MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Feasibility Study for
I-675 and Wilmington Pike Interchange

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Prepared for

Montgomery County Transportation Improvement District, Greene County, City of Centerville, Sugarcreek Township, and the Ohio Department of Transportation

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Chapter One

Introduction

This report evaluates alternative improvements for the Interstate 675 (I-675) and Wilmington Pike interchange located on the county line between Montgomery County and Greene County. The project sponsor – the Montgomery County Transportation Improvement District (MCTID); project stakeholders including Sugarcreek Township, Greene County Engineer's Office, the City of Centerville and the Ohio Department of Transportation (ODOT) District 8 have partnered to study the interchange.

This feasibility study includes identification of alternatives, and an alternatives evaluation based on a capacity analysis using the Highway Capacity Manual 6th Edition and a safety analysis using the AASHTO Highway Safety Manual consistent with current ODOT guidelines. Conceptual plans and construction cost estimates are also included in this feasibility study. The evaluation of potential environmental impacts is based on secondary source information and preliminary estimates of potential impacts only as no technical studies have been completed.

Project History

The I-675 and Wilmington Pike interchange serves major employment (I.e., Wright Patterson AFB), commercial centers, as well as residential and recreational users in Greene and Montgomery County, Ohio. Increasing development (commercial, residential and institutional) has increased in the area of the interchange since 2007 when the Miami Valley Hospital south campus was constructed and the Cornerstone of Centerville development. While development has been rapid in the influence area of the interchange in the last 16 years, there is an additional 280 acres of land in the area that is currently undeveloped which are expected to be developed as commercial, office or higher density residential.

The Miami Valley Regional Planning Commission (MVRPC) 2050 Long Range Transportation Plan (LRTP) identified the I-675 and Wilmington Pike Interchange as a congestion management project. The project was described as a long-term interchange modification to increase the capacity of Wilmington Pike, the I-675 exit and entrance ramps. These congestion management projects were identified through sponsor and stakeholder input and were reviewed through an interactive process that included public participation meetings, financial forecasting and then finally a review using a Project Evaluation System (PES). The PES was based on the common themes and transportation values identified by the 2003 visioning process along with the goals and objectives identified in the LRTP.

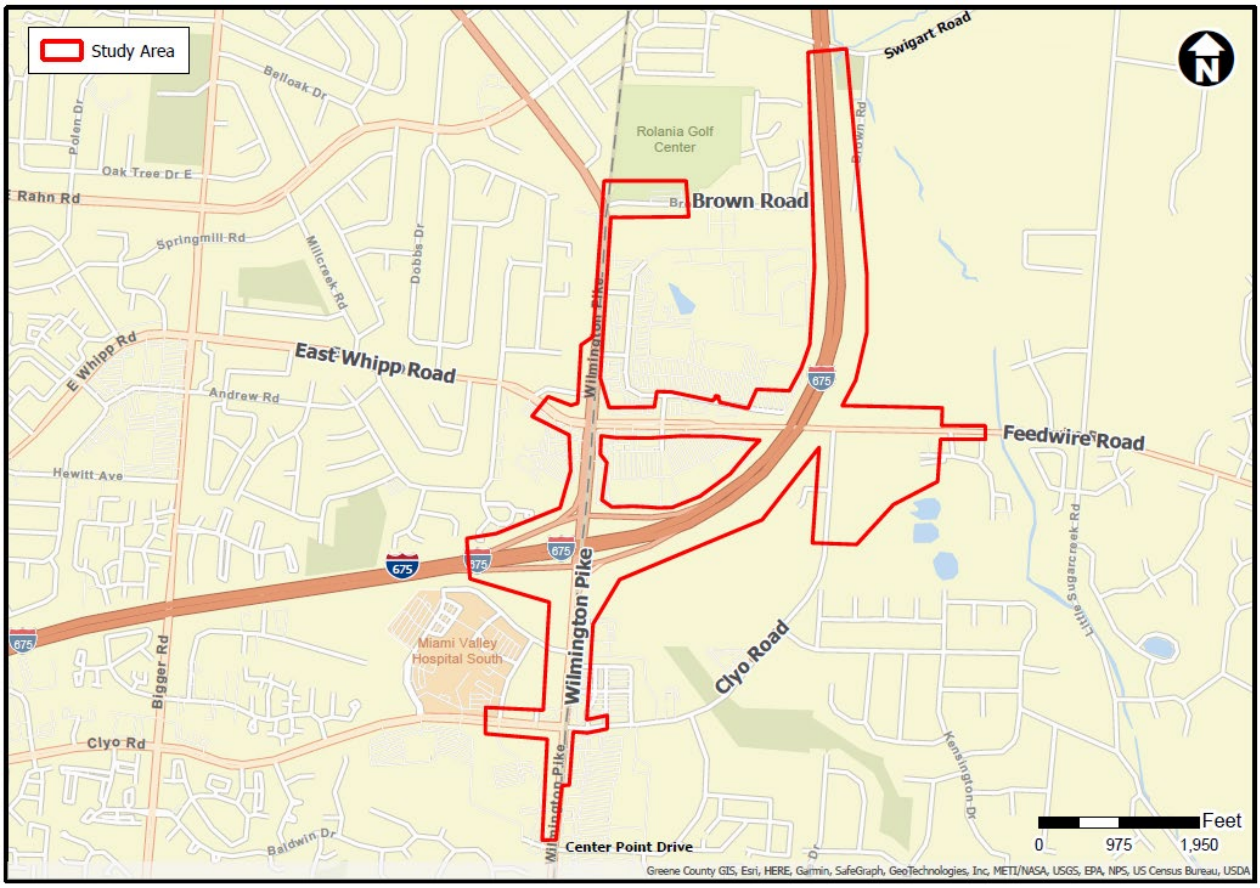
In 2014, an interchange modification study (IMS) was completed for the I-675 and Wilmington Pike interchange. The IMS indicated that the interchange was ranked 264th in the ODOT's 2012 Safety Priority List, with 268 crashes reported in the area of I-675 and Wilmington Pike over a 3-year period (2010 -2012). It also documented congestion and queue formation during the PM peak hour which was identified as a contributing factor to these crashes. The study made recommendations for long term interchange modifications that have not been fully implemented to date.

In 2021, MCTID applied for Transportation Review Advisory Council (TRAC) funding for the I-675 and Wilmington Pike Interchange preliminary engineering and was approved. MCTID along with project stakeholders and partners including ODOT, Greene County Engineers Office, City of Centerville and Sugarcreek Township have formed a Project Management Team to lead the project through the planning and preliminary engineering design phase.

Study Area

The study area for this feasibility study extends along I-675 from the Wilmington Pike interchange area to the Swigart Road bridge, on Wilmington Pike from Brown Road to the north to just north of Center Point Drive to the south. It also includes Feedwire Road from west of Wilmington Pike to approximately 1,800 feet east of Clyo Road. The study area is shown in **Figure 1**.

Figure 1: Study Area Location Map



Purpose and Need

The purpose and need for the project were documented in a Purpose and Need Statement (MOT/GRE-I-675/Wilmington Pike PID 115160) approved by ODOT District 8 on August 3, 2022. The purpose of the project is to reduce congestion and improve safety in the Wilmington Pike and I-675 interchange area while improving pedestrian connectivity and supporting economic development in the area surrounding the interchange.

PRIMARY NEEDS

The I-675 and Wilmington Pike interchange is unable to support the growing transportation demands of the region. A number of existing conditions contribute to the inability of the interchange to operate safely and efficiently, including the following:

- *Congestion along Wilmington Pike, including at the I-675 interchange as well as the Wilmington Pike/ Feedwire Road and Wilmington Pike/Clyo Road intersections.*
- *Traffic volumes exceed ramp capacity, particularly on the southbound I-675 Wilmington Pike ramp during the evening peak period. Queues extend more than a half of a mile in advance of the southbound I-675 exit ramp as documented in the Existing and Future Conditions Report dated August 2022 (page 14). See* Appendix F.
- *Above average crash frequency contributes to the interchange and segments of Wilmington Pike appearing on the ODOT safety priority rankings at the interchange.*

SECONDARY NEEDS

The additional goals stated below are desirable outcomes that may be used to enhance the eventual, selected preferred alternative for transportation improvements.

- *Insufficient transportation infrastructure to support planned community growth and development as identified by the Miami Valley Regional Planning Commission (MVRPC).*
- *Improve pedestrian connectivity and increase the reach of the regional bicycle and pedestrian network.*

Chapter Two

Alternatives Considered & Dismissed

Six alternatives were evaluated for the I-675 and Wilmington Pike interchange improvement project:

- *No Build*
- *Alternative 1 – Upgrade Existing Interchange*
- *Alternative 1A – Diverging Diamond Interchange with Existing I-675 Bridge*
- *Alternative 1B – Diverging Diamond Interchange*
- *Alternative 2 – Split Interchange*
- *Alternative 3 – Swigart Road Interchange*
- *While not part of the TRAC funded portion of the project, the concept plans in Appendix B show improvements on Feedwire Road to Little Sugarcreek Road. These are shown for the continuity of the long-range improvements needed on Feedwire Road. The local project partners understand that there would need to be a locally funded project on Feedwire Road between Clyo Road and Little Sugarcreek Road whose construction timeline relative to the construction timeline of the interchange project would have an impact on what those two project footprints look like.*

Note that Brown Road was included in the study area due to its proximity to the existing interchange. Improvements to the roadway network outside the study area defined in Figure 1 *would be addressed as part of a separate project(s).*

No Build

The No Build alternative does not include any new construction or improvements but includes on-going maintenance activities. The No Build Alternative does not impact adjacent parcels and provides no improvements to accommodate traffic demand in the I-675 and Wilmington Pike interchange area.

This alternative is carried forward as the baseline to compare the alternatives and as required by the National Environmental Policy Act.

Alternative 1 - Upgrade Existing Interchange

This alternative would upgrade the existing network by adding lanes to the existing roadways and interchange to meet demand year volumes. Adding lanes to Wilmington Pike under I-675 would require the replacement of the I-675 bridge over Wilmington Pike. The Feedwire Road bridge over I-675 would also need to be replaced/widened (5 lanes plus a shared use path) to accommodate design year volumes and alternative transportation users. Retaining walls would be necessary to limit property impacts along Feedwire Road and Wilmington Pike. The southbound I-675 exit ramp to Wilmington Pike and the northbound I-675 entrance ramp are to be expanded to 2-lane ramps. The footprint of this alternative is shown in Figure 2*. A concept plan for this alternative is shown in* Appendix B*.*

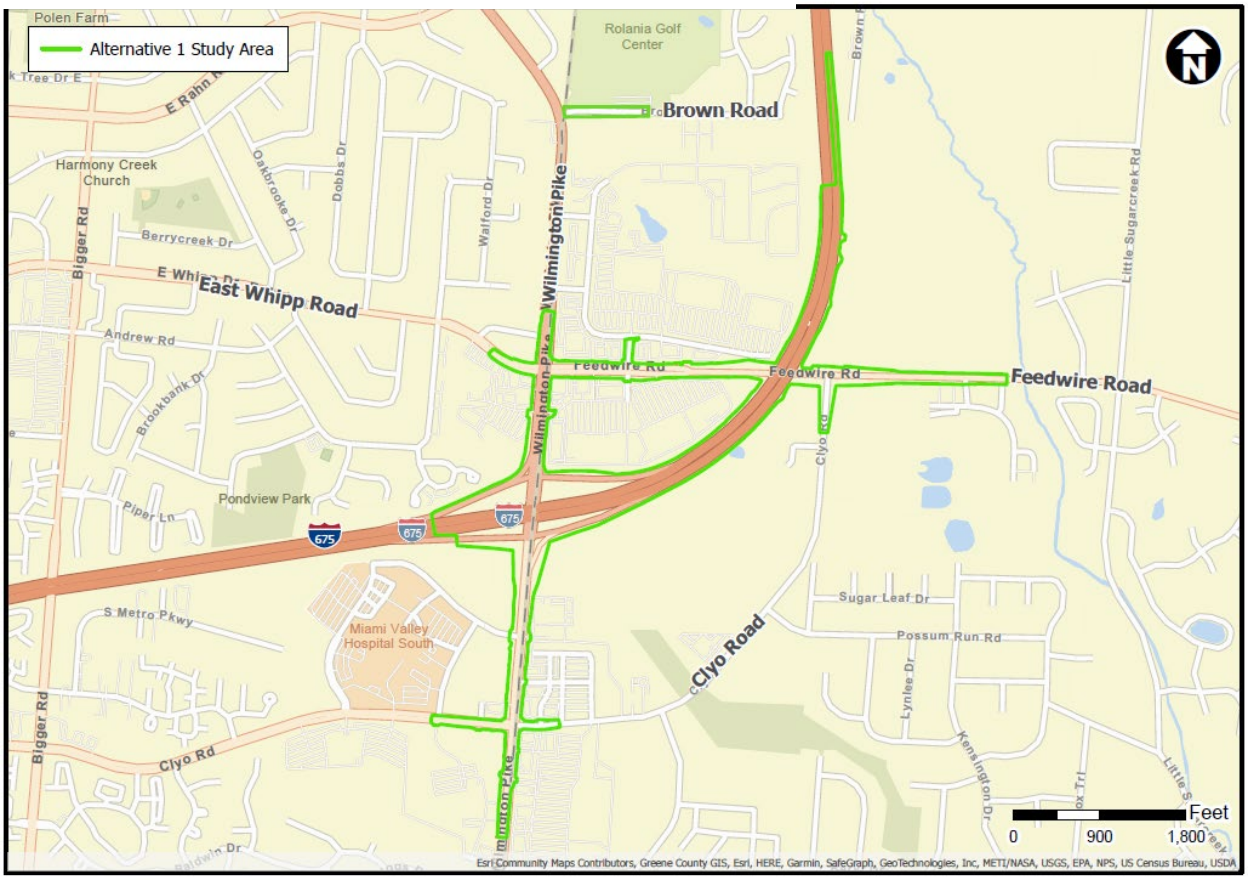
Alternative 1 also includes the following improvements:

1. *Add a second left turn lane onto I-675 at the southbound and northbound ramp intersections from Wilmington Pike.*
2. *Add an additional left turn lane (3 total LT lanes) and two additional right turn lanes (3 total right turn lanes) on the southbound I-675 exit ramp. Adjacent interchanges on the I-675 corridor at*

Indian Ripple Road, at State Route 48, and at State Route 725 have interchange configurations with directional loop ramps that avoid the need for multiple lanes to accommodate high-volume turning movements at signalized intersections.

3. *Additional through lanes on Wilmington Pike south of the Feedwire Road (resulting in 12 total lanes under I-675). Fairfield Road south of the I-675 interchange has a 10-lane section. The I-675 interchanges at State Route 48 and at State Route 725 are split interchanges having ramps connecting to adjacent arterial/collector roadways.*
4. *Add a second eastbound left turn lane on Feedwire Road at Charles Drive.*
5. *Add a through lane on Feedwire Road at existing Clyo Road.*
6. *Add a second left turn lane on Wilmington Pike at Clyo Road on the northbound and southbound approaches.*
7. *Add an eastbound and westbound right turn lane on Clyo Road at Wilmington Pike.*
8. *Add a second lane for the northbound entrance ramp to I-675 from Wilmington Pike.*
9. *Add a second lane for the southbound exit ramp from I-675 to Wilmington Pike.*
10. *Extend numerous storage lengths on several movements on intersections within project area.*

Figure 2: Alternative 1 – Upgrade Existing Interchange



Alternative 1A – Diverging Diamond Interchange with Existing I-675 Bridge

This alternative would upgrade the existing network by adding lanes to the existing roadways and converting the existing interchange to a diverging diamond interchange (DDI). This alternative preserves the existing I-675 bridge over Wilmington Pike while increasing capacity to accommodate design year traffic. Alternative 1A would also include all other network improvements to the adjacent roadways as described for Alternative 1.

Alternative 1A was dismissed as a feasible alternative since one or two of the new lanes (4 total) would be located between the bridge pier and the bridge abutment (the wall supporting the end of the bridge). If reconstruction of the existing bridge was to be avoided, the bridge piers would be located between travel lanes in the same direction making them fixed objects within the traveled way. The design would be similar to southbound Ludlow Street or northbound Jefferson Street at the railroad bridge in the City of Dayton. While devices could be used to protect the structural supports of a bridge, the long-term safety performance of the non-standard design would be poor for motorists.

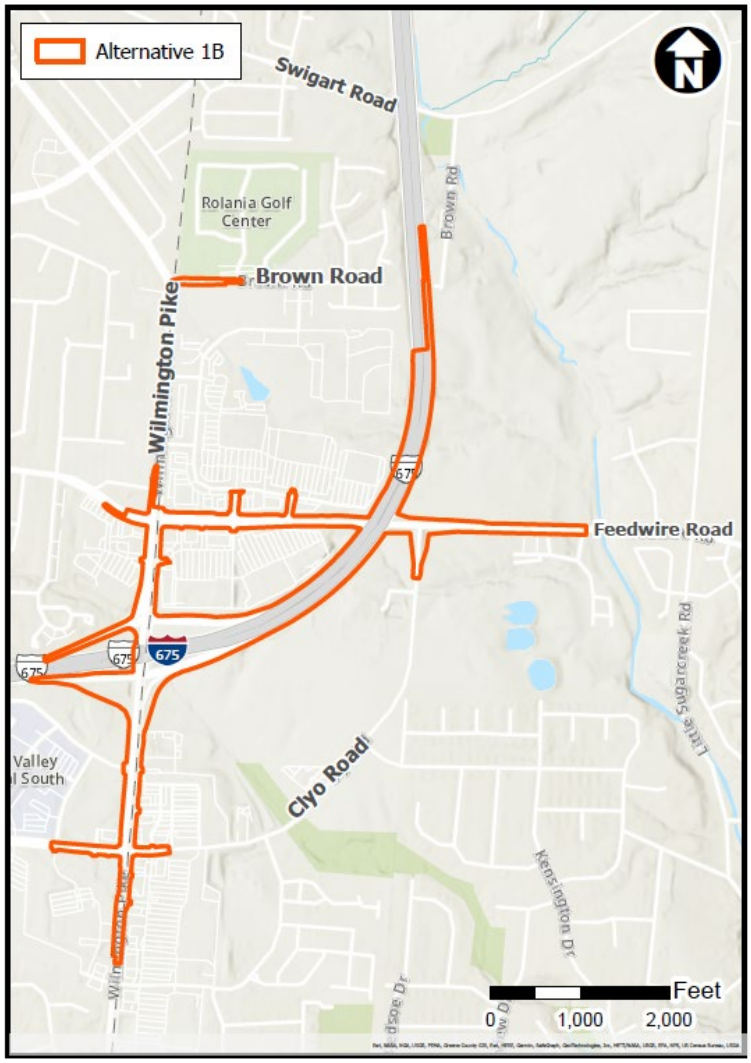
Since this alternative would have fixed objects between travel lanes in the same direction this alternative would not address one of the primary need elements (safety), therefore, **this alternative has been dismissed from further detailed analysis.**

Alternative 1B – Diverging Diamond Interchange

A DDI would be constructed on Wilmington Pike at the I-675 interchange similar to Alternative 1A. However, this alternative would include the replacement of the I-675 bridge over Wilmington Pike. Alternative 1B would also include all other network improvements to the adjacent roadways as described for Alternative 1. The footprint of this alternative is very similar to Alternative 1 and is shown in **Figure 3.**

A concept plan for this alternative is provided in **Appendix B.**

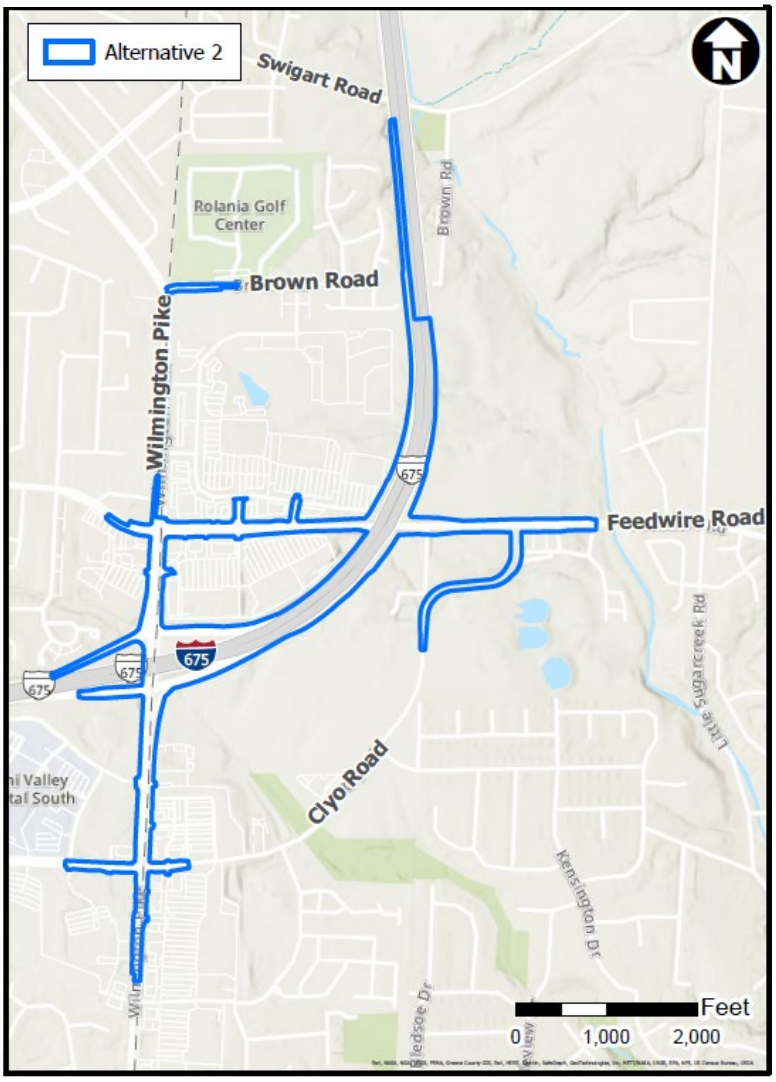
Figure 3: Alternative 1B - Diverging Diamond Interchange



Alternative 2 – Split Interchange

Under this alternative, the existing diamond interchange would be converted to a split interchange with access to I-675 from both Wilmington Pike and from Feedwire Road. Wilmington Pike under I-675 is of sufficient width to fit under the existing I-675 bridge. A new bridge is required on Feedwire Road over I-675 and would be wide enough to support 8 lanes plus a shared use path. Retaining walls would be needed along the new ramps at Feedwire Road, both adjacent to I-675 and adjacent to the Cabela's site. Retaining walls would also be required to limit property impacts along Feedwire Road and Wilmington Pike. The footprint of this alternative is shown in **Figure 4**. *A concept plan for this alternative is shown in* **Appendix B**.

Figure 4: Alternative 2 – Spilt Interchange



Alternative 2 also includes the following improvements:

- *Relocation of a portion of Clyo Road to intersect with Feedwire Road approximately 1,000 feet east of the existing intersection*
- *Additional through lanes on Wilmington Pike south of Feedwire Road (resulting in a total 7 lanes under I-675)*
- *Add a second eastbound left turn lane on Feedwire Road at Charles Drive*
- *Add a second left turn lane on Wilmington Pike at Clyo Road on the northbound, southbound, and westbound approaches*
- *Add a westbound right turn lane on Clyo Road at Wilmington Pike*
- *Extend numerous storage lengths on several movements on intersections within project area*
- *The southbound I-675 exit ramp is a 2-lane ramp having one lane access the exit ramp to Feedwire Road and the second ramp access a collector-distributor roadway that is routed under Feedwire Road and connects to Wilmington Pike. A single lane, northbound I-675 entrance ramp merges east of Wilmington Pike from a collector-distributor (C-D) roadway. The C-D roadway extends to Feedwire Road where a second entrance ramp allows for traffic to access northbound I-675 resulting in two merges onto I-675.*

Alternative 3 – Swigart Road Interchange

The Swigart Road Interchange alternative would include a new interchange at Swigart Road between Wilmington Pike and Indian Ripple Road on I-675. A conceptual plan is shown below in Figure 5. In a June 8, 2021, I-675 & Wilmington Pike Feasibility Study Progress Meeting, the Swigart Road Interchange was determined to be undesirable by the Project Management Team due to environmental considerations such as stream impacts and potential noise impacts in this primarily residential area, along with local roadway network, and interchange spacing considerations. While no detailed capacity or safety analysis was completed, the Project Management Team was also concerned that an interchange at Swigart Road would not to be able to fully address the safety and capacity issues at the I-675 and Wilmington Pike interchange. As a result, **this alternative was not developed further and has been dismissed from further evaluation in this feasibility study**.

Figure 5: Alternative 3 – Swigart Road Interchange



The conceptual plans show the calculated length for the auxiliary storage lanes. Storage lane length calculations of all intersections are included as part of **Appendix C**.

Chapter Three

Key Issues

The key issues used to evaluate the alternatives include traffic analysis, roadway design, safety, cost, right of way, utility impacts, and environmental considerations. The key factors for this feasibility study are discussed below.

Traffic Analysis

Traffic capacity analysis is used to determine whether roadways or intersections can handle the traffic. Capacity analysis was performed for the alternatives using the Highway Capacity Manual (HCM). The efficiency of an intersection is measured using Level of Service (LOS), which quantifies the delay that a motorist experiences as they pass through an intersection. LOS A indicates free-flow operations resulting in little to no delays and LOS F indicates severe congestion. ODOT's design criteria state that the LOS of interstate or freeway systems and interchange components that are built new or modified should generally provide a LOS D or better for the design year in urban areas. As shown in Table 1, under Alternative 1B and Alternative 2, the interchange ramp intersections operate with a desirable LOS D or better in the design year during peak morning (AM) and evening (PM) periods.

Table 1 summarizes the LOS at the I-675 ramp intersections at Wilmington Pike (and at Feedwire Road for Alternative 2). Alternative 1 shows poor LOS (LOS E and F) during the PM peak hour at the I-675 & Wilmington Pike ramp intersections. Better levels of service were not able to be achieved for this alternative despite having a triple left turn lane from the exit ramp to southbound Wilmington Pike. A triple left is considered to be the maximum number of turning lanes at a signalized intersection without having safety issues (such as sideswipe crashes) and operational issues (poor lane utilization).

Alternatives 1B and 2 show acceptable levels of service (LOS B, C or D) at the I-675 ramp intersections in the Design Year. The capacity analysis shown in Appendix D is summarized in tabular format for all intersections within the study area for all alternatives.

TRAVEL TIME ANALYSIS

Travel times were estimated and analyzed for three different sample trips for four alternatives during the PM peak period: No Build, Alternative 1, Alternative 1B, and Alternative 2:

1. *The first sample trip originates from a point on northbound I-675 2000 feet upstream of the ramp intersection at Wilmington Pike travelling to Brookdale Boulevard on Feedwire Road, resulting in a total trip distance of 1.57 miles.*
2. *The second sample trip originates from a point on southbound I-675 5,000 feet upstream of the ramp intersection at Wilmington Pike travelling to the Morris Furniture access on Whipp Road, resulting in a total trip distance of 1.25 miles.*
3. *The third sample trip originates from northbound Wilmington Pike from a point 1,000 feet south of Clyo Road to 500 feet north of Brown Road, resulting in a total trip distance of 1.4 miles.*

Travel times on Wilmington Pike and Feedwire Rd corridors were taken from the HCS PM Peak analyses if available. Where corridor travel times are not available from HCS, these were estimated by dividing roadway segment distances by either the posted speed limit, assumed speed, or HCS segment travel speed. A 55 MPH speed is assumed on C-D roads for Alternative 2, and a 15 MPH speed is assumed to estimate queue "crawling" speed. Control Delays were then added from HCS if applicable.

Table 1: Capacity Analysis for Design Year (2050)

Location	No Build				Alternative 1				Alternative 1B				Alternative 2			
	AM		PM		AM		PM		AM		PM		AM		PM	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Wilm Pike/ I-675 SB Ramps	127.3	F	221.7	F	46.7	D	81.6	F	26.7	C	28.4	C	34.5	C	37.1	D
Wilm Pike/ I-675 NB Ramps	144.2	F	160.4	F	30.9	C	64.1	E	28.6	C	31.8	C	25.7	C	28.1	C
Feedwire Road/ I-675 SB Ramps	NA				NA				NA				33.7	C	31.6	C
Feedwire Road/ I-675 NB Ramps	NA				NA				NA				21.7	C	20.2	C

SB: southbound
NB: northbound
LOS: Level of Service
s/veh: seconds per vehicle

For roadways not modeled as a corridor in HCS (i.e., I-675 ramp and C-D roads), travel times were estimated by dividing the non-queue distance (total length subtracted by HCS 95%-tile queue length) by the posted or assumed speeds, plus the 95%-tile queue length divided by the 15 MPH assumed queue crawl speed, plus the Control Delay from HCS.

Each alternative reduces travel times across the three analyzed trips compared to the No Build conditions. The greatest reduction occurs in the first trip with Alternative 2 with a projected travel time savings of 10.5 minutes. Alternative 1 and Alternative 1B would reduce travel times by 5.5 and 7.8 minutes respectively for this same trip as well. The second trip is projected to save nearly 5 minutes in travel time for each alternative reviewed. The third trip is projected to reduce travel time by 3.6 minutes for Alternative 1, 5 minutes for Alternative 2, and 5.3 minutes for Alternative 3.

Travel Time comparison tables are shown in Appendix E.

Roadway Design

Roadway design issues considered during this study focus on how well they address the primary and secondary needs of the project. The three alternatives under evaluation propose different improvements to the existing roadway network. Alternative 1 includes conventional lane widening improvements to the Wilmington Pike and Feedwire Road network. Alternative 1B includes many of the same conventional improvements provided in Alternative 1 but also includes the conversion of the I-675 and Wilmington Pike interchange to a DDI configuration. Alternative 2 includes the addition of a partial interchange at I-675/ Feedwire Road along with other conventional improvements at and in between intersections on Wilmington Pike within the study area.

One of the primary roadway design differences between the alternatives is the need to reconstruct existing bridges. Due to the number of bridge replacements under Alternative 1 and Alternative 1B being a total of two, additional effort would be required to maintain traffic on I-675.

Table 2 *provides a summary of bridge replacements required for each of the alternatives.*

Table 2: Bridge Replacement Summary

Location	Alternative 1	Alternative 1B	Alternative 2
I-675 bridge @ Wilmington Pike	***Replace bridge** (5 lanes added to Wilmington Pike plus SUP)*	***Replace bridge** (1 lane added to Wilmington Pike plus SUP)*	*Retain existing bridge (no additonal lanes added to Wilmington Pike) plus SUP*
Feedwire Road bridge @ I-675	***Replace bridge** (3 lanes added to Feedwire Road plus SUP, plus 2 lane ramp underneath)*	***Replace bridge** (3 lanes added to Feedwire Road plus SUP, plus 2 lane ramp underneath)*	***Replace bridge** (6 lanes added to Feedwire Road plus SUP)*

SUP: Shared Use Path

All three alternatives address pedestrian connectivity (a secondary need element), with Alternative 2 providing the pedestrian accommodations with the fewest roadway crossings.

Safety

An Existing and Future Conditions (EFC) study dated August 2022 (**Appendix F**) was completed for the Wilmington Pike and I-675 study area as shown in **Figure 1**. A detailed crash analysis was completed for two different time periods: 2017-2019 (3-year period) and 2017-2021 (5-year period). The 5-year time period expanded to include 2020 and 2021 crash data was to determine the effects of COVID related traffic patterns on safety (if any).

Comparing the safety performance of the two time periods confirms the 3-year (2017-2019) dataset is representative of the safety performance within the study area in the future. Therefore, countermeasures based on the 2017-2019 dataset will be more effective to mitigate future safety performance issues. Appendix E contains an excerpt of the EFC study which includes the safety analysis for the 3-year period (2017-2019).

Two primary agencies prioritize safety locations using 2017-2019 crash data from the Ohio Department of Public Safety (ODPS):

- ODOT evaluates crash data across the state of Ohio and ranks the top locations based on the Highway Safety Improvement Program (HSIP)
- Miami Valley Regional Planning Commission (MVRPC) evaluates crash data of a seven-county region in southwest Ohio

Table 3 shows the safety priority ranking of intersections using different agency metrics and databases.

Crashes on southbound I-675 were reviewed to determine if traffic backups (called queues) extending from Wilmington Pike may have negatively affected safety performance. Queues were determined to be a contributing factor in a total of 42 crashes comprising of rear-end, fixed object, and sideswipe passing crashes. Therefore, the gray rows in **Table 3** represent the combined crashes assigned to the southbound I-675/ Wilmington Pike intersection (96 total crashes) resulting in a higher priority location than originally assigned by ODOT.

Table 3: Safety Priority Locations (2017-2019)

2017-2019 HSIP/ MVRPC Rank	Current HSIP/ MVRPC Rank	Intersection	Total Crashes	Injury Crashes
H59	-	Wilmington Pike & I-675 Northbound Ramps	46	14
H80/ H459	-	Wilmington Pike & I-675 Southbound Ramps	54	17
		Southbound I-675 (Southbound Ramp Approach)	42	11
H446	CEAO	Wilmington Pike & State Route 725	38	9
M40	H74/CEAO	Wilmington Pike & Clyo Road	99	26
M52	M52	Wilmington Pike & Feedwire Road	68	16
CEAO	CEAO	Feedwire Road & Little Sugar Creek Road	16	5
CEAO	CEAO	Feedwire Road & Clyo Road	22	4

Crash diagrams shown in **Appendix G** were prepared for segments on Wilmington Pike from Feedwire Road/ Whipp Road to Clyo Road and on Feedwire Road from Wilmington Pike to Clyo Road.

The ODOT Economic Crash Analysis Tool (ECAT) tool was used to compare the safety performance of the three alternatives. The benefits of these improvements from a safety perspective were determined by comparing the net present value of the safety benefits to the construction costs of the improvements. Since the fundamental operation of the Build alternatives differs from the No Build alternative, safety benefits of the proposed improvements were calculated using both safety performance functions (SPF) and crash modification factors (CMF).

The safety information and benefit cost ratio calculations from the ECAT tool for the Build alternatives and for the No Build condition as summarized in **Table 4**. The predicted number of fatal and incapacitating (KA) crashes, injury crashes (BC), and total number of crashes are shown for the No Build conditions and for each Build alternative. For the No Build condition, the predicted number of fatal or incapacitating crashes is 5.2507 crashes per year, the predicted number of other injury crashes is 59.0824, and the predicted number of total crashes of all types is 191.4064 per year.

Table 4: Benefit to Cost Ratios

Alternative	Fatal & Incapacitating Injuries/Yr	Minor Injury/Yr	Total/Yr	Benefit/Cost Ratio	Net Present Value of Safety Benefits
No Build	5.2507	59.0824	191.4064	-	-
Alternative 1	4.4327	48.5881	178.6084	0.68	$ 35,600,000
Alternative 1b	3.9622	43.6506	161.6003	0.73	$ 39,700,000
Alternative 2	4.6818	53.4424	185.8312	0.35	$ 22,500,000

The predicted number of fatal or incapacitating crashes is reduced by the three Build alternatives. Each Build alternative considers Part C (SPFs) and Part D (CMFs) crash modification factors related to the proposed geometrics. Alternatives 1 and 2 mostly rely on Part D crash modification factors that change the average crash frequency as a result of geometric or operational modifications differing from existing conditions. For Alternatives 1 and 2, this is mostly related to geometric improvements to improve capacity in the study area. Alternative 2 provides improved metrics compared to the No Build scenario but also includes the addition of two new traffic signals on Feedwire Road, an additional diverge point on SB I-675 and an additional merge point on NB I-675 resulting in a lower predicted safety performance than Alternatives 1 and 1B.

The greatest predicted reduction of crashes occurs with Alternate 1B and is largely due to the Part C crash modification factor related to the implementation of a Diverging Diamond Interchange. The Part C factors are applied to the historical crash data within the study area whereas the Part D factors are based on average safety performance of similar roadway types (not study area specific). Regarding the benefit cost ratios, a benefit cost ratio less than 1.0 indicates that the cost of the proposed improvements is greater than the safety benefits for a given alternative. All alternatives have a benefit cost ratio less than 1.0.

A benefit cost ratio less than 1.0 is expected since the alternatives address other Need elements in addition to safety. A key safety issue that is mitigated with all alternatives is the reduction of queues that extend onto mainline I-675. Therefore, each alternatives meets the safety primary Need element of the project. The ECAT safety analysis is shown in **Appendix G**.

Note that the workload of drivers navigating the 4-lane crossover of the DDI interchange is an additional safety factor considering this non-traditional interchange configuration is just beginning to be introduced to the region. No DDI are currently planned in the Miami Valley. Driver workload of the multi-lane, DDI interchange is not factored into the benefit cost calculations above.

As documented by the EFC report in **Appendix E**, improving safety performance requires mitigating southbound queues that extend onto mainline I-675 for distances greater than one mile. Capacity constraints of the roadway network are the primary contributing factors of these crashes such that a solution cannot be limited to the Wilmington Pike and southbound I-675 ramp intersection. Therefore, capacity improvements are required downstream of the I-675 interchange. Otherwise, queues will extend from the next adjacent signalized intersection which is located 500 feet (northbound I-675 ramp) or

1,000 feet (Feedwire Road) from the southbound I-675 ramp in the interim condition. Queues will extend from the Wilmington Pike and southbound I-675 ramp intersection as described in Alternative 1.

Not addressing the safety performance of the roadway network does not meet one of the need elements for the project.

Cost

A detailed cost analysis was completed for each of the Build alternatives. Cost estimates include major construction cost drivers, as well as preliminary and construction engineering. Present day unit costs were used with a general 15% inflation factor applied. The inflation factor can be adjusted to escalate to a future year. Utility relocations costs were not included in the estimates.

Each alternative is further broken down into cost for each roadway section. This will allow for comparison of different components from each alternative and assist in phasing if desired. A 15% inflation factor was applied to the cost. A 25% design contingency was also applied given the level of detail. Estimated acreages for right-of-way takes are provided, without associated costs.

The construction cost estimates for each alternative are shown in Appendix H. *Future design phases will include additional details for utility and right-of-way costs.*

Right of Way

The total right-of-way acquisition for each alternative is shown in Table 5. *While Alternative 2 requires greater overall acreage of right of way acquisition, the properties are primarily within undeveloped land along I-675, realigned Clyo Road, and Feedwire Road, east of I-675. Alternative 1 and Alternative 1B would result in greater impacts to commercial properties on the south side of Feedwire Road as described in more detail below.*

Table 5: *Right of Way Impacts*

Impact Type	Alternative 1	Alternative 1B	Alternative 2
Right of Way	8.4 acres	8.7 acres	12.5 acres
Commercial Property Impacts	May reduce the available parking spots for 3 commercial properties; including 35% reduction for one business	May reduce the available parking spots for 3 commercial properties; including 35% reduction for one business	May reduce the available parking spots for 2 commercial properties; including 8% for one business

ALTERNATIVES 1 AND 1B

Alternatives 1 and 1B require a second lane for the eastbound left turn movement to Charles Drive that extends to the Wilmington Pike/ Feedwire Road intersection. Additional storage capacity is also required for the westbound left turn movement to Wilmington Pike. Therefore, the proposed pavement section of Feedwire Road east of Wilmington Pike (7 total lanes) is two lanes (+2) wider than the existing condition These extra lanes require retaining walls to reduce impacts to the parking areas on the south side of Feedwire Road.

Alternatives 1 and 1B also require a second northbound right turn lane from Wilmington Pike to Feedwire Road. This widening impacts the Cracker Barrel parking along Wilmington Pike, which would result in a reduction of approximately 30 parking spaces of the current 86 total (a 35% decrease). Not constructing the second NB right turn lane would result in the following operational issues:

- *The LOS for the NB right turn movement from B to F.*

- *The QSR also increases to 3.47 which equates to a queue length of 1,388 ft which would extend through the SB I-675 ramp intersection (1,100 ft).*

Due to the realignment of the northbound ramps, Alternative 1B requires additional right of way in the southwest and southeast quadrants of the Wilmington Pike and I-675 interchange. These areas are currently undeveloped.

ALTERNATIVE 2

The primary reason for the greater right of way impacts under Alternative 2 is the proposed Feedwire Road interchange which includes new ramps/collector roads and widening of Feedwire Road at the interchange.

Alternative 2 requires the relocation of Clyo Road 1,000 feet east of the existing location to provide adequate space between the northbound I-675 ramp intersection. Acquisition of right-of-way should be done prior to or coordinated with future development of the existing parcel that is vacant. Acquisition of property to accommodate the relocation of Clyo Road after redevelopment of the parcel risks additional costs associated with damages.

However, property impacts are avoided for the Cracker Barrel site by avoiding the need for a second northbound right turn lane as is required for Alternatives 1/1B. Similarly, pavement widening of Feedwire Road east of Wilmington Pike (6 total lanes) is limited to one lane (+1) wider than the existing condition – impacts are less along the south side of Feedwire Road and Whipp Road with Alternative 2.

The proposed southbound I-675 exit ramp to Feedwire Road would impact the parking lot at Cabela's parking lot along the I-675 right-of-way, which would result in a reduction of approximately 35 parking spaces of the current 314 spaces (an 11% decrease).

Utility Impacts

The majority of the project involves the widening of the existing roadways, with ramp realignments/ new ramps also impacting existing lines. Along Wilmington Road, the existing overhead line along the east side of the roadway will be impacted and require relocation for both alternatives. There is also an existing underground utility vault along the east side between the southbound exit ramp and Feedwire Road that will require relocation. The existing culvert running under the interchange will require an extension at the northeast corner of the interchange for alternative 1B.

Feedwire Road impacts will involve overhead lines varying between the north and south side of the roadway. Alternative 1B impacts approximately 4,600 feet of overhead lines, while alternative 2 impacts approximately 4,000 feet. Along I-675, the existing lighting system will be impacted and require relocation. Alternative 2 includes a larger length of ramp work and therefore a higher impact (11,500 ft versus 5,200 feet compared to alternative 1B). Along the proposed northbound ramp from Feedwire Road for alternative 2, approximately 1,350 feet of overhead utilities that run along I-675. An existing ODOT ITS pole will be impacted by the northbound connector road in alternative 2.

Greene County is planning a water main project that runs along Feedwire Road, Little Sugar Creek, and Clyo Road. Several alternatives are being considered to cross I-675. The Clyo section runs along the existing roadway. If Clyo Road gets realigned as shown in alternative 2, the water main may consider using the new alignment to keep the existing right-of-way available for development.

Environmental Analysis

The environmental analysis was completed using secondary source review within the current project study area. This environmental analysis was undertaken with the knowledge that the current project would require a full National Environmental Policy Act (NEPA) environmental review by ODOT once a Preferred

Alternative is confirmed. Additional studies following ODOT procedures and protocols, agency coordination, and/or reviews would be needed as the project progresses through ODOT's Project Development Process.

AQUATIC RESOURCES

The study area is located within the Sugar Creek drainage basin. The aquatic resources within the project area are shown on the Aquatics Resources Maps in **Appendix I**. There are no wetlands mapped on the National Wetland Inventory maps. Based on the location of mapped streams, Alternative 2 would have the greatest impact to streams with approximately 2,437 linear feet of impacts, as summarized in **Table 6**. Maps showing the aquatic resources present in the project area are provided in **Appendix I**.

Table 6: Aquatic Resource Impacts

Stream Impacts	Alternative 1	Alternative 1B	Alternative 2
	1,474 linear feet	1,513 linear feet	2,437 linear feet

Adjustments in the alignments would be considered to avoid impacts to aquatic resources where possible as the design is refined. If impacts are necessary after avoidance and minimization efforts are implemented, waterway permits would be obtained. Compensatory mitigation for wetland and stream impacts would be implemented if required.

An Ecological Survey Report would document impacts to aquatic resources once a preferred alternative alignment has been confirmed. The report would be coordinated with the appropriate state and federal regulatory and resources agencies.

Floodplains

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the project study area was conducted. The majority of the project study area is located within the Area of Minimal Flood Hazard, which is an area determined to be outside the 500-year floodplain. The southeast quadrant of the I-675 and Wilmington Pike intersection project area is located within designated Special Flood Hazard Zones. All three build alternatives have improvements within the designated floodplain but Alternative 1B has the most area located within the flood zone. None of the alternatives would be expected to result in adverse impacts to the floodplain.

Per Executive Order (EO) 11988 - Floodplain Management, efforts would be made to avoid adverse impacts to the floodplain where practical alternatives are available. Compliance with EO 11988 would be required as part of the project environmental documentation.

The No Build Alternative would not impact any aquatic resources or special flood hazard zones.

THREATENED OR ENDANGERED SPECIES

The United States Fish and Wildlife Service (USFWS) species list for Montgomery and Greene County indicates that the following species known or historic range are within the project area:

- Myotis sodalis (Indiana Bat) – Endangered
- Myotis septentrionalis (Northern Long-eared Bat) – Endangered
- Perimyotis subflavus (Tricolored Bat) – Proposed Endangered

Bats

Potential Suitable Wooded Habitat (SWH) for federally listed bat species is defined in the Framework Programmatic Biological Opinion between ODOT and USFWS. Based on a visual survey of aerial maps, the study area contains several wooded areas that may provide SWH for bat species. Alternative 2 results in the greatest acreage of potential SWH impacts, as shown in **Table 7**.

Table 7: Potential Suitable Wooded Habitat for Bats

Potential Suitable Wooded Habitat	Alternative 1	Alternative 1B	Alternative 2
	5.5 acres	7.2 acres	10.8 acres

Bald Eagle

The bald eagle (Haliaeetus leucocephalus) is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle uses super canopy trees (trees that are taller than the surrounding trees) as nesting habitat. The ideal habitat for the bald eagle is a secluded site within two (2) miles of water so the bird has access to a source of fish. The locations of known bald eagle nests would be requested as part of the literature review portion of the Ecological Survey Report performed for the preferred alternative.

An Ecological Survey Report would document impacts to threatened or endangered species once a preferred alternative alignment has been confirmed. The report would be coordinated with the appropriate state and federal regulatory and resources agencies.

The No Build Alternative would not impact any suitable habitat for threatened or endangered species.

The species list from USFWS is provided in Appendix I.

CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the effects of their actions on historic properties. Based on currently recorded information at the Ohio History Connect the Terry Fraze House, which has been identified as eligible for the National Register of Historic Places (NRHP) is the only known cultural resource within the study area. Proposed impacts under any of the alternatives would be minor (i.e., potential right-of-way strip takes). There are no known archaeological resources within any of the project areas. The No Build Alternative would not impact any Historic/Architectural or Archaeological resources.

A Section 106 request and any necessary cultural resource surveys would be conducted to identify any potential cultural resource impacts once a preferred alternative alignment has been confirmed.

REGULATED MATERIALS

Based on a review of aerial maps, the study area is primarily within commercial land uses. Per ODOT's Regulated Materials Review (RMR) process, commercial land uses may be considered high risk depending on current or previous activities (e.g., involving vehicle or equipment storage or maintenance). A review of ODOT's Ohio Regulated Properties Search (ORPS) website was completed to assist in identifying potential RM concerns within the current project area. Eight (8) Resource Conservation and Recovery Act (RCRA) facilities, fifteen (15) Underground Storage Tanks (UST), three (3) Leaking Underground Storage Tanks (LUST), and two (2) spill databases were identified within the project area of alternative 1. Six (6) RCRA facilities, nine (9) UST, and two (2) LUST were identified within the project area in Alternative 2. Each regulated material concern mapped is located along Wilmington Pike with the exception of one RCRA facility mapped along Feedwire Road. Regulated Materials site potential impacts are not substantially different when comparing the alternatives under consideration.

Properties within the study area would be further evaluated on a parcel specific basis using ODOT's RMR Screening process. Depending on the need for additional permanent right-of-way or the extent of deep excavation (6 feet or greater in depth), properties with current or historic high risk land uses may require additional RMR studies. There are no active or historic landfills or known solid waste facilities located within 300 feet of the project study area.

SECTION 4(F) AND SECTION 6(F) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966 protects public parks, recreation areas, wildlife and waterfowl refuges, and historic sites included in or eligible for inclusion in the National Register of Historic Places (NRHP). Sweet Arrow Reserve, located north of Feedwire Road and east of I-675, is within the project area for all alternatives. Alternative 2 is expected to require the most conversion of parkland, but would be outside of existing passive recreational trails and would not impact park access (see Table 8 and Figure 6). A section 4(f) evaluation including avoidance and minimization measures for parkland impacts would be necessary once a preferred alternative alignment has been confirmed.

Table 8: Section 4(f) Impacts

Sweet Arrow Reserve Impacts	Alternative 1	Alternative 1B	Alternative 2
	0.56 acres	0.2 acres	1.18 acres

Figure 6: Alternative 2 – Section 4(f) Resources



The prior Rolandia golf course adjacent to the Brown Road study area has recently undergone redevelopment and is now limited to a miniature golf course and is not expected to be a Section 4(f) resource.

Section 6(f) of the Land and Water Conservation Act applies to the conversion of recreational lands that have received Land and Water Conservation Fund (LWCF) money to non-recreational purposes. The United States Department of Interior's National Park Service listings of LWCF grant properties for Hamilton and Greene County was reviewed in March of 2023. No Section 6(f) properties are currently located in the project area.

NOISE

Alternative 2 includes the realignment of Clyo Road closer to an apartment complex located south of Feedwire Road, as well as closer to several residential properties, which could result in noise impacts on these properties. Alternatives 1 and 1B would have minor lane adjustments which has the potential to bring higher levels of noise to noise sensitive land uses. A noise analysis would be undertaken by ODOT on the preferred alternative to identify any potential noise impacts along with reasonable and feasible noise mitigation.

FARMLAND

According to the United States Census Bureau mapping, the majority of project area is within the designated Dayton Urban Area and is not subject to the Farmland Protection Policy Act of 1981 (FPPA). The only portion outside of the urban area is the Sweet Arrow Reserve parkland.

WATER WELLS AND DRINKING WATER RESOURCES

A cursory review of available drinking and ground water resource mapping was completed to assess the project's potential to impact drinking water resources (i.e., residential wells, public water systems, and drinking water source protection areas). Based on a review of Ohio EPA Drinking and Ground Waters online mapping system, the project is not located over a sole source aquifer. Based on a review of ODNR's Ohio Water Wells online database, impacts to three wells at southern portion of the project areas may occur (ID Numbers 294616, 608165, and 614851). If a private drinking water well would be impacted, a new well may be drilled or the property can be connected to the local public water supply. If this is not feasible, the property and/or dwelling may be acquired.

UNDERREPRESENTED POPULATIONS

ODOT's Transportation Information Mapping System (TIMS) tool was used to obtain U.S. Census Data to identify whether or not Underrepresented Populations are present within the proposed project or study area. Based on census mapping, the project area falls within the following four Block Groups:

- *Block Group 390572201001 – 10% minority, 14% low-income*
- *Block Group 390572202001 – 24% minority, 12% low-income*
- *Block Group 391130402032 – 10% minority, 10% low-income*
- *Block Group 391130402031 – 13% Minority, 8% Low-income*

Environmental Justice

Executive Order 12898 directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities upon minority (people of color) and low-income populations (collectively known as Environmental Justice [EJ] populations).

Based on a review of project area mapping on TIMS, there are identifiable groups or clusters of EJ populations within the project area. There is a transit stop located between Wilmington Pike and the I-675 underpass. The project is not expected to result in discrimination based on race, color, or national origin. Additionally, there are no identifiable differences in impacts to EJ populations between alternatives.

Section 8 housing is the federal government's housing choice voucher program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market. The presence of Section 8 housing within or immediately adjacent to the project area was reviewed using the U.S. Department of Housing and Urban Development (HUD) Resource Locator website. No HUD or Section 8 housing is located within the project area. No impacts to any HUD or Section 8 housing would occur so no further action would need to be taken regarding HUD resources.

Title VI

Under Title VI of the Civil Rights Act of 1964, each Federal agency is required to ensure that no person, on the grounds of race, color, or national origin, is excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance.

As indicated above, there are minority populations within the Block Groups encompassing the project area. There are also no known populations with Limited English Proficiency in the Block Groups that encompass the project area. As such, the project is not expected to result in discrimination based on race, color, or national origin. Additionally, there are no identifiable differences in impacts to Title VI protected populations between alternatives.

The No Build Alternative would not impact EJ Populations or Title VI Protected Populations.

Public involvement (PI) efforts will ensure all Underrepresented Populations are given sufficient opportunity to participate in the PI process. A full evaluation of underrepresented populations would occur once a preferred alternative alignment has been confirmed.

PUBLIC INVOLVEMENT

As identified in the Public Engagement Plan prepared for the project (dated March 8, 2022), the members of the Project Management Team identified a goal to inform the public and project stakeholders of the transportation problem and to solicit their input on the proposed solution. Therefore, the project sponsor held an open house style public involvement meeting at the Sinclair Centerville Campus on July 13, 2023 from 5-7 PM to provide project information and to receive comments. The exhibits used at the in-person meeting were available to review virtually on July 18, 2023 at the following website: https://mctid.org/i-675-wilmington-pike-interchange-project/. All materials presented during the in-person meeting and the virtual public open house were the same. All meeting materials were available on the project website immediately following the in person meeting.

Approximately 118 people attended the in person public open house and 41 comments were provided. All comments received will be considered in the selection of a proposed solution to the transportation problem. The comments received were summarized into a Frequently Asked Questions document that was posted on the MCTID project website. The general theme of the comments made were related to:

- *Bike and pedestrian connectivity*
- *Development and access management*
- *Other options to address the congestion and safety issues*
- *How to access the virtual public open house*

A copy of the public meeting notice, sign in sheets, handouts, comments received and the Frequently Asked Questions document that provides responses to the comments are provided in Appendix J.

Chapter Four

Comparison of Alternatives

The evaluation matrix in Table 9 below compares the alternative benefits, impacts and costs. Notable differences between the alternatives are summarized below.

Table 9: Evaluation Matrix

Evaluation Criteria	No Build	Alternative 1	Alternative 1B	Alternative 2
Congestion (Primary Need)	🔴	🔴	🟢	🟢
Safety (Primary Need)	🔴	⭕	⭕	🟡
Pedestrian Connectivity (Secondary Need)	⭕	⭕	🟡	🟢
Right of Way Impacts	⚫	⭕	🔴	🔴
Environmental Resource Impacts	⚫	🟡	⭕	🔴
Construction Cost*	$0	$70.6 Million	$73.1 Million	$87.0 Million

**The Construction Costs do not include right of way, utility relocation or inflation*

Legend

🔴 **Lower Benefit or Greater Environmental Impact**

⭕ **Medium Benefit or Medium Environmental Impact**

🟡 **High Benefit or Lower Environmental Impact**

🟢 **Not Applicable/ Neutral**

⚫

Alternative 1

While Alternative 1 reduces the congestion on the roadway network adjacent to the interchange, both the northbound and southbound entrance ramps to I-675 from Wilmington Pike would have unacceptable levels of service (LOS E and F) during the evening rush hour by 2050. The over-capacity condition will not mitigate the existing safety performance issues attributed, in part, to queues extending from Wilmington Pike onto mainline I-675. Therefore, Alternative 1 does not meet either of the primary Need elements of the project.

Alternative 1B

Alternative 1B reduces the congestion of the interchange with level of service C for both the morning and evening rush hours by 2050. The safety performance is expected to improve, including the reduction of queues that extend onto mainline I-675 despite the benefit-cost ratio (0.75) of Alternative 1B being less than 1.0. Alternative 1B meets both primary need elements of the project.

Pedestrian connectivity is provided, but with more roadway crosswalks than required for Alternative 2 which is a design characteristic of a DDI interchange. Alternative 1B would require less right of way acreage than Alternative 2 but is expected to impact the parking spaces for more commercial businesses than Alternative 2. Right of way costs attributed to damage are not quantified in the cost estimates. The maintenance of traffic needed for the reconstruction of the I-675 bridge over Wilmington Pike and likely ramp closures to reconstruct would result in greater inconveniences to drivers and pedestrians.

Alternative 2

Alternative 2 reduces the congestion of the interchange with levels of service of D or better for both the morning and evening rush hours in Year 2050 while minimizing pavement widening to the Wilmington Pike/ Feedwire Road intersection. The safety performance is expected to improve, including the reduction of queues that extend onto mainline I-675 despite the benefit-cost ratio (0.37) of Alternative 2 being less than 1.0. Therefore, Alternative 2 meets both primary Need elements of the project.

Alternative 2 provides pedestrian accommodations with the fewest roadway crossings at the I-675 and Wilmington Pike interchange. The relocation of Clyo Road results in the highest impacts to streams and potential suitable wooded habitat for endangered bats and the potential for noise impacts to the adjacent residential complex. This alternative is also expected to have the greatest impact to Sweet Arrow Reserve, a Section 4(f) recreational resource, and has the highest construction cost.

Conclusion

A recommended preferred alternative is not able to be identified based on the technical analysis and feedback received from the public.

An Alternative Evaluation Report (AER) has been proposed to be completed which will provide additional information on the feasible two Build alternatives: Alternative 1B (DDI interchange) and Alternative 2 (split interchange). Specific tasks to be completed as part of the AER include the following:

- *Develop right-of-way costs as the parcel level to update the Construction Cost estimates from the Feasibility Study.*
- *Evaluate utility impacts to determine relocation costs including additional right-of-way where pavement widening occurs.*
- *Develop construction phasing plan(s) to enable the application of ODOT inflation factors based on future improvements.*
- *Increase the number of travel time scenarios to better understand benefits/disadvantages of the alternatives.*
- *Perform environmental studies (i.e. Cultural Resources Studies, Ecological Survey Report, Regulated Materials Review Screening, 4(f) Determinations, etc) to better understand impacts and associated costs to mitigate impacts resulting from each alternative.*

Construction costs and the evaluation matrix will be updated in addition to the concept plans to enable the selection of a recommended preferred alternative.

I-675 and Wilmington Pike Interchange Feasibility Study

Appendix A: Certified Traffic

CMT

INTER-OFFICE COMMUNICATION

TO: **Alex Genbauffe, P.E., Traffic Studies Engineer, District 8**

FROM: Joshua Kieselbach, P.E., Transportation Engineer, Office of Statewide Planning & Research, Modeling & Forecasting Section

SUBJECT: **GRE-675-0.00, PID 115160**

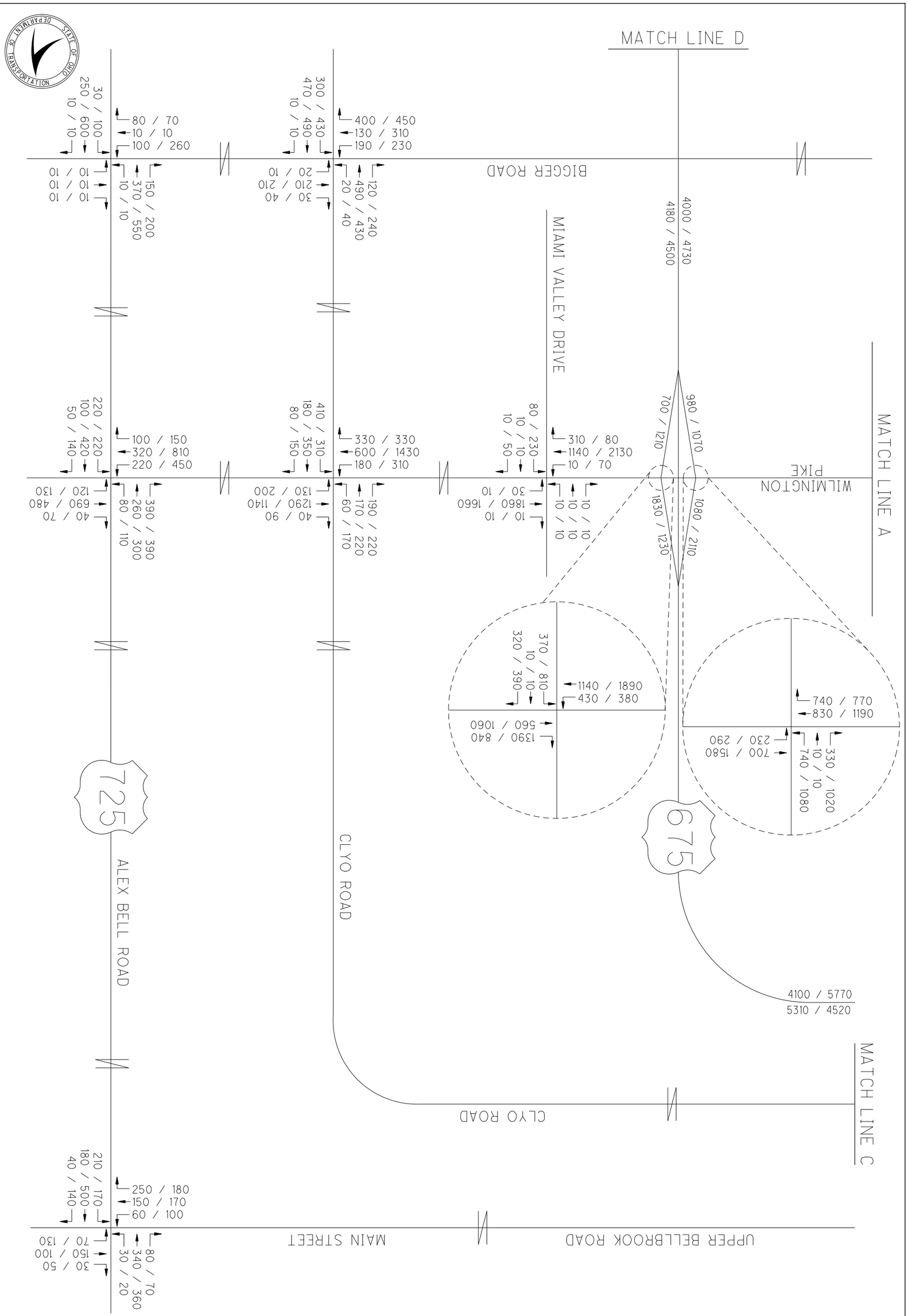
DATE: June 17, 2022

In reply to a request dated June 14, 2022, the review of the submitted design traffic is complete. Based on the review the previous comments from the memo dated June 1, 2022, have been addressed and the forecast is approved for use on this project.

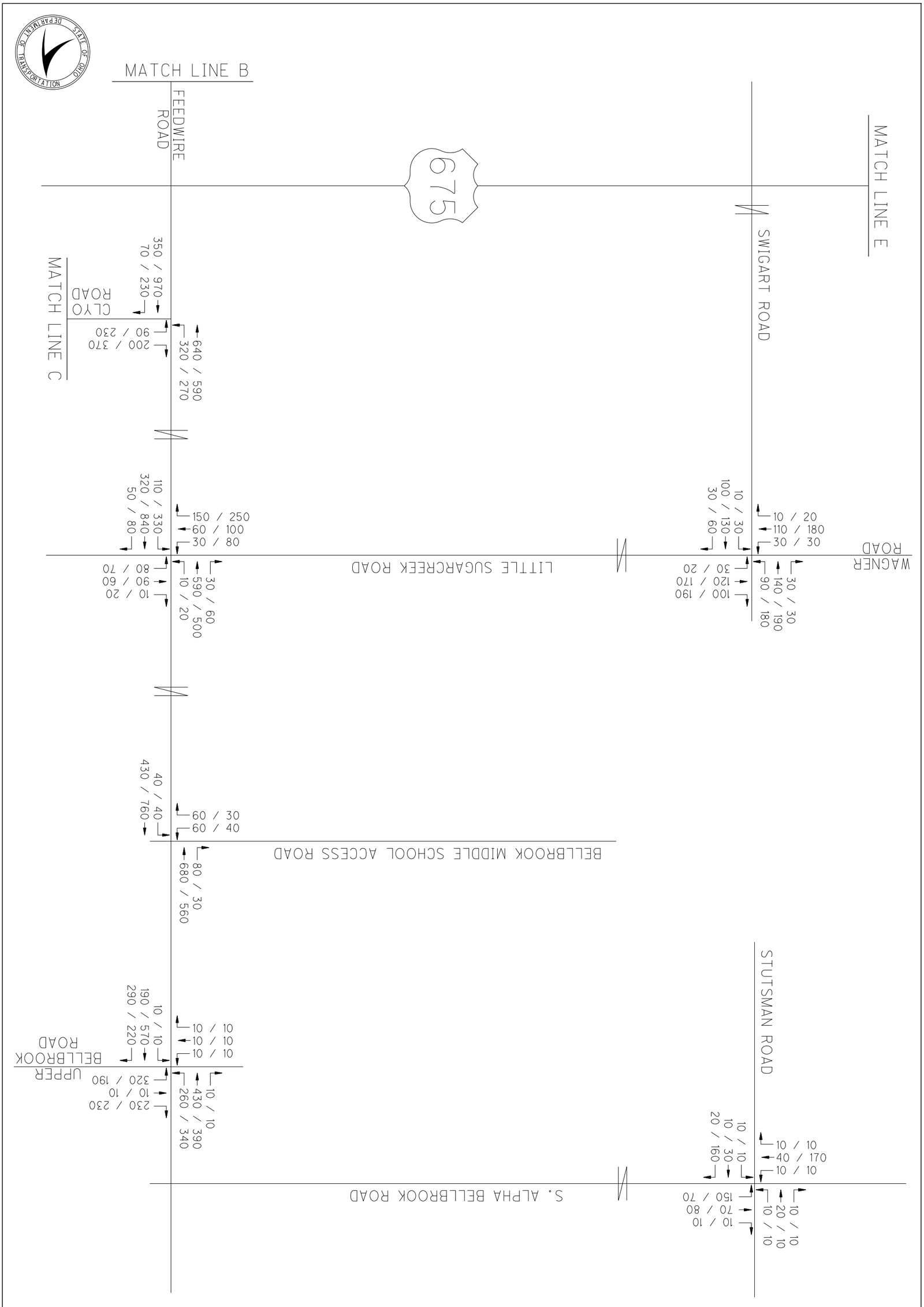
If you have any questions, please contact me at Joshua.Kieselbach@dot.ohio.gov or (614) 752-5747.

c: G. Giaimo, OSPR – File

SWIGART ROAD
150 / 200
30 / 30
120 / 190
30 / 20
20 / 30
10 / 20
FUTURE EXT.
BELLFAST DRIVE
660 / 1340
20 / 50
40 / 50
160 / 120
BROWN ROAD
80 / 180
650 / 1460
BIGGER ROAD
WILMINGTON PIKE
WHIPP ROAD
20 / 90
10 / 1020
120 / 220
150 / 260
180 / 460
460 / 560
70 / 120
130 / 370
380 / 270
240 / 900
520 / 1230
200 / 420
FEEDWIRE ROAD
CHARLES DRIVE
40 / 320
10 / 50
10 / 250
20 / 100
710 / 640
20 / 130
30 / 490
460 / 830
30 / 110
10 / 60
10 / 90
40 / 320
CLINGER LANE
40 / 230
10 / 150
20 / 180
710 / 640
30 / 160
410 / 1050
MATCH LINE B
MATCH LINE A
N
0
NOT TO SCALE
ANALYST KMN
DATE 04/19/22
MOT/GRE I-675/WILMINGTON PIKE 2030 NB AM/PM DESIGN HOUR SMOOTHED
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DEPARTMENT OF TRANSPORTATION



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INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

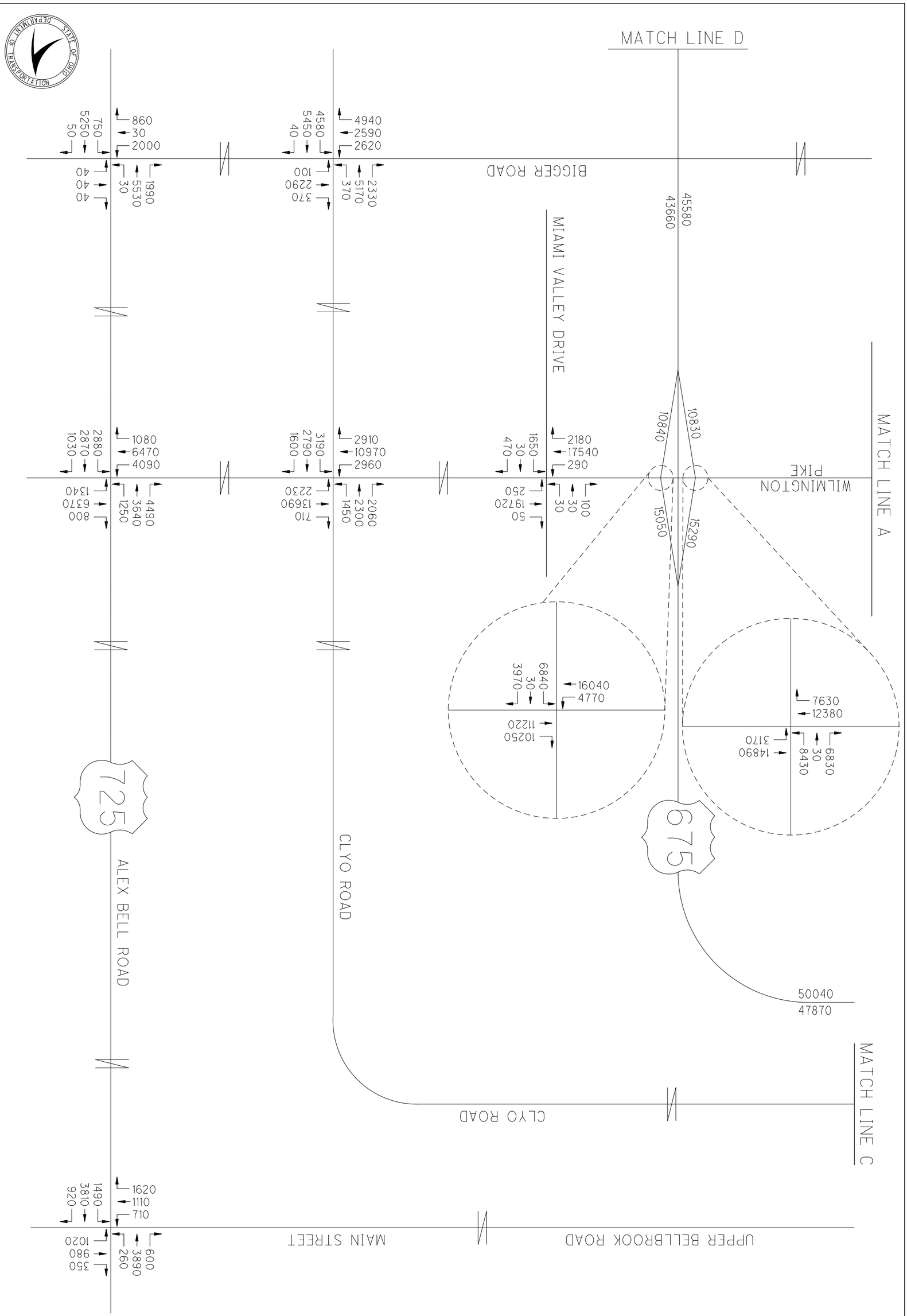
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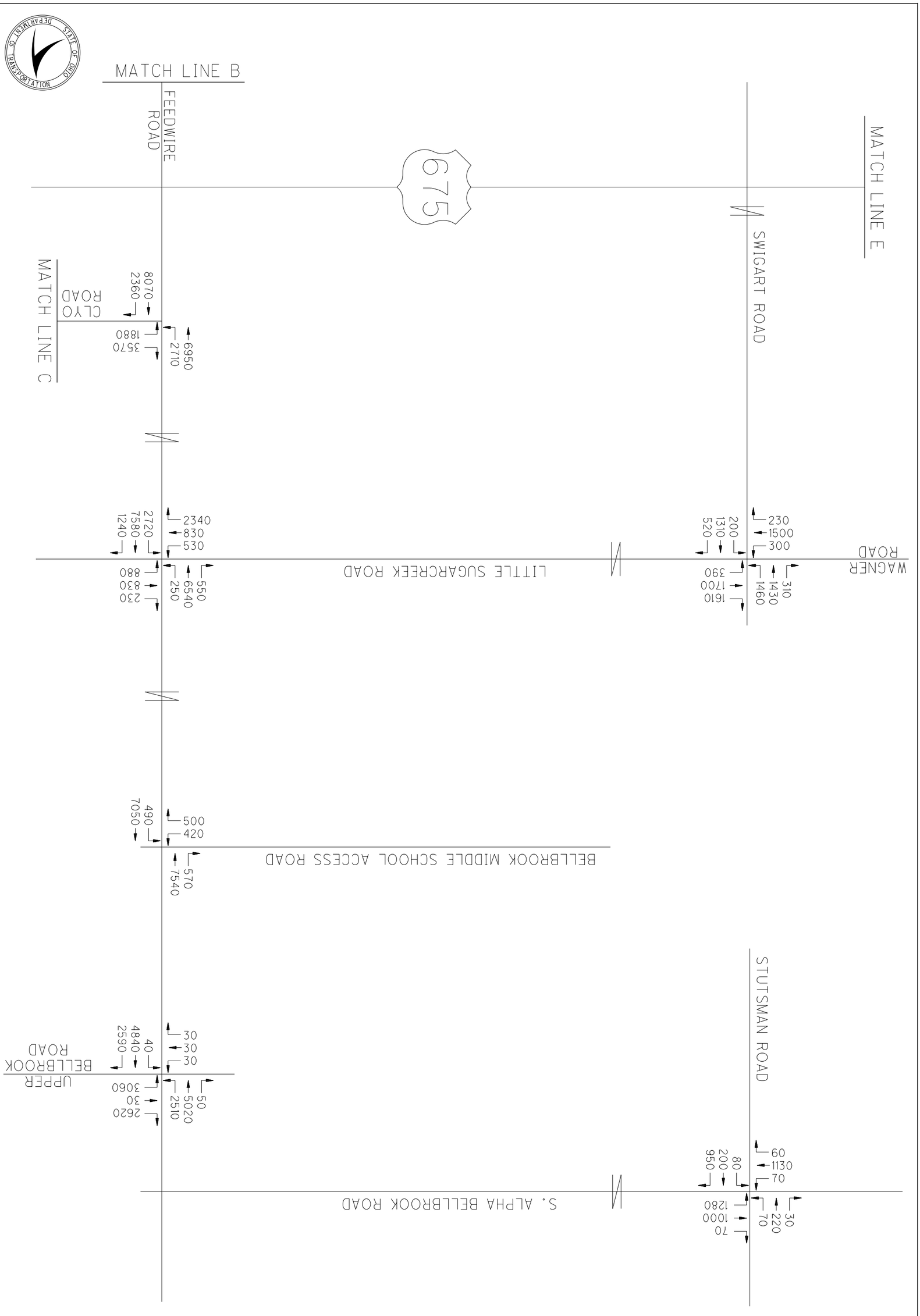
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SWIGART ROAD
1700
350
1670
230
360
240
FUTURE EXT.
BELLFAST DRIVE
BROWN ROAD
14360
530
530
1980
2060
14830
BIGGER ROAD
WILMINGTON PIKE
WHIPP ROAD
760
6720
2220
2260
3780
6960
1070
2940
2990
3110
10510
7150
FEEDWIRE ROAD
CHARLES DRIVE
3250
470
2280
1040
6550
1460
4870
7450
900
3200
820
580
CLINGER LANE
2230
1600
2010
6820
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INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

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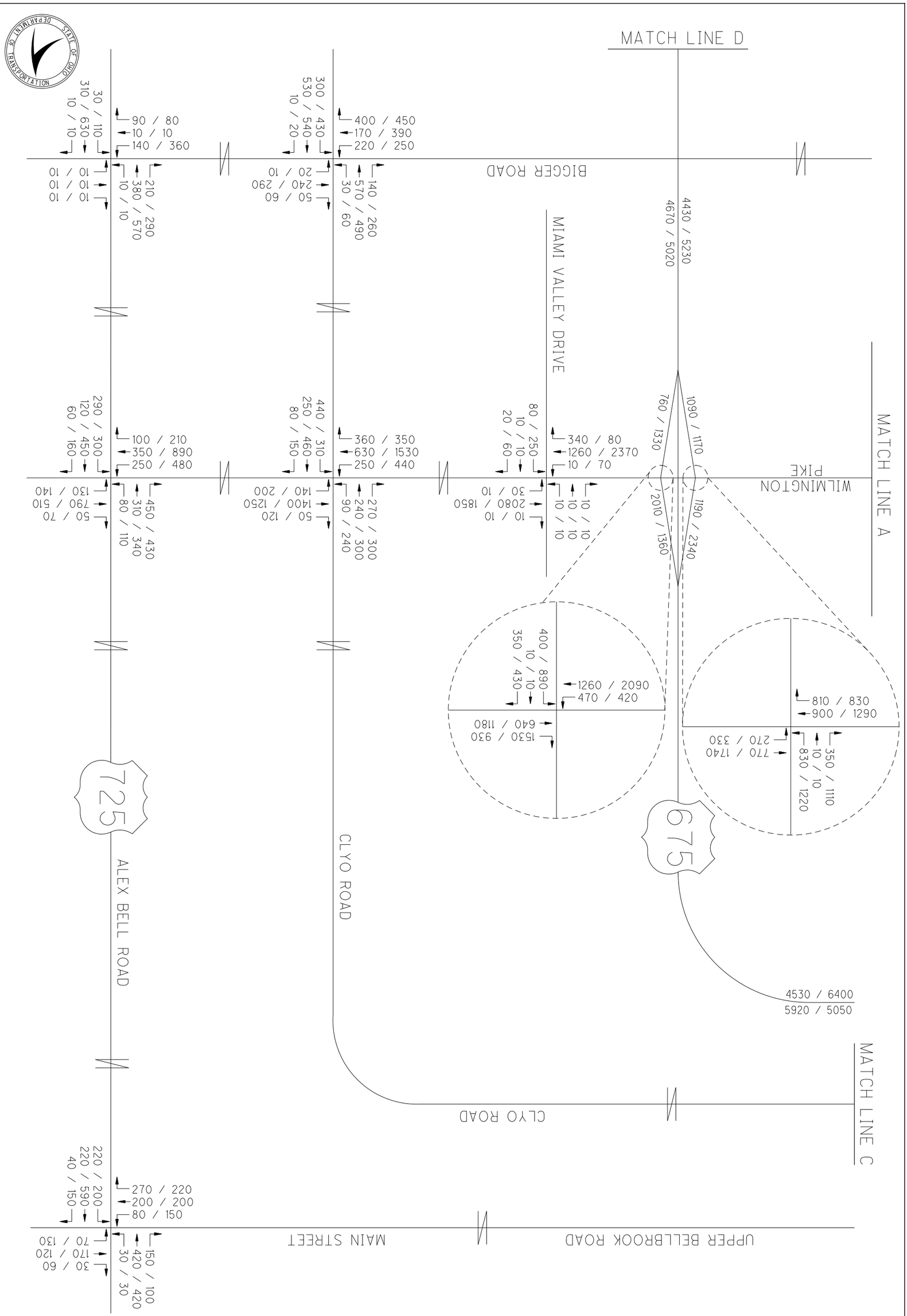
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ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

SWIGART ROAD
BROWN ROAD
WHIPP ROAD
FEEDWIRE ROAD
BIGGER ROAD
WILMINGTON PIKE
FUTURE EXT.
BELLFAST DRIVE
CHARLES DRIVE
CLINGER LANE
MATCH LINE A
MATCH LINE B
160 / 200
40 / 40
130 / 190
30 / 20
20 / 40
20 / 30
740 / 1500
20 / 50
40 / 50
180 / 140
90 / 210
730 / 1600
20 / 110
740 / 1130
150 / 270
190 / 290
200 / 460
520 / 590
70 / 130
140 / 390
390 / 290
270 / 1000
570 / 1360
210 / 430
40 / 320
10 / 50
10 / 300
20 / 130
830 / 700
20 / 150
30 / 500
520 / 990
30 / 110
10 / 90
10 / 100
40 / 320
50 / 230
20 / 200
50 / 250
820 / 750
40 / 170
460 / 1280
N
0
NOT TO SCALE
ANALYST KMN
DATE 04/19/22
MOT/GRE I-675/WILMINGTON PIKE 2050 NB AM/PM DESIGN HOUR SMOOTHED
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MATCH LINE E

SWIGART ROAD

WAGNER ROAD

20 / 20
130 / 240
30 / 40

30 / 40
140 / 190
100 / 230

10 / 40
100 / 130
40 / 60

130 / 250
140 / 240
40 / 30

LITTLE SUGARCREEK ROAD

675

MATCH LINE B

FEEDWIRE ROAD

740 / 670
450 / 400

370 / 1150
110 / 330

CLYO ROAD

310 / 540
130 / 330

MATCH LINE C

180 / 320
70 / 130
30 / 90

30 / 80
760 / 620
20 / 30

140 / 430
400 / 1060
70 / 110

10 / 20
120 / 80
110 / 90

BELLBROOK MIDDLE SCHOOL ACCESS ROAD

80 / 30
70 / 50
80 / 30

100 / 40
830 / 710

40 / 60
510 / 970

STUTSMAN ROAD

10 / 10
10 / 210
10 / 10

10 / 10
20 / 20
10 / 10

10 / 10
10 / 30
30 / 190

10 / 10
90 / 100
180 / 80

S. ALPHA BELLBROOK ROAD

10 / 10
10 / 10
10 / 10
10 / 10
10 / 10

10 / 10
540 / 500
300 / 400

10 / 10
230 / 730
340 / 280

BELLBROOK ROAD

UPPER

380 / 240
10 / 10
270 / 260

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 NB AM/PM DESIGN HOUR SMOOTHED
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 NB AM/PM DESIGN HOUR SMOOTHED
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

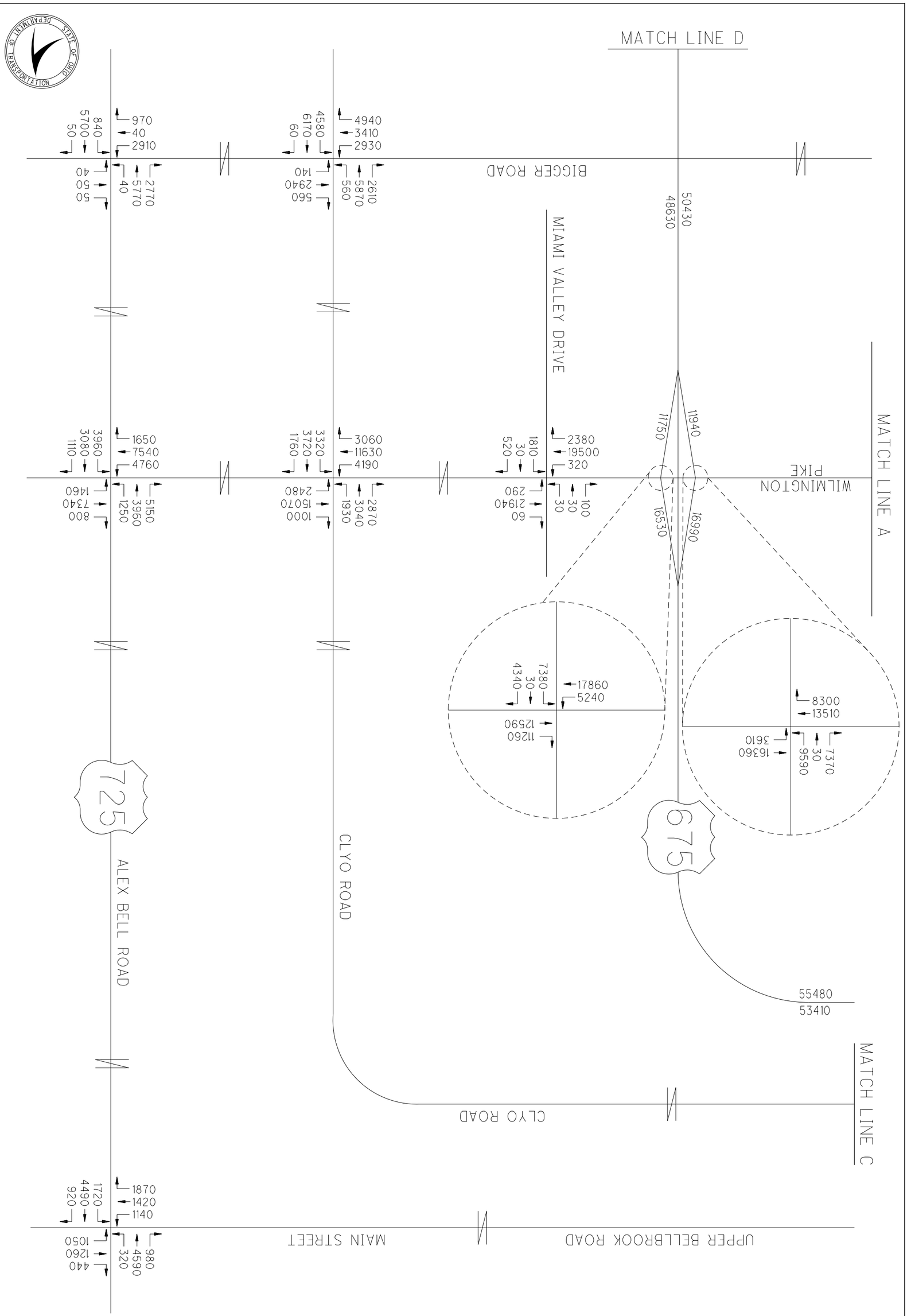
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ANALYST KMN | DATE 04/19/22

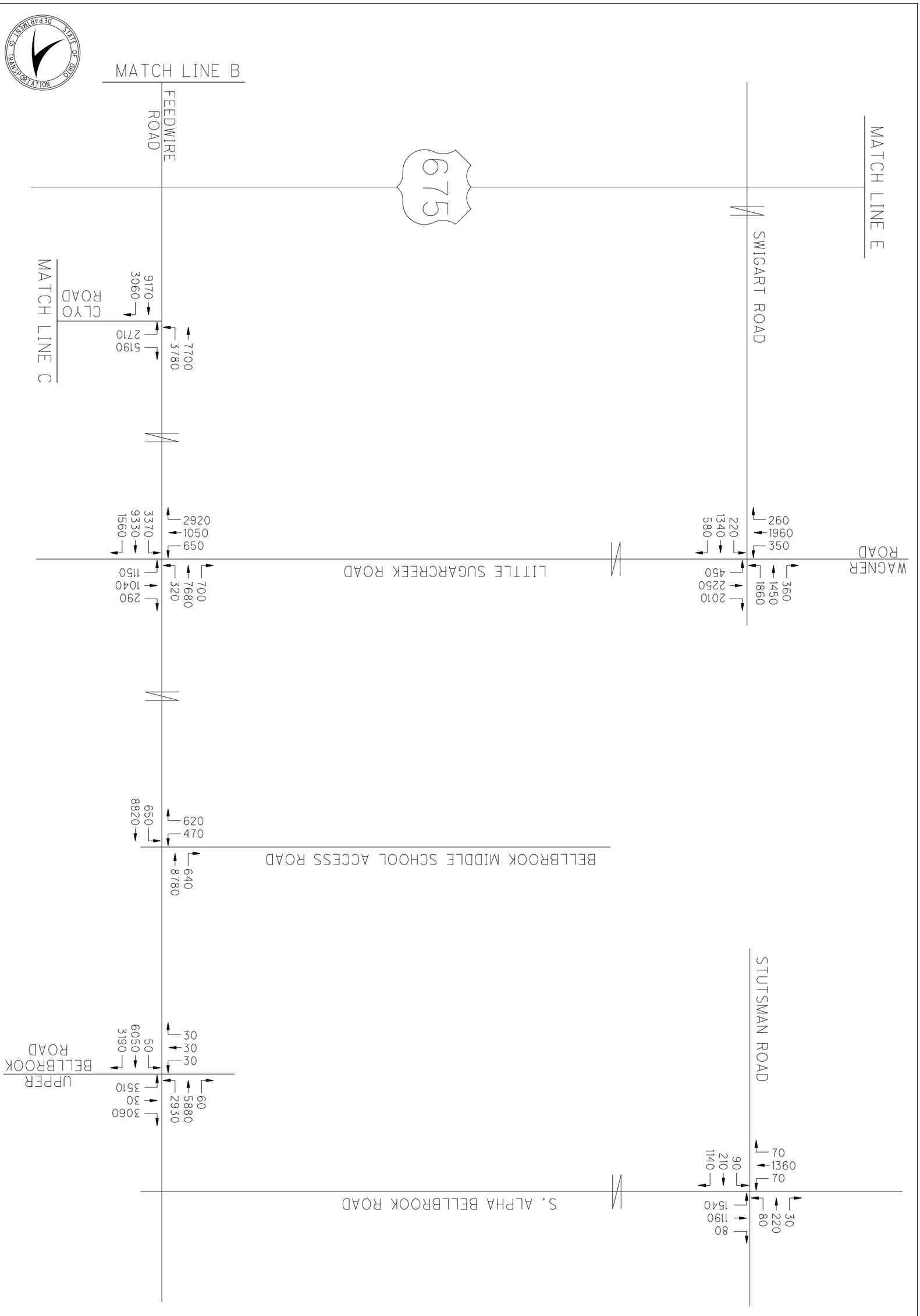
MOT/GRE I-675/WILMINGTON PIKE 2050 NB ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160



14 / 36	PID 115160	MOT/GRE I-675/WILMINGTON PIKE 2050 NB ADT DESIGN HOUR SMOOTHED ODOT STATEWIDE PLANNING AND RESEARCH	ANALYST KMN DATE 04/19/22	0 NOT TO SCALE



15/36	PID 115160	MOT/GRE I-675/WILMINGTON PIKE 2050 NB ADT DESIGN HOUR SMOOTHED ODOT STATEWIDE PLANNING AND RESEARCH	ANALYST KMN DATE 04/19/22	0 NOT TO SCALE

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 NB ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

SWIGART ROAD

0.05 / 0.01 / 0.03

0.01 / 0.02 / 0.02

0.00 / 0.00 / 0.00

FUTURE EXT.
BELLFAST DRIVE

0.03 / 0.01 / 0.02

0.05 / 0.02 / 0.06

BROWN ROAD

0.04 / 0.01 / 0.02

BIGGER ROAD

WILMINGTON PIKE

0.02 / 0.00 / 0.02

20'.0 / 0.00 / 20'.0

WHIPP ROAD

0.03 / 0.00 / 0.01

FEEDWIRE ROAD

0.02 / 0.00 / 0.01

0.04 / 0.01 / 0.02

10'.0 / 0.00 / 10'.0

CHARLES DRIVE

0.00 / 0.01 / 0.01

0.00 / 0.01 / 0.01

0.01 / 0.01 / 0.01

CLINGER LANE

0.00 / 0.02 / 0.03

0.02 / 0.03 / 0.04

MATCH LINE B

MATCH LINE A

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE TRUCKS AM/PM/ADT
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

17
36

MATCH LINE A

MATCH LINE C

MATCH LINE D

WILMINGTON PIKE

BIGGER ROAD

MIAMI VALLEY DRIVE

CLYO ROAD

UPPER BELLBROOK ROAD

MAIN STREET

ALEX BELL ROAD

675

725

0.02 / 0.00 / 0.02

0.03 / 0.01 / 0.02

0.04 / 0.00 / 0.02

0.04 / 0.03 / 0.06

0.03 / 0.04 / 0.06

0.03 / 0.00 / 0.02

0.00 / 0.00 / 0.00

0.01 / 0.00 / 0.01

0.01 / 0.00 / 0.02

20.0 / 0.00 / 20.0

0.05 / 0.01 / 0.02

0.01 / 0.00 / 0.02

0.02 / 0.02 / 0.02

0.04 / 0.01 / 0.02

0.03 / 0.00 / 0.02

0.03 / 0.00 / 0.01

0.02 / 0.01 / 0.01

0.01 / 0.00 / 0.01

0.03 / 0.01 / 0.02

0.02 / 0.01 / 0.02

0.03 / 0.01 / 0.02

0.1 / 0.04 / 0.08

0.03 / 0.03 / 0.03

0.03 / 0.01 / 0.02

0.04 / 0.00 / 0.02

0.03 / 0.04 / 0.03

0.00 / 0.00 / 0.00

0.01 / 0.00 / 0.01

0.14 / 0.06 / 0.08

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

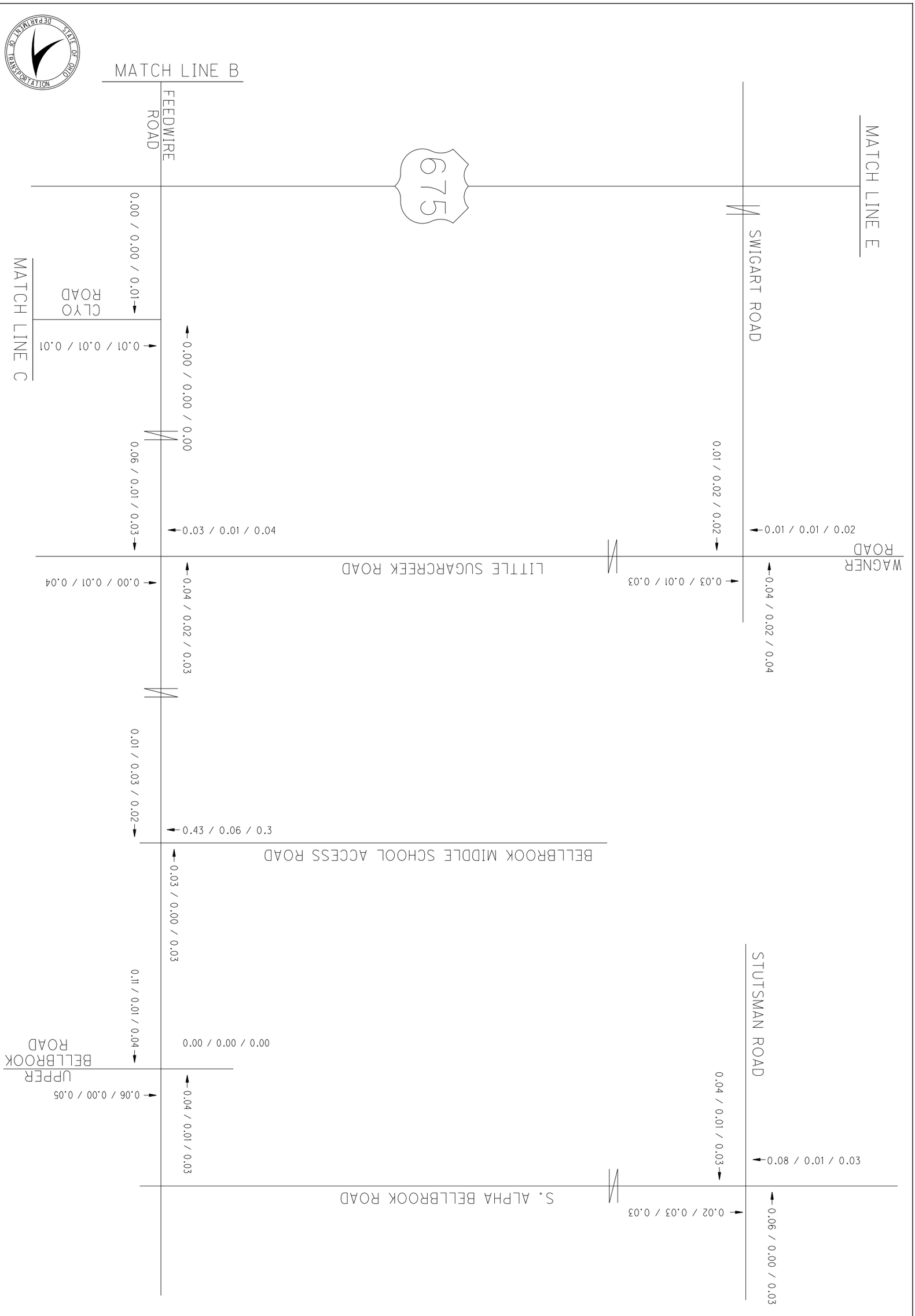
NOT TO SCALE

ANALYST KMN

DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE TRUCKS AM/PM/ADT
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160



19 / 36	**PID 115160**	**MOT/GRE I-675/WILMINGTON PIKE TRUCKS AM/PM/ADT** **ODOT STATEWIDE PLANNING AND RESEARCH**	ANALYST KMN DATE 04/19/22	0 NOT TO SCALE

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE TRUCKS AM/PM/ADT
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2030 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MOT/GRE I-675/WILMINGTON PIKE 2030 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

NOT TO SCALE

ANALYST KMN

DATE 04/19/22

PID 115160

MATCH LINE A

MATCH LINE C

MATCH LINE D

WILMINGTON PIKE

BIGGER ROAD

UPPER BELLBROOK ROAD

CLYO ROAD

MAIN STREET

MIAMI VALLEY DRIVE

ALEX BELL ROAD

I-675 SB C-D

I-675 NB C-D

675

725

4040 / 4770
4260 / 4580

950 / 1170

870 / 1290

1170 / 2120

1760 / 1400

320 / 390
800 / 1120

120 / 740
430 / 490
620 / 890

630
200 / 1320
200 / 290

3090 / 3600
3390 / 3290

350 / 80
1200 / 2040
10 / 70

10 / 10
10 / 10
10 / 10

80 / 240
10 / 10
10 / 50

10 / 10
1770 / 1650
30 / 10

180 / 1840
190 / 1230
170

180 / 430
360 / 510
330 / 350

1210 / 720
650 / 1180

400 / 450
130 / 310
200 / 240

120 / 240
510 / 420
20 / 40

310 / 430
460 / 460
10 / 10

20 / 10
210 / 210
30 / 40

340 / 290
640 / 1380
180 / 310

190 / 210
180 / 230
80 / 190

390 / 280
200 / 370
80 / 160

140 / 210
1230 / 1150
40 / 100

80 / 80
10 / 10
100 / 270

150 / 210
360 / 530
10 / 10

30 / 100
240 / 580
10 / 10

10 / 10
10 / 10
10 / 10

100 / 160
360 / 790
240 / 440

370 / 410
260 / 290
70 / 110

210 / 220
90 / 410
50 / 140

110 / 120
670 / 490
40 / 70

260 / 200
190 / 180
60 / 110

90 / 70
320 / 350
30 / 20

210 / 180
180 / 530
40 / 150

60 / 130
170 / 100
30 / 50

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

MATCH LINE E

SWIGART ROAD

WAGNER ROAD

10 / 10
80 / 120
20 / 30

20 / 30
100 / 190
100 / 160

10 / 30
100 / 130
30 / 50

80 / 160
90 / 110
30 / 20

675

4270 / 5870
5280 / 4630

270 / 340
740 / 1630
170 / 300

340 / 450
390 / 400

370 / 960
40 / 90

250 / 220
660 / 780

240 / 230
300 / 1030

290 / 440
1400 / 890
70 / 70

MATCH LINE B

FEEDWIRE ROAD

1180 / 2270

1890 / 1340

3090 / 3600
3390 / 3290

MATCH LINE C

810 / 740
320 / 270

500 / 1220
90 / 250

CLYO ROAD

210 / 370
100 / 260

LITTLE SUGARCREEK ROAD

130 / 230
40 / 70
20 / 40

20 / 30
750 / 640
10 / 20

120 / 300
460 / 1070
80 / 130

10 / 20
70 / 30
110 / 100

BELLBROOK MIDDLE SCHOOL ACCESS ROAD

90 / 30
90 / 40

80 / 30
810 / 670

50 / 40
540 / 950

STUTSMAN ROAD

10 / 10
40 / 190
10 / 20

10 / 10
20 / 20
10 / 10

10 / 20
10 / 20
10 / 90

90 / 40
90 / 100
10 / 10

S. ALPHA BELLBROOK ROAD

10 / 10
10 / 10
10 / 10
10 / 10

10 / 10
510 / 460
220 / 300

10 / 10
240 / 680
350 / 300

BELLBROOK ROAD

UPPER

370 / 230
10 / 10

210 / 190

N

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2030 2030 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

23
36

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2030 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2030 BUILD ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MATCH LINE A

MATCH LINE C

MATCH LINE D

WILMINGTON PIKE

BIGGER ROAD

UPPER BELLBROOK ROAD

CLYO ROAD

MAIN STREET

MIAMI VALLEY DRIVE

ALEX BELL ROAD

I-675 SB C-D

I-675 NB C-D

675

725

46010
44430

10220

13130

12320

15640

35790
32110

3100
11030

2830
3900
6400

13530
3220

2180
19990
260

110
30
30

1770
30
470

50
20190
260

15420
210

3040
5270
4010

8360
13710

4600
2620
2670

2370
5070
360

4260
5350
40

100
2340
360

2690
10600
2970

2130
2310
1560

2970
3000
1600

2230
14200
820

860
30
2040

2030
5390
30

750
5320
50

40
40
40

1070
6360
3940

4660
3670
1130

3100
2780
1010

1200
6670
720

1730
1110
660

630
3880
250

1510
3570
850

1000
1060
340

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN
DATE 04/19/22

PIKE 2030 BUILD ADT DESIGN HOUR SMOOTHED

MOT/GRE I-675/WILMINGTON PIKE

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MATCH LINE E

SWIGART ROAD

WAGNER ROAD

190
1070
270
280
1520
1320
180
1330
390
300
1130
1390

675

52000
48940

3840
9230
3140
5770
3240
8160
660

2760
8210
3700
7600
800
10370
4470

16210
16830

MATCH LINE B

FEEDWIRE ROAD

35790
32110

MATCH LINE C

CLYO ROAD

9540
2530
2110
3670
8860
2830

LITTLE SUGARCREEK ROAD

2220
480
300
2420
9160
1530
1210
500
190
300
8360
180

BELLBROOK MIDDLE SCHOOL ACCESS ROAD

500
400
490
8360
550
9040

UPPER BELLBROOK ROAD

30
30
30
50
5570
3140
3710
30
2100
40
5850
2040

STUTSMAN ROAD

70
1250
110
90
170
510
750
1170
60
50
200
70

S. ALPHA BELLBROOK ROAD

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN
DATE 04/19/22

2030 BUILD ADT DESIGN HOUR SMOOTHED

PLANNING AND RESEARCH

MOT/GRE I-675/WILMINGTON PIKE 2030 B

ODOT STATEWIDE

PID 115160

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2030 BUILD ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

ANALYST KMN | DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MATCH LINE A

MATCH LINE C

MATCH LINE D

WILMINGTON PIKE

BIGGER ROAD

UPPER BELLBROOK ROAD

CLYO ROAD

MAIN STREET

ALEX BELL ROAD

MIAMI VALLEY DRIVE

I-675 SB C-D

I-675 NB C-D

675

725

4480 / 5300
4730 / 5080

1070 / 1290
900 / 1350

1290 / 2240
1920 / 1470

330 / 420
900 / 1240
130 / 760
470 / 520
690 / 960
720 / 1440
270 / 350

3410 / 4010
3830 / 3730

1400 / 2010
190 / 190
190 / 430
360 / 530
350 / 390
1370 / 750
800 / 1360

380 / 80
1360 / 2250
10 / 10
10 / 10
10 / 10
10 / 10
80 / 260
10 / 10
20 / 60
30 / 2080
10 / 10
10 / 1840

400 / 450
160 / 380
230 / 260
150 / 270
590 / 470
40 / 60
310 / 430
510 / 550
10 / 10
20 / 10
250 / 290
50 / 50

380 / 290
730 / 1480
240 / 430
260 / 290
250 / 320
100 / 260
400 / 280
280 / 490
90 / 160
150 / 1400
220 / 1260
50 / 140

90 / 80
10 / 10
140 / 360
220 / 280
380 / 560
10 / 10
30 / 110
280 / 620
10 / 10
10 / 10
10 / 10
10 / 10

150 / 210
410 / 890
260 / 460
440 / 430
300 / 330
70 / 110
290 / 310
100 / 440
50 / 150
130 / 710
40 / 70
130 / 540

290 / 240
210 / 210
180 / 150
90 / 150
150 / 100
400 / 380
30 / 30
220 / 210
210 / 550
40 / 150
60 / 190
30 / 60
60 / 130
30 / 110

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

N

0
NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD AM/PM DESIGN HOUR SMOOTHED
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MATCH LINE E

SWIGART ROAD

WAGNER ROAD

10 / 20
100 / 170
30 / 40

30 / 30
150 / 190
100 / 200

10 / 30
110 / 140
30 / 60

100 / 220
90 / 170
40 / 20

675

4810 / 6510
6020 / 5320

330 / 370
820 / 1720
250 / 410

410 / 600
430 / 410

440 / 1280
40 / 110

290 / 290
770 / 940

340 / 360
350 / 1330

290 / 460
1560 / 940
70 / 70

1400 / 2500

2190 / 1590

MATCH LINE B

FEEDWIRE ROAD

900 / 820
430 / 370

500 / 1400
140 / 390

300 / 500
160 / 410

CLYO ROAD

3410 / 4010
3830 / 3730

MATCH LINE C

LITTLE SUGARCREEK ROAD

170 / 290
50 / 90
20 / 60

20 / 50
890 / 750
20 / 30

120 / 380
520 / 1280
90 / 150

10 / 20
90 / 50
130 / 110

BELLBROOK MIDDLE SCHOOL ACCESS ROAD

80 / 40
50 / 70

100 / 40
950 / 800

50 / 60
610 / 1160

STUTSMAN ROAD

10 / 10
50 / 220
10 / 20

10 / 10
20 / 20
10 / 10

10 / 20
10 / 20
10 / 110

10 / 10
90 / 110
110 / 40

S. ALPHA BELLBROOK ROAD

10 / 10
01 / 01
01 / 01
10 / 10

10 / 10
610 / 550
260 / 340

10 / 20
280 / 820
390 / 370

240 / 220
10 / 10
430 / 280

BELLBROOK ROAD

UPPER

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

N

0 NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD AM/PM DESIGN HOUR SMOOTHED
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

31
36

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD AM/PM DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD ADT DESIGN HOUR SMOOTHED
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

MATCH LINE A

MATCH LINE C

MATCH LINE D

WILMINGTON PIKE

BIGGER ROAD

UPPER BELLBROOK ROAD

CLYO ROAD

MAIN STREET

MIAMI VALLEY DRIVE

ALEX BELL ROAD

675

725

I-675 SB C-D

I-675 NB C-D

51070
49230

11880

13470

14190

16510

3660
12160
3070
4350
6770
3870
14400

39190
35760

2380
18620
320
110
30
30
1880
30
530
290
21710
60

19730
2200
3330
5550
4590
8760
14940

4600
3420
3000
2670
5730
550
4260
6030
60
120
2960
540

2820
10970
4190
2750
3240
2200
3060
4100
1600
2320
15050
1180

960
40
2930
2760
5700
40
830
5700
50
40
50
50

1630
7440
4610
5110
3910
1130
4130
2950
1090
1450
7210
720

1810
1460
1120
1040
4490
330
1780
4140
850
1000
1370
450

N

0

NOT TO SCALE

ANALYST KMN

DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

MATCH LINE E

SWIGART ROAD

WAGNER ROAD

230
1490
330

340
1530
1590

200
1390
470

350
1650
1710

675

57870
54470

4530
9840
4310

6940
3620

9190
730

3600
9680

4150
9350

880
10960
4670

MATCH LINE B

FEEDWIRE ROAD

18680

18710

10100
3540

10360
3660

4790
3180

CLYO ROAD

39190
35760

MATCH LINE C

LITTLE SUGARCREEK ROAD

2950
660
420

450
9710
260

2930
10340
1780

1380
700
250

BELLBROOK MIDDLE SCHOOL ACCESS ROAD

630
910

650
10490

620
9590

STUTSMAN ROAD

70
1430
110

50
210
70

90
170
630

900
1320
70

S. ALPHA BELLBROOK ROAD

30
30
30

50
6770
2380

60
6360
3680

2460
30
4340

UPPER BELLBROOK ROAD

N

0

NOT TO SCALE

ANALYST KMN

DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD ADT DESIGN HOUR SMOOTHED

ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

35
36

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

INDIAN RIPPLE ROAD / I-675 INTERCHANGE

SR-48 / I-675 INTERCHANGE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

ANALYST KMN
DATE 04/19/22

MOT/GRE I-675/WILMINGTON PIKE 2050 BUILD ADT DESIGN HOUR SMOOTHED

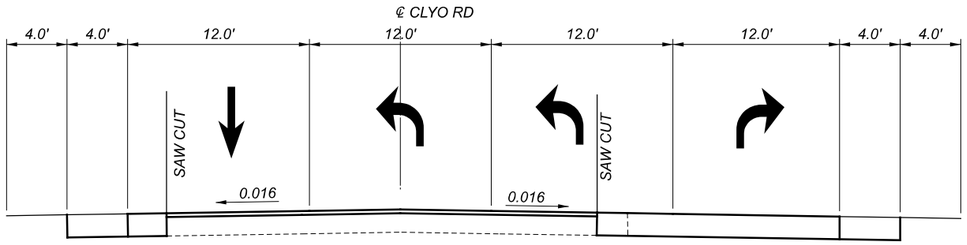
ODOT STATEWIDE PLANNING AND RESEARCH

PID 115160

I-675 and Wilmington Pike Interchange Feasibility Study

APPENDIX B: CONCEPT PLANS

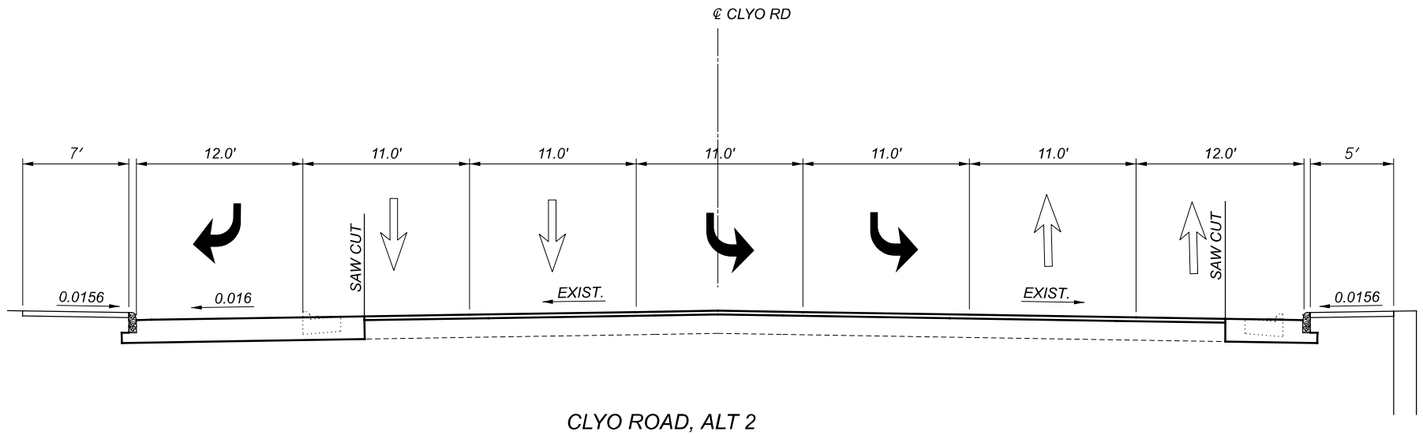
CMT



CLYO ROAD, ALT 1B

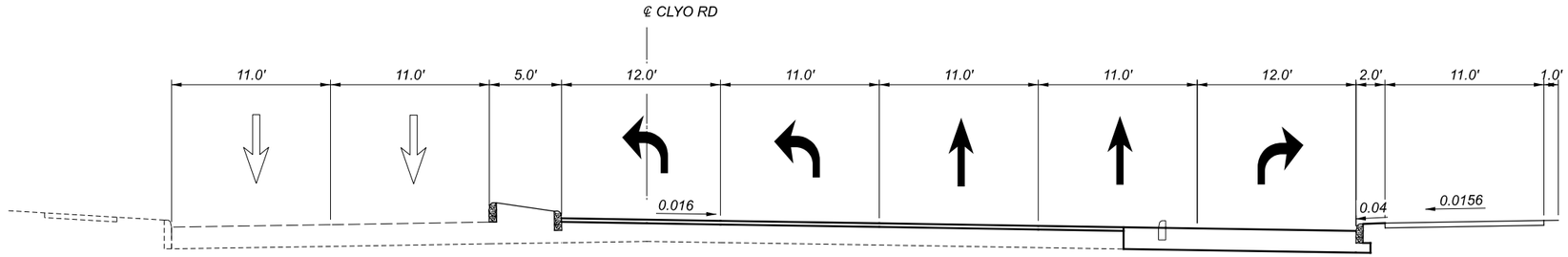
STA. 768+00

	Feedwire	Clyo	Wilmington	Whipp
Functional classification	Major Collector	Major Collector	Principal Arterial	Minor Arterial
Design speed	35	35	40	35
Speed Limit	35	35	40	35
Design year ADT	>6000	>6000	>6000	>6000



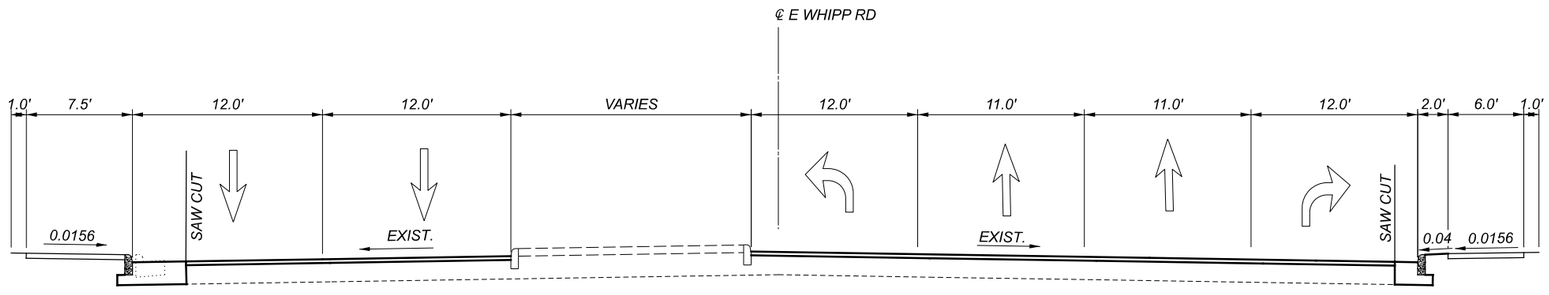
CLYO ROAD, ALT 2

STA. 715+00



CLYO ROAD, ALT 1B/2

STA. 712+00



E. WHIPP ROAD, ALT 1B/2

STA. 764+00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

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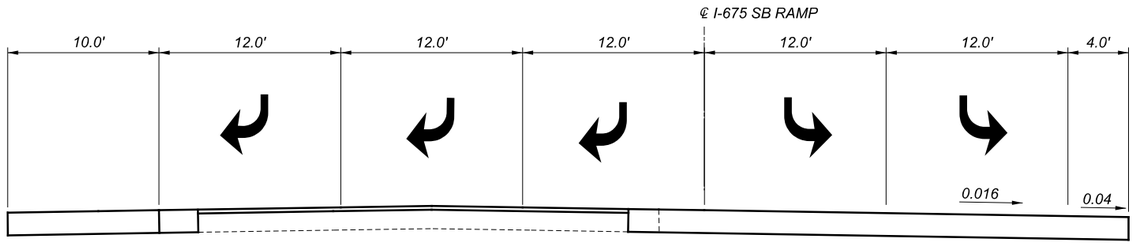
DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

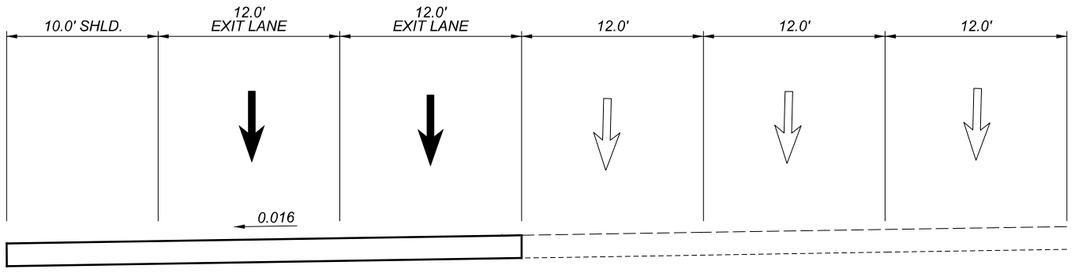
PROJECT ID 115160

SHEET 1 TOTAL 161



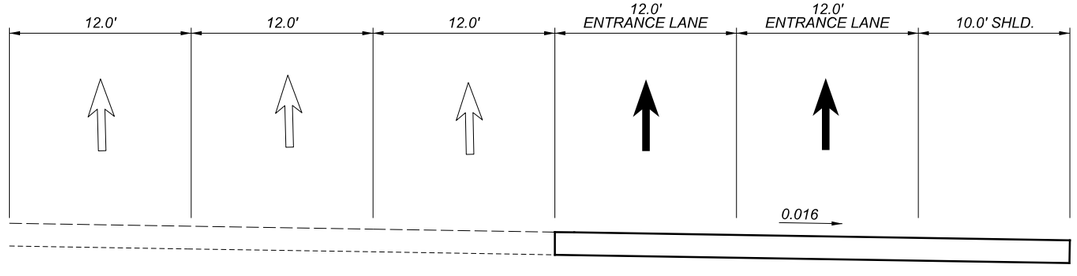
I-675, SB EXIT RAMP, ALT 1B

STA. 453+00



I-675, SB, ALT. 1B

STA. 127+00



I-675, NB, ALT. 1B

STA. 127+00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 2:55:27 PM USER: jespelage
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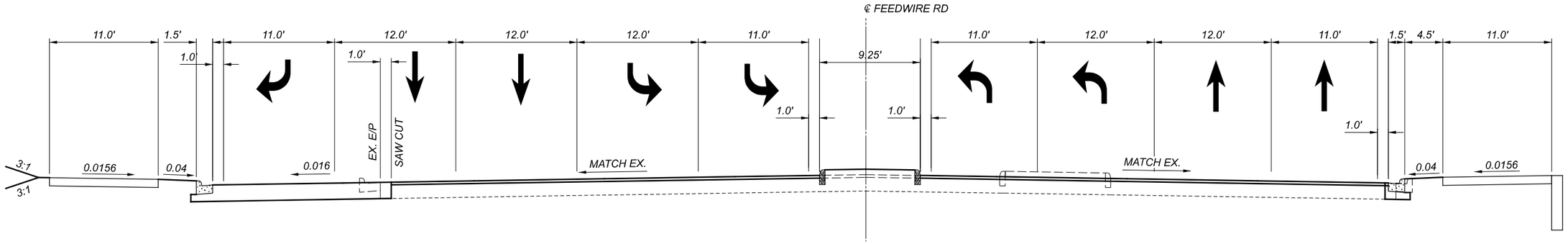
DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

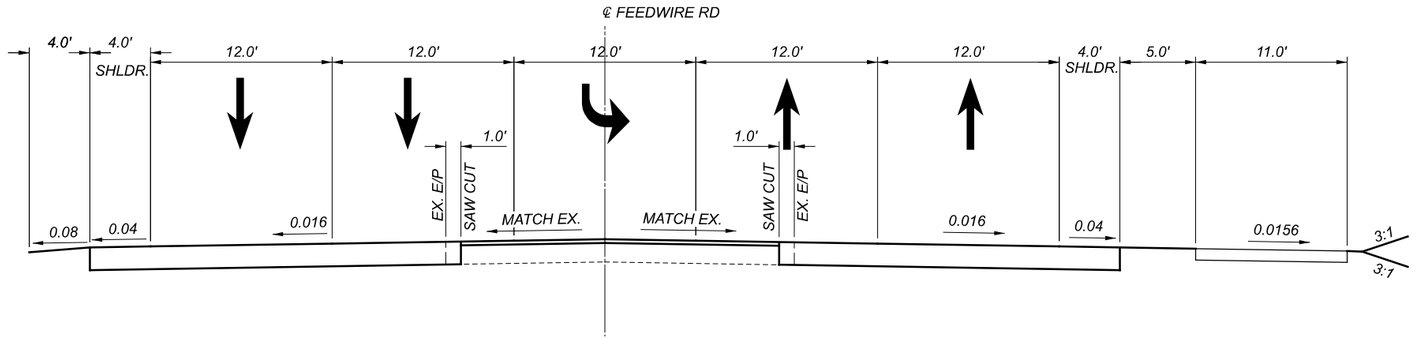
PROJECT ID 115160

SHEET 2 TOTAL 161



FEEDWIRE RD

STA. 504+00.00



FEEDWIRE RD

STA. 532+00.00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

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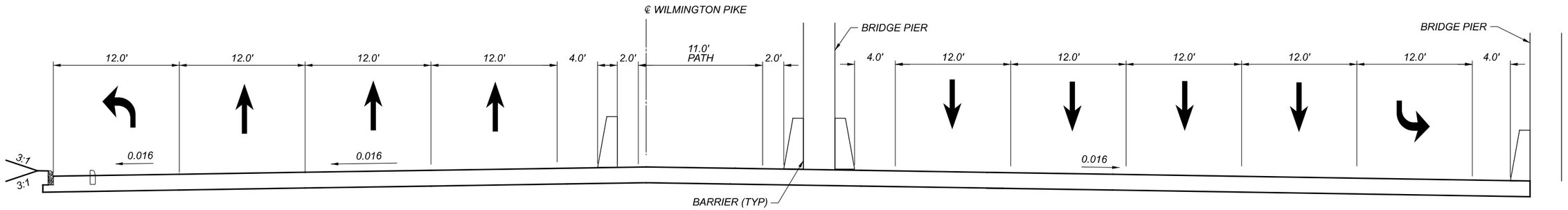
DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

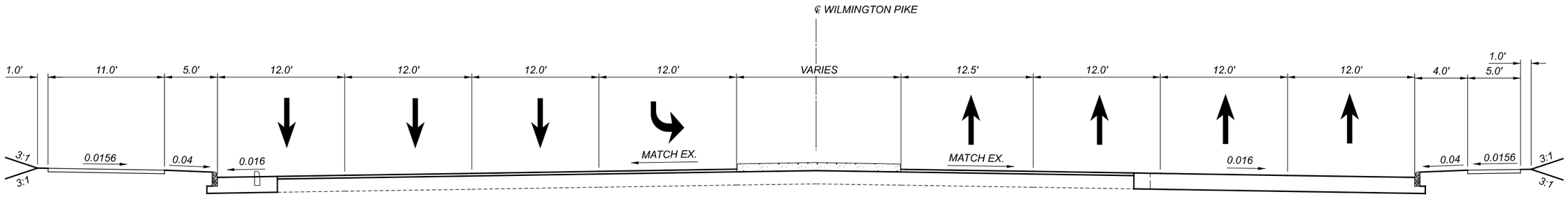
PROJECT ID 115160

SHEET 3 TOTAL 161



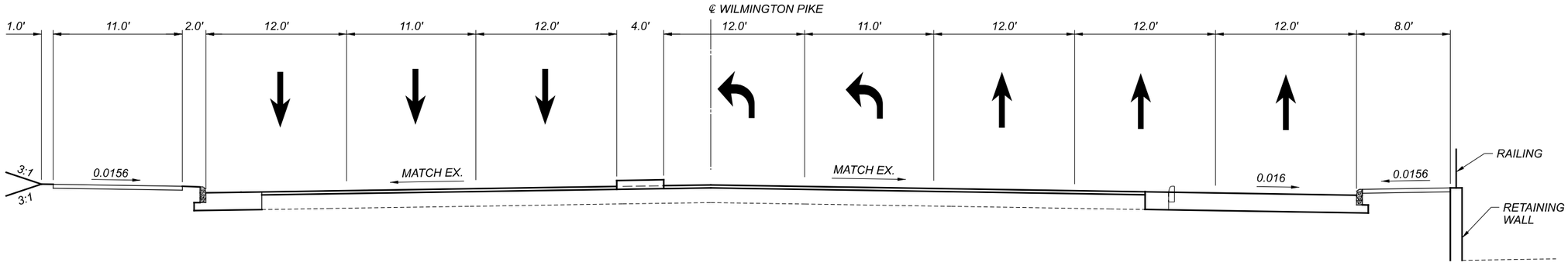
WILMINGTON PIKE - ALT 1B

STA. 247+00



WILMINGTON PIKE - ALT 1B/2

STA. 228+00



WILMINGTON PIKE - ALT 1B/2

STA. 223+00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

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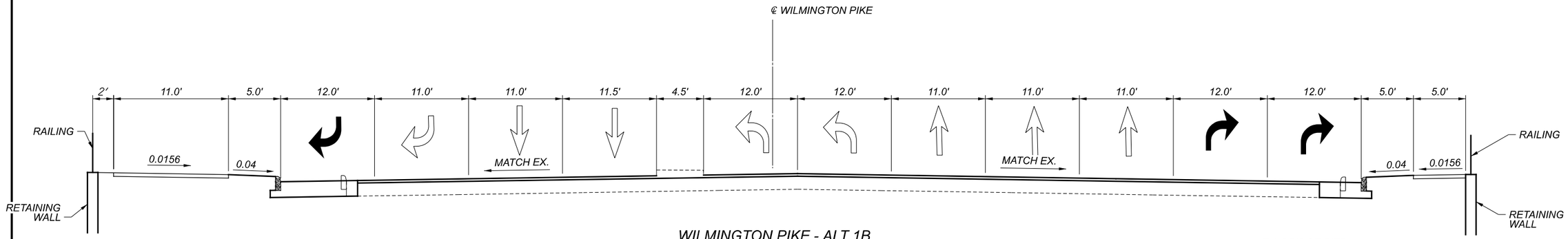
DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

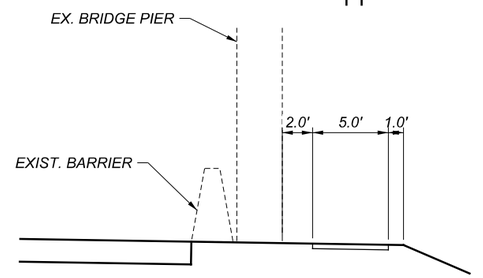
PROJECT ID 115160

SHEET 4 TOTAL 161



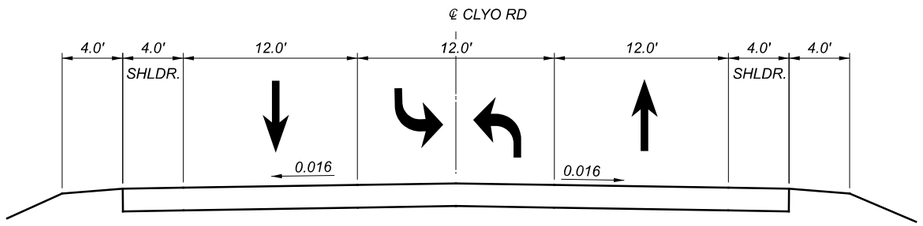
WILMINGTON PIKE - ALT 1B

STA. 260+50



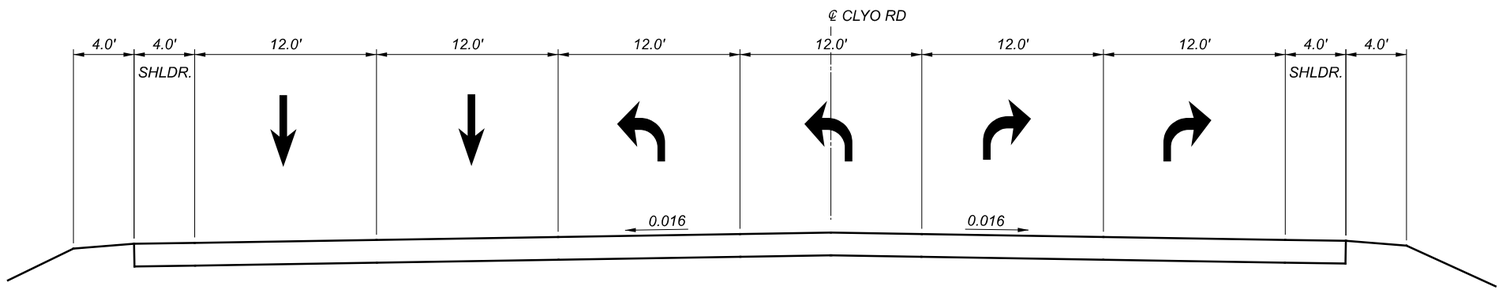
WILMINGTON PIKE - ALT 2

STA. 247+00 RT



CLYO RD - ALT 2

STA.768+00



CLYO RD - ALT 2

STA. 776+00

MOT/GRE I-675/WILMINGTON

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TYPICAL SECTIONS

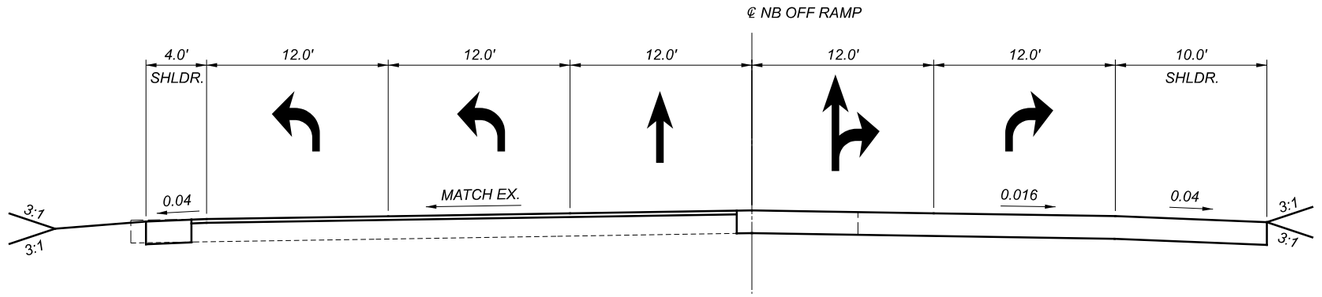
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REVIEWER JRE 03/24/23

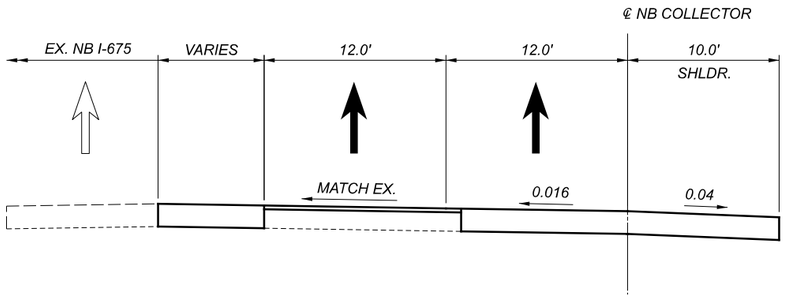
PROJECT ID 115160

SHEET 5 TOTAL 161



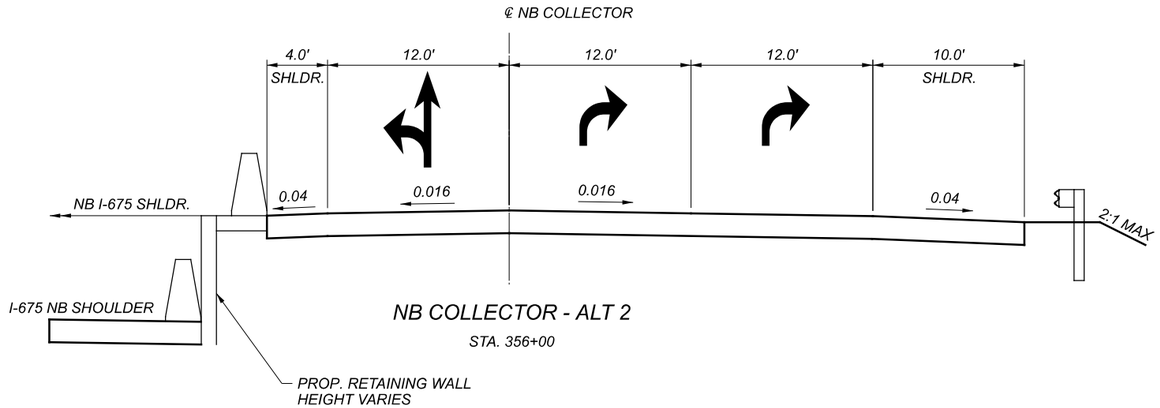
WILMINGTON PIKE NB EXIT RAMP - ALT 2

STA. 383+00



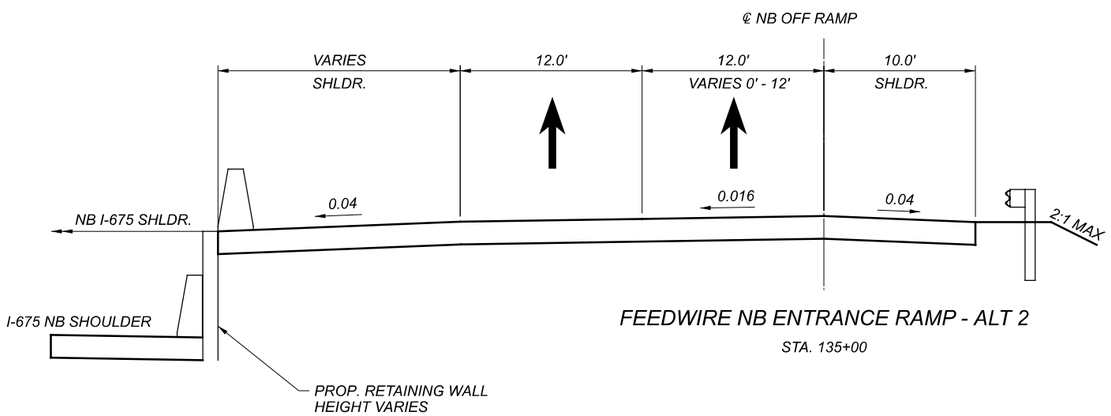
NB COLLECTOR - ALT 2

STA. 340+00



NB COLLECTOR - ALT 2

STA. 356+00



FEEDWIRE NB ENTRANCE RAMP - ALT 2

STA. 135+00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

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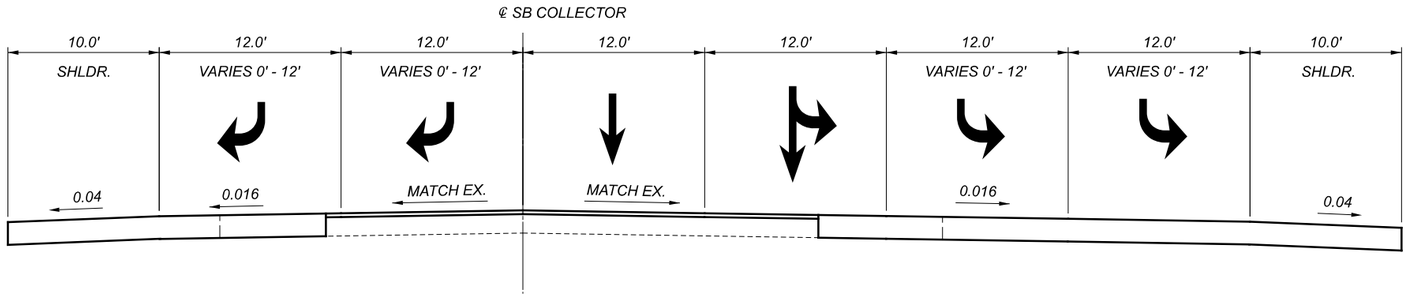
DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

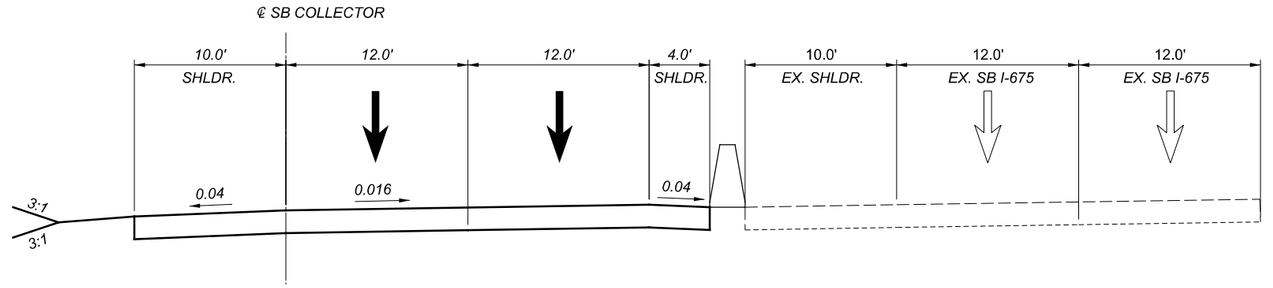
PROJECT ID 115160

SHEET 6 TOTAL 161



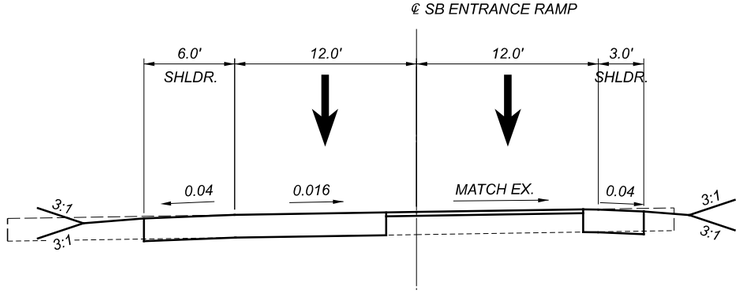
SB COLLECTOR - ALT 2

STA. 377+00



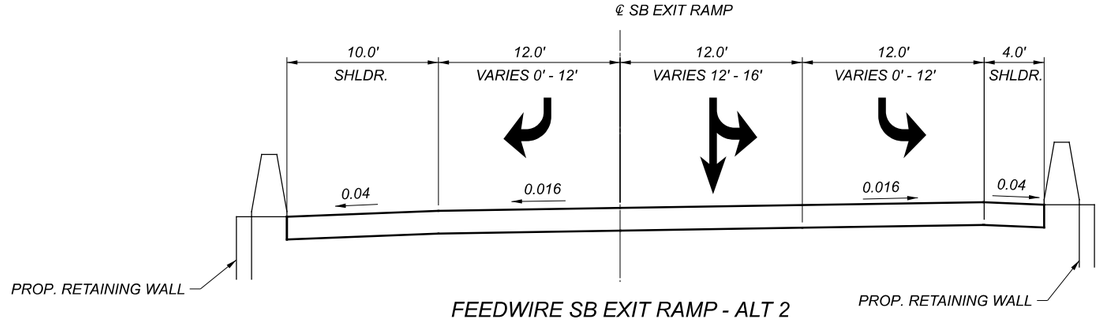
SB COLLECTOR - ALT 2

STA. 393+00



WILMINGTON PIKE SB ENTRANCE RAMP - ALT 1B/2

STA. 96+00



FEEDWIRE SB EXIT RAMP - ALT 2

STA. 135+00

TYPICAL SECTIONS

MOT/GRE I-675/WILMINGTON

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DESIGN AGENCY

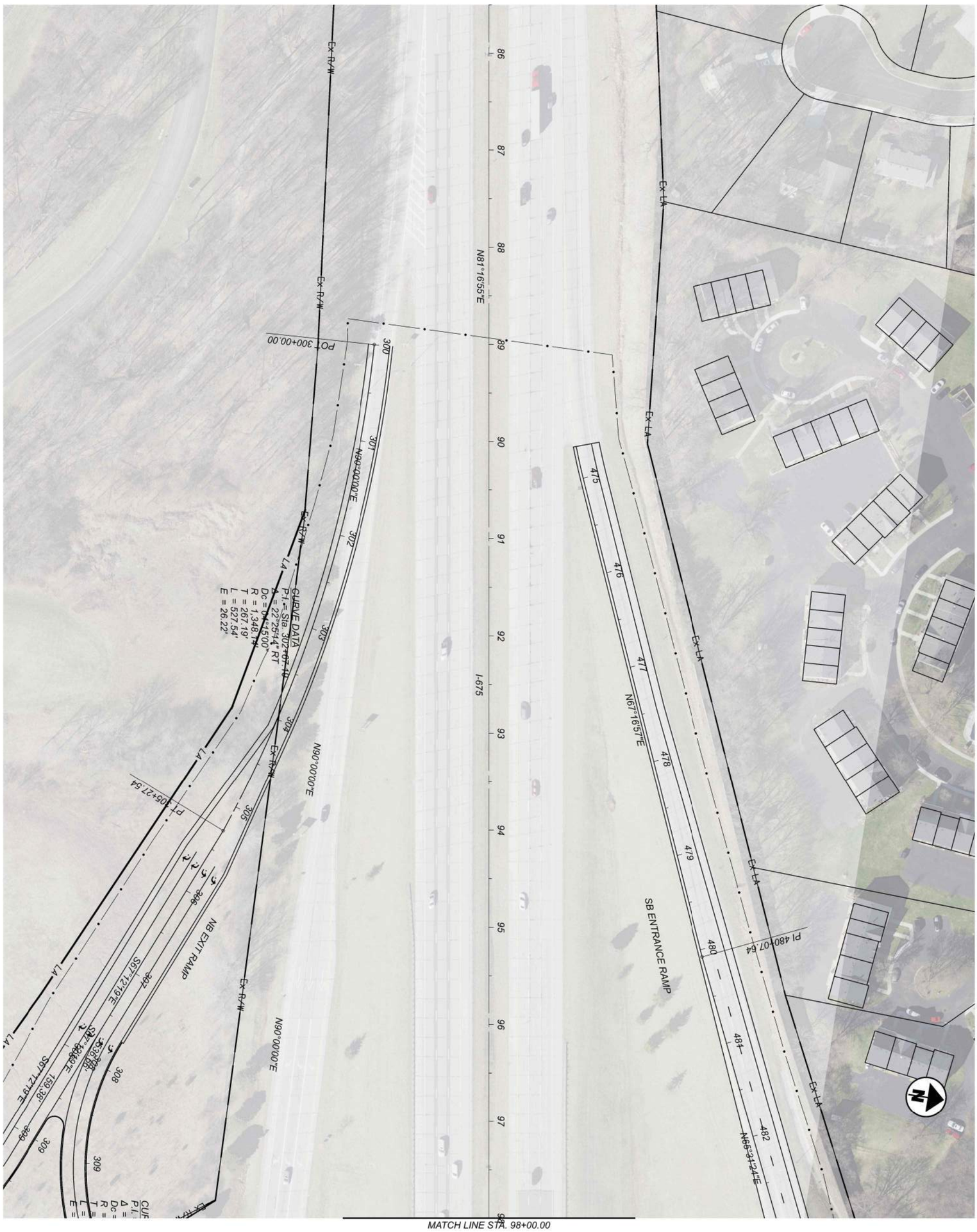
DESIGNER ARW

REVIEWER JRE 03/24/23

PROJECT ID 115160

SHEET 7 TOTAL 161

MODEL: 115160_GP101 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 10:49:10 AM USER: jespelage
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MATCH LINE STA. 98+00.00

SHEET	TOTAL
8	161

PROJECT ID: 115160

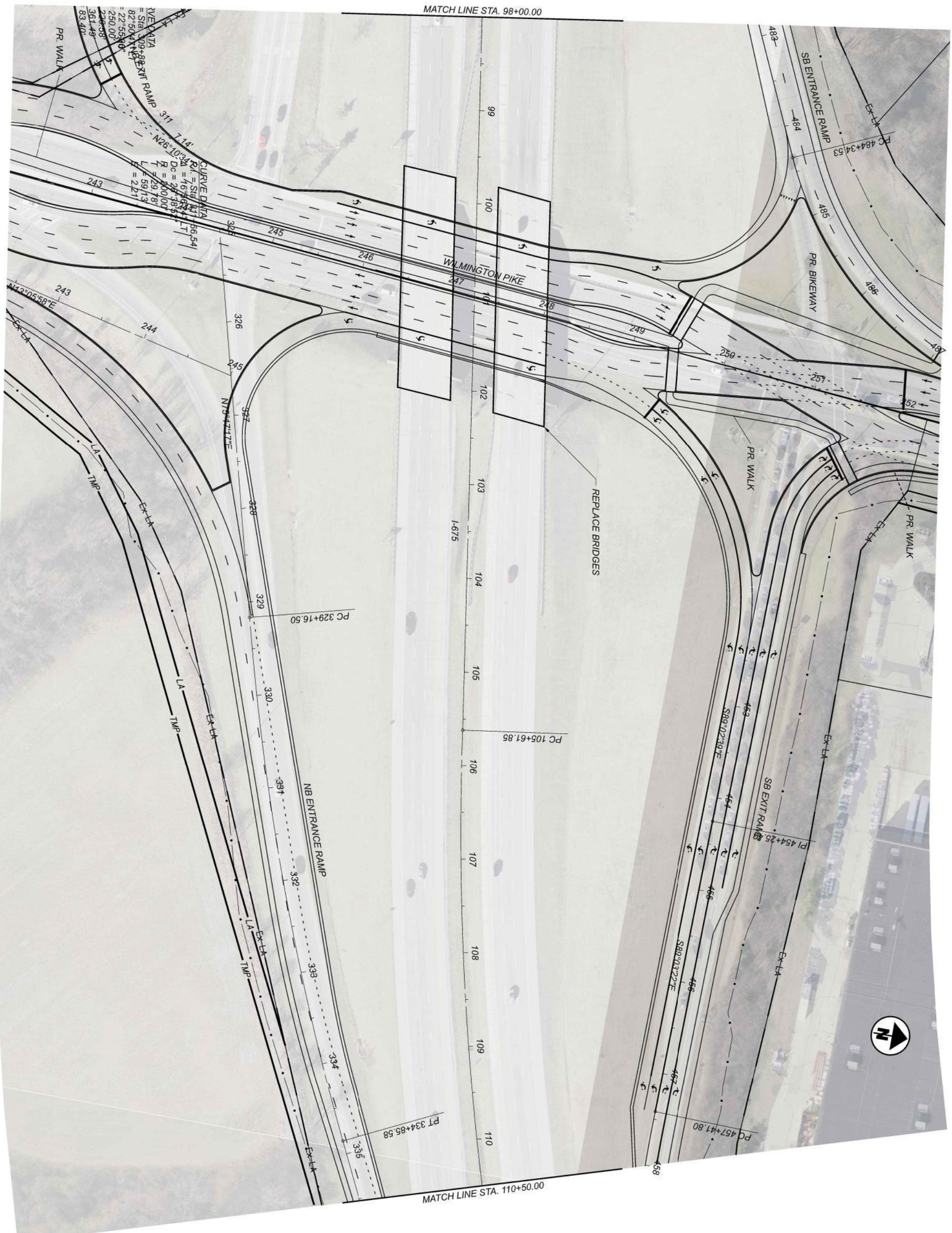
DESIGNER: BMG
REVIEWER: AJS 03/24/23

DESIGN AGENCY

PLAN-I-675
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

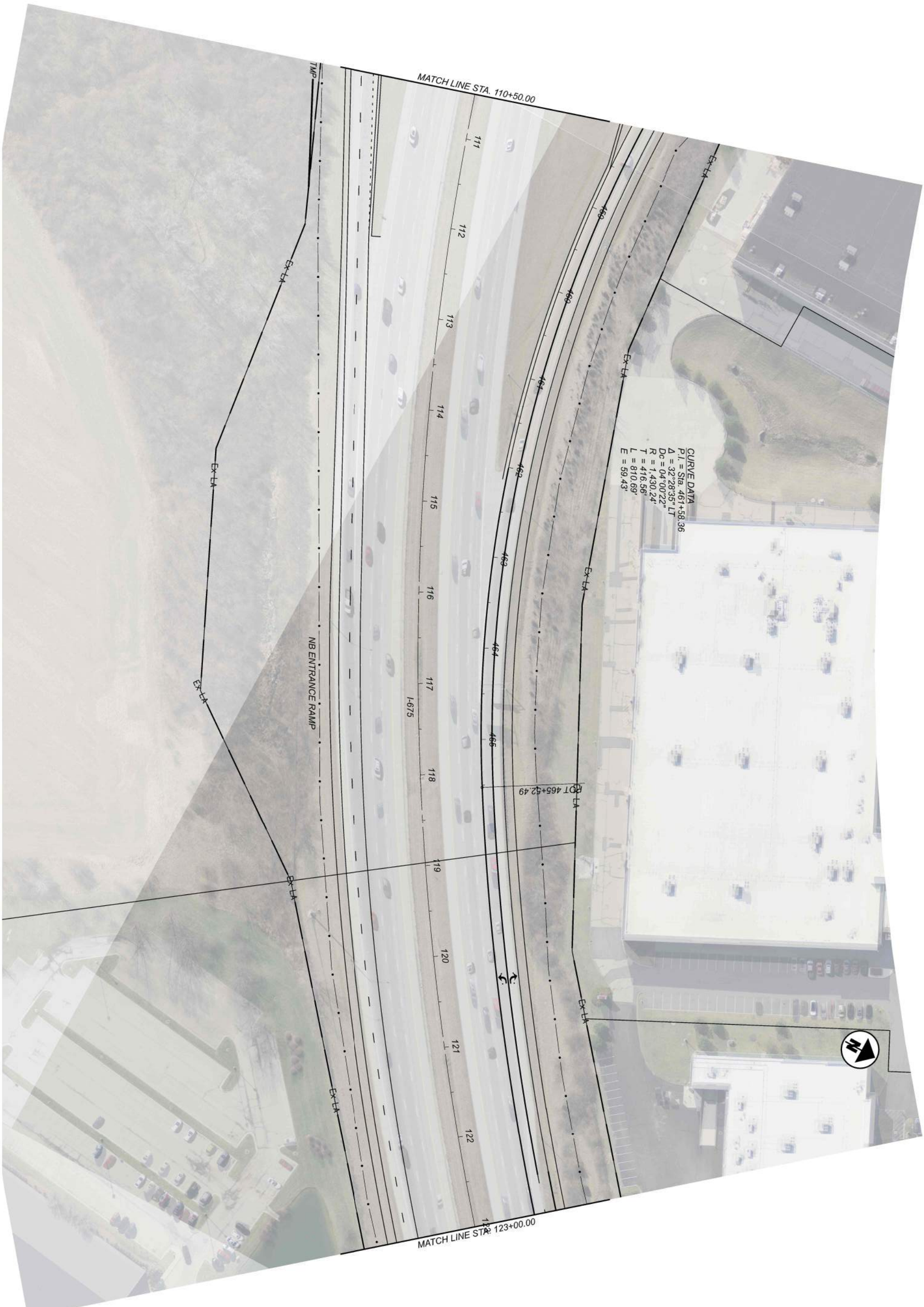
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SHEET 9 TOTAL 161	PROJECT ID 115160	DESIGNER BMG REVIEWER AJS 03/24/23	DESIGN AGENCY	PLAN-I-675 ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP103 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 10:53:30 AM USER: jespelage
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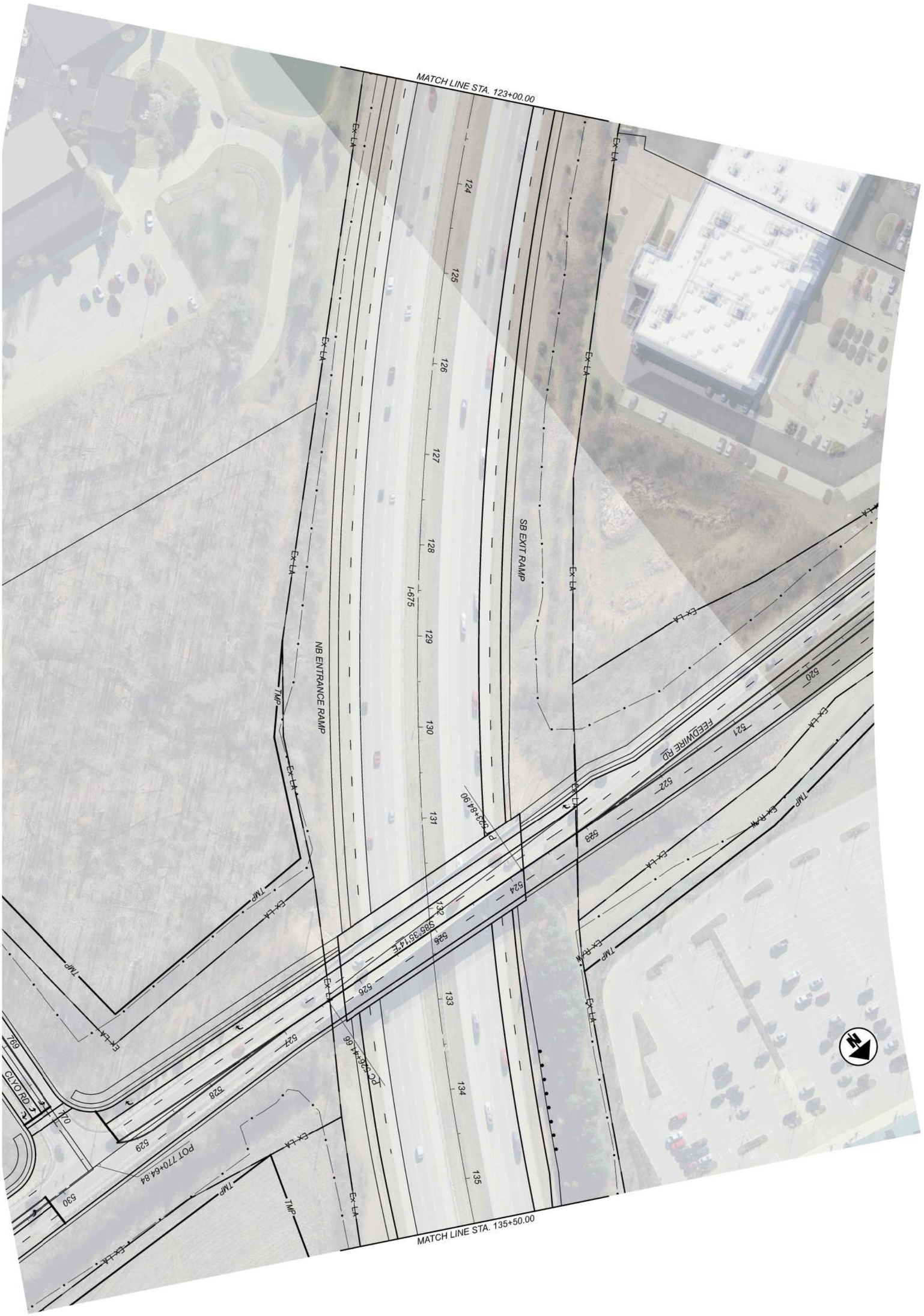
PLAN-I-675
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	10	161

DESIGN AGENCY

MODEL: 115160_GP104 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 10:54:13 AM USER: jespelage
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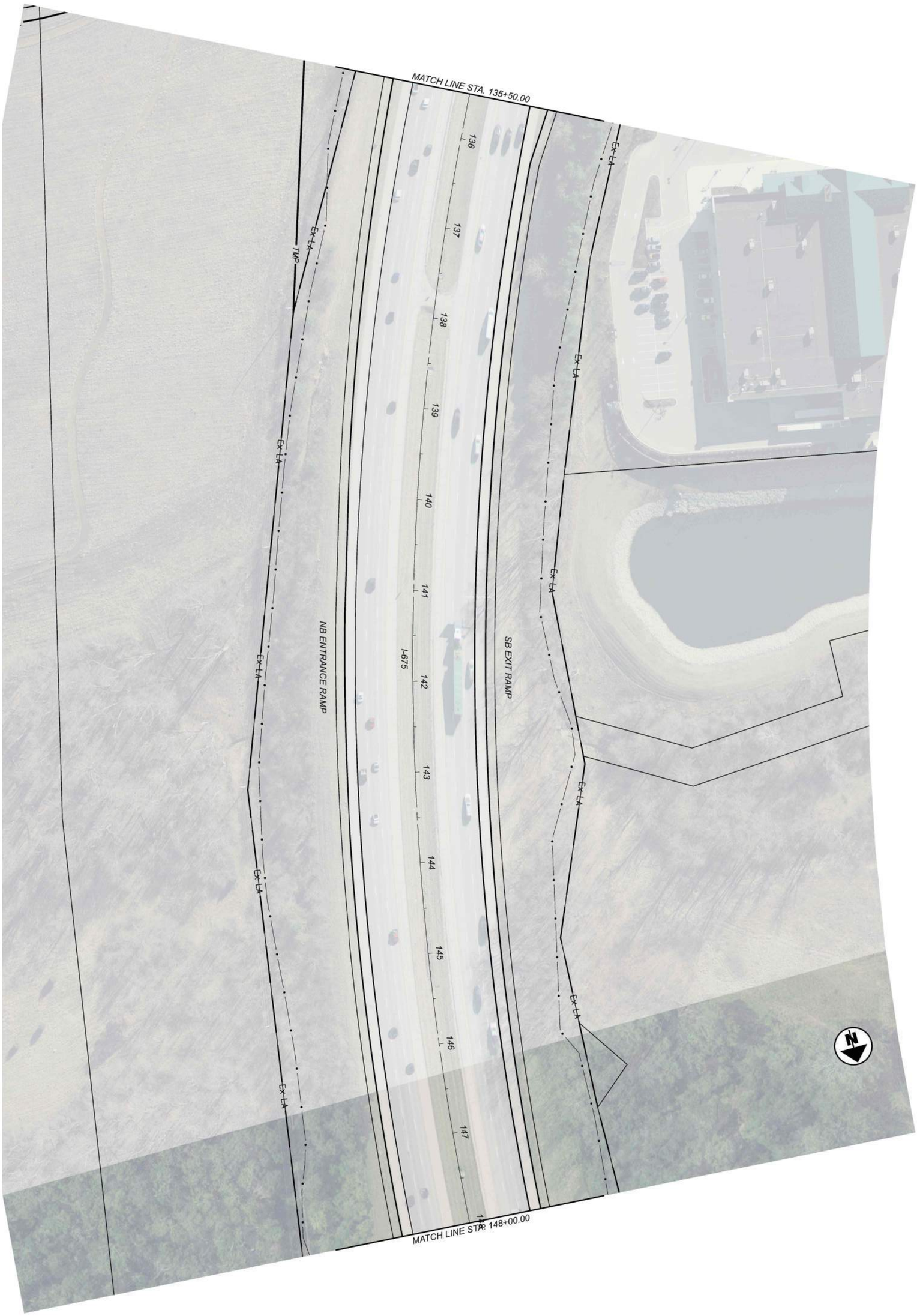


SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
11	161	115160	AJS 03/24/23	BMG	

PLAN-I-675
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP105 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 10:55:53 AM USER: jespelage
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PLAN-I-675
ALTERNATIVE 1B

DESIGNER BMG
REVIEWER AJS 03/24/23
PROJECT ID 115160
SHEET 12 TOTAL 161
DESIGN AGENCY

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP106 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 10:57:52 AM USER: jespelage
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SHEET	TOTAL
13	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: BMG

DESIGN AGENCY

PLAN-I-675
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET

0 50

25 100

MODEL: 115160_GP107 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 10:59:47 AM USER: jespelage
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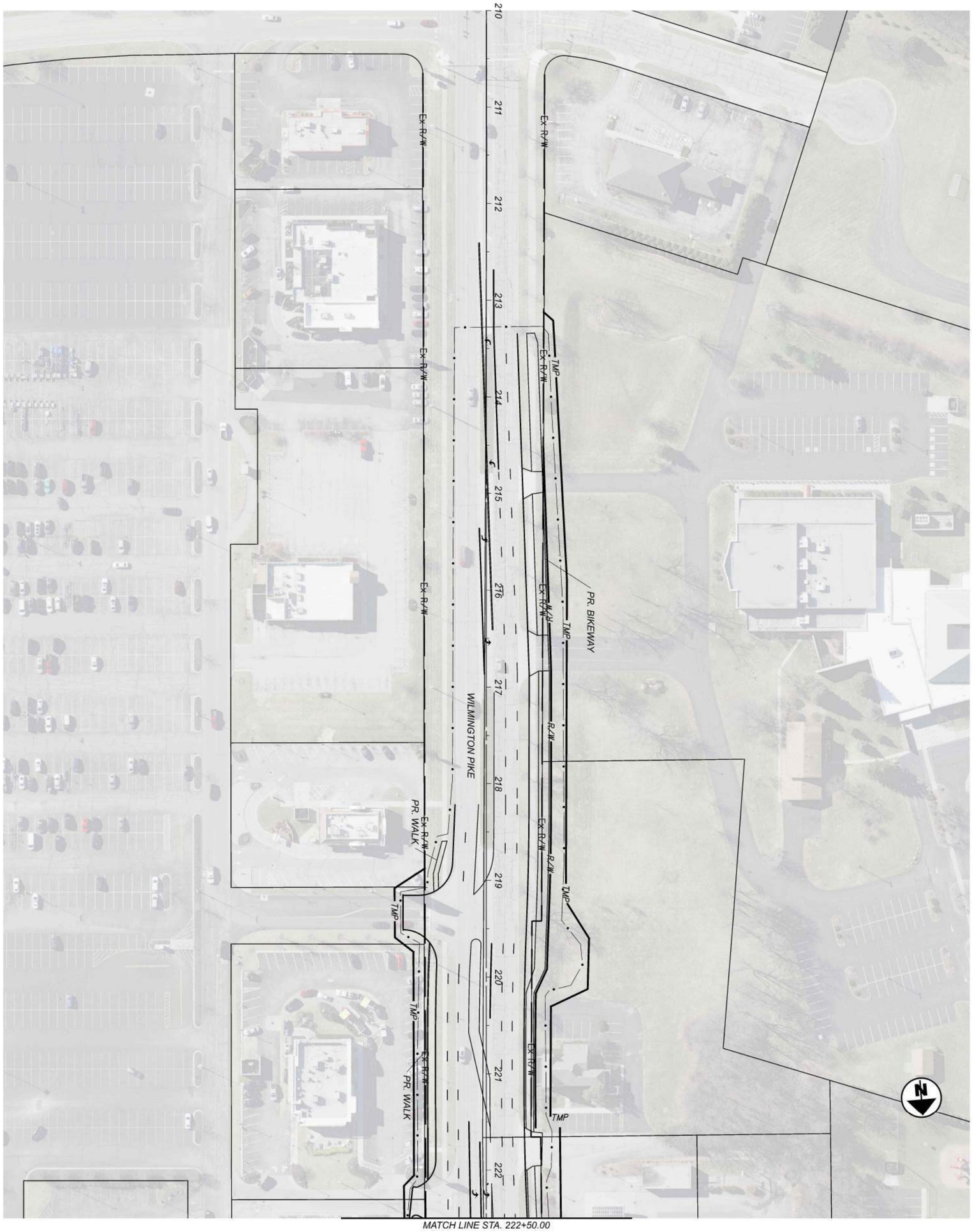
PLAN-I-675
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	14	161

DESIGN AGENCY

MODEL: 115160_GP201 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 10:59:58 AM USER: jespelage
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SHEET	TOTAL
15	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: BMG

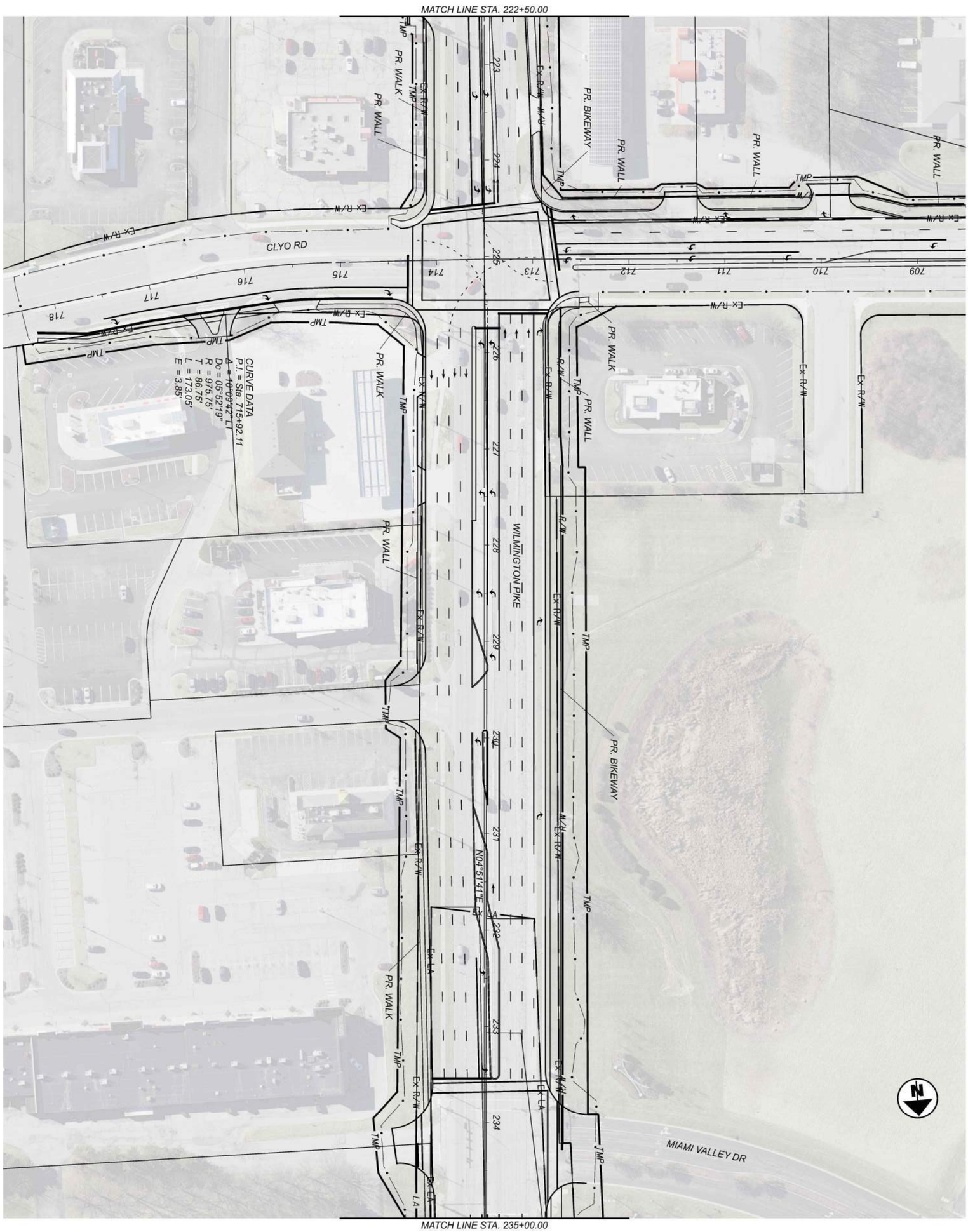
DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET

0 50
25 100

MODEL: 115160_GP202 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:00:02 AM USER: jespelage
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SHEET	TOTAL
16	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: BMG

DESIGN AGENCY

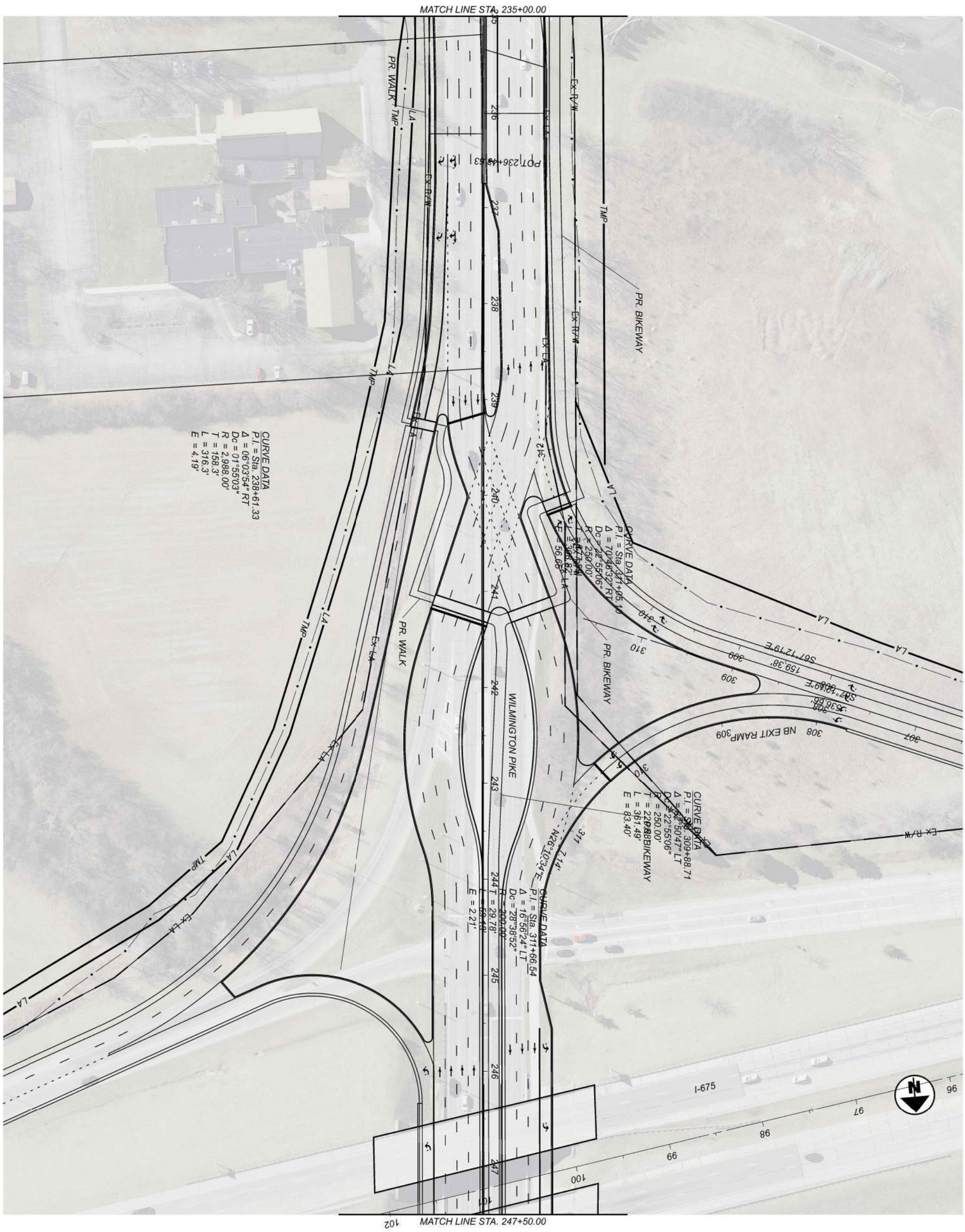
PLAN-WILMINGTON PK
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET

0 50

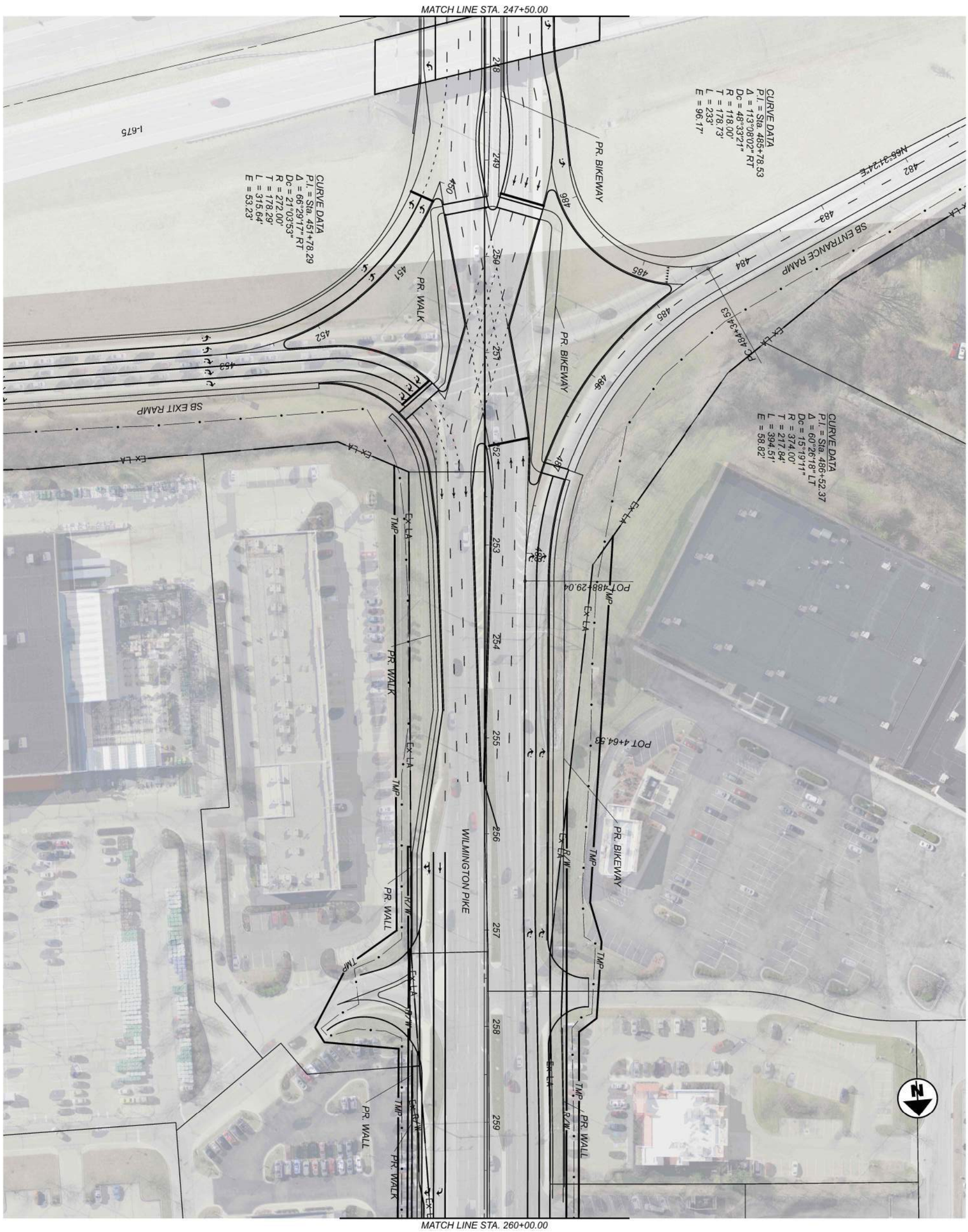
25 100

MODEL: 115160_GP203 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:04:55 AM USER: jespelage
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DESIGNER	DESIGN AGENCY	PLAN-WILMINGTON PK ALTERNATIVE 1B	HORIZONTAL SCALE IN FEET
BMG			0 50
REVIEWER AJS 03/24/23			25 100
PROJECT ID 115160			
SHEET 17 TOTAL 161			

MODEL: 115160_GP204 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:03:34 AM USER: jespelage
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DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	18	161

DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP205 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:05:11 AM USER: jespelage
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SHEET	TOTAL
19	161

PROJECT ID: 115160

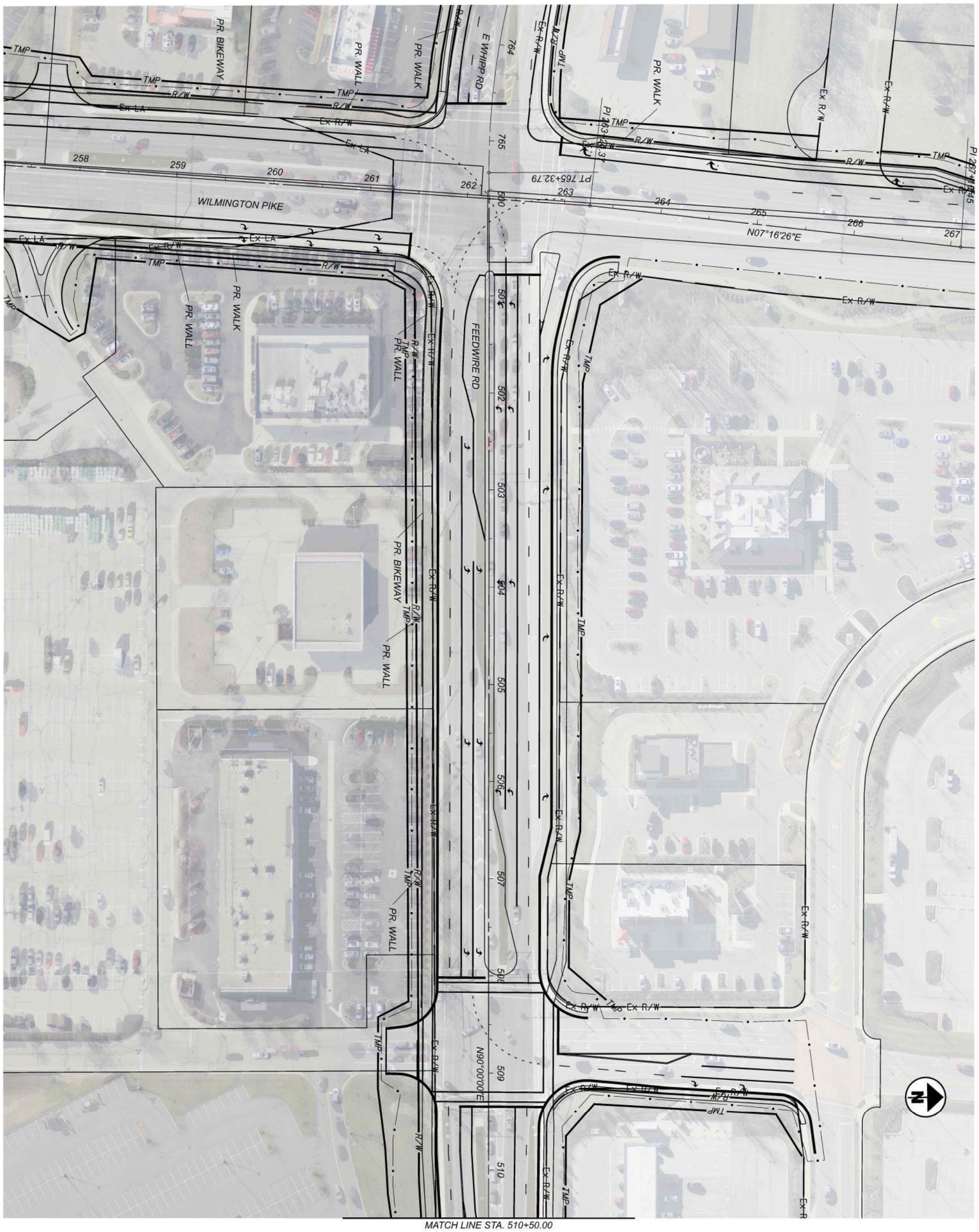
DESIGNER: BMG
REVIEWER: AJS 03/24/23

DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP501 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:07:06 AM USER: jespelage
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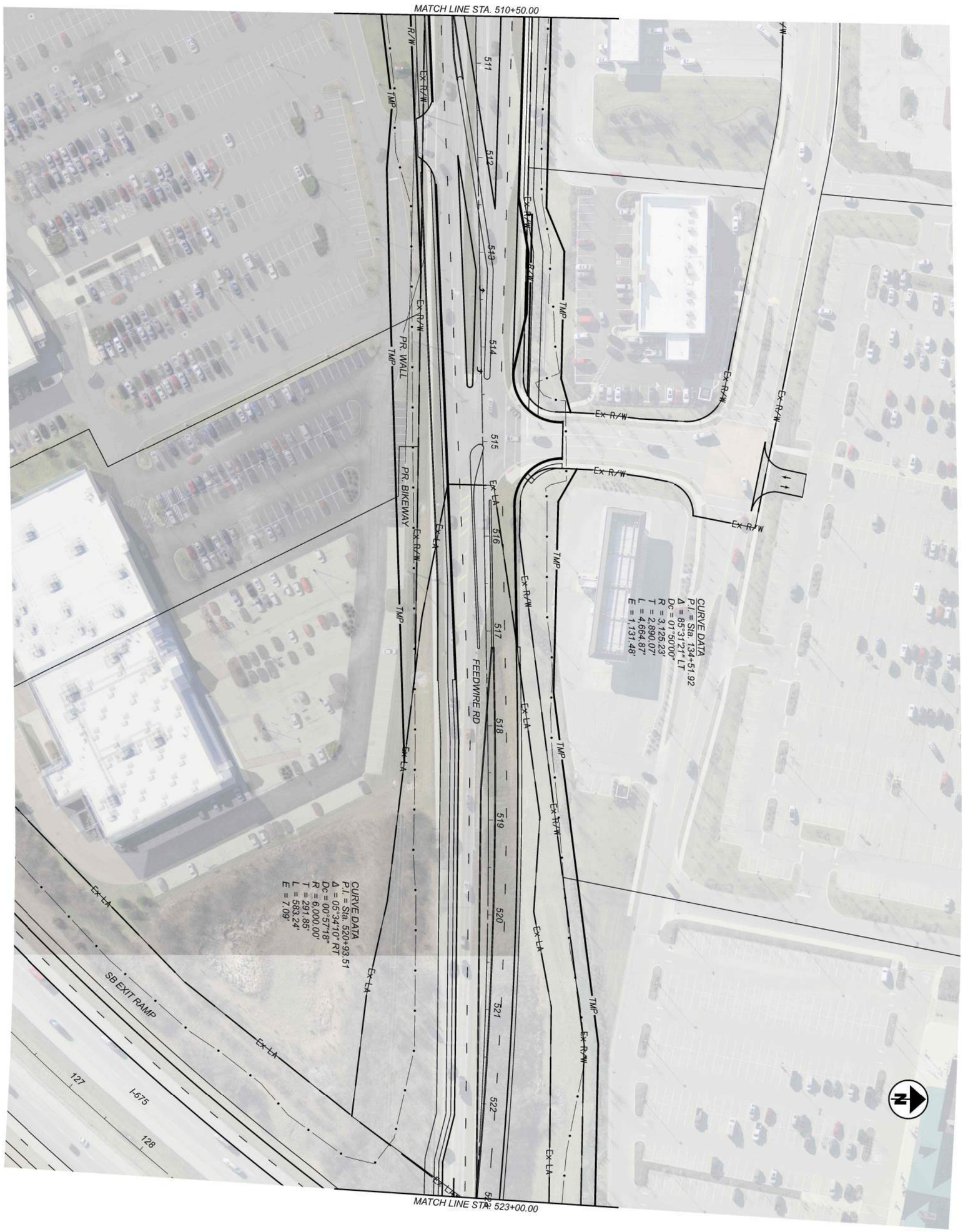


SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
20	161	115160	AJS 03/24/23	BMG	

PLAN-FEEDWIRE RD.
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP502 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:08:57 AM USER: jespelage
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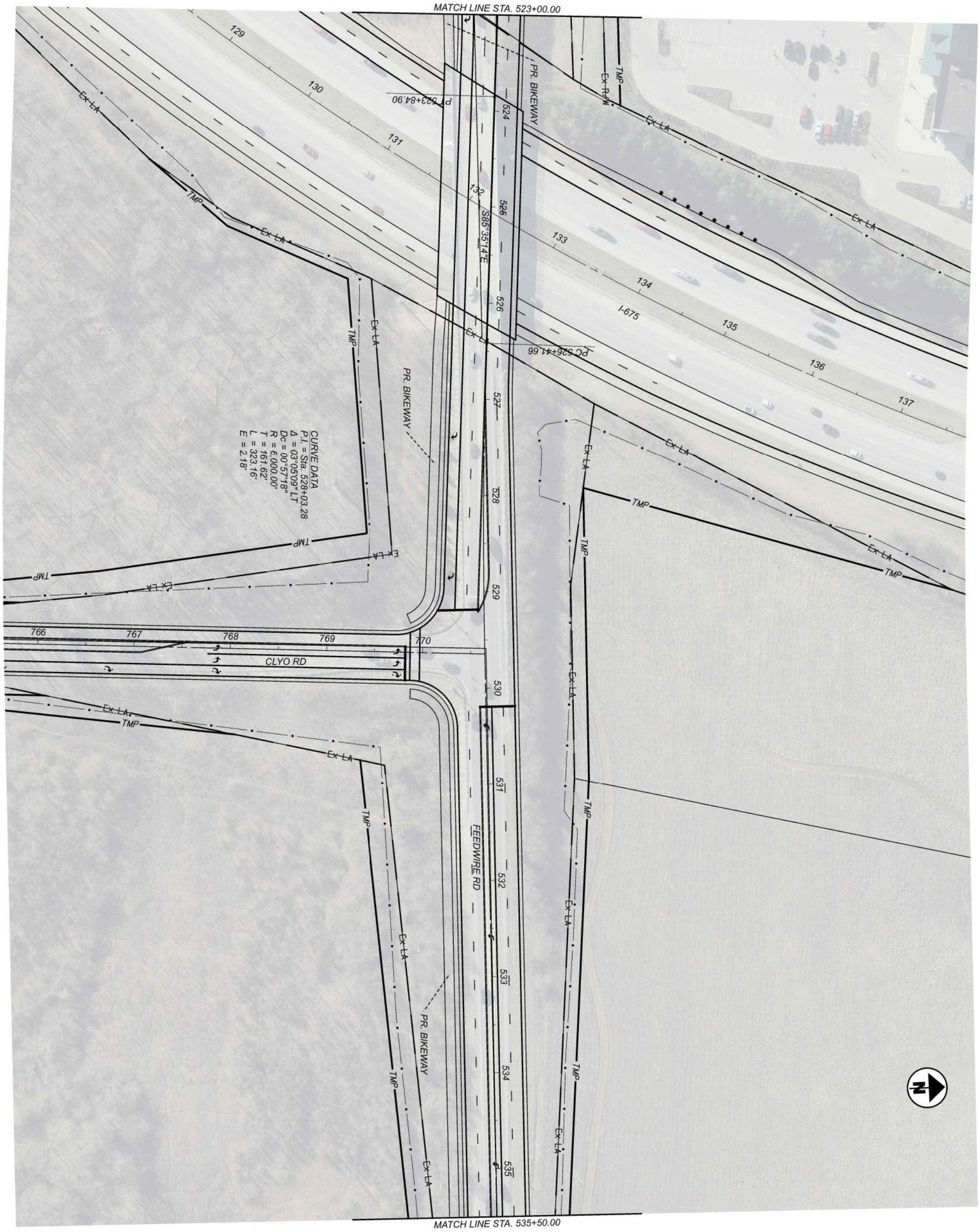
PLAN-FEEDWIRE RD.
ALTERNATIVE 1B

DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	21	161

DESIGN AGENCY

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP503 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:10:32 AM USER: jespelage
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DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	22	161

DESIGN AGENCY

PLAN-FEEDWIRE RD.
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP504 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:12:06 AM USER: jespelage
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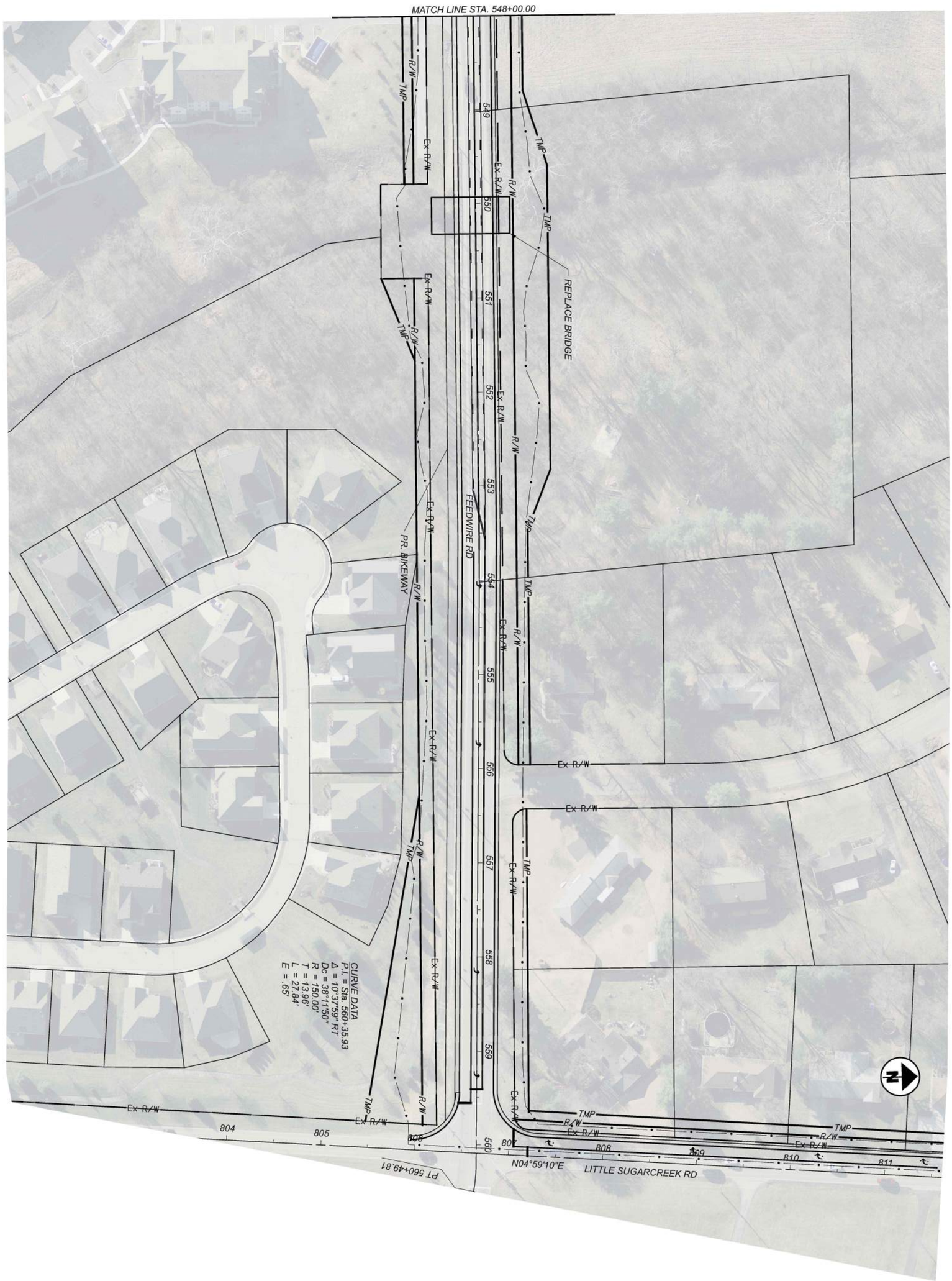


PLAN-FEEDWIRE RD.
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	23	161

DESIGN AGENCY

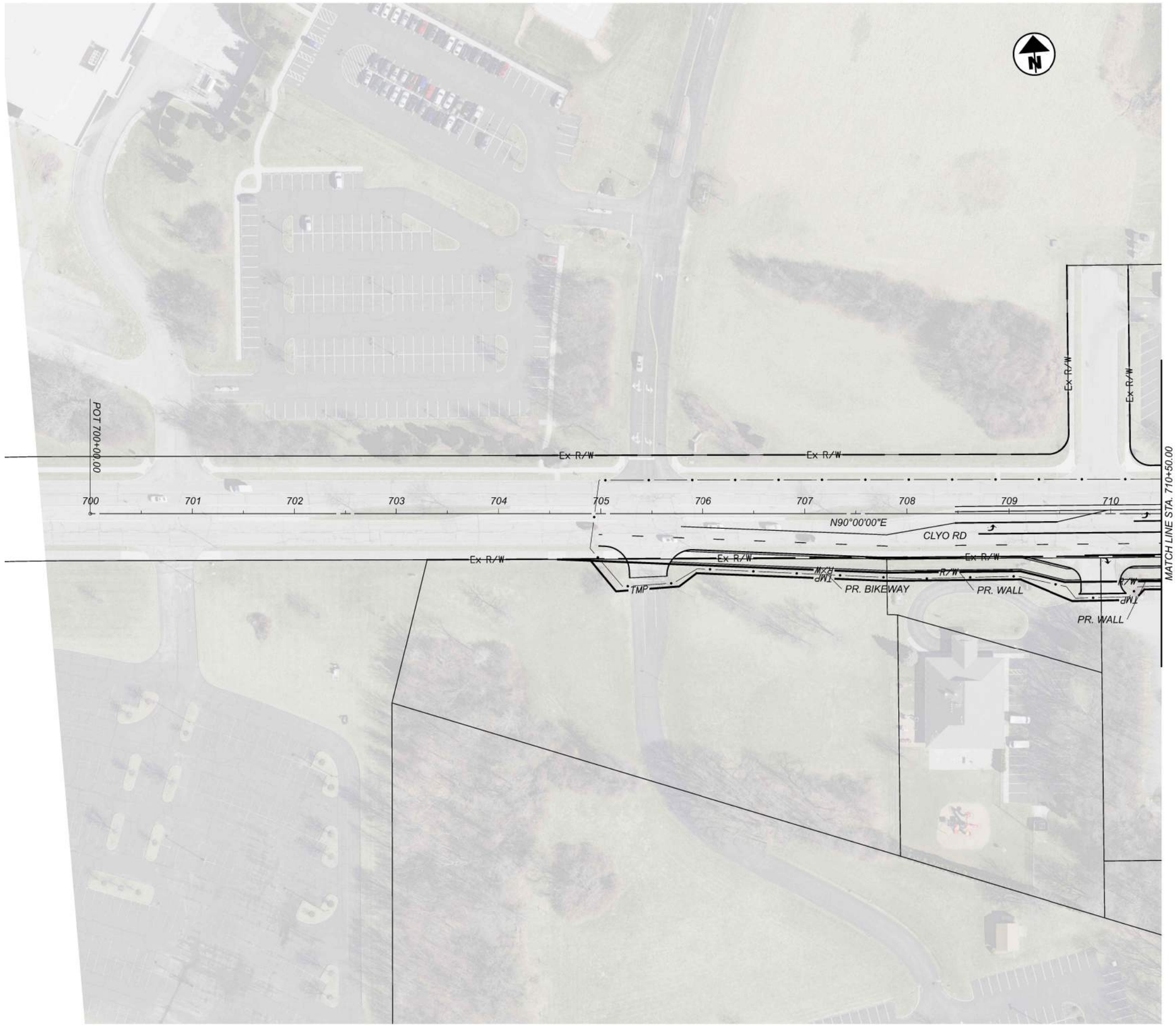


DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
BMG	AJS 03/24/23	115160	24	161

DESIGN AGENCY

PLAN-FEEDWIRE RD.
ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100



HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN-CLYO RD. ALTERNATIVE 1B

DESIGN AGENCY

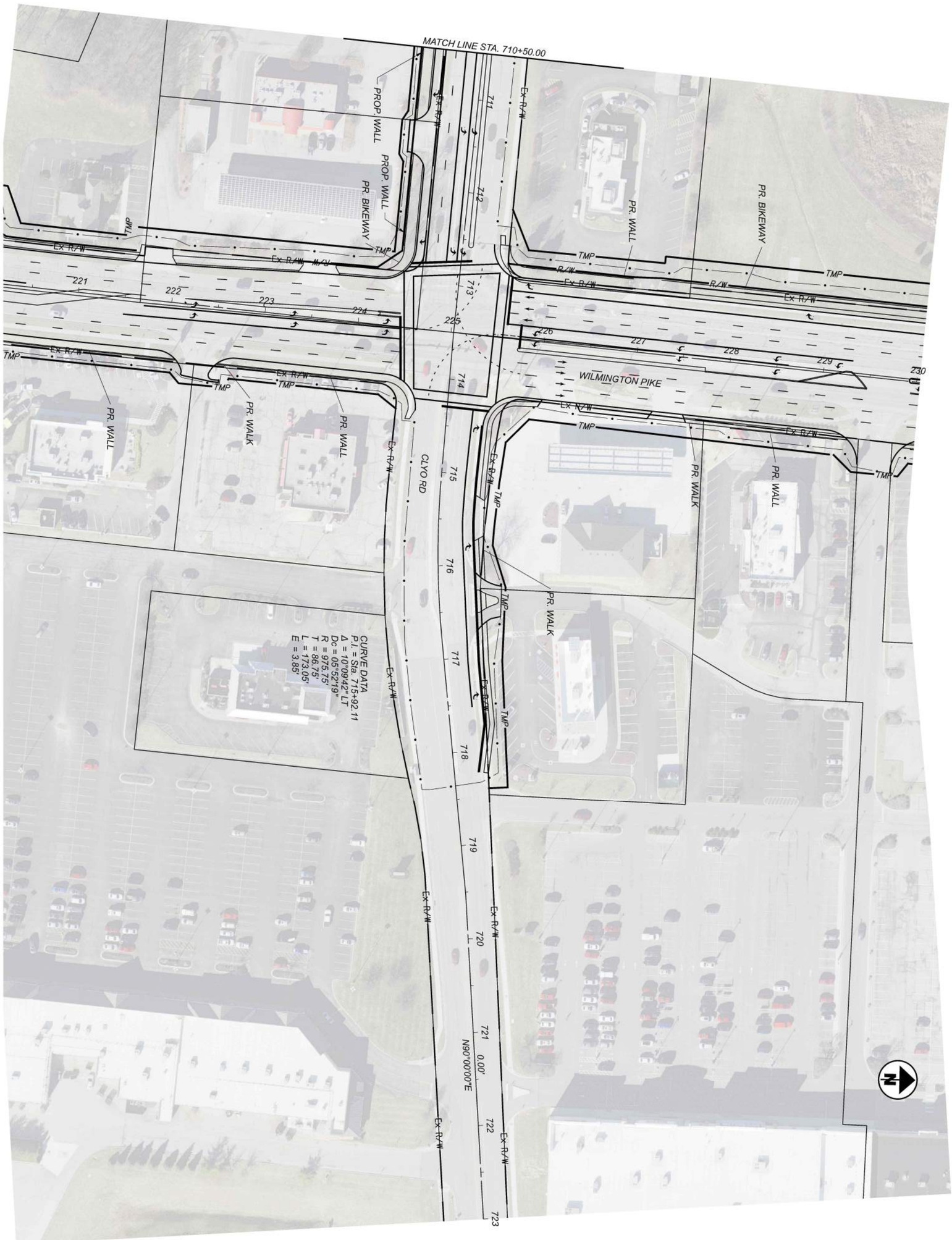
DESIGNER
BMG

REVIEWER
AJS 03/24/23

PROJECT ID
115160

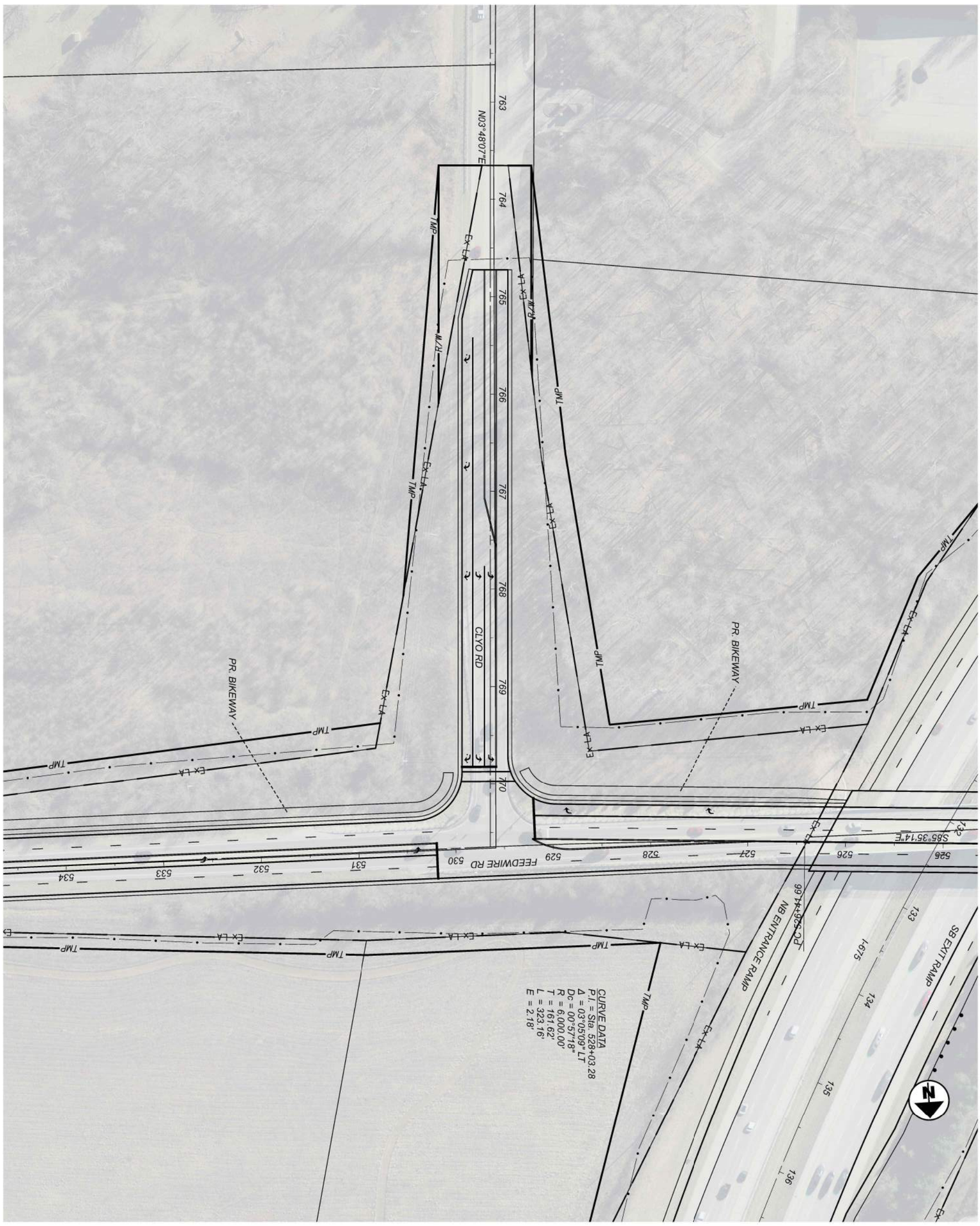
SHEET 25 | TOTAL 161

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DESIGNER	DESIGN AGENCY	PLAN-CLYO RD. ALTERNATIVE 1B	HORIZONTAL SCALE IN FEET
BMG			0 50
REVIEWER AJS 03/24/23			25 100
PROJECT ID 115160			
SHEET 26 TOTAL 161			

MODEL: 115160_GP703-1B PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:14:25 AM USER: jespelage
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SHEET 27 TOTAL 161	PROJECT ID 115160	REVIEWER AJS 03/24/23	DESIGNER BMG	DESIGN AGENCY	PLAN-CLYO RD. ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP75I-1B PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:59 AM USER: jespelage
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SHEET 28 | TOTAL 161	PROJECT ID 115160	DESIGNER BMG REVIEWER AJS 03/24/23	DESIGN AGENCY	PLAN-E. WHIPP RD. ALTERNATIVE 1B

HORIZONTAL SCALE IN FEET
0 50
25 100

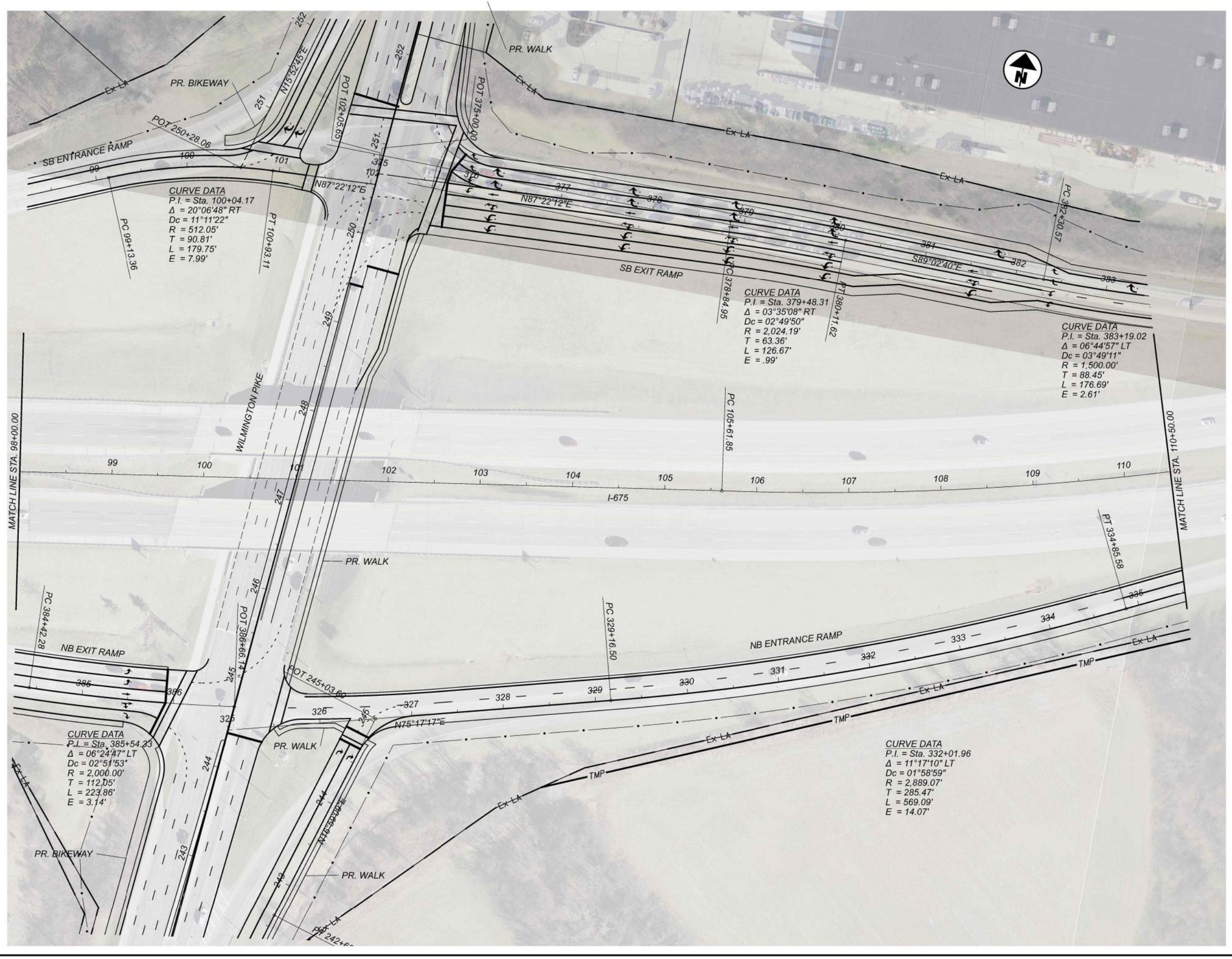
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PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER ARW
REVIEWER AJS 03/24/23
PROJECT ID 115160
SHEET 30 TOTAL 161
DESIGN AGENCY



HORIZONTAL SCALE IN FEET
0 25 50 100

PLAN-I-675 ALTERNATIVE 2

DESIGN AGENCY

DESIGNER ARW

REVIEWER AJS 03/24/23

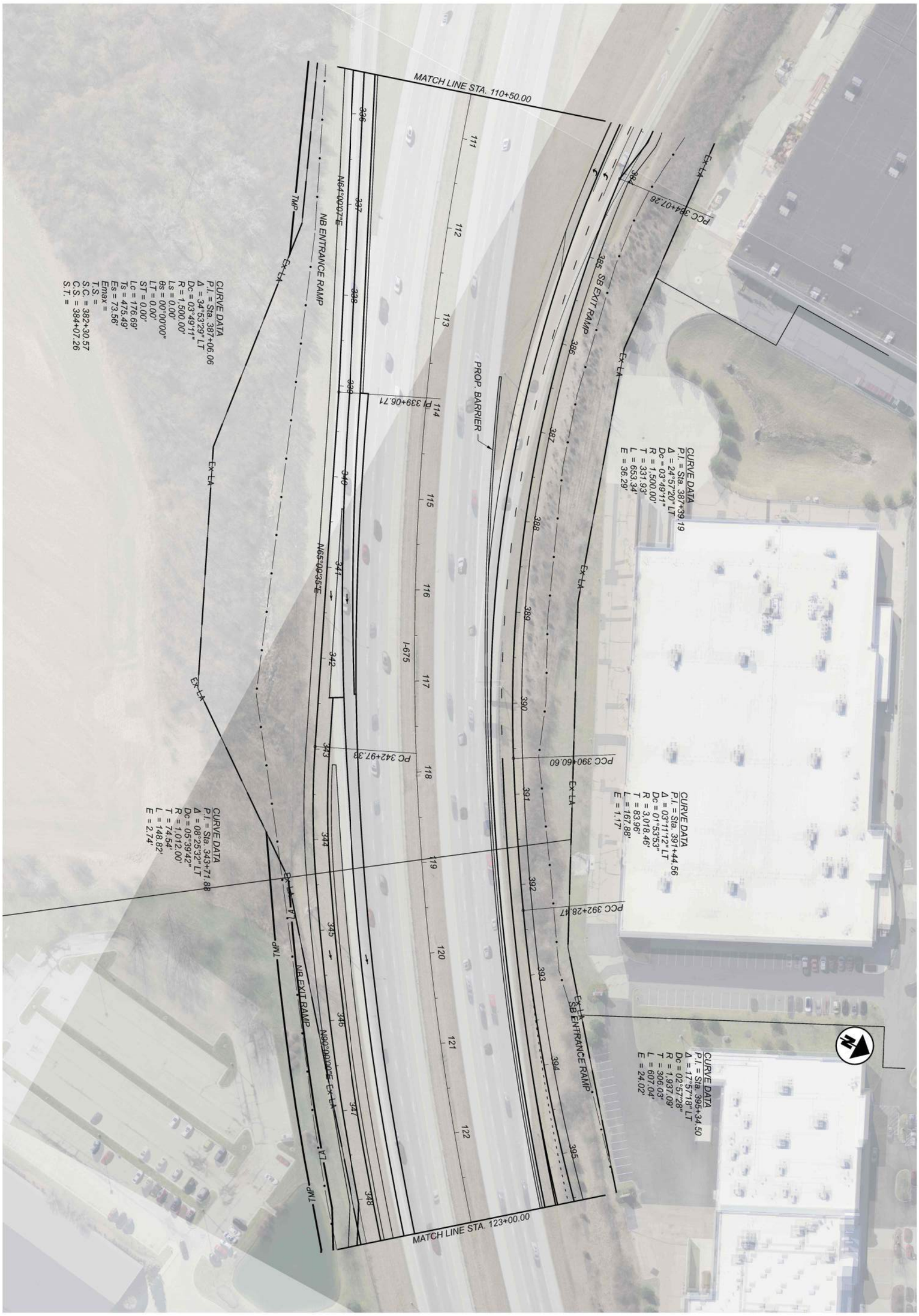
PROJECT ID 115160

SHEET 31 TOTAL 161

MOT/GRE I-675/WILMINGTON

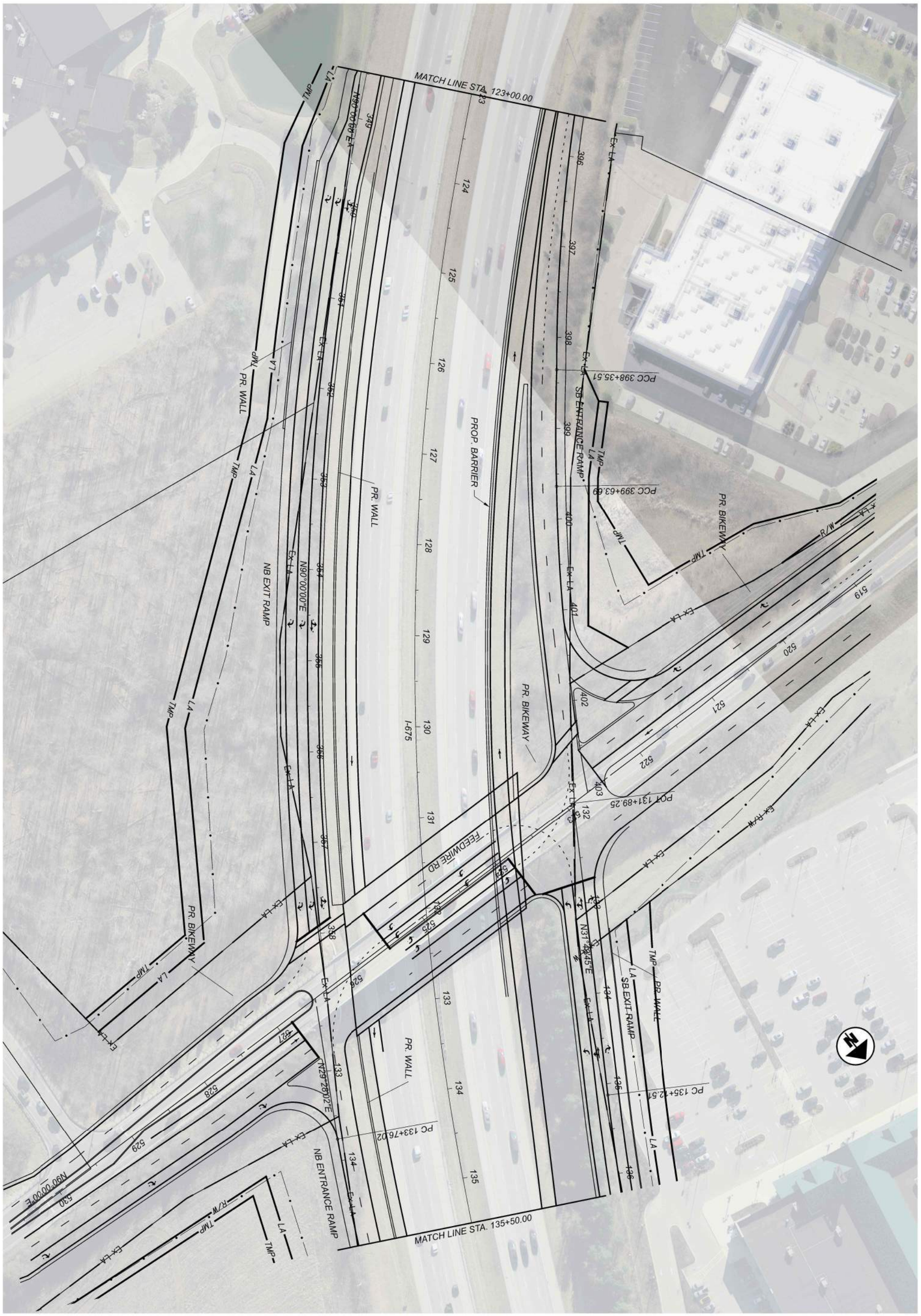
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MODEL: 115160_GP103 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:19:47 AM USER: jespelage
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SHEET 32 TOTAL 161	DESIGNER ARW	DESIGN AGENCY	PLAN-I-675 ALTERNATIVE 2
PROJECT ID 115160	REVIEWER AJS 03/24/23		HORIZONTAL SCALE IN FEET 0 50 25 100

MODEL: 115160_GP104 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 3:50:18 PM USER: jespelage
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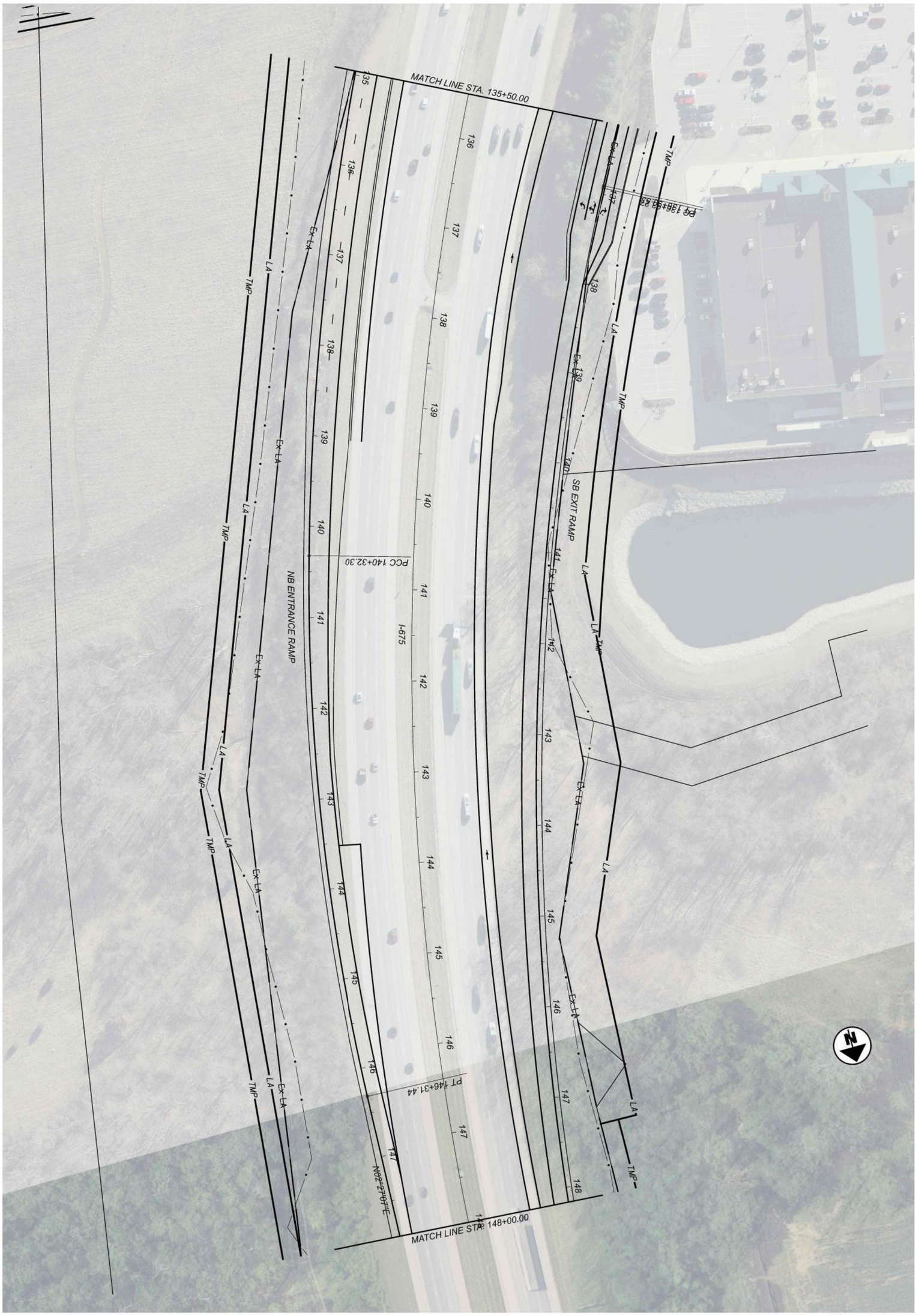


DESIGNER	DESIGN AGENCY
ARW	
REVIEWER	
AJS 03/24/23	
PROJECT ID	
115160	
SHEET	TOTAL
33	161

PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP105 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 3:50:48 PM USER: jespelage
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PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	34	161

DESIGN AGENCY

MODEL: 115160_GP106 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 3:50:57 PM USER: jespelage
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DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	35	161

DESIGN AGENCY

PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP107 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:24:12 AM USER: jespelage
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SHEET 36 TOTAL 161	PROJECT ID 115160	REVIEWER AJS 03/24/23	DESIGNER ARW

DESIGN AGENCY

PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP108 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:24:16 AM USER: jespelage
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SHEET	TOTAL
37	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: ARW

DESIGN AGENCY

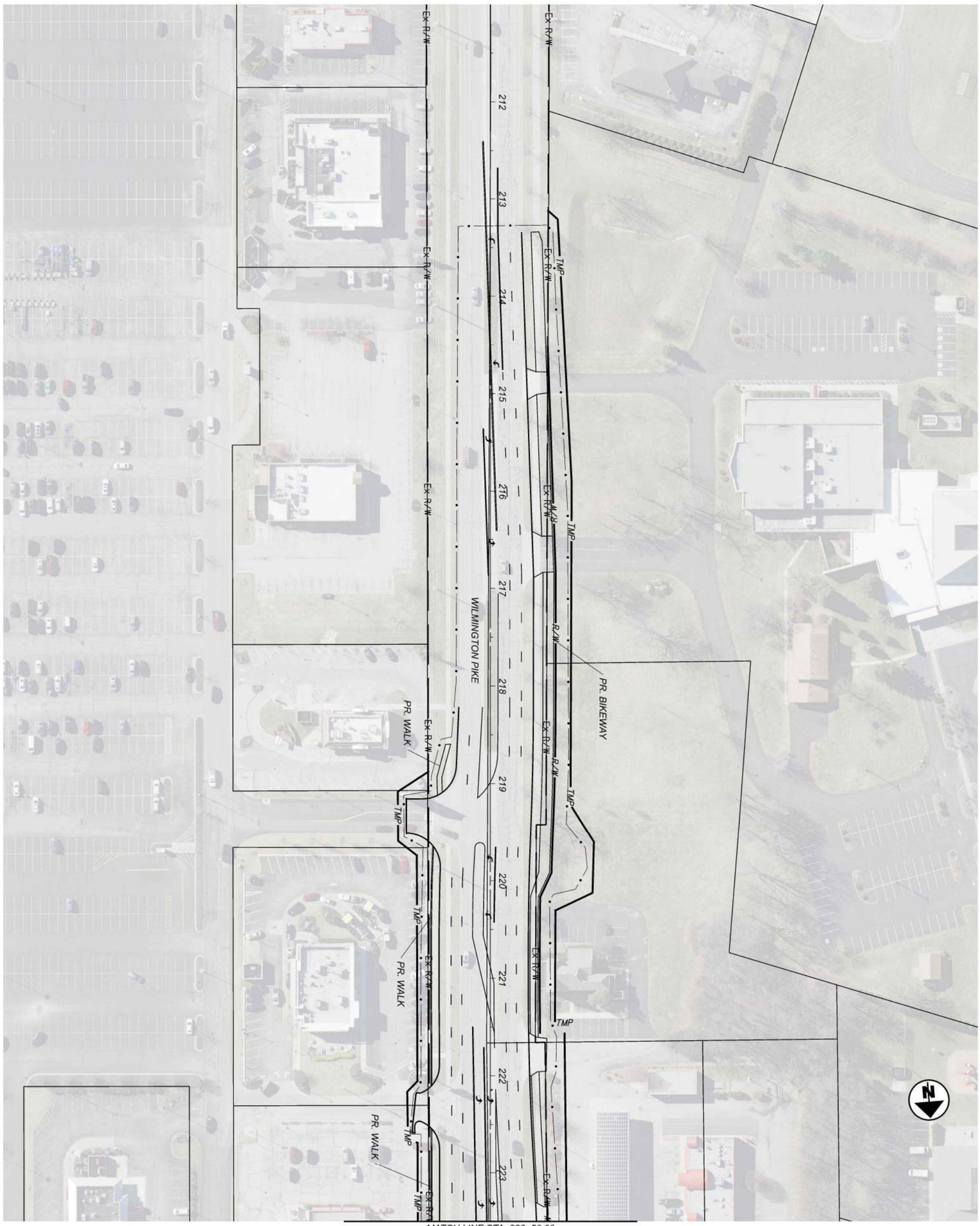
PLAN-I-675
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET

0 50

25 100

MODEL: 115160_GP201 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:25:32 AM USER: jespelage
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MATCH LINE STA. 223+50.00

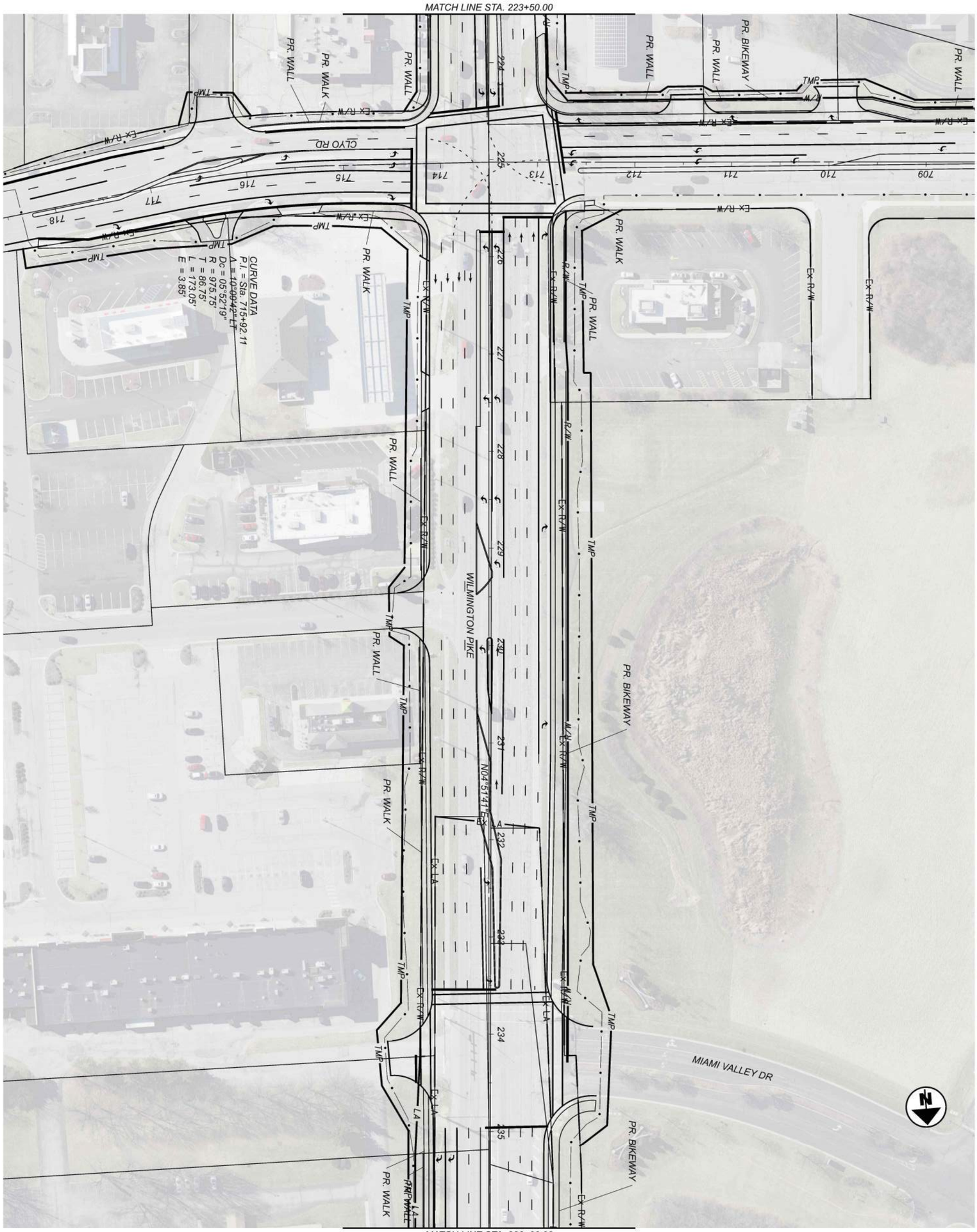
DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	38	161

DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP202 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:26:44 AM USER: jespelage
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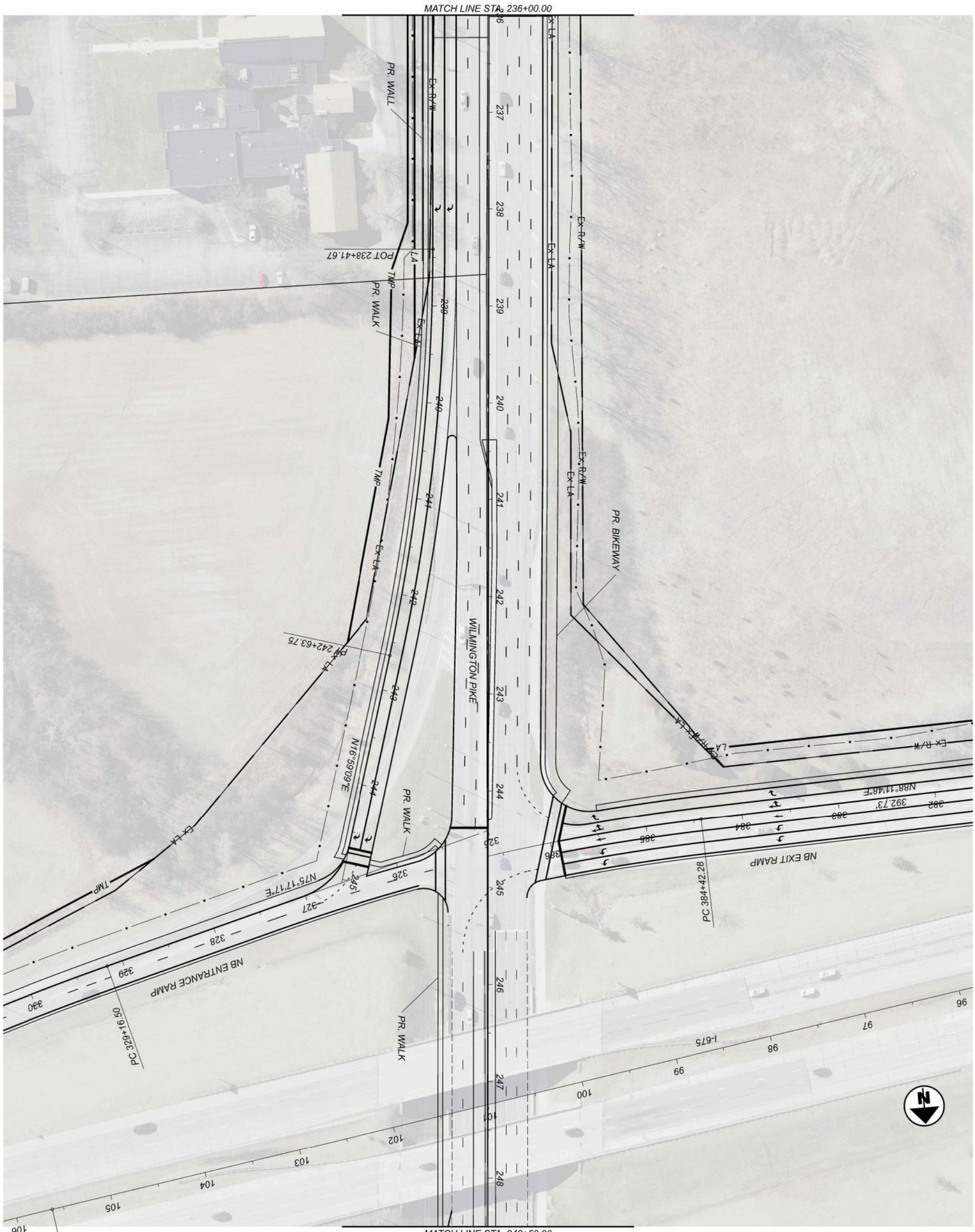
DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	39	161

DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP203 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:27:05 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP203-2.dgn



SHEET	TOTAL
40	161

PROJECT ID: 115160

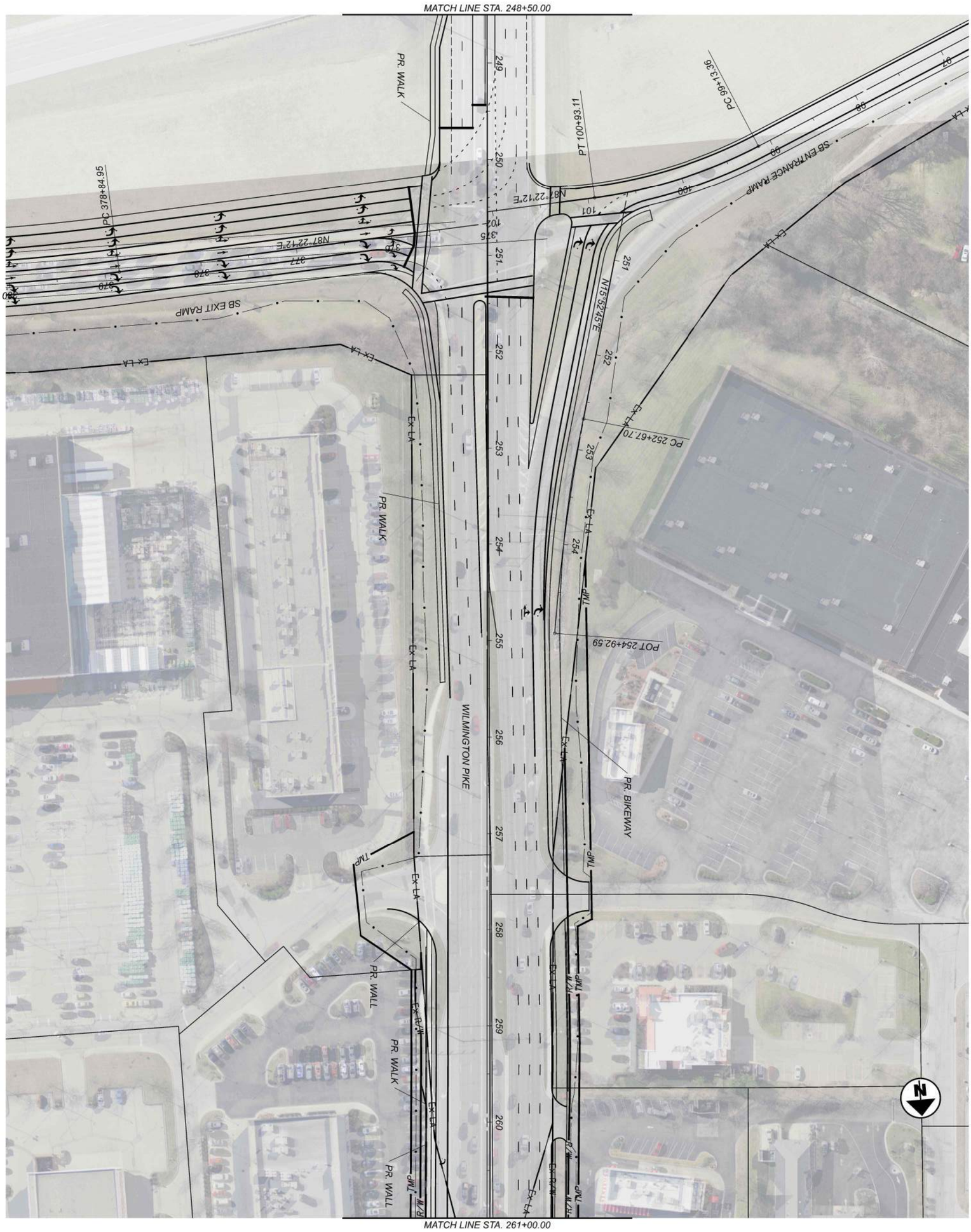
DESIGNER: ARW
REVIEWER: AJS 03/24/23

DESIGN AGENCY

PLAN-WILMINGTON PK
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP204 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:27:14 AM USER: jespelage
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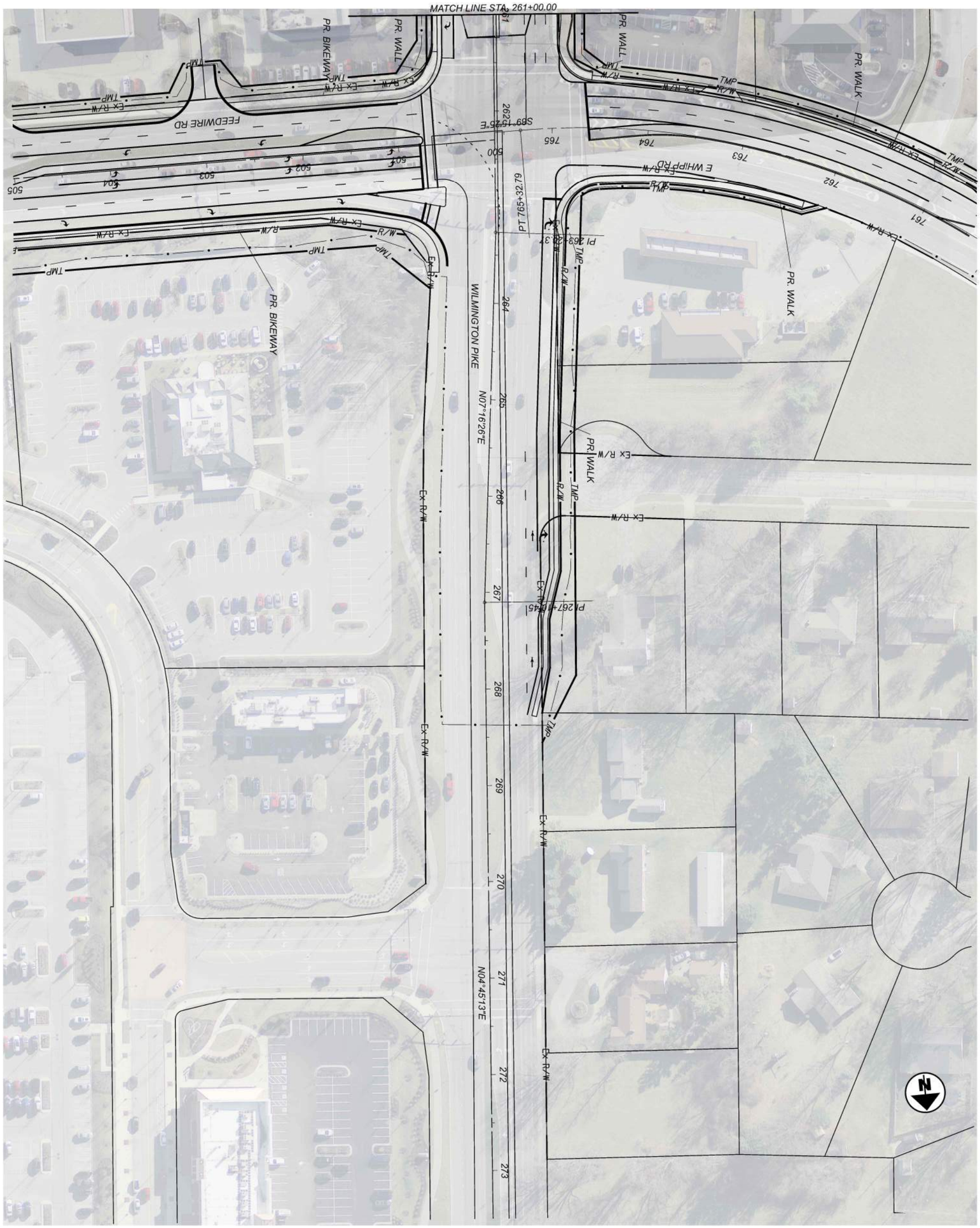
PLAN-WILMINGTON PK
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

SHEET	TOTAL
41	161

PROJECT ID: 115160
REVIEWER: AJS 03/24/23
DESIGNER: ARW
DESIGN AGENCY

MODEL: 115160_GP205 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:27:23 AM USER: jespelage
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SHEET	TOTAL
42	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: ARW

