

APPENDIX

A.

Alum Creek Drive Structure Type Study and Hydraulic Study



FRA-122-1.86L & 1.87R
Structure Type Study
Alum Creek Drive over Big Walnut Creek
PID No. 115792

December 15, 2023

Prepared for:
Franklin County Engineer's Office

Prepared by:
Stantec Consulting Services, Inc.

The conclusions in the Report titled FRA-CR122-1.86L & 1.87R are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Franklin County Engineers Office (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by: _____
Signature

Brandon S. McNeal, P.E.

Printed Name

Reviewed by: _____
Signature

Michael R. Sturdevant, P.E.

Printed Name

Table of Contents

1	INTRODUCTION.....	1
1.1	Purpose	1
1.2	Existing Structure	1
1.3	Proposed Structure.....	2
2	DESIGN CONSIDERATIONS	3
2.1	Design Specifications	3
2.2	Design Criteria	3
2.3	Alignment.....	4
2.4	Maintenance of Traffic	4
2.5	Hydraulics	5
2.6	Foundations	5
3	ALTERNATIVES.....	5
3.1	Alternative 1	6
3.2	Alternative 2	7
3.3	Alternative 3.....	8
3.4	Alternative 4.....	9
4	ALTERNATIVE COMPARISON.....	10
4.1	Live Load Deflection	10
4.2	Waterway Impacts	10
4.3	Initial Construction Cost.....	11
4.4	Life Cycle Costs.....	11
4.5	Total Costs	13
5	RECOMMENDATION	13

LIST OF APPENDICES

APPENDIX A SITE PLAN, PROFILES, AND TYPICAL SECTIONS

APPENDIX B ESTIMATED QUANTITIES

APPENDIX C ESTIMATED CONSTRUCTION AND LIFE CYCLE COSTS

APPENDIX D SPREAD CALCULATIONS



1 Introduction

1.1 Purpose

The purpose of this study is to determine a solution to replace the twin bridge structure on Alum Creek Drive crossing over Big Walnut Creek based on initial construction cost, life-cycle costs, and maintenance of traffic considerations. The intent of the proposed structures will be to remove at least one pier from the ordinary high water (OHW) limits while maintaining essentially the same vertical and horizontal alignment. The proposed bridges will be wider than existing to accommodate additional traffic lanes and pedestrian/bicycle facilities. The proposed structures will have an estimated life span of 100 years, meet current design standards and will require minimal maintenance over the life of the bridges. The study of the twin bridge replacement is part of the overall study to repair and widen the roadway along the Alum Creek Drive corridor between London-Groveport Road (SR-317) and Groveport Road to improve capacity and safety to serve the increasing vehicular, pedestrian, and bicycle traffic demand. The Franklin County Engineer's Office is proposing to add a third lane of traffic in both the northbound and southbound directions along with pedestrian and bicycle facilities on both bridges and throughout this corridor.

1.2 Existing Structure

The existing structures, FRA-CR122-1.86L (left bridge with southbound traffic) and FRA-CR122-1.87R (right bridge with northbound traffic), are both two lane structures carrying Alum Creek Drive over Big Walnut Creek. As initially constructed per the 1958 plans, each bridge consisted of (2)-12' lanes with 3' shoulders and 2'-3" safety curbs. Total bridge deck width was 30' with an additional 2'-3" checker plate safety curb on each side. The original deck consisted of a 7¼" concrete slab with a 2½" asphaltic concrete overlay. Rehabilitation plans in 1987 removed the checker plate safety curbs and extended the bridge deck to 32' wide consisting of (2)-12' lanes and (2)-4' shoulders bringing the bridge deck to its current configuration. The asphaltic concrete overlay was removed and replaced with a 1½" thick dense concrete overlay. In 2002, rehabilitation plans were developed for a resurfacing of the bridge deck by removing the 1½" dense concrete overlay along with 1" of the concrete slab and replacing it with a 2½" thick micro-silica modified concrete overlay.

Each bridge consists of 4 total spans, 63.45' – 80' – 80' – 64', measured from center to center of bearings for a total length of 287.45 feet. The bridges were built in 1959 and currently consist of (5)-33WF200 continuous rolled steel beams spaced at 6'-9" with a non-composite concrete deck and micro-silica concrete overlay. Based on the 1958 construction plans the existing abutments are reinforced concrete stub type abutments supported on two rows of piles. The South abutment is supported on 12BP53 piles while the North abutment is supported on 12" cast-in-place reinforced concrete piles. All three piers are T-Type piers supported on piles. Pier 1 is supported on 12BP53 piles and Pier 3 is supported on 12" cast-in-place reinforced concrete piles. The 1958 construction plans indicate Pier 2 was to be supported on 12" cast-in-place reinforced concrete piles but could potentially be changed to 12BP53 piling if requested during construction and approved by the Director. As-built plans were not available to determine the final type of piling used to support Pier 2.



FRA-122-1.86L & 1.87R

1 Introduction

The 1987 plans included details for replacing the original sliding plate expansion joints at the abutments with elastomeric compression seal joints. Since that time, several repair projects have been executed to repair/replace the expansion joints along with projects to shim the bearings.

Based on the condition of the structures as determined by the annual inspections, the current General Appraisal for both FRA-CR122-1.86L and FRA-CR122-1.87R is 7A, indicating both bridges are open (A) and in good (7) condition

1.3 Proposed Structure

The proposed structures will provide different deck widths on each bridge. The left bridge (southbound) will provide a bridge width of 64'-0" outside of railing to outside of railing that accommodates a 4-foot shoulder, (3)-12-foot lanes, a 10-foot shoulder, a 10-foot sidewalk on the west side of the bridge to accommodate the approaching 8-foot sidewalk, 2 lines of 1.5-foot wide SBR-1-20 railing and a single line of 1 foot wide BR-2-15 railing. The right bridge (northbound) will provide a bridge width of 66'-0" outside of railing to outside of railing that accommodates a 4-foot shoulder, (3) 12-foot lanes, a 10-foot shoulder, a 12-foot shared-use path on the east side of the bridge to accommodate the approaching 10-foot shared-use path, and 2 lines of 1.5-foot wide SBR-1-20 railing and a single line of 1 foot wide BR-2-15 railing. Across the bridges an additional 2-feet was included for both the shared-use path and the sidewalk to provide the minimum required shy distance per the ODOT Multimodal Design Guide Section 5.4. The proposed superstructure will be a composite reinforced concrete deck supported by either prestressed precast concrete I-girders (PCIB), rolled steel beams, or steel plate girders. The thickness of the composite concrete deck will be dependent on the spacing of the supporting members and will be considered within each estimate.

A deck drainage hydraulic study was performed and we determined no scuppers will be required on the bridge. The spread for the design storm stays within the 10' shoulder and encroaches less than half-way into the travel lane with the 4' shoulder.

Railing on the structure will be ODOT Standard SBR-1-20 42" Single Slope Concrete Bridge Railing and BR-2-15 Bridge Sidewalk Railing with Concrete Barrier. Based on guidance from the ODOT Multimodal Design Guide, Section 5.4 recommends a minimum of 42" railing height, as this bridge site does not fit the criteria for considering 48" railing height. Those criteria include bridges or bridge approaches where high-speed, steep angle impacts between bicyclist and railings may occur such as at the foot of a long descending grade. Given the profile grade is <1%, this does not meet the criteria.

For this application, vandal protection fence will not be required along either of the bridges based on ODOT BDM Section 309.5.2, Table 309-3 which does not require fencing when the under-bridge feature is a waterway or bike/walking path.

The piers will be new wall or T-type piers as recommended by the ODOT BDM. The abutments will be semi-integral stub type abutments located approximately 10-feet outside of the existing abutments in order to minimize conflict with existing piles. The use of semi-integral abutments eliminates the need for expansion joints and the resulting maintenance costs.



2 Design Considerations

2.1 Design Specifications

The proposed structures will be designed in accordance with the ODOT 2020 Bridge Design Manual and AASHTO LRFD Bridge Design Specifications 9th Edition, 2020.

2.2 Design Criteria

- Road functional classification: urban, arterial
 - Design Speed: 50 mph
 - Design year (2048) ADT:
 - Right Bridge (northbound) – 22,030
 - Left Bridge (southbound) – 23,620
- Proposed bridge width:
 - Left Bridge (southbound) width total: 64'-4"
 - 1'-8" (including 2" beyond back of railing) SBR-1-20 - 42" Single Slope Concrete Bridge Railing
 - 4'-0" shoulder
 - (3)-12'-0" lanes
 - 10'-0" shoulder
 - 1'-6" SBR-1-20 - 42" Single Slope Concrete Bridge Railing
 - 10'-0" sidewalk, which includes the required 1'-0" shy space on each side of the shared use path per ODOT multimodal design guide chapter 5.4.
 - 1'-2" (including 2" beyond back of railing) BR-2-15 – Bridge Sidewalk Railing With Concrete Barrier
 - Right Bridge (northbound) width total: 66'-4"
 - 1'-8" (including 2" beyond back of railing) SBR-1-20 - 42" Single Slope Concrete Bridge Railing
 - 4'-0" shoulder
 - (3)-12'-0" lanes
 - 10'-0" shoulder
 - 1'-6" SBR-1-20 - 42" Single Slope Concrete Bridge Railing
 - 12'-0" Shared-use path, which includes the required 1'-0" shy space on each side of the shared use path per ODOT multimodal design guide chapter 5.4.
 - 1'-2" (including 2" beyond back of railing) BR-2-15 – Bridge Sidewalk Railing With Concrete Barrier



FRA-122-1.86L & 1.87R

2 Design Considerations

Note that bridge widths are based on following guidance from the ODOT Location and Design Manual Volume 1, Table 302-1, stating that where approach roadway width (traveled way plus shoulders) is surfaced, at a minimum, that surface should be carried across the structure. Also, we have proposed using the single slope concrete bridge railing between traffic and the walk or shared-use path. This can be changed to the standard ODOT pedestrian railing if preferred by the Franklin County Engineer's Office.

The bridge was evaluated to determine if scuppers would be required based on alignment and profile information. Hydraulic spread calculations were performed for a 10-year storm, the spread within the 10'-0" shoulder on each bridge is 8.81 feet which will not encroach into the traveled lane. The spread on the 4'-0" shoulder side will be 6.65 feet which will encroach into the traveled lane 2.65 feet which is less than the allowable 4 feet. The allowable encroachment is based on the Franklin County Drainage Design manual Table 2-9 for Freeways and Expressways with 4 or more lanes and speed greater than 45 mph.

2.3 Alignment

The existing horizontal and vertical alignments will be maintained. The existing bridges are on a tangent alignment and, per the 1958 construction drawings, the bridges slope down from south to north at 0.8%. From the current survey information FRA-CR122-1.86L slopes down from south to north at 0.85% and bridge FRA-CR122-1.87R slopes down from south to north at 0.90%.

The additional lanes will be added to the outside of the existing pavement. Initially, an alternative was considered which would widen toward the median however this precluded the ability to maintain two lanes of northbound traffic during construction and was not considered further.

2.4 Maintenance of Traffic

While the original project requirements mandated a minimum of two southbound/one northbound lanes, further input from the Franklin County Engineer's Office indicated a strong preference for maintaining two lanes in each direction if feasible. This is due to the significant delays and detour routing. This can be accomplished using four phases for bridge construction. Phasing of the work on the bridges has been coordinated with the preliminary phasing of work on the roadway.

Phase 1 will consist of temporarily closing one lane of northbound traffic on the right bridge (a maximum of one week), placing portable concrete barrier 2'-0" from the centerline of the bridge, and demolishing the east overhang, a 2'-0" width. Portable concrete barrier will be placed 2'-0" from the new edge of the bridge to allow two lanes of northbound traffic to be maintained. As this work is accomplished, the proposed substructure units on the right bridge (northbound) will be constructed wide enough to accommodate proposed beam lines 5 through 8. After the substructure is constructed, beam lines 5 through 8 will be set and a minimum width of 31'-2" of the bridge deck will be placed. The proposed barrier between the traffic and the shared-use path will not be constructed at this time to allow space for two lanes of traffic. Mechanical couplers will be installed on the reinforcing in the deck and capped at the surface of the deck to allow connection and construction of the barrier in a future phase of work. Portable



concrete barrier will be placed 6'-0" from the phased-construction edge of deck. All lanes of the left (southbound) bridge will be maintained on the existing bridge during this phase.

Phase 2 will shift the two northbound traffic lanes to the newly constructed section of the right bridge (northbound), then the remainder of the existing right bridge will be demolished and construction of the remainder of the proposed right bridge (northbound) will be completed. All lanes of the left (southbound) bridge will be maintained on the existing bridge during this phase.

Phase 3 will shift the two traffic lanes from the existing left bridge (southbound) to the new constructed right bridge (northbound), providing 2-lanes of traffic in each direction. During this time the existing left bridge (southbound) will be demolished, and the proposed bridge constructed.

Phase 4 will consist of constructing the barrier between the shared-use path and the 10'-0" shoulder on the right bridge (northbound).

2.5 Hydraulics

A preliminary hydraulic analysis of the impacts to Big Walnut Creek post construction has been performed based on existing information, flood studies, and models of the river. The resulting flows, velocities and flood elevations are shown on the site plan in appendix A. The analysis indicates there will be no increase in the 100-yr flood elevation. A memo summarizing the results of the study will be submitted separately.

2.6 Foundations

The geotechnical investigation has not been completed at this time due to reasons related to other aspects of the project. Based on available record plan information, it is not anticipated that this will affect span arrangement. Therefore, for the purposes of this study, the preliminary foundation design is based on the foundation type shown in the 1958 plans and information provided in the historical boring logs available from ODOT. The historical logs indicate the borings terminated around elevation 650-660 without encountering rock. From our review of the information, we anticipate steel H-piles will be utilized as friction piles due to the dense layers of sand and gravel found around the river. The construction cost estimates have been based on this and our preliminary foundation design. Once the geotechnical investigation is complete, we will evaluate the cost of drilled shafts, CIP concrete piles, and steel piles at the substructures for the Stage 1 submittal. If the final type of foundation changes, it will not impact the evaluation of the alternatives as the change in cost will be the same ratio for each alternative.

3 Alternatives

Several superstructure type alternatives and span arrangements for replacement of the bridges were evaluated. Steel plate girders, rolled steel beams and prestressed precast concrete I-girders, all with composite reinforced concrete decks, were considered for the superstructure. Each span arrangement evaluated eliminates a span from the original structure, making a 3-span bridge rather than the current 4-span bridge. Both steel plate girders and prestressed precast concrete I-girders were evaluated using a



FRA-122-1.86L & 1.87R
3 Alternatives

span arrangement that keeps all piers outside the ordinary high water (OHW) limits of Big Walnut Creek. A second span arrangement was evaluated that places Pier 1 within the OHW limits of Big Walnut Creek but has more efficient span lengths for both the prestressed precast concrete I-girders and steel beam alternatives.

All span arrangements and superstructure types considered will have identical Maintenance of Traffic plans and construction phasing. All alternatives will require a causeway to remove existing Pier 2 from Big Walnut Creek. While Alternatives 1 and 2 eliminate all piers within the OHW limits, construction methods will remain similar to Alternatives 3 and 4 which have a pier in the creek. The proposed piers will be very close to the OHW limits and the excavation for the piers will require dewatering with cofferdams placed in or adjacent to Big Walnut Creek. The bank side of the piers could conceivably be open cut rather than utilizing cofferdams. It was noted through a cursory review of available environmental documentation that Big Walnut Creek in Franklin/Pickaway County is a Group 2 stream with known presence of federally listed mussel species. Removing and keeping all piers out of the OHW of Big Walnut Creek would provide environmental benefits. The main environmental benefit is to reduce the likelihood of high velocities around the piers which can disturb aquatic life, including mussels, and reducing overall velocities through the bridge by increasing the waterway opening.

3.1 Alternative 1

Alternative 1 is a 3-span arrangement of 72' – 128' – 110' and utilizes prestressed precast concrete I-girders (PCIB) for the superstructure. This span arrangement was selected to avoid placing piers within the OHW limits. However, with this span arrangement, proposed Pier 1 will conflict with existing Pier 1 for both the left (southbound) and right (northbound) bridges.

Initially, several beam arrangements were evaluated including 8-beam lines, 7-beam lines, and varying the number of beam lines between spans. Preliminary design determined using WF66-49 girders required 8 girders in the center span and 7 girders in the exterior spans. However, our study of the geometric layout indicated varying the number of beam lines from exterior spans to interior span is not a feasible approach as the beam ends interfere with one another over the piers. A uniformly spaced 7-beam line layout for all spans was evaluated and determined to not be a feasible approach for the right bridge (northbound) based on the maintenance of traffic requirements. Constructing a width sufficient to carry two lanes of traffic would require a greater width of the existing bridge to be removed which would not leave sufficient width for two lanes of traffic to be carried on the existing bridge while the new portion is constructed. We also considered a 7-beam line layout with variable beam spacings across the bridge to accommodate the maintenance of traffic requirements. However, we determined the largest prestressed girder, WF72-49, is not capable of carrying the required loads imposed by the larger beam spacings using the design parameters of PSID-1-13. An 8-beam line configuration was evaluated and determined to be the best option compatible with the maintenance of traffic requirements. Beam spacing for this configuration will be 8'-4" for the left bridge (southbound) and 8'-7" for the right bridge (northbound). The design utilizes WF66-49 composite, prestressed precast concrete I-girders with an 8 ½" thick composite concrete deck.



FRA-122-1.86L & 1.87R
3 Alternatives

To comply with maintenance of traffic requirements, phased construction of the right bridge (northbound) will be required as discussed in Section 2.4. After demolition of the existing bridge deck overhang, beam lines 5 through 8 will be constructed with a minimum width of 31'-2" of bridge deck. This width is sufficient to accommodate traffic during the Phase 2 construction of the right bridge (northbound). Once beam lines 5 through 8 and the deck have been constructed, the remainder of the existing bridge will be demolished, including the removal of the steel piles for Pier 1, and the proposed bridge completed. Per the 1958 construction plans, Pier 1 is founded on steel piles with an estimated pay length of 18-feet. Removal of these piles is necessary to avoid conflicts with the foundation for proposed Pier 1 and will incur additional cost for this alternative which has been accounted for in the estimates. The left bridge (southbound) construction will be more simplistic as phased construction is not necessary for this bridge. Once the right bridge (northbound) has been constructed, all traffic will be switched to the right bridge (northbound) providing two southbound lanes of traffic and two northbound lane of traffic. Demolition of the existing left bridge will take place including removal of existing piles in the area of Pier 1. Construction of the left bridge will then commence.

Moving forward, cost comparisons between alternatives will be made considering 8-lines of WF66-49 beams for Alternative 1.

3.2 Alternative 2

Alternative 2 is a 3-span arrangement of 72' – 128' – 110' and utilizes continuous steel plate girders for the superstructure. This span arrangement was selected to avoid placing piers within the OHW limits. However, with this span arrangement, proposed Pier 1 will conflict with existing Pier 1 for both the left (southbound) and right (northbound) bridges.

Initially, several beam line arrangements were evaluated including 7-beam lines and 8-beam lines. A uniformly spaced 7-beam line layout was evaluated and determined to not be a feasible approach for the right bridge (northbound) based on the maintenance of traffic requirements. Constructing a width sufficient to carry two lanes of traffic would require a greater width of the existing bridge to be removed which would not leave sufficient width for two lanes of traffic to be carried on the existing bridge while the new portion is constructed. A 7-beam line layout with variable beam spacing across the right bridge (northbound) was also evaluated to accommodate the maintenance of traffic requirements. However, due to the increased size of steel plate girders required to carry the loads imposed by the larger girder spacing, this alternative was rejected due to excessive cost. For the left bridge (southbound) a 7-beam line layout is a feasible approach as there is no concern with phased construction. For the left bridge (southbound) 7-beam line configuration beams can be uniformly spaced at 9'-8". Ultimately, an 8-beam line configuration was evaluated and determined to be the best option compatible with the maintenance of traffic requirements for the right bridge (northbound). Beam spacing for this configuration will be 8'-7" utilizing steel plate girders with a web depth of 48 inches.

To comply with maintenance of traffic requirements, phased construction of the right bridge (northbound) will be required as discussed in Section 2.4. After demolition of the existing bridge deck overhang, beam lines 5 through 8 will be constructed with a minimum width of 32'-3" of bridge deck. This width is sufficient to accommodate traffic during the Phase 2 construction of the right bridge (northbound). Once beam lines



5 through 8 and the deck have been constructed, the remainder of the existing bridge will be demolished, including the removal of the steel piles for Pier 1, and the proposed bridge completed. Per the 1958 construction plans, Pier 1 is founded on steel piles with an estimated pay length of 18-feet. Removal of these piles is necessary to avoid conflicts with the foundation for proposed Pier 1 and will incur additional cost for this alternative which has been accounted for in the estimates. The left bridge (southbound) construction will be more simplistic as phased construction is not necessary for this bridge. Once the right bridge (northbound) has been constructed, all traffic will be switched to the right bridge (northbound) providing two southbound lanes of traffic and two northbound lane of traffic. Demolition of the existing left bridge will take place including removal of existing piles in the area of Pier 1. Construction of the left bridge will then commence.

Moving forward cost comparisons between alternatives will be made considering 8-lines of 48-inch web depth weathering steel plate girders spaced at 8'-7" for the right bridge (northbound) with a 8 ½" thick composite concrete deck and 7-lines of 54" depth weathering steel plate girders spaced at 9'-8" for the left bridge (southbound) with a 9" thick composite concrete deck for Alternative 2.

3.3 Alternative 3

Alternative 3 is a 3-span arrangement of 105' – 105' – 105' and utilizes prestressed precast concrete I-girders (PCIB) for the superstructure. These spans were selected to provide the most efficient spans for prestressed precast concrete I-girders. This span arrangement does place proposed Pier 1 within the OHW limits of Big Walnut Creek. Existing Pier 2 will be removed from within the OHW limit and thus this alternative results in no net change to the number of piers within Big Walnut Creek when compared to the existing layout. With this span arrangement, proposed Pier 1 will not conflict with existing Pier 1 for either the left bridge (southbound) and right ridge (northbound) bridges. This will offer cost savings when compared to Alternatives 1 and 2 as existing Pier 1 can be removed to a foot below grade rather than completely removing the foundation and piles.

For this alternative, Stantec evaluated both 7-beam lines and 8-beam lines for all spans. A uniformly spaced 7-beam line layout for all spans was evaluated and determined to not be a feasible approach for the right bridge (northbound) based on the maintenance of traffic requirements. Constructing a width sufficient to carry two lanes of traffic would require a greater width of the existing bridge to be removed which would not leave sufficient width for two lanes of traffic to be carried on the existing bridge while the new portion is constructed. We determined a variable spacing which would work with the maintenance of traffic was to have beam lines 1 through 5 spaced at 8'-6" +/- and beams lines 5 through 7 spaced at 12'-9" +/- . This arrangement requires WF66-49 beams. The left bridge (southbound) beam lines can have a constant spacing of 9'-8" and utilize smaller WF60-49 beams.

Evaluating the bridges for 8 beam lines indicated a Modified AASHTO Type 4 (60") or WF60-49 spaced at 8'-7" for the right bridge and 8'-4" for the left bridge will work for all spans. Based on available cost information both the Modified AASHTO Type 4 (60") and WF60-49 are similar in cost. The 8-beam line layout accommodates the maintenance of traffic constraints on the right (northbound) bridge and will be utilized for cost evaluation on this bridge.



The most economical option for this alternative that meets maintenance of traffic criteria is utilizing a 7-beam line layout with a 8 ½" thick composite concrete deck for the left bridge (southbound) and an 8-beam line layout with an 8 ½" thick composite concrete deck for the right bridge (northbound). Moving forward with this study, this will be the option compared with other alternatives.

To comply with maintenance of traffic requirements, phased construction of the right bridge (northbound) will be required as discussed in Section 2.4. After demolition of the existing bridge deck overhang, beam lines 5 through 8 will be constructed with a minimum width of 31'-2" of bridge deck. This width is sufficient to accommodate traffic during the Phase 2 construction of the right bridge (northbound). Once beam lines 5 through 8 and the deck have been constructed, the remainder of the existing bridge will be demolished and the proposed bridge completed. The left bridge (southbound) construction will be more simplistic as phased construction is not necessary for this bridge. Once the right bridge (northbound) has been constructed, all traffic will be switched to the right bridge (northbound) providing two southbound lanes of traffic and two northbound lane of traffic. Demolition of the existing left bridge will take place and construction of the left bridge will then commence.

3.4 Alternative 4

Alternative 4 is a 3-span arrangement of 94.5' – 126' – 94.5' and utilizes steel beams for the superstructure. These spans were selected to provide the most efficient spans for steel beams. Where prestressed precast concrete I-girder beams are most efficient at equal spans, steel beams are most efficient when the span ratio of end spans to internal span is within the range of 0.7 to 0.8 as this balances the maximum moments over the piers and at midspan. This span arrangement places proposed Pier 1 within the OHW limits of Big Walnut Creek. Existing Pier 2 will be removed from the OHW limit and thus this alternative results in no net change to the number of piers within Big Walnut Creek when compared to the existing layout. With this span arrangement, proposed Pier 1 will not conflict with existing Pier 1 for either the left bridge (southbound) and right ridge (northbound) bridges. This will offer cost savings as compared to Alternatives 1 and 2, as existing Pier 1 can be removed to a foot below grade rather than completely removing the foundation and piles .

For this alternative, Stantec compared both rolled steel beams and steel plate girders. It was determined rolled steel beams were not cost effective with 8 or 9 beam lines due to the extremely heavy sections which were required.

Initially several beam line arrangements were evaluated including, 7-beam lines and 8-beam lines. A uniformly spaced 7-beam line layout was evaluated and determined to not be a feasible approach for the right bridge (northbound) based on the maintenance of traffic requirements. The left bridge (southbound) can utilize a 7-beam line layout with constant spacing between beams as phased construction will not be required. The left bridge (southbound) can utilize 7-beam lines spaced at 9'-8" with 48-inch deep webs. A 7-beam line layout with variable beam spacing across the right bridge (northbound) was also evaluated to accommodate the maintenance of traffic requirements. However, due to the increased size of steel plate girders required to carry the loads imposed by the larger girder spacing, this alternative was rejected due to excessive cost. Ultimately, an 8-beam line configuration was evaluated and determined to be the best option that accomdates maintenance of traffic. Beam spacing for this configuration will be 8'-4" for the left



bridge (southbound) and 8'-7" for the right bridge (northbound) utilizing weathering steel plate girders with a web depth of 44 inches was determined to be the most cost efficient for the spacing.

To comply with maintenance of traffic requirements, phased construction of the right bridge (northbound) will be required as discussed in Section 2.4. After demolition of the existing bridge deck overhang, beam lines 5 through 8 will be constructed with a minimum width of 31'-2" of bridge deck. This width is sufficient to accommodate traffic during the Phase 2 construction of the right bridge (northbound). Once beam lines 5 through 8 and the deck have been constructed, the remainder of the existing bridge will be demolished and the proposed bridge completed. The left bridge (southbound) construction will be more simplistic as phased construction is not necessary for this bridge. Once the right bridge (northbound) has been constructed, all traffic will be switched to the right bridge (northbound) providing two southbound lanes of traffic and two northbound lane of traffic. Demolition of the existing left bridge will take place and construction of the left bridge will then commence.

Steel plate girders were evaluated with both 7-beam lines and 8-beam lines with web depths of 48 and 44 inches respectively. It was determined the most cost-effective solution was 7-beam lines with 48-inch deep webs spaced at 9'-8" with a 9" thick composite concrete deck for the left bridge (southbound) and 8-beam lines with 44-inch deep webs spaced at 8'-4" with an 8 ½" thick composite concrete deck for the right bridge (northbound). This arrangement will be used for comparison with the other alternatives.

4 Alternative Comparison

Many items were considered when comparing the alternatives, including live load deflection, waterway impacts, initial construction costs, life cycle costs, constructability, impacts to maintenance of traffic, and the construction schedule. Each of these issues are discussed below.

4.1 Live Load Deflection

Live load deflection considers the deflection due to all lanes of traffic being loaded simultaneously with the maximum truck load. The live load deflection is well within acceptable ranges for all alternatives. However, the deflections and resulting movement, or "bouncing", of the bridge due to normal daily traffic which will be significantly less for Alternatives 1 and 3 due to the greater stiffness and damping mass of the prestressed concrete I-girders. Therefore, people using the sidewalk and shared-use path will feel more comfortable while crossing the bridge.

4.2 Waterway Impacts

Each alternative presented removes existing Pier 2 from Big Walnut Creek and assume requirement of a causeway. Therefore, all alternatives will require a Nationwide Permit as a minimum. Alternatives 1 and 2 eliminate all piers within the OHW limits, however, construction methods will remain similar to Alternatives 3 and 4 since the piers will remain very close to the OHW limits. Excavation for the piers will require dewatering and cofferdams placed in or adjacent to Big Walnut Creek. The bank side of the piers could conceivably be open cut rather than utilizing cofferdams. It was noted through a cursory review of



available environmental documentation that Big Walnut Creek in Franklin/Pickaway County is a Group 2 stream with a known presence of federally listed mussel species. Removing and keeping all piers out of the OHW of Big Walnut Creek would provide environmental benefits. The main environmental benefit is to reduce the likelihood of high velocities around the piers which can disturb aquatic life, including mussels, and reducing overall velocities through the bridge by increasing the waterway opening.

4.3 Initial Construction Cost

To determine the construction cost for each alternative, preliminary quantities were developed for the major cost drivers impacted by the different alternatives. These drivers included existing steel pile removal at existing Pier 1, steel reinforcing, concrete, piling, sealing of concrete surfaces, structural steel, painting fascia girders on each bridge on the median side of the bridge, prestressed I-girders, bearings, and railing. A breakdown of the preliminary quantities can be found in Appendix B. Estimated costs were then developed for these quantities using ODOT’s Estimator program. Where unit costs were not available in Estimator, they were estimated from ODOT’s Historical Bid Data Item Search from 2019 to first quarter of 2023.

The combined left and right bridge estimated construction costs are presented in the table below, these costs do not include inflation and contingency which will be added in section 4.5 Total Costs. The detailed breakdown for each alternative can be found in Appendix C.

	Alternative 1 (Out of OHW, PCIB)	Alternative 2 (Out of OHW, Steel)	Alternative 3 (In OHW, PCIB)	Alternative 4 (In OHW, Steel)
Estimated Cost	\$8,300,916	\$7,967,393	\$7,509,473	\$7,797,971

4.4 Life Cycle Costs

AASHTO LRFD code indicates new bridges designed according to the code should have a life expectancy of 75 to 100 years. Life Cycle Costs should be considered when comparing alternatives to determine actual costs over the life of the bridge. To reduce future maintenance costs, Alternatives 2 and 4 are assumed to use weathering steel.



FRA-122-1.86L & 1.87R
4 Alternative Comparison

Alternatives 1 and 3 will require the following work over the 100-year life of the bridge:

- Removal and replacement of the non-epoxy sealant as shown on the typical sections in Appendix A and exposed concrete surfaces of abutments and piers at years 20, 50 and 75.
 - Alternative 1 – \$91,549
 - Alternative 3 – \$91,890
- Micro Silica Modified Concrete Overlay at years 25, 35, 75 and 85.
 - Alternative 1 – \$757,285
 - Alternative 3 – \$757,285
- Deck replacement at year 50.
 - Alternative 1 – \$1,151,688
 - Alternative 3 – \$1,152,810
- Total Life Cycle Costs.
 - Alternative 1 – \$2,000,522
 - Alternative 3 – \$2,001,985

Alternatives 2 and 4 will require the following work over the 100-year life of the bridge:

- Painting of the steel at years 25, 50 and 75. The ODOT BDM 308.2.2.1.d.1 requires the fascia girders between twin bridges be painted when the gap between bridges is less than a 30-foot gap.
 - Alternative 2 – \$304,923
 - Alternative 4 – \$288,505
- Removal and replacement of the non-epoxy sealant as shown on the typical sections in Appendix A and exposed concrete surfaces of abutments and piers at years 20, 50 and 75.
 - Alternative 2 – \$64,963
 - Alternative 4 – \$67,731
- Micro Silica Modified Concrete Overlay at years 25, 35, 75 and 85.
 - Alternative 2 – \$757,285
 - Alternative 4 – \$757,285
- Deck replacement at year 50.
 - Alternative 2 – \$1,103,738
 - Alternative 4 – \$1,103,738
- Total Life Cycle Costs.
 - Alternative 2 – \$2,230,909
 - Alternative 4 – \$2,217,259



4.5 Total Costs

Total cost for each alternative including 25% inflation, 10% contingency, and Life Cycle Costs are presented in the table below. The detailed cost breakdown of each alternative can be found in Appendix C.

	Alternative 1 (Out of OHW, PCIB)	Alternative 2 (Out of OHW, Steel)	Alternative 3 (In OHW, PCIB)	Alternative 4 (In OHW, Steel)
Initial Cost	\$8,300,916	\$7,967,393	\$7,509,473	\$7,797,971
25% Inflation	\$2,075,229	\$1,991,848	\$1,877,368	\$1,949,493
10% Contingency	\$1,037,615	\$995,924	\$938,684	\$974,746
Sub-Total	\$11,413,760	\$10,955,165	\$10,325,526	\$10,722,210
Life Cycle Cost	\$2,000,522	\$2,230,909	\$2,001,985	\$2,217,259
25% Inflation	\$500,130	\$557,727	\$500,496	\$554,315
10% Contingency	\$250,065	\$278,864	\$250,248	\$277,157
Sub-Total	\$2,750,717	\$3,067,500	\$2,752,730	\$3,048,730
Total Cost	\$14,164,477	\$14,022,665	\$13,078,255	\$13,770,941
Cost Ratio	1.08	1.07	1.00	1.05

5 Recommendation

Alternative 3 offers the lowest initial construction cost and the lowest Life Cycle. Alternative 3 provides three equal spans with one pier within the OHW limits of Big Walnut Creek. While the cost is not significantly less than Alternative 4, the additional stiffness of the PCIB superstructure will provide a more comfortable experience for those using the sidewalk and shared-use path.

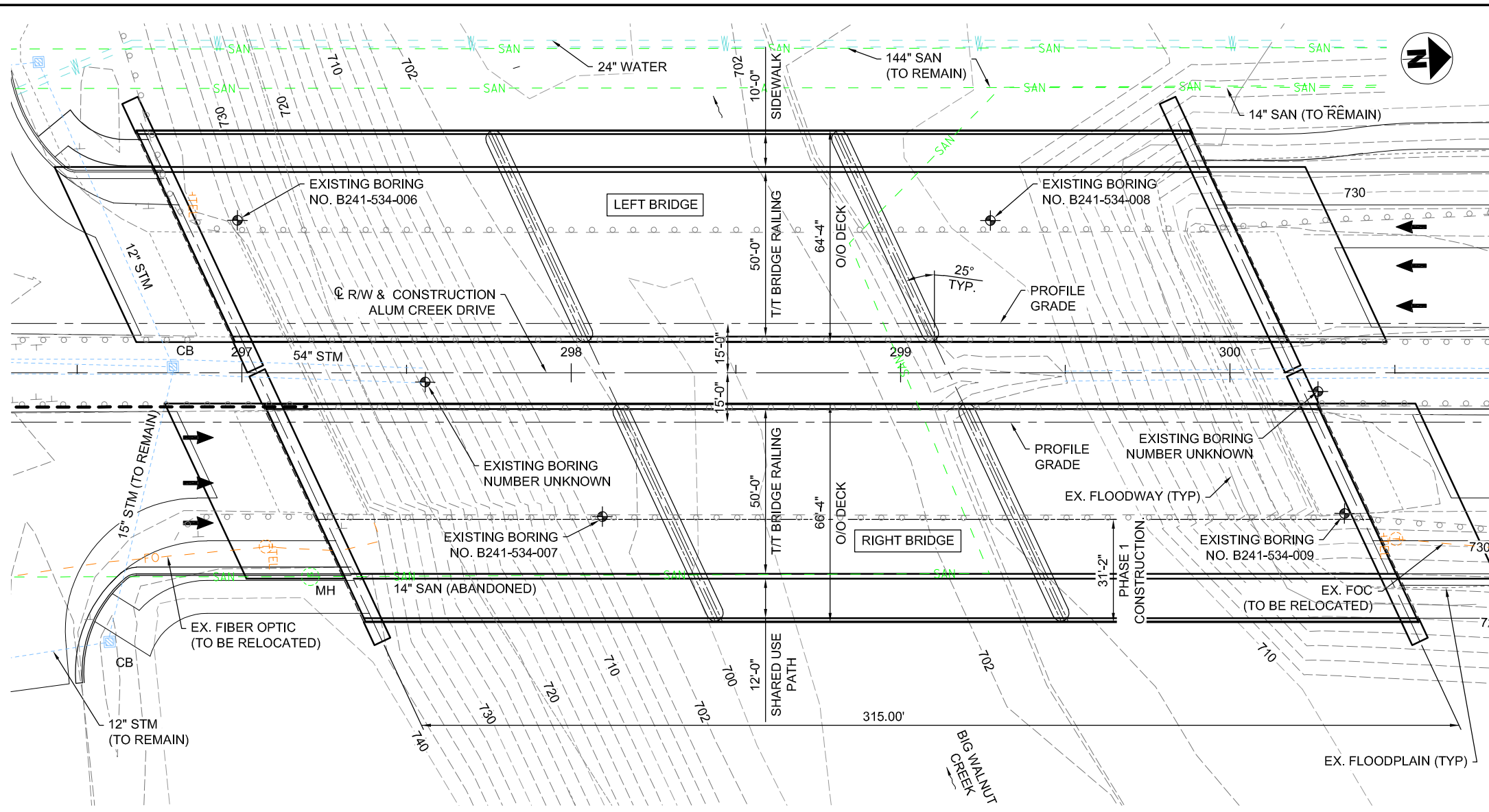
At this time Stantec recommends Alternative 3 be advanced as the preferred structure type and span arrangement.



Appendix A Site Plan, Profiles, and Typical Sections



C:\pw_working\infra01\bmeneal\0181967\115792_SPO01.dwg 19-Dec-23 1:04 PM



PLAN

BENCHMARK DATA			
BM #1 STA.	_____	ELEV.	_____
BM #2 STA.	_____	ELEV.	_____
BM #3 STA.	_____	ELEV.	_____
BM #4 STA.	_____	ELEV.	_____

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET

NOTES
EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

RIGHT BRIDGE TRAFFIC:
2022 ADT = 17,523 2022 ADTT = 4,343
2048 ADT = 22,030 2048 ADTT = 5,445

LEFT BRIDGE TRAFFIC:
2022 ADT = 18,716 2022 ADTT = 4,358
2048 ADT = 23,620 2048 ADTT = 5,500

LEGEND
◆ EXISTING BORING LOCATION

HYDRAULIC DATA
DRAINAGE AREA = 540 SQ. MILES
Q (100) = 30,700 CFS, FIS V (100) = 8.43 FT/S, FIS
Q (25) = 21,300 CFS, FIS V (25) = 6.62 FT/S, FIS
PROPOSED STRUCTURE CLEARS THE 25 YEAR DESIGN HW BY 8.27 FEET.

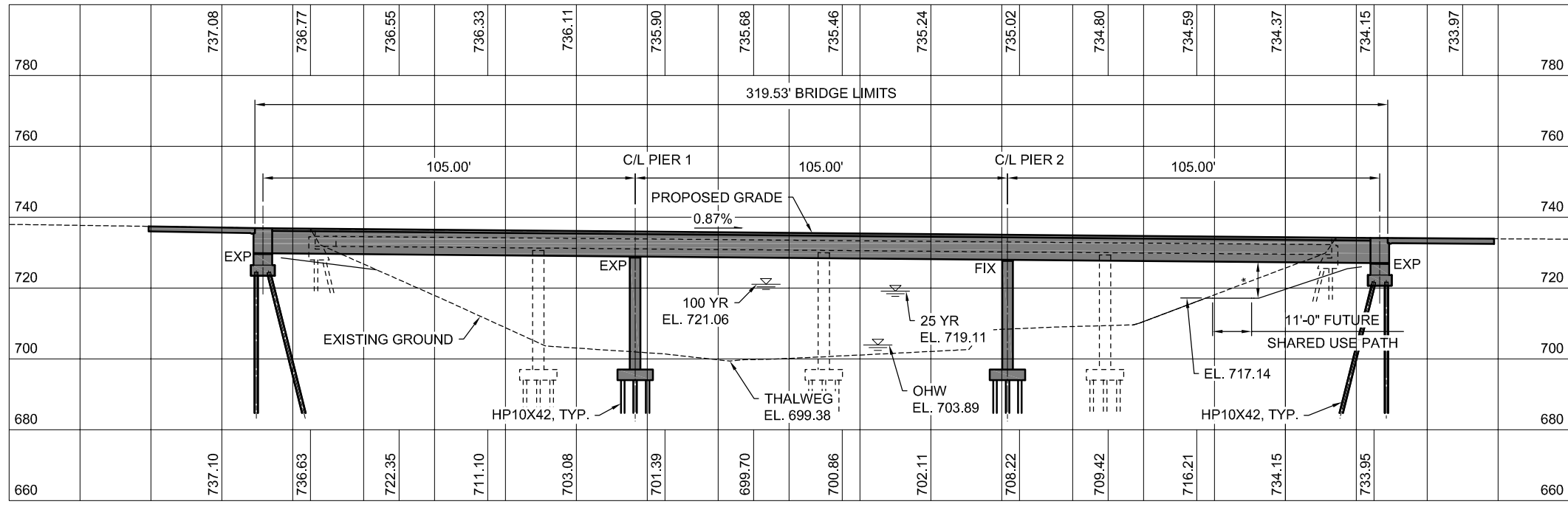
EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL ROLLED BEAMS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.
SPANS: 63.45'± - 80'± - 80'± - 64'0"± C/C BEARINGS
ROADWAY: 32'-0" FACE TO FACE OF GUARDRAIL
LOADING: HS 20-44
SKEW: 25°± RF
WEARING SURFACE: MICRO-SILICA MODIFIED CONCRETE OVERLAY (3")
APPROACH SLABS: 25'± LONG, 13"± THICK, AS-1-54
ALIGNMENT: TANGENT
CROWN: VARIES FT/FT
STRUCTURE FILE NUMBER: LEFT BRIDGE = 2530333
RIGHT BRIDGE = 2530325
DATE BUILT: 1959
DISPOSITION: TO BE DEMOLISHED

PROPOSED STRUCTURE

TYPE: 3-SPAN PRESTRESSED CONCRETE I-BEAM WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED BY SEMI-INTEGRAL ABUTMENTS AND REINFORCED CONCRETE WALL TYPE PIERS SUPPORTED ON STEEL H-PILES.

SPANS: 103.92' - 102.83' - 103.92' MEASURED C/C BEARINGS
ROADWAY: 50'-0" TOE TO TOE BARRIER
SIDEWALK: 10'-0" LT. BRIDGE, 12'-0" RT. BRIDGE
LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE
SKEW: 25° RIGHT FORWARD
WEARING SURFACE: 1" MONOLITHIC CONCRETE
APPROACH SLABS: 30'-0" LONG, 17" THICK(AS-1-15)
ALIGNMENT: TANGENT
CROWN: 0.016 FT/FT
DECK AREA: 21,195 SF
COORDINATES: LATITUDE 39°51'21.65" N 39°51'21.88" N
LONGITUDE 82°56'18.67" W 82°56'17.96" W



PROFILE - ALTERNATIVE 3

NOTE:
HISTORIC BORING INFORMATION DID NOT REACH ROCK ABOVE ELEVATION 660. BORINGS TERMINATED PRIOR TO ENCOUNTERING ROCK.

* - 10'-0" MINIMUM CLEARANCE

DESIGN AGENCY: **Stanec Consulting Services Inc.**
1900 Lake Shore Drive, Suite 100
Columbus, Ohio 43224
(614) 486-6383

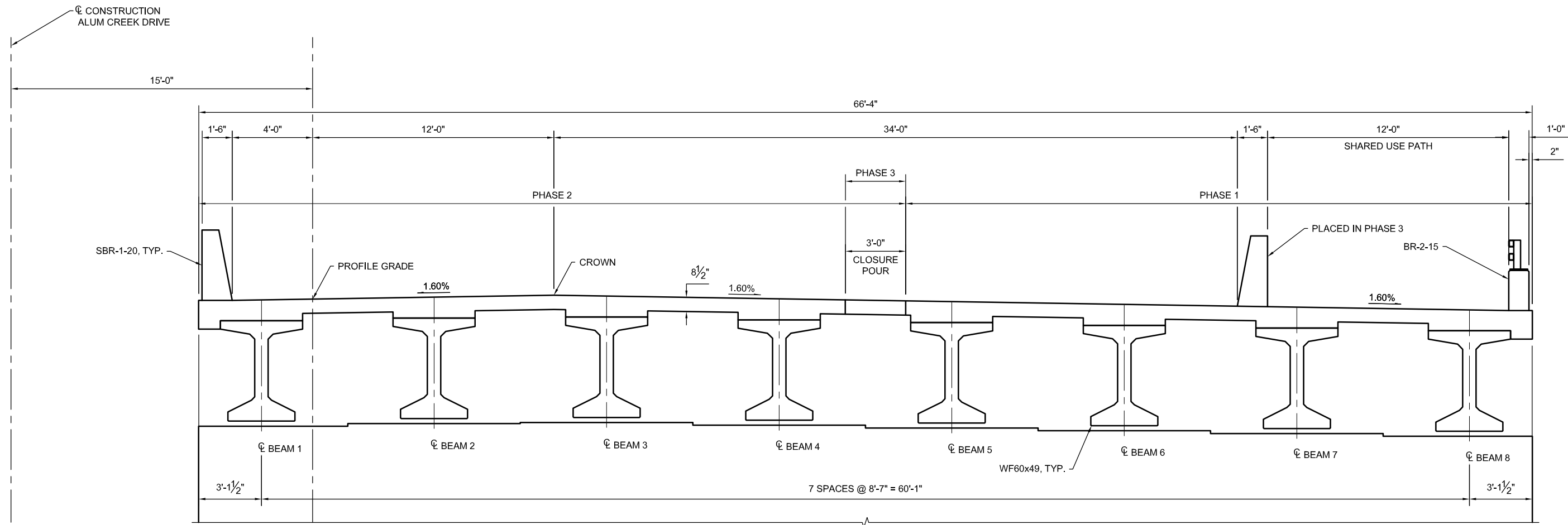
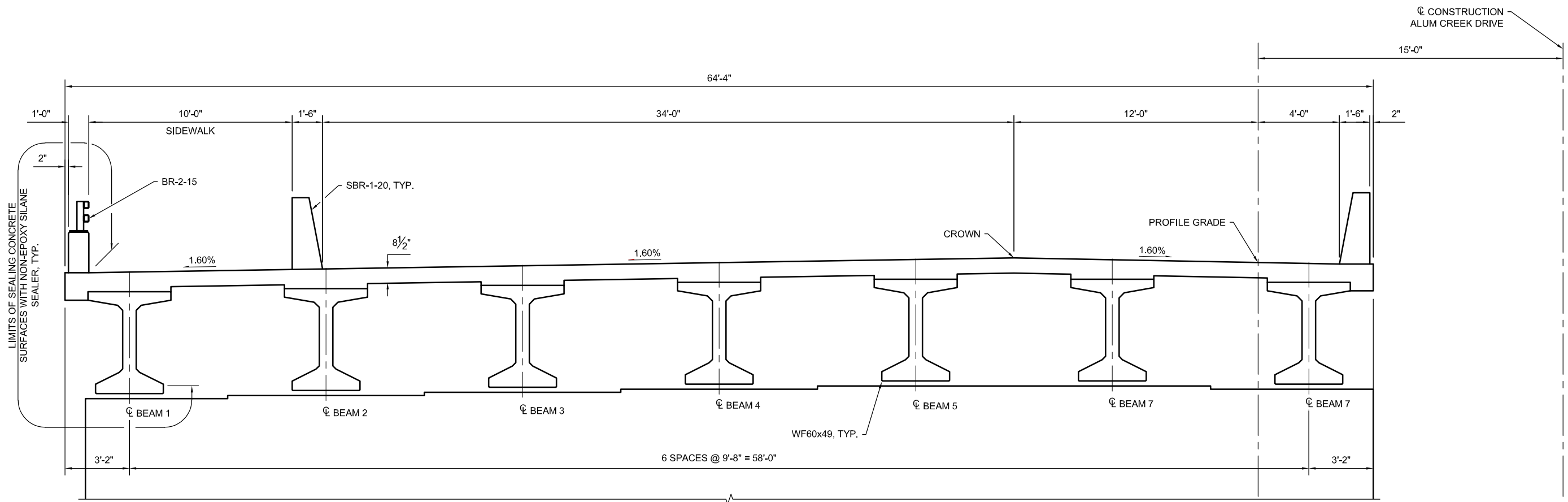
DATE: 12/2023
REVIEWED: EDA
DRAWN: JWS
DESIGNED: BSM
FRANKLIN COUNTY
STA. 297+04.78
STA. 300+19.47

SITE PLAN
BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
PID No. 115792

1 / 8

C:\pw_working\infra01\bmeneal\d0181967\115792_ST001.dwg 14-Dec-23 9:38 PM



DESIGN AGENCY
 Stanlec Consulting Services Inc.
 1500 Lake Shore Drive, Suite 100
 Columbus, Ohio 43204
 (614) 486-6383



DESIGNED	BSM	CHECKED	MRS
DRAWN	JWS	REVISED	
REVIEWED	EDA	STRUCTURE FILE NUMBER	
DATE	12/2023		

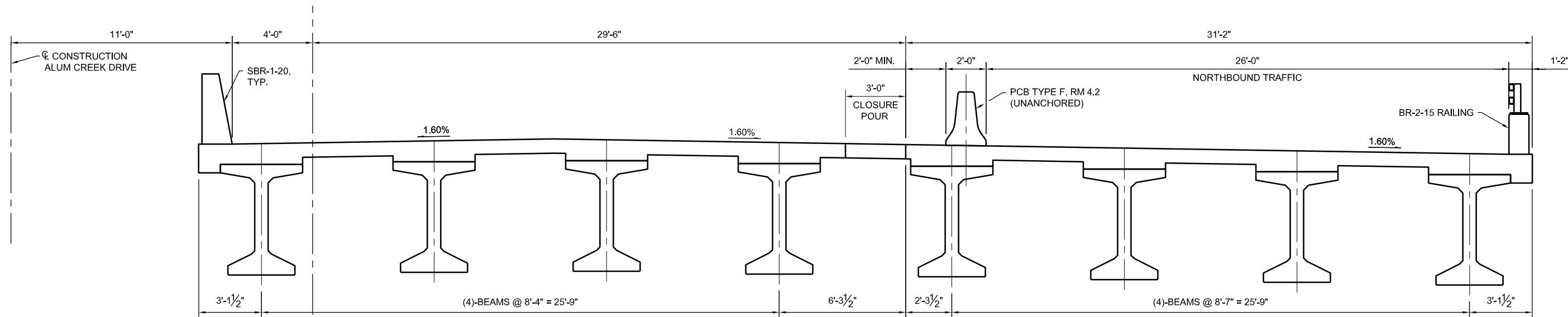
ALTERNATIVE 3 - BRIDGE TYPICAL SECTION
 BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
 ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
 PID No. 115792

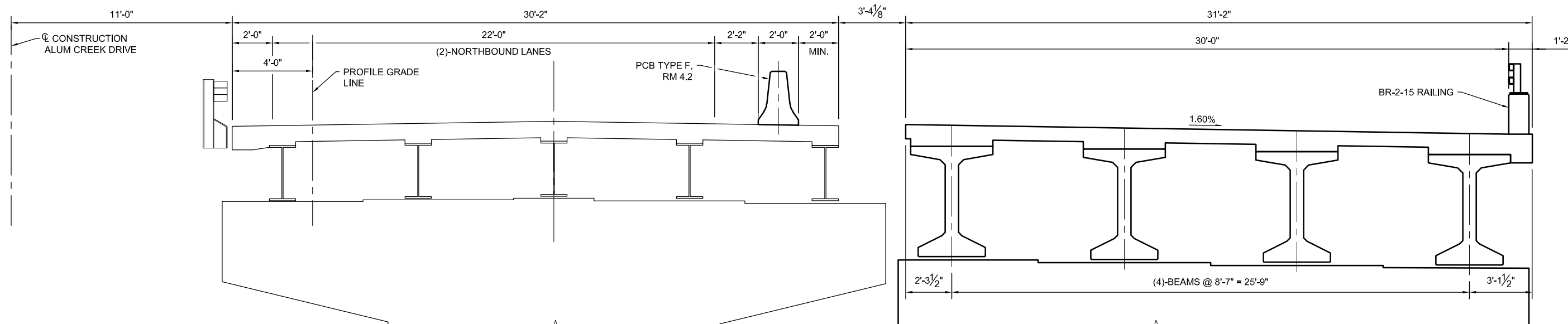
2 / 8



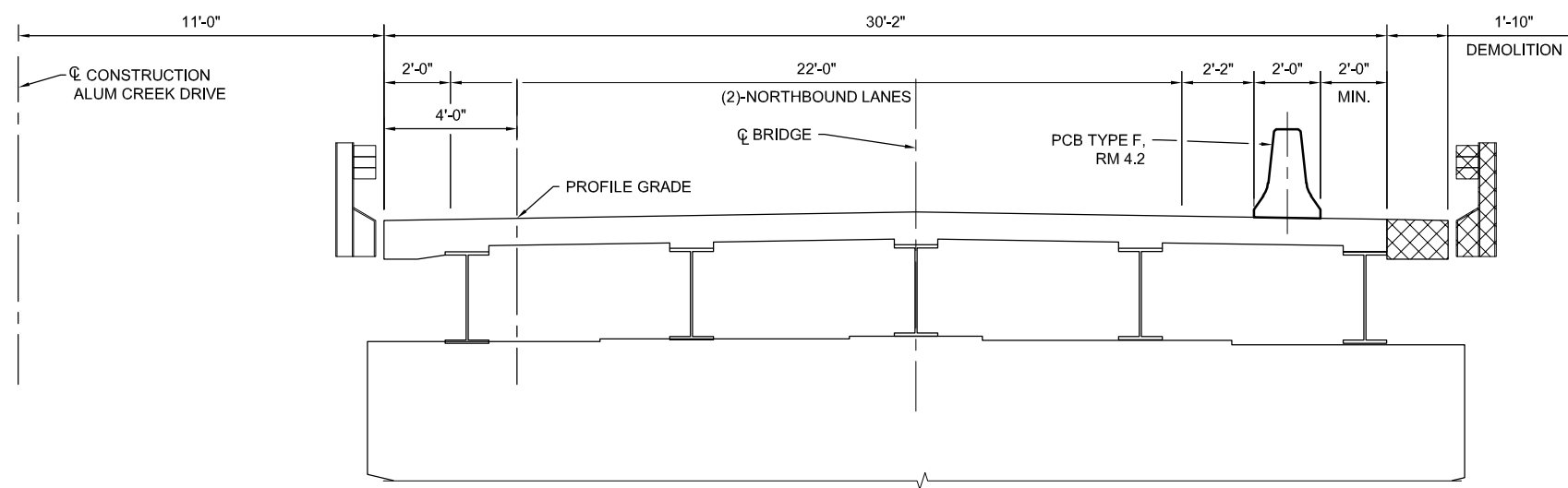
C:\pw_working\infra01\bmceal\d0181967\115792_ST001.dwg 14-Dec-23 9:41 PM



PHASE 2



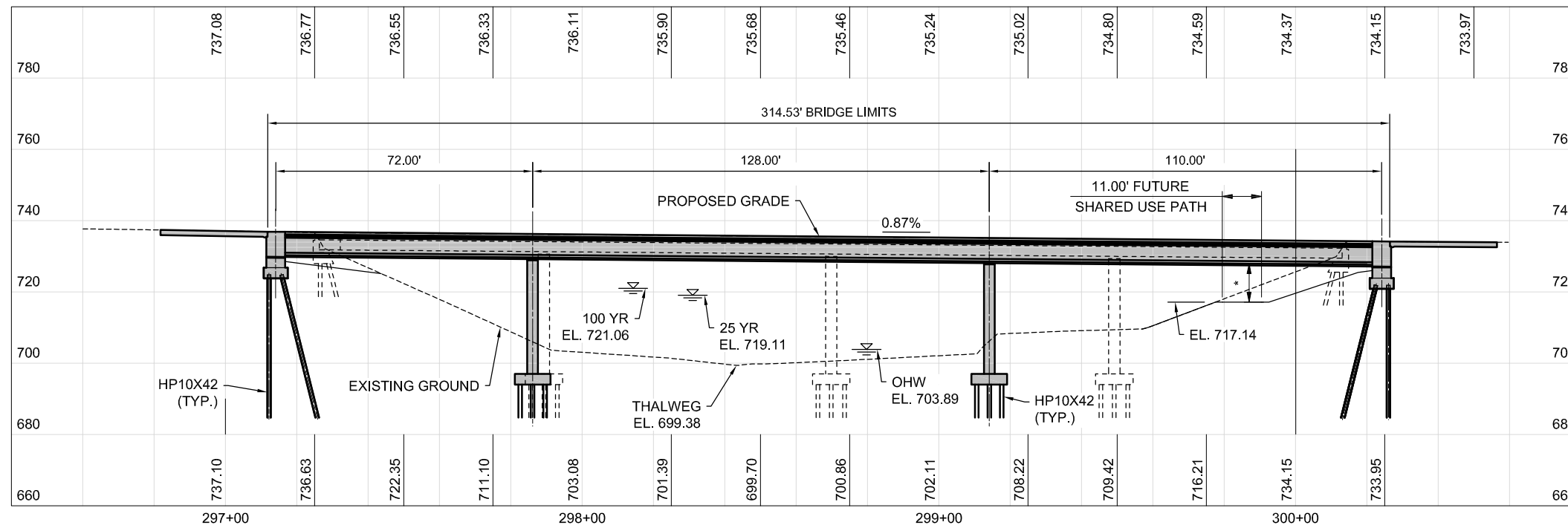
PHASE 1



DEMOLITION PHASE

<p>DESIGN AGENCY Stanlec Consulting Services Inc. 1500 Lake Shore Drive, Suite 100 Columbus, Ohio 43204 (614) 486-6383</p>	DATE	12/2023
	REVIEWED	EDA
DRAWN	JWS	REVIS
DESIGNED	BSM	CHECKED
	MRS	
<p>STRUCTURE FILE NUMBER</p>		
<p>PART WIDTH CONSTRUCTION PHASES FOR FRA-CR122-1.87R</p>		
<p>BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R</p>		
<p>ALUM CREEK DRIVE OVER BIG WALNUT CREEK</p>		
<p>FRA-CR122-0.00</p>		
<p>PID No. 115792</p>		
<p>3/8</p>		

C:\pw_working\infra01\bmecneal\d0181967\115792_Alt002.dwg 14-Dec-23 9:45 PM

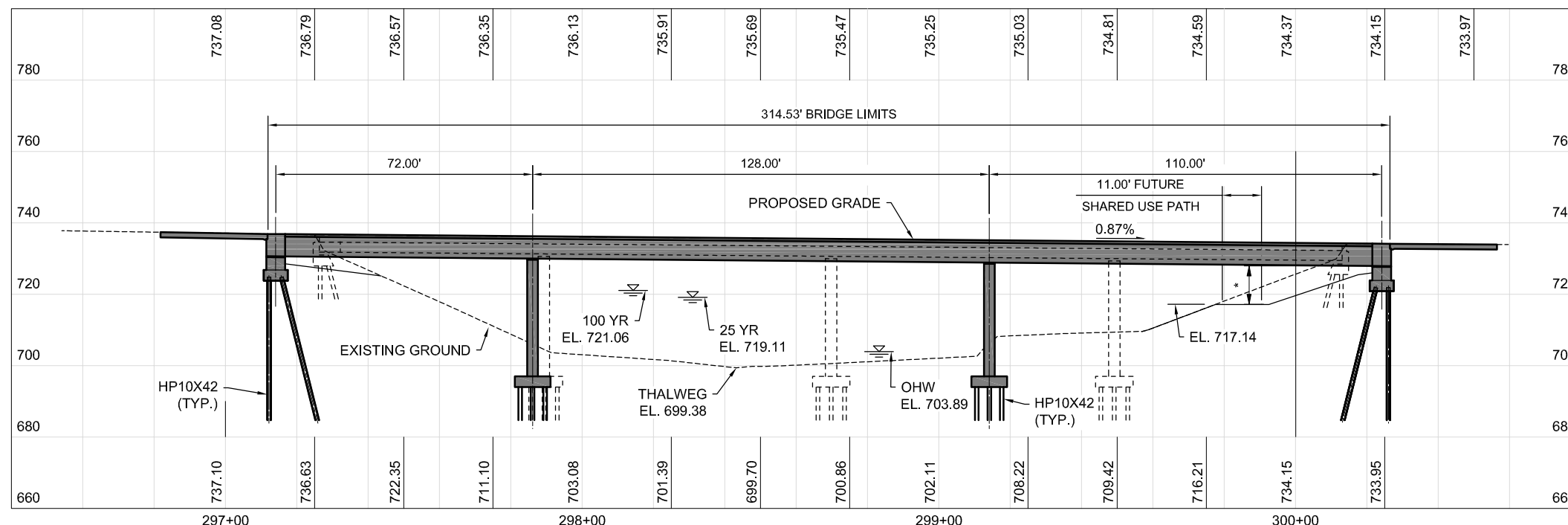


NOTE:
HISTORIC BORING INFORMATION DID NOT REACH ROCK ABOVE ELEVATION 660. BORINGS TERMINATED PRIOR TO ENCOUNTERING ROCK.

PROFILE - ALTERNATIVE 1

* - 10'-0" MINIMUM CLEARANCE

PROPOSED STRUCTURE		
TYPE: 3-SPAN PRESTRESSED CONCRETE I-BEAM WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED BY SEMI-INTEGRAL ABUTMENTS AND REINFORCED CONCRETE WALL TYPE PIERS SUPPORTED ON STEEL H-PILES.		
SPANS: 70.92' - 125.83' - 108.92' MEASURED C/C BEARINGS		
ROADWAY: 50'-0" TOE TO TOE BARRIER		
SIDEWALK: 10'-0" LT. BRIDGE, 12'-0" RT. BRIDGE		
LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE		
SKEW: 25° RIGHT FORWARD		
WEARING SURFACE: 1" MONOLITHIC CONCRETE		
APPROACH SLABS: 30'-0" LONG, 17" THICK(AS-1-15)		
ALIGNMENT: TANGENT		
CROWN: 0.016 FT/FT		
DECK AREA: 20,865 SF		
COORDINATES: LATITUDE	LEFT BRIDGE 39°51'21.63" N	RIGHT BRIDGE 39°51'21.91" N
LONGITUDE	82°56'18.74" W	82°56'17.88" W



NOTE:
HISTORIC BORING INFORMATION DID NOT REACH ROCK ABOVE ELEVATION 660. BORINGS TERMINATED PRIOR TO ENCOUNTERING ROCK.

PROFILE - ALTERNATIVE 2

* - 10'-0" MINIMUM CLEARANCE

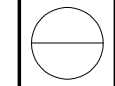
PROPOSED STRUCTURE		
TYPE: 3-SPAN CONTINUOUS STEEL PLATE GIRDER WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED BY SEMI-INTEGRAL ABUTMENTS AND REINFORCED CONCRETE WALL TYPE PIERS SUPPORTED ON STEEL H-PILES.		
SPANS: 72' - 128' - 110' MEASURED C/C BEARINGS		
ROADWAY: 50'-0" TOE TO TOE BARRIER		
SIDEWALK: 10'-0" LT. BRIDGE, 12'-0" RT. BRIDGE		
LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE		
SKEW: 25° RIGHT FORWARD		
WEARING SURFACE: 1" MONOLITHIC CONCRETE		
APPROACH SLABS: 30'-0" LONG, 17" THICK(AS-1-15)		
ALIGNMENT: TANGENT		
CROWN: 0.016 FT/FT		
DECK AREA: 20,865 SF		
COORDINATES: LATITUDE	LEFT BRIDGE 39°51'21.63" N	RIGHT BRIDGE 39°51'21.91" N
LONGITUDE	82°56'18.74" W	82°56'17.88" W



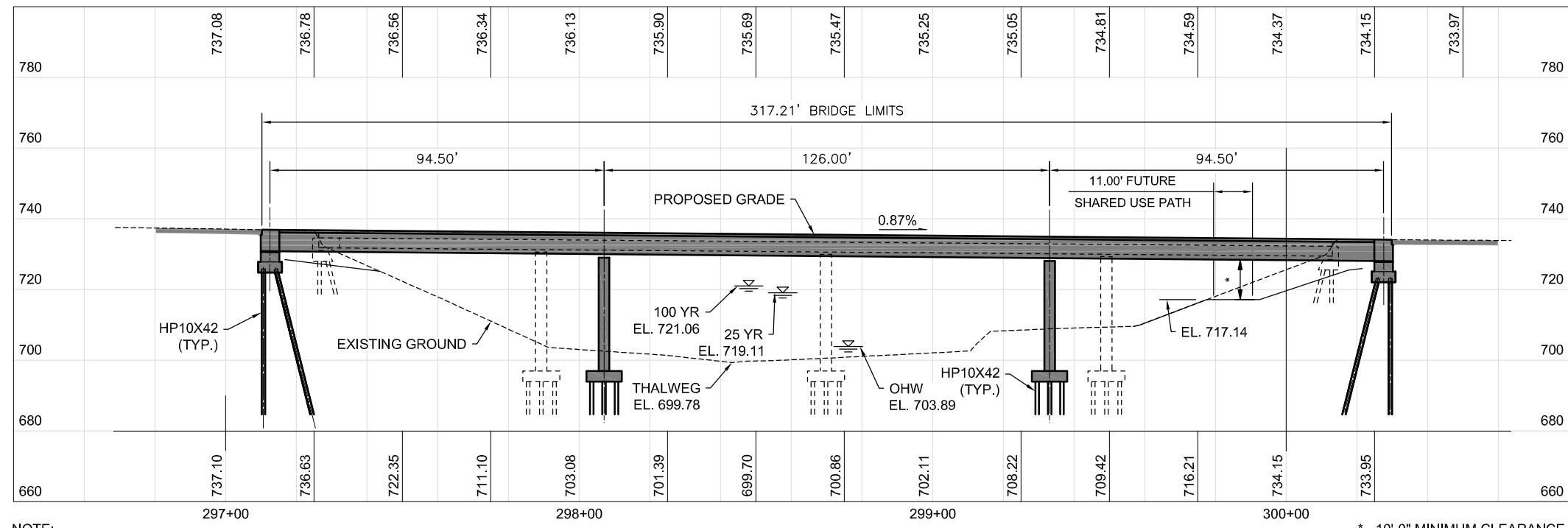
DATE	12/20/23
REVIEWED	EDA
DRAWN	JWS
DESIGNED	BSM
CHECKED	MRS
STRUCTURE FILE NUMBER	

ALTERNATIVE 1 AND ALTERNATIVE 2 PROFILES
BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
PID No. 115792

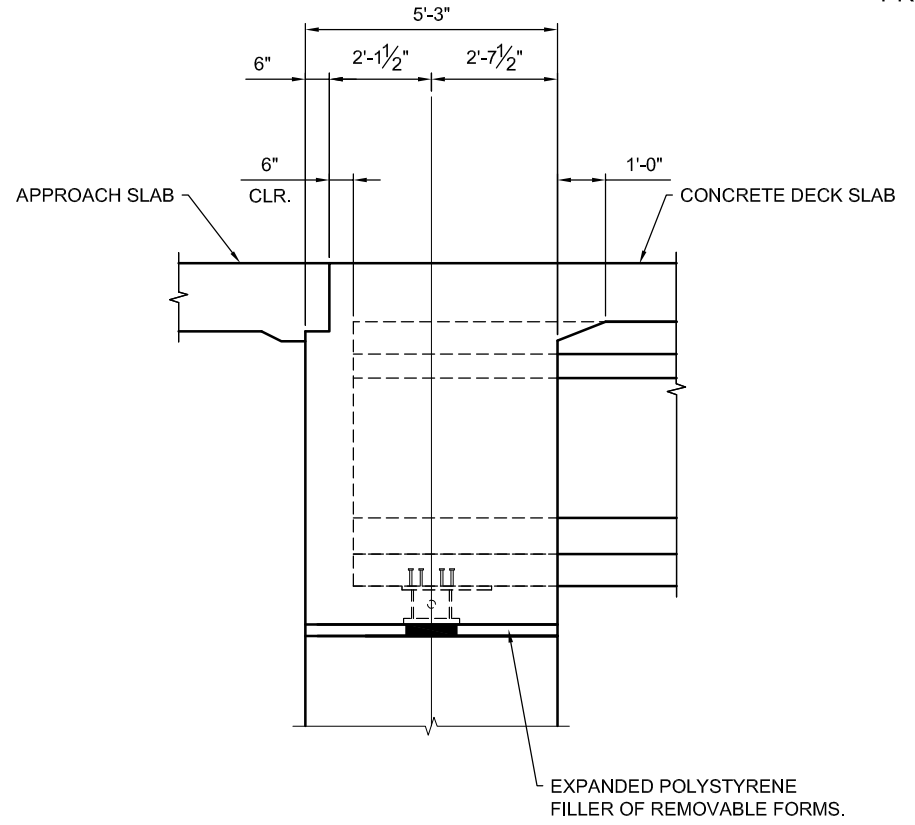


C:\pw_working\infra01\bmeneal\d0181967\115792_Alt003.dwg 14-Dec-23 9:52 PM



NOTE:
HISTORIC BORING INFORMATION DID NOT REACH ROCK ABOVE ELEVATION 660. BORINGS TERMINATED PRIOR TO ENCOUNTERING ROCK.

PROFILE - ALTERNATIVE 4



TYPICAL ABUTMENT SECTION
ALTERNATIVE 1 AND ALTERNATIVE 3

PROPOSED STRUCTURE		
TYPE: 3-SPAN CONTINUOUS STEEL PLATE GIRDER WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED BY SEMI-INTEGRAL ABUTMENTS AND REINFORCED CONCRETE WALL TYPE PIERS SUPPORTED ON STEEL H-PILES.		
SPANS: 94.5' - 126' - 94.5' MEASURED C/C BEARINGS		
ROADWAY: 50'-0" TOE TO TOE BARRIER		
SIDEWALK: 10'-0" LT. BRIDGE, 12'-0" RT. BRIDGE		
LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE		
SKEW: 25° RIGHT FORWARD		
WEARING SURFACE: 1" MONOLITHIC CONCRETE		
APPROACH SLABS: 30'-0" LONG, 17" THICK (AS-1-15)		
ALIGNMENT: TANGENT		
CROWN: 0.016 FT/FT		
DECK AREA: 21,042 SF		
COORDINATES: LATITUDE		RIGHT BRIDGE
LONGITUDE		RIGHT BRIDGE
		LEFT BRIDGE
		RIGHT BRIDGE

* - 10'-0" MINIMUM CLEARANCE

DESIGN AGENCY
Stanlec Consulting Services Inc.
1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204
(614) 486-6383



DATE: 12/2023
REVIEWED: EDA
STRUCTURE FILE NUMBER

DRAWN: JWS
REVISED:

DESIGNED: BSM
CHECKED: MRS

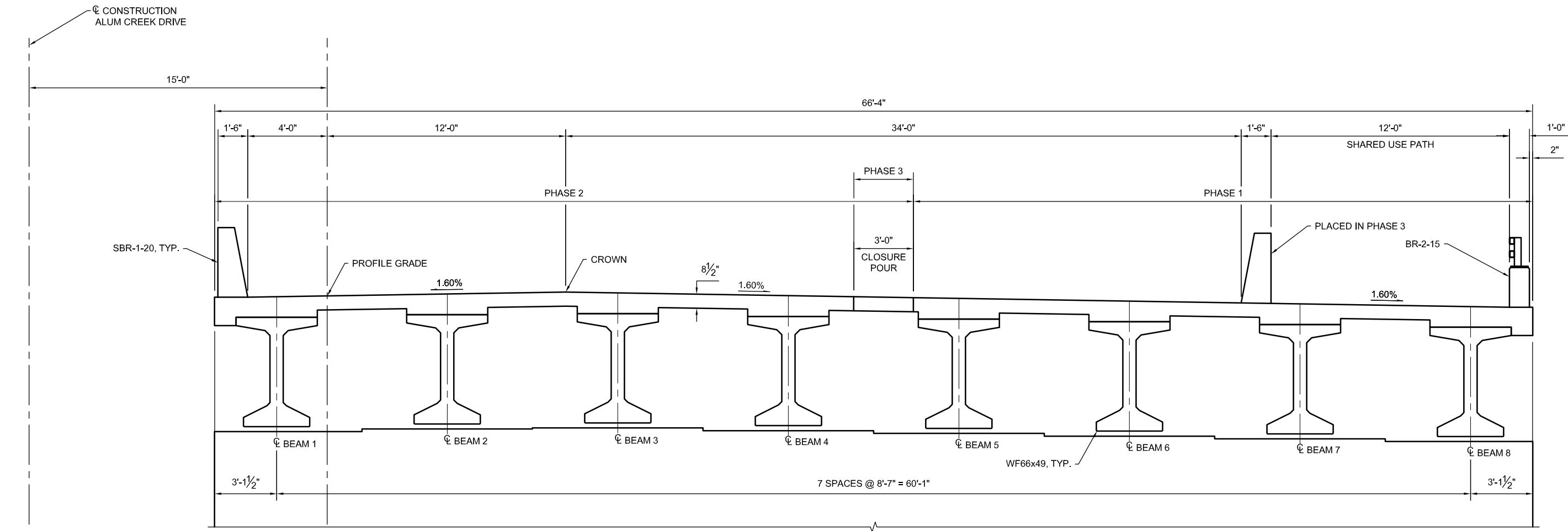
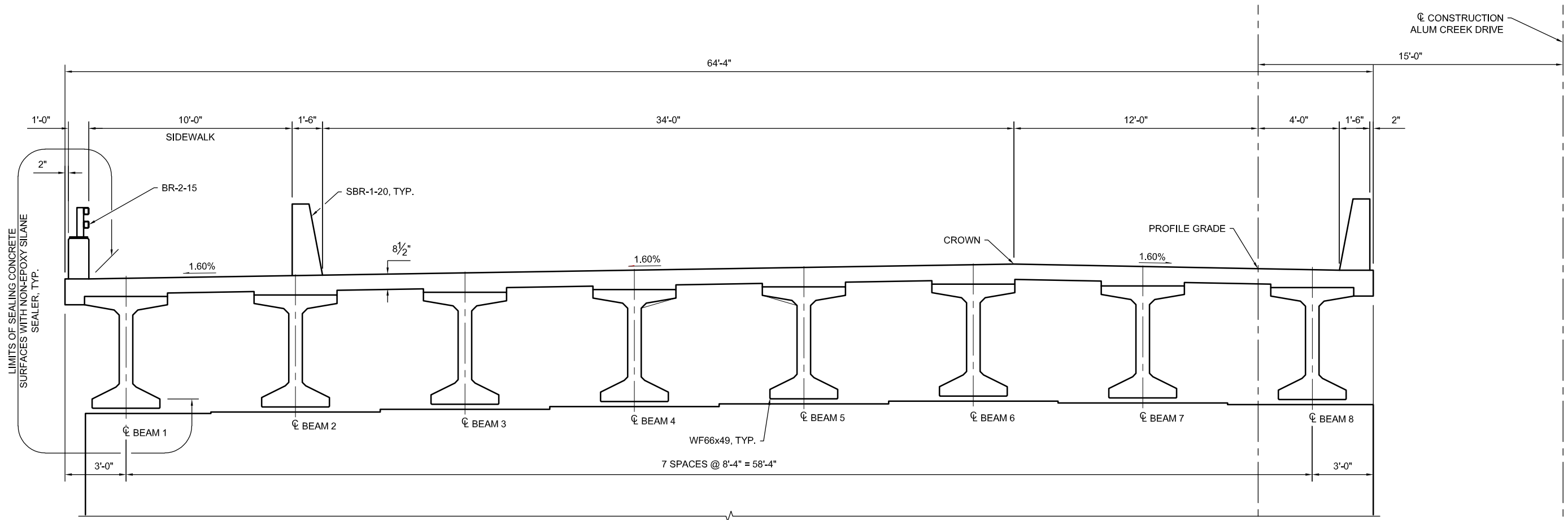
ALTERNATIVE 4 PROFILE AND ABUTMENT TYPICAL SECTION
BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
PID No. 115792

5/8



C:\pw_working\infra01\bmeneal\d0181967\115792_ST001.dwg 14-Dec-23 9:31 PM



DESIGN AGENCY
Stanlec Consulting Services Inc.
 1500 Lake Shore Drive, Suite 100
 Columbus, Ohio 43204
 (614) 486-6383

DATE
 12/2023

REVIEWED
 EDA

DRAWN
 JWS

DESIGNED
 BSM

CHECKED
 MRS

STRUCTURE FILE NUMBER

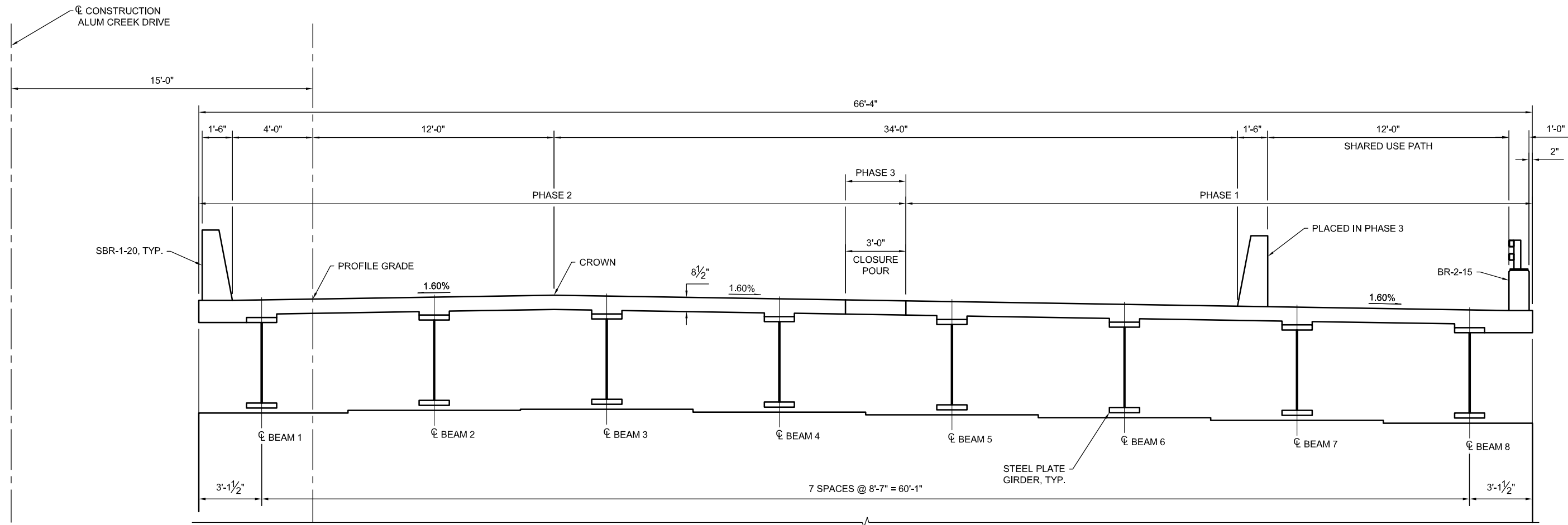
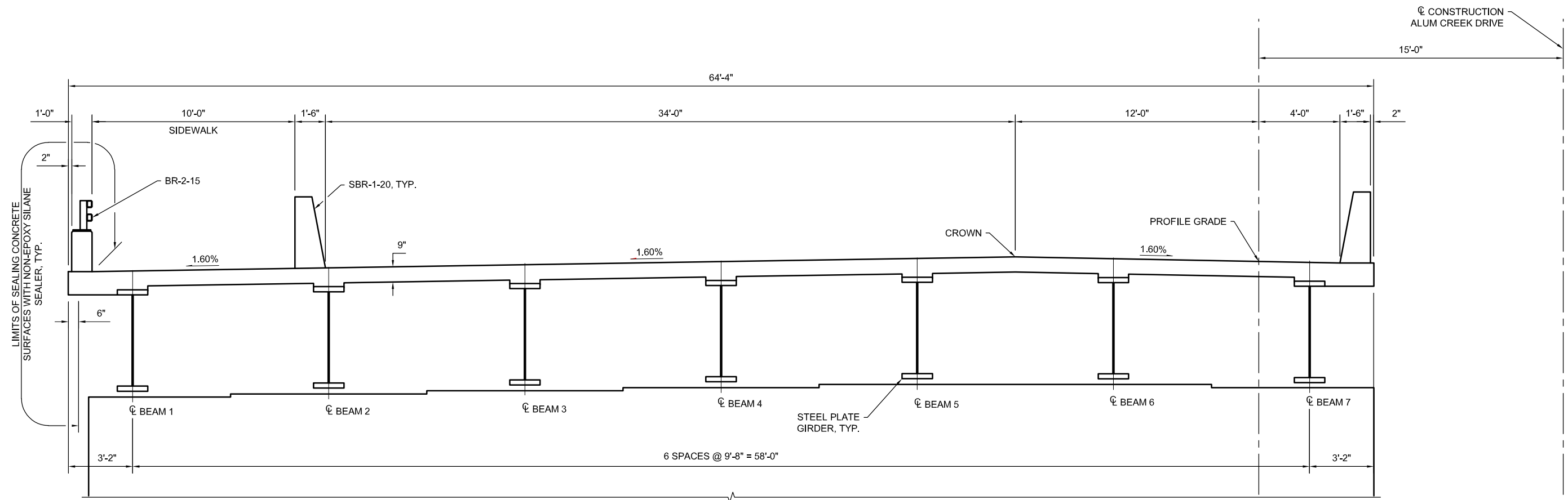
REVISED

ALTERNATIVE 1 - BRIDGE TYPICAL SECTION
 BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
 ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
 PID No. 115792

6 / 8

C:\pw_working\infra01\bmeneal\d0181967\115792_ST001.dwg 14-Dec-23 9:32 PM



DESIGN AGENCY
Stanlec Consulting Services Inc.
 1500 Lake Shore Drive, Suite 100
 Columbus, Ohio 43204
 (614) 486-6383



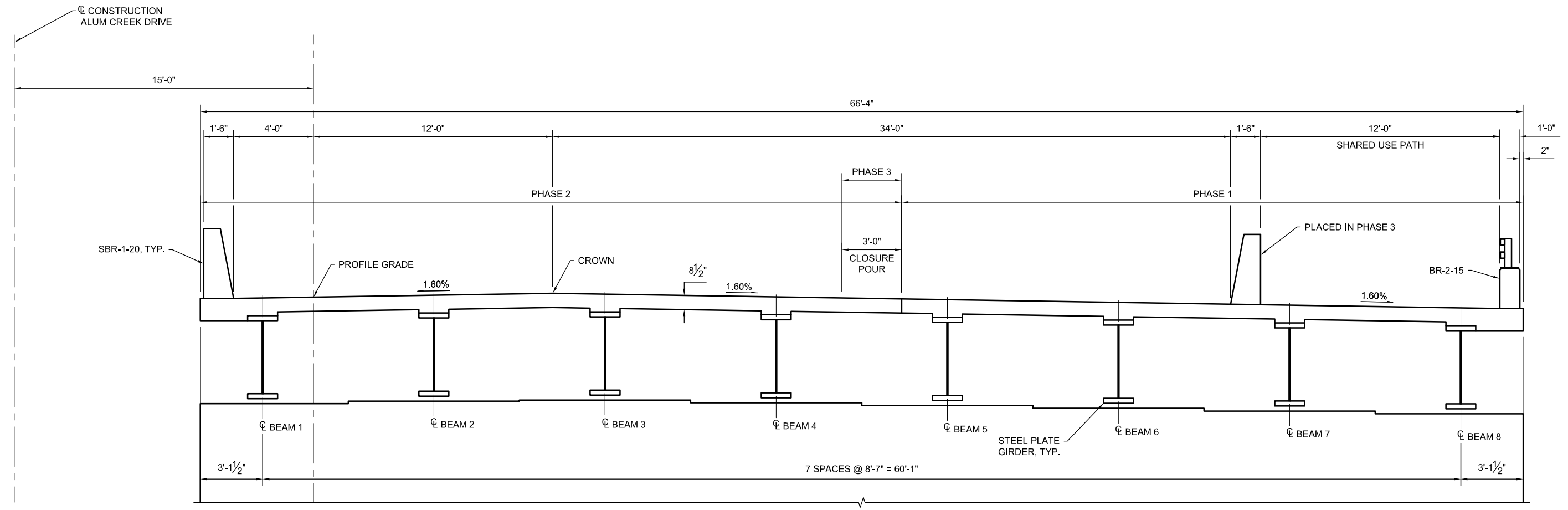
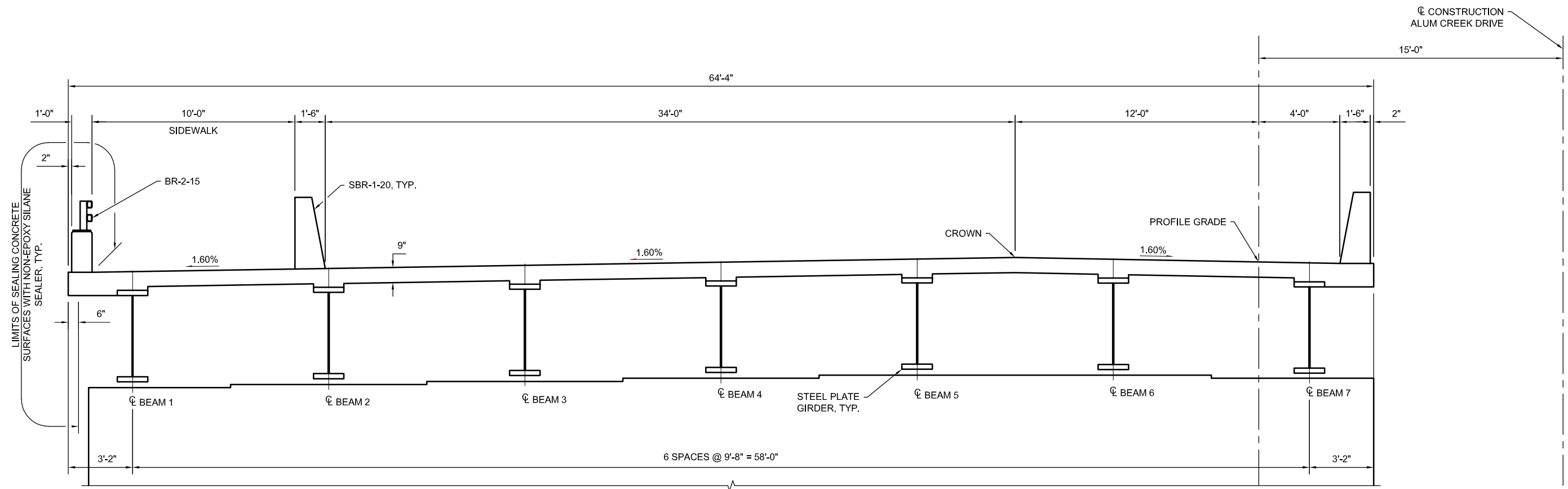
DESIGNED	BSM	CHECKED	MRS
DRAWN	JWS	REVISED	
REVIEWED	EDA	DATE	12/2023
STRUCTURE FILE NUMBER			

ALTERNATIVE 2 - BRIDGE TYPICAL SECTION
 BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
 ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRA-CR122-0.00
 PID No. 115792



C:\pw_working\infra01\bmceal\d0181967\115792_ST001.dwg 14-Dec-23 9:39 PM



<p>DESIGN AGENCY Stanlec Consulting Services Inc. 1900 Lake Shore Drive, Suite 100 Columbus, Ohio 43204 (614) 486-6383</p>			
<p>DESIGNED BSM</p>	<p>DRAWN JWS</p>	<p>REVIEWED EDA</p>	<p>DATE 12/2023</p>
<p>CHECKED MRS</p>	<p>REVISED</p>	<p>STRUCTURE FILE NUMBER</p>	<p>ALTERNATIVE 4 - BRIDGE TYPICAL SECTION BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R ALUM CREEK DRIVE OVER BIG WALNUT CREEK</p>
<p>FRA-CR122-0.00</p>	<p>PID No. 115792</p>	<p>8 / 8</p>	

Appendix B Estimated Quantities





<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	324 ft
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	23	1350 ft
Pier 1	25.00	1.00	1.00	51	1275
Pier 2	30.00	1.00	1.00	51	1530
Forward Abutment	65.00	1.00	1.00	23	1463
					5618 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	23	1238 ft
Pier 1	20.00	1.00	1.00	51	1020
Pier 2	25.00	1.00	1.00	51	1275
Forward Abutment	60.00	1.00	1.00	23	1350
					4883 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				29944 lb
Pier 1	Assume 1% for rebar				47165
Pier 2	Assume 1% for rebar				45644
Footings	Assume 1% for rebar				20874
Deck	Assume 2% for rebar				246550
					390,176 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.71	1	526.6 cy
Haunch	312.00	4.08	0.33	8	125.8
End Diaphragm	70.98	3.00	6.33	2	99.9
Pier Diaphragm	64.28	3.25	5.50	2	85.1
					837 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	69.00	4.50	31.00	1	356.5 cy
Pier 2	69.00	4.50	30.00	1	345.0
					702 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	89.00	6.00	3.00	2	118.7 cy
Breastwall	73.00	5.50	3.00	2	89.2
Wingwall	16.00	1.50	10.38	2	18.4
					226 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	71.00	10.00	3.00	1	78.9 cy
Pier 2	71.00	10.00	3.00	1	78.9
					158 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.13	1.00	1	767.0 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.29	1.00	1	668.8
Pier 1	69.00	1.00	22.50	2	345.0
	4.50	1.00	22.50	2	22.5
Pier 2	69.00	1.00	21.50	2	329.7
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2631 sy
ITEM 515, DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF66-49					
	1.00	1.00	1.00	24	24 ea.
					24 ea
ITEM 515, INTERMEDIATE DIAPHRAGMS					
	1.00	1.00	1.00	49	49 ea.
					49 ea
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	16	16 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	32	32 ea.
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")					
	20.00	63.33	1.00	2	281 sy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.13	1.00	1	767.0 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.29	1.00	1	668.8
Pier 1	69.00	1.00	22.50	2	345.0
	4.50	1.00	22.50	2	22.5
Pier 2	69.00	1.00	21.50	2	329.7
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2631 sy
				Assume occurs at years 20, 50 & 75	x 3
					7894 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY					
	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.71	1	526.6 cy
Haunch	312.00	4.08	0.33	8	125.8
					652 cy
				Assume occurs at year 50	x 1
					652 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	324 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	23	1350 ft
Pier 1	25.00	1.00	1.00	54	1350
Pier 2	30.00	1.00	1.00	54	1620
Forward Abutment	65.00	1.00	1.00	23	1463
					<u>5783 ft</u>
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	23	1238 ft
Pier 1	20.00	1.00	1.00	54	1080
Pier 2	25.00	1.00	1.00	54	1350
Forward Abutment	60.00	1.00	1.00	23	1350
					<u>5018 ft</u>
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				29944 lb
Pier 1	Assume 1% for rebar				48532
Pier 2	Assume 1% for rebar				46967
Footings	Assume 1% for rebar				21462
Deck	Assume 2% for rebar				255311
					<u>402,216 lb</u>
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	542.9 cy
Haunch	312.00	4.08	0.33	8	125.8
End Diaphragm	73.19	3.33	6.33	2	114.5
Pier Diaphragm	65.93	3.25	5.50	2	87.3
					<u>871 cy</u>
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	71.00	4.50	31.00	1	366.8 cy
Pier 2	71.00	4.50	30.00	1	355.0
					<u>722 cy</u>



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	89.00	6.00	3.00	2	118.7 cy
Breastwall	73.00	5.50	3.00	2	89.2
Wingwall	16.00	1.50	10.38	2	18.4
					226 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	73.00	10.00	3.00	1	81.1 cy
Pier 2	73.00	10.00	3.00	1	81.1
					162 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.38	1.00	1	775.7 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.54	1.00	1	677.4
Pier 1	71.00	1.00	22.50	2	355.0
	4.50	1.00	22.50	2	22.5
Pier 2	71.00	1.00	21.50	2	339.2
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2668 sy
ITEM 515, DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF66-49					
	1.00	1.00	1.00	24	24 ea.
					24 ea
ITEM 515, INTERMEDIATE DIAPHRAGMS					
	1.00	1.00	1.00	49	49 ea.
					49 ea
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	16	16 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	32	32 ea.
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")					
	20.00	63.33	1.00	2	281 sy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.38	1.00	1	775.7 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.54	1.00	1	677.4
Pier 1	71.00	1.00	22.50	2	355.0
	4.50	1.00	22.50	2	22.5
Pier 2	71.00	1.00	21.50	2	339.2
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2668 sy
				Assume occurs at years 20, 50 & 75	x 3
					8004 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY					
	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	65.33	0.71	1	534.8 cy
Haunch	312.00	4.08	0.33	8	125.8
					661 cy
				Assume occurs at year 50	x 1
					661 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	324 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	18	1080 ft
Pier 1	25.00	1.00	1.00	42	1050
Pier 2	30.00	1.00	1.00	42	1260
Forward Abutment	65.00	1.00	1.00	18	1170
					4560 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	18	990 ft
Pier 1	20.00	1.00	1.00	42	840
Pier 2	25.00	1.00	1.00	42	1050
Forward Abutment	60.00	1.00	1.00	18	1080
					3960 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				24872 lb
Pier 1	Assume 1% for rebar				31987
Pier 2	Assume 1% for rebar				31443
Footings	Assume 1% for rebar				20727
Deck	Assume 2% for rebar				208136
					317,166 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.75	1	557.6 cy
Haunch	312.00	1.50	0.42	7	50.6
End Diaphragm	70.98	3.00	5.33	2	84.1
					692 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	68.00	3.00	32.00	1	241.8 cy
Pier 2	69.00	3.00	31.00	1	237.7
					479 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	85.00	6.00	3.00	2	113.3 cy
Breastwall	73.00	3.75	3.00	2	60.8
Wingwall	12.00	1.50	10.38	2	13.8
					188 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	70.00	10.00	3.00	1	77.8 cy
Pier 2	71.00	10.00	3.00	1	78.9
					157 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1	345.2 sy
	312.00	7.83	1.00	1	271.6
	312.00	7.13	1.00	1	247.0
Pier 1	68.00	1.00	23.50	2	355.1
	3.00	1.00	23.50	2	15.7
Pier 2	68.00	1.00	22.50	2	340.0
	3.00	1.00	22.50	2	15.0
Abutments	85.00	1.00	10.38	2	196.0
					1786 sy
ITEM 513, STRUCTURAL STEEL MEMBERS, LEVEL 4					
Girders	Quantity from Merlin Dash				610000 lb
Cross Frames	Assume 10%				61000
					671,000 lb
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
Webs	312.00	1.00	5.00	1	1560.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					2730.0 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					2,730 sf
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	14	14 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	14	14 ea.



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")	20.00	63.33	1.00	2	281 sy
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1.00	345.2 sy
	312.00	7.83	1.00	1.00	271.6
	312.00	7.13	1.00	1.00	247.0
	68.00	1.00	23.50	2.00	355.1
	3.00	1.00	23.50	2.00	15.7
	68.00	1.00	22.50	2.00	340.0
	3.00	1.00	22.50	2.00	15.0
	85.00	1.00	10.38	2.00	196.0
					1786 sy
				Assume occurs at years 20, 50 & 75	x 3
					5357 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.75	1	557.6 cy
Haunch	312.00	1.50	0.42	7	50.6
					608 cy
				Assume occurs at year 50	x 1
					608 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 514, SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL					
Webs	312.00	1.00	5.00	1	1560.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					<u>2730.0</u>
				Assume occurs at years 25, 50 & 75	<u> x 3</u>
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, PRIME COAT					
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					8190 sf
ITEM 514, GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL					
	312.00	1.00 min./ft		1	5 mnhr
				Assume occurs at years 25, 50 & 75	<u> x 3</u>
					16 mnhr



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	324 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	18	1080 ft
Pier 1	25.00	1.00	1.00	42	1050
Pier 2	30.00	1.00	1.00	42	1260
Forward Abutment	65.00	1.00	1.00	18	1170
					4560 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	18	990 ft
Pier 1	20.00	1.00	1.00	42	840
Pier 2	25.00	1.00	1.00	42	1050
Forward Abutment	60.00	1.00	1.00	18	1080
					3960 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				25530 lb
Pier 1	Assume 1% for rebar				32928
Pier 2	Assume 1% for rebar				32355
Footings	Assume 1% for rebar				21315
Deck	Assume 2% for rebar				206876
					319,004 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	1.50	0.42	8	57.8
End Diaphragm	73.19	3.00	5.33	2	86.7
	65.93				687 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	70.00	3.00	32.00	1	248.9 cy
Pier 2	71.00	3.00	31.00	1	244.6
					493 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	87.00	6.00	3.00	2	116.0 cy
Breastwall	73.00	3.75	3.00	2	60.8
Wingwall	14.00	1.50	10.38	2	16.1
					193 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	72.00	10.00	3.00	1	80.0 cy
Pier 2	73.00	10.00	3.00	1	81.1
					161 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1	345.2 sy
	312.00	7.83	1.00	1	271.6
	312.00	7.13	1.00	1	247.0
Pier 1	70.00	1.00	23.50	2	365.6
	3.00	1.00	23.50	2	15.7
Pier 2	70.00	1.00	22.50	2	350.0
	3.00	1.00	22.50	2	15.0
Abutments	87.00	1.00	10.38	2	200.6
					1811 sy
ITEM 513, STRUCTURAL STEEL MEMBERS, LEVEL 4					
Girders	Quantity from Merlin Dash				602900 lb
Cross Frames	Assume 10%				60290
					663,190 lb
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
Webs	312.00	1.00	5.00	1	1560.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					2730.0 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					2,730 sf
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	16	16 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	16	16 ea.



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")	20.00	63.33	1.00	2	281 sy

100 Year Life-Cycle Quantities

ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1.00	345.2 sy
	312.00	7.83	1.00	1.00	271.6
	312.00	7.13	1.00	1.00	247.0
	70.00	1.00	23.50	2.00	365.6
	3.00	1.00	23.50	2.00	15.7
	70.00	1.00	22.50	2.00	350.0
	3.00	1.00	22.50	2.00	15.0
	87.00	1.00	10.38	2.00	200.6

1811 sy
Assume occurs at years 20, 50 & 75 x 3
5432 sy

ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY	312.00	50.00	1.00	1	1733 sy
					Assume occurs at years 20, 35, 70, & 85 <u>x 4</u> 6933 sy

ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	1.50	0.42	8	57.8

601 cy
Assume occurs at year 50 x 1
601 cy

ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	312.00	4.08 SF	1.00	2	94 cy
					Assume occurs at year 50 <u>x 1</u> 94 cy

ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
					Assume occurs at year 50 <u>x 1</u> 312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 514, SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL					
Webs	312.00	1.00	5.00	1	1560.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					<u>2730.0</u>
				Assume occurs at years 25, 50 & 75	<u>x 3</u>
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, PRIME COAT					
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
					8190 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					8190 sf
ITEM 514, GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL					
	312.00	1.00 min./ft		1	5 mnhr
				Assume occurs at years 25, 50 & 75	<u>x 3</u>
					16 mnhr



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	0 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	23	1350 ft
Pier 1	25.00	1.00	1.00	51	1275
Pier 2	30.00	1.00	1.00	51	1530
Forward Abutment	65.00	1.00	1.00	23	1463
					5618 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	23	1238 ft
Pier 1	20.00	1.00	1.00	51	1020
Pier 2	25.00	1.00	1.00	51	1275
Forward Abutment	60.00	1.00	1.00	23	1350
					4883 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				29944 lb
Pier 1	Assume 1% for rebar				47165
Pier 2	Assume 1% for rebar				45644
Footings	Assume 1% for rebar				20874
Deck	Assume 2% for rebar				242388
					386,014 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.71	1	526.6 cy
Haunch	312.00	4.08	0.33	7	110.1
End Diaphragm	70.98	3.00	6.33	2	99.9
Pier Diaphragm	64.28	3.25	5.50	2	85.1
					822 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	69.00	4.50	31.00	1	356.5 cy
Pier 2	69.00	4.50	30.00	1	345.0
					702 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	89.00	6.00	3.00	2	118.7 cy
Breastwall	73.00	5.50	3.00	2	89.2
Wingwall	16.00	1.50	10.38	2	18.4
					226 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	71.00	10.00	3.00	1	78.9 cy
Pier 2	71.00	10.00	3.00	1	78.9
					158 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.13	1.00	1	767.0 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.29	1.00	1	668.8
Pier 1	69.00	1.00	22.50	2	345.0
	4.50	1.00	22.50	2	22.5
Pier 2	69.00	1.00	21.50	2	329.7
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2631 sy
ITEM 515, DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF60-49					
	1.00	1.00	1.00	21	21 ea.
					21 ea
ITEM 515, INTERMEDIATE DIAPHRAGMS					
	1.00	1.00	1.00	54	54 ea.
					54 ea
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	14	14 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	28	28 ea.
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")					
	20.00	63.33	1.00	2	281 sy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.13	1.00	1	767.0 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.29	1.00	1	668.8
Pier 1	69.00	1.00	22.50	2	345.0
	4.50	1.00	22.50	2	22.5
Pier 2	69.00	1.00	21.50	2	329.7
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2631 sy
				Assume occurs at years 20, 50 & 75	x 3
					7894 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY					
	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.71	1	526.6 cy
Haunch	312.00	4.08	0.33	7	110.1
					637 cy
				Assume occurs at year 50	x 1
					637 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	18	0 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	23	1350 ft
Pier 1	25.00	1.00	1.00	54	1350
Pier 2	30.00	1.00	1.00	54	1620
Forward Abutment	65.00	1.00	1.00	23	1463
					<u>5783 ft</u>
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	23	1238 ft
Pier 1	20.00	1.00	1.00	54	1080
Pier 2	25.00	1.00	1.00	54	1350
Forward Abutment	60.00	1.00	1.00	23	1350
					<u>5018 ft</u>
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				29944 lb
Pier 1	Assume 1% for rebar				48532
Pier 2	Assume 1% for rebar				46967
Footings	Assume 1% for rebar				21462
Deck	Assume 2% for rebar				255312
					<u>402,216 lb</u>
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	4.08	0.33	8	125.8
End Diaphragm	73.19	3.33	6.33	2	114.5
Pier Diaphragm	65.93	3.25	5.50	2	87.3
					<u>871 cy</u>
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	71.00	4.50	31.00	1	366.8 cy
Pier 2	71.00	4.50	30.00	1	355.0
					<u>722 cy</u>



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	89.00	6.00	3.00	2	118.7 cy
Breastwall	73.00	5.50	3.00	2	89.2
Wingwall	16.00	1.50	10.38	2	18.4
					226 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	73.00	10.00	3.00	1	81.1 cy
Pier 2	73.00	10.00	3.00	1	81.1
					162 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.38	1.00	1	775.7 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.54	1.00	1	677.4
Pier 1	71.00	1.00	22.50	2	355.0
	4.50	1.00	22.50	2	22.5
Pier 2	71.00	1.00	21.50	2	339.2
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2668 sy
ITEM 515, DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE WF60-49					
	1.00	1.00	1.00	24	24 ea.
					24 ea
ITEM 515, INTERMEDIATE DIAPHRAGMS					
	1.00	1.00	1.00	63	63 ea.
					63 ea
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	16	16 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	32	32 ea.
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")					
	20.00	63.33	1.00	2	281 sy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	22.38	1.00	1	775.7 sy
	312.00	7.83	1.00	1	271.6
	312.00	19.54	1.00	1	677.4
Pier 1	71.00	1.00	22.50	2	355.0
	4.50	1.00	22.50	2	22.5
Pier 2	71.00	1.00	21.50	2	339.2
	4.50	1.00	21.50	2	21.5
Abutments	89.00	1.00	10.38	2	205.2
					2668 sy
				Assume occurs at years 20, 50 & 75	x 3
					8004 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY					
	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	4.08	0.33	8	125.8
					669 cy
				Assume occurs at year 50	x 1
					669 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	0	0 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	18	1080 ft
Pier 1	25.00	1.00	1.00	42	1050
Pier 2	30.00	1.00	1.00	42	1260
Forward Abutment	65.00	1.00	1.00	18	1170
					4560 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	18	990 ft
Pier 1	20.00	1.00	1.00	42	840
Pier 2	25.00	1.00	1.00	42	1050
Forward Abutment	60.00	1.00	1.00	18	1080
					3960 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				24872 lb
Pier 1	Assume 1% for rebar				31987
Pier 2	Assume 1% for rebar				31443
Footings	Assume 1% for rebar				20727
Deck	Assume 2% for rebar				208136
					317,166 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.75	1	557.6 cy
Haunch	312.00	1.50	0.42	7	50.6
End Diaphragm	70.98	3.00	5.33	2	84.1
	63.72				692 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	68.00	3.00	32.00	1	241.8 cy
Pier 2	69.00	3.00	31.00	1	237.7
					479 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	85.00	6.00	3.00	2	113.3 cy
Breastwall	73.00	3.75	3.00	2	60.8
Wingwall	12.00	1.50	10.38	2	13.8
					188 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	70.00	10.00	3.00	1	77.8 cy
Pier 2	71.00	10.00	3.00	1	78.9
					157 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1	345.2 sy
	312.00	7.83	1.00	1	271.6
	312.00	7.13	1.00	1	247.0
Pier 1	68.00	1.00	27.00	2	408.0
	3.00	1.00	27.00	2	18.0
Pier 2	68.00	1.00	19.00	2	287.1
	3.00	1.00	19.00	2	12.7
Abutments	85.00	1.00	10.38	2	196.0
					1786 sy
ITEM 513, STRUCTURAL STEEL MEMBERS, LEVEL 4					
Girders	Quantity from Merlin Dash				542900 lb
Cross Frames	Assume 10%				54290
					597,190 lb
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
Webs	312.00	1.00	4.50	1	1404.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					2574.0 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					2,574 sf
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	14	14 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	14	14 ea.



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")	20.00	63.33	1.00	2	281 sy
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1.00	345.2 sy
	312.00	7.83	1.00	1.00	271.6
	312.00	7.13	1.00	1.00	247.0
	68.00	1.00	27.00	2.00	408.0
	3.00	1.00	27.00	2.00	18.0
	68.00	1.00	19.00	2.00	287.1
	3.00	1.00	19.00	2.00	12.7
	85.00	1.00	10.38	2.00	196.0
					1786 sy
				Assume occurs at years 20, 50 & 75	x 3
					5357 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	64.33	0.75	1	557.6 cy
Haunch	312.00	1.50	0.42	7	50.6
					608 cy
				Assume occurs at year 50	x 1
					608 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 514, SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL					
Webs	312.00	1.00	4.50	1	1404.0 sf
Flanges	312.00	1.00	1.50	2.25	1053.0
					2457.0
				Assume occurs at years 25, 50 & 75	x 3
					7371 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, PRIME COAT					
					7371 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
					7371 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					7371 sf
ITEM 514, GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL					
	312.00	1.00 min./ft		1	5 mnhr
				Assume occurs at years 25, 50 & 75	x 3
					16 mnhr



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN (PILES @ PIER 1)					
	18.00	1.00	1.00	0	0 ea.
ITEM 505, PILE DRIVING EQUIPMENT MOBILIZATION					
	1.00	1.00	1.00	1	1 ea.
ITEM 507, STEEL PILES HP12X53, FURNISHED					
Rear Abutment	60.00	1.00	1.00	18	1080 ft
Pier 1	25.00	1.00	1.00	42	1050
Pier 2	30.00	1.00	1.00	42	1260
Forward Abutment	65.00	1.00	1.00	18	1170
					4560 ft
ITEM 507, STEEL PILES HP12X53, DRIVEN					
Rear Abutment	55.00	1.00	1.00	18	990 ft
Pier 1	20.00	1.00	1.00	42	840
Pier 2	25.00	1.00	1.00	42	1050
Forward Abutment	60.00	1.00	1.00	18	1080
					3960 ft
ITEM 509, EPOXY COATED STEEL REINFORCEMENT					
Abutment	Assume 1% for rebar				25530 lb
Pier 1	Assume 1% for rebar				32928
Pier 2	Assume 1% for rebar				32355
Footings	Assume 1% for rebar				21315
Deck	Assume 2% for rebar				206876
					319,004 lb
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	1.50	0.42	8	57.8
End Diaphragm	73.19	3.00	5.33	2	86.7
	65.93				687 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
Pier 1	70.00	3.00	32.00	1	248.9 cy
Pier 2	71.00	3.00	31.00	1	244.6
					493 cy



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 511, CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
Footing	87.00	6.00	3.00	2	116.0 cy
Breastwall	73.00	3.75	3.00	2	60.8
Wingwall	14.00	1.50	10.38	2	16.1
					193 cy
ITEM 511, CLASS QC1 CONCRETE, FOOTING					
Pier 1	72.00	10.00	3.00	1	80.0 cy
Pier 2	73.00	10.00	3.00	1	81.1
					161 cy
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1	345.2 sy
	312.00	7.83	1.00	1	271.6
	312.00	7.13	1.00	1	247.0
Pier 1	70.00	1.00	27.00	2	420.0
	3.00	1.00	27.00	2	18.0
Pier 2	70.00	1.00	19.00	2	295.6
	3.00	1.00	19.00	2	12.7
Abutments	87.00	1.00	10.38	2	200.6
					1811 sy
ITEM 513, STRUCTURAL STEEL MEMBERS, LEVEL 4					
Girders	Quantity from Merlin Dash				610200 lb
Cross Frames	Assume 10%				61020
					671,220 lb
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
Webs	312.00	1.00	4.50	1	1404.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					2574.0 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
					2,574 sf
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN, 2-3" THICK					
Abutments	1.00	1.00	1.00	16	16 ea.
ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), <2" THICK					
Piers	1.00	1.00	1.00	16	16 ea.



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	312.00	1.00	1.00	1	312.0 lf
ITEM 526, REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=13")	20.00	63.33	1.00	2	281 sy
100 Year Life-Cycle Quantities					
ITEM 512, SEALING OF CONCRETE SURFACES (NON-EPOXY)					
Deck	312.00	9.96	1.00	1.00	345.2 sy
	312.00	7.83	1.00	1.00	271.6
	312.00	7.13	1.00	1.00	247.0
	70.00	1.00	27.00	2.00	420.0
	3.00	1.00	27.00	2.00	18.0
	70.00	1.00	19.00	2.00	295.6
	3.00	1.00	19.00	2.00	12.7
	87.00	1.00	10.38	2.00	200.6
					1811 sy
				Assume occurs at years 20, 50 & 75	x 3
					5432 sy
ITEM 847, MICRO SILICA MODIFIED CONCRETE OVERLAY					
	312.00	50.00	1.00	1	1733 sy
				Assume occurs at years 20, 35, 70, & 85	x 4
					6933 sy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
Deck	312.00	66.33	0.71	1	543.0 cy
Haunch	312.00	1.50	0.42	8	57.8
					601 cy
				Assume occurs at year 50	x 1
					601 cy
ITEM 511, CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
	312.00	4.08 SF	1.00	2	94 cy
				Assume occurs at year 50	x 1
					94 cy
ITEM 517, RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
	312.00	1.00	1.00	1	312.0 lf
				Assume occurs at year 50	x 1
					312 lf



<u>Description</u>	<u>Length</u>	<u>Width</u>	<u>Height</u>	<u>No.</u>	<u>Total</u>
ITEM 514, SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL					
Webs	312.00	1.00	4.50	1	1404.0 sf
Flanges	312.00	1.00	1.50	2.50	1170.0
					<u>2574.0</u>
				Assume occurs at years 25, 50 & 75	<u> x 3</u>
					7722 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, PRIME COAT					7722 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					7722 sf
ITEM 514, FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					7722 sf
ITEM 514, GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL					
	312.00	1.00 min./ft		1	5 mnhr
				Assume occurs at years 25, 50 & 75	<u> x 3</u>
					16 mnhr

Appendix C Estimated Construction and Life Cycle Costs



Estimate Alt. 1

Estimated Cost:\$12,876,796.69

Contingency: 10.00%

Estimated Total: \$14,164,476.36

Structure Type Study Estimate
Alternative 1

Base Date: 12/05/23

Spec Year: 23

Unit System: E

Work Type: BRIDGE REPLACEMENT

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: FRANKLIN

Latitude of Midpoint: 0

Longitude of Midpoint: 0

District: 06

Federal/State Project Number:

Prepared by Stantec on 12/05/23

Estimate: Alt. 1

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					

Group 1000: Initial Construction

0001	202E11200	1.000	LS	\$13,000.00000	\$13,000.00
PORTIONS OF STRUCTURE REMOVED (PILING @ PIER 1)					
0002	505E11100	1.000	LS	\$60,000.00000	\$60,000.00
PILE DRIVING EQUIPMENT MOBILIZATION					
0003	507E00200	11,400.000	FT	\$41.46028	\$472,647.19
STEEL PILES HP12X53, FURNISHED					
0004	507E00250	9,900.000	FT	\$16.66175	\$164,951.33
STEEL PILES HP12X53, DRIVEN					
0005	509E10000	792,400.000	LB	\$1.25597	\$995,230.63
EPOXY COATED STEEL REINFORCEMENT					
0006	511E34446	1,708.000	CY	\$674.02798	\$1,151,239.79
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
0007	511E34450	189.000	CY	\$551.06718	\$104,151.70
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0008	511E40512	1,403.000	CY	\$740.00000	\$1,038,220.00
CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
0009	511E43512	453.000	CY	\$610.54175	\$276,575.41
CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
0010	511E46512	316.000	CY	\$466.47724	\$147,406.81
CLASS QC1 CONCRETE WITH QC/QA, FOOTING					
0011	512E10050	5,300.000	SY	\$5.78000	\$30,634.00
SEALING OF CONCRETE SURFACES (NON-EPOXY)					
0012	515E15120	16.000	EACH	\$60,000.00000	\$960,000.00
DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LE VEL 3, TYPE WF66-49 75' LENGTH					
0013	515E15120	32.000	EACH	\$70,000.00000	\$2,240,000.00
DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LE VEL 3, TYPE WF66-49 100'+ LENGTH					
0014	515E20000	98.000	EACH	\$2,190.12429	\$214,632.18
INTERMEDIATE DIAPHRAGMS					
0015	516E44000	64.000	EACH	\$951.90680	\$60,922.04
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)					
0016	516E44101	32.000	EACH	\$1,500.00000	\$48,000.00
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN					
0017	517E75120	624.000	FT	\$270.00000	\$168,480.00
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0018	526E15000	563.000	SY	\$275.00000	\$154,825.00
REINFORCED CONCRETE APPROACH SLABS (T=13")					
0024		1.000		\$2,075,229.00000	\$2,075,229.00
25% INFLATION FOR CONSTRUCTION IN 2028					

Total for Group 1000:\$10,376,145.08

Group 1001: Life-cycle Costs

0019	511E34446	1,305.000	CY	\$674.02798	\$879,606.51
------	-----------	-----------	----	-------------	--------------

9:12:54AM

Friday, December 8, 2023

Page 2 of 3

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
0020	511E34450	188.000	CY	\$551.06718	\$103,600.63
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0021	512E10050	15,839.000	SY	\$5.78000	\$91,549.42
SEALING OF CONCRETE SURFACES (NON-EPOXY)					
0022	517E75120	624.000	FT	\$270.00000	\$168,480.00
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0023	848E10000	13,867.000	SY	\$54.61059	\$757,285.05
MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION					
0025		1.000		\$500,130.00000	\$500,130.00
25% INFLATION FOR CONSTRUCTION IN 2028					

Total for Group 1001:\$2,500,651.61

Estimate Alt. 2

Estimated Cost:\$12,747,876.96

Contingency: 10.00%

Estimated Total: \$14,022,664.66

Structure Type Study Estimate
Alternative 2

Base Date: 12/05/23

Spec Year: 23

Unit System: E

Work Type: BRIDGE REPLACEMENT

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: FRANKLIN

Latitude of Midpoint: 0

Longitude of Midpoint: 0

District: 06

Federal/State Project Number:

Prepared by Stantec on 12/05/23

Estimate: Alt. 2

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					

Group 2000: Initial Construction

0001	202E11200	1.000	LS	\$13,000.00000	\$13,000.00
PORTIONS OF STRUCTURE REMOVED (PILING @ PIER 1)					
0002	505E11100	1.000	LS	\$60,000.00000	\$60,000.00
PILE DRIVING EQUIPMENT MOBILIZATION					
0003	507E00200	9,120.000	FT	\$41.83585	\$381,542.95
STEEL PILES HP12X53, FURNISHED					
0004	507E00250	7,920.000	FT	\$16.66175	\$131,961.06
STEEL PILES HP12X53, DRIVEN					
0005	509E10000	636,200.000	LB	\$1.28772	\$819,247.46
EPOXY COATED STEEL REINFORCEMENT					
0006	511E34446	1,380.000	CY	\$687.46465	\$948,701.22
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
0007	511E34450	189.000	CY	\$550.86441	\$104,113.37
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0008	511E40512	973.000	CY	\$740.00000	\$720,020.00
CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
0009	511E43512	381.000	CY	\$628.90825	\$239,614.04
CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
0010	511E46512	318.000	CY	\$465.98323	\$148,182.67
CLASS QC1 CONCRETE WITH QC/QA, FOOTING					
0011	512E10050	3,596.000	SY	\$6.02175	\$21,654.21
SEALING OF CONCRETE SURFACES (NON-EPOXY)					
0012	513E10280	1,334,200.000	LB	\$3.00000	\$4,002,600.00
STRUCTURAL STEEL MEMBERS, LEVEL 4					
0013	514E00060	5,460.000	SF	\$4.38829	\$23,960.06
FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
0014	514E00066	5,460.000	SF	\$2.78604	\$15,211.78
FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
0015	516E44000	30.000	EACH	\$951.90680	\$28,557.20
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)					
0016	516E44101	30.000	EACH	\$1,500.00000	\$45,000.00
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN					
0017	517E75120	624.000	FT	\$175.00310	\$109,201.93
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0018	526E15000	563.000	SY	\$275.00000	\$154,825.00
REINFORCED CONCRETE APPROACH SLABS (T=13")					
0031		1.000		\$1,991,848.00000	\$1,991,848.00
25% INFLATION FOR CONSTRUCTION IN 2028					

Total for Group 2000:\$9,959,240.95

Group 2001: Life-cycle Costs

0019	511E34446	1,209.000	CY	\$687.46465	\$831,144.76
------	-----------	-----------	----	-------------	--------------

9:16:20AM

Friday, December 8, 2023

Page 2 of 3

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
	Description <u>Supplemental Description</u>				
	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK				
0020	511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	189.000	CY	\$550.86441	\$104,113.37
0021	512E10050 SEALING OF CONCRETE SURFACES (NON-EPOXY)	10,788.000	SY	\$6.02175	\$64,962.64
0022	514E00050 SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	16,380.000	SF	\$9.69448	\$158,795.58
0023	514E00056 FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	16,380.000	SF	\$1.53681	\$25,172.95
0024	514E00060 FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	16,380.000	SF	\$4.38829	\$71,880.19
0025	514E00066 FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	16,380.000	SF	\$2.78604	\$45,635.34
0026	514E00504 GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL	31.000	MNHR	\$110.93954	\$3,439.13
0027	517E75120 RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	624.000	FT	\$270.00000	\$168,480.00
0028	848E10000 MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION	13,867.000	SY	\$54.61059	\$757,285.05
0032		1.000		\$557,727.00000	\$557,727.00

25% INFLATION FOR CONSTRUCTION IN 2028

Total for Group 2001:\$2,788,636.01

Estimate Alt. 3

Estimated Cost:\$11,889,322.48

Contingency: 10.00%

Estimated Total: \$13,078,254.73

Structure Type Study Estimate
Alternative 3

Base Date: 12/05/23

Spec Year: 23

Unit System: E

Work Type: BRIDGE REPLACEMENT

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: FRANKLIN

Latitude of Midpoint: 0

Longitude of Midpoint: 0

District: 06

Federal/State Project Number:

Prepared by Stantec on 12/05/23

Estimate: Alt. 3

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					

Group 3000: Initial Construction

0002	505E11100	1.000	LS	\$60,000.00000	\$60,000.00
PILE DRIVING EQUIPMENT MOBILIZATION					
0003	507E00200	11,400.000	FT	\$41.46028	\$472,647.19
STEEL PILES HP12X53, FURNISHED					
0004	507E00250	9,900.000	FT	\$16.66175	\$164,951.33
STEEL PILES HP12X53, DRIVEN					
0005	509E10000	788,300.000	LB	\$1.25671	\$990,664.49
EPOXY COATED STEEL REINFORCEMENT					
0006	511E34446	1,692.000	CY	\$674.49522	\$1,141,245.91
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
0007	511E34450	189.000	CY	\$550.86441	\$104,113.37
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0008	511E40512	1,423.000	CY	\$740.00000	\$1,053,020.00
CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
0009	511E43512	453.000	CY	\$610.54175	\$276,575.41
CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
0010	511E46512	320.000	CY	\$465.49283	\$148,957.71
CLASS QC1 CONCRETE WITH QC/QA, FOOTING					
0011	512E10050	5,300.000	SY	\$5.78000	\$30,634.00
SEALING OF CONCRETE SURFACES (NON-EPOXY)					
0012	515E15110	15.000	EACH	\$53,000.00000	\$795,000.00
DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LE VEL 3, TYPE WF60-49 75' LENGTH					
0013	515E15110	30.000	EACH	\$53,000.00000	\$1,590,000.00
DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LE VEL 3, TYPE WF60-49 100'+ LENGTH					
0014	515E20000	117.000	EACH	\$2,190.12429	\$256,244.54
INTERMEDIATE DIAPHRAGMS					
0015	516E44000	60.000	EACH	\$951.90680	\$57,114.41
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)					
0016	516E44101	30.000	EACH	\$1,500.00000	\$45,000.00
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN					
0017	517E75120	624.000	FT	\$270.00000	\$168,480.00
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0018	526E15000	563.000	SY	\$275.00000	\$154,825.00
REINFORCED CONCRETE APPROACH SLABS (T=13")					
0024		1.000		\$1,877,368.00000	\$1,877,368.00

25% INFLATION FOR CONSTRUCTION IN 2028

Total for Group 3000:\$9,386,841.36

Group 3001: Life-cycle Costs

0019	511E34446	1,305.000	CY	\$674.49522	\$880,216.26
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
	Description <u>Supplemental Description</u>				
0020	511E34450 CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	189.000	CY	\$550.86441	\$104,113.37
0021	512E10050 SEALING OF CONCRETE SURFACES (NON-EPOXY)	15,898.000	SY	\$5.78000	\$91,890.44
0022	517E75120 RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)	624.000	FT	\$270.00000	\$168,480.00
0023	848E10000 MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION	13,867.000	SY	\$54.61059	\$757,285.05
0025		1.000		\$500,496.00000	\$500,496.00

25% INFLATION FOR CONSTRUCTION IN 2028

Total for Group 3001:\$2,502,481.12

Estimate Alt. 4

Estimated Cost:\$12,519,037.63

Contingency: 10.00%

Estimated Total: \$13,770,941.39

Structure Type Study Estimate
Alternative 4

Base Date: 12/05/23

Spec Year: 23

Unit System: E

Work Type: BRIDGE REPLACEMENT

Highway Type:

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: FRANKLIN

Latitude of Midpoint: 0

Longitude of Midpoint: 0

District: 06

Federal/State Project Number:

Prepared by Stantec on 12/05/23

Estimate: Alt. 4

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					

Group 4000: Initial Construction

0002	505E11100	1.000	LS	\$60,000.00000	\$60,000.00
PILE DRIVING EQUIPMENT MOBILIZATION					
0003	507E00200	9,120.000	FT	\$41.83585	\$381,542.95
STEEL PILES HP12X53, FURNISHED					
0004	507E00250	7,920.000	FT	\$16.66175	\$131,961.06
STEEL PILES HP12X53, DRIVEN					
0005	509E10000	636,200.000	LB	\$1.28772	\$819,247.46
EPOXY COATED STEEL REINFORCEMENT					
0006	511E34446	1,380.000	CY	\$687.46465	\$948,701.22
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					
0007	511E34450	189.000	CY	\$550.86441	\$104,113.37
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0008	511E40512	973.000	CY	\$740.00000	\$720,020.00
CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS					
0009	511E43512	381.000	CY	\$628.90825	\$239,614.04
CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING					
0010	511E46512	318.000	CY	\$465.98323	\$148,182.67
CLASS QC1 CONCRETE WITH QC/QA, FOOTING					
0011	512E10100	3,596.000	SY	\$17.46494	\$62,803.92
SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)					
0012	513E10280	1,268,400.000	LB	\$3.00000	\$3,805,200.00
STRUCTURAL STEEL MEMBERS, LEVEL 4					
0013	514E00060	5,304.000	SF	\$4.50187	\$23,877.92
FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
0014	514E00066	5,304.000	SF	\$2.85113	\$15,122.39
FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
0015	516E44000	30.000	EACH	\$951.90680	\$28,557.20
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE)					
0016	516E44101	30.000	EACH	\$1,500.00000	\$45,000.00
ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN					
0017	517E75120	624.000	FT	\$175.00310	\$109,201.93
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0018	526E15000	563.000	SY	\$275.00000	\$154,825.00
REINFORCED CONCRETE APPROACH SLABS (T=13")					
0029		1.000		\$1,949,493.00000	\$1,949,493.00

25% INFLATION FOR CONSTRUCTION IN 2028

Total for Group 4000:\$9,747,464.13

Group 4001: Life-cycle Costs

0019	511E34446	1,209.000	CY	\$687.46465	\$831,144.76
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK					

<u>Line #</u>	<u>Item Number</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Extension</u>
<u>Description</u>					
<u>Supplemental Description</u>					
0020	511E34450	189.000	CY	\$550.86441	\$104,113.37
CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)					
0021	512E10050	10,788.000	SY	\$6.27833	\$67,730.62
SEALING OF CONCRETE SURFACES (NON-EPOXY)					
0022	514E00050	15,093.000	SF	\$9.94533	\$150,104.87
SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL					
0023	514E00056	15,093.000	SF	\$1.58894	\$23,981.87
FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT					
0024	514E00060	15,093.000	SF	\$4.50187	\$67,946.72
FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT					
0025	514E00066	15,093.000	SF	\$2.85113	\$43,032.11
FIELD PAINTING STRUCTURAL STEEL, FINISH COAT					
0026	514E00504	31.000	MNHR	\$110.93954	\$3,439.13
GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL					
0027	517E75120	624.000	FT	\$270.00000	\$168,480.00
RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)					
0028	848E10000	13,867.000	SY	\$54.61059	\$757,285.05
MICRO SILICA MODIFIED CONCRETE OVERLAY USING HYDRODEMOLITION					
0030		1.000		\$554,315.00000	\$554,315.00
25% INFLATION FOR CONSTRUCTION IN 2028					
Total for Group 4001:					\$2,771,573.50

Appendix D Spread Calculations





INLET SPACING DESIGN

PID : 115792 **Date :** 10/25/2023 **Project :** FRA-CR122-0.00 **Location :** FRANKLIN CO, OHIO
Description : ACD BRIDGE NO. FRA-CR122-0186L OVER WALNUT CREEK (WEST OF CROWN) **Designer :** N.M. GOODMAN
Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 4.00 **Allowable Depth (ft.) :** 0.42
14' (10' shoulder + 4' into travel lane)

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	CONC. AREA (acres)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
296+76	Begin																	
299+91	SHEET FLOW OUT	315.00	0.90	0.25	5.00	3.66	10.00	0.0087	0.0160	0.0160	0.00	0.0000	5.30	*****	*****	1.17	0.141	8.81 End

Table 2-9
Pavement Design Criteria (Stormwater Drainage Manual Section 2.3.2)

Functional Classification	Design Speed	Design Storm Frequency	Maximum Design Spread(2)	Check Storm Frequency	Check Storm Spread Criteria
Interstate Highways		Refer to ODOT L&D Manual Volume 2, Section 1103			
Freeways And Expressways	≥ 45 mph	10-year	4 feet	25-year	(1)
	< 45 mph	10-year	8 feet	25-year	(1)
Major Arterials and	All	50-year	4 feet	Applies at underpasses and sag points	
	≥ 45 mph	10-year	4-feet	25-year	(1)
	< 45 mph	10-year	2- lanes, 6 feet 4-lanes, 8 feet	25-year	(1)
Minor Arterials and Collectors	All	50-year	4 feet	Applies at underpasses and sag points	
	≥ 45 mph	10-year	4-feet	25-year	(1)
	< 45 mph	10-year	2- lanes, 6 feet 4-lanes, 8 feet	25-year	(1)
Locals, other parking and development areas	All	10-year	4 feet	Applies at underpasses and sag points	
	≥ 45 mph	2-year	2- lanes, 6 feet 4-lanes, 8 feet	10-year	One lane free of ponding water
	< 45 mph	5-year	2- lanes, 6 feet 4-lanes, 8 feet	Applies at underpasses and sag points	

Notes to Designer:

(1) On roadways with multiple through lanes in each direction, or one direction on a one-way roadway, one through travel lane in each direction must be free of water. Storm water spread on shoulders, full-time parking lanes, and other paved roadside areas and non-travel lanes is permitted to be full width of that designated pavement area.

(2) Spread is considered the encroachment of ponding water in the through travel lane. The allowable depth of water on a roadway, within the design spread, shall be 1" below the top of curb or 3" maximum (i.e., no overtopping of curb allowed); 6" is permissible when a barrier shape is provided adjacent to the pavement.

(3) Travel lanes are defined for noted street classifications as follows:
 A. Freeways and Expressways - Divided highway with 12-foot travel lanes
 B. Major Arterial - Minimum travel lane 11-feet, refer to (STD DWG, 2110, 2115, 2120, and 2125)
 C. Minor Arterial - Minimum travel lane 10-feet, refer to (STD DWG, 2110 AND 2115)
 D. Locals - Minimum travel lane 9-feet (centered over pavement crown), refer to (STD DWG, 2100, 2105 and 2110)

(4) Other pavement spread computation requirements:
 - Roughness coefficient (n) = 0.015 to be shown on spread sheet computation table or worksheet
 - Show allowable spread from above Table on spread computation table or worksheet

(5) Rainfall intensities shall be consistent with Intensity Duration Frequency (IDF) Curves in the current City of Columbus Storm water Drainage Manual.

(6) ODOT CDSS Program is acceptable for use in City of Columbus Spread calculations submittals; however, if ODOT CDSS is NOT used, note (5) above prevails.
 - Define and design travel lane configuration in accordance with the requirements herein. Any project specific variations to defined travel lanes shall be submitted in writing to the Division of Design and Construction.

Note: Franklin County reserves the option of waiving Table 2-9 and allowing Pavement Spread Design in accordance with the ODOT Location & Design Manual - Volume 2, Section 1103. Said option shall be on a project-by-project basis as authorized by the Franklin County Engineers Office.

NOTE: PAVT SPREAD STAYS IN SHDR HERE.



INLET SPACING DESIGN

PID : 115792 **Date :** 10/25/2023 **Project :** FRA-CR122-0.00 **Location :** FRANKLIN CO, OHIO
Description : ACD BRIDGE NO. FRA-CR122-0186L OVER WALNUT CREEK (EAST OF CROWN) **Designer :** N.M. GOODMAN
Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 4.00 **Allowable Depth (ft.) :** 0.42
8' (4' shoulder + 4' into travel lane)

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)
297+00	Begin																	
300+14	SHEET FLOW OUT	315.00	0.90	0.12	5.00	4.45	10.00	0.0087	0.0160	0.0160	0.00	0.0000	5.30	*****	*****	0.55	0.106	6.65 End

*** PAVT SPREAD 2.65'**
ENCROACHMENT ONTO TRAVELWAY



INLET SPACING DESIGN

PID : 115792 **Date :** 10/25/2023 **Project :** FRA-CR122-0.00 **Location :** FRANKLIN CO, OHIO
Description : ACD BRIDGE NO. FRA-CR122-0186R OVER WALNUT CREEK (WEST OF CROWN) **Designer :** N.M. GOODMAN
Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 4.00 **Allowable Depth (ft.) :** 0.42
8' (4' shoulder + 4' into travel lane)

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)
297+10	Begin																	
300+25	SHEET FLOW OUT	315.00	0.90	0.12	5.00	4.45	10.00	0.0087	0.0160	0.0160	0.00	0.0000	5.30	*****	*****	0.55	0.106	6.65 End

* PAVT SPREAD 2.65'
ENCROACHMENT ONTO TRAVELWAY



INLET SPACING DESIGN

PID : 115792 **Date :** 10/25/2023 **Project :** FRA-CR122-0.00 **Location :** FRANKLIN CO, OHIO
Description : ACD BRIDGE NO. FRA-CR122-0186R OVER WALNUT CREEK (EAST OF CROWN) **Designer :** N.M. GOODMAN
14' (10' shoulder + 4' into travel lane)
Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 4.00 **Allowable Depth (ft.) :** 0.42

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)
297+33	Begin																	
300+48	SHEET FLOW OUT	315.00	0.90	0.25	5.00	3.66	10.00	0.0087	0.0160	0.0160	0.00	0.0000	5.30	*****	*****	1.17	0.141	8.81 End

NOTE: PAVT SPREAD STAYS IN SHDR HERE.

**FLOOD HAZARD EVALUATION
FOR THE PROPOSED BRIDGE
REPLACEMENTS ON ALUM CREEK
DRIVE OVER BIG WALNUT CREEK**

FRA-122-1.86L & 1.87R
Bridge Replacements
PID No. 115792
Franklin County, Ohio



Prepared for:
Franklin County Engineer's Office

Prepared by:
Stantec Consulting Services Inc.
Columbus, Ohio

December 21, 2023

Flood Hazard Evaluation for the proposed bridge replacements for the bridge carrying Alum Creek Drive (C.R.122) over the Big Walnut Creek

FRA-CR 122-1.86L & 1.87R

1.0 Existing Conditions

The existing steel beam structures, FRA-CR122-1.86L (left bridge) and FRA-CR122-1.87R (right bridge), are both two lane structures carrying Alum Creek Drive over Big Walnut Creek, constructed in 1959. Each bridge consists of 4 total spans, 63.45' – 80' – 80' – 64'.

FRA-CR 122-1.86L (Looking West)



FRA-CR 122-1.87R (Looking East)



Pier View of 1.86L (Looking Northeast), 2017



2.0 Proposed Bridge Replacement

The proposed bridges are three-span (105'-105'-105') composite prestressed precast concrete I-girder structures with a beam depth of 66". The replacement bridges will be located in the same location as the existing bridges. Drainage from the bridge will be carried to the end of the structure and intercepted by drainage structures at the north end of the bridge.

3.0 Analysis

An analysis of the Big Walnut Creek in Columbus, Ohio, was performed using version 6.2.0 of the HEC-RAS software from the Army Corp of Engineers. The purpose of the analysis is to determine the effects of the proposed structures on the Water Surface elevation in the vicinity of the structure on Alum Creek Drive over the Big Walnut Creek.

Flows for the analysis were taken from the FEMA Flood Insurance study for the 10-year, 25-year (interpolated), 50-year, 100-year and 500-year storm event at the locations of the existing bridge (Reference: Federal Emergency Management Agency (FEMA), Flood Insurance Study for Franklin County and Incorporated Areas, Ohio, Washington D.C., June 16, 2011). Table 1 summarizes the discharges.

Table 1 Summary of Discharges

Flooding Source and Location	Peak Flow (cfs)				
	10-year	25-year	50-year	100-year	500-year
At USGS gage station approximately 5.0 miles upstream of Morse Road	9,100	11,800	15,800	19,500	30,200
At mouth (Big Walnut Creek)	16,900	21,300	25,800	30,700	46,700

Topographic data for this study was developed using digital elevation model (DEM) developed from Light Detection and Ranging (LiDAR) data (2011-2012) obtained from Ohio Geographically Referenced Information Program (OGRIP). The cell size is 1.25-foot.

HEC-RAS cross section geometry was initially extracted from the DEM, and then modified using collected survey data and effective data converted from HEC-2 models. Generally, the resulting geometry included overbank areas from the DEM and in-channel geometry either directly incorporated from survey or leveraged from effective data. For cross sections which were not surveyed or had no effective data, channel data was interpolated between surveyed cross sections or cross sections with effective data. All cross-sections were reviewed and adjusted based on engineering judgment to establish smooth transitions between overbank LiDAR data and surveyed, leveraged or interpolated channel data.

All Data in the analysis used the Ohio State Plane South FIPS (feet) coordinate system and the vertical datum is NAVD88, and horizontal datum is NAD83.

The downstream boundary condition was set to normal depth calculations using the slope on the downstream end of the stream channel.

The effective FEMA Flood Insurance Rate Map (FIRM) (FEMA product 39049C0427 and 39049C0431K) of Franklin County, Ohio shows that Big Walnut Creek is in a Zone AE Special Flood Hazard Area, with base flood elevations determined for the 100-year storm.

The Analysis of the pre-project and proposed study shows a reduction in the 100-year flood water surface elevations at all cross sections upstream and downstream of the existing bridge, as shown in Table 2.

Table 2 Water Surface Comparison for Effective Study, Pre-project and Proposed Study

River Station	Water Surface Elevation (ft)				
	Effective Study (100 year)	Pre-project (100 year)	Proposed Study (100 year)	Proposed Study (25 year)	Proposed Study (50 year)
63997 (Lettered AH)	723.2	722.77	722.64	720.04	721.20
63105 (Lettered AG)	723.1	721.86	721.85	719.48	720.51
BR-62966 Upstream Face	N/A	721.40	721.40	719.20	720.14
BR-62966 Downstream Face	N/A	721.18	720.73	718.62	719.52
62826	N/A	721.13	720.96	718.72	719.68
61240 (Lettered AF)	721.2	720.74	720.60	717.80	719.25

4.0 Flood Hazard Evaluation

All cross sections for the proposed structure reduced the 100-year water surface elevation and resulted in no rise.

5.0 Appendices

- 5.1)** FEMA FIRM
- 5.2)** Cross Section Layout in HEC-RAS
- 5.3)** Bridge Site Plans
- 5.4)** HEC-RAS Output from Analysis

5.1) FEMA FIRM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Ohio State Plane South Zone 5001 (FPSZONE 3402). The **horizontal datum** was NAD83. Differences in datum, spheroid, projection or state plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA/NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by Franklin County. This information was produced at a scale of 1:1,200 from aerial photography dated 2004.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

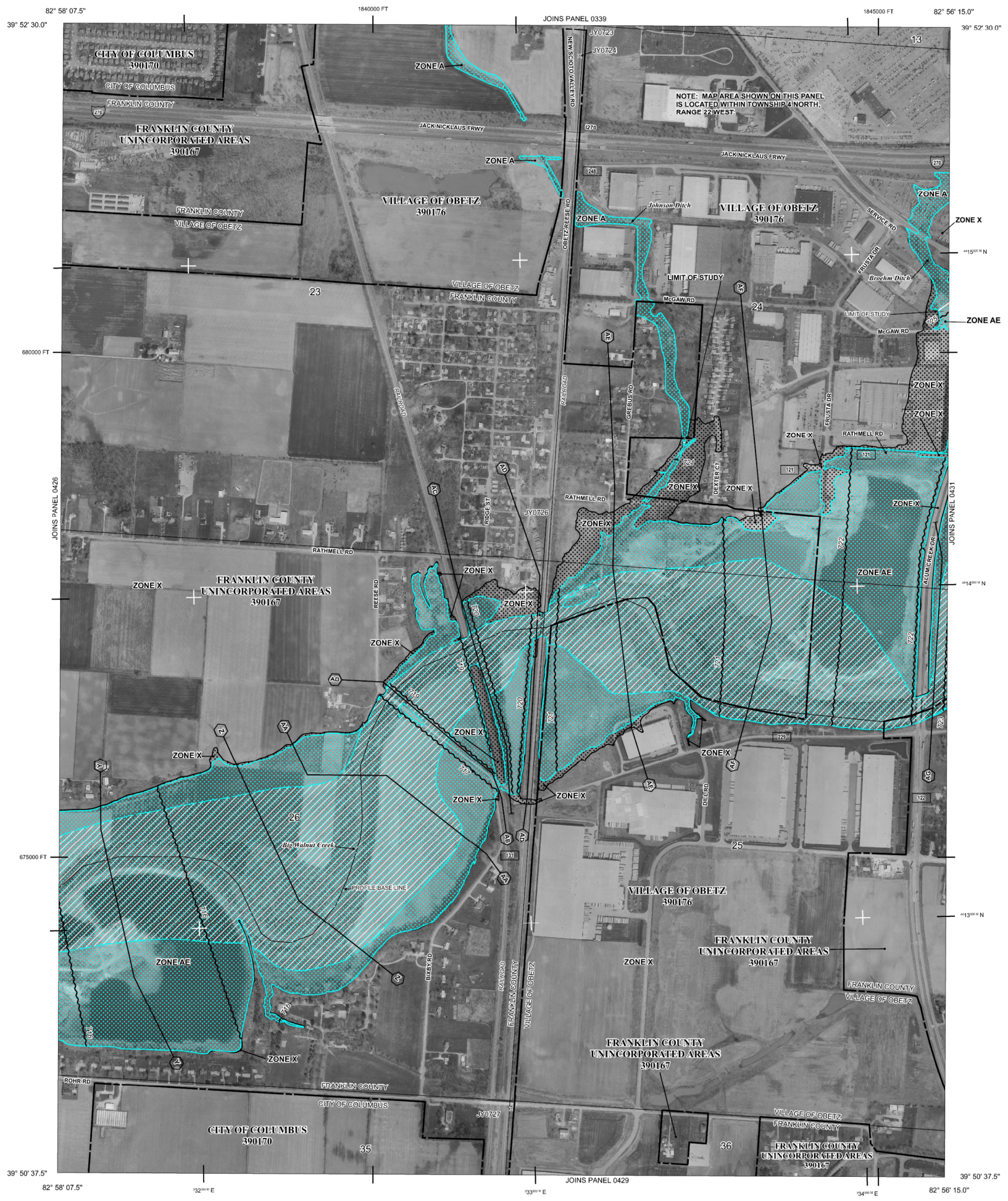
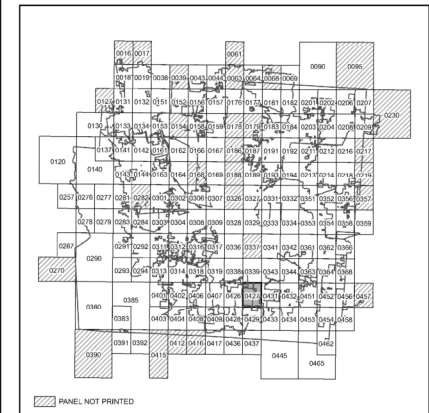
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

PANEL INDEX



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100 year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard may include Zones A, AE, AH, AO, AR, AR9, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE AR9 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside of the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

Base Flood Elevation value where uniform within zone; elevation in feet*

(EL 10)

*Referenced to the North American Vertical Datum of 1988

(A) --- (A) Cross section line

(C) --- (C) Transect line

85° 03' 45.0", 41° 24' 22.5" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

+87°00 M 1000-meter Universal Transverse Mercator grid values, zone 17

2250000 FT 5000-foot grid ticks: Ohio State Plane South Coordinate System, 5001 Zone (FPSZONE 3402) Lambert Conformal Conic

KA0015 x Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 River Mile

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 2, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

7/16/1997
4/21/1999
3/15/2004
9/19/2007

June 17, 2008 - to update corporate limits, to change Special Flood Hazard Areas, to update map format, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0427K

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY, OHIO AND INCORPORATED AREAS

PANEL 427 OF 465

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER PANEL, SHEET #
COLUMBUS, CITY OF	390170 0427 K
FRANKLIN COUNTY	390167 0427 K
OBETZ, VILLAGE OF	390176 0427 K

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 39049C0427K

MAP REVISED JUNE 17, 2008

Federal Emergency Management Agency

5.2) Cross Section Layout in HEC-RAS



ALUM CREEK DRIVE

BIG WALNUT CREEK

BIXBY ROAD

60240

61773

62276

62826

63705

63505

63697

65126

64566

66452

65585

66087

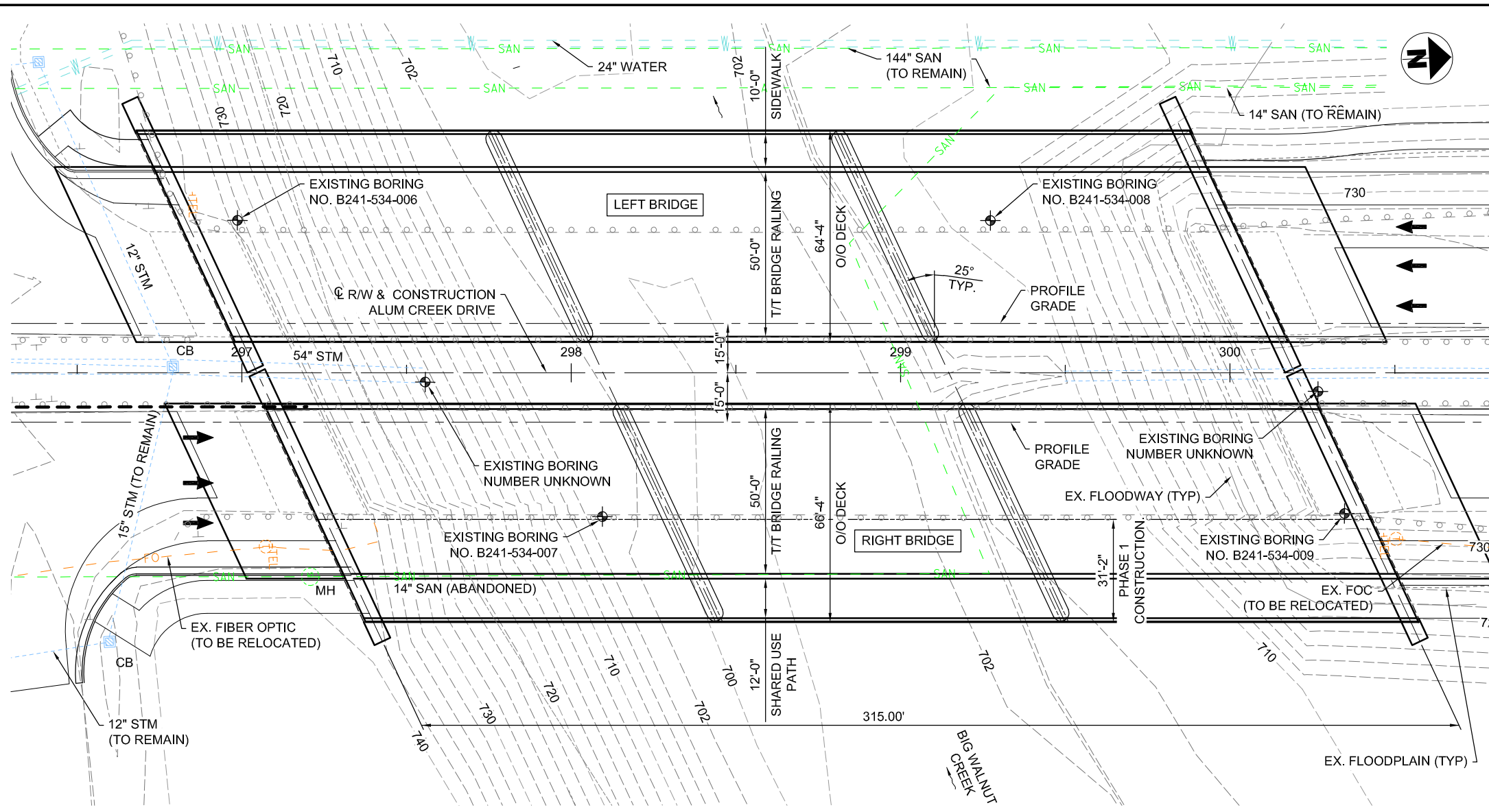
68577

67018

67432

5.3) Bridge Site Plan

C:\pw_working\infra01\bmeneal\0181967\115792_SPO01.dwg 21-Dec-23 8:04 AM



PLAN

BENCHMARK DATA			
BM #1 STA.	_____	ELEV.	_____
BM #2 STA.	_____	ELEV.	_____
BM #3 STA.	_____	ELEV.	_____
BM #4 STA.	_____	ELEV.	_____

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET

NOTES
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

RIGHT BRIDGE TRAFFIC:
 2022 ADT = 17,523 2022 ADTT = 4,343
 2048 ADT = 22,030 2048 ADTT = 5,445

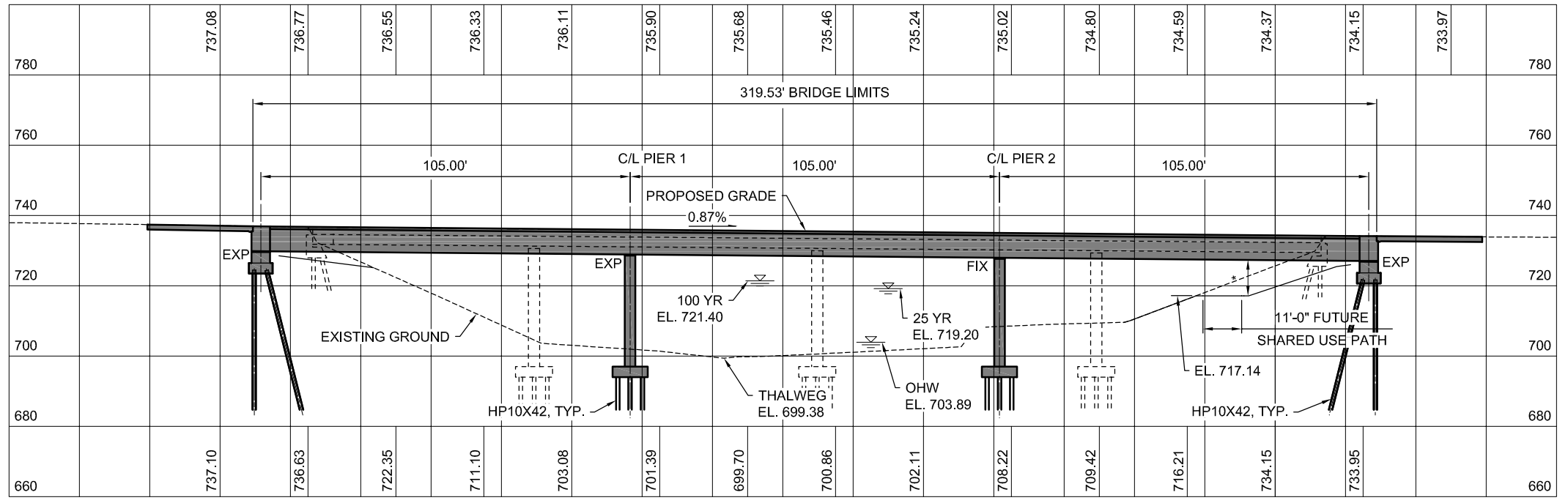
LEFT BRIDGE TRAFFIC:
 2022 ADT = 18,716 2022 ADTT = 4,358
 2048 ADT = 23,620 2048 ADTT = 5,500

LEGEND
 * EXISTING BORING LOCATION

HYDRAULIC DATA
 DRAINAGE AREA = 540 SQ. MILES
 Q (100) = 30,700 CFS, FIS V (100) = 8.25 FT/S, FIS
 Q (25) = 21,300 CFS, FIS V (25) = 6.58 FT/S, FIS
 PROPOSED STRUCTURE CLEARS THE 25 YEAR DESIGN HW BY 8.18 FEET.

EXISTING STRUCTURE
 TYPE: CONTINUOUS STEEL ROLLED BEAMS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.
 SPANS: 63.45' ± - 80' ± - 80' ± - 64' 0" ± C/C BEARINGS
 ROADWAY: 32'-0" FACE TO FACE OF GUARDRAIL
 LOADING: HS 20-44
 SKEW: 25° ± RF
 WEARING SURFACE: MICRO-SILICA MODIFIED CONCRETE OVERLAY (3")
 APPROACH SLABS: 25' ± LONG, 13" ± THICK, AS-1-54
 ALIGNMENT: TANGENT
 CROWN: VARIES FT/FT
 STRUCTURE FILE NUMBER: LEFT BRIDGE = 2530333
 RIGHT BRIDGE = 2530325
 DATE BUILT: 1959
 DISPOSITION: TO BE DEMOLISHED

PROPOSED STRUCTURE
 TYPE: 3-SPAN PRESTRESSED CONCRETE I-BEAM WITH COMPOSITE REINFORCED CONCRETE DECK SUPPORTED BY SEMI-INTEGRAL ABUTMENTS AND REINFORCED CONCRETE WALL TYPE PIERS SUPPORTED ON STEEL H-PILES.
 SPANS: 103.92' - 102.83' - 103.92' MEASURED C/C BEARINGS
 ROADWAY: 50'-0" TOE TO TOE BARRIER
 SIDEWALK: 10'-0" LT. BRIDGE, 12'-0" RT. BRIDGE
 LOADING: HL-93 AND 60 PSF FUTURE WEARING SURFACE
 SKEW: 25° RIGHT FORWARD
 WEARING SURFACE: 1" MONOLITHIC CONCRETE
 APPROACH SLABS: 30'-0" LONG, 17" THICK (AS-1-15)
 ALIGNMENT: TANGENT
 CROWN: 0.016 FT/FT
 DECK AREA: 21,195 SF
 COORDINATES: LATITUDE 39°51'21.65" N 39°51'21.88" N
 LONGITUDE 82°56'18.67" W 82°56'17.96" W



PROFILE - ALTERNATIVE 3

NOTE:
 HISTORIC BORING INFORMATION DID NOT REACH ROCK ABOVE ELEVATION 660. BORINGS TERMINATED PRIOR TO ENCOUNTERING ROCK.

* - 10'-0" MINIMUM CLEARANCE

DESIGN AGENCY: **Stanec Consulting Services Inc.**
 1900 Lake Shore Drive, Suite 100
 Columbus, Ohio 43224
 (614) 486-6383

DATE: 12/2023
 REVIEWED: EDA
 DRAWN: JWS
 DESIGNED: BSM
 CHECKED: MRS

FRANKLIN COUNTY
 STA. 297+04.78
 STA. 300+19.47

SITE PLAN
 BRIDGE NO. FRA-CR122-0186L AND FRA-CR122-0187R
 ALUM CREEK DRIVE OVER BIG WALNUT CREEK

FRANKLIN COUNTY
 STA. 297+04.78
 STA. 300+19.47

FRIDAY, 12/22/23 11:57:92
 PID No. 115792

1 / 8

5.4) HEC-RAS OUTPUT

HEC-RAS Output for Pre-project

River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
63997	100yr	30700.00	698.63	722.77	713.16	722.98	0.000228	4.41	9610.11	1987.50	0.18
63997	10yr	16900.00	698.63	718.26	709.26	718.47	0.000302	4.22	5653.32	1773.91	0.20
63997	25yr	21300.00	698.63	719.95	710.63	720.15	0.000259	4.21	7130.68	1797.97	0.19
63997	50yr	25800.00	698.63	721.24	711.68	721.44	0.000251	4.37	8256.74	1824.43	0.19
63505	100yr	30700.00	698.78	722.21	711.80	722.79	0.000507	6.50	5490.33	2029.92	0.27
63505	10yr	16900.00	698.78	717.92	708.68	718.29	0.000430	5.02	3813.32	1965.38	0.23
63505	25yr	21300.00	698.78	719.54	709.76	719.97	0.000448	5.51	4443.21	1985.62	0.24
63505	50yr	25800.00	698.78	720.73	710.77	721.25	0.000495	6.08	4911.65	2009.56	0.26
63105	100yr	30700.00	698.90	721.86	711.50	722.55	0.000601	6.71	4765.98	2130.97	0.29
63105	10yr	16900.00	698.90	717.73	707.96	718.11	0.000477	4.95	3500.99	1460.71	0.25
63105	25yr	21300.00	698.90	719.31	709.29	719.78	0.000508	5.52	3979.24	1690.69	0.26
63105	50yr	25800.00	698.90	720.44	710.36	721.03	0.000574	6.18	4327.55	1914.56	0.28
62966		Bridge									
62826	100yr	30700.00	698.90	721.13	711.65	722.06	0.000753	7.73	4021.04	2667.76	0.33
62826	10yr	16900.00	698.90	717.37	707.60	717.83	0.000513	5.44	3123.29	2256.93	0.26
62826	25yr	21300.00	698.90	718.84	708.89	719.44	0.000581	6.18	3469.96	2452.20	0.28
62826	50yr	25800.00	698.90	719.84	710.58	720.60	0.000688	7.02	3708.82	2511.22	0.31
62276	100yr	30700.00	698.49	720.93	710.33	721.34	0.000432	5.33	6352.02	2715.13	0.24
62276	10yr	16900.00	698.49	717.17	706.81	717.43	0.000378	4.12	4402.12	2596.99	0.21
62276	25yr	21300.00	698.49	718.64	707.95	718.94	0.000386	4.51	5154.13	2641.74	0.22
62276	50yr	25800.00	698.49	719.63	709.05	719.99	0.000429	5.00	5668.49	2649.19	0.24
61773	100yr	30700.00	697.80	720.73	708.56	721.14	0.000353	5.84	8188.14	2254.69	0.22
61773	10yr	16900.00	697.80	716.79	705.10	717.22	0.000380	5.28	3206.22	885.30	0.22
61773	25yr	21300.00	697.80	718.38	706.30	718.76	0.000336	5.27	5771.45	1341.38	0.21
61773	50yr	25800.00	697.80	719.37	707.42	719.79	0.000367	5.70	6776.90	1915.86	0.23
61240	100yr	30700.00	697.40	720.74	708.14	720.81	0.000060	2.44	15439.97	2091.05	0.09
61240	10yr	16900.00	697.40	716.60	704.70	717.01	0.000354	5.18	3625.13	1855.05	0.22
61240	25yr	21300.00	697.40	717.89	705.90	718.45	0.000439	6.04	4030.18	1934.81	0.24
61240	50yr	25800.00	697.40	719.38	707.01	719.44	0.000058	2.31	13748.91	2017.94	0.09

Bridge (RS: 62966) Profile: 100 Year

Plan: Pre-project		BigWalnutCr 1 RS: 62966	Profile: 100yr	
E.G. US. (ft)	722.55	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	721.86	E.G. Elev (ft)	722.39	722.23
Q Total (cfs)	30700.00	W.S. Elev (ft)	721.40	721.18
Q Bridge (cfs)	30700.00	Crit W.S. (ft)	711.80	712.00
Q Weir (cfs)		Max Chl Dpth (ft)	22.50	22.28
Weir Sta Lft (ft)		Vel Total (ft/s)	7.92	8.16
Weir Sta Rgt (ft)		Flow Area (sq ft)	3875.89	3763.21
Weir Submerg		Froude # Chl	0.30	0.31
Weir Max Depth (ft)		Specif Force (cu ft)	44683.88	43652.79
Min El Weir Flow (ft)	734.14	Hydr Depth (ft)	17.15	16.85
Min El Prs (ft)	734.83	W.P. Total (ft)	356.02	356.82
Delta EG (ft)	0.49	Conv. Total (cfs)	817732.9	780052.2
Delta WS (ft)	0.73	Top Width (ft)	225.99	223.32
BR Open Area (sq ft)	6797.50	Frctn Loss (ft)	0.15	0.11
BR Open Vel (ft/s)	8.16	C & E Loss (ft)	0.02	0.06
BR Sluice Coef		Shear Total (lb/sq ft)	0.96	1.02
BR Sel Method	Energy only	Power Total (lb/ft s)	7.59	8.32

Bridge (RS: 62966) Profile: 10 Year

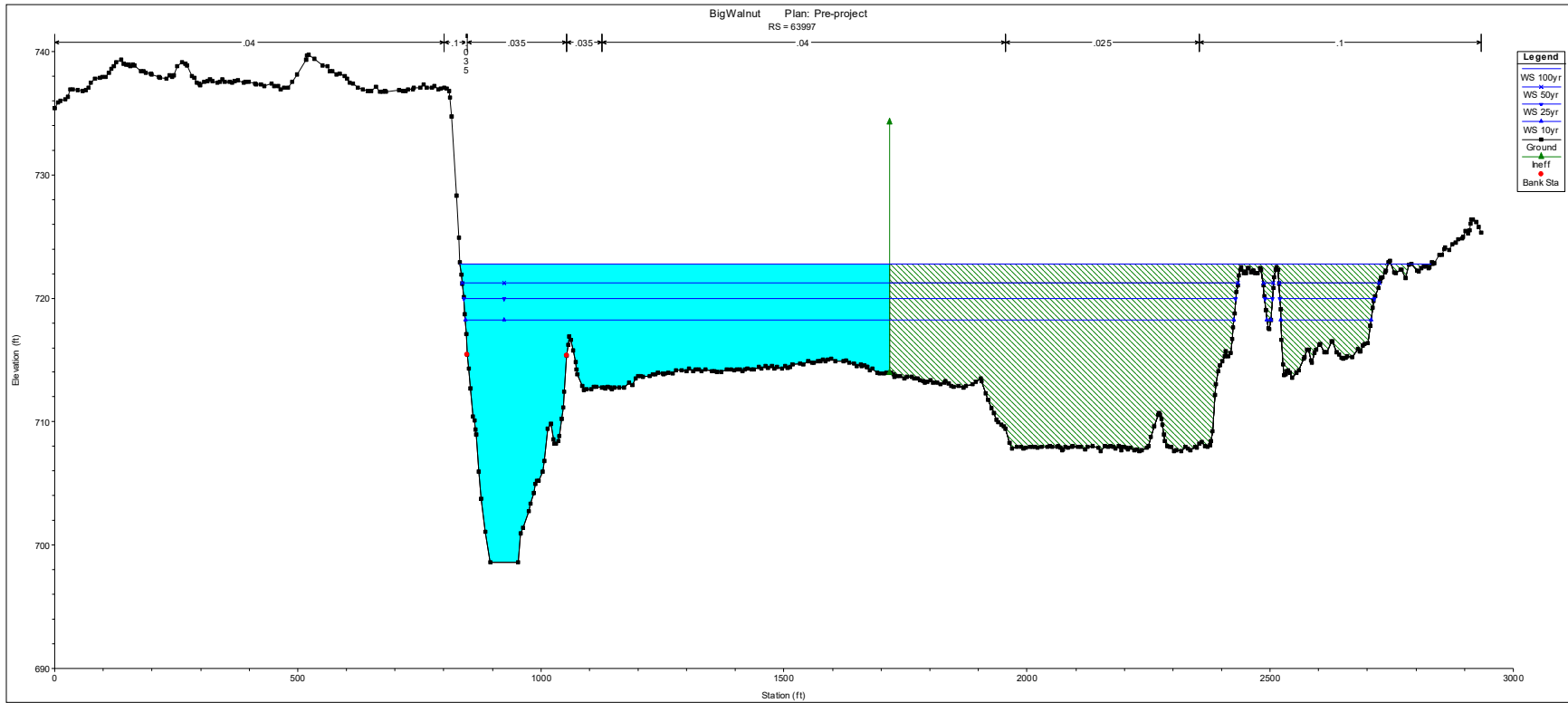
Plan: Pre-project		BigWalnutCr 1 RS: 62966	Profile: 10yr	
E.G. US. (ft)	718.11	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	717.73	E.G. Elev (ft)	718.03	717.93
Q Total (cfs)	16900.00	W.S. Elev (ft)	717.54	717.41
Q Bridge (cfs)	16900.00	Crit W.S. (ft)	708.16	707.82
Q Weir (cfs)		Max Chl Dpth (ft)	18.64	18.51
Weir Sta Lft (ft)		Vel Total (ft/s)	5.60	5.75
Weir Sta Rgt (ft)		Flow Area (sq ft)	3020.30	2939.50
Weir Submerg		Froude # Chl	0.23	0.24
Weir Max Depth (ft)		Specif Force (cu ft)	26712.21	26252.29
Min El Weir Flow (ft)	734.14	Hydr Depth (ft)	13.86	13.73
Min El Prs (ft)	734.83	W.P. Total (ft)	320.06	320.48
Delta EG (ft)	0.28	Conv. Total (cfs)	577756.8	554081.8
Delta WS (ft)	0.36	Top Width (ft)	217.95	214.08
BR Open Area (sq ft)	6797.50	Frctn Loss (ft)	0.09	0.07
BR Open Vel (ft/s)	5.75	C & E Loss (ft)	0.01	0.03
BR Sluice Coef		Shear Total (lb/sq ft)	0.50	0.53
BR Sel Method	Energy only	Power Total (lb/ft s)	2.82	3.06

Bridge (RS: 62966) Profile: 25 Year

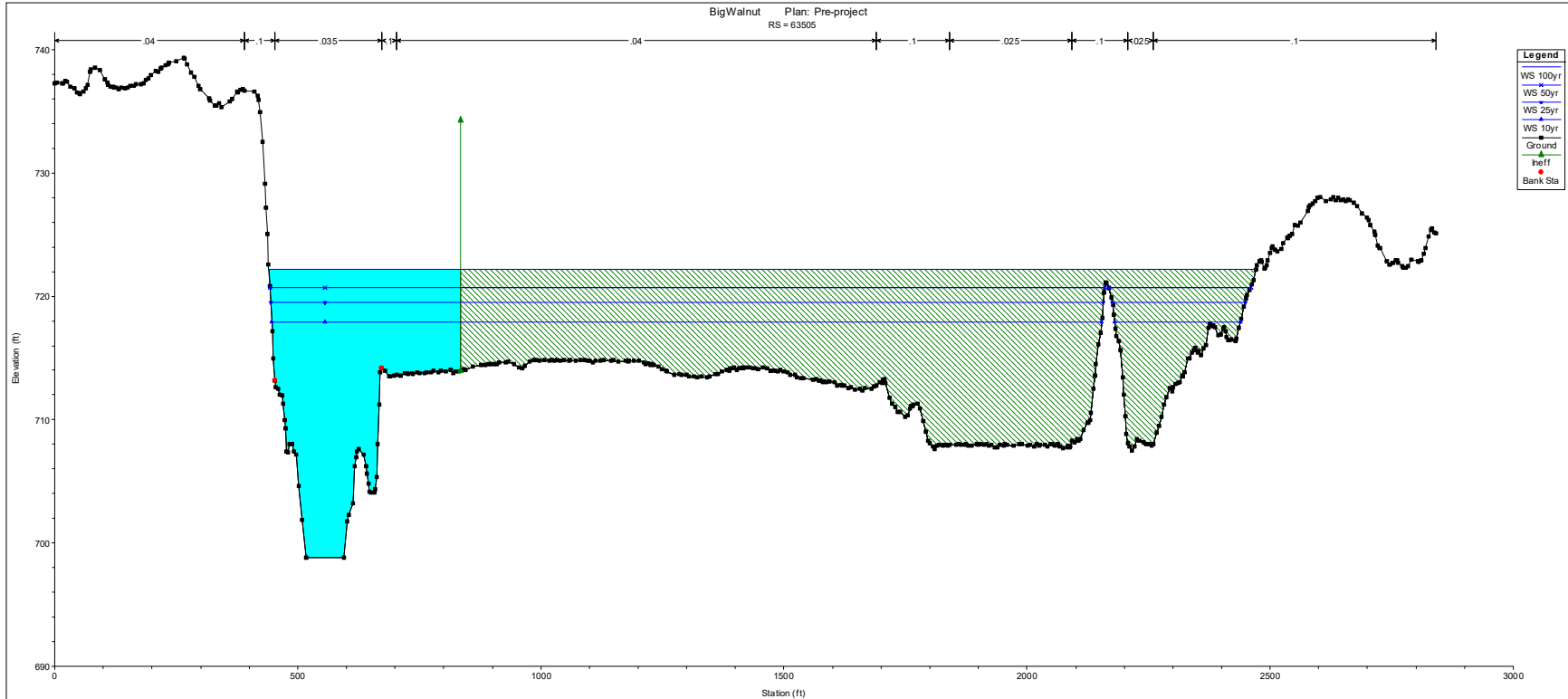
Plan: Pre-project		BigWalnutCr	1 RS: 62966	Profile: 25yr	
E.G. US. (ft)	719.78	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	719.31	E.G. Elev (ft)	719.67	719.56	
Q Total (cfs)	21300.00	W.S. Elev (ft)	719.04	718.88	
Q Bridge (cfs)	21300.00	Crit W.S. (ft)	709.56	709.67	
Q Weir (cfs)		Max Chl Dpth (ft)	20.14	19.98	
Weir Sta Lft (ft)		Vel Total (ft/s)	6.36	6.54	
Weir Sta Rgt (ft)		Flow Area (sq ft)	3349.00	3257.10	
Weir Submerg		Froude # Chl	0.25	0.26	
Weir Max Depth (ft)		Specif Force (cu ft)	32767.07	32125.75	
Min El Weir Flow (ft)	734.14	Hydr Depth (ft)	15.17	14.94	
Min El Prs (ft)	734.83	W.P. Total (ft)	333.75	335.05	
Delta EG (ft)	0.34	Conv. Total (cfs)	668492.3	639647.1	
Delta WS (ft)	0.46	Top Width (ft)	220.78	218.08	
BR Open Area (sq ft)	6797.50	Frctn Loss (ft)	0.11	0.08	
BR Open Vel (ft/s)	6.54	C & E Loss (ft)	0.01	0.04	
BR Sluice Coef		Shear Total (lb/sq ft)	0.64	0.67	
BR Sel Method	Energy only	Power Total (lb/ft s)	4.04	4.40	

Bridge (RS: 62966) Profile: 50 Year

Plan: Pre-project		BigWalnutCr	1 RS: 62966	Profile: 50yr	
E.G. US. (ft)	721.03	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	720.44	E.G. Elev (ft)	720.90	720.75	
Q Total (cfs)	25800.00	W.S. Elev (ft)	720.08	719.89	
Q Bridge (cfs)	25800.00	Crit W.S. (ft)	710.66	710.89	
Q Weir (cfs)		Max Chl Dpth (ft)	21.18	20.99	
Weir Sta Lft (ft)		Vel Total (ft/s)	7.21	7.42	
Weir Sta Rgt (ft)		Flow Area (sq ft)	3580.02	3477.00	
Weir Submerg		Froude # Chl	0.28	0.29	
Weir Max Depth (ft)		Specif Force (cu ft)	37961.14	37134.22	
Min El Weir Flow (ft)	734.14	Hydr Depth (ft)	16.06	15.76	
Min El Prs (ft)	734.83	W.P. Total (ft)	343.38	344.81	
Delta EG (ft)	0.42	Conv. Total (cfs)	733458.7	700026.6	
Delta WS (ft)	0.60	Top Width (ft)	222.85	220.63	
BR Open Area (sq ft)	6797.50	Frctn Loss (ft)	0.13	0.10	
BR Open Vel (ft/s)	7.42	C & E Loss (ft)	0.01	0.05	
BR Sluice Coef		Shear Total (lb/sq ft)	0.81	0.86	
BR Sel Method	Energy only	Power Total (lb/ft s)	5.80	6.35	

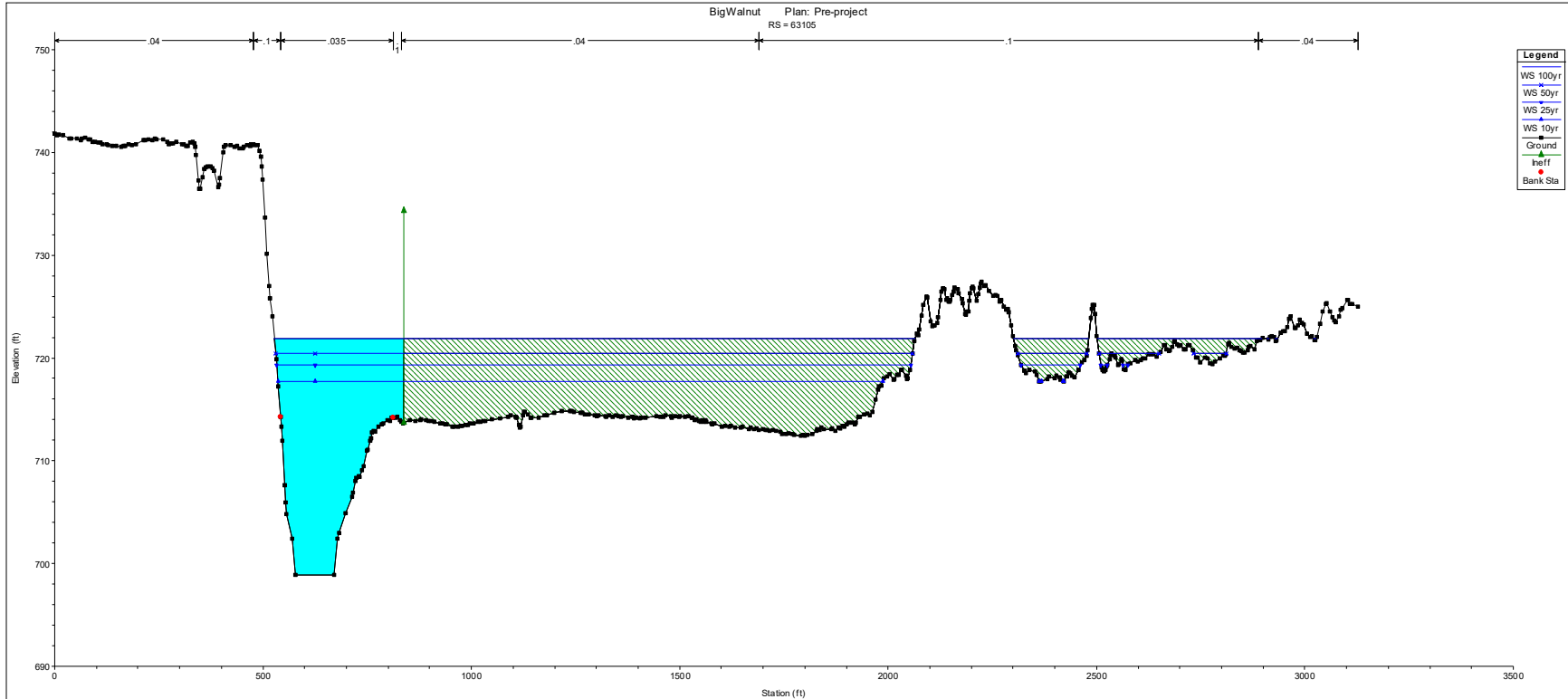


BigWalnut Plan: Pre-project
RS = 63505



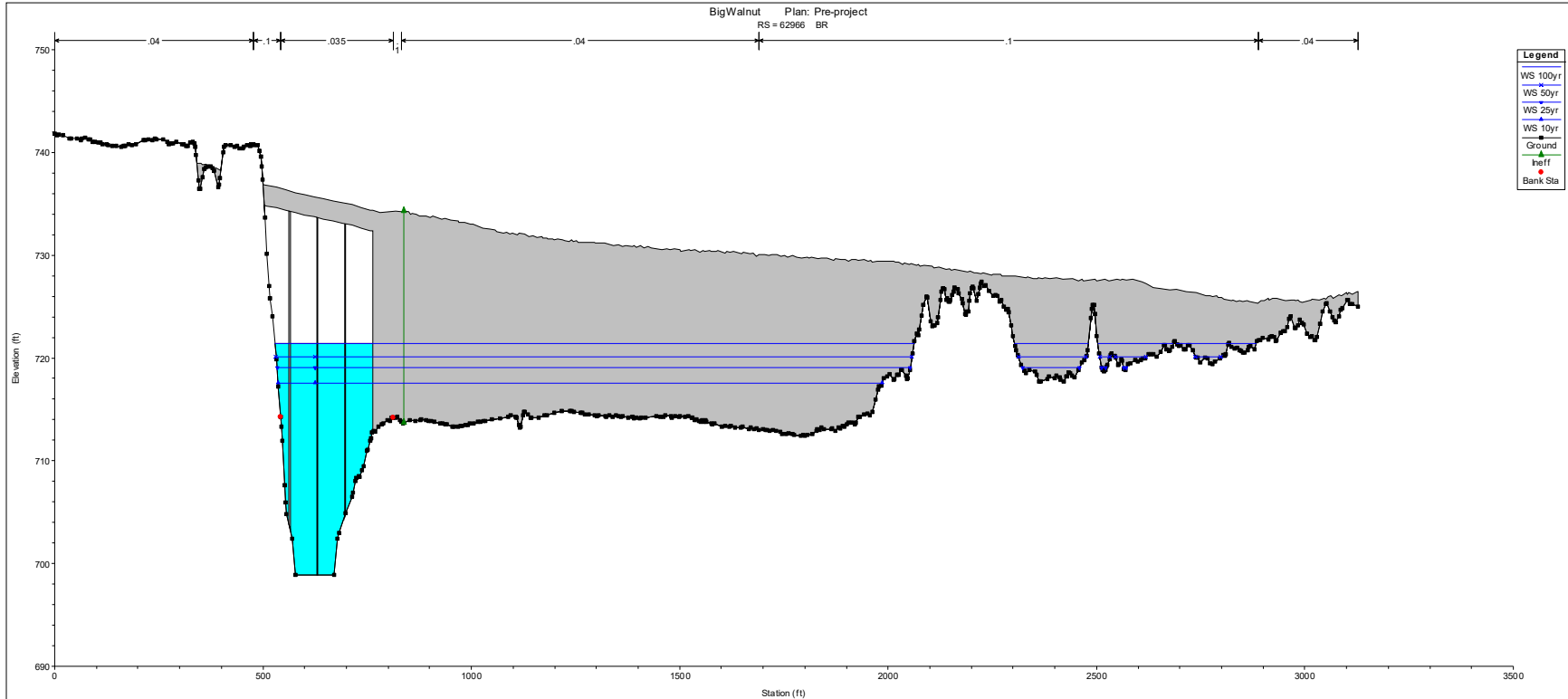
- Legend**
- WS 100yr
 - WS 50yr
 - WS 25yr
 - WS 10yr
 - Ground
 - h_{eff}
 - Bank Sta

BigWalnut Plan: Pre-project
RS = 63105

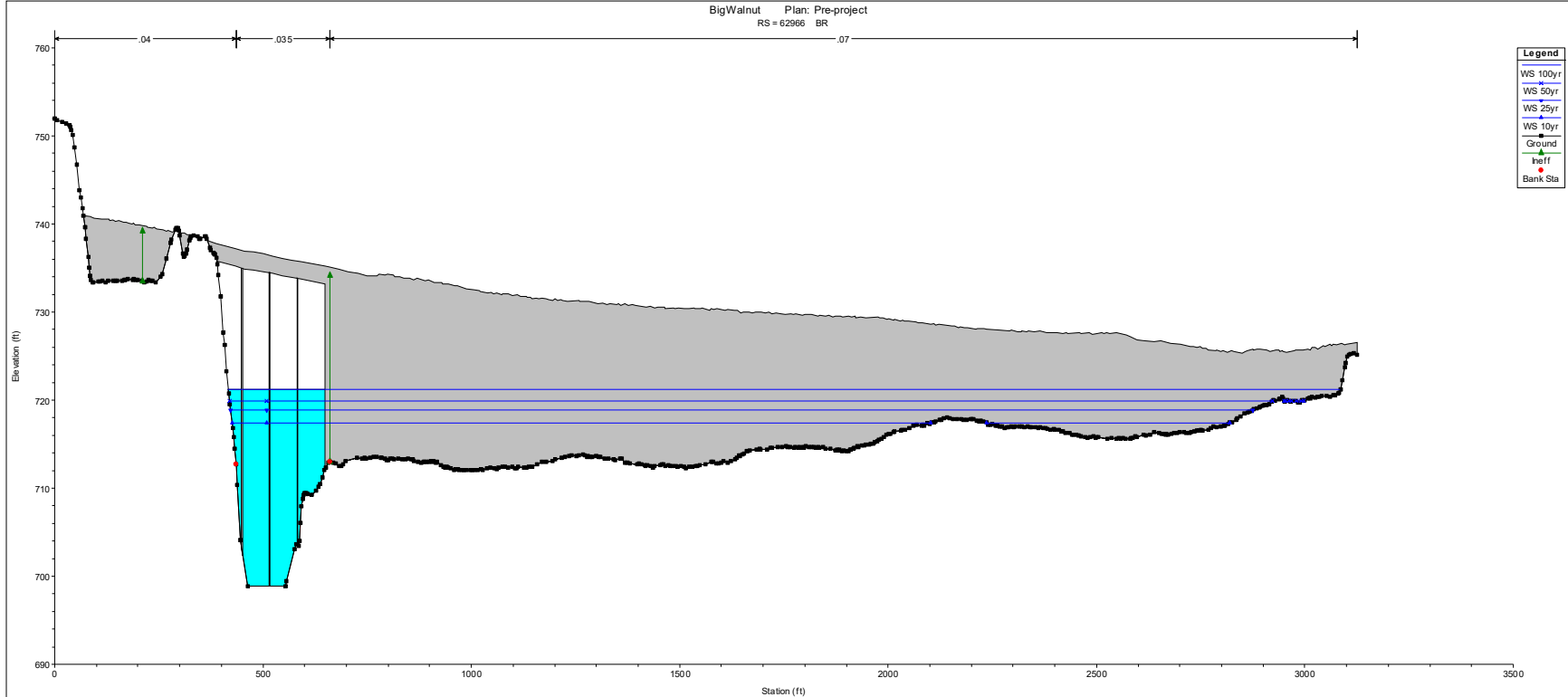


Legend	
WS 100yr	Blue line with dots
WS 50yr	Light blue line with dots
WS 25yr	Cyan line with dots
WS 10yr	Dark cyan line with dots
Ground	Black line with dots
h _{eff}	Green arrow
Bank Sta	Red dot

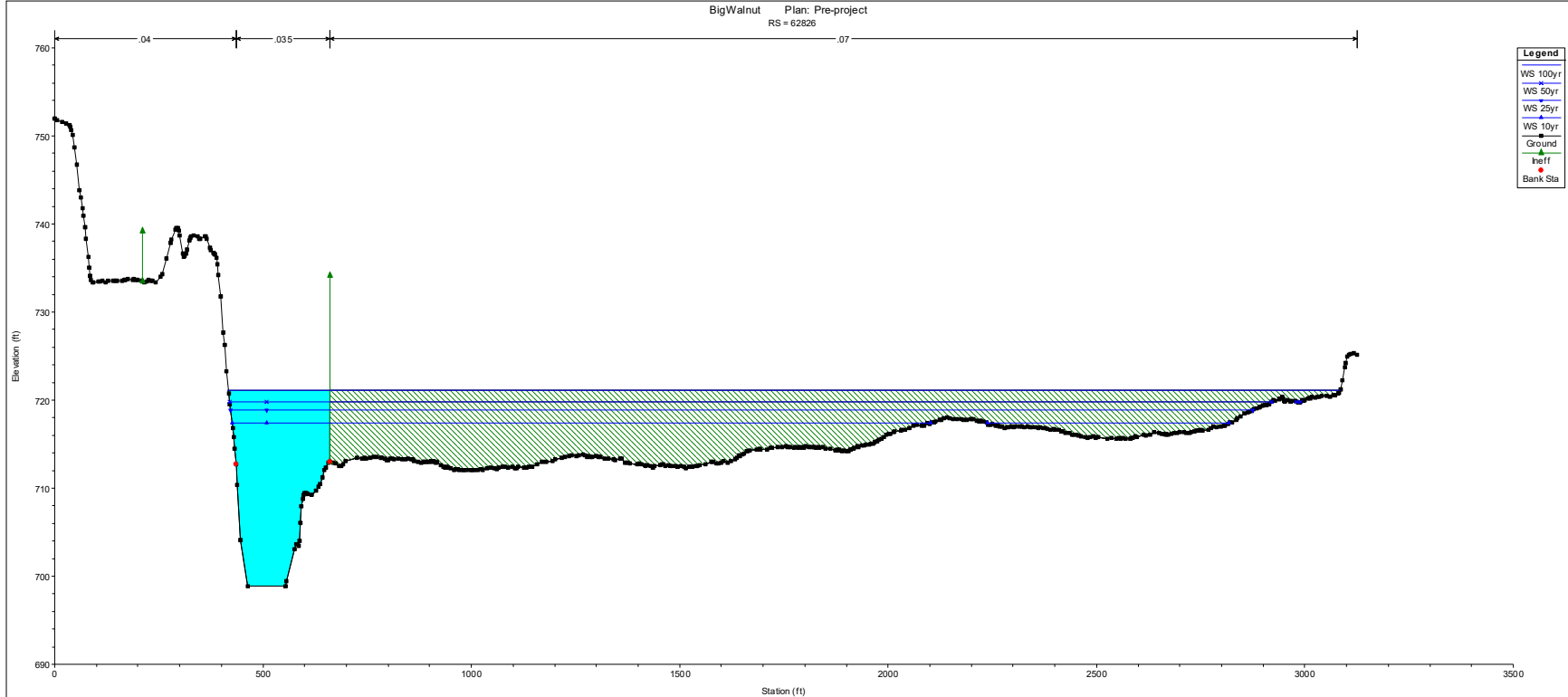
BigWalnut Plan: Pre-project
RS = 62966 BR



BigWalnut Plan: Pre-project
RS = 62966 BR

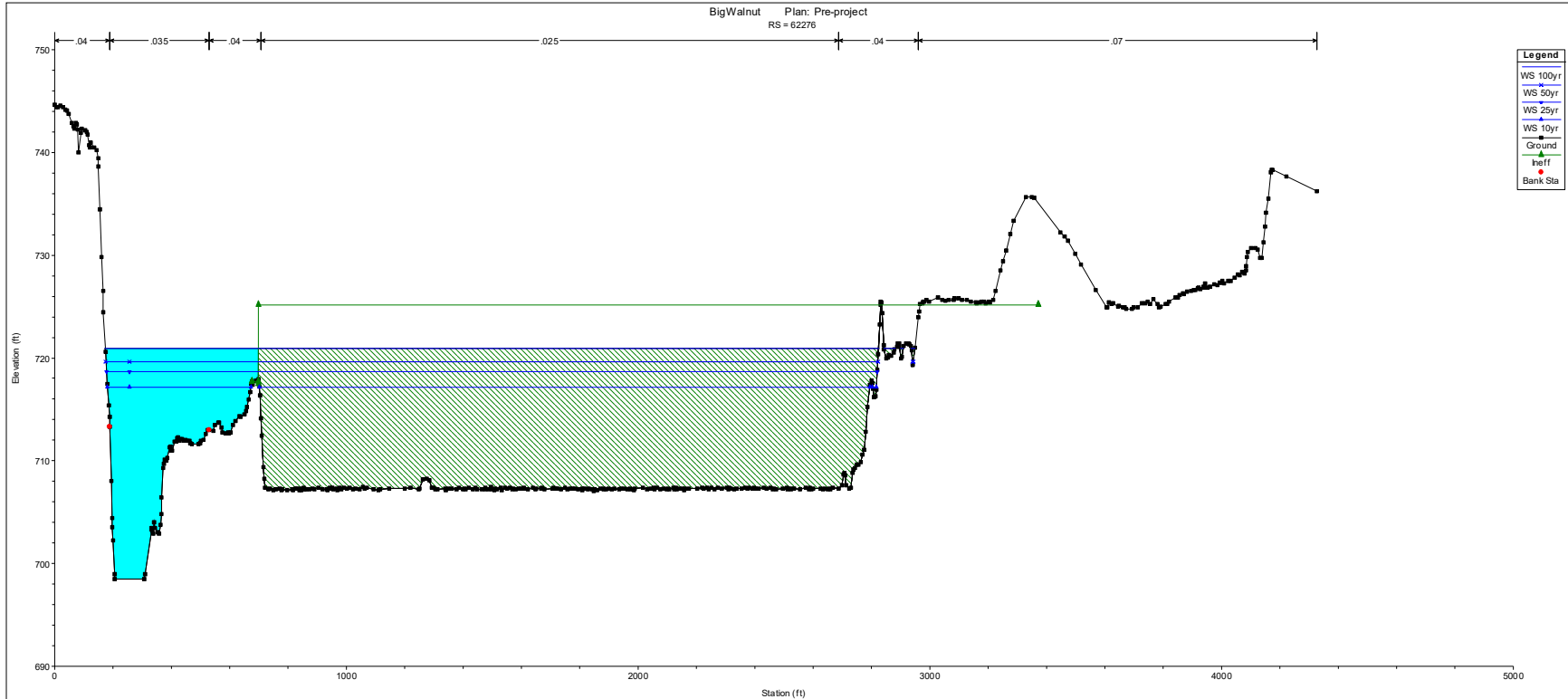


BigWalnut Plan: Pre-project
RS = 62826

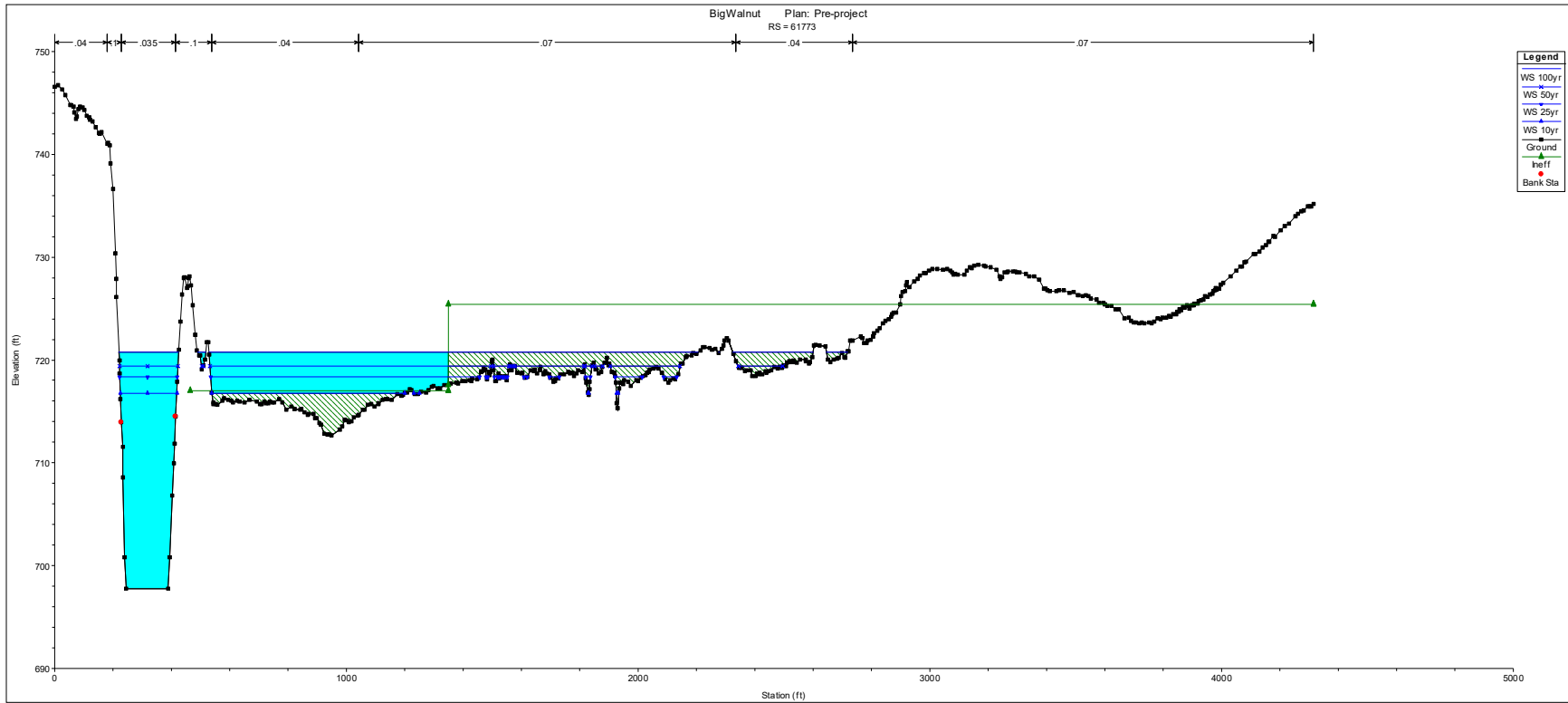


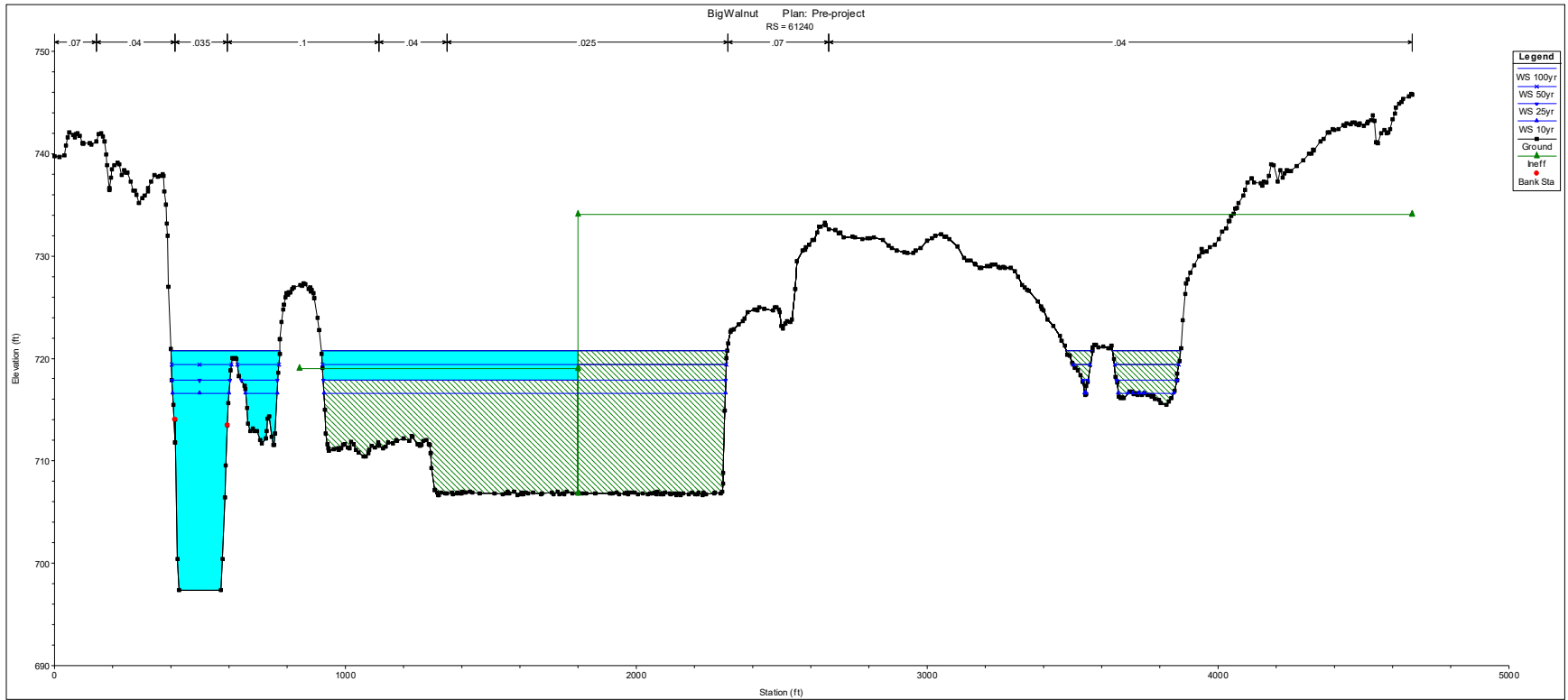
- Legend**
- WS 100yr
 - WS 50yr
 - WS 25yr
 - WS 10yr
 - Ground
 - h'eff
 - Bank Sta

BigWalnut Plan: Pre-project
RS = 62276

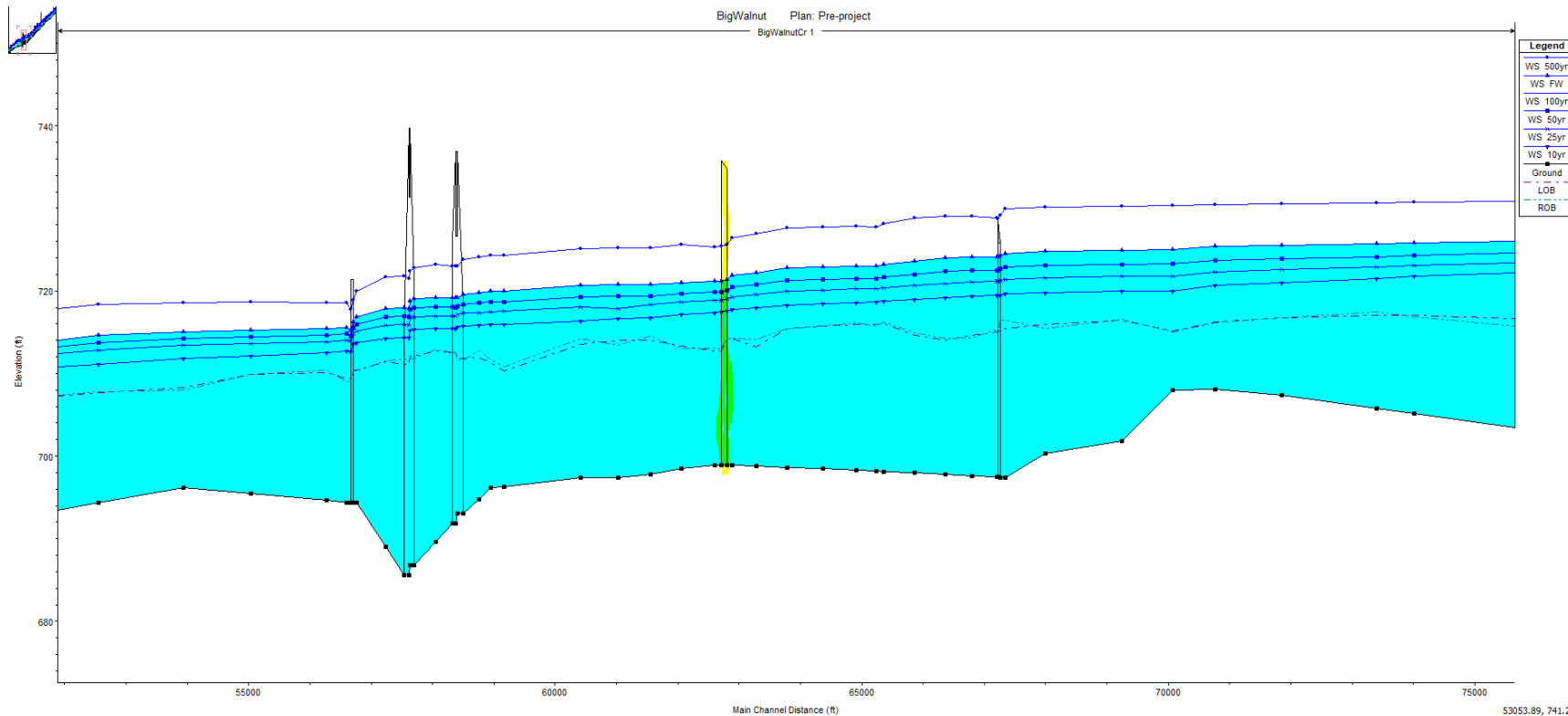


- Legend**
- WS 100yr
 - WS 50yr
 - WS 25yr
 - WS 10yr
 - Ground
 - h'eff
 - Bank Sta





BigWalnut Plan: Pre-project
BigWalnutCr 1



HEC-RAS Output for Proposed Study

River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
63997	100yr	30700.00	698.63	722.64	713.16	722.89	0.000266	4.75	8732.95	1976.92	0.19
63997	10yr	16900.00	698.63	718.51	709.26	718.72	0.000296	4.23	5485.56	1777.16	0.20
63997	25yr	21300.00	698.63	720.04	710.63	720.26	0.000276	4.37	6682.59	1799.38	0.19
63997	50yr	25800.00	698.63	721.20	711.68	721.44	0.000282	4.63	7593.62	1823.63	0.20
63505	100yr	30700.00	698.78	722.16	711.80	722.70	0.000478	6.30	5791.77	2029.59	0.26
63505	10yr	16900.00	698.78	718.22	708.68	718.55	0.000383	4.80	4091.61	1969.09	0.22
63505	25yr	21300.00	698.78	719.69	709.76	720.08	0.000411	5.31	4721.92	1987.91	0.23
63505	50yr	25800.00	698.78	720.77	710.77	721.25	0.000463	5.89	5189.61	2010.54	0.25
63105	100yr	30700.00	698.90	721.85	711.50	722.48	0.000563	6.49	5056.42	2129.23	0.28
63105	10yr	16900.00	698.90	718.06	707.96	718.40	0.000422	4.73	3752.68	1505.15	0.23
63105	25yr	21300.00	698.90	719.48	709.29	719.91	0.000464	5.32	4238.60	1716.20	0.25
63105	50yr	25800.00	698.90	720.51	710.36	721.04	0.000534	5.98	4591.63	1918.61	0.27
62966		Bridge									
62826	100yr	30700.00	698.90	720.96	711.65	721.63	0.000615	6.94	5639.91	2666.15	0.29
62826	10yr	16900.00	698.90	717.37	707.60	717.75	0.000453	5.11	4009.72	2256.38	0.24
62826	25yr	21300.00	698.90	718.72	708.89	719.19	0.000503	5.72	4619.02	2445.79	0.26
62826	50yr	25800.00	698.90	719.68	710.58	720.26	0.000583	6.42	5053.79	2497.87	0.28
62276	100yr	30700.00	698.49	720.93	710.33	721.13	0.000189	3.52	8647.17	2715.39	0.16
62276	10yr	16900.00	698.49	717.18	706.81	717.43	0.000378	4.12	4404.10	2597.07	0.21
62276	25yr	21300.00	698.49	718.67	707.95	718.81	0.000168	2.98	7064.51	2641.84	0.15
62276	50yr	25800.00	698.49	719.63	709.05	719.81	0.000187	3.30	7737.20	2649.26	0.16
61773	100yr	30700.00	697.80	720.58	708.56	720.98	0.000354	5.82	9111.76	2223.22	0.22
61773	10yr	16900.00	697.80	716.79	705.10	717.22	0.000380	5.28	3207.03	885.86	0.22
61773	25yr	21300.00	697.80	718.28	706.30	718.67	0.000347	5.33	5735.11	1307.76	0.22
61773	50yr	25800.00	697.80	719.22	707.42	719.65	0.000380	5.77	7003.90	1845.54	0.23
61240	100yr	30700.00	697.40	720.60	708.14	720.66	0.000052	2.27	16294.00	2085.75	0.09
61240	10yr	16900.00	697.40	716.60	704.70	717.01	0.000354	5.18	3626.44	1856.16	0.22
61240	25yr	21300.00	697.40	717.80	705.90	718.36	0.000446	6.08	3999.95	1928.94	0.25
61240	50yr	25800.00	697.40	719.25	707.01	719.30	0.000051	2.15	14512.73	2011.47	0.08

Bridge (RS: 62966) Profile: 100 Year

Plan: Proposed BigWalnutCr 1 RS: 62966 BR U Profile: 100yr					
Element		Left OB	Channel	Right OB	
E.G. Elev (ft)	722.46				
Vel Head (ft)	1.06	0.040	0.035		
W.S. Elev (ft)	721.40	101.00	101.00	101.00	
Crit W.S. (ft)	711.42				
E.G. Slope (ft/ft)	0.001504				
Q Total (cfs)	30700.00	0.50	3719.04		
Top Width (ft)	225.33	0.50	3719.04		
Vel Total (ft/s)	8.25	0.18	30699.82		
Max Chl Dpth (ft)	22.50	0.27	225.06		
Conv. Total (cfs)	791651.1	0.37	8.25		
Length Wtd. (ft)	101.00	1.85	16.52		
Min Ch El (ft)	698.90	4.8	791646.3		
Alpha	1.00	3.82	343.88		
Frctn Loss (ft)		0.01	1.02		
C & E Loss (ft)		0.00	8.38		
		12947.82	4859.71	9627.76	
		1254.35	309.90	1625.76	

Bridge (RS: 62966) Profile: 10 Year

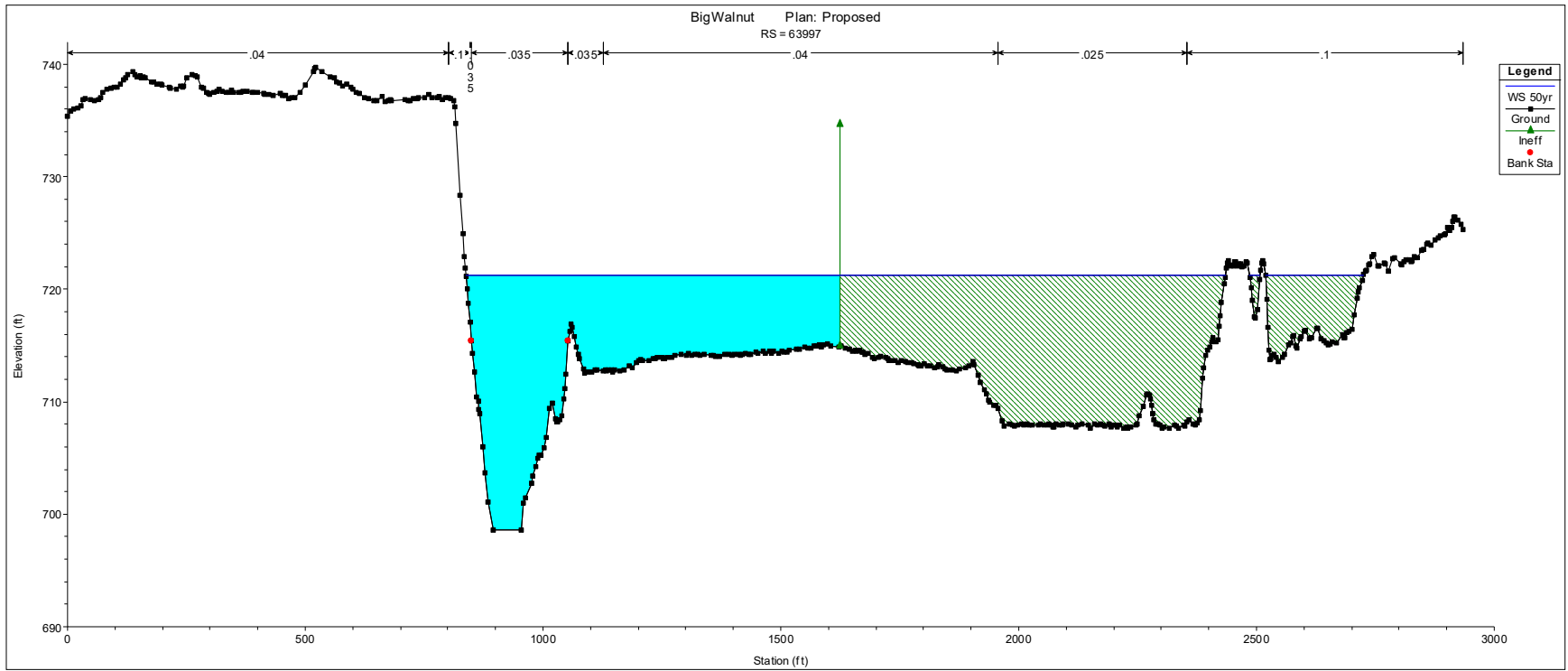
Plan: Proposed BigWalnutCr 1 RS: 62966 BR U Profile: 10yr					
Element		Left OB	Channel	Right OB	
E.G. Elev (ft)	718.36				
Vel Head (ft)	0.51		0.035		
W.S. Elev (ft)	717.85	101.00	101.00	101.00	
Crit W.S. (ft)	707.99				
E.G. Slope (ft/ft)	0.000798				
Q Total (cfs)	16900.00		2953.21		
Top Width (ft)	196.93		2953.21		
Vel Total (ft/s)	5.72		16900.00		
Max Chl Dpth (ft)	18.95		196.93		
Conv. Total (cfs)	598111.0		5.72		
Length Wtd. (ft)	101.00		15.00		
Min Ch El (ft)	698.90		598111.0		
Alpha	1.00		292.64		
Frctn Loss (ft)			0.50		
C & E Loss (ft)			2.88		
		9038.53	3887.71	5376.82	
		1072.79	310.15	1225.83	

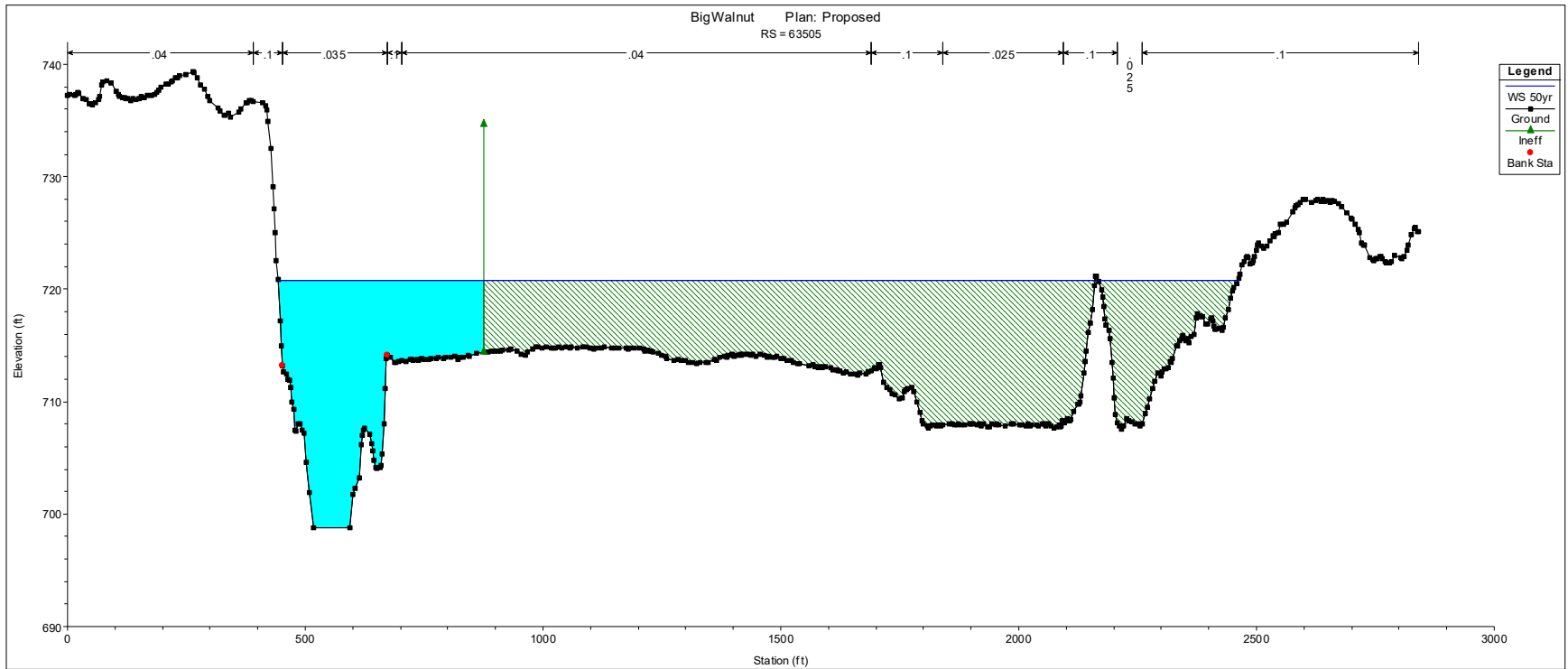
Bridge (RS: 62966) Profile: 25 Year

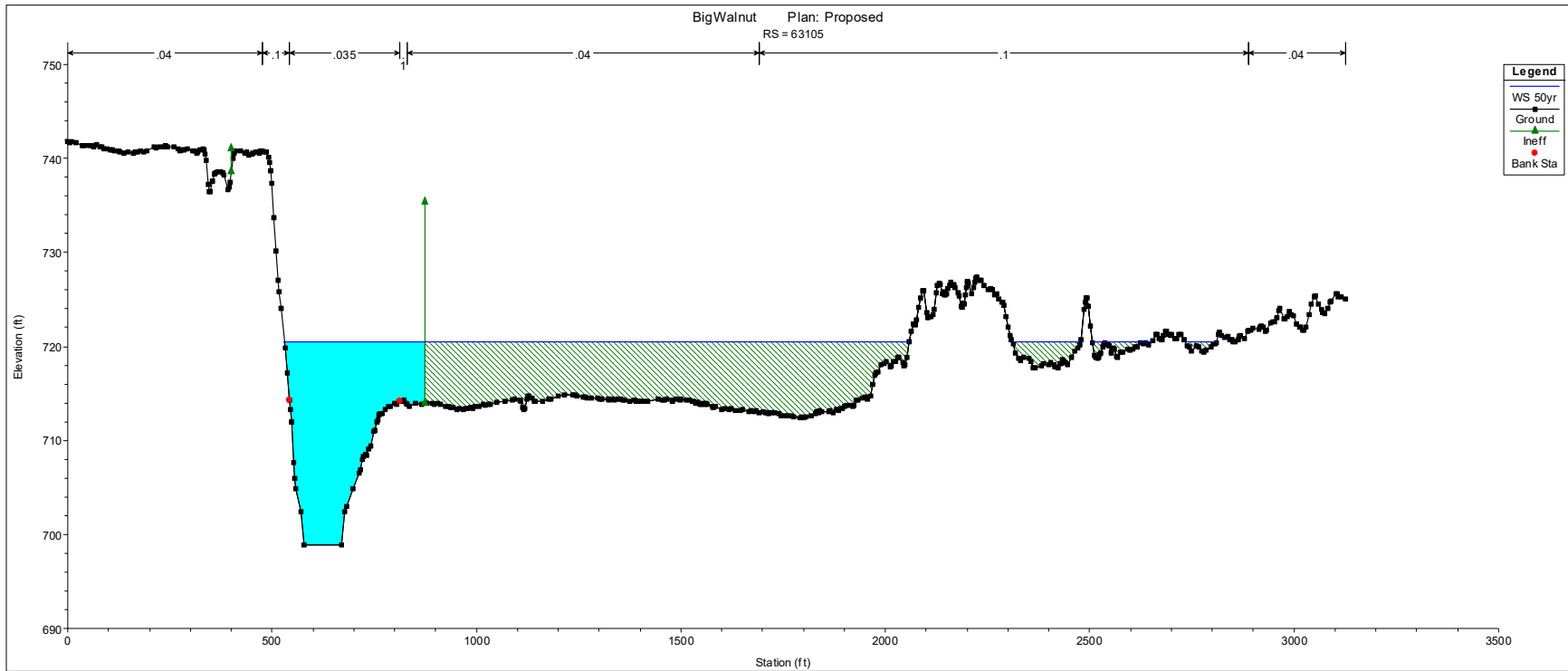
Plan: Proposed BigWalnutCr 1 RS: 62966 BR U Profile: 25yr					
E.G. Elev (ft)	719.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.035	
W.S. Elev (ft)	719.20	Reach Len. (ft)	101.00	101.00	101.00
Crit W.S. (ft)	709.17	Flow Area (sq ft)		3237.43	
E.G. Slope (ft/ft)	0.001045	Area (sq ft)		3237.43	
Q Total (cfs)	21300.00	Flow (cfs)		21300.00	
Top Width (ft)	214.35	Top Width (ft)		214.35	
Vel Total (ft/s)	6.58	Avg. Vel. (ft/s)		6.58	
Max Chl Dpth (ft)	20.30	Hydr. Depth (ft)		15.10	
Conv. Total (cfs)	658899.3	Conv. (cfs)		658899.3	
Length Wtd. (ft)	101.00	Wetted Per. (ft)		318.96	
Min Ch El (ft)	698.90	Shear (lb/sq ft)		0.66	
Alpha	1.00	Stream Power (lb/ft s)		4.36	
Frctn Loss (ft)		Cum Volume (acre-ft)	10499.79	4269.49	6862.40
C & E Loss (ft)		Cum SA (acres)	1168.82	310.23	1397.84

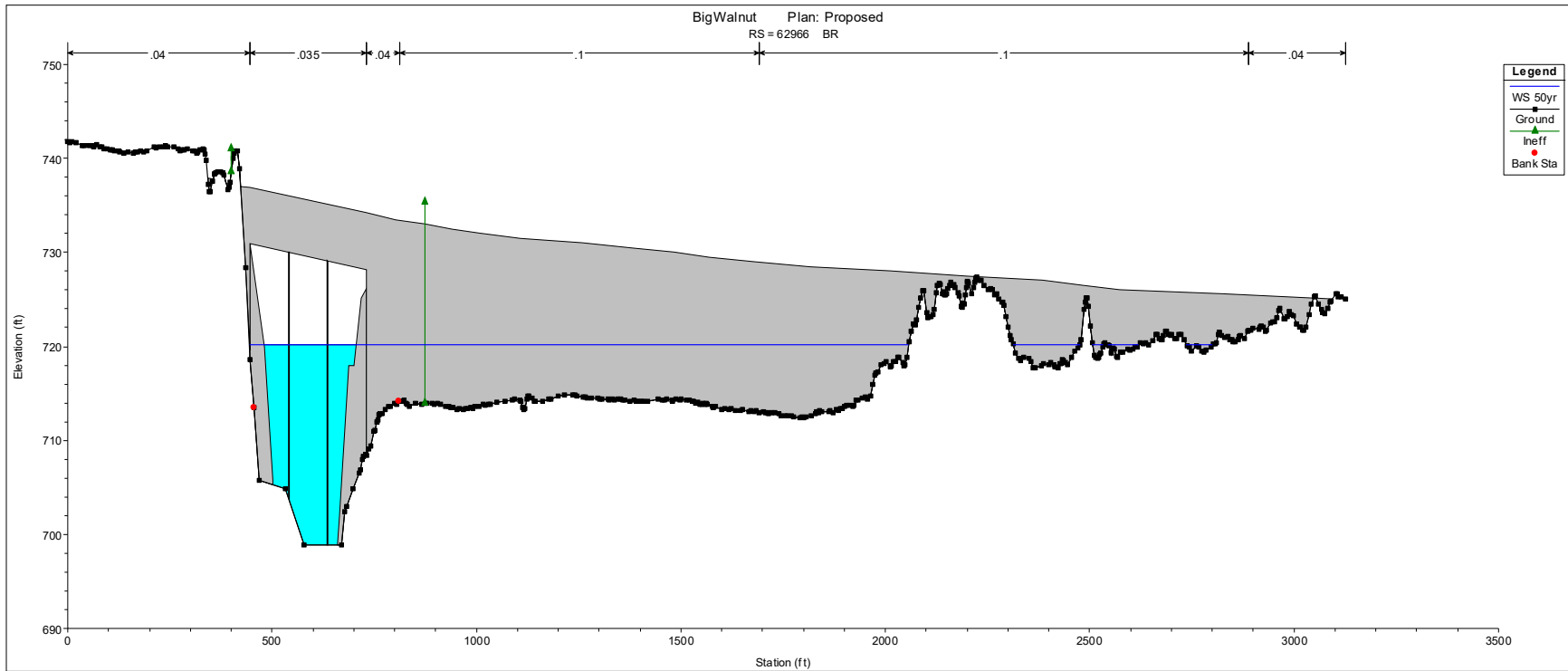
Bridge (RS: 62966) Profile: 50 Year

Plan: Proposed BigWalnutCr 1 RS: 62966 BR U Profile: 50yr					
E.G. Elev (ft)	721.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.040	0.035	
W.S. Elev (ft)	720.14	Reach Len. (ft)	101.00	101.00	101.00
Crit W.S. (ft)	710.30	Flow Area (sq ft)	0.14	3440.29	
E.G. Slope (ft/ft)	0.001300	Area (sq ft)	0.14	3440.29	
Q Total (cfs)	25800.00	Flow (cfs)	0.04	25799.96	
Top Width (ft)	218.32	Top Width (ft)	0.30	218.02	
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	0.30	7.50	
Max Chl Dpth (ft)	21.24	Hydr. Depth (ft)	0.45	15.78	
Conv. Total (cfs)	715480.9	Conv. (cfs)	1.1	715479.8	
Length Wtd. (ft)	101.00	Wetted Per. (ft)	1.30	328.78	
Min Ch El (ft)	698.90	Shear (lb/sq ft)	0.01	0.85	
Alpha	1.00	Stream Power (lb/ft s)	0.00	6.37	
Frctn Loss (ft)		Cum Volume (acre-ft)	11614.40	4547.23	8130.30
C & E Loss (ft)		Cum SA (acres)	1217.78	309.88	1519.63



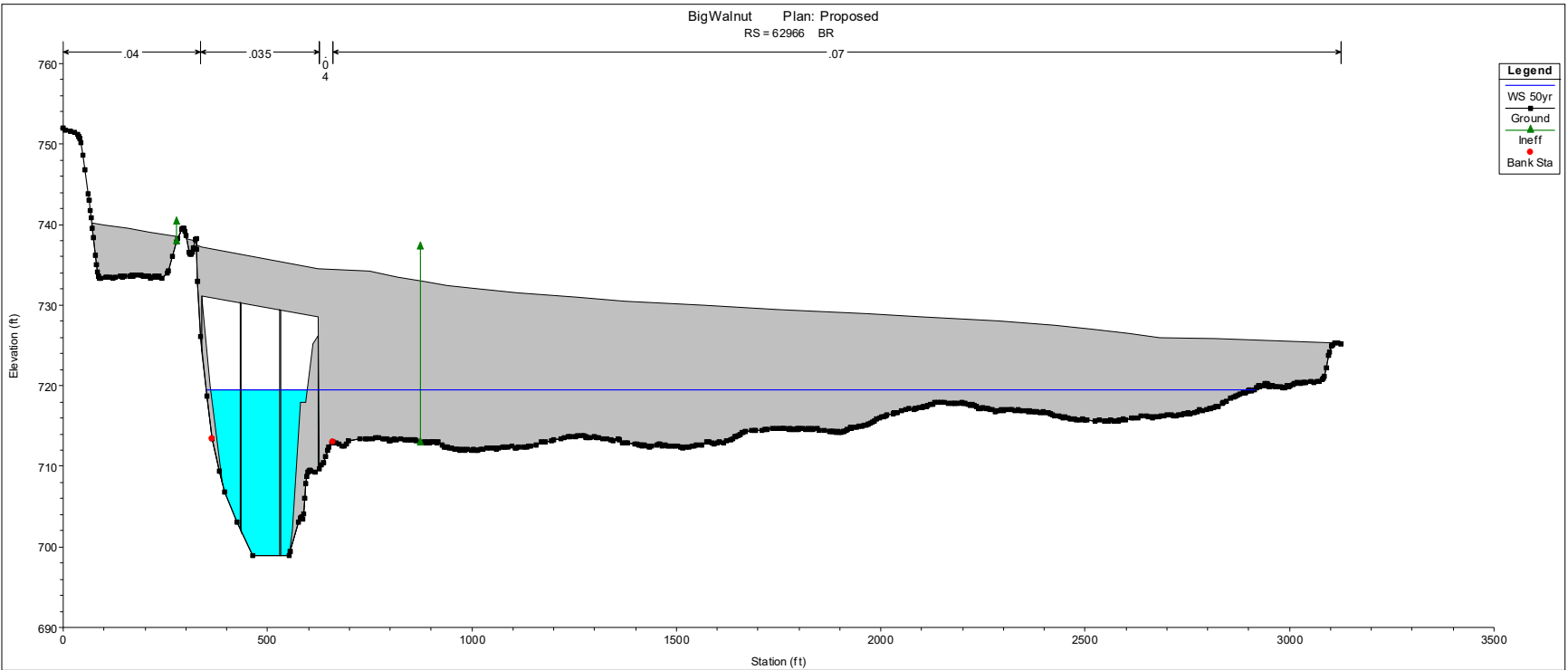






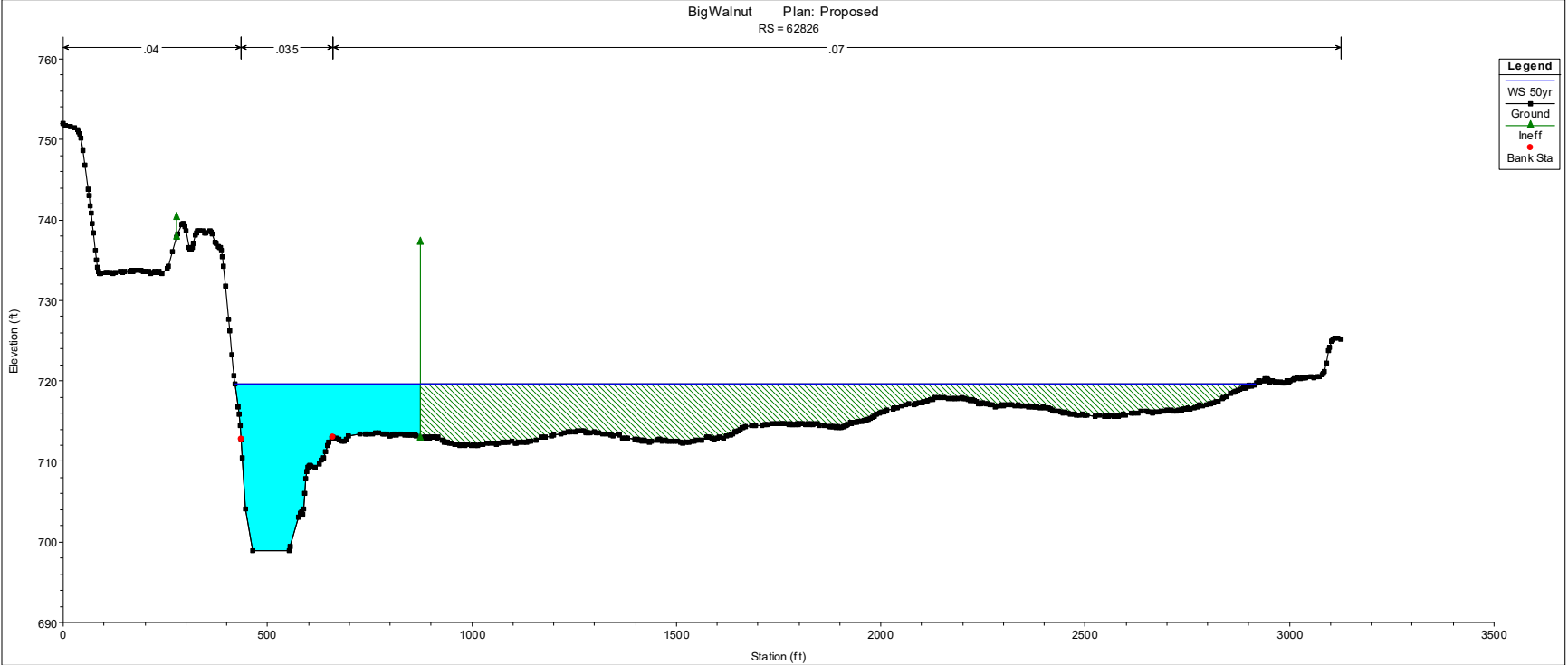
BigWalnut Plan: Proposed
RS = 62966 BR

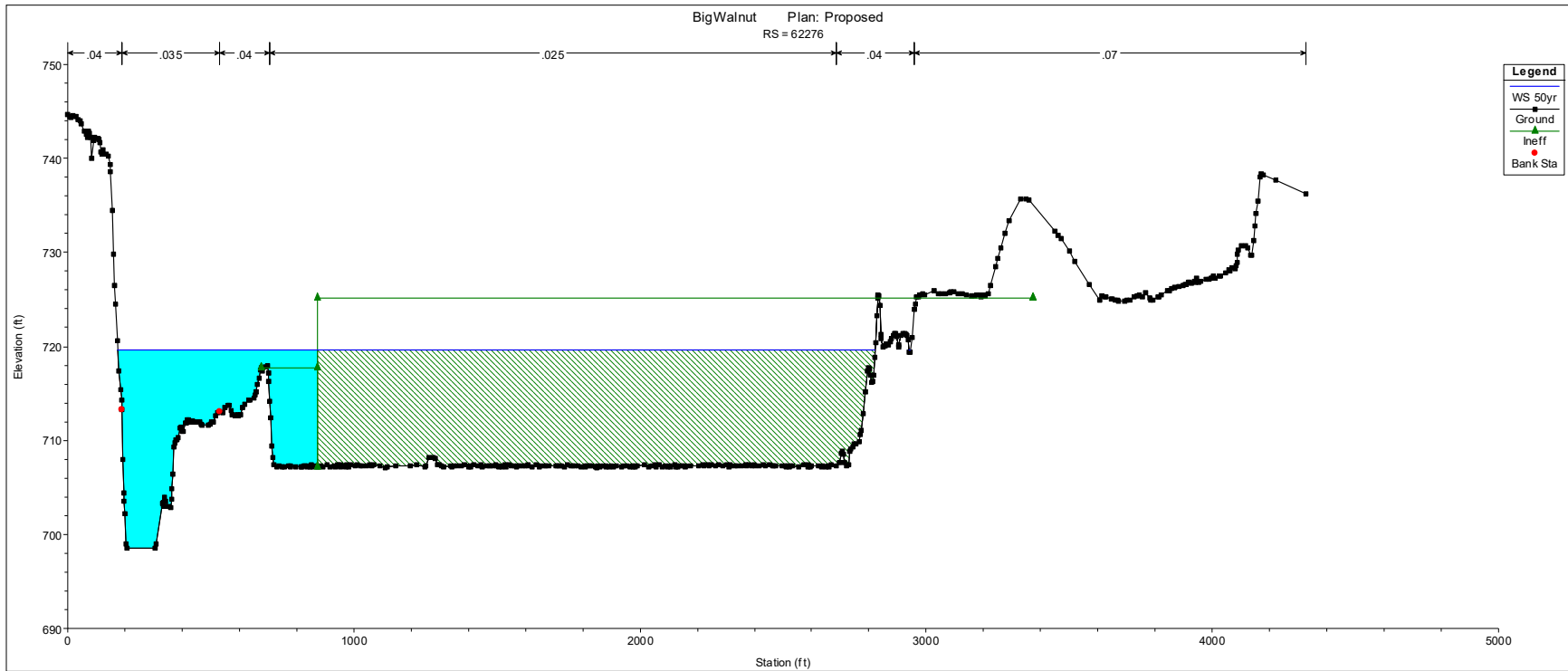
Legend	
—	WS 50yr
—	Ground
▲	Ineff
●	Bank Sta

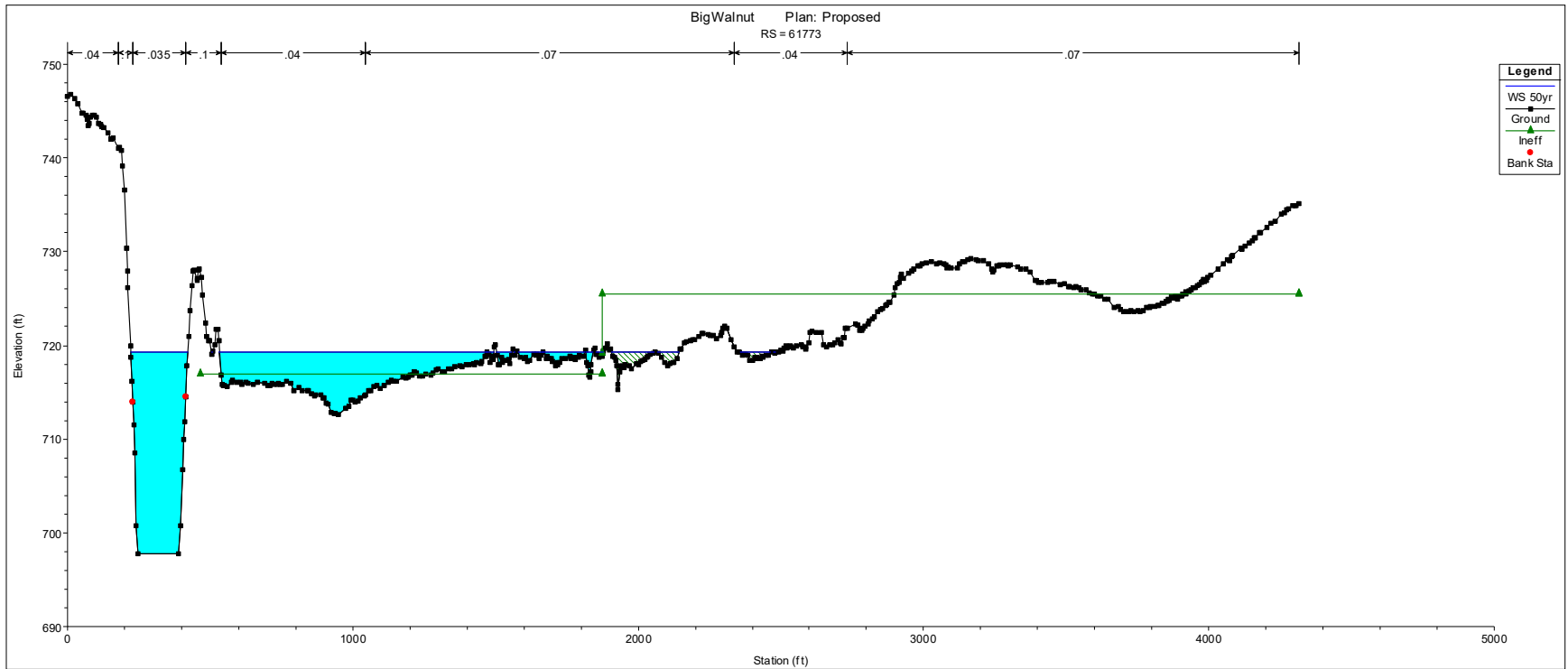


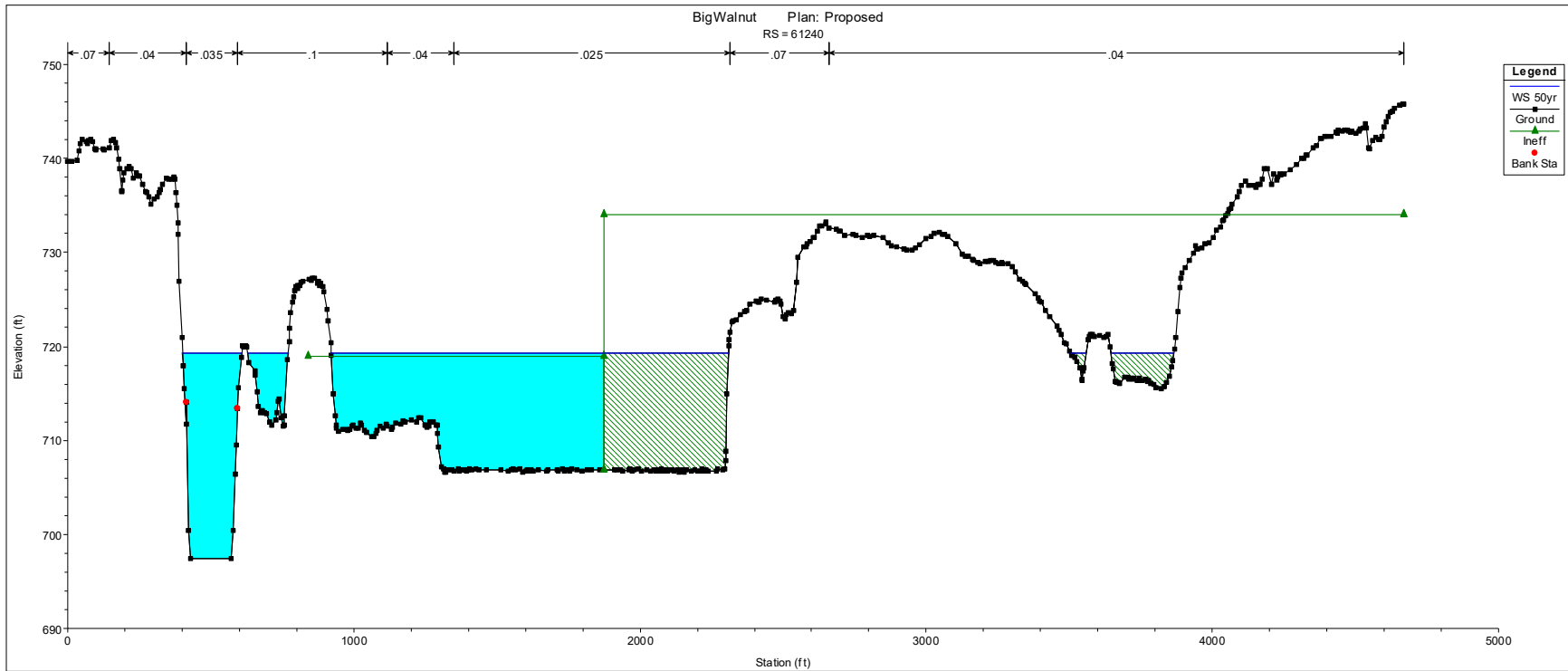
BigWalnut Plan: Proposed
RS = 62826

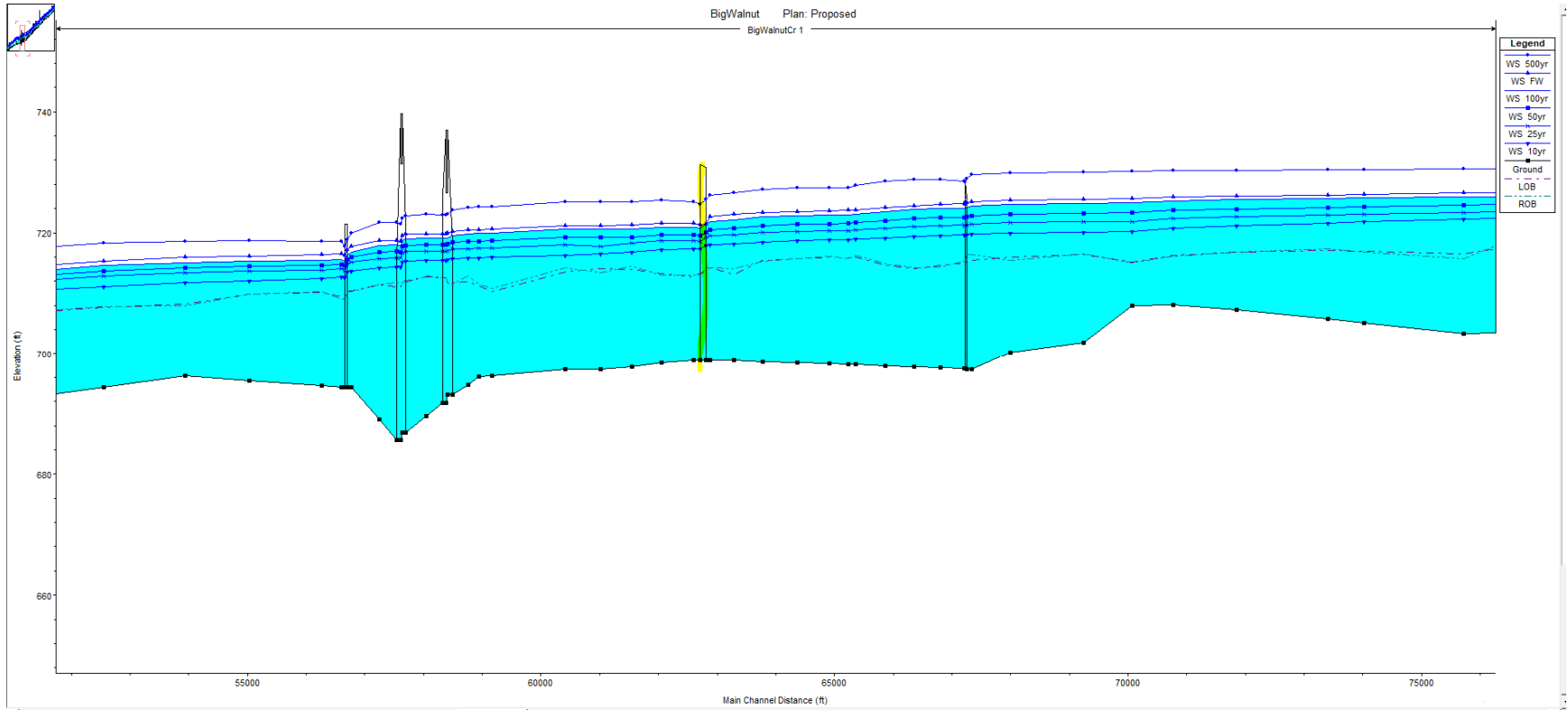
Legend	
WS 50yr	—
Ground	—●—
Ineff	—▲—
Bank Sta	—●—











APPENDIX

B.

Raw Traffic Counts

**Alum Creek Drive and
Groveport Road**

3084 - Alum Creek Dr & Groveport Rd - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978966, Location: 39.868051, -82.935142, Site Code: 3084



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Groveport Rd Eastbound						Groveport Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16																									
12:00AM	0	0	10	0	10	0	0	0	12	0	12	0	11	205	1	0	217	0	9	33	4	0	46	0	285
12:15AM	0	0	4	0	4	0	0	0	14	0	14	0	1	93	1	0	95	0	11	31	4	0	46	0	159
12:30AM	0	0	8	0	8	0	0	0	11	0	11	0	5	64	1	0	70	0	7	45	6	0	58	0	147
12:45AM	0	0	3	0	3	0	0	0	10	0	10	0	0	49	0	0	49	0	8	40	10	0	58	0	120
Hourly Total	0	0	25	0	25	0	0	0	47	0	47	0	17	411	3	0	431	0	35	149	24	0	208	0	711
1:00AM	0	0	2	0	2	0	0	0	19	0	19	0	3	65	1	0	69	0	7	33	8	0	48	0	138
1:15AM	0	0	2	0	2	0	0	0	5	0	5	0	2	69	0	0	71	0	4	39	6	1	50	0	128
1:30AM	0	0	6	0	6	0	0	0	5	0	5	0	1	36	0	0	37	0	5	35	3	0	43	0	91
1:45AM	0	0	2	0	2	0	0	0	6	0	6	0	3	33	2	0	38	0	7	44	6	0	57	0	103
Hourly Total	0	0	12	0	12	0	0	0	35	0	35	0	9	203	3	0	215	0	23	151	23	1	198	0	460
2:00AM	0	0	2	0	2	0	0	0	14	0	14	0	7	125	0	0	132	0	6	36	5	0	47	0	195
2:15AM	0	0	3	0	3	0	0	0	15	0	15	0	3	56	1	0	60	0	4	33	13	0	50	0	128
2:30AM	0	0	1	0	1	0	0	0	4	0	4	1	4	78	1	0	83	0	5	32	7	0	44	0	132
2:45AM	0	0	2	0	2	0	0	0	8	0	8	0	3	36	0	0	39	0	3	49	6	0	58	0	107
Hourly Total	0	0	8	0	8	0	0	0	41	0	41	1	17	295	2	0	314	0	18	150	31	0	199	0	562
3:00AM	0	0	7	0	7	0	0	0	18	0	18	0	2	42	0	0	44	0	6	53	4	0	63	0	132
3:15AM	0	0	5	0	5	0	0	0	13	0	13	0	3	53	1	0	57	0	5	70	9	0	84	0	159
3:30AM	0	0	5	0	5	0	0	0	15	0	15	0	7	162	2	0	171	0	7	90	8	1	106	0	297
3:45AM	0	0	4	0	4	0	0	0	28	0	28	0	8	78	1	0	87	0	2	100	8	0	110	0	229
Hourly Total	0	0	21	0	21	0	0	0	74	0	74	0	20	335	4	0	359	0	20	313	29	1	363	0	817
4:00AM	0	0	6	0	6	0	0	0	16	0	16	0	8	115	2	0	125	0	11	118	11	0	140	0	287
4:15AM	0	0	8	0	8	0	0	0	19	0	19	0	1	82	0	0	83	0	12	164	12	1	189	0	299
4:30AM	0	0	16	0	16	0	0	0	30	0	30	0	4	159	6	0	169	0	14	231	18	0	263	0	478
4:45AM	0	0	20	0	20	0	0	0	29	0	29	0	4	97	1	0	102	0	24	276	21	0	321	0	472
Hourly Total	0	0	50	0	50	0	0	0	94	0	94	0	17	453	9	0	479	0	61	789	62	1	913	0	1536
5:00AM	0	0	8	0	8	0	0	0	24	0	24	0	11	137	3	0	151	0	17	207	20	0	244	0	427
5:15AM	0	0	24	0	24	0	0	0	41	0	41	0	6	93	4	0	103	0	37	348	27	0	412	0	580
5:30AM	0	0	34	0	34	0	0	0	51	0	51	0	6	80	1	0	87	0	35	509	36	0	580	0	752
5:45AM	0	0	50	0	50	0	0	0	48	0	48	1	14	122	7	0	143	0	48	614	66	2	730	0	971
Hourly Total	0	0	116	0	116	0	0	0	164	0	164	1	37	432	15	0	484	0	137	1678	149	2	1966	0	2730
6:00AM	0	0	25	0	25	0	0	0	66	0	66	0	7	181	5	0	193	1	32	326	36	0	394	0	678
6:15AM	0	0	37	0	37	0	0	0	92	0	92	1	10	160	2	0	172	1	43	372	51	0	466	0	767
6:30AM	0	0	36	0	36	0	0	0	132	0	132	0	12	186	3	0	201	0	75	505	50	0	630	1	999
6:45AM	0	0	57	0	57	0	0	0	137	0	137	3	15	204	4	0	223	1	109	585	80	0	774	0	1191
Hourly Total	0	0	155	0	155	0	0	0	427	0	427	4	44	731	14	0	789	3	259	1788	217	0	2264	1	3635
7:00AM	0	0	23	0	23	2	0	0	164	0	164	1	17	194	3	0	214	2	72	261	54	0	387	0	788
7:15AM	0	0	28	0	28	0	0	0	141	0	141	4	19	206	6	0	231	2	60	369	59	0	488	0	888
7:30AM	0	0	35	0	35	0	0	0	178	0	178	0	18	213	7	0	238	0	66	404	73	0	543	0	994
7:45AM	0	0	40	0	40	0	0	0	150	0	150	0	20	164	5	0	189	0	65	484	86	0	635	0	1014
Hourly Total	0	0	126	0	126	2	0	0	633	0	633	5	74	777	21	0	872	4	263	1518	272	0	2053	0	3684
8:00AM	0	0	27	0	27	0	0	0	139	0	139	0	21	158	8	0	187	0	60	324	67	0	451	0	804
8:15AM	0	0	19	0	19	0	0	0	129	0	129	0	13	159	0	0	172	0	35	317	47	0	399	0	719
8:30AM	0	0	35	0	35	0	0	0	112	0	112	0	17	169	8	0	194	0	48	282	48	0	378	0	719
8:45AM	0	0	27	0	27	1	0	0	117	0	117	0	13	161	4	0	178	0	55	271	42	0	368	0	690
Hourly Total	0	0	108	0	108	1	0	0	497	0	497	0	64	647	20	0	731	0	198	1194	204	0	1596	0	2932
9:00AM	0	0	23	0	23	0	0	0	128	0	128	0	27	158	5	0	190	0	35	193	37	0	265	0	606
9:15AM	0	0	21	0	21	0	0	0	167	0	167	0	14	140	5	0	159	0	31	195	41	0	267	0	614
9:30AM	0	0	20	0	20	0	1	0	92	0	93	0	22	166	5	0	193	0	34	198	43	0	275	0	581
9:45AM	0	0	24	0	24	0	0	0	93	0	93	0	10	153	1	0	164	0	42	190	38	0	270	0	551
Hourly Total	0	0	88	0	88	0	1	0	480	0	481	0	73	617	16	0	706	0	142	776	159	0	1077	0	2352
10:00AM	0	0	21	0	21	0	0	0	95	0	95	0	24	141	2	0	167	0	26	147	38	0	211	0	494
10:15AM	0	0	24	0	24	0	0	0	101	0	101	0	17	150	8	0	175	0	44	148	47	0	239	0	539
10:30AM	0	0	28	0	28	0	0	0	91	0	91	0	18	160	4	0	182	0	35	157	46	0	238	0	539
10:45AM	0	0	26	0	26	0	0	0	73	0	73	0	19	157	12	1	189	0	40	182	55	0	277	0	565

Leg Direction	Groveport Rd Eastbound					Groveport Rd Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int			
Time	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	Int			
Hourly Total	0	0	99	0	99	0	0	360	0	360	0	78	608	26	1	713	0	145	634	186	0	965	0	2137
11:00AM	0	0	35	0	35	0	0	96	0	96	0	34	201	12	0	247	0	47	178	46	0	271	0	649
11:15AM	0	0	40	0	40	0	0	115	0	115	0	32	158	15	0	205	0	49	175	51	0	275	0	635
11:30AM	0	0	47	0	47	0	0	91	0	91	0	27	194	13	0	234	0	42	178	49	0	269	0	641
11:45AM	0	0	50	0	50	0	0	89	0	89	1	34	168	14	0	216	1	48	184	46	0	278	0	633
Hourly Total	0	0	172	0	172	0	0	391	0	391	1	127	721	54	0	902	1	186	715	192	0	1093	0	2558
12:00PM	0	0	40	0	40	0	0	79	0	79	0	51	217	13	1	282	0	53	162	57	0	272	0	673
12:15PM	1	0	62	0	63	0	0	82	0	82	0	39	197	8	0	244	0	46	167	58	0	271	0	660
12:30PM	0	0	53	0	53	0	0	114	0	114	0	39	169	7	0	215	0	53	188	46	0	287	0	669
12:45PM	0	0	40	0	40	0	0	93	0	93	0	32	202	3	0	237	1	60	171	45	0	276	0	646
Hourly Total	1	0	195	0	196	0	0	368	0	368	0	161	785	31	1	978	1	212	688	206	0	1106	0	2648
1:00PM	0	0	28	0	28	0	0	100	0	100	0	40	220	5	0	265	0	42	198	52	0	292	0	685
1:15PM	0	0	47	0	47	0	0	77	0	77	0	21	195	11	0	227	0	46	227	53	0	326	0	677
1:30PM	0	0	39	0	39	0	0	117	0	117	0	26	242	3	0	271	0	41	282	45	1	369	0	796
1:45PM	0	0	36	0	36	0	0	90	0	90	0	18	213	4	0	235	0	52	290	58	0	400	0	761
Hourly Total	0	0	150	0	150	0	0	384	0	384	0	105	870	23	0	998	0	181	997	208	1	1387	0	2919
2:00PM	0	0	27	0	27	0	0	122	0	122	0	35	325	8	0	368	0	63	258	65	0	386	0	903
2:15PM	0	0	30	0	30	0	0	110	0	110	0	31	378	7	0	416	0	77	245	52	0	374	0	930
2:30PM	0	0	28	0	28	0	0	147	0	147	0	33	354	7	0	394	2	82	303	55	0	440	0	1009
2:45PM	0	0	42	0	42	0	0	115	0	115	0	39	430	9	1	479	1	77	301	69	0	447	0	1083
Hourly Total	0	0	127	0	127	0	0	494	0	494	0	138	1487	31	1	1657	3	299	1107	241	0	1647	0	3925
3:00PM	3	0	27	0	30	0	0	151	0	151	0	49	410	8	0	467	1	84	262	56	0	402	0	1050
3:15PM	0	0	52	0	52	0	0	170	0	170	0	31	334	10	0	375	2	117	285	45	0	447	0	1044
3:30PM	0	0	42	0	42	0	0	205	0	205	3	34	390	10	0	434	1	95	284	55	0	434	0	1115
3:45PM	0	0	37	0	37	0	0	172	0	172	1	26	455	6	0	487	1	106	301	62	0	469	0	1165
Hourly Total	3	0	158	0	161	0	0	698	0	698	4	140	1589	34	0	1763	5	402	1132	218	0	1752	0	4374
4:00PM	0	0	30	0	30	1	0	211	0	211	0	32	330	5	0	367	2	129	258	78	0	465	0	1073
4:15PM	0	0	33	0	33	0	0	196	0	196	0	23	372	9	0	404	1	104	295	85	0	484	0	1117
4:30PM	0	0	31	0	31	0	0	208	0	208	0	22	408	3	0	433	0	109	335	50	0	494	0	1166
4:45PM	0	0	42	0	42	0	0	140	0	140	1	26	428	6	0	460	0	112	302	63	0	477	1	1119
Hourly Total	0	0	136	0	136	1	0	755	0	755	1	103	1538	23	0	1664	3	454	1190	276	0	1920	1	4475
5:00PM	0	0	20	0	20	0	0	194	0	194	0	41	362	4	0	407	0	103	231	47	0	381	0	1002
5:15PM	0	0	29	0	29	1	0	153	0	153	0	24	346	7	0	377	0	153	241	51	0	445	0	1004
5:30PM	0	0	29	0	29	1	0	152	0	152	0	28	287	8	0	323	1	149	211	50	1	411	0	915
5:45PM	0	0	32	0	32	0	0	113	0	113	0	23	228	8	0	259	0	110	238	52	0	400	0	804
Hourly Total	0	0	110	0	110	2	0	612	0	612	0	116	1223	27	0	1366	1	515	921	200	1	1637	0	3725
6:00PM	0	0	22	0	22	3	0	131	0	131	1	21	242	3	0	266	1	80	175	39	0	294	0	713
6:15PM	0	0	26	0	26	0	0	107	0	107	0	15	186	2	0	203	1	82	197	35	0	314	0	650
6:30PM	0	0	18	0	18	0	0	90	0	90	0	11	195	8	0	214	0	69	156	31	0	256	0	578
6:45PM	0	0	18	0	18	0	0	95	0	95	2	12	157	8	0	177	0	60	138	29	0	227	0	517
Hourly Total	0	0	84	0	84	3	0	423	0	423	3	59	780	21	0	860	2	291	666	134	0	1091	0	2458
7:00PM	0	0	13	0	13	0	0	83	0	83	0	21	155	8	2	186	0	48	90	22	0	160	0	442
7:15PM	0	0	17	0	17	0	0	79	0	79	0	12	132	3	0	147	1	46	113	29	0	188	0	431
7:30PM	0	0	18	0	18	0	0	87	0	87	0	4	126	6	0	136	0	37	80	25	0	142	0	383
7:45PM	0	0	16	0	16	0	0	55	0	55	0	15	104	7	0	126	0	51	102	25	1	179	0	376
Hourly Total	0	0	64	0	64	0	0	304	0	304	0	52	517	24	2	595	1	182	385	101	1	669	0	1632
8:00PM	0	0	12	0	12	0	1	52	0	53	0	17	110	5	1	133	0	36	98	25	1	160	0	358
8:15PM	0	0	16	0	16	0	0	55	0	55	0	13	113	8	0	134	2	40	94	37	0	171	0	376
8:30PM	0	0	17	0	17	0	0	50	0	50	0	9	116	2	1	128	0	35	96	25	0	156	0	351
8:45PM	0	0	16	0	16	0	0	47	0	47	0	8	83	2	0	93	0	31	95	27	1	154	0	310
Hourly Total	0	0	61	0	61	0	1	204	0	205	0	47	422	17	2	488	2	142	383	114	2	641	0	1395
9:00PM	0	0	17	0	17	1	0	44	0	44	2	10	95	3	0	108	1	32	114	22	0	168	0	337
9:15PM	0	0	13	0	13	0	0	37	0	37	0	18	88	2	0	108	0	37	88	25	0	150	0	308
9:30PM	0	0	10	0	10	0	0	26	0	26	0	10	104	2	0	116	0	27	109	23	0	159	0	311
9:45PM	0	0	11	0	11	0	0	39	0	39	0	4	96	1	0	101	0	21	108	13	0	142	0	293
Hourly Total	0	0	51	0	51	1	0	146	0	146	2	42	383	8	0	433	1	117	419	83	0	619	0	1249
10:00PM	0	0	14	0	14	0	0	38	0	38	0	21	154	4	0	179	0	21	65	15	0	101	0	332
10:15PM	0	0	15	0	15	0	0	25	0	25	0	7	121	3	0	131	0	15	77	18	1	111	0	282
10:30PM	0	0	11	0	11	0	0	21	0	21	0	8	91	1	0	100	0	10	83	15	0	108	0	240
10:45PM	0	0	7	0	7	0	0	23	0	23	0	4	80	1	0	85	0	23	93	11	1	128	0	243

Leg Direction	Groveport Rd Eastbound						Groveport Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
Hourly Total	0	0	47	0	47	0	0	0	107	0	107	0	40	446	9	0	495	0	69	318	59	2	448	0	1097
11:00PM	0	0	13	0	13	0	0	0	22	0	22	0	7	147	1	0	155	0	18	56	3	0	77	0	267
11:15PM	0	0	6	0	6	0	0	0	17	0	17	0	6	104	3	0	113	0	16	62	8	0	86	0	222
11:30PM	0	0	6	0	6	0	0	0	30	0	30	0	12	240	5	0	257	0	12	52	13	0	77	0	370
11:45PM	0	0	8	0	8	0	0	0	20	0	20	0	13	165	0	0	178	0	10	46	7	0	63	0	269
Hourly Total	0	0	33	0	33	0	0	0	89	0	89	0	38	656	9	0	703	0	56	216	31	0	303	0	1128
Total	4	0	2196	0	2200	10	2	0	7827	0	7829	22	1618	16926	444	7	18995	27	4407	18277	3419	12	26115	2	55139
% Approach	0.2%	0%	99.8%	0%	-	-	0%	0%	100.0%	0%	-	-	8.5%	89.1%	2.3%	0%	-	-	16.9%	70.0%	13.1%	0%	-	-	-
% Total	0%	0%	4.0%	0%	4.0%	-	0%	0%	14.2%	0%	14.2%	-	2.9%	30.7%	0.8%	0%	34.4%	-	8.0%	33.1%	6.2%	0%	47.4%	-	-
Lights and Motorcycles	4	0	1796	0	1800	-	2	0	6872	0	6874	-	1326	12759	388	7	14480	-	4093	13935	2873	12	20913	-	44067
% Lights and Motorcycles	100%	0%	81.8%	0%	81.8%	-	100%	0%	87.8%	0%	87.8%	-	82.0%	75.4%	87.4%	100%	76.2%	-	92.9%	76.2%	84.0%	100%	80.1%	-	79.9%
Heavy	0	0	400	0	400	-	0	0	955	0	955	-	292	4167	56	0	4515	-	314	4342	546	0	5202	-	11072
% Heavy	0%	0%	18.2%	0%	18.2%	-	0%	0%	12.2%	0%	12.2%	-	18.0%	24.6%	12.6%	0%	23.8%	-	7.1%	23.8%	16.0%	0%	19.9%	-	20.1%
Pedestrians	-	-	-	-	-	10	-	-	-	-	-	22	-	-	-	-	-	27	-	-	-	-	-	2	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3084 - Alum Creek Dr & Groveport Rd - TMC

Tue Aug 16, 2022

AM Peak (6:30 AM - 7:30 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978966, Location: 39.868051, -82.935142, Site Code: 3084



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Groveport Rd Eastbound						Groveport Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16 6:30AM	0	0	36	0	36	0	0	0	132	0	132	0	12	186	3	0	201	0	75	505	50	0	630	1	999
6:45AM	0	0	57	0	57	0	0	0	137	0	137	3	15	204	4	0	223	1	109	585	80	0	774	0	1191
7:00AM	0	0	23	0	23	2	0	0	164	0	164	1	17	194	3	0	214	2	72	261	54	0	387	0	788
7:15AM	0	0	28	0	28	0	0	0	141	0	141	4	19	206	6	0	231	2	60	369	59	0	488	0	888
Total	0	0	144	0	144	2	0	0	574	0	574	8	63	790	16	0	869	5	316	1720	243	0	2279	1	3866
% Approach	0%	0%	100%	0%	-	-	0%	0%	100%	0%	-	-	7.2%	90.9%	1.8%	0%	-	-	13.9%	75.5%	10.7%	0%	-	-	-
% Total	0%	0%	3.7%	0%	3.7%	-	0%	0%	14.8%	0%	14.8%	-	1.6%	20.4%	0.4%	0%	22.5%	-	8.2%	44.5%	6.3%	0%	58.9%	-	-
PHF	-	-	0.632	-	0.632	-	-	-	0.875	-	0.875	-	0.829	0.959	0.667	-	0.940	-	0.725	0.735	0.759	-	0.736	-	0.812
Lights and Motorcycles	0	0	123	0	123	-	0	0	516	0	516	-	54	605	13	0	672	-	301	1515	222	0	2038	-	3349
% Lights and Motorcycles	0%	0%	85.4%	0%	85.4%	-	0%	0%	89.9%	0%	89.9%	-	85.7%	76.6%	81.3%	0%	77.3%	-	95.3%	88.1%	91.4%	0%	89.4%	-	86.6%
Heavy	0	0	21	0	21	-	0	0	58	0	58	-	9	185	3	0	197	-	15	205	21	0	241	-	517
% Heavy	0%	0%	14.6%	0%	14.6%	-	0%	0%	10.1%	0%	10.1%	-	14.3%	23.4%	18.8%	0%	22.7%	-	4.7%	11.9%	8.6%	0%	10.6%	-	13.4%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	5	-	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3084 - Alum Creek Dr & Groveport Rd - TMC

Tue Aug 16, 2022

Midday Peak (1 PM - 2 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978966, Location: 39.868051, -82.935142, Site Code: 3084



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Groveport Rd Eastbound					Groveport Rd Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound									
Time	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	Int				
2022-08-16 1:00PM	0	0	28	0	28	0	0	100	0	100	0	40	220	5	0	265	0	42	198	52	0	292	0	685	
1:15PM	0	0	47	0	47	0	0	77	0	77	0	21	195	11	0	227	0	46	227	53	0	326	0	677	
1:30PM	0	0	39	0	39	0	0	117	0	117	0	26	242	3	0	271	0	41	282	45	1	369	0	796	
1:45PM	0	0	36	0	36	0	0	90	0	90	0	18	213	4	0	235	0	52	290	58	0	400	0	761	
Total	0	0	150	0	150	0	0	384	0	384	0	105	870	23	0	998	0	181	997	208	1	1387	0	2919	
% Approach	0%	0%	100%	0%	-	0%	0%	100%	0%	-	10.5%	87.2%	2.3%	0%	-	13.0%	71.9%	15.0%	0.1%	-	-	-	-	-	
% Total	0%	0%	5.1%	0%	5.1%	0%	0%	13.2%	0%	13.2%	-	3.6%	29.8%	0.8%	0%	34.2%	-	6.2%	34.2%	7.1%	0%	47.5%	-	-	
PHF	-	-	0.798	-	0.798	-	-	0.821	-	0.821	-	0.656	0.899	0.523	-	0.921	-	0.870	0.859	0.897	0.250	0.867	-	0.917	
Lights and Motorcycles	0	0	120	0	120	-	0	0	318	0	318	-	80	585	20	0	685	-	165	698	172	1	1036	-	2159
% Lights and Motorcycles	0%	0%	80.0%	0%	80.0%	-	0%	0%	82.8%	0%	82.8%	-	76.2%	67.2%	87.0%	0%	68.6%	-	91.2%	70.0%	82.7%	100%	74.7%	-	74.0%
Heavy	0	0	30	0	30	-	0	0	66	0	66	-	25	285	3	0	313	-	16	299	36	0	351	-	760
% Heavy	0%	0%	20.0%	0%	20.0%	-	0%	0%	17.2%	0%	17.2%	-	23.8%	32.8%	13.0%	0%	31.4%	-	8.8%	30.0%	17.3%	0%	25.3%	-	26.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3084 - Alum Creek Dr & Groveport Rd - TMC
 Tue Aug 16, 2022
 PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
 All Classes (Lights and Motorcycles, Heavy, Pedestrians)
 All Movements
 ID: 978966, Location: 39.868051, -82.935142, Site Code: 3084



Provided by: Smart Services, Inc.
 88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Groveport Rd Eastbound						Groveport Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16 3:45PM	0	0	37	0	37	0	0	0	172	0	172	1	26	455	6	0	487	1	106	301	62	0	469	0	1165
4:00PM	0	0	30	0	30	1	0	0	211	0	211	0	32	330	5	0	367	2	129	258	78	0	465	0	1073
4:15PM	0	0	33	0	33	0	0	0	196	0	196	0	23	372	9	0	404	1	104	295	85	0	484	0	1117
4:30PM	0	0	31	0	31	0	0	0	208	0	208	0	22	408	3	0	433	0	109	335	50	0	494	0	1166
Total	0	0	131	0	131	1	0	0	787	0	787	1	103	1565	23	0	1691	4	448	1189	275	0	1912	0	4521
% Approach	0%	0%	100%	0%	-	-	0%	0%	100%	0%	-	-	6.1%	92.5%	1.4%	0%	-	-	23.4%	62.2%	14.4%	0%	-	-	-
% Total	0%	0%	2.9%	0%	2.9%	-	0%	0%	17.4%	0%	17.4%	-	2.3%	34.6%	0.5%	0%	37.4%	-	9.9%	26.3%	6.1%	0%	42.3%	-	-
PHF	-	-	0.885	-	0.885	-	-	-	0.932	-	0.932	-	0.805	0.860	0.639	-	0.868	-	0.868	0.887	0.809	-	0.968	-	0.969
Lights and Motorcycles	0	0	112	0	112	-	0	0	738	0	738	-	81	1363	19	0	1463	-	431	897	236	0	1564	-	3877
% Lights and Motorcycles	0%	0%	85.5%	0%	85.5%	-	0%	0%	93.8%	0%	93.8%	-	78.6%	87.1%	82.6%	0%	86.5%	-	96.2%	75.4%	85.8%	0%	81.8%	-	85.8%
Heavy	0	0	19	0	19	-	0	0	49	0	49	-	22	202	4	0	228	-	17	292	39	0	348	-	644
% Heavy	0%	0%	14.5%	0%	14.5%	-	0%	0%	6.2%	0%	6.2%	-	21.4%	12.9%	17.4%	0%	13.5%	-	3.8%	24.6%	14.2%	0%	18.2%	-	14.2%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Rathmell Road**

3077 - Alum Creek Dr & Rathmell Rd - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978972, Location: 39.863333, -82.937215, Site Code: 3077



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rathmell Rd Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
2022-08-16 12:00AM	3	1	0	4	0	1	234	0	235	0	41	6	0	47	0	286
12:15AM	1	0	0	1	0	0	91	0	91	0	30	4	1	35	0	127
12:30AM	1	0	0	1	0	0	66	1	67	0	44	11	1	56	0	124
12:45AM	2	1	0	3	0	1	49	0	50	0	30	14	0	44	0	97
Hourly Total	7	2	0	9	0	2	440	1	443	0	145	35	2	182	0	634
1:00AM	2	1	0	3	0	1	66	0	67	0	29	3	0	32	0	102
1:15AM	2	0	0	2	0	2	62	0	64	0	31	9	2	42	0	108
1:30AM	1	0	0	1	0	2	36	0	38	0	30	10	0	40	0	79
1:45AM	1	0	0	1	0	3	37	0	40	0	25	21	0	46	0	87
Hourly Total	6	1	0	7	0	8	201	0	209	0	115	43	2	160	0	376
2:00AM	1	0	0	1	0	0	126	0	126	0	33	6	0	39	0	166
2:15AM	2	2	0	4	0	0	62	0	62	0	34	5	0	39	0	105
2:30AM	2	1	0	3	0	0	80	0	80	0	27	6	0	33	0	116
2:45AM	2	1	0	3	0	0	38	0	38	0	53	5	0	58	0	99
Hourly Total	7	4	0	11	0	0	306	0	306	0	147	22	0	169	0	486
3:00AM	3	2	0	5	0	0	38	0	38	0	55	5	0	60	0	103
3:15AM	1	0	0	1	0	0	57	0	57	0	78	4	0	82	0	140
3:30AM	2	2	0	4	0	1	184	0	185	0	95	2	0	97	0	286
3:45AM	7	1	0	8	0	1	73	0	74	0	106	3	0	109	0	191
Hourly Total	13	5	0	18	0	2	352	0	354	0	334	14	0	348	0	720
4:00AM	8	3	0	11	0	0	116	0	116	0	117	3	0	120	0	247
4:15AM	3	0	0	3	0	0	76	0	76	0	176	0	0	176	0	255
4:30AM	8	1	0	9	0	0	166	0	166	0	242	4	0	246	0	421
4:45AM	0	1	0	1	0	0	99	0	99	0	300	2	0	302	0	402
Hourly Total	19	5	0	24	0	0	457	0	457	0	835	9	0	844	0	1325
5:00AM	1	3	0	4	0	0	150	0	150	0	215	3	0	218	0	372
5:15AM	5	4	0	9	0	1	102	0	103	0	372	2	0	374	0	486
5:30AM	2	2	0	4	0	0	82	0	82	0	542	2	0	544	0	630
5:45AM	4	3	0	7	0	0	138	0	138	0	686	5	0	691	0	836
Hourly Total	12	12	0	24	0	1	472	0	473	0	1815	12	0	1827	0	2324
6:00AM	6	0	0	6	0	2	184	0	186	0	354	4	0	358	0	550
6:15AM	8	1	0	9	1	3	169	0	172	0	405	7	0	412	0	593
6:30AM	8	3	0	11	0	2	200	0	202	0	533	7	2	542	0	755
6:45AM	10	4	0	14	0	2	216	1	219	0	631	16	0	647	0	880
Hourly Total	32	8	0	40	1	9	769	1	779	0	1923	34	2	1959	0	2778
7:00AM	13	10	0	23	0	6	219	2	227	0	256	21	0	277	0	527
7:15AM	16	3	0	19	0	1	209	0	210	0	356	20	0	376	0	605
7:30AM	18	9	0	27	0	3	229	0	232	0	436	11	1	448	0	707
7:45AM	5	4	0	9	0	2	205	0	207	0	525	6	2	533	0	749
Hourly Total	52	26	0	78	0	12	862	2	876	0	1573	58	3	1634	0	2588
8:00AM	15	2	0	17	0	4	163	0	167	0	333	17	2	352	0	536
8:15AM	9	6	0	15	0	5	156	1	162	0	317	27	1	345	0	522
8:30AM	14	1	0	15	0	9	186	1	196	0	292	32	0	324	0	535
8:45AM	23	6	0	29	0	3	157	0	160	0	281	23	0	304	0	493
Hourly Total	61	15	0	76	0	21	662	2	685	0	1223	99	3	1325	0	2086
9:00AM	19	6	0	25	1	6	170	1	177	0	199	15	0	214	0	416
9:15AM	16	4	0	20	0	2	166	0	168	0	205	17	1	223	0	411
9:30AM	19	7	0	26	0	5	175	1	181	0	215	14	0	229	0	436
9:45AM	8	1	0	9	0	2	159	2	163	0	210	13	0	223	0	395
Hourly Total	62	18	0	80	1	15	670	4	689	0	829	59	1	889	0	1658
10:00AM	9	2	0	11	0	3	152	1	156	0	164	10	1	175	0	342
10:15AM	15	5	0	20	0	4	158	1	163	0	172	7	2	181	0	364
10:30AM	12	4	0	16	0	3	178	0	181	0	170	9	1	180	0	377
10:45AM	12	4	0	16	0	4	194	0	198	0	201	9	1	211	0	425

Leg Direction	Rathmell Rd Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
Hourly Total	48	15	0	63	0	14	682	2	698	0	707	35	5	747	0	1508
11:00AM	11	2	0	13	0	3	221	1	225	0	215	7	3	225	0	463
11:15AM	5	2	0	7	0	6	191	1	198	0	215	14	4	233	0	438
11:30AM	11	5	0	16	0	1	218	1	220	0	218	20	1	239	0	475
11:45AM	6	3	0	9	0	6	209	0	215	0	214	18	1	233	0	457
Hourly Total	33	12	0	45	0	16	839	3	858	0	862	59	9	930	0	1833
12:00PM	8	5	0	13	0	1	270	0	271	0	189	16	2	207	0	491
12:15PM	9	3	0	12	0	5	227	0	232	0	219	14	5	238	0	482
12:30PM	9	3	0	12	0	3	206	0	209	0	226	19	3	248	0	469
12:45PM	19	5	0	24	0	10	226	0	236	0	203	14	1	218	0	478
Hourly Total	45	16	0	61	0	19	929	0	948	0	837	63	11	911	0	1920
1:00PM	12	2	0	14	0	1	236	0	237	0	231	11	2	244	0	495
1:15PM	16	6	0	22	0	1	201	0	202	0	267	14	2	283	0	507
1:30PM	8	2	0	10	0	5	245	1	251	0	313	10	1	324	0	585
1:45PM	11	6	0	17	0	5	212	0	217	0	325	18	0	343	0	577
Hourly Total	47	16	0	63	0	12	894	1	907	0	1136	53	5	1194	0	2164
2:00PM	7	5	0	12	0	3	372	1	376	0	281	10	0	291	0	679
2:15PM	9	3	0	12	0	2	414	0	416	0	264	14	1	279	0	707
2:30PM	7	5	0	12	0	2	471	1	474	0	317	16	1	334	0	820
2:45PM	7	5	0	12	0	5	427	1	433	0	332	24	0	356	0	801
Hourly Total	30	18	0	48	0	12	1684	3	1699	0	1194	64	2	1260	0	3007
3:00PM	10	3	0	13	0	5	485	1	491	0	274	14	1	289	0	793
3:15PM	14	6	0	20	0	4	393	1	398	0	312	14	0	326	0	744
3:30PM	8	3	0	11	0	3	454	0	457	0	302	29	0	331	0	799
3:45PM	6	8	0	14	0	2	435	0	437	0	318	20	2	340	0	791
Hourly Total	38	20	0	58	0	14	1767	2	1783	0	1206	77	3	1286	0	3127
4:00PM	10	5	0	15	0	13	426	0	439	0	266	28	0	294	0	748
4:15PM	3	3	0	6	0	5	373	2	380	0	297	36	1	334	0	720
4:30PM	7	11	0	18	0	6	473	1	480	0	316	45	2	363	0	861
4:45PM	8	4	0	12	0	8	439	1	448	0	305	36	0	341	0	801
Hourly Total	28	23	0	51	0	32	1711	4	1747	0	1184	145	3	1332	0	3130
5:00PM	9	5	0	14	0	5	485	1	491	0	251	22	0	273	0	778
5:15PM	13	6	0	19	0	2	341	0	343	0	253	30	2	285	0	647
5:30PM	16	6	0	22	0	5	345	0	350	0	237	19	1	257	0	629
5:45PM	11	5	0	16	0	8	257	0	265	0	245	32	3	280	0	561
Hourly Total	49	22	0	71	0	20	1428	1	1449	0	986	103	6	1095	0	2615
6:00PM	17	3	0	20	0	3	253	0	256	0	171	22	3	196	0	472
6:15PM	19	5	0	24	0	3	188	0	191	0	202	20	1	223	0	438
6:30PM	13	3	0	16	0	2	229	0	231	0	140	23	2	165	0	412
6:45PM	10	3	0	13	0	1	173	0	174	0	140	20	3	163	0	350
Hourly Total	59	14	0	73	0	9	843	0	852	0	653	85	9	747	0	1672
7:00PM	14	5	0	19	0	5	175	1	181	0	96	10	1	107	0	307
7:15PM	28	2	0	30	0	0	127	0	127	0	120	7	0	127	0	284
7:30PM	9	3	0	12	0	2	120	0	122	0	86	12	5	103	0	237
7:45PM	11	5	0	16	0	3	110	0	113	0	102	11	0	113	0	242
Hourly Total	62	15	0	77	0	10	532	1	543	0	404	40	6	450	0	1070
8:00PM	5	3	0	8	0	3	122	1	126	0	97	15	0	112	0	246
8:15PM	15	8	0	23	0	0	114	0	114	0	101	17	3	121	0	258
8:30PM	23	3	0	26	0	3	102	2	107	0	101	10	3	114	0	247
8:45PM	8	5	0	13	0	4	80	1	85	0	105	7	0	112	0	210
Hourly Total	51	19	0	70	0	10	418	4	432	0	404	49	6	459	0	961
9:00PM	12	4	0	16	0	3	104	1	108	0	117	13	1	131	0	255
9:15PM	17	6	0	23	0	1	96	0	97	0	87	9	0	96	0	216
9:30PM	9	6	0	15	0	6	102	0	108	0	111	10	2	123	0	246
9:45PM	12	7	0	19	0	2	91	1	94	0	113	7	1	121	0	234
Hourly Total	50	23	0	73	0	12	393	2	407	0	428	39	4	471	0	951
10:00PM	11	3	0	14	0	2	179	0	181	0	71	2	2	75	0	270
10:15PM	6	3	0	9	0	1	117	1	119	0	88	7	0	95	0	223
10:30PM	9	6	0	15	0	3	97	0	100	0	93	3	2	98	0	213
10:45PM	2	0	0	2	0	4	83	0	87	0	94	4	0	98	0	187

Leg Direction	Rathmell Rd					Alum Creek Dr					Alum Creek Dr					Int
	Eastbound					Northbound					Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
Hourly Total	28	12	0	40	0	10	476	1	487	0	346	16	4	366	0	893
11:00PM	7	2	0	9	0	5	149	0	154	0	64	2	1	67	0	230
11:15PM	4	1	0	5	0	4	111	1	116	0	62	2	2	66	0	187
11:30PM	4	1	0	5	0	1	238	2	241	0	50	5	3	58	0	304
11:45PM	1	0	0	1	0	2	169	0	171	0	54	2	2	58	0	230
Hourly Total	16	4	0	20	0	12	667	3	682	0	230	11	8	249	0	951
Total	855	325	0	1180	2	272	18454	37	18763	0	19516	1224	94	20834	0	40777
% Approach	72.5%	27.5%	0%	-	-	1.4%	98.4%	0.2%	-	-	93.7%	5.9%	0.5%	-	-	-
% Total	2.1%	0.8%	0%	2.9%	-	0.7%	45.3%	0.1%	46.0%	-	47.9%	3.0%	0.2%	51.1%	-	-
Lights and Motorcycles	803	241	0	1044	-	208	13921	30	14159	-	14967	967	87	16021	-	31224
% Lights and Motorcycles	93.9%	74.2%	0%	88.5%	-	76.5%	75.4%	81.1%	75.5%	-	76.7%	79.0%	92.6%	76.9%	-	76.6%
Heavy	52	84	0	136	-	64	4533	7	4604	-	4549	257	7	4813	-	9553
% Heavy	6.1%	25.8%	0%	11.5%	-	23.5%	24.6%	18.9%	24.5%	-	23.3%	21.0%	7.4%	23.1%	-	23.4%
Pedestrians	-	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3077 - Alum Creek Dr & Rathmell Rd - TMC

Tue Aug 16, 2022

AM Peak (6 AM - 7 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978972, Location: 39.863333, -82.937215, Site Code: 3077



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rathmell Rd Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2022-08-16 6:00AM	6	0	0	6	0	2	184	0	186	0	354	4	0	358	0	550
6:15AM	8	1	0	9	1	3	169	0	172	0	405	7	0	412	0	593
6:30AM	8	3	0	11	0	2	200	0	202	0	533	7	2	542	0	755
6:45AM	10	4	0	14	0	2	216	1	219	0	631	16	0	647	0	880
Total	32	8	0	40	1	9	769	1	779	0	1923	34	2	1959	0	2778
% Approach	80.0%	20.0%	0%	-	-	1.2%	98.7%	0.1%	-	-	98.2%	1.7%	0.1%	-	-	-
% Total	1.2%	0.3%	0%	1.4%	-	0.3%	27.7%	0%	28.0%	-	69.2%	1.2%	0.1%	70.5%	-	-
PHF	0.800	0.500	-	0.714	-	0.750	0.890	0.250	0.889	-	0.762	0.531	0.250	0.757	-	0.789
Lights and Motorcycles	30	5	0	35	-	9	613	1	623	-	1764	26	2	1792	-	2450
% Lights and Motorcycles	93.8%	62.5%	0%	87.5%	-	100%	79.7%	100%	80.0%	-	91.7%	76.5%	100%	91.5%	-	88.2%
Heavy	2	3	0	5	-	0	156	0	156	-	159	8	0	167	-	328
% Heavy	6.3%	37.5%	0%	12.5%	-	0%	20.3%	0%	20.0%	-	8.3%	23.5%	0%	8.5%	-	11.8%
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3077 - Alum Creek Dr & Rathmell Rd - TMC

Tue Aug 16, 2022

Midday Peak (1 PM - 2 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978972, Location: 39.863333, -82.937215, Site Code: 3077



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rathmell Rd Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2022-08-16 1:00PM	12	2	0	14	0	1	236	0	237	0	231	11	2	244	0	495
1:15PM	16	6	0	22	0	1	201	0	202	0	267	14	2	283	0	507
1:30PM	8	2	0	10	0	5	245	1	251	0	313	10	1	324	0	585
1:45PM	11	6	0	17	0	5	212	0	217	0	325	18	0	343	0	577
Total	47	16	0	63	0	12	894	1	907	0	1136	53	5	1194	0	2164
% Approach	74.6%	25.4%	0%	-	-	1.3%	98.6%	0.1%	-	-	95.1%	4.4%	0.4%	-	-	-
% Total	2.2%	0.7%	0%	2.9%	-	0.6%	41.3%	0%	41.9%	-	52.5%	2.4%	0.2%	55.2%	-	-
PHF	0.734	0.667	-	0.716	-	0.600	0.912	0.250	0.903	-	0.874	0.736	0.625	0.870	-	0.925
Lights and Motorcycles	46	14	0	60	-	9	613	1	623	-	809	36	4	849	-	1532
% Lights and Motorcycles	97.9%	87.5%	0%	95.2%	-	75.0%	68.6%	100%	68.7%	-	71.2%	67.9%	80.0%	71.1%	-	70.8%
Heavy	1	2	0	3	-	3	281	0	284	-	327	17	1	345	-	632
% Heavy	2.1%	12.5%	0%	4.8%	-	25.0%	31.4%	0%	31.3%	-	28.8%	32.1%	20.0%	28.9%	-	29.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3077 - Alum Creek Dr & Rathmell Rd - TMC

Tue Aug 16, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978972, Location: 39.863333, -82.937215, Site Code: 3077



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rathmell Rd Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
2022-08-16 4:15PM	3	3	0	6	0	5	373	2	380	0	297	36	1	334	0	720
4:30PM	7	11	0	18	0	6	473	1	480	0	316	45	2	363	0	861
4:45PM	8	4	0	12	0	8	439	1	448	0	305	36	0	341	0	801
5:00PM	9	5	0	14	0	5	485	1	491	0	251	22	0	273	0	778
Total	27	23	0	50	0	24	1770	5	1799	0	1169	139	3	1311	0	3160
% Approach	54.0%	46.0%	0%	-	-	1.3%	98.4%	0.3%	-	-	89.2%	10.6%	0.2%	-	-	-
% Total	0.9%	0.7%	0%	1.6%	-	0.8%	56.0%	0.2%	56.9%	-	37.0%	4.4%	0.1%	41.5%	-	-
PHF	0.750	0.523	-	0.694	-	0.750	0.912	0.625	0.916	-	0.925	0.772	0.375	0.903	-	0.918
Lights and Motorcycles	27	19	0	46	-	23	1528	3	1554	-	937	130	3	1070	-	2670
% Lights and Motorcycles	100%	82.6%	0%	92.0%	-	95.8%	86.3%	60.0%	86.4%	-	80.2%	93.5%	100%	81.6%	-	84.5%
Heavy	0	4	0	4	-	1	242	2	245	-	232	9	0	241	-	490
% Heavy	0%	17.4%	0%	8.0%	-	4.2%	13.7%	40.0%	13.6%	-	19.8%	6.5%	0%	18.4%	-	15.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive
and Bixby Road**