DESIGN AGENCY

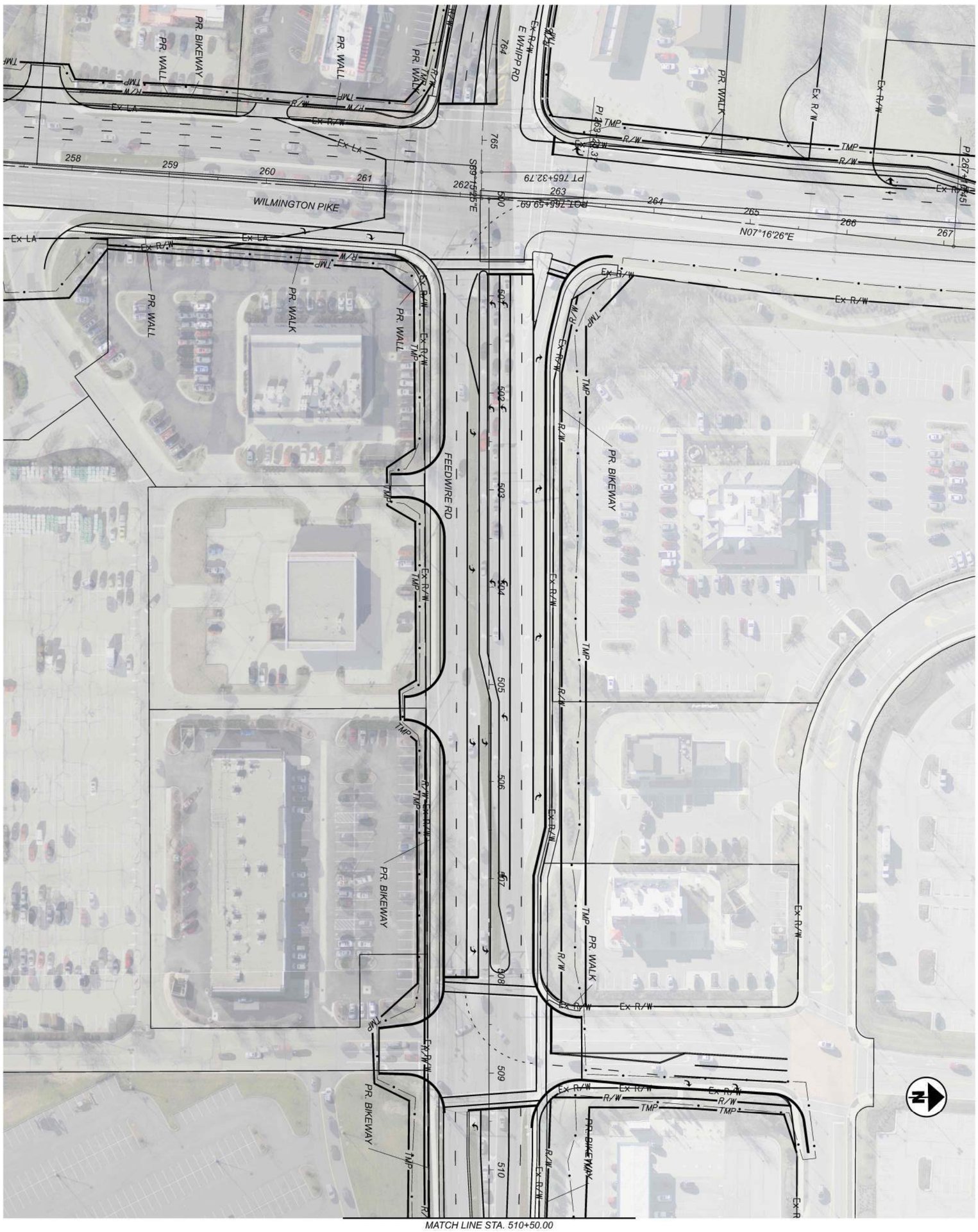
PLAN-WILMINGTON PK
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET

0 50

25 100

MODEL: 115160_GP501 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:27:32 AM USER: jespelage
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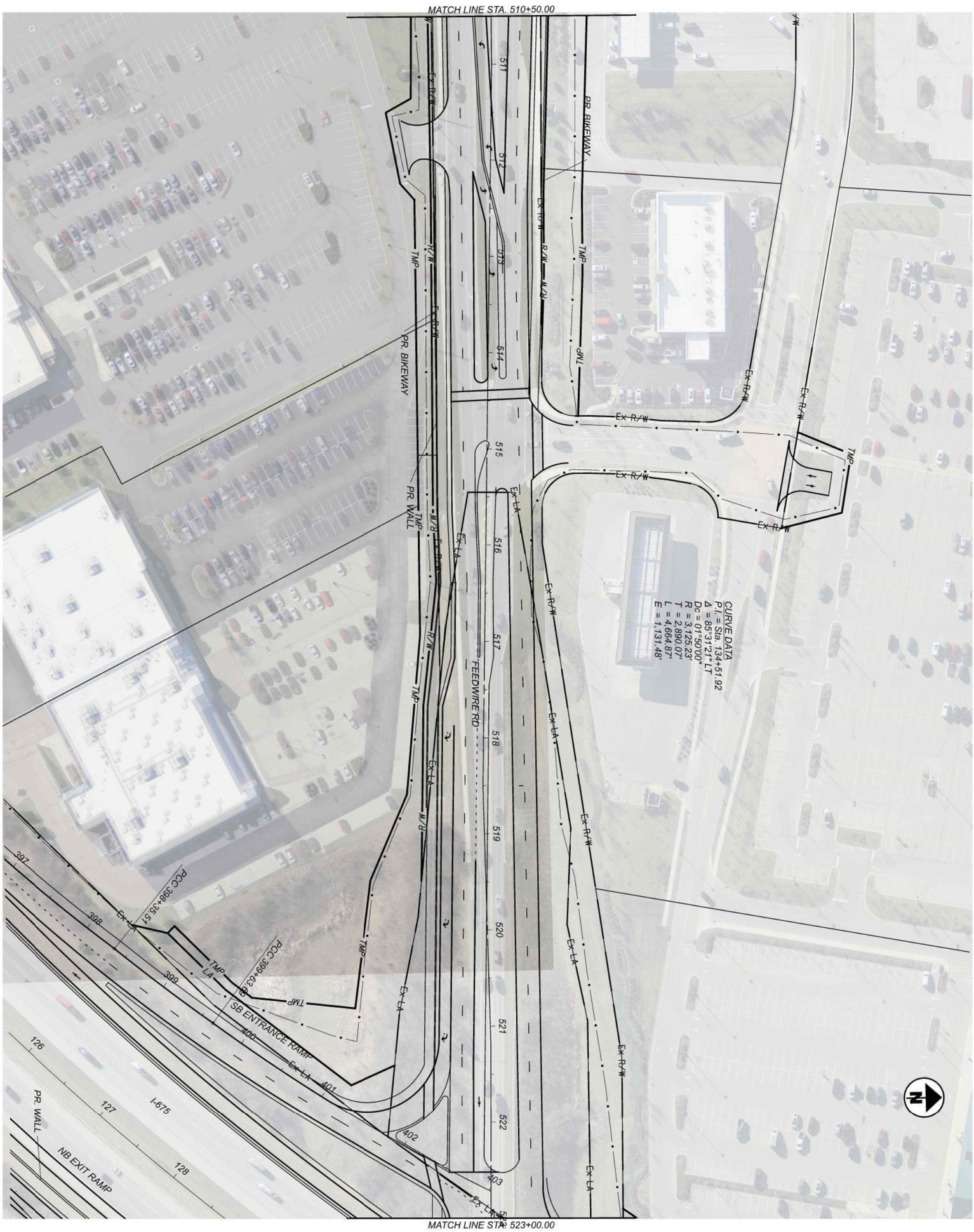
DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	43	161

DESIGN AGENCY

PLAN-FEEDWIRE RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP502 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:27:40 AM USER: jespelage
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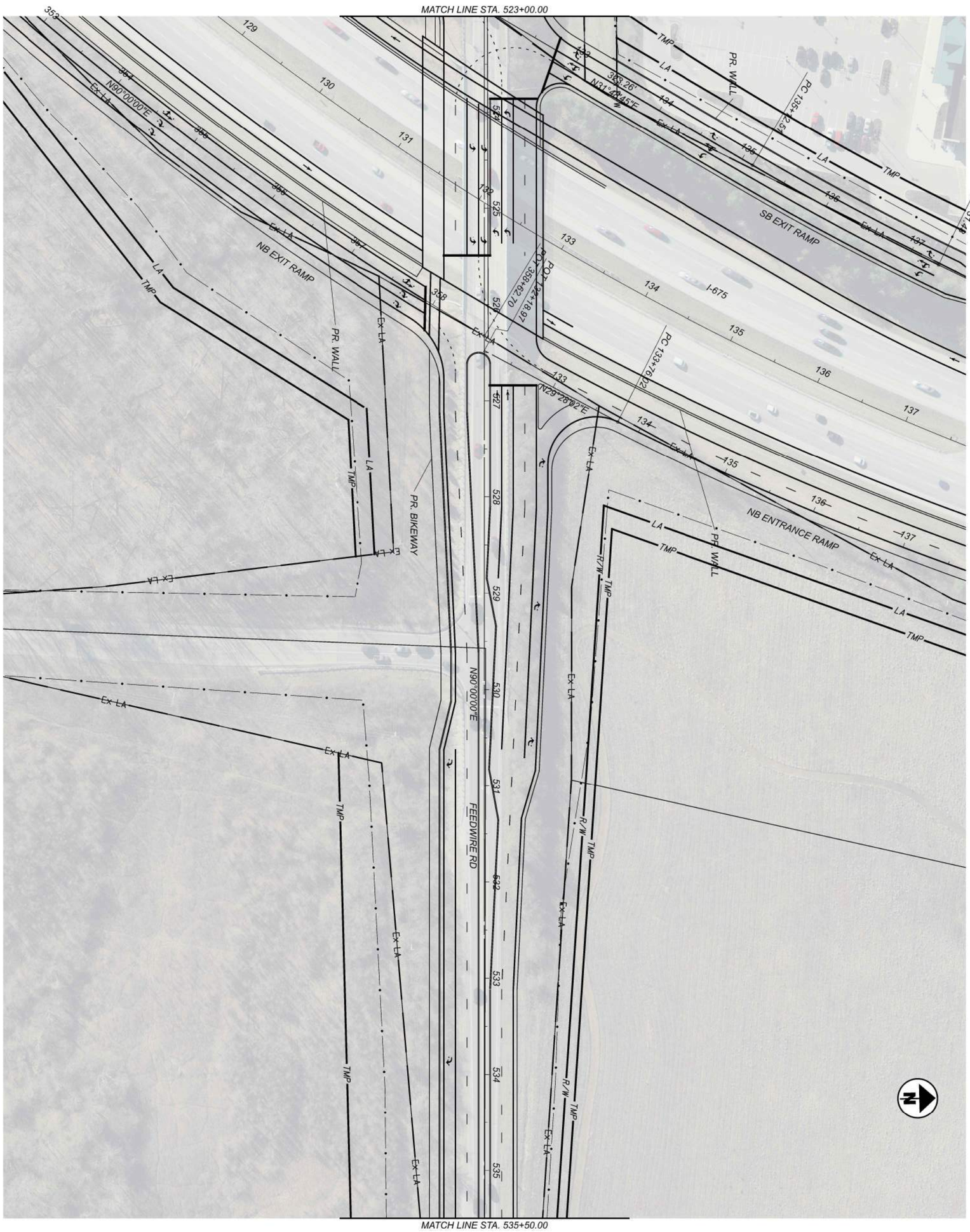
PLAN-FEEDWIRE RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

SHEET	TOTAL
44	161

PROJECT ID: 115160
REVIEWER: AJS 03/24/23
DESIGNER: ARW
DESIGN AGENCY

MODEL: 115160_GP503 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:27:49 AM USER: jespelage
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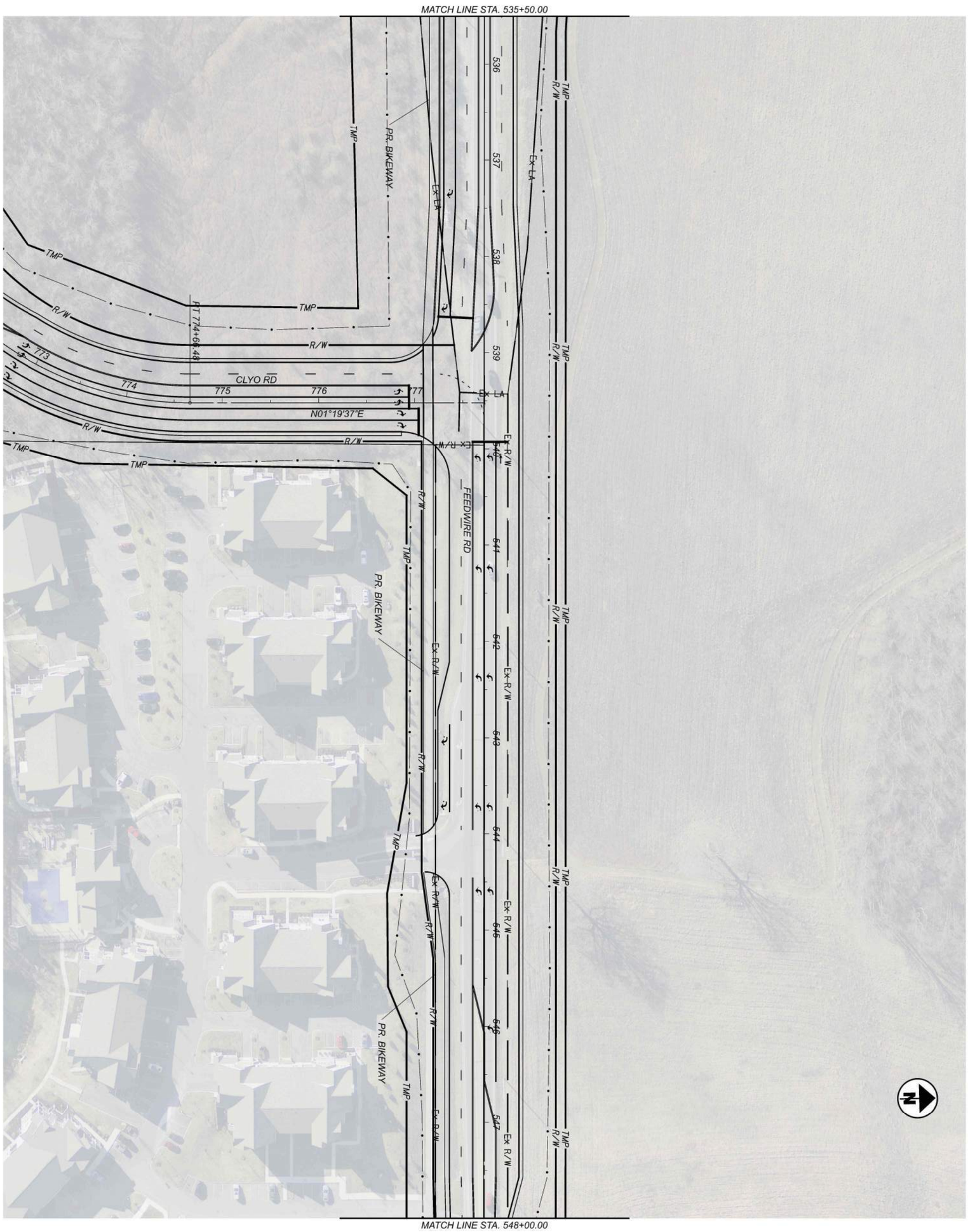
DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	45	161

DESIGN AGENCY

PLAN-FEEDWIRE RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP504 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:27:58 AM USER: jespelage
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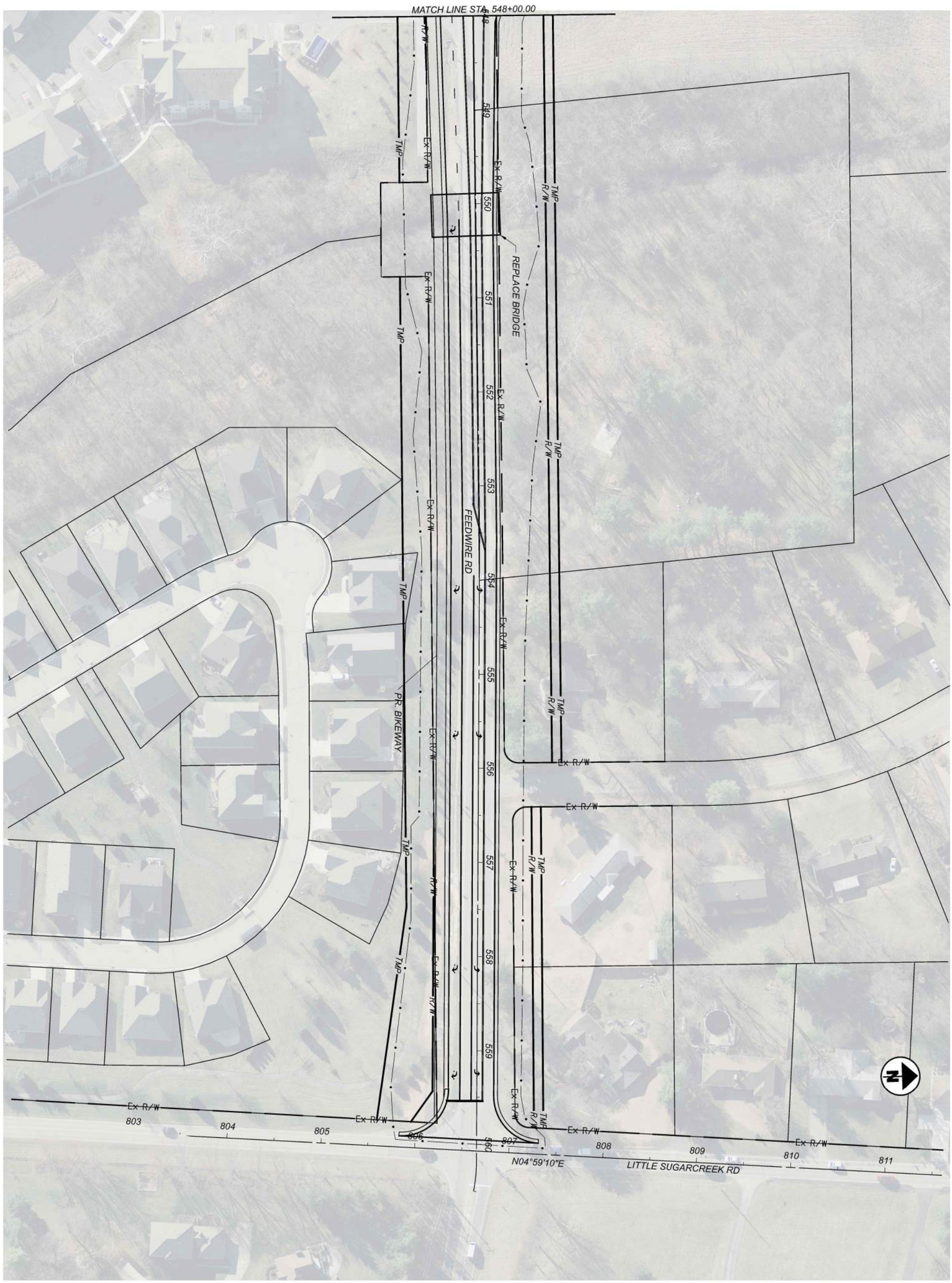


DESIGNER ARW
REVIEWER AJS 03/24/23
PROJECT ID 115160
SHEET 46 TOTAL 161
DESIGN AGENCY

PLAN-FEEDWIRE RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP505 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:28:02 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP505-2.dgn



SHEET	TOTAL
47	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: ARW

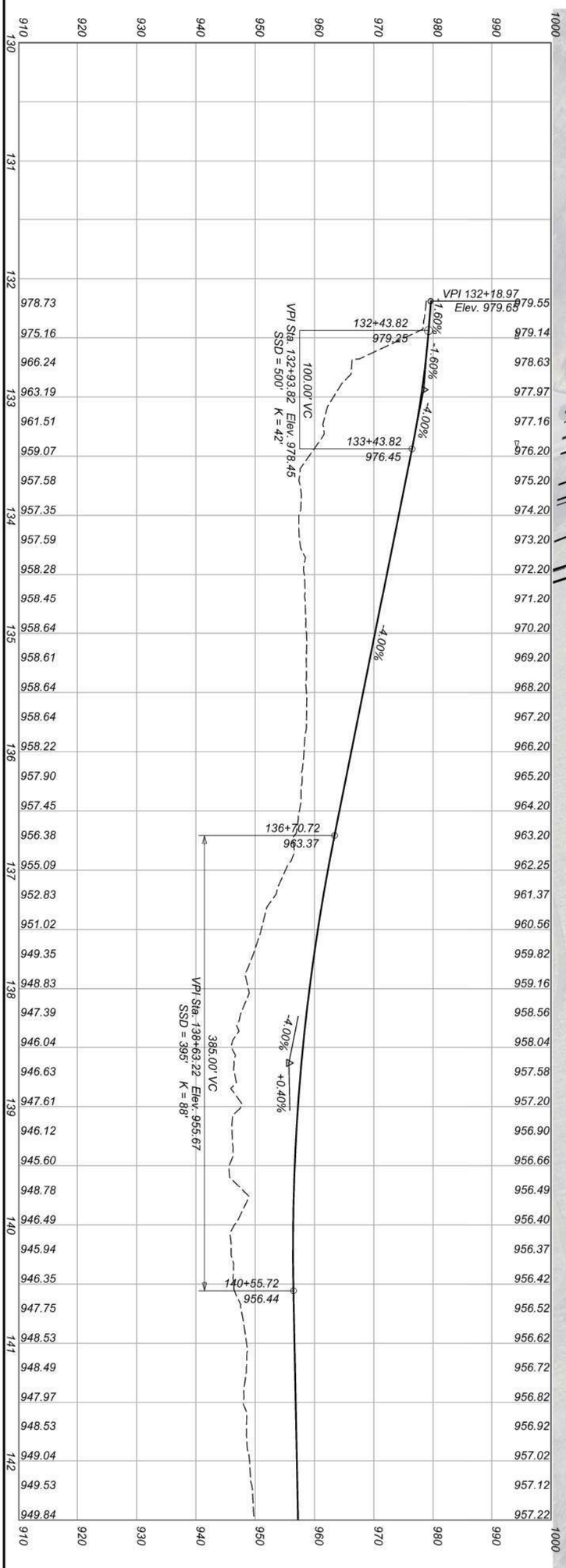
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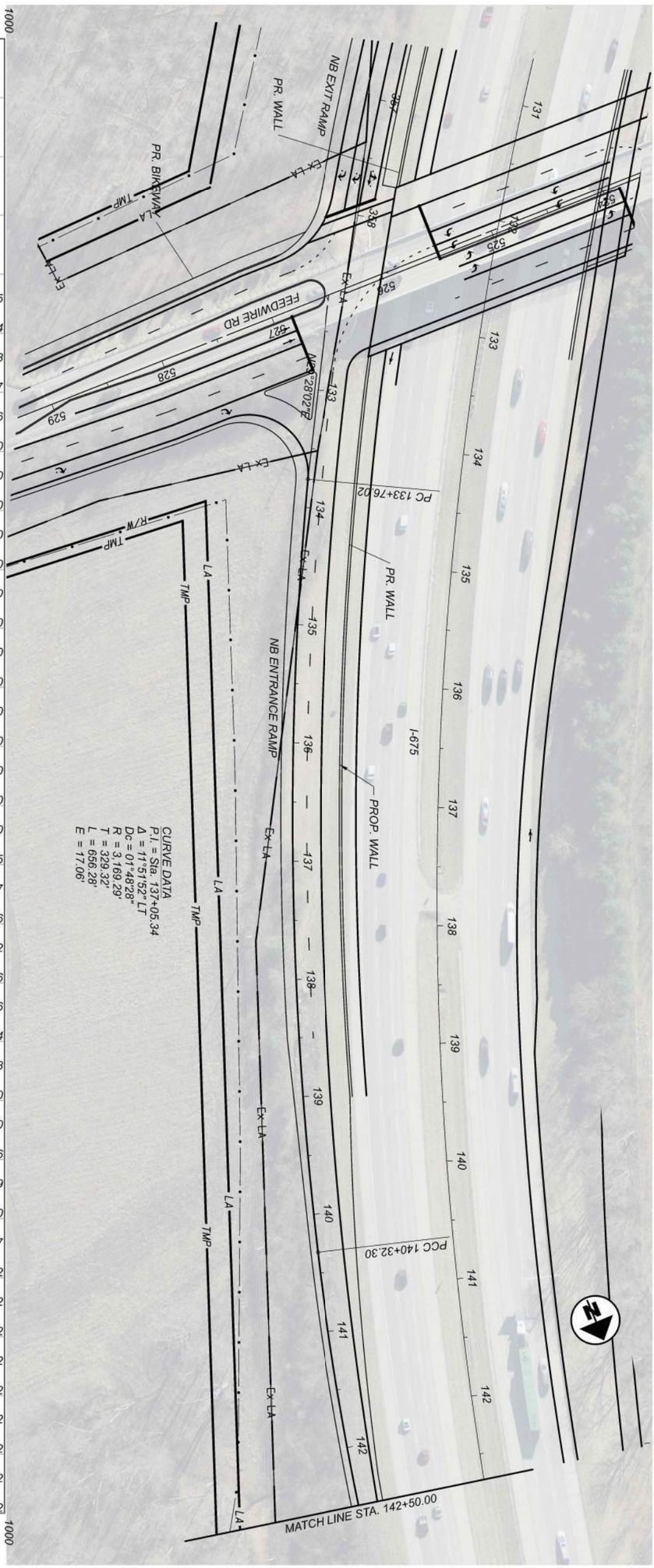
PLAN-FEEDWIRE RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET

0 50

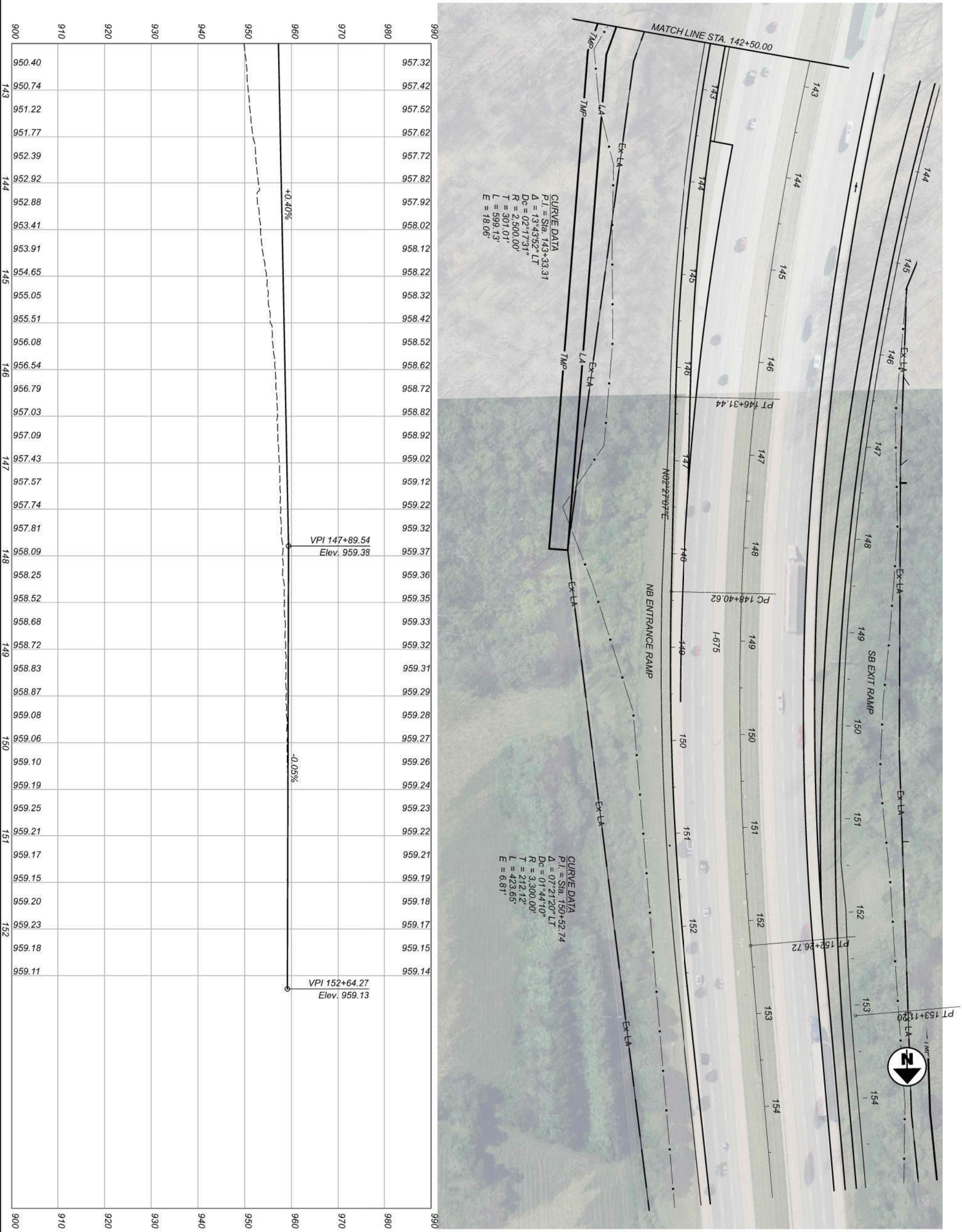
25 100





DESIGNER	DESIGN AGENCY	PLAN AND PROFILE-NB ENTRANCE RAMP ALTERNATIVE 2	HORIZONTAL SCALE IN FEET 0 50 25 100
ARW			
REVIEWER AJS 03/24/23			
PROJECT ID 115160			
SHEET 48 TOTAL 161			

MODEL: 115160_GP602 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:28:21 AM USER: jespelage
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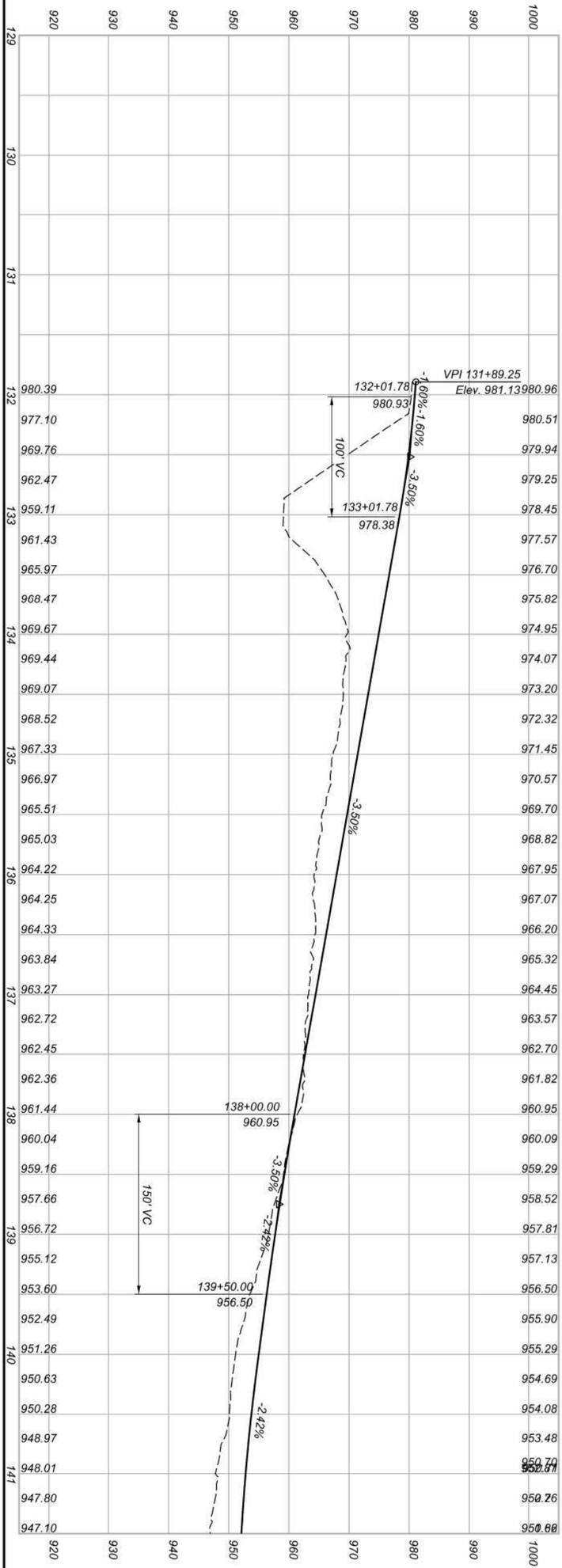
DESIGNER	REVIEWER	DESIGN AGENCY	SHEET	TOTAL
ARW	AJS 03/24/23		49	161

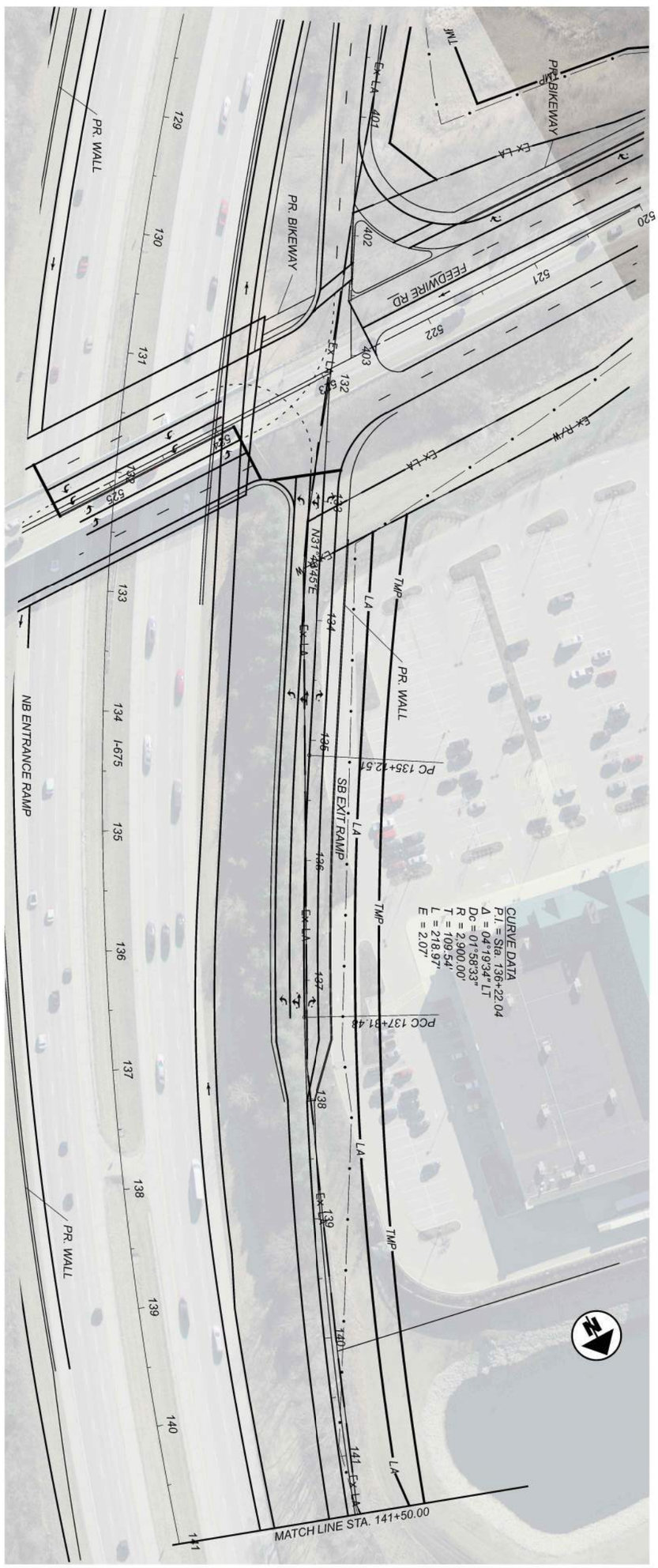
PROJECT ID 115160

PLAN AND PROFILE-NB ENTRANCE RAMP
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP65I PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:28:32 AM USER: jespelage
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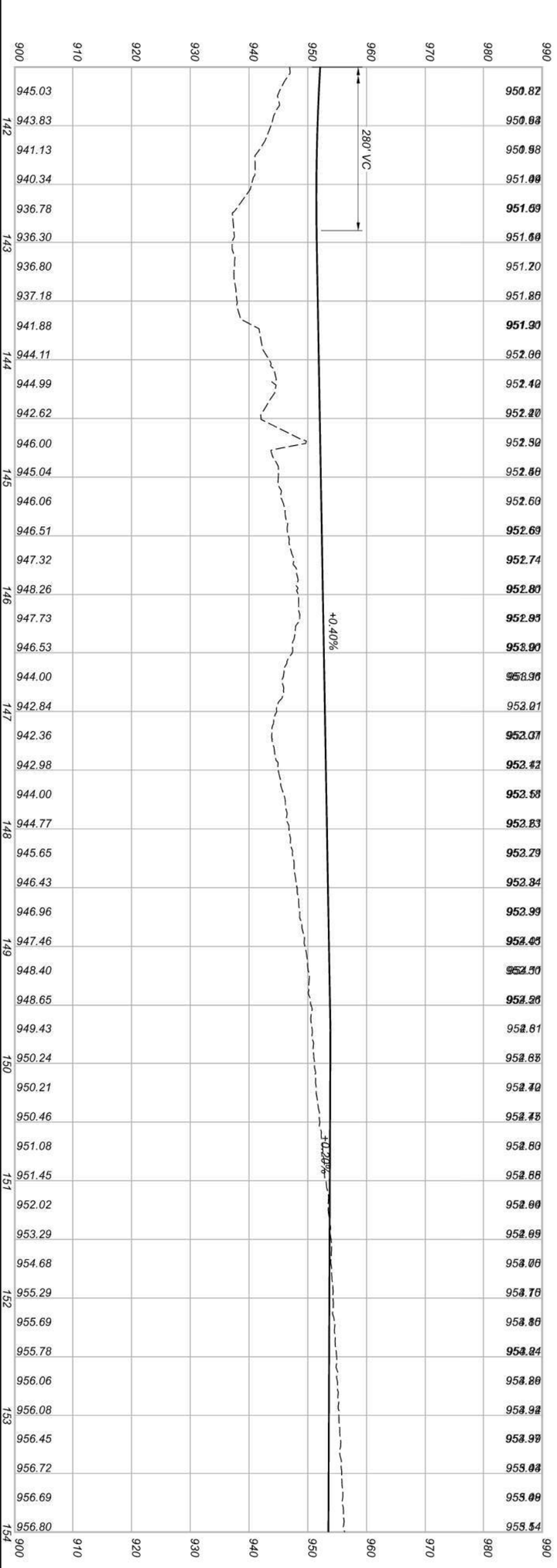


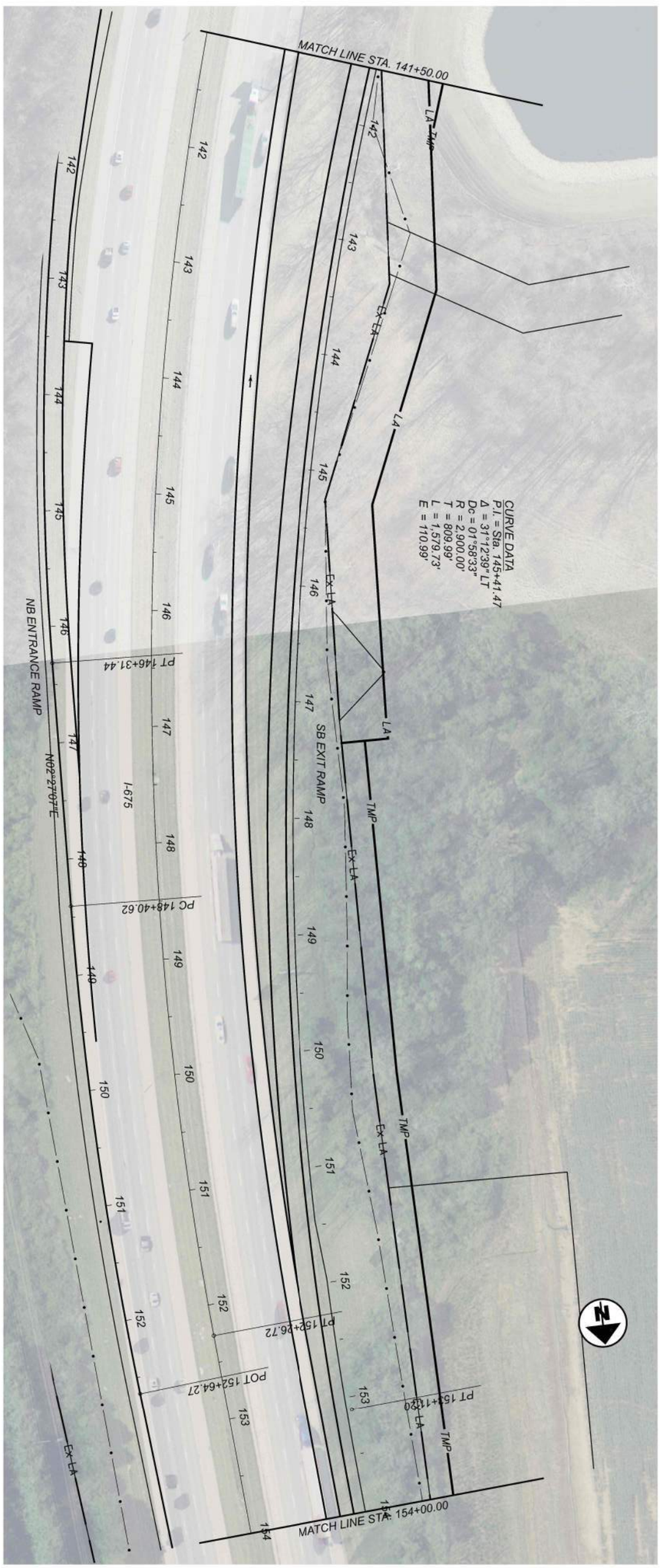
PLAN AND PROFILE-SB EXIT RAMP
ALTERNATIVE 2

DESIGNER: ARW
REVIEWER: AJS 03/24/23
PROJECT ID: 115160
SHEET: 50 TOTAL: 161
DESIGN AGENCY

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP652 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:29:15 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP652-2.dgn





PLAN AND PROFILE-SB EXIT RAMP
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

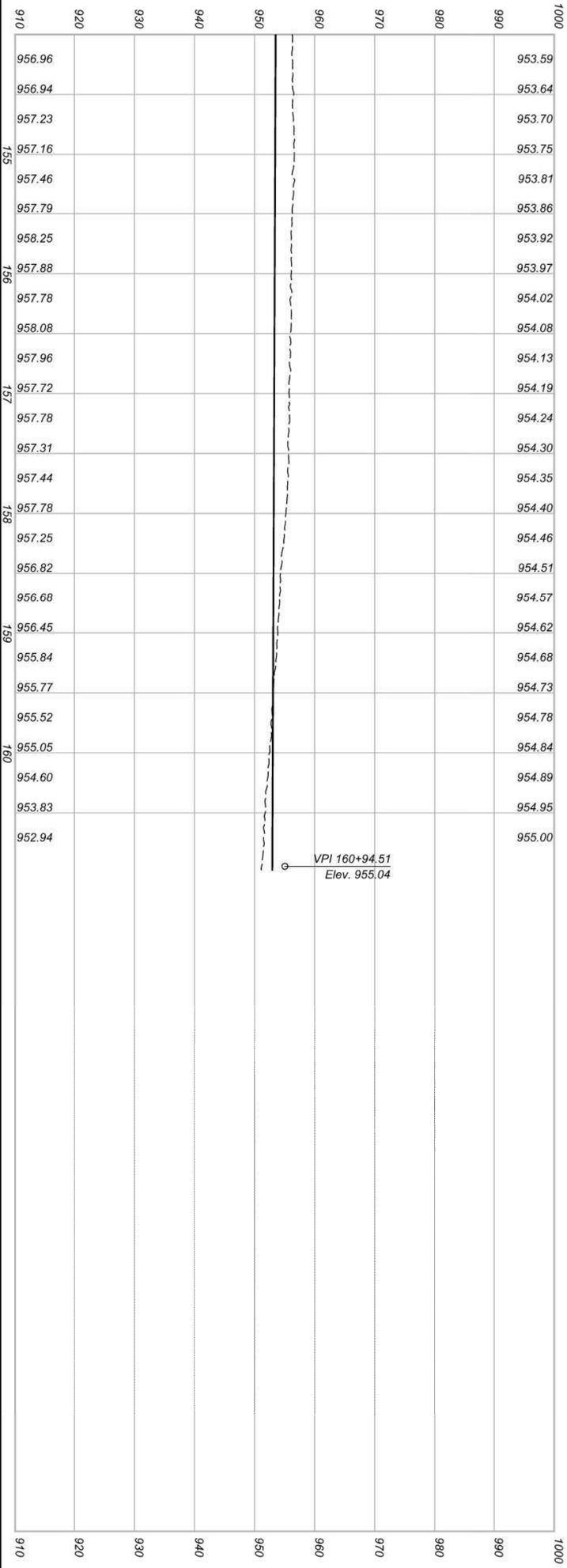
SHEET	TOTAL
51	161

PROJECT ID: 115160

REVIEWER: AJS 03/24/23

DESIGNER: ARW

DESIGN AGENCY



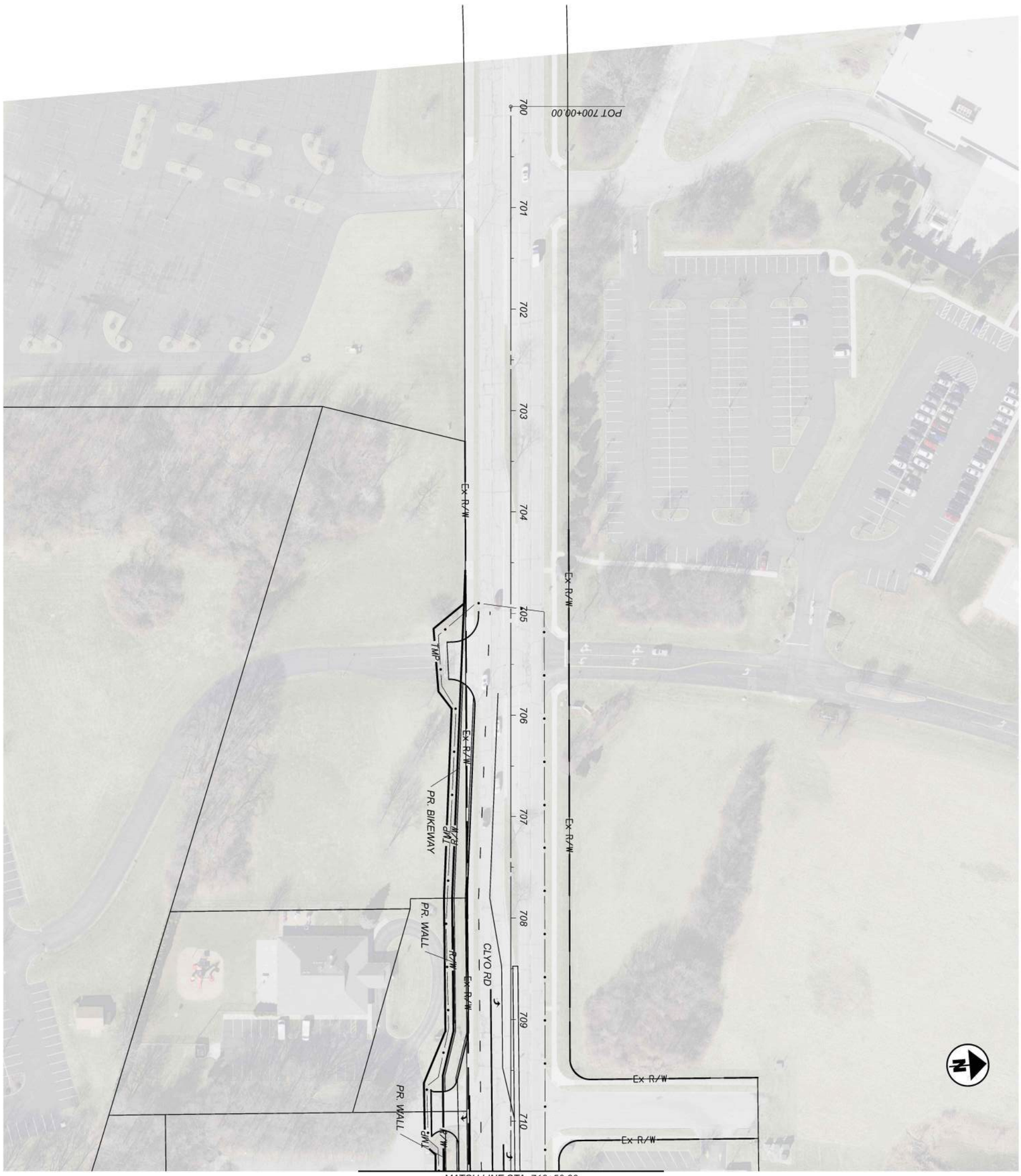


PLAN AND PROFILE-SB EXIT RAMP
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER ARW
REVIEWER AJS 03/24/23
PROJECT ID 115160
SHEET 52 TOTAL 161
DESIGN AGENCY

MODEL: 115160_GP701 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:36:30 AM USER: jespelage
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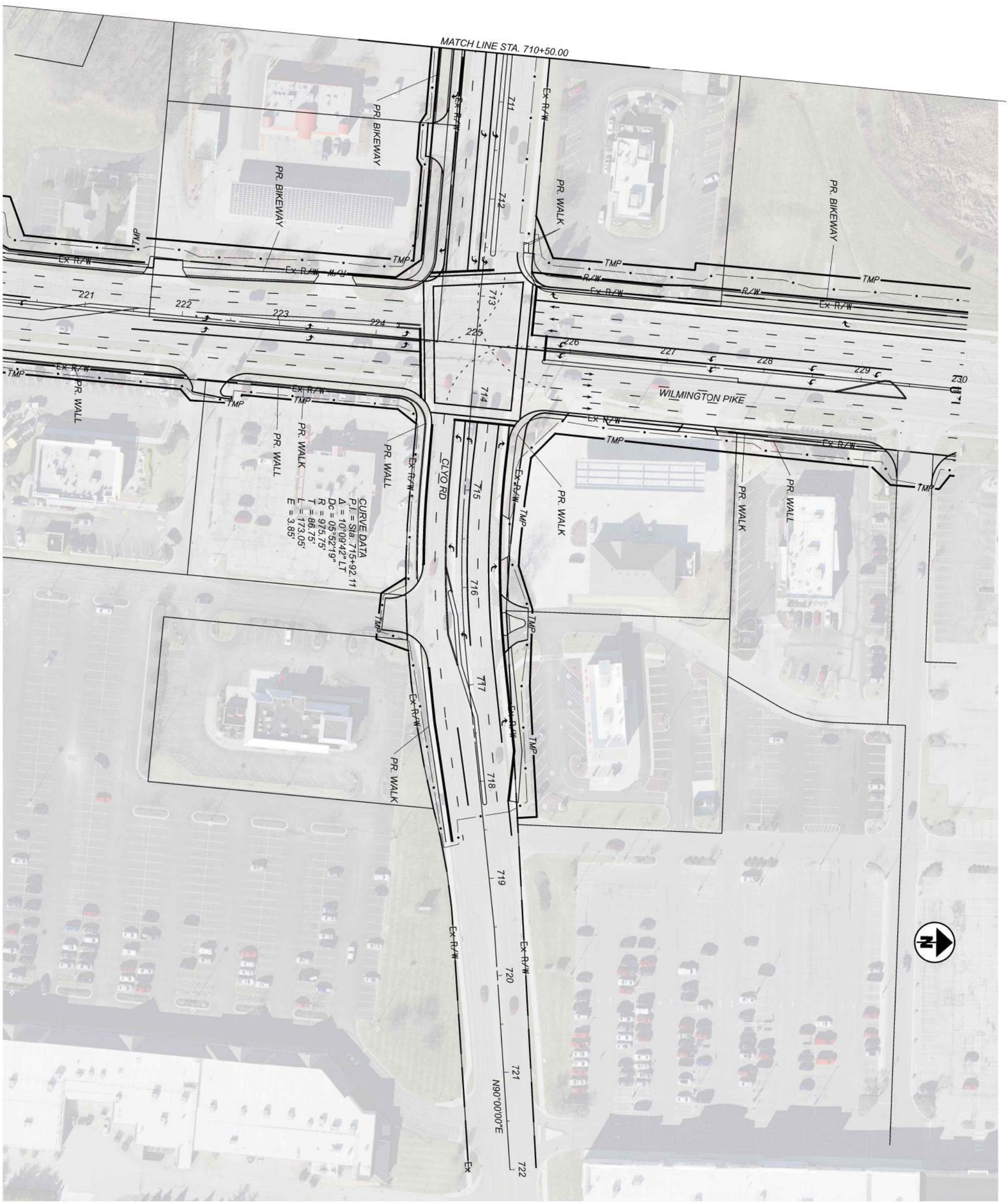
MATCH LINE STA. 710+50.00

SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
53	161	115160	AJS 03/24/23	ARW	

PLAN-CLYO RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP702 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:32:44 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP702-2.dgn

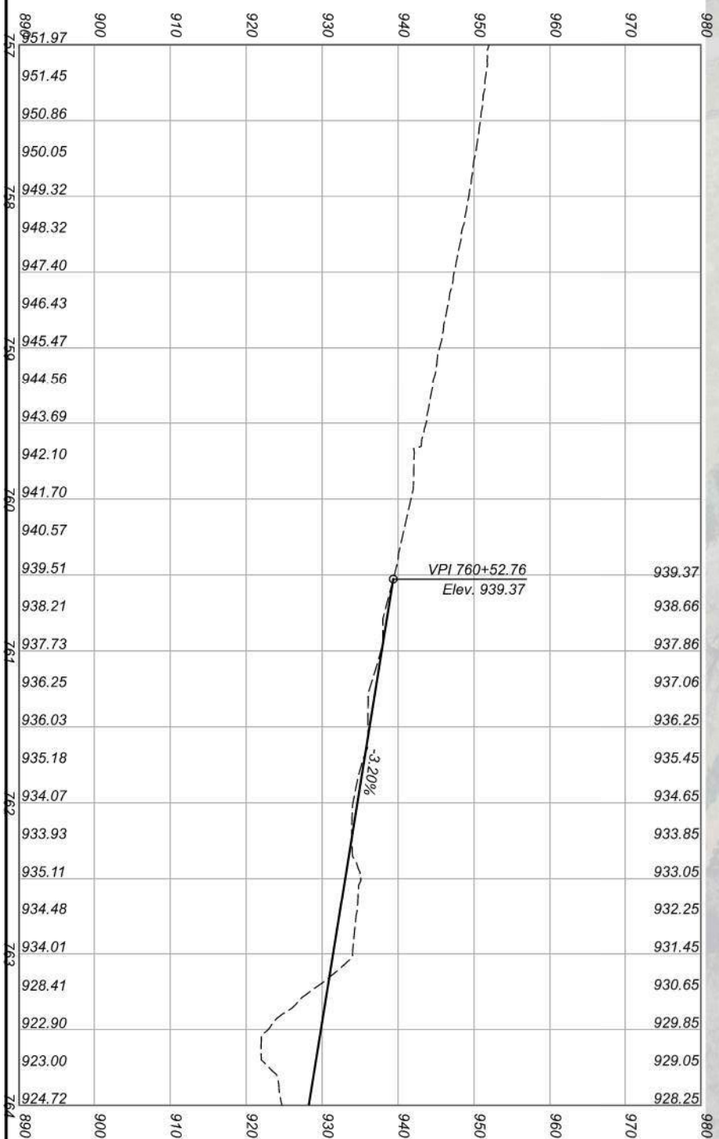


SHEET	TOTAL	PROJECT ID	DESIGNER	REVIEWER	DESIGN AGENCY
54	161	115160	ARW	AJS 03/24/23	

PLAN-CLYO RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: 115160_GP703 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 2:56:58 PM USER: jespelage
Q:\Montgomery Cnty TID\011795 3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP703-2.dgn

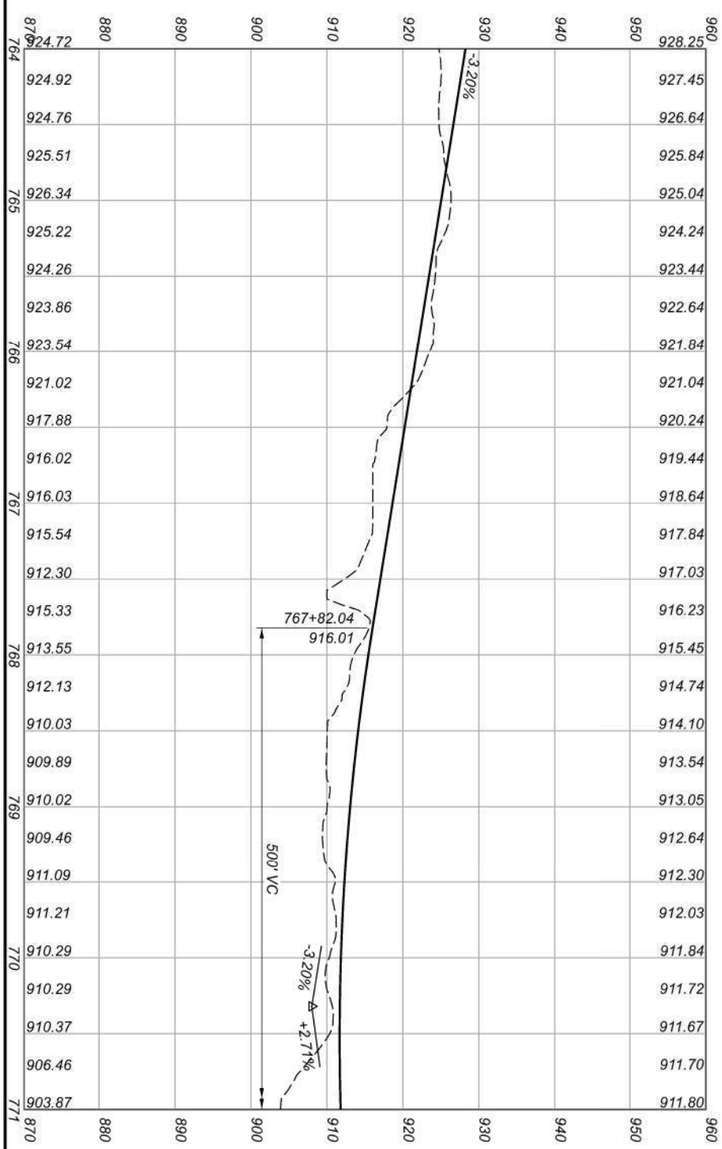




PLAN AND PROFILE-CLYO RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGNER ARW
REVIEWER JRE 03/24/23
PROJECT ID 115160
SHEET 55 TOTAL 161
DESIGN AGENCY





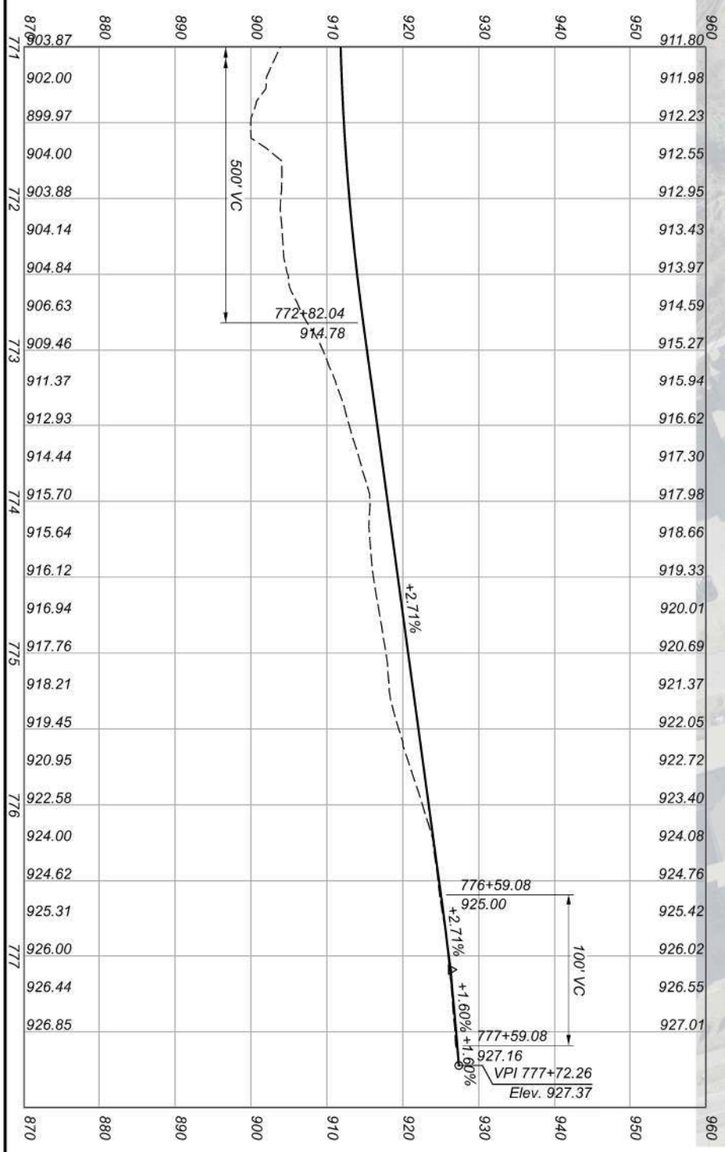
DESIGNER	REVIEWER	PROJECT ID	SHEET	TOTAL
ARW	AJS 03/24/23	115160	56	161

DESIGN AGENCY

PLAN AND PROFILE-CLYO RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET

0 50
25 100





SHEET	TOTAL	PROJECT ID	REVIEWER	DESIGNER	DESIGN AGENCY
57	161	115160	AJS 03/24/23	ARW	

PLAN AND PROFILE-CLYO RD.
ALTERNATIVE 2

HORIZONTAL SCALE IN FEET

0 50
25 100

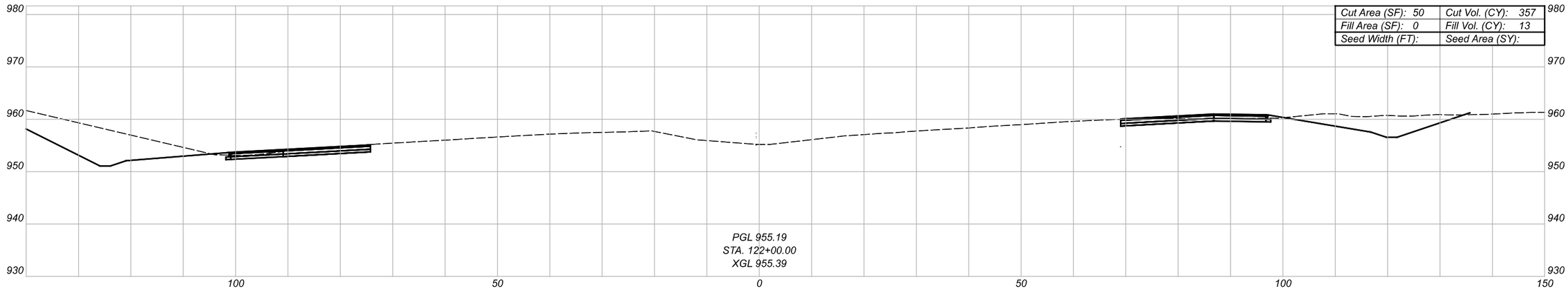
MODEL: 115160_GP75I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:33:04 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_GP75I-2.dgn



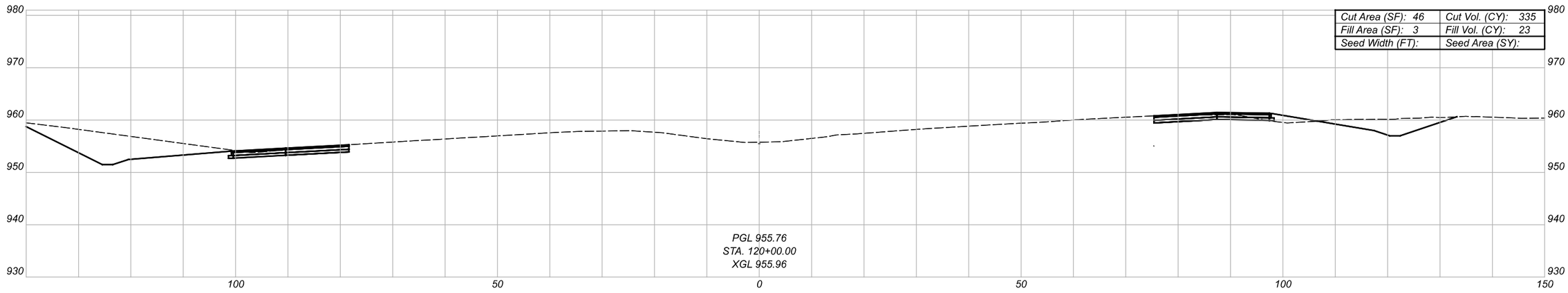
NOTE: SHEET 59 NOT USED.

SHEET 58 / TOTAL 161	PROJECT ID 115160	DESIGNER ARW REVIEWER AJS 03/24/23	DESIGN AGENCY	PLAN-E WHIPP RD. ALTERNATIVE 2

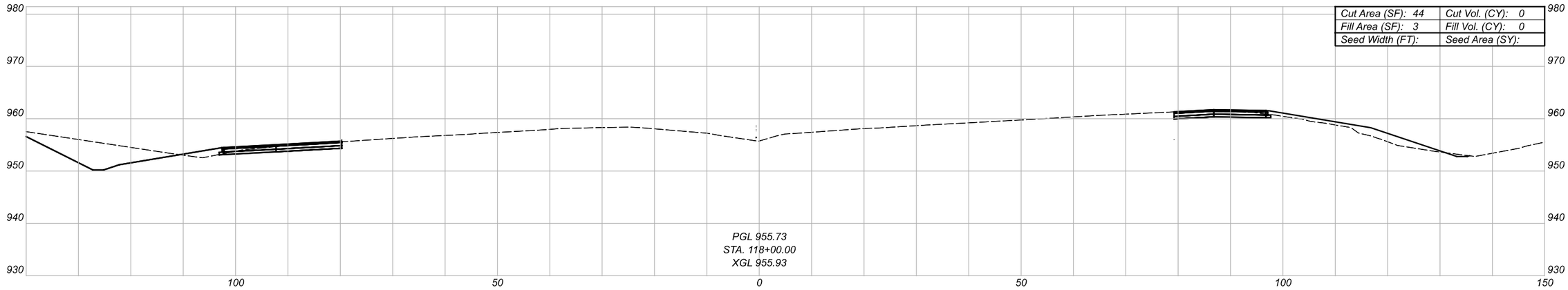
HORIZONTAL SCALE IN FEET
0 50
25 100



Cut Area (SF): 50	Cut Vol. (CY): 357
Fill Area (SF): 0	Fill Vol. (CY): 13
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 46	Cut Vol. (CY): 335
Fill Area (SF): 3	Fill Vol. (CY): 23
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 44	Cut Vol. (CY): 0
Fill Area (SF): 3	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XSIOI-I PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 11:45:27 AM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XSIOI-IB.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

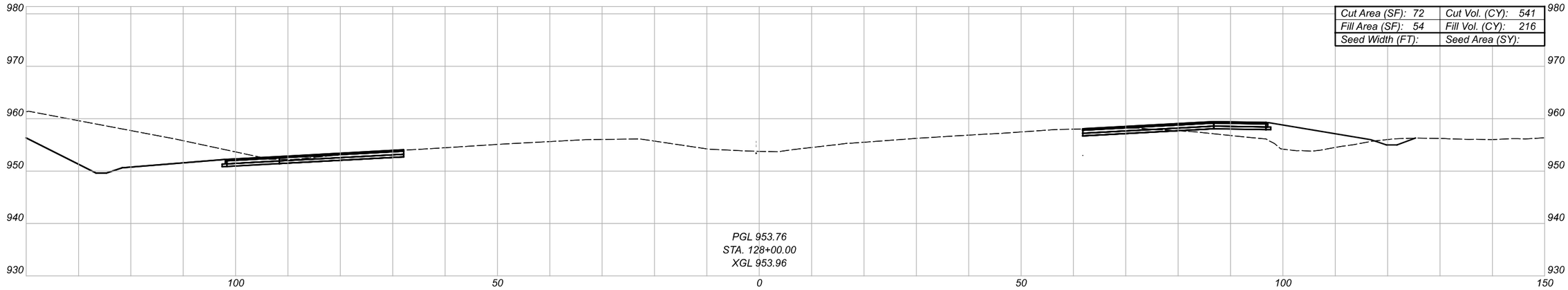
DESIGNER
ARW

REVIEWER
JRE 03/24/23

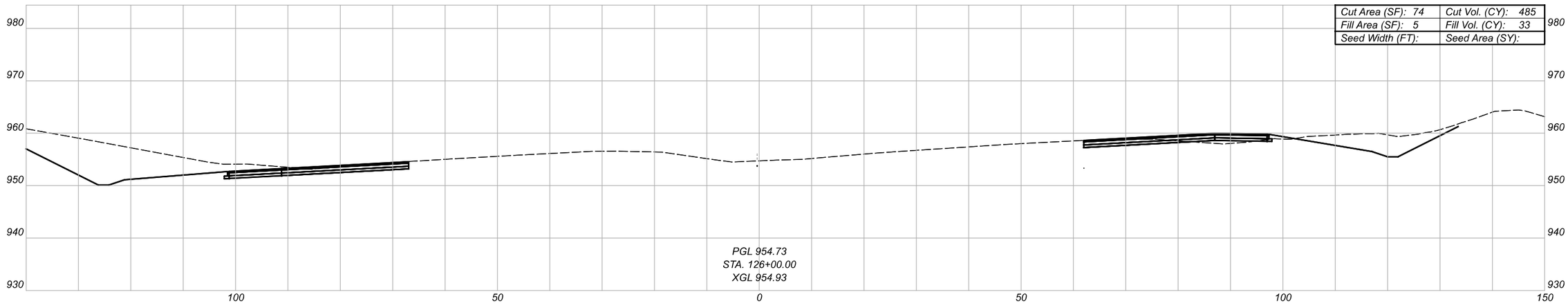
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

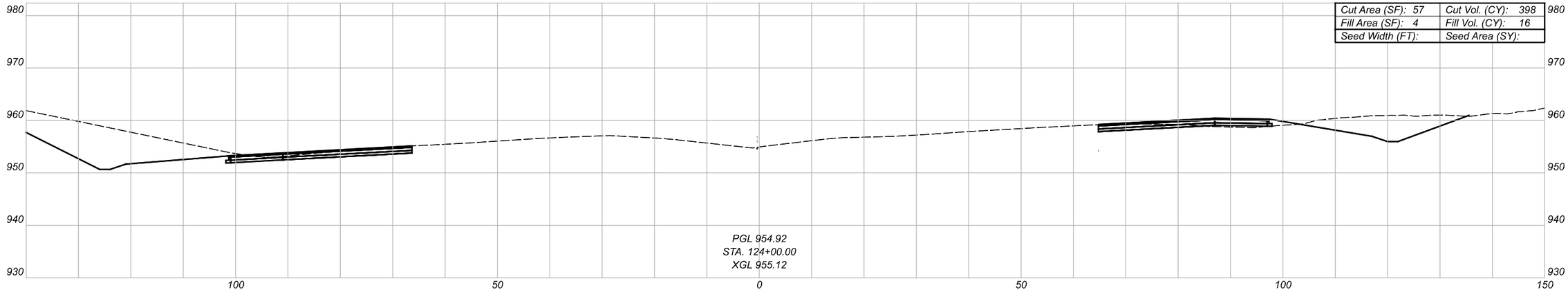
SHEET 60 TOTAL 161



Cut Area (SF): 72	Cut Vol. (CY): 541
Fill Area (SF): 54	Fill Vol. (CY): 216
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 74	Cut Vol. (CY): 485
Fill Area (SF): 5	Fill Vol. (CY): 33
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 57	Cut Vol. (CY): 398
Fill Area (SF): 4	Fill Vol. (CY): 16
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS101-2 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:46:37 AM USER: jespelage
O:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS02-1B.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

Sheet Totals		
Seeding	Cut	Fill
-	-	-

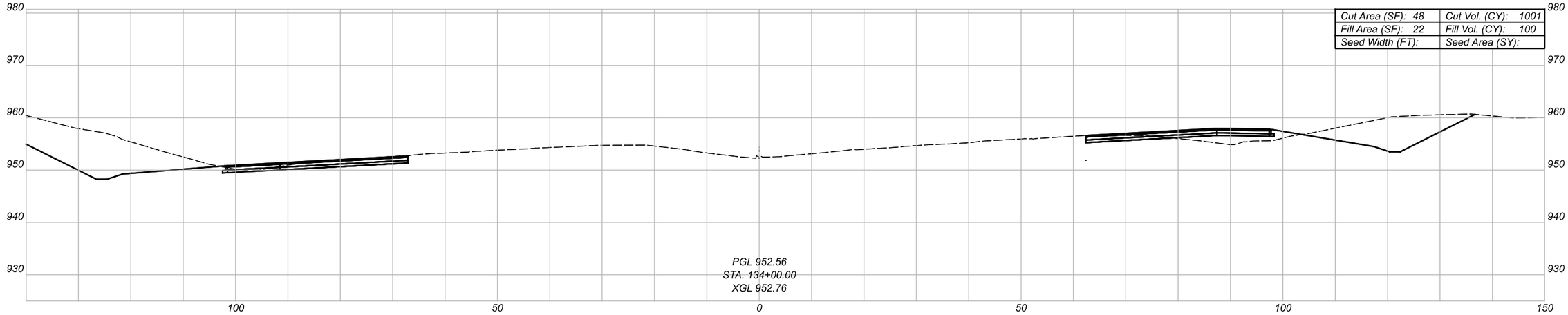
DESIGN AGENCY

DESIGNER
ARW

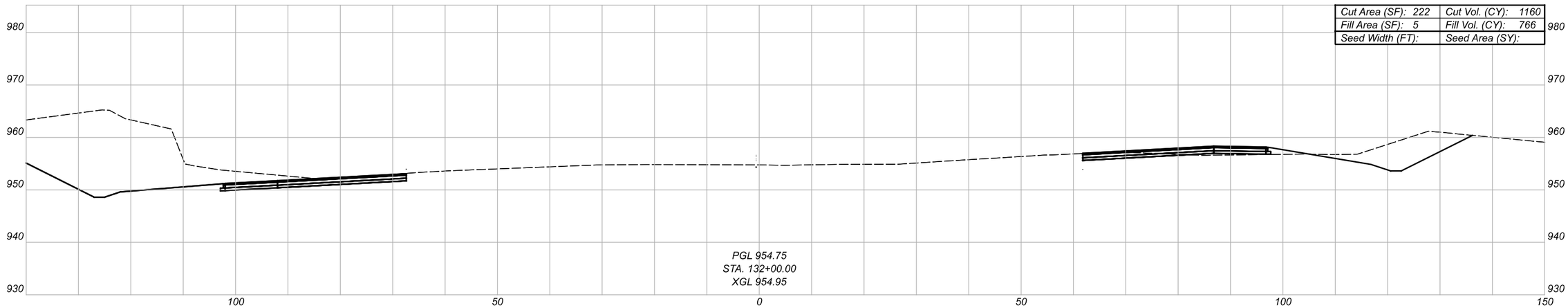
REVIEWER
JRE 03/24/23

PROJECT ID
115160

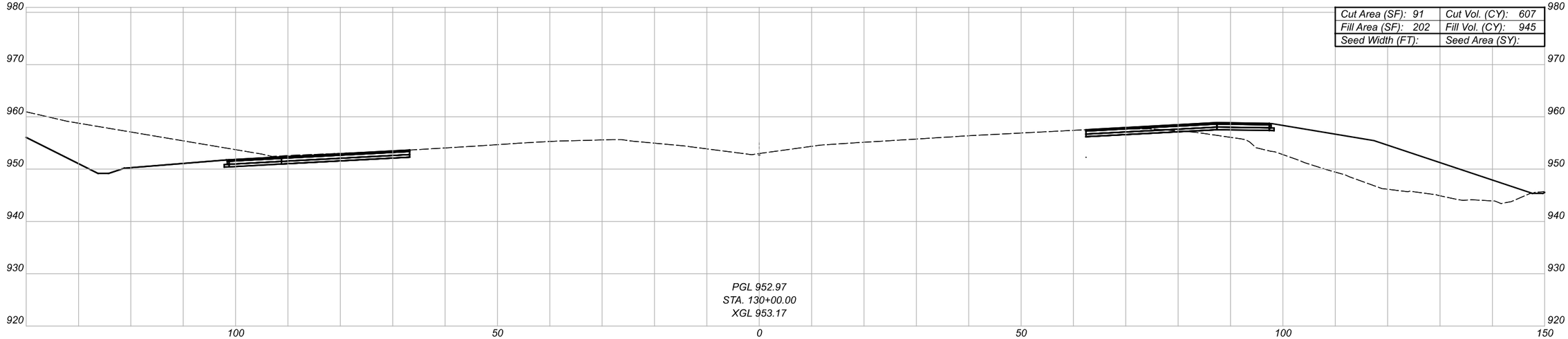
SHEET	TOTAL
61	161



Cut Area (SF): 48	Cut Vol. (CY): 1001
Fill Area (SF): 22	Fill Vol. (CY): 100
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 222	Cut Vol. (CY): 1160
Fill Area (SF): 5	Fill Vol. (CY): 766
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 91	Cut Vol. (CY): 607
Fill Area (SF): 202	Fill Vol. (CY): 945
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS01-3 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:47:43 AM USER: jespelage
G:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS03-1B.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

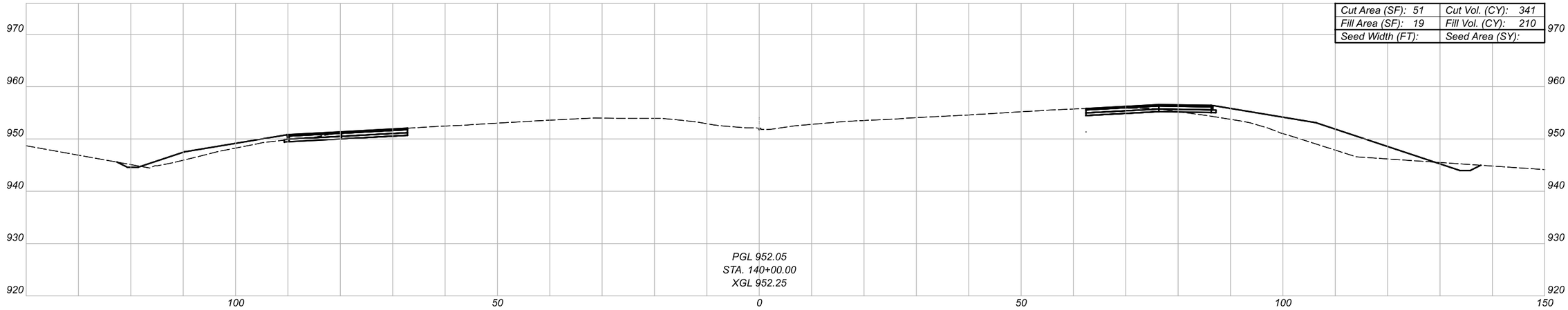
DESIGNER: ARW

REVIEWER: JRE 03/24/23

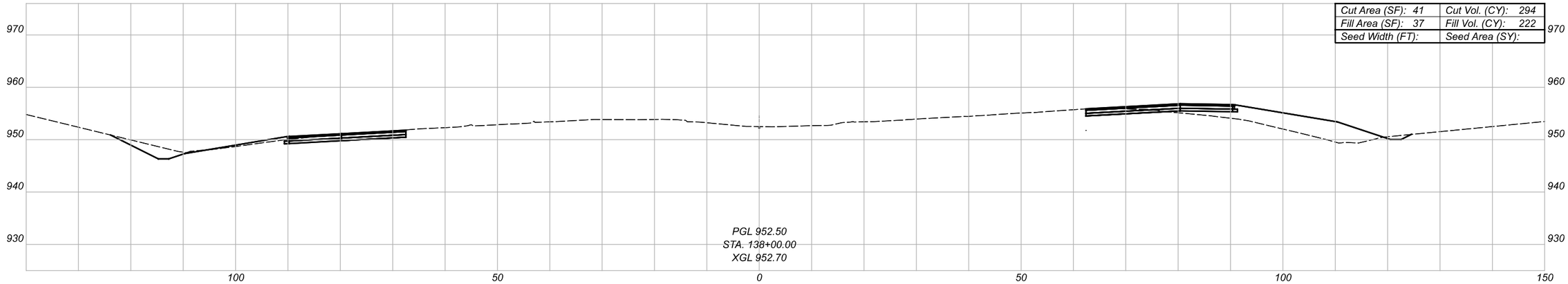
PROJECT ID: 115160

SHEET: 62 TOTAL: 161

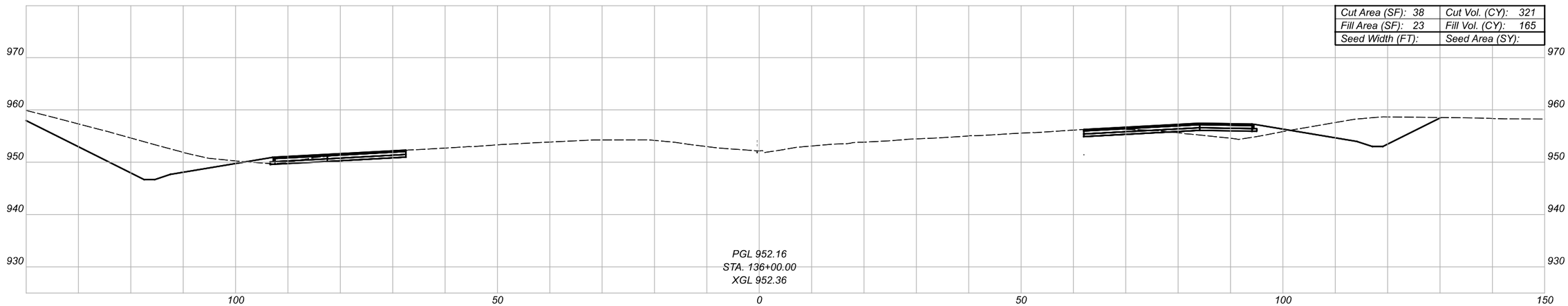
Sheet Totals		
Seeding	Cut	Fill
-	-	-



Cut Area (SF): 51	Cut Vol. (CY): 341
Fill Area (SF): 19	Fill Vol. (CY): 210
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 41	Cut Vol. (CY): 294
Fill Area (SF): 37	Fill Vol. (CY): 222
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 38	Cut Vol. (CY): 321
Fill Area (SF): 23	Fill Vol. (CY): 165
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS01-4 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:48:48 AM USER: jespelage
O:\Montgomery Cnty TID\DI7953A.00 - I-675 Wilmington Interchange\I5160\400-Engineering\Roadway\Sheets\I5160_XS04-IB.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

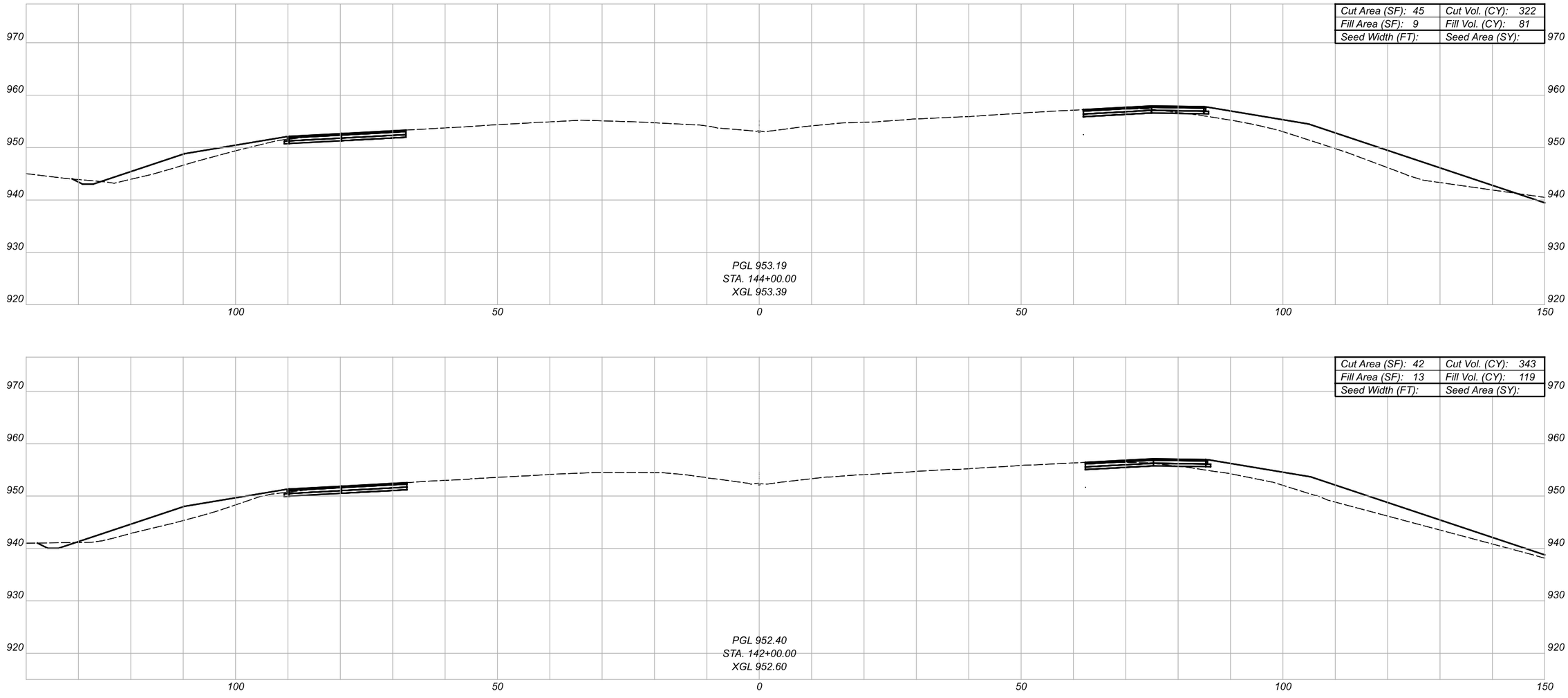
DESIGNER
ARW

REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET	TOTAL
63	161



MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS101-5 PAPERSIZE: 17x11(in) DATE: 9/12/2023 TIME: 11:49:53 AM USER: jespelage
Q:\Montgomery Cnty TID\011795.3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\I15160_XS105-1B.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

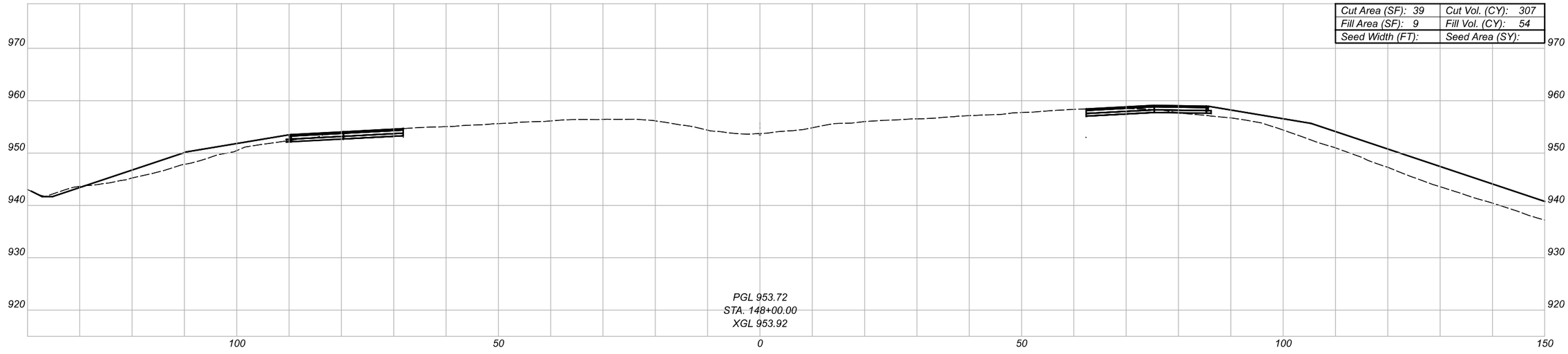
DESIGNER
ARW

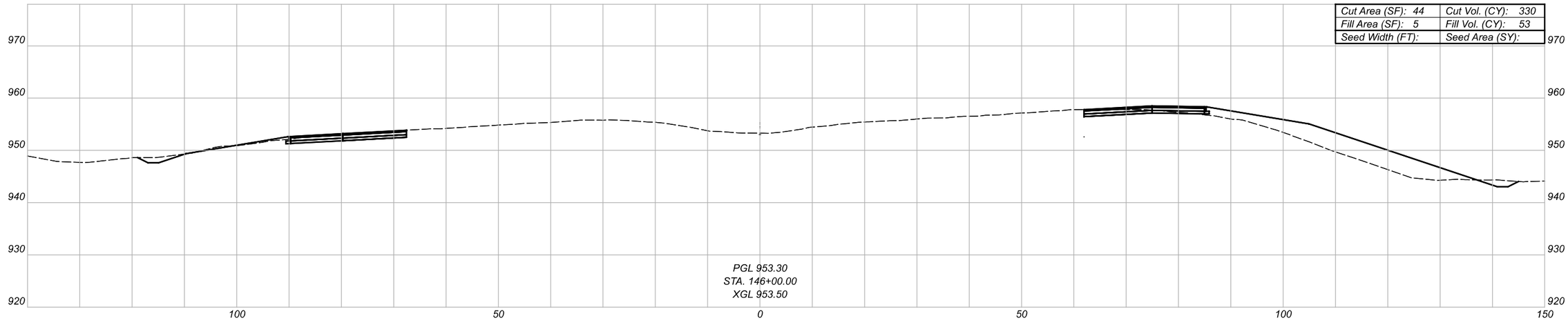
REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 64 TOTAL 161





CROSS SECTIONS-I-675
ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS01-6 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:50:37 AM USER: jespelage
G:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\I15160_XS06-IB.dgn

DESIGN AGENCY

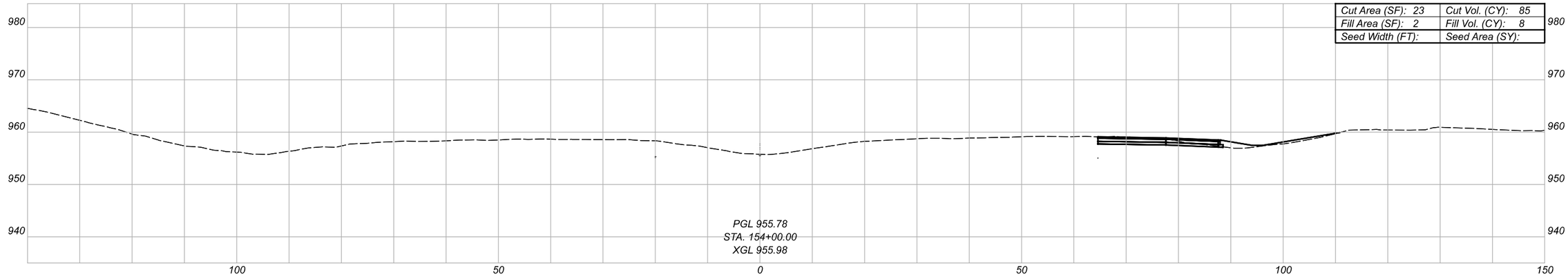
DESIGNER
ARW

REVIEWER
JRE 03/24/23

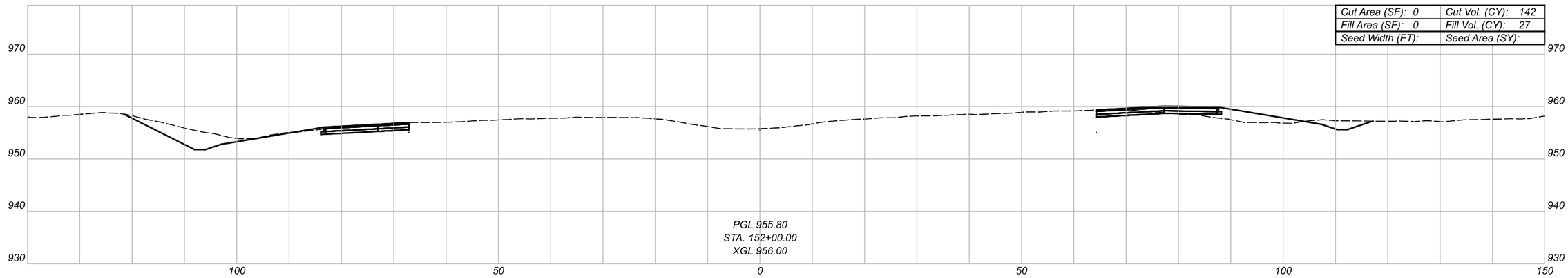
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

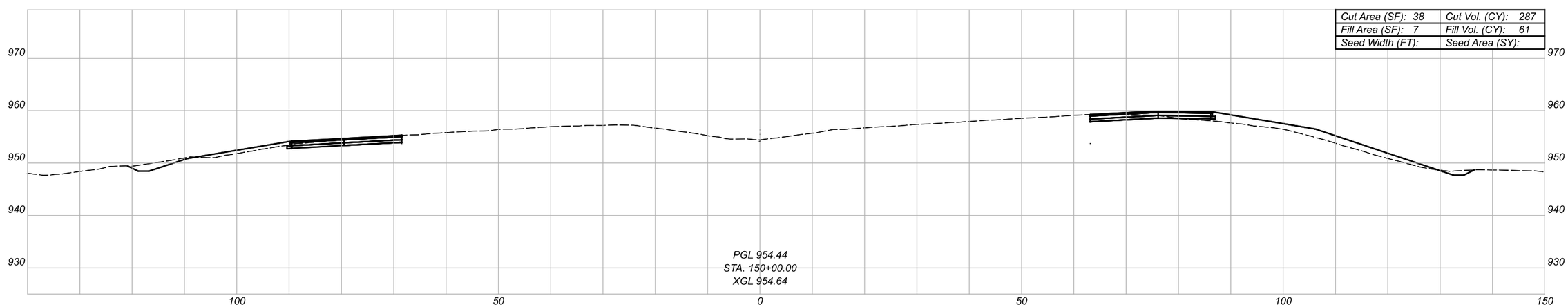
SHEET 65 TOTAL 161



Cut Area (SF): 23	Cut Vol. (CY): 85
Fill Area (SF): 2	Fill Vol. (CY): 8
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 142
Fill Area (SF): 0	Fill Vol. (CY): 27
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 38	Cut Vol. (CY): 287
Fill Area (SF): 7	Fill Vol. (CY): 61
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS101-7 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:51:21 AM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS107-1B.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

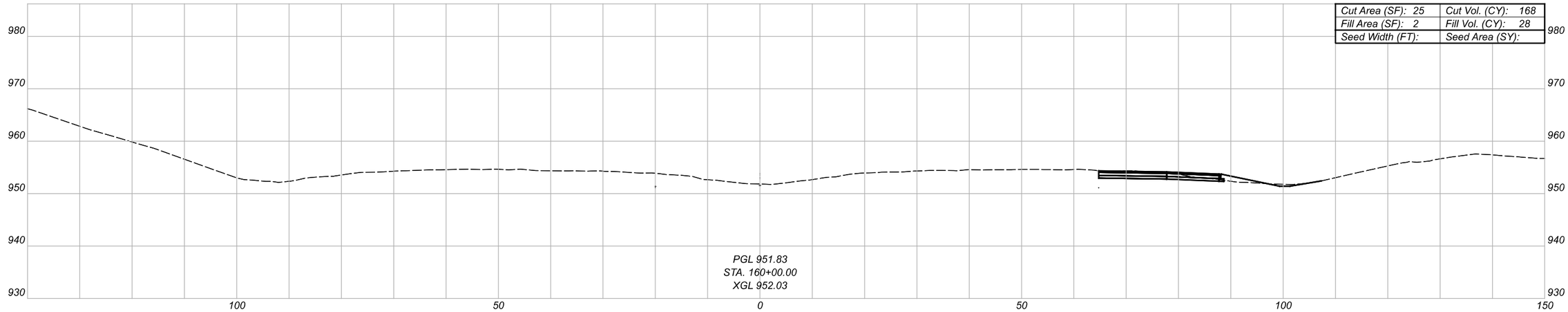
DESIGNER
ARW

REVIEWER
JRE 03/24/23

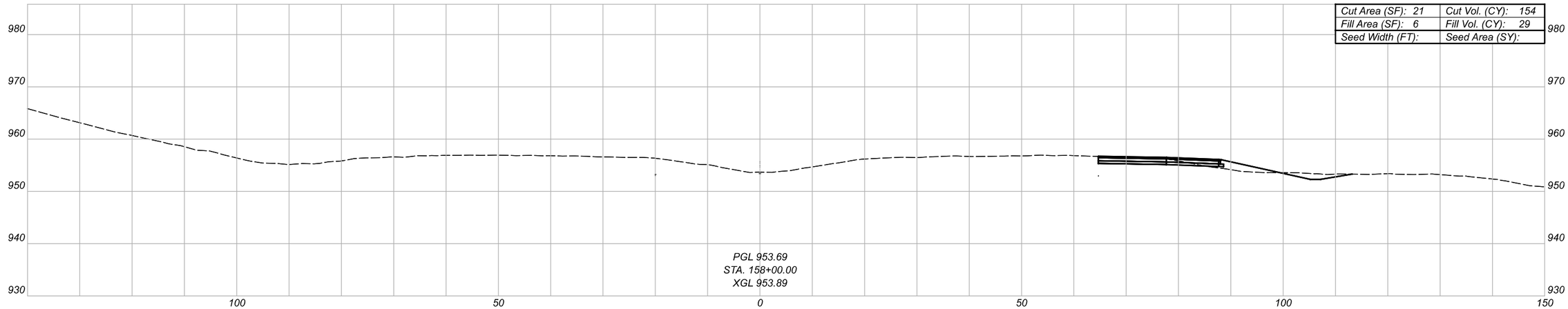
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

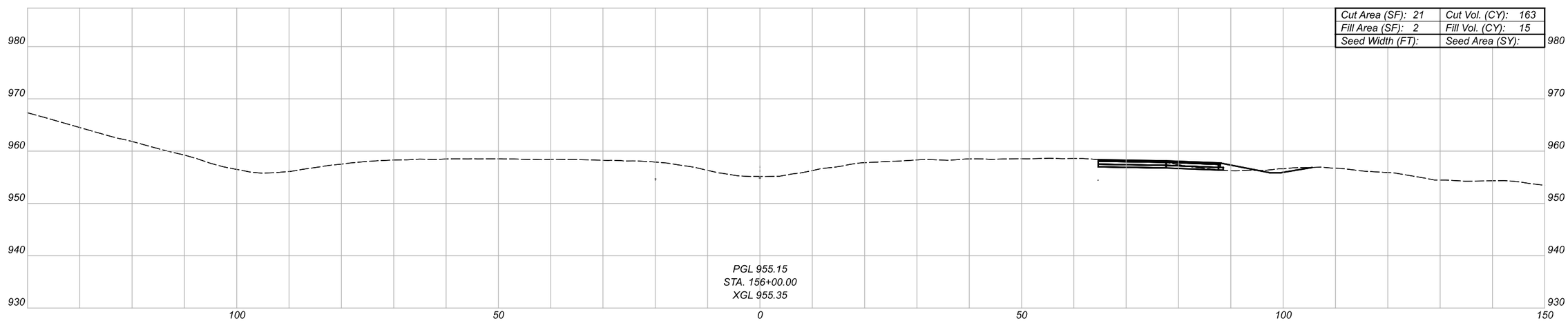
SHEET 66 TOTAL 161



Cut Area (SF): 25	Cut Vol. (CY): 168
Fill Area (SF): 2	Fill Vol. (CY): 28
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 21	Cut Vol. (CY): 154
Fill Area (SF): 6	Fill Vol. (CY): 29
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 21	Cut Vol. (CY): 163
Fill Area (SF): 2	Fill Vol. (CY): 15
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5I60_XSI01-8 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:52:26 AM USER: jespelage
O:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I5I60\400-Engineering\Roadway\Sheets\I5I60_XSI08-IB.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

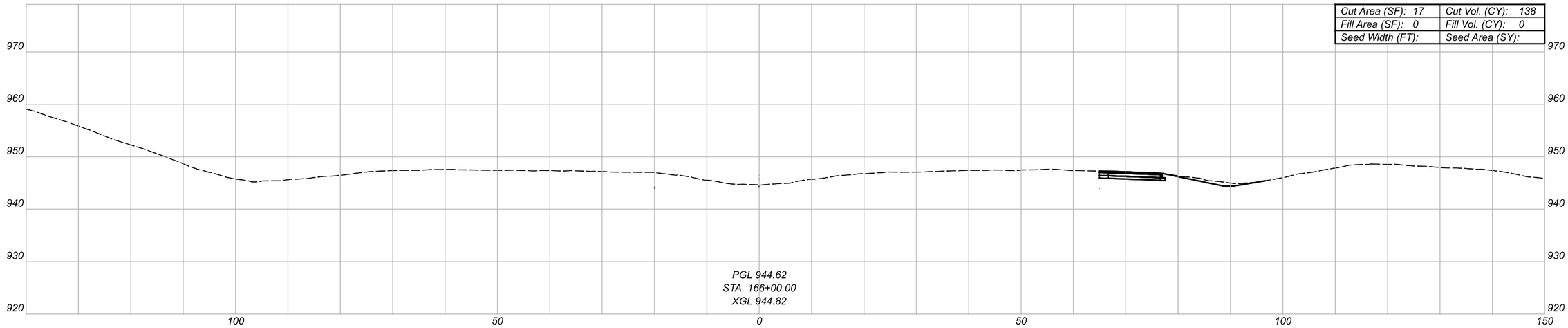
DESIGNER
ARW

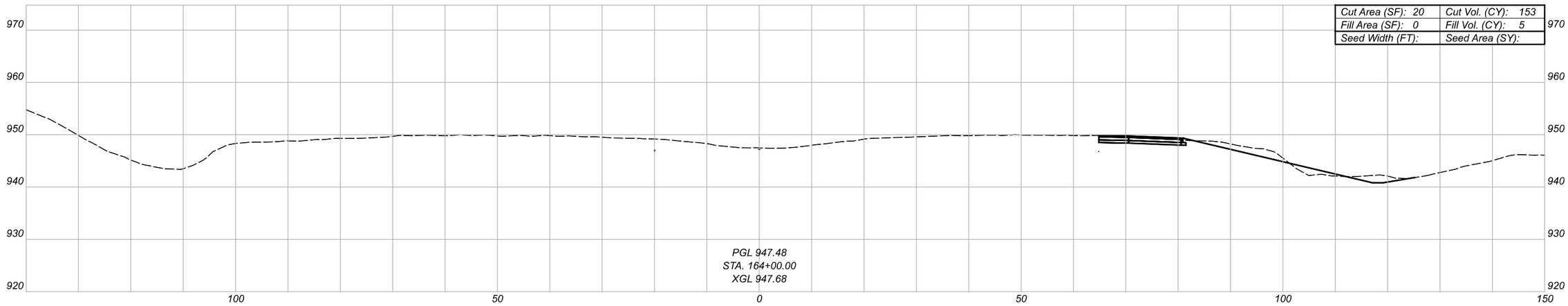
REVIEWER
JRE 03/24/23

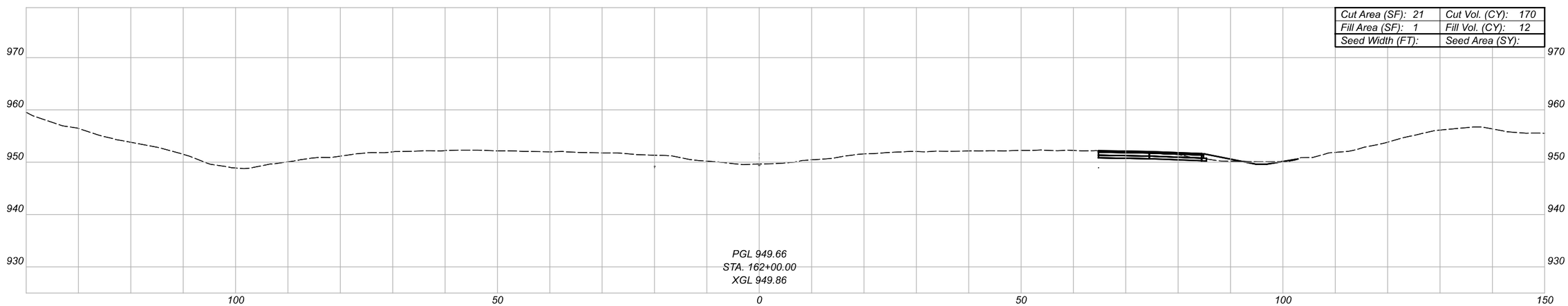
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 67 TOTAL 161







MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS01-9 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:53:32 AM USER: jespelage
Q:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\I15160_XS09-IB.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 1B

DESIGN AGENCY

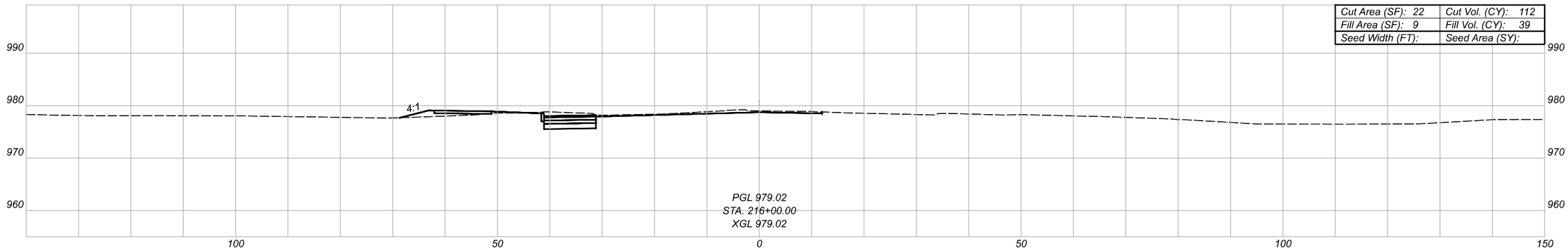
DESIGNER
ARW

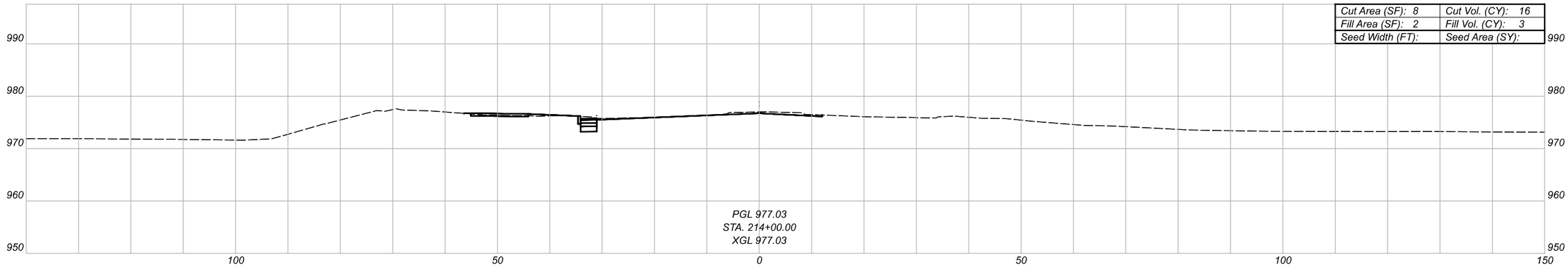
REVIEWER
JRE 03/24/23

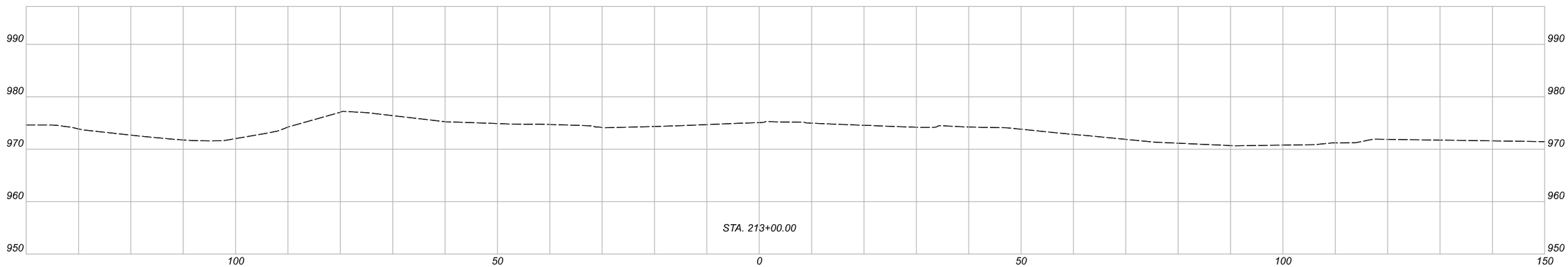
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 68 TOTAL 161







CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS20I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:54:39 AM USER: jespelage
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DESIGN AGENCY

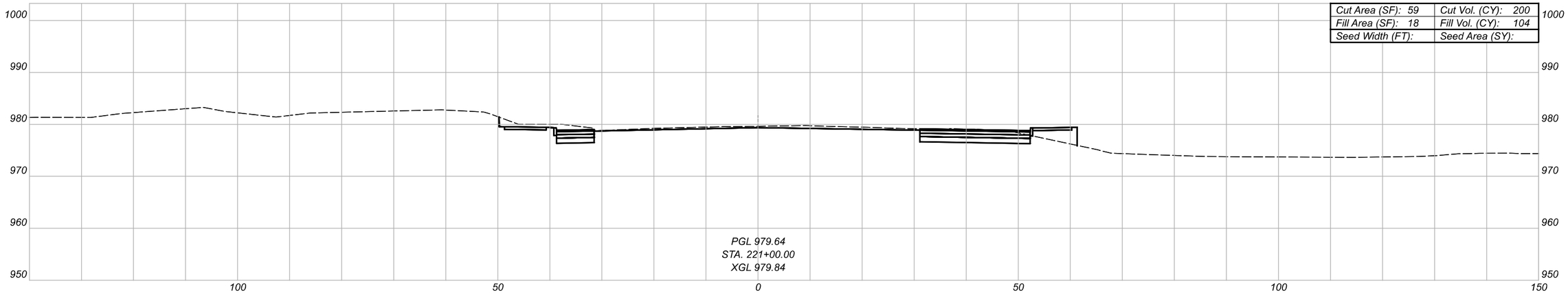
DESIGNER: JMD

REVIEWER: JRE 03/24/23

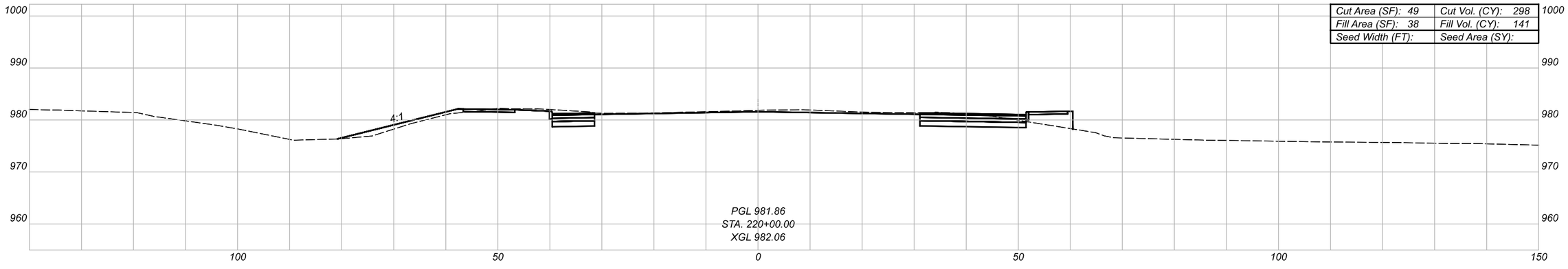
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

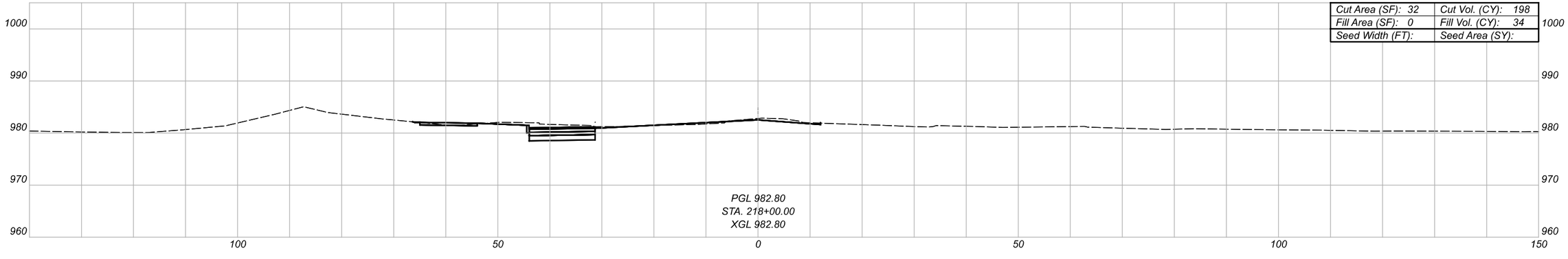
SHEET: 69 TOTAL: 161



Cut Area (SF): 59	Cut Vol. (CY): 200
Fill Area (SF): 18	Fill Vol. (CY): 104
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 49	Cut Vol. (CY): 298
Fill Area (SF): 38	Fill Vol. (CY): 141
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 32	Cut Vol. (CY): 198
Fill Area (SF): 0	Fill Vol. (CY): 34
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: ll5160_XS202 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:55:46 AM USER: jespelage
G:\Montgomery Cnty TID\011795 3A.00 - I-675 Wilmington Interchange\ll5160\400-Engineering\Roadway\Sheets\ll5160_XS202.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

DESIGN AGENCY

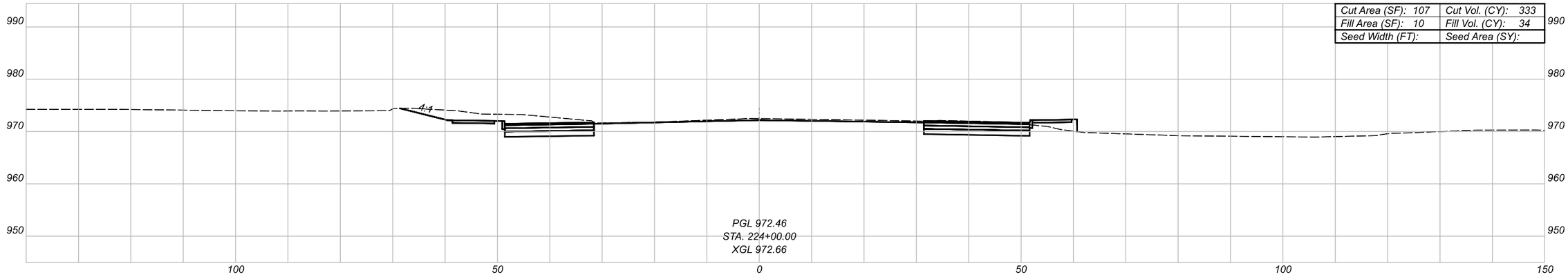
DESIGNER JMD

REVIEWER JRE 03/24/23

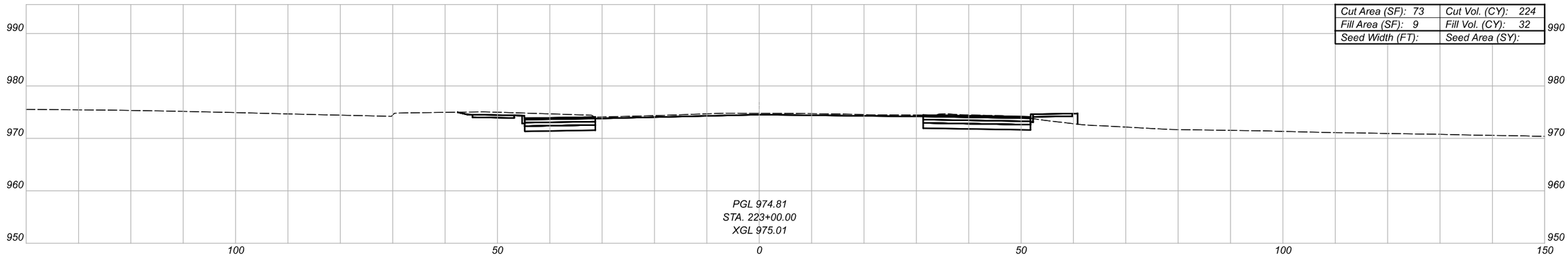
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

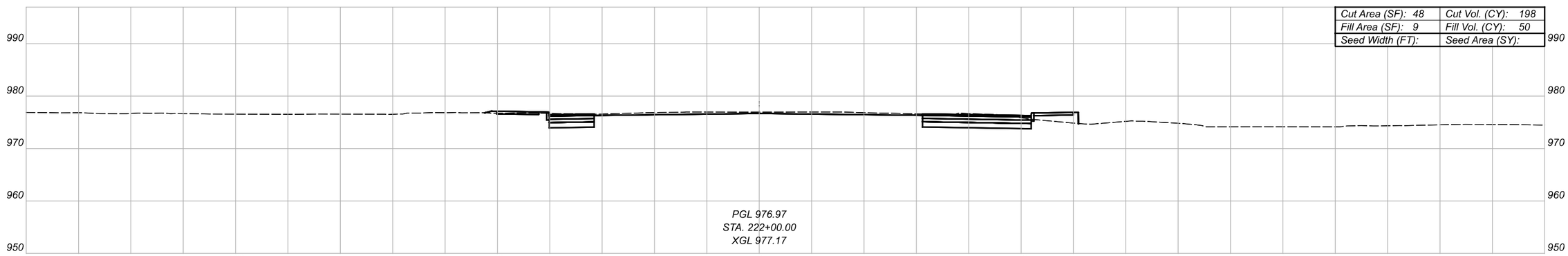
SHEET 70 TOTAL 161



Cut Area (SF): 107	Cut Vol. (CY): 333
Fill Area (SF): 10	Fill Vol. (CY): 34
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 73	Cut Vol. (CY): 224
Fill Area (SF): 9	Fill Vol. (CY): 32
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 48	Cut Vol. (CY): 198
Fill Area (SF): 9	Fill Vol. (CY): 50
Seed Width (FT):	Seed Area (SY):

Sheet Totals		
Seeding	Cut	Fill
-	-	-

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

DESIGN AGENCY

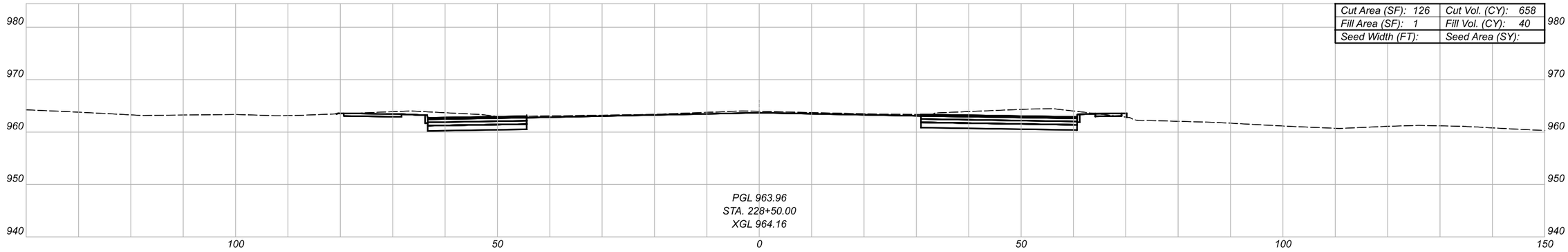
DESIGNER JMD

REVIEWER JRE 03/24/23

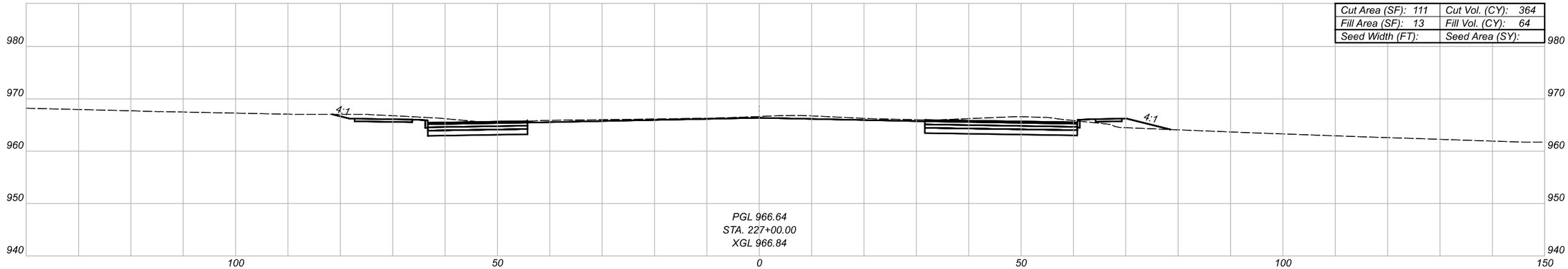
PROJECT ID 115160

SHEET 71 TOTAL 161

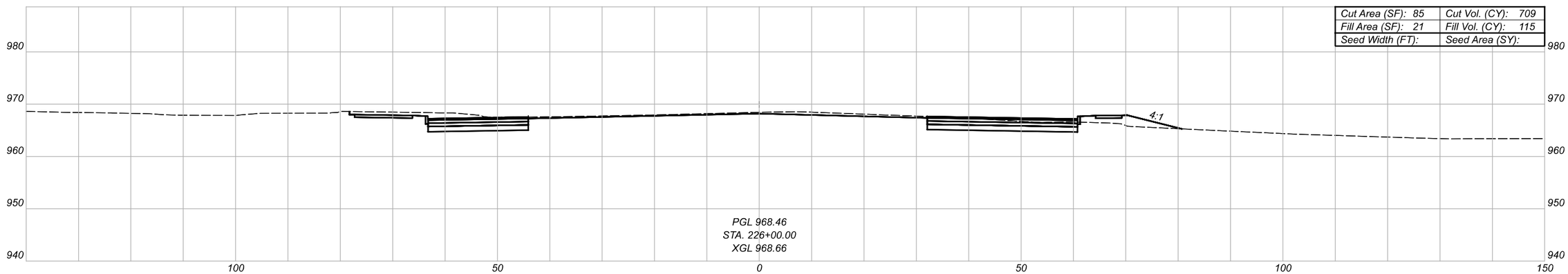
MODEL: 115160_XS203 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:56:54 AM USER: jespelage
Q:\Montgomery Cnty TID\011795 3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS203.dgn



Cut Area (SF): 126	Cut Vol. (CY): 658
Fill Area (SF): 1	Fill Vol. (CY): 40
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 111	Cut Vol. (CY): 364
Fill Area (SF): 13	Fill Vol. (CY): 64
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 85	Cut Vol. (CY): 709
Fill Area (SF): 21	Fill Vol. (CY): 115
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS204 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:58:01 AM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

DESIGN AGENCY

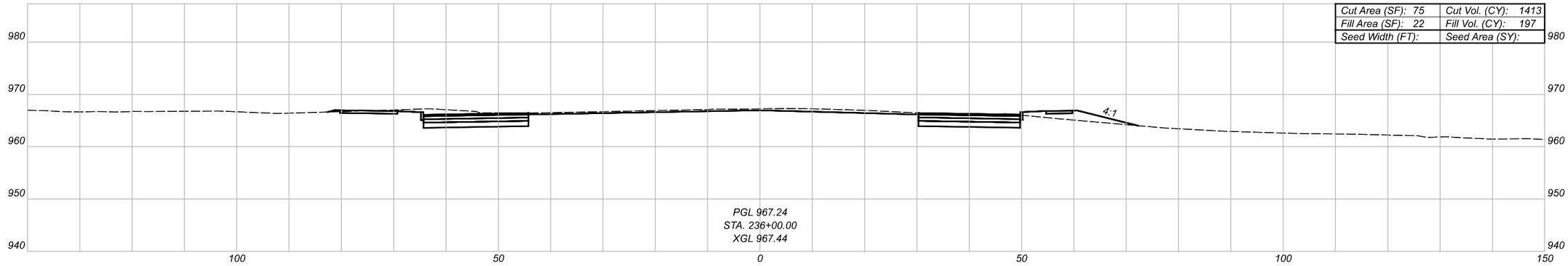
DESIGNER: JMD

REVIEWER: JRE 03/24/23

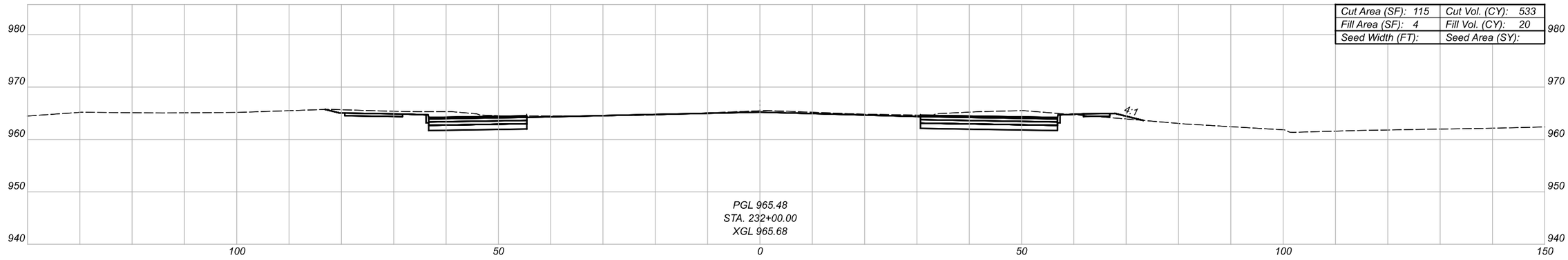
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

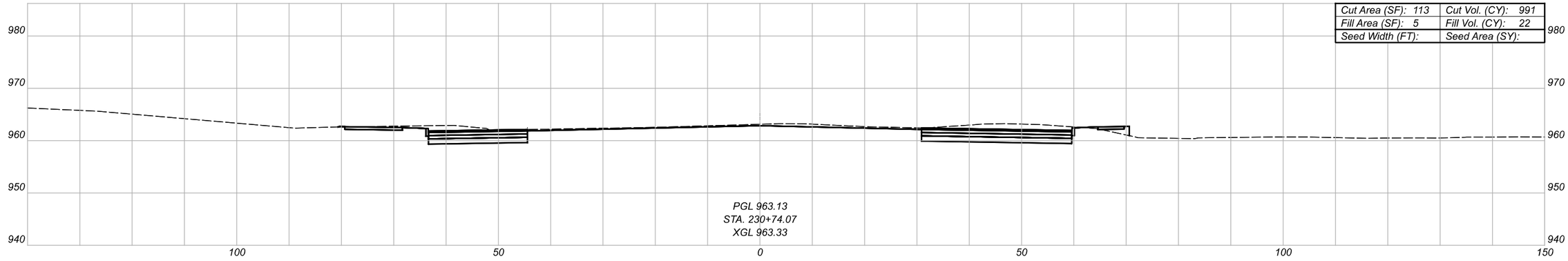
SHEET: 72 TOTAL: 161



Cut Area (SF): 75	Cut Vol. (CY): 1413
Fill Area (SF): 22	Fill Vol. (CY): 197
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 115	Cut Vol. (CY): 533
Fill Area (SF): 4	Fill Vol. (CY): 20
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 113	Cut Vol. (CY): 991
Fill Area (SF): 5	Fill Vol. (CY): 22
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS205 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:59:08 AM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS205.dgn

CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

DESIGN AGENCY

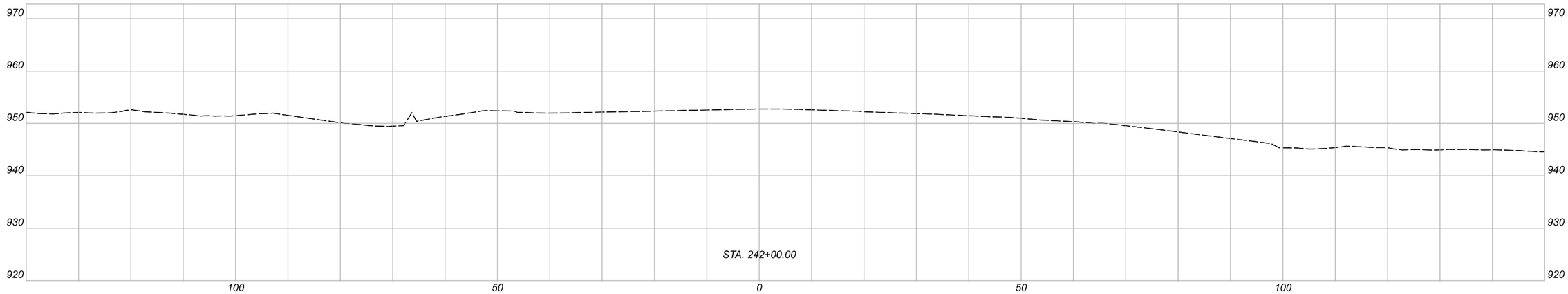
DESIGNER: JMD

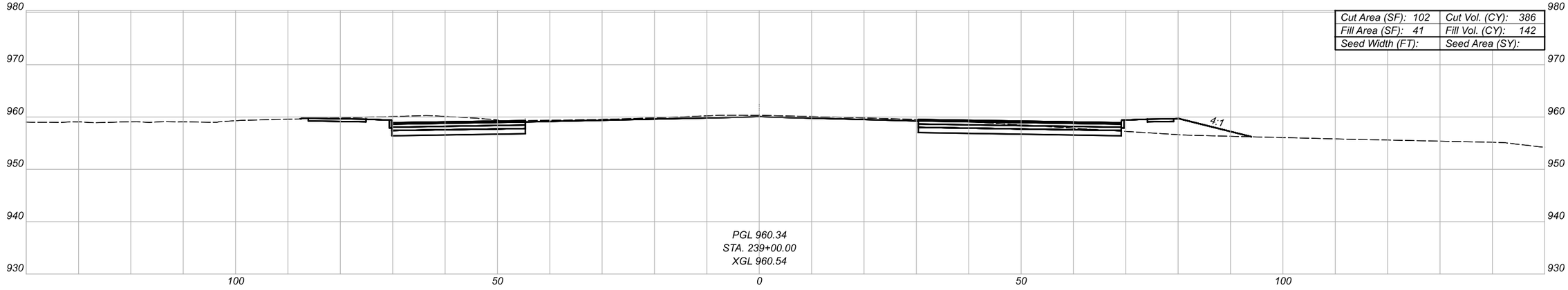
REVIEWER: JRE 03/24/23

PROJECT ID: 115160

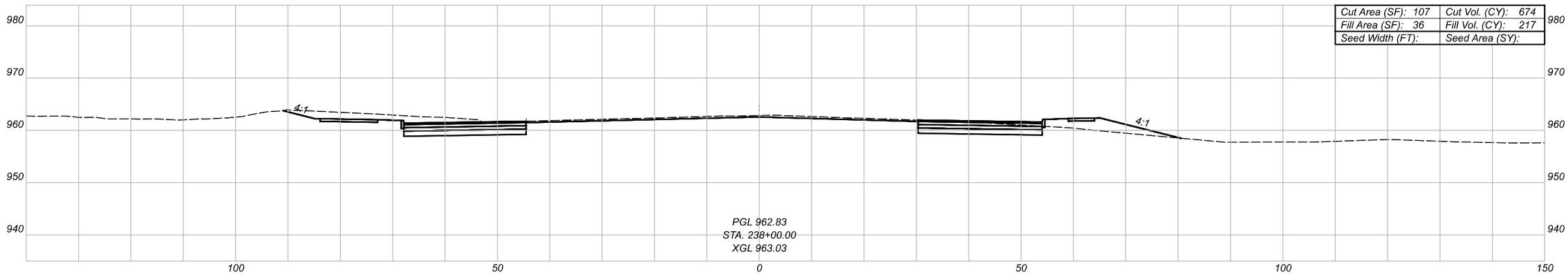
Sheet Totals		
Seeding	Cut	Fill
.	.	.

SHEET: 73 TOTAL: 161





Cut Area (SF): 102	Cut Vol. (CY): 386
Fill Area (SF): 41	Fill Vol. (CY): 142
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 107	Cut Vol. (CY): 674
Fill Area (SF): 36	Fill Vol. (CY): 217
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS206 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:00:16 PM USER: jespelage
O:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I5160\400-Engineering\Roadway\Sheets\I5160_XS206.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER: JMD

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

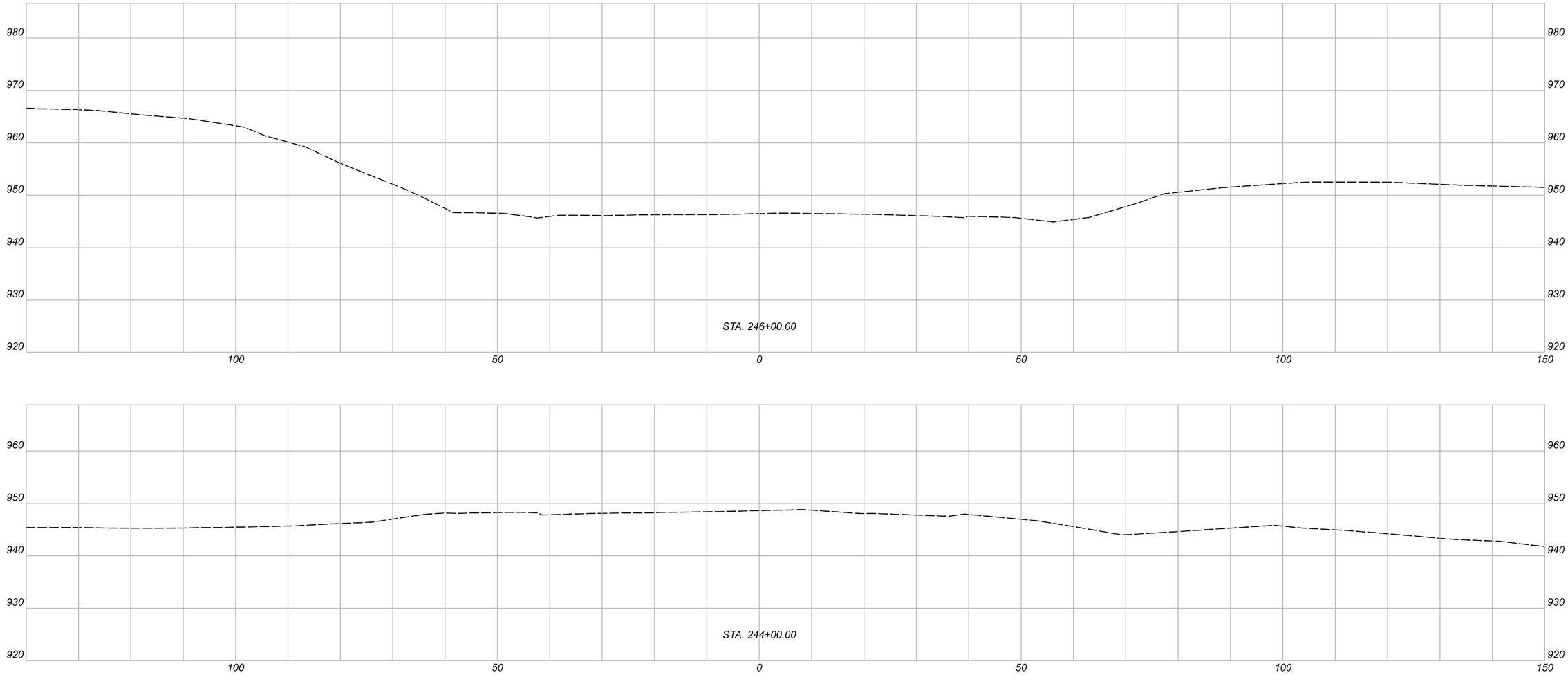
Sheet Totals		
Seeding	Cut	Fill
.	.	.

SHEET: 74 TOTAL: 161

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS207 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:01:24 PM USER: jespelage
Q:\Montgomery Cnty TID\011795 3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS207.dgn

NOTE: MODELING NOT PERFORMED FOR THIS AREA, SEE TYPICAL SECTION



CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

DESIGN AGENCY

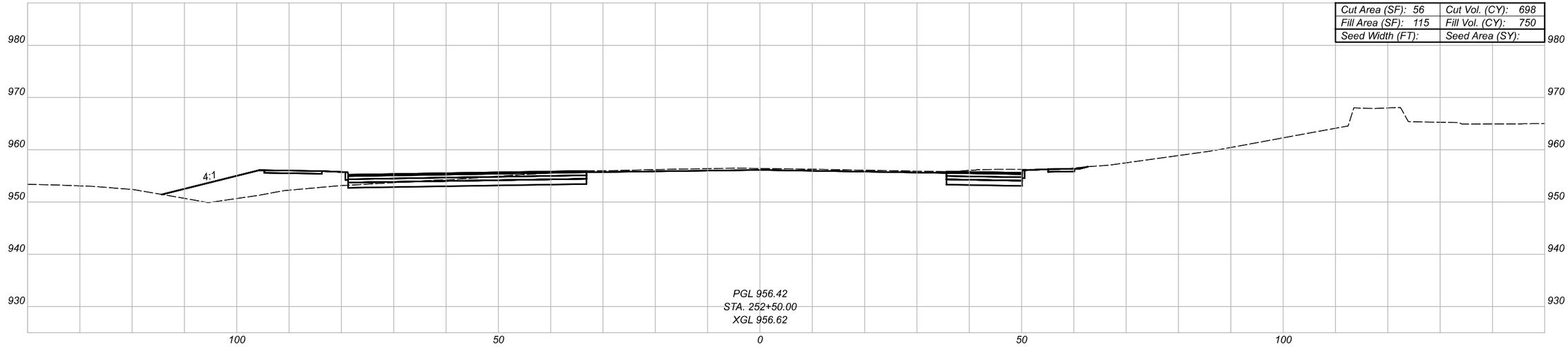
DESIGNER: JMD

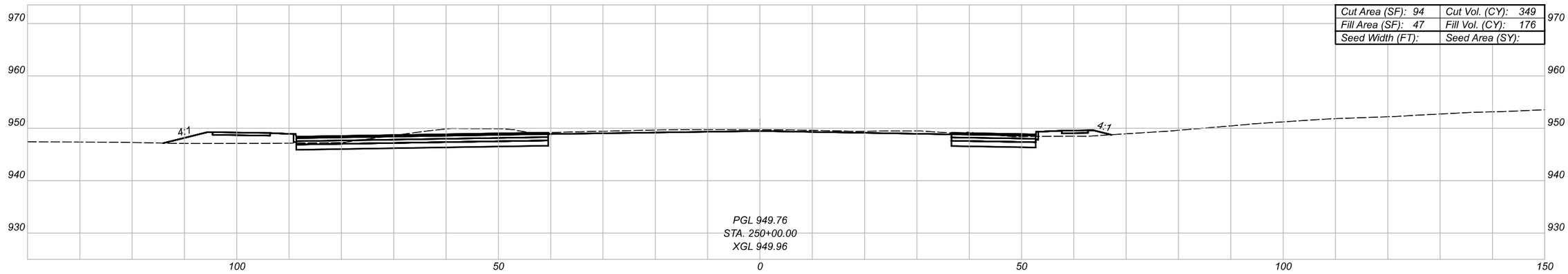
REVIEWER: JRE 03/24/23

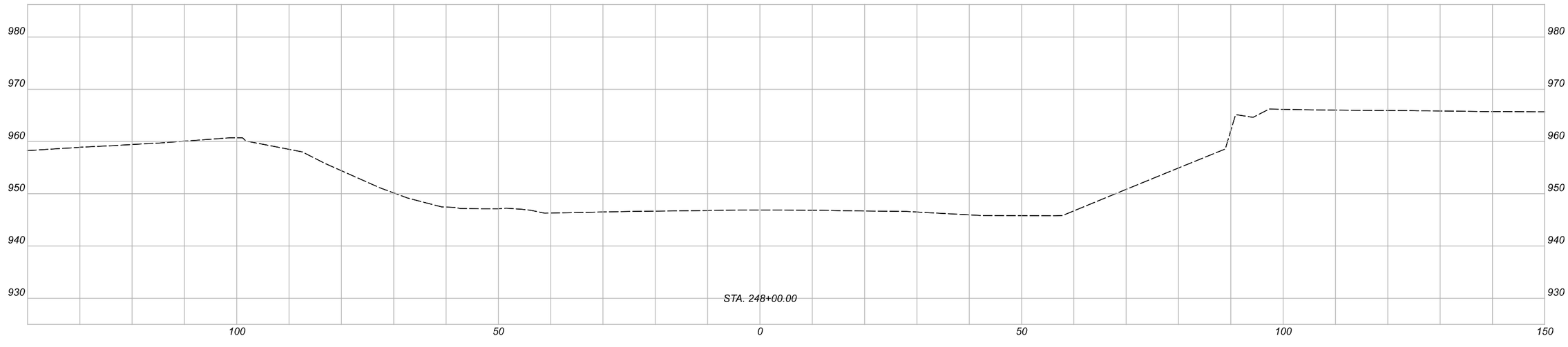
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET: 75 TOTAL: 161







MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS208 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:02:09 PM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\II5160\400-Engineering\Roadway\Sheets\II5160_XS208.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

DESIGN AGENCY

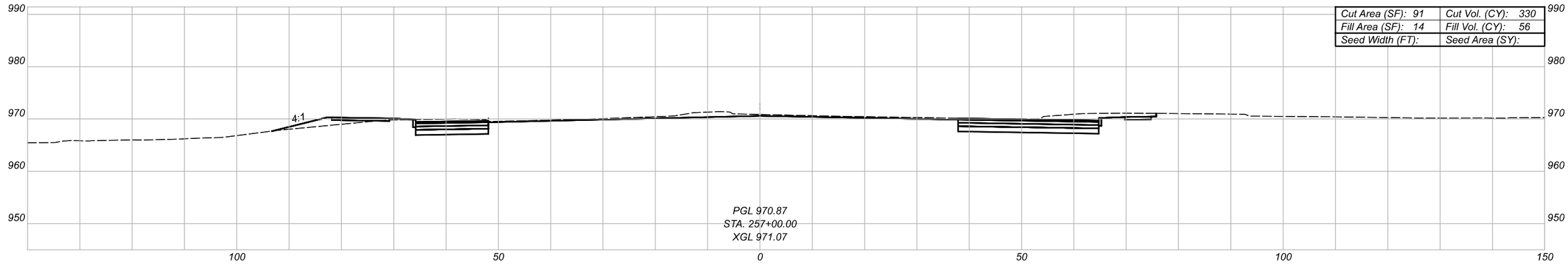
DESIGNER: JMD

REVIEWER: JRE 03/24/23

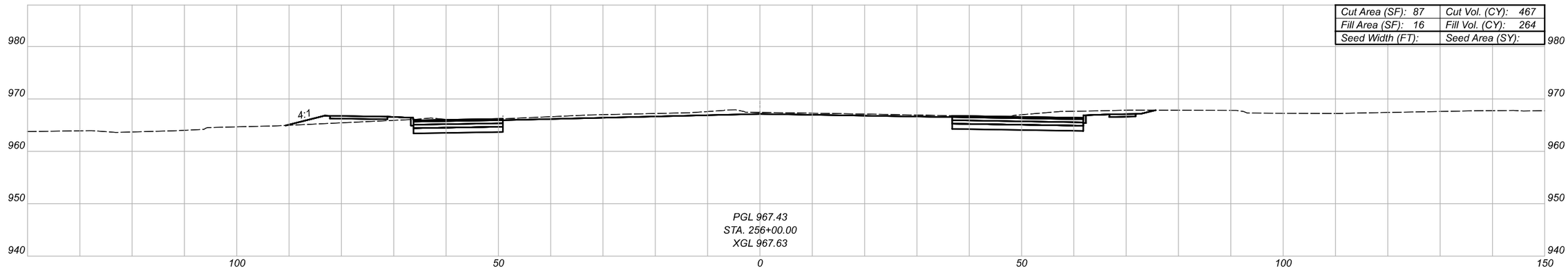
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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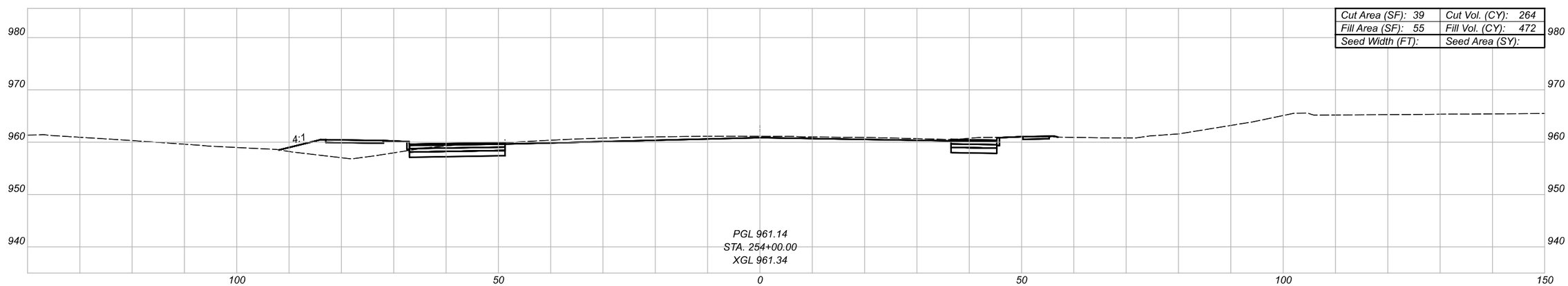
SHEET 76 TOTAL 161



Cut Area (SF): 91	Cut Vol. (CY): 330
Fill Area (SF): 14	Fill Vol. (CY): 56
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 87	Cut Vol. (CY): 467
Fill Area (SF): 16	Fill Vol. (CY): 264
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 39	Cut Vol. (CY): 264
Fill Area (SF): 55	Fill Vol. (CY): 472
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS209 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:03:17 PM USER: jespelage
Q:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS209.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 1B

DESIGN AGENCY

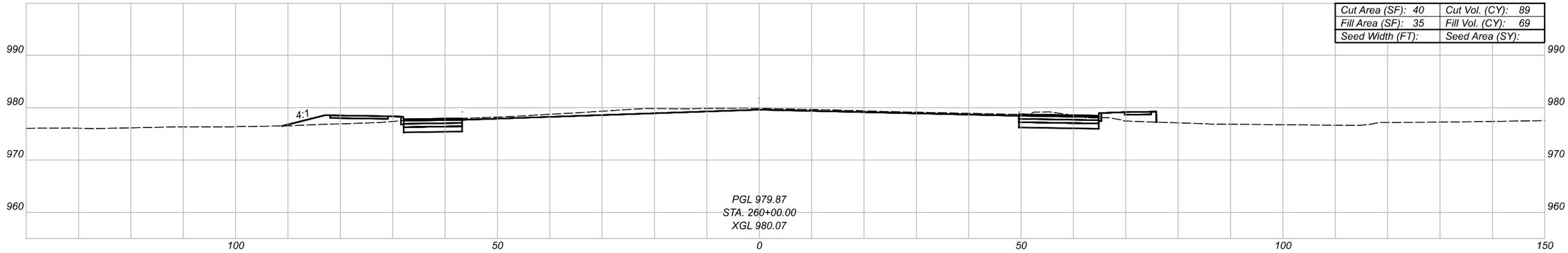
DESIGNER: JMD

REVIEWER: JRE 03/24/23

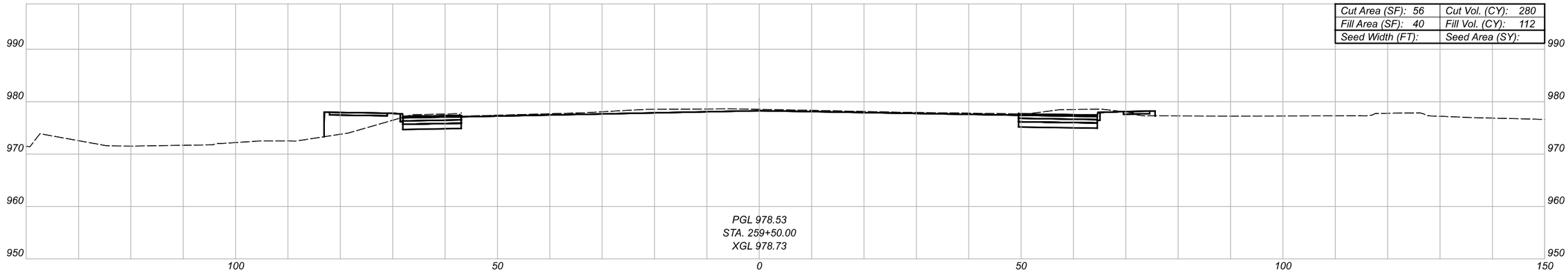
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

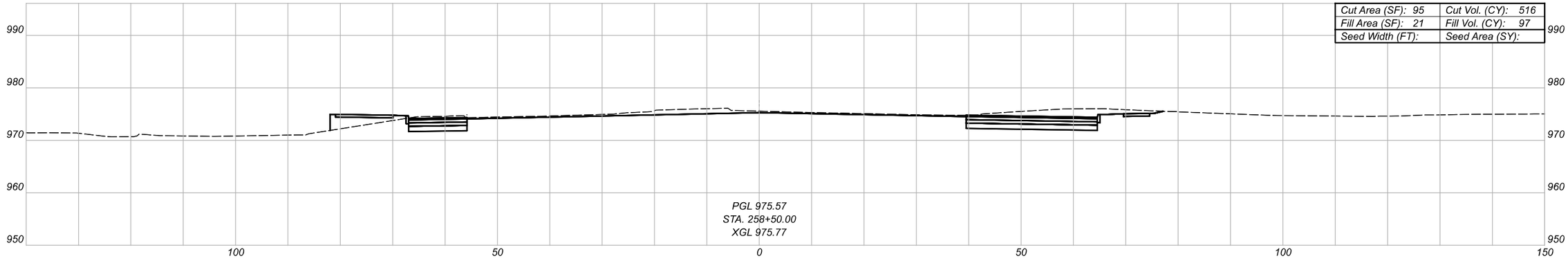
SHEET 77 TOTAL 161



Cut Area (SF): 40	Cut Vol. (CY): 89
Fill Area (SF): 35	Fill Vol. (CY): 69
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 56	Cut Vol. (CY): 280
Fill Area (SF): 40	Fill Vol. (CY): 112
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 95	Cut Vol. (CY): 516
Fill Area (SF): 21	Fill Vol. (CY): 97
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS210 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:04:24 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\II5160\400-Engineering\Roadway\Sheets\II5160_XS210.dgn

DESIGN AGENCY

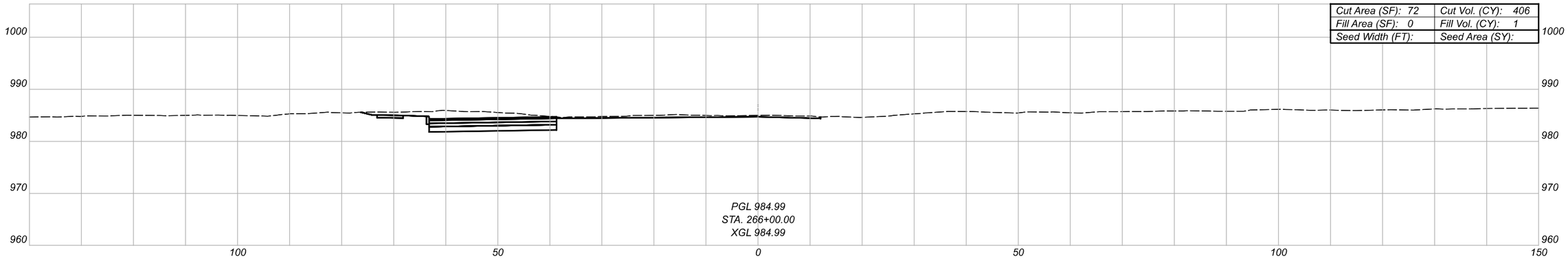
DESIGNER: JMD

REVIEWER: JRE 03/24/23

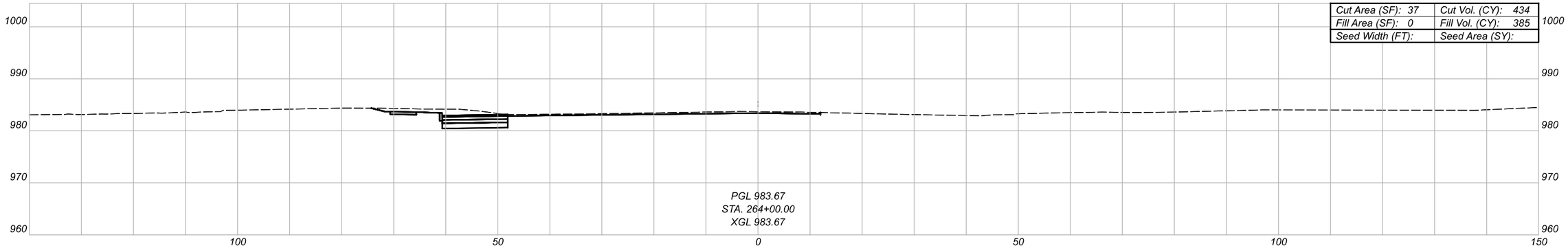
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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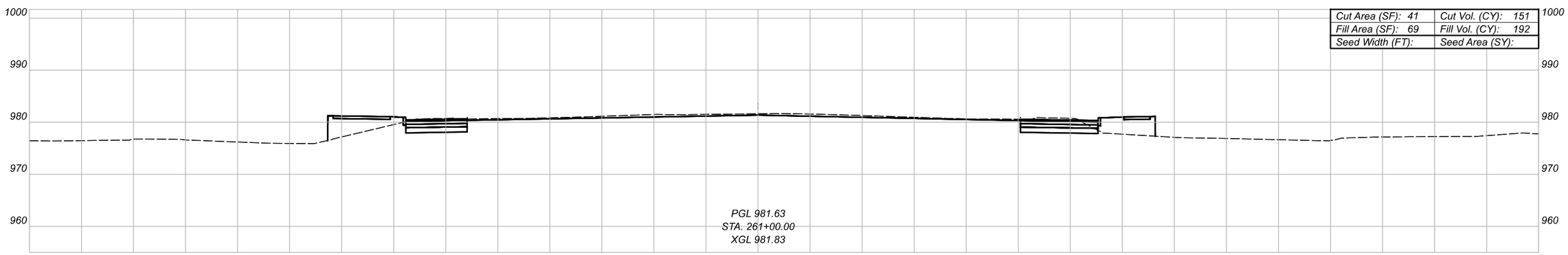
SHEET: 78 TOTAL: 161



Cut Area (SF): 72	Cut Vol. (CY): 406
Fill Area (SF): 0	Fill Vol. (CY): 1
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 37	Cut Vol. (CY): 434
Fill Area (SF): 0	Fill Vol. (CY): 385
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 41	Cut Vol. (CY): 151
Fill Area (SF): 69	Fill Vol. (CY): 192
Seed Width (FT):	Seed Area (SY):

Sheet Totals		
Seeding	Cut	Fill
-	-	-

CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER: JMD

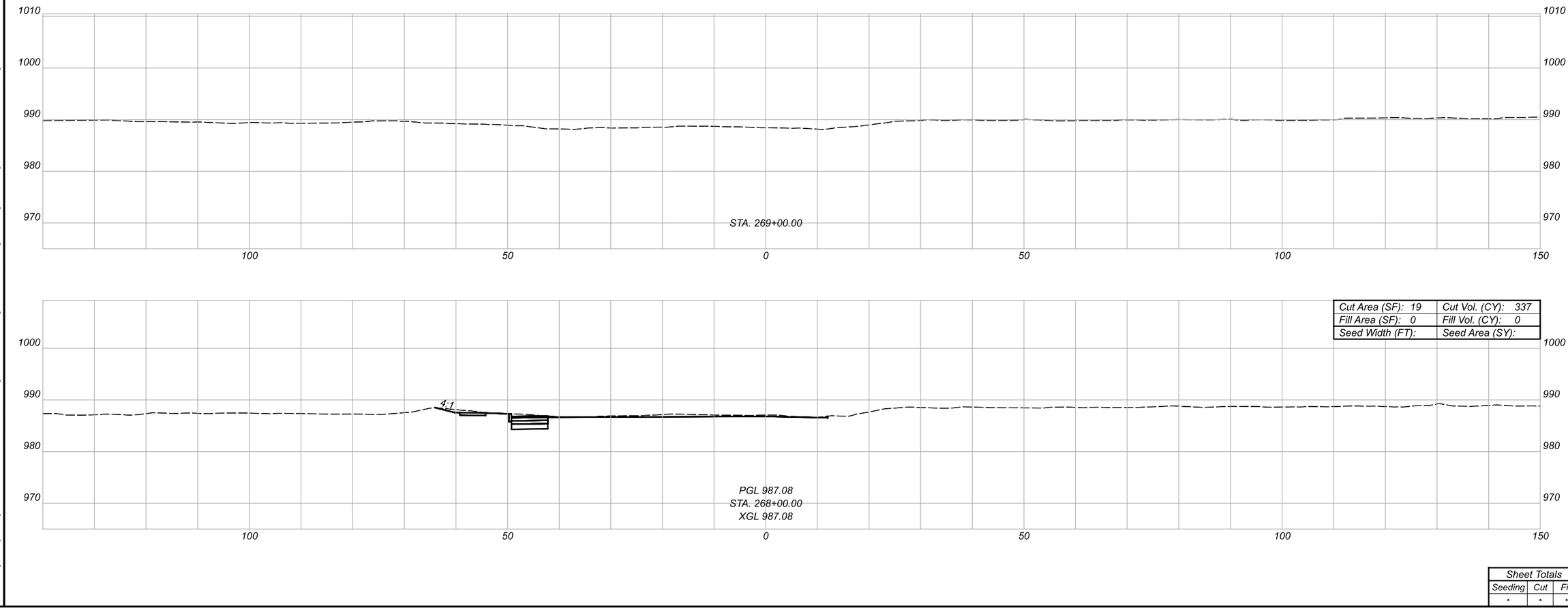
REVIEWER: JRE 03/24/23

PROJECT ID: 115160

SHEET: 79 TOTAL: 161

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS2ii PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:05:33 PM USER: jespelage
G:\Montgomery Cnty TID\011795\A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS2ii.dgn



MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS2I2 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:06:40 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 1B

DESIGN AGENCY

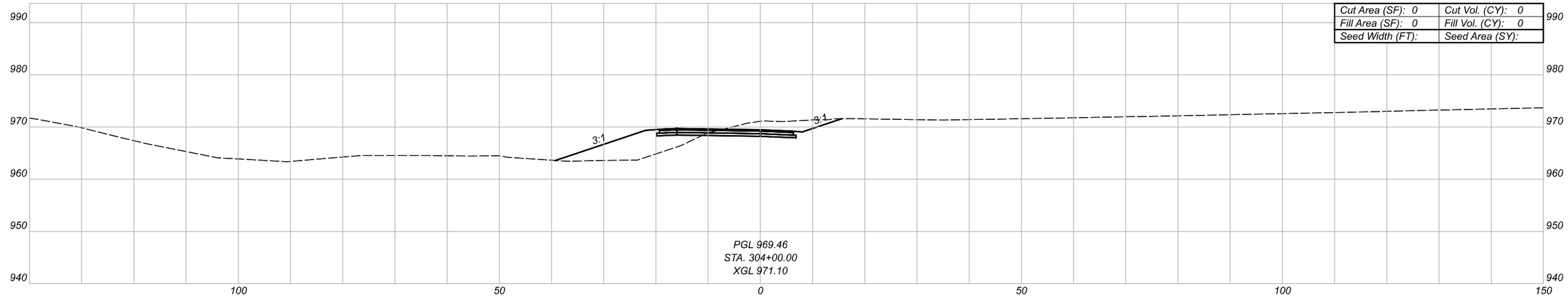
DESIGNER: JMD

REVIEWER: JRE 03/24/23

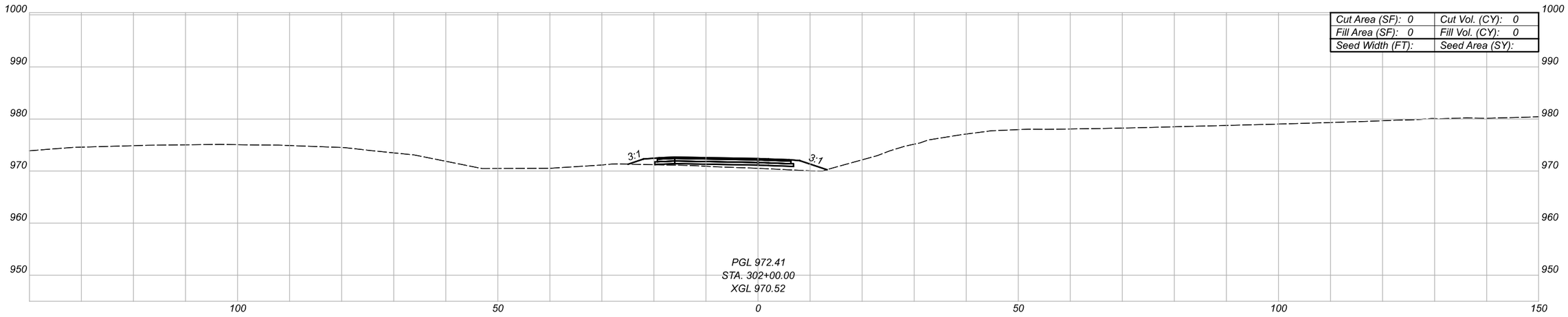
PROJECT ID: 115160

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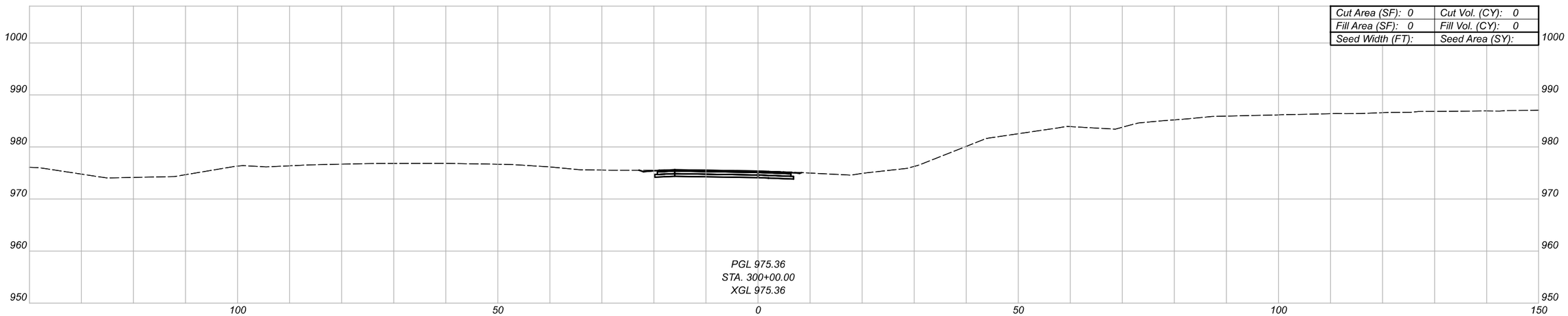
SHEET: 80 TOTAL: 161



Cut Area (SF): 0	Cut Vol. (CY): 0
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Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
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Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS30I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:07:25 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE, NB EXIT RAMP ALTERNATIVE 1B

DESIGN AGENCY

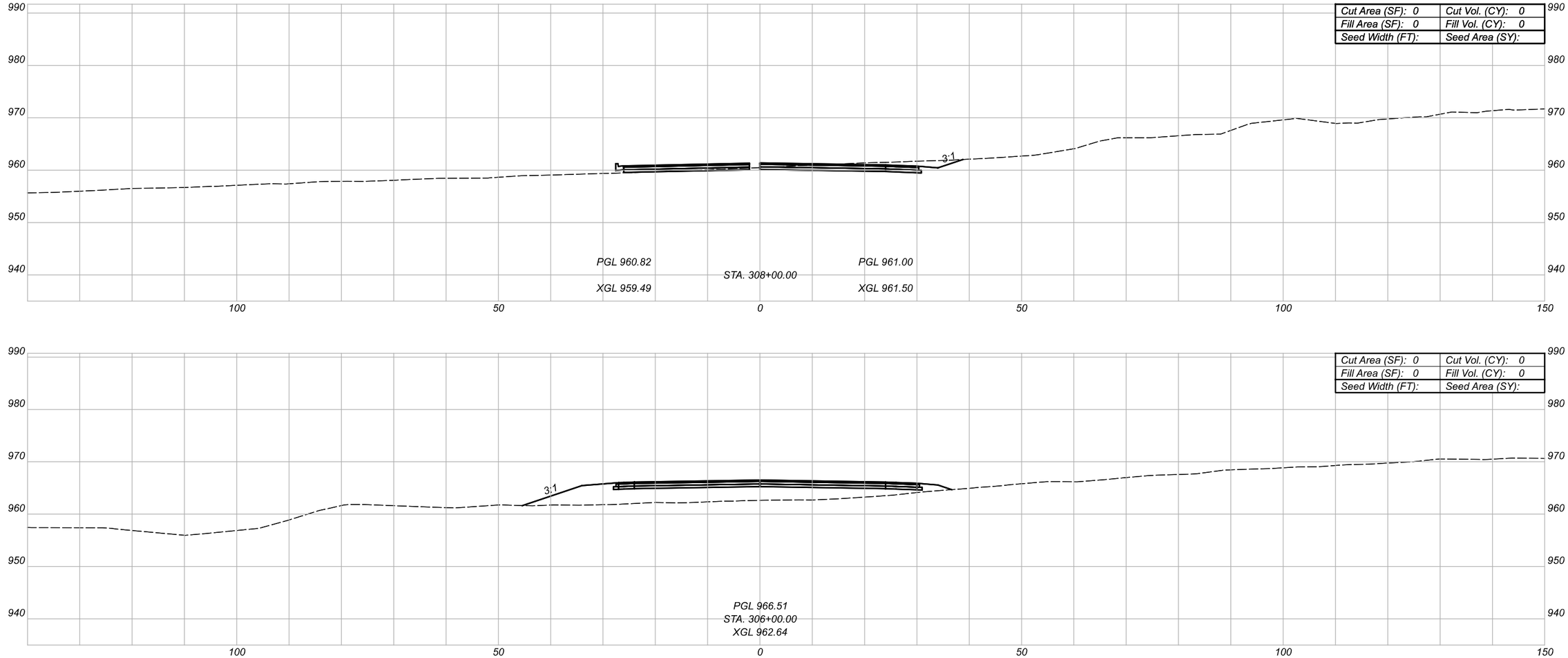
DESIGNER ARW

REVIEWER JRE 03/24/23

PROJECT ID 115160

Sheet Totals		
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SHEET 81 TOTAL 161



MOT/GRE I-675/WILMINGTON

MODEL: I15I60_XS302 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:08:31 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE, NB EXIT RAMP ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER
ARW

REVIEWER
JRE 03/24/23

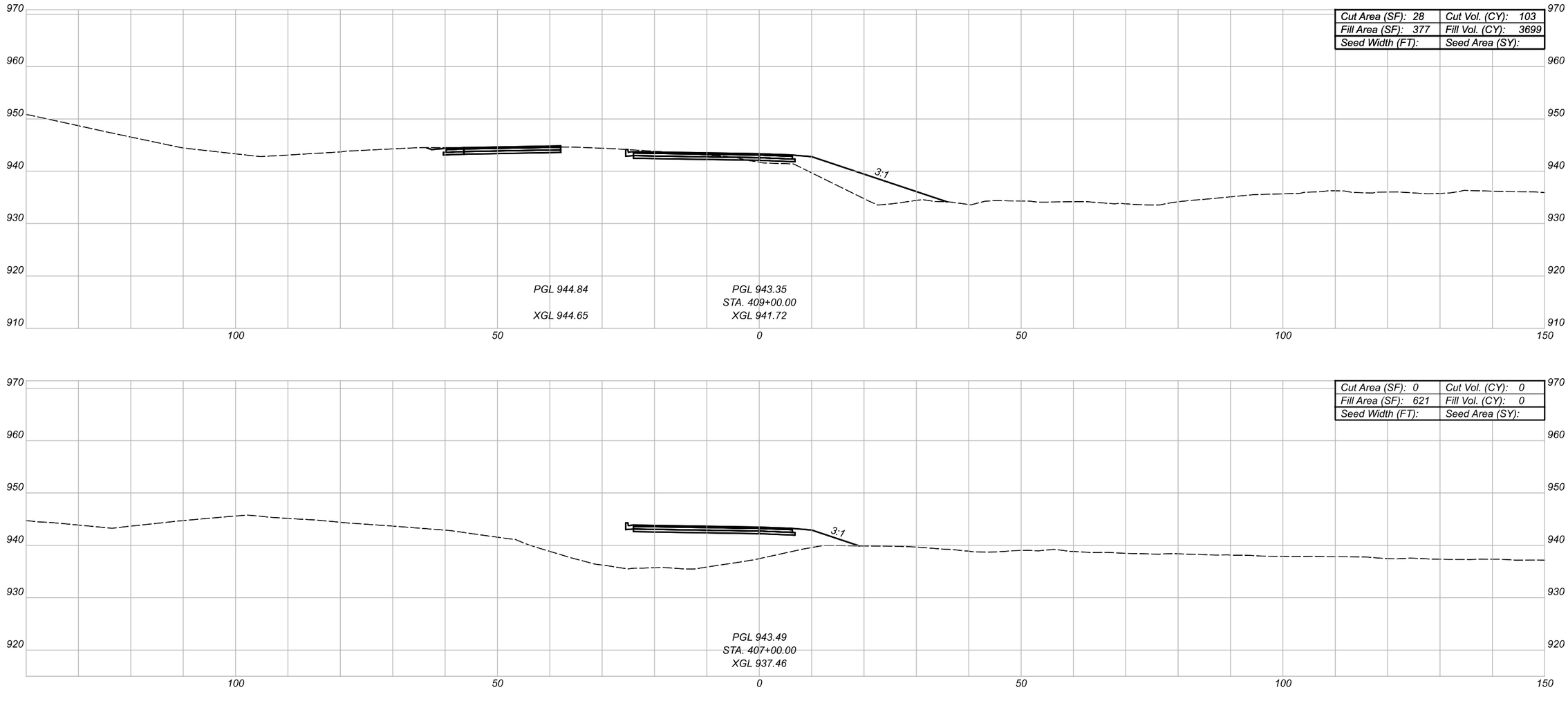
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
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SHEET 82 TOTAL 161

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS40I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:09:15 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON NB ENTRANCE RAMP ALTERNATIVE 1B

Sheet Totals		
Seeding	Cut	Fill
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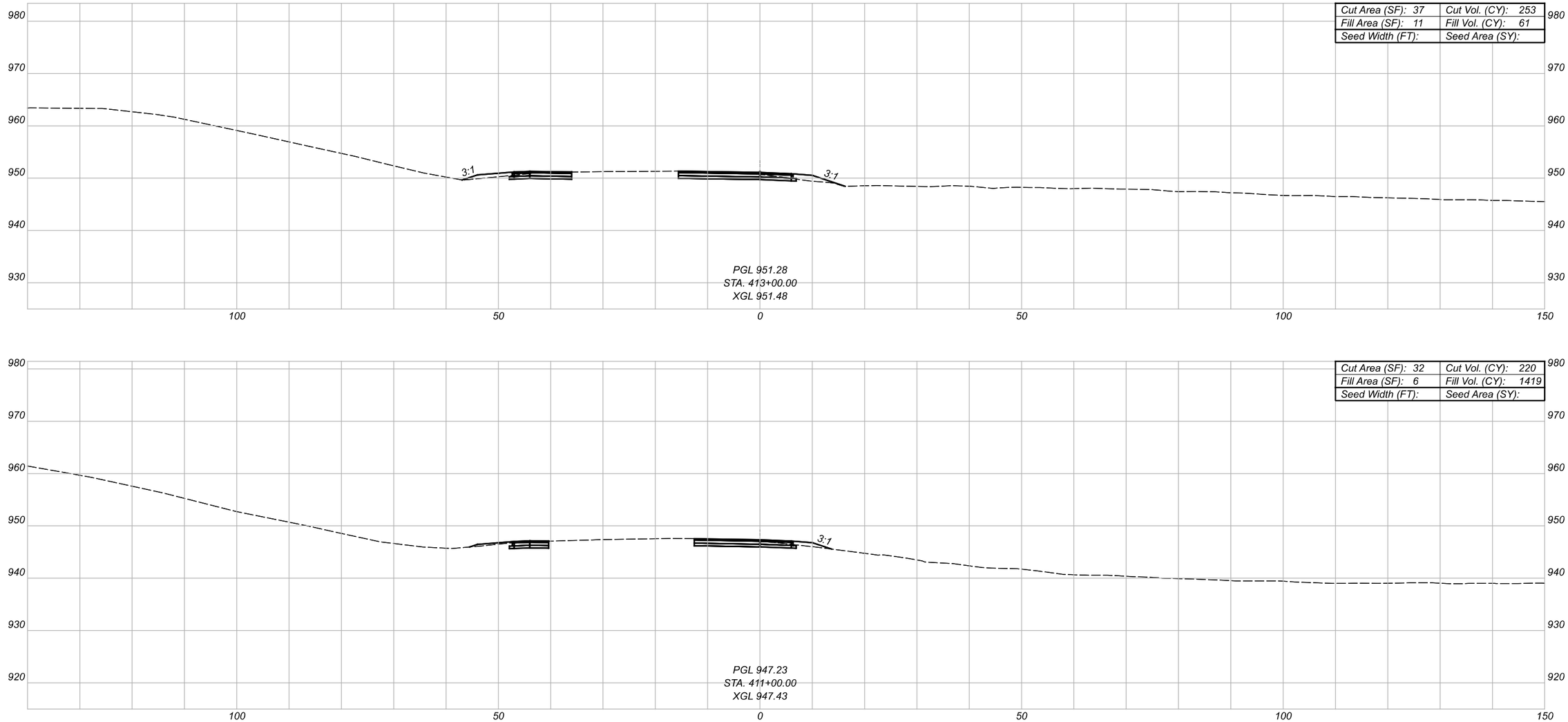
DESIGN AGENCY

DESIGNER
ARW

REVIEWER
JRE 03/24/23

PROJECT ID
115160

SHEET 83 TOTAL 161



MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS402 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:10:00 PM USER: jespelage
D:\Montgomery Cnty TID\DI17953A.00 - I-675 Wilmington Interchange\I5160\400-Engineering\Roadway\Sheets\I5160_XS402.dgn

CROSS SECTIONS-WILMINGTON NB ENTRANCE RAMP ALTERNATIVE 1B

DESIGN AGENCY

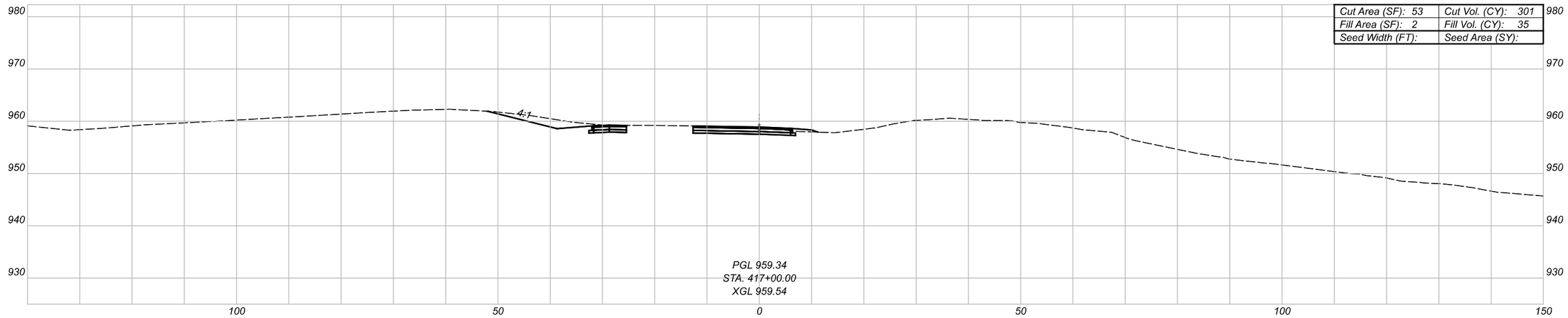
DESIGNER ARW

REVIEWER JRE 03/24/23

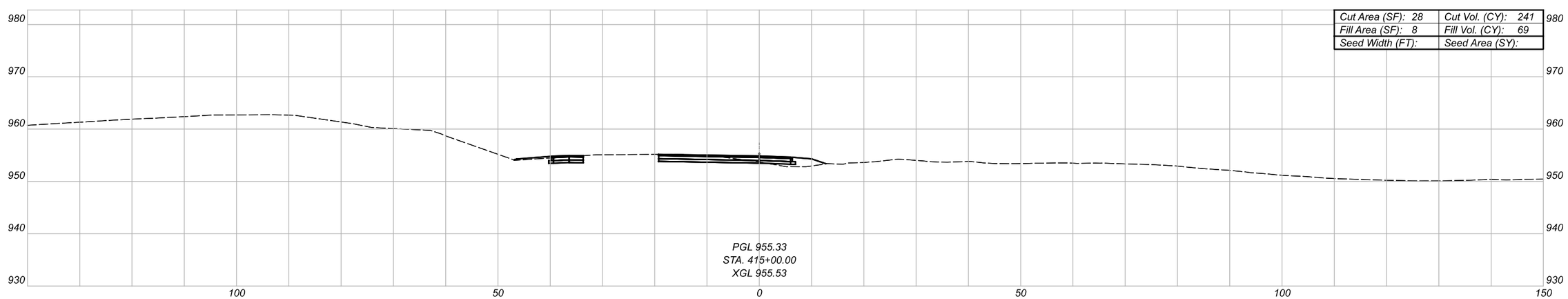
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 84 TOTAL 161



Cut Area (SF): 53	Cut Vol. (CY): 301
Fill Area (SF): 2	Fill Vol. (CY): 35
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 28	Cut Vol. (CY): 241
Fill Area (SF): 8	Fill Vol. (CY): 69
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-WILMINGTON NB ENTRANCE RAMP
ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER: ARW

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 85 | TOTAL 161

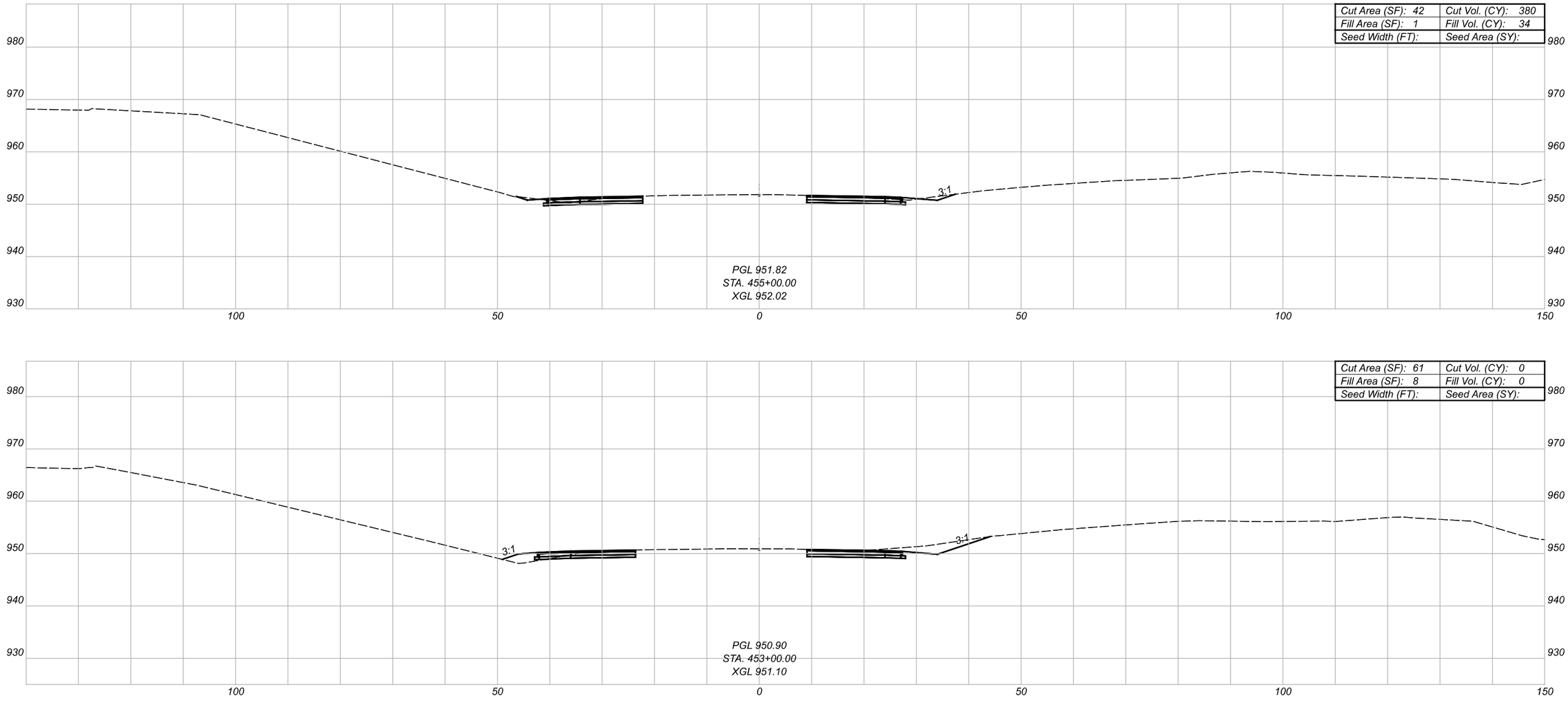
MOT/GRE I-675/WILMINGTON

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MOT/GRE I-675/WILMINGTON

MODEL: II5I60_XS45I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:11:29 PM USER: jespelage
Q:\Montgomery Cnty TID\0II7953A.00 - I-675 Wilmington Interchange\II5I60\400-Engineering\Roadway\Sheets\II5I60_XS45I.dgn

CROSS SECTIONS-WILMINGTON SB EXIT RAMP
ALTERNATIVE 1B



DESIGN AGENCY

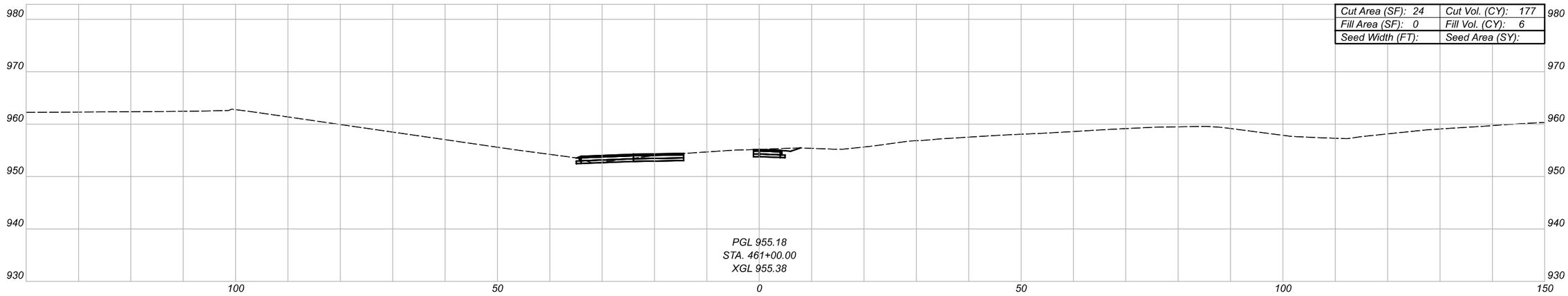
DESIGNER
ARW

REVIEWER
JRE 03/24/23

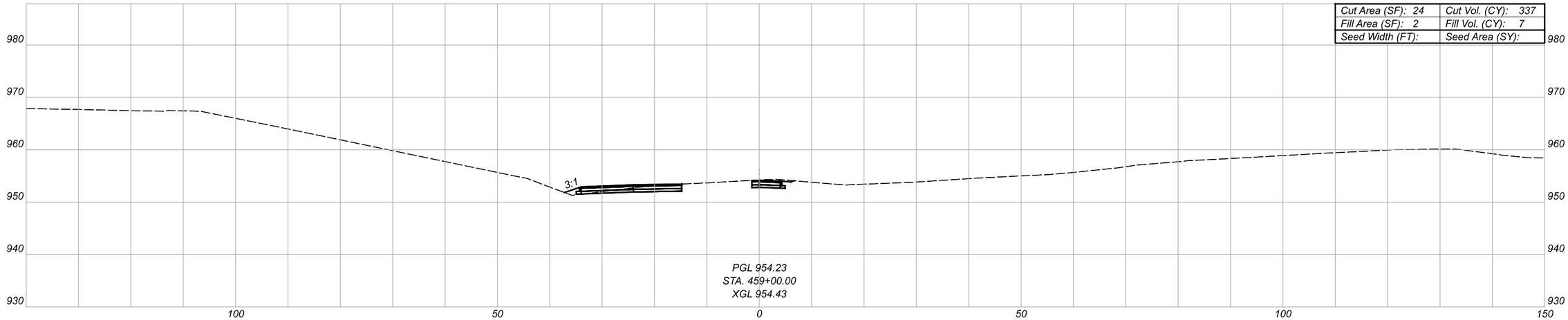
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

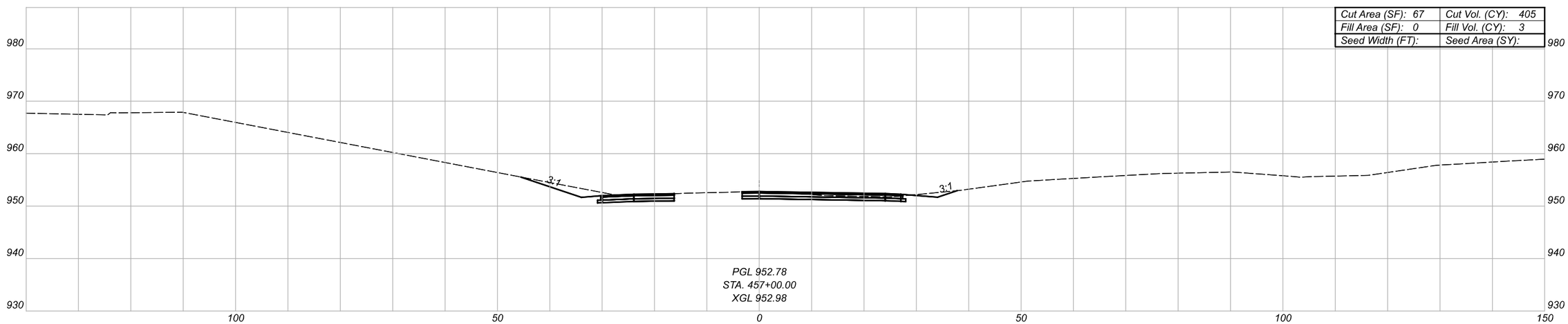
SHEET	TOTAL
86	161



Cut Area (SF): 24	Cut Vol. (CY): 177
Fill Area (SF): 0	Fill Vol. (CY): 6
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 24	Cut Vol. (CY): 337
Fill Area (SF): 2	Fill Vol. (CY): 7
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 67	Cut Vol. (CY): 405
Fill Area (SF): 0	Fill Vol. (CY): 3
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS452 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:12:14 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON SB EXIT RAMP ALTERNATIVE 1B

DESIGN AGENCY

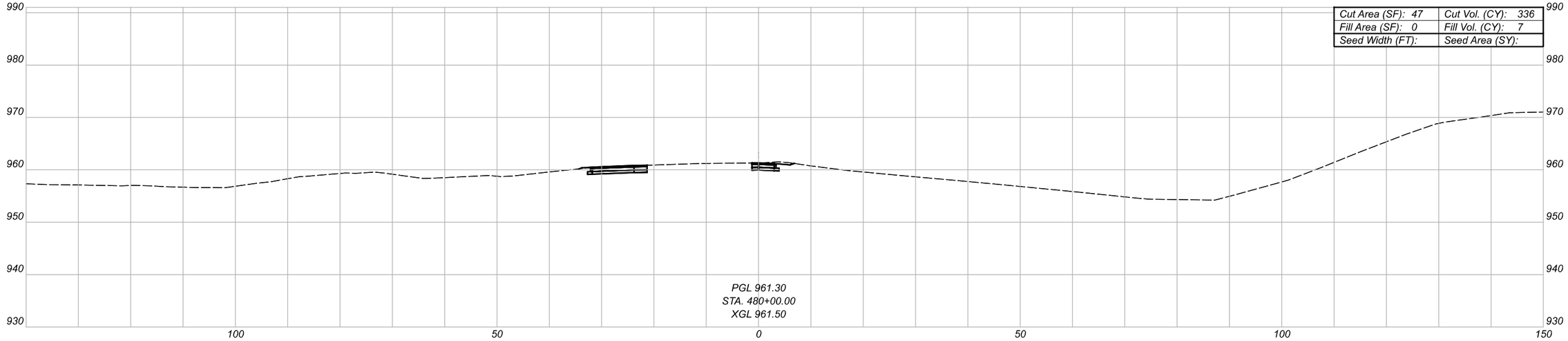
DESIGNER: ARW

REVIEWER: JRE 03/24/23

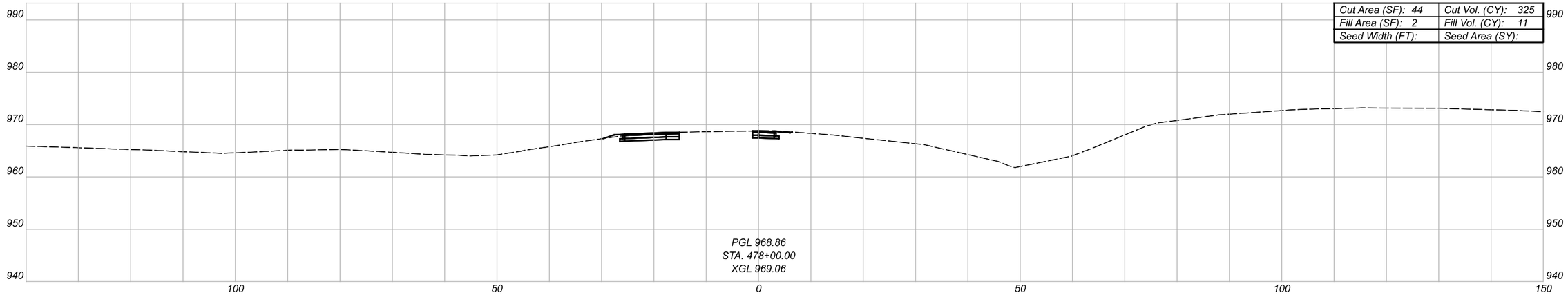
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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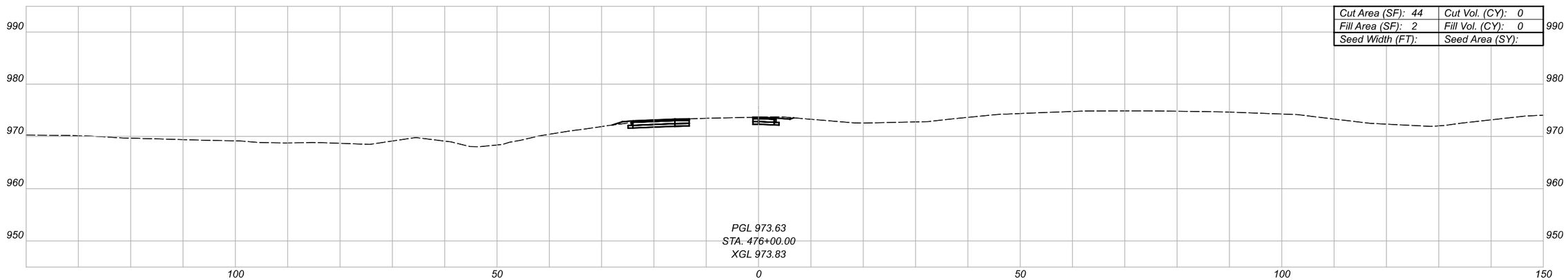
SHEET: 87 TOTAL: 161



Cut Area (SF): 47	Cut Vol. (CY): 336
Fill Area (SF): 0	Fill Vol. (CY): 7
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 44	Cut Vol. (CY): 325
Fill Area (SF): 2	Fill Vol. (CY): 11
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 44	Cut Vol. (CY): 0
Fill Area (SF): 2	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS476-1B PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:13:21 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON SB ENTRANCE RAMP
ALTERNATIVE 1B

DESIGN AGENCY

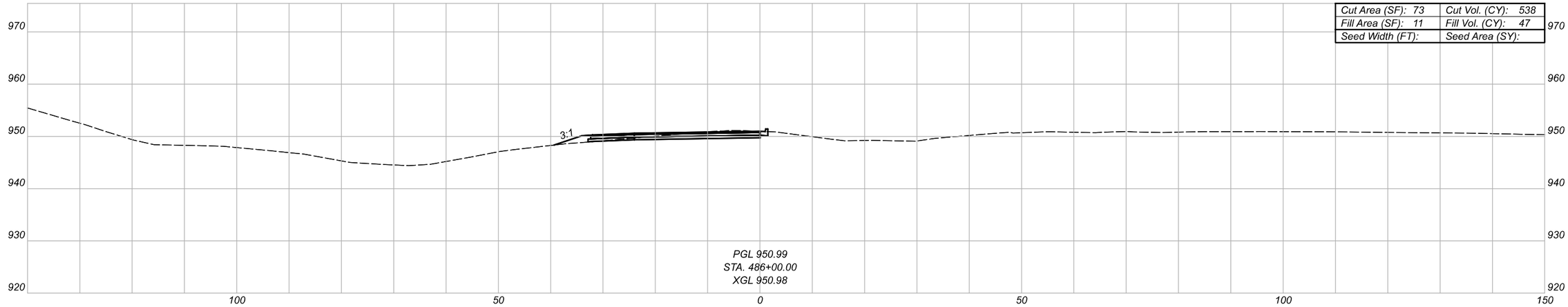
DESIGNER: ARW

REVIEWER: JRE 03/24/23

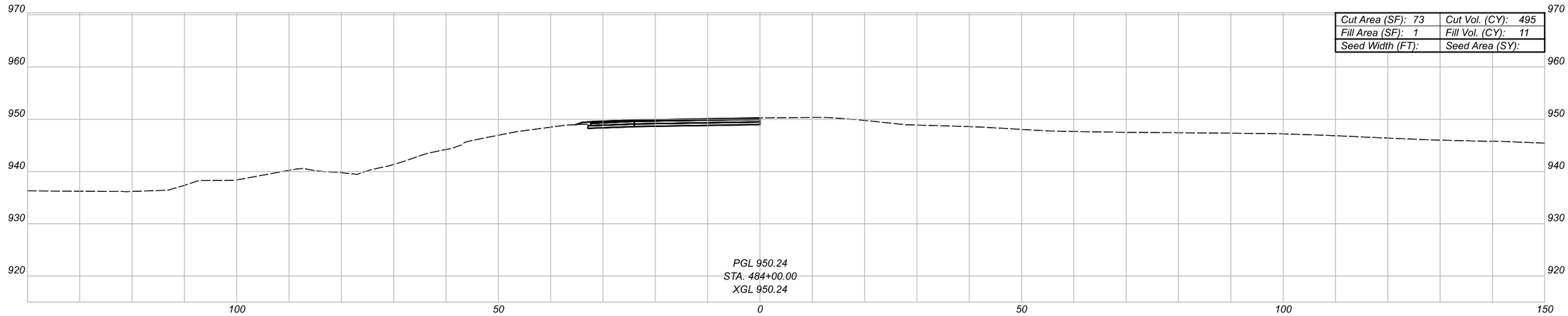
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

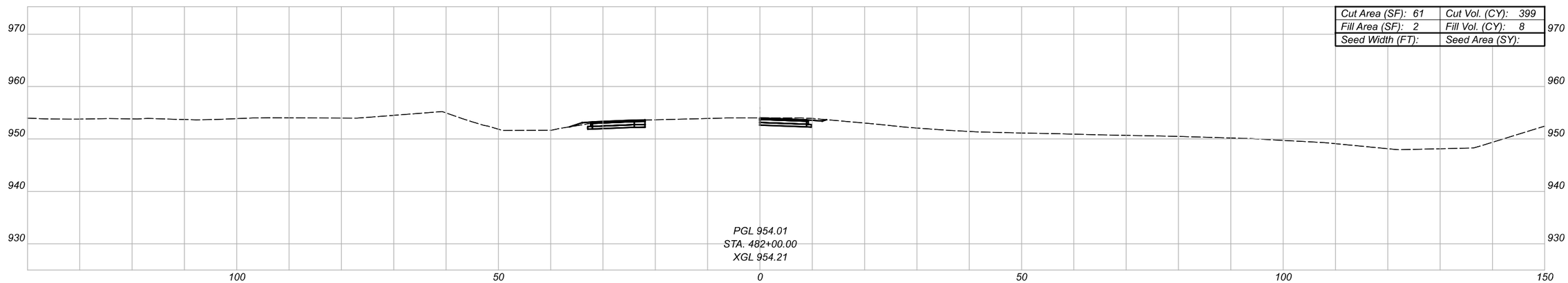
SHEET: 88 TOTAL: 161



Cut Area (SF): 73	Cut Vol. (CY): 538
Fill Area (SF): 11	Fill Vol. (CY): 47
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 73	Cut Vol. (CY): 495
Fill Area (SF): 1	Fill Vol. (CY): 11
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 61	Cut Vol. (CY): 399
Fill Area (SF): 2	Fill Vol. (CY): 8
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-WILMINGTON SB ENTRANCE RAMP ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS476-IB-1 PAPERSIZE: 7x11 (in.) DATE: 9/12/2023 TIME: 12:14:27 PM USER: jespelage
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DESIGN AGENCY

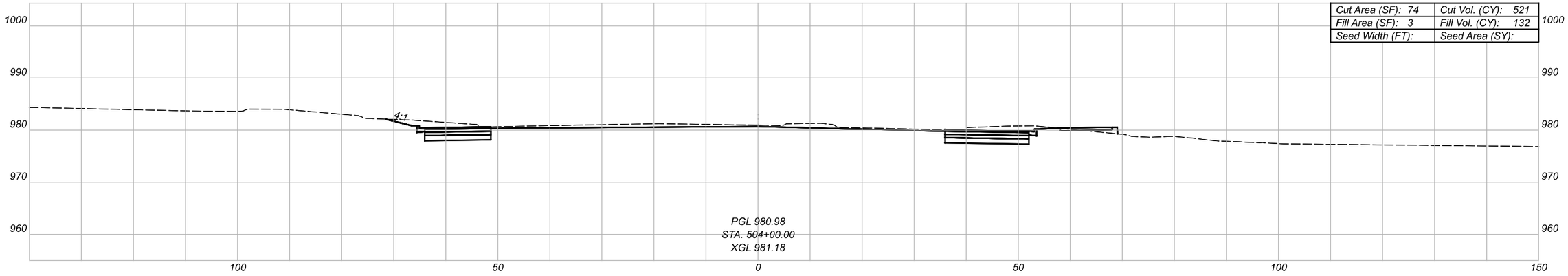
DESIGNER ARW

REVIEWER JRE 03/24/23

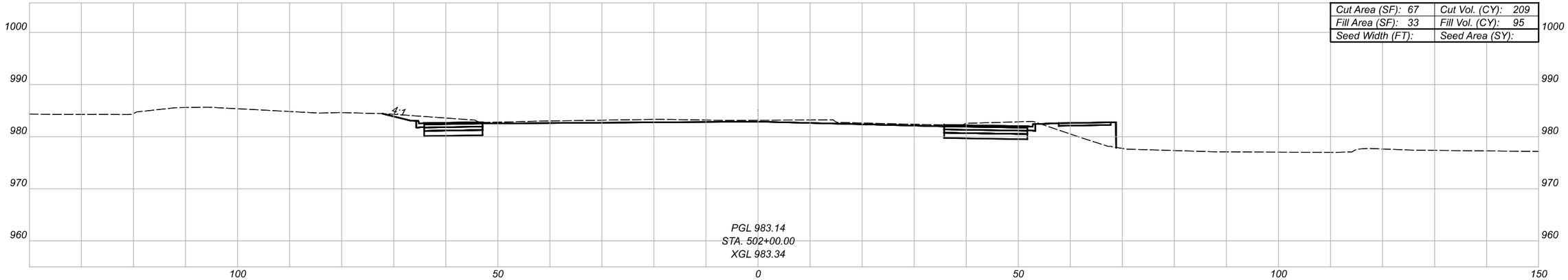
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
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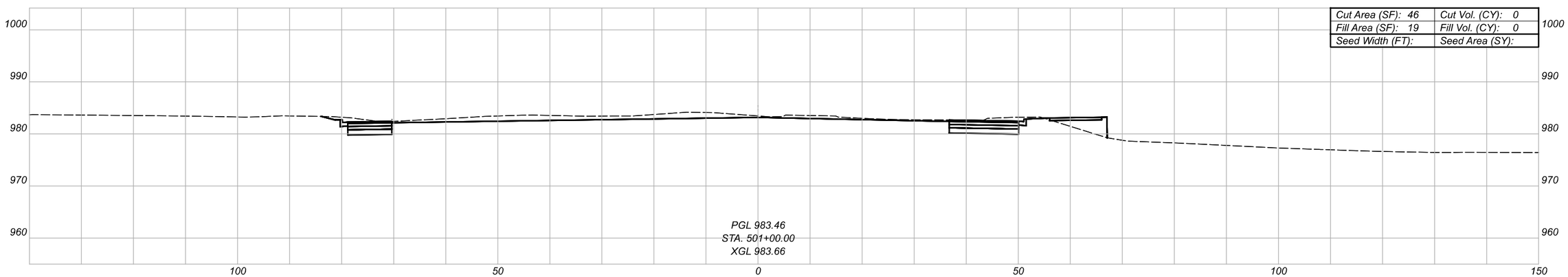
SHEET 89 TOTAL 161



Cut Area (SF): 74	Cut Vol. (CY): 521
Fill Area (SF): 3	Fill Vol. (CY): 132
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 67	Cut Vol. (CY): 209
Fill Area (SF): 33	Fill Vol. (CY): 95
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 46	Cut Vol. (CY): 0
Fill Area (SF): 19	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS501 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:15:38 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

DESIGN AGENCY

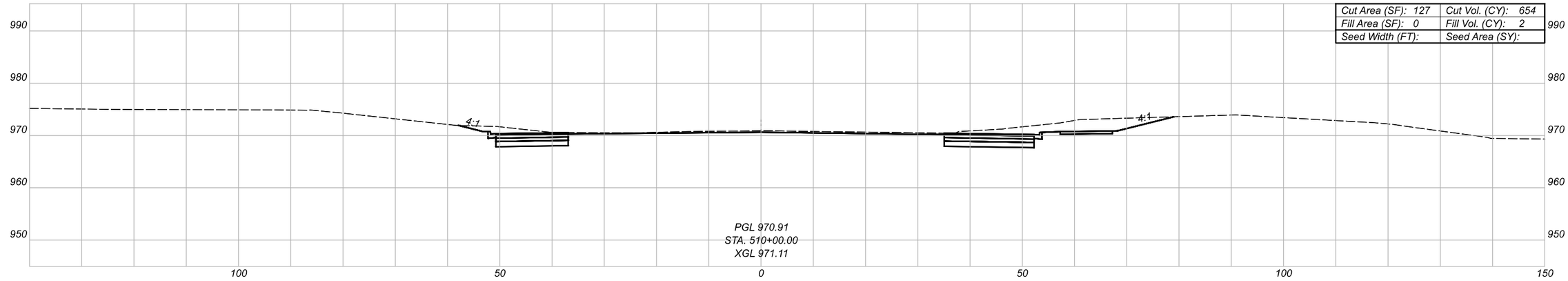
DESIGNER
JMD

REVIEWER
JRE 03/24/23

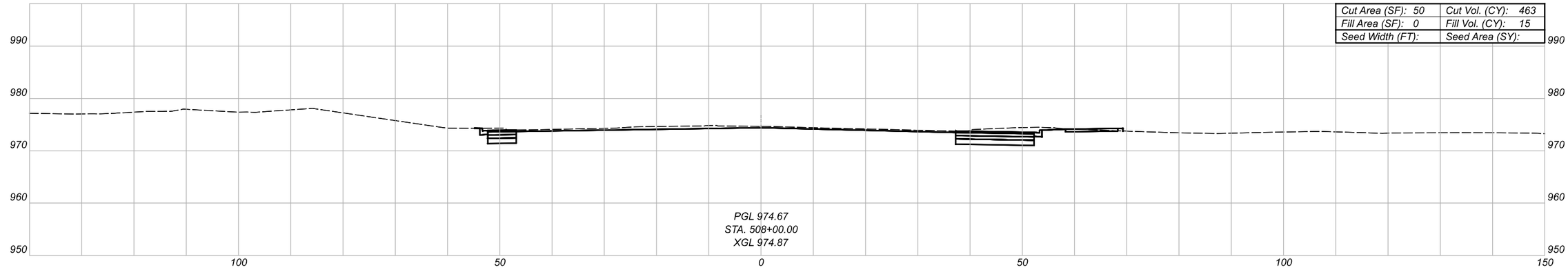
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
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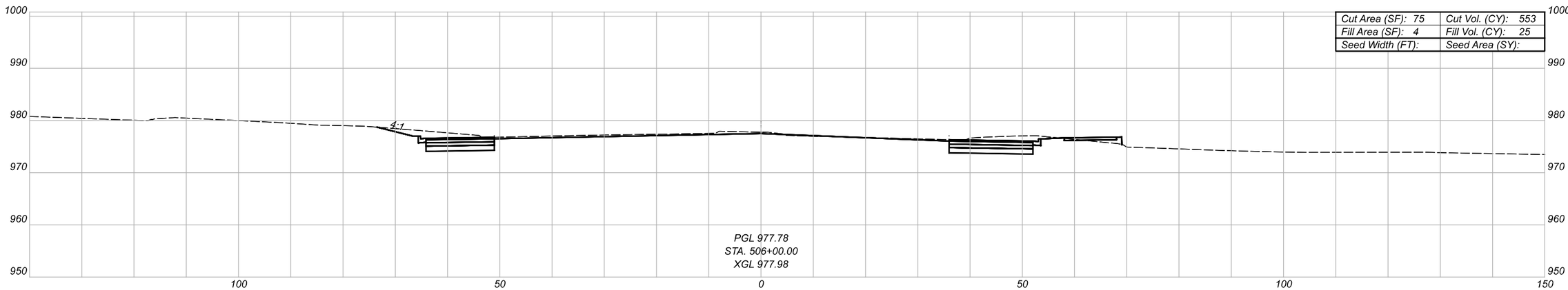
SHEET	TOTAL
90	161



Cut Area (SF): 127	Cut Vol. (CY): 654
Fill Area (SF): 0	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 50	Cut Vol. (CY): 463
Fill Area (SF): 0	Fill Vol. (CY): 15
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 75	Cut Vol. (CY): 553
Fill Area (SF): 4	Fill Vol. (CY): 25
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 1B

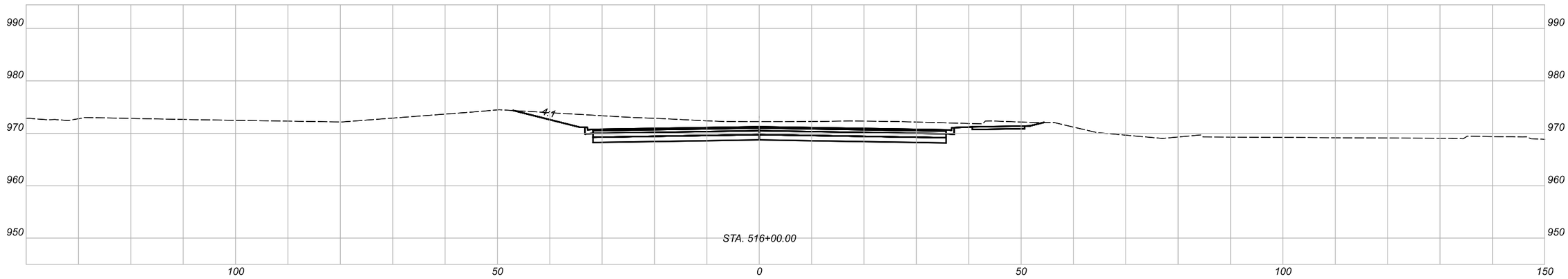
MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS502 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:16:53 PM USER: jespelage
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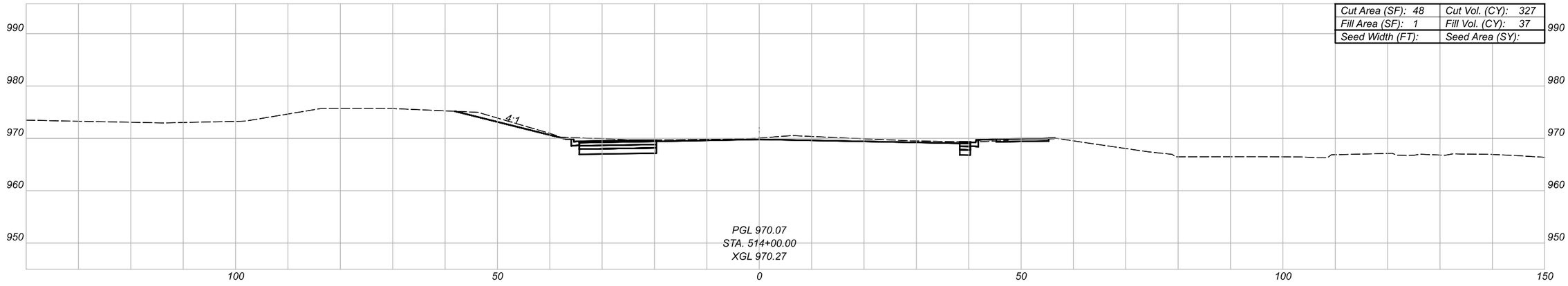
DESIGN AGENCY

DESIGNER	JMD
REVIEWER	JRE 03/24/23
PROJECT ID	115160
SHEET	91
TOTAL	161

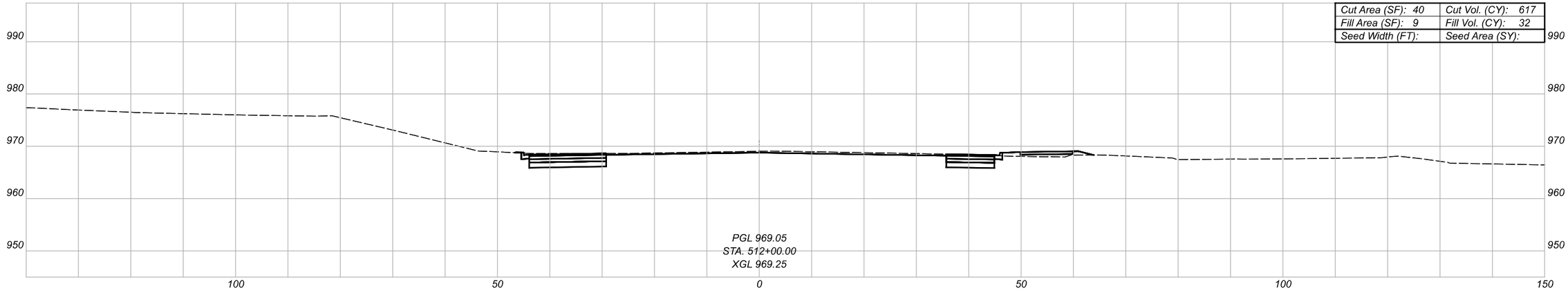
Sheet Totals		
Seeding	Cut	Fill
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Cut Area (SF): 48	Cut Vol. (CY): 327
Fill Area (SF): 1	Fill Vol. (CY): 37
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 40	Cut Vol. (CY): 617
Fill Area (SF): 9	Fill Vol. (CY): 32
Seed Width (FT):	Seed Area (SY):



MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS503 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:18:06 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER
JMD

REVIEWER
JRE 03/24/23

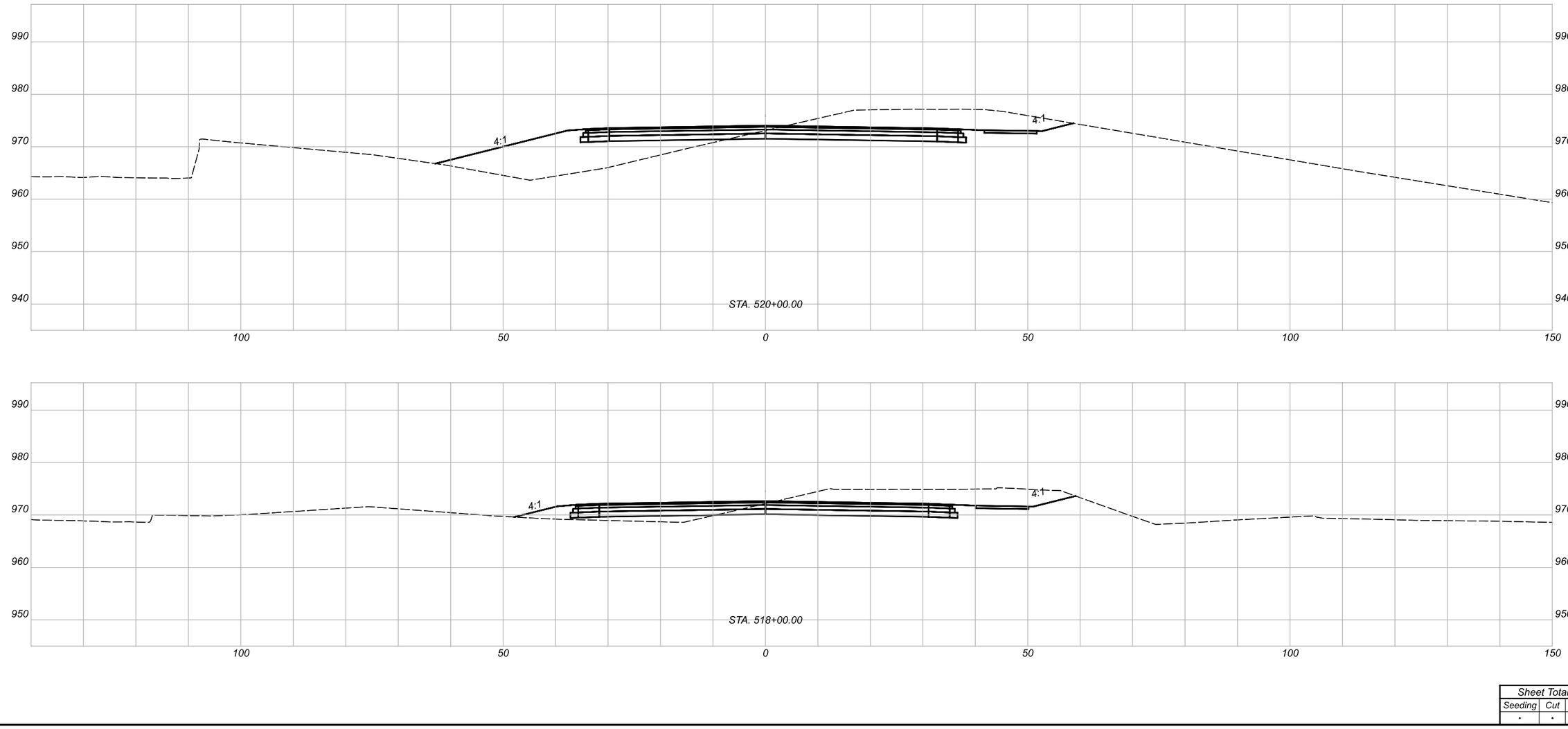
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Sheet Totals		
Seeding	Cut	Fill
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SHEET 92 TOTAL 161

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS504 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:19:19 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

DESIGN AGENCY

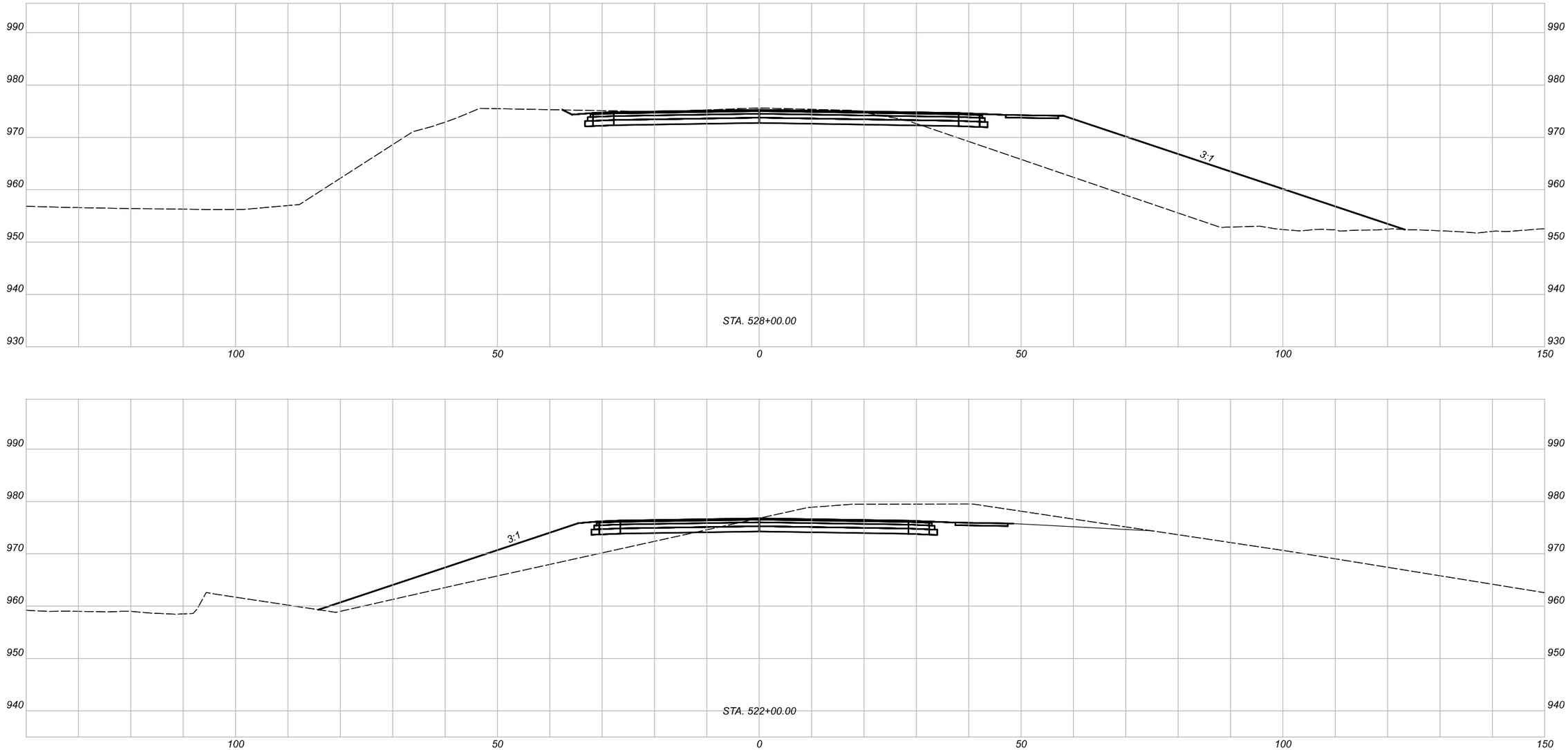
DESIGNER: JMD

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET: 93 TOTAL: 161



MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS505 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:20:08 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 1B

DESIGN AGENCY

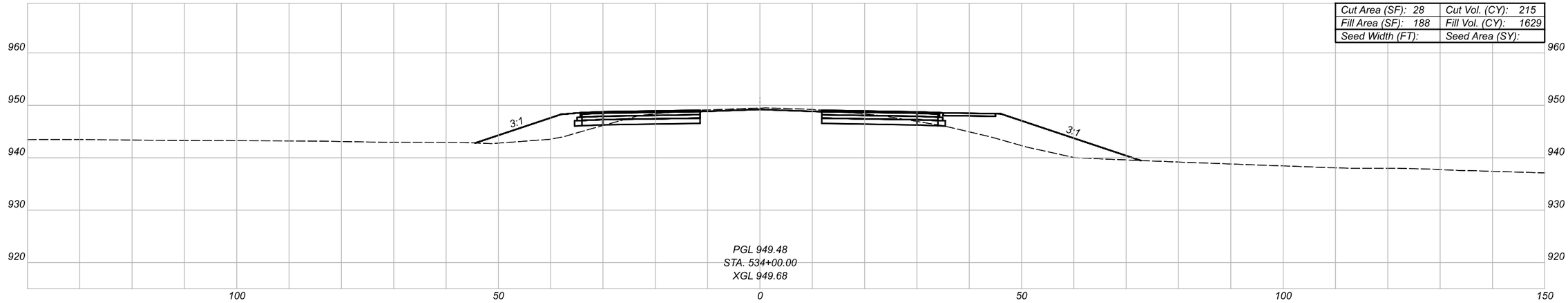
DESIGNER: JMD

REVIEWER: JRE 03/24/23

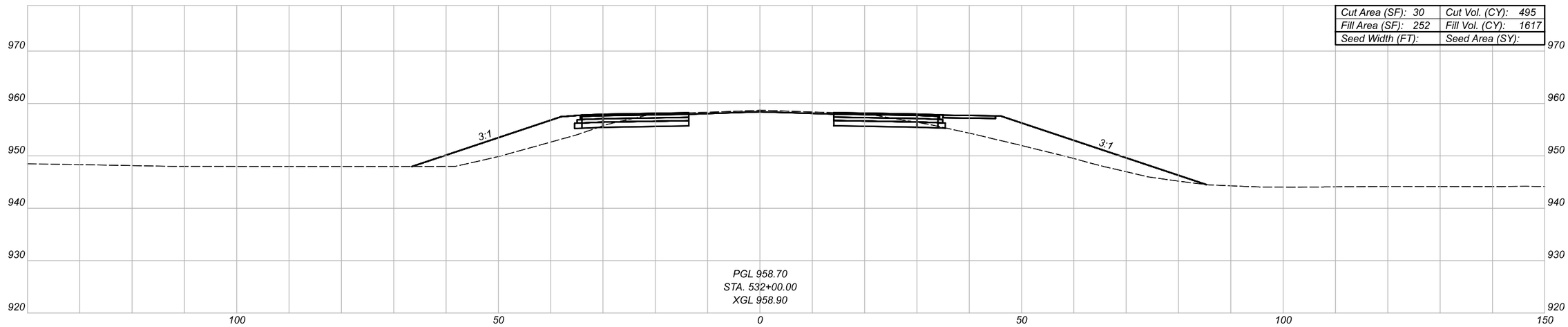
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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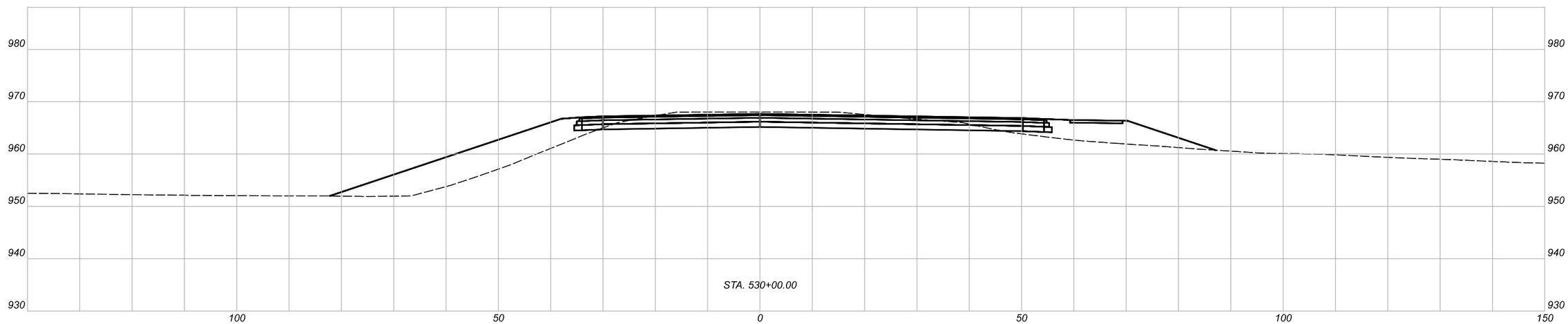
SHEET: 94 TOTAL: 161



Cut Area (SF): 28	Cut Vol. (CY): 215
Fill Area (SF): 188	Fill Vol. (CY): 1629
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 30	Cut Vol. (CY): 495
Fill Area (SF): 252	Fill Vol. (CY): 1617
Seed Width (FT):	Seed Area (SY):



CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 1B

DESIGN AGENCY

DESIGNER JMD

REVIEWER JRE 03/24/23

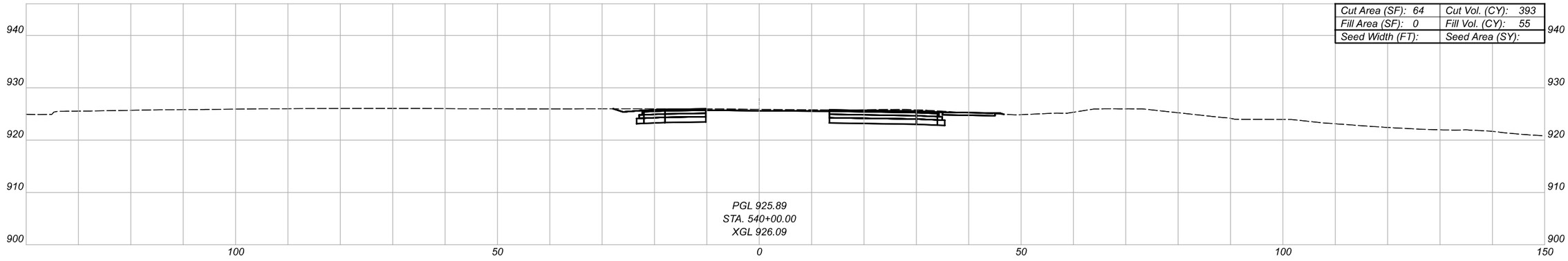
PROJECT ID 115160

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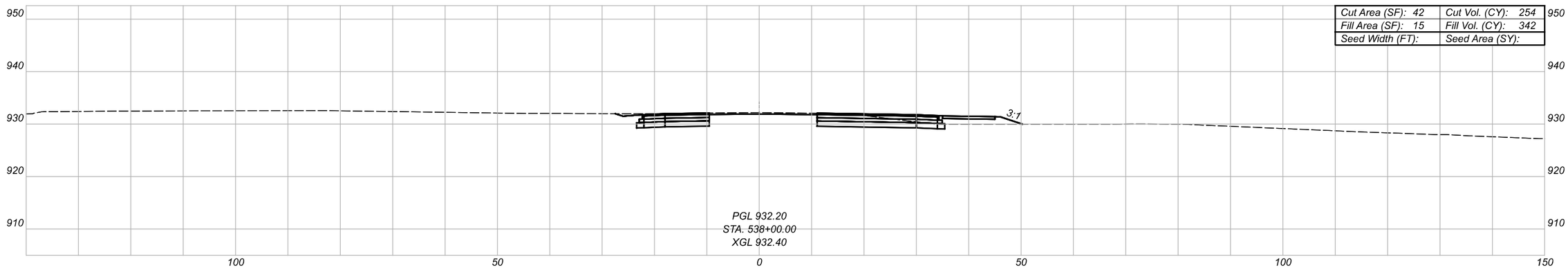
SHEET 95 TOTAL 161

MOT/GRE I-675/WILMINGTON

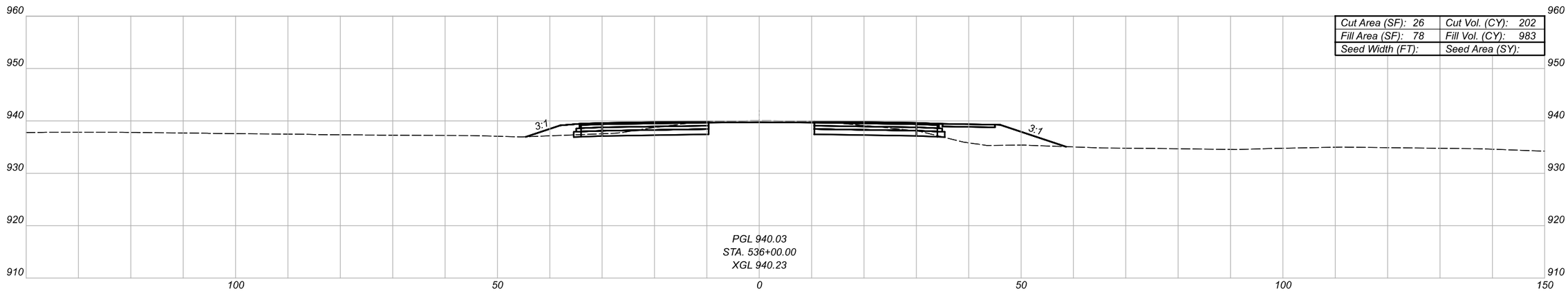
MODEL: II5160_XS506 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 3:04:26 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\II5160\400-Engineering\Roadway\Sheets\II5160_XS506.dgn



Cut Area (SF): 64	Cut Vol. (CY): 393
Fill Area (SF): 0	Fill Vol. (CY): 55
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 42	Cut Vol. (CY): 254
Fill Area (SF): 15	Fill Vol. (CY): 342
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 26	Cut Vol. (CY): 202
Fill Area (SF): 78	Fill Vol. (CY): 983
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS507 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:22:11 PM USER: jespelage
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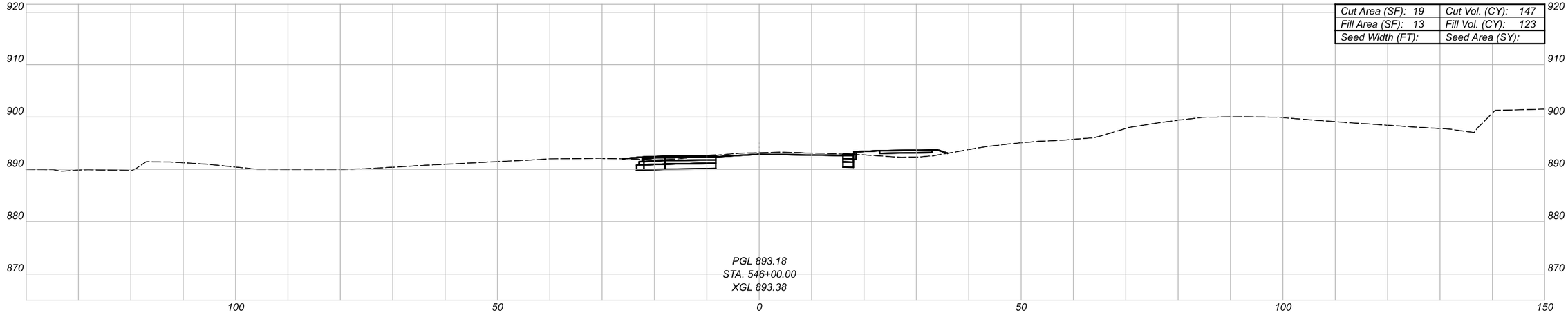
CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

DESIGN AGENCY

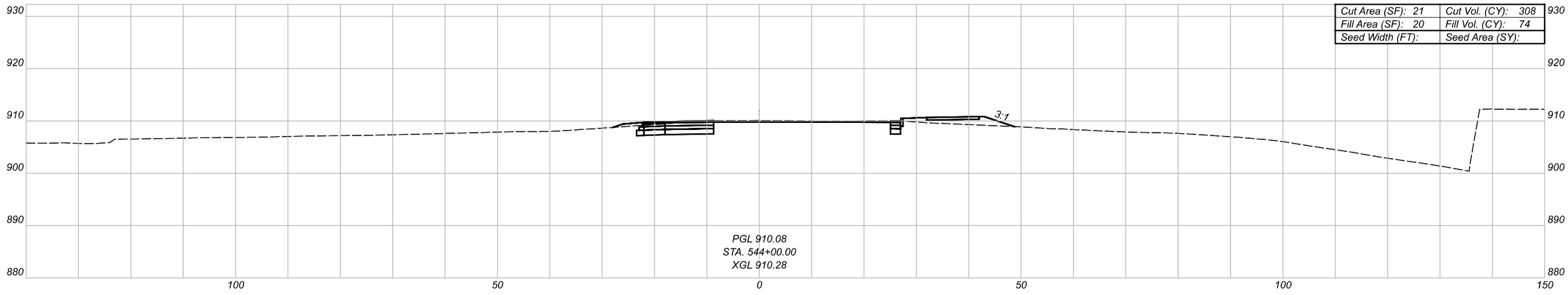
DESIGNER: JMD
REVIEWER: JRE 03/24/23
PROJECT ID: 115160

Sheet Totals		
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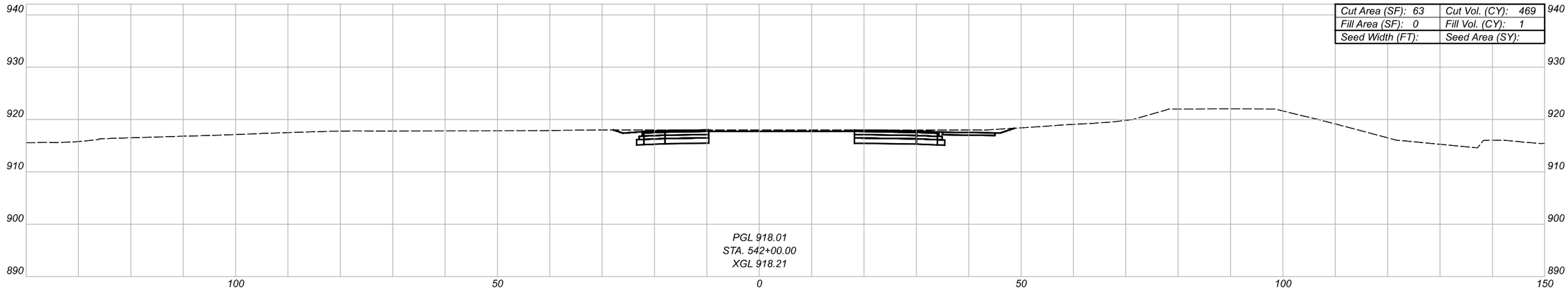
SHEET: 96 TOTAL: 161



Cut Area (SF): 19	Cut Vol. (CY): 147
Fill Area (SF): 13	Fill Vol. (CY): 123
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 21	Cut Vol. (CY): 308
Fill Area (SF): 20	Fill Vol. (CY): 74
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 63	Cut Vol. (CY): 469
Fill Area (SF): 0	Fill Vol. (CY): 1
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS508 PAPERSIZE: ITxII(In.) DATE: 9/12/2023 TIME: 12:23:25 PM USER: Jespelage
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CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 1B

DESIGN AGENCY

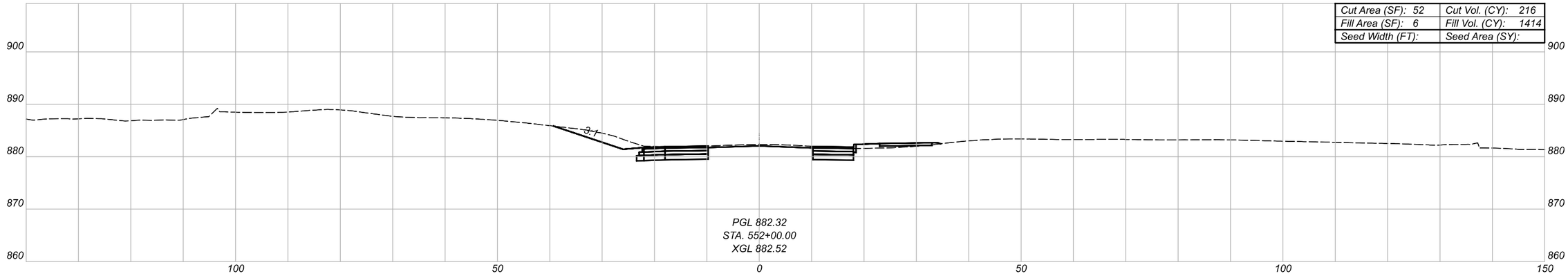
DESIGNER JMD

REVIEWER JRE 03/24/23

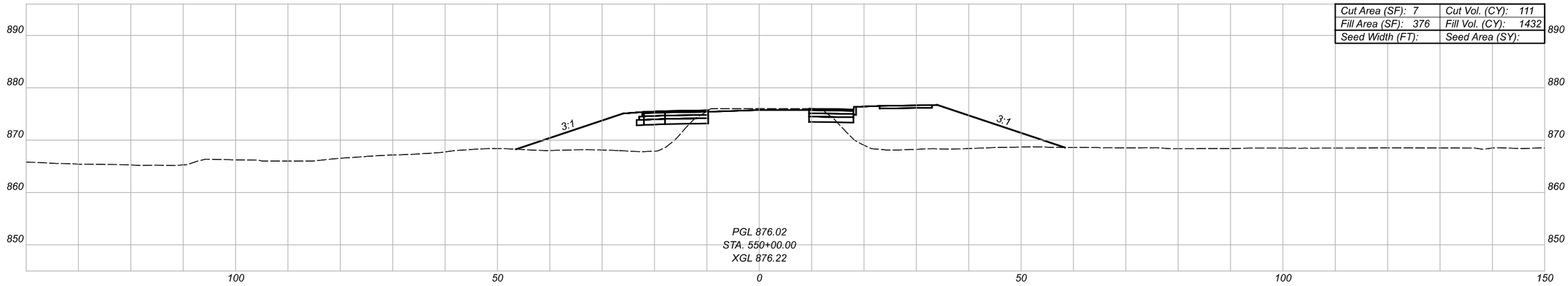
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
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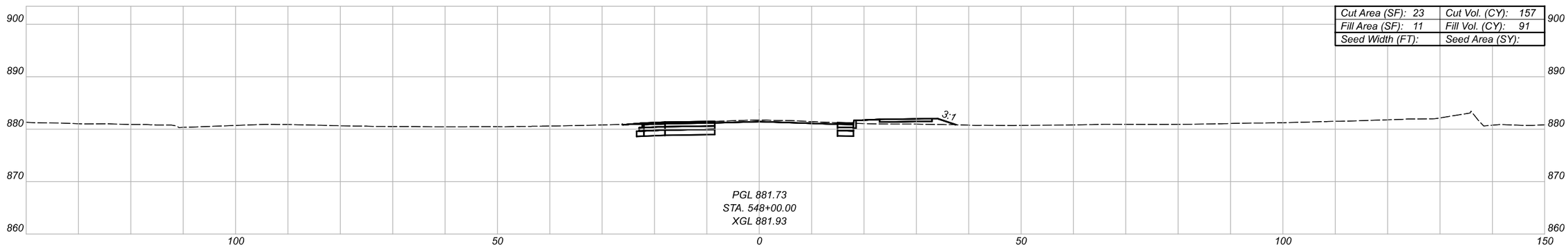
SHEET 97 TOTAL 161