2584 - Alum Creek Dr & Bixby Rd - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978974, Location: 39.85583, -82.938441, Site Code: 2584



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Bixby Rd Eastbound						Bixby Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16 12:00AM	0	0	0	0	0	0	0	0	1	0	1	0	0	225	5	0	230	0	0	36	0	0	36	0	267
12:15AM	0	0	0	0	0	0	0	0	1	0	1	0	0	92	0	0	92	0	0	32	0	0	32	0	125
12:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	66	0	0	66	0	0	39	1	0	40	0	106
12:45AM	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	0	46	0	0	30	0	0	30	0	76
Hourly Total	0	0	0	0	0	0	0	0	2	0	2	0	0	429	5	0	434	0	0	137	1	0	138	0	574
1:00AM	0	0	1	0	1	0	0	0	0	0	0	0	0	68	0	0	68	0	0	33	0	0	33	0	102
1:15AM	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0	0	58	0	0	30	0	0	30	0	88
1:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	38	0	0	29	0	0	29	0	67
1:45AM	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	42	0	0	24	0	0	24	0	66
Hourly Total	0	0	1	0	1	0	0	0	0	0	0	0	0	206	0	0	206	0	0	116	0	0	116	0	323
2:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	133	2	0	135	0	0	34	0	0	34	0	169
2:15AM	0	0	0	0	0	0	0	0	0	0	0	0	0	62	1	0	63	0	0	36	0	0	36	0	99
2:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	80	1	0	81	0	0	23	1	0	24	0	105
2:45AM	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	40	0	0	50	0	0	50	0	90
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	315	4	0	319	0	0	143	1	0	144	0	463
3:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	39	3	0	42	0	0	56	0	0	56	0	98
3:15AM	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	56	0	0	81	0	0	81	0	137
3:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	189	2	0	191	0	0	95	0	0	95	0	286
3:45AM	0	0	0	0	0	0	0	0	0	0	0	0	0	71	2	0	73	0	0	107	1	0	108	0	181
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	355	7	0	362	0	0	339	1	0	340	0	702
4:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	118	1	0	119	0	0	116	0	0	116	0	235
4:15AM	0	0	1	0	1	0	0	0	0	0	0	0	0	77	0	0	77	0	0	166	6	0	172	0	250
4:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	173	2	0	175	0	0	238	3	0	241	0	416
4:45AM	0	0	1	0	1	0	0	0	1	0	1	0	0	101	1	0	102	0	0	305	4	0	309	0	413
Hourly Total	0	0	2	0	2	0	0	0	1	0	1	0	0	469	4	0	473	0	0	825	13	0	838	0	1314
5:00AM	0	0	1	0	1	0	0	0	0	0	0	0	0	150	0	0	150	0	0	206	9	0	215	0	366
5:15AM	0	0	1	0	1	0	0	0	0	0	0	0	0	107	1	0	108	0	0	355	18	0	373	0	482
5:30AM	0	0	1	0	1	0	0	0	0	0	0	0	0	90	3	0	93	0	0	518	18	0	536	0	630
5:45AM	0	0	0	0	0	0	0	0	0	0	0	0	0	154	0	0	154	0	0	664	28	0	692	0	846
Hourly Total	0	0	3	0	3	0	0	0	0	0	0	0	0	501	4	0	505	0	0	1743	73	0	1816	0	2324
6:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	190	2	0	192	0	0	356	1	0	357	0	549
6:15AM	0	0	1	0	1	0	0	0	2	0	2	0	0	166	0	0	166	0	0	412	3	0	415	0	584
6:30AM	0	0	2	0	2	1	0	0	1	0	1	0	0	197	1	0	198	0	0	497	3	0	500	0	701
6:45AM	0	0	0	0	0	0	0	0	1	0	1	0	0	232	4	0	236	0	0	669	5	0	674	0	911
Hourly Total	0	0	3	0	3	1	0	0	4	0	4	0	0	785	7	0	792	0	0	1934	12	0	1946	0	2745
7:00AM	0	0	2	0	2	0	0	0	3	0	3	0	0	215	1	0	216	0	0	284	7	0	291	0	512
7:15AM	0	0	1	0	1	0	0	0	3	0	3	0	0	210	3	0	213	0	0	353	4	0	357	0	574
7:30AM	0	0	0	0	0	0	0	0	2	0	2	0	0	230	3	0	233	0	0	413	6	0	419	0	654
7:45AM	0	0	4	0	4	0	0	0	6	0	6	0	0	202	0	0	202	0	0	518	7	0	525	0	737
Hourly Total	0	0	7	0	7	0	0	0	14	0	14	0	0	857	7	0	864	0	0	1568	24	0	1592	0	2477
8:00AM	0	0	1	0	1	0	0	0	2	0	2	0	0	168	5	0	173	0	0	382	6	0	388	0	564
8:15AM	0	0	3	0	3	2	0	0	1	0	1	0	0	163	2	0	165	0	0	323	1	0	324	0	493
8:30AM	0	0	1	0	1	0	0	0	0	0	0	0	0	190	2	0	192	0	0	296	6	0	302	0	495
8:45AM	0	0	0	0	0	0	0	0	2	0	2	0	0	157	3	0	160	0	0	300	7	0	307	0	469
Hourly Total	0	0	5	0	5	2	0	0	5	0	5	0	0	678	12	0	690	0	0	1301	20	0	1321	0	2021
9:00AM	0	0	1	0	1	0	0	0	1	0	1	0	0	183	2	0	185	0	0	219	4	0	223	0	410
9:15AM	0	0	1	0	1	0	0	0	1	0	1	0	0	159	4	0	163	0	0	203	4	0	207	0	372
9:30AM	0	0	2	0	2	0	0	0	2	0	2	0	0	180	0	0	180	0	0	204	3	0	207	0	391
9:45AM	0	0	2	0	2	0	0	0	1	0	1	0	0	156	2	0	158	0	0	210	1	0	211	0	372
Hourly Total	0	0	6	0	6	0	0	0	5	0	5	0	0	678	8	0	686	0	0	836	12	0	848	0	1545
10:00AM	0	0	3	0	3	0	0	0	1	0	1	0	0	162	2	0	164	0	0	168	1	0	169	0	337
10:15AM	0	0	0	0	0	0	0	0	2	0	2	0	0	162	1	0	163	0	0	188	2	0	190	0	355
10:30AM	0	0	1	0	1	0	0	0	2	0	2	0	0	185	0	0	185	0	0	171	3	0	174	0	362
10:45AM	0	0	2	1	3	0	0	0	2	0	2	0	0	191	3	0	194	0	0	210	1	0	211	0	410

Leg Direction	Bixby Rd Eastbound						Bixby Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
Hourly Total	0	0	6	1	7	0	0	0	7	0	7	0	0	700	6	0	706	0	0	737	7	0	744	0	1464
11:00AM	0	0	4	0	4	0	0	0	1	0	1	0	0	246	4	0	250	0	0	206	4	0	210	0	465
11:15AM	0	0	3	0	3	0	0	0	1	0	1	0	0	205	6	0	211	0	0	214	1	0	215	0	430
11:30AM	0	0	3	0	3	0	0	0	2	0	2	0	0	222	2	0	224	0	0	234	4	0	238	0	467
11:45AM	0	0	2	0	2	0	0	0	1	0	1	0	0	226	7	0	233	0	0	224	3	0	227	0	463
Hourly Total	0	0	12	0	12	0	0	0	5	0	5	0	0	899	19	0	918	0	0	878	12	0	890	0	1825
12:00PM	0	0	1	0	1	0	0	0	0	0	0	0	0	282	2	0	284	0	0	198	1	0	199	0	484
12:15PM	0	0	2	0	2	0	0	0	2	0	2	0	0	223	6	0	229	0	0	207	5	0	212	0	445
12:30PM	0	0	5	0	5	0	0	0	2	0	2	0	0	207	6	0	213	0	0	226	6	0	232	0	452
12:45PM	0	0	2	0	2	2	0	0	2	0	2	0	0	236	8	0	244	0	0	218	2	0	220	0	468
Hourly Total	0	0	10	0	10	2	0	0	6	0	6	0	0	948	22	0	970	0	0	849	14	0	863	0	1849
1:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	249	5	0	254	0	0	232	3	0	235	0	489
1:15PM	0	0	2	0	2	0	0	0	2	0	2	0	0	206	4	0	210	0	0	274	3	0	277	0	491
1:30PM	0	0	4	0	4	0	0	0	3	0	3	0	0	268	1	0	269	0	0	315	2	0	317	0	593
1:45PM	0	0	1	0	1	0	0	0	1	0	1	0	0	239	6	0	245	0	0	320	0	0	320	0	567
Hourly Total	0	0	7	0	7	0	0	0	6	0	6	0	0	962	16	0	978	0	0	1141	8	0	1149	0	2140
2:00PM	0	0	6	0	6	0	0	0	3	0	3	0	0	374	12	0	386	0	0	287	2	0	289	0	684
2:15PM	0	0	3	0	3	0	0	0	3	0	3	0	0	402	13	0	415	0	0	270	1	0	271	0	692
2:30PM	0	0	1	0	1	0	0	0	4	0	4	0	0	499	14	0	513	0	0	331	4	0	335	0	853
2:45PM	0	0	2	0	2	0	0	0	1	0	1	0	0	394	11	0	405	0	0	349	3	0	352	0	760
Hourly Total	0	0	12	0	12	0	0	0	11	0	11	0	0	1669	50	0	1719	0	0	1237	10	0	1247	0	2989
3:00PM	0	0	3	0	3	0	0	0	5	0	5	0	0	493	15	0	508	0	0	289	0	0	289	0	805
3:15PM	0	0	3	0	3	0	0	0	3	0	3	0	0	395	11	0	406	0	0	319	6	0	325	0	737
3:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	527	12	0	539	0	0	317	2	0	319	0	858
3:45PM	0	0	2	0	2	0	0	0	1	0	1	0	0	411	26	0	437	0	0	342	1	0	343	0	783
Hourly Total	0	0	8	0	8	0	0	0	9	0	9	0	0	1826	64	0	1890	0	0	1267	9	0	1276	0	3183
4:00PM	0	0	2	0	2	0	0	0	4	0	4	0	0	420	17	0	437	0	0	258	4	0	262	0	705
4:15PM	0	0	0	0	0	0	0	0	1	0	1	0	0	334	14	0	348	0	0	299	2	0	301	0	650
4:30PM	0	0	6	0	6	0	0	0	1	0	1	0	0	517	22	0	539	0	0	345	1	0	346	0	892
4:45PM	0	0	3	0	3	0	0	0	2	0	2	0	0	419	7	0	426	0	0	309	4	0	313	0	744
Hourly Total	0	0	11	0	11	0	0	0	8	0	8	0	0	1690	60	0	1750	0	0	1211	11	0	1222	0	2991
5:00PM	0	0	1	0	1	0	0	0	4	0	4	0	0	491	14	0	505	0	0	247	8	0	255	0	765
5:15PM	0	0	2	0	2	0	0	0	1	0	1	0	0	315	7	0	322	0	0	252	9	0	261	0	586
5:30PM	0	0	4	0	4	0	0	0	2	0	2	0	0	345	5	0	350	0	0	211	25	0	236	0	592
5:45PM	0	0	1	0	1	0	0	0	1	0	1	0	0	264	6	0	270	0	0	227	33	0	260	0	532
Hourly Total	0	0	8	0	8	0	0	0	8	0	8	0	0	1415	32	0	1447	0	0	937	75	0	1012	0	2475
6:00PM	0	0	2	0	2	0	0	0	2	0	2	0	0	240	2	0	242	0	0	172	3	0	175	0	421
6:15PM	0	0	1	0	1	0	0	0	1	0	1	0	0	191	11	0	202	0	0	211	3	0	214	0	418
6:30PM	0	0	0	0	0	0	0	0	1	0	1	0	0	217	1	0	218	0	0	149	2	0	151	0	370
6:45PM	0	0	1	0	1	0	0	0	0	0	0	0	0	153	5	0	158	0	0	137	2	0	139	0	298
Hourly Total	0	0	4	0	4	0	0	0	4	0	4	0	0	801	19	0	820	0	0	669	10	0	679	0	1507
7:00PM	0	0	0	0	0	0	0	0	1	0	1	0	0	180	1	0	181	0	0	106	3	0	109	0	291
7:15PM	0	0	1	0	1	0	0	0	0	0	0	0	0	127	0	0	127	0	0	123	0	0	123	0	251
7:30PM	0	0	1	0	1	0	0	0	0	0	0	0	0	116	0	0	116	0	0	90	0	0	90	0	207
7:45PM	0	0	1	0	1	0	0	0	1	0	1	0	0	115	1	0	116	0	0	106	1	0	107	0	225
Hourly Total	0	0	3	0	3	0	0	0	2	0	2	0	0	538	2	0	540	0	0	425	4	0	429	0	974
8:00PM	0	0	1	0	1	0	0	0	4	0	4	0	0	130	6	0	136	0	0	94	2	0	96	0	237
8:15PM	0	0	0	0	0	0	0	0	1	0	1	0	0	121	4	0	125	0	0	114	0	0	114	0	240
8:30PM	0	0	1	0	1	0	0	0	3	0	3	0	0	100	1	0	101	0	0	109	3	0	112	0	217
8:45PM	0	0	2	0	2	0	0	0	1	0	1	0	0	82	1	0	83	0	0	110	2	0	112	0	198
Hourly Total	0	0	4	0	4	0	0	0	9	0	9	0	0	433	12	0	445	0	0	427	7	0	434	0	892
9:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	110	6	0	116	0	0	110	1	0	111	0	227
9:15PM	0	0	1	0	1	0	0	0	1	0	1	0	0	96	0	0	96	0	0	97	2	0	99	0	197
9:30PM	0	0	1	0	1	0	0	0	1	0	1	0	0	105	1	0	106	0	0	111	1	0	112	0	220
9:45PM	0	0	1	0	1	0	0	0	1	0	1	0	0	97	3	0	100	0	0	124	2	0	126	0	228
Hourly Total	0	0	3	0	3	0	0	0	3	0	3	0	0	408	10	0	418	0	0	442	6	0	448	0	872
10:00PM	0	0	1	0	1	0	0	0	0	0	0	0	0	175	2	0	177	0	0	75	0	0	75	0	253
10:15PM	0	0	0	0	0	0	0	0	1	0	1	0	0	116	2	0	118	0	0	94	0	0	94	0	213
10:30PM	0	0	1	0	1	0	0	0	0	0	0	0	0	99	3	0	102	0	0	100	0	0	100	0	203
10:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	89	3	0	92	0	0	100	1	0	101	0	193

Leg Direction	Bixby Rd Eastbound						Bixby Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
Hourly Total	0	0	2	0	2	0	0	0	1	0	1	0	0	479	10	0	489	0	0	369	1	0	370	0	862
11:00PM	0	0	1	0	1	0	0	0	0	0	0	0	0	146	1	0	147	0	0	67	0	0	67	0	215
11:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	116	4	0	120	0	0	67	0	0	67	0	187
11:30PM	0	0	0	0	0	1	0	0	1	0	1	0	0	239	3	0	242	0	0	56	0	0	56	0	299
11:45PM	0	0	1	0	1	0	0	0	0	0	0	0	0	169	0	0	169	0	0	50	1	0	51	0	221
Hourly Total	0	0	2	0	2	1	0	0	1	0	1	0	0	670	8	0	678	0	0	240	1	0	241	0	922
Total	0	0	119	1	120	6	0	0	111	0	111	0	0	18711	388	0	19099	0	0	19771	332	0	20103	0	39433
% Approach	0%	0%	99.2%	0.8%	-	-	0%	0%	100%	0%	-	-	0%	98.0%	2.0%	0%	-	-	0%	98.3%	1.7%	0%	-	-	-
% Total	0%	0%	0.3%	0%	0.3%	-	0%	0%	0.3%	0%	0.3%	-	0%	47.5%	1.0%	0%	48.4%	-	0%	50.1%	0.8%	0%	51.0%	-	-
Lights and Motorcycles	0	0	107	1	108	-	0	0	105	0	105	-	0	14045	374	0	14419	-	0	15124	297	0	15421	-	30053
% Lights and Motorcycles	0%	0%	89.9%	100%	90.0%	-	0%	0%	94.6%	0%	94.6%	-	0%	75.1%	96.4%	0%	75.5%	-	0%	76.5%	89.5%	0%	76.7%	-	76.2%
Heavy	0	0	12	0	12	-	0	0	6	0	6	-	0	4666	14	0	4680	-	0	4647	35	0	4682	-	9380
% Heavy	0%	0%	10.1%	0%	10.0%	-	0%	0%	5.4%	0%	5.4%	-	0%	24.9%	3.6%	0%	24.5%	-	0%	23.5%	10.5%	0%	23.3%	-	23.8%
Pedestrians	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2584 - Alum Creek Dr & Bixby Rd - TMC

Tue Aug 16, 2022

AM Peak (6 AM - 7 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978974, Location: 39.85583, -82.938441, Site Code: 2584



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Bixby Rd Eastbound						Bixby Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16 6:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	190	2	0	192	0	0	356	1	0	357	0	549
6:15AM	0	0	1	0	1	0	0	0	2	0	2	0	0	166	0	0	166	0	0	412	3	0	415	0	584
6:30AM	0	0	2	0	2	1	0	0	1	0	1	0	0	197	1	0	198	0	0	497	3	0	500	0	701
6:45AM	0	0	0	0	0	0	0	0	1	0	1	0	0	232	4	0	236	0	0	669	5	0	674	0	911
Total	0	0	3	0	3	1	0	0	4	0	4	0	0	785	7	0	792	0	0	1934	12	0	1946	0	2745
% Approach	0%	0%	100%	0%	-	-	0%	0%	100%	0%	-	-	0%	99.1%	0.9%	0%	-	-	0%	99.4%	0.6%	0%	-	-	-
% Total	0%	0%	0.1%	0%	0.1%	-	0%	0%	0.1%	0%	0.1%	-	0%	28.6%	0.3%	0%	28.9%	-	0%	70.5%	0.4%	0%	70.9%	-	-
PHF	-	-	0.375	-	0.375	-	-	-	0.500	-	0.500	-	-	0.846	0.438	-	0.839	-	-	0.723	0.600	-	0.722	-	0.753
Lights and Motorcycles	0	0	3	0	3	-	0	0	4	0	4	-	0	627	6	0	633	-	0	1775	12	0	1787	-	2427
% Lights and Motorcycles	0%	0%	100%	0%	100%	-	0%	0%	100%	0%	100%	-	0%	79.9%	85.7%	0%	79.9%	-	0%	91.8%	100%	0%	91.8%	-	88.4%
Heavy	0	0	0	0	0	-	0	0	0	0	0	-	0	158	1	0	159	-	0	159	0	0	159	-	318
% Heavy	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	20.1%	14.3%	0%	20.1%	-	0%	8.2%	0%	0%	8.2%	-	11.6%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2584 - Alum Creek Dr & Bixby Rd - TMC

Tue Aug 16, 2022

Midday Peak (1 PM - 2 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978974, Location: 39.85583, -82.938441, Site Code: 2584



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Bixby Rd Eastbound					Bixby Rd Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int				
	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*					
2022-08-16 1:00PM	0	0	0	0	0	0	0	0	0	0	0	249	5	0	254	0	0	232	3	0	235	0	489		
1:15PM	0	0	2	0	2	0	0	2	0	2	0	0	206	4	0	210	0	0	274	3	0	277	0	491	
1:30PM	0	0	4	0	4	0	0	3	0	3	0	0	268	1	0	269	0	0	315	2	0	317	0	593	
1:45PM	0	0	1	0	1	0	0	1	0	1	0	0	239	6	0	245	0	0	320	0	0	320	0	567	
Total	0	0	7	0	7	0	0	6	0	6	0	0	962	16	0	978	0	0	1141	8	0	1149	0	2140	
% Approach	0%	0%	100%	0%	-	-	0%	0%	100%	0%	-	-	0%	98.4%	1.6%	0%	-	-	0%	99.3%	0.7%	0%	-	-	-
% Total	0%	0%	0.3%	0%	0.3%	-	0%	0%	0.3%	0%	0.3%	-	0%	45.0%	0.7%	0%	45.7%	-	0%	53.3%	0.4%	0%	53.7%	-	-
PHF	-	-	0.438	-	0.438	-	-	-	0.500	-	0.500	-	-	0.897	0.667	-	0.909	-	-	0.891	0.667	-	0.898	-	0.902
Lights and Motorcycles	0	0	6	0	6	-	0	0	6	0	6	-	0	653	16	0	669	-	0	819	6	0	825	-	1506
% Lights and Motorcycles	0%	0%	85.7%	0%	85.7%	-	0%	0%	100%	0%	100%	-	0%	67.9%	100%	0%	68.4%	-	0%	71.8%	75.0%	0%	71.8%	-	70.4%
Heavy	0	0	1	0	1	-	0	0	0	0	0	-	0	309	0	0	309	-	0	322	2	0	324	-	634
% Heavy	0%	0%	14.3%	0%	14.3%	-	0%	0%	0%	0%	0%	-	0%	32.1%	0%	0%	31.6%	-	0%	28.2%	25.0%	0%	28.2%	-	29.6%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2584 - Alum Creek Dr & Bixby Rd - TMC

Tue Aug 16, 2022

PM Peak (3 PM - 4 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978974, Location: 39.85583, -82.938441, Site Code: 2584



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Bixby Rd Eastbound					Bixby Rd Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int				
	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*					
2022-08-16 3:00PM	0	0	3	0	3	0	0	0	5	0	5	0	0	493	15	0	508	0	0	289	0	0	289	0	805
3:15PM	0	0	3	0	3	0	0	0	3	0	3	0	0	395	11	0	406	0	0	319	6	0	325	0	737
3:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	527	12	0	539	0	0	317	2	0	319	0	858
3:45PM	0	0	2	0	2	0	0	0	1	0	1	0	0	411	26	0	437	0	0	342	1	0	343	0	783
Total	0	0	8	0	8	0	0	0	9	0	9	0	0	1826	64	0	1890	0	0	1267	9	0	1276	0	3183
% Approach	0%	0%	100%	0%	-	-	0%	0%	100%	0%	-	-	0%	96.6%	3.4%	0%	-	-	0%	99.3%	0.7%	0%	-	-	-
% Total	0%	0%	0.3%	0%	0.3%	-	0%	0%	0.3%	0%	0.3%	-	0%	57.4%	2.0%	0%	59.4%	-	0%	39.8%	0.3%	0%	40.1%	-	-
PHF	-	-	0.667	-	0.667	-	-	-	0.450	-	0.450	-	-	0.866	0.615	-	0.877	-	-	0.926	0.375	-	0.930	-	0.927
Lights and Motorcycles	0	0	7	0	7	-	0	0	9	0	9	-	0	1548	63	0	1611	-	0	922	6	0	928	-	2555
% Lights and Motorcycles	0%	0%	87.5%	0%	87.5%	-	0%	0%	100%	0%	100%	-	0%	84.8%	98.4%	0%	85.2%	-	0%	72.8%	66.7%	0%	72.7%	-	80.3%
Heavy	0	0	1	0	1	-	0	0	0	0	0	-	0	278	1	0	279	-	0	345	3	0	348	-	628
% Heavy	0%	0%	12.5%	0%	12.5%	-	0%	0%	0%	0%	0%	-	0%	15.2%	1.6%	0%	14.8%	-	0%	27.2%	33.3%	0%	27.3%	-	19.7%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Toy Road/Creekside Parkway**

3076 - Alum Creek Dr & Toy Rd-Creekside Pkwy - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978976, Location: 39.85241, -82.938601, Site Code: 3076



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Creekside Pkwy Eastbound						Toy Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16																									
12:00AM	37	3	0	0	40	0	5	4	29	0	38	0	2	146	6	0	154	0	6	32	1	0	39	0	271
12:15AM	14	1	0	0	15	0	4	0	9	0	13	0	1	60	4	0	65	0	10	21	1	0	32	0	125
12:30AM	13	1	1	0	15	0	5	0	9	0	14	0	0	39	5	0	44	0	8	31	2	0	41	0	114
12:45AM	5	0	0	0	5	0	4	1	11	0	16	0	0	24	4	0	28	0	4	26	0	0	30	0	79
Hourly Total	69	5	1	0	75	0	18	5	58	0	81	0	3	269	19	0	291	0	28	110	4	0	142	0	589
1:00AM	1	0	1	0	2	0	5	1	16	0	22	0	0	53	2	0	55	0	2	29	0	0	31	0	110
1:15AM	0	1	0	0	1	0	6	0	20	0	26	0	0	34	1	0	35	0	3	25	4	0	32	0	94
1:30AM	1	0	0	0	1	0	1	1	2	0	4	0	0	37	3	0	40	0	3	24	3	0	30	0	75
1:45AM	4	0	0	0	4	0	3	0	2	0	5	0	0	34	5	0	39	0	4	17	3	0	24	0	72
Hourly Total	6	1	1	0	8	0	15	2	40	0	57	0	0	158	11	0	169	0	12	95	10	0	117	0	351
2:00AM	54	3	0	0	57	0	3	0	10	0	13	0	0	66	11	0	77	0	4	29	1	0	34	0	181
2:15AM	8	1	0	0	9	0	4	2	3	0	9	0	0	39	3	0	42	0	5	26	5	0	36	0	96
2:30AM	5	0	0	0	5	0	4	2	5	0	11	0	0	71	5	0	76	0	2	21	2	0	25	0	117
2:45AM	2	0	0	0	2	0	4	0	4	0	8	0	0	28	1	0	29	0	12	38	2	0	52	0	91
Hourly Total	69	4	0	0	73	0	15	4	22	0	41	0	0	204	20	0	224	0	23	114	10	0	147	0	485
3:00AM	5	1	0	0	6	0	3	0	1	0	4	0	0	41	3	0	44	0	13	41	1	0	55	0	109
3:15AM	15	1	1	0	17	0	6	1	3	0	10	0	0	34	0	0	34	0	33	40	5	0	78	0	139
3:30AM	39	3	3	0	45	0	5	1	4	0	10	0	0	133	7	0	140	0	41	57	2	0	100	0	295
3:45AM	11	4	4	0	19	0	2	1	3	0	6	0	0	52	7	0	59	0	23	78	5	0	106	0	190
Hourly Total	70	9	8	0	87	0	16	3	11	0	30	0	0	260	17	0	277	0	110	216	13	0	339	0	733
4:00AM	23	2	2	0	27	0	3	2	4	0	9	0	0	87	11	0	98	0	38	68	9	0	115	0	249
4:15AM	11	8	1	0	20	0	7	0	9	0	16	1	3	46	13	0	62	1	64	90	18	1	173	0	271
4:30AM	58	5	5	0	68	0	8	1	25	0	34	0	1	82	15	0	98	1	49	158	37	0	244	0	444
4:45AM	14	2	3	0	19	0	8	2	10	0	20	0	2	65	7	0	74	0	51	197	49	0	297	0	410
Hourly Total	106	17	11	0	134	0	26	5	48	0	79	1	6	280	46	0	332	2	202	513	113	1	829	0	1374
5:00AM	4	2	1	0	7	0	4	2	39	0	45	0	6	91	12	0	109	0	51	140	21	0	212	0	373
5:15AM	9	2	2	0	13	0	12	2	16	0	30	0	9	69	10	0	88	1	64	249	40	0	353	0	484
5:30AM	6	11	4	0	21	0	8	2	11	0	21	0	7	74	12	0	93	5	91	352	66	1	510	0	645
5:45AM	9	6	5	0	20	0	10	7	15	0	32	0	14	112	18	0	144	2	102	425	124	0	651	0	847
Hourly Total	28	21	12	0	61	0	34	13	81	0	128	0	36	346	52	0	434	8	308	1166	251	1	1726	0	2349
6:00AM	17	4	3	0	24	0	13	0	14	0	27	0	4	141	11	0	156	2	56	248	68	0	372	0	579
6:15AM	16	4	3	0	23	0	11	3	13	0	27	1	4	128	12	0	144	4	75	277	64	2	418	0	612
6:30AM	12	5	4	0	21	0	9	3	19	0	31	0	6	161	23	0	190	1	101	344	57	0	502	0	744
6:45AM	7	16	3	0	26	0	17	6	21	0	44	0	5	172	28	0	205	4	124	426	77	0	627	0	902
Hourly Total	52	29	13	0	94	0	50	12	67	0	129	1	19	602	74	0	695	11	356	1295	266	2	1919	0	2837
7:00AM	8	5	2	0	15	0	6	0	19	0	25	0	5	186	21	0	212	1	84	196	31	0	311	0	563
7:15AM	10	2	2	0	14	0	9	1	15	0	25	0	5	150	19	0	174	2	61	259	36	0	356	0	569
7:30AM	10	4	0	0	14	0	13	3	14	0	30	0	3	184	21	0	208	3	65	313	55	0	433	0	685
7:45AM	13	4	4	0	21	0	12	3	17	0	32	0	5	154	17	0	176	3	68	381	68	0	517	0	746
Hourly Total	41	15	8	0	64	0	40	7	65	0	112	0	18	674	78	0	770	9	278	1149	190	0	1617	0	2563
8:00AM	8	1	4	0	13	0	11	5	13	0	29	0	2	139	15	0	156	2	62	227	45	2	336	0	534
8:15AM	21	0	0	0	21	0	13	4	15	0	32	0	2	100	14	0	116	1	50	242	36	0	328	0	497
8:30AM	9	3	2	0	14	0	12	4	24	0	40	1	2	142	21	0	165	0	69	197	29	0	295	0	514
8:45AM	14	1	1	0	16	0	18	3	21	0	42	1	1	112	12	0	125	3	53	192	22	0	267	0	450
Hourly Total	52	5	7	0	64	0	54	16	73	0	143	2	7	493	62	0	562	6	234	858	132	2	1226	0	1995
9:00AM	16	5	1	0	22	0	15	2	20	0	37	0	5	130	16	0	151	0	36	159	21	0	216	0	426
9:15AM	10	2	4	0	16	0	11	4	16	0	31	0	4	122	14	0	140	0	35	144	20	0	199	0	386
9:30AM	13	1	4	0	18	0	16	2	25	0	43	0	2	121	8	0	131	0	43	153	20	0	216	0	408
9:45AM	22	4	4	0	30	0	14	3	31	0	48	0	2	103	10	0	115	0	32	165	19	0	216	0	409
Hourly Total	61	12	13	0	86	0	56	11	92	0	159	0	13	476	48	0	537	0	146	621	80	0	847	0	1629
10:00AM	15	4	2	0	21	0	17	4	20	0	41	0	3	118	14	0	135	0	24	122	21	0	167	0	364
10:15AM	16	1	4	0	21	0	12	4	17	0	33	0	4	120	13	0	137	0	36	123	16	0	175	0	366
10:30AM	21	2	4	0	27	0	10	3	13	0	26	0	3	132	15	0	150	0	27	120	18	0	165	0	368
10:45AM	24	3	10	0	37	0	19	4	23	0	46	0	2	128	17	0	147	0	43	134	21	0	198	0	428

Leg Direction	Creekside Pkwy Eastbound						Toy Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
Hourly Total	76	10	20	0	106	0	58	15	73	0	146	0	12	498	59	0	569	0	130	499	76	0	705	0	1526
11:00AM	22	6	6	0	34	0	14	11	28	0	53	1	4	168	25	0	197	1	40	155	17	0	212	0	496
11:15AM	17	5	4	0	26	0	18	4	30	0	52	1	3	135	17	0	155	1	46	151	15	0	212	0	445
11:30AM	24	5	12	0	41	0	14	3	28	0	45	0	4	141	24	0	169	1	31	164	35	0	230	0	485
11:45AM	10	7	9	0	26	0	22	5	31	0	58	1	3	159	21	0	183	4	39	159	22	0	220	0	487
Hourly Total	73	23	31	0	127	0	68	23	117	0	208	3	14	603	87	0	704	7	156	629	89	0	874	0	1913
12:00PM	26	4	5	0	35	0	28	7	36	0	71	0	4	195	18	0	217	0	39	143	15	0	197	0	520
12:15PM	18	3	5	0	26	0	17	5	21	0	43	0	3	165	17	0	185	0	45	144	19	0	208	0	462
12:30PM	19	1	5	0	25	0	19	3	33	0	55	0	2	164	18	0	184	0	51	150	19	0	220	0	484
12:45PM	22	2	3	0	27	0	8	2	43	0	53	1	10	172	12	0	194	2	45	140	18	0	203	0	477
Hourly Total	85	10	18	0	113	0	72	17	133	0	222	1	19	696	65	0	780	2	180	577	71	0	828	0	1943
1:00PM	23	3	8	0	34	0	12	4	41	0	57	0	2	169	10	0	181	0	39	160	23	0	222	0	494
1:15PM	14	8	7	0	29	0	11	4	35	0	50	0	5	143	20	0	168	0	50	194	24	0	268	0	515
1:30PM	26	9	2	0	37	0	21	8	37	0	66	0	5	176	23	0	204	0	82	194	40	0	316	0	623
1:45PM	32	8	7	0	47	0	23	6	43	0	72	0	4	160	12	0	176	1	89	206	27	0	322	0	617
Hourly Total	95	28	24	0	147	0	67	22	156	0	245	0	16	648	65	0	729	1	260	754	114	0	1128	0	2249
2:00PM	85	11	12	0	108	0	15	7	86	0	108	1	3	223	9	0	235	3	77	175	24	0	276	0	727
2:15PM	39	5	9	0	53	0	11	3	81	0	95	0	4	247	17	0	268	0	82	176	28	0	286	0	702
2:30PM	88	5	5	0	98	0	10	7	132	0	149	0	5	274	12	0	291	3	39	251	32	1	323	0	861
2:45PM	31	5	3	0	39	0	20	4	74	0	98	0	1	243	15	0	259	2	33	254	55	1	343	0	739
Hourly Total	243	26	29	0	298	0	56	21	373	0	450	1	13	987	53	0	1053	8	231	856	139	2	1228	0	3029
3:00PM	73	2	8	0	83	0	16	7	116	0	139	1	3	286	25	0	314	1	44	190	47	0	281	0	817
3:15PM	38	6	9	0	53	0	22	6	43	0	71	0	1	278	24	0	303	2	40	225	57	1	323	0	750
3:30PM	92	7	9	0	108	0	32	7	118	0	157	0	2	311	8	0	321	1	34	225	23	0	282	0	868
3:45PM	75	7	6	0	88	0	20	9	43	0	72	0	21	276	19	0	316	3	38	255	22	1	316	0	792
Hourly Total	278	22	32	0	332	0	90	29	320	0	439	1	27	1151	76	0	1254	7	156	895	149	2	1202	0	3227
4:00PM	46	6	7	0	59	0	13	9	67	0	89	0	4	287	15	0	306	0	28	210	19	0	257	0	711
4:15PM	40	1	7	0	48	0	16	8	49	0	73	0	5	227	9	0	241	0	29	227	32	0	288	0	650
4:30PM	102	6	22	0	130	0	19	4	97	0	120	0	3	321	17	0	341	3	42	275	35	0	352	0	943
4:45PM	55	4	8	0	67	0	14	2	46	0	62	1	3	290	12	0	305	2	28	217	51	0	296	0	730
Hourly Total	243	17	44	0	304	0	62	23	259	0	344	1	15	1125	53	0	1193	5	127	929	137	0	1193	0	3034
5:00PM	92	3	8	0	103	0	21	4	73	0	98	2	8	311	18	0	337	3	27	188	21	0	236	0	774
5:15PM	29	6	6	0	41	0	12	7	46	0	65	0	0	203	18	0	221	1	46	177	24	1	248	0	575
5:30PM	27	2	6	0	35	0	17	8	67	0	92	0	5	214	18	0	237	1	38	165	5	0	208	0	572
5:45PM	20	2	4	0	26	0	19	10	46	0	75	0	0	171	14	0	185	0	39	170	12	1	222	0	508
Hourly Total	168	13	24	0	205	0	69	29	232	0	330	2	13	899	68	0	980	5	150	700	62	2	914	0	2429
6:00PM	20	3	5	0	28	0	17	1	34	0	52	1	2	180	13	0	195	2	36	126	9	1	172	0	447
6:15PM	15	1	0	0	16	0	7	5	29	0	41	0	3	126	12	0	141	0	50	146	12	0	208	0	406
6:30PM	22	4	7	0	33	0	9	2	28	0	39	0	2	138	5	0	145	3	18	125	3	0	146	0	363
6:45PM	16	1	3	0	20	0	12	2	13	0	27	0	2	126	9	0	137	0	24	110	6	0	140	0	324
Hourly Total	73	9	15	0	97	0	45	10	104	0	159	1	9	570	39	0	618	5	128	507	30	1	666	0	1540
7:00PM	18	3	1	0	22	0	13	4	26	0	43	0	4	117	11	0	132	2	18	80	6	2	106	0	303
7:15PM	9	1	3	0	13	0	7	5	15	0	27	0	1	94	8	0	103	0	22	94	7	0	123	0	266
7:30PM	11	3	4	0	18	0	10	3	8	0	21	0	1	89	12	0	102	0	11	68	11	0	90	0	231
7:45PM	9	3	1	0	13	0	4	2	11	0	17	0	1	84	7	0	92	0	18	83	7	0	108	0	230
Hourly Total	47	10	9	0	66	0	34	14	60	0	108	0	7	384	38	0	429	2	69	325	31	2	427	0	1030
8:00PM	8	1	1	0	10	0	11	4	13	0	28	0	1	108	5	0	114	0	9	77	10	0	96	0	248
8:15PM	11	1	1	0	13	0	10	2	11	0	23	0	0	96	9	0	105	0	18	89	6	0	113	0	254
8:30PM	10	1	2	0	13	0	18	1	11	0	30	0	2	72	5	0	79	0	19	76	13	0	108	0	230
8:45PM	11	2	3	0	16	0	2	0	4	0	6	0	1	55	10	0	66	0	16	87	5	1	109	0	197
Hourly Total	40	5	7	0	52	0	41	7	39	0	87	0	4	331	29	0	364	0	62	329	34	1	426	0	929
9:00PM	16	1	1	0	18	0	1	3	9	0	13	1	0	74	9	0	83	1	22	85	8	0	115	0	229
9:15PM	6	2	0	0	8	0	7	1	12	0	20	0	3	70	4	0	77	0	17	67	6	1	91	0	196
9:30PM	11	2	3	0	16	0	10	3	6	0	19	0	2	88	2	0	92	1	12	93	10	0	115	0	242
9:45PM	10	1	0	0	11	0	5	0	14	0	19	0	3	68	4	0	75	0	29	83	15	0	127	0	232
Hourly Total	43	6	4	0	53	0	23	7	41	0	71	1	8	300	19	0	327	2	80	328	39	1	448	0	899
10:00PM	32	1	2	0	35	0	7	1	17	0	25	2	1	115	6	0	122	2	15	48	7	1	71	0	253
10:15PM	14	2	4	0	20	0	4	3	4	0	11	0	0	78	8	0	86	0	13	67	7	1	88	0	205
10:30PM	15	1	4	0	20	0	10	3	8	0	21	0	1	70	5	0	76	0	27	69	4	0	100	0	217
10:45PM	5	1	1	0	7	0	2	1	17	0	20	0	0	55	5	0	60	0	26	71	2	0	99	0	186
Hourly Total	66	5	11	0	82	0	23	8	46	0	77	2	2	318	24	0	344	2	81	255	20	2	358	0	861
11:00PM	14	3	0	0	17	0	7	2	61	0	70	0	1	76	5	0	82	0	15	43	8	0	66	0	235

Leg Direction	Creekside Pkwy Eastbound						Toy Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
11:15PM	20	1	0	0	21	0	6	3	51	0	60	0	2	49	7	0	58	0	20	35	8	1	64	0	203
11:30PM	27	4	2	0	33	0	3	1	85	0	89	0	0	128	5	0	133	0	13	32	7	0	52	0	307
11:45PM	5	0	0	0	5	0	7	0	20	0	27	0	1	126	8	0	135	0	4	44	7	1	56	0	223
Hourly Total	66	8	2	0	76	0	23	6	217	0	246	0	4	379	25	0	408	0	52	154	30	2	238	0	968
Total	2150	310	344	0	2804	0	1055	309	2727	0	4091	17	265	12651	1127	0	14043	82	3559	13874	2090	21	19544	0	40482
% Approach	76.7%	11.1%	12.3%	0%	-	-	25.8%	7.6%	66.7%	0%	-	-	1.9%	90.1%	8.0%	0%	-	-	18.2%	71.0%	10.7%	0.1%	-	-	-
% Total	5.3%	0.8%	0.8%	0%	6.9%	-	2.6%	0.8%	6.7%	0%	10.1%	-	0.7%	31.3%	2.8%	0%	34.7%	-	8.8%	34.3%	5.2%	0.1%	48.3%	-	-
Lights and Motorcycles	1836	279	236	0	2351	-	751	270	2228	0	3249	-	196	9069	859	0	10124	-	2865	10351	1724	21	14961	-	30685
% Lights and Motorcycles	85.4%	90.0%	68.6%	0%	83.8%	-	71.2%	87.4%	81.7%	0%	79.4%	-	74.0%	71.7%	76.2%	0%	72.1%	-	80.5%	74.6%	82.5%	100%	76.6%	-	75.8%
Heavy	314	31	108	0	453	-	304	39	499	0	842	-	69	3582	268	0	3919	-	694	3523	366	0	4583	-	9797
% Heavy	14.6%	10.0%	31.4%	0%	16.2%	-	28.8%	12.6%	18.3%	0%	20.6%	-	26.0%	28.3%	23.8%	0%	27.9%	-	19.5%	25.4%	17.5%	0%	23.4%	-	24.2%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	17	-	-	-	-	-	82	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3076 - Alum Creek Dr & Toy Rd-Creekside Pkwy - TMC

Tue Aug 16, 2022

AM Peak (6 AM - 7 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978976, Location: 39.85241, -82.938601, Site Code: 3076



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Creekside Pkwy Eastbound							Toy Rd Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							
Time	L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*	Int	
2022-08-16																													
6:00AM	17	4	3	0	24	0		13	0	14	0	27	0		4	141	11	0	156	2		56	248	68	0	372	0	579	
6:15AM	16	4	3	0	23	0		11	3	13	0	27	1		4	128	12	0	144	4		75	277	64	2	418	0	612	
6:30AM	12	5	4	0	21	0		9	3	19	0	31	0		6	161	23	0	190	1		101	344	57	0	502	0	744	
6:45AM	7	16	3	0	26	0		17	6	21	0	44	0		5	172	28	0	205	4		124	426	77	0	627	0	902	
Total	52	29	13	0	94	0		50	12	67	0	129	1		19	602	74	0	695	11		356	1295	266	2	1919	0	2837	
% Approach	55.3%	30.9%	13.8%	0%	-	-		38.8%	9.3%	51.9%	0%	-	-	2.7%	86.6%	10.6%	0%	-	-	18.6%	67.5%	13.9%	0.1%	-	-	-			
% Total	1.8%	1.0%	0.5%	0%	3.3%	-		1.8%	0.4%	2.4%	0%	4.5%	-	0.7%	21.2%	2.6%	0%	24.5%	-	12.5%	45.6%	9.4%	0.1%	67.6%	-	-			
PHF	0.765	0.453	0.813	-	0.904	-		0.735	0.500	0.798	-	0.733	-	0.792	0.875	0.661	-	0.848	-	0.718	0.760	0.864	0.250	0.765	-	0.786			
Lights and Motorcycles	41	28	9	0	78	-		36	12	52	0	100	-	17	478	66	0	561	-	331	1177	249	2	1759	-	2498			
% Lights and Motorcycles	78.8%	96.6%	69.2%	0%	83.0%	-		72.0%	100%	77.6%	0%	77.5%	-	89.5%	79.4%	89.2%	0%	80.7%	-	93.0%	90.9%	93.6%	100%	91.7%	-	88.1%			
Heavy	11	1	4	0	16	-		14	0	15	0	29	-	2	124	8	0	134	-	25	118	17	0	160	-	339			
% Heavy	21.2%	3.4%	30.8%	0%	17.0%	-		28.0%	0%	22.4%	0%	22.5%	-	10.5%	20.6%	10.8%	0%	19.3%	-	7.0%	9.1%	6.4%	0%	8.3%	-	11.9%			
Pedestrians	-	-	-	-	-	0		-	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	-	0			
% Pedestrians	-	-	-	-	-	-		-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-			

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3076 - Alum Creek Dr & Toy Rd-Creekside Pkwy - TMC

Tue Aug 16, 2022

Midday Peak (1 PM - 2 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978976, Location: 39.85241, -82.938601, Site Code: 3076



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Creekside Pkwy Eastbound						Toy Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16 1:00PM	23	3	8	0	34	0	12	4	41	0	57	0	2	169	10	0	181	0	39	160	23	0	222	0	494
1:15PM	14	8	7	0	29	0	11	4	35	0	50	0	5	143	20	0	168	0	50	194	24	0	268	0	515
1:30PM	26	9	2	0	37	0	21	8	37	0	66	0	5	176	23	0	204	0	82	194	40	0	316	0	623
1:45PM	32	8	7	0	47	0	23	6	43	0	72	0	4	160	12	0	176	1	89	206	27	0	322	0	617
Total	95	28	24	0	147	0	67	22	156	0	245	0	16	648	65	0	729	1	260	754	114	0	1128	0	2249
% Approach	64.6%	19.0%	16.3%	0%	-	-	27.3%	9.0%	63.7%	0%	-	-	2.2%	88.9%	8.9%	0%	-	-	23.0%	66.8%	10.1%	0%	-	-	-
% Total	4.2%	1.2%	1.1%	0%	6.5%	-	3.0%	1.0%	6.9%	0%	10.9%	-	0.7%	28.8%	2.9%	0%	32.4%	-	11.6%	33.5%	5.1%	0%	50.2%	-	-
PHF	0.742	0.778	0.750	-	0.782	-	0.728	0.688	0.907	-	0.851	-	0.800	0.920	0.707	-	0.893	-	0.730	0.915	0.713	-	0.876	-	0.902
Lights and Motorcycles	73	24	13	0	110	-	42	15	120	0	177	-	11	404	48	0	463	-	221	507	87	0	815	-	1565
% Lights and Motorcycles	76.8%	85.7%	54.2%	0%	74.8%	-	62.7%	68.2%	76.9%	0%	72.2%	-	68.8%	62.3%	73.8%	0%	63.5%	-	85.0%	67.2%	76.3%	0%	72.3%	-	69.6%
Heavy	22	4	11	0	37	-	25	7	36	0	68	-	5	244	17	0	266	-	39	247	27	0	313	-	684
% Heavy	23.2%	14.3%	45.8%	0%	25.2%	-	37.3%	31.8%	23.1%	0%	27.8%	-	31.3%	37.7%	26.2%	0%	36.5%	-	15.0%	32.8%	23.7%	0%	27.7%	-	30.4%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3076 - Alum Creek Dr & Toy Rd-Creekside Pkwy - TMC

Tue Aug 16, 2022

PM Peak (3 PM - 4 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978976, Location: 39.85241, -82.938601, Site Code: 3076



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Creekside Pkwy Eastbound						Toy Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int						
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*							
2022-08-16																															
3:00PM	73	2	8	0	83	0	16	7	116	0	139	1	3	286	25	0	314	1	44	190	47	0	281	0							817
3:15PM	38	6	9	0	53	0	22	6	43	0	71	0	1	278	24	0	303	2	40	225	57	1	323	0							750
3:30PM	92	7	9	0	108	0	32	7	118	0	157	0	2	311	8	0	321	1	34	225	23	0	282	0							868
3:45PM	75	7	6	0	88	0	20	9	43	0	72	0	21	276	19	0	316	3	38	255	22	1	316	0							792
Total	278	22	32	0	332	0	90	29	320	0	439	1	27	1151	76	0	1254	7	156	895	149	2	1202	0							3227
% Approach	83.7%	6.6%	9.6%	0%	-	-	20.5%	6.6%	72.9%	0%	-	-	2.2%	91.8%	6.1%	0%	-	-	13.0%	74.5%	12.4%	0.2%	-	-							-
% Total	8.6%	0.7%	1.0%	0%	10.3%	-	2.8%	0.9%	9.9%	0%	13.6%	-	0.8%	35.7%	2.4%	0%	38.9%	-	4.8%	27.7%	4.6%	0.1%	37.2%	-							-
PHF	0.755	0.786	0.889	-	0.769	-	0.703	0.806	0.678	-	0.699	-	0.321	0.925	0.760	-	0.977	-	0.886	0.877	0.654	0.500	0.930	-							0.929
Lights and Motorcycles	263	19	25	0	307	-	69	29	288	0	386	-	21	917	64	0	1002	-	116	631	125	2	874	-							2569
% Lights and Motorcycles	94.6%	86.4%	78.1%	0%	92.5%	-	76.7%	100%	90.0%	0%	87.9%	-	77.8%	79.7%	84.2%	0%	79.9%	-	74.4%	70.5%	83.9%	100%	72.7%	-							79.6%
Heavy	15	3	7	0	25	-	21	0	32	0	53	-	6	234	12	0	252	-	40	264	24	0	328	-							658
% Heavy	5.4%	13.6%	21.9%	0%	7.5%	-	23.3%	0%	10.0%	0%	12.1%	-	22.2%	20.3%	15.8%	0%	20.1%	-	25.6%	29.5%	16.1%	0%	27.3%	-							20.4%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	0							
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-							-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Global Court**

7477 - Alum Creek Dr & Global Court - TMC

Thu Aug 18, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 979763, Location: 39.848853, -82.938237, Site Code: 7477



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Global Court Eastbound						Global Court Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-18																									
12:00AM	0	0	0	0	0	0	0	0	3	0	3	0	0	153	2	0	155	0	0	29	0	0	29	0	187
12:15AM	0	0	0	0	0	0	1	0	1	0	2	0	0	59	2	0	61	0	1	37	1	0	39	0	102
12:30AM	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	40	0	1	32	0	0	33	0	73
12:45AM	2	0	1	0	3	0	0	0	1	0	1	0	1	30	1	0	32	0	1	29	1	0	31	0	67
Hourly Total	2	0	1	0	3	0	1	0	5	0	6	0	1	282	5	0	288	0	3	127	2	0	132	0	429
1:00AM	1	0	0	0	1	0	0	0	3	0	3	0	0	65	1	0	66	0	1	32	0	0	33	0	103
1:15AM	1	0	0	0	1	0	2	0	2	0	4	0	1	31	0	0	32	0	2	24	0	0	26	0	63
1:30AM	0	0	0	0	0	0	0	0	2	0	2	0	0	33	0	0	33	0	0	30	0	0	30	0	65
1:45AM	0	0	0	0	0	0	0	0	0	0	0	0	1	37	0	0	38	0	2	33	0	0	35	0	73
Hourly Total	2	0	0	0	2	0	2	0	7	0	9	0	2	166	1	0	169	0	5	119	0	0	124	0	304
2:00AM	0	0	0	0	0	0	0	0	2	0	2	0	0	92	0	0	92	0	1	26	1	0	28	0	122
2:15AM	0	0	0	0	0	0	0	0	1	0	1	0	0	34	1	0	35	0	0	37	0	0	37	0	73
2:30AM	0	0	0	0	0	0	0	0	1	0	1	0	0	88	1	0	89	0	0	27	0	0	27	0	117
2:45AM	0	0	1	0	1	0	2	0	2	0	4	0	1	48	0	0	49	0	0	34	1	0	35	0	89
Hourly Total	0	0	1	0	1	0	2	0	6	0	8	0	1	262	2	0	265	0	1	124	2	0	127	0	401
3:00AM	3	0	0	0	3	0	0	0	0	0	0	0	0	36	0	1	37	0	0	34	0	0	34	0	74
3:15AM	4	0	1	0	5	0	0	0	0	0	0	0	1	28	0	0	29	0	1	44	2	0	47	0	81
3:30AM	0	0	2	0	2	0	1	0	1	0	2	0	1	149	1	0	151	0	1	69	0	0	70	0	225
3:45AM	0	0	0	0	0	0	2	0	1	0	3	0	0	67	0	0	67	0	3	76	2	0	81	0	151
Hourly Total	7	0	3	0	10	0	3	0	2	0	5	0	2	280	1	1	284	0	5	223	4	0	232	0	531
4:00AM	0	0	2	0	2	0	1	0	0	0	1	0	0	91	1	0	92	0	1	61	0	0	62	0	157
4:15AM	2	0	0	0	2	0	1	0	2	0	3	0	1	75	1	0	77	0	4	105	0	0	109	0	191
4:30AM	0	0	1	0	1	0	0	0	2	0	2	0	1	92	0	1	94	0	4	158	1	0	163	0	260
4:45AM	1	0	2	0	3	0	1	0	2	0	3	0	3	72	0	0	75	0	1	185	2	0	188	0	269
Hourly Total	3	0	5	0	8	0	3	0	6	0	9	0	5	330	2	1	338	0	10	509	3	0	522	0	877
5:00AM	0	0	0	0	0	0	0	0	1	0	1	0	1	104	0	0	105	0	1	150	1	0	152	0	258
5:15AM	1	0	1	0	2	0	0	0	2	0	2	0	1	82	1	1	85	0	3	237	0	0	240	0	329
5:30AM	1	0	0	0	1	0	1	0	2	0	3	0	2	114	1	0	117	0	0	353	1	0	354	0	475
5:45AM	0	0	1	0	1	0	2	0	1	0	3	0	3	141	1	0	145	0	1	425	4	0	430	0	579
Hourly Total	2	0	2	0	4	0	3	0	6	0	9	0	7	441	3	1	452	0	5	1165	6	0	1176	0	1641
6:00AM	0	0	5	0	5	0	0	0	0	0	0	0	3	153	2	0	158	0	0	208	2	0	210	0	373
6:15AM	2	0	0	0	2	1	1	0	0	0	1	0	3	158	1	0	162	0	3	297	4	0	304	0	469
6:30AM	0	1	2	0	3	0	1	0	0	0	1	0	4	204	0	0	208	0	1	386	6	0	393	0	605
6:45AM	5	0	2	0	7	0	1	0	1	0	2	0	4	190	4	0	198	0	8	398	8	0	414	0	621
Hourly Total	7	1	9	0	17	1	3	0	1	0	4	0	14	705	7	0	726	0	12	1289	20	0	1321	0	2068
7:00AM	4	0	2	0	6	0	1	0	1	0	2	0	7	207	5	0	219	0	10	214	14	0	238	0	465
7:15AM	5	0	4	0	9	0	1	0	2	0	3	0	3	179	2	1	185	0	3	299	6	0	308	0	505
7:30AM	0	0	3	0	3	0	1	0	1	0	2	0	5	202	3	0	210	1	5	289	9	0	303	0	518
7:45AM	3	0	1	0	4	0	2	0	3	0	5	0	6	153	3	0	162	0	4	355	18	0	377	0	548
Hourly Total	12	0	10	0	22	0	5	0	7	0	12	0	21	741	13	1	776	1	22	1157	47	0	1226	0	2036
8:00AM	4	1	3	0	8	0	2	0	4	0	6	0	2	155	2	0	159	0	3	267	4	0	274	0	447
8:15AM	2	0	2	0	4	0	1	0	2	0	3	0	3	160	1	0	164	0	2	206	5	0	213	0	384
8:30AM	1	1	0	0	2	0	1	0	3	0	4	0	4	128	0	0	132	0	6	223	0	0	229	0	367
8:45AM	1	0	2	0	3	0	1	0	5	0	6	0	2	133	3	0	138	0	3	215	8	0	226	0	373
Hourly Total	8	2	7	0	17	0	5	0	14	0	19	0	11	576	6	0	593	0	14	911	17	0	942	0	1571
9:00AM	4	0	3	0	7	0	2	0	2	0	4	0	1	137	3	0	141	0	1	174	2	0	177	0	329
9:15AM	3	0	1	0	4	0	2	0	1	0	3	1	5	149	0	0	154	0	7	160	3	0	170	0	331
9:30AM	3	0	2	0	5	0	1	0	3	0	4	0	1	148	2	0	151	0	8	171	1	0	180	0	340
9:45AM	1	0	0	0	1	0	1	0	4	0	5	1	0	147	2	0	149	1	6	216	6	0	228	0	383
Hourly Total	11	0	6	0	17	0	6	0	10	0	16	2	7	581	7	0	595	1	22	721	12	0	755	0	1383
10:00AM	2	1	5	0	8	0	0	0	7	0	7	0	4	157	5	0	166	0	3	198	3	0	204	0	385
10:15AM	1	0	5	0	6	0	0	0	7	0	7	1	3	146	1	0	150	0	4	157	2	0	163	0	326
10:30AM	2	0	3	0	5	0	5	0	4	0	9	0	3	180	0	0	183	0	2	169	0	0	171	0	368
10:45AM	2	0	2	0	4	0	1	1	2	0	4	0	1	186	0	0	187	0	3	187	4	0	194	0	389
Hourly Total	7	1	15	0	23	0	6	1	20	0	27	1	11	669	6	0	686	0	12	711	9	0	732	0	1468

Leg Direction	Global Court Eastbound						Global Court Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
11:00AM	2	0	1	0	3	0	5	1	4	0	10	0	2	219	4	1	226	0	3	157	4	0	164	0	403
11:15AM	4	0	1	0	5	0	3	0	7	0	10	0	0	165	1	0	166	0	4	203	1	0	208	0	389
11:30AM	1	0	3	0	4	0	4	0	6	0	10	0	2	183	4	0	189	0	5	219	8	0	232	0	435
11:45AM	2	0	6	0	8	0	2	0	2	0	4	0	5	181	4	0	190	0	5	213	4	0	222	0	424
Hourly Total	9	0	11	0	20	0	14	1	19	0	34	0	9	748	13	1	771	0	17	792	17	0	826	0	1651
12:00PM	4	0	2	0	6	0	2	0	8	0	10	0	2	198	5	0	205	0	1	213	0	0	214	0	435
12:15PM	4	0	4	0	8	0	4	0	2	0	6	0	1	235	5	0	241	0	4	186	2	0	192	0	447
12:30PM	2	0	1	0	3	0	0	1	3	0	4	0	4	247	2	1	254	0	4	189	2	0	195	0	456
12:45PM	4	0	4	0	8	0	1	0	1	0	2	0	1	170	3	0	174	0	5	193	1	0	199	0	383
Hourly Total	14	0	11	0	25	0	7	1	14	0	22	0	8	850	15	1	874	0	14	781	5	0	800	0	1721
1:00PM	1	0	3	0	4	0	1	0	4	0	5	0	2	191	1	1	195	0	1	189	4	0	194	0	398
1:15PM	2	0	1	0	3	0	3	0	2	0	5	0	4	158	1	0	163	0	3	219	4	0	226	0	397
1:30PM	2	0	6	0	8	0	1	0	4	0	5	0	2	208	6	0	216	0	7	212	5	0	224	0	453
1:45PM	2	0	6	0	8	0	1	0	2	0	3	0	2	210	0	0	212	0	8	224	5	0	237	0	460
Hourly Total	7	0	16	0	23	0	6	0	12	0	18	0	10	767	8	1	786	0	19	844	18	0	881	0	1708
2:00PM	1	0	1	0	2	0	1	0	6	0	7	0	3	271	1	0	275	0	3	211	6	0	220	0	504
2:15PM	2	1	9	0	12	0	3	0	12	0	15	0	6	288	2	1	297	0	3	256	6	0	265	0	589
2:30PM	12	0	9	0	21	0	1	0	2	0	3	0	6	332	1	1	340	0	3	279	3	0	285	0	649
2:45PM	4	0	1	0	5	0	4	0	8	0	12	0	4	297	2	0	303	0	3	295	3	0	301	0	621
Hourly Total	19	1	20	0	40	0	9	0	28	0	37	0	19	1188	6	2	1215	0	12	1041	18	0	1071	0	2363
3:00PM	3	0	5	0	8	0	1	0	7	0	8	0	1	379	0	0	380	0	3	252	2	0	257	0	653
3:15PM	2	0	3	0	5	1	2	0	7	0	9	1	3	344	3	0	350	0	1	256	2	0	259	0	623
3:30PM	7	0	12	0	19	0	2	0	2	0	4	0	1	365	0	0	366	0	0	272	6	0	278	0	667
3:45PM	4	0	5	0	9	0	0	0	4	0	4	0	5	298	8	1	312	0	1	264	4	0	269	0	594
Hourly Total	16	0	25	0	41	1	5	0	20	0	25	1	10	1386	11	1	1408	0	5	1044	14	0	1063	0	2537
4:00PM	5	0	7	0	12	0	2	0	4	0	6	0	0	304	0	0	304	1	2	246	2	0	250	0	572
4:15PM	5	0	5	0	10	0	3	0	1	0	4	1	2	266	3	0	271	0	5	281	1	0	287	0	572
4:30PM	5	0	4	0	9	0	1	0	3	0	4	0	3	351	6	1	361	0	1	342	1	0	344	0	718
4:45PM	3	0	2	0	5	0	3	0	1	0	4	0	0	260	2	1	263	0	0	280	4	0	284	0	556
Hourly Total	18	0	18	0	36	0	9	0	9	0	18	1	5	1181	11	2	1199	1	8	1149	8	0	1165	0	2418
5:00PM	6	1	1	0	8	0	2	0	6	0	8	0	0	333	1	0	334	0	3	231	2	0	236	0	586
5:15PM	6	0	1	0	7	0	2	0	2	0	4	0	0	217	3	0	220	0	4	216	0	0	220	0	451
5:30PM	5	0	2	0	7	0	3	0	4	0	7	1	0	244	2	0	246	0	0	243	2	0	245	0	505
5:45PM	0	0	2	0	2	0	1	0	2	0	3	0	1	185	2	1	189	0	1	234	2	0	237	0	431
Hourly Total	17	1	6	0	24	0	8	0	14	0	22	1	1	979	8	1	989	0	8	924	6	0	938	0	1973
6:00PM	7	0	1	0	8	0	3	0	4	0	7	0	0	194	2	0	196	0	1	180	1	0	182	0	393
6:15PM	1	0	2	0	3	0	3	0	2	0	5	0	0	152	0	0	152	0	2	180	0	0	182	0	342
6:30PM	2	0	2	0	4	0	1	0	1	0	2	0	1	198	4	0	203	0	1	145	0	0	146	0	355
6:45PM	3	0	3	0	6	0	0	0	0	0	0	0	0	162	1	0	163	0	3	112	6	0	121	0	290
Hourly Total	13	0	8	0	21	0	7	0	7	0	14	0	1	706	7	0	714	0	7	617	7	0	631	0	1380
7:00PM	1	0	0	0	1	0	1	0	3	0	4	0	2	176	0	0	178	0	1	99	4	0	104	0	287
7:15PM	2	0	3	0	5	0	0	0	5	0	5	1	1	151	0	1	153	0	3	96	1	0	100	0	263
7:30PM	4	0	0	0	4	0	0	0	0	0	0	0	0	103	0	0	103	0	2	89	0	0	91	0	198
7:45PM	1	0	0	0	1	0	1	0	0	0	1	0	2	91	1	0	94	0	1	109	3	0	113	0	209
Hourly Total	8	0	3	0	11	0	2	0	8	0	10	1	5	521	1	1	528	0	7	393	8	0	408	0	957
8:00PM	3	0	1	0	4	0	0	0	2	0	2	0	0	106	1	0	107	0	0	86	1	0	87	0	200
8:15PM	0	0	0	0	0	0	0	0	1	0	1	0	1	84	1	0	86	0	2	101	1	0	104	0	191
8:30PM	3	0	0	0	3	0	1	0	1	0	2	0	1	91	2	0	94	0	2	82	1	0	85	0	184
8:45PM	0	0	2	0	2	0	2	0	3	0	5	0	3	77	2	1	83	0	1	73	0	0	74	0	164
Hourly Total	6	0	3	0	9	0	3	0	7	0	10	0	5	358	6	1	370	0	5	342	3	0	350	0	739
9:00PM	2	0	0	0	2	0	1	0	0	0	1	1	0	70	0	0	70	1	0	98	1	0	99	0	172
9:15PM	0	0	0	0	0	0	0	0	4	0	4	0	0	56	2	0	58	0	2	73	2	0	77	0	139
9:30PM	0	0	0	0	0	0	1	0	4	0	5	0	0	85	0	1	86	0	3	89	0	0	92	0	183
9:45PM	2	0	2	0	4	0	1	0	3	0	4	0	0	60	2	0	62	0	1	98	2	0	101	0	171
Hourly Total	4	0	2	0	6	0	3	0	11	0	14	1	0	271	4	1	276	1	6	358	5	0	369	0	665
10:00PM	1	0	0	0	1	0	2	0	2	0	4	0	0	119	3	0	122	0	1	64	0	0	65	0	192
10:15PM	0	0	1	0	1	0	1	0	1	0	2	0	1	93	2	0	96	0	1	84	1	0	86	0	185
10:30PM	0	0	0	0	0	0	5	0	2	0	7	0	1	95	0	0	96	0	1	69	1	0	71	0	174
10:45PM	1	0	0	0	1	0	0	0	0	0	0	0	0	66	2	0	68	0	1	79	0	0	80	0	149
Hourly Total	2	0	1	0	3	0	8	0	5	0	13	0	2	373	7	0	382	0	4	296	2	0	302	0	700
11:00PM	4	0	2	0	6	0	1	0	1	0	2	0	0	95	1	0	96	0	2	47	0	0	49	0	153
11:15PM	0	0	1	0	1	0	1	0	1	0	2	0	1	48	0	0	49	0	2	47	4	0	53	0	105

Leg Direction	Global Court Eastbound						Global Court Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
11:30PM	0	0	1	0	1	0	0	0	1	0	1	0	1	112	0	0	113	0	0	35	0	0	35	0	150
11:45PM	0	0	1	0	1	0	0	0	3	0	3	0	0	142	0	0	142	0	1	33	0	0	34	0	180
Hourly Total	4	0	5	0	9	0	2	0	6	0	8	0	2	397	1	0	400	0	5	162	4	0	171	0	588
Total	198	6	188	0	392	2	122	3	244	0	369	8	159	14758	151	16	15084	4	228	15799	237	0	16264	0	32109
% Approach	50.5%	1.5%	48.0%	0%	-	-	33.1%	0.8%	66.1%	0%	-	-	1.1%	97.8%	1.0%	0.1%	-	-	1.4%	97.1%	1.5%	0%	-	-	-
% Total	0.6%	0%	0.6%	0%	1.2%	-	0.4%	0%	0.8%	0%	1.1%	-	0.5%	46.0%	0.5%	0%	47.0%	-	0.7%	49.2%	0.7%	0%	50.7%	-	-
Lights and Motorcycles	118	5	98	0	221	-	43	1	72	0	116	-	85	11017	50	11	11163	-	91	11992	139	0	12222	-	23722
% Lights and Motorcycles	59.6%	83.3%	52.1%	0%	56.4%	-	35.2%	33.3%	29.5%	0%	31.4%	-	53.5%	74.7%	33.1%	68.8%	74.0%	-	39.9%	75.9%	58.6%	0%	75.1%	-	73.9%
Heavy	80	1	90	0	171	-	79	2	172	0	253	-	74	3741	101	5	3921	-	137	3807	98	0	4042	-	8387
% Heavy	40.4%	16.7%	47.9%	0%	43.6%	-	64.8%	66.7%	70.5%	0%	68.6%	-	46.5%	25.3%	66.9%	31.3%	26.0%	-	60.1%	24.1%	41.4%	0%	24.9%	-	26.1%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

7477 - Alum Creek Dr & Global Court - TMC

Thu Aug 18, 2022

AM Peak (6:30 AM - 7:30 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 979763, Location: 39.848853, -82.938237, Site Code: 7477



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Global Court Eastbound						Global Court Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-18																									
6:30AM	0	1	2	0	3	0	1	0	0	0	1	0	4	204	0	0	208	0	1	386	6	0	393	0	605
6:45AM	5	0	2	0	7	0	1	0	1	0	2	0	4	190	4	0	198	0	8	398	8	0	414	0	621
7:00AM	4	0	2	0	6	0	1	0	1	0	2	0	7	207	5	0	219	0	10	214	14	0	238	0	465
7:15AM	5	0	4	0	9	0	1	0	2	0	3	0	3	179	2	1	185	0	3	299	6	0	308	0	505
Total	14	1	10	0	25	0	4	0	4	0	8	0	18	780	11	1	810	0	22	1297	34	0	1353	0	2196
% Approach	56.0%	4.0%	40.0%	0%	-	-	50.0%	0%	50.0%	0%	-	-	2.2%	96.3%	1.4%	0.1%	-	-	1.6%	95.9%	2.5%	0%	-	-	-
% Total	0.6%	0%	0.5%	0%	1.1%	-	0.2%	0%	0.2%	0%	0.4%	-	0.8%	35.5%	0.5%	0%	36.9%	-	1.0%	59.1%	1.5%	0%	61.6%	-	-
PHF	0.700	0.250	0.625	-	0.694	-	1.000	-	0.500	-	0.667	-	0.643	0.942	0.550	0.250	0.925	-	0.550	0.815	0.607	-	0.817	-	0.884
Lights and Motorcycles	3	1	2	0	6	-	2	0	1	0	3	-	11	646	6	1	664	-	19	1133	31	0	1183	-	1856
% Lights and Motorcycles	21.4%	100%	20.0%	0%	24.0%	-	50.0%	0%	25.0%	0%	37.5%	-	61.1%	82.8%	54.5%	100%	82.0%	-	86.4%	87.4%	91.2%	0%	87.4%	-	84.5%
Heavy	11	0	8	0	19	-	2	0	3	0	5	-	7	134	5	0	146	-	3	164	3	0	170	-	340
% Heavy	78.6%	0%	80.0%	0%	76.0%	-	50.0%	0%	75.0%	0%	62.5%	-	38.9%	17.2%	45.5%	0%	18.0%	-	13.6%	12.6%	8.8%	0%	12.6%	-	15.5%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

7477 - Alum Creek Dr & Global Court - TMC

Thu Aug 18, 2022

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 979763, Location: 39.848853, -82.938237, Site Code: 7477



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Global Court Eastbound					Global Court Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound						
Time	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	Int	
2022-08-18 11:45AM																						
	2	0	6	0	8 0	2	0	2	0	4 0	5	181	4	0	190 0	5	213	4	0	222 0	424	
12:00PM	4	0	2	0	6 0	2	0	8	0	10 0	2	198	5	0	205 0	1	213	0	0	214 0	435	
12:15PM	4	0	4	0	8 0	4	0	2	0	6 0	1	235	5	0	241 0	4	186	2	0	192 0	447	
12:30PM	2	0	1	0	3 0	0	1	3	0	4 0	4	247	2	1	254 0	4	189	2	0	195 0	456	
Total	12	0	13	0	25 0	8	1	15	0	24 0	12	861	16	1	890 0	14	801	8	0	823 0	1762	
% Approach	48.0%	0%	52.0%	0%	-	33.3%	4.2%	62.5%	0%	-	1.3%	96.7%	1.8%	0.1%	-	1.7%	97.3%	1.0%	0%	-	-	
% Total	0.7%	0%	0.7%	0%	1.4%	0.5%	0.1%	0.9%	0%	1.4%	0.7%	48.9%	0.9%	0.1%	50.5%	0.8%	45.5%	0.5%	0%	46.7%	-	
PHF	0.750	-	0.542	-	0.781	0.500	0.250	0.469	-	0.600	0.600	0.871	0.800	0.250	0.876	0.700	0.940	0.500	-	0.927	0.966	
Lights and Motorcycles	7	0	5	0	12	6	0	8	0	14	7	598	9	1	615	10	540	4	0	554	1195	
% Lights and Motorcycles	58.3%	0%	38.5%	0%	48.0%	75.0%	0%	53.3%	0%	58.3%	58.3%	69.5%	56.3%	100%	69.1%	71.4%	67.4%	50.0%	0%	67.3%	67.8%	
Heavy	5	0	8	0	13	2	1	7	0	10	5	263	7	0	275	4	261	4	0	269	567	
% Heavy	41.7%	0%	61.5%	0%	52.0%	25.0%	100%	46.7%	0%	41.7%	41.7%	30.5%	43.8%	0%	30.9%	28.6%	32.6%	50.0%	0%	32.7%	32.2%	
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0		
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

7477 - Alum Creek Dr & Global Court - TMC

Thu Aug 18, 2022

PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 979763, Location: 39.848853, -82.938237, Site Code: 7477



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Global Court Eastbound						Global Court Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-18 2:45PM	4	0	1	0	5	0	4	0	8	0	12	0	4	297	2	0	303	0	3	295	3	0	301	0	621
3:00PM	3	0	5	0	8	0	1	0	7	0	8	0	1	379	0	0	380	0	3	252	2	0	257	0	653
3:15PM	2	0	3	0	5	1	2	0	7	0	9	1	3	344	3	0	350	0	1	256	2	0	259	0	623
3:30PM	7	0	12	0	19	0	2	0	2	0	4	0	1	365	0	0	366	0	0	272	6	0	278	0	667
Total	16	0	21	0	37	1	9	0	24	0	33	1	9	1385	5	0	1399	0	7	1075	13	0	1095	0	2564
% Approach	43.2%	0%	56.8%	0%	-	-	27.3%	0%	72.7%	0%	-	-	0.6%	99.0%	0.4%	0%	-	-	0.6%	98.2%	1.2%	0%	-	-	-
% Total	0.6%	0%	0.8%	0%	1.4%	-	0.4%	0%	0.9%	0%	1.3%	-	0.4%	54.0%	0.2%	0%	54.6%	-	0.3%	41.9%	0.5%	0%	42.7%	-	-
PHF	0.571	-	0.438	-	0.487	-	0.563	-	0.750	-	0.688	-	0.563	0.914	0.417	-	0.920	-	0.583	0.911	0.542	-	0.909	-	0.961
Lights and Motorcycles	13	0	17	0	30	-	5	0	13	0	18	-	8	1123	1	0	1132	-	4	801	6	0	811	-	1991
% Lights and Motorcycles	81.3%	0%	81.0%	0%	81.1%	-	55.6%	0%	54.2%	0%	54.5%	-	88.9%	81.1%	20.0%	0%	80.9%	-	57.1%	74.5%	46.2%	0%	74.1%	-	77.7%
Heavy	3	0	4	0	7	-	4	0	11	0	15	-	1	262	4	0	267	-	3	274	7	0	284	-	573
% Heavy	18.8%	0%	19.0%	0%	18.9%	-	44.4%	0%	45.8%	0%	45.5%	-	11.1%	18.9%	80.0%	0%	19.1%	-	42.9%	25.5%	53.8%	0%	25.9%	-	22.3%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Rohr Road**

2578 - Alum Creek Dr & Rohr Rd - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978970, Location: 39.843947, -82.935968, Site Code: 2578



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rohr Rd Eastbound							Rohr Rd Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							Int
	L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		
2022-08-16 12:00AM	24	2	3	0	29	0		1	7	24	0	32	0		2	109	2	0	113	0		8	27	8	0	43	0	217	
12:15AM	12	5	6	0	23	0		1	1	12	0	14	0		7	42	1	0	50	0		4	15	7	0	26	0	113	
12:30AM	9	6	4	0	19	0		1	6	10	0	17	0		5	24	1	0	30	0		6	26	2	0	34	0	100	
12:45AM	6	3	4	0	13	0		0	5	7	0	12	0		6	13	0	0	19	0		4	23	4	1	32	0	76	
Hourly Total	51	16	17	0	84	0		3	19	53	0	75	0		20	188	4	0	212	0		22	91	21	1	135	0	506	
1:00AM	10	5	6	0	21	0		1	6	11	0	18	0		4	27	4	0	35	0		5	27	6	0	38	0	112	
1:15AM	3	4	2	0	9	0		1	3	4	0	8	0		5	24	0	0	29	0		6	12	8	0	26	0	72	
1:30AM	7	2	5	0	14	0		1	3	10	0	14	0		3	19	0	0	22	0		3	20	4	1	28	0	78	
1:45AM	4	0	3	0	7	0		0	2	4	0	6	0		3	28	0	0	31	0		5	9	3	0	17	0	61	
Hourly Total	24	11	16	0	51	0		3	14	29	0	46	0		15	98	4	0	117	0		19	68	21	1	109	0	323	
2:00AM	15	11	3	0	29	0		0	7	16	0	23	0		5	48	0	0	53	0		5	13	10	0	28	0	133	
2:15AM	8	3	4	0	15	0		0	4	8	0	12	0		2	22	1	0	25	0		7	16	9	1	33	0	85	
2:30AM	8	2	1	0	11	0		0	7	11	0	18	0		2	57	4	0	63	0		4	15	7	0	26	0	118	
2:45AM	8	1	1	0	10	0		1	1	8	0	10	0		7	15	0	0	22	0		11	24	7	0	42	0	84	
Hourly Total	39	17	9	0	65	0		1	19	43	0	63	0		16	142	5	0	163	0		27	68	33	1	129	0	420	
3:00AM	8	7	3	0	18	0		0	2	18	0	20	0		2	18	0	0	20	0		2	36	7	0	45	0	103	
3:15AM	8	0	3	0	11	0		0	3	6	0	9	0		0	21	3	0	24	0		10	26	5	0	41	0	85	
3:30AM	12	1	4	0	17	0		0	6	16	0	22	0		5	122	10	0	137	0		18	42	10	0	70	0	246	
3:45AM	6	2	5	0	13	0		1	4	10	0	15	0		1	32	6	0	39	0		21	54	9	0	84	0	151	
Hourly Total	34	10	15	0	59	0		1	15	50	0	66	0		8	193	19	0	220	0		51	158	31	0	240	0	585	
4:00AM	21	7	2	0	30	0		3	1	21	0	25	0		5	51	3	0	59	0		11	55	6	0	72	0	186	
4:15AM	5	5	2	0	12	0		1	7	19	0	27	0		4	45	4	0	53	0		15	65	12	0	92	0	184	
4:30AM	5	6	8	0	19	0		12	14	42	0	68	0		4	47	4	0	55	0		27	115	22	0	164	0	306	
4:45AM	10	6	9	0	25	0		4	18	15	0	37	0		4	48	3	0	55	0		29	157	17	0	203	0	320	
Hourly Total	41	24	21	0	86	0		20	40	97	0	157	0		17	191	14	0	222	0		82	392	57	0	531	0	996	
5:00AM	7	10	7	0	24	0		7	15	30	0	52	0		7	71	4	0	82	0		35	74	22	0	131	0	289	
5:15AM	11	9	6	0	26	0		8	14	25	0	47	0		8	57	5	0	70	0		65	134	35	0	234	0	377	
5:30AM	13	17	8	0	38	0		7	21	26	0	54	0		7	60	8	0	75	0		89	232	52	0	373	0	540	
5:45AM	19	28	12	0	59	0		11	23	48	0	82	0		9	91	10	0	110	0		109	285	58	0	452	0	703	
Hourly Total	50	64	33	0	147	0		33	73	129	0	235	0		31	279	27	0	337	0		298	725	167	0	1190	0	1909	
6:00AM	18	11	14	0	43	0		1	23	34	0	58	0		10	109	8	0	127	1		46	173	45	0	264	0	492	
6:15AM	13	15	16	0	44	0		4	35	24	0	63	0		8	102	6	0	116	0		55	185	51	0	291	0	514	
6:30AM	23	21	20	0	64	0		10	32	26	0	68	0		8	147	13	0	168	0		79	197	55	0	331	0	631	
6:45AM	17	22	8	0	47	1		5	32	43	0	80	0		20	155	10	0	185	0		99	224	77	0	400	0	712	
Hourly Total	71	69	58	0	198	1		20	122	127	0	269	0		46	513	37	0	596	1		279	779	228	0	1286	0	2349	
7:00AM	28	11	12	0	51	0		3	29	52	0	84	0		7	118	9	0	134	0		61	141	36	0	238	0	507	
7:15AM	28	17	17	0	62	0		9	26	25	0	60	0		8	139	7	0	154	0		47	169	31	0	247	0	523	
7:30AM	24	10	12	0	46	0		4	23	35	0	62	0		8	154	5	0	167	0		52	173	53	0	278	0	553	
7:45AM	16	11	17	0	44	0		4	27	39	0	70	0		10	117	5	0	132	0		91	224	66	0	381	0	627	
Hourly Total	96	49	58	0	203	0		20	105	151	0	276	0		33	528	26	0	587	0		251	707	186	0	1144	0	2210	
8:00AM	21	12	10	0	43	0		7	27	18	0	52	0		10	112	4	0	126	0		64	173	25	0	262	0	483	
8:15AM	25	13	12	0	50	0		6	11	19	0	36	0		10	80	5	0	95	0		51	149	44	0	244	0	425	
8:30AM	20	6	4	0	30	0		2	10	39	0	51	0		4	98	4	0	106	0		42	140	22	0	204	0	391	
8:45AM	21	6	10	0	37	0		4	14	23	0	41	0		10	77	10	0	97	0		45	157	28	0	230	0	405	
Hourly Total	87	37	36	0	160	0		19	62	99	0	180	0		34	367	23	0	424	0		202	619	119	0	940	0	1704	
9:00AM	26	5	13	0	44	0		2	13	30	0	45	0		10	98	5	0	113	0		35	116	26	0	177	0	379	
9:15AM	23	12	14	0	49	0		7	14	32	0	53	0		10	94	7	0	111	0		22	93	27	0	142	0	355	
9:30AM	24	5	12	0	41	0		5	19	38	0	62	0		9	75	5	0	89	0		29	113	23	0	165	0	357	
9:45AM	26	15	7	0	48	0		8	24	26	0	58	0		10	67	7	0	84	0		35	123	20	0	178	0	368	
Hourly Total	99	37	46	0	182	0		22	70	126	0	218	0		39	334	24	0	397	0		121	445	96	0	662	0	1459	
10:00AM	24	12	15	0	51	0		2	16	24	0	42	0		12	84	1	0	97	0		30	94	23	0	147	0	337	
10:15AM	23	6	9	0	38	0		6	17	35	0	58	0		10	86	2	0	98	0		36	88	21	0	145	0	339	
10:30AM	23	7	13	0	43	0		3	13	34	0	50	0		13	94	3	0	110	0		33	82	23	0	138	0	341	
10:45AM	24	12	16	0	52	0		3	12	35	0	50	0		17	96	6	0	119	0		31	99	26	0	156	0	377	
Hourly Total	94	37	53	0	184	0		14	58	128	0	200	0		52	360	12	0	424	0		130	363	93	0	586	0	1394	
11:00AM	26	17	11	0	54	1		7	26	43	0	76	0		16	125	8	0	149	1		37	111	20	0	168	0	447	

Leg Direction	Rohr Rd Eastbound						Rohr Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
11:15AM	22	12	12	0	46	0	8	16	37	0	61	0	14	102	8	0	124	0	30	104	31	0	165	0	396
11:30AM	36	16	15	0	67	0	2	30	44	0	76	0	15	105	7	0	127	0	44	104	36	0	184	0	454
11:45AM	23	16	13	0	52	0	3	24	42	0	69	0	19	112	5	0	136	0	42	118	28	0	188	0	445
Hourly Total	107	61	51	0	219	1	20	96	166	0	282	0	64	444	28	0	536	1	153	437	115	0	705	0	1742
12:00PM	36	16	26	0	78	1	10	28	46	0	84	0	34	136	7	0	177	1	34	100	38	0	172	0	511
12:15PM	28	23	32	0	83	0	3	24	42	0	69	0	19	125	10	0	154	0	37	103	25	0	165	0	471
12:30PM	30	14	19	0	63	0	5	25	43	0	73	0	13	119	6	0	138	0	35	106	40	0	181	0	455
12:45PM	30	15	11	0	56	0	7	12	41	0	60	0	9	104	5	0	118	0	30	106	35	0	171	0	405
Hourly Total	124	68	88	0	280	1	25	89	172	0	286	0	75	484	28	0	587	1	136	415	138	0	689	0	1842
1:00PM	23	19	15	0	57	0	3	24	42	0	69	0	12	119	2	0	133	0	47	103	31	0	181	0	440
1:15PM	24	12	18	0	54	0	4	18	37	0	59	0	12	109	5	0	126	0	47	125	34	0	206	0	445
1:30PM	24	16	9	0	49	0	9	19	51	0	79	0	9	132	4	0	145	0	50	111	37	0	198	0	471
1:45PM	27	16	12	0	55	0	8	15	42	0	65	0	16	112	9	0	137	0	72	143	37	0	252	0	509
Hourly Total	98	63	54	0	215	0	24	76	172	0	272	0	49	472	20	0	541	0	216	482	139	0	837	0	1865
2:00PM	34	12	9	0	55	0	7	32	83	0	122	0	9	122	9	0	140	0	49	131	35	0	215	0	532
2:15PM	30	15	13	0	58	0	12	13	84	0	109	0	13	161	9	0	183	0	34	132	22	0	188	0	538
2:30PM	40	32	17	0	89	0	14	36	82	0	132	0	15	199	9	0	223	0	44	172	41	0	257	0	701
2:45PM	34	16	17	0	67	0	12	24	52	0	88	0	21	155	10	0	186	0	50	200	37	0	287	0	628
Hourly Total	138	75	56	0	269	0	45	105	301	0	451	0	58	637	37	0	732	0	177	635	135	0	947	0	2399
3:00PM	43	34	15	0	92	0	4	39	91	0	134	0	19	222	10	0	251	1	35	138	29	0	202	0	679
3:15PM	35	20	19	0	74	1	11	22	51	0	84	0	8	188	17	0	213	0	53	165	37	0	255	0	626
3:30PM	72	45	14	0	131	1	10	34	86	0	130	2	10	239	6	0	255	0	63	182	36	0	281	0	797
3:45PM	29	26	15	0	70	2	10	16	51	0	77	0	17	172	16	0	205	0	70	188	41	0	299	0	651
Hourly Total	179	125	63	0	367	4	35	111	279	0	425	2	54	821	49	0	924	1	221	673	143	0	1037	0	2753
4:00PM	32	28	17	0	77	0	14	36	77	0	127	0	11	179	4	0	194	0	54	158	33	0	245	0	643
4:15PM	28	17	10	0	55	0	18	27	54	0	99	0	7	164	7	0	178	0	42	169	30	0	241	0	573
4:30PM	51	39	12	0	102	0	6	30	79	0	115	0	13	252	6	0	271	0	70	179	32	0	281	0	769
4:45PM	40	10	15	0	65	0	16	23	46	0	85	1	4	203	7	0	214	0	65	180	27	0	272	0	636
Hourly Total	151	94	54	0	299	0	54	116	256	0	426	1	35	798	24	0	857	0	231	686	122	0	1039	0	2621
5:00PM	39	21	15	0	75	0	6	31	52	0	89	0	14	218	10	0	242	0	65	136	33	0	234	1	640
5:15PM	25	16	10	0	51	0	3	7	41	0	51	0	10	148	10	0	168	0	54	118	25	0	197	1	467
5:30PM	43	19	11	0	73	0	6	24	72	0	102	0	9	148	4	0	161	0	57	111	21	0	189	0	525
5:45PM	20	13	5	0	38	0	6	9	37	0	52	0	9	116	3	0	128	0	64	128	17	0	209	0	427
Hourly Total	127	69	41	0	237	0	21	71	202	0	294	0	42	630	27	0	699	0	240	493	96	0	829	2	2059
6:00PM	25	12	13	0	50	0	13	22	50	0	85	0	9	114	5	0	128	0	44	89	13	0	146	0	409
6:15PM	16	7	10	0	33	0	5	14	29	0	48	0	5	93	7	0	105	0	46	99	16	0	161	0	347
6:30PM	24	8	5	0	37	0	2	10	32	0	44	0	10	96	6	0	112	0	31	91	17	0	139	0	332
6:45PM	18	6	8	0	32	0	0	11	26	0	37	0	9	82	2	0	93	0	33	86	15	1	135	0	297
Hourly Total	83	33	36	0	152	0	20	57	137	0	214	0	33	385	20	0	438	0	154	365	61	1	581	0	1385
7:00PM	23	8	6	0	37	0	3	8	48	0	59	0	8	67	1	0	76	0	22	65	12	0	99	0	271
7:15PM	19	6	7	0	32	0	1	9	21	0	31	0	5	62	4	0	71	0	22	67	11	0	100	0	234
7:30PM	19	4	5	0	28	0	5	6	19	0	30	0	6	63	0	0	69	0	19	55	16	0	90	0	217
7:45PM	19	4	7	0	30	0	0	6	18	0	24	0	5	60	4	0	69	0	14	52	16	0	82	0	205
Hourly Total	80	22	25	0	127	0	9	29	106	0	144	0	24	252	9	0	285	0	77	239	55	0	371	0	927
8:00PM	20	6	11	0	37	0	1	6	15	0	22	0	6	73	0	0	79	0	12	57	11	0	80	2	218
8:15PM	13	6	4	0	23	0	1	5	18	0	24	0	6	69	1	0	76	0	19	76	9	0	104	0	227
8:30PM	14	9	6	0	29	0	0	8	22	0	30	0	6	46	3	0	55	0	13	52	14	0	79	2	193
8:45PM	20	5	7	0	32	0	1	9	12	0	22	0	3	47	1	0	51	0	16	61	15	0	92	0	197
Hourly Total	67	26	28	0	121	0	3	28	67	0	98	0	21	235	5	0	261	0	60	246	49	0	355	4	835
9:00PM	14	8	9	0	31	0	3	7	15	0	25	0	8	46	3	0	57	0	8	66	7	0	81	0	194
9:15PM	15	11	4	0	30	0	2	16	12	0	30	0	4	54	3	0	61	0	14	46	12	0	72	0	193
9:30PM	9	4	7	0	20	0	0	5	9	0	14	0	6	72	0	0	78	0	14	72	12	0	98	0	210
9:45PM	6	2	7	0	15	0	1	9	23	0	33	0	4	50	4	0	58	0	12	54	14	0	80	0	186
Hourly Total	44	25	27	0	96	0	6	37	59	0	102	0	22	222	10	0	254	0	48	238	45	0	331	0	783
10:00PM	25	8	6	0	39	0	3	12	40	0	55	0	3	56	1	0	60	0	9	47	6	0	62	0	216
10:15PM	15	16	2	0	33	0	0	9	30	0	39	0	4	40	1	0	45	0	14	47	13	0	74	0	191
10:30PM	11	2	8	0	21	0	2	6	19	0	27	0	1	45	0	0	46	0	15	54	15	0	84	0	178
10:45PM	9	5	7	1	22	0	0	3	14	0	17	0	3	41	3	0	47	0	15	53	15	0	83	0	169
Hourly Total	60	31	23	1	115	0	5	30	103	0	138	0	11	182	5	0	198	0	53	201	49	0	303	0	754
11:00PM	8	5	5	0	18	0	3	16	30	0	49	0	6	44	1	0	51	0	8	33	12	0	53	0	171
11:15PM	15	6	3	0	24	0	1	6	6	0	13	0	1	34	0	0	35	0	8	29	9	0	46	0	118
11:30PM	7	9	2	0	18	0	1	8	13	0	22	0	3	116	2	0	121	0	10	28	6	0	44	0	205
11:45PM	8	6	5	0	19	0	0	4	9	0	13	0	8	106	3	0	117	0	7	23	12	0	42	0	191

Leg Direction	Rohr Rd Eastbound							Rohr Rd Westbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound										
Time	L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*	Int
Hourly Total	38	26	15	0	79	0		5	34	58	0	97	0		18	300	6	0	324	0		33	113	39	0	185	0	685
Total	1982	1089	923	1	3995	7		428	1476	3110	0	5014	3		817	9055	463	0	10335	4		3281	9638	2238	4	15161	6	34505
% Approach	49.6%	27.3%	23.1%	0%	-	-		8.5%	29.4%	62.0%	0%	-	-		7.9%	87.6%	4.5%	0%	-	-		21.6%	63.6%	14.8%	0%	-	-	-
% Total	5.7%	3.2%	2.7%	0%	11.6%	-		1.2%	4.3%	9.0%	0%	14.5%	-		2.4%	26.2%	1.3%	0%	30.0%	-		9.5%	27.9%	6.5%	0%	43.9%	-	-
Lights and Motorcycles	1113	947	710	1	2771	-		340	1148	2148	0	3636	-		520	7019	334	0	7873	-		2272	7442	1517	1	11232	-	25512
% Lights and Motorcycles	56.2%	87.0%	76.9%	100%	69.4%	-		79.4%	77.8%	69.1%	0%	72.5%	-		63.6%	77.5%	72.1%	0%	76.2%	-		69.2%	77.2%	67.8%	25.0%	74.1%	-	73.9%
Heavy	869	142	213	0	1224	-		88	328	962	0	1378	-		297	2036	129	0	2462	-		1009	2196	721	3	3929	-	8993
% Heavy	43.8%	13.0%	23.1%	0%	30.6%	-		20.6%	22.2%	30.9%	0%	27.5%	-		36.4%	22.5%	27.9%	0%	23.8%	-		30.8%	22.8%	32.2%	75.0%	25.9%	-	26.1%
Pedestrians	-	-	-	-	-	7		-	-	-	-	-	3		-	-	-	-	-	4		-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	100%		-	-	-	-	-	100%		-	-	-	-	-	100%		-	-	-	-	-	100%	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2578 - Alum Creek Dr & Rohr Rd - TMC

Tue Aug 16, 2022

AM Peak (6:30 AM - 7:30 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978970, Location: 39.843947, -82.935968, Site Code: 2578



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rohr Rd Eastbound						Rohr Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16 6:30AM	23	21	20	0	64	0	10	32	26	0	68	0	8	147	13	0	168	0	79	197	55	0	331	0	631
6:45AM	17	22	8	0	47	1	5	32	43	0	80	0	20	155	10	0	185	0	99	224	77	0	400	0	712
7:00AM	28	11	12	0	51	0	3	29	52	0	84	0	7	118	9	0	134	0	61	141	36	0	238	0	507
7:15AM	28	17	17	0	62	0	9	26	25	0	60	0	8	139	7	0	154	0	47	169	31	0	247	0	523
Total	96	71	57	0	224	1	27	119	146	0	292	0	43	559	39	0	641	0	286	731	199	0	1216	0	2373
% Approach	42.9%	31.7%	25.4%	0%	-	-	9.2%	40.8%	50.0%	0%	-	-	6.7%	87.2%	6.1%	0%	-	-	23.5%	60.1%	16.4%	0%	-	-	-
% Total	4.0%	3.0%	2.4%	0%	9.4%	-	1.1%	5.0%	6.2%	0%	12.3%	-	1.8%	23.6%	1.6%	0%	27.0%	-	12.1%	30.8%	8.4%	0%	51.2%	-	-
PHF	0.857	0.807	0.713	-	0.875	-	0.675	0.930	0.702	-	0.869	-	0.538	0.902	0.750	-	0.866	-	0.722	0.816	0.646	-	0.760	-	0.833
Lights and Motorcycles	53	61	49	0	163	-	26	108	111	0	245	-	29	469	32	0	530	-	249	640	168	0	1057	-	1995
% Lights and Motorcycles	55.2%	85.9%	86.0%	0%	72.8%	-	96.3%	90.8%	76.0%	0%	83.9%	-	67.4%	83.9%	82.1%	0%	82.7%	-	87.1%	87.6%	84.4%	0%	86.9%	-	84.1%
Heavy	43	10	8	0	61	-	1	11	35	0	47	-	14	90	7	0	111	-	37	91	31	0	159	-	378
% Heavy	44.8%	14.1%	14.0%	0%	27.2%	-	3.7%	9.2%	24.0%	0%	16.1%	-	32.6%	16.1%	17.9%	0%	17.3%	-	12.9%	12.4%	15.6%	0%	13.1%	-	15.9%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2578 - Alum Creek Dr & Rohr Rd - TMC

Tue Aug 16, 2022

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978970, Location: 39.843947, -82.935968, Site Code: 2578



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rohr Rd Eastbound							Rohr Rd Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int				
2022-08-16 11:45AM	23	16	13	0	52	0	3	24	42	0	69	0	19	112	5	0	136	0	42	118	28	0	188	0	445				
12:00PM	36	16	26	0	78	1	10	28	46	0	84	0	34	136	7	0	177	1	34	100	38	0	172	0	511				
12:15PM	28	23	32	0	83	0	3	24	42	0	69	0	19	125	10	0	154	0	37	103	25	0	165	0	471				
12:30PM	30	14	19	0	63	0	5	25	43	0	73	0	13	119	6	0	138	0	35	106	40	0	181	0	455				
Total	117	69	90	0	276	1	21	101	173	0	295	0	85	492	28	0	605	1	148	427	131	0	706	0	1882				
% Approach	42.4%	25.0%	32.6%	0%	-	-	7.1%	34.2%	58.6%	0%	-	-	14.0%	81.3%	4.6%	0%	-	-	21.0%	60.5%	18.6%	0%	-	-	-				
% Total	6.2%	3.7%	4.8%	0%	14.7%	-	1.1%	5.4%	9.2%	0%	15.7%	-	4.5%	26.1%	1.5%	0%	32.1%	-	7.9%	22.7%	7.0%	0%	37.5%	-	-				
PHF	0.813	0.750	0.703	-	0.831	-	0.525	0.902	0.940	-	0.878	-	0.625	0.904	0.700	-	0.855	-	0.881	0.905	0.819	-	0.939	-	0.921				
Lights and Motorcycles	69	57	71	0	197	-	17	72	98	0	187	-	62	326	16	0	404	-	72	269	82	0	423	-	1211				
% Lights and Motorcycles	59.0%	82.6%	78.9%	0%	71.4%	-	81.0%	71.3%	56.6%	0%	63.4%	-	72.9%	66.3%	57.1%	0%	66.8%	-	48.6%	63.0%	62.6%	0%	59.9%	-	64.3%				
Heavy	48	12	19	0	79	-	4	29	75	0	108	-	23	166	12	0	201	-	76	158	49	0	283	-	671				
% Heavy	41.0%	17.4%	21.1%	0%	28.6%	-	19.0%	28.7%	43.4%	0%	36.6%	-	27.1%	33.7%	42.9%	0%	33.2%	-	51.4%	37.0%	37.4%	0%	40.1%	-	35.7%				
Pedestrians	-	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	0	-				
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-				

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2578 - Alum Creek Dr & Rohr Rd - TMC

Tue Aug 16, 2022

PM Peak (3 PM - 4 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978970, Location: 39.843947, -82.935968, Site Code: 2578



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Rohr Rd Eastbound						Rohr Rd Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16																									
3:00PM	43	34	15	0	92	0	4	39	91	0	134	0	19	222	10	0	251	1	35	138	29	0	202	0	679
3:15PM	35	20	19	0	74	1	11	22	51	0	84	0	8	188	17	0	213	0	53	165	37	0	255	0	626
3:30PM	72	45	14	0	131	1	10	34	86	0	130	2	10	239	6	0	255	0	63	182	36	0	281	0	797
3:45PM	29	26	15	0	70	2	10	16	51	0	77	0	17	172	16	0	205	0	70	188	41	0	299	0	651
Total	179	125	63	0	367	4	35	111	279	0	425	2	54	821	49	0	924	1	221	673	143	0	1037	0	2753
% Approach	48.8%	34.1%	17.2%	0%	-	-	8.2%	26.1%	65.6%	0%	-	-	5.8%	88.9%	5.3%	0%	-	-	21.3%	64.9%	13.8%	0%	-	-	-
% Total	6.5%	4.5%	2.3%	0%	13.3%	-	1.3%	4.0%	10.1%	0%	15.4%	-	2.0%	29.8%	1.8%	0%	33.6%	-	8.0%	24.4%	5.2%	0%	37.7%	-	-
PHF	0.622	0.694	0.829	-	0.700	-	0.795	0.712	0.766	-	0.793	-	0.711	0.859	0.721	-	0.906	-	0.789	0.895	0.872	-	0.867	-	0.864
Lights and Motorcycles	126	112	47	0	285	-	28	90	217	0	335	-	32	678	38	0	748	-	152	506	95	0	753	-	2121
% Lights and Motorcycles	70.4%	89.6%	74.6%	0%	77.7%	-	80.0%	81.1%	77.8%	0%	78.8%	-	59.3%	82.6%	77.6%	0%	81.0%	-	68.8%	75.2%	66.4%	0%	72.6%	-	77.0%
Heavy	53	13	16	0	82	-	7	21	62	0	90	-	22	143	11	0	176	-	69	167	48	0	284	-	632
% Heavy	29.6%	10.4%	25.4%	0%	22.3%	-	20.0%	18.9%	22.2%	0%	21.2%	-	40.7%	17.4%	22.4%	0%	19.0%	-	31.2%	24.8%	33.6%	0%	27.4%	-	23.0%
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Spiegel Drive**

3086 - Alum Creek Dr & Spiegel Dr - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978975, Location: 39.837374, -82.933478, Site Code: 3086



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Spiegel Dr Eastbound						Spiegel Dr Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16 12:00AM	46	7	15	0	68	0	1	0	7	0	8	0	1	60	0	0	61	0	1	27	2	0	30	0	167
12:15AM	6	0	1	0	7	0	0	0	3	0	3	0	2	37	0	0	39	0	2	18	3	0	23	0	72
12:30AM	6	0	0	0	6	0	0	0	5	0	5	0	2	20	0	0	22	0	3	24	2	0	29	0	62
12:45AM	0	0	1	0	1	0	0	0	2	0	2	0	1	16	0	0	17	0	3	21	4	0	28	0	48
Hourly Total	58	7	17	0	82	0	1	0	17	0	18	0	6	133	0	0	139	0	9	90	11	0	110	0	349
1:00AM	2	0	1	0	3	0	0	0	19	0	19	0	0	19	0	0	19	0	8	24	2	0	34	0	75
1:15AM	6	0	1	0	7	0	0	0	2	0	2	0	0	20	0	0	20	0	2	13	2	0	17	0	46
1:30AM	0	0	0	0	0	0	0	1	1	0	2	0	2	19	0	0	21	0	1	25	1	0	27	0	50
1:45AM	2	0	0	0	2	0	0	0	1	0	1	0	0	28	0	0	28	0	1	11	1	0	13	0	44
Hourly Total	10	0	2	0	12	0	0	1	23	0	24	0	2	86	0	0	88	0	12	73	6	0	91	0	215
2:00AM	3	0	1	0	4	0	0	0	4	0	4	0	1	44	0	0	45	0	3	9	3	0	15	0	68
2:15AM	10	0	3	0	13	0	0	0	2	0	2	0	1	16	0	0	17	0	1	19	1	0	21	0	53
2:30AM	51	5	4	0	60	0	0	0	0	0	0	0	0	12	0	0	12	0	0	13	3	0	16	0	88
2:45AM	3	1	1	0	5	0	0	0	3	0	3	0	1	12	0	0	13	0	1	24	0	0	25	0	46
Hourly Total	67	6	9	0	82	0	0	0	9	0	9	0	3	84	0	0	87	0	5	65	7	0	77	0	255
3:00AM	1	0	2	0	3	0	0	1	5	0	6	0	2	17	0	0	19	0	2	30	3	0	35	0	63
3:15AM	10	0	1	0	11	0	0	0	3	0	3	0	1	13	2	0	16	0	1	29	3	0	33	0	63
3:30AM	46	2	5	0	53	0	0	0	2	0	2	0	3	93	0	0	96	0	2	35	5	0	42	0	193
3:45AM	7	0	4	0	11	0	0	0	0	0	0	0	0	31	0	0	31	0	2	48	8	0	58	0	100
Hourly Total	64	2	12	0	78	0	0	1	10	0	11	0	6	154	2	0	162	0	7	142	19	0	168	0	419
4:00AM	3	0	0	0	3	0	0	0	0	0	0	0	3	53	0	0	56	0	4	48	7	0	59	0	118
4:15AM	4	0	0	0	4	0	0	0	0	0	0	0	3	47	1	0	51	0	7	39	19	0	65	0	120
4:30AM	6	1	0	0	7	0	0	0	0	0	0	0	10	50	0	0	60	0	19	70	42	0	131	0	198
4:45AM	9	1	0	0	10	0	0	3	0	0	3	0	12	37	2	0	51	0	46	64	69	0	179	0	243
Hourly Total	22	2	0	0	24	0	0	3	0	0	3	0	28	187	3	0	218	0	76	221	137	0	434	0	679
5:00AM	8	1	1	0	10	0	0	2	16	0	18	0	3	57	4	0	64	0	14	56	13	0	83	0	175
5:15AM	11	0	1	0	12	0	1	2	5	0	8	0	8	53	4	0	65	0	29	104	19	0	152	0	237
5:30AM	5	2	1	0	8	0	2	1	15	0	18	0	13	57	6	0	76	0	47	135	40	1	223	0	325
5:45AM	10	3	9	0	22	0	0	6	11	0	17	0	27	87	4	0	118	0	68	170	79	0	317	0	474
Hourly Total	34	6	12	0	52	0	3	11	47	0	61	0	51	254	18	0	323	0	158	465	151	1	775	0	1211
6:00AM	12	2	6	0	20	0	1	3	18	0	22	0	13	96	9	0	118	1	66	109	18	0	193	0	353
6:15AM	13	3	4	0	20	0	0	4	6	0	10	0	18	95	7	0	120	2	31	134	44	0	209	0	359
6:30AM	12	0	2	0	14	0	0	6	7	0	13	0	15	161	5	1	182	0	18	136	56	0	210	1	419
6:45AM	11	1	2	0	14	0	1	6	1	0	8	0	12	180	4	0	196	0	32	171	59	0	262	0	480
Hourly Total	48	6	14	0	68	0	2	19	32	0	53	0	58	532	25	1	616	3	147	550	177	0	874	1	1611
7:00AM	10	0	4	0	14	0	0	1	5	0	6	0	7	144	5	0	156	1	11	115	30	0	156	2	332
7:15AM	6	0	1	0	7	0	1	2	7	0	10	0	5	145	5	0	155	1	18	150	32	0	200	1	372
7:30AM	6	0	5	0	11	0	1	4	8	0	13	0	3	147	4	0	154	0	30	132	27	0	189	0	367
7:45AM	6	3	1	0	10	0	1	4	5	0	10	0	4	129	4	0	137	1	37	166	43	1	247	0	404
Hourly Total	28	3	11	0	42	0	3	11	25	0	39	0	19	565	18	0	602	3	96	563	132	1	792	3	1475
8:00AM	5	1	0	0	6	0	0	2	6	0	8	0	7	126	4	0	137	1	38	127	34	0	199	0	350
8:15AM	7	2	6	0	15	0	0	3	8	0	11	0	5	76	8	0	89	0	30	112	36	0	178	0	293
8:30AM	15	1	7	0	23	0	0	1	3	0	4	0	3	98	2	0	103	0	17	105	24	2	148	0	278
8:45AM	7	0	4	0	11	0	1	3	4	0	8	0	4	84	3	0	91	0	26	116	26	0	168	0	278
Hourly Total	34	4	17	0	55	0	1	9	21	0	31	0	19	384	17	0	420	1	111	460	120	2	693	0	1199
9:00AM	13	1	6	0	20	0	4	0	8	0	12	0	7	95	5	0	107	0	9	100	24	0	133	0	272
9:15AM	16	4	7	0	27	0	2	0	5	0	7	0	2	85	4	0	91	0	9	98	16	0	123	0	248
9:30AM	10	1	2	0	13	0	1	3	8	0	12	1	5	72	5	0	82	0	6	98	26	0	130	2	237
9:45AM	9	0	1	0	10	0	0	0	2	0	2	0	3	77	0	0	80	0	12	110	25	1	148	0	240
Hourly Total	48	6	16	0	70	0	7	3	23	0	33	1	17	329	14	0	360	0	36	406	91	1	534	2	997
10:00AM	9	3	7	0	19	0	0	0	2	0	2	0	6	87	3	0	96	0	10	97	9	0	116	0	233
10:15AM	15	1	0	0	16	0	2	0	0	0	2	0	3	79	2	0	84	0	8	75	11	0	94	0	196
10:30AM	19	2	1	0	22	0	0	0	2	0	2	0	2	86	7	0	95	0	10	84	13	0	107	1	226
10:45AM	14	0	3	0	17	0	2	2	5	0	9	0	2	106	3	0	111	0	8	99	11	0	118	0	255
Hourly Total	57	6	11	0	74	0	4	2	9	0	15	0	13	358	15	0	386	0	36	355	44	0	435	1	910
11:00AM	23	1	11	0	35	0	0	1	13	0	14	0	5	115	8	0	128	0	10	98	22	0	130	0	307

Leg Direction	Spiegel Dr Eastbound						Spiegel Dr Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
11:15AM	15	1	5	0	21	0	2	4	11	0	17	0	5	91	3	0	99	0	9	108	15	0	132	0	269
11:30AM	21	1	5	0	27	0	1	2	5	0	8	0	6	107	5	0	118	0	14	86	20	0	120	1	273
11:45AM	16	2	6	0	24	0	5	0	10	0	15	0	10	117	4	0	131	0	12	103	18	0	133	0	303
Hourly Total	75	5	27	0	107	0	8	7	39	0	54	0	26	430	20	0	476	0	45	395	75	0	515	1	1152
12:00PM	28	1	14	0	43	0	2	4	25	0	31	0	8	126	4	0	138	0	14	110	17	0	141	0	353
12:15PM	15	1	3	0	19	0	0	1	10	0	11	0	6	123	7	1	137	0	21	97	21	1	140	0	307
12:30PM	18	1	2	0	21	0	1	1	13	0	15	0	2	106	5	1	114	0	22	94	20	0	136	0	286
12:45PM	11	0	5	0	16	0	0	3	16	0	19	0	6	100	4	0	110	0	25	86	19	0	130	0	275
Hourly Total	72	3	24	0	99	0	3	9	64	0	76	0	22	455	20	2	499	0	82	387	77	1	547	0	1221
1:00PM	19	0	5	0	24	0	1	0	16	0	17	0	5	103	5	0	113	0	12	99	13	0	124	0	278
1:15PM	13	1	8	0	22	0	0	2	16	0	18	0	11	117	5	0	133	0	14	105	22	1	142	0	315
1:30PM	25	2	4	0	31	0	1	6	4	0	11	0	6	111	7	0	124	0	16	95	27	0	138	0	304
1:45PM	20	1	4	0	25	0	0	2	10	0	12	0	6	112	5	0	123	0	24	105	31	0	160	0	320
Hourly Total	77	4	21	0	102	0	2	10	46	0	58	0	28	443	22	0	493	0	66	404	93	1	564	0	1217
2:00PM	26	3	7	0	36	0	3	2	11	0	16	0	6	116	4	0	126	0	19	106	23	0	148	0	326
2:15PM	24	0	14	0	38	0	0	5	43	0	48	0	8	119	3	0	130	0	29	121	20	0	170	0	386
2:30PM	43	5	15	0	63	0	6	2	53	0	61	0	4	143	7	0	154	0	37	142	13	0	192	0	470
2:45PM	15	5	9	0	29	0	7	4	62	0	73	0	6	134	6	0	146	0	59	147	28	1	235	0	483
Hourly Total	108	13	45	0	166	0	16	13	169	0	198	0	24	512	20	0	556	0	144	516	84	1	745	0	1665
3:00PM	26	0	9	0	35	0	7	13	86	0	106	0	5	145	6	0	156	0	23	109	33	0	165	0	462
3:15PM	57	14	33	0	104	0	5	7	12	0	24	0	13	148	3	0	164	0	15	151	38	0	204	0	496
3:30PM	105	26	61	0	192	0	2	3	21	0	26	0	3	165	4	0	172	2	7	158	32	0	197	0	587
3:45PM	24	8	17	0	49	0	1	5	21	0	27	0	4	124	3	0	131	0	14	190	36	0	240	0	447
Hourly Total	212	48	120	0	380	0	15	28	140	0	183	0	25	582	16	0	623	2	59	608	139	0	806	0	1992
4:00PM	33	3	12	0	48	0	2	3	23	0	28	0	4	147	0	0	151	0	11	140	22	0	173	0	400
4:15PM	45	8	17	0	70	0	3	1	11	0	15	0	5	111	3	0	119	4	13	166	23	1	203	0	407
4:30PM	51	7	18	0	76	0	0	2	15	0	17	0	7	206	5	0	218	0	7	166	30	0	203	0	514
4:45PM	30	2	9	0	41	0	1	3	21	0	25	1	10	157	4	0	171	0	6	182	37	1	226	0	463
Hourly Total	159	20	56	0	235	0	6	9	70	0	85	1	26	621	12	0	659	4	37	654	112	2	805	0	1784
5:00PM	24	4	9	0	37	0	6	4	64	0	74	0	3	161	3	0	167	0	4	132	12	0	148	0	426
5:15PM	29	4	5	0	38	0	2	0	27	0	29	0	1	107	3	0	111	0	5	131	8	0	144	0	322
5:30PM	20	3	2	0	25	0	1	0	16	0	17	0	0	131	1	0	132	0	11	111	4	0	126	0	300
5:45PM	13	3	3	0	19	0	0	0	13	0	13	0	0	106	1	0	107	0	11	120	9	0	140	0	279
Hourly Total	86	14	19	0	119	0	9	4	120	0	133	0	4	505	8	0	517	0	31	494	33	0	558	0	1327
6:00PM	12	0	3	0	15	0	5	0	23	0	28	0	0	90	4	0	94	0	13	94	8	0	115	0	252
6:15PM	11	0	3	0	14	0	0	1	19	0	20	0	2	80	2	0	84	0	14	98	5	1	118	0	236
6:30PM	9	1	1	0	11	0	0	0	12	0	12	0	0	86	3	0	89	0	19	68	4	0	91	0	203
6:45PM	16	2	0	0	18	0	1	2	15	0	18	0	0	66	1	0	67	0	18	72	5	0	95	0	198
Hourly Total	48	3	7	0	58	0	6	3	69	0	78	0	2	322	10	0	334	0	64	332	22	1	419	0	889
7:00PM	7	0	2	0	9	0	0	0	15	0	15	0	3	61	1	0	65	0	4	71	4	0	79	0	168
7:15PM	6	0	1	0	7	0	0	0	10	0	10	0	6	54	0	0	60	0	10	65	1	1	77	0	154
7:30PM	6	0	2	0	8	0	0	1	10	0	11	0	1	49	2	0	52	0	4	54	6	0	64	0	135
7:45PM	6	0	2	0	8	0	0	1	8	0	9	0	1	46	1	0	48	0	3	51	5	0	59	0	124
Hourly Total	25	0	7	0	32	0	0	2	43	0	45	0	11	210	4	0	225	0	21	241	16	1	279	0	581
8:00PM	5	2	1	0	8	0	3	1	17	0	21	0	1	72	2	0	75	0	3	63	6	0	72	0	176
8:15PM	3	0	3	0	6	0	0	0	8	0	8	1	2	57	1	0	60	0	7	66	8	0	81	0	155
8:30PM	4	0	4	0	8	0	1	0	2	0	3	0	4	58	1	0	63	1	2	52	5	0	59	0	133
8:45PM	7	0	2	0	9	0	0	0	2	0	2	0	2	35	2	0	39	0	4	72	7	0	83	0	133
Hourly Total	19	2	10	0	31	0	4	1	29	0	34	1	9	222	6	0	237	1	16	253	26	0	295	0	597
9:00PM	14	2	3	0	19	0	1	0	11	0	12	0	3	38	2	0	43	0	5	68	4	0	77	0	151
9:15PM	7	0	3	0	10	0	1	0	4	0	5	0	4	47	4	0	55	0	7	35	10	0	52	0	122
9:30PM	10	1	3	0	14	0	1	1	11	0	13	0	3	60	1	1	65	1	6	58	17	0	81	0	173
9:45PM	10	1	3	0	14	0	1	0	8	0	9	0	6	39	0	0	45	0	5	43	15	0	63	0	131
Hourly Total	41	4	12	0	57	0	4	1	34	0	39	0	16	184	7	1	208	1	23	204	46	0	273	0	577
10:00PM	6	0	4	0	10	0	0	2	3	0	5	0	4	53	1	0	58	0	5	46	5	0	56	0	129
10:15PM	7	0	2	0	9	0	1	0	4	0	5	0	2	39	0	0	41	0	4	45	5	0	54	0	109
10:30PM	8	0	4	0	12	0	2	0	6	0	8	0	1	39	0	0	40	0	5	52	6	0	63	0	123
10:45PM	9	0	5	0	14	0	0	0	3	0	3	0	1	33	0	0	34	0	7	44	6	0	57	0	108
Hourly Total	30	0	15	0	45	0	3	2	16	0	21	0	8	164	1	0	173	0	21	187	22	0	230	0	469
11:00PM	6	0	1	0	7	0	1	0	6	0	7	0	2	36	0	0	38	0	3	33	4	0	40	0	92
11:15PM	2	1	2	0	5	0	1	0	0	0	1	0	1	31	1	0	33	0	6	28	4	0	38	0	77
11:30PM	6	0	0	0	6	0	0	0	14	0	14	0	0	100	1	0	101	0	4	21	4	0	29	0	150
11:45PM	2	0	0	0	2	0	1	1	59	0	61	0	0	52	1	0	53	0	2	27	2	0	31	0	147

Leg Direction	Spiegel Dr Eastbound						Spiegel Dr Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
Hourly Total	16	1	3	0	20	0	3	1	79	0	83	0	3	219	3	0	225	0	15	109	14	0	138	0	466
Total	1438	165	487	0	2090	0	100	150	1134	0	1384	3	426	7935	261	4	8626	15	1317	8174	1654	12	11157	8	23257
% Approach	68.8%	7.9%	23.3%	0%	-	-	7.2%	10.8%	81.9%	0%	-	-	4.9%	92.0%	3.0%	0%	-	-	11.8%	73.3%	14.8%	0.1%	-	-	-
% Total	6.2%	0.7%	2.1%	0%	9.0%	-	0.4%	0.6%	4.9%	0%	6.0%	-	1.8%	34.1%	1.1%	0%	37.1%	-	5.7%	35.1%	7.1%	0.1%	48.0%	-	-
Lights and Motorcycles	1138	147	391	0	1676	-	78	127	868	0	1073	-	365	6033	125	4	6527	-	1033	6244	1299	12	8588	-	17864
% Lights and Motorcycles	79.1%	89.1%	80.3%	0%	80.2%	-	78.0%	84.7%	76.5%	0%	77.5%	-	85.7%	76.0%	47.9%	100%	75.7%	-	78.4%	76.4%	78.5%	100%	77.0%	-	76.8%
Heavy	300	18	96	0	414	-	22	23	266	0	311	-	61	1902	136	0	2099	-	284	1930	355	0	2569	-	5393
% Heavy	20.9%	10.9%	19.7%	0%	19.8%	-	22.0%	15.3%	23.5%	0%	22.5%	-	14.3%	24.0%	52.1%	0%	24.3%	-	21.6%	23.6%	21.5%	0%	23.0%	-	23.2%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	15	-	-	-	-	-	-	8
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-	-	-100%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3086 - Alum Creek Dr & Spiegel Dr - TMC

Tue Aug 16, 2022

AM Peak (6 AM - 7 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978975, Location: 39.837374, -82.933478, Site Code: 3086



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Spiegel Dr Eastbound						Spiegel Dr Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16																									
6:00AM	12	2	6	0	20	0	1	3	18	0	22	0	13	96	9	0	118	1	66	109	18	0	193	0	353
6:15AM	13	3	4	0	20	0	0	4	6	0	10	0	18	95	7	0	120	2	31	134	44	0	209	0	359
6:30AM	12	0	2	0	14	0	0	6	7	0	13	0	15	161	5	1	182	0	18	136	56	0	210	1	419
6:45AM	11	1	2	0	14	0	1	6	1	0	8	0	12	180	4	0	196	0	32	171	59	0	262	0	480
Total	48	6	14	0	68	0	2	19	32	0	53	0	58	532	25	1	616	3	147	550	177	0	874	1	1611
% Approach	70.6%	8.8%	20.6%	0%	-	-	3.8%	35.8%	60.4%	0%	-	-	9.4%	86.4%	4.1%	0.2%	-	-	16.8%	62.9%	20.3%	0%	-	-	-
% Total	3.0%	0.4%	0.9%	0%	4.2%	-	0.1%	1.2%	2.0%	0%	3.3%	-	3.6%	33.0%	1.6%	0.1%	38.2%	-	9.1%	34.1%	11.0%	0%	54.3%	-	-
PHF	0.923	0.500	0.583	-	0.850	-	0.500	0.792	0.444	-	0.602	-	0.806	0.739	0.694	0.250	0.786	-	0.557	0.804	0.750	-	0.834	-	0.839
Lights and Motorcycles	44	6	12	0	62	-	2	19	30	0	51	-	58	448	18	1	525	-	140	487	169	0	796	-	1434
% Lights and Motorcycles	91.7%	100%	85.7%	0%	91.2%	-	100%	100%	93.8%	0%	96.2%	-	100%	84.2%	72.0%	100%	85.2%	-	95.2%	88.5%	95.5%	0%	91.1%	-	89.0%
Heavy	4	0	2	0	6	-	0	0	2	0	2	-	0	84	7	0	91	-	7	63	8	0	78	-	177
% Heavy	8.3%	0%	14.3%	0%	8.8%	-	0%	0%	6.3%	0%	3.8%	-	0%	15.8%	28.0%	0%	14.8%	-	4.8%	11.5%	4.5%	0%	8.9%	-	11.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3086 - Alum Creek Dr & Spiegel Dr - TMC

Tue Aug 16, 2022

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978975, Location: 39.837374, -82.933478, Site Code: 3086



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Spiegel Dr Eastbound							Spiegel Dr Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int				
2022-08-16 11:45AM	16	2	6	0	24	0	5	0	10	0	15	0	10	117	4	0	131	0	12	103	18	0	133	0	303				
12:00PM	28	1	14	0	43	0	2	4	25	0	31	0	8	126	4	0	138	0	14	110	17	0	141	0	353				
12:15PM	15	1	3	0	19	0	0	1	10	0	11	0	6	123	7	1	137	0	21	97	21	1	140	0	307				
12:30PM	18	1	2	0	21	0	1	1	13	0	15	0	2	106	5	1	114	0	22	94	20	0	136	0	286				
Total	77	5	25	0	107	0	8	6	58	0	72	0	26	472	20	2	520	0	69	404	76	1	550	0	1249				
% Approach	72.0%	4.7%	23.4%	0%	-	-	11.1%	8.3%	80.6%	0%	-	-	5.0%	90.8%	3.8%	0.4%	-	-	12.5%	73.5%	13.8%	0.2%	-	-	-				
% Total	6.2%	0.4%	2.0%	0%	8.6%	-	0.6%	0.5%	4.6%	0%	5.8%	-	2.1%	37.8%	1.6%	0.2%	41.6%	-	5.5%	32.3%	6.1%	0.1%	44.0%	-	-				
PHF	0.688	0.625	0.446	-	0.622	-	0.400	0.375	0.580	-	0.581	-	0.650	0.937	0.714	0.500	0.942	-	0.784	0.918	0.905	0.250	0.975	-	0.885				
Lights and Motorcycles	57	4	11	0	72	-	5	6	43	0	54	-	24	314	11	2	351	-	44	262	51	1	358	-	835				
% Lights and Motorcycles	74.0%	80.0%	44.0%	0%	67.3%	-	62.5%	100%	74.1%	0%	75.0%	-	92.3%	66.5%	55.0%	100%	67.5%	-	63.8%	64.9%	67.1%	100%	65.1%	-	66.9%				
Heavy	20	1	14	0	35	-	3	0	15	0	18	-	2	158	9	0	169	-	25	142	25	0	192	-	414				
% Heavy	26.0%	20.0%	56.0%	0%	32.7%	-	37.5%	0%	25.9%	0%	25.0%	-	7.7%	33.5%	45.0%	0%	32.5%	-	36.2%	35.1%	32.9%	0%	34.9%	-	33.1%				
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0					
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

3086 - Alum Creek Dr & Spiegel Dr - TMC

Tue Aug 16, 2022

PM Peak (2:45 PM - 3:45 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978975, Location: 39.837374, -82.933478, Site Code: 3086



Provided by: Smart Services, Inc.

88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Spiegel Dr Eastbound							Spiegel Dr Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							Int
	L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		
2022-08-16 2:45PM	15	5	9	0	29	0		7	4	62	0	73	0		6	134	6	0	146	0		59	147	28	1	235	0		483
3:00PM	26	0	9	0	35	0		7	13	86	0	106	0		5	145	6	0	156	0		23	109	33	0	165	0		462
3:15PM	57	14	33	0	104	0		5	7	12	0	24	0		13	148	3	0	164	0		15	151	38	0	204	0		496
3:30PM	105	26	61	0	192	0		2	3	21	0	26	0		3	165	4	0	172	2		7	158	32	0	197	0		587
Total	203	45	112	0	360	0		21	27	181	0	229	0		27	592	19	0	638	2		104	565	131	1	801	0		2028
% Approach	56.4%	12.5%	31.1%	0%	-	-		9.2%	11.8%	79.0%	0%	-	-		4.2%	92.8%	3.0%	0%	-	-		13.0%	70.5%	16.4%	0.1%	-	-		-
% Total	10.0%	2.2%	5.5%	0%	17.8%	-		1.0%	1.3%	8.9%	0%	11.3%	-		1.3%	29.2%	0.9%	0%	31.5%	-		5.1%	27.9%	6.5%	0%	39.5%	-		-
PHF	0.483	0.433	0.459	-	0.469	-		0.750	0.519	0.526	-	0.540	-		0.519	0.897	0.792	-	0.927	-		0.441	0.894	0.862	0.250	0.852	-		0.864
Lights and Motorcycles	185	44	106	0	335	-		20	23	167	0	210	-		17	450	5	0	472	-		82	429	105	1	617	-		1634
% Lights and Motorcycles	91.1%	97.8%	94.6%	0%	93.1%	-		95.2%	85.2%	92.3%	0%	91.7%	-		63.0%	76.0%	26.3%	0%	74.0%	-		78.8%	75.9%	80.2%	100%	77.0%	-		80.6%
Heavy	18	1	6	0	25	-		1	4	14	0	19	-		10	142	14	0	166	-		22	136	26	0	184	-		394
% Heavy	8.9%	2.2%	5.4%	0%	6.9%	-		4.8%	14.8%	7.7%	0%	8.3%	-		37.0%	24.0%	73.7%	0%	26.0%	-		21.2%	24.1%	19.8%	0%	23.0%	-		19.4%
Pedestrians	-	-	-	-	-	0		-	-	-	-	-	0		-	-	-	-	-	2		-	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-100%		-	-	-	-	-	-	-	

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive and
Alum Creek Service Drive**

- Alum Creek Dr & Alum Creek Service Dr - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978978, Location: 39.833138, -82.933783, Site Code: ####



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
2022-08-16 12:00AM	0	0	0	0	0	0	61	0	61	0	38	0	0	38	0	99
12:15AM	0	0	0	0	0	0	39	0	39	0	20	0	0	20	0	59
12:30AM	0	0	0	0	0	0	22	0	22	0	22	0	0	22	0	44
12:45AM	0	0	0	0	0	0	16	0	16	0	23	0	0	23	0	39
Hourly Total	0	0	0	0	0	0	138	0	138	0	103	0	0	103	0	241
1:00AM	0	0	0	0	0	0	19	0	19	0	23	0	0	23	0	42
1:15AM	0	0	0	0	0	0	20	0	20	0	16	0	0	16	0	36
1:30AM	0	0	0	0	0	0	23	0	23	0	25	0	0	25	0	48
1:45AM	0	0	0	0	0	0	25	0	25	0	10	0	0	10	0	35
Hourly Total	0	0	0	0	0	0	87	0	87	0	74	0	0	74	0	161
2:00AM	0	0	0	0	0	0	43	0	43	0	11	0	0	11	0	54
2:15AM	0	0	0	0	0	0	17	0	17	0	21	0	0	21	0	38
2:30AM	0	0	0	0	0	0	12	0	12	0	18	0	0	18	0	30
2:45AM	0	0	0	0	0	0	15	0	15	0	25	0	0	25	0	40
Hourly Total	0	0	0	0	0	0	87	0	87	0	75	0	0	75	0	162
3:00AM	0	0	0	0	0	0	19	0	19	0	32	0	0	32	0	51
3:15AM	0	0	0	0	0	0	17	0	17	0	30	0	0	30	0	47
3:30AM	0	0	0	0	0	0	90	0	90	0	40	0	0	40	0	130
3:45AM	0	0	0	0	0	0	33	0	33	0	53	0	0	53	0	86
Hourly Total	0	0	0	0	0	0	159	0	159	0	155	0	0	155	0	314
4:00AM	0	0	0	0	0	0	52	0	52	0	50	0	0	50	0	102
4:15AM	0	0	0	0	0	0	47	0	47	0	41	0	0	41	0	88
4:30AM	0	0	0	0	0	0	58	0	58	0	70	0	0	70	0	128
4:45AM	0	0	0	0	0	0	57	0	57	0	67	0	0	67	0	124
Hourly Total	0	0	0	0	0	0	214	0	214	0	228	0	0	228	0	442
5:00AM	0	0	0	0	0	0	62	0	62	0	57	0	0	57	0	119
5:15AM	0	0	0	0	0	0	70	0	70	0	104	1	0	105	0	175
5:30AM	0	1	0	1	0	0	75	0	75	0	142	0	0	142	0	218
5:45AM	0	1	0	1	0	0	116	0	116	0	179	0	0	179	0	296
Hourly Total	0	2	0	2	0	0	323	0	323	0	482	1	0	483	0	808
6:00AM	1	1	0	2	0	0	121	0	121	0	116	0	0	116	0	239
6:15AM	0	0	0	0	0	0	122	0	122	0	132	0	0	132	0	254
6:30AM	2	0	0	2	0	0	188	0	188	0	144	0	0	144	0	334
6:45AM	0	1	0	1	0	0	186	0	186	0	173	0	0	173	0	360
Hourly Total	3	2	0	5	0	0	617	0	617	0	565	0	0	565	0	1187
7:00AM	2	0	0	2	0	0	153	0	153	0	118	0	0	118	0	273
7:15AM	0	0	0	0	0	1	149	1	151	0	146	0	0	146	0	297
7:30AM	3	0	0	3	0	0	152	0	152	0	143	0	0	143	0	298
7:45AM	1	0	0	1	0	0	140	0	140	0	174	1	0	175	0	316
Hourly Total	6	0	0	6	0	1	594	1	596	0	581	1	0	582	0	1184
8:00AM	0	1	0	1	0	1	136	2	139	0	129	0	0	129	0	269
8:15AM	1	0	0	1	0	1	85	0	86	0	115	0	0	115	0	202
8:30AM	1	0	0	1	0	0	99	0	99	0	112	0	0	112	0	212
8:45AM	0	2	0	2	0	0	95	0	95	0	117	1	0	118	0	215
Hourly Total	2	3	0	5	0	2	415	2	419	0	473	1	0	474	0	898
9:00AM	1	1	0	2	0	1	104	1	106	0	112	0	0	112	0	220
9:15AM	1	0	0	1	0	0	84	0	84	0	107	0	0	107	0	192
9:30AM	1	1	0	2	0	0	83	0	83	0	97	0	0	97	0	182
9:45AM	0	2	0	2	0	1	78	0	79	0	111	0	0	111	0	192
Hourly Total	3	4	0	7	0	2	349	1	352	0	427	0	0	427	0	786
10:00AM	0	2	0	2	0	1	94	0	95	0	95	0	1	96	0	193
10:15AM	0	0	0	0	0	0	88	0	88	0	82	1	1	84	0	172
10:30AM	0	1	0	1	0	0	95	0	95	0	86	0	1	87	0	183
10:45AM	1	0	0	1	0	0	101	0	101	0	100	0	0	100	0	202

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
Hourly Total	1	3	0	4	0	1	378	0	379	0	363	1	3	367	0	750
11:00AM	0	0	0	0	0	2	123	0	125	0	110	0	0	110	0	235
11:15AM	0	0	0	0	0	1	105	0	106	0	106	1	0	107	0	213
11:30AM	2	0	0	2	0	0	117	0	117	0	101	1	0	102	0	221
11:45AM	1	0	0	1	0	0	135	1	136	0	115	0	0	115	0	252
Hourly Total	3	0	0	3	0	3	480	1	484	0	432	2	0	434	0	921
12:00PM	1	1	0	2	0	0	138	0	138	0	128	1	0	129	0	269
12:15PM	0	0	0	0	0	0	139	1	140	0	103	0	0	103	0	243
12:30PM	0	0	0	0	0	1	117	0	118	0	106	0	0	106	0	224
12:45PM	0	1	0	1	0	1	108	0	109	0	90	0	0	90	0	200
Hourly Total	1	2	0	3	0	2	502	1	505	0	427	1	0	428	0	936
1:00PM	0	0	0	0	0	0	113	0	113	0	99	0	0	99	0	212
1:15PM	0	0	0	0	0	0	140	1	141	0	118	1	0	119	0	260
1:30PM	0	1	0	1	0	0	124	0	124	0	97	0	0	97	0	222
1:45PM	1	0	0	1	0	0	118	0	118	0	109	1	0	110	0	229
Hourly Total	1	1	0	2	0	0	495	1	496	0	423	2	0	425	0	923
2:00PM	0	3	0	3	0	0	127	1	128	0	116	0	0	116	0	247
2:15PM	0	1	0	1	0	2	129	1	132	2	126	0	0	126	0	259
2:30PM	0	1	0	1	0	0	163	0	163	0	170	0	1	171	0	335
2:45PM	2	0	0	2	0	1	129	0	130	0	157	0	0	157	0	289
Hourly Total	2	5	0	7	0	3	548	2	553	2	569	0	1	570	0	1130
3:00PM	0	0	0	0	0	1	141	0	142	0	132	1	0	133	0	275
3:15PM	0	0	0	0	0	1	147	1	149	0	183	0	0	183	0	332
3:30PM	2	3	0	5	0	1	157	0	158	0	217	1	0	218	0	381
3:45PM	0	1	0	1	0	2	120	0	122	0	198	0	0	198	0	321
Hourly Total	2	4	0	6	0	5	565	1	571	0	730	2	0	732	0	1309
4:00PM	0	0	0	0	0	1	151	0	152	0	169	0	0	169	0	321
4:15PM	0	1	0	1	0	1	119	0	120	0	198	0	0	198	0	319
4:30PM	0	0	0	0	0	0	216	1	217	0	186	0	0	186	0	403
4:45PM	0	0	0	0	0	2	170	0	172	0	188	0	0	188	0	360
Hourly Total	0	1	0	1	0	4	656	1	661	0	741	0	0	741	0	1403
5:00PM	0	1	0	1	0	0	174	0	174	0	155	3	0	158	0	333
5:15PM	0	2	0	2	0	2	109	0	111	0	138	0	0	138	0	251
5:30PM	1	3	0	4	0	0	130	0	130	0	112	2	0	114	0	248
5:45PM	0	1	0	1	0	2	103	0	105	0	121	0	0	121	0	227
Hourly Total	1	7	0	8	0	4	516	0	520	0	526	5	0	531	0	1059
6:00PM	0	0	0	0	0	2	91	0	93	0	103	0	0	103	0	196
6:15PM	0	0	0	0	0	0	84	0	84	0	100	1	0	101	0	185
6:30PM	0	0	0	0	0	0	90	0	90	0	72	0	0	72	0	162
6:45PM	0	0	0	0	0	0	66	1	67	0	71	1	0	72	0	139
Hourly Total	0	0	0	0	0	2	331	1	334	0	346	2	0	348	0	682
7:00PM	0	1	0	1	0	0	66	0	66	0	72	0	0	72	0	139
7:15PM	0	1	0	1	0	0	60	0	60	0	66	0	0	66	0	127
7:30PM	0	0	0	0	0	2	55	0	57	0	60	0	0	60	0	117
7:45PM	0	0	0	0	0	0	49	0	49	0	52	0	0	52	0	101
Hourly Total	0	2	0	2	0	2	230	0	232	0	250	0	0	250	0	484
8:00PM	0	0	0	0	0	1	74	0	75	0	67	0	0	67	0	142
8:15PM	1	0	0	1	0	1	54	0	55	0	67	0	0	67	0	123
8:30PM	0	1	0	1	0	0	62	0	62	0	59	0	0	59	0	122
8:45PM	0	0	0	0	0	0	39	0	39	0	71	1	0	72	0	111
Hourly Total	1	1	0	2	0	2	229	0	231	0	264	1	0	265	0	498
9:00PM	0	0	0	0	0	0	43	1	44	0	71	0	0	71	0	115
9:15PM	0	1	0	1	0	1	54	0	55	0	42	0	0	42	0	98
9:30PM	0	1	0	1	0	0	67	0	67	0	63	0	0	63	0	131
9:45PM	0	0	0	0	0	0	40	0	40	0	48	0	0	48	0	88
Hourly Total	0	2	0	2	0	1	204	1	206	0	224	0	0	224	0	432
10:00PM	0	1	0	1	0	0	58	0	58	0	51	0	0	51	0	110
10:15PM	0	0	0	0	0	0	43	0	43	0	47	0	0	47	0	90
10:30PM	0	0	0	0	0	0	41	0	41	0	60	0	0	60	0	101
10:45PM	0	1	0	1	0	0	36	0	36	0	47	0	0	47	0	84

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
Hourly Total	0	2	0	2	0	0	178	0	178	0	205	0	0	205	0	385
11:00PM	0	0	0	0	0	1	39	0	40	0	35	0	0	35	0	75
11:15PM	0	0	0	0	0	0	36	0	36	0	32	0	0	32	0	68
11:30PM	0	0	0	0	0	0	116	0	116	0	21	0	0	21	0	137
11:45PM	0	0	0	0	0	0	55	0	55	0	25	0	0	25	0	80
Hourly Total	0	0	0	0	0	1	246	0	247	0	113	0	0	113	0	360
Total	26	41	0	67	0	35	8541	13	8589	2	8776	19	4	8799	0	17455
% Approach	38.8%	61.2%	0%	-	-	0.4%	99.4%	0.2%	-	-	99.7%	0.2%	0%	-	-	-
% Total	0.1%	0.2%	0%	0.4%	-	0.2%	48.9%	0.1%	49.2%	-	50.3%	0.1%	0%	50.4%	-	-
Lights and Motorcycles	22	38	0	60	-	33	6479	13	6525	-	6731	19	3	6753	-	13338
% Lights and Motorcycles	84.6%	92.7%	0%	89.6%	-	94.3%	75.9%	100%	76.0%	-	76.7%	100%	75.0%	76.7%	-	76.4%
Heavy	4	3	0	7	-	2	2062	0	2064	-	2045	0	1	2046	-	4117
% Heavy	15.4%	7.3%	0%	10.4%	-	5.7%	24.1%	0%	24.0%	-	23.3%	0%	25.0%	23.3%	-	23.6%
Pedestrians	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

- Alum Creek Dr & Alum Creek Service Dr - TMC

Tue Aug 16, 2022

AM Peak (6:30 AM - 7:30 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978978, Location: 39.833138, -82.933783, Site Code: ####



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2022-08-16 6:30AM	2	0	0	2	0	0	188	0	188	0	144	0	0	144	0	334
6:45AM	0	1	0	1	0	0	186	0	186	0	173	0	0	173	0	360
7:00AM	2	0	0	2	0	0	153	0	153	0	118	0	0	118	0	273
7:15AM	0	0	0	0	0	1	149	1	151	0	146	0	0	146	0	297
Total	4	1	0	5	0	1	676	1	678	0	581	0	0	581	0	1264
% Approach	80.0%	20.0%	0%	-	-	0.1%	99.7%	0.1%	-	-	100%	0%	0%	-	-	-
% Total	0.3%	0.1%	0%	0.4%	-	0.1%	53.5%	0.1%	53.6%	-	46.0%	0%	0%	46.0%	-	-
PHF	0.500	0.250	-	0.625	-	0.250	0.899	0.250	0.902	-	0.840	-	-	0.840	-	0.878
Lights and Motorcycles	3	1	0	4	-	0	559	1	560	-	497	0	0	497	-	1061
% Lights and Motorcycles	75.0%	100%	0%	80.0%	-	0%	82.7%	100%	82.6%	-	85.5%	0%	0%	85.5%	-	83.9%
Heavy	1	0	0	1	-	1	117	0	118	-	84	0	0	84	-	203
% Heavy	25.0%	0%	0%	20.0%	-	100%	17.3%	0%	17.4%	-	14.5%	0%	0%	14.5%	-	16.1%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

- Alum Creek Dr & Alum Creek Service Dr - TMC

Tue Aug 16, 2022

Midday Peak (11:45 AM - 12:45 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978978, Location: 39.833138, -82.933783, Site Code: ####



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2022-08-16 11:45AM	1	0	0	1	0	0	135	1	136	0	115	0	0	115	0	252
12:00PM	1	1	0	2	0	0	138	0	138	0	128	1	0	129	0	269
12:15PM	0	0	0	0	0	0	139	1	140	0	103	0	0	103	0	243
12:30PM	0	0	0	0	0	1	117	0	118	0	106	0	0	106	0	224
Total	2	1	0	3	0	1	529	2	532	0	452	1	0	453	0	988
% Approach	66.7%	33.3%	0%	-	-	0.2%	99.4%	0.4%	-	-	99.8%	0.2%	0%	-	-	-
% Total	0.2%	0.1%	0%	0.3%	-	0.1%	53.5%	0.2%	53.8%	-	45.7%	0.1%	0%	45.9%	-	-
PHF	0.500	0.250	-	0.375	-	0.250	0.951	0.500	0.950	-	0.883	0.250	-	0.878	-	0.918
Lights and Motorcycles	1	1	0	2	-	1	363	2	366	-	294	1	0	295	-	663
% Lights and Motorcycles	50.0%	100%	0%	66.7%	-	100%	68.6%	100%	68.8%	-	65.0%	100%	0%	65.1%	-	67.1%
Heavy	1	0	0	1	-	0	166	0	166	-	158	0	0	158	-	325
% Heavy	50.0%	0%	0%	33.3%	-	0%	31.4%	0%	31.2%	-	35.0%	0%	0%	34.9%	-	32.9%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

- Alum Creek Dr & Alum Creek Service Dr - TMC

Tue Aug 16, 2022

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978978, Location: 39.833138, -82.933783, Site Code: ####



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	Alum Creek Service Dr Eastbound					Alum Creek Dr Northbound					Alum Creek Dr Southbound					Int
	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	
2022-08-16 4:15PM	0	1	0	1	0	1	119	0	120	0	198	0	0	198	0	319
4:30PM	0	0	0	0	0	0	216	1	217	0	186	0	0	186	0	403
4:45PM	0	0	0	0	0	2	170	0	172	0	188	0	0	188	0	360
5:00PM	0	1	0	1	0	0	174	0	174	0	155	3	0	158	0	333
Total	0	2	0	2	0	3	679	1	683	0	727	3	0	730	0	1415
% Approach	0%	100%	0%	-	-	0.4%	99.4%	0.1%	-	-	99.6%	0.4%	0%	-	-	-
% Total	0%	0.1%	0%	0.1%	-	0.2%	48.0%	0.1%	48.3%	-	51.4%	0.2%	0%	51.6%	-	-
PHF	-	0.500	-	0.500	-	0.375	0.786	0.250	0.787	-	0.918	0.250	-	0.922	-	0.878
Lights and Motorcycles	0	2	0	2	-	3	560	1	564	-	614	3	0	617	-	1183
% Lights and Motorcycles	0%	100%	0%	100%	-	100%	82.5%	100%	82.6%	-	84.5%	100%	0%	84.5%	-	83.6%
Heavy	0	0	0	0	-	0	119	0	119	-	113	0	0	113	-	232
% Heavy	0%	0%	0%	0%	-	0%	17.5%	0%	17.4%	-	15.5%	0%	0%	15.5%	-	16.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

**Alum Creek Drive
and SR-317**

2599 - Alum Creek Dr & SR 317 - TMC

Tue Aug 16, 2022

Full Length (12 AM-12 AM (+1))

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978981, Location: 39.830073, -82.933894, Site Code: 2599



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	SR 317 Eastbound						SR 317 Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
2022-08-16																									
12:00AM	4	7	2	0	13	0	4	6	5	0	15	0	7	51	6	0	64	0	19	18	5	0	42	0	134
12:15AM	6	8	5	0	19	0	3	1	3	0	7	0	5	28	3	0	36	0	4	6	8	0	18	0	80
12:30AM	6	10	0	0	16	0	3	7	1	0	11	1	3	13	3	0	19	1	3	17	5	0	25	0	71
12:45AM	4	3	2	0	9	0	3	4	3	0	10	0	3	8	2	0	13	0	3	12	8	0	23	0	55
Hourly Total	20	28	9	0	57	0	13	18	12	0	43	1	18	100	14	0	132	1	29	53	26	0	108	0	340
1:00AM	4	5	4	0	13	0	1	4	3	0	8	0	2	12	4	0	18	0	1	12	10	0	23	0	62
1:15AM	5	2	4	0	11	0	1	5	3	0	9	0	0	12	0	0	12	0	2	11	3	0	16	0	48
1:30AM	12	4	2	0	18	0	5	5	3	0	13	0	2	11	1	0	14	0	1	10	15	0	26	0	71
1:45AM	12	9	4	0	25	0	0	4	4	0	8	0	2	9	1	0	12	0	1	4	5	0	10	0	55
Hourly Total	33	20	14	0	67	0	7	18	13	0	38	0	6	44	6	0	56	0	5	37	33	0	75	0	236
2:00AM	3	2	1	0	6	0	6	5	4	0	15	0	1	41	13	0	55	0	1	10	0	0	11	0	87
2:15AM	5	2	2	0	9	0	1	1	1	0	3	1	1	10	2	0	13	0	3	10	6	0	19	0	44
2:30AM	2	5	0	0	7	0	0	3	1	0	4	0	0	7	1	0	8	0	7	12	2	0	21	0	40
2:45AM	4	4	2	0	10	0	3	6	6	0	15	0	1	6	2	0	9	0	2	15	8	0	25	0	59
Hourly Total	14	13	5	0	32	0	10	15	12	0	37	1	3	64	18	0	85	0	13	47	16	0	76	0	230
3:00AM	3	3	0	0	6	0	4	7	4	0	15	0	3	11	3	0	17	0	1	14	15	0	30	0	68
3:15AM	4	6	5	0	15	0	10	6	4	0	20	0	4	10	0	0	14	0	1	8	23	0	32	0	81
3:30AM	18	10	5	0	33	0	10	10	1	0	21	0	6	79	27	0	112	0	4	12	21	0	37	0	203
3:45AM	17	9	5	0	31	0	10	9	1	0	20	0	4	18	4	0	26	0	2	34	19	0	55	0	132
Hourly Total	42	28	15	0	85	0	34	32	10	0	76	0	17	118	34	0	169	0	8	68	78	0	154	0	484
4:00AM	29	13	7	0	49	0	11	8	4	0	23	0	3	18	5	0	26	0	3	31	16	0	50	0	148
4:15AM	30	15	12	0	57	0	15	4	4	0	23	1	6	10	5	0	21	0	2	31	4	0	37	0	138
4:30AM	21	10	10	0	41	0	19	7	9	0	35	0	5	29	4	0	38	0	6	59	6	0	71	0	185
4:45AM	19	20	9	0	48	0	25	12	10	0	47	0	3	30	6	0	39	0	2	52	4	0	58	0	192
Hourly Total	99	58	38	0	195	0	70	31	27	0	128	1	17	87	20	0	124	0	13	173	30	0	216	0	663
5:00AM	11	10	4	0	25	0	9	11	5	0	25	0	6	51	13	0	70	0	2	56	5	0	63	0	183
5:15AM	15	18	18	0	51	0	36	11	6	0	53	0	7	45	9	0	61	0	9	79	15	0	103	0	268
5:30AM	19	19	15	0	53	0	62	30	5	0	97	1	12	52	9	0	73	1	7	117	21	0	145	0	368
5:45AM	12	27	30	0	69	0	70	30	12	0	112	1	16	96	8	0	120	0	15	134	26	0	175	0	476
Hourly Total	57	74	67	0	198	0	177	82	28	0	287	2	41	244	39	0	324	1	33	386	67	0	486	0	1295
6:00AM	15	22	28	0	65	0	36	20	7	0	63	0	21	86	15	0	122	0	12	98	16	0	126	1	376
6:15AM	20	17	26	0	63	0	37	29	12	0	78	1	15	91	11	0	117	1	11	103	14	2	130	1	388
6:30AM	49	8	18	0	75	0	36	26	11	0	73	1	13	113	8	0	134	0	10	76	14	0	100	0	382
6:45AM	24	33	28	0	85	0	49	27	2	0	78	0	23	140	23	0	186	0	16	138	15	0	169	0	518
Hourly Total	108	80	100	0	288	0	158	102	32	0	292	2	72	430	57	0	559	1	49	415	59	2	525	2	1664
7:00AM	26	28	31	0	85	0	29	22	8	0	59	2	20	120	15	0	155	0	18	91	11	0	120	0	419
7:15AM	21	38	34	0	93	0	35	25	7	0	67	2	25	127	13	0	165	3	12	120	11	0	143	1	468
7:30AM	14	34	21	0	69	0	36	22	10	0	68	1	31	126	17	0	174	1	8	118	17	0	143	0	454
7:45AM	20	31	31	0	82	0	36	30	11	0	77	0	12	101	20	0	133	0	19	126	22	1	168	0	460
Hourly Total	81	131	117	0	329	0	136	99	36	0	271	5	88	474	65	0	627	4	57	455	61	1	574	1	1801
8:00AM	33	31	26	0	90	0	36	23	12	0	71	1	13	80	16	0	109	1	18	90	24	0	132	0	402
8:15AM	13	18	16	0	47	0	27	24	13	0	64	0	18	67	13	0	98	0	11	89	15	0	115	0	324
8:30AM	24	29	24	0	77	0	29	13	4	0	46	1	23	75	13	0	111	0	9	66	19	0	94	0	328
8:45AM	17	24	16	0	57	0	18	18	8	0	44	0	20	71	18	0	109	0	24	77	24	0	125	0	335
Hourly Total	87	102	82	0	271	0	110	78	37	0	225	2	74	293	60	0	427	1	62	322	82	0	466	0	1389
9:00AM	14	20	16	0	50	0	26	22	14	0	62	0	17	75	9	0	101	0	26	85	15	1	127	0	340
9:15AM	13	17	12	0	42	0	17	31	11	0	59	0	15	60	10	0	85	0	15	69	15	1	100	0	286
9:30AM	18	16	11	0	45	0	11	31	7	0	49	0	14	56	16	0	86	0	18	68	20	0	106	0	286
9:45AM	12	30	17	0	59	0	24	33	10	0	67	0	15	57	17	0	89	0	15	69	23	0	107	0	322
Hourly Total	57	83	56	0	196	0	78	117	42	0	237	0	61	248	52	0	361	0	74	291	73	2	440	0	1234
10:00AM	16	16	26	0	58	0	30	29	9	0	68	0	14	68	16	0	98	0	17	60	22	0	99	0	323
10:15AM	15	18	13	0	46	0	17	15	9	0	41	1	16	67	16	0	99	0	6	62	15	0	83	0	269
10:30AM	24	31	20	0	75	0	22	22	14	0	58	0	20	51	13	0	84	0	9	59	24	0	92	0	309
10:45AM	19	19	18	0	56	0	18	23	9	0	50	0	29	76	20	0	125	0	10	62	26	0	98	0	329
Hourly Total	74	84	77	0	235	0	87	89	41	0	217	1	79	262	65	0	406	0	42	243	87	0	372	0	1230

Leg Direction	SR 317 Eastbound						SR 317 Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						Int
	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	
11:00AM	29	25	30	0	84	0	29	23	13	0	65	1	16	89	23	0	128	0	12	66	25	0	103	0	380
11:15AM	15	23	29	0	67	0	38	26	10	0	74	0	19	90	21	0	130	0	21	70	14	0	105	0	376
11:30AM	20	23	21	0	64	0	41	19	10	0	70	1	23	83	25	0	131	0	15	65	16	1	97	1	362
11:45AM	21	18	25	0	64	0	30	35	13	0	78	0	18	92	21	0	131	0	16	89	15	0	120	0	393
Hourly Total	85	89	105	0	279	0	138	103	46	0	287	2	76	354	90	0	520	0	64	290	70	1	425	1	1511
12:00PM	19	22	28	0	69	0	40	31	15	0	86	0	23	100	40	0	163	0	21	83	22	0	126	0	444
12:15PM	20	19	17	0	56	0	52	31	10	0	93	0	22	102	18	0	142	0	12	80	12	2	106	0	397
12:30PM	21	15	20	0	56	1	47	27	17	0	91	0	12	83	19	0	114	0	10	67	22	0	99	2	360
12:45PM	18	19	28	0	65	0	41	32	15	0	88	0	15	71	23	0	109	0	13	70	13	0	96	0	358
Hourly Total	78	75	93	0	246	1	180	121	57	0	358	0	72	356	100	0	528	0	56	300	69	2	427	2	1559
1:00PM	15	11	19	0	45	0	33	33	7	0	73	0	23	95	26	0	144	1	10	66	17	1	94	0	356
1:15PM	23	36	36	0	95	0	34	24	11	0	69	2	20	83	18	0	121	0	16	75	31	0	122	2	407
1:30PM	18	22	24	0	64	0	20	27	8	0	55	0	28	98	16	0	142	0	11	57	31	0	99	0	360
1:45PM	15	21	26	0	62	0	40	44	4	0	88	3	21	97	22	0	140	1	15	79	10	0	104	2	394
Hourly Total	71	90	105	0	266	0	127	128	30	0	285	5	92	373	82	0	547	2	52	277	89	1	419	4	1517
2:00PM	30	35	29	0	94	0	29	45	10	0	84	5	24	87	16	0	127	1	20	83	19	0	122	0	427
2:15PM	28	28	30	0	86	0	48	29	15	0	92	1	31	84	20	0	135	1	21	95	19	0	135	1	448
2:30PM	15	34	27	0	76	0	51	43	9	0	103	0	48	129	33	0	210	1	19	113	28	0	160	2	549
2:45PM	19	32	34	0	85	0	37	43	12	0	92	0	39	94	34	0	167	0	12	114	32	0	158	0	502
Hourly Total	92	129	120	0	341	0	165	160	46	0	371	6	142	394	103	0	639	3	72	405	98	0	575	3	1926
3:00PM	23	50	38	0	111	0	38	42	16	0	96	1	48	125	41	0	214	0	17	85	26	0	128	0	549
3:15PM	24	47	18	0	89	0	37	37	14	0	88	0	44	122	26	0	192	0	32	115	26	0	173	0	542
3:30PM	14	36	25	0	75	0	38	42	13	0	93	2	61	136	47	0	244	0	54	141	28	0	223	0	635
3:45PM	19	41	28	0	88	0	44	44	8	0	96	1	36	98	40	0	174	1	17	143	32	0	192	0	550
Hourly Total	80	174	109	0	363	0	157	165	51	0	373	4	189	481	154	0	824	1	120	484	112	0	716	0	2276
4:00PM	16	33	32	0	81	0	36	43	9	0	88	1	52	124	34	0	210	0	14	131	23	0	168	0	547
4:15PM	13	44	30	0	87	0	53	32	10	0	95	3	30	101	19	0	150	1	25	128	28	0	181	0	513
4:30PM	16	46	30	0	92	0	46	41	10	0	97	2	47	195	37	0	279	2	25	136	26	0	187	1	655
4:45PM	25	36	27	0	88	0	53	32	17	0	102	0	52	118	25	0	195	0	25	132	26	0	183	0	568
Hourly Total	70	159	119	0	348	0	188	148	46	0	382	6	181	538	115	0	834	3	89	527	103	0	719	1	2283
5:00PM	25	37	14	0	76	0	51	58	16	0	125	0	32	121	29	0	182	0	15	111	29	1	156	0	539
5:15PM	17	47	30	0	94	0	38	40	13	0	91	1	23	76	36	0	135	1	14	97	25	0	136	0	456
5:30PM	21	32	27	0	80	0	36	34	21	0	91	1	21	92	25	0	138	1	17	94	7	0	118	0	427
5:45PM	17	27	22	0	66	0	40	27	6	0	73	2	22	81	18	0	121	1	9	88	21	0	118	0	378
Hourly Total	80	143	93	0	316	0	165	159	56	0	380	4	98	370	108	0	576	3	55	390	82	1	528	0	1800
6:00PM	16	33	17	0	66	0	29	33	6	0	68	0	14	68	25	0	107	0	8	72	23	1	104	0	345
6:15PM	17	28	25	0	70	0	32	37	8	0	77	2	16	57	17	0	90	2	8	56	41	0	105	0	342
6:30PM	22	23	19	0	64	0	22	24	8	0	54	5	18	57	16	0	91	2	17	43	15	0	75	0	284
6:45PM	15	30	18	0	63	0	33	24	6	0	63	0	10	39	13	0	62	0	13	57	4	0	74	0	262
Hourly Total	70	114	79	0	263	0	116	118	28	0	262	7	58	221	71	0	350	4	46	228	83	1	358	0	1233
7:00PM	16	26	16	0	58	0	27	19	7	0	53	0	7	44	15	0	66	0	13	44	13	0	70	0	247
7:15PM	11	19	26	0	56	0	33	18	9	0	60	0	9	44	19	0	72	0	6	59	6	0	71	0	259
7:30PM	10	33	21	0	64	0	24	12	8	0	44	1	5	37	12	0	54	0	9	39	10	0	58	0	220
7:45PM	10	21	16	0	47	0	19	20	2	0	41	0	12	38	12	0	62	0	6	40	7	0	53	0	203
Hourly Total	47	99	79	0	225	0	103	69	26	0	198	1	33	163	58	0	254	0	34	182	36	0	252	0	929
8:00PM	20	30	10	0	60	0	29	19	2	0	50	0	8	54	11	0	73	0	9	46	8	0	63	0	246
8:15PM	18	15	21	0	54	0	23	22	5	0	50	0	7	35	15	0	57	0	5	54	6	0	65	0	226
8:30PM	16	19	16	0	51	0	29	22	5	0	56	0	9	40	12	0	61	0	6	45	8	0	59	0	227
8:45PM	6	14	20	0	40	0	22	19	0	0	41	3	9	28	12	0	49	0	7	50	13	1	71	0	201
Hourly Total	60	78	67	0	205	0	103	82	12	0	197	3	33	157	50	0	240	0	27	195	35	1	258	0	900
9:00PM	6	16	8	0	30	0	22	14	5	0	41	0	8	36	16	0	60	0	8	53	12	0	73	0	204
9:15PM	4	5	9	0	18	0	30	10	11	0	51	1	15	43	7	0	65	1	8	32	8	0	48	0	182
9:30PM	5	6	15	0	26	0	17	8	8	0	33	1	11	50	13	0	74	1	12	38	11	0	61	0	194
9:45PM	4	7	9	0	20	0	23	4	8	0	35	0	4	31	11	0	46	0	5	38	12	0	55	0	156
Hourly Total	19	34	41	0	94	0	92	36	32	0	160	2	38	160	47	0	245	2	33	161	43	0	237	0	736
10:00PM	4	6	6	0	16	0	12	7	3	0	22	2	7	48	11	0	66	2	6	33	11	1	51	0	155
10:15PM	5	6	9	0	20	0	11	7	6	0	24	0	11	24	12	0	47	0	4	24	18	0	46	0	137
10:30PM	20	13	7	0	40	0	15	14	3	0	32	1	5	24	8	0	37	0	5	47	7	0	59	0	168
10:45PM	7	9	10	0	26	0	12	10	3	0	25	0	4	22	5	0	31	0	9	34	5	0	48	0	130
Hourly Total	36	34	32	0	102	0	50	38	15	0	103	3	27	118	36	0	181	2	24	138	41	1	204	0	590
11:00PM	7	12	6	0	25	0	16	8	1	0	25	0	5	33	7	0	45	0	4	24	9	0	37	0	132
11:15PM	2	5	5	0	12	0	9	10	4	0	23	2	6	28	6	0	40	0	5	19	9	0	33	0	108
11:30PM	9	11	2	0	22	0	5	6	3	0	14	0	15	112	25	0	152	0	1	18	3	0	22	0	210

Leg Direction	SR 317 Eastbound						SR 317 Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
11:45PM	10	7	3	0	20	0	7	4	4	0	15	0	5	41	5	0	51	0	3	22	0	0	25	0	111
Hourly Total	28	35	16	0	79	0	37	28	12	0	77	2	31	214	43	0	288	0	13	83	21	0	117	0	561
Total	1488	1954	1638	0	5080	1	2501	2036	747	0	5284	60	1546	6263	1487	0	9296	28	1070	6150	1494	13	8727	14	28387
% Approach	29.3%	38.5%	32.2%	0%	-	-	47.3%	38.5%	14.1%	0%	-	-	16.6%	67.4%	16.0%	0%	-	-	12.3%	70.5%	17.1%	0.1%	-	-	-
% Total	5.2%	6.9%	5.8%	0%	17.9%	-	8.8%	7.2%	2.6%	0%	18.6%	-	5.4%	22.1%	5.2%	0%	32.7%	-	3.8%	21.7%	5.3%	0%	30.7%	-	-
Lights and Motorcycles	1144	1666	1267	0	4077	-	2262	1747	447	0	4456	-	1215	4801	1345	0	7361	-	827	4761	1092	12	6692	-	22586
% Lights and Motorcycles	76.9%	85.3%	77.4%	0%	80.3%	-	90.4%	85.8%	59.8%	0%	84.3%	-	78.6%	76.7%	90.5%	0%	79.2%	-	77.3%	77.4%	73.1%	92.3%	76.7%	-	79.6%
Heavy	344	288	371	0	1003	-	239	289	300	0	828	-	331	1462	142	0	1935	-	243	1389	402	1	2035	-	5801
% Heavy	23.1%	14.7%	22.6%	0%	19.7%	-	9.6%	14.2%	40.2%	0%	15.7%	-	21.4%	23.3%	9.5%	0%	20.8%	-	22.7%	22.6%	26.9%	7.7%	23.3%	-	20.4%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	60	-	-	-	-	-	28	-	-	-	-	-	14	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	100%	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2599 - Alum Creek Dr & SR 317 - TMC

Tue Aug 16, 2022

AM Peak (6:45 AM - 7:45 AM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978981, Location: 39.830073, -82.933894, Site Code: 2599



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg	SR 317 Eastbound						SR 317 Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Direction	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16																									
6:45AM	24	33	28	0	85	0	49	27	2	0	78	0	23	140	23	0	186	0	16	138	15	0	169	0	518
7:00AM	26	28	31	0	85	0	29	22	8	0	59	2	20	120	15	0	155	0	18	91	11	0	120	0	419
7:15AM	21	38	34	0	93	0	35	25	7	0	67	2	25	127	13	0	165	3	12	120	11	0	143	1	468
7:30AM	14	34	21	0	69	0	36	22	10	0	68	1	31	126	17	0	174	1	8	118	17	0	143	0	454
Total	85	133	114	0	332	0	149	96	27	0	272	5	99	513	68	0	680	4	54	467	54	0	575	1	1859
% Approach	25.6%	40.1%	34.3%	0%	-	-	54.8%	35.3%	9.9%	0%	-	-	14.6%	75.4%	10.0%	0%	-	-	9.4%	81.2%	9.4%	0%	-	-	-
% Total	4.6%	7.2%	6.1%	0%	17.9%	-	8.0%	5.2%	1.5%	0%	14.6%	-	5.3%	27.6%	3.7%	0%	36.6%	-	2.9%	25.1%	2.9%	0%	30.9%	-	-
PHF	0.817	0.875	0.838	-	0.892	-	0.760	0.889	0.675	-	0.872	-	0.798	0.916	0.739	-	0.914	-	0.750	0.846	0.794	-	0.851	-	0.897
Lights and Motorcycles	66	122	83	0	271	-	140	88	14	0	242	-	78	414	65	0	557	-	48	393	39	0	480	-	1550
% Lights and Motorcycles	77.6%	91.7%	72.8%	0%	81.6%	-	94.0%	91.7%	51.9%	0%	89.0%	-	78.8%	80.7%	95.6%	0%	81.9%	-	88.9%	84.2%	72.2%	0%	83.5%	-	83.4%
Heavy	19	11	31	0	61	-	9	8	13	0	30	-	21	99	3	0	123	-	6	74	15	0	95	-	309
% Heavy	22.4%	8.3%	27.2%	0%	18.4%	-	6.0%	8.3%	48.1%	0%	11.0%	-	21.2%	19.3%	4.4%	0%	18.1%	-	11.1%	15.8%	27.8%	0%	16.5%	-	16.6%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	4	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2599 - Alum Creek Dr & SR 317 - TMC

Tue Aug 16, 2022

Midday Peak (11:30 AM - 12:30 PM)

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978981, Location: 39.830073, -82.933894, Site Code: 2599



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg Direction	SR 317 Eastbound							SR 317 Westbound							Alum Creek Dr Northbound							Alum Creek Dr Southbound							Int
	L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		L	T	R	U	App	Ped*		
2022-08-16																													
11:30AM	20	23	21	0	64	0	41	19	10	0	70	1	23	83	25	0	131	0	15	65	16	1	97	1	362				
11:45AM	21	18	25	0	64	0	30	35	13	0	78	0	18	92	21	0	131	0	16	89	15	0	120	0	393				
12:00PM	19	22	28	0	69	0	40	31	15	0	86	0	23	100	40	0	163	0	21	83	22	0	126	0	444				
12:15PM	20	19	17	0	56	0	52	31	10	0	93	0	22	102	18	0	142	0	12	80	12	2	106	0	397				
Total	80	82	91	0	253	0	163	116	48	0	327	1	86	377	104	0	567	0	64	317	65	3	449	1	1596				
% Approach	31.6%	32.4%	36.0%	0%	-	-	49.8%	35.5%	14.7%	0%	-	-	15.2%	66.5%	18.3%	0%	-	-	14.3%	70.6%	14.5%	0.7%	-	-	-				
% Total	5.0%	5.1%	5.7%	0%	15.9%	-	10.2%	7.3%	3.0%	0%	20.5%	-	5.4%	23.6%	6.5%	0%	35.5%	-	4.0%	19.9%	4.1%	0.2%	28.1%	-	-				
PHF	0.952	0.891	0.813	-	0.917	-	0.784	0.829	0.800	-	0.879	-	0.935	0.924	0.650	-	0.870	-	0.762	0.890	0.739	0.375	0.891	-	0.899				
Lights and Motorcycles	55	59	54	0	168	-	142	104	27	0	273	-	55	251	97	0	403	-	46	201	43	3	293	-	1137				
% Lights and Motorcycles	68.8%	72.0%	59.3%	0%	66.4%	-	87.1%	89.7%	56.3%	0%	83.5%	-	64.0%	66.6%	93.3%	0%	71.1%	-	71.9%	63.4%	66.2%	100%	65.3%	-	71.2%				
Heavy	25	23	37	0	85	-	21	12	21	0	54	-	31	126	7	0	164	-	18	116	22	0	156	-	459				
% Heavy	31.3%	28.0%	40.7%	0%	33.6%	-	12.9%	10.3%	43.8%	0%	16.5%	-	36.0%	33.4%	6.7%	0%	28.9%	-	28.1%	36.6%	33.8%	0%	34.7%	-	28.8%				
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	1				
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	100%				

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

2599 - Alum Creek Dr & SR 317 - TMC

Tue Aug 16, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians)

All Movements

ID: 978981, Location: 39.830073, -82.933894, Site Code: 2599



Provided by: Smart Services, Inc.
88 W. Church Street, Newark, OH, 43055, US

Leg	SR 317 Eastbound						SR 317 Westbound						Alum Creek Dr Northbound						Alum Creek Dr Southbound						
Direction	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-08-16																									
4:00PM	16	33	32	0	81	0	36	43	9	0	88	1	52	124	34	0	210	0	14	131	23	0	168	0	547
4:15PM	13	44	30	0	87	0	53	32	10	0	95	3	30	101	19	0	150	1	25	128	28	0	181	0	513
4:30PM	16	46	30	0	92	0	46	41	10	0	97	2	47	195	37	0	279	2	25	136	26	0	187	1	655
4:45PM	25	36	27	0	88	0	53	32	17	0	102	0	52	118	25	0	195	0	25	132	26	0	183	0	568
Total	70	159	119	0	348	0	188	148	46	0	382	6	181	538	115	0	834	3	89	527	103	0	719	1	2283
% Approach	20.1%	45.7%	34.2%	0%	-	-	49.2%	38.7%	12.0%	0%	-	-	21.7%	64.5%	13.8%	0%	-	-	12.4%	73.3%	14.3%	0%	-	-	-
% Total	3.1%	7.0%	5.2%	0%	15.2%	-	8.2%	6.5%	2.0%	0%	16.7%	-	7.9%	23.6%	5.0%	0%	36.5%	-	3.9%	23.1%	4.5%	0%	31.5%	-	-
PHF	0.700	0.864	0.930	-	0.946	-	0.887	0.860	0.676	-	0.936	-	0.870	0.690	0.777	-	0.747	-	0.890	0.969	0.920	-	0.961	-	0.871
Lights and Motorcycles	60	144	107	0	311	-	174	130	35	0	339	-	161	453	104	0	718	-	70	426	82	0	578	-	1946
% Lights and Motorcycles	85.7%	90.6%	89.9%	0%	89.4%	-	92.6%	87.8%	76.1%	0%	88.7%	-	89.0%	84.2%	90.4%	0%	86.1%	-	78.7%	80.8%	79.6%	0%	80.4%	-	85.2%
Heavy	10	15	12	0	37	-	14	18	11	0	43	-	20	85	11	0	116	-	19	101	21	0	141	-	337
% Heavy	14.3%	9.4%	10.1%	0%	10.6%	-	7.4%	12.2%	23.9%	0%	11.3%	-	11.0%	15.8%	9.6%	0%	13.9%	-	21.3%	19.2%	20.4%	0%	19.6%	-	14.8%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	3	-	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-100%	-	-	-	-	-	-100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

APPENDIX

C.

MORPC Growth Rate Request

From: Morgan, Perry <Perry.Morgan@kimley-horn.com>
Sent: Friday, September 9, 2022 12:51 PM
To: Hwashik Jang <hjang@morpc.org>; Nick Gill <NGILL@morpc.org>
Cc: mrehfus@franklincountyengineer.org; Hagerty, Brian <Brian.Hagerty@stantec.com>; Schneider, Andrew <Andrew.Schneider@kimley-horn.com>; Wilson, Jessica <Jessica.Wilson@kimley-horn.com>
Subject: Alum Creek Drive Growth Rate Request (PID 115792)

Caution: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact the IT team

Hwashik and Nick –

Happy Friday!

Kimley-Horn is assisting Stantec and Franklin County with traffic study portion of the Alum Creek Drive Widening project (PID 115792).

This project is to include the addition of a 3rd lane in each direction on Alum Creek Drive from Groveport Road to London-Groveport Road (SR-317).

The attached documents are our formal request for MORPC to provide growth rates for the study intersections, as well as the traffic counts for each of the study intersections.

The count information is also summarized the AM and PM peak periods and ADTs in the attached exhibits.

If you have any questions, or need additional information, please let us know.

Thanks.

Perry.

Perry Morgan, P.E.

Kimley-Horn | 7965 N. High Street, Suite 200, Columbus, OH 43235
Direct: 614 472 8551 | Mobile: 614 582 7838 | www.kimley-horn.com

[Celebrating 15 years as one of FORTUNE's 100 Best Companies to Work For](#)

From: Hwashik Jang <hjang@morpc.org>
Sent: Thursday, September 22, 2022 2:23 PM
To: Morgan, Perry
Cc: mrehfus@franklincountyengineer.org; Hagerty, Brian; Schneider, Andrew; Wilson, Jessica; Nick Gill
Subject: RE: Alum Creek Drive Growth Rate Request (PID 115792)

Follow Up Flag: Follow up
Flag Status: Completed

Perry,

We have completed processing growth rates for your Alum Creek Dr traffic study intersections.

Please use linear annual growth rates as summarized below.

<u>Location</u>	<u>Linear Annual Growth Rate</u>
Groveport Rd e/o Alum Creek Dr	1.30%
Alum Creek Dr n/o Groveport Rd	1.00%
Groveport Rd w/o Alum Creek Dr	1.00%
Alum Creek Dr s/o Groveport Rd	1.00%
Alum Creek Dr n/o Rathmell Rd	1.00%
Rathmell Rd w/o Alum Creek Dr	1.00%
Alum Creek Dr s/o Rathmell Rd	1.00%
Bixby Rd e/o Alum Creek Dr	3.80%
Alum Creek Dr n/o Bixby Rd	1.00%
Bixby Rd w/o Alum Creek Dr	1.30%
Alum Creek Dr s/o Bixby Rd	0.90%
Toy Rd e/o Alum Creek Dr	0.70%
Alum Creek Dr n/o Toy Rd	0.90%
Creekside Pkwy w/o Alum Creek Dr	0.60%
Alum Creek Dr s/o Toy Rd	1.00%
Global Ct e/o Alum Creek Dr	1.00%
Alum Creek Dr n/o Global Ct	1.00%
Global Dr w/o Alum Creek Dr	0.90%
Alum Creek Dr s/o Global Ct	0.90%

Rohr Rd e/o Alum Creek Dr	1.00%
Alum Creek Dr n/o Rohr Rd	1.00%
Rohr Rd w/o Alum Creek Dr	1.70%
Alum Creek Dr s/o Rohr Rd	0.90%
Spiegel Dr e/o Alum Creek Dr	0.50%
Alum Creek Dr n/o Spiegel Dr	0.90%
Spiegel Dr w/o Alum Creek Dr	0.80%
Alum Creek Dr s/o Spiegel Dr	0.90%
Alum Creek Dr n/o Alum Creek Service Dr	0.90%
Alum Creek Dr s/o Alum Creek Service Dr	0.90%
SR 317 e/o Alum Creek Dr	0.90%
Alum Creek Dr n/o SR 317	0.90%
SR 317 w/o Alum Creek Dr	0.90%
Alum Creek Dr s/o SR 317	1.10%

Note: The above rate was derived based on planning level analysis by using MORPC's regional travel demand model.

If you have any questions, please let me know.

Thanks,

HWASHIK JANG

Senior Planner | Mid-Ohio Regional Planning Commission

T: 614.233.4145 | hjang@morpc.org

111 Liberty Street, Suite 100 | Columbus, OH 43215

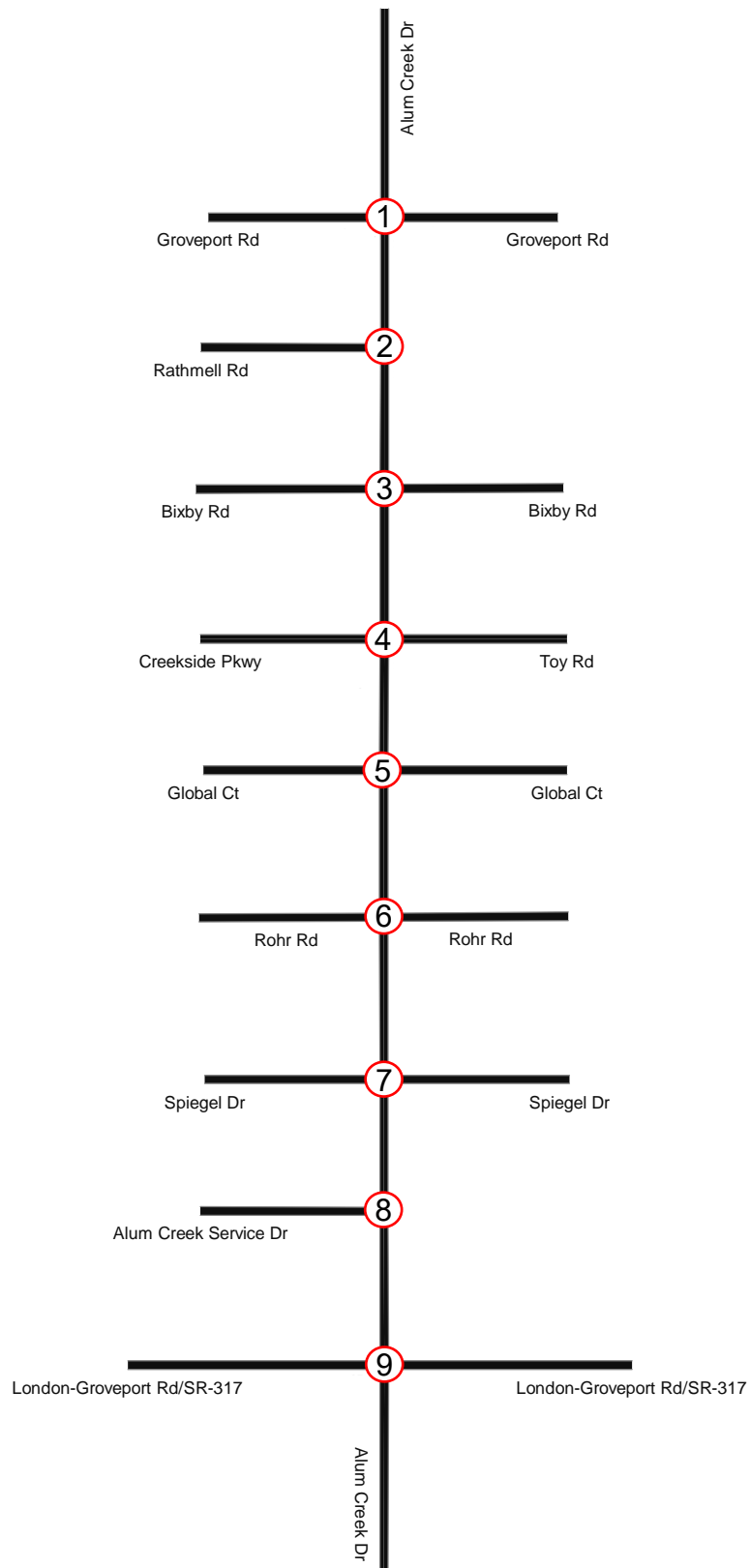


APPENDIX

D.

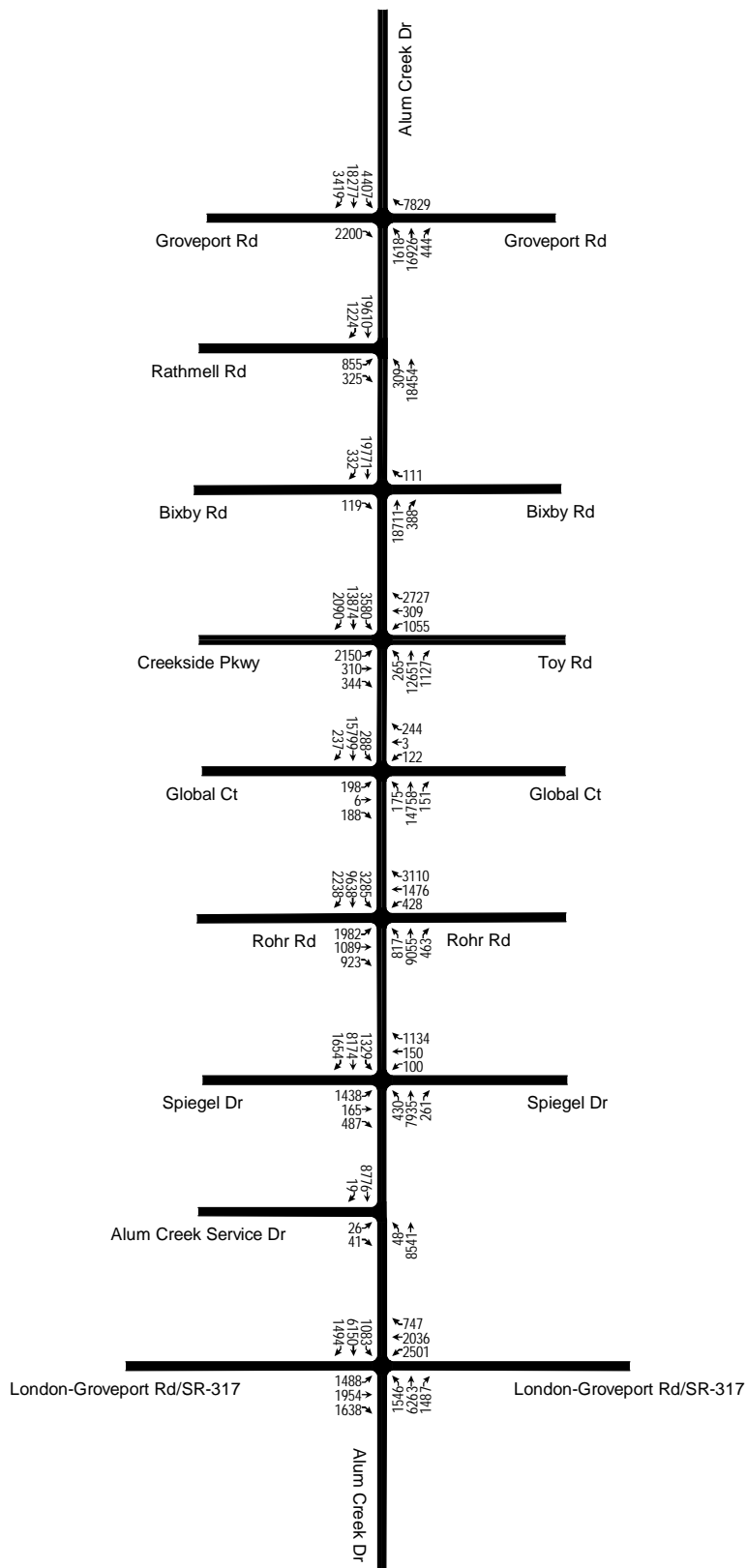
Certified Traffic Volumes

Exhibit 1: Project Study Location



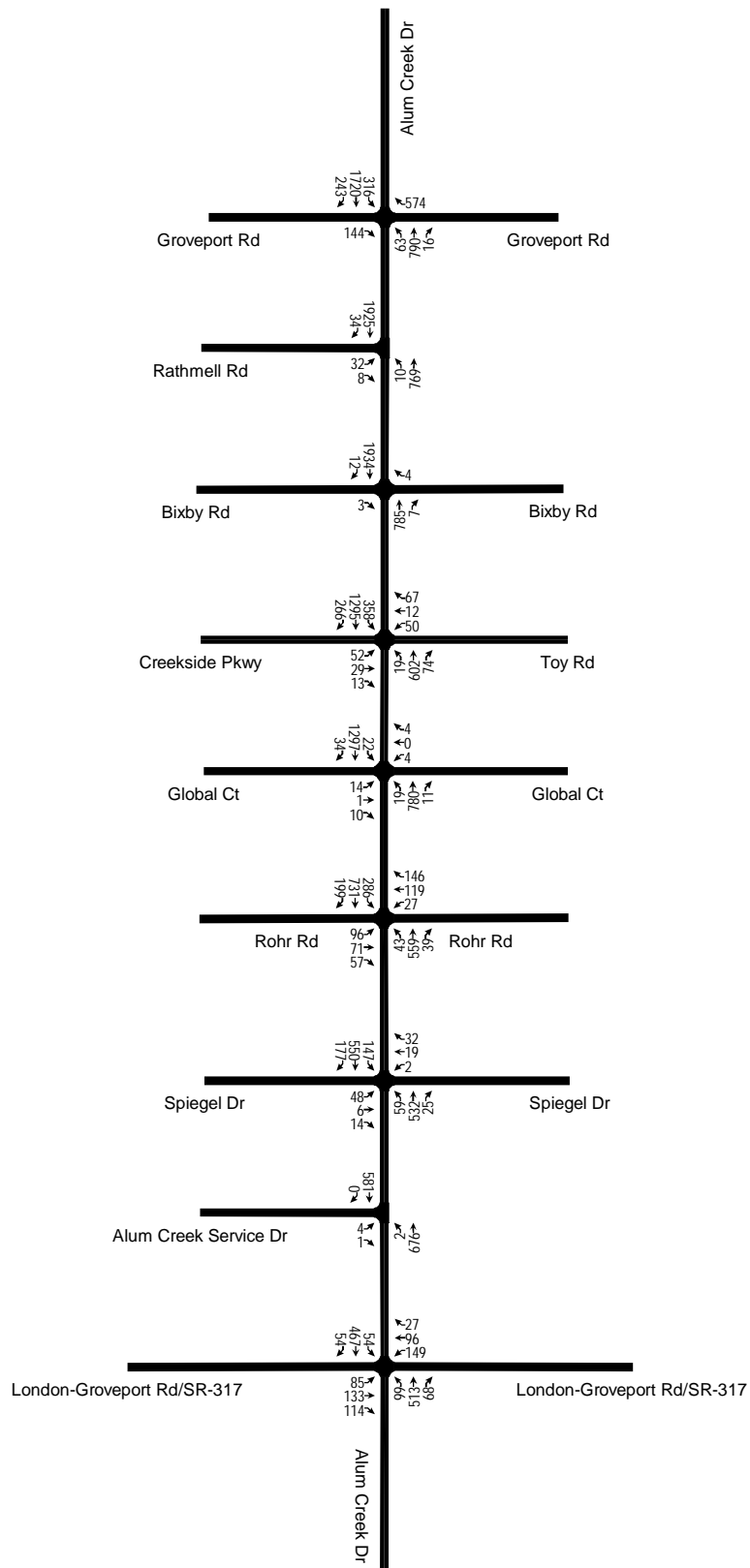
Alum Creek Drive

Exhibit 2: Weekday 2022 Existing Counts



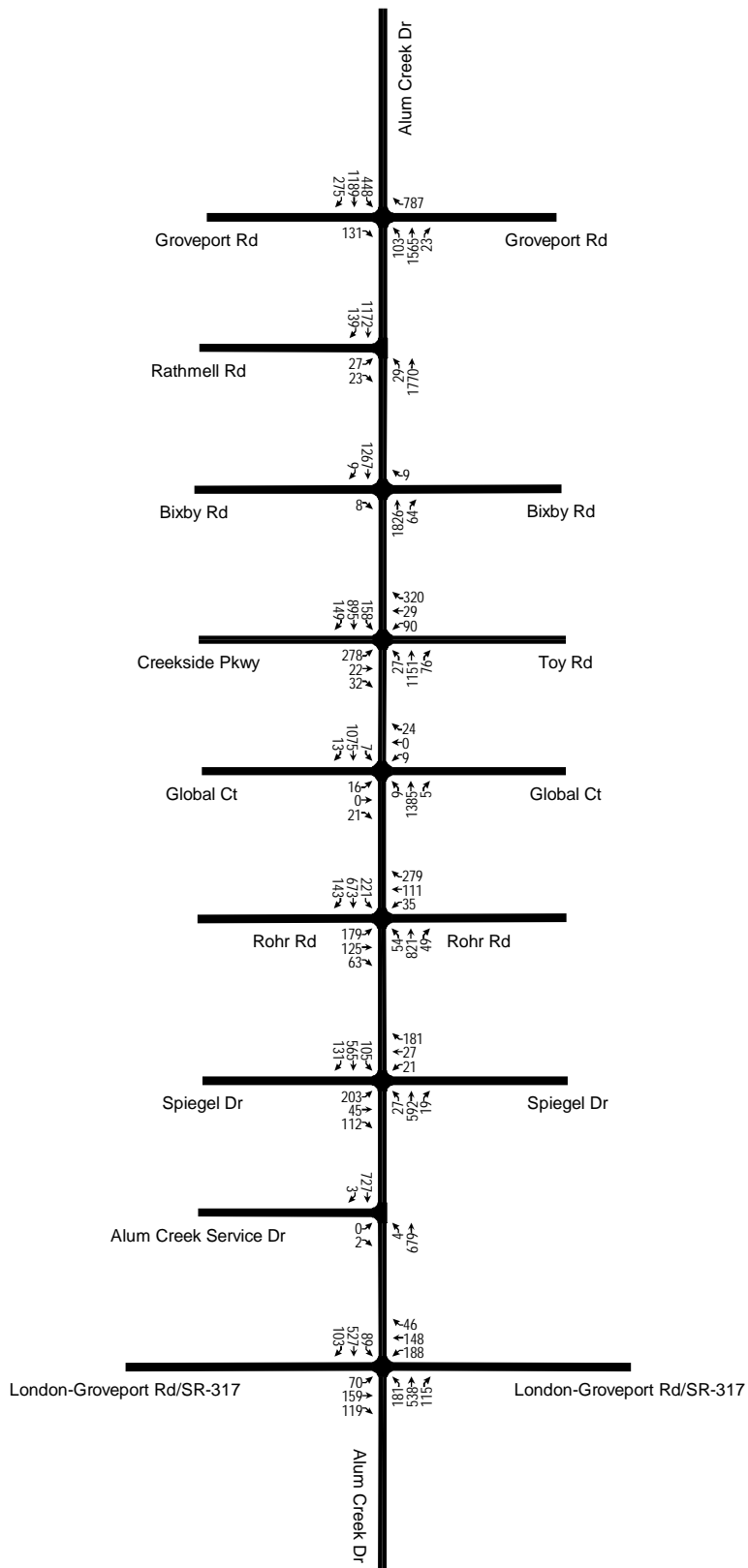
Alum Creek Drive

Exhibit 3: AM Peak Hour 2022 Existing Counts



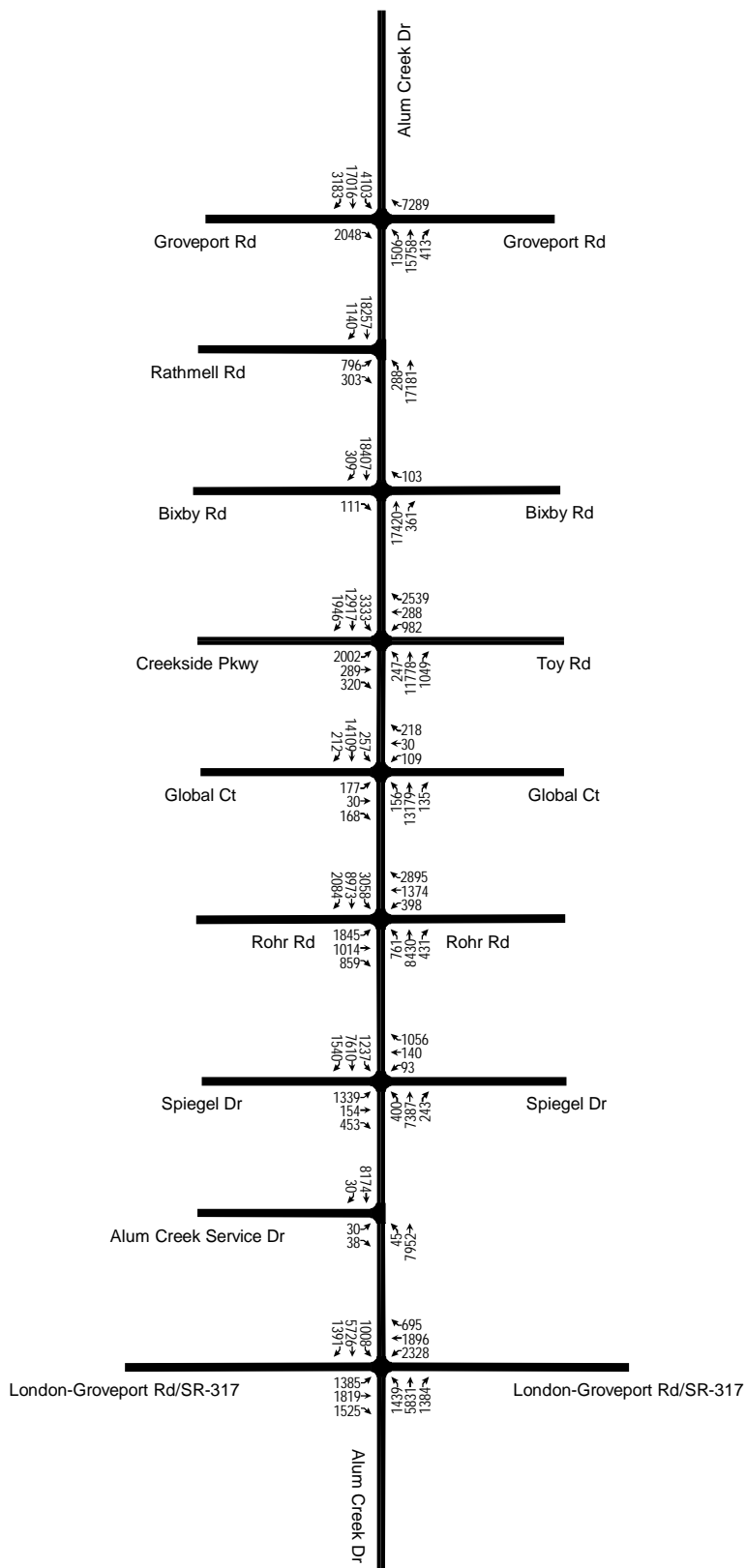
Alum Creek Drive

Exhibit 4: PM Peak Hour 2022 Existing Counts



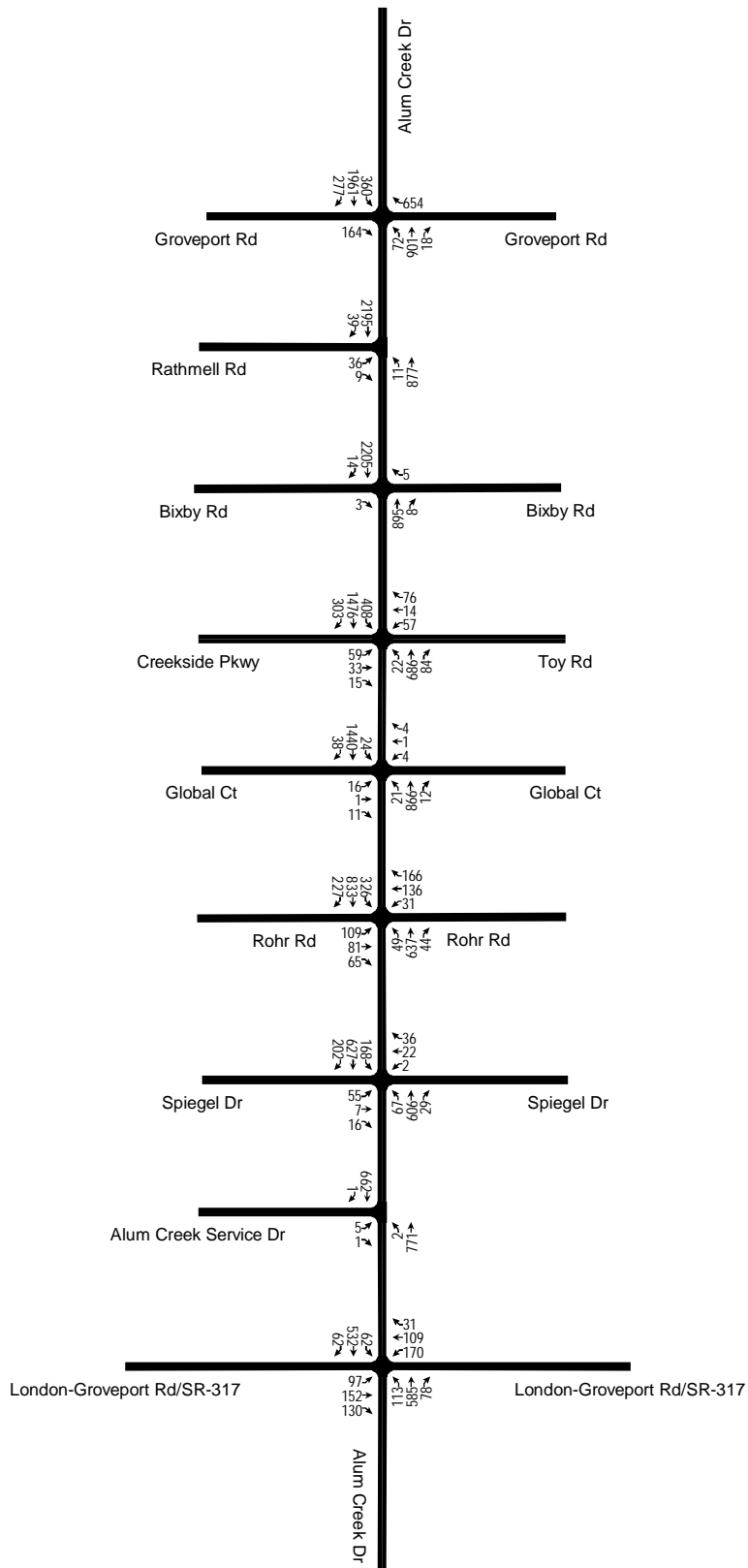
Alum Creek Drive

Exhibit 5: Weekday 2022 Adjusted Volumes



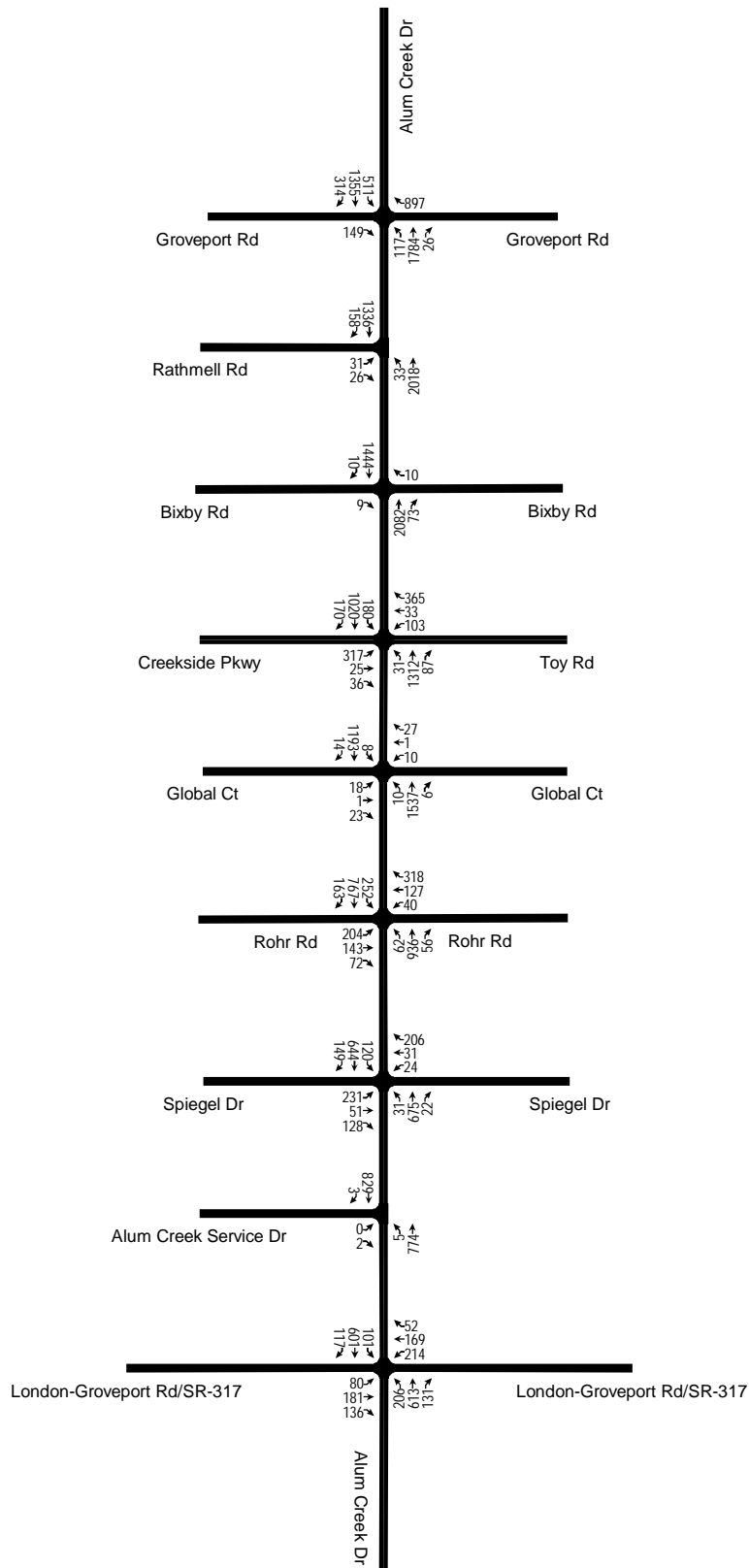
Alum Creek Drive

Exhibit 6: AM Peak Hour 2022 Adjusted Volumes



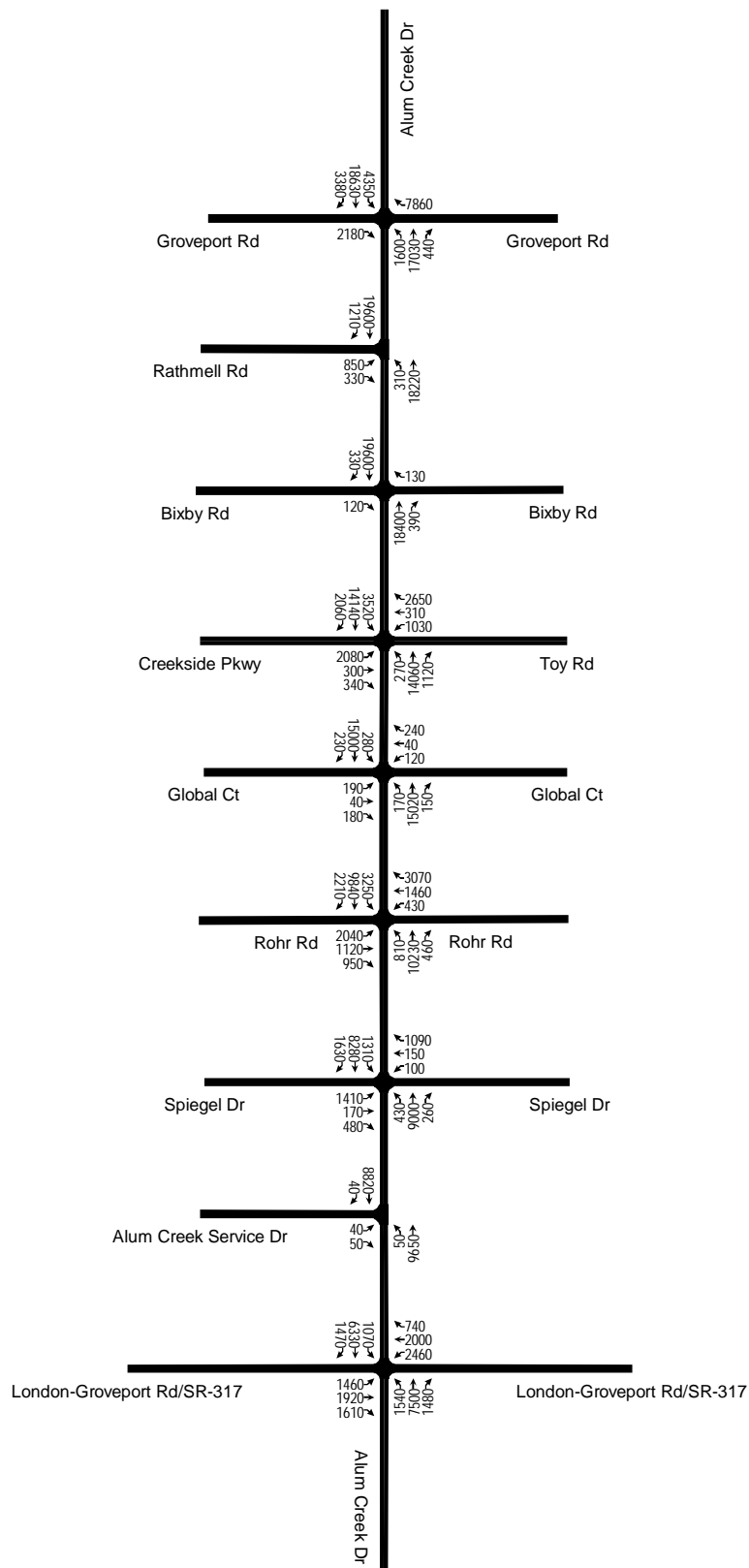
Alum Creek Drive

Exhibit 7: PM Peak Hour 2022 Adjusted Volumes



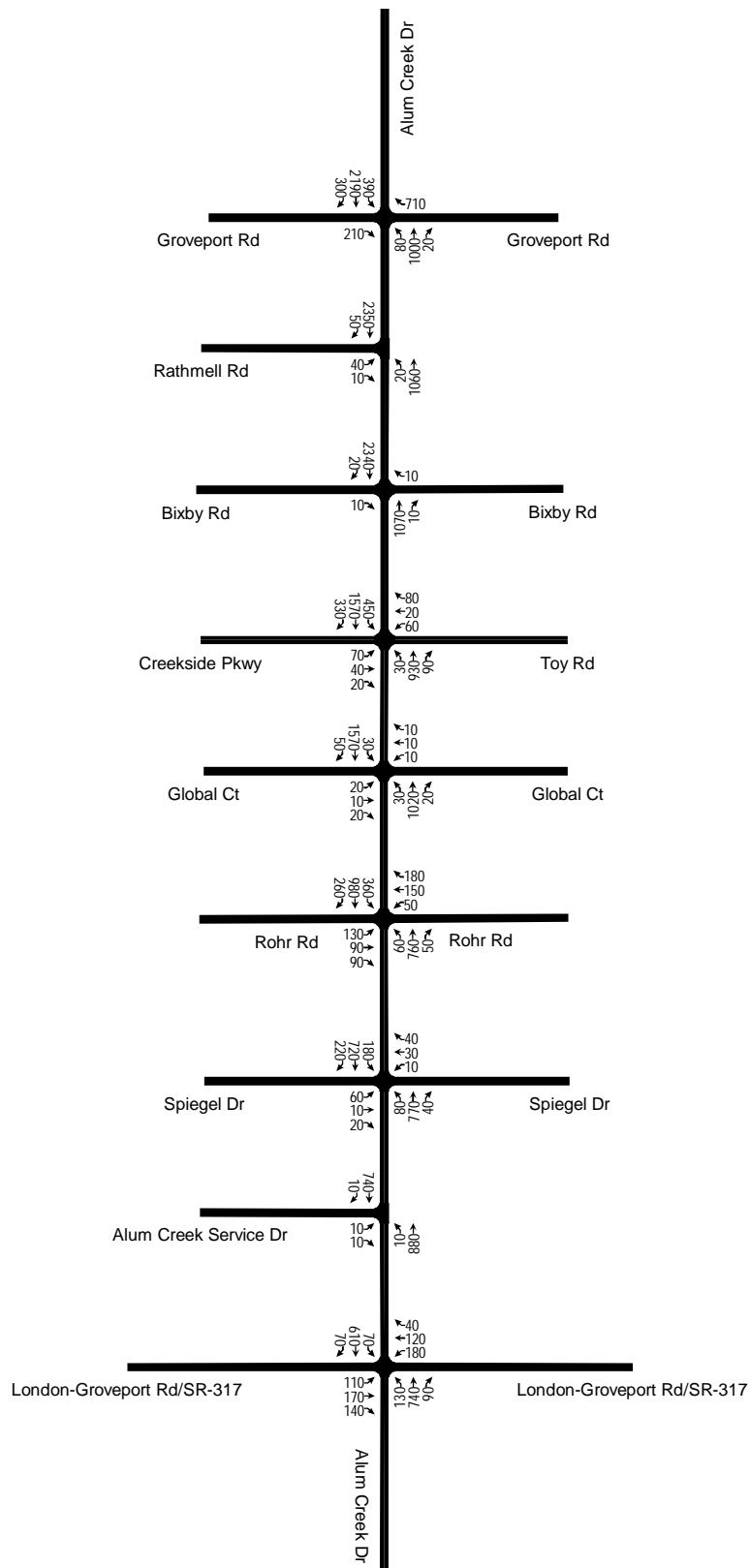
Alum Creek Drive

Exhibit 8: Daily 2028 Projections



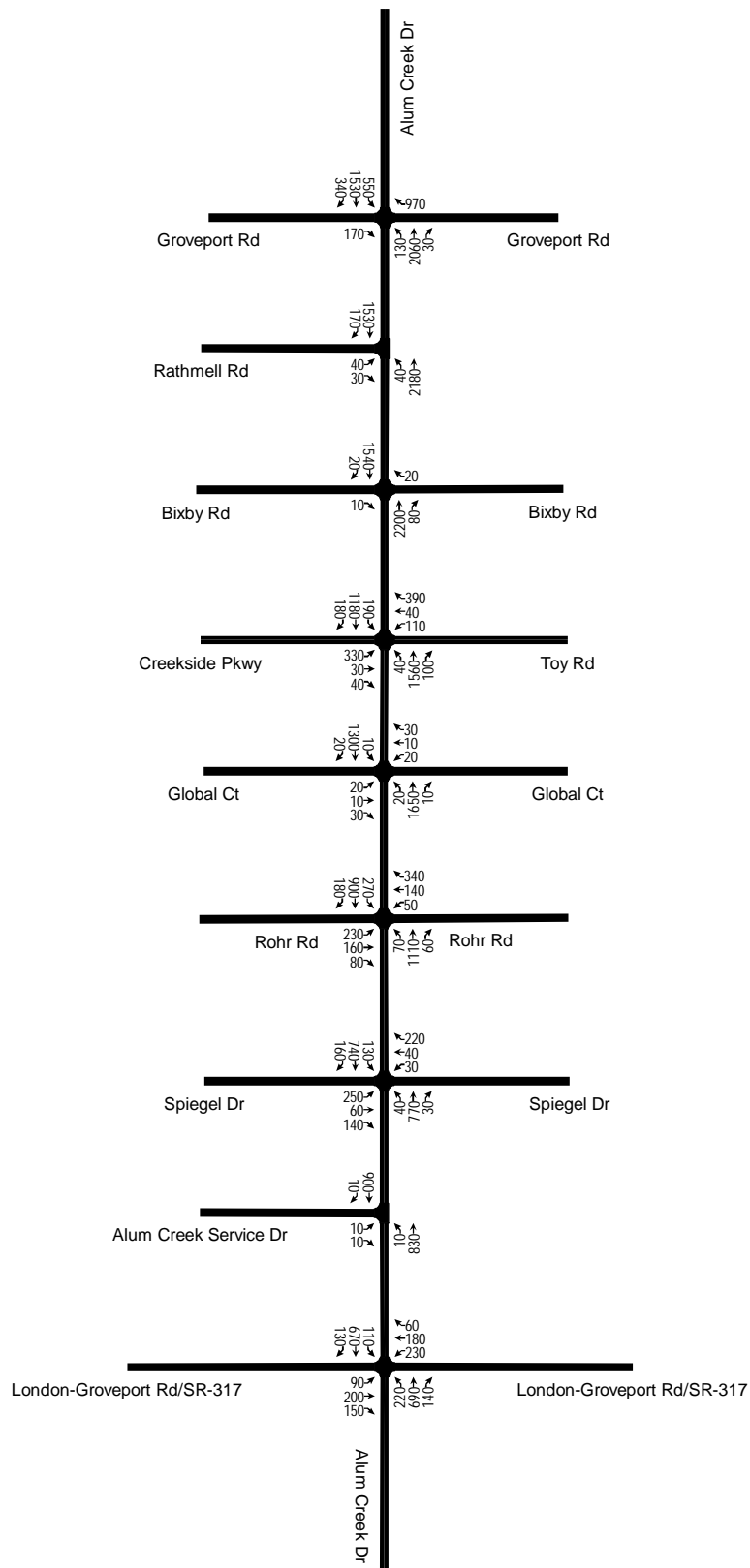
Alum Creek Drive

Exhibit 9: AM Peak Hour 2028 Projections



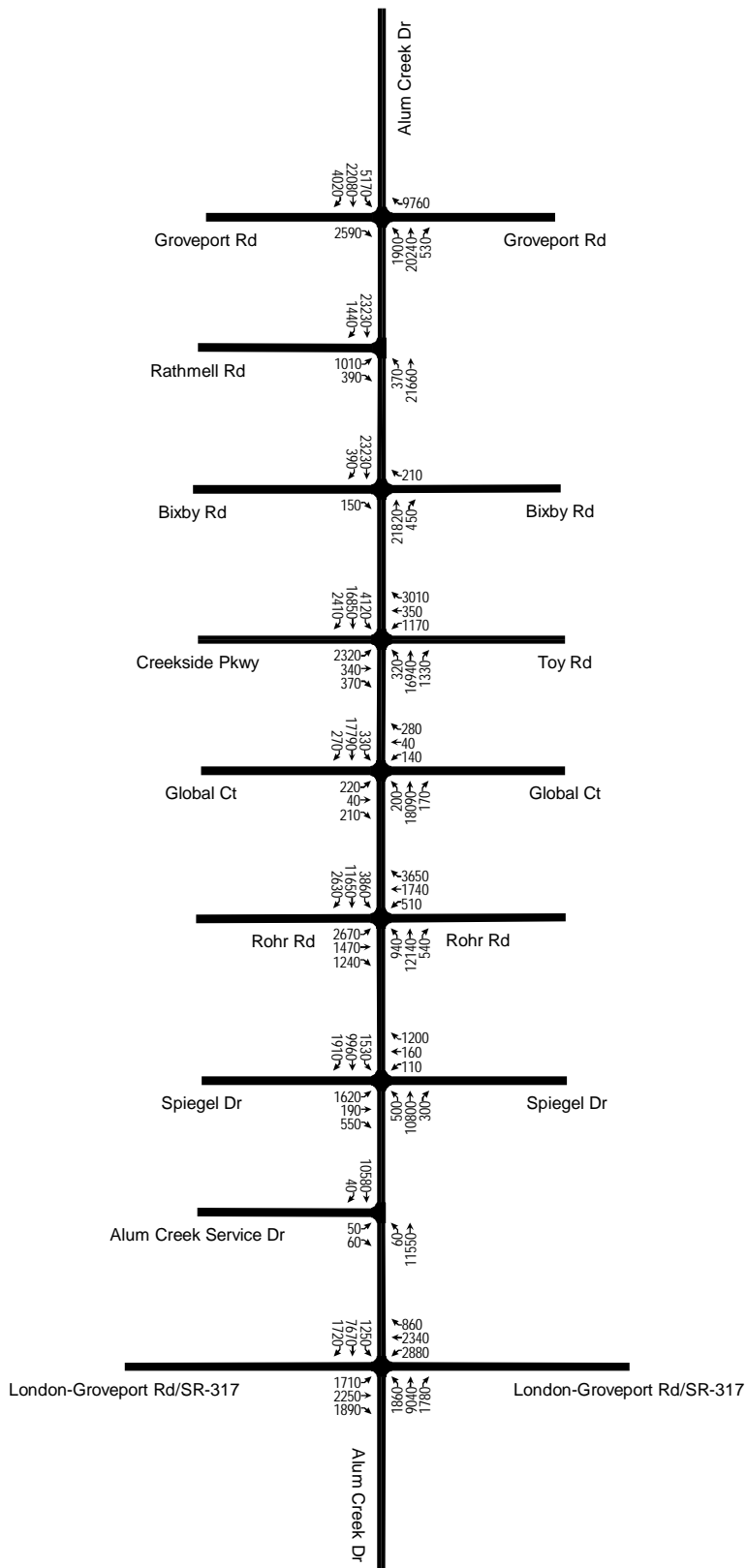
Alum Creek Drive

Exhibit 10: PM Peak Hour 2028 Projections



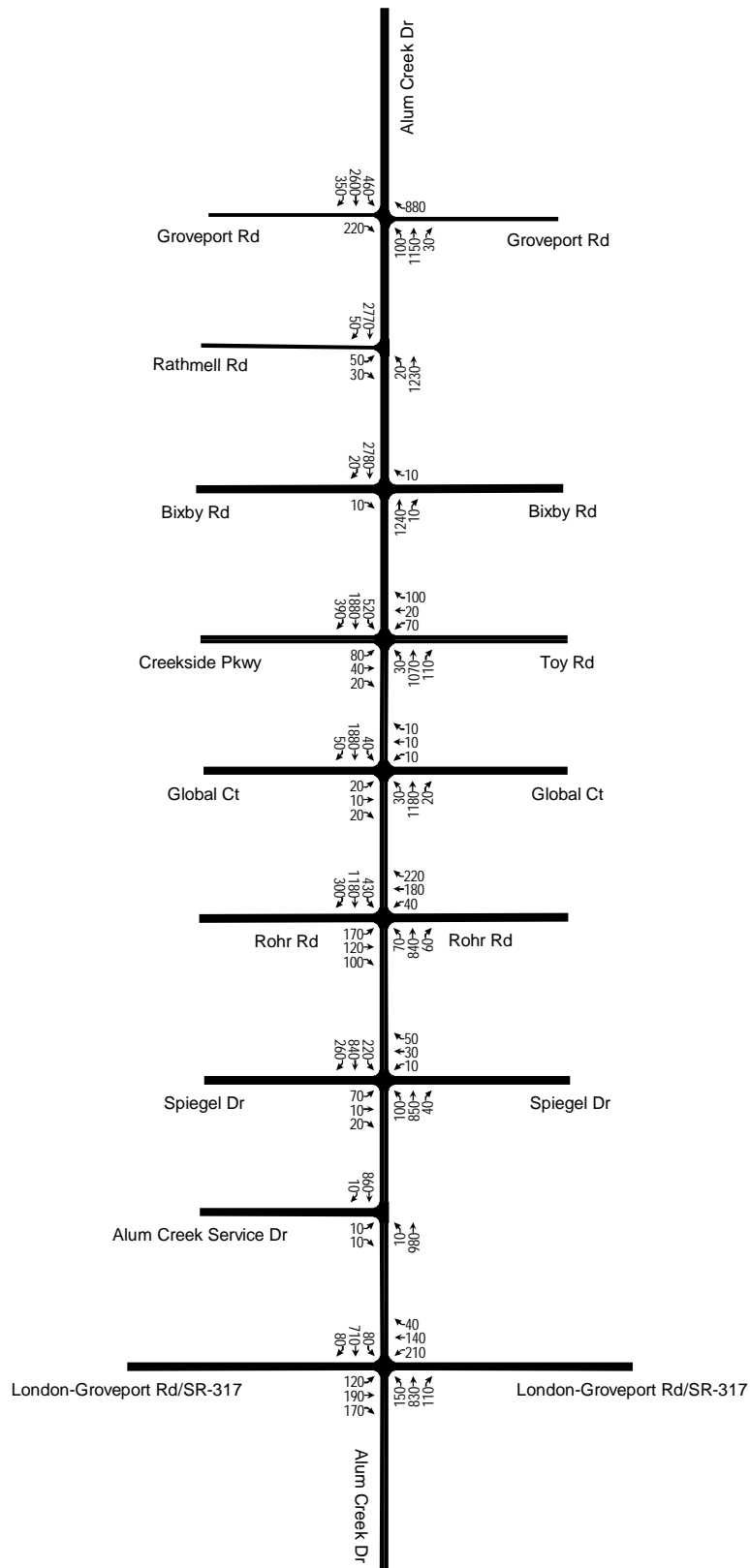
Alum Creek Drive

Exhibit 11: Daily 2048 Projections



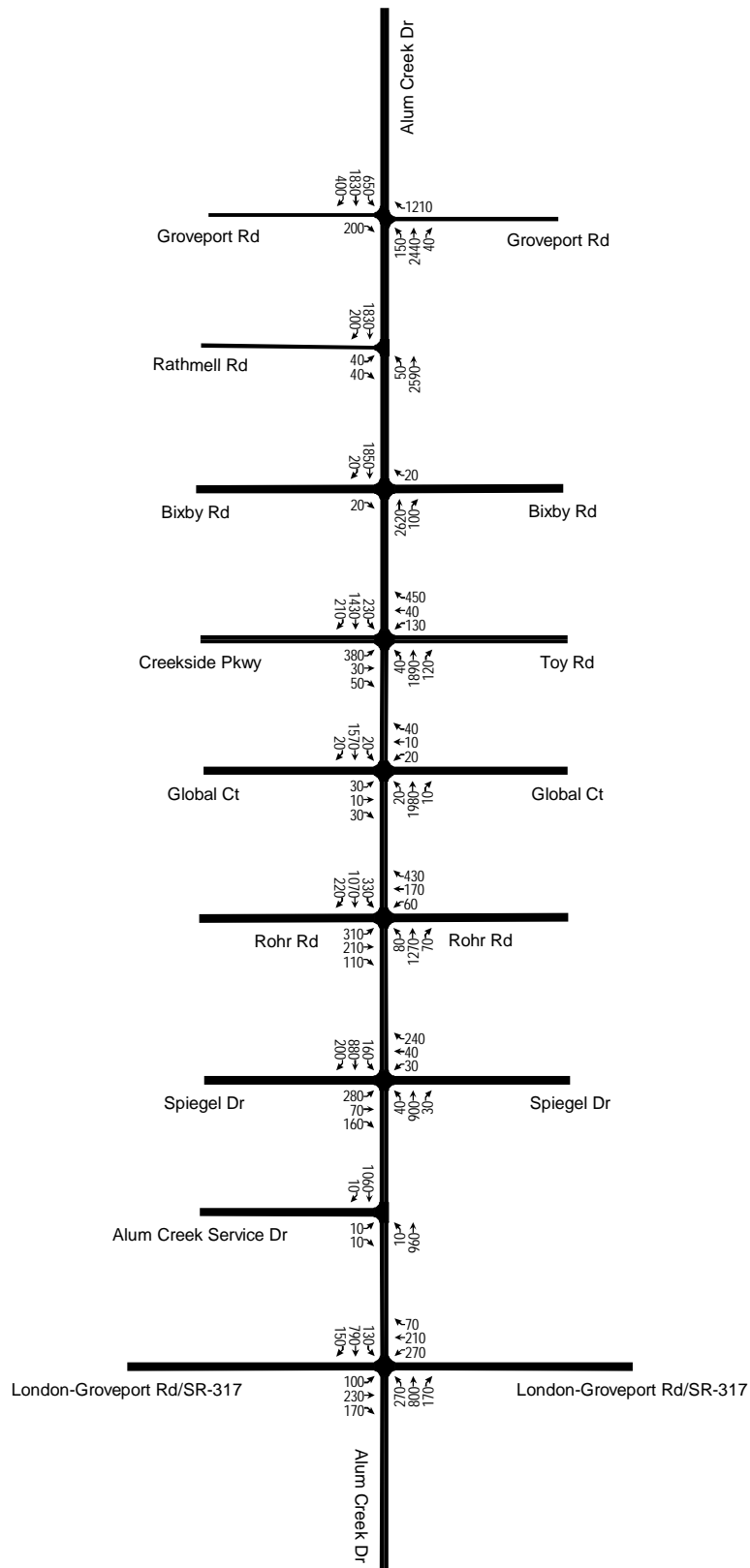
Alum Creek Drive

Exhibit 12: AM Peak Hour 2048 Projections



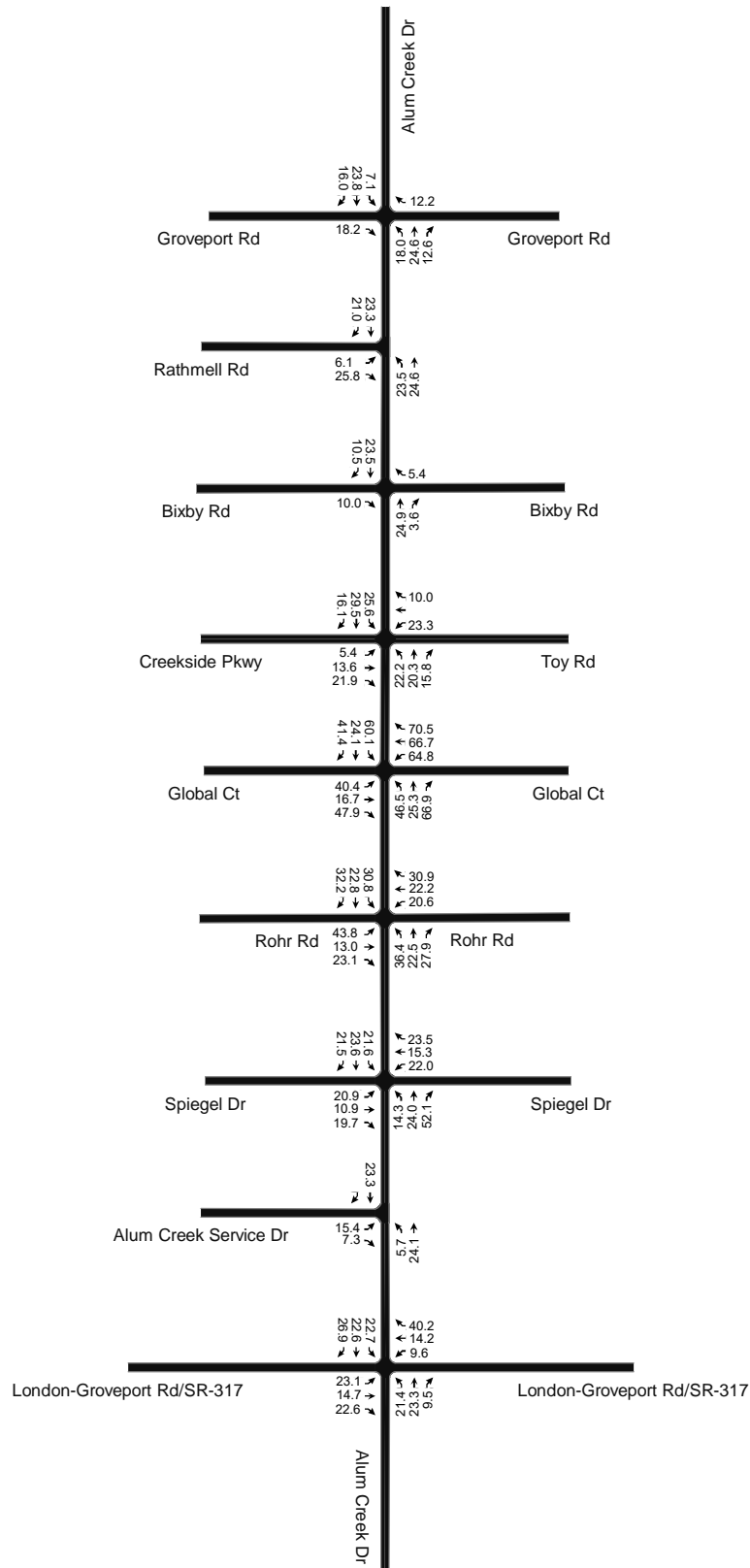
Alum Creek Drive

Exhibit 13: PM Peak Hour 2048 Projections



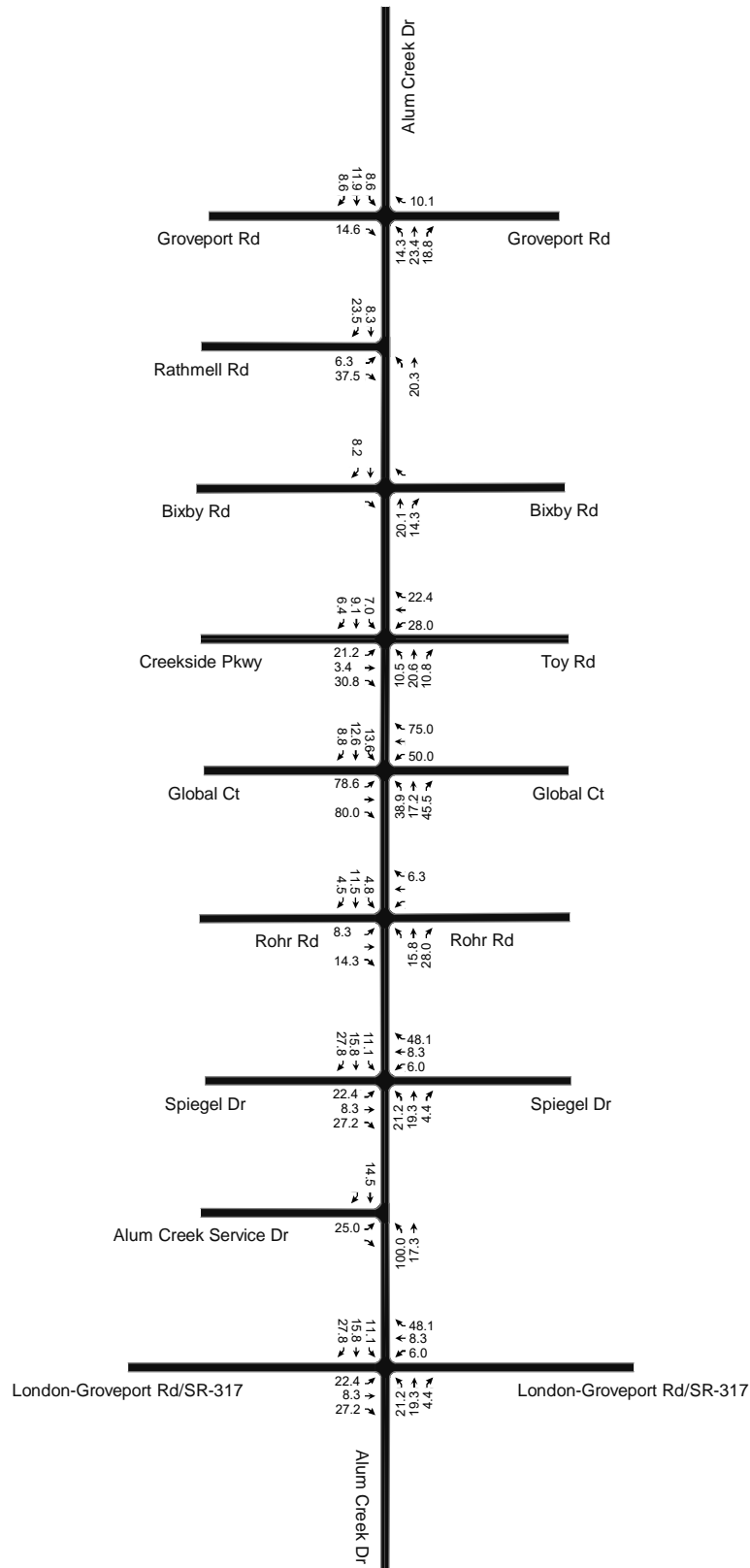
Alum Creek Drive

Exhibit 14: Weekday ADT Heavy Vehicle Percentages



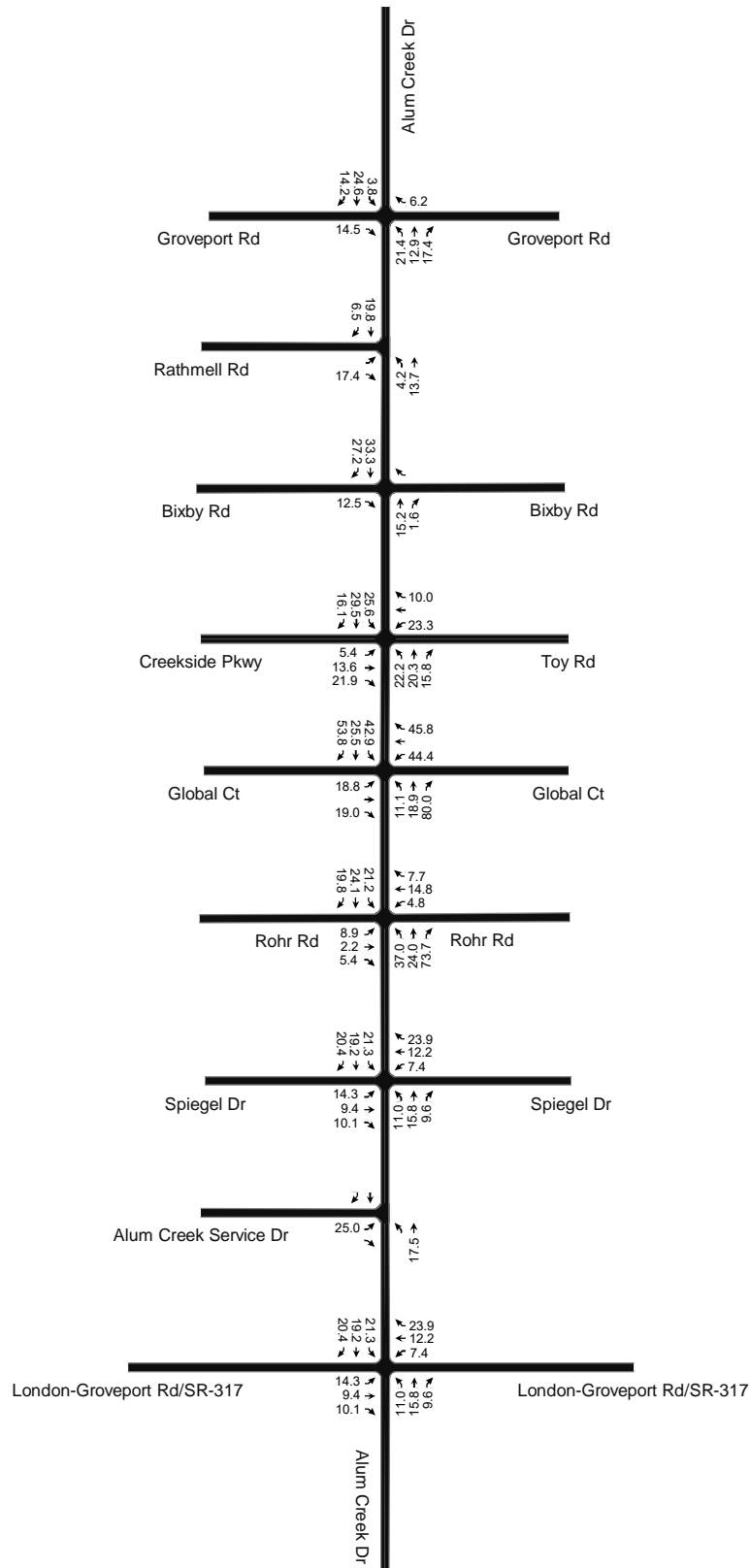
Alum Creek Drive

Exhibit 15: AM Peak Hour Heavy Vehicle Percentages



Alum Creek Drive

Exhibit 16: PM Peak Hour Heavy Vehicle Percentages



Alum Creek Drive

APPENDIX

E.

Expanded Capacity Analysis Tables

2028 Weekday AM Peak Hour- Study Intersections Capacity Analysis

Int #1	2028 AM No-Build (Signal, 130s)			Int #1	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c
EBR	69.3	E	0.81	EBR	1.4	A	0.18
EB Approach	69.3	E	0.81	EB Approach	1.4	A	0.18
WBR	44.9	D	0.86	WBR	0.1	A	0.34
WB Approach	44.9	D	0.86	WB Approach	0.1	A	0.34
NBL	54.9	D	0.38	NBL	63.5	E	0.63
NBT	19.4	B	0.55	NBT	7.7	A	0.41
NBR	14.1	B	0.02	NBR	5.3	A	0.02
NB Approach	21.9	C	0.55	NB Approach	11.8	B	0.63
SBL	42.1	D	0.78	SBL	55.3	E	0.77
SBT	12.3	B	0.78	SBT	6.9	A	0.72
SBR	6.0	A	0.25	SBR	3.5	A	0.25
SB Approach	15.7	B	0.78	SB Approach	13.1	B	0.77
Intersection	23.6	C	0.83	Intersection	10.4	B	0.78
Int #2	2028 AM No-Build (Signal, 130s)			Int #2	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c
EBL	-	-	-	EBL	-	-	-
EBT	-	-	-	EBT	42.6	D	0.19
EBR	-	-	-	EBR	-	-	-
EB Approach	-	-	-	EB Approach	42.6	D	0.19
NBL	-	-	-	NBL	32.0	C	0.18
NBT	98.0	F	0.41	NBT	26.4	C	0.40
NB Approach	-	-	-	NB Approach	26.5	C	0.40
SBT	-	-	-	SBT	31.9	C	0.93
SBR	-	-	-	SBR	40.2	D	0.94
SB Approach	-	-	-	SB Approach	34.7	C	0.94
Intersection	-	-	-	Intersection	32.4	D	-
Int #3	2028 AM No-Build (TWSC)			Int #3	2028 AM Build (TWSC)		
Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c
EBR	47.4	E	0.14	EBR	14.7	B	0.03
EB Approach	47.4	E	0.14	EB Approach	14.7	B	0.03
WBR	10.1	B	0.02	WBR	11.5	B	0.02
WB Approach	10.1	B	0.02	WB Approach	11.5	B	0.02
NBT	-	-	-	NBT	-	-	-
NBR	-	-	-	NBR	-	-	-
NB Approach	-	-	-	NB Approach	-	-	-
SBT	-	-	-	SBT	-	-	-

2028 Weekday AM Peak Hour- Study Intersections Capacity Analysis

SBR	-	-	-	SBR	-	-	-
SB Approach	-	-	-	SB Approach	-	-	-
Intersection	-	-	-	Intersection	-	-	-
Int #4	2028 AM No-Build (Signal, 130s)			Int #4	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c
EBL	54.4	D	0.29	EBL	51.6	D	0.24
EBT	51.0	D	0.35	EBT	49.1	D	0.32
EBR	-	-	-	EBR	-	-	-
EB Approach	52.8	D	0.35	EB Approach	50.5	D	0.32
WBL	50.2	D	0.34	WBL	51.1	D	0.33
WBT	54.6	D	0.17	WBT	55.5	E	0.19
WBR	37.0	D	0.17	WBR	32.5	C	0.14
WB Approach	44.2	D	0.34	WB Approach	42.4	D	0.33
NBL	29.3	C	0.20	NBL	22.4	C	0.10
NBT	46.8	D	0.71	NBT	51.4	D	0.58
NBR	31.7	C	0.16	NBR	34.3	C	0.16
NB Approach	45.0	D	0.71	NB Approach	49.1	D	0.58
SBL	97.7	F	1.02	SBL	51.7	D	0.77
SBT	47.7	F	1.00	SBT	45.0	D	0.90
SBR	10.1	B	0.40	SBR	22.2	C	0.48
SB Approach	52.0	D	1.02	SB Approach	43.1	D	0.90
Intersection	49.8	D	-	Intersection	44.9	D	-
Int #5	2028 AM No-Build (Signal, 130s)			Int #5	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c
EBL	44.6	D	0.14	EBL	40.1	D	0.12
EBT	40.4	D	0.21	EBT	36.4	D	0.18
EBR	-	-	-	EBR	-	-	-
EB Approach	42.0	D	0.21	EB Approach	37.9	D	0.18
WBL	-	-	-	WBL	-	-	-
WBT	39.6	D	0.11	WBT	35.6	D	0.09
WBR	31.3	C	0.05	WBR	27.3	C	0.04
WB Approach	36.9	D	0.11	WB Approach	32.8	C	0.09
NBL	30.2	C	0.15	NBL	19.1	B	0.15
NBT	36.9	D	0.47	NBT	33.0	C	0.47
NBR	37.3	D	0.47	NBR	34.2	C	0.47
NB Approach	36.9	D	0.47	NB Approach	33.0	C	0.47
SBL	52.8	D	0.16	SBL	47.9	D	0.14
SBT	37.3	F	1.01	SBT	37.2	D	0.76
SBR	40.8	F	1.02	SBR	38.6	D	0.77

2028 Weekday AM Peak Hour- Study Intersections Capacity Analysis

SB Approach	39.3	D	1.02	SB Approach	37.8	D	0.77
Intersection	38.5	D	-	Intersection	36.0	D	-
Int #6	2028 AM No-Build (Signal, 130s)			Int #6	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c
EBL	44.2	D	0.28	EBL	40.8	D	0.32
EBT	37.7	D	0.52	EBT	29.6	C	0.50
EBR	-	-	-	EBR	-	-	-
EB Approach	40.4	D	0.52	EB Approach	34.3	C	0.50
WBL	31.4	C	0.15	WBL	34.1	C	0.16
WBT	45.7	D	0.51	WBT	44.7	D	0.48
WBR	34.9	C	0.47	WBR	28.0	C	0.45
WB Approach	38.7	D	0.51	WB Approach	35.4	D	0.48
NBL	32.2	C	0.32	NBL	32.1	C	0.31
NBT	47.6	D	0.80	NBT	46.9	D	0.55
NBR	43.6	D	-	NBR	0.0	A	-
NB Approach	43.8	D	0.80	NB Approach	42.5	D	0.55
SBL	26.6	C	0.77	SBL	19.3	B	0.66
SBT	54.7	F	1.06	SBT	49.9	D	0.69
SBR	0.0	A	-	SBR	0.0	A	-
SB Approach	39.5	D	1.06	SB Approach	34.9	C	0.69
Intersection	40.6	D	-	Intersection	36.9	D	-
Int #7	2028 AM No-Build (Signal, 130s)			Int #7	2028 AM Build (Signal, 130s)		
Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c
EBL	28.8	C	0.14	EBL	32.4	C	0.15
EBT	26.7	C	0.06	EBT	30.1	C	0.07
EBR	-	-	-	EBR	-	-	-
EB Approach	28.7	C	0.14	EB Approach	31.6	C	0.15
WBL	27.6	C	0.02	WBL	31.0	C	0.03
WBT	26.6	C	0.05	WBT	30.0	C	0.06
WBR	27.0	C	0.08	WBR	14.0	B	0.06
WB Approach	26.9	C	0.08	WB Approach	22.1	C	0.06
NBL	29.2	C	0.30	NBL	25.3	B	0.30
NBT	19.4	B	0.75	NBT	28.6	D	0.53
NBR	19.0	B	0.75	NBR	29.9	D	0.53
NB Approach	20.1	C	0.75	NB Approach	28.7	C	0.53
SBL	22.5	C	0.49	SBL	10.5	B	0.42
SBT	47.1	D	0.80	SBT	38.1	D	0.50
SBR	47.3	D	0.80	SBR	42.7	D	0.50
SB Approach	43.3	D	0.80	SB Approach	24.8	C	0.50
Intersection	32.9	C	-	Intersection	31.9	C	-

2028 Weekday AM Peak Hour- Study Intersections Capacity Analysis

Int #8	2028 AM No-Build (TWSC)			Int #8	2028 AM Build (TWSC)		
Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c
EBL	-	-	-	EBL	-	-	-
EBT	17.2	C	0.07	EBT	15.6	C	0.06
EBR	-	-	-	EBR	-	-	-
EB Approach	17.2	C	0.07	EB Approach	15.6	C	0.06
WBL	-	-	-	WBL	-	-	-
WBT	-	-	-	WBT	-	-	-
WBR	-	-	-	WBR	-	-	-
WB Approach	-	-	-	WB Approach	-	-	-
NBL	11.7	B	0.02	NBL	15.6	C	0.03
NBT	-	-	-	NBT	-	-	-
NBR	-	-	-	NBR	-	-	-
NB Approach	11.7	B	0.02	NB Approach	15.6	C	0.03
SBL	-	-	-	SBL	-	-	-
SBT	-	-	-	SBT	-	-	-
SBR	-	-	-	SBR	-	-	-
SB Approach	-	-	-	SB Approach	-	-	-
Intersection	-	-	-	Intersection	-	-	-

Int #9	2028 AM No-Build (Signal, 130s)			Int #9	2028 AM Build (Signal, 130s)		
Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c	Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c
EBL	33.5	C	0.32	EBL	35.2	D	0.32
EBT	46.9	D	0.55	EBT	51.2	D	0.62
EBR	37.8	D	0.40	EBR	51.2	D	0.44
EB Approach	40.3	D	0.55	EB Approach	43.7	D	0.62
WBL	33.9	C	0.52	WBL	45.0	D	0.64
WBT	41.5	D	0.32	WBT	53.2	D	0.54
WBR	32.2	C	0.10	WBR	39.8	D	0.13
WB Approach	36.4	D	0.52	WB Approach	34.4	D	0.64
NBL	28.3	C	0.60	NBL	28.4	C	0.57
NBT	36.5	D	0.74	NBT	37.4	D	0.70
NBR	19.1	B	0.15	NBR	18.6	B	0.15
NB Approach	37.6	D	0.74	NB Approach	34.4	C	0.70
SBL	29.0	C	0.35	SBL	24.3	C	0.30
SBT	57.5	E	0.64	SBT	51.6	D	0.60
SBR	32.2	C	0.13	SBR	22.3	C	0.11
SB Approach	52.5	D	0.64	SB Approach	46.3	D	0.60
Intersection	42.6	D	-	Intersection	41.6	D	-

2028 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Int #1	2028 PM No-Build (Signal, 130s)			Int #1	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c
EBR	63.0	E	0.67	EBR	7.8	A	0.14
EB Approach	63.0	E	0.67	EB Approach	7.8	A	0.14
WBR	52.9	D	0.94	WBR	6.1	A	0.48
WB Approach	52.9	D	0.94	WB Approach	6.1	A	0.48
NBL	62.4	E	0.68	NBL	53.4	D	0.56
NBT	27.1	C	0.94	NBT	15.0	B	0.72
NBR	45.8	D	0.02	NBR	7.2	A	0.02
NB Approach	29.4	C	0.94	NB Approach	17.1	B	0.72
SBL	61.7	E	0.95	SBL	53.0	D	0.81
SBT	5.1	A	0.47	SBT	6.5	A	0.49
SBR	4.3	A	0.26	SBR	5.3	A	0.26
SB Approach	17.9	B	0.95	SB Approach	16.9	B	0.81
Intersection	29.5	C	0.94	Intersection	14.9	B	0.78
Int #2	2028 PM No-Build (Signal, 130s)			Int #2	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c
EBL	-	-	-	EBL	-	-	-
EBT	2205.3	F	4.82	EBT	33.5	C	0.02
EBR	-	-	-	EBR	-	-	-
EB Approach	-	-	-	EB Approach	37.4	C	0.02
NBL	19.4	C	0.15	NBL	46.4	D	0.18
NBT	-	-	-	NBT	38.1	D	0.89
NB Approach	-	-	-	NB Approach	38.3	D	0.89
SBT	-	-	-	SBT	34.7	C	0.82
SBR	-	-	-	SBR	39.8	D	0.82
SB Approach	-	-	-	SB Approach	36.3	D	0.82
Intersection	-	-	-	Intersection	37.4	D	-
Int #3	2028 PM No-Build (TWSC)			Int #3	2028 PM Build (TWSC)		
Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c
EBR	18.0	C	0.04	EBR	13.0	B	0.03
EB Approach	18.0	C	0.04	EB Approach	13.0	B	0.03
WBR	18.0	C	0.07	WBR	19.9	C	0.09
WB Approach	18.0	C	0.07	WB Approach	19.9	C	0.09
NBT	-	-	-	NBT	-	-	-
NBR	-	-	-	NBR	-	-	-
NB Approach	-	-	-	NB Approach	-	-	-
SBT	-	-	-	SBT	-	-	-
SBR	-	-	-	SBR	-	-	-
SB Approach	-	-	-	SB Approach	-	-	-

2028 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Intersection	-	-		Intersection	-	-	
Intersection #4							
Int #4	2028 PM No-Build (Signal, 130s)			Int #4	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c
EBL	66.5	E	0.82	EBL	53.8	D	0.67
EBT	51.8	D	0.35	EBT	47.2	D	0.27
EBR	-	-		EBR	-	-	
EB Approach	64.0	E	0.82	EB Approach	52.6	D	0.67
WBL	50.5	D	0.44	WBL	51.4	D	0.45
WBT	63.0	E	0.32	WBT	57.2	E	0.32
WBR	56.7	E	0.75	WBR	43.5	D	0.62
WB Approach	55.9	E	0.75	WB Approach	46.1	D	0.62
NBL	24.2	C	0.10	NBL	20.1	C	0.16
NBT	95.2	F	1.16	NBT	51.0	D	0.96
NBR	9.8	A	0.17	NBR	27.9	C	0.20
NB Approach	88.5	F	1.16	NB Approach	48.9	D	0.96
SBL	52.8	D	0.53	SBL	26.4	C	0.33
SBT	110.7	F	1.13	SBT	36.7	D	0.61
SBR	18.5	B	0.29	SBR	29.7	C	0.30
SB Approach	92.9	F	1.13	SB Approach	34.6	C	0.61
Intersection	83.7	F	-	Intersection	43.7	D	-
Intersection #5							
Int #5	2028 PM No-Build (Signal, 130s)			Int #5	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c
EBL	55.1	E	0.13	EBL	36.2	D	0.06
EBT	50.4	D	0.22	EBT	33.3	C	0.10
EBR	-	-		EBR	-	-	
EB Approach	52.0	D	0.22	EB Approach	34.3	C	0.10
WBL	-	-		WBL	-	-	
WBT	51.8	D	0.19	WBT	34.0	C	0.10
WBR	37.9	D	0.12	WBR	25.2	C	0.08
WB Approach	44.9	D	0.19	WB Approach	29.6	C	0.10
NBL	21.0	C	0.04	NBL	10.1	B	0.09
NBT	29.1	C	0.93	NBT	30.2	C	0.79
NBR	29.3	C	0.93	NBR	32.4	C	0.79
NB Approach	29.1	C	0.93	NB Approach	30.7	C	0.79
SBL	56.7	E	0.03	SBL	49.0	D	0.04
SBT	34.9	F	1.01	SBT	23.7	C	0.69
SBR	35.0	F	1.01	SBR	25.8	C	0.69
SB Approach	35.1	D	1.01	SB Approach	24.6	C	0.69
Intersection	32.2	C	-	Intersection	28.2	C	

2028 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Int #6	2028 PM No-Build (Signal, 130s)			Int #6	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c
EBL	67.6	E	0.80	EBL	50.7	D	0.57
EBT	47.8	D	0.10	EBT	38.0	D	0.60
EBR	-	-		EBR	-	-	-
EB Approach	57.5	E	0.80	EB Approach	44.2	D	0.60
WBL	37.0	D	0.26	WBL	32.5	C	0.18
WBT	45.2	D	0.48	WBT	42.3	D	0.42
WBR	35.4	D	0.85	WBR	44.2	D	0.78
WB Approach	49.7	D	0.85	WB Approach	42.6	D	0.78
NBL	21.8	C	0.22	NBL	20.4	C	0.24
NBT	68.8	E	1.00	NBT	45.6	D	0.83
NBR	0.0	A		NBR	0.0	A	-
NB Approach	62.9	E	1.00	NB Approach	41.9	D	0.83
SBL	30.9	C	0.54	SBL	26.2	C	0.53
SBT	44.8	D	0.81	SBT	49.3	D	0.64
SBR	0.0	A	-	SBR	0.0	A	-
SB Approach	36.1	D	0.81	SB Approach	38.1	D	0.64
Intersection	51.0	D	-	Intersection	41.0	D	-
Int #7	2028 PM No-Build (Signal, 130s)			Int #7	2028 PM Build (Signal, 130s)		
Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c
EBL	38.5	D	0.59	EBL	40.8	D	0.62
EBT	32.3	C	0.42	EBT	33.8	C	0.44
EBR	-	-		EBR	-	-	-
EB Approach	35.7	D	0.59	EB Approach	37.7	D	0.62
WBL	38.8	D	0.11	WBL	40.7	D	0.12
WBT	28.2	C	0.07	WBT	29.5	C	0.08
WBR	33.2	C	0.48	WBR	34.9	C	0.51
WB Approach	33.1	C	0.48	WB Approach	34.8	C	0.51
NBL	23.4	C	0.12	NBL	13.3	B	0.15
NBT	33.5	C	0.64	NBT	39.0	D	0.47
NBR	33.4	C	0.64	NBR	40.3	D	0.47
NB Approach	33.0	C	0.64	NB Approach	38.2	D	0.47
SBL	28.3	C	0.48	SBL	9.3	A	0.39
SBT	37.7	D	0.86	SBT	29.4	C	0.47
SBR	36.3	D	0.86	SBR	31.7	C	0.48
SB Approach	35.9	D	0.86	SB Approach	27.5	C	0.48
Intersection	34.6	C	-	Intersection	33.6	C	-
Int #8	2028 PM No-Build (TWSC)			Int #8	2028 PM Build (TWSC)		
Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c

2028 Weekday PM Peak Hour- Study Intersections Capacity Analysis

EBL	-	-		EBL	-	-	
EBT	11.8	B	0.04	EBT	16.5	C	0.07
EBR	-	-		EBR	-	-	
EB Approach	11.8	B	0.04	EB Approach	16.5	C	0.07
WBL	-	-		WBL	-	-	
WBT	-	-		WBT	-	-	
WBR	-	-		WBR	-	-	
WB Approach	-	-		WB Approach	-	-	
NBL	10.9	B	0.02	NBL	18.1	C	0.04
NBT	-	-		NBT	-	-	
NBR	-	-		NBR	-	-	
NB Approach	10.9	B	0.02	NB Approach	18.1	C	0.04
SBL	-	-		SBL	-	-	
SBT	-	-		SBT	-	-	
SBR	-	-		SBR	-	-	
SB Approach	-	-		SB Approach	-	-	
Intersection	-	-		Intersection	-	-	

Int #9	2028 PM No-Build (Signal, 130s)			Int #9	2028 PM Build (Signal, 130s)		
Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c	Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c
EBL	36.9	D	0.30	EBL	37.2	D	0.32
EBT	63.6	E	0.78	EBT	69.1	E	0.82
EBR	43.9	D	0.49	EBR	32.3	C	0.34
EB Approach	51.4	D	0.78	EB Approach	50.0	D	0.82
WBL	44.2	D	0.73	WBL	49.8	D	0.78
WBT	48.0	D	0.60	WBT	52.8	D	0.64
WBR	27.2	D	0.12	WBR	26.5	C	0.12
WB Approach	43.5	C	0.73	WB Approach	48.0	D	0.78
NBL	75.2	D	0.91	NBL	31.4	C	0.67
NBT	51.7	E	0.85	NBT	60.7	D	0.91
NBR	24.0	D	0.25	NBR	26.3	B	0.27
NB Approach	52.9	C	0.91	NB Approach	50.0	C	0.91
SBL	27.6	D	0.32	SBL	13.0	C	0.32
SBT	51.1	C	0.57	SBT	57.0	D	0.83
SBR	30.6	D	0.19	SBR	28.5	D	0.25
SB Approach	46.0	C	0.57	SB Approach	47.7	D	0.83
Intersection	49.0	D	-	Intersection	48.9	D	

2048 Weekday AM Peak Hour- Study Intersections Capacity Analysis

Int #1	2048 AM No-Build (Signal, 130s)			Int #1	2048 AM Build (Signal, 130s)		
Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c
EBR	84.8	F	0.90	EBR	1.9	A	0.22
EB Approach	84.8	F	0.90	EB Approach	1.9	A	0.22
WBR	45.4	D	0.93	WBR	0.1	A	0.42
WB Approach	46.4	D	0.93	WB Approach	0.1	A	0.42
NBL	50.5	D	0.50	NBL	74.5	E	0.66
NBT	30.1	C	0.72	NBT	23.8	C	0.49
NBR	18.7	B	0.03	NBR	18.2	B	0.03
NB Approach	31.4	C	0.72	NB Approach	27.6	C	0.66
SBL	36.0	D	0.78	SBL	51.9	D	0.78
SBT	18.6	B	0.92	SBT	12.3	B	0.87
SBR	6.1	A	0.30	SBR	4.4	A	0.30
SB Approach	19.7	B	0.92	SB Approach	16.9	B	0.87
Intersection	28.8	C	0.95	Intersection	16.1	B	0.88

Int #2	2048 AM No-Build (Signal, 130s)			Int #2	2048 AM Build (Signal, 130s)		
Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c
EBL	-	-		EBL	-	-	
EBT	-	-		EBT	40.0	D	0.23
EBR	-	-		EBR	-	-	
EB Approach	-	-		EB Approach	40.0	D	0.23
NBL	285.9	F	0.81	NBL	23.5	C	0.22
NBT	-	-		NBT	34.7	C	0.99
NB Approach	-	-		NB Approach	34.5	C	0.99
SBT	-	-		SBT	31.0	C	0.86
SBR	-	-		SBR	17.8	B	0.26
SB Approach	-	-		SB Approach	29.7	C	0.86
Intersection	-	-		Intersection	32.6	C	

Int #3	2048 AM No-Build (TWSC)			Int #3	2048 AM Build (TWSC)		
Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c
EBR	79.1	F	0.22	EBR	19.8	C	0.05
EB Approach	79.1	F	0.22	EB Approach	19.8	C	0.05
WBR	27.5	D	0.08	WBR	10.7	B	0.02
WB Approach	27.5	D	0.08	WB Approach	10.7	B	0.02
NBT	-	-		NBT	-	-	
NBR	-	-		NBR	-	-	
NB Approach	-	-		NB Approach	-	-	
SBT	-	-		SBT	-	-	
SBR	-	-		SBR	-	-	
SB Approach	-	-		SB Approach	-	-	

2048 Weekday AM Peak Hour- Study Intersections Capacity Analysis

Intersection	-	-		Intersection	-	-	
Int #4							
2048 AM No-Build (Signal, 130s)				2048 AM Build (Signal, 130s)			
Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c
EBL	60.9	E	0.54	EBL	50.8	D	0.25
EBT	65.8	E	0.63	EBT	49.7	D	0.33
EBR	-	-		EBR	-	-	
EB Approach	63.0	E	0.63	EB Approach	50.5	D	0.33
WBL	53.6	D	0.54	WBL	51.6	D	0.38
WBT	56.5	E	0.21	WBT	56.5	E	0.21
WBR	25.3	C	0.14	WBR	35.9	D	0.20
WB Approach	39.0	D	0.54	WB Approach	43.9	D	0.38
NBL	30.9	C	0.19	NBL	20.2	C	0.20
NBT	40.8	F	1.02	NBT	50.4	D	0.64
NBR	10.7	B	0.24	NBR	31.4	C	0.18
NB Approach	37.8	D	1.02	NB Approach	48.0	D	0.64
SBL	39.0	D	0.63	SBL	64.3	E	0.99
SBT	81.8	F	1.11	SBT	31.2	C	0.83
SBR	10.7	B	0.47	SBR	11.4	B	0.45
SB Approach	63.9	E	1.11	SB Approach	34.6	C	0.99
Intersection	56.0	E		Intersection	39.1	D	
Int #5							
2048 AM No-Build (Signal, 130s)				2048 AM Build (Signal, 130s)			
Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c
EBL	48.3	D	0.16	EBL	42.7	D	0.13
EBT	43.8	D	0.24	EBT	38.7	D	0.20
EBR	-	-		EBR	-	-	
EB Approach	45.6	D	0.24	EB Approach	40.3	D	0.20
WBL	-	-		WBL	-	-	
WBT	43.0	D	0.12	WBT	38.0	D	0.10
WBR	31.3	C	0.05	WBR	21.7	C	0.03
WB Approach	39.1	D	0.12	WB Approach	32.6	D	0.10
NBL	31.4	C	0.23	NBL	27.8	C	0.21
NBT	36.2	C	0.74	NBT	34.2	C	0.62
NBR	35.4	C	0.74	NBR	35.5	D	0.62
NB Approach	36.2	C	0.74	NB Approach	34.5	C	0.62
SBL	58.6	E	0.14	SBL	36.2	D	0.09
SBT	41.6	F	1.04	SBT	41.8	D	0.82
SBR	45.4	F	1.05	SBR	44.2	D	0.83
SB Approach	43.2	D	1.05	SB Approach	42.5	D	0.83
Intersection	40.9	D		Intersection	39.5	D	

2048 Weekday AM Peak Hour- Study Intersections Capacity Analysis

Int #6	2048 AM No-Build (Signal, 130s)			Int #6	2048 AM Build (Signal, 130s)		
Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c
EBL	45.1	D	0.37	EBL	50.6	D	0.48
EBT	39.7	D	0.61	EBT	46.9	D	0.70
EBR	-	-		EBR	-	-	
EB Approach	42.1	D	0.61	EB Approach	48.5	D	0.70
WBL	32.1	C	0.14	WBL	32.2	C	0.16
WBT	48.6	D	0.61	WBT	47.1	D	0.59
WBR	35.2	D	0.55	WBR	25.6	C	0.43
WB Approach	40.4	D	0.61	WB Approach	35.0	D	0.59
NBL	27.2	C	0.45	NBL	32.3	C	0.35
NBT	38.3	D	0.93	NBT	53.2	D	0.76
NBR	0.0	A		NBR	0.0	A	
NB Approach	35.2	D	0.93	NB Approach	48.4	D	0.76
SBL	29.5	C	0.82	SBL	61.9	E	0.79
SBT	54.8	F	1.06	SBT	19.2	B	0.75
SBR	0.0	A		SBR	0.0	A	
SB Approach	40.5	D	1.06	SB Approach	25.8	C	0.79
Intersection	39.3	D		Intersection	34.8	C	

Int #7	2048 AM No-Build (Signal, 130s)			Int #7	2048 AM Build (Signal, 130s)		
Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c
EBL	32.7	C	0.18	EBL	32.7	C	0.18
EBT	30.1	C	0.07	EBT	30.1	C	0.07
EBR	-	-		EBR	-	-	
EB Approach	31.9	C	0.18	EB Approach	31.9	C	0.18
WBL	31.0	C	0.03	WBL	31.0	C	0.03
WBT	30.0	C	0.06	WBT	30.0	C	0.06
WBR	30.6	C	0.12	WBR	14.1	B	0.07
WB Approach	30.4	C	0.12	WB Approach	21.3	C	0.07
NBL	28.4	C	0.43	NBL	26.2	C	0.39
NBT	33.6	C	0.88	NBT	26.2	C	0.59
NBR	33.6	C	0.88	NBR	27.9	C	0.59
NB Approach	33.0	C	0.88	NB Approach	26.7	C	0.59
SBL	11.8	B	0.50	SBL	22.8	C	0.52
SBT	28.5	C	0.73	SBT	22.2	C	0.58
SBR	29.8	C	0.73	SBR	22.3	C	0.58
SB Approach	26.3	C	0.73	SB Approach	22.3	C	0.58
Intersection	29.4	C		Intersection	24.3	C	

Int #8	2048 AM No-Build (TWSC)			Int #8	2048 AM Build (TWSC)		
Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c

2048 Weekday AM Peak Hour- Study Intersections Capacity Analysis

EBL	-	-		EBL	-	-	
EBT	20.2	C	0.09	EBT	11.9	B	0.04
EBR	-	-		EBR	-	-	
EB Approach	20.2	C	0.09	EB Approach	11.9	B	0.04
NBL	11.7	B	0.02	NBL	10.5	B	0.02
NBT	-	-		NBT	-	-	
NBR	-	-		NBR	-	-	
NB Approach	11.7	B	0.02	NB Approach	10.5	B	0.02
SBL	-	-		SBL	-	-	
SBT	-	-		SBT	-	-	
SBR	-	-		SBR	-	-	
SB Approach	-	-		SB Approach	-	-	
Intersection	-	-		Intersection	-	-	

Int #9	2048 AM No-Build (Signal, 130s)			Int #9	2048 AM Build (Signal, 130s)		
Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c	Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c
EBL	41.6	D	0.46	EBL	35.9	D	0.40
EBT	57.3	E	0.72	EBT	57.3	E	0.72
EBR	40.8	D	0.51	EBR	44.1	D	0.56
EB Approach	47.5	D	0.72	EB Approach	47.3	D	0.72
WBL	55.7	E	0.80	WBL	50.1	D	0.78
WBT	43.9	D	0.41	WBT	48.5	D	0.50
WBR	27.4	C	0.08	WBR	30.8	C	0.10
WB Approach	48.6	D	0.80	WB Approach	47.5	D	0.78
NBL	28.8	C	0.58	NBL	45.4	D	0.75
NBT	49.7	D	0.87	NBT	41.0	D	0.67
NBR	22.7	C	0.20	NBR	44.7	D	0.67
NB Approach	44.1	D	0.87	NB Approach	42.6	D	0.67
SBL	22.5	C	0.27	SBL	21.4	C	0.29
SBT	49.3	D	0.61	SBT	51.2	D	0.70
SBR	31.5	C	0.13	SBR	24.8	C	0.14
SB Approach	45.2	D	0.61	SB Approach	46.1	D	0.70
Intersection	45.6	D		Intersection	45.2	D	

2048 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Int #1	2048 PM No-Build (Signal, 130s)			Int #1	2048 PM Build (Signal, 130s)		
Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Groveport Road	Delay (s/veh)	LOS	v/c
EBR	65.7	E	0.74	EBR	9.8	A	0.22
EB Approach	65.7	E	0.74	EB Approach	9.8	A	0.22
WBR	128.2	F	1.18	WBR	9.1	A	0.65
WB Approach	128.2	F	1.18	WB Approach	9.1	A	0.65
NBL	60.7	E	0.69	NBL	50.6	D	0.58
NBT	90.4	F	1.12	NBT	21.9	C	0.89
NBR	15.8	B	0.03	NBR	14.3	B	0.03
NB Approach	87.5	F	1.12	NB Approach	23.4	C	0.89
SBL	112.6	F	1.12	SBL	53.4	D	0.85
SBT	7.0	A	0.58	SBT	8.7	A	0.60
SBR	5.4	A	0.32	SBR	6.7	A	0.33
SB Approach	30.6	C	1.12	SB Approach	18.5	B	0.85
Intersection	70.3	E	1.14	Intersection	18.5	B	0.88
Int #2	2048 PM No-Build (Signal, 130s)			Int #2	2048 PM Build (Signal, 130s)		
Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rathmell Road	Delay (s/veh)	LOS	v/c
EBL	-	-	-	EBL	-	-	-
EBT	6307.4	F	12.69	EBT	40.0	D	0.23
EBR	-	-	-	EBR	-	-	-
EB Approach	-	-	-	EB Approach	40.0	D	0.23
NBL	31.1	D	0.28	NBL	23.5	C	0.22
NBT	-	-	-	NBT	34.7	C	0.99
NB Approach	-	-	-	NB Approach	34.5	C	0.99
SBT	-	-	-	SBT	31.0	C	0.86
SBR	-	-	-	SBR	17.8	B	0.26
SB Approach	-	-	-	SB Approach	29.7	C	0.86
Intersection	-	-	-	Intersection	32.6	C	-
Int #3	2048 PM No-Build (TWSC)			Int #3	2048 PM Build (TWSC)		
Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Bixby Road	Delay (s/veh)	LOS	v/c
EBR	23.1	C	0.10	EBR	14.3	B	0.06
EB Approach	23.1	C	0.10	EB Approach	14.3	B	0.06
WBR	25.8	D	0.11	WBR	11.6	B	0.04
WB Approach	25.8	D	0.11	WB Approach	11.6	B	0.04
NBT	-	-	-	NBT	-	-	-
NBR	-	-	-	NBR	-	-	-
NB Approach	-	-	-	NB Approach	-	-	-
SBT	-	-	-	SBT	-	-	-
SBR	-	-	-	SBR	-	-	-
SB Approach	-	-	-	SB Approach	-	-	-

2048 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Intersection	-	-	-	Intersection	-	-	-
Int #4							
2048 PM No-Build (Signal, 130s)				2048 PM Build (Signal, 130s)			
Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Creekside Parkway/ Toy Road	Delay (s/veh)	LOS	v/c
EBL	86.3	F	0.95	EBL	74.4	E	0.90
EBT	55.4	E	0.50	EBT	45.8	D	0.29
EBR	-	-	-	EBR	-	-	-
EB Approach	80.9	F	0.95	EB Approach	69.5	E	0.90
WBL	48.9	D	0.52	WBL	51.9	D	0.53
WBT	57.2	E	0.32	WBT	54.2	D	0.25
WBR	84.5	F	0.97	WBR	74.8	E	0.93
WB Approach	75.3	E	0.97	WB Approach	68.7	E	0.93
NBL	30.3	C	0.20	NBL	22.0	C	0.23
NBT	89.0	F	1.17	NBT	48.1	D	0.99
NBR	5.0	A	0.17	NBR	18.4	B	0.18
NB Approach	83.0	F	1.17	NB Approach	45.9	D	0.99
SBL	66.0	E	0.77	SBL	68.0	E	0.90
SBT	44.9	D	0.97	SBT	42.8	D	0.69
SBR	8.6	A	0.26	SBR	15.5	B	0.26
SB Approach	43.4	D	0.97	SB Approach	42.8	D	0.90
Intersection	66.5	E	-	Intersection	49.6	D	-
Int #5							
2048 PM No-Build (Signal, 130s)				2048 PM Build (Signal, 130s)			
Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Global Court	Delay (s/veh)	LOS	v/c
EBL	50.7	D	0.15	EBL	37.4	D	0.09
EBT	46.0	D	0.17	EBT	34.0	C	0.10
EBR	-	-	-	EBR	-	-	-
EB Approach	48.0	D	0.17	EB Approach	35.5	D	0.10
WBL	-	-	-	WBL	-	-	-
WBT	47.2	D	0.16	WBT	34.8	C	0.10
WBR	36.0	D	0.15	WBR	24.8	C	0.10
WB Approach	40.8	D	0.16	WB Approach	29.1	C	0.10
NBL	22.8	C	0.11	NBL	14.0	B	0.08
NBT	33.0	F	1.03	NBT	32.5	C	0.99
NBR	33.6	F	1.03	NBR	36.6	D	0.99
NB Approach	33.2	C	1.03	NB Approach	33.6	C	0.99
SBL	57.9	E	0.08	SBL	51.2	D	0.07
SBT	25.8	C	0.86	SBT	20.7	C	0.80
SBR	25.9	C	0.87	SBR	23.8	C	0.80
SB Approach	26.2	C	0.87	SB Approach	22.1	C	0.80
Intersection	30.5	C	-	Intersection	28.8	C	-

2048 Weekday PM Peak Hour- Study Intersections Capacity Analysis

Int #6	2048 PM No-Build (Signal, 130s)			Int #6	2048 PM Build (Signal, 130s)		
Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Rohr Road	Delay (s/veh)	LOS	v/c
EBL	76.2	E	0.89	EBL	64.8	E	0.83
EBT	76.8	E	0.94	EBT	46.6	D	0.79
EBR	-	-	-	EBR	-	-	-
EB Approach	76.5	E	0.94	EB Approach	55.6	E	0.83
WBL	41.3	D	0.45	WBL	33.7	C	0.30
WBT	52.7	D	0.66	WBT	41.9	D	0.49
WBR	138.2	F	1.16	WBR	74.4	E	0.98
WB Approach	107.4	F	1.16	WB Approach	62.3	E	0.98
NBL	30.8	C	0.43	NBL	16.9	B	0.31
NBT	110.5	F	1.17	NBT	62.1	E	0.99
NBR	0.0	A	-	NBR	0.0	A	-
NB Approach	100.6	F	1.17	NB Approach	56.5	E	0.99
SBL	38.0	D	0.75	SBL	69.5	E	0.92
SBT	54.4	D	0.90	SBT	57.3	E	0.77
SBR	0.0	A	-	SBR	0.0	A	-
SB Approach	43.7	D	0.90	SB Approach	52.0	D	0.92
Intersection	77.7	E	-	Intersection	55.7	E	-

Int #7	2048 PM No-Build (Signal, 130s)			Int #7	2048 PM Build (Signal, 130s)		
Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Spiegel Drive	Delay (s/veh)	LOS	v/c
EBL	45.5	D	0.71	EBL	56.1	E	0.76
EBT	35.7	D	0.51	EBT	42.2	D	0.55
EBR	-	-	-	EBR	-	-	-
EB Approach	41.1	D	0.71	EB Approach	49.8	D	0.76
WBL	43.9	D	0.14	WBL	48.3	D	0.15
WBT	30.2	C	0.08	WBT	32.6	C	0.09
WBR	37.0	D	0.56	WBR	21.6	C	0.37
WB Approach	36.8	D	0.56	WB Approach	25.6	C	0.37
NBL	21.2	C	0.25	NBL	20.5	C	0.16
NBT	44.1	D	0.77	NBT	51.2	D	0.62
NBR	44.4	D	0.77	NBR	53.0	D	0.62
NB Approach	43.3	D	0.77	NB Approach	50.5	D	0.62
SBL	26.8	C	0.69	SBL	9.9	A	0.43
SBT	48.7	D	0.79	SBT	32.3	C	0.54
SBR	52.0	D	0.79	SBR	35.5	D	0.54
SB Approach	47.3	D	0.79	SB Approach	30.3	C	0.54
Intersection	43.8	D	-	Intersection	39.7	D	-

Int #8	2048 PM No-Build (TWSC)			Int #8	2048 PM Build (TWSC)		
Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c	Alum Creek Drive & Alum Creek Service Drive	Delay (s/veh)	LOS	v/c

2048 Weekday PM Peak Hour- Study Intersections Capacity Analysis

EBL	-	-	-	EBL	-	-	-
EBT	25.2	D	0.11	EBT	11.9	B	0.04
EBR	-	-	-	EBR	-	-	-
EB Approach	25.2	D	0.11	EB Approach	11.9	B	0.04
WBL	-	-	-	WBL	-	-	-
WBT	-	-	-	WBT	-	-	-
WBR	-	-	-	WBR	-	-	-
WB Approach	-	-	-	WB Approach	-	-	-
NBL	11.1	B	0.02	NBL	10.5	B	0.02
NBT	-	-	-	NBT	-	-	-
NBR	-	-	-	NBR	-	-	-
NB Approach	11.1	B	0.02	NB Approach	10.5	B	0.02
SBL	-	-	-	SBL	-	-	-
SBT	-	-	-	SBT	-	-	-
SBR	-	-	-	SBR	-	-	-
SB Approach	-	-	-	SB Approach	-	-	-
Intersection	-	-	-	Intersection	-	-	-

Int #9	2048 PM No-Build (Signal, 130s)			Int #9	2048 PM Build (Signal, 130s)		
Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c	Alum Creek Drive & SR-317	Delay (s/veh)	LOS	v/c
EBL	38.8	D	0.37	EBL	36.3	D	0.37
EBT	76.9	E	0.88	EBT	76.9	E	0.88
EBR	37.1	D	0.44	EBR	32.7	C	0.39
EB Approach	55.7	E	0.88	EB Approach	53.8	D	0.88
WBL	63.4	E	0.91	WBL	74.5	E	0.95
WBT	44.7	D	0.58	WBT	52.4	D	0.68
WBR	33.8	C	0.18	WBR	25.5	C	0.14
WB Approach	52.5	D	0.91	WB Approach	59.8	E	0.95
NBL	121.2	F	1.11	NBL	55.6	E	0.89
NBT	39.2	D	0.75	NBT	58.7	E	0.88
NBR	16.9	B	0.25	NBR	70.4	E	0.89
NB Approach	54.0	D	1.11	NB Approach	60.9	E	0.89
SBL	38.6	D	0.70	SBL	28.9	C	0.40
SBT	55.8	E	0.92	SBT	40.3	D	0.93
SBR	29.9	C	0.30	SBR	11.1	B	0.29
SB Approach	5.1	D	0.92	SB Approach	34.8	C	0.93
Intersection	52.8	D	-	Intersection	51.5	D	-

APPENDIX

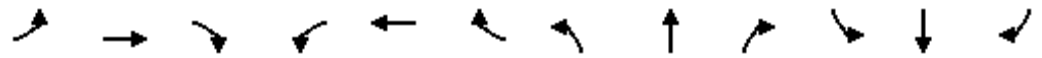
F.