Cut Area (SF): 52	Cut Vol. (CY): 216
Fill Area (SF): 6	Fill Vol. (CY): 1414
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 7	Cut Vol. (CY): 111
Fill Area (SF): 376	Fill Vol. (CY): 1432
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 23	Cut Vol. (CY): 157
Fill Area (SF): 11	Fill Vol. (CY): 91
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS509 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:24:37 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

DESIGN AGENCY

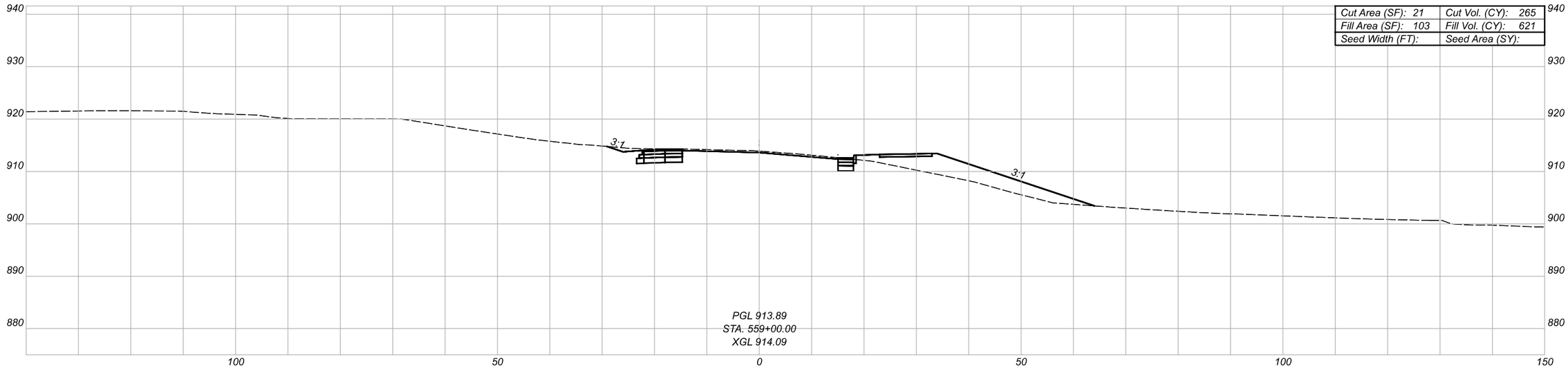
DESIGNER JMD

REVIEWER JRE 03/24/23

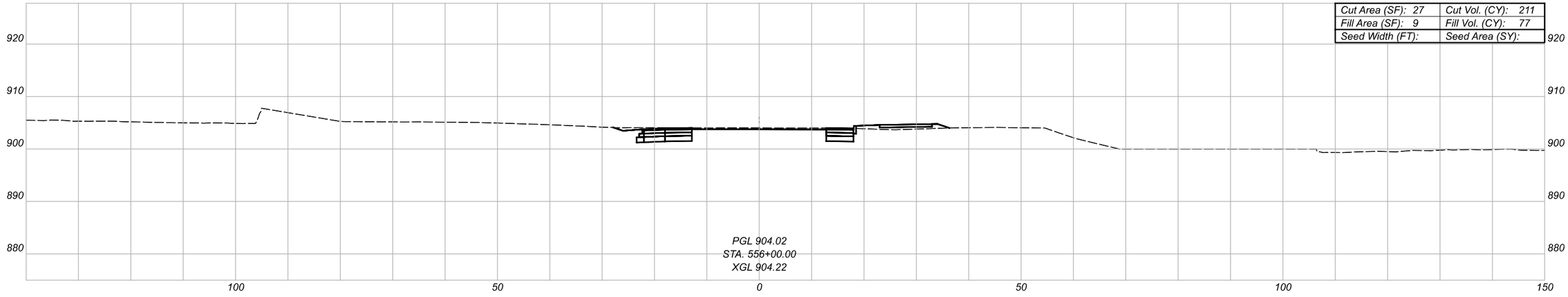
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
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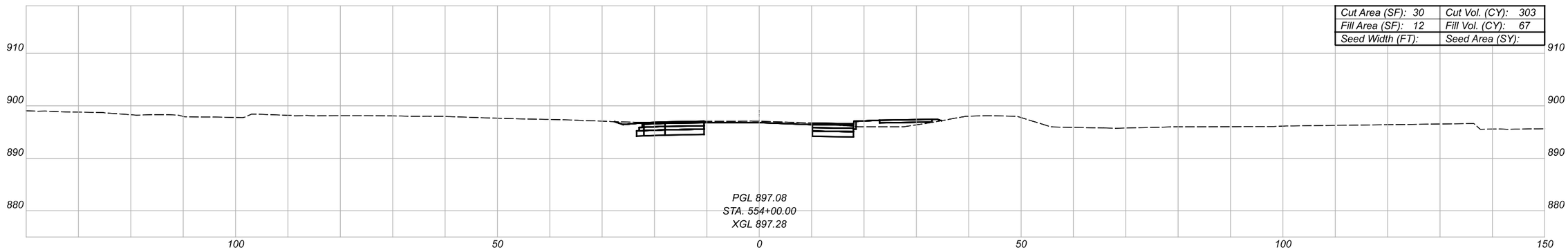
SHEET 98 TOTAL 161



Cut Area (SF): 21	Cut Vol. (CY): 265
Fill Area (SF): 103	Fill Vol. (CY): 621
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 27	Cut Vol. (CY): 211
Fill Area (SF): 9	Fill Vol. (CY): 77
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 30	Cut Vol. (CY): 303
Fill Area (SF): 12	Fill Vol. (CY): 67
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 1B

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS50 PAPERSIZE: 17x11(in) DATE: 9/12/2023 TIME: 12:25:38 PM USER: jespelage
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DESIGN AGENCY

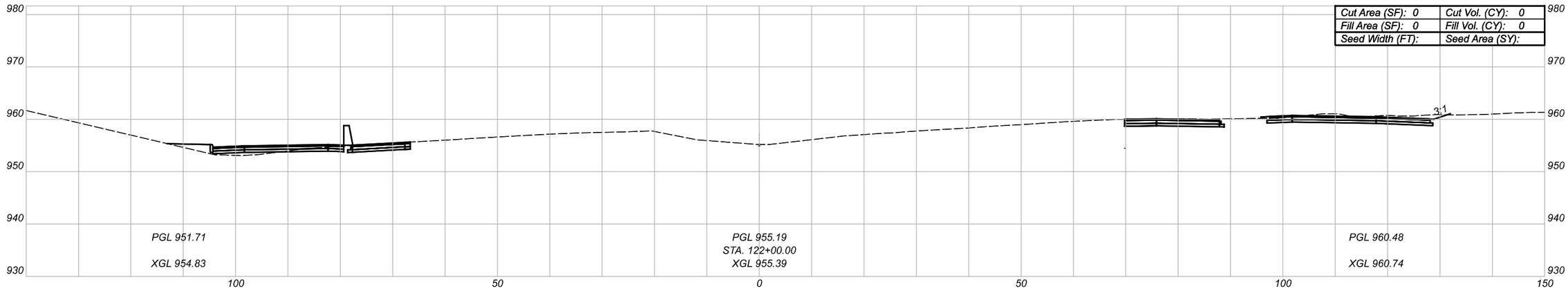
DESIGNER
JMD

REVIEWER
JRE 03/24/23

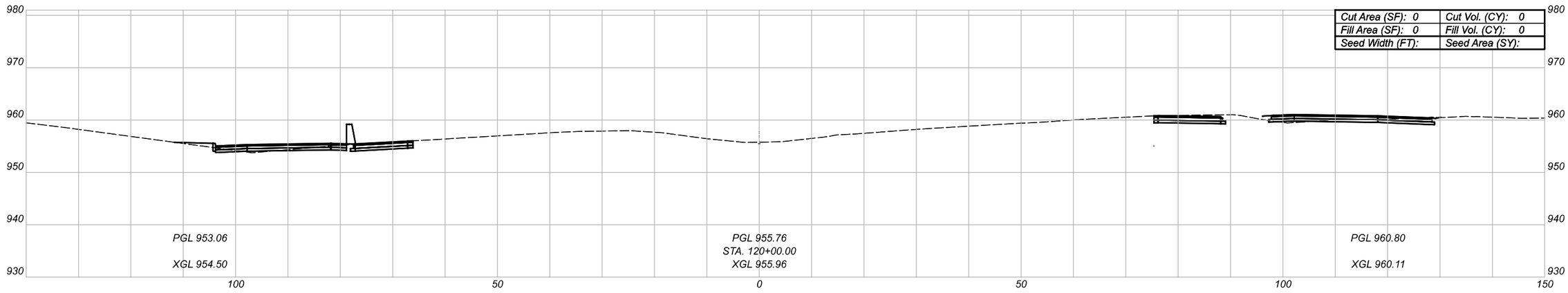
PROJECT ID
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Sheet Totals		
Seeding	Cut	Fill
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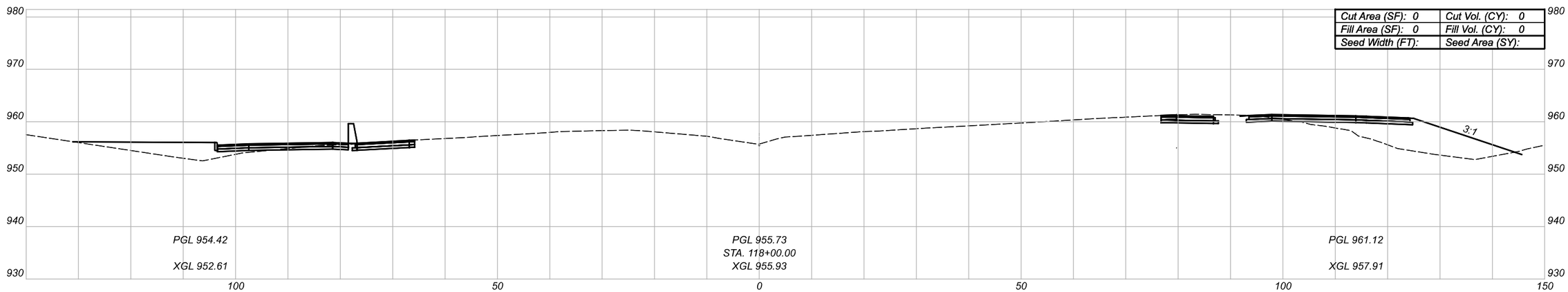
SHEET 99 TOTAL 161



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

CROSS SECTIONS-I-675
ALTERNATIVE 2

MODEL: I15160_XS101 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 3:05:49 PM USER: jespelage
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Sheet Totals		
Seeding	Cut	Fill
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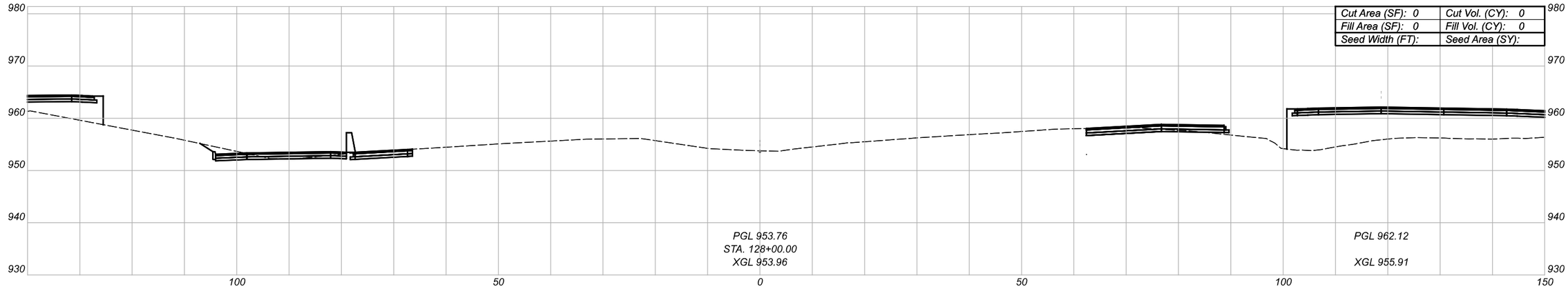
DESIGN AGENCY

DESIGNER
ARW

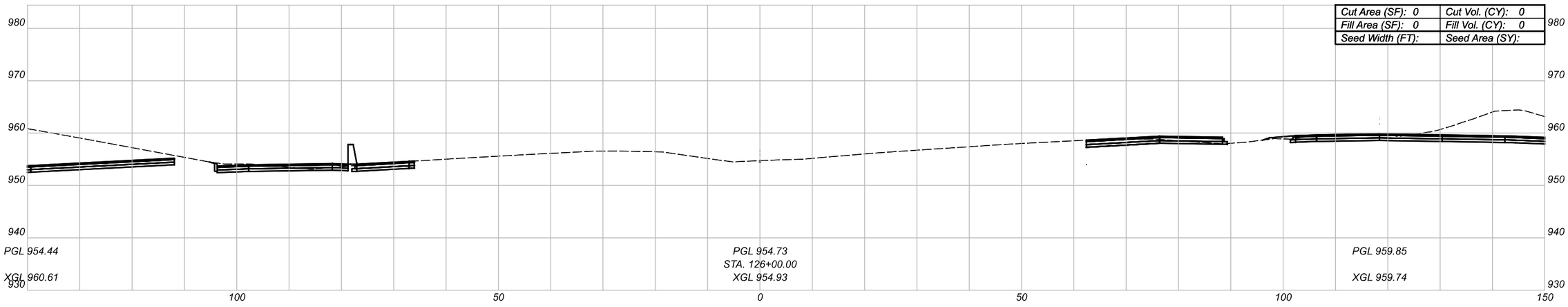
REVIEWER
JRE 03/24/23

PROJECT ID
115160

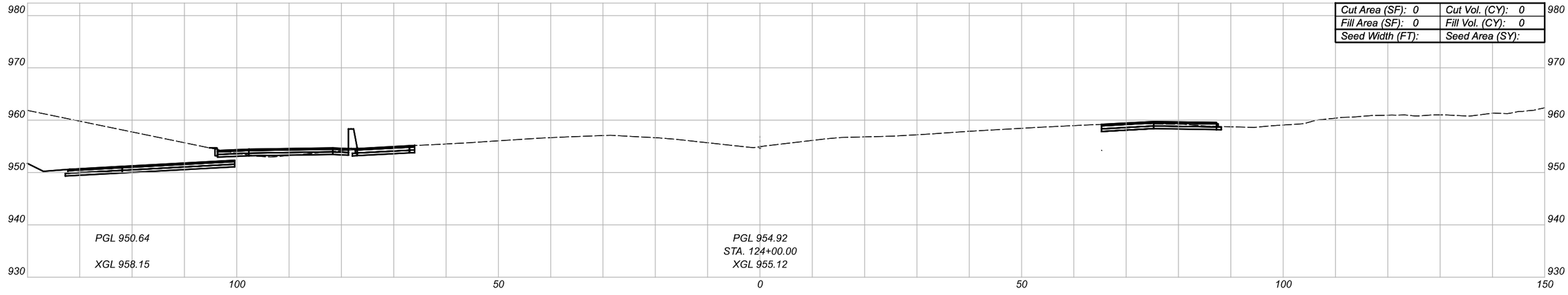
SHEET	TOTAL
100	161



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS102 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:29:11 PM USER: jespelage
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CROSS SECTIONS-I-675
ALTERNATIVE 2

DESIGN AGENCY

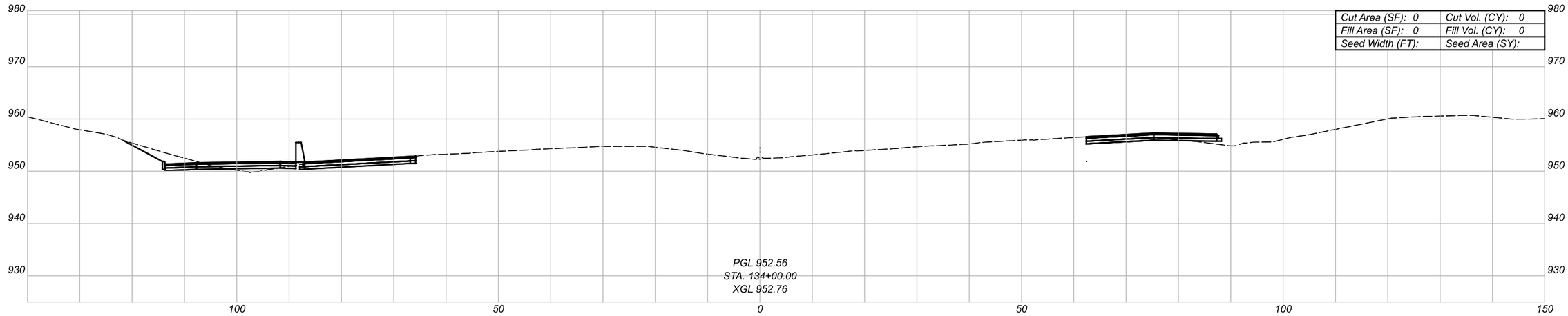
DESIGNER
ARW

REVIEWER
JRE 03/24/23

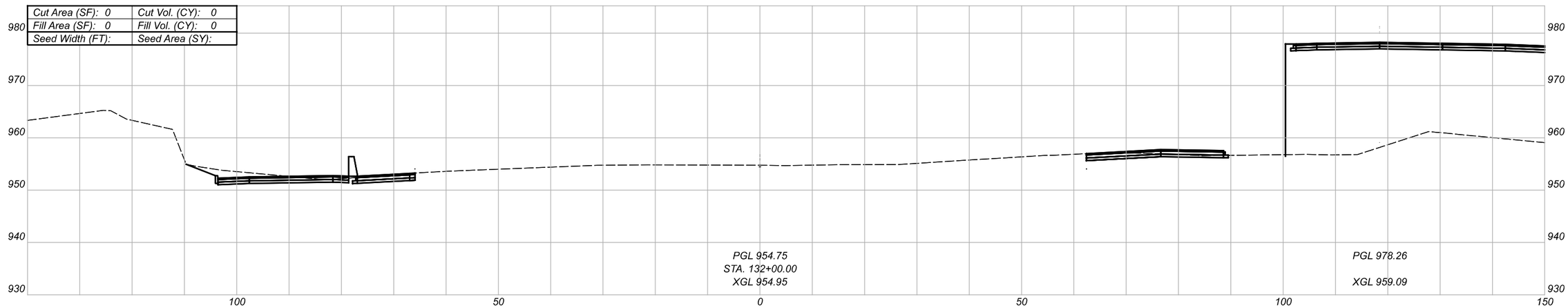
PROJECT ID
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Sheet Totals		
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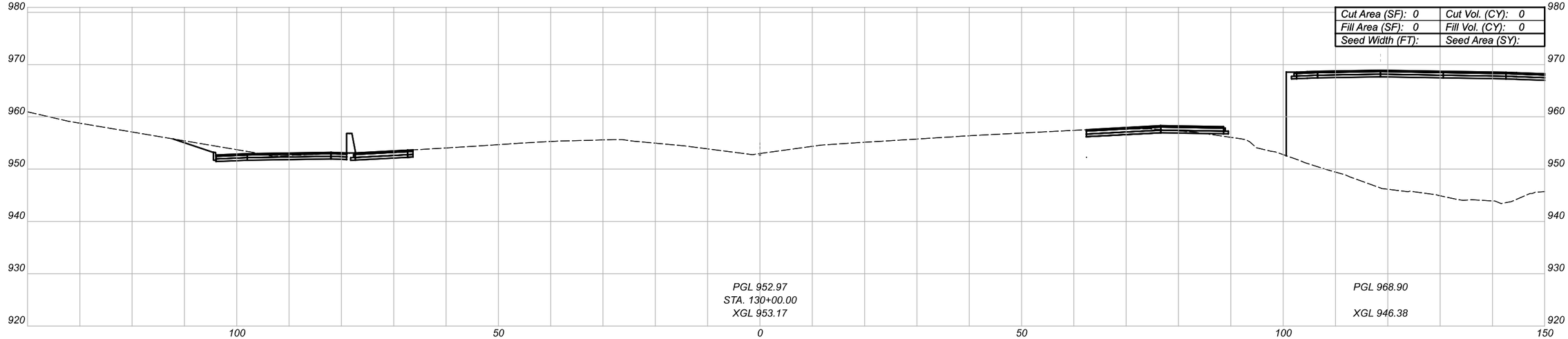
SHEET	TOTAL
101	161



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-I-675
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS03 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:30:17 PM USER: jespelage
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DESIGN AGENCY

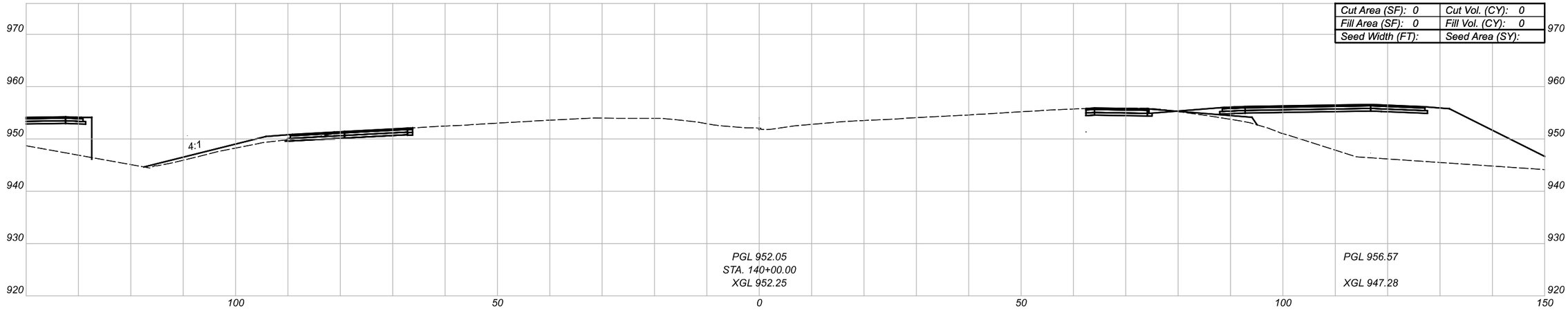
DESIGNER: ARW

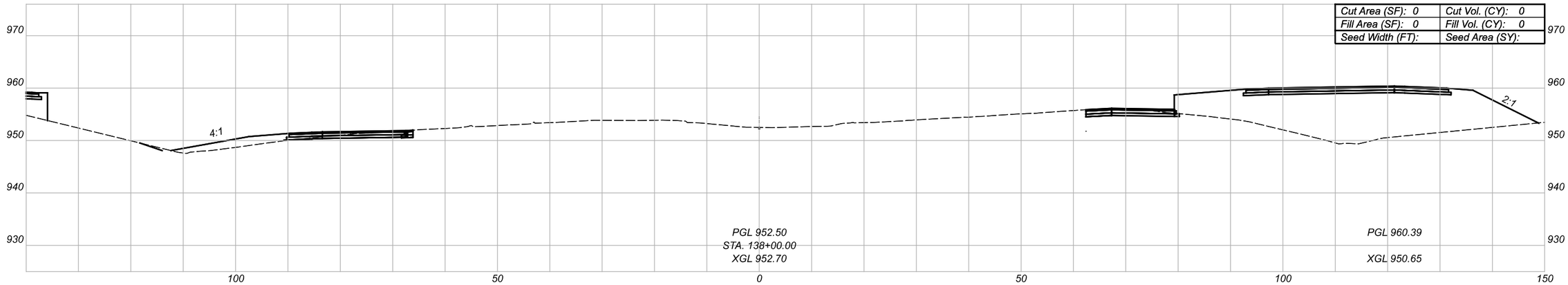
REVIEWER: JRE 03/24/23

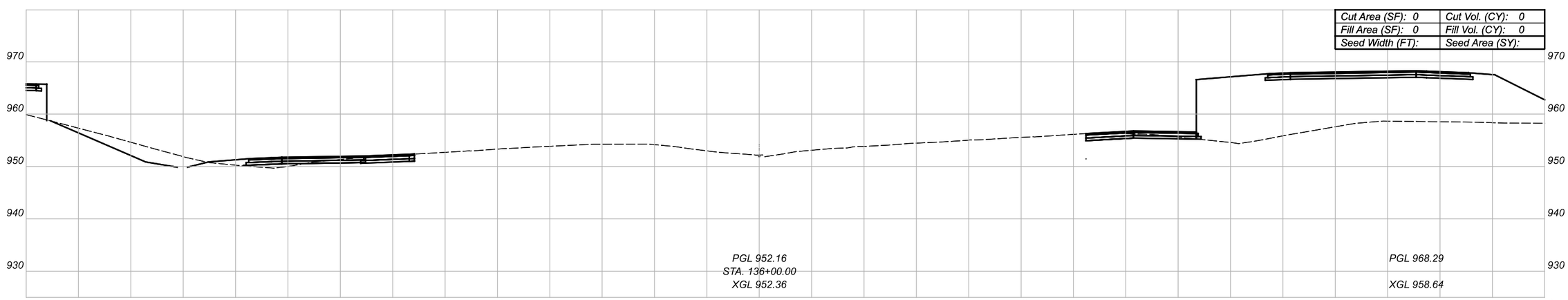
PROJECT ID: 115160

Sheet Totals		
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SHEET: 102 TOTAL: 161







MOT/GRE I-675/WILMINGTON

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CROSS SECTIONS-I-675 ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: ARW

REVIEWER: JRE 03/24/23

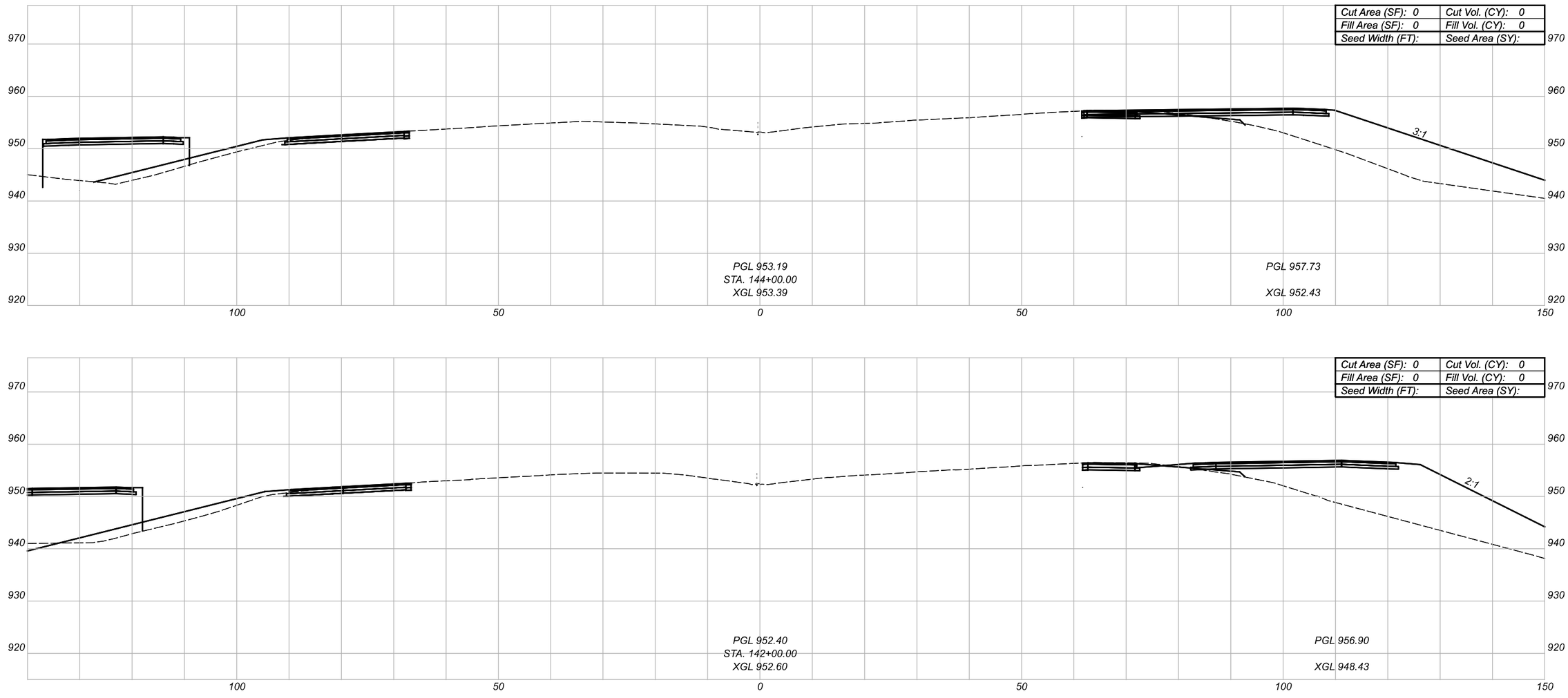
PROJECT ID: 115160

Sheet Totals		
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SHEET: 103 TOTAL: 161

MODEL: 115160_XS05 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 3:09:22 PM USER: jespelage
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CROSS SECTIONS-I-675
ALTERNATIVE 2



Sheet Totals		
Seeding	Cut	Fill
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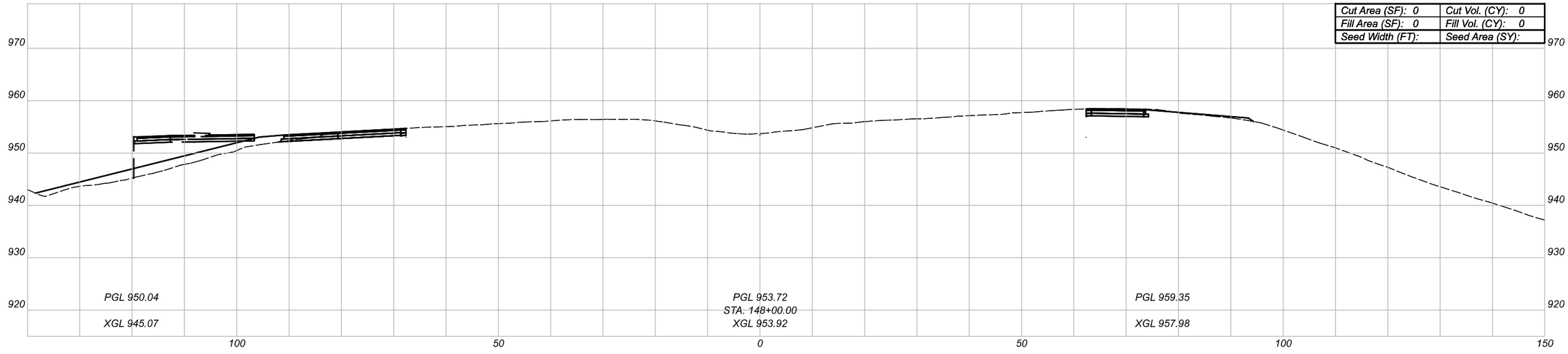
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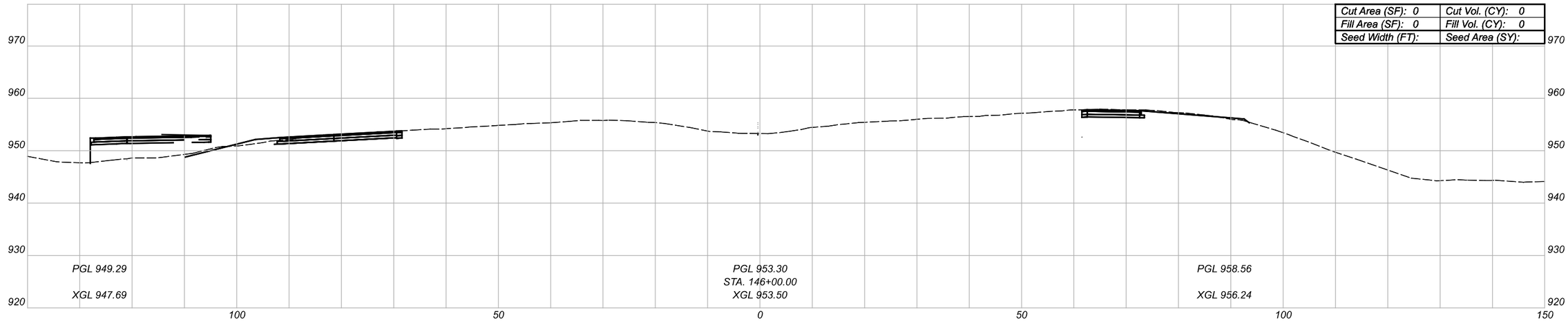
DESIGNER ARW

REVIEWER JRE 03/24/23

PROJECT ID 115160

SHEET 104 TOTAL 161





MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS106 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:33:14 PM USER: jespelage
G:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS106-2.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 2

DESIGN AGENCY

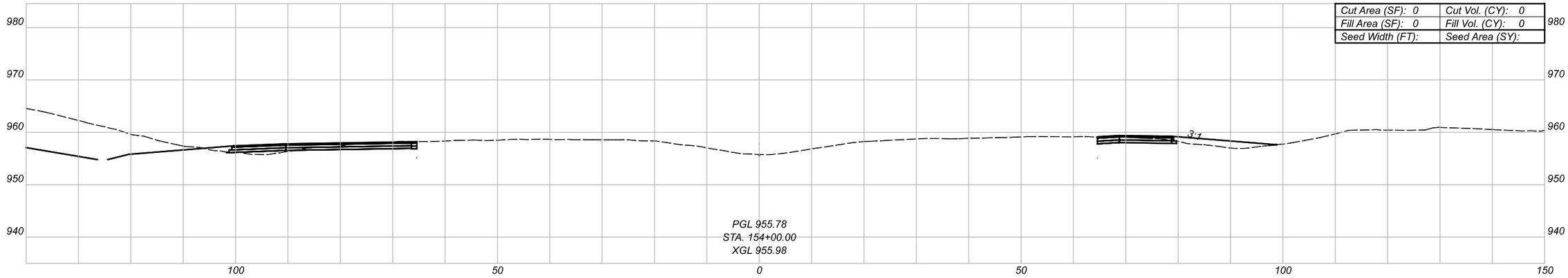
DESIGNER
ARW

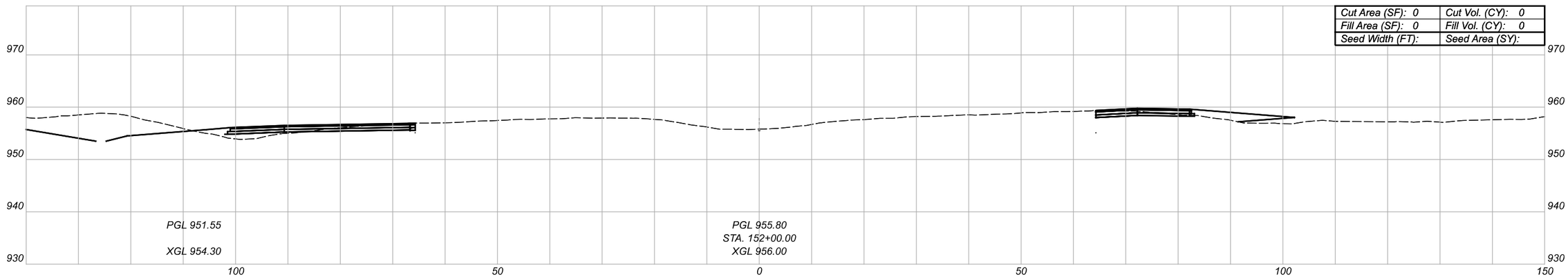
REVIEWER
JRE 03/24/23

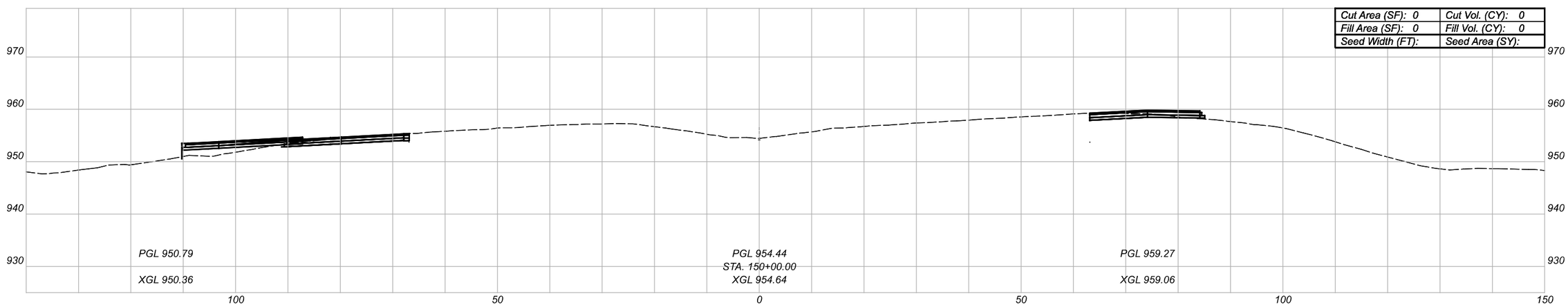
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Sheet Totals		
Seeding	Cut	Fill
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SHEET 105 TOTAL 161







CROSS SECTIONS-I-675
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XSI07 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:33:59 PM USER: jespelage
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DESIGN AGENCY

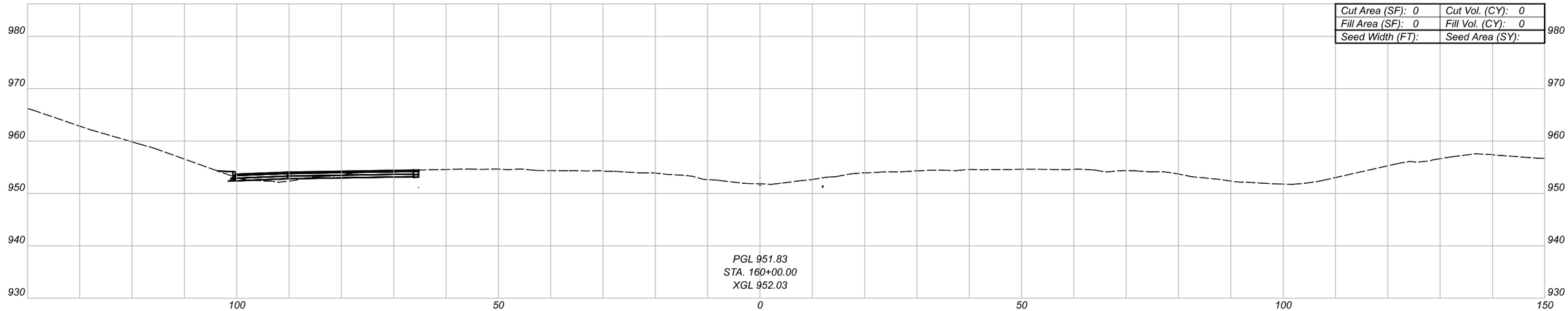
DESIGNER ARW

REVIEWER JRE 03/24/23

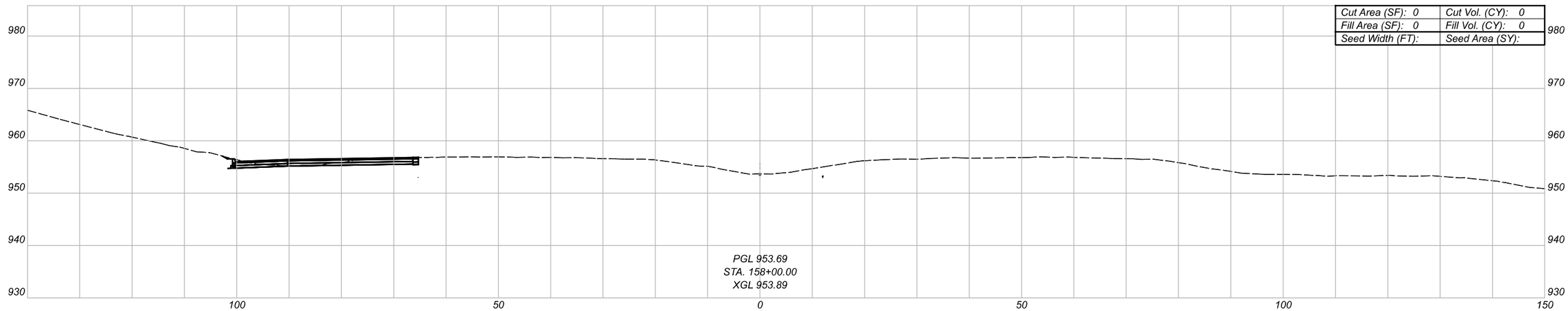
PROJECT ID 115160

Sheet Totals		
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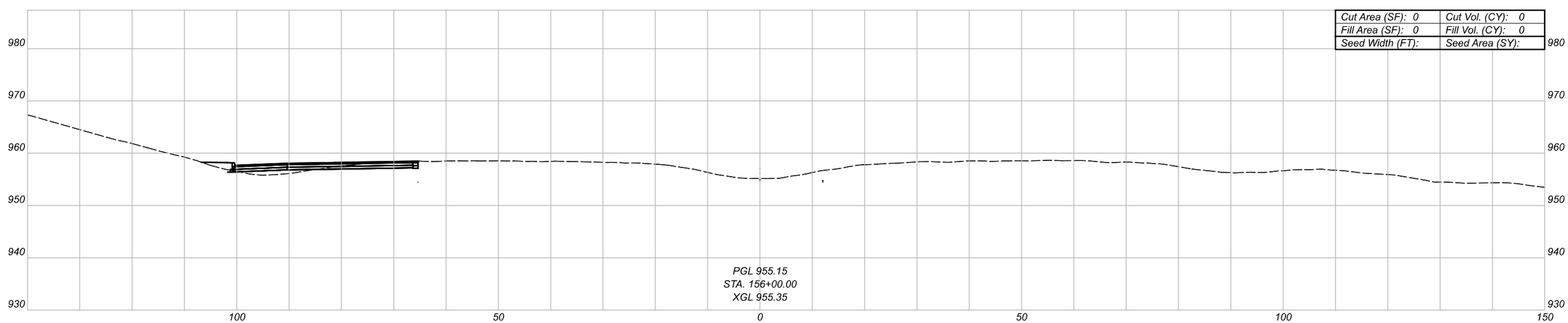
SHEET 106 TOTAL 161



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Seed Width (FT):	Seed Area (SY):



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Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



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Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS108 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:35:06 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I5160\400-Engineering\Roadway\Sheets\I5160_XS108-2.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 2

DESIGN AGENCY

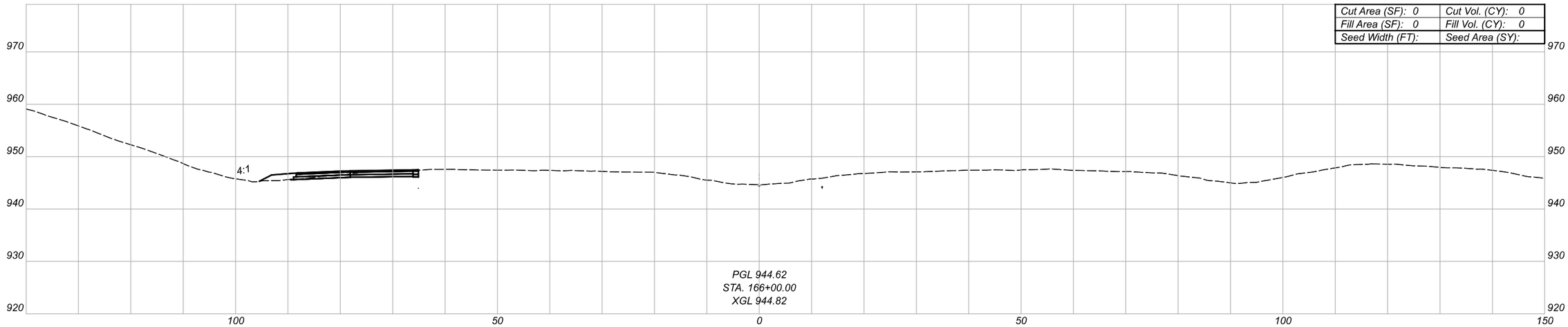
DESIGNER
ARW

REVIEWER
JRE 03/24/23

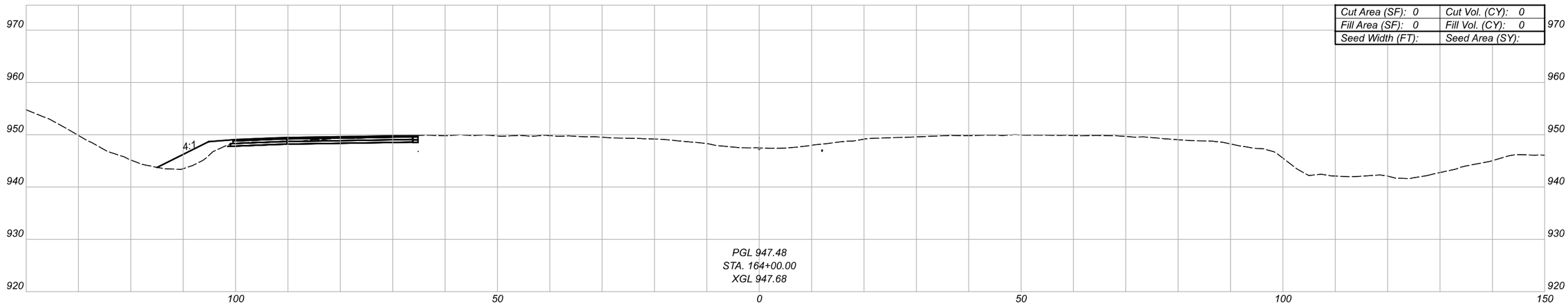
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
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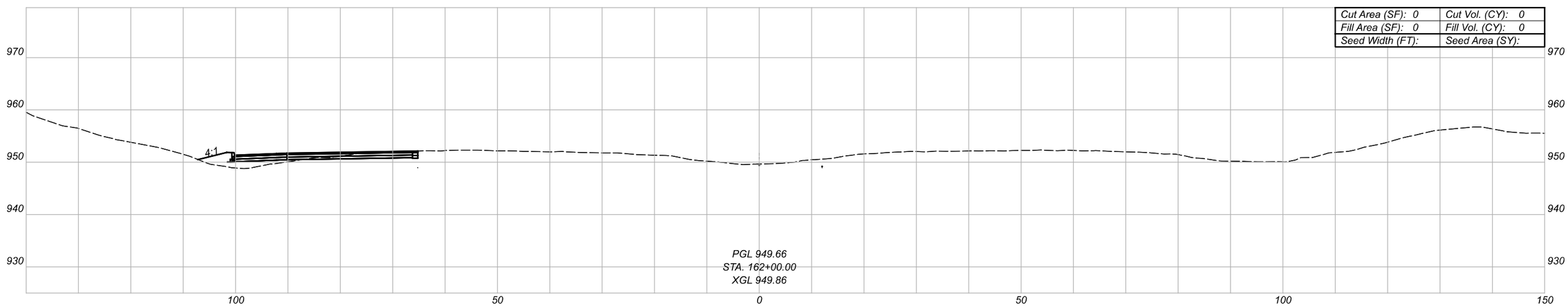
SHEET 107 TOTAL 161



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Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS09 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:36:12 PM USER: jespelage
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CROSS SECTIONS-I-675
ALTERNATIVE 2

DESIGN AGENCY

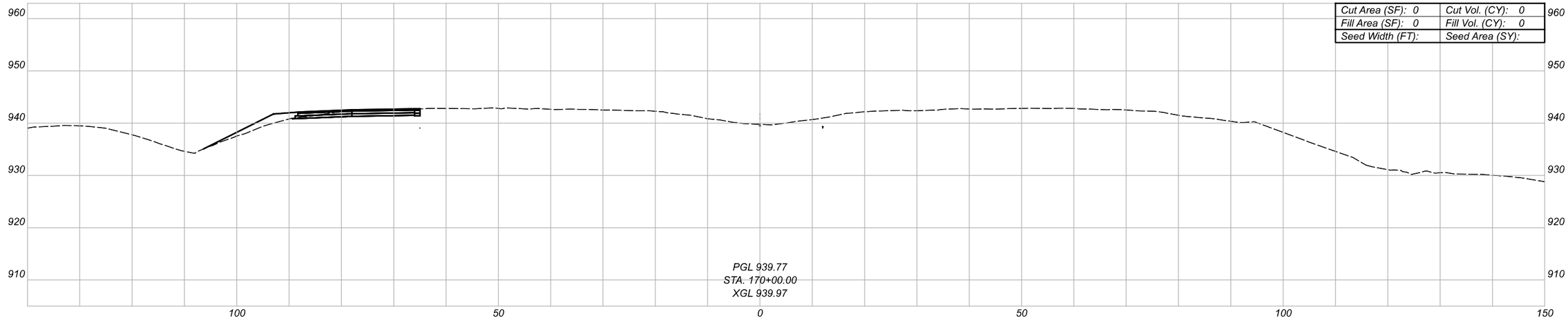
DESIGNER
ARW

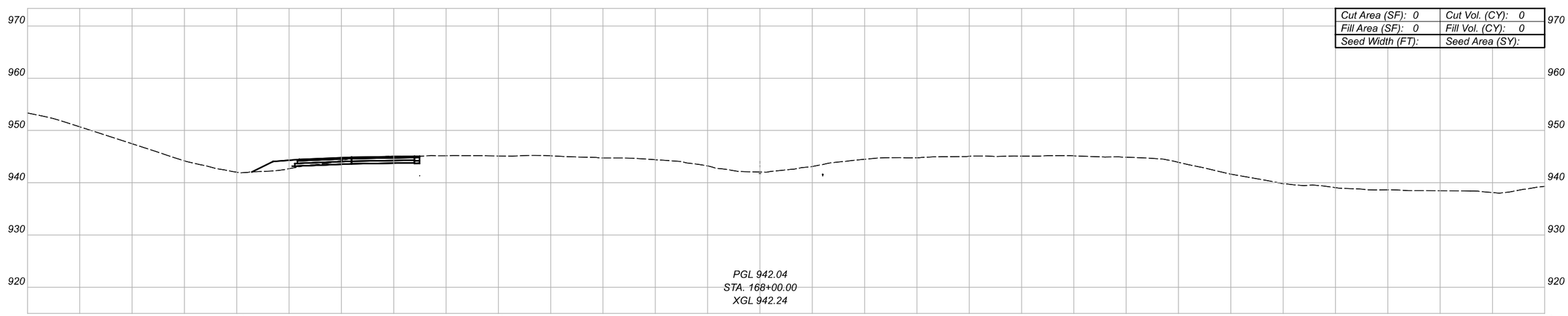
REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
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SHEET 108 TOTAL 161





MOT/GRE I-675/WILMINGTON

MODEL: CLX_I676 - 168+00.00 [Sheet] PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:37:18 PM USER: jespelage
Q:\Montgomery Cnty TID\011795JA.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS00-2.dgn

CROSS SECTIONS-I-675
ALTERNATIVE 2

Sheet Totals		
Seeding	Cut	Fill
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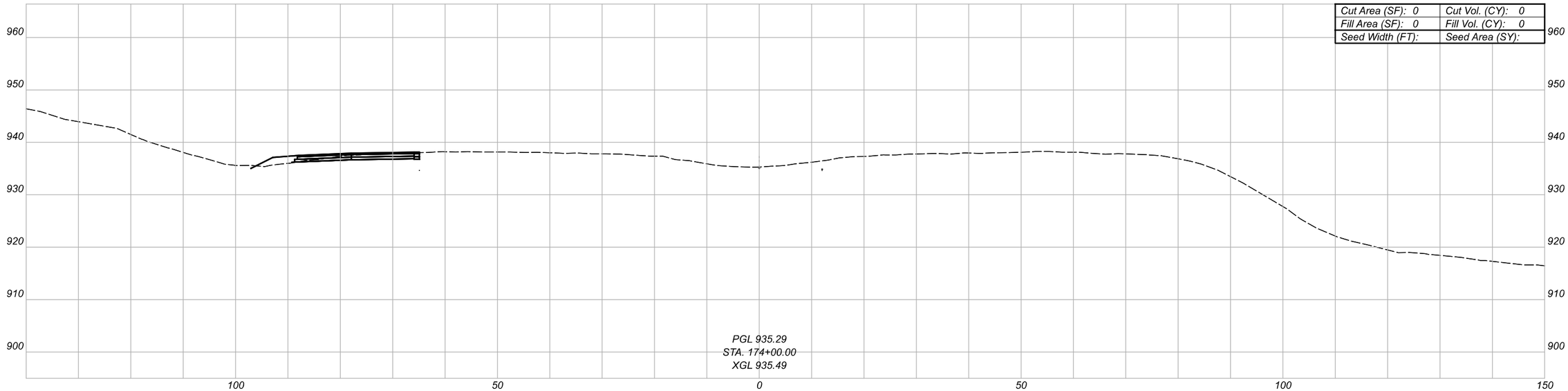
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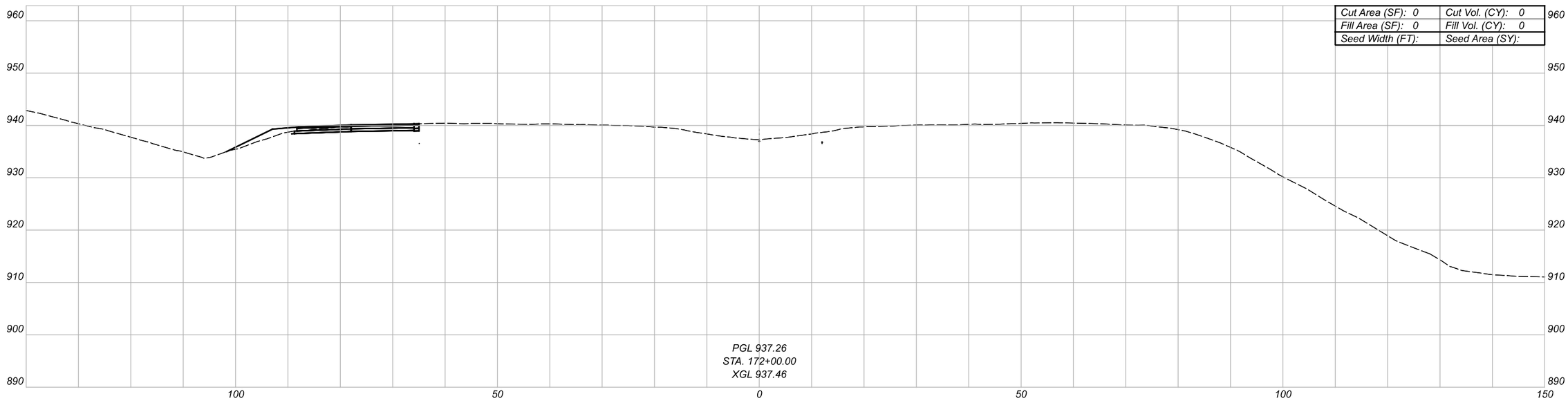
DESIGNER
ARW

REVIEWER
JRE 09/12/23

PROJECT ID
115160

SHEET 108A | TOTAL 161





CROSS SECTIONS-I-675
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: CLX_I676 - I72+00.00 [Sheet1] PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:38:02 PM USER: jespelage
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DESIGN AGENCY

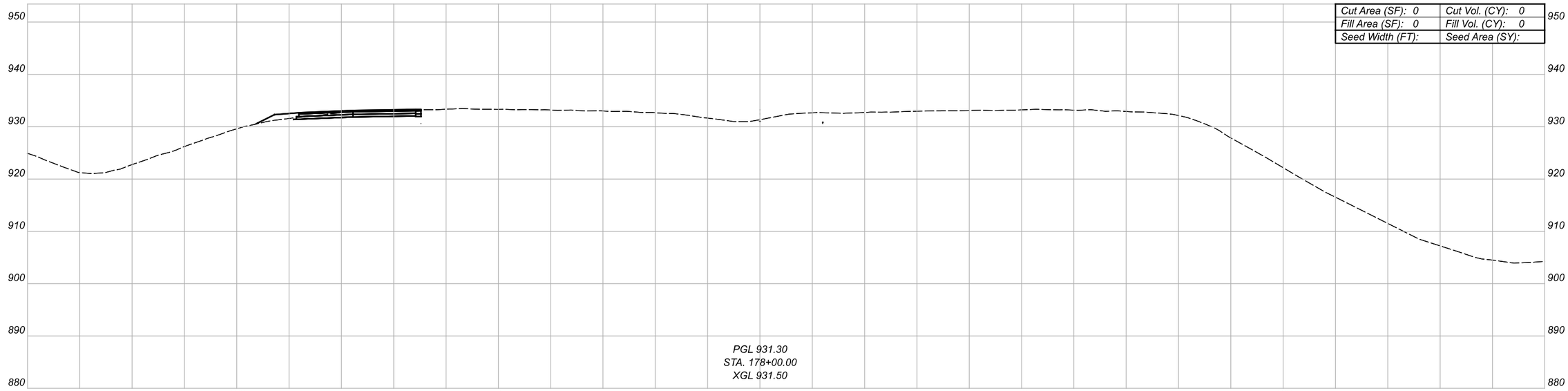
DESIGNER
ARW

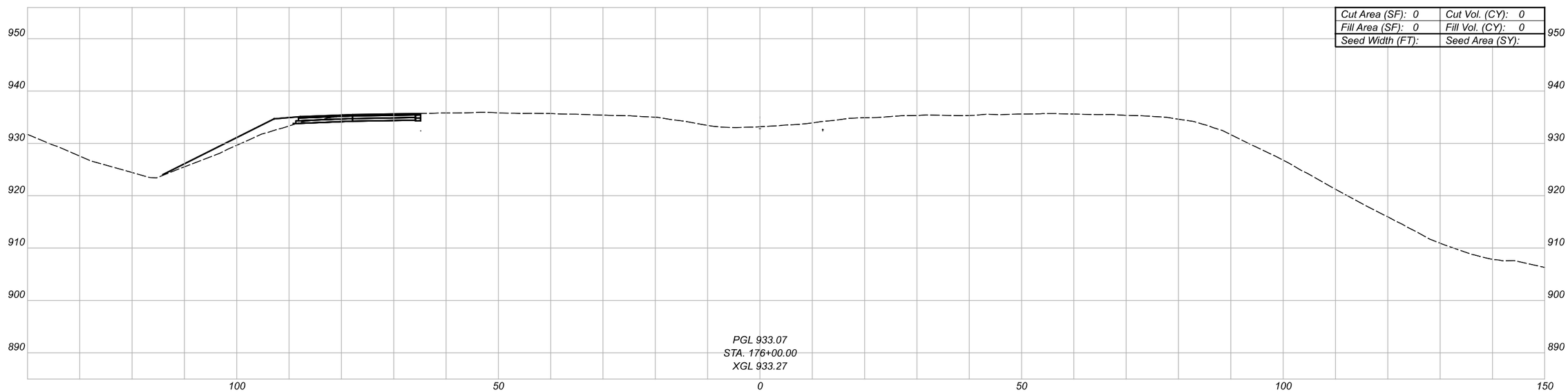
REVIEWER
JRE 09/12/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 108B | TOTAL 161





CROSS SECTIONS-I-675
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: CLX_I676 - I76+00.00 [Sheet] PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:38:46 PM USER: jespelage
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DESIGN AGENCY

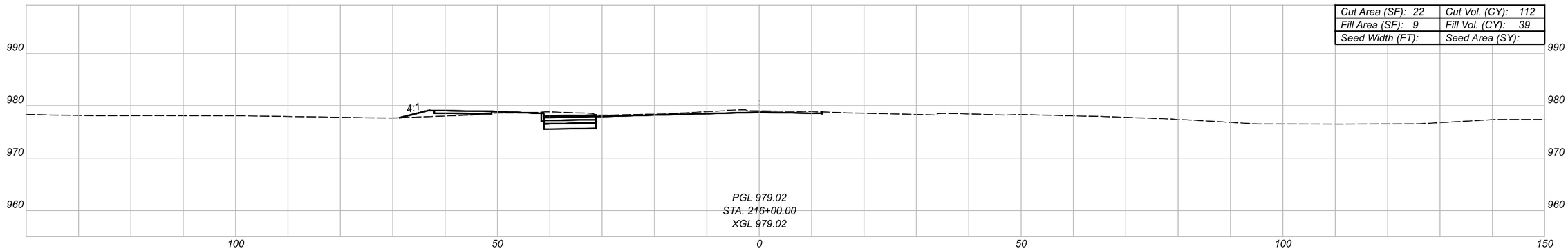
DESIGNER: ARW

REVIEWER: JRE 09/12/23

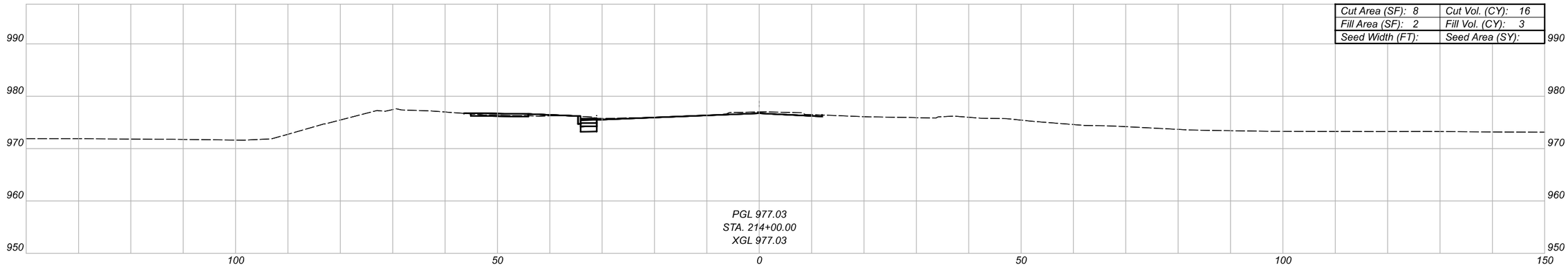
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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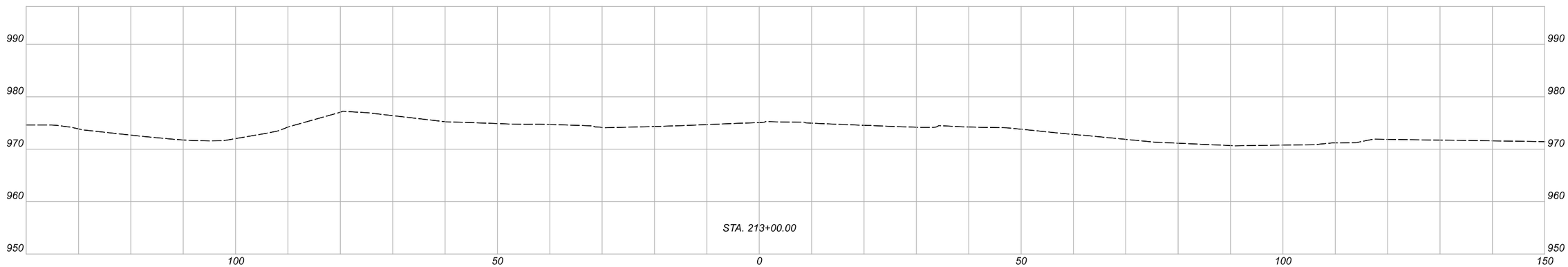
SHEET: 108C TOTAL: 161



Cut Area (SF): 22	Cut Vol. (CY): 112
Fill Area (SF): 9	Fill Vol. (CY): 39
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 8	Cut Vol. (CY): 16
Fill Area (SF): 2	Fill Vol. (CY): 3
Seed Width (FT):	Seed Area (SY):



CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: JMD

REVIEWER: JRE 03/24/23

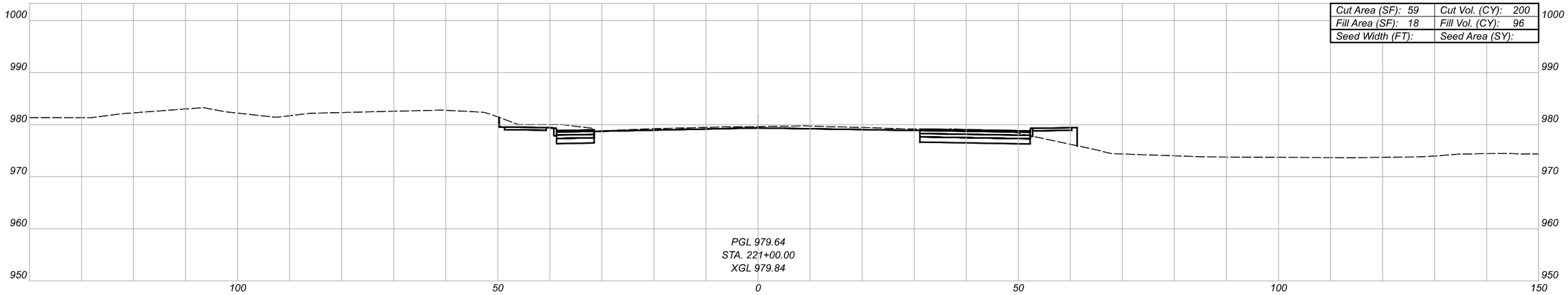
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

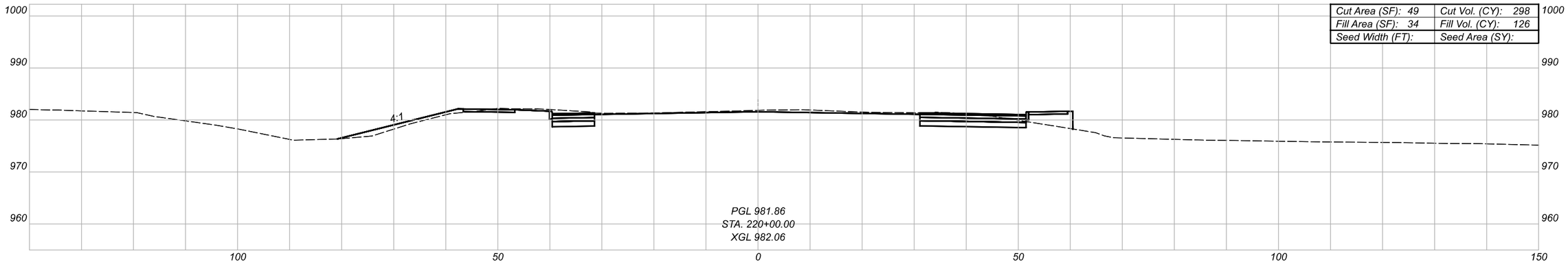
SHEET: 109 TOTAL: 161

MOT/GRE I-675/WILMINGTON

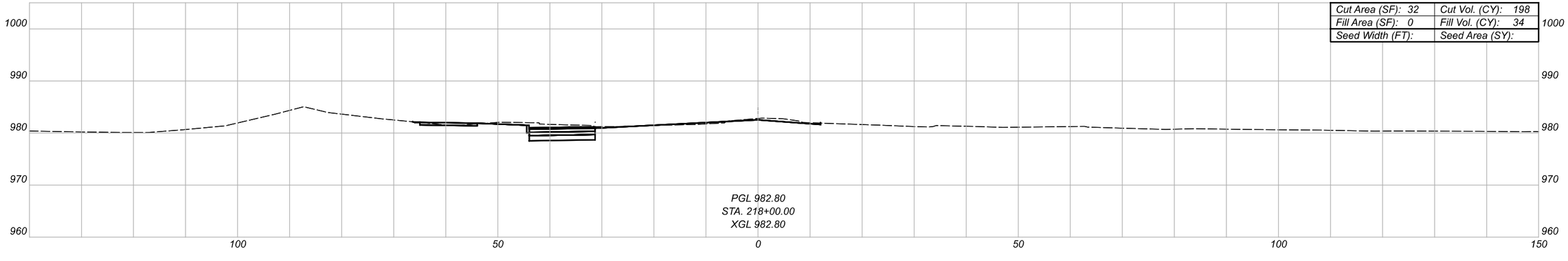
MODEL: 115160_XS20I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:39:33 PM USER: jespelage
Q:\Montgomery Cnty TID\Oil7953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS20I-2.dgn



Cut Area (SF): 59	Cut Vol. (CY): 200
Fill Area (SF): 18	Fill Vol. (CY): 96
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 49	Cut Vol. (CY): 298
Fill Area (SF): 34	Fill Vol. (CY): 126
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 32	Cut Vol. (CY): 198
Fill Area (SF): 0	Fill Vol. (CY): 34
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS202 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:40:42 PM USER: jespelage
Q:\Montgomery Cnty TID\011795 3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS202-2.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

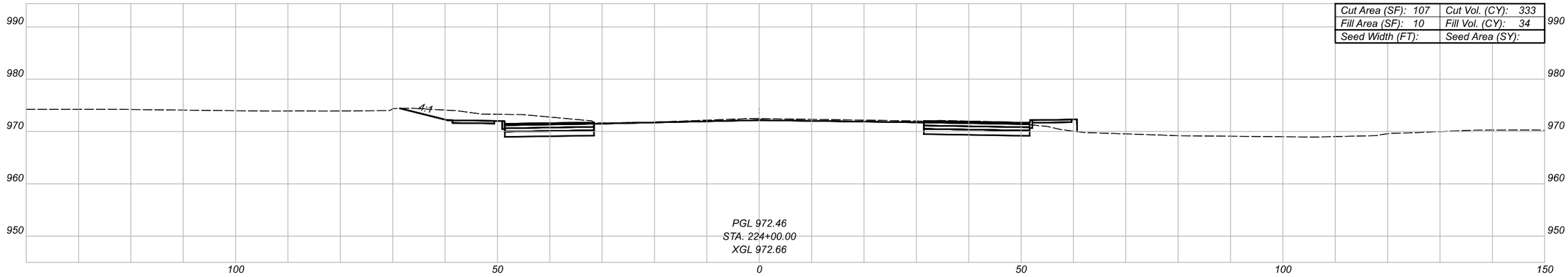
DESIGNER JMD

REVIEWER JRE 03/24/23

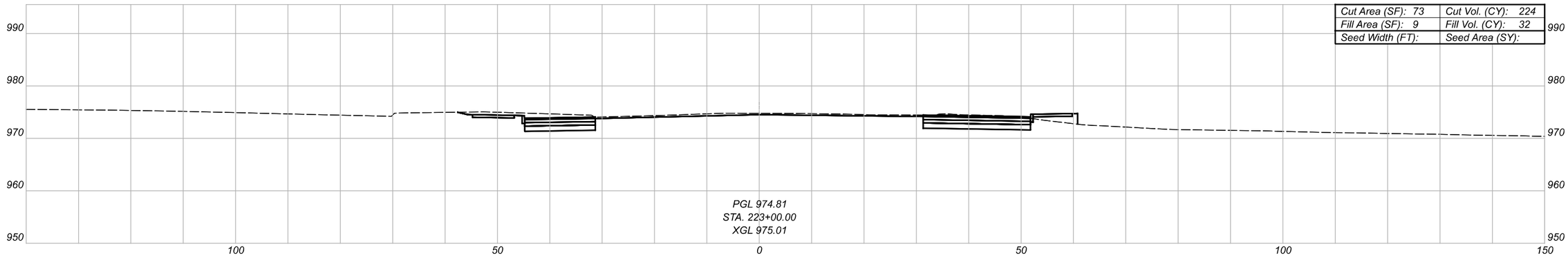
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
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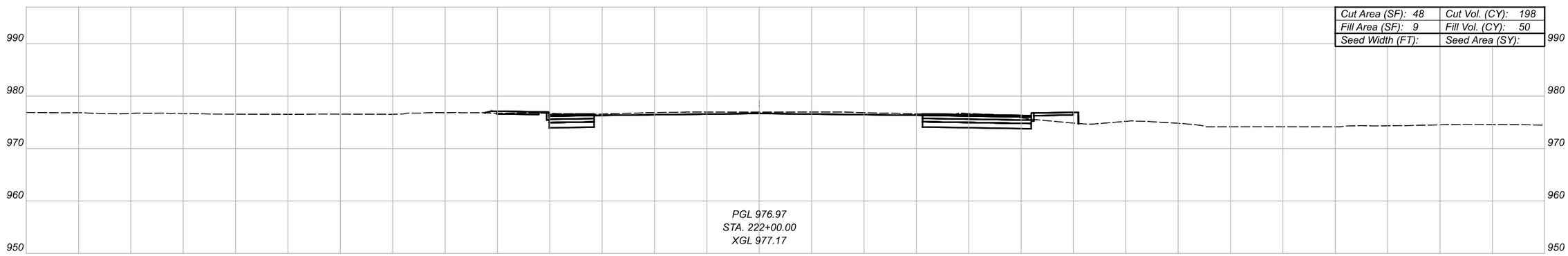
SHEET 110 TOTAL 161



Cut Area (SF): 107	Cut Vol. (CY): 333
Fill Area (SF): 10	Fill Vol. (CY): 34
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 73	Cut Vol. (CY): 224
Fill Area (SF): 9	Fill Vol. (CY): 32
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 48	Cut Vol. (CY): 198
Fill Area (SF): 9	Fill Vol. (CY): 50
Seed Width (FT):	Seed Area (SY):

Sheet Totals		
Seeding	Cut	Fill
-	-	-

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS203 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:41:50 PM USER: jespelage
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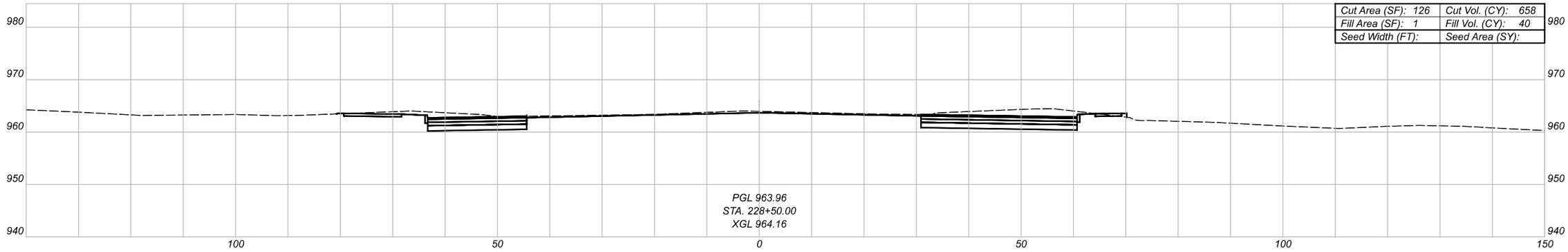
DESIGN AGENCY

DESIGNER JMD

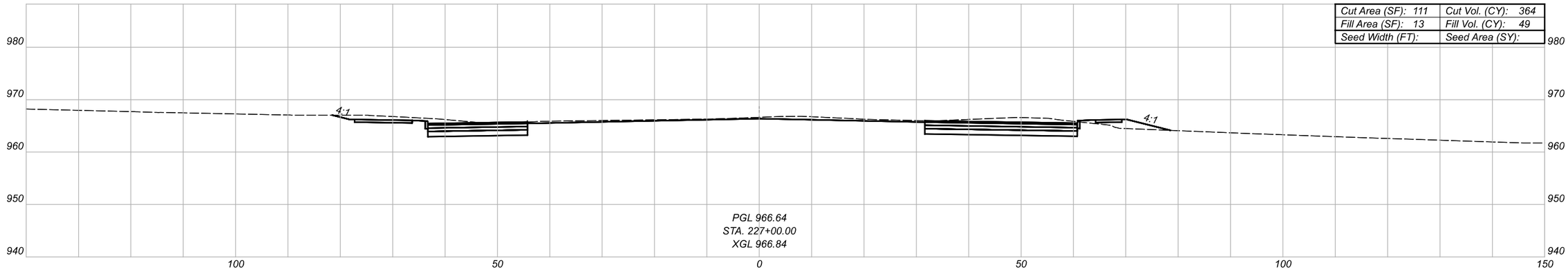
REVIEWER JRE 03/24/23

PROJECT ID 115160

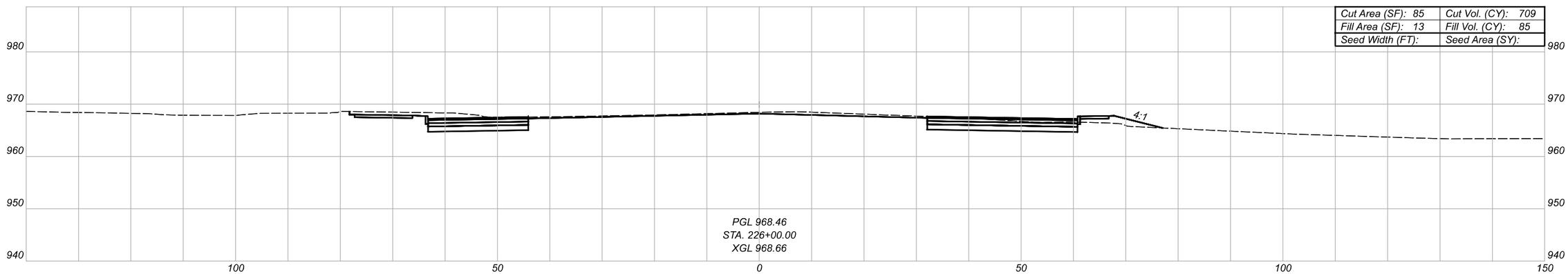
SHEET 111 TOTAL 161



Cut Area (SF): 126	Cut Vol. (CY): 658
Fill Area (SF): 1	Fill Vol. (CY): 40
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 111	Cut Vol. (CY): 364
Fill Area (SF): 13	Fill Vol. (CY): 49
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 85	Cut Vol. (CY): 709
Fill Area (SF): 13	Fill Vol. (CY): 85
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS204 PAPERSIZE: ITxII(In.) DATE: 9/12/2023 TIME: 12:42:58 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 2

DESIGN AGENCY

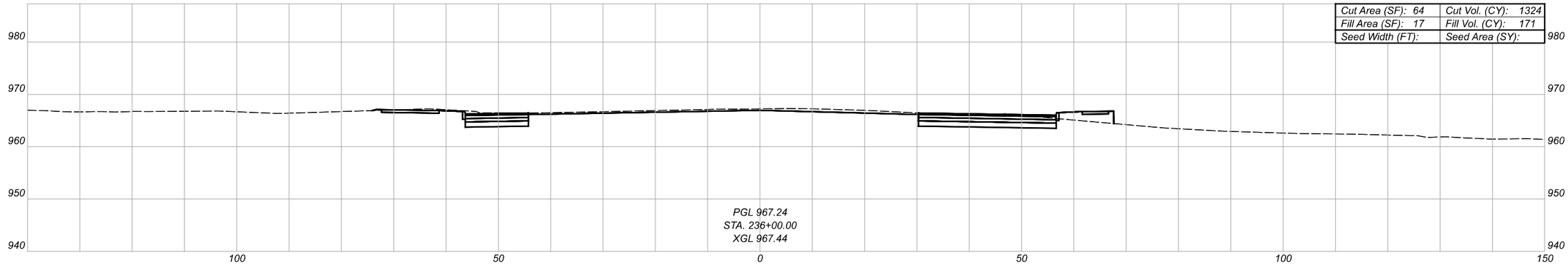
DESIGNER: JMD

REVIEWER: JRE 03/24/23

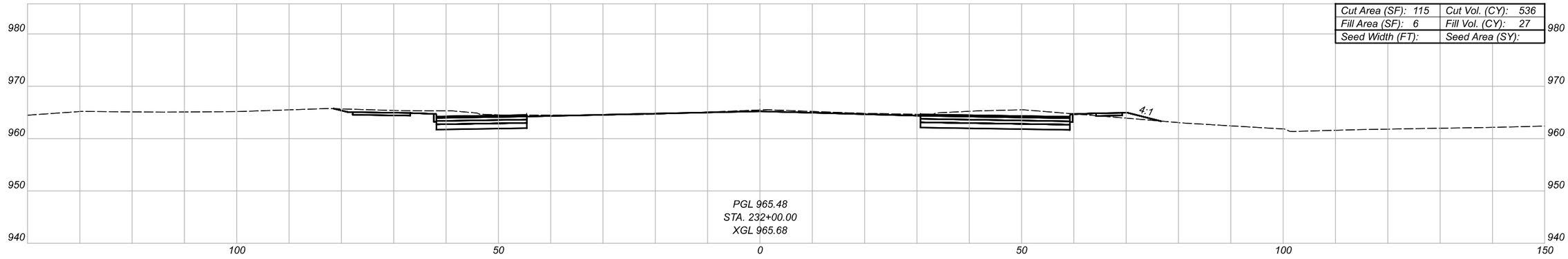
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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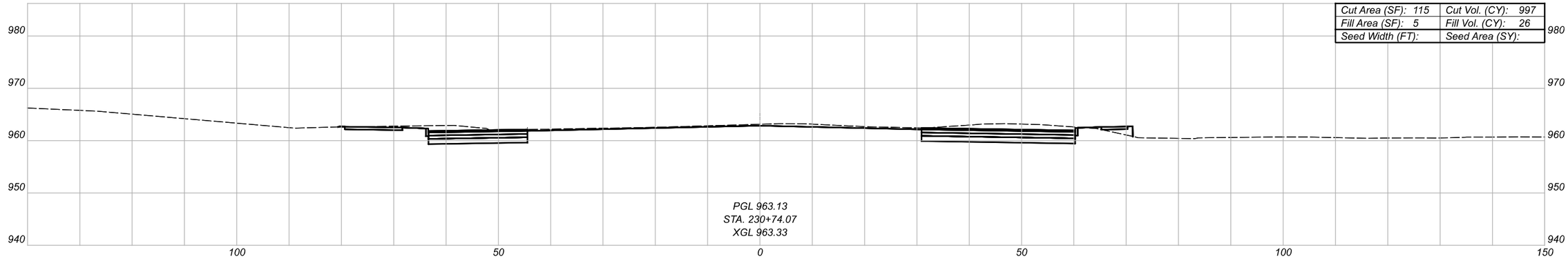
SHEET: 112 TOTAL: 161



Cut Area (SF): 64	Cut Vol. (CY): 1324
Fill Area (SF): 17	Fill Vol. (CY): 171
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 115	Cut Vol. (CY): 536
Fill Area (SF): 6	Fill Vol. (CY): 27
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 115	Cut Vol. (CY): 997
Fill Area (SF): 5	Fill Vol. (CY): 26
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS205 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:44:08 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

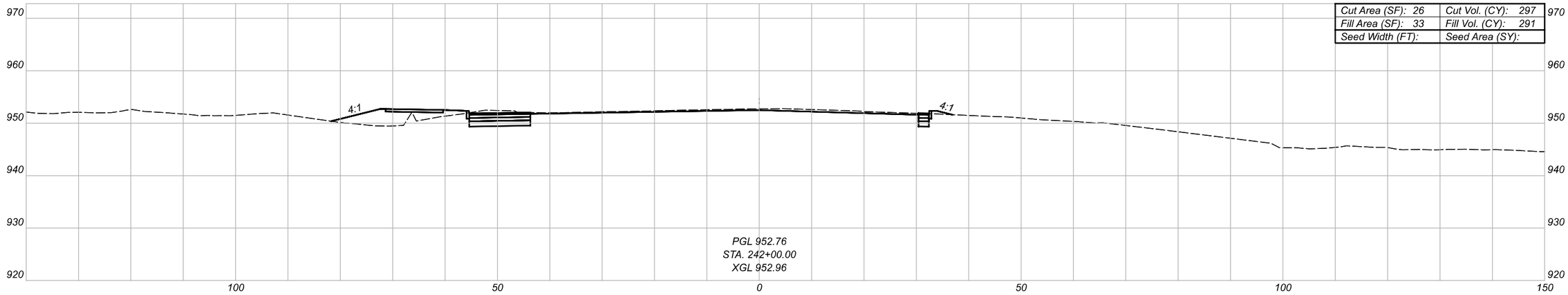
DESIGNER: JMD

REVIEWER: JRE 03/24/23

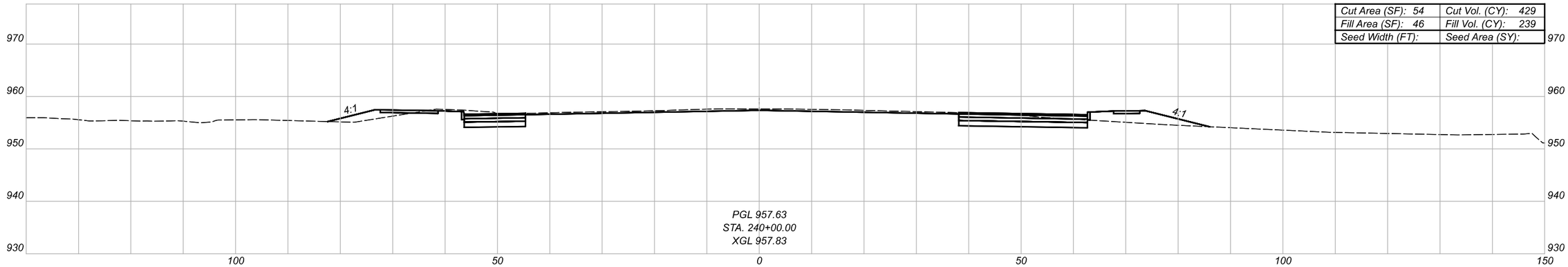
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

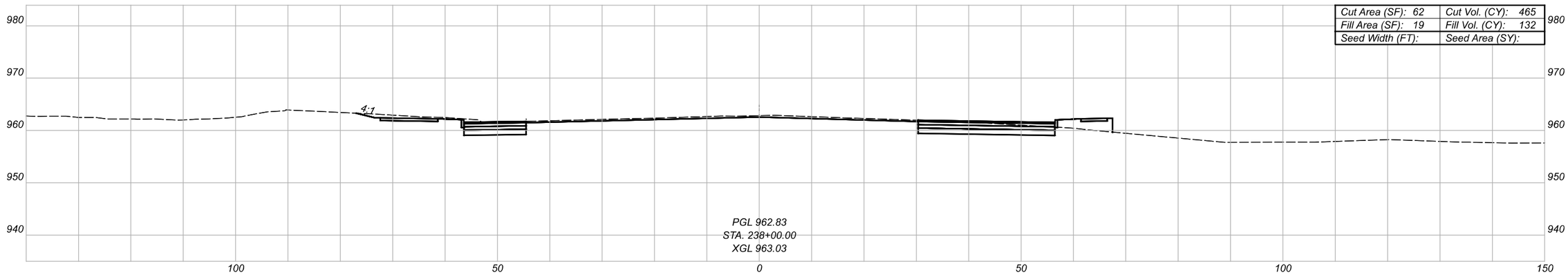
SHEET: 113 TOTAL: 161



Cut Area (SF): 26	Cut Vol. (CY): 297
Fill Area (SF): 33	Fill Vol. (CY): 291
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 54	Cut Vol. (CY): 429
Fill Area (SF): 46	Fill Vol. (CY): 239
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 62	Cut Vol. (CY): 465
Fill Area (SF): 19	Fill Vol. (CY): 132
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS206 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:45:18 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

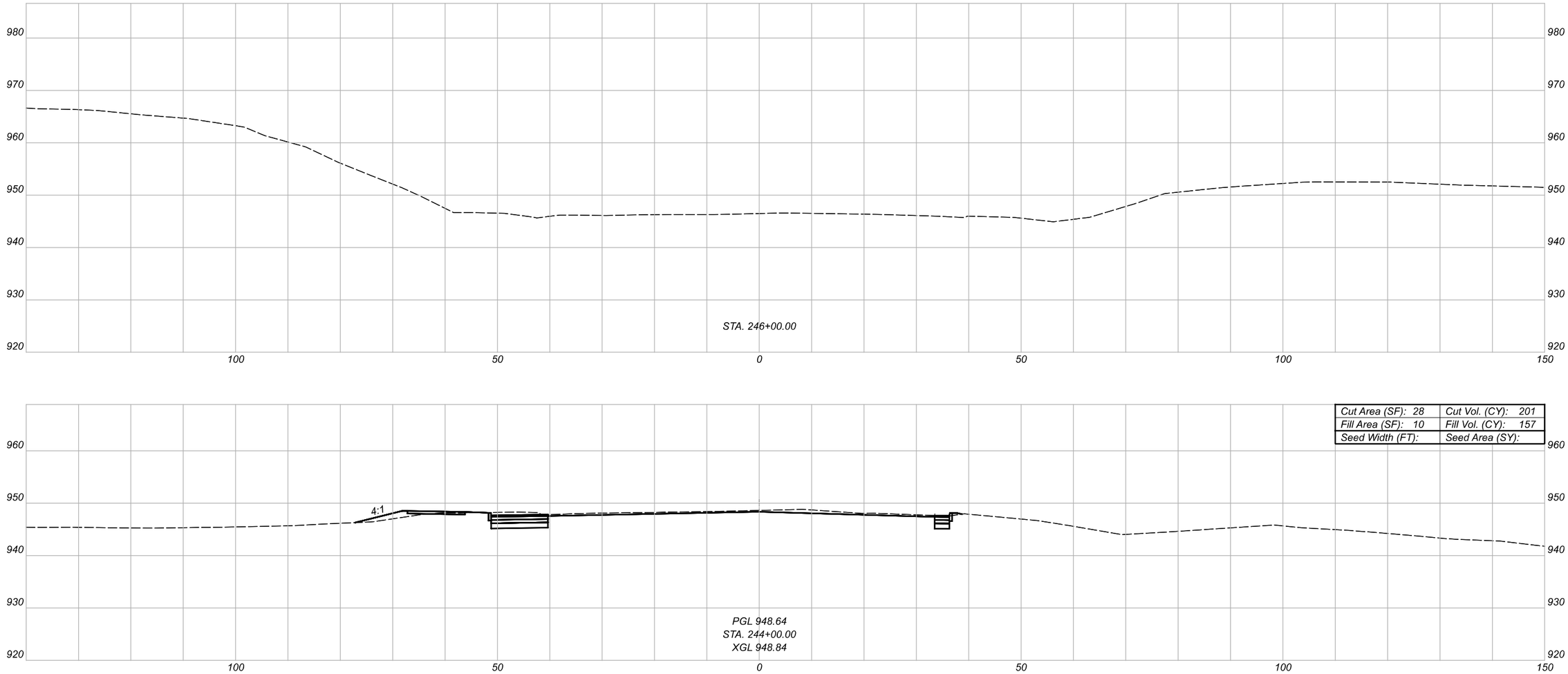
DESIGNER
JMD

REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 114 TOTAL 161



MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS207 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:46:26 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 2

DESIGN AGENCY

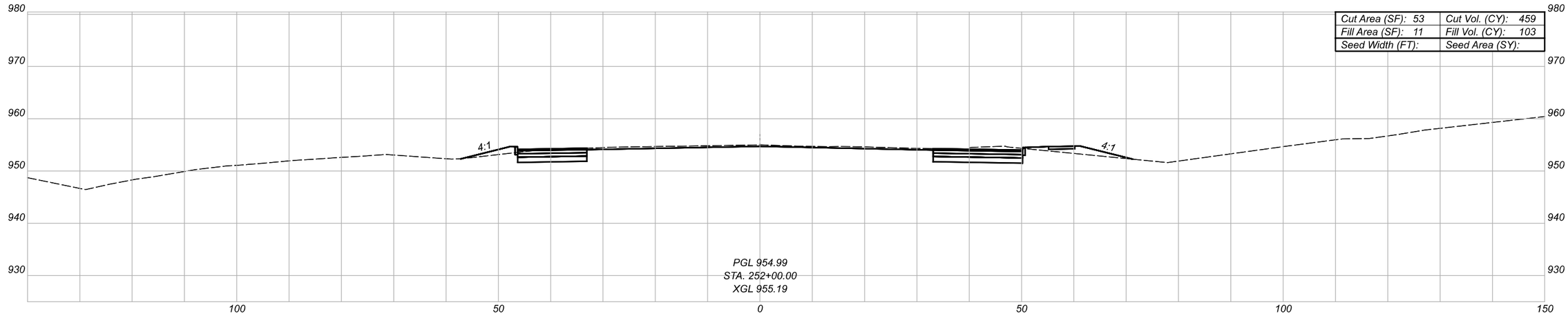
DESIGNER
JMD

REVIEWER
JRE 03/24/23

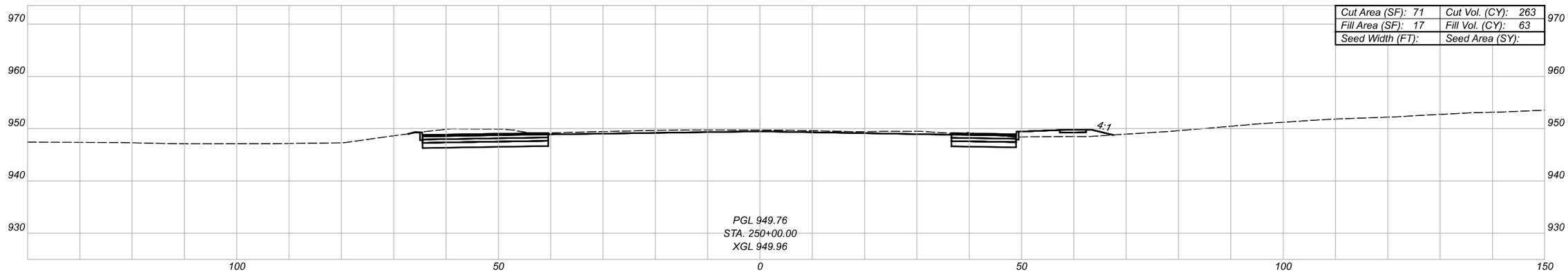
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

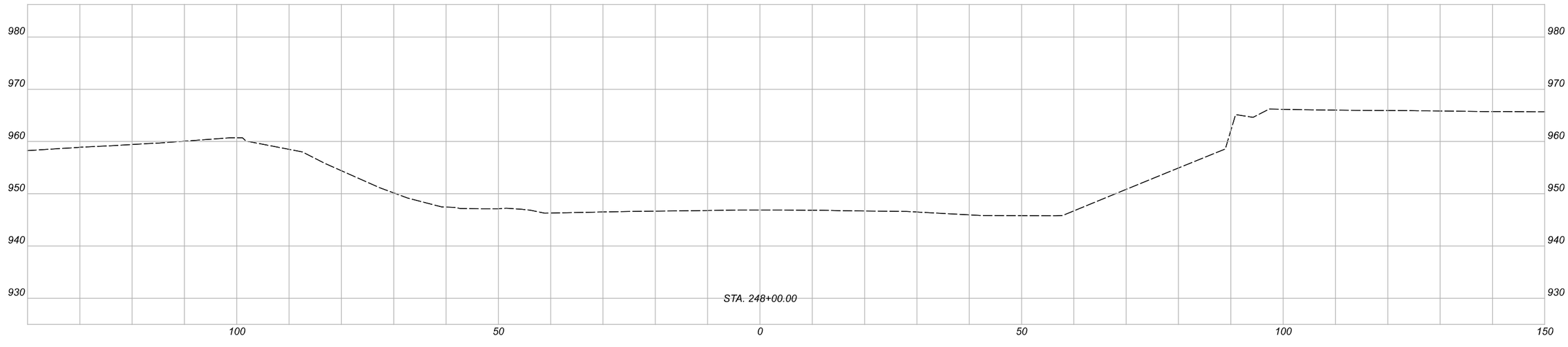
SHEET 115 TOTAL 161



Cut Area (SF): 53	Cut Vol. (CY): 459
Fill Area (SF): 11	Fill Vol. (CY): 103
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 71	Cut Vol. (CY): 263
Fill Area (SF): 17	Fill Vol. (CY): 63
Seed Width (FT):	Seed Area (SY):



CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS208 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:47:12 PM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS208-2.dgn

DESIGN AGENCY

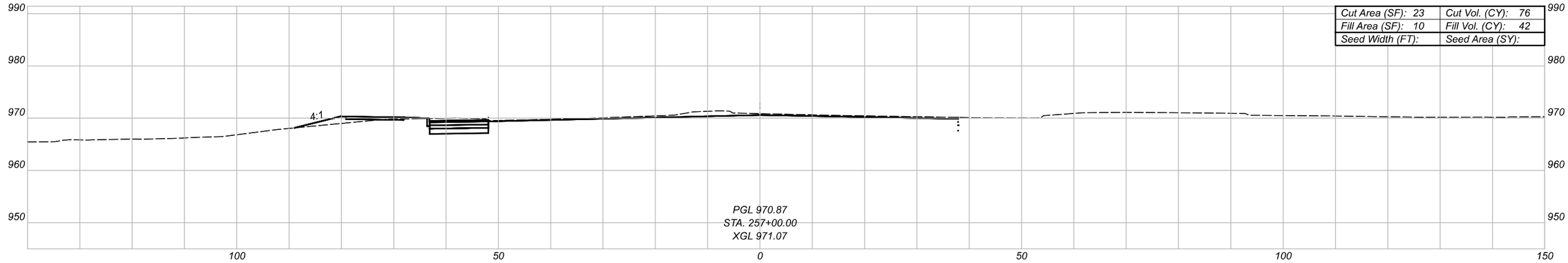
DESIGNER: JMD

REVIEWER: JRE 03/24/23

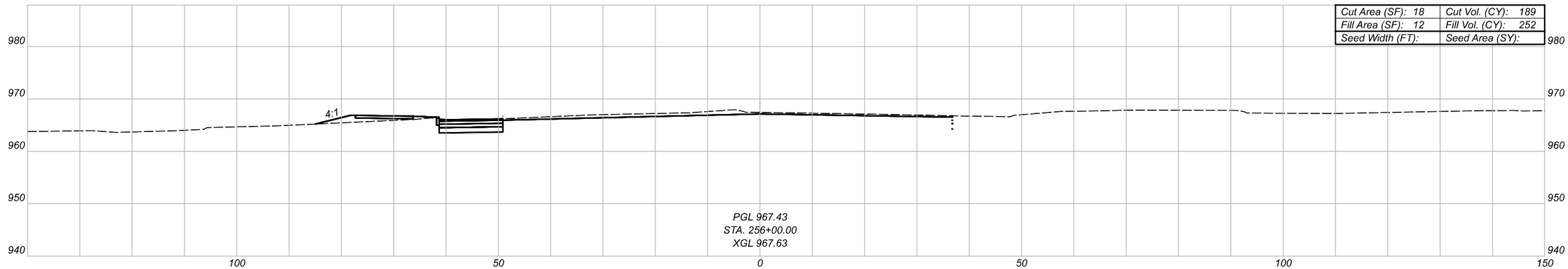
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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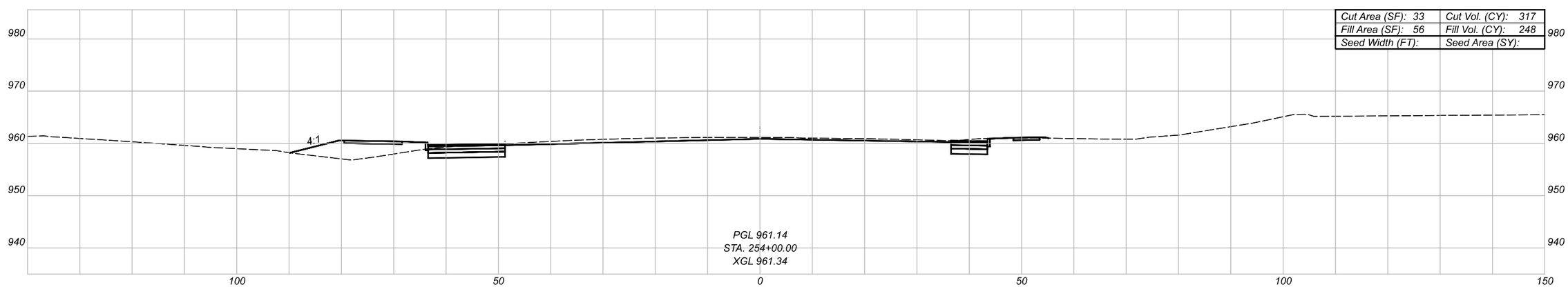
SHEET: 116 TOTAL: 161



Cut Area (SF): 23	Cut Vol. (CY): 76
Fill Area (SF): 10	Fill Vol. (CY): 42
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 18	Cut Vol. (CY): 189
Fill Area (SF): 12	Fill Vol. (CY): 252
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 33	Cut Vol. (CY): 317
Fill Area (SF): 56	Fill Vol. (CY): 248
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS209 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:48:21 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS209-2.dgn

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

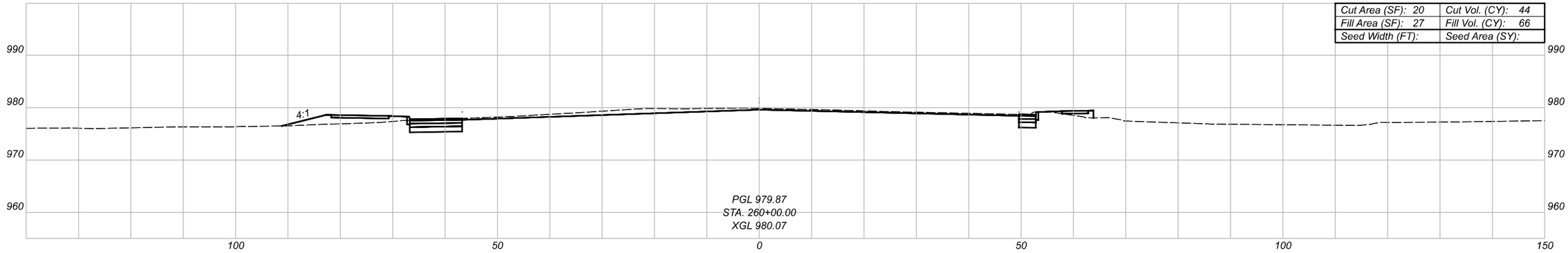
DESIGNER: JMD

REVIEWER: JRE 03/24/23

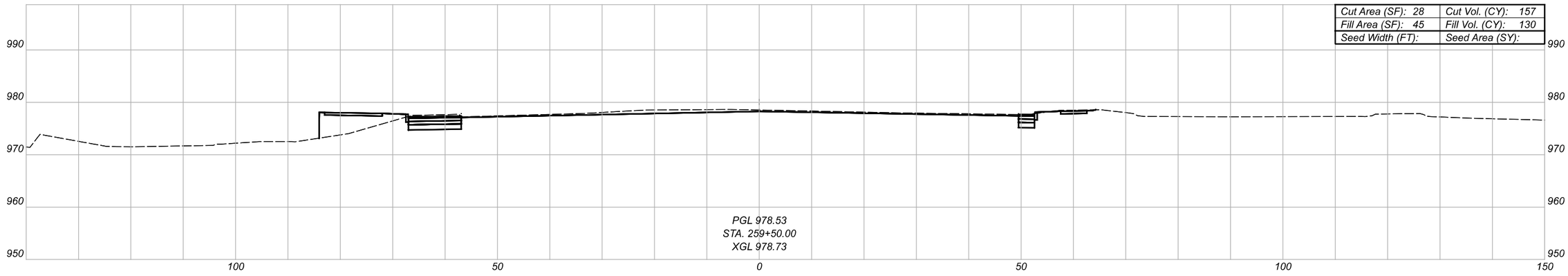
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

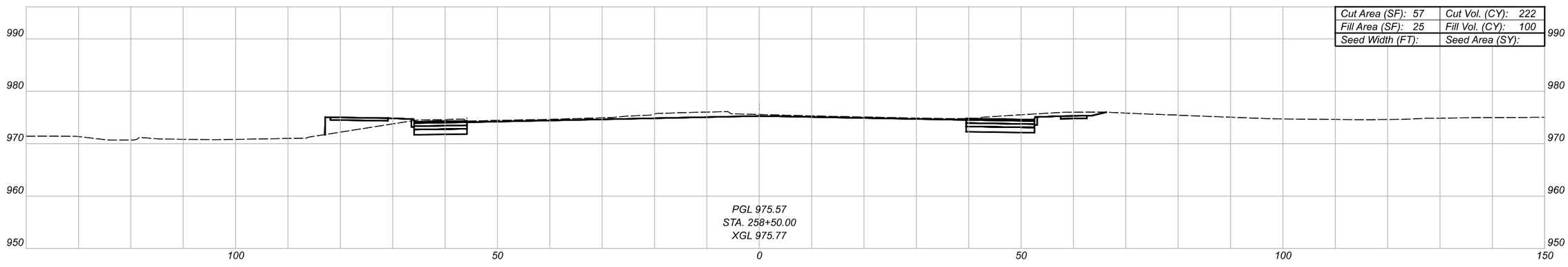
SHEET: 117 TOTAL: 161



Cut Area (SF): 20	Cut Vol. (CY): 44
Fill Area (SF): 27	Fill Vol. (CY): 66
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 28	Cut Vol. (CY): 157
Fill Area (SF): 45	Fill Vol. (CY): 130
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 57	Cut Vol. (CY): 222
Fill Area (SF): 25	Fill Vol. (CY): 100
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-WILMINGTON PIKE ALTERNATIVE 2

DESIGN AGENCY

DESIGNER JMD

REVIEWER JRE 03/24/23

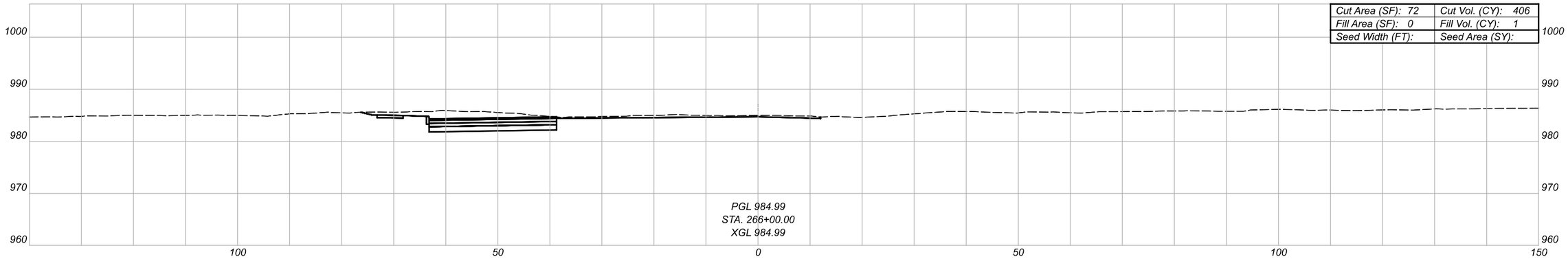
PROJECT ID 115160

SHEET 118 TOTAL 161

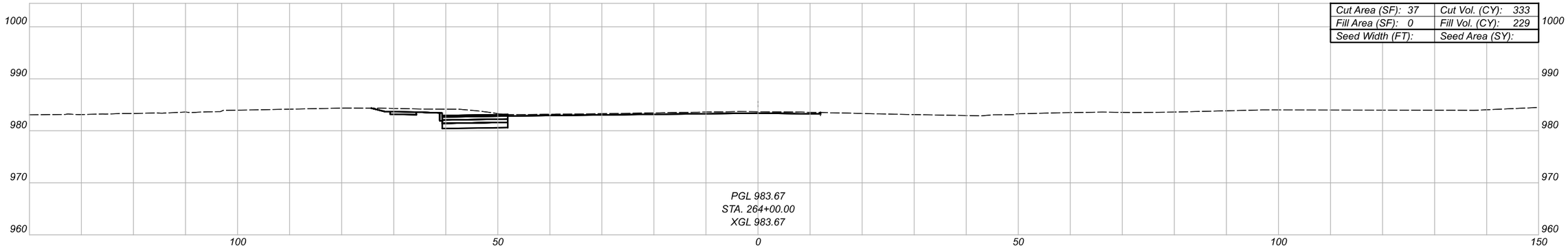
Sheet Totals		
Seeding	Cut	Fill
-	-	-

MOT/GRE I-675/WILMINGTON

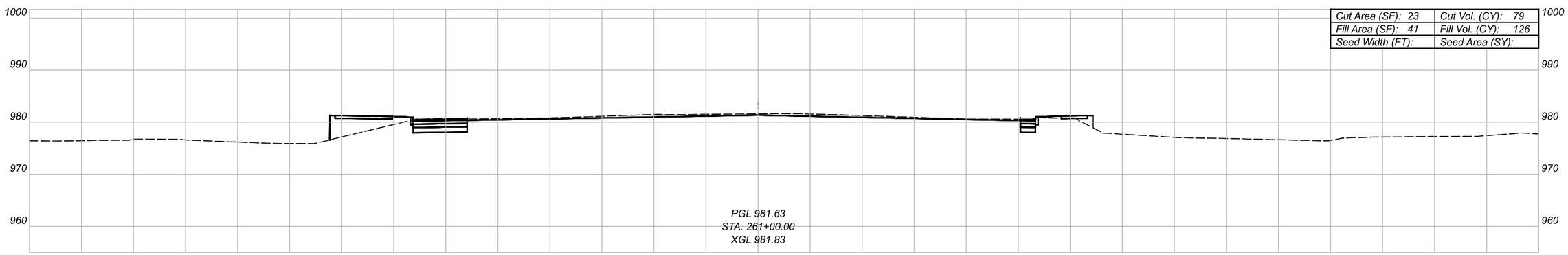
MODEL: 115160_XS210 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:49:30 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS210-2.dgn



Cut Area (SF): 72	Cut Vol. (CY): 406
Fill Area (SF): 0	Fill Vol. (CY): 1
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 37	Cut Vol. (CY): 333
Fill Area (SF): 0	Fill Vol. (CY): 229
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 23	Cut Vol. (CY): 79
Fill Area (SF): 41	Fill Vol. (CY): 126
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS2ll PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:50:39 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER
JMD

REVIEWER
JRE 03/24/23

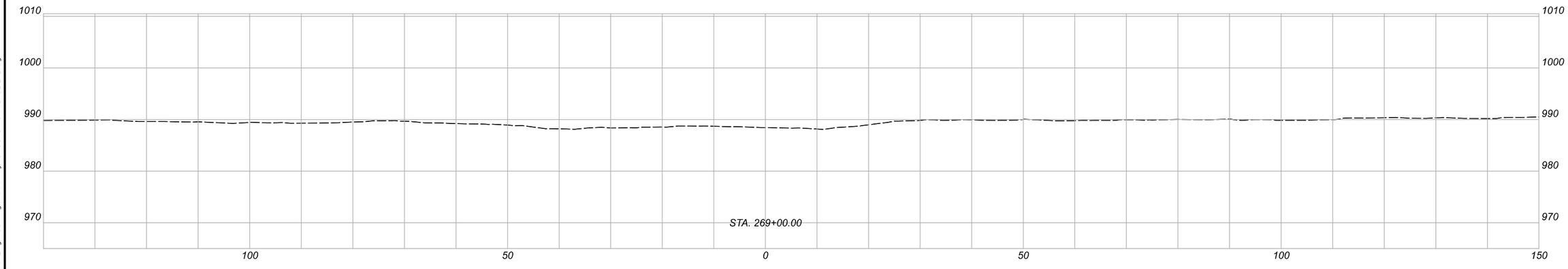
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

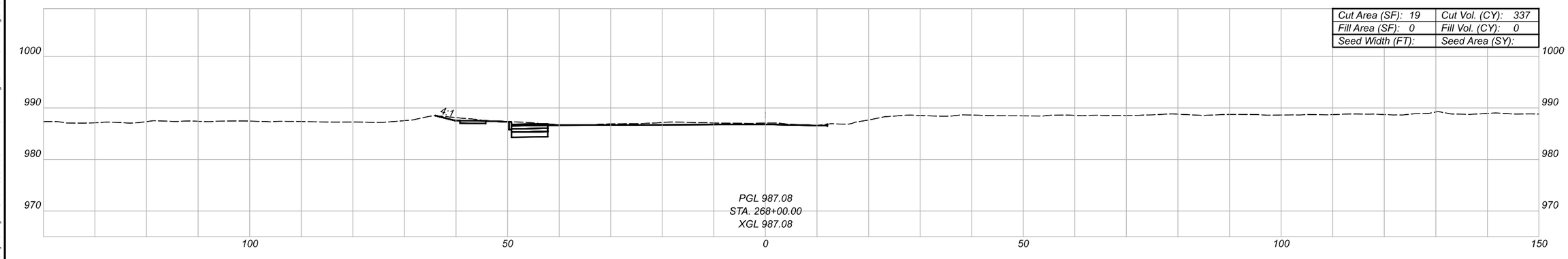
SHEET	TOTAL
119	161

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS212 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:51:47 PM USER: jespelage
Q:\Montgomery Cnty TID\Dll7953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS212-2.dgn



Cut Area (SF): 19	Cut Vol. (CY): 337
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



CROSS SECTIONS-WILMINGTON PIKE
ALTERNATIVE 2

DESIGN AGENCY

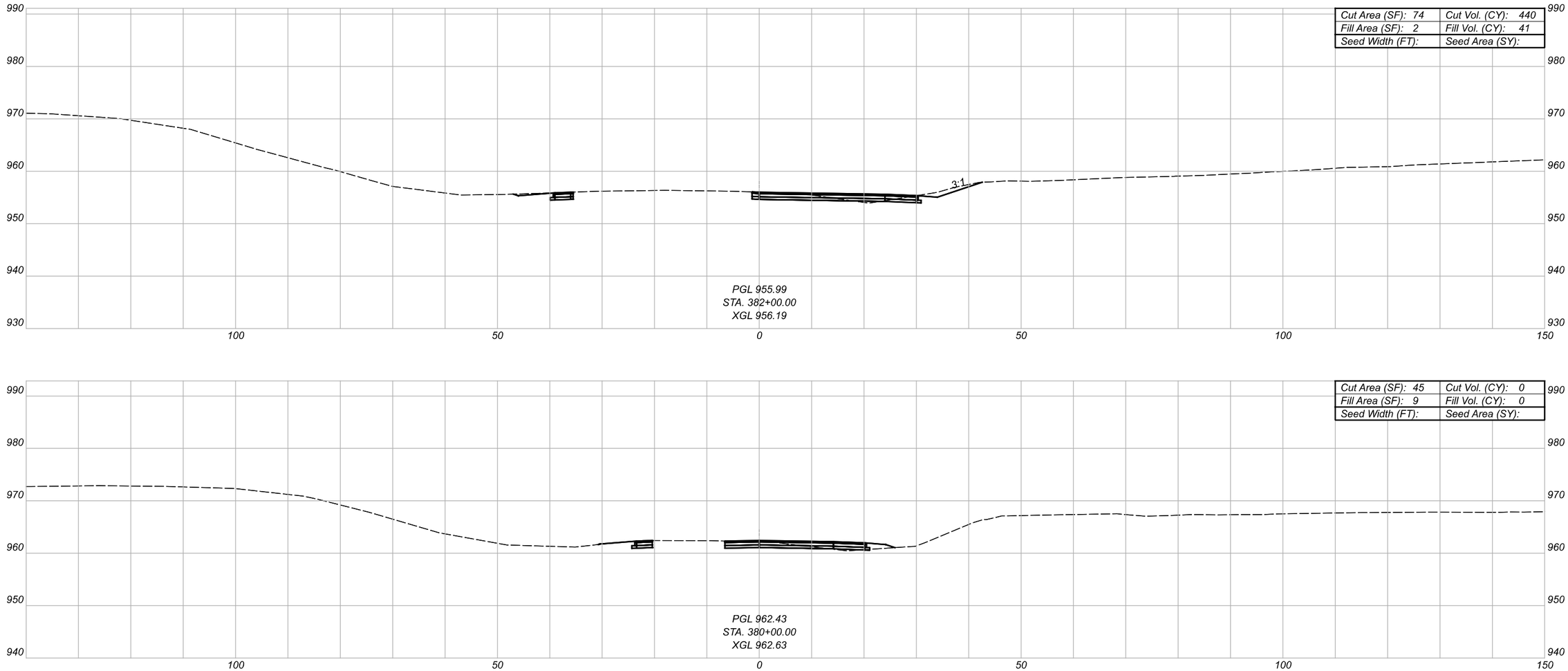
DESIGNER: JMD

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET: 120 TOTAL: 161



MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS30I-2 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:52:35 PM USER: jespelage
G:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS30I-2.dgn

CROSS SECTIONS-WILMINGTON PIKE, NB EXIT RAMP
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: AWR

REVIEWER: JRE 03-24-23

PROJECT ID: 115160

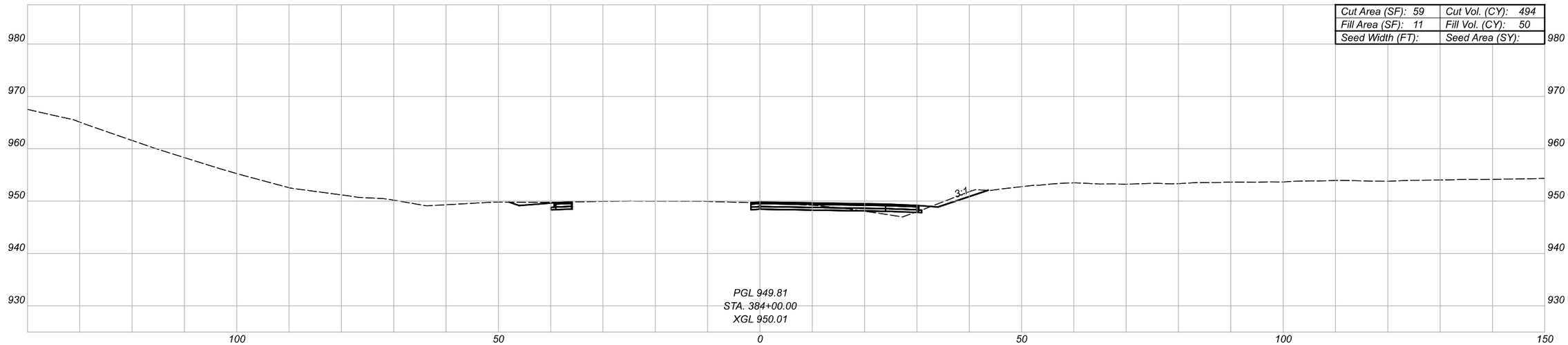
SHEET: 121 TOTAL: 161

Sheet Totals		
Seeding	Cut	Fill
-	-	-

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS301-3 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:53:35 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON PIKE, NB EXIT RAMP
ALTERNATIVE 2



Sheet Totals		
Seeding	Cut	Fill
.	.	.

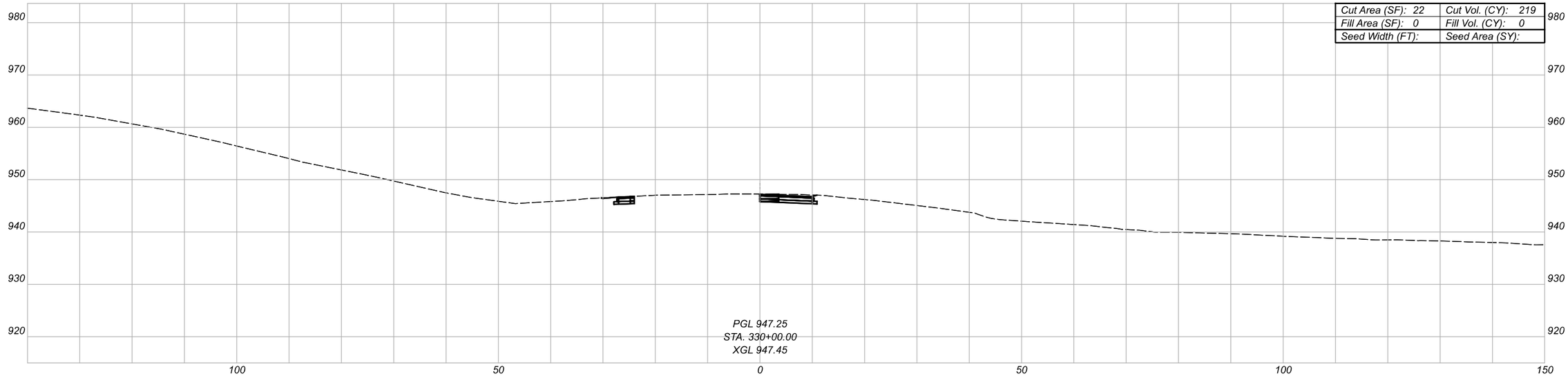
DESIGN AGENCY

DESIGNER
ARW

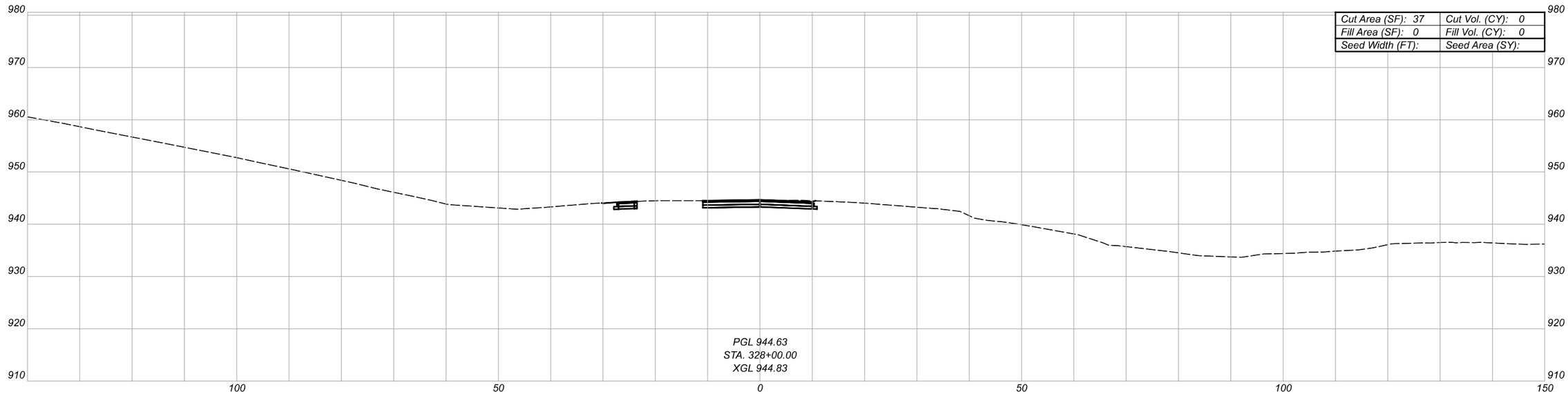
REVIEWER
JRE 03-24-23

PROJECT ID
115160

SHEET 122 TOTAL 161



Cut Area (SF): 22	Cut Vol. (CY): 219
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 37	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-NB COLLECTOR RD ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS326 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:53:59 PM USER: jespelage
Q:\Montgomery Cnty TID\0I7953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS326.dgn

DESIGN AGENCY

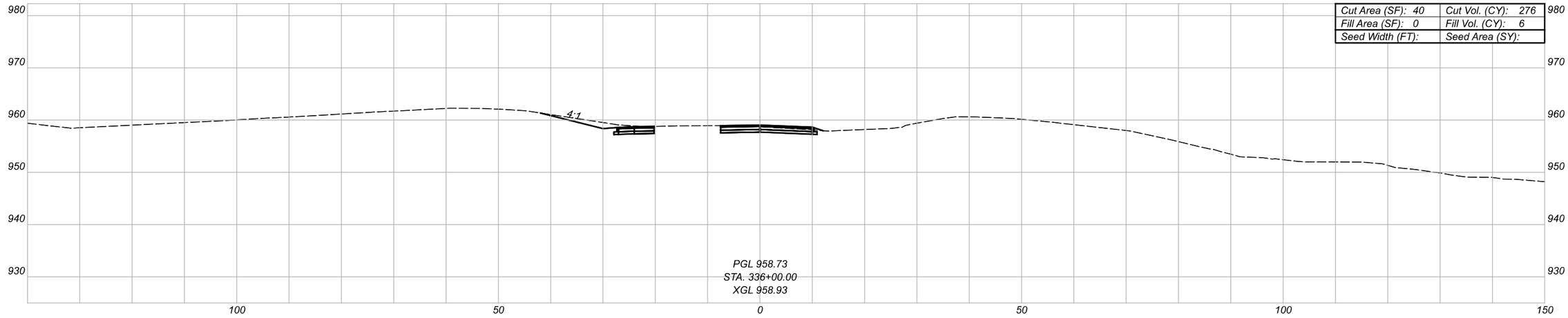
DESIGNER ARW

REVIEWER JRE 03/24/23

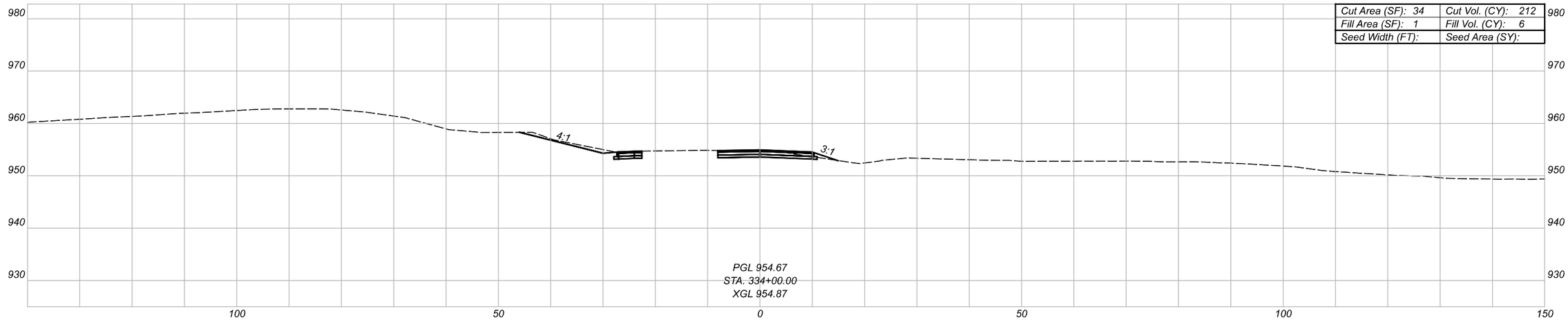
PROJECT ID 115160

SHEET 123 TOTAL 161

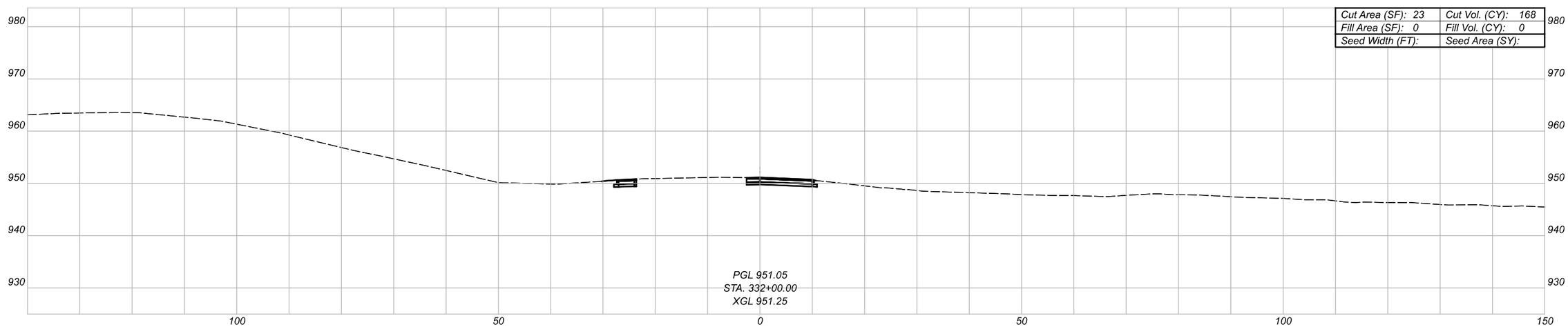
Sheet Totals		
Seeding	Cut	Fill
.	.	.



Cut Area (SF): 40	Cut Vol. (CY): 276
Fill Area (SF): 0	Fill Vol. (CY): 6
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 34	Cut Vol. (CY): 212
Fill Area (SF): 1	Fill Vol. (CY): 6
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 23	Cut Vol. (CY): 168
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS327 PAPERSIZE: 17x11(in) DATE: 9/12/2023 TIME: 12:55:46 PM USER: jespelage
Q:\Montgomery Cnty TID\DI17953A.00 - I-675 Wilmington Interchange\I5160\400-Engineering\Roadway\Sheets\I5160_XS327.dgn

CROSS SECTIONS-NB COLLECTOR RD
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: ARW

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

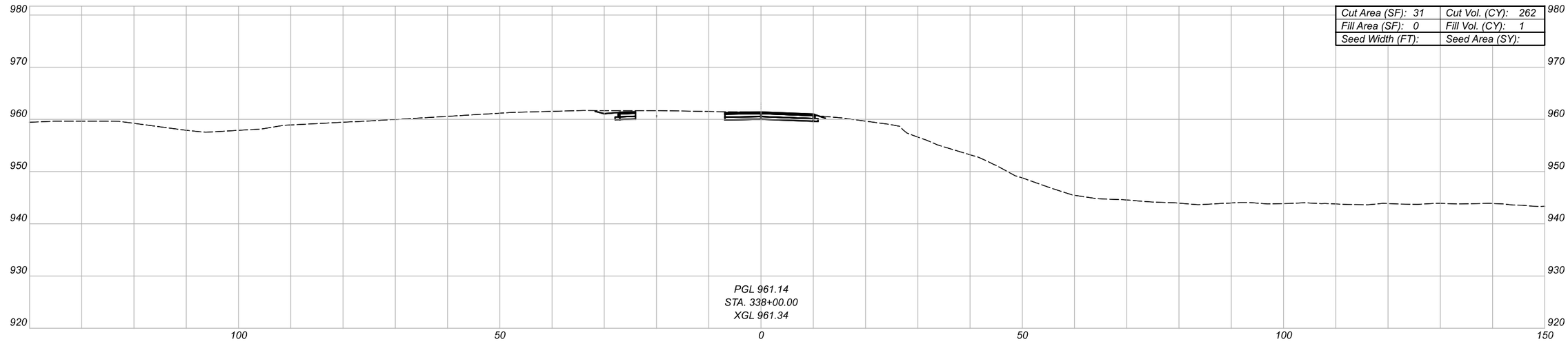
Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET: 124 TOTAL: 161

MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS328 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:56:55 PM USER: jespelage
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CROSS SECTIONS-NB COLLECTOR RD
ALTERNATIVE 2



Cut Area (SF): 31	Cut Vol. (CY): 262
Fill Area (SF): 0	Fill Vol. (CY): 1
Seed Width (FT):	Seed Area (SY):

Sheet Totals		
Seeding	Cut	Fill
-	-	-

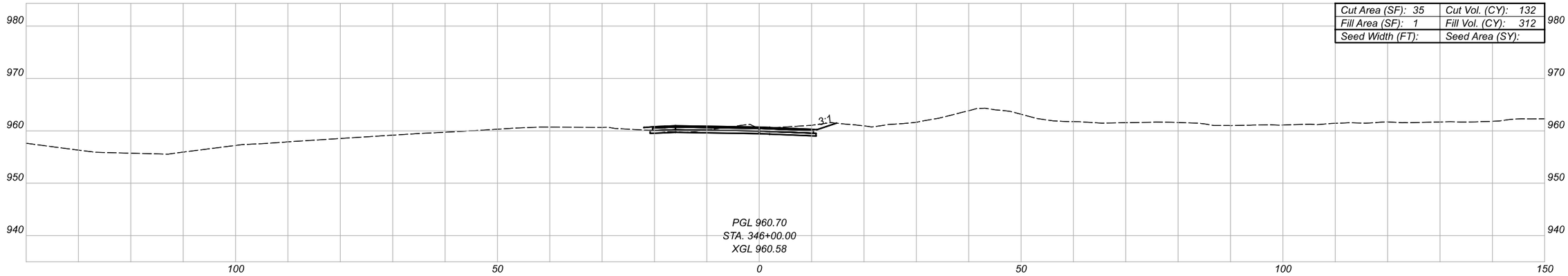
DESIGN AGENCY

DESIGNER
ARW

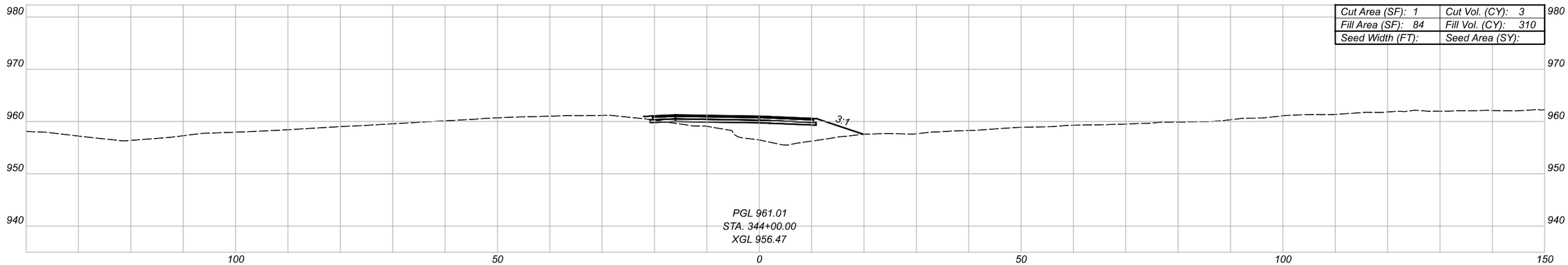
REVIEWER
JRE 03/24/23

PROJECT ID
115160

SHEET 125 TOTAL 161



Cut Area (SF): 35	Cut Vol. (CY): 132
Fill Area (SF): 1	Fill Vol. (CY): 312
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 1	Cut Vol. (CY): 3
Fill Area (SF): 84	Fill Vol. (CY): 310
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-NB COLLECTOR RD
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

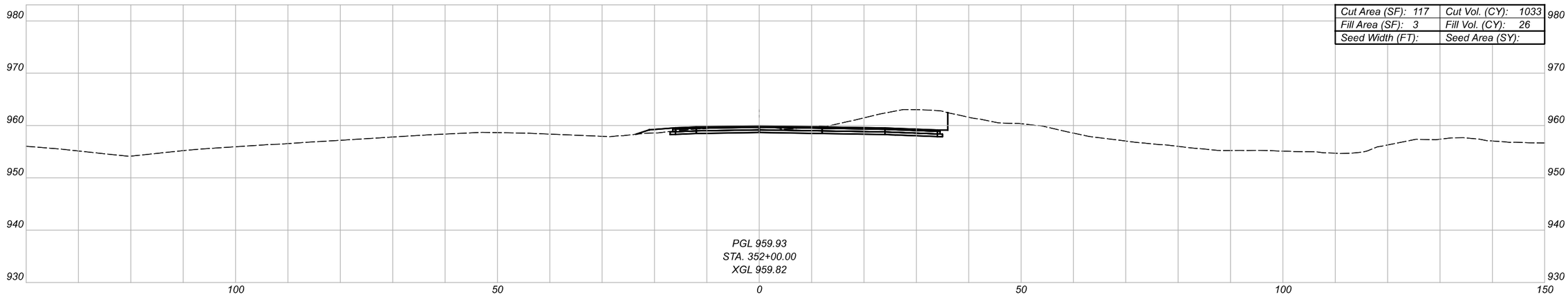
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

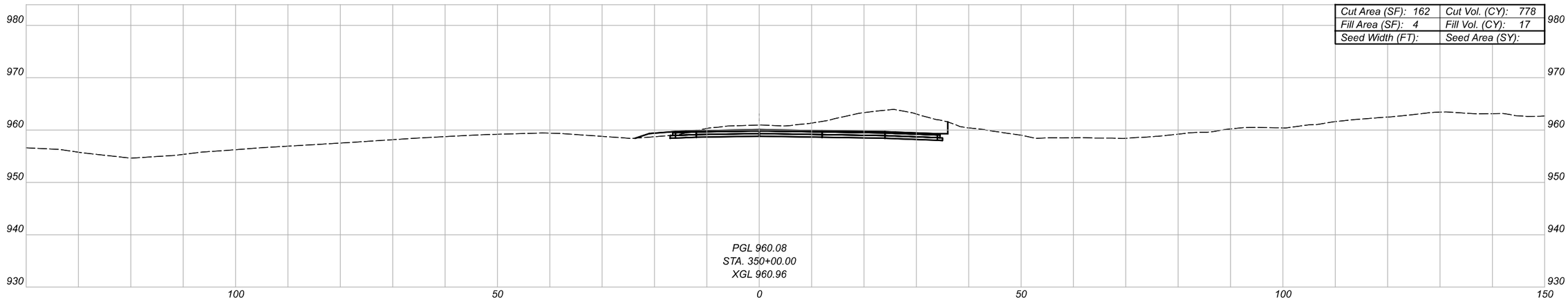
SHEET 126 TOTAL 161

MOT/GRE I-675/WILMINGTON

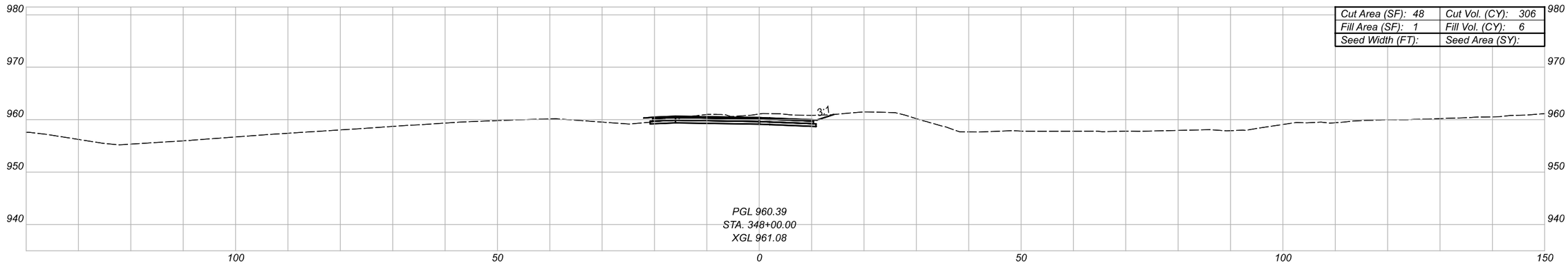
MODEL: I15160_XS329 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:57:18 PM USER: jespelage
Q:\Montgomery Cnty TID\OH7953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS329.dgn



Cut Area (SF): 117	Cut Vol. (CY): 1033
Fill Area (SF): 3	Fill Vol. (CY): 26
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 162	Cut Vol. (CY): 778
Fill Area (SF): 4	Fill Vol. (CY): 17
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 48	Cut Vol. (CY): 306
Fill Area (SF): 1	Fill Vol. (CY): 6
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-NB COLLECTOR RD ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS330 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:58:03 PM USER: jespelage
Q:\Montgomery Cnty TID\Dil7953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS330.dgn

DESIGN AGENCY

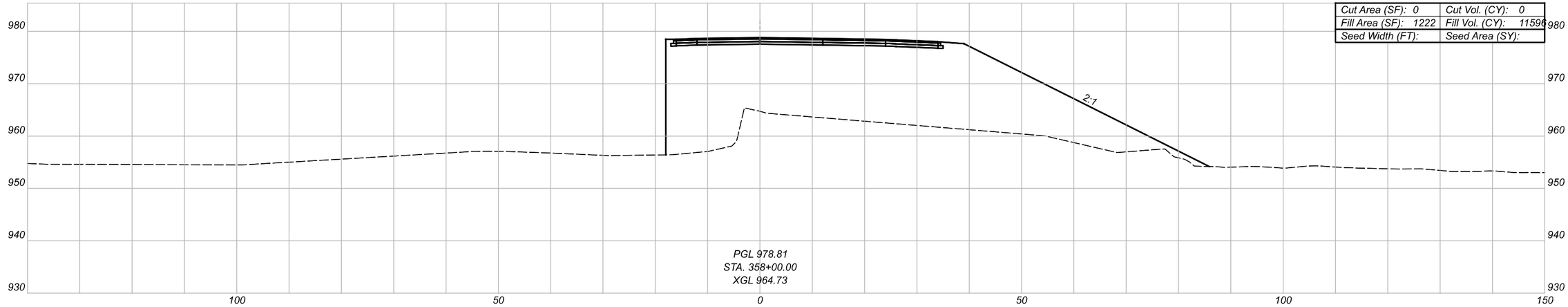
DESIGNER: ARW

REVIEWER: JRE 03/24/23

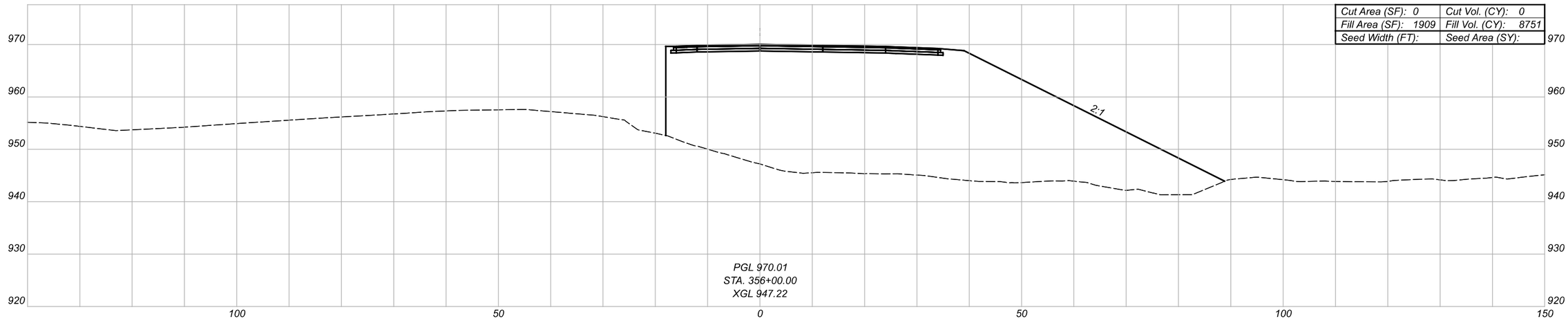
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

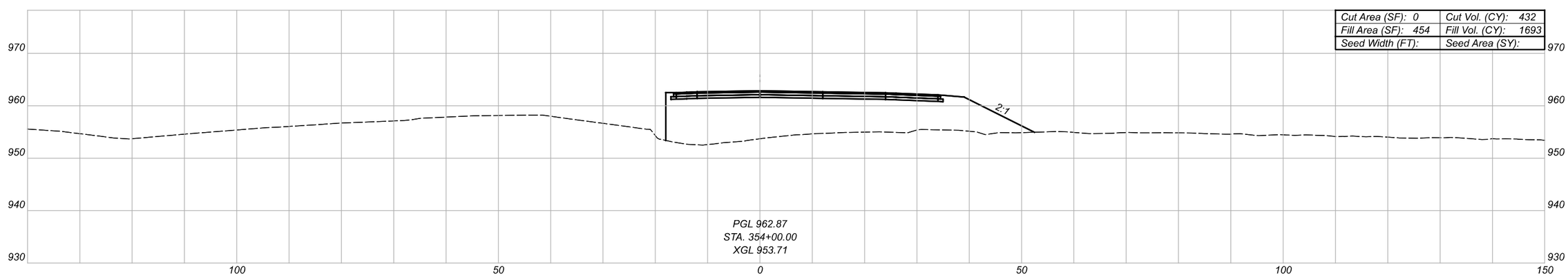
SHEET: 127 TOTAL: 161



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 1222	Fill Vol. (CY): 11596
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 1909	Fill Vol. (CY): 8751
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 432
Fill Area (SF): 454	Fill Vol. (CY): 1693
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS33i PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:59:11 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS33i.dgn

CROSS SECTIONS-NB COLLECTOR RD
ALTERNATIVE 2

Sheet Totals		
Seeding	Cut	Fill
-	-	-

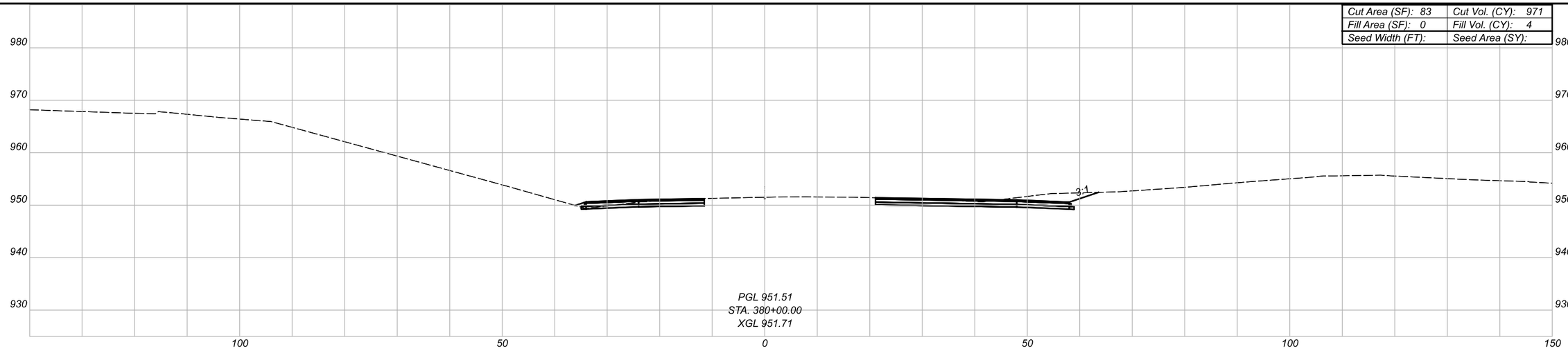
DESIGN AGENCY

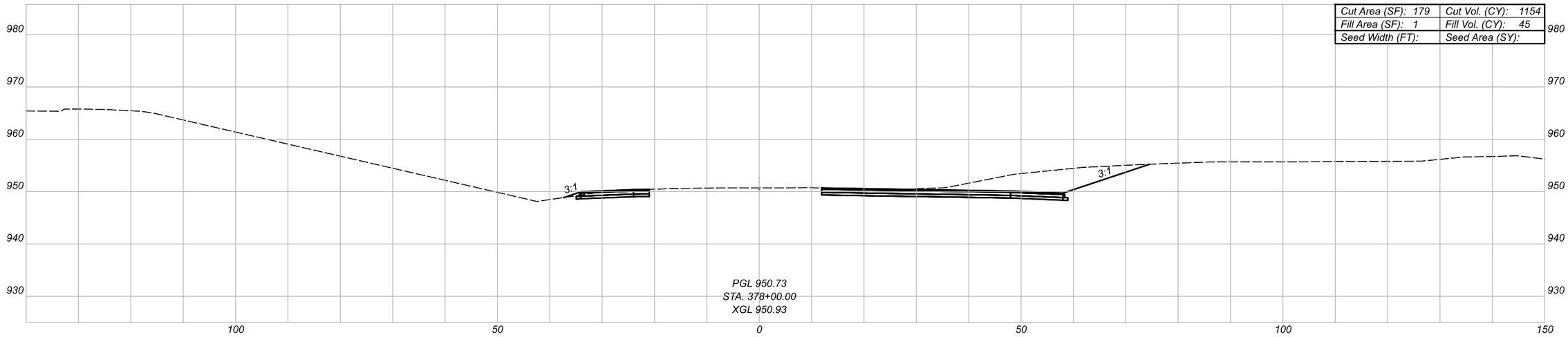
DESIGNER ARW

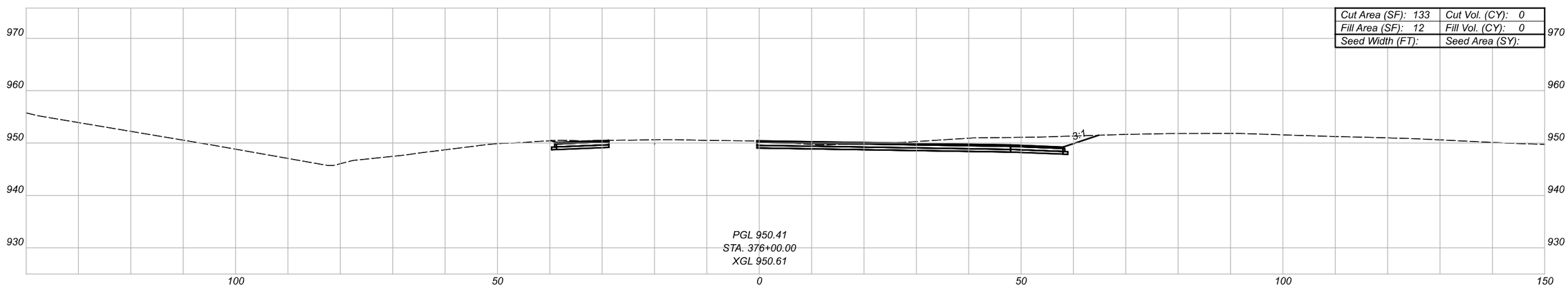
REVIEWER JRE 03/24/23

PROJECT ID 115160

SHEET 128 TOTAL 161







MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS376 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 1:00:20 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS376.dgn

CROSS SECTIONS-SB COLLECTOR RD ALTERNATIVE 2

DESIGN AGENCY

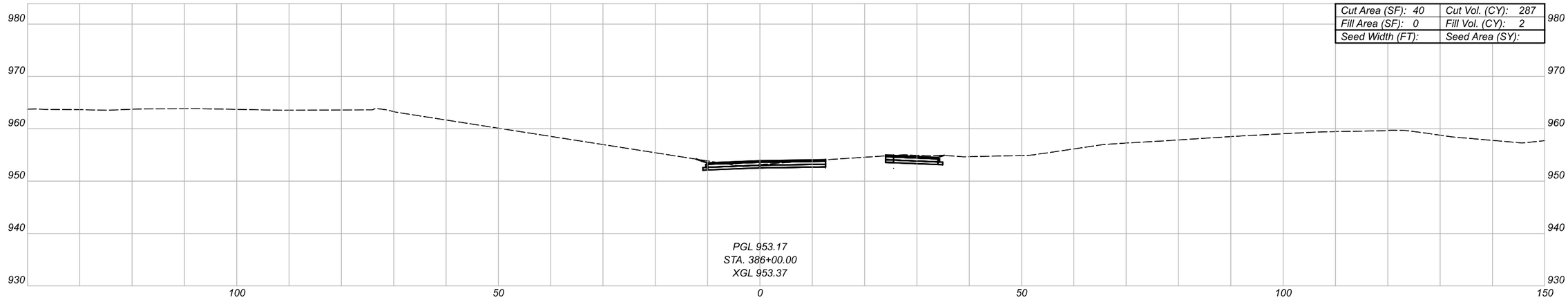
DESIGNER: ARW

REVIEWER: JRE 03/24/23

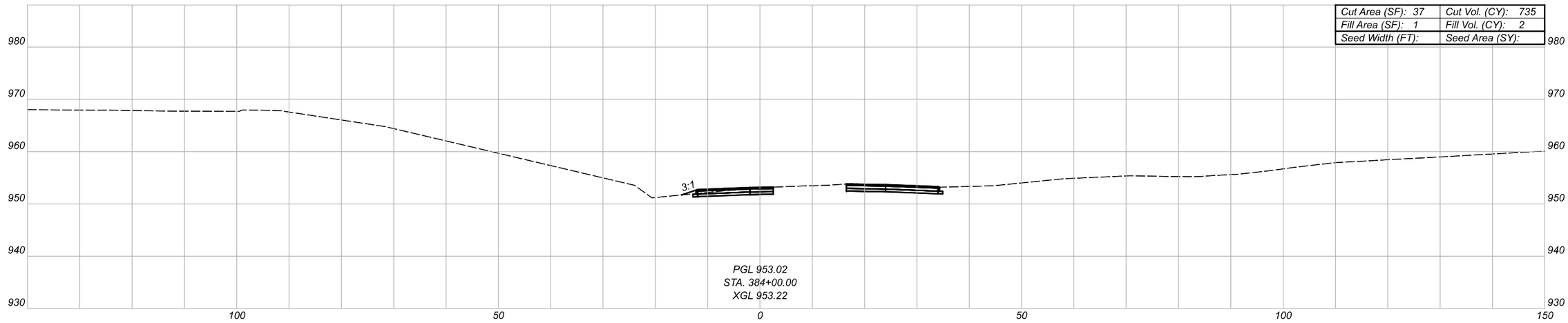
PROJECT ID: 115160

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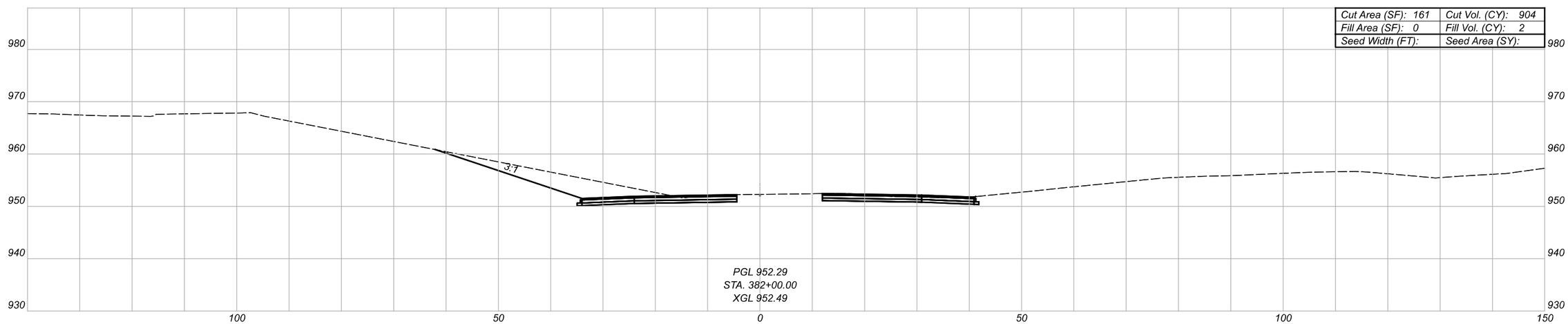
SHEET: 129 TOTAL: 161



Cut Area (SF): 40	Cut Vol. (CY): 287
Fill Area (SF): 0	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 37	Cut Vol. (CY): 735
Fill Area (SF): 1	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 161	Cut Vol. (CY): 904
Fill Area (SF): 0	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS377 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 10:28 PM USER: jespelage
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CROSS SECTIONS-SB COLLECTOR RD
ALTERNATIVE 2

DESIGN AGENCY

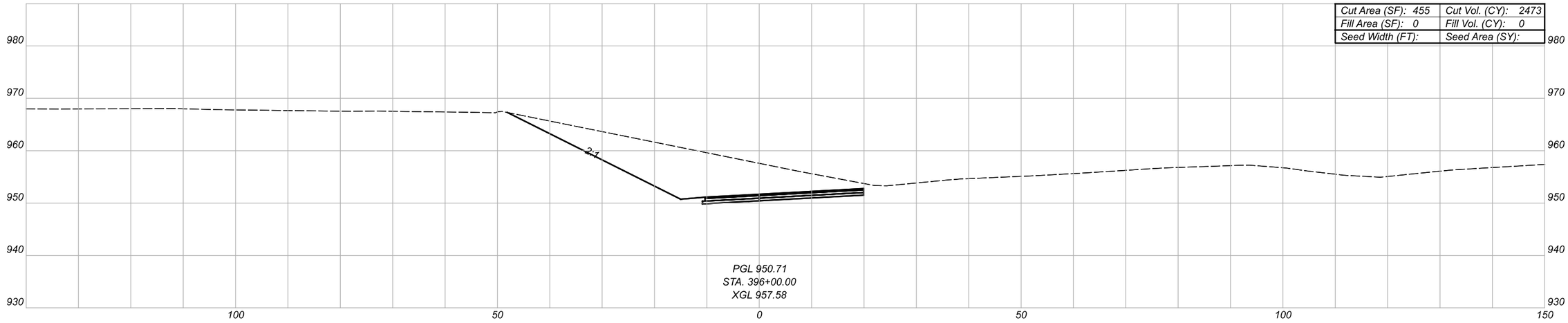
DESIGNER: ARW

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
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SHEET: 130 TOTAL: 161



CROSS SECTIONS-SB COLLECTOR RD
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: ARW

REVIEWER: JRE 03/24/23

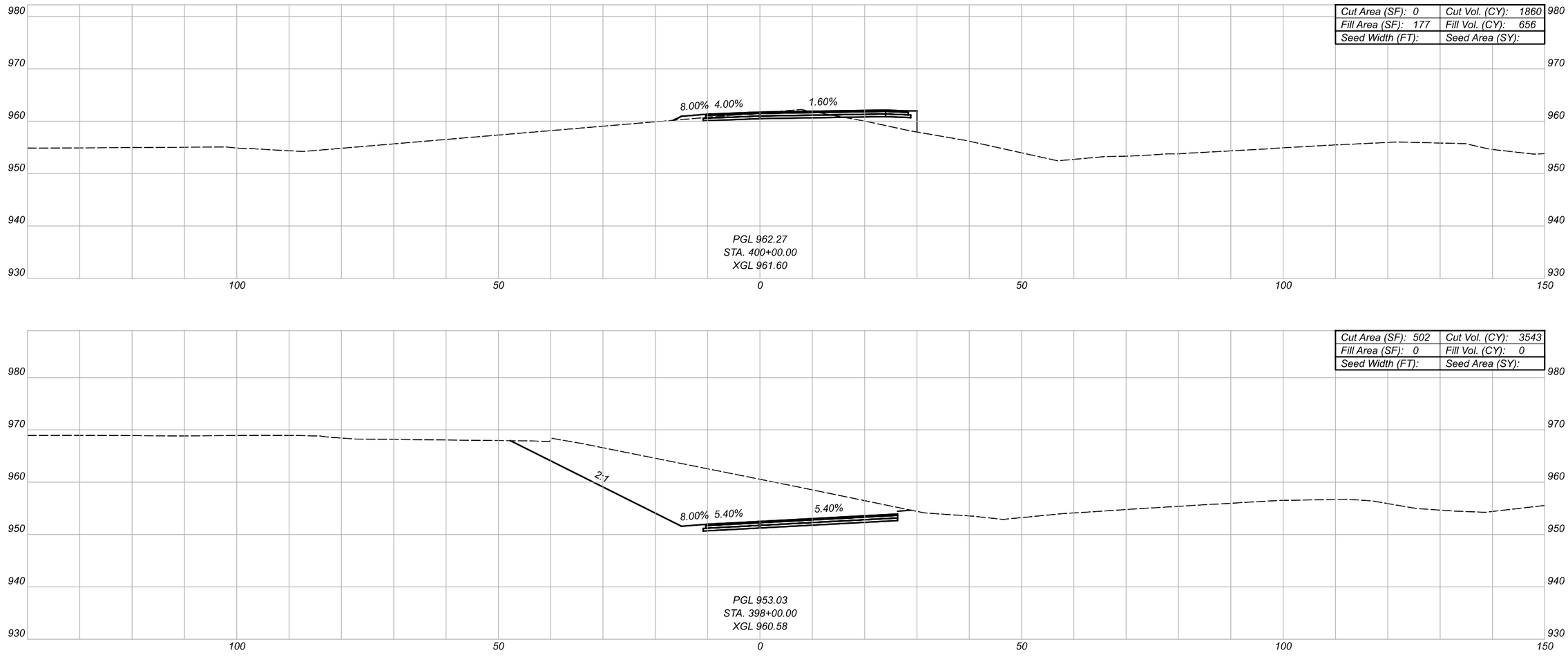
PROJECT ID: 115160

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SHEET 131 TOTAL 161

MOT/GRE I-675/WILMINGTON

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MOT/GRE I-675/WILMINGTON

MODEL: I5160_XS380 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 03:20 PM USER: jespelage
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CROSS SECTIONS-SB COLLECTOR RD ALTERNATIVE 2

DESIGN AGENCY

DESIGNER
ARW

REVIEWER
JRE 03/24/23

PROJECT ID
115160

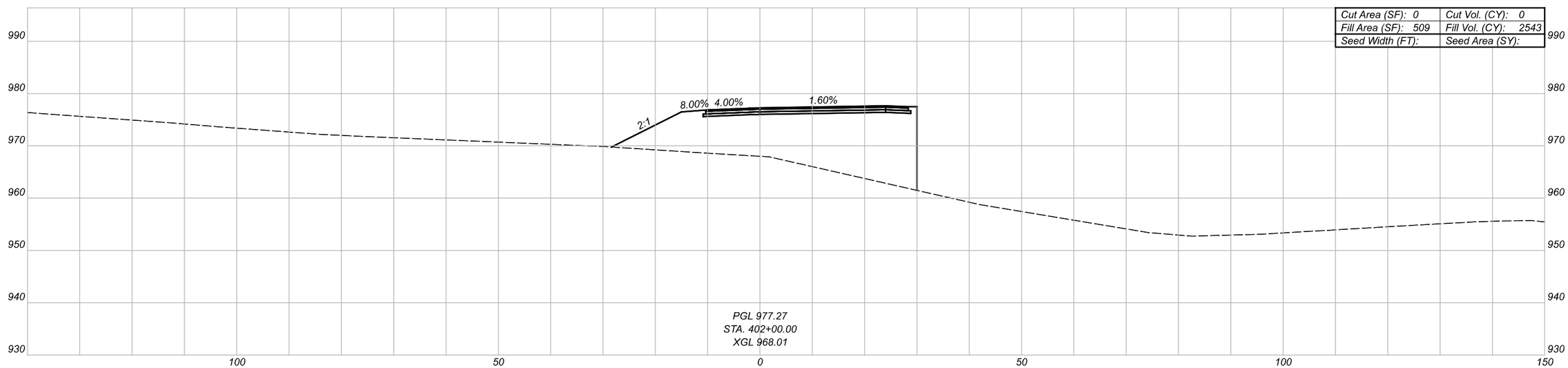
Sheet Totals		
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SHEET	TOTAL
132	161

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS38 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 04:05 PM USER: jespelage
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CROSS SECTIONS-SB COLLECTOR RD
ALTERNATIVE 2



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 509	Fill Vol. (CY): 2543
Seed Width (FT):	Seed Area (SY):

DESIGN AGENCY

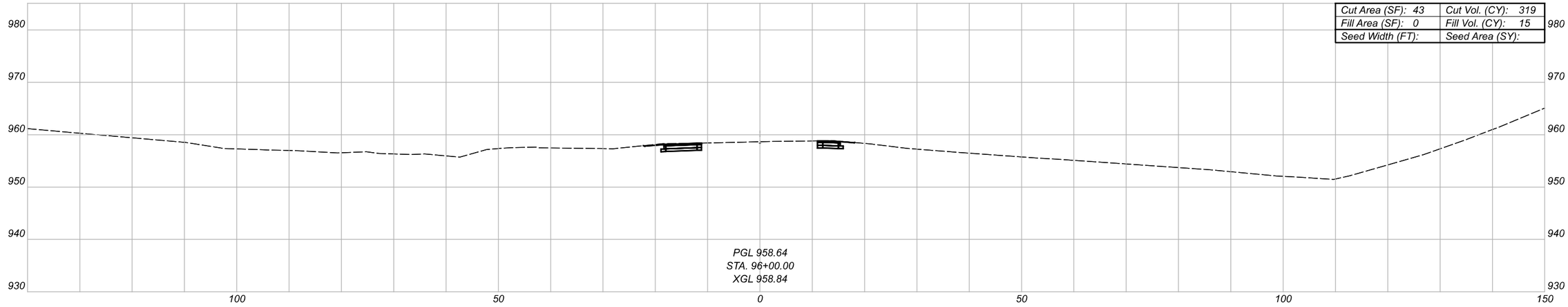
DESIGNER: ARW

REVIEWER: JRE 03/24/23

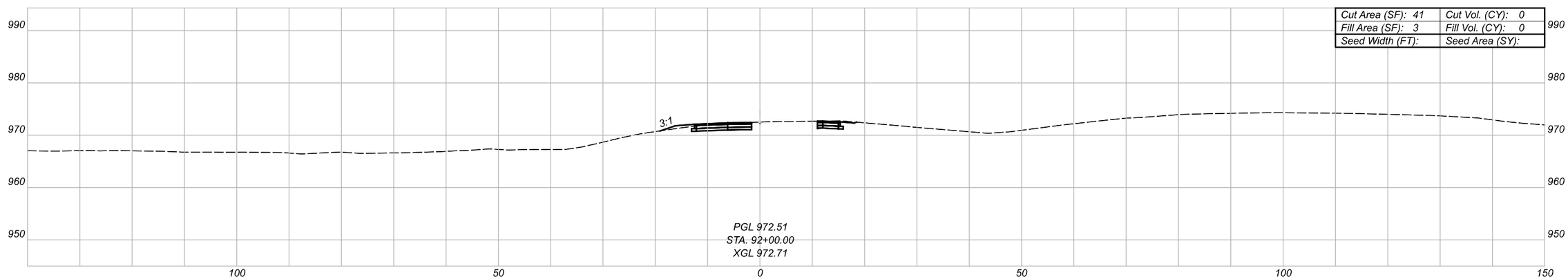
PROJECT ID: 115160

SHEET: 133 TOTAL: 161

Sheet Totals		
Seeding	Cut	Fill
-	-	-







CROSS SECTIONS-WILMINGTON SB ENTRANCE RAMP ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS476 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 1:04:29 PM USER: jespelage
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DESIGN AGENCY

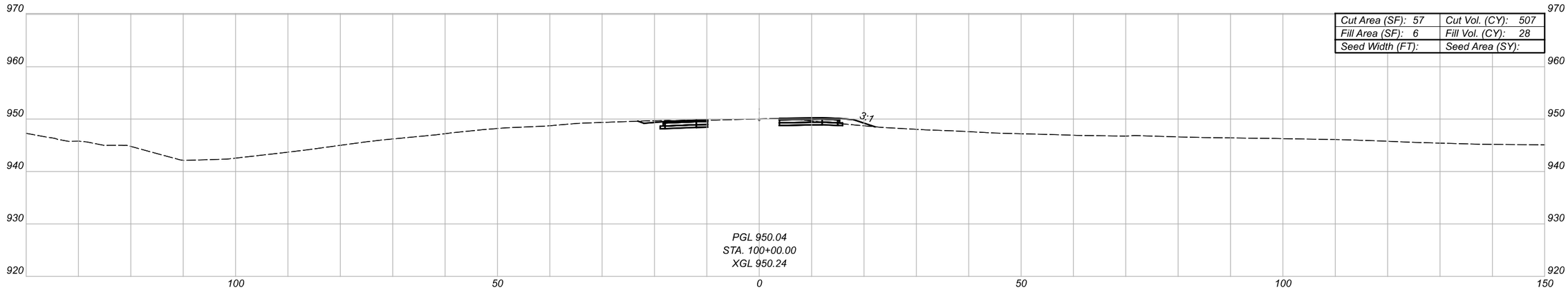
DESIGNER: ARW

REVIEWER: JRE 03/24/23

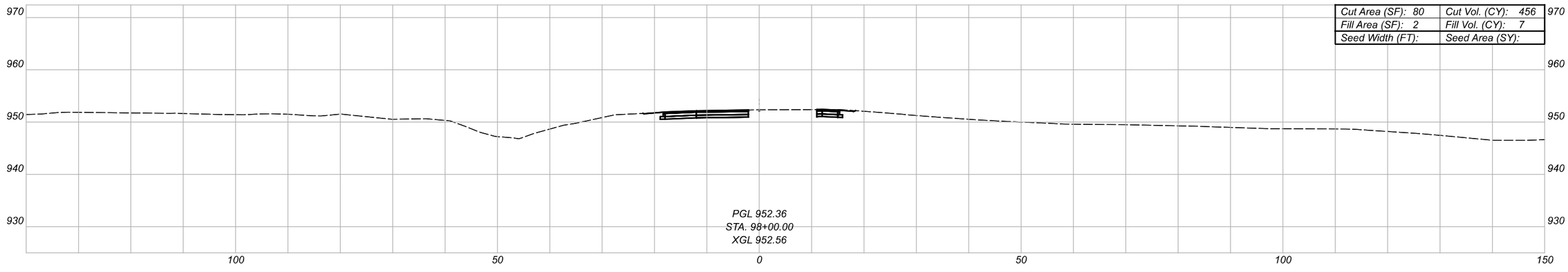
PROJECT ID: 115160

SHEET: 134 TOTAL: 161

Sheet Totals		
Seeding	Cut	Fill
-	-	-



Cut Area (SF): 57	Cut Vol. (CY): 507
Fill Area (SF): 6	Fill Vol. (CY): 28
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 80	Cut Vol. (CY): 456
Fill Area (SF): 2	Fill Vol. (CY): 7
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS477 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 1:06:49 PM USER: jespelage
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CROSS SECTIONS-WILMINGTON SB ENTRANCE RAMP ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: ARW

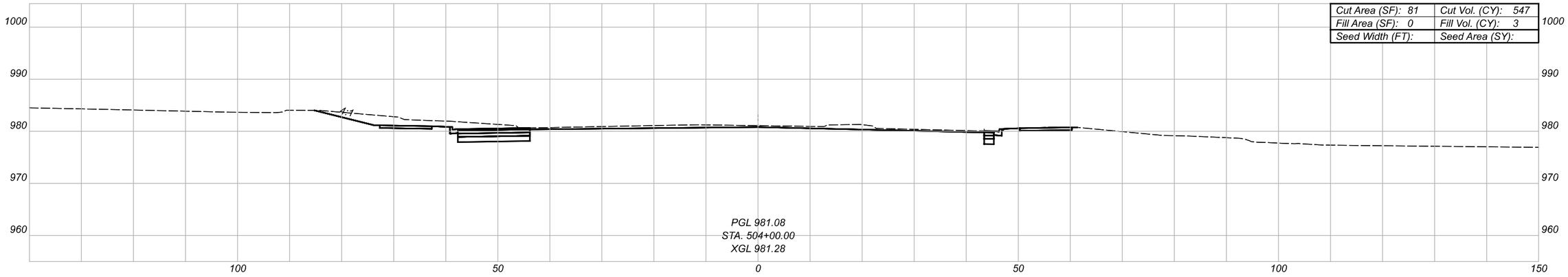
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PROJECT ID: 115160

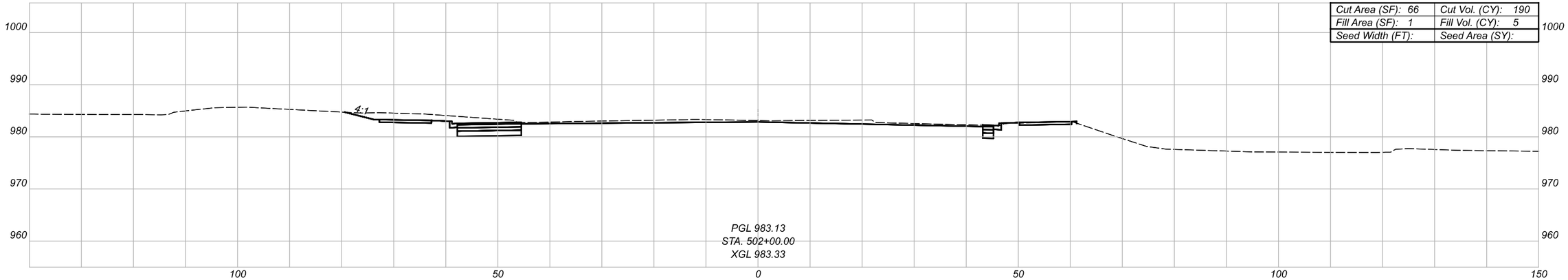
SHEET: 135 TOTAL: 161

Sheet Totals

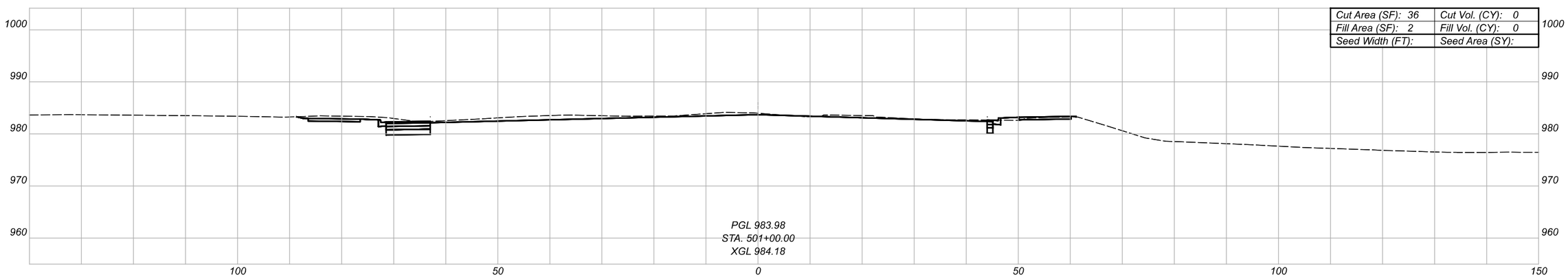
Seeding	Cut	Fill
.	.	.



Cut Area (SF): 81	Cut Vol. (CY): 547
Fill Area (SF): 0	Fill Vol. (CY): 3
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 66	Cut Vol. (CY): 190
Fill Area (SF): 1	Fill Vol. (CY): 5
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 36	Cut Vol. (CY): 0
Fill Area (SF): 2	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: li5160_XS50i PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 1:07:38 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 2

DESIGN AGENCY

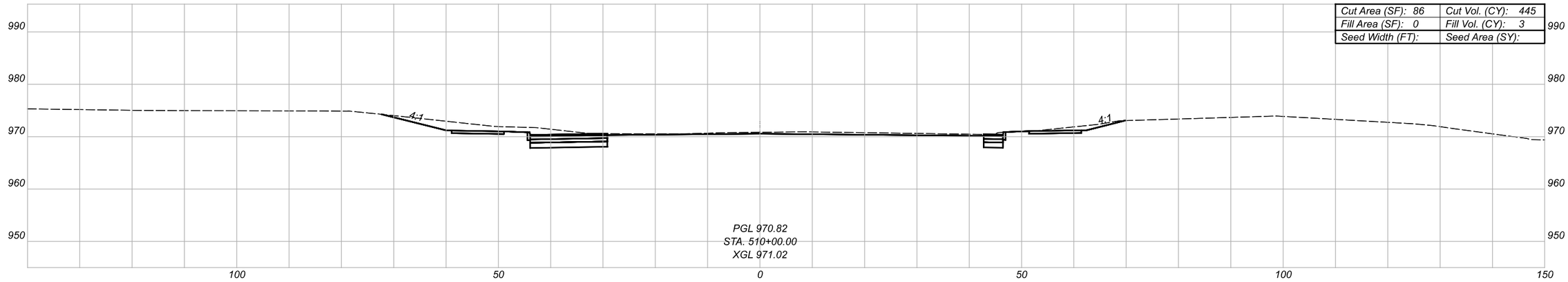
DESIGNER: JMD

REVIEWER: JRE 03/24/23

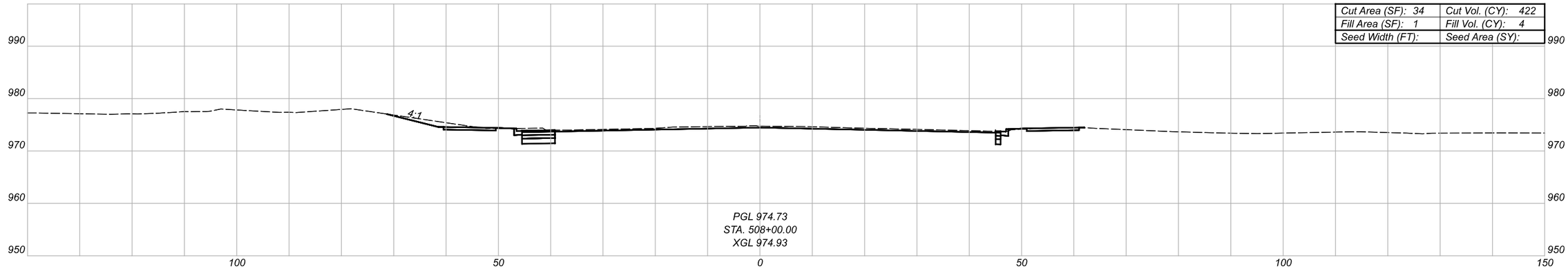
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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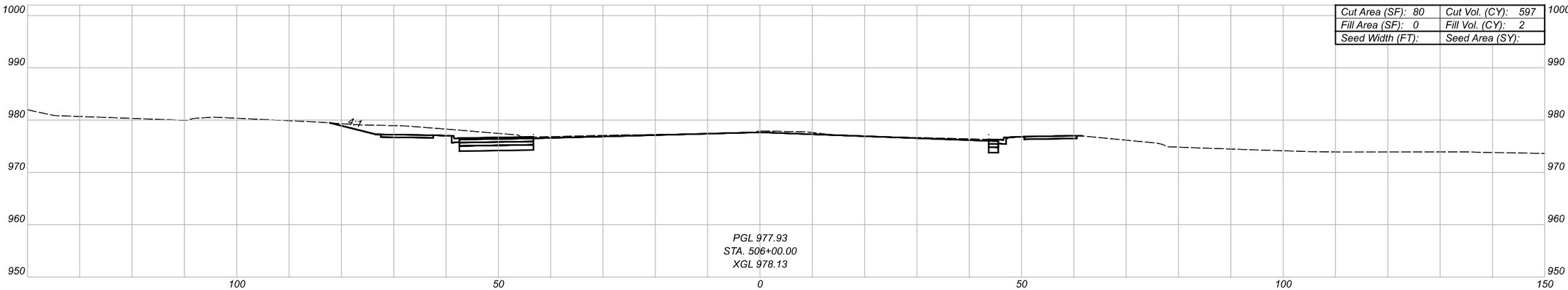
SHEET: 136 TOTAL: 161



Cut Area (SF): 86	Cut Vol. (CY): 445
Fill Area (SF): 0	Fill Vol. (CY): 3
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 34	Cut Vol. (CY): 422
Fill Area (SF): 1	Fill Vol. (CY): 4
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 80	Cut Vol. (CY): 597
Fill Area (SF): 0	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS502 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 10:54 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

DESIGN AGENCY

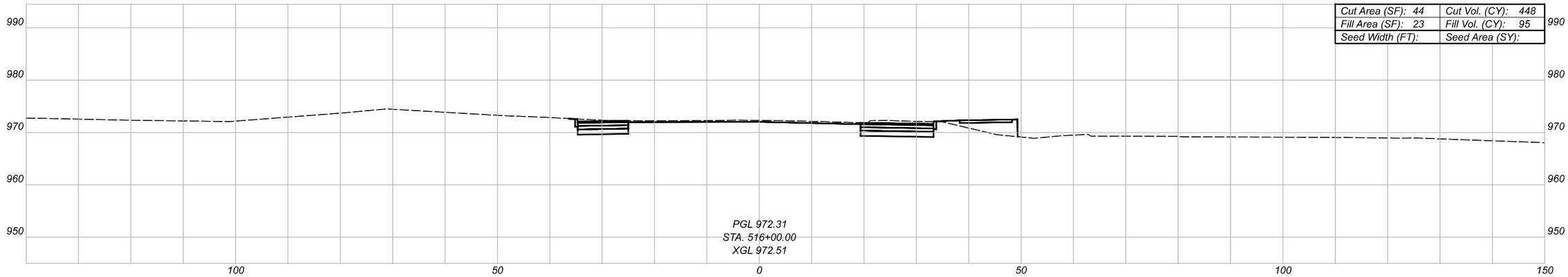
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REVIEWER: JRE 03/24/23

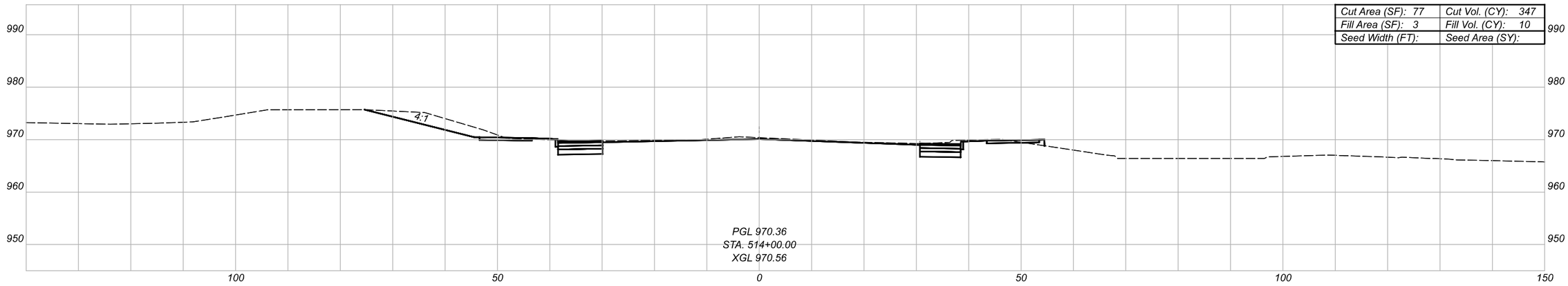
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

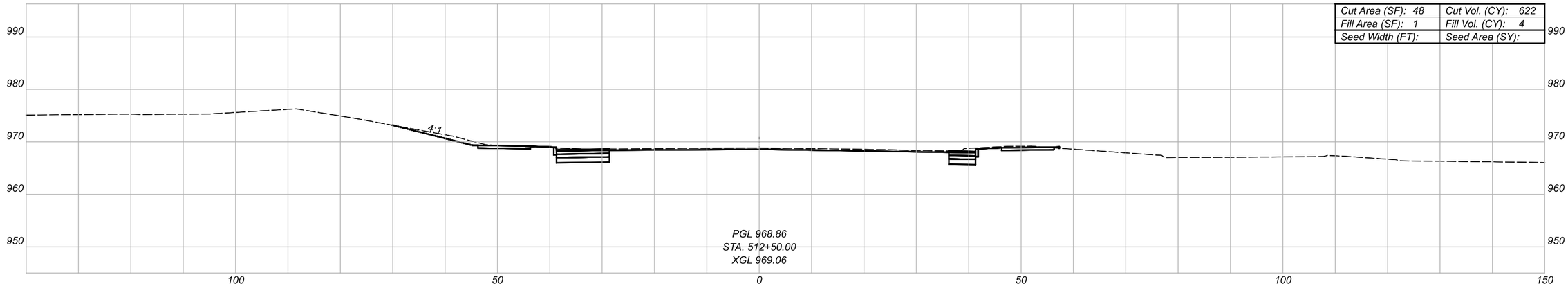
SHEET: 137 TOTAL: 161



Cut Area (SF): 44	Cut Vol. (CY): 448
Fill Area (SF): 23	Fill Vol. (CY): 95
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 77	Cut Vol. (CY): 347
Fill Area (SF): 3	Fill Vol. (CY): 10
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 48	Cut Vol. (CY): 622
Fill Area (SF): 1	Fill Vol. (CY): 4
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS503 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 10:07 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 2

DESIGN AGENCY

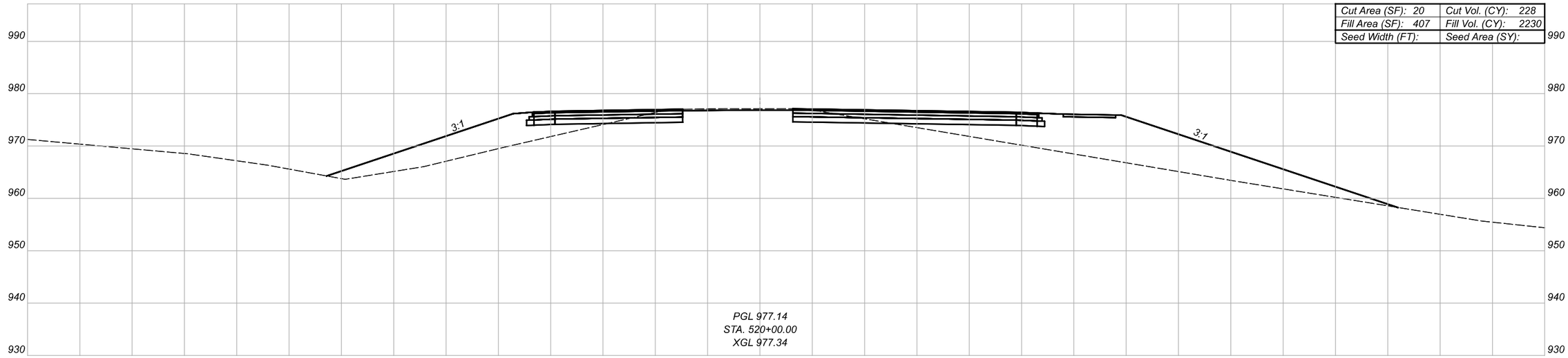
DESIGNER
JMD

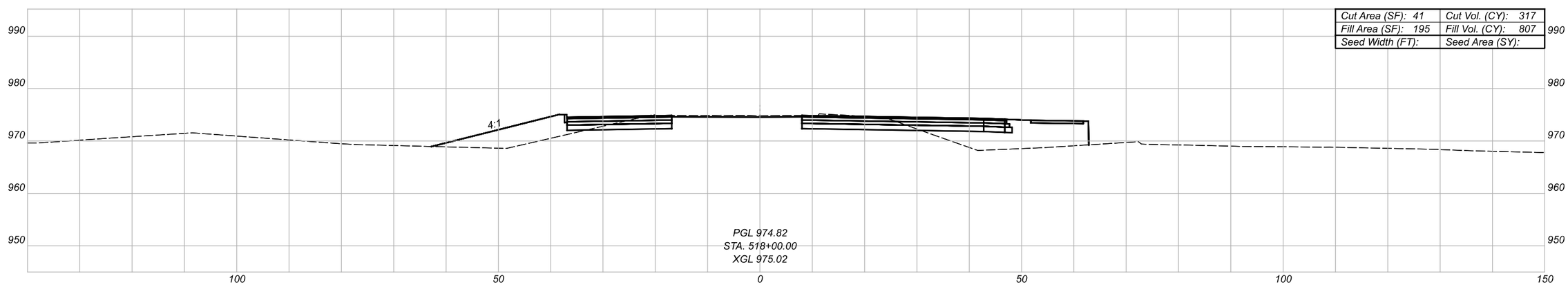
REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET	TOTAL
138	161





CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS504 PAPERSIZE: 17x11(In.) DATE: 9/12/2023 TIME: 1:11:21 PM USER: jespelage
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DESIGN AGENCY

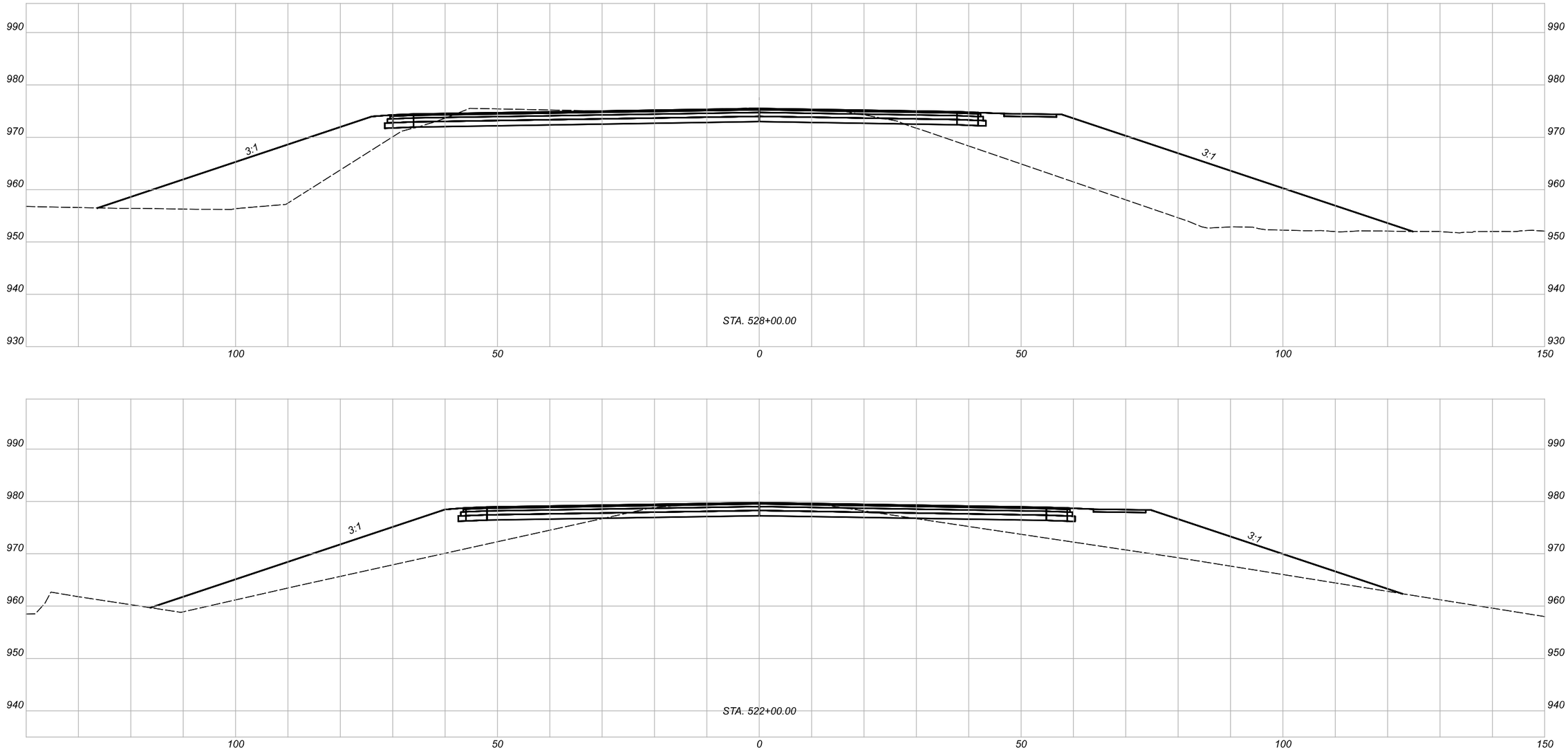
DESIGNER: JMD

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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SHEET: 139 TOTAL: 161



MOT/GRE I-675/WILMINGTON

MODEL: II5160_XS505 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:09 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

DESIGN AGENCY

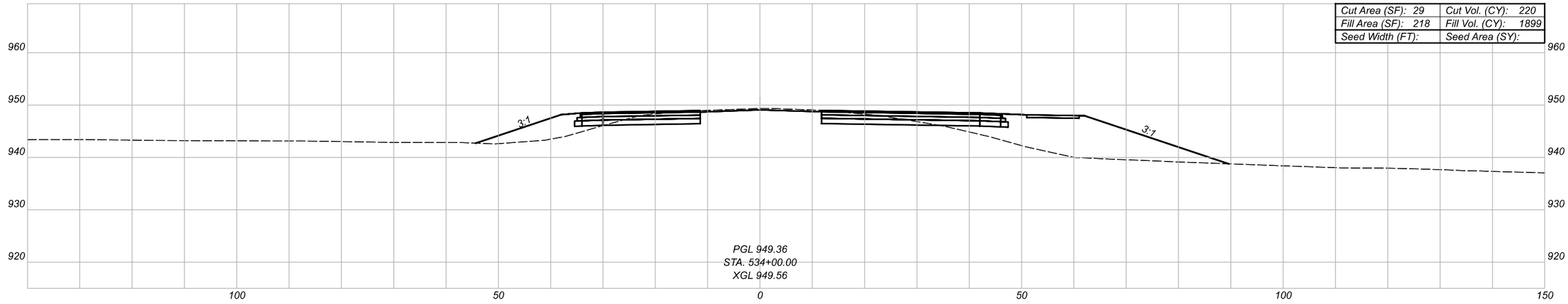
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REVIEWER: JRE 03/24/23

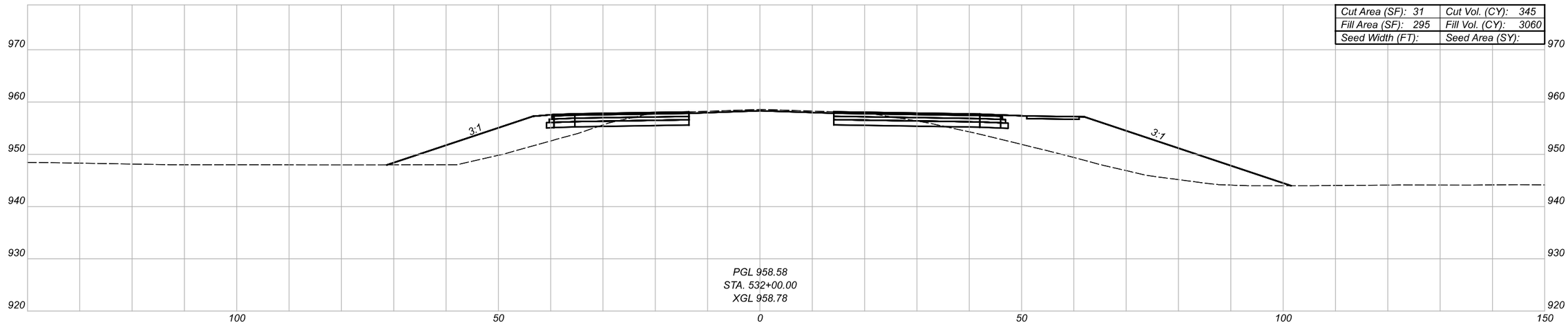
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Sheet Totals		
Seeding	Cut	Fill
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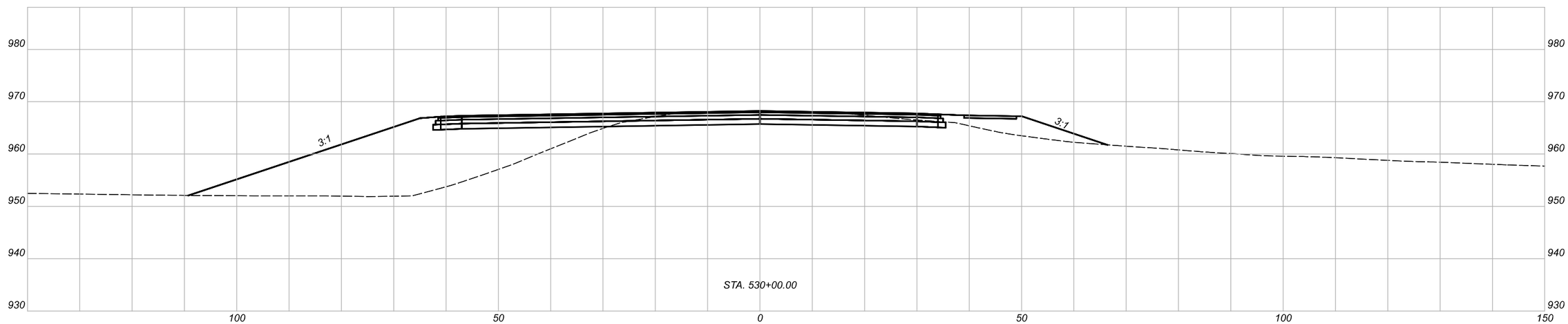
SHEET: 140 TOTAL: 161



Cut Area (SF): 29	Cut Vol. (CY): 220
Fill Area (SF): 218	Fill Vol. (CY): 1899
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 31	Cut Vol. (CY): 345
Fill Area (SF): 295	Fill Vol. (CY): 3060
Seed Width (FT):	Seed Area (SY):



CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS506 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 11:25:8 PM USER: jespelage
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DESIGN AGENCY

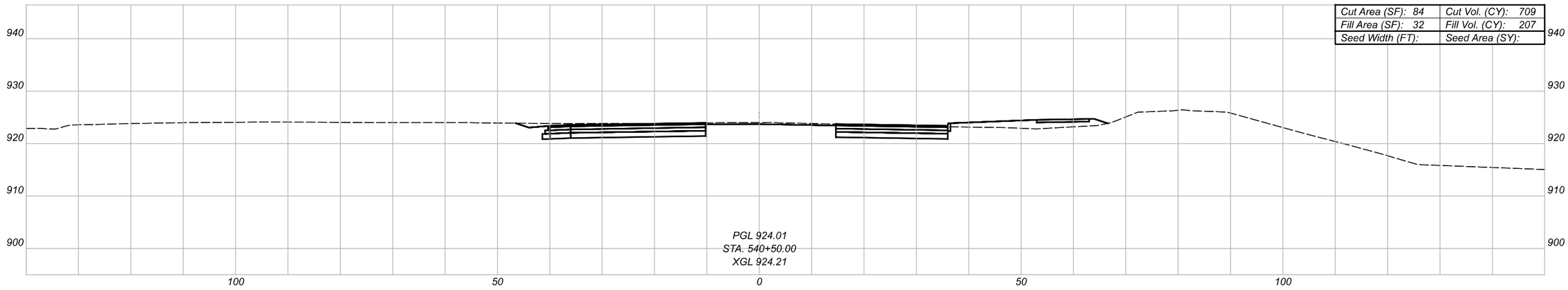
DESIGNER JMD

REVIEWER JRE 03/24/23

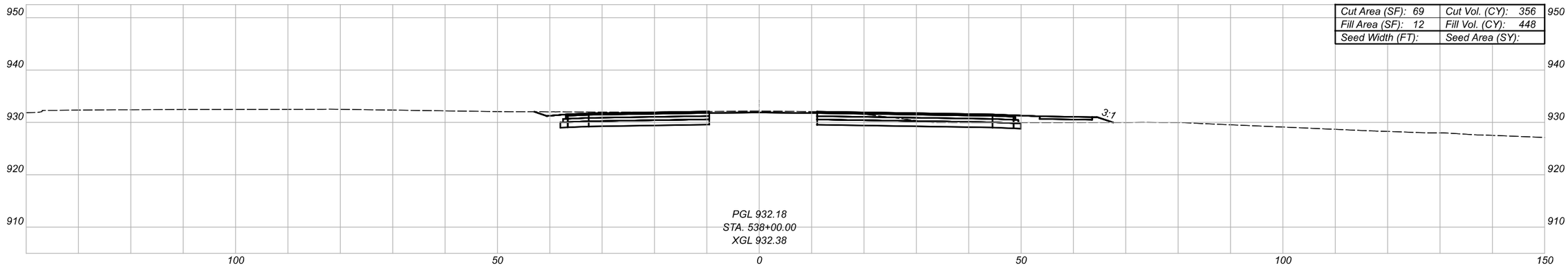
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

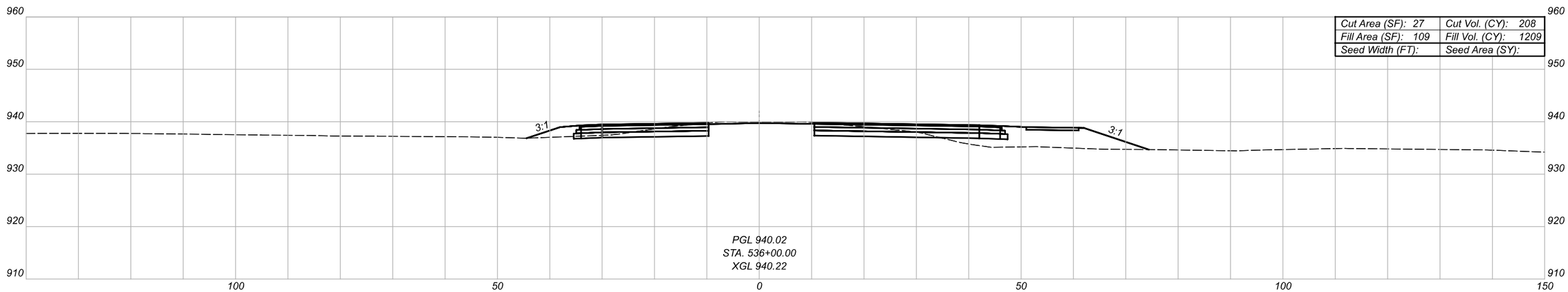
SHEET 141 TOTAL 161



Cut Area (SF): 84	Cut Vol. (CY): 709
Fill Area (SF): 32	Fill Vol. (CY): 207
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 69	Cut Vol. (CY): 356
Fill Area (SF): 12	Fill Vol. (CY): 448
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 27	Cut Vol. (CY): 208
Fill Area (SF): 109	Fill Vol. (CY): 1209
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 2

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS507 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 04:42 PM USER: jespelage
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DESIGN AGENCY

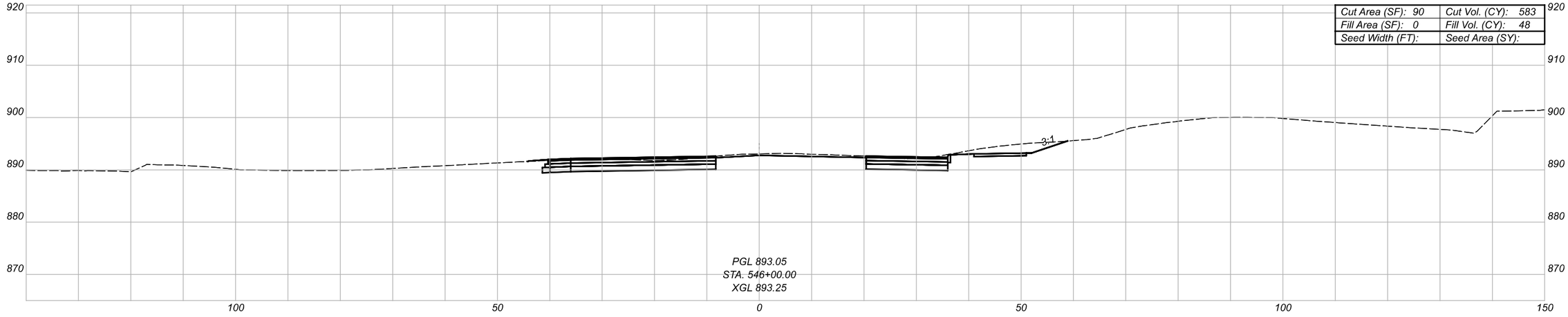
DESIGNER: JMD

REVIEWER: JRE 03/24/23

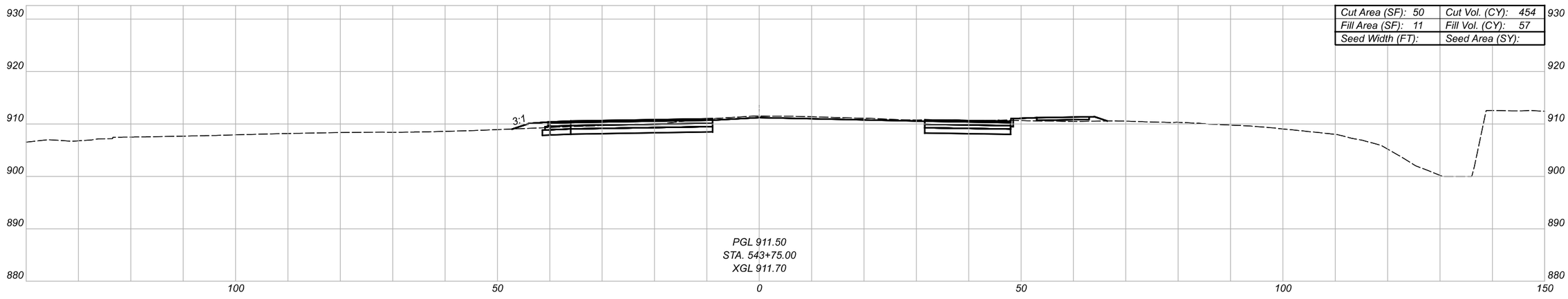
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
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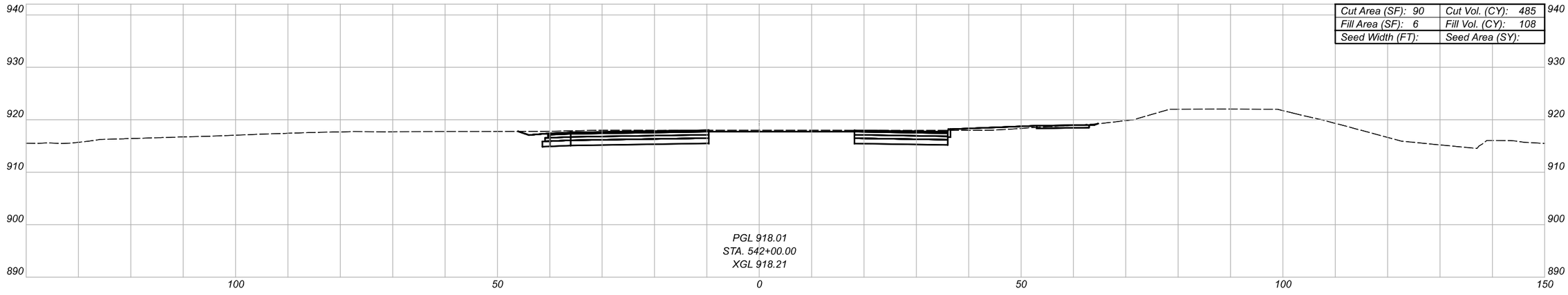
SHEET: 142 TOTAL: 161



Cut Area (SF): 90	Cut Vol. (CY): 583
Fill Area (SF): 0	Fill Vol. (CY): 48
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 50	Cut Vol. (CY): 454
Fill Area (SF): 11	Fill Vol. (CY): 57
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 90	Cut Vol. (CY): 485
Fill Area (SF): 6	Fill Vol. (CY): 108
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS508 PAPERSIZE: ITxII(In.) DATE: 9/12/2023 TIME: 11:52:27 PM USER: jespelage
C:\Montgomery Cnty TID\DII79534.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS508-2.dgn

CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

DESIGN AGENCY

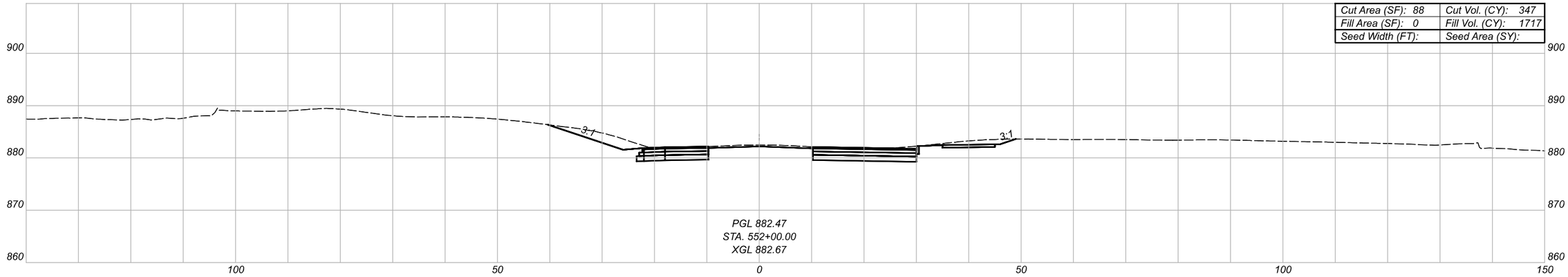
DESIGNER JMD

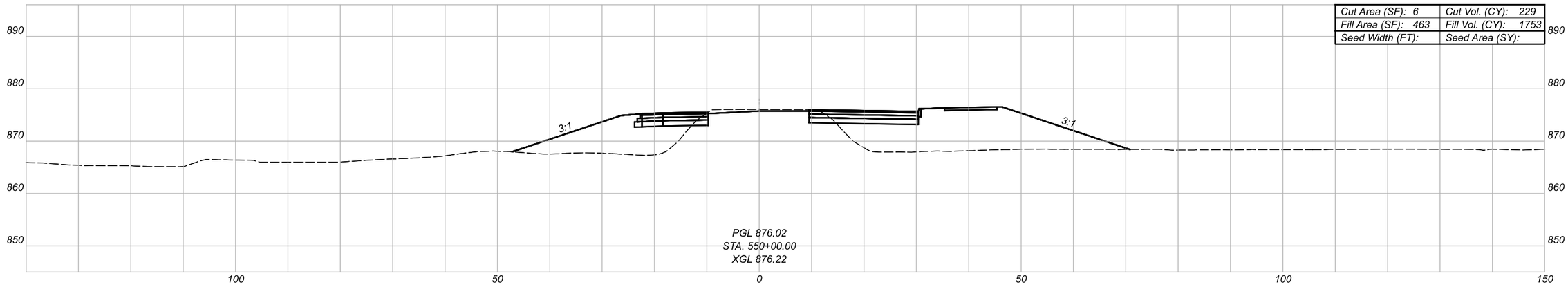
REVIEWER JRE 03/24/23

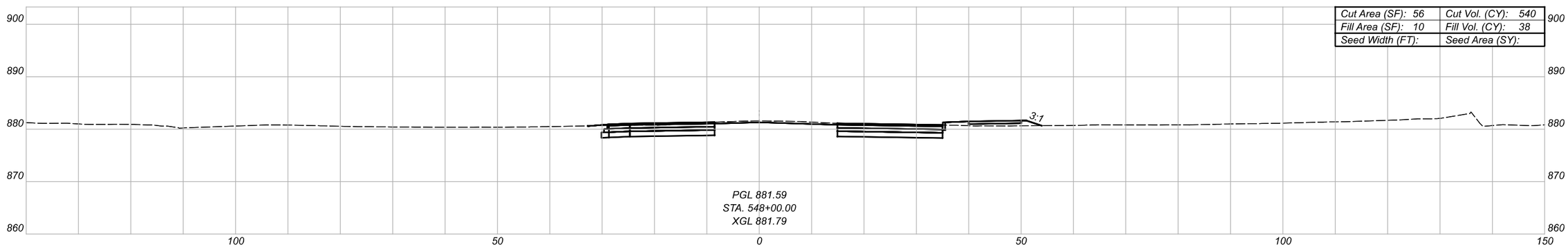
PROJECT ID 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 143 TOTAL 161







MOT/GRE I-675/WILMINGTON

MODEL: I15160.XS509 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 1:16:40 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160.XS509-2.dgn

CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

DESIGN AGENCY

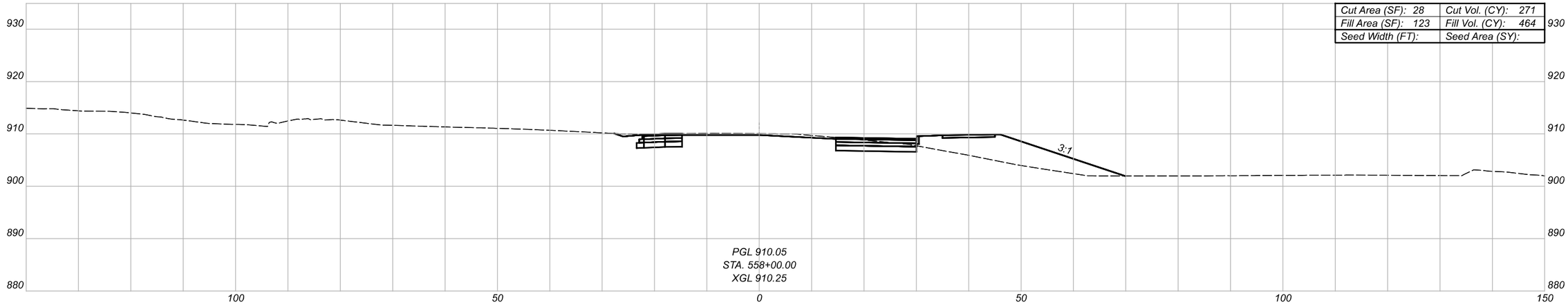
DESIGNER: JMD

REVIEWER: JRE 03/24/23

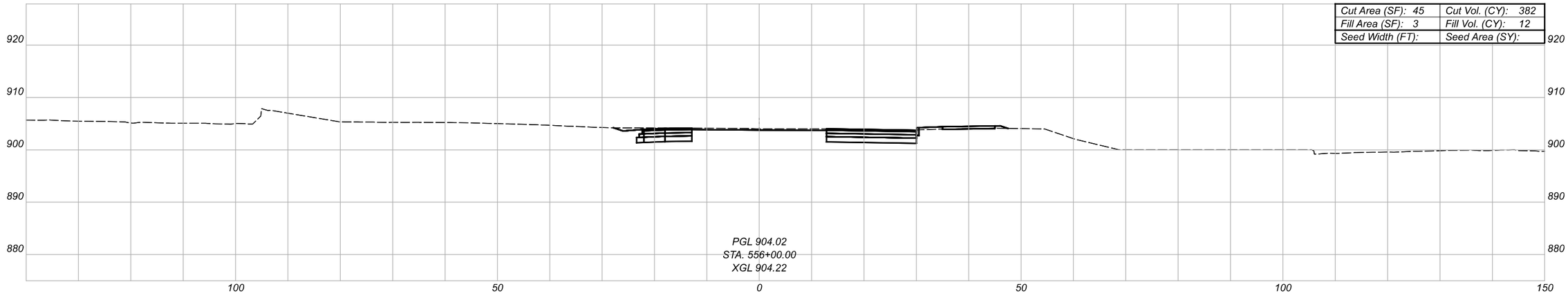
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

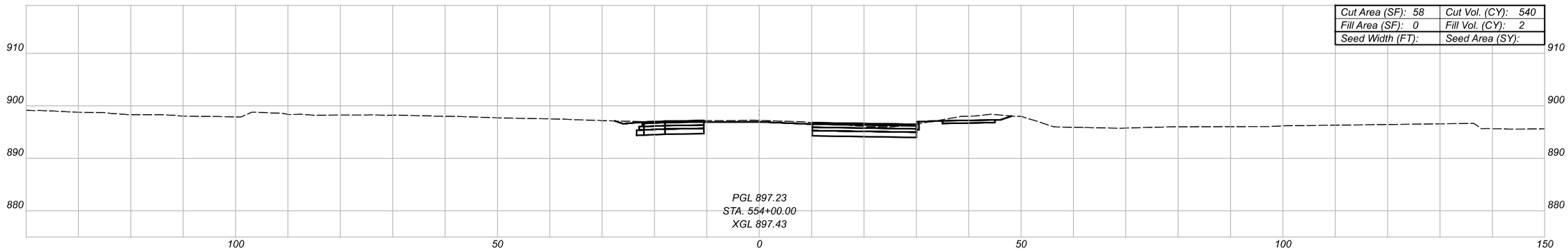
SHEET: 144 TOTAL: 161



Cut Area (SF): 28	Cut Vol. (CY): 271
Fill Area (SF): 123	Fill Vol. (CY): 464
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 45	Cut Vol. (CY): 382
Fill Area (SF): 3	Fill Vol. (CY): 12
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 58	Cut Vol. (CY): 540
Fill Area (SF): 0	Fill Vol. (CY): 2
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS50 PAPERSIZE: 17x11(in) DATE: 9/12/2023 TIME: 07:42 PM USER: jespelage
Q:\Montgomery Cnty TID\DI17953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS50-2.dgn

CROSS SECTIONS-FEEDWIRE RD ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: JMD

REVIEWER: JRE 03/24/23

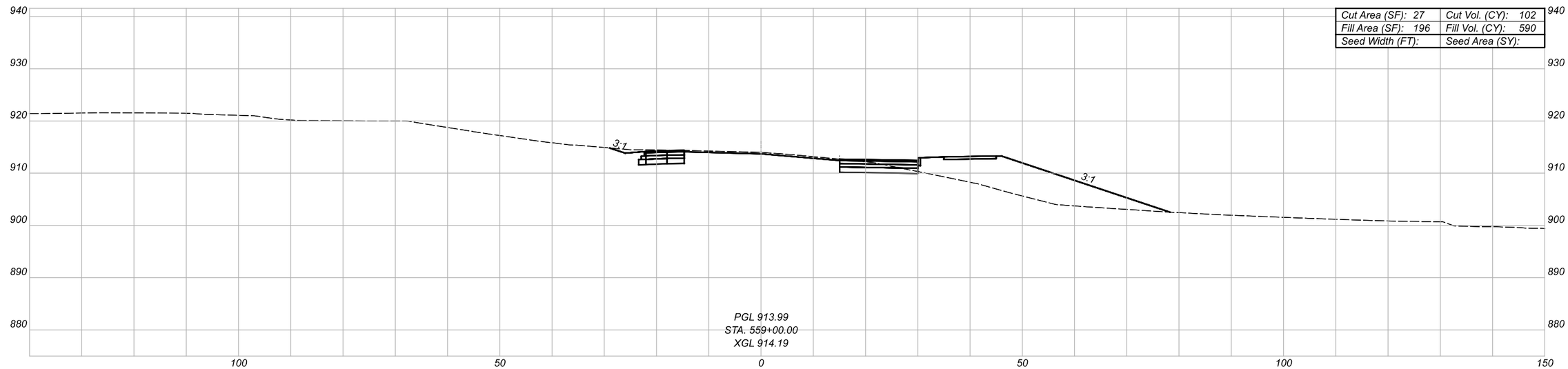
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET: 145 TOTAL: 161

MOT/GRE I-675/WILMINGTON

MODEL: I15160_XS5ii PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 11:8:56 PM USER: jespelage
D:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I15160\400-Engineering\Roadway\Sheets\I15160_XS5ii-2.dgn



Cut Area (SF): 27	Cut Vol. (CY): 102
Fill Area (SF): 196	Fill Vol. (CY): 590
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-FEEDWIRE RD
ALTERNATIVE 2

DESIGN AGENCY

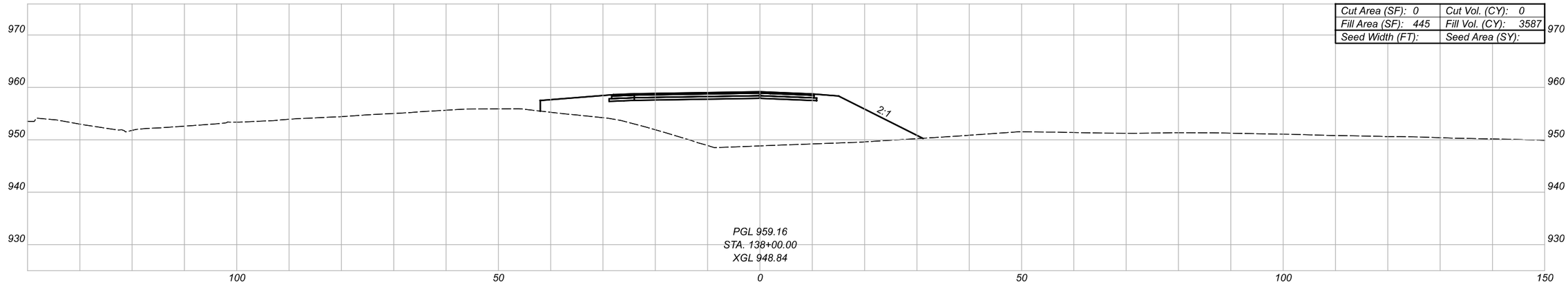
DESIGNER
JMD

REVIEWER
JRE 03/24/23

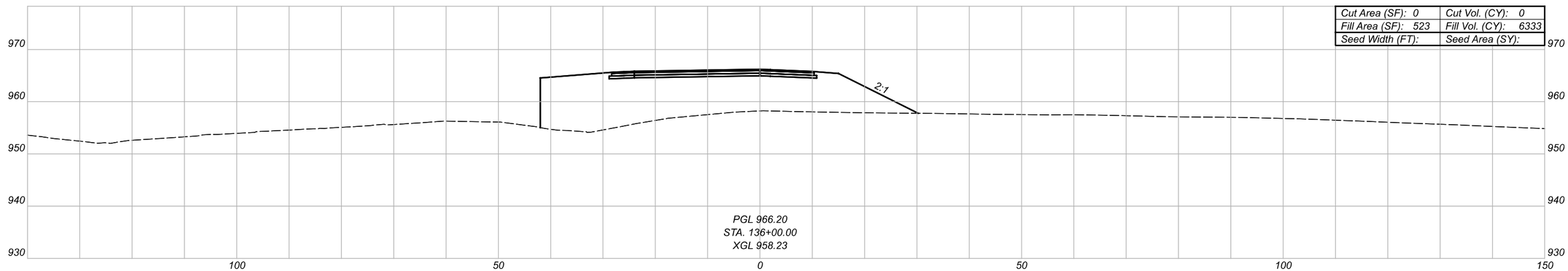
PROJECT ID
115160

SHEET 146 TOTAL 161

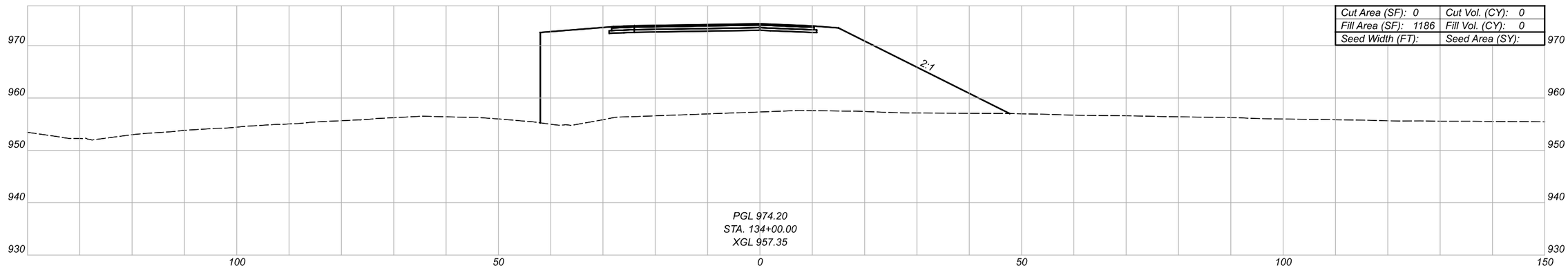
Sheet Totals		
Seeding	Cut	Fill
.	.	.



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 445	Fill Vol. (CY): 3587
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 523	Fill Vol. (CY): 6333
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 1186	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: AP2_R675DD - I34+00.00 PAPERSIZE: 17x11 (in.) DATE: 9/12/2023 TIME: 12:20:23 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS60I-2.dgn

CROSS SECTIONS-FEEDWIRE RD, NB ENTRANCE RAMP ALTERNATIVE 2

DESIGN AGENCY

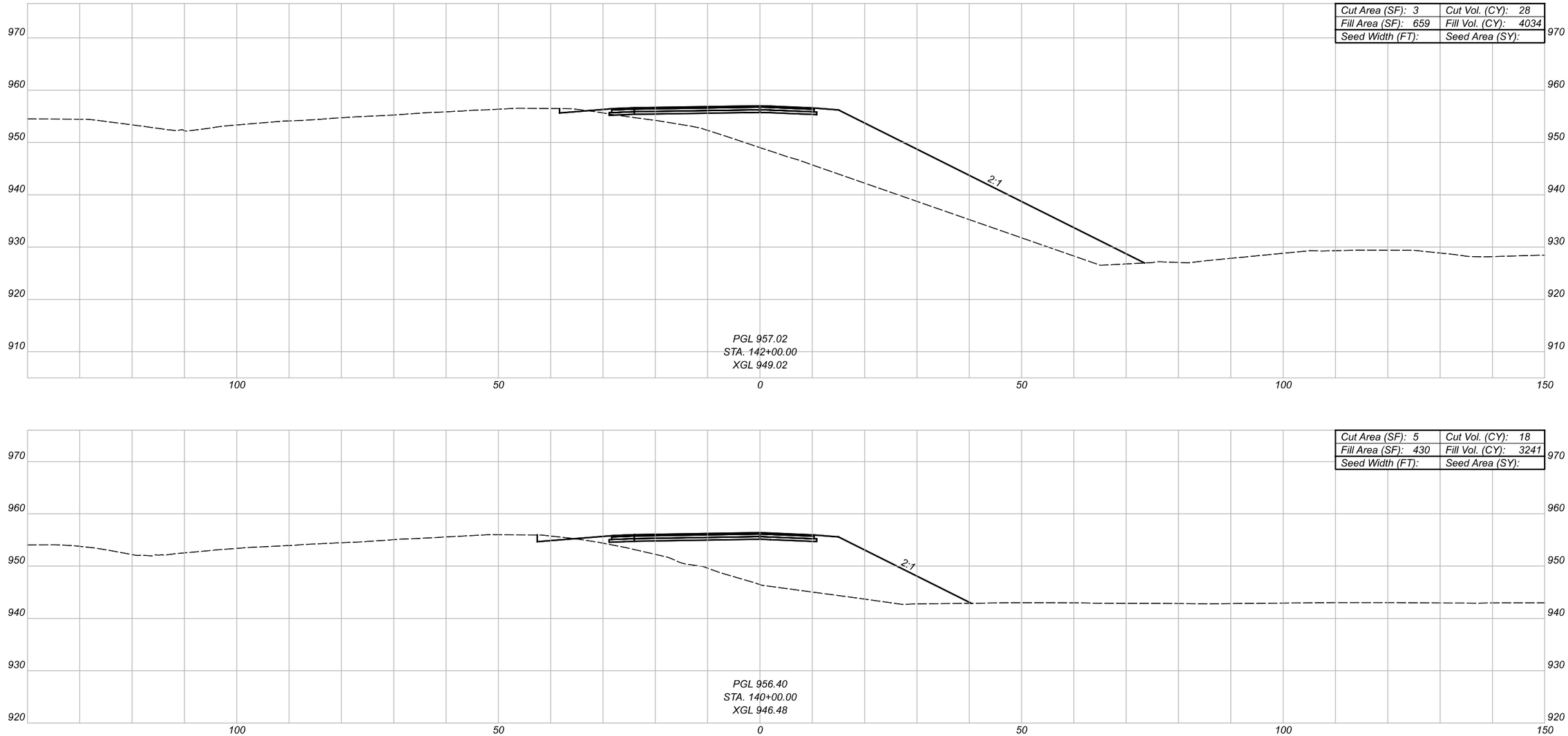
DESIGNER: ARW

REVIEWER: JRE 03/24/23

PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

SHEET: 147 TOTAL: 161



CROSS SECTIONS-FEEDWIRE RD, NB ENTRANCE RAMP
ALTERNATIVE 2

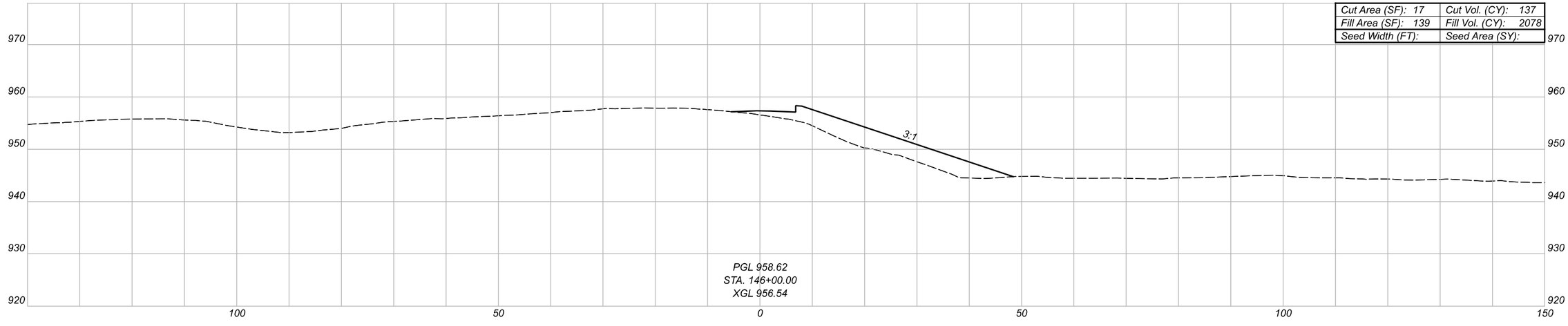
MOT/GRE I-675/WILMINGTON

MODEL: AP2_R675DD - I40+00.00 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:29 PM USER: jespelage
Q:\Montgomery Cnty TID\011953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS602-2.dgn

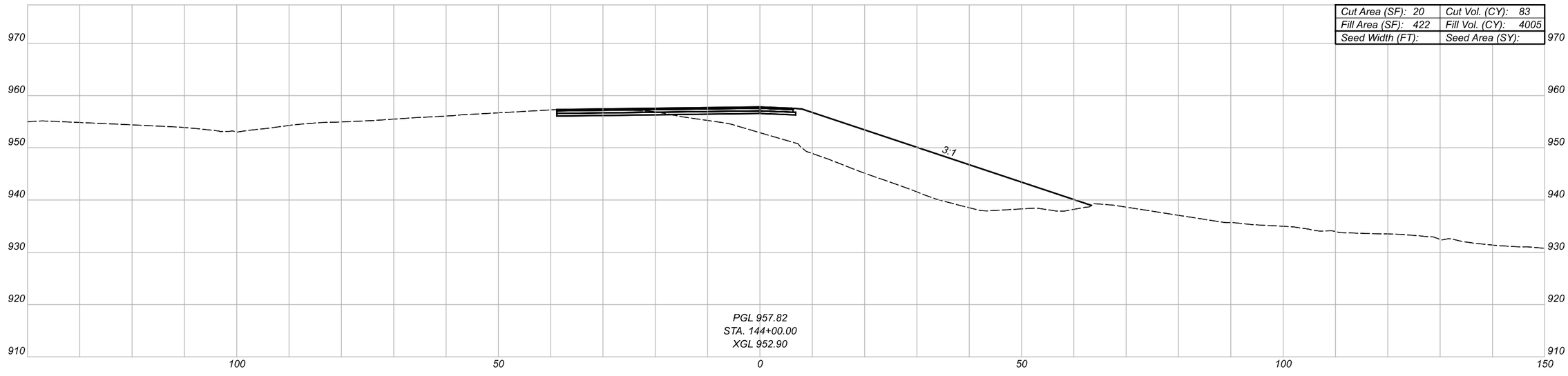
DESIGN AGENCY

Sheet Totals		
Seeding	Cut	Fill
-	-	-

DESIGNER: ARW
REVIEWER: JRE 03/24/23
PROJECT ID: 115160
SHEET: 148 TOTAL: 161



Cut Area (SF): 17	Cut Vol. (CY): 137
Fill Area (SF): 139	Fill Vol. (CY): 2078
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 20	Cut Vol. (CY): 83
Fill Area (SF): 422	Fill Vol. (CY): 4005
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: AP2_R675DD - 144+00.00 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:13 PM USER: jespelage
O:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS603-2.dgn

CROSS SECTIONS-FEEDWIRE RD, NB ENTRANCE RAMP
ALTERNATIVE 2

DESIGN AGENCY

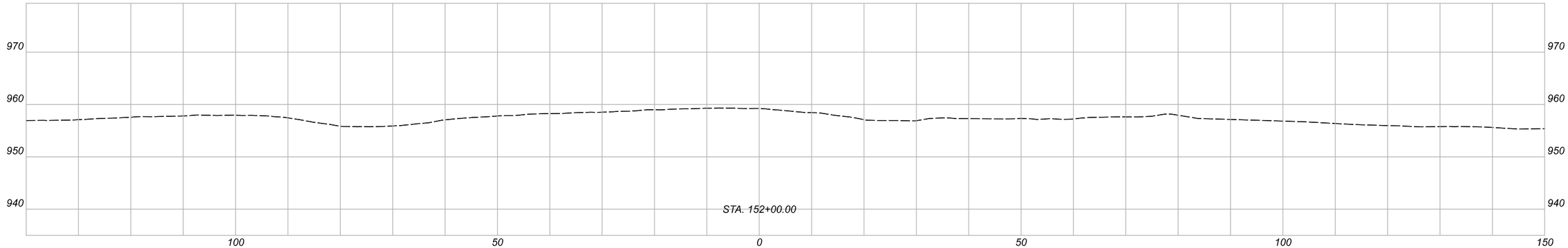
DESIGNER
ARW

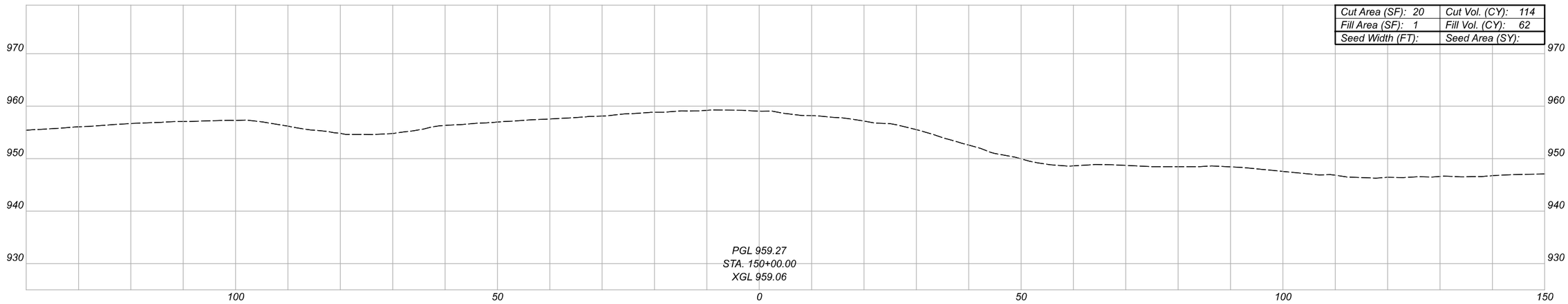
REVIEWER
JRE 03/24/23

PROJECT ID
115160

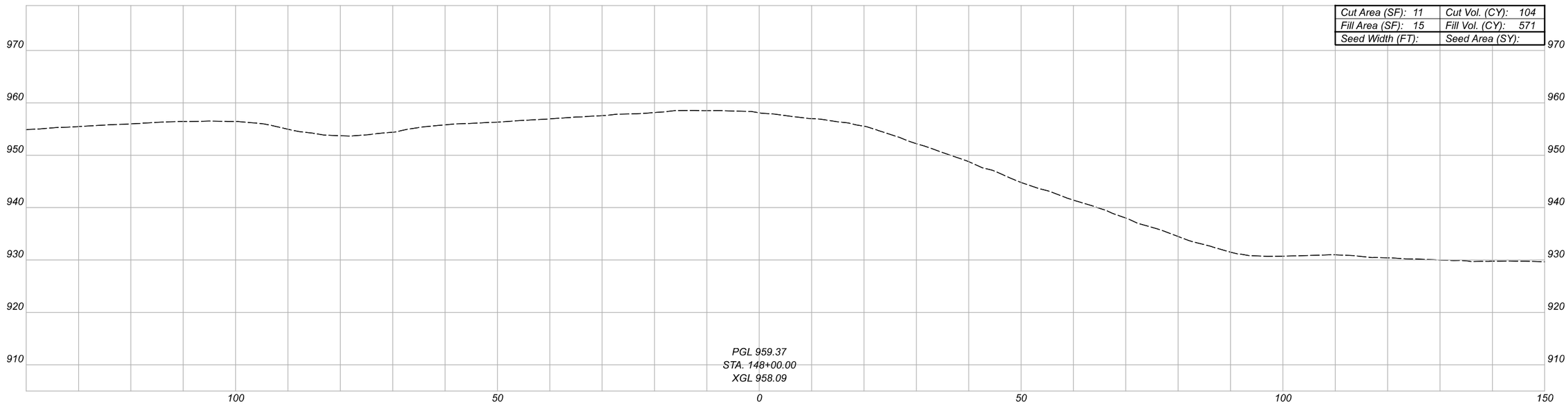
Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 149 TOTAL 161





Cut Area (SF): 20	Cut Vol. (CY): 114
Fill Area (SF): 1	Fill Vol. (CY): 62
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 11	Cut Vol. (CY): 104
Fill Area (SF): 15	Fill Vol. (CY): 571
Seed Width (FT):	Seed Area (SY):

NOTE: FOR MODEL, SEE I-675 CROSS SECTIONS

Sheet Totals		
Seeding	Cut	Fill
-	-	-

MOT/GRE I-675/WILMINGTON

MODEL: AP2_R675DD - I48+00.00 PAPERSIZE: 17x11in DATE: 9/12/2023 TIME: 12:57 PM USER: jespelage
G:\Montgomery Cnty TID\011795\3A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS604-2.dgn

CROSS SECTIONS-FEEDWIRE RD, NB ENTRANCE RAMP ALTERNATIVE 2

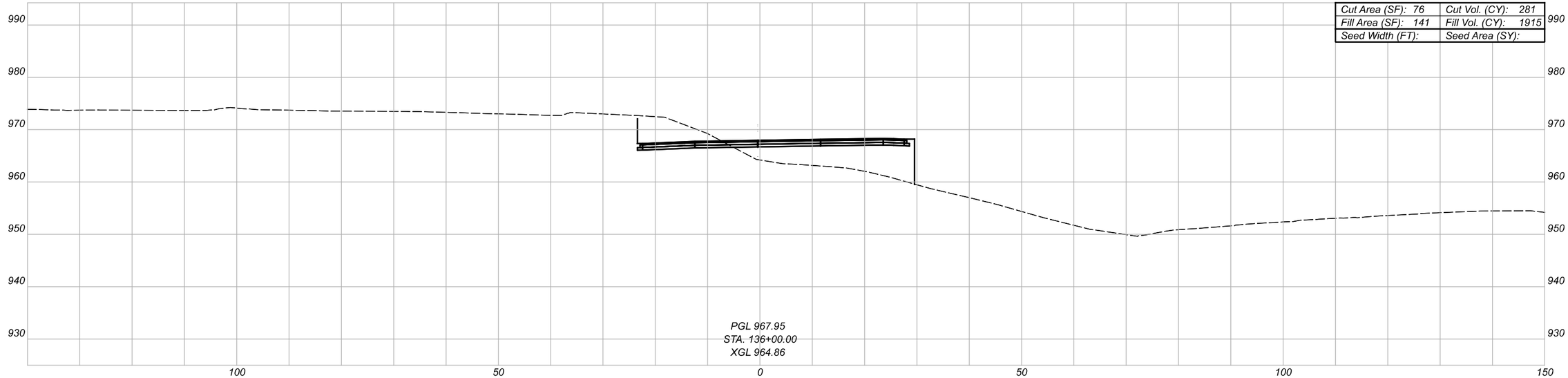
DESIGN AGENCY

DESIGNER: ARW

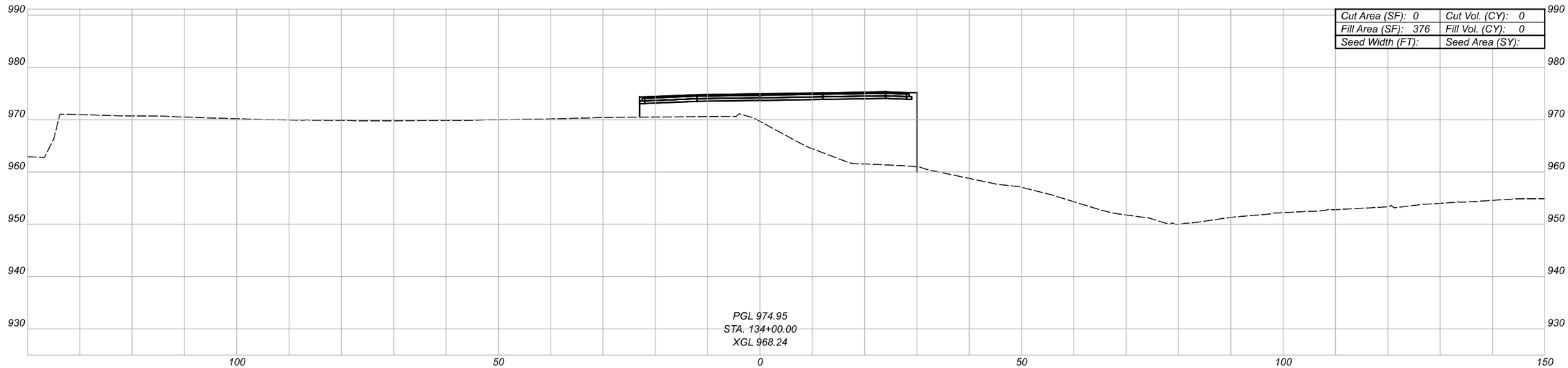
REVIEWER: JRE 03/24/23

PROJECT ID: 115160

SHEET: 150 TOTAL: 161



Cut Area (SF): 76	Cut Vol. (CY): 281
Fill Area (SF): 141	Fill Vol. (CY): 1915
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 376	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: I5I60_XS65I PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:40:06 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\I5I60\400-Engineering\Roadway\Sheets\I5I60_XS65I-2.dgn

CROSS SECTIONS-FEEDWIRE RD, SB EXIT RAMP ALTERNATIVE 2

DESIGN AGENCY

DESIGNER: ARW

REVIEWER: JRE 03/24/23

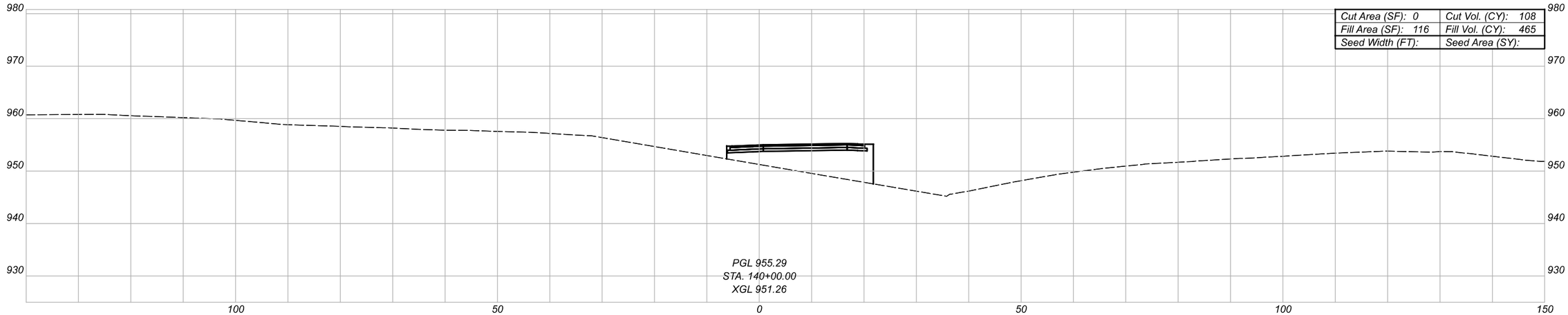
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

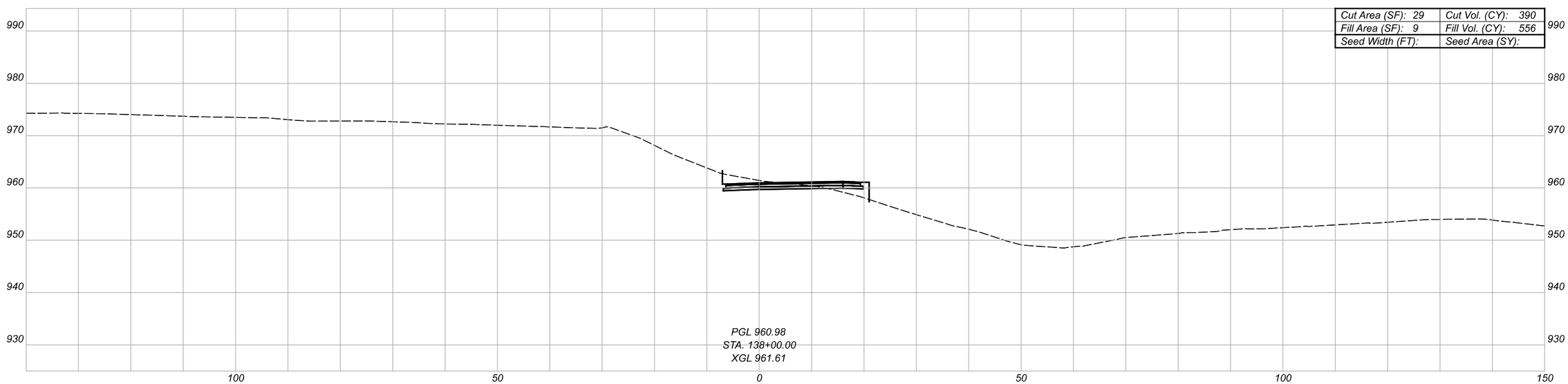
SHEET 151 TOTAL 161

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS652 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:50 PM USER: jespelage
Q:\Montgomery Cnty TID\011795JA.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS652-2.dgn



Cut Area (SF): 0	Cut Vol. (CY): 108
Fill Area (SF): 116	Fill Vol. (CY): 465
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 29	Cut Vol. (CY): 390
Fill Area (SF): 9	Fill Vol. (CY): 556
Seed Width (FT):	Seed Area (SY):

CROSS SECTIONS-FEEDWIRE RD, SB EXIT RAMP
ALTERNATIVE 2

DESIGN AGENCY

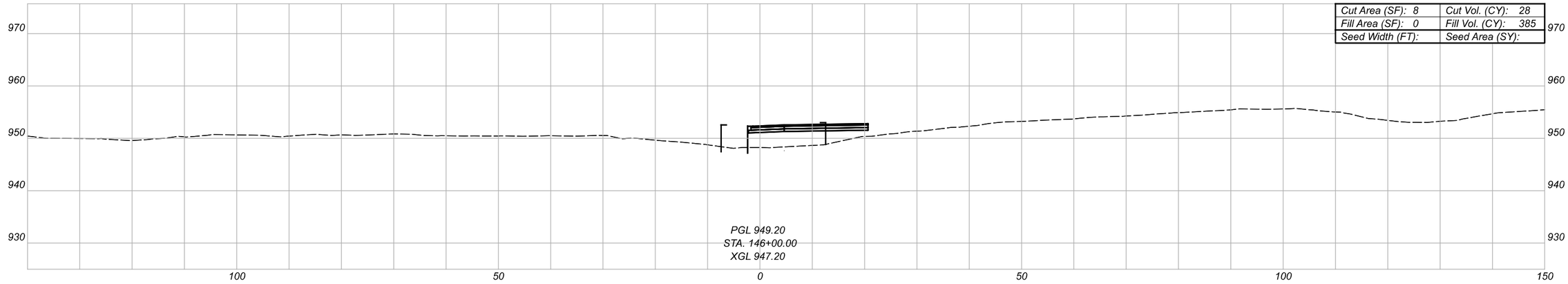
DESIGNER
ARW

REVIEWER
JRE 03/24/23

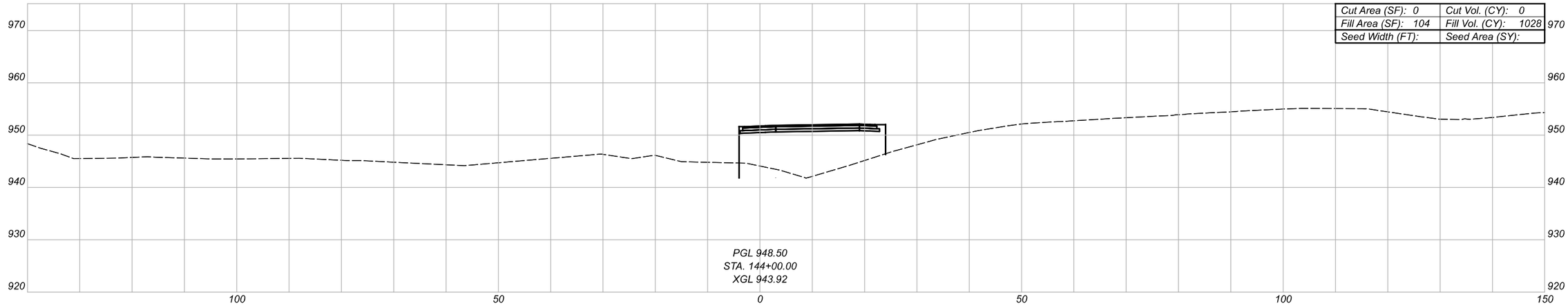
PROJECT ID
115160

SHEET 152 TOTAL 161

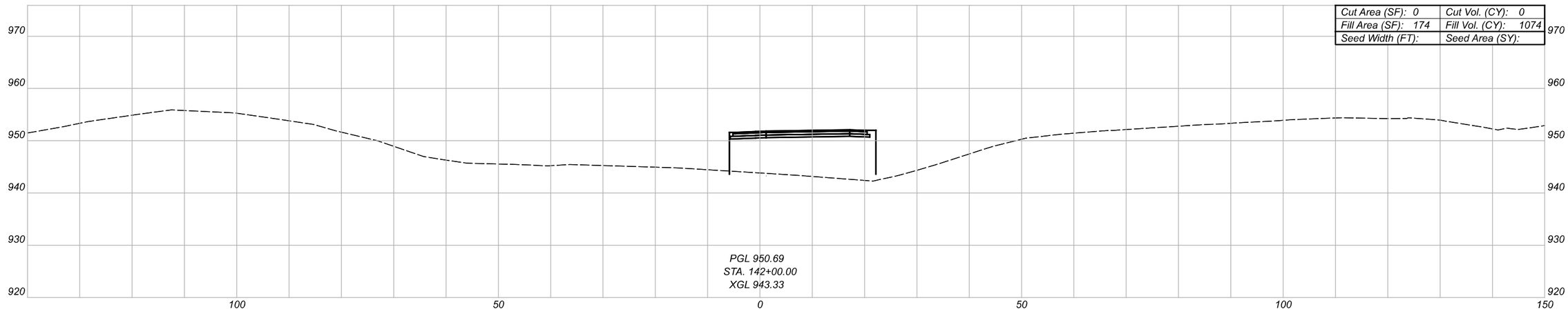
Sheet Totals		
Seeding	Cut	Fill
-	-	-



Cut Area (SF): 8	Cut Vol. (CY): 28
Fill Area (SF): 0	Fill Vol. (CY): 385
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 104	Fill Vol. (CY): 1028
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 0	Cut Vol. (CY): 0
Fill Area (SF): 174	Fill Vol. (CY): 1074
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS653 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:53:34 PM USER: jespelage
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CROSS SECTIONS-FEEDWIRE RD, SB EXIT RAMP
ALTERNATIVE 2

DESIGN AGENCY

DESIGNER ARW

REVIEWER JRE 03/24/23

PROJECT ID 115160

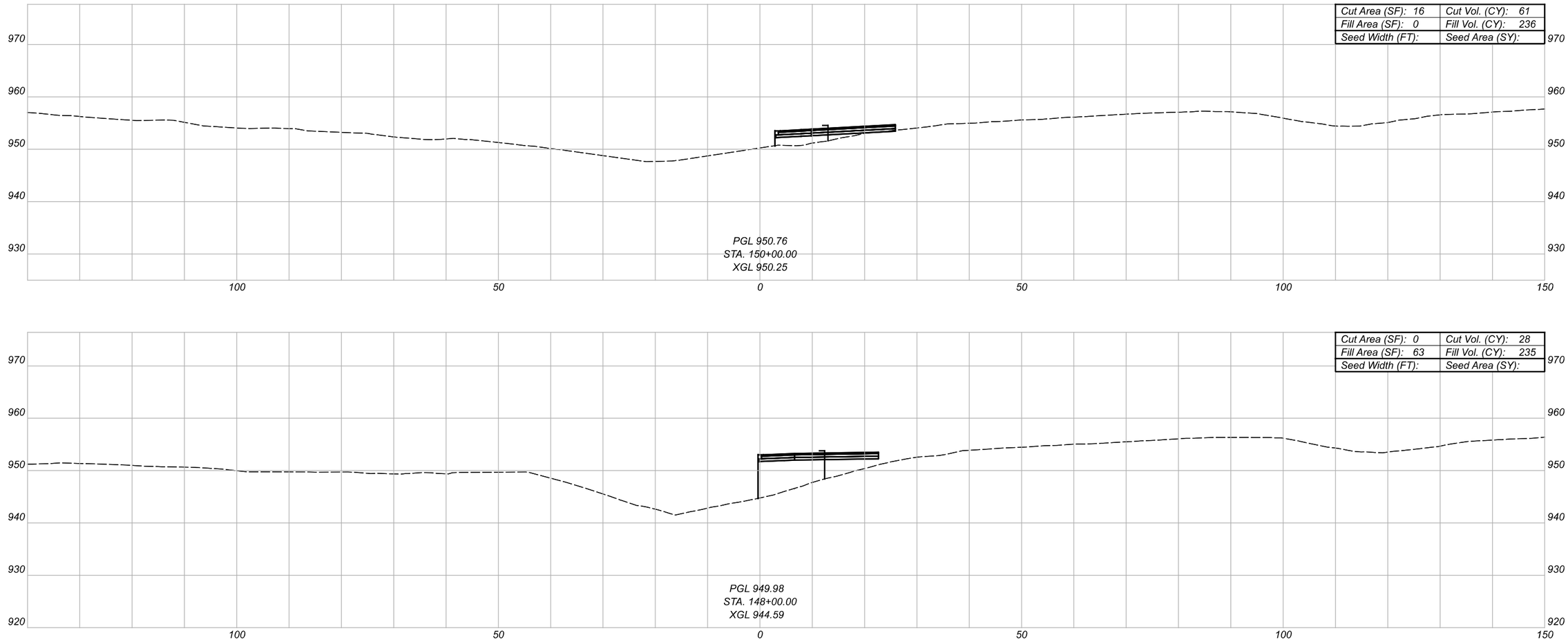
Sheet Totals		
Seeding	Cut	Fill
.	.	.

SHEET 153 TOTAL 161

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS654 PAPERSIZE: 7x11(in.) DATE: 9/12/2023 TIME: 12:26:39 PM USER: jespelage
Q:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS654-2.dgn

CROSS SECTIONS-FEEDWIRE RD, SB EXIT RAMP
ALTERNATIVE 2



DESIGN AGENCY

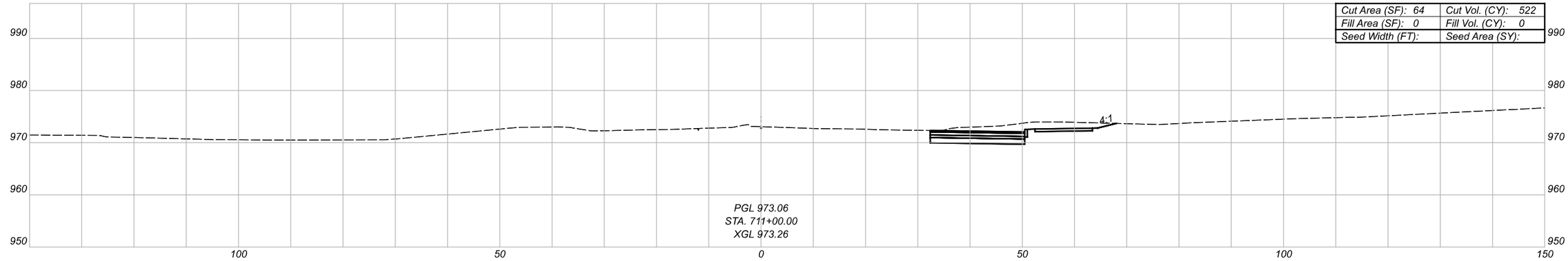
DESIGNER: ARW

REVIEWER: JRE 03/24/23

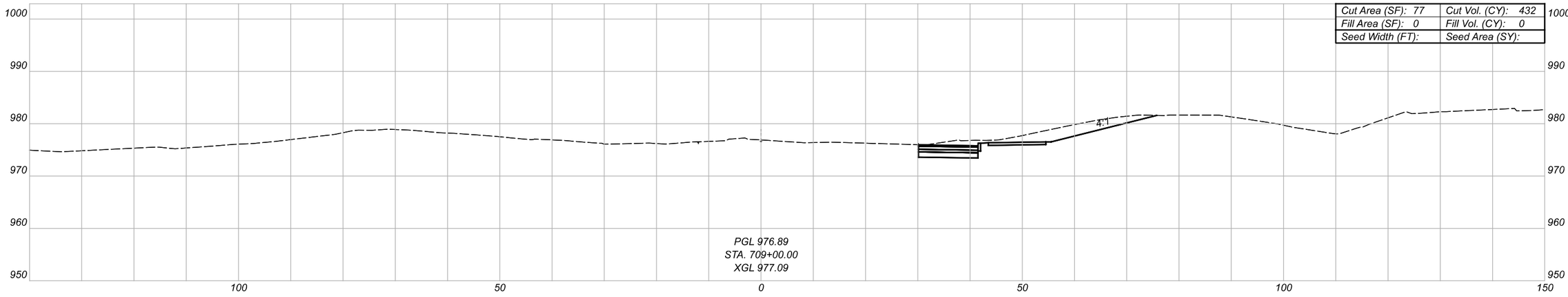
PROJECT ID: 115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

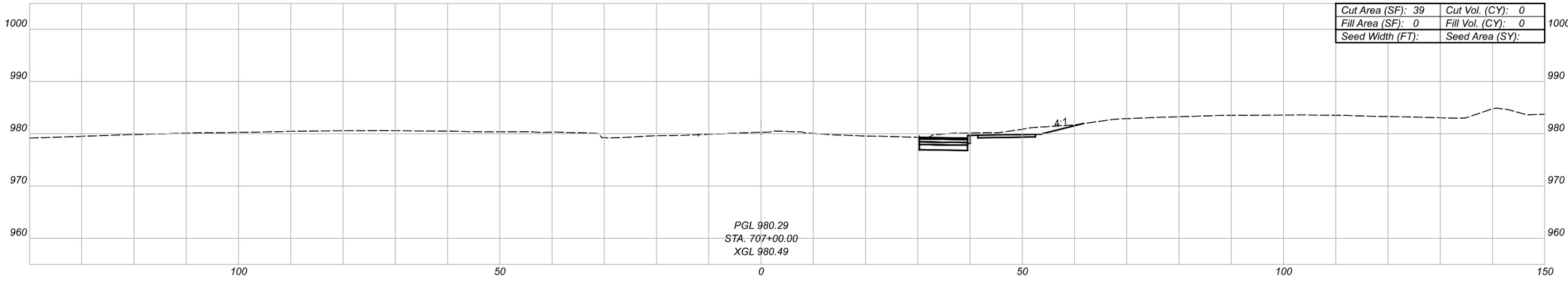
SHEET	TOTAL
154	161



Cut Area (SF): 64	Cut Vol. (CY): 522
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 77	Cut Vol. (CY): 432
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 39	Cut Vol. (CY): 0
Fill Area (SF): 0	Fill Vol. (CY): 0
Seed Width (FT):	Seed Area (SY):

MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS701 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 12:7:46 PM USER: jespelage
G:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS701-2.dgn

CROSS SECTIONS-CLYO RD
ALTERNATIVE 2

DESIGN AGENCY

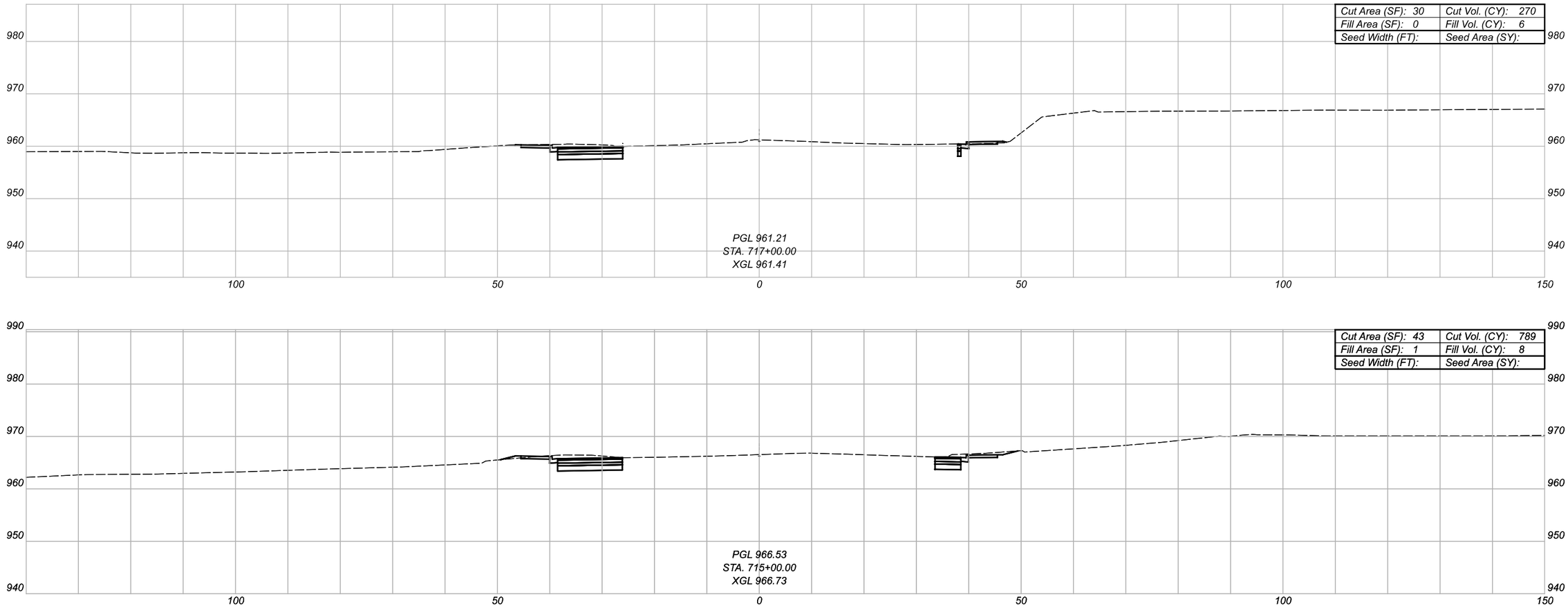
DESIGNER
ARW

REVIEWER
JRE 03/24/23

PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
-	-	-

SHEET 155 TOTAL 161



MOT/GRE I-675/WILMINGTON

MODEL: 115160_XS702 PAPERSIZE: 17x11(in.) DATE: 9/12/2023 TIME: 1:28:54 PM USER: jespelage
O:\Montgomery Cnty TID\0117953A.00 - I-675 Wilmington Interchange\115160\400-Engineering\Roadway\Sheets\115160_XS702-2.dgn

CROSS SECTIONS-CLYO RD
ALTERNATIVE 2

DESIGN AGENCY

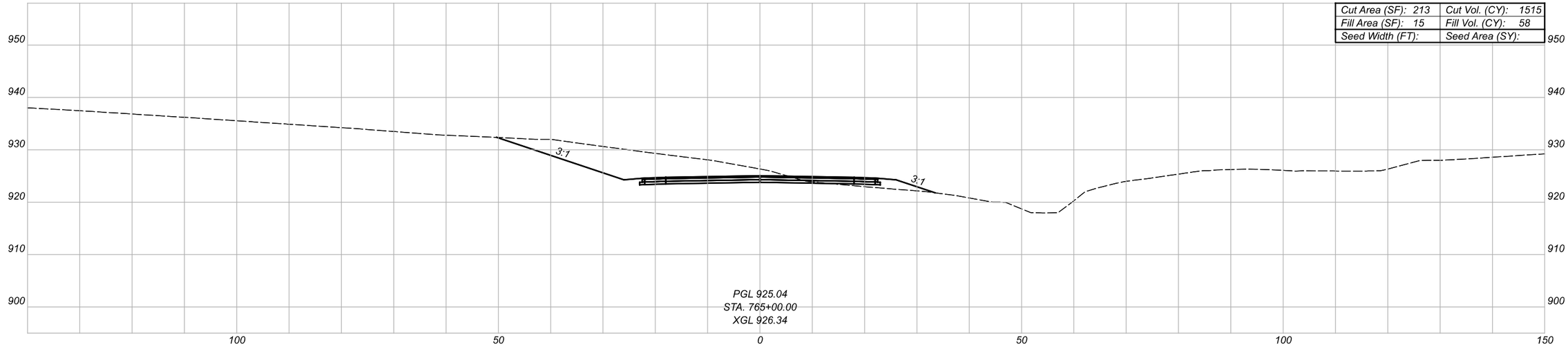
DESIGNER
ARW

REVIEWER
JRE 03/24/23

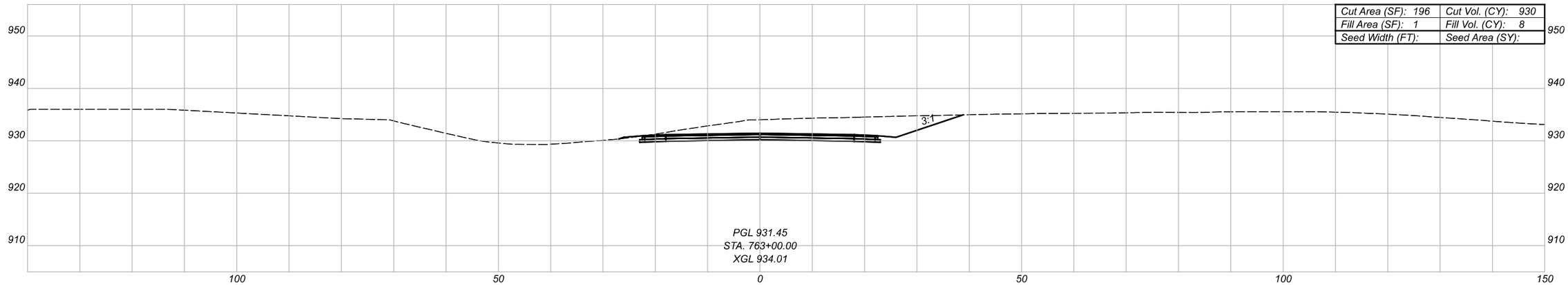
PROJECT ID
115160

Sheet Totals		
Seeding	Cut	Fill
.	.	.

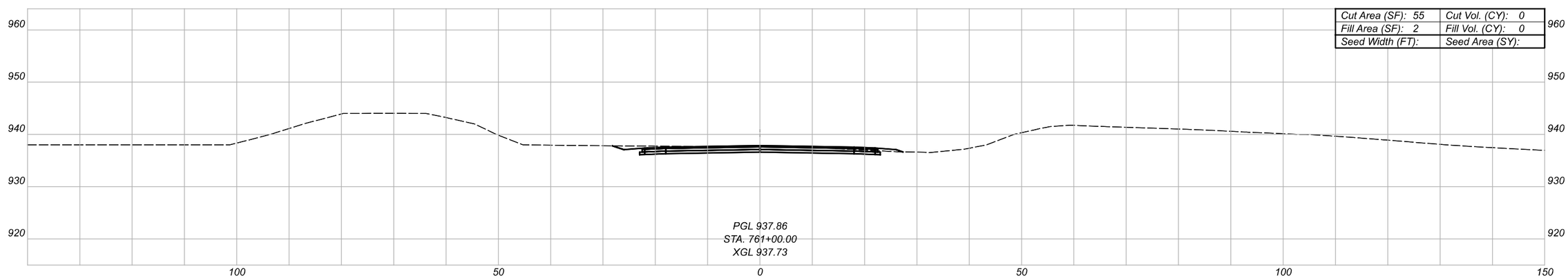
SHEET 156 TOTAL 161



Cut Area (SF): 213	Cut Vol. (CY): 1515
Fill Area (SF): 15	Fill Vol. (CY): 58
Seed Width (FT):	Seed Area (SY):



Cut Area (SF): 196	Cut Vol. (CY): 930
Fill Area (SF): 1	Fill Vol. (CY): 8
Seed Width (FT):	Seed Area (SY):



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MOT/GRE I-675/WILMINGTON

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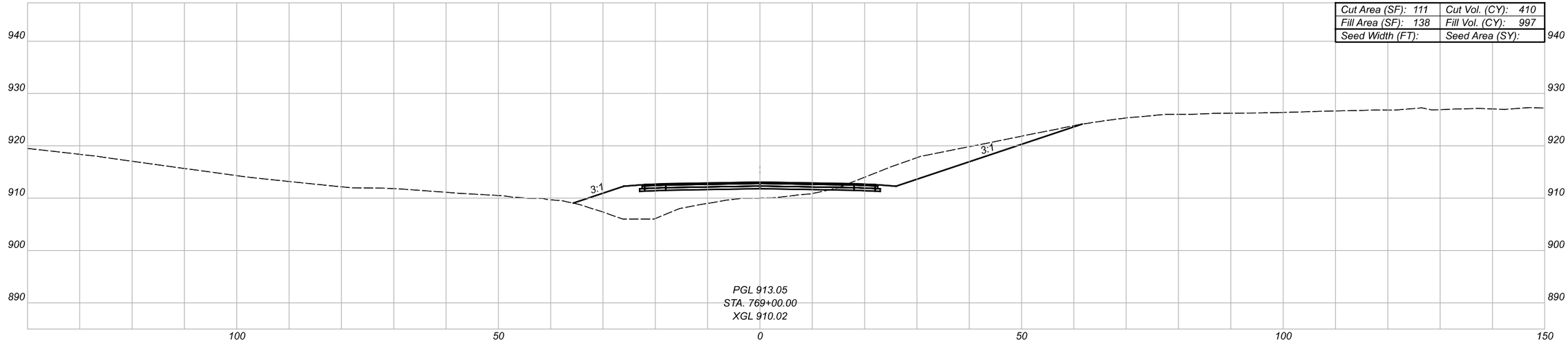
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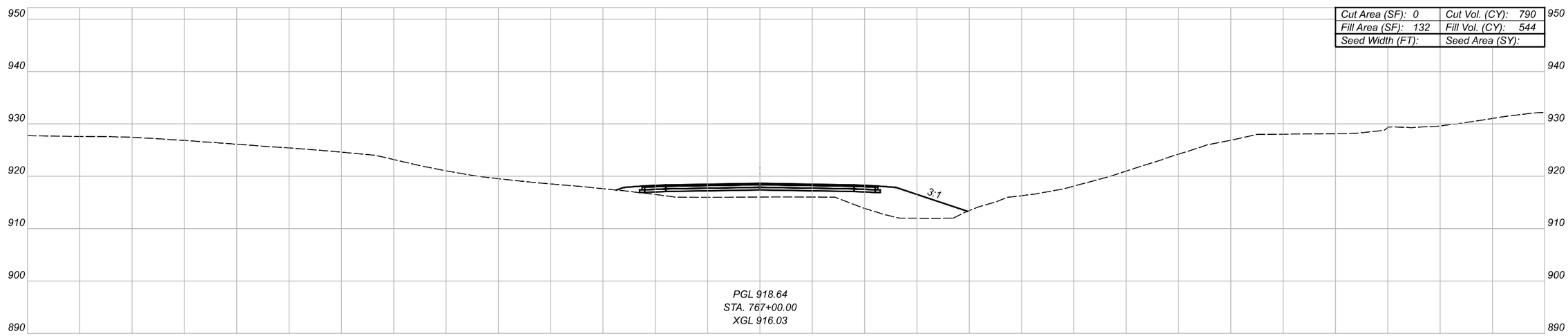
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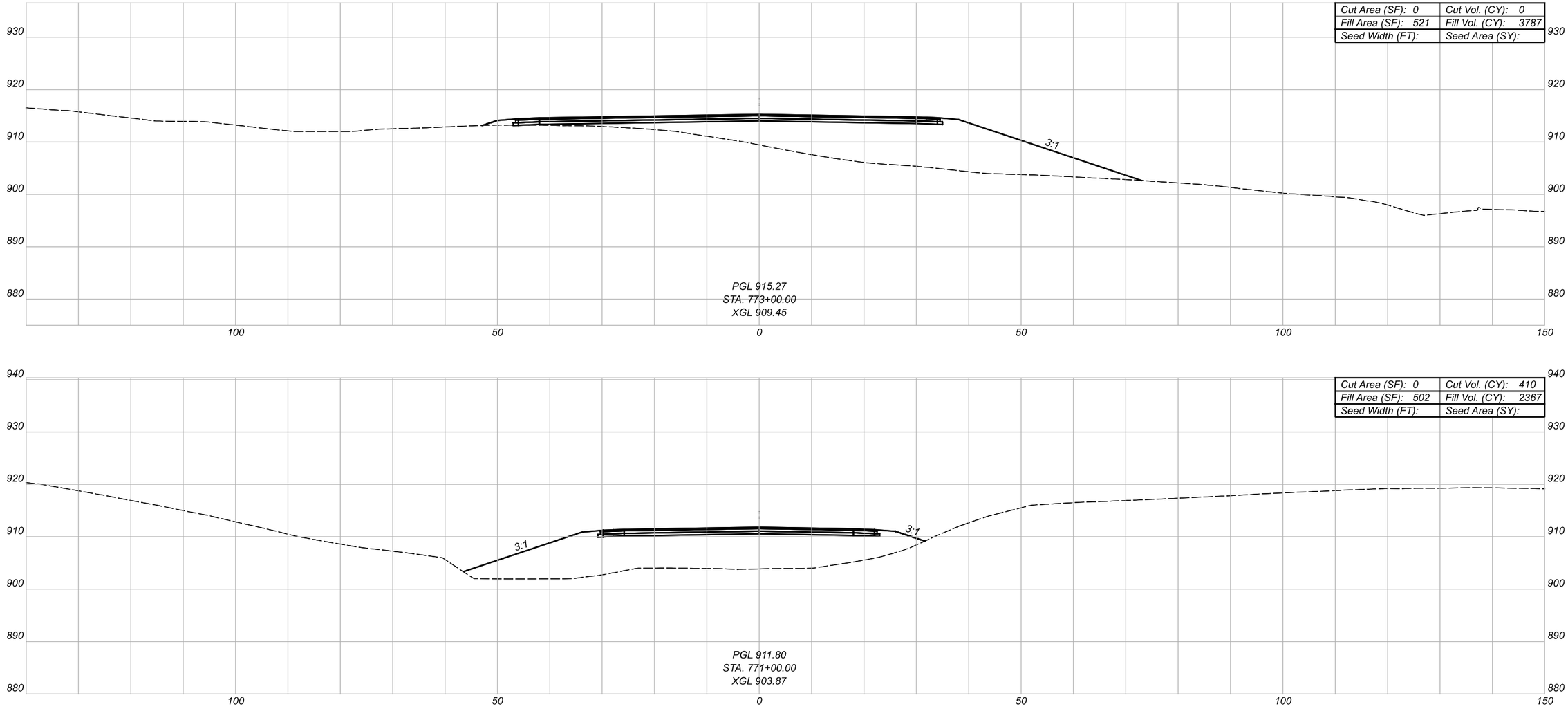
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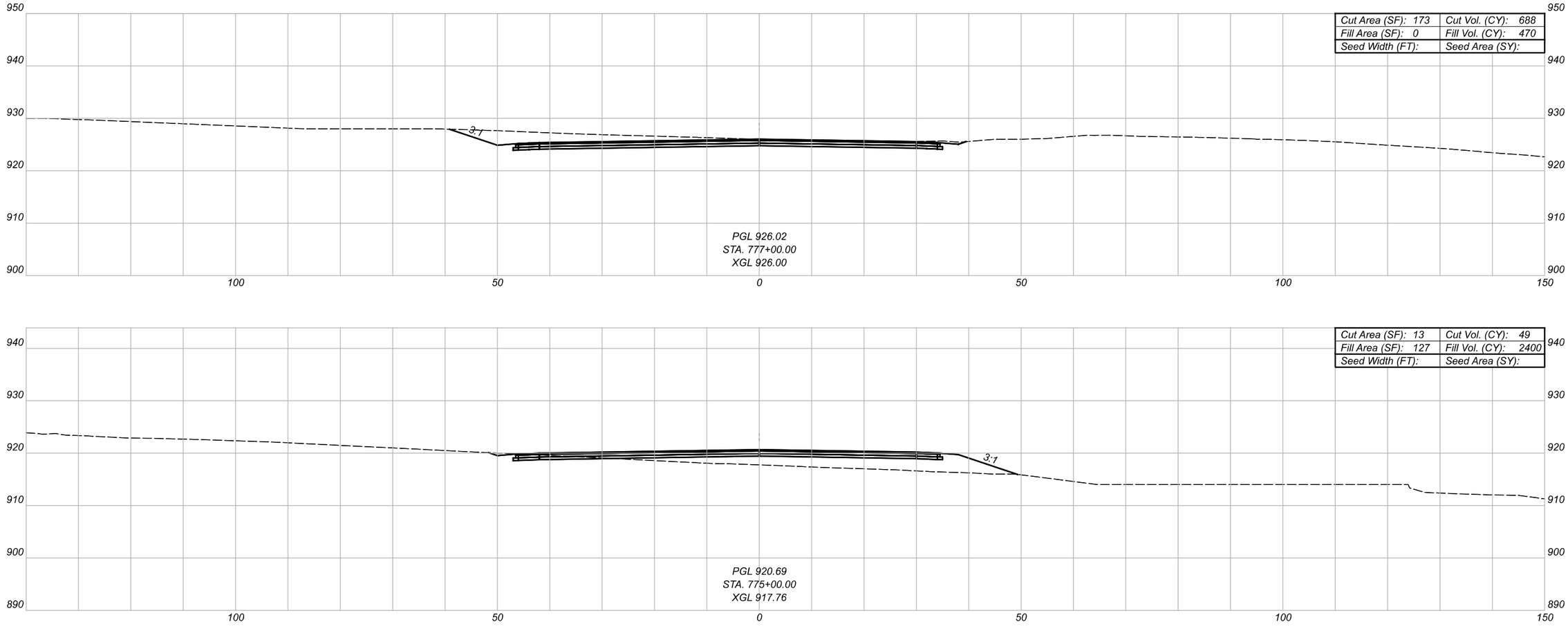
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ALTERNATIVE 2

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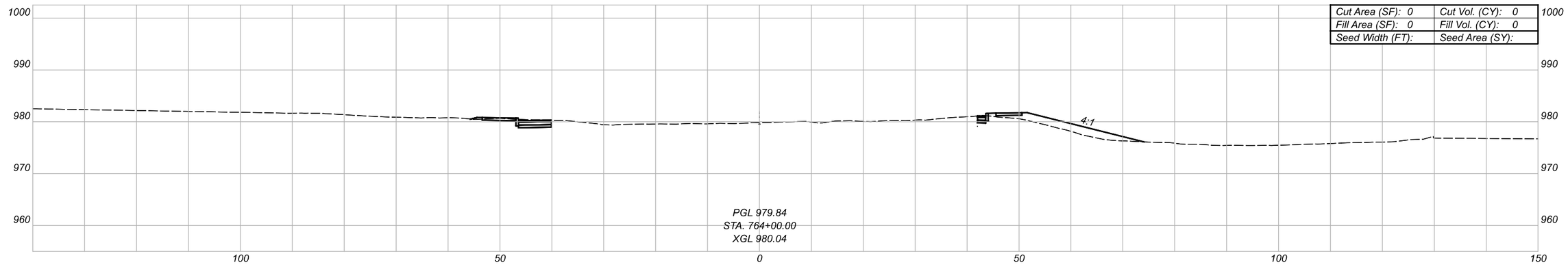
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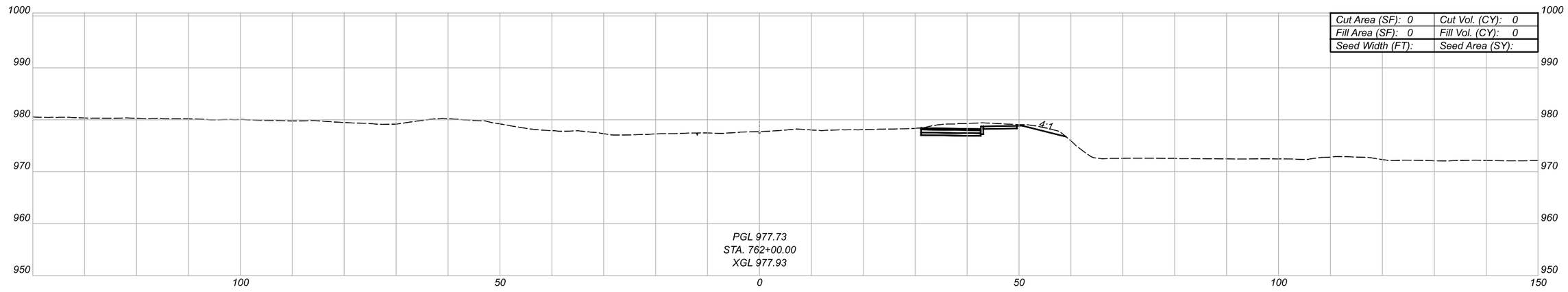
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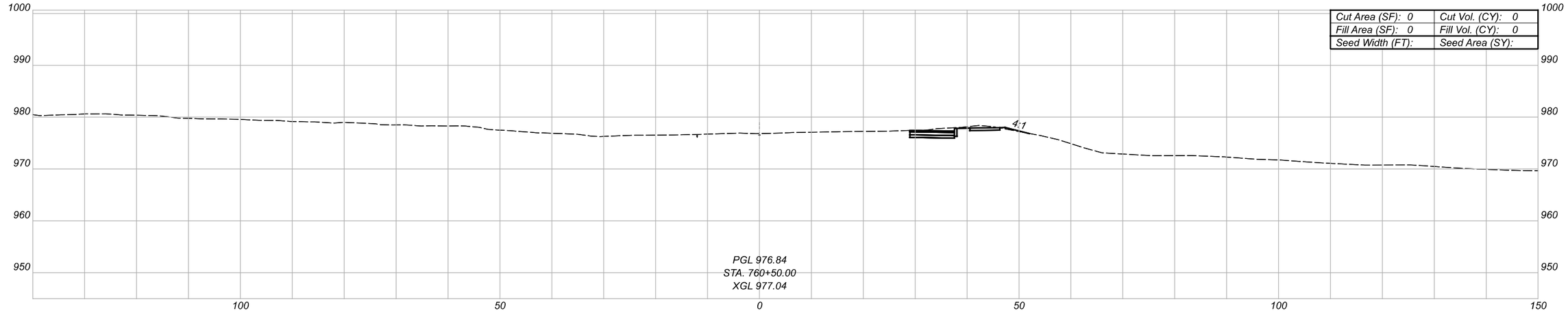
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SHEET 160 TOTAL 161







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REVIEWER
JRE 03/24/23

PROJECT ID
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SHEET	TOTAL
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I-675 and Wilmington Pike Interchange Feasibility Study

Appendix C: Storage Length Calculations

CMT

Storage Lane Calculations
No Build

Turn Lane	2050 DHV		L&D Method		HCS 95% Queue	Existing Storage Length (ft)
	Turn Volume	Through Volume	Calculated Turn Lane Storage	No Block Storage Length		
Wilmington Pike and Clyo Rd						
NB Left	200	1250	382	767	139	240 + 110 [3]
NB Right-Thru	120	1250	440	958	739	-
WB Left	240	300	375	250	353	280
SB Left	440	1530	632	890	477	190
SB Right	350	1530	549	890	318	-
EB Left	440	250	342	229	479	190 / 190
Wilmington Pike and Miami Valley Dr						
NB Left	30	2080	165	1165	4	180
SB Left	70	2370	232	915	24	240
EB Left	250	70	230	167	186	220 / 400
Wilmington Pike and I-675 NB Ramps						
EB Right	430	900	559	668	427	530
SB Left	420	2090	615	831	915	460 + 300 [3]
Wilmington Pike and I-675 SB Ramps						
WB Right	1110	1220*	1225	779	109	600
NB Left	330	1740	515	995	29	460
Wilmington Pike and Feedwire Rd/Whipp Rd						
NB Left	430	1360	461	578	266	240 / 570
NB Right	1000	1360	1190	578	1869	270
WB Left	590*	460	500	359	588	440 / 600
WB Right	290	460	417	359	-	610
SB Left	270	1130	303	514	191	310 / 460
SB Right-Thru	110	1130	407	577	457	-
EB Left	130	390	233	313	136	250
EB Right	390	140	525	167	493	220
Wilmington Pike and Brown Rd						
WB Left	180	40	300	117	259	175
SB Left	50	1500	199	875	51	250
Feedwire Rd and Charles Dr						
EB Left	500	990	634	625	399	340
WB Left	150	700	250	484	134	380
Feedwire Rd and Clyo Rd						
NB Left	330	540	450	675	650	210
WB Left	450	740	690	867	203	160

*59% lane utilization used for EBL to calculate No Block Storage

*52% lane utilization used for WBL to calculate No Block Storage

*61% lane utilization used for WBL to calculate Turn Lane Storage

Note 1: Analysis performed using 2050 certified traffic volumes. Storage lengths were calculated based on ODOT L&D Figure 401-9 unless noted otherwise.

Note 2: Through and turn volumes shown on table are to be divided by corresponding no. of lanes for per lane volume. Blockage lengths were calculated using Condition A (Storage Only) per ODOT L&D Figure 401-9.

Note 3: Storage lane extends beyond adjacent intersection

WilmPike / Clyo Rd NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1250
Number of Through Lanes	2
Turning Volume (veh/hr)	200
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	6.67
Storage Length (feet)	267
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	382
Through Vehicles / Cycle / Lane	20.83
No Block Distance (feet)	717
No Block Turn Length (feet)	767

WilmPike / Clyo Rd NB RT-Thru	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1250
Number of Through Lanes*	1.5
Turning Volume (veh/hr)	120
Number of Turning Lanes*	0.5
Design Condition	C
Turn Vehicles / Cycle / Lane	8.00
Storage Length (feet)	325
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	440
Through Vehicles / Cycle / Lane	27.78
No Block Distance (feet)	908
No Block Turn Length (feet)	958

* Assume 1/2 of curb lane used by RT and 1/2 by thru.

WilmPike / Clyo Rd WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	300
Number of Through Lanes	2
Turning Volume (veh/hr)	240
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	8.00
Storage Length (feet)	325
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	375
Through Vehicles / Cycle / Lane	5.00
No Block Distance (feet)	200
No Block Turn Length (feet)	250

WilmPike / Clyo Rd SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1530
Number of Through Lanes	2
Turning Volume (veh/hr)	440
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	14.67
Storage Length (feet)	517
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	632
Through Vehicles / Cycle / Lane	25.50
No Block Distance (feet)	840
No Block Turn Length (feet)	890

WIlmPike / Miami Valley Dr NB LT	
Design Hour	2050 AM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2080
Number of Through Lanes	2
Turning Volume (veh/hr)	30
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	1.00
Storage Length (feet)	50
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	165
Through Vehicles / Cycle / Lane	34.67
No Block Distance (feet)	1115
No Block Turn Length (feet)	1165

WIlmPike / Miami Valley Dr SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2370
Number of Through Lanes	3
Turning Volume (veh/hr)	70
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	2.33
Storage Length (feet)	117
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	232
Through Vehicles / Cycle / Lane	26.33
No Block Distance (feet)	865
No Block Turn Length (feet)	915

WIlmPike / Miami Valley Dr EB LT	
Design Hour	2050 PM
Design Speed (mph)	15
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	70
Number of Through Lanes	1
Turning Volume (veh/hr)	250
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	4.17
Storage Length (feet)	180
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	230
Through Vehicles / Cycle / Lane	2.33
No Block Distance (feet)	117
No Block Turn Length (feet)	167

WilmPike / Clyo Rd SB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1530
Number of Through Lanes	2
Turning Volume (veh/hr)	350
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	11.67
Storage Length (feet)	434
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	549
Through Vehicles / Cycle / Lane	25.50
No Block Distance (feet)	840
No Block Turn Length (feet)	890

WilmPike / Clyo Rd EB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	250
Number of Through Lanes	2
Turning Volume (veh/hr)	440
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	7.33
Storage Length (feet)	292
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	342
Through Vehicles / Cycle / Lane	4.17
No Block Distance (feet)	179
No Block Turn Length (feet)	229

WIlmPike / I-675 NB Ramps EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)	531
Number of LT Lanes	1
RT Volume (veh/hr)	430
Number of RT Lanes	1
Design Condition	A
RT Vehicles / Cycle / Lane	14.33
Storage Length (feet)	509
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	559
LT Vehicles / Cycle / Lane	17.70
Calculated LT Distance (feet)	618
Calculated LT Turn Length (feet)	668

*Due to lane utilization of 59% for the highest lane volume, the higher volume will be used to determine storage on this approach

WIlmPike / I-675 NB Ramps SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2090
Number of Through Lanes	3
Turning Volume (veh/hr)	420
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	14.00
Storage Length (feet)	500
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	615
Through Vehicles / Cycle / Lane	23.22
No Block Distance (feet)	781
No Block Turn Length (feet)	831

WIlmPike / I-675 SB Ramps WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)*	634
Number of LT Lanes	1
Right Turn Volume (veh/hr)	1110
Number of Right Turn Lanes	1
Design Condition	A
Right Turn Vehicles / Cycle / Lane	37.00
Storage Length (feet)	1175
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	1225
RT Vehicles / Cycle / Lane	21.13
Calculated LT Distance (feet)	729
Calculated LT Turn Length (feet)	779

*Due to lane utilization of 52% for the highest lane volume, the higher volume will be used to determine storage on this approach

WIlmPike / I-675 SB Ramps NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1740
Number of Through Lanes	2
Turning Volume (veh/hr)	330
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	11.00
Storage Length (feet)	400
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	515
Through Vehicles / Cycle / Lane	29.00
No Block Distance (feet)	945
No Block Turn Length (feet)	995

WIlmPike / Feedwire NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)*	1360
Number of Through Lanes	3
Turning Volume (veh/hr)	430
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	8.83
Storage Length (feet)	346
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	461
Through Vehicles / Cycle / Lane	15.11
No Block Distance (feet)	528
No Block Turn Length (feet)	578

WIlmPike / Feedwire NB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1360
Number of Through Lanes	3
Turning Volume (veh/hr)	1000
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	33.33
Storage Length (feet)	1075
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	1190
Through Vehicles / Cycle / Lane	15.11
No Block Distance (feet)	528
No Block Turn Length (feet)	578

WIlmPike / Feedwire WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	460
Number of Through Lanes	2
Turning Volume (veh/hr)*	360
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	12.00
Storage Length (feet)	450
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	500
Through Vehicles / Cycle / Lane	7.67
No Block Distance (feet)	309
No Block Turn Length (feet)	359

*Due to lane utilization of 61% for the highest lane volume, the higher volume will be used to determine storage on this approach

WIlmPike / Feedwire WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Yield
Through Volume (veh/hr)	460
Number of Through Lanes	2
Turning Volume (veh/hr)*	290
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	9.67
Storage Length (feet)	367
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	417
Through Vehicles / Cycle / Lane	7.67
No Block Distance (feet)	309
No Block Turn Length (feet)	359

WilmPike / Brown Rd WB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Right Turn Volume (veh/hr)	40
Number of RT Lanes*	1
Turning Volume (veh/hr)	180
Number of Turning Lanes*	1
Design Condition	A
Turn Vehicles / Cycle / Lane	6.00
Storage Length (feet)	250
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	300
RT Vehicles / Cycle / Lane	1.33
No Block Distance (feet)	67
No Block Turn Length (feet)	117

WilmPike / Brown Rd SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1500
Number of Through Lanes	2
Turning Volume (veh/hr)	50
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	1.67
Storage Length (feet)	84
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	199
Through Vehicles / Cycle / Lane	25.00
No Block Distance (feet)	825
No Block Turn Length (feet)	875

WIlmPike / Feedwire SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1130
Number of Through Lanes	3
Turning Volume (veh/hr)	270
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	4.50
Storage Length (feet)	188
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	303
Through Vehicles / Cycle / Lane	12.56
No Block Distance (feet)	464
No Block Turn Length (feet)	514

WIlmPike / Feedwire SB RT-Thru	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1130
Number of Through Lanes*	2.5
Turning Volume (veh/hr)	110
Number of Turning Lanes*	0.5
Design Condition	C
Turn Vehicles / Cycle / Lane	7.33
Storage Length (feet)	292
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	407
Through Vehicles / Cycle / Lane	15.07
No Block Distance (feet)	527
No Block Turn Length (feet)	577

* Assume 1/2 of curb lane used by RT and 1/2 by thru.

WIlmPike / Feedwire EB-LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	390
Number of Through Lanes	2
Turning Volume (veh/hr)	130
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	4.33
Storage Length (feet)	183
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	233
Through Vehicles / Cycle / Lane	6.50
No Block Distance (feet)	263
No Block Turn Length (feet)	313

WIlmPike / Feedwire EB RT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	140
Number of Through Lanes	2
Turning Volume (veh/hr)	390
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	13.00
Storage Length (feet)	475
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	525
Through Vehicles / Cycle / Lane	2.33
No Block Distance (feet)	117
No Block Turn Length (feet)	167

Feedwire / Charles EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	990
Number of Through Lanes	2
Turning Volume (veh/hr)	500
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	16.67
Storage Length (feet)	584
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	634
Through Vehicles / Cycle / Lane	16.50
No Block Distance (feet)	575
No Block Turn Length (feet)	625

Feedwire / Charles WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	700
Number of Through Lanes	2
Turning Volume (veh/hr)	150
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	5.00
Storage Length (feet)	200
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	250
Through Vehicles / Cycle / Lane	11.67
No Block Distance (feet)	434
No Block Turn Length (feet)	484

Feedwire / Clyo NB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	540
Number of RT Lanes	1
LT Volume (veh/hr)	330
Number of LT Lanes	1
Design Condition	A
Left Turn Vehicles / Cycle / Lane	11.00
Storage Length (feet)	400
Deceleration/Taper (feet)	50
Calculated LT Lane Length (feet)	450
Right Turn Vehicles / Cycle / Lane	18.00
Right Turn Lane Distance (feet)	625
Calculated RT Lane Length (feet)	675

Feedwire / Clyo WB LT	
Design Hour	2050 AM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	740
Number of Through Lanes	1
Turning Volume (veh/hr)	450
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	15.00
Storage Length (feet)	525
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	690
Through Vehicles / Cycle / Lane	24.67
No Block Distance (feet)	817
No Block Turn Length (feet)	867

Storage Lane Calculations
Alternative 1

Option 1

Turn Lane	2050 DHV		L&D Method		HCS 95% Queue	Existing Storage Length (ft)	Proposed Storage Length (ft)	Comments
	Turn Volume	Through Volume	Calculated Turn Lane Storage	No Block Storage Length				
Wilmington Pike and Clyo Rd								
NB Left	200	1250	274	548	125	240 + 110 south of BP station	400/300	Add additional NB-LT lane
NB Right-Thru	120	1250	440	634	311	-	480	Construct new NB-RT-Thru storage lane
WB Left	240	300	375	250	306	280	Match Existing	Existing turn length meets turn lane stroage requirements
WB Right	300	300	425	250	313	-	390	Add WB-RT lane
SB Left	440	1530	407	519	198	190	450/350	Extending SB-LT lane and add additional SB-LT lane
SB Right	350	1530	549	519	168	-	-	Existing turn length meets turn lane storage requirement (1 additional SB-T lane is proposed in Build 1)
EB Left	440	250	342	230	289	190 / 190	300/400	Extend exisitng dual EB-LT lanes
EB Right	150	460	175	359	187	-	360	Add EB-RT lane
Wilmington Pike and Miami Valley Dr								
NB Left	30	2080	125	828	4	180	Match Existing	Existing turn length meets turn lane storage requirement.
SB Left	70	2370	232	915	26	240		
EB Left	250	10	230	67	182	220 / 400		
Wilmington Pike and I-675 NB Ramps								
EB Right	430	900	334	425	240	530	630/530	Lengthen existing RT lane and add EB-RT lane
EB Left	900	430	425	334	470	530	630/630/530	Lengthen existing dual LT lanes and add new EB-LT lane
SB Left	420	2090	390	661	255	460 + 300 at I-675 SB Ramp	1075/470	Duall SB-LT lanes 470'; single lane extends through SB ramp intersection +500'
Wilmington Pike and I-675 SB Ramps								
WB Right	1110	1230	509	542	435	600	700/700/600	One lane extends from off ramp; the other two lanes 600' and 700'
WB Left	1230	1110	542	509	773	600	875/875/775	One lane extends from off ramp; the other two lanes 775' and 875'
NB Left	330	1740	340	563	223	460	990/470	Duall NB-LT lanes 470'; single lane extends through NB ramp intersection +400'
Wilmington Pike and Feedwire Rd								
NB Left	430	1360	399	578	266	240 / 570	Match Existing	Existing turn length meets turn lane storage requirement.
NB Right	1000	1360	699	578	353	270	400	Dual RT lane; inside lane drop from SB Ramp; outside RT lane 400'
WB Left	590	460	470	376	359	450 / 600	600 / 700	Extend turn lanes to 600 ft (inside) and 700 ft (outside)
WB Right	290	460	417	376	-	600	Match Existing	Existing turn length meets turn lane storage requirement.
SB Left	270	1130	303	514	204	310 / 460	Match Existing	Existing turn length meets turn lane storage requirement.
SB Right	110	1130	282	514	119	290	435	SB RT 435'; extend TH-R to 535'
EB Left	130	390	234	313	151	250	Match Existing	Existing turn length meets turn lane storage requirement.
EB Right	390	140	515	167	480	190	515	Extend storage to 515 ft
Wilmington Pike and Brown Rd								
WB Left	180	40	300	117	259	250	Match Existing	TWLTL preceeds WBL storage for additional storage capacity
Feedwire Rd and Charles Dr								
EB Left	500	990	384	625	288	340	500 / 625	Extend turn lanes to 500 ft (inside) and 625 ft (outside)
WB Left	150	700	250	484	153	380	Match Existing	Existing turn length meets turn lane storage requirement.
Feedwire Rd and Clinger Dr								
EB Left	170	1280	192	Free	1	-	200	Construct new EB-LT lane
Feedwire Rd and Clyo Rd								
NB Left	330	540	275	675	176	210	275	Extend existing NB-LT storage length
NB Right	540	330	675	275	481	-	675	Provide new NB-RT lane - the old RT lane becomes a LT lane for dual lefts
EB Right	330	1150	565	705	57	-	705	Provide new EB-RT lane
WB Thru	740	450	-	509	105	-	510	Begin WB auxilliary lane 510 east of Clyo Rd
WB Left	450	740	690	509	121	160	690	Extend existing WB-LT storage length

Note 1: Analysis performed using 2050 design year volumes. Storage lengths were calculated based on Condition C (Storage Only) per ODOT L&D Figure 401-9 unless noted otherwise.

Note 2: Through and turn volumes shown on table are to be divided by corresponding no. of lanes for per lane volume. Blockage lengths were calculated using Condition A (Storage Only) per ODOT L&D

WilmPike / Clyo Rd NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1250
Number of Through Lanes	3
Turning Volume (veh/hr)	200
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	3.33
Storage Length (feet)	159
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	274
Through Vehicles / Cycle / Lane	13.89
No Block Distance (feet)	498
No Block Turn Length (feet)	548

WilmPike / Clyo Rd NB RT-Thru	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1250
Number of Through Lanes*	2.5
Turning Volume (veh/hr)	120
Number of Turning Lanes*	0.5
Design Condition	C
Turn Vehicles / Cycle / Lane	8.00
Storage Length (feet)	325
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	440
Through Vehicles / Cycle / Lane	16.67
No Block Distance (feet)	584
No Block Turn Length (feet)	634

* Assume 1/2 of curb lane used by RT and 1/2 by thru.

WilmPike / Clyo Rd WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	300
Number of Through Lanes	2
Turning Volume (veh/hr)	240
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	8.00
Storage Length (feet)	325
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	375
Through Vehicles / Cycle / Lane	5.00
No Block Distance (feet)	200
No Block Turn Length (feet)	250

WilmPike / Clyo Rd WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	300
Number of Through Lanes	2
Turning Volume (veh/hr)	300
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	10.00
Storage Length (feet)	375
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	425
Through Vehicles / Cycle / Lane	5.00
No Block Distance (feet)	200
No Block Turn Length (feet)	250

WIlmPike / Miami Valley Dr NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2080
Number of Through Lanes	3
Turning Volume (veh/hr)	30
Number of Turning Lanes	1
Design Condition	B
Turn Vehicles / Cycle / Lane	1.00
Storage Length (feet)	50
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	125
Through Vehicles / Cycle / Lane	23.11
No Block Distance (feet)	778
No Block Turn Length (feet)	828

WIlmPike / Miami Valley Dr SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2370
Number of Through Lanes	3
Turning Volume (veh/hr)	70
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	2.33
Storage Length (feet)	117
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	232
Through Vehicles / Cycle / Lane	26.33
No Block Distance (feet)	865
No Block Turn Length (feet)	915

WIlmPike / Miami Valley Dr EB LT	
Design Hour	2050 PM
Design Speed (mph)	15
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	10
Number of Through Lanes	1
Turning Volume (veh/hr)	250
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	4.17
Storage Length (feet)	180
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	230
Through Vehicles / Cycle / Lane	0.33
No Block Distance (feet)	17
No Block Turn Length (feet)	67

WilmPike / Clyo Rd SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1530
Number of Through Lanes	4
Turning Volume (veh/hr)	440
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.33
Storage Length (feet)	292
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	407
Through Vehicles / Cycle / Lane	12.75
No Block Distance (feet)	469
No Block Turn Length (feet)	519

WilmPike / Clyo Rd SB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1530
Number of Through Lanes	4
Turning Volume (veh/hr)	350
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	11.67
Storage Length (feet)	434
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	549
Through Vehicles / Cycle / Lane	12.75
No Block Distance (feet)	469
No Block Turn Length (feet)	519

WilmPike / Clyo Rd EB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	250
Number of Through Lanes	2
Turning Volume (veh/hr)	440
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	7.33
Storage Length (feet)	292
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	342
Through Vehicles / Cycle / Lane	4.17
No Block Distance (feet)	180
No Block Turn Length (feet)	230

WilmPike / Clyo Rd EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	460
Number of Through Lanes	2
Turning Volume (veh/hr)	150
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	2.50
Storage Length (feet)	125
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	175
Through Vehicles / Cycle / Lane	7.67
No Block Distance (feet)	309
No Block Turn Length (feet)	359

WIlmPike / I-675 NB Ramps EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)	900
Number of LT Lanes	3
RT Volume (veh/hr)	430
Number of RT Lanes	2
Design Condition	A
RT Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	334
LT Vehicles / Cycle / Lane	10.00
Calculated LT Distance (feet)	375
Calculated LT Turn Length (feet)	425

WIlmPike / I-675 NB Ramps EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	430
Number of Through Lanes	2
LT Volume (veh/hr)	900
Number of Turning Lanes	3
Design Condition	A
Turn Vehicles / Cycle / Lane	10.00
Storage Length (feet)	375
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	425
Through Vehicles / Cycle / Lane	7.17
No Block Distance (feet)	284
No Block Turn Length (feet)	334

WIlmPike / I-675 NB Ramps SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2090
Number of Through Lanes	4
Turning Volume (veh/hr)	420
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.00
Storage Length (feet)	275
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	390
Through Vehicles / Cycle / Lane	17.42
No Block Distance (feet)	611
No Block Turn Length (feet)	661

WIlmPike / I-675 SB Ramps WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)	1230
Number of LT Lanes	3
Right Turn Volume (veh/hr)	1110
Number of Right Turn Lanes	3
Design Condition	A
Right Turn Vehicles / Cycle / Lane	12.33
Storage Length (feet)	459
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	509
LT Vehicles / Cycle / Lane	13.67
Calculated LT Distance (feet)	492
Calculated LT Turn Length (feet)	542

WIlmPike / I-675 SB Ramps WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	1110
Number of Through Lanes	3
Turning Volume (veh/hr)	1230
Number of Turning Lanes	3
Design Condition	A
Turn Vehicles / Cycle / Lane	13.67
Storage Length (feet)	492
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	542
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	459
No Block Turn Length (feet)	509

WIlmPike / I-675 SB Ramps NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1740
Number of Through Lanes	4
Turning Volume (veh/hr)	330
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	5.50
Storage Length (feet)	225
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	340
Through Vehicles / Cycle / Lane	14.50
No Block Distance (feet)	513
No Block Turn Length (feet)	563

WilmPike / Feedwire NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1360
Number of Through Lanes	3
Turning Volume (veh/hr)	430
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	399
Through Vehicles / Cycle / Lane	15.11
No Block Distance (feet)	528
No Block Turn Length (feet)	578

WilmPike / Feedwire NB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1360
Number of Through Lanes	3
Turning Volume (veh/hr)	1000
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	16.67
Storage Length (feet)	584
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	699
Through Vehicles / Cycle / Lane	15.11
No Block Distance (feet)	528
No Block Turn Length (feet)	578

WilmPike / Feedwire WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	460
Number of Through Lanes	2
Turning Volume (veh/hr)*	342
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	11.40
Storage Length (feet)	420
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	470
Through Vehicles / Cycle / Lane	7.67
No Block Distance (feet)	326
No Block Turn Length (feet)	376

* Lane utilization of 58% for PM peak hour

WilmPike / Feedwire WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Yield
Through Volume (veh/hr)	460
Number of Through Lanes	2
Turning Volume (veh/hr)	290
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	9.67
Storage Length (feet)	367
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	417
Through Vehicles / Cycle / Lane	7.67
No Block Distance (feet)	326
No Block Turn Length (feet)	376

WilmPike / Brown WB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	40
Number of Through Lanes	1
LT Volume (veh/hr)	180
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	6.00
Storage Length (feet)	250
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	300
Through Vehicles / Cycle / Lane	1.33
No Block Distance (feet)	67
No Block Turn Length (feet)	117

WilmPike / Feedwire SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1130
Number of Through Lanes	3
Turning Volume (veh/hr)	270
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	4.50
Storage Length (feet)	188
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	303
Through Vehicles / Cycle / Lane	12.56
No Block Distance (feet)	464
No Block Turn Length (feet)	514

WilmPike / Feedwire SB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1130
Number of Through Lanes*	3
Turning Volume (veh/hr)	110
Number of Turning Lanes*	1
Design Condition	C
Turn Vehicles / Cycle / Lane	3.67
Storage Length (feet)	167
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	282
Through Vehicles / Cycle / Lane	12.56
No Block Distance (feet)	464
No Block Turn Length (feet)	514

WilmPike / Feedwire EB-LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	390
Number of Through Lanes	2
Turning Volume (veh/hr)	130
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	4.33
Storage Length (feet)	184
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	234
Through Vehicles / Cycle / Lane	6.50
No Block Distance (feet)	263
No Block Turn Length (feet)	313

WilmPike / Feedwire EB RT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	140
Number of Through Lanes	2
Turning Volume (veh/hr)	390
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	13.00
Storage Length (feet)	465
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	515
Through Vehicles / Cycle / Lane	2.33
No Block Distance (feet)	117
No Block Turn Length (feet)	167

Feedwire / Charles EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	990
Number of Through Lanes	2
Turning Volume (veh/hr)	500
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	8.33
Storage Length (feet)	334
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	384
Through Vehicles / Cycle / Lane	16.50
No Block Distance (feet)	575
No Block Turn Length (feet)	625

Feedwire / Charles WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	700
Number of Through Lanes	2
Turning Volume (veh/hr)	150
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	5.00
Storage Length (feet)	200
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	250
Through Vehicles / Cycle / Lane	11.67
No Block Distance (feet)	434
No Block Turn Length (feet)	484

Feedwire / Clinger EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	60
Control Type	Unsignalized/Thru
Through Volume (veh/hr)	1280
Number of Through Lanes	2
Turning Volume (veh/hr)	170
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	2.83
Storage Length (feet)	142
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	192
Through Vehicles / Cycle / Lane	*
No Block Distance (feet)	*
No Block Turn Length (feet)	*

* EB Through is a free movement

Feedwire / Clyo NB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	540
Number of RT Lanes	1
LT Volume (veh/hr)	330
Number of LT Lanes	2
Design Condition	A
Left Turn Vehicles / Cycle / Lane	5.50
Storage Length (feet)	225
Deceleration/Taper (feet)	50
Calculated LT Lane Length (feet)	275
Right Turn Vehicles / Cycle / Lane	18.00
Right Turn Lane Distance (feet)	625
Calculated RT Lane Length (feet)	675

Feedwire / Clyo NB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
LT Volume (veh/hr)	330
Number of LT Lanes	2
Turning Volume (veh/hr)	540
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	18.00
Storage Length (feet)	625
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	675
Through Vehicles / Cycle / Lane	5.50
No Block Distance (feet)	225
No Block Turn Length (feet)	275

Feedwire / Clyo WB LT	
Design Hour	2050 AM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	740
Number of Through Lanes	2
Turning Volume (veh/hr)	450
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	15.00
Storage Length (feet)	525
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	690
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	459
No Block Turn Length (feet)	509

Feedwire / Clyo WB T	
Design Hour	2050 AM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	740
Number of Through Lanes	2
Turning Volume (veh/hr)	450
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	15.00
Storage Length (feet)	525
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	690
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	459
No Block Turn Length (feet)	509

Feedwire / Clyo EB RT	
Design Hour	2050 PM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1150
Number of Through Lanes	2
Turning Volume (veh/hr)	330
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	11.00
Storage Length (feet)	400
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	565
Through Vehicles / Cycle / Lane	19.17
No Block Distance (feet)	655
No Block Turn Length (feet)	705

Storage Lane Calculations
Alternative 1B

Option 1B

Turn Lane	2050 DHV		L&D Method		HCS 95% Queue	Existing Storage Length (ft)	Proposed Storage Length (ft)	Comments
	Turn Volume	Through Volume	Calculated Turn Lane Storage	No Block Storage Length				
Wilmington Pike and I-675 NB Ramps								
EB Right	430	890	334	571	194	530	675/575	Provide dual EB-RT lanes
EB Left	890	430	571	333	412	530	675/575	Provide dual EB-LT lanes
SB Thru	-	2090	-	831	1004	500	840	Provide 840 feet between Ramp intersections
NB Thru	-	1180	-	528	520			
Wilmington Pike and I-675 SB Ramps								
WB Right	1110	1220	509	742	556	600	675/675/525	Provide triple WB-RT lanes
WB Left	1220	1110	742	509	666	600	850/750	Provide dual WB-LT lanes
NB Thru	-	1740	-	708	682	500	840	Provide 840 feet between Ramp intersections
SB Thru	-	1290	-	558	534			

Note 1: Analysis performed using 2050 design year volumes. Storage lengths were calculated based on Condition C (Storage Only) per ODOT L&D Figure 401-9 unless noted otherwise.

Note 2: Through and turn volumes shown on table are to be divided by corresponding no. of lanes for per lane volume. Blockage lengths were calculated using Condition A (Storage Only) per ODOT L&D

WIlmPike / I-675 NB Ramps EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)	890
Number of LT Lanes	2
RT Volume (veh/hr)	430
Number of RT Lanes	2
Design Condition	A
RT Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	334
LT Vehicles / Cycle / Lane	14.83
Calculated LT Distance (feet)	521
Calculated LT Turn Length (feet)	571

WIlmPike / I-675 NB Ramps EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	430
Number of Through Lanes	2
LT Volume (veh/hr)	890
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	14.83
Storage Length (feet)	521
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	571
Through Vehicles / Cycle / Lane	7.17
No Block Distance (feet)	283
No Block Turn Length (feet)	333

WIlmPike / I-675 NB Ramps SB T	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2090
Number of Through Lanes	3
Turning Volume (veh/hr)	0
Number of Turning Lanes	0
Design Condition	A
Turn Vehicles / Cycle / Lane	#DIV/0!
Storage Length (feet)	0
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	50
Through Vehicles / Cycle / Lane	23.22
No Block Distance (feet)	781
No Block Turn Length (feet)	831

WIlmPike / I-675 NB Ramps NB T	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1180
Number of Through Lanes	3
Turning Volume (veh/hr)	0
Number of Turning Lanes	0
Design Condition	A
Turn Vehicles / Cycle / Lane	#DIV/0!
Storage Length (feet)	0
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	50
Through Vehicles / Cycle / Lane	13.11
No Block Distance (feet)	478
No Block Turn Length (feet)	528

WIlmPike / I-675 SB Ramps WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Left Turn Volume (veh/hr)	1220
Number of LT Lanes	2
Right Turn Volume (veh/hr)	1110
Number of Right Turn Lanes	3
Design Condition	A
Right Turn Vehicles / Cycle / Lane	12.33
Storage Length (feet)	459
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	509
LT Vehicles / Cycle / Lane	20.33
Calculated LT Distance (feet)	692
Calculated LT Turn Length (feet)	742

WIlmPike / I-675 SB Ramps WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	1110
Number of Through Lanes	2
Turning Volume (veh/hr)	1220
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	20.33
Storage Length (feet)	692
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	742
Through Vehicles / Cycle / Lane	18.50
No Block Distance (feet)	638
No Block Turn Length (feet)	688

WIlmPike / I-675 SB Ramps NB T	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1740
Number of Through Lanes	3
Turning Volume (veh/hr)	0
Number of Turning Lanes	0
Design Condition	A
Turn Vehicles / Cycle / Lane	#DIV/0!
Storage Length (feet)	0
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	50
Through Vehicles / Cycle / Lane	19.33
No Block Distance (feet)	658
No Block Turn Length (feet)	708

WIlmPike / I-675 SB Ramps SB T	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1290
Number of Through Lanes	3
Turning Volume (veh/hr)	0
Number of Turning Lanes	0
Design Condition	A
Turn Vehicles / Cycle / Lane	#DIV/0!
Storage Length (feet)	0
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	50
Through Vehicles / Cycle / Lane	14.33
No Block Distance (feet)	508
No Block Turn Length (feet)	558

Storage Lane Calculations
Alternative 2

Option 2

Turn Lane	2050 DHV		L&D Method		HCS 95% Queue	Existing Storage Length (ft)	Proposed Storage Length (ft)	Comments
	Turn Volume	Through Volume	Calculated Turn Lane Storage	No Block Storage Length				
Wilmington Pike and Clyo Rd								
NB Left	220	1260	283	550	73	240 + 110 south of BP station	400/300	Add additional NB-LT lane
NB Right-Thru	140	1260	498	640	353	-	480	Construct new NB-RT-Thru storage lane
WB Left	260	320	233	267	190	275	300/200	Dual Lefts 300/200
WB Right	290	320	417	267	286	-	425	Add WB-RT lane
SB Left	430	1480	399	519	322	190	650 / 190	Add additional SB-LT lane
SB Right	290	1480	482	519	79	-	-	Existing turn length meets turn lane storage requirement (1 additional SB-T lane is proposed in Build 2)
EB Left	400	280	317	292	268	190 / 190	380/380	Extend exisitng dual EB-LT lanes
EB Right	160	490	267	380	194	-	380	Add EB-RT lane
Wilmington Pike and Miami Valley Dr								
NB Left	30	2080	125	828	4	180	Match Existing	Existing turn length meets turn lane storage requirement.
SB Left	70	2250	232	875	33	240		
EB Left	260	10	234	67	189	220 / 400		
Wilmington Pike and I-675 NB Ramps								
EB Right	390	530	392	489	474	530	600/500	Provide EB-RT storage as part of L-L-T-TR-R EB lane geometry. EB-TR lane is 600' and EB-RT lane is 500'
EB Left	430	530	559	489	233	530	660/560	Provide Dual EB-LT storage as part of L-L-T-TR-R EB lane geometry
SB Left	190	2010	374	809	209	460 + 300 at I-675 SB Ramp	460+350	SB-LT single lane extends through SB ramp intersection 350'
Wilmington Pike and I-675 SB Ramps								
WB Right	760	520	517	478	459	600	625/525	Provide dual WB-RT lanes for overall approach configuation (L-L-TL-T-R-R).
WB Left	960	520	404	324	570	600	650/550	Provide dual WB-LT lanes
NB Left	350	1440	549	850	355	460	860	Single NB-LT extends through NB ramp intersection +400'
NB-Thru	-	1440	-	850	119	-	200	Begin NB-T auxillary lane 200 feet before I-675-SB Ramp intersection
Wilmington Pike and Feedwire Rd								
NB Left	430	1140	399	517	266	240 / 570	Match Existing	Existing turn length meets turn lane storage requirement.
NB Right	580	1140	774	517	552	270	775	Extend existing NB-RT turn lane
WB Left	300	490	290	380	202	450 / 600	700/440	Provide 700'/440' dual lefts
WB Right	270	490	400	380	-	600	Match Existing	Existing turn length meets turn lane storage requirement.
SB Left	300	1170	315	450	200	310 / 460	Match Existing	Existing turn length meets turn lane storage requirement.
SB Right	180	990	565	365	196	290	500	Add SB-RT lane; extend existing SB-TR lane from 290' to 450' and convert to SB-T
EB Left	240	480	375	375	231	250	375	Extend EB-LT lane to 375 feet
EB Right	340	130	467	159	367	190	470	Extend storage to 470 ft
Wilmington Pike and Brown Rd								
WB Left	160	40	267	117	236	250	Match Existing	TWLTL preceeds WBL storage for additional storage capacity
Feedwire Rd and Charles Dr								
EB Left	500	710	380	492	224	340	650/340	Extend turn lanes to 340 ft (inside) and 650 ft (outside)
WB Left	230	450	359	350	189	380	Match Existing	Existing turn length meets turn lane storage requirement.
Feedwire Rd and Clinger Dr								
EB Left	170	1070	192	Free	1	-	200	Construct new EB-LT lane
Feedwire Rd and I-675 SB								
EB Right	110	1280	218	563	44	-	570	Single EB-RT
WB Left	410	600	321	425	267	-	750/250	Dual WB-LT lanes extend past NB ramp intersection 460'/250'
SB Right	370	410	509	271	442	-	525	Single SB-RT
SB Left	410	370	271	509	476	-	525	TL-L with a 525' long left lane on the R/TL/L approach
Feedwire Rd and I-675 NB								
NB Right	460	70	359	167	297	-	360	NB LT/R/R lane configuration. Add Dual RT lanes 460/360'
EB Left	360	1330	300	805	195	-	750/250	Dual EB-LT lanes between ramps; single lane extends past SB ramp intersection 570'
WB Right	290	940	419	436	184	-	450	Single WB-RT
Feedwire Rd and Clyo Rd								
NB Left	410	500	321	384	242	-	500/400	Dual NB-LT lanes
NB Right	500	410	384	321	256	-	500/400	Dual NB-RT lanes
EB Right	390	1400	640	834	56	-	850	Single EB-RT
WB Left	430	900	449	575	195	-	675/575	Dual WB-LT Lanes; begin auxilliary WB-T lane 675' east of Clyo Rd

Note 1: Analysis performed using 2050 design year volumes. Storage lengths were calculated based on Condition C (Storage Only) per ODOT L&D Figure 401-9 unless noted otherwise.
Note 2: Through and turn volumes shown on table are to be divided by corresponding no. of lanes for per lane volume. Blockage lengths were calculated using Condition A (Storage Only) per ODOT L&D

WilmPike / Clyo Rd NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1260
Number of Through Lanes	3
Turning Volume (veh/hr)	220
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	3.67
Storage Length (feet)	168
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	283
Through Vehicles / Cycle / Lane	14.00
No Block Distance (feet)	500
No Block Turn Length (feet)	550

WilmPike / Clyo Rd NB RT-Thru	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1260
Number of Through Lanes*	2.5
Turning Volume (veh/hr)	140
Number of Turning Lanes*	0.5
Design Condition	C
Turn Vehicles / Cycle / Lane	9.33
Storage Length (feet)	383
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	498
Through Vehicles / Cycle / Lane	16.80
No Block Distance (feet)	590
No Block Turn Length (feet)	640

* Assume 1/2 of curb lane used by RT and 1/2 by thru.

WilmPike / Clyo Rd WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	320
Number of Through Lanes	2
Turning Volume (veh/hr)	260
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	4.33
Storage Length (feet)	183
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	233
Through Vehicles / Cycle / Lane	5.33
No Block Distance (feet)	217
No Block Turn Length (feet)	267

WilmPike / Clyo Rd WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	320
Number of Through Lanes	2
Turning Volume (veh/hr)	290
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	9.67
Storage Length (feet)	367
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	417
Through Vehicles / Cycle / Lane	5.33
No Block Distance (feet)	217
No Block Turn Length (feet)	267

WIlmPike / Miami Valley Dr NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2080
Number of Through Lanes	3
Turning Volume (veh/hr)	30
Number of Turning Lanes	1
Design Condition	B
Turn Vehicles / Cycle / Lane	1.00
Storage Length (feet)	50
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	125
Through Vehicles / Cycle / Lane	23.11
No Block Distance (feet)	778
No Block Turn Length (feet)	828

WIlmPike / Miami Valley Dr SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2250
Number of Through Lanes	3
Turning Volume (veh/hr)	70
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	2.33
Storage Length (feet)	117
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	232
Through Vehicles / Cycle / Lane	25.00
No Block Distance (feet)	825
No Block Turn Length (feet)	875

WIlmPike / Miami Valley Dr EB LT	
Design Hour	2050 PM
Design Speed (mph)	15
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	10
Number of Through Lanes	1
Turning Volume (veh/hr)	260
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	4.33
Storage Length (feet)	184
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	234
Through Vehicles / Cycle / Lane	0.33
No Block Distance (feet)	17
No Block Turn Length (feet)	67

WilmPike / Clyo Rd SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1480
Number of Through Lanes	4
Turning Volume (veh/hr)	430
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	399
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	469
No Block Turn Length (feet)	519

WilmPike / Clyo Rd SB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1480
Number of Through Lanes	4
Turning Volume (veh/hr)	290
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	9.67
Storage Length (feet)	367
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	482
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	469
No Block Turn Length (feet)	519

WilmPike / Clyo Rd EB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	280
Number of Through Lanes	2
Turning Volume (veh/hr)	400
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	6.67
Storage Length (feet)	267
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	317
Through Vehicles / Cycle / Lane	4.67
No Block Distance (feet)	192
No Block Turn Length (feet)	242

WilmPike / Clyo Rd EB RT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	490
Number of Through Lanes	2
Turning Volume (veh/hr)	160
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	5.33
Storage Length (feet)	217
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	267
Through Vehicles / Cycle / Lane	8.17
No Block Distance (feet)	330
No Block Turn Length (feet)	380

WIlmPike / I-675 NB Ramps EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	530
Number of Through Lanes	1.5
Turning Volume (veh/hr)	390
Number of Turning Lanes	1.5
Design Condition	A
Turn Vehicles / Cycle / Lane	8.67
Storage Length (feet)	342
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	392
Through Vehicles / Cycle / Lane	11.78
No Block Distance (feet)	439
No Block Turn Length (feet)	489

WIlmPike / I-675 NB Ramps EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	530
Number of Through Lanes	1.5
Turning Volume (veh/hr)	430
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	14.33
Storage Length (feet)	509
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	559
Through Vehicles / Cycle / Lane	11.78
No Block Distance (feet)	439
No Block Turn Length (feet)	489

WIlmPike / I-675 NB Ramps SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	2010
Number of Through Lanes	3
Turning Volume (veh/hr)	190
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	6.33
Storage Length (feet)	259
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	374
Through Vehicles / Cycle / Lane	22.33
No Block Distance (feet)	759
No Block Turn Length (feet)	809

WIlmPike / I-675 SB Ramps WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	520
Number of Through Lanes	1.5
Turning Volume (veh/hr)	760
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	12.67
Storage Length (feet)	467
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	517
Through Vehicles / Cycle / Lane	11.56
No Block Distance (feet)	428
No Block Turn Length (feet)	478

WIlmPike / I-675 SB Ramps WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	520
Number of Through Lanes	2.5
Turning Volume (veh/hr)	960
Number of Turning Lanes	3.5
Design Condition	A
Turn Vehicles / Cycle / Lane	9.14
Storage Length (feet)	354
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	404
Through Vehicles / Cycle / Lane	6.93
No Block Distance (feet)	274
No Block Turn Length (feet)	324

WIlmPike / I-675 SB Ramps NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1440
Number of Through Lanes	2
Turning Volume (veh/hr)	350
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	11.67
Storage Length (feet)	434
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	549
Through Vehicles / Cycle / Lane	24.00
No Block Distance (feet)	800
No Block Turn Length (feet)	850

WilmPike / Feedwire NB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1140
Number of Through Lanes	3
Turning Volume (veh/hr)	430
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	399
Through Vehicles / Cycle / Lane	12.67
No Block Distance (feet)	467
No Block Turn Length (feet)	517

WilmPike / Feedwire NB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1140
Number of Through Lanes	3
Turning Volume (veh/hr)	580
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	19.33
Storage Length (feet)	659
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	774
Through Vehicles / Cycle / Lane	12.67
No Block Distance (feet)	467
No Block Turn Length (feet)	517

WilmPike / Feedwire WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	490
Number of Through Lanes	2
Turning Volume (veh/hr)*	174
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	5.80
Storage Length (feet)	240
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	290
Through Vehicles / Cycle / Lane	8.17
No Block Distance (feet)	330
No Block Turn Length (feet)	380

* Lane utilization of 58% for PM peak hour

WilmPike / Feedwire WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Yield
Through Volume (veh/hr)	490
Number of Through Lanes	2
Turning Volume (veh/hr)	270
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	9.00
Storage Length (feet)	350
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	400
Through Vehicles / Cycle / Lane	8.17
No Block Distance (feet)	330
No Block Turn Length (feet)	380

WilmPike / Brown WB LT	
Design Hour	2050 AM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
RT Volume (veh/hr)	40
Number of Through Lanes	1
LT Volume (veh/hr)	160
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	5.33
Storage Length (feet)	217
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	267
Through Vehicles / Cycle / Lane	1.33
No Block Distance (feet)	67
No Block Turn Length (feet)	117

WilmPike / Feedwire SB LT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	990
Number of Through Lanes	3
Turning Volume (veh/hr)	300
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	5.00
Storage Length (feet)	200
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	315
Through Vehicles / Cycle / Lane	11.00
No Block Distance (feet)	400
No Block Turn Length (feet)	450

WilmPike / Feedwire SB RT	
Design Hour	2050 PM
Design Speed (mph)	40
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	990
Number of Through Lanes*	3
Turning Volume (veh/hr)	180
Number of Turning Lanes*	1
Design Condition	C
Turn Vehicles / Cycle / Lane	6.00
Storage Length (feet)	250
Deceleration/Taper (feet)	115
Calculated Lane Length (feet)	365
Through Vehicles / Cycle / Lane	11.00
No Block Distance (feet)	400
No Block Turn Length (feet)	450

WilmPike / Feedwire EB-LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	480
Number of Through Lanes	2
Turning Volume (veh/hr)	240
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	8.00
Storage Length (feet)	325
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	375
Through Vehicles / Cycle / Lane	8.00
No Block Distance (feet)	325
No Block Turn Length (feet)	375

WilmPike / Feedwire EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	130
Number of Through Lanes	2
Turning Volume (veh/hr)	340
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	11.33
Storage Length (feet)	417
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	467
Through Vehicles / Cycle / Lane	2.17
No Block Distance (feet)	109
No Block Turn Length (feet)	159

Feedwire / Charles EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	710
Number of Through Lanes	2
Turning Volume (veh/hr)	490
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	8.17
Storage Length (feet)	330
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	380
Through Vehicles / Cycle / Lane	11.83
No Block Distance (feet)	442
No Block Turn Length (feet)	492

Feedwire / Charles WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	450
Number of Through Lanes	2
Turning Volume (veh/hr)	230
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	7.67
Storage Length (feet)	309
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	359
Through Vehicles / Cycle / Lane	7.50
No Block Distance (feet)	300
No Block Turn Length (feet)	350

Feedwire / Clinger EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	60
Control Type	Unsignalized/Thru
Through Volume (veh/hr)	1070
Number of Through Lanes	2
Turning Volume (veh/hr)	170
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	2.83
Storage Length (feet)	142
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	192
Through Vehicles / Cycle / Lane	*
No Block Distance (feet)	*
No Block Turn Length (feet)	*

* EB Through is a free movement

Feedwire / I-675 SB EB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Thru Volume (veh/hr)	1280
Number of Thru Lanes	3
RT Volume (veh/hr)	110
Number of RT Lanes	1
Design Condition	A
RT Turn Vehicles / Cycle / Lane	3.67
Storage Length (feet)	168
Deceleration/Taper (feet)	50
Calculated RT Lane Length (feet)	218
Through Vehicles / Cycle / Lane	14.22
No Block Distance (feet)	513
No Block Turn Length (feet)	563

Feedwire / I-675 SB WB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Thru Volume (veh/hr)	600
Number of Thru Lanes	2
Turning Volume (veh/hr)	410
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	6.83
Storage Length (feet)	271
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	321
Through Vehicles / Cycle / Lane	10.00
No Block Distance (feet)	375
No Block Turn Length (feet)	425

Feedwire / I-675 SB SB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	410
Number of Through Lanes	2
Turning Volume (veh/hr)	370
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	12.33
Storage Length (feet)	459
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	509
Through Vehicles / Cycle / Lane	6.83
No Block Distance (feet)	271
No Block Turn Length (feet)	321

Feedwire / I-675 SB SB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	370
Number of Through Lanes	1
Turning Volume (veh/hr)	410
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	6.83
Storage Length (feet)	271
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	321
Through Vehicles / Cycle / Lane	12.33
No Block Distance (feet)	459
No Block Turn Length (feet)	509

Feedwire / I-675 NB NB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Lt/Thru Volume (veh/hr)	70
Number of Lt/Thru Lanes	1
Turning Volume (veh/hr)	460
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	7.67
Storage Length (feet)	309
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	359
Through Vehicles / Cycle / Lane	2.33
No Block Distance (feet)	117
No Block Turn Length (feet)	167

Feedwire / I-675 NB EB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1330
Number of Through Lanes	2
Turning Volume (veh/hr)	360
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	6.00
Storage Length (feet)	250
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	300
Through Vehicles / Cycle / Lane	22.17
No Block Distance (feet)	755
No Block Turn Length (feet)	805

Feedwire / I-675 NB WB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	940
Number of Through Lanes	3
Turning Volume (veh/hr)	290
Number of Turning Lanes	1
Design Condition	A
Turn Vehicles / Cycle / Lane	9.67
Storage Length (feet)	369
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	419
Through Vehicles / Cycle / Lane	10.44
No Block Distance (feet)	386
No Block Turn Length (feet)	436

Feedwire / Clyo NB LT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	500
Number of Through Lanes	2
Turning Volume (veh/hr)	410
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	6.83
Storage Length (feet)	271
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	321
Through Vehicles / Cycle / Lane	8.33
No Block Distance (feet)	334
No Block Turn Length (feet)	384

Feedwire / Clyo NB RT	
Design Hour	2050 PM
Design Speed (mph)	35
Cycle Length (s)	120
Control Type	Signal
LT Volume (veh/hr)	410
Number of LT Lanes	2
Turning Volume (veh/hr)	500
Number of Turning Lanes	2
Design Condition	A
Turn Vehicles / Cycle / Lane	8.33
Storage Length (feet)	334
Deceleration/Taper (feet)	50
Calculated Lane Length (feet)	384
Through Vehicles / Cycle / Lane	6.83
No Block Distance (feet)	271
No Block Turn Length (feet)	321

Feedwire / Clyo EB RT	
Design Hour	2050 PM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	1400
Number of Through Lanes	2
Turning Volume (veh/hr)	390
Number of Turning Lanes	1
Design Condition	C
Turn Vehicles / Cycle / Lane	13.00
Storage Length (feet)	475
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	640
Through Vehicles / Cycle / Lane	23.33
No Block Distance (feet)	784
No Block Turn Length (feet)	834

Feedwire / Clyo EB LT	
Design Hour	2050 AM
Design Speed (mph)	55
Cycle Length (s)	120
Control Type	Signal
Through Volume (veh/hr)	900
Number of Through Lanes	2
Turning Volume (veh/hr)	430
Number of Turning Lanes	2
Design Condition	C
Turn Vehicles / Cycle / Lane	7.17
Storage Length (feet)	284
Deceleration/Taper (feet)	165
Calculated Lane Length (feet)	449
Through Vehicles / Cycle / Lane	15.00
No Block Distance (feet)	525
No Block Turn Length (feet)	575

I-675 and Wilmington Pike Interchange Feasibility Study

Appendix D: Capacity Analysis

CMT

Traffic Analysis

Capacity analyses were performed for the following scenarios: No Build, Alternative 1, Alternative 1B, and Alternative 2. Certified Traffic Volumes provided by ODOT's Office of Statewide Planning & Research are used for the 2050 AM and PM peak hour conditions. Peak Hour Factors calculated for the Existing and Future Conditions Study from August 2022 are depicted in this section. Lane Utilization factors used in the Existing and Future Conditions Study are also applied to the capacity analysis for the Feasibility Study (Appendix D). Summaries and detailed reports from the Highway Capacity Software (HCS 2023) results of all analyses are summarized below. The certified traffic volumes were also used to develop storage lane lengths in conjunction with the capacity analysis. Storage lane length calculations are found in Appendix C.

The analysis of congestion on roadways is conducted using the Federal Highway Administration (FHWA) Highway Capacity Manual (HCM) and the Highway Capacity Software (HCS). Traffic flow is generally evaluated using a level of service (LOS). LOS values range from LOS A to LOS F. LOS A describes excellent traffic flow. LOS F describes congested conditions. ODOT's design criteria state that the LOS of interstate or freeway systems and interchange components that are built new or modified should generally provide a LOS D or better for the design year in urban areas. Table 1D shows the HCM level of service (LOS) thresholds for the freeway and intersection analyses in the study area.

Table 1D: HCM LOS Criteria

Level of Service	Basic Freeway Segment	Merge & Diverge Areas	Signalized Intersection	Unsignalized Intersections
(LOS)	Density (pc/mi/ln)	Density (pc/mi/ln)	Control Delay (sec)	Control Delay (sec)
A	0-11	0-10	0-10	0-10
B	>11-18	>10-20	>10-20	>10-15
C	>18-26	>20-28	>20-35	>15-25
D	>26-35	>28-35	>35-55	>25-35
E	>35-45	>35	>55-80	>35-50
F	>45 or V/C ratio > 1.00	Demand Exceeds Capacity	>80 or V/C ratio > 1.00	>50

No Build Traffic Analysis

The No Build traffic conditions for intersections on Wilmington Pike and Feedwire Road assumes the existing lane configurations at the study intersections as well as the I-675 main line and ramps entering and exiting the freeway at the Wilmington Pike Interchange. Congestion at the study intersections and on the freeway segments are due to high traffic volumes. The results for signalized intersections for the freeway analyses are summarized below.

The capacity analyses show both of the I-675 and Wilmington Pike ramp intersections will operate at LOS F in the AM and PM peak hours in the No Build Scenarios. The intersection of Wilmington Pike & Clyo Road operates at LOS F during the AM peak hour. The Feedwire Road intersections with Clinger Drive and Clyo Road also operate at LOS F in the PM peak hour with overall delays exceeding one hundred seconds.

The volumes at the I-675 ramps are also projected to exceed capacity. This will lead to traffic being unable to enter or exit the freeway system at this interchange similar to the condition contributing to

safety performance issues on southbound I-675 exit ramp. Additionally, adjacent intersections on Wilmington Pike including at Clyo Road and Feedwire Road are expected to exceed capacity. Excessive congestion in the interchange influence area is expected due to the intersections operating at over-capacity levels in the No Build alternative.

The entrance ramp form Wilmington Pike to NB I-675, and NB I-675 segments between Wilmington Pike and Indian Ripple Road and north of Indian Ripple Road operating at LOS E in the 2050 AM No Build Scenario. The analysis also shows SB I-675 operating at LOS F in the freeway segment north of Indian Ripple Road, the SB I-675 off ramp to Indian Ripple Road, and the SB I-675 off ramp to Wilmington Pike in the 2050 PM Peak hour. The SB I-675 freeway segment between Indian Ripple Road and Wilmington Pike operates at LOS E during the PM Peak hour. These levels of service indicate that I-675 is operating near or at capacity during the morning and evening commute. Congestion at the I-675 entrance and exit ramps at Wilmington Pike and Indian Ripple Road will lead to lower levels of service and delays.

Alternative 1 Traffic Analysis

The Alternative 1 Traffic Analysis traffic conditions for intersections on Wilmington Pike and Feedwire Road assumes conventional lane additions and turn lane extensions at the study intersections in order to improve intersection capacity. The NB I-675 entrance ramp from Wilmington Pike receives an additional lane and was analyzed as a 2-lane ramp. Similarly, the SB I-675 exit ramp to Wilmington Pike is expanded to a 2-lane ramp. The overall length of the modified entrance will be a minimum of 5200 feet based on ODOT L&D Figure 505-1a: Multi-Lane Entrance Ramps and Converging Roadways.

The SB exit ramp I-675 and Wilmington Pike intersection will operate at LOS F in the PM peak hour with an overall delay of 81.6 seconds in the Alternative 1 scenario. Due to expected congestion at this intersection and desire to eliminate queuing onto mainline I-675, the SB exit ramp has three left turn lanes and three right turn lanes in this scenario.

Design year volumes exceed capacity during the PM peak hour which could lead to congestion issues affecting mainline I-675. Each approach to the I-675 SB Ramps at Wilmington Pike intersection includes lane additions in Alternative 1.

- *On Wilmington Pike, there are four southbound through lanes, two northbound left turn lanes and four northbound through lanes.*
- *On the I-675 SB exit ramp, there are three westbound left turn lanes (lengths: 875'/875'/775') and three westbound right turn lanes (lengths: 700'/700'/600'). The HCS 95th percentile queue is 773 feet for the westbound left turn lanes and 436 feet for the westbound right turn lanes. The westbound right turn lanes are longer than the calculated queues to account for possible lane blockages from the left turning traffic.*
- *The southbound through lanes include one lane that is an extension of one of the SB left turn at the I-675 NB entrance ramp.*
- *The dual NB left turns for the I-675 SB entrance ramp are 990 feet and 470 feet long. The 470-foot-long left turn lane is in between the I-675 interchange intersections while the longer 990-foot-long left turn lane extends past the I-675 SB Ramp intersection to accommodate the queues anticipated for the NB left turn for the I-675 SB Entrance Ramp.*

See **Figure 1D** *for the SB I-675 exit ramp configuration at Wilmington Pike.*

Figure 1D: SB I-675 Ramp to Wilmington Pike Alternative 1 Configuration

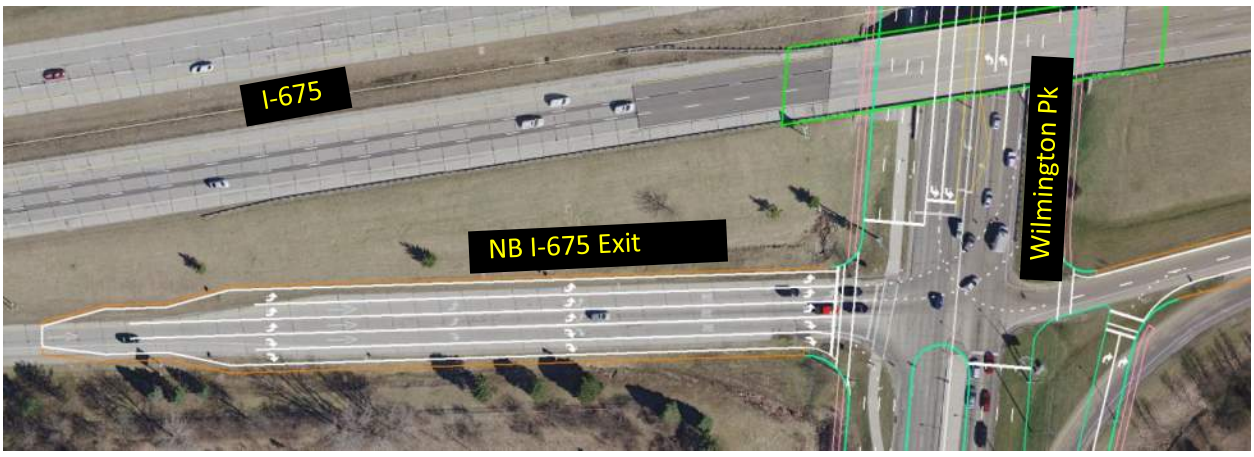


Lanes are added to increase capacity at the I-675 NB Ramps at Wilmington Pike intersection:

- *On Wilmington Pike, there are four northbound through lanes, four southbound through lanes and two southbound left turn lanes to enter the I-675 NB entrance ramp.*
- *On the I-675 NB exit ramp, there are three eastbound left turn lanes (lengths: 630'/630'/530') and two eastbound right turn lanes (lengths: 630'/530'). The HCS 95th percentile queue is 470 feet for the eastbound left turn lanes and 241 feet for the eastbound right turn lanes. The right turn lanes are longer than the calculated queues to account for possible lane blockages from the left turning traffic.*
- *The northbound through lanes include one lane that is an extension of one of the NB left turn at the I-675 SB entrance ramp.*
- *The dual SB left turns for the I-675 NB entrance ramp are 1075 feet and 470 feet long. The 470 ft long left turn lane is in between the I-675 interchange intersections while the longer 1075-foot-long left turn lane extends past the I-675 NB Ramp intersection to accommodate the queues anticipated for the SB left turn at the I-675 NB Entrance Ramp.*

The NB I-675 exit ramp lane configuration at Wilmington Pike is shown in **Figure 2D**.

Figure 2D: NB I-675 Exit Ramp to Wilmington Pike Alternative 1 Configuration

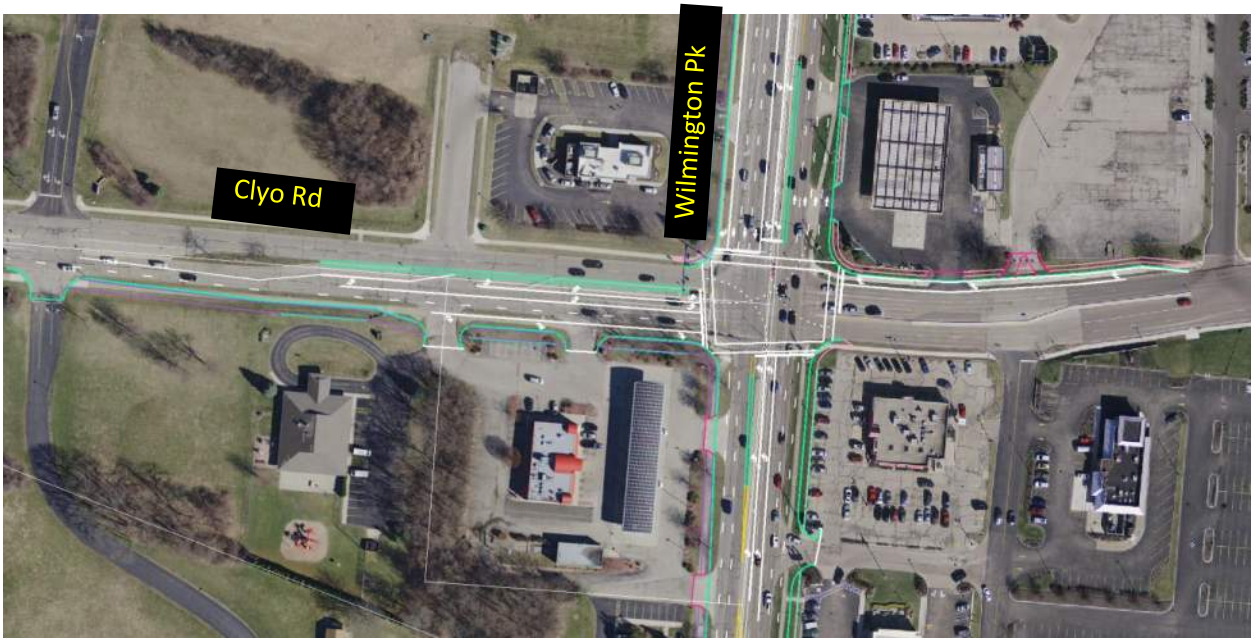


The Wilmington Pike & Clyo Road intersection operates at a LOS D. It should be noted that the SB approach operates at a LOS F during the PM peak hour and is over capacity. Capacity improvements include the following:

- *In the southbound direction, a second left turn lane and an additional through lane are added.*
- *In the westbound direction, a right turn lane is added to separate the right turn traffic from the current shared through-right lane.*
- *In the northbound direction, a second left turn lane is provided in addition to a new shared 480 foot long through-right lane.*
- *On the eastbound approach, the exiting dual left turn lanes are extended to 300'/400' and a 360' right turn lane is added. The eastbound dual left lanes are extended such that the Premier Drive will be converted into a right-in/right-out operation due to the median island extension adjacent to the eastbound left turn lanes. This median extension will also affect access to the Early Beginnings daycare and BP Gas/On the Fly Convenience Store.*

See **Figure 3D** *for an excerpt of the proposed concept plan of the Alternative 1 lane configurations at Wilmington Pike & Clyo Road.*

Figure 3D: Wilmington Pike and Clyo Road Alternative 1 Configuration



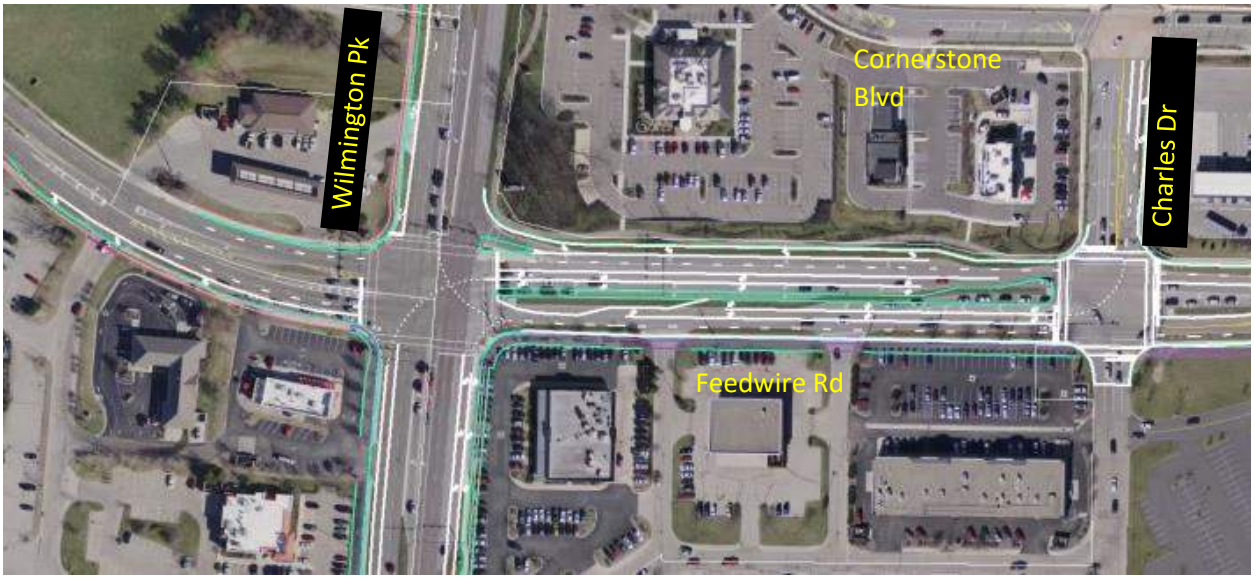
Lanes are added to increase capacity at the Wilmington Pike & E. Whipp Road/Feedwire Road intersection:

- *Southbound (exclusive right turn lane) and northbound (second right turn lane) approaches.*
- *Turn lanes are lengthened to accommodate the storage required on each approach – most notably for the northbound right turn lanes and for the westbound left turn lanes.*
- *The northbound right turn lanes are proposed to be 400 feet long*
- *The westbound left turn lanes are proposed to be 700 feet (outside) and 600 feet (inside) long.*

Due to these lane additions, the quadrant at this intersection that is most impacted is the southeast quadrant that includes a Cracker Barrell Restaurant, Tire Discounters, and a retail strip center. See **Figure**

4D for an excerpt of the proposed concept plan of Feedwire Road between Wilmington Pike and Charles Drive.

Figure 4D: Feedwire Rd between Wilmington Pk and Charles Dr Alternative 1 Configuration

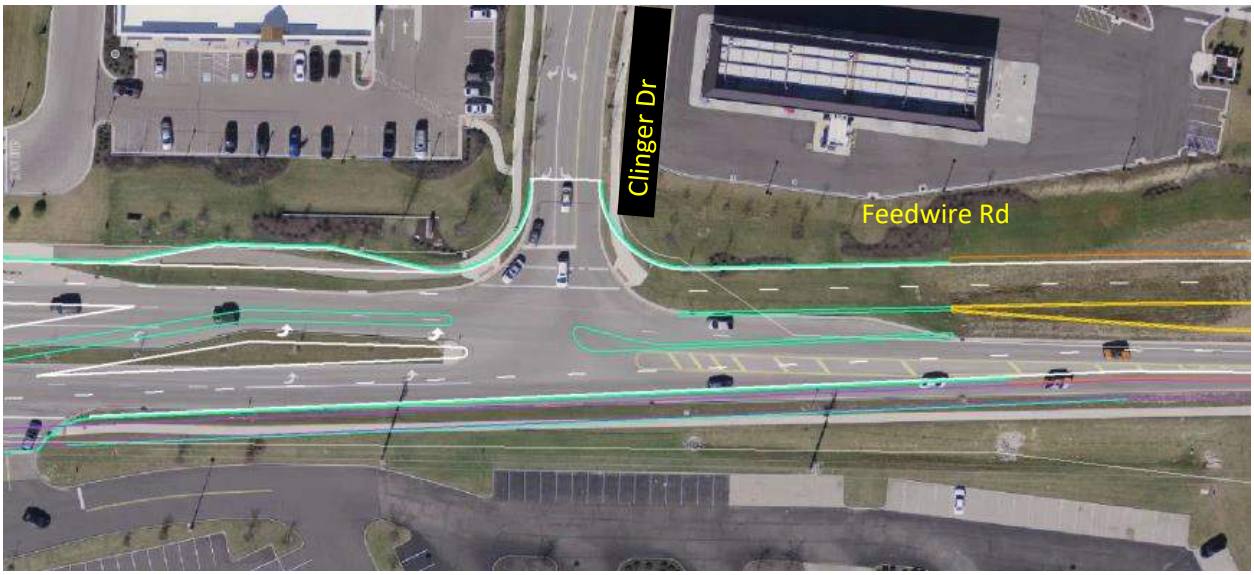


The proposed changes at the Feedwire Road & Charles Drive intersection partially affect the Wilmington Pike & Feedwire Road intersection. In order to accommodate the eastbound left turn traffic entering Charles Drive from Feedwire Road, a second left turn lane is proposed. Due to the required length of these turn lanes (500 feet inside and 625 feet outside), Feedwire Road will need to be widened by two lanes. Additionally, the lane configuration of northbound Charles Drive entering the Cornerstone Development is proposed to be modified with a new right turn lane to better accommodate and distribute incoming traffic at Cornerstone Boulevard.

- *The unsignalized intersection of Feedwire Road & Clinger Drive is modified.*
- *EB Feedwire Road is widened to two through lanes at this location.*
- *The existing EB left turn lane is separated giving the EB approach three total lanes.*
- *The SB left turn movement is modified to be a two-stage left turn to improve safety. The SB approach of Clinger Drive is unchanged from existing conditions and includes a right only lane and a left only lane.*
- *A median area is provided for the SB left turning traffic to take shelter in before merging into EB traffic on Feedwire Road.*

No change is made to WB Feedwire Road in terms of the number of lanes (two lanes). See **Figure 5D** *for an excerpt from the concept plan.*

Figure 5D: Feedwire Road and Clinger Drive Alternative 1 Configuration



Feedwire Road will maintain two through lanes in each direction to the east of Charles Drive past Clyo Road. The westbound auxiliary lane begins about 700 feet to the east of Clyo Road. The eastbound auxiliary lane ends as a right turn drop at Brookdale Blvd. Continuing to the east on Feedwire Road is a two way left turn lane (TWLTL) that ends with the existing eastbound left turn lane at Little Sugarcreek Road. In this section of Feedwire Road between Charles Drive and Little Sugarcreek Road are two structures that will need to be reconstructed to accommodate the lane geometry: over I-675 and over Little Sugar Creek.

At the Feedwire Road and Clyo Road intersection, the auxiliary through lanes on Feedwire Road provide additional capacity on the mainline.

- *The new eastbound right turn lane is 705' long and extends over the expanded I-675 overpass.*
- *The westbound left turn lane is extended to 690 feet.*
- *An additional left turn lane is added to Clyo Road to accommodate design year volumes. In order to accommodate the new left turn lane, a new 510-foot right turn lane is added to the east of the current Clyo Road alignment.*

See **Figure 6D** *for Alt 1 concept plan details at Feedwire Road & Clyo Road.*

Figure 6D: Feedwire Road at Clyo Road Alternative 1 Configuration



The NB I-675 segments between Wilmington Pike and Indian Ripple Road and north of Indian Ripple Road operating at LOS E in the 2050 AM. The table also shows SB I-675 operating at LOS F in the freeway segment north of Indian Ripple Road and the SB I-675 off ramp to Indian Ripple Road in the 2050 PM Peak hour. The SB I-675 freeway segment between Indian Ripple Road and Wilmington Pike operates at LOS E during the PM Peak hour. These levels of service indicate that SB I-675 operates near or at capacity during the morning and evening commute peak hours. Congestion at the I-675 entrance and exit ramps Indian Ripple Road will lead to lower levels of service and delays. The traffic volumes on I-675 originating north of the study area suggest capacity improvements may be warranted prior to and at the Indian Ripple Road interchange to mitigate operational issues. These future operational issues are anticipated regardless of proposed improvements at the Wilmington Pike interchange.

Alternative 1B Traffic Analysis

The Alternative 1B Traffic Analysis studies the impacts of a Diverging Diamond Interchange (DDI) at Wilmington Pike & I-675. Per the ODOT L&D Volume 1 Manual, a DDI should be considered at locations with heavy left turns for both the entrance and exit ramps. DDIs offer improved safety due to the reduction of the number of conflict points between vehicles and other roadway users. DDI's offer simplified traffic signal operations which allow for greater traffic volumes to pass through the interchange. DDI's also provide improved bicycle and pedestrian safety by using one sidewalk in the median island thus reducing the number of crossings with motorized vehicles.

All other lane configurations applied to adjacent intersections on Wilmington Pike and Feedwire Road are the same as Alternative 1. Alternative 1B includes the second lane added to the NB I-675 entrance ramp from Wilmington Pike and the SB I-675 exit ramp to Wilmington Pike.

The DDI interchange at the Wilmington Pike & I-675 analyzed using 2050 certified traffic operates at acceptable levels of service in both the AM and PM peak hours. The DDI configuration improves capacity for through traffic on Wilmington Pike and traffic exiting from both directions of I-675 during both peak hours.

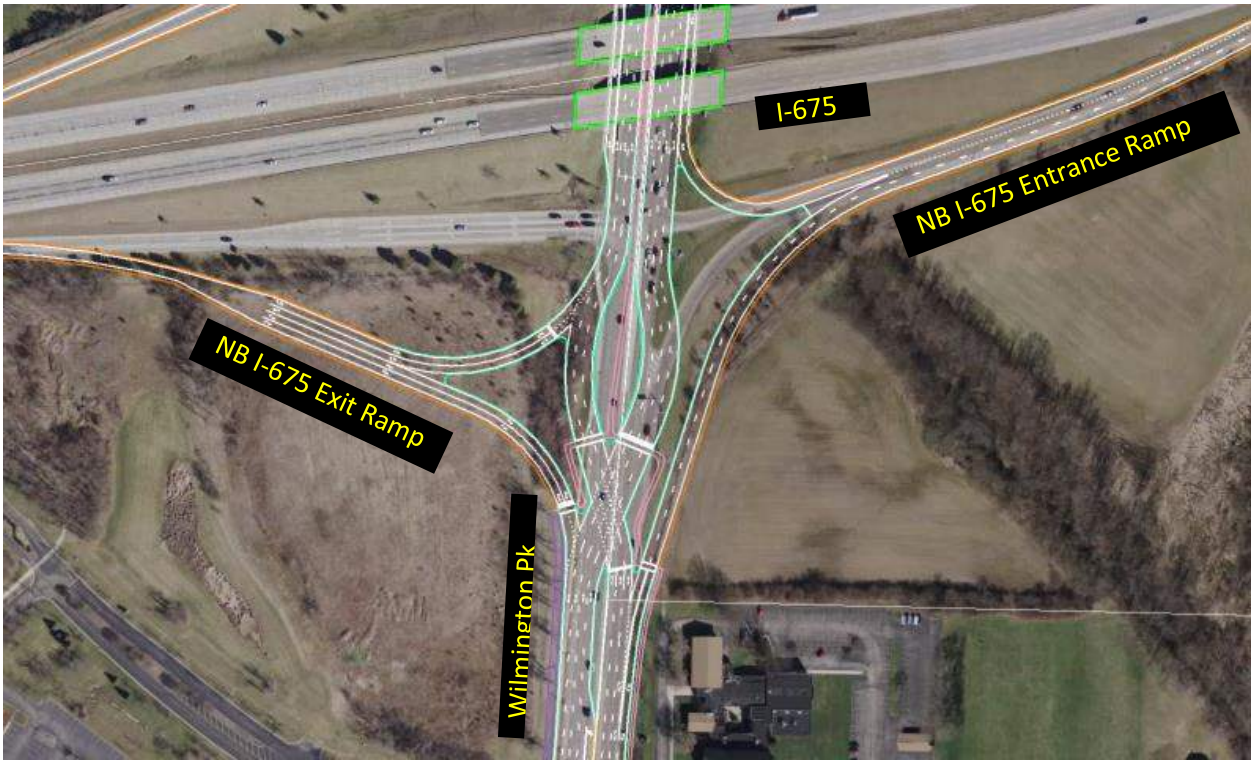
The NB I-675 Ramp intersection with Wilmington Pike is moved 450 feet south to accommodate Wilmington Pike queues inside the DDI (95-%tile SB queue of 814.5 feet at the NB ramp). The shift also accommodates the proposed entrance and exit ramps to I-675.

Northbound Wilmington Pike has four lanes approaching the NB I-675 Ramp intersection. The right most lane drops onto the entrance ramp to I-675 NB. The lane second from the right is a shared right-through lane that provides the NB I-675 Entrance ramp a second lane. The remaining northbound Wilmington Pike lanes are through only lanes for a total of three through lanes.

SB Wilmington Pike has four through lanes approaching the NB I-675 intersection. The NB I-675 Off Ramp has four approach lanes to the intersection with Wilmington Pike: two left turn lanes to go north on Wilmington Pike and two right turn lanes to go south on Wilmington Pike. The main diamond crossing is signalized which also controls the turning traffic coming from the I-675 NB exit ramp.

The relocation of this intersection will result in right of way acquisition but is not expected to impact existing structures. See Figure 7D *for details.*

Figure 7D: I-675 NB Ramp at Wilmington Pike Alternative 1B Configuration



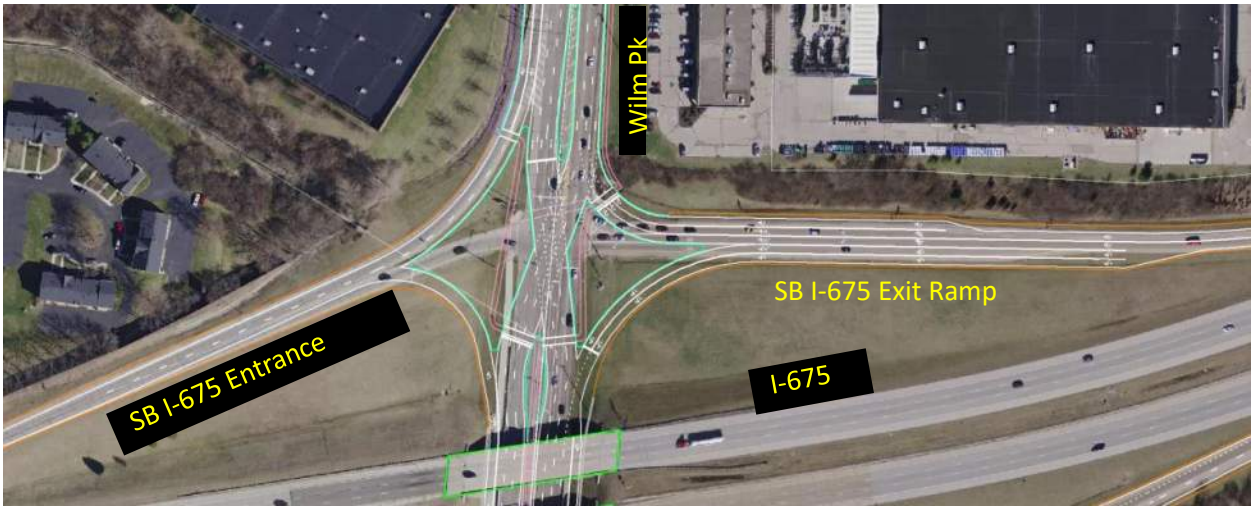
The SB I-675 Ramp at Wilmington Pike intersection is modified as follows:

Southbound Wilmington Pike has five lanes approaching the SB I-675 Ramp intersection. The two right most lanes slip onto the entrance ramp to I-675 SB. The remaining three lanes are through only lanes. NB Wilmington Pike has four lanes approaching the SB I-675 intersection. The left most lane is a slip lane onto the entrance ramp to SB I-675. The remaining three northbound lanes are through lanes for Wilmington Pike.

The SB I-675 Off Ramp has five approach lanes to the intersection with Wilmington Pike: two left turn lanes to go south on Wilmington Pike and three right turn lanes to go north on Wilmington Pike. The main diamond crossing is signalized which also controls the turning traffic arriving from the SB I-675 exit ramp.

See **Figure 8D** *for details.*

Figure 8D: I-675 NB Ramp at Wilmington Pike Alternative 1B Configuration



The summary of the results for Alternative 1B signalized intersection that are different from the Alternative 1 signalized intersection at the I-675 interchange. The results for the Freeway Analyses for Alternative 1 are the same for Alternative 1B.

Alternative 2 Traffic Analysis

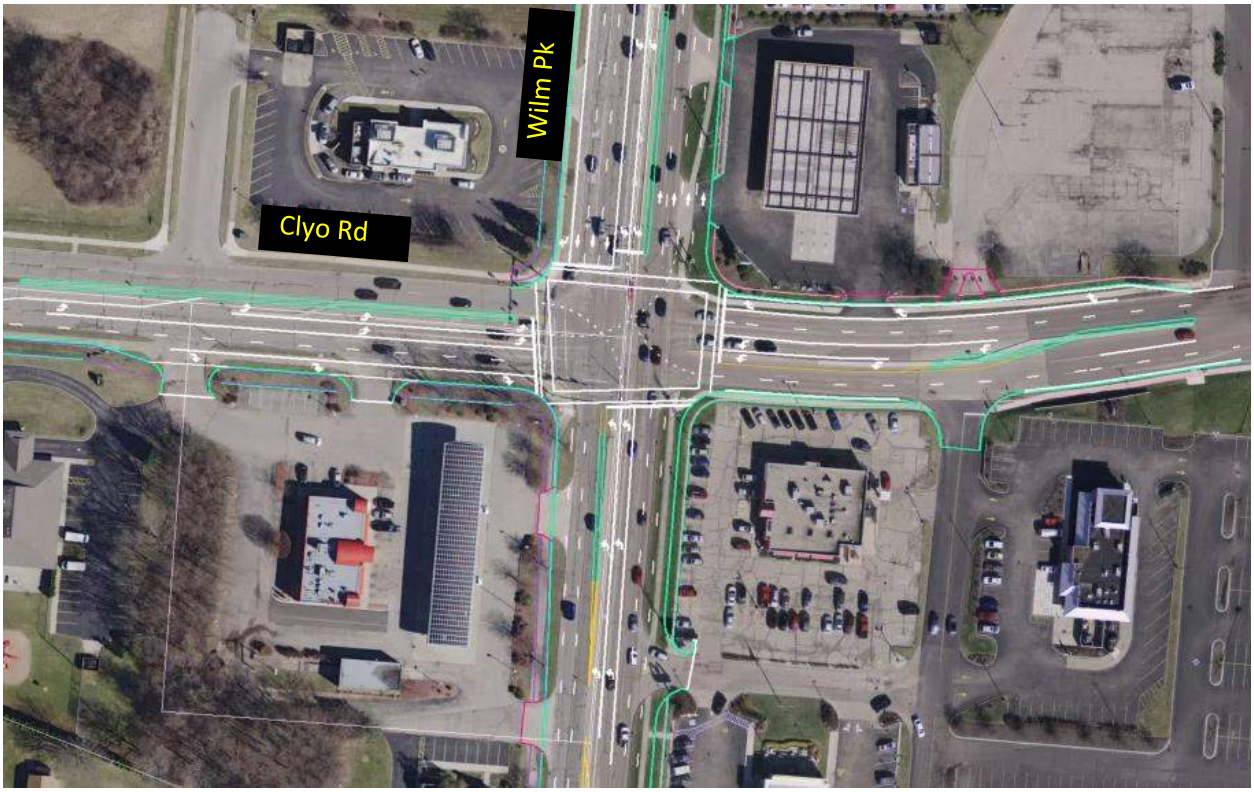
The main feature of Alternative 2 is the addition of a split interchange on I-675 having ramps at both Wilmington Pike and on Feedwire Road to better distribute 2050 design year traffic volumes to the existing roadway network. All study intersections operate at LOS of D or better.

Wilmington Pike & Clyo Road has an overall LOS of D with a delay of 53.6 seconds/vehicle during the PM peak hour. However, the SB approach has a LOS F during the PM peak hour and is over capacity during this time. Lanes are added to increase capacity at the I-675 NB Ramps at Wilmington Pike intersection:

- *In the southbound direction, a second left turn lane and an additional through lane are added.*
- *In the westbound direction, a right turn lane is added to separate the right turn traffic from the current shared through-right lane and a second left turn lane is added to assist with redistributed traffic. The westbound left turn lanes are sized at 300 ft and 200 ft.*
- *In the northbound direction, a second left turn lane is provided in addition to a new shared 480 foot long through-right lane.*
- *In the eastbound approach, the exiting dual left turn lanes are extended to 300'/400' and a 360' right turn lane is added. The eastbound dual left lanes are extended such that the Premier Drive will be converted into a right-in/right-out operation due to the median island extension adjacent to the eastbound left turn lanes. This median extension will also affect access to the Early Beginnings daycare and BP Gas/On the Fly Convenience Store.*

See **Figure 9D** *for an excerpt of the proposed concept plan of the Alternative 2 lane configurations at Wilmington Pike and Clyo Road.*

Figure 9D: Wilmington Pike and Clyo Road Alternative 2 Configuration



Lanes are added to each approach to the I-675 NB Ramps at Wilmington Pike intersection:

A third through lane is added to accommodate a 400-ft extension to the NB left turn at the SB I-675 entrance ramp intersection. .

The I-675 NB exit ramp to Wilmington Pike will have two lanes added for an overall configuration of two left turn lanes (650'/550'), a through only lane, a shared through/right turn lane (600'), and a right only lane (500').

The lanes under the I-675 bridge between this intersection and the I-675 SB Ramps intersection are the same as existing conditions – 3 SB through lanes, one SB left lane, one NB left lane, and two NB through lanes.

The NB I-675 Ramp at Wilmington Pike intersection is shown in **Figure 10D**.

Figure 10D: NB I-675 Ramp at Wilmington Pike Alternative 2 Configuration



Lanes are added to each approach to the I-675 SB Ramps at Wilmington Pike intersection:

- *On NB Wilmington Pike, an additional through lane is added immediately to the north of I-675 overpass for a length of 135 feet including taper. The NB left approach has a v/c ratio of .992 in the AM Peak hour and .965 in the PM peak hour. In the AM peak hour, the NB left has a Queue Storage Ratio of 0.96 but this does not account for the storage available beyond the upstream intersection.*
- *On SB Wilmington Pike, an additional through lane is added for a total of four lanes on the SB approach. The leftmost SB through lane is the 350 ft extension of the SB left turn lane at the NB I-675 Entrance Ramp.*
- *On the I-675 SB exit ramp, there are six total lanes. There are two left turn lanes (650'/550'), a shared through/left lane, a through only lane, and two right only lanes (625'/525'). The WB left has a v/c ratio of .93 during the PM Peak hour effectively meaning that these approaches are at or nearing capacity.*

See **Figure 11D** *for the SB I-675 Ramp & Wilmington Pike intersection.*

Figure 11D: SB I-675 Ramp at Wilmington Pike Alternative 2 Configuration



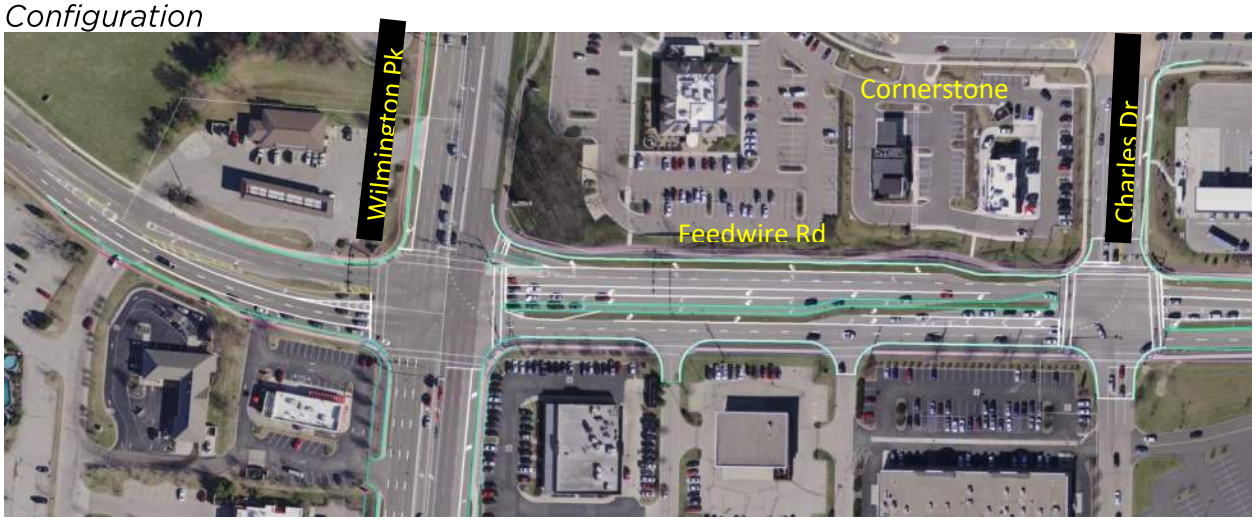
Lanes are added to each approach to the Wilmington Pike and E. Whipp Road/Feedwire Road intersection:

- *A lane is added on the southbound (exclusive right turn lane) approach. Turn lanes are lengthened to accommodate the storage required on each approach including the eastbound right turn lane and northbound right turn lane.*
- *The existing storage for the westbound left turn lanes is adequate for this alternative, however, all the westbound lanes will be shifted to the north one lane to accommodate lane modifications at the intersection of Feedwire Road & Charles Drive. The new westbound turn lanes will be sized 700 ft (inside) and 440 ft (outside) so the outside turn lanes for this approach and for Charles Drive can fit back-to-back and not require another lane width addition on Feedwire Road between Wilmington Pike and Charles Drive.*
- *The proposed condition at this intersection impacts the northeast corner the most and minimizes impact to the southeast corner of the intersection.*

In order to accommodate the eastbound left turn traffic entering Charles Drive from Feedwire Road, a second left turn lane is proposed (330 ft) which can fit behind the 440 ft long WB left for Feedwire Road approaching Wilmington Pike. As noted in Alternative 1, the lane configuration of northbound Charles Drive entering the Cornerstone Development is proposed to be modified to provide a new right turn lane to better accommodate and distribute incoming traffic at Cornerstone Boulevard.

See **Figure 12D** *for the proposed concept plan of this intersection as well as Feedwire Road between Wilmington Pike and Charles Drive.*

Figure 12D: Feedwire Rd between Wilmington Pk and Charles Dr Alternative 2 Configuration



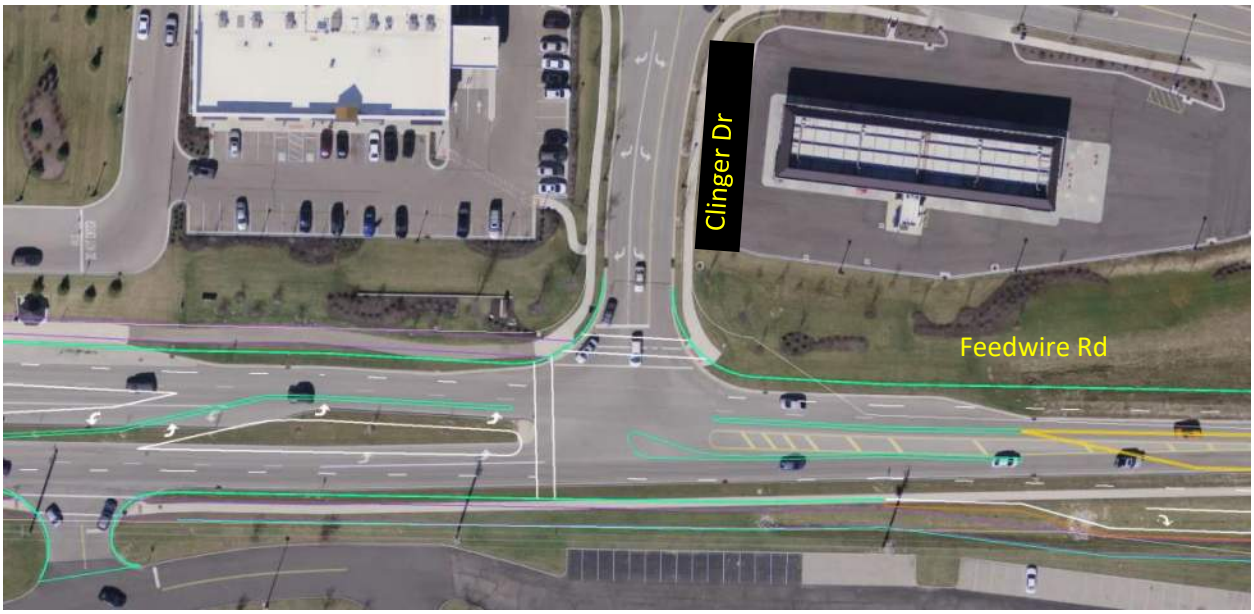
At the unsignalized intersection of Feedwire Road & Clinger Drive, a few lanes are modified.

- *EB Feedwire Road is widened to two through lanes at this location and the existing EB left turn lane is separated out giving the EB approach three total lanes.*
- *The SB left turn movement is modified to be a two-stage left to improve safety. A median area is provided for the SB left turning traffic to take shelter in before merging into EB traffic on Feedwire Road.*

No change is made to WB Feedwire Road in terms of the number of lanes (two lanes). The SB approach of Clinger Drive is unchanged from existing conditions and includes a right only lane and a left only lane.

See **Figure 13D** *for an excerpt from the concept plan.*

Figure 13d: Feedwire Road at Clinger Drive Alternative 2 Configuration



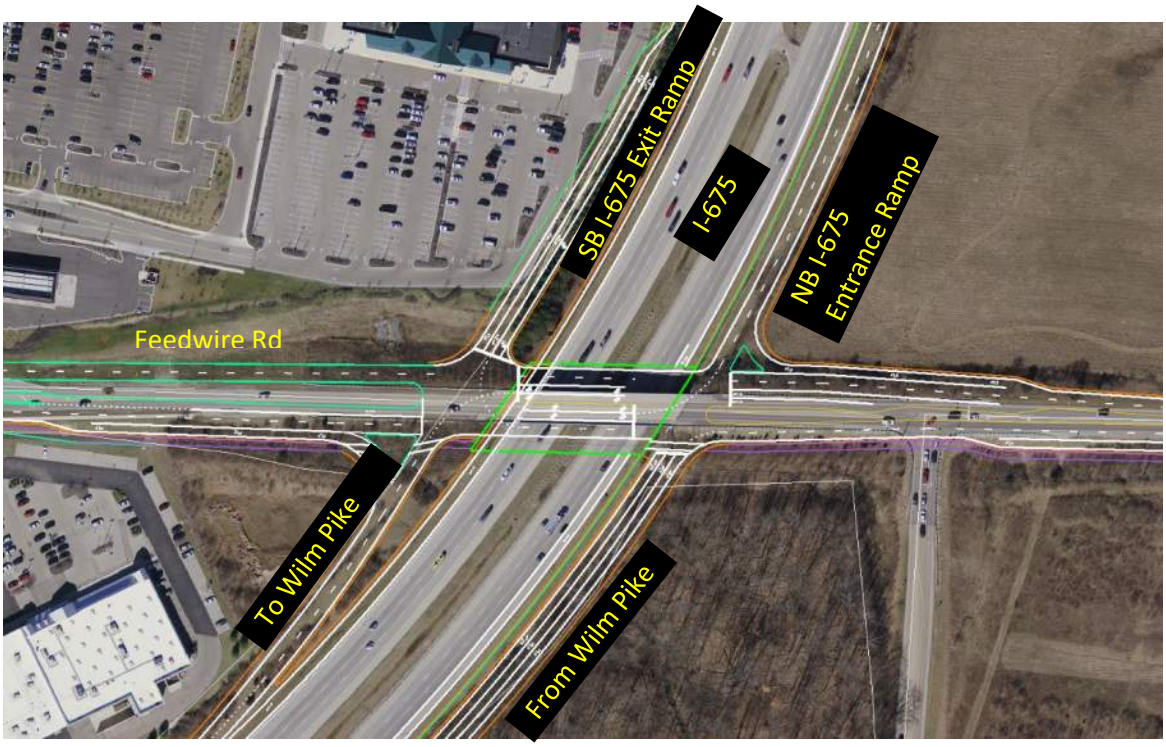
The principal modification included in Alternative 2 is the modification of the Wilmington Pike interchange to include a partial interchange at Feedwire Road. The interchange elements proposed at Feedwire Road are intended to alleviate the capacity and safety issues at the Wilmington Pike Interchange and adjacent local roadway intersections by dispersing traffic entering and exiting from I-675. To accommodate the new ramps, a new Feedwire Road overpass and large MSE walls will be constructed along I-675 and adjacent to the Cabela's property. The new bridge over I-675 is wide enough to support eight lanes and a shared use path and over mainline I-675 and a new collector-distributer lane for SB I-675 access to Wilmington Pike. Two new signalized intersections are proposed with the updated interchange – Feedwire Road & I-675 SB Ramps and Feedwire Rd & I-675 NB Ramps.

The new I-675 interchange at Feedwire Road including the following elements:

- *At the Feedwire Rd & SB I-675 Ramp intersection, the exit ramp from SB I-675 has three lanes – a right only lane, through-left lane, and left only lane. EB Feedwire Road has one right turn lane and four through lanes with the two leftmost lanes being extensions of the EB left turn lanes at the NB I-675 entrance ramp. WB Feedwire has four lanes total including two left turn lanes and two through lanes.*
- *At the NB I-675 Ramps & Feedwire Road intersection, the NB ramp approach has three lanes – a shared through/left lane and two right only lanes. WB Feedwire Road has five approaches lanes: one right turn lane, and four through lanes with the two leftmost lanes being extensions of the WB left turn lanes at the SB I-675 ramp intersection. EB Feedwire has four lanes total including two left turn lanes and two through lanes.*
- *The SB exit ramp splits between a lane approaching the new signalized intersection with Feedwire Road and a collector-distributor road passing under Feedwire Road for traffic destined to exit at Wilmington Pike. The added lanes to Feedwire Road in Alternative 2 will require a new bridge over I-675.*

See **Figure 14D** *for intersection layout.*

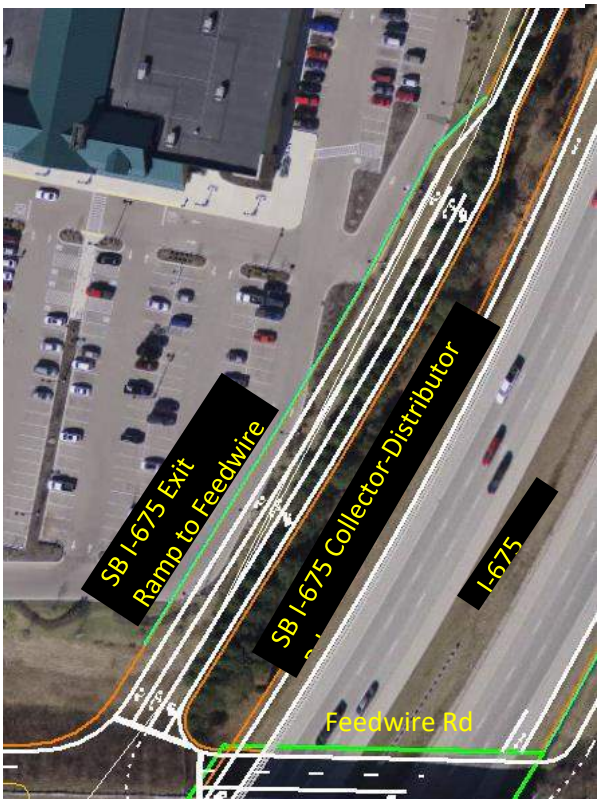
Figure 14D: Feedwire Road and I-675 Interchange Configuration



The SB exit ramp directly to Wilmington Pike is removed in Alternative 2. All traffic from SB I-675 must exit prior to Feedwire Road if destined to either Feedwire Road or Wilmington Pike. After the diverge point from SB I-675, a ramp is provided to intersect Feedwire Road at grade that diverges from a collector-distributor Road that is destined to terminate at Wilmington Pike. The collector distributor road is separated from mainline I-675 by a concrete barrier. See **Figure 15D** *for an excerpt from the Alternate 2 Concept Plan. A ramp from Feedwire Road for traffic destined to SB I-675 merges with the collector-distributor road to Wilmington Pike.*

The single lane NB I-675 entrance ramp is maintained in Alternative 2, but a collector distributor road is also provided between Wilmington Pike and Feedwire Road. See **Figure 16D** *showing the split as depicted in the Alternative 2 concept plan. This road intersects Feedwire Rd at grade and crosses to the NB I-675 entrance ramp from Feedwire Road. The dual lefts from Feedwire Road require two receiving lanes on the NB I-675 entrance ramp but these two lanes merge to one about 500 feet after the intersection resulting in a single lane on ramp to NB I-675. The two NB entrance ramps to I-675 are approximately*

Figure 15D: Alternative 2 SB I-675 Exit Ramp to Feedwire Rd and Collector-Distributor Road



1,650 feet apart which exceeds the 1000 ft threshold noted in ODOT L&D Figure 503-1a Minimum Ramp Terminal Spacing.

Figure 16D: Alternative 2 NB I-675 Entrance Ramp and Collector-Distributor Road Diverge Point

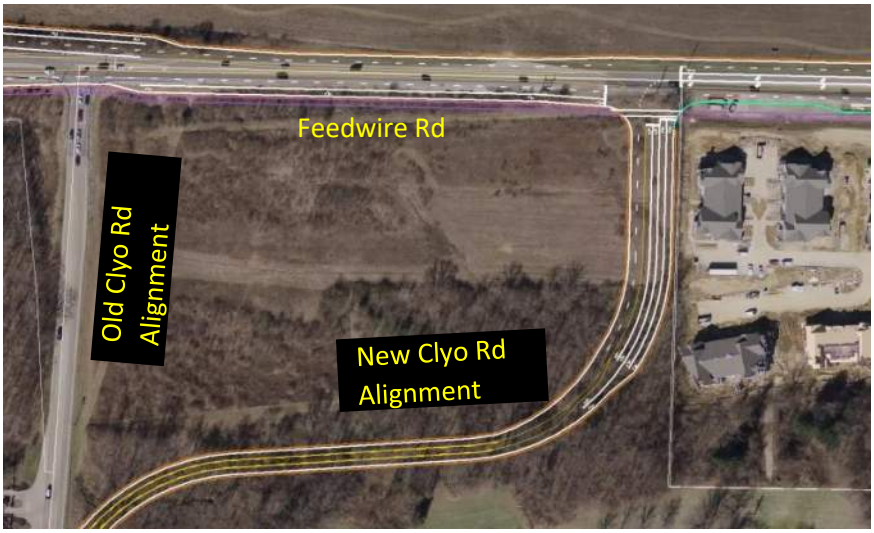


The Feedwire Road and Clyo intersection is shifted approximately 1000 feet to the east in order to increase spacing between this intersection and the new I-675 interchange with Feedwire Road:

- *NB Clyo Road has four approach lanes: two left turn lanes and two right turn lanes.*
- *EB Feedwire Road has three lanes including a right turn lane and two through lanes.*
- *WB Feedwire Road has four lanes including dual left turn lanes and two through lanes.*

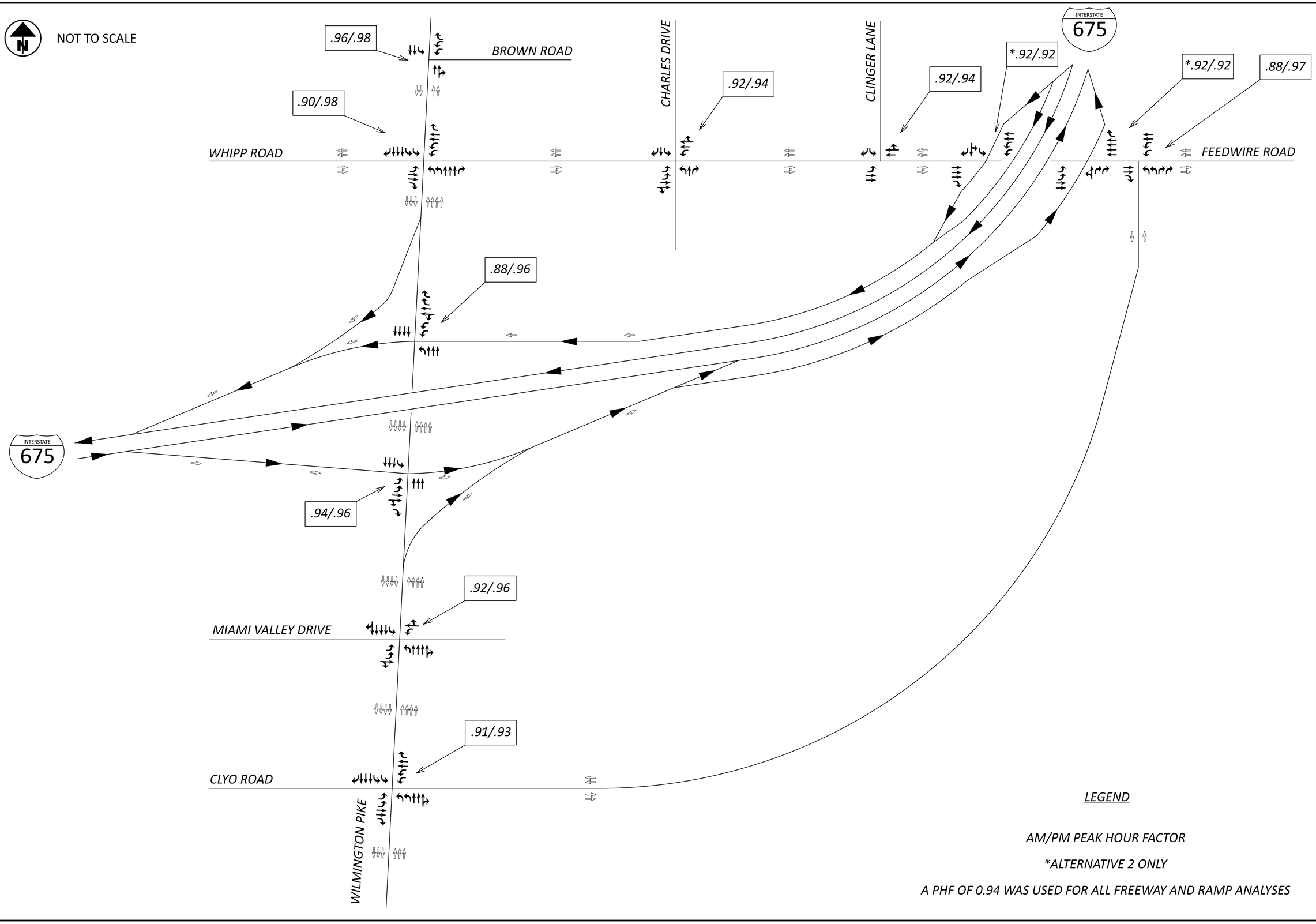
See **Figure 17D** *for the location of the relocated Feedwire Road & Clyo Road intersection.*

Figure 17D: Relocated Feedwire Road and Clyo Road Intersection



The NB I-675 segments between Wilmington Pike and Indian Ripple Road and north of Indian Ripple Road operating at LOS E in the 2050 AM Alternative 2 Scenario. The table also shows SB I-675 operating at LOS F in the freeway segment north of Indian Ripple Road and the SB I-675 off ramp to Indian Ripple Road in the 2050 PM Peak hour in Alternate 2. The SB I-675 freeway segment between Indian Ripple Road and Wilmington Pike and the SB entrance ramp from Indian Ripple Road operates at LOS E during the PM Peak hour. These levels of service indicate that SB I-675 operates near or at capacity during the morning and evening commute peak hours. Congestion at the I-675 entrance and exit ramps at the Indian Ripple Road interchange will lead to lower levels of service and delays. The traffic volumes on I-675 originating north of the study area suggest capacity improvements may be warranted prior to and at the Indian Ripple Road interchange to mitigate operational issues. These future operational issues are anticipated regardless of proposed improvements at the Wilmington Pike interchange.

NOT TO SCALE



LEGEND

AM/PM PEAK HOUR FACTOR

*ALTERNATIVE 2 ONLY

A PHF OF 0.94 WAS USED FOR ALL FREEWAY AND RAMP ANALYSES

PEAK HOUR FACTORS

GRE/MOT-675 WILM PIKE

MODEL: Sheet_Sun/Fl PAPERSIZE: 34x22 (in.) DATE: 7/6/2023 TIME: 3:45:01 PM USER: nwright
L:\MCTID\22004979-00_FeasibilityStudyTRAC\497900\400-Engineering\Traffic\Sheets\497900_TM201.dgn

DESIGN AGENCY
CMT
CRAWFORD, MURPHY & TILLY, INC.
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DESIGNER RTM

REVIEWER SAK 07-06-23

PROJECT ID 115160

SHEET P.0 TOTAL 0

Wilmington Pike TRAC Freeway Facility Capacity Analysis Summary Tables

NB I-675	2050 AM			2050 PM		
	No Build	Options 1,1B	Option 2	No Build	Options 1,1B	Option 2
Faciltity Length, mi	8.52	8.52	8.52	8.52	8.52	8.52
Space Mean Speed, mi/h	60.9	62.40	61.60	65.10	65.90	65.00
Avg. Density, pc/mil/ln	31.6	28.70	30.90	27.00	24.80	27.30
Avg. Density, veh/mi/ln	30.7	27.90	30.20	25.90	23.90	26.50
Avg. Travel Time, min	8.4	8.20	8.30	7.80	7.80	7.90
LOS	D	D	D	D	D	D

SB I-675	2050 AM			2050 PM		
	No Build	Options 1,1B	Option 2	No Build	Options 1,1B	Option 2
Faciltity Length, mi	8.4	8.4	8.4	8.4	8.4	8.4
Space Mean Speed, mi/h	67.2	67.40	67.40	60.40	60.90	61.20
Density, pc/mil/ln	23.3	22.20	22.50	32.30	30.70	30.20
Density, veh/mi/ln	22.4	21.40	21.70	31.40	29.80	29.30
Travel Time, min	7.5	7.50	7.50	8.30	8.30	8.20
LOS	C	C	C	F	F	F

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike EFC Capacity Analysis		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	14
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 NB between Wilmington and Indian Ripple	10300	3
10	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
11	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
12	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
13	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
14	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4163	7200	0.58	69.6	19.9	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	

1	0.94	0.94	0.971	0.971	4163	668	7200	2200	0.58	0.30	66.9	63.6	20.7	25.0	C

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	3495	7200	0.49	69.9	16.6	B

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	5085	1590	7200	2200	0.71	0.72	61.1	59.2	27.7	28.4	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5116	7200	0.71	67.0	25.4	C

Segment 6: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.952	5116	849	7200	2200	0.71	0.39	66.4	63.2	25.7	29.5	D

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4284	7200	0.60	69.4	20.6	C

Segment 8: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	6466	2182	7200	2200	0.90	0.99	55.4	52.5	38.9	36.7	E

Segment 9: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6486	7200	0.90	59.3	36.5	E

Segment 10: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6486	1107	7200	2200	0.90	0.50	65.5	62.5	33.0	35.0	D

Segment 11: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5357	7200	0.74	66.0	27.1	D

Segment 12: Merge

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS

	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.971	6168	811	7200	2200	0.86	0.37	59.8	57.8	34.4	31.0	D

Segment 13: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.971	6946	778	7200	2200	0.96	0.35	56.7	54.0	40.8	34.8	D

Segment 14: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6946	7200	0.96	55.6	41.6	E

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11941	10883	25.61	640.22	60.9	31.6	30.7	8.40	D

Facility Overall Results

Space Mean Speed, mi/h	60.9	Average Density, veh/mi/ln	30.7
Average Travel Time, min	8.40	Average Density, pc/mi/ln	31.6
Total VMT, veh-mi	11941	Total VHD, veh-h	25.61
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	640.22

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	E	E	D	D	D
	Seg 13	Seg 14										
AP 1	D	E										

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	69.6	66.9	69.9	61.1	67.0	66.4	69.4	55.4	59.3	65.5	66.0	59.8
	Seg 13	Seg 14										
AP 1	56.7	55.6										

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.9	20.7	16.6	27.7	25.4	25.7	20.6	38.9	36.5	33.0	27.1	34.4
	Seg 13	Seg 14										
AP 1	40.8	41.6										

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.58	0.58	0.49	0.71	0.71	0.71	0.60	0.90	0.90	0.90	0.74	0.86
	Seg 13	Seg 14										
AP 1	0.96	0.96										

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.3	20.1	16.1	26.9	24.7	25.0	20.0	37.8	35.4	32.0	26.3	33.4
	Seg 13	Seg 14										
AP 1	39.6	40.4										

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	25.0	-	28.4	-	29.5	-	36.7	-	35.0	-	31.0
	Seg 13	Seg 14										
AP 1	34.8	-										

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	E	E	D	D	D
	Seg 13	Seg 14										
AP 1	D	E										

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14										

AP 1	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.58	0.58	0.49	0.71	0.71	0.71	0.60	0.90	0.90	0.90	0.74	0.86
	Seg 13	**Seg 14**										
AP 1	0.96	0.96										

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike EFC Capacity Analysis		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	14
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 NB between Wilmington and Indian Ripple	10300	3
10	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
11	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
12	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
13	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
14	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4899	7200	0.68	67.8	24.1	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	

1	0.94	0.94	0.962	0.990	4899	763	7200	2200	0.68	0.35	66.7	63.4	24.5	28.5	D
Segment 3: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		4114		7200		0.57		69.7		19.7		C
Segment 4: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.990	5511	1397	7200	2200	0.77	0.63	60.4	58.3	30.4	29.9	D
Segment 5: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5551		7200		0.77		65.1		28.4		D
Segment 6: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.990	5551	1429	7200	2200	0.77	0.65	65.1	61.7	28.4	32.7	D
Segment 7: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		4081		7200		0.57		69.7		19.5		C
Segment 8: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.980	5557	1476	7200	2200	0.77	0.67	60.0	57.9	30.9	30.6	D
Segment 9: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5585		7200		0.78		64.9		28.7		D
Segment 10: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.990	5585	1311	7200	2200	0.78	0.60	65.4	62.0	28.5	31.5	D
Segment 11: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		4235		7200		0.59		69.5		20.3		C
Segment 12: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**

	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5073	838	7200	2200	0.70	0.38	61.9	60.2	27.3	26.6	C

Segment 13: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5521	423	7200	2200	0.77	0.19	61.6	60.1	29.9	27.2	C

Segment 14: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5529	7200	0.77	65.2	28.3	D

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	10787	9880	11.53	288.14	65.1	27.0	25.9	7.80	D

Facility Overall Results

Space Mean Speed, mi/h	65.1	Average Density, veh/mi/ln	25.9
Average Travel Time, min	7.80	Average Density, pc/mi/ln	27.0
Total VMT, veh-mi	10787	Total VHD, veh-h	11.53
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	288.14

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	D	D	D	C	C
	Seg 13	Seg 14										
AP 1	C	D										

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.8	66.7	69.7	60.4	65.1	65.1	69.7	60.0	64.9	65.4	69.5	61.9
	Seg 13	Seg 14										
AP 1	61.6	65.2										

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.1	24.5	19.7	30.4	28.4	28.4	19.5	30.9	28.7	28.5	20.3	27.3
	Seg 13	Seg 14										
AP 1	29.9	28.3										

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.68	0.68	0.57	0.77	0.77	0.77	0.57	0.77	0.78	0.78	0.59	0.70
	Seg 13	Seg 14										
AP 1	0.77	0.77										

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	23.2	23.6	19.0	29.2	27.3	27.3	18.8	29.7	27.6	27.4	19.5	26.3
	Seg 13	Seg 14										
AP 1	28.8	27.2										

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.5	-	29.9	-	32.7	-	30.6	-	31.5	-	26.6
	Seg 13	Seg 14										
AP 1	27.2	-										

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	D	D	D	C	C
	Seg 13	Seg 14										
AP 1	C	D										

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14										

AP 1	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.68	0.68	0.57	0.77	0.77	0.77	0.57	0.77	0.78	0.78	0.59	0.70

	Seg 13	**Seg 14**
AP 1	0.77	0.77

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike EFC Capacity Analysis		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	13
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.40		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	10098	3
6	Diverge	Diverge	I-675 SB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 SB between Wilmington Ramps	3280	3
8	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
10	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
11	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
12	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
13	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4965	7200	0.69	67.6	24.5	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.971	4965	1019	7200	2200	0.69	0.46	66.1	62.7	25.0	28.3	D

Segment 3: Basic

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	0.94		0.962		3937		7200		0.55		69.9		18.8		C
Segment 4: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.980	4990	1053	7200	2200	0.69	0.48	61.9	60.2	26.9	26.5	C
Segment 5: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5010		7200		0.70		67.4		24.8		C
Segment 6: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.971	5010	1304	7200	2200	0.70	0.59	65.5	62.0	25.5	28.9	D
Segment 7: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		3694		7200		0.51		69.9		17.6		B
Segment 8: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.980	4877	1183	7200	2200	0.68	0.54	62.3	60.6	26.1	25.8	C
Segment 9: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		4899		7200		0.68		67.8		24.1		C
Segment 10: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.971	4899	1304	7200	2200	0.68	0.59	65.4	62.0	25.0	29.1	D
Segment 11: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		3583		7200		0.50		69.8		17.1		B
Segment 12: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.990	4346	763	7200	2200	0.60	0.35	63.2	61.6	22.9	22.6	C

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4368	7200	0.61	68.5	21.0	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	9466	8705	5.69	142.36	67.2	23.3	22.4	7.50	C

Facility Overall Results

Space Mean Speed, mi/h	67.2	Average Density, veh/mi/ln	22.4
Average Travel Time, min	7.50	Average Density, pc/mi/ln	23.3
Total VMT, veh-mi	9466	Total VHD, veh-h	5.69
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	142.36

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	C	C	D	B	C	C	D	B	C
	Seg 13											
AP 1	C											

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.6	66.1	69.9	61.9	67.4	65.5	69.9	62.3	67.8	65.4	69.8	63.2
	Seg 13											
AP 1	68.5											

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.5	25.0	18.8	26.9	24.8	25.5	17.6	26.1	24.1	25.0	17.1	22.9
	Seg 13											
AP 1	21.0											

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.69	0.69	0.55	0.69	0.70	0.70	0.51	0.68	0.68	0.68	0.50	0.60
	Seg 13											
AP 1	0.61											

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	23.6	24.0	18.1	25.9	23.9	24.5	16.9	25.1	23.2	24.0	16.5	22.0
	Seg 13											
AP 1	20.2											

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.3	-	26.5	-	28.9	-	25.8	-	29.1	-	22.6
	Seg 13											
AP 1	-											

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	C	C	D	B	C	C	D	B	C
	Seg 13											
AP 1	C											

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13											

AP 1	-

Volume - Capacity Ratio (V/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.69	0.69	0.55	0.69	0.70	0.70	0.51	0.68	0.68	0.68	0.50	0.60

	Seg 13
AP 1	0.61

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike EFC Capacity Analysis		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	13
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.40		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	10098	3
6	Diverge	Diverge	I-675 SB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 SB between Wilmington Ramps	3280	3
8	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
10	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
11	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
12	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
13	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	7200	7200	1.06	53.3	45.0	F

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	7200	1881	7200	2200	1.06	0.85	63.9	60.6	37.6	38.3	F

Segment 3: Basic

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
1	0.94		0.971		5319		7200		0.80		66.2		26.8		D
Segment 4: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.990	6576	1257	7200	2200	0.97	0.57	57.1	54.2	38.4	34.5	D
Segment 5: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		6576		7200		0.97		58.6		37.4		E
Segment 6: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.990	6576	2515	7200	2200	0.97	1.14	62.6	59.0	35.0	39.1	F
Segment 7: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		4061		7200		0.62		69.7		19.4		C
Segment 8: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.980	5331	1270	7200	2200	0.79	0.58	61.2	59.4	29.0	28.2	D
Segment 9: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		5331		7200		0.80		66.1		26.9		D
Segment 10: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.980	5331	1726	7200	2200	0.80	0.78	64.4	61.0	27.6	32.4	D
Segment 11: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		3605		7200		0.55		69.8		17.2		B
Segment 12: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.990	4443	838	7200	2200	0.67	0.38	63.0	61.4	23.5	23.3	C

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4443	7200	0.67	68.4	21.4	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11949	11814	27.16	679.01	60.4	32.3	31.4	8.30	F

Facility Overall Results

Space Mean Speed, mi/h	60.4	Average Density, veh/mi/ln	31.4
Average Travel Time, min	8.30	Average Density, pc/mi/ln	32.3
Total VMT, veh-mi	11949	Total VHD, veh-h	27.16
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	679.01

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	D	D	E	F	C	D	D	D	B	C
	Seg 13											
AP 1	C											

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	53.3	63.9	66.2	57.1	58.6	62.6	69.7	61.2	66.1	64.4	69.8	63.0
	Seg 13											
AP 1	68.4											

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	45.0	37.6	26.8	38.4	37.4	35.0	19.4	29.0	26.9	27.6	17.2	23.5
	Seg 13											
AP 1	21.4											

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	1.06	1.06	0.80	0.97	0.97	0.97	0.62	0.79	0.80	0.80	0.55	0.67
	Seg 13											
AP 1	0.67											

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	43.7	36.5	26.0	37.3	36.3	34.0	18.9	28.2	26.1	26.8	16.7	22.8
	Seg 13											
AP 1	20.8											

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	38.3	-	34.5	-	39.1	-	28.2	-	32.4	-	23.3
	Seg 13											
AP 1	-											

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	E	D	D	E	E	C	D	D	D	B	C
	Seg 13											
AP 1	C											

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	-	-	-	F	-	-	-	-	-	-
	Seg 13											

AP 1	-

Volume - Capacity Ratio (V/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	1.00	1.00	0.74	0.91	0.91	0.91	0.56	0.74	0.74	0.74	0.50	0.62

	Seg 13
AP 1	0.62

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050 Option 1 and 1a w/ 2 lanes on I675 On Ramp
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington 1	1500	3
9	Basic	Basic	I-675 NB On Ramp from Wilmington 2	3700	5
10	Basic	Basic	I-675 NB On Ramp from Wilmignton 3	2600	4
11	Basic	Basic	I-675 NB between Wilmington and Indian Ripple	4000	3
12	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
13	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
14	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
15	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
16	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4163	7200	0.58	69.6	19.9	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.971	4163	668	7200	2200	0.58	0.30	66.9	63.6	20.7	25.0	C

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	3495	7200	0.49	69.9	16.6	B

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	5085	1590	7200	2200	0.71	0.72	61.1	59.2	27.7	28.4	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5116	7200	0.71	67.0	25.4	C

Segment 6: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.952	5116	849	7200	2200	0.71	0.39	66.4	63.2	25.7	29.5	D

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4284	7200	0.60	69.4	20.6	C

Segment 8: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	6466	2182	7200	4400	0.90	0.50	57.4	54.8	37.5	31.3	D

Segment 9: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6486	12000	0.54	69.8	18.6	C

Segment 10: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6486	9600	0.68	67.9	23.9	C

Segment 11: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6486	7200	0.90	59.3	36.5	E

Segment 12: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6486	1107	7200	2200	0.90	0.50	65.5	62.5	33.0	34.2	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5357	7200	0.74	66.0	27.1	D

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	6160	803	7200	2200	0.86	0.37	59.9	57.9	34.3	30.9	D

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6931	763	7200	2200	0.96	0.35	56.8	54.1	40.7	34.7	D

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6946	7200	0.96	55.6	41.6	E

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11940	10883	20.84	521.01	62.4	28.7	27.9	8.20	D

Facility Overall Results

Space Mean Speed, mi/h	62.4	Average Density, veh/mi/ln	27.9
Average Travel Time, min	8.20	Average Density, pc/mi/ln	28.7
Total VMT, veh-mi	11940	Total VHD, veh-h	20.84
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	521.01

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	D	C	C	E	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	D	D	E								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	69.6	66.9	69.9	61.1	67.0	66.4	69.4	57.4	69.8	67.9	59.3	65.5
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	66.0	59.9	56.8	55.6								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.9	20.7	16.6	27.7	25.4	25.7	20.6	37.5	18.6	23.9	36.5	33.0
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	27.1	34.3	40.7	41.6								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.58	0.58	0.49	0.71	0.71	0.71	0.60	0.90	0.54	0.68	0.90	0.90
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.74	0.86	0.96	0.96								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.3	20.1	16.1	26.9	24.7	25.0	20.0	36.4	18.1	23.2	35.4	32.0
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	26.3	33.3	39.5	40.4								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	25.0	-	28.4	-	29.5	-	31.3	-	-	-	34.2
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	-	30.9	34.7	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	D	C	C	E	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	D	D	E								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.58	0.58	0.49	0.71	0.71	0.71	0.60	0.90	0.54	0.68	0.90	0.90

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.74	0.86	0.96	0.96

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a w/ 2 lanes on I675 On Ramp
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington 1	1500	3
9	Basic	Basic	I-675 NB On Ramp from Wilmington 2	3700	5
10	Basic	Basic	I-675 NB On Ramp from Wilmington 3	2600	4
11	Basic	Basic	I-675 NB between Wilmington and Indian Ripple	4000	3
12	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
13	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
14	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
15	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
16	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4899	7200	0.68	67.8	24.1	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	4899	763	7200	2200	0.68	0.35	66.7	63.4	24.5	28.5	D

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4114	7200	0.57	69.7	19.7	C

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5511	1397	7200	2200	0.77	0.63	60.4	58.3	30.4	29.9	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5551	7200	0.77	65.1	28.4	D

Segment 6: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5551	1429	7200	2200	0.77	0.65	65.1	61.7	28.4	32.7	D

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4081	7200	0.57	69.7	19.5	C

Segment 8: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5557	1476	7200	4400	0.77	0.34	62.1	60.7	29.8	25.2	C

Segment 9: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5585	12000	0.47	69.9	16.0	B

Segment 10: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5585	9600	0.58	69.6	20.1	C

Segment 11: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5585	7200	0.78	64.9	28.7	D

Segment 12: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5585	1311	7200	2200	0.78	0.60	65.4	62.0	28.5	31.2	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4235	7200	0.59	69.5	20.3	C

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5082	847	7200	2200	0.71	0.38	61.9	60.2	27.4	26.6	C

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5521	423	7200	2200	0.77	0.19	61.6	60.1	29.9	27.2	C

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5529	7200	0.77	65.2	28.3	D

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	10788	9880	9.59	239.76	65.9	24.8	23.9	7.80	C

Facility Overall Results

Space Mean Speed, mi/h	65.9	Average Density, veh/mi/ln	23.9
Average Travel Time, min	7.80	Average Density, pc/mi/ln	24.8
Total VMT, veh-mi	10788	Total VHD, veh-h	9.59
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	239.76

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	C	B	C	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	C	C	C	D								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.8	66.7	69.7	60.4	65.1	65.1	69.7	62.1	69.9	69.6	64.9	65.4
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	69.5	61.9	61.6	65.2								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.1	24.5	19.7	30.4	28.4	28.4	19.5	29.8	16.0	20.1	28.7	28.5
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	20.3	27.4	29.9	28.3								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.68	0.68	0.57	0.77	0.77	0.77	0.57	0.77	0.47	0.58	0.78	0.78
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.59	0.71	0.77	0.77								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	23.2	23.6	19.0	29.2	27.3	27.3	18.8	28.7	15.4	19.3	27.6	27.4
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	19.5	26.4	28.8	27.2								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.5	-	29.9	-	32.7	-	25.2	-	-	-	31.2
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	-	26.6	27.2	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	C	B	C	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	C	C	C	D								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.68	0.68	0.57	0.77	0.77	0.77	0.57	0.77	0.47	0.58	0.78	0.78

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.59	0.71	0.77	0.77

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	15
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.41		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	8250	3
6	Basic	Basic	I-675 SB Off Ramp to Wilmington 1	1650	4
7	Basic	Basic	I-675 SB Off Ramp to Wilmington 2	250	5
8	Diverge	Diverge	I-675 SB Off Ramp to Wilmington 3	1500	5
9	Basic	Basic	I-675 SB between Wilmington Ramps	3270	3
10	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
11	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
12	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
13	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
14	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
15	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4965	7200	0.69	67.6	24.5	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	

1	0.94	0.94	0.962	0.971	4965	1019	7200	2200	0.69	0.46	66.1	62.7	25.0	28.3	D
Segment 3: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		3937		7200		0.55		69.9		18.8		C
Segment 4: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.980	4990	1053	7200	2200	0.69	0.48	61.9	60.2	26.9	26.5	C
Segment 5: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5010		7200		0.70		67.4		24.8		C
Segment 6: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5010		9600		0.52		70.0		17.9		B
Segment 7: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		5010		12000		0.42		70.0		14.3		B
Segment 8: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.971	5010	1304	12000	4400	0.42	0.30	68.7	62.0	13.1	12.8	B
Segment 9: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		3694		7200		0.51		70.0		17.6		B
Segment 10: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.962	0.980	4877	1183	7200	2200	0.68	0.54	62.3	60.6	26.1	25.8	C
Segment 11: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.962		4899		7200		0.68		67.8		24.1		C
Segment 12: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	

1	0.94	0.94	0.962	0.971	4899	1304	7200	2200	0.68	0.59	65.4	62.0	25.0	29.1	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	3583	7200	0.50	69.8	17.1	B

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	4346	763	7200	2200	0.60	0.35	63.2	61.6	22.9	22.6	C

Segment 15: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4368	7200	0.61	68.5	21.0	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	9477	8715	5.21	130.28	67.4	22.2	21.4	7.50	C

Facility Overall Results

Space Mean Speed, mi/h	67.4	Average Density, veh/mi/ln	21.4
Average Travel Time, min	7.50	Average Density, pc/mi/ln	22.2
Total VMT, veh-mi	9477	Total VHD, veh-h	5.21
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	130.28

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	C	C	B	B	B	B	C	C	D
	Seg 13	Seg 14	Seg 15									
AP 1	B	C	C									

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.6	66.1	69.9	61.9	67.4	70.0	70.0	68.7	70.0	62.3	67.8	65.4
	Seg 13	Seg 14	Seg 15									
AP 1	69.8	63.2	68.5									

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.5	25.0	18.8	26.9	24.8	17.9	14.3	13.1	17.6	26.1	24.1	25.0
	Seg 13	Seg 14	Seg 15									
AP 1	17.1	22.9	21.0									

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.69	0.69	0.55	0.69	0.70	0.52	0.42	0.42	0.51	0.68	0.68	0.68
	Seg 13	Seg 14	Seg 15									
AP 1	0.50	0.60	0.61									

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	23.6	24.0	18.1	25.9	23.9	17.2	13.8	12.6	16.9	25.1	23.2	24.0
	Seg 13	Seg 14	Seg 15									
AP 1	16.5	22.0	20.2									

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.3	-	26.5	-	-	-	12.8	-	25.8	-	29.1
	Seg 13	Seg 14	Seg 15									
AP 1	-	22.6	-									

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	C	C	B	B	B	B	C	C	D
	Seg 13	Seg 14	Seg 15									
AP 1	B	C	C									

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15									

AP 1	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.69	0.69	0.55	0.69	0.70	0.52	0.42	0.42	0.51	0.68	0.68	0.68

	Seg 13	**Seg 14**	**Seg 15**
AP 1	0.50	0.60	0.61

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	15
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.41		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	8250	3
6	Basic	Basic	I-675 SB Off Ramp to Wilmington 1	1650	4
7	Basic	Basic	I-675 SB Off Ramp to Wilmington 2	250	5
8	Diverge	Diverge	I-675 SB Off Ramp to Wilmington 3	1500	5
9	Basic	Basic	I-675 SB between Wilmington Ramps	3270	3
10	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
11	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
12	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
13	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
14	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
15	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	7200	7200	1.06	53.3	45.0	F

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	

1	0.94	0.94	0.971	0.990	7200	1881	7200	2200	1.06	0.85	63.9	60.6	37.6	38.3	F
Segment 3: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		5319		7200		0.80		66.2		26.8		D
Segment 4: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.990	6576	1257	7200	2200	0.97	0.57	57.1	54.2	38.4	34.5	D
Segment 5: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		6576		7200		0.97		58.6		37.4		E
Segment 6: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		6576		9600		0.73		67.7		24.3		C
Segment 7: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		6576		12000		0.58		69.5		18.8		C
Segment 8: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.990	6576	2515	12000	4400	0.58	0.57	65.0	59.0	17.2	22.9	C
Segment 9: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		4061		7200		0.62		69.7		19.4		C
Segment 10: Merge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	
1	0.94	0.94	0.971	0.980	5331	1270	7200	2200	0.79	0.58	61.2	59.4	29.0	28.2	D
Segment 11: Basic															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
1	0.94		0.971		5331		7200		0.80		66.1		26.9		D
Segment 12: Diverge															
AP	**PHF**		**fHV**		**Flow Rate (pc/h)**		**Capacity (pc/h)**		**d/c Ratio**		**Speed (mi/h)**		**Density (pc/mi/ln)**		**LOS**
	F	**R**	**F**	**R**	**Freeway**	**Ramp**	**Freeway**	**Ramp**	**F**	**R**	**F**	**R Infl.**	**F**	**R Infl.**	

1	0.94	0.94	0.971	0.980	5331	1726	7200	2200	0.80	0.78	64.4	61.0	27.6	32.4	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	3605	7200	0.55	69.8	17.2	B

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	4443	838	7200	2200	0.67	0.38	63.0	61.4	23.5	23.3	C

Segment 15: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4443	7200	0.67	68.4	21.4	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11963	11828	25.59	639.75	60.9	30.7	29.8	8.30	F

Facility Overall Results

Space Mean Speed, mi/h	60.9	Average Density, veh/mi/ln	29.8
Average Travel Time, min	8.30	Average Density, pc/mi/ln	30.7
Total VMT, veh-mi	11963	Total VHD, veh-h	25.59
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	639.75

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	D	D	E	C	C	C	C	D	D	D
	Seg 13	Seg 14	Seg 15									
AP 1	B	C	C									

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	53.3	63.9	66.2	57.1	58.6	67.7	69.5	65.0	69.7	61.2	66.1	64.4
	Seg 13	Seg 14	Seg 15									
AP 1	69.8	63.0	68.4									

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	45.0	37.6	26.8	38.4	37.4	24.3	18.8	17.2	19.4	29.0	26.9	27.6
	Seg 13	Seg 14	Seg 15									
AP 1	17.2	23.5	21.4									

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	1.06	1.06	0.80	0.97	0.97	0.73	0.58	0.58	0.62	0.79	0.80	0.80
	Seg 13	Seg 14	Seg 15									
AP 1	0.55	0.67	0.67									

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	43.7	36.5	26.0	37.3	36.3	23.6	18.3	16.7	18.9	28.2	26.1	26.8
	Seg 13	Seg 14	Seg 15									
AP 1	16.7	22.8	20.8									

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	38.3	-	34.5	-	-	-	22.9	-	28.2	-	32.4
	Seg 13	Seg 14	Seg 15									
AP 1	-	23.3	-									

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	E	D	D	E	C	C	C	C	D	D	D
	Seg 13	Seg 14	Seg 15									
AP 1	B	C	C									

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15									

AP 1	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	1.00	1.00	0.74	0.91	0.91	0.68	0.55	0.55	0.56	0.74	0.74	0.74

	Seg 13	**Seg 14**	**Seg 15**
AP 1	0.50	0.62	0.62

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	1/9/2022
Agency	CMT	Analysis Year	2050 Option 2_Retain Wilmington On Ramp
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 NB between Wilmington and Feedwire	2200	3
10	Merge	Merge	I-675 NB On Ramp from Feedwire	1500	3
11	Basic	Basic	I-675 NB between Wilmington and Feedwire	6600	3
12	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
13	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
14	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
15	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
16	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4163	7200	0.58	69.6	19.9	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.971	4163	668	7200	2200	0.58	0.30	66.9	63.6	20.7	25.0	C

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	3495	7200	0.49	69.9	16.6	B

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	5150	1655	7200	2200	0.72	0.75	60.8	58.9	28.2	28.9	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5182	7200	0.72	66.8	25.9	C

Segment 6: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.952	5182	1006	7200	2200	0.72	0.46	65.9	62.7	26.2	30.4	D

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4196	7200	0.58	69.5	20.1	C

Segment 8: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	5889	1693	7200	2200	0.82	0.77	58.5	56.1	33.6	32.7	D

Segment 9: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5905	7200	0.82	63.2	31.1	D

Segment 10: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	1.000	0.980	6418	684	7200	2200	0.89	0.31	62.6	59.6	34.2	32.4	D

Segment 11: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS

1	0.94		1.000		6404		7200		0.89		59.9		35.6		E

Segment 12: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6596	1204	7200	2200	0.92	0.55	65.3	62.3	33.7	34.8	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5368	7200	0.75	66.0	27.1	D

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	6171	803	7200	2200	0.86	0.37	59.8	57.8	34.4	31.0	D

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6856	677	7200	2200	0.95	0.31	57.3	54.8	39.9	34.2	D

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6869	7200	0.95	56.2	40.7	E

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11875	10810	23.57	589.36	61.6	30.9	30.2	8.30	D

Facility Overall Results

Space Mean Speed, mi/h	61.6	Average Density, veh/mi/ln	30.2
Average Travel Time, min	8.30	Average Density, pc/mi/ln	30.9
Total VMT, veh-mi	11875	Total VHD, veh-h	23.57
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	589.36

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	D	D	D	E	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	D	D	E								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	69.6	66.9	69.9	60.8	66.8	65.9	69.5	58.5	63.2	62.6	59.9	65.3
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	66.0	59.8	57.3	56.2								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.9	20.7	16.6	28.2	25.9	26.2	20.1	33.6	31.1	34.2	35.6	33.7
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	27.1	34.4	39.9	40.7								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.58	0.58	0.49	0.72	0.72	0.72	0.58	0.82	0.82	0.89	0.89	0.92
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.75	0.86	0.95	0.95								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	19.3	20.1	16.1	27.4	25.1	25.4	19.5	32.6	30.2	34.2	35.6	32.7
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	26.3	33.4	38.7	39.5								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	25.0	-	28.9	-	30.4	-	32.7	-	32.4	-	34.8
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	-	31.0	34.2	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	C	B	D	C	D	C	D	D	D	E	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	D	D	E								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.58	0.58	0.49	0.72	0.72	0.72	0.58	0.82	0.82	0.89	0.89	0.92

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.75	0.86	0.95	0.95

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	12/5/2022
Agency	CMT	Analysis Year	2050 Option 2_Retain Wilmington On Ramp
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	Wilmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.52		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 NB S of SR 48	440	3
2	Diverge	Diverge	I-675 NB Off Ramp to SR 48 NB	1500	3
3	Basic	Basic	I-675 NB between SR 48 Ramps	2763	3
4	Merge	Merge	I-675 NB On Ramp from SR 48	1500	3
5	Basic	Basic	I-675 NB between SR 48 and Wilmington	7500	3
6	Diverge	Diverge	I-675 NB Off Ramp to Wilmington	1500	3
7	Basic	Basic	I-675 NB between Wilmington Ramps	3080	3
8	Merge	Merge	I-675 NB On Ramp from Wilmington	1500	3
9	Basic	Basic	I-675 NB between Wilmington and Feedwire	2200	3
10	Merge	Merge	I-675 NB On Ramp from Feedwire	1500	3
11	Basic	Basic	I-675 NB Between WIlmington and Feedwire	6600	3
12	Diverge	Diverge	I-675 NB Off Ramp to Indian Ripple	1500	3
13	Basic	Basic	I-675 NB between Indian Ripple Off Ramp and EB On Ramp	1878	3
14	Merge	Merge	I-675 NB On Ramp from EB Indian Ripple	1346	3
15	Merge	Merge	I-675 NB On Ramp from WB Indian Ripple	1500	3
16	Basic	Basic	I-675 NB N of Indian Ripple	8654	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4910	7200	0.68	67.8	24.1	C

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	4910	763	7200	2200	0.68	0.35	66.7	63.4	24.5	28.5	D

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4125	7200	0.57	69.6	19.8	C

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5576	1451	7200	2200	0.77	0.66	60.1	58.0	30.9	30.3	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5618	7200	0.78	64.8	28.9	D

Segment 6: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5618	1451	7200	2200	0.78	0.66	65.0	61.6	28.8	33.1	D

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4125	7200	0.57	69.6	19.8	C

Segment 8: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5145	1020	7200	2200	0.71	0.46	61.6	59.8	27.8	27.4	C

Segment 9: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5164	7200	0.72	66.9	25.7	C

Segment 10: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	1.000	0.980	5674	706	7200	2200	0.79	0.32	64.9	62.4	29.1	29.0	D

Segment 11: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS

1	0.94		1.000		5660		7200		0.79		64.5		29.3	D

Segment 12: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	5883	1418	7200	2200	0.82	0.64	65.1	61.7	30.1	32.6	D

Segment 13: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4423	7200	0.61	69.1	21.3	C

Segment 14: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5270	847	7200	2200	0.73	0.38	61.7	59.9	28.5	27.4	C

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5655	369	7200	2200	0.79	0.17	61.4	59.8	30.7	27.7	C

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5662	7200	0.79	64.5	29.3	D

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	10978	10041	12.55	313.84	65.0	27.3	26.5	7.90	D

Facility Overall Results

Space Mean Speed, mi/h	65.0	Average Density, veh/mi/ln	26.5
Average Travel Time, min	7.90	Average Density, pc/mi/ln	27.3
Total VMT, veh-mi	10978	Total VHD, veh-h	12.55
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	313.84

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	C	C	D	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	C	C	C	D								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.8	66.7	69.6	60.1	64.8	65.0	69.6	61.6	66.9	64.9	64.5	65.1
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	69.1	61.7	61.4	64.5								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.1	24.5	19.8	30.9	28.9	28.8	19.8	27.8	25.7	29.1	29.3	30.1
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	21.3	28.5	30.7	29.3								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.68	0.68	0.57	0.77	0.78	0.78	0.57	0.71	0.72	0.79	0.79	0.82
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.61	0.73	0.79	0.79								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	23.2	23.6	19.0	29.7	27.8	27.7	19.0	26.7	24.7	29.1	29.3	29.0
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	20.5	27.4	29.5	28.2								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.5	-	30.3	-	33.1	-	27.4	-	29.0	-	32.6
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	-	27.4	27.7	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	D	C	C	C	D	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	C	C	C	D								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.68	0.68	0.57	0.77	0.78	0.78	0.57	0.71	0.72	0.79	0.79	0.82

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.61	0.73	0.79	0.79

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	6/30/2023
Agency	CMT	Analysis Year	2050 Option 2
Jurisdiction		Time Analyzed	AM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.40		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	5420	3
6	Basic	Basic	I-675 SB Off Ramp to Feedwire 1	955	4
7	Basic	Basic	I-675 SB Off Ramp to Feedwire 2	150	5
8	Diverge	Basic	I-675 SB Off Ramp to Feedwire 3	1500	5
9	Diverge	Basic	I-675 SB Off Ramp to Wilmington	1500	4
10	Basic	Basic	I-675 SB between Wilmington Ramps	5337	3
11	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
12	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
13	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
14	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
15	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
16	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5120	7200	0.71	67.0	25.5	C

Segment 2: Diverge

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS

	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.971	5120	997	7200	2200	0.71	0.45	66.1	62.8	25.8	28.9	D

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4114	7200	0.57	69.7	19.7	C

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	5297	1183	7200	2200	0.74	0.54	61.2	59.3	28.9	28.3	D

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5319	7200	0.74	66.2	26.8	D

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5319	9600	0.55	69.8	19.1	C

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	5319	12000	0.44	69.9	15.2	B

Segment 8: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.971	5319	635	12000	2200	0.44	0.29	70.0	70.0	15.2	15.2	B

Segment 9: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.971	4678	898	9600	2200	0.49	0.41	74.9	75.0	15.6	15.6	B

Segment 10: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	3771	7200	0.52	70.0	18.0	B

Segment 11: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.980	4933	1162	7200	2200	0.69	0.53	62.2	60.5	26.4	26.0	C

Segment 12: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4954	7200	0.69	67.6	24.4	C

Segment 13: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.971	4954	1359	7200	2200	0.69	0.62	65.3	61.9	25.3	29.5	D

Segment 14: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	3583	7200	0.50	69.8	17.1	B

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.962	0.990	4346	763	7200	2200	0.60	0.35	63.2	61.6	22.9	22.6	C

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.962	4368	7200	0.61	68.5	21.0	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	9588	8814	5.72	143.02	67.4	22.5	21.7	7.50	C

Facility Overall Results

Space Mean Speed, mi/h	67.4	Average Density, veh/mi/ln	21.7
Average Travel Time, min	7.50	Average Density, pc/mi/ln	22.5
Total VMT, veh-mi	9589	Total VHD, veh-h	5.72
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	143.02

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	C	B	B	B	B	C	C
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	B	C	C								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	67.0	66.1	69.7	61.2	66.2	69.8	69.9	70.0	74.9	70.0	62.2	67.6
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	65.3	69.8	63.2	68.5								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	25.5	25.8	19.7	28.9	26.8	19.1	15.2	15.2	15.6	18.0	26.4	24.4
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	25.3	17.1	22.9	21.0								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	0.71	0.71	0.57	0.74	0.74	0.55	0.44	0.44	0.49	0.52	0.69	0.69
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.69	0.50	0.60	0.61								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	24.5	24.8	19.0	27.8	25.8	18.4	14.6	14.6	15.0	17.3	25.4	23.5
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	24.3	16.5	22.0	20.2								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	28.9	-	28.3	-	-	-	15.2	15.6	-	26.0	-
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	29.5	-	22.6	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	C	D	C	D	D	C	B	B	B	B	C	C
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	B	C	C								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	-	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	0.71	0.71	0.57	0.74	0.74	0.55	0.44	0.44	0.49	0.52	0.69	0.69

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.69	0.50	0.60	0.61

HCS Freeway Facilities Report

Project Information

Analyst	RTM	Date	6/30/2023
Agency	CMT	Analysis Year	2050 Option 2
Jurisdiction		Time Analyzed	PM Peak
Facility Name		Units	U.S. Customary
Project Description	WIlmington Pike Capacity Analysis TRAC		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	16
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	8.40		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	I-675 SB N of Indian Ripple	7920	3
2	Diverge	Diverge	I-675 SB Off Ramp to Indian Ripple	1500	3
3	Basic	Basic	I-675 SB between Indian Ripple Ramps	3115	3
4	Merge	Merge	I-675 SB On Ramp from Indian Ripple	1500	3
5	Basic	Basic	I-675 SB between Indian Ripple and Wilmington	5420	3
6	Basic	Basic	I-675 SB Off Ramp to Feedwire 1	955	4
7	Basic	Basic	I-675 S Off Ramp to Feedwire 2	150	5
8	Diverge	Basic	I-675 SB Off Ramp to Feedwire 3	1500	5
9	Diverge	Basic	I-675 SB Off Ramp to Wilmington	1500	4
10	Basic	Basic	I-675 SB between Wilmington Ramps	5337	3
11	Merge	Merge	I-675 SB On Ramp from Wilmington	1500	3
12	Basic	Basic	I-675 SB between Wilmington and SR 48	7915	3
13	Diverge	Diverge	I-675 SB Off Ramp to SR 48	1500	3
14	Basic	Basic	I-675 SB between SR 48 Ramps	2698	3
15	Merge	Merge	I-675 SB On Ramp from SB SR 48	1500	3
16	Basic	Basic	I-675 SB S of SR 48	334	3

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	7200	7200	1.05	53.3	45.0	F

Segment 2: Diverge

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS

	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	7200	1838	7200	2200	1.05	0.84	63.9	60.7	37.6	38.2	F

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5362	7200	0.79	66.0	27.1	D

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6759	1397	7200	2200	0.99	0.63	55.8	52.7	40.4	35.7	E

Segment 5: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6759	7200	0.99	57.2	39.4	E

Segment 6: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6759	9600	0.74	67.2	25.1	C

Segment 7: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	6759	12000	0.59	68.9	19.4	C

Segment 8: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	6759	838	12000	2200	0.59	0.38	68.5	68.5	16.8	16.8	B

Segment 9: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	5921	1848	9600	2200	0.65	0.84	70.1	70.1	21.1	21.1	C

Segment 10: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4073	7200	0.61	69.7	19.5	C

Segment 11: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	5473	1400	7200	2200	0.80	0.64	60.7	58.7	30.1	29.2	D

Segment 12: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	5473	7200	0.81	65.5	27.9	D

Segment 13: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.980	5473	1802	7200	2200	0.81	0.82	64.2	60.8	28.4	33.4	D

Segment 14: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	3671	7200	0.55	69.8	17.5	B

Segment 15: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.94	0.94	0.971	0.990	4509	838	7200	2200	0.67	0.38	62.9	61.3	23.9	23.6	C

Segment 16: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	0.971	4509	7200	0.67	68.4	21.8	C

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	11835	11560	24.77	619.25	61.2	30.2	29.3	8.20	F

Facility Overall Results

Space Mean Speed, mi/h	61.2	Average Density, veh/mi/ln	29.3
Average Travel Time, min	8.20	Average Density, pc/mi/ln	30.2
Total VMT, veh-mi	11835	Total VHD, veh-h	24.77
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	619.25

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LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	D	E	E	C	C	B	C	C	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	B	C	C								

Speed (mi/h)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	53.3	63.9	66.0	55.8	57.2	67.2	68.9	68.5	70.1	69.7	60.7	65.5
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	64.2	69.8	62.9	68.4								

Density (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	45.0	37.6	27.1	40.4	39.4	25.1	19.4	16.8	21.1	19.5	30.1	27.9
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	28.4	17.5	23.9	21.8								

Demand - Capacity Ratio (D/C)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	1.05	1.05	0.79	0.99	0.99	0.74	0.59	0.59	0.65	0.61	0.80	0.81
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	0.81	0.55	0.67	0.67								

Density (veh/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	43.7	36.5	26.3	39.2	38.2	24.4	18.8	16.3	20.5	18.9	29.2	27.0
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	27.6	17.0	23.2	21.2								

Density in Ramp Influence Area (pc/mi/ln)												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	-	38.2	-	35.7	-	-	-	16.8	21.1	-	29.2	-
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	33.4	-	23.6	-								

Density-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	E	D	E	E	C	C	B	C	C	D	D
	Seg 13	Seg 14	Seg 15	Seg 16								
AP 1	D	B	C	C								

Demand-Based LOS												
	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	Seg 9	Seg 10	Seg 11	Seg 12
AP 1	F	F	-	-	-	-	-	-	-	-	-	-
	Seg 13	Seg 14	Seg 15	Seg 16								

AP 1	-	-	-	-

Volume - Capacity Ratio (V/C)												
	Seg 1	**Seg 2**	**Seg 3**	**Seg 4**	**Seg 5**	**Seg 6**	**Seg 7**	**Seg 8**	**Seg 9**	**Seg 10**	**Seg 11**	**Seg 12**
AP 1	1.00	1.00	0.74	0.94	0.94	0.70	0.56	0.56	0.62	0.57	0.76	0.76

	Seg 13	**Seg 14**	**Seg 15**	**Seg 16**
AP 1	0.76	0.51	0.63	0.63

Wilmington Pike TRAC Freeway Segments Capacity Analysis Summary Tables

Segment	Analysis Type	Loation (I-675 NB)	2050 AM No Build				2050 PM No Build			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 NB S of SR 48	C	0.58	0.58	-	C	0.68	0.68	-
2	Diverge	I-675 NB Off Ramp to SR 48 NB	C	0.58	0.58	0.30	D	0.68	0.68	0.35
3	Basic	I-675 btwn SR 48 Ramps	B	0.49	0.49	-	C	0.57	0.57	-
4	Merge	I-675 NB On Ramp from SR 48	D	0.71	0.71	0.72	D	0.77	0.77	0.64
5	Basic	I-675 NB btwn SR 48 & Wilm Pike	C	0.71	0.71	-	D	0.77	0.77	-
6	Diverge	I-675 NB Off Ramp to Wilm Pike	D	0.71	0.71	0.39	D	0.77	0.77	0.65
7	Basic	I-675 NB btwn Wilm Pike Ramps	C	0.60	0.60	-	C	0.57	0.57	-
8	Merge	I-675 NB On Ramp from Wilm Pike	E	0.90	0.90	0.99	D	0.77	0.77	0.67
9	Basic	I-675 NB btwn Feedwire & Indian Ripple	E	0.90	0.90	-	D	0.78	0.78	-
10	Diverge	I-675 NB Off Ramp to Indian Ripple	D	0.90	0.90	0.50	D	0.78	0.78	0.60
11	Basic	I-675 NB btwn Indian Ripple Off Ramp & EB On Ramp	D	0.74	0.74	-	C	0.59	0.59	-
12	Merge	I-675 NB On Ramp from EB Indian Ripple	D	0.86	0.86	0.37	C	0.70	0.70	0.38
13	Merge	I-675 NB On Ramp from WB Indian Ripple	D	0.96	0.96	0.35	C	0.77	0.77	0.19
14	Basic	I-675 NB N of Indian Ripple	E	0.96	0.96	-	D	0.77	0.77	-

Segment	Analysis Type	Loation (I-675 NB)	2050 AM				2050 PM			
			Option 1, 1B				Option 1, 1B			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 NB S of SR 48	C	0.58	0.58	-	C	0.68	0.68	-
2	Diverge	I-675 NB Off Ramp to SR 48 NB	C	0.58	0.58	0.30	D	0.68	0.68	0.35
3	Basic	I-675 btwn SR 48 Ramps	B	0.49	0.49	-	C	0.57	0.57	-
4	Merge	I-675 NB On Ramp from SR 48	D	0.71	0.71	0.72	D	0.77	0.77	0.63
5	Basic	I-675 NB btwn SR 48 & Wilm Pike	C	0.71	0.71	-	D	0.77	0.77	-
6	Diverge	I-675 NB Off Ramp to Wilm Pike	D	0.71	0.71	0.39	D	0.77	0.77	0.65
7	Basic	I-675 NB btwn Wilm Pike Ramps	C	0.60	0.60	-	C	0.57	0.57	-
8	Merge	I-675 NB On Ramp from Wilm Pike 1	D	0.90	0.90	0.50	C	0.77	0.77	0.34
9	Basic	I-675 NB On Ramp from Wilm Pike 2	C	0.54	0.54	-	B	0.47	0.47	-
10	Basic	I-675 NB On Ramp from Wilm Pike 3	C	0.68	0.68	-	C	0.58	0.58	-
11	Basic	I-675 NB btwn Feedwire & Indian Ripple	E	0.90	0.90	-	D	0.78	0.78	-
12	Diverge	I-675 NB Off Ramp to Indian Ripple	D	0.90	0.90	0.50	D	0.78	0.78	0.60
13	Basic	I-675 NB btwn Indian Ripple Off Ramp & EB On Ramp	D	0.74	0.74	-	C	0.59	0.59	-
14	Merge	I-675 NB On Ramp from EB Indian Ripple	D	0.86	0.86	0.37	C	0.71	0.71	0.38
15	Merge	I-675 NB On Ramp from WB Indian Ripple	D	0.96	0.96	0.35	C	0.77	0.77	0.19
16	Basic	I-675 NB N of Indian Ripple	E	0.96	0.96	-	D	0.77	0.77	-

Segment	Analysis Type	Loation (I-675 NB)	2050 AM				2050 PM			
			Option 2				Option 2			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 NB S of SR 48	C	0.58	0.58	-	C	0.68	0.68	-
2	Diverge	I-675 NB Off Ramp to SR 48 NB	C	0.58	0.58	0.30	D	0.68	0.68	0.35
3	Basic	I-675 btwn SR 48 Ramps	B	0.49	0.49	-	C	0.57	0.57	-
5	Basic	I-675 NB btwn SR 48 & Wilm Pike	C	0.72	0.72	-	D	0.78	0.78	-
6	Diverge	I-675 NB Off Ramp to Wilm Pike	D	0.72	0.72	0.46	D	0.78	0.78	0.66
7	Basic	I-675 NB btwn Wilm Pike Ramps	C	0.58	0.58	-	C	0.57	0.57	-
8	Merge	I-675 NB On Ramp from Wilm Pike	D	0.82	0.82	0.77	C	0.71	0.71	0.46
9	Basic	I-675 NB btwn Wilm Pike & Feedwire	D	0.82	0.82	-	C	0.72	0.72	-
10	Merge	I-675 NB On Ramp from Feedwire	D	0.89	0.89	0.31	D	0.79	0.79	0.32
11	Basic	I-675 NB btwn Feedwire & Indian Ripple	E	0.89	0.89	-	D	0.82	0.82	-
12	Diverge	I-675 NB Off Ramp to Indian Ripple	D	0.92	0.92	0.55	D	0.82	0.82	0.64
13	Basic	I-675 NB btwn Indian Ripple Off Ramp & EB On Ramp	D	0.75	0.75	-	C	0.61	0.61	-
14	Merge	I-675 NB On Ramp from EB Indian Ripple	D	0.86	0.86	0.37	C	0.73	0.73	0.39
15	Merge	I-675 NB On Ramp from WB Indian Ripple	D	0.95	0.95	0.31	C	0.79	0.79	0.17
16	Basic	I-675 NB N of Indian Ripple	E	0.95	0.95	-	D	0.79	0.79	-

Segment	Analysis Type	Loation (I-675 SB)	2050 AM No Build				2050 PM No Build			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 SB N of Indian Ripple	C	0.69	0.69	-	F	1.06	1.06	-
2	Diverge	I-675 SB Off Ramp to Indian Ripple	D	0.69	0.69	0.46	F	1.06	1.06	0.85
3	Basic	I-675 SB btwn Indian Ripple Ramps	C	0.55	0.55	-	D	0.80	0.80	-
4	Merge	I-675 SB On Ramp from Indian Ripple	C	0.69	0.69	0.48	D	0.97	0.97	0.57
5	Basic	I-675 SB bwtn Indian Ripple & Wilm Pike	C	0.70	0.70	-	E	0.97	0.97	-
6	Diverge	I-675 SB Off Ramp to Wilm Pike	D	0.7	0.7	0.59	F	0.97	0.97	1.14
7	Basic	I-675 SB btwn Wilmington Ramps	B	0.51	0.51	-	C	0.62	0.62	-
8	Merge	I-675 SB On Ramp from Wilm Pike	C	0.68	0.68	0.54	D	0.79	0.79	0.58
9	Basic	I-675 SB btwn Wilm Pike & SR 48	C	0.68	0.68	-	D	0.80	0.80	-
10	Diverge	I-675 SB Off Ramp to SR 48	D	0.68	0.68	0.59	D	0.80	0.80	0.78
11	Basic	I-675 SB btwn SR 48 Ramps	B	0.50	0.50	-	B	0.55	0.55	-
12	Merge	I-675 SB On Ramp from SB SR 48	C	0.60	0.60	0.35	C	0.67	0.67	0.38
13	Basic	I-675 SB S of SR 48	C	0.61	0.61	-	C	0.67	0.67	-

Segment	Analysis Type	Loation (I-675 SB)	2050 AM				2050 PM			
			Option 1, 1B				Option 1, 1B			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 SB N of Indian Ripple	C	0.69	0.69	-	F	1.06	1.06	-
2	Diverge	I-675 SB Off Ramp to Indian Ripple	D	0.69	0.69	0.46	F	1.06	1.06	0.85
3	Basic	I-675 SB btwn Indian Ripple Ramps	C	0.55	0.55	-	D	0.80	0.80	-
4	Merge	I-675 SB On Ramp from Indian Ripple	C	0.69	0.69	0.48	D	0.97	0.97	0.57
5	Basic	I-675 SB bwtn Indian Ripple & Wilm Pike	C	0.70	0.70	-	E	0.97	0.97	-
6	Basic	I-675 SB Off Ramp to Wilm Pike 1	B	0.52	0.53	-	C	0.73	0.73	-
7	Basic	I-675 SB Off Ramp to Wilm Pike 2	B	0.42	0.42	-	C	0.58	0.58	-
8	Diverge	I-675 SB Off Ramp to Wilm Pike 3	B	0.42	0.42	0.30	C	0.58	0.58	0.57
9	Basic	I-675 SB btwn Wilmington Ramps	B	0.51	0.51	-	C	0.62	0.62	-
10	Merge	I-675 SB On Ramp from Wilm Pike	C	0.68	0.68	0.54	D	0.79	0.79	0.58
11	Basic	I-675 SB btwn Wilm Pike & SR 48	C	0.68	0.68	-	D	0.80	0.80	-
12	Diverge	I-675 SB Off Ramp to SR 48	D	0.68	0.68	0.59	D	0.80	0.80	0.78
13	Basic	I-675 SB btwn SR 48 Ramps	B	0.50	0.50	-	B	0.55	0.55	-
14	Merge	I-675 SB On Ramp from SB SR 48	C	0.60	0.60	0.35	C	0.67	0.67	0.38
15	Basic	I-675 SB S of SR 48	C	0.61	0.61	-	C	0.67	0.67	-

Segment	Analysis Type	Loation (I-675 SB)	2050 AM				2050 PM			
			Option 2				Option 2			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	I-675 SB N of Indian Ripple	C	0.71	0.71	-	F	1.05	1.05	-
2	Diverge	I-675 SB Off Ramp to Indian Ripple	D	0.71	0.71	0.45	F	1.05	1.05	0.84
3	Basic	I-675 SB btwn Indian Ripple Ramps	C	0.57	0.57	-	D	0.79	0.79	-
4	Merge	I-675 SB On Ramp from Indian Ripple	D	0.74	0.74	0.54	E	0.99	0.99	0.63
5	Basic	I-675 SB bwtn Indian Ripple & Wilm Pike	D	0.74	0.74	-	E	0.99	0.99	-
6	Basic	I-675 SB Off Ramp to Feedwire 1	C	0.55	0.55	-	C	0.74	0.74	-
7	Basic	I-675 SB Off Ramp to Feedwire 2	B	0.44	0.44	-	C	0.59	0.59	-
8	Diverge	I-675 SB Off Ramp to Feedwire 3	B	0.44	0.44	0.29	B	0.59	0.59	0.38
9	Diverge	I-675 SB Off Ramp to Wilm Pike	B	0.49	0.49	0.41	C	0.65	0.65	0.84
10	Basic	I-675 SB btwn Wilmington Ramps	B	0.52	0.52	-	C	0.61	0.61	-
11	Merge	I-675 SB On Ramp from Wilm Pike	C	0.69	0.69	0.53	D	0.80	0.80	0.64
12	Basic	I-675 SB btwn Wilm Pike & SR 48	C	0.69	0.69	-	D	0.81	0.81	-
13	Diverge	I-675 SB Off Ramp to SR 48	D	0.69	0.69	0.62	D	0.81	0.81	0.82
14	Basic	I-675 SB btwn SR 48 Ramps	B	0.50	0.50	-	B	0.55	0.55	-
15	Merge	I-675 SB On Ramp from SB SR 48	C	0.60	0.60	0.35	C	0.67	0.67	0.38
16	Basic	I-675 SB S of SR 48	C	0.61	0.61	-	C	0.67	0.67	-

HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	AM Peak
Project Description	Wilmington Pike EFC Capacity Analysis	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.16
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3800	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1388
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.58

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3800	610
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.971
Flow Rate (v_i), pc/h	4163	668
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.58	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2852	Outer Lanes Freeway Speed (S_O), mi/h	75.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	20.7
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.33
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3190	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1165
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.49

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	16.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3190	1480
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3495	1590
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.72

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1931.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1395
Downstream Equilibrium Distance (L_{EQ}), ft	4279.0	On-Ramp Influence Area Speed (S_R), mi/h	59.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2100	Outer Lanes Freeway Speed (S_O), mi/h	66.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3690	Ramp Junction Speed (S), mi/h	61.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.4

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4670	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1705
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.71

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4670	760
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	5.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.952
Flow Rate (v_i), pc/h	5116	849
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.39

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	12807.7	Flow Outer Lanes (v_{OA}), pc/h/ln	1668
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3448	Outer Lanes Freeway Speed (S_O), mi/h	74.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.5

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3910	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1428
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.60

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3910	2010
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4284	2182
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.90	0.99

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2202.4	Flow Outer Lanes (v_{OA}), pc/h/ln	1718
Downstream Equilibrium Distance (L_{EQ}), ft	5749.9	On-Ramp Influence Area Speed (S_R), mi/h	52.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	2566	Outer Lanes Freeway Speed (S_O), mi/h	65.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4748	Ramp Junction Speed (S), mi/h	55.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	38.9
Level of Service (LOS)	E	Density in Ramp Influence Area (D_R), pc/mi/ln	36.7

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB between Wilmington and Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	10300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5920	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2162
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.90

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	59.3
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	36.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	10	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5920	1030
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6486	1107
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.90	0.50

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	16031.3	Flow Outer Lanes (v_{OA}), pc/h/ln	2351
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	4135	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.5
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	33.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	35.0

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4890	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1786
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	12	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4890	740
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.971
Flow Rate (v_i), pc/h	5357	811
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.86	0.37

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2138.7	Flow Outer Lanes (v_{OA}), pc/h/ln	2234
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	57.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3123	Outer Lanes Freeway Speed (S_O), mi/h	63.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3934	Ramp Junction Speed (S), mi/h	59.8
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	34.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	31.0

HCS Freeway Merge Report

Project Information

Segment Number	13	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5630	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.971
Flow Rate (v_i), pc/h	6168	778
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.96	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2461
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	54.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3707	Outer Lanes Freeway Speed (S_O), mi/h	62.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4485	Ramp Junction Speed (S), mi/h	56.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	40.8
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.8

HCS Basic Freeway Report

Project Information

Segment Number	14	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6340	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2315
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.96

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	55.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	41.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	PM Peak
Project Description	Wilmington Pike EFC Capacity Analysis	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4430	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1633
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4430	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4899	763
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1646
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3253	Outer Lanes Freeway Speed (S_O), mi/h	74.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.5

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3720	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1371
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3720	1300
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4114	1397
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.64

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2022.5	Flow Outer Lanes (v_{OA}), pc/h/ln	1641
Downstream Equilibrium Distance (L_{EQ}), ft	7202.3	On-Ramp Influence Area Speed (S_R), mi/h	58.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2473	Outer Lanes Freeway Speed (S_O), mi/h	65.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3870	Ramp Junction Speed (S), mi/h	60.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.9

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5020	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1850
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.77

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5020	1330
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5551	1429
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.65

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	15510.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1727
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3824	Outer Lanes Freeway Speed (S_O), mi/h	74.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.7

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3690	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1360
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3690	1360
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4081	1476
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.67

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2007.9	Flow Outer Lanes (v_{OA}), pc/h/ln	1636
Downstream Equilibrium Distance (L_{EQ}), ft	6809.5	On-Ramp Influence Area Speed (S_R), mi/h	57.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2445	Outer Lanes Freeway Speed (S_O), mi/h	65.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3921	Ramp Junction Speed (S), mi/h	60.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.9
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	30.6

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB between Wilmington and Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	10300	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5050	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1862
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.78

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	10	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5050	1220
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5585	1311
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.78	0.60

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	14786.8	Flow Outer Lanes (v_{OA}), pc/h/ln	1855
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3730	Outer Lanes Freeway Speed (S_O), mi/h	73.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	31.5

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3830	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1412
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.59

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	12	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3830	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4235	838
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.70	0.38

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1904.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1707
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2528	Outer Lanes Freeway Speed (S_O), mi/h	65.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3366	Ramp Junction Speed (S), mi/h	61.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.3
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	26.6

HCS Freeway Merge Report

Project Information

Segment Number	13	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4610	390
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	5098	423
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.19

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2034
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3064	Outer Lanes Freeway Speed (S_O), mi/h	64.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3487	Ramp Junction Speed (S), mi/h	61.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	27.2

HCS Basic Freeway Report

Project Information

Segment Number	14	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5000	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1843
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.77

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	AM Peak
Project Description	WIlmington Pike EFC Capacity Analysis	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4490	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1655
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.69

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4490	930
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4965	1019
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.46

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1622
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3343	Outer Lanes Freeway Speed (S_O), mi/h	74.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.3

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3560	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1312
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.55

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3560	970
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	3937	1053
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.48

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1911.0	Flow Outer Lanes (v_{OA}), pc/h/ln	1571
Downstream Equilibrium Distance (L_{EQ}), ft	6572.3	On-Ramp Influence Area Speed (S_R), mi/h	60.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2366	Outer Lanes Freeway Speed (S_O), mi/h	66.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3419	Ramp Junction Speed (S), mi/h	61.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	26.5

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	10098	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4530	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1670
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.70

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	545
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

	Freeway	Ramp
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (V_i), veh/h	4530	1190
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	5010	1304
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.70	0.59

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	12085.9	Flow Outer Lanes (v_{OA}), pc/h/ln	1575
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3435	Outer Lanes Freeway Speed (S_O), mi/h	74.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.5
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.9

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3340	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1231
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.51

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3340	1090
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	3694	1183
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.54

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1932.1	Flow Outer Lanes (v_{OA}), pc/h/ln	1463
Downstream Equilibrium Distance (L_{EQ}), ft	6229.6	On-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2231	Outer Lanes Freeway Speed (S_O), mi/h	66.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3414	Ramp Junction Speed (S), mi/h	62.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.1
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.8

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4430	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1633
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	10	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4430	1190
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4899	1304
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.59

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	13987.9	Flow Outer Lanes (v_{OA}), pc/h/ln	1470
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3429	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.1

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3240	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1194
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.50

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	12	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3240	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	3583	763
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.60	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1779.4	Flow Outer Lanes (v_{OA}), pc/h/ln	1430
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2153	Outer Lanes Freeway Speed (S_O), mi/h	66.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2916	Ramp Junction Speed (S), mi/h	63.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	22.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	22.6

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3950	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1456
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.61

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	2/7/2023
Agency	CMT	Analysis Year	2050 No Build
Jurisdiction		Time Analyzed	PM Peak
Project Description	WIlmington Pike EFC Capacity Analysis	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6980	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2400
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	1.00

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	53.3
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6980	1750
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7647	1881
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	1.00	0.86

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2697
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	4503	Outer Lanes Freeway Speed (S_O), mi/h	70.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	63.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	37.6
Level of Service (LOS)	F	Density in Ramp Influence Area (D_R), pc/mi/ln	38.3

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5230	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1773
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	26.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5230	1170
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	5730	1257
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.91	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2250.4	Flow Outer Lanes (v_{OA}), pc/h/ln	2122
Downstream Equilibrium Distance (L_{EQ}), ft	12670.7	On-Ramp Influence Area Speed (S_R), mi/h	54.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3197	Outer Lanes Freeway Speed (S_O), mi/h	64.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4454	Ramp Junction Speed (S), mi/h	57.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.5

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	10098	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6400	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2192
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.91

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	58.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	37.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	545
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6400	2340
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7012	2515
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.91	1.14

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	40407.6	Flow Outer Lanes (v_{OA}), pc/h/ln	1953
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	4623	Outer Lanes Freeway Speed (S_O), mi/h	73.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	62.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	35.0
Level of Service (LOS)	F	Density in Ramp Influence Area (D_R), pc/mi/ln	39.1

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4060	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1354
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.56

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4060	1170
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4448	1270
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.74	0.58

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2029.2	Flow Outer Lanes (v_{OA}), pc/h/ln	1608
Downstream Equilibrium Distance (L_{EQ}), ft	8240.8	On-Ramp Influence Area Speed (S_R), mi/h	59.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2453	Outer Lanes Freeway Speed (S_O), mi/h	66.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3723	Ramp Junction Speed (S), mi/h	61.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.2

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5230	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1777
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	26.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	10	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5230	1590
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	5730	1726
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.74	0.78

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	20340.5	Flow Outer Lanes (v_{OA}), pc/h/ln	1518
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3813	Outer Lanes Freeway Speed (S_O), mi/h	74.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.6
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.4

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3640	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1202
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.50

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.2
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	12	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3640	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3988	838
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.62	0.38

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1800.1	Flow Outer Lanes (v_{OA}), pc/h/ln	1438
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2167	Outer Lanes Freeway Speed (S_O), mi/h	66.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3005	Ramp Junction Speed (S), mi/h	63.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	23.5
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	23.3

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4420	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1481
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.62

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050 Option 1 and 1a w/ 2 lanes on I675 On Ramp
Jurisdiction		Time Analyzed	AM Peak
Project Description	Wilmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3800	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1388
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.58

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3800	610
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.971
Flow Rate (v_i), pc/h	4163	668
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.58	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2852	Outer Lanes Freeway Speed (S_O), mi/h	75.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	20.7
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.33
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3190	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1165
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.49

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	16.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3190	1480
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3495	1590
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.72

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1931.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1395
Downstream Equilibrium Distance (L_{EQ}), ft	4279.0	On-Ramp Influence Area Speed (S_R), mi/h	59.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2100	Outer Lanes Freeway Speed (S_O), mi/h	66.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3690	Ramp Junction Speed (S), mi/h	61.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.4

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4670	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1705
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.71

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4670	760
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	5.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.952
Flow Rate (v_i), pc/h	5116	849
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.39

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	12807.7	Flow Outer Lanes (v_{OA}), pc/h/ln	1668
Downstream Equilibrium Distance (L_{EQ}), ft	1644.9	Off-Ramp Influence Area Speed (S_R), mi/h	63.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3448	Outer Lanes Freeway Speed (S_O), mi/h	74.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.5

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3910	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1428
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.60

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington 1
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3910	2010
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4284	2182
Capacity (c_{md}), pc/h	7200	4400
Adjusted Capacity (c_{mda}), pc/h	7200	4400
Volume-to-Capacity Ratio (v/c)	0.90	0.50

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1836
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	54.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2448	Outer Lanes Freeway Speed (S_O), mi/h	65.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4630	Ramp Junction Speed (S), mi/h	57.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	37.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	31.3

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB On Ramp from Wilmington 2
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	3700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5920	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1297
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.54

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	10	Segment Name	I-675 NB On Ramp from Wilmignton 3
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	2600	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5920	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1622
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	23.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB between Wilmington and Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	4000	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5920	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2162
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.90

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	59.3
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	36.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5920	1030
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6486	1107
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.90	0.50

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2437
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	4049	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.5
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	33.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.2

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4890	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1786
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4890	740
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	5357	803
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.86	0.37

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2136.9	Flow Outer Lanes (v_{OA}), pc/h/ln	2234
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	57.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	3123	Outer Lanes Freeway Speed (S_O), mi/h	63.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3926	Ramp Junction Speed (S), mi/h	59.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	34.3
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	30.9

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5630	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6168	763
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.96	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2461
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	54.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3707	Outer Lanes Freeway Speed (S_O), mi/h	62.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4470	Ramp Junction Speed (S), mi/h	56.8
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	40.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.7

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6340	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2315
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.96

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	55.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	41.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a w/ 2 lanes on I675 On Ramp
Jurisdiction		Time Analyzed	PM Peak
Project Description	Wilmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4430	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1633
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4430	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4899	763
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1646
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3253	Outer Lanes Freeway Speed (S_O), mi/h	74.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.5

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.33
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3720	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1371
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3720	1300
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4114	1397
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.64

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2022.5	Flow Outer Lanes (v_{OA}), pc/h/ln	1641
Downstream Equilibrium Distance (L_{EQ}), ft	7202.3	On-Ramp Influence Area Speed (S_R), mi/h	58.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2473	Outer Lanes Freeway Speed (S_O), mi/h	65.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3870	Ramp Junction Speed (S), mi/h	60.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.9

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5020	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1850
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.77

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5020	1330
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5551	1429
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.65

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	15510.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1727
Downstream Equilibrium Distance (L_{EQ}), ft	2945.6	Off-Ramp Influence Area Speed (S_R), mi/h	61.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3824	Outer Lanes Freeway Speed (S_O), mi/h	74.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.7

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3690	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1360
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington 1
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	2
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	1500
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3690	1360
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4081	1476
Capacity (c_{md}), pc/h	7200	4400
Adjusted Capacity (c_{mda}), pc/h	7200	4400
Volume-to-Capacity Ratio (v/c)	0.77	0.34

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1749
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2332	Outer Lanes Freeway Speed (S_O), mi/h	65.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3808	Ramp Junction Speed (S), mi/h	62.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.8
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.2

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB On Ramp from Wilmington 2
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	3700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5050	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1117
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.47

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	16.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	10	Segment Name	I-675 NB On Ramp from Wilmington 3
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	2600	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5050	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1396
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.58

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB between Wilmington and Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	4000	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5050	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1862
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.78

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5050	1220
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5585	1311
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.78	0.60

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1881
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3704	Outer Lanes Freeway Speed (S_O), mi/h	73.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	31.2

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3830	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1412
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.59

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3830	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4235	847
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.39

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1906.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1707
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2528	Outer Lanes Freeway Speed (S_O), mi/h	65.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3375	Ramp Junction Speed (S), mi/h	61.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.4
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	26.6

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4610	390
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	5098	423
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.19

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2034
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3064	Outer Lanes Freeway Speed (S_O), mi/h	64.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3487	Ramp Junction Speed (S), mi/h	61.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	27.2

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5000	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1843
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.77

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a
Jurisdiction		Time Analyzed	AM Peak
Project Description	WIlmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4490	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1655
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.69

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4490	930
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4965	1019
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.46

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1622
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3343	Outer Lanes Freeway Speed (S_O), mi/h	74.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.3

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3560	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1312
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.55

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3560	970
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	3937	1053
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.48

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1911.0	Flow Outer Lanes (v_{OA}), pc/h/ln	1571
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	60.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2366	Outer Lanes Freeway Speed (S_O), mi/h	66.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3419	Ramp Junction Speed (S), mi/h	61.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	26.5

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.67
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4530	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1670
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.70

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Wilmington 1
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	1650	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4530	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1252
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.52

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	70.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 SB Off Ramp to Wilmington 2
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4530	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1002
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.42

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	70.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	14.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	8	Segment Name	I-675 SB Off Ramp to Wilmington 3
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	5	2
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4530	1190
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	5010	1304
Capacity (c_{md}), pc/h	12000	4400
Initial Adjusted Capacity (c_{mda}), pc/h	12000	-
Final Adjusted Capacity (c_{mda}), pc/h	12000	4400
Volume-to-Capacity Ratio (v/c)	0.42	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1186
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2137	Outer Lanes Freeway Speed (S_O), mi/h	76.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	68.7
Number of Outer Lanes on Freeway (N_O), ln	2	Average Density (D), pc/mi/ln	13.1
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	12.8

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3270	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3340	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1231
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.51

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	70.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	10	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3340	1090
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	3694	1183
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.54

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1463
Downstream Equilibrium Distance (L_{EQ}), ft	6229.6	On-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2231	Outer Lanes Freeway Speed (S_O), mi/h	66.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3414	Ramp Junction Speed (S), mi/h	62.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.1
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.8

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4430	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1633
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4430	1190
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4899	1304
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.59

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	13987.9	Flow Outer Lanes (v_{OA}), pc/h/ln	1470
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3429	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.1

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.17
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3240	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1194
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.50

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3240	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	3583	763
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.60	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1779.4	Flow Outer Lanes (v_{OA}), pc/h/ln	1430
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2153	Outer Lanes Freeway Speed (S_O), mi/h	66.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2916	Ramp Junction Speed (S), mi/h	63.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	22.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	22.6

HCS Basic Freeway Report

Project Information

Segment Number	15	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3950	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1456
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.61

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	11/29/2022
Agency	CMT	Analysis Year	2050 Option 1 and 1a
Jurisdiction		Time Analyzed	PM Peak
Project Description	WIlmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6980	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2400
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	1.00

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	53.3
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6980	1750
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7647	1881
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	1.00	0.86

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2697
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	4503	Outer Lanes Freeway Speed (S_O), mi/h	70.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	63.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	37.6
Level of Service (LOS)	F	Density in Ramp Influence Area (D_R), pc/mi/ln	38.3

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5230	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1773
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	26.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5230	1170
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	5730	1257
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.91	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2250.4	Flow Outer Lanes (v_{OA}), pc/h/ln	2122
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	54.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	3197	Outer Lanes Freeway Speed (S_O), mi/h	64.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4454	Ramp Junction Speed (S), mi/h	57.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.5

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.67
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6400	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2192
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.91

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	58.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	37.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Wilmington 1
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	1650	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6400	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1644
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 SB Off Ramp to Wilmington 2
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	250	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6400	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1315
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.55

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	8	Segment Name	I-675 SB Off Ramp to Wilmington 3
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	5	2
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	1090
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided Two-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6400	2340
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7012	2515
Capacity (c_{md}), pc/h	12000	4400
Initial Adjusted Capacity (c_{mda}), pc/h	12000	-
Final Adjusted Capacity (c_{mda}), pc/h	12000	4400
Volume-to-Capacity Ratio (v/c)	0.55	0.57

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1138
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	59.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3314	Outer Lanes Freeway Speed (S_O), mi/h	76.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.0
Number of Outer Lanes on Freeway (N_O), ln	2	Average Density (D), pc/mi/ln	17.2
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	22.9

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3270	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4060	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1354
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.56

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	10	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4060	1170
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4448	1270
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.74	0.58

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1608
Downstream Equilibrium Distance (L_{EQ}), ft	8240.8	On-Ramp Influence Area Speed (S_R), mi/h	59.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2453	Outer Lanes Freeway Speed (S_O), mi/h	66.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3723	Ramp Junction Speed (S), mi/h	61.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.0
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.2

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5230	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1777
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	26.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5230	1590
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	5730	1726
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.74	0.78

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	20340.5	Flow Outer Lanes (v_{OA}), pc/h/ln	1518
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	3813	Outer Lanes Freeway Speed (S_O), mi/h	74.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.6
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.4

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.17
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3640	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1202
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.50

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.2
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3640	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3988	838
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.62	0.38

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1800.1	Flow Outer Lanes (v_{OA}), pc/h/ln	1438
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2167	Outer Lanes Freeway Speed (S_O), mi/h	66.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3005	Ramp Junction Speed (S), mi/h	63.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	23.5
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	23.3

HCS Basic Freeway Report

Project Information

Segment Number	15	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4420	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1481
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.62

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	1/9/2022
Agency	CMT	Analysis Year	2050 Option 2_Retain Wilmington On Ramp
Jurisdiction		Time Analyzed	AM Peak
Project Description	Wilmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.16
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3800	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1388
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.58

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3800	610
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.971
Flow Rate (v_i), pc/h	4163	668
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.58	0.30

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2852	Outer Lanes Freeway Speed (S_O), mi/h	75.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	20.7
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	25.0

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.33
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3190	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1165
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.49

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	16.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3190	1540
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3495	1655
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.72	0.75

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1945.2	Flow Outer Lanes (v_{OA}), pc/h/ln	1395
Downstream Equilibrium Distance (L_{EQ}), ft	5065.3	On-Ramp Influence Area Speed (S_R), mi/h	58.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2100	Outer Lanes Freeway Speed (S_O), mi/h	66.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3755	Ramp Junction Speed (S), mi/h	60.8
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.9

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4730	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1727
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.72

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4730	900
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	5.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.952
Flow Rate (v_i), pc/h	5182	1006
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.72	0.46

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	14552.0	Flow Outer Lanes (v_{OA}), pc/h/ln	1629
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3553	Outer Lanes Freeway Speed (S_O), mi/h	74.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.2
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	30.4

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3830	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1399
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.58

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	20.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3830	1560
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4196	1693
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.82	0.77

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2079.0	Flow Outer Lanes (v_{OA}), pc/h/ln	1683
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	56.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2513	Outer Lanes Freeway Speed (S_O), mi/h	65.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4206	Ramp Junction Speed (S), mi/h	58.5
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	33.6
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.7

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB between Wilmington and Feedwire
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2200	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5390	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1968
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.82

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	63.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	31.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	10	Segment Name	I-675 NB On Ramp from Feedwire
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5390	630
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980
Flow Rate (v_i), pc/h	5734	684
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.89	0.31

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2294
Downstream Equilibrium Distance (L_{EQ}), ft	6162.9	On-Ramp Influence Area Speed (S_R), mi/h	59.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	3440	Outer Lanes Freeway Speed (S_O), mi/h	68.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4124	Ramp Junction Speed (S), mi/h	62.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	34.2
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.4

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB between Wilmington and Feedwire
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	6600	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6020	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2135
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.89

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	35.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6020	1120
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6596	1204
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.92	0.55

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	5213.3	Flow Outer Lanes (v_{OA}), pc/h/ln	2480
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	4116	Outer Lanes Freeway Speed (S_O), mi/h	71.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	33.7
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.8

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4900	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1789
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.75

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4900	740
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	5368	803
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.86	0.37

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2139.3	Flow Outer Lanes (v_{OA}), pc/h/ln	2238
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	57.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3130	Outer Lanes Freeway Speed (S_O), mi/h	63.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3933	Ramp Junction Speed (S), mi/h	59.8
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	34.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	31.0

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5640	630
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6179	677
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.95	0.31

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2465
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	54.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3714	Outer Lanes Freeway Speed (S_O), mi/h	62.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4391	Ramp Junction Speed (S), mi/h	57.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	39.9
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	34.2

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6270	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2290
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.95

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	56.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	40.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	12/5/2022
Agency	CMT	Analysis Year	2050 Option 2_Retain Wilmington On Ramp
Jurisdiction		Time Analyzed	PM Peak
Project Description	Wilmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 NB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	440	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.16
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4440	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1637
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.68

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 NB Off Ramp to SR 48 NB
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	415
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4440	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4910	763
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.68	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1651
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	63.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	3259	Outer Lanes Freeway Speed (S_O), mi/h	74.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.5

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 NB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2763	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.33
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3730	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1375
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 NB On Ramp from SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3730	1350
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	4125	1451
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.77	0.66

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2036.4	Flow Outer Lanes (v_{OA}), pc/h/ln	1646
Downstream Equilibrium Distance (L_{EQ}), ft	7313.1	On-Ramp Influence Area Speed (S_R), mi/h	58.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2479	Outer Lanes Freeway Speed (S_O), mi/h	65.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3930	Ramp Junction Speed (S), mi/h	60.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.9
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	30.3

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 NB between SR 48 and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7500	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5080	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1873
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.78

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	64.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	28.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	6	Segment Name	I-675 NB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	490
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5080	1350
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5618	1451
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.78	0.66

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	16133.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1746
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	3872	Outer Lanes Freeway Speed (S_O), mi/h	73.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.8
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	33.1

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 NB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3080	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3730	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1375
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	8	Segment Name	I-675 NB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3730	940
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4125	1020
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.46

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1919.7	Flow Outer Lanes (v_{OA}), pc/h/ln	1654
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	59.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2471	Outer Lanes Freeway Speed (S_O), mi/h	65.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3491	Ramp Junction Speed (S), mi/h	61.6
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	27.8
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	27.4

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 NB between Wilmington and Feedwire
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2200	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4670	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1721
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.72

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	10	Segment Name	I-675 NB On Ramp from Feedwire
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4670	650
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	0.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980
Flow Rate (v_i), pc/h	4968	706
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.79	0.32

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1987
Downstream Equilibrium Distance (L_{EQ}), ft	7264.3	On-Ramp Influence Area Speed (S_R), mi/h	62.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2981	Outer Lanes Freeway Speed (S_O), mi/h	70.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3687	Ramp Junction Speed (S), mi/h	64.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.0

HCS Basic Freeway Report

Project Information

Segment Number	11	Segment Name	I-675 NB Between WIlmington and Feedwire
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	6600	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5320	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1887
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.79

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	29.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	12	Segment Name	I-675 NB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	540
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5320	1320
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	5883	1418
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.82	0.64

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	7154.4	Flow Outer Lanes (v_{OA}), pc/h/ln	2018
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3865	Outer Lanes Freeway Speed (S_O), mi/h	72.8
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.1
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	32.6

HCS Basic Freeway Report

Project Information

Segment Number	13	Segment Name	I-675 NB between Indian Ripple Off Ramp and EB On Ramp
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	1878	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4000	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1474
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.61

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.1
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	14	Segment Name	I-675 NB On Ramp from EB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1346	775
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4000	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4423	847
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.73	0.39

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1946.5	Flow Outer Lanes (v_{OA}), pc/h/ln	1791
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	59.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2632	Outer Lanes Freeway Speed (S_O), mi/h	65.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3479	Ramp Junction Speed (S), mi/h	61.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.5
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	27.4

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 NB On Ramp from WB Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	850
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4780	340
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	5286	369
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.79	0.17

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2109
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	59.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3177	Outer Lanes Freeway Speed (S_O), mi/h	64.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3546	Ramp Junction Speed (S), mi/h	61.4
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.7
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	27.7

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 NB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	8654	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5120	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1887
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.79

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	29.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	6/30/2023
Agency	CMT	Analysis Year	2050 Option 2
Jurisdiction		Time Analyzed	AM Peak
Project Description	WIlmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4630	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1707
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.71

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4630	910
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	5120	997
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.71	0.45

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1707
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	62.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3413	Outer Lanes Freeway Speed (S_O), mi/h	74.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.8
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.9

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3720	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1371
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3720	1090
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	4114	1183
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.74	0.54

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1976.7	Flow Outer Lanes (v_{OA}), pc/h/ln	1641
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	59.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2473	Outer Lanes Freeway Speed (S_O), mi/h	65.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3656	Ramp Junction Speed (S), mi/h	61.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.9
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	28.3

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5420	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.67
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4810	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1773
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	26.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Feedwire 1
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	955	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4810	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1330
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.55

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 SB Off Ramp to Feedwire 2
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	150	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4810	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1064
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.44

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	15.2
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	8	Segment Name	I-675 SB Off Ramp to Feedwire 3
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4810	580
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	5319	635
Capacity (c_{md}), pc/h	12000	2200
Initial Adjusted Capacity (c_{mda}), pc/h	12000	-
Final Adjusted Capacity (c_{mda}), pc/h	12000	2200
Volume-to-Capacity Ratio (v/c)	0.44	0.29

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	9999.0	Flow Outer Lanes (v_{OA}), pc/h/ln	0
Downstream Equilibrium Distance (L_{EQ}), ft	9999.0	Off-Ramp Influence Area Speed (S_R), mi/h	70.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	0	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	0	Ramp Junction Speed (S), mi/h	70.0
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	15.2
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	15.2

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	75.4	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4230	820
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4678	898
Capacity (c_{md}), pc/h	9600	2200
Initial Adjusted Capacity (c_{mda}), pc/h	9600	-
Final Adjusted Capacity (c_{mda}), pc/h	9600	2200
Volume-to-Capacity Ratio (v/c)	0.49	0.41

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	9999.0	Flow Outer Lanes (v_{OA}), pc/h/ln	0
Downstream Equilibrium Distance (L_{EQ}), ft	9999.0	Off-Ramp Influence Area Speed (S_R), mi/h	75.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	0	Outer Lanes Freeway Speed (S_O), mi/h	75.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	0	Ramp Junction Speed (S), mi/h	74.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	15.6
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	15.6

HCS Basic Freeway Report

Project Information

Segment Number	10	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5337	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3410	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1257
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.52

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	70.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	11	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3410	1070
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.980
Flow Rate (v_i), pc/h	3771	1162
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.53

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1944.1	Flow Outer Lanes (v_{OA}), pc/h/ln	1493
Downstream Equilibrium Distance (L_{EQ}), ft	6492.3	On-Ramp Influence Area Speed (S_R), mi/h	60.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	2278	Outer Lanes Freeway Speed (S_O), mi/h	66.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3440	Ramp Junction Speed (S), mi/h	62.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	26.4
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	26.0

HCS Basic Freeway Report

Project Information

Segment Number	12	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4480	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1651
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.69

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.6
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	24.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	13	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4480	1240
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	3.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.971
Flow Rate (v_i), pc/h	4954	1359
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.69	0.62

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	14217.8	Flow Outer Lanes (v_{OA}), pc/h/ln	1481
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	61.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	3473	Outer Lanes Freeway Speed (S_O), mi/h	74.9
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.3
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	25.3
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.5

HCS Basic Freeway Report

Project Information

Segment Number	14	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.17
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3240	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1194
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.50

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3240	710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	4.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.962	0.990
Flow Rate (v_i), pc/h	3583	763
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.60	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1779.4	Flow Outer Lanes (v_{OA}), pc/h/ln	1430
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2153	Outer Lanes Freeway Speed (S_O), mi/h	66.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2916	Ramp Junction Speed (S), mi/h	63.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	22.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	22.6

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	07:00-07:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3950	Heavy Vehicle Adjustment Factor (f_{HV})	0.962
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1456
Total Trucks, %	4.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.61

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	6/30/2023
Agency	CMT	Analysis Year	2050 Option 2
Jurisdiction		Time Analyzed	PM Peak
Project Description	WIlmington Pike Capacity Analysis TRAC	Units	U.S. Customary
Segment Number	1	Segment Name	I-675 SB N of Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7920	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6920	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2400
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	1.00

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	53.3
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	2	Segment Name	I-675 SB Off Ramp to Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	525
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6920	1710
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7582	1838
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	1.00	0.84

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	2700
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	60.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	4500	Outer Lanes Freeway Speed (S_O), mi/h	70.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	63.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	37.6
Level of Service (LOS)	F	Density in Ramp Influence Area (D_R), pc/mi/ln	38.2

HCS Basic Freeway Report

Project Information

Segment Number	3	Segment Name	I-675 SB between Indian Ripple Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	3115	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5210	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1787
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.74

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	66.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	27.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	4	Segment Name	I-675 SB On Ramp from Indian Ripple
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	830
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5210	1300
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	5708	1397
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.94	0.64

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2289.6	Flow Outer Lanes (v_{OA}), pc/h/ln	2139
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	52.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	3223	Outer Lanes Freeway Speed (S_O), mi/h	64.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	4620	Ramp Junction Speed (S), mi/h	55.8
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	40.4
Level of Service (LOS)	E	Density in Ramp Influence Area (D_R), pc/mi/ln	35.7

HCS Basic Freeway Report

Project Information

Segment Number	5	Segment Name	I-675 SB between Indian Ripple and Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5420	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.67
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6510	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	2253
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.94

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	57.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	39.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	6	Segment Name	I-675 SB Off Ramp to Feedwire 1
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	4	Terrain Type	Level
Segment Length (L), ft	955	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6510	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1690
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.70

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	67.2
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	25.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	7	Segment Name	I-675 S Off Ramp to Feedwire 2
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	5	Terrain Type	Level
Segment Length (L), ft	150	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	6510	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1352
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.56

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.9
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Basic Freeway Report

Project Information

Segment Number	8	Segment Name	I-675 SB Off Ramp to Feedwire 3
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	6510	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	7132	838
Capacity (c_{md}), pc/h	12000	2200
Initial Adjusted Capacity (c_{mda}), pc/h	12000	-
Final Adjusted Capacity (c_{mda}), pc/h	12000	2200
Volume-to-Capacity Ratio (v/c)	0.56	0.38

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1384
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	68.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	2978	Outer Lanes Freeway Speed (S_O), mi/h	75.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	68.5
Number of Outer Lanes on Freeway (N_O), ln	2	Average Density (D), pc/mi/ln	16.8
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	16.8

HCS Basic Freeway Report

Project Information

Segment Number	9	Segment Name	I-675 SB Off Ramp to Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	75.4	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5730	1720
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	6278	1848
Capacity (c_{md}), pc/h	9600	2200
Initial Adjusted Capacity (c_{mda}), pc/h	9600	-
Final Adjusted Capacity (c_{mda}), pc/h	9600	2200
Volume-to-Capacity Ratio (v/c)	0.62	0.84

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1149
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	70.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	3624	Outer Lanes Freeway Speed (S_O), mi/h	82.1
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	70.1
Number of Outer Lanes on Freeway (N_O), ln	2	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	21.1

HCS Basic Freeway Report

Project Information

Segment Number	10	Segment Name	I-675 SB between Wilmington Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5337	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4010	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1358
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.57

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.7
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	19.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	11	Segment Name	I-675 SB On Ramp from Wilmington
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	932
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	4010	1290
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	4393	1400
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.76	0.64

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	2059.6	Flow Outer Lanes (v_{OA}), pc/h/ln	1613
Downstream Equilibrium Distance (L_{EQ}), ft	8603.9	On-Ramp Influence Area Speed (S_R), mi/h	58.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2460	Outer Lanes Freeway Speed (S_O), mi/h	66.0
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3860	Ramp Junction Speed (S), mi/h	60.7
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	30.1
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	29.2

HCS Basic Freeway Report

Project Information

Segment Number	12	Segment Name	I-675 SB between Wilmington and SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	7915	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.83
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	5300	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1824
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.76

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	65.5
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	27.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Diverge Report