Synchro Analysis Capacity Reports

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd

12/20/2023





























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↖↗	↖	↑↑↑	↗	↖	↑↑↑	↗
Traffic Volume (vph)	0	0	210	0	0	710	80	1000	20	390	2190	300
Future Volume (vph)	0	0	210	0	0	710	80	1000	20	390	2190	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2584	1467	4217	1313	1626	4673	1455
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2584	1467	4217	1313	1626	4673	1455
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	259	0	0	877	99	1235	25	481	2704	370
RTOR Reduction (vph)	0	0	55	0	0	37	0	0	12	0	0	96
Lane Group Flow (vph)	0	0	204	0	0	840	99	1235	13	481	2704	274
Heavy Vehicles (%)	15%	15%	15%	10%	10%	10%	23%	23%	23%	11%	11%	11%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			5			1						
Actuated Green, G (s)			22.9			49.2	22.9	69.8	69.8	49.2	96.1	96.1
Effective Green, g (s)			22.9			49.2	22.9	69.8	69.8	49.2	96.1	96.1
Actuated g/C Ratio			0.18			0.38	0.18	0.54	0.54	0.38	0.74	0.74
Clearance Time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)			3.0			3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			251			977	258	2264	704	615	3454	1075
v/s Ratio Prot							0.07	0.29	0.01	0.30	c0.58	0.19
v/s Ratio Perm			0.14			c0.32						
v/c Ratio			0.81			0.86	0.38	0.55	0.02	0.78	0.78	0.25
Uniform Delay, d1			51.5			37.2	47.3	19.7	14.1	35.7	10.5	5.4
Progression Factor			1.00			1.00	1.15	0.95	1.00	1.00	1.00	1.00
Incremental Delay, d2			17.8			7.6	0.6	0.6	0.0	6.4	1.8	0.6
Delay (s)			69.3			44.9	54.9	19.4	14.1	42.1	12.3	6.0
Level of Service			E			D	D	B	B	D	B	A
Approach Delay (s)		69.3			44.9			21.9			15.7	
Approach LOS		E			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			23.6			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			64.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd




























12/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  			   	
Traffic Volume (vph)	0	0	170	0	0	970	130	2060	30	550	1530	340
Future Volume (vph)	0	0	170	0	0	970	130	2060	30	550	1530	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2682	1583	4550	1417	1530	4396	1369
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2682	1583	4550	1417	1530	4396	1369
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	181	0	0	1032	138	2191	32	585	1628	362
RTOR Reduction (vph)	0	0	58	0	0	13	0	0	16	0	0	77
Lane Group Flow (vph)	0	0	123	0	0	1019	138	2191	16	585	1628	285
Heavy Vehicles (%)	15%	15%	15%	6%	6%	6%	14%	14%	14%	18%	18%	18%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			5			1						
Actuated Green, G (s)			16.7			52.4	16.7	66.6	66.6	52.4	102.3	102.3
Effective Green, g (s)			16.7			52.4	16.7	66.6	66.6	52.4	102.3	102.3
Actuated g/C Ratio			0.13			0.40	0.13	0.51	0.51	0.40	0.79	0.79
Clearance Time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)			3.0			3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			183			1081	203	2331	725	616	3459	1077
v/s Ratio Prot							0.09	c0.48	0.01	c0.38	0.37	0.21
v/s Ratio Perm			0.09			0.38						
v/c Ratio			0.67			0.94	0.68	0.94	0.02	0.95	0.47	0.26
Uniform Delay, d1			54.0			37.4	54.1	29.8	15.6	37.5	4.7	3.7
Progression Factor			1.00			1.00	1.14	0.87	2.93	1.00	1.00	1.00
Incremental Delay, d2			9.0			15.5	0.8	1.0	0.0	24.1	0.5	0.6
Delay (s)			63.0			52.9	62.4	27.1	45.8	61.7	5.1	4.3
Level of Service			E			D	E	C	D	E	A	A
Approach Delay (s)		63.0			52.9			29.4			17.9	
Approach LOS		E			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			29.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			82.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd




























12/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  		  	  	
Traffic Volume (vph)	0	0	210	0	0	710	80	1000	20	390	2190	300
Future Volume (vph)	0	0	210	0	0	710	80	1000	20	390	2190	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	0.97	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2584	1467	4217	1313	3155	4673	1455
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2584	1467	4217	1313	3155	4673	1455
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	259	0	0	877	99	1235	25	481	2704	370
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	7	0	0	71
Lane Group Flow (vph)	0	0	225	0	0	877	99	1235	18	481	2704	299
Heavy Vehicles (%)	15%	15%	15%	10%	10%	10%	23%	23%	23%	11%	11%	11%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			2 5			1 6						
Actuated Green, G (s)			112.8			130.0	14.0	93.3	93.3	25.7	105.0	105.0
Effective Green, g (s)			112.8			130.0	14.0	93.3	93.3	25.7	105.0	105.0
Actuated g/C Ratio			0.87			1.00	0.11	0.72	0.72	0.20	0.81	0.81
Clearance Time (s)							5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)							3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			1239			2584	157	3026	942	623	3774	1175
v/s Ratio Prot							0.07	0.29	0.01	c0.15	c0.58	0.21
v/s Ratio Perm			0.16			0.34						
v/c Ratio			0.18			0.34	0.63	0.41	0.02	0.77	0.72	0.25
Uniform Delay, d1			1.4			0.0	55.5	7.3	5.3	49.4	5.7	3.0
Progression Factor			1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			0.1			0.1	8.0	0.4	0.0	5.9	1.2	0.5
Delay (s)			1.4			0.1	63.5	7.7	5.3	55.3	6.9	3.5
Level of Service			A			A	E	A	A	E	A	A
Approach Delay (s)		1.4			0.1			11.8			13.1	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.4			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			64.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd



























12/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  		  	  	
Traffic Volume (vph)	0	0	170	0	0	970	130	2060	30	550	1530	340
Future Volume (vph)	0	0	170	0	0	970	130	2060	30	550	1530	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	0.97	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2682	1583	4550	1417	2968	4396	1369
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2682	1583	4550	1417	2968	4396	1369
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	181	0	0	1032	138	2191	32	585	1628	362
RTOR Reduction (vph)	0	0	42	0	0	62	0	0	11	0	0	87
Lane Group Flow (vph)	0	0	139	0	0	970	138	2191	21	585	1628	275
Heavy Vehicles (%)	15%	15%	15%	6%	6%	6%	14%	14%	14%	18%	18%	18%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			2 5			1 6						
Actuated Green, G (s)			87.3			98.7	20.3	87.3	87.3	31.7	98.7	98.7
Effective Green, g (s)			87.3			98.7	20.3	87.3	87.3	31.7	98.7	98.7
Actuated g/C Ratio			0.67			0.76	0.16	0.67	0.67	0.24	0.76	0.76
Clearance Time (s)							5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)							3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			959			2036	247	3055	951	723	3337	1039
v/s Ratio Prot							0.09	c0.48	0.02	c0.20	0.37	0.20
v/s Ratio Perm			0.10			0.36						
v/c Ratio			0.14			0.48	0.56	0.72	0.02	0.81	0.49	0.26
Uniform Delay, d1			7.8			5.9	50.7	13.5	7.1	46.3	6.0	4.7
Progression Factor			1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			0.1			0.2	2.7	1.5	0.0	6.7	0.5	0.6
Delay (s)			7.8			6.1	53.4	15.0	7.2	53.0	6.5	5.3
Level of Service			A			A	D	B	A	D	A	A
Approach Delay (s)		7.8			6.1			17.1			16.9	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			82.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd

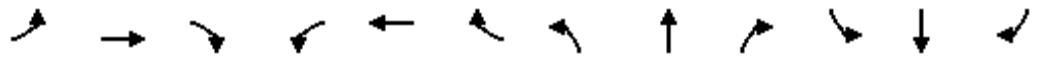
12/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  			   	
Traffic Volume (vph)	0	0	220	0	0	880	100	1150	30	460	2600	350
Future Volume (vph)	0	0	220	0	0	880	100	1150	30	460	2600	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2584	1467	4217	1313	1626	4673	1455
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2584	1467	4217	1313	1626	4673	1455
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	272	0	0	1086	123	1420	37	568	3210	432
RTOR Reduction (vph)	0	0	56	0	0	14	0	0	20	0	0	110
Lane Group Flow (vph)	0	0	216	0	0	1072	123	1420	17	568	3210	322
Heavy Vehicles (%)	15%	15%	15%	10%	10%	10%	23%	23%	23%	11%	11%	11%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			5			1						
Actuated Green, G (s)			22.0			58.2	22.0	60.8	60.8	58.2	97.0	97.0
Effective Green, g (s)			22.0			58.2	22.0	60.8	60.8	58.2	97.0	97.0
Actuated g/C Ratio			0.17			0.45	0.17	0.47	0.47	0.45	0.75	0.75
Clearance Time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)			3.0			3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			241			1156	248	1972	614	727	3486	1085
v/s Ratio Prot							0.08	0.34	0.01	0.35	c0.69	0.22
v/s Ratio Perm			0.15			c0.41						
v/c Ratio			0.90			0.93	0.50	0.72	0.03	0.78	0.92	0.30
Uniform Delay, d1			52.9			33.9	49.0	27.8	18.7	30.5	13.4	5.4
Progression Factor			1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			31.9			12.5	1.6	2.3	0.1	5.5	5.2	0.7
Delay (s)			84.8			46.4	50.5	30.1	18.7	36.0	18.6	6.1
Level of Service			F			D	D	C	B	D	B	A
Approach Delay (s)		84.8			46.4			31.4			19.7	
Approach LOS		F			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			73.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd

12/20/2023





























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗	↘	↑↑↑	↗	↘	↑↑↑	↗
Traffic Volume (vph)	0	0	200	0	0	1210	150	2440	40	650	1830	400
Future Volume (vph)	0	0	200	0	0	1210	150	2440	40	650	1830	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2682	1583	4550	1417	1530	4396	1369
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2682	1583	4550	1417	1530	4396	1369
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	213	0	0	1287	160	2596	43	691	1947	426
RTOR Reduction (vph)	0	0	57	0	0	13	0	0	21	0	0	92
Lane Group Flow (vph)	0	0	156	0	0	1274	160	2596	22	691	1947	334
Heavy Vehicles (%)	15%	15%	15%	6%	6%	6%	14%	14%	14%	18%	18%	18%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			5			1						
Actuated Green, G (s)			19.2			52.5	19.2	66.5	66.5	52.5	99.8	99.8
Effective Green, g (s)			19.2			52.5	19.2	66.5	66.5	52.5	99.8	99.8
Actuated g/C Ratio			0.15			0.40	0.15	0.51	0.51	0.40	0.77	0.77
Clearance Time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)			3.0			3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			211			1083	233	2327	724	617	3374	1050
v/s Ratio Prot							0.10	c0.57	0.02	0.45	0.44	0.24
v/s Ratio Perm			0.11			c0.48						
v/c Ratio			0.74			1.18	0.69	1.12	0.03	1.12	0.58	0.32
Uniform Delay, d1			53.0			38.8	52.5	31.8	15.8	38.8	6.3	4.6
Progression Factor			1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2			12.7			89.4	8.1	58.6	0.1	73.9	0.7	0.8
Delay (s)			65.7			128.2	60.7	90.4	15.8	112.6	7.0	5.4
Level of Service			E			F	E	F	B	F	A	A
Approach Delay (s)		65.7			128.2			87.5			30.6	
Approach LOS		E			F			F			C	
Intersection Summary												
HCM 2000 Control Delay			70.3			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			98.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd




























12/20/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  		 	  	
Traffic Volume (vph)	0	0	220	0	0	880	100	1150	30	460	2600	350
Future Volume (vph)	0	0	220	0	0	880	100	1150	30	460	2600	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	0.97	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2584	1467	4217	1313	3155	4673	1455
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2584	1467	4217	1313	3155	4673	1455
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	0	272	0	0	1086	123	1420	37	568	3210	432
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	12	0	0	91
Lane Group Flow (vph)	0	0	272	0	0	1086	123	1420	25	568	3210	341
Heavy Vehicles (%)	15%	15%	15%	10%	10%	10%	23%	23%	23%	11%	11%	11%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			2 5			1 6						
Actuated Green, G (s)			110.7			130.0	16.4	88.8	88.8	30.2	102.6	102.6
Effective Green, g (s)			110.7			130.0	16.4	88.8	88.8	30.2	102.6	102.6
Actuated g/C Ratio			0.85			1.00	0.13	0.68	0.68	0.23	0.79	0.79
Clearance Time (s)							5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)							3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			1216			2584	185	2880	896	732	3688	1148
v/s Ratio Prot							0.08	0.34	0.02	c0.18	c0.69	0.23
v/s Ratio Perm			0.19			0.42						
v/c Ratio			0.22			0.42	0.66	0.49	0.03	0.78	0.87	0.30
Uniform Delay, d1			1.8			0.0	54.2	9.8	6.7	46.7	9.2	3.8
Progression Factor			1.00			1.00	1.23	2.36	2.72	1.00	1.00	1.00
Incremental Delay, d2			0.1			0.1	8.0	0.6	0.1	5.2	3.1	0.7
Delay (s)			1.9			0.1	74.5	23.8	18.2	51.9	12.3	4.4
Level of Service			A			A	E	C	B	D	B	A
Approach Delay (s)		1.9			0.1			27.6			16.9	
Approach LOS		A			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			16.1			HCM 2000 Level of Service		B				
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)		11.0				
Intersection Capacity Utilization			73.0%			ICU Level of Service		D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Alum Creek & Groveport Rd

12/20/2023

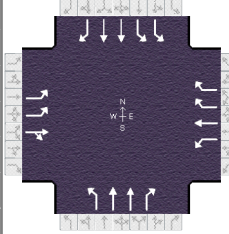
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		  		  	  	
Traffic Volume (vph)	0	0	200	0	0	1210	150	2440	40	650	1830	400
Future Volume (vph)	0	0	200	0	0	1210	150	2440	40	650	1830	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.5			5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor			1.00			0.88	1.00	0.91	1.00	0.97	0.91	1.00
Frt			0.86			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			1429			2682	1583	4550	1417	2968	4396	1369
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			1429			2682	1583	4550	1417	2968	4396	1369
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	213	0	0	1287	160	2596	43	691	1947	426
RTOR Reduction (vph)	0	0	11	0	0	5	0	0	14	0	0	87
Lane Group Flow (vph)	0	0	202	0	0	1282	160	2596	29	691	1947	339
Heavy Vehicles (%)	15%	15%	15%	6%	6%	6%	14%	14%	14%	18%	18%	18%
Turn Type			Perm			Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases							5	2	2	1	6	6
Permitted Phases			2 5			1 6						
Actuated Green, G (s)			83.5			96.2	22.8	83.5	83.5	35.5	96.2	96.2
Effective Green, g (s)			83.5			96.2	22.8	83.5	83.5	35.5	96.2	96.2
Actuated g/C Ratio			0.64			0.74	0.18	0.64	0.64	0.27	0.74	0.74
Clearance Time (s)							5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)							3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)			917			1984	277	2922	910	810	3253	1013
v/s Ratio Prot							0.10	c0.57	0.02	c0.23	0.44	0.25
v/s Ratio Perm			0.14			0.48						
v/c Ratio			0.22			0.65	0.58	0.89	0.03	0.85	0.60	0.33
Uniform Delay, d1			9.7			8.4	49.2	19.4	8.5	44.8	7.9	5.8
Progression Factor			1.00			1.00	1.00	1.01	1.68	1.00	1.00	1.00
Incremental Delay, d2			0.1			0.7	1.5	2.4	0.0	8.7	0.8	0.9
Delay (s)			9.8			9.1	50.6	21.9	14.3	53.4	8.7	6.7
Level of Service			A			A	D	C	B	D	A	A
Approach Delay (s)		9.8			9.1			23.4			18.5	
Approach LOS		A			A			C			B	
Intersection Summary												
HCM 2000 Control Delay			18.5			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			11.0			
Intersection Capacity Utilization			98.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX

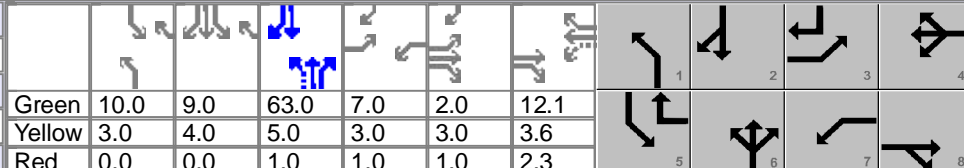
G.

HCS-7 Analysis Capacity Reports

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.79	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Creekside Parkway/ Toy...	File Name	2028 AM Projections.xus			
Project Description	2028 AM Projections					

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	40	20	60	20	80	30	930	90	450	1570	330

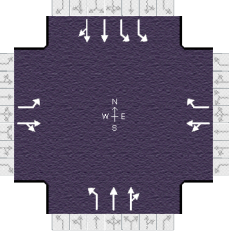
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	10.0	9.0	63.0	7.0	2.0	12.1	1	2	3	4
Offset, s	86	Reference Point	End	Yellow	3.0	4.0	5.0	3.0	3.0	3.6	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	1.0	1.0	1.0	2.3				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	17.0	24.0	11.0	18.0	13.0	69.0	26.0	82.0
Change Period, ($Y+R_c$), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	5.5	7.7	8.0	6.3	3.3		24.0	
Green Extension Time (g_e), s	0.1	0.3	0.0	0.2	0.0	0.0	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	0.07	0.00		1.00	

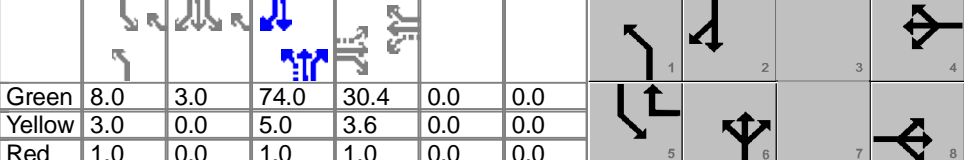
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	89	76		76	25	101	34	1064	103	570	1987	418
Adjusted Saturation Flow Rate (s), veh/h/ln	1524	1555		1485	1559	1169	1541	1541	1372	1647	1696	1510
Queue Service Time (g_s), s	3.5	5.7		6.0	1.9	4.3	1.3	42.2	8.3	22.0	76.0	15.7
Cycle Queue Clearance Time (g_c), s	3.5	5.7		6.0	1.9	4.3	1.3	42.2	8.3	22.0	76.0	15.7
Green Ratio (g/C)	0.10	0.14		0.15	0.09	0.26	0.56	0.48	0.48	0.17	0.58	0.68
Capacity (c), veh/h	305	216		223	145	613	174	1493	665	558	1983	1034
Volume-to-Capacity Ratio (X)	0.291	0.351		0.340	0.174	0.165	0.197	0.713	0.155	1.022	1.002	0.404
Back of Queue (Q), ft/ln (50 th percentile)	38.3	64		66.1	22.8	36.9	14.3	507.2	125.1	324	864	125.7
Back of Queue (Q), veh/ln (50 th percentile)	1.3	2.3		2.2	0.8	1.2	0.5	17.6	4.3	12.2	32.5	4.7
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.00		0.53	0.00	0.14	0.02	0.00	0.34	0.72	0.00	0.21
Uniform Delay (d_1), s/veh	54.2	50.6		49.9	54.3	37.0	29.1	44.6	31.4	54.0	27.0	8.9
Incremental Delay (d_2), s/veh	0.2	0.4		0.3	0.2	0.0	0.2	2.2	0.4	43.7	20.7	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
Control Delay (d), s/veh	54.4	51.0		50.2	54.6	37.0	29.3	46.8	31.7	97.7	47.7	10.1
Level of Service (LOS)	D	D		D	D	D	C	D	C	F	F	B
Approach Delay, s/veh / LOS	52.8		D	44.2		D	45.0		D	52.0		D
Intersection Delay, s/veh / LOS	49.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.61	C	2.42	B	2.09	B
Bicycle LOS Score / LOS	0.76	A	0.82	A	1.58	B	2.94	C

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.88	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2028 AM Projections.xus			
Project Description	2028 AM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	20	10	10	10	30	1020	20	30	1570	50

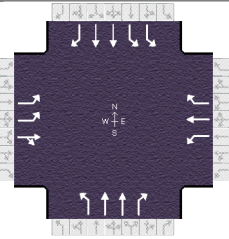
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	8.0	3.0	74.0	30.4	0.0	0.0	1	2	3	4
Offset, s	4	Reference Point	End	Yellow	3.0	0.0	5.0	3.6	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		35.0		35.0	12.0	80.0	15.0	83.0
Change Period, (Y+R _c), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		4.1		4.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		12.0		7.7	3.1		3.4	
Green Extension Time (g _e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.02		0.00	

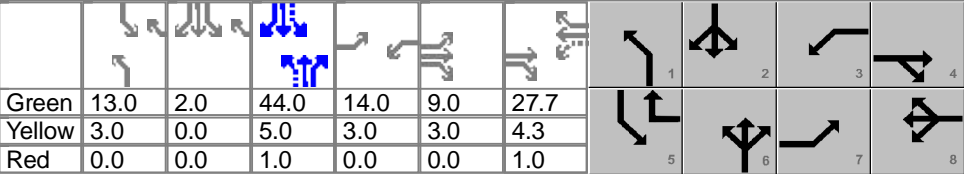
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	23	34		23	11		34	597	593	38	1023	1023
Adjusted Saturation Flow Rate (s), veh/h/ln	580	691		743	819		1555	1633	1622	1579	1707	1689
Queue Service Time (g _s), s	4.3	5.2		0.6	1.3		1.1	41.4	41.6	1.4	77.0	77.0
Cycle Queue Clearance Time (g _c), s	10.0	5.2		5.7	1.3		1.1	41.4	41.6	1.4	77.0	77.0
Green Ratio (g/C)	0.23	0.23		0.23	0.31		0.63	0.57	0.57	0.08	0.59	0.59
Capacity (c), veh/h	166	162		215	254		151	930	923	243	1011	1000
Volume-to-Capacity Ratio (X)	0.137	0.211		0.106	0.045		0.227	0.642	0.643	0.156	1.012	1.023
Back of Queue (Q), ft/ln (50 th percentile)	25.1	35.8		22.4	9.5		16.6	514.3	449.9	14.8	793.4	735
Back of Queue (Q), veh/ln (50 th percentile)	0.6	0.9		0.6	0.3		0.6	18.0	18.0	0.5	28.7	29.4
Queue Storage Ratio (RQ) (50 th percentile)	0.08	0.00		0.00	0.03		0.06	0.00	0.00	0.04	0.00	0.00
Uniform Delay (d ₁), s/veh	44.4	40.1		39.5	31.3		30.0	34.5	35.0	52.8	23.0	23.0
Incremental Delay (d ₂), s/veh	0.1	0.2		0.1	0.0		0.2	2.3	2.4	0.0	14.4	17.8
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	44.6	40.4		39.6	31.3		30.2	36.9	37.3	52.8	37.3	40.8
Level of Service (LOS)	D	D		D	C		C	D	D	D	F	F
Approach Delay, s/veh / LOS	42.0	D		36.9	D		36.9	D		39.3	D	
Intersection Delay, s/veh / LOS	38.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.46	B	2.09	B	1.89	B
Bicycle LOS Score / LOS	0.58	A	0.54	A	1.49	A	2.03	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.83	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2028 AM Projections.xus			
Project Description	2028 AM Projections					

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	90	90	50	150	180	60	760	50	360	980	260

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	13.0	2.0	44.0	14.0	9.0	27.7	1	2	3	4
Offset, s	26	Reference Point	End	Yellow	3.0	0.0	5.0	3.0	3.0	4.3	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	1.0	0.0	0.0	1.0				
Force Mode	Float	Simult. Gap N/S	On											

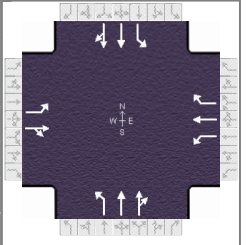
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	29.0	45.0	17.0	33.0	16.0	50.0	18.0	52.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	8.2	18.9	5.5	17.9	5.5		13.8	
Green Extension Time (g_e), s	0.3	1.2	0.0	1.0	0.0	0.0	0.2	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.00	0.00	0.04	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	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	157	217		60	181	217	67	851	56	446	1215	322
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1376		1584	1663	1409	1570	1569		1579	1625	
Queue Service Time (g_s), s	6.2	16.9		3.5	12.5	15.9	3.5	32.8		11.8	46.0	
Cycle Queue Clearance Time (g_c), s	6.2	16.9		3.5	12.5	15.9	3.5	32.8		11.8	46.0	
Green Ratio (g/C)	0.20	0.31		0.32	0.21	0.33	0.44	0.34		0.46	0.35	
Capacity (c), veh/h	555	420		392	354	463	212	1062		577	1150	
Volume-to-Capacity Ratio (X)	0.282	0.516		0.154	0.510	0.469	0.317	0.802		0.774	1.056	
Back of Queue (Q), ft/ln (50 th percentile)	65.2	173.6		37.9	146.1	153.7	36.8	377.1		102.4	455.1	
Back of Queue (Q), veh/ln (50 th percentile)	2.1	5.7		1.3	5.2	5.5	1.3	13.3		3.7	16.5	
Queue Storage Ratio (RQ) (50 th percentile)	0.22	0.00		0.08	0.00	0.31	0.09	0.00		0.22	0.00	
Uniform Delay (d_1), s/veh	44.1	37.2		31.4	45.2	34.6	32.0	43.1		26.1	26.9	
Incremental Delay (d_2), s/veh	0.1	0.5		0.1	0.5	0.3	0.2	4.5		0.6	27.8	
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	
Control Delay (d), s/veh	44.2	37.7		31.4	45.7	34.9	32.2	47.6	0.0	26.6	54.7	0.0
Level of Service (LOS)	D	D		C	D	C	C	D	A	C	F	A
Approach Delay, s/veh / LOS	40.4		D	38.7		D	43.8		D	39.5		D
Intersection Delay, s/veh / LOS	40.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.60	C	2.29	B	2.12	B
Bicycle LOS Score / LOS	1.10	A	1.24	A	1.35	A	2.08	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.84
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00
Intersection	Spiegel Drive	File Name	2028 AM Projections.xus		
Project Description	2028 AM Projections				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	10	20	10	30	40	80	770	40	180	720	220

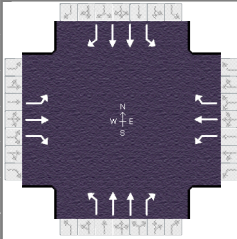
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	26	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Float	Simult. Gap N/S	On										
				Green	13.8	2.0	47.0	47.6	0.0	0.0			
				Yellow	3.0	3.0	5.0	3.6	0.0	0.0			
				Red	1.2	1.0	1.0	1.8	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		53.0		53.0	18.0	53.0	24.0	59.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		8.5		4.7	6.3		11.0	
Green Extension Time (g_e), s		0.4		0.4	0.1	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

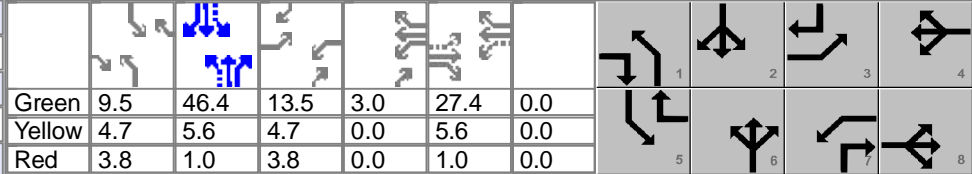
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	71	36		12	36	48	89	454	446	212	576	531
Adjusted Saturation Flow Rate (s), veh/h/ln	1296	1577		1351	1841	1560	1598	1678	1648	1682	1767	1624
Queue Service Time (g_s), s	4.9	1.9		0.7	1.6	2.6	4.3	20.5	20.2	9.0	40.1	40.2
Cycle Queue Clearance Time (g_c), s	6.5	1.9		2.7	1.6	2.6	4.3	20.5	20.2	9.0	40.1	40.2
Green Ratio (g/C)	0.37	0.37		0.37	0.37	0.37	0.47	0.36	0.36	0.53	0.41	0.41
Capacity (c), veh/h	514	578		530	674	571	263	607	596	433	720	662
Volume-to-Capacity Ratio (X)	0.139	0.062		0.022	0.053	0.083	0.338	0.748	0.749	0.489	0.800	0.801
Back of Queue (Q), ft/ln (50 th percentile)	41.2	19.4		6.3	18.6	25.1	45.9	140.3	134.2	98.8	497.5	458.5
Back of Queue (Q), veh/ln (50 th percentile)	1.5	0.7		0.2	0.7	1.0	1.6	5.0	4.8	3.7	18.6	17.1
Queue Storage Ratio (RQ) (50 th percentile)	0.14	0.00		0.01	0.00	0.04	0.13	0.00	0.00	0.22	0.00	0.00
Uniform Delay (d_1), s/veh	28.7	26.7		27.6	26.6	26.9	29.0	13.5	13.0	22.5	45.7	45.7
Incremental Delay (d_2), s/veh	0.0	0.0		0.0	0.0	0.0	0.2	5.9	6.0	0.0	1.5	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
Control Delay (d), s/veh	28.8	26.7		27.6	26.6	27.0	29.2	19.4	19.0	22.5	47.1	47.3
Level of Service (LOS)	C	C		C	C	C	C	B	B	C	D	D
Approach Delay, s/veh / LOS	28.1	C		26.9	C		20.1	C		43.3	D	
Intersection Delay, s/veh / LOS	32.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.12	B	1.92	B
Bicycle LOS Score / LOS	0.66	A	0.64	A	1.36	A	1.59	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.90	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2028 AM Projections.xus			
Project Description	2028 AM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	110	170	140	180	120	40	130	740	90	70	610	70

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	9.5	46.4	13.5	3.0	27.4	0.0				
Offset, s	1	Reference Point	End	Yellow	4.7	5.6	4.7	0.0	5.6	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	3.8	1.0	3.8	0.0	1.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	22.0	34.0	25.0	37.0	18.0	53.0	18.0	53.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	9.6	15.4	13.8	10.3	9.6		6.2	
Green Extension Time (g_e), s	0.1	0.9	0.1	1.0	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.38	0.01	1.00	0.00	1.00		0.60	

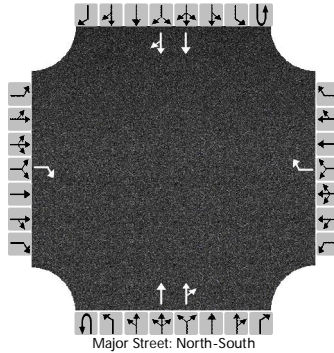
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	122	189	156	200	133	44	144	822	100	82	719	82
Adjusted Saturation Flow Rate (s), veh/h/ln	1555	1633	1384	1654	1737	1472	1555	1555	1384	1570	1569	1397
Queue Service Time (g_s), s	7.6	13.4	11.8	11.8	8.3	2.8	7.6	30.0	5.2	4.2	29.6	6.4
Cycle Queue Clearance Time (g_c), s	7.6	13.4	11.8	11.8	8.3	2.8	7.6	30.0	5.2	4.2	29.6	6.4
Green Ratio (g/C)	0.31	0.21	0.28	0.34	0.23	0.31	0.43	0.36	0.48	0.43	0.36	0.46
Capacity (c), veh/h	387	344	393	385	406	452	242	1110	670	235	1120	644
Volume-to-Capacity Ratio (X)	0.316	0.549	0.396	0.520	0.328	0.098	0.598	0.741	0.149	0.351	0.642	0.128
Back of Queue (Q), ft/ln (50 th percentile)	82.5	158.1	114.7	130.2	97	27.4	81.7	330.6	48.3	44.7	372.9	101.7
Back of Queue (Q), veh/ln (50 th percentile)	2.9	5.5	4.0	4.8	3.6	1.0	2.9	11.6	1.7	1.6	13.1	3.6
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.00	0.23	0.25	0.00	0.05	0.14	0.00	0.13	0.09	0.00	0.25
Uniform Delay (d_1), s/veh	33.4	45.8	37.6	33.3	41.3	32.2	28.3	36.5	18.7	28.8	55.9	32.0
Incremental Delay (d_2), s/veh	0.2	1.1	0.2	0.6	0.2	0.0	2.8	4.5	0.5	0.2	1.6	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	0.0	0.0
Control Delay (d), s/veh	33.5	46.9	37.8	33.9	41.5	32.2	31.1	41.0	19.1	29.0	57.5	32.2
Level of Service (LOS)	C	D	D	C	D	C	C	D	B	C	E	C
Approach Delay, s/veh / LOS	40.3		D	36.4		D	37.6		D	52.5		D
Intersection Delay, s/veh / LOS	42.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.12	B	2.12	B
Bicycle LOS Score / LOS	1.26	A	1.11	A	1.37	A	1.18	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Bixby				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Bixby Road				
Analysis Year	2028	North/South Street	Alum Creek Drive				
Time Analyzed	AM No Build	Peak Hour Factor	0.75				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	2	0		0	2	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				10			1070	10			2340	20
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked				0.000				0.330								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

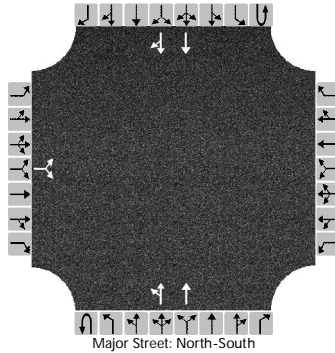
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13				13								
Capacity, c (veh/h)				98				724								
v/c Ratio				0.14				0.02								
95% Queue Length, Q ₉₅ (veh)				0.5				0.1								
Control Delay (s/veh)				47.4				10.1								
Level of Service (LOS)				E				B								
Approach Delay (s/veh)	47.4				10.1											
Approach LOS	E				B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Rathmell				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Rathmell Road				
Analysis Year	2028	North/South Street	Alum Creek Drive				
Time Analyzed	AM No Build	Peak Hour Factor	0.79				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0
Configuration			LR							LT	T				T	TR
Volume (veh/h)		40		10						20	1060				2350	50
Percent Heavy Vehicles (%)		13		13						20						
Proportion Time Blocked		0.000		0.200						0.200						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		7.06		7.16						4.50						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.63		3.43						2.40						

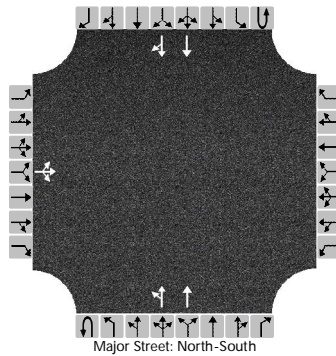
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			63							25						
Capacity, c (veh/h)										62						
v/c Ratio										0.41						
95% Queue Length, Q ₉₅ (veh)										1.5						
Control Delay (s/veh)										98.0						
Level of Service (LOS)										F						
Approach Delay (s/veh)									1.8							
Approach LOS																

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	AM No Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	2	0	0	0	2	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	880				740	10
Percent Heavy Vehicles (%)		20	20	20						17						
Proportion Time Blocked		0.360	0.000	0.640						0.640						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

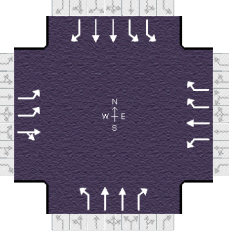
Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9						4.1						
Critical Headway (sec)		7.90	6.90	7.30						4.44						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.70	4.20	3.50						2.37						

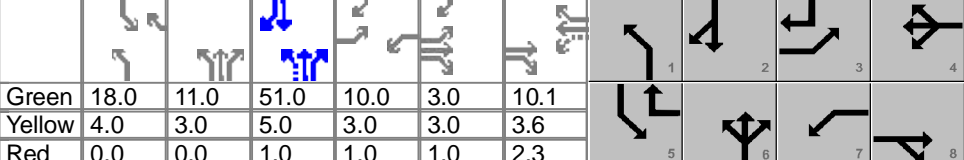
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			318							547						
v/c Ratio			0.07							0.02						
95% Queue Length, Q ₉₅ (veh)			0.2							0.1						
Control Delay (s/veh)			17.2							11.7						
Level of Service (LOS)			C							B						
Approach Delay (s/veh)	17.2								0.4							
Approach LOS	C															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.93	
Urban Street	Alum Creek Drive	Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	Creekside Parkway/ Toy...	File Name	2028 PM Projections.xus			
Project Description	2028 PM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	330	30	40	110	40	390	40	1560	100	190	1180	180

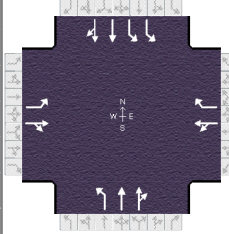
Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	18.0	11.0	51.0	10.0	3.0	10.1	Yellow	4.0	3.0	5.0	3.0	3.0	3.6	Red	0.0	0.0	1.0	1.0	1.0	2.3
Offset, s	12	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Float	Simult. Gap N/S	On																					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	21.0	23.0	14.0	16.0	36.0	71.0	22.0	57.0
Change Period, ($Y+R_c$), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	15.6	7.5	10.5	12.1	3.7		10.9	
Green Extension Time (g_e), s	0.1	1.1	0.0	0.0	0.1	0.0	0.2	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.03	1.00	1.00	0.00		0.01	

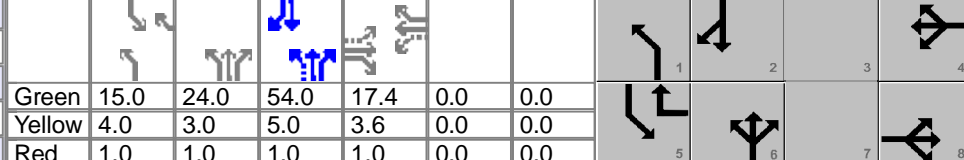
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	355	75		118	43	419	46	1776	114	204	1269	194
Adjusted Saturation Flow Rate (s), veh/h/ln	1647	1615		1640	1722	1292	1527	1527	1359	1387	1428	1271
Queue Service Time (g_s), s	13.6	5.5		8.5	3.1	10.1	1.7	65.0	3.5	8.9	51.0	11.1
Cycle Queue Clearance Time (g_c), s	13.6	5.5		8.5	3.1	10.1	1.7	65.0	3.5	8.9	51.0	11.1
Green Ratio (g/C)	0.13	0.13		0.15	0.08	0.22	0.66	0.50	0.50	0.14	0.39	0.52
Capacity (c), veh/h	431	212		271	134	558	443	1527	679	384	1120	665
Volume-to-Capacity Ratio (X)	0.824	0.354		0.436	0.321	0.751	0.103	1.164	0.168	0.532	1.133	0.291
Back of Queue (Q), ft/ln (50 th percentile)	167.8	59.9		96.4	42.8	191.8	18.9	865.7	27.3	92.7	845.1	99.4
Back of Queue (Q), veh/ln (50 th percentile)	6.3	2.3		3.5	1.6	7.0	0.7	29.9	0.9	3.0	27.8	3.3
Queue Storage Ratio (RQ) (50 th percentile)	0.71	0.00		0.77	0.00	0.71	0.03	0.00	0.07	0.21	0.00	0.17
Uniform Delay (d_1), s/veh	55.0	51.4		50.1	56.7	47.7	24.2	19.2	9.6	52.1	39.5	17.4
Incremental Delay (d_2), s/veh	11.5	0.4		0.4	6.2	9.0	0.0	76.0	0.2	0.7	71.2	1.1
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	66.5	51.8		50.5	63.0	56.7	24.2	95.2	9.8	52.8	110.7	18.5
Level of Service (LOS)	E	D		D	E	E	C	F	A	D	F	B
Approach Delay, s/veh / LOS	64.0		E	55.9		E	88.5		F	92.9		F
Intersection Delay, s/veh / LOS	83.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.61	C	2.42	B	2.12	B
Bicycle LOS Score / LOS	1.20	A	1.45	A	2.00	B	1.86	B

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information								
Agency					Duration, h	0.250							
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023		Area Type	Other							
Jurisdiction	ODOT	Time Period			PHF	0.96							
Urban Street	Alum Creek Drive	Analysis Year	2022		Analysis Period	1 > 7:00							
Intersection	Global Court	File Name	2028 PM Projections.xus										
Project Description	2028 PM Projections												

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	30	20	10	30	20	1650	10	10	1300	20

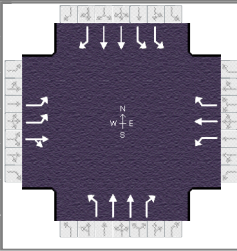
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	20	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	15.0	24.0	54.0	17.4	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	4.0	3.0	5.0	3.6	0.0	0.0				
				Red	1.0	1.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		22.0		22.0	48.0	88.0	20.0	60.0
Change Period, ($Y+R_c$), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		10.0		7.9	2.6		2.4	
Green Extension Time (g_e), s		0.1		0.1	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.01		0.00	0.00		0.00	

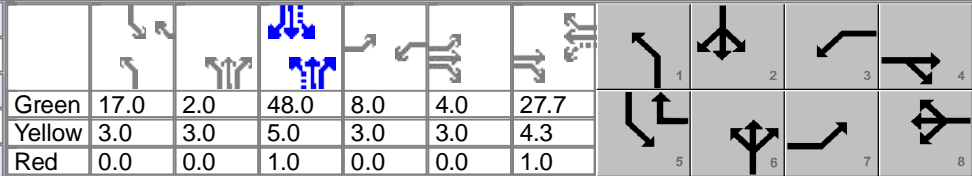
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	21	42		31	31		23	948	947	10	638	634
Adjusted Saturation Flow Rate (s), veh/h/ln	1215	1426		857	1032		1541	1618	1615	1401	1515	1506
Queue Service Time (g_s), s	2.1	3.4		2.5	3.0		0.6	69.2	69.5	0.4	54.0	54.0
Cycle Queue Clearance Time (g_c), s	8.0	3.4		5.9	3.0		0.6	69.2	69.5	0.4	54.0	54.0
Green Ratio (g/C)	0.13	0.13		0.13	0.25		0.77	0.63	0.63	0.12	0.42	0.42
Capacity (c), veh/h	163	191		161	257		577	1021	1019	323	629	626
Volume-to-Capacity Ratio (X)	0.128	0.218		0.194	0.121		0.040	0.928	0.930	0.030	1.013	1.014
Back of Queue (Q), ft/ln (50 th percentile)	18.4	35.2		31.9	26.6		10.4	726.7	633.3	4.6	391.3	320.1
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.2		0.9	0.8		0.4	25.2	25.3	0.2	13.0	12.8
Queue Storage Ratio (RQ) (50 th percentile)	0.06	0.00		0.00	0.09		0.04	0.00	0.00	0.01	0.00	0.00
Uniform Delay (d_1), s/veh	55.0	50.2		51.6	37.8		21.0	24.6	24.6	56.7	20.7	20.6
Incremental Delay (d_2), s/veh	0.1	0.2		0.2	0.1		0.0	4.5	4.7	0.0	14.2	14.4
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
Control Delay (d), s/veh	55.1	50.4		51.8	37.9		21.0	29.1	29.3	56.7	34.9	35.0
Level of Service (LOS)	E	D		D	D		C	C	C	E	F	F
Approach Delay, s/veh / LOS	52.0	D		44.9	D		29.1	C		35.1	D	
Intersection Delay, s/veh / LOS	32.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.47	B	2.08	B	1.92	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.93	B	1.63	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.86	
Urban Street	Alum Creek Drive	Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2028 PM Projections.xus			
Project Description	2028 PM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	230	160	80	50	140	340	70	1110	60	270	900	180

Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	17.0	2.0	48.0	8.0	4.0	27.7	Yellow	3.0	3.0	5.0	3.0	3.0	4.3	Red	0.0	0.0	1.0	0.0	0.0	1.0
Offset, s	10	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Float	Simult. Gap N/S	On													

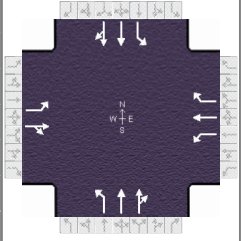
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	18.0	40.0	11.0	33.0	25.0	59.0	20.0	54.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	13.6	24.1	5.8	29.7	5.3		8.9	
Green Extension Time (g_e), s	0.1	1.5	0.0	0.0	0.1	0.0	0.3	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.06	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	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	267	279		58	163	395	79	1255	68	258	859	172
Adjusted Saturation Flow Rate (s), veh/h/ln	1456	1485		1513	1589	1346	1541	1541		1387	1428	
Queue Service Time (g_s), s	11.6	22.1		3.8	11.7	27.7	3.3	52.9		6.9	36.7	
Cycle Queue Clearance Time (g_c), s	11.6	22.1		3.8	11.7	27.7	3.3	52.9		6.9	36.7	
Green Ratio (g/C)	0.12	0.27		0.27	0.21	0.34	0.55	0.41		0.50	0.37	
Capacity (c), veh/h	336	396		225	339	463	365	1256		474	1054	
Volume-to-Capacity Ratio (X)	0.796	0.704		0.258	0.481	0.854	0.217	0.999		0.544	0.814	
Back of Queue (Q), ft/ln (50 th percentile)	140.8	251.3		41.1	135.1	388	31.6	697.3		71.7	401.6	
Back of Queue (Q), veh/ln (50 th percentile)	4.8	8.5		1.4	4.6	13.3	1.1	24.2		2.4	13.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.47	0.00		0.08	0.00	0.78	0.08	0.00		0.15	0.00	
Uniform Delay (d_1), s/veh	56.0	43.0		36.8	44.8	39.6	21.7	46.8		30.8	43.8	
Incremental Delay (d_2), s/veh	11.6	4.8		0.2	0.4	13.7	0.1	22.0		0.1	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	
Control Delay (d), s/veh	67.6	47.8		37.0	45.2	53.4	21.8	68.8	0.0	30.9	44.8	0.0
Level of Service (LOS)	E	D		D	D	D	C	E	A	C	D	A
Approach Delay, s/veh / LOS	57.5	E		49.7	D		62.9	E		36.1	D	
Intersection Delay, s/veh / LOS	51.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.60	C	2.28	B	2.12	B
Bicycle LOS Score / LOS	1.39	A	1.50	B	1.68	B	1.78	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.86
Urban Street	Alum Creek Drive	Analysis Year	2022	Analysis Period	1 > 7:00
Intersection	Spiegel Drive	File Name	2028 PM Projections.xus		
Project Description	2028 PM Projections				



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	60	140	30	40	220	40	770	30	130	740	160

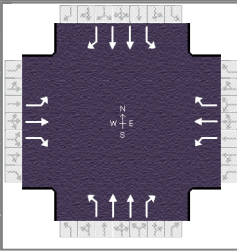
Signal Information				Signal Phases											
Cycle, s	130.0	Reference Phase	2												
Offset, s	24	Reference Point	End	Green	9.0	11.8	44.0	45.6	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	3.0	5.0	3.6	0.0	0.0					
Force Mode	Float	Simult. Gap N/S	On	Red	1.0	1.2	1.0	1.8	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		51.0		51.0	29.0	66.0	13.0	50.0
Change Period, (Y+R _c), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		29.1		19.7	4.2		9.1	
Green Extension Time (g _e), s		1.8		1.9	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.01		0.00	0.00		1.00	

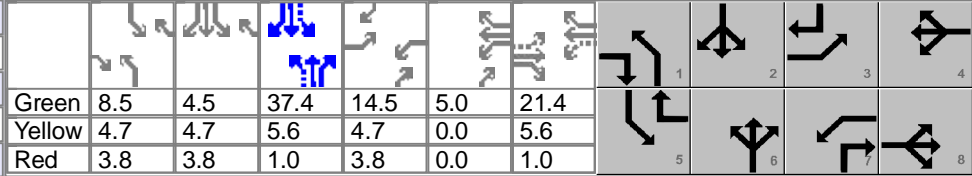
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	291	233		35	47	256	44	447	441	127	455	427
Adjusted Saturation Flow Rate (s), veh/h/ln	1305	1595		1093	1781	1510	1443	1515	1494	1485	1559	1462
Queue Service Time (g _s), s	24.8	14.4		3.3	2.3	17.2	2.2	31.1	31.1	7.1	32.8	32.2
Cycle Queue Clearance Time (g _c), s	27.1	14.4		17.7	2.3	17.2	2.2	31.1	31.1	7.1	32.8	32.2
Green Ratio (g/C)	0.35	0.35		0.35	0.35	0.35	0.54	0.46	0.46	0.41	0.34	0.34
Capacity (c), veh/h	491	560		318	625	530	375	699	690	266	528	495
Volume-to-Capacity Ratio (X)	0.593	0.416		0.110	0.074	0.483	0.119	0.640	0.640	0.479	0.863	0.863
Back of Queue (Q), ft/ln (50 th percentile)	211.8	146.7		23.5	25.9	167.5	21.5	353.4	322.4	77.9	314.3	248.7
Back of Queue (Q), veh/ln (50 th percentile)	8.0	5.6		0.9	1.0	6.3	0.7	11.7	11.5	2.6	10.6	9.3
Queue Storage Ratio (RQ) (50 th percentile)	0.71	0.00		0.04	0.00	0.28	0.06	0.00	0.00	0.17	0.00	0.00
Uniform Delay (d ₁), s/veh	37.2	32.1		38.8	28.1	33.0	23.4	30.7	30.6	28.1	27.6	25.7
Incremental Delay (d ₂), s/veh	1.3	0.2		0.1	0.0	0.3	0.0	2.8	2.8	0.3	10.0	10.6
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
Control Delay (d), s/veh	38.5	32.3		38.8	28.2	33.2	23.4	33.5	33.4	28.3	37.7	36.3
Level of Service (LOS)	D	C		D	C	C	C	C	C	C	D	D
Approach Delay, s/veh / LOS	35.7	D		33.1	C		33.0	C		35.9	D	
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.11	B	1.93	B
Bicycle LOS Score / LOS	1.35	A	1.04	A	1.29	A	1.48	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.90	
Urban Street	Alum Creek Drive	Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2028 PM Projections.xus			
Project Description	2028 PM Projections					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	90	200	150	230	180	60	220	690	140	110	670	130

Signal Information											
Cycle, s	130.0	Reference Phase	2								
Offset, s	10	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	23.0	28.0	28.0	33.0	17.0	44.0	30.0	57.0
Change Period, (Y+R _c), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	8.1	17.9	18.3	15.5	10.5		7.8	
Green Extension Time (g _e), s	0.1	0.6	0.1	1.1	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.01	0.85	1.00	0.02	1.00		0.00	

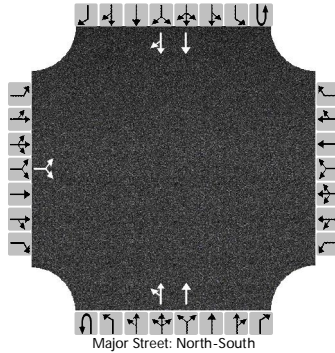
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	100	222	167	256	200	67	244	767	156	112	680	132
Adjusted Saturation Flow Rate (s), veh/h/ln	1654	1737	1472	1654	1737	1472	1612	1611	1434	1527	1527	1359
Queue Service Time (g _s), s	6.1	15.9	12.8	16.3	13.5	3.9	8.5	28.9	8.9	5.8	28.2	10.2
Cycle Queue Clearance Time (g _c), s	6.1	15.9	12.8	16.3	13.5	3.9	8.5	28.9	8.9	5.8	28.2	10.2
Green Ratio (g/C)	0.28	0.16	0.23	0.31	0.20	0.37	0.35	0.29	0.44	0.47	0.39	0.50
Capacity (c), veh/h	332	286	339	349	353	542	268	927	628	347	1184	678
Volume-to-Capacity Ratio (X)	0.301	0.777	0.492	0.733	0.567	0.123	0.914	0.827	0.248	0.321	0.574	0.194
Back of Queue (Q), ft/ln (50 th percentile)	67	212.8	127.2	195.2	161.5	37.5	181.2	336.7	84.7	61	347.5	164.4
Back of Queue (Q), veh/ln (50 th percentile)	2.5	7.8	4.7	7.2	5.9	1.4	6.5	12.1	3.0	2.1	12.0	5.7
Queue Storage Ratio (RQ) (50 th percentile)	0.13	0.00	0.25	0.37	0.00	0.07	0.30	0.00	0.23	0.12	0.00	0.41
Uniform Delay (d ₁), s/veh	36.7	52.0	43.5	37.4	46.7	27.2	42.6	43.3	23.1	27.5	50.9	30.3
Incremental Delay (d ₂), s/veh	0.2	11.6	0.4	6.8	1.4	0.0	32.6	8.4	0.9	0.1	1.2	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	0.0
Control Delay (d), s/veh	36.9	63.6	43.9	44.2	48.0	27.2	75.2	51.7	24.0	27.6	52.1	30.6
Level of Service (LOS)	D	E	D	D	D	C	E	D	C	C	D	C
Approach Delay, s/veh / LOS	51.4		D	43.5		D	52.9		D	46.0		D
Intersection Delay, s/veh / LOS	49.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.13	B	2.12	B
Bicycle LOS Score / LOS	1.29	A	1.35	A	1.45	A	1.32	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Rathmell				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Rathmell Road				
Analysis Year	2028	North/South Street	Alum Creek Drive				
Time Analyzed	PM No Build	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0
Configuration			LR							LT	T				T	TR
Volume (veh/h)		40		30						40	2180				1530	170
Percent Heavy Vehicles (%)		8		8						14						
Proportion Time Blocked		0.000		0.200						0.200						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.96		7.06						4.38						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.58		3.38						2.34						

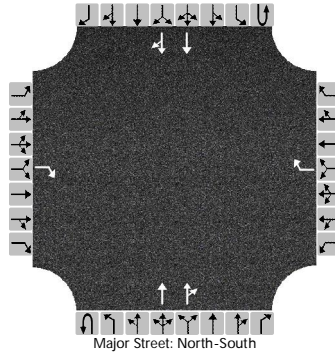
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			76							43						
Capacity, c (veh/h)			16							294						
v/c Ratio			4.82							0.15						
95% Queue Length, Q ₉₅ (veh)			10.3							0.5						
Control Delay (s/veh)			2205.3							19.4						
Level of Service (LOS)			F							C						
Approach Delay (s/veh)	2205.3								0.3							
Approach LOS	F															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek & Bixby		
Agency/Co.				Jurisdiction	ODOT		
Date Performed	2/23/2023			East/West Street	Bixby Road		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	PM No Build			Peak Hour Factor	0.93		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				20			2200	80			1540	20
Percent Heavy Vehicles (%)				13				0								
Proportion Time Blocked				0.000				0.230								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				7.16				6.90								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.43				3.30								

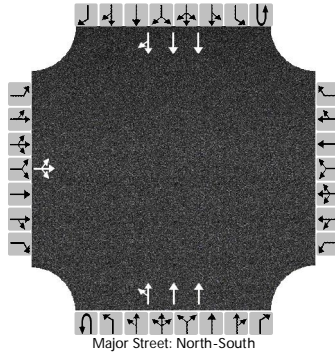
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				11				22								
Capacity, c (veh/h)				287				299								
v/c Ratio				0.04				0.07								
95% Queue Length, Q ₉₅ (veh)				0.1				0.2								
Control Delay (s/veh)				18.0				18.0								
Level of Service (LOS)				C				C								
Approach Delay (s/veh)	18.0				18.0											
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	PM No Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0		0	3	0		0	3	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	830				900	10
Percent Heavy Vehicles (%)		0	0	0						17						
Proportion Time Blocked		0.310	0.000	0.440						0.440						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4	6.5	7.1						5.3						
Critical Headway (sec)		6.40	6.50	7.10						5.64						
Base Follow-Up Headway (sec)		3.8	4.0	3.9						3.1						
Follow-Up Headway (sec)		3.80	4.00	3.90						3.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			554							617						
v/c Ratio			0.04							0.02						
95% Queue Length, Q ₉₅ (veh)			0.1							0.1						
Control Delay (s/veh)			11.8							10.9						
Level of Service (LOS)			B							B						
Approach Delay (s/veh)	11.8								0.3							
Approach LOS	B															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.80	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Rathmell Road	File Name	2028 AM Projections - 130.xus			
Project Description	2028 AM Projections Mitigations					

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	0	10				20	1060			2350	50

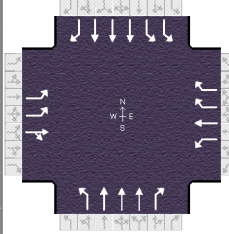
Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	6.0	79.0	27.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Float	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			1.0	4.0		8.3
Phase Duration, s		33.0			12.0	97.0		85.0
Change Period, ($Y+R_c$), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2			3.0	0.0		0.0
Queue Clearance Time (g_s), s		6.2			2.7			
Green Extension Time (g_e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.00			0.47			

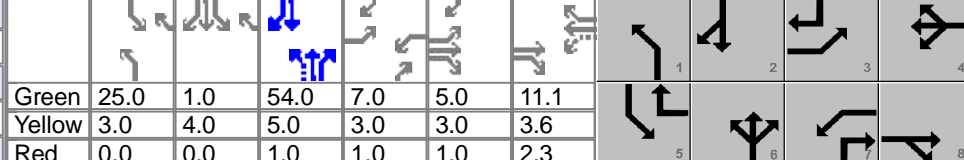
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h	63						23	1231			2000	1000
Adjusted Saturation Flow Rate (s), veh/h/ln	1587						1527	1456			1767	1747
Queue Service Time (g_s), s	4.2						0.7	30.6			67.1	68.3
Cycle Queue Clearance Time (g_c), s	4.2						0.7	30.6			67.1	68.3
Green Ratio (g/C)	0.21						0.67	0.70			0.61	0.61
Capacity (c), veh/h	330						131	3058			2147	1062
Volume-to-Capacity Ratio (X)	0.190						0.177	0.403			0.931	0.942
Back of Queue (Q), ft/ln (50 th percentile)	46						13	343.4			711.7	782.4
Back of Queue (Q), veh/ln (50 th percentile)	1.7						0.4	11.8			26.6	29.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00						0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh	42.5						31.8	26.1			23.1	23.4
Incremental Delay (d_2), s/veh	0.1						0.2	0.3			8.9	16.8
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (d), s/veh	42.6						32.0	26.4			31.9	40.2
Level of Service (LOS)	D						C	C			C	D
Approach Delay, s/veh / LOS	42.6		D	0.0			26.5		C	34.7		C
Intersection Delay, s/veh / LOS	32.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.48	B	1.35	A	1.66	B
Bicycle LOS Score / LOS	0.59	A			1.23	A	2.14	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.79	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Creekside Parkway/ Toy...	File Name	2028 AM Projections - 130.xus			
Project Description	2028 AM Projections Mitigations					

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	40	20	60	20	80	30	930	90	450	1570	330

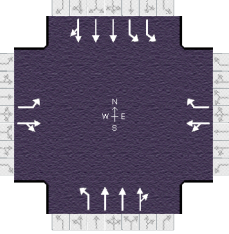
Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	25.0	1.0	54.0	7.0	5.0	11.1	Yellow	3.0	4.0	5.0	3.0	3.0	3.6	Red	0.0	0.0	1.0	1.0	1.0	2.3
Offset, s	0	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Float	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	20.0	26.0	11.0	17.0	28.0	60.0	33.0	65.0
Change Period, ($Y+R_c$), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	5.4	7.6	8.0	6.1	3.2		23.3	
Green Extension Time (g_e), s	0.1	0.3	0.0	0.2	0.0	0.0	0.8	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	0.16	0.00		0.16	

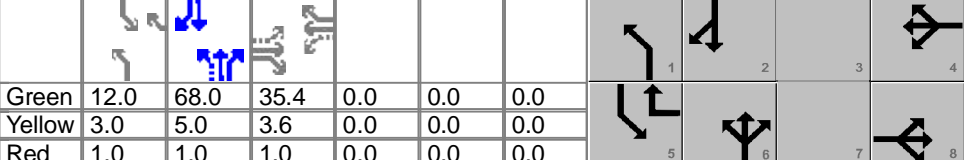
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	89	76		76	25	101	34	1064	103	565	1971	414
Adjusted Saturation Flow Rate (s), veh/h/ln	1524	1555		1485	1559	1169	1541	1470	1372	1647	1618	1510
Queue Service Time (g_s), s	3.4	5.6		6.0	2.0	4.1	1.2	30.6	8.6	21.3	50.6	23.8
Cycle Queue Clearance Time (g_c), s	3.4	5.6		6.0	2.0	4.1	1.2	30.6	8.6	21.3	50.6	23.8
Green Ratio (g/C)	0.12	0.15		0.14	0.09	0.31	0.61	0.42	0.47	0.22	0.45	0.58
Capacity (c), veh/h	375	240		230	133	721	361	1831	644	735	2202	871
Volume-to-Capacity Ratio (X)	0.236	0.316		0.331	0.190	0.140	0.095	0.581	0.160	0.769	0.895	0.476
Back of Queue (Q), ft/ln (50 th percentile)	37.2	62.7		66.7	23.1	34.3	12.1	359.6	136	236.4	557.2	248
Back of Queue (Q), veh/ln (50 th percentile)	1.3	2.2		2.3	0.8	1.2	0.4	12.5	4.7	8.9	20.9	9.3
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.00		0.53	0.00	0.13	0.02	0.00	0.37	0.53	0.00	0.41
Uniform Delay (d_1), s/veh	51.5	48.8		50.8	55.3	32.5	22.3	50.2	33.8	50.6	43.3	21.8
Incremental Delay (d_2), s/veh	0.1	0.3		0.3	0.3	0.0	0.0	1.2	0.5	1.1	1.7	0.5
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	51.6	49.1		51.1	55.5	32.5	22.4	51.4	34.3	51.7	45.0	22.2
Level of Service (LOS)	D	D		D	E	C	C	D	C	D	D	C
Approach Delay, s/veh / LOS	50.5		D	42.4		D	49.1		D	43.1		D
Intersection Delay, s/veh / LOS	44.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.87	C	2.43	B	2.11	B
Bicycle LOS Score / LOS	0.76	A	0.82	A	1.22	A	2.12	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.88	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2028 AM Projections - 130.xus			
Project Description	2028 AM Projections Mitigations					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	20	10	10	10	30	1020	20	30	1570	50

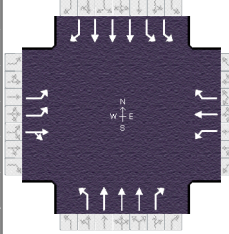
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	12.0	68.0	35.4	0.0	0.0	0.0				
Offset, s	65	Reference Point	End	Yellow	3.0	5.0	3.6	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		40.0		40.0	16.0	74.0	16.0	74.0
Change Period, (Y+R _c), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		4.1		4.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		11.4		7.3	3.1		3.3	
Green Extension Time (g _e), s		0.2		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

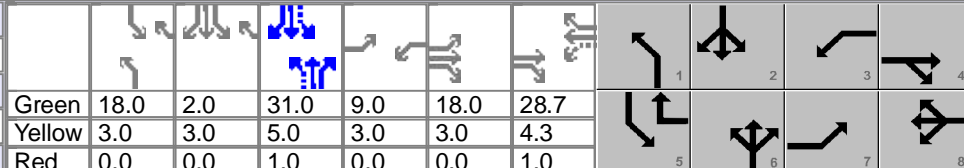
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	23	34		23	11		34	796	394	38	1363	672
Adjusted Saturation Flow Rate (s), veh/h/ln	580	691		760	819		1555	1633	1616	1579	1707	1679
Queue Service Time (g _s), s	4.1	4.9		0.4	1.2		1.1	26.5	26.7	1.3	46.3	46.5
Cycle Queue Clearance Time (g _c), s	9.4	4.9		5.3	1.2		1.1	26.5	26.7	1.3	46.3	46.5
Green Ratio (g/C)	0.27	0.27		0.27	0.36		0.62	0.52	0.52	0.08	0.52	0.52
Capacity (c), veh/h	190	188		248	292		226	1709	845	267	1786	878
Volume-to-Capacity Ratio (X)	0.120	0.181		0.091	0.039		0.152	0.466	0.466	0.141	0.763	0.765
Back of Queue (Q), ft/ln (50 th percentile)	23.7	33.8		21.1	8.8		10.7	323.1	286.7	13.4	552.4	502.3
Back of Queue (Q), veh/ln (50 th percentile)	0.6	0.8		0.6	0.2		0.4	11.3	11.5	0.5	20.0	20.1
Queue Storage Ratio (RQ) (50 th percentile)	0.08	0.00		0.00	0.03		0.04	0.00	0.00	0.04	0.00	0.00
Uniform Delay (d ₁), s/veh	40.0	36.2		35.6	27.3		19.0	32.4	32.9	47.8	36.0	36.1
Incremental Delay (d ₂), s/veh	0.1	0.2		0.1	0.0		0.1	0.7	1.3	0.0	1.2	2.5
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	40.1	36.4		35.6	27.3		19.1	33.0	34.2	47.9	37.2	38.6
Level of Service (LOS)	D	D		D	C		B	C	C	D	D	D
Approach Delay, s/veh / LOS	37.9	D		32.8	C		33.0	C		37.8	D	
Intersection Delay, s/veh / LOS	36.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.72	C	2.10	B	1.91	B
Bicycle LOS Score / LOS	0.58	A	0.54	A	1.16	A	1.52	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.83	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2028 AM Projections - 130.xus			
Project Description	2028 AM Projections Mitigations					

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	90	90	50	150	180	60	760	50	360	980	260

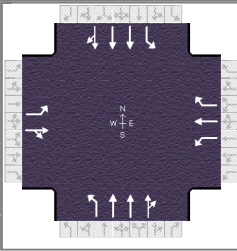
Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	18.0	2.0	31.0	9.0	18.0	28.7	Yellow	3.0	3.0	5.0	3.0	3.0	4.3	Red	0.0	0.0	1.0	0.0	0.0	1.0
Offset, s	93	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Float	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	33.0	55.0	12.0	34.0	21.0	37.0	26.0	42.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	8.0	17.0	5.6	16.2	5.0		13.2	
Green Extension Time (g_e), s	0.3	1.2	0.0	1.1	0.1	0.0	0.8	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.00	0.70	0.01	0.00		0.00	

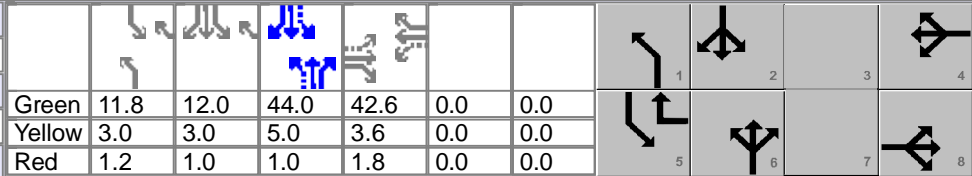
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	157	217		60	181	217	67	851	56	451	1229	326
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1376		1584	1663	1409	1570	1496		1579	1550	
Queue Service Time (g_s), s	6.0	15.0		3.6	12.4	14.2	3.0	22.5		11.2	33.4	
Cycle Queue Clearance Time (g_c), s	6.0	15.0		3.6	12.4	14.2	3.0	22.5		11.2	33.4	
Green Ratio (g/C)	0.23	0.38		0.29	0.22	0.40	0.38	0.24		0.43	0.28	
Capacity (c), veh/h	640	526		394	367	560	275	1071		747	1288	
Volume-to-Capacity Ratio (X)	0.245	0.412		0.153	0.492	0.387	0.245	0.795		0.604	0.954	
Back of Queue (Q), ft/ln (50 th percentile)	62.4	151		39.8	144.1	135.4	28.6	226.7		80.5	337.6	
Back of Queue (Q), veh/ln (50 th percentile)	2.1	5.0		1.4	5.1	4.8	1.0	8.0		2.9	12.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.21	0.00		0.08	0.00	0.27	0.07	0.00		0.17	0.00	
Uniform Delay (d_1), s/veh	40.8	29.4		34.1	44.3	27.9	22.9	41.5		18.7	39.0	
Incremental Delay (d_2), s/veh	0.1	0.2		0.1	0.4	0.2	0.1	5.4		0.6	10.9	
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	
Control Delay (d), s/veh	40.8	29.6		34.1	44.7	28.0	23.1	46.9	0.0	19.3	49.9	0.0
Level of Service (LOS)	D	C		C	D	C	C	D	A	B	D	A
Approach Delay, s/veh / LOS	34.3	C		35.4	D		42.5	D		34.9	C	
Intersection Delay, s/veh / LOS	36.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.85	C	2.30	B	2.13	B
Bicycle LOS Score / LOS	1.10	A	1.24	A	1.06	A	1.55	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.84	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Spiegel Drive	File Name	2028 AM Projections - 130.xus			
Project Description	2028 AM Projections Mitigations					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	10	20	10	30	40	80	770	40	180	720	220

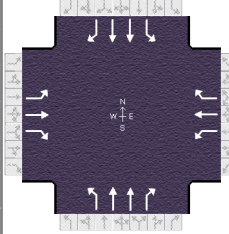
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	11.8	12.0	44.0	42.6	0.0	0.0				
Offset, s	55	Reference Point	End	Yellow	3.0	3.0	5.0	3.6	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.2	1.0	1.0	1.8	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		48.0		48.0	16.0	50.0	32.0	66.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		8.9		4.8	6.5		9.1	
Green Extension Time (g_e), s		0.4		0.4	0.0	0.0	0.3	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.03		0.00	

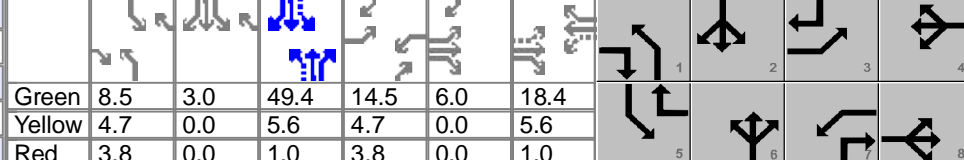
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	71	36		12	36	48	89	605	295	225	813	359
Adjusted Saturation Flow Rate (s), veh/h/ln	1296	1577		1351	1841	1560	1598	1678	1633	1682	1767	1553
Queue Service Time (g_s), s	5.2	2.0		0.8	1.7	1.9	4.5	16.6	16.6	7.1	26.3	27.7
Cycle Queue Clearance Time (g_c), s	6.9	2.0		2.8	1.7	1.9	4.5	16.6	16.6	7.1	26.3	27.7
Green Ratio (g/C)	0.33	0.33		0.33	0.33	0.54	0.43	0.34	0.34	0.57	0.46	0.46
Capacity (c), veh/h	463	517		477	603	847	300	1136	553	541	1631	717
Volume-to-Capacity Ratio (X)	0.154	0.069		0.025	0.059	0.056	0.296	0.532	0.534	0.415	0.499	0.501
Back of Queue (Q), ft/ln (50 th percentile)	44.1	20.8		6.8	20	17	48.1	165.6	167.1	52.5	325.6	313.2
Back of Queue (Q), veh/ln (50 th percentile)	1.6	0.8		0.3	0.8	0.7	1.7	5.9	6.0	2.0	12.1	11.7
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.00		0.01	0.00	0.03	0.14	0.00	0.00	0.12	0.00	0.00
Uniform Delay (d_1), s/veh	32.3	30.1		31.0	30.0	14.0	25.1	27.3	27.2	10.4	37.7	41.8
Incremental Delay (d_2), s/veh	0.1	0.0		0.0	0.0	0.0	0.2	1.3	2.7	0.1	0.4	0.9
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	32.4	30.1		31.0	30.0	14.0	25.3	28.6	29.9	10.5	38.1	42.7
Level of Service (LOS)	C	C		C	C	B	C	C	C	B	D	D
Approach Delay, s/veh / LOS	31.6	C		22.1	C		28.7	C		34.8	C	
Intersection Delay, s/veh / LOS	31.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.12	B	1.92	B
Bicycle LOS Score / LOS	0.66	A	0.64	A	1.07	A	1.22	A

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information								
Agency					Duration, h	0.250							
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023		Area Type	Other							
Jurisdiction	ODOT	Time Period			PHF	0.90							
Urban Street	Alum Creek Drive	Analysis Year	2028		Analysis Period	1 > 7:00							
Intersection	London-Groveport Road	File Name	2028 AM Projections - 130.xus										
Project Description	2028 AM Projections Mitigations												

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	110	170	140	180	120	40	130	740	90	70	610	70

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	5	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
	Green	8.5	3.0	49.4	14.5	6.0	18.4						
	Yellow	4.7	0.0	5.6	4.7	0.0	5.6						
	Red	3.8	0.0	1.0	3.8	0.0	1.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	29.0	31.0	23.0	25.0	17.0	56.0	20.0	59.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	9.8	15.8	15.4	11.3	9.4		6.1	
Green Extension Time (g_e), s	0.1	0.8	0.0	0.7	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.04	1.00	0.10	1.00		0.03	

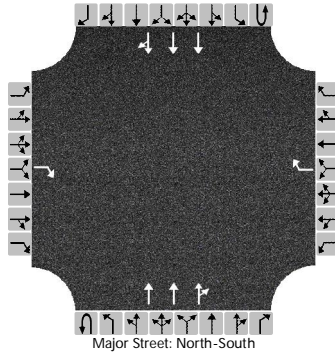
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	122	189	156	200	133	44	144	822	100	87	760	87
Adjusted Saturation Flow Rate (s), veh/h/ln	1555	1633	1384	1654	1737	1472	1555	1555	1384	1570	1569	1397
Queue Service Time (g_s), s	7.8	13.8	12.3	13.4	9.3	3.1	7.4	29.0	5.1	4.1	30.4	5.7
Cycle Queue Clearance Time (g_c), s	7.8	13.8	12.3	13.4	9.3	3.1	7.4	29.0	5.1	4.1	30.4	5.7
Green Ratio (g/C)	0.30	0.19	0.25	0.25	0.14	0.23	0.45	0.38	0.49	0.47	0.40	0.56
Capacity (c), veh/h	378	307	350	313	246	339	252	1182	680	286	1265	783
Volume-to-Capacity Ratio (X)	0.324	0.616	0.444	0.639	0.542	0.131	0.574	0.696	0.147	0.304	0.601	0.111
Back of Queue (Q), ft/ln (50 th percentile)	84.4	166.9	120.4	155.1	112.1	30.9	77.9	313.8	47.3	42.3	377.9	96
Back of Queue (Q), veh/ln (50 th percentile)	3.0	5.8	4.2	5.7	4.1	1.1	2.7	11.0	1.7	1.5	13.3	3.4
Queue Storage Ratio (RQ) (50 th percentile)	0.17	0.00	0.24	0.30	0.00	0.06	0.13	0.00	0.13	0.08	0.00	0.24
Uniform Delay (d_1), s/veh	35.0	48.5	40.9	41.7	51.9	39.7	26.4	34.0	18.1	24.1	49.8	22.0
Incremental Delay (d_2), s/veh	0.2	2.7	0.3	3.3	1.4	0.1	2.1	3.4	0.5	0.2	1.8	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	0.0
Control Delay (d), s/veh	35.2	51.2	41.2	45.0	53.2	39.8	28.4	37.4	18.6	24.3	51.6	22.3
Level of Service (LOS)	D	D	D	D	D	D	C	D	B	C	D	C
Approach Delay, s/veh / LOS	43.7		D	47.3		D	34.4		C	46.3		D
Intersection Delay, s/veh / LOS	41.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.47	B	2.12	B	2.11	B
Bicycle LOS Score / LOS	1.26	A	1.11	A	1.37	A	1.18	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek & Bixby		
Agency/Co.				Jurisdiction	ODOT		
Date Performed	2/23/2023			East/West Street	Bixby Road		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	AM Projections			Peak Hour Factor	0.75		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	3	0		0	3	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				10			1070	10			2340	20
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked				0.580				0.380								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				7.1				7.1								
Critical Headway (sec)				7.16				7.16								
Base Follow-Up Headway (sec)				3.9				3.9								
Follow-Up Headway (sec)				3.93				3.93								

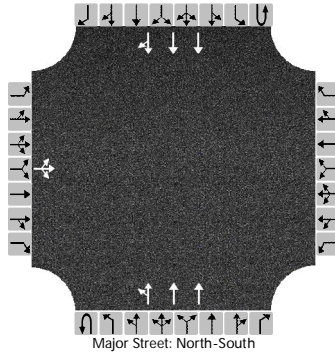
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13				13								
Capacity, c (veh/h)				385				568								
v/c Ratio				0.03				0.02								
95% Queue Length, Q ₉₅ (veh)				0.1				0.1								
Control Delay (s/veh)				14.7				11.5								
Level of Service (LOS)				B				B								
Approach Delay (s/veh)	14.7				11.5											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	AM Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	3	0	0	0	3	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	880				740	10
Percent Heavy Vehicles (%)		20	20	20						17						
Proportion Time Blocked		0.400	0.000	0.680						0.680						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

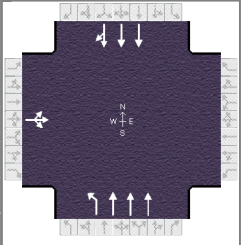
Base Critical Headway (sec)		6.4	6.5	7.1						5.3						
Critical Headway (sec)		6.80	6.90	7.50						5.64						
Base Follow-Up Headway (sec)		3.8	4.0	3.9						3.1						
Follow-Up Headway (sec)		4.00	4.20	4.10						3.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			362							352						
v/c Ratio			0.06							0.03						
95% Queue Length, Q ₉₅ (veh)			0.2							0.1						
Control Delay (s/veh)			15.6							15.6						
Level of Service (LOS)			C							C						
Approach Delay (s/veh)	15.6								0.5							
Approach LOS	C															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.92
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1> 7:00
Intersection	Rathmell Road	File Name	2028 PM Projections - 130.xus		
Project Description	2028 PM Projections Mitigation				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	40	0	30				40	2180			1530	170

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Float	Simult. Gap N/S	On									
Green	61.0	12.0	39.0	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						

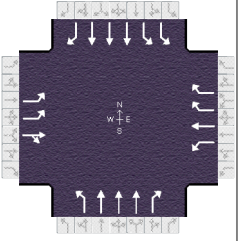
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			1.0	4.0		8.4
Phase Duration, s		45.0			18.0	85.0		67.0
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2			3.0	0.0		0.0
Queue Clearance Time (g _s), s		6.5			2.0			
Green Extension Time (g _e), s		0.1			6.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.00			0.52			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		76					46	2505			1252	595
Adjusted Saturation Flow Rate (s), veh/h/ln		1611					1810	1537			1633	1547
Queue Service Time (g _s), s		4.5					0.0	66.2			42.7	43.2
Cycle Queue Clearance Time (g _c), s		4.5					0.0	66.2			42.7	43.2
Green Ratio (g/C)		0.30					0.55	0.61			0.47	0.47
Capacity (c), veh/h		483					253	2802			1533	726
Volume-to-Capacity Ratio (X)		0.157					0.181	0.894			0.817	0.820
Back of Queue (Q), ft/ln (50 th percentile)		47.3					32.2	715			476.4	422.4
Back of Queue (Q), veh/ln (50 th percentile)		1.8					1.3	25.7			16.7	16.9
Queue Storage Ratio (RQ) (50 th percentile)		0.00					0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh		33.4					46.3	36.1			29.7	29.8
Incremental Delay (d ₂), s/veh		0.1					0.0	2.0			5.0	10.1
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0			0.0	0.0
Control Delay (d), s/veh		33.5					46.4	38.1			34.7	39.8
Level of Service (LOS)		C					D	D			C	D
Approach Delay, s/veh / LOS	33.5	C		0.0			38.3	D		36.3	D	
Intersection Delay, s/veh / LOS	37.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.48	B	1.37	A	1.73	B
Bicycle LOS Score / LOS	0.61	A			1.81	B	1.50	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.93
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1> 7:00
Intersection	Creekside Parkway/ Toy...	File Name	2028 PM Projections - 130.xus		
Project Description	2028 PM Projections Mitigation				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	330	30	40	110	40	390	40	1560	100	190	1180	180

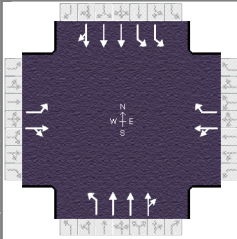
Signal Information															
Cycle, s	130.0	Reference Phase	2												
Offset, s	122	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Float	Simult. Gap N/S	On												
		Green		13.0	8.0	55.0	9.0	8.0	10.1						
		Yellow		3.0	4.0	5.0	3.0	3.0	3.6						
		Red		0.0	0.0	1.0	1.0	1.0	2.3						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	25.0	28.0	13.0	16.0	16.0	61.0	28.0	73.0
Change Period, (Y+R _c), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	15.2	7.3	10.6	12.1	4.0		6.4	
Green Extension Time (g _e), s	0.5	1.3	0.0	0.0	0.0	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.10	0.00	1.00	1.00	0.00		0.00	

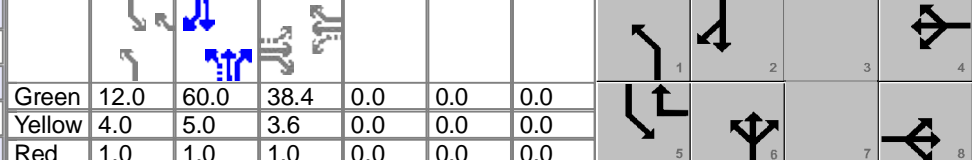
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	355	75		118	43	419	46	1776	114	208	1291	197
Adjusted Saturation Flow Rate (s), veh/h/ln	1647	1615		1640	1722	1292	1527	1456	1359	1387	1362	1271
Queue Service Time (g _s), s	13.2	5.3		8.6	3.1	10.1	2.0	51.9	7.8	4.4	35.9	16.1
Cycle Queue Clearance Time (g _c), s	13.2	5.3		8.6	3.1	10.1	2.0	51.9	7.8	4.4	35.9	16.1
Green Ratio (g/C)	0.16	0.17		0.15	0.08	0.26	0.52	0.42	0.42	0.62	0.52	0.52
Capacity (c), veh/h	532	275		264	134	678	290	1848	575	633	2106	655
Volume-to-Capacity Ratio (X)	0.667	0.274		0.449	0.321	0.619	0.157	0.961	0.198	0.328	0.613	0.301
Back of Queue (Q), ft/ln (50 th percentile)	148.7	56.8		97.4	37	164.6	20.2	575.6	85.4	44.8	384.7	164.9
Back of Queue (Q), veh/ln (50 th percentile)	5.6	2.1		3.6	1.3	6.0	0.7	19.8	2.9	1.5	12.7	5.4
Queue Storage Ratio (RQ) (50 th percentile)	0.63	0.00		0.78	0.00	0.61	0.03	0.00	0.23	0.10	0.00	0.27
Uniform Delay (d ₁), s/veh	51.2	47.0		51.0	56.7	42.2	20.0	42.3	27.5	26.4	36.0	29.2
Incremental Delay (d ₂), s/veh	2.6	0.2		0.4	0.5	1.3	0.1	8.7	0.4	0.1	0.7	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
Control Delay (d), s/veh	53.8	47.2		51.4	57.2	43.5	20.1	51.0	27.9	26.4	36.7	29.7
Level of Service (LOS)	D	D		D	E	D	C	D	C	C	D	C
Approach Delay, s/veh / LOS	52.6		D	46.1		D	48.9		D	34.6		C
Intersection Delay, s/veh / LOS	43.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.87	C	2.43	B	2.10	B
Bicycle LOS Score / LOS	1.20	A	1.45	A	1.49	A	1.40	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.96	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2028 PM Projections - 130.xus			
Project Description	2028 PM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	30	20	10	30	20	1650	10	10	1300	20

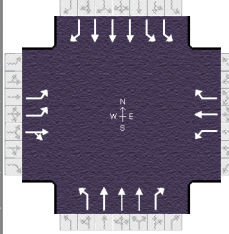
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	12.0	60.0	38.4	0.0	0.0	0.0	1	2	3	4
Offset, s	20	Reference Point	End	Yellow	4.0	5.0	3.6	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		43.0		43.0	21.0	70.0	17.0	66.0
Change Period, (Y+R _c), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		8.3		6.6	2.6		2.4	
Green Extension Time (g _e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

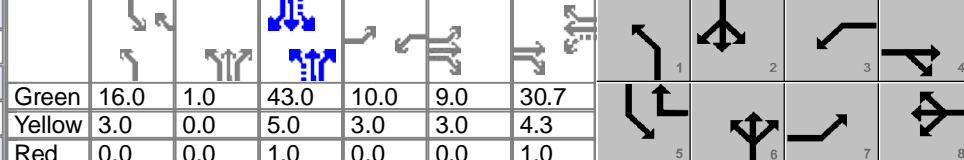
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	21	42		31	31		23	1265	630	11	963	478
Adjusted Saturation Flow Rate (s), veh/h/ln	1215	1426		939	1032		1541	1618	1613	1401	1515	1502
Queue Service Time (g _s), s	1.7	2.8		1.8	2.5		0.6	42.5	42.6	0.4	29.4	29.3
Cycle Queue Clearance Time (g _c), s	6.3	2.8		4.6	2.5		0.6	42.5	42.6	0.4	29.4	29.3
Green Ratio (g/C)	0.30	0.30		0.30	0.39		0.61	0.49	0.49	0.09	0.46	0.46
Capacity (c), veh/h	371	421		323	400		332	1594	794	259	1398	693
Volume-to-Capacity Ratio (X)	0.056	0.099		0.097	0.078		0.069	0.794	0.794	0.042	0.689	0.689
Back of Queue (Q), ft/ln (50 th percentile)	14.5	27.8		25.1	21		4.9	454.3	405.2	4.4	275	235.1
Back of Queue (Q), veh/ln (50 th percentile)	0.5	1.0		0.7	0.6		0.2	15.8	16.2	0.1	9.1	9.4
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.00		0.00	0.07		0.02	0.00	0.00	0.01	0.00	0.00
Uniform Delay (d ₁), s/veh	36.2	33.2		34.0	25.1		10.1	28.0	28.0	49.0	21.5	21.4
Incremental Delay (d ₂), s/veh	0.0	0.0		0.0	0.0		0.0	2.3	4.4	0.0	2.2	4.3
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	36.2	33.3		34.0	25.2		10.1	30.2	32.4	49.0	23.7	25.8
Level of Service (LOS)	D	C		C	C		B	C	C	D	C	C
Approach Delay, s/veh / LOS	34.3	C		29.6	C		30.7	C		24.6	C	
Intersection Delay, s/veh / LOS	28.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.72	C	2.10	B	1.92	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.45	A	1.25	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.86	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2028 PM Projections - 130.xus			
Project Description	2028 PM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	230	160	80	50	140	340	70	1110	60	270	900	180

Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	16.0	1.0	43.0	10.0	9.0	30.7	Yellow	3.0	0.0	5.0	3.0	3.0	4.3	Red	0.0	0.0	1.0	0.0	0.0	1.0
Offset, s	80	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Float	Simult. Gap N/S	On																					

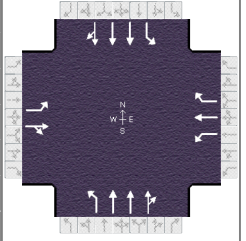
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	25.0	48.0	13.0	36.0	20.0	50.0	19.0	49.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	13.5	23.4	5.4	32.7	5.4		9.2	
Green Extension Time (g_e), s	0.4	1.7	0.0	0.0	0.1	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.00	0.10	1.00	0.00		0.02	

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	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	267	279		58	163	395	79	1255	68	294	981	196
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1415		1584	1663	1409	1570	1496		1579	1550	
Queue Service Time (g_s), s	11.5	21.4		3.4	10.8	30.7	3.4	33.7		7.2	25.8	
Cycle Queue Clearance Time (g_c), s	11.5	21.4		3.4	10.8	30.7	3.4	33.7		7.2	25.8	
Green Ratio (g/C)	0.17	0.33		0.31	0.24	0.36	0.46	0.34		0.45	0.33	
Capacity (c), veh/h	469	465		322	393	506	328	1519		551	1538	
Volume-to-Capacity Ratio (X)	0.570	0.600		0.181	0.415	0.781	0.242	0.826		0.534	0.638	
Back of Queue (Q), ft/ln (50 th percentile)	123	229.2		37	125.3	338.3	33.1	358.5		66.7	294.8	
Back of Queue (Q), veh/ln (50 th percentile)	4.0	7.5		1.3	4.4	12.0	1.2	12.6		2.4	10.7	
Queue Storage Ratio (RQ) (50 th percentile)	0.41	0.00		0.07	0.00	0.68	0.08	0.00		0.14	0.00	
Uniform Delay (d_1), s/veh	49.6	36.5		32.4	42.0	37.1	20.3	41.0		25.8	47.9	
Incremental Delay (d_2), s/veh	1.1	1.5		0.1	0.3	7.1	0.1	4.5		0.4	1.4	
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	
Control Delay (d), s/veh	50.7	38.0		32.5	42.3	44.2	20.4	45.6	0.0	26.2	49.3	0.0
Level of Service (LOS)	D	D		C	D	D	C	D	A	C	D	A
Approach Delay, s/veh / LOS	44.2		D	42.6		D	41.9		D	38.1		D
Intersection Delay, s/veh / LOS	41.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.85	C	2.29	B	2.12	B
Bicycle LOS Score / LOS	1.39	A	1.50	B	1.28	A	1.35	A

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information		
Agency					Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023		Area Type	Other	
Jurisdiction	ODOT	Time Period			PHF	0.86	
Urban Street	Alum Creek Drive	Analysis Year	2028		Analysis Period	1 > 7:00	
Intersection	Spiegel Drive	File Name	2028 PM Projections - 130.xus				
Project Description	2028 PM Projections Mitigation						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	250	60	140	30	40	220	40	770	30	130	740	160

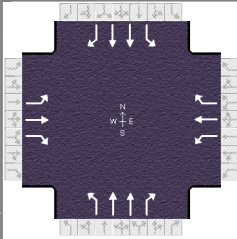
Signal Information				Signal Timing (s)									
Cycle, s	130.0	Reference Phase	2										
Offset, s	21	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	10.8	1.0	55.0	43.6	0.0	0.0			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	3.0	5.0	3.6	0.0	0.0			
				Red	1.2	1.0	1.0	1.8	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		49.0		49.0	15.0	61.0	20.0	66.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		29.7		20.1	3.7		7.1	
Green Extension Time (g_e), s		1.8		1.9	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.02		0.00	0.00		0.00	

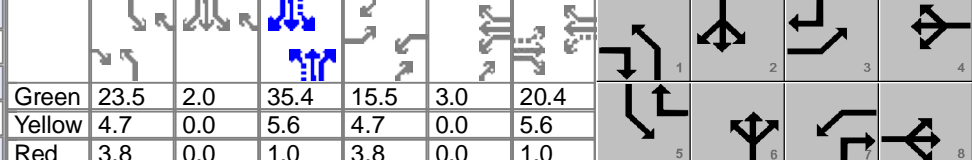
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	291	233		35	47	256	44	596	293	143	678	311
Adjusted Saturation Flow Rate (s), veh/h/ln	1305	1595		1093	1781	1510	1443	1515	1484	1485	1559	1415
Queue Service Time (g_s), s	25.4	14.7		3.3	2.3	17.6	1.7	22.4	22.6	5.1	21.5	22.2
Cycle Queue Clearance Time (g_c), s	27.7	14.7		18.1	2.3	17.6	1.7	22.4	22.6	5.1	21.5	22.2
Green Ratio (g/C)	0.34	0.34		0.34	0.34	0.34	0.51	0.42	0.42	0.56	0.46	0.46
Capacity (c), veh/h	470	535		298	597	506	302	1282	628	368	1439	653
Volume-to-Capacity Ratio (X)	0.619	0.435		0.117	0.078	0.505	0.147	0.465	0.466	0.388	0.471	0.476
Back of Queue (Q), ft/ln (50 th percentile)	219.1	150.9		24.1	26.6	172.3	14.4	268.8	251	30.5	242.5	214.2
Back of Queue (Q), veh/ln (50 th percentile)	8.3	5.7		0.9	1.0	6.5	0.5	8.9	9.0	1.0	8.2	8.0
Queue Storage Ratio (RQ) (50 th percentile)	0.73	0.00		0.04	0.00	0.29	0.04	0.00	0.00	0.07	0.00	0.00
Uniform Delay (d_1), s/veh	38.9	33.6		40.6	29.5	34.6	13.2	38.4	39.0	9.1	28.6	29.9
Incremental Delay (d_2), s/veh	1.8	0.2		0.1	0.0	0.3	0.0	0.6	1.3	0.2	0.8	1.9
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	40.8	33.8		40.7	29.5	34.9	13.3	39.0	40.3	9.3	29.4	31.7
Level of Service (LOS)	D	C		D	C	C	B	D	D	A	C	C
Approach Delay, s/veh / LOS	37.7		D	34.8		C	38.2		D	27.5		C
Intersection Delay, s/veh / LOS	33.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.11	B	1.92	B
Bicycle LOS Score / LOS	1.35	A	1.04	A	1.02	A	1.15	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.90	
Urban Street	Alum Creek Drive	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2028 PM Projections - 130.xus			
Project Description	2028 PM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	90	200	150	230	180	60	220	690	140	110	670	130

Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	23.5	2.0	35.4	15.5	3.0	20.4	Yellow	4.7	0.0	5.6	4.7	0.0	5.6	Red	3.8	0.0	1.0	3.8	0.0	1.0
Offset, s	60	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	24.0	27.0	27.0	30.0	32.0	42.0	34.0	44.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	8.1	18.1	18.6	15.9	15.3		5.8	
Green Extension Time (g_e), s	0.1	0.4	0.0	0.9	0.3	0.0	0.2	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	0.11	0.01		0.00	

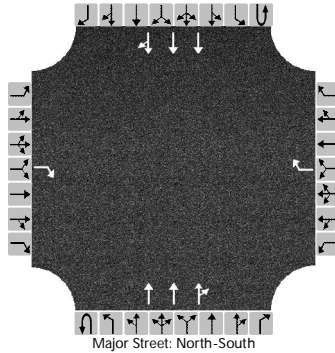
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	100	222	167	256	200	67	244	767	156	122	744	144
Adjusted Saturation Flow Rate (s), veh/h/ln	1654	1737	1472	1654	1737	1472	1555	1555	1384	1570	1569	1397
Queue Service Time (g_s), s	6.1	16.1	11.0	16.6	13.9	3.8	13.3	31.0	9.6	3.8	29.6	9.4
Cycle Queue Clearance Time (g_c), s	6.1	16.1	11.0	16.6	13.9	3.8	13.3	31.0	9.6	3.8	29.6	9.4
Green Ratio (g/C)	0.28	0.16	0.34	0.30	0.18	0.38	0.45	0.27	0.41	0.47	0.29	0.41
Capacity (c), veh/h	316	273	497	327	313	554	364	847	574	384	903	568
Volume-to-Capacity Ratio (X)	0.316	0.815	0.335	0.783	0.640	0.120	0.671	0.905	0.271	0.318	0.825	0.254
Back of Queue (Q), ft/ln (50 th percentile)	67	222.8	106.8	208.4	171	37	143.5	377.9	92.3	31.6	362.2	100.7
Back of Queue (Q), veh/ln (50 th percentile)	2.5	8.2	3.9	7.7	6.3	1.4	5.0	13.2	3.2	1.1	12.8	3.5
Queue Storage Ratio (RQ) (50 th percentile)	0.13	0.00	0.21	0.40	0.00	0.07	0.24	0.00	0.25	0.06	0.00	0.25
Uniform Delay (d_1), s/veh	36.9	53.0	32.2	39.1	49.4	26.5	27.6	45.7	25.1	13.1	49.4	27.6
Incremental Delay (d_2), s/veh	0.2	16.1	0.1	10.7	3.4	0.0	3.9	15.0	1.2	0.2	7.6	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	37.2	69.1	32.3	49.8	52.8	26.5	31.4	60.7	26.3	13.3	57.0	28.5
Level of Service (LOS)	D	E	C	D	D	C	C	E	C	B	E	C
Approach Delay, s/veh / LOS	50.0	D		48.0	D		50.0	D		47.7	D	
Intersection Delay, s/veh / LOS	48.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.13	B	2.13	B
Bicycle LOS Score / LOS	1.29	A	1.35	A	1.45	A	1.32	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek & Bixby		
Agency/Co.				Jurisdiction	ODOT		
Date Performed	2/23/2023			East/West Street	Bixby Road		
Analysis Year	2028			North/South Street	Alum Creek Drive		
Time Analyzed	PM Projections			Peak Hour Factor	0.80		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	3	0	0	0	3	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				20			2200	80			1540	20
Percent Heavy Vehicles (%)				13				0								
Proportion Time Blocked				0.480				0.190								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				7.1				7.1								
Critical Headway (sec)				7.36				7.10								
Base Follow-Up Headway (sec)				3.9				3.9								
Follow-Up Headway (sec)				4.03				3.90								

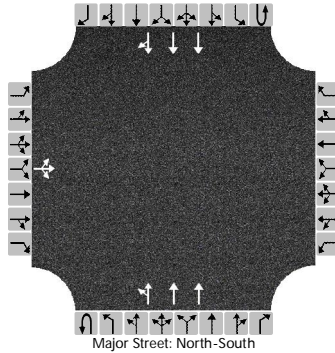
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13				25								
Capacity, c (veh/h)				465				267								
v/c Ratio				0.03				0.09								
95% Queue Length, Q ₉₅ (veh)				0.1				0.3								
Control Delay (s/veh)				13.0				19.9								
Level of Service (LOS)				B				C								
Approach Delay (s/veh)	13.0				19.9											
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek Drive				
Agency/Co.		Jurisdiction	Franklin County				
Date Performed	9/15/2023	East/West Street	Alum Creek Service Drive				
Analysis Year	2028	North/South Street	Alum Creek Drive				
Time Analyzed	PM Build	Peak Hour Factor	0.88				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	3	0	0	0	3	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	830				900	10
Percent Heavy Vehicles (%)		0	0	0						17						
Proportion Time Blocked		0.370	0.000	0.740						0.740						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

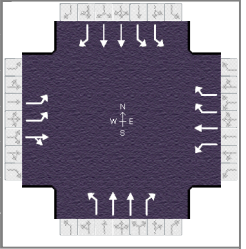
Base Critical Headway (sec)		6.4	6.5	7.1						5.3						
Critical Headway (sec)		6.40	6.50	7.10						5.64						
Base Follow-Up Headway (sec)		3.8	4.0	3.9						3.1						
Follow-Up Headway (sec)		3.80	4.00	3.90						3.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			336							286						
v/c Ratio			0.07							0.04						
95% Queue Length, Q ₉₅ (veh)			0.2							0.1						
Control Delay (s/veh)			16.5							18.1						
Level of Service (LOS)			C							C						
Approach Delay (s/veh)	16.5								0.7							
Approach LOS	C															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.79
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Creekside Parkway/ Toy...	File Name	2048 AM Projections.xus		
Project Description	2048 AM Projections				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	80	40	20	70	20	100	30	1070	110	520	1880	390

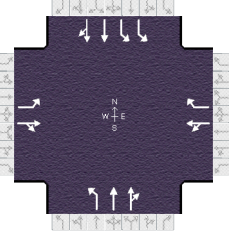
Signal Information				Signal Timing (s)								Signal Phases					
Cycle, s	130.0	Reference Phase	2														
Offset, s	6	Reference Point	End	Green	11.0	27.0	51.0	8.0	10.1	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	4.0	5.0	3.0	3.6	0.0							
Force Mode	Float	Simult. Gap N/S	On	Red	0.0	0.0	1.0	1.0	2.3	0.0							

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	12.0	16.0	12.0	16.0	14.0	57.0	45.0	88.0
Change Period, (Y+R _c), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	6.2	8.2	9.1	6.5	3.7		24.2	
Green Extension Time (g _e), s	0.0	0.1	0.0	0.2	0.0	0.0	1.4	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	0.72	0.00		0.00	

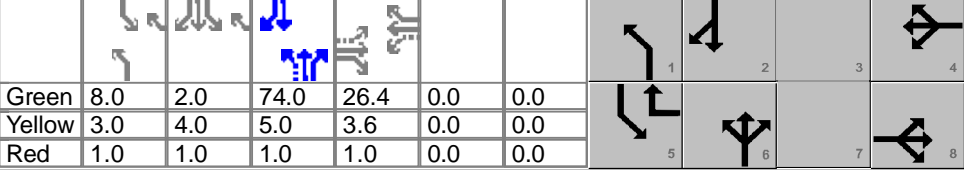
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	101	76		89	25	127	34	1228	126	658	2380	494
Adjusted Saturation Flow Rate (s), veh/h/ln	1524	1555		1485	1559	1169	1541	1541	1372	1647	1696	1510
Queue Service Time (g _s), s	4.2	6.2		7.1	2.0	4.5	1.7	51.0	3.5	22.2	82.0	19.4
Cycle Queue Clearance Time (g _c), s	4.2	6.2		7.1	2.0	4.5	1.7	51.0	3.5	22.2	82.0	19.4
Green Ratio (g/C)	0.06	0.08		0.14	0.08	0.39	0.48	0.39	0.39	0.32	0.63	0.69
Capacity (c), veh/h	188	121		163	121	919	186	1209	538	1039	2139	1045
Volume-to-Capacity Ratio (X)	0.540	0.629		0.543	0.209	0.138	0.185	1.015	0.235	0.633	1.112	0.472
Back of Queue (Q), ft/ln (50 th percentile)	47	75.7		80.6	23.3	37.3	16.8	276.4	29.1	232.8	1192.1	154.8
Back of Queue (Q), veh/ln (50 th percentile)	1.7	2.7		2.7	0.8	1.3	0.6	9.6	1.0	8.8	44.8	5.8
Queue Storage Ratio (RQ) (50 th percentile)	0.20	0.00		0.64	0.00	0.14	0.03	0.00	0.08	0.52	0.00	0.26
Uniform Delay (d ₁), s/veh	59.2	58.1		51.5	56.2	25.3	30.8	16.7	10.0	38.1	24.0	9.1
Incremental Delay (d ₂), s/veh	1.7	7.6		2.1	0.3	0.0	0.1	24.2	0.6	1.0	57.8	1.5
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	60.9	65.8		53.6	56.5	25.3	30.9	40.8	10.7	39.0	81.8	10.7
Level of Service (LOS)	E	E		D	E	C	C	F	B	D	F	B
Approach Delay, s/veh / LOS	63.0	E		39.0	D		37.8	D		63.9	E	
Intersection Delay, s/veh / LOS	56.0						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.61	C	2.44	B	2.08	B
Bicycle LOS Score / LOS	0.78	A	0.88	A	1.75	B	3.40	C

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.88	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2048 AM Projections.xus			
Project Description	2048 AM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	20	10	10	10	30	1180	20	40	1880	50

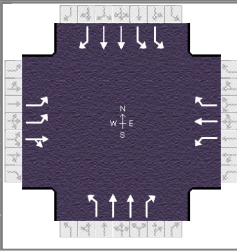
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	1	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	8.0	2.0	74.0	26.4	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	4.0	5.0	3.6	0.0	0.0				
				Red	1.0	1.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		31.0		31.0	12.0	80.0	19.0	87.0
Change Period, (Y+R _c), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		4.1		4.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		12.5		8.1	3.1		3.9	
Green Extension Time (g _e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.02		0.00	

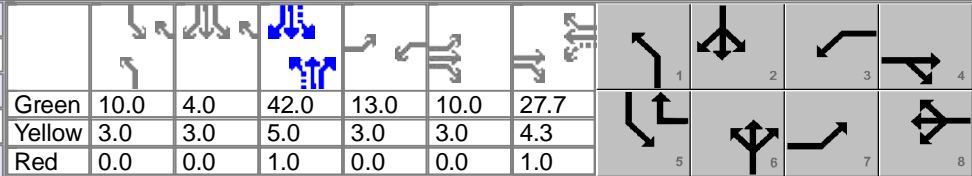
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	23	34		23	11		34	690	687	46	1104	1104
Adjusted Saturation Flow Rate (s), veh/h/ln	580	691		725	819		1555	1633	1623	1579	1707	1692
Queue Service Time (g _s), s	4.5	5.4		0.7	1.3		1.1	48.0	48.1	1.9	81.0	81.0
Cycle Queue Clearance Time (g _c), s	10.5	5.4		6.1	1.3		1.1	48.0	48.1	1.9	81.0	81.0
Green Ratio (g/C)	0.20	0.20		0.20	0.31		0.63	0.57	0.57	0.11	0.62	0.62
Capacity (c), veh/h	146	140		189	254		151	930	924	340	1064	1054
Volume-to-Capacity Ratio (X)	0.155	0.243		0.120	0.045		0.228	0.742	0.743	0.135	1.038	1.047
Back of Queue (Q), ft/ln (50 th percentile)	26.3	37.6		23.5	9.5		17.3	578.4	505.5	20.3	857.9	796.8
Back of Queue (Q), veh/ln (50 th percentile)	0.7	0.9		0.6	0.3		0.6	20.2	20.2	0.7	31.1	31.9
Queue Storage Ratio (RQ) (50 th percentile)	0.09	0.00		0.00	0.03		0.06	0.00	0.00	0.05	0.00	0.00
Uniform Delay (d ₁), s/veh	48.1	43.4		42.9	31.3		31.2	33.2	33.5	58.5	21.2	21.1
Incremental Delay (d ₂), s/veh	0.2	0.3		0.1	0.0		0.2	2.9	3.0	0.0	20.4	24.3
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	48.3	43.8		43.0	31.3		31.4	36.2	36.4	58.6	41.6	45.4
Level of Service (LOS)	D	D		D	C		C	D	D	E	F	F
Approach Delay, s/veh / LOS	45.6	D		39.1	D		36.2	D		43.8	D	
Intersection Delay, s/veh / LOS	40.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.46	B	2.09	B	1.89	B
Bicycle LOS Score / LOS	0.58	A	0.54	A	1.64	B	2.33	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.83	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2048 AM Projections.xus			
Project Description	2048 AM Projections					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	170	120	100	40	180	220	70	840	60	430	1180	300

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	5	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Float	Simult. Gap N/S	On									
Green	10.0	4.0	42.0	13.0	10.0	27.7						
Yellow	3.0	3.0	5.0	3.0	3.0	4.3						
Red	0.0	0.0	1.0	0.0	0.0	1.0						

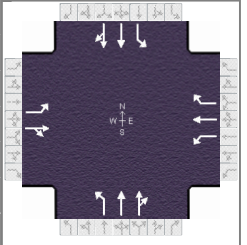
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	29.0	46.0	16.0	33.0	13.0	48.0	20.0	55.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	10.3	23.1	4.8	21.8	5.9		14.1	
Green Extension Time (g_e), s	0.4	1.5	0.0	1.0	0.0	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.00	0.00	0.31	0.18		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	205	265		48	217	265	78	942	67	472	1296	329
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1386		1584	1663	1409	1570	1569		1579	1625	
Queue Service Time (g_s), s	8.3	21.1		2.8	15.3	19.8	3.9	36.1		12.1	49.0	
Cycle Queue Clearance Time (g_c), s	8.3	21.1		2.8	15.3	19.8	3.9	36.1		12.1	49.0	
Green Ratio (g/C)	0.20	0.31		0.31	0.21	0.34	0.40	0.32		0.47	0.38	
Capacity (c), veh/h	555	434		348	354	485	176	1014		573	1225	
Volume-to-Capacity Ratio (X)	0.369	0.611		0.139	0.612	0.547	0.446	0.929		0.824	1.057	
Back of Queue (Q), ft/ln (50 th percentile)	86.9	222.7		30.5	184.2	192.2	36.8	317.7		119	498.8	
Back of Queue (Q), veh/ln (50 th percentile)	2.9	7.3		1.1	6.5	6.8	1.3	11.2		4.3	18.1	
Queue Storage Ratio (RQ) (50 th percentile)	0.29	0.00		0.06	0.00	0.38	0.09	0.00		0.25	0.00	
Uniform Delay (d_1), s/veh	44.9	37.9		32.0	46.3	34.5	27.4	28.9		28.6	26.7	
Incremental Delay (d_2), s/veh	0.2	1.8		0.1	2.3	0.7	0.3	9.4		0.9	28.1	
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	
Control Delay (d), s/veh	45.1	39.7		32.1	48.6	35.2	27.7	38.3	0.0	29.5	54.8	0.0
Level of Service (LOS)	D	D		C	D	D	C	D	A	C	F	A
Approach Delay, s/veh / LOS	42.1		D	40.4		D	35.2		D	40.5		D
Intersection Delay, s/veh / LOS	39.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.60	C	2.29	B	2.12	B
Bicycle LOS Score / LOS	1.26	A	1.36	A	1.45	A	2.39	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.84
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Spiegel Drive	File Name	2048 AM Projections.xus		
Project Description	2048 AM Projections				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	70	10	20	10	30	50	100	850	40	220	840	260

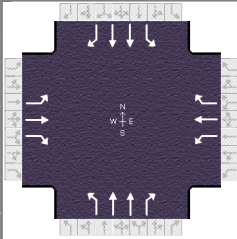
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	82	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Float	Simult. Gap N/S	On											
				Green	10.8	13.0	44.0	42.6	0.0	0.0				
				Yellow	3.0	3.0	5.0	3.6	0.0	0.0				
				Red	1.2	1.0	1.0	1.8	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		48.0		48.0	15.0	50.0	32.0	67.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		9.9		5.5	7.7		9.0	
Green Extension Time (g_e), s		0.4		0.4	0.0	0.0	0.3	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.85		0.00	

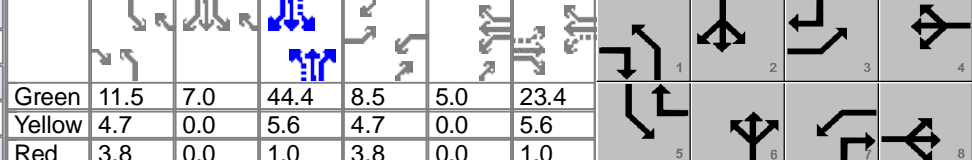
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	83	36		12	36	60	111	498	490	232	605	557
Adjusted Saturation Flow Rate (s), veh/h/ln	1296	1577		1351	1841	1560	1598	1678	1651	1682	1767	1623
Queue Service Time (g_s), s	6.1	2.0		0.8	1.7	3.5	5.7	32.6	32.5	7.0	35.9	36.6
Cycle Queue Clearance Time (g_c), s	7.9	2.0		2.8	1.7	3.5	5.7	32.6	32.5	7.0	35.9	36.6
Green Ratio (g/C)	0.33	0.33		0.33	0.33	0.33	0.42	0.34	0.34	0.57	0.47	0.47
Capacity (c), veh/h	463	517		477	603	511	263	568	559	465	829	761
Volume-to-Capacity Ratio (X)	0.180	0.069		0.025	0.059	0.116	0.423	0.878	0.878	0.500	0.729	0.732
Back of Queue (Q), ft/ln (50 th percentile)	51.9	20.8		6.8	20	33.9	63	268.9	263	47.6	383.3	365.2
Back of Queue (Q), veh/ln (50 th percentile)	1.9	0.8		0.3	0.8	1.3	2.3	9.6	9.4	1.8	14.3	13.6
Queue Storage Ratio (RQ) (50 th percentile)	0.17	0.00		0.01	0.00	0.06	0.18	0.00	0.00	0.11	0.00	0.00
Uniform Delay (d_1), s/veh	32.7	30.1		31.0	30.0	30.5	28.2	23.5	23.4	11.8	27.9	29.1
Incremental Delay (d_2), s/veh	0.1	0.0		0.0	0.0	0.0	0.2	10.0	10.2	0.0	0.7	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
Control Delay (d), s/veh	32.7	30.1		31.0	30.0	30.6	28.4	33.6	33.6	11.8	28.5	29.8
Level of Service (LOS)	C	C		C	C	C	C	C	C	B	C	C
Approach Delay, s/veh / LOS	31.9	C		30.4	C		33.0	C		26.3	C	
Intersection Delay, s/veh / LOS	29.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.12	B	1.91	B
Bicycle LOS Score / LOS	0.68	A	0.66	A	1.46	A	1.78	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.90	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2048 AM Projections.xus			
Project Description	2048 AM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	190	170	210	140	40	150	830	110	80	710	80

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	11.5	7.0	44.4	8.5	5.0	23.4				
Offset, s	31	Reference Point	End	Yellow	4.7	0.0	5.6	4.7	0.0	5.6				
Uncoordinated	No	Simult. Gap E/W	On	Red	3.8	0.0	1.0	3.8	0.0	1.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	17.0	30.0	22.0	35.0	20.0	51.0	27.0	58.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	10.5	17.8	15.5	12.0	10.9		5.6	
Green Extension Time (g_e), s	0.0	0.7	0.0	1.1	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.28	1.00	0.00	1.00		0.00	

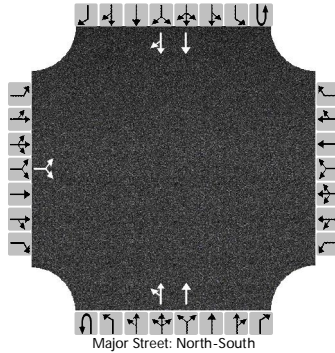
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	133	211	189	233	156	44	167	922	122	85	753	85
Adjusted Saturation Flow Rate (s), veh/h/ln	1555	1633	1384	1654	1737	1472	1555	1555	1384	1570	1569	1397
Queue Service Time (g_s), s	8.5	15.8	15.0	13.5	10.0	2.6	8.9	36.1	7.0	3.6	29.7	6.5
Cycle Queue Clearance Time (g_c), s	8.5	15.8	15.0	13.5	10.0	2.6	8.9	36.1	7.0	3.6	29.7	6.5
Green Ratio (g/C)	0.25	0.18	0.27	0.28	0.22	0.36	0.43	0.34	0.45	0.49	0.40	0.46
Capacity (c), veh/h	293	294	372	291	379	531	287	1062	616	313	1241	644
Volume-to-Capacity Ratio (X)	0.455	0.718	0.508	0.803	0.410	0.084	0.581	0.868	0.198	0.271	0.607	0.132
Back of Queue (Q), ft/ln (50 th percentile)	101.4	200.4	147.1	198.2	117.6	25	94	415.3	65.8	35.1	361.8	99.2
Back of Queue (Q), veh/ln (50 th percentile)	3.5	7.0	5.1	7.3	4.3	0.9	3.3	14.5	2.3	1.2	12.7	3.5
Queue Storage Ratio (RQ) (50 th percentile)	0.20	0.00	0.29	0.38	0.00	0.05	0.16	0.00	0.18	0.07	0.00	0.25
Uniform Delay (d_1), s/veh	41.2	50.2	40.3	41.8	43.6	27.4	26.9	40.1	21.9	22.4	47.9	31.2
Incremental Delay (d_2), s/veh	0.4	7.1	0.5	13.9	0.3	0.0	2.0	9.6	0.7	0.1	1.4	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	0.0
Control Delay (d), s/veh	41.6	57.3	40.8	55.7	43.9	27.4	28.8	49.7	22.7	22.5	49.3	31.5
Level of Service (LOS)	D	E	D	E	D	C	C	D	C	C	D	C
Approach Delay, s/veh / LOS	47.5	D		48.6	D		44.1	D		45.2	D	
Intersection Delay, s/veh / LOS	45.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.12	B	2.12	B
Bicycle LOS Score / LOS	1.37	A	1.20	A	1.49	A	1.29	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek & Rathmell		
Agency/Co.				Jurisdiction	ODOT		
Date Performed	2/23/2023			East/West Street	Rathmell Road		
Analysis Year	2048			North/South Street	Alum Creek Drive		
Time Analyzed	AM Projections			Peak Hour Factor	0.79		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	2	0	0	0	2	0
Configuration			LR							LT	T				T	TR
Volume (veh/h)		50		30						20	1230				2770	50
Percent Heavy Vehicles (%)		13		13						20						
Proportion Time Blocked		0.000		0.200						0.200						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		7.06		7.16						4.50						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.63		3.43						2.40						

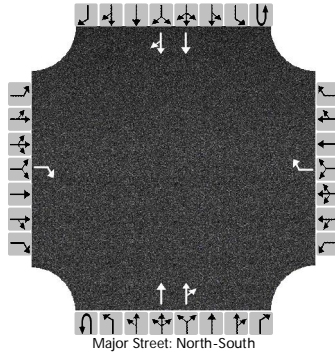
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			101							25						
Capacity, c (veh/h)										31						
v/c Ratio										0.81						
95% Queue Length, Q ₉₅ (veh)										2.7						
Control Delay (s/veh)										285.9						
Level of Service (LOS)										F						
Approach Delay (s/veh)									4.6							
Approach LOS																

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Bixby				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Bixby Road				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	AM Projections	Peak Hour Factor	0.75				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	2	0		0	2	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				10			1240	10			2780	20
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked				0.000				0.840								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

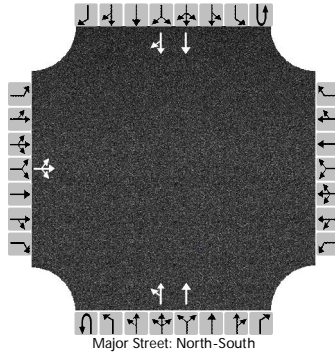
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13				13								
Capacity, c (veh/h)				61				173								
v/c Ratio				0.22				0.08								
95% Queue Length, Q ₉₅ (veh)				0.7				0.2								
Control Delay (s/veh)				79.1				27.5								
Level of Service (LOS)				F				D								
Approach Delay (s/veh)	79.1				27.5											
Approach LOS	F				D											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2048			North/South Street	Alum Creek Drive		
Time Analyzed	AM No Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	2	0	0	0	2	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	980				860	10
Percent Heavy Vehicles (%)		20	20	20						17						
Proportion Time Blocked		0.400	0.000	0.640						0.640						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

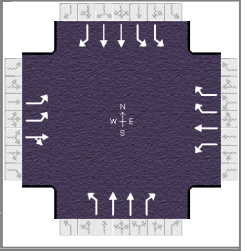
Base Critical Headway (sec)		7.5	6.5	6.9						4.1						
Critical Headway (sec)		7.90	6.90	7.30						4.44						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.70	4.20	3.50						2.37						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			259							547						
v/c Ratio			0.09							0.02						
95% Queue Length, Q ₉₅ (veh)			0.3							0.1						
Control Delay (s/veh)			20.2							11.7						
Level of Service (LOS)			C							B						
Approach Delay (s/veh)	20.2								0.4							
Approach LOS	C															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.93
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Creekside Parkway/ Toy...	File Name	2048 PM Projections.xus		
Project Description	2048 PM Projections				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	380	30	50	130	40	450	40	1890	120	230	1430	210

Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	12.0	68.0	13.0	10.1	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	5.0	3.0	3.6	0.0	0.0				
				Red	0.0	1.0	1.0	2.3	0.0	0.0				

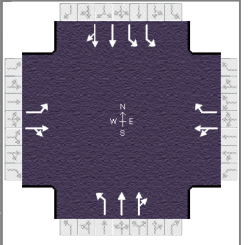
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	21.0	20.0	17.0	16.0	15.0	74.0	19.0	78.0
Change Period, (Y+R _c), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	18.0	8.6	12.0	12.1	3.4		13.3	
Green Extension Time (g _e), s	0.0	0.9	0.0	0.0	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.32	1.00	1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	409	86		140	43	484	40	1870	119	247	1538	226
Adjusted Saturation Flow Rate (s), veh/h/ln	1647	1601		1640	1722	1292	1527	1527	1359	1387	1428	1271
Queue Service Time (g _s), s	16.0	6.6		10.0	3.1	10.1	1.4	68.0	2.0	11.3	67.7	8.9
Cycle Queue Clearance Time (g _c), s	16.0	6.6		10.0	3.1	10.1	1.4	68.0	2.0	11.3	67.7	8.9
Green Ratio (g/C)	0.13	0.11		0.18	0.08	0.19	0.62	0.52	0.52	0.12	0.55	0.68
Capacity (c), veh/h	431	174		271	134	499	202	1597	711	320	1582	870
Volume-to-Capacity Ratio (X)	0.948	0.495		0.516	0.321	0.970	0.196	1.171	0.167	0.773	0.972	0.259
Back of Queue (Q), ft/ln (50 th percentile)	223.5	71.3		112.6	37	273.7	19.1	641.6	15.1	129.9	736.2	68.8
Back of Queue (Q), veh/ln (50 th percentile)	8.4	2.7		4.1	1.3	10.0	0.7	22.1	0.5	4.3	24.2	2.3
Queue Storage Ratio (RQ) (50 th percentile)	0.95	0.00		0.90	0.00	1.01	0.03	0.00	0.04	0.29	0.00	0.11
Uniform Delay (d ₁), s/veh	56.1	54.6		48.1	56.7	52.1	30.3	11.5	4.9	55.8	28.0	7.9
Incremental Delay (d ₂), s/veh	30.2	0.8		0.8	0.5	32.4	0.0	77.6	0.0	10.1	16.9	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
Control Delay (d), s/veh	86.3	55.4		48.9	57.2	84.5	30.3	89.0	5.0	66.0	44.9	8.6
Level of Service (LOS)	F	E		D	E	F	C	F	A	E	D	A
Approach Delay, s/veh / LOS	80.9	F		75.3	E		83.0	F		43.4	D	
Intersection Delay, s/veh / LOS	66.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.61	C	2.42	B	2.09	B
Bicycle LOS Score / LOS	1.30	A	1.59	B	2.31	B	2.15	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.96
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Global Court	File Name	2048 PM Projections.xus		
Project Description	2048 PM Projections				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	30	10	30	20	10	40	20	1980	10	20	1570	20

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	118	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Float	Simult. Gap N/S	On										
	Green	8.0	1.0	79.0	22.4	0.0	0.0						
	Yellow	3.0	4.0	5.0	3.6	0.0	0.0						
	Red	1.0	1.0	1.0	1.0	0.0	0.0						

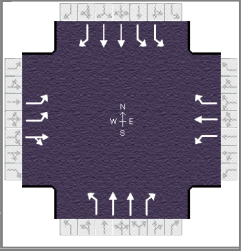
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		27.0		27.0	12.0	85.0	18.0	91.0
Change Period, ($Y+R_c$), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		10.6		7.6	2.6		3.0	
Green Extension Time (g_e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	31	42			31	42	20	1014	1014	22	856	854
Adjusted Saturation Flow Rate (s), veh/h/ln	1215	1426			890	1032	1541	1618	1615	1401	1515	1508
Queue Service Time (g_s), s	3.0	3.2			2.4	4.0	0.6	79.0	79.0	1.0	62.1	62.4
Cycle Queue Clearance Time (g_c), s	8.6	3.2			5.6	4.0	0.6	79.0	79.0	1.0	62.1	62.4
Green Ratio (g/C)	0.17	0.17			0.17	0.27	0.67	0.61	0.61	0.10	0.65	0.65
Capacity (c), veh/h	212	246			200	281	189	984	982	280	990	986
Volume-to-Capacity Ratio (X)	0.147	0.170			0.157	0.148	0.108	1.031	1.033	0.077	0.864	0.866
Back of Queue (Q), ft/ln (50 th percentile)	26.4	33.4			30.3	34.6	8.4	565.2	490	10.3	641.9	532.3
Back of Queue (Q), veh/ln (50 th percentile)	0.9	1.2			0.9	1.0	0.3	19.6	19.6	0.3	21.3	21.3
Queue Storage Ratio (RQ) (50 th percentile)	0.09	0.00			0.00	0.12	0.03	0.00	0.00	0.03	0.00	0.00
Uniform Delay (d_1), s/veh	50.6	45.9			47.1	35.9	22.7	14.8	14.7	57.9	22.8	22.9
Incremental Delay (d_2), s/veh	0.1	0.1			0.1	0.1	0.0	18.2	18.9	0.0	3.0	3.0
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
Control Delay (d), s/veh	50.7	46.0			47.2	36.0	22.8	33.0	33.6	57.9	25.8	25.9
Level of Service (LOS)	D	D			D	D	C	F	F	E	C	C
Approach Delay, s/veh / LOS	48.0		D	40.8		D	33.2		C	26.2		C
Intersection Delay, s/veh / LOS	30.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.46	B	2.08	B	1.88	B
Bicycle LOS Score / LOS	0.61	A	0.61	A	2.21	B	1.87	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.86
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Rohr Road	File Name	2048 PM Projections.xus		
Project Description	2048 PM Projections				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	310	210	110	60	170	430	80	1270	70	330	1070	220

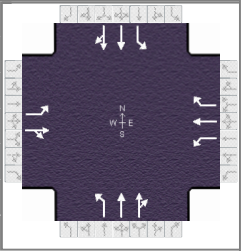
Signal Information															
Cycle, s	130.0	Reference Phase	2												
Offset, s	73	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Float	Simult. Gap N/S	On												
		Green		12.0	2.0	53.0	8.0	7.0	24.7						
		Yellow		3.0	3.0	5.0	3.0	3.0	4.3						
		Red		0.0	0.0	1.0	0.0	0.0	1.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	21.0	40.0	11.0	30.0	15.0	59.0	20.0	64.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	17.8	33.9	6.7	26.7	6.3		12.8	
Green Extension Time (g_e), s	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	1.00	0.02		0.32	

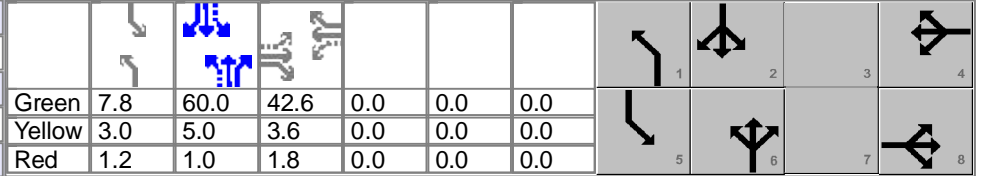
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	360	372		70	198	500	92	1466	81	354	1149	236
Adjusted Saturation Flow Rate (s), veh/h/ln	1456	1482		1513	1589	1346	1541	1541		1387	1428	
Queue Service Time (g_s), s	15.8	31.9		4.7	15.0	24.7	4.3	53.0		10.8	51.1	
Cycle Queue Clearance Time (g_c), s	15.8	31.9		4.7	15.0	24.7	4.3	53.0		10.8	51.1	
Green Ratio (g/C)	0.14	0.27		0.25	0.19	0.32	0.50	0.41		0.55	0.45	
Capacity (c), veh/h	403	396		154	302	432	214	1256		474	1274	
Volume-to-Capacity Ratio (X)	0.894	0.940		0.454	0.655	1.158	0.432	1.167		0.749	0.902	
Back of Queue (Q), ft/ln (50 th percentile)	204	438.3		51.9	182.1	727.1	45.1	860		83.2	606.7	
Back of Queue (Q), veh/ln (50 th percentile)	6.9	14.9		1.8	6.2	24.9	1.6	29.9		2.7	20.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.68	0.00		0.10	0.00	1.45	0.11	0.00		0.18	0.00	
Uniform Delay (d_1), s/veh	55.1	46.6		40.5	48.7	44.2	30.5	29.7		35.5	49.5	
Incremental Delay (d_2), s/veh	21.1	30.1		0.8	4.0	94.1	0.3	80.9		2.5	4.9	
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	
Control Delay (d), s/veh	76.2	76.8		41.3	52.7	138.2	30.8	110.5	0.0	38.0	54.4	0.0
Level of Service (LOS)	E	E		D	D	F	C	F	A	D	D	A
Approach Delay, s/veh / LOS	76.5	E		107.4	F		100.6	F		43.7	D	
Intersection Delay, s/veh / LOS	77.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.60	C	2.28	B	2.11	B
Bicycle LOS Score / LOS	1.70	B	1.75	B	1.85	B	2.04	B

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information								
Agency					Duration, h	0.250							
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023		Area Type	Other							
Jurisdiction	ODOT	Time Period			PHF	0.86							
Urban Street	Alum Creek Drive	Analysis Year	2048		Analysis Period	1 > 7:00							
Intersection	Spiegel Drive	File Name	2048 PM Projections.xus										
Project Description	2048 PM Projections												

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	70	160	30	40	240	40	900	30	160	880	200

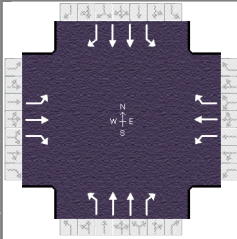
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	42	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.8	60.0	42.6	0.0	0.0	0.0			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	5.0	3.6	0.0	0.0	0.0			
				Red	1.2	1.0	1.8	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		48.0		48.0	12.0	66.0	16.0	70.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		34.2		23.2	3.9		9.5	
Green Extension Time (g_e), s		1.7		2.1	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.19		0.01	0.19		1.00	

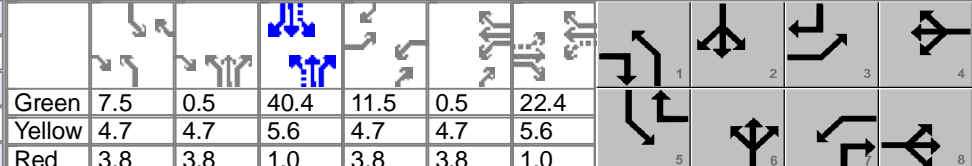
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	326	267		35	47	279	46	538	531	174	605	568
Adjusted Saturation Flow Rate (s), veh/h/ln	1305	1596		1059	1781	1510	1443	1515	1497	1485	1559	1459
Queue Service Time (g_s), s	29.8	17.6		3.6	2.3	19.8	1.9	41.8	41.9	7.5	48.0	48.8
Cycle Queue Clearance Time (g_c), s	32.2	17.6		21.2	2.3	19.8	1.9	41.8	41.9	7.5	48.0	48.8
Green Ratio (g/C)	0.33	0.33		0.33	0.33	0.33	0.52	0.46	0.46	0.57	0.49	0.49
Capacity (c), veh/h	460	523		259	584	495	181	699	691	254	768	718
Volume-to-Capacity Ratio (X)	0.708	0.511		0.135	0.080	0.564	0.254	0.769	0.769	0.685	0.789	0.791
Back of Queue (Q), ft/ln (50 th percentile)	264.4	180.8		25.1	27	196	16.6	508.9	468.3	72.2	600.9	526.6
Back of Queue (Q), veh/ln (50 th percentile)	10.0	6.9		0.9	1.0	7.4	0.5	16.9	16.7	2.4	20.3	19.6
Queue Storage Ratio (RQ) (50 th percentile)	0.88	0.00		0.04	0.00	0.33	0.05	0.00	0.00	0.16	0.00	0.00
Uniform Delay (d_1), s/veh	41.3	35.3		43.8	30.2	36.0	21.0	38.5	38.8	24.6	45.8	48.8
Incremental Delay (d_2), s/veh	4.3	0.4		0.1	0.0	0.9	0.2	5.6	5.7	2.2	3.0	3.2
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
Control Delay (d), s/veh	45.5	35.7		43.9	30.2	37.0	21.2	44.1	44.4	26.8	48.7	52.0
Level of Service (LOS)	D	D		D	C	D	C	D	D	C	D	D
Approach Delay, s/veh / LOS	41.1	D		36.8	D		43.3	D		47.3	D	
Intersection Delay, s/veh / LOS	43.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.11	B	1.91	B
Bicycle LOS Score / LOS	1.47	A	1.08	A	1.42	A	1.68	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.87	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2048 PM Projections.xus			
Project Description	2048 PM Projections					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	230	170	270	210	70	270	800	170	130	790	150

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	7.5	0.5	40.4	11.5	0.5	22.4				
Offset, s	93	Reference Point	End	Yellow	4.7	4.7	5.6	4.7	4.7	5.6				
Uncoordinated	No	Simult. Gap E/W	On	Red	3.8	3.8	1.0	3.8	3.8	1.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	20.0	29.0	29.0	38.0	25.0	56.0	16.0	47.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	9.2	21.3	21.7	17.9	18.5		9.5	
Green Extension Time (g_e), s	0.0	0.3	0.0	1.4	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	0.01	1.00		1.00	

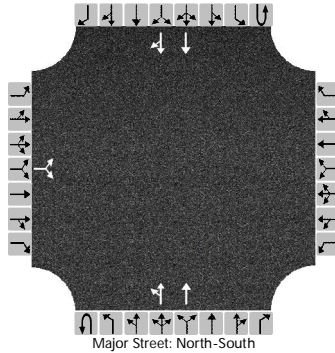
Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12	
Adjusted Flow Rate (v), veh/h	115	264	195	310	241	80	310	920	195	143	869	165	
Adjusted Saturation Flow Rate (s), veh/h/ln	1654	1737	1472	1654	1737	1472	1612	1611	1434	1527	1527	1359	
Queue Service Time (g_s), s	7.2	19.3	13.9	19.7	15.9	5.3	16.5	32.2	9.5	7.5	35.9	11.4	
Cycle Queue Clearance Time (g_c), s	7.2	19.3	13.9	19.7	15.9	5.3	16.5	32.2	9.5	7.5	35.9	11.4	
Green Ratio (g/C)	0.26	0.17	0.30	0.35	0.24	0.30	0.45	0.38	0.54	0.37	0.31	0.40	
Capacity (c), veh/h	311	299	440	341	420	440	280	1225	771	204	949	543	
Volume-to-Capacity Ratio (X)	0.369	0.883	0.444	0.911	0.575	0.183	1.108	0.751	0.253	0.699	0.916	0.304	
Back of Queue (Q), ft/ln (50 th percentile)	79.7	282.5	136.8	282	189.3	51.6	355.7	352.9	85.9	89.4	424.9	120.9	
Back of Queue (Q), veh/ln (50 th percentile)	2.9	10.4	5.0	10.4	7.0	1.9	12.8	12.7	3.1	3.1	14.7	4.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.00	0.27	0.54	0.00	0.10	0.59	0.00	0.23	0.18	0.00	0.30	
Uniform Delay (d_1), s/veh	38.5	52.5	36.8	36.5	43.4	33.8	35.2	35.0	16.1	33.2	45.8	29.0	
Incremental Delay (d_2), s/veh	0.3	24.4	0.3	26.9	1.3	0.1	86.0	4.3	0.8	5.4	10.0	0.9	
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	0.0	
Control Delay (d), s/veh	38.8	76.9	37.1	63.4	44.7	33.8	121.2	39.2	16.9	38.6	55.8	29.9	
Level of Service (LOS)	D	E	D	E	D	C	F	D	B	D	E	C	
Approach Delay, s/veh / LOS	55.7	E		52.5	D		54.0	D			50.1	D	
Intersection Delay, s/veh / LOS	52.8						D						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.12	B	2.13	B
Bicycle LOS Score / LOS	1.44	A	1.53	B	1.66	B	1.50	B

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Rathmell				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Rathmell Road				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	PM Projections	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0
Configuration			LR							LT	T				T	TR
Volume (veh/h)		40		40						50	2580				1830	200
Percent Heavy Vehicles (%)		8		8						14						
Proportion Time Blocked		0.000		0.200						0.200						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.96		7.06						4.38						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.58		3.38						2.34						

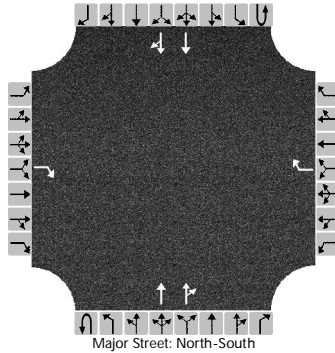
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			87							54						
Capacity, c (veh/h)			7							191						
v/c Ratio			12.69							0.28						
95% Queue Length, Q ₉₅ (veh)			12.6							1.1						
Control Delay (s/veh)			6307.4							31.1						
Level of Service (LOS)			F							D						
Approach Delay (s/veh)	6307.4								0.6							
Approach LOS	F															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Bixby				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Bixby Road				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	PM Projections	Peak Hour Factor	0.93				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	2	0		0	2	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				20				20			2610	100			1850	20
Percent Heavy Vehicles (%)				13				3								
Proportion Time Blocked				0.000				0.820								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				7.16				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.43				3.33								

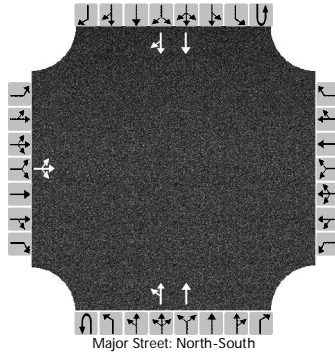
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				22				22								
Capacity, c (veh/h)				221				195								
v/c Ratio				0.10				0.11								
95% Queue Length, Q ₉₅ (veh)				0.3				0.4								
Control Delay (s/veh)				23.1				25.8								
Level of Service (LOS)				C				D								
Approach Delay (s/veh)	23.1				25.8											
Approach LOS	C				D											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek Drive				
Agency/Co.		Jurisdiction	Franklin County				
Date Performed	9/15/2023	East/West Street	Alum Creek Service Drive				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	PM No Build	Peak Hour Factor	0.88				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	2	0	0	0	2	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	960				1060	10
Percent Heavy Vehicles (%)		0	0	0						17						
Proportion Time Blocked		0.380	0.000	0.200						0.200						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

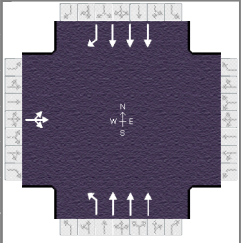
Base Critical Headway (sec)		7.5	6.5	6.9						4.1						
Critical Headway (sec)		7.50	6.50	6.90						4.44						
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2						
Follow-Up Headway (sec)		3.50	4.00	3.30						2.37						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			201							599						
v/c Ratio			0.11							0.02						
95% Queue Length, Q ₉₅ (veh)			0.4							0.1						
Control Delay (s/veh)			25.2							11.1						
Level of Service (LOS)			D							B						
Approach Delay (s/veh)	25.2								0.4							
Approach LOS	D															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.80
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Rathmell Road	File Name	2048 AM Projections - 130.xus		
Project Description	2048 AM Projections Mitigation				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	50	0	30				20	1230			2770	50

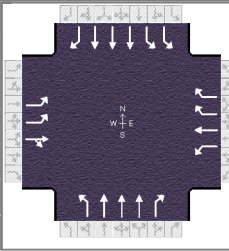
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	94.0	12.0	0.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			1.0	4.0		7.3
Phase Duration, s		18.0			12.0	112.0		100.0
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2			3.0	0.0		0.0
Queue Clearance Time (g _s), s		10.1			2.4			
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			0.27			


Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h	100						23	1432			3463	63
Adjusted Saturation Flow Rate (s), veh/h/ln	1554						1527	1456			1604	1497
Queue Service Time (g _s), s	8.1						0.4	26.6			92.3	1.6
Cycle Queue Clearance Time (g _c), s	8.1						0.4	26.6			92.3	1.6
Green Ratio (g/C)	0.09						0.78	0.82			0.72	0.72
Capacity (c), veh/h	143						126	3562			3480	1083
Volume-to-Capacity Ratio (X)	0.697						0.184	0.402			0.995	0.058
Back of Queue (Q), ft/ln (50 th percentile)	100.4						14.3	273.8			807.8	11.7
Back of Queue (Q), veh/ln (50 th percentile)	3.6						0.5	9.4			30.1	0.4
Queue Storage Ratio (RQ) (50 th percentile)	0.00						0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	57.2						35.1	12.6			17.8	5.2
Incremental Delay (d ₂), s/veh	11.8						0.2	0.3			14.2	0.1
Initial Queue Delay (d ₃), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (d), s/veh	69.0						35.3	12.9			31.9	5.3
Level of Service (LOS)	E						D	B			C	A
Approach Delay, s/veh / LOS	69.0	E		0.0			13.3	B		31.5	C	
Intersection Delay, s/veh / LOS	27.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.62	C	1.31	A	1.64	B
Bicycle LOS Score / LOS	0.65	A			1.35	A	2.43	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.79	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Creekside Parkway/ Toy...	File Name	2048 AM Projections - 130.xus			
Project Description	2048 AM Projections Mitigation					

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	40	20	70	20	100	30	1070	110	520	1880	390

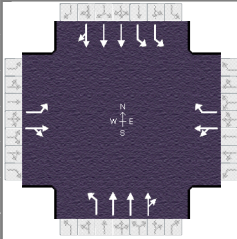
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	8.0	15.0	57.0	8.0	5.0	10.1	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.0	4.0	5.0	3.0	3.0	3.6	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	1.0	1.0	1.0	2.3				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	21.0	25.0	12.0	16.0	11.0	63.0	30.0	82.0
Change Period, ($Y+R_c$), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	5.9	7.7	9.1	7.4	3.3		27.7	
Green Extension Time (g_e), s	0.1	0.4	0.0	0.1	0.0	0.0	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	0.04		1.00	

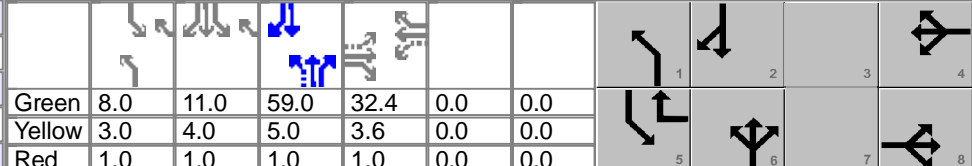
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	101	76		89	25	127	34	1228	126	652	2358	489
Adjusted Saturation Flow Rate (s), veh/h/ln	1524	1555		1485	1559	1169	1541	1470	1372	1647	1618	1510
Queue Service Time (g_s), s	3.9	5.7		7.1	2.0	5.4	1.3	35.0	10.0	25.7	55.9	21.5
Cycle Queue Clearance Time (g_c), s	3.9	5.7		7.1	2.0	5.4	1.3	35.0	10.0	25.7	55.9	21.5
Green Ratio (g/C)	0.13	0.15		0.14	0.08	0.28	0.50	0.44	0.50	0.20	0.58	0.72
Capacity (c), veh/h	399	228		232	121	649	168	1933	686	659	2837	1080
Volume-to-Capacity Ratio (X)	0.254	0.332		0.381	0.209	0.195	0.204	0.635	0.184	0.990	0.831	0.453
Back of Queue (Q), ft/ln (50 th percentile)	42.2	63.4		78.5	23.3	45.6	12.2	407.3	158.6	305.9	575.9	196.7
Back of Queue (Q), veh/ln (50 th percentile)	1.5	2.2		2.7	0.8	1.5	0.4	14.1	5.5	11.5	21.7	7.4
Queue Storage Ratio (RQ) (50 th percentile)	0.18	0.00		0.63	0.00	0.17	0.02	0.00	0.43	0.68	0.00	0.33
Uniform Delay (d_1), s/veh	50.8	49.7		51.2	56.2	35.9	20.0	49.2	30.9	54.9	30.9	11.3
Incremental Delay (d_2), s/veh	0.1	0.3		0.4	0.3	0.1	0.2	1.2	0.4	9.4	0.3	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	0.0
Control Delay (d), s/veh	50.9	50.0		51.6	56.5	35.9	20.2	50.4	31.4	64.3	31.2	11.4
Level of Service (LOS)	D	D		D	E	D	C	D	C	E	C	B
Approach Delay, s/veh / LOS	50.5		D	43.9		D	48.0		D	34.6		C
Intersection Delay, s/veh / LOS	39.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.87	C	2.43	B	2.09	B
Bicycle LOS Score / LOS	0.78	A	0.88	A	1.33	A	2.43	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.88	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2048 AM Projections - 130.xus			
Project Description	2048 AM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	10	20	10	10	10	30	1180	20	40	1880	50

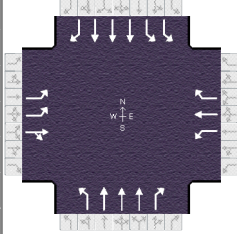
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	8.0	11.0	59.0	32.4	0.0	0.0	1	2	3	4
Offset, s	65	Reference Point	End	Yellow	3.0	4.0	5.0	3.6	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	1.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		37.0		37.0	12.0	65.0	28.0	81.0
Change Period, ($Y+R_c$), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		4.1		4.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		11.8		7.6	3.5		3.4	
Green Extension Time (g_e), s		0.2		0.2	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.05		0.00	

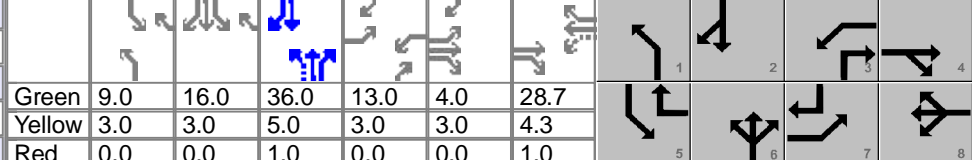
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	23	34		23	11		34	921	456	50	1619	803
Adjusted Saturation Flow Rate (s), veh/h/ln	580	691		750	819		1555	1633	1619	1579	1707	1684
Queue Service Time (g_s), s	4.2	5.1		0.5	1.0		1.5	30.4	30.3	1.4	57.4	57.9
Cycle Queue Clearance Time (g_c), s	9.8	5.1		5.6	1.0		1.5	30.4	30.3	1.4	57.4	57.9
Green Ratio (g/C)	0.25	0.25		0.25	0.43		0.52	0.45	0.45	0.18	0.58	0.58
Capacity (c), veh/h	175	172		229	349		165	1482	735	559	1970	971
Volume-to-Capacity Ratio (X)	0.130	0.198		0.099	0.033		0.208	0.621	0.621	0.090	0.822	0.827
Back of Queue (Q), ft/ln (50 th percentile)	24.5	35		21.9	7.7		14.8	352.8	311.4	14.8	710.6	654.5
Back of Queue (Q), veh/ln (50 th percentile)	0.6	0.9		0.6	0.2		0.5	12.3	12.5	0.5	25.7	26.2
Queue Storage Ratio (RQ) (50 th percentile)	0.08	0.00		0.00	0.03		0.05	0.00	0.00	0.04	0.00	0.00
Uniform Delay (d_1), s/veh	42.6	38.5		37.9	21.7		27.6	32.8	32.7	36.2	39.8	40.1
Incremental Delay (d_2), s/veh	0.1	0.2		0.1	0.0		0.2	1.4	2.8	0.0	2.0	4.1
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	42.7	38.7		38.0	21.7		27.8	34.2	35.5	36.2	41.8	44.2
Level of Service (LOS)	D	D		D	C		C	C	D	D	D	D
Approach Delay, s/veh / LOS	40.3	D		32.6	C		34.5	C		42.5	D	
Intersection Delay, s/veh / LOS	39.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.73	C	2.11	B	1.90	B
Bicycle LOS Score / LOS	0.58	A	0.54	A	1.26	A	1.72	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.83	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Rohr Road	File Name	2048 AM Projections - 130.xus			
Project Description	2048 AM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	170	120	100	40	180	220	70	840	60	430	1180	300

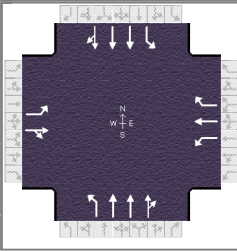
Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	9.0	16.0	36.0	13.0	4.0	28.7				
Offset, s	60	Reference Point	End	Yellow	3.0	3.0	5.0	3.0	3.0	4.3				
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	1.0	0.0	0.0	1.0				
Force Mode	Float	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	23.0	41.0	16.0	34.0	12.0	42.0	31.0	61.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	10.8	24.3	4.8	19.0	6.6		24.0	
Green Extension Time (g_e), s	0.3	1.3	0.0	1.3	0.0	0.0	0.6	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.00	0.03	0.00	0.06	1.00		0.48	

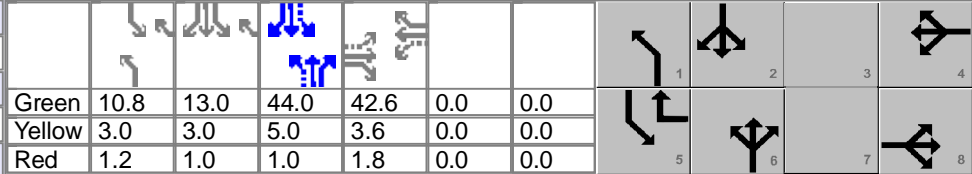
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	205	265		48	217	265	78	942	67	539	1479	376
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1386		1584	1663	1409	1570	1496		1579	1550	
Queue Service Time (g_s), s	8.8	22.3		2.8	15.2	17.0	4.6	25.9		22.0	28.2	
Cycle Queue Clearance Time (g_c), s	8.8	22.3		2.8	15.2	17.0	4.6	25.9		22.0	28.2	
Green Ratio (g/C)	0.15	0.27		0.32	0.22	0.44	0.35	0.28		0.22	0.42	
Capacity (c), veh/h	427	381		301	367	615	224	1243		680	1968	
Volume-to-Capacity Ratio (X)	0.480	0.696		0.160	0.591	0.431	0.350	0.757		0.792	0.752	
Back of Queue (Q), ft/ln (50 th percentile)	92.7	244.7		30.2	181	159.5	50.3	293.4		266.8	185	
Back of Queue (Q), veh/ln (50 th percentile)	3.1	8.1		1.1	6.4	5.7	1.8	10.3		9.7	6.7	
Queue Storage Ratio (RQ) (50 th percentile)	0.31	0.00		0.06	0.00	0.32	0.13	0.00		0.56	0.00	
Uniform Delay (d_1), s/veh	50.2	42.3		32.1	45.4	25.5	32.0	49.5		59.0	17.9	
Incremental Delay (d_2), s/veh	0.3	4.6		0.1	1.7	0.2	0.3	3.7		2.9	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	
Control Delay (d), s/veh	50.6	46.9		32.2	47.1	25.6	32.3	53.2	0.0	61.9	19.2	0.0
Level of Service (LOS)	D	D		C	D	C	C	D	A	E	B	A
Approach Delay, s/veh / LOS	48.5		D	35.0		D	48.4		D	25.8		C
Intersection Delay, s/veh / LOS	34.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.85	C	2.30	B	2.11	B
Bicycle LOS Score / LOS	1.26	A	1.36	A	1.13	A	1.75	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.84	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Spiegel Drive	File Name	2048 AM Projections - 130.xus			
Project Description	2048 AM Projections Mitigation					