Project Information

Segment Number	13	Segment Name	I-675 SB Off Ramp to SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Deceleration Length (LD), ft	1500	518
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	5300	1660
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.980
Flow Rate (v_i), pc/h	5807	1802
Capacity (c_{md}), pc/h	7200	2200
Initial Adjusted Capacity (c_{mda}), pc/h	7200	-
Final Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.76	0.82

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	23361.8	Flow Outer Lanes (v_{OA}), pc/h/ln	1538
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	60.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	3935	Outer Lanes Freeway Speed (S_O), mi/h	74.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.2
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (D_R), pc/mi/ln	33.4

HCS Basic Freeway Report

Project Information

Segment Number	14	Segment Name	I-675 SB between SR 48 Ramps
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	2698	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.17
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	3640	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1224
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.51

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	69.8
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	17.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

HCS Freeway Merge Report

Project Information

Segment Number	15	Segment Name	I-675 SB On Ramp from SB SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	70.0	55.0
Segment Length (L) / Acceleration Length (LA), ft	1500	844
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity

Demand Volume (V_i), veh/h	3640	780
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	3.00	1.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.971	0.990
Flow Rate (v_i), pc/h	3988	838
Capacity (c_{md}), pc/h	7200	2200
Adjusted Capacity (c_{mda}), pc/h	7200	2200
Volume-to-Capacity Ratio (v/c)	0.63	0.38

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	1814.3	Flow Outer Lanes (v_{OA}), pc/h/ln	1465
Downstream Equilibrium Distance (L_{EQ}), ft	-	On-Ramp Influence Area Speed (S_R), mi/h	61.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2206	Outer Lanes Freeway Speed (S_O), mi/h	66.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	3044	Ramp Junction Speed (S), mi/h	62.9
Number of Outer Lanes on Freeway (N_O), ln	1	Average Density (D), pc/mi/ln	23.9
Level of Service (LOS)	C	Density in Ramp Influence Area (D_R), pc/mi/ln	23.6

HCS Basic Freeway Report

Project Information

Segment Number	16	Segment Name	I-675 SB S of SR 48
Analysis Period Number	1	Segment Analysis Period	17:00-17:15

Geometric Data

Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	334	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	1.00
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	70.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	4420	Heavy Vehicle Adjustment Factor (f_{HV})	0.971
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1503
Total Trucks, %	3.00	Capacity (c), pc/h/ln	2400
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2400
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2400
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.63

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	68.4
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	21.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	70.0		

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Wilmington Pike TRAC C-D Segments Capacity Analysis Summary Tables

Segment	Analysis Type	Loation (I-675 NB C-D)	2050 AM				2050 PM			
			Option 2				Option 2			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Basic	C-D Road between Wilmington & Feedwire	C	0.46	0.46	-	B	0.35	0.35	-
2	Diverge	C-D Road between Wilmington & Feedwire Diverge	A	0.23	0.23	0.29	B	0.38	0.38	0.19

Segment	Analysis Type	Loation (I-675 SB C-D)	2050 AM				2050 PM			
			Option 2				Option 2			
			LOS	v/c	d/c		LOS	v/c	d/c	
					F*	R*			F*	R*
1	Weave	C-D Weave between Feedwire and Wilmington Pike	B	0.40	0.40	-	C	0.73	0.73	-

HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	AM Peak
Project Description	NB C-D Road between Wilmington & Feedwire	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	55.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1920	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	1042
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2250
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2250
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2250
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.46

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	55.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	18.9
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	55.0		

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HCS Basic Freeway Report

Project Information

Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak
Project Description	NB C-D Road between Wilmington & Feedwire	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	55.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Final Capacity Adjustment Factor (CAF)	1.000
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAF_{CAV}	1.000

Demand and Capacity

Demand Volume (V), veh/h	1470	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor (PHF)	0.94	Flow Rate (v_p), pc/h/ln	798
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2250
Single-Unit Trucks (SUT), %	-	Initial Adjusted Capacity (c_{adj}), pc/h/ln	2250
Tractor-Trailers (TT), %	-	Final Adjusted Capacity (c_{adj}), pc/h/ln	2250
Passenger Car Equivalent (E_T)	2.00	Volume-to-Capacity Ratio (v/c)	0.35

Speed and Density

Lane Width Adjustment (f_{LW})	-	Average Speed (S), mi/h	55.0
Right-Side Lateral Clearance Adj. (f_{RLC})	-	Density (D), pc/mi/ln	14.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	55.0		

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HCS Freeway Diverge Report

Project Information			
Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	AM Peak
Project Description	NB C-D between Wilmington and Feedwire	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	55.0	35.0
Segment Length (L) / Deceleration Length (LD), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity		
Demand Volume (V_i), veh/h	1560	360
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	2.00	0.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	1.000
Flow Rate (v_i), pc/h	1693	383
Capacity (c_{md}), pc/h	4500	2000
Initial Adjusted Capacity (c_{mda}), pc/h	4500	-
Final Adjusted Capacity (c_{mda}), pc/h	4500	2000
Volume-to-Capacity Ratio (v/c)	0.38	0.19

Speed and Density			
Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	49.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	1693	Outer Lanes Freeway Speed (S_O), mi/h	60.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	49.0
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	17.3
Level of Service (LOS)	B	Density in Ramp Influence Area (D_R), pc/mi/ln	15.2

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HCS Freeway Diverge Report

Project Information			
Analyst	RTM	Date	6/26/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak
Project Description	NB C-D between Wilmington and Feedwire	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	55.0	35.0
Segment Length (L) / Deceleration Length (LD), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Proportion of CAVs in Traffic Stream	0	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000	-
Final Capacity Adjustment Factor (CAF)	1.000	1.000

Demand and Capacity		
Demand Volume (V_i), veh/h	940	530
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980
Flow Rate (v_i), pc/h	1020	575
Capacity (c_{md}), pc/h	4500	2000
Initial Adjusted Capacity (c_{mda}), pc/h	4500	-
Final Adjusted Capacity (c_{mda}), pc/h	4500	2000
Volume-to-Capacity Ratio (v/c)	0.23	0.29

Speed and Density			
Upstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	-
Downstream Equilibrium Distance (L_{EQ}), ft	-	Off-Ramp Influence Area Speed (S_R), mi/h	48.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	1020	Outer Lanes Freeway Speed (S_O), mi/h	60.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	48.8
Number of Outer Lanes on Freeway (N_O), ln	0	Average Density (D), pc/mi/ln	10.5
Level of Service (LOS)	A	Density in Ramp Influence Area (D_R), pc/mi/ln	9.4

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HCS Freeway Weaving Report

Project Information

Analyst	RTM	Date	6/27/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	AM Peak
Project Description	SB C-D Weave btwn Feedwire and WilmPike	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Highway/CD Roadway
Segment Length (L_S), ft	875	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	1.000

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	690	470	0	130
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	2.00	2.00	0.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980
Flow Rate (v_i), pc/h	749	510	0	141
Weaving Flow Rate (v_w), pc/h	651	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2250
Non-Weaving Flow Rate (v_{NW}), pc/h	749	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3428
Total Flow Rate (v), pc/h	1400	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		5058
Volume Ratio (VR)	0.465	Weaving Area Capacity (c_W), veh/h		3428
Minimum Lane Change Rate (LC_{MIN}), lc/h	651	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3428
Maximum Weaving Length (L_{MAX}), ft	7420	Demand-to-Capacity Ratio (v/c)		0.40

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	262	Average Weaving Speed (S_W), mi/h	46.8
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	243	Average Non-Weaving Speed (S_{NW}), mi/h	47.0
Weaving Lane Change Rate (LC_W), lc/h	787	Average Speed (S), mi/h	46.9
Weaving Lane Change Rate (LC_{All}), lc/h	1030	Density (D), pc/mi/ln	14.9
Weaving Intensity Factor (W)	0.257	Level of Service (LOS)	B

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HCS Freeway Weaving Report

Project Information

Analyst	RTM	Date	6/27/2023
Agency	CMT	Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak
Project Description	SB C-D Weave btwn Feedwire and WilmPike	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Highway/CD Roadway
Segment Length (L_S), ft	875	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adjustment Factor for CAVs, CAF_{CAV}	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	1.000

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	960	520	0	760
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	2.00	2.00	0.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980
Flow Rate (v_i), pc/h	1042	564	0	825
Weaving Flow Rate (v_w), pc/h	1389	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2250
Non-Weaving Flow Rate (v_{NW}), pc/h	1042	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3242
Total Flow Rate (v), pc/h	2431	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4119
Volume Ratio (VR)	0.571	Weaving Area Capacity (c_W), veh/h		3242
Minimum Lane Change Rate (LC_{MIN}), lc/h	1389	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3242
Maximum Weaving Length (L_{MAX}), ft	8668	Demand-to-Capacity Ratio (v/c)		0.73

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	365	Average Weaving Speed (S_W), mi/h	43.5
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	304	Average Non-Weaving Speed (S_{NW}), mi/h	39.2
Weaving Lane Change Rate (LC_W), lc/h	1525	Average Speed (S), mi/h	41.5
Weaving Lane Change Rate (LC_{All}), lc/h	1829	Density (D), pc/mi/ln	29.3
Weaving Intensity Factor (W)	0.404	Level of Service (LOS)	C

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Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM												2050 PM											
	No Build				Option 1				Option 2				No Build				Option 1				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
WilmPike/ Brown	C (21.2)	-	-	-	C (24.5)	-	-	-	B (18.8)	-	-	-	B (16.9)	-	-	-	C (21.4)	-	-	-	B (19.5)	-	-	-
WB-Left	E (59.0)	0.836	1.48	258.6	E (59.0)	0.836	1.48	258.6	E (59.8)	0.822	1.35	236.3	E (60.5)	0.795	1.17	204.7	E (60.5)	0.795	1.17	204.7	E (60.9)	0.784	1.11	193.6
WB-Right	D (47.3)	0.209	-	53.2	D (47.3)	0.209	-	53.2	D (48.8)	0.231	-	54.3	D (51.3)	0.319	0	67	D (51.3)	0.319	-	67.0	D (52.1)	0.339	-	67.7
WB Approach	E (56.9)	-	-	-	E (56.9)	-	-	-	E (57.6)	-	-	-	E (58.1)	-	-	-	E (58.1)	-	-	-	E (58.4)	-	-	-
NB-Thru*	C (24.7)	0.501	0.62	582.1	C (29.3)	0.595	0.73	705.6	C (20.2)	0.572	0.61	588.3	C (22.6)	0.55	0.63	600.2	C (29.2)	0.716	0.83	801.6	C (25.8)	0.709	0.79	762.8
NB-Right*	C (26.3)	0.503	0.6	566.7	C (31.0)	0.602	0.71	685.9	C (21.3)	0.577	0.6	576.3	C (24.9)	0.556	0.65	610.4	C (32.3)	0.745	0.86	829.7	C (28.6)	0.736	0.82	793.3
NB Approach	C (25.5)	-	-	-	C (30.1)	-	-	-	C (20.7)	-	-	-	C (23.7)	-	-	-	C (30.8)	-	-	-	C (27.2)	-	-	-
SB-Left	A (10.0)	0.073	0.05	7.4	B (13.7)	0.093	0.07	10.2	B (10.4)	0.082	0.05	8	D (36.7)	0.35	0.34	51	D (36.7)	0.350	0.34	51.0	D (36.8)	0.336	0.34	51.3
SB-Thru	A (3.8)	0.278	0	87.3	A (3.8)	0.278	-	87.3	A (3.3)	0.248	-	68.1	A (4.4)	0.525	-	177.4	A (4.4)	0.525	-	177.4	A (4.0)	0.504	-	154.1
SB Approach	A (4.0)	-	-	-	A (4.1)	-	-	-	A (3.5)	-	-	-	A (5.4)	-	-	-	A (5.4)	-	-	-	A (5.1)	-	-	-

Intersection/ Approach	2050 AM												2050 PM											
	No Build				Option 1				Option 2				No Build				Option 1				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm & Feedwire	D (40.6)	-	-	-	D (40.2)	-	-	-	C (34.0)	-	-	-	E (72.7)	-	-	-	D (40.5)	-	-	-	D (38.8)	-	-	-
EB-Left	C (32.2)	0.184	0.31	76.9	C (31.5)	0.180	0.3	75.9	C (29.4)	0.357	0.59	147.8	C (34.7)	0.384	0.55	136.4	D (41.0)	0.406	0.6	150.5	C (32.9)	0.664	0.92	230.8
EB-Thru	D (37.2)	0.189	-	83.4	D (36.4)	0.183	-	82.3	C (34.8)	0.159	-	74.4	D (43.8)	0.549	-	225.9	E (65.2)	0.852	-	271.9	D (42.7)	0.608	-	266.4
EB-Right	D (51.6)	0.855	2.59	493	D (48.4)	0.833	0.96	479.5	D (35.5)	0.693	0.78	367.4	C (31.8)	0.524	1.45	275.4	D (41.7)	0.658	0.63	313.7	C (28.8)	0.442	0.51	239.1
EB Approach	D (46.0)	-	-	-	D (43.6)	-	-	-	C (34.4)	-	-	-	D (38.0)	-	-	-	D (52.9)	-	-	-	D (36.6)	-	-	-
WB-Left	D (53.3)	0.893	0.78	351.9	D (53.3)	0.893	0.78	351.9	E (56.3)	0.794	0.36	162.3	F (165.9)	1.218	1.31	588.3	D (54.1)	0.827	0.8	358.5	D (55.0)	0.82	0.45	202.4
WB-Thru	C (23.1)	0.157	-	91.3	C (22.5)	0.154	-	89.8	C (34.2)	0.254	-	127.3	D (35.6)	0.456	0	236.4	D (35.9)	0.460	-	237	D (43.6)	0.634	0	273.9
WB Approach	D (35.5)	-	-	-	D (35.4)	-	-	-	C (33.4)	-	-	-	F (85.3)	-	-	-	D (36.1)	-	-	-	D (35.7)	-	-	-
NB-Left	E (56.6)	0.771	0.48	162	E (56.6)	0.771	0.48	162	E (56.4)	0.767	0.48	161.7	D (52.3)	0.838	0.79	266.4	D (52.3)	0.838	0.79	266.3	D (52.3)	0.837	0.79	266.3
NB-Thru*	D (37.7)	0.467	0.23	229.4	D (38.7)	0.482	0.23	232	C (26.8)	0.28	0.16	159.5	D (40.3)	0.804	0.46	458.7	D (40.5)	0.807	0.46	460.3	D (35.8)	0.666	0.37	368.6
NB-Right	C (20.5)	0.39	0.88	232.9	B (18.2)	0.224	0.27	109.4	B (18.4)	0.151	0.11	81.8	F (170.9)	1.292	7.05	1869.1	B (19.4)	0.635	0.88	353.3	D (37.0)	0.806	0.71	552.1
NB Approach	D (37.1)	-	-	-	D (37.0)	-	-	-	C (33.7)	-	-	-	F (89.0)	-	-	-	C (34.8)	-	-	-	D (39.4)	-	-	-
SB-Left	E (58.0)	0.719	0.36	114.9	E (57.9)	0.717	0.36	114.8	E (58.0)	0.701	0.34	107	E (59.1)	0.811	0.6	190.8	E (67.8)	0.831	0.65	204.3	D (55.0)	0.796	0.63	200.4
SB-Thru	D (42.9)	0.608	-	305.4	D (44.2)	0.671	-	302.7	C (30.4)	0.396	-	221.4	D (46.0)	0.797	-	447.2	D (44.8)	0.799	-	403.2	D (38.8)	0.652	-	334.5
SB-Right	D (45.8)	0.609	-	310.5	D (35.4)	0.057	0.08	23.4	C (26.9)	0.1	0.17	49.6	D (52.1)	0.798	0	456.8	C (34.9)	0.250	0.41	118.6	D (35.5)	0.381	0.68	196.3
SB Approach	D (46.2)	-	-	-	D (46.3)	-	-	-	C (34.9)	-	-	-	D (50.0)	-	-	-	D (48.2)	-	-	-	D (41.7)	-	-	-

**QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach*

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM																			
	No Build				Option 1				Option 1B (Transmodeler)				Option 1B (HCS)				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 SB Ramps	F (127.3)	-	-	-	D (46.7)	-	-	-	C (26.7)	NO OUTPUT	-	-	B (16.7)	-	-	-	C (34.5)	-	-	-
WB-Left	F (166.0)	1.268	3.11	1775.1	D (54.7)	0.927	0.51	392.8	C (23.8)		0.21	157.8	C (25.0)	0.639	0.52	388.7	E (55.1)	0.898	0.71	468.4
WB-Thru	C (20.3)	0.015	-	8.6	-	-	-	-	-		-	-	-	-	-	-	D (39.6)	0.56	-	286.1
WB-Right	C (28.8)	0.601	0.62	354.8	C (32.7)	0.318	0.24	137.7	C (32.0)		0.14	103.1	C (20.5)	0.200	0.14	104	D (35.2)	0.207	0.12	78.7
WB Approach	F (124.4)	-	-	-	D (48.2)	-	-	-	-		-	-	-	-	-	-	D (47.4)	-	-	-
NB-Left	F (379.3)	1.759	2.46	1130.8	D (43.2)	0.939	0.67	309.8	-		-	-	-	-	-	-	D (36.0)	0.992	0.96	443.4
NB-Thru*	D (38.6)	0.954	0.61	591.4	F (56.2)	1.093	0.65	326.7	C (28.6)		0.23	192.8	C (26.3)	0.608	0.31	262	A (1.4)	0.564	0.07	36.3
NB Approach	F (127.1)	-	-	-	D (52.8)	-	-	-	C (28.6)		-	-	-	-	-	-	B (10.8)	-	-	-
SB-Thru*	F (129.7)	1.171	0.93	931.9	D (35.9)	0.814	0.46	382.9	C (24.9)		0.20	188.4	B (10.5)	0.415	0.12	111.3	E (65.6)	0.923	0.41	410.7
SB Approach	F (129.7)	-	-	-	D (35.9)	-	-	-	C (24.9)		-	-	-	-	-	-	E (65.6)	-	-	-

Intersection/ Approach	2050 PM																			
	No Build				Option 1				Option 1B (Transmodeler)				Option 1B (HCS)				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 SB Ramps	F (221.7)	-	-	-	F (81.6)	-	-	-	C (28.4)	NO OUTPUT	-	-	C (28.8)	-	-	-	D (37.1)	-	-	-
WB-Left	F (252.3)	1.477	5.11	115.5	F (145.0)	1.209	0.67	772.7	C (25.9)		0.35	263.0	B (13.5)	0.607	0.49	367.3	D (53.8)	0.93	0.86	569.6
WB-Thru	B (16.4)	0.012	-	0.3	-	-	-	-	-		-	-	-	-	-	-	C (33.6)	0.461	-	263.8
WB-Right	F (267.7)	1.51	4.83	109.2	D (48.6)	0.896	0.76	435.3	D (37.7)		0.34	249.2	D (48.9)	0.884	0.58	432.9	D (51.8)	0.899	0.69	458.5
WB Approach	F (258.6)	-	-	-	F (99.1)	-	-	-	-		-	-	-	-	-	-	D (48.4)	-	-	-
NB-Left	F (416.5)	1.848	1.57	28.9	D (49.5)	0.869	0.48	223	-		-	-	-	-	-	-	D (46.7)	0.965	0.77	354.7
NB-Thru*	F (149.0)	1.236	0.05	51.4	F (100.7)	1.206	1.04	523.3	C (31.9)		0.43	359.9	C (22.5)	0.851	0.54	454.4	A (5.4)	0.62	0.24	119
NB Approach	F (191.7)	-	-	-	F (92.5)	-	-	-	C (31.9)		-	-	-	-	-	-	B (13.4)	-	-	-
SB-Thru*	F (208.0)	1.347	1.44	1391.8	D (47.7)	0.778	0	520	B (17.9)		0.17	160.1	F (56.9)	1.025	0.44	424.8	D (54.5)	0.887	0	454.5
SB Approach	F (208.0)	-	-	-	D (47.7)	-	-	-	B (17.9)		-	-	-	-	-	-	D (54.5)	-	-	-

**QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream of the approach*

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM																			
	No Build				Option 1				Option 1B (Transmodeler)				Option 1B (HCS)				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 NB Ramps	F (144.2)	-	-	-	C (30.9)	-	-	-	C (28.6)	NO OUTPUT	-	-	B (18.6)	-	-	-	C (25.7)	-	-	-
EB-Left	F (161.2)	1.199	1.57	834.5	D (46.0)	0.675	0.26	186.6	C (26.0)		0.16	96.2	C (25.4)	0.319	0.33	171.3	D (36.6)	0.273	0.2	112.9
EB-Thru	D (38.3)	0.029	-	12	-	-	-	-	-		-	-	-	-	-	-	D (38.2)	0.418	-	216.7
EB-Right	F (156.0)	1.179	1.38	732.2	D (44.9)	0.616	0.34	223.1	D (37.7)		0.25	138.9	B (16.9)	0.280	0.27	154.4	E (72.1)	0.928	0.94	499.9
EB Approach	F (157.2)	-	-	-	D (45.5)	-	-	-	-		-	-	-	-	-	-	D (51.1)	-	-	-
NB-Thru*	F (198.2)	1.318	3.36	2030.6	D (45.5)	0.842	0.65	617.2	D (39.4)		0.31	189.5	B (15.2)	0.199	0.15	66.5	C (32.0)	0.996	0.42	399.8
NB Approach	F (198.2)	-	-	-	D (45.5)	-	-	-	D (39.4)		-	-	-	-	-	-	C (32.0)	-	-	-
SB-Left	F (269.7)	1.483	2.85	1310.4	D (46.3)	0.969	0.52	299.9	-		-	-	-	-	-	-	D (43.9)	0.926	0.4	185.9
SB-Thru*	C (22.9)	0.64	0.74	373	A (1.9)	0.780	0.06	29	C (21.4)		0.31	290.1	C (29.7)	0.812	0.39	326.1	A (2.1)	0.552	0.11	56.5
SB Approach	F (89.9)	-	-	-	B (14.0)	-	-	-	C (21.4)		-	-	-	-	-	-	A (7.1)	-	-	-

Intersection/ Approach	2050 PM																			
	No Build				Option 1				Option 1B (Transmodeler)				Option 1B (HCS)				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 NB Ramps	F (160.4)	-	-	-	E (64.1)	-	-	-	C (31.8)	NO OUTPUT	-	-	D (43.9)	-	-	-	C (28.1)	-	-	-
EB-Left	F (183.4)	1.304	3.41	1806.5	F (90.2)	1.059	0.65	470	C (30.6)		0.34	201.8	C (30.5)	0.424	0.41	216.4	D (35.5)	0.493	0.42	233.4
EB-Thru	C (22.0)	0.014	-	8.2	-	-	-	-	-		-	-	-	-	-	-	D (35.3)	0.490	-	274.7
EB-Right	D (35.0)	0.708	0.8	426.6	D (37.6)	0.551	0.37	240.4	D (36.1)		0.28	153.2	B (16.6)	0.517	0.53	305.1	D (53.7)	0.851	0.89	474.1
EB Approach	F (134.2)	-	-	-	E (73.1)	-	-	-	-		-	-	-	-	-	-	D (40.7)	-	-	-
NB-Thru*	F (211.6)	1.399	2.86	1730.1	D (46.0)	0.711	0.55	515.4	D (44.5)		0.45	273.0	C (34.7)	0.928	0.96	434.2	D (47.4)	0.898	0.84	656.1
NB Approach	F (211.6)	-	-	-	D (46.0)	-	-	-	D (44.5)		-	-	-	-	-	-	D (47.4)	-	-	-
SB-Left	F (411.3)	1.82	1.99	914.8	D (52.4)	0.898	0.44	254.5	-		-	-	-	-	-	-	D (48.1)	0.893	0.45	209.1
SB-Thru*	F (82.4)	1.076	1.52	764.3	F (74.8)	1.153	0.85	429.1	C (23.9)		0.36	337.8	F (97.3)	1.141	0.97	814.5	A (4.0)	0.786	0.18	94.4
SB Approach	F (137.5)	-	-	-	E (71.0)	-	-	-	C (23.9)		-	-	-	-	-	-	A (7.8)	-	-	-

**QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream of the approach*

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM												2050 PM											
	No Build				Option 1				Option 2				No Build				Option 1				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pk & Miami Valley	C (25.7)	-	-	-	B (13.8)	-	-	-	B (12.0)	-	-	-	B (17.9)	-	-	-	B (19.2)	-	-	-	B (17.4)	-	-	-
EB-Left	E (56.6)	0.452	0.29	60.7	E (56.6)	0.452	0.29	60.7	E (56.6)	0.452	0.29	60.7	E (58.1)	0.789	0.89	185.9	E (55.9)	0.749	0.87	181.7	E (56.1)	0.766	0.9	189.4
EB-Thru/Right	D (50.6)	0.201	-	43	D (50.5)	0.201	-	43	D (48.8)	0.174	-	42	D (47.0)	0.313	-	92.1	D (46.4)	0.303	-	91.4	D (46.2)	0.299	-	91.2
EB Approach	D (54.9)	-	-	-	D (54.9)	-	-	-	D (54.5)	-	-	-	E (55.7)	-	-	-	D (53.8)	-	-	-	D (54.0)	-	-	-
WB-Left	D (51.6)	0.062	0.47	14.2	D (51.6)	0.062	0.47	14.2	D (49.9)	0.056	0.47	14	D (51.0)	0.058	0.45	13.6	D (51.0)	0.058	0.45	13.6	D (51.0)	0.058	0.45	13.6
WB-Thru/Right	D (54.8)	0.211	-	30	D (54.8)	0.211	-	30	D (52.7)	0.169	-	29.1	D (53.9)	0.185	-	28.4	D (53.9)	0.185	-	28.4	D (53.9)	0.185	-	28.4
WB Approach	D (53.7)	-	-	-	D (53.7)	-	-	-	D (51.8)	-	-	-	D (53.0)	-	-	-	D (53.0)	-	-	-	D (53.0)	-	-	-
NB-Left	B (12.5)	0.142	0.6	9.8	A (8.8)	0.167	0.05	10	A (7.2)	0.142	0.06	10.3	B (13.3)	0.059	0.02	3.7	B (13.2)	0.069	0.03	4.3	B (13.2)	0.070	0.2	4.2
NB-Thru*	C (25.3)	0.802	1.19	674.4	B (10.7)	0.459	-	241.6	B (14.3)	0.45	-	308.6	B (12.9)	0.698	-	278.5	B (16.5)	0.374	-	262.9	B (12.1)	0.368	-	194.5
NB-Right*	C (25.4)	0.803	1.19	670.9	B (11.1)	0.459	-	243.7	B (14.8)	0.45	-	311.1	B (13.0)	0.698	-	280.4	B (17.1)	0.374	-	267.2	B (12.5)	0.368	-	196.7
NB Approach	C (25.2)	-	-	-	B (10.8)	-	-	-	B (14.3)	-	-	-	B (13.0)	-	-	-	B (16.7)	-	-	-	B (12.2)	-	-	-
SB-Left	B (19.6)	0.09	0.03	7	A (8.4)	0.082	0.02	5.4	A (9.6)	0.071	0.02	5.1	B (13.4)	0.244	0.1	24.2	A (9.4)	0.259	0.11	26.4	A (9.2)	0.267	0.14	32.8
SB-Thru*	C (22.7)	0.563	0.55	519.1	B (13.3)	0.510	0.34	324.4	A (7.7)	0.484	0.19	185.4	B (15.4)	0.645	0.37	351.9	B (16.3)	0.575	0.35	327.7	B (15.4)	0.591	0.39	370.9
SB-Right*	C (26.9)	0.571	0.54	510.9	B (17.0)	0.513	0.35	333.1	A (3.8)	0.485	0.07	70.3	B (15.5)	0.649	0.37	348.8	B (16.8)	0.577	0.35	328.6	B (16.3)	0.593	0.4	374.7
SB Approach	C (23.9)	-	-	-	B (14.1)	-	-	-	A (6.8)	-	-	-	B (15.4)	-	-	-	B (16.2)	-	-	-	B (15.4)	-	-	-

Intersection/ Approach	2050 AM												2050 PM											
	No Build				Option 1				Option 2				No Build				Option 1				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Wilm Pike & Clyo	F (83.6)	-	-	-	D (45.4)	-	-	-	D (40.3)	-	-	-	E (78.1)	-	-	-	D (51.1)	-	-	-	D (53.6)	-	-	-
EB-Left	F (160.0)	1.189	2.74	479.1	D (51.3)	0.826	0.96	288.7	D (52.2)	0.817	0.890	268.4	E (55.1)	0.801	1.24	216.9	E (56.1)	0.813	0.73	218.6	E (63.3)	0.828	0.71	213.3
EB-Thru*	D (35.9)	0.367	-	196.8	C (32.1)	0.256	-	135.8	C (33.2)	0.296	-	155.8	F (91.1)	0.979	-	503.7	E (62.0)	0.864	-	319.2	E (55.1)	0.819	-	319.4
EB-Right	D (36.1)	0.379	-	188.2	C (26.0)	0.151	0.21	75.8	C (27.3)	0.177	0.24	87.9	F (95.7)	0.988	-	482.9	D (41.6)	0.462	0.52	186.7	D (39.8)	0.453	0.54	193.5
EB Approach	F (106.8)	-	-	-	D (42.4)	-	-	-	D (42.4)	-	-	-	F (80.4)	-	-	-	E (56.7)	-	-	-	D (55.0)	-	-	-
WB-Left	C (34.4)	0.294	0.45	103.1	D (35.9)	0.262	0.28	105.8	E (57.7)	0.563	0.2	76.6	E (78.0)	0.952	1.53	352.9	D (55.0)	0.835	0.82	305.9	E (56.5)	0.785	0.51	190
WB-Thru	D (46.3)	0.671	-	302	D (42.6)	0.390	-	156.1	D (42.8)	0.405	-	163.2	F (80.3)	0.935	-	453.4	D (46.5)	0.535	-	195.8	D (45.8)	0.541	-	204.8
WB-Right	E (65.9)	0.891	-	386.9	C (34.0)	0.563	0.67	285	D (36.0)	0.581	0.67	283.1	F (132.3)	1.103	1.35	570.8	D (35.4)	0.607	0.74	313.3	C (31.3)	0.538	0.67	286.2
WB Approach	D (53.3)	-	-	-	D (37.7)	-	-	-	D (42.3)	-	-	-	F (98.2)	-	-	-	D (45.0)	-	-	-	D (44.1)	-	-	-
NB-Left	C (24.2)	0.484	0.45	105.5	D (51.5)	0.705	0.39	91.5	C (26.8)	0.325	0.27	62.6	D (35.2)	0.764	0.59	138.3	E (70.4)	0.776	0.53	125	C (31.7)	0.541	0.31	72.9
NB-Thru*	F (110.9)	1.151	0.77	1075.3	D (48.1)	0.925	0.36	509.5	D (37.9)	0.81	-	446.4	F (96.3)	1.068	0.53	738.6	C (32.2)	0.551	-	310.5	D (37.8)	0.592	-	353.4
NB-Right*	F (113.0)	1.157	0.77	1067.6	D (54.7)	0.925	0.37	528.4	D (42.0)	0.81	-	461.3	F (96.2)	1.069	0.51	717.1	C (30.2)	0.553	-	278.8	D (38.5)	0.594	-	340.6
NB Approach	F (104.2)	-	-	-	D (50.4)	-	-	-	D (38.1)	-	-	-	F (88.5)	-	-	-	D (36.5)	-	-	-	D (37.1)	-	-	-
SB-Left	F (179.7)	1.294	3.06	550.3	D (54.1)	0.816	0.91	237.1	D (54.1)	0.792	0.76	197.8	D (48.9)	0.92	2.65	476.9	D (35.4)	0.880	0.76	197.9	E (56.3)	0.825	0.81	322.2
SB-Thru*	C (34.4)	0.581	-	381.3	D (48.2)	0.735	-	379.2	D (43.6)	0.688	-	358.2	F (76.2)	1.023	1.15	918.9	F (75.0)	1.091	0.87	695	F (77.8)	1.128	0.65	518
SB-Right*	C (25.2)	0.562	-	378.4	C (32.4)	0.707	0.73	577.7	C (26.6)	0.564	-	451.1	C (26.4)	0.399	-	318.3	B (11.6)	0.435	-	167.6	A (5.9)	0.395	-	79
SB Approach	E (61.0)	-	-	-	D (44.8)	-	-	-	D (40.7)	-	-	-	E (63.5)	-	-	-	E (58.0)	-	-	-	E (64.1)	-	-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream of the approach

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM												2050 PM											
	No Build				Option 1				Option 2				No Build				Option 1				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Feedwire & Charles	B (19.1)	-	-	-	B (14.8)	-	-	-	B (19.2)	-	-	-	D (36.1)	-	-	-	D (37.7)	-	-	-	D (36.6)	-	-	-
EB-Left	A (7.6)	0.076	0.03	10.9	D (47.9)	0.242	0.05	18.5	D (51.2)	0.273	0.07	25.3	D (44.2)	0.92	1.21	398.8	D (48.7)	0.856	0.85	287.7	D (37.8)	0.855	0.66	224.2
EB-Thru*	B (19.4)	0.299	-	218.7	A (8.0)	0.299	-	93.1	B (19.6)	0.198	-	145.6	C (31.8)	0.781	-	306.4	C (29.6)	0.813	-	360.6	C (33.2)	0.712	-	315.2
EB-Right*	B (18.4)	0.299	-	288.5	A (8.1)	0.300	-	143.3	B (18.6)	0.2	-	193.6	C (30.5)	0.781	-	430.1	C (28.6)	0.814	0.72	513.9	C (32.0)	0.713	0.83	432.4
EB Approach	B (18.2)	-	-	-	B (10.1)	-	-	-	C (22.2)	-	-	-	D (35.2)	-	-	-	D (35.1)	-	-	-	C (34.5)	-	-	-
WB-Left	A (8.2)	0.041	0.02	7.9	A (7.2)	0.039	0.02	8.1	A (7.9)	0.152	0.11	40.8	C (30.5)	0.535	0.36	134.2	C (34.2)	0.672	0.32	152.7	C (25.2)	0.707	0.51	189.4
WB-Thru	B (16.4)	0.383	-	314.7	B (13.4)	0.402	-	284.5	A (5.6)	0.315	-	97.4	D (38.4)	0.801	-	343.6	C (34.2)	0.690	-	389.9	C (35.0)	0.625	-	362.1
WB-Right	B (16.5)	0.383	-	313.9	B (13.5)	0.402	-	283.7	A (7.5)	0.316	-	122.4	D (39.9)	0.803	-	336.5	C (32.4)	0.690	-	352.6	C (24.0)	0.628	-	226.3
WB Approach	B (16.3)	-	-	-	B (13.3)	-	-	-	A (6.7)	-	-	-	D (37.8)	-	-	-	C (33.5)	-	-	-	C (28.7)	-	-	-
NB-Left	D (47.5)	0.177	0.71	53.5	D (47.5)	0.177	0.71	53.5	D (47.1)	0.193	0.71	53.3	D (36.9)	0.647	0.92	68.9	D (53.5)	0.812	3.2	240.3	D (42.0)	0.682	4.38	328.5
NB-Thru	D (48.4)	0.054	-	13.5	D (48.4)	0.054	-	13.5	D (50.9)	0.069	-	14	D (37.6)	0.242	-	117.4	D (43.8)	0.322	-	128.3	D (50.6)	0.432	-	124.1
NB-Right	D (45.2)	0.05	0.17	13	D (45.1)	0.049	0.17	13	D (47.0)	0.289	1.08	80.8	C (30.6)	0.194	1.25	94.1	D (37.9)	0.257	0.02	1.7	D (39.3)	0.346	1.93	144.8
NB Approach	D (47.3)	-	-	-	D (47.2)	-	-	-	D (47.4)	-	-	-	D (35.9)	-	-	-	D (48.8)	-	-	-	D (42.9)	-	-	-
SB-Left	D (49.4)	0.053	0.06	13.7	D (49.4)	0.053	0.06	13.7	D (46.9)	0.211	0.29	67.1	D (43.2)	0.709	0.73	167.9	D (50.6)	0.787	0.82	188.6	D (49.0)	0.803	1.76	405.4
SB-Thru	D (51.4)	0.073	-	14.2	D (51.4)	0.073	-	14.2	D (50.9)	0.132	-	28.2	D (39.7)	0.14	-	59.3	D (41.4)	0.153	-	60.8	D (48.2)	0.271	0	80.6
SB-Right	D (48.7)	0.232	0.24	55.2	D (48.7)	0.232	0.24	55.2	D (50.6)	0.519	0.62	143.1	C (28.6)	0.535	1.31	302.3	C (32.8)	0.588	1.4	323.1	D (43.1)	0.720	1.61	369.7
SB Approach	D (49.3)	-	-	-	D (49.3)	-	-	-	D (49.6)	-	-	-	D (35.9)	-	-	-	D (41.4)	-	-	-	D (46.3)	-	-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500'

Intersection/ Approach	2050 AM				2050 PM			
	Option 2				Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Feedwire & I-675 SB	C (33.7)	-	-	-	C (31.6)	-	-	-
EB-Thru*	C (31.6)	0.194	0.2	166.5	C (22.3)	0.550	0.34	255.9
EB-Right	C (27.3)	0.056	0	39.1	B (12.0)	0.150	0	43.6
EB-Approach	C (31.2)	-	-	-	C (21.5)	-	-	-
WB-Left	D (45.7)	0.842	1.07	266.3	D (53.2)	0.811	1.07	266.5
WB-Thru*	A (7.5)	0.203	0.36	92.5	B (18.4)	0.285	1.04	263.7
WB-Approach	C (27.1)	-	-	-	C (32.5)	-	-	-
SB-Left	D (40.4)	0.596	0.41	291.7	D (44.8)	0.863	0.68	476.3
SB-Thru**	0	0	-	0	0	0.000	-	0
SB-Right	D (49.4)	0.884	0.58	410.8	D (46.0)	0.876	0.63	442
SB-Approach	D (45.6)	-	-	-	D (45.4)	-	-	-

** No SB thru volumes but analyzed with a three lane SB approach: LT, T-L, RT

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables

Intersection/ Approach	2050 AM Option 2				2050 PM Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Feedwire & I-675 NB	C (21.7)	-	-	-	C (20.2)	-	-	-
EB-Left	D (52.6)	0.824	0.87	217.5	D (49.5)	0.831	0.78	195
EB-Thru*	A (0.8)	0.129	0.01	9.9	A (2.6)	0.505	0.3	77.7
EB-Approach	C (26.3)	-	-	-	B (12.6)	-	-	-
WB-Thru*	A (9.5)	0.217	0.23	100.4	B (18.2)	0.269	0.53	188.1
WB-Right	A (9.4)	0.345	0.24	141.4	B (15.0)	0.350	0.31	183.7
WB-Approach	A (9.5)	-	-	-	B (17.5)	-	-	-
NB-Thru Left	D (47.2)	0.317	0.09	94.4	D (39.9)	0.211	0.08	85.7
NB-Right	D (52.5)	0.834	0.22	208.6	D (48.2)	0.878	0.310	297.3
NB-Approach	D (51.5)	-	-	-	D (47.1)	-	-	-

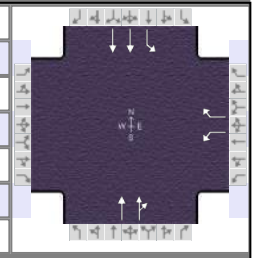
**QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream of the approach*

Intersection/ Approach	2050 AM No Build				2050 AM Option 1				2050 AM Option 2				2050 PM No Build				2050 PM Option 1				2050 PM Option 2			
	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)	LOS (Delay/sec)	v/c	QSR*	95th %tile Queue (ft)
Feedwire & Clyo	C (27.3)	-	-	-	B (16.2)	-	-	-	C (21.8)	-	-	-	F (115.0)	-	-	-	C (24.4)	-	-	-	C (22.4)	-	-	-
EB-Thru*	D (36.9)	0.609	0.43	574.5	C (31.0)	0.271	0.16	219.9	C (22.2)	0.252	0.16	217.9	F (205.4)	1.406	1.63	2180.8	C (27.9)	0.799	0.26	375.8	C (24.1)	0.710	0.37	472.4
EB-Right	-	-	-	-	B (11.7)	0.125	0.29	146.6	A (5.8)	0.128	0.05	41.9	-	-	-	-	A (4.3)	0.294	0.11	57.4	A (3.7)	0.321	0.07	55.8
EB Approach	D (36.9)	-	-	-	C (26.5)	-	-	-	B (18.7)	-	-	-	F (205.4)	-	-	-	C (22.6)	-	-	-	B (19.6)	-	-	-
WB-Left	C (26.0)	0.967	1.35	202.6	A (7.8)	0.627	0.18	121.1	D (38.0)	0.864	0.31	194.7	D (43.8)	0.909	2.22	332.7	D (35.2)	0.915	0.43	299	D (37.1)	0.852	0.24	152.8
WB-Thru	B (15.5)	0.602	-	380.7	A (5.3)	0.329	-	105.3	A (7.4)	0.366	-	183.3	B (10.6)	0.47	-	261.1	B (13.4)	0.311	-	196.1	A (4.0)	0.331	-	77.3
WB Approach	B (19.5)	-	-	-	A (6.3)	-	-	-	B (17.3)	-	-	-	C (23.0)	-	-	-	C (21.6)	-	-	-	B (14.3)	-	-	-
NB-Left	D (40.9)	0.383	0.93	171.5	D (40.0)	0.209	0.12	82.8	D (48.0)	0.389	0.17	113.7	F (155.7)	1.166	3.51	649.8	C (33.2)	0.330	0.26	175.5	D (43.9)	0.589	0.37	242.4
NB-Right*	C (34.5)	0.639	-	340.5	C (27.4)	0.536	-	305	C (34.2)	0.408	-	180.7	E (59.4)	0.939	0.34	659.7	C (29.3)	0.736	-	480.8	C (33.2)	0.549	-	255.6
NB Approach	D (36.4)	-	-	-	C (31.1)	-	-	-	D (39.0)	-	-	-	F (95.9)	-		-	C (30.8)	-	-	-	D (38.0)	-	-	-

**QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500'*

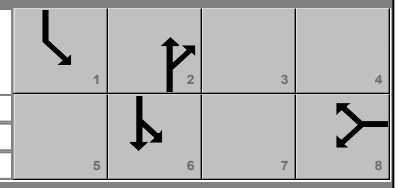
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Brown Rd & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	24	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				5		5		4		3	3	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.74	0.74	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

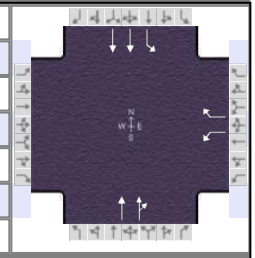
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l1*), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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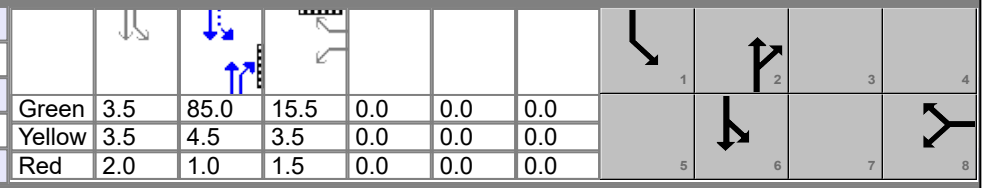
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Brown Rd & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	24	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0		
Red	2.0	1.0	1.5	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				20.5		90.5	9.0	99.5
Change Period, ($Y+R_c$), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (g_s), s				14.6			2.4	
Green Extension Time (g_e), s				0.8		0.0	0.1	0.0
Phase Call Probability				1.00			0.50	
Max Out Probability				0.00			0.00	

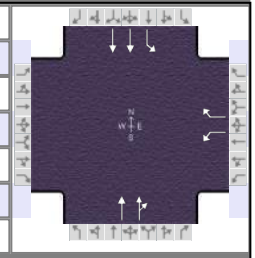
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				188		42		654	631	21	771	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1739		1547		1841	1770	1767	1766	
Queue Service Time (g_s), s				12.6		2.9		30.7	35.7	0.4	7.2	
Cycle Queue Clearance Time (g_c), s				12.6		2.9		30.7	35.7	0.4	7.2	
Green Ratio (*g/C*)				0.13		0.13		0.71	0.71	0.75	0.78	
Capacity (*c*), veh/h				224		200		1304	1254	287	2768	
Volume-to-Capacity Ratio (*X*)				0.836		0.209		0.501	0.503	0.073	0.278	
Back of Queue (*Q*), ft/ln (95 th percentile)				258.6		53.2		582.1	566.7	7.4	87.3	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.9		2.0		22.6	22.7	0.3	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.48		0.00		0.00	0.00	0.05	0.00	
Uniform Delay (d_1), s/veh				51.0		46.8		23.6	25.2	9.9	3.6	
Incremental Delay (d_2), s/veh				8.0		0.5		1.0	1.1	0.1	0.3	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				59.0		47.3		24.7	26.3	10.0	3.8	
Level of Service (LOS)				E		D		C	C	A	A	
Approach Delay, s/veh / LOS	0.0			56.9	E		25.5	C		4.0	A	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.64	A
Bicycle LOS Score / LOS				F	1.19	A	1.14	A

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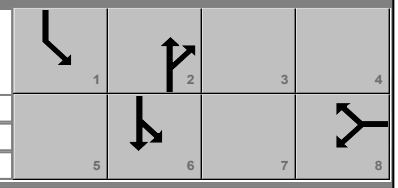
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Brown Rd & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	24	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

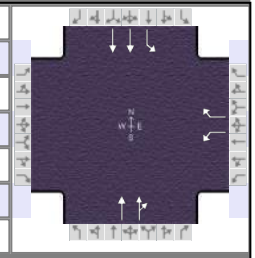
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.961	1.000	0.961	1.000	0.969	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.961	0.961		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1739	0	1547	0	3215	395	1767	3622	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.13	0.00	0.13	0.00	0.32	0.17	0.03	0.78	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.13		0.71	0.75	0.78
Permitted Saturation Flow Rate (s_p), veh/h/ln				1739		710	427	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	87.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	49.3	0.0
Permitted Queue Service Time (g_{ps}), s							1.9	
Time to First Blockage (g_f), s				0.0		85.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.065	0.000	0.041
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1417.03	5.10	1567.11	2.81
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	0.70	-3.64	0.65

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Brown Rd & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				

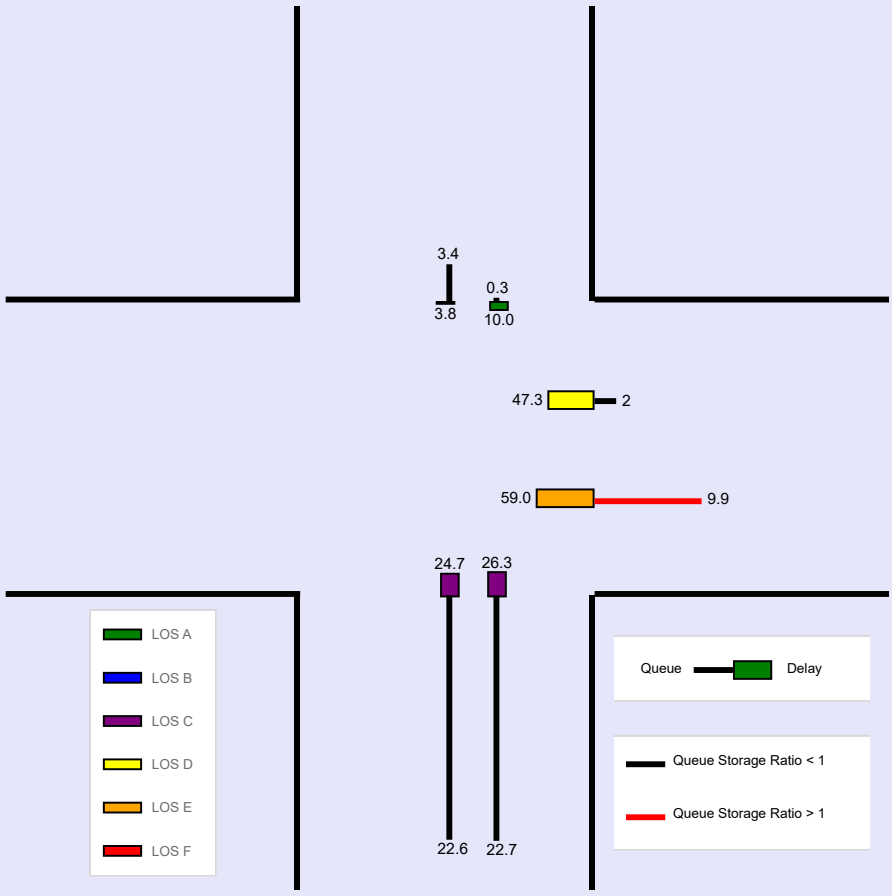


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	24	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.5	85.0	15.5	0.0	0.0	0.0	1	2	3	4		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0	5	6	7	8		
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				258.6		53.2		582.1	566.7	7.4	87.3	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.9		2.0		22.6	22.7	0.3	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.48		0.00		0.00	0.00	0.05	0.00	
Control Delay (*d*), s/veh				59.0		47.3		24.7	26.3	10.0	3.8	
Level of Service (LOS)				E		D		C	C	A	A	
Approach Delay, s/veh / LOS	0.0			56.9		E	25.5		C	4.0		A
Intersection Delay, s/veh / LOS	21.2						C					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

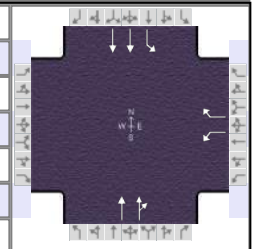
WARNING: According to input data, upstream feeding volume is equal to 153% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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HCS Signalized Intersection Input Data

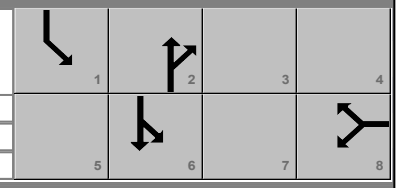
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Brown Rd & Wilm Pike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.7	86.2	12.1	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				2		2		1		1	1	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.74	0.74	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

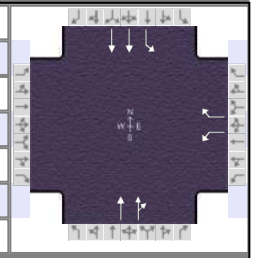
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l*t), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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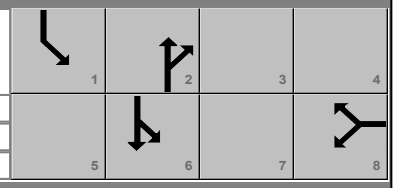
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Brown Rd & Wilm Pike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	86.2	12.1	0.0	0.0	0.0		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0		
Red	2.0	1.0	1.5	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				17.1		91.7	11.2	102.9
Change Period, (*Y+R c*), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (*g s*), s				11.4			2.8	
Green Extension Time (*g e*), s				0.7		0.0	0.2	0.0
Phase Call Probability				1.00			0.82	
Max Out Probability				0.00			0.00	

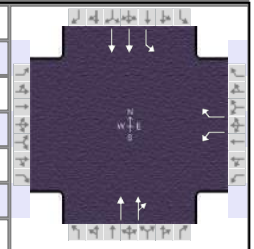
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				143		51		745	722	51	1531	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1781		1585		1885	1808	1795	1795	
Queue Service Time (*g s*), s				9.4		3.6		98.9	38.7	0.8	16.8	
Cycle Queue Clearance Time (*g c*), s				9.4		3.6		98.9	38.7	0.8	16.8	
Green Ratio (*g/C*)				0.10		0.10		0.72	0.72	0.78	0.81	
Capacity (*c*), veh/h				180		160		1354	1299	146	2913	
Volume-to-Capacity Ratio (*X*)				0.795		0.319		0.550	0.556	0.350	0.525	
Back of Queue (*Q*), ft/ln (95 th percentile)				204.7		67		600.2	610.4	51	177.4	
Back of Queue (*Q*), veh/ln (95 th percentile)				8.1		2.6		23.8	24.4	2.0	7.0	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.17		0.00		0.00	0.00	0.34	0.00	
Uniform Delay (*d 1*), s/veh				52.7		50.1		21.4	23.6	35.3	3.7	
Incremental Delay (*d 2*), s/veh				7.7		1.1		1.2	1.3	1.4	0.7	
Initial Queue Delay (*d 3*), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				60.5		51.3		22.6	24.9	36.7	4.4	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.1		E	23.7		C	5.4		A
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.63	A
Bicycle LOS Score / LOS				F	2.01	B	1.79	B

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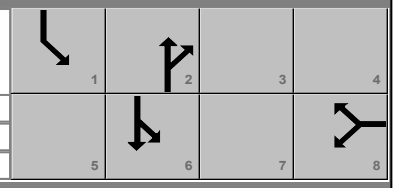
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Brown Rd & Wilm Pike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	86.2	12.1	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

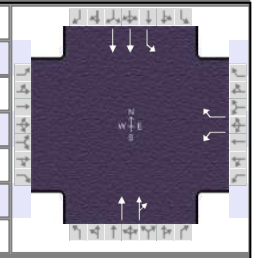
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.984	1.000	0.984	1.000	0.992	1.000	0.992	0.992	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.959	0.959		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1781	0	1585	0	3267	426	1795	3680	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.39	0.21	0.05	0.81	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.10		0.72	0.78	0.81
Permitted Saturation Flow Rate (s_p), veh/h/ln				1781		345	364	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	88.2	0.0
Permitted Service Time (g_u), s				0.0		0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s							0.0	
Time to First Blockage (g_f), s				0.0		86.2	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.063	0.000	0.030
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1436.22	4.77	1623.26	2.13
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	1.52	-3.64	1.30

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Brown Rd & Wilm Pike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				

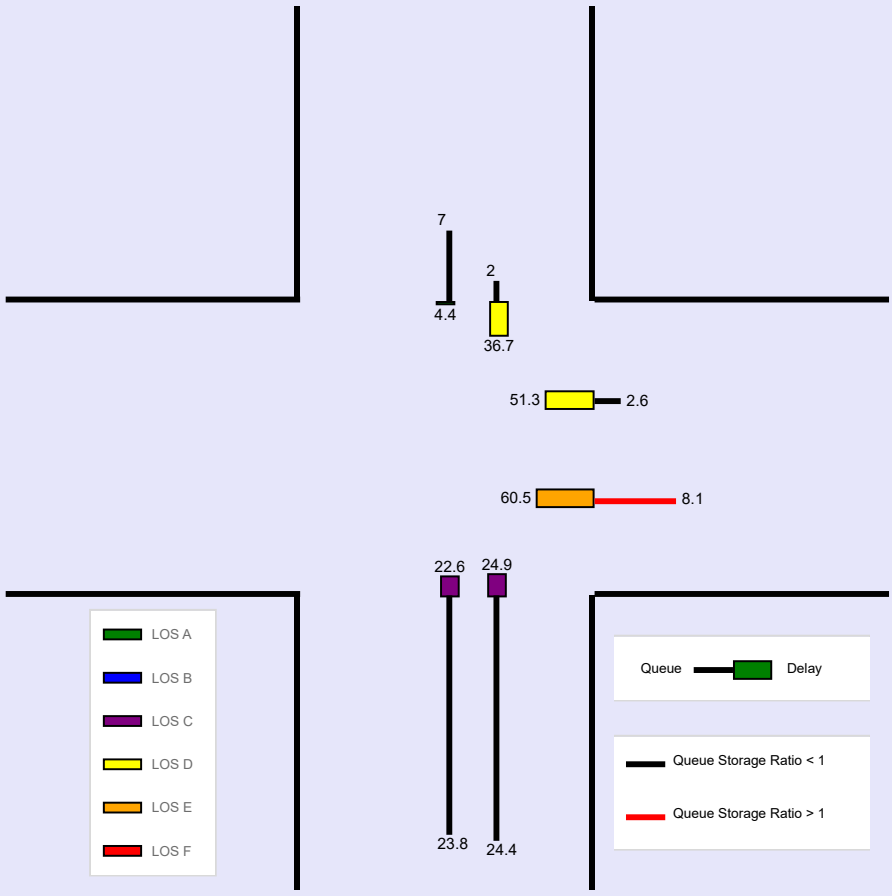


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	5.7	86.2	12.1	0.0	0.0	0.0	5	6	7	8		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				204.7		67		600.2	610.4	51	177.4	
Back of Queue (*Q*), veh/ln (95 th percentile)				8.1		2.6		23.8	24.4	2.0	7.0	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.17		0.00		0.00	0.00	0.34	0.00	
Control Delay (*d*), s/veh				60.5		51.3		22.6	24.9	36.7	4.4	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.1		E	23.7		C	5.4		A
Intersection Delay, s/veh / LOS	16.9						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

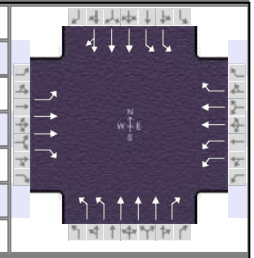
WARNING: According to input data, upstream feeding volume is equal to 82% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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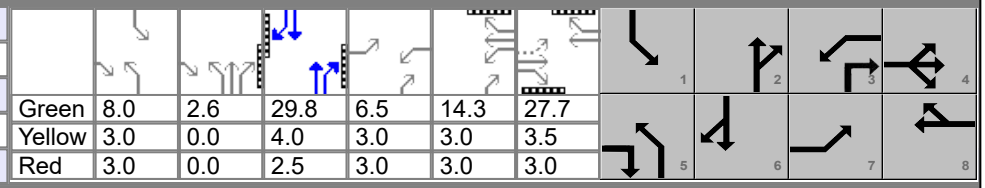
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPIke	File Name	Wilmington & Feedwire_2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.0	2.6	29.8	6.5	14.3	27.7						
Yellow	3.0	0.0	4.0	3.0	3.0	3.5						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2	2	3	3	3	4	4	4	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	250	0	190	450	0	600	339	0	265	316	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

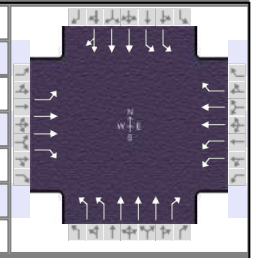
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	25.0	24.0	43.0	42.0	36.0	22.0	31.0	17.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Off	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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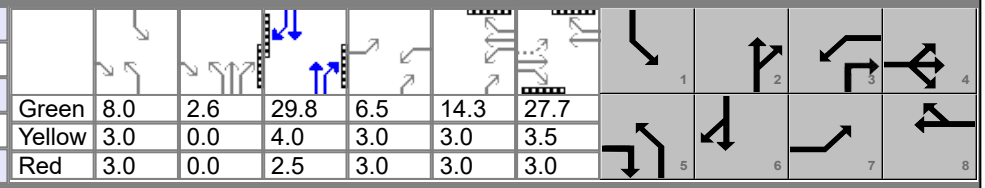
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPIke	File Name	Wilmington & Feedwire_2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.0	2.6	29.8	6.5	14.3	27.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	12.5	34.2	32.8	54.5	16.7	39.0	14.0	36.3
Change Period, (*Y+R c*), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.2	3.6	4.2	3.5	0.0	3.5	0.0
Queue Clearance Time (*g s*), s	5.9	29.7	25.2	13.2	10.0		7.7	
Green Extension Time (*g e*), s	0.1	0.0	1.6	4.6	0.6	0.0	0.4	0.0
Phase Call Probability	0.93	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	1.00	0.02	0.00	0.00		0.00	

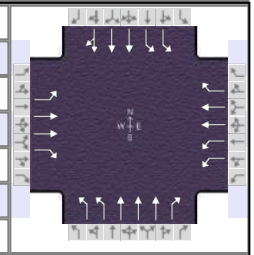
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	78	156	433	578	222	211	233	633	300	167	565	279
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1781	1585	1449	1766		1702	1671	1560	1730	1870	1844
Queue Service Time (*g s*), s	3.9	4.2	27.7	23.2	4.8		8.0	12.7	14.5	5.7	16.0	16.1
Cycle Queue Clearance Time (*g c*), s	3.9	4.2	27.7	23.2	4.8		8.0	12.7	14.5	5.7	16.0	16.1
Green Ratio (*g/C*)	0.28	0.23	0.32	0.22	0.40		0.09	0.27	0.49	0.07	0.25	0.25
Capacity (*c*), veh/h	423	822	507	647	1414		303	1357	770	232	930	458
Volume-to-Capacity Ratio (*X*)	0.184	0.189	0.855	0.893	0.157		0.771	0.467	0.390	0.719	0.608	0.609
Back of Queue (*Q*), ft/ln (95 th percentile)	76.9	83.4	493	351.9	91.3		162	229.4	232.9	114.9	305.4	310.5
Back of Queue (*Q*), veh/ln (95 th percentile)	3.0	3.3	19.4	13.7	3.6		6.3	8.9	9.0	4.5	12.0	12.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.31	0.00	2.59	0.78	0.00		0.48	0.00	0.88	0.36	0.00	0.00
Uniform Delay (*d 1*), s/veh	32.1	37.1	38.2	45.2	23.0		53.5	36.5	19.0	54.9	39.9	39.9
Incremental Delay (*d 2*), s/veh	0.2	0.1	13.4	8.1	0.1		3.1	1.2	1.5	3.1	2.9	5.9
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	32.2	37.2	51.6	53.3	23.1	0.0	56.6	37.7	20.5	58.0	42.9	45.8
Level of Service (LOS)	C	D	D	D	C	A	E	D	C	E	D	D
Approach Delay, s/veh / LOS	46.0	D		35.5	D		37.1	D		46.2	D	
Intersection Delay, s/veh / LOS	40.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.71	C	2.59	C	2.45	B
Bicycle LOS Score / LOS	1.04	A	1.32	A	1.13	A	1.04	A

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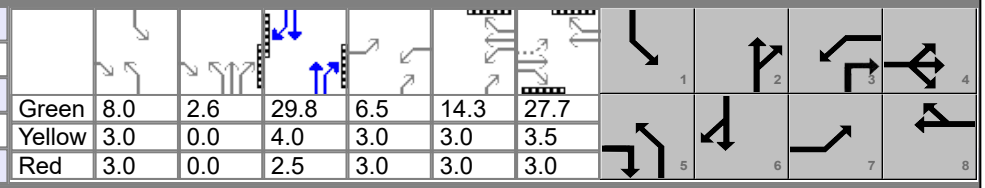
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPIke	File Name	Wilmington & Feedwire_2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.0	2.6	29.8	6.5	14.3	27.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

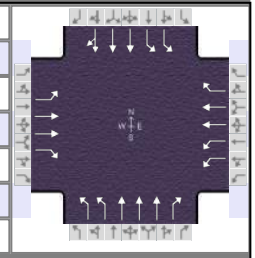
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	0.977	0.977	0.977	0.969	0.969	0.969	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.820	0.952	1.000	0.971	0.908	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.986	0.986
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1781	3561	1585	2899	3533	1572	3404	5014	1560	3459	5438	147
Proportion of Vehicles Arriving on Green (P)	0.05	0.23	0.23	0.22	0.40	0.40	0.09	0.27	0.27	0.07	0.25	0.25
Incremental Delay Factor (k)	0.08	0.11	0.39	0.20	0.11	0.11	0.08	0.50	0.50	0.08	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.28	0.23	0.22	0.40	0.09	0.27	0.07	0.25
Permitted Saturation Flow Rate (s_p), veh/h/ln	1159	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	27.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	27.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1585		0		1560		
Protected Right Effective Green Time (g_R), s		10.7		0.0		26.8		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	1.983	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.143	0.000	0.123	0.000	0.139	0.000	0.141
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	461.95	35.48	800.33	21.59	541.10	31.93	497.20	33.88
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.83	-3.64	0.64	-3.64	0.56

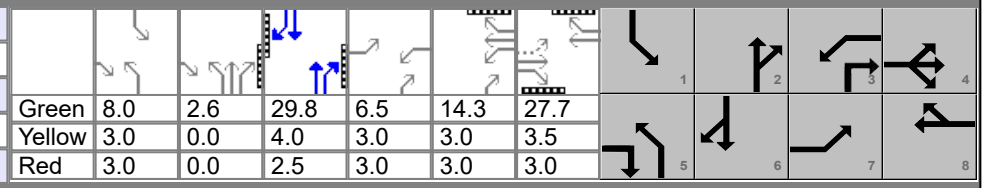
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPIke	File Name	Wilmington & Feedwire_2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



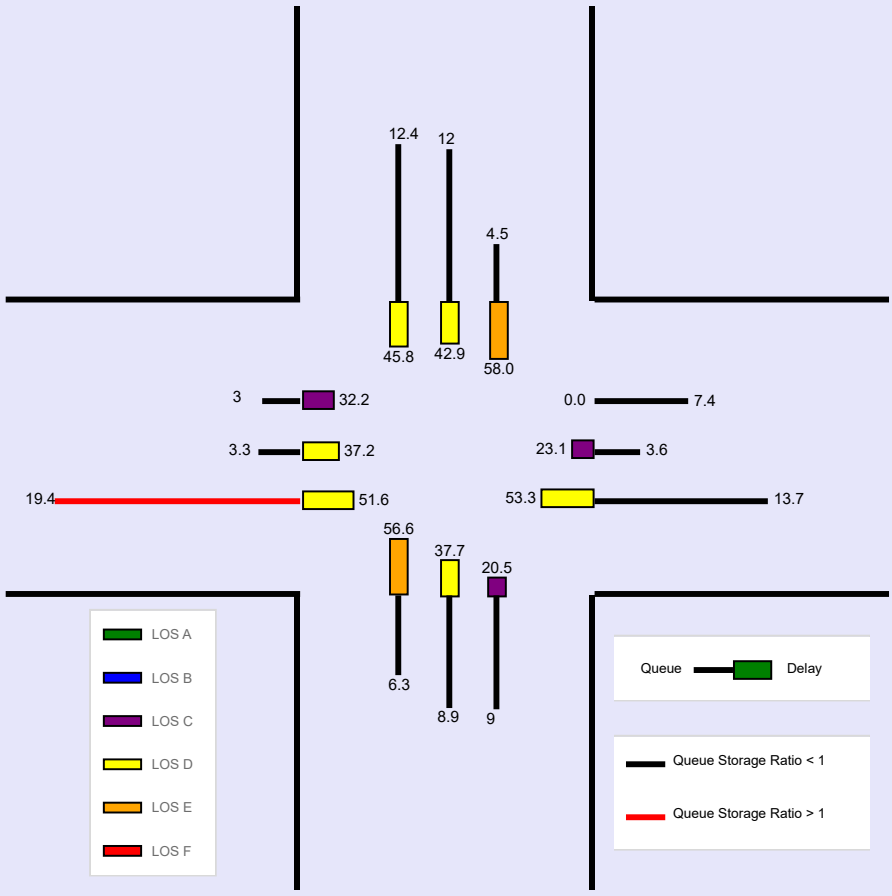
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.0	2.6	29.8	6.5	14.3	27.7						
Yellow	3.0	0.0	4.0	3.0	3.0	3.5						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	76.9	83.4	493	351.9	91.3		162	229.4	232.9	114.9	305.4	310.5
Back of Queue (*Q*), veh/ln (95 th percentile)	3.0	3.3	19.4	13.7	3.6		6.3	8.9	9.0	4.5	12.0	12.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.31	0.00	2.59	0.78	0.00		0.48	0.00	0.88	0.36	0.00	0.00
Control Delay (*d*), s/veh	32.2	37.2	51.6	53.3	23.1	0.0	56.6	37.7	20.5	58.0	42.9	45.8
Level of Service (LOS)	C	D	D	D	C	A	E	D	C	E	D	D
Approach Delay, s/veh / LOS	46.0	D		35.5	D		37.1	D		46.2	D	
Intersection Delay, s/veh / LOS	40.6						D					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

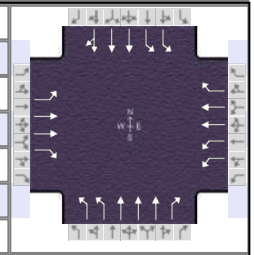
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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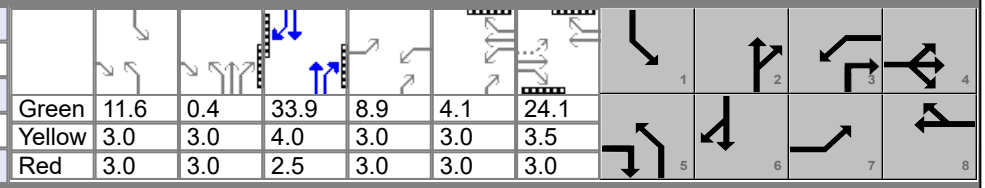
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPike	File Name	Wilmington & Feedwire_2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.6	0.4	33.9	8.9	4.1	24.1
Yellow	3.0	3.0	4.0	3.0	3.0	3.5
Red	3.0	3.0	2.5	3.0	3.0	3.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0	0	0	0	0	1	1	1	0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft	250	0	190	450	0	600	339	0	265	316	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

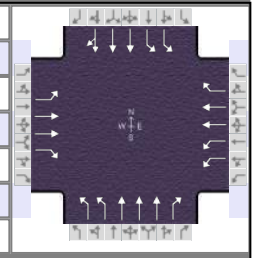
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	36.0	25.0	41.0	41.0	42.0	17.0	18.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Off	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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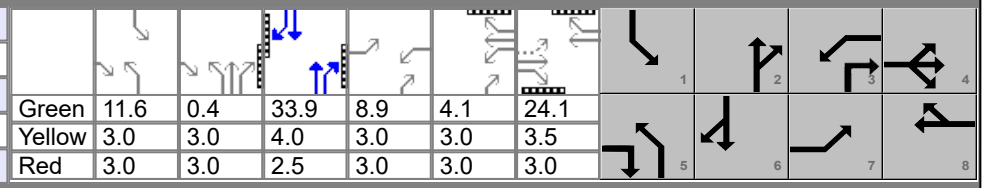
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPike	File Name	Wilmington & Feedwire_2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.6	0.4	33.9	8.9	4.1	24.1
Yellow	3.0	3.0	4.0	3.0	3.0	3.5
Red	3.0	3.0	2.5	3.0	3.0	3.0

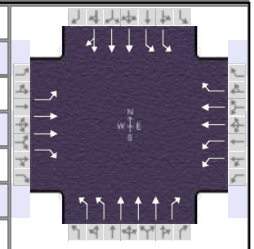
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	14.9	30.6	25.0	40.7	24.0	46.8	17.6	40.4
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.1	3.6	4.1	3.5	0.0	3.5	0.0
Queue Clearance Time (g_s), s	8.9	19.5	21.0	21.3	16.7		11.2	
Green Extension Time (g_e), s	0.1	4.5	0.0	6.1	1.3	0.0	0.4	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.21	0.48	1.00	0.17	0.00		0.25	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	133	398	296	602	469	296	439	1388	1020	276	857	409
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1809	1610	1561	1809		1743	1712	1598	1757	1900	1810
Queue Service Time (g_s), s	6.9	11.9	17.5	19.0	12.8		14.7	29.5	40.3	9.2	25.1	25.1
Cycle Queue Clearance Time (g_c), s	6.9	11.9	17.5	19.0	12.8		14.7	29.5	40.3	9.2	25.1	25.1
Green Ratio (*g/C*)	0.27	0.20	0.35	0.16	0.28		0.15	0.34	0.49	0.10	0.28	0.28
Capacity (*c*), veh/h	345	725	565	494	1030		524	1727	790	340	1074	512
Volume-to-Capacity Ratio (*X*)	0.384	0.549	0.524	1.218	0.456		0.838	0.804	1.292	0.811	0.797	0.798
Back of Queue (*Q*), ft/ln (95 th percentile)	136.4	225.9	275.4	588.3	236.4		266.4	458.7	1869.1	190.8	447.2	456.8
Back of Queue (*Q*), veh/ln (95 th percentile)	5.5	9.0	11.0	23.5	9.5		10.6	18.2	74.2	7.6	17.9	18.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.55	0.00	1.45	1.31	0.00		0.79	0.00	7.05	0.60	0.00	0.00
Uniform Delay (d_1), s/veh	34.2	43.1	31.0	50.5	35.3		49.6	36.2	30.3	53.1	39.9	39.9
Incremental Delay (d_2), s/veh	0.5	0.7	0.8	115.4	0.3		2.7	4.1	140.6	6.0	6.2	12.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	34.7	43.8	31.8	165.9	35.6	0.0	52.3	40.3	170.9	59.1	46.0	52.1
Level of Service (LOS)	C	D	C	F	D	A	D	D	F	E	D	D
Approach Delay, s/veh / LOS	38.0	D		85.3	F		89.0	F		50.0	D	
Intersection Delay, s/veh / LOS	72.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.72	C	2.58	C	2.45	B
Bicycle LOS Score / LOS	1.17	A	1.62	B	2.05	B	1.34	A

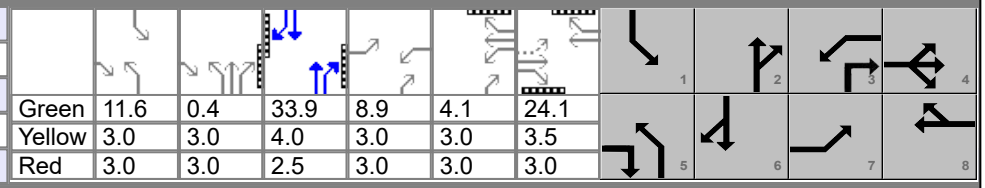
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPike	File Name	Wilmington & Feedwire_2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.6	0.4	33.9	8.9	4.1	24.1
Yellow	3.0	3.0	4.0	3.0	3.0	3.5
Red	3.0	3.0	2.5	3.0	3.0	3.0

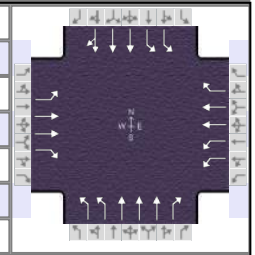
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.863	0.952	1.000	0.971	0.908	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.953	0.953
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1810	3618	1610	3122	3618	1610	3487	5135	1598	3514	5113	497
Proportion of Vehicles Arriving on Green (P)	0.07	0.20	0.20	0.16	0.28	0.28	0.15	0.34	0.34	0.10	0.28	0.28
Incremental Delay Factor (k)	0.08	0.11	0.11	0.50	0.11	0.15	0.08	0.50	0.50	0.14	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.27	0.20	0.16	0.28	0.15	0.34	0.10	0.28
Permitted Saturation Flow Rate (s_p), veh/h/ln	938	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	19.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.8							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		0		1598		
Protected Right Effective Green Time (g_R), s		18.0		0.0		19.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	1.983	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.146	0.000	0.137	0.000	0.131	0.000	0.138
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	400.86	38.36	569.28	30.70	672.42	26.44	565.43	30.87
Bicycle F_w / F_v	-3.64	0.68	-3.64	1.13	-3.64	1.57	-3.64	0.85

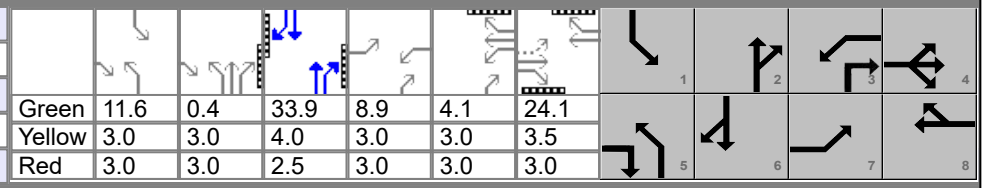
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:00
Intersection	Feedwire & WilmPike	File Name	Wilmington & Feedwire_2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



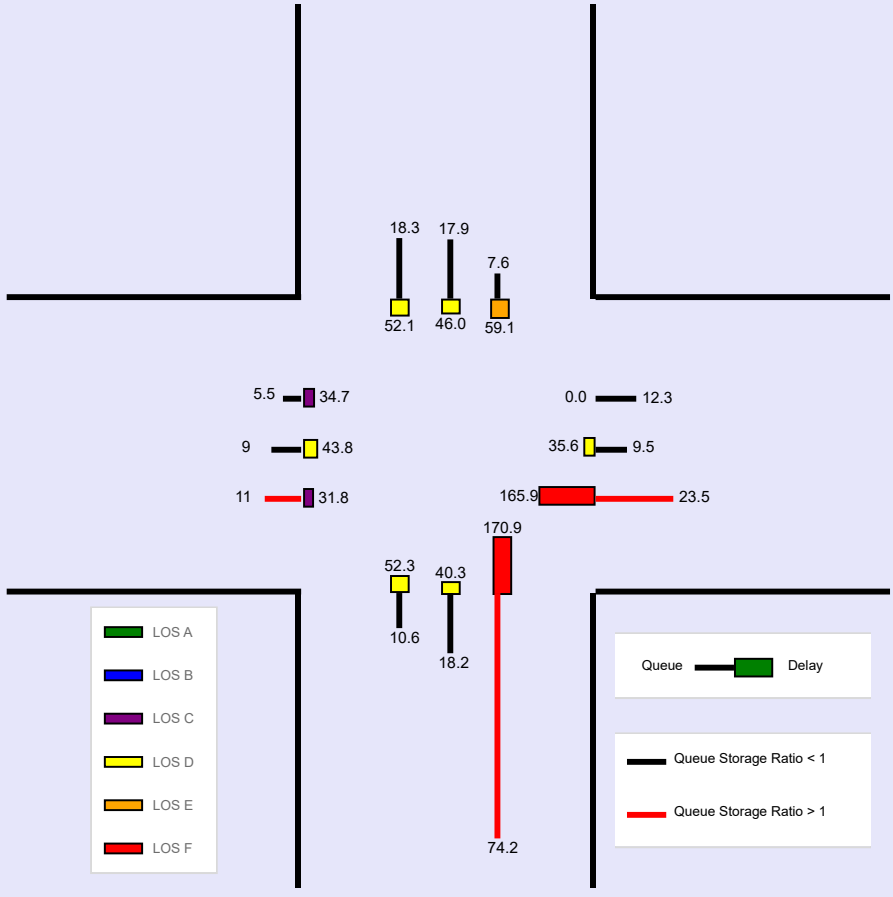
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.6	0.4	33.9	8.9	4.1	24.1						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.5	3.0	3.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	136.4	225.9	275.4	588.3	236.4		266.4	458.7	1869.1	190.8	447.2	456.8
Back of Queue (*Q*), veh/ln (95 th percentile)	5.5	9.0	11.0	23.5	9.5		10.6	18.2	74.2	7.6	17.9	18.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.55	0.00	1.45	1.31	0.00		0.79	0.00	7.05	0.60	0.00	0.00
Control Delay (*d*), s/veh	34.7	43.8	31.8	165.9	35.6	0.0	52.3	40.3	170.9	59.1	46.0	52.1
Level of Service (LOS)	C	D	C	F	D	A	D	D	F	E	D	D
Approach Delay, s/veh / LOS	38.0	D		85.3	F		89.0	F		50.0	D	
Intersection Delay, s/veh / LOS	72.7						E					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

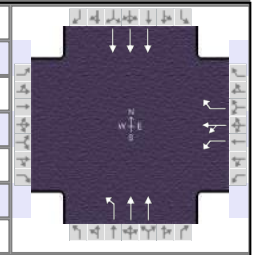
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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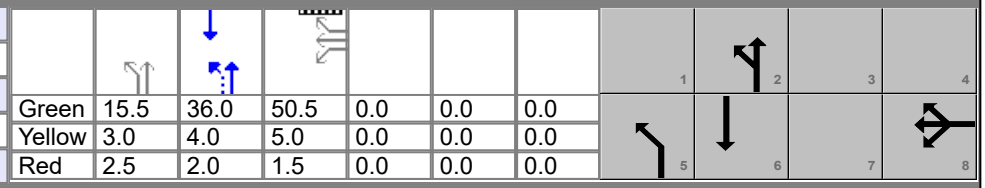
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830	10	350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	119	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.5	36.0		50.5	0.0	0.0	0.0					
Yellow	3.0	4.0		5.0	0.0	0.0	0.0					
Red	2.5	2.0		1.5	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830	10	350	270	770			900	
Initial Queue (Q_b), veh/h				0	0	0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900	1900	1900	1900	1900			1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				3	3	3	4	4			2	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3	3	3	3	3			3	
Upstream Filtering (*I*)				1.00	1.00	1.00	0.09	0.09			0.51	
Lane Width (*W*), ft				12.0	12.0	12.0	12.0	12.0			12.0	
Turn Bay Length, ft				570	0	570	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35	35	35	45	45			45	

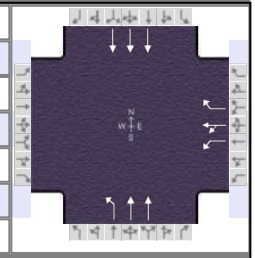
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				57.0	21.0	63.0		42.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				8	7	20		20
Start-Up Lost Time (*lt*), s			2.0	2.0	2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0	2.0	2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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HCS Signalized Intersection Results Summary

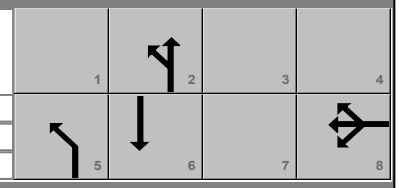
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830	10	350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	119	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.5	36.0	50.5	0.0	0.0	0.0	
Yellow	3.0	4.0	5.0	0.0	0.0	0.0	
Red	2.5	2.0	1.5	0.0	0.0	0.0	



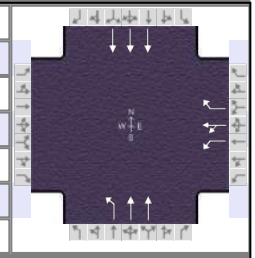
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	1.0	4.0		8.3
Phase Duration, s				57.0	21.0	63.0		42.0
Change Period, ($Y+R_c$), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.2	2.5	0.0		0.0
Queue Clearance Time (g_s), s				52.5	17.5			
Green Extension Time (g_e), s				0.0	0.0	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				943	11	398	504	1437			1790	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1767	1856	1572	1753	1585			1698	
Queue Service Time (g_s), s				50.5	0.4	23.5	15.5	52.9			36.0	
Cycle Queue Clearance Time (g_c), s				50.5	0.4	23.5	15.5	52.9			36.0	
Green Ratio (*g/C*)				0.42	0.42	0.42	0.45	0.48			0.30	
Capacity (*c*), veh/h				744	781	662	286	1506			1528	
Volume-to-Capacity Ratio (*X*)				1.268	0.015	0.601	1.759	0.954			1.171	
Back of Queue (*Q*), ft/ln (95 th percentile)				1775.1	8.6	354.8	1130.8	591.4			931.9	
Back of Queue (*Q*), veh/ln (95 th percentile)				69.3	0.3	13.9	43.8	22.9			36.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				3.11	0.00	0.62	2.46	0.00			0.00	
Uniform Delay (d_1), s/veh				34.8	20.3	26.9	36.7	36.6			48.7	
Incremental Delay (d_2), s/veh				131.2	0.0	1.8	342.7	2.0			81.0	
Initial Queue Delay (d_3), s/veh				0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				166.0	20.3	28.8	379.3	38.6			129.7	
Level of Service (LOS)				F	C	C	F	D			F	
Approach Delay, s/veh / LOS	0.0			124.4		F	127.1		F	129.7		F
Intersection Delay, s/veh / LOS	127.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.32	B	1.91	B	1.42	A
Bicycle LOS Score / LOS			2.72	C	1.46	A	1.05	A

HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830	10	350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	119	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	15.5	36.0	50.5	0.0	0.0	0.0	5	6	7	8		
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

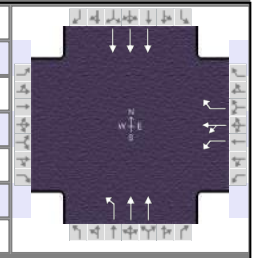
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.977	0.977	0.977	0.969	0.969	1.000	1.000	0.984	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.861	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				1767	1856	1572	1753	3426	0	0	5439	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.42	0.42	0.42	0.13	0.37	0.00	0.00	0.19	0.00
Incremental Delay Factor (k)				0.50	0.15	0.22	0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.42	0.45	0.48		0.30
Permitted Saturation Flow Rate (s_p), veh/h/ln				1767	260	0		378
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	38.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s					0.0			
Time to First Blockage (g_f), s				0.0	0.0	0.0		36.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.557	0.000	1.198	0.000	0.681	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.113	0.000	0.136
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	950.00	16.54	600.00	29.40
Bicycle F_w / F_v	-3.64		-3.64	2.23	-3.64	0.98	-3.64	0.56

HCS Signalized Intersection Results Graphical Summary

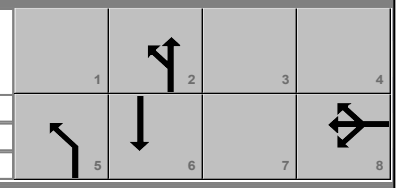
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



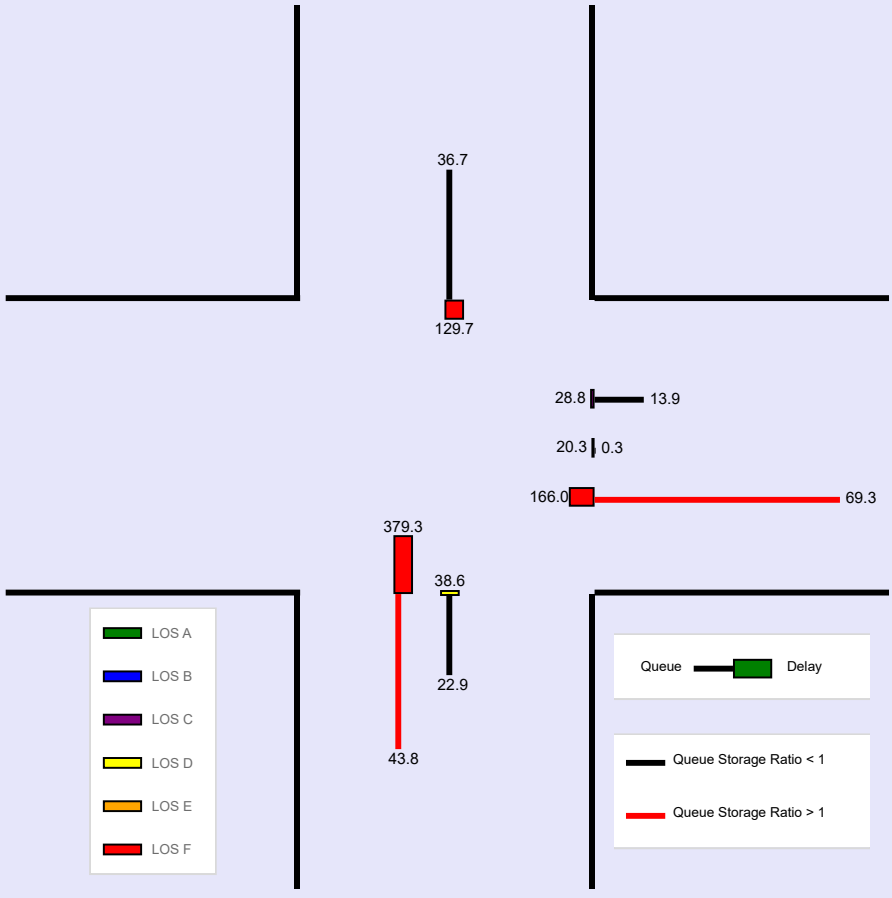
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830	10	350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	119	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.5	36.0	50.5	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				1775.1	8.6	354.8	1130.8	591.4			931.9	
Back of Queue (*Q*), veh/ln (95 th percentile)				69.3	0.3	13.9	43.8	22.9			36.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				3.11	0.00	0.62	2.46	0.00			0.00	
Control Delay (*d*), s/veh				166.0	20.3	28.8	379.3	38.6			129.7	
Level of Service (LOS)				F	C	C	F	D			F	
Approach Delay, s/veh / LOS	0.0			124.4		F	127.1		F	129.7		F
Intersection Delay, s/veh / LOS	127.3						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 175% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 175% of downstream exit volume during time period #1, for thru movement #6.

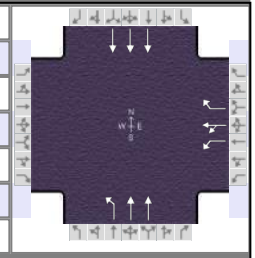
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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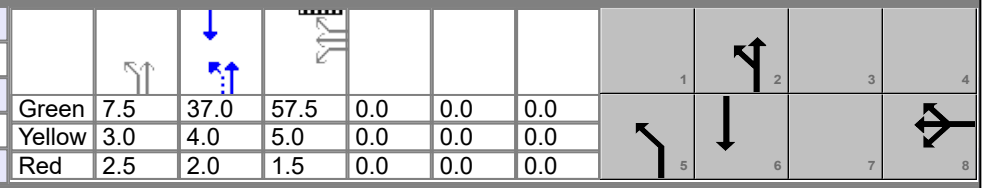
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220	10	1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	37.0	57.5	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220	10	1110	330	1740			1290	
Initial Queue (Q_b), veh/h				0	0	0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900	1900	1900	1900	1900			1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				1	1	1	0	0			0	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3	3	3	3	3			3	
Upstream Filtering (*I*)				1.00	1.00	1.00	0.09	0.09			0.42	
Lane Width (*W*), ft				12.0	12.0	12.0	12.0	12.0			12.0	
Turn Bay Length, ft				570	0	570	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35	35	35	45	45			45	

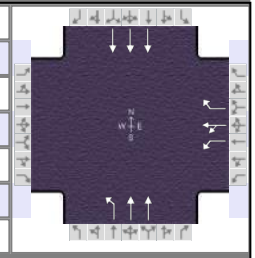
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				64.0	13.0	56.0		43.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				8	7	20		20
Start-Up Lost Time (*l*t), s			2.0	2.0	2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0	2.0	2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220	10	1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	7.5	37.0	57.5	0.0	0.0	0.0	5	6	7	8
Yellow	3.0	4.0	5.0	0.0	0.0	0.0				
Red	2.5	2.0	1.5	0.0	0.0	0.0				

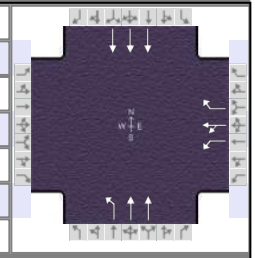
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	1.0	4.0		8.3
Phase Duration, s				64.0	13.0	56.0		43.0
Change Period, (*Y+R c*), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.2	2.5	0.0		0.0
Queue Clearance Time (*g s*), s				59.5	9.5			
Green Extension Time (*g e*), s				0.0	0.0	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				1271	10	1156	320	1687			2150	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1795	1885	1598	1810	1638			1725	
Queue Service Time (*g s*), s				57.5	0.3	57.5	7.5	50.0			37.0	
Cycle Queue Clearance Time (*g c*), s				57.5	0.3	57.5	7.5	50.0			37.0	
Green Ratio (*g/C*)				0.48	0.48	0.48	0.39	0.42			0.31	
Capacity (*c*), veh/h				860	903	766	173	1365			1596	
Volume-to-Capacity Ratio (*X*)				1.477	0.012	1.510	1.848	1.236			1.347	
Back of Queue (*Q*), ft/ln (95 th percentile)				2911.7	6.8	2751.4	722.6	1284.8			1391.8	
Back of Queue (*Q*), veh/ln (95 th percentile)				115.5	0.3	109.2	28.9	51.4			55.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				5.11	0.00	4.83	1.57	0.00			0.00	
Uniform Delay (*d 1*), s/veh				31.3	16.4	31.3	32.7	42.3			49.8	
Incremental Delay (*d 2*), s/veh				221.0	0.0	236.4	383.8	106.7			158.2	
Initial Queue Delay (*d 3*), s/veh				0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				252.3	16.4	267.7	416.5	149.0			208.0	
Level of Service (LOS)				F	B	F	F	F			F	
Approach Delay, s/veh / LOS	0.0			258.6		F	191.7		F	208.0		F
Intersection Delay, s/veh / LOS	221.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.32	B	1.92	B	1.42	A
Bicycle LOS Score / LOS			4.51	E	2.27	B	1.23	A

HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				

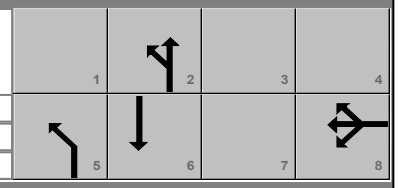


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220	10	1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	37.0	57.5	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						



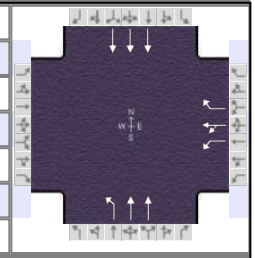
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.992	0.992	0.992	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.862	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				1795	1885	1598	1810	3538	0	0	5525	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.48	0.48	0.48	0.03	0.29	0.00	0.00	0.17	0.00
Incremental Delay Factor (k)				0.50	0.15	0.50	0.50	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.48	0.39	0.42		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln				1795	189	0		297
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	39.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s					0.0			
Time to First Blockage (g_f), s				0.0	0.0	0.0		37.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.557	0.000	1.198	0.000	0.681	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.121	0.000	0.135
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	833.33	20.42	616.67	28.70
Bicycle F_w / F_v	-3.64		-3.64	4.02	-3.64	1.78	-3.64	0.74

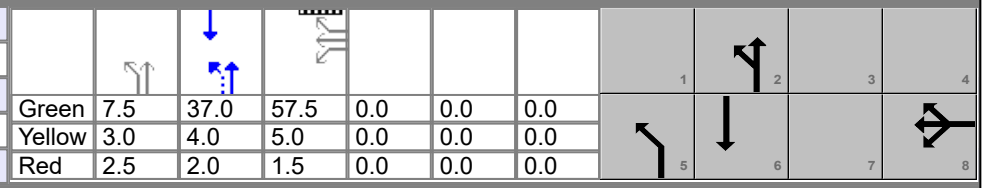
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 SB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



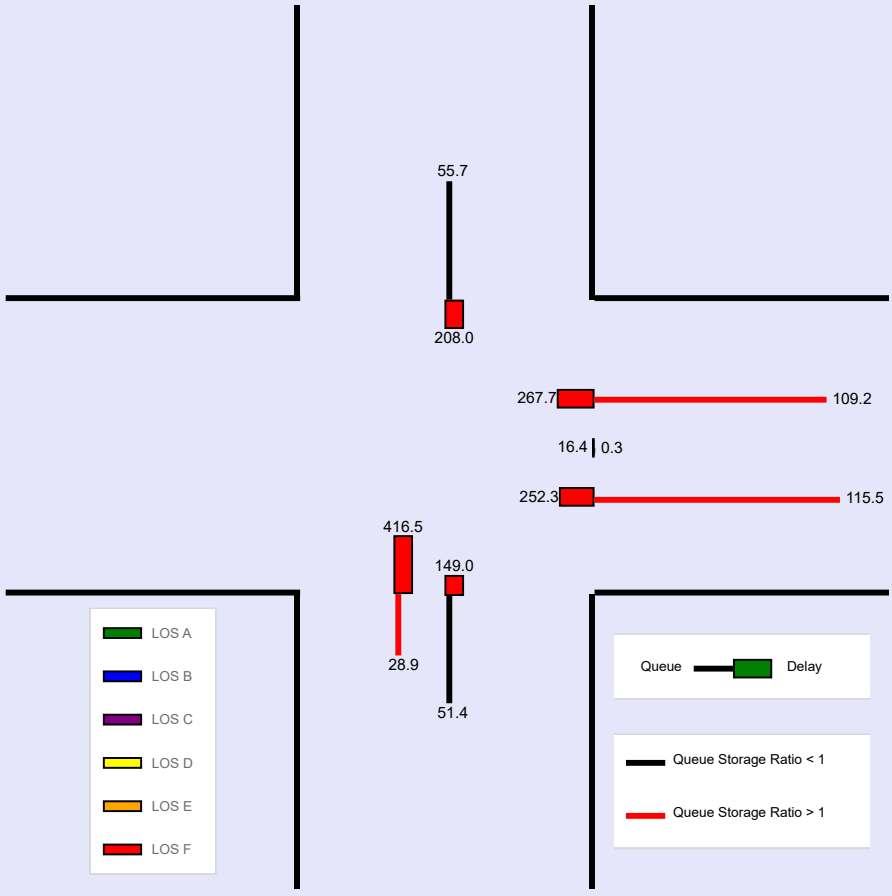
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220	10	1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	37.0	57.5	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				2911.7	6.8	2751.4	722.6	1284.8			1391.8	
Back of Queue (*Q*), veh/ln (95 th percentile)				115.5	0.3	109.2	28.9	51.4			55.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				5.11	0.00	4.83	1.57	0.00			0.00	
Control Delay (*d*), s/veh				252.3	16.4	267.7	416.5	149.0			208.0	
Level of Service (LOS)				F	B	F	F	F			F	
Approach Delay, s/veh / LOS	0.0			258.6		F	191.7		F	208.0		F
Intersection Delay, s/veh / LOS	221.7						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 132% of downstream exit volume during time period #1, for thru movement #6.

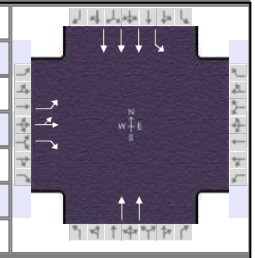
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				

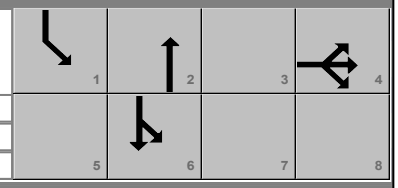


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	10	350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	24.0	53.0	24.5	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	10	350					640		470	1260	
Initial Queue (Q_b), veh/h	0	0	0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	5	5	5					1		2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3					3		3	3	
Upstream Filtering (*I*)	1.00	1.00	1.00					0.52		0.09	0.09	
Lane Width (*W*), ft	12.0	12.0	12.0					12.0		12.0	12.0	
Turn Bay Length, ft	530	0	530					0		460	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35					45		45	45	

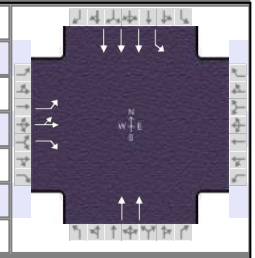
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		31.0				59.0	30.0	89.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		8				20	7	20
Start-Up Lost Time (*l*t), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0				2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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HCS Signalized Intersection Results Summary

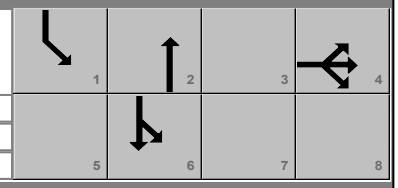
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	10	350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.0	53.0	24.5	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



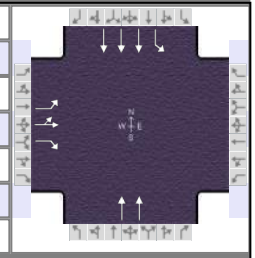
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	1.0	4.0
Phase Duration, s		31.0				59.0	30.0	89.0
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		26.5					26.0	
Green Extension Time (g_e), s		0.0				0.0	0.0	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		1.00					1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	426	11	372					2090		617	1655	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1547					1795		1781	1247	
Queue Service Time (g_s), s	24.5	0.6	24.5					53.0		24.0	42.0	
Cycle Queue Clearance Time (g_c), s	24.5	0.6	24.5					53.0		24.0	42.0	
Green Ratio (*g/C*)	0.20	0.20	0.20					0.44		0.66	0.69	
Capacity (*c*), veh/h	355	373	316					1585		416	2587	
Volume-to-Capacity Ratio (*X*)	1.199	0.029	1.179					1.318		1.483	0.640	
Back of Queue (*Q*), ft/ln (95 th percentile)	834.5	12	732.2					2030.6		1310.4	373	
Back of Queue (*Q*), veh/ln (95 th percentile)	32.1	0.5	28.2					80.6		51.6	14.7	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.57	0.00	1.38					0.00		2.85	0.00	
Uniform Delay (d_1), s/veh	47.8	38.2	47.8					52.6		51.2	22.8	
Incremental Delay (d_2), s/veh	113.5	0.1	108.3					145.6		218.5	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	161.2	38.3	156.0					198.2		269.7	22.9	
Level of Service (LOS)	F	D	F					F		F	C	
Approach Delay, s/veh / LOS	157.2	F		0.0			198.2	F		89.9	F	
Intersection Delay, s/veh / LOS	144.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.47	B	1.40	A	1.87	B
Bicycle LOS Score / LOS	1.82	B			1.05	A	1.50	A

HCS Signalized Intersection Intermediate Values

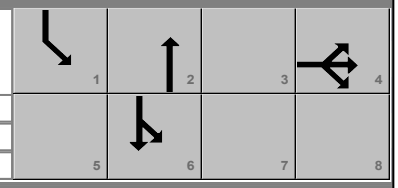
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	10	350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.0	53.0	24.5	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



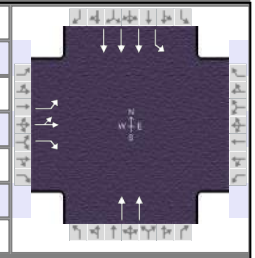
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	0.961				1.000	0.992	1.000	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.667	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	1739	1826	1547				0	3770	0	1781	4364	0
Proportion of Vehicles Arriving on Green (P)	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.12	0.00	0.02	0.42	0.00
Incremental Delay Factor (k)	0.50	0.23	0.50					0.50		0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.20				0.44	0.66	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln		1739				306	197	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	55.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s							0.0	
Time to First Blockage (g_f), s		0.0				53.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.000	1.710	0.000	0.681	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.117	0.000	0.070
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	883.33	18.70	1383.33	5.70
Bicycle F_w / F_v	-3.64	1.33	-3.64		-3.64	0.56	-3.64	1.01

HCS Signalized Intersection Results Graphical Summary

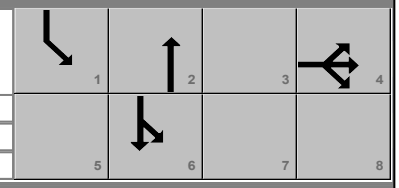
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



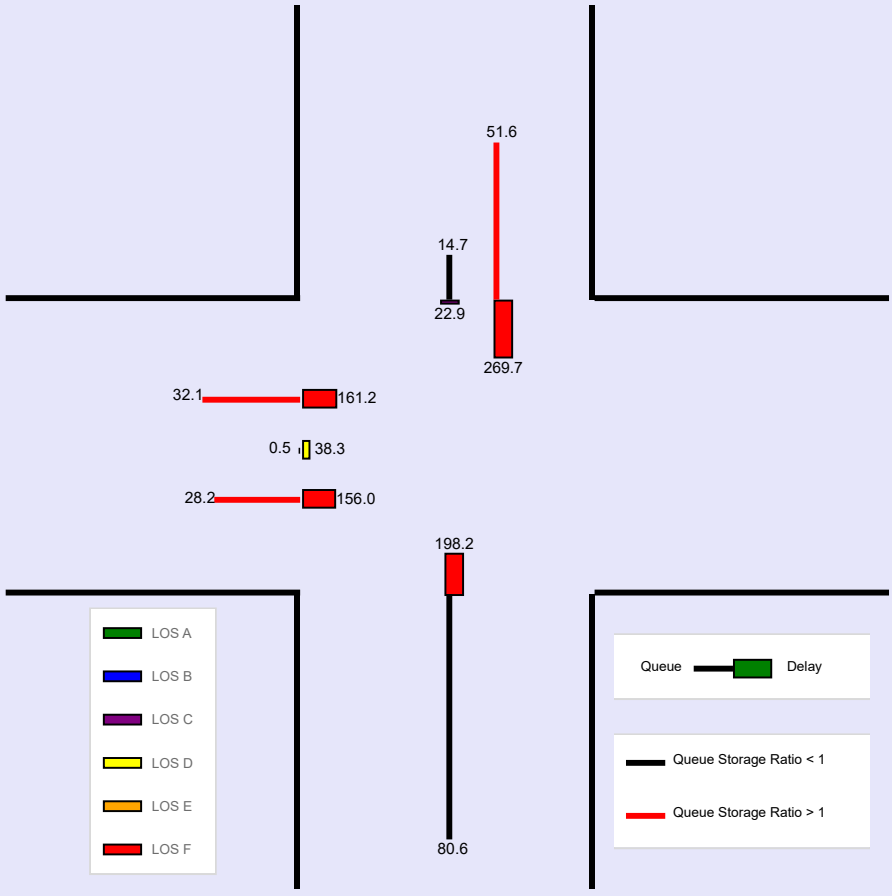
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	10	350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.0	53.0	24.5	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	834.5	12	732.2					2030.6		1310.4	373	
Back of Queue (*Q*), veh/ln (95 th percentile)	32.1	0.5	28.2					80.6		51.6	14.7	
Queue Storage Ratio (*RQ*) (95 th percentile)	1.57	0.00	1.38					0.00		2.85	0.00	
Control Delay (*d*), s/veh	161.2	38.3	156.0					198.2		269.7	22.9	
Level of Service (LOS)	F	D	F					F		F	C	
Approach Delay, s/veh / LOS	157.2		F	0.0			198.2		F	89.9		F
Intersection Delay, s/veh / LOS	144.2						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 307% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 144% of downstream exit volume during time period #1, for thru movement #6.

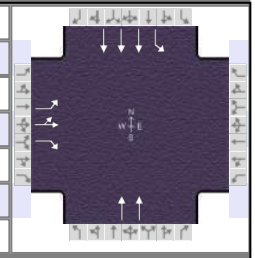
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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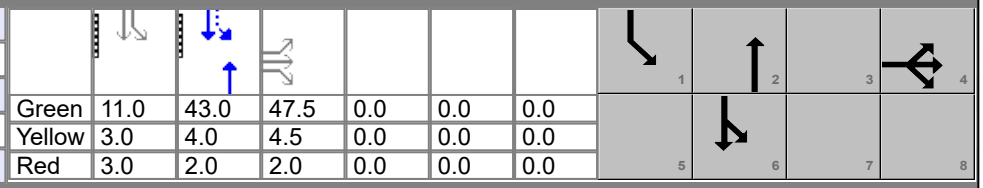
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890	10	430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	47	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	47.5	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890	10	430					1180		420	2090	
Initial Queue (Q_b), veh/h	0	0	0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	1	1	1					0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3					3		3	3	
Upstream Filtering (*I*)	1.00	1.00	1.00					0.64		0.09	0.09	
Lane Width (*W*), ft	12.0	12.0	12.0					12.0		12.0	12.0	
Turn Bay Length, ft	530	0	530					0		460	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35					45		45	45	

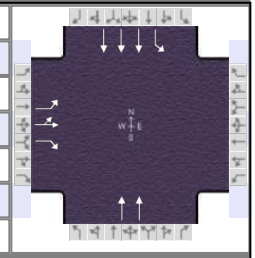
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		54.0				49.0	17.0	66.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		8				20	7	20
Start-Up Lost Time (*l*t), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0				2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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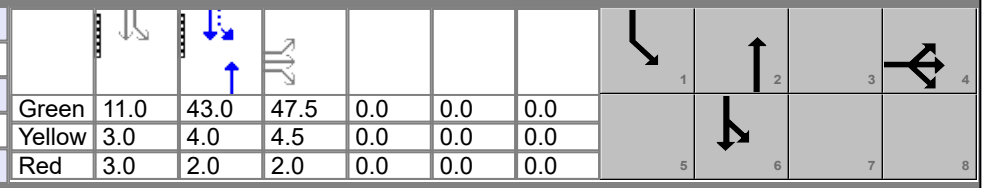
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890	10	430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	47	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	47.5	0.0	0.0	0.0
Yellow	3.0	4.0	4.5	0.0	0.0	0.0
Red	3.0	2.0	2.0	0.0	0.0	0.0

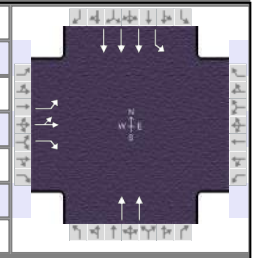
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	1.0	4.0
Phase Duration, s		54.0				49.0	17.0	66.0
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		49.5					13.0	
Green Extension Time (g_e), s		0.0				0.0	0.0	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		1.00					1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	927	10	448					1814		411	2045	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1598					1809		1810	1267	
Queue Service Time (g_s), s	47.5	0.4	28.2					43.0		11.0	60.0	
Cycle Queue Clearance Time (g_c), s	47.5	0.4	28.2					43.0		11.0	60.0	
Green Ratio (*g/C*)	0.40	0.40	0.40					0.36		0.47	0.50	
Capacity (*c*), veh/h	711	746	632					1296		226	1900	
Volume-to-Capacity Ratio (*X*)	1.304	0.014	0.708					1.399		1.820	1.076	
Back of Queue (*Q*), ft/ln (95 th percentile)	1806.5	8.2	426.6					1730.1		914.8	764.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	71.7	0.3	16.9					69.2		36.6	30.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	3.41	0.00	0.80					0.00		1.99	0.00	
Uniform Delay (d_1), s/veh	36.3	22.0	30.4					28.9		41.0	46.9	
Incremental Delay (d_2), s/veh	147.1	0.0	4.6					182.7		370.4	35.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	183.4	22.0	35.0					211.6		411.3	82.4	
Level of Service (LOS)	F	C	D					F		F	F	
Approach Delay, s/veh / LOS	134.2	F		0.0			211.6	F		137.5	F	
Intersection Delay, s/veh / LOS	160.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.47	B	1.41	A	1.91	B
Bicycle LOS Score / LOS	2.77	C			1.50	B	1.93	B

HCS Signalized Intersection Intermediate Values

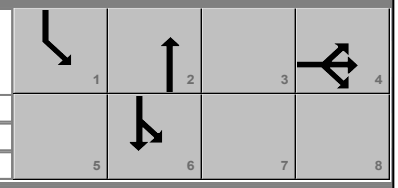
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890	10	430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	47	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.0	43.0	47.5	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



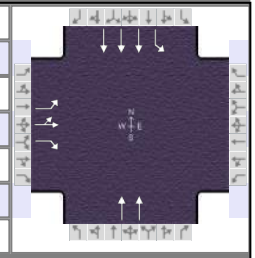
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992				1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.667	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	1795	1885	1598				0	3800	0	1810	4433	0
Proportion of Vehicles Arriving on Green (P)	0.40	0.40	0.40	0.00	0.00	0.00	0.00	0.52	0.00	0.01	0.22	0.00
Incremental Delay Factor (k)	0.50	0.23	0.34					0.50		0.50	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.40				0.36	0.47	0.50
Permitted Saturation Flow Rate (s_p), veh/h/ln		1795				209	262	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	45.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s							0.0	
Time to First Blockage (g_f), s		0.0				43.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.000	1.710	0.000	0.681	0.000	1.198	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.129	0.000	0.109
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	716.67	24.70	1000.00	15.00
Bicycle F_w / F_v	-3.64	2.29	-3.64		-3.64	1.01	-3.64	1.44

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	I-675 NB Ramps & Wilm…	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				

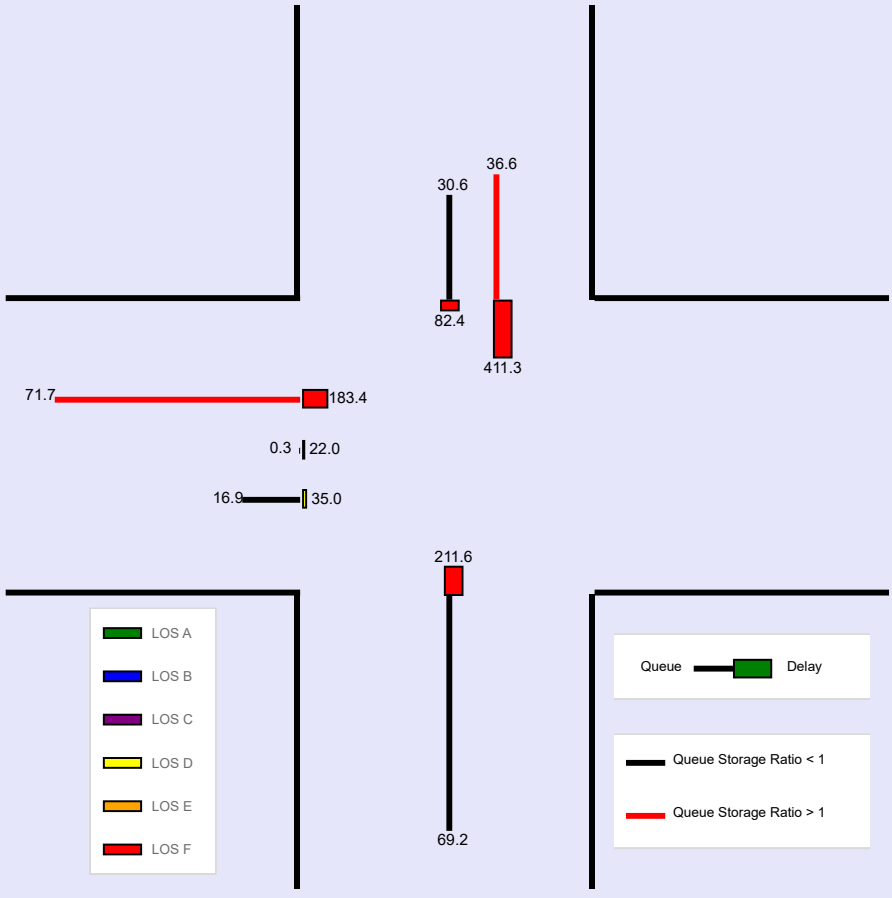


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890	10	430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	47	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	11.0	43.0	47.5	0.0	0.0	0.0				
Yellow	3.0	4.0	4.5	0.0	0.0	0.0				
Red	3.0	2.0	2.0	0.0	0.0	0.0	5	6	7	8

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	1806.5	8.2	426.6					1730.1		914.8	764.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	71.7	0.3	16.9					69.2		36.6	30.6	
Queue Storage Ratio (*RQ*) (95 th percentile)	3.41	0.00	0.80					0.00		1.99	0.00	
Control Delay (*d*), s/veh	183.4	22.0	35.0					211.6		411.3	82.4	
Level of Service (LOS)	F	C	D					F		F	F	
Approach Delay, s/veh / LOS	134.2	F		0.0			211.6	F		137.5	F	
Intersection Delay, s/veh / LOS	160.4						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 111% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 116% of downstream exit volume during time period #1, for thru movement #6.

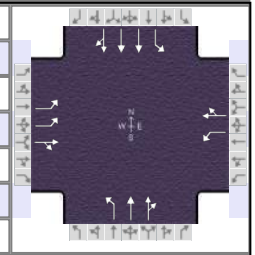
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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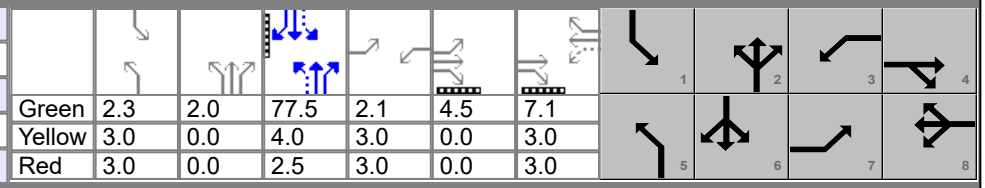
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.3	2.0	77.5	2.1	4.5	7.1						
Yellow	3.0	0.0	4.0	3.0	0.0	3.0						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1		0	0		1	1		3	3	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.60	0.60	0.60
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

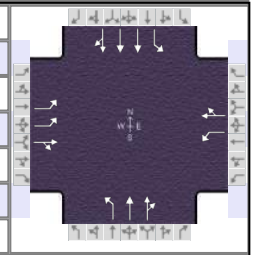
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	15.0	14.0	15.0	37.0	56.0	35.0	54.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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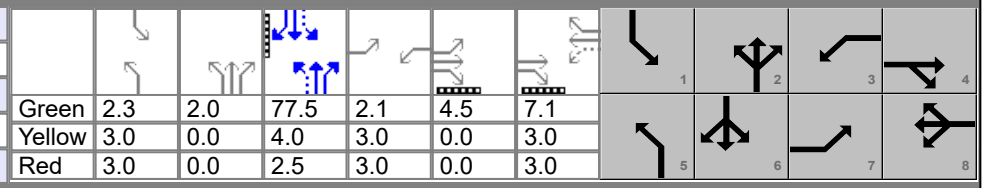
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.3	2.0	77.5	2.1	4.5	7.1
Yellow	3.0	0.0	4.0	3.0	0.0	3.0
Red	3.0	0.0	2.5	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	12.6	17.6	8.1	13.1	10.3	85.9	8.3	84.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.4	4.1	4.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	4.9	4.1	2.7	3.4	2.6		2.3	
Green Extension Time (g_e), s	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Phase Call Probability	0.94	0.99	0.30	0.89	0.62		0.34	
Max Out Probability	1.00	0.00	0.11	0.06	0.00		0.00	

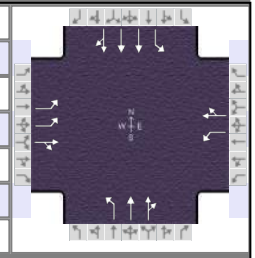
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	87	33		11	22		29	1001	1001	12	1350	609
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1683		1810	1743		1795	1885	1882	1767	1856	1652
Queue Service Time (g_s), s	2.9	2.1		0.7	1.4		0.6	54.0	54.2	0.3	33.2	36.0
Cycle Queue Clearance Time (g_c), s	2.9	2.1		0.7	1.4		0.6	54.0	54.2	0.3	33.2	36.0
Green Ratio (*g/C*)	0.06	0.10		0.08	0.06		0.68	0.66	0.66	0.67	0.65	0.65
Capacity (*c*), veh/h	192	162		175	103		203	1248	1246	136	2396	1067
Volume-to-Capacity Ratio (*X*)	0.452	0.201		0.062	0.211		0.142	0.802	0.803	0.090	0.563	0.571
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	43		14.2	30		9.8	674.4	670.9	7	519.1	510.9
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	26.8	26.8	0.3	20.3	20.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.03	0.00	0.00
Uniform Delay (d_1), s/veh	54.9	49.9		51.4	53.8		12.4	24.8	24.9	19.5	22.1	25.6
Incremental Delay (d_2), s/veh	1.7	0.6		0.1	1.0		0.0	0.5	0.5	0.2	0.6	1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.6	50.6		51.6	54.8		12.5	25.3	25.4	19.6	22.7	26.9
Level of Service (LOS)	E	D		D	D		B	C	C	B	C	C
Approach Delay, s/veh / LOS	54.9	D		53.7	D		25.2	C		23.9	C	
Intersection Delay, s/veh / LOS	25.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	1.87	B	2.07	B
Bicycle LOS Score / LOS	0.68	A	0.54	A	2.39	B	1.45	A

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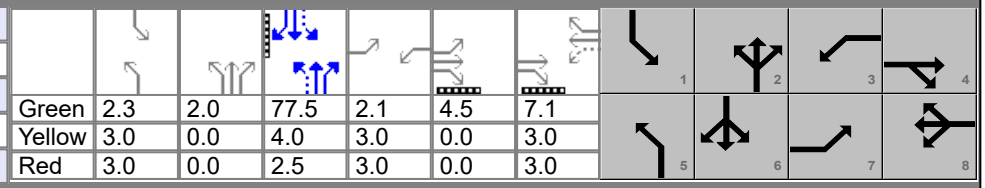
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.3	2.0		77.5	2.1	4.5	7.1					
Yellow	3.0	0.0		4.0	3.0	0.0	3.0					
Red	3.0	0.0		2.5	3.0	0.0	3.0					

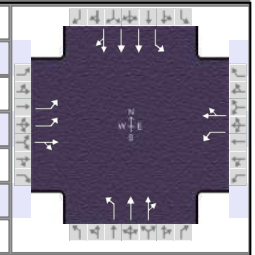
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.893	0.893		0.917	0.917		0.998	0.998		0.890	0.890
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	561	1122	1810	872	872	1795	3749	18	1767	4234	1130
Proportion of Vehicles Arriving on Green (P)	0.06	0.10	0.10	0.02	0.06	0.06	0.03	0.48	0.33	0.04	0.42	0.32
Incremental Delay Factor (k)	0.11	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.06	0.10	0.08	0.06	0.68	0.66	0.67	0.65
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1398	0	226	0	213	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	7.1	0.0	77.5	0.0	77.5	0.0
Permitted Service Time (g_u), s	0.0	0.0	7.1	0.0	41.5	0.0	23.2	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		5.3		3.2	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.710	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.156	0.000	0.159	0.000	0.077	0.000	0.081
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	192.95	48.98	118.17	53.12	1324.16	6.85	1291.35	7.53
Bicycle F_w / F_v	-3.64	0.20	-3.64	0.05	-3.64	1.90	-3.64	0.96

HCS Signalized Intersection Results Graphical Summary

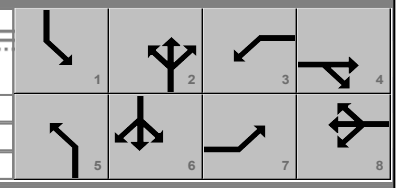
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



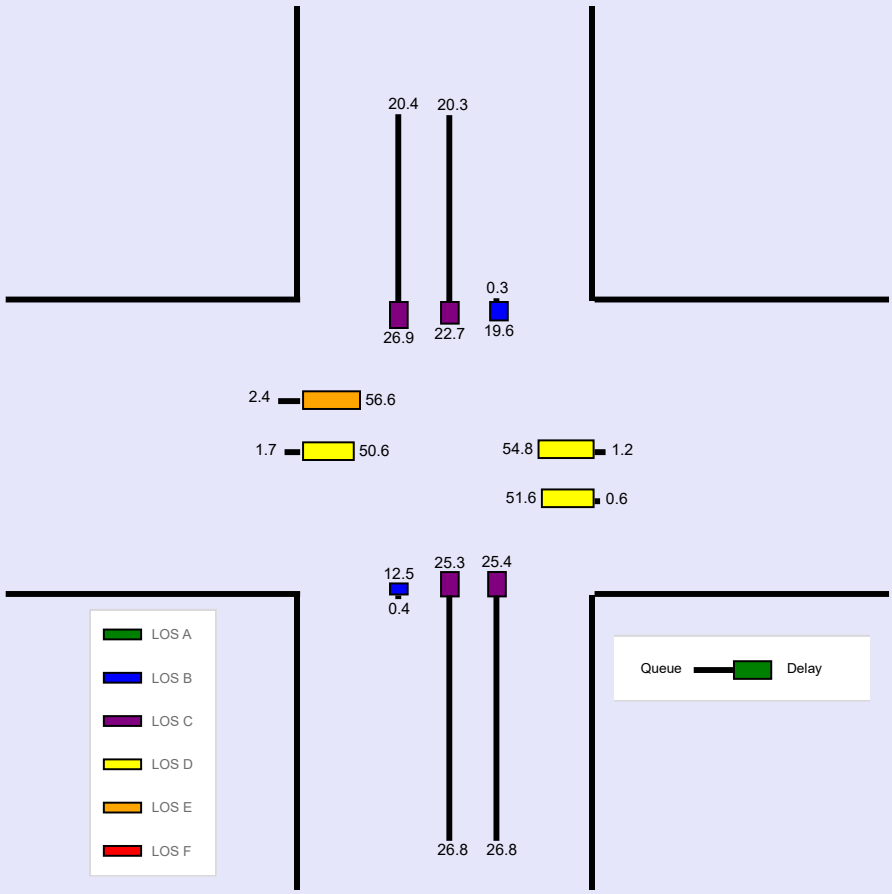
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.3	2.0	77.5	2.1	4.5	7.1	
Yellow	3.0	0.0	4.0	3.0	0.0	3.0	
Red	3.0	0.0	2.5	3.0	0.0	3.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	43		14.2	30		9.8	674.4	670.9	7	519.1	510.9
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	26.8	26.8	0.3	20.3	20.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.03	0.00	0.00
Control Delay (*d*), s/veh	56.6	50.6		51.6	54.8		12.5	25.3	25.4	19.6	22.7	26.9
Level of Service (LOS)	E	D		D	D		B	C	C	B	C	C
Approach Delay, s/veh / LOS	54.9	D		53.7	D		25.2	C		23.9	C	
Intersection Delay, s/veh / LOS	25.7						C					



--- Messages ---

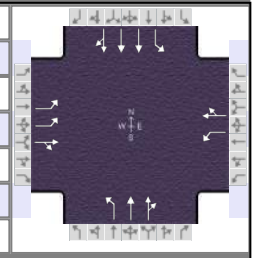
WARNING: According to input data, upstream feeding volume is equal to 120% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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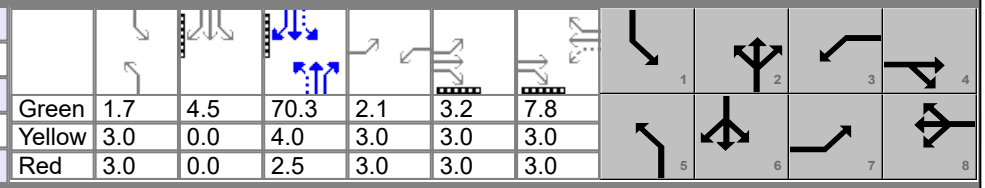
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.7	4.5	70.3	2.1	3.2	7.8						
Yellow	3.0	0.0	4.0	3.0	3.0	3.0						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

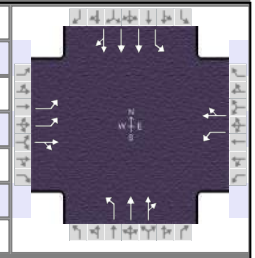
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	23.0	14.0	34.0	25.0	34.0	56.0	16.0	38.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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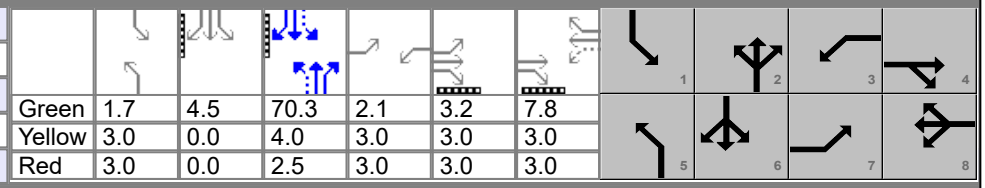
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.7	4.5	70.3	2.1	3.2	7.8	
Yellow	3.0	0.0	4.0	3.0	3.0	3.0	
Red	3.0	0.0	2.5	3.0	3.0	3.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.3	23.0	8.1	13.8	7.7	76.8	12.2	81.3
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.5	4.1	4.5	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	10.7	6.8	2.6	3.4	2.2		3.6	
Green Extension Time (g_e), s	0.6	0.3	0.0	0.3	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	0.29	0.97	0.24		0.89	
Max Out Probability	0.30	0.00	0.00	0.00	0.00		0.00	

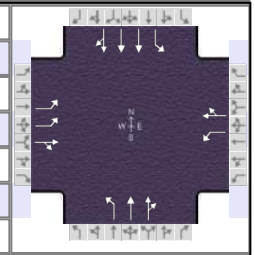
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	260	73		10	21		8	776	775	65	1528	755
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1646		1810	1743		1810	1900	1896	1810	1900	1867
Queue Service Time (g_s), s	8.7	4.8		0.6	1.4		0.2	29.7	29.8	1.6	31.4	31.6
Cycle Queue Clearance Time (g_c), s	8.7	4.8		0.6	1.4		0.2	29.7	29.8	1.6	31.4	31.6
Green Ratio (*g/C*)	0.09	0.14		0.08	0.06		0.60	0.59	0.59	0.64	0.62	0.62
Capacity (*c*), veh/h	330	233		178	113		142	1113	1110	267	2368	1163
Volume-to-Capacity Ratio (*X*)	0.789	0.313		0.058	0.185		0.059	0.698	0.698	0.244	0.645	0.649
Back of Queue (*Q*), ft/ln (95 th percentile)	185.9	92.1		13.6	28.4		3.7	278.5	280.4	24.2	351.9	348.8
Back of Queue (*Q*), veh/ln (95 th percentile)	7.4	3.7		0.5	1.1		0.1	11.1	11.2	1.0	14.1	14.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.89	0.00		0.45	0.00		0.02	0.00	0.00	0.10	0.00	0.00
Uniform Delay (d_1), s/veh	53.2	46.3		50.9	53.1		13.3	12.6	12.7	13.4	15.3	15.2
Incremental Delay (d_2), s/veh	4.9	0.8		0.1	0.8		0.0	0.3	0.3	0.0	0.1	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.1	47.0		51.0	53.9		13.3	12.9	13.0	13.4	15.4	15.5
Level of Service (LOS)	E	D		D	D		B	B	B	B	B	B
Approach Delay, s/veh / LOS	55.7	E		53.0	D		13.0	B		15.4	B	
Intersection Delay, s/veh / LOS	17.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.47	B	1.89	B	2.07	B
Bicycle LOS Score / LOS	1.04	A	0.54	A	2.09	B	1.93	B

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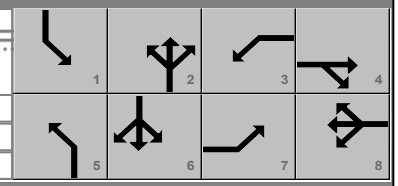
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.7	4.5	70.3	2.1	3.2	7.8
Yellow	3.0	0.0	4.0	3.0	3.0	3.0
Red	3.0	0.0	2.5	3.0	3.0	3.0

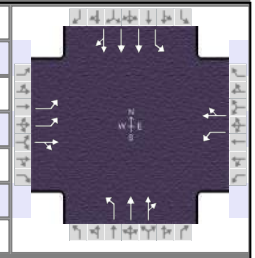
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.866	0.866		0.917	0.917		0.998	0.998		0.983	0.983
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	235	1411	1810	872	872	1810	3776	20	1810	5482	184
Proportion of Vehicles Arriving on Green (P)	0.09	0.14	0.14	0.02	0.06	0.06	0.02	0.68	0.56	0.01	0.60	0.62
Incremental Delay Factor (k)	0.13	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.09	0.14	0.08	0.06	0.60	0.59	0.64	0.62
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1348	0	166	0	338	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	7.8	0.0	70.3	0.0	70.8	0.0
Permitted Service Time (g_u), s	0.0	0.0	7.8	0.0	41.1	0.0	40.2	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		1.5		7.6	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.710	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.152	0.000	0.159	0.000	0.094	0.000	0.086
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	282.91	44.23	129.20	52.50	1171.12	10.31	1246.15	8.52
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.05	-3.64	1.61	-3.64	1.44

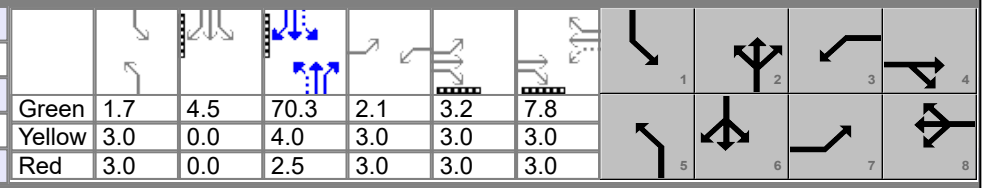
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Miami Valley & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



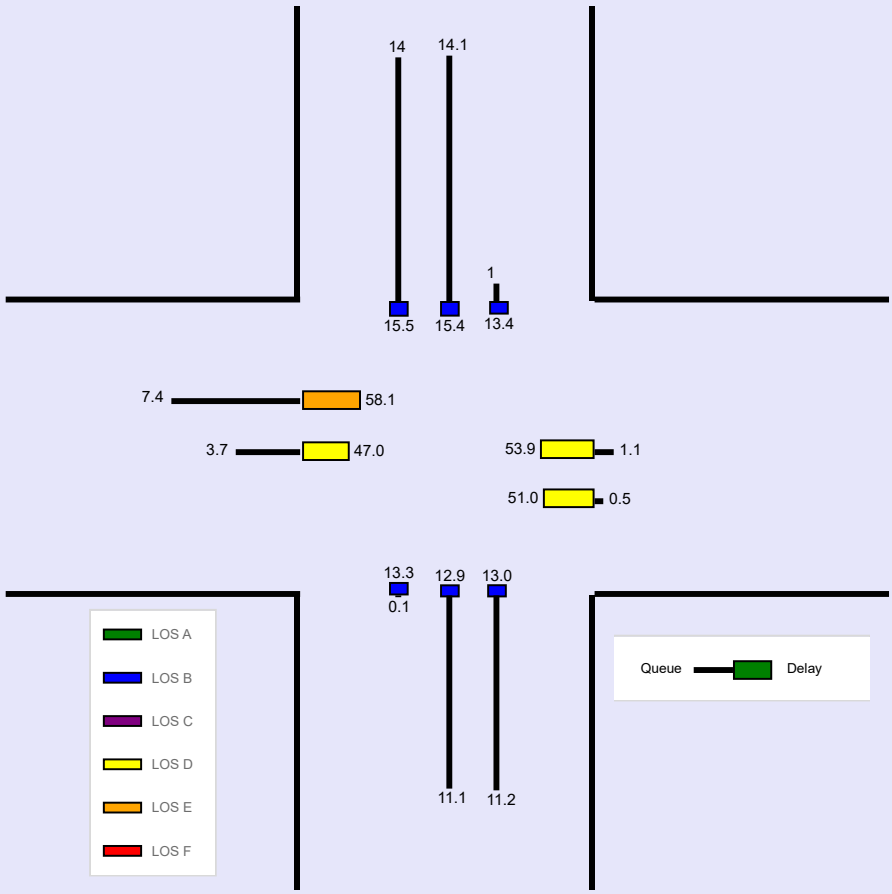
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	43	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	1.7	4.5		70.3	2.1	3.2	7.8					
Yellow	3.0	0.0		4.0	3.0	3.0	3.0					
Red	3.0	0.0		2.5	3.0	3.0	3.0					

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	185.9	92.1		13.6	28.4		3.7	278.5	280.4	24.2	351.9	348.8
Back of Queue (*Q*), veh/ln (95 th percentile)	7.4	3.7		0.5	1.1		0.1	11.1	11.2	1.0	14.1	14.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.89	0.00		0.45	0.00		0.02	0.00	0.00	0.10	0.00	0.00
Control Delay (*d*), s/veh	58.1	47.0		51.0	53.9		13.3	12.9	13.0	13.4	15.4	15.5
Level of Service (LOS)	E	D		D	D		B	B	B	B	B	B
Approach Delay, s/veh / LOS	55.7	E		53.0	D		13.0	B		15.4	B	
Intersection Delay, s/veh / LOS	17.9						B					



--- Messages ---

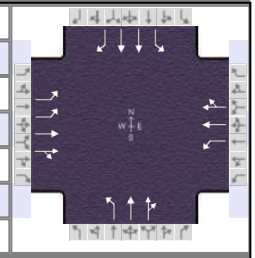
WARNING: According to input data, upstream feeding volume is equal to 85% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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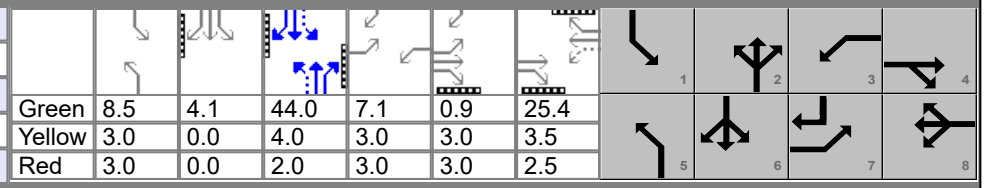
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.5	4.1		44.0	7.1	0.9	25.4					
Yellow	3.0	0.0		4.0	3.0	3.0	3.5					
Red	3.0	0.0		2.0	3.0	3.0	2.5					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1		3	3		1	1		3	3	3
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.34	0.34	0.34	0.81	0.81	0.81
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	175	0		230	0		235	0		180	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

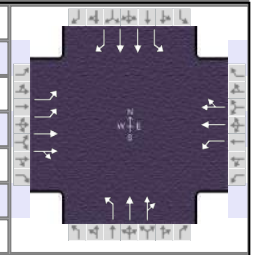
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	31.0	24.0	35.0	22.0	50.0	15.0	43.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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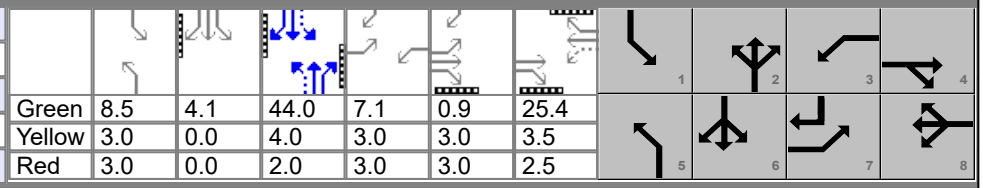
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.5	4.1		44.0	7.1	0.9	25.4					
Yellow	3.0	0.0		4.0	3.0	3.0	3.5					
Red	3.0	0.0		2.0	3.0	3.0	2.5					

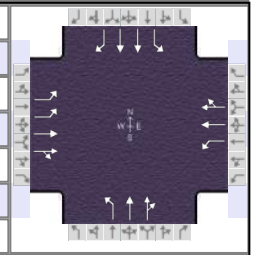
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	20.0	38.3	13.1	31.4	14.5	50.0	18.6	54.1
Change Period, (*Y+R c*), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (*g s*), s	16.0	12.0	7.2	24.0	8.3		14.6	
Green Extension Time (*g e*), s	0.0	2.6	0.2	1.4	0.3	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	0.96	1.00	0.99		1.00	
Max Out Probability	1.00	0.00	0.00	0.67	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	484	186	177	99	264	297	153	796	790	318	800	457
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1885	1730	1767	1856	1572	1795	1885	1862	1767	1719	1572
Queue Service Time (*g s*), s	14.0	9.6	10.0	5.2	15.7	22.0	6.3	44.0	44.0	12.6	23.5	25.0
Cycle Queue Clearance Time (*g c*), s	14.0	9.6	10.0	5.2	15.7	22.0	6.3	44.0	44.0	12.6	23.5	25.0
Green Ratio (*g/C*)	0.12	0.27	0.27	0.27	0.21	0.21	0.44	0.37	0.37	0.47	0.40	0.52
Capacity (*c*), veh/h	407	508	466	336	393	333	316	691	683	245	1377	813
Volume-to-Capacity Ratio (*X*)	1.189	0.367	0.379	0.294	0.671	0.891	0.484	1.151	1.157	1.294	0.581	0.562
Back of Queue (*Q*), ft/ln (95 th percentile)	479.1	196.8	188.2	103.1	302	386.9	105.5	1075.3	1067.6	550.3	381.3	378.4
Back of Queue (*Q*), veh/ln (95 th percentile)	19.0	7.8	7.5	4.0	11.8	15.5	4.2	42.7	42.7	21.5	14.9	14.8
Queue Storage Ratio (*RQ*) (95 th percentile)	2.74	0.00	0.00	0.45	0.00	0.00	0.45	0.00	0.00	3.06	0.00	0.00
Uniform Delay (*d 1*), s/veh	53.0	35.5	35.7	33.9	43.5	46.0	23.8	36.8	36.4	25.2	33.0	22.9
Incremental Delay (*d 2*), s/veh	107.0	0.3	0.4	0.5	2.8	19.9	0.4	74.1	76.6	154.5	1.5	2.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	160.0	35.9	36.1	34.4	46.3	65.9	24.2	110.9	113.0	179.7	34.4	25.2
Level of Service (LOS)	F	D	D	C	D	E	C	F	F	F	C	C
Approach Delay, s/veh / LOS	106.8	F		53.3	D		104.2	F		61.0	E	
Intersection Delay, s/veh / LOS	83.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.46	B	2.28	B	2.43	B
Bicycle LOS Score / LOS	1.19	A	1.03	A	1.93	B	1.61	B

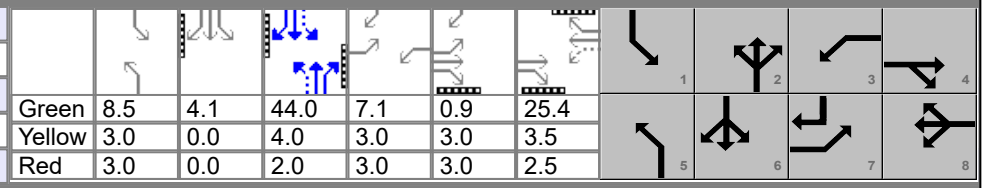
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.5	4.1		44.0	7.1	0.9	25.4					
Yellow	3.0	0.0		4.0	3.0	3.0	3.5					
Red	3.0	0.0		2.0	3.0	3.0	2.5					

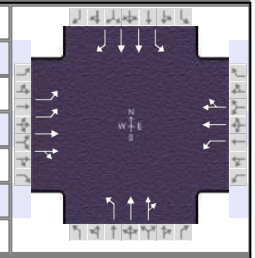
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	0.977	0.977	1.000	0.992	0.992	1.000	0.977	0.977	0.977
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.926	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.918	0.918		0.847	0.847		0.988	0.988		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	2754	862	1767	1856	1572	1795	3618	129	1767	3438	1572
Proportion of Vehicles Arriving on Green (P)	0.12	0.27	0.27	0.06	0.21	0.21	0.05	0.39	0.49	0.30	0.31	0.31
Incremental Delay Factor (k)	0.50	0.08	0.08	0.11	0.15	0.32	0.11	0.50	0.50	0.50	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.12	0.27	0.27	0.21	0.44	0.37	0.47	0.40
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1011	0	685	0	320	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	25.4	0.0	44.0	0.0	44.1	0.0
Permitted Service Time (g_u), s	0.0	0.0	20.3	0.0	22.6	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s			0.5		6.4		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1572
Protected Right Effective Green Time (g_R), s								14.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.000	1.710	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.139	0.000	0.145	0.000	0.128	0.000	0.123
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	538.60	32.04	423.40	37.29	733.34	24.07	801.25	21.55
Bicycle F_w / F_v	-3.64	0.70	-3.64	0.54	-3.64	1.44	-3.64	1.12

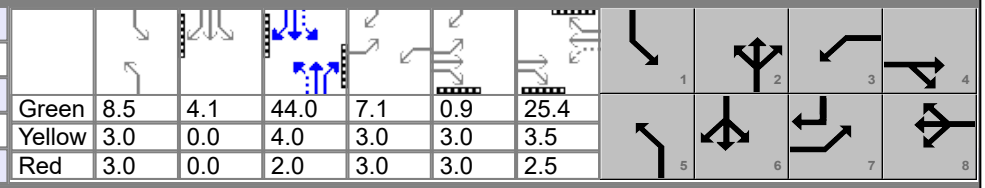
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 AM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



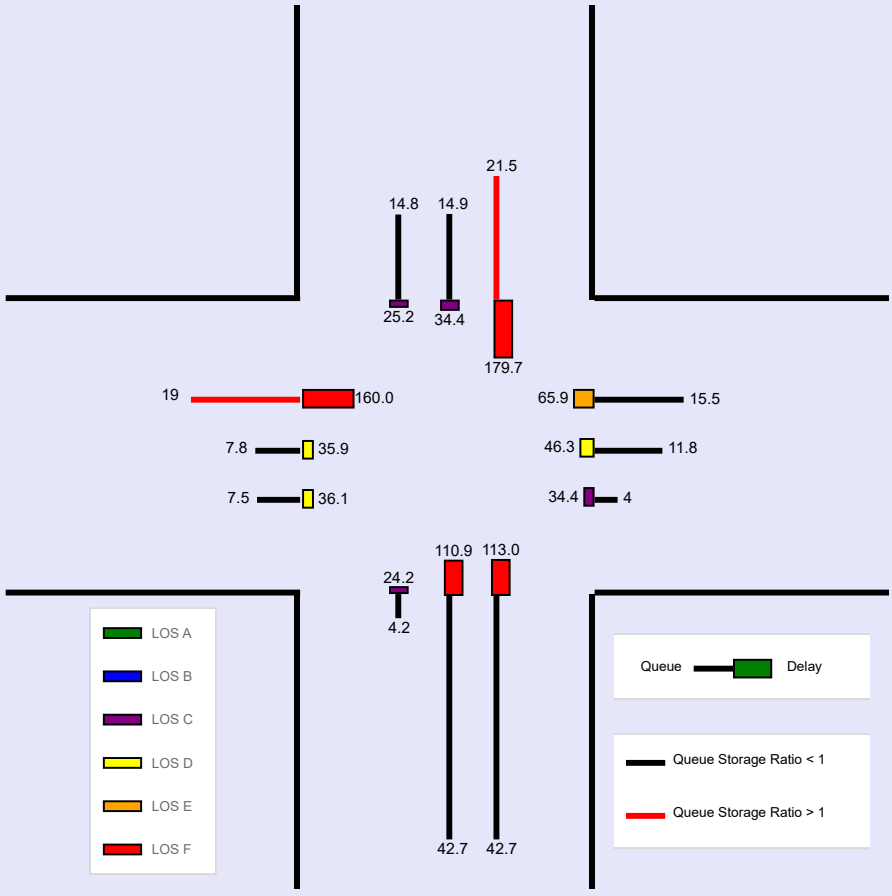
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	109	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.5	4.1		44.0	7.1	0.9	25.4					
Yellow	3.0	0.0		4.0	3.0	3.0	3.5					
Red	3.0	0.0		2.0	3.0	3.0	2.5					

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	479.1	196.8	188.2	103.1	302	386.9	105.5	1075.3	1067.6	550.3	381.3	378.4
Back of Queue (*Q*), veh/ln (95 th percentile)	19.0	7.8	7.5	4.0	11.8	15.5	4.2	42.7	42.7	21.5	14.9	14.8
Queue Storage Ratio (*RQ*) (95 th percentile)	2.74	0.00	0.00	0.45	0.00	0.00	0.45	0.00	0.00	3.06	0.00	0.00
Control Delay (*d*), s/veh	160.0	35.9	36.1	34.4	46.3	65.9	24.2	110.9	113.0	179.7	34.4	25.2
Level of Service (LOS)	F	D	D	C	D	E	C	F	F	F	C	C
Approach Delay, s/veh / LOS	106.8	F		53.3	D		104.2	F		61.0	E	
Intersection Delay, s/veh / LOS	83.6						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

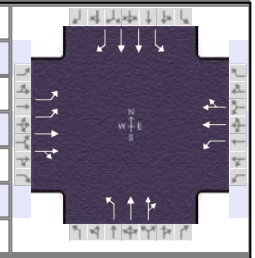
WARNING: According to input data, upstream feeding volume is equal to 120% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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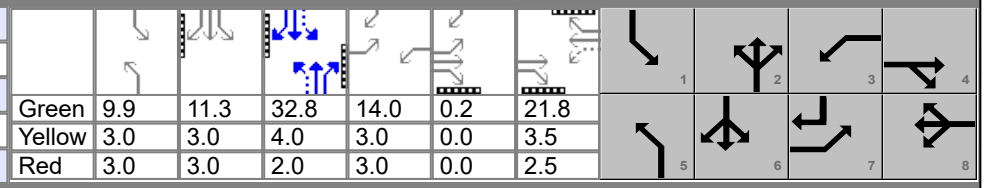
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.9	11.3	32.8	14.0	0.2	21.8						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	0		0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.54	0.54	0.54	0.73	0.73	0.73
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	175	0		230	0		235	0		180	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

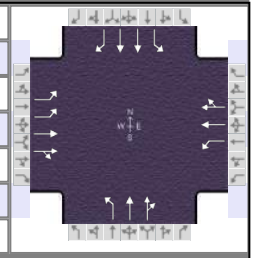
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	33.0	28.0	20.0	15.0	38.0	29.0	43.0	34.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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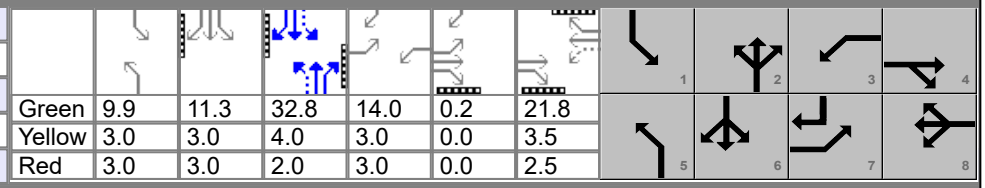
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.9	11.3	32.8	14.0	0.2	21.8						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	20.2	28.0	20.0	27.8	15.9	38.8	33.2	56.1
Change Period, (*Y+R c*), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (*g s*), s	13.1	23.7	16.0	23.8	9.5		26.0	
Green Extension Time (*g e*), s	1.1	0.0	0.0	0.0	0.5	0.0	1.2	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	1.00	1.00	1.00	0.00		0.05	

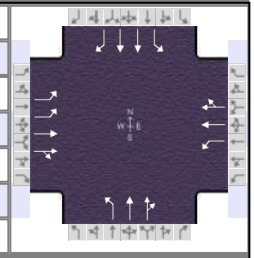
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	333	341	315	258	323	323	160	555	538	433	1504	344
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1900	1740	1810	1900	1610	1810	1900	1841	1810	1760	1610
Queue Service Time (*g s*), s	11.1	21.4	21.7	14.0	20.1	21.8	7.5	32.8	32.8	24.0	50.1	18.9
Cycle Queue Clearance Time (*g c*), s	11.1	21.4	21.7	14.0	20.1	21.8	7.5	32.8	32.8	24.0	50.1	18.9
Green Ratio (*g/C*)	0.12	0.18	0.18	0.30	0.18	0.18	0.36	0.27	0.27	0.52	0.42	0.54
Capacity (*c*), veh/h	416	348	319	271	345	292	209	520	503	470	1470	863
Volume-to-Capacity Ratio (*X*)	0.801	0.979	0.988	0.952	0.935	1.103	0.764	1.068	1.069	0.920	1.023	0.399
Back of Queue (*Q*), ft/ln (95 th percentile)	216.9	503.7	482.9	352.9	453.4	570.8	138.3	738.6	717.1	476.9	918.9	318.3
Back of Queue (*Q*), veh/ln (95 th percentile)	8.7	20.1	19.3	14.1	18.1	22.8	5.5	29.5	28.7	19.1	36.8	12.7
Queue Storage Ratio (*RQ*) (95 th percentile)	1.24	0.00	0.00	1.53	0.00	0.00	0.59	0.00	0.00	2.65	0.00	0.00
Uniform Delay (*d 1*), s/veh	51.5	48.8	48.9	36.4	48.4	49.1	32.0	47.3	46.6	36.2	50.0	25.4
Incremental Delay (*d 2*), s/veh	3.6	42.3	46.8	41.6	31.9	83.1	3.1	49.0	49.6	12.7	26.2	1.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	55.1	91.1	95.7	78.0	80.3	132.3	35.2	96.3	96.2	48.9	76.2	26.4
Level of Service (LOS)	E	F	F	E	F	F	D	F	F	D	F	C
Approach Delay, s/veh / LOS	80.4	F		98.2	F		88.5	F		63.5	E	
Intersection Delay, s/veh / LOS	78.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.46	B	2.30	B	2.43	B
Bicycle LOS Score / LOS	1.30	A	1.23	A	1.88	B	2.55	C

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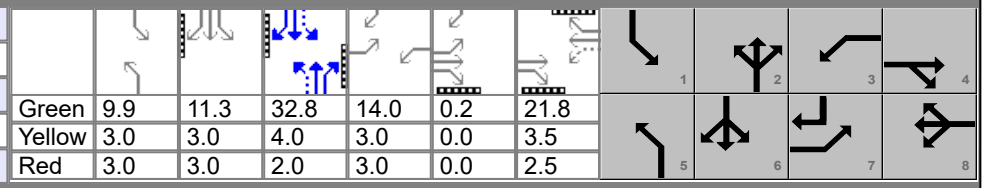
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.9	11.3		32.8	14.0	0.2	21.8					
Yellow	3.0	3.0		4.0	3.0	0.0	3.5					
Red	3.0	3.0		2.0	3.0	0.0	2.5					

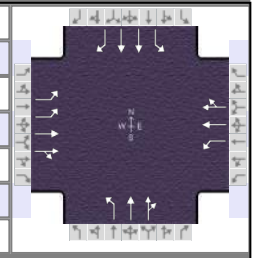
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.926	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.916	0.916		0.847	0.847		0.969	0.969		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	2749	891	1810	1900	1610	1810	3413	328	1810	3519	1610
Proportion of Vehicles Arriving on Green (P)	0.12	0.18	0.18	0.12	0.18	0.18	0.08	0.21	0.27	0.21	0.17	0.15
Incremental Delay Factor (k)	0.11	0.48	0.49	0.46	0.45	0.50	0.11	0.50	0.50	0.26	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.12	0.18	0.30	0.18	0.36	0.27	0.52	0.42
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	790	0	354	0	524	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	21.8	0.0	32.8	0.0	34.8	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								1610
Protected Right Effective Green Time (g_R), s								14.2

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.000	1.710	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.148	0.000	0.148	0.000	0.139	0.000	0.121
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	366.67	40.02	363.22	40.19	546.74	31.68	835.29	20.35
Bicycle F_w / F_v	-3.64	0.82	-3.64	0.75	-3.64	1.39	-3.64	2.06

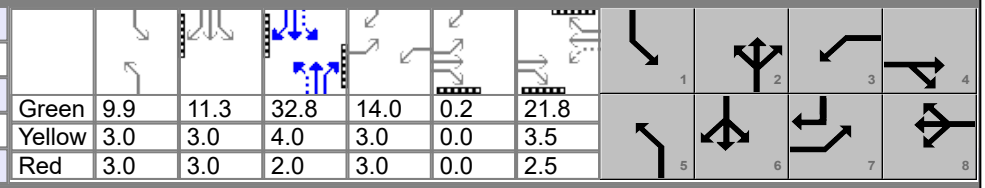
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & WilmPike	File Name	WilmPike Corridor 2050 PM No Build.xus		
Project Description	Wilmington Pike TRAC No Build				



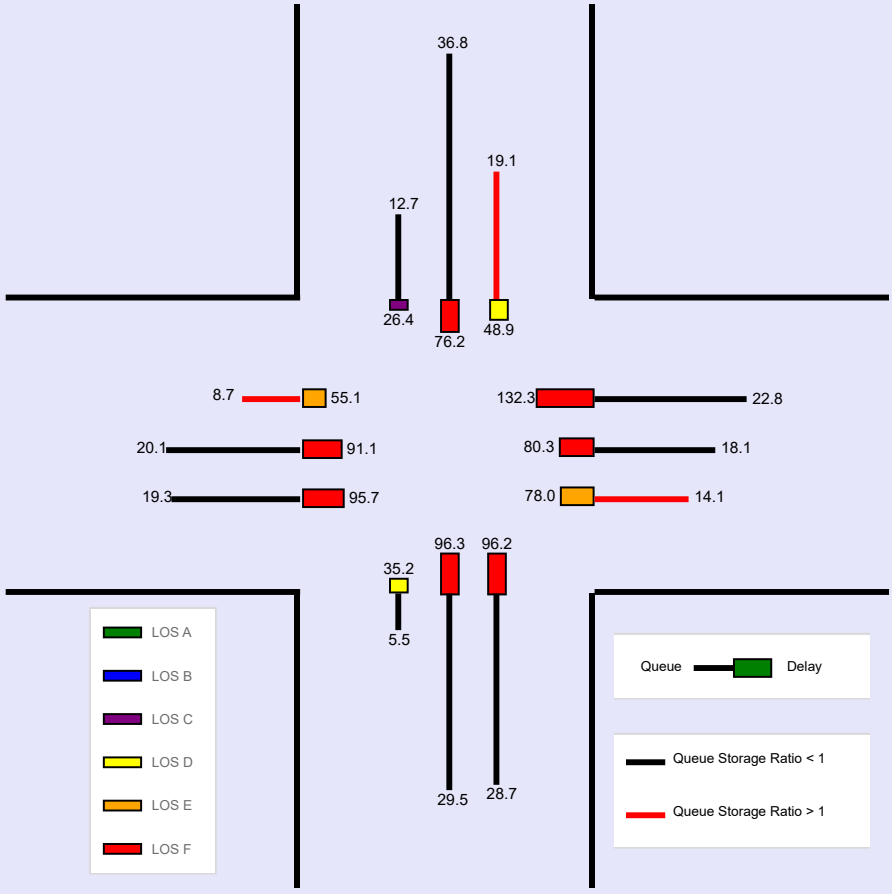
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	92	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.9	11.3	32.8	14.0	0.2	21.8						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	216.9	503.7	482.9	352.9	453.4	570.8	138.3	738.6	717.1	476.9	918.9	318.3
Back of Queue (*Q*), veh/ln (95 th percentile)	8.7	20.1	19.3	14.1	18.1	22.8	5.5	29.5	28.7	19.1	36.8	12.7
Queue Storage Ratio (*RQ*) (95 th percentile)	1.24	0.00	0.00	1.53	0.00	0.00	0.59	0.00	0.00	2.65	0.00	0.00
Control Delay (*d*), s/veh	55.1	91.1	95.7	78.0	80.3	132.3	35.2	96.3	96.2	48.9	76.2	26.4
Level of Service (LOS)	E	F	F	E	F	F	D	F	F	D	F	C
Approach Delay, s/veh / LOS	80.4	F		98.2	F		88.5	F		63.5	E	
Intersection Delay, s/veh / LOS	78.1						E					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

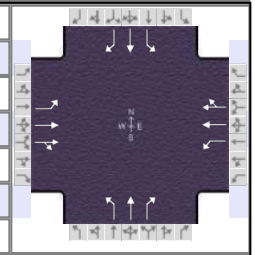
WARNING: According to input data, upstream feeding volume is equal to 74% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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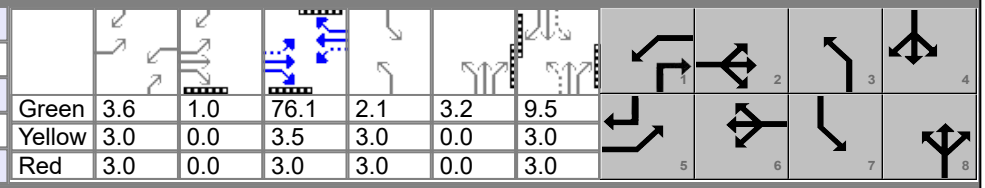
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.6	1.0		76.1	2.1	3.2	9.5					
Yellow	3.0	0.0		3.5	3.0	0.0	3.0					
Red	3.0	0.0		3.0	3.0	0.0	3.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2		0	0		0	0	0	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	330	0		370	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

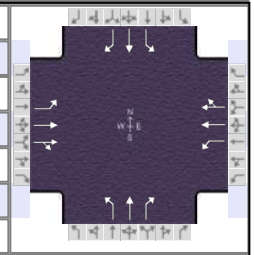
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	27.0	14.0	27.0	25.0	54.0	25.0	54.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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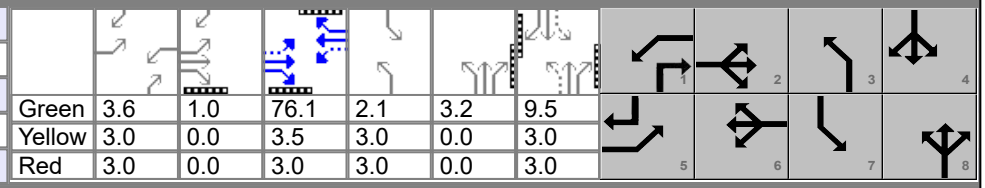
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.6	1.0		76.1	2.1		3.2	9.5				
Yellow	3.0	0.0		3.5	3.0		0.0	3.0				
Red	3.0	0.0		3.0	3.0		0.0	3.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	83.6	9.6	82.6	11.4	18.7	8.1	15.5
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.3	3.7	4.3
Queue Clearance Time (g_s), s	2.7		2.5		4.6	2.7	2.7	5.0
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.3	0.0	0.3
Phase Call Probability	0.66		0.51		0.77	0.98	0.30	0.94
Max Out Probability	0.00		0.00		0.00	0.00	0.00	0.00

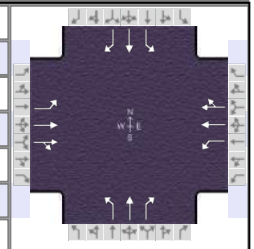
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	32	236	354	22	461	458	43	11	11	11	11	43
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1231	1840	1810	1900	1884	1810	1900	1610	1795	1885	1598
Queue Service Time (g_s), s	0.7	16.3	15.9	0.5	18.2	18.2	2.6	0.6	0.7	0.7	0.6	3.0
Cycle Queue Clearance Time (g_c), s	0.7	16.3	15.9	0.5	18.2	18.2	2.6	0.6	0.7	0.7	0.6	3.0
Green Ratio (*g/C*)	0.67	0.64	0.64	0.66	0.63	0.63	0.12	0.11	0.14	0.10	0.08	0.12
Capacity (*c*), veh/h	421	791	1182	524	1205	1195	246	201	218	203	148	187
Volume-to-Capacity Ratio (*X*)	0.076	0.299	0.299	0.041	0.383	0.383	0.177	0.054	0.050	0.053	0.073	0.232
Back of Queue (*Q*), ft/ln (95 th percentile)	10.9	218.7	288.5	7.9	314.7	313.9	53.5	13.5	13	13.7	14.2	55.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	8.6	11.5	0.3	12.6	12.6	2.1	0.5	0.5	0.5	0.6	2.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.00	0.00	0.02	0.00	0.00	0.71	0.00	0.17	0.06	0.00	0.24
Uniform Delay (d_1), s/veh	7.6	18.6	17.9	8.2	15.7	15.7	47.2	48.3	45.1	49.3	51.2	48.1
Incremental Delay (d_2), s/veh	0.0	0.8	0.5	0.0	0.7	0.7	0.3	0.1	0.1	0.1	0.2	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	7.6	19.4	18.4	8.2	16.4	16.5	47.5	48.4	45.2	49.4	51.4	48.7
Level of Service (LOS)	A	B	B	A	B	B	D	D	D	D	D	D
Approach Delay, s/veh / LOS	18.2	B		16.3	B		47.3	D		49.3	D	
Intersection Delay, s/veh / LOS	19.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.07	B	2.07	B	2.31	B	2.31	B
Bicycle LOS Score / LOS	1.01	A	1.27	A	0.60	A	0.60	A

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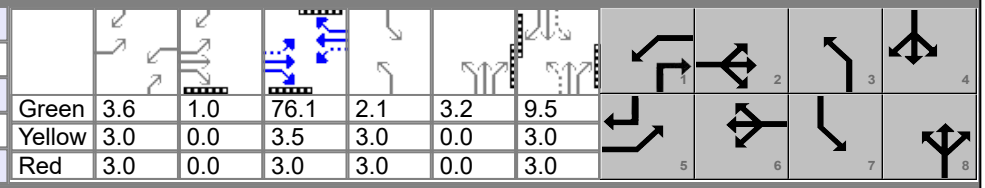
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.6	1.0		76.1	2.1	3.2	9.5					
Yellow	3.0	0.0		3.5	3.0	0.0	3.0					
Red	3.0	0.0		3.0	3.0	0.0	3.0					

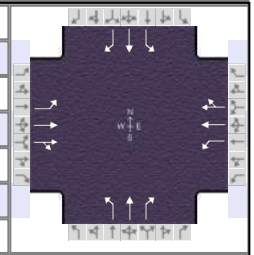
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.658	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.984	0.984		0.992	0.992		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1781	2904	167	1810	3695	89	1810	1900	1610	1795	1885	1598
Proportion of Vehicles Arriving on Green (P)	0.09	0.37	0.59	0.03	0.50	0.45	0.04	0.11	0.11	0.02	0.08	0.08
Incremental Delay Factor (k)	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.11	0.11	0.08	0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.67	0.64	0.66	0.63	0.12	0.11	0.10	0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	608	0	839	0	1426	0	1415	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	76.1	0.0	76.1	0.0	9.5	0.0	9.5	0.0
Permitted Service Time (g_u), s	57.8	0.0	58.5	0.0	8.8	0.0	9.5	0.0
Permitted Queue Service Time (g_{ps}), s	1.0		0.5		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1610		1598
Protected Right Effective Green Time (g_R), s						3.6		4.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.389	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.082	0.000	0.084	0.000	0.155	0.000	0.158
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1284.95	7.67	1268.11	8.03	211.32	47.99	157.50	50.92
Bicycle F_w / F_v	-3.64	0.52	-3.64	0.78	-3.64	0.11	-3.64	0.11

HCS Signalized Intersection Results Graphical Summary

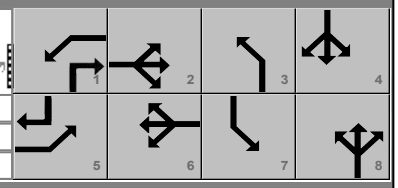
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



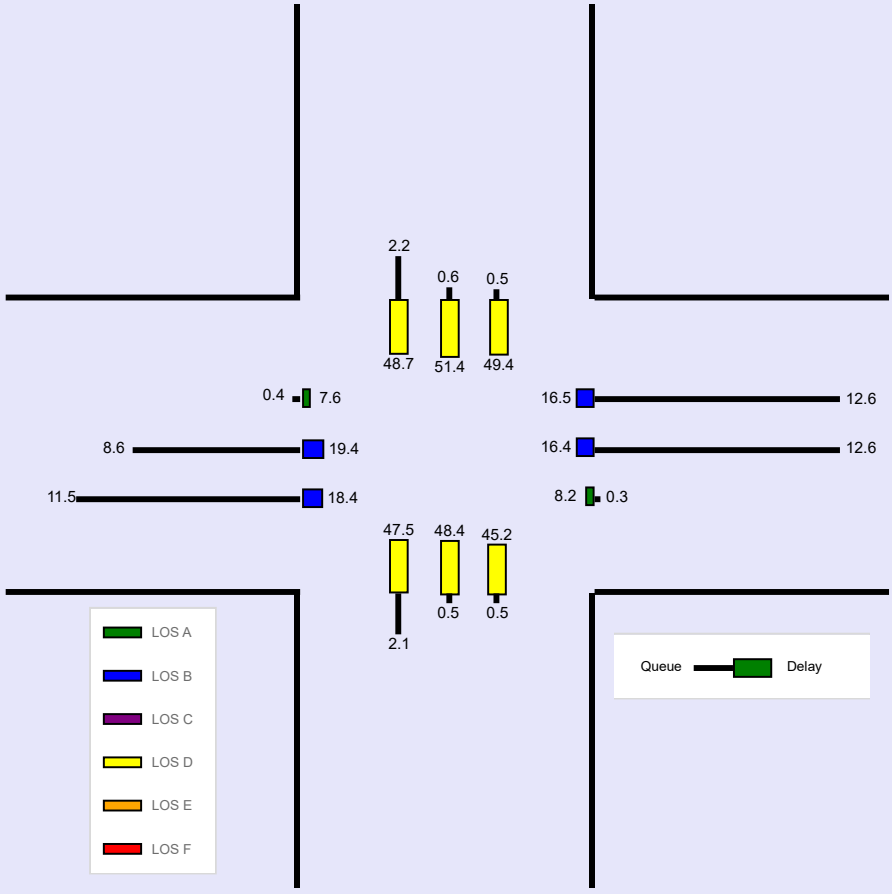
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	82	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.6	1.0		76.1	2.1	3.2	9.5					
Yellow	3.0	0.0		3.5	3.0	0.0	3.0					
Red	3.0	0.0		3.0	3.0	0.0	3.0					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	10.9	218.7	288.5	7.9	314.7	313.9	53.5	13.5	13	13.7	14.2	55.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	8.6	11.5	0.3	12.6	12.6	2.1	0.5	0.5	0.5	0.6	2.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.00	0.00	0.02	0.00	0.00	0.71	0.00	0.17	0.06	0.00	0.24
Control Delay (*d*), s/veh	7.6	19.4	18.4	8.2	16.4	16.5	47.5	48.4	45.2	49.4	51.4	48.7
Level of Service (LOS)	A	B	B	A	B	B	D	D	D	D	D	D
Approach Delay, s/veh / LOS	18.2	B		16.3	B		47.3	D		49.3	D	
Intersection Delay, s/veh / LOS	19.4						B					



--- Messages ---

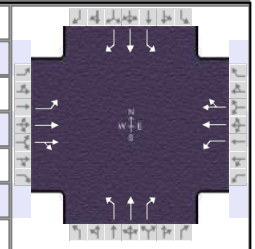
No errors or warnings exist.

--- Comments ---

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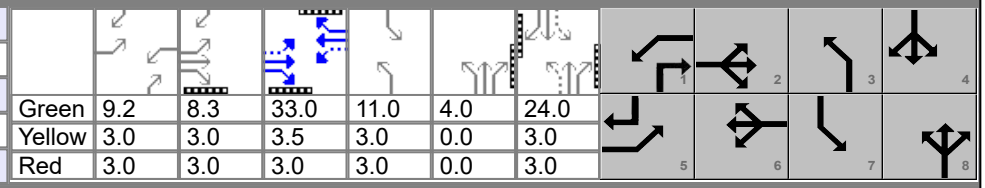
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	8.3	33.0	11.0	4.0	24.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		1	1		1	1	1	0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.64	0.64	0.64	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	330	0		370	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

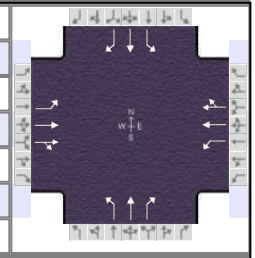
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	18.0	30.0	15.0	27.0	21.0	58.0	17.0	54.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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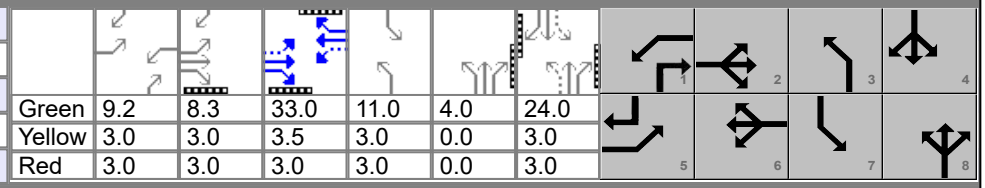
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	8.3	33.0	11.0	4.0	24.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	29.5	53.9	15.2	39.5	21.0	34.0	17.0	30.0
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.3	3.7	4.3
Queue Clearance Time (g_s), s	22.6		8.9		17.0	7.5	13.0	21.5
Green Extension Time (g_e), s	1.0	0.0	0.3	0.0	0.0	2.6	0.0	2.5
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.01		0.00		1.00	0.00	1.00	0.00

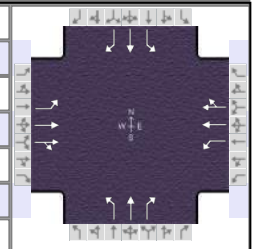
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	433	385	568	147	417	395	340	106	96	319	53	340
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1251	1844	1795	1885	1782	1795	1885	1598	1810	1900	1610
Queue Service Time (g_s), s	20.6	28.9	29.5	6.9	22.8	23.1	15.0	5.5	5.3	11.0	2.8	19.5
Cycle Queue Clearance Time (g_c), s	20.6	28.9	29.5	6.9	22.8	23.1	15.0	5.5	5.3	11.0	2.8	19.5
Green Ratio (*g/C*)	0.49	0.39	0.39	0.35	0.28	0.28	0.33	0.23	0.31	0.29	0.20	0.39
Capacity (*c*), veh/h	471	493	728	274	520	492	526	440	495	450	380	636
Volume-to-Capacity Ratio (*X*)	0.920	0.781	0.781	0.535	0.801	0.803	0.647	0.242	0.194	0.709	0.140	0.535
Back of Queue (*Q*), ft/ln (95 th percentile)	398.8	306.4	430.1	134.2	343.6	336.5	68.9	117.4	94.1	167.9	59.3	302.3
Back of Queue (*Q*), veh/ln (95 th percentile)	16.0	12.3	17.2	5.3	13.6	13.5	2.7	4.7	3.7	6.7	2.4	12.1
Queue Storage Ratio (*RQ*) (95 th percentile)	1.21	0.00	0.00	0.36	0.00	0.00	0.92	0.00	1.25	0.73	0.00	1.31
Uniform Delay (d_1), s/veh	32.8	22.2	23.8	29.8	30.1	31.1	34.4	37.4	30.4	38.4	39.5	27.9
Incremental Delay (d_2), s/veh	11.4	9.6	6.7	0.8	8.2	8.7	2.5	0.3	0.2	4.8	0.2	0.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	44.2	31.8	30.5	30.5	38.4	39.9	36.9	37.6	30.6	43.2	39.7	28.6
Level of Service (LOS)	D	C	C	C	D	D	D	D	C	D	D	C
Approach Delay, s/veh / LOS	35.2	D		37.8	D		35.9	D		35.9	D	
Intersection Delay, s/veh / LOS	36.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.13	B	2.30	B	2.30	B
Bicycle LOS Score / LOS	1.89	B	1.35	A	1.38	A	1.66	B

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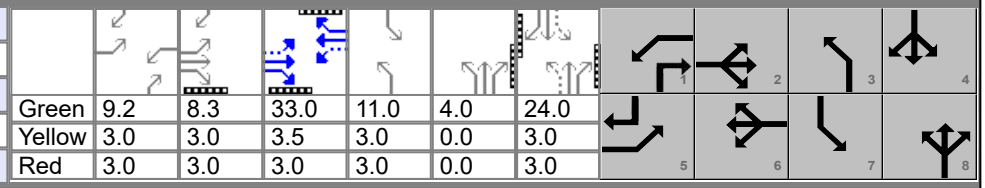
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	8.3	33.0	11.0	4.0	24.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

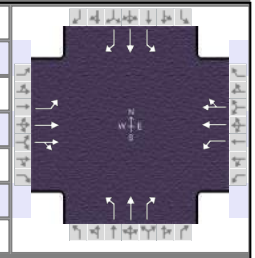
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	0.992	0.992	1.000	0.992	0.992	0.992	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.658	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.971	0.971		0.945	0.945		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1810	2785	309	1795	3093	574	1795	1885	1598	1810	1900	1610
Proportion of Vehicles Arriving on Green (P)	0.09	0.56	0.39	0.06	0.45	0.40	0.13	0.23	0.23	0.09	0.20	0.20
Incremental Delay Factor (k)	0.21	0.50	0.50	0.08	0.50	0.50	0.20	0.11	0.11	0.26	0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.49	0.39	0.35	0.28	0.33	0.23	0.29	0.20
Permitted Saturation Flow Rate (s_p), veh/h/ln	683	0	593	0	1362	0	1308	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	35.1	0.0	33.1	0.0	24.0	0.0	24.0	0.0
Permitted Service Time (g_u), s	10.3	0.0	15.6	0.0	21.3	0.0	20.6	0.0
Permitted Queue Service Time (g_{ps}), s	10.3		5.9		6.5		12.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1598		1610
Protected Right Effective Green Time (g_R), s						9.1		23.4

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.389	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.138	0.000	0.143	0.000	0.146
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	789.54	21.98	550.69	31.51	466.26	35.29	399.59	38.42
Bicycle F_w / F_v	-3.64	1.40	-3.64	0.86	-3.64	0.90	-3.64	1.18

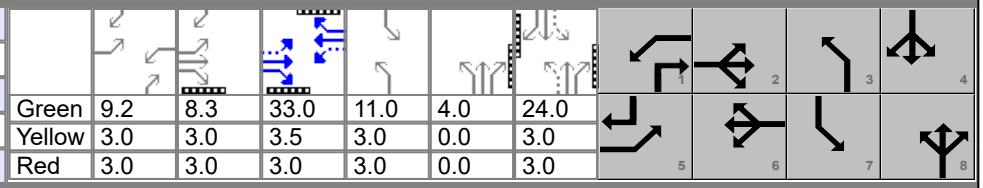
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



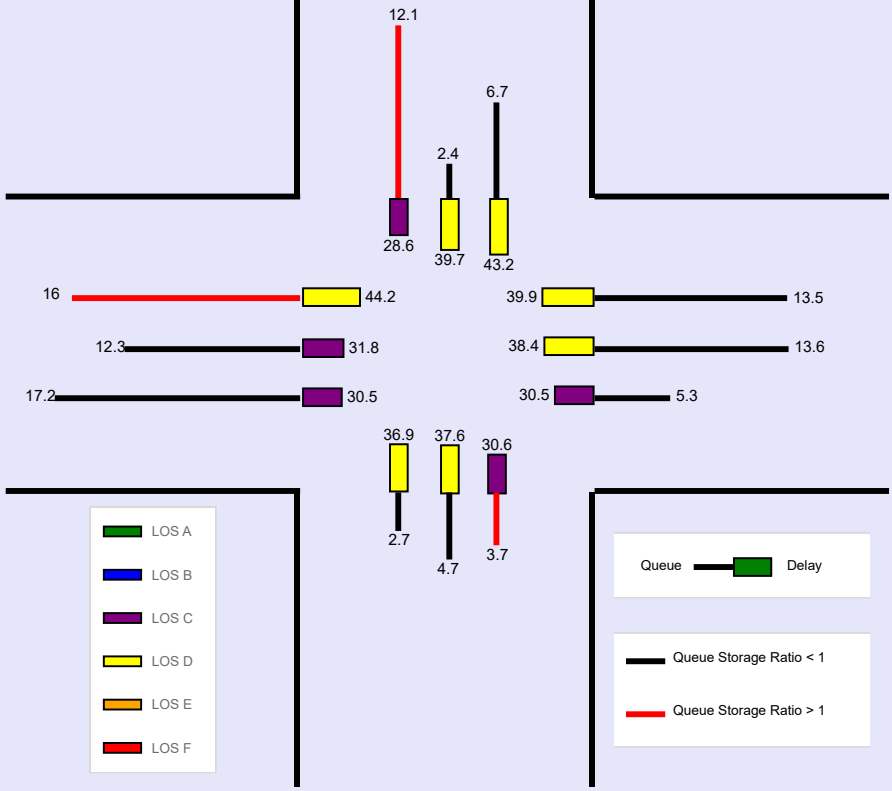
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	8.3	33.0	11.0	4.0	24.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	398.8	306.4	430.1	134.2	343.6	336.5	68.9	117.4	94.1	167.9	59.3	302.3
Back of Queue (*Q*), veh/ln (95 th percentile)	16.0	12.3	17.2	5.3	13.6	13.5	2.7	4.7	3.7	6.7	2.4	12.1
Queue Storage Ratio (*RQ*) (95 th percentile)	1.21	0.00	0.00	0.36	0.00	0.00	0.92	0.00	1.25	0.73	0.00	1.31
Control Delay (*d*), s/veh	44.2	31.8	30.5	30.5	38.4	39.9	36.9	37.6	30.6	43.2	39.7	28.6
Level of Service (LOS)	D	C	C	C	D	D	D	D	C	D	D	C
Approach Delay, s/veh / LOS	35.2	D		37.8	D		35.9	D		35.9	D	
Intersection Delay, s/veh / LOS	36.1						D					



--- Messages ---

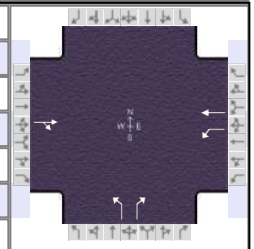
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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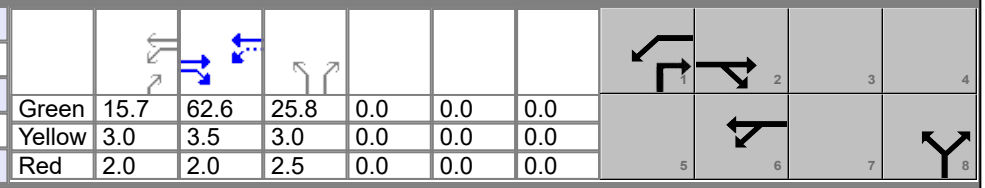
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	120	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.7	62.6	25.8	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0		0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.97	0.97	0.09	0.09		1.00		1.00			
Lane Width (*W*), ft		12.0		12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0		150	0		185		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

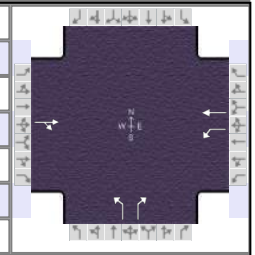
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		68.0	12.0	80.0		40.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5		3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0		2.5		
Minimum Green (G_{min}), s		20	7	20		10		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0		3.0		
Recall Mode		Min	Off	Min		Off		
Dual Entry		Yes	No	Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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HCS Signalized Intersection Results Summary

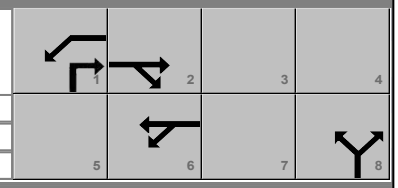
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	120	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.7	62.6	25.8	0.0	0.0	0.0	
Yellow	3.0	3.5	3.0	0.0	0.0	0.0	
Red	2.0	2.0	2.5	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	1.0	4.0		9.0		
Phase Duration, s		68.1	20.7	88.7		31.3		
Change Period, (*Y+R c*), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (*g s*), s			17.6			24.2		
Green Extension Time (*g e*), s		0.0	0.0	0.0		1.5		
Phase Call Probability			1.00			1.00		
Max Out Probability			1.00			0.12		

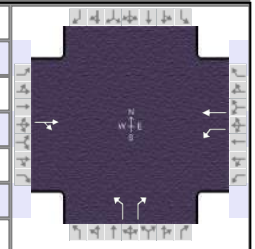
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		580		482	793		148		352			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1825		1810	1900		1795		1598			
Queue Service Time (*g s*), s		33.7		15.6	33.1		8.4		22.2			
Cycle Queue Clearance Time (*g c*), s		33.7		15.6	33.1		8.4		22.2			
Green Ratio (*g/C*)		0.52		0.67	0.69		0.21		0.34			
Capacity (*c*), veh/h		952		499	1318		386		551			
Volume-to-Capacity Ratio (*X*)		0.609		0.967	0.602		0.383		0.639			
Back of Queue (*Q*), ft/ln (95 th percentile)		574.5		202.6	380.7		171.5		340.5			
Back of Queue (*Q*), veh/ln (95 th percentile)		23.0		8.1	15.2		6.8		13.5			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00		1.35	0.00		0.93		0.00			
Uniform Delay (*d 1*), s/veh		34.1		19.7	15.3		40.3		33.0			
Incremental Delay (*d 2*), s/veh		2.8		6.3	0.2		0.6		1.5			
Initial Queue Delay (*d 3*), s/veh		0.0		0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		36.9		26.0	15.5		40.9		34.5			
Level of Service (LOS)		D		C	B		D		C			
Approach Delay, s/veh / LOS	36.9	D		19.5	B		36.4	D		0.0		
Intersection Delay, s/veh / LOS	27.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	0.67	A	1.96	B	1.74	B
Bicycle LOS Score / LOS	1.39	A	2.72	C		F		

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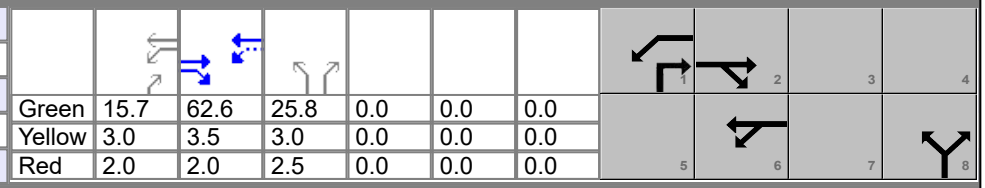
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	120	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.7	62.6	25.8	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						

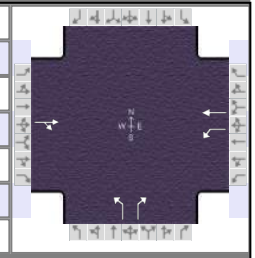
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	0.960		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.960		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	1407	418	1810	1900	0	1795	0	1598			
Proportion of Vehicles Arriving on Green (P)	0.00	0.25	0.25	0.21	0.56	0.00	0.21	0.00	0.21	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50		0.47	0.50		0.11		0.13			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		4.0		
Green Ratio (g/C)		0.52	0.67	0.69		0.21		
Permitted Saturation Flow Rate (s_p), veh/h/ln		695	848	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	64.6	0.0		0.0		
Permitted Service Time (g_u), s		0.0	28.7	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			28.7					
Time to First Blockage (g_f), s		62.6	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1598		
Protected Right Effective Green Time (g_R), s						15.6		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.000	0.000	1.198	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.105	0.000	0.069	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1042.74	13.75	1387.21	5.63		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	0.90	-3.64	2.23	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

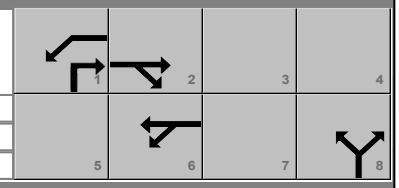
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 7, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



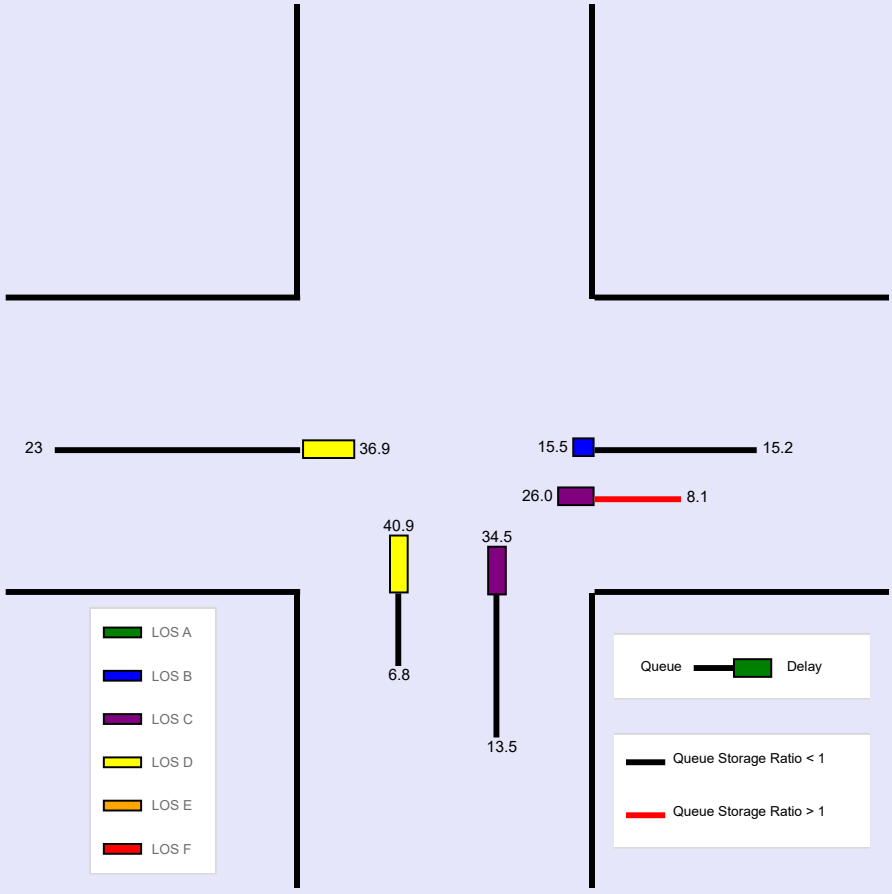
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	120	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.7	62.6	25.8	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		574.5		202.6	380.7		171.5		340.5			
Back of Queue (*Q*), veh/ln (95 th percentile)		23.0		8.1	15.2		6.8		13.5			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00		1.35	0.00		0.93		0.00			
Control Delay (*d*), s/veh		36.9		26.0	15.5		40.9		34.5			
Level of Service (LOS)		D		C	B		D		C			
Approach Delay, s/veh / LOS	36.9	D		19.5	B		36.4	D		0.0		
Intersection Delay, s/veh / LOS	27.3						C					



--- Messages ---

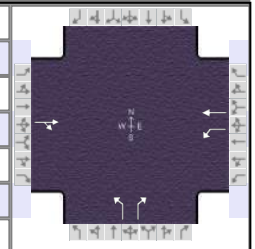
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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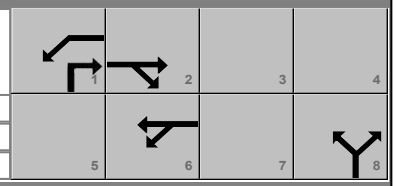
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	25.0	59.5	19.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0		0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.70	0.70	0.09	0.09		1.00		1.00			
Lane Width (*W*), ft		12.0		12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0		150	0		185		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

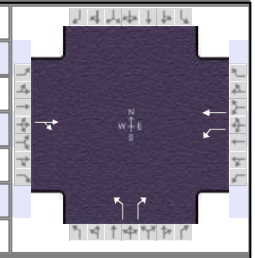
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		51.0	44.0	95.0		25.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5		3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0		2.5		
Minimum Green (G_{min}), s		20	7	20		10		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0		3.0		
Recall Mode		Min	Off	Min		Off		
Dual Entry		Yes	No	Yes		Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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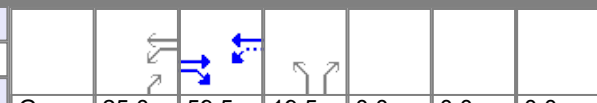
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				

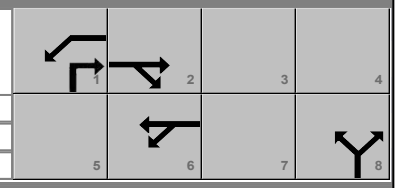


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	25.0	59.5	19.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



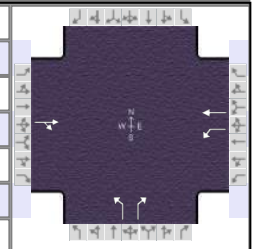
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	1.0	4.0		9.0		
Phase Duration, s		65.0	30.0	95.0		25.0		
Change Period, ($Y+R_c$), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (g_s), s			23.9			21.5		
Green Extension Time (g_e), s		0.0	1.2	0.0		0.0		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			1.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		1273		398	666		340		557			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1827		1810	1900		1795		1598			
Queue Service Time (g_s), s		59.5		21.9	23.0		19.5		19.5			
Cycle Queue Clearance Time (g_c), s		59.5		21.9	23.0		19.5		19.5			
Green Ratio (*g/C*)		0.50		0.72	0.75		0.16		0.37			
Capacity (*c*), veh/h		905		438	1417		292		593			
Volume-to-Capacity Ratio (*X*)		1.406		0.909	0.470		1.166		0.939			
Back of Queue (*Q*), ft/ln (95 th percentile)		2180.8		332.7	261.1		649.8		659.7			
Back of Queue (*Q*), veh/ln (95 th percentile)		87.2		13.3	10.4		25.8		26.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00		2.22	0.00		3.51		0.00			
Uniform Delay (d_1), s/veh		17.8		42.4	10.4		50.3		36.4			
Incremental Delay (d_2), s/veh		187.6		1.4	0.1		105.4		23.0			
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		205.4		43.8	10.6		155.7		59.4			
Level of Service (LOS)		F		D	B		F		E			
Approach Delay, s/veh / LOS	205.4	F		23.0	C		95.9	F		0.0		
Intersection Delay, s/veh / LOS	115.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	0.65	A	1.96	B	1.74	B
Bicycle LOS Score / LOS	3.01	C	2.31	B		F		

HCS Signalized Intersection Intermediate Values

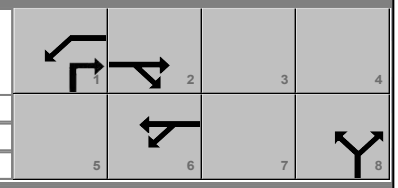
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	25.0	59.5	19.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



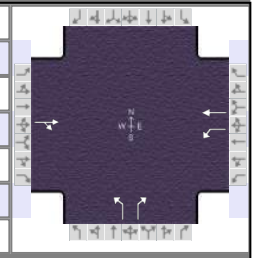
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	0.961		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.961		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	1419	407	1810	1900	0	1795	0	1598			
Proportion of Vehicles Arriving on Green (P)	0.00	0.67	0.81	0.16	0.61	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50		0.20	0.50		0.50		0.45			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		4.0		
Green Ratio (g/C)		0.50	0.72	0.75		0.16		
Permitted Saturation Flow Rate (s_p), veh/h/ln		782	442	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	61.5	0.0		0.0		
Permitted Service Time (g_u), s		0.0	0.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			0.0					
Time to First Blockage (g_f), s		59.5	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1598		
Protected Right Effective Green Time (g_R), s						25.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.000	0.000	1.198	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.109	0.000	0.054	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	991.02	15.27	1491.67	3.88		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	2.52	-3.64	1.82	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

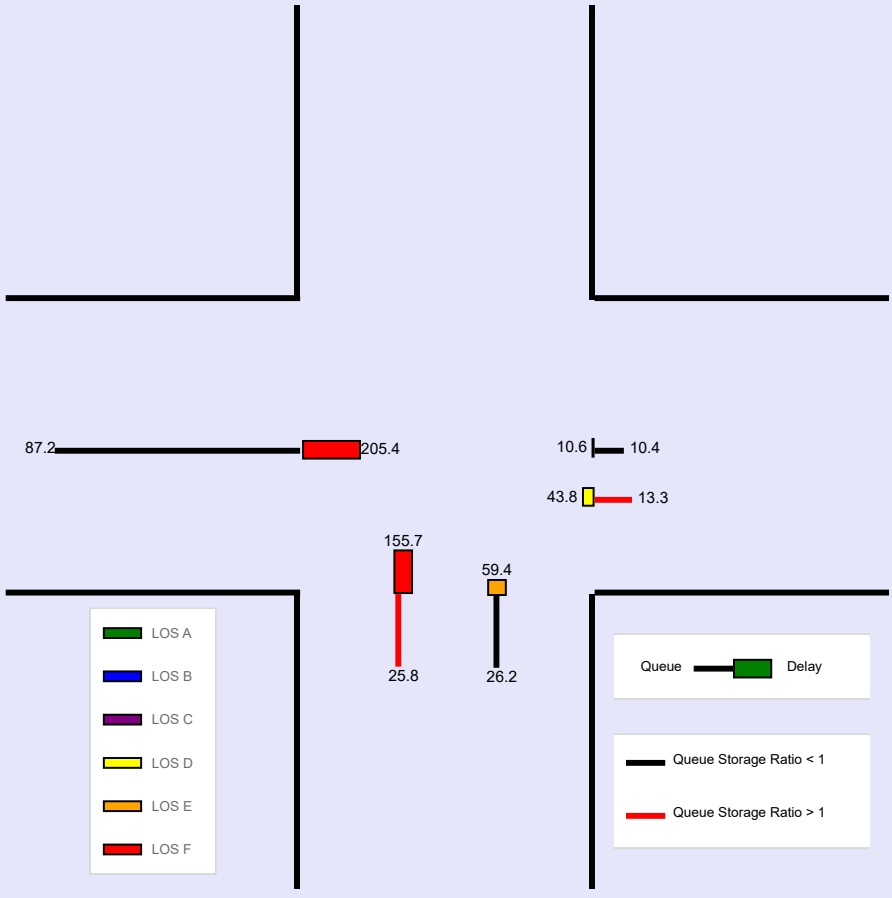
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 No Build	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM No Build.xus		
Project Description	Feedwire Rd TRAC No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information					EB		WB			NB				SB		
Cycle, s	120.0	Reference Phase	2													
Offset, s	55	Reference Point	End	Green	25.0	59.5	19.5	0.0	0.0	0.0	1	2	3	4		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	3.5	3.0	0.0	0.0	0.0	5	6	7	8		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		2180.8		332.7	261.1		649.8		659.7			
Back of Queue (*Q*), veh/ln (95 th percentile)		87.2		13.3	10.4		25.8		26.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00		2.22	0.00		3.51		0.00			
Control Delay (*d*), s/veh		205.4		43.8	10.6		155.7		59.4			
Level of Service (LOS)		F		D	B		F		E			
Approach Delay, s/veh / LOS	205.4	F		23.0	C		95.9	F		0.0		
Intersection Delay, s/veh / LOS	115.0						F					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

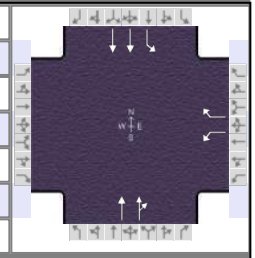
WARNING: According to input data, upstream feeding volume is equal to 71% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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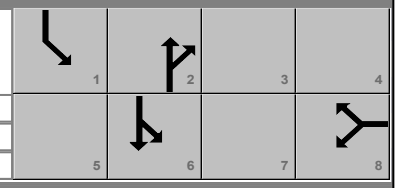
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				5		5		4		3	3	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.62	0.62	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

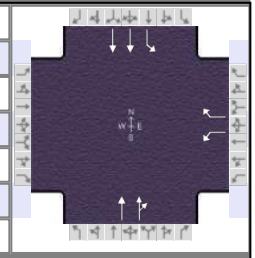
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l1*), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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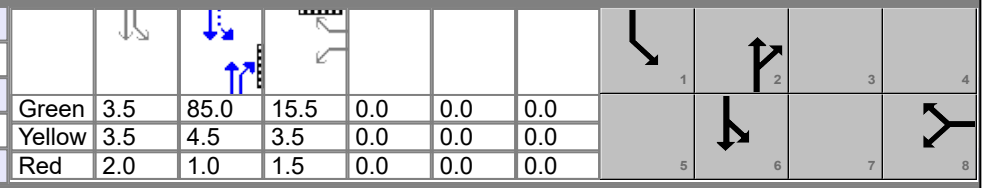
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0			
Yellow	3.5	4.5	3.5	0.0	0.0	0.0			
Red	2.0	1.0	1.5	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				20.5		90.5	9.0	99.5
Change Period, (*Y+R c*), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (*g s*), s				14.6			2.4	
Green Extension Time (*g e*), s				0.8		0.0	0.1	0.0
Phase Call Probability				1.00			0.50	
Max Out Probability				0.00			0.00	

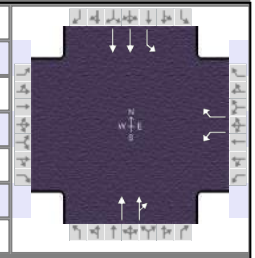
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				188		42		776	755	21	771	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1739		1547		1841	1770	1767	1766	
Queue Service Time (*g s*), s				12.6		2.9		30.7	45.0	0.4	7.2	
Cycle Queue Clearance Time (*g c*), s				12.6		2.9		30.7	45.0	0.4	7.2	
Green Ratio (*g/C*)				0.13		0.13		0.71	0.71	0.75	0.78	
Capacity (*c*), veh/h				224		200		1304	1254	224	2768	
Volume-to-Capacity Ratio (*X*)				0.836		0.209		0.595	0.602	0.093	0.278	
Back of Queue (*Q*), ft/ln (95 th percentile)				258.6		53.2		705.6	685.9	10.2	87.3	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.9		2.0		27.3	27.4	0.4	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.48		0.00		0.00	0.00	0.07	0.00	
Uniform Delay (*d 1*), s/veh				51.0		46.8		28.0	29.7	13.5	3.6	
Incremental Delay (*d 2*), s/veh				8.0		0.5		1.3	1.3	0.2	0.3	
Initial Queue Delay (*d 3*), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				59.0		47.3		29.3	31.0	13.7	3.8	
Level of Service (LOS)				E		D		C	C	B	A	
Approach Delay, s/veh / LOS	0.0			56.9		E	30.1		C	4.1		A
Intersection Delay, s/veh / LOS	24.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.64	A
Bicycle LOS Score / LOS				F	1.19	A	1.14	A

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	3.5	85.0	15.5	0.0	0.0	0.0	5	6	7	8
Yellow	3.5	4.5	3.5	0.0	0.0	0.0				
Red	2.0	1.0	1.5	0.0	0.0	0.0				

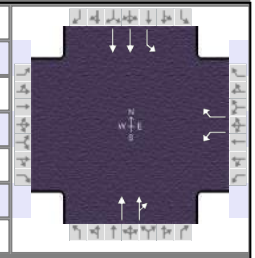
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.961	1.000	0.961	1.000	0.969	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.961	0.961		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1739	0	1547	0	3217	394	1767	3622	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.13	0.00	0.13	0.00	0.29	0.16	0.03	0.78	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.13		0.71	0.75	0.78
Permitted Saturation Flow Rate (s_p), veh/h/ln				1739		710	337	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	87.0	0.0
Permitted Service Time (g_u), s				0.0		0.0	40.0	0.0
Permitted Queue Service Time (g_{ps}), s							3.1	
Time to First Blockage (g_f), s				0.0		85.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.065	0.000	0.041
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1417.03	5.10	1567.11	2.81
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	0.70	-3.64	0.65

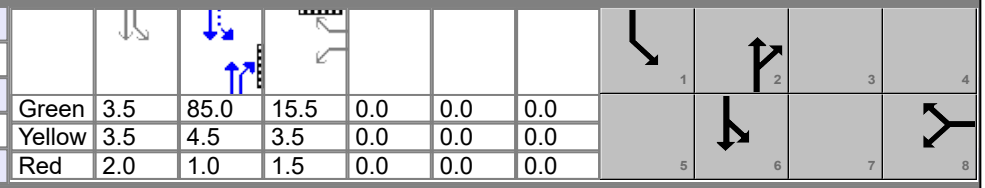
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



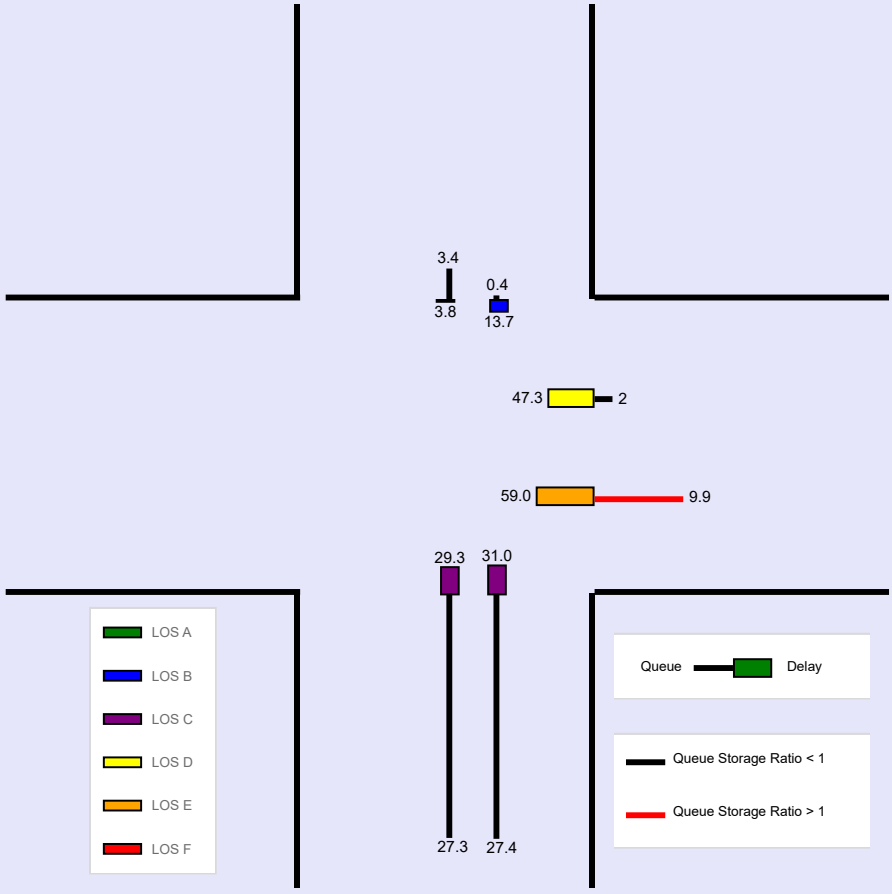
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				180		40		730	90	20	740	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	85.0	15.5	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				258.6		53.2		705.6	685.9	10.2	87.3	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.9		2.0		27.3	27.4	0.4	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.48		0.00		0.00	0.00	0.07	0.00	
Control Delay (*d*), s/veh				59.0		47.3		29.3	31.0	13.7	3.8	
Level of Service (LOS)				E		D		C	C	B	A	
Approach Delay, s/veh / LOS	0.0			56.9		E	30.1		C	4.1		A
Intersection Delay, s/veh / LOS	24.5						C					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

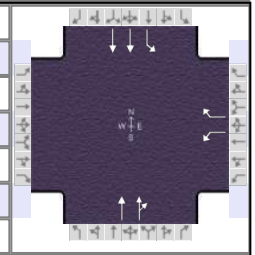
WARNING: According to input data, upstream feeding volume is equal to 166% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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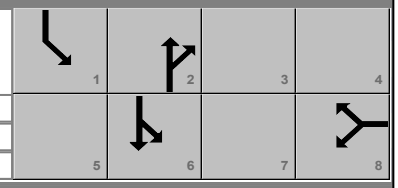
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	113	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	86.2	12.1	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				2		2		1		1	1	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.47	0.47	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

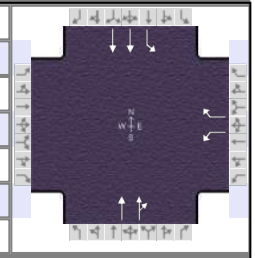
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l*t), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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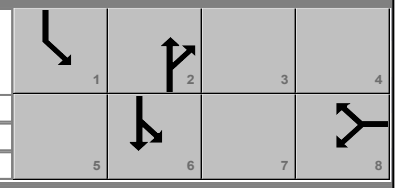
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	113	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	86.2	12.1	0.0	0.0	0.0		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0		
Red	2.0	1.0	1.5	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				17.1		91.7	11.2	102.9
Change Period, ($Y+R_c$), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (g_s), s				11.4			2.8	
Green Extension Time (g_e), s				0.7		0.0	0.2	0.0
Phase Call Probability				1.00			0.82	
Max Out Probability				0.00			0.00	

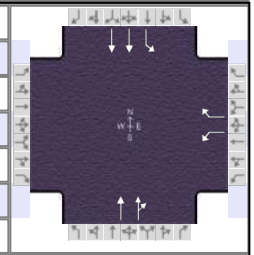
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				143		51		969	968	51	1531	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1781		1585		1885	1810	1795	1795	
Queue Service Time (g_s), s				9.4		3.6		98.9	57.0	0.8	16.8	
Cycle Queue Clearance Time (g_c), s				9.4		3.6		98.9	57.0	0.8	16.8	
Green Ratio (*g/C*)				0.10		0.10		0.72	0.72	0.78	0.81	
Capacity (*c*), veh/h				180		160		1354	1299	146	2913	
Volume-to-Capacity Ratio (*X*)				0.795		0.319		0.716	0.745	0.350	0.525	
Back of Queue (*Q*), ft/ln (95 th percentile)				204.7		67		801.6	829.7	51	177.4	
Back of Queue (*Q*), veh/ln (95 th percentile)				8.1		2.6		31.8	33.2	2.0	7.0	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.17		0.00		0.00	0.00	0.34	0.00	
Uniform Delay (d_1), s/veh				52.7		50.1		27.6	30.4	35.3	3.7	
Incremental Delay (d_2), s/veh				7.7		1.1		1.6	1.9	1.4	0.7	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				60.5		51.3		29.2	32.3	36.7	4.4	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.1		E	30.8		C	5.4		A
Intersection Delay, s/veh / LOS	21.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.63	A
Bicycle LOS Score / LOS				F	2.01	B	1.79	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	113	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	5.7	86.2	12.1	0.0	0.0	0.0	5	6	7	8		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

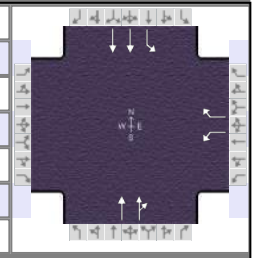
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.984	1.000	0.984	1.000	0.992	1.000	0.992	0.992	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.960	0.960		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1781	0	1585	0	3275	420	1795	3680	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.10	0.00	0.10	0.00	0.36	0.22	0.05	0.81	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.10		0.72	0.78	0.81
Permitted Saturation Flow Rate (s_p), veh/h/ln				1781		345	231	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	88.2	0.0
Permitted Service Time (g_u), s				0.0		0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s							0.0	
Time to First Blockage (g_f), s				0.0		86.2	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.063	0.000	0.030
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1436.22	4.77	1623.26	2.13
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	1.52	-3.64	1.30

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				

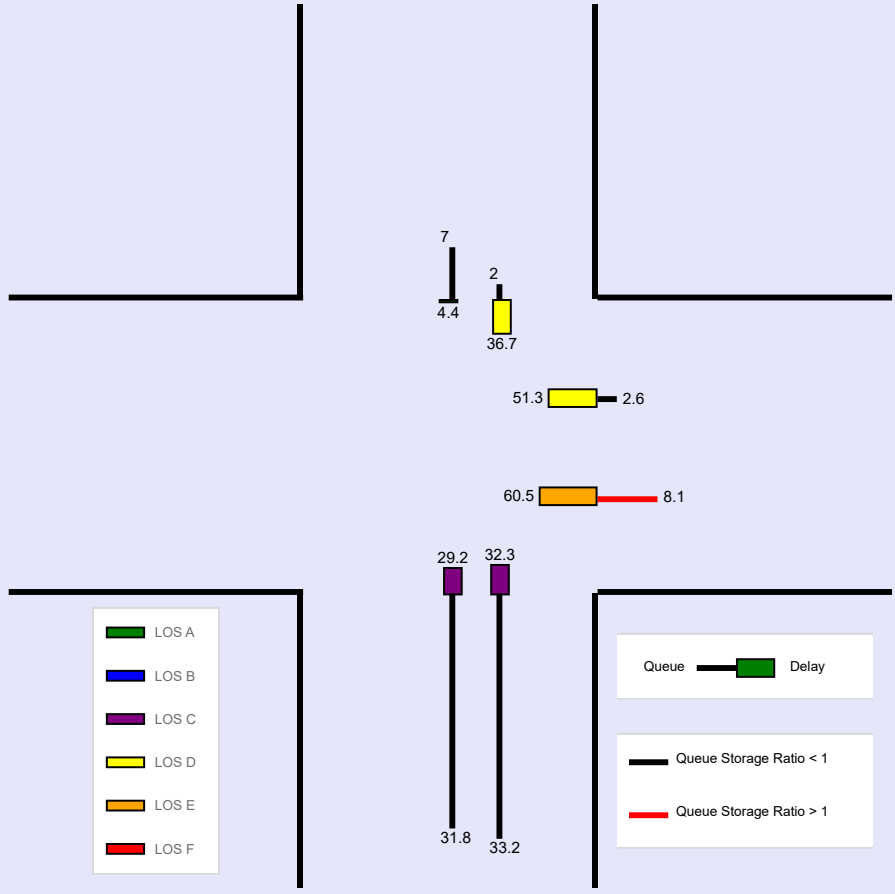


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				140		50		1600	210	50	1500	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	113	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.7	86.2	12.1	0.0	0.0	0.0	1	2	3	4		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0	5	6	7	8		
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				204.7		67		801.6	829.7	51	177.4	
Back of Queue (*Q*), veh/ln (95 th percentile)				8.1		2.6		31.8	33.2	2.0	7.0	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.17		0.00		0.00	0.00	0.34	0.00	
Control Delay (*d*), s/veh				60.5		51.3		29.2	32.3	36.7	4.4	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.1		E	30.8		C	5.4		A
Intersection Delay, s/veh / LOS	21.4						C					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

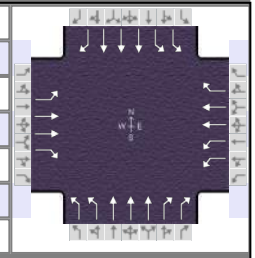
WARNING: According to input data, upstream feeding volume is equal to 113% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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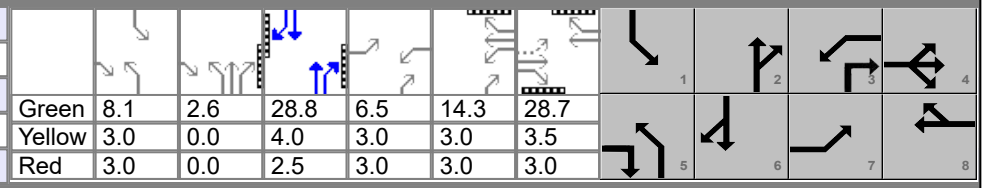
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 1.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.1	2.6	28.8	6.5	14.3	28.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2	2	3	3	3	4	4	4	2	2	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	250	0	500	450	0	600	339	0	400	316	0	290
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

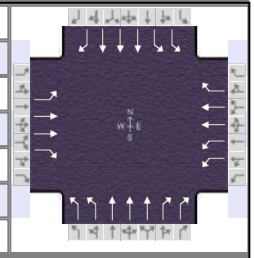
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	26.0	25.0	43.0	42.0	35.0	17.0	35.0	17.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Off	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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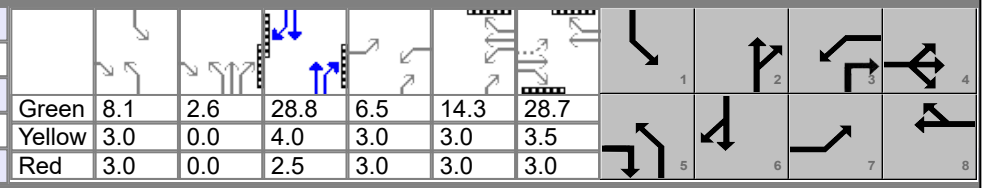
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 1.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.1	2.6	28.8	6.5	14.3	28.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	12.5	35.2	32.8	55.5	16.7	37.9	14.1	35.3
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.2	3.6	4.2	3.5	0.0	3.5	0.0
Queue Clearance Time (g_s), s	5.9	30.7	25.2	13.0	10.0		7.7	
Green Extension Time (g_e), s	0.1	0.0	1.6	4.6	0.6	0.0	0.4	0.0
Phase Call Probability	0.93	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	1.00	0.02	0.00	0.00		0.00	

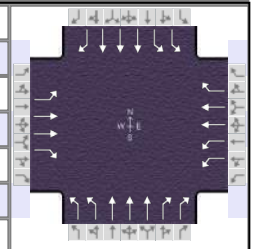
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	78	156	433	578	222	211	233	633	300	167	822	22
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1781	1585	1449	1766		1702	1671	1381	1730	1698	1610
Queue Service Time (g_s), s	3.9	4.2	28.7	23.2	4.8		8.0	12.8	7.5	5.7	17.5	1.3
Cycle Queue Clearance Time (g_c), s	3.9	4.2	28.7	23.2	4.8		8.0	12.8	7.5	5.7	17.5	1.3
Green Ratio (*g/C*)	0.29	0.24	0.33	0.22	0.41		0.09	0.26	0.49	0.15	0.24	0.24
Capacity (*c*), veh/h	433	852	520	647	1443		303	1314	1340	233	1225	387
Volume-to-Capacity Ratio (*X*)	0.180	0.183	0.833	0.893	0.154		0.771	0.482	0.224	0.717	0.671	0.057
Back of Queue (*Q*), ft/ln (95 th percentile)	75.9	82.3	479.5	351.9	89.8		162	232	109.4	114.8	302.7	23.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.0	3.2	18.9	13.7	3.5		6.3	9.0	4.2	4.5	11.9	0.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.30	0.00	0.96	0.78	0.00		0.48	0.00	0.27	0.36	0.00	0.08
Uniform Delay (d_1), s/veh	31.3	36.3	37.3	45.2	22.4		53.5	37.4	17.8	54.8	41.3	35.1
Incremental Delay (d_2), s/veh	0.1	0.1	11.1	8.1	0.0		3.1	1.3	0.4	3.1	2.9	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	31.5	36.4	48.4	53.3	22.5	0.0	56.6	38.7	18.2	57.9	44.2	35.4
Level of Service (LOS)	C	D	D	D	C	A	E	D	B	E	D	D
Approach Delay, s/veh / LOS	43.6	D		35.4	D		37.0	D		46.3	D	
Intersection Delay, s/veh / LOS	40.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.97	C	2.83	C	2.59	C	2.45	B
Bicycle LOS Score / LOS	1.04	A	1.32	A	1.13	A	1.04	A

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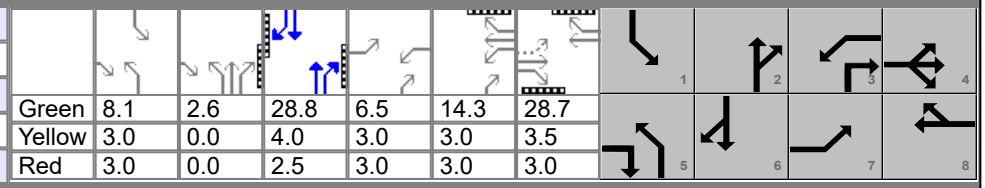
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 1.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.1	2.6	28.8	6.5	14.3	28.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

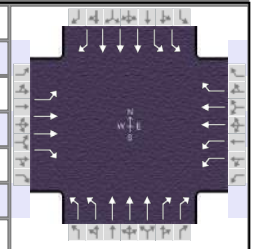
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	0.977	0.977	0.977	0.969	0.969	0.969	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.820	0.952	1.000	0.971	0.908	0.885	0.971	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1781	3561	1585	2899	3533	1572	3404	5014	2761	3459	5095	1610
Proportion of Vehicles Arriving on Green (P)	0.05	0.24	0.24	0.22	0.41	0.41	0.09	0.26	0.26	0.07	0.24	0.24
Incremental Delay Factor (k)	0.08	0.11	0.37	0.20	0.11	0.11	0.08	0.50	0.50	0.08	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.29	0.24	0.22	0.41	0.09	0.26	0.15	0.24
Permitted Saturation Flow Rate (s_p), veh/h/ln	1159	0	0	0	0	0	794	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	28.7	0.0	0.0	0.0	0.0	0.0	10.5	0.0
Permitted Service Time (g_u), s	28.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1585		0		1381		0
Protected Right Effective Green Time (g_R), s		10.7		0.0		26.8		0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.000	2.107	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.142	0.000	0.122	0.000	0.140	0.000	0.142
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	478.62	34.72	817.00	20.99	523.93	32.68	480.68	34.62
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.83	-3.64	0.64	-3.64	0.56

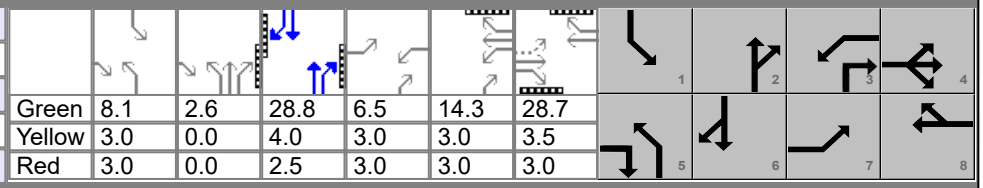
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 1.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 1				



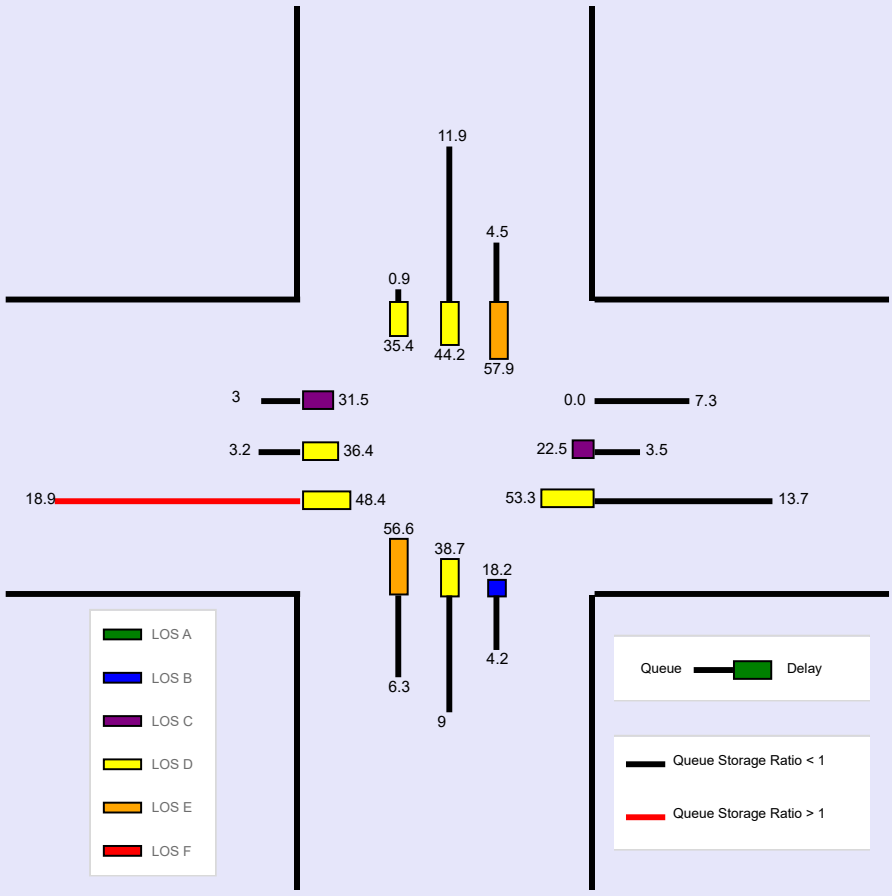
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	140	390	520	200	190	210	570	270	150	740	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.1	2.6	28.8	6.5	14.3	28.7
Yellow	3.0	0.0	4.0	3.0	3.0	3.5
Red	3.0	0.0	2.5	3.0	3.0	3.0

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	75.9	82.3	479.5	351.9	89.8		162	232	109.4	114.8	302.7	23.4
Back of Queue (*Q*), veh/ln (95 th percentile)	3.0	3.2	18.9	13.7	3.5		6.3	9.0	4.2	4.5	11.9	0.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.30	0.00	0.96	0.78	0.00		0.48	0.00	0.27	0.36	0.00	0.08
Control Delay (*d*), s/veh	31.5	36.4	48.4	53.3	22.5	0.0	56.6	38.7	18.2	57.9	44.2	35.4
Level of Service (LOS)	C	D	D	D	C	A	E	D	B	E	D	D
Approach Delay, s/veh / LOS	43.6	D		35.4	D		37.0	D		46.3	D	
Intersection Delay, s/veh / LOS	40.2						D					



--- Messages ---

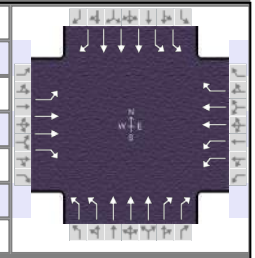
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 1.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.3	0.7	33.5	9.7	12.3	15.5						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.5	3.0	3.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0	0	0	0	0	1	1	1	0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	250	0	500	450	0	600	339	0	400	316	0	290
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

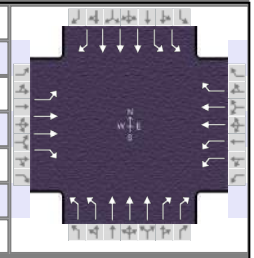
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	36.0	22.0	34.0	20.0	47.0	46.0	18.0	17.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Max	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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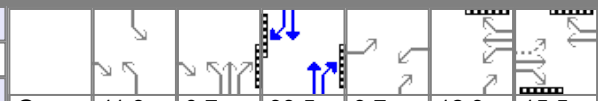
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 1.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 1				

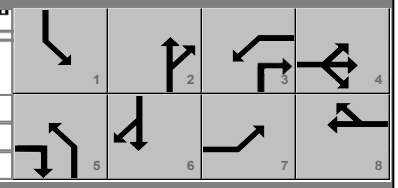


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.3	0.7	33.5	9.7	12.3	15.5						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.5	3.0	3.0	3.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	15.7	22.0	34.0	40.3	24.0	46.7	17.3	40.0
Change Period, (*Y+R c*), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.1	3.6	4.1	3.5	0.0	3.5	0.0
Queue Clearance Time (*g s*), s	9.5	17.5	24.0	21.4	16.7		11.2	
Green Extension Time (*g e*), s	0.3	0.0	0.9	5.1	1.3	0.0	0.1	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	1.00	0.81	0.35	0.00		1.00	

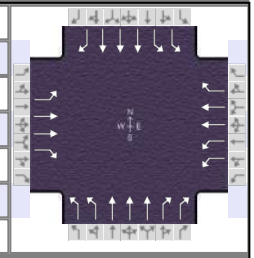
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	133	398	296	602	469	296	439	1388	1020	276	1153	112
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1809	1610	1561	1809		1743	1712	1414	1757	1725	1610
Queue Service Time (*g s*), s	7.5	12.9	15.5	22.0	12.8		14.7	29.6	29.3	9.2	24.8	6.5
Cycle Queue Clearance Time (*g c*), s	7.5	12.9	15.5	22.0	12.8		14.7	29.6	29.3	9.2	24.8	6.5
Green Ratio (*g/C*)	0.21	0.13	0.28	0.23	0.28		0.15	0.33	0.57	0.09	0.28	0.28
Capacity (*c*), veh/h	327	467	450	728	1020		524	1720	1607	331	1444	449
Volume-to-Capacity Ratio (*X*)	0.406	0.852	0.658	0.827	0.460		0.838	0.807	0.635	0.831	0.799	0.250
Back of Queue (*Q*), ft/ln (95 th percentile)	150.5	271.9	313.7	358.5	237		266.3	460.3	353.3	204.3	403.2	118.6
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	10.9	12.5	14.3	9.5		10.6	18.3	14.0	8.2	16.1	4.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.60	0.00	0.63	0.80	0.00		0.79	0.00	0.88	0.65	0.00	0.41
Uniform Delay (*d 1*), s/veh	40.4	51.1	38.2	43.7	35.5		49.6	36.4	17.5	53.4	40.1	33.5
Incremental Delay (*d 2*), s/veh	0.6	14.0	3.5	10.4	0.3		2.7	4.2	1.9	14.4	4.7	1.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	41.0	65.2	41.7	54.1	35.9	0.0	52.3	40.5	19.4	67.8	44.8	34.9
Level of Service (LOS)	D	E	D	D	D	A	D	D	B	E	D	C
Approach Delay, s/veh / LOS	52.9	D		36.1	D		34.8	C		48.2	D	
Intersection Delay, s/veh / LOS	40.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.98	C	2.84	C	2.58	C	2.45	B
Bicycle LOS Score / LOS	1.17	A	1.62	B	2.05	B	1.34	A

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 1.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.3	0.7	33.5	9.7	12.3	15.5
Yellow	3.0	3.0	4.0	3.0	3.0	3.5
Red	3.0	3.0	2.5	3.0	3.0	3.0

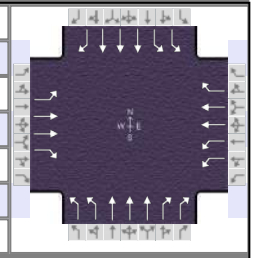
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.863	0.952	1.000	0.971	0.908	0.885	0.971	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1810	3618	1610	3122	3618	1610	3487	5135	2828	3514	5176	1610
Proportion of Vehicles Arriving on Green (P)	0.08	0.13	0.13	0.23	0.28	0.28	0.15	0.33	0.33	0.09	0.28	0.28
Incremental Delay Factor (k)	0.08	0.38	0.23	0.50	0.11	0.23	0.08	0.50	0.50	0.32	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.21	0.13	0.23	0.28	0.15	0.33	0.09	0.28
Permitted Saturation Flow Rate (s_p), veh/h/ln	938	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		0		1414		0
Protected Right Effective Green Time (g_R), s		18.0		0.0		28.0		0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.000	2.107	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.153	0.000	0.138	0.000	0.131	0.000	0.138
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	258.33	45.50	564.00	30.93	669.75	26.54	557.89	31.20
Bicycle F_w / F_v	-3.64	0.68	-3.64	1.13	-3.64	1.57	-3.64	0.85

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Feb 10, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 1.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 1				



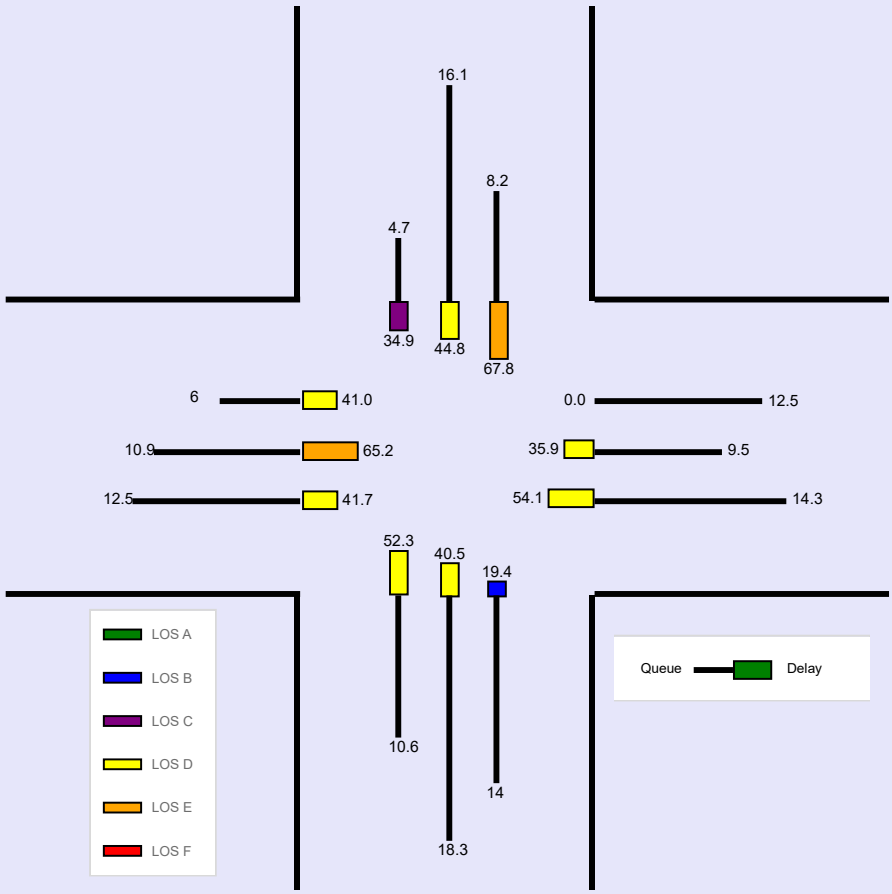
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	130	390	290	590	460	290	430	1360	1000	270	1130	110

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.3	0.7	33.5	9.7	12.3	15.5	
Yellow	3.0	3.0	4.0	3.0	3.0	3.5	
Red	3.0	3.0	2.5	3.0	3.0	3.0	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	150.5	271.9	313.7	358.5	237		266.3	460.3	353.3	204.3	403.2	118.6
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	10.9	12.5	14.3	9.5		10.6	18.3	14.0	8.2	16.1	4.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.60	0.00	0.63	0.80	0.00		0.79	0.00	0.88	0.65	0.00	0.41
Control Delay (*d*), s/veh	41.0	65.2	41.7	54.1	35.9	0.0	52.3	40.5	19.4	67.8	44.8	34.9
Level of Service (LOS)	D	E	D	D	D	A	D	D	B	E	D	C
Approach Delay, s/veh / LOS	52.9	D		36.1	D		34.8	C		48.2	D	
Intersection Delay, s/veh / LOS	40.5						D					



--- Messages ---

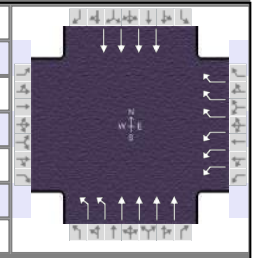
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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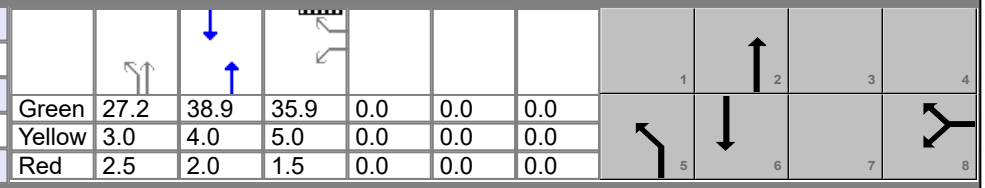
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 SB…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830		350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	85	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	27.2	38.9	35.9	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830		350	270	770			900	
Initial Queue (Q_b), veh/h				0		0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900	1900	1900			1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				3		3	4	4			2	
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3	3	3			3	
Upstream Filtering (*I*)				1.00		1.00	0.47	0.47			0.57	
Lane Width (*W*), ft				12.0		12.0	12.0	12.0			12.0	
Turn Bay Length, ft				775		570	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35	45	45			45	

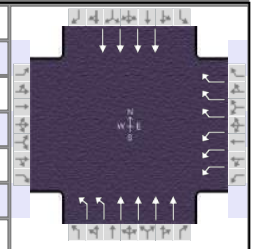
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				43.0	36.0	77.0		41.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				8	7	20		20
Start-Up Lost Time (*l*t), s			2.0		2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0		2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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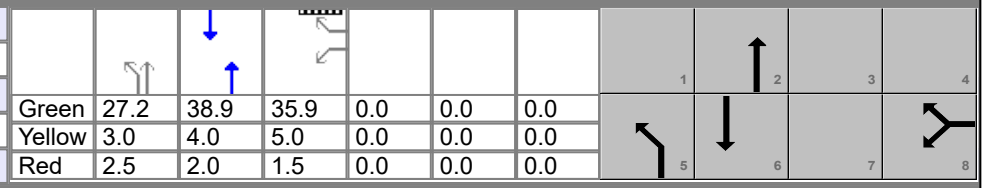
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 SB…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830		350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	85	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	27.2	38.9		35.9	0.0	0.0	0.0					
Yellow	3.0	4.0		5.0	0.0	0.0	0.0					
Red	2.5	2.0		1.5	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	2.0	4.0		8.3
Phase Duration, s				42.4	32.7	77.6		44.9
Change Period, ($Y+R_c$), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.2	2.5	0.0		0.0
Queue Clearance Time (g_s), s				34.3	26.5			
Green Extension Time (g_e), s				1.6	0.7	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	0.22			

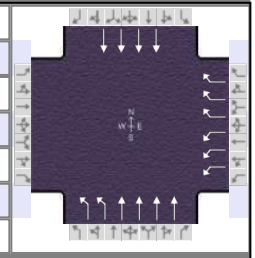
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				943		398	725	2066			1790	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1132		1392	1702	793			1698	
Queue Service Time (g_s), s				32.3		8.9	24.5	71.6			28.4	
Cycle Queue Clearance Time (g_c), s				32.3		8.9	24.5	71.6			28.4	
Green Ratio (*g/C*)				0.30		0.30	0.23	0.60			0.32	
Capacity (*c*), veh/h				1017		1251	771	1891			2200	
Volume-to-Capacity Ratio (*X*)				0.927		0.318	0.939	1.093			0.814	
Back of Queue (*Q*), ft/ln (95 th percentile)				392.8		137.7	309.8	326.7			382.9	
Back of Queue (*Q*), veh/ln (95 th percentile)				15.3		5.4	12.0	12.7			15.1	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.51		0.24	0.67	0.00			0.00	
Uniform Delay (d_1), s/veh				40.8		32.5	34.5	9.6			34.0	
Incremental Delay (d_2), s/veh				13.9		0.2	8.7	46.6			2.0	
Initial Queue Delay (d_3), s/veh				0.0		0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				54.7		32.7	43.2	56.2			35.9	
Level of Service (LOS)				D		C	D	F			D	
Approach Delay, s/veh / LOS	0.0			48.2		D	52.8		D	35.9		D
Intersection Delay, s/veh / LOS	46.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.99	C	2.75	C	2.40	B	1.70	B
Bicycle LOS Score / LOS				F	0.98	A	0.91	A

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HCS Signalized Intersection Intermediate Values

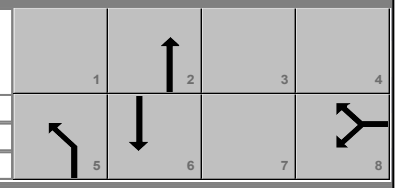
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 SB…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830		350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	85	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	27.2	38.9	35.9	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						



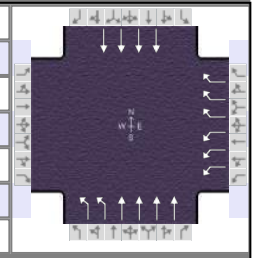
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.977	0.977	0.977	0.969	0.969	1.000	1.000	0.984	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.640	1.000	0.885	0.971	0.431	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				5302	0	4175	3404	4219	0	0	7137	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.30	0.00	0.30	0.41	0.84	0.00	0.00	0.38	0.00
Incremental Delay Factor (k)				0.44		0.15	0.34	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.30	0.23	0.60		0.32
Permitted Saturation Flow Rate (s_p), veh/h/ln				1767	0	0		205
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	0.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s				0.0	0.0	0.0		38.9
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.000	1.983	0.000	1.710	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.091	0.000	0.133
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	1192.52	9.78	647.76	27.43
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	0.49	-3.64	0.42

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 SB…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				

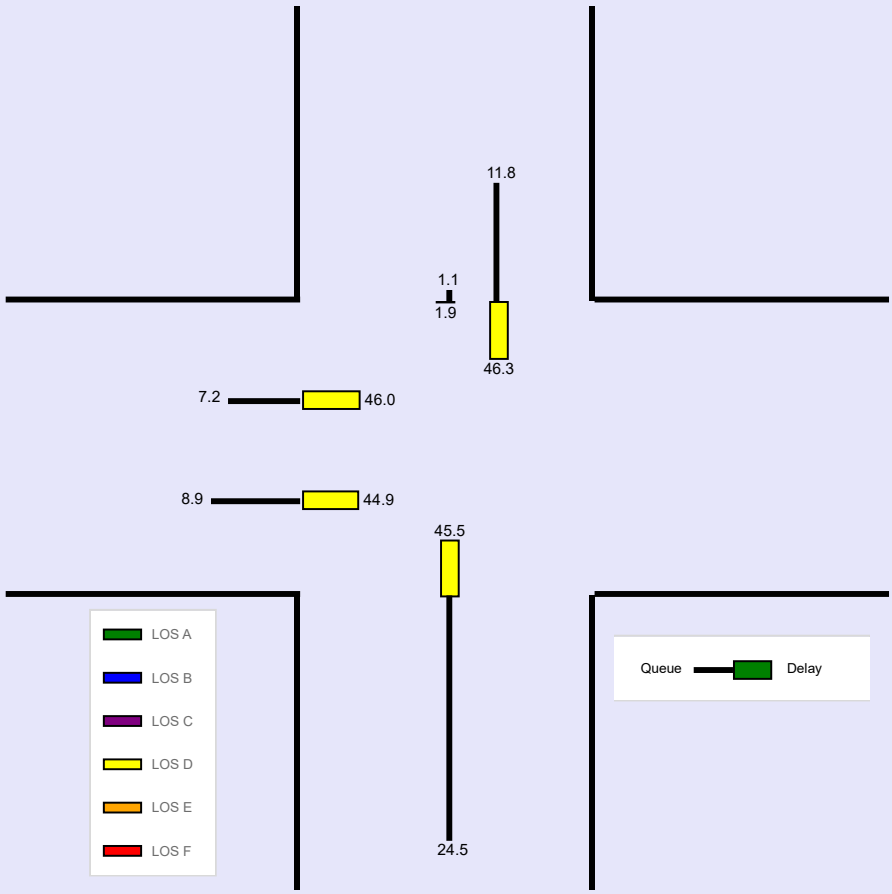


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				830		350	270	770			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	85	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	27.2	38.9	35.9	0.0	0.0	0.0	5	6	7	8		
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				392.8		137.7	309.8	326.7			382.9	
Back of Queue (*Q*), veh/ln (95 th percentile)				15.3		5.4	12.0	12.7			15.1	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.51		0.24	0.67	0.00			0.00	
Control Delay (*d*), s/veh				54.7		32.7	43.2	56.2			35.9	
Level of Service (LOS)				D		C	D	F			D	
Approach Delay, s/veh / LOS	0.0			48.2		D	52.8		D	35.9		D
Intersection Delay, s/veh / LOS	46.7						D					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 192% of downstream exit volume during time period #1, for thru movement #2.

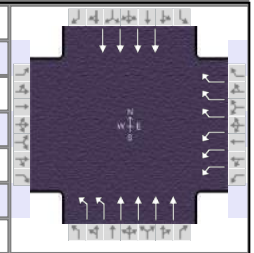
WARNING: According to input data, upstream feeding volume is equal to 175% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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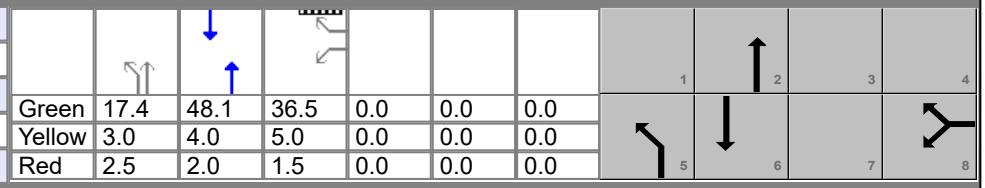
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220		1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	97	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	17.4	48.1		36.5	0.0	0.0	0.0					
Yellow	3.0	4.0		5.0	0.0	0.0	0.0					
Red	2.5	2.0		1.5	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220		1110	330	1740			1290	
Initial Queue (Q_b), veh/h				0		0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900	1900	1900			1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				1		1	0	0			0	
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3	3	3			3	
Upstream Filtering (*I*)				1.00		1.00	0.46	0.46			0.35	
Lane Width (*W*), ft				12.0		12.0	12.0	12.0			12.0	
Turn Bay Length, ft				1150		570	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35	45	45			45	

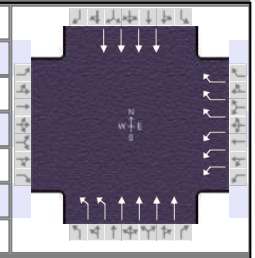
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				43.0	50.0	77.0		27.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				8	7	20		20
Start-Up Lost Time (*l*t), s			2.0		2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0		2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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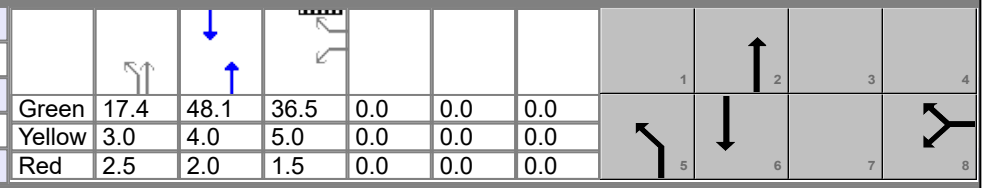
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220		1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	97	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	17.4	48.1	36.5	0.0	0.0	0.0			
Yellow	3.0	4.0	5.0	0.0	0.0	0.0			
Red	2.5	2.0	1.5	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	2.0	4.0		8.3
Phase Duration, s				43.0	22.9	77.0		54.1
Change Period, (*Y+R c*), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.2	2.5	0.0		0.0
Queue Clearance Time (*g s*), s				38.5	16.7			
Green Extension Time (*g e*), s				0.0	0.7	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	0.00			

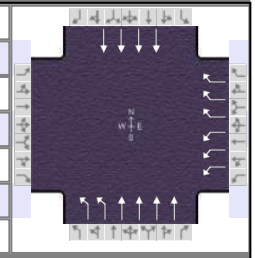
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				1271		1156	443	2338			2150	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1152		1414	1757	819			1725	
Queue Service Time (*g s*), s				36.5		31.3	14.7	71.0			36.2	
Cycle Queue Clearance Time (*g c*), s				36.5		31.3	14.7	71.0			36.2	
Green Ratio (*g/C*)				0.30		0.30	0.15	0.59			0.40	
Capacity (*c*), veh/h				1051		1290	510	1939			2765	
Volume-to-Capacity Ratio (*X*)				1.209		0.896	0.869	1.206			0.778	
Back of Queue (*Q*), ft/ln (95 th percentile)				772.7		435.3	223	523.3			520	
Back of Queue (*Q*), veh/ln (95 th percentile)				30.7		17.3	8.9	20.9			20.8	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.67		0.76	0.48	0.00			0.00	
Uniform Delay (*d 1*), s/veh				41.8		39.9	48.7	5.5			46.9	
Incremental Delay (*d 2*), s/veh				103.2		8.7	0.8	95.1			0.8	
Initial Queue Delay (*d 3*), s/veh				0.0		0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				145.0		48.6	49.5	100.7			47.7	
Level of Service (LOS)				F		D	D	F			D	
Approach Delay, s/veh / LOS	0.0			99.1		F	92.5		F	47.7		D
Intersection Delay, s/veh / LOS	81.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.99	C	2.75	C	2.40	B	1.70	B
Bicycle LOS Score / LOS				F	1.38	A	1.04	A

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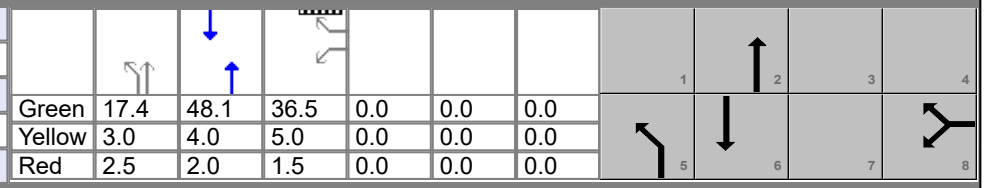
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220		1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	97	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	17.4	48.1	36.5	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

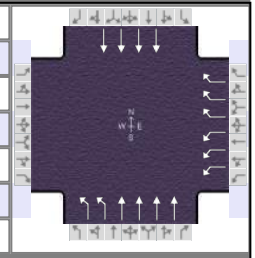
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.992	0.992	0.992	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.641	1.000	0.885	0.971	0.431	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				5386	0	4242	3514	4357	0	0	7250	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.30	0.00	0.30	0.17	0.91	0.00	0.00	0.13	0.00
Incremental Delay Factor (k)				0.50		0.43	0.04	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.30	0.15	0.59		0.40
Permitted Saturation Flow Rate (s_p), veh/h/ln				1795	0	0		157
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	0.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s				0.0	0.0	0.0		48.1
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.000	1.983	0.000	1.710	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.092	0.000	0.123
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	1183.33	10.00	801.40	21.55
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	0.89	-3.64	0.55

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				

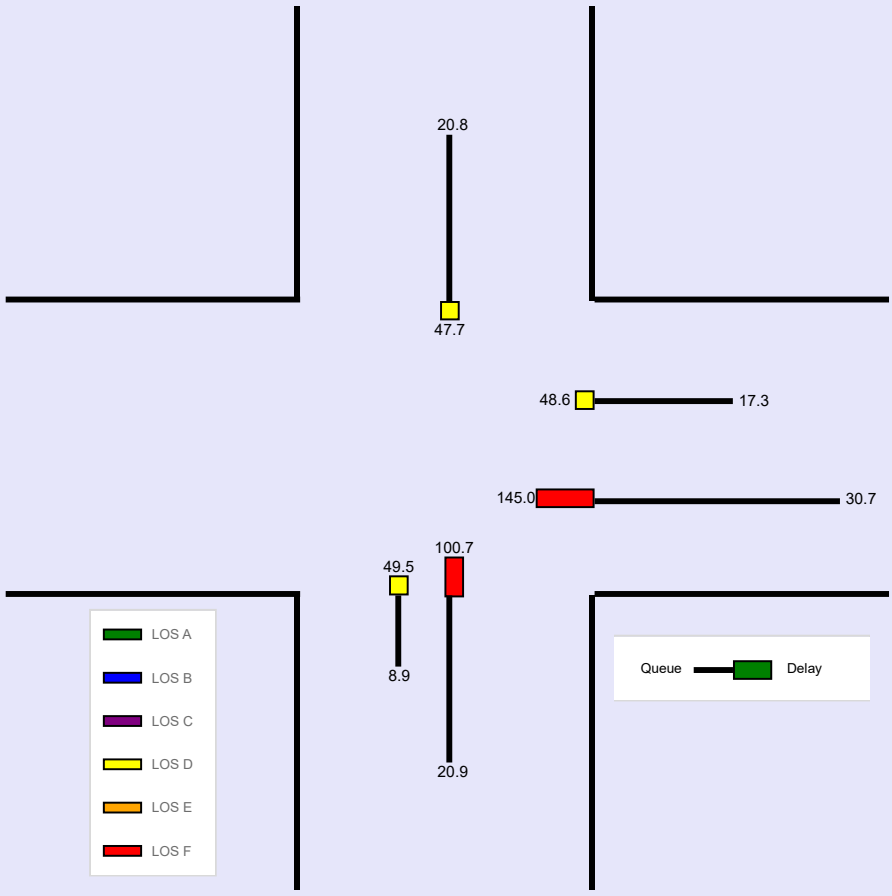


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				1220		1110	330	1740			1290	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	97	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	17.4	48.1	36.5	0.0	0.0	0.0	5	6	7	8		
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				772.7		435.3	223	523.3			520	
Back of Queue (*Q*), veh/ln (95 th percentile)				30.7		17.3	8.9	20.9			20.8	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.67		0.76	0.48	0.00			0.00	
Control Delay (*d*), s/veh				145.0		48.6	49.5	100.7			47.7	
Level of Service (LOS)				F		D	D	F			D	
Approach Delay, s/veh / LOS	0.0			99.1		F	92.5		F	47.7		D
Intersection Delay, s/veh / LOS	81.6						F					



--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 127% of downstream exit volume during time period #1, for thru movement #2.

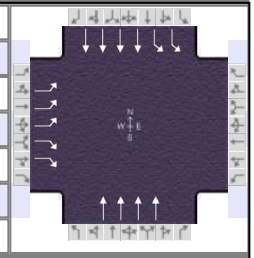
WARNING: According to input data, upstream feeding volume is equal to 132% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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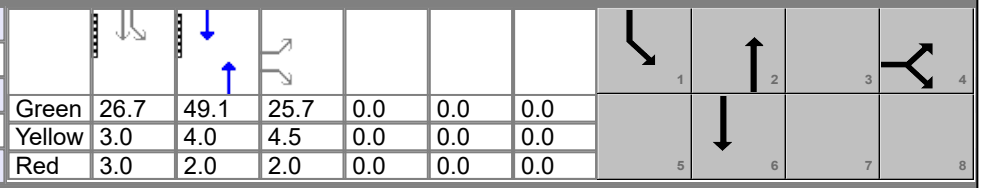
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400		350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	27	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	26.7	49.1	25.7	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400		350					640		470	1260	
Initial Queue (Q_b), veh/h	0		0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	5		1					1		2	2	
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3		3	3	
Upstream Filtering (*I*)	1.00		1.00					0.89		0.41	0.41	
Lane Width (*W*), ft	12.0		12.0					12.0		12.0	12.0	
Turn Bay Length, ft	725		650					0		575	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35		35					45		45	45	

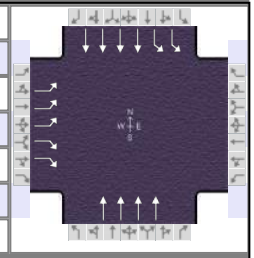
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		48.0				55.0	17.0	72.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		8				20	7	20
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0					2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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HCS Signalized Intersection Results Summary

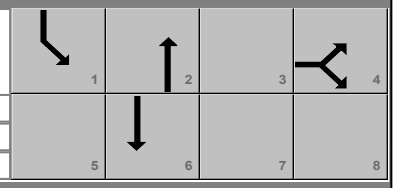
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400		350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	27	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	26.7	49.1	25.7	0.0	0.0	0.0
Yellow	3.0	4.0	4.5	0.0	0.0	0.0
Red	3.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	2.0	4.0
Phase Duration, s		32.2				55.1	32.7	87.8
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		17.9					27.1	
Green Extension Time (g_e), s		7.7				0.0	0.0	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.14					1.00	

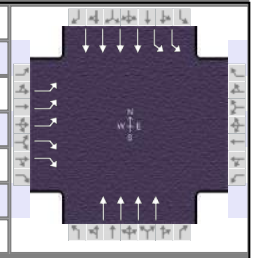
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	426		372					2365		743	1991	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	982		1414					1712		1730	935	
Queue Service Time (g_s), s	15.9		14.3					39.6		25.1	9.9	
Cycle Queue Clearance Time (g_c), s	15.9		14.3					39.6		25.1	9.9	
Green Ratio (*g/C*)	0.21		0.21					0.41		0.22	0.68	
Capacity (*c*), veh/h	630		605					2810		766	2551	
Volume-to-Capacity Ratio (*X*)	0.675		0.616					0.842		0.969	0.780	
Back of Queue (*Q*), ft/ln (95 th percentile)	186.6		223.1					617.2		299.9	29	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.2		8.9					24.5		11.8	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.26		0.34					0.00		0.52	0.00	
Uniform Delay (d_1), s/veh	43.3		42.7					42.6		32.4	0.9	
Incremental Delay (d_2), s/veh	2.7		2.2					2.9		13.9	1.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	46.0		44.9					45.5		46.3	1.9	
Level of Service (LOS)	D		D					D		D	A	
Approach Delay, s/veh / LOS	45.5		D	0.0			45.5		D	14.0		B
Intersection Delay, s/veh / LOS	30.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.75	C	2.99	C	1.69	B	2.23	B
Bicycle LOS Score / LOS		F			0.77	A	1.25	A

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400		350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	27	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	26.7	49.1	25.7	0.0	0.0	0.0	1	2	3	4		
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0	5	6	7	8		

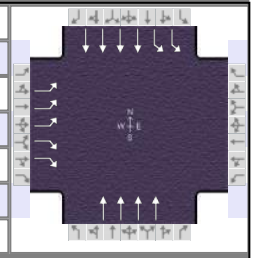
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	0.992				1.000	0.992	1.000	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.565	1.000	0.885	1.000	1.000	1.000	1.000	0.908	1.000	0.971	0.500	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	5217	0	2828				0	7194	0	3459	4676	0
Proportion of Vehicles Arriving on Green (P)	0.21	0.00	0.21	0.00	0.00	0.00	0.00	0.23	0.00	0.45	0.96	0.00
Incremental Delay Factor (k)	0.23		0.23					0.50		0.46	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.21				0.41	0.22	0.68
Permitted Saturation Flow Rate (s_p), veh/h/ln		1739				221	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0				49.3	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.224	0.000	0.972	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.122	0.000	0.072
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	818.75	20.93	1363.89	6.07
Bicycle F_w / F_v	-3.64	Infinity	-3.64		-3.64	0.28	-3.64	0.76

HCS Signalized Intersection Results Graphical Summary

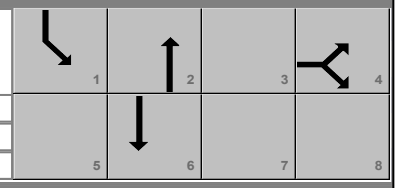
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



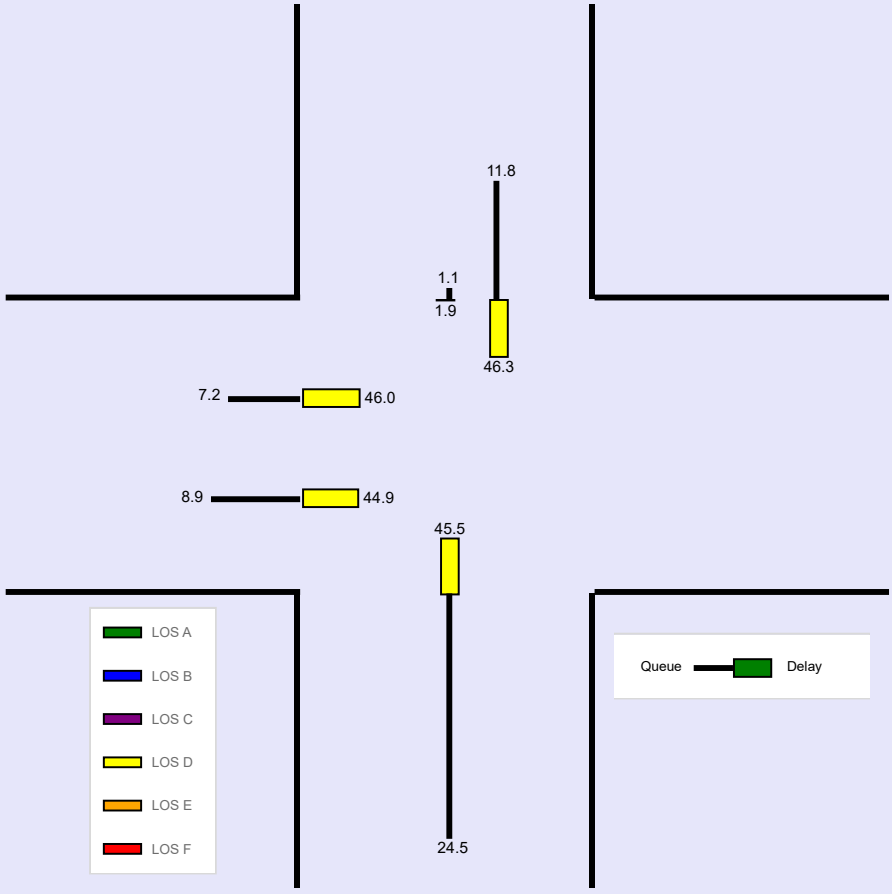
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400		350					640		470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	27	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	26.7	49.1	25.7	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	186.6		223.1					617.2		299.9	29	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.2		8.9					24.5		11.8	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.26		0.34					0.00		0.52	0.00	
Control Delay (*d*), s/veh	46.0		44.9					45.5		46.3	1.9	
Level of Service (LOS)	D		D					D		D	A	
Approach Delay, s/veh / LOS	45.5	D		0.0			45.5	D		14.0	B	
Intersection Delay, s/veh / LOS	30.9						C					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 270% of downstream exit volume during time period #1, for thru movement #2.

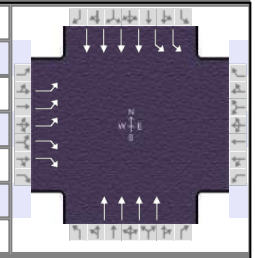
WARNING: According to input data, upstream feeding volume is equal to 143% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				

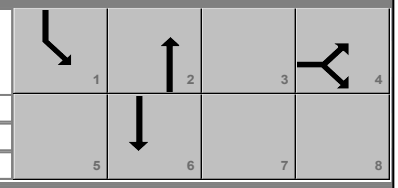


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890		430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.4	46.6	34.5	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890		430					1180		420	2090	
Initial Queue (Q_b), veh/h	0		0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	1		1					0		0	0	
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3		3	3	
Upstream Filtering (*I*)	1.00		1.00					0.91		0.23	0.23	
Lane Width (*W*), ft	12.0		12.0					12.0		12.0	12.0	
Turn Bay Length, ft	725		650					0		575	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35		35					45		45	45	

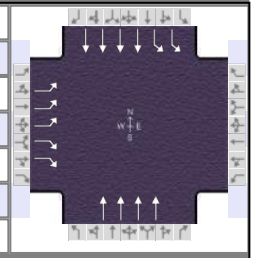
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		41.0				49.0	30.0	79.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		8				20	7	20
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0					2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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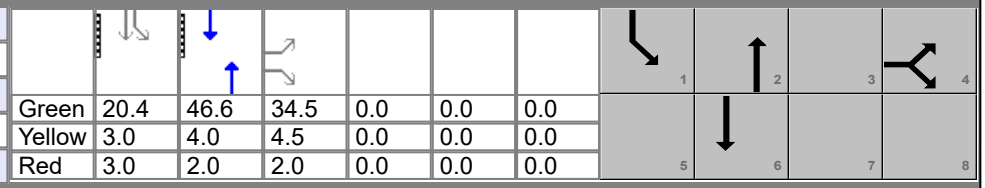
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890		430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.4	46.6	34.5	0.0	0.0	0.0			
Yellow	3.0	4.0	4.5	0.0	0.0	0.0			
Red	3.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	2.0	4.0
Phase Duration, s		41.0				52.6	26.4	79.0
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		36.5					19.9	
Green Extension Time (g_e), s		0.0				0.0	0.4	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		1.00					0.24	

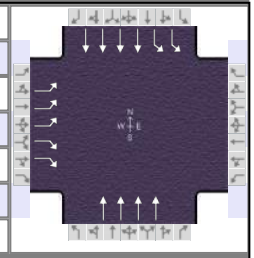
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	927		448					1906		536	2666	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1015		1414					1725		1757	950	
Queue Service Time (g_s), s	34.5		16.1					31.5		17.9	73.0	
Cycle Queue Clearance Time (g_c), s	34.5		16.1					31.5		17.9	73.0	
Green Ratio (*g/C*)	0.29		0.29					0.39		0.17	0.61	
Capacity (*c*), veh/h	875		813					2682		596	2312	
Volume-to-Capacity Ratio (*X*)	1.059		0.551					0.711		0.898	1.153	
Back of Queue (*Q*), ft/ln (95 th percentile)	470		240.4					515.4		254.5	429.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	18.7		9.5					20.6		10.2	17.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.65		0.37					0.00		0.44	0.00	
Uniform Delay (d_1), s/veh	42.8		36.2					44.5		49.2	4.6	
Incremental Delay (d_2), s/veh	47.4		1.4					1.5		3.3	70.2	
Initial Queue Delay (d_3), s/veh	0.0		0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	90.2		37.6					46.0		52.4	74.8	
Level of Service (LOS)	F		D					D		D	F	
Approach Delay, s/veh / LOS	73.1	E		0.0			46.0	D		71.0	E	
Intersection Delay, s/veh / LOS	64.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.75	C	2.99	C	1.70	B	2.25	B
Bicycle LOS Score / LOS		F			0.99	A	1.57	B

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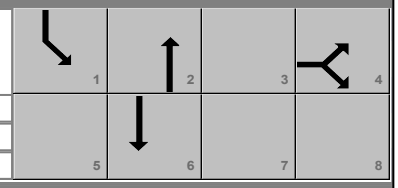
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890		430					1180		420	2090	

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	45	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	20.4	46.6	34.5	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	4.0	4.5	0.0	0.0	0.0		
				Red	3.0	2.0	2.0	0.0	0.0	0.0		



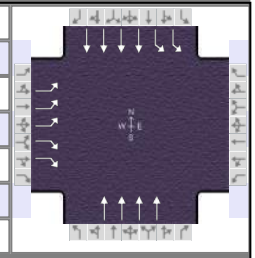
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992				1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.565	1.000	0.885	1.000	1.000	1.000	1.000	0.908	1.000	0.971	0.500	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	5386	0	2828				0	7250	0	3514	4750	0
Proportion of Vehicles Arriving on Green (P)	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.15	0.00	0.16	0.92	0.00
Incremental Delay Factor (k)	0.50		0.26					0.50		0.28	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.29				0.39	0.17	0.61
Permitted Saturation Flow Rate (s_p), veh/h/ln		1795				113	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0				46.6	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.224	0.000	0.972	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.125	0.000	0.089
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	777.21	22.43	1216.67	9.20
Bicycle F_w / F_v	-3.64	Infinity	-3.64		-3.64	0.51	-3.64	1.08

HCS Signalized Intersection Results Graphical Summary

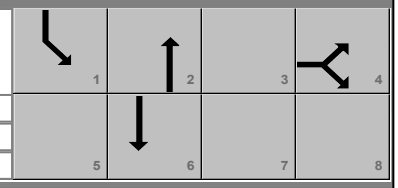
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



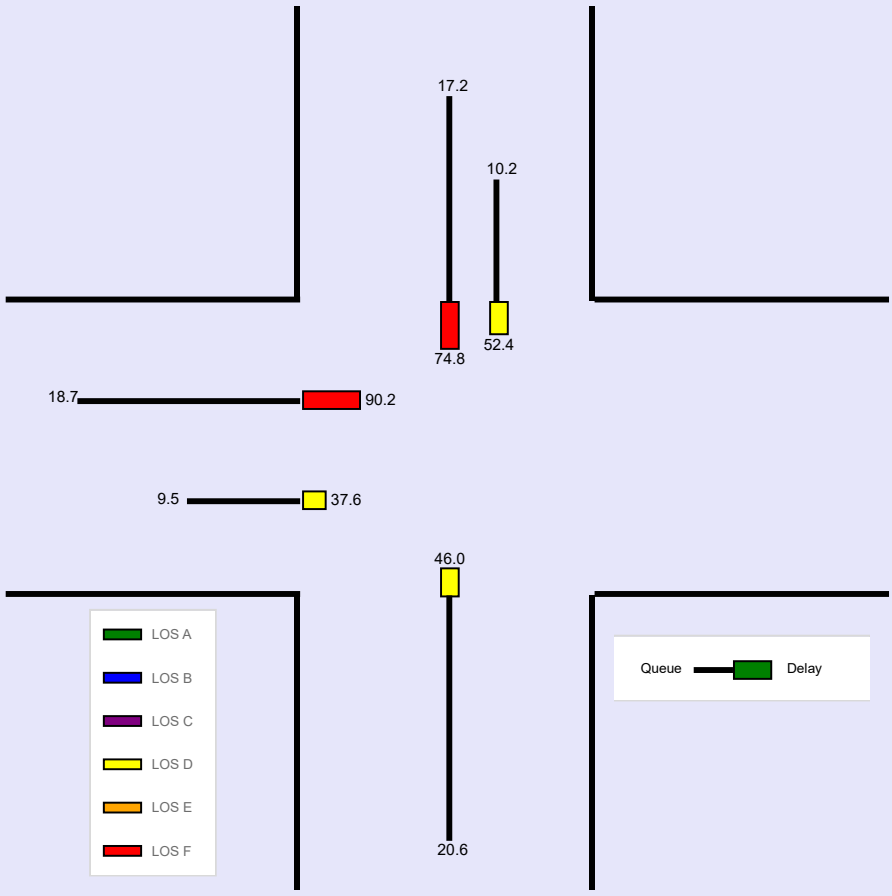
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	890		430					1180		420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	20.4	46.6	34.5	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	470		240.4					515.4		254.5	429.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	18.7		9.5					20.6		10.2	17.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.65		0.37					0.00		0.44	0.00	
Control Delay (*d*), s/veh	90.2		37.6					46.0		52.4	74.8	
Level of Service (LOS)	F		D					D		D	F	
Approach Delay, s/veh / LOS	73.1		E	0.0			46.0		D	71.0		E
Intersection Delay, s/veh / LOS	64.1						E					



--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 150% of downstream exit volume during time period #1, for thru movement #2.

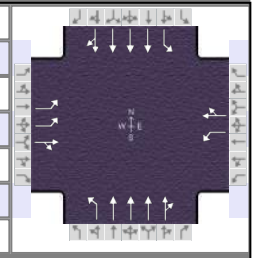
WARNING: According to input data, upstream feeding volume is equal to 116% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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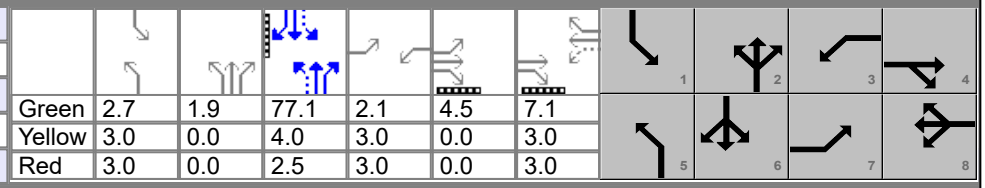
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	105	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.7	1.9	77.1	2.1	4.5	7.1						
Yellow	3.0	0.0	4.0	3.0	0.0	3.0						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1		0	0		1	1		3	3	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.40	0.40	0.40	0.63	0.63	0.63
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

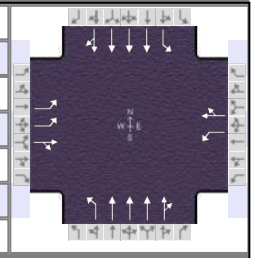
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	17.0	20.0	28.0	31.0	39.0	51.0	21.0	33.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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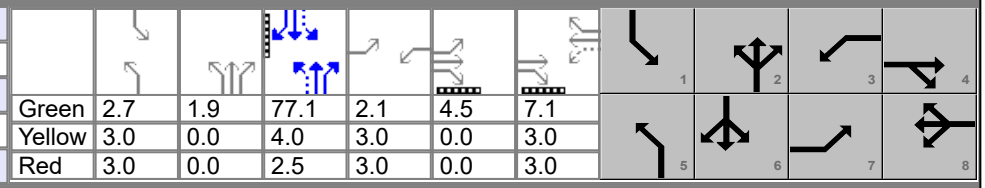
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	105	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.7	1.9	77.1	2.1	4.5	7.1
Yellow	3.0	0.0	4.0	3.0	0.0	3.0
Red	3.0	0.0	2.5	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	12.6	17.6	8.1	13.1	10.6	85.6	8.7	83.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.4	4.1	4.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	4.9	4.1	2.7	3.4	2.7		2.3	
Green Extension Time (g_e), s	0.1	0.2	0.0	0.2	0.1	0.0	0.0	0.0
Phase Call Probability	0.94	0.99	0.30	0.89	0.66		0.39	
Max Out Probability	0.16	0.00	0.00	0.00	0.00		0.00	

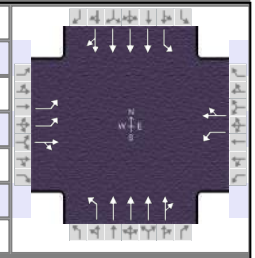
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	87	33		11	22		33	1710	568	15	1826	523
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1683		1810	1743		1795	1885	1879	1767	1856	1583
Queue Service Time (g_s), s	2.9	2.1		0.7	1.4		0.7	18.4	18.4	0.3	22.6	25.4
Cycle Queue Clearance Time (g_c), s	2.9	2.1		0.7	1.4		0.7	18.4	18.4	0.3	22.6	25.4
Green Ratio (*g/C*)	0.06	0.10		0.08	0.06		0.68	0.66	0.66	0.67	0.64	0.64
Capacity (*c*), veh/h	192	162		175	103		196	3727	1238	179	3579	1018
Volume-to-Capacity Ratio (*X*)	0.452	0.201		0.062	0.211		0.167	0.459	0.459	0.082	0.510	0.513
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	43		14.2	30		10	241.6	243.7	5.4	324.4	333.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	9.6	9.7	0.2	12.7	13.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.02	0.00	0.00
Uniform Delay (d_1), s/veh	54.9	49.9		51.4	53.8		8.6	10.6	10.6	8.3	13.0	15.8
Incremental Delay (d_2), s/veh	1.7	0.6		0.1	1.0		0.2	0.2	0.5	0.1	0.3	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.6	50.5		51.6	54.8		8.8	10.7	11.1	8.4	13.3	17.0
Level of Service (LOS)	E	D		D	D		A	B	B	A	B	B
Approach Delay, s/veh / LOS	54.9	D		53.7	D		10.8	B		14.1	B	
Intersection Delay, s/veh / LOS	13.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.86	C	2.87	C	1.88	B	2.07	B
Bicycle LOS Score / LOS	0.68	A	0.54	A	1.44	A	1.21	A

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HCS Signalized Intersection Intermediate Values

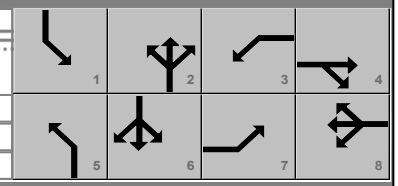
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	105	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.7	1.9	77.1	2.1	4.5	7.1
Yellow	3.0	0.0	4.0	3.0	0.0	3.0
Red	3.0	0.0	2.5	3.0	0.0	3.0



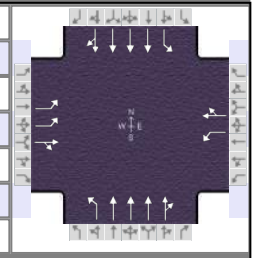
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.893	0.893		0.917	0.917		0.997	0.997		0.853	0.853
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	561	1122	1810	872	872	1795	7498	36	1767	5638	1512
Proportion of Vehicles Arriving on Green (P)	0.06	0.10	0.10	0.02	0.06	0.06	0.13	0.64	0.56	0.03	0.60	0.53
Incremental Delay Factor (k)	0.11	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.06	0.10	0.08	0.06	0.68	0.66	0.67	0.64
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1398	0	154	0	162	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	7.1	0.0	77.1	0.0	77.1	0.0
Permitted Service Time (g_u), s	0.0	0.0	7.1	0.0	51.7	0.0	58.6	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		6.1		1.8	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.156	0.000	0.159	0.000	0.078	0.000	0.082
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	192.95	48.98	118.18	53.12	1318.10	6.97	1285.79	7.65
Bicycle F_w / F_v	-3.64	0.20	-3.64	0.05	-3.64	0.95	-3.64	0.72

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				

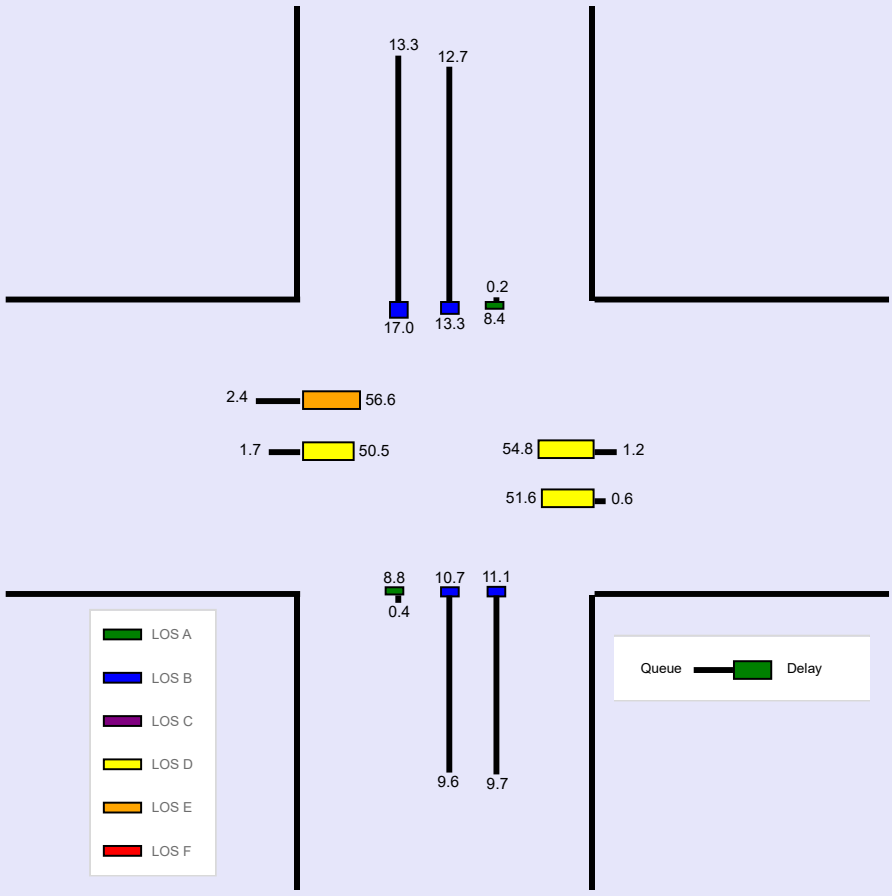


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1260	340

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	105	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.7	1.9	77.1	2.1	4.5	7.1	1	2	3	4		
Yellow	3.0	0.0	4.0	3.0	0.0	3.0	5	6	7	8		
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	43		14.2	30		10	241.6	243.7	5.4	324.4	333.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	9.6	9.7	0.2	12.7	13.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.02	0.00	0.00
Control Delay (*d*), s/veh	56.6	50.5		51.6	54.8		8.8	10.7	11.1	8.4	13.3	17.0
Level of Service (LOS)	E	D		D	D		A	B	B	A	B	B
Approach Delay, s/veh / LOS	54.9	D		53.7	D		10.8	B		14.1	B	
Intersection Delay, s/veh / LOS	13.8						B					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 85% of downstream exit volume during time period #1, for thru movement #2.

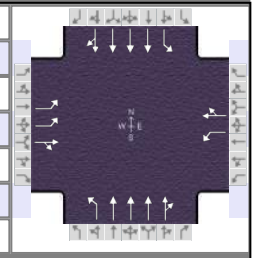
WARNING: According to input data, upstream feeding volume is equal to 131% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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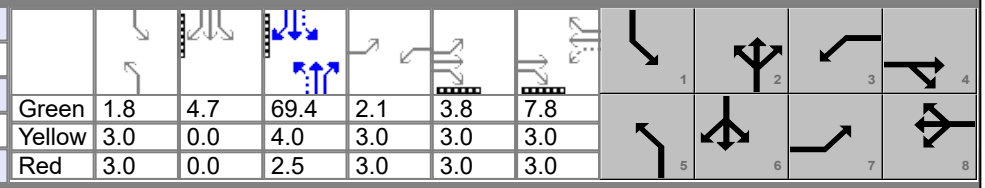
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	102	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.7		69.4	2.1	3.8	7.8					
Yellow	3.0	0.0		4.0	3.0	3.0	3.0					
Red	3.0	0.0		2.5	3.0	3.0	3.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75	0.75	0.09	0.09	0.09
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

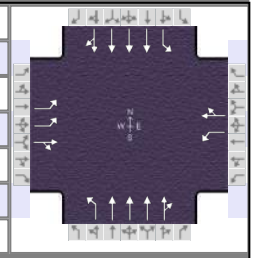
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	52.0	16.0	53.0	17.0	21.0	31.0	20.0	30.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

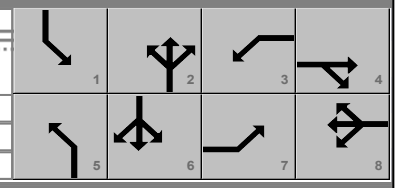
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	102	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	1.8	4.7	69.4	2.1	3.8	7.8
Yellow	3.0	0.0	4.0	3.0	3.0	3.0
Red	3.0	0.0	2.5	3.0	3.0	3.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.9	23.6	8.1	13.8	7.8	75.9	12.5	80.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.5	4.1	4.5	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	10.7	6.7	2.6	3.4	2.2		3.9	
Green Extension Time (g_e), s	1.2	0.4	0.0	0.4	0.0	0.0	0.2	0.0
Phase Call Probability	1.00	1.00	0.29	0.97	0.26		0.92	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

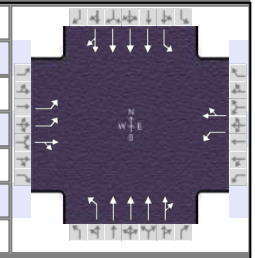
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	260	73		10	21		9	1234	410	77	2022	661
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1646		1810	1743		1810	1900	1893	1810	1900	1856
Queue Service Time (g_s), s	8.7	4.7		0.6	1.4		0.2	15.8	15.8	1.9	27.7	28.1
Cycle Queue Clearance Time (g_c), s	8.7	4.7		0.6	1.4		0.2	15.8	15.8	1.9	27.7	28.1
Green Ratio (*g/C*)	0.10	0.15		0.08	0.06		0.59	0.58	0.58	0.64	0.62	0.62
Capacity (*c*), veh/h	348	241		178	113		128	3298	1095	296	3519	1146
Volume-to-Capacity Ratio (*X*)	0.749	0.303		0.058	0.185		0.069	0.374	0.374	0.259	0.575	0.577
Back of Queue (*Q*), ft/ln (95 th percentile)	181.7	91.4		13.6	28.4		4.3	262.9	267.2	26.4	327.7	328.6
Back of Queue (*Q*), veh/ln (95 th percentile)	7.3	3.7		0.5	1.1		0.2	10.5	10.7	1.1	13.1	13.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.87	0.00		0.45	0.00		0.03	0.00	0.00	0.11	0.00	0.00
Uniform Delay (d_1), s/veh	52.6	45.7		50.9	53.1		13.0	16.3	16.3	9.3	16.2	16.6
Incremental Delay (d_2), s/veh	3.2	0.7		0.1	0.8		0.2	0.2	0.7	0.0	0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	55.9	46.4		51.0	53.9		13.2	16.5	17.1	9.4	16.3	16.8
Level of Service (LOS)	E	D		D	D		B	B	B	A	B	B
Approach Delay, s/veh / LOS	53.8	D		53.0	D		16.7	B		16.2	B	
Intersection Delay, s/veh / LOS	19.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.86	C	2.87	C	1.89	B	2.08	B
Bicycle LOS Score / LOS	1.04	A	0.54	A	1.29	A	1.57	B

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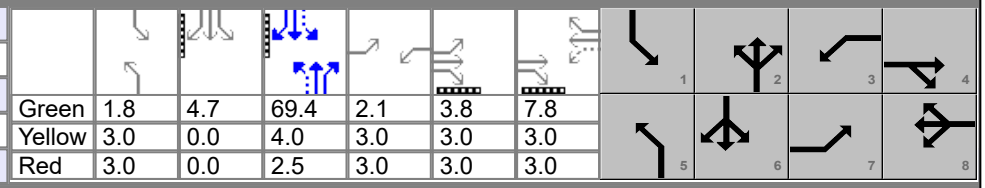
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	102	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.7	69.4	2.1	3.8	7.8
Yellow	3.0	0.0	4.0	3.0	3.0	3.0
Red	3.0	0.0	2.5	3.0	3.0	3.0

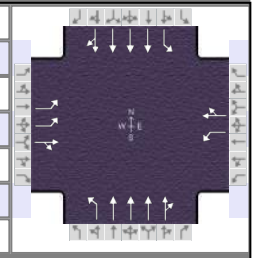
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.866	0.866		0.917	0.917		0.996	0.996		0.977	0.977
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	235	1411	1810	872	872	1810	7552	41	1810	7310	246
Proportion of Vehicles Arriving on Green (P)	0.10	0.15	0.15	0.02	0.06	0.06	0.01	0.51	0.47	0.09	0.56	0.50
Incremental Delay Factor (k)	0.11	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.10	0.15	0.08	0.06	0.59	0.58	0.64	0.62
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1348	0	111	0	309	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	7.8	0.0	69.4	0.0	70.1	0.0
Permitted Service Time (g_u), s	0.0	0.0	7.8	0.0	44.0	0.0	53.6	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		2.2		5.2	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.151	0.000	0.159	0.000	0.095	0.000	0.087
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	292.76	43.72	129.20	52.50	1157.05	10.66	1234.87	8.78
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.05	-3.64	0.80	-3.64	1.08

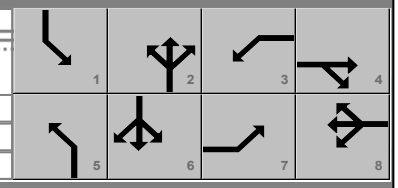
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



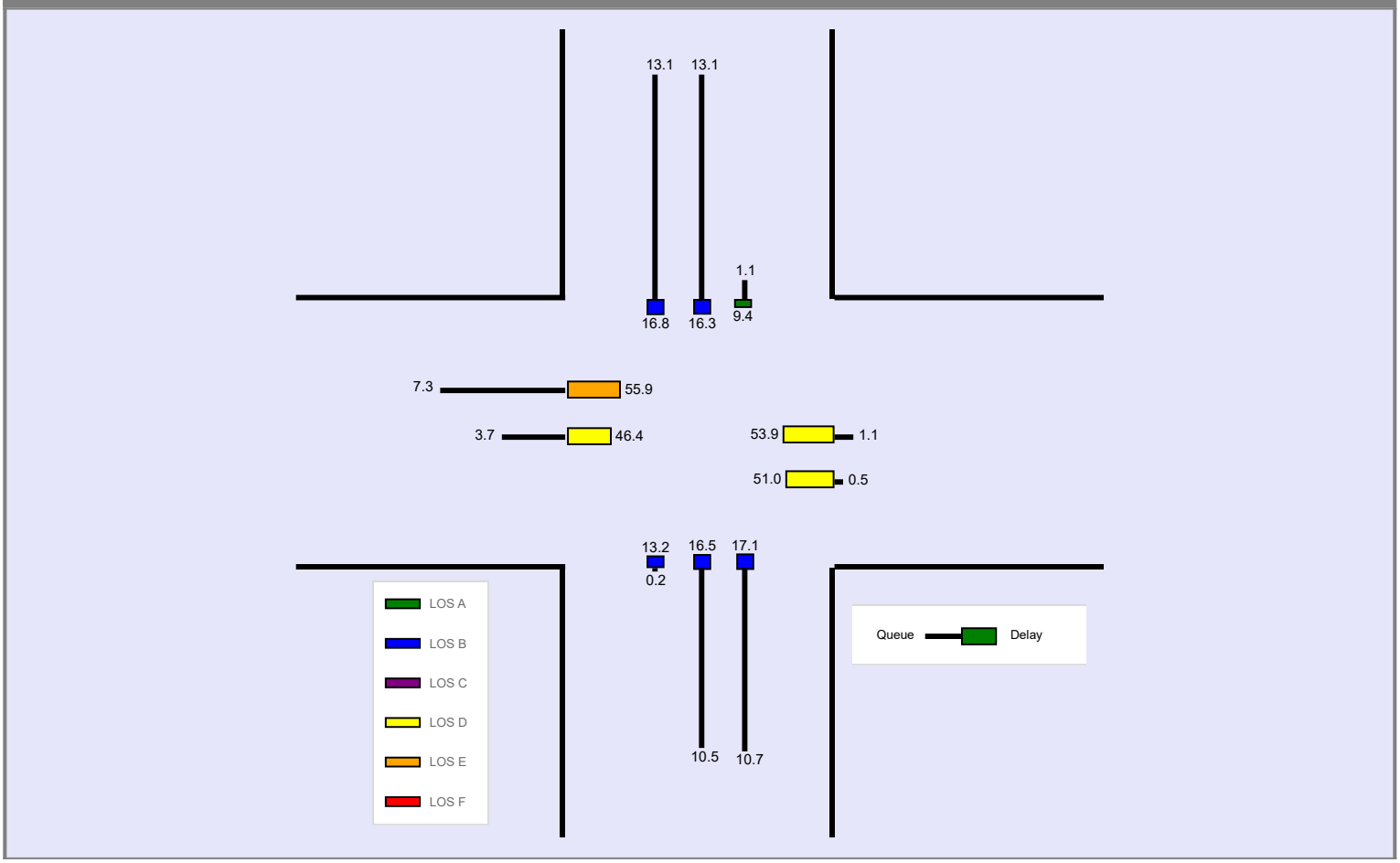
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	250	10	60	10	10	10	10	1850	10	70	2370	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	102	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.7	69.4	2.1	3.8	7.8						
Yellow	3.0	0.0	4.0	3.0	3.0	3.0						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	181.7	91.4		13.6	28.4		4.3	262.9	267.2	26.4	327.7	328.6
Back of Queue (*Q*), veh/ln (95 th percentile)	7.3	3.7		0.5	1.1		0.2	10.5	10.7	1.1	13.1	13.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.87	0.00		0.45	0.00		0.03	0.00	0.00	0.11	0.00	0.00
Control Delay (*d*), s/veh	55.9	46.4		51.0	53.9		13.2	16.5	17.1	9.4	16.3	16.8
Level of Service (LOS)	E	D		D	D		B	B	B	A	B	B
Approach Delay, s/veh / LOS	53.8	D		53.0	D		16.7	B		16.2	B	
Intersection Delay, s/veh / LOS	19.2						B					



--- Messages ---

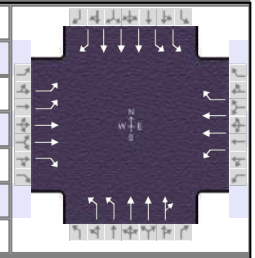
WARNING: According to input data, upstream feeding volume is equal to 82% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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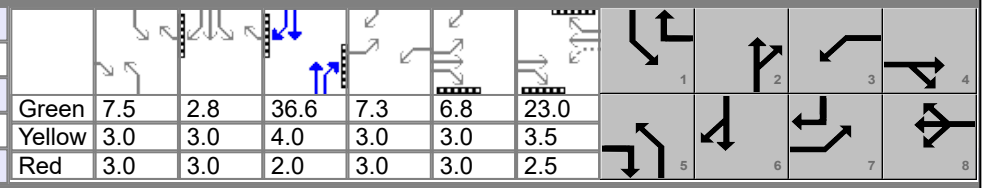
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	2.8	36.6	7.3	6.8	23.0						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None		0	L + R	0
Heavy Vehicles (P_{HV}), %	1	1	0	3	3	0	1	1		3	3	3
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.46	0.46	0.46	0.85	0.85	0.85
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	300	0	359	375	0	425	235	0		260	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

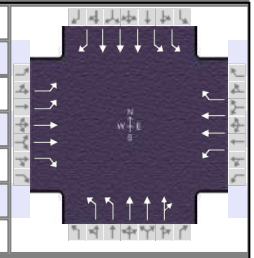
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	52.0	26.0	45.0	19.0	20.0	28.0	21.0	29.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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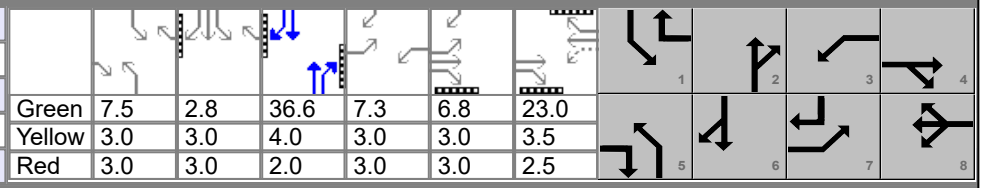
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	2.8		36.6	7.3	6.8	23.0					
Yellow	3.0	3.0		4.0	3.0	3.0	3.5					
Red	3.0	3.0		2.0	3.0	3.0	2.5					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	1.1	3.0	2.0	4.0	2.0	3.0
Phase Duration, s	26.1	41.8	13.3	29.0	13.5	42.6	22.3	51.4
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	18.1	9.0	7.3	20.2	7.0		14.9	
Green Extension Time (g_e), s	2.1	3.0	0.3	2.8	0.5	0.0	1.3	0.0
Phase Call Probability	1.00	1.00	0.96	1.00	0.99		1.00	
Max Out Probability	0.00	0.00	0.00	0.01	0.00		0.00	

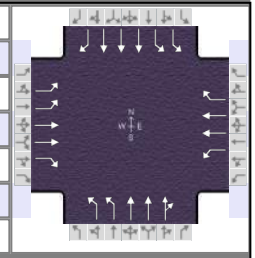
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	484	275	88	99	264	297	153	1064	522	379	956	546
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795	1610	1767	1766	1610	1743	1885	1850	1716	1146	1415
Queue Service Time (g_s), s	16.1	7.0	4.4	5.3	7.8	18.2	5.0	32.8	32.9	12.9	31.8	33.9
Cycle Queue Clearance Time (g_c), s	16.1	7.0	4.4	5.3	7.8	18.2	5.0	32.8	32.9	12.9	31.8	33.9
Green Ratio (*g/C*)	0.17	0.30	0.36	0.25	0.19	0.33	0.06	0.30	0.30	0.14	0.38	0.55
Capacity (*c*), veh/h	585	1071	581	378	677	527	217	1150	564	465	1300	773
Volume-to-Capacity Ratio (*X*)	0.826	0.256	0.151	0.262	0.390	0.563	0.705	0.925	0.925	0.816	0.735	0.707
Back of Queue (*Q*), ft/ln (95 th percentile)	288.7	135.8	75.8	105.8	156.1	285	91.5	509.5	528.4	237.1	379.2	577.7
Back of Queue (*Q*), veh/ln (95 th percentile)	11.5	5.4	3.0	4.1	6.1	11.4	3.6	20.2	21.1	9.3	14.8	22.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.96	0.00	0.21	0.28	0.00	0.67	0.39	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d_1), s/veh	48.2	32.0	25.9	35.5	42.4	33.3	49.6	40.8	41.6	51.0	45.0	27.7
Incremental Delay (d_2), s/veh	3.0	0.1	0.1	0.4	0.3	0.7	1.9	7.3	13.1	3.0	3.2	4.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	51.3	32.1	26.0	35.9	42.6	34.0	51.5	48.1	54.7	54.1	48.2	32.4
Level of Service (LOS)	D	C	C	D	D	C	D	D	D	D	D	C
Approach Delay, s/veh / LOS	42.4	D		37.7	D		50.4	D		44.8	D	
Intersection Delay, s/veh / LOS	45.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.85	C	2.45	B	2.58	C
Bicycle LOS Score / LOS	1.19	A	1.03	A	1.45	A	1.24	A

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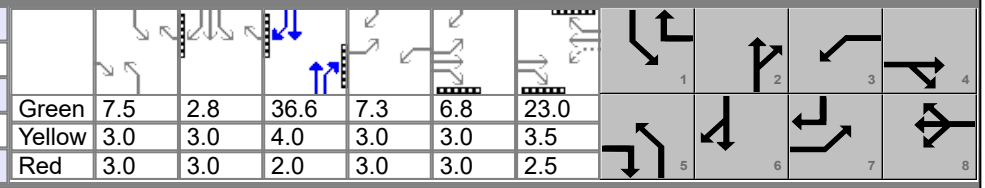
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	2.8	36.6	7.3	6.8	23.0						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

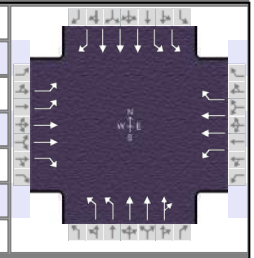
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	0.977	0.977	1.000	0.992	0.992	1.000	0.977	0.977	0.977
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.900
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	0.971	1.000	1.000	0.971	0.618	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.981	0.981		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	3589	1610	1767	3533	1610	3487	5427	194	3432	3438	1415
Proportion of Vehicles Arriving on Green (P)	0.17	0.30	0.30	0.06	0.19	0.19	0.16	0.30	0.17	0.13	0.15	0.14
Incremental Delay Factor (k)	0.11	0.08	0.08	0.11	0.08	0.08	0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.17	0.30	0.25	0.19	0.06	0.30	0.14	0.38
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1096	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	23.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	23.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s			0.0					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		1610				1415
Protected Right Effective Green Time (g_R), s		7.5		16.3				20.1

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.107	0.000	1.710	0.000	1.852	0.000
Pedestrian F_s / F_{delay}	0.000	0.136	0.000	0.147	0.000	0.135	0.000	0.126
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	596.81	29.53	383.28	39.21	609.83	28.99	756.50	23.19
Bicycle F_w / F_v	-3.64	0.70	-3.64	0.54	-3.64	0.96	-3.64	0.75

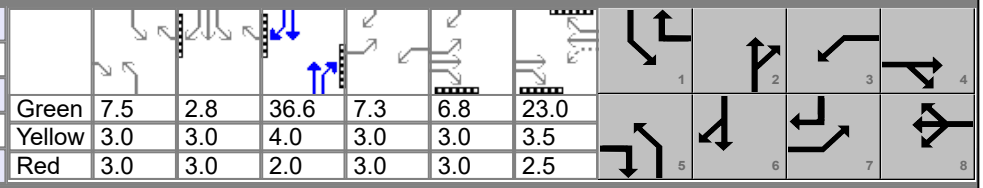
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 AM - Option 1				



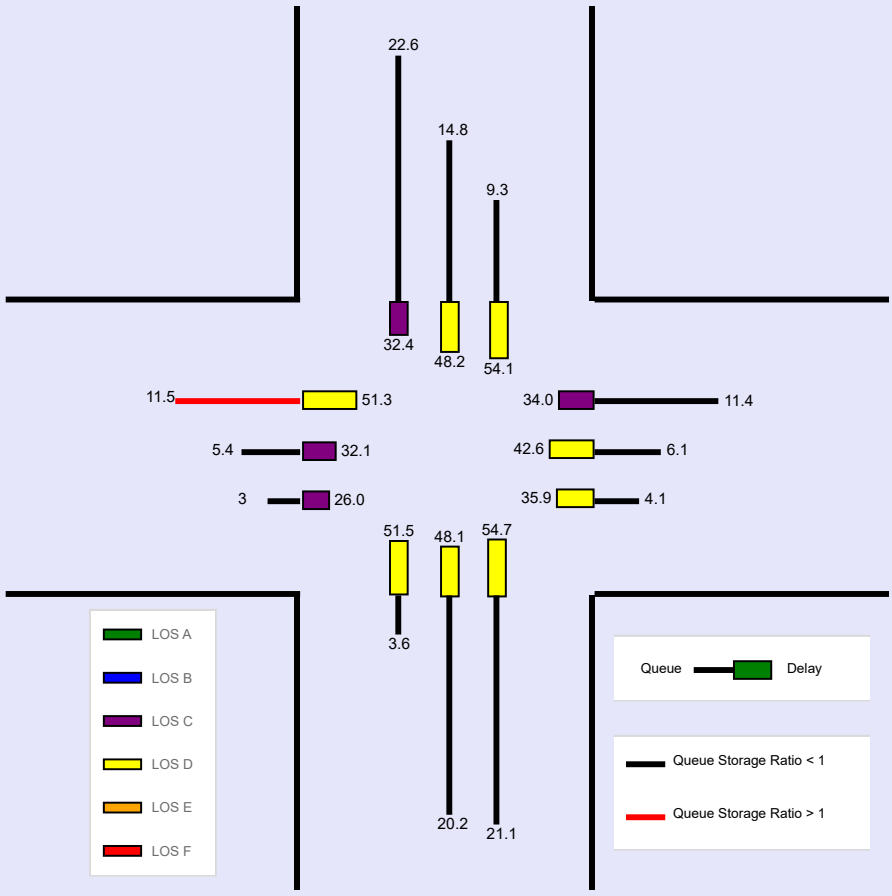
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	440	250	80	90	240	270	140	1400	50	250	630	360

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	29	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.5	2.8	36.6	7.3	6.8	23.0						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	288.7	135.8	75.8	105.8	156.1	285	91.5	509.5	528.4	237.1	379.2	577.7
Back of Queue (*Q*), veh/ln (95 th percentile)	11.5	5.4	3.0	4.1	6.1	11.4	3.6	20.2	21.1	9.3	14.8	22.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.96	0.00	0.21	0.28	0.00	0.67	0.39	0.00	0.00	0.91	0.00	0.00
Control Delay (*d*), s/veh	51.3	32.1	26.0	35.9	42.6	34.0	51.5	48.1	54.7	54.1	48.2	32.4
Level of Service (LOS)	D	C	C	D	D	C	D	D	D	D	D	C
Approach Delay, s/veh / LOS	42.4	D		37.7	D		50.4	D		44.8	D	
Intersection Delay, s/veh / LOS	45.4						D					



--- Messages ---

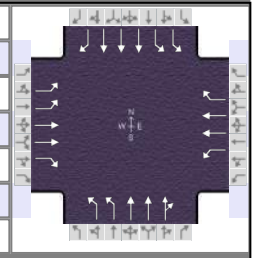
WARNING: According to input data, upstream feeding volume is equal to 134% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	116	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	6.6	42.4	14.0	1.0	19.0						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0	0	0	0	0	0	0		0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	0.80	0.80	0.80
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	300	0	359	375	0	425	235	0		260	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

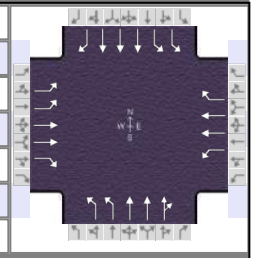
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	28.0	25.0	21.0	18.0	13.0	33.0	41.0	61.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	116	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	6.6	42.4	14.0	1.0	19.0
Yellow	3.0	3.0	4.0	3.0	0.0	3.5
Red	3.0	3.0	2.0	3.0	0.0	2.5

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	1.1	3.0	2.0	4.0	2.0	3.0
Phase Duration, s	20.0	25.0	21.0	26.0	13.0	48.4	25.6	61.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	13.1	18.0	16.3	22.0	7.4		17.7	
Green Extension Time (g_e), s	0.9	0.5	0.0	0.0	0.0	0.0	1.9	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.06	1.00	1.00	1.00	1.00		0.00	

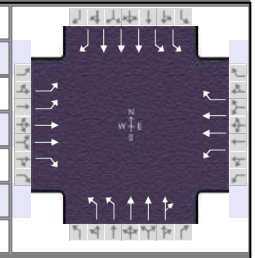
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	333	495	161	258	323	323	160	739	354	506	1760	403
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1809	1610	1810	1809	1610	1757	1900	1812	1757	1173	1610
Queue Service Time (g_s), s	11.1	16.0	10.5	14.3	9.8	20.0	5.4	18.7	17.7	15.7	55.0	14.2
Cycle Queue Clearance Time (g_c), s	11.1	16.0	10.5	14.3	9.8	20.0	5.4	18.7	17.7	15.7	55.0	14.2
Green Ratio (*g/C*)	0.12	0.16	0.22	0.28	0.17	0.33	0.06	0.35	0.35	0.16	0.46	0.57
Capacity (*c*), veh/h	410	573	349	309	603	532	206	1342	640	575	1613	926
Volume-to-Capacity Ratio (*X*)	0.813	0.864	0.462	0.835	0.535	0.607	0.776	0.551	0.553	0.880	1.091	0.435
Back of Queue (*Q*), ft/ln (95 th percentile)	218.6	319.2	186.7	305.9	195.8	313.3	125	310.5	278.8	197.9	695	167.6
Back of Queue (*Q*), veh/ln (95 th percentile)	8.7	12.8	7.5	12.2	7.8	12.5	5.0	12.4	11.2	7.9	27.8	6.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.73	0.00	0.52	0.82	0.00	0.74	0.53	0.00	0.00	0.76	0.00	0.00
Uniform Delay (d_1), s/veh	51.7	49.2	40.9	37.3	45.7	33.7	58.0	31.0	27.7	31.7	25.2	10.4
Incremental Delay (d_2), s/veh	4.4	12.7	0.7	17.7	0.8	1.8	12.4	1.2	2.4	3.7	49.8	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.1	62.0	41.6	55.0	46.5	35.4	70.4	32.2	30.2	35.4	75.0	11.6
Level of Service (LOS)	E	E	D	D	D	D	E	C	C	D	F	B
Approach Delay, s/veh / LOS	56.7	E		45.0	D		36.5	D		58.0	E	
Intersection Delay, s/veh / LOS	51.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.86	C	2.44	B	2.57	C
Bicycle LOS Score / LOS	1.30	A	1.23	A	1.42	A	1.86	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	116	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	6.6	42.4	14.0	1.0	19.0
Yellow	3.0	3.0	4.0	3.0	0.0	3.5
Red	3.0	3.0	2.0	3.0	0.0	2.5

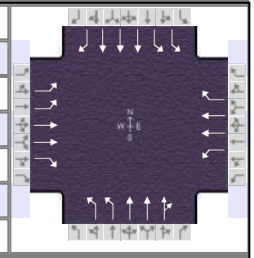
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.952	1.000	0.971	1.000	1.000	0.971	0.617	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.954	0.954		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	3618	1610	1810	3618	1610	3514	5121	491	3514	3519	1610
Proportion of Vehicles Arriving on Green (P)	0.12	0.16	0.16	0.13	0.17	0.17	0.02	0.36	0.58	0.45	0.58	0.59
Incremental Delay Factor (k)	0.12	0.39	0.08	0.37	0.11	0.17	0.32	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.12	0.16	0.28	0.17	0.06	0.35	0.16	0.46
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	917	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	19.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s			3.0					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		1610				1610
Protected Right Effective Green Time (g_R), s		7.0		19.6				14.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.107	0.000	1.710	0.000	1.852	0.000
Pedestrian F_s / F_{delay}	0.000	0.150	0.000	0.150	0.000	0.129	0.000	0.115
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	316.64	42.51	333.29	41.67	706.06	25.11	916.52	17.61
Bicycle F_w / F_v	-3.64	0.82	-3.64	0.75	-3.64	0.93	-3.64	1.37

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 1	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 1.xus		
Project Description	Wilmington Pike - 2050 PM - Option 1				



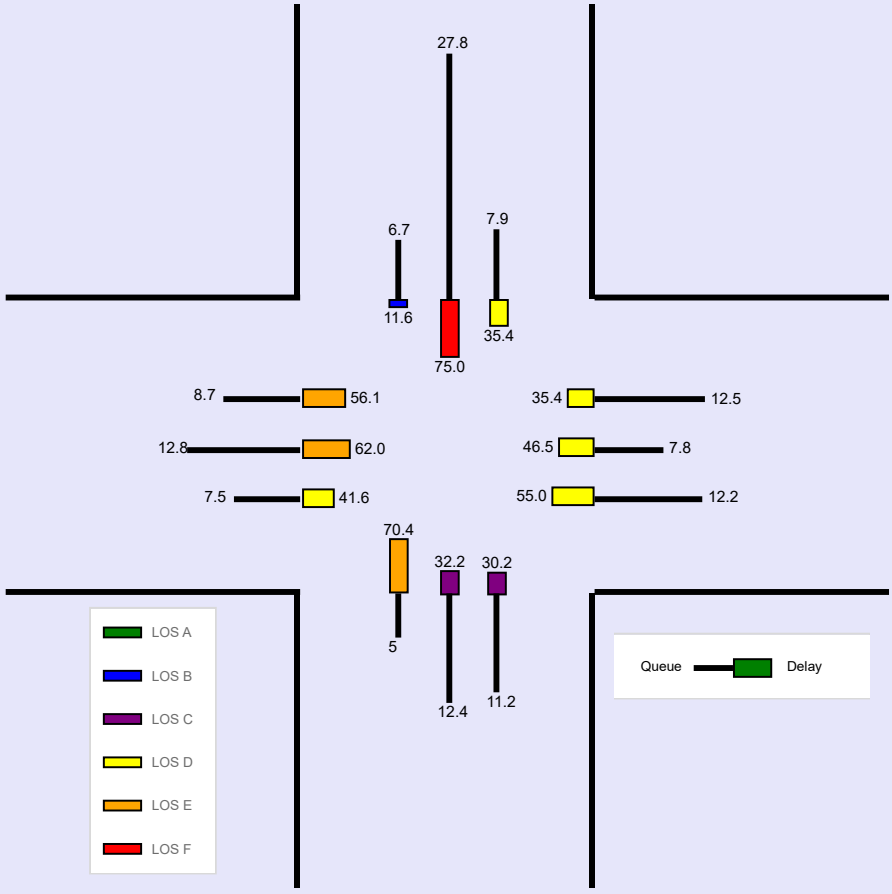
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	310	460	150	240	300	300	200	1250	120	440	1530	350

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	116	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	6.6		42.4	14.0	1.0	19.0					
Yellow	3.0	3.0		4.0	3.0	0.0	3.5					
Red	3.0	3.0		2.0	3.0	0.0	2.5					

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	218.6	319.2	186.7	305.9	195.8	313.3	125	310.5	278.8	197.9	695	167.6
Back of Queue (*Q*), veh/ln (95 th percentile)	8.7	12.8	7.5	12.2	7.8	12.5	5.0	12.4	11.2	7.9	27.8	6.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.73	0.00	0.52	0.82	0.00	0.74	0.53	0.00	0.00	0.76	0.00	0.00
Control Delay (*d*), s/veh	56.1	62.0	41.6	55.0	46.5	35.4	70.4	32.2	30.2	35.4	75.0	11.6
Level of Service (LOS)	E	E	D	D	D	D	E	C	C	D	F	B
Approach Delay, s/veh / LOS	56.7		E	45.0		D	36.5		D	58.0		E
Intersection Delay, s/veh / LOS	51.1						D					



--- Messages ---

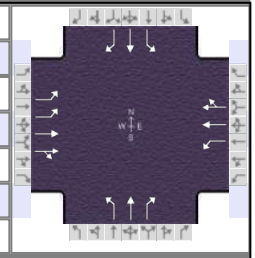
WARNING: According to input data, upstream feeding volume is equal to 74% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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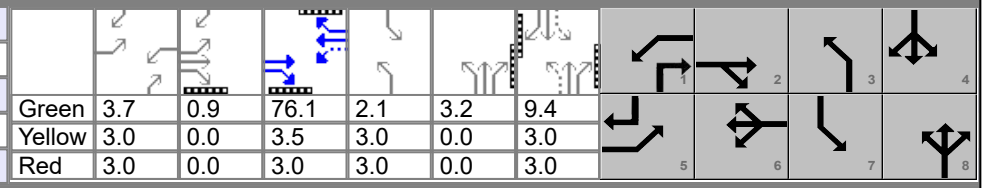
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.7	0.9		76.1	2.1	3.2	9.4					
Yellow	3.0	0.0		3.5	3.0	0.0	3.0					
Red	3.0	0.0		3.0	3.0	0.0	3.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2		0	0		0	0	0	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	340	0		480	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

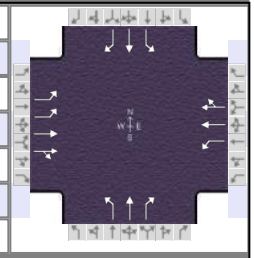
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	34.0	34.0	27.0	27.0	19.0	35.0	24.0	40.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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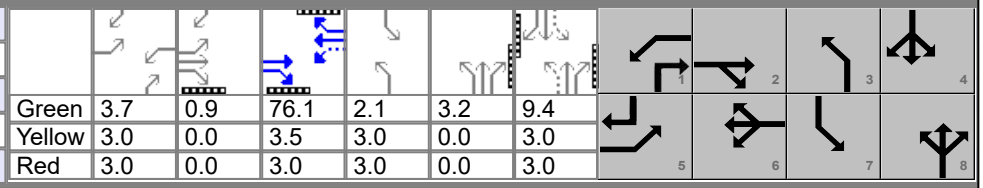
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.7	0.9	76.1	2.1	3.2	9.4						
Yellow	3.0	0.0	3.5	3.0	0.0	3.0						
Red	3.0	0.0	3.0	3.0	0.0	3.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	83.5	9.7	82.6	11.4	18.7	8.1	15.4
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.3	3.7	4.3
Queue Clearance Time (g_s), s	3.0		2.5		4.6	2.7	2.7	5.0
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Phase Call Probability	0.66		0.53		0.77	0.98	0.30	0.94
Max Out Probability	0.00		0.00		0.00	0.00	0.00	0.00

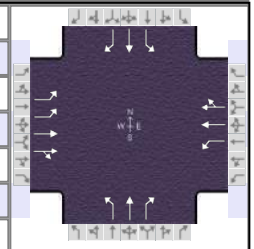
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	32	236	354	23	485	481	43	11	11	11	11	43
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1231	1840	1810	1900	1884	1810	1900	1610	1795	1885	1598
Queue Service Time (g_s), s	1.0	8.2	8.6	0.5	16.5	16.6	2.6	0.6	0.7	0.7	0.6	3.0
Cycle Queue Clearance Time (g_c), s	1.0	8.2	8.6	0.5	16.5	16.6	2.6	0.6	0.7	0.7	0.6	3.0
Green Ratio (*g/C*)	0.04	0.64	0.64	0.67	0.63	0.63	0.12	0.11	0.14	0.10	0.08	0.12
Capacity (*c*), veh/h	133	790	1180	580	1205	1195	246	201	220	203	148	187
Volume-to-Capacity Ratio (*X*)	0.242	0.299	0.300	0.039	0.402	0.402	0.177	0.054	0.049	0.053	0.073	0.232
Back of Queue (*Q*), ft/ln (95 th percentile)	18.5	93.1	143.3	8.1	284.5	283.7	53.5	13.5	13	13.7	14.2	55.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	3.7	5.6	0.3	11.4	11.3	2.1	0.5	0.5	0.5	0.6	2.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.05	0.00	0.00	0.02	0.00	0.00	0.71	0.00	0.17	0.06	0.00	0.24
Uniform Delay (d_1), s/veh	47.4	7.2	7.6	7.1	12.5	12.5	47.2	48.3	45.0	49.3	51.2	48.1
Incremental Delay (d_2), s/veh	0.6	0.8	0.5	0.0	1.0	1.0	0.3	0.1	0.1	0.1	0.2	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	47.9	8.0	8.1	7.2	13.4	13.5	47.5	48.4	45.1	49.4	51.4	48.7
Level of Service (LOS)	D	A	A	A	B	B	D	D	D	D	D	D
Approach Delay, s/veh / LOS	10.1	B		13.3	B		47.2	D		49.3	D	
Intersection Delay, s/veh / LOS	14.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.07	B	2.24	B	2.31	B	2.47	B
Bicycle LOS Score / LOS	1.01	A	1.27	A	0.60	A	0.60	A

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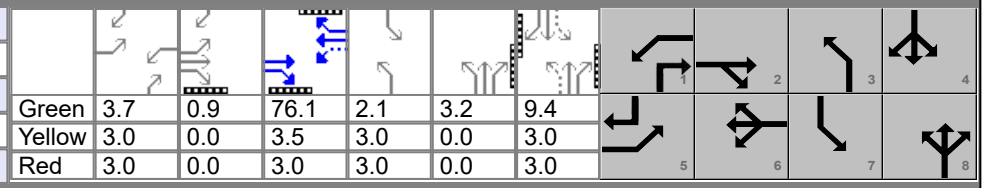
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.7	0.9	76.1	2.1	3.2	9.4						
Yellow	3.0	0.0	3.5	3.0	0.0	3.0						
Red	3.0	0.0	3.0	3.0	0.0	3.0						

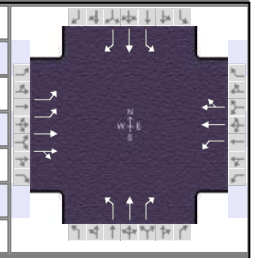
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.658	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.984	0.984		0.992	0.992		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3459	2904	167	1810	3695	89	1810	1900	1610	1795	1885	1598
Proportion of Vehicles Arriving on Green (P)	0.19	0.72	0.57	0.04	0.59	0.56	0.04	0.11	0.11	0.02	0.08	0.08
Incremental Delay Factor (k)	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.11	0.11	0.08	0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.04	0.64	0.67	0.63	0.12	0.11	0.10	0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	839	0	1426	0	1415	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	76.1	0.0	9.5	0.0	9.5	0.0
Permitted Service Time (g_u), s	0.0	0.0	66.4	0.0	8.8	0.0	9.5	0.0
Permitted Queue Service Time (g_{ps}), s			0.3		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1610		1598
Protected Right Effective Green Time (g_R), s						3.7		4.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.082	0.000	0.084	0.000	0.155	0.000	0.158
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1282.92	7.71	1268.11	8.03	211.31	47.99	157.50	50.92
Bicycle F_w / F_v	-3.64	0.52	-3.64	0.78	-3.64	0.11	-3.64	0.11

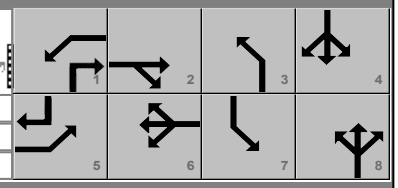
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				

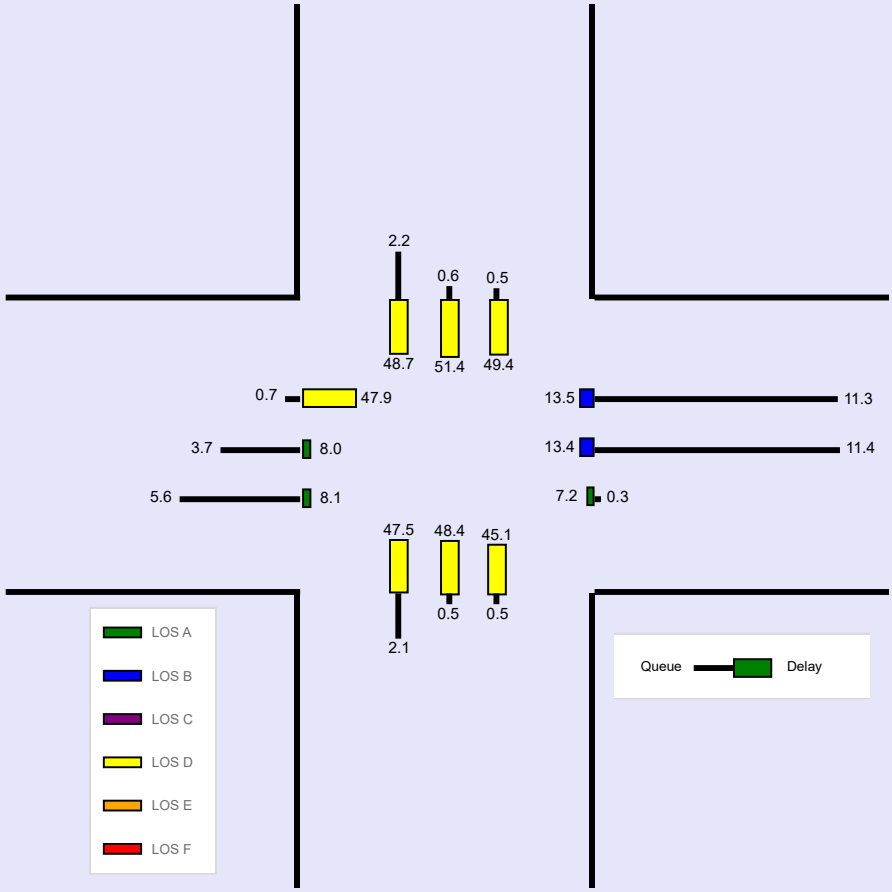


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	520	30	20	830	20	40	10	10	10	10	40

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	15	Reference Point	End	Green	3.7	0.9	76.1	2.1	3.2	9.4		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	0.0	3.5	3.0	0.0	3.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	3.0	3.0	0.0	3.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	18.5	93.1	143.3	8.1	284.5	283.7	53.5	13.5	13	13.7	14.2	55.2
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	3.7	5.6	0.3	11.4	11.3	2.1	0.5	0.5	0.5	0.6	2.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.05	0.00	0.00	0.02	0.00	0.00	0.71	0.00	0.17	0.06	0.00	0.24
Control Delay (*d*), s/veh	47.9	8.0	8.1	7.2	13.4	13.5	47.5	48.4	45.1	49.4	51.4	48.7
Level of Service (LOS)	D	A	A	A	B	B	D	D	D	D	D	D
Approach Delay, s/veh / LOS	10.1	B		13.3	B		47.2	D		49.3	D	
Intersection Delay, s/veh / LOS	14.8						B					



--- Messages ---

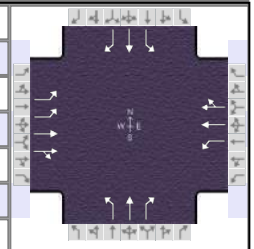
WARNING: According to input data, upstream feeding volume is equal to 76% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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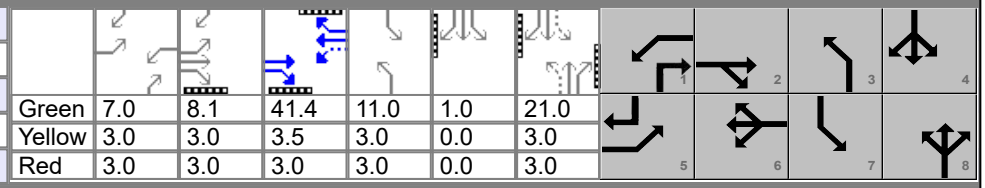
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	17	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	8.1	41.4	11.0	1.0	21.0	
Yellow	3.0	3.0	3.5	3.0	0.0	3.0	
Red	3.0	3.0	3.0	3.0	0.0	3.0	

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		1	1		1	1	1	0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	340	0		480	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

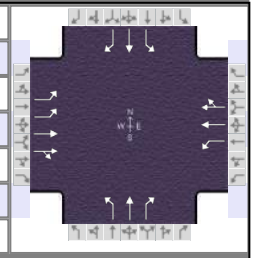
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	46.0	62.0	13.0	29.0	17.0	27.0	18.0	28.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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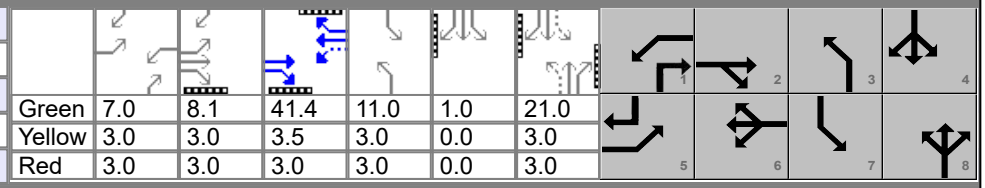
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	17	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	8.1	41.4	11.0	1.0	21.0
Yellow	3.0	3.0	3.5	3.0	0.0	3.0
Red	3.0	3.0	3.0	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	27.1	62.0	13.0	47.9	17.0	27.0	18.0	28.0
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.3	3.7	4.3
Queue Clearance Time (g_s), s	19.4		8.8		13.0	7.9	14.0	22.6
Green Extension Time (g_e), s	1.7	0.0	0.0	0.0	0.0	2.1	0.0	0.0
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		1.00		1.00	0.07	1.00	1.00

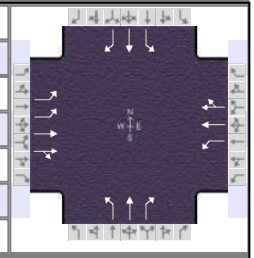
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	529	470	694	158	448	424	340	106	96	319	53	340
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1251	1844	1795	1885	1782	1795	1885	1598	1810	1900	1610
Queue Service Time (g_s), s	17.4	35.2	36.2	6.8	23.0	22.3	11.0	5.9	5.9	12.0	2.8	20.6
Cycle Queue Clearance Time (g_c), s	17.4	35.2	36.2	6.8	23.0	22.3	11.0	5.9	5.9	12.0	2.8	20.6
Green Ratio (*g/C*)	0.18	0.46	0.46	0.40	0.34	0.34	0.27	0.17	0.23	0.27	0.18	0.36
Capacity (*c*), veh/h	618	578	853	235	650	615	419	330	373	405	348	579
Volume-to-Capacity Ratio (*X*)	0.856	0.813	0.814	0.672	0.690	0.690	0.812	0.322	0.257	0.787	0.153	0.588
Back of Queue (*Q*), ft/ln (95 th percentile)	287.7	360.6	513.9	152.7	389.9	352.6	240.3	128.3	1.7	188.6	60.8	323.1
Back of Queue (*Q*), veh/ln (95 th percentile)	11.5	14.4	20.6	6.1	15.5	14.0	9.5	5.1	0.1	7.5	2.4	12.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.85	0.00	0.00	0.32	0.00	0.00	3.20	0.00	0.02	0.82	0.00	1.40
Uniform Delay (d_1), s/veh	46.5	19.8	21.7	27.8	28.5	26.4	42.3	43.3	37.5	40.9	41.2	31.2
Incremental Delay (d_2), s/veh	2.2	9.8	6.9	6.5	5.7	6.0	11.2	0.6	0.4	9.6	0.2	1.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	48.7	29.6	28.6	34.2	34.2	32.4	53.5	43.8	37.9	50.6	41.4	32.8
Level of Service (LOS)	D	C	C	C	C	C	D	D	D	D	D	C
Approach Delay, s/veh / LOS	35.1	D		33.5	C		48.8	D		41.4	D	
Intersection Delay, s/veh / LOS	37.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.29	B	2.31	B	2.46	B
Bicycle LOS Score / LOS	1.89	B	1.35	A	1.38	A	1.66	B

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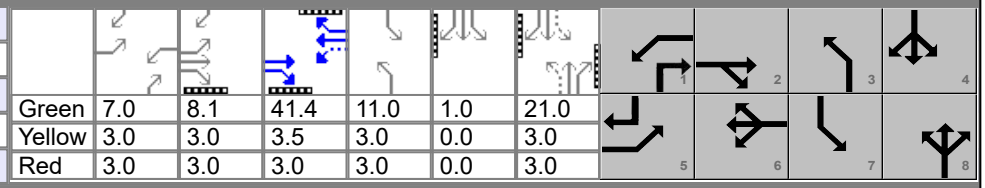
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	17	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	8.1	41.4	11.0	1.0	21.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

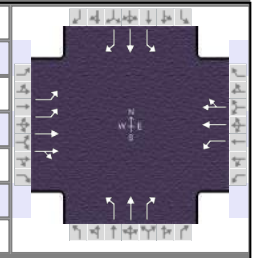
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	0.992	0.992	0.992	0.992	0.992	0.992	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.658	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.971	0.971		0.945	0.945		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	2786	309	1795	3093	574	1795	1885	1598	1810	1900	1610
Proportion of Vehicles Arriving on Green (P)	0.20	0.60	0.41	0.03	0.44	0.56	0.09	0.17	0.17	0.10	0.18	0.18
Incremental Delay Factor (k)	0.08	0.50	0.50	0.22	0.50	0.50	0.34	0.11	0.11	0.32	0.11	0.18

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.18	0.46	0.40	0.34	0.27	0.17	0.27	0.18
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	486	0	1362	0	1308	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	41.4	0.0	21.0	0.0	21.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	17.3	0.0	17.2	0.0	15.1	0.0
Permitted Queue Service Time (g_{ps}), s			12.1		14.9		11.9	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1598		1610
Protected Right Effective Green Time (g_R), s						7.0		21.1

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.114	0.000	0.130	0.000	0.149	0.000	0.148
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	924.97	17.34	689.77	25.75	350.00	40.84	366.66	40.02
Bicycle F_w / F_v	-3.64	1.40	-3.64	0.86	-3.64	0.90	-3.64	1.18

HCS Signalized Intersection Results Graphical Summary

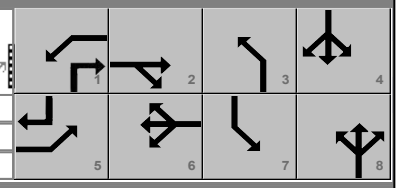
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



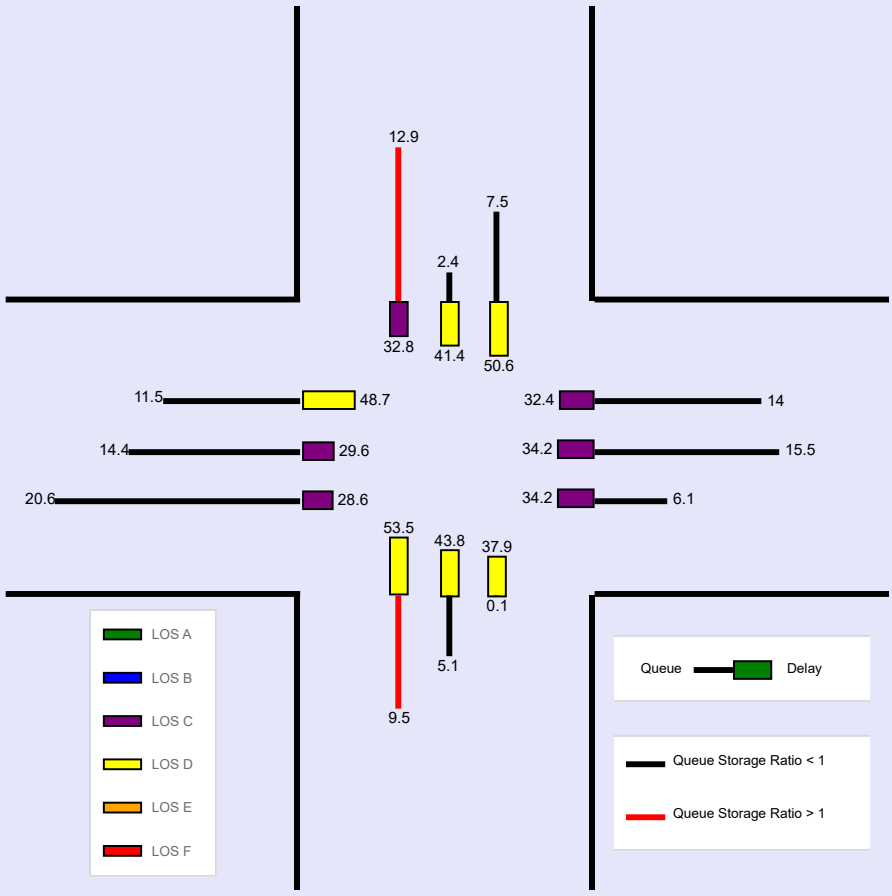
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	500	990	110	150	700	130	320	100	90	300	50	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	17	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.0	8.1	41.4	11.0	1.0	21.0	
Yellow	3.0	3.0	3.5	3.0	0.0	3.0	
Red	3.0	3.0	3.0	3.0	0.0	3.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	287.7	360.6	513.9	152.7	389.9	352.6	240.3	128.3	1.7	188.6	60.8	323.1
Back of Queue (*Q*), veh/ln (95 th percentile)	11.5	14.4	20.6	6.1	15.5	14.0	9.5	5.1	0.1	7.5	2.4	12.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.85	0.00	0.00	0.32	0.00	0.00	3.20	0.00	0.02	0.82	0.00	1.40
Control Delay (*d*), s/veh	48.7	29.6	28.6	34.2	34.2	32.4	53.5	43.8	37.9	50.6	41.4	32.8
Level of Service (LOS)	D	C	C	C	C	C	D	D	D	D	D	C
Approach Delay, s/veh / LOS	35.1	D		33.5	C		48.8	D		41.4	D	
Intersection Delay, s/veh / LOS	37.7						D					



--- Messages ---

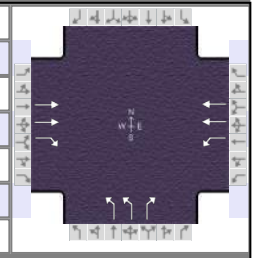
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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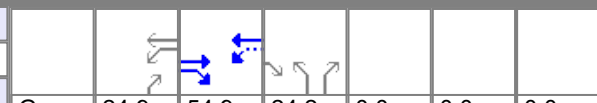
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				

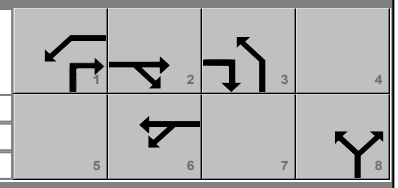


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	84	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	24.9	54.9	24.2	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0	0	0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.70	0.70	0.70	0.70		1.00		1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0	500	690	0		675		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

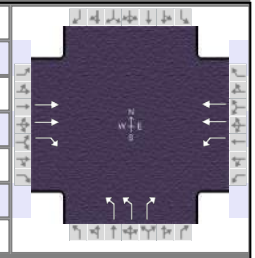
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		55.0	13.0	68.0	52.0	52.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5	3.0	3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0	2.5	2.5		
Minimum Green (G_{min}), s		20	7	20	7	10		
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0	2.0	3.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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HCS Signalized Intersection Results Summary

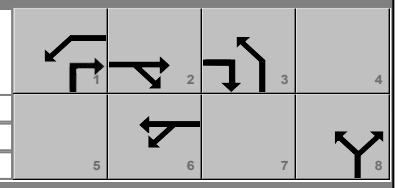
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	84	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.9	54.9	24.2	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		9.0		
Phase Duration, s		60.4	29.9	90.3		29.7		
Change Period, ($Y+R_c$), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (g_s), s			23.6			22.0		
Green Extension Time (g_e), s		0.0	1.1	0.0		2.1		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.34			0.00		

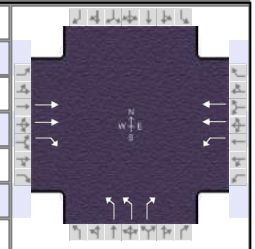
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		447	133	511	841		148		352			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1809	1610	1810	1809		1743		1598			
Queue Service Time (g_s), s		12.4	5.1	21.6	8.7		4.2		20.0			
Cycle Queue Clearance Time (g_c), s		12.4	5.1	21.6	8.7		4.2		20.0			
Green Ratio (*g/C*)		0.46	0.66	0.68	0.71		0.20		0.41			
Capacity (*c*), veh/h		1648	1059	778	2554		706		657			
Volume-to-Capacity Ratio (*X*)		0.271	0.125	0.657	0.329		0.209		0.536			
Back of Queue (*Q*), ft/ln (95 th percentile)		219.9	146.6	121.1	105.3		82.8		305			
Back of Queue (*Q*), veh/ln (95 th percentile)		8.8	5.9	4.8	4.2		3.3		12.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.29	0.18	0.00		0.12		0.00			
Uniform Delay (d_1), s/veh		30.7	11.5	6.7	5.1		39.9		26.7			
Incremental Delay (d_2), s/veh		0.3	0.2	1.1	0.2		0.1		0.7			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		31.0	11.7	7.8	5.3		40.0		27.4			
Level of Service (LOS)		C	B	A	A		D		C			
Approach Delay, s/veh / LOS	26.5	C		6.3	A		31.1	C		0.0		
Intersection Delay, s/veh / LOS	16.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	0.67	A	2.32	B	2.32	B
Bicycle LOS Score / LOS	0.94	A	1.60	B		F		

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HCS Signalized Intersection Intermediate Values

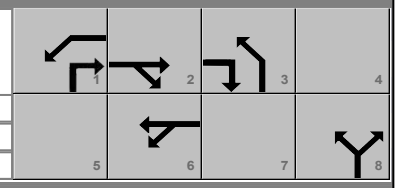
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	84	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.9	54.9	24.2	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



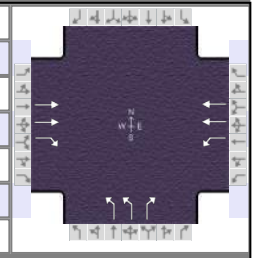
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	0.971	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	3709	1610	1810	3709	0	3591	0	1598			
Proportion of Vehicles Arriving on Green (P)	0.00	0.21	0.21	0.51	0.77	0.00	0.20	0.00	0.20	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.18	0.50		0.11		0.11			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		5.5		
Green Ratio (g/C)		0.46	0.68	0.71		0.20		
Permitted Saturation Flow Rate (s_p), veh/h/ln		665	958	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	56.7	0.0		0.0		
Permitted Service Time (g_u), s		0.0	42.6	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			6.9					
Time to First Blockage (g_f), s		54.7	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610				1598		
Protected Right Effective Green Time (g_R), s		24.3				25.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	0.000	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.115	0.000	0.066	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	915.71	17.64	1413.42	5.16		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	0.45	-3.64	1.12	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

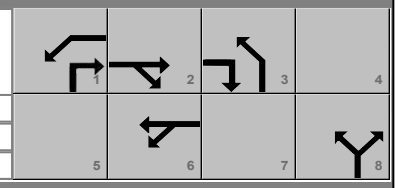
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 AM - Option 1				



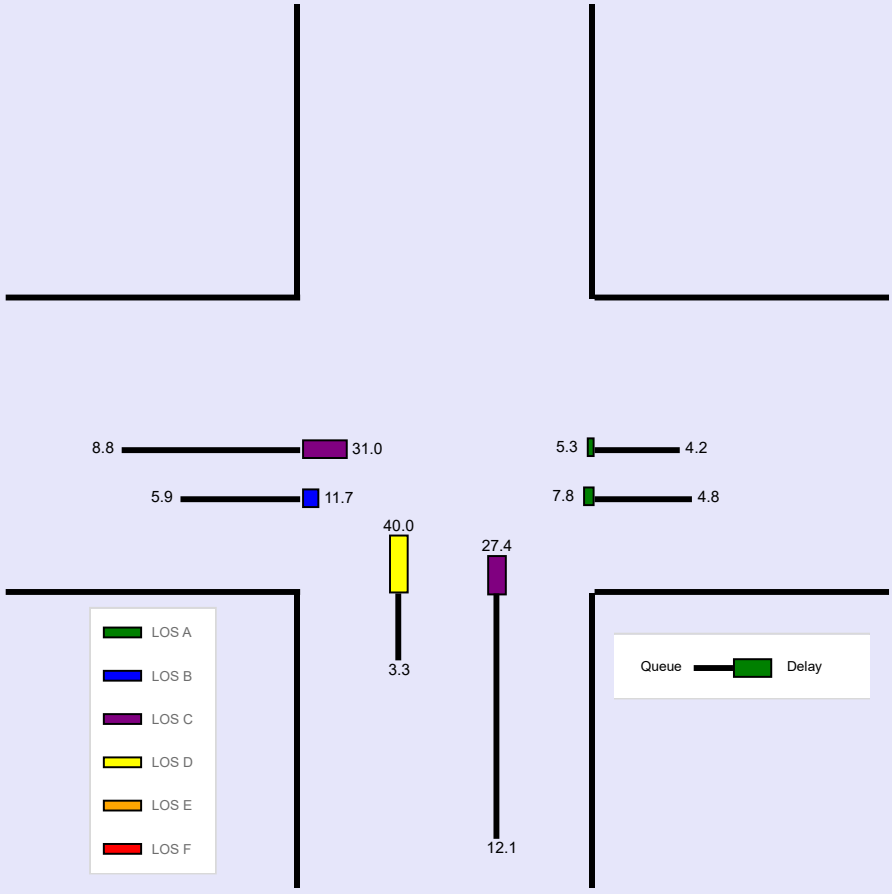
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		370	110	450	740		130		310			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	84	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	24.9	54.9	24.2	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		219.9	146.6	121.1	105.3		82.8		305			
Back of Queue (*Q*), veh/ln (95 th percentile)		8.8	5.9	4.8	4.2		3.3		12.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.29	0.18	0.00		0.12		0.00			
Control Delay (*d*), s/veh		31.0	11.7	7.8	5.3		40.0		27.4			
Level of Service (LOS)		C	B	A	A		D		C			
Approach Delay, s/veh / LOS	26.5	C		6.3	A		31.1	C		0.0		
Intersection Delay, s/veh / LOS	16.2						B					



--- Messages ---

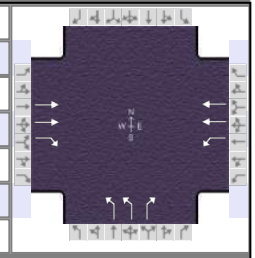
No errors or warnings exist.

--- Comments ---

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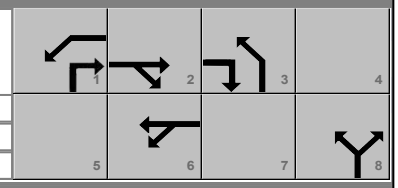
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	23	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	21.3	47.2	35.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0	0	0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.70	0.70	0.92	0.92		1.00		1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0	500	690	0		675		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

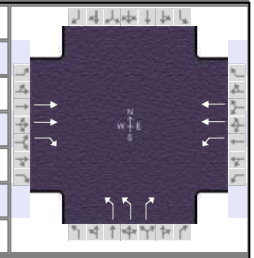
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		27.0	52.0	79.0	41.0	41.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5	3.0	3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0	2.5	2.5		
Minimum Green (G_{min}), s		20	7	20	7	10		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0	2.0	3.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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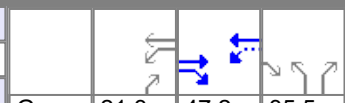
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				

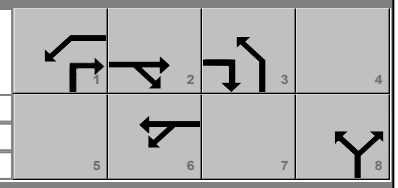


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	23	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	21.3	47.2	35.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		9.0		
Phase Duration, s		52.7	26.3	79.0		41.0		
Change Period, ($Y+R_c$), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (g_s), s			20.0			35.8		
Green Extension Time (g_e), s		0.0	1.4	0.0		0.0		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			1.00		

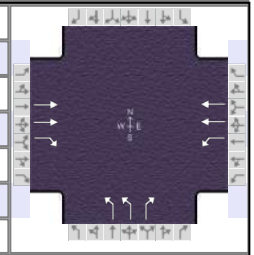
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		1137	326	412	690		340		557			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1809	1610	1810	1809		1743		1598			
Queue Service Time (g_s), s		30.8	6.5	18.0	12.3		9.1		33.8			
Cycle Queue Clearance Time (g_c), s		30.8	6.5	18.0	12.3		9.1		33.8			
Green Ratio (*g/C*)		0.39	0.69	0.59	0.61		0.30		0.47			
Capacity (*c*), veh/h		1423	1110	450	2216		1031		756			
Volume-to-Capacity Ratio (*X*)		0.799	0.294	0.915	0.311		0.330		0.736			
Back of Queue (*Q*), ft/ln (95 th percentile)		375.8	57.4	299	196.1		175.5		480.8			
Back of Queue (*Q*), veh/ln (95 th percentile)		15.0	2.3	12.0	7.8		7.0		19.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.11	0.43	0.00		0.26		0.00			
Uniform Delay (d_1), s/veh		24.5	3.9	28.0	13.1		33.0		25.6			
Incremental Delay (d_2), s/veh		3.4	0.5	7.2	0.3		0.2		3.8			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		27.9	4.3	35.2	13.4		33.2		29.3			
Level of Service (LOS)		C	A	D	B		C		C			
Approach Delay, s/veh / LOS	22.6	C		21.6	C		30.8	C		0.0		
Intersection Delay, s/veh / LOS	24.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	0.69	A	2.32	B	2.32	B
Bicycle LOS Score / LOS	1.75	B	1.40	A		F		

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HCS Signalized Intersection Intermediate Values

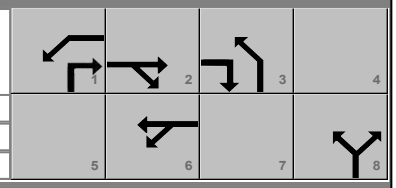
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	23	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	21.3	47.2	35.5	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



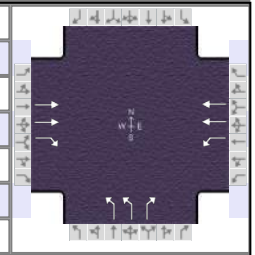
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	0.971	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	3709	1610	1810	3709	0	3591	0	1598			
Proportion of Vehicles Arriving on Green (P)	0.00	0.53	0.65	0.18	0.56	0.00	0.30	0.00	0.30	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50		0.11		0.29			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		5.5		
Green Ratio (g/C)		0.39	0.59	0.61		0.30		
Permitted Saturation Flow Rate (s_p), veh/h/ln		765	503	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	49.2	0.0		0.0		
Permitted Service Time (g_u), s		0.0	16.5	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			16.5					
Time to First Blockage (g_f), s		47.2	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610				1598		
Protected Right Effective Green Time (g_R), s		35.5				21.3		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	0.000	0.000	1.557	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.124	0.000	0.088	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	786.31	22.10	1225.01	9.01		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	1.26	-3.64	0.91	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 1	Analysis Period	1> 17:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 1.xus		
Project Description	Feedwire Rd - 2050 PM - Option 1				

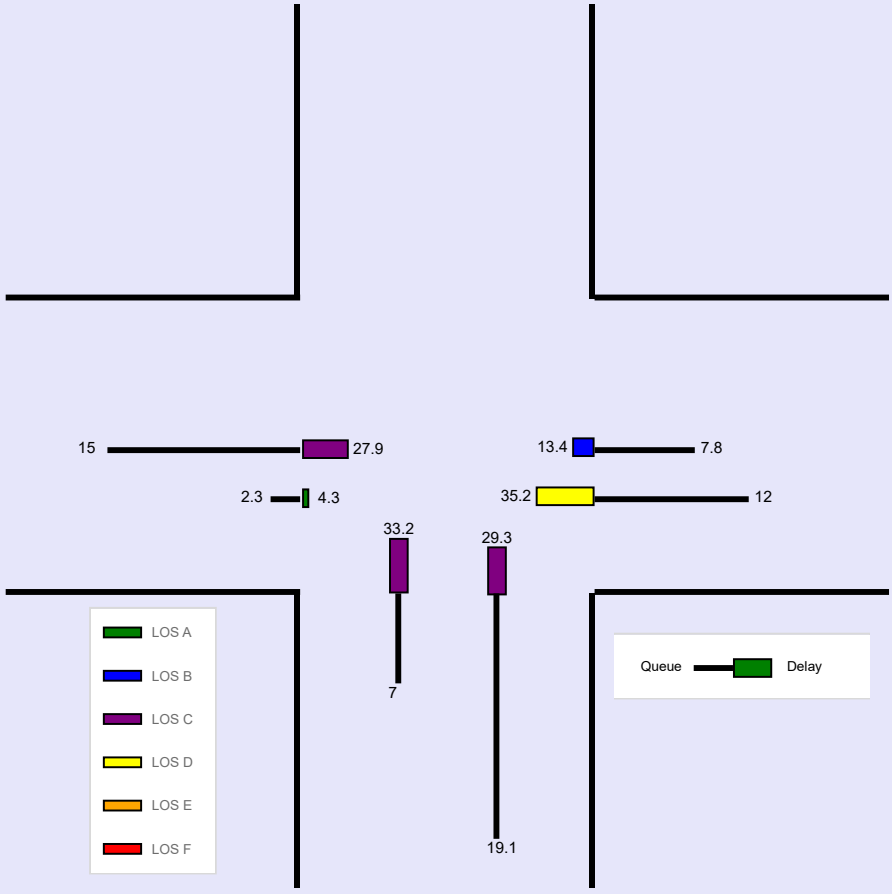


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1150	330	400	670		330		540			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	23	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

	1	2	3	4	5	6	7	8
Green	21.3	47.2	35.5	0.0	0.0	0.0		
Yellow	3.0	3.5	3.0	0.0	0.0	0.0		
Red	2.0	2.0	2.5	0.0	0.0	0.0		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		375.8	57.4	299	196.1		175.5		480.8			
Back of Queue (*Q*), veh/ln (95 th percentile)		15.0	2.3	12.0	7.8		7.0		19.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.11	0.43	0.00		0.26		0.00			
Control Delay (*d*), s/veh		27.9	4.3	35.2	13.4		33.2		29.3			
Level of Service (LOS)		C	A	D	B		C		C			
Approach Delay, s/veh / LOS	22.6	C		21.6	C		30.8	C		0.0		
Intersection Delay, s/veh / LOS	24.4						C					



--- Messages ---

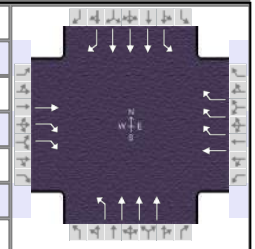
No errors or warnings exist.

--- Comments ---

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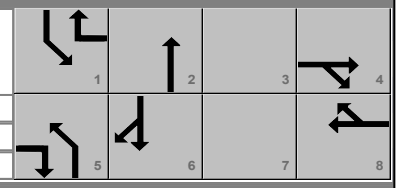
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.88
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	830		0	350	270	770		1	900	810

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	7	Reference Point	End	Green	55.0	52.0	1.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	830		0	350	270	770		1	900	810
Initial Queue (Q_b), veh/h		0	0		0	0	0	0		0	0	0
Base Saturation Flow Rate (s_o), veh/h		1900	1900		1900	1900	1900	1900		1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		0	3		0	3	4	4		2	2	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)		3	3		3	3	3	3		3	3	3
Upstream Filtering (*I*)		1.00	1.00		1.00	1.00	1.00	1.00		0.64	0.64	0.64
Lane Width (*W*), ft		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft		0	750		0	750	300	840		0	960	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35		35	35	45	45		45	45	45

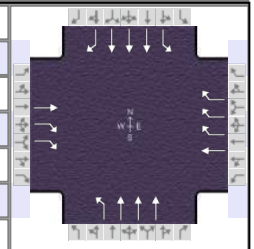
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		1.0		1.0	61.0	61.0	58.0	58.0
Yellow Change Interval (*Y*), s		0.0		0.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s		0.0		0.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s		1		1	6	6	6	6
Start-Up Lost Time (*l*t), s		2.0		2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	No	No	No
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

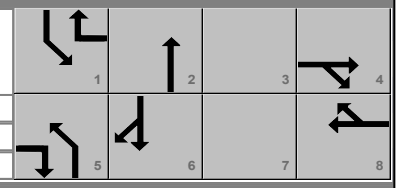
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.88
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	830		0	350	270	770		1	900	810

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	55.0	52.0	1.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	4.0	2.0	3.0
Phase Duration, s		1.0		1.0	61.0	61.0	58.0	58.0
Change Period, ($Y+R_c$), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.4		3.4	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		3.0		3.0	15.8		2.0	
Green Extension Time (g_e), s		0.0		0.0	0.5	0.0	4.7	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.00	

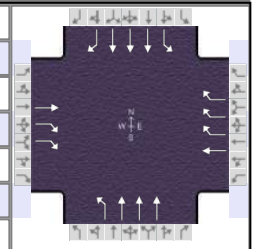
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2		1	6	16
Adjusted Flow Rate (*v*), veh/h		0	943		0	398	307	875		1	901	811
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1776	1583		1776	1500	1753	1047		1781	1672	
Queue Service Time (g_s), s		0.0	1.0		0.0	1.0	13.8	25.1		0.0	8.2	
Cycle Queue Clearance Time (g_c), s		0.0	1.0		0.0	1.0	13.8	25.1		0.0	8.2	
Green Ratio (*g/C*)		0.01	0.47		0.01	0.44	0.46	0.46		0.43	0.43	
Capacity (*c*), veh/h		15	1477		15	1987	803	1440		772	2174	
Volume-to-Capacity Ratio (*X*)		0.000	0.639		0.000	0.200	0.382	0.608		0.001	0.415	
Back of Queue (*Q*), ft/ln (95 th percentile)		0	388.7		0	104	237.7	262		0.2	111.3	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	15.2		0.0	4.1	9.2	10.2		0.0	4.4	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.52		0.00	0.14	0.79	0.31		0.00	0.12	
Uniform Delay (d_1), s/veh		0.0	24.3		0.0	20.5	21.3	24.4		6.8	10.1	
Incremental Delay (d_2), s/veh		0.0	0.7		0.0	0.0	0.1	1.9		0.0	0.4	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		0.0	25.0		0.0	20.5	21.4	26.3		6.8	10.5	0.0
Level of Service (LOS)			C			C	C	C		A	B	A
Approach Delay, s/veh / LOS	25.0	C		20.5	C		25.0	C		5.5	A	
Intersection Delay, s/veh / LOS	16.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.75	C	2.28	B	2.11	B
Bicycle LOS Score / LOS	2.04	B	1.14	A	1.14	A	1.56	B

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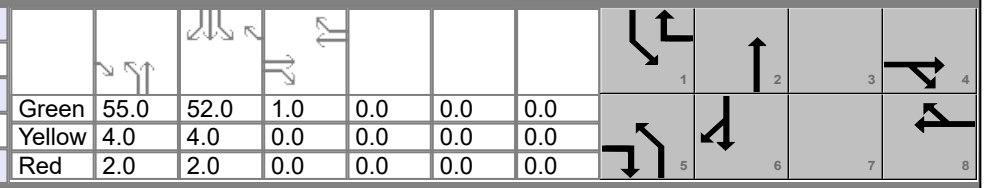
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.88
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	830		0	350	270	770		1	900	810

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	55.0	52.0	1.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						

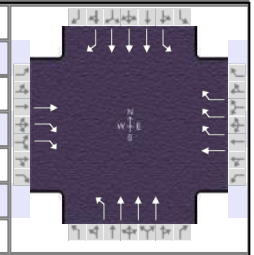
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	0.977	1.000	1.000	0.977	0.969	0.969	1.000	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.637	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		1.000	1.000		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.913	1.000	1.000	0.913	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	0	1776	3165	0	1776	4499	1753	3738	0	1781	5016	1715
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.01	0.00	0.00	0.01	0.46	0.46	0.00	0.80	0.73	0.83
Incremental Delay Factor (k)			0.17			0.04	0.04	0.50		0.04	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		0.0		0.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)		0.01		0.01	0.46	0.46	0.43	0.43
Permitted Saturation Flow Rate (s_p), veh/h/ln		1440		1440	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g_p), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		1.0		1.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1583		1500				0
Protected Right Effective Green Time (g_R), s		55.0		52.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.852	0.000	1.983	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.119	0.000	0.119
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	16.67	59.00	16.67	59.00	866.67	19.27	866.67	19.27
Bicycle F_w / F_v	-3.64	1.56	-3.64	0.66	-3.64	0.65	-3.64	1.07

HCS Signalized Intersection Results Graphical Summary

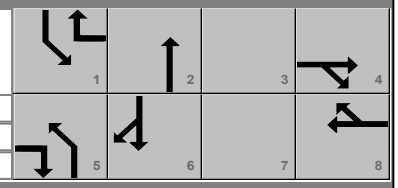
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.88
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



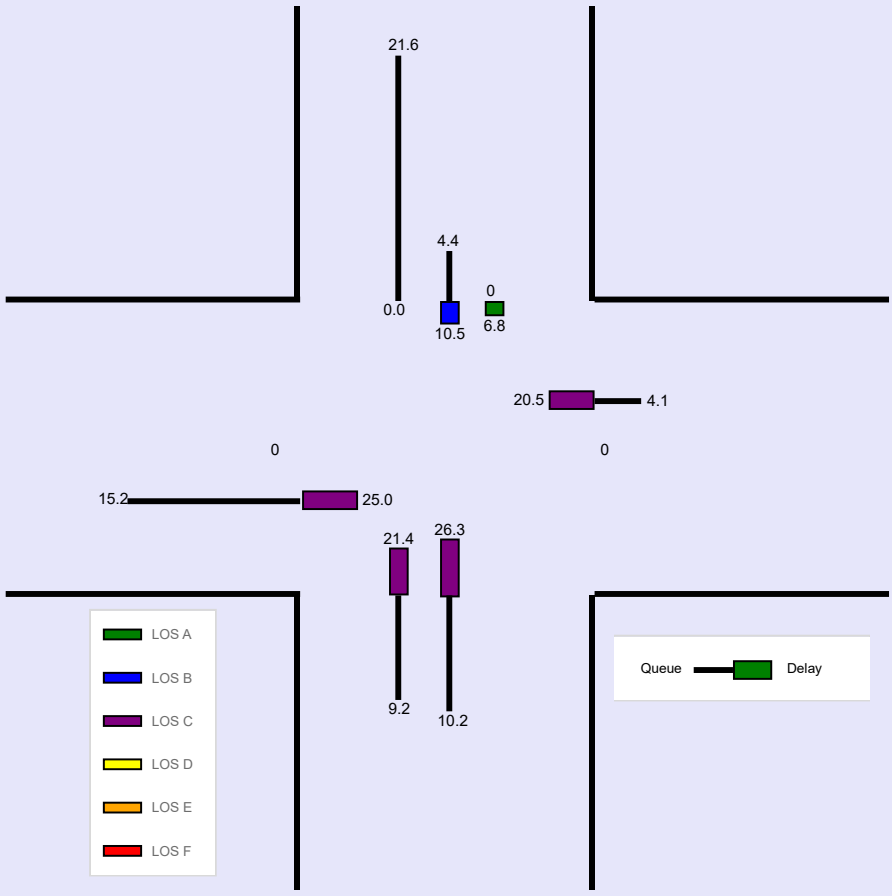
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	830		0	350	270	770		1	900	810

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	55.0	52.0	1.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		0	388.7		0	104	237.7	262		0.2	111.3	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	15.2		0.0	4.1	9.2	10.2		0.0	4.4	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.52		0.00	0.14	0.79	0.31		0.00	0.12	
Control Delay (*d*), s/veh		0.0	25.0		0.0	20.5	21.4	26.3		6.8	10.5	0.0
Level of Service (LOS)			C			C	C	C		A	B	A
Approach Delay, s/veh / LOS	25.0		C	20.5		C	25.0		C	5.5		A
Intersection Delay, s/veh / LOS	16.7						B					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 88% of downstream exit volume during time period #1, for thru movement #6.

INFO: SBR was specified to have Unsignalized Delay of 0 seconds.

WARNING: EDTT data have not been entered for this DDI analysis. Most typical DDI analyses should contain non-zero EDTT values.

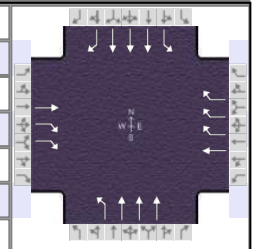
WARNING: For a DDI analysis, the number of lanes departing from the upstream intersection must equal the number of lanes arriving at the downstream intersection on the main direction of travel NB.

--- Comments ---

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HCS Signalized Intersection Input Data

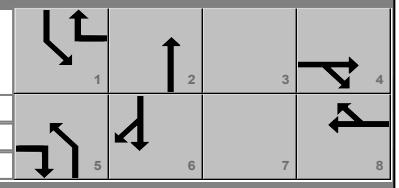
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	1220		0	1110	330	1740		1	1290	830

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	75.0	32.0	1.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	1220		0	1110	330	1740		1	1290	830
Initial Queue (Q_b), veh/h		0	0		0	0	0	0		0	0	0
Base Saturation Flow Rate (s_o), veh/h		1900	1900		1900	1900	1900	1900		1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		0	1		0	1	0	0		0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)		3	3		3	3	3	3		3	3	3
Upstream Filtering (*I*)		1.00	1.00		1.00	1.00	1.00	1.00		0.09	0.09	0.09
Lane Width (*W*), ft		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft		0	750		0	750	300	840		0	960	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35		35	35	45	45		45	45	45

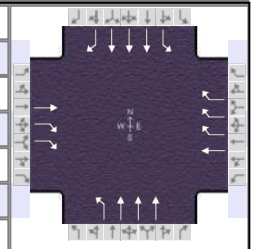
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		1.0		1.0	81.0	81.0	38.0	38.0
Yellow Change Interval (*Y*), s		0.0		0.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s		0.0		0.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s		1		1	6	6	6	6
Start-Up Lost Time (*l*t), s		2.0		2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	No	No	No
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

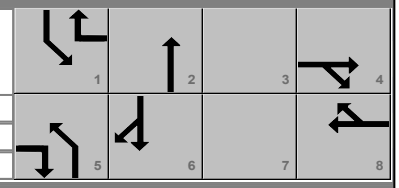
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	1220		0	1110	330	1740		1	1290	830

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	75.0	32.0	1.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	4.0	2.0	3.0
Phase Duration, s		1.0		1.0	81.0	81.0	38.0	38.0
Change Period, ($Y+R_c$), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.4		3.4	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		3.0		3.0	12.6		2.1	
Green Extension Time (g_e), s		0.0		0.0	0.6	0.0	7.6	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.06	

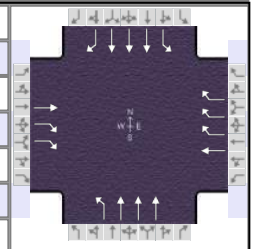
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2		1	6	16
Adjusted Flow Rate (*v*), veh/h		0	1271		0	1156	344	1813		1	1433	922
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1776	1652		1776	1586	1810	1137		1810	1748	
Queue Service Time (g_s), s		0.0	1.0		0.0	1.0	10.6	51.1		0.1	32.0	
Cycle Queue Clearance Time (g_c), s		0.0	1.0		0.0	1.0	10.6	51.1		0.1	32.0	
Green Ratio (*g/C*)		0.01	0.63		0.01	0.28	0.62	0.62		0.27	0.27	
Capacity (*c*), veh/h		15	2093		15	1308	1131	2131		483	1398	
Volume-to-Capacity Ratio (*X*)		0.000	0.607		0.000	0.884	0.304	0.851		0.002	1.025	
Back of Queue (*Q*), ft/ln (95 th percentile)		0	367.3		0	432.9	170.9	454.4		1	424.8	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	14.6		0.0	17.2	6.8	18.2		0.0	17.0	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.49		0.00	0.58	0.57	0.54		0.00	0.44	
Uniform Delay (d_1), s/veh		0.0	13.1		0.0	41.7	10.4	18.0		30.3	42.0	
Incremental Delay (d_2), s/veh		0.0	0.4		0.0	7.2	0.1	4.5		0.0	14.8	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		0.0	13.5		0.0	48.9	10.5	22.5		30.3	56.9	0.0
Level of Service (LOS)			B			D	B	C		C	F	A
Approach Delay, s/veh / LOS	13.5		B	48.9		D	20.6		C	34.6		C
Intersection Delay, s/veh / LOS	28.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.75	C	2.30	B	2.13	B
Bicycle LOS Score / LOS	2.58	C	2.40	B	1.67	B	1.70	B

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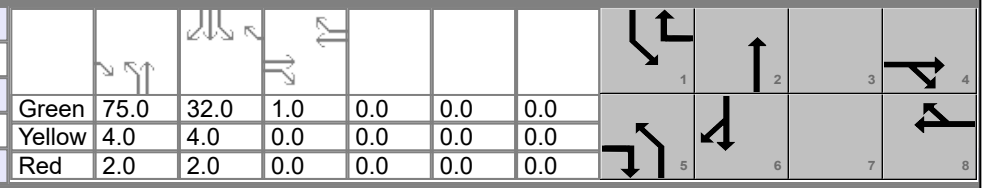
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	1220		0	1110	330	1740		1	1290	830

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	7	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	75.0	32.0	1.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						

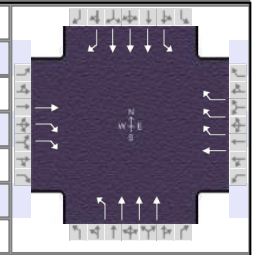
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.637	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		1.000	1.000		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.913	1.000	1.000	0.913	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	0	1776	3304	0	1776	4757	1810	4058	0	1810	5243	1742
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.01	0.00	0.00	0.01	0.63	0.63	0.00	0.31	0.30	0.32
Incremental Delay Factor (k)			0.14			0.39	0.04	0.50		0.04	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		0.0		0.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)		0.01		0.01	0.63	0.63	0.27	0.27
Permitted Saturation Flow Rate (s_p), veh/h/ln		1440		1440	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0		0				
Permitted Effective Green Time (g_p), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		1.0		1.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1652		1586				0
Protected Right Effective Green Time (g_R), s		75.0		32.0				0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.852	0.000	1.983	0.000	1.557	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.139	0.000	0.139
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	16.67	59.00	16.67	59.00	533.33	32.27	533.33	32.27
Bicycle F_w / F_v	-3.64	2.10	-3.64	1.91	-3.64	1.19	-3.64	1.22

HCS Signalized Intersection Results Graphical Summary

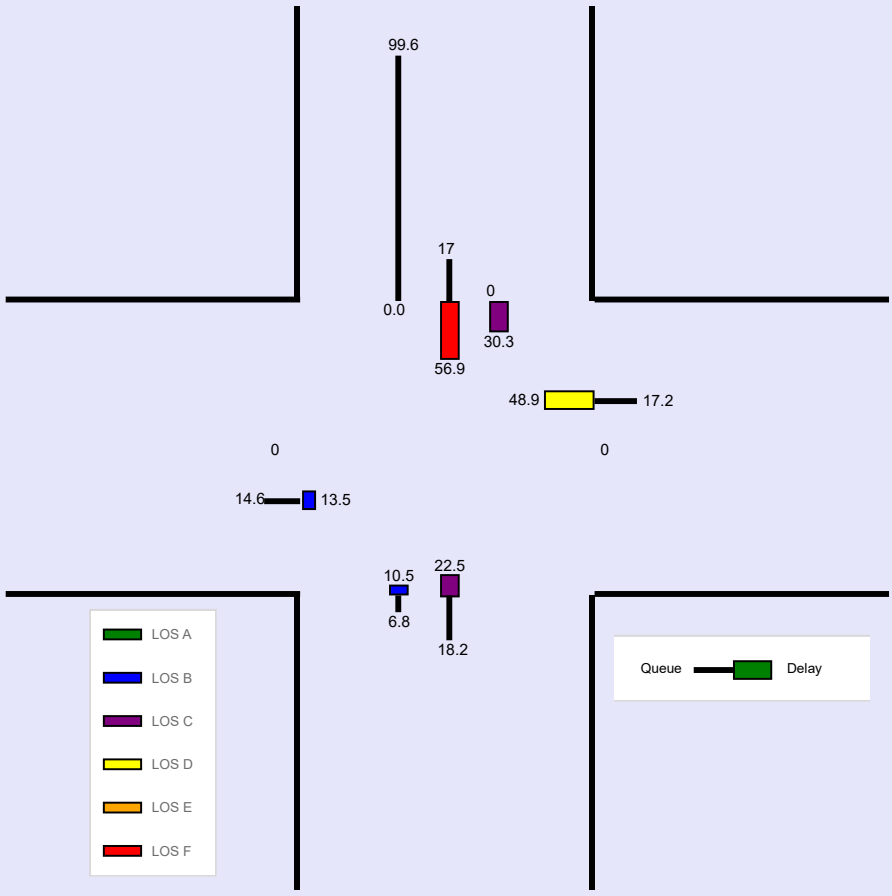
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	SB I-675 Ramps & Wilm…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	1220		0	1110	330	1740		1	1290	830

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	7	Reference Point	End	Green	75.0	32.0	1.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		0	367.3		0	432.9	170.9	454.4		1	424.8	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	14.6		0.0	17.2	6.8	18.2		0.0	17.0	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.49		0.00	0.58	0.57	0.54		0.00	0.44	
Control Delay (*d*), s/veh		0.0	13.5		0.0	48.9	10.5	22.5		30.3	56.9	0.0
Level of Service (LOS)			B			D	B	C		C	F	A
Approach Delay, s/veh / LOS	13.5		B	48.9		D	20.6		C	34.6		C
Intersection Delay, s/veh / LOS	28.8						C					



--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 119% of downstream exit volume during time period #1, for thru movement #6.

INFO: SBR was specified to have Unsignalized Delay of 0 seconds.

WARNING: EDTT data have not been entered for this DDI analysis. Most typical DDI analyses should contain non-zero EDTT values.

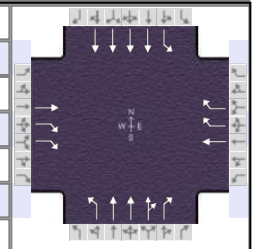
WARNING: For a DDI analysis, the number of lanes departing from the upstream intersection must equal the number of lanes arriving at the downstream intersection on the main direction of travel NB.

--- Comments ---

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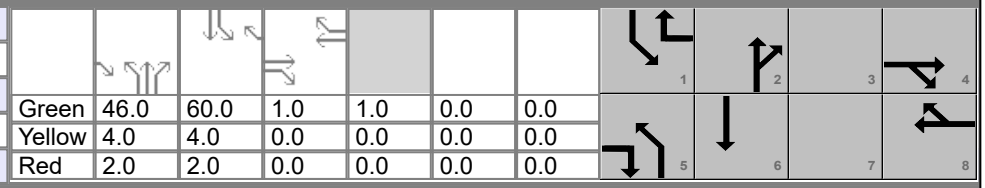
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.94
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	350		0	400	1	640	1530	470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	46.0	60.0	1.0	1.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	350		0	400	1	640	1530	470	1260	
Initial Queue (Q_b), veh/h		0	0		0	0	0	0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h		1900	1900		1900	1900	1900	1900	1900	1900	1900	
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		0	5		0	5	1	1	0	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)		3	3		3	3	3	3	3	3	3	
Upstream Filtering (*I*)		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lane Width (*W*), ft		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft		0	525		0	575	0	450	0	0	840	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35		35	35	35	35	35	35	35	

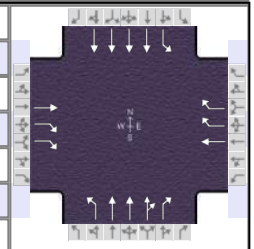
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		1.0		1.0	52.0	52.0	66.0	66.0
Yellow Change Interval (*Y*), s		0.0		0.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s		0.0		0.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s		1		1	6	6	6	6
Start-Up Lost Time (*lt*), s		2.0		2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	No	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.94
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	350		0	400	1	640	1530	470	1260	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	46.0	60.0	1.0	1.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		11.0		11.0	2.0	3.0	2.0	4.0
Phase Duration, s		1.0		1.0	52.0	52.0	66.0	66.0
Change Period, ($Y+R_c$), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		3.0		3.0	2.0		25.4	
Green Extension Time (g_e), s		0.0		0.0	0.0	0.0	5.7	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.01	

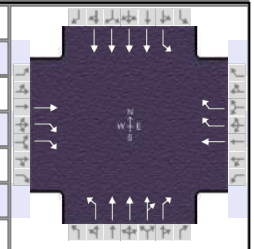
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2	12	1	6	
Adjusted Flow Rate (*v*), veh/h		0	372		0	426	1	375	897	500	1340	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1776	1488		1776	1494	1795	1640		1781	826	
Queue Service Time (g_s), s		0.0	1.0		0.0	1.0	0.0	4.0		23.4	41.0	
Cycle Queue Clearance Time (g_c), s		0.0	1.0		0.0	1.0	0.0	4.0		23.4	41.0	
Green Ratio (*g/C*)		0.01	0.39		0.01	0.51	0.38	0.38		0.50	0.50	
Capacity (*c*), veh/h		15	1166		15	1519	688	1886		891	1651	
Volume-to-Capacity Ratio (*X*)		0.000	0.319		0.000	0.280	0.001	0.199		0.561	0.812	
Back of Queue (*Q*), ft/ln (95 th percentile)		0	171.3		0	154.4	0.2	66.5		371	326.1	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	6.6		0.0	5.9	0.0	2.6		14.6	12.8	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.33		0.00	0.27	0.00	0.15		0.00	0.39	
Uniform Delay (d_1), s/veh		0.0	25.4		0.0	16.9	11.4	15.0		20.9	25.2	
Incremental Delay (d_2), s/veh		0.0	0.1		0.0	0.0	0.0	0.2		0.5	4.5	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		0.0	25.4		0.0	16.9	11.4	15.2	0.0	21.4	29.7	
Level of Service (LOS)			C			B	B	B	A	C	C	
Approach Delay, s/veh / LOS	25.4		C	16.9		B	4.5		A	27.4		C
Intersection Delay, s/veh / LOS	18.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.87	C	2.75	C	2.10	B	2.10	B
Bicycle LOS Score / LOS	1.10	A	1.19	A	1.76	B	1.25	A

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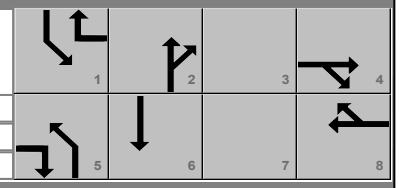
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.94
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	350		0	400	1	640	1530	470	1260	

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	46.0	60.0	1.0	1.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.0	0.0	0.0	0.0	0.0		



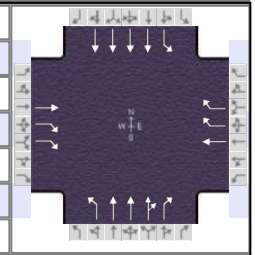
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	0.961	1.000	1.000	0.961	0.992	0.992	1.000	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.491	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.913	1.000	1.000	0.913	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	0	1776	2976	0	1776	2989	1795	4919	1741	1781	4158	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.01	0.00	0.00	0.01	0.69	0.61	0.74	0.50	0.50	0.00
Incremental Delay Factor (k)			0.04			0.04	0.04	0.50	0.50	0.10	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		0.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)		0.01		0.01	0.38	0.38	0.50	0.50
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0		0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1488		1494		0		
Protected Right Effective Green Time (g_R), s		46.0		60.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	1.983	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.109	0.000	0.109
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	16.67	59.00		61.00	1000.00	15.00	1000.00	15.00
Bicycle F_w / F_v	-3.64	0.61	-3.64	0.70	-3.64	1.27	-3.64	0.76

HCS Signalized Intersection Results Graphical Summary

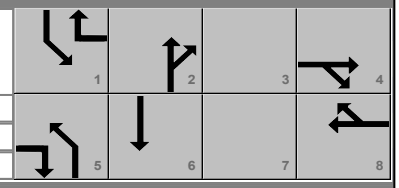
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.94
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-AM.xus		
Project Description	2050 AM Build, Alt#1B				



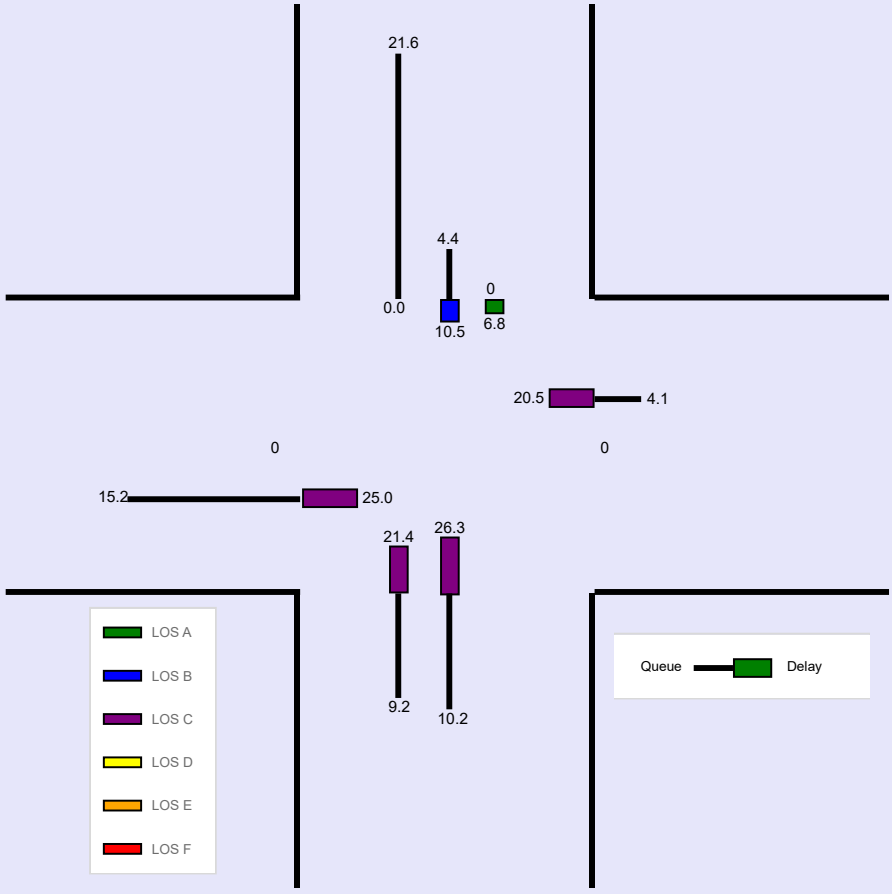
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	350		0	400	1	640	1530	470	1260	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							

Green	46.0	60.0	1.0	1.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		0	171.3		0	154.4	0.2	66.5		371	326.1	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	6.6		0.0	5.9	0.0	2.6		14.6	12.8	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.33		0.00	0.27	0.00	0.15		0.00	0.39	
Control Delay (*d*), s/veh		0.0	25.4		0.0	16.9	11.4	15.2	0.0	21.4	29.7	
Level of Service (LOS)			C			B	B	B	A	C	C	
Approach Delay, s/veh / LOS	25.4		C	16.9		B	4.5		A	27.4		C
Intersection Delay, s/veh / LOS	18.6						B					



--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 55% of downstream exit volume during time period #1, for thru movement #2.

WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

INFO: NBR was specified to have Unsignalized Delay of 0 seconds.

WARNING: EDTT data have not been entered for this DDI analysis. Most typical DDI analyses should contain non-zero EDTT values.

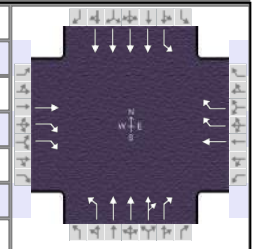
WARNING: For a DDI analysis, the number of lanes departing from the upstream intersection must equal the number of lanes arriving at the downstream intersection on the main direction of travel NB.

--- Comments ---

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HCS Signalized Intersection Input Data

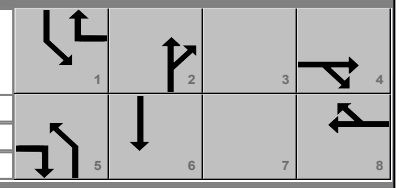
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	430		0	890	1	1180	930	420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	40.0	66.0	1.0	1.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	430		0	890	1	1180	930	420	2090	
Initial Queue (Q_b), veh/h		0	0		0	0	0	0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h		1900	1900		1900	1900	1900	1900	1900	1900	1900	
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %		0	1		0	1	0	0	0	0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)		3	3		3	3	3	3	3	3	3	
Upstream Filtering (*I*)		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lane Width (*W*), ft		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Turn Bay Length, ft		0	525		0	575	0	450	0	0	840	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35		35	35	35	35	35	35	35	

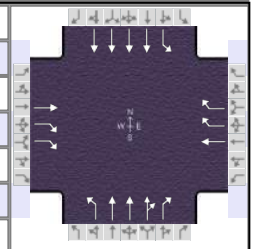
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		1.0		1.0	46.0	46.0	72.0	72.0
Yellow Change Interval (*Y*), s		0.0		0.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s		0.0		0.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s		1		1	6	6	6	6
Start-Up Lost Time (*l*t), s		2.0		2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s		2.0		2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	No	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	430		0	890	1	1180	930	420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	40.0	66.0	1.0	1.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		11.0		11.0	2.0	3.0	2.0	4.0
Phase Duration, s		1.0		1.0	46.0	46.0	72.0	72.0
Change Period, ($Y+R_c$), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		3.0		3.0	2.0		19.2	
Green Extension Time (g_e), s		0.0		0.0	0.0	0.0	11.4	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.03	

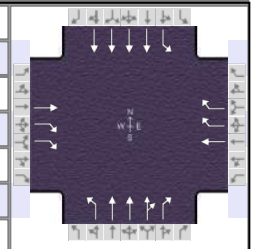
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2	12	1	6	
Adjusted Flow Rate (*v*), veh/h		0	448		0	927	1	1659	1308	438	2177	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1776	1545		1776	1606	1810	1769		1810	867	
Queue Service Time (g_s), s		0.0	1.0		0.0	1.0	0.0	35.4		17.2	66.0	
Cycle Queue Clearance Time (g_c), s		0.0	1.0		0.0	1.0	0.0	35.4		17.2	66.0	
Green Ratio (*g/C*)		0.01	0.34		0.01	0.56	0.33	0.33		0.55	0.55	
Capacity (*c*), veh/h		15	1056		15	1793	603	1769		995	1908	
Volume-to-Capacity Ratio (*X*)		0.000	0.424		0.000	0.517	0.002	0.938		0.440	1.141	
Back of Queue (*Q*), ft/ln (95 th percentile)		0	216.4		0	305.1	0.8	434.2		279.7	814.5	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	8.6		0.0	12.1	0.0	17.4		11.2	32.6	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.41		0.00	0.53	0.00	0.96		0.00	0.97	
Uniform Delay (d_1), s/veh		0.0	30.4		0.0	16.5	17.3	29.6		16.0	27.0	
Incremental Delay (d_2), s/veh		0.0	0.1		0.0	0.1	0.0	5.0		0.1	70.3	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh		0.0	30.5		0.0	16.6	17.3	34.7	0.0	16.1	97.3	
Level of Service (LOS)			C			B	B	C	A	B	F	
Approach Delay, s/veh / LOS	30.5		C	16.6		B	19.4		B	83.7		F
Intersection Delay, s/veh / LOS	43.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.87	C	2.75	C	2.09	B	2.09	B
Bicycle LOS Score / LOS	1.23	A	2.02	B	1.70	B	1.57	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	430		0	890	1	1180	930	420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	40.0	66.0	1.0	1.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

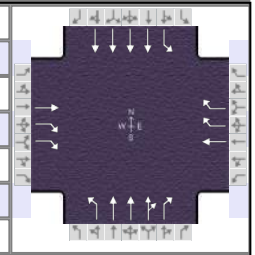
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.491	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		1.000	1.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.913	1.000	1.000	0.913	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	0	1776	3091	0	1776	3212	1810	5308	1742	1810	4369	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.01	0.00	0.00	0.01	0.57	0.49	0.61	0.55	0.55	0.00
Incremental Delay Factor (k)			0.04			0.06	0.04	0.50	0.50	0.04	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0		0.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)		0.01		0.01	0.33	0.33	0.55	0.55
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0		0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0		0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1545		1606		0		
Protected Right Effective Green Time (g_R), s		40.0		66.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	1.983	0.000	1.389	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.100	0.000	0.100
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	16.67	59.00		61.00	1100.00	12.15	1100.00	12.15
Bicycle F_w / F_v	-3.64	0.74	-3.64	1.53	-3.64	1.21	-3.64	1.08

HCS Signalized Intersection Results Graphical Summary

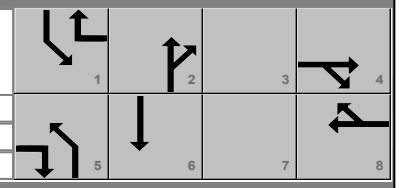
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Jun 26, 2023	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.96
Urban Street		Analysis Year	2050	Analysis Period	1> 17:00
Intersection	NB I-675 & Wilmington…	File Name	2050_DDI-PM.xus		
Project Description	2050 PM Build, Alt#1B				



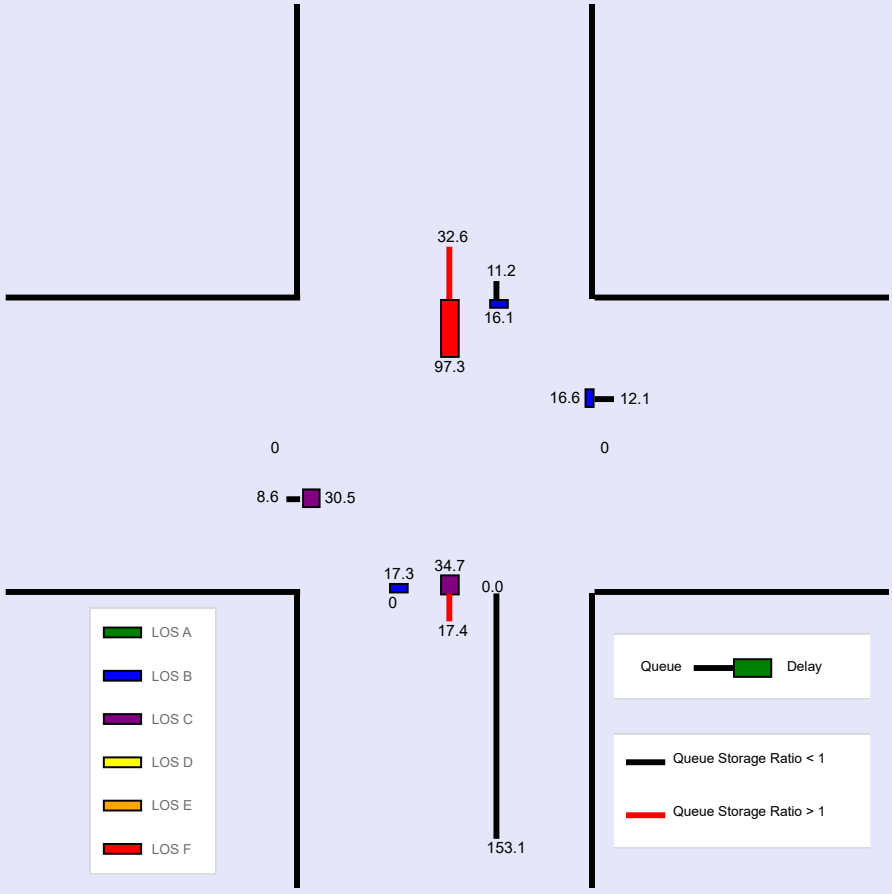
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		0	430		0	890	1	1180	930	420	2090	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	40.0	66.0	1.0	1.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		0	216.4		0	305.1	0.8	434.2		279.7	814.5	
Back of Queue (*Q*), veh/ln (95 th percentile)		0.0	8.6		0.0	12.1	0.0	17.4		11.2	32.6	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.41		0.00	0.53	0.00	0.96		0.00	0.97	
Control Delay (*d*), s/veh		0.0	30.5		0.0	16.6	17.3	34.7	0.0	16.1	97.3	
Level of Service (LOS)			C			B	B	C	A	B	F	
Approach Delay, s/veh / LOS	30.5		C	16.6		B	19.4		B	83.7		F
Intersection Delay, s/veh / LOS	43.9						D					



--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: According to input data, upstream feeding volume is equal to 135% of downstream exit volume during time period #1, for thru movement #2.

WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

INFO: NBR was specified to have Unsignalized Delay of 0 seconds.

WARNING: EDTT data have not been entered for this DDI analysis. Most typical DDI analyses should contain non-zero EDTT values.

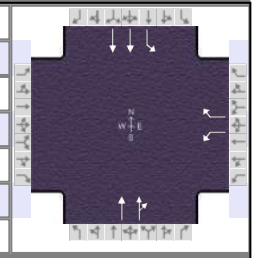
WARNING: For a DDI analysis, the number of lanes departing from the upstream intersection must equal the number of lanes arriving at the downstream intersection on the main direction of travel NB.

--- Comments ---

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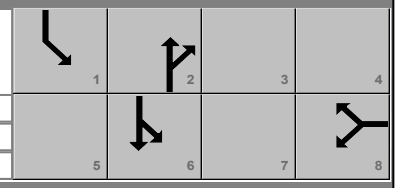
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				160		40		680	70	20	670	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	86.5	14.0	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				160		40		680	70	20	670	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				5		5		4		3	3	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.85	0.85	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

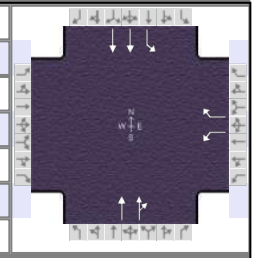
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l*t), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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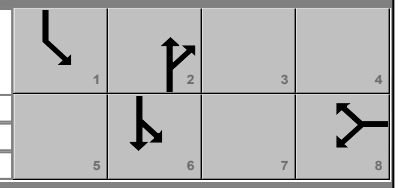
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				160		40		680	70	20	670	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	86.5	14.0	0.0	0.0	0.0		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0		
Red	2.0	1.0	1.5	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				19.0		92.0	9.0	101.0
Change Period, ($Y+R_c$), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (g_s), s				13.2			2.3	
Green Extension Time (g_e), s				0.8		0.0	0.1	0.0
Phase Call Probability				1.00			0.50	
Max Out Probability				0.00			0.00	

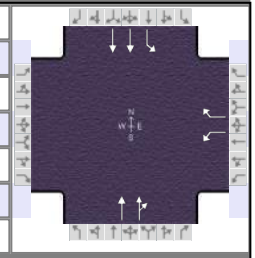
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				167		42		758	741	21	698	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1739		1547		1841	1780	1767	1766	
Queue Service Time (g_s), s				11.2		2.9		27.3	37.3	0.3	6.0	
Cycle Queue Clearance Time (g_c), s				11.2		2.9		27.3	37.3	0.3	6.0	
Green Ratio (*g/C*)				0.12		0.12		0.72	0.72	0.77	0.80	
Capacity (*c*), veh/h				203		180		1327	1283	253	2812	
Volume-to-Capacity Ratio (*X*)				0.822		0.231		0.572	0.577	0.082	0.248	
Back of Queue (*Q*), ft/ln (95 th percentile)				236.3		54.3		588.3	576.3	8	68.1	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.1		2.1		22.8	23.1	0.3	2.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.35		0.00		0.00	0.00	0.05	0.00	
Uniform Delay (d_1), s/veh				51.8		48.1		18.7	19.7	10.2	3.1	
Incremental Delay (d_2), s/veh				8.0		0.6		1.5	1.6	0.1	0.2	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				59.8		48.8		20.2	21.3	10.4	3.3	
Level of Service (LOS)				E		D		C	C	B	A	
Approach Delay, s/veh / LOS	0.0			57.6	E		20.7	C		3.5	A	
Intersection Delay, s/veh / LOS	18.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.64	A
Bicycle LOS Score / LOS				F	1.13	A	1.08	A

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				160		40		680	70	20	670	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	3.5	86.5	14.0	0.0	0.0	0.0	5	6	7	8
Yellow	3.5	4.5	3.5	0.0	0.0	0.0				
Red	2.0	1.0	1.5	0.0	0.0	0.0				

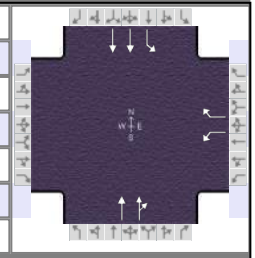
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.961	1.000	0.961	1.000	0.969	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.967	0.967		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1739	0	1547	0	3285	336	1767	3622	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.46	0.36	0.03	0.80	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.12		0.72	0.77	0.80
Permitted Saturation Flow Rate (s_p), veh/h/ln				1739		759	347	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	88.5	0.0
Permitted Service Time (g_u), s				0.0		0.0	49.0	0.0
Permitted Queue Service Time (g_{ps}), s							2.5	
Time to First Blockage (g_f), s				0.0		86.5	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.062	0.000	0.037
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1441.73	4.68	1591.81	2.50
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	0.64	-3.64	0.59

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				

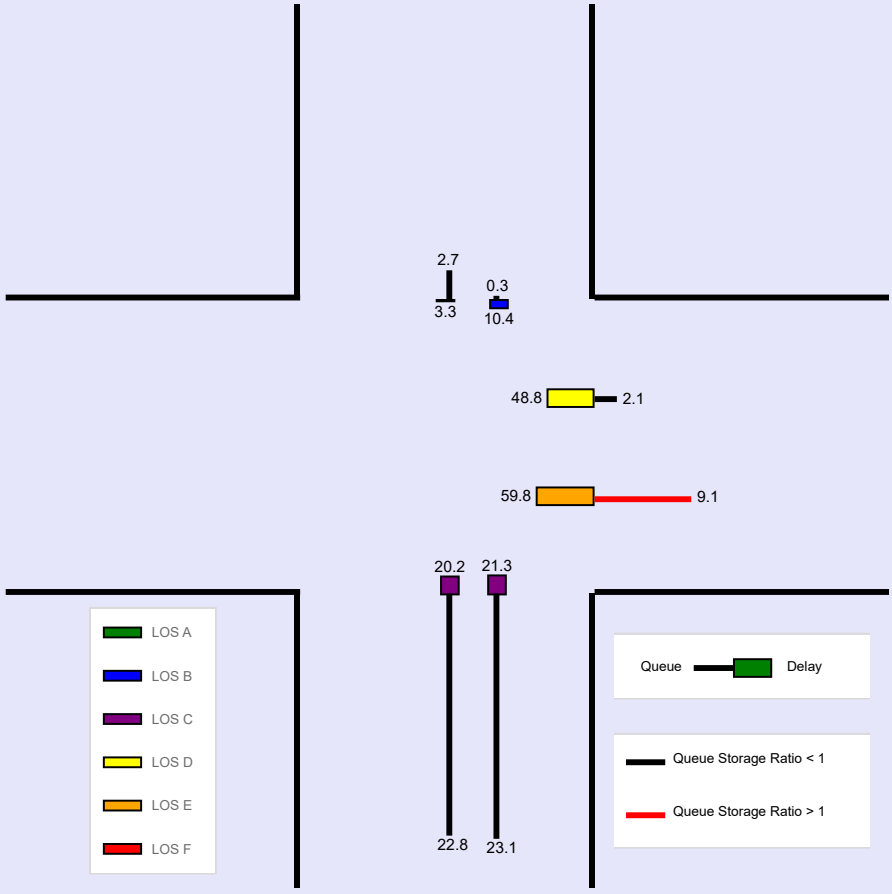


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				160		40		680	70	20	670	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	39	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.5	86.5	14.0	0.0	0.0	0.0	1	2	3	4		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0	5	6	7	8		
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				236.3		54.3		588.3	576.3	8	68.1	
Back of Queue (*Q*), veh/ln (95 th percentile)				9.1		2.1		22.8	23.1	0.3	2.7	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.35		0.00		0.00	0.00	0.05	0.00	
Control Delay (*d*), s/veh				59.8		48.8		20.2	21.3	10.4	3.3	
Level of Service (LOS)				E		D		C	C	B	A	
Approach Delay, s/veh / LOS	0.0			57.6		E	20.7		C	3.5		A
Intersection Delay, s/veh / LOS	18.8						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

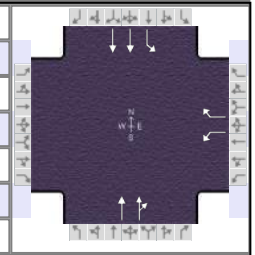
WARNING: According to input data, upstream feeding volume is equal to 162% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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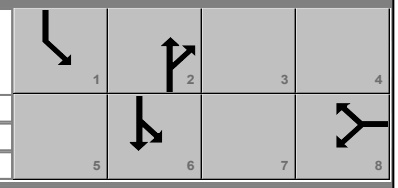
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				130		50		1480	180	50	1450	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.7	86.9	11.4	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				130		50		1480	180	50	1450	
Initial Queue (Q_b), veh/h				0		0		0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h				1900		1900		1900	1900	1900	1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				2		2		1		1	1	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3		3		3	3	3	3	
Upstream Filtering (*I*)				1.00		1.00		0.54	0.54	1.00	1.00	
Lane Width (*W*), ft				12.0		12.0		12.0		12.0	12.0	
Turn Bay Length, ft				175		0		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35		35		45	45	45	45	

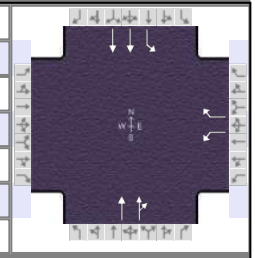
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				81.0		26.0	13.0	39.0
Yellow Change Interval (*Y*), s				3.5		4.5	3.5	4.5
Red Clearance Interval (R_c), s				1.5		1.0	2.0	1.0
Minimum Green (G_{min}), s				10		20	7	20
Start-Up Lost Time (*l*t), s			2.0			2.0	2.0	2.0
Extension of Effective Green (*e*), s			2.0			2.0	2.0	2.0
Passage (*PT*), s				3.0		2.0	3.0	2.0
Recall Mode				Off		Min	Off	Min
Dual Entry				Yes		Yes	No	Yes
Walk (*Walk*), s		0.0		7.0		7.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		16.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No		0.50	No		0.50			0.50

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HCS Signalized Intersection Results Summary

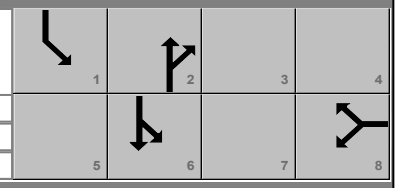
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				130		50		1480	180	50	1450	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.7	86.9	11.4	0.0	0.0	0.0						
Yellow	3.5	4.5	3.5	0.0	0.0	0.0						
Red	2.0	1.0	1.5	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				16.4		92.4	11.2	103.6
Change Period, ($Y+R_c$), s				5.0		5.5	5.5	5.5
Max Allow Headway (*MAH*), s				4.2		0.0	4.0	0.0
Queue Clearance Time (g_s), s				10.7			2.7	
Green Extension Time (g_e), s				0.7		0.0	0.2	0.0
Phase Call Probability				1.00			0.82	
Max Out Probability				0.00			0.00	

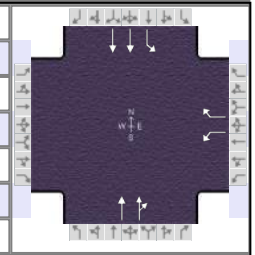
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1	6	
Adjusted Flow Rate (*v*), veh/h				133		51		968	967	51	1480	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1781		1585		1885	1814	1795	1795	
Queue Service Time (g_s), s				8.7		3.6		83.7	54.6	0.7	15.4	
Cycle Queue Clearance Time (g_c), s				8.7		3.6		83.7	54.6	0.7	15.4	
Green Ratio (*g/C*)				0.09		0.09		0.72	0.72	0.79	0.82	
Capacity (*c*), veh/h				169		150		1365	1314	152	2935	
Volume-to-Capacity Ratio (*X*)				0.784		0.339		0.709	0.736	0.336	0.504	
Back of Queue (*Q*), ft/ln (95 th percentile)				193.6		67.7		762.8	793.3	51.3	154.1	
Back of Queue (*Q*), veh/ln (95 th percentile)				7.6		2.7		30.3	31.7	2.0	6.1	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.11		0.00		0.00	0.00	0.34	0.00	
Uniform Delay (d_1), s/veh				53.1		50.8		24.1	26.6	35.5	3.4	
Incremental Delay (d_2), s/veh				7.7		1.3		1.7	2.0	1.3	0.6	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh				60.9		52.1		25.8	28.6	36.8	4.0	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.4	E		27.2	C		5.1	A	
Intersection Delay, s/veh / LOS	19.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	1.86	B	0.63	A
Bicycle LOS Score / LOS				F	1.89	B	1.75	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				130		50		1480	180	50	1450	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	5.7	86.9	11.4	0.0	0.0	0.0	5	6	7	8
Yellow	3.5	4.5	3.5	0.0	0.0	0.0				
Red	2.0	1.0	1.5	0.0	0.0	0.0				

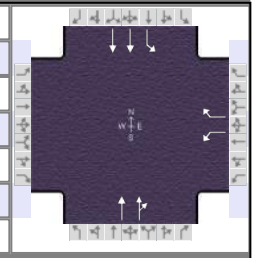
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.984	1.000	0.984	1.000	0.992	1.000	0.992	0.992	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		0.962	0.962		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h				1781	0	1585	0	3306	394	1795	3680	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.43	0.28	0.05	0.82	0.00
Incremental Delay Factor (k)				0.11		0.11		0.50	0.50	0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0		5.5	5.5	5.5
Green Ratio (g/C)				0.09		0.72	0.79	0.82
Permitted Saturation Flow Rate (s_p), veh/h/ln				1781		363	231	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s				0.0		0.0	88.9	0.0
Permitted Service Time (g_u), s				0.0		0.0	3.2	0.0
Permitted Queue Service Time (g_{ps}), s							3.2	
Time to First Blockage (g_f), s				0.0		86.9	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.198	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.061	0.000	0.028
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		66.15	1448.11	4.57	1635.14	2.00
Bicycle F_w / F_v	-3.64		-3.64	Infinity	-3.64	1.40	-3.64	1.26

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Brown Rd	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				

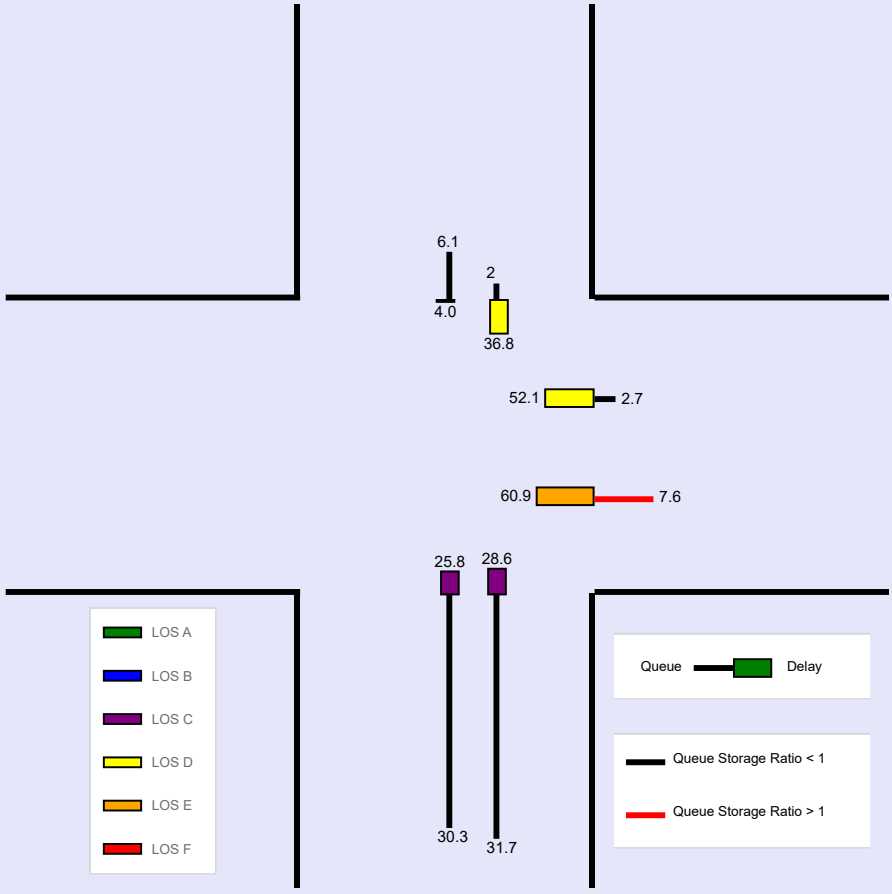


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				130		50		1480	180	50	1450	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	15	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.7	86.9	11.4	0.0	0.0	0.0	1	2	3	4		
Yellow	3.5	4.5	3.5	0.0	0.0	0.0	5	6	7	8		
Red	2.0	1.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				193.6		67.7		762.8	793.3	51.3	154.1	
Back of Queue (*Q*), veh/ln (95 th percentile)				7.6		2.7		30.3	31.7	2.0	6.1	
Queue Storage Ratio (*RQ*) (95 th percentile)				1.11		0.00		0.00	0.00	0.34	0.00	
Control Delay (*d*), s/veh				60.9		52.1		25.8	28.6	36.8	4.0	
Level of Service (LOS)				E		D		C	C	D	A	
Approach Delay, s/veh / LOS	0.0			58.4		E	27.2		C	5.1		A
Intersection Delay, s/veh / LOS	19.5						B					



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

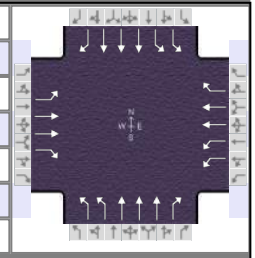
WARNING: According to input data, upstream feeding volume is equal to 90% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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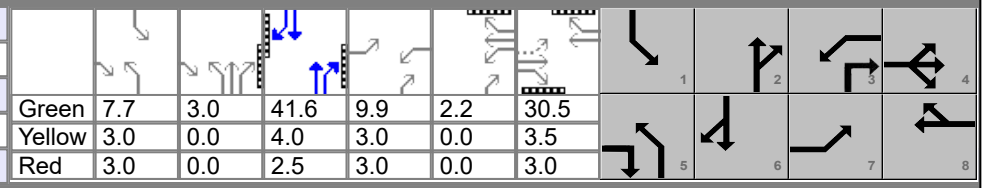
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 2.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	140	130	340	210	220	150	210	470	100	140	630	50

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.7	3.0	41.6	9.9	2.2	30.5
Yellow	3.0	0.0	4.0	3.0	0.0	3.5
Red	3.0	0.0	2.5	3.0	0.0	3.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	140	130	340	210	220	150	210	470	100	140	630	50
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2	2	3	3	3	4	4	4	2	2	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	250	0	470	450	0	600	339	0	775	316	0	290
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

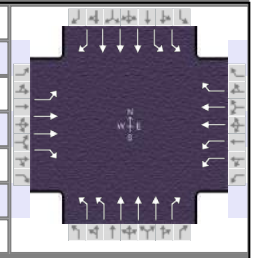
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	57.0	17.0	57.0	17.0	29.0	17.0	29.0	17.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Off	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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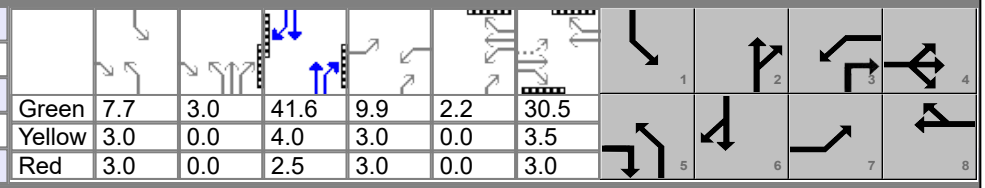
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 2.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	140	130	340	210	220	150	210	470	100	140	630	50

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.7	3.0	41.6	9.9	2.2	30.5
Yellow	3.0	0.0	4.0	3.0	0.0	3.5
Red	3.0	0.0	2.5	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	15.9	37.0	18.2	39.2	16.7	51.1	13.7	48.1
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.2	3.6	4.2	3.5	0.0	3.5	0.0
Queue Clearance Time (g_s), s	9.6	26.6	11.4	12.3	10.0		7.3	
Green Extension Time (g_e), s	0.4	3.9	0.7	4.1	0.7	0.0	0.4	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	1.00		0.99	
Max Out Probability	0.00	0.02	0.00	0.00	0.00		0.00	

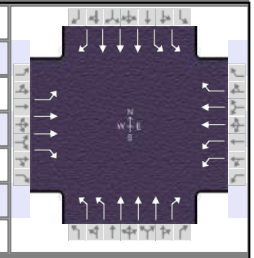
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	156	144	378	233	244	167	233	522	111	156	700	56
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1781	1585	1450	1766		1702	1671	1560	1730	1698	1610
Queue Service Time (g_s), s	7.6	3.8	24.6	9.4	6.5		8.0	8.8	4.8	5.3	12.5	2.8
Cycle Queue Clearance Time (g_c), s	7.6	3.8	24.6	9.4	6.5		8.0	8.8	4.8	5.3	12.5	2.8
Green Ratio (*g/C*)	0.34	0.25	0.34	0.10	0.27		0.09	0.37	0.47	0.15	0.35	0.35
Capacity (*c*), veh/h	436	906	545	294	964		304	1864	738	222	1766	558
Volume-to-Capacity Ratio (*X*)	0.357	0.159	0.693	0.794	0.254		0.767	0.280	0.151	0.701	0.396	0.100
Back of Queue (*Q*), ft/ln (95 th percentile)	147.8	74.4	367.4	162.3	127.3		161.7	159.5	81.8	107	221.4	49.6
Back of Queue (*Q*), veh/ln (95 th percentile)	5.8	2.9	14.5	6.3	5.0		6.3	6.2	3.2	4.2	8.7	2.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.59	0.00	0.78	0.36	0.00		0.48	0.00	0.11	0.34	0.00	0.17
Uniform Delay (d_1), s/veh	29.1	34.8	33.9	52.7	34.1		53.4	26.4	17.9	55.0	29.7	26.5
Incremental Delay (d_2), s/veh	0.4	0.1	1.6	3.6	0.1		3.0	0.4	0.4	3.0	0.7	0.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	29.4	34.8	35.5	56.3	34.2	0.0	56.4	26.8	18.4	58.0	30.4	26.9
Level of Service (LOS)	C	C	D	E	C	A	E	C	B	E	C	C
Approach Delay, s/veh / LOS	34.0	C		33.4	C		33.7	C		34.9	C	
Intersection Delay, s/veh / LOS	34.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.85	C	2.58	C	2.44	B
Bicycle LOS Score / LOS	1.05	A	1.02	A	0.96	A	0.99	A

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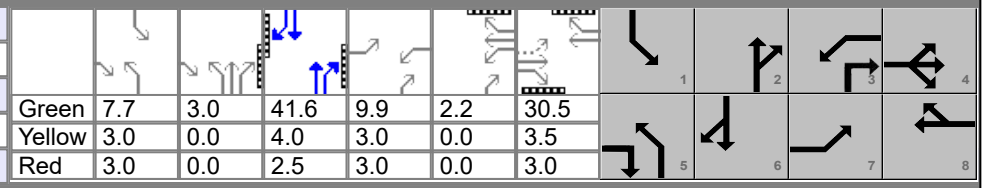
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 2.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	140	130	340	210	220	150	210	470	100	140	630	50

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.7	3.0	41.6	9.9	2.2	30.5						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

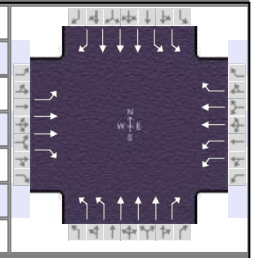
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	0.977	0.977	0.977	0.969	0.969	0.969	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.820	0.952	1.000	0.971	0.908	1.000	0.971	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1781	3561	1585	2899	3533	1572	3404	5014	1560	3459	5095	1610
Proportion of Vehicles Arriving on Green (P)	0.08	0.25	0.25	0.10	0.27	0.27	0.09	0.37	0.37	0.06	0.35	0.35
Incremental Delay Factor (k)	0.08	0.11	0.11	0.08	0.11	0.11	0.08	0.50	0.50	0.08	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.34	0.25	0.10	0.27	0.09	0.37	0.15	0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	1135	0	0	0	0	0	880	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	30.5	0.0	0.0	0.0	0.0	0.0	10.5	0.0
Permitted Service Time (g_u), s	24.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	1.0							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1585		0		1560		0
Protected Right Effective Green Time (g_R), s		10.7		0.0		12.2		0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.141	0.000	0.139	0.000	0.127	0.000	0.130
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	508.75	33.36	545.70	31.72	743.67	23.68	693.09	25.62
Bicycle F_w / F_v	-3.64	0.56	-3.64	0.53	-3.64	0.48	-3.64	0.50

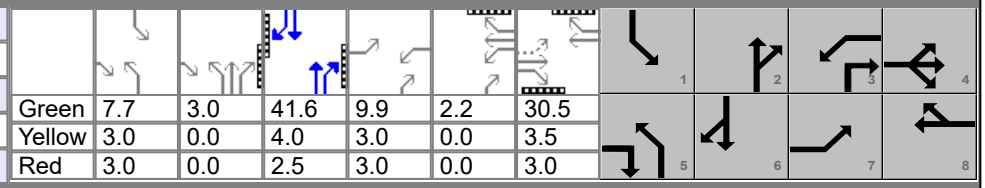
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	AM	PHF	0.90
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 AM Option 2.xus		
Project Description	Wimington & Feedwire - 2050 AM Option 2				



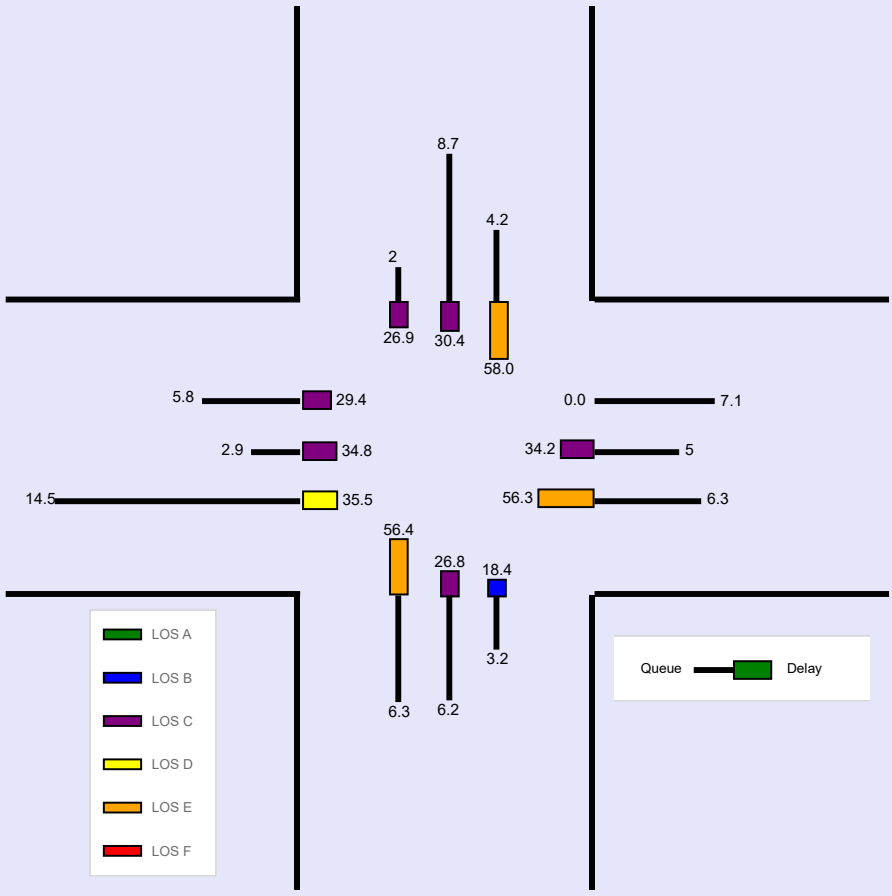
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	140	130	340	210	220	150	210	470	100	140	630	50

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.7	3.0	41.6	9.9	2.2	30.5						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	147.8	74.4	367.4	162.3	127.3		161.7	159.5	81.8	107	221.4	49.6
Back of Queue (*Q*), veh/ln (95 th percentile)	5.8	2.9	14.5	6.3	5.0		6.3	6.2	3.2	4.2	8.7	2.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.59	0.00	0.78	0.36	0.00		0.48	0.00	0.11	0.34	0.00	0.17
Control Delay (*d*), s/veh	29.4	34.8	35.5	56.3	34.2	0.0	56.4	26.8	18.4	58.0	30.4	26.9
Level of Service (LOS)	C	C	D	E	C	A	E	C	B	E	C	C
Approach Delay, s/veh / LOS	34.0		C	33.4		C	33.7		C	34.9		C
Intersection Delay, s/veh / LOS	34.0						C					



--- Messages ---

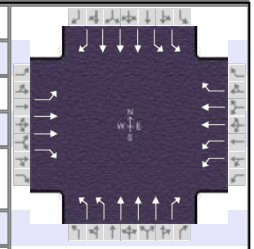
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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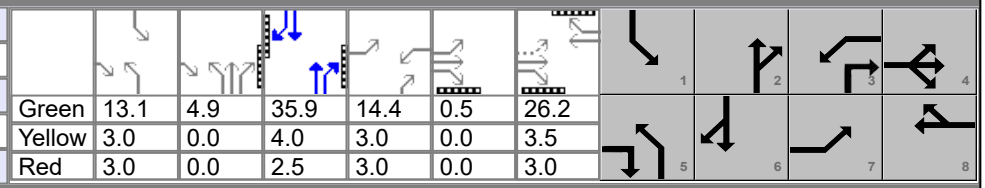
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Peak Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 2.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	240	480	260	300	490	270	430	1140	580	300	990	180

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.1	4.9	35.9	14.4	0.5	26.2						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

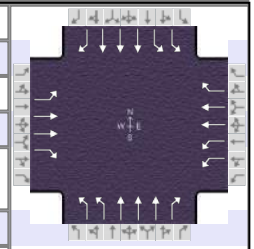
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	240	480	260	300	490	270	430	1140	580	300	990	180
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0	0	0	0	0	1	1	1	0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	250	0	470	450	0	600	339	0	775	316	0	290
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	36.0	22.0	37.0	23.0	44.0	17.0	44.0	17.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	3.0	2.5	3.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Off	Off	Off	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		6.0		6.0		5.0		5.0
Pedestrian Clearance Time (*PC*), s		31.0		27.0		23.0		24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

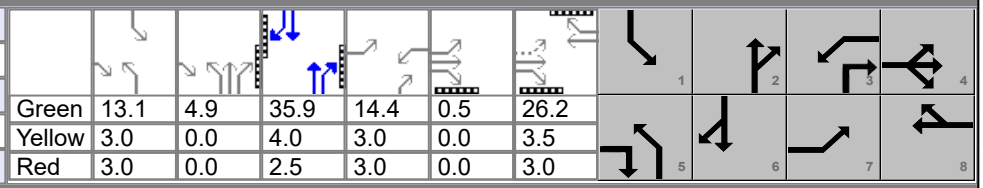
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Peak Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 2.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	240	480	260	300	490	270	430	1140	580	300	990	180

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.1	4.9	35.9	14.4	0.5	26.2						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

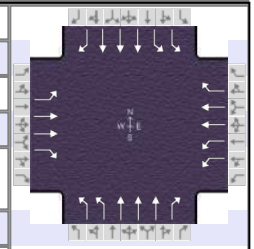
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	20.9	33.2	20.4	32.7	24.0	47.3	19.1	42.4
Change Period, (*Y+R c*), s	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	3.6	4.1	3.6	4.1	3.5	0.0	3.5	0.0
Queue Clearance Time (*g s*), s	14.4	16.8	13.5	21.4	16.7		12.2	
Green Extension Time (*g e*), s	0.5	5.9	0.9	4.8	1.4	0.0	0.9	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.26	0.00	0.48	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	245	490	265	306	500	276	439	1163	592	306	1010	184
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1809	1610	1560	1809		1743	1712	1598	1757	1725	1610
Queue Service Time (*g s*), s	12.4	14.6	14.8	11.5	15.0		14.7	23.2	38.1	10.2	20.4	10.8
Cycle Queue Clearance Time (*g c*), s	12.4	14.6	14.8	11.5	15.0		14.7	23.2	38.1	10.2	20.4	10.8
Green Ratio (*g/C*)	0.34	0.22	0.37	0.12	0.22		0.15	0.34	0.46	0.20	0.30	0.30
Capacity (*c*), veh/h	369	805	600	373	789		524	1747	735	384	1549	482
Volume-to-Capacity Ratio (*X*)	0.664	0.608	0.442	0.820	0.634		0.837	0.666	0.806	0.796	0.652	0.381
Back of Queue (*Q*), ft/ln (95 th percentile)	230.8	266.4	239.1	202.4	273.9		266.3	368.6	552.1	200.4	334.5	196.3
Back of Queue (*Q*), veh/ln (95 th percentile)	9.2	10.7	9.6	8.1	11.0		10.6	14.6	21.9	8.0	13.4	7.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.92	0.00	0.51	0.45	0.00		0.79	0.00	0.71	0.63	0.00	0.68
Uniform Delay (*d 1*), s/veh	31.3	41.9	28.3	51.6	42.6		49.6	33.8	27.8	52.1	36.6	33.3
Incremental Delay (*d 2*), s/veh	1.5	0.8	0.5	3.4	1.0		2.7	2.0	9.2	2.8	2.2	2.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	32.9	42.7	28.8	55.0	43.6	0.0	52.3	35.8	37.0	55.0	38.8	35.5
Level of Service (LOS)	C	D	C	D	D	A	D	D	D	D	D	D
Approach Delay, s/veh / LOS	36.6	D		35.7	D		39.4	D		41.7	D	
Intersection Delay, s/veh / LOS	38.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.85	C	2.58	C	2.45	B
Bicycle LOS Score / LOS	1.31	A	1.38	A	1.69	B	1.31	A

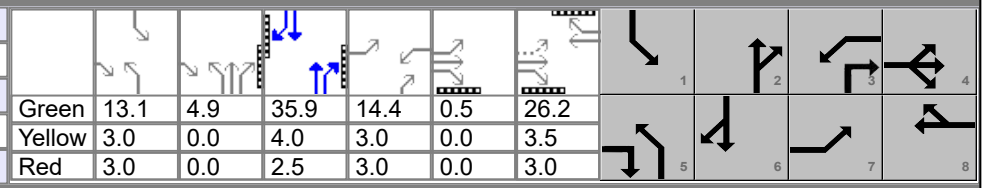
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Peak Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 2.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	240	480	260	300	490	270	430	1140	580	300	990	180

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.1	4.9	35.9	14.4	0.5	26.2						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.862	0.952	1.000	0.971	0.908	1.000	0.971	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	1810	3618	1610	3120	3618	1610	3487	5135	1598	3514	5176	1610
Proportion of Vehicles Arriving on Green (P)	0.12	0.22	0.22	0.12	0.22	0.22	0.15	0.34	0.34	0.11	0.30	0.30
Incremental Delay Factor (k)	0.08	0.11	0.11	0.08	0.13	0.23	0.08	0.50	0.50	0.08	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.34	0.22	0.12	0.22	0.15	0.34	0.20	0.30
Permitted Saturation Flow Rate (s_p), veh/h/ln	912	0	0	0	0	0	490	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	26.2	0.0	0.0	0.0	0.0	0.0	10.5	0.0
Permitted Service Time (g_u), s	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	5.5							
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		0		1598		0
Protected Right Effective Green Time (g_R), s		18.0		0.0		14.4		0.0

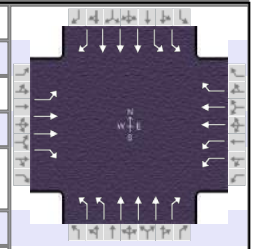
Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.144	0.000	0.144	0.000	0.131	0.000	0.136
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	445.02	36.27	436.08	36.69	680.34	26.12	598.47	29.46

Bicycle F_w / F_v	-3.64	0.83	-3.64	0.89	-3.64	1.21	-3.64	0.83

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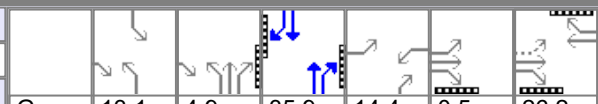
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 2, 2022	Area Type	Other
Jurisdiction		Time Period	PM	PHF	0.98
Urban Street	Wilmington Pike	Analysis Year	2050 Peak Option 2	Analysis Period	1> 7:00
Intersection	Wilmington & Feedwire	File Name	Wilmington & Feedwire_2050 PM Option 2.xus		
Project Description	Wilmington & Feedwire - 2050 AM Option 2				

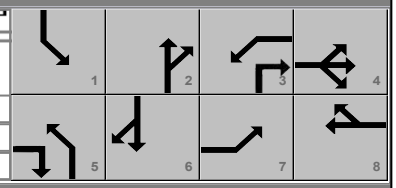


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	240	480	260	300	490	270	430	1140	580	300	990	180

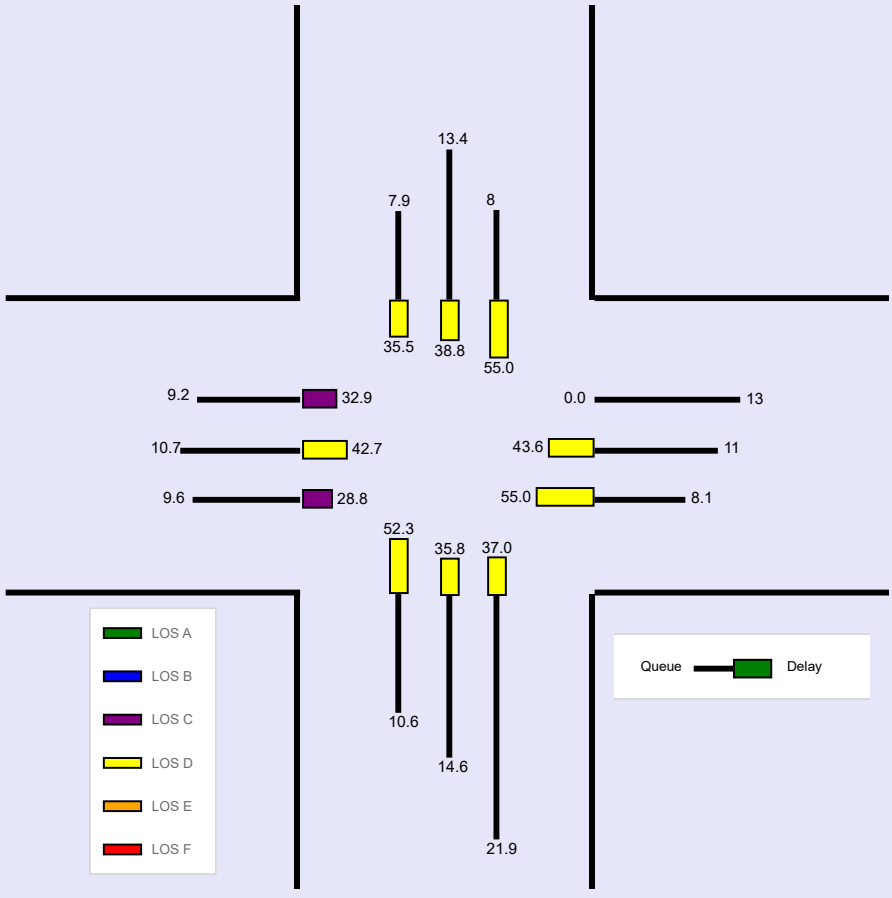
Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.1	4.9	35.9	14.4	0.5	26.2						
Yellow	3.0	0.0	4.0	3.0	0.0	3.5						
Red	3.0	0.0	2.5	3.0	0.0	3.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	230.8	266.4	239.1	202.4	273.9		266.3	368.6	552.1	200.4	334.5	196.3
Back of Queue (*Q*), veh/ln (95 th percentile)	9.2	10.7	9.6	8.1	11.0		10.6	14.6	21.9	8.0	13.4	7.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.92	0.00	0.51	0.45	0.00		0.79	0.00	0.71	0.63	0.00	0.68
Control Delay (*d*), s/veh	32.9	42.7	28.8	55.0	43.6	0.0	52.3	35.8	37.0	55.0	38.8	35.5
Level of Service (LOS)	C	D	C	D	D	A	D	D	D	D	D	D
Approach Delay, s/veh / LOS	36.6	D		35.7	D		39.4	D		41.7	D	
Intersection Delay, s/veh / LOS	38.8						D					



--- Messages ---

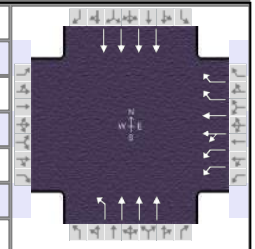
INFO: WBR was specified to have Unsignalized Delay of 0 seconds.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				690	470	130	270	720			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	47.0	24.2	30.8	0.0	0.0	0.0	5	6	7	8
Yellow	3.0	4.0	5.0	0.0	0.0	0.0				
Red	2.5	2.0	1.5	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				690	470	130	270	720			900	
Initial Queue (Q_b), veh/h				0	0	0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900	1900	1900	1900	1900			1900	
Parking (N_m), man/h					None			None			None	
Heavy Vehicles (P_{HV}), %				3	3	3	4	4			2	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3	3	3	3	3			3	
Upstream Filtering (*I*)				1.00	1.00	1.00	0.23	0.23			0.82	
Lane Width (*W*), ft				12.0	12.0	12.0	12.0	12.0			12.0	
Turn Bay Length, ft				660	0	660	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35	35	35	45	45			45	

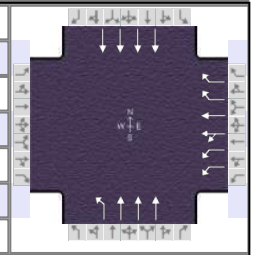
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				38.0	52.0	82.0		30.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				10	7	20		20
Start-Up Lost Time (*l*t), s			2.0	2.0	2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0	2.0	2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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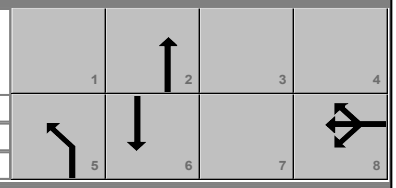
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				690	470	130	270	720			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	47.0	24.2	30.8	0.0	0.0	0.0			
Yellow	3.0	4.0	5.0	0.0	0.0	0.0			
Red	2.5	2.0	1.5	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	2.0	4.0		8.3
Phase Duration, s				37.3	52.5	82.7		30.2
Change Period, ($Y+R_c$), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.1	2.5	0.0		0.0
Queue Clearance Time (g_s), s				28.8	47.7			
Green Extension Time (g_e), s				2.1	0.0	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	1.00			

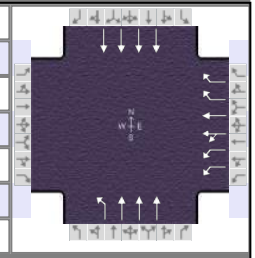
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				784	534	148	677	1805			1275	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1698	1856	1392	1753	1671			1698	
Queue Service Time (g_s), s				26.8	15.0	5.0	45.7	4.6			22.4	
Cycle Queue Clearance Time (g_c), s				26.8	15.0	5.0	45.7	4.6			22.4	
Green Ratio (*g/C*)				0.26	0.26	0.26	0.39	0.64			0.20	
Capacity (*c*), veh/h				873	954	715	683	3203			1382	
Volume-to-Capacity Ratio (*X*)				0.898	0.560	0.207	0.992	0.564			0.923	
Back of Queue (*Q*), ft/ln (95 th percentile)				468.4	286.1	78.7	443.4	36.3			410.7	
Back of Queue (*Q*), veh/ln (95 th percentile)				18.3	11.2	3.1	17.2	1.4			16.2	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.71	0.00	0.12	0.96	0.00			0.00	
Uniform Delay (d_1), s/veh				43.1	38.7	35.0	21.4	1.2			55.8	
Incremental Delay (d_2), s/veh				12.0	0.9	0.2	14.5	0.2			9.9	
Initial Queue Delay (d_3), s/veh				0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				55.1	39.6	35.2	36.0	1.4			65.6	
Level of Service (LOS)				E	D	D	D	A			E	
Approach Delay, s/veh / LOS	0.0			47.4	D		10.8	B		65.6	E	
Intersection Delay, s/veh / LOS	34.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.75	C	2.62	C	2.39	B	1.72	B
Bicycle LOS Score / LOS			1.70	B	1.11	A	0.91	A

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HCS Signalized Intersection Intermediate Values

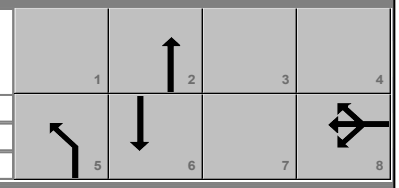
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				690	470	130	270	720			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	47.0	24.2	30.8	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						



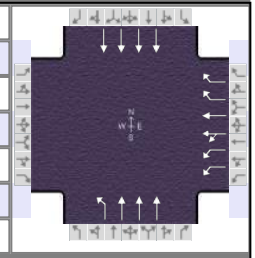
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.977	0.977	0.977	0.969	0.969	1.000	1.000	0.984	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.961	1.000	0.885	1.000	0.908	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				3534	3711	2783	1753	5183	0	0	7137	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.26	0.26	0.26	0.64	0.95	0.00	0.00	0.05	0.00
Incremental Delay Factor (k)				0.42	0.19	0.15	0.48	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.26	0.39	0.64		0.20
Permitted Saturation Flow Rate (s_p), veh/h/ln				1767	0	0		265
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	0.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s				0.0	0.0	0.0		24.4
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	1.852	0.000	1.710	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.083	0.000	0.146
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	1277.70	7.83	403.51	38.23
Bicycle F_w / F_v	-3.64		-3.64	1.21	-3.64	0.62	-3.64	0.42

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				

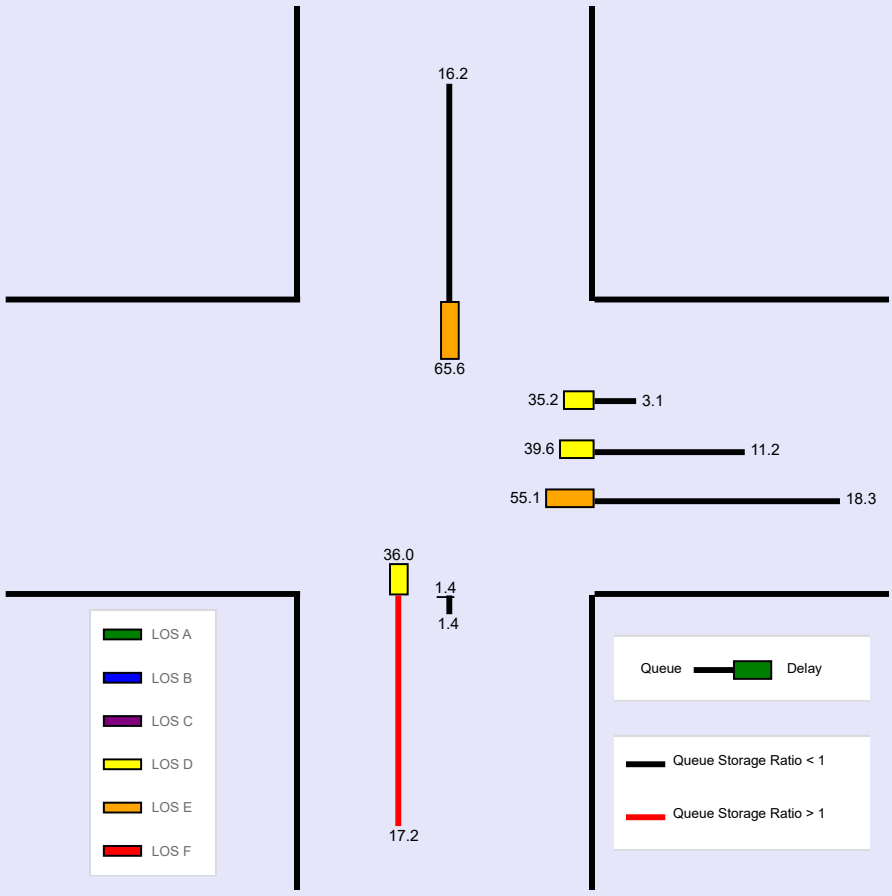


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				690	470	130	270	720			900	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	31	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4		
Green	47.0	24.2	30.8	0.0	0.0	0.0	5	6	7	8		
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				468.4	286.1	78.7	443.4	36.3			410.7	
Back of Queue (*Q*), veh/ln (95 th percentile)				18.3	11.2	3.1	17.2	1.4			16.2	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.71	0.00	0.12	0.96	0.00			0.00	
Control Delay (*d*), s/veh				55.1	39.6	35.2	36.0	1.4			65.6	
Level of Service (LOS)				E	D	D	D	A			E	
Approach Delay, s/veh / LOS	0.0			47.4	D		10.8	B		65.6	E	
Intersection Delay, s/veh / LOS	34.5						C					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 173% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 125% of downstream exit volume during time period #1, for thru movement #6.

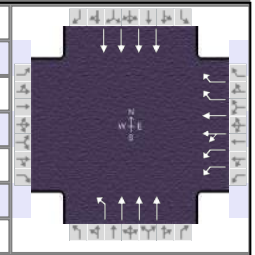
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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HCS Signalized Intersection Input Data

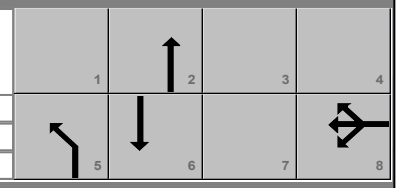
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				960	520	760	350	1440			1240	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	31.3	33.3	37.4	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				960	520	760	350	1440			1240	
Initial Queue (Q_b), veh/h				0	0	0	0	0			0	
Base Saturation Flow Rate (s_o), veh/h				1900	1900	1900	1900	1900			1900	
Parking (N_m), man/h					None			None		0	L + R	0
Heavy Vehicles (P_{HV}), %				1	1	1	0	0			0	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	
Buses (N_b), buses/h				0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)				3	3	3	3	3			3	
Upstream Filtering (*I*)				1.00	1.00	1.00	0.47	0.47			0.66	
Lane Width (*W*), ft				12.0	12.0	12.0	12.0	12.0			12.0	
Turn Bay Length, ft				660	0	660	460	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h				35	35	35	45	45			45	

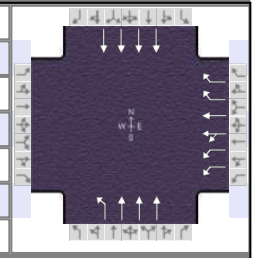
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s				44.0	39.0	76.0		37.0
Yellow Change Interval (*Y*), s				5.0	3.0	4.0		4.0
Red Clearance Interval (R_c), s				1.5	2.5	2.0		2.0
Minimum Green (G_{min}), s				8	7	20		20
Start-Up Lost Time (*l*t), s			2.0	2.0	2.0	2.0		2.0
Extension of Effective Green (*e*), s			2.0	2.0	2.0	2.0		2.0
Passage (*PT*), s				4.0	1.5	2.0		2.0
Recall Mode				Off	Off	Min		Min
Dual Entry				Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		5.0		0.0		
Pedestrian Clearance Time (*PC*), s		0.0		23.0		0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0			
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0			
Street Width / Island / Curb, ft		0		0.0	0	No	0.0	0	No	0.0		No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No			No	0.50		No	0.50			0.50	

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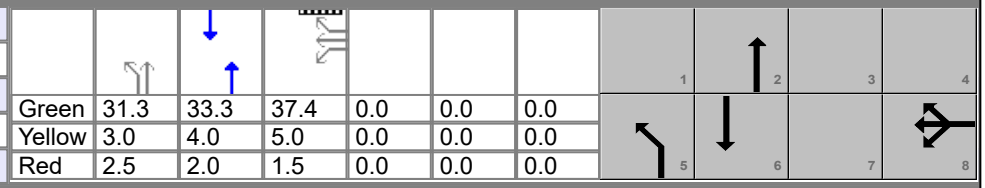
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				960	520	760	350	1440			1240	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	31.3	33.3	37.4	0.0	0.0	0.0			
Yellow	3.0	4.0	5.0	0.0	0.0	0.0			
Red	2.5	2.0	1.5	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Case Number				9.0	2.0	4.0		8.3
Phase Duration, s				43.9	36.8	76.1		39.3
Change Period, ($Y+R_c$), s				6.5	5.5	6.0		6.0
Max Allow Headway (*MAH*), s				5.2	2.5	0.0		0.0
Queue Clearance Time (g_s), s				35.7	31.1			
Green Extension Time (g_e), s				1.7	0.2	0.0		0.0
Phase Call Probability				1.00	1.00			
Max Out Probability				1.00	1.00			

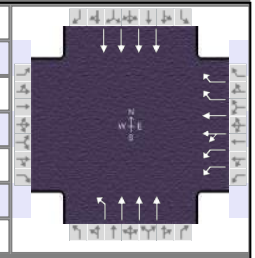
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	5	2			6	
Adjusted Flow Rate (*v*), veh/h				1000	542	792	456	1875			1657	
Adjusted Saturation Flow Rate (*s*), veh/h/ln				1727	1885	1414	1810	1725			1682	
Queue Service Time (g_s), s				33.7	13.9	32.1	29.1	14.1			29.0	
Cycle Queue Clearance Time (g_c), s				33.7	13.9	32.1	29.1	14.1			29.0	
Green Ratio (*g/C*)				0.31	0.31	0.31	0.26	0.58			0.28	
Capacity (*c*), veh/h				1076	1174	881	472	3025			1868	
Volume-to-Capacity Ratio (*X*)				0.930	0.461	0.899	0.965	0.620			0.887	
Back of Queue (*Q*), ft/ln (95 th percentile)				569.6	263.8	458.5	354.7	119			454.5	
Back of Queue (*Q*), veh/ln (95 th percentile)				22.6	10.5	18.2	14.2	4.8			18.2	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.86	0.00	0.69	0.77	0.00			0.00	
Uniform Delay (d_1), s/veh				40.0	33.2	39.5	28.3	4.9			49.9	
Incremental Delay (d_2), s/veh				13.8	0.4	12.3	18.4	0.5			4.6	
Initial Queue Delay (d_3), s/veh				0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh				53.8	33.6	51.8	46.7	5.4			54.5	
Level of Service (LOS)				D	C	D	D	A			D	
Approach Delay, s/veh / LOS	0.0			48.4		D	13.4		B	54.5		D
Intersection Delay, s/veh / LOS	37.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.75	C	2.62	C	2.40	B	1.71	B
Bicycle LOS Score / LOS			2.41	B	1.51	B	1.02	A

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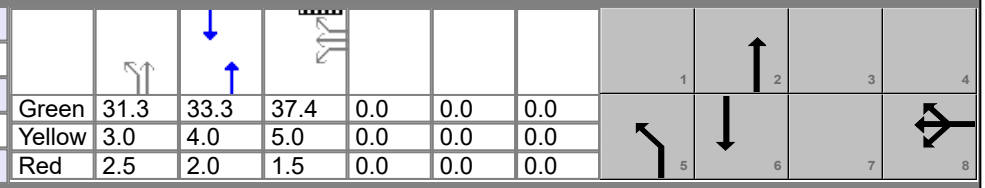
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				960	520	760	350	1440			1240	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	31.3	33.3	37.4	0.0	0.0	0.0						
Yellow	3.0	4.0	5.0	0.0	0.0	0.0						
Red	2.5	2.0	1.5	0.0	0.0	0.0						

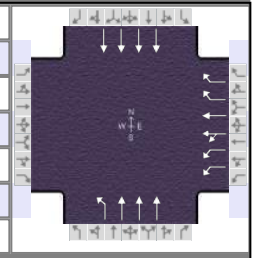
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})				0.992	0.992	0.992	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.975	1.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	0.962	1.000	0.885	1.000	0.908	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})				0.952	0.000		0.952	0.000		1.000	1.000	
Right-Turn Adjustment Factor (f_{RT})					0.000	0.847		1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})				1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})						1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)							1.00					
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)										1.00		
Movement Saturation Flow Rate (s), veh/h				3591	3770	2828	1810	5350	0	0	7069	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.31	0.31	0.31	0.52	0.85	0.00	0.00	0.14	0.00
Incremental Delay Factor (k)				0.45	0.15	0.43	0.41	0.50			0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)				4.0	5.5	6.0		6.0
Green Ratio (g/C)				0.31	0.26	0.58		0.28
Permitted Saturation Flow Rate (s_p), veh/h/ln				1795	0	0		247
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s				0.0	0.0	0.0		0.0
Permitted Service Time (g_u), s				0.0	0.0	0.0		0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s				0.0	0.0	0.0		33.3
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0				
Protected Right Effective Green Time (g_R), s				0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	1.852	0.000	1.710	0.000	0.972	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.094	0.000	0.138
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	-83.33	65.10		67.73	1168.76	10.36	555.24	31.31
Bicycle F_w / F_v	-3.64		-3.64	1.93	-3.64	1.03	-3.64	0.53

HCS Signalized Intersection Results Graphical Summary

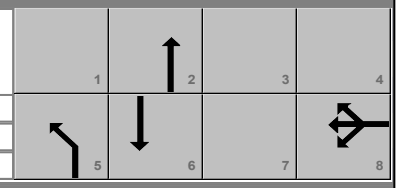
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & SB I-675 Ra…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



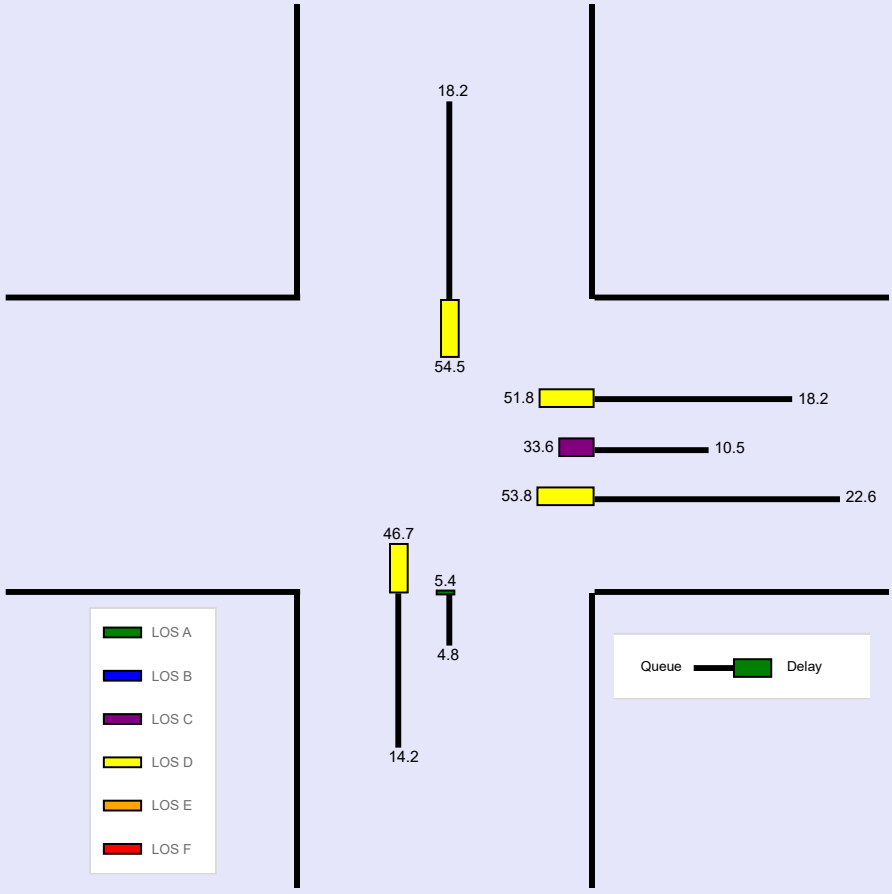
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h				960	520	760	350	1440			1240	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	20	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	31.3	33.3	37.4	0.0	0.0	0.0	
Yellow	3.0	4.0	5.0	0.0	0.0	0.0	
Red	2.5	2.0	1.5	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)				569.6	263.8	458.5	354.7	119			454.5	
Back of Queue (*Q*), veh/ln (95 th percentile)				22.6	10.5	18.2	14.2	4.8			18.2	
Queue Storage Ratio (*RQ*) (95 th percentile)				0.86	0.00	0.69	0.77	0.00			0.00	
Control Delay (*d*), s/veh				53.8	33.6	51.8	46.7	5.4			54.5	
Level of Service (LOS)				D	C	D	D	A			D	
Approach Delay, s/veh / LOS	0.0			48.4	D		13.4	B		54.5	D	
Intersection Delay, s/veh / LOS	37.1						D					



--- Messages ---

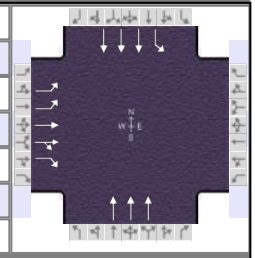
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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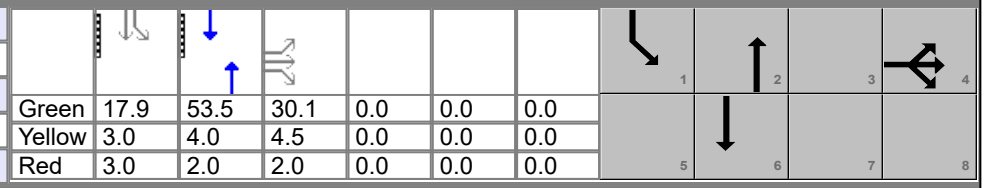
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	190	360	350					800		190	1400	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	17.9	53.5	30.1	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	190	360	350					800		190	1400	
Initial Queue (Q_b), veh/h	0	0	0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	5	5	1					1		2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3					3		3	3	
Upstream Filtering (*I*)	1.00	1.00	1.00					0.89		0.29	0.29	
Lane Width (*W*), ft	12.0	12.0	12.0					12.0		12.0	12.0	
Turn Bay Length, ft	560	0	530					0		460	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35					45		45	45	

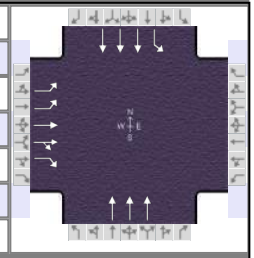
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		37.0				55.0	28.0	83.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		10				20	7	20
Start-Up Lost Time (*l*t), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0				2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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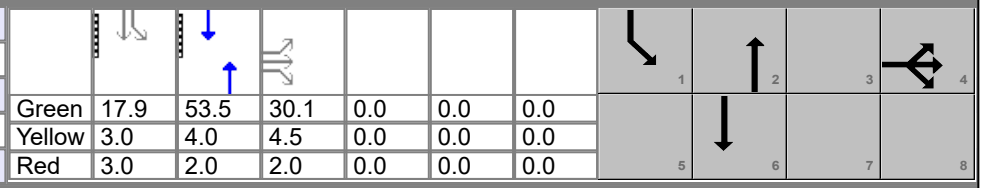
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	190	360	350					800		190	1400	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	17.9	53.5	30.1	0.0	0.0	0.0		
Yellow	3.0	4.0	4.5	0.0	0.0	0.0		
Red	3.0	2.0	2.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	2.0	4.0
Phase Duration, s		36.6				59.5	23.9	83.4
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		29.3					17.7	
Green Extension Time (g_e), s		0.8				0.0	0.1	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		1.00					0.08	

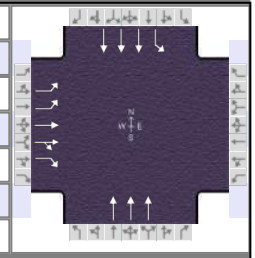
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	202	383	372					2280		246	1813	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1475	1826	1598					1712		1781	1698	
Queue Service Time (g_s), s	6.6	10.5	27.3					52.7		15.7	6.8	
Cycle Queue Clearance Time (g_c), s	6.6	10.5	27.3					52.7		15.7	6.8	
Green Ratio (*g/C*)	0.25	0.25	0.25					0.45		0.15	0.64	
Capacity (*c*), veh/h	741	917	401					2288		266	3285	
Volume-to-Capacity Ratio (*X*)	0.273	0.418	0.928					0.996		0.926	0.552	
Back of Queue (*Q*), ft/ln (95 th percentile)	112.9	216.7	499.9					399.8		185.9	56.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.3	8.3	19.8					15.9		7.3	2.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.20	0.00	0.94					0.00		0.40	0.00	
Uniform Delay (d_1), s/veh	36.1	37.6	43.9					15.0		34.0	1.9	
Incremental Delay (d_2), s/veh	0.4	0.6	28.2					17.0		9.8	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	36.6	38.2	72.1					32.0		43.9	2.1	
Level of Service (LOS)	D	D	E					C		D	A	
Approach Delay, s/veh / LOS	51.1	D		0.0			32.0	C		7.1	A	
Intersection Delay, s/veh / LOS	25.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.62	C	1.69	B	2.24	B
Bicycle LOS Score / LOS	1.28	A			0.96	A	1.42	A

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HCS Signalized Intersection Intermediate Values

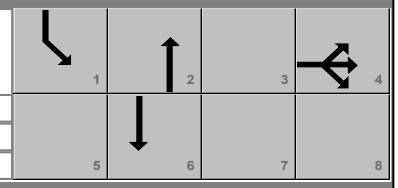
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	190	360	350					800		190	1400	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.9	53.5	30.1	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



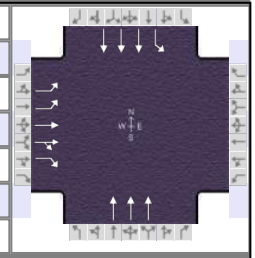
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.961	0.961	0.992				1.000	0.992	1.000	0.984	0.984	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.848	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	3478	3652	1598				0	5482	0	1781	5267	0
Proportion of Vehicles Arriving on Green (P)	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.75	0.00	0.42	0.92	0.00
Incremental Delay Factor (k)	0.23	0.23	0.46					0.50		0.26	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.25				0.45	0.15	0.64
Permitted Saturation Flow Rate (s_p), veh/h/ln		1739				262	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0				53.5	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.852	0.000	0.972	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.117	0.000	0.081
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	891.61	18.43	1289.53	7.57
Bicycle F_w / F_v	-3.64	0.79	-3.64		-3.64	0.47	-3.64	0.93

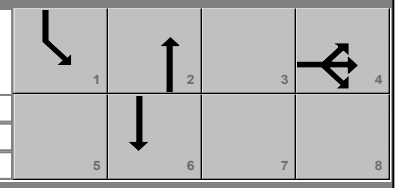
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.94
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & NB I-675 Ra…	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				

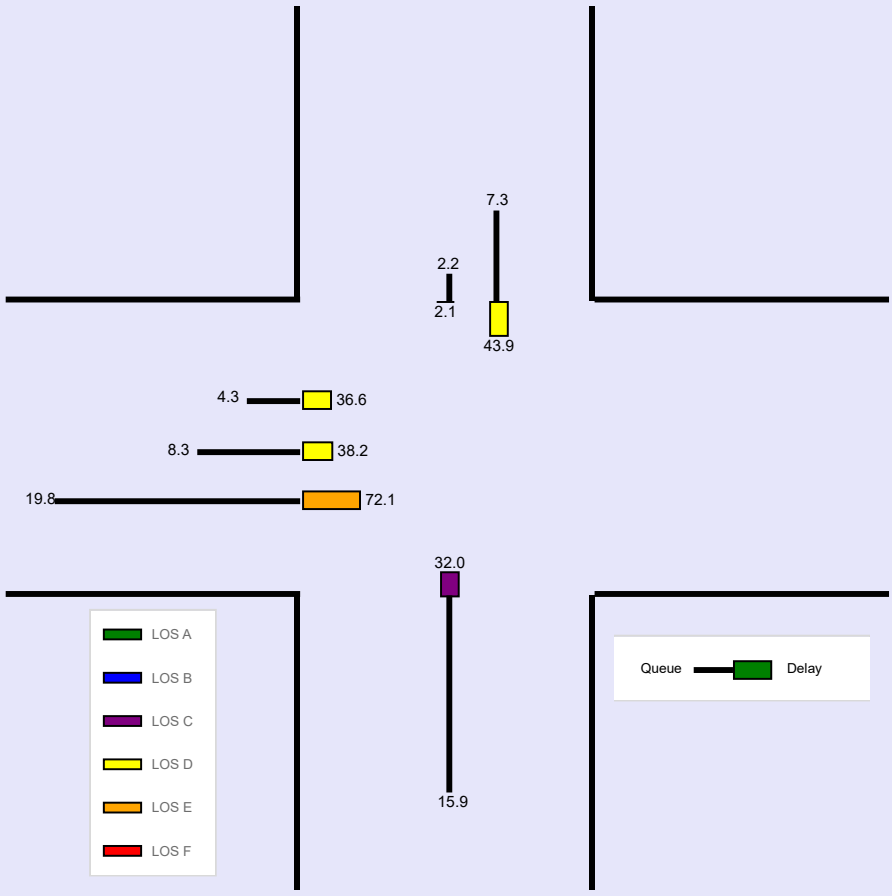


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	190	360	350					800		190	1400	

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	6	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	17.9	53.5	30.1	0.0	0.0	0.0		
				Yellow	3.0	4.0	4.5	0.0	0.0	0.0		
				Red	3.0	2.0	2.0	0.0	0.0	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	112.9	216.7	499.9					399.8		185.9	56.5	
Back of Queue (*Q*), veh/ln (95 th percentile)	4.3	8.3	19.8					15.9		7.3	2.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.20	0.00	0.94					0.00		0.40	0.00	
Control Delay (*d*), s/veh	36.6	38.2	72.1					32.0		43.9	2.1	
Level of Service (LOS)	D	D	E					C		D	A	
Approach Delay, s/veh / LOS	51.1	D		0.0			32.0	C		7.1	A	
Intersection Delay, s/veh / LOS	25.7						C					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 205% of downstream exit volume during time period #1, for thru movement #2.

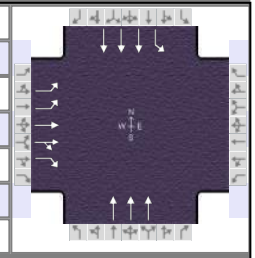
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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HCS Signalized Intersection Input Data

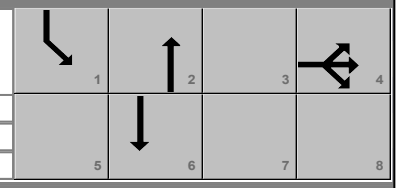
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 N…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	430	530	390					1360		190	2010	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	42	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.0	48.6	35.9	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	430	530	390					1360		190	2010	
Initial Queue (Q_b), veh/h	0	0	0					0		0	0	
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900					1900		1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	1	1	1					0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3					3		3	3	
Upstream Filtering (*I*)	1.00	1.00	1.00					0.91		0.31	0.31	
Lane Width (*W*), ft	12.0	12.0	12.0					12.0		12.0	12.0	
Turn Bay Length, ft	560	0	530					0		460	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35					45		45	45	

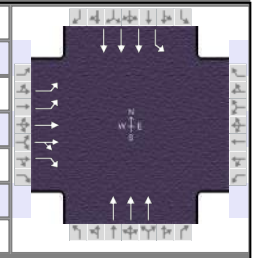
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		44.0				26.0	50.0	76.0
Yellow Change Interval (*Y*), s		4.5				4.0	3.0	4.0
Red Clearance Interval (R_c), s		2.0				2.0	3.0	2.0
Minimum Green (G_{min}), s		8				20	7	20
Start-Up Lost Time (*l1*), s	2.0	2.0				2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0				2.0	2.0	2.0
Passage (*PT*), s		5.0				2.0	1.5	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				4.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				13.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0				0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0				9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No		0		0.0		No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0				12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No				0.50		No	0.50	

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HCS Signalized Intersection Results Summary

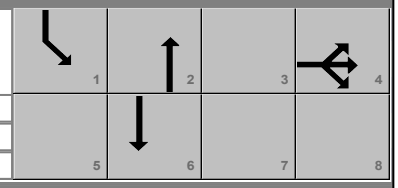
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 N…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	430	530	390					1360		190	2010	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	42	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.0	48.6	35.9	0.0	0.0	0.0
Yellow	3.0	4.0	4.5	0.0	0.0	0.0
Red	3.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				8.3	2.0	4.0
Phase Duration, s		42.4				54.6	23.0	77.6
Change Period, ($Y+R_c$), s		6.5				6.0	6.0	6.0
Max Allow Headway (*MAH*), s		6.2				0.0	2.5	0.0
Queue Clearance Time (g_s), s		30.7					16.8	
Green Extension Time (g_e), s		5.2				0.0	0.2	0.0
Phase Call Probability		1.00					1.00	
Max Out Probability		0.97					0.00	

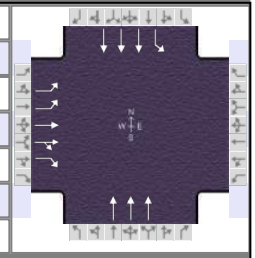
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14					2		1	6	
Adjusted Flow Rate (*v*), veh/h	448	552	406					1882		229	2428	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1520	1885	1598					1725		1810	1725	
Queue Service Time (g_s), s	14.5	14.4	28.7					42.1		14.8	19.0	
Cycle Queue Clearance Time (g_c), s	14.5	14.4	28.7					42.1		14.8	19.0	
Green Ratio (*g/C*)	0.30	0.30	0.30					0.40		0.14	0.60	
Capacity (*c*), veh/h	908	1127	478					2096		257	3089	
Volume-to-Capacity Ratio (*X*)	0.493	0.490	0.851					0.898		0.893	0.786	
Back of Queue (*Q*), ft/ln (95 th percentile)	233.4	274.7	474.1					656.1		209.1	94.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	9.3	10.9	18.8					26.2		8.4	3.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.42	0.00	0.89					0.00		0.45	0.00	
Uniform Delay (d_1), s/veh	34.6	34.6	39.5					41.4		46.7	3.3	
Incremental Delay (d_2), s/veh	0.9	0.7	14.2					6.1		1.4	0.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0					0.0		0.0	0.0	
Control Delay (*d*), s/veh	35.5	35.3	53.7					47.4		48.1	4.0	
Level of Service (LOS)	D	D	D					D		D	A	
Approach Delay, s/veh / LOS	40.7	D		0.0			47.4	D		7.8	A	
Intersection Delay, s/veh / LOS	28.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.62	C	1.69	B	2.25	B
Bicycle LOS Score / LOS	1.65	B			1.27	A	1.75	B

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HCS Signalized Intersection Intermediate Values

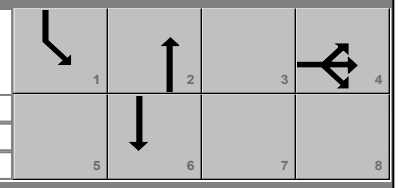
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 N…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	430	530	390					1360		190	2010	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	42	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.0	48.6	35.9	0.0	0.0	0.0						
Yellow	3.0	4.0	4.5	0.0	0.0	0.0						
Red	3.0	2.0	2.0	0.0	0.0	0.0						



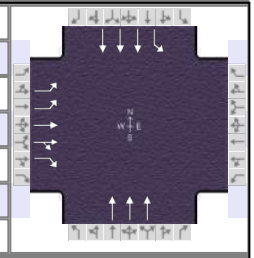
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992				1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.846	1.000	1.000	1.000	1.000	1.000	1.000	0.908	1.000	1.000	0.908	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000					1.000	1.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847					1.000	1.000		1.000	1.000
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000						1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000						1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000				1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)										1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)							1.00					
Movement Saturation Flow Rate (s), veh/h	3591	3770	1598				0	5525	0	1810	5350	0
Proportion of Vehicles Arriving on Green (P)	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.27	0.00	0.21	0.90	0.00
Incremental Delay Factor (k)	0.23	0.23	0.40					0.50		0.04	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		4.0				6.0	6.0	6.0
Green Ratio (g/C)		0.30				0.40	0.14	0.60
Permitted Saturation Flow Rate (s_p), veh/h/ln		1795				143	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln						0		
Permitted Effective Green Time (g_p), s		0.0				0.0	0.0	0.0
Permitted Service Time (g_u), s		0.0				0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		0.0				48.6	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	1.852	0.000	0.972	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.164	0.000	0.164	0.000	0.123	0.000	0.091
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b		67.73	-83.33	65.10	809.91	21.24	1193.87	9.75
Bicycle F_w / F_v	-3.64	1.16	-3.64		-3.64	0.78	-3.64	1.26

HCS Signalized Intersection Results Graphical Summary

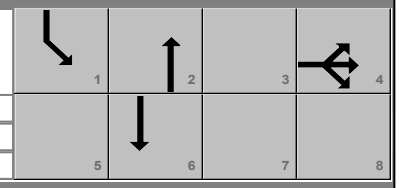
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & NB I-675 N…	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



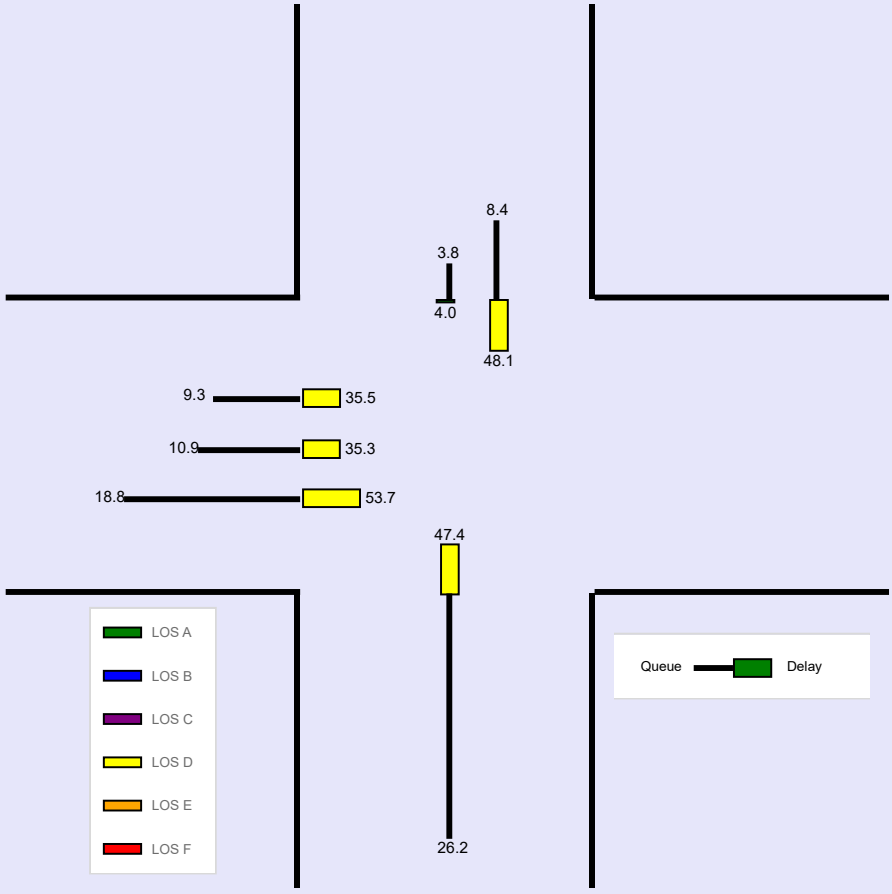
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	430	530	390					1360		190	2010	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	42	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	17.0	48.6	35.9	0.0	0.0	0.0	
Yellow	3.0	4.0	4.5	0.0	0.0	0.0	
Red	3.0	2.0	2.0	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	233.4	274.7	474.1					656.1		209.1	94.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	9.3	10.9	18.8					26.2		8.4	3.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.42	0.00	0.89					0.00		0.45	0.00	
Control Delay (*d*), s/veh	35.5	35.3	53.7					47.4		48.1	4.0	
Level of Service (LOS)	D	D	D					D		D	A	
Approach Delay, s/veh / LOS	40.7	D		0.0			47.4	D		7.8	A	
Intersection Delay, s/veh / LOS	28.1						C					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 133% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 88% of downstream exit volume during time period #1, for thru movement #6.

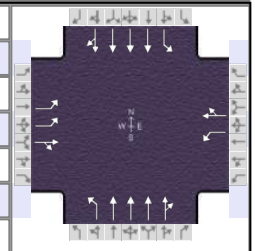
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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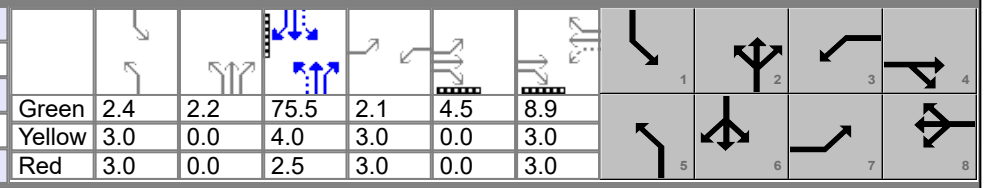
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1360	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	19	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.4	2.2	75.5	2.1	4.5	8.9						
Yellow	3.0	0.0	4.0	3.0	0.0	3.0						
Red	3.0	0.0	2.5	3.0	0.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1360	380
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1		0	0		1	1		3	3	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.53	0.53	0.75	0.75	0.75
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

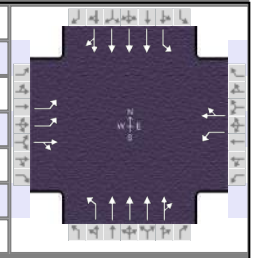
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	16.0	18.0	14.0	16.0	24.0	39.0	49.0	64.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	10	7	10	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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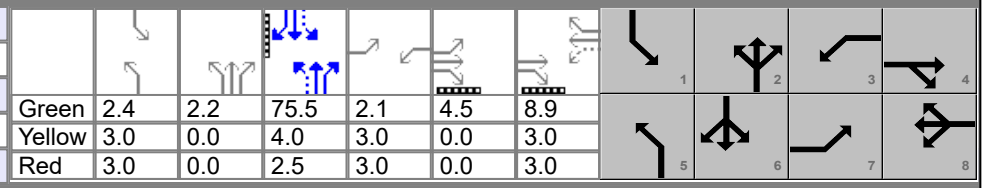
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1360	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	19	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.4	2.2	75.5	2.1	4.5	8.9
Yellow	3.0	0.0	4.0	3.0	0.0	3.0
Red	3.0	0.0	2.5	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	12.6	19.3	8.1	14.9	10.5	84.1	8.4	82.0
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.4	4.1	4.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	4.9	4.1	2.7	3.4	2.7		2.3	
Green Extension Time (g_e), s	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Phase Call Probability	0.94	0.99	0.30	0.89	0.65		0.34	
Max Out Probability	0.45	0.00	0.10	0.00	0.00		0.00	

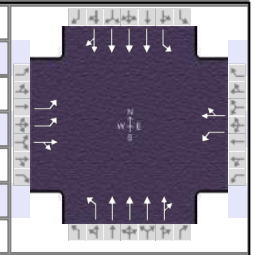
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	87	33		11	22		31	1646	547	12	1693	480
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1683		1810	1743		1795	1885	1879	1767	1856	1575
Queue Service Time (g_s), s	2.9	2.1		0.7	1.4		0.7	20.8	20.8	0.3	14.2	6.4
Cycle Queue Clearance Time (g_c), s	2.9	2.1		0.7	1.4		0.7	20.8	20.8	0.3	14.2	6.4
Green Ratio (*g/C*)	0.06	0.11		0.09	0.07		0.67	0.65	0.65	0.65	0.63	0.63
Capacity (*c*), veh/h	192	187		195	129		221	3659	1215	176	3501	991
Volume-to-Capacity Ratio (*X*)	0.452	0.174		0.056	0.169		0.142	0.450	0.450	0.071	0.484	0.485
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	42		14	29.1		10.3	308.6	311.1	5.1	185.4	70.3
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	12.2	12.4	0.2	7.2	2.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.02	0.00	0.00
Uniform Delay (d_1), s/veh	54.9	48.3		49.8	52.1		7.0	14.1	14.2	9.5	7.3	2.5
Incremental Delay (d_2), s/veh	1.7	0.4		0.1	0.6		0.2	0.2	0.6	0.1	0.4	1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.6	48.8		49.9	52.7		7.2	14.3	14.8	9.6	7.7	3.8
Level of Service (LOS)	E	D		D	D		A	B	B	A	A	A
Approach Delay, s/veh / LOS	54.5	D		51.8	D		14.3	B		6.8	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.86	C	2.86	C	1.88	B	2.07	B
Bicycle LOS Score / LOS	0.68	A	0.54	A	1.44	A	1.27	A

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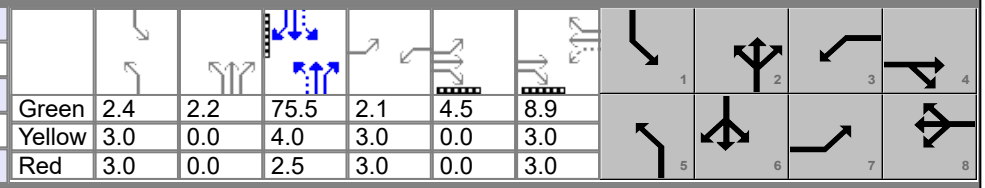
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1360	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	19	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.4	2.2	75.5	2.1	4.5	8.9
Yellow	3.0	0.0	4.0	3.0	0.0	3.0
Red	3.0	0.0	2.5	3.0	0.0	3.0

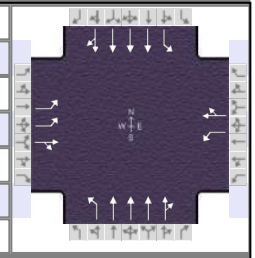
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.977	0.977	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.893	0.893		0.917	0.917		0.997	0.997		0.849	0.849
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	561	1122	1810	872	872	1795	7498	36	1767	5585	1557
Proportion of Vehicles Arriving on Green (P)	0.06	0.11	0.11	0.02	0.07	0.07	0.13	0.55	0.44	0.01	0.75	0.90
Incremental Delay Factor (k)	0.11	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.06	0.11	0.09	0.07	0.67	0.65	0.65	0.63
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1398	0	183	0	177	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	8.9	0.0	75.5	0.0	75.5	0.0
Permitted Service Time (g_u), s	0.0	0.0	8.9	0.0	61.2	0.0	54.8	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		2.6		1.6	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.155	0.000	0.158	0.000	0.081	0.000	0.085
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	222.49	47.39	147.71	51.46	1293.97	7.48	1257.90	8.26
Bicycle F_w / F_v	-3.64	0.20	-3.64	0.05	-3.64	0.95	-3.64	0.78

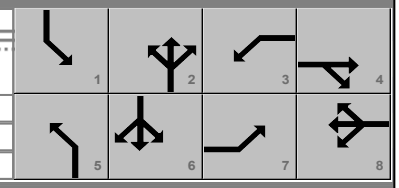
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				

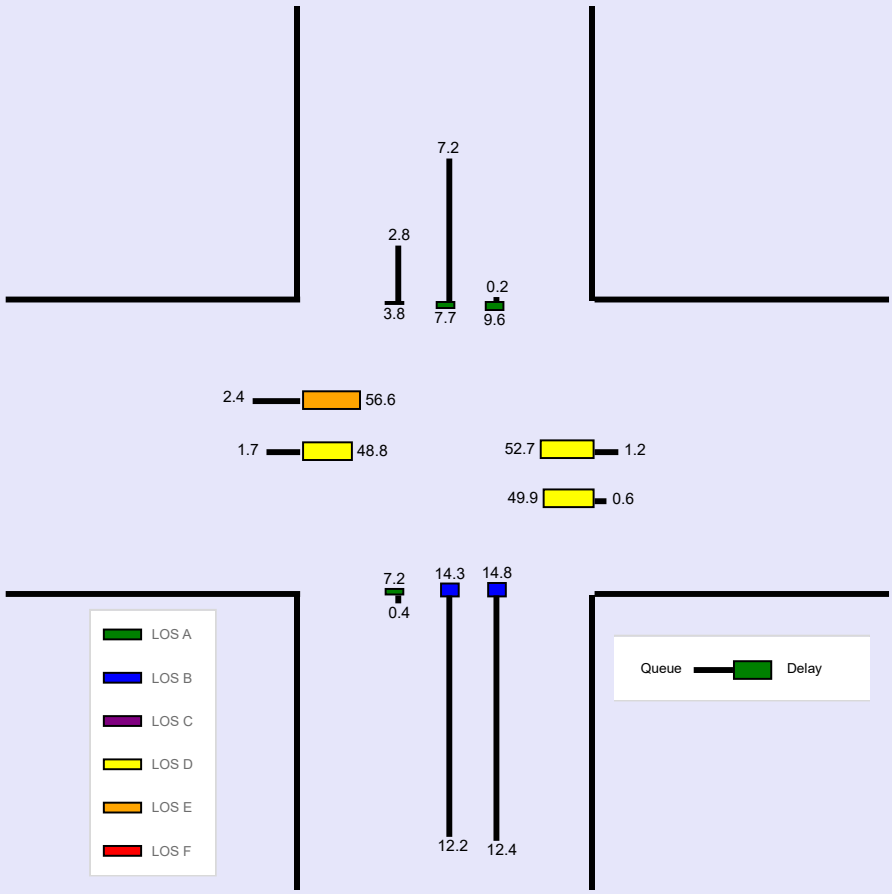


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	10	20	10	10	10	30	2080	10	10	1360	380

Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	19	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.4	2.2	75.5	2.1	4.5	8.9			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	4.0	3.0	0.0	3.0			
				Red	3.0	0.0	2.5	3.0	0.0	3.0			



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	60.7	42		14	29.1		10.3	308.6	311.1	5.1	185.4	70.3
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4	1.7		0.6	1.2		0.4	12.2	12.4	0.2	7.2	2.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.29	0.00		0.47	0.00		0.06	0.00	0.00	0.02	0.00	0.00
Control Delay (*d*), s/veh	56.6	48.8		49.9	52.7		7.2	14.3	14.8	9.6	7.7	3.8
Level of Service (LOS)	E	D		D	D		A	B	B	A	A	A
Approach Delay, s/veh / LOS	54.5	D		51.8	D		14.3	B		6.8	A	
Intersection Delay, s/veh / LOS	12.0						B					



--- Messages ---

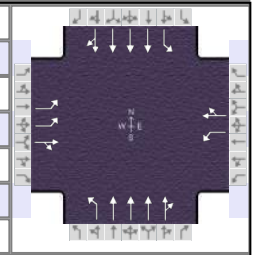
No errors or warnings exist.