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	10	20	10	30	50	100	850	40	220	840	260

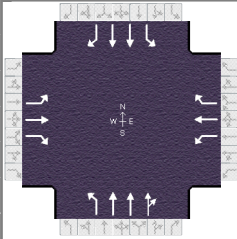
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	65	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	10.8	13.0	44.0	42.6	0.0	0.0			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	3.0	5.0	3.6	0.0	0.0			
				Red	1.2	1.0	1.0	1.8	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		48.0		48.0	15.0	50.0	32.0	67.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		9.9		4.8	7.7		13.5	
Green Extension Time (g_e), s		0.4		0.4	0.0	0.0	0.4	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.00	0.85		0.00	

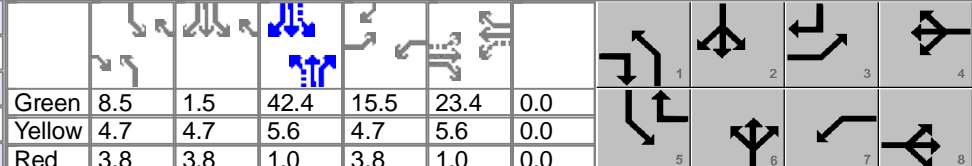
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	83	36		12	36	60	111	664	325	275	954	419
Adjusted Saturation Flow Rate (s), veh/h/ln	1296	1577		1351	1841	1560	1598	1678	1637	1682	1767	1550
Queue Service Time (g_s), s	6.1	2.0		0.8	1.7	2.4	5.7	17.6	17.6	11.5	23.4	22.8
Cycle Queue Clearance Time (g_c), s	7.9	2.0		2.8	1.7	2.4	5.7	17.6	17.6	11.5	23.4	22.8
Green Ratio (g/C)	0.33	0.33		0.33	0.33	0.54	0.42	0.34	0.34	0.57	0.47	0.47
Capacity (c), veh/h	463	517		477	603	847	285	1136	554	527	1658	728
Volume-to-Capacity Ratio (X)	0.180	0.069		0.025	0.059	0.070	0.390	0.585	0.586	0.521	0.575	0.576
Back of Queue (Q), ft/ln (50 th percentile)	51.9	20.8		6.8	20	21.4	63.1	163	166.4	133	233	199.7
Back of Queue (Q), veh/ln (50 th percentile)	1.9	0.8		0.3	0.8	0.8	2.3	5.8	5.9	5.0	8.7	7.5
Queue Storage Ratio (RQ) (50 th percentile)	0.17	0.00		0.01	0.00	0.04	0.18	0.00	0.00	0.30	0.00	0.00
Uniform Delay (d_1), s/veh	32.7	30.1		31.0	30.0	14.1	25.9	24.5	24.4	22.5	21.3	20.3
Incremental Delay (d_2), s/veh	0.1	0.0		0.0	0.0	0.0	0.2	1.7	3.4	0.3	0.9	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
Control Delay (d), s/veh	32.7	30.1		31.0	30.0	14.1	26.2	26.2	27.9	22.8	22.2	22.3
Level of Service (LOS)	C	C		C	C	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS	31.9	C		21.3	C		26.7	C		22.3	C	
Intersection Delay, s/veh / LOS	24.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.12	B	1.91	B
Bicycle LOS Score / LOS	0.68	A	0.66	A	1.14	A	1.35	A

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information		
Agency					Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other		
Jurisdiction	ODOT	Time Period		PHF	0.90		
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00		
Intersection	London-Groveport Road	File Name	2048 AM Projections - 130.xus				
Project Description	2048 AM Projections Mitigation						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	190	170	210	140	40	150	830	110	80	710	80

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	8.5	1.5	42.4	15.5	23.4	0.0	1	2	3	4
Offset, s	13	Reference Point	End	Yellow	4.7	4.7	5.6	4.7	5.6	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	3.8	3.8	1.0	3.8	1.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	4.0	1.1	3.0
Phase Duration, s	24.0	30.0	24.0	30.0	17.0	49.0	27.0	59.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	8.5	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	10.5	17.8	17.0	12.5	10.5		6.5	
Green Extension Time (g_e), s	0.1	0.7	0.0	1.0	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.11	0.28	1.00	0.02	1.00		0.00	

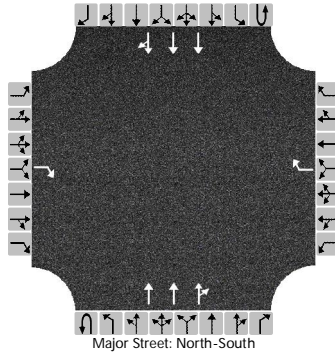
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	133	211	189	233	156	44	167	710	335	100	885	100
Adjusted Saturation Flow Rate (s), veh/h/ln	1555	1633	1384	1654	1737	1472	1555	1633	1532	1570	1569	1397
Queue Service Time (g_s), s	8.5	15.8	15.5	15.0	10.5	2.7	8.5	24.3	24.5	4.5	35.0	6.7
Cycle Queue Clearance Time (g_c), s	8.5	15.8	15.5	15.0	10.5	2.7	8.5	24.3	24.5	4.5	35.0	6.7
Green Ratio (g/C)	0.30	0.18	0.25	0.30	0.18	0.32	0.39	0.33	0.33	0.48	0.40	0.52
Capacity (c), veh/h	331	294	340	299	313	474	222	1065	500	344	1265	729
Volume-to-Capacity Ratio (X)	0.403	0.718	0.556	0.780	0.498	0.094	0.750	0.666	0.670	0.289	0.699	0.137
Back of Queue (Q), ft/ln (50 th percentile)	93	200.4	154.2	189.1	124.3	26.7	117.9	280.4	279.7	43.9	428.8	104.2
Back of Queue (Q), veh/ln (50 th percentile)	3.3	7.0	5.4	7.0	4.6	1.0	4.1	9.8	9.8	1.5	15.1	3.7
Queue Storage Ratio (RQ) (50 th percentile)	0.19	0.00	0.31	0.36	0.00	0.05	0.20	0.00	0.00	0.09	0.00	0.00
Uniform Delay (d_1), s/veh	35.6	50.2	42.9	38.7	48.0	30.8	33.5	37.7	37.8	21.2	48.6	24.4
Incremental Delay (d_2), s/veh	0.3	7.1	1.2	11.4	0.5	0.0	11.9	3.3	7.0	0.1	2.6	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	0.0
Control Delay (d), s/veh	35.9	57.3	44.1	50.1	48.5	30.8	45.4	41.0	44.7	21.4	51.2	24.8
Level of Service (LOS)	D	E	D	D	D	C	D	D	D	C	D	C
Approach Delay, s/veh / LOS	47.3		D	47.5		D	42.6		D	46.1		D
Intersection Delay, s/veh / LOS	45.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	2.12	B	2.11	B
Bicycle LOS Score / LOS	1.37	A	1.20	A	1.15	A	1.29	A

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Bixby				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Bixby Road				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	AM Projections	Peak Hour Factor	0.80				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	3	0		0	3	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				10				10			1240	10			2780	20
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked				0.720				0.150								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				7.1				7.1								
Critical Headway (sec)				7.16				7.16								
Base Follow-Up Headway (sec)				3.9				3.9								
Follow-Up Headway (sec)				3.93				3.93								

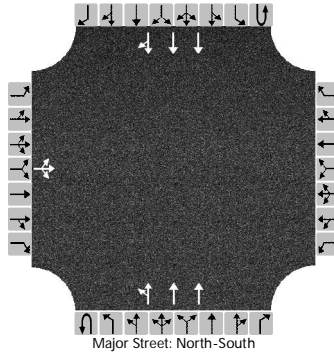
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13				13								
Capacity, c (veh/h)				256				650								
v/c Ratio				0.05				0.02								
95% Queue Length, Q ₉₅ (veh)				0.2				0.1								
Control Delay (s/veh)				19.8				10.7								
Level of Service (LOS)				C				B								
Approach Delay (s/veh)	19.8				10.7											
Approach LOS	C				B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2048			North/South Street	Alum Creek Drive		
Time Analyzed	AM Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	3	0	0	0	3	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	960				1060	10
Percent Heavy Vehicles (%)		0	0	0						17						
Proportion Time Blocked		0.360	0.000	0.390						0.390						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

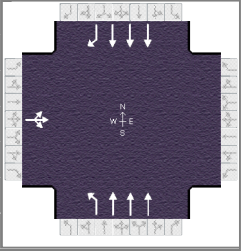
Base Critical Headway (sec)		6.4	6.5	7.1						5.3						
Critical Headway (sec)		6.40	6.50	7.10						5.64						
Base Follow-Up Headway (sec)		3.8	4.0	3.9						3.1						
Follow-Up Headway (sec)		3.80	4.00	3.90						3.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			547							672						
v/c Ratio			0.04							0.02						
95% Queue Length, Q ₉₅ (veh)			0.1							0.1						
Control Delay (s/veh)			11.9							10.5						
Level of Service (LOS)			B							B						
Approach Delay (s/veh)	11.9								0.3							
Approach LOS	B															

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.92
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1> 7:00
Intersection	Rathmell Road	File Name	2048 PM Projections - 130.xus		
Project Description	2048 PM Projections Mitigation				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	40	0	40				50	2590			1830	200

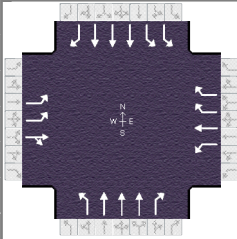
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Float	Simult. Gap N/S	On											
				Green	13.0	68.0	31.0	0.0	0.0	0.0				
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		12.0			1.0	4.0		7.3
Phase Duration, s		37.0			19.0	93.0		74.0
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2			3.0	0.0		0.0
Queue Clearance Time (g _s), s		7.7			3.6			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.00			0.00			

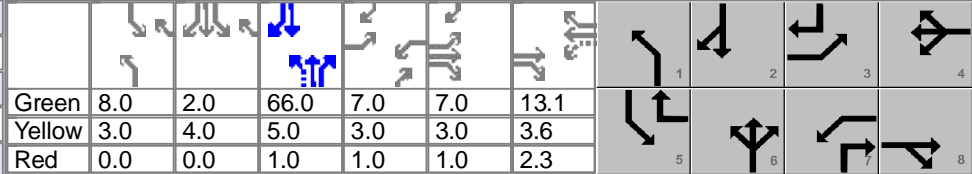
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		87					59	3042			1989	217
Adjusted Saturation Flow Rate (s), veh/h/ln		1598					1810	1537			1483	1610
Queue Service Time (g _s), s		5.7					1.6	84.5			50.1	9.7
Cycle Queue Clearance Time (g _c), s		5.7					1.6	84.5			50.1	9.7
Green Ratio (g/C)		0.24					0.64	0.67			0.52	0.52
Capacity (c), veh/h		381					267	3085			2327	842
Volume-to-Capacity Ratio (X)		0.228					0.220	0.986			0.855	0.258
Back of Queue (Q), ft/ln (50 th percentile)		59.9					21.9	865.9			487.2	88.7
Back of Queue (Q), veh/ln (50 th percentile)		2.3					0.9	31.1			17.0	3.5
Queue Storage Ratio (RQ) (50 th percentile)		0.00					0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh		39.9					23.5	30.8			26.7	17.1
Incremental Delay (d ₂), s/veh		0.1					0.0	3.9			4.3	0.7
Initial Queue Delay (d ₃), s/veh		0.0					0.0	0.0			0.0	0.0
Control Delay (d), s/veh		40.0					23.5	34.7			31.0	17.8
Level of Service (LOS)		D					C	C			C	B
Approach Delay, s/veh / LOS	40.0		D	0.0			34.5		C	29.7		C
Intersection Delay, s/veh / LOS	32.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.62	C	1.36	A	1.68	B
Bicycle LOS Score / LOS	0.63	A			2.07	B	1.70	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.93	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Creekside Parkway/ Toy...	File Name	2048 PM Projections - 130.xus			
Project Description	2048 PM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	380	30	50	130	40	450	40	1890	120	230	1430	210

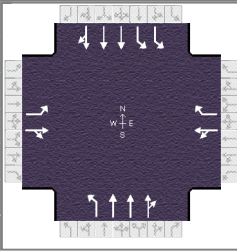
Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	8.0	2.0	66.0	7.0	7.0	13.1	Yellow	3.0	4.0	5.0	3.0	3.0	3.6	Red	0.0	0.0	1.0	1.0	1.0	2.3
Offset, s	122	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Float	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	22.0	30.0	11.0	19.0	11.0	72.0	17.0	78.0
Change Period, ($Y+R_c$), s	4.0	5.9	4.0	5.9	3.0	6.0	4.0	6.0
Max Allow Headway (MAH), s	3.1	3.3	3.1	3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	17.9	8.0	9.0	15.1	3.8		13.5	
Green Extension Time (g_e), s	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.00	1.00	1.00	0.12		1.00	

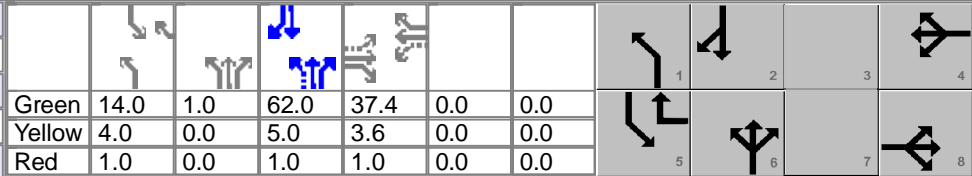
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	409	86		140	43	484	47	2208	140	250	1554	228
Adjusted Saturation Flow Rate (s), veh/h/ln	1647	1601		1640	1722	1292	1527	1456	1359	1387	1362	1271
Queue Service Time (g_s), s	15.9	6.0		7.0	3.0	13.1	1.8	65.6	8.2	11.5	46.0	14.0
Cycle Queue Clearance Time (g_c), s	15.9	6.0		7.0	3.0	13.1	1.8	65.6	8.2	11.5	46.0	14.0
Green Ratio (g/C)	0.14	0.19		0.15	0.10	0.20	0.57	0.51	0.56	0.10	0.55	0.69
Capacity (c), veh/h	456	297		265	174	519	202	2218	763	277	2263	880
Volume-to-Capacity Ratio (X)	0.896	0.290		0.527	0.248	0.933	0.232	0.996	0.184	0.901	0.687	0.259
Back of Queue (Q), ft/ln (50 th percentile)	206.3	64		117.5	35.8	256.7	17.5	719.1	103.7	126.1	510.5	236.3
Back of Queue (Q), veh/ln (50 th percentile)	7.8	2.4		4.3	1.3	9.4	0.6	24.8	3.6	4.1	16.8	7.8
Queue Storage Ratio (RQ) (50 th percentile)	0.88	0.00		0.52	0.00	0.92	0.03	0.00	0.28	0.28	0.00	0.39
Uniform Delay (d_1), s/veh	55.1	45.6		51.0	53.9	51.1	21.9	41.1	18.3	52.6	42.1	15.2
Incremental Delay (d_2), s/veh	19.4	0.2		1.0	0.3	23.7	0.0	7.0	0.1	15.4	0.7	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	74.4	45.8		51.9	54.2	74.8	22.0	48.1	18.4	68.0	42.8	15.5
Level of Service (LOS)	E	D		D	D	E	C	D	B	E	D	B
Approach Delay, s/veh / LOS	69.5	E		68.7	E		45.9	D		42.8	D	
Intersection Delay, s/veh / LOS	49.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.87	C	2.42	B	2.09	B
Bicycle LOS Score / LOS	1.30	A	1.59	B	1.70	B	1.59	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.96	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	Global Court	File Name	2048 PM Projections - 130.xus			
Project Description	2048 PM Projections Mitigation					

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	10	30	20	10	40	20	1980	10	20	1570	20

Signal Information														
Cycle, s	130.0	Reference Phase	2	Green	14.0	1.0	62.0	37.4	0.0	0.0	1	2	3	4
Offset, s	13	Reference Point	End	Yellow	4.0	0.0	5.0	3.6	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On											

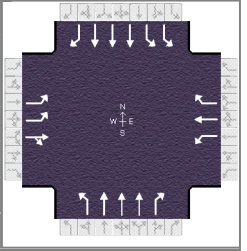
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		7.0	1.1	4.0	2.0	4.0
Phase Duration, s		42.0		42.0	20.0	69.0	19.0	68.0
Change Period, (Y+R _c), s		4.6		4.6	4.0	6.0	5.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		9.2		6.7	2.7		2.9	
Green Extension Time (g _e), s		0.3		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		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	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	31	42		31	42		23	1557	777	22	1153	573
Adjusted Saturation Flow Rate (s), veh/h/ln	1215	1426		937	1032		1541	1618	1614	1401	1515	1504
Queue Service Time (g _s), s	2.6	2.8		1.9	3.3		0.7	61.8	61.9	0.9	35.4	35.3
Cycle Queue Clearance Time (g _c), s	7.2	2.8		4.7	3.3		0.7	61.8	61.9	0.9	35.4	35.3
Green Ratio (g/C)	0.29	0.29		0.29	0.40		0.60	0.48	0.48	0.11	0.48	0.48
Capacity (c), veh/h	361	410		316	408		295	1569	782	302	1445	717
Volume-to-Capacity Ratio (X)	0.086	0.102		0.099	0.102		0.080	0.993	0.994	0.072	0.798	0.798
Back of Queue (Q), ft/ln (50 th percentile)	22.2	28.1		25.4	27.9		6.5	566.4	513	9.2	274.4	239.6
Back of Queue (Q), veh/ln (50 th percentile)	0.8	1.0		0.7	0.8		0.2	19.7	20.5	0.3	9.1	9.6
Queue Storage Ratio (RQ) (50 th percentile)	0.07	0.00		0.00	0.09		0.02	0.00	0.00	0.02	0.00	0.00
Uniform Delay (d ₁), s/veh	37.3	34.0		34.7	24.8		14.0	24.4	24.3	51.2	17.4	17.3
Incremental Delay (d ₂), s/veh	0.0	0.0		0.1	0.0		0.0	8.1	12.3	0.0	3.3	6.5
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	37.4	34.0		34.8	24.8		14.0	32.5	36.6	51.2	20.7	23.8
Level of Service (LOS)	D	C		C	C		B	C	D	D	C	C
Approach Delay, s/veh / LOS	35.5	D		29.1	C		33.6	C		22.1	C	
Intersection Delay, s/veh / LOS	28.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.72	C	2.10	B	1.91	B
Bicycle LOS Score / LOS	0.61	A	0.61	A	1.64	B	1.41	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other
Jurisdiction	ODOT	Time Period		PHF	0.83
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00
Intersection	Rohr Road	File Name	2048 PM Projections - 130.xus		
Project Description	2048 PM Projections Mitigation				



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	210	110	60	170	430	80	1270	70	330	1070	220

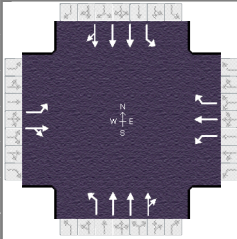
Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	80	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	16.0	1.0	42.0	9.0	9.0	32.7				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.0	0.0	5.0	3.0	3.0	4.3				
				Red	0.0	0.0	1.0	0.0	0.0	1.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	1	6	5	2
Case Number	2.0	4.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	24.0	50.0	12.0	38.0	20.0	49.0	19.0	48.0
Change Period, ($Y+R_c$), s	3.0	5.3	3.0	5.3	3.0	6.0	3.0	6.0
Max Allow Headway (MAH), s	3.1	3.2	3.1	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	19.0	34.0	6.2	34.7	5.5		16.5	
Green Extension Time (g_e), s	0.2	2.1	0.0	0.0	0.1	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.12	1.00	1.00	0.00		1.00	

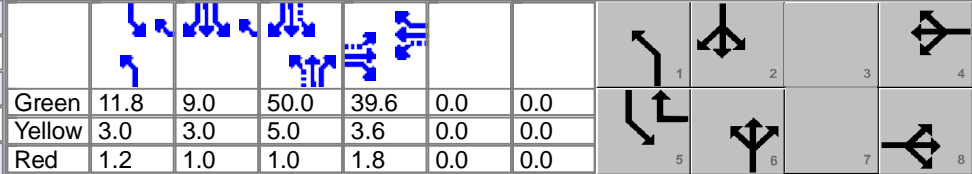
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	373	386		72	205	518	92	1466	81	358	1160	239
Adjusted Saturation Flow Rate (s), veh/h/ln	1387	1412		1584	1663	1409	1570	1496		1579	1550	
Queue Service Time (g_s), s	17.0	32.0		4.2	13.7	32.7	3.5	42.2		14.5	31.8	
Cycle Queue Clearance Time (g_c), s	17.0	32.0		4.2	13.7	32.7	3.5	42.2		14.5	31.8	
Green Ratio (g/C)	0.16	0.34		0.32	0.25	0.37	0.45	0.33		0.12	0.32	
Capacity (c), veh/h	448	486		238	418	528	294	1485		389	1503	
Volume-to-Capacity Ratio (X)	0.833	0.794		0.304	0.490	0.981	0.314	0.987		0.921	0.772	
Back of Queue (Q), ft/ln (50 th percentile)	200.9	365.2		46.1	158.5	590.9	29.6	495.6		169.2	375.8	
Back of Queue (Q), veh/ln (50 th percentile)	6.6	12.0		1.6	5.6	21.0	1.0	17.5		6.1	13.6	
Queue Storage Ratio (RQ) (50 th percentile)	0.67	0.00		0.09	0.00	0.98	0.07	0.00		0.36	0.00	
Uniform Delay (d_1), s/veh	52.8	38.5		33.5	41.5	40.2	16.8	44.5		52.8	55.2	
Incremental Delay (d_2), s/veh	12.0	8.1		0.3	0.3	34.2	0.2	17.6		16.8	2.1	
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	
Control Delay (d), s/veh	64.8	46.6		33.7	41.9	74.4	16.9	62.1	0.0	69.5	57.3	0.0
Level of Service (LOS)	E	D		C	D	E	B	E	A	E	E	A
Approach Delay, s/veh / LOS	55.6		E	62.3		E	56.5		E	52.0		D
Intersection Delay, s/veh / LOS	55.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.85	C	2.29	B	2.12	B
Bicycle LOS Score / LOS	1.74	B	1.80	B	1.43	A	1.56	B

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information								
Agency					Duration, h	0.250							
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023		Area Type	Other							
Jurisdiction	ODOT	Time Period			PHF	0.86							
Urban Street	Alum Creek Drive	Analysis Year	2048		Analysis Period	1 > 7:00							
Intersection	Spiegel Drive	File Name	2048 PM Projections - 130.xus										
Project Description	2048 PM Projections Mitigation												

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	70	160	30	40	240	40	900	30	160	880	200

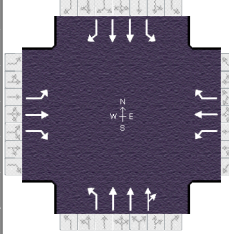
Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	31	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Float	Simult. Gap N/S	On									
Green	11.8	9.0	50.0	39.6	0.0	0.0						
Yellow	3.0	3.0	5.0	3.6	0.0	0.0						
Red	1.2	1.0	1.0	1.8	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		5.0	1.1	4.0	1.1	4.0
Phase Duration, s		45.0		45.0	16.0	56.0	29.0	69.0
Change Period, ($Y+R_c$), s		5.4		5.4	4.2	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		35.3		23.9	4.2		6.9	
Green Extension Time (g_e), s		1.1		2.0	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.72		0.02	0.00		0.00	

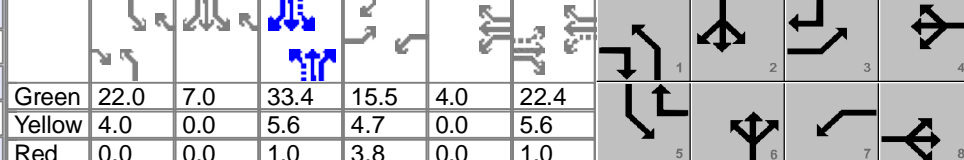
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	326	267		35	47	279	46	716	352	176	818	371
Adjusted Saturation Flow Rate (s), veh/h/ln	1305	1596		1059	1781	1510	1443	1515	1488	1485	1559	1409
Queue Service Time (g_s), s	30.8	18.2		3.7	2.4	14.8	2.2	29.6	29.7	4.9	27.7	28.7
Cycle Queue Clearance Time (g_c), s	33.3	18.2		21.9	2.4	14.8	2.2	29.6	29.7	4.9	27.7	28.7
Green Ratio (g/C)	0.30	0.30		0.30	0.30	0.50	0.48	0.38	0.38	0.59	0.48	0.48
Capacity (c), veh/h	429	486		230	543	750	281	1165	572	409	1511	683
Volume-to-Capacity Ratio (X)	0.760	0.550		0.152	0.086	0.372	0.164	0.615	0.616	0.430	0.541	0.543
Back of Queue (Q), ft/ln (50 th percentile)	297.3	202.3		28.3	29.2	144.8	23.3	372.4	347.4	35.4	321.1	283.1
Back of Queue (Q), veh/ln (50 th percentile)	11.3	7.7		1.1	1.1	5.4	0.8	12.3	12.4	1.2	10.8	10.6
Queue Storage Ratio (RQ) (50 th percentile)	0.99	0.00		0.05	0.00	0.24	0.07	0.00	0.00	0.08	0.00	0.00
Uniform Delay (d_1), s/veh	44.2	37.8		46.9	32.3	20.2	19.9	49.9	50.3	8.0	31.5	33.7
Incremental Delay (d_2), s/veh	11.9	4.4		1.4	0.3	1.4	0.7	1.3	2.7	1.9	0.8	1.8
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	56.1	42.2		48.3	32.6	21.6	20.5	51.2	53.0	9.9	32.3	35.5
Level of Service (LOS)	E	D		D	C	C	C	D	D	A	C	D
Approach Delay, s/veh / LOS	49.8		D	25.6		C	50.5		D	30.3		C
Intersection Delay, s/veh / LOS	39.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.12	B	1.91	B
Bicycle LOS Score / LOS	1.47	A	1.08	A	1.11	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.250	
Analyst	Kimley-Horn	Analysis Date	Feb 23, 2023	Area Type	Other	
Jurisdiction	ODOT	Time Period		PHF	0.87	
Urban Street	Alum Creek Drive	Analysis Year	2048	Analysis Period	1 > 7:00	
Intersection	London-Groveport Road	File Name	2048 PM Projections - 130.xus			
Project Description	2048 PM Projections Mitigation					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	230	170	270	210	70	270	800	170	130	790	150

Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	22.0	7.0	33.4	15.5	4.0	22.4	Yellow	4.0	0.0	5.6	4.7	0.0	5.6	Red	0.0	0.0	1.0	3.8	0.0	1.0
Offset, s	50	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	3.0	1.1	3.0	1.1	4.0	1.1	3.0
Phase Duration, s	24.0	29.0	28.0	33.0	26.0	40.0	33.0	47.0
Change Period, ($Y+R_c$), s	8.5	6.6	8.5	6.6	4.0	6.6	8.5	6.6
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	8.9	21.3	21.5	18.7	20.3		9.9	
Green Extension Time (g_e), s	0.1	0.3	0.0	1.1	0.1	0.0	0.2	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.01	1.00	1.00	0.14	1.00		0.00	

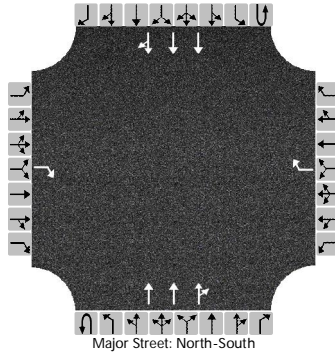
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	115	264	195	310	241	80	310	765	350	145	878	167
Adjusted Saturation Flow Rate (s), veh/h/ln	1654	1737	1472	1654	1737	1472	1612	1693	1538	1527	1527	1359
Queue Service Time (g_s), s	6.9	19.3	13.1	19.5	16.7	4.6	18.3	28.2	28.4	7.9	34.0	5.5
Cycle Queue Clearance Time (g_c), s	6.9	19.3	13.1	19.5	16.7	4.6	18.3	28.2	28.4	7.9	34.0	5.5
Green Ratio (g/C)	0.29	0.17	0.34	0.32	0.20	0.39	0.43	0.26	0.26	0.45	0.31	0.43
Capacity (c), veh/h	315	299	503	328	353	576	347	870	395	360	949	584
Volume-to-Capacity Ratio (X)	0.365	0.883	0.389	0.946	0.684	0.140	0.893	0.880	0.885	0.402	0.926	0.285
Back of Queue (Q), ft/ln (50 th percentile)	75.9	282.5	127.2	308.8	207.9	43.8	250.2	358.3	363.1	83.6	283	40.7
Back of Queue (Q), veh/ln (50 th percentile)	2.8	10.4	4.7	11.4	7.6	1.6	9.0	12.9	13.1	2.9	9.8	1.4
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.00	0.25	0.59	0.00	0.08	0.42	0.00	0.00	0.17	0.00	0.00
Uniform Delay (d_1), s/veh	36.0	52.5	32.5	39.2	47.9	25.5	32.2	46.4	46.4	28.7	26.4	10.0
Incremental Delay (d_2), s/veh	0.3	24.4	0.2	35.3	4.5	0.0	23.4	12.4	23.9	0.2	13.9	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	36.3	76.9	32.7	74.5	52.4	25.5	55.6	58.7	70.4	28.9	40.3	11.1
Level of Service (LOS)	D	E	C	E	D	C	E	E	E	C	D	B
Approach Delay, s/veh / LOS	53.8		D	59.8		E	60.9		E	34.8		C
Intersection Delay, s/veh / LOS	51.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	2.13	B	2.13	B
Bicycle LOS Score / LOS	1.44	A	1.53	B	1.27	A	1.50	B

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn	Intersection	Alum Creek & Bixby				
Agency/Co.		Jurisdiction	ODOT				
Date Performed	2/23/2023	East/West Street	Bixby Road				
Analysis Year	2048	North/South Street	Alum Creek Drive				
Time Analyzed	PM Projections	Peak Hour Factor	0.80				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	115792						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1		0	3	0		0	3	0
Configuration				R				R			T	TR			T	TR
Volume (veh/h)				20				20			2620	100			1850	20
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked				0.550				0.380								
Percent Grade (%)	0				0											
Right Turn Channelized	No				No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				7.1				7.1								
Critical Headway (sec)				7.16				7.16								
Base Follow-Up Headway (sec)				3.9				3.9								
Follow-Up Headway (sec)				3.93				3.93								

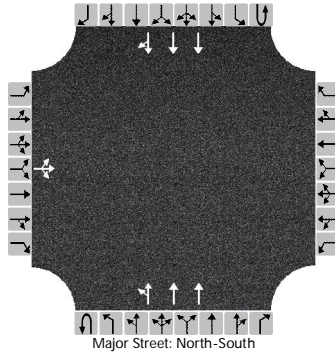
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				25				25								
Capacity, c (veh/h)				412				568								
v/c Ratio				0.06				0.04								
95% Queue Length, Q ₉₅ (veh)				0.2				0.1								
Control Delay (s/veh)				14.3				11.6								
Level of Service (LOS)				B				B								
Approach Delay (s/veh)	14.3				11.6											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Kimley-Horn			Intersection	Alum Creek Drive		
Agency/Co.				Jurisdiction	Franklin County		
Date Performed	9/15/2023			East/West Street	Alum Creek Service Drive		
Analysis Year	2048			North/South Street	Alum Creek Drive		
Time Analyzed	PM Build			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Alum Creek Drive						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	3	0	0	0	3	0
Configuration			LTR							LT	T				T	TR
Volume (veh/h)		10	0	10						10	960				1060	10
Percent Heavy Vehicles (%)		0	0	0						17						
Proportion Time Blocked		0.360	0.000	0.390						0.390						
Percent Grade (%)	0															
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4	6.5	7.1						5.3						
Critical Headway (sec)		6.40	6.50	7.10						5.64						
Base Follow-Up Headway (sec)		3.8	4.0	3.9						3.1						
Follow-Up Headway (sec)		3.80	4.00	3.90						3.27						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			23							11						
Capacity, c (veh/h)			547							672						
v/c Ratio			0.04							0.02						
95% Queue Length, Q ₉₅ (veh)			0.1							0.1						
Control Delay (s/veh)			11.9							10.5						
Level of Service (LOS)			B							B						
Approach Delay (s/veh)	11.9								0.3							
Approach LOS	B															

APPENDIX

H.

Signal Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

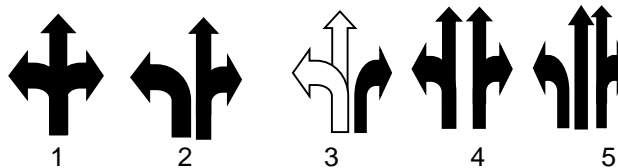
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Groveport Road

Minor Street Approach Configuration: 3 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
Peak Hour			
3:45 PM			
4:45 PM			
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Peak Hour			
11:15 AM			
12:15 PM			
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks. 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes. 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes:

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	4	33	9			46	12	0	0		12	1	205	11			217	10	0	0			10		
12:15 AM	4	31	11			46	14	0	0		14	1	93	1			95	4	0	0			4		
12:30 AM	6	45	7			58	11	0	0		11	1	64	5			70	5	0	0			5		
12:45 AM	10	40	8			58	10	0	0		10	0	49	0			49	3	0	0			3		
Hourly Total	24	149	35	0	0	208	47	0	0	0	0	47	3	411	17	0	0	431	25	0	0	0	25		
1:00 AM	8	33	7			48	19	0	0		19	1	65	3			69	19	0	0			19		
1:15 AM	6	39	4			50	5	0	0		5	0	69	2			71	2	0	0			2		
1:30 AM	3	35	5			43	5	0	0		5	0	36	1			37	6	0	0			6		
1:45 AM	6	44	7			57	6	0	0		6	2	33	3			39	2	0	0			2		
Hourly Total	23	151	23	0	0	198	35	0	0	0	0	35	3	203	9	0	0	215	12	0	0	0	12		
2:00 AM	5	36	6			47	14	0	0		14	0	125	7			132	2	0	0			2		
2:15 AM	13	33	4			50	15	0	0		15	1	56	3			60	3	0	0			3		
2:30 AM	7	32	5			44	4	0	0		4	1	78	4			83	1	0	0			1		
2:45 AM	6	49	3			58	8	0	0		8	0	36	3			39	2	0	0			2		
Hourly Total	31	150	18	0	0	199	41	0	0	0	0	41	2	235	17	0	0	244	8	0	0	0	8		
3:00 AM	4	53	6			63	18	0	0		18	0	42	2			44	7	0	0			7		
3:15 AM	9	75	5			84	13	0	0		13	1	37	3			37	5	0	0			5		
3:30 AM	8	90	7			106	15	0	0		15	2	162	7			171	5	0	0			5		
3:45 AM	8	100	2			110	28	0	0		28	1	78	8			87	4	0	0			4		
Hourly Total	29	313	30	0	0	363	74	0	0	0	0	74	4	335	20	0	0	359	21	0	0	0	21		
4:00 AM	11	118	11			140	16	0	0		16	2	115	8			125	6	0	0			6		
4:15 AM	12	164	12			189	19	0	0		19	0	82	1			83	8	0	0			8		
4:30 AM	18	231	14			263	30	0	0		30	6	159	4			169	16	0	0			16		
4:45 AM	21	278	24			321	29	0	0		29	1	167	4			172	27	0	0			27		
Hourly Total	62	789	61	0	0	913	94	0	0	0	0	94	9	453	17	0	0	479	50	0	0	0	50		
5:00 AM	20	207	17			244	24	0	0		24	3	137	11			151	8	0	0			8		
5:15 AM	27	348	37			412	41	0	0		41	4	93	6			103	24	0	0			24		
5:30 AM	36	505	35			580	51	0	0		51	1	30	6			67	34	0	0			34		
5:45 AM	66	614	48			730	48	0	0		48	7	122	14			143	50	0	0			50		
Hourly Total	149	1678	137	0	0	1966	164	0	0	0	0	164	15	432	37	0	0	484	116	0	0	0	116		
6:00 AM	36	326	32			394	36	0	0		36	5	181	7			193	25	0	0			25		
6:15 AM	51	372	43			466	92	0	0		92	2	160	10			172	37	0	0			37		
6:30 AM	50	505	75			630	132	0	0		132	3	186	12			201	36	0	0			36		
6:45 AM	80	585	109			774	137	0	0		137	4	204	15			223	57	0	0			57		
Hourly Total	217	1768	259	0	0	2284	427	0	0	0	0	427	14	731	44	0	0	789	155	0	0	0	155		
7:00 AM	54	261	72			387	164	0	0		164	3	194	17			214	23	0	0			23		
7:15 AM	59	369	60			488	141	0	0		141	6	206	19			231	28	0	0			28		
7:30 AM	73	404	66			543	178	0	0		178	7	213	18			238	35	0	0			35		
7:45 AM	86	484	65			635	150	0	0		150	5	164	20			189	40	0	0			40		
Hourly Total	272	1518	263	0	0	2053	633	0	0	0	0	633	21	777	74	0	0	872	128	0	0	0	128		
8:00 AM	67	324	60			451	139	0	0		139	8	158	21			167	27	0	0			27		
8:15 AM	47	217	35			399	129	0	0		129	0	159	13			172	19	0	0			19		
8:30 AM	48	282	48			378	112	0	0		112	8	169	17			194	35	0	0			35		
8:45 AM	42	271	55			368	117	0	0		117	4	161	13			178	27	0	0			27		
Hourly Total	204	1194	198	0	0	1596	497	0	0	0	0	497	20	647	64	0	0	731	108	0	0	0	108		
9:00 AM	37	193	35			265	128	0	0		128	5	158	27			190	23	0	0			23		
9:15 AM	41	195	31			267	167	0	0		167	5	140	14			189	21	0	0			21		
9:30 AM	43	198	34			275	92	0	1		92	5	186	22			193	20	0	0			20		
9:45 AM	38	190	32			270	93	0	0		93	1	153	10			164	24	0	0			24		
Hourly Total	159	776	142	0	0	1077	480	0	1	0	0	481	16	617	73	0	0	706	88	0	0	0	88		
10:00 AM	38	147	26			211	95	0	0		95	2	141	24			167	21	0	0			21		
10:15 AM	47	148	44			239	91	0	0		91	8	150	17			175	17	0	0			17		
10:30 AM	46	157	35			238	91	0	0		91	4	180	18			182	28	0	0			28		
10:45 AM	55	182	40			277	73	0	0		73	12	157	19			189	26	0	0			26		
Hourly Total	186	634	145	0	0	965	360	0	0	0	0	360	26	608	78	0	0	713	99	0	0	0	99		
11:00 AM	46	176	47			271	96	0	0		96	12	201	34			247	37	0	0			37		
11:15 AM	51	175	49			275	115	0	0		115	15	158	32			205	40	0	0			40		
11:30 AM	49	178	42			269	91	0	0		91	13	194	27			234	47	0	0			47		
11:45 AM	46	184	48			278	89	0	0		89	14	168	34			216	50	0	0			50		
Hourly Total	192	1115	186	0	0	1063	381	0	0	0	0	381	54	721	127	0	0	802	122	0	0	0	122		
12:00 PM	57	162	53			272	79	0	0		79	13	217	51			282	40	0	0			40		
12:15 PM	58	167	46			271	82	0	0		82	8	197	39			244	62	0	0			62		
12:30 PM	45	186	53			284	114	0	0		114	7	169	39			215	51	0	0			51		
12:45 PM	45	171	60			276	93	0	0		93	3	202	32			237	40	0	0			40		
Hourly Total	206	688	212	0	0	1106	368	0	0	0	0	368	31	785	161	0	0	978	195	0	0	0	195		
1:00 PM	52	198	42			292	100	0	0		100	5	220	40			265	28	0	0			28		
1:15 PM	53	227	46			326	77	0	0		77	4	185	27			227	47	0	0			47		
1:30 PM	45	282	41			369	117	0	0		117	3	242	26			271	39	0	0			39		
1:45 PM	58	290	52			400	90	0	0		90	4	213	18			235	36	0	0			36		
Hourly Total	208	907	181	0	0	1367	384	0	0	0	0	384	23	870	105	0	0	998	186	0	0	0	186		
2:00 PM	66	258	63			386	122	0	0		122	8	162	36			368	27	0	0			27		
2:15 PM	52	245	77			374	110	0	0		110	7	378	31			416	30	0	0			30		
2:30 PM	55	303	82			440	147	0	0		147	7	354	33			394	28	0	0			28		
2:45 PM	69	301	77			447	115	0	0		115	9	430	39			479	42	0	0			42		
Hourly Total	241	1107	299	0	0	1647	494	0	0	0	0	494	31	1487	138	0	0	1657	127	0	0	0	127		
3:00 PM	56	262	84			402	151	0	0		151	8	410	49			467	27	0	3			30		
3:15 PM	45	285	117			447	170	0	0		170	10	334	31			375	52	0	0	</				

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	80%		80%		56%		56%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	639	47	1		1				1		1			1		1	1	
12:15 AM	493	54																
12:30 AM	472	45																
12:45 AM	424	39																
1:00 AM	412	35												1				
1:15 AM	474	30			1													
1:30 AM	464	40																
1:45 AM	511	39								1						1		
2:00 AM	513	41												1				
2:15 AM	441	45			1													
2:30 AM	472	43																
2:45 AM	621	54	1							1						1	1	
3:00 AM	721	74							1	1			1	1	1			
3:15 AM	879	72			1													
3:30 AM	1009	78					1	1										
3:45 AM	1165	93	1							1						1	1	
4:00 AM	1391	94							1	1			1	1	1	1		
4:15 AM	1521	102			1													
4:30 AM	1765	124					1	1										
4:45 AM	2000	145	1							1	1					1	1	
5:00 AM	2448	164							1	1			1	1	1	1		
5:15 AM	2640	206			1	1												
5:30 AM	2763	257					1	1										
5:45 AM	2927	338	1	1						1	1					1	1	
6:00 AM	3053	427							1	1			1	1	1	1		
6:15 AM	3067	525			1	1							1	1	1	1		
6:30 AM	3148	574					1	1										
6:45 AM	3098	620	1	1						1	1					1	1	
7:00 AM	2925	633							1	1			1	1	1	1		
7:15 AM	2962	608			1	1												
7:30 AM	2814	596					1	1										
7:45 AM	2605	530	1	1						1	1					1	1	
8:00 AM	2327	497							1	1			1	1	1	1		
8:15 AM	2144	486			1	1												
8:30 AM	1999	524					1	1										
8:45 AM	1895	505	1	1						1	1					1	1	
9:00 AM	1783	481							1	1			1	1	1	1		
9:15 AM	1706	448			1	1												
9:30 AM	1694	382					1	1										
9:45 AM	1646	380	1	1						1	1					1	1	
10:00 AM	1677	360							1	1			1	1	1	1		
10:15 AM	1817	361			1	1												

10:30 AM	1883	375					1	1										
10:45 AM	1966	375	1	1						1	1						1	1
11:00 AM	1995	391							1	1			1	1	1	1		
11:15 AM	2030	374			1	1												
11:30 AM	2065	341					1	1										
11:45 AM	2064	364	1	1						1	1						1	1
12:00 PM	2083	368							1	1			1	1	1	1		
12:15 PM	2087	389			1	1												
12:30 PM	2125	384					1	1										
12:45 PM	2262	387	1	1						1	1						1	1
1:00 PM	2384	384							1	1			1	1	1	1		
1:15 PM	2581	406			1	1												
1:30 PM	2818	439					1	1										
1:45 PM	3013	469	1	1						1	1						1	1
2:00 PM	3303	494							1	1			1	1	1	1		
2:15 PM	3418	523			1	1												
2:30 PM	3450	583					1	1										
2:45 PM	3484	641	1	1						1	1						1	1
3:00 PM	3515	698							1	1			1	1	1	1		
3:15 PM	3478	758			1	1												
3:30 PM	3544	784					1	1										
3:45 PM	3603	787	1	1						1	1						1	1
4:00 PM	3584	755							1	1			1	1	1	1		
4:15 PM	3540	738			1	1												
4:30 PM	3474	695					1	1										
4:45 PM	3280	639	1	1						1	1						1	1
5:00 PM	3002	612							1	1			1	1	1	1		
5:15 PM	2774	549			1	1												
5:30 PM	2469	503					1	1										
5:45 PM	2206	441	1	1						1	1						1	1
6:00 PM	1951	423							1	1			1	1	1	1		
6:15 PM	1735	375			1	1												
6:30 PM	1553	347					1	1										
6:45 PM	1361	344	1	1						1	1						1	1
7:00 PM	1261	304							1	1			1	1	1	1		
7:15 PM	1208	274			1	1												
7:30 PM	1178	250					1	1										
7:45 PM	1183	213	1	1						1	1						1	1
8:00 PM	1125	205							1	1			1	1	1	1		
8:15 PM	1110	196			1	1												
8:30 PM	1063	178					1	1										
8:45 PM	1055	154	1	1						1	1						1	1
9:00 PM	1052	146							1	1			1	1	1	1		
9:15 PM	1056	140			1	1												
9:30 PM	1039	128					1	1										
9:45 PM	972	123	1							1	1						1	1
HOURS MET			22	16	23	17	20	20	22	21	23	18	21	21	24	20	23	22
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

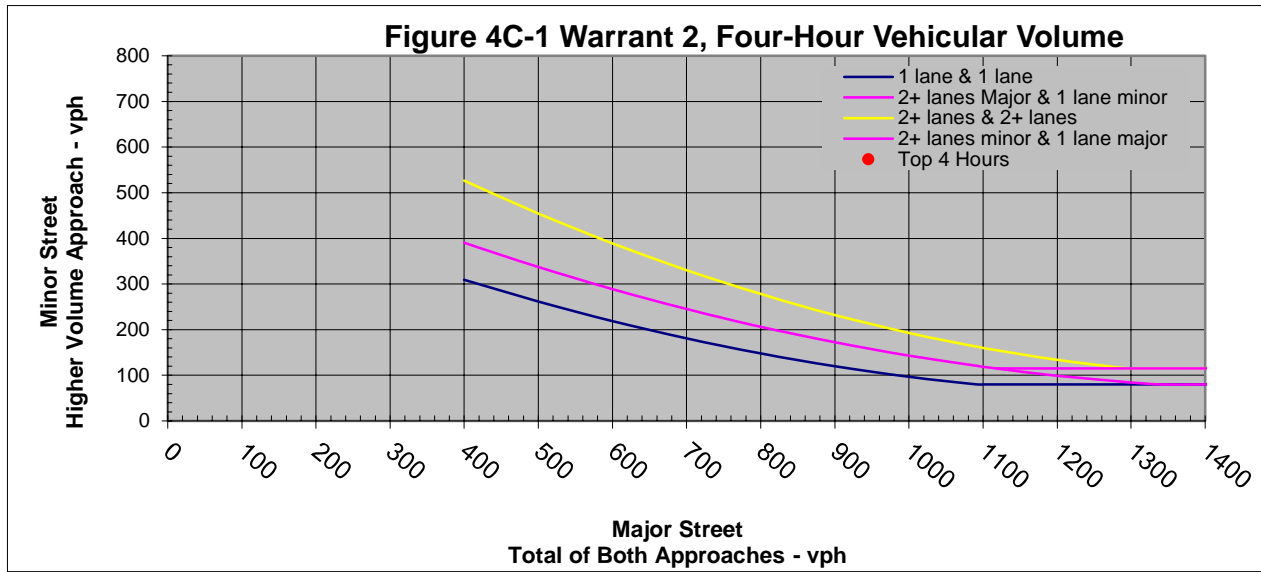
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	18
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	21
Minor Street: 1 Lane		

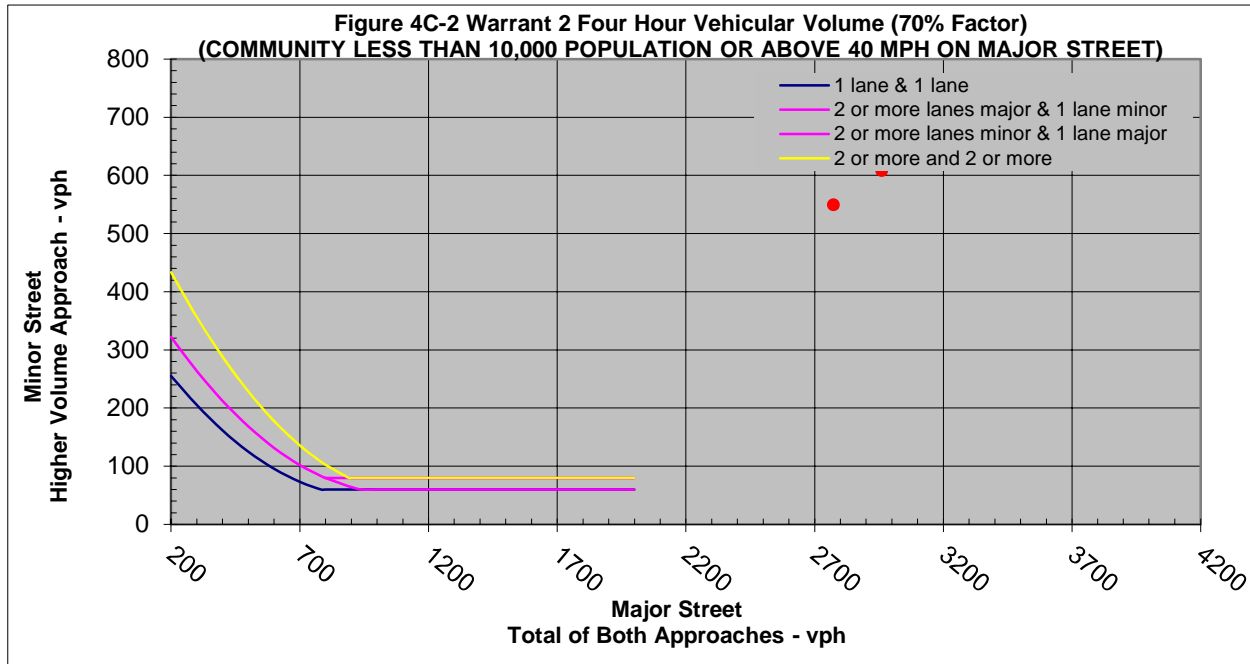
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
--	------------

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Groveport Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	789	2264	427	155	3053	427	Met	
6:15 AM	810	2257	525	153	3067	525		Met
6:30 AM	869	2279	574	144	3148	574		
6:45 AM	906	2192	620	143	3098	620		
7:00 AM	872	2053	633	126	2925	633	Met	
7:15 AM	845	2117	608	130	2962	608		Met
7:30 AM	786	2028	596	121	2814	596		
7:45 AM	742	1863	530	121	2605	530		
8:00 AM	731	1596	497	108	2327	497	Met	
8:15 AM	734	1410	486	104	2144	486		Met
8:30 AM	721	1278	524	106	1999	524		
8:45 AM	720	1175	505	91	1895	505		
9:00 AM	706	1077	481	88	1783	481	Met	
9:15 AM	683	1023	448	86	1706	448		Met
9:30 AM	699	995	382	89	1694	382		
9:45 AM	688	958	380	97	1646	380		
10:00 AM	712	965	360	99	1677	360	Met	
10:15 AM	792	1025	361	113	1817	361		Met
10:30 AM	822	1061	375	129	1883	375		
10:45 AM	874	1092	375	148	1966	375		
11:00 AM	902	1093	391	172	1995	391	Met	
11:15 AM	936	1094	374	177	2030	374		Met
11:30 AM	975	1090	341	200	2065	341		
11:45 AM	956	1108	364	206	2064	364		
12:00 PM	977	1106	368	196	2083	368	Met	
12:15 PM	961	1126	389	184	2087	389		Met
12:30 PM	944	1181	384	168	2125	384		
12:45 PM	1000	1262	387	154	2262	387		
1:00 PM	998	1386	384	150	2384	384	Met	
1:15 PM	1101	1480	406	149	2581	406		Met
1:30 PM	1290	1528	439	132	2818	439		
1:45 PM	1413	1600	469	121	3013	469		
2:00 PM	1656	1647	494	127	3303	494	Met	
2:15 PM	1755	1663	523	130	3418	523		Met
2:30 PM	1714	1736	583	152	3450	583		
2:45 PM	1754	1730	641	166	3484	641		
3:00 PM	1763	1752	698	161	3515	698	Met	
3:15 PM	1663	1815	758	161	3478	758		Met
3:30 PM	1692	1852	784	142	3544	784		
3:45 PM	1691	1912	787	131	3603	787		
4:00 PM	1664	1920	755	136	3584	755	Met	
4:15 PM	1704	1836	738	126	3540	738		Met
4:30 PM	1677	1797	695	122	3474	695		
4:45 PM	1567	1713	639	120	3280	639		
5:00 PM	1366	1636	612	110	3002	612	Met	
5:15 PM	1225	1549	549	112	2774	549		Met
5:30 PM	1051	1418	503	109	2469	503		
5:45 PM	942	1264	441	98	2206	441		
6:00 PM	860	1091	423	84	1951	423	Met	
6:15 PM	778	957	375	75	1735	375		Met
6:30 PM	722	831	347	66	1553	347		
6:45 PM	644	717	344	66	1361	344		
7:00 PM	593	668	304	64	1261	304	Met	
7:15 PM	541	667	274	63	1208	274		Met
7:30 PM	528	650	250	62	1178	250		
7:45 PM	519	664	213	61	1183	213		
8:00 PM	486	639	205	61	1125	205	Met	



Top Hours for Figure 4C-1				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	3584	755
2nd Highest Hour	3:00 PM	4:00 PM	3515	698
3rd Highest Hour	7:00 AM	8:00 AM	2925	633
4th Highest Hour	5:00 PM	6:00 PM	3002	612

Top Hours for Figure 4C-2				
	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	3478	758
2nd Highest Hour	4:15 PM	5:15 PM	3540	738
3rd Highest Hour	7:15 AM	8:15 AM	2962	608
4th Highest Hour	5:15 PM	6:15 PM	2774	549



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	3:45 PM
Major Street: 2 or More Lanes	Peak Hour End Time	4:45 PM
Minor Street: 1 Lane		

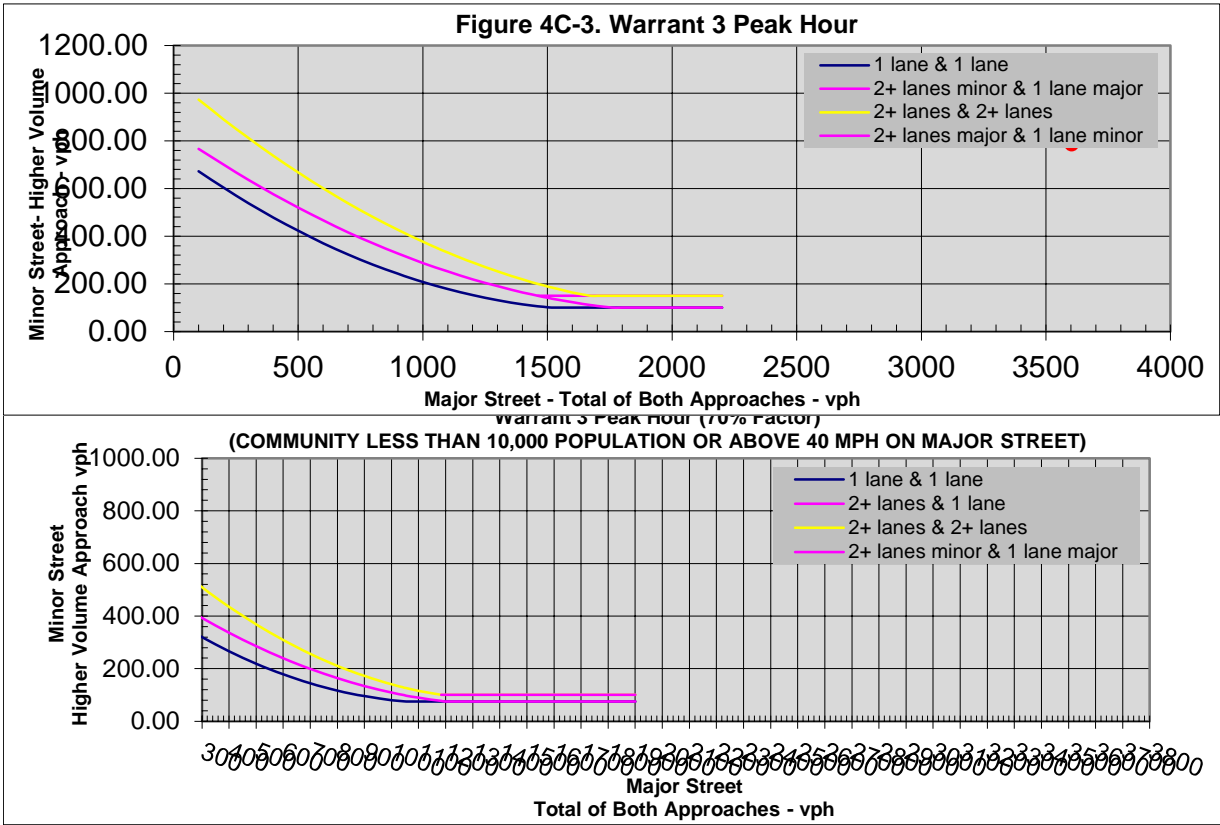
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3053	427	3480	3635
6:15 AM	3067	525	3592	3745
6:30 AM	3148	574	3722	3866
6:45 AM	3098	620	3718	3861
7:00 AM	2925	633	3558	3684
7:15 AM	2962	608	3570	3700
7:30 AM	2814	596	3410	3531
7:45 AM	2605	530	3135	3256
8:00 AM	2327	497	2824	2932
8:15 AM	2144	486	2630	2734
8:30 AM	1999	524	2523	2629
8:45 AM	1895	505	2400	2491
9:00 AM	1783	481	2264	2352
9:15 AM	1706	448	2154	2240
9:30 AM	1694	382	2076	2165
9:45 AM	1646	380	2026	2123
10:00 AM	1677	360	2037	2136
10:15 AM	1817	361	2178	2291
10:30 AM	1883	375	2258	2387
10:45 AM	1966	375	2341	2489
11:00 AM	1995	391	2386	2558
11:15 AM	2030	374	2404	2581
11:30 AM	2065	341	2406	2606
11:45 AM	2064	364	2428	2634
12:00 PM	2083	368	2451	2647
12:15 PM	2087	389	2476	2660
12:30 PM	2125	384	2509	2677
12:45 PM	2262	387	2649	2803
1:00 PM	2384	384	2768	2918
1:15 PM	2581	406	2987	3136
1:30 PM	2818	439	3257	3389
1:45 PM	3013	469	3482	3603
2:00 PM	3303	494	3797	3924
2:15 PM	3418	523	3941	4071
2:30 PM	3450	583	4033	4185
2:45 PM	3484	641	4125	4291
3:00 PM	3515	698	4213	4374
3:15 PM	3478	758	4236	4397
3:30 PM	3544	784	4328	4470
3:45 PM	3603	787	4390	4521
4:00 PM	3584	755	4339	4475
4:15 PM	3540	738	4278	4404
4:30 PM	3474	695	4169	4291
4:45 PM	3280	639	3919	4039
5:00 PM	3002	612	3614	3724
5:15 PM	2774	549	3323	3435
5:30 PM	2469	503	2972	3081
5:45 PM	2206	441	2647	2745
6:00 PM	1951	423	2374	2458
6:15 PM	1735	375	2110	2185
6:30 PM	1553	347	1900	1966
6:45 PM	1361	344	1705	1771
7:00 PM	1261	304	1565	1629
7:15 PM	1208	274	1482	1545
7:30 PM	1178	250	1428	1490
7:45 PM	1183	213	1396	1457
8:00 PM	1125	205	1330	1391

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
3603	787	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 3

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

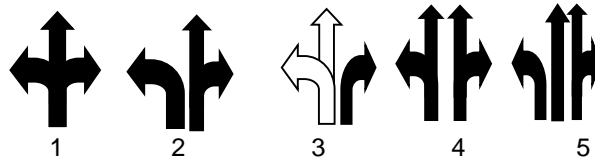
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Rathmell Road

Minor Street Approach Configuration: 1 E-Bound
W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	No	Condition B (70%) was met.
Warrant 2, Four-Hour Vehicular Volume	Yes	No	Figure 4C-2 (70% Factor)
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated.
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks. 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes. 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes: Met 70% Factor for Warrants 1 and 2

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:	
	Southbound						Westbound						Northbound						Eastbound							
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total		
12:00 AM	6	41				47						0						234	1				235	1	3	4
12:15 AM	4	30				34						0						91	0				91	0	1	
12:30 AM	11	44				55						0						66	0				66	1	1	
12:45 AM	14	30				44						0						49	1				50	1	2	
Hourly Total	35	145	0	0	0	180	0	0	0	0	0	0	440	2	0	0	0	442	2	2	7	0	0	9		
1:00 AM	3	29				32						0						66	1				67	1	2	
1:15 AM	9	31				40						0						62	2				64	0	2	
1:30 AM	10	30				40						0						36	2				38	0	1	
1:45 AM	21	25				46						0						37	3				40	0	1	
Hourly Total	43	115	0	0	0	158	0	0	0	0	0	0	207	8	0	0	0	209	1	3	6	1	0	7		
2:00 AM	6	33				39						0						126	0				126	0	1	
2:15 AM	5	34				39						0						62	2				62	2	4	
2:30 AM	6	27				33						0						80	0				80	1	2	
2:45 AM	5	53				58						0						38	1				38	1	3	
Hourly Total	22	147	0	0	0	169	0	0	0	0	0	0	306	0	0	0	0	306	4	7	0	0	0	11		
3:00 AM	5	95				80						0						38	2				38	2	5	
3:15 AM	4	78				82						0						57	0				57	1	1	
3:30 AM	2	95				97						0						184	1				185	2	4	
3:45 AM	3	106				109						0						73	1				74	1	8	
Hourly Total	14	334	0	0	0	343	0	0	0	0	0	0	352	2	0	0	0	354	3	13	0	0	0	18		
4:00 AM	3	117				120						0						116	0				116	3	11	
4:15 AM	0	176				176						0						76	0				76	0	3	
4:30 AM	4	242				246						0						166	1				166	1	9	
4:45 AM	2	300				302						0						39	0				39	0	0	
Hourly Total	9	835	0	0	0	844	0	0	0	0	0	0	457	0	0	0	0	457	5	19	0	0	0	24		
5:00 AM	3	215				218						0						150	0				150	3	4	
5:15 AM	2	372				374						0						102	1				103	4	9	
5:30 AM	2	542				544						0						82	0				82	2	8	
5:45 AM	5	686				691						0						138	0				138	3	7	
Hourly Total	12	1815	0	0	0	1827	0	0	0	0	0	0	472	1	0	0	0	473	12	12	0	0	0	24		
6:00 AM	4	354				358						0						184	2				186	5	6	
6:15 AM	7	405				412						0						169	3				172	1	9	
6:30 AM	7	533				540						0						200	2				202	3	11	
6:45 AM	16	631				647						0						216	2				218	4	13	
Hourly Total	34	1923	0	0	0	1937	0	0	0	0	0	0	778	9	0	0	0	778	18	32	0	0	0	40		
7:00 AM	21	256				277						0						219	6				225	10	13	
7:15 AM	20	356				376						0						209	1				210	3	19	
7:30 AM	11	436				447						0						229	3				232	19	27	
7:45 AM	6	525				531						0						205	2				207	4	9	
Hourly Total	58	1573	0	0	0	1631	0	0	0	0	0	0	862	12	0	0	0	874	26	52	0	0	0	78		
8:00 AM	17	333				350						0						163	4				167	2	17	
8:15 AM	27	417				444						0						344	5				349	6	15	
8:30 AM	32	292				324						0						186	9				195	1	14	
8:45 AM	23	281				304						0						157	3				160	6	29	
Hourly Total	99	1323	0	0	0	1322	0	0	0	0	0	0	652	21	0	0	0	653	15	61	0	0	0	78		
9:00 AM	15	196				211						0						170	6				176	6	19	
9:15 AM	17	205				222						0						166	2				168	4	20	
9:30 AM	14	215				229						0						175	5				180	7	26	
9:45 AM	13	210				223						0						159	2				161	8	9	
Hourly Total	59	829	0	0	0	888	0	0	0	0	0	0	670	15	0	0	0	685	18	62	0	0	0	80		
10:00 AM	10	164				174						0						152	3				155	2	11	
10:15 AM	7	172				179						0						129	3				132	5	15	
10:30 AM	9	170				179						0						178	3				181	4	12	
10:45 AM	9	201				210						0						194	4				198	4	16	
Hourly Total	35	707	0	0	0	742	0	0	0	0	0	0	682	14	0	0	0	696	15	48	0	0	0	63		
11:00 AM	7	215				222						0						221	3				224	3	11	
11:15 AM	14	215				229						0						191	6				197	2	7	
11:30 AM	20	218				238						0						218	1				219	5	11	
11:45 AM	18	214				232						0						209	6				215	3	8	
Hourly Total	59	862	0	0	0	921	0	0	0	0	0	0	858	16	0	0	0	855	12	33	0	0	0	51		
12:00 PM	16	189				205						0						270	5				271	5	13	
12:15 PM	14	219				233						0						227	5				232	3	12	
12:30 PM	19	226				245						0						236	3				239	3	9	
12:45 PM	14	203				217						0						226	10				236	5	19	
Hourly Total	63	837	0	0	0	900	0	0	0	0	0	0	929	19	0	0	0	948	16	45	0	0	0	61		
1:00 PM	11	231				242						0						236	1				237	2	14	
1:15 PM	14	267				281						0						201	1				202	1	16	
1:30 PM	10	313				323						0						245	5				250	2	8	
1:45 PM	18	325				343						0						212	5				217	6		

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	622	9	1		1						1				1		1	
12:15 AM	439	8																
12:30 AM	418	9																
12:45 AM	375	9																
1:00 AM	367	7													1			
1:15 AM	433	5			1													
1:30 AM	430	7																
1:45 AM	465	9																
2:00 AM	475	10													1			
2:15 AM	408	13																
2:30 AM	446	12			1													
2:45 AM	615	11	1							1								1
3:00 AM	702	17							1						1			
3:15 AM	840	23											1					
3:30 AM	953	25			1		1											
3:45 AM	1083	30	1							1								1
4:00 AM	1301	23							1						1			
4:15 AM	1433	16											1					
4:30 AM	1658	20			1		1											
4:45 AM	1872	15	1							1								1
5:00 AM	2300	21							1						1			
5:15 AM	2476	26											1					
5:30 AM	2583	26			1		1											
5:45 AM	2699	33	1							1								1
6:00 AM	2735	40							1						1			
6:15 AM	2693	57											1					
6:30 AM	2695	65			1		1											
6:45 AM	2632	81	1							1					1			1
7:00 AM	2505	76							1	1					1			
7:15 AM	2520	71											1	1				
7:30 AM	2439	66			1		1											
7:45 AM	2279	55	1								1							1
8:00 AM	2005	74							1	1					1			
8:15 AM	1878	81											1	1				
8:30 AM	1763	86			1		1	1										
8:45 AM	1653	96	1								1							1
9:00 AM	1573	77							1	1					1			
9:15 AM	1512	64											1	1				
9:30 AM	1463	63			1		1											
9:45 AM	1414	54	1							1								1
10:00 AM	1438	60							1	1					1			
10:15 AM	1555	62											1	1				

10:30 AM	1640	50			1		1											
10:45 AM	1737	50	1							1						1	1	
11:00 AM	1776	43							1				1					
11:15 AM	1806	42										1						
11:30 AM	1845	47			1		1											
11:45 AM	1842	44	1							1						1	1	
12:00 PM	1848	58						1	1				1					
12:15 PM	1851	60										1	1					
12:30 PM	1869	69			1		1											
12:45 PM	1988	67	1							1						1	1	
1:00 PM	2095	60						1	1				1					
1:15 PM	2282	58										1						
1:30 PM	2493	48			1		1											
1:45 PM	2726	46	1							1						1	1	
2:00 PM	2954	41						1					1					
2:15 PM	3066	46										1						
2:30 PM	3095	55			1		1											
2:45 PM	3077	54	1							1						1	1	
3:00 PM	3064	55						1	1				1					
3:15 PM	3019	52										1						
3:30 PM	3007	39			1		1											
3:45 PM	3059	43	1							1						1	1	
4:00 PM	3072	42						1					1					
4:15 PM	3102	41										1						
4:30 PM	3017	53			1		1											
4:45 PM	2783	63	1							1						1	1	
5:00 PM	2537	67						1	1				1					
5:15 PM	2223	73										1	1					
5:30 PM	2010	79			1		1	1										
5:45 PM	1798	73	1							1						1	1	
6:00 PM	1590	71						1	1				1					
6:15 PM	1427	69										1	1					
6:30 PM	1268	76			1		1	1										
6:45 PM	1094	72	1							1						1	1	
7:00 PM	986	74						1	1				1					
7:15 PM	937	64										1	1					
7:30 PM	915	56			1		1											
7:45 PM	911	70	1							1						1	1	
8:00 PM	881	67						1	1				1					
8:15 PM	881	74										1	1					
8:30 PM	842	75			1													
8:45 PM	855	63	1							1						1	1	
9:00 PM	872	69						1	1				1					
9:15 PM	889	67										1	1					
9:30 PM	909	54			1		1											
9:45 PM	876	54	1							1						1	1	
HOURS MET			22	0	23	0	19	3	21	12	22	0	20	10	24	0	22	16
WARRANT SATISFIED?			NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Warrant Met: **No**

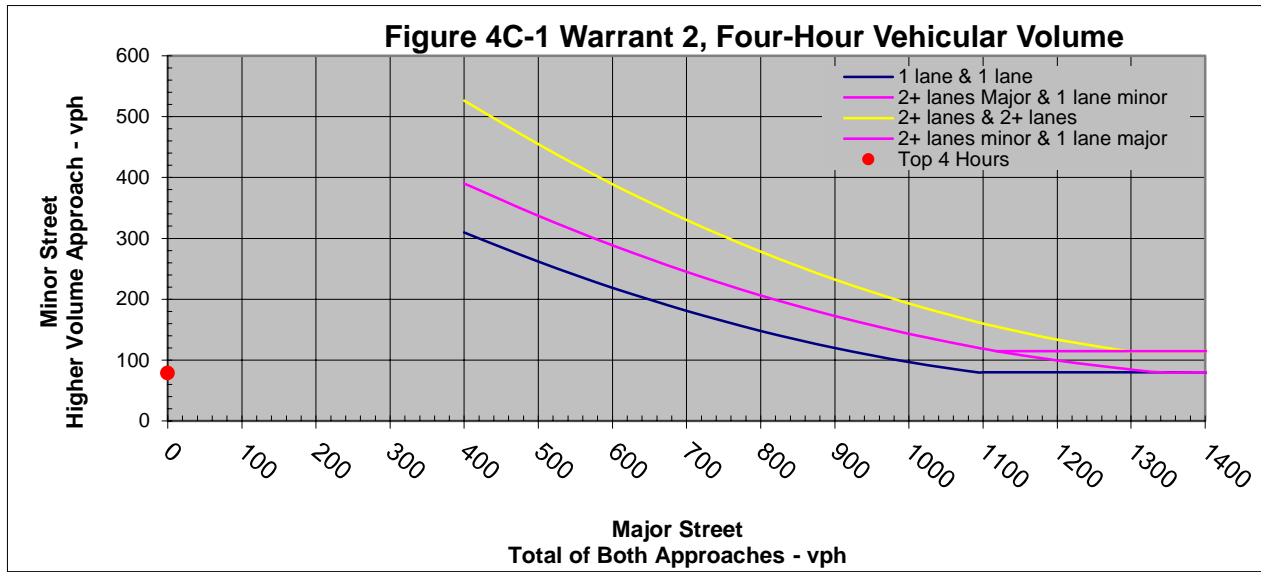
Notes: Condition B (70%) was met.

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	2
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	10
Minor Street: 1 Lane		

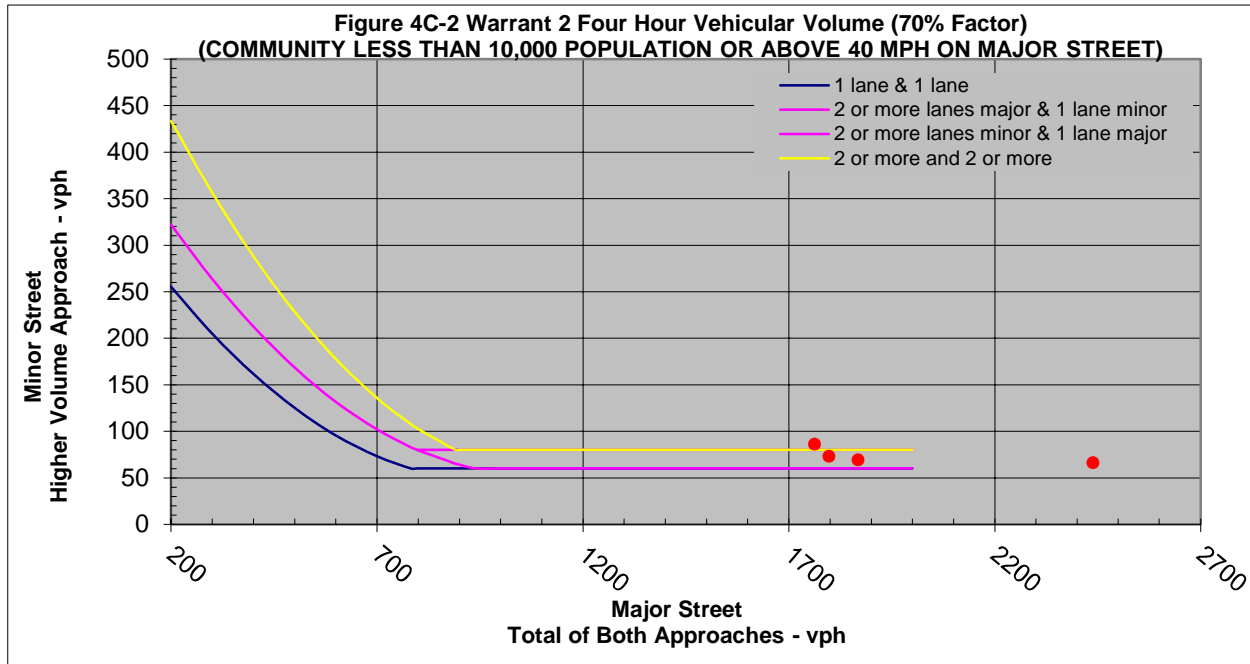
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rathmell Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	778	1957	0	40	2735	40		
6:15 AM	817	1876	0	57	2693	57		
6:30 AM	855	1840	0	65	2695	65		Met
6:45 AM	885	1747	0	81	2632	81	Met	
7:00 AM	874	1631	0	76	2505	76		
7:15 AM	816	1704	0	71	2520	71		
7:30 AM	767	1672	0	66	2439	66		Met
7:45 AM	730	1549	0	55	2279	55		
8:00 AM	683	1322	0	74	2005	74		
8:15 AM	692	1186	0	81	1878	81	Met	
8:30 AM	699	1064	0	86	1763	86		Met
8:45 AM	684	969	0	96	1653	96		
9:00 AM	685	888	0	77	1573	77		
9:15 AM	664	848	0	64	1512	64		
9:30 AM	658	805	0	63	1463	63		Met
9:45 AM	659	755	0	54	1414	54		
10:00 AM	696	742	0	60	1438	60		
10:15 AM	765	790	0	62	1555	62		
10:30 AM	800	840	0	50	1640	50		
10:45 AM	838	899	0	50	1737	50		
11:00 AM	855	921	0	43	1776	43		
11:15 AM	902	904	0	42	1806	42		
11:30 AM	937	908	0	47	1845	47		
11:45 AM	927	915	0	44	1842	44		
12:00 PM	948	900	0	58	1848	58		
12:15 PM	914	937	0	60	1851	60		
12:30 PM	884	985	0	69	1869	69		Met
12:45 PM	925	1063	0	67	1988	67		
1:00 PM	906	1189	0	60	2095	60		
1:15 PM	1044	1238	0	58	2282	58		
1:30 PM	1258	1235	0	48	2493	48		
1:45 PM	1481	1245	0	46	2726	46		
2:00 PM	1696	1258	0	41	2954	41		
2:15 PM	1811	1255	0	46	3066	46		
2:30 PM	1792	1303	0	55	3095	55		
2:45 PM	1776	1301	0	54	3077	54		
3:00 PM	1781	1283	0	55	3064	55		
3:15 PM	1730	1289	0	52	3019	52		
3:30 PM	1711	1296	0	39	3007	39		
3:45 PM	1733	1326	0	43	3059	43		
4:00 PM	1743	1329	0	42	3072	42		
4:15 PM	1794	1308	0	41	3102	41		
4:30 PM	1759	1258	0	53	3017	53		
4:45 PM	1630	1153	0	63	2783	63		Met
5:00 PM	1448	1089	0	67	2537	67		
5:15 PM	1214	1009	0	73	2223	73		
5:30 PM	1062	948	0	79	2010	79		
5:45 PM	943	855	0	73	1798	73		Met
6:00 PM	852	738	0	71	1590	71		
6:15 PM	776	651	0	69	1427	69		
6:30 PM	712	556	0	76	1268	76		
6:45 PM	603	491	0	72	1094	72		Met
7:00 PM	542	444	0	74	986	74		
7:15 PM	487	450	0	64	937	64		
7:30 PM	474	441	0	56	915	56		
7:45 PM	457	454	0	70	911	70		Met
8:00 PM	428	453	0	67	881	67		



Top Hours for Figure 4C-1				
	Start Time	End Time	Major Street	Minor Street
Top Hour	6:45 AM	7:45 AM	2632	81
2nd Highest Hour	8:15 AM	9:15 AM	1878	81
3rd Highest Hour	12:00 AM	1:00 AM	0	79
4th Highest Hour	5:30 PM	6:30 PM	2010	79

Top Hours for Figure 4C-2				
	Start Time	End Time	Major Street	Minor Street
Top Hour	8:30 AM	9:30 AM	1763	86
2nd Highest Hour	5:45 PM	6:45 PM	1798	73
3rd Highest Hour	12:30 PM	1:30 PM	1869	69
4th Highest Hour	7:30 AM	8:30 AM	2439	66



Are the requirements for Warrant 2 met?: No

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	8:30 AM
Major Street: 2 or More Lanes	Peak Hour End Time	9:30 AM
Minor Street: 1 Lane		

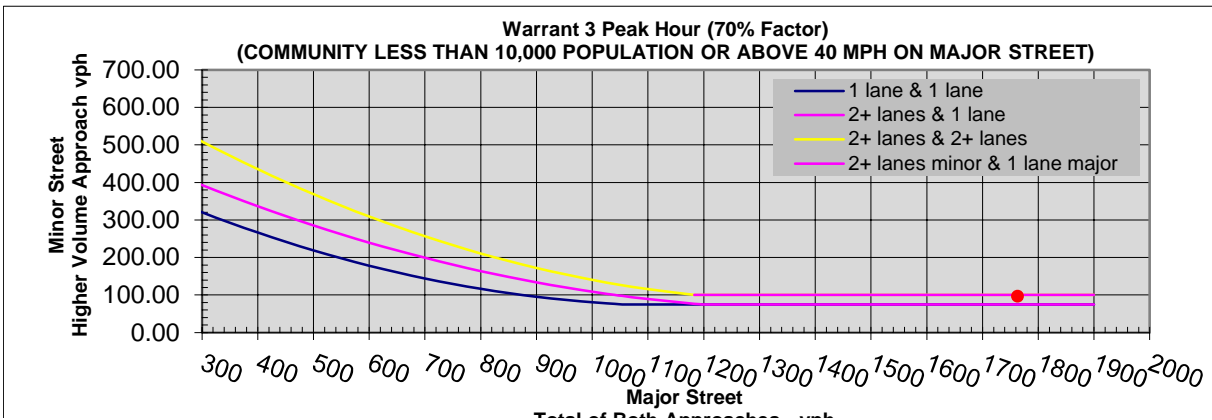
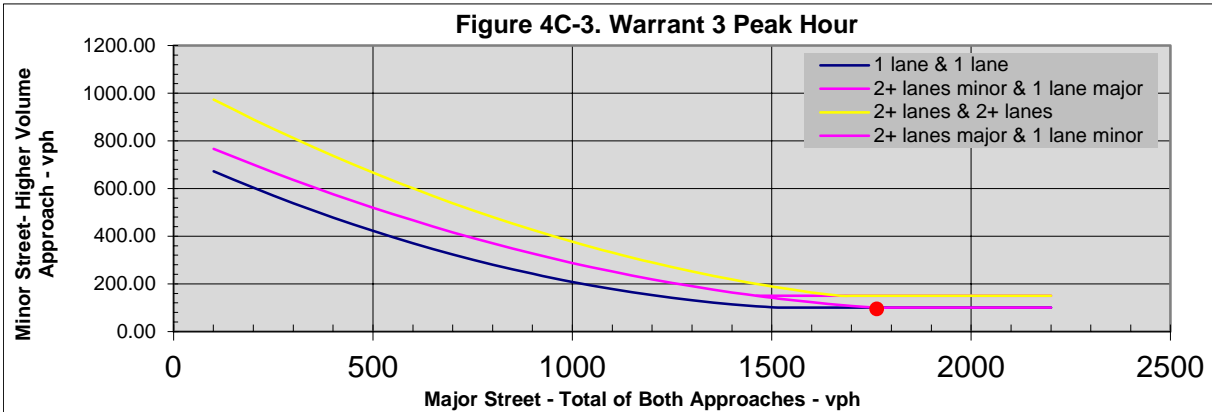
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2735	40	2775	2775
6:15 AM	2693	57	2750	2750
6:30 AM	2695	65	2760	2760
6:45 AM	2632	81	2713	2713
7:00 AM	2505	76	2581	2581
7:15 AM	2520	71	2591	2591
7:30 AM	2439	66	2505	2505
7:45 AM	2279	55	2334	2334
8:00 AM	2005	74	2079	2079
8:15 AM	1878	81	1959	1959
8:30 AM	1763	86	1849	1849
8:45 AM	1653	96	1749	1749
9:00 AM	1573	77	1650	1650
9:15 AM	1512	64	1576	1576
9:30 AM	1463	63	1526	1526
9:45 AM	1414	54	1468	1468
10:00 AM	1438	60	1498	1498
10:15 AM	1555	62	1617	1617
10:30 AM	1640	50	1690	1690
10:45 AM	1737	50	1787	1787
11:00 AM	1776	43	1819	1819
11:15 AM	1806	42	1848	1848
11:30 AM	1845	47	1892	1892
11:45 AM	1842	44	1886	1886
12:00 PM	1848	58	1906	1906
12:15 PM	1851	60	1911	1911
12:30 PM	1869	69	1938	1938
12:45 PM	1988	67	2055	2055
1:00 PM	2095	60	2155	2155
1:15 PM	2282	58	2340	2340
1:30 PM	2493	48	2541	2541
1:45 PM	2726	46	2772	2772
2:00 PM	2954	41	2995	2995
2:15 PM	3066	46	3112	3112
2:30 PM	3095	55	3150	3150
2:45 PM	3077	54	3131	3131
3:00 PM	3064	55	3119	3119
3:15 PM	3019	52	3071	3071
3:30 PM	3007	39	3046	3046
3:45 PM	3059	43	3102	3102
4:00 PM	3072	42	3114	3114
4:15 PM	3102	41	3143	3143
4:30 PM	3017	53	3070	3070
4:45 PM	2783	63	2846	2846
5:00 PM	2537	67	2604	2604
5:15 PM	2223	73	2296	2296
5:30 PM	2010	79	2089	2089
5:45 PM	1798	73	1871	1871
6:00 PM	1590	71	1661	1661
6:15 PM	1427	69	1496	1496
6:30 PM	1268	76	1344	1344
6:45 PM	1094	72	1166	1166
7:00 PM	986	74	1060	1060
7:15 PM	937	64	1001	1001
7:30 PM	915	56	971	971
7:45 PM	911	70	981	981
8:00 PM	881	67	948	948

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1763	96	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

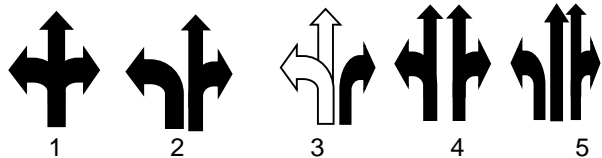
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Bixby Road

Minor Street Approach Configuration: 3 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">1:30 PM</td></tr> <tr><td style="text-align: center;">2:30 PM</td></tr> </table>	Peak Hour	1:30 PM	2:30 PM
Peak Hour						
1:30 PM						
2:30 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">12:45 PM</td></tr> <tr><td style="text-align: center;">1:45 PM</td></tr> </table>	Peak Hour	12:45 PM	1:45 PM
Peak Hour						
12:45 PM						
1:45 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Do Not Install New Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection.

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:						
	Southbound						Westbound						Northbound						Eastbound												
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total							
12:00 AM	0	36	0			36	1	0	0			1	5	225	0			230	0	0	0			0	0	0	0			0	It should be noted that if data is copied overtop of the Hourly Totals or Approach Totals, that the AutoSum Formula will be lost. This should not affect the actual totals if the data was copied from a program that performs the calculations for the user.
12:15 AM	0	32	0			32	1	0	0			1	0	86	0			87	0	0	0			0	0	0	0			0	
12:30 AM	1	39	0			40	0	0	0			0	0	66	0			66	0	0	0			0	0	0	0			0	
12:45 AM	0	30	0			30	0	0	0			0	0	46	0			46	0	0	0			0	0	0	0			0	
Hourly Total	1	137	0	0	0	138	2	0	0	0	0	2	5	429	0	0	0	434	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 AM	0	33	0			33	0	0	0			0	0	68	0			68	1	0	0			1	0	0	0			0	
1:15 AM	0	30	0			30	0	0	0			0	0	58	0			58	0	0	0			0	0	0	0			0	
1:30 AM	0	29	0			29	0	0	0			0	0	38	0			38	0	0	0			0	0	0	0			0	
1:45 AM	0	24	0			24	0	0	0			0	0	42	0			42	0	0	0			0	0	0	0			0	
Hourly Total	0	116	0	0	0	116	0	0	0	0	0	0	0	206	0	0	0	206	1	0	0	0	0	1	0	0	0	0	0	0	
2:00 AM	0	34	0			34	0	0	0			0	2	133	0			135	0	0	0			0	0	0	0			0	
2:15 AM	0	36	0			36	0	0	0			0	1	62	0			63	0	0	0			0	0	0	0			0	
2:30 AM	1	24	0			24	0	0	0			0	1	80	0			81	0	0	0			0	0	0	0			0	
2:45 AM	0	50	0			50	0	0	0			0	0	40	0			40	0	0	0			0	0	0	0			0	
Hourly Total	1	143	0	0	0	144	0	0	0	0	0	0	4	315	0	0	0	319	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 AM	0	56	0			56	0	0	0			0	3	39	0			42	0	0	0			0	0	0	0			0	
3:15 AM	0	81	0			81	0	0	0			0	0	56	0			56	0	0	0			0	0	0	0			0	
3:30 AM	0	95	0			95	0	0	0			0	2	189	0			191	0	0	0			0	0	0	0			0	
3:45 AM	1	107	0			108	0	0	0			0	2	71	0			73	0	0	0			0	0	0	0			0	
Hourly Total	1	339	0	0	0	340	0	0	0	0	0	0	7	355	0	0	0	362	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 AM	0	116	0			116	0	0	0			0	1	118	0			119	0	0	0			0	0	0	0			0	
4:15 AM	6	166	0			172	0	0	0			0	0	77	0			77	1	0	0			1	0	0	0			0	
4:30 AM	3	238	0			241	0	0	0			0	2	173	0			175	0	0	0			0	0	0	0			0	
4:45 AM	4	305	0			309	1	0	0			1	1	101	0			102	1	0	0			1	0	0	0			0	
Hourly Total	13	825	0	0	0	838	1	0	0	0	0	1	4	469	0	0	0	473	2	0	0	0	0	2	0	0	0	0	0	2	
5:00 AM	9	206	0			215	0	0	0			0	0	150	0			150	1	0	0			1	0	0	0			0	
5:15 AM	18	355	0			373	0	0	0			0	1	107	0			108	1	0	0			1	0	0	0			0	
5:30 AM	18	518	0			536	0	0	0			0	3	30	0			33	1	0	0			1	0	0	0			0	
5:45 AM	28	664	0			692	0	0	0			0	0	154	0			154	0	0	0			0	0	0	0			0	
Hourly Total	73	1743	0	0	0	1816	0	0	0	0	0	0	4	501	0	0	0	505	3	0	0	0	0	3	0	0	0	0	0	3	
6:00 AM	1	356	0			357	0	0	0			0	2	190	0			192	0	0	0			0	0	0	0			0	
6:15 AM	3	412	0			415	2	0	0			2	0	166	0			166	1	0	0			1	0	0	0			0	
6:30 AM	3	497	0			500	1	0	0			1	1	197	0			198	2	0	0			2	0	0	0			0	
6:45 AM	5	669	0			674	1	0	0			1	4	232	0			236	0	0	0			0	0	0	0			0	
Hourly Total	12	1934	0	0	0	1946	4	0	0	0	0	4	7	934	0	0	0	937	3	0	0	0	0	3	0	0	0	0	0	3	
7:00 AM	7	284	0			291	3	0	0			3	1	215	0			216	2	0	0			2	0	0	0			0	
7:15 AM	4	353	0			357	3	0	0			3	3	210	0			213	1	0	0			1	0	0	0			0	
7:30 AM	6	413	0			419	2	0	0			2	3	230	0			233	0	0	0			0	0	0	0			0	
7:45 AM	7	518	0			525	6	0	0			6	0	202	0			202	4	0	0			4	0	0	0			0	
Hourly Total	24	1568	0	0	0	1592	14	0	0	0	0	14	7	857	0	0	0	864	7	0	0	0	0	7	0	0	0	0	0	7	
8:00 AM	6	382	0			388	2	0	0			2	5	198	0			173	1	0	0			1	0	0	0			0	
8:15 AM	1	323	0			324	1	0	0			1	2	163	0			165	3	0	0			3	0	0	0			0	
8:30 AM	6	296	0			302	0	0	0			0	2	190	0			192	1	0	0			1	0	0	0			0	
8:45 AM	7	300	0			307	2	0	0			2	3	157	0			160	0	0	0			0	0	0	0			0	
Hourly Total	20	1301	0	0	0	1321	5	0	0	0	0	5	12	678	0	0	0	686	5	0	0	0	0	5	0	0	0	0	0	5	
9:00 AM	4	219	0			223	1	0	0			1	2	183	0			185	1	0	0			1	0	0	0			0	
9:15 AM	4	203	0			207	1	0	0			1	4	159	0			163	1	0	0			1	0	0	0			0	
9:30 AM	3	204	0			207	2	0	0			2	0	180	0			180	2	0	0			2	0	0	0			0	
9:45 AM	2	210	0			212	1	0	0			1	2	156	0			158	2	0	0			2	0	0	0			0	
Hourly Total	12	836	0	0	0	848	5	0	0	0	0	5	8	678	0	0	0	686	6	0	0	0	0	6	0	0	0	0	0	6	
10:00 AM	1	168	0			169	1	0	0			1	2	182	0			164	3	0	0			3	0	0	0			0	
10:15 AM	2	198	0			200	2	0	0			2	1	160	0			161	1	0	0			1	0	0	0			0	
10:30 AM	3	171	0			174	2	0	0			2	0	185	0			185	1	0	0			1	0	0	0			0	
10:45 AM	1	210	0			211	2	0	0			2	3	191	0			194	2	0	0			2	0	0	0			0	
Hourly Total	7	737	0	0	0	744	7	0	0	0	0	7	6	700	0	0	0	706	6	0	0	0	0	6	0	0	0	0	0	6	
11:00 AM	4	208	0			212	1	0	0			1	4	246	0			250	4	0	0			4	0	0	0			0	
11:15 AM	1	214	0			215	1	0	0			1	6	205	0			211	3	0	0			3	0	0	0			0	
11:30 AM	4	234	0			238	2	0	0			2	2	222	0			224	3	0	0			3	0	0	0			0	
11:45 AM	3	224	0			227	1	0	0			1	7	419	0			233	2	0	0			2	0	0	0			0	
Hourly Total	12	1078	0	0	0	1090	5	0	0	0	0	5	19	899	0	0	0	918	12	0	0	0	0	12	0	0	0	0	0	12	
12:00 PM	1	198	0			199	0	0	0			0	2	282	0			284	1	0	0			1	0	0	0			0	
12:15 PM	5	207	0			212	2	0	0			2	6	223	0																

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	572	2			1						1			1		1		
12:15 AM	407	1																
12:30 AM	371	1																
12:45 AM	332	1																
1:00 AM	322	1																
1:15 AM	390	0												1				
1:30 AM	401	0																
1:45 AM	439	0			1													
2:00 AM	463	0																
2:15 AM	392	0												1				
2:30 AM	430	0																
2:45 AM	611	0	1		1					1		1					1	
3:00 AM	702	0							1									
3:15 AM	839	0										1		1				
3:30 AM	951	1					1											
3:45 AM	1081	1	1		1					1							1	
4:00 AM	1311	2							1									
4:15 AM	1441	3										1		1				
4:30 AM	1673	3					1											
4:45 AM	1886	4	1		1					1							1	
5:00 AM	2321	3							1									
5:15 AM	2505	2										1		1				
5:30 AM	2605	2					1											
5:45 AM	2674	3	1		1					1							1	
6:00 AM	2738	4							1									
6:15 AM	2696	7										1		1				
6:30 AM	2685	8					1											
6:45 AM	2639	9	1		1					1							1	
7:00 AM	2456	14							1									
7:15 AM	2510	13										1		1				
7:30 AM	2429	11					1											
7:45 AM	2271	9	1		1					1							1	
8:00 AM	2011	5							1									
8:15 AM	1858	5										1		1				
8:30 AM	1739	4					1											
8:45 AM	1632	6	1		1					1							1	
9:00 AM	1534	6							1									
9:15 AM	1459	8										1		1				
9:30 AM	1442	7					1											
9:45 AM	1414	6	1		1					1							1	
10:00 AM	1450	7							1									
10:15 AM	1577	7										1		1				

10:30 AM	1650	10				1												
10:45 AM	1753	12	1		1				1								1	
11:00 AM	1808	12						1										
11:15 AM	1831	9									1		1					
11:30 AM	1846	8				1												
11:45 AM	1829	10	1		1				1								1	
12:00 PM	1833	10						1										
12:15 PM	1839	9									1		1					
12:30 PM	1885	9				1												
12:45 PM	2026	8	1		1				1								1	
1:00 PM	2127	7						1										
1:15 PM	2313	13									1		1					
1:30 PM	2512	14				1												
1:45 PM	2774	11	1		1				1								1	
2:00 PM	2966	12						1										
2:15 PM	3088	13									1		1					
2:30 PM	3133	13				1												
2:45 PM	3143	9	1		1				1								1	
3:00 PM	3166	9						1										
3:15 PM	3068	8									1		1					
3:30 PM	2986	6				1												
3:45 PM	3013	10	1		1				1								1	
4:00 PM	2972	11						1										
4:15 PM	3033	10									1		1					
4:30 PM	2967	12				1												
4:45 PM	2668	10	1		1				1								1	
5:00 PM	2459	8						1										
5:15 PM	2116	9									1		1					
5:30 PM	1949	8				1												
5:45 PM	1732	5	1		1				1								1	
6:00 PM	1499	4						1										
6:15 PM	1372	3									1		1					
6:30 PM	1206	2				1												
6:45 PM	1043	3	1		1				1								1	
7:00 PM	969	3						1										
7:15 PM	911	5									1		1					
7:30 PM	900	6				1												
7:45 PM	907	9	1		1				1								1	
8:00 PM	879	9						1										
8:15 PM	874	5									1		1					
8:30 PM	830	5																
8:45 PM	835	4	1		1				1								1	
9:00 PM	866	3						1										
9:15 PM	891	4									1		1					
9:30 PM	908	3				1												
9:45 PM	892	3	1		1				1								1	
HOURS MET			21	0	23	0	19	0	21	0	22	0	20	0	23	0	22	0
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO	

Warrant Met: **No**

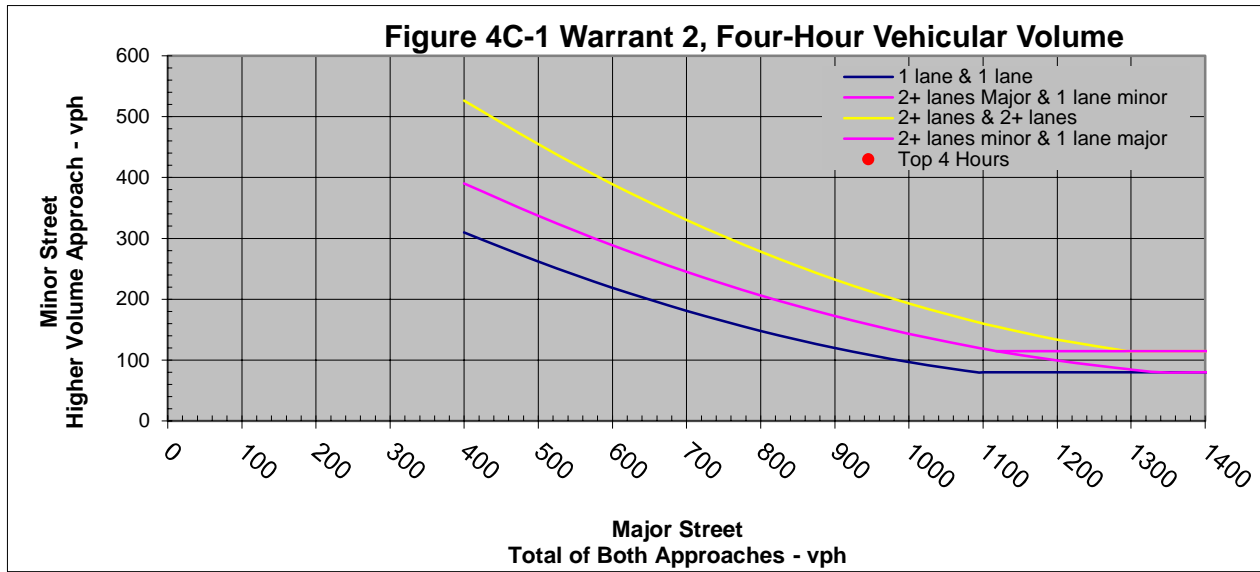
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

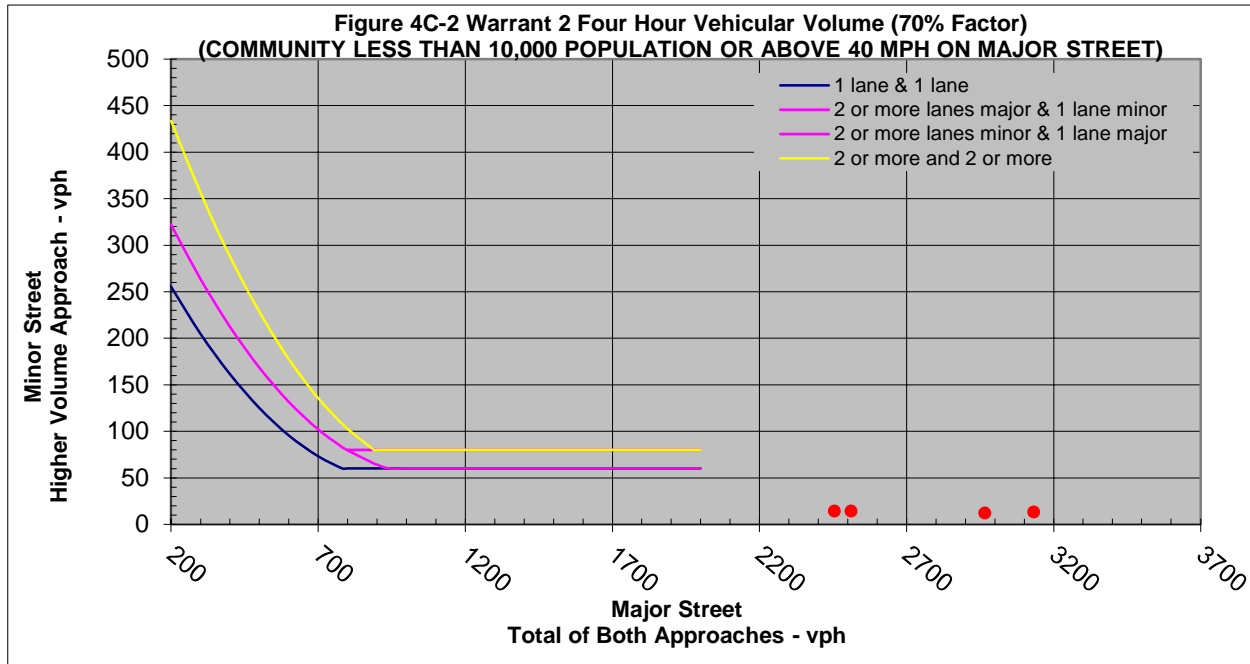
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Bixby Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	792	1946	4	3	2738	4		
6:15 AM	816	1880	7	5	2696	7		
6:30 AM	863	1822	8	5	2685	8		
6:45 AM	898	1741	9	3	2639	9		
7:00 AM	864	1592	14	7	2456	14		
7:15 AM	821	1689	13	6	2510	13		
7:30 AM	773	1656	11	8	2429	11		
7:45 AM	732	1539	9	9	2271	9		
8:00 AM	690	1321	5	5	2011	5		
8:15 AM	702	1156	4	5	1858	5		
8:30 AM	700	1039	4	3	1739	4		
8:45 AM	688	944	6	4	1632	6		
9:00 AM	686	848	5	6	1534	6		
9:15 AM	665	794	5	8	1459	8		
9:30 AM	665	777	6	7	1442	7		
9:45 AM	670	744	6	6	1414	6		
10:00 AM	706	744	7	6	1450	7		
10:15 AM	792	785	7	7	1577	7		
10:30 AM	840	810	6	10	1650	10		
10:45 AM	879	874	6	12	1753	12		
11:00 AM	918	890	5	12	1808	12		
11:15 AM	952	879	4	9	1831	9		
11:30 AM	970	876	5	8	1846	8		
11:45 AM	959	870	5	10	1829	10		
12:00 PM	970	863	6	10	1833	10		
12:15 PM	940	899	6	9	1839	9		
12:30 PM	921	964	6	9	1885	9		
12:45 PM	977	1049	7	8	2026	8		
1:00 PM	978	1149	6	7	2127	7		
1:15 PM	1110	1203	9	13	2313	13		
1:30 PM	1315	1197	10	14	2512	14		
1:45 PM	1559	1215	11	11	2774	11		
2:00 PM	1719	1247	11	12	2966	12		
2:15 PM	1841	1247	13	9	3088	13		
2:30 PM	1832	1301	13	9	3133	13		
2:45 PM	1858	1285	9	8	3143	9		
3:00 PM	1890	1276	9	8	3166	9		
3:15 PM	1819	1249	8	7	3068	8		
3:30 PM	1761	1225	6	4	2986	6		
3:45 PM	1761	1252	7	10	3013	10		
4:00 PM	1750	1222	8	11	2972	11		
4:15 PM	1818	1215	8	10	3033	10		
4:30 PM	1792	1175	8	12	2967	12		
4:45 PM	1603	1065	9	10	2668	10		
5:00 PM	1447	1012	8	8	2459	8		
5:15 PM	1184	932	6	9	2116	9		
5:30 PM	1064	885	6	8	1949	8		
5:45 PM	932	800	5	4	1732	5		
6:00 PM	820	679	4	4	1499	4		
6:15 PM	759	613	3	2	1372	3		
6:30 PM	684	522	2	2	1206	2		
6:45 PM	582	461	1	3	1043	3		
7:00 PM	540	429	2	3	969	3		
7:15 PM	495	416	5	4	911	5		
7:30 PM	493	407	6	3	900	6		
7:45 PM	478	429	9	3	907	9		
8:00 PM	445	434	9	4	879	9		



Top Hours for Figure 4C-1		Start Time	End Time	Major Street	Minor Street
Top Hour	1:30 PM	2:30 PM	2512	14	
2nd Highest Hour	7:00 AM	8:00 AM	2456	14	
3rd Highest Hour	2:30 PM	3:30 PM	3133	13	
4th Highest Hour	4:30 PM	5:30 PM	2967	12	

Top Hours for Figure 4C-2		Start Time	End Time	Major Street	Minor Street
Top Hour	1:30 PM	2:30 PM	2512	14	
2nd Highest Hour	7:00 AM	8:00 AM	2456	14	
3rd Highest Hour	2:30 PM	3:30 PM	3133	13	
4th Highest Hour	4:30 PM	5:30 PM	2967	12	



Are the requirements for Warrant 2 met?: No

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	1:30 PM
Major Street: 2 or More Lanes	Peak Hour End Time	2:30 PM
Minor Street: 1 Lane		

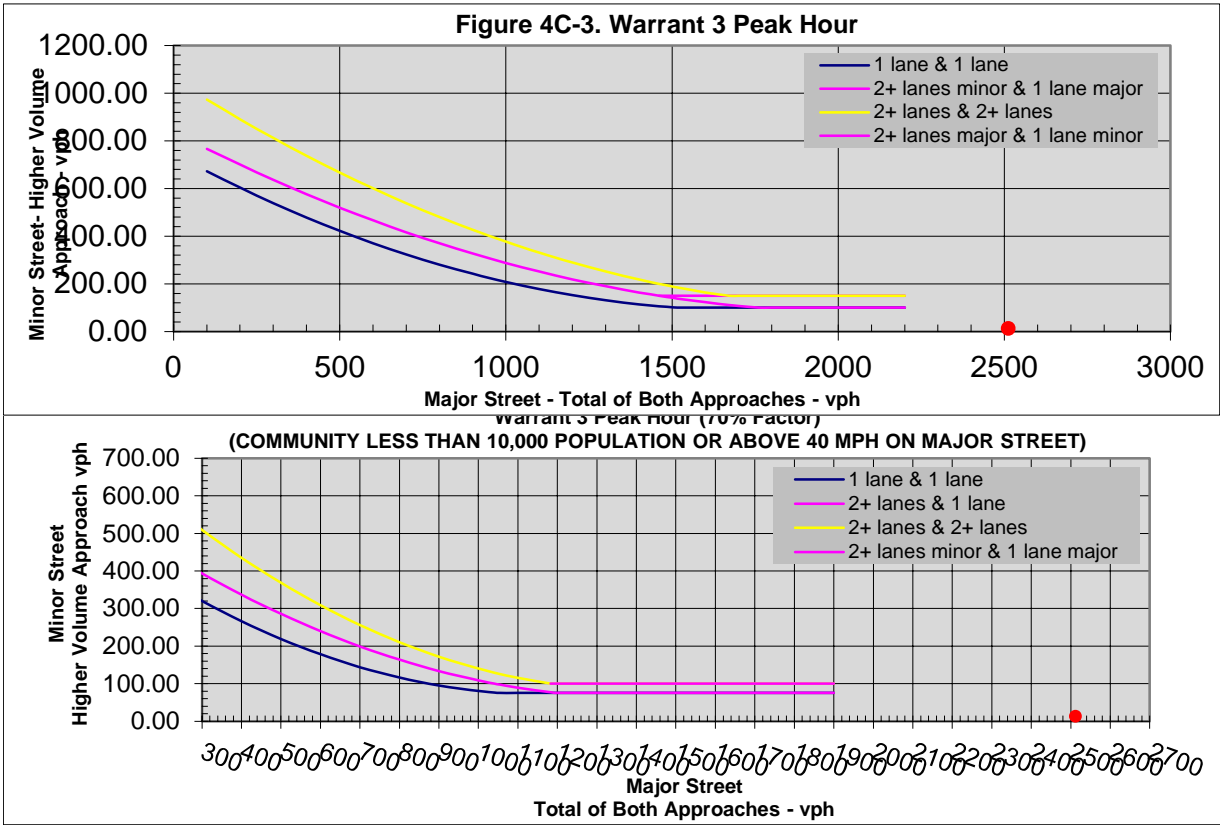
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2738	4	2742	2745
6:15 AM	2696	7	2703	2708
6:30 AM	2685	8	2693	2698
6:45 AM	2639	9	2648	2651
7:00 AM	2456	14	2470	2477
7:15 AM	2510	13	2523	2529
7:30 AM	2429	11	2440	2448
7:45 AM	2271	9	2280	2289
8:00 AM	2011	5	2016	2021
8:15 AM	1858	5	1863	1867
8:30 AM	1739	4	1743	1746
8:45 AM	1632	6	1638	1642
9:00 AM	1534	6	1540	1545
9:15 AM	1459	8	1467	1472
9:30 AM	1442	7	1449	1455
9:45 AM	1414	6	1420	1426
10:00 AM	1450	7	1457	1463
10:15 AM	1577	7	1584	1591
10:30 AM	1650	10	1660	1666
10:45 AM	1753	12	1765	1771
11:00 AM	1808	12	1820	1825
11:15 AM	1831	9	1840	1844
11:30 AM	1846	8	1854	1859
11:45 AM	1829	10	1839	1844
12:00 PM	1833	10	1843	1849
12:15 PM	1839	9	1848	1854
12:30 PM	1885	9	1894	1900
12:45 PM	2026	8	2034	2041
1:00 PM	2127	7	2134	2140
1:15 PM	2313	13	2326	2335
1:30 PM	2512	14	2526	2536
1:45 PM	2774	11	2785	2796
2:00 PM	2966	12	2978	2989
2:15 PM	3088	13	3101	3110
2:30 PM	3133	13	3146	3155
2:45 PM	3143	9	3152	3160
3:00 PM	3166	9	3175	3183
3:15 PM	3068	8	3076	3083
3:30 PM	2986	6	2992	2996
3:45 PM	3013	10	3023	3030
4:00 PM	2972	11	2983	2991
4:15 PM	3033	10	3043	3051
4:30 PM	2967	12	2979	2987
4:45 PM	2668	10	2678	2687
5:00 PM	2459	8	2467	2475
5:15 PM	2116	9	2125	2131
5:30 PM	1949	8	1957	1963
5:45 PM	1732	5	1737	1741
6:00 PM	1499	4	1503	1507
6:15 PM	1372	3	1375	1377
6:30 PM	1206	2	1208	1210
6:45 PM	1043	3	1046	1047
7:00 PM	969	3	972	974
7:15 PM	911	5	916	920
7:30 PM	900	6	906	909
7:45 PM	907	9	916	919
8:00 PM	879	9	888	892

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2512	14	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

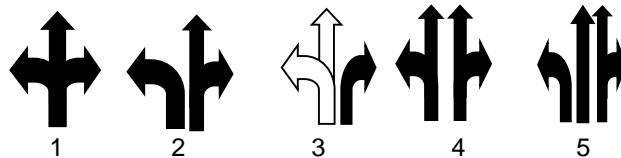
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Creekside Parkway/ Toy Road

Minor Street Approach Configuration: 2 E-Bound
2 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
Peak Hour			
2:15 PM			
3:15 PM			
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Peak Hour			
1:15 PM			
2:15 PM			
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	1	32	6			39	29	4	5			38	6	146	2			154	0	3	37			40	
12:15 AM	1	21	10			32	9	0	4			13	4	60	1			65	0	1	14			15	
12:30 AM	2	31	8			41	9	0	5			14	3	39	0			44	0	1	13			15	
12:45 AM	0	26	4			30	11	1	4			16	4	24	0			28	0	0	5			5	
Hourly Total	4	110	28	0	0	142	58	5	18	0	0	81	19	269	3	0	0	291	1	5	69	0	0	75	
1:00 AM	0	29	2			31	16	1	5			22	2	53	0			55	1	0	1			7	
1:15 AM	4	25	3			32	20	0	6			26	1	34	0			35	0	1	0			1	
1:30 AM	3	24	3			30	2	1	1			4	3	37	0			40	0	0	1			1	
1:45 AM	3	17	4			24	3	0	3			6	5	34	0			39	0	0	3			4	
Hourly Total	10	96	12	0	0	117	40	2	15	0	0	57	11	158	0	0	0	169	1	1	6	0	0	8	
2:00 AM	1	29	4			34	10	0	3			13	11	66	0			77	0	3	54			57	
2:15 AM	5	26	5			36	3	2	4			9	3	39	0			42	0	1	8			9	
2:30 AM	2	25	2			29	2	2	4			11	5	71	0			76	0	0	2			3	
2:45 AM	2	38	12			52	4	0	4			8	1	28	0			29	0	0	2			2	
Hourly Total	10	114	23	0	0	147	22	4	15	0	0	41	20	204	0	0	0	224	0	4	69	0	0	73	
3:00 AM	1	41	13			55	1	0	3			4	3	41	0			44	0	1	5			6	
3:15 AM	5	60	33			78	3	1	6			20	7	55	0			63	0	0	2			12	
3:30 AM	2	57	41			100	4	1	5			10	7	133	0			140	3	3	39			45	
3:45 AM	5	78	23			106	3	1	2			6	7	52	0			59	4	4	11			19	
Hourly Total	13	216	110	0	0	339	11	3	16	0	0	30	17	280	0	0	0	277	8	9	70	0	0	87	
4:00 AM	88	248	56			372	14	2	3			27	11	87	0			98	3	4	17			24	
4:15 AM	18	90	64			172	9	0	7			16	13	46	3			62	1	8	11			20	
4:30 AM	37	158	49			244	25	1	8			34	15	82	1			98	5	5	58			68	
4:45 AM	49	107	51			209	10	2	8			20	7	65	2			76	3	2	14			19	
Hourly Total	113	513	202	0	0	828	48	5	26	0	0	79	46	280	6	0	0	332	11	17	106	0	0	134	
5:00 AM	21	140	51			212	39	2	4			45	12	91	6			109	1	2	4			7	
5:15 AM	40	249	64			353	16	2	12			30	10	69	9			88	2	2	9			13	
5:30 AM	66	352	91			509	11	2	8			21	12	74	7			93	4	11	6			21	
5:45 AM	124	426	102			652	15	7	10			32	18	112	14			144	5	6	9			20	
Hourly Total	295	1166	308	0	0	1725	81	13	34	0	0	128	52	346	36	0	0	434	12	21	28	0	0	61	
6:00 AM	88	248	66			372	14	0	13			27	11	41	4			56	3	4	17			24	
6:15 AM	64	277	75			416	13	3	11			27	12	128	4			144	3	4	16			23	
6:30 AM	57	344	101			502	19	3	9			31	23	161	6			190	4	5	12			21	
6:45 AM	77	426	124			627	21	6	17			44	28	172	5			205	3	16	7			26	
Hourly Total	268	1026	366	0	0	1591	67	12	50	0	0	129	74	602	19	0	0	692	13	29	52	0	0	84	
7:00 AM	31	196	84			311	19	0	6			25	21	186	5			212	2	5	8			15	
7:15 AM	36	259	61			356	15	1	9			25	19	150	5			174	2	2	10			14	
7:30 AM	55	313	65			433	14	3	13			30	21	184	3			201	0	4	10			14	
7:45 AM	68	381	68			517	17	3	12			32	17	154	5			176	4	4	13			21	
Hourly Total	190	1149	278	0	0	1617	65	7	40	0	0	112	78	674	18	0	0	770	8	15	41	0	0	64	
8:00 AM	45	227	62			334	13	5	11			29	15	139	2			156	4	1	8			13	
8:15 AM	36	242	60			326	15	4	13			32	14	100	2			116	0	0	21			14	
8:30 AM	29	197	69			295	24	4	12			40	21	142	2			165	2	3	9			14	
8:45 AM	22	192	53			267	21	3	18			42	12	112	1			125	1	1	14			16	
Hourly Total	132	656	234	0	0	1224	73	16	54	0	0	143	62	483	7	0	0	562	7	5	52	0	0	61	
9:00 AM	21	159	36			216	20	2	15			37	16	130	5			151	1	5	16			22	
9:15 AM	20	144	35			199	16	4	11			31	14	122	4			140	4	2	10			16	
9:30 AM	20	153	43			216	25	2	16			48	8	121	2			131	4	1	13			18	
9:45 AM	19	156	32			216	31	3	14			48	10	103	2			115	4	4	22			30	
Hourly Total	80	621	146	0	0	847	92	11	56	0	0	159	48	476	13	0	0	537	13	12	61	0	0	86	
10:00 AM	21	122	24			167	20	4	12			41	14	118	3			135	2	4	15			21	
10:15 AM	16	123	36			155	17	4	17			33	13	120	4			133	4	1	16			21	
10:30 AM	18	120	27			165	13	3	10			26	15	132	3			150	4	2	21			27	
10:45 AM	21	134	43			188	23	4	19			46	17	128	2			147	10	3	24			37	
Hourly Total	76	499	130	0	0	705	73	15	58	0	0	146	59	498	12	0	0	569	20	10	76	0	0	106	
11:00 AM	17	155	40			212	28	11	14			53	25	168	4			197	6	6	22			34	
11:15 AM	15	151	46			212	30	4	18			52	17	135	3			155	4	5	17			26	
11:30 AM	35	164	31			230	28	3	14			45	24	141	4			169	12	5	24			41	
11:45 AM	22	159	39			220	31	5	22			58	21	159	3			183	9	7	10			27	
Hourly Total	89	629	156	0	0	974	117	23	68	0	0	208	87	603	14	0	0	704	31	23	73	0	0	127	
12:00 PM	15	143	39			197	36	7	28			71	18	195	4			217	5	4	26			35	
12:15 PM	19	144	45			208	21	5	17			43	17	165	3			185	5	3	18			26	
12:30 PM	19	150	51			220	33	3	19			55	18	164	2			194	5	1	19			26	
12:45 PM	18	140	45			203	43	2	8			53	12	172	10			194	3	2	22			27	
Hourly Total	71	577	180	0	0	82																			

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	433	81			1									1				
12:15 AM	326	65																
12:30 AM	296	78																
12:45 AM	281	68																
1:00 AM	286	57																
1:15 AM	311	63																
1:30 AM	322	71																
1:45 AM	353	75												1				
2:00 AM	371	73																
2:15 AM	359	32																
2:30 AM	393	33																
2:45 AM	532	70			1						1				1		1	1
3:00 AM	616	87	1															
3:15 AM	730	108							1	1			1	1				
3:30 AM	852	111																
3:45 AM	954	134			1	1	1	1			1	1			1	1	1	1
4:00 AM	1160	134	1															
4:15 AM	1268	115							1	1			1	1				
4:30 AM	1475	129																
4:45 AM	1735	116			1	1	1	1			1				1	1	1	1
5:00 AM	2159	128	1															
5:15 AM	2366	110							1	1			1	1				
5:30 AM	2485	107																
5:45 AM	2575	117			1	1	1	1			1				1	1	1	1
6:00 AM	2612	129	1															
6:15 AM	2607	127							1	1			1	1				
6:30 AM	2577	125																
6:45 AM	2526	124			1	1	1	1			1	1			1	1	1	1
7:00 AM	2387	112	1															
7:15 AM	2354	116							1	1			1	1				
7:30 AM	2268	123																
7:45 AM	2087	133			1	1	1	1			1	1			1	1	1	1
8:00 AM	1786	143	1															
8:15 AM	1663	151							1	1			1	1				
8:30 AM	1558	150																
8:45 AM	1445	153			1	1	1	1			1	1			1	1	1	1
9:00 AM	1384	159	1	1														
9:15 AM	1319	163							1	1			1	1				
9:30 AM	1292	165																
9:45 AM	1260	148			1	1	1	1			1	1			1	1	1	1
10:00 AM	1274	146	1															
10:15 AM	1381	158							1	1			1	1				

10:30 AM	1436	177																
10:45 AM	1520	196			1	1	1	1			1	1			1	1	1	
11:00 AM	1578	208	1	1														
11:15 AM	1583	226							1	1				1	1			
11:30 AM	1609	217																
11:45 AM	1614	227			1	1	1	1			1	1			1	1	1	
12:00 PM	1608	222	1	1														
12:15 PM	1597	208								1	1				1	1		
12:30 PM	1640	215																
12:45 PM	1756	226			1	1	1	1			1	1			1	1	1	
1:00 PM	1857	245	1	1														
1:15 PM	1965	296								1	1				1	1		
1:30 PM	2083	341																
1:45 PM	2176	424			1	1	1	1			1	1			1	1	1	
2:00 PM	2279	450	1	1														
2:15 PM	2363	481								1	1				1	1		
2:30 PM	2434	457																
2:45 PM	2424	465			1	1	1	1			1	1			1	1	1	
3:00 PM	2454	439	1	1														
3:15 PM	2422	389								1	1				1	1		
3:30 PM	2326	391																
3:45 PM	2416	354			1	1	1	1			1	1			1	1	1	
4:00 PM	2386	344	1	1														
4:15 PM	2396	353								1	1				1	1		
4:30 PM	2335	345																
4:45 PM	2087	317			1	1	1	1			1	1			1	1	1	
5:00 PM	1892	330	1	1														
5:15 PM	1685	284								1	1				1	1		
5:30 PM	1566	260																
5:45 PM	1412	207			1	1	1	1			1	1			1	1	1	
6:00 PM	1283	159	1	1														
6:15 PM	1153	150								1	1				1	1		
6:30 PM	1030	136																
6:45 PM	931	118			1	1	1	1			1				1	1	1	
7:00 PM	854	108	1															
7:15 PM	828	93								1	1				1	1		
7:30 PM	820	89																
7:45 PM	815	98			1						1				1	1	1	
8:00 PM	789	87	1															
8:15 PM	777	72								1	1				1	1		
8:30 PM	726	69																
8:45 PM	746	58			1						1				1		1	
9:00 PM	774	71	1															
9:15 PM	768	83								1	1				1	1		
9:30 PM	774	82																
9:45 PM	743	86			1						1				1	1	1	
HOURS MET			21	10	22	17	16	16	20	20	21	14	19	19	23	19	21	21
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

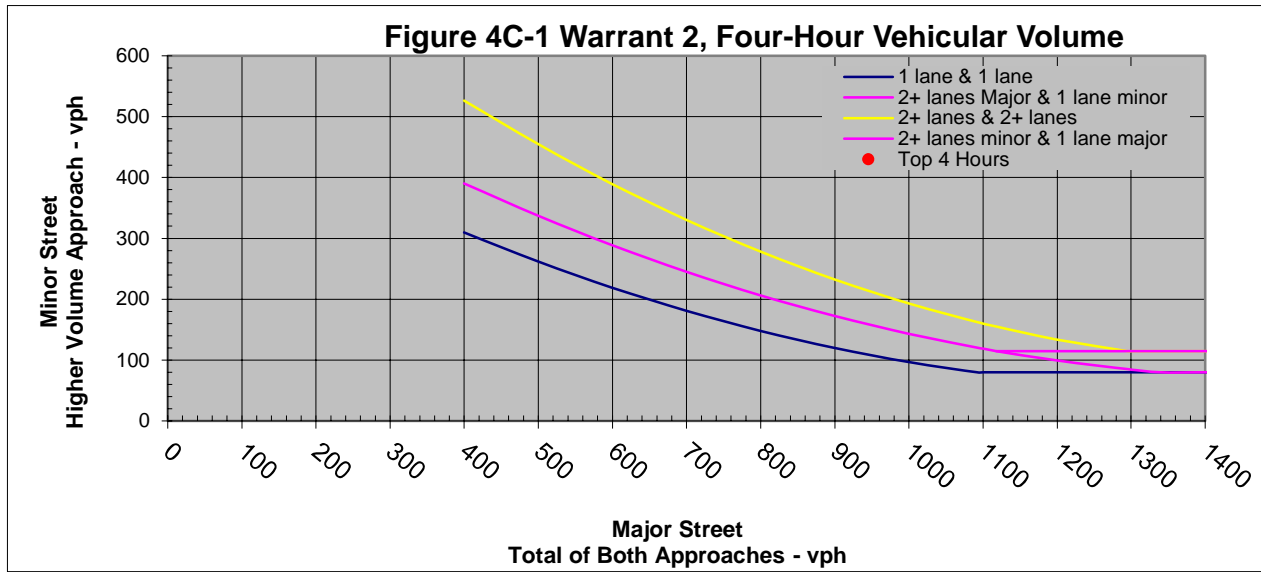
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	15
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	19
Minor Street: 1 Lane		

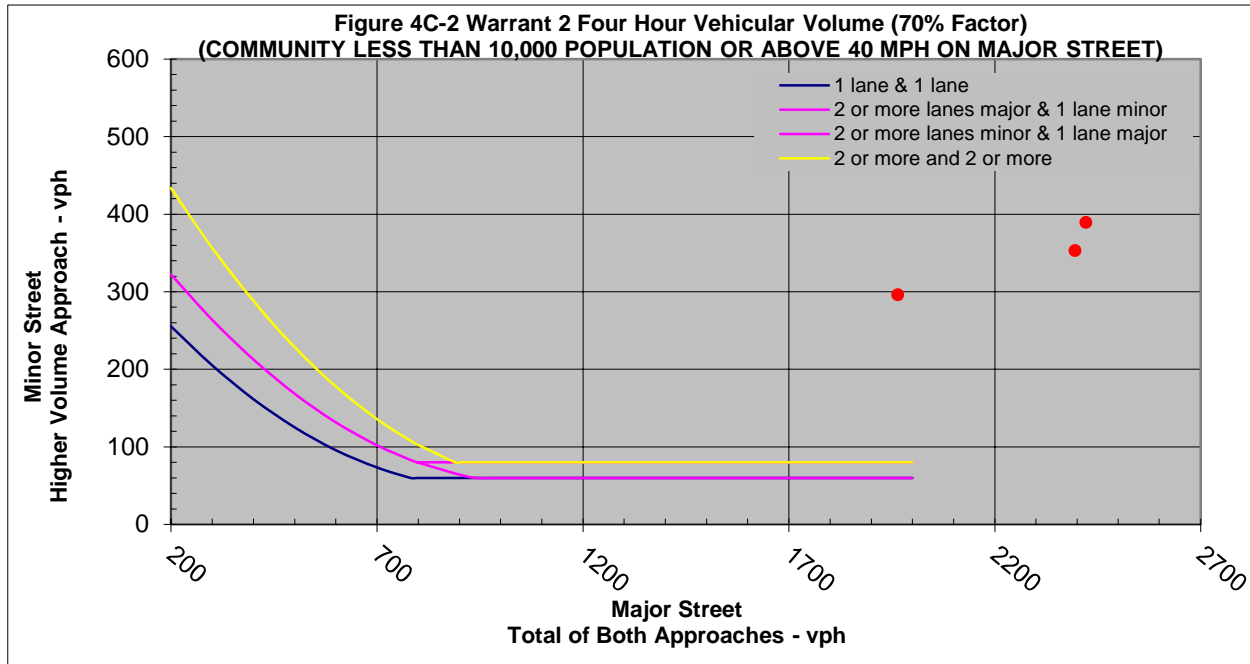
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Creekside Parkway/ Toy Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	695	1917	129	94	2612	129	Met	
6:15 AM	751	1856	127	85	2607	127		Met
6:30 AM	781	1796	125	76	2577	125		
6:45 AM	799	1727	124	69	2526	124		
7:00 AM	770	1617	112	64	2387	112	Met	
7:15 AM	714	1640	116	62	2354	116		Met
7:30 AM	656	1612	123	69	2268	123		
7:45 AM	613	1474	133	69	2087	133		
8:00 AM	562	1224	143	64	1786	143	Met	
8:15 AM	557	1106	151	73	1663	151		Met
8:30 AM	581	977	150	68	1558	150		
8:45 AM	547	898	153	72	1445	153		
9:00 AM	537	847	159	86	1384	159	Met	
9:15 AM	521	798	163	85	1319	163		Met
9:30 AM	518	774	165	90	1292	165		
9:45 AM	537	723	148	99	1260	148		
10:00 AM	569	705	146	106	1274	146	Met	
10:15 AM	631	750	158	119	1381	158		Met
10:30 AM	649	787	177	124	1436	177		
10:45 AM	668	852	196	138	1520	196		
11:00 AM	704	874	208	127	1578	208	Met	
11:15 AM	724	859	226	128	1583	226		Met
11:30 AM	754	855	217	128	1609	217		
11:45 AM	769	845	227	112	1614	227		
12:00 PM	780	828	222	113	1608	222	Met	
12:15 PM	744	853	208	112	1597	208		Met
12:30 PM	727	913	215	115	1640	215		
12:45 PM	747	1009	226	127	1756	226		
1:00 PM	729	1128	245	147	1857	245	Met	
1:15 PM	783	1182	296	221	1965	296		Met
1:30 PM	883	1200	341	245	2083	341		
1:45 PM	970	1206	424	306	2176	424		
2:00 PM	1053	1226	450	298	2279	450	Met	
2:15 PM	1132	1231	481	273	2363	481		Met
2:30 PM	1167	1267	457	273	2434	457		
2:45 PM	1197	1227	465	283	2424	465		
3:00 PM	1254	1200	439	332	2454	439	Met	
3:15 PM	1246	1176	389	308	2422	389		Met
3:30 PM	1184	1142	391	303	2326	391		
3:45 PM	1204	1212	354	325	2416	354		
4:00 PM	1193	1193	344	304	2386	344	Met	
4:15 PM	1224	1172	353	348	2396	353		Met
4:30 PM	1204	1131	345	341	2335	345		
4:45 PM	1100	987	317	246	2087	317		
5:00 PM	980	912	330	205	1892	330	Met	
5:15 PM	838	847	284	130	1685	284		Met
5:30 PM	758	808	260	105	1566	260		
5:45 PM	666	746	207	103	1412	207		
6:00 PM	618	665	159	97	1283	159	Met	
6:15 PM	555	598	150	91	1153	150		Met
6:30 PM	517	513	136	88	1030	136		
6:45 PM	474	457	118	73	931	118		
7:00 PM	429	425	108	66	854	108		
7:15 PM	411	417	93	54	828	93		Met
7:30 PM	413	407	89	54	820	89		
7:45 PM	390	425	98	49	815	98		
8:00 PM	364	425	87	52	789	87		



Top Hours for Figure 4C-1				
	Start Time	End Time	Major Street	Minor Street
Top Hour	2:00 PM	3:00 PM	2279	450
2nd Highest Hour	3:00 PM	4:00 PM	2454	439
3rd Highest Hour	4:00 PM	5:00 PM	2386	344
4th Highest Hour	5:00 PM	6:00 PM	1892	330

Top Hours for Figure 4C-2				
	Start Time	End Time	Major Street	Minor Street
Top Hour	2:15 PM	3:15 PM	2363	481
2nd Highest Hour	3:15 PM	4:15 PM	2422	389
3rd Highest Hour	4:15 PM	5:15 PM	2396	353
4th Highest Hour	1:15 PM	2:15 PM	1965	296



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	2:15 PM
Major Street: 2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street: 1 Lane		

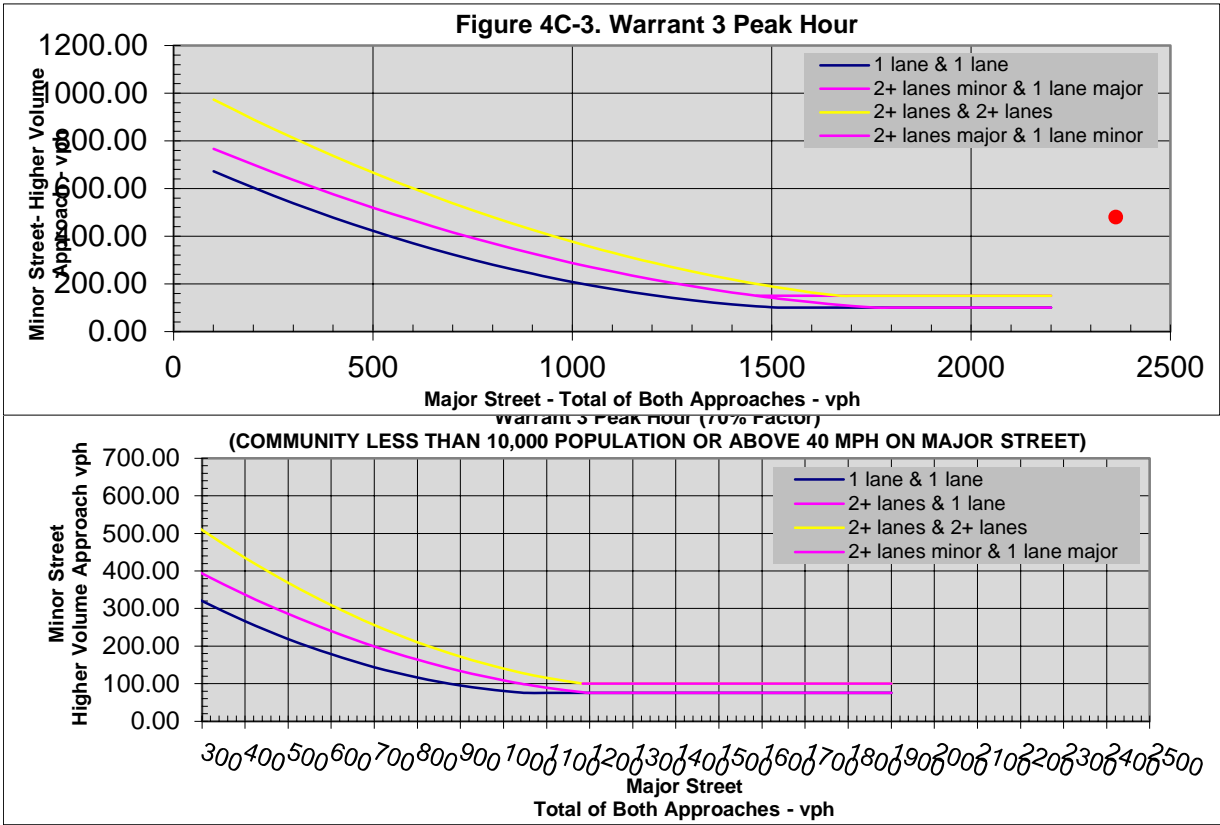
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2612	129	2741	2835
6:15 AM	2607	127	2734	2819
6:30 AM	2577	125	2702	2778
6:45 AM	2526	124	2650	2719
7:00 AM	2387	112	2499	2563
7:15 AM	2354	116	2470	2532
7:30 AM	2268	123	2391	2460
7:45 AM	2087	133	2220	2289
8:00 AM	1786	143	1929	1993
8:15 AM	1663	151	1814	1887
8:30 AM	1558	150	1708	1776
8:45 AM	1445	153	1598	1670
9:00 AM	1384	159	1543	1629
9:15 AM	1319	163	1482	1567
9:30 AM	1292	165	1457	1547
9:45 AM	1260	148	1408	1507
10:00 AM	1274	146	1420	1526
10:15 AM	1381	158	1539	1658
10:30 AM	1436	177	1613	1737
10:45 AM	1520	196	1716	1854
11:00 AM	1578	208	1786	1913
11:15 AM	1583	226	1809	1937
11:30 AM	1609	217	1826	1954
11:45 AM	1614	227	1841	1953
12:00 PM	1608	222	1830	1943
12:15 PM	1597	208	1805	1917
12:30 PM	1640	215	1855	1970
12:45 PM	1756	226	1982	2109
1:00 PM	1857	245	2102	2249
1:15 PM	1965	296	2261	2482
1:30 PM	2083	341	2424	2669
1:45 PM	2176	424	2600	2906
2:00 PM	2279	450	2729	3027
2:15 PM	2363	481	2844	3117
2:30 PM	2434	457	2891	3164
2:45 PM	2424	465	2889	3172
3:00 PM	2454	439	2893	3225
3:15 PM	2422	389	2811	3119
3:30 PM	2326	391	2717	3020
3:45 PM	2416	354	2770	3095
4:00 PM	2386	344	2730	3034
4:15 PM	2396	353	2749	3097
4:30 PM	2335	345	2680	3021
4:45 PM	2087	317	2404	2650
5:00 PM	1892	330	2222	2427
5:15 PM	1685	284	1969	2099
5:30 PM	1566	260	1826	1931
5:45 PM	1412	207	1619	1722
6:00 PM	1283	159	1442	1539
6:15 PM	1153	150	1303	1394
6:30 PM	1030	136	1166	1254
6:45 PM	931	118	1049	1122
7:00 PM	854	108	962	1028
7:15 PM	828	93	921	975
7:30 PM	820	89	909	963
7:45 PM	815	98	913	962
8:00 PM	789	87	876	928

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2363	481	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/18/2022
 Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

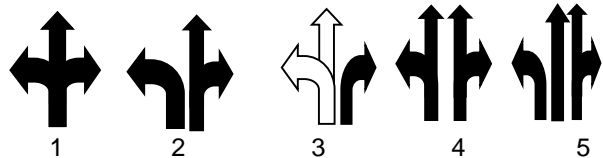
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Global Court

Minor Street Approach Configuration: 2 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:30 PM</td></tr> <tr><td style="text-align: center;">4:30 PM</td></tr> </table>	Peak Hour	3:30 PM	4:30 PM
Peak Hour						
3:30 PM						
4:30 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">6:00 AM</td></tr> <tr><td style="text-align: center;">7:00 AM</td></tr> </table>	Peak Hour	6:00 AM	7:00 AM
Peak Hour						
6:00 AM						
7:00 AM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	0	29	0			29	3	0	0			3	2	153	0			155	0	0	0			0	
12:15 AM	1	37	1			39	1	0	1			2	2	59	0			61	0	0	0			0	
12:30 AM	0	32	1			33	0	0	0			0	0	40	0			40	0	0	0			0	
12:45 AM	1	29	1			31	1	0	0			1	1	30	1			32	1	0	2			3	
Hourly Total	2	127	3	0	0	132	5	0	1	0	0	6	5	282	1	0	0	288	1	0	2	0	0	3	
1:00 AM	0	32	1			33	3	0	0			3	1	65	0			66	0	0	1			1	
1:15 AM	0	24	2			26	2	0	2			4	0	31	1			32	0	0	1			1	
1:30 AM	0	30	0			30	2	0	0			2	0	33	0			33	0	0	0			0	
1:45 AM	0	33	2			35	2	0	0			2	0	37	1			38	0	0	0			0	
Hourly Total	0	119	5	0	0	124	7	0	2	0	0	9	1	166	2	0	0	169	0	0	2	0	0	2	
2:00 AM	1	26	1			28	2	0	0			2	0	92	0			92	0	0	0			0	
2:15 AM	0	37	0			37	1	0	0			1	1	34	0			35	0	0	0			0	
2:30 AM	0	29	0			29	1	0	0			1	1	88	0			89	0	0	0			0	
2:45 AM	1	34	0			35	2	0	2			4	0	48	1			49	1	0	0			1	
Hourly Total	2	124	1	0	0	127	6	0	2	0	0	8	2	262	1	0	0	265	1	0	0	0	0	1	
3:00 AM	0	34	0			34	0	0	0			0	0	36	0			36	0	0	3			3	
3:15 AM	2	44	1			47	0	0	0			0	0	28	1			29	1	0	4			5	
3:30 AM	0	69	1			70	1	0	1			2	1	149	1			151	2	0	0			2	
3:45 AM	2	76	3			81	1	0	2			3	0	67	0			67	0	0	0			0	
Hourly Total	4	223	5	0	0	232	2	0	3	0	0	5	1	262	2	0	0	263	3	0	7	0	0	10	
4:00 AM	0	61	1			62	0	0	1			1	1	91	0			92	2	0	0			2	
4:15 AM	0	105	4			109	2	0	1			3	1	75	1			77	0	0	2			2	
4:30 AM	1	158	4			163	2	0	0			2	0	92	1			93	1	0	0			1	
4:45 AM	2	205	1			208	2	0	1			3	3	72	3			75	2	0	1			3	
Hourly Total	3	509	10	0	0	522	6	0	3	0	0	9	2	330	5	0	0	337	5	0	3	0	0	8	
5:00 AM	1	150	1			152	1	0	0			1	0	104	1			105	0	0	0			0	
5:15 AM	0	237	3			240	2	0	0			2	1	124	1			124	1	0	1			2	
5:30 AM	1	363	0			364	2	0	1			3	1	114	2			117	0	0	1			1	
5:45 AM	4	425	1			430	1	0	2			3	1	141	3			145	1	0	0			1	
Hourly Total	6	1165	5	0	0	1176	6	0	3	0	0	9	3	441	7	0	0	451	2	0	2	0	0	4	
6:00 AM	2	238	0			240	2	0	0			2	2	153	3			158	5	0	0			5	
6:15 AM	4	297	3			304	0	0	1			1	1	158	3			162	0	0	2			2	
6:30 AM	6	386	1			393	0	0	1			1	0	204	4			208	2	1	0			3	
6:45 AM	8	398	8			414	1	0	1			2	4	190	4			198	2	1	0			3	
Hourly Total	20	1269	12	0	0	1321	4	0	3	0	0	4	7	705	14	0	0	726	9	1	7	0	0	12	
7:00 AM	14	214	10			238	1	0	1			2	5	207	7			219	2	0	4			6	
7:15 AM	6	299	3			308	2	0	1			3	2	179	3			184	4	0	5			9	
7:30 AM	9	289	5			303	1	0	1			2	3	202	5			210	3	0	0			6	
7:45 AM	18	355	4			377	3	0	2			5	3	153	6			162	1	0	3			4	
Hourly Total	47	1157	22	0	0	1228	7	0	5	0	0	12	13	741	21	0	0	775	10	0	12	0	0	22	
8:00 AM	4	267	3			274	4	0	2			6	2	155	2			159	3	1	4			8	
8:15 AM	5	206	2			213	2	0	1			3	1	160	3			164	2	0	2			4	
8:30 AM	0	223	6			229	3	0	1			4	0	128	4			132	0	1	1			2	
8:45 AM	8	215	3			226	5	0	1			6	3	133	2			138	2	0	1			3	
Hourly Total	17	911	14	0	0	942	14	0	5	0	0	19	6	576	11	0	0	593	7	2	8	0	0	17	
9:00 AM	2	174	1			177	2	0	2			4	3	137	1			141	3	0	4			4	
9:15 AM	3	160	7			170	1	0	2			3	0	149	5			154	1	0	3			4	
9:30 AM	1	171	8			180	3	0	1			4	2	148	1			151	2	0	3			5	
9:45 AM	6	216	6			228	4	0	1			5	2	147	0			149	0	0	1			1	
Hourly Total	12	721	22	0	0	755	10	0	6	0	0	16	7	581	7	0	0	595	6	0	11	0	0	17	
10:00 AM	3	198	3			204	7	0	0			7	5	157	4			166	5	1	2			8	
10:15 AM	2	157	4			163	7	0	0			7	1	146	3			151	3	0	1			7	
10:30 AM	0	169	2			171	4	0	5			9	0	180	3			183	3	0	2			4	
10:45 AM	4	187	3			194	2	1	1			4	0	186	1			187	2	0	2			4	
Hourly Total	9	711	12	0	0	732	20	1	6	0	0	27	6	669	11	0	0	698	15	1	7	0	0	23	
11:00 AM	4	157	3			164	4	1	5			10	4	219	2			225	1	0	2			4	
11:15 AM	1	203	4			208	7	0	3			10	1	165	0			166	1	0	4			5	
11:30 AM	8	219	5			232	6	0	4			10	4	183	2			189	3	0	1			4	
11:45 AM	4	213	5			222	2	0	2			4	4	181	5			190	6	0	2			4	
Hourly Total	17	1209	17	0	0	1242	19	1	14	0	0	34	13	748	9	0	0	770	11	0	9	0	0	20	
12:00 PM	0	213	1			214	8	0	2			10	5	188	2			205	2	0	4			6	
12:15 PM	2	186	4			192	2	0	4			6	5	235	1			241	4	0	4			8	
12:30 PM	2	189	4			195	3	1	0			4	2	247	4			253	4	0	2			6	
12:45 PM	1	193	5			199	1	0	1			2	3	170	1			174	4	0	4			8	
Hourly Total	5	781	14	0	0	800	14	1	7	0	0	22	15	850	8	0	0	873	11	0	14	0	0	25	
1:00 PM	4	189	1			194	4	0	1			5	1	191	2			194	3	0	1			4	
1:15 PM	5	219	3			226	2	0	3			5	1	156	4			163	3	0	2			3	
1:30 PM	5	212	7			224	4	0	1			5	6	208	2			216	6	0	2			8	
1:45 PM	5	224	8			237	2	0	1			3	0	210	2			212	6	0	2			8	
Hourly Total	18	844	19	0	0	881	8	0	6	0	0	18	8	707	10	0	0	725	16	0	7	0	0	23	
2:00 PM	6	211	3			220	6	0	1			7	1	271	3			275	9	1	2			12	
2:15 PM	6	256	3			265	12	0	3			15	2	288	6			296	9	1	2			12	
2:30 PM	3	279	3			285	2	0	1			3	1	332	6			339	9	0	12			21	
2:45 PM	3	295	3			301	8	0	4			12	2	297	4			303	4	0	4			5	
Hourly Total	18	1041	12	0	0	1071	28	0	9	0	0	37	6	1188	19	0	0	1213	20	1	19	0	0	40	
3:00 PM	2	252	3			257	7	0	1			8	0	379	1			380	5	0	3			8	
3:15 PM	1	256	1			259	7	0	2			9	3	344	3			350	3	0	2			8	
3:30 PM	6	272	0			278	2	0	2			4	0	365	1			366	12	0	7			19	