--- Comments ---

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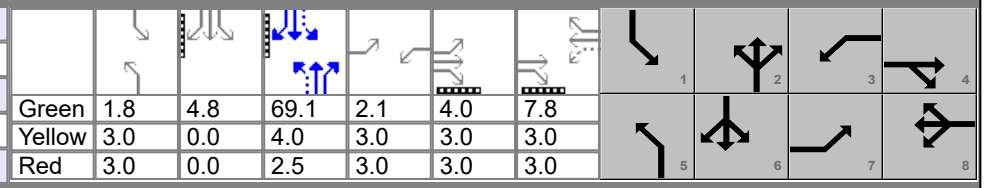
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	10	60	10	10	10	10	1840	10	70	2250	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	89	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.8	69.1	2.1	4.0	7.8						
Yellow	3.0	0.0	4.0	3.0	3.0	3.0						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	10	60	10	10	10	10	1840	10	70	2250	80
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74	0.51	0.51	0.51
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	210	0		30	0		170	0		235	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	20	20	20	20	20	20	45	45	45	45	45	45

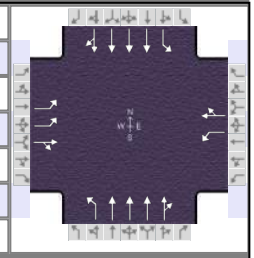
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	34.0	16.0	33.0	15.0	40.0	27.0	44.0	31.0
Yellow Change Interval (*Y*), s	3.0	3.0	3.0	3.0	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.5
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		0.0		0.0		4.0
Pedestrian Clearance Time (*PC*), s		22.0		0.0		0.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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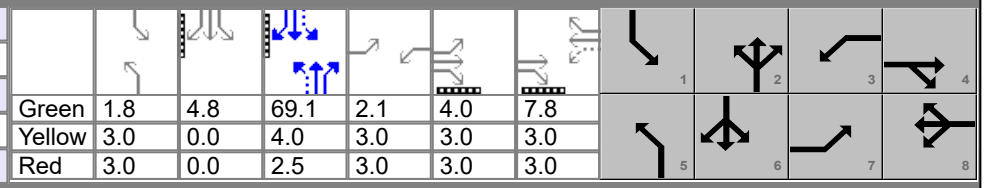
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	10	60	10	10	10	10	1840	10	70	2250	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	89	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.8	69.1	2.1	4.0	7.8
Yellow	3.0	0.0	4.0	3.0	3.0	3.0
Red	3.0	0.0	2.5	3.0	3.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	18.1	23.8	8.1	13.8	7.8	75.6	12.6	80.4
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Max Allow Headway (*MAH*), s	4.3	4.5	4.1	4.5	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	11.0	6.7	2.6	3.4	2.2		4.1	
Green Extension Time (g_e), s	1.1	0.3	0.0	0.3	0.0	0.0	0.3	0.0
Phase Call Probability	1.00	1.00	0.29	0.97	0.25		0.94	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

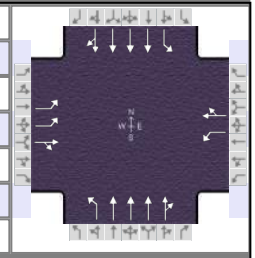
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	271	73		10	21		9	1208	401	83	2074	677
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1646		1810	1743		1810	1900	1893	1810	1900	1853
Queue Service Time (g_s), s	9.0	4.7		0.6	1.4		0.2	12.4	12.3	2.1	27.4	27.7
Cycle Queue Clearance Time (g_c), s	9.0	4.7		0.6	1.4		0.2	12.4	12.3	2.1	27.4	27.7
Green Ratio (*g/C*)	0.10	0.15		0.08	0.06		0.59	0.58	0.58	0.64	0.62	0.62
Capacity (*c*), veh/h	354	244		178	113		125	3283	1090	310	3511	1142
Volume-to-Capacity Ratio (*X*)	0.766	0.299		0.058	0.185		0.070	0.368	0.368	0.267	0.591	0.593
Back of Queue (*Q*), ft/ln (95 th percentile)	189.4	91.2		13.6	28.4		4.2	194.5	196.7	32.8	370.9	374.7
Back of Queue (*Q*), veh/ln (95 th percentile)	7.6	3.6		0.5	1.1		0.2	7.8	7.9	1.3	14.8	15.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.90	0.00		0.45	0.00		0.02	0.00	0.00	0.14	0.00	0.00
Uniform Delay (d_1), s/veh	52.6	45.6		50.9	53.1		13.0	11.9	11.8	8.9	15.0	15.2
Incremental Delay (d_2), s/veh	3.5	0.7		0.1	0.8		0.2	0.2	0.7	0.2	0.4	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.1	46.2		51.0	53.9		13.2	12.1	12.5	9.2	15.4	16.3
Level of Service (LOS)	E	D		D	D		B	B	B	A	B	B
Approach Delay, s/veh / LOS	54.0	D		53.0	D		12.2	B		15.4	B	
Intersection Delay, s/veh / LOS	17.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.86	C	2.87	C	1.89	B	2.08	B
Bicycle LOS Score / LOS	1.05	A	0.54	A	1.29	A	1.52	B

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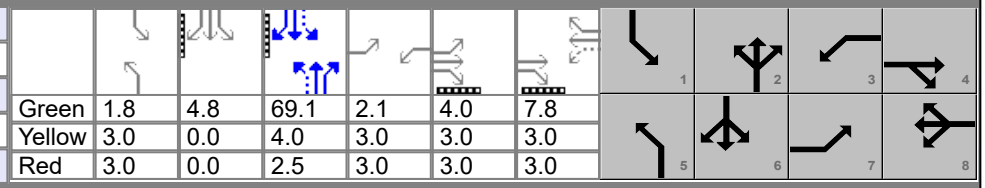
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	10	60	10	10	10	10	1840	10	70	2250	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	89	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.8	69.1	2.1	4.0	7.8						
Yellow	3.0	0.0	4.0	3.0	3.0	3.0						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

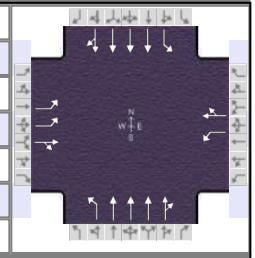
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.866	0.866		0.917	0.917		0.996	0.996		0.976	0.976
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	235	1411	1810	872	872	1810	7552	41	1810	7295	259
Proportion of Vehicles Arriving on Green (P)	0.10	0.15	0.15	0.02	0.06	0.06	0.01	0.62	0.81	0.09	0.59	0.57
Incremental Delay Factor (k)	0.11	0.11		0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
Green Ratio (g/C)	0.10	0.15	0.08	0.06	0.59	0.58	0.64	0.62
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1348	0	104	0	320	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	7.8	0.0	69.1	0.0	69.9	0.0
Permitted Service Time (g_u), s	0.0	0.0	7.8	0.0	44.1	0.0	56.7	0.0
Permitted Queue Service Time (g_{ps}), s			0.0		2.3		4.4	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.107	0.000	2.107	0.000	1.198	0.000	1.389	0.000
Pedestrian F_s / F_{delay}	0.000	0.151	0.000	0.159	0.000	0.095	0.000	0.087
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	296.23	43.54	129.19	52.50	1151.94	10.79	1231.81	8.85
Bicycle F_w / F_v	-3.64	0.57	-3.64	0.05	-3.64	0.80	-3.64	1.03

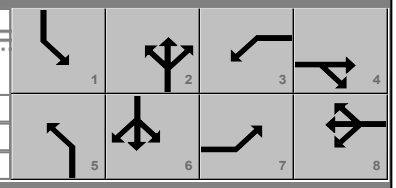
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Miami Valley	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



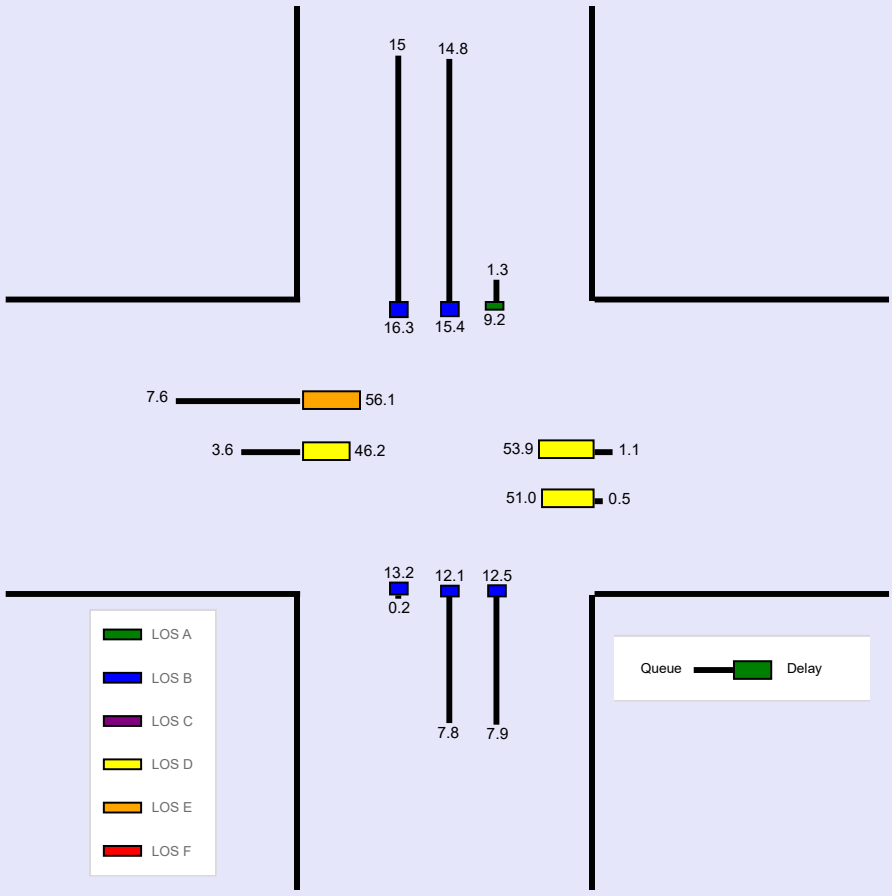
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	260	10	60	10	10	10	10	1840	10	70	2250	80

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	89	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	4.8	69.1	2.1	4.0	7.8						
Yellow	3.0	0.0	4.0	3.0	3.0	3.0						
Red	3.0	0.0	2.5	3.0	3.0	3.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	189.4	91.2		13.6	28.4		4.2	194.5	196.7	32.8	370.9	374.7
Back of Queue (*Q*), veh/ln (95 th percentile)	7.6	3.6		0.5	1.1		0.2	7.8	7.9	1.3	14.8	15.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.90	0.00		0.45	0.00		0.02	0.00	0.00	0.14	0.00	0.00
Control Delay (*d*), s/veh	56.1	46.2		51.0	53.9		13.2	12.1	12.5	9.2	15.4	16.3
Level of Service (LOS)	E	D		D	D		B	B	B	A	B	B
Approach Delay, s/veh / LOS	54.0	D		53.0	D		12.2	B		15.4	B	
Intersection Delay, s/veh / LOS	17.4						B					



--- Messages ---

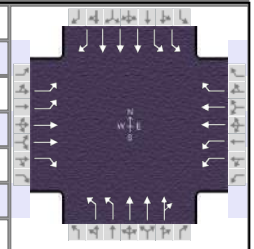
WARNING: According to input data, upstream feeding volume is equal to 84% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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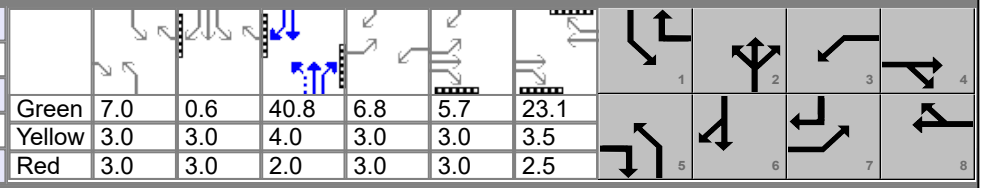
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	280	90	100	250	260	150	1460	50	240	730	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	64	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	0.6	40.8	6.8	5.7	23.1						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	280	90	100	250	260	150	1460	50	240	730	380
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	0	3	3	0	1	1		3	3	3
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.51	0.51	0.51	0.87	0.87	0.87
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	300	0	359	375	0	425	235	0		260	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

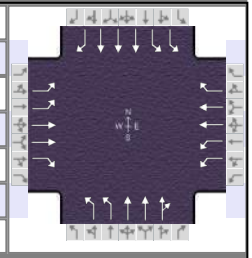
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	55.0	31.0	48.0	24.0	15.0	27.0	14.0	26.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	10	7	10	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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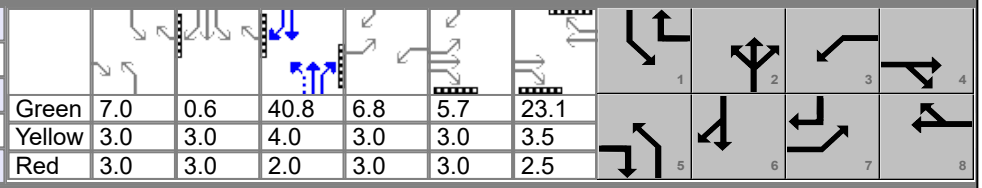
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	280	90	100	250	260	150	1460	50	240	730	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	64	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	0.6	40.8	6.8	5.7	23.1						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	2.0	3.0
Phase Duration, s	24.5	40.8	12.8	29.1	13.0	46.8	19.6	53.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	16.6	10.0	5.7	20.0	5.4		12.4	
Green Extension Time (g_e), s	1.9	3.1	0.4	3.1	0.6	0.0	1.1	0.0
Phase Call Probability	1.00	1.00	0.97	1.00	0.99		1.00	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

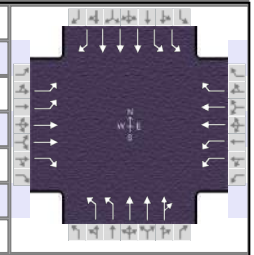
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	440	308	99	110	275	286	154	1040	511	308	936	487
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795	1610	1716	1766	1610	1743	1885	1852	1716	1146	1572
Queue Service Time (g_s), s	14.6	8.0	5.1	3.7	8.2	18.0	3.4	29.9	30.2	10.4	30.3	26.4
Cycle Queue Clearance Time (g_c), s	14.6	8.0	5.1	3.7	8.2	18.0	3.4	29.9	30.2	10.4	30.3	26.4
Green Ratio (*g/C*)	0.15	0.29	0.35	0.06	0.19	0.31	0.40	0.34	0.34	0.11	0.40	0.55
Capacity (*c*), veh/h	538	1040	560	195	679	492	475	1283	630	389	1360	865
Volume-to-Capacity Ratio (*X*)	0.817	0.296	0.177	0.563	0.405	0.581	0.325	0.810	0.810	0.792	0.688	0.564
Back of Queue (*Q*), ft/ln (95 th percentile)	268.4	155.8	87.9	76.6	163.2	283.1	62.6	446.4	461.3	197.8	358.2	451.1
Back of Queue (*Q*), veh/ln (95 th percentile)	10.7	6.2	3.5	3.0	6.4	11.3	2.5	17.7	18.5	7.7	14.0	17.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.89	0.00	0.24	0.20	0.00	0.67	0.27	0.00	0.00	0.76	0.00	0.00
Uniform Delay (d_1), s/veh	49.1	33.1	27.2	55.1	42.5	35.2	26.6	34.9	36.1	50.9	41.1	24.3
Incremental Delay (d_2), s/veh	3.1	0.1	0.1	2.5	0.3	0.8	0.2	3.0	5.9	3.2	2.5	2.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	52.2	33.2	27.3	57.7	42.8	36.0	26.8	37.9	42.0	54.1	43.6	26.6
Level of Service (LOS)	D	C	C	E	D	D	C	D	D	D	D	C
Approach Delay, s/veh / LOS	42.4	D		42.3	D		38.1	D		40.7	D	
Intersection Delay, s/veh / LOS	40.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.85	C	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.19	A	1.04	A	1.49	A	1.30	A

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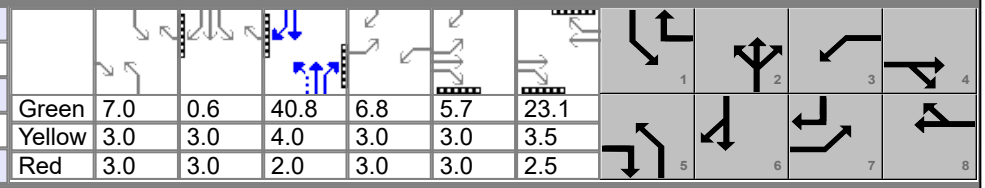
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	280	90	100	250	260	150	1460	50	240	730	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	64	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	0.6	40.8	6.8	5.7	23.1						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

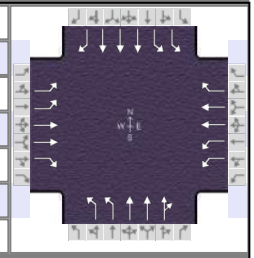
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	1.000	0.977	0.977	1.000	0.992	0.992	1.000	0.977	0.977	0.977
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	1.000	1.000	0.971	0.618	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.982	0.982		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3487	3589	1610	3432	3533	1610	3487	5436	186	3432	3438	1572
Proportion of Vehicles Arriving on Green (P)	0.15	0.29	0.29	0.06	0.19	0.19	0.03	0.36	0.15	0.13	0.20	0.19
Incremental Delay Factor (k)	0.11	0.08	0.08	0.11	0.08	0.08	0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.15	0.29	0.06	0.19	0.40	0.34	0.11	0.40
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	603	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	40.8	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	15.2	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s					3.9			
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		1610				1572
Protected Right Effective Green Time (g_R), s		7.0		13.6				18.5

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.107	0.000	1.852	0.000	1.852	0.000
Pedestrian F_s / F_{delay}	0.000	0.137	0.000	0.147	0.000	0.131	0.000	0.124
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	579.23	30.28	384.21	39.16	680.66	26.11	791.09	21.92
Bicycle F_w / F_v	-3.64	0.70	-3.64	0.55	-3.64	1.00	-3.64	0.82

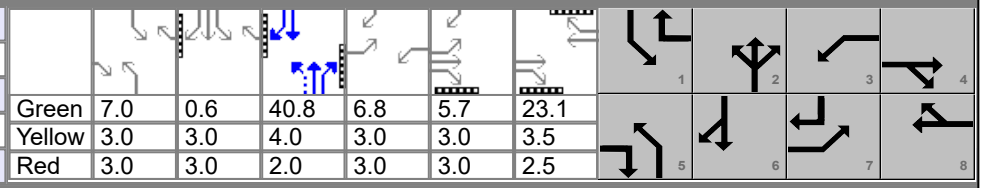
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	Dec 9, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 AM_Build_Option 2.xus		
Project Description	WilmPike - 2050 AM - Option 2				



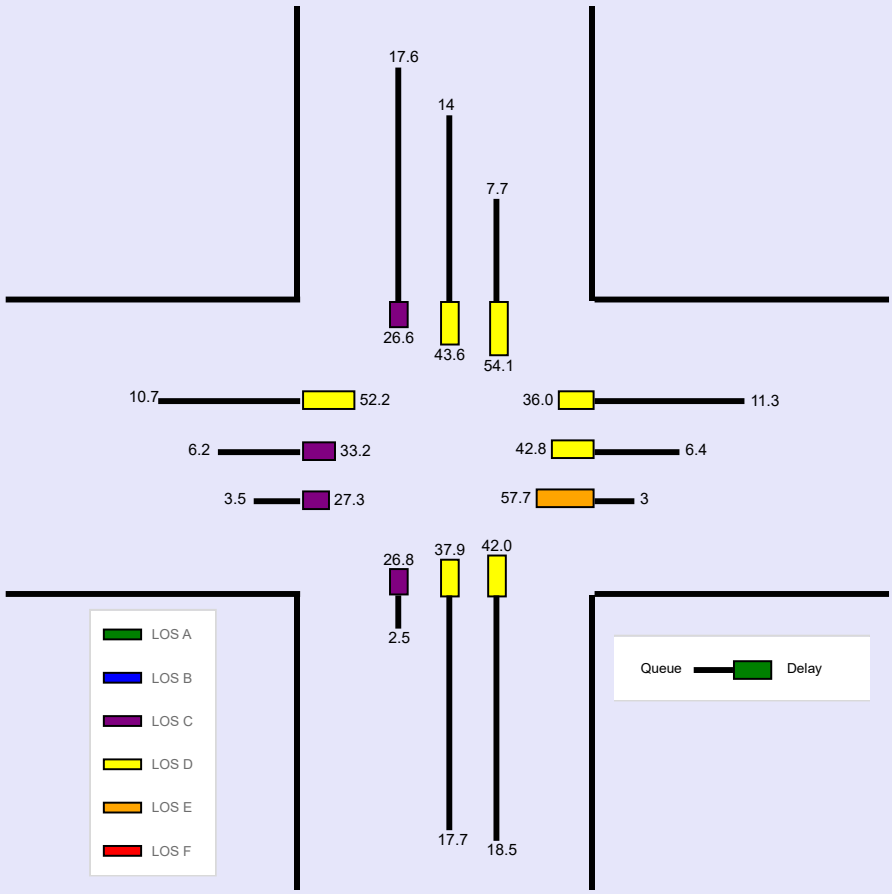
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	400	280	90	100	250	260	150	1460	50	240	730	380

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	64	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	0.6	40.8	6.8	5.7	23.1						
Yellow	3.0	3.0	4.0	3.0	3.0	3.5						
Red	3.0	3.0	2.0	3.0	3.0	2.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	268.4	155.8	87.9	76.6	163.2	283.1	62.6	446.4	461.3	197.8	358.2	451.1
Back of Queue (*Q*), veh/ln (95 th percentile)	10.7	6.2	3.5	3.0	6.4	11.3	2.5	17.7	18.5	7.7	14.0	17.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.89	0.00	0.24	0.20	0.00	0.67	0.27	0.00	0.00	0.76	0.00	0.00
Control Delay (*d*), s/veh	52.2	33.2	27.3	57.7	42.8	36.0	26.8	37.9	42.0	54.1	43.6	26.6
Level of Service (LOS)	D	C	C	E	D	D	C	D	D	D	D	C
Approach Delay, s/veh / LOS	42.4	D		42.3	D		38.1	D		40.7	D	
Intersection Delay, s/veh / LOS	40.3						D					



--- Messages ---

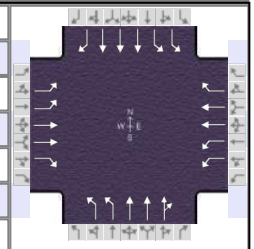
No errors or warnings exist.

--- Comments ---

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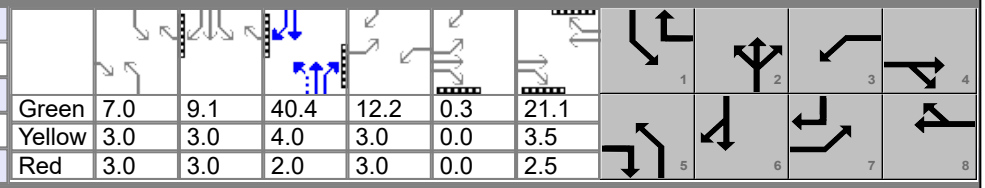
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	490	160	260	320	290	220	1260	140	430	1480	290

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	80	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	9.1	40.4	12.2	0.3	21.1						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	490	160	260	320	290	220	1260	140	430	1480	290
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0	0	0	0	0	0	0		0	0	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	0.69	0.69	0.69	0.79	0.79	0.79
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	300	0	359	375	0	425	235	0		400	0	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	45	45	45	45	45	45

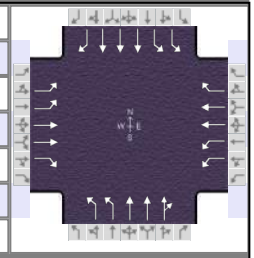
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	21.0	17.0	29.0	25.0	48.0	30.0	44.0	26.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance Interval (R_c), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Minimum Green (G_{min}), s	7	8	7	8	7	20	7	20
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	2.5	3.0	2.5	3.0	2.0	3.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		4.0		4.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		19.0		22.0		18.0		19.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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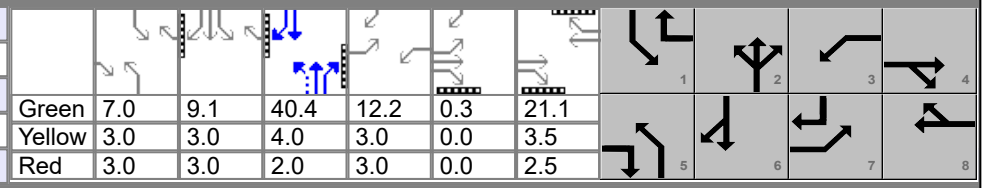
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	490	160	260	320	290	220	1260	140	430	1480	290

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	80	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	9.1	40.4	12.2	0.3	21.1						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	2.0	3.0
Phase Duration, s	18.4	27.4	18.2	27.1	13.0	46.4	28.1	61.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	4.1	3.6	4.1	3.6	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	12.1	18.8	11.3	20.5	5.8		20.0	
Green Extension Time (g_e), s	0.3	1.5	0.8	0.6	0.7	0.0	2.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	0.01	1.00	0.00		0.00	

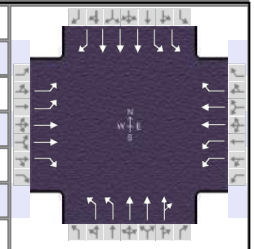
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	301	527	172	280	344	312	176	758	360	534	1836	360
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1757	1809	1610	1757	1809	1610	1757	1900	1799	1757	1173	1610
Queue Service Time (g_s), s	10.1	16.8	11.0	9.3	10.4	18.5	3.8	20.7	20.6	18.0	55.5	7.2
Cycle Queue Clearance Time (g_c), s	10.1	16.8	11.0	9.3	10.4	18.5	3.8	20.7	20.6	18.0	55.5	7.2
Green Ratio (*g/C*)	0.10	0.18	0.24	0.10	0.18	0.36	0.39	0.34	0.34	0.18	0.46	0.57
Capacity (*c*), veh/h	364	644	380	356	636	579	324	1280	606	647	1628	912
Volume-to-Capacity Ratio (*X*)	0.828	0.819	0.453	0.785	0.541	0.538	0.541	0.592	0.594	0.825	1.128	0.395
Back of Queue (*Q*), ft/ln (95 th percentile)	213.3	319.4	193.5	190	204.8	286.2	72.9	353.4	340.6	322.2	518	79
Back of Queue (*Q*), veh/ln (95 th percentile)	8.5	12.8	7.7	7.6	8.2	11.4	2.9	14.1	13.6	12.9	20.7	3.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.71	0.00	0.54	0.51	0.00	0.67	0.31	0.00	0.00	0.81	0.00	0.00
Uniform Delay (d_1), s/veh	52.7	47.5	39.2	52.6	45.1	30.5	30.8	36.4	35.6	54.1	13.4	4.9
Incremental Delay (d_2), s/veh	10.6	7.7	0.6	3.8	0.7	0.8	1.0	1.4	2.9	2.2	64.4	1.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	63.3	55.1	39.8	56.5	45.8	31.3	31.7	37.8	38.5	56.3	77.8	5.9
Level of Service (LOS)	E	E	D	E	D	C	C	D	D	E	F	A
Approach Delay, s/veh / LOS	55.0	D		44.1	D		37.1	D		64.1	E	
Intersection Delay, s/veh / LOS	53.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.86	C	2.58	C	2.57	C
Bicycle LOS Score / LOS	1.31	A	1.26	A	1.45	A	1.79	B

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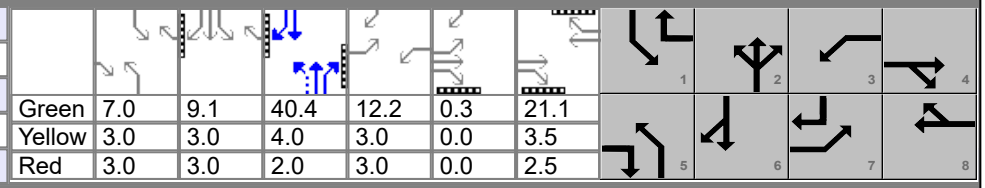
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	490	160	260	320	290	220	1260	140	430	1480	290

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	80	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	9.1	40.4	12.2	0.3	21.1						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

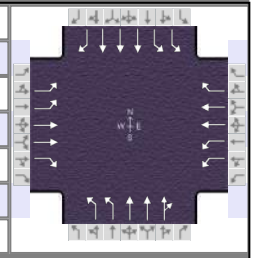
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	1.000	1.000	0.971	0.617	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.947	0.947		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3514	3618	1610	3514	3618	1610	3514	5041	559	3514	3519	1610
Proportion of Vehicles Arriving on Green (P)	0.10	0.18	0.18	0.10	0.18	0.18	0.03	0.27	0.32	0.07	0.78	0.79
Incremental Delay Factor (k)	0.25	0.33	0.08	0.11	0.10	0.11	0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.10	0.18	0.10	0.18	0.39	0.34	0.18	0.46
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	257	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	40.4	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s					0.0			
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610		1610				1610
Protected Right Effective Green Time (g_R), s		7.0		22.1				12.4

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.983	0.000	2.107	0.000	1.852	0.000	1.852	0.000
Pedestrian F_s / F_{delay}	0.000	0.148	0.000	0.149	0.000	0.131	0.000	0.114
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	355.85	40.55	351.37	40.77	673.54	26.39	925.22	17.33
Bicycle F_w / F_v	-3.64	0.83	-3.64	0.77	-3.64	0.96	-3.64	1.30

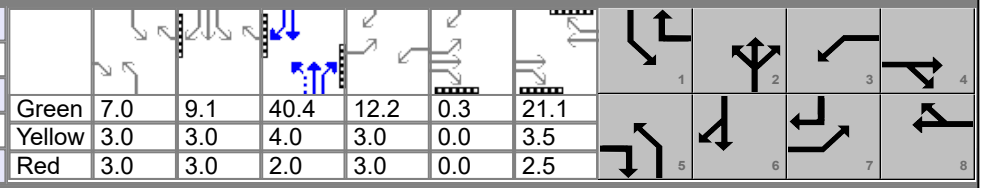
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Wilmington Pike	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	WilmPike & Clyo	File Name	WilmPike Corridor 2050 PM_Build_Option 2.xus		
Project Description	WilmPike - 2050 PM - Option 2				



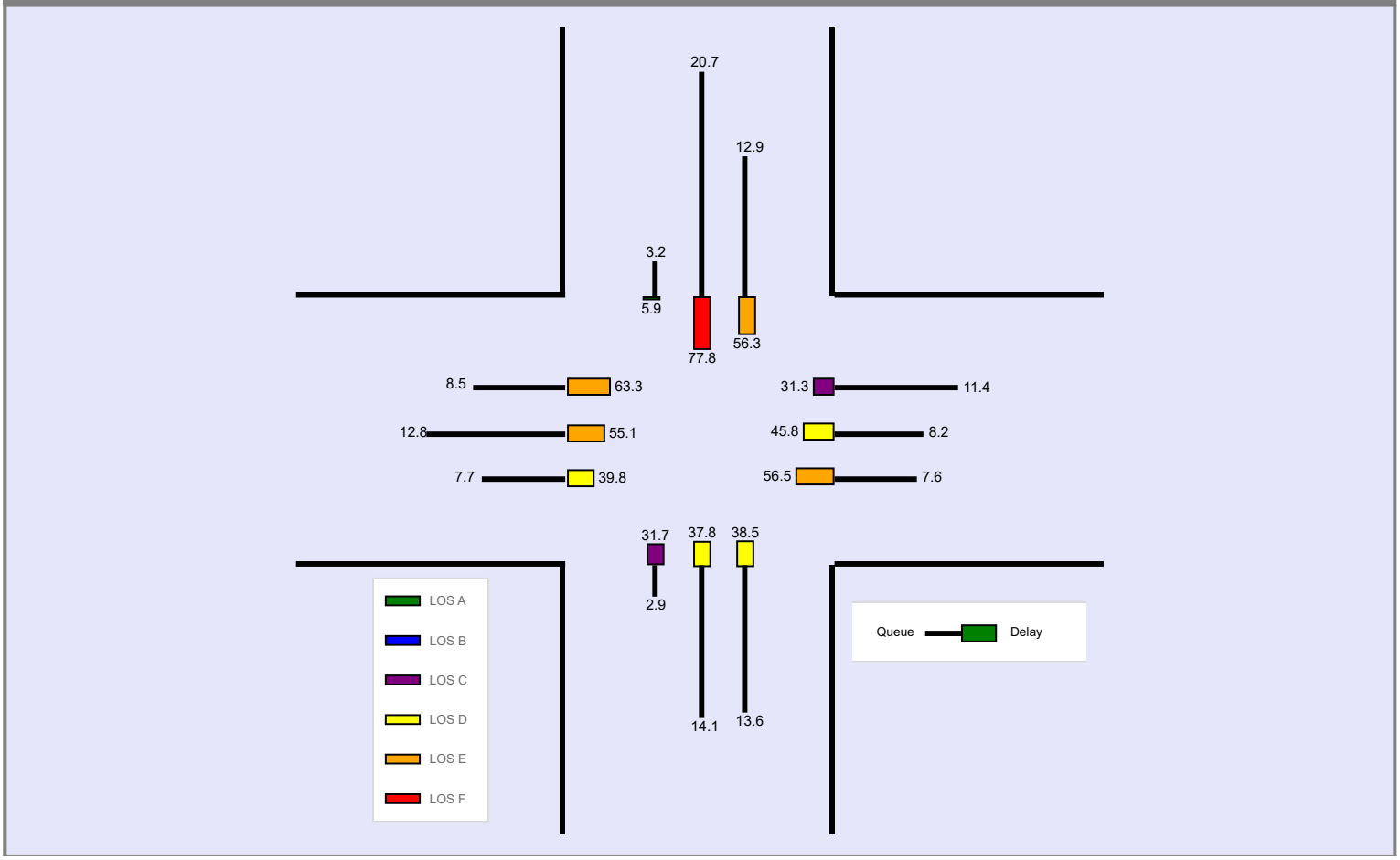
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	280	490	160	260	320	290	220	1260	140	430	1480	290

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	80	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	9.1	40.4	12.2	0.3	21.1						
Yellow	3.0	3.0	4.0	3.0	0.0	3.5						
Red	3.0	3.0	2.0	3.0	0.0	2.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	213.3	319.4	193.5	190	204.8	286.2	72.9	353.4	340.6	322.2	518	79
Back of Queue (*Q*), veh/ln (95 th percentile)	8.5	12.8	7.7	7.6	8.2	11.4	2.9	14.1	13.6	12.9	20.7	3.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.71	0.00	0.54	0.51	0.00	0.67	0.31	0.00	0.00	0.81	0.00	0.00
Control Delay (*d*), s/veh	63.3	55.1	39.8	56.5	45.8	31.3	31.7	37.8	38.5	56.3	77.8	5.9
Level of Service (LOS)	E	E	D	E	D	C	C	D	D	E	F	A
Approach Delay, s/veh / LOS	55.0		D	44.1		D	37.1		D	64.1		E
Intersection Delay, s/veh / LOS	53.6						D					



--- Messages ---

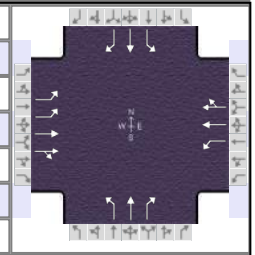
WARNING: According to input data, upstream feeding volume is equal to 74% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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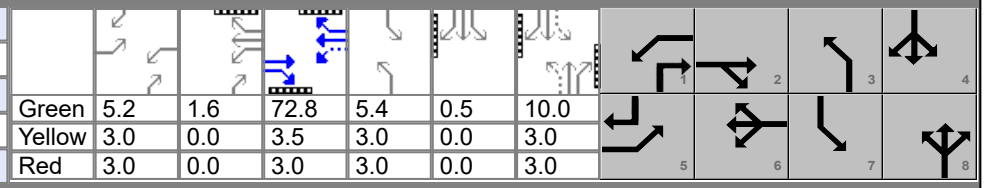
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	330	30	90	490	120	40	10	60	50	20	100

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	69	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.2	1.6	72.8	5.4	0.5	10.0						
Yellow	3.0	0.0	3.5	3.0	0.0	3.0						
Red	3.0	0.0	3.0	3.0	0.0	3.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	330	30	90	490	120	40	10	60	50	20	100
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2		0	0		0	0	0	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	340	0		370	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

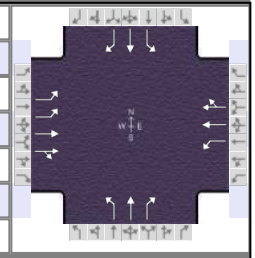
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	50.0	28.0	63.0	41.0	13.0	16.0	13.0	16.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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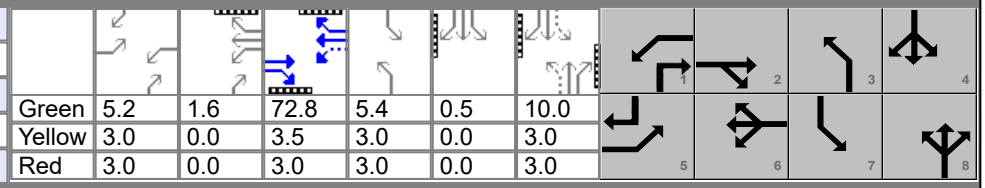
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	330	30	90	490	120	40	10	60	50	20	100

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	69	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.2	1.6	72.8	5.4	0.5	10.0
Yellow	3.0	0.0	3.5	3.0	0.0	3.0
Red	3.0	0.0	3.0	3.0	0.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	11.2	79.3	12.8	80.9	11.4	16.0	11.9	16.5
Change Period, ($Y+R_c$), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.4	3.7	4.4
Queue Clearance Time (g_s), s	3.3		4.5		4.6	6.4	5.3	9.6
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0	0.0	0.3	0.0	0.1
Phase Call Probability	0.75		0.97		0.77	1.00	0.84	1.00
Max Out Probability	0.00		0.00		1.00	0.77	1.00	1.00

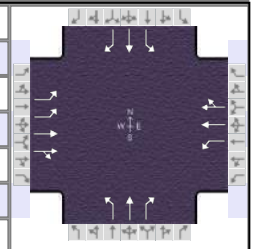
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	41	148	222	106	371	347	43	11	65	54	22	109
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1230	1825	1810	1900	1770	1810	1900	1610	1795	1885	1598
Queue Service Time (g_s), s	1.3	10.3	10.1	2.5	6.1	7.9	2.6	0.6	4.4	3.3	1.3	7.6
Cycle Queue Clearance Time (g_c), s	1.3	10.3	10.1	2.5	6.1	7.9	2.6	0.6	4.4	3.3	1.3	7.6
Green Ratio (*g/C*)	0.04	0.61	0.61	0.66	0.62	0.62	0.13	0.08	0.14	0.13	0.09	0.13
Capacity (*c*), veh/h	151	746	1108	698	1178	1098	226	158	225	258	165	209
Volume-to-Capacity Ratio (*X*)	0.273	0.198	0.200	0.152	0.315	0.316	0.193	0.069	0.289	0.211	0.132	0.519
Back of Queue (*Q*), ft/ln (95 th percentile)	25.3	145.6	193.6	40.8	97.4	122.4	53.3	14	80.8	67.1	28.2	143.1
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	5.7	7.6	1.6	3.9	4.9	2.1	0.6	3.2	2.7	1.1	5.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.07	0.00	0.00	0.11	0.00	0.00	0.71	0.00	1.08	0.29	0.00	0.62
Uniform Delay (d_1), s/veh	50.6	19.2	18.3	7.8	5.0	6.9	46.8	50.7	46.3	46.6	50.5	48.6
Incremental Delay (d_2), s/veh	0.6	0.5	0.3	0.1	0.6	0.6	0.3	0.2	0.7	0.3	0.4	2.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	51.2	19.6	18.6	7.9	5.6	7.5	47.1	50.9	47.0	46.9	50.9	50.6
Level of Service (LOS)	D	B	B	A	A	A	D	D	D	D	D	D
Approach Delay, s/veh / LOS	22.2	C		6.7	A		47.4	D		49.6	D	
Intersection Delay, s/veh / LOS	19.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.08	B	2.24	B	2.31	B	2.47	B
Bicycle LOS Score / LOS	0.85	A	1.12	A	0.68	A	0.79	A

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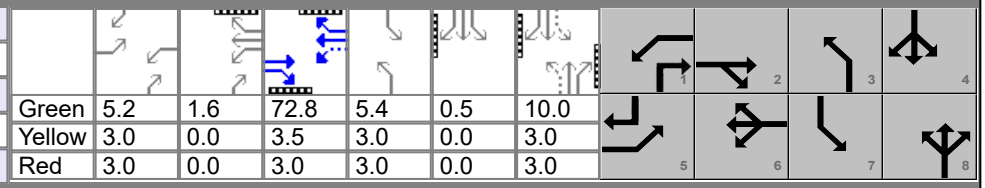
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	330	30	90	490	120	40	10	60	50	20	100

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	69	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.2	1.6	72.8	5.4	0.5	10.0
Yellow	3.0	0.0	3.5	3.0	0.0	3.0
Red	3.0	0.0	3.0	3.0	0.0	3.0

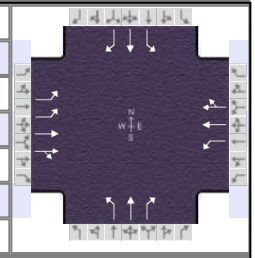
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.657	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.976	0.976		0.932	0.932		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3459	2801	254	1810	2950	720	1810	1900	1610	1795	1885	1598
Proportion of Vehicles Arriving on Green (P)	0.13	0.33	0.53	0.04	0.81	0.65	0.04	0.08	0.08	0.05	0.09	0.09
Incremental Delay Factor (k)	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.11	0.11	0.08	0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.04	0.61	0.66	0.62	0.13	0.08	0.13	0.09
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	1028	0	1412	0	1415	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	72.8	0.0	10.0	0.0	10.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	62.5	0.0	7.2	0.0	9.4	0.0
Permitted Queue Service Time (g_{ps}), s			1.2		0.1		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1610		1598
Protected Right Effective Green Time (g_R), s						6.8		5.2

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.089	0.000	0.087	0.000	0.157	0.000	0.157
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1214.15	9.26	1240.38	8.66	166.63	50.42	174.95	49.96
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.63	-3.64	0.20	-3.64	0.30

HCS Signalized Intersection Results Graphical Summary

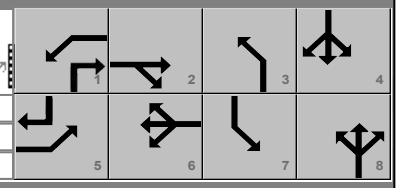
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



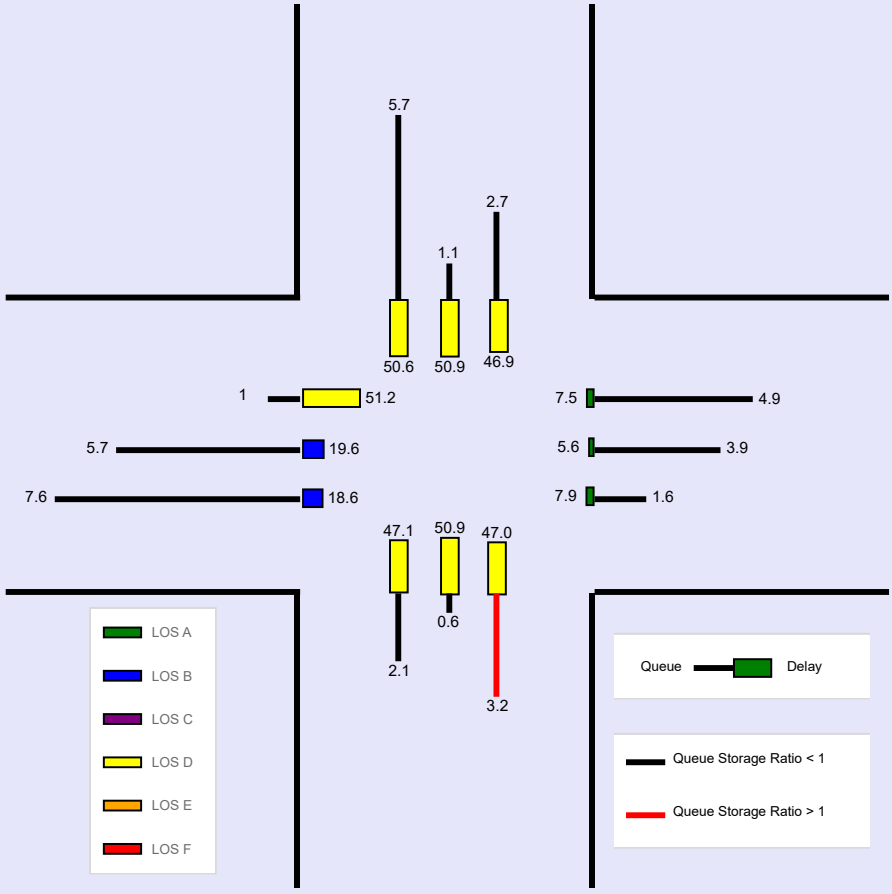
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	330	30	90	490	120	40	10	60	50	20	100

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	69	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	1.6	72.8	5.4	0.5	10.0	
Yellow	3.0	0.0	3.5	3.0	0.0	3.0	
Red	3.0	0.0	3.0	3.0	0.0	3.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	25.3	145.6	193.6	40.8	97.4	122.4	53.3	14	80.8	67.1	28.2	143.1
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	5.7	7.6	1.6	3.9	4.9	2.1	0.6	3.2	2.7	1.1	5.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.07	0.00	0.00	0.11	0.00	0.00	0.71	0.00	1.08	0.29	0.00	0.62
Control Delay (*d*), s/veh	51.2	19.6	18.6	7.9	5.6	7.5	47.1	50.9	47.0	46.9	50.9	50.6
Level of Service (LOS)	D	B	B	A	A	A	D	D	D	D	D	D
Approach Delay, s/veh / LOS	22.2	C		6.7	A		47.4	D		49.6	D	
Intersection Delay, s/veh / LOS	19.2						B					



--- Messages ---

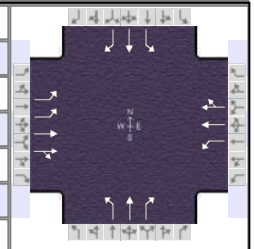
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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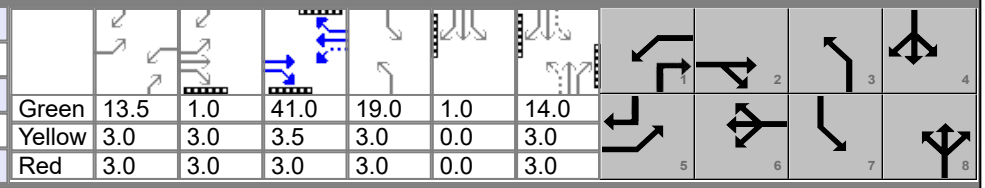
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	490	710	100	230	450	240	290	90	120	340	60	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.5	1.0		41.0	19.0	1.0	14.0					
Yellow	3.0	3.0		3.5	3.0	0.0	3.0					
Red	3.0	3.0		3.0	3.0	0.0	3.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	490	710	100	230	450	240	290	90	120	340	60	320
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	2	2		0	0		0	0	0	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	0.81	0.81	0.81	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	340	0		370	0		75	0	75	230	0	230
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

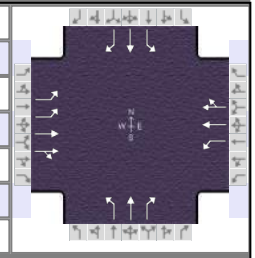
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	47.0	33.0	41.0	27.0	25.0	20.0	26.0	21.0
Yellow Change Interval (*Y*), s	3.0	3.5	3.0	3.5	3.0	3.0	3.0	3.0
Red Clearance Interval (R_c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G_{min}), s	7	20	7	20	7	10	7	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	2.5	2.0	2.5	2.0	2.5	3.0	2.5	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		5.0		5.0		4.0		4.0
Pedestrian Clearance Time (*PC*), s		17.0		23.0		21.0		22.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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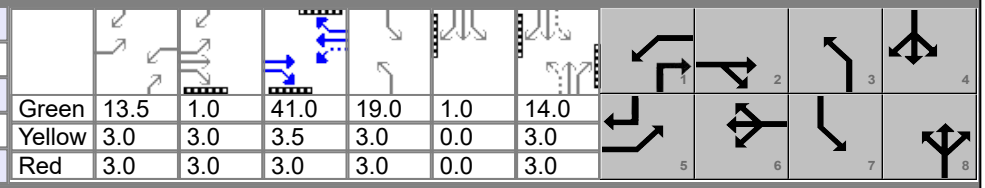
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	490	710	100	230	450	240	290	90	120	340	60	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.5	1.0		41.0	19.0	1.0	14.0					
Yellow	3.0	3.0		3.5	3.0	0.0	3.0					
Red	3.0	3.0		3.0	3.0	0.0	3.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	26.5	54.5	19.5	47.5	25.0	20.0	26.0	21.0
Change Period, (*Y+R c*), s	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.6	0.0	3.6	0.0	3.7	4.3	3.7	4.3
Queue Clearance Time (*g s*), s	18.9		12.9		19.9	10.0	22.0	17.0
Green Extension Time (*g e*), s	1.7	0.0	0.6	0.0	0.0	1.1	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	1.00	1.00	1.00

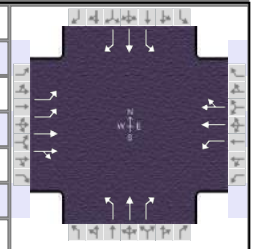
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	523	351	514	255	406	360	309	96	128	362	64	340
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1230	1803	1810	1900	1677	1810	1900	1610	1795	1885	1598
Queue Service Time (*g s*), s	16.9	27.2	27.6	10.9	20.9	16.8	17.9	5.6	8.0	20.0	3.7	15.0
Cycle Queue Clearance Time (*g c*), s	16.9	27.2	27.6	10.9	20.9	16.8	17.9	5.6	8.0	20.0	3.7	15.0
Green Ratio (*g/C*)	0.17	0.40	0.40	0.45	0.34	0.34	0.28	0.12	0.23	0.28	0.12	0.30
Capacity (*c*), veh/h	591	492	721	361	649	573	452	222	369	451	236	473
Volume-to-Capacity Ratio (*X*)	0.885	0.712	0.713	0.707	0.625	0.628	0.682	0.432	0.346	0.803	0.271	0.720
Back of Queue (*Q*), ft/ln (95 th percentile)	224.2	315.2	432.4	189.4	362.1	226.3	328.5	124.1	144.8	405.4	80.6	369.7
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	12.4	17.0	7.6	14.5	9.1	13.1	5.0	5.8	16.1	3.2	14.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.66	0.00	0.00	0.51	0.00	0.00	4.38	0.00	1.93	1.76	0.00	1.61
Uniform Delay (*d 1*), s/veh	34.9	26.3	27.2	23.6	31.2	19.7	38.1	49.3	38.7	39.2	47.5	37.8
Incremental Delay (*d 2*), s/veh	2.9	7.0	4.8	1.6	3.8	4.4	3.9	1.3	0.6	9.8	0.6	5.3
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	37.8	33.2	32.0	25.2	35.0	24.0	42.0	50.6	39.3	49.0	48.2	43.1
Level of Service (LOS)	D	C	C	C	C	C	D	D	D	D	D	D
Approach Delay, s/veh / LOS	34.5	C		28.7	C		42.9	D		46.3	D	
Intersection Delay, s/veh / LOS	36.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.29	B	2.31	B	2.46	B
Bicycle LOS Score / LOS	1.63	B	1.30	A	1.37	A	1.75	B

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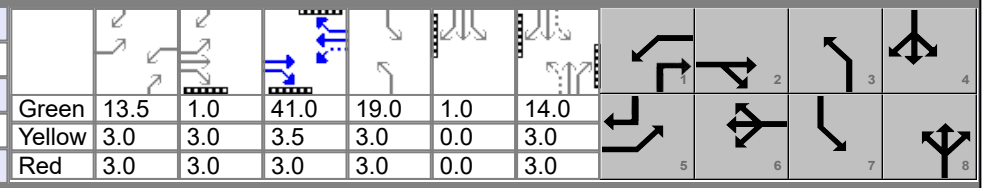
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	490	710	100	230	450	240	290	90	120	340	60	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	13.5	1.0	41.0	19.0	1.0	14.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						

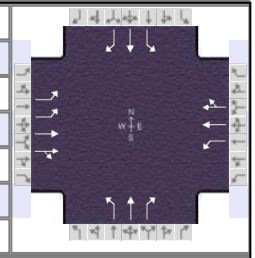
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	0.984	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.657	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.964	0.964		0.882	0.882		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)												
Movement Saturation Flow Rate (s), veh/h	3459	2658	374	1810	2336	1241	1810	1900	1610	1795	1885	1598
Proportion of Vehicles Arriving on Green (P)	0.40	0.47	0.39	0.14	0.38	0.66	0.16	0.12	0.12	0.17	0.13	0.13
Incremental Delay Factor (k)	0.08	0.50	0.50	0.08	0.50	0.50	0.23	0.11	0.11	0.33	0.11	0.28

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0
Green Ratio (g/C)	0.17	0.40	0.45	0.34	0.28	0.12	0.28	0.13
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	650	0	1359	0	1310	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	41.0	0.0	14.0	0.0	14.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	18.1	0.0	9.3	0.0	8.4	0.0
Permitted Queue Service Time (g_{ps}), s			14.1		1.4		4.7	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						1610		1598
Protected Right Effective Green Time (g_R), s						13.5		20.5

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.389	0.000	1.557	0.000	1.557	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.123	0.000	0.131	0.000	0.154	0.000	0.153
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	800.32	21.59	683.11	26.01	233.33	46.82	250.00	45.94
Bicycle F_w / F_v	-3.64	1.14	-3.64	0.81	-3.64	0.88	-3.64	1.26

HCS Signalized Intersection Results Graphical Summary

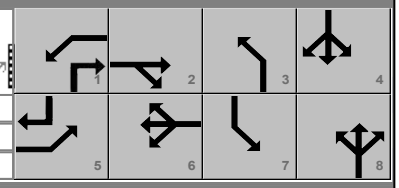
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.94
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Charles & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



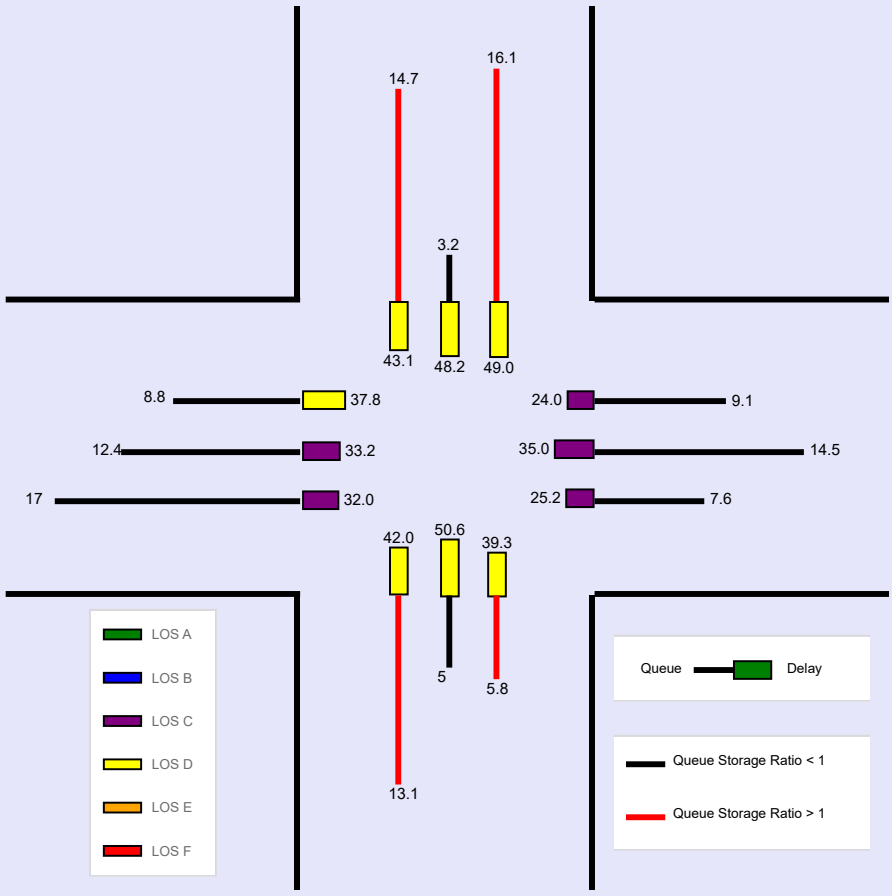
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	490	710	100	230	450	240	290	90	120	340	60	320

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	6	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.5	1.0	41.0	19.0	1.0	14.0						
Yellow	3.0	3.0	3.5	3.0	0.0	3.0						
Red	3.0	3.0	3.0	3.0	0.0	3.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	224.2	315.2	432.4	189.4	362.1	226.3	328.5	124.1	144.8	405.4	80.6	369.7
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	12.4	17.0	7.6	14.5	9.1	13.1	5.0	5.8	16.1	3.2	14.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.66	0.00	0.00	0.51	0.00	0.00	4.38	0.00	1.93	1.76	0.00	1.61
Control Delay (*d*), s/veh	37.8	33.2	32.0	25.2	35.0	24.0	42.0	50.6	39.3	49.0	48.2	43.1
Level of Service (LOS)	D	C	C	C	C	C	D	D	D	D	D	D
Approach Delay, s/veh / LOS	34.5	C		28.7	C		42.9	D		46.3	D	
Intersection Delay, s/veh / LOS	36.6						D					



--- Messages ---

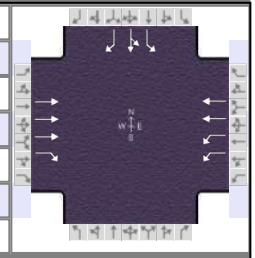
WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				

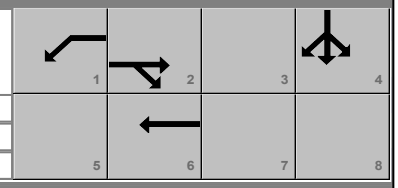


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	40	430	410					250	0	330

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	90	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.1	51.2	30.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	40	430	410					250	0	330
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900					1900	1900	1900
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		2	0	2	2					2	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		0.99	0.99	0.98	0.98					1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0	12.0	12.0					12.0	12.0	12.0
Turn Bay Length, ft		0	0	250	0					705	0	705
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					35	35	35

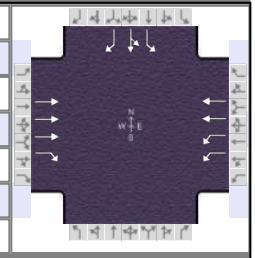
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		35.0	24.0	59.0				61.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	3.0	2.0				3.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				7.0		7.0		0.0
Pedestrian Clearance Time (*PC*), s				10.0		10.0		10.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				

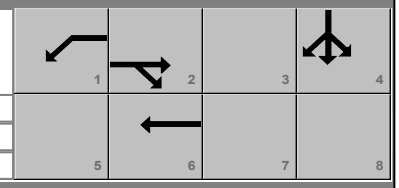


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	40	430	410					250	0	330

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	90	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.1	51.2	30.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		7.3	2.0	4.0				9.0
Phase Duration, s		57.2	26.1	83.3				36.7
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	4.1	0.0				4.3
Queue Clearance Time (*g s*), s			18.0					28.1
Green Extension Time (*g e*), s		0.0	2.1	0.0				2.6
Phase Call Probability			1.00					1.00
Max Out Probability			0.00					0.00

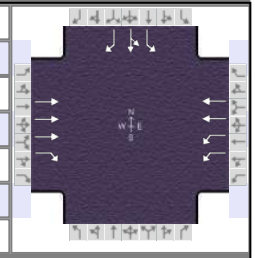
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6					7	4	14
Adjusted Flow Rate (*v*), veh/h		421	38	488	466					272	0	359
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1698	1610	1730	1781					1781	1870	1585
Queue Service Time (*g s*), s		8.4	2.2	16.0	5.6					16.1	0.0	26.1
Cycle Queue Clearance Time (*g c*), s		8.4	2.2	16.0	5.6					16.1	0.0	26.1
Green Ratio (*g/C*)		0.43	0.43	0.17	0.64					0.26	0.26	0.26
Capacity (*c*), veh/h		2173	687	580	2294					456	479	406
Volume-to-Capacity Ratio (*X*)		0.194	0.056	0.842	0.203					0.596	0.000	0.884
Back of Queue (*Q*), ft/ln (95 th percentile)		166.5	39.1	266.3	92.5					291.7	0	410.8
Back of Queue (*Q*), veh/ln (95 th percentile)		6.6	1.6	10.5	3.6					11.5	0.0	16.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	1.07	0.00					0.41	0.00	0.58
Uniform Delay (*d 1*), s/veh		31.4	27.1	42.3	7.3					39.2	0.0	42.9
Incremental Delay (*d 2*), s/veh		0.2	0.2	3.4	0.2					1.3	0.0	6.5
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (*d*), s/veh		31.6	27.3	45.7	7.5					40.4	0.0	49.4
Level of Service (LOS)		C	C	D	A					D		D
Approach Delay, s/veh / LOS	31.2	C		27.1	C		0.0			45.6	D	
Intersection Delay, s/veh / LOS	33.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.69	B	1.88	B	2.62	C	2.47	B
Bicycle LOS Score / LOS	0.77	A	1.24	A			1.53	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				

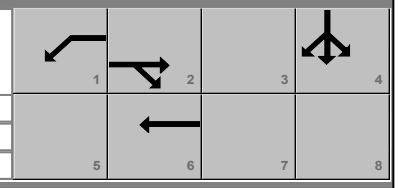


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	40	430	410					250	0	330

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	90	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.1	51.2	30.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



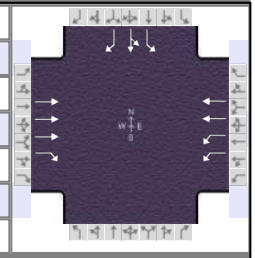
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.984	1.000	0.984	0.984	1.000				0.984	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.908	1.000	0.971	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000					0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	5267	1610	3459	3651	0				1781	1870	1585
Proportion of Vehicles Arriving on Green (P)	0.00	0.19	0.24	0.27	0.70	0.00	0.00	0.00	0.00	0.26	0.00	0.26
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50					0.11		0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.43	0.17	0.64				0.26
Permitted Saturation Flow Rate (s_p), veh/h/ln		942	0	0				1781
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	0.0	0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		51.2	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						0
Protected Right Effective Green Time (g_R), s		0.0						0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.120	0.000	0.081	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	852.97	19.74	1288.16	7.60	-83.33	65.10		67.20
Bicycle F_w / F_v	-3.64	0.29	-3.64	0.75	-3.64		-3.64	1.04

HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				

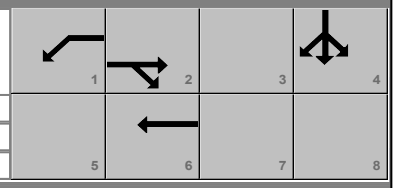


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		440	40	430	410					250	0	330

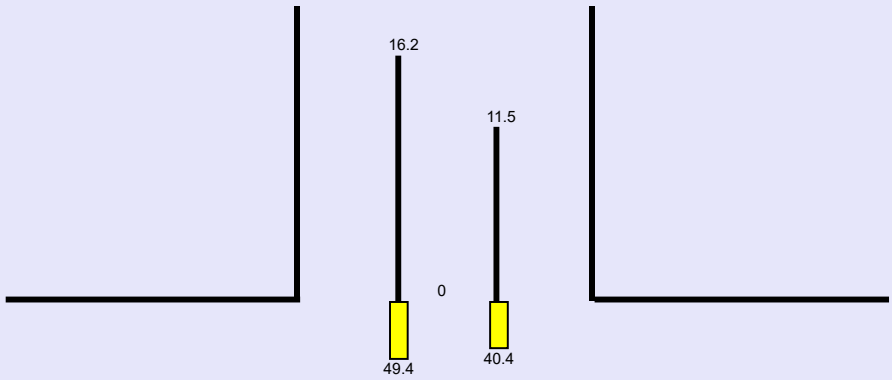
Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	90	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

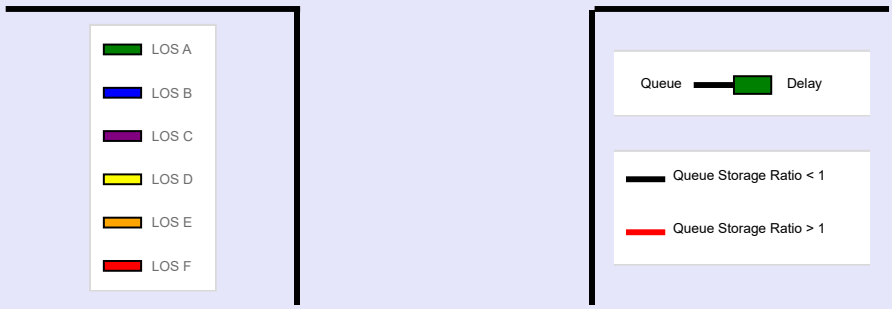


Green	20.1	51.2	30.7	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		166.5	39.1	266.3	92.5					291.7	0	410.8
Back of Queue (*Q*), veh/ln (95 th percentile)		6.6	1.6	10.5	3.6					11.5	0.0	16.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	1.07	0.00					0.41	0.00	0.58
Control Delay (*d*), s/veh		31.6	27.3	45.7	7.5					40.4	0.0	49.4
Level of Service (LOS)		C	C	D	A					D		D
Approach Delay, s/veh / LOS	31.2		C	27.1		C	0.0			45.6		D
Intersection Delay, s/veh / LOS	33.7					C						





--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: According to input data, upstream feeding volume is equal to 88% of downstream exit volume during time period #1, for thru movement #2.

WARNING: According to input data, upstream feeding volume is equal to 74% of downstream exit volume during time period #1, for thru movement #6.

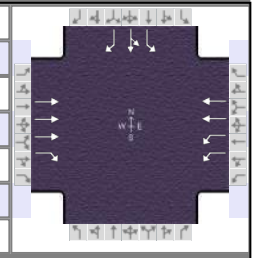
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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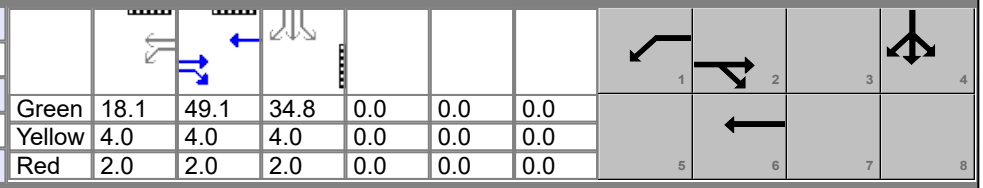
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1280	110	410	600					410	0	370

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	18	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	18.1	49.1	34.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1280	110	410	600					410	0	370
Initial Queue (Q_b), veh/h		0	0	0	0					0	0	0
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900					1900	1900	1900
Parking (N_m), man/h		None			None						None	
Heavy Vehicles (P_{HV}), %		2	0	2	2					2	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0				0	0	0
Arrival Type (*AT*)		3	3	3	3					3	3	3
Upstream Filtering (*I*)		0.65	0.65	0.97	0.97					1.00	1.00	1.00
Lane Width (*W*), ft		12.0	12.0	12.0	12.0					12.0	12.0	12.0
Turn Bay Length, ft		0	0	250	0					705	0	705
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		35	35	35	35					35	35	35

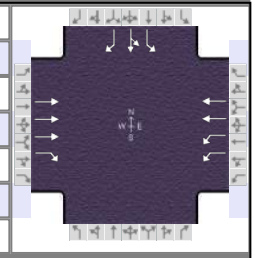
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		28.0	14.0	42.0				78.0
Yellow Change Interval (*Y*), s		4.0	4.0	4.0				4.0
Red Clearance Interval (R_c), s		2.0	2.0	2.0				2.0
Minimum Green (G_{min}), s		20	7	20				10
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0			2.0	2.0
Extension of Effective Green (*e*), s		2.0	2.0	2.0			2.0	2.0
Passage (*PT*), s		2.0	3.0	2.0				3.0
Recall Mode		Min	Off	Min				Off
Dual Entry		Yes	No	Yes				Yes
Walk (*Walk*), s				7.0		7.0		0.0
Pedestrian Clearance Time (*PC*), s				10.0		10.0		10.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0		No	0.0	0	No		0		0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0				12.0	5.0	2.0
Pedestrian Signal / Occupied Parking		0.50		No	0.50		No			No	0.50	

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				

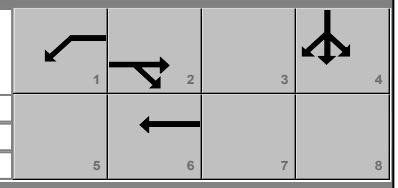


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1280	110	410	600					410	0	370

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	18	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	18.1	49.1	34.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		7.3	2.0	4.0				9.0
Phase Duration, s		55.1	24.1	79.2				40.8
Change Period, (*Y+R c*), s		6.0	6.0	6.0				6.0
Max Allow Headway (*MAH*), s		0.0	4.1	0.0				4.2
Queue Clearance Time (*g s*), s			16.2					31.0
Green Extension Time (*g e*), s		0.0	1.8	0.0				3.8
Phase Call Probability			1.00					1.00
Max Out Probability			0.00					0.00

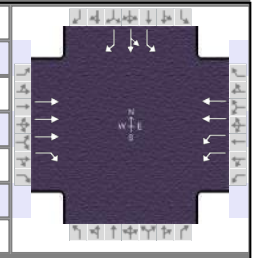
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6					7	4	14
Adjusted Flow Rate (*v*), veh/h		1149	99	423	619					446	0	402
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1698	1610	1730	1781					1781	1870	1585
Queue Service Time (*g s*), s		18.3	2.6	14.2	14.0					28.4	0.0	29.0
Cycle Queue Clearance Time (*g c*), s		18.3	2.6	14.2	14.0					28.4	0.0	29.0
Green Ratio (*g/C*)		0.41	0.41	0.15	0.61					0.29	0.29	0.29
Capacity (*c*), veh/h		2087	659	521	2173					516	542	459
Volume-to-Capacity Ratio (*X*)		0.550	0.150	0.811	0.285					0.863	0.000	0.876
Back of Queue (*Q*), ft/ln (95 th percentile)		255.9	43.6	266.5	263.7					476.3	0	442
Back of Queue (*Q*), veh/ln (95 th percentile)		10.1	1.7	10.5	10.4					18.8	0.0	17.4
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	1.07	0.00					0.68	0.00	0.63
Uniform Delay (*d 1*), s/veh		21.6	11.7	50.2	18.1					40.4	0.0	40.6
Incremental Delay (*d 2*), s/veh		0.7	0.3	3.0	0.3					4.4	0.0	5.4
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Control Delay (*d*), s/veh		22.3	12.0	53.2	18.4					44.8	0.0	46.0
Level of Service (LOS)		C	B	D	B					D		D
Approach Delay, s/veh / LOS	21.5	C		32.5	C		0.0			45.4	D	
Intersection Delay, s/veh / LOS	31.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.69	B	1.89	B	2.62	C	2.47	B
Bicycle LOS Score / LOS	1.32	A	1.39	A			1.89	B

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HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				

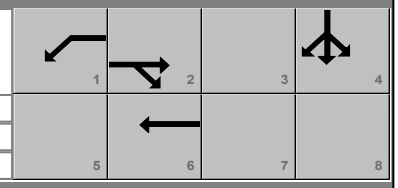


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1280	110	410	600					410	0	370

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	18	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	18.1	49.1	34.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



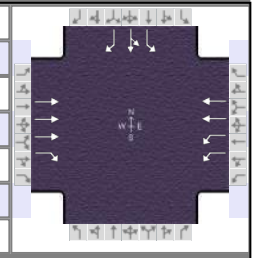
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.984	1.000	0.984	0.984	1.000				0.984	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.908	1.000	0.971	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000					0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000					0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000						1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000						1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000				1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	5267	1610	3459	3651	0				1781	1870	1585
Proportion of Vehicles Arriving on Green (P)	0.00	0.52	0.68	0.14	0.40	0.00	0.00	0.00	0.00	0.29	0.00	0.29
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50					0.11		0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	6.0	6.0				4.0
Green Ratio (g/C)		0.41	0.15	0.61				0.29
Permitted Saturation Flow Rate (s_p), veh/h/ln		817	0	0				1781
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0				0.0
Permitted Service Time (g_u), s		0.0	0.0	0.0				0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		49.1	0.0	0.0				0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						0
Protected Right Effective Green Time (g_R), s		0.0						0.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	0.972	0.000	1.198	0.000	1.852	0.000	1.710	0.000
Pedestrian F_s / F_{delay}	0.000	0.122	0.000	0.089	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	819.14	20.92	1220.45	9.12	-83.33	65.10		67.20
Bicycle F_w / F_v	-3.64	0.83	-3.64	0.91	-3.64		-3.64	1.40

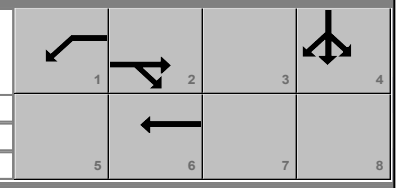
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 SB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				

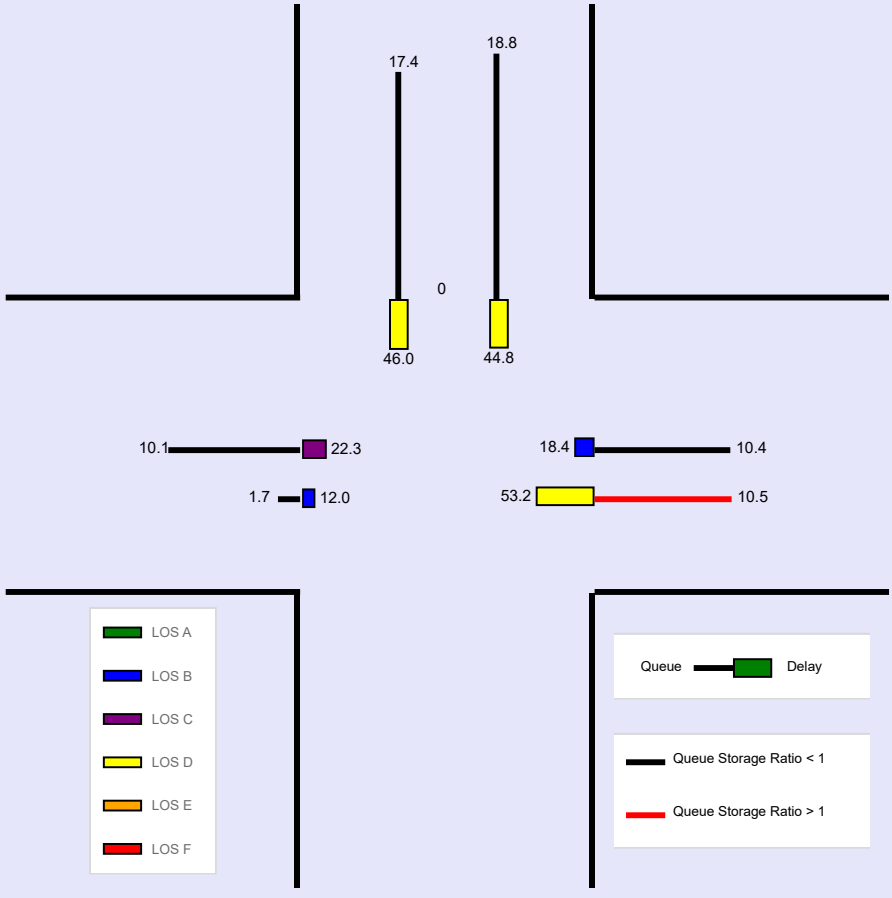


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1280	110	410	600					410	0	370

Signal Information					EB		WB			NB			SB		
Cycle, s	120.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	18	Reference Point	End	Green	18.1	49.1		34.8	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	0.0	0.0	0.0					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		255.9	43.6	266.5	263.7					476.3	0	442
Back of Queue (*Q*), veh/ln (95 th percentile)		10.1	1.7	10.5	10.4					18.8	0.0	17.4
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	1.07	0.00					0.68	0.00	0.63
Control Delay (*d*), s/veh		22.3	12.0	53.2	18.4					44.8	0.0	46.0
Level of Service (LOS)		C	B	D	B					D		D
Approach Delay, s/veh / LOS	21.5	C		32.5	C		0.0			45.4	D	
Intersection Delay, s/veh / LOS	31.6	C										



--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

WARNING: According to input data, upstream feeding volume is equal to 80% of downstream exit volume during time period #1, for thru movement #2.

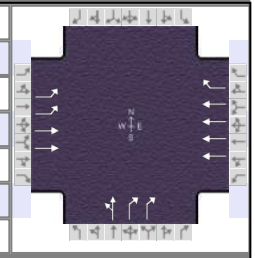
WARNING: The shared-plus-exclusive turn lane solution is an approximation of the HCM method, because more than three lane groups cannot be accommodated. Input data for Percent Turns in Shared Lane are used to specify proportion of turning vehicles in the shared lane.

--- Comments ---

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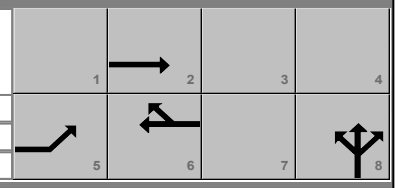
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	350			770	290	70	0	290			

Signal Information					EB			WB			NB			SB		
Cycle, s	120.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	45	Reference Point	End	Green	14.4	71.5		16.2	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0		4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0		2.0	0.0	0.0	0.0					



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	350			770	290	70	0	290			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900			1900	1900	1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	2	2			2	0		2	2			
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.94	0.94			0.94	0.94	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0		12.0	12.0			
Turn Bay Length, ft	250	0			0	600		0	950			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	35	35	35			

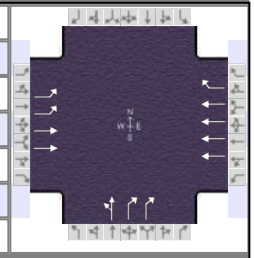
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	18.0	59.0		41.0		61.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		
Minimum Green (G_{min}), s	7	20		20		10		
Start-Up Lost Time (*l1*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0		2.0		
Recall Mode	Min	Min		Min		Off		
Dual Entry	No	Yes		Yes		Yes		
Walk (*Walk*), s		7.0				7.0		7.0
Pedestrian Clearance Time (*PC*), s		10.0				10.0		10.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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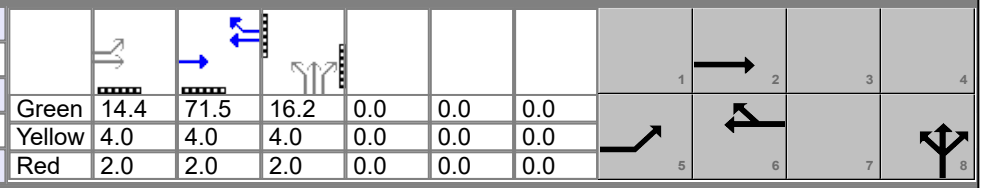
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	350			770	290	70	0	290			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.4	71.5	16.2	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	2.0	4.0		7.3		11.0		
Phase Duration, s	20.4	97.8		77.5		22.2		
Change Period, (*Y+R c*), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.3		
Queue Clearance Time (*g s*), s	13.5					15.1		
Green Extension Time (*g e*), s	0.8	0.0		0.0		1.0		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.00					0.00		

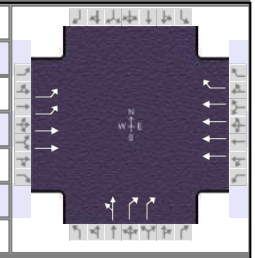
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	341	351			878	331		76	315			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1781			1698	1610		1781	1403			
Queue Service Time (*g s*), s	11.5	0.7			6.2	9.5		4.6	13.1			
Cycle Queue Clearance Time (*g c*), s	11.5	0.7			6.2	9.5		4.6	13.1			
Green Ratio (*g/C*)	0.12	0.77			0.60	0.60		0.13	0.13			
Capacity (*c*), veh/h	414	2725			4047	959		240	378			
Volume-to-Capacity Ratio (*X*)	0.824	0.129			0.217	0.345		0.317	0.834			
Back of Queue (*Q*), ft/ln (95 th percentile)	217.5	9.9			100.4	141.4		94.4	208.6			
Back of Queue (*Q*), veh/ln (95 th percentile)	8.6	0.4			4.0	5.7		3.7	8.2			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.87	0.00			0.00	0.24		0.00	0.22			
Uniform Delay (*d 1*), s/veh	51.1	0.7			9.4	8.4		46.9	50.6			
Incremental Delay (*d 2*), s/veh	1.5	0.1			0.1	0.9		0.3	1.9			
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0	0.0			
Control Delay (*d*), s/veh	52.6	0.8			9.5	9.4		47.2	52.5			
Level of Service (LOS)	D	A			A	A		D	D			
Approach Delay, s/veh / LOS	26.3	C		9.5	A		51.5	D		0.0		
Intersection Delay, s/veh / LOS	21.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.85	B	1.66	B	2.62	C	2.75	C
Bicycle LOS Score / LOS	1.11	A	0.96	A	1.13	A		

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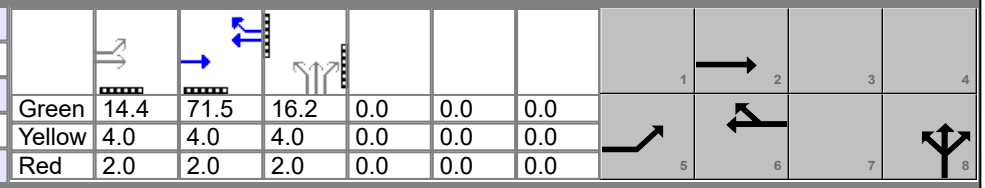
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	350			770	290	70	0	290			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.4	71.5	16.2	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

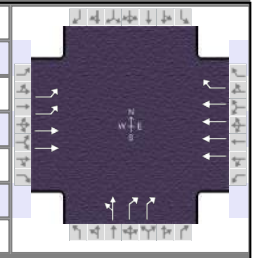
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	1.000	1.000	0.984	1.000	1.000	0.984	0.984			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.908	1.000	1.000	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.952	0.952				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	3459	3651	0	0	6965	1610	1781	0	2806			
Proportion of Vehicles Arriving on Green (P)	0.13	0.95	0.00	0.00	0.66	0.71	0.13	0.00	0.13	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50		0.04	0.04			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		4.0		
Green Ratio (g/C)	0.12	0.77		0.60		0.13		
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		1046		0		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0		0.0		
Permitted Service Time (g_u), s	0.0	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0		71.5		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0		0		
Protected Right Effective Green Time (g_R), s				0.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.972	0.000	1.852	0.000	1.983	0.000
Pedestrian F_s / F_{delay}	0.000	0.048	0.000	0.092	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1530.57	3.31	1191.37	9.81		67.20	-83.33	65.10
Bicycle F_w / F_v	-3.64	0.62	-3.64	0.48	-3.64	0.65	-3.64	

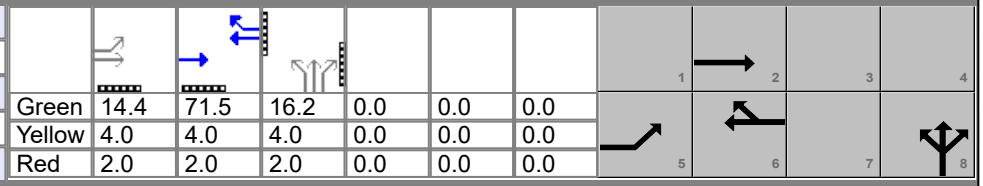
HCS Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



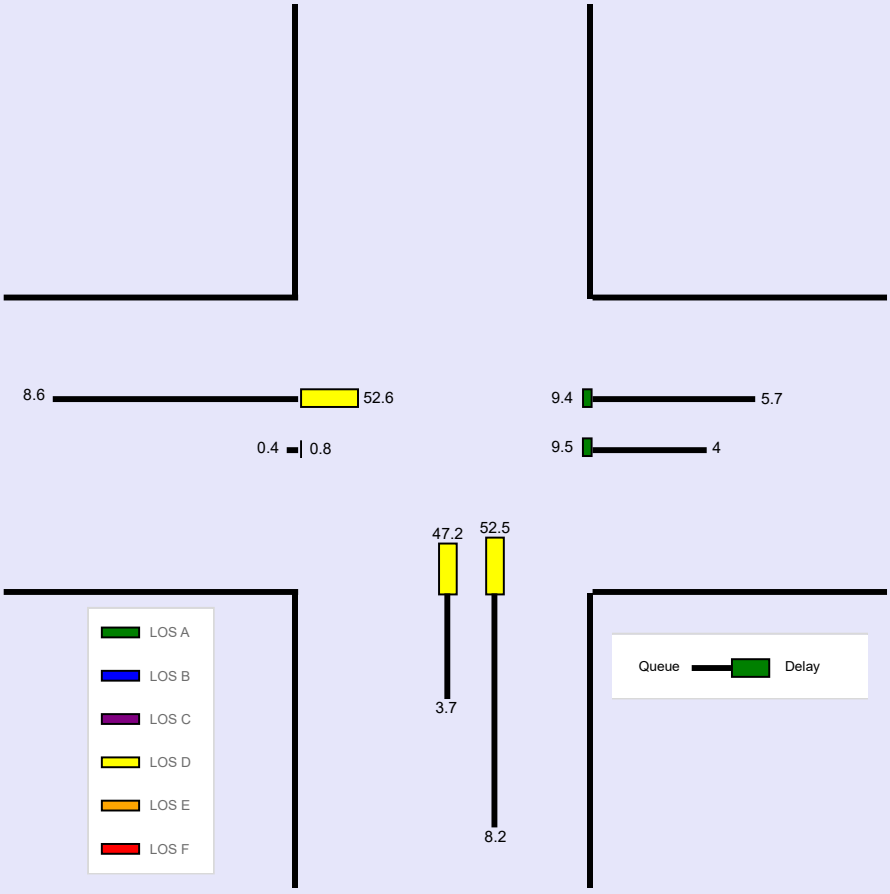
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	350			770	290	70	0	290			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	45	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.4	71.5	16.2	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	217.5	9.9			100.4	141.4		94.4	208.6			
Back of Queue (*Q*), veh/ln (95 th percentile)	8.6	0.4			4.0	5.7		3.7	8.2			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.87	0.00			0.00	0.24		0.00	0.22			
Control Delay (*d*), s/veh	52.6	0.8			9.5	9.4		47.2	52.5			
Level of Service (LOS)	D	A			A	A		D	D			
Approach Delay, s/veh / LOS	26.3	C		9.5	A		51.5	D		0.0		
Intersection Delay, s/veh / LOS	21.7						C					



--- Messages ---

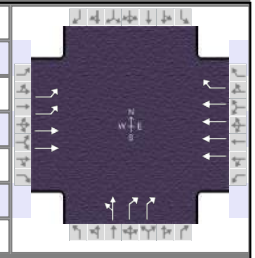
WARNING: According to input data, upstream feeding volume is equal to 71% of downstream exit volume during time period #1, for thru movement #6.

--- Comments ---

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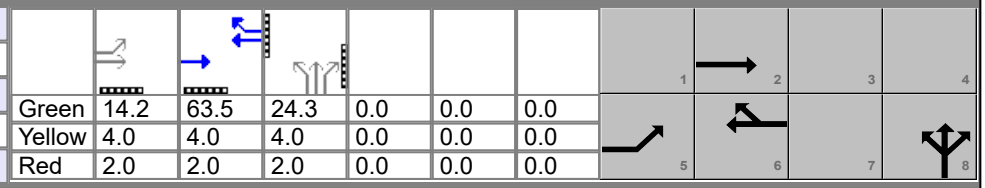
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	360	1330			940	290	70	0	460			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	60	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.2	63.5	24.3	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	360	1330			940	290	70	0	460			
Initial Queue (Q_b), veh/h	0	0			0	0	0	0	0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900			1900	1900	1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	2	2			2	0		2	2			
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0	0	0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3			3	3	3	3	3			
Upstream Filtering (*I*)	0.73	0.73			0.91	0.91	1.00	1.00	1.00			
Lane Width (*W*), ft	12.0	12.0			12.0	12.0		12.0	12.0			
Turn Bay Length, ft	250	0			0	600		0	950			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35			35	35	35	35	35			

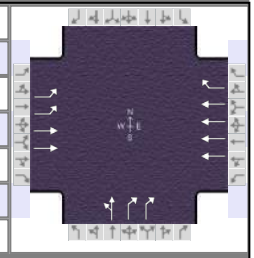
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	19.0	46.0		27.0		74.0		
Yellow Change Interval (*Y*), s	4.0	4.0		4.0		4.0		
Red Clearance Interval (R_c), s	2.0	2.0		2.0		2.0		
Minimum Green (G_{min}), s	7	20		20		10		
Start-Up Lost Time (*lt*), s	2.0	2.0		2.0	2.0	2.0		
Extension of Effective Green (*e*), s	2.0	2.0		2.0	2.0	2.0		
Passage (*PT*), s	2.0	2.0		2.0		2.0		
Recall Mode	Off	Min		Min		Off		
Dual Entry	No	Yes		Yes		Yes		
Walk (*Walk*), s		7.0				7.0		7.0
Pedestrian Clearance Time (*PC*), s		10.0				10.0		10.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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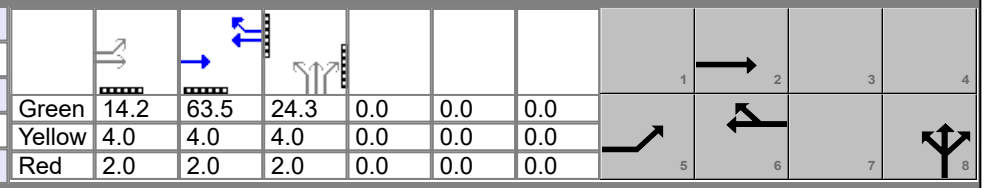
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	360	1330			940	290	70	0	460			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	60	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.2	63.5	24.3	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	2.0	4.0		7.3		11.0		
Phase Duration, s	20.2	89.7		69.5		30.3		
Change Period, ($Y+R_c$), s	6.0	6.0		6.0		6.0		
Max Allow Headway (*MAH*), s	3.1	0.0		0.0		3.3		
Queue Clearance Time (g_s), s	13.4					22.7		
Green Extension Time (g_e), s	0.8	0.0		0.0		1.6		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.00					0.00		

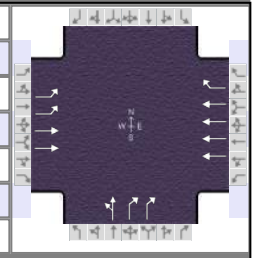
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16	3	8	18			
Adjusted Flow Rate (*v*), veh/h	340	1255			966	298		76	500			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1781			1698	1610		1781	1403			
Queue Service Time (g_s), s	11.4	7.3			10.5	11.5		4.3	20.7			
Cycle Queue Clearance Time (g_c), s	11.4	7.3			10.5	11.5		4.3	20.7			
Green Ratio (*g/C*)	0.12	0.70			0.53	0.53		0.20	0.20			
Capacity (*c*), veh/h	409	2482			3593	852		361	569			
Volume-to-Capacity Ratio (*X*)	0.831	0.505			0.269	0.350		0.211	0.878			
Back of Queue (*Q*), ft/ln (95 th percentile)	195	77.7			188.1	183.7		85.7	297.3			
Back of Queue (*Q*), veh/ln (95 th percentile)	7.7	3.1			7.4	7.3		3.4	11.7			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.78	0.00			0.00	0.31		0.00	0.31			
Uniform Delay (d_1), s/veh	48.2	2.0			18.0	14.0		39.8	46.4			
Incremental Delay (d_2), s/veh	1.2	0.5			0.2	1.0		0.1	1.8			
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0	0.0		0.0	0.0			
Control Delay (*d*), s/veh	49.5	2.6			18.2	15.0		39.9	48.2			
Level of Service (LOS)	D	A			B	B		D	D			
Approach Delay, s/veh / LOS	12.6	B		17.5	B		47.1	D		0.0		
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.87	B	1.68	B	2.62	C	2.75	C
Bicycle LOS Score / LOS	2.00	B	1.04	A	1.44	A		

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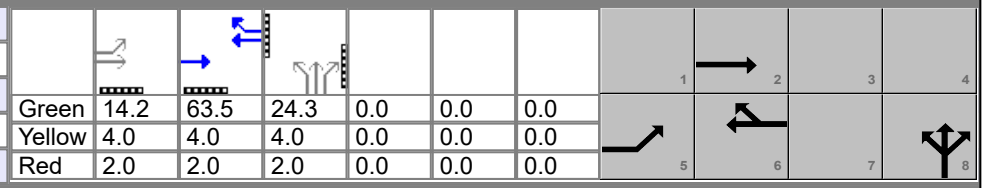
HCS Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	360	1330			940	290	70	0	460			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	60	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	14.2	63.5	24.3	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

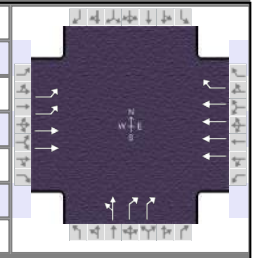
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	0.984	0.984	1.000	1.000	0.984	1.000	1.000	0.984	0.984			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	1.000	0.908	1.000	1.000	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		1.000	1.000		0.952	0.952				
Right-Turn Adjustment Factor (f_{RT})		1.000	1.000		0.000	0.847		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)	1.00											
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)				1.00								
Movement Saturation Flow Rate (s), veh/h	3459	3651	0	0	6965	1610	1781	0	2806			
Proportion of Vehicles Arriving on Green (P)	0.18	0.91	0.00	0.00	0.46	0.59	0.20	0.00	0.20	0.00	0.00	0.00
Incremental Delay Factor (k)	0.04	0.50			0.50	0.50		0.04	0.04			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		4.0		
Green Ratio (g/C)	0.12	0.70		0.53		0.20		
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0		450		0		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln				0				
Permitted Effective Green Time (g_p), s	0.0	0.0		0.0		0.0		
Permitted Service Time (g_u), s	0.0	0.0		0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0		63.5		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln				0		0		
Protected Right Effective Green Time (g_R), s				0.0		0.0		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.198	0.000	0.972	0.000	1.852	0.000	1.983	0.000
Pedestrian F_s / F_{delay}	0.000	0.068	0.000	0.104	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1394.18	5.51	1057.80	13.32		67.20	-83.33	65.10
Bicycle F_w / F_v	-3.64	1.52	-3.64	0.55	-3.64	0.95	-3.64	

HCS Signalized Intersection Results Graphical Summary

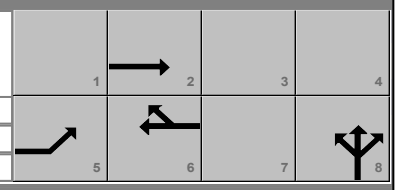
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	I-675 NB Ramp & Feed…	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



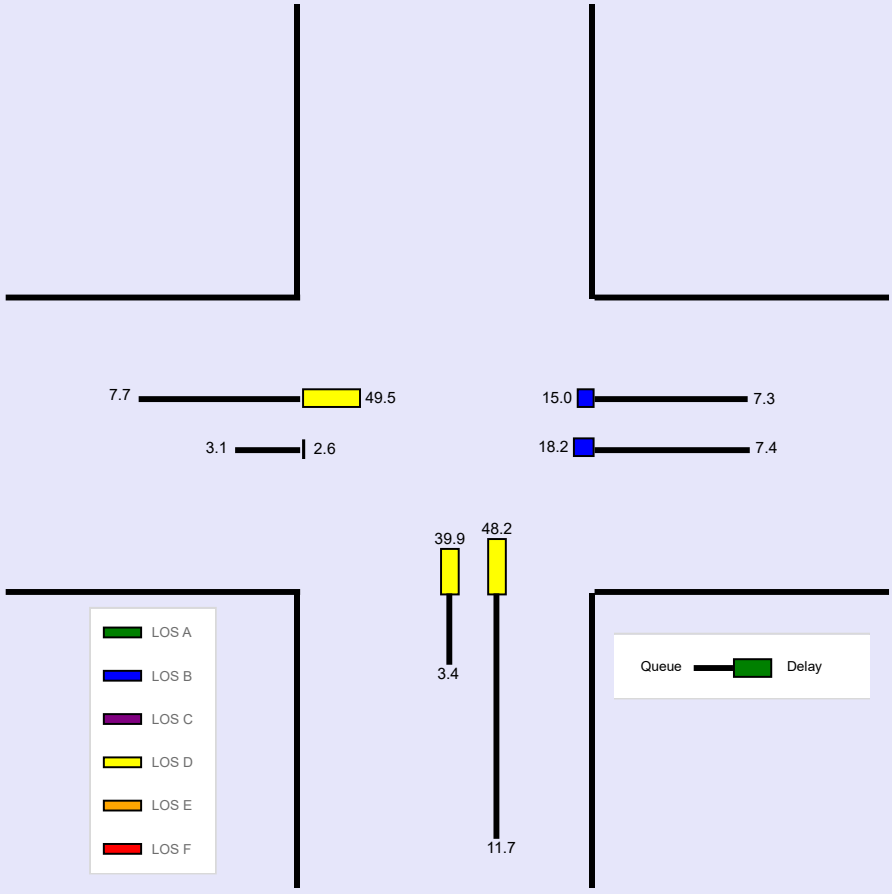
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	360	1330			940	290	70	0	460			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	60	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.2	63.5	24.3	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	195	77.7			188.1	183.7		85.7	297.3			
Back of Queue (*Q*), veh/ln (95 th percentile)	7.7	3.1			7.4	7.3		3.4	11.7			
Queue Storage Ratio (*RQ*) (95 th percentile)	0.78	0.00			0.00	0.31		0.00	0.31			
Control Delay (*d*), s/veh	49.5	2.6			18.2	15.0		39.9	48.2			
Level of Service (LOS)	D	A			B	B		D	D			
Approach Delay, s/veh / LOS	12.6		B	17.5		B	47.1		D	0.0		
Intersection Delay, s/veh / LOS	20.2						C					



--- Messages ---

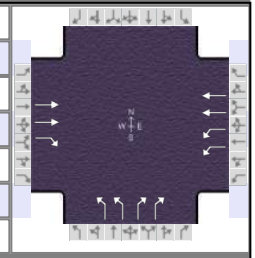
WARNING: According to input data, upstream feeding volume is equal to 77% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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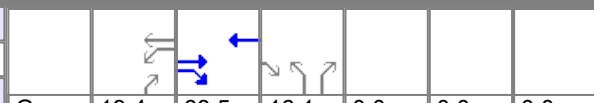
HCS Signalized Intersection Input Data

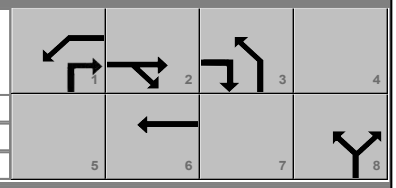
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		500	140	430	900		160		300			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



										
							1	2	3	4
Green	19.4	68.5	16.1	0.0	0.0	0.0	5	6	7	8
Yellow	3.0	3.5	3.0	0.0	0.0	0.0				
Red	2.0	2.0	2.5	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		500	140	430	900		160		300			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0	0	0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.70	0.70	0.63	0.63		1.00		1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0	850	625	0		650		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

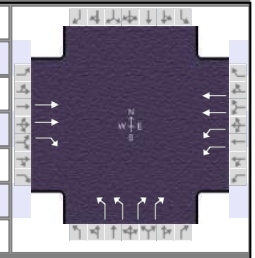
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		27.0	40.0	67.0	53.0	53.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5	3.0	3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0	2.5	2.5		
Minimum Green (G_{min}), s		20	7	20	7	10		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0	2.0	3.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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HCS Signalized Intersection Results Summary

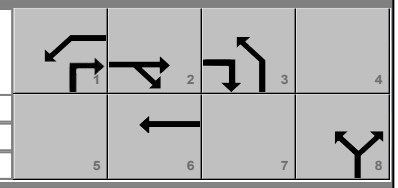
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		500	140	430	900		160		300			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.4	68.5	16.1	0.0	0.0	0.0	
Yellow	3.0	3.5	3.0	0.0	0.0	0.0	
Red	2.0	2.0	2.5	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	2.0	4.0		9.0		
Phase Duration, s		74.0	24.4	98.4		21.6		
Change Period, ($Y+R_c$), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (g_s), s			17.4			13.6		
Green Extension Time (g_e), s		0.0	2.0	0.0		2.5		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			0.00		

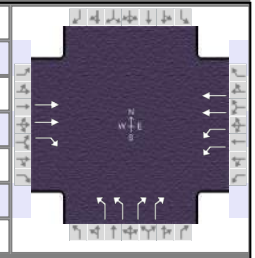
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		521	146	491	1027		182		341			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1809	1610	1757	1809		1743		1414			
Queue Service Time (g_s), s		12.9	3.5	15.4	15.3		5.7		11.6			
Cycle Queue Clearance Time (g_c), s		12.9	3.5	15.4	15.3		5.7		11.6			
Green Ratio (*g/C*)		0.57	0.71	0.16	0.77		0.13		0.30			
Capacity (*c*), veh/h		2066	1135	568	2802		467		836			
Volume-to-Capacity Ratio (*X*)		0.252	0.128	0.864	0.366		0.389		0.408			
Back of Queue (*Q*), ft/ln (95 th percentile)		217.9	41.9	194.7	183.3		113.7		180.7			
Back of Queue (*Q*), veh/ln (95 th percentile)		8.7	1.7	7.8	7.3		4.5		7.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.05	0.31	0.00		0.17		0.00			
Uniform Delay (d_1), s/veh		22.0	5.7	35.4	7.2		47.5		33.9			
Incremental Delay (d_2), s/veh		0.2	0.2	2.6	0.2		0.5		0.3			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		22.2	5.8	38.0	7.4		48.0		34.2			
Level of Service (LOS)		C	A	D	A		D		C			
Approach Delay, s/veh / LOS	18.7	B		17.3	B		39.0	D		0.0		
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.41	B	0.64	A	2.47	B	2.32	B
Bicycle LOS Score / LOS	1.09	A	1.73	B		F		

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HCS Signalized Intersection Intermediate Values

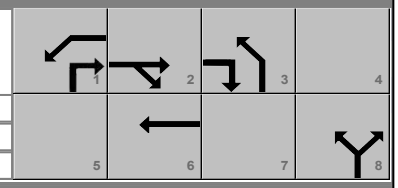
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		500	140	430	900		160		300			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.4	68.5	16.1	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



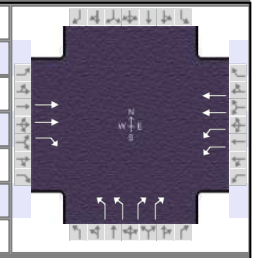
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.971	0.952	1.000	0.971	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	3709	1610	3514	3709	0	3591	0	2828			
Proportion of Vehicles Arriving on Green (P)	0.00	0.31	0.58	0.39	0.66	0.00	0.13	0.00	0.13	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50		0.11		0.11			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		5.5		
Green Ratio (g/C)		0.57	0.16	0.77		0.13		
Permitted Saturation Flow Rate (s_p), veh/h/ln		558	0	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0		0.0		
Permitted Service Time (g_u), s		0.0	0.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		68.5	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610				1414		
Protected Right Effective Green Time (g_R), s		16.1				19.4		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	0.000	0.000	1.710	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.096	0.000	0.045	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1142.37	11.03	1548.84	3.05		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	0.60	-3.64	1.25	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

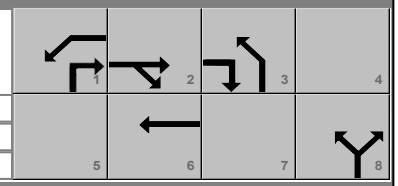
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.88
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 7:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 AM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 AM - Option 2				



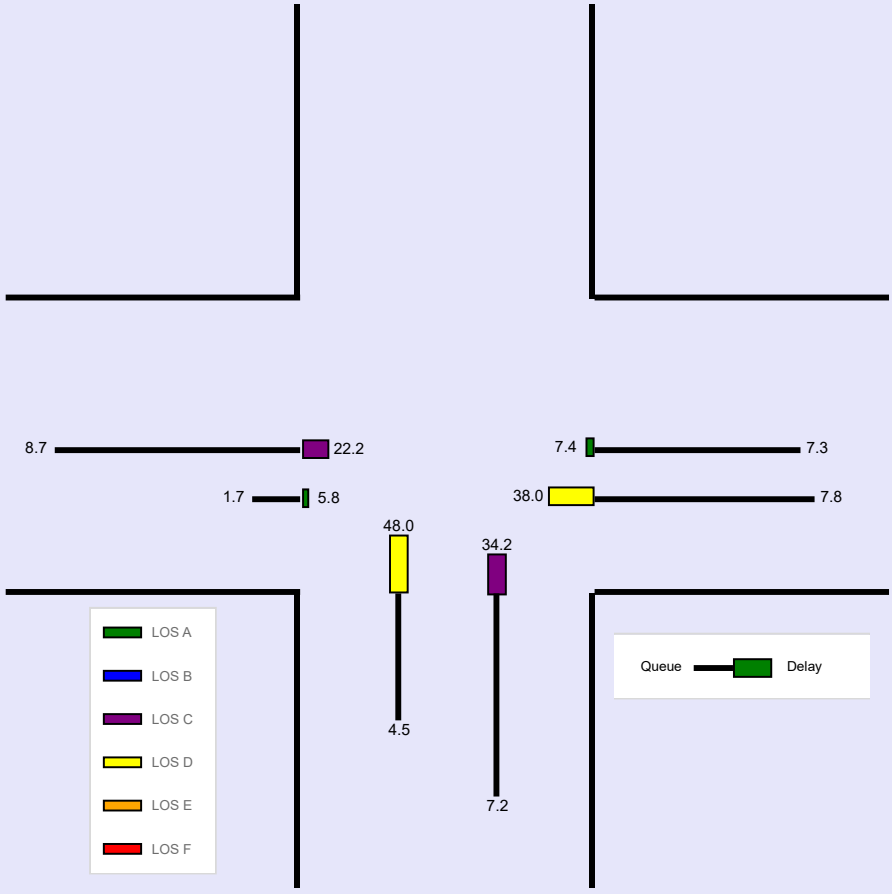
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		500	140	430	900		160		300			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	55	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	19.4	68.5	16.1	0.0	0.0	0.0	
Yellow	3.0	3.5	3.0	0.0	0.0	0.0	
Red	2.0	2.0	2.5	0.0	0.0	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		217.9	41.9	194.7	183.3		113.7		180.7			
Back of Queue (*Q*), veh/ln (95 th percentile)		8.7	1.7	7.8	7.3		4.5		7.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.05	0.31	0.00		0.17		0.00			
Control Delay (*d*), s/veh		22.2	5.8	38.0	7.4		48.0		34.2			
Level of Service (LOS)		C	A	D	A		D		C			
Approach Delay, s/veh / LOS	18.7	B		17.3	B		39.0	D		0.0		
Intersection Delay, s/veh / LOS	21.8						C					



--- Messages ---

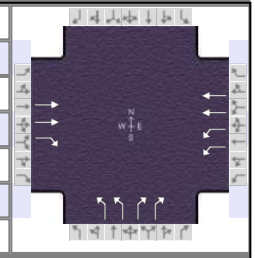
No errors or warnings exist.

--- Comments ---

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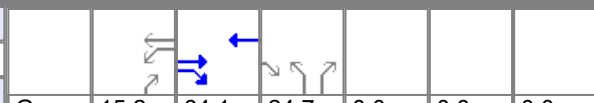
HCS Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				

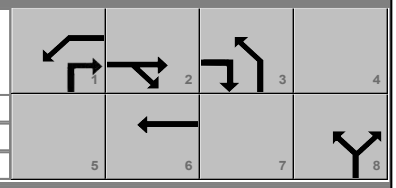


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1400	390	370	820		410		500			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	57	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.2	64.1	24.7	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1400	390	370	820		410		500			
Initial Queue (Q_b), veh/h		0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h		1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		0	0	0	0		1		1			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)		3	3	3	3		3		3			
Upstream Filtering (*I*)		0.70	0.70	0.67	0.67		1.00		1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0		12.0			
Turn Bay Length, ft		0	850	625	0		650		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		60	60	60	60		35		35			

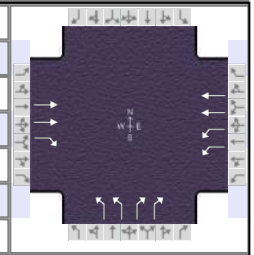
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		27.0	32.0	59.0	61.0	61.0		
Yellow Change Interval (*Y*), s		3.5	3.0	3.5	3.0	3.0		
Red Clearance Interval (R_c), s		2.0	2.0	2.0	2.5	2.5		
Minimum Green (G_{min}), s		20	7	20	7	10		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0			
Passage (*PT*), s		2.0	3.0	2.0	2.0	3.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0				0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0				9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0		No	0.0	0	No		0	
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50			0.50		No	0.50		No		

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HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1400	390	370	820		410		500			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	57	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.2	64.1	24.7	0.0	0.0	0.0	1	2	3	4		
Yellow	3.0	3.5	3.0	0.0	0.0	0.0	5	6	7	8		
Red	2.0	2.0	2.5	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	2.0	4.0		9.0		
Phase Duration, s		69.6	20.2	89.8		30.2		
Change Period, ($Y+R_c$), s		5.5	5.0	5.5		5.5		
Max Allow Headway (*MAH*), s		0.0	3.9	0.0		4.3		
Queue Clearance Time (g_s), s			13.7			19.9		
Green Extension Time (g_e), s		0.0	1.5	0.0		4.8		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			0.00		

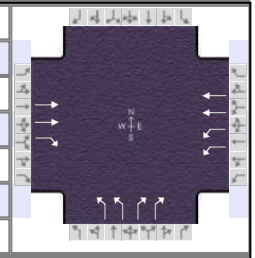
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		1372	382	379	841		423		515			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1809	1610	1757	1809		1743		1414			
Queue Service Time (g_s), s		35.1	6.9	11.7	6.8		13.1		17.9			
Cycle Queue Clearance Time (g_c), s		35.1	6.9	11.7	6.8		13.1		17.9			
Green Ratio (*g/C*)		0.53	0.74	0.13	0.70		0.21		0.33			
Capacity (*c*), veh/h		1933	1192	445	2542		717		940			
Volume-to-Capacity Ratio (*X*)		0.710	0.321	0.852	0.331		0.589		0.549			
Back of Queue (*Q*), ft/ln (95 th percentile)		472.4	55.8	152.8	77.3		242.4		255.6			
Back of Queue (*Q*), veh/ln (95 th percentile)		18.9	2.2	6.1	3.1		9.6		10.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.07	0.24	0.00		0.37		0.00			
Uniform Delay (d_1), s/veh		22.5	3.2	33.9	3.7		43.1		32.7			
Incremental Delay (d_2), s/veh		1.6	0.5	3.2	0.2		0.8		0.5			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		24.1	3.7	37.1	4.0		43.9		33.2			
Level of Service (LOS)		C	A	D	A		D		C			
Approach Delay, s/veh / LOS	19.6	B		14.3	B		38.0	D		0.0		
Intersection Delay, s/veh / LOS	22.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.41	B	0.67	A	2.47	B	2.32	B
Bicycle LOS Score / LOS	2.01	B	1.50	A		F		

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HCS Signalized Intersection Intermediate Values

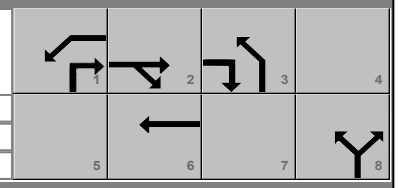
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1400	390	370	820		410		500			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	57	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.2	64.1	24.7	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



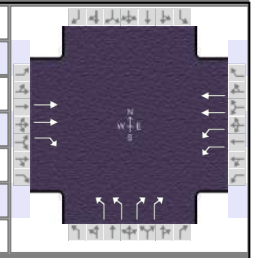
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	0.992			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	0.971	0.952	1.000	0.971	1.000	0.885	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.000	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Left-Turn Prot. CAV Adj. Factor ($f_{CAV,prot}$)				1.00								
Left-Turn Perm. CAV Adj. Factor ($f_{CAV,perm}$)	1.00											
Movement Saturation Flow Rate (s), veh/h	0	3709	1610	3514	3709	0	3591	0	2828			
Proportion of Vehicles Arriving on Green (P)	0.00	0.51	0.70	0.42	0.82	0.00	0.21	0.00	0.21	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50		0.11		0.11			

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.5	5.0	5.5		5.5		
Green Ratio (g/C)		0.53	0.13	0.70		0.21		
Permitted Saturation Flow Rate (s_p), veh/h/ln		665	0	0		1795		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	0.0	0.0		0.0		
Permitted Service Time (g_u), s		0.0	0.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s		64.1	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1610				1414		
Protected Right Effective Green Time (g_R), s		24.7				15.2		

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.710	0.000	0.000	0.000	1.710	0.000	1.557	0.000
Pedestrian F_s / F_{delay}	0.000	0.103	0.000	0.067	0.000	0.164	0.000	0.164
Pedestrian M_{corner} / M_{cw}	0.00		0.00		0.00		0.00	
Bicycle c_b / d_b	1068.75	13.01	1405.34	5.30		66.68	-83.33	65.10
Bicycle F_w / F_v	-3.64	1.52	-3.64	1.01	-3.64	Infinity	-3.64	

HCS Signalized Intersection Results Graphical Summary

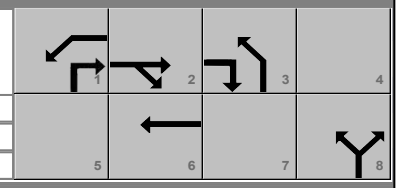
General Information				Intersection Information	
Agency	CMT			Duration, h	0.250
Analyst	RTM	Analysis Date	3/28/2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.97
Urban Street	Feedwire Rd	Analysis Year	2050 Option 2	Analysis Period	1> 16:30
Intersection	Clyo & Feedwire	File Name	Feedwire Corridor 2050 PM_Build_Option 2.xus		
Project Description	Feedwire Rd - 2050 PM - Option 2				



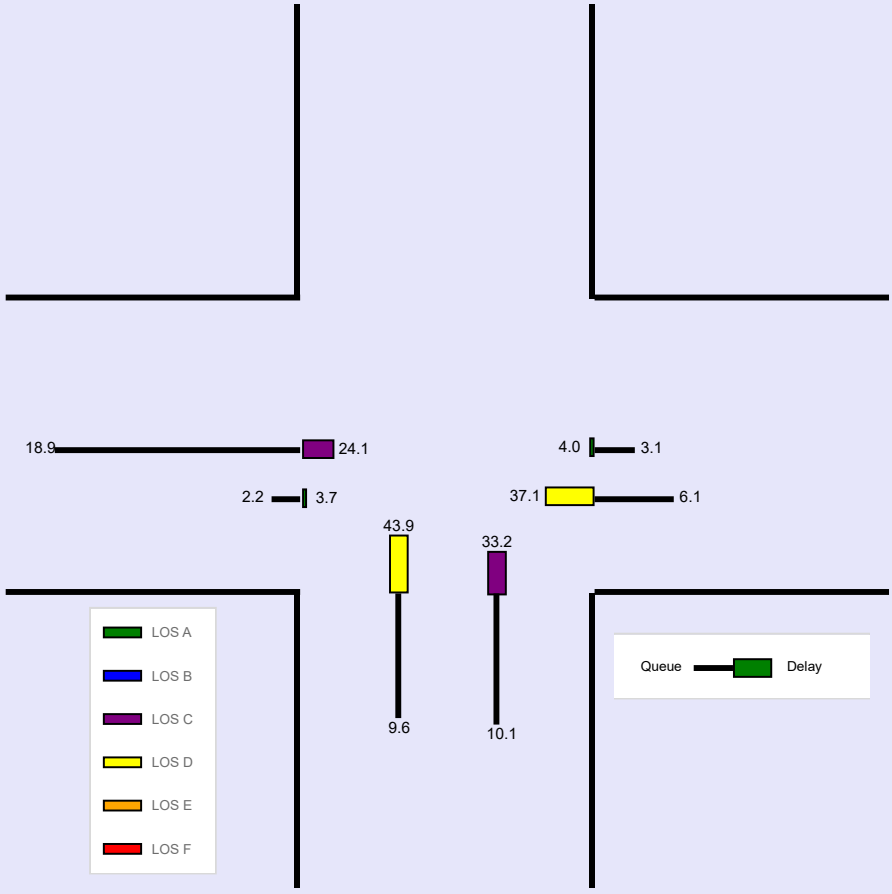
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1400	390	370	820		410		500			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	57	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.2	64.1	24.7	0.0	0.0	0.0						
Yellow	3.0	3.5	3.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		472.4	55.8	152.8	77.3		242.4		255.6			
Back of Queue (*Q*), veh/ln (95 th percentile)		18.9	2.2	6.1	3.1		9.6		10.1			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.07	0.24	0.00		0.37		0.00			
Control Delay (*d*), s/veh		24.1	3.7	37.1	4.0		43.9		33.2			
Level of Service (LOS)		C	A	D	A		D		C			
Approach Delay, s/veh / LOS	19.6	B		14.3	B		38.0	D		0.0		
Intersection Delay, s/veh / LOS	22.4						C					



--- Messages ---

WARNING: According to input data, upstream feeding volume is equal to 87% of downstream exit volume during time period #1, for thru movement #2.

--- Comments ---

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Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables -- Alt 1B Transmodeler Simulation Output

Intersection/ Approach	2050 AM				2050 PM			
	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)
Wilm & Feedwire	D (38.4)	NO OUTPUT	-	-	D (36.9)	NO OUTPUT	-	-
EB-Left	B (17.2)		0.08	18.5	C (34.6)		0.33	76.3
EB-Thru	C (33.3)		-	47.2	D (47.0)		-	164.8
EB-Right	C (30.3)		0.51	253.0	C (22.5)		0.32	157.1
EB Approach	C (29.5)		-	-	D (36.3)		-	-
WB-Left	D (53.4)		0.50	226.2	E (57.5)		0.61	275.8
WB-Thru	C (20.5)		-	58.8	C (26.3)		-	165.1
WB Approach	D (39.2)		-	-	D (40.0)		-	-
NB-Left	D (53.9)		0.37	126.5	D (50.4)		0.58	199.9
NB-Thru	D (36.0)		-	160.6	C (29.6)		-	310.8
NB-Right	C (28.4)		0.28	113.2	B (16.5)		0.43	172.3
NB Approach	D (37.6)		-	-	C (28.0)		-	-
SB-Left	D (43.5)		0.15	47.8	E (57.1)		0.40	127.3
SB-Thru	D (44.7)		-	187.7	D (51.4)		-	323.0
SB-Right	D (36.0)		0.05	16.4	C (23.0)		0.10	32.0
SB Approach	D (44.3)		-	-	D (50.4)		-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach

^ Not a Transmodeler simulation output

Intersection/ Approach	2050 AM				2050 PM			
	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 SB Ramps**	C (26.7)	NO OUTPUT	-	-	C (28.4)	NO OUTPUT	-	-
WB-Left	C (23.8)		0.21	157.8	C (25.9)		0.35	263.0
WB-Thru	-		-	-	-		-	-
WB-Right	C (32.0)		0.14	103.1	D (37.7)		0.34	249.2
WB Approach	-		-	-	-		-	-
NB-Left	-		-	-	-		-	-
NB-Thru	C (28.6)		0.23	192.8	C (31.9)		0.43	359.9
NB Approach	C (28.6)		-	-	C (31.9)		-	-
SB-Thru	C (24.9)		0.20	188.4	B (17.9)		0.17	160.1
SB Approach	C (24.9)		-	-	B (17.9)		-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach

** Due to intersection modeled as a group of 3 sub-intersections, Intersection Delay manually calculated using HCM Equation 19-29.

^ Not a Transmodeler simulation output

Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables -- Alt 1B Transmodeler Simulation Output

Intersection/ Approach	2050 AM				2050 PM			
	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)
Wilm Pike & I-675 NB Ramps**	C (28.6)		-	-	C (31.8)		-	-
EB-Left	C (26.0)		0.16	96.2	C (30.6)		0.34	201.8
EB-Thru	-		-	-	-		-	-
EB-Right	D (37.7)	NO OUTPUT	0.25	138.9	D (36.1)	NO OUTPUT	0.28	153.2
EB Approach	-		-	-	-		-	-
NB-Thru	D (39.4)		0.31	189.5	D (44.5)		0.45	273.0
NB Approach	D (39.4)		-	-	D (44.5)		-	-
SB-Left	-		-	-	-		-	-
SB-Thru	C (21.4)		0.31	290.1 #	C (23.9)		0.36	337.8 #
SB Approach	C (21.4)		-	-	C (23.9)		-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach

** Due to intersection modeled as a group of 3 sub-intersections, Intersection Delay manually calculated using HCM Equation 19-29.

^ Not a Transmodeler simulation output

No output produced from simulation, output Max Queue (ft) is shown in lieu of 95th %tile Queue (ft)

Intersection/ Approach	2050 AM				2050 PM			
	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)
Wilm Pk & Miami Valley	B (12.3)		-	-	B (15.8)		-	-
EB-Left	D (52.0)		0.28	58.2	F (91.9)		1.42	294.8
EB-Thru/Right	D (53.6)		-	42.3	C (29.0)		-	73.6
EB Approach	D (52.5)		-	-	E (78.6)		-	-
WB-Left	C (24.4)		0.50	15.1	E (64.4)		0.60	18.0
WB-Thru/Right	E (61.1)		-	35.4	D (43.5)			16.1
WB Approach	D (48.0)	NO OUTPUT	-	-	D (50.5)	NO OUTPUT	-	-
NB-Left	A (8.6)		0.09	17.2	B (16.9)		0.08	14.9
NB-Thru	B (15.3)		-	306.7	C (21.9)		-	308.1
NB-Right	B (17.8)		-	274.6	C (24.1)		-	200.7
NB Approach	B (16.0)		-	-	C (22.4)		-	-
SB-Left	B (15.6)		0.06	16.5	B (10.7)		0.07	17.9
SB-Thru	A (3.7)		-	80.0	A (1.9)		-	86.8
SB-Right	A (5.5)		-	126.3	A (3.0)		-	22.9
SB Approach	A (4.4)		-	-	A (2.4)		-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach

^ Not a Transmodeler simulation output

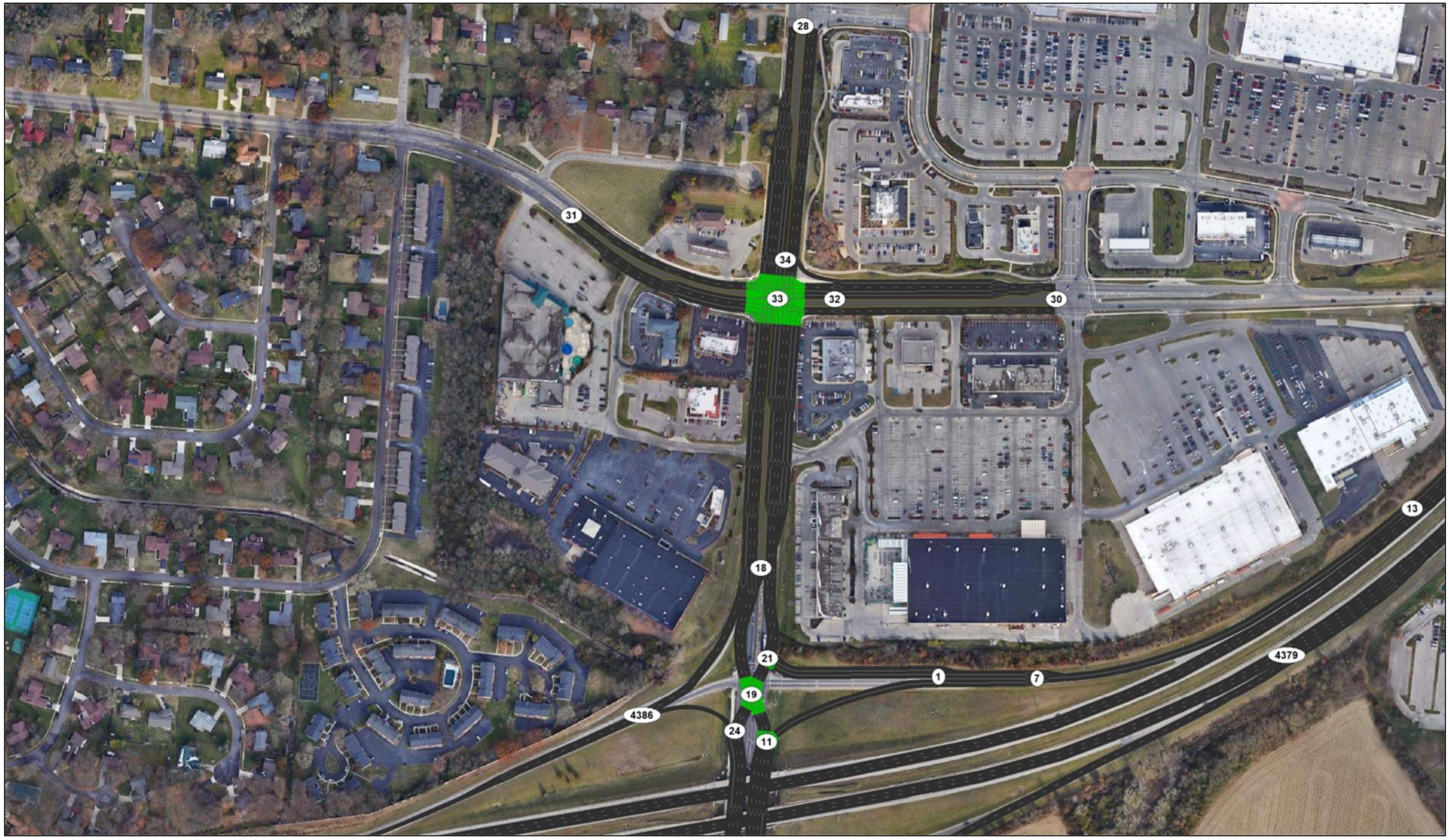
Wilmington Pike TRAC Signalized Intersection Capacity Analysis Summary Tables -- Alt 1B Transmodeler Simulation Output

Intersection/ Approach	2050 AM				2050 PM			
	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)	LOS (Delay/ sec)	v/c ^	QSR*	95th %tile Queue (ft)
Wilm Pike & Clyo	C (31.4)		-	-	C (34.0)		-	-
EB-Left	D (50.2)		0.71	213.0	D (47.9)		0.44	132.2
EB-Thru	D (46.7)		-	108.1	D (48.2)		-	190.2
EB-Right	B (10.8)		0.05	16.4	C (24.7)		0.24	78.4
EB Approach	D (45.0)		-	-	D (44.3)		-	-
WB-Left	D (47.3)		0.20	75.9	D (49.6)		0.49	185.7
WB-Thru	D (45.0)		-	100.5	D (41.9)		-	109.3
WB-Right	C (28.8)	NO OUTPUT	0.35	150.6	C (25.9)	NO OUTPUT	0.36	154.3
WB Approach	D (38.1)		-	-	D (38.4)		-	-
NB-Left	E (56.9)		0.20	48.1	D (51.1)		0.49	116.7
NB-Thru	C (25.6)		-	278.9	D (35.8)		-	362.7
NB-Right	C (29.6)		-	362.4	D (38.2)		-	362.4
NB Approach	C (29.8)		-	-	D (38.5)		-	-
SB-Left	E (77.8)		0.62	162.3	E (67.8)		0.81	212.6
SB-Thru	A (9.1)		-	44.2	B (17.4)		-	204.9
SB-Right	A (6.6)		-	27.4	A (4.9)		-	32.4
SB Approach	C (22.2)		-	-	C (25.1)		-	-

*QSR on approaches with no storage were calculated using available distance to nearest upstream intersection when 95%-tile queues exceed 500' or interchange ramp exists upstream/downstream of the approach

^ Not a Transmodeler simulation output

OPTION 1B – DIVERGING DIAMOND INTERCHANGE TRANSMODELER MODEL NETWORK WITH NODE NUMBERS (FEEDWIRE RD TO I-675 SB RAMP)



OPTION 1B – DIVERGING DIAMOND INTERCHANGE TRANSMODELER MODEL NETWORK WITH NODE NUMBERS (I-675 RAMPS)



OPTION 1B – DIVERGING DIAMOND INTERCHANGE TRANSMODELER MODEL NETWORK WITH NODE NUMBERS (I-675 NB RAMP TO CLYO RD)



Project: WilmPike_Option1B_DDI
Scenario: AM Pk 120s CL
Run(s): 06/30/23 12:39:10
Simulated: 06/30/23 12:39:10
Time: 10:00:00 - 11:00:00
Interval: Summary
Selection: --

Intersection LOS

Node ID	Intersection	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service	Control Type
19	WILMINGTON PIKE	1,802	13.33	26.6	C	Actuated
22	WILMINGTON PIKE	2,084	15.84	27.4	C	Actuated
29	WILMINGTON PIKE & CLYO RD	4,577	39.96	31.4	C	Actuated
25	WILMINGTON PIKE & I675 NB RAMP - EBLT	684	0.02	0.1	A	Actuated
20	WILMINGTON PIKE & I675 NB RAMP - EBRT	2,110	6.39	10.9	B	Actuated
11	WILMINGTON PIKE & I675 SB RAMP - WBLT	2,062	8.14	14.2	B	Actuated
21	WILMINGTON PIKE & I675 SB RAMP - WBRT	834	0.03	0.1	A	Actuated
9	WILMINGTON PIKE & MIAMI VALLEY DR	4,218	14.45	12.3	B	Actuated
33	WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD	3,811	40.65	38.4	D	Actuated

Project: WilmPike_Option1B_DDI
Scenario: PM Pk 120s CL
Run(s): 06/30/23 11:41:21
Simulated: 06/30/23 11:41:21
Time: 18:00:00 - 19:00:00
Interval: Summary
Selection: --

Intersection LOS

Node ID	Intersection	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service	Control Type
19	WILMINGTON PIKE	3,281	23.70	26.0	C	Actuated
22	WILMINGTON PIKE	3,453	30.17	31.5	C	Actuated
29	WILMINGTON PIKE & CLYO RD	6,066	57.28	34.0	C	Actuated
25	WILMINGTON PIKE & I675 NB RAMP - EBLT	1,264	0.00	0.0	A	Actuated
20	WILMINGTON PIKE & I675 NB RAMP - EBRT	3,503	11.92	12.2	B	Actuated
11	WILMINGTON PIKE & I675 SB RAMP - WBLT	3,545	19.31	19.6	B	Actuated
21	WILMINGTON PIKE & I675 SB RAMP - WBRT	1,896	0.13	0.3	A	Actuated
9	WILMINGTON PIKE & MIAMI VALLEY DR	5,063	22.25	15.8	B	Actuated
33	WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD	6,932	70.99	36.9	D	Actuated

Project: WilmPike_Option1B_DDI
Scenario: AM Pk 120s CL
Run(s): 06/30/23 12:39:10
Simulated: 06/30/23 12:39:10
Time: 10:00:00 - 11:00:00
Interval: Summary
Selection: --

Intersection LOS by Approach

WILMINGTON PIKE -- SIGNALIZED — NODE: 19

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510559	968	6.70	24.9	C
NE	WILMINGTON PIKE	720510595	834	6.63	28.6	C

WILMINGTON PIKE -- SIGNALIZED — NODE: 22

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
SW	WILMINGTON PIKE	720510577	1,398	8.33	21.4	C
NW	WILMINGTON PIKE	720510597	686	7.52	39.4	D

WILMINGTON PIKE & CLYO RD -- SIGNALIZED — NODE: 29

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510608	1,378	8.48	22.2	C
E	CLYO RD	720510609	830	10.37	45.0	D
W	CLYO RD	720510610	645	6.83	38.1	D
N	WILMINGTON PIKE	720510611	1,724	14.27	29.8	C

WILMINGTON PIKE & I675 NB RAMP - EBLT -- SIGNALIZED — NODE: 25

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
NW	WILMINGTON PIKE	720510587	684	0.02	0.1	A

WILMINGTON PIKE & I675 NB RAMP - EBRT -- SIGNALIZED — NODE: 20

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
SE	I675 NB RAMP - EBRT	720510584	712	6.39	32.3	C
S	WILMINGTON PIKE	720510588	1,398	0.00	0.0	A

WILMINGTON PIKE & I675 SB RAMP - WBLT -- SIGNALIZED — NODE: 11

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510560	972	0.04	0.1	A
SW	I675 SB RAMP - WBLT	720510575	1,090	8.10	26.8	C

WILMINGTON PIKE & I675 SB RAMP - WBRT -- SIGNALIZED — NODE: 21

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
NE	WILMINGTON PIKE	720510591	834	0.03	0.1	A

WILMINGTON PIKE & MIAMI VALLEY DR -- SIGNALIZED — NODE: 9

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510585	1,781	2.17	4.4	A
E	MIAMI VALLEY DR	720510605	116	1.69	52.5	D
W	MIAMI VALLEY DR	720510606	28	0.37	48.0	D
N	WILMINGTON PIKE	720510608	2,293	10.21	16.0	B

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD -- SIGNALIZED — NODE: 33

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
N	WILMINGTON PIKE	16151	1,181	12.32	37.6	D
E	WHIPP RD	720510613	644	5.28	29.5	C
S	WILMINGTON PIKE	720510614	1,004	12.35	44.3	D
W	FEEDWIRE RD	720510615	982	10.70	39.2	D

Project: WilmPike_Option1B_DDI
Scenario: PM Pk 120s CL
Run(s): 06/30/23 11:41:21
Simulated: 06/30/23 11:41:21
Time: 18:00:00 - 19:00:00
Interval: Summary
Selection: --

Intersection LOS by Approach

WILMINGTON PIKE -- SIGNALIZED — NODE: 19

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510559	1,385	6.90	17.9	B
NE	WILMINGTON PIKE	720510595	1,896	16.80	31.9	C

WILMINGTON PIKE -- SIGNALIZED — NODE: 22

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
SW	WILMINGTON PIKE	720510577	2,189	14.56	23.9	C
NW	WILMINGTON PIKE	720510597	1,264	15.61	44.5	D

WILMINGTON PIKE & CLYO RD -- SIGNALIZED — NODE: 29

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510608	2,463	17.14	25.1	C
E	CLYO RD	720510609	994	12.24	44.3	D
W	CLYO RD	720510610	904	9.66	38.4	D
N	WILMINGTON PIKE	720510611	1,705	18.24	38.5	D

WILMINGTON PIKE & I675 NB RAMP - EBLT -- SIGNALIZED — NODE: 25

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
NW	WILMINGTON PIKE	720510587	1,264	0.00	0.0	A

WILMINGTON PIKE & I675 NB RAMP - EBRT -- SIGNALIZED — NODE: 20

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
SE	I675 NB RAMP - EBRT	720510584	1,315	11.90	32.6	C
S	WILMINGTON PIKE	720510588	2,188	0.01	0.0	A

WILMINGTON PIKE & I675 SB RAMP - WBLT -- SIGNALIZED — NODE: 11

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510560	1,384	0.04	0.1	A
SW	I675 SB RAMP - WBLT	720510575	2,161	19.27	32.1	C

WILMINGTON PIKE & I675 SB RAMP - WBRT -- SIGNALIZED — NODE: 21

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
NE	WILMINGTON PIKE	720510591	1,896	0.13	0.3	A

WILMINGTON PIKE & MIAMI VALLEY DR -- SIGNALIZED — NODE: 9

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
S	WILMINGTON PIKE	720510585	2,671	1.77	2.4	A
E	MIAMI VALLEY DR	720510605	345	7.53	78.6	E
W	MIAMI VALLEY DR	720510606	27	0.38	50.5	D
N	WILMINGTON PIKE	720510608	2,020	12.57	22.4	C

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD -- SIGNALIZED — NODE: 33

Dir	Street	Superlink	Number of Vehicles	Total Control Delay (hr)	Avg Control Delay (sec/veh)	Level of Service
N	WILMINGTON PIKE	16151	2,971	23.15	28.0	C
E	WHIPP RD	720510613	874	8.81	36.3	D
S	WILMINGTON PIKE	720510614	1,634	22.87	50.4	D
W	FEEDWIRE RD	720510615	1,453	16.16	40.0	D

Project: WilmPike_Option1B_DDI
Scenario: AM Pk 120s CL
Run(s): 06/30/23 12:39:10
Simulated: 06/30/23 12:39:10
Time: 10:00:00 - 11:00:00
Interval: Summary
Selection: --

Intersection LOS by Lane Group

WILMINGTON PIKE -- SIGNALIZED — NODE: 19

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NEB T	WILMINGTON PIKE	720510595	834	6.63	28.6	C
SB T	WILMINGTON PIKE	720510559	968	6.70	24.9	C

WILMINGTON PIKE -- SIGNALIZED — NODE: 22

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB T	WILMINGTON PIKE	720510597	686	7.52	39.4	D
SWB T	WILMINGTON PIKE	720510577	1,398	8.33	21.4	C

WILMINGTON PIKE & CLYO RD -- SIGNALIZED — NODE: 29

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	CLYO RD	720510609	472	6.59	50.2	D
EB R	CLYO RD	720510609	86	0.26	10.8	B
EB T	CLYO RD	720510609	272	3.53	46.7	D
NB L	WILMINGTON PIKE	720510611	152	2.40	56.9	E
NB T	WILMINGTON PIKE	720510611	944	6.71	25.6	C
NB TR	WILMINGTON PIKE	720510611	628	5.16	29.6	C
SB L	WILMINGTON PIKE	720510608	276	5.97	77.8	E
SB R	WILMINGTON PIKE	720510608	400	0.74	6.6	A
SB T	WILMINGTON PIKE	720510608	702	1.78	9.1	A
WB L	CLYO RD	720510610	98	1.29	47.3	D
WB R	CLYO RD	720510610	288	2.31	28.8	C
WB T	CLYO RD	720510610	259	3.24	45.0	D

WILMINGTON PIKE & I675 NB RAMP - EBLT -- SIGNALIZED — NODE: 25

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB T	WILMINGTON PIKE	720510587	684	0.02	0.1	A

WILMINGTON PIKE & I675 NB RAMP - EBRT -- SIGNALIZED — NODE: 20

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	I675 NB RAMP - EBLT	720510584	329	2.37	26.0	C
SB T	WILMINGTON PIKE	720510588	1,398	0.00	0.0	A
SEB T	I675 NB RAMP - EBRT	720510584	383	4.02	37.7	D

WILMINGTON PIKE & I675 SB RAMP - WBLT -- SIGNALIZED — NODE: 11

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB R	I675 SB RAMP - WBRT	720510575	400	3.56	32.0	C
SB T	WILMINGTON PIKE	720510560	972	0.04	0.1	A
SWB T	I675 SB RAMP - WBLT	720510575	690	4.55	23.7	C

WILMINGTON PIKE & I675 SB RAMP - WBRT -- SIGNALIZED — NODE: 21

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NEB T	WILMINGTON PIKE	720510591	834	0.03	0.1	A

WILMINGTON PIKE & MIAMI VALLEY DR -- SIGNALIZED — NODE: 9

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	MIAMI VALLEY DR	720510605	84	1.21	52.0	D
EB TR	MIAMI VALLEY DR	720510605	32	0.48	53.6	D
NB L	WILMINGTON PIKE	720510608	30	0.07	8.6	A
NB T	WILMINGTON PIKE	720510608	1,515	6.44	15.3	B
NB TR	WILMINGTON PIKE	720510608	748	3.70	17.8	B
SB L	WILMINGTON PIKE	720510585	11	0.05	15.6	B
SB T	WILMINGTON PIKE	720510585	1,136	1.16	3.7	A
SB TR	WILMINGTON PIKE	720510585	634	0.96	5.5	A
WB L	MIAMI VALLEY DR	720510606	10	0.07	24.4	C
WB TR	MIAMI VALLEY DR	720510606	18	0.31	61.1	E

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD -- SIGNALIZED NODE: 33

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	WHIPP RD	720510613	74	0.35	17.2	B
EB R	WHIPP RD	720510613	419	3.53	30.3	C
EB T	WHIPP RD	720510613	151	1.40	33.3	C
NB L	WILMINGTON PIKE	16151	231	3.46	53.9	D
NB R	WILMINGTON PIKE	16151	304	2.40	28.4	C
NB T	WILMINGTON PIKE	16151	646	6.46	36.0	D
SB L	WILMINGTON PIKE	720510614	162	1.96	43.5	D
SB R	WILMINGTON PIKE	720510614	22	0.22	36.0	D
SB T	WILMINGTON PIKE	720510614	820	10.17	44.7	D
WB L	FEEDWIRE RD	720510615	559	8.29	53.4	D
WB T	FEEDWIRE RD	720510615	423	2.41	20.5	C

Project: WilmPike_Option1B_DDI
Scenario: PM Pk 120s CL
Run(s): 06/30/23 11:41:21
Simulated: 06/30/23 11:41:21
Time: 18:00:00 - 19:00:00
Interval: Summary
Selection: --

Intersection LOS by Lane Group

WILMINGTON PIKE -- SIGNALIZED — NODE: 19

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NEB T	WILMINGTON PIKE	720510595	1,896	16.80	31.9	C
SB T	WILMINGTON PIKE	720510559	1,385	6.90	17.9	B

WILMINGTON PIKE -- SIGNALIZED — NODE: 22

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB T	WILMINGTON PIKE	720510597	1,264	15.61	44.5	D
SWB T	WILMINGTON PIKE	720510577	2,189	14.56	23.9	C

WILMINGTON PIKE & CLYO RD -- SIGNALIZED — NODE: 29

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	CLYO RD	720510609	332	4.42	47.9	D
EB R	CLYO RD	720510609	161	1.11	24.7	C
EB T	CLYO RD	720510609	501	6.71	48.2	D
NB L	WILMINGTON PIKE	720510611	217	3.08	51.1	D
NB T	WILMINGTON PIKE	720510611	919	9.13	35.8	D
NB TR	WILMINGTON PIKE	720510611	569	6.03	38.2	D
SB L	WILMINGTON PIKE	720510608	465	8.75	67.8	E
SB R	WILMINGTON PIKE	720510608	369	0.51	4.9	A
SB T	WILMINGTON PIKE	720510608	1,629	7.89	17.4	B
WB L	CLYO RD	720510610	259	3.57	49.6	D
WB R	CLYO RD	720510610	320	2.30	25.9	C
WB T	CLYO RD	720510610	325	3.78	41.9	D

WILMINGTON PIKE & I675 NB RAMP - EBLT -- SIGNALIZED — NODE: 25

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB T	WILMINGTON PIKE	720510587	1,264	0.00	0.0	A

WILMINGTON PIKE & I675 NB RAMP - EBRT -- SIGNALIZED — NODE: 20

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	I675 NB RAMP - EBLT	720510584	835	7.09	30.6	C
SB T	WILMINGTON PIKE	720510588	2,188	0.01	0.0	A
SEB T	I675 NB RAMP - EBRT	720510584	480	4.81	36.1	D

WILMINGTON PIKE & I675 SB RAMP - WBLT -- SIGNALIZED — NODE: 11

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NWB R	I675 SB RAMP - WBRT	720510575	1,131	11.84	37.7	D
SB T	WILMINGTON PIKE	720510560	1,384	0.04	0.1	A
SWB T	I675 SB RAMP - WBLT	720510575	1,030	7.42	25.9	C

WILMINGTON PIKE & I675 SB RAMP - WBRT -- SIGNALIZED — NODE: 21

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
NEB T	WILMINGTON PIKE	720510591	1,896	0.13	0.3	A

WILMINGTON PIKE & MIAMI VALLEY DR -- SIGNALIZED — NODE: 9

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	MIAMI VALLEY DR	720510605	272	6.95	91.9	F
EB TR	MIAMI VALLEY DR	720510605	73	0.59	29.0	C
NB L	WILMINGTON PIKE	720510608	10	0.05	16.9	B
NB T	WILMINGTON PIKE	720510608	1,550	9.44	21.9	C
NB TR	WILMINGTON PIKE	720510608	460	3.08	24.1	C
SB L	WILMINGTON PIKE	720510585	73	0.22	10.7	B
SB T	WILMINGTON PIKE	720510585	2,016	1.06	1.9	A
SB TR	WILMINGTON PIKE	720510585	582	0.48	3.0	A
WB L	MIAMI VALLEY DR	720510606	9	0.16	64.4	E
WB TR	MIAMI VALLEY DR	720510606	18	0.22	43.5	D

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD -- SIGNALIZED NODE: 33

Lane Group	Street Name	Superlink ID	Number of Vehicles	Total Control Delay (hrs)	Avg Control Delay (sec/veh)	Level of Service
EB L	WHIPP RD	720510613	140	1.35	34.6	C
EB R	WHIPP RD	720510613	311	1.95	22.5	C
EB T	WHIPP RD	720510613	423	5.52	47.0	D
NB L	WILMINGTON PIKE	16151	455	6.36	50.4	D
NB R	WILMINGTON PIKE	16151	1,068	4.90	16.5	B
NB T	WILMINGTON PIKE	16151	1,448	11.89	29.6	C
SB L	WILMINGTON PIKE	720510614	291	4.62	57.1	E
SB R	WILMINGTON PIKE	720510614	119	0.76	23.0	C
SB T	WILMINGTON PIKE	720510614	1,224	17.49	51.4	D
WB L	FEEDWIRE RD	720510615	638	10.19	57.5	E
WB T	FEEDWIRE RD	720510615	815	5.96	26.3	C

Project: WilmPike_Option1B_DDI
Scenario: AM Pk 120s CL
Run(s): 06/30/23 12:39:10
Simulated: 06/30/23 12:39:10
Time: 10:00:00 - 11:00:00
Interval: Summary
Selection: --

Lane Queue by Intersection

WILMINGTON PIKE — NODE: 19

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NEB T	33649822	WILMINGTON PIKE	119	34.4	1.3	179.2	7.0	0.0%
NEB T	33649823	WILMINGTON PIKE	119	35.8	1.4	192.8	8.0	0.0%
NEB T	33649824	WILMINGTON PIKE	119	32.2	1.2	163.3	6.0	0.0%
SB T	33649711	WILMINGTON PIKE	119	51.3	2.0	188.4	7.0	3.4%
SB T	33649712	WILMINGTON PIKE	119	41.3	1.7	159.8	6.0	0.0%
SB T	33649833	WILMINGTON PIKE	119	38.7	1.5	151.9	5.1	0.0%

WILMINGTON PIKE — NODE: 22

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T	33649843	WILMINGTON PIKE	119	53.1	2.1	189.5	7.0	0.0%
NWB T	33649844	WILMINGTON PIKE	119	35.8	1.5	122.0	5.0	0.0%
NWB T	33649845	WILMINGTON PIKE	119	14.7	0.7	67.3	3.0	0.0%

WILMINGTON PIKE & CLYO RD — NODE: 29

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649944	CLYO RD	119	69.1	2.6	194.8	7.1	0.8%
EB L	33649945	CLYO RD	119	83.5	3.2	213.0	7.1	0.0%
EB R	33649948	CLYO RD	119	2.6	0.1	16.4	1.0	0.0%
EB T	33649946	CLYO RD	119	40.0	1.6	108.1	4.0	0.0%
EB T	33649947	CLYO RD	119	34.6	1.4	106.9	4.0	0.0%
NB L	33649967	WILMINGTON PIKE	119	15.5	0.8	48.1	2.0	0.0%
NB L	33649968	WILMINGTON PIKE	119	28.8	1.3	77.6	3.0	0.0%
NB T	33649969	WILMINGTON PIKE	119	31.0	1.2	159.6	6.0	0.0%
NB T	33649970	WILMINGTON PIKE	119	74.7	2.7	278.9	10.0	0.0%
NB TR	33649971	WILMINGTON PIKE	119	85.5	3.2	362.4	12.0	0.0%
SB L	33649934	WILMINGTON PIKE	119	64.8	2.6	123.3	5.0	0.0%
SB L	33649925	WILMINGTON PIKE	119	71.4	2.9	162.3	6.0	0.0%
SB R	33649929	WILMINGTON PIKE	119	4.2	0.2	27.4	1.1	0.0%
SB T	33649926	WILMINGTON PIKE	119	1.8	0.1	16.6	1.0	0.0%
SB T	33649927	WILMINGTON PIKE	119	5.5	0.2	44.2	2.0	0.0%

WILMINGTON PIKE & CLYO RD — NODE: 29

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
SB T	33649928	WILMINGTON PIKE	119	12.2	0.5	95.6	4.0	0.0%
WB L	33649951	CLYO RD	119	25.7	1.1	75.9	3.0	0.0%
WB R	33649953	CLYO RD	119	45.3	1.8	150.6	6.0	0.0%
WB T	33649938	CLYO RD	119	33.6	1.4	88.4	3.0	0.0%
WB T	33649952	CLYO RD	119	33.1	1.4	100.5	4.0	0.0%

WILMINGTON PIKE & I675 NB RAMP - EBLT — NODE: 25

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T	33649801	WILMINGTON PIKE	119	0.4	0.0	0.0	0.0	2.5%
NWB T	33649802	WILMINGTON PIKE	119	0.7	0.0	0.0	0.0	4.2%
NWB T	33649803	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%

WILMINGTON PIKE & I675 NB RAMP - EBRT — NODE: 20

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649807	I675 NB RAMP - EBRT	119	16.5	0.7	96.2	4.0	0.0%
EB L	33649808	I675 NB RAMP - EBRT	119	19.0	0.8	81.9	3.0	0.0%
SB T	33649840	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
SB T	33649804	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
SB T	33649805	WILMINGTON PIKE	119	1.0	0.1	15.4	1.0	0.0%
SB T	33649806	WILMINGTON PIKE	119	0.7	0.0	0.0	0.0	0.0%
SEB T	33649793	I675 NB RAMP - EBRT	119	38.1	1.5	138.9	5.0	0.0%
SEB T	33649794	I675 NB RAMP - EBRT	119	40.8	1.7	122.4	5.0	0.0%

WILMINGTON PIKE & I675 SB RAMP - WBLT — NODE: 11

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB R	33649772	I675 SB RAMP - WBRT	119	31.3	1.3	103.1	4.0	0.0%
NWB R	33649773	I675 SB RAMP - WBRT	119	18.1	0.8	71.5	3.0	0.0%
NWB R	33649835	I675 SB RAMP - WBRT	119	22.6	1.0	70.2	3.0	0.0%
SB T	33649713	WILMINGTON PIKE	119	4.8	0.3	18.6	1.0	4.2%
SB T	33649714	WILMINGTON PIKE	119	1.3	0.1	16.7	1.0	0.0%
SB T	33649715	WILMINGTON PIKE	119	0.9	0.1	1.7	0.1	0.0%
SWB T	33649774	I675 SB RAMP - WBRT	119	38.6	1.6	141.8	6.0	0.0%
SWB T	33649775	I675 SB RAMP - WBRT	119	41.2	1.7	157.8	6.0	0.0%

WILMINGTON PIKE & I675 SB RAMP - WBLT — NODE: 11

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)

WILMINGTON PIKE & I675 SB RAMP - WBRT — NODE: 21

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NEB T	33649812	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
NEB T	33649813	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
NEB T	33649814	WILMINGTON PIKE	119	0.4	0.0	0.0	0.0	2.5%

WILMINGTON PIKE & MIAMI VALLEY DR — NODE: 9

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649889	MIAMI VALLEY DR	119	2.3	0.1	17.5	1.0	0.0%
EB L	33649890	MIAMI VALLEY DR	119	22.0	1.1	58.2	3.0	0.0%
EB TR	33649891	MIAMI VALLEY DR	119	8.7	0.5	42.3	2.0	0.0%
NB L	33649898	WILMINGTON PIKE	119	2.4	0.1	17.2	1.0	0.0%
NB T	33649903	WILMINGTON PIKE	119	8.7	0.4	52.1	2.1	0.0%
NB T	33649904	WILMINGTON PIKE	119	10.1	0.4	64.7	2.1	0.0%
NB T	33649905	WILMINGTON PIKE	119	48.9	1.8	306.7	10.2	0.0%
NB TR	33649906	WILMINGTON PIKE	119	41.4	1.5	274.6	8.2	0.0%
SB L	33649884	WILMINGTON PIKE	119	1.1	0.1	16.5	1.0	0.0%
SB T	33649885	WILMINGTON PIKE	119	3.9	0.2	28.0	1.1	0.0%
SB T	33649886	WILMINGTON PIKE	119	2.3	0.1	15.0	1.0	0.0%
SB T	33649887	WILMINGTON PIKE	119	10.4	0.4	80.0	3.0	0.0%
SB TR	33649888	WILMINGTON PIKE	119	14.9	0.6	126.3	4.1	0.0%
WB L	33649897	MIAMI VALLEY DR	119	1.4	0.1	15.1	1.0	0.0%
WB TR	33649883	MIAMI VALLEY DR	119	5.8	0.3	35.4	1.1	0.0%

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD — NODE: 33

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33650000	WHIPP RD	119	4.9	0.3	18.5	1.0	0.0%
EB R	33650002	WHIPP RD	119	65.6	2.5	253.0	9.0	0.0%
EB T	33649999	WHIPP RD	119	13.9	0.7	47.2	2.0	0.0%
EB T	33650001	WHIPP RD	119	8.6	0.5	38.9	2.0	0.0%
NB L	33649989	WILMINGTON PIKE	119	31.3	1.4	109.8	4.0	0.0%
NB L	33649995	WILMINGTON PIKE	119	35.5	1.5	126.5	5.0	0.0%

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD — NODE: 33

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB R	33649993	WILMINGTON PIKE	119	17.4	0.7	76.2	3.0	0.0%
NB R	33649994	WILMINGTON PIKE	119	24.7	1.0	113.2	4.1	0.0%
NB T	33649990	WILMINGTON PIKE	119	46.5	1.9	160.6	6.0	0.0%
NB T	33649991	WILMINGTON PIKE	119	40.1	1.6	157.3	6.0	0.0%
NB T	33649992	WILMINGTON PIKE	119	30.5	1.3	120.3	5.0	0.0%
SB L	33650018	WILMINGTON PIKE	119	12.3	0.6	44.9	2.0	0.0%
SB L	33650020	WILMINGTON PIKE	119	14.5	0.7	47.8	2.0	0.0%
SB R	33650024	WILMINGTON PIKE	119	2.3	0.1	16.4	1.0	0.0%
SB T	33650021	WILMINGTON PIKE	119	34.8	1.4	123.8	4.1	0.0%
SB T	33650022	WILMINGTON PIKE	119	49.6	1.9	171.7	7.0	0.0%
SB T	33650023	WILMINGTON PIKE	119	62.4	2.4	187.7	7.0	0.0%
WB L	33650027	FEEDWIRE RD	119	94.5	3.6	226.2	8.1	0.0%
WB L	33650028	FEEDWIRE RD	119	48.9	1.9	150.2	6.0	0.0%
WB T	33650029	FEEDWIRE RD	119	15.1	0.7	48.7	2.0	0.0%
WB T	33650030	FEEDWIRE RD	119	19.4	0.9	58.8	2.0	0.0%
WB T	33650042	FEEDWIRE RD	119	0.3	0.0	0.0	0.0	0.0%

Project: WilmPike_Option1B_DDI
Scenario: PM Pk 120s CL
Run(s): 06/30/23 11:41:21
Simulated: 06/30/23 11:41:21
Time: 18:00:00 - 19:00:00
Interval: Summary
Selection: --

Lane Queue by Intersection

WILMINGTON PIKE — NODE: 19

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NEB T	33649822	WILMINGTON PIKE	119	69.2	2.5	328.7	11.1	0.0%
NEB T	33649823	WILMINGTON PIKE	119	82.7	3.0	359.9	13.0	0.0%
NEB T	33649824	WILMINGTON PIKE	119	76.0	2.8	335.0	12.0	0.0%
SB T	33649711	WILMINGTON PIKE	119	57.8	2.1	160.1	5.1	0.0%
SB T	33649712	WILMINGTON PIKE	119	49.0	1.9	148.0	5.0	0.0%
SB T	33649833	WILMINGTON PIKE	119	48.3	1.8	155.5	5.0	0.0%

WILMINGTON PIKE — NODE: 22

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T	33649843	WILMINGTON PIKE	119	102.9	3.9	273.0	10.0	0.0%
NWB T	33649844	WILMINGTON PIKE	119	93.7	3.4	259.0	9.1	0.0%
NWB T	33649845	WILMINGTON PIKE	119	57.6	2.3	188.7	7.0	0.0%

WILMINGTON PIKE & CLYO RD — NODE: 29

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649944	CLYO RD	119	45.3	1.9	130.3	5.0	0.0%
EB L	33649945	CLYO RD	119	50.6	2.1	132.2	5.0	0.0%
EB R	33649948	CLYO RD	119	21.1	0.9	78.4	3.0	0.0%
EB T	33649946	CLYO RD	119	66.8	2.6	190.2	7.0	0.0%
EB T	33649947	CLYO RD	119	61.8	2.4	176.2	7.0	0.0%
NB L	33649967	WILMINGTON PIKE	119	20.3	1.0	64.4	2.1	0.0%
NB L	33649968	WILMINGTON PIKE	119	40.5	1.6	116.7	4.0	0.0%
NB T	33649969	WILMINGTON PIKE	119	72.7	2.7	242.6	9.0	0.0%
NB T	33649970	WILMINGTON PIKE	119	111.2	4.0	362.7	12.0	0.0%
NB TR	33649971	WILMINGTON PIKE	119	123.3	4.4	362.4	12.1	0.0%
SB L	33649934	WILMINGTON PIKE	119	92.9	3.6	212.6	8.0	0.0%
SB L	33649925	WILMINGTON PIKE	119	98.6	3.7	209.3	8.0	0.0%
SB R	33649929	WILMINGTON PIKE	119	5.0	0.2	32.4	2.0	0.0%
SB T	33649926	WILMINGTON PIKE	119	12.8	0.6	61.1	2.1	0.0%
SB T	33649927	WILMINGTON PIKE	119	30.3	1.2	129.6	5.0	0.0%

WILMINGTON PIKE & CLYO RD — NODE: 29

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
SB T	33649928	WILMINGTON PIKE	119	52.3	2.1	204.9	8.0	0.0%
WB L	33649951	CLYO RD	119	76.2	3.0	185.7	7.0	0.0%
WB R	33649953	CLYO RD	119	44.0	1.7	154.3	5.1	0.0%
WB T	33649938	CLYO RD	119	35.0	1.5	109.3	4.0	0.0%
WB T	33649952	CLYO RD	119	35.7	1.5	105.6	4.0	0.0%

WILMINGTON PIKE & I675 NB RAMP - EBLT — NODE: 25

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB T	33649801	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
NWB T	33649802	WILMINGTON PIKE	119	0.5	0.0	0.0	0.0	2.5%
NWB T	33649803	WILMINGTON PIKE	119	0.3	0.0	0.0	0.0	1.7%

WILMINGTON PIKE & I675 NB RAMP - EBRT — NODE: 20

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649807	I675 NB RAMP - EBRT	119	51.6	2.0	175.0	7.0	0.0%
EB L	33649808	I675 NB RAMP - EBRT	119	52.9	2.0	201.8	7.0	0.0%
SB T	33649840	WILMINGTON PIKE	119	0.3	0.0	0.0	0.0	0.0%
SB T	33649804	WILMINGTON PIKE	119	0.0	0.0	0.0	0.0	0.0%
SB T	33649805	WILMINGTON PIKE	119	1.8	0.1	16.0	1.0	0.0%
SB T	33649806	WILMINGTON PIKE	119	0.6	0.0	0.0	0.0	0.0%
SEB T	33649793	I675 NB RAMP - EBRT	119	42.2	1.7	153.2	6.0	0.0%
SEB T	33649794	I675 NB RAMP - EBRT	119	34.5	1.4	104.4	4.0	0.0%

WILMINGTON PIKE & I675 SB RAMP - WBLT — NODE: 11

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NWB R	33649772	I675 SB RAMP - WBRT	119	73.1	2.8	218.3	8.0	0.0%
NWB R	33649773	I675 SB RAMP - WBRT	119	55.9	2.3	196.6	7.1	0.0%
NWB R	33649835	I675 SB RAMP - WBRT	119	85.2	3.3	249.2	9.0	0.0%
SB T	33649713	WILMINGTON PIKE	119	6.8	0.4	24.5	1.1	10.1%
SB T	33649714	WILMINGTON PIKE	119	1.8	0.1	15.1	1.0	0.0%
SB T	33649715	WILMINGTON PIKE	119	5.8	0.3	20.5	1.0	4.2%
SWB T	33649774	I675 SB RAMP - WBRT	119	62.9	2.4	263.0	8.1	0.0%
SWB T	33649775	I675 SB RAMP - WBRT	119	62.2	2.4	209.3	8.0	0.0%

WILMINGTON PIKE & I675 SB RAMP - WBLT — NODE: 11

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)

WILMINGTON PIKE & I675 SB RAMP - WBRT — NODE: 21

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NEB T	33649812	WILMINGTON PIKE	119	0.7	0.0	0.0	0.0	4.2%
NEB T	33649813	WILMINGTON PIKE	119	0.5	0.0	0.0	0.0	2.5%
NEB T	33649814	WILMINGTON PIKE	119	1.2	0.1	14.6	1.0	7.6%

WILMINGTON PIKE & MIAMI VALLEY DR — NODE: 9

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33649889	MIAMI VALLEY DR	119	32.0	1.3	97.4	4.0	0.0%
EB L	33649890	MIAMI VALLEY DR	119	136.0	5.1	294.8	10.0	1.7%
EB TR	33649891	MIAMI VALLEY DR	119	13.4	0.5	73.6	2.1	0.0%
NB L	33649898	WILMINGTON PIKE	119	1.0	0.1	14.9	1.0	0.0%
NB T	33649903	WILMINGTON PIKE	119	32.2	1.3	165.7	6.0	0.0%
NB T	33649904	WILMINGTON PIKE	119	38.6	1.4	201.0	6.1	0.0%
NB T	33649905	WILMINGTON PIKE	119	67.5	2.5	308.1	11.0	0.0%
NB TR	33649906	WILMINGTON PIKE	119	44.7	1.7	200.7	8.0	0.0%
SB L	33649884	WILMINGTON PIKE	119	3.6	0.2	17.9	1.0	0.0%
SB T	33649885	WILMINGTON PIKE	119	3.6	0.2	17.4	1.0	0.0%
SB T	33649886	WILMINGTON PIKE	119	2.5	0.1	15.9	1.0	0.0%
SB T	33649887	WILMINGTON PIKE	119	8.8	0.3	86.8	3.1	0.0%
SB TR	33649888	WILMINGTON PIKE	119	5.1	0.2	22.9	1.1	0.0%
WB L	33649897	MIAMI VALLEY DR	119	2.7	0.2	18.0	1.0	0.0%
WB TR	33649883	MIAMI VALLEY DR	119	3.1	0.2	16.1	1.0	0.0%

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD — NODE: 33

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
EB L	33650000	WHIPP RD	119	25.1	1.1	76.3	3.0	0.0%
EB R	33650002	WHIPP RD	119	36.4	1.4	157.1	6.0	0.0%
EB T	33649999	WHIPP RD	119	58.1	2.3	164.8	6.0	0.0%
EB T	33650001	WHIPP RD	119	55.6	2.3	142.3	5.0	0.0%
NB L	33649989	WILMINGTON PIKE	119	60.9	2.4	183.0	7.0	0.0%
NB L	33649995	WILMINGTON PIKE	119	73.5	2.8	199.9	7.0	0.0%

WILMINGTON PIKE, WHIPP RD & FEEDWIRE RD — NODE: 33

Movements	Lane ID	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	95th Percentile Length (ft)	95th Percentile Num Queued	Spillback Rate (%)
NB R	33649993	WILMINGTON PIKE	119	38.2	1.5	172.3	5.0	0.0%
NB R	33649994	WILMINGTON PIKE	119	34.9	1.3	165.5	6.0	0.0%
NB T	33649990	WILMINGTON PIKE	119	94.7	3.5	310.8	11.0	0.0%
NB T	33649991	WILMINGTON PIKE	119	76.4	2.9	253.6	9.0	0.0%
NB T	33649992	WILMINGTON PIKE	119	51.5	2.0	198.5	8.0	0.0%
SB L	33650018	WILMINGTON PIKE	119	42.9	1.8	126.8	5.0	0.0%
SB L	33650020	WILMINGTON PIKE	119	39.2	1.6	127.3	4.1	0.0%
SB R	33650024	WILMINGTON PIKE	119	6.5	0.3	32.0	2.0	0.0%
SB T	33650021	WILMINGTON PIKE	119	89.0	3.3	249.9	9.0	0.0%
SB T	33650022	WILMINGTON PIKE	119	90.3	3.3	262.6	9.1	0.0%
SB T	33650023	WILMINGTON PIKE	119	120.1	4.4	323.0	11.0	0.0%
WB L	33650027	FEEDWIRE RD	119	112.6	4.1	275.8	10.0	0.0%
WB L	33650028	FEEDWIRE RD	119	60.7	2.3	185.7	6.1	0.0%
WB T	33650029	FEEDWIRE RD	119	45.4	1.7	149.4	5.1	0.0%
WB T	33650030	FEEDWIRE RD	119	48.1	1.9	165.1	6.0	0.0%
WB T	33650042	FEEDWIRE RD	119	6.7	0.4	37.6	2.0	0.0%

Project: WilmPike_Option1B_DDI
Scenario: AM Pk 120s CL
Run(s): 06/30/23 12:39:10
Simulated: 06/30/23 12:39:10
Time: 10:00:00 - 11:00:00
Interval: Summary
Selection: Instant Report

Spillback Queue by Intersection

WILMINGTON PIKE

NODE: 22

			LONGEST BRANCH				ALL BRANCHES	
Dir	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	Max Queue Length (ft)	Max Num Queued	Avg Total Queued	Max Total Queued
NWB	WILMINGTON PIKE	60	51.0	3.9	199.2	17	3.9	17
SWB	WILMINGTON PIKE	60	69.5	5.8	290.1	29	5.8	29

ABOUT SPILLBACK QUEUES
Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Project: WilmPike_Option1B_DDI
Scenario: PM Pk 120s CL
Run(s): 06/30/23 11:41:21
Simulated: 06/30/23 11:41:21
Time: 18:00:00 - 19:00:00
Interval: Summary
Selection: Instant Report

Spillback Queue by Intersection

WILMINGTON PIKE

NODE: 22

			LONGEST BRANCH				ALL BRANCHES	
Dir	Street Name	Observations	Avg Queue Length (ft)	Avg Num Queued	Max Queue Length (ft)	Max Num Queued	Avg Total Queued	Max Total Queued
NWB	WILMINGTON PIKE	60	118.5	10.2	430.7	24	10.2	24
SWB	WILMINGTON PIKE	60	69.3	6.4	337.8	31	6.4	31

ABOUT SPILLBACK QUEUES
Spillback queues begin at the front bumper of the first vehicle in queue on a link. From there, the queue can branch as a tree in different directions as it spills upstream through intersections. The various branches of the spillback queue will extend beyond the originating link and superlink boundaries until the back of the queue is reached on every branch in the tree.

- Average/Maximum Queue Length: Distance from the front bumper of the first queued vehicle to the back bumper of the last queued vehicle for the longest branch
- Average/Maximum Vehicles Queued: Number of vehicles queued in all lanes for the longest branch

Wilmington Pike TRAC Stop Intersection Capacity Analysis Summary Table

Intersection/ Approach	2050 AM									2050 PM								
	No Build			Option 1			Option 2			No Build			Option 1			Option 2		
	LOS (Delay/sec)	v/c	95th %tile Queue (veh)	LOS (Delay/sec)	v/c	95th %tile Queue (veh)	LOS (Delay/sec)	v/c	95th %tile Queue (veh)	LOS (Delay/sec)	v/c	95th %tile Queue (veh)	LOS (Delay/sec)	v/c	95th %tile Queue (veh)	LOS (Delay/sec)	v/c	95th %tile Queue (veh)
Feedwire & Clinger (TWSC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB-Left	B (10.3)	0.06	0.2	B (10.3)	0.06	0.2	A (9.7)	0.05	0.2	B (12.7)	0.28	1.1	B (12.7)	0.28	1.1	B (12.5)	0.27	1.1
EB-Thru	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EB Approach	A (0.8)	-	-	A (0.8)	-	-	A (0.9)	-	-	A (1.5)	-	-	A (1.5)	-	-	A (1.7)	-	-
SB-Left	C (16.4)	0.06	0.2	C (16.2)	0.06	0.2	C (15.5)	0.18	0.7	F (499.9)	1.9	17.2	F (115.2)	1.02	9.2	F (251.0)	1.42	19.2
SB-Right	B (12.4)	0.1	0.3	B (12.4)	0.10	0.3	B (11.6)	0.09	0.3	C (19.2)	0.49	2.7	C (19.2)	0.49	2.7	C (18.6)	0.48	2.6
SB Approach	B (13.5)	-	-	B (13.5)	-	-	B (13.9)	-	-	F (242.8)	-	-	F (63.8)	-	-	F (153.8)	-	-

HCS Two-Way Stop-Control Report

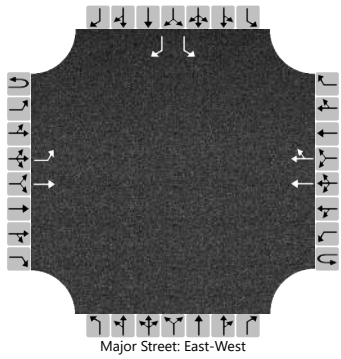
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	2/7/2023
Analysis Year	2050
Time Analyzed	AM
Intersection Orientation	East-West
Project Description	Wilmington Pike TRAC No Build

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	MCTID
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	40	460				820	50						20		50
Percent Heavy Vehicles (%)	0	2												1		1
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Left Only								5							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.14												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43												22		54
Capacity, c (veh/h)		721												338		540
v/c Ratio		0.06												0.06		0.10
95% Queue Length, Q_{95} (veh)		0.2												0.2		0.3
Control Delay (s/veh)		10.3												16.4		12.4
Level of Service (LOS)		B												C		B
Approach Delay (s/veh)	0.8												13.5			
Approach LOS	A												B			

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HCS Two-Way Stop-Control Report

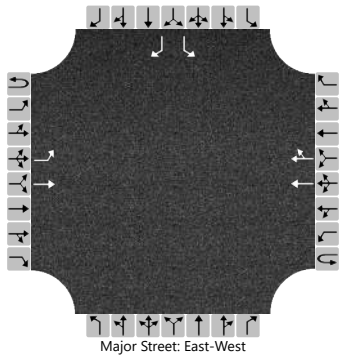
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	2/7/2023
Analysis Year	2050
Time Analyzed	PM
Intersection Orientation	East-West
Project Description	Wilmington Pike TRAC No Build

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	MCTID
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	170	1280				750	250						200		230
Percent Heavy Vehicles (%)	0	3												1		1
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Left Only								5					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		181												213		245
Capacity, c (veh/h)		645												112		495
v/c Ratio		0.28												1.90		0.49
95% Queue Length, Q_{95} (veh)		1.1												17.2		2.7
Control Delay (s/veh)		12.7												499.9		19.2
Level of Service (LOS)		B												F		C
Approach Delay (s/veh)		1.5												242.8		
Approach LOS		A												F		

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HCS Two-Way Stop-Control Report

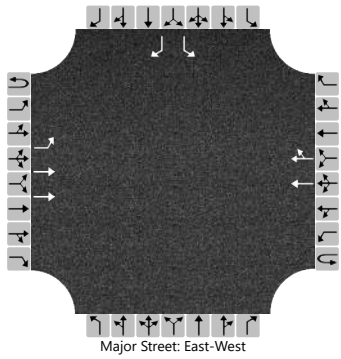
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	11/30/2022
Analysis Year	2050
Time Analyzed	AM Peak Option 1
Intersection Orientation	East-West
Project Description	Wilmington Pike Capacity Analysis TRAC

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	40	460				820	50						20		50
Percent Heavy Vehicles (%)	0	2												1		1
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Left Only								5							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.14												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43												22		54
Capacity, c (veh/h)		721												344		540
v/c Ratio		0.06												0.06		0.10
95% Queue Length, Q_{95} (veh)		0.2												0.2		0.3
Control Delay (s/veh)		10.3												16.2		12.4
Level of Service (LOS)		B												C		B
Approach Delay (s/veh)	0.8												13.5			
Approach LOS	A												B			

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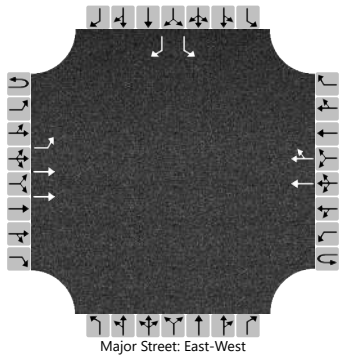
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	11/30/2022
Analysis Year	2050
Time Analyzed	PM Peak Option 1
Intersection Orientation	East-West
Project Description	Wilmington Pike Capacity Analysis TRAC

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	MCTID
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	170	1280				750	250						200		230
Percent Heavy Vehicles (%)	0	3												1		1
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Left Only								5					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		181												213		245
Capacity, c (veh/h)		645												209		495
v/c Ratio		0.28												1.02		0.49
95% Queue Length, Q_{95} (veh)		1.1												9.2		2.7
Control Delay (s/veh)		12.7												115.2		19.2
Level of Service (LOS)		B												F		C
Approach Delay (s/veh)		1.5												63.8		
Approach LOS		A												F		

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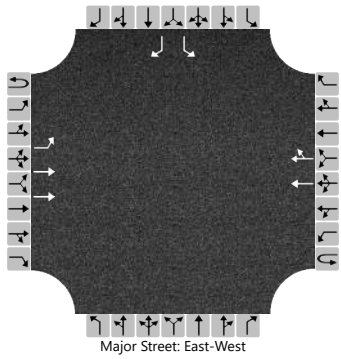
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	11/30/2022
Analysis Year	2050
Time Analyzed	AM Peak Option 2
Intersection Orientation	East-West
Project Description	Wilmington Pike Capacity Analysis TRAC

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	40	410				650	90						70		50
Percent Heavy Vehicles (%)	0	2												1		1
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Left Only								5							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.14												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43												76		54
Capacity, c (veh/h)		816												417		601
v/c Ratio		0.05												0.18		0.09
95% Queue Length, Q_{95} (veh)		0.2												0.7		0.3
Control Delay (s/veh)		9.7												15.5		11.6
Level of Service (LOS)		A												C		B
Approach Delay (s/veh)	0.9												13.9			
Approach LOS	A												B			

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HCS Two-Way Stop-Control Report

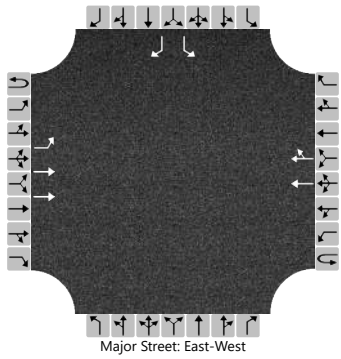
General Information

Analyst	RTM
Agency/Co.	CMT
Date Performed	11/30/2022
Analysis Year	2050
Time Analyzed	PM Peak Option 2
Intersection Orientation	East-West
Project Description	Wilmington Pike Capacity Analysis TRAC

Site Information

Intersection	Feedwire & Clinger
Jurisdiction	MCTID
East/West Street	Feedwire Rd
North/South Street	Clinger Ln
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		1	0	1
Configuration		L	T				T	TR						L		R
Volume (veh/h)	0	170	1070				690	280						320		230
Percent Heavy Vehicles (%)	0	3												1		1
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage	Left Only								5							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.82		6.92
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		181												340		245
Capacity, c (veh/h)		663												240		507
v/c Ratio		0.27												1.42		0.48
95% Queue Length, Q_{95} (veh)		1.1												19.2		2.6
Control Delay (s/veh)		12.5												251.0		18.6
Level of Service (LOS)		B												F		C
Approach Delay (s/veh)	1.7												153.8			
Approach LOS	A												F			

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I-675 AND WILMINGTON PIKE INTERCHANGE FEASIBILITY STUDY

APPENDIX E: TRAVEL TIME ANALYSIS

CMT

CASE 1: NB-675 (2000' from Wilm Pike) to Apartment Complex driveway on Feedwire Rd (1.57 miles)

Segment	Travel Time (sec)			
	No Build	Alt 1	Alt 1B	Alt 2
NB 675 Off Ramp at WilmPike	267.34	127.53	48.17	64.36
Wilm Pike b/w ramps	161.53	112.97	55.37	
Wilm Pike b/w SB 675 and Feedwire	53.06	60.70	60.70	
Feedwire b/w Wilm Pike and Charles	48.23	66.86	66.86	
Feedwire b/w Charles and Clyo Rd	231.29	68.47	68.47	
NB CD Road				47.24
Feedwire b/w NB CD to Clyo Rd				41.95
Feedwire b/w Clyo Rd and Driveway	31.48	24.54	24.54	10.13
Total Travel Time (sec)	792.93	461.06	324.11	163.68
Total Travel Time (min)	13.22	7.68	5.40	2.73

CASE 2: SB-675 (5000' from Wilm Pike) to Morris Furniture on Whipp Rd (1.25 miles)

Segment	Travel Time (sec)				
	No Build	Alt 1	Alt 1B	Alt 2 (via Wilm Pike)	Alt 2 (via Feedwire)
SB 675 Off Ramp at Feedwire Rd					83.40
Feedwire b/w SB ramp and Charles					69.42
Feedwire b/w Charles and Wilm Pike					60.31
SB 675 Off Ramp (or CD Rd) at WilmPike	416.00	116.10	116.33	128.78	
Wilm Pike b/w SB 675 (or CD Rd) and Feedwire	53.06	60.70	60.70	55.86	
Feedwire b/w Wilm Pike and Morris Driveway	6.41	6.41	6.41	6.41	6.41
Total Travel Time (sec)	475.47	183.22	183.45	191.06	219.54
Total Travel Time (min)	7.92	3.05	3.06	3.18	3.66

CASE 3: NB Wilm Pike (1000' from Clyo) to 500' north of Brown Rd (1.40 miles)

Segment	Travel Time (sec)			
	No Build	Alt 1	Alt 1B	Alt 2
WilmPike b/w 1000' south of Clyo to Clyo Rd	36.89	22.25	22.25	23.67
WilmPike b/w Clyo to Miami Valley	29.09	32.50	32.50	28.03
WilmPike b/w Miami Valley to NB ramp	229.94	63.91	34.59	65.51
Wilm Pike b/w ramps	161.53	112.97	55.37	17.73
Wilm Pike b/w SB 675 and Feedwire	53.06	60.70	60.70	55.86
Wilm Pike b/w Feedwire and Brown Rd	65.89	70.86	70.86	68.67
Wilm Pike b/w Brown to 500' north of Brown Rd	8.50	8.50	8.50	8.50
Total Travel Time (sec)	584.90	371.69	284.76	267.97
Total Travel Time (min)	9.75	6.19	4.75	4.47

3 trips totaling 4.22 miles	30.89	16.93	13.21	10.38

Assumptions:

1. I-675 Speed = 65 MPH. CD Speed = 55 MPH. Assume 15 MPH for queue "crawling" speed.
2. Use travel time from HCS PM if available
3. Use distance divided by posted speed limit or HCS segment travel speed speed if HCS travel time unavailable, then add delays from HCS PM
4. At non corridor, travel time estimated by using the following:

{(non-queue dist) / (posted or assumed speed)}
+ {(queue dist) / (posted or assumed speed)}
+ (Control Delay)

------ SEE INDIVIDUAL CELLS FOR CALCULATION DETAILS, NO CALC MEANS TRAVEL TIME FROM HCS ------

I-675 and Wilmington Pike Interchange Feasibility Study

Appendix F: EFC Report Excerpt

CMT

EXISTING & FUTURE CONDITIONS STUDY

MOT/GRE-675/WILMINGTON PIKE (PID 115160)

ODOT DISTRICT 8

MONTGOMERY COUNTY TRANSPORTATION IMPROVEMENT DISTRICT

AUGUST 12, 2022

PREPARED FOR:

MONTGOMERY COUNTY TRANSPORTATION
IMPROVEMENT DISTRICT
451 W. THIRD ST., 10TH FLOOR
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APPENDIX C: Capacity Analyses

APPENDIX D: Freeway Analyses

APPENDIX E: Safety Analysis

APPENDIX F: Storage Lane Length Analysis

INTRODUCTION

The Ohio Department of Transportation (ODOT), the Montgomery County Transportation Improvement District (MCTID), and key stakeholders including the Greene County Engineers Office, the City of Centerville, and Sugarcreek Township have partnered to evaluate existing and future traffic conditions within the vicinity of Interstate 675 (I-675) and the Wilmington Pike interchange.

The project area takes into consideration political boundaries, the adjacent roadway network, and land use development trends near the I-675/ Wilmington Pike interchange. The general area being evaluated by the key stakeholders is bounded by Swigart Road/ Stutsman Road on the north, Bigger Rd on the west, SR-725 on the south, and Upper Bellbrook/ Alpha Bellbrook Rd on the east.

This focus of this Existing and Future Conditions (EFC) report is to evaluate the roadway network within the influence area of the existing I-675/ Wilmington Pike interchange. The following signalized intersections are included in the analysis of the EFC report to evaluate operations and the safety performance that may be critical to the long-term operations of the I-675/ Wilmington Pike interchange.

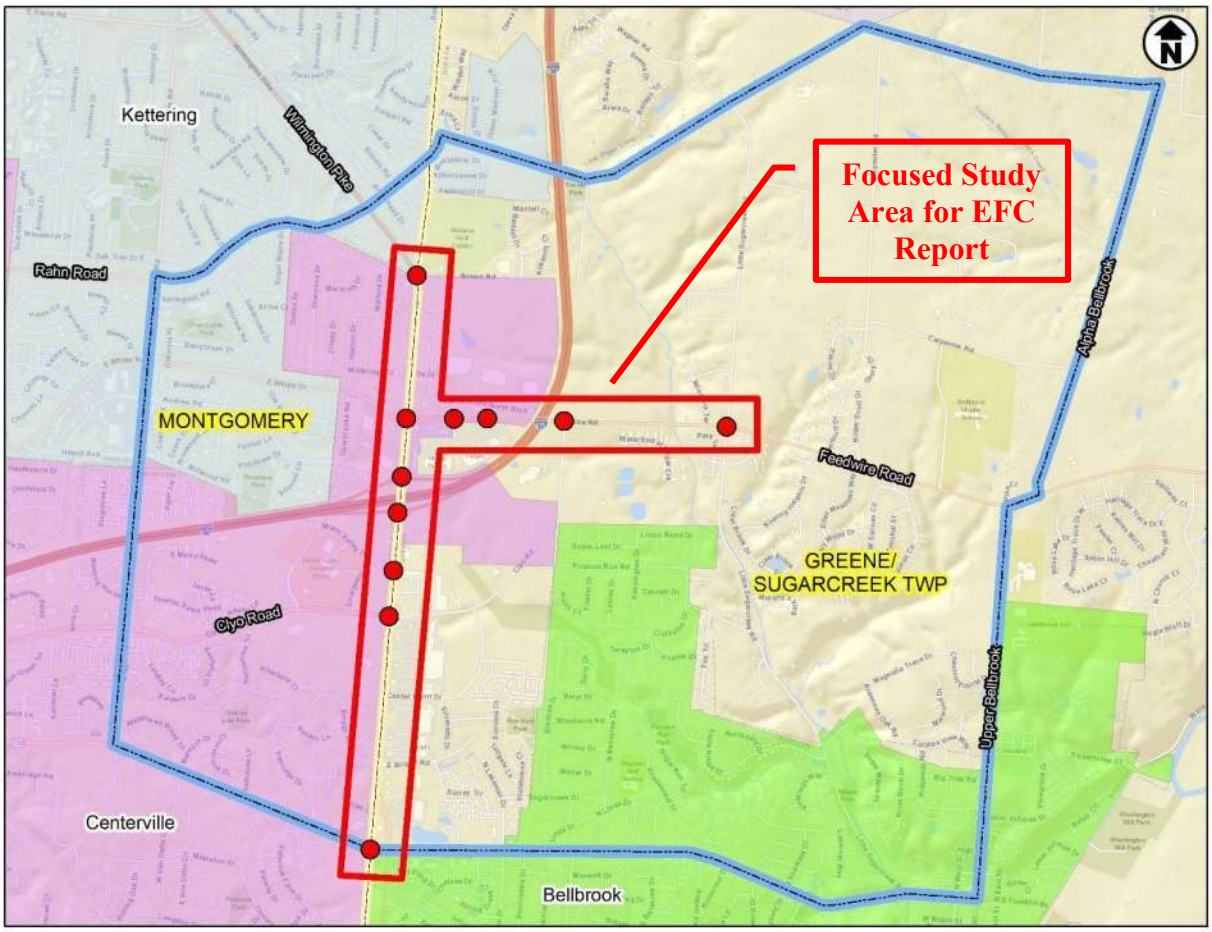
Note that TRAC eligible locations are shown below. The intersections that affect the operations and safety performance of the I-675/ Wilmington Pike interchange may be refined as additional analyses is completed.

1. Wilmington Pike at Brown Road
2. Wilmington Pike at Feedwire Road/ Whipp Road
3. Wilmington Pike at I-675 SB Ramps
4. Wilmington Pike at I-675 NB Ramps
5. Wilmington Pike at Miami Valley Drive
6. Wilmington Pike at Clyo Road
7. Feedwire Road at Charles Drive
8. Feedwire Road at Clinger Lane
9. Feedwire Road and Clyo Road

The focused study area for the EFC report is shown within the red box on **Figure 1**. Analyses was also performed on the I-675 corridor as well as the ramps at the adjacent interchanges on I-675: the Indian Ripple Road and at State Route 48. Note the ramps to/from Alex-Bell Road are excluded from the analysis.

A previous study (MOT-675-7.42 IMS) dated June 2014 identified interchange modifications that would address operational deficiencies and safety issues in the I-675 / Wilmington Pike interchange. Several short term and long-term improvements were proposed as part of the study recommendations.

FIGURE 1: PROJECT AREA



DATA COLLECTION

A Count Evaluation Technical Memo dated December 9, 2021 summarized the traffic data compiled for the study area. The data collection effort was about 8 months after the beginning of multiple rules and orders relating to COVID-19 which has affected traffic patterns. These traffic data have been found to be consistently lower than pre-COVID levels. Therefore, the traffic data was adjusted using seasonal factors, COVID factors, and queue data to develop a pre-COVID base volumes.

The growth rates from the Count Evaluation Tech memo were used to develop Opening Day (2030) and Design Year (2050) volumes for the AM and PM peak periods. An annual linear growth rate of 0.69% on Wilmington Pike and 0.50% on Feedwire Rd were applied to the described volumes. ODOT approved the use of the planning level traffic volumes (2/1/22 email) based on the growth rates outlined in the 12/9/21 count evaluation memo. Certified traffic will be used during the feasibility study phase of the project to confirm the initial findings and select a preferred alternative for detailed design.

Appendix A contains the Count Evaluation Tech Memo dated 12/9/21. **Appendix B** contains the traffic volume plates used for the EFC analysis.

LANE UTILIZATION

The addition to the peak hour traffic counts collected in 2020, lane utilization was measured at seven locations in the Wilmington Pike and I-675 interchange influence area where lane imbalances was observed to be a factor contributing to multicycle queues. Critical approaches where downstream weaving occurs due to capacity constraints attributed to lane imbalances are listed below with an asterisk (**).

Table 1 summarizes the percentage of vehicles in the highest volume lane.

1. EB Feedwire Road Through Lanes at Charles Drive (11/5/21 PM) **
2. WB Feedwire Road Left Turn Lanes at Wilmington Pike (11/5/21 AM, 11/10/21 PM) **
3. Southbound I-675 Off Ramp Left Turn Lanes at Wilmington Pike (11/8/21 PM)
4. NB Wilmington Pike Through Lanes at I-675 Southbound Off Ramp (11/8/21 PM) **
5. SB Wilmington Pike Through Lanes at I-675 Northbound Off Ramp (11/9/21 PM) **
6. Northbound I-675 Off Ramp Left Turn Lanes at Wilmington Pike (11/9/21 PM) **
7. Southbound Wilmington Pike Through Lanes at Clyo Road (11/4/21 PM) **

TABLE 1: LANE UTILIZATION SUMMARY

	2030 AM	2030 PM	2050 AM	2050 PM
	EB Feedwire Rd Thru Lanes at Charles Drive			
Approach Volume	409	730	448	800
Lane Utilization %	76%	76%	76%	76%
Highest Lane Vol	**311**	**555**	**340**	**608**
	WB Feedwire Rd Left Turn at Wilmington Pk			
Approach Volume	387	498	424	544
Lane Utilization %	61%	58%	61%	58%
Highest Lane Vol	**236**	**289**	**259**	**316**
	SB I-675 Off Ramp Left Turn at Wilmington Pk			
Approach Volume	659	960	744	1084
Lane Utilization %	52%	52%	52%	52%
Highest Lane Vol	**343**	**499**	**387**	**564**
	NB Wilmington Pk Thru Lanes at SB I-675 Off Ramp			
Approach Volume	621	1403	701	1584
Lane Utilization %	58%	58%	58%	58%
Highest Lane Vol	**360**	**814**	**407**	**919**
	SB Wilmington Pk Thru Lanes at NB I-675 Off Ramp			
Approach Volume	962	1656	1086	1870
Lane Utilization %	50%	50%	50%	50%
Highest Lane Vol	**481**	**828**	**543**	**935**
	NB I-675 Off Ramp Left Turn at Wilmington Pk			
Approach Volume	341	738	385	833
Lane Utilization %	59%	59%	59%	59%
Highest Lane Vol	**201**	**435**	**227**	**491**
	SB Wilmington Pk Through Lanes at Clyo Rd			
Approach Volume	493	1261	557	1424
Lane Utilization %	54%	54%	54%	54%
Highest Lane Vol	**266**	**681**	**301**	**769**

Traffic volumes were measured in each approach lane to calculate the respective lane utilization. The lane utilization percentage was calculated from data collected in November 2021 to determine the Heaviest Lane Volume (veh/h). The percentage was then applied to the approach volumes using the methodology outlined in the Count Evaluation Tech Memo (12/9/2021) to determine the Heaviest Lane Volume for the 2030 and 2050 No Build HCS Analyses. Note the Lane Utilization of 50% in a single lane for the SB Wilmington Pike approach at the NB I-675 ramp intersection occurred a 3-lane approach.

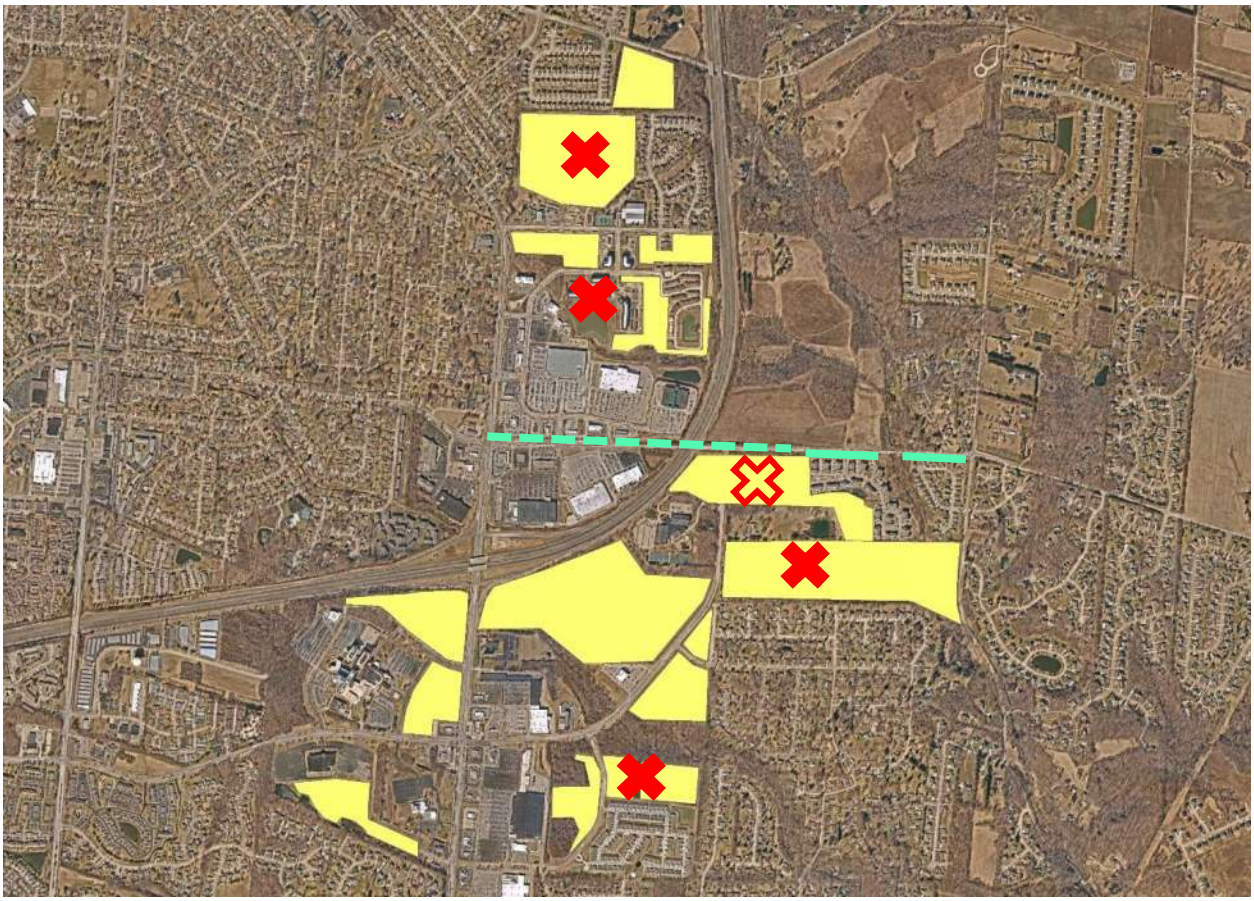
AM and PM percentages were collected for the WB left turn movement on Feedwire Road at Wilmington Pike and will be used for the respective peak hours. The PM percentages were collected for the other locations and will be applied to all AM and PM scenarios.

LAND USE

Average population growth rates within Montgomery County, Greene County, Washington Township, and Sugarcreek Township were used to develop traffic growth rates for the study. An annual linear growth rate of 0.69% on Wilmington Pike and 0.50% on Feedwire Rd were applied to the described volumes, resulting in 2030 (opening year) and 2050 (design year) volumes.

The total of 280 acres of land is undeveloped (yellow parcels) as shown in **Figure 2** directly adjacent to the study area. The majority of the highlighted parcels are higher trip generating land uses such as commercial, office or higher density residential (apartments/ multi-family). Additional property is available for development within the larger study area as shown in **Figure 1** (Greene County/Sugarcreek Twp). Several parcels are currently advancing through the planning/ site development process as noted with a solid X.

FIGURE 2: VACANT PARCELS



A 2013 Long Range Land Use Plan for Sugarcreek Twp also shows existing and future bikeways within the Feedwire Road corridor. The plan shows an on-street bikeway between Wilmington Pike and Little Sugarcreek Road – see dashed green line on **Figure** 2. Two parcels on the south side of Feedwire Road, west of Little Sugarcreek Road has a shared use path (SUP).

CAPACITY ANALYSES

Wilmington Pike is the county line between Montgomery County (ODOT District 7) and Greene County (ODOT District 8). The I-675/ Wilmington Pike interchange is located at mile post (MP) 7.40 on I-675 and at MP 1.20 on Wilmington Pike.

Wilmington Pike is a principal urban arterial having a roadway section that varies from 9 lanes near Feedwire Road to a standard 5-lane section south of Clyo Road. A raised median exists for the majority of the corridor for exclusive left turn lanes with the exception between the I-675 ramps. The posted speed limit is 40 MPH. The average annual daily traffic (AADT) from a 2019 traffic count was 29,100 vehicles north of I-675.

Feedwire Road is a major collector having a variable roadway section that varies from 7 lanes near Wilmington Pike to 2-lanes east of Clyo Road. A raised median exists for the corridor between Wilmington Pike and Clinger Lane. The posted speed limit is 35 MPH with the City of Centerville (west of bridge over I-675) and prima facie 55 MPH from the bridge to Little Sugarcreek Road. The average annual daily traffic (AADT) based on a 2019 estimate was 15,571 vehicles north of I-675

I-675 is an interstate that connects I-75 to I-70 on the east side of Dayton. This interstate has a 6-lane divided typical section within the study limits. The average annual daily traffic (AADT) from a 2019 traffic count was 84,093 vehicles north of Wilmington Pike. The AADT south of Wilmington Pike is 75,427 vehicles. B+C truck percentages is equal to 5%.

CAPACITY ANALYSIS OVERVIEW

Capacity analysis used 2030 and 2050 traffic volumes that were based on the growth rate estimated outlined in **Appendix A**. The analyses were performed using the Highway Capacity Manual (HCM) 6th Edition (Transportation Research Board, 2016). Highway Capacity Software version 7.9 was used for all capacity analyses. **Table 2** shows the HCM level of service (LOS) thresholds for the freeway and intersection analyses in the study area.

TABLE 2: HCM LOS CRITERIA

Level of Service	Basic Freeway Segment	Merge & Diverge Areas	Signalized Intersection	Unsignalized Intersections
(LOS)	Density (pc/mi/ln)	Density (pc/mi/ln)	Control Delay (sec)	Control Delay (sec)
A	0-11	0-10	0-10	0-10
B	>11-18	>10-20	>10-20	>10-15
C	>18-26	>20-28	>20-35	>15-25
D	>26-35	>28-35	>35-55	>25-35
E	>35-45	>35	>55-80	>35-50
F	>45 or V/C ratio > 1.00	Demand Exceeds Capacity	>80 or V/C ratio > 1.00	>50

The Data Collection section of the EFC study documented queues that extended onto mainline SB I-675. **Photo 1** shows a rolling queue on SB I-675 that occurred at 5:15PM on December 7, 2021. The photo was taken from the east end of the bridge on Feedwire Road looking in the NW direction. The red arrow shows queues extending beyond the advance ½ mile exit sign which is consistent (not equal) with the QSR calculated for the SB I-675 exit ramp (i.e., greater than 2,000 feet). Actual queue lengths in the field are greater than calculated due, in part, to the longer headways between vehicles in a rolling queue traveling at an estimated speed of 5-10 MPH.

Planning level studies to increase capacity of the SB exit ramp to Wilmington Pike were initiated to mitigate queues that extending onto SB I-675 prior to March 2020. While the frequency of queues reduced after March 2020, the frequency of queues that extend onto SB I-675 continues to increase throughout 2021 as traffic volumes return to pre-COVID levels.

PHOTO 1: SB I-675 QUEUES



Other queues were documented, and volumes adjusted as described in the Count Evaluation Technical Memo dated December 9, 2021. **Photo 2** shows queues on EB Feedwire Road that occurred at 6:00PM on December 7, 2021.

PHOTO 2: EB FEEDWIRE ROAD QUEUES



EB Feedwire queues extend from the Clyo Road and the Charles Drive intersections onto NB Wilmington Pike during the PM peak period. Operational issues contribute to congestion that extends onto Wilmington Pike:

- The lane utilization on EB Feedwire Road (curb lane) is equal to 76% for all through and right turning traffic due to a downstream lane drop to Clinger Lane (see **Table 1**).
- The EB left turn lane at Charles Lane has a QSR greater than 1.0 resulting in queues blocking the inside through lane east of Wilmington Pike.

Congestion on Feedwire Road on weekends is comparable to PM weekday conditions due to the commercial land uses along Feedwire Road.

Improvements to reduce queueing on the SB I-675 exit ramp will need to take into consideration congestion that occurs immediately downstream of the I-675/Wilmington Pike interchange. In addition to EB Feedwire Road noted above, critical movements on SB Wilmington Pike include the following:

- The lane utilization for through movements on SB Wilmington Pike at Clyo favor the lane adjacent to the left turn lane – 54% of traffic as shown in **Table 1**. Congestion in the SB (inside) through lane is exacerbated due to queues extending from the SB left turn lane having a QSR > 1.0.
- The SB approach of Wilmington Pike/ SR725 operates at a LOS F during the PM peak period (2030). The minor SB right turn movement results in queuing of the inside through lane which has both through and left turning vehicles.

The capacity analyses identify other critical movements that are over capacity and would be mitigated as part of a Feasibility Study. For example, the left turn movements on Wilmington Pike at both I-675 ramp intersections are over capacity and have QSR values greater than 1.0. A couple critical movements that are not apparent from the No Build analysis but observed in the field are discussed in greater detail below:

- **WB left on Feedwire Road at Wilmington Pike**. Multi-cycle delays are common for this movement due, in part, to the lane imbalance (60/40 split) on the approach. The calculated lane utilization is lower than actual for two reasons: 1) motorists merge downstream of the Wilm Pike/Feedwire intersection to access the SB I-675 ramp to avoid multi-cycle delays at the traffic signal for both AM/PM peak periods, and 2) motorists will travel west through the Wilm Pike/ Feedwire intersection and use the private roadway in the SW quadrant of Wilm Pike/Feedwire/Whipp when destined to I-675.
- **EB left on NB I-675 ramp at Wilmington Pike.** Aggressive weaving occurs downstream on NB Wilmington Pike to avoid multi-cycle queues on the NB I-675 exit ramp. Individual cycles will also fail (i.e., not deliver all vehicles each cycle) although the QSR shows a value less than 1.0. Seasonal and weekend fluctuations can result in multi-cycle queuing on the ramp. Design year 2050 volumes are show the sensitivity of this critical movement to exhibit operational issues during the peak periods.

In general, the lane utilization is affected by the proximity of adjacent signalized intersections. A total of 11 signalized intersections exists on the 2.05-mile length of the Wilmington Pike corridor resulting in an average distance less than 1,000 feet between intersections. Therefore, motorists will favor lanes several intersections in advance of a turn to avoid weaving between lanes on a congested corridor. Balanced lane utilization is important to avoid queues that extend into the functional area of adjacent intersections.

SAFETY ANALYSIS

The study area contains numerous intersections and segments that have been identified as high priority locations from a safety perspective. Three primary agencies prioritize safety locations using 2017-2019 crash data from the Ohio Department of Public Safety (ODPS):

- Ohio Department of Transportation (ODOT) which evaluates crash data across the state of Ohio and ranks the top locations based on the Highway Safety Improvement Program (HSIP).
- Miami Valley Regional Planning Commission (MVRPC) which evaluates crash data of a seven-county region in SW Ohio including incorporated areas
- County Engineers Association of Ohio (CEAO) which evaluates the county roadway network.

The top 10 locations ranked using the ODOT and MVRPC data includes the following:

1. **Urban Ramp HSIP #59**: NB I-675 Off Ramp to Wilmington Pike from log point 0.14 to 0.22 (MOTRA57256). This segment extends from the NB I-675 Off Ramp/ Wilmington Pike intersection.
2. **Urban Ramp HSIP #80**: SB I-675 Off Ramp to Wilmington Pike from log point 0.18 to 0.32 (GRERA29000). This segment extends from the SB I-675 Off Ramp/ Wilmington Pike intersection. This dataset does not include crashes attributed to queues that extend onto mainline SB I-675 thus the actual ranking is expected to be higher than stated.
3. **Urban Ramp HSIP Intersection #127**: I-675 & Wilmington Pike (MOT00675 log 7.44)
4. **Urban Non-Freeway HSIP Segment #446** on SR 725 from log point 0.00 to 0.10 (GRE00725). This segment is located on both of the SR 725 approaches to Wilmington Pike. The signalized intersection also appears on a CEAO priority list (10 total crashes; 4 injury crashes).
5. **Urban Ramp HSIP Segment #459**: SB I-675 On Ramp from Wilmington Pike from log point 0.00 to 0.07 (SMOTRA57186). This segment extends from the SB I-675/ Wilmington Pike intersection.
6. **MVRPC Priority Intersection #40** (Medium Priority) and CEAO Priority Intersection: Wilmington Pike & Clyo Road (GRECR00095 log point 0.84, 30 total crashes, 10 injury crashes).
7. **MVRPC Priority Intersection #52** (Medium Priority): Wilmington Pk & Feedwire Road/ Whipp Road.
8. **MVRPC Priority Segment #90** (Medium Priority): Wilmington Pike between I-675 SB Ramp and I-675 NB Ramp.
9. **MVRPC Priority Segment #123** (Low Priority): Wilmington Pike between I-675 NB Ramp and Clyo Rd.
10. **MVRPC Priority Segment #175** (Low Priority): Wilmington Pike between Clyo Rd and SR 725.

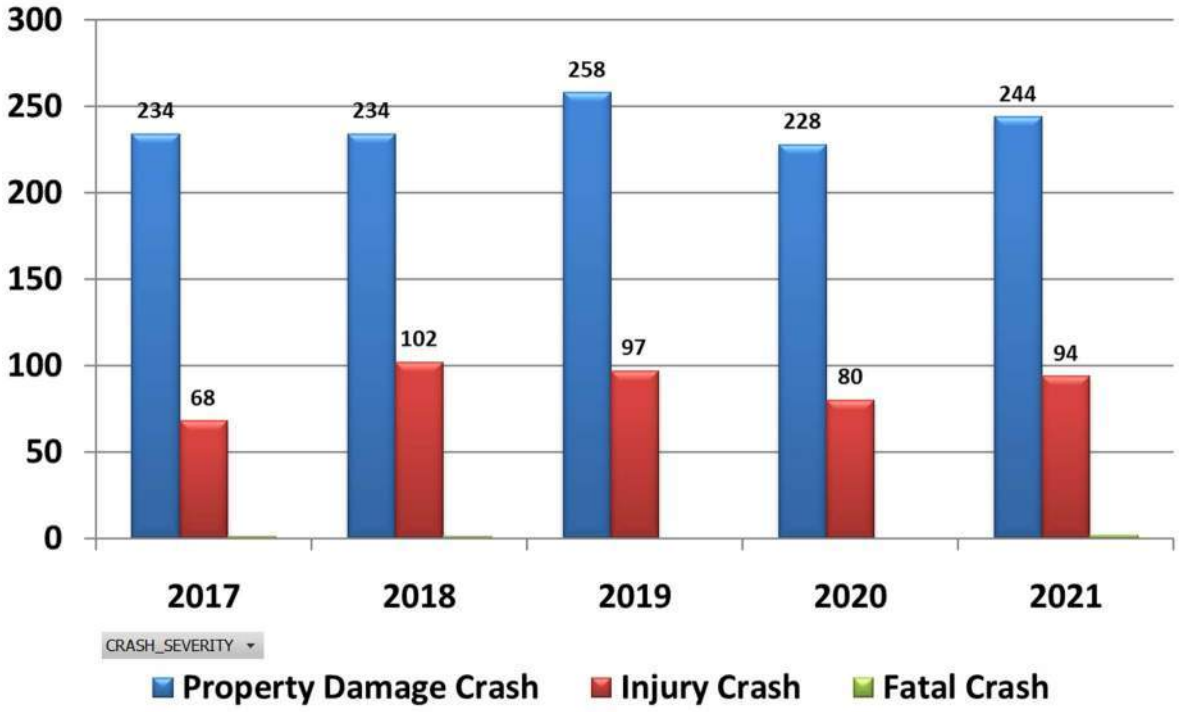
The segment of Wilmington Pike south of the I-675 interchange appears on the CEAO list as a priority segment (MP 0.00 to 1.10). Other intersections that are identified by CEAO as having higher frequency or severity include the following:

1. CEAO Priority Intersection: Feedwire Rd & Little Sugar Creek Rd (GRECR00021 log point 1.14, 23 total crashes, 14 injury crashes).

2. CEAO Priority Intersection: Feedwire Rd & Clyo Rd (GRECR00021 log point 0.56, 23 total crashes, 4 injury crashes).

A detailed crash analysis was completed for two different time periods: 2017-2019 (3-year period) and 2017-2021 (5-year period). The 5-year time period was expanded to include 2020 and 2021 crash data was to determine the effects of COVID related traffic patterns on safety (if any). **Figure 3** shows the crash frequency and severity over the past 5-years.

FIGURE 3: FREQUENCY OF CRASHES BY YEAR AND SEVERITY



The number of crashes over the 5-year period varied between a low of 303 (2017) to a high of 355 (2019). The average crash frequency was equal to 329 crashes. **Table 6** shows the variation of serious visible/ incapacitating injuries and fatalities across the 5-year period.

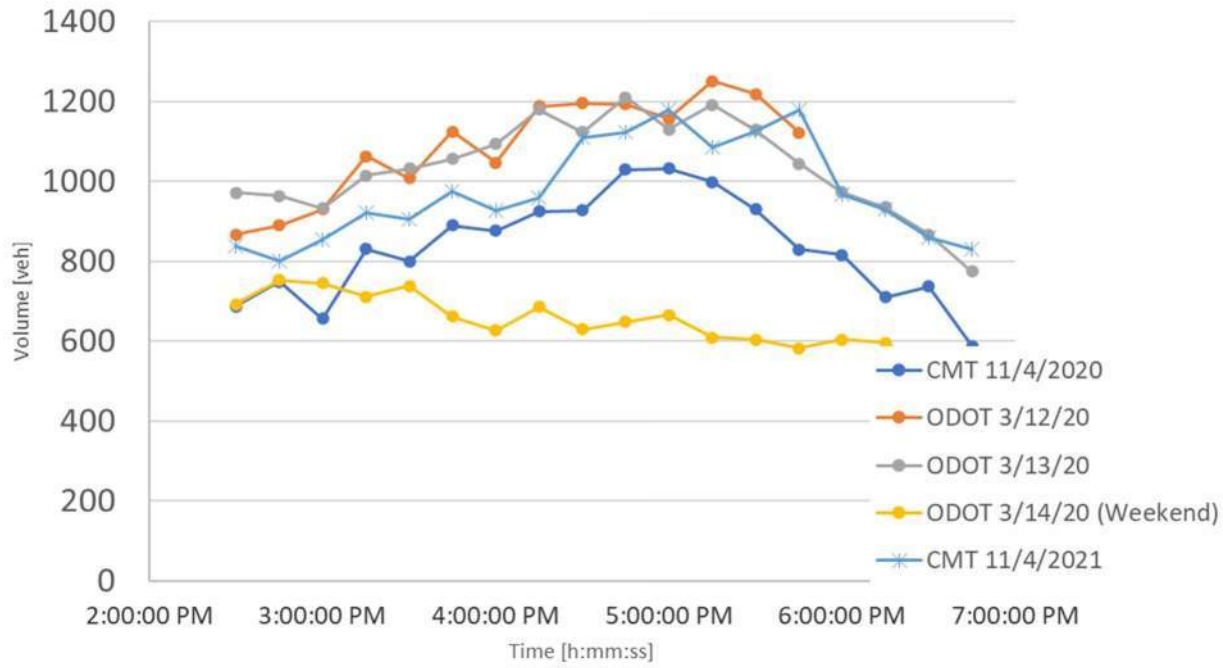
TABLE 6: SERIOUS/ FATAL CRASHES BY YEAR

TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2017	1	7
2018	1	5
2019	0	7
2020	0	3
2021	2	10
Grand Total	**4**	**32**

A total of 2 fatal and 19 serious injury crashes occurred over the 3-year period from 2017-2019. A total of 2 fatal and 19 serious crashes occurred over the 3-year period from 2019-2021.

Historical traffic data of total entering volumes was compared at the SB I-675 ramp and Wilmington Pike intersection as shown in **Figure 4**. The data from March 2020 represents pre-COVID volumes. Traffic data was also collected in Nov 2020 (8 months after lockdown) and in Nov 2021 (20 months after lockdown). The Nov 2021 volumes (light blue) track much closer to the pre-COVID volumes (grey) especially in the 4:30 to 6:30 PM time frame. While traffic volumes are returning to pre-COVID levels, the crash patterns during 2020 and 2021 can be expected to be affected by the reduced volumes.

FIGURE 4: INTERSECTION VOLUMES BY TIME OF DAY



Comparing the safety performance of the two time periods and the trend of normalizing volumes 2-years after the COVID lockdown confirms the 3-year (2017-2019) dataset is representative of the safety performance within the study area in the future. Therefore, countermeasures based on the 2017-2019 dataset will be more effective to mitigate future safety performance issues.

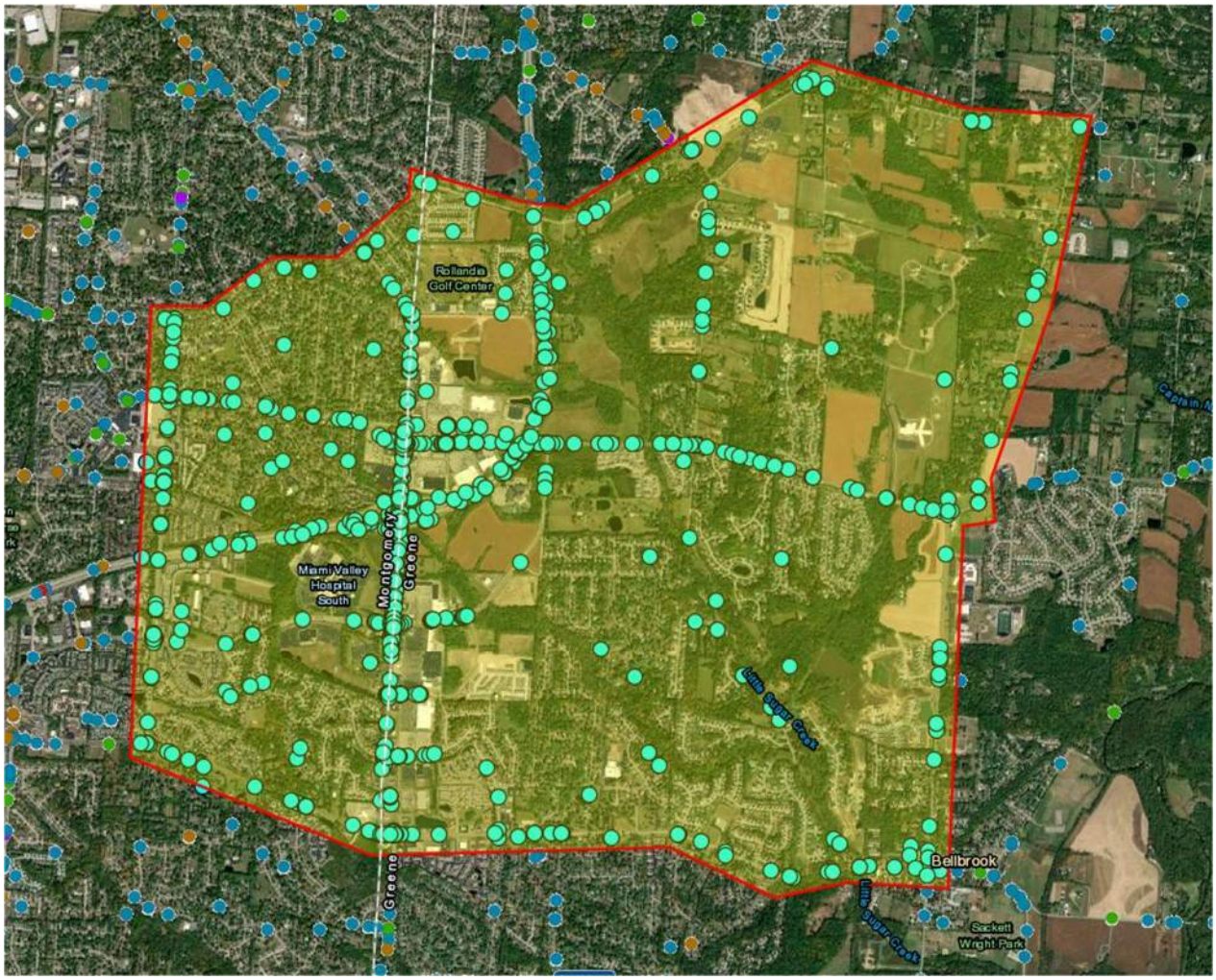
2017-2019 CRASH ANALYSIS

Crash data was obtained using the ODOT Transportation Information Mapping System (TIMS). A total of 995 crashes occurred over a three-year period (2017 to 2019). The study area was expanded to include crashes that occurred on SB I-675 ramps and are attributed to slowing or stopped traffic due to queues extending from the Wilmington Pike corridor.

The OH-1 crash report for each documented crash was reviewed to locate and code crashes accurately within the study limits. The following crash types resulting in **Fatal and All Injury crashes (269 total)** are over-represented within the study area compared to statewide averages for an urban, divided roadway segment (shown in parenthesis). The urban, divided roadway type was selected since the majority of crashes occur on the Wilmington Pike (arterial) and the Feedwire Road (major collector) which both having raised medians.

- Fixed Object Crashes: 25 crashes or 9.3 percent (3.7 percent)
- Sideswipe passing crashes: 18 crashes or 6.7 percent (4.2 percent)

FIGURE 5: INTERSECTION VOLUMES BY TIME OF DAY



Both of the fatal crashes that occurred over the 3-year period was outside of the focused study area shown on **Figure 1**.

The crash pattern by time of day shows the majority of crashes (54 percent) occur over a 6-hour period (1:00 - 7:00 PM). **Figure 6** show the distribution of crashes over a 24-hour period for the 2017-2019. Congestion during the PM peak period is a contributing factor to the safety performance within the study area.

FIGURE6: FREQUENCY OF CRASHES BY TIME OF DAY

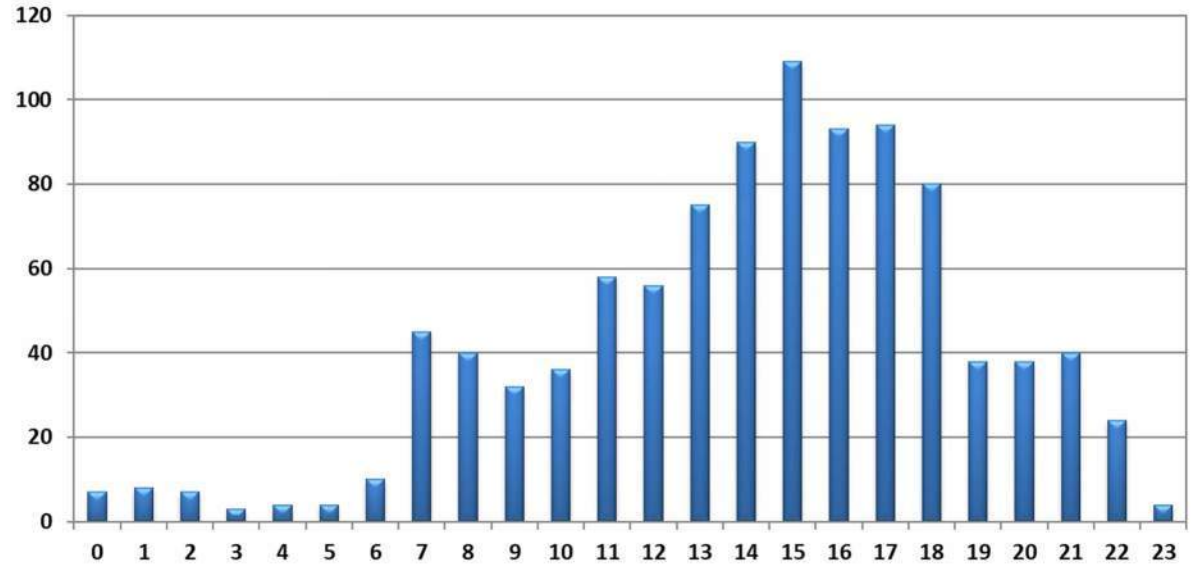
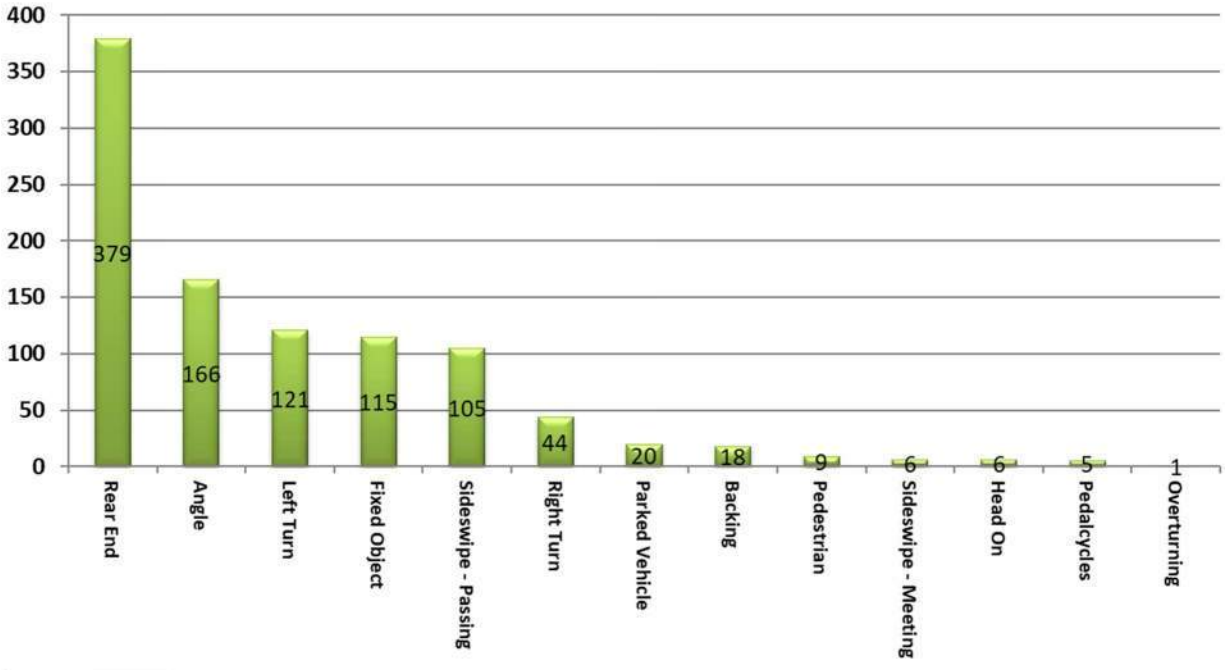


Figure 7 shows the frequency of all crashes by type. Most of the crash types are consistent with statewide averages which may be expected due to the size of the dataset.

FIGURE7: FREQUENCY OF CRASHES BY CRASH TYPE



PRIORITY LOCATIONS

Despite the overall safety performance matching statewide averages, several locations within the focused study area are included on the HSIP safety priority list. Furthermore, crash analysis from the CAM tool identified two crash types that are over-represented for severe crash types as noted above: fixed object and sideswipe passing crashes. **Table 7** shows the priority intersections within the focused study area based on the 3-year dataset (2017-2019).

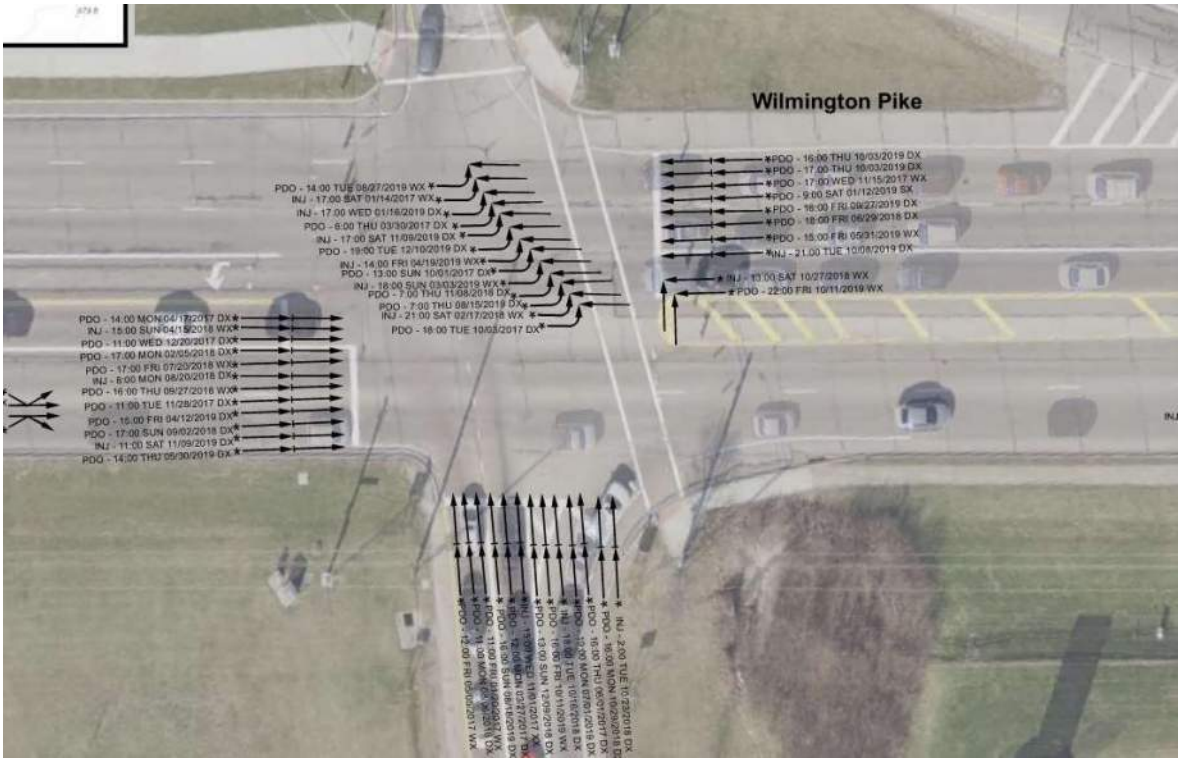
TABLE 7: PRIORITY SAFETY LOCATIONS

HSIP/ MVRPC Rank	Intersection	Total Crashes	Injury Crashes
H59	Wilmington Pk & I-675 NB Ramps	46	14
H80/ H459	Wilmington Pk & I-675 SB Ramps	54	17
	SB I-675 (SB ramp approach)	42	11
H446	Wilmington Pk & SR 725	38	9
M40	Wilmington Pk & Clyo Rd	99	26
M52	Wilmington Pk & Feedwire Rd	68	16
CEAO	Feedwire Rd & Little Sugar Creek Rd	16	5
CEAO	Feedwire Rd & Clyo Rd	22	4

Crashes on SB I-675 were reviewed to determine if queues extending from Wilmington Pike may have negatively affected safety performance. Queues were determined to be a contributing factor in a total of 42 crashes comprising of rear-end, fixed object, and sideswipe passing crashes. Therefore, the gray rows in **Table 7** represent the combined crashes assigned to the SB I-675/ Wilmington Pike intersection (95 total crashes) resulting in a higher priority location than originally assigned by ODOT.

Crash diagrams were prepared for segments of Wilmington Pike from Feedwire/ Whipp to Clyo Road and of Feedwire Road from Wilmington Pike to Clyo Road. **Figure 8** shows the crash patterns at the SB I-675 Ramp and Wilmington Pike intersection. This location is the highest-ranking crash location with the addition of crashes on SB I-675.

FIGURE 8: SB I-675 RAMP AND WILM PIKE INTERSECTION



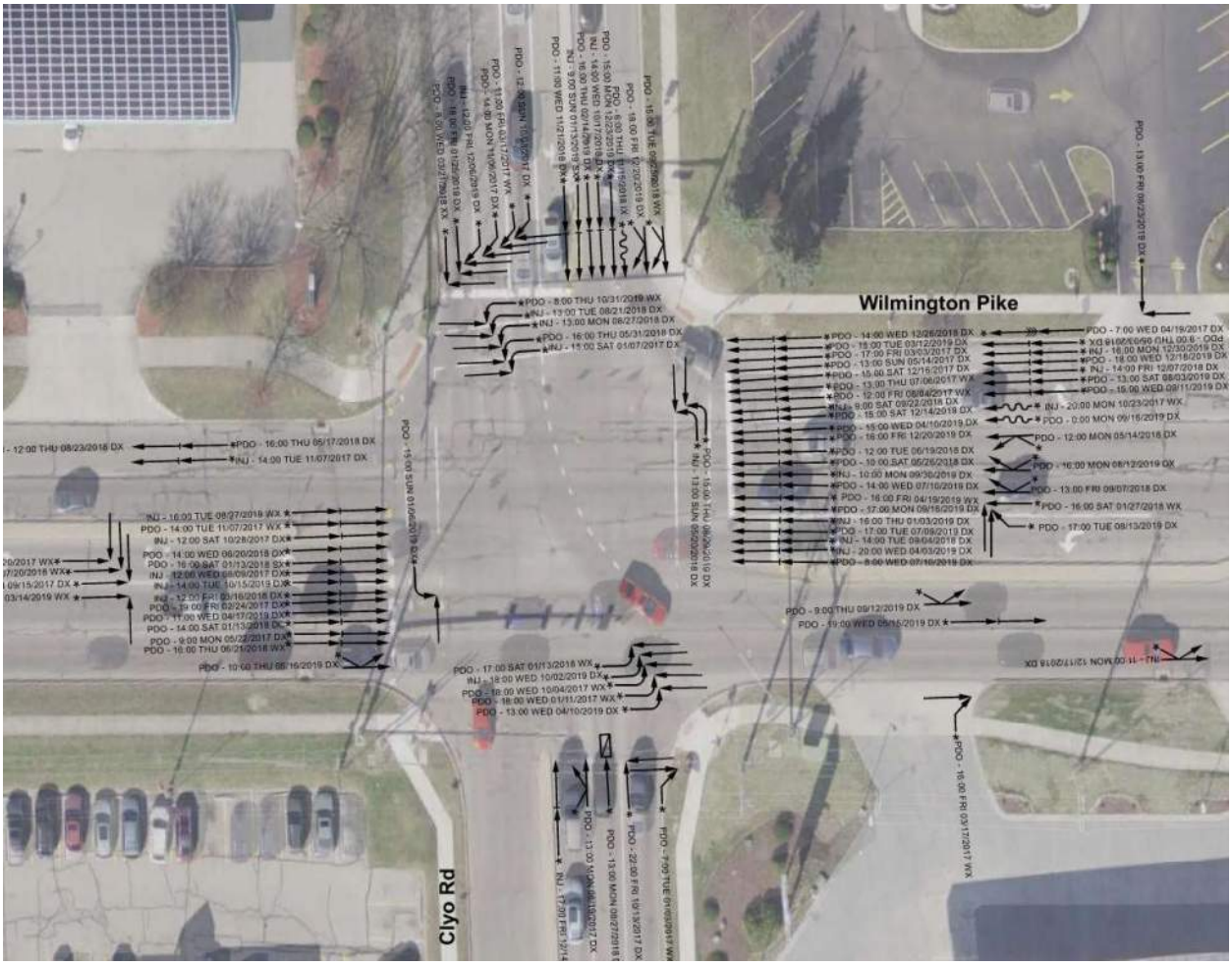
The capacity constraints summarized in **Table 3B** and rolling queues documented in **Photo 1**, contribute to the priority ranking shown in **Table 7** (95 total crashes). Two conditions contribute to the frequency of NB left turn crashes:

- The 95th %ile queue (840 feet) of left turning vehicles extends from the NB I-675 intersection (**Table 3D**) through the SB I-675 ramp intersection.
- The 95th %ile queue (695 feet) of through vehicles extend from the NB I-675 intersection. The lane utilization measurements summarized in **Table 1** showed that 50% of all traffic on the SB approach of the NB I-675 ramp intersection occupy one lane of the 3-lane approach.

Motorists turn during the permissive phase when queues extend from the adjacent ramp intersection. The distance between the ramps to I-675 is 510 feet. A left turn crash pattern also exists at the NB I-675 ramp intersection due to similar queues extending from the SB I-675 ramp intersection.

Figure 9 shows the crash patterns at the Clyo Road and Wilmington Pike intersection which is the highest-ranking (#40) intersection within the study area on the MVRPC Top 100 safety list.

FIGURE 9: CLYO ROAD AND WILM PIKE INTERSECTION



Factors contributing to crashes at the Wilmington Pike and Clyo Road intersection include the following:

- Congestion on the SB approach of Wilmington Pike. Queues of 700 feet block access to the SB left turn at the Clyo Road intersection and to the SB left turn lane to the Sugarcreek Plaza. The lane utilization on the SB approach favors the inside through lane which contributes to conflicts with vehicles accessing the exclusive left turn lanes.
- Offset left turn lanes on Wilmington Pike reduce sight distance of opposing left turn movements during the permissive LT phase
- The sight distance of EB right turning vehicles may be restricted when turning right of red by SB right turning vehicles.

Other crash diagrams are contained in **Appendix E**.

CONCLUSIONS

Existing and future capacity constraints are documented at the majority of intersections within the focused study area as shown in **Tables 3A-K**. These tables also identify movements where the 95th %ile queues exceed the available storage space (QSR>1.0).

In addition to the QSR ratio, storage length analyses were performed at all intersections within the focused study area using the 2050 volumes – the highest volume for each time period was used as the design hour volume. The length of the storage lane was calculated based on ODOT Location and Design (L&D) Volume 1 Section 400 Procedures and compared to the 95th percentile queue lengths provided by HCS (Tables 3A-K). Turn lane lengths calculated within the L&D procedures were based on a typical 120 second cycle length. A design speed equal to the speed limit is used on all approaches. A design speed of 35 mph is assumed on the ramps.

The through and turn lane volumes were divided by the corresponding number of lanes per lane volume to obtain storage length per lane results. Utilization factors were applied to turning movements where data was collected and summarized in **Table 1**. Blockage lengths were calculated using Condition A (Storage Only) per ODOT L&D Figure 401-9. **Table 8** shows results of the storage lane length analyses. Locations where calculated lengths exceed existing lengths are highlighted yellow.

The distance between adjacent intersections may not be sufficient to prevent queues from extending into adjacent intersections. Accommodating design year volumes may require additional lanes to reduce queues that exceed available distances between intersections even if the movement does not exceed a volume/capacity ratio of 1.0.

Increasing capacity to meet existing and future volumes will mitigate safety performance issues at critical intersections listed in **Table 7**. Capacity and queues extending through adjacent intersections are factors that contribute to the safety performance issues within the study area. The crash types that contribute to severe crashes (i.e., sideswipe passing and fixed object) are attributed, in part, to the queues that form on SB I-675 from the Wilmington Pike interchange.

Additional studies will determine feasible improvements to mitigate the capacity and safety performance issues documented in this Existing and Future Conditions study. Considering that traffic destined to the study area currently diverts to adjacent interchanges (i.e., SB I-675 at Indian Ripple Road shown in **Table 5B**), future improvements will be needed within the influence area of the Wilmington Pike and I-675 interchange to enable development of the remaining 280 acres (**Figure 2**) adjacent to the interchange.