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	80%		80%		56%		56%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	420	6			1									1				
12:15 AM	335	6																
12:30 AM	293	8																
12:45 AM	283	10																
1:00 AM	293	9																
1:15 AM	314	8																
1:30 AM	328	5																
1:45 AM	381	4												1				
2:00 AM	392	8																
2:15 AM	342	6																
2:30 AM	346	9																
2:45 AM	451	11			1									1				
3:00 AM	515	10								1							1	
3:15 AM	599	9																
3:30 AM	709	9	1						1									
3:45 AM	744	9			1							1		1				
4:00 AM	859	9								1							1	
4:15 AM	962	9					1											
4:30 AM	1100	8	1						1									
4:45 AM	1315	9			1							1		1				
5:00 AM	1627	9								1			1				1	
5:15 AM	1738	9					1											
5:30 AM	1880	9	1						1									
5:45 AM	2010	11			1							1		1				
6:00 AM	2047	17								1							1	
6:15 AM	2136	18					1											
6:30 AM	2162	25	1						1									
6:45 AM	2074	25			1							1		1				
7:00 AM	2001	22								1							1	
7:15 AM	1977	24					1											
7:30 AM	1862	19	1						1									
7:45 AM	1710	18			1							1		1				
8:00 AM	1535	19								1							1	
8:15 AM	1420	17					1											
8:30 AM	1367	17	1						1									
8:45 AM	1337	19			1							1		1				
9:00 AM	1350	17								1							1	
9:15 AM	1402	19					1											
9:30 AM	1391	23	1						1									
9:45 AM	1414	28			1							1		1				
10:00 AM	1418	27								1							1	
10:15 AM	1437	30					1											

10:30 AM	1498	33	1					1										
10:45 AM	1565	34		1							1		1					
11:00 AM	1596	34								1							1	
11:15 AM	1626	34				1												
11:30 AM	1685	30	1					1										
11:45 AM	1712	25		1							1		1					
12:00 PM	1673	25								1							1	
12:15 PM	1642	23				1												
12:30 PM	1598	18	1					1										
12:45 PM	1590	23		1							1		1		1			
1:00 PM	1666	23								1							1	
1:15 PM	1773	21				1												
1:30 PM	1945	30	1					1										
1:45 PM	2129	43		1							1		1		1			
2:00 PM	2284	40								1							1	
2:15 PM	2426	46				1												
2:30 PM	2474	39	1					1										
2:45 PM	2494	37		1								1		1				
3:00 PM	2470	41								1							1	
3:15 PM	2387	45				1												
3:30 PM	2336	50	1					1										
3:45 PM	2396	40		1								1		1				
4:00 PM	2362	36								1							1	
4:15 PM	2378	32				1												
4:30 PM	2260	29	1					1										
4:45 PM	2047	27		1								1		1				
5:00 PM	1926	24								1							1	
5:15 PM	1734	24				1												
5:30 PM	1628	22	1					1										
5:45 PM	1486	17		1								1		1				
6:00 PM	1345	21								1							1	
6:15 PM	1249	14				1												
6:30 PM	1167	16	1					1										
6:45 PM	1012	16		1								1		1				
7:00 PM	935	11								1							1	
7:15 PM	847	14																
7:30 PM	785	9	1					1										
7:45 PM	770	8		1								1		1				
8:00 PM	719	10								1							1	
8:15 PM	694	9																
8:30 PM	639	12	1					1										
8:45 PM	637	15		1										1				
9:00 PM	644	14								1							1	
9:15 PM	662	17																
9:30 PM	709	15	1					1										
9:45 PM	699	17		1										1				
HOURS MET			19	0	22	0	15	0	19	0	21	0	17	0	23	0	21	0
WARRANT SATISFIED?			NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Warrant Met: **No**

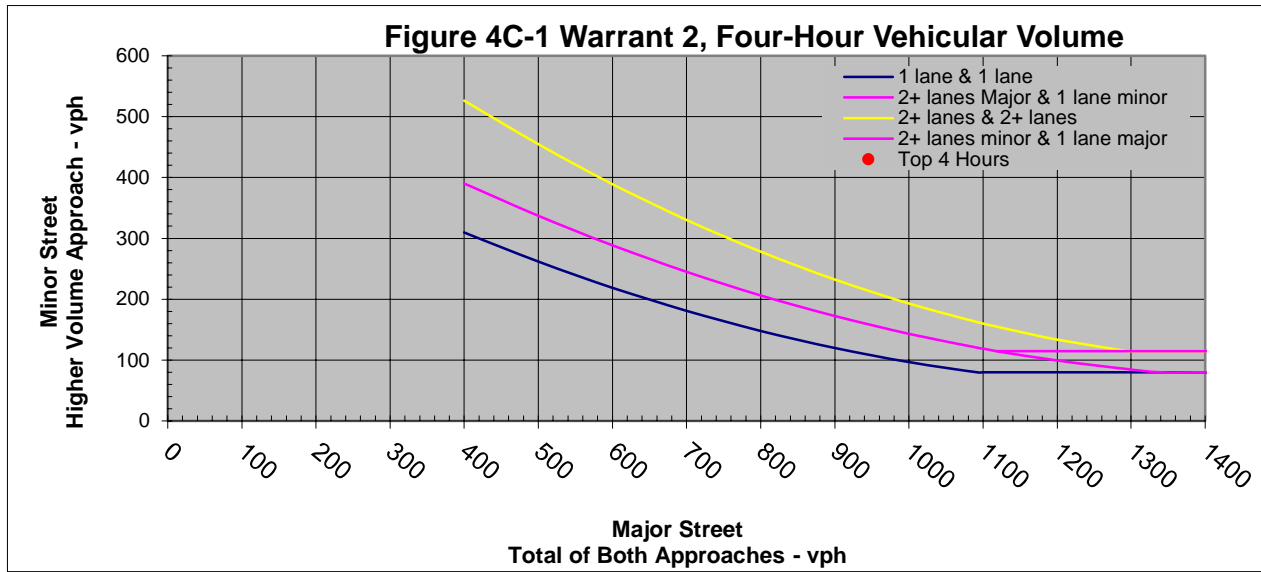
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

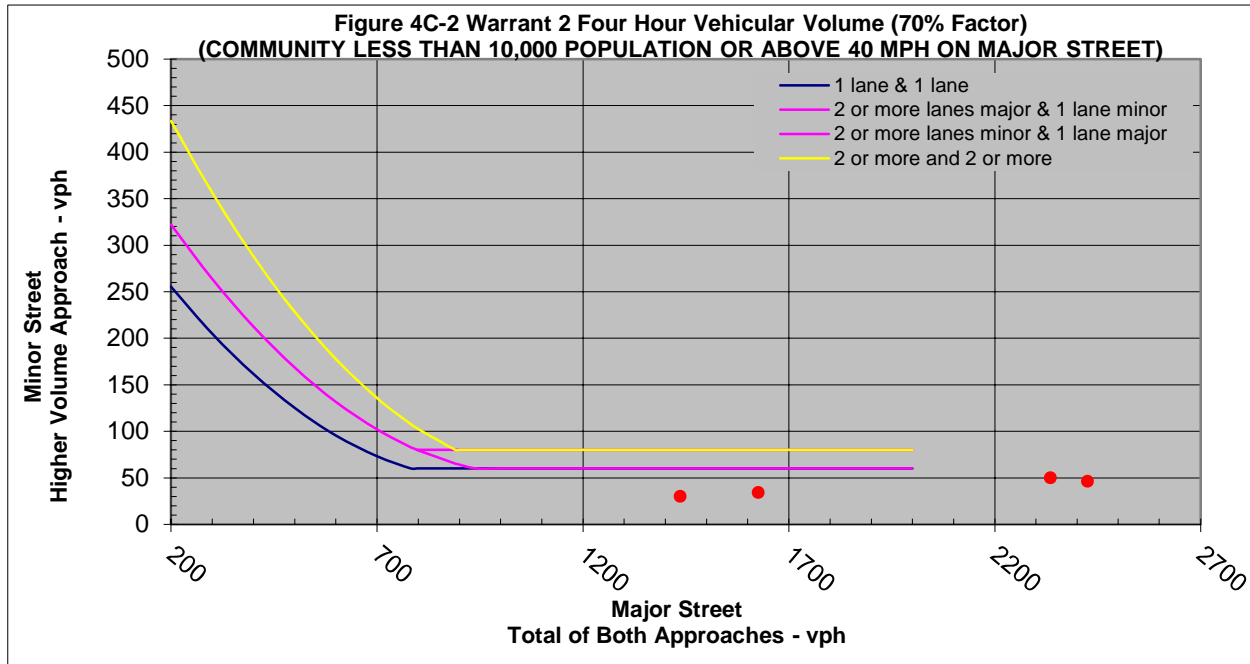
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Global Court					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	726	1321	4	17	2047	17		
6:15 AM	787	1349	6	18	2136	18		
6:30 AM	809	1353	8	25	2162	25		
6:45 AM	811	1263	9	25	2074	25		
7:00 AM	775	1226	12	22	2001	22		
7:15 AM	715	1262	16	24	1977	24		
7:30 AM	695	1167	16	19	1862	19		
7:45 AM	617	1093	18	18	1710	18		
8:00 AM	593	942	19	17	1535	19		
8:15 AM	575	845	17	16	1420	17		
8:30 AM	565	802	17	16	1367	17		
8:45 AM	584	753	17	19	1337	19		
9:00 AM	595	755	16	17	1350	17		
9:15 AM	620	782	19	18	1402	19		
9:30 AM	616	775	23	20	1391	23		
9:45 AM	648	766	28	20	1414	28		
10:00 AM	686	732	27	23	1418	27		
10:15 AM	745	692	30	18	1437	30		
10:30 AM	761	737	33	17	1498	33		
10:45 AM	767	798	34	16	1565	34		
11:00 AM	770	826	34	20	1596	34		
11:15 AM	750	876	34	23	1626	34		
11:30 AM	825	860	30	26	1685	30		
11:45 AM	889	823	24	25	1712	25		
12:00 PM	873	800	22	25	1673	25		
12:15 PM	862	780	17	23	1642	23		
12:30 PM	784	814	16	18	1598	18		
12:45 PM	747	843	17	23	1590	23		
1:00 PM	785	881	18	23	1666	23		
1:15 PM	866	907	20	21	1773	21		
1:30 PM	999	946	30	30	1945	30		
1:45 PM	1122	1007	28	43	2129	43		
2:00 PM	1213	1071	37	40	2284	40		
2:15 PM	1318	1108	38	46	2426	46		
2:30 PM	1372	1102	32	39	2474	39		
2:45 PM	1399	1095	33	37	2494	37		
3:00 PM	1407	1063	25	41	2470	41		
3:15 PM	1331	1056	23	45	2387	45		
3:30 PM	1252	1084	18	50	2336	50		
3:45 PM	1246	1150	18	40	2396	40		
4:00 PM	1197	1165	18	36	2362	36		
4:15 PM	1227	1151	20	32	2378	32		
4:30 PM	1176	1084	20	29	2260	29		
4:45 PM	1062	985	23	27	2047	27		
5:00 PM	988	938	22	24	1926	24		
5:15 PM	850	884	21	24	1734	24		
5:30 PM	782	846	22	20	1628	22		
5:45 PM	739	747	17	17	1486	17		
6:00 PM	714	631	14	21	1345	21		
6:15 PM	696	553	11	14	1249	14		
6:30 PM	696	471	11	16	1167	16		
6:45 PM	596	416	9	16	1012	16		
7:00 PM	527	408	10	11	935	11		
7:15 PM	456	391	8	14	847	14		
7:30 PM	390	395	4	9	785	9		
7:45 PM	381	389	6	8	770	8		
8:00 PM	369	350	10	9	719	10		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2336	50
2nd Highest Hour	2:15 PM	3:15 PM	2426	46
3rd Highest Hour	11:15 AM	12:15 PM	1626	34
4th Highest Hour	10:15 AM	11:15 AM	1437	30

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2336	50
2nd Highest Hour	2:15 PM	3:15 PM	2426	46
3rd Highest Hour	11:15 AM	12:15 PM	1626	34
4th Highest Hour	10:15 AM	11:15 AM	1437	30



Are the requirements for Warrant 2 met?: No

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	3:30 PM
Major Street: 2 or More Lanes	Peak Hour End Time	4:30 PM
Minor Street: 1 Lane		

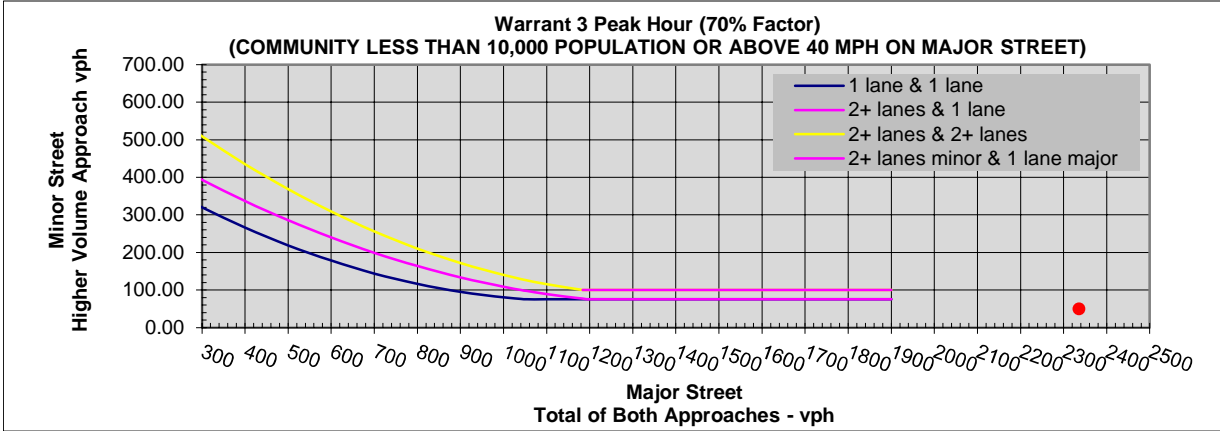
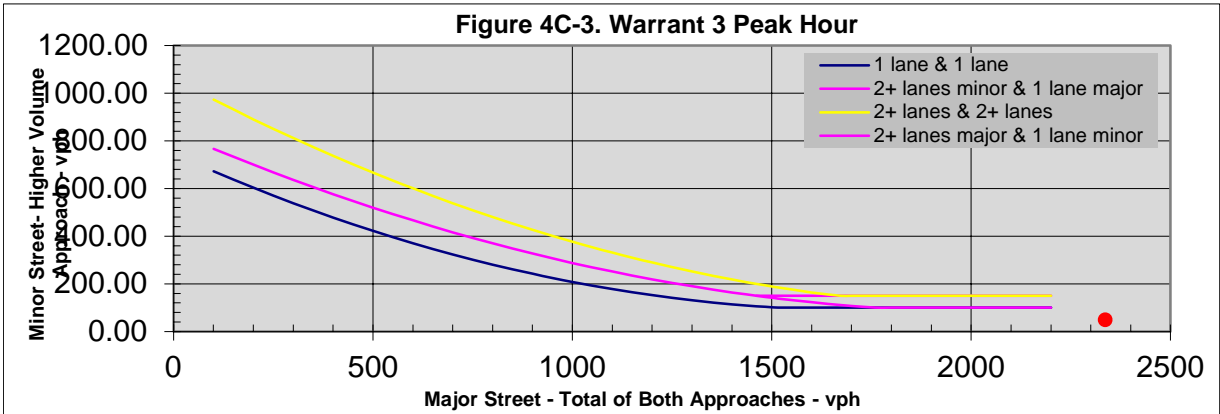
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2047	17	2064	2068
6:15 AM	2136	18	2154	2160
6:30 AM	2162	25	2187	2195
6:45 AM	2074	25	2099	2108
7:00 AM	2001	22	2023	2035
7:15 AM	1977	24	2001	2017
7:30 AM	1862	19	1881	1897
7:45 AM	1710	18	1728	1746
8:00 AM	1535	19	1554	1571
8:15 AM	1420	17	1437	1453
8:30 AM	1367	17	1384	1400
8:45 AM	1337	19	1356	1373
9:00 AM	1350	17	1367	1383
9:15 AM	1402	19	1421	1439
9:30 AM	1391	23	1414	1434
9:45 AM	1414	28	1442	1462
10:00 AM	1418	27	1445	1468
10:15 AM	1437	30	1467	1485
10:30 AM	1498	33	1531	1548
10:45 AM	1565	34	1599	1615
11:00 AM	1596	34	1630	1650
11:15 AM	1626	34	1660	1683
11:30 AM	1685	30	1715	1741
11:45 AM	1712	25	1737	1761
12:00 PM	1673	25	1698	1720
12:15 PM	1642	23	1665	1682
12:30 PM	1598	18	1616	1632
12:45 PM	1590	23	1613	1630
1:00 PM	1666	23	1689	1707
1:15 PM	1773	21	1794	1814
1:30 PM	1945	30	1975	2005
1:45 PM	2129	43	2172	2200
2:00 PM	2284	40	2324	2361
2:15 PM	2426	46	2472	2510
2:30 PM	2474	39	2513	2545
2:45 PM	2494	37	2531	2564
3:00 PM	2470	41	2511	2536
3:15 PM	2387	45	2432	2455
3:30 PM	2336	50	2386	2404
3:45 PM	2396	40	2436	2454
4:00 PM	2362	36	2398	2416
4:15 PM	2378	32	2410	2430
4:30 PM	2260	29	2289	2309
4:45 PM	2047	27	2074	2097
5:00 PM	1926	24	1950	1972
5:15 PM	1734	24	1758	1779
5:30 PM	1628	22	1650	1670
5:45 PM	1486	17	1503	1520
6:00 PM	1345	21	1366	1380
6:15 PM	1249	14	1263	1274
6:30 PM	1167	16	1183	1194
6:45 PM	1012	16	1028	1037
7:00 PM	935	11	946	956
7:15 PM	847	14	861	869
7:30 PM	785	9	794	798
7:45 PM	770	8	778	784
8:00 PM	719	10	729	738

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2336	50	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

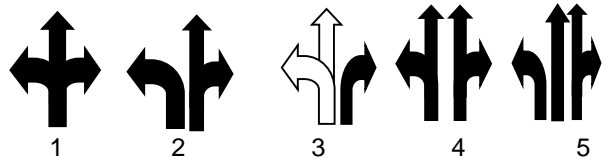
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Rohr Road

Minor Street Approach Configuration: 2 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes:

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	8	27	8			43	24	7	1			32	2	109	2			113	3	2	24			29	
12:15 AM	5	15	4			24	12	1	1			14	1	42	7			50	6	5	12			23	
12:30 AM	2	28	6			34	10	6	1			17	1	24	5			30	4	6	9			19	
12:45 AM	4	23	4			31	7	5	0			12	0	13	6			19	4	3	6			13	
Hourly Total	21	91	22	0	0	134	53	19	3	0	0	75	4	188	20	0	0	212	17	16	51	0	0	84	
1:00 AM	6	27	5			38	11	6	1			18	4	27	4			35	6	5	10			21	
1:15 AM	8	12	6			26	4	3	1			8	0	24	5			29	2	4	3			9	
1:30 AM	4	20	3			27	10	3	1			14	0	19	3			22	5	2	7			14	
1:45 AM	3	9	5			17	4	2	0			6	0	28	3			31	8	7	4			7	
Hourly Total	21	68	19	0	0	108	29	14	3	0	0	46	4	88	15	0	0	117	16	11	24	0	0	51	
2:00 AM	10	13	5			28	16	7	0			23	0	48	5			53	3	11	15			29	
2:15 AM	9	16	7			32	8	4	0			12	1	27	2			25	4	3	8			15	
2:30 AM	7	15	4			26	4	7	0			16	4	57	2			63	1	2	7			11	
2:45 AM	7	24	11			42	8	1	1			10	0	15	7			22	1	1	8			10	
Hourly Total	33	68	27	0	0	128	43	19	1	0	0	63	5	142	16	0	0	163	9	17	39	0	0	66	
3:00 AM	7	36	2			45	18	2	0			20	0	18	2			20	3	7	8			18	
3:15 AM	5	26	10			41	6	3	0			9	3	21	0			24	3	0	8			11	
3:30 AM	10	42	18			70	16	6	0			22	10	122	5			137	4	1	12			17	
3:45 AM	9	54	21			84	10	4	1			15	6	32	1			39	5	2	6			13	
Hourly Total	41	158	51	0	0	249	50	15	1	0	0	66	19	193	8	0	0	220	15	10	34	0	0	69	
4:00 AM	8	55	11			72	21	7	1			25	3	51	5			69	2	7	21			30	
4:15 AM	12	65	15			92	19	7	1			27	4	45	4			53	2	5	5			12	
4:30 AM	22	115	27			164	42	14	12			88	4	47	4			95	8	6	5			19	
4:45 AM	17	107	29			203	15	18	4			57	3	48	4			65	6	6	10			25	
Hourly Total	57	392	82	0	0	531	97	40	20	0	0	157	14	191	17	0	0	222	21	24	41	0	0	86	
5:00 AM	22	74	35			131	30	15	7			52	4	71	7			82	7	10	7			24	
5:15 AM	35	134	65			234	25	14	8			47	5	57	8			70	6	9	11			31	
5:30 AM	52	232	89			373	26	21	7			54	8	80	7			75	8	17	13			38	
5:45 AM	58	285	109			452	48	23	11			82	10	91	9			110	12	28	19			59	
Hourly Total	167	725	298	0	0	1190	129	73	33	0	0	235	27	279	31	0	0	337	33	64	50	0	0	147	
6:00 AM	45	115	46			264	34	23	1			58	8	109	10			127	14	11	18			43	
6:15 AM	51	185	55			291	24	35	4			63	6	102	8			116	16	15	13			44	
6:30 AM	55	197	79			331	26	32	10			68	13	147	8			168	20	21	23			64	
6:45 AM	77	224	99			400	43	32	5			80	10	155	20			185	8	22	17			47	
Hourly Total	228	779	279	0	0	1298	127	122	20	0	0	269	37	513	46	0	0	598	59	69	71	0	0	198	
7:00 AM	36	141	61			238	52	29	3			84	9	118	7			134	12	11	28			51	
7:15 AM	31	169	47			247	25	26	9			62	7	139	8			154	17	17	28			62	
7:30 AM	53	173	52			278	35	25	4			67	5	154	8			187	12	10	24			46	
7:45 AM	66	224	91			381	39	27	4			70	5	117	10			132	17	11	16			44	
Hourly Total	186	707	251	0	0	1144	151	105	20	0	0	276	26	528	33	0	0	587	58	49	96	0	0	203	
8:00 AM	25	173	64			262	18	27	7			52	4	112	10			126	10	12	21			43	
8:15 AM	44	149	61			244	19	11	6			36	5	80	10			95	12	13	25			40	
8:30 AM	22	140	42			204	38	10	2			51	4	98	4			106	4	6	20			30	
8:45 AM	28	157	45			230	23	14	4			41	10	77	10			97	10	6	21			37	
Hourly Total	119	619	202	0	0	846	99	62	19	0	0	180	23	367	34	0	0	424	36	37	87	0	0	160	
9:00 AM	26	116	35			177	30	13	2			45	5	98	10			113	13	5	26			44	
9:15 AM	27	93	22			142	32	14	7			53	7	94	10			111	14	12	23			49	
9:30 AM	23	113	29			165	38	19	5			62	5	75	9			89	12	5	24			41	
9:45 AM	20	123	28			178	28	24	8			58	7	67	10			87	7	15	26			40	
Hourly Total	96	445	121	0	0	662	126	70	22	0	0	218	24	334	39	0	0	397	46	37	99	0	0	182	
10:00 AM	23	84	30			147	24	16	2			42	1	84	12			97	15	12	24			51	
10:15 AM	21	88	36			145	35	17	6			46	2	86	10			103	16	6	23			49	
10:30 AM	23	82	33			138	34	13	3			50	3	94	13			110	13	7	23			43	
10:45 AM	26	99	31			156	35	12	3			50	6	96	17			119	16	12	24			52	
Hourly Total	93	363	130	0	0	586	128	58	14	0	0	200	12	380	52	0	0	424	53	37	94	0	0	184	
11:00 AM	20	111	37			168	43	26	7			76	8	125	16			149	11	17	26			57	
11:15 AM	31	104	30			165	37	16	8			61	8	102	14			124	12	12	22			46	
11:30 AM	36	104	44			184	44	30	2			76	7	105	15			127	15	16	36			67	
11:45 AM	28	118	42			188	42	24	2			69	5	112	19			136	13	16	23			58	
Hourly Total	115	637	163	0	0	705	166	96	20	0	0	282	28	444	64	0	0	538	51	51	107	0	0	219	
12:00 PM	38	100	34			172	46	28	10			84	7	136	34			177	26	16	36			72	
12:15 PM	25	103	37			165	42	24	3			69	10	125	19			154	32	23	28			83	
12:30 PM	40	106	35			181	43	25	5			73	8	119	13			138	19	14	30			73	
12:45 PM	35	106	30			171	41	12	7			60	5	104	9			118	11	15	30			56	

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
											Cond. A		Cond. B		Cond. A		Cond. B	
			Major	Minor	100%		70%		100%		70%		80%		80%		56%	
		Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	
1 / 1		500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42	
2+ / 1	X	600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42	
2+ / 2+		600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56	
1 / 2+		500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56	
12:00 AM	346	84												1	1			
12:15 AM	263	76																
12:30 AM	242	62																
12:45 AM	227	57																
1:00 AM	225	51																
1:15 AM	233	59																
1:30 AM	235	65																
1:45 AM	275	62																
2:00 AM	291	65																
2:15 AM	275	60																
2:30 AM	283	57																
2:45 AM	401	61												1				
3:00 AM	460	66			1													
3:15 AM	526	71								1						1	1	
3:30 AM	606	89	1															
3:45 AM	618	135												1	1			
4:00 AM	753	157			1	1			1	1			1	1				
4:15 AM	835	184								1	1					1	1	
4:30 AM	994	204	1	1				1	1									
4:45 AM	1223	190												1	1			
5:00 AM	1527	235			1	1			1	1			1	1				
5:15 AM	1705	241									1	1				1	1	
5:30 AM	1808	257	1	1				1	1									
5:45 AM	1859	271												1	1			
6:00 AM	1882	269			1	1			1	1			1	1				
6:15 AM	1863	295								1	1					1	1	
6:30 AM	1857	292	1	1				1	1									
6:45 AM	1803	286												1	1			
7:00 AM	1731	276			1	1			1	1			1	1				
7:15 AM	1747	244								1	1					1	1	
7:30 AM	1685	220	1	1				1	1									
7:45 AM	1550	209												1	1			
8:00 AM	1364	180			1	1			1	1			1	1				
8:15 AM	1266	173									1	1				1	1	
8:30 AM	1180	190	1	1				1	1									
8:45 AM	1124	201												1	1			
9:00 AM	1059	218			1	1			1	1			1	1				
9:15 AM	1013	215								1	1					1	1	
9:30 AM	1003	220	1	1				1	1									
9:45 AM	997	208												1	1			
10:00 AM	1010	200			1	1			1	1			1	1				
10:15 AM	1083	234								1	1					1	1	

10:30 AM	1129	237	1	1			1	1										
10:45 AM	1192	263												1	1			
11:00 AM	1241	282			1	1			1	1			1	1				
11:15 AM	1273	290									1	1					1	1
11:30 AM	1303	298	1	1			1	1										
11:45 AM	1311	295												1	1			
12:00 PM	1276	286			1	1			1	1			1	1				
12:15 PM	1241	271									1	1					1	1
12:30 PM	1254	261	1	1			1	1										
12:45 PM	1278	267												1	1			
1:00 PM	1378	272			1	1			1	1			1	1				
1:15 PM	1419	325									1	1					1	1
1:30 PM	1458	375	1	1			1	1										
1:45 PM	1595	428												1	1			
2:00 PM	1679	451			1	1			1	1			1	1				
2:15 PM	1777	463									1	1					1	1
2:30 PM	1874	438	1	1			1	1										
2:45 PM	1930	436												1	1			
3:00 PM	1961	425			1	1			1	1			1	1				
3:15 PM	1947	418									1	1					1	1
3:30 PM	1898	433	1	1			1	1										
3:45 PM	1914	418												1	1			
4:00 PM	1896	426			1	1			1	1			1	1				
4:15 PM	1933	388									1	1					1	1
4:30 PM	1879	340	1	1			1	1										
4:45 PM	1677	327												1	1			
5:00 PM	1528	294			1	1			1	1			1	1				
5:15 PM	1326	290									1	1					1	1
5:30 PM	1227	287	1	1			1	1										
5:45 PM	1128	229												1	1			
6:00 PM	1018	214			1	1			1	1			1	1				
6:15 PM	919	188									1	1					1	1
6:30 PM	824	171	1	1														
6:45 PM	732	157												1	1			
7:00 PM	656	144			1	1			1	1								
7:15 PM	640	127									1	1					1	1
7:30 PM	649	118	1															
7:45 PM	624	119												1	1			
8:00 PM	616	121			1	1												
8:15 PM	595	115									1						1	1
8:30 PM	548	122																
8:45 PM	590	113												1	1			
9:00 PM	585	102			1													
9:15 PM	569	132									1	1					1	1
9:30 PM	555	141																
9:45 PM	509	154												1	1			
HOURS MET			17	15	21	18	14	14	16	16	20	18	15	15	22	21	20	20
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

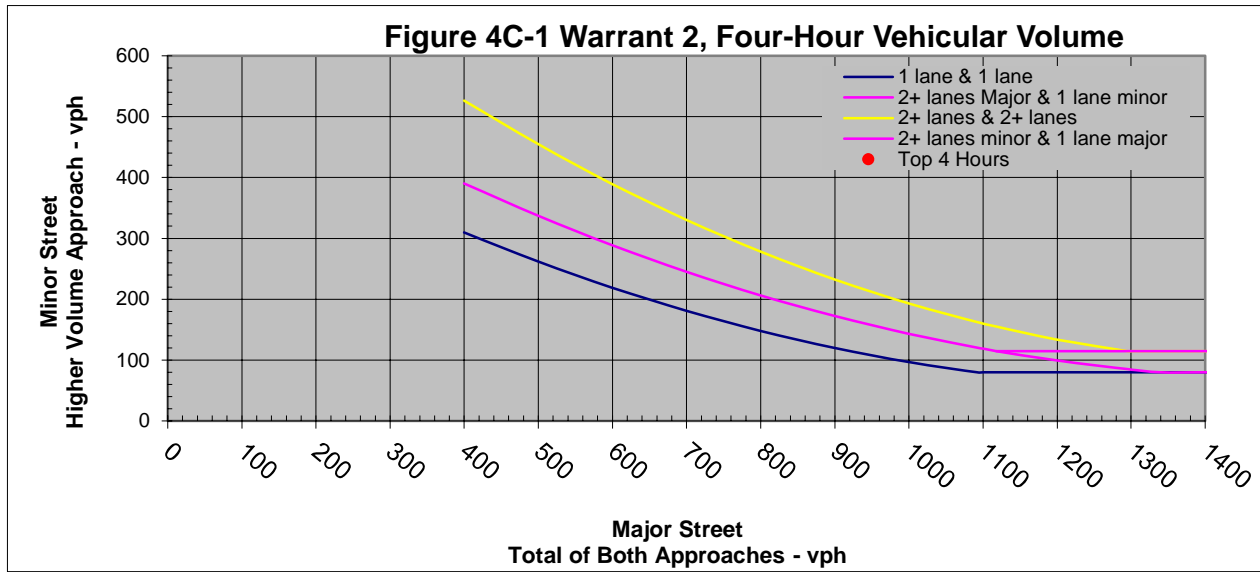
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	14
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	16
Minor Street: 1 Lane		

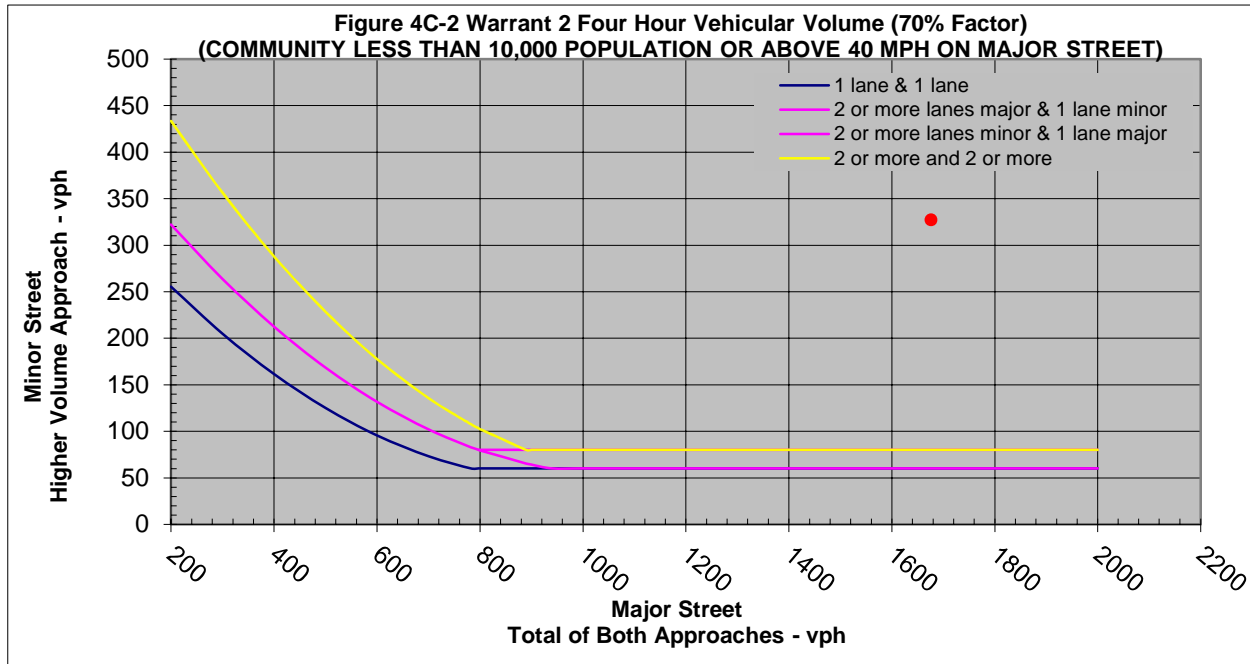
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
--	------------

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rohr Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	596	1286	269	198	1882	269		
6:15 AM	603	1260	295	206	1863	295		
6:30 AM	641	1216	292	224	1857	292	Met	
6:45 AM	640	1163	286	206	1803	286		Met
7:00 AM	587	1144	276	203	1731	276		
7:15 AM	579	1168	244	195	1747	244		
7:30 AM	520	1165	220	183	1685	220	Met	
7:45 AM	459	1091	209	167	1550	209		Met
8:00 AM	424	940	180	160	1364	180		
8:15 AM	411	855	173	161	1266	173		
8:30 AM	427	753	190	160	1180	190	Met	
8:45 AM	410	714	201	171	1124	201		Met
9:00 AM	397	662	218	182	1059	218		
9:15 AM	381	632	215	189	1013	215		
9:30 AM	368	635	220	178	1003	220	Met	
9:45 AM	389	608	208	180	997	208		Met
10:00 AM	424	586	200	184	1010	200		
10:15 AM	476	607	234	187	1083	234		
10:30 AM	502	627	237	195	1129	237	Met	
10:45 AM	519	673	263	219	1192	263		Met
11:00 AM	536	705	282	219	1241	282		
11:15 AM	564	709	290	243	1273	290		
11:30 AM	594	709	298	280	1303	298	Met	
11:45 AM	605	706	295	276	1311	295		Met
12:00 PM	587	689	286	280	1276	286		
12:15 PM	543	698	271	259	1241	271		
12:30 PM	515	739	261	230	1254	261	Met	
12:45 PM	522	756	267	216	1278	267		Met
1:00 PM	541	837	272	215	1378	272		
1:15 PM	548	871	325	213	1419	325		
1:30 PM	605	853	375	217	1458	375	Met	
1:45 PM	683	912	428	257	1595	428		Met
2:00 PM	732	947	451	269	1679	451		
2:15 PM	843	934	463	306	1777	463		
2:30 PM	873	1001	438	322	1874	438	Met	
2:45 PM	905	1025	436	364	1930	436		Met
3:00 PM	924	1037	425	367	1961	425		
3:15 PM	867	1080	418	352	1947	418		
3:30 PM	832	1066	433	333	1898	433	Met	
3:45 PM	848	1066	418	304	1914	418		Met
4:00 PM	857	1039	426	299	1896	426		
4:15 PM	905	1028	388	297	1933	388		
4:30 PM	895	984	340	293	1879	340	Met	
4:45 PM	785	892	327	264	1677	327		Met
5:00 PM	699	829	294	237	1528	294		
5:15 PM	585	741	290	212	1326	290		
5:30 PM	522	705	287	194	1227	287	Met	
5:45 PM	473	655	229	158	1128	229		Met
6:00 PM	438	580	214	152	1018	214		
6:15 PM	386	533	188	139	919	188		
6:30 PM	352	472	171	138	824	171		
6:45 PM	309	423	157	129	732	157		Met
7:00 PM	285	371	144	127	656	144		
7:15 PM	288	352	107	127	640	127		
7:30 PM	293	356	100	118	649	118		
7:45 PM	279	345	100	119	624	119		
8:00 PM	261	355	98	121	616	121		



Top Hours for Figure 4C-1				
	Start Time	End Time	Major Street	Minor Street
Top Hour	2:30 PM	3:30 PM	1874	438
2nd Highest Hour	3:30 PM	4:30 PM	1898	433
3rd Highest Hour	1:30 PM	2:30 PM	1458	375
4th Highest Hour	4:30 PM	5:30 PM	1879	340

Top Hours for Figure 4C-2				
	Start Time	End Time	Major Street	Minor Street
Top Hour	2:45 PM	3:45 PM	1930	436
2nd Highest Hour	1:45 PM	2:45 PM	1595	428
3rd Highest Hour	3:45 PM	4:45 PM	1914	418
4th Highest Hour	4:45 PM	5:45 PM	1677	327



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	2:15 PM
Major Street: 2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street: 1 Lane		

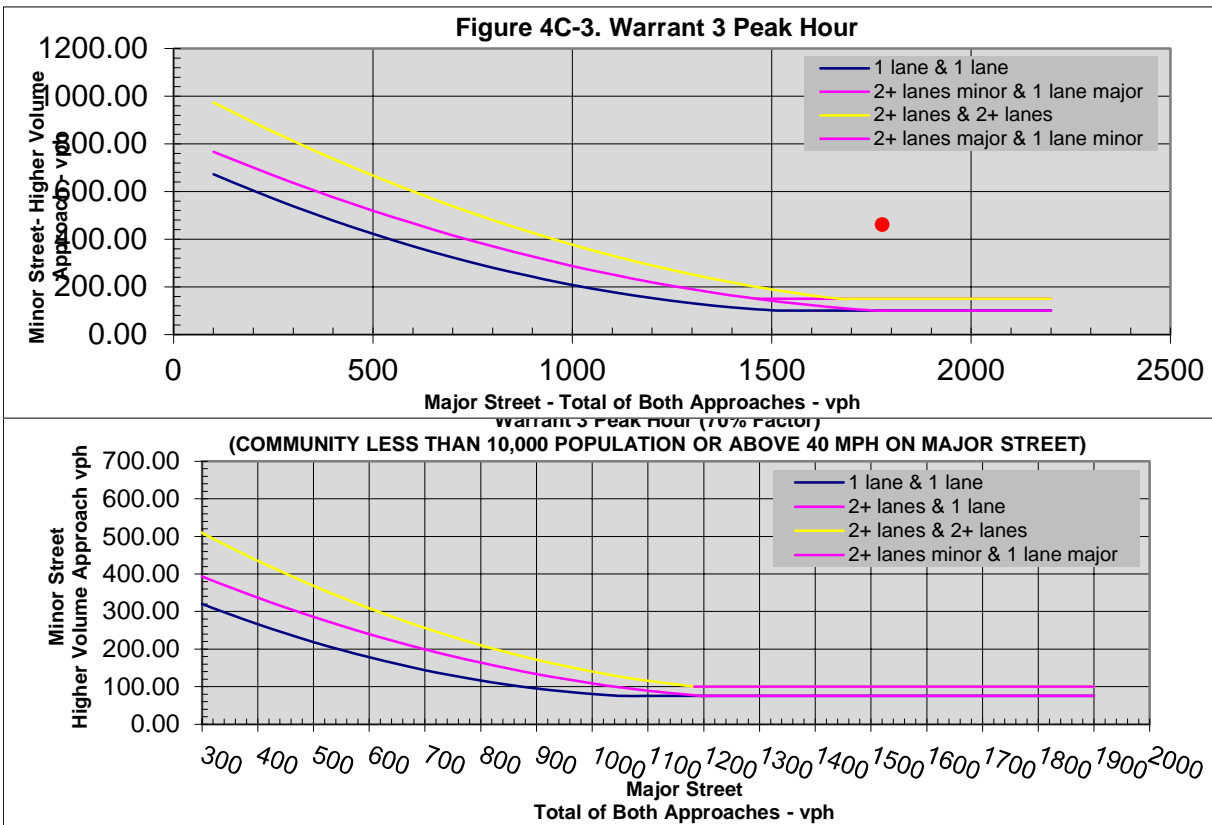
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1882	269	2151	2349
6:15 AM	1863	295	2158	2364
6:30 AM	1857	292	2149	2373
6:45 AM	1803	286	2089	2295
7:00 AM	1731	276	2007	2210
7:15 AM	1747	244	1991	2186
7:30 AM	1685	220	1905	2088
7:45 AM	1550	209	1759	1926
8:00 AM	1364	180	1544	1704
8:15 AM	1266	173	1439	1600
8:30 AM	1180	190	1370	1530
8:45 AM	1124	201	1325	1496
9:00 AM	1059	218	1277	1459
9:15 AM	1013	215	1228	1417
9:30 AM	1003	220	1223	1401
9:45 AM	997	208	1205	1385
10:00 AM	1010	200	1210	1394
10:15 AM	1083	234	1317	1504
10:30 AM	1129	237	1366	1561
10:45 AM	1192	263	1455	1674
11:00 AM	1241	282	1523	1742
11:15 AM	1273	290	1563	1806
11:30 AM	1303	298	1601	1881
11:45 AM	1311	295	1606	1882
12:00 PM	1276	286	1562	1842
12:15 PM	1241	271	1512	1771
12:30 PM	1254	261	1515	1745
12:45 PM	1278	267	1545	1761
1:00 PM	1378	272	1650	1865
1:15 PM	1419	325	1744	1957
1:30 PM	1458	375	1833	2050
1:45 PM	1595	428	2023	2280
2:00 PM	1679	451	2130	2399
2:15 PM	1777	463	2240	2546
2:30 PM	1874	438	2312	2634
2:45 PM	1930	436	2366	2730
3:00 PM	1961	425	2386	2753
3:15 PM	1947	418	2365	2717
3:30 PM	1898	433	2331	2664
3:45 PM	1914	418	2332	2636
4:00 PM	1896	426	2322	2621
4:15 PM	1933	388	2321	2618
4:30 PM	1879	340	2219	2512
4:45 PM	1677	327	2004	2268
5:00 PM	1528	294	1822	2059
5:15 PM	1326	290	1616	1828
5:30 PM	1227	287	1514	1708
5:45 PM	1128	229	1357	1515
6:00 PM	1018	214	1232	1384
6:15 PM	919	188	1107	1246
6:30 PM	824	171	995	1133
6:45 PM	732	157	889	1018
7:00 PM	656	144	800	927
7:15 PM	640	127	767	874
7:30 PM	649	118	767	867
7:45 PM	624	119	743	843
8:00 PM	616	121	737	835

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1777	463	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

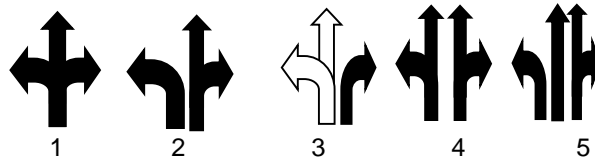
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Spiegel Drive

Minor Street Approach Configuration: 2 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
Peak Hour			
3:15 PM			
4:15 PM			
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Peak Hour			
6:30 AM			
7:30 AM			
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	2	33	1	0	0	36	8	0	1	0	0	9	0	74	1	0	0	75	18	8	56	0	0	82	
12:15 AM	4	22	2	0	0	28	3	0	0	0	0	3	0	46	2	0	0	48	0	0	7	0	0	8	
12:30 AM	2	30	4	0	0	36	5	0	0	0	0	5	0	26	2	0	0	27	0	0	7	0	0	7	
12:45 AM	5	26	4	0	0	35	2	0	0	0	0	2	0	20	1	0	0	21	1	0	0	0	0	1	
Hourly Total	13	111	11	0	0	135	19	0	1	0	0	20	0	185	6	0	0	171	20	8	70	0	0	98	
1:00 AM	2	30	10	0	0	42	21	2	0	0	0	21	0	23	0	0	0	23	21	0	2	0	0	3	
1:15 AM	2	16	2	0	0	20	2	0	0	0	0	2	0	25	0	0	0	25	1	0	7	0	0	8	
1:30 AM	1	31	1	0	0	33	1	1	0	0	0	2	0	23	2	0	0	25	0	0	0	0	0	0	
1:45 AM	1	14	1	0	0	16	1	0	0	0	0	1	0	35	0	0	0	36	0	0	2	0	0	2	
Hourly Total	6	91	14	0	0	111	25	1	0	0	0	26	0	81	106	2	0	88	2	0	11	0	0	13	
2:00 AM	4	11	4	0	0	19	5	0	0	0	0	5	0	54	1	0	0	55	1	0	4	0	0	5	
2:15 AM	1	23	1	0	0	25	2	0	0	0	0	2	0	20	1	0	0	21	4	0	12	0	0	16	
2:30 AM	4	16	0	0	0	20	0	0	0	0	0	0	0	15	0	0	0	15	5	6	82	0	0	73	
2:45 AM	0	30	1	0	0	31	3	0	0	0	0	3	0	15	1	0	0	16	1	1	4	0	0	6	
Hourly Total	9	80	6	0	0	95	10	0	0	0	0	10	0	104	3	0	0	107	11	7	82	0	0	100	
3:00 AM	4	37	2	0	0	43	6	1	0	0	0	7	0	21	2	0	0	23	2	0	1	0	0	3	
3:15 AM	4	26	1	0	0	41	3	0	0	0	0	3	0	16	1	0	0	17	1	0	12	0	0	13	
3:30 AM	6	43	2	0	0	51	2	0	0	0	0	2	0	115	4	0	0	119	6	2	56	0	0	64	
3:45 AM	10	59	2	0	0	71	0	0	0	0	0	0	0	38	0	0	0	38	5	0	8	0	0	13	
Hourly Total	24	175	7	0	0	206	15	1	0	0	0	12	2	190	7	0	0	199	14	2	77	0	0	93	
4:00 AM	9	59	5	0	0	73	0	0	0	0	0	0	0	65	4	0	0	69	0	0	4	0	0	4	
4:15 AM	23	48	9	0	0	80	0	0	0	0	0	0	1	58	4	0	0	63	0	0	5	0	0	5	
4:30 AM	52	86	23	0	0	161	0	0	0	0	0	0	0	62	12	0	0	74	0	1	7	0	0	8	
4:45 AM	85	79	57	0	0	221	0	3	0	0	0	3	2	48	15	0	0	63	0	1	11	0	0	12	
Hourly Total	169	272	94	0	0	535	0	3	0	0	0	3	3	231	35	0	0	269	0	2	27	0	0	29	
5:00 AM	16	69	17	0	0	102	18	2	1	0	0	20	5	70	4	0	0	79	1	10	0	0	0	12	
5:15 AM	23	129	36	0	0	162	6	2	1	0	0	9	5	65	10	0	0	80	1	0	13	0	0	14	
5:30 AM	48	167	38	0	0	244	11	1	2	0	0	20	7	167	16	0	0	93	1	2	6	0	0	13	
5:45 AM	97	210	84	0	0	391	12	7	0	0	0	19	5	107	33	0	0	145	11	4	12	0	0	27	
Hourly Total	185	574	195	0	0	954	53	12	3	0	0	68	22	312	63	0	0	397	14	7	41	0	0	62	
6:00 AM	35	136	81	0	0	252	20	3	1	0	0	24	11	118	16	0	0	145	7	2	14	0	0	23	
6:15 AM	54	165	38	0	0	257	7	5	0	0	0	12	9	117	22	0	0	148	5	4	16	0	0	25	
6:30 AM	69	168	22	0	0	259	1	7	0	0	0	15	6	199	19	0	0	224	2	0	14	0	0	16	
6:45 AM	73	211	39	0	0	323	1	7	1	0	0	9	5	222	15	0	0	242	2	1	13	0	0	16	
Hourly Total	218	679	180	0	0	1077	36	22	2	0	0	60	31	679	72	0	0	756	15	7	57	0	0	62	
7:00 AM	37	142	14	0	0	193	6	1	0	0	0	7	6	178	9	0	0	193	5	0	12	0	0	17	
7:15 AM	39	185	22	0	0	246	8	2	1	0	0	11	6	179	6	0	0	191	1	0	7	0	0	8	
7:30 AM	33	163	37	0	0	233	9	5	1	0	0	15	5	181	4	0	0	190	6	0	7	0	0	13	
7:45 AM	53	205	46	0	0	304	6	5	1	0	0	12	5	159	5	0	0	169	1	4	7	0	0	12	
Hourly Total	162	695	119	0	0	976	29	13	3	0	0	45	22	697	24	0	0	743	13	4	33	0	0	50	
8:00 AM	42	157	47	0	0	246	7	2	0	0	0	9	5	155	9	0	0	169	0	1	6	0	0	7	
8:15 AM	44	138	47	0	0	219	9	3	0	0	0	12	10	94	6	0	0	110	7	2	8	0	0	17	
8:30 AM	30	130	21	0	0	181	3	1	0	0	0	4	2	121	4	0	0	127	8	1	18	0	0	27	
8:45 AM	32	143	32	0	0	207	5	3	1	0	0	9	4	104	5	0	0	113	5	0	8	0	0	13	
Hourly Total	148	598	137	0	0	853	24	9	1	0	0	34	21	474	24	0	0	519	20	4	40	0	0	64	
9:00 AM	30	123	11	0	0	164	9	0	5	0	0	14	6	117	9	0	0	132	7	1	16	0	0	24	
9:15 AM	20	121	11	0	0	152	6	0	2	0	0	8	5	105	2	0	0	112	8	5	19	0	0	32	
9:30 AM	32	121	7	0	0	160	9	3	1	0	0	13	6	89	6	0	0	101	2	1	12	0	0	15	
9:45 AM	31	136	15	0	0	182	2	0	0	0	0	2	0	95	4	0	0	99	2	0	11	0	0	12	
Hourly Total	113	501	44	0	0	658	26	3	8	0	0	37	17	406	21	0	0	444	18	7	58	0	0	83	
10:00 AM	11	120	12	0	0	143	2	0	0	0	0	2	4	107	7	0	0	118	8	4	11	0	0	23	
10:15 AM	14	103	10	0	0	117	0	0	2	0	0	2	2	97	4	0	0	103	0	1	18	0	0	21	
10:30 AM	16	104	12	0	0	142	2	0	0	0	0	11	2	106	2	0	0	117	1	2	23	0	0	26	
10:45 AM	14	122	10	0	0	146	6	2	2	0	0	10	4	131	2	0	0	137	4	0	17	0	0	21	
Hourly Total	55	439	44	0	0	538	10	2	4	0	0	16	19	441	15	0	0	475	13	7	69	0	0	89	
11:00 AM	27	121	12	0	0	160	15	1	0	0	0	16	11	142	6	0	0	158	13	1	28	0	0	49	
11:15 AM	19	133	11	0	0	163	12	5	2	0	0	19	4	112	6	0	0	122	6	1	18	0	0	25	
11:30 AM	25	106	17	0	0	148	6	2	1	0	0	9	6	132	7	0	0	145	6	1	25	0	0	32	
11:45 AM	22	127	15	0	0	164	11	0	6	0	0	17	5	144	12	0	0	161	7	2	19	0	0	28	
Hourly Total	138	608	65	0	0	833	44	8	9	0	0	61	26	690	31	0	0	880	32	5	90	0	0	127	
12:00 PM	21	136	17	0	0	174	28	5	2	0	0	35	5	155	10	0	0	170	17	1	34	0	0	52	
1																									

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	80%		80%		56%		56%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	306	98																
12:15 AM	260	32																
12:30 AM	229	31																
12:45 AM	224	27																
1:00 AM	219	26																
1:15 AM	228	15																
1:30 AM	229	23																
1:45 AM	206	96																
2:00 AM	202	100																
2:15 AM	194	98																
2:30 AM	208	95																
2:45 AM	343	86													1	1		
3:00 AM	405	93																
3:15 AM	481	94			1						1							
3:30 AM	564	86															1	1
3:45 AM	629	30	1												1			
4:00 AM	804	29							1				1					
4:15 AM	843	37			1						1							
4:30 AM	967	46					1										1	1
4:45 AM	1099	52	1												1			
5:00 AM	1351	68							1	1			1	1				
5:15 AM	1553	73			1							1						
5:30 AM	1691	84					1	1									1	1
5:45 AM	1807	91	1												1	1		
6:00 AM	1836	80							1	1				1	1			
6:15 AM	1839	74			1						1							
6:30 AM	1871	57					1										1	1
6:45 AM	1811	54	1												1			
7:00 AM	1719	50							1				1					
7:15 AM	1748	47			1						1							
7:30 AM	1640	49					1										1	1
7:45 AM	1525	63	1												1			
8:00 AM	1372	64							1	1			1	1				
8:15 AM	1253	81			1						1							
8:30 AM	1188	96					1	1									1	1
8:45 AM	1141	84	1												1	1		
9:00 AM	1102	83							1	1			1	1				
9:15 AM	1067	82			1						1							
9:30 AM	1023	69					1										1	1
9:45 AM	1011	80	1												1			
10:00 AM	1013	89							1	1			1	1				
10:15 AM	1070	108			1	1					1							

10:30 AM	1135	114					1	1									1	1
10:45 AM	1179	120	1											1	1			
11:00 AM	1221	127							1	1			1	1				
11:15 AM	1247	137			1	1					1	1						
11:30 AM	1302	135					1	1									1	1
11:45 AM	1316	128	1											1	1			
12:00 PM	1286	119							1	1			1	1				
12:15 PM	1234	96			1						1							
12:30 PM	1232	100					1	1									1	1
12:45 PM	1248	112	1											1	1			
1:00 PM	1302	123							1	1			1	1				
1:15 PM	1347	137			1	1					1	1						
1:30 PM	1380	156					1	1									1	1
1:45 PM	1484	195	1	1										1	1			
2:00 PM	1603	224							1	1			1	1				
2:15 PM	1662	327			1	1					1	1						
2:30 PM	1746	300					1	1									1	1
2:45 PM	1775	435	1	1										1	1			
3:00 PM	1764	460							1	1			1	1				
3:15 PM	1768	476			1	1					1	1						
3:30 PM	1709	435					1	1									1	1
3:45 PM	1773	295	1	1										1	1			
4:00 PM	1805	284							1	1			1	1				
4:15 PM	1795	271			1	1					1	1						
4:30 PM	1714	232					1	1									1	1
4:45 PM	1513	170	1	1										1	1			
5:00 PM	1329	151							1	1			1	1				
5:15 PM	1197	118			1	1					1							
5:30 PM	1129	89					1	1									1	1
5:45 PM	1032	83	1											1				
6:00 PM	926	88							1	1			1	1				
6:15 PM	846	73			1						1							
6:30 PM	766	62															1	1
6:45 PM	686	60	1											1				
7:00 PM	619	50																
7:15 PM	622	56			1						1							
7:30 PM	628	54															1	1
7:45 PM	636	45	1						1					1				
8:00 PM	654	37																
8:15 PM	621	51			1						1							
8:30 PM	580	55															1	1
8:45 PM	609	62	1											1				
9:00 PM	592	69																
9:15 PM	584	58			1						1							
9:30 PM	569	56															1	1
9:45 PM	516	54												1				
HOURS MET			18	4	20	7	14	10	16	13	19	5	15	13	21	10	19	19
WARRANT SATISFIED?			NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Warrant Met: **Yes**

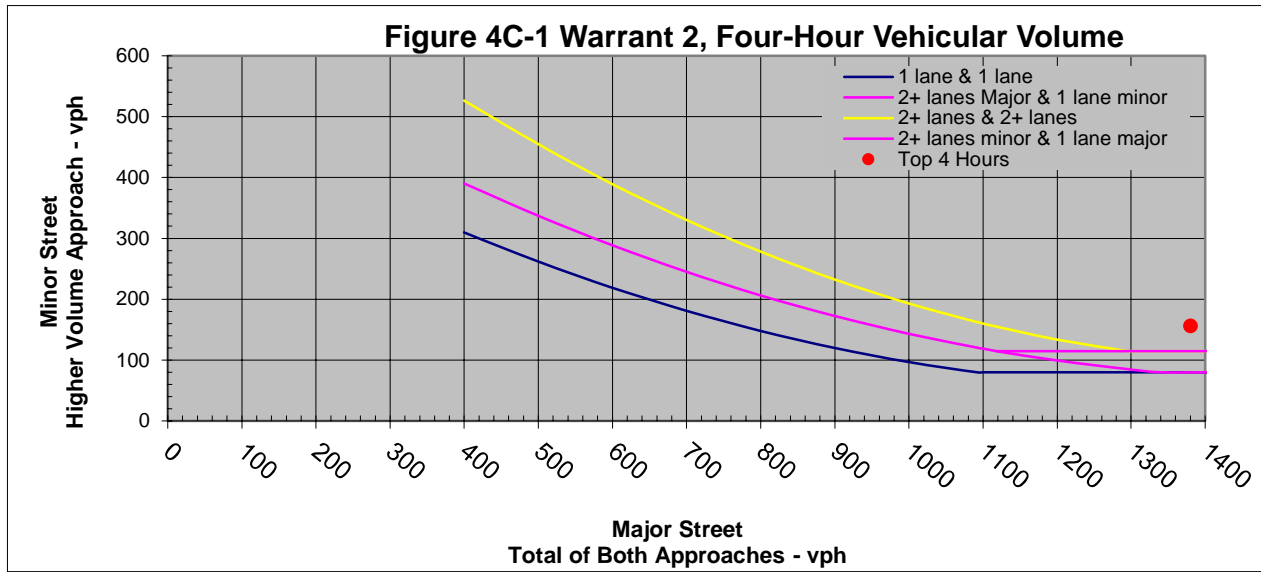
Notes: Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	8
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	13
Minor Street: 1 Lane		

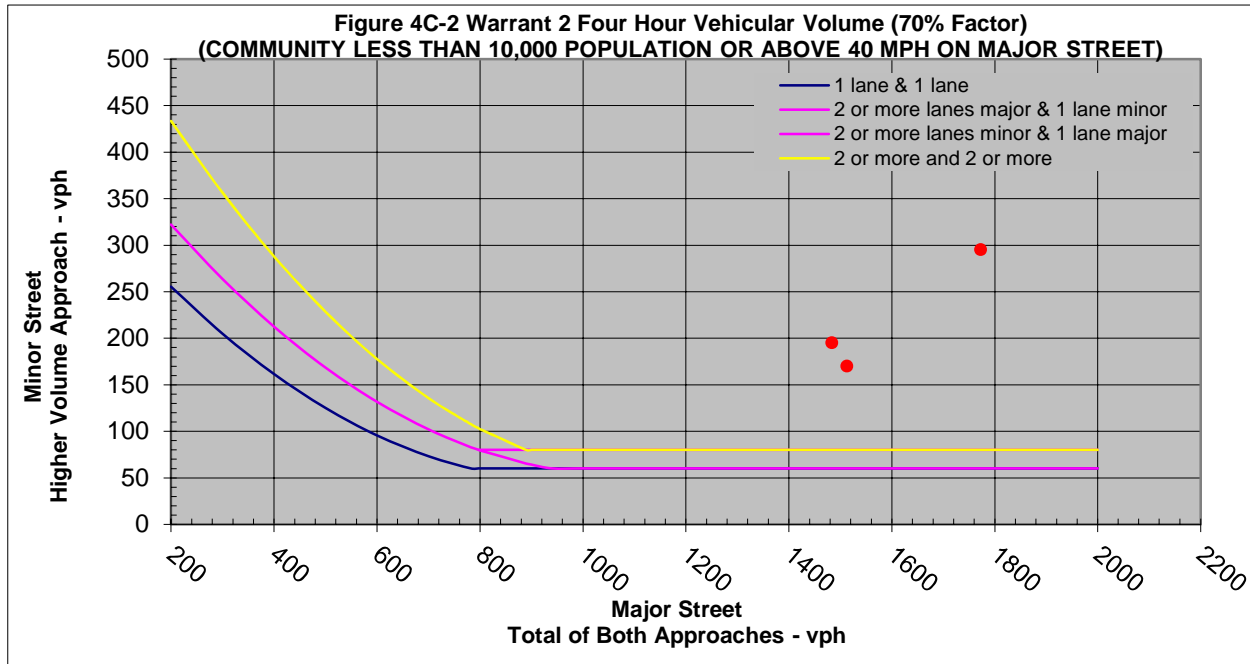
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Spiegel Drive					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	759	1077	60	80	1836	80		Met
6:15 AM	807	1032	43	74	1839	74		
6:30 AM	850	1021	42	57	1871	57		
6:45 AM	816	995	42	54	1811	54		
7:00 AM	743	976	45	50	1719	50		
7:15 AM	719	1029	47	40	1748	47		
7:30 AM	638	1002	48	49	1640	49		
7:45 AM	575	950	37	63	1525	63		Met
8:00 AM	519	853	34	64	1372	64		
8:15 AM	482	771	39	81	1253	81		
8:30 AM	484	704	35	96	1188	96		
8:45 AM	458	683	44	84	1141	84		Met
9:00 AM	444	658	37	83	1102	83		
9:15 AM	430	637	25	82	1067	82		
9:30 AM	421	602	19	69	1023	69		
9:45 AM	437	574	8	80	1011	80		Met
10:00 AM	475	538	16	89	1013	89		
10:15 AM	515	555	30	108	1070	108		
10:30 AM	534	601	47	114	1135	114	Met	
10:45 AM	562	617	54	120	1179	120		Met
11:00 AM	586	635	61	127	1221	127		
11:15 AM	598	649	80	137	1247	137		
11:30 AM	644	658	73	135	1302	135	Met	
11:45 AM	638	678	81	128	1316	128		Met
12:00 PM	612	674	85	119	1286	119		
12:15 PM	581	653	69	96	1234	96		
12:30 PM	577	655	77	100	1232	100	Met	
12:45 PM	591	657	73	112	1248	112		Met
1:00 PM	607	695	65	123	1302	123		
1:15 PM	623	724	63	137	1347	137		
1:30 PM	620	760	98	156	1380	156	Met	
1:45 PM	657	827	154	195	1484	195		Met
2:00 PM	685	918	224	200	1603	224		
2:15 PM	722	940	327	199	1662	327		
2:30 PM	764	982	300	279	1746	300	Met	
2:45 PM	787	988	260	435	1775	435		Met
3:00 PM	770	994	208	460	1764	460		
3:15 PM	764	1004	119	476	1768	476		
3:30 PM	708	1001	107	435	1709	435	Met	
3:45 PM	764	1009	97	295	1773	295		Met
4:00 PM	813	992	94	284	1805	284		
4:15 PM	834	961	147	271	1795	271		
4:30 PM	824	890	164	232	1714	232	Met	
4:45 PM	718	795	164	170	1513	170		Met
5:00 PM	639	690	151	145	1329	151		
5:15 PM	548	649	99	118	1197	118		
5:30 PM	514	615	88	89	1129	89		
5:45 PM	461	571	83	72	1032	83		Met
6:00 PM	411	515	88	69	926	88		
6:15 PM	375	471	73	61	846	73		
6:30 PM	346	420	62	52	766	62		
6:45 PM	299	387	60	48	686	60		
7:00 PM	276	343	50	36	619	50		
7:15 PM	288	334	56	35	622	56		
7:30 PM	287	341	54	35	628	54		
7:45 PM	302	334	45	36	636	45		
8:00 PM	290	364	37	37	654	37		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	1709	435
2nd Highest Hour	2:30 PM	3:30 PM	1746	300
3rd Highest Hour	4:30 PM	5:30 PM	1714	232
4th Highest Hour	1:30 PM	2:30 PM	1380	156

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:45 PM	3:45 PM	1775	435
2nd Highest Hour	3:45 PM	4:45 PM	1773	295
3rd Highest Hour	1:45 PM	2:45 PM	1484	195
4th Highest Hour	4:45 PM	5:45 PM	1513	170



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	3:15 PM
Major Street: 2 or More Lanes	Peak Hour End Time	4:15 PM
Minor Street: 1 Lane		

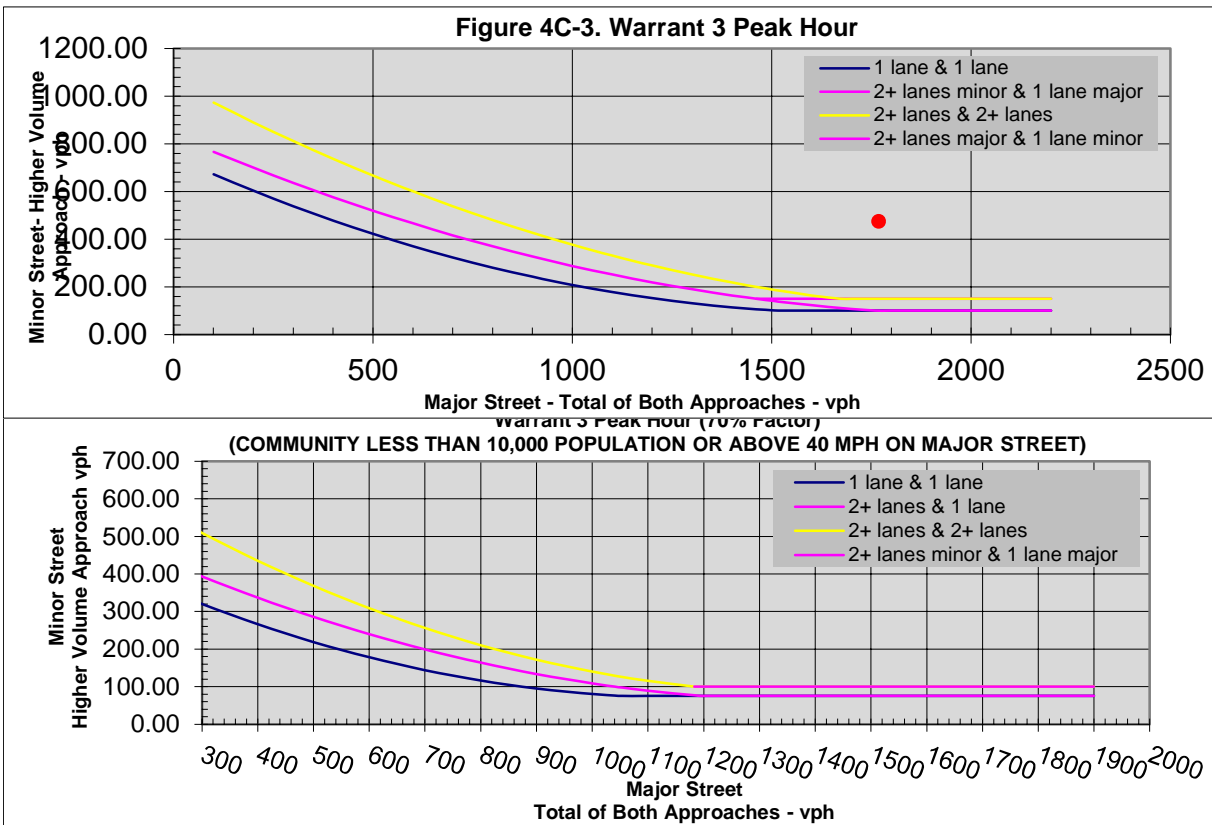
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1836	80	1916	1976
6:15 AM	1839	74	1913	1956
6:30 AM	1871	57	1928	1970
6:45 AM	1811	54	1865	1907
7:00 AM	1719	50	1769	1814
7:15 AM	1748	47	1795	1835
7:30 AM	1640	49	1689	1737
7:45 AM	1525	63	1588	1625
8:00 AM	1372	64	1436	1470
8:15 AM	1253	81	1334	1373
8:30 AM	1188	96	1284	1319
8:45 AM	1141	84	1225	1269
9:00 AM	1102	83	1185	1222
9:15 AM	1067	82	1149	1174
9:30 AM	1023	69	1092	1111
9:45 AM	1011	80	1091	1099
10:00 AM	1013	89	1102	1118
10:15 AM	1070	108	1178	1208
10:30 AM	1135	114	1249	1296
10:45 AM	1179	120	1299	1353
11:00 AM	1221	127	1348	1409
11:15 AM	1247	137	1384	1464
11:30 AM	1302	135	1437	1510
11:45 AM	1316	128	1444	1525
12:00 PM	1286	119	1405	1490
12:15 PM	1234	96	1330	1399
12:30 PM	1232	100	1332	1409
12:45 PM	1248	112	1360	1433
1:00 PM	1302	123	1425	1490
1:15 PM	1347	137	1484	1547
1:30 PM	1380	156	1536	1634
1:45 PM	1484	195	1679	1833
2:00 PM	1603	224	1827	2027
2:15 PM	1662	327	1989	2188
2:30 PM	1746	300	2046	2325
2:45 PM	1775	435	2210	2470
3:00 PM	1764	460	2224	2432
3:15 PM	1768	476	2244	2363
3:30 PM	1709	435	2144	2251
3:45 PM	1773	295	2068	2165
4:00 PM	1805	284	2089	2183
4:15 PM	1795	271	2066	2213
4:30 PM	1714	232	1946	2110
4:45 PM	1513	170	1683	1847
5:00 PM	1329	151	1480	1625
5:15 PM	1197	118	1315	1414
5:30 PM	1129	89	1218	1306
5:45 PM	1032	83	1115	1187
6:00 PM	926	88	1014	1083
6:15 PM	846	73	919	980
6:30 PM	766	62	828	880
6:45 PM	686	60	746	794
7:00 PM	619	50	669	705
7:15 PM	622	56	678	713
7:30 PM	628	54	682	717
7:45 PM	636	45	681	717
8:00 PM	654	37	691	728

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1768	476	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

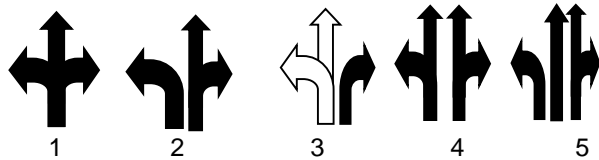
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR-317

Minor Street Approach Configuration: 5 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p><u>If no warrants are satisfied, additional options may be considered:</u></p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection.

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Northbound			Peds	App Total	Eastbound			Peds	App Total			
													Right	Thru	Left			Right	Thru	Left			Right	Thru	
12:00 AM	6	22	23	0	0	51	6	7	5	0	0	18	4	66	9	0	0	83	2	9	5	0	0	16	
12:15 AM	10	7	5	0	0	22	4	1	4	0	0	14	4	36	6	0	0	46	6	10	7	0	0	23	
12:30 AM	8	21	4	0	0	31	1	9	4	0	0	14	4	17	4	0	0	25	0	12	7	0	0	19	
12:45 AM	10	15	4	0	0	29	4	5	4	0	0	13	3	10	4	0	0	17	2	4	5	0	0	11	
Hourly Total	32	65	36	0	0	133	15	22	17	0	0	54	19	129	23	0	0	171	10	35	24	0	0	69	
1:00 AM	12	15	1	0	0	28	4	5	1	0	0	10	5	15	3	0	0	23	5	6	5	0	0	16	
1:15 AM	4	14	2	0	0	20	4	6	1	0	0	11	0	15	0	0	0	15	5	2	6	0	0	13	
1:30 AM	19	12	1	0	0	32	4	6	6	0	0	16	1	14	3	0	0	18	2	5	15	0	0	22	
1:45 AM	6	5	1	0	0	12	5	5	0	0	0	10	1	12	3	0	0	16	5	11	15	0	0	31	
Hourly Total	41	46	5	0	0	92	17	22	8	0	0	47	7	56	9	0	0	72	17	24	41	0	0	82	
2:00 AM	0	12	1	0	0	13	5	6	7	0	0	18	17	53	1	0	0	71	1	2	4	0	0	7	
2:15 AM	7	12	4	0	0	23	1	1	1	0	0	3	3	13	1	0	0	17	2	2	6	0	0	10	
2:30 AM	2	15	9	0	0	26	1	4	0	0	0	5	1	9	0	0	0	10	0	5	2	0	0	7	
2:45 AM	10	19	2	0	0	31	7	7	4	0	0	18	3	8	1	0	0	12	2	5	5	0	0	12	
Hourly Total	19	58	16	0	0	93	14	18	12	0	0	44	24	83	3	0	0	110	5	15	17	0	0	37	
3:00 AM	19	17	1	0	0	37	12	9	5	0	0	24	4	14	4	0	0	22	0	4	4	0	0	8	
3:15 AM	28	10	1	0	0	39	5	7	12	0	0	24	0	13	5	0	0	18	7	7	5	0	0	19	
3:30 AM	26	15	5	0	0	46	1	12	12	0	0	25	35	102	8	0	0	145	6	12	22	0	0	40	
3:45 AM	23	42	2	0	0	67	1	11	12	0	0	24	5	23	5	0	0	33	6	11	21	0	0	38	
Hourly Total	86	84	9	0	0	179	12	39	41	0	0	92	44	152	22	0	0	218	18	34	52	0	0	104	
4:00 AM	20	38	4	0	0	62	5	10	14	0	0	29	6	23	4	0	0	33	9	16	36	0	0	61	
4:15 AM	5	38	2	0	0	45	5	5	19	0	0	29	6	13	8	0	0	27	15	19	37	0	0	71	
4:30 AM	7	73	7	0	0	87	11	9	23	0	0	43	5	37	6	0	0	48	12	12	26	0	0	50	
4:45 AM	5	64	2	0	0	71	12	15	31	0	0	58	8	39	4	0	0	51	11	25	23	0	0	59	
Hourly Total	37	213	15	0	0	265	33	39	87	0	0	159	25	112	22	0	0	159	47	72	122	0	0	241	
5:00 AM	6	69	2	0	0	77	6	14	11	0	0	31	17	66	8	0	0	91	5	12	14	0	0	31	
5:15 AM	19	97	11	0	0	127	7	14	44	0	0	68	12	58	9	0	0	79	22	22	19	0	0	63	
5:30 AM	26	144	9	0	0	179	6	37	77	0	0	120	12	67	15	0	0	94	19	23	23	0	0	65	
5:45 AM	32	165	19	0	0	216	15	37	86	0	0	138	10	123	21	0	0	154	37	33	15	0	0	85	
Hourly Total	83	475	41	0	0	599	34	102	218	0	0	354	51	314	53	0	0	418	83	90	71	0	0	244	
6:00 AM	20	121	15	0	0	156	9	26	44	0	0	78	19	111	27	0	0	157	35	27	19	0	0	81	
6:15 AM	17	127	14	0	0	158	15	36	46	0	0	97	14	117	19	0	0	150	32	21	25	0	0	78	
6:30 AM	17	94	12	0	0	123	14	32	44	0	0	90	10	145	17	0	0	172	22	10	60	0	0	92	
6:45 AM	19	170	20	0	0	209	2	33	60	0	0	95	30	180	30	0	0	240	35	41	30	0	0	106	
Hourly Total	73	512	61	0	0	646	40	126	194	0	0	360	73	453	83	0	0	719	124	99	134	0	0	357	
7:00 AM	14	112	22	0	0	148	10	27	36	0	0	73	19	154	26	0	0	199	38	35	32	0	0	105	
7:15 AM	14	148	15	0	0	177	9	31	43	0	0	83	17	163	32	0	0	212	42	47	26	0	0	115	
7:30 AM	21	146	10	0	0	177	12	27	44	0	0	85	23	162	40	0	0	224	28	42	17	0	0	87	
7:45 AM	27	155	23	0	0	205	14	37	44	0	0	93	26	130	15	0	0	171	38	36	25	0	0	101	
Hourly Total	76	561	70	0	0	707	45	122	167	0	0	334	84	609	113	0	0	806	144	162	100	0	0	406	
8:00 AM	30	111	22	0	0	163	15	28	44	0	0	87	21	103	17	0	0	141	32	38	41	0	0	111	
8:15 AM	19	110	14	0	0	143	16	30	33	0	0	79	17	86	23	0	0	120	24	22	16	0	0	64	
8:30 AM	23	81	11	0	0	115	5	16	36	0	0	57	17	96	30	0	0	143	30	36	30	0	0	96	
8:45 AM	30	95	30	0	0	155	10	22	22	0	0	54	23	91	26	0	0	140	20	30	21	0	0	71	
Hourly Total	102	397	77	0	0	576	46	96	135	0	0	277	76	376	96	0	0	550	102	126	108	0	0	336	
9:00 AM	19	106	32	0	0	158	17	27	32	0	0	76	12	96	22	0	0	130	20	26	17	0	0	63	
9:15 AM	19	86	19	0	0	123	14	38	21	0	0	73	13	77	19	0	0	109	15	21	16	0	0	52	
9:30 AM	25	84	22	0	0	131	9	38	14	0	0	61	21	72	18	0	0	111	14	20	22	0	0	56	
9:45 AM	28	95	19	0	0	142	12	41	30	0	0	83	12	73	19	0	0	104	22	37	15	0	0	74	
Hourly Total	91	359	92	0	0	542	52	144	97	0	0	293	68	318	78	0	0	464	70	103	70	0	0	243	
10:00 AM	27	74	21	0	0	122	11	36	37	0	0	84	21	87	18	0	0	126	32	20	20	0	0	72	
10:15 AM	19	77	27	0	0	115	11	19	21	0	0	51	21	86	21	0	0	129	16	22	19	0	0	61	
10:30 AM	30	73	11	0	0	114	17	27	27	0	0	71	17	86	26	0	0	109	25	38	30	0	0	93	
10:45 AM	32	77	12	0	0	121	11	28	22	0	0	61	26	98	37	0	0	161	22	23	23	0	0	68	
Hourly Total	108	301	51	0	0	460	50	110	107	0	0	267	85	337	102	0	0	524	95	103	92	0	0	290	
11:00 AM	20	121	15	0	0	156	16	28	36	0	0	80	30	114	27	0	0	165	37	31	36	0	0	104	
11:15 AM	17	86	26	0	0	129	12	32	47	0	0	91	27	116	24	0	0	167	36	28	19	0	0	83	
11:30 AM	20	80	19	0	0	119	12	23	51	0	0	86	32	107	30	0	0	169	26	28	25	0	0	79	
11:45 AM	19	110	20	0	0	149	16	43	37	0	0	96	27	118	23	0	0	168	31	22	26	0	0	79	
Hourly Total	97	367	80	0	0	524	56	126	171	0	0	353	116	453	88	0	0	669	130	109	106	0	0	345	
12:00 PM	27	102	26	0	0	155	19	38	49	0	0	106	51	129	30	0	0	210	35	27	23	0	0	85	
12:15 PM	15	99	15	0	0	129	12	38	64	0	0	114	23	131	28	0	0	182	21	23	25	0	0	69	
12:30 PM	27	123	12	0	0	162	16	33	58	0	0	105	34	107	15	0	0	171	24	107	26	0	0	97	
12:45 PM	16	86	16	0	0	119	19	39	51	0	0	109	30	91	19	0	0	140	35	23	22	0	0	80	
Hourly Total	85	370	69	0	0	524	71	148	222	0	0	441	128	458	92	0	0	678	116	92	96	0	0	304	
1:00 PM	21	81	12	0	0	114	9	41	41	0	0	91	33	122	30	0	0	185	23</						

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

**Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)*

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	80%		80%		56%		56%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	304	69																
12:15 AM	221	69																
12:30 AM	188	59																
12:45 AM	182	62																
1:00 AM	164	82																
1:15 AM	197	73																
1:30 AM	202	70																
1:45 AM	188	56																
2:00 AM	203	44																
2:15 AM	178	45																
2:30 AM	195	66																
2:45 AM	350	86													1	1		
3:00 AM	407	104																
3:15 AM	443	157			1	1												
3:30 AM	458	210																
3:45 AM	402	220												1	1			
4:00 AM	424	241																
4:15 AM	497	211			1	1				1	1							
4:30 AM	631	203	1	1					1	1							1	1
4:45 AM	769	274										1	1	1	1			
5:00 AM	1017	354					1	1										
5:15 AM	1162	401			1	1				1	1							
5:30 AM	1264	433	1	1					1	1							1	1
5:45 AM	1286	403										1	1	1	1			
6:00 AM	1365	360					1	1										
6:15 AM	1399	381			1	1				1	1							
6:30 AM	1480	418	1	1					1	1							1	1
6:45 AM	1586	411										1	1	1	1			
7:00 AM	1513	406					1	1										
7:15 AM	1470	412			1	1				1	1							
7:30 AM	1350	355	1	1					1	1							1	1
7:45 AM	1207	366										1	1	1	1			
8:00 AM	1126	336					1	1										
8:15 AM	1108	287			1	1					1	1						
8:30 AM	1071	281	1	1					1	1							1	1
8:45 AM	1055	264										1	1	1	1			
9:00 AM	1006	293					1	1										
9:15 AM	968	301			1	1				1	1							
9:30 AM	967	279	1	1					1	1							1	1
9:45 AM	948	295										1	1	1	1			
10:00 AM	984	290					1	1										
10:15 AM	1028	322			1	1				1	1							

10:30 AM	1093	348	1	1					1	1						1	1	
10:45 AM	1158	334										1	1	1	1			
11:00 AM	1193	353				1	1											
11:15 AM	1266	379			1	1					1	1						
11:30 AM	1281	402	1	1					1	1						1	1	
11:45 AM	1261	428										1	1	1	1			
12:00 PM	1202	441				1	1											
12:15 PM	1136	426			1	1					1	1						
12:30 PM	1132	398	1	1					1	1						1	1	
12:45 PM	1169	354										1	1	1	1			
1:00 PM	1219	353				1	1											
1:15 PM	1234	388			1	1					1	1						
1:30 PM	1267	394	1	1					1	1						1	1	
1:45 PM	1429	453										1	1	1	1			
2:00 PM	1531	459				1	1											
2:15 PM	1651	474			1	1					1	1						
2:30 PM	1771	469	1	1					1	1						1	1	
2:45 PM	1893	457										1	1	1	1			
3:00 PM	1942	461				1	1											
3:15 PM	1985	450			1	1					1	1						
3:30 PM	1942	457	1	1					1	1						1	1	
3:45 PM	1943	462										1	1	1	1			
4:00 PM	1961	469				1	1											
4:15 PM	1910	516			1	1					1	1						
4:30 PM	1835	512	1	1					1	1						1	1	
4:45 PM	1568	504										1	1	1	1			
5:00 PM	1392	468				1	1											
5:15 PM	1230	397			1	1					1	1						
5:30 PM	1134	380	1	1					1	1						1	1	
5:45 PM	1021	335										1	1	1	1			
6:00 PM	891	325																
6:15 PM	798	315			1	1					1	1						
6:30 PM	732	297	1	1					1	1						1	1	
6:45 PM	662	298											1	1				
7:00 PM	635	278																
7:15 PM	635	280			1	1					1	1						
7:30 PM	608	278	1	1												1	1	
7:45 PM	619	262											1	1				
8:00 PM	625	253																
8:15 PM	621	230			1	1					1	1						
8:30 PM	610	232	1	1												1	1	
8:45 PM	630	204							1	1			1	1				
9:00 PM	607	197																
9:15 PM	587	175			1	1					1	1						
9:30 PM	562	142														1	1	
9:45 PM	511	141											1	1				
HOURS MET			17	17	20	20	13	13	16	16	19	18	14	14	21	21	19	19
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

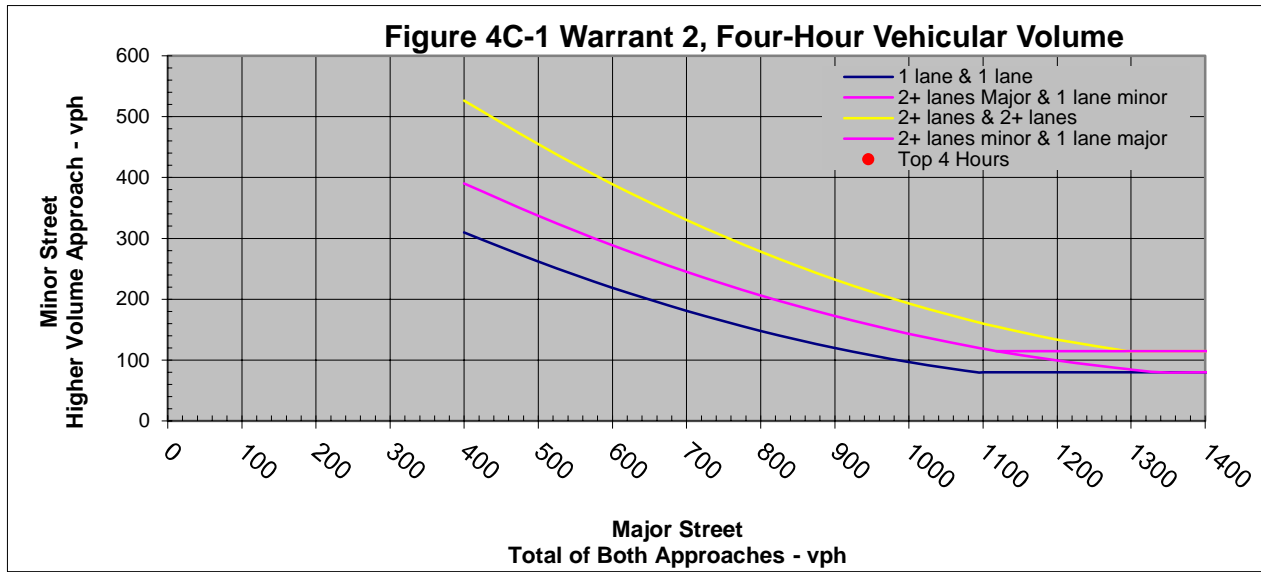
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	15
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	18
Minor Street: 1 Lane		

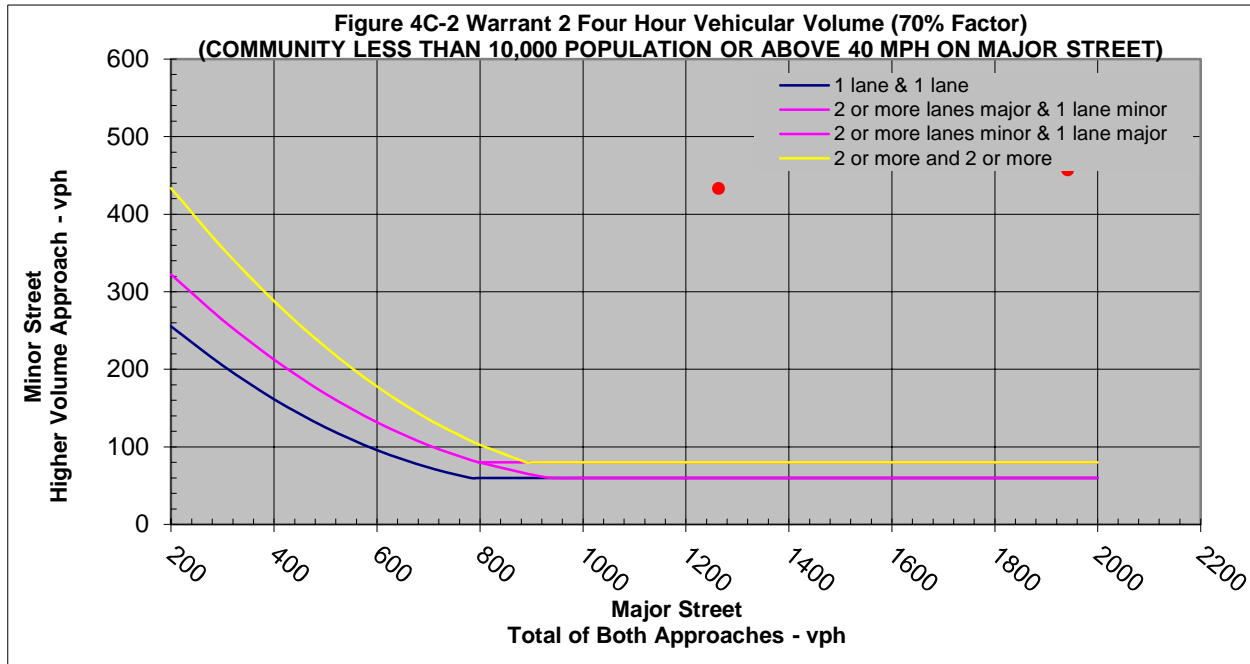
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - SR-317					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	719	646	360	357	1365	360		
6:15 AM	761	638	355	381	1399	381		
6:30 AM	823	657	341	418	1480	418		Met
6:45 AM	875	711	334	411	1586	411	Met	
7:00 AM	806	707	334	406	1513	406		
7:15 AM	748	722	348	412	1470	412		
7:30 AM	662	688	344	355	1350	355		Met
7:45 AM	581	626	318	366	1207	366	Met	
8:00 AM	550	576	277	336	1126	336		
8:15 AM	539	569	266	287	1108	287		
8:30 AM	522	549	260	281	1071	281		Met
8:45 AM	490	565	264	241	1055	264	Met	
9:00 AM	464	542	293	243	1006	293		
9:15 AM	460	508	301	253	968	301		
9:30 AM	479	488	279	258	967	279		Met
9:45 AM	477	471	289	295	948	295	Met	
10:00 AM	524	460	267	290	984	290		
10:15 AM	563	465	263	322	1028	322		
10:30 AM	602	491	303	348	1093	348		Met
10:45 AM	662	496	318	334	1158	334	Met	
11:00 AM	669	524	353	345	1193	353		
11:15 AM	714	552	379	326	1266	379		
11:30 AM	729	552	402	312	1281	402		Met
11:45 AM	706	555	428	303	1261	428	Met	
12:00 PM	678	524	441	304	1202	441		
12:15 PM	653	483	426	275	1136	426		
12:30 PM	627	505	398	322	1132	398		Met
12:45 PM	664	505	354	331	1169	354	Met	
1:00 PM	704	515	353	328	1219	353		
1:15 PM	683	551	366	388	1234	388		
1:30 PM	701	566	394	379	1267	394		Met
1:45 PM	788	641	453	394	1429	453	Met	
2:00 PM	823	708	459	421	1531	459		
2:15 PM	935	716	474	442	1651	474		
2:30 PM	1008	763	469	445	1771	469		Met
2:45 PM	1051	842	457	443	1893	457	Met	
3:00 PM	1059	883	461	448	1942	461		
3:15 PM	1053	932	450	411	1985	450		
3:30 PM	999	943	457	408	1942	457		Met
3:45 PM	1045	898	462	430	1943	462	Met	
4:00 PM	1073	888	469	429	1961	469		
4:15 PM	1037	873	516	423	1910	516		
4:30 PM	1018	817	512	432	1835	512		Met
4:45 PM	836	732	504	416	1568	504	Met	
5:00 PM	740	652	468	389	1392	468		
5:15 PM	643	587	397	377	1230	397		
5:30 PM	585	549	380	348	1134	380		Met
5:45 PM	525	496	335	328	1021	335	Met	
6:00 PM	450	441	324	325	891	325		
6:15 PM	398	400	305	315	798	315		
6:30 PM	375	357	284	297	732	297		Met
6:45 PM	327	335	272	298	662	298	Met	
7:00 PM	326	309	244	278	635	278		
7:15 PM	334	301	240	280	635	280		
7:30 PM	314	294	227	278	608	278		Met
7:45 PM	323	296	241	262	619	262		
8:00 PM	307	318	241	253	625	253		



Top Hours for Figure 4C-1				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:45 PM	5:45 PM	1568	504
2nd Highest Hour	3:45 PM	4:45 PM	1943	462
3rd Highest Hour	2:45 PM	3:45 PM	1893	457
4th Highest Hour	1:45 PM	2:45 PM	1429	453

Top Hours for Figure 4C-2				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:30 PM	5:30 PM	1835	512
2nd Highest Hour	2:30 PM	3:30 PM	1771	469
3rd Highest Hour	3:30 PM	4:30 PM	1942	457
4th Highest Hour	5:30 AM	6:30 AM	1264	433



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR		
Number of Lanes for Moving Traffic on Each Approach	Peak Hour Start time	4:15 PM
Major Street: 2 or More Lanes	Peak Hour End Time	5:15 PM
Minor Street: 1 Lane		

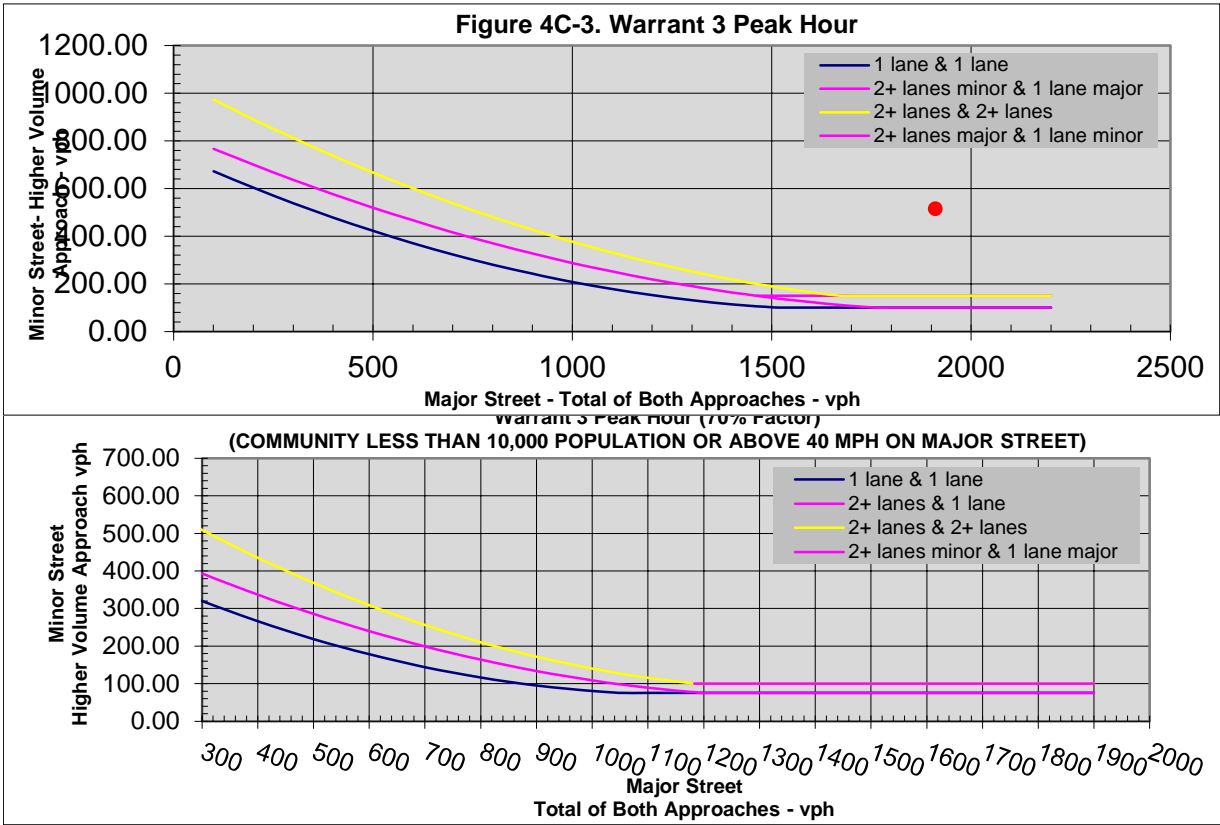
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1365	360	1725	2082
6:15 AM	1399	381	1780	2135
6:30 AM	1480	418	1898	2239
6:45 AM	1586	411	1997	2331
7:00 AM	1513	406	1919	2253
7:15 AM	1470	412	1882	2230
7:30 AM	1350	355	1705	2049
7:45 AM	1207	366	1573	1891
8:00 AM	1126	336	1462	1739
8:15 AM	1108	287	1395	1661
8:30 AM	1071	281	1352	1612
8:45 AM	1055	264	1319	1560
9:00 AM	1006	293	1299	1542
9:15 AM	968	301	1269	1522
9:30 AM	967	279	1246	1504
9:45 AM	948	295	1243	1532
10:00 AM	984	290	1274	1541
10:15 AM	1028	322	1350	1613
10:30 AM	1093	348	1441	1744
10:45 AM	1158	334	1492	1810
11:00 AM	1193	353	1546	1891
11:15 AM	1266	379	1645	1971
11:30 AM	1281	402	1683	1995
11:45 AM	1261	428	1689	1992
12:00 PM	1202	441	1643	1947
12:15 PM	1136	426	1562	1837
12:30 PM	1132	398	1530	1852
12:45 PM	1169	354	1523	1854
1:00 PM	1219	353	1572	1900
1:15 PM	1234	388	1622	1988
1:30 PM	1267	394	1661	2040
1:45 PM	1429	453	1882	2276
2:00 PM	1531	459	1990	2411
2:15 PM	1651	474	2125	2567
2:30 PM	1771	469	2240	2685
2:45 PM	1893	457	2350	2793
3:00 PM	1942	461	2403	2851
3:15 PM	1985	450	2435	2846
3:30 PM	1942	457	2399	2807
3:45 PM	1943	462	2405	2835
4:00 PM	1961	469	2430	2859
4:15 PM	1910	516	2426	2849
4:30 PM	1835	512	2347	2779
4:45 PM	1568	504	2072	2488
5:00 PM	1392	468	1860	2249
5:15 PM	1230	397	1627	2004
5:30 PM	1134	380	1514	1862
5:45 PM	1021	335	1356	1684
6:00 PM	891	325	1216	1540
6:15 PM	798	315	1113	1418
6:30 PM	732	297	1029	1313
6:45 PM	662	298	960	1232
7:00 PM	635	278	913	1157
7:15 PM	635	280	915	1155
7:30 PM	608	278	886	1113
7:45 PM	619	262	881	1122
8:00 PM	625	253	878	1119

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1910	516	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:

Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

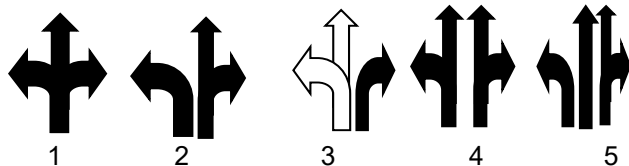
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
 *Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration: E-Bound
 W-Bound



Number of Thru Lanes on Each Minor Street Approach: LANE(S)

Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
			<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:45 PM</td></tr> <tr><td style="text-align: center;">4:45 PM</td></tr> </table>	Peak Hour	3:45 PM	4:45 PM
Peak Hour						
3:45 PM						
4:45 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
			<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">8:45 AM</td></tr> <tr><td style="text-align: center;">9:45 AM</td></tr> </table>	Peak Hour	8:45 AM	9:45 AM
Peak Hour						
8:45 AM						
9:45 AM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

- If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes:

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:	
	Right		Left		U-Turn	Peds	Right		Left		U-Turn	Peds	Right		Left		U-Turn	Peds	Right		Left		U-Turn	Peds		App Total
	App Total	Thru	App Total	Thru			App Total	Thru	App Total	Thru			App Total	Thru	App Total	Thru			App Total	Thru	App Total	Thru				
12:00 AM	4	35	10	0	0	49	13	0	0	0	0	13	1	217	12	0	0	230	11	0	0	0	0	11		
12:15 AM	4	33	12	0	0	49	15	0	0	0	0	15	1	99	1	0	0	101	4	0	0	0	0	4		
12:30 AM	6	48	7	0	0	61	12	0	0	0	0	12	1	68	5	0	0	74	8	0	0	0	0	8		
12:45 AM	11	42	8	0	0	61	11	0	0	0	0	11	0	52	0	0	0	52	3	0	0	0	0	3		
Hourly Total	25	158	37	0	0	220	51	0	0	0	0	51	3	436	18	0	0	457	26	0	0	0	0	26		
1:00 AM	8	35	7	0	0	50	20	0	0	0	0	20	1	69	3	0	0	73	2	0	0	0	0	2		
1:15 AM	6	41	4	0	0	51	5	0	0	0	0	5	0	73	2	0	0	75	2	0	0	0	0	2		
1:30 AM	3	37	5	0	0	45	5	0	0	0	0	5	0	38	1	0	0	39	6	0	0	0	0	6		
1:45 AM	6	47	7	0	0	60	6	0	0	0	0	6	2	35	3	0	0	40	2	0	0	0	0	2		
Hourly Total	23	160	23	0	0	206	36	0	0	0	0	36	3	215	9	0	0	227	12	0	0	0	0	12		
2:00 AM	3	38	6	0	0	46	15	0	0	0	0	15	0	133	7	0	0	140	2	0	0	0	0	2		
2:15 AM	14	35	4	0	0	53	16	0	0	0	0	16	1	59	3	0	0	63	3	0	0	0	0	3		
2:30 AM	7	34	5	0	0	46	4	0	0	0	0	4	1	83	4	0	0	88	1	0	0	0	0	1		
2:45 AM	6	52	3	0	0	61	9	0	0	0	0	9	0	38	3	0	0	41	2	0	0	0	0	2		
Hourly Total	32	159	18	0	0	209	44	0	0	0	0	44	2	313	17	0	0	332	8	0	0	0	0	8		
3:00 AM	4	58	6	0	0	66	19	0	0	0	0	19	0	45	2	0	0	47	7	0	0	0	0	7		
3:15 AM	10	74	5	0	0	89	14	0	0	0	0	14	1	56	3	0	0	60	5	0	0	0	0	5		
3:30 AM	8	96	7	0	0	110	16	0	0	0	0	16	2	172	7	0	0	181	5	0	0	0	0	5		
3:45 AM	3	106	2	0	0	116	30	0	0	0	0	30	1	83	8	0	0	92	4	0	0	0	0	4		
Hourly Total	30	331	20	0	0	381	79	0	0	0	0	79	4	356	20	0	0	380	21	0	0	0	0	21		
4:00 AM	12	125	12	0	0	149	17	0	0	0	0	17	2	122	8	0	0	132	6	0	0	0	0	6		
4:15 AM	13	174	13	0	0	200	20	0	0	0	0	20	0	87	1	0	0	88	8	0	0	0	0	8		
4:30 AM	19	245	15	0	0	279	32	0	0	0	0	32	6	169	4	0	0	179	17	0	0	0	0	17		
4:45 AM	22	293	25	0	0	340	31	0	0	0	0	31	1	103	4	0	0	108	21	0	0	0	0	21		
Hourly Total	66	837	65	0	0	968	100	0	0	0	0	100	9	481	17	0	0	507	52	0	0	0	0	52		
5:00 PM	21	219	18	0	0	258	26	0	0	0	0	26	3	145	12	0	0	160	8	0	0	0	0	8		
5:15 AM	29	369	38	0	0	437	44	0	0	0	0	44	4	389	6	0	0	449	25	0	0	0	0	25		
5:30 AM	38	540	37	0	0	615	55	0	0	0	0	55	1	85	6	0	0	92	36	0	0	0	0	36		
5:45 AM	70	651	51	0	0	772	52	0	0	0	0	52	7	129	15	0	0	151	53	0	0	0	0	53		
Hourly Total	158	1779	145	0	0	2082	177	0	0	0	0	177	15	458	39	0	0	512	122	0	0	0	0	122		
6:00 AM	38	346	34	0	0	418	71	0	0	0	0	71	5	192	7	0	0	204	27	0	0	0	0	27		
6:15 AM	54	394	46	0	0	494	99	0	0	0	0	99	2	170	11	0	0	183	39	0	0	0	0	39		
6:30 AM	53	535	80	0	0	668	142	0	0	0	0	142	3	197	13	0	0	213	38	0	0	0	0	38		
6:45 AM	85	620	118	0	0	821	148	0	0	0	0	148	4	218	16	0	0	236	66	0	0	0	0	66		
Hourly Total	230	1895	276	0	0	2401	460	0	0	0	0	460	14	775	47	0	0	836	164	0	0	0	0	164		
7:00 AM	57	277	76	0	0	410	177	0	0	0	0	177	3	206	18	0	0	227	24	0	0	0	0	24		
7:15 AM	63	391	64	0	0	518	152	0	0	0	0	152	6	218	20	0	0	244	30	0	0	0	0	30		
7:30 AM	77	428	70	0	0	575	192	0	0	0	0	192	7	235	19	0	0	252	37	0	0	0	0	37		
7:45 AM	91	513	69	0	0	673	162	0	0	0	0	162	5	174	21	0	0	200	42	0	0	0	0	42		
Hourly Total	288	1809	279	0	0	2176	683	0	0	0	0	683	21	824	78	0	0	923	133	0	0	0	0	133		
8:00 AM	71	343	84	0	0	478	150	0	0	0	0	150	8	167	22	0	0	197	29	0	0	0	0	29		
8:15 AM	50	338	57	0	0	423	139	0	0	0	0	139	6	169	14	0	0	193	20	0	0	0	0	20		
8:30 AM	51	299	81	0	0	401	121	0	0	0	0	121	8	179	18	0	0	205	37	0	0	0	0	37		
8:45 AM	45	287	58	0	0	390	126	0	0	0	0	126	4	171	14	0	0	189	29	0	0	0	0	29		
Hourly Total	217	1265	210	0	0	1892	536	0	0	0	0	536	20	688	68	0	0	774	115	0	0	0	0	115		
9:00 AM	39	295	37	0	0	371	138	0	0	0	0	138	7	187	20	0	0	203	27	0	0	0	0	27		
9:15 AM	43	207	33	0	0	283	180	0	0	0	0	180	5	148	15	0	0	188	22	0	0	0	0	22		
9:30 AM	46	210	36	0	0	292	99	0	1	0	0	100	5	176	23	0	0	204	21	0	0	0	0	21		
9:45 AM	40	201	45	0	0	286	100	0	0	0	0	100	1	162	11	0	0	174	25	0	0	0	0	25		
Hourly Total	168	823	151	0	0	1142	517	1	0	0	0	517	18	653	78	0	0	747	92	0	0	0	0	92		
10:00 AM	40	156	28	0	0	224	102	0	0	0	0	102	2	149	25	0	0	176	22	0	0	0	0	22		
10:15 AM	50	157	47	0	0	254	109	0	0	0	0	109	8	159	18	0	0	185	25	0	0	0	0	25		
10:30 AM	49	166	37	0	0	252	96	0	0	0	0	96	4	170	19	0	0	193	30	0	0	0	0	30		
10:45 AM	58	163	42	0	0	263	79	0	0	0	0	79	3	166	20	0	0	199	28	0	0	0	0	28		
Hourly Total	197	672	154	0	0	1023	388	0	0	0	0	388	27	644	82	0	0	753	105	0	0	0	0	105		
11:00 AM	49	189	50	0	0	288	103	0	0	0	0	103	13	213	36	0	0	262	37	0	0	0	0	37		
11:15 AM	54	186	52	0	0	292	124	0	0	0	0	124	16	167	34	0	0	217	42	0	0	0	0	42		
11:30 AM	52	189	45	0	0	286	98	0	0	0	0	98	8	206	29	0	0	245	50	0	0	0	0	50		
11:45 AM	49	195	51	0	0	295	96	0	0	0	0	96	15	178	36	0	0	229	53	0	0	0	0	53		
Hourly Total	204	759	198	0	0	1161	421	0	0	0	0	421	58	764	135	0	0	957	182	0	0	0	0	182		
12:00 PM	60	172	56	0	0	288	95	0	0	0	0	95	14	230	34	0	0	286	42	0	0	0	0	42		
12:15 PM	61	177	49	0	0	287	88	0	0	0	0	88	8	209	41	0	0	258	66	0	0	0	0	66		
12:30 PM	49	199	56	0	0	304	123	0	0	0	0	123	7	179	41	0	0	227	56	0	0	0	0	56		
12:45 PM	48	181	64	0	0	293	100	0	0	0	0	100	3	214	34	0	0	251	42	0	0	0	0	42		
Hourly Total	218	729	225	0	0	1172	396	0	0	0	0	396	32	632	170	0	0	1034	266	0	0	0	0	266		
1:00 PM	55	210	45	0	0	310	108	0	0	0	0	108	8	233	42	0	0	280	30	0	0	0	0	30		
1:15 PM	56	241	49	0	0	346	83	0	0	0	0	83	12	207	22	0	0	241	50	0	0	0	0	50		
1:30 PM	48	299	43	0	0	390	126	0	0	0	0	126	3	257	28	0	0	288	41	0	0	0	0	41		
1:45 PM	51	307	55	0	0	423	97	0	0	0	0	97	4	226	19	0	0	249	38	0	0					

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	677	51	1		1				1		1				1		1	1
12:15 AM	521	58																
12:30 AM	497	48																
12:45 AM	446	41																
1:00 AM	433	36			1									1				
1:15 AM	499	31								1								
1:30 AM	489	42																
1:45 AM	539	41															1	
2:00 AM	541	44			1									1				
2:15 AM	465	48																
2:30 AM	498	46								1								
2:45 AM	655	58	1						1	1							1	1
3:00 AM	761	79			1							1	1	1				
3:15 AM	929	77					1	1										
3:30 AM	1068	83								1								
3:45 AM	1235	99	1						1	1							1	1
4:00 AM	1475	100			1							1	1	1	1			
4:15 AM	1612	109					1	1										
4:30 AM	1870	133								1	1							
4:45 AM	2119	156	1	1					1	1							1	1
5:00 AM	2594	177			1	1							1	1	1	1		
5:15 AM	2798	222					1	1										
5:30 AM	2929	277								1	1							
5:45 AM	3103	364	1	1					1	1							1	1
6:00 AM	3237	460			1	1						1	1	1	1			
6:15 AM	3252	566					1	1										
6:30 AM	3337	619								1	1							
6:45 AM	3283	669	1	1					1	1							1	1
7:00 AM	3099	683			1	1						1	1	1	1			
7:15 AM	3137	656					1	1										
7:30 AM	2981	643								1	1							
7:45 AM	2760	572	1	1					1	1							1	1
8:00 AM	2466	536			1	1						1	1	1	1			
8:15 AM	2273	524					1	1										
8:30 AM	2118	565								1	1							
8:45 AM	2008	544	1	1					1	1							1	1
9:00 AM	1889	518			1	1						1	1	1	1			
9:15 AM	1807	482					1	1										
9:30 AM	1795	411								1	1							
9:45 AM	1744	409	1	1					1	1							1	1

10:00 AM	1776	388			1	1						1	1	1	1			
10:15 AM	1926	389					1	1										
10:30 AM	1996	404								1	1							
10:45 AM	2086	404	1	1					1	1						1	1	
11:00 AM	2118	421			1	1						1	1	1	1			
11:15 AM	2154	403					1	1										
11:30 AM	2190	367								1	1							
11:45 AM	2186	392	1	1					1	1						1	1	
12:00 PM	2206	396			1	1						1	1	1	1			
12:15 PM	2210	419					1	1										
12:30 PM	2252	414								1	1							
12:45 PM	2399	417	1	1					1	1						1	1	
1:00 PM	2527	414			1	1						1	1	1	1			
1:15 PM	2736	438					1	1										
1:30 PM	2987	474								1	1							
1:45 PM	3192	506	1	1					1	1						1	1	
2:00 PM	3501	533			1	1						1	1	1	1			
2:15 PM	3623	564					1	1										
2:30 PM	3657	628								1	1							
2:45 PM	3694	691	1	1					1	1						1	1	
3:00 PM	3726	752			1	1						1	1	1	1			
3:15 PM	3687	816					1	1										
3:30 PM	3756	844								1	1							
3:45 PM	3818	847	1	1					1	1						1	1	
4:00 PM	3799	813			1	1						1	1	1	1			
4:15 PM	3752	795					1	1										
4:30 PM	3681	749								1	1							
4:45 PM	3476	689	1	1					1	1						1	1	
5:00 PM	3180	660			1	1						1	1	1	1			
5:15 PM	2939	592					1	1										
5:30 PM	2617	542								1	1							
5:45 PM	2338	475	1	1					1	1						1	1	
6:00 PM	2068	455			1	1						1	1	1	1			
6:15 PM	1837	403					1	1										
6:30 PM	1645	373								1	1							
6:45 PM	1442	370	1	1					1	1						1	1	
7:00 PM	1336	327			1	1						1	1	1	1			
7:15 PM	1282	295					1	1										
7:30 PM	1249	269								1	1							
7:45 PM	1255	229	1	1					1	1						1	1	
8:00 PM	1194	221			1	1						1	1	1	1			
8:15 PM	1178	211					1	1										
8:30 PM	1128	192								1	1							
8:45 PM	1119	166	1	1					1	1						1	1	
9:00 PM	1115	157			1	1						1	1	1	1			
9:15 PM	1118	151					1	1										
9:30 PM	1100	138								1	1							
9:45 PM	1028	133	1						1	1						1	1	
HOURS MET			22	17	24	18	20	20	22	21	23	18	21	21	24	20	23	22
WARRANT SATISFIED?			YES		YES		YES		YES		YES		YES		YES		YES	

Warrant Met: **Yes**

Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

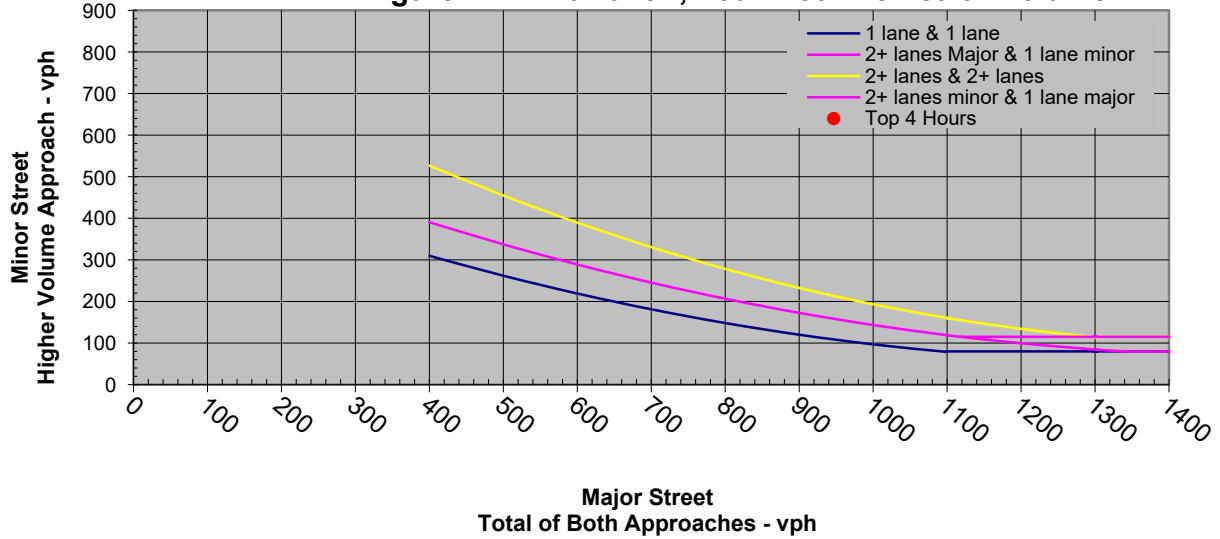
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	18
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	21
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Groveport Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	836	2401	460	164	3237	460		
6:15 AM	859	2393	566	161	3252	566		Met
6:30 AM	920	2417	619	152	3337	619		
6:45 AM	959	2324	669	151	3283	669	Met	
7:00 AM	923	2176	683	133	3099	683		
7:15 AM	893	2244	656	138	3137	656		Met
7:30 AM	832	2149	643	128	2981	643		
7:45 AM	785	1975	572	128	2760	572	Met	
8:00 AM	774	1692	536	115	2466	536		
8:15 AM	778	1495	524	110	2273	524		Met
8:30 AM	763	1355	565	112	2118	565		
8:45 AM	762	1246	544	96	2008	544	Met	
9:00 AM	747	1142	518	92	1889	518		
9:15 AM	722	1085	482	90	1807	482		Met
9:30 AM	739	1056	411	93	1795	411		
9:45 AM	728	1016	409	102	1744	409	Met	
10:00 AM	753	1023	388	105	1776	388		
10:15 AM	839	1087	389	120	1926	389		Met
10:30 AM	871	1125	404	137	1996	404		
10:45 AM	927	1159	404	157	2086	404	Met	
11:00 AM	957	1161	421	182	2118	421		
11:15 AM	993	1161	403	187	2154	403		Met
11:30 AM	1034	1156	367	212	2190	367		
11:45 AM	1012	1174	392	218	2186	392	Met	
12:00 PM	1034	1172	396	207	2206	396		
12:15 PM	1016	1194	419	195	2210	419		Met
12:30 PM	999	1253	414	178	2252	414		
12:45 PM	1060	1339	417	163	2399	417	Met	
1:00 PM	1058	1469	414	159	2527	414		
1:15 PM	1168	1568	438	158	2736	438		Met
1:30 PM	1368	1619	474	140	2987	474		
1:45 PM	1497	1695	506	129	3192	506	Met	
2:00 PM	1755	1746	533	136	3501	533		
2:15 PM	1860	1763	564	139	3623	564		Met
2:30 PM	1817	1840	628	162	3657	628		
2:45 PM	1860	1834	691	177	3694	691	Met	
3:00 PM	1869	1857	752	171	3726	752		
3:15 PM	1763	1924	816	171	3687	816		Met
3:30 PM	1793	1963	844	151	3756	844		
3:45 PM	1791	2027	847	139	3818	847	Met	
4:00 PM	1763	2036	813	145	3799	813		
4:15 PM	1805	1947	795	134	3752	795		Met
4:30 PM	1776	1905	749	130	3681	749		
4:45 PM	1660	1816	689	128	3476	689	Met	
5:00 PM	1446	1734	660	117	3180	660		
5:15 PM	1297	1642	592	119	2939	592		Met
5:30 PM	1113	1504	542	116	2617	542		
5:45 PM	998	1340	475	104	2338	475	Met	
6:00 PM	911	1157	455	89	2068	455		
6:15 PM	823	1014	403	80	1837	403		Met
6:30 PM	764	881	373	70	1645	373		
6:45 PM	681	761	370	70	1442	370	Met	
7:00 PM	627	709	327	68	1336	327		
7:15 PM	573	709	295	67	1282	295		Met
7:30 PM	559	690	269	66	1249	269		
7:45 PM	550	705	229	65	1255	229	Met	
8:00 PM	515	679	221	65	1194	221		

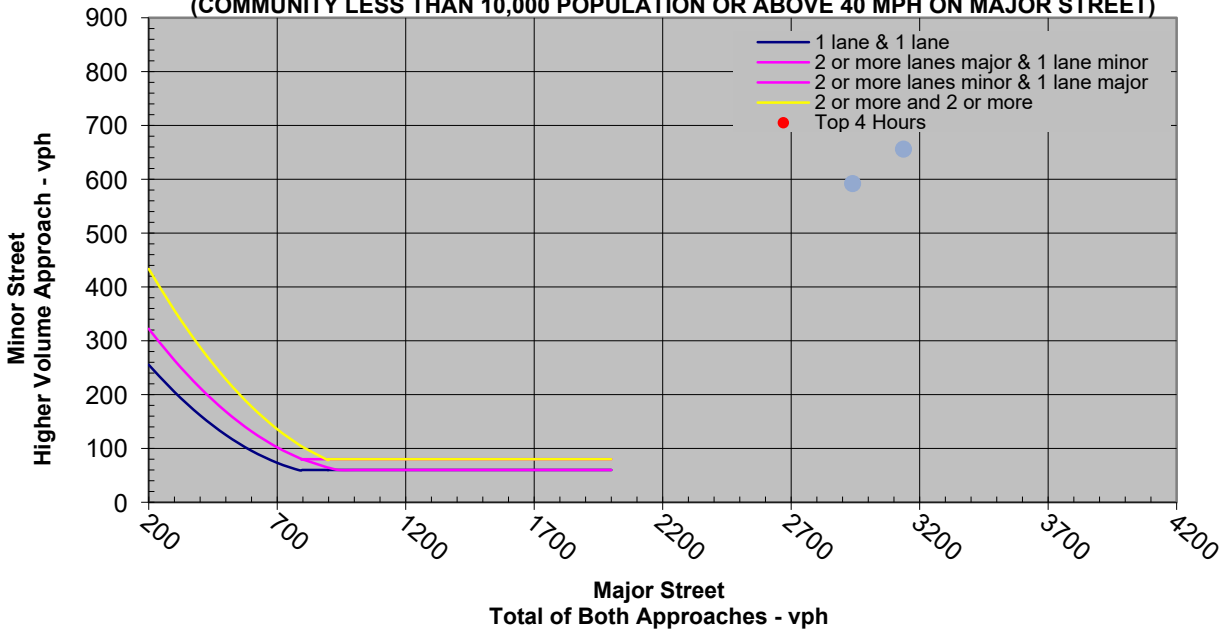
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	3818	847
2nd Highest Hour	2:45 PM	3:45 PM	3694	691
3rd Highest Hour	4:45 PM	5:45 PM	3476	689
4th Highest Hour	6:45 AM	7:45 AM	3283	669

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	3687	816
2nd Highest Hour	4:15 PM	5:15 PM	3752	795
3rd Highest Hour	7:15 AM	8:15 AM	3137	656
4th Highest Hour	5:15 PM	6:15 PM	2939	592

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:45 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:45 PM
Minor Street:	1 Lane		

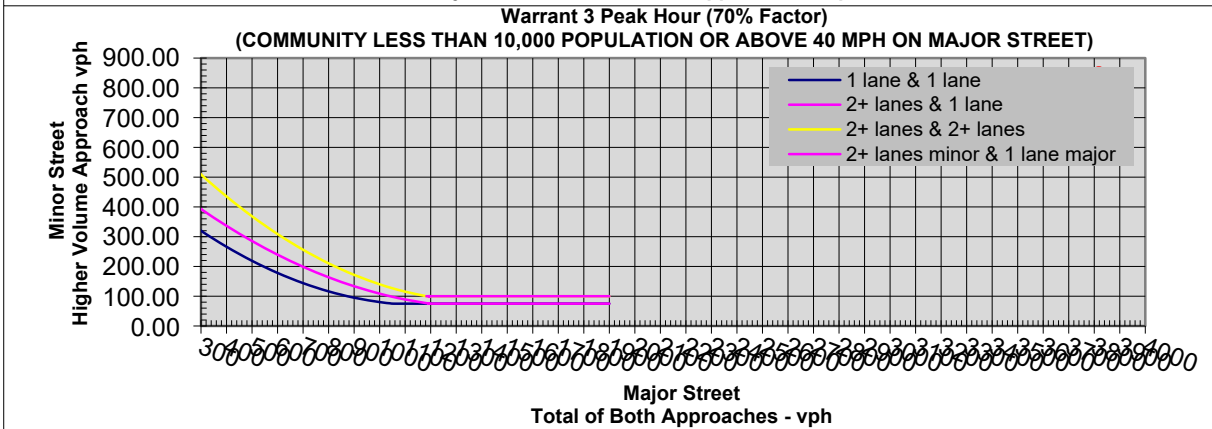
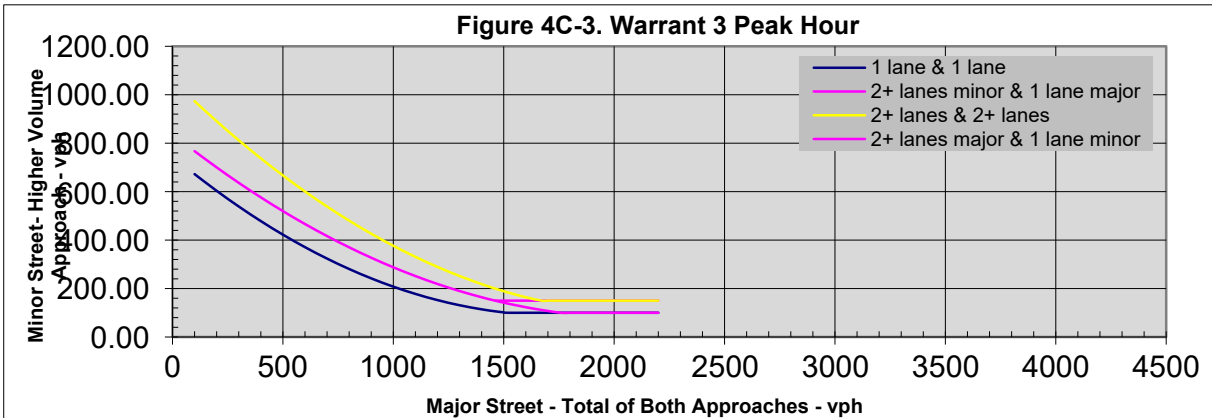
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3237	460	3697	3861
6:15 AM	3252	566	3818	3979
6:30 AM	3337	619	3956	4108
6:45 AM	3283	669	3952	4103
7:00 AM	3099	683	3782	3915
7:15 AM	3137	656	3793	3931
7:30 AM	2981	643	3624	3752
7:45 AM	2760	572	3332	3460
8:00 AM	2466	536	3002	3117
8:15 AM	2273	524	2797	2907
8:30 AM	2118	565	2683	2795
8:45 AM	2008	544	2552	2648
9:00 AM	1889	518	2407	2499
9:15 AM	1807	482	2289	2379
9:30 AM	1795	411	2206	2299
9:45 AM	1744	409	2153	2255
10:00 AM	1776	388	2164	2269
10:15 AM	1926	389	2315	2435
10:30 AM	1996	404	2400	2537
10:45 AM	2086	404	2490	2647
11:00 AM	2118	421	2539	2721
11:15 AM	2154	403	2557	2744
11:30 AM	2190	367	2557	2769
11:45 AM	2186	392	2578	2796
12:00 PM	2206	396	2602	2809
12:15 PM	2210	419	2629	2824
12:30 PM	2252	414	2666	2844
12:45 PM	2399	417	2816	2979
1:00 PM	2527	414	2941	3100
1:15 PM	2736	438	3174	3332
1:30 PM	2987	474	3461	3601
1:45 PM	3192	506	3698	3827
2:00 PM	3501	533	4034	4170
2:15 PM	3623	564	4187	4326
2:30 PM	3657	628	4285	4447
2:45 PM	3694	691	4385	4562
3:00 PM	3726	752	4478	4649
3:15 PM	3687	816	4503	4674
3:30 PM	3756	844	4600	4751
3:45 PM	3818	847	4665	4804
4:00 PM	3799	813	4612	4757
4:15 PM	3752	795	4547	4681
4:30 PM	3681	749	4430	4560
4:45 PM	3476	689	4165	4293
5:00 PM	3180	660	3840	3957
5:15 PM	2939	592	3531	3650
5:30 PM	2617	542	3159	3275
5:45 PM	2338	475	2813	2917
6:00 PM	2068	455	2523	2612
6:15 PM	1837	403	2240	2320
6:30 PM	1645	373	2018	2088
6:45 PM	1442	370	1812	1882
7:00 PM	1336	327	1663	1731
7:15 PM	1282	295	1577	1644
7:30 PM	1249	269	1518	1584
7:45 PM	1255	229	1484	1549
8:00 PM	1194	221	1415	1480

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
3818	847	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 3

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

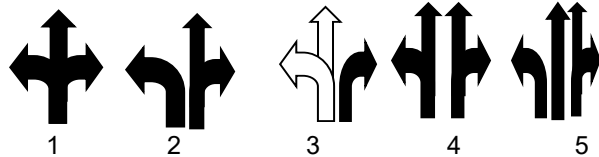
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Rathmell Road

Minor Street Approach Configuration: 1 E-Bound
W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: Yes

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	No	Condition B (70%) was met.
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated.
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
8:45 AM
9:45 AM

Peak Hour
8:15 AM
9:15 AM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks. 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes. 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes: Warrants 1, 2, and 3 were met

Start Time	Southbound Approach					Westbound Approach					Northbound Approach					Eastbound Approach				
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total		
12:00 AM	6	43	0	0	0	49	0	0	0	0	0	0	0	248	1	0	3	0	0	4
12:15 AM	4	32	0	0	0	36	0	0	0	0	0	0	0	96	0	0	1	0	0	1
12:30 AM	4	47	0	0	0	51	0	0	0	0	0	0	0	70	0	0	0	0	0	1
12:45 AM	15	32	0	0	0	47	0	0	0	0	0	0	0	52	1	0	2	0	0	3
Hourly Total	37	154	0	0	0	191	0	0	0	0	0	0	0	466	2	0	7	0	0	9
1:00 AM	3	31	0	0	0	34	0	0	0	0	0	0	0	70	1	0	2	0	0	3
1:15 AM	10	33	0	0	0	43	0	0	0	0	0	0	0	66	2	0	0	0	0	2
1:30 AM	11	32	0	0	0	43	0	0	0	0	0	0	0	38	2	0	0	0	0	1
1:45 AM	22	27	0	0	0	49	0	0	0	0	0	0	0	39	3	0	0	0	0	1
Hourly Total	46	123	0	0	0	169	0	0	0	0	0	0	0	213	8	0	4	0	0	7
2:00 AM	6	35	0	0	0	41	0	0	0	0	0	0	0	134	0	0	0	0	0	1
2:15 AM	5	36	0	0	0	41	0	0	0	0	0	0	0	66	0	0	2	0	0	4
2:30 AM	6	29	0	0	0	35	0	0	0	0	0	0	0	85	0	0	2	0	0	3
2:45 AM	5	36	0	0	0	41	0	0	0	0	0	0	0	40	0	0	2	0	0	3
Hourly Total	22	156	0	0	0	178	0	0	0	0	0	0	0	325	4	0	7	0	0	11
3:00 AM	5	58	0	0	0	63	0	0	0	0	0	0	0	40	0	0	2	0	0	3
3:15 AM	4	83	0	0	0	87	0	0	0	0	0	0	0	60	0	0	1	0	0	1
3:30 AM	2	101	0	0	0	103	0	0	0	0	0	0	0	195	1	0	2	0	0	14
3:45 AM	3	112	0	0	0	115	0	0	0	0	0	0	0	77	0	0	7	0	0	8
Hourly Total	14	354	0	0	0	368	0	0	0	0	0	0	0	372	2	0	13	0	0	18
4:00 AM	3	124	0	0	0	127	0	0	0	0	0	0	0	123	0	0	8	0	0	11
4:15 AM	0	187	0	0	0	187	0	0	0	0	0	0	0	81	0	0	3	0	0	8
4:30 AM	4	257	0	0	0	261	0	0	0	0	0	0	0	176	0	0	8	0	0	9
4:45 AM	2	318	0	0	0	320	0	0	0	0	0	0	0	105	0	0	0	0	0	1
Hourly Total	9	886	0	0	0	895	0	0	0	0	0	0	0	485	0	0	19	0	0	24
5:00 AM	3	224	0	0	0	227	0	0	0	0	0	0	0	159	0	0	3	0	0	4
5:15 AM	2	384	0	0	0	386	0	0	0	0	0	0	0	108	1	0	4	0	0	9
5:30 AM	2	575	0	0	0	577	0	0	0	0	0	0	0	87	0	0	2	0	0	4
5:45 AM	5	727	0	0	0	732	0	0	0	0	0	0	0	146	0	0	4	0	0	7
Hourly Total	12	1624	0	0	0	1636	0	0	0	0	0	0	0	500	1	0	12	0	0	24
6:00 AM	4	375	0	0	0	379	0	0	0	0	0	0	0	195	2	0	19	0	0	6
6:15 AM	7	429	0	0	0	436	0	0	0	0	0	0	0	179	3	0	8	0	0	9
6:30 AM	7	565	0	0	0	572	0	0	0	0	0	0	0	212	2	0	21	0	0	11
6:45 AM	17	669	0	0	0	686	0	0	0	0	0	0	0	229	2	0	23	0	0	15
Hourly Total	35	2038	0	0	0	2073	0	0	0	0	0	0	0	815	9	0	82	0	0	41
7:00 AM	22	271	0	0	0	293	0	0	0	0	0	0	0	232	6	0	23	0	0	25
7:15 AM	21	377	0	0	0	398	0	0	0	0	0	0	0	222	1	0	23	0	0	20
7:30 AM	12	462	0	0	0	474	0	0	0	0	0	0	0	243	3	0	24	0	0	29
7:45 AM	6	557	0	0	0	563	0	0	0	0	0	0	0	217	2	0	21	0	0	9
Hourly Total	61	1667	0	0	0	1728	0	0	0	0	0	0	0	914	12	0	92	0	0	83
8:00 AM	18	353	0	0	0	371	0	0	0	0	0	0	0	173	4	0	17	0	0	18
8:15 AM	29	336	0	0	0	365	0	0	0	0	0	0	0	165	5	0	10	0	0	16
8:30 AM	34	310	0	0	0	344	0	0	0	0	0	0	0	197	10	0	20	0	0	16
8:45 AM	24	298	0	0	0	322	0	0	0	0	0	0	0	166	3	0	19	0	0	30
Hourly Total	105	1297	0	0	0	1402	0	0	0	0	0	0	0	701	22	0	73	0	0	80
9:00 AM	16	211	0	0	0	227	0	0	0	0	0	0	0	180	3	0	18	0	0	26
9:15 AM	18	217	0	0	0	236	0	0	0	0	0	0	0	176	2	0	17	0	0	21
9:30 AM	15	228	0	0	0	243	0	0	0	0	0	0	0	188	5	0	19	0	0	27
9:45 AM	14	223	0	0	0	237	0	0	0	0	0	0	0	169	2	0	17	0	0	9
Hourly Total	63	879	0	0	0	942	0	0	0	0	0	0	0	711	15	0	72	0	0	83
10:00 AM	11	174	0	0	0	185	0	0	0	0	0	0	0	161	3	0	16	0	0	12
10:15 AM	7	182	0	0	0	189	0	0	0	0	0	0	0	167	4	0	17	0	0	21
10:30 AM	10	163	0	0	0	190	0	0	0	0	0	0	0	189	3	0	19	0	0	17
10:45 AM	21	213	0	0	0	234	0	0	0	0	0	0	0	208	4	0	21	0	0	17
Hourly Total	38	749	0	0	0	787	0	0	0	0	0	0	0	723	14	0	73	0	0	67
11:00 AM	7	228	0	0	0	235	0	0	0	0	0	0	0	234	3	0	23	0	0	14
11:15 AM	15	228	0	0	0	243	0	0	0	0	0	0	0	202	6	0	20	0	0	7
11:30 AM	21	231	0	0	0	252	0	0	0	0	0	0	0	231	1	0	23	0	0	17
11:45 AM	19	227	0	0	0	246	0	0	0	0	0	0	0	222	6	0	22	0	0	9
Hourly Total	62	914	0	0	0	976	0	0	0	0	0	0	0	889	16	0	90	0	0	47
12:00 PM	17	200	0	0	0	217	0	0	0	0	0	0	0	288	1	0	28	0	0	13
12:15 PM	15	232	0	0	0	247	0	0	0	0	0	0	0	241	5	0	24	0	0	13
12:30 PM	20	240	0	0	0	260	0	0	0	0	0	0	0	218	3	0	21	0	0	13
12:45 PM	15	215	0	0	0	230	0	0	0	0	0	0	0	240	11	0	25	0	0	25
Hourly Total	67	887	0	0	0	954	0	0	0	0	0	0	0	885	20	0	100	0	0	64
1:00 PM	12	245	0	0	0	257	0	0	0	0	0	0	0	250	1	0	25	0	0	15
1:15 PM	15	283	0	0	0	298	0	0	0	0	0	0	0	213	1	0	21	0	0	23
1:30 PM	11	332	0	0	0	343	0	0	0	0	0	0	0	260	5	0	26	0	0	10
1:45 PM	19	345	0	0	0	364	0	0	0	0	0	0	0	225	5	0	23	0	0	16
Hourly Total	57	1205	0	0	0	1262	0	0	0	0	0	0	0	948	12	0	96	0	0	66
2:00 PM	11	298	0	0	0	309	0	0	0	0	0	0	0	394	3	0	39	0	0	12
2:15 PM	15	280	0	0	0	295	0	0	0	0	0	0	0	439	2	0	44	0	0	13
2:30 PM	17	336	0	0	0	353	0	0	0	0	0	0	0	490	2	0	49	0	0	12
2:45 PM	25	352	0	0	0	377	0	0	0	0	0	0	0	453	5	0	45	0	0	12
Hourly Total	68	1266	0	0	0	1334	0	0	0	0	0	0	0	1785	12	0	179	0	0	49
3:00 PM	15	290	0	0	0	305	0	0	0	0	0	0	0	514	5	0	51	0	0	14
3:15 PM	15	331	0	0	0	346	0	0	0	0	0	0	0	417	4	0	42	0	0	21
3:30 PM	31	320	0	0	0	351	0	0	0	0	0	0	0	481	3	0	48	0	0	11
3:45 PM	21	337	0	0	0	358	0	0	0	0	0	0	0	461	2	0	46	0	0	14
Hourly Total	82	1278	0	0	0	1360	0	0	0	0	0	0	0	1873	14	0	188	0	0	60
4:00 PM	30	282	0	0	0	312	0	0	0	0	0	0	0	432	14	0	46	0	0	16
4:15 PM	38	315	0	0	0	353	0	0	0	0	0	0	0	395	5	0	40	0	0	6
4:30 PM	48	335	0	0	0	383	0	0	0	0	0	0	0	501	6	0	50	0	0	19
4:45 PM	38	323	0	0	0	361	0	0	0	0	0	0	0	465	8	0	47	0	0	12
Hourly Total	154	1255	0	0	0	1409	0	0	0	0	0	0	0	1813	33	0	184	0	0	53

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	659	9	1		1				1		1			1		1		
12:15 AM	466	8																
12:30 AM	445	9																
12:45 AM	399	9																
1:00 AM	390	7												1				
1:15 AM	460	5			1													
1:30 AM	456	7																
1:45 AM	493	9								1								
2:00 AM	503	10												1				
2:15 AM	431	13			1													
2:30 AM	471	12																
2:45 AM	650	11	1						1	1							1	
3:00 AM	742	17										1		1				
3:15 AM	889	23			1													
3:30 AM	1010	25					1											
3:45 AM	1148	30	1						1	1							1	
4:00 AM	1380	23										1		1				
4:15 AM	1520	16			1													
4:30 AM	1757	20					1											
4:45 AM	1984	15	1						1	1							1	
5:00 AM	2437	21										1		1				
5:15 AM	2623	26			1													
5:30 AM	2736	26					1											
5:45 AM	2858	33	1						1	1							1	
6:00 AM	2897	41										1		1				
6:15 AM	2852	60			1													
6:30 AM	2855	70					1											
6:45 AM	2789	87	1						1	1	1						1	
7:00 AM	2654	81										1	1	1				
7:15 AM	2671	75			1													
7:30 AM	2585	70					1											
7:45 AM	2416	58	1						1	1	1						1	
8:00 AM	2125	78										1	1	1				
8:15 AM	1990	85			1													
8:30 AM	1868	90					1	1										
8:45 AM	1751	100	1						1	1	1						1	
9:00 AM	1668	80										1	1	1				
9:15 AM	1604	67			1													
9:30 AM	1551	66					1											
9:45 AM	1499	57	1						1	1	1						1	

10:00 AM	1524	64										1	1	1				
10:15 AM	1647	66			1													
10:30 AM	1738	53					1											
10:45 AM	1840	53	1					1	1	1						1	1	
11:00 AM	1881	45										1		1				
11:15 AM	1913	43			1													
11:30 AM	1955	49					1											
11:45 AM	1952	46	1					1		1						1	1	
12:00 PM	1959	61										1	1	1				
12:15 PM	1963	64			1													
12:30 PM	1982	73					1											
12:45 PM	2109	70	1					1	1	1						1	1	
1:00 PM	2222	64										1	1	1				
1:15 PM	2420	61			1													
1:30 PM	2644	51					1											
1:45 PM	2890	53	1					1	1	1						1	1	
2:00 PM	3131	43										1		1				
2:15 PM	3249	49			1													
2:30 PM	3280	57					1											
2:45 PM	3261	56	1					1	1	1						1	1	
3:00 PM	3247	57										1		1				
3:15 PM	3201	55			1													
3:30 PM	3187	41					1											
3:45 PM	3242	46	1					1		1						1	1	
4:00 PM	3255	45										1		1				
4:15 PM	3285	44			1													
4:30 PM	3195	56					1											
4:45 PM	2947	66	1					1	1	1						1	1	
5:00 PM	2687	71										1	1	1				
5:15 PM	2354	77			1													
5:30 PM	2128	83					1	1										
5:45 PM	1903	77	1					1	1	1						1	1	
6:00 PM	1682	75										1	1	1				
6:15 PM	1511	73			1													
6:30 PM	1343	81					1	1										
6:45 PM	1159	77	1					1	1	1						1	1	
7:00 PM	1046	79										1	1	1				
7:15 PM	993	68			1													
7:30 PM	970	59					1											
7:45 PM	966	73	1					1	1	1						1	1	
8:00 PM	933	69										1	1	1				
8:15 PM	933	77			1													
8:30 PM	892	78																
8:45 PM	906	66	1				1		1	1	1					1	1	
9:00 PM	924	73										1	1	1				
9:15 PM	942	71			1													
9:30 PM	962	57																
9:45 PM	927	57	1				1		1	1	1					1	1	
HOURS MET			22	0	23	0	20	3	22	14	23	0	21	11	24	0	22	16
WARRANT SATISFIED?			NO		NO		NO		YES		NO		NO		NO		NO	

Warrant Met: **No**

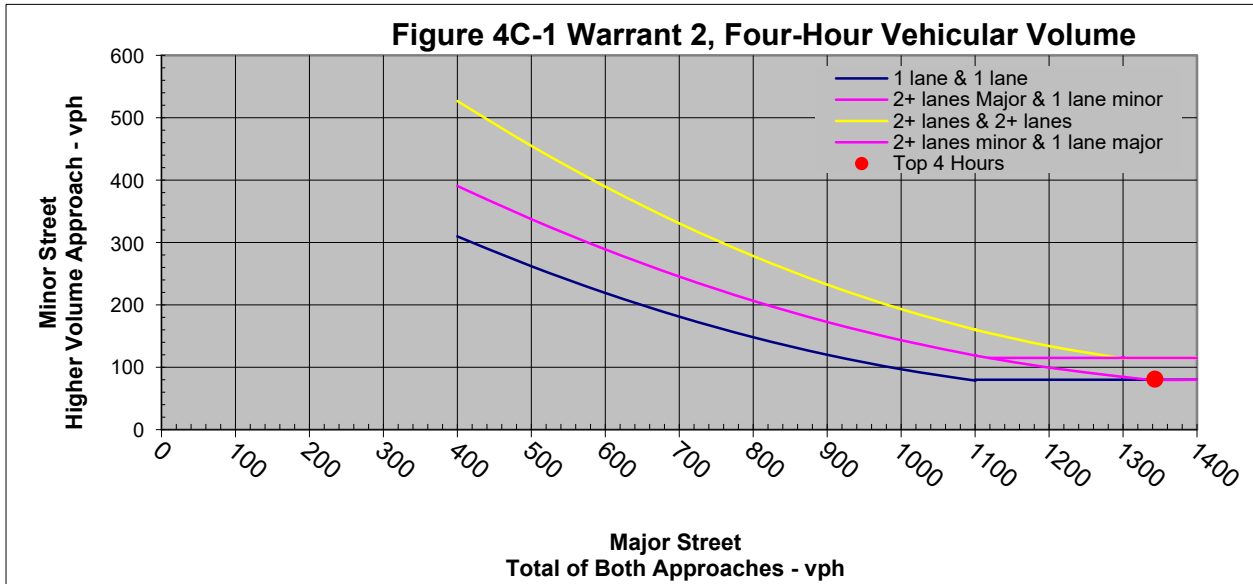
Notes: Condition B (70%) was met.