I-675 and Wilmington Pike Interchange Feasibility Study

Appendix G: Safety Analysis

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Alternative 1 Improvements	20	$52,265,126.20			$52,265,126.20	$52,265,126.20	-57.960	$35,557,308
Maintenance of Traffic		$1,871,612.00			$0.00	$1,871,612.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
CMF 1 - Provide a Raised Median (KABC - Clyo)	20	$140,000.00			$140,000.00	$140,000.00	-0.016	$58,767
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$54,276,738.20**	**$0.00**	**$0.00**	**$52,405,126.20**	**$54,276,738.20**	**-57.975**	**$35,616,075**

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Benefit - Cost Calculator

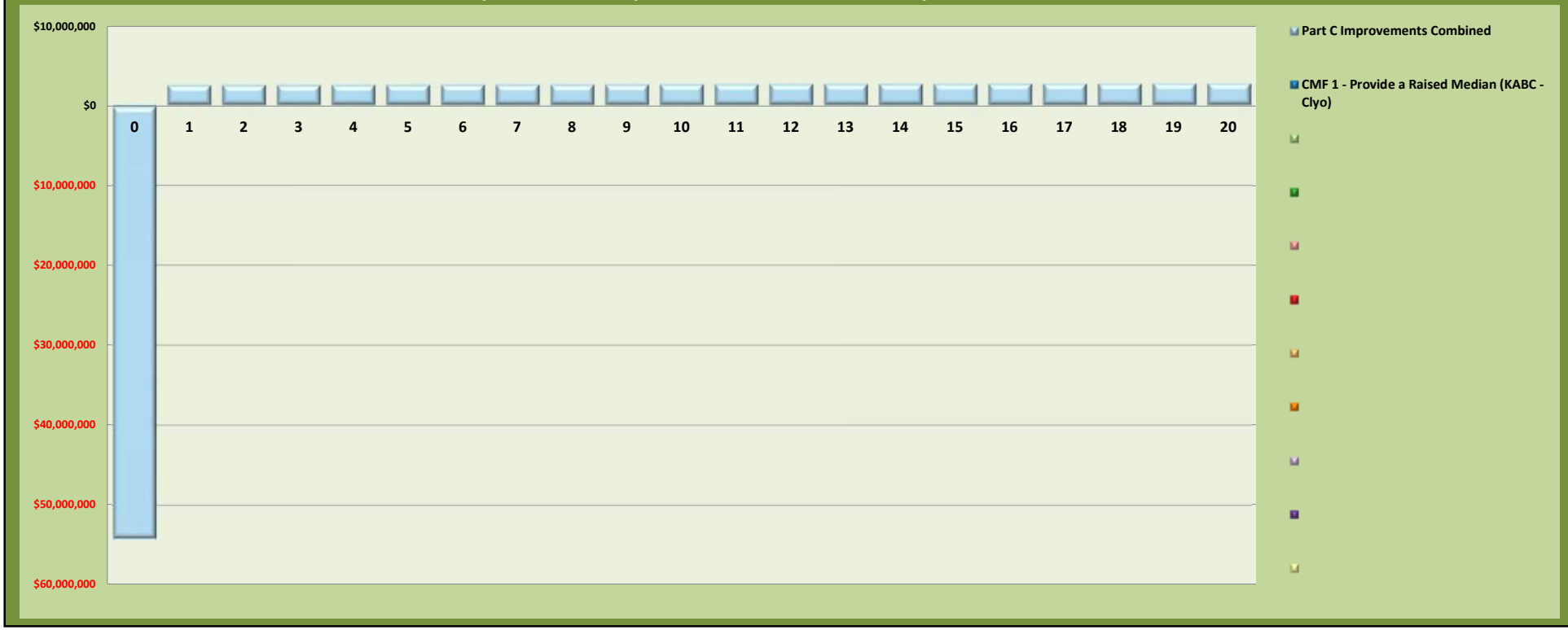
Net Present Value of Project	$52,405,126.20
Net Present Value of Safety Benefits	$35,616,075.22
Net Benefit	($16,789,050.98)
Benefit / Cost Ratio	0.68

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-2.107
Number of Injury Crashes	-23.962
Number of Total Crashes	-57.975

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

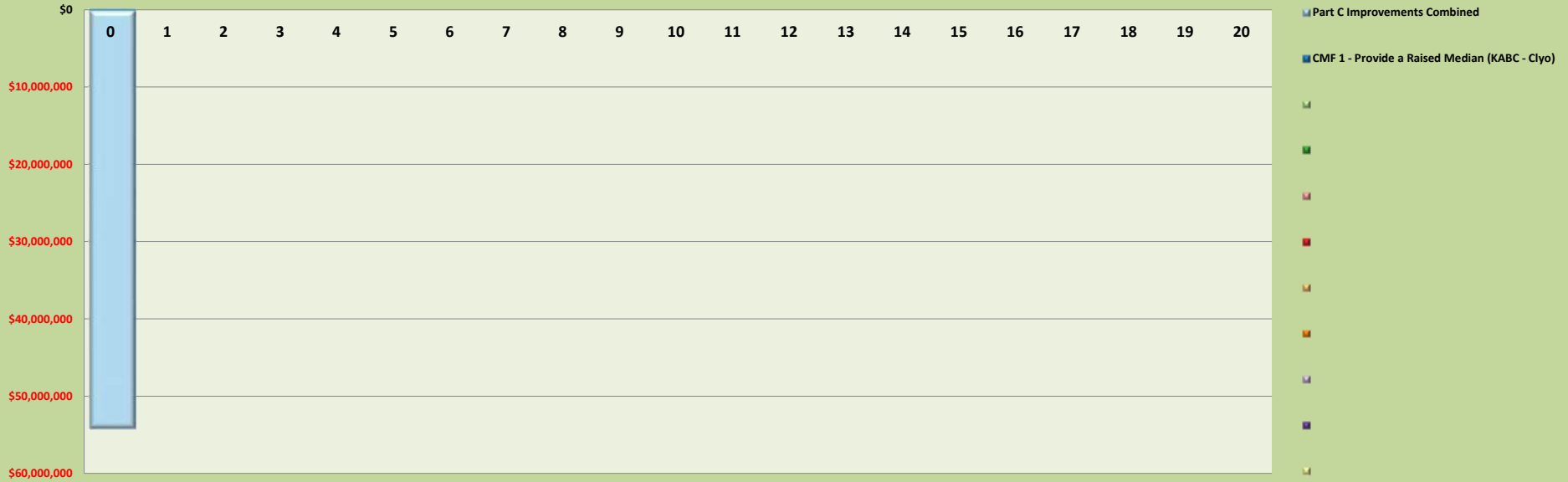


Safety Benefit - Cost Analysis

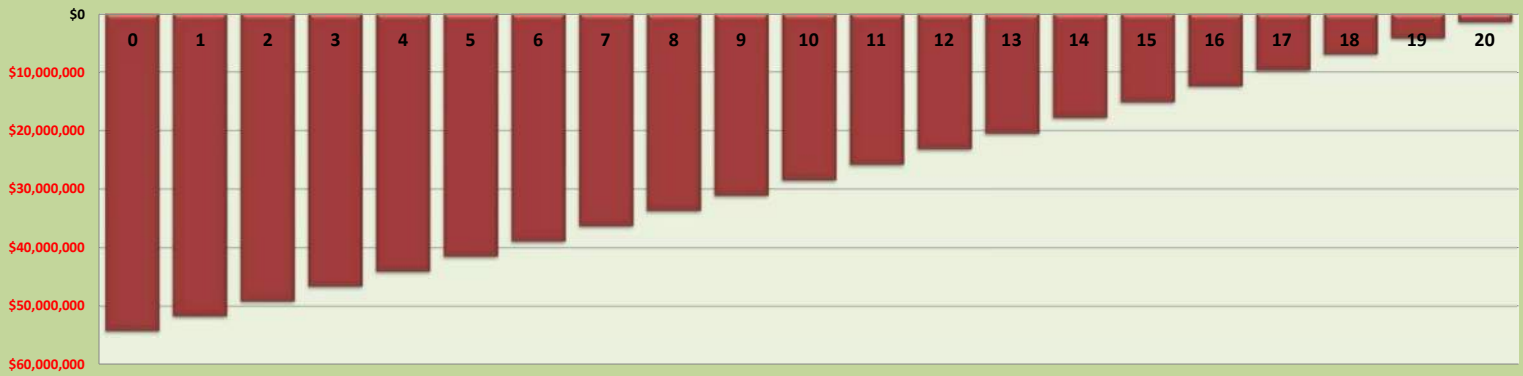
General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investiment: Unknown (Unknown years)

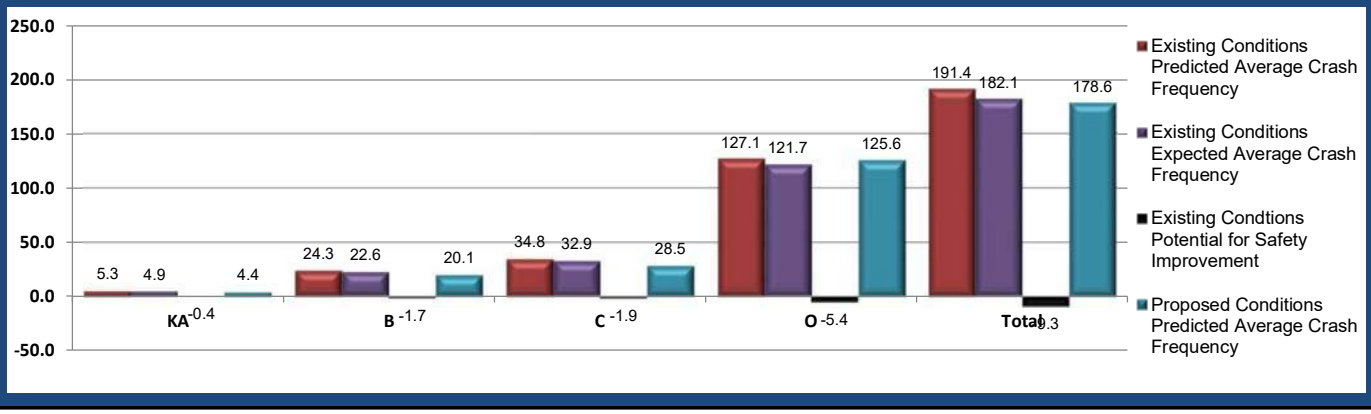
Percentage of Service Life to observe a continuous Positive Return on Investment: Unknown%

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	5.2507	24.2740	34.8084	127.0733	191.4064
$N_{expected}$ - Existing Conditions	4.8515	22.5755	32.9351	121.7162	182.0783
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.3992	-1.6985	-1.8733	-5.3571	-9.3281
$N_{predicted}$ - Proposed Conditions	4.4327	20.1000	28.4881	125.5876	178.6084

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0279	0.0823	0.1219	0.6359	0.868
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0077	0.0224	0.0324	0.1697	0.2322
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0498	0.1324	0.1787	0.7823	1.1432
Feedwire Segment 5	Feedwire E of Clyo	0.1508	0.4042	0.553	2.3878	3.4958
WilmPk Segment 1	WilmPk S of Clyo	0.0976	0.2908	0.4388	2.2848	3.112
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0662	0.2002	0.3103	1.6172	2.1939
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.0665	0.2054	0.3209	1.6909	2.2837
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.007	0.0243	0.0408	0.2403	0.3124
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0455	0.1392	0.2173	1.1394	1.5414
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0667	0.1991	0.3023	1.5724	2.1405
WilmPk Segment 7	WilmPk N of Brown	0.0249	0.1237	0.1229	0.6997	0.9712
Clyo Segment 1	Clyo W of WilmPk	0.0136	0.0386	0.0547	0.2879	0.3948
NB I-675	NB I-675 btwn WilmPk & Swigert	0.5597	2.5706	2.9229	2.6532	8.7064
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4214	1.7784	2.0291	1.8586	6.0875
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.1157	0.3724	0.9311	3.68	5.0992
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1279	0.4116	1.0395	3.944	5.523
Clyo Segment 2	Clyo E of WilmPk	0.0138	0.0391	0.0547	0.2905	0.3981
Clyo Segment 3	Clyo S of Feedwire	0.0224	0.0668	0.077	0.4337	0.5999
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0143	0.0397	0.055	0.2916	0.4006
Charles & Feedwire	Charles & Feedwire	0.2061	1.1186	1.7654	7.7977	10.8878
Clinger & Feedwire	Clinger & Feedwire	0.0451	0.1847	0.2468	1.2948	1.7714
Clyo & Feedwire	Clyo & Feedwire	0.1406	0.7301	1.0651	6.1244	8.0602
Clyo & WilmPk	Clyo & Wilmington Pike	0.3238	1.7636	2.8023	11.6749	16.5646
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2473	1.3896	2.243	8.8605	12.7404
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.401	1.6515	2.5516	10.6438	15.2479
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.7626	3.1409	4.8526	10.7878	19.5439
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3075	1.7089	2.7334	11.5024	16.2522
Brown & WilmPk	Brown & Wilmington Pike	0.1613	0.8605	1.2843	6.8741	9.1802

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0254	0.0727	0.1039	1.0758	1.2778
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0075	0.0216	0.0309	0.1481	0.2081
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0551	0.1518	0.211	0.5346	0.9525
Feedwire Segment 5	Feedwire E of Clyo	0.1143	0.2907	0.375	2.0154	2.7954
WilmPk Segment 1	WilmPk S of Clyo	0.1006	0.304	0.4722	2.4367	3.3135
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0535	0.1506	0.2164	1.7655	2.186
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.062	0.189	0.2912	1.5314	2.0736
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.0067	0.0231	0.0385	0.2615	0.3298
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0537	0.1726	0.2835	0.9514	1.4612
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0908	0.2986	0.4971	2.9715	3.858
WilmPk Segment 7	WilmPk N of Brown	0.0223	0.1097	0.1083	0.4675	0.7078
Clyo Segment 1	Clyo W of WilmPk	0.0133	0.0374	0.0528	0.2735	0.377
NB I-675	NB I-675 btwn WilmPk & Swigert	0.5504	2.3645	2.6624	1.9558	7.5331
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4189	1.7425	2.0148	1.4235	5.5997
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.0942	0.3041	0.7402	2.0859	3.2244
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1055	0.3404	0.8369	2.3415	3.6243
Clyo Segment 2	Clyo E of WilmPk	0.0155	0.046	0.0682	0.4381	0.5678
Clyo Segment 3	Clyo S of Feedwire	0.0211	0.0629	0.0721	0.3474	0.5035
Feedwire Segment 1	Whipp Rd W of WilmPk	0.016	0.0467	0.069	0.4544	0.5861
Charles & Feedwire	Charles & Feedwire	0.1903	1.0271	1.5985	6.1229	8.9388
Clinger & Feedwire	Clinger & Feedwire	0.0632	0.2666	0.362	3.1059	3.7977
Clyo & Feedwire	Clyo & Feedwire	0.1298	0.6669	0.9549	5.9909	7.7425
Clyo & WilmPk	Clyo & Wilmington Pike	0.4968	2.7649	4.629	21.8398	29.7305
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2258	1.2649	2.0155	6.813	10.3192
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.4109	1.6921	2.6144	10.4588	15.1762
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.6213	2.5584	3.9527	11.7143	18.8467
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3159	1.7582	2.8238	17.4679	22.3658
Brown & WilmPk	Brown & Wilmington Pike	0.1483	0.7833	1.1487	3.0868	5.1671

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	-0.0025	-0.0096	-0.018	**0.4399**	**0.4098**
Feedwire Segment 3	Feedwire btwn Charles & Clinger	-0.0002	-0.0008	-0.0015	-0.0216	-0.0241
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	**0.0053**	**0.0194**	**0.0323**	-0.2477	-0.1907
Feedwire Segment 5	Feedwire E of Clyo	-0.0365	-0.1135	-0.178	-0.3724	-0.7004
WilmPk Segment 1	WilmPk S of Clyo	**0.003**	**0.0132**	**0.0334**	**0.1519**	**0.2015**
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	-0.0127	-0.0496	-0.0939	**0.1483**	-0.0079
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	-0.0045	-0.0164	-0.0297	-0.1595	-0.2101
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	-0.0003	-0.0012	-0.0023	**0.0212**	**0.0174**
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	**0.0082**	**0.0334**	**0.0662**	-0.188	-0.0802
WilmPk Segment 6	WilmPk between Feedwire & Brown	**0.0241**	**0.0995**	**0.1948**	**1.3991**	**1.7175**
WilmPk Segment 7	WilmPk N of Brown	-0.0026	-0.014	-0.0146	-0.2322	-0.2634
Clyo Segment 1	Clyo W of WilmPk	-0.0003	-0.0012	-0.0019	-0.0144	-0.0178
NB I-675	NB I-675 btwn WilmPk & Swigert	-0.0093	-0.2061	-0.2605	-0.6974	-1.1733
SB I-675	SB I-675 btwn Sqigert & WilmPk	-0.0025	-0.0359	-0.0143	-0.4351	-0.4878
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
SB I-675 Exit Ramp	SB I-675 Exit Ramp	-0.0215	-0.0683	-0.1909	-1.5941	-1.8748
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
NB I-675 Exit Ramp	NB I-675 Exit Ramp	-0.0224	-0.0712	-0.2026	-1.6025	-1.8987
Clyo Segment 2	Clyo E of WilmPk	**0.0017**	**0.0069**	**0.0135**	**0.1476**	**0.1697**
Clyo Segment 3	Clyo S of Feedwire	-0.0013	-0.0039	-0.0049	-0.0863	-0.0964
Feedwire Segment 1	Whipp Rd W of WilmPk	**0.0017**	**0.007**	**0.014**	**0.1628**	**0.1855**
Charles & Feedwire	Charles & Feedwire	-0.0158	-0.0915	-0.1669	-1.6748	-1.949
Clinger & Feedwire	Clinger & Feedwire	**0.0181**	**0.0819**	**0.1152**	**1.8111**	**2.0263**
Clyo & Feedwire	Clyo & Feedwire	-0.0108	-0.0632	-0.1102	-0.1335	-0.3177
Clyo & WilmPk	Clyo & Wilmington Pike	**0.173**	**1.0013**	**1.8267**	**10.1649**	**13.1659**
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	-0.0215	-0.1247	-0.2275	-2.0475	-2.4212
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	**0.0099**	**0.0406**	**0.0628**	-0.185	-0.0717
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	-0.1413	-0.5825	-0.8999	**0.9265**	-0.6972
Feedwire & WilmPk	Feedwire & Wilmington Pike	**0.0084**	**0.0493**	**0.0904**	**5.9655**	**6.1136**
Brown & WilmPk	Brown & Wilmington Pike	-0.013	-0.0772	-0.1356	-3.7873	-4.0131

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0174	0.0512	0.0759	0.3957	0.5402
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0071	0.0207	0.0299	0.1568	0.2145
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.014	0.0472	0.0772	0.4209	0.5593
Feedwire Segment 5	Feedwire E of Clyo	0.028	0.0949	0.1558	0.8652	1.1439
WilmPk Segment 1	WilmPk S of Clyo	0.0405	0.1208	0.1822	0.949	1.2925
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0298	0.0902	0.1397	0.7282	0.9879
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.033	0.1018	0.1589	0.8377	1.1314
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.007	0.0243	0.0408	0.2403	0.3124
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0402	0.1231	0.1922	1.0076	1.3631
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0667	0.1991	0.3023	1.5724	2.1405
WilmPk Segment 7	WilmPk N of Brown	0.0249	0.1237	0.1229	0.6997	0.9712
Clyo Segment 1	Clyo W of WilmPk	0.0083	0.0236	0.0334	0.3138	0.3791
NB I-675	NB I-675 btwn WilmPk & Swigert	0.6913	2.9001	3.4208	15.5349	22.5471
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.5975	2.4473	2.5922	16.9933	22.6303
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1216	0.4096	0.7276	1.709	2.9678
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1216	0.4096	0.7276	1.709	2.9678
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.2053	0.9476	1.2393	2.6684	5.0606
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1279	0.4116	1.0395	3.944	5.523
Clyo Segment 2	Clyo E of WilmPk	0.0138	0.0391	0.0547	0.2905	0.3981
Clyo Segment 3	Clyo S of Feedwire	0.0205	0.0612	0.0706	0.3976	0.5499
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0112	0.0312	0.0433	0.2296	0.3153
Charles & Feedwire	Charles & Feedwire	0.1965	1.0638	1.6775	7.4039	10.3417
Clinger & Feedwire	Clinger & Feedwire	0.0451	0.1847	0.2468	1.2948	1.7714
Clyo & Feedwire	Clyo & Feedwire	0.1408	0.7306	1.0655	6.1244	8.0613
Clyo & WilmPk	Clyo & Wilmington Pike	0.2961	1.5991	2.5333	10.5254	14.9539
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.247	1.3865	2.2376	8.8406	12.7117
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.4704	1.9377	2.994	11.6229	17.025
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike					0
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.2975	1.6518	2.6411	11.1103	15.7007
Brown & WilmPk	Brown & Wilmington Pike	0.1613	0.8605	1.2843	6.8741	9.1802

Project Safety Performance Report

General Information

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Analyst	RTM	Analysis Year	2017-2019
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Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.3748	0.2536	-0.1211	0.3644
Head On	1.5084	1.8097	**0.3013**	1.3889
Rear End	79.3200	81.4754	**2.1553**	73.0748
Backing	3.6070	4.2950	**0.6880**	3.1026
Sideswipe - Meeting	1.3022	1.1895	-0.1127	1.1290
Sideswipe - Passing	28.0631	27.1824	-0.8806	24.2661
Angle	21.1271	23.9725	**2.8453**	20.9842
Parked Vehicle	3.2050	2.1184	-1.0866	3.2036
Pedestrian	0.7390	0.6908	-0.0481	0.7370
Animal	39.7305	13.8788	-25.8517	39.5368
Train	0.0088	0.0083	-0.0004	0.0088
Pedalcycles	2.6386	2.5935	-0.0451	2.6299
Other Non-Vehicle	0.0045	0.0044	-0.0001	0.0045
Fixed Object	22.6690	12.2002	-10.4689	21.2628
Other Object	1.1471	0.6406	-0.5065	0.9953
Overturning	1.4606	0.9727	-0.4879	1.4134
Other Non-Collision	1.9578	1.0250	-0.9328	1.8310
Left Turn	9.9200	11.3903	**1.4703**	9.8518
Right Turn	3.2006	4.2484	**1.0478**	3.1947

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
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Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Alternative 1B Improvements	20	$34,062,028.00			$34,062,028.00	$34,062,028.00	-30.021	$37,483,453
Maintenance of Traffic		$1,939,230.00			$0.00	$1,939,230.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
CMF 1 - Provide a Raised Median (KABC - Clyo)	20	$140,000.00			$140,000.00	$140,000.00	-0.016	$58,767
CMF 2 - Convert Diamond Interchange to Diverging Diamond Interchange (DDI) or Double Crossover Diamond (DCD)	20	$20,096,402.00			$20,096,402.00	$20,096,402.00	-14.237	$2,145,879
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$56,237,660.00**	**$0.00**	**$0.00**	**$54,298,430.00**	**$56,237,660.00**	**-44.274**	**$39,688,099**

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
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Benefit - Cost Calculator

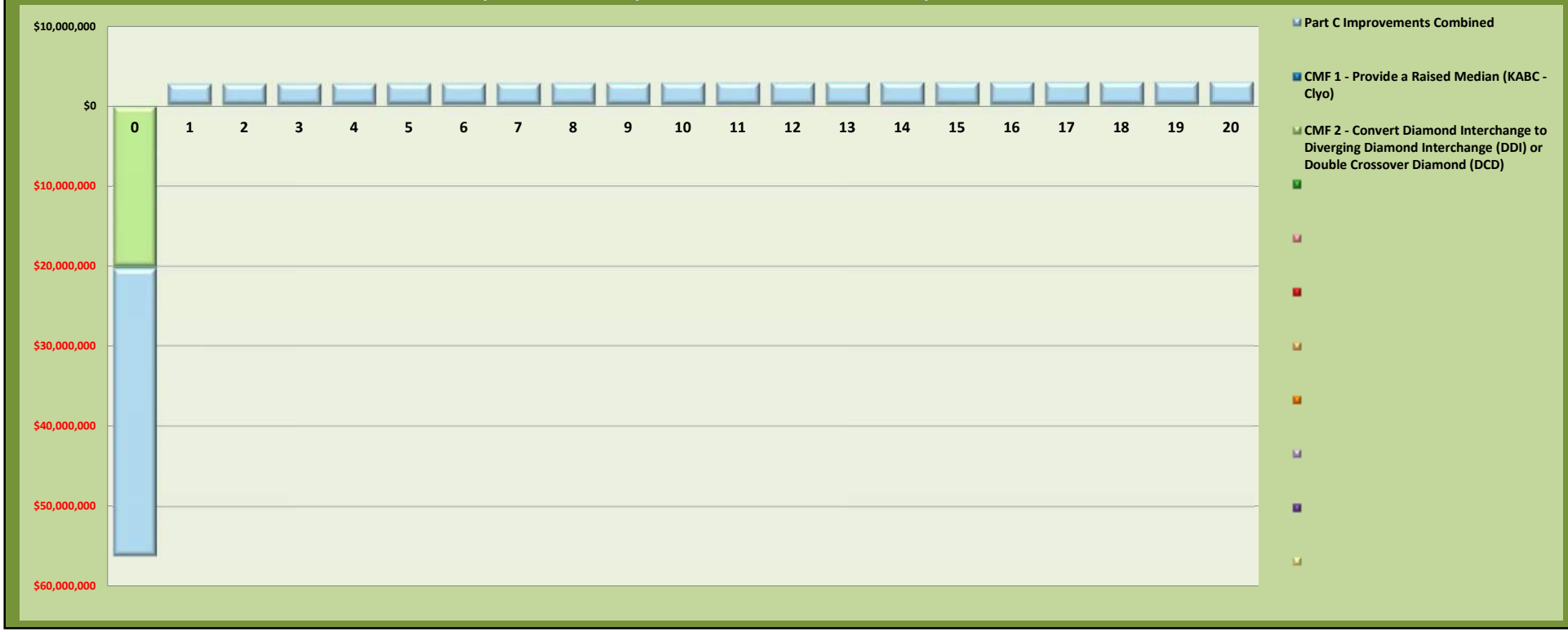
Net Present Value of Project	$54,298,430.00
Net Present Value of Safety Benefits	$39,688,098.63
Net Benefit	($14,610,331.37)
Benefit / Cost Ratio	0.73

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-2.577
Number of Injury Crashes	-29.370
Number of Total Crashes	-44.274

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year



Safety Benefit - Cost Analysis

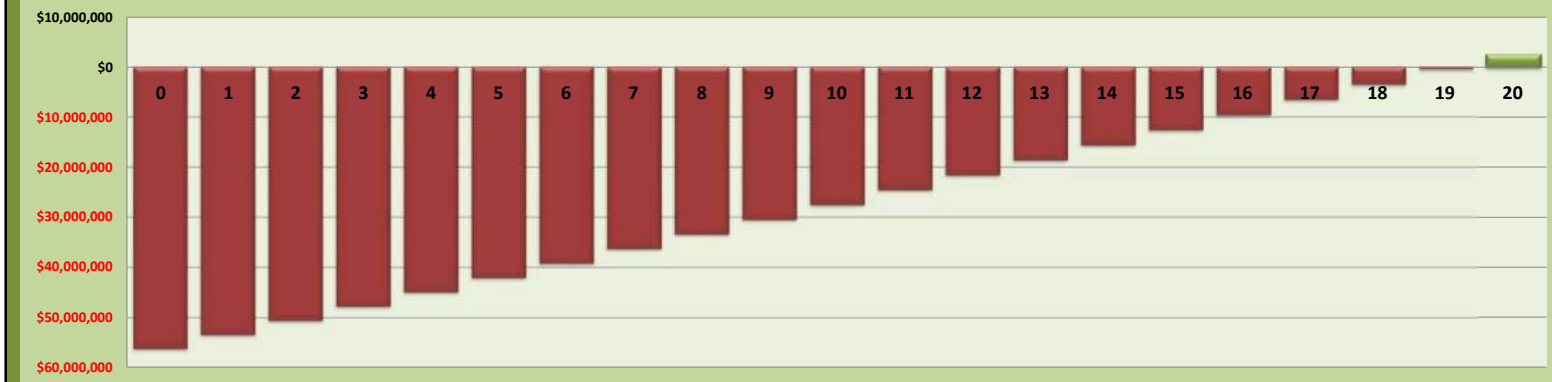
General Information

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Analyst	RTM	Analysis Year	2017-2019
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Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investiment: Unknown (20 years)

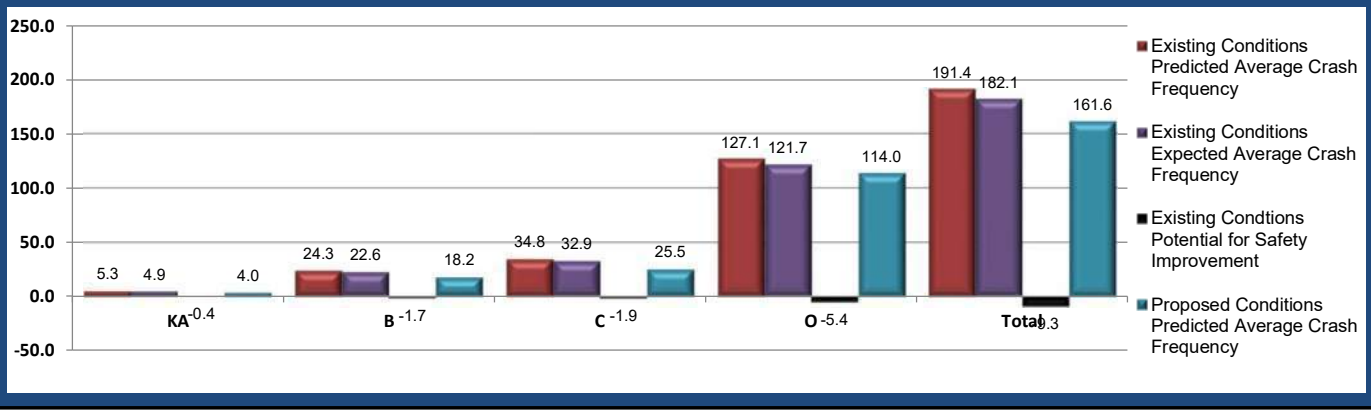
Percentage of Service Life to observe a continuous Positive Return on Investment: 05.00%

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
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Analyst	RTM	Analysis Year	2017-2019
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Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	5.2507	24.2740	34.8084	127.0733	191.4064
$N_{expected}$ - Existing Conditions	4.8515	22.5755	32.9351	121.7162	182.0783
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.3992	-1.6985	-1.8733	-5.3571	-9.3281
$N_{predicted}$ - Proposed Conditions	3.9622	18.1611	25.4894	113.9876	161.6003

Project Safety Performance Report

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Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0279	0.0823	0.1219	0.6359	0.868
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0077	0.0224	0.0324	0.1697	0.2322
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0498	0.1324	0.1787	0.7823	1.1432
Feedwire Segment 5	Feedwire E of Clyo	0.1508	0.4042	0.553	2.3878	3.4958
WilmPk Segment 1	WilmPk S of Clyo	0.0976	0.2908	0.4388	2.2848	3.112
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0662	0.2002	0.3103	1.6172	2.1939
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.0665	0.2054	0.3209	1.6909	2.2837
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.007	0.0243	0.0408	0.2403	0.3124
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0455	0.1392	0.2173	1.1394	1.5414
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0667	0.1991	0.3023	1.5724	2.1405
WilmPk Segment 7	WilmPk N of Brown	0.0249	0.1237	0.1229	0.6997	0.9712
Clyo Segment 1	Clyo W of WilmPk	0.0136	0.0386	0.0547	0.2879	0.3948
NB I-675	NB I-675 btwn WilmPk & Swigert	0.5597	2.5706	2.9229	2.6532	8.7064
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4214	1.7784	2.0291	1.8586	6.0875
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.1157	0.3724	0.9311	3.68	5.0992
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1279	0.4116	1.0395	3.944	5.523
Clyo Segment 2	Clyo E of WilmPk	0.0138	0.0391	0.0547	0.2905	0.3981
Clyo Segment 3	Clyo S of Feedwire	0.0224	0.0668	0.077	0.4337	0.5999
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0143	0.0397	0.055	0.2916	0.4006
Charles & Feedwire	Charles & Feedwire	0.2061	1.1186	1.7654	7.7977	10.8878
Clinger & Feedwire	Clinger & Feedwire	0.0451	0.1847	0.2468	1.2948	1.7714
Clyo & Feedwire	Clyo & Feedwire	0.1406	0.7301	1.0651	6.1244	8.0602
Clyo & WilmPk	Clyo & Wilmington Pike	0.3238	1.7636	2.8023	11.6749	16.5646
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2473	1.3896	2.243	8.8605	12.7404
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.401	1.6515	2.5516	10.6438	15.2479
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.7626	3.1409	4.8526	10.7878	19.5439
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3075	1.7089	2.7334	11.5024	16.2522
Brown & WilmPk	Brown & Wilmington Pike	0.1613	0.8605	1.2843	6.8741	9.1802

Project Safety Performance Report

General Information

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Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0254	0.0727	0.1039	1.0758	1.2778
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0075	0.0216	0.0309	0.1481	0.2081
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0551	0.1518	0.211	0.5346	0.9525
Feedwire Segment 5	Feedwire E of Clyo	0.1143	0.2907	0.375	2.0154	2.7954
WilmPk Segment 1	WilmPk S of Clyo	0.1006	0.304	0.4722	2.4367	3.3135
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0535	0.1506	0.2164	1.7655	2.186
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.062	0.189	0.2912	1.5314	2.0736
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.0067	0.0231	0.0385	0.2615	0.3298
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0537	0.1726	0.2835	0.9514	1.4612
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0908	0.2986	0.4971	2.9715	3.858
WilmPk Segment 7	WilmPk N of Brown	0.0223	0.1097	0.1083	0.4675	0.7078
Clyo Segment 1	Clyo W of WilmPk	0.0133	0.0374	0.0528	0.2735	0.377
NB I-675	NB I-675 btwn WilmPk & Swigert	0.5504	2.3645	2.6624	1.9558	7.5331
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4189	1.7425	2.0148	1.4235	5.5997
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.0942	0.3041	0.7402	2.0859	3.2244
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1055	0.3404	0.8369	2.3415	3.6243
Clyo Segment 2	Clyo E of WilmPk	0.0155	0.046	0.0682	0.4381	0.5678
Clyo Segment 3	Clyo S of Feedwire	0.0211	0.0629	0.0721	0.3474	0.5035
Feedwire Segment 1	Whipp Rd W of WilmPk	0.016	0.0467	0.069	0.4544	0.5861
Charles & Feedwire	Charles & Feedwire	0.1903	1.0271	1.5985	6.1229	8.9388
Clinger & Feedwire	Clinger & Feedwire	0.0632	0.2666	0.362	3.1059	3.7977
Clyo & Feedwire	Clyo & Feedwire	0.1298	0.6669	0.9549	5.9909	7.7425
Clyo & WilmPk	Clyo & Wilmington Pike	0.4968	2.7649	4.629	21.8398	29.7305
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2258	1.2649	2.0155	6.813	10.3192
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.4109	1.6921	2.6144	10.4588	15.1762
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.6213	2.5584	3.9527	11.7143	18.8467
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3159	1.7582	2.8238	17.4679	22.3658
Brown & WilmPk	Brown & Wilmington Pike	0.1483	0.7833	1.1487	3.0868	5.1671

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	-0.0025	-0.0096	-0.018	**0.4399**	**0.4098**
Feedwire Segment 3	Feedwire btwn Charles & Clinger	-0.0002	-0.0008	-0.0015	-0.0216	-0.0241
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	**0.0053**	**0.0194**	**0.0323**	-0.2477	-0.1907
Feedwire Segment 5	Feedwire E of Clyo	-0.0365	-0.1135	-0.178	-0.3724	-0.7004
WilmPk Segment 1	WilmPk S of Clyo	**0.003**	**0.0132**	**0.0334**	**0.1519**	**0.2015**
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	-0.0127	-0.0496	-0.0939	**0.1483**	-0.0079
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	-0.0045	-0.0164	-0.0297	-0.1595	-0.2101
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	-0.0003	-0.0012	-0.0023	**0.0212**	**0.0174**
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	**0.0082**	**0.0334**	**0.0662**	-0.188	-0.0802
WilmPk Segment 6	WilmPk between Feedwire & Brown	**0.0241**	**0.0995**	**0.1948**	**1.3991**	**1.7175**
WilmPk Segment 7	WilmPk N of Brown	-0.0026	-0.014	-0.0146	-0.2322	-0.2634
Clyo Segment 1	Clyo W of WilmPk	-0.0003	-0.0012	-0.0019	-0.0144	-0.0178
NB I-675	NB I-675 btwn WilmPk & Swigert	-0.0093	-0.2061	-0.2605	-0.6974	-1.1733
SB I-675	SB I-675 btwn Sqigert & WilmPk	-0.0025	-0.0359	-0.0143	-0.4351	-0.4878
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
SB I-675 Exit Ramp	SB I-675 Exit Ramp	-0.0215	-0.0683	-0.1909	-1.5941	-1.8748
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
NB I-675 Exit Ramp	NB I-675 Exit Ramp	-0.0224	-0.0712	-0.2026	-1.6025	-1.8987
Clyo Segment 2	Clyo E of WilmPk	**0.0017**	**0.0069**	**0.0135**	**0.1476**	**0.1697**
Clyo Segment 3	Clyo S of Feedwire	-0.0013	-0.0039	-0.0049	-0.0863	-0.0964
Feedwire Segment 1	Whipp Rd W of WilmPk	**0.0017**	**0.007**	**0.014**	**0.1628**	**0.1855**
Charles & Feedwire	Charles & Feedwire	-0.0158	-0.0915	-0.1669	-1.6748	-1.949
Clinger & Feedwire	Clinger & Feedwire	**0.0181**	**0.0819**	**0.1152**	**1.8111**	**2.0263**
Clyo & Feedwire	Clyo & Feedwire	-0.0108	-0.0632	-0.1102	-0.1335	-0.3177
Clyo & WilmPk	Clyo & Wilmington Pike	**0.173**	**1.0013**	**1.8267**	**10.1649**	**13.1659**
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	-0.0215	-0.1247	-0.2275	-2.0475	-2.4212
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	**0.0099**	**0.0406**	**0.0628**	-0.185	-0.0717
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	-0.1413	-0.5825	-0.8999	**0.9265**	-0.6972
Feedwire & WilmPk	Feedwire & Wilmington Pike	**0.0084**	**0.0493**	**0.0904**	**5.9655**	**6.1136**
Brown & WilmPk	Brown & Wilmington Pike	-0.013	-0.0772	-0.1356	-3.7873	-4.0131

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0174	0.0512	0.0759	0.3957	0.5402
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0071	0.0207	0.0299	0.1568	0.2145
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.014	0.0472	0.0772	0.4209	0.5593
Feedwire Segment 5	Feedwire E of Clyo	0.028	0.0949	0.1558	0.8652	1.1439
WilmPk Segment 1	WilmPk S of Clyo	0.0405	0.1208	0.1822	0.949	1.2925
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0298	0.0902	0.1397	0.7282	0.9879
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.033	0.1018	0.1589	0.8377	1.1314
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.0063	0.0195	0.0303	0.2433	0.2994
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0402	0.1231	0.1922	1.0076	1.3631
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0667	0.1991	0.3023	1.5724	2.1405
WilmPk Segment 7	WilmPk N of Brown	0.0249	0.1237	0.1229	0.6997	0.9712
Clyo Segment 1	Clyo W of WilmPk	0.0083	0.0236	0.0334	0.3138	0.3791
NB I-675	NB I-675 btwn WilmPk & Swigert	0.6913	2.9001	3.4208	15.5349	22.5471
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.5975	2.4473	2.5922	16.9933	22.6303
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1216	0.4096	0.7276	1.709	2.9678
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1216	0.4096	0.7276	1.709	2.9678
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.2053	0.9476	1.2393	2.6684	5.0606
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1279	0.4116	1.0395	3.944	5.523
Clyo Segment 2	Clyo E of WilmPk	0.0138	0.0391	0.0547	0.2905	0.3981
Clyo Segment 3	Clyo S of Feedwire	0.0205	0.0612	0.0706	0.3976	0.5499
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0112	0.0312	0.0433	0.2296	0.3153
Charles & Feedwire	Charles & Feedwire	0.1965	1.0638	1.6775	7.4039	10.3417
Clinger & Feedwire	Clinger & Feedwire	0.0451	0.1847	0.2468	1.2948	1.7714
Clyo & Feedwire	Clyo & Feedwire	0.1408	0.7306	1.0655	6.1244	8.0613
Clyo & WilmPk	Clyo & Wilmington Pike	0.2961	1.5991	2.5333	10.5254	14.9539
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2476	1.3901	2.2434	8.8605	12.7416
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike					0
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike					0
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.2975	1.6518	2.6411	11.1103	15.7007
Brown & WilmPk	Brown & Wilmington Pike	0.1613	0.8605	1.2843	6.8741	9.1802

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 1B)	Contact Phone	
Reference Number		Date Performed	3/30/2023
Analyst	RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.3748	0.2536	-0.1211	0.3644
Head On	1.5084	1.8097	**0.3013**	1.3889
Rear End	79.3200	81.4754	**2.1553**	73.0748
Backing	3.6070	4.2950	**0.6880**	3.1026
Sideswipe - Meeting	1.3022	1.1895	-0.1127	1.1290
Sideswipe - Passing	28.0631	27.1824	-0.8806	24.2661
Angle	21.1271	23.9725	**2.8453**	20.9842
Parked Vehicle	3.2050	2.1184	-1.0866	3.2036
Pedestrian	0.7390	0.6908	-0.0481	0.7370
Animal	39.7305	13.8788	-25.8517	39.5368
Train	0.0088	0.0083	-0.0004	0.0088
Pedalcycles	2.6386	2.5935	-0.0451	2.6299
Other Non-Vehicle	0.0045	0.0044	-0.0001	0.0045
Fixed Object	22.6690	12.2002	-10.4689	21.2628
Other Object	1.1471	0.6406	-0.5065	0.9953
Overturning	1.4606	0.9727	-0.4879	1.4134
Other Non-Collision	1.9578	1.0250	-0.9328	1.8310
Left Turn	9.9200	11.3903	**1.4703**	9.8518
Right Turn	3.2006	4.2484	**1.0478**	3.1947

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Select Site Types to be used in Benefit-Cost Analysis:

All Sites

Comments:

Countermeasure Service Lives, Costs, and Safety Benefits

Countermeasures	Service Life (Years)	Initial Cost of Countermeasure	Annual Maintenance & Energy Costs	Salvage Value	Net Present Cost of Countermeasure	Total Cost of Countermeasures	Summary of Annual Crash Modifications	Net Present Value of Safety Benefits
Alternate 2 Improvements	20	$64,469,314.00			$64,469,314.00	$64,469,314.00	-23.868	$22,399,207
Maintenance of Traffic		$2,307,475.00			$0.00	$2,307,475.00		
		$0.00			$0.00	$0.00		
		$0.00			$0.00	$0.00		
CMF 1 - Provide a Raised Median (KABC - Clyo)	20	$140,000.00			$140,000.00	$140,000.00	-0.041	$61,814
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
		$0.00			$0.00	$0.00	0.000	$0
Totals		**$66,916,789.00**	**$0.00**	**$0.00**	**$64,609,314.00**	**$66,916,789.00**	**-23.908**	**$22,461,021**

Safety Benefit - Cost Analysis

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Benefit - Cost Calculator

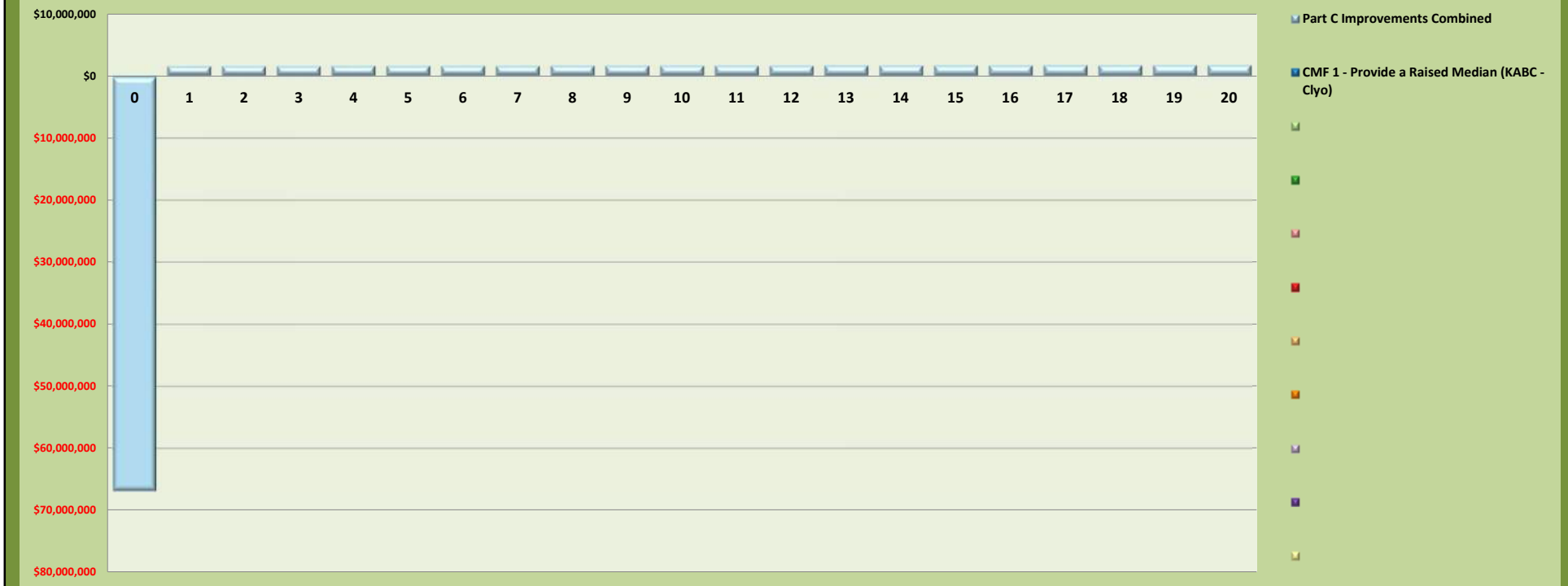
Net Present Value of Project	$64,609,314.00
Net Present Value of Safety Benefits	$22,461,021.17
Net Benefit	($42,148,292.83)
Benefit / Cost Ratio	0.35

Expected Annual Crash Adjustment

Number of Fatal & Incapacitating Injury Crashes	-1.512
Number of Injury Crashes	-16.105
Number of Total Crashes	-23.908

Comments:

Safety Benefits and Project Costs Combined Cash Flows By Countermeasure Per Year

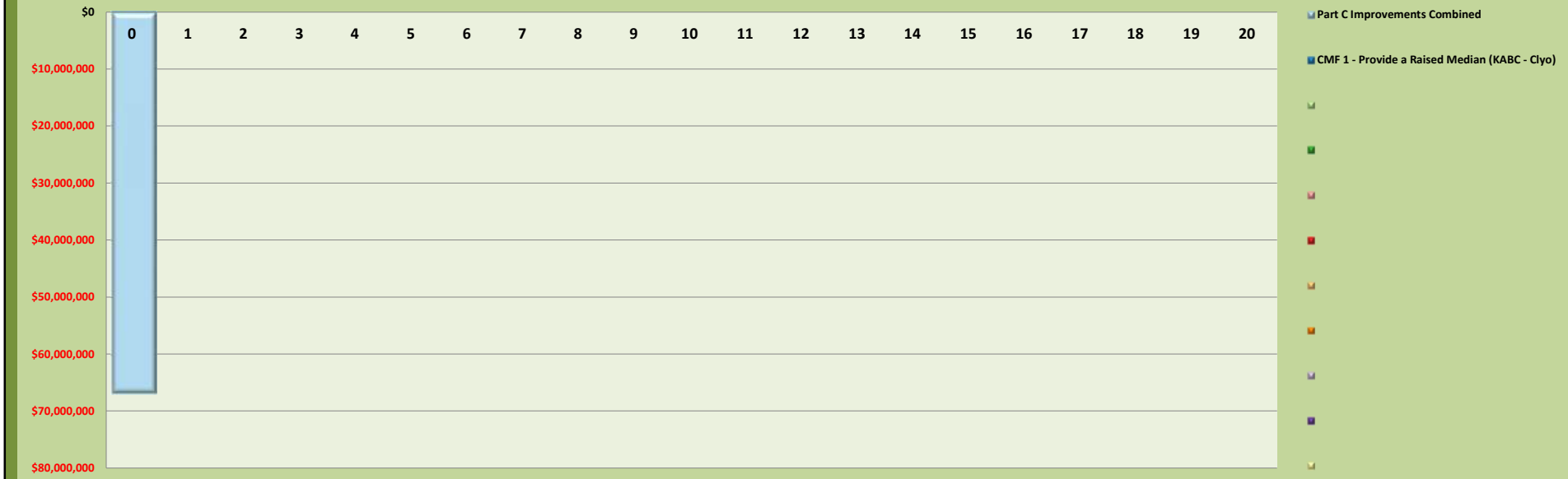


Safety Benefit - Cost Analysis

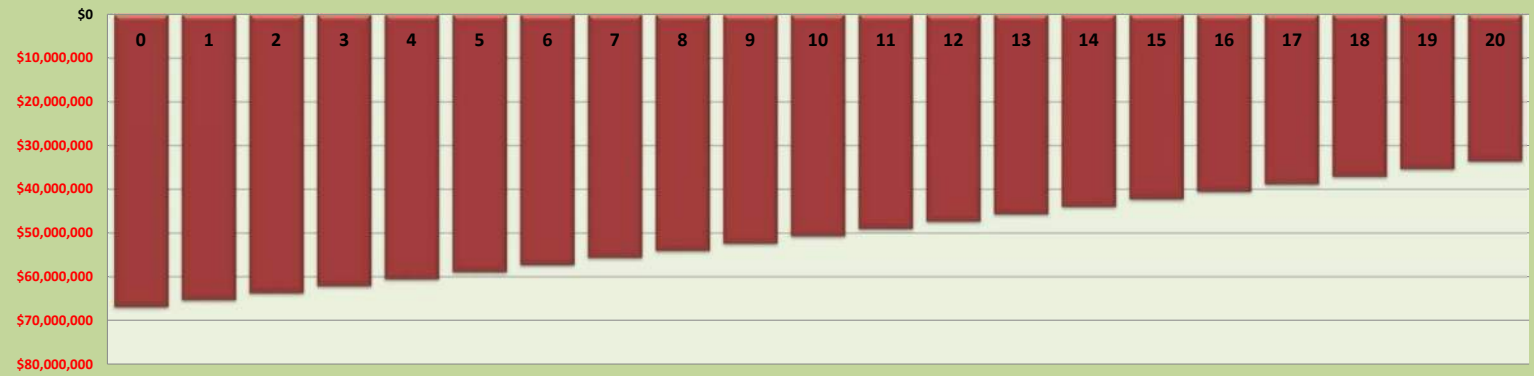
General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Project Costs Only Cash Flows By Countermeasure Per Year



Return on Investment (Safety Benefits and Project Investments)



First year to observe a positive return on investiment: Unknown (Unknown years)

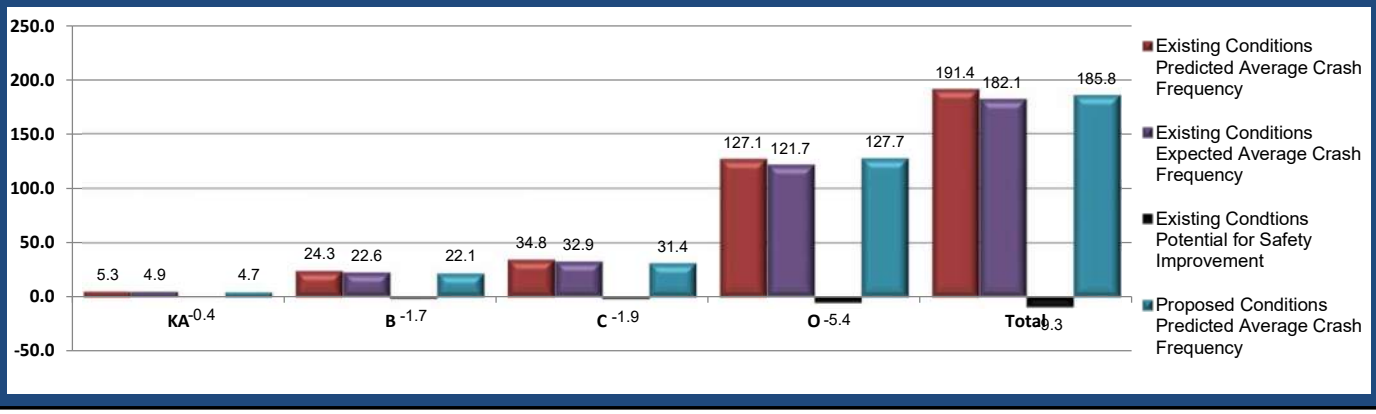
Percentage of Service Life to observe a continuous Positive Return on Investment: Unknown%

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Summary of Anticipated Safety Performance of the Project (average crashes/year)



Project Summary Results (Without Animal Crashes)

	KA	B	C	O	Total
$N_{predicted}$ - Existing Conditions	5.2507	24.2740	34.8084	127.0733	191.4064
$N_{expected}$ - Existing Conditions	4.8515	22.5755	32.9351	121.7162	182.0783
$N_{potential\ for\ improvement}$ - Existing Conditions	-0.3992	-1.6985	-1.8733	-5.3571	-9.3281
$N_{predicted}$ - Proposed Conditions	4.6818	22.0529	31.3895	127.7070	185.8312

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0279	0.0823	0.1219	0.6359	0.868
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0077	0.0224	0.0324	0.1697	0.2322
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0498	0.1324	0.1787	0.7823	1.1432
Feedwire Segment 5	Feedwire E of Clyo	0.1508	0.4042	0.553	2.3878	3.4958
WilmPk Segment 1	WilmPk S of Clyo	0.0976	0.2908	0.4388	2.2848	3.112
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0662	0.2002	0.3103	1.6172	2.1939
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.0665	0.2054	0.3209	1.6909	2.2837
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.007	0.0243	0.0408	0.2403	0.3124
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0455	0.1392	0.2173	1.1394	1.5414
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0667	0.1991	0.3023	1.5724	2.1405
WilmPk Segment 7	WilmPk N of Brown	0.0249	0.1237	0.1229	0.6997	0.9712
Clyo Segment 1	Clyo W of WilmPk	0.0136	0.0386	0.0547	0.2879	0.3948
NB I-675 Segment 1	NB I-675 btwn WilmPk & Swigert	0.5597	2.5706	2.9229	2.6532	8.7064
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4214	1.7784	2.0291	1.8586	6.0875
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.2028	1.2885	1.5397	7.3627	10.3937
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.1157	0.3724	0.9311	3.68	5.0992
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1752	1.0037	1.1906	5.0638	7.4333
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1279	0.4116	1.0395	3.944	5.523
Clyo Segment 2	Clyo E of WilmPk	0.0138	0.0391	0.0547	0.2905	0.3981
Clyo Segment 3	Clyo S of Feedwire	0.0224	0.0668	0.077	0.4337	0.5999
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0143	0.0397	0.055	0.2916	0.4006
Charles & Feedwire	Charles & Feedwire	0.2061	1.1186	1.7654	7.7977	10.8878
Clinger & Feedwire	Clinger & Feedwire	0.0451	0.1847	0.2468	1.2948	1.7714
Clyo & Feedwire	Clyo & Feedwire	0.1406	0.7301	1.0651	6.1244	8.0602
Clyo & WilmPk	Clyo & Wilmington Pike	0.3238	1.7636	2.8023	11.6749	16.5646
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2473	1.3896	2.243	8.8605	12.7404
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.401	1.6515	2.5516	10.6438	15.2479
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.7626	3.1409	4.8526	10.7878	19.5439
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3075	1.7089	2.7334	11.5024	16.2522
Brown & WilmPk	Brown & Wilmington Pike	0.1613	0.8605	1.2843	6.8741	9.1802
Feedwire Segment 6						0
Feedwire Segment 7						0
NB I-675 C-D Road						0
New NB I-675 Entranc						0
New SB I-675 Exit Ran						0
New SB I-675 Entranc						0
NB I-675 Ramps & Fee						0
SB I-675 Ramps & Fee						0
NB I-675 Segment 2						0

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Expected Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0254	0.0727	0.1039	1.0758	1.2778
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0075	0.0216	0.0309	0.1481	0.2081
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	0.0551	0.1518	0.211	0.5346	0.9525
Feedwire Segment 5	Feedwire E of Clyo	0.1143	0.2907	0.375	2.0154	2.7954
WilmPk Segment 1	WilmPk S of Clyo	0.1006	0.304	0.4722	2.4367	3.3135
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0535	0.1506	0.2164	1.7655	2.186
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.062	0.189	0.2912	1.5314	2.0736
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.0067	0.0231	0.0385	0.2615	0.3298
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0537	0.1726	0.2835	0.9514	1.4612
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0908	0.2986	0.4971	2.9715	3.858
WilmPk Segment 7	WilmPk N of Brown	0.0223	0.1097	0.1083	0.4675	0.7078
Clyo Segment 1	Clyo W of WilmPk	0.0133	0.0374	0.0528	0.2735	0.377
NB I-675 Segment 1	NB I-675 btwn WilmPk & Swigert	0.5504	2.3645	2.6624	1.9558	7.5331
SB I-675	SB I-675 btwn Sqigert & WilmPk	0.4189	1.7425	2.0148	1.4235	5.5997
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1263	0.9233	1.1128	3.5698	5.7322
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.0942	0.3041	0.7402	2.0859	3.2244
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.0849	0.6088	0.7328	2.2484	3.6749
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.1055	0.3404	0.8369	2.3415	3.6243
Clyo Segment 2	Clyo E of WilmPk	0.0155	0.046	0.0682	0.4381	0.5678
Clyo Segment 3	Clyo S of Feedwire	0.0211	0.0629	0.0721	0.3474	0.5035
Feedwire Segment 1	Whipp Rd W of WilmPk	0.016	0.0467	0.069	0.4544	0.5861
Charles & Feedwire	Charles & Feedwire	0.1903	1.0271	1.5985	6.1229	8.9388
Clinger & Feedwire	Clinger & Feedwire	0.0632	0.2666	0.362	3.1059	3.7977
Clyo & Feedwire	Clyo & Feedwire	0.1298	0.6669	0.9549	5.9909	7.7425
Clyo & WilmPk	Clyo & Wilmington Pike	0.4968	2.7649	4.629	21.8398	29.7305
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2258	1.2649	2.0155	6.813	10.3192
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.4109	1.6921	2.6144	10.4588	15.1762
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.6213	2.5584	3.9527	11.7143	18.8467
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.3159	1.7582	2.8238	17.4679	22.3658
Brown & WilmPk	Brown & Wilmington Pike	0.1483	0.7833	1.1487	3.0868	5.1671
Feedwire Segment 6						0
Feedwire Segment 7						0
NB I-675 C-D Road						0
New NB I-675 Entranc						0
New SB I-675 Exit Ran						0
New SB I-675 Entranc						0
NB I-675 Ramps & Fee						0
SB I-675 Ramps & Fee						0
NB I-675 Segment 2						0

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Existing Conditions Project Element Potential for Safety Improvement Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	-0.0025	-0.0096	-0.018	**0.4399**	**0.4098**
Feedwire Segment 3	Feedwire btwn Charles & Clinger	-0.0002	-0.0008	-0.0015	-0.0216	-0.0241
Feedwire Segment 4	Feedwire btwn Clinger & Clyo	**0.0053**	**0.0194**	**0.0323**	-0.2477	-0.1907
Feedwire Segment 5	Feedwire E of Clyo	-0.0365	-0.1135	-0.178	-0.3724	-0.7004
WilmPk Segment 1	WilmPk S of Clyo	**0.003**	**0.0132**	**0.0334**	**0.1519**	**0.2015**
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	-0.0127	-0.0496	-0.0939	**0.1483**	-0.0079
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	-0.0045	-0.0164	-0.0297	-0.1595	-0.2101
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	-0.0003	-0.0012	-0.0023	**0.0212**	**0.0174**
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	**0.0082**	**0.0334**	**0.0662**	-0.188	-0.0802
WilmPk Segment 6	WilmPk between Feedwire & Brown	**0.0241**	**0.0995**	**0.1948**	**1.3991**	**1.7175**
WilmPk Segment 7	WilmPk N of Brown	-0.0026	-0.014	-0.0146	-0.2322	-0.2634
Clyo Segment 1	Clyo W of WilmPk	-0.0003	-0.0012	-0.0019	-0.0144	-0.0178
NB I-675 Segment 1	NB I-675 btwn WilmPk & Swigert	-0.0093	-0.2061	-0.2605	-0.6974	-1.1733
SB I-675	SB I-675 btwn Sqigert & WilmPk	-0.0025	-0.0359	-0.0143	-0.4351	-0.4878
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	-0.0765	-0.3652	-0.4269	-3.7929	-4.6615
SB I-675 Exit Ramp	SB I-675 Exit Ramp	-0.0215	-0.0683	-0.1909	-1.5941	-1.8748
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	-0.0903	-0.3949	-0.4578	-2.8154	-3.7584
NB I-675 Exit Ramp	NB I-675 Exit Ramp	-0.0224	-0.0712	-0.2026	-1.6025	-1.8987
Clyo Segment 2	Clyo E of WilmPk	**0.0017**	**0.0069**	**0.0135**	**0.1476**	**0.1697**
Clyo Segment 3	Clyo S of Feedwire	-0.0013	-0.0039	-0.0049	-0.0863	-0.0964
Feedwire Segment 1	Whipp Rd W of WilmPk	**0.0017**	**0.007**	**0.014**	**0.1628**	**0.1855**
Charles & Feedwire	Charles & Feedwire	-0.0158	-0.0915	-0.1669	-1.6748	-1.949
Clinger & Feedwire	Clinger & Feedwire	**0.0181**	**0.0819**	**0.1152**	**1.8111**	**2.0263**
Clyo & Feedwire	Clyo & Feedwire	-0.0108	-0.0632	-0.1102	-0.1335	-0.3177
Clyo & WilmPk	Clyo & Wilmington Pike	**0.173**	**1.0013**	**1.8267**	**10.1649**	**13.1659**
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	-0.0215	-0.1247	-0.2275	-2.0475	-2.4212
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	**0.0099**	**0.0406**	**0.0628**	-0.185	-0.0717
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	-0.1413	-0.5825	-0.8999	**0.9265**	-0.6972
Feedwire & WilmPk	Feedwire & Wilmington Pike	**0.0084**	**0.0493**	**0.0904**	**5.9655**	**6.1136**
Brown & WilmPk	Brown & Wilmington Pike	-0.013	-0.0772	-0.1356	-3.7873	-4.0131
Feedwire Segment 6						0
Feedwire Segment 7						0
NB I-675 C-D Road						0
New NB I-675 Entranc						0
New SB I-675 Exit Ran						0
New SB I-675 Entranc						0
NB I-675 Ramps & Fee						0
SB I-675 Ramps & Fee						0
NB I-675 Segment 2						0

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Proposed Conditions Project Element Predicted Crash Summary (Without Animal Crashes)

Project Element ID	Common Name	Crash Severity Level				
		KA	B	C	O	Total
Feedwire Segment 2	Feedwire btwn WilmPk & Charles	0.0169	0.0484	0.0688	0.3625	0.4966
Feedwire Segment 3	Feedwire btwn Charles & Clinger	0.0067	0.0191	0.0272	0.1432	0.1962
Feedwire Segment 4	Feedwire btwn Clinger & SB I-675 Ramps	0.0125	0.0363	0.0522	0.2754	0.3764
Feedwire Segment 5	Feedwire btwn SB I-675 Ramps and NB I-675	0.0029	0.0098	0.016	0.088	0.1167
WilmPk Segment 1	WilmPk S of Clyo	0.0398	0.1185	0.1785	0.9292	1.266
WilmPk Segment 2	WilmPk btwn Clyo & Miami Valley	0.0289	0.087	0.1345	0.7005	0.9509
WilmPk Segment 3	WilmPk btwn Miami Valley & NB I-675	0.0322	0.0992	0.1547	0.8142	1.1003
WilmPk Segment 4	WilmPk btwn NB I-675 & SB I-675	0.0059	0.0205	0.0342	0.198	0.2586
WilmPk Segment 5	WilmPk between SB I-675 & Feedwire	0.0288	0.0863	0.1308	0.6818	0.9277
WilmPk Segment 6	WilmPk between Feedwire & Brown	0.0607	0.1799	0.2706	1.4075	1.9187
WilmPk Segment 7	WilmPk N of Brown	0.0231	0.1144	0.1133	0.6427	0.8935
Clyo Segment 1	Clyo W of WilmPk	0.0082	0.0231	0.0327	0.2828	0.3468
NB I-675 Segment 1	NB I-675 btwn WilmPk & Feedwire On Ramps	0.1984	0.9789	1.1018	1.7594	4.0385
SB I-675	SB I-675 btwn Swigert & WilmPk	0.4652	1.8795	2.1459	0	4.4906
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1872	1.1617	1.3858	6.8659	9.6006
NB I-675 Entrance Rar	NB I-675 Entrance Ramp	0.1872	1.1617	1.3858	6.8659	9.6006
SB I-675 Exit Ramp	SB I-675 Exit Ramp	0.2837	0.9248	1.9722	9.3476	12.5283
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1644	0.9397	1.1147	5.0391	7.2579
SB I-675 Entrance Rar	SB I-675 Entrance Ramp	0.1644	0.9397	1.1147	5.0391	7.2579
NB I-675 Exit Ramp	NB I-675 Exit Ramp	0.0611	0.2765	0.3605	0.823	1.5211
Clyo Segment 2	Clyo E of WilmPk	0.0145	0.0414	0.0583	0.3082	0.4224
Clyo Segment 3	Clyo S of Feedwire	0.0114	0.0374	0.0596	0.3099	0.4183
Feedwire Segment 1	Whipp Rd W of WilmPk	0.0153	0.0428	0.0598	0.316	0.4339
Charles & Feedwire	Charles & Feedwire	0.1626	0.8714	1.365	6.1904	8.5894
Clinger & Feedwire	Clinger & Feedwire	0.0441	0.1789	0.2376	1.2949	1.7555
Clyo & Feedwire	Clyo & Feedwire	0.1485	0.7747	1.1323	6.6437	8.6992
Clyo & WilmPk	Clyo & Wilmington Pike	0.2735	1.4804	2.3463	9.7954	13.8956
Miami Valley & WilmPk	Miami Valley & Wilmington Pike	0.2398	1.3463	2.172	8.6179	12.376
NB I-675 Ramps & Wil	NB I-675 Ramps & Wilmington Pike	0.3682	1.5164	2.3429	9.1905	13.418
SB I-675 Ramps & Wil	SB I-675 Ramps & Wilmington Pike	0.366	1.5077	2.3293	7.673	11.876
Feedwire & WilmPk	Feedwire & Wilmington Pike	0.2206	1.2178	1.9374	8.4107	11.7865
Brown & WilmPk	Brown & Wilmington Pike	0.1464	0.7809	1.1665	6.1269	8.2207
Feedwire Segment 6	Feedwire bwtn NB I-675 Ramps and Clyo Roa	0.0258	0.0766	0.1134	0.5941	0.8099
Feedwire Segment 7	Feedwire E of Clyo Road	0.0201	0.0684	0.1127	0.6327	0.8339
NB I-675 C-D Road	NB I-675 CD Road	0.0099	0.0455	0.058	0.1455	0.2589
New NB I-675 Entranc	NB I-675 Entrance Ramp from Feedwire	0.0795	0.6178	0.7471	2.1497	3.5941
New SB I-675 Exit Ran	SB I-675 Exit Ramp to Feedwire	0.0801	0.2622	0.5272	2.4669	3.3364
New SB I-675 Entranc	SB I-675 Entrance Ramp from Feedwire	0.0196	0.0639	0.1307	0.4132	0.6274
NB I-675 Ramps & Fee	NB I-675 Ramps & Feedwire Rd	0.0845	0.3483	0.5384	4.098	5.0692
SB I-675 Ramps & Fee	SB I-675 Ramps & Feedwire Rd	0.0938	0.3861	0.5966	3.3854	4.4619
NB I-675 Segment 2	NB I-675 btwn Feedwire On Ramp & Swigert	0.2794	1.283	1.5635	6.6782	9.8041

Project Safety Performance Report

General Information

Project Name	Wilmington Pike Feasibility Study	Contact Email	rmulvaney@cmtengr.com
Project Description	Safety Analysis (Alternative 2)	Contact Phone	
Reference Number		Date Performed	7/13/2023
Analyst	CMK/RTM	Analysis Year	2017-2019
Agency/Company	CMT		

Summary by Crash Type

Crash Type	Existing			Proposed
	Predicted Crash Frequency	Expected Crash Frequency	PSI	Predicted Crash Frequency
Unknown	0.4255	0.2986	-0.1269	0.4116
Head On	1.4452	1.7804	**0.3352**	1.3117
Rear End	78.3896	83.7441	**5.3546**	71.0479
Backing	3.6123	4.3548	**0.7425**	3.0404
Sideswipe - Meeting	1.0708	1.0521	-0.0187	0.8700
Sideswipe - Passing	29.5239	29.4759	-0.0479	24.8634
Angle	20.0031	23.7175	**3.7144**	19.8688
Parked Vehicle	3.0346	2.1544	-0.8802	3.0327
Pedestrian	0.6311	0.5873	-0.0438	0.6118
Animal	43.6372	18.3089	-25.3283	43.3532
Train	0.0081	0.0081	**0.0001**	0.0081
Pedalcycles	2.5649	2.5608	-0.0040	2.5551
Other Non-Vehicle	0.0037	0.0037	0.0000	0.0036
Fixed Object	25.2084	14.9781	-10.2302	23.2272
Other Object	1.1427	0.7078	-0.4348	0.9220
Overturning	1.4742	1.0666	-0.4076	1.4081
Other Non-Collision	1.9889	1.1515	-0.8374	1.8088
Left Turn	9.3514	11.2226	**1.8712**	9.2859
Right Turn	3.2208	4.2642	**1.0434**	3.2208

I-675 and Wilmington Pike Interchange Feasibility Study

APPENDIX H: COST ESTIMATES

CMT

MOT/GRE I-675/Wilmington Pike

ALTERNATIVE 1

PRELIMINARY CONSTRUCTION COST ESTIMATE

LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	Wilmington Pike ESTIMATED QUANTITY	Wilmington Pike COST	Feedwire Road/E Whipp Road ESTIMATED QUANTITY	Feedwire Road/E Whipp Road COST	I-675 ESTIMATED QUANTITY	I-675 COST	Ramps ESTIMATED QUANTITY	Ramps COST	Clyo Road ESTIMATED QUANTITY	Clyo Road COST	TOTAL ESTIMATED QUANTITY	TOTAL TOTAL COST
		Roadway														
1	201	Clearing and Grubbing	LS			$ 45,000		$ 70,000		$ 125,000		$ 125,000		$ 25,000	0	$ 390,000
2	202	Guardrail removed	FT	$ 3.00	500	$ 1,500	1700	$ 5,100	3000	$ 9,000	360	$ 1,080	350	$ 1,050	5910	$ 17,730
3	202	Pavement removed	SY	$ 11.00	7650	$ 84,150	4900	$ 53,900	11150	$ 122,650	7860	$ 86,460	500	$ 5,500	32060	$ 352,660
4	203	Excavation	CY	$ 20.00	12231	$ 244,620	16540	$ 330,800	8603	$ 172,052	8684	$ 173,680	3000	$ 60,000	49058	$ 981,152
5	203	Embankment	CY	$ 18.00	4055	$ 72,990	20020	$ 360,360	3201	$ 57,620	3244	$ 58,391	1000	$ 18,000	31520	$ 567,361
6	204	Subgrade compaction	SY	$ 2.25	28500	$ 64,125	22000	$ 49,500	26500	$ 59,625	15500	$ 34,875	3300	$ 7,425	95800	$ 215,550
7	605	6" Shallow Pipe Underdrains	FT	$ 12.00	13800	$ 165,600	8500	$ 102,000	9000	$ 108,000	8900	$ 106,800	2200	$ 26,400	42400	$ 508,800
8	606	Guardrail, Type MGS	FT	$ 20.00	500	$ 10,000	2000	$ 40,000	2000	$ 40,000		$ -	500	$ 10,000	5000	$ 100,000
9	608	4" Concrete Walk	SF	$ 7.00	47900	$ 335,300	5250	$ 36,750		$ -		$ -	1500	$ 10,500	54650	$ 382,550
10	609	Curb, Type 6	FT	$ 30.00	13800	$ 414,000	4850	$ 145,500			915	$ 27,450	1625	$ 48,750	21190	$ 635,700
11	609	Combination Curb and Gutter, Type 2	FT	$ 35.00			3500	$ 122,500					500	$ 17,500	4000	$ 140,000
12	622	Concrete Barrier, Single Slope, Type B	FT	$ 90.00	300	$ 27,000		$ -		$ -		$ -		$ -	300	$ 27,000
		Erosion Control														
13	832	Storm Water Pollution Prevention Plan	LS			$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 25,000
14	832	Erosion Control	EA	$ 1.00		$ 50,000		$ 50,000		$ 75,000		$ 50,000		$ 10,000	0	$ 235,000
		Drainage														
15	611	18" conduit, Type B	FT	$ 150.00	6500	$ 975,000	2500	$ 375,000	2000	$ 300,000	500	$ 75,000	500	$ 75,000	12000	$ 1,800,000
16	611	Catch basin, No. 3	EA	$ 4,000.00	35	$ 140,000	15	$ 60,000		$ -		$ -	4	$ 16,000	54	$ 216,000
17	611	Catch Basin, No. 2-2B	EA	$ 3,500.00	10	$ 35,000	10	$ 35,000		$ -			3	$ 10,500	23	$ 80,500
18	611	Manhole, No. 3	EA	$ 4,500.00	20	$ 90,000	8	$ 36,000					2	$ 9,000	30	$ 135,000
19	611	Inlet, No 3 For Single Slope Barrier, Type B	EA	$ 5,000.00	2	$ 10,000				$ -					2	$ 10,000
		Pavement														
20	301	Asphalt concrete base, PG64-22	CY	$ 170.00	6038	$ 1,026,376	4477	$ 761,103	7904	$ 1,343,715	4507	$ 766,252	685	$ 116,384	23611	$ 4,013,830
21	304	Aggregate base	CY	$ 62.00	4711	$ 292,088	3531	$ 218,942	4406	$ 273,185	2562	$ 158,862	544	$ 33,731	15755	$ 976,808
22	442	Asphalt Concrete Surface Course, 12.5mm, Type A, (446)	CY	$ 220.00	3209	$ 705,982	2212	$ 486,674	3731	$ 820,757	963	$ 211,955	546	$ 120,097	10661	$ 2,345,464
23	442	Asphalt Concrete Intermediate Course, 19MM, (448)	CY	$ 190.00	3209	$ 609,712	2212	$ 420,309	3731	$ 708,835	963	$ 183,052	546	$ 103,720	10661	$ 2,025,628

MOT/GRE I-675/Wilmington Pike

ALTERNATIVE 1

PRELIMINARY CONSTRUCTION COST ESTIMATE

LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	Wilmington Pike ESTIMATED QUANTITY	Wilmington Pike COST	Feedwire Road/E Whipp Road ESTIMATED QUANTITY	Feedwire Road/E Whipp Road COST	I-675 ESTIMATED QUANTITY	I-675 COST	Ramps ESTIMATED QUANTITY	Ramps COST	Clyo Road ESTIMATED QUANTITY	Clyo Road COST	TOTAL ESTIMATED QUANTITY	TOTAL COST
24	452	8" Non-Reinforced Concrete Pavement (Drive Work)	SY	$ 90.00	270	$ 24,300	100	$ 9,000					130	$ 11,700	500	$ 45,000
25	SPEC	Shared Used Path	SY	$ 100.00	0	$ -	7730	$ 773,000					0	$ -	7730	$ 773,000
		Lighting														
26	SPEC	Lighting Work	LS			$ -				$ 200,000		$ 100,000				$ 300,000
		Traffic Control														
27	SPEC	Pavement Markings and Ground Mounted Signing	LS			$ 40,000		$ 40,000		$ 50,000		$ 30,000		$ 20,000		$ 180,000
	SPEC	Signal Work	EA	$ 275,000.00	4	$ 1,100,000	4	$ 1,100,000				$ -		$ -		$ 2,200,000
28	SPEC	Major Overhead Sign Work	LS			$ 180,000		$ 170,000		$ 145,000						$ 495,000
		Retaining Walls														
29	SPEC	Retaining Wall	SF	$ 100.00	1700	$ 170,000	1100	$ 110,000		$ -		$ -	300	$ 30,000		$ 310,000
		Bridge Work														
30	SPEC	Bridge Feedwire Rd Over I-675	LS			$ -		$ 6,400,000								$6,400,000.00
31	SPEC	Bridge Feedwire Over Little Sugar Creek	LS					$ 1,060,000								$1,060,000.00
32	SPEC	Bridge I-675 Over Wilmington Road	LS					$ 9,487,500								$9,487,500.00
			CONSTRUCTION COST			$ 6,917,743		$ 22,913,938		$ 4,615,440		$ 2,193,856		$ 791,256		$ 37,432,233
		MAINTENANCE OF TRAFFIC				$ 345,887		$ 1,145,697		$ 230,772		$ 109,693		$ 39,563		$ 1,871,612
		CONTINGENCY 40% (25% Design + 15% Inflation)				$ 2,767,097		$ 9,165,575		$ 1,846,176		$ 877,542		$ 316,502		$ 14,972,893
		TOTAL CONSTRUCTION COST				**$ 10,030,727**		**$ 33,225,210**		**$ 6,692,388**		**$ 3,181,091**		**$ 1,147,321**		**$ 54,276,737**
		PRELIMINARY ENGINEERING (20%)				**$ 2,006,145**		**$ 6,645,042**		**$ 1,338,478**		**$ 636,218**		**$ 229,464**		**$ 10,855,347**
		RIGHT OF WAY (PERMANENT)						**$ -**				**$ -**		**$ -**		**8.4 AC**
		RIGHT OF WAY (TEMPORARY)														**7.3 AC**
		CONSTRUCTION ENGINEERING (10%)				**$ 1,003,073**		**$ 3,322,521**		**$ 669,239**		**$ 318,109**		**$ 114,732**		**$ 5,427,674**
				TOTAL		**$ 13,039,945**		**$ 43,192,773**		**$ 8,700,105**		**$ 4,135,418**		**$ 1,491,517**		**$ 70,559,758**

MOT/GRE I-675/Wilmington Pike ALTERNATIVE 1B PRELIMINARY CONSTRUCTION COST ESTIMATE					Wilmington Pike		Feedwire Road/E Whipp Road		I-675		Ramps		Clyo Road		TOTAL	
LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	TOTAL COST
		Roadway														
1	201	Clearing and Grubbing	LS			$ 45,000		$ 70,000		$ 125,000		$ 125,000		$ 25,000	0	$ 390,000
2	202	Guardrail removed	FT	$ 3.00	500	$ 1,500	1700	$ 5,100	3000	$ 9,000	360	$ 1,080	350	$ 1,050	5910	$ 17,730
3	202	Pavement removed	SY	$ 11.00	19100	$ 210,100	5000	$ 55,000	10500	$ 115,500	2300	$ 25,300	500	$ 5,500	37400	$ 411,400
4	203	Excavation	CY	$ 20.00	12231	$ 244,620	16540	$ 330,800	9291	$ 185,820	8684	$ 173,680	3000	$ 60,000	49746	$ 994,920
5	203	Embankment	CY	$ 18.00	4055	$ 72,990	20020	$ 360,360	3457	$ 62,226	3244	$ 58,391	1000	$ 18,000	31776	$ 571,967
6	204	Subgrade compaction	SY	$ 2.25	31000	$ 69,750	22000	$ 49,500	26500	$ 59,625	24000	$ 54,000	3300	$ 7,425	106800	$ 240,300
7	206	Cement Stabilized Subgrade 12 Inches Deep	SY	$ 5.00	30957	$ 154,786	21715	$ 108,573	26512	$ 132,559	23685	$ 118,426	3264	$ 16,321	106133	$ 530,664
8	605	6" Shallow Pipe Underdrains	FT	$ 12.00	11650	$ 139,800	13000	$ 156,000	9000	$ 108,000	38000	$ 456,000	2200	$ 26,400	73850	$ 886,200
9	606	Guardrail, Type MGS	FT	$ 20.00	500	$ 10,000	2000	$ 40,000	2000	$ 40,000		$ -	500	$ 10,000	5000	$ 100,000
10	608	4" Concrete Walk	SF	$ 7.00	23700	$ 165,900	4560	$ 31,920		$ -		$ -	1800	$ 12,600	30060	$ 210,420
11	609	Curb, Type 6	FT	$ 30.00	14150	$ 424,500	6655	$ 199,650			2660	$ 79,800	1625	$ 48,750	25090	$ 752,700
12	609	Combination Curb and Gutter, Type 2	FT	$ 35.00			3550	$ 124,250					500	$ 17,500	4050	$ 141,750
13	622	Concrete Barrier, Single Slope, Type B	FT	$ 90.00	300	$ 27,000		$ -		$ -		$ -		$ -	300	$ 27,000
		Erosion Control														
14	832	Storm Water Pollution Prevention Plan	LS			$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 25,000
15	832	Erosion Control	EA	$ 1.00		$ 50,000		$ 50,000		$ 75,000		$ 50,000		$ 10,000	0	$ 235,000
		Drainage														
16	611	18" conduit, Type B	FT	$ 150.00	6500	$ 975,000	2500	$ 375,000	2000	$ 300,000	500	$ 75,000	500	$ 75,000	12000	$ 1,800,000
17	611	Catch basin, No. 3	EA	$ 4,000.00	35	$ 140,000	15	$ 60,000		$ -		$ -	4	$ 16,000	54	$ 216,000
18	611	Catch Basin, No. 2-2B	EA	$ 3,500.00	10	$ 35,000	10	$ 35,000		$ -			3	$ 10,500	23	$ 80,500
19	611	Manhole, No. 3	EA	$ 4,500.00	20	$ 90,000	8	$ 36,000					2	$ 9,000	30	$ 135,000
20	611	Inlet, No 3 For Single Slope Barrier, Type B	EA	$ 5,000.00	2	$ 10,000				$ -					2	$ 10,000
		Pavement														
21	301	Asphalt concrete base, PG64-22	CY	$ 170.00	6592	$ 1,120,686	4594	$ 781,003	7878	$ 1,339,248	6446	$ 1,095,819	685	$ 116,384	26195	$ 4,453,140
22	304	Aggregate base	CY	$ 62.00	5159	$ 319,888	3619	$ 224,385	4419	$ 273,955	3947	$ 244,738	544	$ 33,731	17689	$ 1,096,698
23	442	Asphalt Concrete Surface Course, 12.5mm, Type A, (446)	CY	$ 240.00	2883	$ 692,004	2234	$ 536,045	3727	$ 894,511	1088	$ 261,077	546	$ 131,014	10478	$ 2,514,651

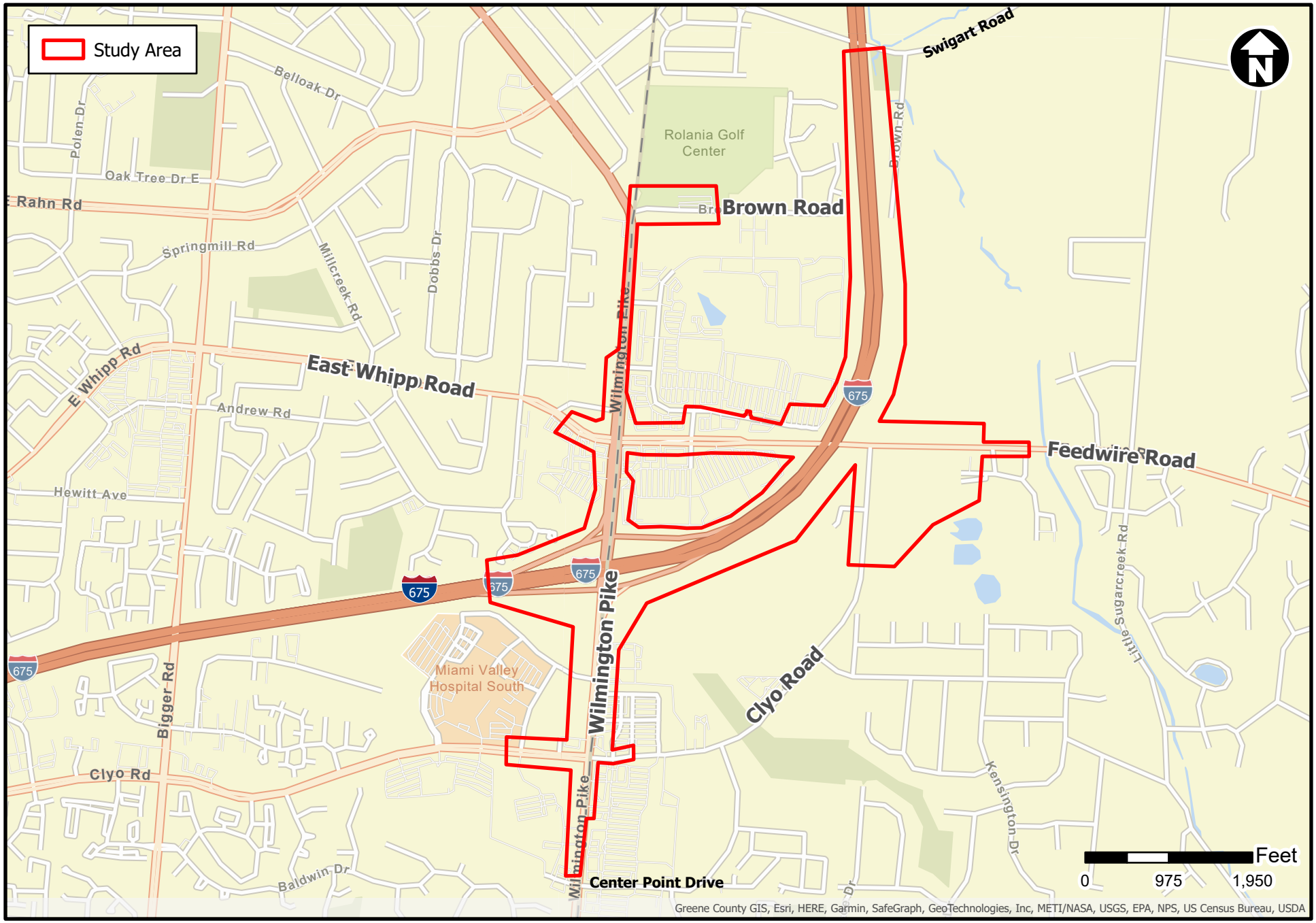
MOT/GRE I-675/Wilmington Pike ALTERNATIVE 1B PRELIMINARY CONSTRUCTION COST ESTIMATE					Wilmington Pike		Feedwire Road/E Whipp Road		I-675		Ramps		Clyo Road		TOTAL	
LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	TOTAL COST
24	442	Asphalt Concrete Intermediate Course, 19MM, (448)	CY	$ 20.00	2883	$ 57,667	2234	$ 44,670	3727	$ 74,543	1088	$ 21,756	546	$ 10,918	10478	$ 209,554
25	452	8" Non-Reinforced Concrete Pavement (Drive Work)	SY	$ 90.00	270	$ 24,300	100	$ 9,000					130	$ 11,700	500	$ 45,000
26	SPEC	Shared Used Path	SY	$ 100.00	5300	$ 530,000	6150	$ 615,000					740		12190	$ 1,219,000
Lighting																
27	SPEC	Lighting Work	LS			$ -				$ 200,000		$ 100,000				$ 300,000
Traffic Control																
28	SPEC	Pavement Markings and Ground Mounted Signing	LS			$ 40,000		$ 40,000		$ 50,000		$ 30,000		$ 20,000		$ 180,000
	SPEC	Signal Work	EA	$ 275,000.00	4	$ 1,100,000	4	$ 1,100,000				$ -		$ -		$ 2,200,000
29	SPEC	Major Overhead Sign Work	LS			$ 180,000		$ 170,000		$ 145,000						$ 495,000
Retaining Walls																
30	SPEC	Retaining Wall	SF	$ 100.00	1700	$ 170,000	1100	$ 110,000		$ -		$ -	300	$ 30,000		$ 310,000
Bridge Work																
31	SPEC	Bridge Feedwire Rd Over I-675	LS			$ -		$ 6,400,000								$6,400,000.00
32	SPEC	Bridge Feedwire Over Little Sugar Creek	LS					$ 1,060,000								$1,060,000.00
33	SPEC	Bridge I-675 Over Wilmington Road	LS					$ 8,625,000								$8,625,000.00
34	SPEC	Bridge Removal	LS			$ 600,000		$ 300,000								$900,000.00
35	SPEC	Work Associated With Existing 96" Twin Culvert	LS			$ 1,000,000										$1,000,000.00
			CONSTRUCTION COST			$ 8,705,491		$ 22,107,256		$ 4,194,987		$ 2,975,067		$ 727,792		$ 38,784,593
		MAINTENANCE OF TRAFFIC				$ 435,275		$ 1,105,363		$ 209,749		$ 148,753		$ 36,390		$ 1,939,230
		CONTINGENCY 40% (25% Design + 15% Inflation)				$ 3,482,196		$ 8,842,902		$ 1,677,995		$ 1,190,027		$ 291,117		$ 15,513,837
		TOTAL CONSTRUCTION COST				**$ 12,622,962**		**$ 32,055,520**		**$ 6,082,732**		**$ 4,313,847**		**$ 1,055,299**		**$ 56,237,660**
		PRELIMINARY ENGINEERING (20%)				**$ 2,524,592**		**$ 6,411,104**		**$ 1,216,546**		**$ 862,769**		**$ 211,060**		**$ 11,247,532**
		RIGHT OF WAY (PERMANENT)						**$ -**				**$ -**		**$ -**		**8.7 AC**
		RIGHT OF WAY (TEMPORARY)														**8.0 AC**
		CONSTRUCTION ENGINEERING (10%)				**$ 1,262,296**		**$ 3,205,552**		**$ 608,273**		**$ 431,385**		**$ 105,530**		**$ 5,623,766**
				TOTAL		**$ 16,409,850**		**$ 41,672,176**		**$ 7,907,551**		**$ 5,608,001**		**$ 1,371,889**		**$ 73,108,958**

MOT/GRE I-675/Wilmington Pike ALTERNATIVE 2 PRELIMINARY CONSTRUCTION COST ESTIMATE					Wilmington Pike		Feedwire Road/E Whipp Road		I-675		Ramps		Clyo Road		TOTAL	
LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	TOTAL COST
		Roadway														
1	201	Clearing and Grubbing	LS			$ 50,000		$ 75,000		$ 150,000		$ 150,000		$ 25,000	0	$ 450,000
2	202	Guardrail removed	FT	$ 3.00	350	$ 1,050	1800	$ 5,400	2500	$ 7,500		$ -	350	$ 1,050	5000	$ 15,000
3	202	Pavement removed	SY	$ 11.00	2500	$ 27,500	3100	$ 34,100	15000	$ 165,000	1000	$ 11,000	300	$ 3,300	21900	$ 240,900
4	203	Excavation	CY	$ 20.00	11000	$ 220,000	15000	$ 300,000	8593	$ 171,852	53000	$ 1,060,000	500	$ 10,000	88093	$ 1,761,852
5	203	Embankment	CY	$ 18.00	3100	$ 55,800	40000	$ 720,000	7800	$ 140,400	75000	$ 1,350,000	200	$ 3,600	126100	$ 2,269,800
6	204	Subgrade compaction	SY	$ 2.25	17000	$ 38,250	16500	$ 37,125	41500	$ 93,375	45000	$ 101,250	45000	$ 101,250	165000	$ 371,250
7	206	Cement Stabilized Subgrade 12 Inches Deep	SY	$ 5.00	12651	$ 63,257	15004	$ 75,019	37861	$ 189,304	38691	$ 193,454	40755	$ 203,774	144962	$ 724,809
7	605	6" Shallow Pipe Underdrains	FT	$ 12.00	11000	$ 132,000	10300	$ 123,600	10000	$ 120,000	31000	$ 372,000	1300	$ 15,600	63600	$ 763,200
8	606	Guardrail, Type MGS	FT	$ 20.00		$ -	2000	$ 40,000	2700	$ 54,000	3200	$ 64,000		$ -	7900	$ 158,000
9	608	4" Concrete Walk	SF	$ 7.00	22800	$ 159,600	2880	$ 20,160		$ -		$ -	4800	$ 33,600	30480	$ 213,360
10	609	Curb, Type 6	FT	$ 30.00	11000	$ 330,000	8300	$ 249,000	1200	$ 36,000			800	$ 24,000	21300	$ 639,000
11	609	Combination Curb and Gutter, Type 2	FT	$ 35.00			2000	$ 70,000					500	$ 17,500	2500	$ 87,500
12	622	Concrete Barrier, Single Slope, Type B	FT	$ 90.00		$ -		$ -	4650	$ 418,500	5400	$ 486,000		$ -	10050	$ 904,500
		Erosion Control														
13	832	Storm Water Pollution Prevention Plan	LS			$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 5,000		$ 25,000
14	832	Erosion Control	EA	$ 1.00		$ 50,000		$ 50,000		$ 100,000		$ 100,000		$ 10,000	0	$ 310,000
		Drainage														
15	611	18" conduit, Type B	FT	$ 150.00	6500	$ 975,000	2500	$ 375,000	4000	$ 600,000		$ -	1200	$ 180,000	14200	$ 2,130,000
16	611	Catch basin, No. 3	EA	$ 4,000.00	35	$ 140,000	15	$ 60,000	6	$ 24,000		$ -	6	$ 24,000	62	$ 248,000
17	611	Catch Basin, No. 2-2B	EA	$ 3,500.00	10	$ 35,000	10	$ 35,000		$ -			3	$ 10,500	23	$ 80,500
18	611	Manhole, No. 3	EA	$ 4,500.00	20	$ 90,000	8	$ 36,000					3	$ 13,500	31	$ 139,500
19	611	Inlet, No 3 For Single Slope Barrier, Type B	EA	$ 5,000.00					16	$ 80,000					16	$ 80,000
		Pavement														
20	301	Asphalt concrete base, PG64-22	CY	$ 170.00	2811	$ 477,943	3334	$ 566,809	11569	$ 1,966,657	11822	$ 2,009,777	9057	$ 1,539,629	38593	$ 6,560,816
21	304	Aggregate base	CY	$ 62.00	2294	$ 142,213	2650	$ 164,282	6421	$ 398,117	7023	$ 435,398	6855	$ 425,003	25242	$ 1,565,013
22	442	Asphalt Concrete Surface Course, 12.5mm, Type A, (446)	CY	$ 204.00	2553	$ 520,855	1609	$ 328,291	6419	$ 1,309,422	2008	$ 409,675	2062	$ 420,559	14651	$ 2,988,802

MOT/GRE I-675/Wilmington Pike ALTERNATIVE 2 PRELIMINARY CONSTRUCTION COST ESTIMATE					Wilmington Pike		Feedwire Road/E Whipp Road		I-675		Ramps		Clyo Road		TOTAL	
LINE NO.	ODOT ITEM	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	COST	ESTIMATED QUANTITY	TOTAL COST
23	442	Asphalt Concrete Intermediate Course, 19MM, (448)	CY	$ 210.00	2553	$ 536,175	1609	$ 337,946	6419	$ 1,347,935	2008	$ 421,724	2062	$ 432,929	14651	$ 3,076,708
24	452	8" Non-Reinforced Concrete Pavement (Drive Work)	SY	$ 90.00	200	$ 18,000	100	$ 9,000					100	$ 9,000	400	$ 36,000
25	SPEC	Shared Used Path	SY	$ 100.00	5100	$ 510,000	7100	$ 710,000							12200	$ 1,220,000
Lighting																
26	SPEC	Lighting Work	LS			$ -				$ 250,000		$ 350,000				$ 600,000
Traffic Control																
27	SPEC	Pavement Markings and Ground Mounted Signing	LS			$ 40,000		$ 40,000		$ 50,000		$ 50,000		$ 20,000		$ 200,000
28	SPEC	Signal Work	EA	$ 275,000.00	5	$ 1,375,000	2	$ 550,000			2	$ 550,000	1	$ 275,000		
29	SPEC	Major Overhead Sign Work	LS			$ 255,000		$ 170,000		$ 250,000		$ 375,000				$ 1,050,000
Retaining Walls																
30	SPEC	Retaining Wall	SF	$ 100.00	8000	$ 800,000	3000	$ 300,000		$ -	40000	$ 4,000,000	1400	$ 140,000		$ 5,240,000
Bridge Work																
31	SPEC	Bridge Feedwire Rd Over I-675	LS			$ -		$ 9,100,000								$9,100,000.00
32	SPEC	Bridge Feedwire Over Little Sugar Creek	LS					$ 1,000,000								$1,000,000.00
33	SPEC	Bridge Removal	LS			$ 600,000		$ 300,000								$900,000.00
34	SPEC	Work Associated With Existing 96" Twin Culvert	LS			$ 1,000,000										$1,000,000.00
			CONSTRUCTION COST			$ 8,647,644		$ 15,886,732		$ 7,927,061		$ 12,494,278		$ 3,943,795		$ 46,149,510
		MAINTENANCE OF TRAFFIC				$ 432,382		$ 794,337		$ 396,353		$ 624,714		$ 197,190		$ 2,307,475
		CONTINGENCY 40% (25% Design + 15% Inflation)				$ 3,459,058		$ 6,354,693		$ 3,170,825		$ 4,997,711		$ 1,577,518		$ 18,459,804
		TOTAL CONSTRUCTION COST				**$ 12,539,084**		**$ 23,035,762**		**$ 11,494,240**		**$ 18,116,703**		**$ 5,718,502**		**$ 66,916,789**
		PRELIMINARY ENGINEERING (20%)				**$ 2,507,817**		**$ 4,607,152**		**$ 2,298,848**		**$ 3,623,341**		**$ 1,143,700**		**$ 13,383,358**
		RIGHT OF WAY (PERMANENT)														**12.7 AC**
		RIGHT OF WAY (TEMPORARY)														**13.3 AC**
		CONSTRUCTION ENGINEERING (10%)				**$ 1,253,908**		**$ 2,303,576**		**$ 1,149,424**		**$ 1,811,670**		**$ 571,850**		**$ 6,691,679**
				TOTAL		**$ 16,300,809**		**$ 29,946,490**		**$ 14,942,512**		**$ 23,551,714**		**$ 7,434,052**		**$ 86,991,826**

I-675 and Wilmington Pike Interchange Feasibility Study

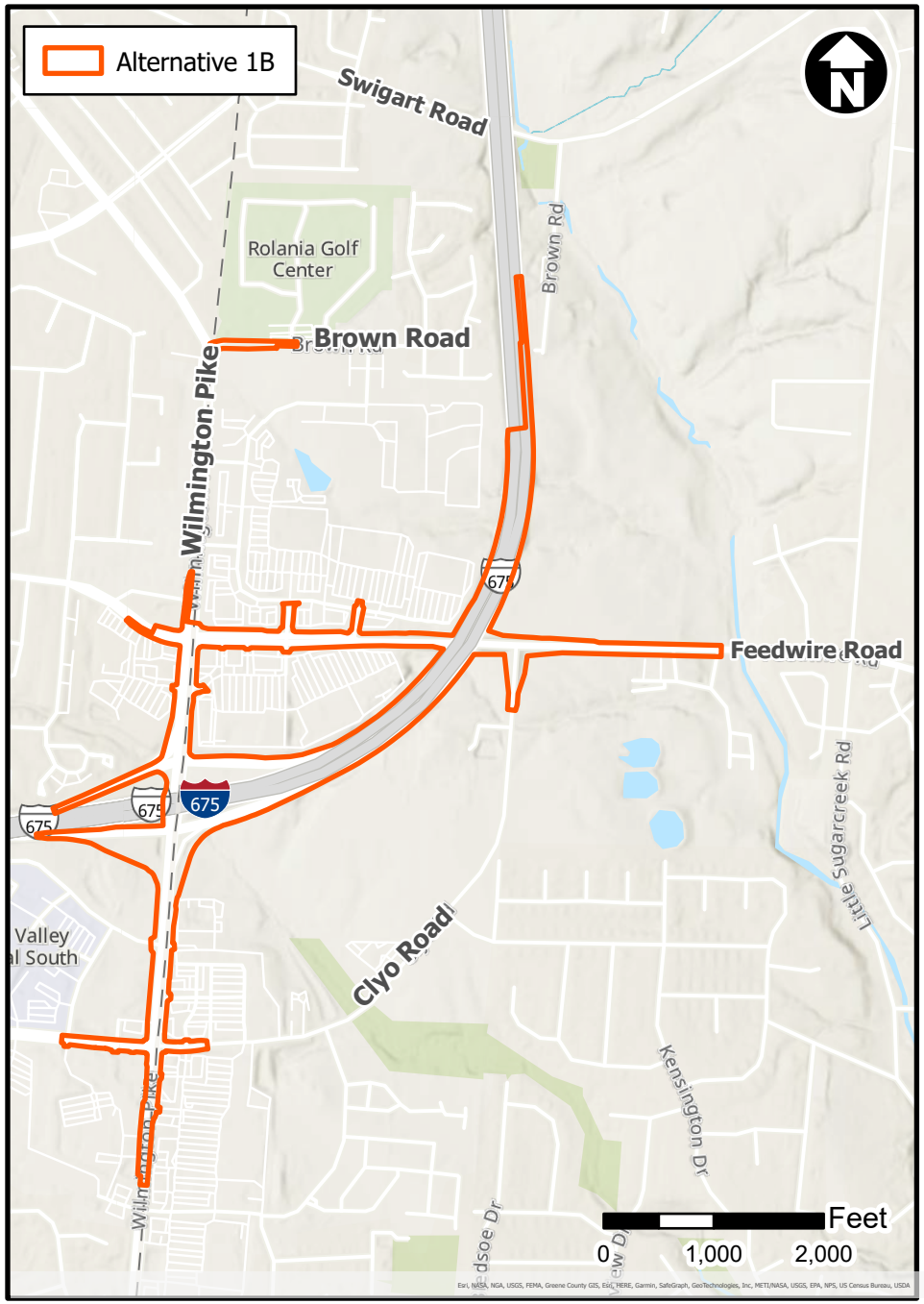
Appendix I: Environmental Resources

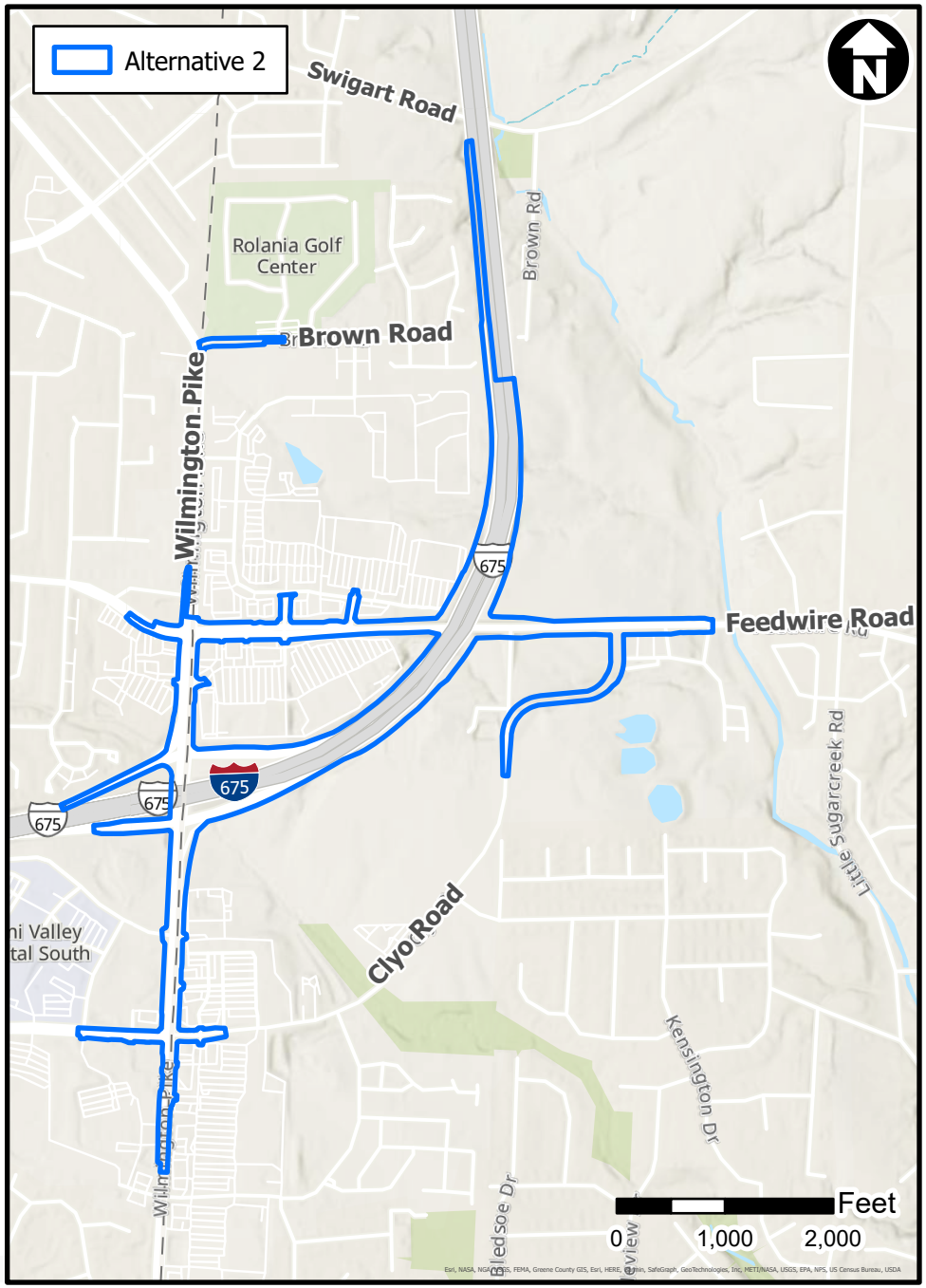


MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Study Area Location Map

CMT
Crawford, Murphy & Tilly





MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Alternatives 1B and 2

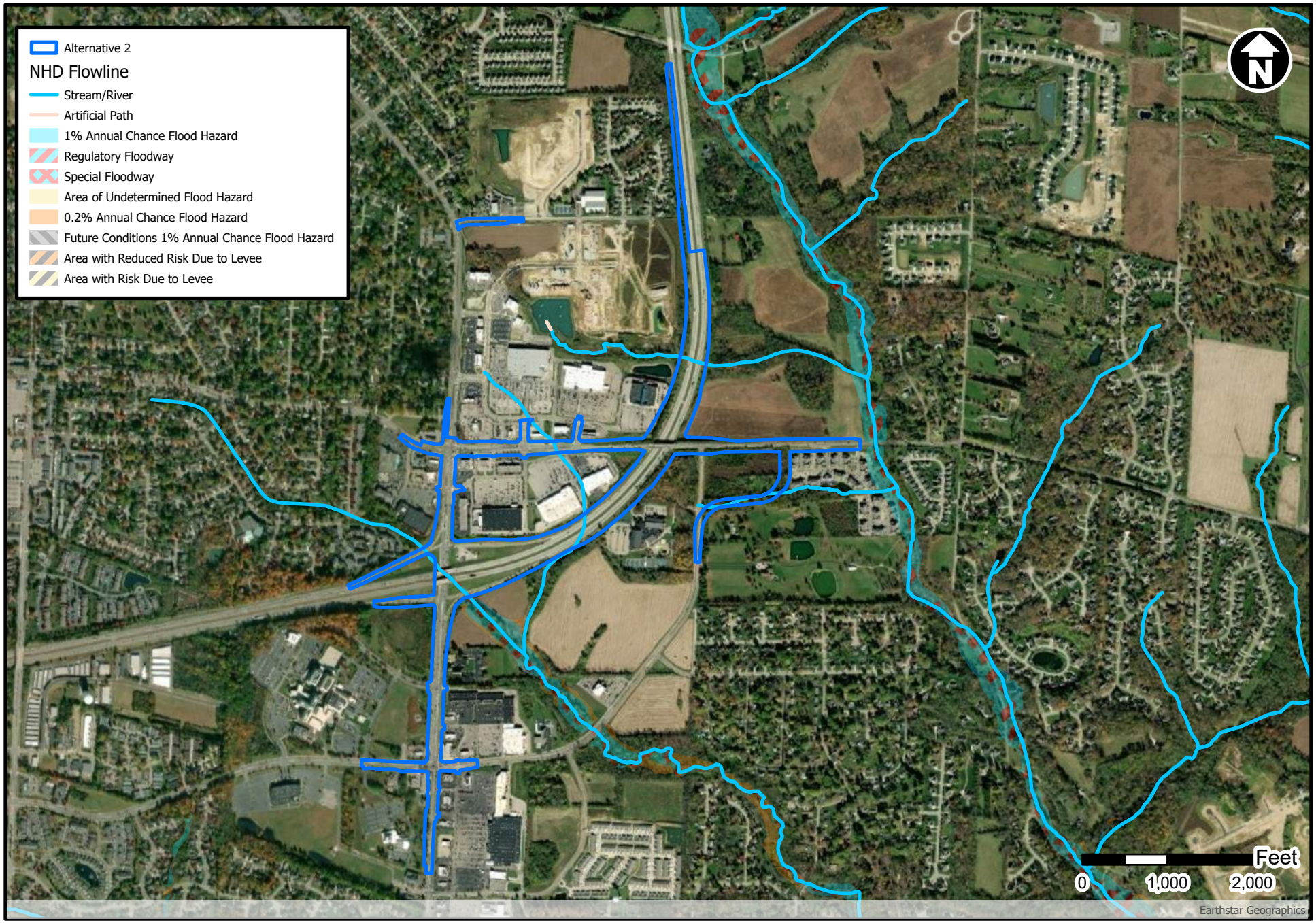
CMT
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MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Water Resources Map - Alternative 1B

CMT
Crawford, Murphy & Tilly



MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Water Resources Map - Alternative 2

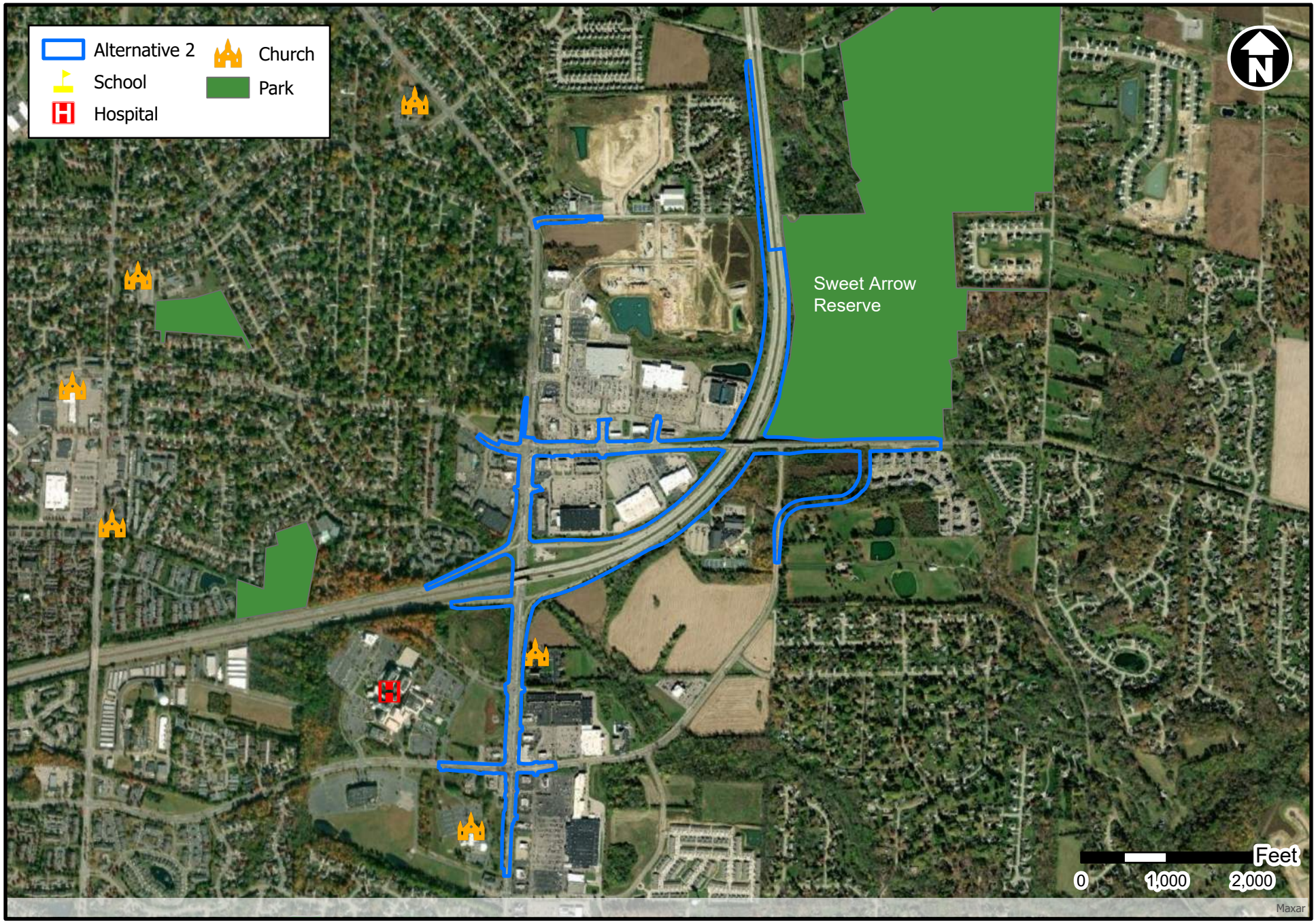
CMT
Crawford, Murphy & Tilly



MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Infrastructure Map - Alternative 1B

CMT
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MOT/GRE-I-675/WILMINGTON PIKE PID 115160

Infrastructure Map - Alternative 2

CMT
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Alternative 1B - Hazardous Materials

Area of Interest (AOI) Information

Area : 87.07 acres

Mar 28 2023 14:18:38 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(ft)
SEMS - Non-NPL Sites w/buffer (US EPA)	0	0	N/A
SEMS - NPL Sites w/buffer (US EPA)	0	0	N/A
RCRA (US EPA)	6	N/A	N/A
RCRA - TSD Sites w/buffer (US EPA)	0	0	N/A
Federal Engineering Controls (US EPA)	0	N/A	N/A
Federal Institutional Controls (US EPA)	0	N/A	N/A
BUSTR - UST Locations (BUSTR/OGRIP)	9	N/A	N/A
BUSTR - LUST Locations (BUSTR/OGRIP)	2	N/A	N/A
Coal Gas Generators (OEPA-DERR)	0	N/A	N/A
DERR Database (OEPA-DERR)	0	N/A	N/A
Impoundment Sites (OEPA-DERR)	0	N/A	N/A
Landfills - Active Solid Waste Facilities w/buffer (OEPA-DMWM)	0	0	N/A
Landfills - Historic/Abandoned Facilities w/buffer (OEPA-DMWM/DERR)	0	0	N/A
Landfills - Solid Waste Facility Polygons (OEPA-DMWM)	0	0	N/A
Projects With Engineering Controls (OEPA-DERR)	0	N/A	N/A
Projects With Institutional Controls (OEPA-DERR)	0	N/A	N/A
Spills Database (OEPA)	0	N/A	N/A
VAP Sites (OEPA-DERR)	0	N/A	N/A
Potential Areas of Concern (ODOT-OES)	0	0	N/A

RCRA (US EPA)

#	REGISTRY_ID	PRIMARY_NAME	ADDRESS	CITY	STATE	ZIP	LAST_REPORTED_DATE	URL
1	110004663169	CONCORD CUSTOM CLEANERS NO 6089	6212 WILMINGTON PIKE	DAYTON	OH	45459	4/14/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004663169
2	110004710439	SUGARCREEK AUTOMOTIVE	6018 WILMINGTON PIKE	CENTERVILLE	OH	45459	10/16/2014	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004710439
3	110022821142	TARGET STORE #1940	4341 FEEDWIRE RD	DAYTON	OH	45440	6/5/2018	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110022821142
4	110004705882	WAL-MART NO 1503	6244 WILMINGTON PIKE	CENTERVILLE	OH	45459	5/22/2019	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004705882
5	110018892377	HOME DEPOT 3854	5860 WILMINGTON PIKE RD	CENTERVILLE	OH	45459	4/28/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110018892377
6	110018890413	GIANT BP FACILITY #490	6201 WILMINGTON PIKE	CENTERVILLE	OH	45459-7108	4/28/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110018890413

#	PGM_SYS_ID	PGM_SYS_ACRONYM	INTEREST_TYPE	REFERENCE_POINT_DESC	Count
1	OHD986977833	RCRAINFO	UNSPECIFIED UNIVERSE	ENTRANCE POINT OF A FACILITY OR STATION	1
2	OHR000004226	RCRAINFO	SQG	ENTRANCE POINT OF A FACILITY OR STATION	1
3	OHR000130922	RCRAINFO	CESQG	ENTRANCE POINT OF A FACILITY OR STATION	1
4	OHD987055654	RCRAINFO	UNSPECIFIED UNIVERSE	ENTRANCE POINT OF A FACILITY OR STATION	1
5	OHR000123257	RCRAINFO	SQG	ENTRANCE POINT OF A FACILITY OR STATION	1
6	OHR000122184	RCRAINFO	UNSPECIFIED UNIVERSE	CENTER OF A FACILITY OR STATION	1

BUSTR - UST Locations (BUSTR/OGRIP)

#	FACILITY_ID	CURRENT_FACILITY_NAME	ADDRESS	CITY	ZIP	Status	INSPECTION_DATE	FACILITY_CO
1	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	CIU	03/13/12	Yes
2	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	CIU	03/13/12	Yes
3	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	CIU	03/13/12	Yes
4	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
5	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
6	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
7	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*
8	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*
9	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*

#	TANK_ID	CAPACITY	CONTENT	DATE_REMOVED	FACILITY_STATUS	Count
1	T00004	15000	Gasoline	NULL	Active	1
2	T00005	10000	Gasoline	NULL	Active	1
3	T00006	10000	Gasoline	NULL	Active	1
4	T00001	10000	Gasoline	10/10/00	Inactive	1
5	T00002	10000	Gasoline	10/10/00	Inactive	1
6	T00003	10000	Gasoline	10/10/00	Inactive	1
7	T00002	10000	Gasoline	*No Data*	*No Data*	1
8	T00003	8000	Diesel	*No Data*	*No Data*	1
9	T00001	12000	Gasoline	*No Data*	*No Data*	1

BUSTR - LUST Locations (BUSTR/OGRIP)

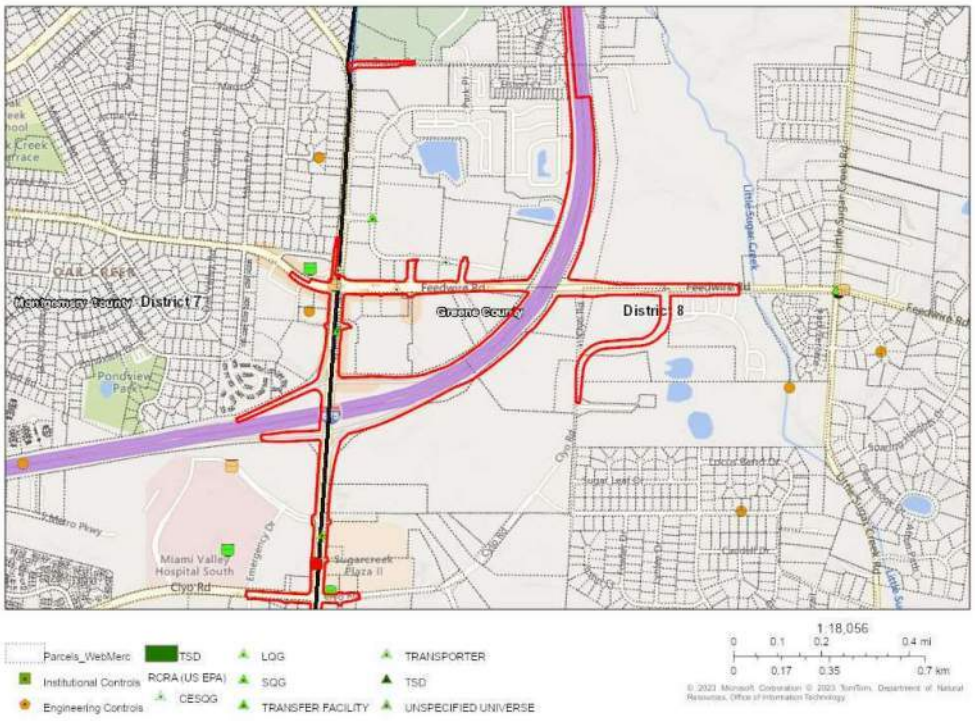
#	FACILITY_ID	CURRENT_FACILITY_NAME	ADDRESS	CITY	ZIP	INCIDENT_ID	LTF	STATUS	FACILITY_STATUS	Count
1	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	N00001	1 SUS/CON from regulated UST	NFA: No Further Action	Inactive	1
2	*No Data*	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	*No Data*	6 Closure of regulated UST	NFA: No Further Action	Inactive	1

Alternative 2 - Hazardous Materials

Area of Interest (AOI) Information

Area : 95.45 acres

Mar 28 2023 14:19:44 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(ft)
SEMS - Non-NPL Sites w/buffer (US EPA)	0	0	N/A
SEMS - NPL Sites w/buffer (US EPA)	0	0	N/A
RCRA (US EPA)	6	N/A	N/A
RCRA - TSD Sites w/buffer (US EPA)	0	0	N/A
Federal Engineering Controls (US EPA)	0	N/A	N/A
Federal Institutional Controls (US EPA)	0	N/A	N/A
BUSTR - UST Locations (BUSTR/OGRIP)	9	N/A	N/A
BUSTR - LUST Locations (BUSTR/OGRIP)	2	N/A	N/A
Coal Gas Generators (OEPA-DERR)	0	N/A	N/A
DERR Database (OEPA-DERR)	0	N/A	N/A
Impoundment Sites (OEPA-DERR)	0	N/A	N/A
Landfills - Active Solid Waste Facilities w/buffer (OEPA-DMWM)	0	0	N/A
Landfills - Historic/Abandoned Facilities w/buffer (OEPA-DMWM/DERR)	0	0	N/A
Landfills - Solid Waste Facility Polygons (OEPA-DMWM)	0	0	N/A
Projects With Engineering Controls (OEPA-DERR)	0	N/A	N/A
Projects With Institutional Controls (OEPA-DERR)	0	N/A	N/A
Spills Database (OEPA)	0	N/A	N/A
VAP Sites (OEPA-DERR)	0	N/A	N/A
Potential Areas of Concern (ODOT-OES)	0	0	N/A

RCRA (US EPA)

#	REGISTRY_ID	PRIMARY_NAME	ADDRESS	CITY	STATE	ZIP	LAST_REPORTED_DATE	URL
1	110004663169	CONCORD CUSTOM CLEANERS NO 6089	6212 WILMINGTON PIKE	DAYTON	OH	45459	4/14/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004663169
2	110004710439	SUGARCREEK AUTOMOTIVE	6018 WILMINGTON PIKE	CENTERVILLE	OH	45459	10/16/2014	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004710439
3	110022821142	TARGET STORE #1940	4341 FEEDWIRE RD	DAYTON	OH	45440	6/5/2018	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110022821142
4	110004705882	WAL-MART NO 1503	6244 WILMINGTON PIKE	CENTERVILLE	OH	45459	5/22/2019	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110004705882
5	110018892377	HOME DEPOT 3854	5860 WILMINGTON PIKE RD	CENTERVILLE	OH	45459	4/28/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110018892377
6	110018890413	GIANT BP FACILITY #490	6201 WILMINGTON PIKE	CENTERVILLE	OH	45459-7108	4/28/2015	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110018890413

#	PGM_SYS_ID	PGM_SYS_ACRONYM	INTEREST_TYPE	REFERENCE_POINT_DESC	Count
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3	OHR000130922	RCRAINFO	CESQG	ENTRANCE POINT OF A FACILITY OR STATION	1
4	OHD987055654	RCRAINFO	UNSPECIFIED UNIVERSE	ENTRANCE POINT OF A FACILITY OR STATION	1
5	OHR000123257	RCRAINFO	SQG	ENTRANCE POINT OF A FACILITY OR STATION	1
6	OHR000122184	RCRAINFO	UNSPECIFIED UNIVERSE	CENTER OF A FACILITY OR STATION	1

BUSTR - UST Locations (BUSTR/OGRIP)

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3	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	CIU	03/13/12	Yes
4	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
5	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
6	57002047	Giant #590	6201 WILMINGTON PK	CENTERVILLE	45458	REM	*No Data*	*No Data*
7	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*
8	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*
9	57000465	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	CIU	*No Data*	*No Data*

#	TANK_ID	CAPACITY	CONTENT	DATE_REMOVED	FACILITY_STATUS	Count
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2	T00005	10000	Gasoline	NULL	Active	1
3	T00006	10000	Gasoline	NULL	Active	1
4	T00001	10000	Gasoline	10/10/00	Inactive	1
5	T00002	10000	Gasoline	10/10/00	Inactive	1
6	T00003	10000	Gasoline	10/10/00	Inactive	1
7	T00002	10000	Gasoline	*No Data*	*No Data*	1
8	T00003	8000	Diesel	*No Data*	*No Data*	1
9	T00001	12000	Gasoline	*No Data*	*No Data*	1

BUSTR - LUST Locations (BUSTR/OGRIP)

#	FACILITY_ID	CURRENT_FACILITY_NAME	ADDRESS	CITY	ZIP	INCIDENT_ID	LTF	STATUS	FACILITY_STATUS	Count
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2	*No Data*	SPEEDWAY #9726	5495 WILMINGTON PIKE	CENTERVILLE	45440	*No Data*	6 Closure of regulated UST	NFA: No Further Action	Inactive	1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, OH 43230-8355
Phone: (614) 416-8993 Fax: (614) 416-8994

In Reply Refer To: March 28, 2023
Project Code: 2023-0061399
Project Name: I-675 and Wilmington Pike Interchange

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, OH 43230-8355
(614) 416-8993

PROJECT SUMMARY

Project Code: 2023-0061399
Project Name: I-675 and Wilmington Pike Interchange
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The purpose of the project is to reduce congestion and improve safety in the Wilmington Pike and I-675 interchange area while improving pedestrian connectivity and supporting economic development in the area surrounding the interchange.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.66751295,-84.1077217085836,14z



Counties: Greene and Montgomery counties, Ohio

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Crawford, Murphy, and Tilly, Inc.
Name: Alexander Tadda
Address: 8101 North High Street
City: Columbus
State: OH
Zip: 43235
Email atadda@cmtengr.com
Phone: 6144681200

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, OH 43230-8355
Phone: (614) 416-8993 Fax: (614) 416-8994

In Reply Refer To: March 28, 2023
Project Code: 2023-0061401
Project Name: I-675 and Wilmington Pike Interchange - Alt 2

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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This species list is provided by:

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4625 Morse Road, Suite 104
Columbus, OH 43230-8355
(614) 416-8993

PROJECT SUMMARY

Project Code: 2023-0061401
Project Name: I-675 and Wilmington Pike Interchange - Alt 2
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The purpose of the project is to reduce congestion and improve safety in the Wilmington Pike and I-675 interchange area while improving pedestrian connectivity and supporting economic development in the area surrounding the interchange.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.667512450000004,-84.10772251251962,14z



Counties: Greene and Montgomery counties, Ohio

ENDANGERED SPECIES ACT SPECIES

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Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

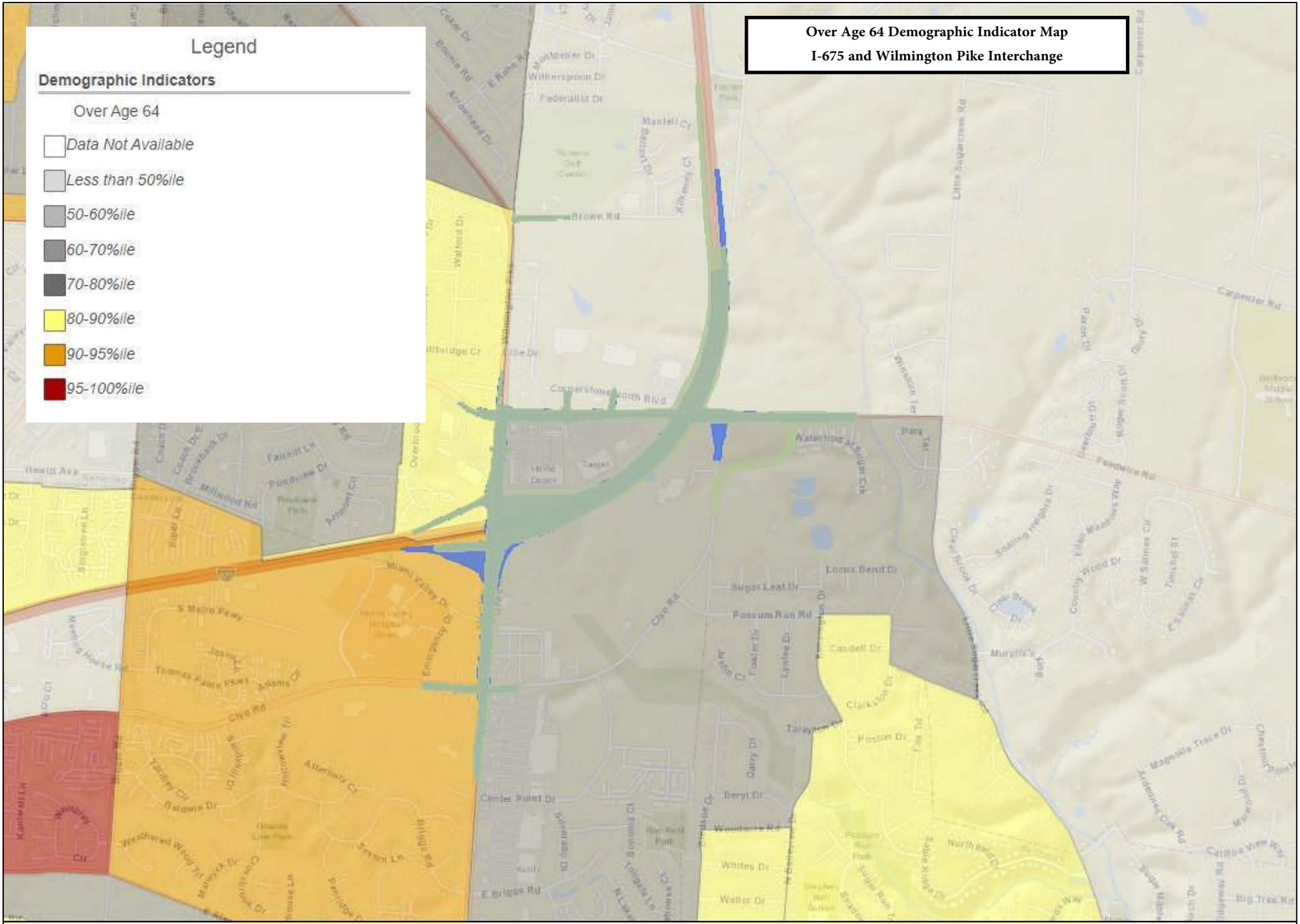
NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Crawford, Murphy, and Tilly, Inc.
Name: Alexander Tadda
Address: 8101 North High Street
City: Columbus
State: OH
Zip: 43235
Email atadda@cmtengr.com
Phone: 6144681200

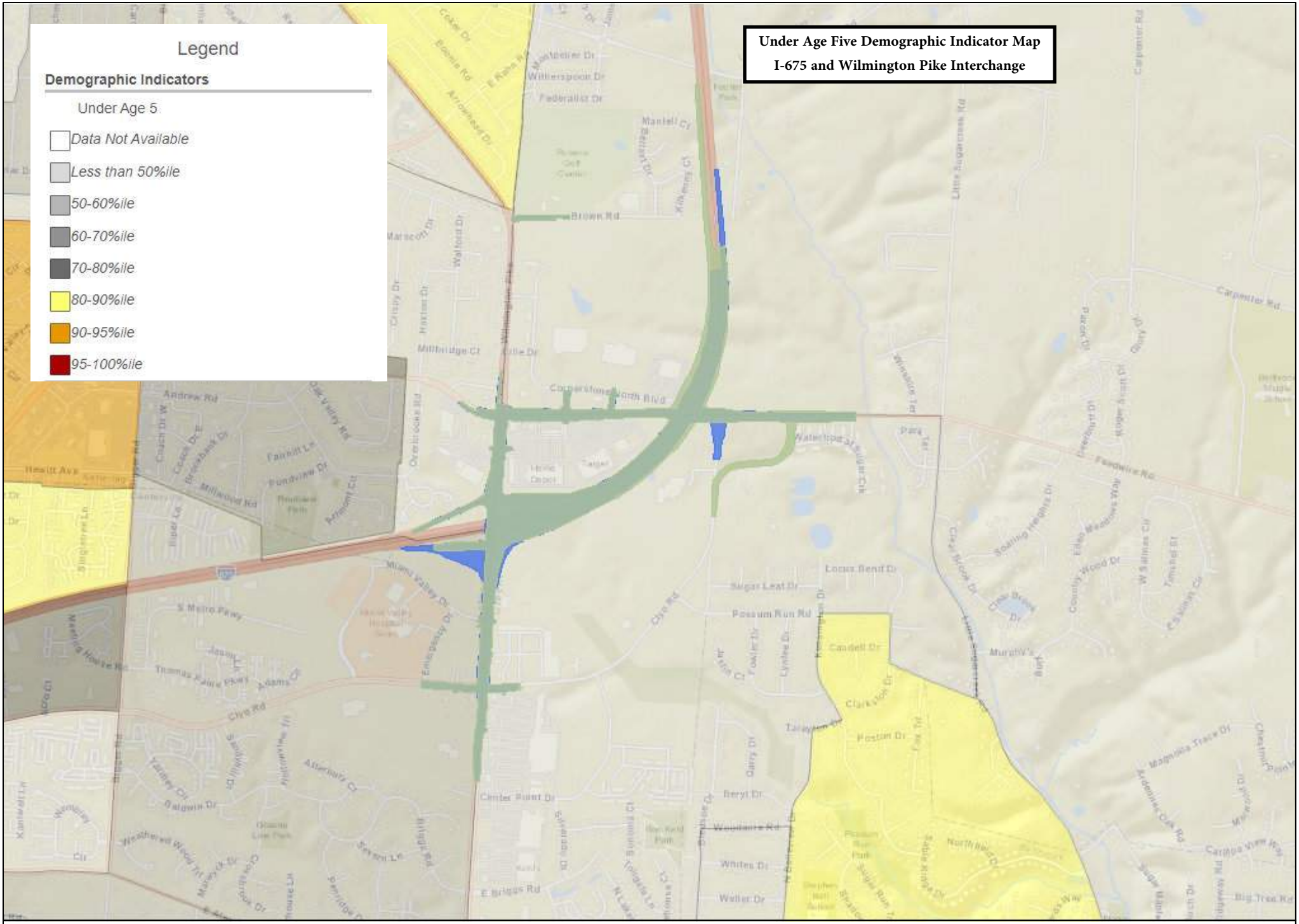


Over Age 64 Demographic Indicator Map
I-675 and Wilmington Pike Interchange

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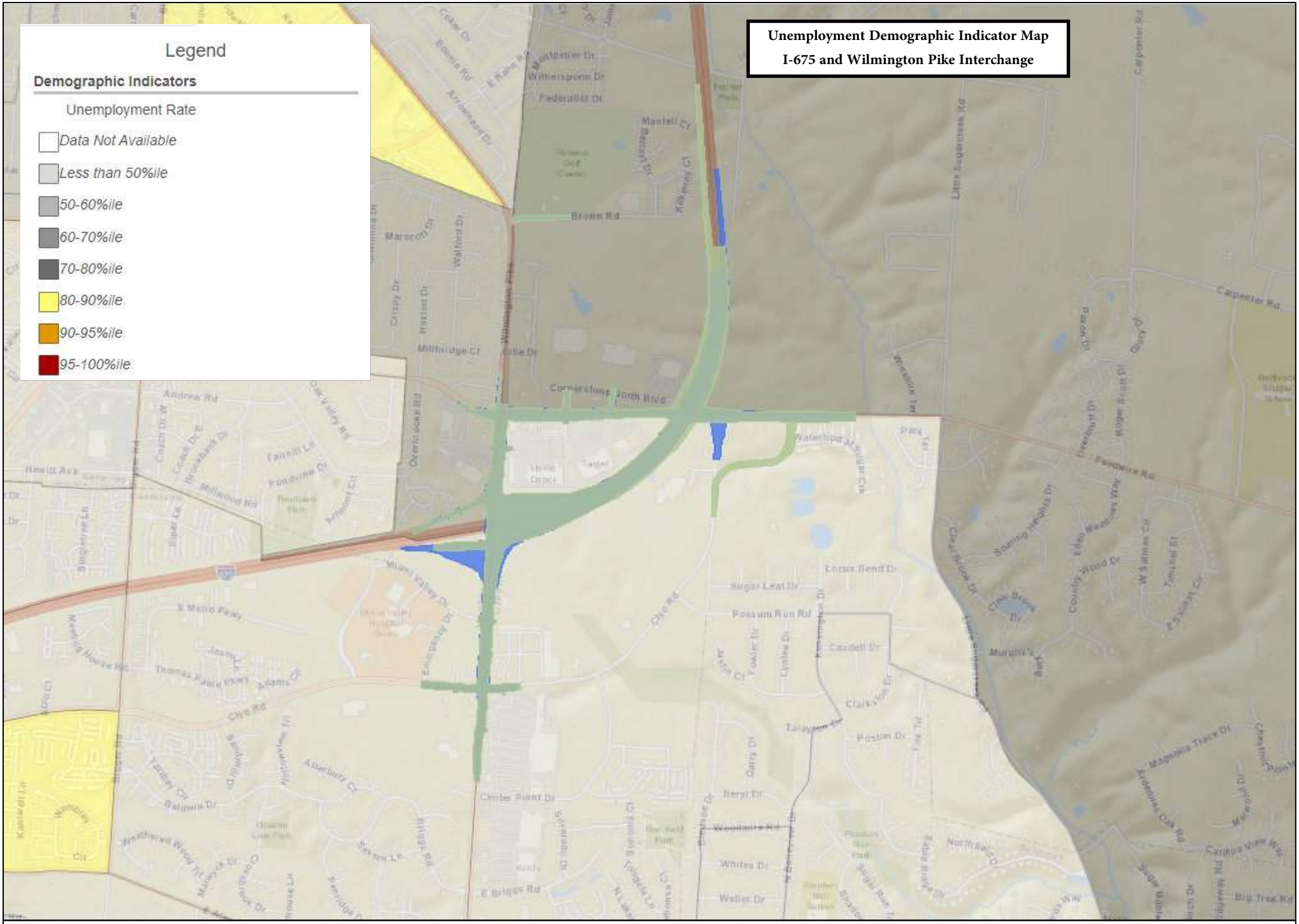
Date: 3/28/2023



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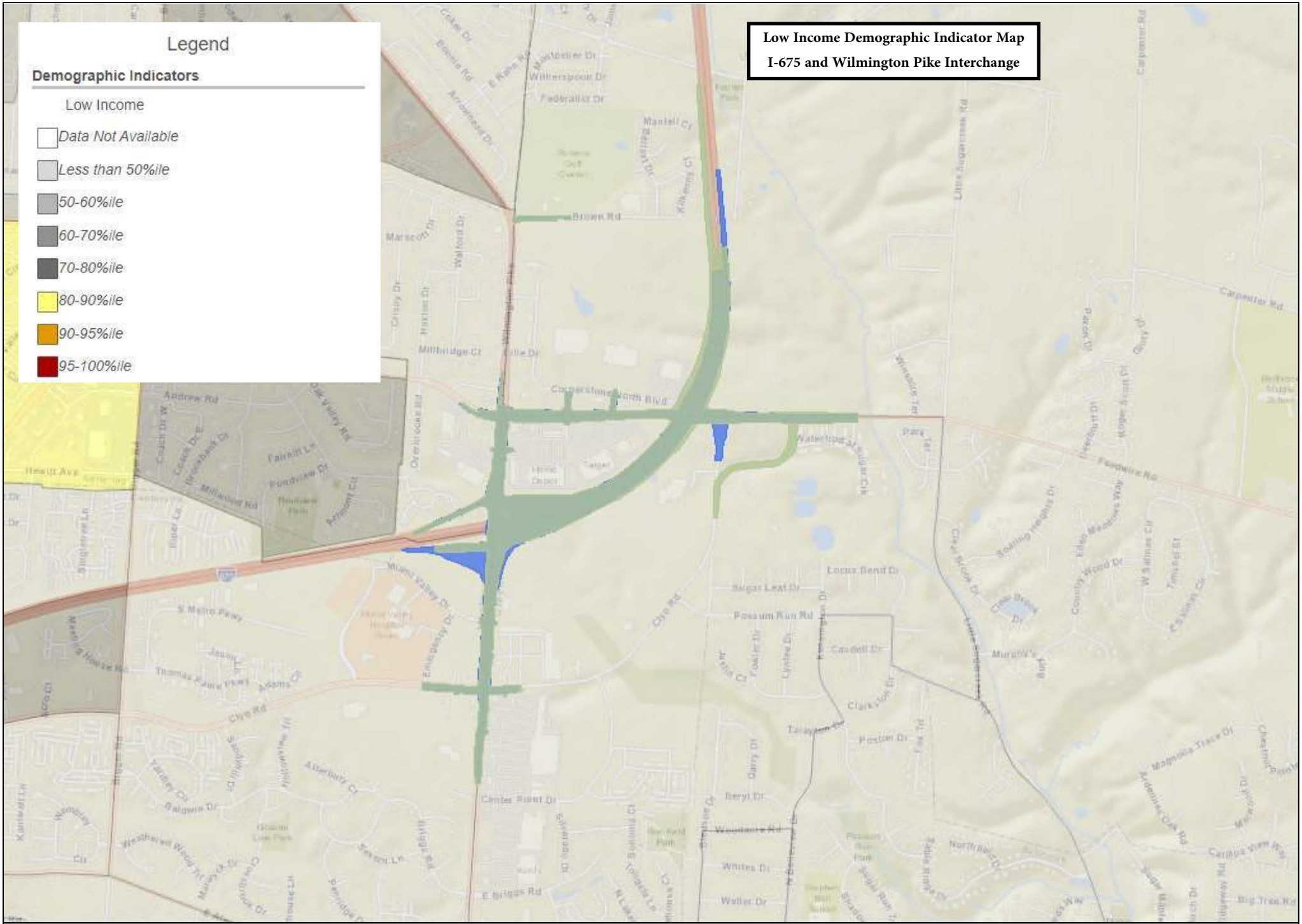
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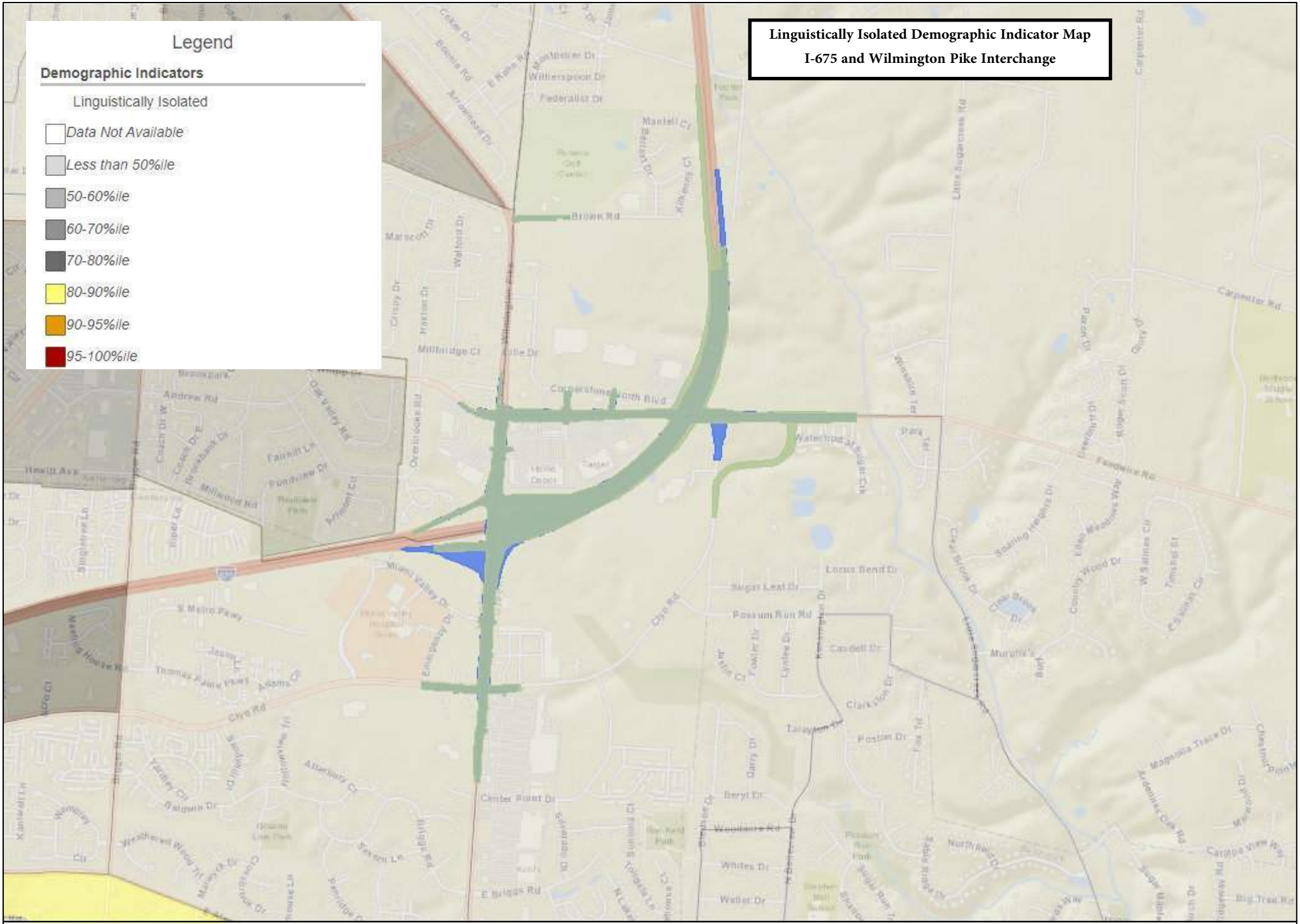
Date: 3/28/2023



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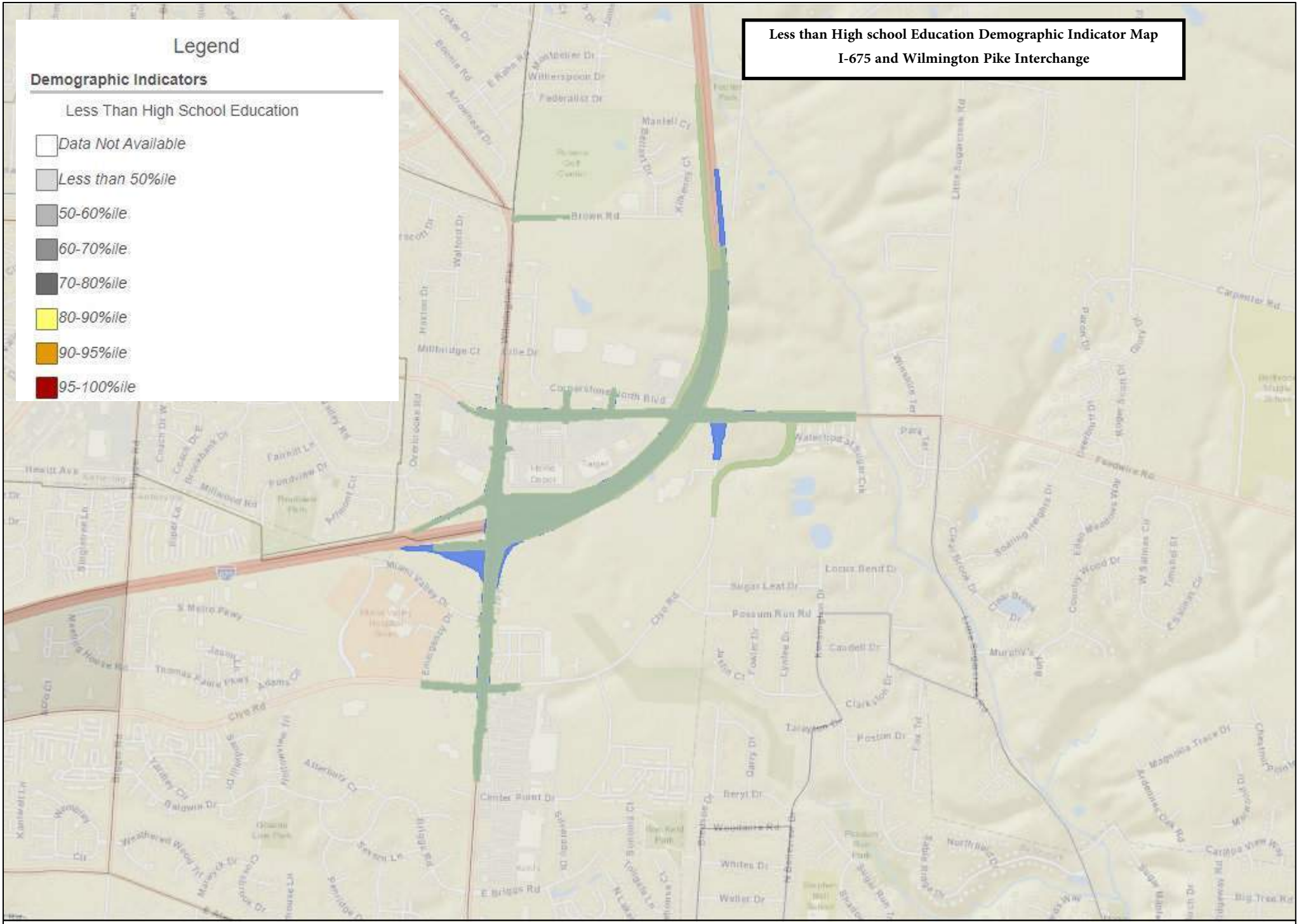
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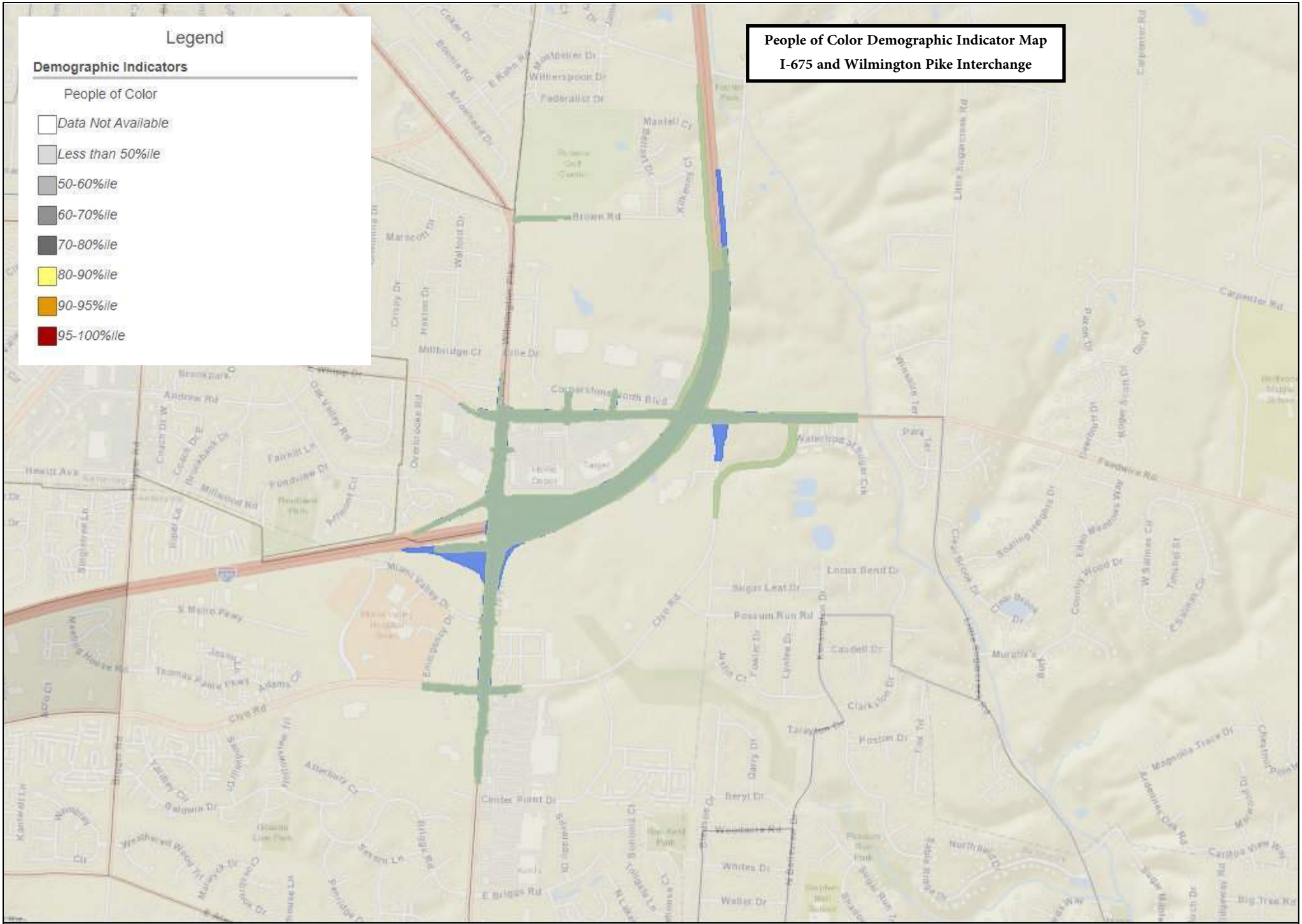
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Date: 3/28/2023

I-675 and Wilmington Pike Interchange Feasibility Study

Appendix J: Public Involvement

June 2, 2023

Re: Interstate 675 and Wilmington Pike Interchange Improvements (PID 115160)
Public Information Meeting - Rescheduled

Dear Neighbor:

We are writing to advise you that the Ohio Department of Transportation (ODOT), the Montgomery County Transportation Improvement District (MCTID), Sugarcreek Township, the Greene County Engineer's Office, and the City of Centerville are evaluating alternatives for improvements to the Interstate 675 and Wilmington Pike interchange. The project is necessary to address congestion and safety. **The public information meetings originally scheduled for June 6th and June 7th have been rescheduled for July 13th and July 18th.**

To ensure the proposed project is viable and successful, we are asking all those interested to attend and participate in the upcoming public meetings. We want your comments regarding the social, environmental, and economic impacts of this proposed project. Additionally, we would appreciate any information you may have on the existence of cultural resources (archaeological, historic, architectural), ecological resources (streams, wetlands, etc.), or hazardous materials (dump sites, underground and above ground storage tanks, etc.) within the project area. We welcome your questions and comments at the following upcoming public involvement meetings.

In Person Meeting
Thursday July 13, 2023, 5:00 to 7:00 pm
Location: Sinclair Centerville Campus at 5800 Clyo Road, Centerville, Ohio 45459

Virtual Meeting
Tuesday July 18, 2023 at 12:00 pm
Hosted on project website: https://mctid.org/i-675-wilmington-pike-interchange-project/

All materials presented during the in-person meeting and the virtual public meeting will be the same. Materials will be available on the project website immediately following the virtual meeting.

Feedback from the community will assist the project team in decision making. We ask that the public provide comments by August 18, 2023. Comments can be provided during the public meetings, via the information below or on the project website: https://mctid.org/i-675-wilmington-pike-interchange-project/. All comments carry equal weight regardless of how they are submitted.



Questions or comments? Please contact me:

Crystal Corbin, Executive Director, MCTID
Phone: 614-530-0884
Email: ccorbin@mctid.org

Individuals who require interpretation services or a reasonable accommodation to participate in this meeting should contact Crystal Corbin no later than June 21, 2023. Public participation is solicited without regard to race, color, sex, age, national origin, or disability.

Respectfully,

Crystal L. Corbin

Crystal Corbin
Executive Director, MCTID

cc: Tom Mazza, ODOT D8 Project Manager; Keith Smith, District Environmental Coordinator; Kathleen Fuller, District Public Information Officer

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PROOF OF PUBLICATION

STATE OF OHIO

PUBLIC NOTICE

Before the undersigned authority personally appeared Andrea Feltner, who on oath says that he/she is a Legal Advertising Representative of the Dayton Daily News, a daily newspaper of general circulation in Montgomery, Clark, Warren, Butler, Clinton, Greene, Preble, Miami, Darke, Mercer, Shelby, Fayette, Auglaize, and Champaign Counties, and State of Ohio, and he/she further says that the advertisement, a copy of which is hereunto attached, has been published in the said Dayton Daily News, publication dates June 15, June 18, July 2, 2023, and he/she further says that the bona fide daily paid circulation of the said Dayton Daily News was over 25,000 at the time the said advertisement was published, and that the price charged for same does not exceed the rates charged on annual contract for the like amount of space to other advertisers in the general display advertising columns.

Crawford, Murphy & Tilly
7777 Washington Village Drive
Dayton, OH 45459

Invoice/Order Number:	0000797101
Ad Cost:	$1,568.25
Paid:	$1,568.25
Balance Due:	$0.00

Signed Andrea Feltner
(Legal Advertising Agent)

Sworn or affirmed to, and subscribed before me, this 11th day of July, 2023. In Testimony whereof, I have hereunto set my hand and affixed my official seal, the day and year aforesaid.

Signed
(Notary)

NOTARY PUBLIC STATE OF OHIO

JUSTIN PETERSON, Notary Public
In and for the State of Ohio
My Commission Expires July 31, 2024

Please see Ad on following page(s).

Crawford, Murphy & Tilly 7777
Washington Village Drive Dayton, OH
45459

Invoice/Order Number:	0000797101
Ad Cost:	$1,568.25
Paid:	$1,568.25
Balance Due:	$0.00

PUBLIC MEETING

I-675 and WILMINGTON PIKE INTERCHANGE IMPROVEMENTS

In Person Meeting
Thursday July 13, 2023, 5:00 to 7:00 pm
Location: Sinclair Centerville Campus at 5800 Clyo Road,
Centerville, Ohio 45459

Virtual Meeting (On Project Website)
Tuesday July 18, 2023 at 12:00 pm

Project Website and Comment Form:
https://mctid.org/i-675-wilmington-pike-interchange-project/

ODOT, the Montgomery County Transportation Improvement District, Sugarcreek Township, the Greene County Engineer's Office, and the City of Centerville are evaluating alternatives for improvements to the Interstate 675 and Wilmington Pike interchange. Improvements will address increasing congestion, travel delays, and escalating crash rates.

The purpose of the meetings is to present alternatives for proposed improvements, answer questions, and gather feedback from the community that will assist in project decision-making. Anyone needing special meeting assistance should call (614) 530-0884 by June 21, 2023. Following the July 13 meeting, the comment form and all meeting materials will be available on the project website.

Questions and comments can be submitted on the project website and by mail, email, or phone. Comments received by August 18, 2023 will be compiled and posted on the website.



CONTACT
Crystal Corbin, Executive Director, MCTID
ccorbin@mctid.org • (614) 530-0884

LEARN MORE ONLINE
mctid.org/i-675-wilmington-pike-interchange-project/

Public participation is solicited without regard to race, color, sex, age, national origin, or disability.

PID 115160

PUBLIC MEETING

I-675 and WILMINGTON PIKE INTERCHANGE IMPROVEMENTS

In Person Meeting

Thursday July 13, 2023, 5:00 to 7:00 pm
Location: Sinclair Centerville Campus at 5800 Clyo Road, Centerville, Ohio 45459

Virtual Meeting (On Project Website)

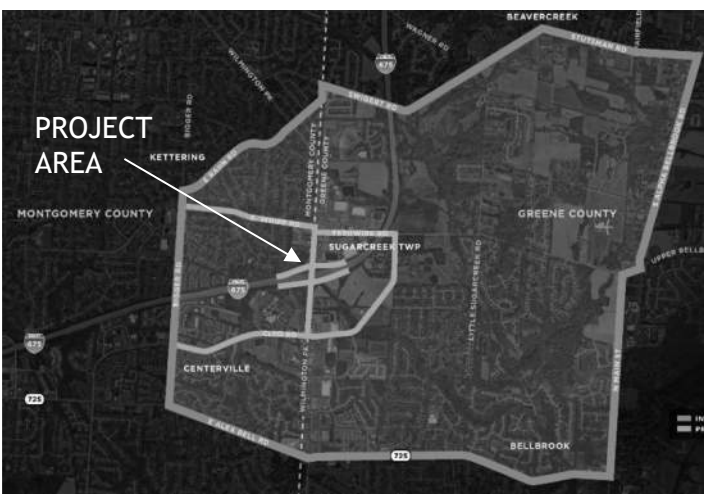
Tuesday July 18, 2023 at 12:00 pm

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CONTACT

Crystal Corbin, Executive Director, MCTID
ccorbin@mctid.org • (614) 530-0884

LEARN MORE ONLINE

mctid.org/i-675-wilmington-pike-interchange-project/

Public participation is solicited without regard to race, color, sex, age, national origin, or disability.

PID 115160

[redacted]

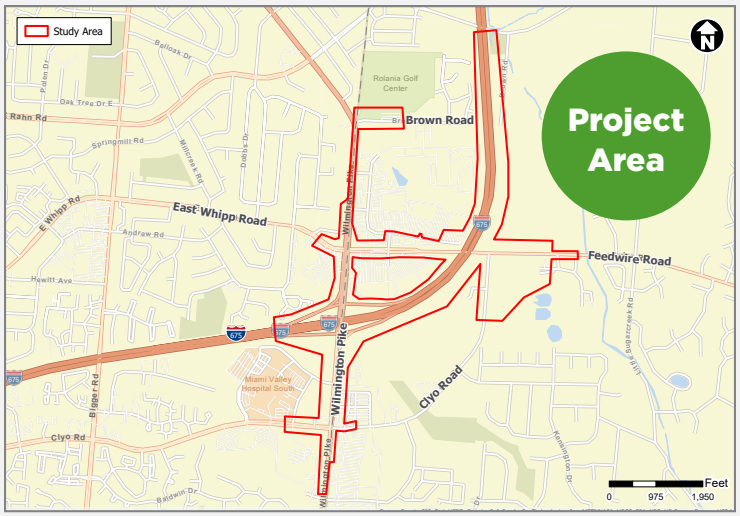
I-675 WILMINGTON PIKE IMPROVEMENTS

PROJECT DESCRIPTION

The Interstate 675 and Wilmington Pike interchange can be challenging to navigate. Increased traffic and congestion are resulting in travel delays and elevated crash rates. The Montgomery County Transportation Improvement District (MCTID) along with Sugarcreek Township, the Greene County Engineer's Office, the City of Centerville and the Ohio Department of Transportation (ODOT) Districts 7 and 8 partnered to study the interchange and identified the following key contributing factors:

- There is traffic congestion along Wilmington Pike, including the I-675 interchange as well as the Wilmington Pike/Feedwire Road and the Wilmington Pike/Clyo Road intersections
- Traffic exiting I-675 southbound onto Wilmington Pike extends onto the highway during the evening rush hour
- The traffic congestion and backups on the interstate contribute to the elevated crash rates in the project area

To address these issues effectively, MCTID and its project partners have determined it is necessary to make improvements to reduce congestion and improve safety in the I-675 and Wilmington Pike interchange area.



IMPROVEMENT ALTERNATIVES

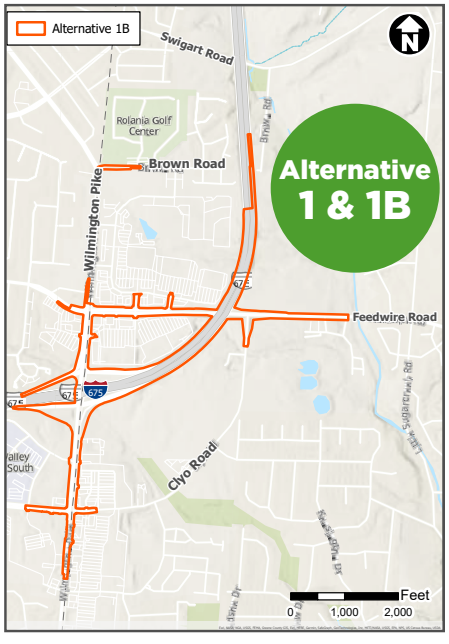
MCTID and its project partners are evaluating several proposed alternatives for the interchange. Concepts under consideration include:

▶ Alternative 1 – Upgrade the Existing Interchange:

Add Lanes To:
- Wilmington Pike
- Brown Road
- Feedwire Road
- I-675 ramps

Widen:
- Feedwire Road bridge (5 lanes) over I-675
- I-675 bridge over Wilmington Pike (12 lanes)

Add Bicycle/ Pedestrian Paths:
- Wilmington Pike
- Feedwire Road



Improvement Alternatives continued

- **Alternative 1B – Diverging Diamond Interchange:**
  Converts the existing interchange to a Diverging Diamond Interchange (DDI) and includes the following upgrades:

Add Lanes To:
- Wilmington Pike
- Brown Road
- Feedwire Road
- I-675 ramps

Widen:
- Feedwire Road bridge (5 lanes) over I-675
- I-675 bridge over Wilmington Pike (9 lanes)

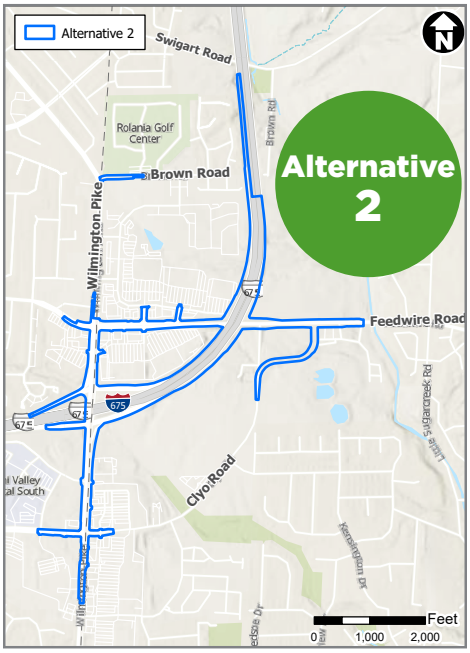
Add Bicycle/ Pedestrian Paths:
- Wilmington Pike
- Feedwire Road

The location of the improvements for Alternatives 1 and 1B are shown on page 1.

- **Alternative 2 – Split Interchange:**
  Converts the existing interchange to a split interchange resulting in two interchanges with access to I-675 from both Wilmington Pike and from Feedwire Road. This would require a relocation of a portion of Clyo Road and the construction of a local access road along I-675. Improvements also include:

Widen:
- Feedwire Road bridge (8 lanes) over I-675

Add Bicycle/Pedestrian Paths:
- Wilmington Pike
- Feedwire Road



SCHEDULE

This project is in the planning phase of ODOT's Project Development Process. ODOT and project partners are currently studying the alternatives and no decisions have been made at this time.

Using the results of current study efforts and input to be gathered during the public involvement meeting in July 2023, the project team's goal is to identify a preferred alternative by fall 2023. Detailed design and construction phases will follow.

TRAFFIC IMPACTS

ODOT works to minimize delays and impacts to the surrounding communities, businesses and residents as much as possible during construction. Anticipated impacts to traffic in the area will be dependent on the alternative chosen for the project. Traffic will be detoured if necessary.

FUNDING

This project is currently expected to cost* between $70-82 million. This estimate will be refined as project development advances to a future preliminary engineering phase. Funding will likely come through a variety of federal and state resources as well as through the project partners.

**Note that cost does not include right of way acquisition or utility relocation or inflation.*

PROJECT COMMENTS

Comments about this project are welcomed and encouraged. Please submit comments via phone, email, or mail to:

Crystal Corbin,
Executive Director, MCTID
ccorbin@mctid.org
614-530-0884

Montgomery County Transportation Improvement District
451 West Third St., 10th Floor
Dayton, Ohio 45422-1075

Comments on the proposed alternatives should be submitted by **August 18, 2023**.

MCTID will respond to all comments received. Please reference MOT/GRE-I-675/ Wilmington Pike PID 115160 in emails and letters.

The environmental review, consultation and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by ODOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12/14/2020, and executed by FHWA and ODOT.

SEE MORE AT MCTID.ORG

PROJECT PARTNERS

GREENE COUNTY ENGINEER
Sugarcreek OHIO
CITY OF CENTERVILLE OHIO
MONTGOMERY COUNTY
TRANSPORTATION IMPROVEMENT DISTRICT

A TIMELY, COST-EFFECTIVE SOLUTION

A DDI can cost less – in some cases as much as 75 percent less – than an equivalent conventional diamond or single point urban interchange.[4] DDIs often require fewer lanes than a conventional design to handle the same amount of traffic. A smaller project footprint means less right-of-way is needed, resulting in fewer impacts to adjacent areas. All of this makes a DDI alternative cheaper, easier, and quicker to construct.

INTEGRATING ALL USERS

The benefits of a DDI are not limited to just vehicle traffic – safe and convenient pedestrian walkways and crossings are important components of any well-designed interchange. At a DDI, pedestrian walkways are located either through the median or along the sides of the crossroad, while bicycle lanes are placed in the customary location to the right of traffic. Crosswalks are simpler and involve crossing fewer lanes at a time.

Given the importance of freight movement through interchanges, a DDI also is designed to accommodate large commercial vehicles. The ability of trucks to turn on to and off of the ramps and navigate along the crossroad is not inhibited with a DDI. In surveys of commercial drivers using the Springfield (Missouri) DDI, 83 percent of respondents felt that maneuvering a large truck through the interchange was easy and no different from other interchange types.[5]



Center Pedestrian Refuge, Springfield, MO DDI
Source: DDI Video FHWA-SA-14-019



Trucks Using a DDI in Salt Lake County, UT
Source: DDI Video FHWA-SA-14-019

SOURCES

[1] FHWA, *Techbrief: Double Crossover Diamond Interchange*, FHWA-HRT-09-054 (Washington, DC: 2009). Available at: https://www.fhwa.dot.gov/publications/research/safety/09054/index.cfm

[2] Missouri DOT, *Diverging Diamond Interchange Performance Evaluation* (I-44 and Route 13), OR11-012 (2011). Available at: https://ntlrepository.blob.core.windows.net/lib/36000/36000/36038/or11012.pdf

[3] Praveen Edara, Joe Bared, and Ram Jagannathan, "Diverging Diamond Interchange and Double Crossover Intersection – Vehicle and Pedestrian Performance," *Transportation Research Record* 1912 (2005):31-38

[4] The Official Website of the DDI - "A Diamond Interchange With a Twist." Available at: https://divergingdiamond.com/

[5] Missouri DOT, *Diverging Diamond Interchange Performance Evaluation (I-44 and Route 13)*, OR11-012 (2011). Available at: https://trid.trb.org/view/1098716

CONTACT

Jeffrey Shaw, P.E.
FHWA Office of Safety
202.738.7793
jeffrey.shaw@dot.gov

Mark Doctor, P.E.
FHWA Resource Center
404.895.6210
mark.doctor@dot.gov

FHWA-SA-14-039 Revised July 2020

DIVERGING DIAMOND INTERCHANGE



Atlanta, GA DDI
Source: Google Earth

AN INNOVATIVE, PROVEN SOLUTION FOR IMPROVING SAFETY AND MOBILITY AT INTERCHANGES

U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives
http://safety.fhwa.dot.gov

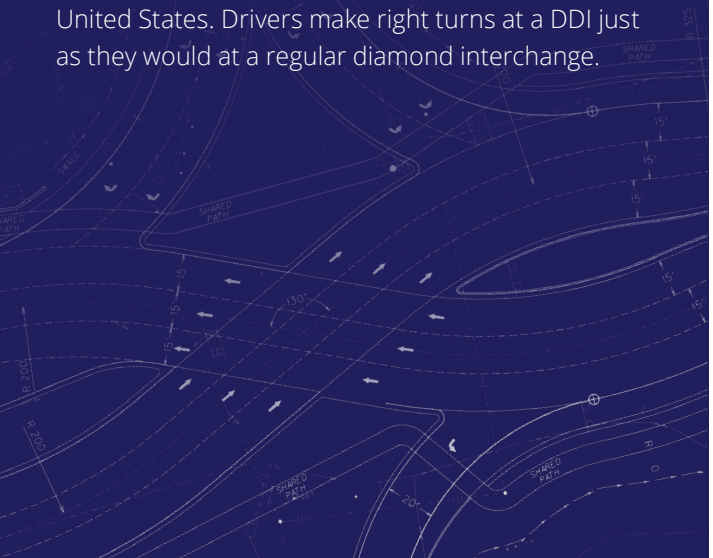
Motorists, pedestrians, and bicyclists face greater mobility challenges and safety risks at interchanges as traffic volumes grow and congestion worsens. Agencies need safer, more balanced designs that keep people moving. Innovative intersection designs represent a solution, and are being built more often because they can deliver more for less.

WHAT IS A DIVERGING DIAMOND INTERCHANGE?

A DDI is sometimes referred to as a ***Double Crossover Diamond*** (DCD)

The Diverging Diamond Interchange (DDI) is a simple design innovation that improves safety and mobility, often at a much lower cost, compared to conventional interchange designs. The key to what makes a DDI work so well is how left turns are handled.

The DDI resembles a conventional diamond interchange, which is the most common form in the United States. Drivers make right turns at a DDI just as they would at a regular diamond interchange.



The crossover intersections are what make DDIs different, and they are very intuitive for the driver. The crossovers gently transition – or diverge – traffic from the right side of the road to the left side of the road and then back again. Because traffic is on the left hand side between the crossovers, all left turns occur without having to cross opposing traffic. The road geometry, signs, and pavement markings all work together to make this very simple. In cities where DDIs have been built, drivers say they don't even notice the crossover intersections.

Diverging Diamond Interchanges are almost always worth considering as an alternative, but particularly if a location has any of the following characteristics:

- Heavy volumes of left turns on to and off of freeway ramps.
- Moderate but unbalanced crossroad traffic volumes through the interchange.
- Left turn related safety concerns at the interchange intersections.
- A need for additional capacity without widening the roadway and bridge(s).[1]

IMPROVING SAFETY WHILE INCREASING THROUGHPUT

A potential conflict exists each time a vehicle, pedestrian, or bicycle crosses or turns across the path of another direction of traffic. Compared to a conventional diamond interchange, the DDI reduces vehicle-to-vehicle conflict points by nearly 50 percent and eliminates many of the most severe crash types. An evaluation of the Springfield (Missouri) DDI compared crashes from the first year after construction to the 5-year average before the DDI, and found the following:

- Left turn crashes were totally eliminated.
- Right angle crashes were reduced 72 percent.
- Rear end crashes were reduced 29 percent.
- Total crashes were reduced 46 percent.[2]

A separate study comparing DDI designs to conventional diamond interchange designs modeled a range of high and low traffic volume combinations.[3] For higher traffic volumes, the DDI designs demonstrated better overall performance, reducing delay by 15-60 percent and increasing throughput by 10-30 percent. The DDI was able to accommodate twice the left turn traffic as the conventional design.

Opened in 2009, the DDI in Springfield (Missouri) was the first in the United States. Since then, dozens more have been built in several states, and they have quickly become a popular interchange design option. Where they have been built, travelers save time, agencies saved money, and communities will benefit from safer facilities for many years.



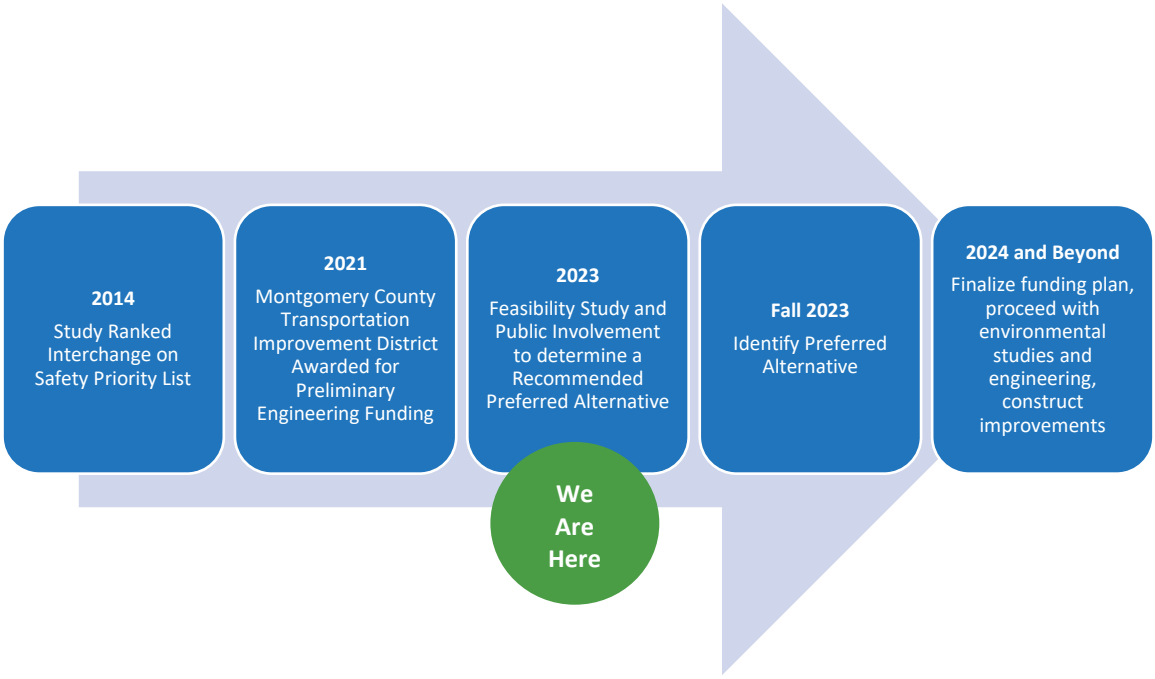
Springfield, MO DDI
Source: DDI Video FHWA-SA-14-019

Purpose of the Project

- Reduce Congestion
- Improve Safety
- Improving Pedestrian Connectivity
- Support Economic Development

Evaluation Criteria	No Build	Alternative 1	Alternative 1B	Alternative 2
	Existing Conditions	Upgrade Diamond Interchange + Network Capacity Improvements	Diverging Diamond Interchange + Network Capacity Improvements	Split Interchange w/Feedwire Rd + Network Capacity Improvements
Congestion (Primary)	Majority of study area intersections operate at unacceptable levels of service (LOS E and F) in the 2050 Design Year	NB and SB I-675 Ramp intersections operate at unacceptable levels of service (LOS E and F) in 2050 Design Year	Acceptable levels of service (LOS D or better) at all study intersections	Acceptable levels of service (LOS D or better) at all study intersections
Safety (Primary)	Multiple segments and intersections on the ODOT and MVRPC safety priority lists	Safety performance issues expected at the NB and SB I-675 ramp intersections due to queues extending onto I-675 and through adjacent intersections; urban ramp (#80) on ODOT HISP list	Greater safety performance improvements achieved within study area: Predicted crash frequency reduction (-44.3 crashes per year)	Safety performance improved within study area: Predicted crash frequency reduction (-24.9 crashes per year

Project Timeline



Project Cost and Funding

Alternative 1	Alternative 1B	Alternative 2
$70.6 Million*	$71.4 Million*	$82.1 Million*

*Note that costs do not include right of way acquisition, utility relocation or inflation

Potential Funding Sources

- Highway Safety Improvement Program (HSIP)
- Project Partners
- Transportation Review Advisory Council (TRAC)
- Miami Valley Regional Planning Commission (MVRPC) Congestion Mitigation Air Quality (CMAQ)
- Tax Increment Financing (TIF) Districts
- State Infrastructure Bank (SIB)
- Developer Impact Fees
- Special Assessment Districts

Comparison of Alternatives

Evaluation Criteria	No Build	Alternative 1	Alternative 1B	Alternative 2
Congestion (Primary Need)				
Safety (Primary Need)				
Pedestrian Connectivity (Secondary Need)				
Right of Way Impacts				
Environmental Resource Impacts				
Construction Cost*	$0	$70.6 Million	$71.4 Million	$82.1 Million

*Note that the reported costs do not include right of way, utility relocation or inflation

Legend


Lower Benefit
or Greater Environmental Impact



Medium Benefit
or Medium Environmental Impact




High Benefit
or Lower Environmental Impact


Not Applicable/ Neutral

Travel Time Comparison

Travel Scenario		Travel Times (Minutes)			
		No Build	Alt 1	Alt 1B	Alt 2
Northbound I-675 (2000’ from Wilmington Pike) to Brookdale Blvd (Waterford at Sugarcreek apartments access) – 1.57 miles		13.2	7.7	5.4	2.7
Southbound I-675 (5000' from Wilmington Pike) to Morris Furniture access on Whipp Road – 1.25 miles		8.0	3.1	3.1	3.2
Northbound on Wilmington Pike (1000' from Clyo) to 500' north of Brown Road – 1.4 miles		9.8	6.2	4.8	4.5

WILMINGTON PIKE INTERCHANGE PROJECT

SIGN IN ONLINE!

SIGN-IN SHEET

Name	Street Address	City	State	Zip Code	Phone	Email
JACALYN PARRETT	2460 Periwinkle	BEAVERCREEK	OH	45305		
Chris Patricia Wantz	4256 E. Centerville Road	Spring Valley	OH	45370	937-367-7603	

LEARN MORE ABOUT THE PROJECT AT MCTID.ORG/I-675-WILMINGTON-PIKE-INTERCHANGE-PROJECT/

WILMINGTON PIKE INTERCHANGE PROJECT

SIGN IN ONLINE!

SIGN-IN SHEET

Name	Street Address	City	State	Zip Code	Phone	Email
Jason Wade	5023 Lausanne Dr.	Centerville	OH	45458		
Mike Schmidt	3579 Bittersweet Rd	Beavercreek	OH	45385		
Lauraine Longson	1345 Soaring Hgts Dr	Sugarcreek Twp	OH	45440		
Don Longson	1345 Soaring Hgts Dr.	Sugarcreek Twp	OH	45440		
Pat + Don Roudff	3662 E. Soloria Cir	Sugarcreek Twp	OH	45440		
Carol Adamb	1370 E. Centerville Station Rd	Centerville	OH	45459	937 367-5773	
Mike Bednarek	7507 James Bradford Dr	Centerville	OH	45459	937-438-5339	
Carolyn Destefani	2815 Upper Bellbrook Rd	Sugarcreek Twp.	OH	45350		
Mark Edgington	1038 Bentgrass Ln	Centerville	OH	45458		
Tom Flask	6780 Rockside Woods South #290	Independence	OH	44131		
ALAN DEIKE	2551 TEDBURN CT	CENTERVILLE	OH	45459		

LEARN MORE ABOUT THE PROJECT AT
MCTID.ORG/I-675-WILMINGTON-PIKE-INTERCHANGE-PROJECT/

WILMINGTON PIKE INTERCHANGE PROJECT

SIGN IN ONLINE!

SIGN-IN SHEET

Name	Street Address	City	State	Zip Code	Phone	Email
George Oberer JR	3445 NEWMARK DR.	MIAMISBURG	OH	45324	937-531-5501	goojr@oberer.com
Bonnie Warner	4159 Possum Run Rd	Bellbrook	Oh	45305	937-356-9780	bonnie3warner@aol.com
Journal Gazette	855 Deer Run Rd	Centerville	OH	45459	937-657-9969	
Cheryl & Michael Robinson	7851 Wilmington	Dayton	OH	45458	937-620-2440	
Ed Griffith	7825 John Elwood R.	Centerville	OH	45459	937-272-3320	
Latonia Peat-Brown	5805 Clyo Rd	Centerville	OH	45459	937-512-3097	
Sivaji Subramaniam	1240 Bairnard Woods Dr.	Centerville	OH	45458	937-902-7435	
Tom Westendorf	4169 SWIGART RD	Kettering	OH	45440	937-269-8636	farmerwestendorf@gmail.com
Adam Treiber						
David Sykes	Mot Co.					
ROBERT ULRICH	4832 LAURELANN DR	KETTERING	OH	45429	937-435-0717	pvtbd.@yahoo.com
Gail Ulrich	4832 LAURELANN DR	Kettering	OH	45429		
Jeff Stewart	2851 Washington Mill	Bellbrook	OH	45305	937-848-3335	JStewart@bellbrookparks.org

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Name	Street Address	City	State	Zip Code	Phone	Email
Sue Shay	7887 Lockport Blvd	CV	OH	45459	[redacted]	SBCGLOBAL.NET
LEO SCHOLL	6401 SANIBEL DR	DAYTON	OH	45459	937-901-0165	LSCHOLL
Wilma Scholl	" " "	"	"	"	—	—
SARA GILSON	6391 Adami Circle	Centerville	OH	45459		sara@gilsons.org
Ken Curell	6512 Atterbury Ct	C'ville	OH	45459	9374783601	curellk@gmail.com
Don Rauff	3662 E. Salinas	S.C. TSP	OH	45440	937-848-3114	
DENISE MOORE	4360 NAPA Valley Dr	S.C. TSP	OH	45305	937-848-6880	denise.moore51@outlook.com
Bill Montgomery	4093 Clarkston Dr	Bellbrook	OH	45305	9376715676	BillL.Jr@ATT.net
Bill DRIVER	1541 Clear Brook Dr	"	"	45440	937-848-4090	wdriver54@aol.
Joseph Peters	5073 Wilmington Pike	Centerville	OH	45440	740-517-1455	peters_joseph@msn.com
Stephen Rau	1370 Seminary View Dr	Centerville	OH	45458	937-203-5657	—
Michael Baumer	4236 Clearview Ct	Bellbrook	OH	45435	937-671-9600	michael.baumer@wright.edu
KIM GROTE	5418 NEWELL DR	KETTERING	OH	45440		
JOE ESPETAGE		MIAMISBUC				
VEENA MADINENI	2500 Newmark Drive	Miamisburg	OH	45432		

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WILMINGTON PIKE INTERCHANGE PROJECT

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Name	Street Address	City	State	Zip Code	Phone	Email
FRED CRAMER	1873 RIVER RIDGE	SPRING VALLEY	OH	45370	937-572-0999	SUGARCREEKOH.US FCRAMER@
Mariah Vogdgera	100 W. Spring Valley Rd.	Centerville	OH	45458	937-428-9714	
STEVE STANLEY	COUNTY ADMIN BLDG-10th	DAYTON	OH	45422	937-673-3852	SSTANLEY@MCTID.ORG
Mark Chandler	422 Factory Rd	Beavercreek	oh	45435	937-562-7169	
mark.chandler@greenecountyohio.gov						
Luke Rogers	615 Dayton Xenia Rd	Xenia	OH			luke.rogers@greenecountyoh.gov
Kelly Miller	615 Dayton Xenia Rd.	Xenia	OH	45385	937-562-7512	kelly.miller@ch2m.com
Tom Mazza	505 Ohio 741	Lebanon	OH	45036	513-933-6591	
Scott Knebel	7777 Washington Village Drive	Dayton	OH	45459	937776-1040	sknebel@cutlergr.com
ANDY SHAHAN	4870 MEDLAR RD.	MIAMISBURG	OH	45342	937 2595180	ashahan@LJBinc.com
Erin Smith	1345 Meadowbright Ln.	Cincinnati	OH	45230		
Heather Lacey						
~~JOE~~						

LEARN MORE ABOUT THE PROJECT AT
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WILMINGTON PIKE INTERCHANGE PROJECT

SIGN IN ONLINE!

SIGN-IN SHEET

Name	Street Address	City	State	Zip Code	Phone	Email
PAT TURNBULL	CENTERVILLE					
Brian Marth	MVRPC					
Dale Owens	Sugarcreek Twp					
Josh Darnell	Sugarcreek twp					
Graham Gillaspy	Centerville					
Kendal Lieberman	Centerville					
Wayne Davis	Centerville, City of.					
Doug Buffenbarger	Sugarcreek Fire					
Eric Henry	Greene Co					
SARAH SPEES	DIC					
Taylor Stinson	Sugarcreek twp					
TIM FRANCK	WASHINGTON TWP					
Steve Bergstresser	Kettering					
Madeline Iseli	Sinclair College					
JOSEPH ZOTS	CENTERVILLE					
JoAnne Rau	Centerville City Council					

LEARN MORE ABOUT THE PROJECT AT
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WILMINGTON PIKE INTERCHANGE PROJECT

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Name	Street Address	City	State	Zip Code	Phone	Email
Lexi Voller	Centerville					
Taylor Koors	Centerville					
Jeff Wichman	Montgomery County					
Suzanne Rummel	Greene County					
Scott Schmid	1001 St. Marys Ave Sidney	Sidney	OH	45365	937 497 6683	Scott.schmid@dot.ohio.gov
Courtney Fuhrman	2040 Troy Rd	Sugarcreek Centerville	OH	45305	937-848-4926	
Tonya Tate			OH	45459	937 620 4131	mtate@woodmen-montgomery.com
Mike Thomerson	Washington Township					
David Sparks	Mont. Co.	Dayton	OH	45402	937-776-2314	
Brooks A. Compton	350 Rosslake Drive, C	Centerville	OH	45458	937-604-1753	
Randy Gilbert	667 Dayton-Xenia	Xenia	OH	45385	937-562-7499	randy.gilbert@greenecountyoh.gov
Chris Kershner	8 N. Main St	Dayton	OH	45402	937-776-3161	CBK@dot.ohio.gov
Stephanie Groff	Greene County Engineer	&				
Stephanie Kenrath	5742 Terrace Pk Dr	Dayton	OH	45429		Skenrath@dot.ohio.gov
PAUL GOODINE	DAYTON, OH					
Bill Serra	6536 Athrebby Court	centerville	OH	45459	937-266-1256	Bill.serra@outlook.com

LEARN MORE ABOUT THE PROJECT AT
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WILMINGTON PIKE INTERCHANGE PROJECT

SIGN IN ONLINE!

SIGN-IN SHEET

Name	Street Address	City	State	Zip Code	Phone	Email
Taylor Webster	505 S SR 741	Lebanon	Oh	45036	513-933-6597	Taylor.Webster@dot.ohio.gov
LUCY ZELINSKI	505 S SR 741	Lebanon	OH	45036		
DONNA HELLMANN	3981 WINDY BLUFF CT	SUGARCREEK TWP	OH	45440		
ANNE WOLF	STREEM BRANCH DR.	CENTERVILLE	OH	45459		
JL Dr	Bellbr~Dr	Bellbrook	OH	45305		
Doreen & RANDY Elliott	4301 MANTELL CT	SUGARCREEK TWP	OH	45440		
JOHN PALCHER	1461 CLOVERCREST LN	CENTERVILLE	OH	45458		
Marvin Moeller	3614 Middle Run Rd	Springvalley	OH	45370		Leaderdude@Aol.
LARRY MATTEY	1393 Timshel ST	SUGAR CREEK TWP	OH	45440	937-848-4567	
Ann Raney	5147 Wilmington Pk.	Centerville	OH	45440	937-545-1003	amraney2013@gmail.com
Joe Shank	1062 Hollowcreek Ct.	Miamisburg	OH	45342	937-305-5780	dbee1956@gmail.com
Debbie Swigart	5310 Grantland Dr.	Kettering	OH	45429	937-307-2926	
Barb Tellinger	4360 Napa Valley Drive	Bellbrook	OH	45305	937-848-6880	btellinger@insightbb.com
Terry Smith	5002 Lausanne Dr	Centerville	OH	45458	937-232-8393	terryksmith2@gmail.com
Janet Bednarek	7507 James Bradford Dr.	Centerville	OH	45459	937-438-5338	jrbednarek@woh.rr.com
ROSE DRIVER	1541 CLEAR BROOK DR.	SUGARCREEK TWP	OH	45440		

LEARN MORE ABOUT THE PROJECT AT
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Online Sign Ins for In Person Public Open House

Name	Representing	Address	Email	Phone
Jennifer Miller	Self	89 Lakeview Dr	jennmiller42@sbcglobal.net	19376893638
Eddie Drow			eddie.drow@gmail.com	
Gavin Smiley			jetty.smiley@gmail.com	
Kenneth Hodges	Self	6350 Luntshire Ct	chip.hodges@sbcglobal.net	19374779823
Jene Curell		6512 Atterbury Ct	jdaay@aol.com	19374783611
Bradley Fizer		8190 Mcewen Rd	fizerb@mcohiosheriff.org	19374322721
Kate Bostdorff			kbostdorff@centervilleohio.gov	
Samantha Scarfo	Greene County	615 Dayton Xenia Rd	sam.scarfo@greenecountyohio.gov	
Kate Bostdorff	Centerville		kbostdorff@centervilleohio.gov	
Crystal Corbin	MCTID	451 W. Third St	ccorbin@mctid.org	16145300884
Joey OBrien	City of Centerville		jobrien@centervilleohio.gov	19374284762
Chuck Cowgill	Centerville City Schools	111 Virginia Ave	chuck.cowgill@centerville.k12.oh.us	19372871941
Nick Bergman	Washington Township Fire	8320 McEwen Rd	nick.bergman@washingtontwp.org	19376814909
Scott Kujawa	Washington Township Fire Dept	8320 McEwen Rd	scott.kujawa@washingtontwp.org	19374333083
Heather Lacey	CMT	7777 Washington Village Dr	hlacey@cmtengr.com	19373070744

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: _____

Mailing address (or nearest cross streets): _____

_____

Email address: _____ **Phone:** _____

Address of impacted property (or nearest cross streets): _____

_____

Business/Organization Name: _____

Business/Organization Address: _____

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other: _____

How often do you travel in the project area?

☐ Daily ☐ A few times a week ☒ Weekly ☐ A few times a month ☐ Monthly
☐ Other: _____

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☐ Walk ☐ Other: _____

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

FIRST IMPRESSION - 1B, SEEMS TO BE BEST COMPROMISE OF COST & TRAFFIC EFFICIENCY

Other Comments:

CURIOUS ABOUT EMERGENCY VEHICLE ACCESS TO HOSPITAL DURING CONGESTED PERIODS OF THE DAY - NOT SURE IF ONE OPTION IS BETTER IN THAT SITUATION?

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: TERRY K. SMITH

Mailing address (or nearest cross streets): 5002 LAUSANNE DR

CENTERVILLE, OH 45458

Email address: [redacted] terryksmith2@gmail.com **Phone:** 937-232-8393

Address of impacted property (or nearest cross streets): same as above

Business/Organization Name:

Business/Organization Address:

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other:

How often do you travel in the project area?

☐ Daily ☒ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other:

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☐ Walk ☐ Other:

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

Alternative 2 – very strongly favorable

Alternative 1 – next favorable (minimal) Alternative 1B – Strongly opposed

Other Comments: Need to also look at measures to control future development and favor lower-density, lower-traffic uses.

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: Sue Shay

Mailing address (or nearest cross streets): 7887 Lockport Blvd
CV 45459

Email address: sue_shay@att.net **Phone:** 937.830.6835

Address of impacted property (or nearest cross streets):
Alex Bell / Clyo Rd

Business/Organization Name:

Business/Organization Address:

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other:

How often do you travel in the project area?

☐ Daily ☒ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other:

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☐ Walk ☐ Other:

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area? Option 2! Then, if that isn't enough, do 1B.

Other Comments: 1B is crazy.

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: Jena Curell

Mailing address (or nearest cross streets): 6512 Attenbury Ct 45459

Email address: Jenecurell@gmail.com **Phone:** (937) 478-3611

Address of impacted property (or nearest cross streets): _____

Business/Organization Name: _____

Business/Organization Address: _____

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other: _____

How often do you travel in the project area?

☒ Daily ☐ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other: _____

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☒ Walk ☐ Other: _____

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

Loved #2 Really appreciate the traffic pressure at Wilmington Pike as well as the bike lanes and sidewalks

Other Comments:

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

Accommodating Bicyclist on Road, I-675 & Wilmington Interchange Area

Greene and Montgomery Counties are at the forefront of bike trails but its acceptance of bicyclist on the roads could be better.

For too many years, 'Complete Streets' has been ignored while the motorist has been privileged. The prioritization of the convenience of the motorist has resulted in sky rocketing non-motorists deaths because streets are too easy to drive and too many motorists believe they do not need to pay attention while driving. Too often, juveniles see our wide open street as drag strips.

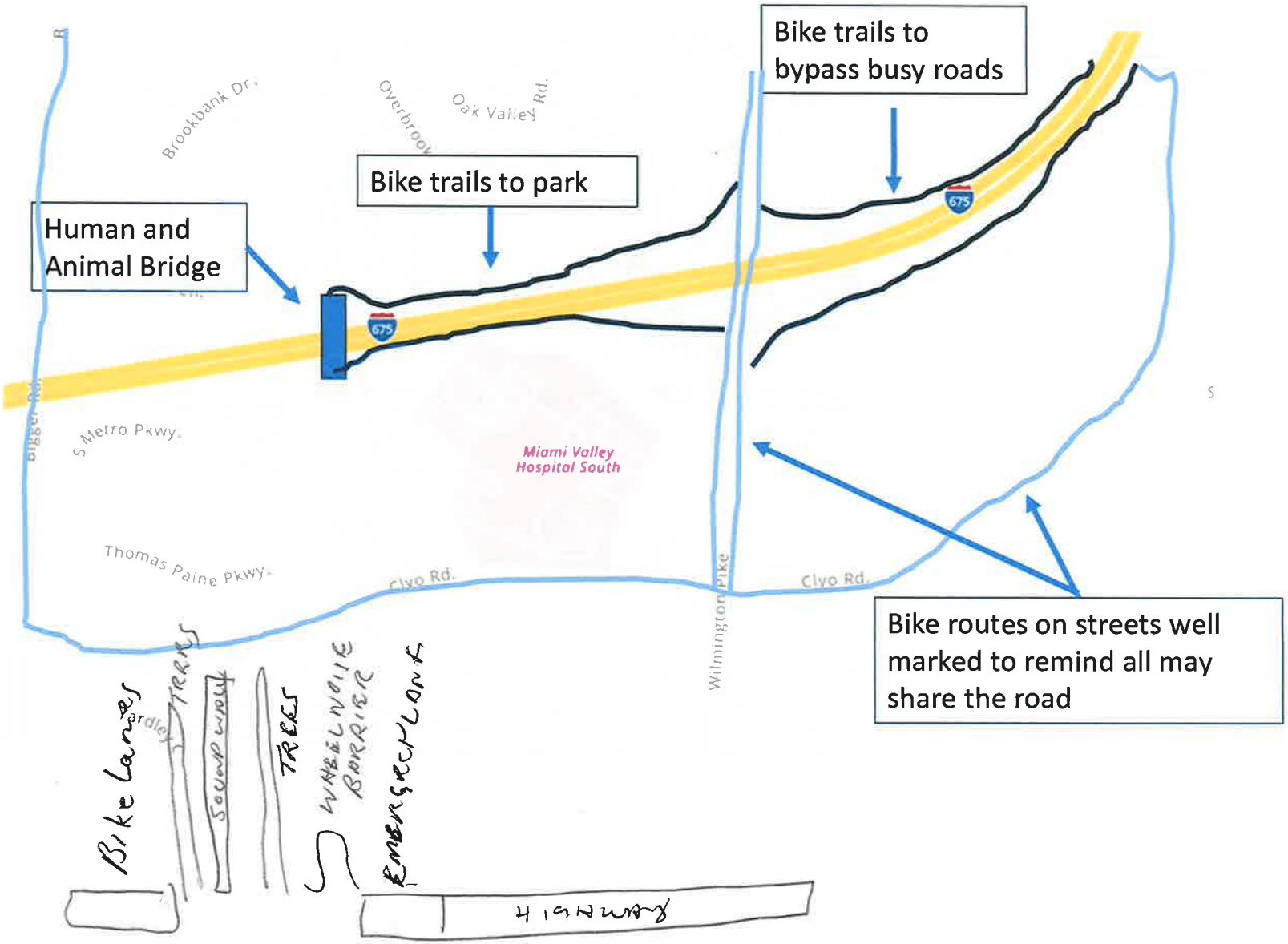
To be sure, the number of bad drivers is small. When I ride my bicycle on streets like Wilmington, Feedwire and Clyo, over 99 out of 100 drivers pass me responsibly and courteously. But that one percent can be dangerous. For some reason, there are a few drivers on the roads who don't recognize the rights of the bicyclist to ride in the lane. Instead of seeing the bicyclist as another slow moving vehicle, they sometimes get outraged that they have to take 15-20 seconds to maneuver around them.

Please take this opportunity to evaluate potential bicycle traffic in all directions. Since it is not always easy to "keep right," I am asking that sharrows on the pavement be added for all lanes to help motorists remember that "Bikes May Use Full Lane" always, and that all vehicles must always "Share The Road".

Finally, I ask that you use social media to collect more information from the public on the proposed roundabout. Comments to my Facebook posts in the group "Paved Bike Trails of Ohio" were illuminating. They ranged from wholehearted support to begging me to not ride on major streets, even though it is fairly safe outside of rush hour. What most of the comments share is a tacit recognition that riding bikes on our public roadways can be terrifying, and that should NEVER be the case.

Thank you,

Dan Kien, Dayton, OH


Bike trails to bypass busy roads
Bike trails to park
Human and Animal Bridge
Brookbank Dr.
Overbrook
Oak Valley Rd.
675
S Metro Pkwy.
Miami Valley Hospital South
Thomas Paine Pkwy.
Clyo Rd.
Clyo Rd.
Wilmington Pike
Bike routes on streets well marked to remind all may share the road
Bike Lanes
TREES
SOUND WALL
TREES
WHEELCHAIR BARRIER
EMERGENCY LANE
HIGHWAY

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160
Demographics Form

Thank you for taking a few minutes to complete this survey. **Answering the following questions is optional** but your response will be extremely helpful in ensuring the fairness and equity of ODOT's public involvement process. Submissions will be kept confidential and separate from any personally identifiable information so that respondents will remain anonymous. These questions are not listed in any particular order.

What is your race?
□ Black or African American □ American Indian or Alaskan Native □ Asian □ Hispanic or Latino
☒ White □ Native Hawaiian or Other Pacific Islander
□ I prefer to self-describe: _____

What is the primary language spoken in your home?
☒ English □ Spanish □ Other (Please specify): _____

Was project information translated into other languages appropriately?
□ Yes □ No ☒ Not Applicable

How many people live in your household?
☒ 1 - 2 □ 3 - 5 □ 6 +

What are the age ranges of those living in your household? *(Check all that apply.)*
□ Under 18 □ 19 - 44 ☒ 45 - 64 □ 65 +

What is your annual household income?
□ Less than $10,000 □ $10,000 - $24,999 □ $25,000 - $49,999 □ $50,000 - $74,999
□ $75,000 - $99,999 □ $100,000 - $149,999 ☒ $150,000 +

What is the highest level of education completed by members of your household?
□ No □ Elementary school □ Middle school □ High school ☒ College/university
□ Other: _____

Do any individuals living in your home have a physical or mental impairment which substantially limits one or more major life activities?
□ Yes ☒ No

Please suggest additional ways you think ODOT can improve the inclusiveness of our public outreach efforts.

_____

_____

_____

Thank you for helping ODOT improve its public involvement practices!

Please submit this page only:
Email to PublicInvolvement@dot.ohio.gov
Mail to:
Public Involvement
Ohio Department of Transportation
1980 W. Broad Street, MS4170
Columbus, OH 43223

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: ANN RANEY

Mailing address (or nearest cross streets): 5147 WILMINGTON PK CENTERVILLE OH 45440-2248

Email address: amraney2013@gmail.com **Phone:** 937-245-1003

Address of impacted property (or nearest cross streets): _____

Business/Organization Name: _____

Business/Organization Address: _____

How did you hear about this meeting? *(Select all that apply.)*

☐ Newspaper ☑ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☑ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☑ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other: _____

How often do you travel in the project area?

☑ Daily ☐ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other: _____

How do you usually travel through the project area? *(Select all that apply)*

☑ Automobile ☐ Bicycle ☑ Walk ☐ Other: _____

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

1B - Most cost effective; should address congestion and safety. Congestion issues occur at specific times of day and seasonally (Christmas, Black Friday)

Other Comments:

2 is major costly construction that appears to be unnecessary at this time. IMHO

Thank you. Applaud your time and proactive efforts!

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

FOLD HERE

Mrs. Ann Raney
5147 Wilmington Pike
Dayton, OH 45440-2248

COLUMBUS OH 430
22 JUL 2023 PM 1 L



FOREVER / USA

received
7/25/2023

Montgomery County Transportation
Improvement District
ATTN: Crystal Corbin, Executive Director
451 West Third Street,
10th Floor
Dayton, OH 45422

45422

FOLD HERE

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: Donald Rouff

Mailing address (or nearest cross streets): 3662 E. Salinas Cir.
Dayton Ohio 45440

Email address: _____ **Phone:** 937-848-3114

Address of impacted property (or nearest cross streets): _____
Cross street = ADAMS PL. and Feedwire Rd.

Business/Organization Name: ~

Business/Organization Address: ~

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other: _____

How often do you travel in the project area?

☒ Daily ☐ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other: _____

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☐ Walk ☐ Other: _____

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

_____

_____

Other Comments: Excellent Presentation !

_____

_____

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160
Demographics Form

Thank you for taking a few minutes to complete this survey. **Answering the following questions is optional** but your response will be extremely helpful in ensuring the fairness and equity of ODOT's public involvement process. Submissions will be kept confidential and separate from any personally identifiable information so that respondents will remain anonymous. These questions are not listed in any particular order.

What is your race?

☐ Black or African American ☐ American Indian or Alaskan Native ☐ Asian ☐ Hispanic or Latino
☒ White ☐ Native Hawaiian or Other Pacific Islander
☐ I prefer to self-describe: _____

What is the primary language spoken in your home?

☒ English ☐ Spanish ☐ Other (Please specify): _____

Was project information translated into other languages appropriately?

☒ Yes ☐ No ☐ Not Applicable

How many people live in your household?

☒ 1 - 2 ☐ 3 - 5 ☐ 6 +

What are the age ranges of those living in your household? *(Check all that apply.)*

☐ Under 18 ☐ 19 - 44 ☐ 45 - 64 ☒ 65 +

What is your annual household income?

☐ Less than $10,000 ☐ $10,000 - $24,999 ☐ $25,000 - $49,999 ☐ $50,000 - $74,999
☒ $75,000 - $99,999 ☐ $100,000 - $149,999 ☐ $150,000 +

What is the highest level of education completed by members of your household?

☐ No ☐ Elementary school ☐ Middle school ☐ High school ☒ College/university
☐ Other: _____

Do any individuals living in your home have a physical or mental impairment which substantially limits one or more major life activities?

☐ Yes ☒ No

Please suggest additional ways you think ODOT can improve the inclusiveness of our public outreach efforts.

_____

_____

_____

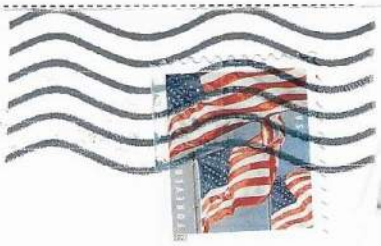
Thank you for helping ODOT improve its public involvement practices!

Please submit this page only:
Email to PublicInvolvement@dot.ohio.gov
Mail to:
Public Involvement
Ohio Department of Transportation
1980 W. Broad Street, MS4170
Columbus, OH 43223

FOLD HERE

Donald & Patricia Rauff
3662 E. Salinas Circle
Dayton, OH 45440

COLUMBUS OH 430
11 AUG 2023 PM 7 L



RECEIVED
08/14/2023
MONTGOMERY COUNTY – TRANSPORTATION IMPROVEMENT DISTRICT

Montgomery County Transportation
Improvement District
ATTN: Crystal Corbin, Executive Director
451 West Third Street,
10th Floor
Dayton, OH 45422

45422

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OHIO DEPARTMENT OF TRANSPORTATION

I-675 and Wilmington Pike, PID 115160

Public Comment Form

Contact information is not required but will ensure you receive a response, should one be required.

Name: Mike Baumer

Mailing address (or nearest cross streets): 4236 Clearview Cf
Bellbrook OH 45305

Email address: michael.baumer@wright.edu **Phone:** _____

Address of impacted property (or nearest cross streets): _____

Business/Organization Name: —

Business/Organization Address: —

How did you hear about this meeting? *(Select all that apply.)*

☒ Newspaper ☐ Mailed letter ☐ TV or radio ☐ Church ☐ Word-of-mouth
☐ ODOT website ☐ Social media ☐ Email ☐ Other:

What is your interest in the proposed project? *(Select all that apply.)*

☒ Area Resident ☐ Area business owner or employee ☐ Commuter
☐ Other: _____

How often do you travel in the project area?

☒ Daily ☐ A few times a week ☐ Weekly ☐ A few times a month ☐ Monthly
☐ Other: _____

How do you usually travel through the project area? *(Select all that apply)*

☒ Automobile ☐ Bicycle ☐ Walk ☐ Other: would love to see bike & Pedestrian or Runner use

What interchange improvement option - Alternative 1, 1B or 2, do you feel would benefit this area?

I feel adding another access to I-675 will be easier for drivers to understand & I don't think folks will adapt to 1B - Diverging Diamond - on paper - looks OK, But in Reality? oh NO!

Other Comments:

COMMENTS DUE BY
August 17, 2023

Comments may be submitted:

- Verbally or in writing after the public meeting
- By email at ccorbin@mctid.org
- By telephone at 614-530-0884
- Online at mctid.org/i-675-wilmington-pike-interchange-project/

FOLD HERE

COLUMBUS OH 430
26 AUG 2023 PM 1 L



Michael Baumer
4236 Clearview Ct.
Bellbrook, OH 45305

RECEIVED
08/29/2023
MONTGOMERY COUNTY – TRANSPORTATION IMPROVEMENT DISTRICT

Montgomery County Transportation
Improvement District
ATTN: Crystal Corbin, Executive Director
451 West Third Street,
10th Floor
Dayton, OH 45422

45422-

FOLD HERE

Heather Lacey

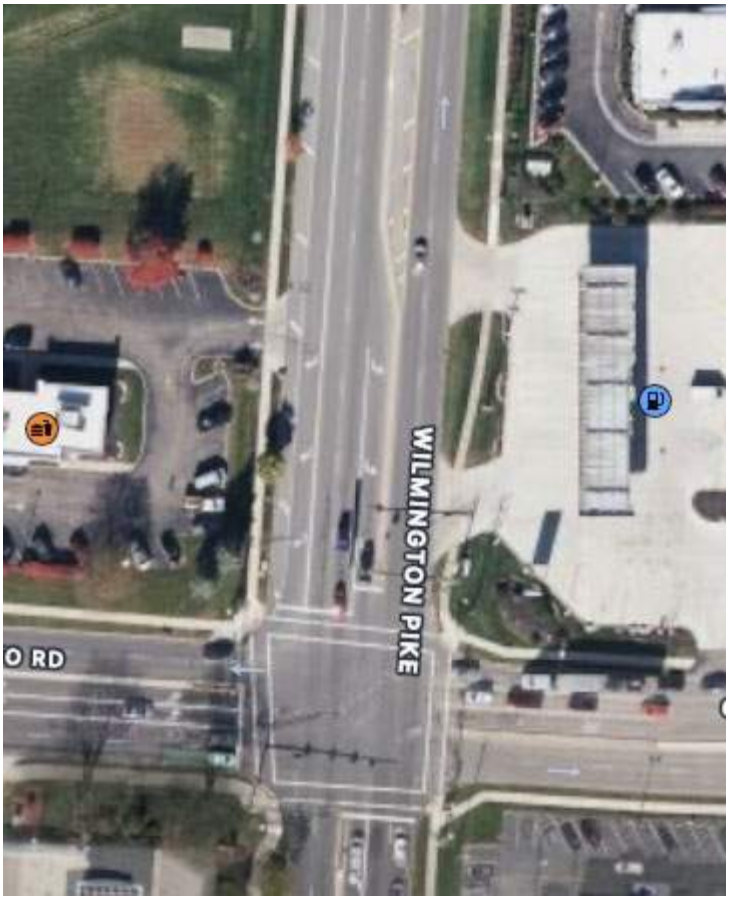
From: Robert Heidler <heidb21@icloud.com>
Sent: Monday, July 17, 2023 9:03 AM
To: Crystal Corbin
Subject: I-675/Wilmington Pk Interchange

Good Morning
I'm emailing in response to request for comments on this project.

Southbound traffic flow on Wilmington Pike between the 675 interchange and Clyo Rd would be greatly improved if the left turn lane from Wilmington Pike onto Clyo Rd were lengthened, allowing more cars to wait to turn without impeding through traffic. Currently, the left turn lane which is enclosed by a concrete median is not long enough to accommodate the volume of drives who want to turn on to Clyo at peak times. This causes people waiting to turn left to spill into the the left side through lane southbound, which blocks through traffic, and causes drivers to either wait or attempt to then get into the right side lane to go around the stopped traffic. Meanwhile, the northbound lanes of Wilmington Pike on the opposite side feature a left turn lane that goes nowhere- there is nothing to turn into on the hospital property. This seems like am easy, fast and inexpensive fix.

Also, this might be outside the scope of the project, but the intersection of Feedwire Rd and Little Sugarcreek Rd, which is about a mile from the interchange, I believe is also a source of backups that contribute to the congestion at the interchange and around Cornerstone. My opinion is that this intersection would be GREATLY improved by the addition of a roundabout or with the addition of signal controlled, dedicated left turn lanes on north and south bound Little Sugarcreek.

Thanks
Bob Heidler
Bellbrook


WILMINGTON PIKE
O RD

Heather Lacey

From: Jake Fannin <jacob.g.fannin@gmail.com>
Sent: Saturday, July 15, 2023 8:47 AM
To: Crystal Corbin
Subject: MOT/GRE-I-675/Wilmington Pike PID 115160

Dear Ms. Corbin,

I travel through the I-675/Wilmington Pike interchange daily to/from work. I wasn't able to attend the open house, but I'd love to see the interchange converted into a Diverging Double Diamond (similar to Union Centre/I-75 in West Chester and Roberts/I-270 in Hilliard). People are often hesitant at first (just like roundabouts), but those type of interchanges really help to smooth traffic flow.

Sincerely,

Jake Fannin
Centerville, OH Resident

From: dan.kien@gmail.com
To: Crystal Corbin
Cc: cdestefani@sugarcreekoh.us
Subject: I675 & Wilmington Interchange PID 115160
Date: Thursday, July 13, 2023 9:45:58 PM
Attachments: image001.png
Bikes at Wilmington I-675 corridors.pdf

Hi Crystal Corbin,
Please consider my comments below for the I-675/Wilmington Pike Interchange Project and surrounding areas. It would be great to be able to ride my bike on the roads in that area and feel safe. The attached pdf has the same information.

Thanks,

Dan

Dan Kien
Dayton, OH 45429

Public Comments on the I-675 & Wilmington Corridors

Greene and Montgomery Counties are at the forefront of bike trails but its acceptance of bicyclist on the roads could be better. Below is a diagram of a well-designed transportation corridor that considers the needs of recreational and transportation bicyclists.

For too many years, 'Complete Streets' has been ignored while the motorist has been privileged. The prioritization of the convenience of the motorist has resulted in skyrocketing non-motorist's deaths because streets are too easy to drive and too many motorists believe they do not need to pay attention while driving. Too often, juveniles see our wide-open street as drag strips Many studies have linked traffic noise to stress and premature death.

To be sure, the number of bad drivers is small. When I ride my bicycle on streets like Wilmington, Feedwire and Alex Bell, at least 99 out of 100 drivers pass me responsibly and courteously. But that one percent can be dangerous. For some reason, there are a few drivers on the roads who don't recognize the rights of the bicyclist to ride in the lane. Instead of seeing the bicyclist as another slow-moving vehicle, they sometimes get outraged that they must take 15-20 seconds to maneuver around them.

Please take this opportunity to evaluate potential bicycle traffic in all directions on the roads. When using your bike as transportation, it is not always easy to "keep right," I am asking that sharrows on the pavement be added for all lanes to help motorists remember that "Bikes May Use Full Lane" always, and that all vehicles must always "Share The Road". Use this opportunity to make Noise Reduction as high of a priority as motorist convenience.

Finally, I ask that you use social media to collect more information from the public on the condition of roads today. Comments to my Facebook posts in the group "Paved Bike Trails of Ohio" were illuminating. They ranged from wholehearted support to begging me to not ride on major streets, even though they are fairly safe outside of rush hour. What most of the comments share is a tacit recognition that riding bikes on our public roadways can be terrifying, and that should NEVER be the case.

From: Michael Hamm
To: Crystal Corbin
Subject: I-675/Wilmington per WHIO
Date: Saturday, July 15, 2023 1:48:12 PM

I strongly urge roundabouts and the reduction or elimination of as many traffic lights/signals as possible along the corridor. I would prefer a diverging diamond at 675/Wilmington. If it is unrealistic to do so, I would hope that traffic signals could be better programmed for traffic flow.

Michael Hamm
Kettering

From: Caleb Ritenour
To: Crystal Corbin
Subject: MOT/GRE-I-675/Wilmington Pike PID 115160
Date: Sunday, July 16, 2023 7:11:12 PM

Hello

Although I am an aerospace engineer, not a civil, it appears to me that the single biggest issue is the southbound 675 exit at Wilmington Pike, and the primary factor to me appears to be the righthand turn onto the Pike. Specifically, there's so much cross traffic that making right turns on red is virtually impossible, which I do not believe the original intersection designers intended. The majority of people seem to be headed to the Costco/Kroger's plaza just down the road as well, so adding lots of through lanes seems counterproductive. If I were redesigning this intersection, I would add a dedicated free-flow right turn lane that would turn into into the 3rd/4th (far right) lane which presently begins shortly down the road by Cracker Barrel's entrance. That entrance itself is over-designed, I believe, so pushing it back should have relatively low impact on traffic flow. Also, this would not involve closing down the whole road, merely the seldom-used sidewalk.
I cannot recommend adding a diverging diamond; the costs and traffic impact short-term would be immediate, and I do not believe that ordinary traffic flow justifies the trouble Making this a split interchange would probably create a lot of confusion and unintended traffic patterns.

Caleb

Heather Lacey

From: Crystal Corbin <ccorbin@mctid.org>
Sent: Monday, August 7, 2023 3:37 PM
To: Heather Lacey
Cc: Vanessa Glotfelter
Subject: FW: I-675 and Wilmington Pike, PID 115160 Comments

External Message: *This email was sent from someone outside of CMT. Please use caution with links and attachments from unknown senders or receiving unexpected emails.*

From: Donna M Hellmann <donna.m.hellmann@gmail.com>
Sent: Monday, August 7, 2023 3:22 PM
To: Crystal Corbin <ccorbin@mctid.org>
Subject: I-675 and Wilmington Pike, PID 115160 Comments

Hi Crystal,

My name is Donna Hellmann and we spoke about the virtual meeting a few weeks ago. I was in attendance at the meeting Sinclair. My family has been a resident in Sugarcreek Township since 1989. When we first moved here Whipp Road and Feedwire Road didn't connect. Clyo was Possum Run and there was a four way stop at Feedwire Rd and Little Sugarcreek Rd.

After reviewing all the information on this project, I am of the opinion that Alternate 2 -Split Interchange is the best option for dealing with the traffic increases in the future. This Alternative offers the movement of traffic on and off I -675 and Wilmington and in and out of the area of Wilmington Pike and Feedwire best. Below I have my comments on issues, mostly along the Feedwire portion. I live by Feedwire and Little Sugarcreek. I see a lot of current problems since I drive this portion just about everyday. I realize some of my comments are really the responsibility of Centerville and Sugarcreek Township but they directly impact what ODOT and MCTID are trying to accomplish. My assumption is all parties are trying to work together to achieve the best result for everyone. So here they are.

MOT/GRE I-675/WLMINGTON PROJECT, PID 115160

ALTERNATIVE 2 (SPLIT INTERCHANGE)- WILMINGTON PIKE

Comments

- The I-675 off ramp to Wilmington Pike (westbound) - painting left turn arrows on the pavement for the three lanes and right turn arrows on the pavement for the two lanes to address confusion upon exiting.
- Can't understand how the shared use path will work on Wilmington. To me, it looks like an extremely dangerous proposition. Are there guardrails between the path and the road to protect walkers? Cars involved in accidents don't always stay in the roadway.

MOT/GRE I-675/WLMINGTON PROJECT, PID 115160

ALTERNATIVE 2 (SPLIT INTERCHANGE)- FEEDWIRE ROAD

Comments

- The intersection of Feedwire and Charles Dr on the south side, move the immediate left turn into the Target parking lot back to the intersection where Home Depot and Winans Coffee is. This will reduce the congestion of the cars wanting to turn into Target and the cars trying to make the right turn out of the Target parking lot to then go straight to Costco or make the left onto Feedwire. I realize this is Centerville land and Sugarcreek Township land. But trying to make Feedwire flow better, this intersection currently is a headache and will most likely get worse, I hope Centerville and Sugarcreek Township are currently working together on this intersection.

- Perhaps it is possible to make a right in/right out entrance across from Clinger Ln into PetSmart and Marshall. This will get those cars going east out of the area quicker.

- Clyo approaching Feedwire – A right in/right out at Brookdale Ln at the Waterford Apartments is needed. This will allow cars to turn right onto Clyo and at the corner make a left onto Feedwire. Otherwise the only option is Brookdale Blvd.
In the current configuration it sometimes takes a long time to make a left out of Brookdale Blvd onto Feedwire. This will give cars another option.

- The furthest exit going east is Brookdale Ln and currently it's exit right only. This would work better as a right in/right out. Cars going to the lower part of the apartments can be more direct in getting there. In Alternative 2, there appears to be a divider on Feedwire (I'm not good at reading these road lines) which will prevent the left turn into or out of this exit that is currently happening. If this isn't the case, then it should be a true entrance. I understand there are some sight issues but I hope not since the road will be wider. If there is no divider then cars will continue to make illegal turns.

Again, I hope Sugarcreek Township is working with ODOT and MCTID with the Waterford Apartment options I listed.

I hope this helps the process. If you have any questions, please let me know either by email or at 937-623-0729.

Regards

Donna Hellmann

Heather Lacey

From: Crystal Corbin <ccorbin@mctid.org>
Sent: Tuesday, August 15, 2023 11:55 AM
To: Heather Lacey
Cc: Vanessa Glotfelter
Subject: FW: I-675 / Wilmington Pike Interchange

External Message: *This email was sent from someone outside of CMT. Please use caution with links and attachments from unknown senders or receiving unexpected emails.*

Another comment submission.

From: Trevor Nartker <tntboy13@gmail.com>
Sent: Tuesday, August 15, 2023 1:46 AM
To: Crystal Corbin <ccorbin@mctid.org>
Subject: I-675 / Wilmington Pike Interchange

Ms. Corbin,

I had previously missed the public comment opportunity in July, but saw additional public comment could be solicited via email until 18 August.

Usually, I am not one to write on such issues. Having lived in the area my whole life, and making use of that interchange almost every day, I wanted to provide at least some comment.

My background is unfortunately not in traffic flows or city planning, but rather Computer Engineering.

--- ---

In terms of solutions, I think it best to provide my observation of the problem. Mainly, I find that the congestion for the right lane compounds and causes left and center lane traffic to join the congestion as they wait for the singular exit lane off the interstate. When drivers turning right favor the right side on the exit and effectively make it 2 lanes, the left turning cars can relieve their contribution to the congestion readily. Many times, I have waited in the line on the interstate only to get to the exit, pull to the left shoulder and go around those turning right, and then to drive straight up to the exit ramp's light without a queue. This tells me the 2 main factors at play are queuing capacity, and throughput for the right turn.

I think the easiest/most cost effective solution would be to turn the middle lane on the 675 South Exit 7 to a Left or Right Turn, instead of only Left. This would add the middle lane's queuing capacity for the right turn, which provide some degree of improvement. You get the added benefits of distributing the traffic load between the center and right lanes of the exit depending on their choice of direction at the Cornerstone intersection, and may also reduce lane diving if the driver intends to turn West at Conerstone.

When optionally coupled with extending the right turn only lane into a third lane on Wilmington Pike going North which already exists just a few hundred feet down the road, you may get increased capacity for the right lane in throughput, and another 400 feet for interstate traffic to merge into Wilmington Pikes traffic

before the light at Feedwire. The biggest problem with this is keeping Northbound Traffic on Wilmington Pike from trying to use this added lane by lane changing in the intersection, keeping it open for right turn on red for the exit. However, Im not sure that this addition is absolutely critical for success.

Next, the three lanes may be extended up the ramp towards the interstate, increasing the queuing capacity.

I believe these additions could provide the necessary queuing in the exit ramp utilizing the existing lane structures, increase the throughput of the right turn to a point that would prevent reaching the critical mass of congestion that causes the major backups onto the interstate, and minimize complex downstream effects from a substantial increase in throughput or change in traffic patterns.

I will note, these are strictly based on observation throughout my life in this area, and I do not have high quality traffic data to definitively support this solution.

--- ---

I understand other more elegant traffic interchanges were proposed, and may provide better capacity. However, I wish to better understand the downstream network effects of a substantially increased throughput or changed traffic patterns.

--- ---

As to general principles used in any solution, I beg the MCTID to carefully reconsider solutions that seek to increase capacity via an endless increase in lanes. I have recently returned from a trip to Dallas - Fort Worth, where such a philosophy (along with interchanges as far as the eye can see) appears to be the standard, and it is absolutely madness. There is still congestion, and no amount of lanes appears to fix it. Numerous metros have tried similar plans, and Im not aware of any where it is lauded as a lasting success.

I wanted to present the main reason I generally oppose additional lanes, mainly the lack of consideration for downstream effects.

- Often, the added lanes are only as effective as the choke points they feed, pushing congestion somewhere further down in the system.
    - This in turn results in more lanes down through all of classes of the road network until the necessary number of vehicles can be moved with existing infrastructure and no longer need additional capacity.

In the case of this interchange, I strongly suspect changes that substantially increase throughput will quickly unveil further issues on lower capacity roads down the network. In my commute from 675 down Clyo to near Spring Valley Road, it appears to me that there are many people who may be utilizing capacity from other routes that may not be the shortest path. While nothing is wrong with using excess capacity, I believe that points to the lack of capacity in areas further than just the interchange as this occurs even when the right lane at 675 South Exit 7 is not congested.

Particularly, I often see many cars turning West onto 725 from Clyo travelling South, and similarly more than I would expect turning North onto Bigger from Clyo traveling West. This would appear to me as cars attempting to avoid the intersection to the North of the Interchange, and similarly attempting to avoid 675 and St Rt 48's exit. While I have no definitive proof this is the case, it is an observation I have made multiple times when it

becomes comically congested in the right lane on Clyo South Bound compared to the left (through) lane. Due to these observations in my daily life, and knowing the congestion on Feedwire and Wilmington going South even down to 725 and further, I believe roads/intersections of the surrounding road networks are underserving the requisite capacity, but is hidden by the headline grabbing congestion at the interstate. I sincerely hope I am wrong, but I do not have the metrics at my disposal to say definitively either way and am relying on my general intuition.

--- ---

I understand this may or may not be in your wheelhouse, but I would like to bring up the idea of public transit. I know nobody likes talking about it, and theres a tendency to brush it away as not feasible. However, I think this project is indicative of the challenges we are going to continue to face in the future. Theres a lot of farm land still in Sugarcreek waiting to be developed, especially along Wilmington Dayton which would add more congestion to this interchange. Im sure this is similar to other areas around the suburbs where development continues apace. I am a car guy myself, and enjoy the freedom of a car. However, I see the practical need to increase transit density on the limited land resources we have already allocated for transportation, and have witnessed the horror of what is to come if we try to support an ever growing vehicle demand by dedicating more land to more lanes and fancier interchanges.

I would like to close by saying that we must seriously start considering the path we will take for our transportation needs. With the proposed Amtrak expansion possibly taking form in the next decade, there is a significant opportunity to lay a foundation for functional public transit in the Dayton Metro to help support such an addition. While $10 Million isnt exactly going to build a light rail system to support the 675 corridor and support the necessary busses, enough savings from not implementing solutions based around expanding low-density transit, and some federal funds may add up to an improved bussing or light rail capability that could change the perception of transit in the Miami Valley.

Thank you for your time,

Trevor Nartker

Connect with Us : Entry # 912

Name

Krysti Barnhill

Email

jbkb1024@aol.com

Message

test

Notes

Admin Notification (ID: 5f7fbcd47dc93)

added 5 mins ago

WordPress successfully passed the notification email to the sending server.

Admin Notification - Copy 1 (ID: 64bedb08c09d2)

added 4 mins ago

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 911

Name

Baylie Barnhill

Email

jbkb1024@aol.com

Message

Test

Notes

Admin Notification (ID: 5f7fbcd47dc93)

added 10 mins ago

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Admin Notification - Copy 1 (ID: 64bedb08c09d2)

added 10 mins ago

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 909

Name

Richard Christopher

Email

r.christopher@sbcglobal.net

Message

I was not able to open the article. My comments about I-675 and Wilmington Pike are as follows. I have lived in this area for 33 yrs. I remember when the area was farm land with plenty of wild life. The intersection at Wilmington Pike, Whipp Rd and Feedwire Rd is extremely dangerous. My recommendations are: (1) at each of the four intersections prohibit right turns on red, and (2) build a person bridge across Wilmington Pike from Whipp Rd to Feedwire Rd like the one on I-675 by Wright State University.

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 18, 2023 at 17:53

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 907

Name

Bill Montgomery

Email

bill.L.jr@sbcglobal.net

Message

I came to the web site today to learn about the Wilmington pike I 675 project. A web event for today at noon was advertised in a mailer. I don't see anything.
Also I thought this site was to have detailed diagrams and other information??

Bill

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 18, 2023 at 12:26

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 904

Name

Jeff Pearce

Email

pearceja@yahoo.com

Message

Where is the virtual meeting on the I-675/Wilmington project that was supposed to start at noon today? It says that it's to be hosted on the project website, but this website appears to be static.

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 18, 2023 at 12:07

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 898

Name

Alice Diebel

Email

diebelalice@gmail.com

Message

How do I access the webinar?

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 18, 2023 at 12:01

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 889

Name

Connect with Us : Entry # 889

Jack M.

Email

jackm@50poundsocial.co.uk

Message

Good Morning,

Did you know? According to an article by Constant Contract, Transportation/Trucking/Railroad companies increase their brand awareness by 44% by being on social media like Instagram and TikTok? Similar companies like J K Materials And Trucking, Accelerated Transport and Trans X Auto, who are also based in Montgomery, has been taking advantage of this and has significantly boosted their business exposure.

By the way, Jack here from 50 Pound Social. I can't help but notice that Montgomery County Transportation Improvement District has not tapped into the potential of social media to enhance brand awareness. And we would like to offer our assistance. We help businesses like yours improve social media presence and boost brand's visibility. We offer cost effective social media solutions that can help your company increase your reach and have an amplified brand personality.

If you find this interesting, you can check our full services at: 50poundsocial.co.uk/plans

Look forward to hearing back

Jack MacHugh
Managing Director

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 18, 2023 at 06:03

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 876

Name

Rene Thibodeaux

Email

rene.thibodeaux.1@betageneral.com

Message

ODOT has committed to the upgrading of U.S. 35 through Ohio from Dayton to the West Virginia border. This includes the current construction of both the Smithville and Woodman interchanges already underway and the future Trebein/Factory Road/Orchard Lane interchanges in Beavercreek, Greene County. Given ODOT is already investing in U.S. 35 would the Montgomery County Transportation Improvement District support the complete conversion of U.S. 35 to Future I-66 from Virginia to Dayton Ohio. This would coordinate with The Ohio Valley Regional Planning Commission (OVRPC) transportation improvement feasibility studies to upgrade of U.S. 35 to a full freeway.

Connect with Us : Entry # 876

1. Future U.S. 35 upgrade to Future Interstate 66: Washington DC to Dayton Ohio.
a. Future I-66 extends from I-66 in Virginia at I-81.
b. I-66 follows US 48 Corridor H,
c. Then I-66 generally follows US 33 along a new terrain route to US 35 in West Virginia
d. I-66 follows U.S. 35 through Ohio to Dayton
e. Future I-66 terminates west of the Dayton/Trotwood/Brookville area at I-70.

Future I-66 becomes the major traffic alternative to I-70 from Dayton to West Virginia. Future I-66 would be a huge economic boom for economic development throughout Southern Ohio from the Ohio River to Dayton and Trotwood.

Future I-73 and I-74 were originally part of the Intermodal Surface Transportation Efficiency Act of 1991. Both routes were cancelled from ODOT plans because the public strongly opposed building these highways in the Cincinnati and Columbus areas. However, the Ohio State Legislature in 2022 passed a resolution to have the Ohio Department of Transportation (ODOT) to conduct a new feasibility study of Future I-73/I-74 in the State of Ohio. OVRPC still has plans to start a new feasibility study Future I-73/I-74 to Cincinnati and Columbus. This will likely also be opposed in both Cincinnati and Columbus and will be a waste of time. A substantially better alternative that would immediately be a traffic alternative for I-75 would be to rout Future I-73 from Findlay Ohio to Portsmouth Ohio, then through eastern Kentucky to I-26 in Kingsport Tennessee forming a trade corridor from Ohio to Charleston South Carolina.

2. Future Interstate 73 from Findlay Ohio to Kingsport Tennessee:
a. Future I-73 starts from I-75 south of Findlay, the follows U.S. 68 to Bellefontaine, Urbana, Springfield to U.S. 68 east of Xenia and Wilmington then OH 73 at Hillsboro.
b. Future I-73 follows OH 73 from Hillsboro to Portsmouth.
c. Future I-73 follows U.S. 52 from Portsmouth to Huntington West Virginia
d. From Huntington West Virginia, Future I-73 follows U.S. 23 through eastern Kentucky, Virginia, to the existing I-26 in Kingsport Tennessee.

Future I-73 becomes a major international trade corridor from the Ohio to the deep-water port in Charleston South Carolina. This is a massive economic opportunity for the manufacturing and distribution center to have direct export/import connections to one of the nation’s major international ports. Future I-66 and I-73 would be excellent demonstration projects for solar farms along the path to generate electric power not only for electric vehicle charging but also as a source of electric power for the local communities along their path. Building solar farms along the length of the highway makes the electric charging stations independent of fossil fuels and negates the environmental argument that these highways would increase climate change. The excess electric power becomes a source of revenue to the state transportation department and the Federal-Aid Highway Trust Fund that offsets the construction cost of building the highways. A 640-acre/250 MW solar farm every 50-miles, would generate $1B of revenue per year over a 300-mile highway.

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 14, 2023 at 02:51

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 855

Name

Nina Herzog

Connect with Us : Entry # 855

Email

herzogn@wright.edu

Message

I am writing about the upcoming meeting about the I-675/Wilmington Pike interchange safety sessions. I would like to see if someone can email me a direct link to the on-line session. I do have to say I saw this issue coming ever since the Dillie Property was annexed by the City of Centerville and sold for development.

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added June 26, 2023 at 13:13

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 835

Name

Crystal Corbin

Email

ccorbin@mctid.org

Message

I want to know more about the roads.

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added June 21, 2023 at 10:11

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 832

Name

Jonathan Bourne

Email

buckeye_bourne@yahoo.com

Message

Connect with Us : Entry # 832

Good morning,
I am trying to locate a project map for the roundabout that is being built off of Dog Leg Rd in Vandalia. I am a regional truck driver for Frito-Lay and I noticed this morning that there is no longer access to turn east at this stage in the project. I would like to put a paper up in my driver's room to remind/notify other drivers that would be delivering to the area. The road sign I noticed said project was starting April 3rd, or after, for ninety days, is that still the plan? Any additional dates or info on this project would be greatly appreciated! I also noticed that the north end of Dog Leg has been milled for repaying, is there a date set for paving? Will trucks be able to get through on those days? The only alternate route around that area I see is the drive that runs between Amazon and the Croc warehouses. Thank you for your time and input!
As always, Go Buckeyes!
Thanks again, Jonathan Bourne

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added June 15, 2023 at 07:15

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 827

Name

c c

Email

ccorbin@mctid.org

Message

test

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added June 2, 2023 at 15:40

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 823

Name

Jeff Shaner

Email

jeffrey.shaner@dot.ohio.gov

Connect with Us : Entry # 823

Message

Hello,

This email is for Veronica Hull. I got some of your contact information from Blake Simpson. I need your help on a project payment information on PID 98794. Please email me back and I can let you know what I need or if there is someone else I should contact.

Thanks

Jeff Shaner

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added May 25, 2023 at 06:59

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 821

Name

Blythe Alspaugh

Email

balspaugh@bizjournals.com

Message

Good morning,

My name is Blythe Alspaugh and I am a reporter for the Dayton Business Journal. I'm currently working on a series of stories about various projects in the region that have secured Congressionally Directed Spending funding, including the I-675 and Wilmington Pike Interchange project that was recently awarded $3 million from CDS funds.

I wanted to check in on where the interchange project is currently at in planning/execution, and what the $3 million funding award would be put toward.

Thank you in advance for your help!

Kind regards,
Blythe

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added May 23, 2023 at 09:52

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 812

Name

Tim Spurlock

Email

Spurlock.Timothy38@gmail.com

Message

My apologies I believe I said easy if Douglas way on Jackson road and I meant west of Douglas way.

Thanks

Notes

Admin Notification (ID: 5f7fbcd47dc93)

added April 27, 2023 at 09:44

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 810

Name

Tim Spurlock

Email

Spurlock.Timothy38@gmail.com

Message

Hi,

Is there a plan in place to reduce amount of traffic east of Douglas way on Jackson road? There is absolutely way too much traffic for a road that is barely wide enough to have cars pass one another. Since there is going to be multiple ways for employees to get to their respective places of work, I feel it is necessary to eliminate traffic on jackson road and only use it for residential traffic only. Wether it's a dead end or culdesac. Also, the speed limit is too high for this road as well. I understand it's important to keep businesses in Ohio and provide work, but people who reside on the road have been left to dry with no way of knowing what's going on.

Notes

Admin Notification (ID: 5f7fbcd47dc93)

added April 27, 2023 at 09:43

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 799

Name

Rick Suess

Email

suessrm@yahoo.com

Message

We live on Frederick PIke between Peters and Brantford; when can we expect this portion to be resurfaced. The road is in terrible shape and a lot of cars speed along this section, which poses a danger with all the "band aid" repairs.

Thank you

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added February 8, 2023 at 16:56

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 795

Name

Cornelius Frolik

Email

cory.frolik@coxinc.com

Message

Hi there,

This is Cory, a reporter with the Dayton Daily News. I hope you are having a nice start to 2023.

Hey, I am writing about the omnibus bill that Congress passed and that was signed by President Biden last month.

I am doing a roundup of federal funding that was approved for local projects. See:
https://www.brown.senate.gov/imo/media/doc/fy2023_omnibus_cds_wins.pdf

It looks like the I-675 and Wilmington Pike Interchange project was awarded $3 million.

Can you briefly describe this project? How much is the overall project cost? Who is leading the project?

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How much will this funding help this project? What will the federal money be used for?

What impact will this project have on the community? And what is the timeline for this project?

Thank you! I really appreciate it. Emailed responses are best since I am reaching out to all the funding recipients.

I am writing this roundup story today, Friday. Deadline is likely around 2:30 to 3 p.m.

Cornelius Frolik, Dayton Daily News, cory.frolik@coxinc.com , 937-844-8072

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added January 6, 2023 at 09:41

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 774

Name

Andrew Weisner

Email

weisnera2@yahoo.com

Message

Sir or Ma'am,

Good morning.

Sorry to say that this is a complaint about the way that the final paving of US 40 near the Dayton International Airport Road has been handled/scheduled.

I am not sure who made the decision to do grinding and paving in the middle of the night/early morning hours, or why-- but the low frequency noise from the equipment easily transmits distances and into areas that are zoned residential, i.e. on Fredrick Pike near the intersection of U.S. 40.

This is the second time this has been a problem in the past week.

It would have been better if it had not been a surprise. I do not recall other portions of the US 40 improvements over the past year happening at night.

If you do not think it is a problem to someone sleeping, am happy to have you come hear the noise transmission for yourself.

This affects residents' sleep and ability to go to work and perform their own jobs effectively. It is also a disappointment given the amount of property tax being paid by homeowners who had no choice in their property being zoned residential in a transitional area.

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There may be little that can be done now with this project underway, but please think about this for future projects.

Andrew Weisner
9100 Frederick Pike
Dayton, OH 45414

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 26, 2022 at 05:23

WordPress successfully passed the notification email to the sending server.

Connect with Us : Entry # 767

Name

Maria Aguilar

Email

maguilarprieto@usatoday.com

Message

Good evening,

Hope this message finds you well. My name is Maria, and I am a reporter with USA TODAY. I am reaching out for comment on a story I am doing on traffic infrastructure and road unsafety in the U.S.

One of the stories the article features is a pedestrian casualty that occurred at the intersection of U.S. 40 and Dog Leg Road in Vandalia, Ohio (traffic crash report # 57-0034-57). From my research, I am aware that that stretch of the road is currently undergoing an expansion project to turn it into five lanes.

I am reaching out to see if somebody from your department would be interested in issuing a comment on this road -- whether there have been any safety concerns in the past, a history of pedestrian accidents, or the reason behind the plans to upgrade the highway? Please let me know!

Best,
Maria Aguilar

Notes

Admin Notification (ID: 5f7fbcd47dc93)
added July 7, 2022 at 17:58

WordPress successfully passed the notification email to the sending server.

Frequently Asked Questions

The feasibility study for the I-675 and Wilmington Pike Interchange Project analyzed the I-675 and Wilmington Pike Interchange and the surrounding local roadway network, which serves a number of large employers, residents and a growing commerce corridor that is part of Main Street to WPAFB. The following provides a summary of the frequently asked questions that were submitted during the public comment period following the public involvement meetings held July 13 and 18, 2023. Questions on the project can be directed to Vanessa Glotfelter Director of Engineering at the Montgomery County Transportation Improvement District, by email at vglotfelter@mctid.org or by mail to 451 West Third Street, 10th Floor, Dayton, Ohio 45422.

Question	Response
Could the traffic congestion and safety issues be resolved by lengthening the left turn lane from Wilmington Pike onto Clyo Road?	The project team investigated adding or lengthening turn lanes within the project area as part of this Feasibility Study in each alternative reviewed. Corridor scale improvements are needed to resolve existing and future traffic congestion and safety issues beyond isolated intersection/ interchange improvements in this area.
Could the traffic congestion and safety issues to resolved by adjusting the traffic signals along the corridor?	The Level of Service (LOS) metric is used to quantify the delay that a motorist experiences as they pass through an intersection. Several intersections in the study area are currently operating at poor levels of service (LOS E) or are over capacity (LOS F). Traffic signal timings were optimized in each scenario evaluated in this Feasibility Study. In order to achieve acceptable levels of service (LOS D or better) for existing and future volumes, changes like additional lanes or interchange modifications are necessary in addition to optimizing signal timing.
Could the traffic congestion and safety issues be resolved by adding turn lanes on the existing I-675 off ramps?	The project team investigated adding lanes to the I-675 Off ramps only instead of the Diverging Diamond Interchange (Option 1B) or the Feedwire Interchange (Option 2). Adding lanes to the I-675 exit ramps still yields poor levels of service (LOS E or F) and does not provide enough congestion relief to be a viable solution.

Could the traffic congestion and safety issues be resolved by prohibiting right turns on red?	Prohibiting right turns on red would increase vehicle delays/ traffic congestion then if right turns on red are permitted.
Because the project location is near Miami Valley Hospital South, should the project consider preemption for emergency vehicles?	Preemption for emergency vehicles can improve emergency vehicle mobility. Emergency vehicle preemption could be incorporated with future designs or independently depending on further review.
Can bike lanes be added to the project to make cycling safer in the corridor?	The project includes bikeways along the major routes that are separated from vehicular traffic. Separated bike facilities will provide the greatest safety benefit along multilane arterials such as Wilmington Pike and Feedwire Road.
Can the project incorporate a pedestrian bridge across Wilmington Pike from Whipp Road to Feedwire Road?	While a pedestrian bridge would eliminate pedestrian and vehicular conflicts at Wilmington Pike and Whipp Road, it would add a significant cost to the project. This scale of pedestrian facilities is beyond the scope of the current project.
What can we do now to control future development?	Zoning code changes that affect how property is developed in the future is not a part of the scope of the Feasibility Study. An Access Management Plan was updated to provide guidance along the Wilmington Pike, Feedwire Road, and Clyo Road corridors. (available on the project page: https://mctid.org/i-675-wilmington-pike-interchange-project/). The purpose of the access management Plan is provide stakeholders a guide to manage future access as properties redevelop in the project area.
How can I access the virtual public open house?	The virtual public open house content was available on the Montgomery Country Transportation Improvement website with content and a link (https://publicinput.com/p1602) to provide public comments from July 18, 2023 through August 18, 2023. All exhibits and information available at the in-person public involvement meeting were provided on the website. There was no live presentation nor a question-and-answer session.