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	4
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	11
Minor Street: 1 Lane		

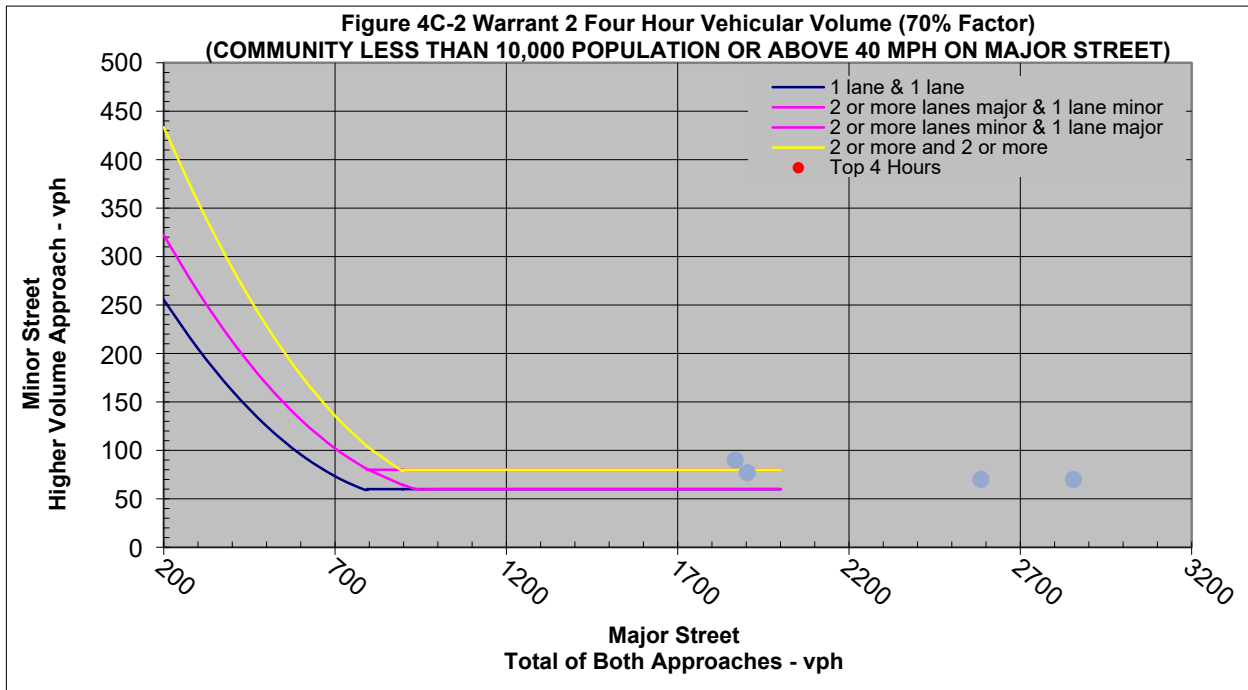
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rathmell Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	824	2073	0	41	2897	41		
6:15 AM	865	1987	0	60	2852	60		
6:30 AM	906	1949	0	70	2855	70		Met
6:45 AM	938	1851	0	87	2789	87	Met	
7:00 AM	926	1728	0	81	2654	81		
7:15 AM	865	1806	0	75	2671	75		
7:30 AM	812	1773	0	70	2585	70		Met
7:45 AM	773	1643	0	58	2416	58		
8:00 AM	723	1402	0	78	2125	78		
8:15 AM	732	1258	0	85	1990	85	Met	
8:30 AM	740	1128	0	90	1868	90		Met
8:45 AM	724	1027	0	100	1751	100		
9:00 AM	726	942	0	80	1668	80		
9:15 AM	704	900	0	67	1604	67		
9:30 AM	697	854	0	66	1551	66		Met
9:45 AM	698	801	0	57	1499	57		
10:00 AM	737	787	0	64	1524	64		
10:15 AM	810	837	0	66	1647	66		
10:30 AM	847	891	0	53	1738	53		
10:45 AM	887	953	0	53	1840	53		
11:00 AM	905	976	0	45	1881	45		
11:15 AM	955	958	0	43	1913	43		
11:30 AM	993	962	0	49	1955	49		
11:45 AM	982	970	0	46	1952	46		
12:00 PM	1005	954	0	61	1959	61		Met
12:15 PM	969	994	0	64	1963	64		
12:30 PM	937	1045	0	73	1982	73		
12:45 PM	981	1128	0	70	2109	70		
1:00 PM	960	1262	0	64	2222	64		Met
1:15 PM	1106	1314	0	61	2420	61		
1:30 PM	1333	1311	0	51	2644	51		
1:45 PM	1569	1321	0	53	2890	53		
2:00 PM	1797	1334	0	43	3131	43		
2:15 PM	1919	1330	0	49	3249	49		
2:30 PM	1899	1381	0	57	3280	57		
2:45 PM	1882	1379	0	56	3261	56		
3:00 PM	1887	1360	0	57	3247	57		
3:15 PM	1834	1367	0	55	3201	55		
3:30 PM	1813	1374	0	41	3187	41		
3:45 PM	1836	1406	0	46	3242	46		
4:00 PM	1846	1409	0	45	3255	45		
4:15 PM	1899	1386	0	44	3285	44		
4:30 PM	1862	1333	0	56	3195	56		
4:45 PM	1726	1221	0	66	2947	66		Met
5:00 PM	1533	1154	0	71	2687	71		
5:15 PM	1285	1069	0	77	2354	77		
5:30 PM	1124	1004	0	83	2128	83	Met	
5:45 PM	998	905	0	77	1903	77		Met
6:00 PM	902	780	0	75	1682	75		
6:15 PM	822	689	0	73	1511	73		
6:30 PM	755	588	0	81	1343	81	Met	
6:45 PM	639	520	0	77	1159	77		Met
7:00 PM	575	471	0	79	1046	79		
7:15 PM	516	477	0	68	993	68		
7:30 PM	502	468	0	59	970	59		
7:45 PM	484	482	0	73	966	73		Met
8:00 PM	453	480	0	69	933	69		



Top Hours for Figure 4C-1		Start Time	End Time	Major Street	Minor Street
Top Hour	6:45 AM	7:45 AM	2789	87	
2nd Highest Hour	8:15 AM	9:15 AM	1990	85	
3rd Highest Hour	5:30 PM	6:30 PM	2128	83	
4th Highest Hour	6:30 PM	7:30 PM	1343	81	

Top Hours for Figure 4C-2		Start Time	End Time	Major Street	Minor Street
Top Hour	8:30 AM	9:30 AM	1868	90	
2nd Highest Hour	5:45 PM	6:45 PM	1903	77	
3rd Highest Hour	6:30 AM	7:30 AM	2855	70	
4th Highest Hour	7:30 AM	8:30 AM	2585	70	



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	8:45 AM
Major Street:	2 or More Lanes	Peak Hour End Time	9:45 AM
Minor Street:	1 Lane		

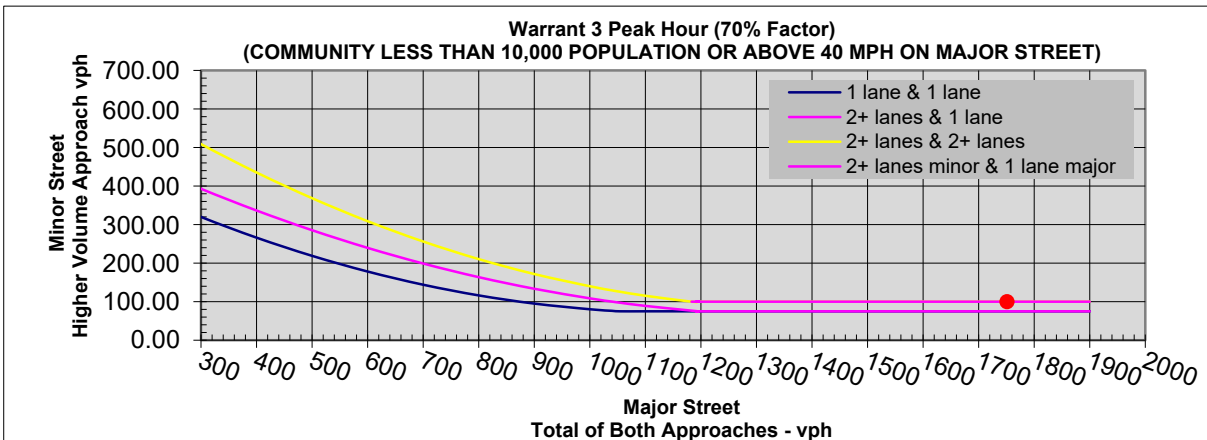
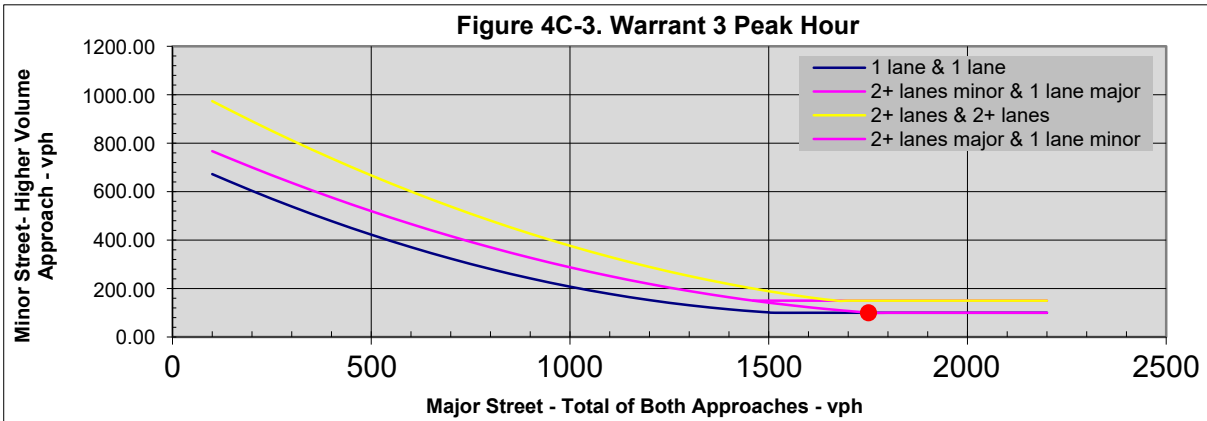
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2897	41	2938	2938
6:15 AM	2852	60	2912	2912
6:30 AM	2855	70	2925	2925
6:45 AM	2789	87	2876	2876
7:00 AM	2654	81	2735	2735
7:15 AM	2671	75	2746	2746
7:30 AM	2585	70	2655	2655
7:45 AM	2416	58	2474	2474
8:00 AM	2125	78	2203	2203
8:15 AM	1990	85	2075	2075
8:30 AM	1868	90	1958	1958
8:45 AM	1751	100	1851	1851
9:00 AM	1668	80	1748	1748
9:15 AM	1604	67	1671	1671
9:30 AM	1551	66	1617	1617
9:45 AM	1499	57	1556	1556
10:00 AM	1524	64	1588	1588
10:15 AM	1647	66	1713	1713
10:30 AM	1738	53	1791	1791
10:45 AM	1840	53	1893	1893
11:00 AM	1881	45	1926	1926
11:15 AM	1913	43	1956	1956
11:30 AM	1955	49	2004	2004
11:45 AM	1952	46	1998	1998
12:00 PM	1959	61	2020	2020
12:15 PM	1963	64	2027	2027
12:30 PM	1982	73	2055	2055
12:45 PM	2109	70	2179	2179
1:00 PM	2222	64	2286	2286
1:15 PM	2420	61	2481	2481
1:30 PM	2644	51	2695	2695
1:45 PM	2890	53	2943	2943
2:00 PM	3131	43	3174	3174
2:15 PM	3249	49	3298	3298
2:30 PM	3280	57	3337	3337
2:45 PM	3261	56	3317	3317
3:00 PM	3247	57	3304	3304
3:15 PM	3201	55	3256	3256
3:30 PM	3187	41	3228	3228
3:45 PM	3242	46	3288	3288
4:00 PM	3255	45	3300	3300
4:15 PM	3285	44	3329	3329
4:30 PM	3195	56	3251	3251
4:45 PM	2947	66	3013	3013
5:00 PM	2687	71	2758	2758
5:15 PM	2354	77	2431	2431
5:30 PM	2128	83	2211	2211
5:45 PM	1903	77	1980	1980
6:00 PM	1682	75	1757	1757
6:15 PM	1511	73	1584	1584
6:30 PM	1343	81	1424	1424
6:45 PM	1159	77	1236	1236
7:00 PM	1046	79	1125	1125
7:15 PM	993	68	1061	1061
7:30 PM	970	59	1029	1029
7:45 PM	966	73	1039	1039
8:00 PM	933	69	1002	1002

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1751	100	101	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

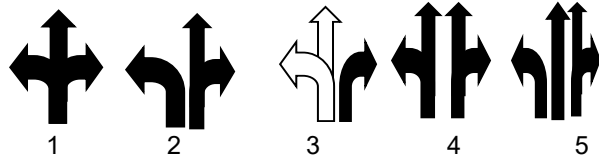
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Bixby Road

Minor Street Approach Configuration: 3 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">7:00 AM</td></tr> <tr><td style="text-align: center;">8:00 AM</td></tr> </table>	Peak Hour	7:00 AM	8:00 AM
Peak Hour						
7:00 AM						
8:00 AM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">5:30 PM</td></tr> <tr><td style="text-align: center;">6:30 PM</td></tr> </table>	Peak Hour	5:30 PM	6:30 PM
Peak Hour						
5:30 PM						
6:30 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Do Not Install New Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection.

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	0	38	0	0	0	38	1	0	0	0	0	1	5	237	0	0	0	242	0	0	0	0	0	0	
12:15 AM	0	34	0	0	0	34	1	0	0	0	0	1	0	97	0	0	0	97	0	0	0	0	0	0	
12:30 AM	1	41	0	0	0	42	0	0	0	0	0	0	0	70	0	0	0	70	0	0	0	0	0	0	
12:45 AM	0	32	0	0	0	32	0	0	0	0	0	0	0	48	0	0	0	48	0	0	0	0	0	0	
Hourly Total	1	145	0	0	0	146	2	0	0	0	0	2	5	452	0	0	0	457	0	0	0	0	0	0	
1:00 AM	0	35	0	0	0	35	0	0	0	0	0	0	0	72	0	0	0	72	1	0	0	0	0	1	
1:15 AM	0	32	0	0	0	32	0	0	0	0	0	0	0	61	0	0	0	61	0	0	0	0	0	0	
1:30 AM	0	31	0	0	0	31	0	0	0	0	0	0	0	40	0	0	0	40	0	0	0	0	0	0	
1:45 AM	0	25	0	0	0	25	0	0	0	0	0	0	0	44	0	0	0	44	0	0	0	0	0	0	
Hourly Total	0	123	0	0	0	123	0	0	0	0	0	0	0	217	0	0	0	217	1	0	0	0	0	1	
2:00 AM	0	36	0	0	0	36	0	0	0	0	0	0	2	140	0	0	0	142	0	0	0	0	0	0	
2:15 AM	0	38	0	0	0	38	0	0	0	0	0	0	1	65	0	0	0	66	0	0	0	0	0	0	
2:30 AM	1	24	0	0	0	25	0	0	0	0	0	0	1	84	0	0	0	85	0	0	0	0	0	0	
2:45 AM	0	53	0	0	0	53	0	0	0	0	0	0	0	42	0	0	0	42	0	0	0	0	0	0	
Hourly Total	1	151	0	0	0	152	0	0	0	0	0	0	4	331	0	0	0	335	0	0	0	0	0	0	
3:00 AM	0	59	0	0	0	59	0	0	0	0	0	0	3	41	0	0	0	44	0	0	0	0	0	0	
3:15 AM	0	86	0	0	0	86	0	0	0	0	0	0	0	59	0	0	0	59	0	0	0	0	0	0	
3:30 AM	0	101	0	0	0	101	0	0	0	0	0	0	2	199	0	0	0	201	0	0	0	0	0	0	
3:45 AM	1	113	0	0	0	114	0	0	0	0	0	0	2	75	0	0	0	77	0	0	0	0	0	0	
Hourly Total	1	359	0	0	0	360	0	0	0	0	0	0	7	374	0	0	0	381	0	0	0	0	0	0	
4:00 AM	0	123	0	0	0	123	0	0	0	0	0	0	1	124	0	0	0	125	0	0	0	0	0	0	
4:15 AM	6	176	0	0	0	182	0	0	0	0	0	0	0	81	0	0	0	81	1	0	0	0	0	1	
4:30 AM	3	252	0	0	0	255	0	0	0	0	0	0	2	182	0	0	0	184	0	0	0	0	0	0	
4:45 AM	4	323	0	0	0	327	1	0	0	0	1	1	1	106	0	0	0	107	1	0	0	0	0	1	
Hourly Total	13	874	0	0	0	887	1	0	0	0	1	1	4	493	0	0	0	497	2	0	0	0	0	2	
5:00 PM	10	218	0	0	0	228	0	0	0	0	0	1	0	158	0	0	0	158	1	0	0	0	0	1	
5:15 PM	19	376	0	0	0	395	0	0	0	0	0	0	1	113	0	0	0	114	1	0	0	0	0	1	
5:30 AM	19	549	0	0	0	568	0	0	0	0	0	0	3	95	0	0	0	98	1	0	0	0	0	1	
5:45 AM	30	704	0	0	0	734	0	0	0	0	0	0	0	162	0	0	0	162	0	0	0	0	0	0	
Hourly Total	78	1847	0	0	0	1925	0	0	0	0	0	0	4	538	0	0	0	532	3	0	0	0	0	3	
6:00 AM	1	377	0	0	0	378	0	0	0	0	0	0	2	200	0	0	0	202	0	0	0	0	0	0	
6:15 AM	3	437	0	0	0	440	2	0	0	0	2	0	0	175	0	0	0	175	1	0	0	0	0	1	
6:30 AM	3	527	0	0	0	530	1	0	0	0	1	1	1	208	0	0	0	209	2	0	0	0	0	2	
6:45 AM	5	709	0	0	0	714	1	0	0	0	1	1	1	245	0	0	0	246	0	0	0	0	0	0	
Hourly Total	12	2050	0	0	0	2062	4	0	0	0	4	4	7	828	0	0	0	835	3	0	0	0	0	3	
7:00 AM	7	301	0	0	0	308	4	0	0	0	4	4	1	227	0	0	0	228	2	0	0	0	0	2	
7:15 AM	4	374	0	0	0	378	4	0	0	0	4	4	3	221	0	0	0	224	1	0	0	0	0	1	
7:30 AM	6	438	0	0	0	444	2	0	0	0	2	2	3	242	0	0	0	245	0	0	0	0	0	0	
7:45 AM	7	549	0	0	0	556	7	0	0	0	7	7	0	213	0	0	0	213	4	0	0	0	0	4	
Hourly Total	24	1662	0	0	0	1686	17	0	0	0	17	17	7	903	0	0	0	910	7	0	0	0	0	4	
8:00 AM	6	405	0	0	0	411	2	0	0	0	2	2	5	177	0	0	0	182	1	0	0	0	0	1	
8:15 AM	1	342	0	0	0	343	1	0	0	0	1	1	2	174	0	0	0	176	0	0	0	0	0	0	
8:30 AM	6	314	0	0	0	320	0	0	0	0	0	0	2	200	0	0	0	202	1	0	0	0	0	1	
8:45 AM	7	318	0	0	0	325	2	0	0	0	2	2	3	165	0	0	0	168	0	0	0	0	0	0	
Hourly Total	20	1379	0	0	0	1399	5	0	0	0	5	5	12	714	0	0	0	726	5	0	0	0	0	5	
9:00 AM	4	232	0	0	0	236	1	0	0	0	1	1	2	195	0	0	0	197	1	0	0	0	0	1	
9:15 AM	4	215	0	0	0	219	1	0	0	0	1	1	4	168	0	0	0	172	1	0	0	0	0	1	
9:30 AM	3	216	0	0	0	219	2	0	0	0	2	2	0	190	0	0	0	190	2	0	0	0	0	2	
9:45 AM	1	223	0	0	0	224	1	0	0	0	1	1	2	164	0	0	0	166	2	0	0	0	0	2	
Hourly Total	12	866	0	0	0	888	5	0	0	0	5	5	9	715	0	0	0	723	3	0	0	0	0	6	
10:00 AM	1	178	0	0	0	179	1	0	0	0	1	1	2	171	0	0	0	173	3	0	0	0	0	3	
10:15 AM	2	199	0	0	0	201	2	0	0	0	2	2	1	171	0	0	0	172	0	0	0	0	0	0	
10:30 AM	3	181	0	0	0	184	2	0	0	0	2	2	0	195	0	0	0	195	1	0	0	0	0	1	
10:45 AM	1	223	0	0	0	224	2	0	0	0	2	2	3	201	0	0	0	204	2	0	0	0	0	2	
Hourly Total	7	781	0	0	0	788	7	0	0	0	7	7	6	738	0	0	0	744	6	0	0	0	0	6	
11:00 AM	4	218	0	0	0	222	1	0	0	0	1	1	4	259	0	0	0	263	4	0	0	0	0	4	
11:15 AM	1	227	0	0	0	228	1	0	0	0	1	1	6	216	0	0	0	222	3	0	0	0	0	3	
11:30 AM	4	248	0	0	0	252	2	0	0	0	2	2	2	234	0	0	0	236	3	0	0	0	0	3	
11:45 AM	3	237	0	0	0	240	1	0	0	0	1	1	7	238	0	0	0	245	2	0	0	0	0	2	
Hourly Total	12	930	0	0	0	942	5	0	0	0	5	5	19	947	0	0	0	966	12	0	0	0	0	12	
12:00 PM	0	210	0	0	0	211	0	0	0	0	0	0	2	267	0	0	0	269	0	0	0	0	0	0	
12:15 PM	5	219	0	0	0	224	2	0	0	0	2	2	6	235	0	0	0	241	2	0	0	0	0	2	
12:30 PM	6	240	0	0	0	246	2	0	0	0	2	2	6	218	0	0	0	224	5	0	0	0	0	5	
12:45 PM	2	231	0	0	0	233	2	0	0	0	2	2	8	249	0	0	0	257	2	0	0	0	0	2	
Hourly Total	14	903	0	0	0	914	6	0	0	0	6	6	22	909	0	0	0	1021	10	0	0	0	0	10	
1:00 PM	3	246	0	0	0	249	0	0	0	0	0	0	5	282	0	0	0	287	0	0	0	0	0	0	
1:15 PM	3	290	0	0	0	293	2	0	0	0	2	2	4	217	0	0	0	221	2	0	0	0	0	2	
1:30 PM	2	334	0	0	0	336	4	0	0	0	4	4	1	282	0	0	0	283	4	0	0	0	0	4	
1:45 PM	0	339	0	0	0	339	1	0	0	0	1	1	6	253	0	0	0	259	1	0	0	0	0	1	
Hourly Total	8	1209	0	0	0	1217	7	0	0	0	7	7	16	1013	0	0	0	1029	7	0	0	0	0	7	
2:00 PM	2	304	0	0	0	306	4	0	0	0	4	4	13	394	0	0	0	407	6	0	0	0	0	6	
2:15 PM	1	286	0	0	0	287	4	0	0	0	4	4	14	424	0	0	0	438	3	0	0	0	0	3	
2:30 PM	4	351	0	0	0	355	5	0	0	0	5														

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	603	2	1		1						1				1		1	
12:15 AM	430	1																
12:30 AM	392	1																
12:45 AM	351	1																
1:00 AM	340	1												1				
1:15 AM	411	0																
1:30 AM	422	0			1													
1:45 AM	461	0																
2:00 AM	487	0								1				1				
2:15 AM	412	0																
2:30 AM	453	0			1													
2:45 AM	645	0	1						1									1
3:00 AM	741	0								1		1		1				
3:15 AM	886	0																
3:30 AM	1004	1			1		1											
3:45 AM	1141	1	1						1									1
4:00 AM	1384	2								1		1		1				
4:15 AM	1522	3																
4:30 AM	1768	3			1		1											
4:45 AM	1995	4	1						1									1
5:00 AM	2457	3								1		1		1				
5:15 AM	2651	2																
5:30 AM	2757	2			1		1											
5:45 AM	2830	3	1						1									1
6:00 AM	2897	4								1		1		1				
6:15 AM	2853	8																
6:30 AM	2840	10			1		1											
6:45 AM	2790	11	1						1									1
7:00 AM	2596	17								1		1		1				
7:15 AM	2653	15																
7:30 AM	2568	12			1		1											
7:45 AM	2401	10	1						1									1
8:00 AM	2125	5								1		1		1				
8:15 AM	1963	5																
8:30 AM	1837	4			1		1											
8:45 AM	1724	6	1						1									1
9:00 AM	1621	6								1		1		1				
9:15 AM	1542	8																
9:30 AM	1524	7			1		1											
9:45 AM	1494	6	1						1									1

10:00 AM	1532	7							1		1		1					
10:15 AM	1665	7																
10:30 AM	1742	10		1		1												
10:45 AM	1851	12	1					1								1		
11:00 AM	1908	12							1		1		1					
11:15 AM	1933	9																
11:30 AM	1948	8		1		1												
11:45 AM	1930	10	1					1								1		
12:00 PM	1935	10							1		1		1					
12:15 PM	1941	9																
12:30 PM	1990	9		1		1												
12:45 PM	2139	8	1					1								1		
1:00 PM	2246	7							1		1		1					
1:15 PM	2443	13																
1:30 PM	2654	14		1		1												
1:45 PM	2931	14	1					1								1		
2:00 PM	3134	14							1		1		1					
2:15 PM	3263	16																
2:30 PM	3310	16		1		1												
2:45 PM	3320	11	1					1								1		
3:00 PM	3344	11							1		1		1					
3:15 PM	3240	10																
3:30 PM	3154	7		1		1												
3:45 PM	3183	10	1					1								1		
4:00 PM	3140	11							1		1		1					
4:15 PM	3205	10																
4:30 PM	3135	12		1		1												
4:45 PM	2820	10	1					1								1		
5:00 PM	2599	9							1		1		1					
5:15 PM	2236	9																
5:30 PM	2060	8		1		1												
5:45 PM	1830	5	1					1								1		
6:00 PM	1583	4							1		1		1					
6:15 PM	1449	3																
6:30 PM	1273	2		1		1												
6:45 PM	1100	3	1					1								1		
7:00 PM	1022	3							1		1		1					
7:15 PM	961	6																
7:30 PM	950	7		1		1												
7:45 PM	958	11	1					1								1		
8:00 PM	929	11							1		1		1					
8:15 PM	924	6																
8:30 PM	877	6		1														
8:45 PM	883	4	1					1								1		
9:00 PM	915	3				1			1		1		1					
9:15 PM	941	4																
9:30 PM	959	3		1														
9:45 PM	941	3	1					1								1		
HOURS MET			22	0	23	0	20	0	21	0	23	0	21	0	24	0	22	0
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO	

Warrant Met: **No**

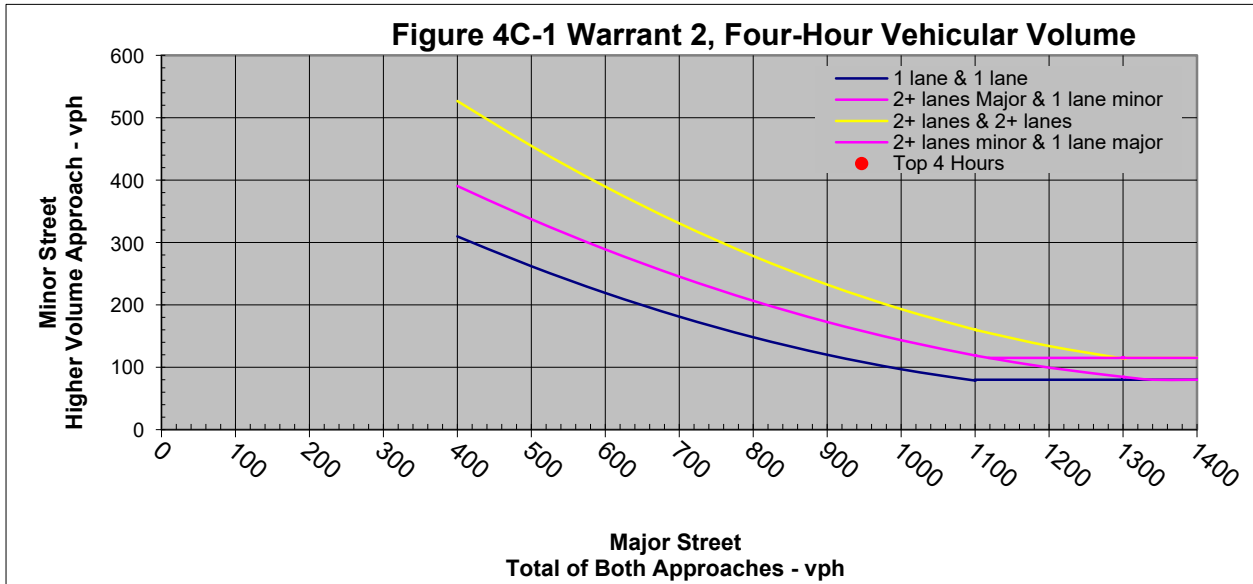
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

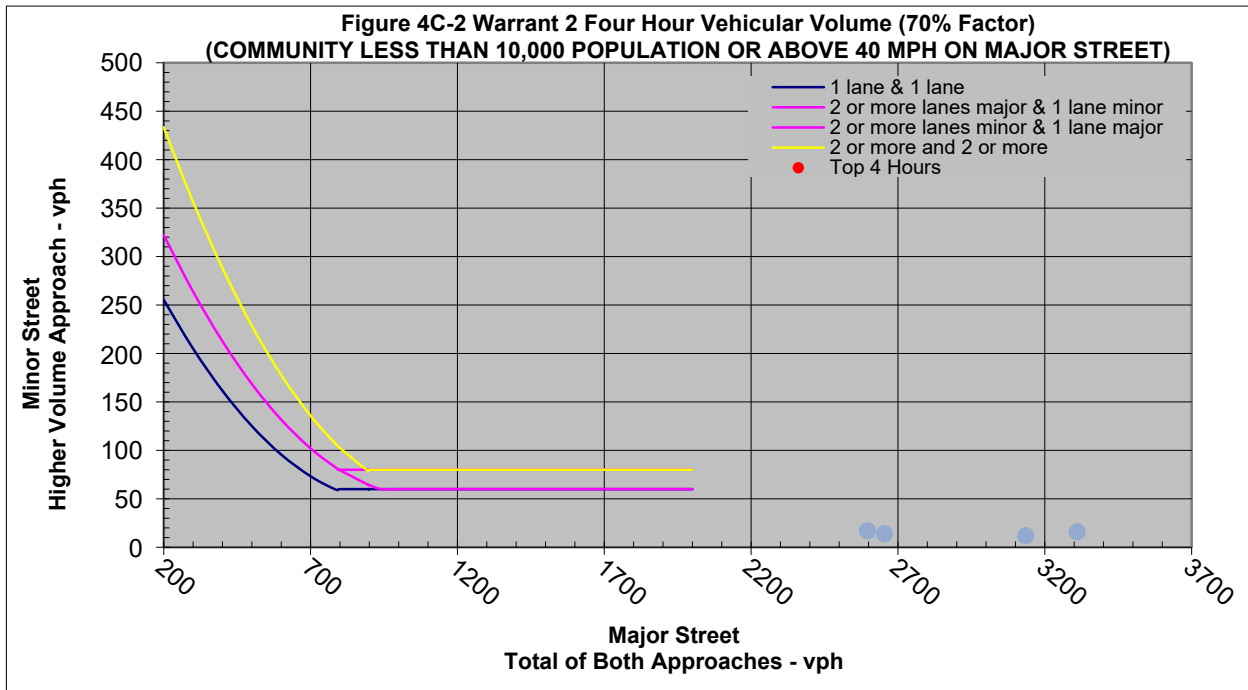
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Bixby Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	835	2062	4	3	2897	4		
6:15 AM	861	1992	8	5	2853	8		
6:30 AM	910	1930	10	5	2840	10		
6:45 AM	946	1844	11	3	2790	11		
7:00 AM	910	1686	17	7	2596	17		
7:15 AM	864	1789	15	6	2653	15		
7:30 AM	814	1754	12	8	2568	12		
7:45 AM	771	1630	10	9	2401	10		
8:00 AM	726	1399	5	5	2125	5		
8:15 AM	739	1224	4	5	1963	5		
8:30 AM	737	1100	4	3	1837	4		
8:45 AM	725	999	6	4	1724	6		
9:00 AM	723	898	5	6	1621	6		
9:15 AM	701	841	5	8	1542	8		
9:30 AM	701	823	6	7	1524	7		
9:45 AM	706	788	6	6	1494	6		
10:00 AM	744	788	7	6	1532	7		
10:15 AM	834	831	7	7	1665	7		
10:30 AM	884	858	6	10	1742	10		
10:45 AM	925	926	6	12	1851	12		
11:00 AM	966	942	5	12	1908	12		
11:15 AM	1002	931	4	9	1933	9		
11:30 AM	1021	927	5	8	1948	8		
11:45 AM	1009	921	5	10	1930	10		
12:00 PM	1021	914	6	10	1935	10		
12:15 PM	989	952	6	9	1941	9		
12:30 PM	969	1021	6	9	1990	9		
12:45 PM	1028	1111	8	8	2139	8		
1:00 PM	1029	1217	7	7	2246	7		
1:15 PM	1169	1274	11	13	2443	13		
1:30 PM	1386	1268	13	14	2654	14		
1:45 PM	1644	1287	14	11	2931	14		
2:00 PM	1813	1321	14	12	3134	14		
2:15 PM	1942	1321	16	9	3263	16		
2:30 PM	1932	1378	16	9	3310	16		
2:45 PM	1959	1361	11	8	3320	11		
3:00 PM	1992	1352	11	8	3344	11		
3:15 PM	1917	1323	10	7	3240	10		
3:30 PM	1856	1298	7	4	3154	7		
3:45 PM	1856	1327	8	10	3183	10		
4:00 PM	1845	1295	9	11	3140	11		
4:15 PM	1917	1288	9	10	3205	10		
4:30 PM	1889	1246	9	12	3135	12		
4:45 PM	1690	1130	10	10	2820	10		
5:00 PM	1525	1074	9	8	2599	9		
5:15 PM	1247	989	6	9	2236	9		
5:30 PM	1121	939	6	8	2060	8		
5:45 PM	982	848	5	4	1830	5		
6:00 PM	864	719	4	4	1583	4		
6:15 PM	800	649	3	2	1449	3		
6:30 PM	721	552	2	2	1273	2		
6:45 PM	613	487	1	3	1100	3		
7:00 PM	569	453	2	3	1022	3		
7:15 PM	521	440	6	4	961	6		
7:30 PM	519	431	7	3	950	7		
7:45 PM	503	455	11	3	958	11		
8:00 PM	468	461	11	4	929	11		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	7:00 AM	8:00 AM	2596	17
2nd Highest Hour	2:30 PM	3:30 PM	3310	16
3rd Highest Hour	1:30 PM	2:30 PM	2654	14
4th Highest Hour	4:30 PM	5:30 PM	3135	12

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	7:00 AM	8:00 AM	2596	17
2nd Highest Hour	2:30 PM	3:30 PM	3310	16
3rd Highest Hour	1:30 PM	2:30 PM	2654	14
4th Highest Hour	4:30 PM	5:30 PM	3135	12



Are the requirements for Warrant 2 met?:

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	7:00 AM
Major Street:	2 or More Lanes	Peak Hour End Time	8:00 AM
Minor Street:	1 Lane		

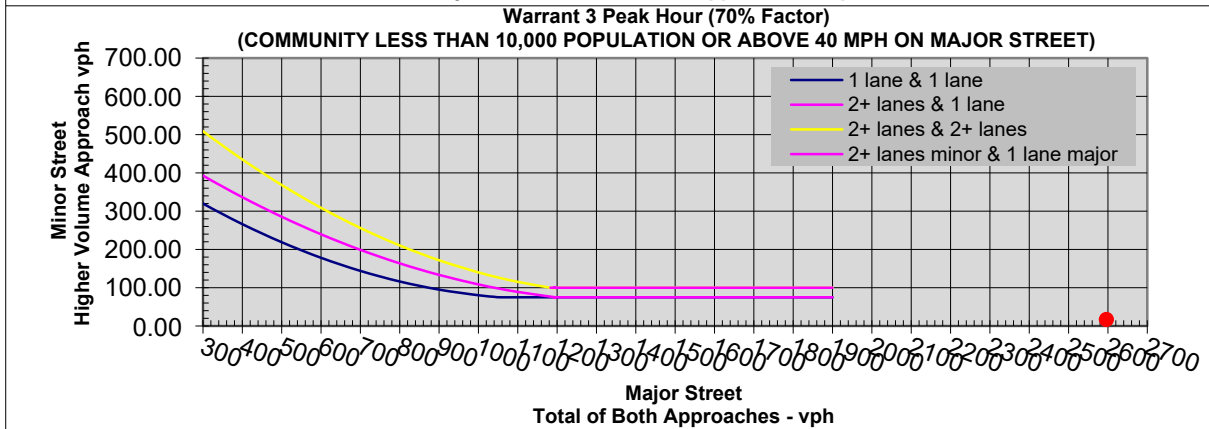
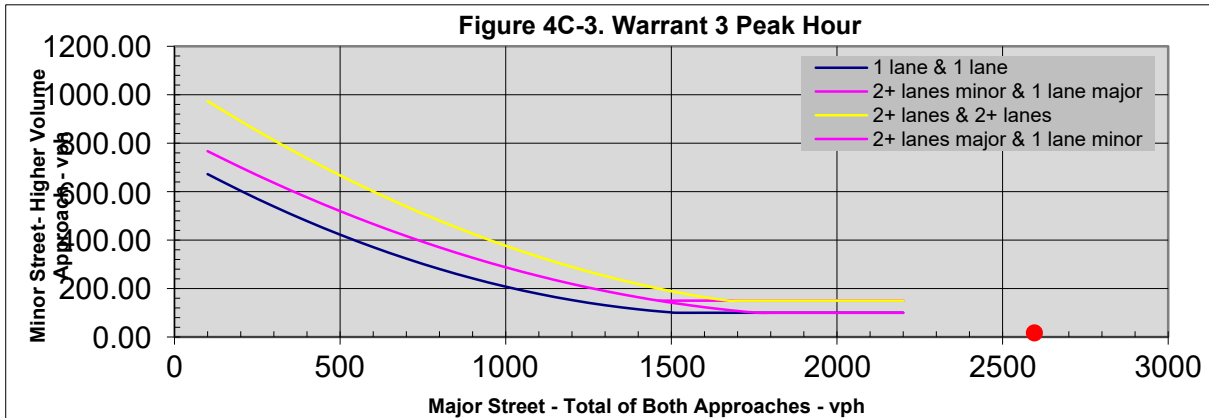
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2897	4	2901	2904
6:15 AM	2853	8	2861	2866
6:30 AM	2840	10	2850	2855
6:45 AM	2790	11	2801	2804
7:00 AM	2596	17	2613	2620
7:15 AM	2653	15	2668	2674
7:30 AM	2568	12	2580	2588
7:45 AM	2401	10	2411	2420
8:00 AM	2125	5	2130	2135
8:15 AM	1963	5	1968	1972
8:30 AM	1837	4	1841	1844
8:45 AM	1724	6	1730	1734
9:00 AM	1621	6	1627	1632
9:15 AM	1542	8	1550	1555
9:30 AM	1524	7	1531	1537
9:45 AM	1494	6	1500	1506
10:00 AM	1532	7	1539	1545
10:15 AM	1665	7	1672	1679
10:30 AM	1742	10	1752	1758
10:45 AM	1851	12	1863	1869
11:00 AM	1908	12	1920	1925
11:15 AM	1933	9	1942	1946
11:30 AM	1948	8	1956	1961
11:45 AM	1930	10	1940	1945
12:00 PM	1935	10	1945	1951
12:15 PM	1941	9	1950	1956
12:30 PM	1990	9	1999	2005
12:45 PM	2139	8	2147	2155
1:00 PM	2246	7	2253	2260
1:15 PM	2443	13	2456	2467
1:30 PM	2654	14	2668	2681
1:45 PM	2931	14	2945	2956
2:00 PM	3134	14	3148	3160
2:15 PM	3263	16	3279	3288
2:30 PM	3310	16	3326	3335
2:45 PM	3320	11	3331	3339
3:00 PM	3344	11	3355	3363
3:15 PM	3240	10	3250	3257
3:30 PM	3154	7	3161	3165
3:45 PM	3183	10	3193	3201
4:00 PM	3140	11	3151	3160
4:15 PM	3205	10	3215	3224
4:30 PM	3135	12	3147	3156
4:45 PM	2820	10	2830	2840
5:00 PM	2599	9	2608	2616
5:15 PM	2236	9	2245	2251
5:30 PM	2060	8	2068	2074
5:45 PM	1830	5	1835	1839
6:00 PM	1583	4	1587	1591
6:15 PM	1449	3	1452	1454
6:30 PM	1273	2	1275	1277
6:45 PM	1100	3	1103	1104
7:00 PM	1022	3	1025	1027
7:15 PM	961	6	967	971
7:30 PM	950	7	957	960
7:45 PM	958	11	969	972
8:00 PM	929	11	940	944

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2596	17	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

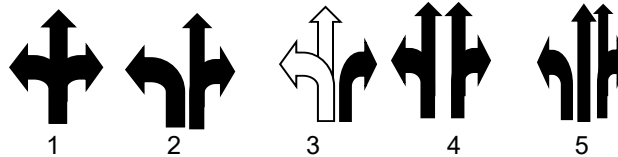
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Creekside Parkway/ Toy Road

Minor Street Approach Configuration: 2 E-Bound
2 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">2:15 PM</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> </table>				Peak Hour	2:15 PM	3:15 PM
Peak Hour						
2:15 PM						
3:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">5:00 PM</td></tr> <tr><td style="text-align: center;">6:00 PM</td></tr> </table>				Peak Hour	5:00 PM	6:00 PM
Peak Hour						
5:00 PM						
6:00 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	1	36	6	0	0	43	30	4	5	0	0	39	6	155	2	0	0	163	0	3	38	0	0	41	
12:15 AM	1	23	12	0	0	36	9	0	4	0	0	13	4	64	1	0	0	69	0	1	15	0	0	16	
12:30 AM	2	35	8	0	0	45	9	0	5	0	0	14	5	41	0	0	0	46	0	1	13	0	0	15	
12:45 AM	0	28	4	0	0	32	11	1	4	0	0	16	4	25	0	0	0	29	0	0	5	0	0	4	
Hourly Total	4	122	30	0	0	156	59	5	18	0	0	82	19	285	3	0	0	307	1	5	71	0	0	77	
1:00 AM	0	33	2	0	0	35	17	1	5	0	0	23	2	56	0	0	0	58	1	0	1	0	0	2	
1:15 AM	4	27	3	0	0	34	21	0	6	0	0	27	1	36	0	0	0	37	1	0	1	0	0	1	
1:30 AM	3	26	3	0	0	32	2	1	1	0	0	4	3	39	0	0	0	42	0	0	1	0	0	1	
1:45 AM	3	19	4	0	0	26	5	5	3	0	0	13	5	36	0	0	0	41	0	0	4	0	0	4	
Hourly Total	10	105	12	0	0	127	42	2	15	0	0	59	11	167	0	0	0	178	1	1	6	0	0	8	
2:00 AM	1	33	4	0	0	38	10	0	3	0	0	13	12	70	0	0	0	82	0	3	56	0	0	9	
2:15 AM	5	28	5	0	0	38	3	2	4	0	0	9	3	41	0	0	0	44	0	1	8	0	0	9	
2:30 AM	2	23	2	0	0	27	5	2	4	0	0	11	5	75	0	0	0	80	0	0	5	0	0	5	
2:45 AM	2	42	14	0	0	58	4	0	4	0	0	8	1	30	0	0	0	31	0	0	2	0	0	2	
Hourly Total	10	128	25	0	0	161	22	4	15	0	0	41	21	216	0	0	0	237	0	4	71	0	0	75	
3:00 AM	1	45	15	0	0	61	1	0	3	0	0	4	3	43	0	0	0	46	0	1	5	0	0	6	
3:15 AM	5	44	37	0	0	86	3	1	6	0	0	10	0	36	0	0	0	36	1	1	16	0	0	18	
3:30 AM	2	63	45	0	0	110	4	1	5	0	0	10	7	141	0	0	0	148	3	3	40	0	0	46	
3:45 AM	1	86	25	0	0	116	3	1	2	0	0	6	7	55	0	0	0	62	4	4	17	0	0	18	
Hourly Total	13	238	122	0	0	373	11	3	16	0	0	30	17	275	0	0	0	292	8	9	72	0	0	89	
4:00 AM	9	76	42	0	0	127	4	2	3	0	0	9	12	92	0	0	0	104	2	2	24	0	0	20	
4:15 AM	20	100	71	0	0	191	9	0	7	0	0	16	14	49	3	0	0	64	1	8	11	0	0	20	
4:30 AM	41	170	55	0	0	272	26	1	8	0	0	32	16	57	1	0	0	68	5	5	60	0	0	70	
4:45 AM	55	219	57	0	0	331	10	2	8	0	0	20	7	69	2	0	0	78	3	2	15	0	0	20	
Hourly Total	126	671	226	0	0	921	49	5	26	0	0	80	49	297	6	0	0	352	11	17	110	0	0	138	
5:00 AM	23	156	57	0	0	236	21	2	4	0	0	47	13	96	6	0	0	115	1	2	4	0	0	7	
5:15 AM	44	276	71	0	0	391	17	7	13	0	0	32	17	13	10	0	0	94	2	2	9	0	0	13	
5:30 AM	74	391	101	0	0	566	11	2	8	0	0	21	13	78	7	0	0	98	4	11	6	0	0	21	
5:45 AM	138	472	114	0	0	724	16	7	10	0	0	33	19	119	15	0	0	153	5	6	9	0	0	20	
Hourly Total	279	1265	343	0	0	1917	85	13	35	0	0	133	56	386	38	0	0	460	12	21	26	0	0	61	
6:00 AM	75	275	62	0	0	413	15	0	14	0	0	29	12	149	4	0	0	165	3	4	18	0	0	25	
6:15 AM	71	308	83	0	0	462	14	3	11	0	0	28	13	136	4	0	0	153	3	4	17	0	0	24	
6:30 AM	63	383	112	0	0	558	20	3	9	0	0	32	24	171	6	0	0	201	4	5	12	0	0	21	
6:45 AM	95	473	138	0	0	696	22	6	18	0	0	46	30	132	5	0	0	217	3	17	7	0	0	27	
Hourly Total	295	1439	395	0	0	2129	71	12	52	0	0	135	79	638	19	0	0	736	13	30	54	0	0	97	
7:00 AM	35	218	94	0	0	347	20	0	6	0	0	26	22	197	5	0	0	224	2	5	8	0	0	15	
7:15 AM	40	288	67	0	0	395	16	1	9	0	0	26	20	159	5	0	0	184	2	2	10	0	0	14	
7:30 AM	61	348	73	0	0	482	15	3	14	0	0	32	22	195	3	0	0	212	3	4	13	0	0	18	
7:45 AM	76	424	76	0	0	576	18	3	13	0	0	34	18	163	5	0	0	186	4	4	13	0	0	21	
Hourly Total	212	1278	310	0	0	1800	69	7	42	0	0	118	82	714	18	0	0	814	8	15	41	0	0	84	
8:00 AM	50	252	89	0	0	371	14	5	11	0	0	30	16	147	2	0	0	165	4	1	8	0	0	13	
8:15 AM	40	265	56	0	0	368	16	4	14	0	0	32	15	138	2	0	0	170	3	4	13	0	0	22	
8:30 AM	33	219	77	0	0	329	25	4	13	0	0	42	22	151	2	0	0	175	2	3	9	0	0	14	
8:45 AM	24	213	59	0	0	296	22	3	19	0	0	44	13	119	1	0	0	133	1	1	15	0	0	13	
Hourly Total	147	953	261	0	0	1361	77	16	57	0	0	150	66	523	7	0	0	596	7	5	54	0	0	66	
9:00 AM	117	402	98	0	0	620	21	2	16	0	0	39	12	167	3	0	0	180	7	5	22	0	0	23	
9:15 AM	22	160	39	0	0	221	17	4	11	0	0	32	15	129	4	0	0	148	4	2	10	0	0	16	
9:30 AM	22	170	47	0	0	239	26	2	17	0	0	45	8	128	2	0	0	138	4	1	13	0	0	18	
9:45 AM	21	183	36	0	0	240	32	3	15	0	0	50	10	109	2	0	0	129	4	4	23	0	0	31	
Hourly Total	88	690	162	0	0	940	96	11	59	0	0	146	51	604	13	0	0	668	13	12	63	0	0	88	
10:00 AM	23	136	26	0	0	185	21	4	18	0	0	43	15	125	3	0	0	143	2	4	16	0	0	22	
10:15 AM	18	137	40	0	0	195	18	4	13	0	0	35	14	127	4	0	0	145	4	1	17	0	0	22	
10:30 AM	20	133	30	0	0	183	14	3	10	0	0	27	16	140	3	0	0	159	4	2	22	0	0	28	
10:45 AM	23	149	47	0	0	219	24	4	20	0	0	48	18	136	2	0	0	166	10	3	25	0	0	38	
Hourly Total	84	555	143	0	0	782	77	15	61	0	0	153	63	528	12	0	0	603	20	10	80	0	0	110	
11:00 AM	19	172	44	0	0	235	29	11	14	0	0	55	27	178	4	0	0	209	6	6	23	0	0	35	
11:15 AM	17	168	51	0	0	236	31	4	19	0	0	54	18	143	3	0	0	164	4	5	18	0	0	27	
11:30 AM	15	180	39	0	0	266	29	3	15	0	0	50	25	149	4	0	0	178	12	5	28	0	0	42	
11:45 AM	24	177	43	0	0	244	32	5	23	0	0	60	22	169	3	0	0	194	9	7	10	0	0	26	
Hourly Total	99	699	173	0	0	971	121	23	72	0	0	216	92	639	14	0	0	745	31	23	76	0	0	130	
12:00 PM	79	422	26	0	0	529	39	7	29	0	0	74	19	267	4	0	0	230	5	4	27	0	0	36	
12:15 PM	21	160	50	0	0	231	22	5	18	0	0	45	18	175	3	0	0	196	5	3	19	0	0	27	
12:30 PM	21	167	57	0	0	245	34	3	20	0	0	57	19	174	2	0	0	195	5	1	20	0	0	26	
12:45 PM	20	156	50	0	0	226	45	2	8	0	0	55	13	182	11	0	0	206	3	2	23	0	0	28	
Hourly Total	169	965	172	0	0	1332	139	17	75	0	0	221	69	738	20	0	0	821	18	10	89	0	0	117	
1:00 PM	25	175	43	0	0	246	43	4	13	0	0	60	21	179	2	0	0	192	7	8	24	0	0	35	
1:15 PM	26	215	56	0	0	297	36	4	11	0	0	51	21	152	5	0	0	178	7	8	15	0	0	30	
1:30 PM	44	215	91	0	0	350	39	8	22	0	0	69	24	187	5	0	0	218	2	9	27	0	0	38	
1:45 PM	30	229	99	0	0	358	45	6	24	0	0	75	13	170</											

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	463	82			1										1			
12:15 AM	350	66																
12:30 AM	316	80																
12:45 AM	299	70																
1:00 AM	305	59																
1:15 AM	332	65																
1:30 AM	343	73												1				
1:45 AM	376	77																
2:00 AM	398	75																
2:15 AM	385	32																
2:30 AM	425	33			1										1			
2:45 AM	576	72								1							1	1
3:00 AM	665	89	1						1	1								
3:15 AM	789	111											1	1				
3:30 AM	924	113			1	1	1	1							1	1		
3:45 AM	1042	137								1	1						1	1
4:00 AM	1273	138	1						1	1								
4:15 AM	1393	118											1	1				
4:30 AM	1621	134			1	1	1	1							1	1		
4:45 AM	1909	120									1	1					1	1
5:00 AM	2377	133	1						1	1								
5:15 AM	2604	115											1	1				
5:30 AM	2734	111			1	1	1	1							1	1		
5:45 AM	2829	122								1	1						1	1
6:00 AM	2865	135	1						1	1								
6:15 AM	2858	132											1	1				
6:30 AM	2822	130			1	1	1	1							1	1		
6:45 AM	2765	130								1	1						1	1
7:00 AM	2614	118	1						1	1								
7:15 AM	2579	122											1	1				
7:30 AM	2488	130			1	1	1	1							1	1		
7:45 AM	2290	140									1	1					1	1
8:00 AM	1957	150	1	1					1	1								
8:15 AM	1821	159											1	1				
8:30 AM	1702	157			1	1	1	1							1	1		
8:45 AM	1575	160								1	1						1	1
9:00 AM	1508	166	1	1					1	1								
9:15 AM	1436	170											1	1				
9:30 AM	1407	173			1	1	1	1							1	1		
9:45 AM	1372	155								1	1						1	1

10:00 AM	1385	153	1	1					1	1								
10:15 AM	1501	165										1	1					
10:30 AM	1561	184			1	1	1	1						1	1			
10:45 AM	1653	204								1	1					1	1	
11:00 AM	1716	216	1	1					1	1								
11:15 AM	1721	235										1	1					
11:30 AM	1748	226			1	1	1	1						1	1			
11:45 AM	1754	236									1	1				1	1	
12:00 PM	1748	231	1	1					1	1								
12:15 PM	1737	217										1	1					
12:30 PM	1785	223			1	1	1	1						1	1			
12:45 PM	1911	235								1	1					1	1	
1:00 PM	2024	255	1	1					1	1								
1:15 PM	2140	308										1	1					
1:30 PM	2268	355			1	1	1	1						1	1			
1:45 PM	2368	441									1	1				1	1	
2:00 PM	2478	468	1	1					1	1								
2:15 PM	2569	500										1	1					
2:30 PM	2644	476			1	1	1	1						1	1			
2:45 PM	2631	484									1	1				1	1	
3:00 PM	2661	457	1	1					1	1								
3:15 PM	2626	405										1	1					
3:30 PM	2525	407			1	1	1	1						1	1			
3:45 PM	2624	369									1	1				1	1	
4:00 PM	2592	359	1	1					1	1								
4:15 PM	2601	368										1	1					
4:30 PM	2532	360			1	1	1	1						1	1			
4:45 PM	2261	331									1	1				1	1	
5:00 PM	2050	344	1	1					1	1								
5:15 PM	1827	296										1	1					
5:30 PM	1701	270			1	1	1	1						1	1			
5:45 PM	1535	214									1	1				1	1	
6:00 PM	1393	165	1	1					1	1								
6:15 PM	1252	156										1	1					
6:30 PM	1114	142			1	1	1	1						1	1			
6:45 PM	1009	123									1	1				1	1	
7:00 PM	925	111	1						1	1								
7:15 PM	896	95										1	1					
7:30 PM	889	90			1									1	1			
7:45 PM	882	100									1					1	1	
8:00 PM	856	89	1						1	1								
8:15 PM	845	73										1	1					
8:30 PM	789	71			1									1				
8:45 PM	812	59									1					1	1	
9:00 PM	843	73	1						1	1								
9:15 PM	835	86										1	1					
9:30 PM	842	84			1									1	1			
9:45 PM	807	89									1					1	1	
HOURS MET			21	12	22	17	16	16	21	21	21	17	19	19	23	19	21	21
WARRANT SATISFIED?			YES		YES		YES		YES		YES		YES		YES		YES	

Warrant Met: **Yes**

Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

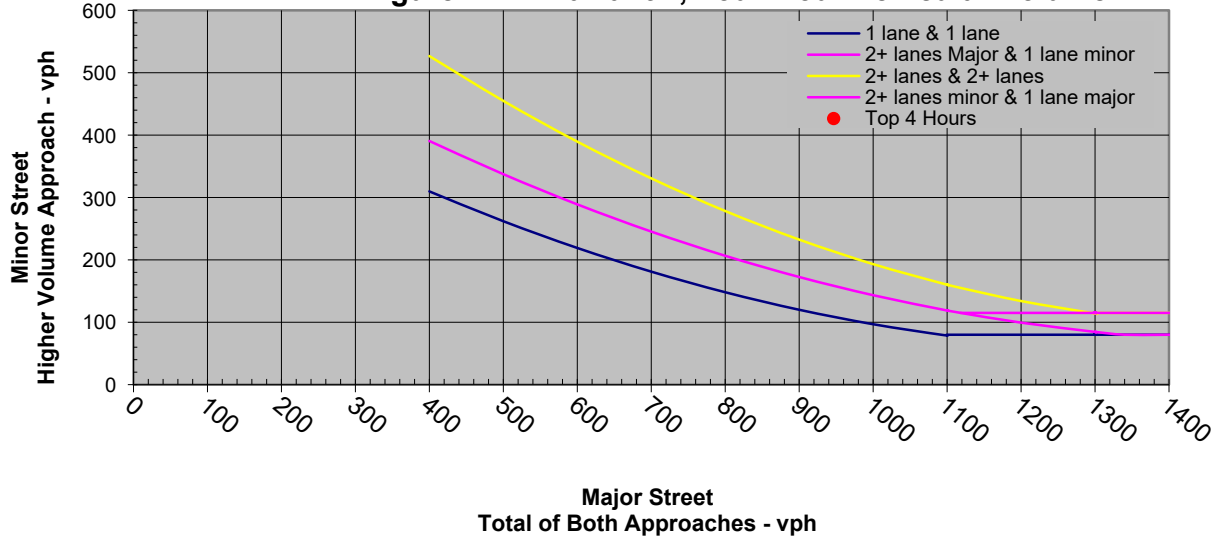
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	16
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	21
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Creekside Parkway/ Toy Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	736	2129	135	97	2865	135		
6:15 AM	795	2063	132	87	2858	132		Met
6:30 AM	826	1996	130	77	2822	130		
6:45 AM	845	1920	130	70	2765	130	Met	
7:00 AM	814	1800	118	64	2614	118		
7:15 AM	755	1824	122	62	2579	122		Met
7:30 AM	694	1794	130	70	2488	130		
7:45 AM	649	1641	140	70	2290	140	Met	
8:00 AM	596	1361	150	66	1957	150		
8:15 AM	591	1230	159	76	1821	159		Met
8:30 AM	616	1086	157	70	1702	157		
8:45 AM	579	996	160	74	1575	160	Met	
9:00 AM	568	940	166	88	1508	166		
9:15 AM	551	885	170	87	1436	170		Met
9:30 AM	548	859	173	93	1407	173		
9:45 AM	569	803	155	103	1372	155	Met	
10:00 AM	603	782	153	110	1385	153		
10:15 AM	669	832	165	123	1501	165		Met
10:30 AM	688	873	184	128	1561	184		
10:45 AM	707	946	204	142	1653	204	Met	
11:00 AM	745	971	216	130	1716	216		
11:15 AM	766	955	235	131	1721	235		Met
11:30 AM	798	950	226	131	1748	226		
11:45 AM	815	939	236	115	1754	236	Met	
12:00 PM	827	921	231	117	1748	231		
12:15 PM	789	948	217	116	1737	217		Met
12:30 PM	771	1014	223	119	1785	223		
12:45 PM	792	1119	235	131	1911	235	Met	
1:00 PM	773	1251	255	151	2024	255		
1:15 PM	830	1310	308	227	2140	308		Met
1:30 PM	936	1332	355	251	2268	355		
1:45 PM	1028	1340	441	314	2368	441	Met	
2:00 PM	1116	1362	468	306	2478	468		
2:15 PM	1200	1369	500	281	2569	500		Met
2:30 PM	1237	1407	476	281	2644	476		
2:45 PM	1269	1362	484	291	2631	484	Met	
3:00 PM	1329	1332	457	342	2661	457		
3:15 PM	1320	1306	405	317	2626	405		Met
3:30 PM	1255	1270	407	312	2525	407		
3:45 PM	1276	1348	369	336	2624	369	Met	
4:00 PM	1264	1328	359	314	2592	359		
4:15 PM	1297	1304	368	359	2601	368		Met
4:30 PM	1275	1257	360	352	2532	360		
4:45 PM	1165	1096	331	253	2261	331	Met	
5:00 PM	1038	1012	344	211	2050	344		
5:15 PM	888	939	296	134	1827	296		Met
5:30 PM	804	897	270	109	1701	270		
5:45 PM	706	829	214	107	1535	214	Met	
6:00 PM	656	737	165	101	1393	165		
6:15 PM	589	663	156	95	1252	156		Met
6:30 PM	548	566	142	91	1114	142		
6:45 PM	503	506	123	75	1009	123		
7:00 PM	454	471	111	67	925	111		
7:15 PM	434	462	95	54	896	95		Met
7:30 PM	437	452	90	54	889	90		
7:45 PM	412	470	100	49	882	100		
8:00 PM	385	471	89	52	856	89		

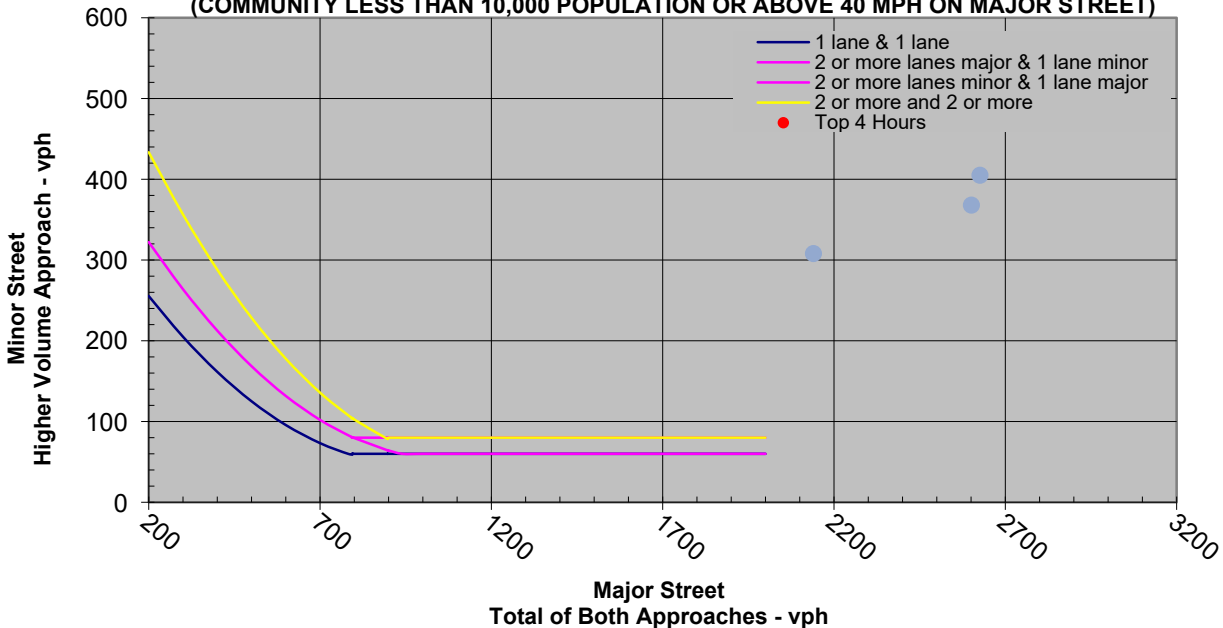
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	2:45 PM	3:45 PM	2631	484
2nd Highest Hour	1:45 PM	2:45 PM	2368	441
3rd Highest Hour	3:45 PM	4:45 PM	2624	369
4th Highest Hour	4:45 PM	5:45 PM	2261	331

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:15 PM	3:15 PM	2569	500
2nd Highest Hour	3:15 PM	4:15 PM	2626	405
3rd Highest Hour	4:15 PM	5:15 PM	2601	368
4th Highest Hour	1:15 PM	2:15 PM	2140	308

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	2:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street:	1 Lane		

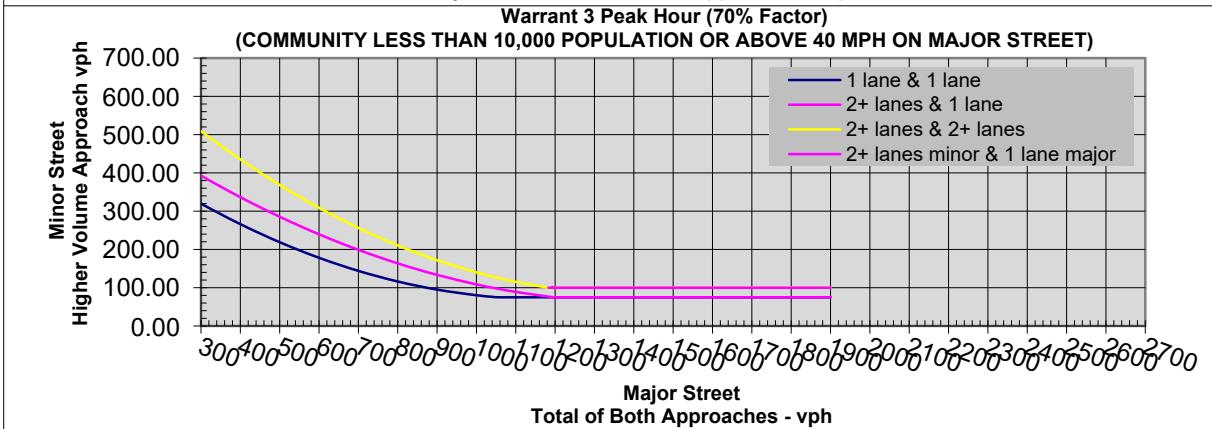
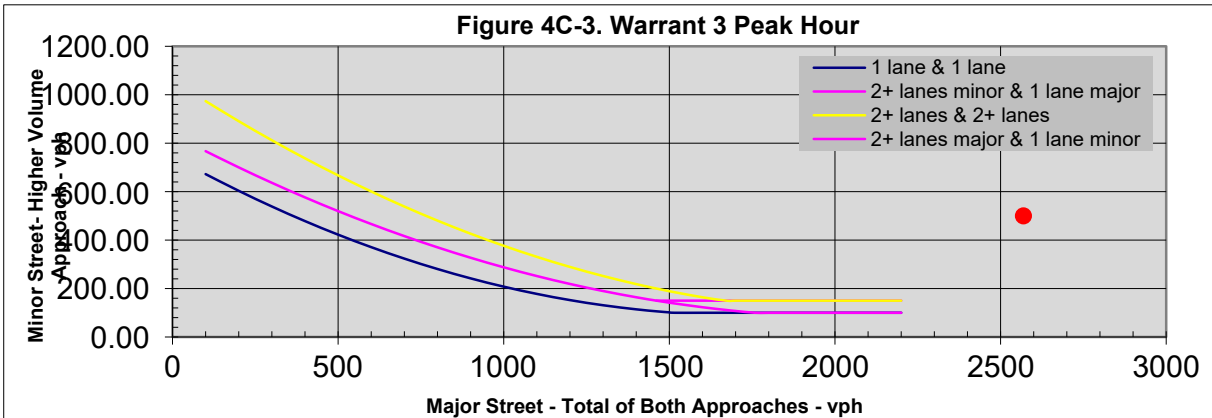
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2865	135	3000	3097
6:15 AM	2858	132	2990	3077
6:30 AM	2822	130	2952	3029
6:45 AM	2765	130	2895	2965
7:00 AM	2614	118	2732	2796
7:15 AM	2579	122	2701	2763
7:30 AM	2488	130	2618	2688
7:45 AM	2290	140	2430	2500
8:00 AM	1957	150	2107	2173
8:15 AM	1821	159	1980	2056
8:30 AM	1702	157	1859	1929
8:45 AM	1575	160	1735	1809
9:00 AM	1508	166	1674	1762
9:15 AM	1436	170	1606	1693
9:30 AM	1407	173	1580	1673
9:45 AM	1372	155	1527	1630
10:00 AM	1385	153	1538	1648
10:15 AM	1501	165	1666	1789
10:30 AM	1561	184	1745	1873
10:45 AM	1653	204	1857	1999
11:00 AM	1716	216	1932	2062
11:15 AM	1721	235	1956	2087
11:30 AM	1748	226	1974	2105
11:45 AM	1754	236	1990	2105
12:00 PM	1748	231	1979	2096
12:15 PM	1737	217	1954	2070
12:30 PM	1785	223	2008	2127
12:45 PM	1911	235	2146	2277
1:00 PM	2024	255	2279	2430
1:15 PM	2140	308	2448	2675
1:30 PM	2268	355	2623	2874
1:45 PM	2368	441	2809	3123
2:00 PM	2478	468	2946	3252
2:15 PM	2569	500	3069	3350
2:30 PM	2644	476	3120	3401
2:45 PM	2631	484	3115	3406
3:00 PM	2661	457	3118	3460
3:15 PM	2626	405	3031	3348
3:30 PM	2525	407	2932	3244
3:45 PM	2624	369	2993	3329
4:00 PM	2592	359	2951	3265
4:15 PM	2601	368	2969	3328
4:30 PM	2532	360	2892	3244
4:45 PM	2261	331	2592	2845
5:00 PM	2050	344	2394	2605
5:15 PM	1827	296	2123	2257
5:30 PM	1701	270	1971	2080
5:45 PM	1535	214	1749	1856
6:00 PM	1393	165	1558	1659
6:15 PM	1252	156	1408	1503
6:30 PM	1114	142	1256	1347
6:45 PM	1009	123	1132	1207
7:00 PM	925	111	1036	1103
7:15 PM	896	95	991	1045
7:30 PM	889	90	979	1033
7:45 PM	882	100	982	1031
8:00 PM	856	89	945	997

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2569	500	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/18/2022
Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

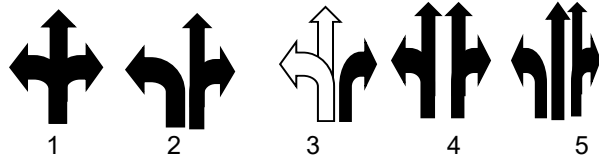
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Global Court

Minor Street Approach Configuration: 2 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 10px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:30 PM</td></tr> <tr><td style="text-align: center;">4:30 PM</td></tr> </table>	Peak Hour	3:30 PM	4:30 PM
Peak Hour						
3:30 PM						
4:30 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 10px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">1:30 PM</td></tr> <tr><td style="text-align: center;">2:30 PM</td></tr> </table>	Peak Hour	1:30 PM	2:30 PM
Peak Hour						
1:30 PM						
2:30 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks. 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes. 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	0	31	0	0	0	31	3	0	0	0	0	3	2	161	0	0	0	163	0	0	0	0	0	163	
12:15 AM	1	39	1	0	0	41	1	0	1	0	0	2	2	62	0	0	0	64	0	0	0	0	0	64	
12:30 AM	0	34	1	0	0	35	0	0	0	0	0	0	0	42	0	0	0	42	0	0	0	0	0	42	
12:45 AM	1	31	1	0	0	33	1	0	0	0	0	1	1	32	1	0	0	34	0	0	0	2	0	34	
Hourly Total	2	135	3	0	0	140	5	0	1	0	0	6	5	297	1	0	0	303	1	0	2	0	0	3	
1:00 AM	0	34	1	0	0	35	3	0	0	0	0	3	1	69	0	0	0	70	0	0	1	0	0	71	
1:15 AM	0	25	2	0	0	27	2	0	2	0	0	4	0	33	1	0	0	34	0	0	1	0	0	35	
1:30 AM	0	32	0	0	0	32	2	0	0	0	0	2	0	35	0	0	0	35	0	0	0	0	0	35	
1:45 AM	0	35	2	0	0	37	0	0	0	0	0	0	0	39	1	0	0	40	0	0	0	0	0	40	
Hourly Total	0	126	5	0	0	131	7	0	2	0	0	9	1	176	2	0	0	179	0	0	2	0	0	2	
2:00 AM	1	28	1	0	0	30	2	0	0	0	0	2	0	97	0	0	0	97	0	0	0	0	0	97	
2:15 AM	0	39	0	0	0	39	1	0	0	0	0	1	1	36	0	0	0	37	0	0	0	0	0	37	
2:30 AM	0	29	0	0	0	29	1	0	0	0	0	1	1	93	0	0	0	94	0	0	0	0	0	94	
2:45 AM	1	36	0	0	0	37	2	0	2	0	0	4	0	51	1	0	0	52	1	0	0	0	0	53	
Hourly Total	2	132	1	0	0	135	6	0	2	0	0	8	2	277	1	0	0	280	1	0	0	0	0	1	
3:00 AM	0	36	0	0	0	36	0	0	0	0	0	0	0	38	0	0	0	38	0	0	3	0	0	3	
3:15 AM	2	47	1	0	0	50	0	0	0	0	0	0	0	30	1	0	0	31	1	0	4	0	0	5	
3:30 AM	0	73	1	0	0	74	1	1	1	0	0	2	1	157	1	0	0	159	2	0	0	0	0	2	
3:45 AM	2	81	3	0	0	86	2	0	2	0	0	3	0	71	0	0	0	71	0	0	0	0	0	0	
Hourly Total	4	237	5	0	0	246	2	0	3	0	0	5	1	296	2	0	0	299	3	0	7	0	0	10	
4:00 AM	0	65	1	0	0	66	0	0	1	0	0	1	1	96	0	0	0	97	2	0	0	0	0	2	
4:15 AM	0	111	4	0	0	115	2	0	1	0	0	3	1	79	1	0	0	81	0	0	2	0	0	2	
4:30 AM	1	167	4	0	0	172	2	2	0	0	0	2	0	97	1	0	0	98	1	0	0	0	0	1	
4:45 AM	2	196	1	0	0	199	2	0	1	0	0	3	0	76	3	0	0	79	2	0	1	0	0	3	
Hourly Total	3	539	10	0	0	552	6	0	3	0	0	9	2	348	5	0	0	355	5	0	3	0	0	8	
5:00 AM	1	159	1	0	0	161	1	0	0	0	0	1	0	110	1	0	0	111	0	0	0	0	0	0	
5:15 AM	0	251	3	0	0	254	2	0	0	0	0	2	0	86	1	0	0	88	1	0	1	0	0	2	
5:30 AM	1	374	0	0	0	375	2	0	1	0	0	3	1	120	2	0	0	123	0	0	1	0	0	1	
5:45 AM	4	451	1	0	0	456	1	0	2	0	0	3	1	149	3	0	0	153	1	0	0	0	0	1	
Hourly Total	6	1235	5	0	0	1246	6	0	3	0	0	9	3	465	7	0	0	475	2	0	2	0	0	4	
6:00 AM	2	222	0	0	0	222	0	0	0	0	0	0	2	161	3	0	0	166	5	0	0	0	0	5	
6:15 AM	4	315	3	0	0	322	0	0	1	0	0	1	1	167	3	0	0	171	0	0	2	0	0	2	
6:30 AM	6	409	1	0	0	416	0	0	1	0	0	1	0	215	4	0	0	219	2	1	0	0	0	3	
6:45 AM	8	422	8	0	0	438	1	0	1	0	0	2	4	230	4	0	0	238	2	0	5	0	0	7	
Hourly Total	20	1366	12	0	0	1398	1	0	3	0	0	4	7	743	14	0	0	764	9	1	7	0	0	17	
7:00 AM	15	227	11	0	0	253	1	1	0	0	0	2	5	218	7	0	0	230	2	0	4	0	0	6	
7:15 AM	6	317	3	0	0	326	2	0	1	0	0	3	2	189	3	0	0	194	4	0	5	0	0	9	
7:30 AM	10	308	5	0	0	321	1	0	1	0	0	2	3	213	5	0	0	221	3	0	6	0	0	9	
7:45 AM	19	378	4	0	0	399	3	0	2	0	0	5	3	161	6	0	0	170	1	0	3	0	0	4	
Hourly Total	50	1226	23	0	0	1259	7	0	5	0	0	12	13	781	21	0	0	815	10	0	12	0	0	22	
8:00 AM	4	283	3	0	0	290	4	0	2	0	0	6	2	163	2	0	0	167	3	1	4	0	0	8	
8:15 AM	5	215	2	0	0	225	2	0	1	0	0	2	3	169	3	0	0	173	0	0	2	0	0	2	
8:30 AM	0	238	6	0	0	242	3	0	1	0	0	4	0	135	4	0	0	139	0	1	1	0	0	2	
8:45 AM	8	228	3	0	0	239	5	0	1	0	0	6	3	140	2	0	0	145	2	0	1	0	0	3	
Hourly Total	17	965	14	0	0	996	14	0	5	0	0	19	6	607	11	0	0	624	7	2	8	0	0	17	
9:00 AM	2	184	1	0	0	187	2	2	4	0	0	2	2	144	4	0	0	148	1	0	0	0	0	1	
9:15 AM	3	170	7	0	0	180	1	0	2	0	0	3	0	157	5	0	0	162	1	0	3	0	0	4	
9:30 AM	1	181	8	0	0	190	3	0	1	0	0	4	2	156	1	0	0	159	2	0	3	0	0	5	
9:45 AM	6	229	6	0	0	241	4	0	1	0	0	5	2	155	0	0	0	157	0	0	1	0	0	1	
Hourly Total	12	764	22	0	0	788	10	2	7	0	0	16	7	612	7	0	0	626	6	0	11	0	0	17	
10:00 AM	3	210	3	0	0	216	7	0	0	0	0	7	5	165	4	0	0	174	5	1	2	0	0	8	
10:15 AM	2	166	4	0	0	172	7	0	0	0	0	7	1	154	3	0	0	158	5	0	1	0	0	6	
10:30 AM	0	179	2	0	0	181	4	0	5	0	0	9	0	190	3	0	0	193	3	0	2	0	0	5	
10:45 AM	4	198	3	0	0	205	2	0	1	0	0	4	0	196	1	0	0	197	0	0	0	0	0	0	
Hourly Total	9	753	12	0	0	774	20	1	6	0	0	27	6	705	11	0	0	722	15	1	7	0	0	23	
11:00 AM	4	166	3	0	0	173	4	1	5	0	0	10	4	231	2	0	0	237	1	0	2	0	0	3	
11:15 AM	1	215	4	0	0	220	7	0	3	0	0	10	1	174	0	0	0	175	1	0	4	0	0	5	
11:30 AM	8	232	5	0	0	245	6	0	4	0	0	9	4	193	3	0	0	198	3	4	1	0	0	4	
11:45 AM	4	226	5	0	0	235	4	2	2	0	0	4	4	191	5	0	0	200	6	0	2	0	0	8	
Hourly Total	17	839	17	0	0	873	19	1	14	0	0	34	13	789	9	0	0	811	11	0	9	0	0	20	
12:00 PM	0	228	1	0	0	229	3	0	2	0	0	10	5	209	2	0	0	216	2	0	4	0	0	6	
12:15 PM	2	197	4	0	0	203	2	0	4	0	0	6	5	248	0	0	0	254	4	0	4	0	0	8	
12:30 PM	2	200	4	0	0	206	3	1	0	0	0	4	2	260	4	0	0	263	1	0	2	0	0	3	
12:45 PM	1	205	5	0	0	211	1	0	1	0	0	2	3	179	1	0	0	183	4	0	4	0	0	8	
Hourly Total	5	828	14	0	0	847	14	1	7	0	0	22	15	896	6	0	0	919	11	0	14	0	0	25	
1:00 PM	4	200	3	0	0	205	4	0	1	0	0	5	1	201	2	0	0	204	1	0	0	0	0	1	
1:15 PM	4	232	3	0	0	239	2	0	3	0	0	5	1	167	4	0	0	172	1	0	2	0	0	3	
1:30 PM	5	225	7	0	0	237	4	0	1	0	0	5	6	219	2	0	0	227	6	0	2	0	0	8	
1:45 PM	5	237	8	0	0	250	2	0	1	0	0	2	0	221	2	0	0	223	0	0	2	0	0	2	
Hourly Total	18	894	19	0	0	931	12	0	6	0	0	18	8	808	10	0	0	826	16	0	7	0	0	23	
2:00 PM	6	224	3	0	0	233	6	0	1	0	0	7	1	286	3	0	0	290	1	0	1	0	0	2	
2:15 PM	6	271	3	0	0	280	13	0	3	0	0	16	2	304	6	0	0	312							

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	443	6			1									1				
12:15 AM	354	6																
12:30 AM	310	8																
12:45 AM	300	10																
1:00 AM	310	9																
1:15 AM	332	8																
1:30 AM	347	5												1				
1:45 AM	403	4																
2:00 AM	415	8																
2:15 AM	362	6																
2:30 AM	367	9												1				
2:45 AM	477	11			1													
3:00 AM	545	10								1							1	
3:15 AM	634	9	1						1									
3:30 AM	749	9										1		1				
3:45 AM	786	9			1													
4:00 AM	907	9					1			1							1	
4:15 AM	1016	9	1						1									
4:30 AM	1162	8										1		1				
4:45 AM	1390	9			1													
5:00 AM	1721	9					1			1							1	
5:15 AM	1837	9	1						1									
5:30 AM	1988	9										1		1				
5:45 AM	2125	11			1													
6:00 AM	2162	17					1			1							1	
6:15 AM	2257	18	1						1									
6:30 AM	2284	25										1		1				
6:45 AM	2191	25			1													
7:00 AM	2114	22					1			1							1	
7:15 AM	2088	24	1						1									
7:30 AM	1966	19										1		1				
7:45 AM	1805	18			1													
8:00 AM	1620	19					1			1							1	
8:15 AM	1498	17	1						1									
8:30 AM	1442	17										1		1				
8:45 AM	1410	19			1													
9:00 AM	1424	17					1			1							1	
9:15 AM	1479	19	1						1									
9:30 AM	1467	23										1		1				
9:45 AM	1492	28			1													

10:00 AM	1496	27				1			1						1			
10:15 AM	1516	30	1					1										
10:30 AM	1581	33									1		1					
10:45 AM	1651	34			1													
11:00 AM	1684	34				1			1							1		
11:15 AM	1717	34	1					1										
11:30 AM	1779	30									1		1					
11:45 AM	1807	25			1													
12:00 PM	1766	25				1			1							1		
12:15 PM	1732	23	1					1										
12:30 PM	1686	18									1		1					
12:45 PM	1678	23			1													
1:00 PM	1757	23				1			1							1		
1:15 PM	1871	21	1					1										
1:30 PM	2052	31									1		1					
1:45 PM	2247	44			1													
2:00 PM	2412	41				1			1							1		
2:15 PM	2561	47	1					1										
2:30 PM	2612	40									1		1					
2:45 PM	2633	38			1													
3:00 PM	2607	42				1			1						1	1		
3:15 PM	2520	46	1					1										
3:30 PM	2466	51									1		1					
3:45 PM	2530	40			1													
4:00 PM	2495	36				1			1							1		
4:15 PM	2512	32	1					1										
4:30 PM	2388	29									1		1					
4:45 PM	2163	27			1													
5:00 PM	2035	24				1			1							1		
5:15 PM	1832	24	1					1										
5:30 PM	1720	22									1		1					
5:45 PM	1570	17			1													
6:00 PM	1421	21				1			1							1		
6:15 PM	1320	14	1					1										
6:30 PM	1233	16									1		1					
6:45 PM	1069	16			1													
7:00 PM	988	11				1			1							1		
7:15 PM	895	14	1					1										
7:30 PM	830	9									1		1					
7:45 PM	814	8			1													
8:00 PM	759	10							1							1		
8:15 PM	733	9	1					1										
8:30 PM	674	12											1					
8:45 PM	672	15			1													
9:00 PM	680	14							1							1		
9:15 PM	698	17	1					1										
9:30 PM	748	15									1		1					
9:45 PM	737	17			1													
HOURS MET			20	0	22	0	16	0	20	0	21	0	18	0	23	0	21	1
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO	

Warrant Met: **No**

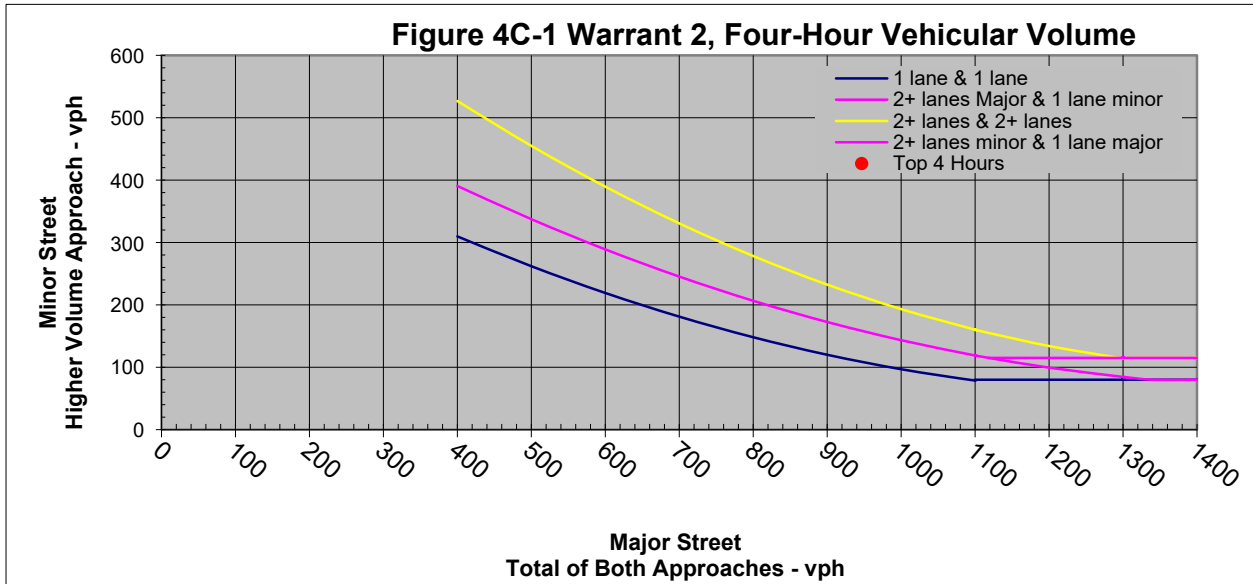
Notes:

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

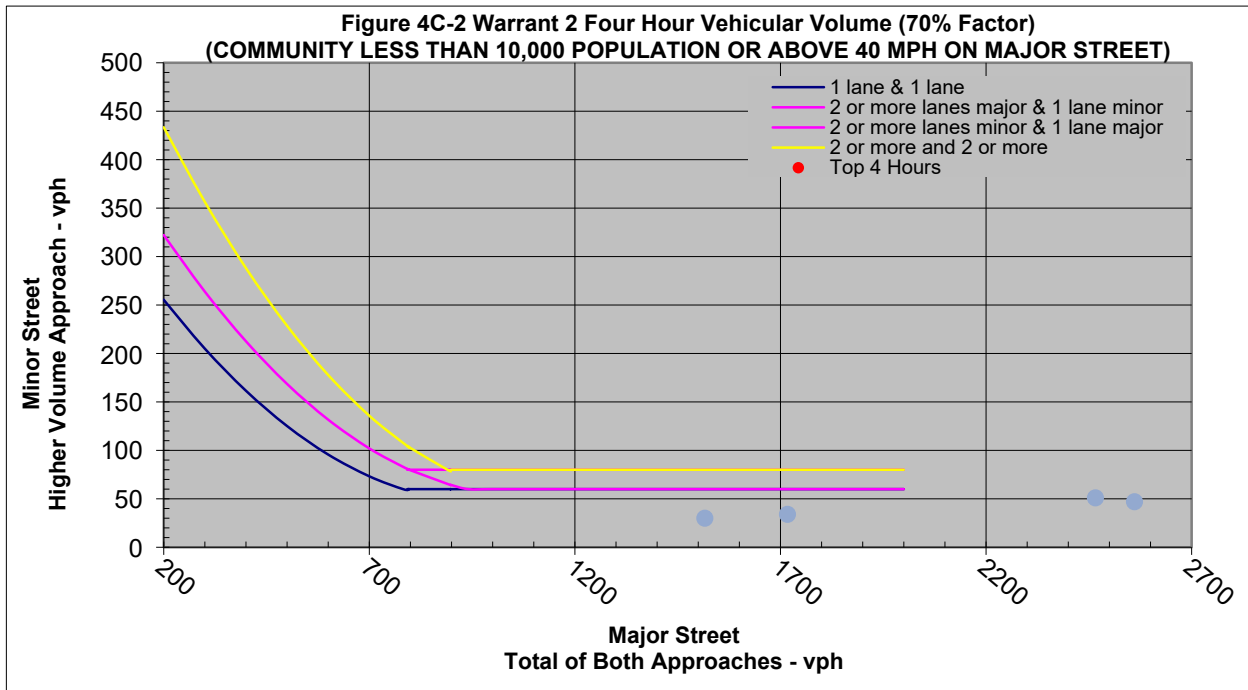
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Global Court					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	764	1398	4	17	2162	17		
6:15 AM	828	1429	6	18	2257	18		
6:30 AM	851	1433	8	25	2284	25		
6:45 AM	853	1338	9	25	2191	25		
7:00 AM	815	1299	12	22	2114	22		
7:15 AM	752	1336	16	24	2088	24		
7:30 AM	731	1235	16	19	1966	19		
7:45 AM	649	1156	18	18	1805	18		
8:00 AM	624	996	19	17	1620	19		
8:15 AM	605	893	17	16	1498	17		
8:30 AM	594	848	17	16	1442	17		
8:45 AM	614	796	17	19	1410	19		
9:00 AM	626	798	16	17	1424	17		
9:15 AM	652	827	19	18	1479	19		
9:30 AM	648	819	23	20	1467	23		
9:45 AM	682	810	28	20	1492	28		
10:00 AM	722	774	27	23	1496	27		
10:15 AM	785	731	30	18	1516	30		
10:30 AM	802	779	33	17	1581	33		
10:45 AM	808	843	34	16	1651	34		
11:00 AM	811	873	34	20	1684	34		
11:15 AM	790	927	34	23	1717	34		
11:30 AM	869	910	30	26	1779	30		
11:45 AM	936	871	24	25	1807	25		
12:00 PM	919	847	22	25	1766	25		
12:15 PM	907	825	17	23	1732	23		
12:30 PM	825	861	16	18	1686	18		
12:45 PM	786	892	17	23	1678	23		
1:00 PM	826	931	18	23	1757	23		
1:15 PM	912	959	20	21	1871	21		
1:30 PM	1052	1000	31	30	2052	31		
1:45 PM	1182	1065	29	44	2247	44		
2:00 PM	1278	1134	38	41	2412	41		
2:15 PM	1388	1173	39	47	2561	47		
2:30 PM	1445	1167	32	40	2612	40		
2:45 PM	1474	1159	33	38	2633	38		
3:00 PM	1482	1125	25	42	2607	42		
3:15 PM	1402	1118	23	46	2520	46		
3:30 PM	1318	1148	18	51	2466	51		
3:45 PM	1311	1219	18	40	2530	40		
4:00 PM	1260	1235	18	36	2495	36		
4:15 PM	1292	1220	20	32	2512	32		
4:30 PM	1239	1149	20	29	2388	29		
4:45 PM	1119	1044	23	27	2163	27		
5:00 PM	1041	994	22	24	2035	24		
5:15 PM	895	937	21	24	1832	24		
5:30 PM	823	897	22	20	1720	22		
5:45 PM	778	792	17	17	1570	17		
6:00 PM	752	669	14	21	1421	21		
6:15 PM	734	586	11	14	1320	14		
6:30 PM	734	499	11	16	1233	16		
6:45 PM	629	440	9	16	1069	16		
7:00 PM	556	432	10	11	988	11		
7:15 PM	481	414	8	14	895	14		
7:30 PM	412	418	4	9	830	9		
7:45 PM	402	412	6	8	814	8		
8:00 PM	389	370	10	9	759	10		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2466	51
2nd Highest Hour	2:15 PM	3:15 PM	2561	47
3rd Highest Hour	11:15 AM	12:15 PM	1717	34
4th Highest Hour	10:15 AM	11:15 AM	1516	30

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2466	51
2nd Highest Hour	2:15 PM	3:15 PM	2561	47
3rd Highest Hour	11:15 AM	12:15 PM	1717	34
4th Highest Hour	10:15 AM	11:15 AM	1516	30



Are the requirements for Warrant 2 met?:

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:30 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:30 PM
Minor Street:	1 Lane		

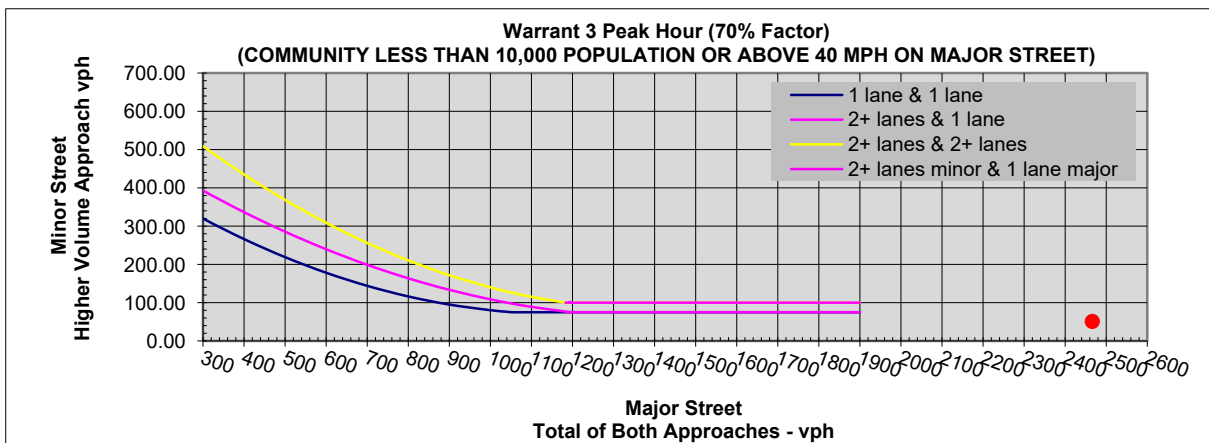
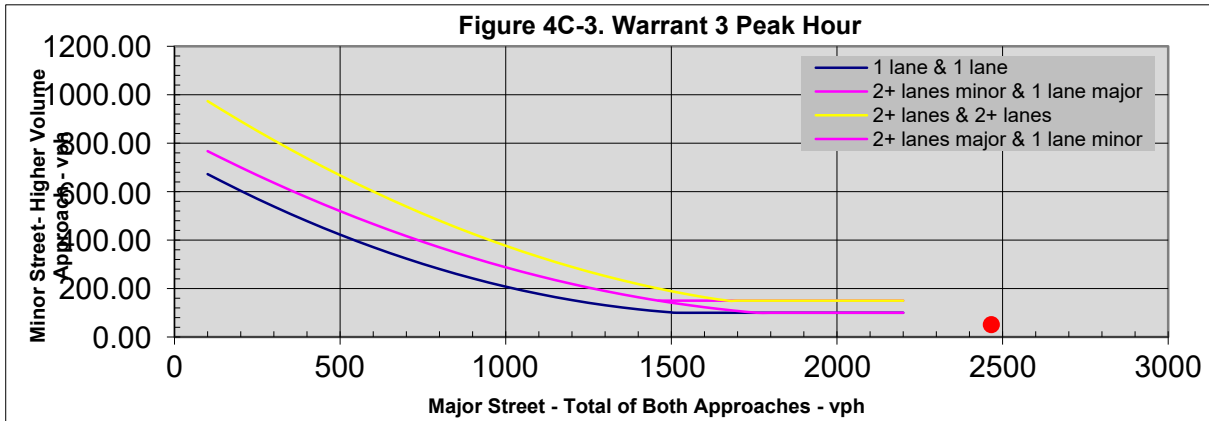
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2162	17	2179	2183
6:15 AM	2257	18	2275	2281
6:30 AM	2284	25	2309	2317
6:45 AM	2191	25	2216	2225
7:00 AM	2114	22	2136	2148
7:15 AM	2088	24	2112	2128
7:30 AM	1966	19	1985	2001
7:45 AM	1805	18	1823	1841
8:00 AM	1620	19	1639	1656
8:15 AM	1498	17	1515	1531
8:30 AM	1442	17	1459	1475
8:45 AM	1410	19	1429	1446
9:00 AM	1424	17	1441	1457
9:15 AM	1479	19	1498	1516
9:30 AM	1467	23	1490	1510
9:45 AM	1492	28	1520	1540
10:00 AM	1496	27	1523	1546
10:15 AM	1516	30	1546	1564
10:30 AM	1581	33	1614	1631
10:45 AM	1651	34	1685	1701
11:00 AM	1684	34	1718	1738
11:15 AM	1717	34	1751	1774
11:30 AM	1779	30	1809	1835
11:45 AM	1807	25	1832	1856
12:00 PM	1766	25	1791	1813
12:15 PM	1732	23	1755	1772
12:30 PM	1686	18	1704	1720
12:45 PM	1678	23	1701	1718
1:00 PM	1757	23	1780	1798
1:15 PM	1871	21	1892	1912
1:30 PM	2052	31	2083	2113
1:45 PM	2247	44	2291	2320
2:00 PM	2412	41	2453	2491
2:15 PM	2561	47	2608	2647
2:30 PM	2612	40	2652	2684
2:45 PM	2633	38	2671	2704
3:00 PM	2607	42	2649	2674
3:15 PM	2520	46	2566	2589
3:30 PM	2466	51	2517	2535
3:45 PM	2530	40	2570	2588
4:00 PM	2495	36	2531	2549
4:15 PM	2512	32	2544	2564
4:30 PM	2388	29	2417	2437
4:45 PM	2163	27	2190	2213
5:00 PM	2035	24	2059	2081
5:15 PM	1832	24	1856	1877
5:30 PM	1720	22	1742	1762
5:45 PM	1570	17	1587	1604
6:00 PM	1421	21	1442	1456
6:15 PM	1320	14	1334	1345
6:30 PM	1233	16	1249	1260
6:45 PM	1069	16	1085	1094
7:00 PM	988	11	999	1009
7:15 PM	895	14	909	917
7:30 PM	830	9	839	843
7:45 PM	814	8	822	828
8:00 PM	759	10	769	778

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2466	51	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

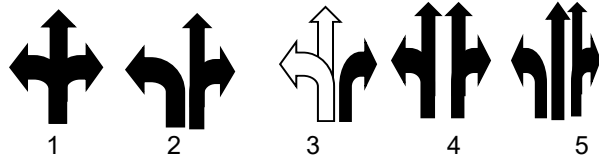
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration: E-Bound
 W-Bound



Number of Thru Lanes on Each Minor Street Approach: LANE(S)
 Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">2:15 PM</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> </table>				Peak Hour	2:15 PM	3:15 PM
Peak Hour						
2:15 PM						
3:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> </table>				Peak Hour	3:15 PM	4:15 PM
Peak Hour						
3:15 PM						
4:15 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <ol style="list-style-type: none"> 1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks. 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes. 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.
--

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes:

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:						
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total							
12:00 AM	8	29	8	0	0	45	25	7	1	0	0	33	2	115	2	0	0	119	3	2	26	0	0	31	7	6	13	0	0	26	<p>If data is copied overtop of the Hourly Totals or Approach Totals, that the "AutoSum" Formula will be lost. This should not affect the actual totals if the data was copied from a program that performs the calculations for the user.</p>
12:15 AM	7	16	4	0	0	27	13	1	1	0	0	15	1	44	7	0	0	52	7	6	13	0	0	26	2	28	6	0	0	36	
12:30 AM	2	28	6	0	0	36	7	6	1	0	0	14	0	25	5	0	0	31	4	7	10	0	0	21	4	24	4	0	0	32	
12:45 AM	4	24	4	0	0	32	7	5	0	0	0	12	0	14	6	0	0	20	4	3	7	0	0	14	2	21	3	0	0	26	
Hourly Total	21	97	22	0	0	140	56	19	3	0	0	78	4	198	20	0	0	222	18	18	56	0	0	92	18	118	26	0	0	162	
1:00 AM	6	29	5	0	0	40	12	6	1	0	0	19	4	28	4	0	0	36	7	6	11	0	0	24	6	23	5	0	0	34	
1:15 AM	8	13	6	0	0	27	4	3	1	0	0	8	0	25	5	0	0	30	2	4	3	0	0	9	4	21	3	0	0	28	
1:30 AM	4	21	3	0	0	28	11	3	1	0	0	15	0	20	3	0	0	23	6	2	8	0	0	16	3	10	5	0	0	18	
1:45 AM	3	10	5	0	0	18	4	2	0	0	0	6	0	30	3	0	0	33	3	3	4	0	0	7	2	13	4	0	0	19	
Hourly Total	21	73	19	0	0	113	31	14	3	0	0	48	4	103	15	0	0	122	18	12	26	0	0	56	18	114	22	0	0	154	
2:00 AM	11	14	5	0	0	30	17	7	0	0	0	24	4	51	5	0	0	56	3	12	17	0	0	32	5	21	6	0	0	32	
2:15 AM	10	17	7	0	0	34	8	4	0	0	0	12	1	23	2	0	0	26	4	3	9	0	0	16	6	24	7	0	0	39	
2:30 AM	7	16	4	0	0	27	12	7	0	0	0	19	4	60	2	0	0	66	1	2	9	0	0	12	4	21	5	0	0	30	
2:45 AM	7	25	12	0	0	44	8	1	1	0	0	10	0	16	7	0	0	23	1	7	9	0	0	17	5	22	6	0	0	33	
Hourly Total	35	72	28	0	0	135	45	19	1	0	0	65	5	150	16	0	0	171	9	18	44	0	0	71	21	84	28	0	0	133	
3:00 AM	7	38	2	0	0	47	19	2	0	0	0	21	0	19	2	0	0	21	3	8	9	0	0	20	4	23	5	0	0	32	
3:15 AM	5	28	11	0	0	44	6	3	0	0	0	9	3	22	0	0	0	25	3	0	9	0	0	12	5	24	6	0	0	35	
3:30 AM	11	45	19	0	0	75	17	6	0	0	0	23	11	129	5	0	0	145	4	1	13	0	0	18	6	30	7	0	0	43	
3:45 AM	10	57	22	0	0	89	11	4	1	0	0	16	0	34	4	0	0	41	8	2	7	0	0	15	7	34	9	0	0	50	
Hourly Total	33	168	54	0	0	255	53	15	1	0	0	69	20	204	8	0	0	232	16	11	38	0	0	65	26	126	34	0	0	186	
4:00 AM	6	58	12	0	0	76	22	1	3	0	0	26	3	54	5	0	0	62	2	8	23	0	0	33	4	29	6	0	0	41	
4:15 AM	13	69	16	0	0	98	20	7	1	0	0	28	4	47	4	0	0	55	2	6	6	0	0	14	5	33	7	0	0	45	
4:30 AM	23	122	29	0	0	174	45	15	13	0	0	73	4	29	6	0	0	68	7	6	23	0	0	36	8	44	10	0	0	62	
4:45 AM	18	166	31	0	0	215	16	19	4	0	0	39	3	51	4	0	0	58	10	7	11	0	0	28	6	37	8	0	0	51	
Hourly Total	60	415	89	0	0	563	103	42	21	0	0	166	14	202	17	0	0	233	23	28	46	0	0	97	29	151	31	0	0	211	
5:00 AM	23	78	37	0	0	138	32	16	7	0	0	55	4	75	7	0	0	86	5	11	6	0	0	27	7	42	10	0	0	59	
5:15 AM	27	142	69	0	0	248	27	15	8	0	0	50	5	60	8	0	0	73	7	20	12	0	0	29	8	49	11	0	0	68	
5:30 AM	55	246	94	0	0	395	28	22	7	0	0	57	8	63	7	0	0	78	9	19	14	0	0	42	11	66	16	0	0	93	
5:45 AM	61	302	116	0	0	479	51	24	12	0	0	87	11	96	9	0	0	118	13	31	21	0	0	65	14	75	18	0	0	107	
Hourly Total	176	768	316	0	0	1260	138	77	34	0	0	249	28	254	31	0	0	353	37	71	55	0	0	163	47	251	56	0	0	354	
6:00 AM	48	183	49	0	0	280	36	24	1	0	0	61	8	115	11	0	0	134	15	12	20	0	0	47	18	93	21	0	0	132	
6:15 AM	54	196	58	0	0	308	25	37	4	0	0	66	6	108	8	0	0	122	18	17	14	0	0	49	21	102	24	0	0	147	
6:30 AM	58	209	84	0	0	351	28	34	11	0	0	73	14	155	8	0	0	177	22	23	25	0	0	70	24	114	28	0	0	166	
6:45 AM	82	237	105	0	0	424	46	34	5	0	0	85	11	163	21	0	0	195	9	24	19	0	0	52	11	126	15	0	0	152	
Hourly Total	242	825	296	0	0	1363	135	129	21	0	0	285	39	541	48	0	0	628	64	76	78	0	0	218	74	393	87	0	0	554	
7:00 AM	38	149	65	0	0	262	55	31	3	0	0	89	9	124	7	0	0	140	13	12	31	0	0	56	16	107	19	0	0	142	
7:15 AM	33	179	50	0	0	262	27	28	10	0	0	65	7	147	8	0	0	162	19	19	31	0	0	69	21	119	23	0	0	163	
7:30 AM	56	183	55	0	0	294	37	24	4	0	0	65	5	162	9	0	0	175	13	11	28	0	0	52	15	126	17	0	0	158	
7:45 AM	70	237	96	0	0	403	41	29	4	0	0	74	5	123	11	0	0	139	19	12	18	0	0	49	21	138	16	0	0	175	
Hourly Total	197	748	266	0	0	1211	160	112	21	0	0	293	26	556	34	0	0	616	64	54	106	0	0	224	74	407	52	0	0	533	
8:00 AM	27	183	68	0	0	278	19	29	7	0	0	55	4	118	11	0	0	133	11	13	23	0	0	47	14	114	17	0	0	145	
8:15 AM	47	158	54	0	0	259	20	12	6	0	0	38	5	84	11	0	0	101	13	14	28	0	0	55	16	126	16	0	0	158	
8:30 AM	23	148	45	0	0	216	41	11	2	0	0	54	4	103	4	0	0	111	4	7	22	0	0	33	5	107	11	0	0	123	
8:45 AM	30	166	48	0	0	244	24	15	4	0	0	43	11	81	11	0	0	103	11	7	23	0	0	41	13	120	14	0	0	157	
Hourly Total	127	655	215	0	0	997	104	67	19	0	0	190	24	386	37	0	0	447	39	41	96	0	0	176	47	261	34	0	0	342	
9:00 AM	32	123	37	0	0	198	14	2	4	0	0	28	14	111	11	0	0	139	11	6	21	0	0	48	13	116	14	0	0	143	
9:15 AM	29	99	23	0	0	151	34	15	7	0	0	56	7	99	11	0	0	117	15	13	25	0	0	53	16	107	12	0	0	135	
9:30 AM	24	120	31	0	0	175	40	20	5	0	0	65	5	79	9	0	0	93	13	6	26	0	0	45	15	109	13	0	0	137	
9:45 AM	21	133	37	0	0	188	28	25	9	0	0	61	7	71	11	0	0	85	8	7	20	0	0	35	10	104	11	0	0	125	
Hourly Total	102	472	128	0	0	702	134	74	22	0	0	230	24	352	42	0	0	418	40	42	109	0	0	201	47	246	30	0	0	323	
10:00 AM	24	100	32	0	0	156	25	17	2	0	0	44	1	89	13	0	0	103	17	13	26	0	0	56	19	112	14	0	0	145	
10:15 AM	22	93	38	0	0	153	37	18	3	0	0	57	2	91	11	0	0	104	10	7	25	0	0	42	12	105	13	0	0	130	
10:30 AM	24	87	35	0	0	146	36	14	6	0	0	56	3	99	14	0	0	116	14	8	25	0	0	47	14	109	12	0	0	135	
10:45 AM	28	105	33	0	0	166	37	13	3	0	0	53	6	101	18	0	0	1													

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	362	92													1	1		
12:15 AM	274	85																
12:30 AM	252	68																
12:45 AM	236	63																
1:00 AM	235	56																
1:15 AM	245	64																
1:30 AM	248	71																
1:45 AM	290	67																
2:00 AM	306	71																
2:15 AM	288	62																
2:30 AM	297	59																
2:45 AM	424	63			1									1				
3:00 AM	487	69								1								
3:15 AM	557	78															1	1
3:30 AM	641	93	1						1	1								
3:45 AM	653	143			1	1								1	1			
4:00 AM	796	166									1	1	1	1				
4:15 AM	882	195															1	1
4:30 AM	1050	217	1	1			1	1	1	1								
4:45 AM	1291	201			1	1								1	1			
5:00 AM	1613	249									1	1	1	1				
5:15 AM	1803	255															1	1
5:30 AM	1912	271	1	1			1	1	1	1								
5:45 AM	1967	287			1	1								1	1			
6:00 AM	1991	285									1	1	1	1				
6:15 AM	1969	313															1	1
6:30 AM	1963	312	1	1			1	1	1	1								
6:45 AM	1904	304			1	1								1	1			
7:00 AM	1827	293									1	1	1	1				
7:15 AM	1846	259															1	1
7:30 AM	1781	232	1	1			1	1	1	1								
7:45 AM	1639	221			1	1								1	1			
8:00 AM	1444	190									1	1	1	1				
8:15 AM	1340	183															1	1
8:30 AM	1249	201	1	1			1	1	1	1								
8:45 AM	1190	212			1	1								1	1			
9:00 AM	1120	230									1	1	1	1				
9:15 AM	1072	226															1	1
9:30 AM	1061	231	1	1			1	1	1	1								
9:45 AM	1055	219			1	1								1	1			

10:00 AM	1069	211								1	1	1	1					
10:15 AM	1145	248														1	1	
10:30 AM	1194	251	1	1			1	1	1	1								
10:45 AM	1261	279			1	1								1	1			
11:00 AM	1313	299								1	1	1	1					
11:15 AM	1346	308														1	1	
11:30 AM	1378	317	1	1			1	1	1	1								
11:45 AM	1385	314			1	1								1	1			
12:00 PM	1347	309								1	1	1	1					
12:15 PM	1311	287														1	1	
12:30 PM	1325	276	1	1			1	1	1	1								
12:45 PM	1351	282			1	1								1	1			
1:00 PM	1457	288								1	1	1	1					
1:15 PM	1500	344														1	1	
1:30 PM	1540	398	1	1			1	1	1	1								
1:45 PM	1685	454			1	1								1	1			
2:00 PM	1774	478								1	1	1	1					
2:15 PM	1878	490														1	1	
2:30 PM	1980	463	1	1			1	1	1	1								
2:45 PM	2040	461			1	1								1	1			
3:00 PM	2072	450								1	1	1	1					
3:15 PM	2057	444														1	1	
3:30 PM	2006	460	1	1			1	1	1	1								
3:45 PM	2023	444			1	1								1	1			
4:00 PM	2005	452								1	1	1	1					
4:15 PM	2045	411														1	1	
4:30 PM	1989	359	1	1			1	1	1	1								
4:45 PM	1774	344			1	1								1	1			
5:00 PM	1616	309								1	1	1	1					
5:15 PM	1401	305														1	1	
5:30 PM	1295	303	1	1			1	1	1	1								
5:45 PM	1191	243			1	1								1	1			
6:00 PM	1074	228								1	1	1	1					
6:15 PM	970	200														1	1	
6:30 PM	869	182	1	1					1	1								
6:45 PM	771	166			1	1								1	1			
7:00 PM	691	151								1	1							
7:15 PM	674	141														1	1	
7:30 PM	685	130	1						1	1								
7:45 PM	659	131			1	1								1	1			
8:00 PM	652	134								1	1							
8:15 PM	628	127														1	1	
8:30 PM	578	135																
8:45 PM	623	125	1		1	1								1	1			
9:00 PM	617	108								1								
9:15 PM	602	140														1	1	
9:30 PM	587	150																
9:45 PM	538	163			1	1								1	1			
HOURS MET			18	15	21	20	14	14	17	17	21	18	15	15	22	21	20	20
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

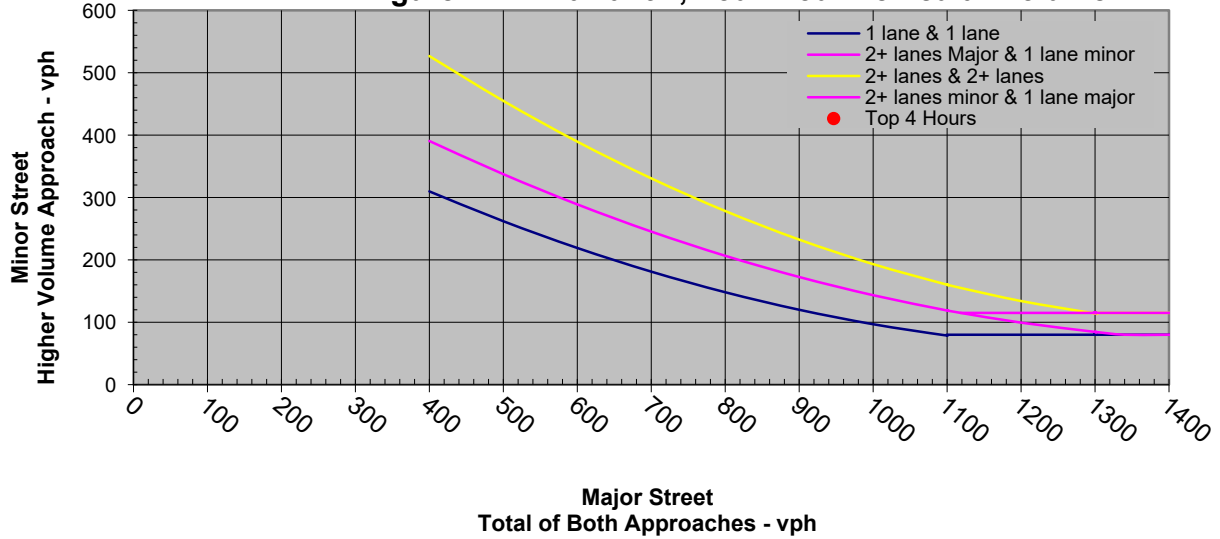
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	15
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	19
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rohr Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	628	1363	285	218	1991	285		
6:15 AM	634	1335	313	227	1969	313	Met	
6:30 AM	674	1289	312	247	1963	312		
6:45 AM	672	1232	304	227	1904	304		Met
7:00 AM	616	1211	293	224	1827	293		
7:15 AM	609	1237	259	215	1846	259	Met	
7:30 AM	547	1234	232	201	1781	232		
7:45 AM	483	1156	221	184	1639	221		Met
8:00 AM	447	997	190	176	1444	190		
8:15 AM	433	907	183	178	1340	183	Met	
8:30 AM	450	799	201	176	1249	201		
8:45 AM	432	758	212	188	1190	212		Met
9:00 AM	418	702	230	201	1120	230		
9:15 AM	402	670	226	208	1072	226	Met	
9:30 AM	389	672	231	197	1061	231		
9:45 AM	412	643	219	199	1055	219		Met
10:00 AM	448	621	211	202	1069	211		
10:15 AM	502	643	248	206	1145	248	Met	
10:30 AM	529	665	251	214	1194	251		
10:45 AM	547	714	279	242	1261	279		Met
11:00 AM	565	748	299	242	1313	299		
11:15 AM	594	752	308	269	1346	308	Met	
11:30 AM	626	752	317	310	1378	317		
11:45 AM	637	748	314	304	1385	314		Met
12:00 PM	618	729	304	309	1347	309		
12:15 PM	572	739	287	285	1311	287	Met	
12:30 PM	542	783	276	253	1325	276		
12:45 PM	549	802	282	238	1351	282		Met
1:00 PM	569	888	288	237	1457	288		
1:15 PM	576	924	344	234	1500	344	Met	
1:30 PM	636	904	398	239	1540	398		
1:45 PM	719	966	454	283	1685	454		Met
2:00 PM	771	1003	478	296	1774	478		
2:15 PM	889	989	490	337	1878	490	Met	
2:30 PM	920	1060	463	355	1980	463		
2:45 PM	954	1086	461	401	2040	461		Met
3:00 PM	974	1098	450	405	2072	450		
3:15 PM	914	1143	444	389	2057	444	Met	
3:30 PM	877	1129	460	368	2006	460		
3:45 PM	894	1129	444	336	2023	444		Met
4:00 PM	903	1102	452	330	2005	452		
4:15 PM	954	1091	411	328	2045	411	Met	
4:30 PM	945	1044	359	324	1989	359		
4:45 PM	828	946	344	292	1774	344		Met
5:00 PM	737	879	309	262	1616	309		
5:15 PM	615	786	305	234	1401	305	Met	
5:30 PM	547	748	303	214	1295	303		
5:45 PM	496	695	243	175	1191	243		Met
6:00 PM	459	615	228	169	1074	228		
6:15 PM	405	565	200	155	970	200	Met	
6:30 PM	369	500	182	154	869	182		
6:45 PM	323	448	166	144	771	166		Met
7:00 PM	298	393	151	141	691	151		
7:15 PM	301	373	112	141	674	141		
7:30 PM	307	378	104	130	685	130		
7:45 PM	292	367	104	131	659	131		Met
8:00 PM	274	378	103	134	652	134		

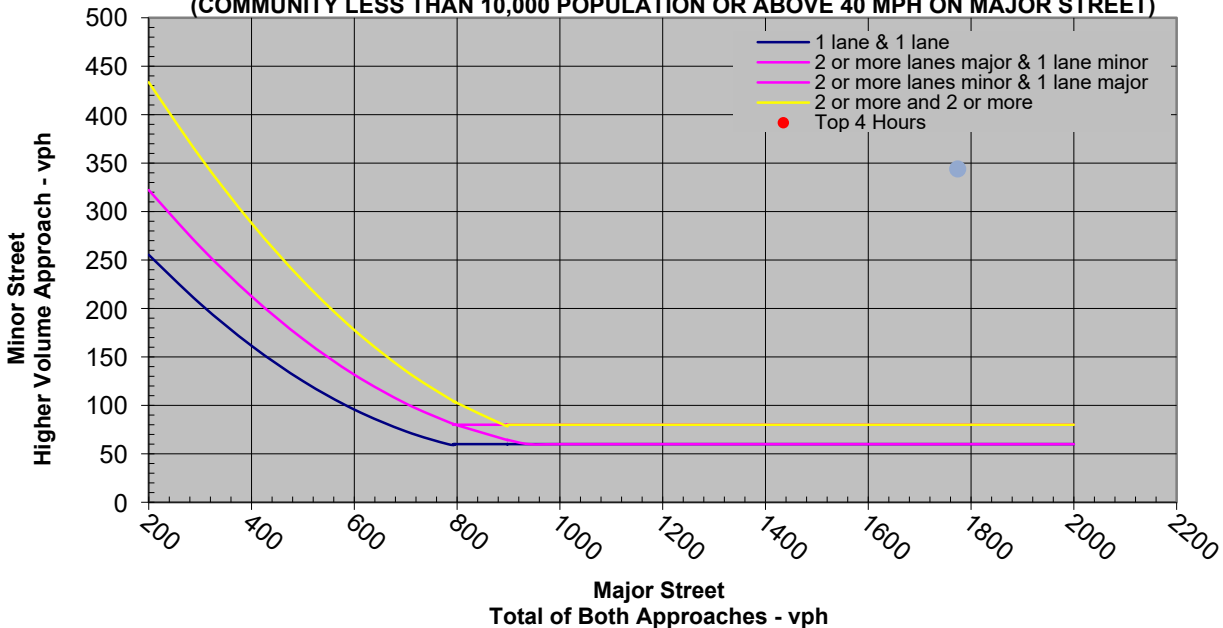
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	2:15 PM	3:15 PM	1878	490
2nd Highest Hour	3:15 PM	4:15 PM	2057	444
3rd Highest Hour	4:15 PM	5:15 PM	2045	411
4th Highest Hour	1:15 PM	2:15 PM	1500	344

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:45 PM	3:45 PM	2040	461
2nd Highest Hour	1:45 PM	2:45 PM	1685	454
3rd Highest Hour	3:45 PM	4:45 PM	2023	444
4th Highest Hour	4:45 PM	5:45 PM	1774	344

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	2:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street:	1 Lane		

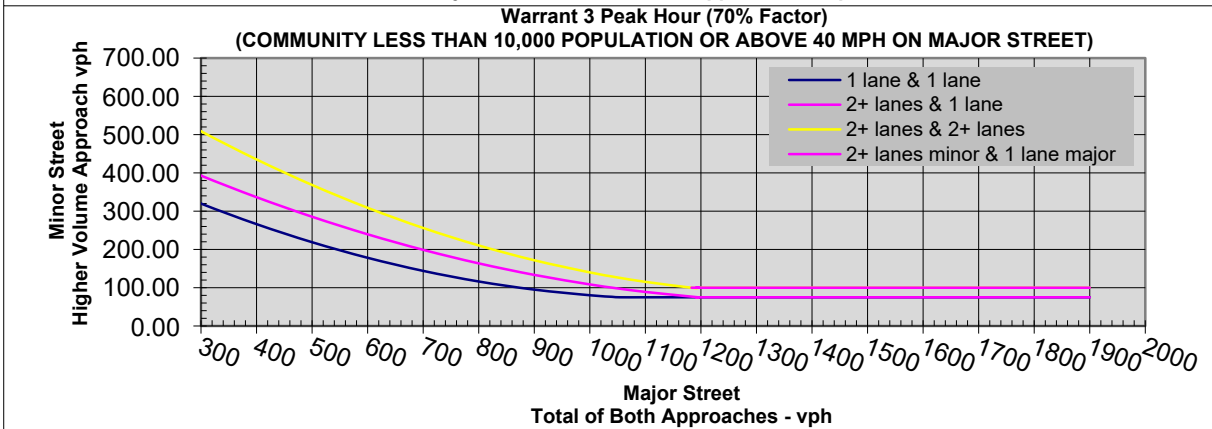
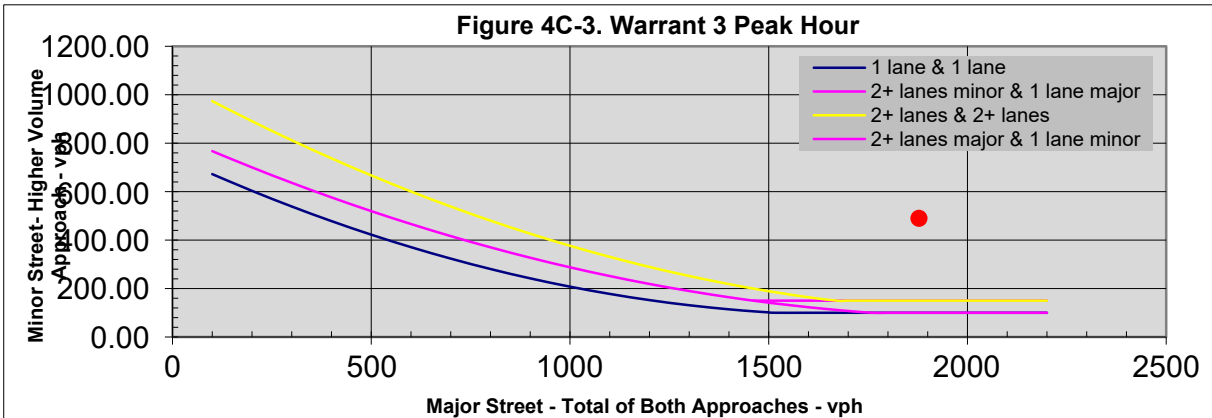
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1991	285	2276	2494
6:15 AM	1969	313	2282	2509
6:30 AM	1963	312	2275	2522
6:45 AM	1904	304	2208	2435
7:00 AM	1827	293	2120	2344
7:15 AM	1846	259	2105	2320
7:30 AM	1781	232	2013	2214
7:45 AM	1639	221	1860	2044
8:00 AM	1444	190	1634	1810
8:15 AM	1340	183	1523	1701
8:30 AM	1249	201	1450	1626
8:45 AM	1190	212	1402	1590
9:00 AM	1120	230	1350	1551
9:15 AM	1072	226	1298	1506
9:30 AM	1061	231	1292	1489
9:45 AM	1055	219	1274	1473
10:00 AM	1069	211	1280	1482
10:15 AM	1145	248	1393	1599
10:30 AM	1194	251	1445	1659
10:45 AM	1261	279	1540	1782
11:00 AM	1313	299	1612	1854
11:15 AM	1346	308	1654	1923
11:30 AM	1378	317	1695	2005
11:45 AM	1385	314	1699	2003
12:00 PM	1347	309	1656	1960
12:15 PM	1311	287	1598	1883
12:30 PM	1325	276	1601	1854
12:45 PM	1351	282	1633	1871
1:00 PM	1457	288	1745	1982
1:15 PM	1500	344	1844	2078
1:30 PM	1540	398	1938	2177
1:45 PM	1685	454	2139	2422
2:00 PM	1774	478	2252	2548
2:15 PM	1878	490	2368	2705
2:30 PM	1980	463	2443	2798
2:45 PM	2040	461	2501	2902
3:00 PM	2072	450	2522	2927
3:15 PM	2057	444	2501	2890
3:30 PM	2006	460	2466	2834
3:45 PM	2023	444	2467	2803
4:00 PM	2005	452	2457	2787
4:15 PM	2045	411	2456	2784
4:30 PM	1989	359	2348	2672
4:45 PM	1774	344	2118	2410
5:00 PM	1616	309	1925	2187
5:15 PM	1401	305	1706	1940
5:30 PM	1295	303	1598	1812
5:45 PM	1191	243	1434	1609
6:00 PM	1074	228	1302	1471
6:15 PM	970	200	1170	1325
6:30 PM	869	182	1051	1205
6:45 PM	771	166	937	1081
7:00 PM	691	151	842	983
7:15 PM	674	141	815	927
7:30 PM	685	130	815	919
7:45 PM	659	131	790	894
8:00 PM	652	134	786	889

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1878	490	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

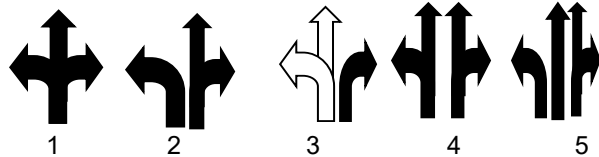
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Spiegel Drive

Minor Street Approach Configuration: 2 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:
	Applicable?	Satisfied?	
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.
Warrant 5, School Crossing	No		N/A
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.

Peak Hour
3:15 PM
4:15 PM

Peak Hour
6:30 AM
7:30 AM

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	2	28	1	0	0	31	7	0	1	0	0	8	0	63	1	0	0	64	16	7	48	0	0	71	
12:15 AM	3	19	2	0	0	24	3	0	0	0	0	3	0	39	2	0	0	41	1	0	6	0	0	7	
12:30 AM	2	25	3	0	0	30	5	0	0	0	0	5	0	21	2	0	0	23	0	0	6	0	0	6	
12:45 AM	4	22	3	0	0	29	2	0	0	0	0	2	0	17	1	0	0	18	1	0	0	0	0	1	
Hourly Total	11	94	9	0	0	114	17	0	1	0	0	18	0	140	6	0	0	146	18	7	60	0	0	85	
1:00 AM	2	25	8	0	0	35	20	0	0	0	0	20	0	20	0	0	0	20	1	0	2	0	0	3	
1:15 AM	2	14	2	0	0	18	2	0	0	0	0	2	0	21	0	0	0	21	1	0	6	0	0	7	
1:30 AM	1	26	1	0	0	28	1	1	0	0	0	2	0	20	2	0	0	22	0	0	0	0	0	0	
1:45 AM	1	12	1	0	0	14	1	0	0	0	0	1	0	30	0	0	0	30	0	0	2	0	0	2	
Hourly Total	6	77	12	0	0	95	24	1	0	0	0	25	0	91	2	0	0	93	2	0	10	0	0	12	
2:00 AM	3	9	3	0	0	15	4	0	0	0	0	4	0	46	1	0	0	47	1	0	3	0	0	4	
2:15 AM	1	20	1	0	0	22	2	0	0	0	0	2	0	17	1	0	0	18	3	0	10	0	0	13	
2:30 AM	3	14	0	0	0	17	0	0	0	0	0	0	0	13	0	0	0	13	4	5	53	0	0	62	
2:45 AM	0	25	1	0	0	26	3	0	0	0	0	3	0	13	1	0	0	14	1	1	3	0	0	5	
Hourly Total	7	68	5	0	0	80	9	0	0	0	0	9	0	89	3	0	0	92	9	6	69	0	0	84	
3:00 AM	3	32	2	0	0	37	5	1	0	0	0	6	0	18	2	0	0	20	2	0	1	0	0	3	
3:15 AM	3	31	1	0	0	35	3	2	0	0	0	3	2	14	1	0	0	17	1	0	10	0	0	11	
3:30 AM	5	37	2	0	0	44	3	0	0	0	0	3	0	98	3	0	0	101	5	2	48	0	0	55	
3:45 AM	8	51	2	0	0	61	6	0	0	0	0	6	0	33	0	0	0	35	4	0	7	0	0	11	
Hourly Total	19	151	7	0	0	177	10	1	0	0	0	11	2	163	6	0	0	171	12	2	66	0	0	80	
4:00 AM	7	51	4	0	0	62	0	0	0	0	0	0	0	56	3	0	0	59	0	0	3	0	0	4	
4:15 AM	20	41	7	0	0	68	0	0	0	0	0	0	1	50	3	0	0	54	0	0	4	0	0	4	
4:30 AM	44	74	20	0	0	138	0	44	74	0	0	0	0	53	11	0	0	64	0	1	3	0	0	7	
4:45 AM	73	67	48	0	0	188	0	3	0	0	0	3	2	39	13	0	0	54	0	1	9	0	0	10	
Hourly Total	144	233	79	0	0	456	0	3	0	0	0	3	3	198	30	0	0	231	0	2	22	0	0	24	
5:00 AM	14	58	15	0	0	86	16	50	15	0	0	18	4	60	3	0	0	67	1	1	8	0	0	10	
5:15 AM	20	110	31	0	0	161	5	2	1	0	0	8	4	56	8	0	0	68	8	2	12	0	0	13	
5:30 AM	42	142	50	0	0	234	15	1	2	0	0	17	6	60	14	0	0	80	8	1	2	5	0	8	
5:45 AM	83	179	72	0	0	334	11	6	0	0	0	17	4	92	28	0	0	124	9	3	10	0	0	22	
Hourly Total	159	480	168	0	0	817	47	11	3	0	0	61	18	268	53	0	0	339	12	6	35	0	0	53	
6:00 AM	13	115	70	0	0	204	19	3	1	0	0	23	9	101	14	0	0	124	8	2	13	0	0	21	
6:15 AM	46	141	33	0	0	220	6	4	0	0	0	10	7	100	19	0	0	126	4	3	14	0	0	21	
6:30 AM	59	143	19	0	0	221	7	6	0	0	0	13	5	170	16	0	0	191	2	0	13	0	0	15	
6:45 AM	62	180	34	0	0	276	1	6	1	0	0	8	4	130	13	0	0	207	2	1	12	0	0	15	
Hourly Total	186	579	156	0	0	921	33	19	2	0	0	54	25	561	62	0	0	648	14	6	52	0	0	72	
7:00 AM	32	121	12	0	0	165	5	1	0	0	0	6	5	152	7	0	0	164	4	0	10	0	0	14	
7:15 AM	34	158	19	0	0	211	7	2	1	0	0	10	5	153	5	0	0	163	1	0	6	0	0	7	
7:30 AM	28	139	32	0	0	199	8	4	1	0	0	12	4	155	3	0	0	162	5	0	7	0	0	11	
7:45 AM	45	175	39	0	0	259	5	4	1	0	0	10	4	136	4	0	0	144	1	3	6	0	0	10	
Hourly Total	139	593	102	0	0	834	25	11	3	0	0	39	18	506	19	0	0	633	11	3	28	0	0	42	
8:00 AM	36	134	40	0	0	210	6	2	0	0	0	8	4	133	7	0	0	144	0	1	5	0	0	6	
8:15 AM	38	118	32	0	0	188	20	3	0	0	0	17	8	80	5	0	0	94	5	0	7	0	0	15	
8:30 AM	25	111	18	0	0	154	3	1	0	0	0	4	2	103	3	0	0	108	7	1	16	0	0	24	
8:45 AM	27	122	27	0	0	176	4	3	1	0	0	8	3	89	4	0	0	96	4	0	7	0	0	11	
Hourly Total	128	485	117	0	0	728	21	9	1	0	0	31	17	405	19	0	0	441	17	4	35	0	0	56	
9:00 AM	26	108	9	0	0	139	8	3	4	0	0	12	4	100	7	0	0	112	6	2	14	0	0	21	
9:15 AM	17	103	9	0	0	129	5	0	2	0	0	7	4	90	2	0	0	96	7	4	17	0	0	28	
9:30 AM	27	103	6	0	0	136	8	3	1	0	0	12	5	76	5	0	0	86	2	1	10	0	0	13	
9:45 AM	26	116	13	0	0	155	2	0	0	0	0	2	0	81	3	0	0	84	1	0	10	0	0	10	
Hourly Total	95	423	37	0	0	559	23	3	7	0	0	27	14	347	17	0	0	378	16	6	50	0	0	72	
10:00 AM	9	102	11	0	0	122	2	0	0	0	0	2	3	92	6	0	0	101	7	3	9	0	0	19	
10:15 AM	12	79	8	0	0	99	0	0	2	0	0	2	2	83	3	0	0	88	0	1	16	0	0	17	
10:30 AM	14	89	11	0	0	114	2	0	0	0	0	2	7	91	2	0	0	100	1	2	20	0	0	23	
10:45 AM	12	104	8	0	0	124	5	2	2	0	0	7	3	112	2	0	0	117	0	1	15	0	0	18	
Hourly Total	47	374	38	0	0	459	9	2	4	0	0	15	15	378	13	0	0	406	11	6	60	0	0	77	
11:00 AM	23	103	11	0	0	137	13	1	0	0	0	14	8	121	5	0	0	134	12	1	24	0	0	37	
11:15 AM	16	114	9	0	0	139	11	4	2	0	0	17	3	96	5	0	0	104	5	1	16	0	0	22	
11:30 AM	21	91	15	0	0	127	5	2	1	0	0	8	5	113	6	0	0	124	5	1	22	0	0	28	
11:45 AM	19	109	13	0	0	141	10	0	5	0	0	15	4	123	11	0	0	138	6	2	17	0	0	25	
Hourly Total	79	417	48	0	0	544	39	7	8	0	0	54	20	453	27	0	0	500	28	5	79	0	0	112	
12:00 PM	18	148	15	0	0	169	26	4	2	0	0	32	4	133	8	0	0	145	15	1	29	0	0	45	
12:15 PM	22	102	22	0	0	146	10	1	0	0	0	11	7	130	6	0	0	143	3	1	16	0	0	20	
12:30 PM	21	99	23	0	0	143	13	1	1	0	0	15	5	112	2	0	0	119	2	1	19	0	0	22	
12:45 PM	20	91	26	0	0	137	16	3	0	0	0	19	4	105	6	0	0	115	5	0	12	0	0	17	
Hourly Total	81	408	86	0	0	575	25	9	3	0	0	77	20	480	22	0	0	522	25	3	76	0	0	104	
1:00 PM	23	104	13	0	0	139	16	0	0	0	0	17	5	109	5	0	0	119	8	0	20	0	0	25	
1:15 PM	31	111	15	0	0	149	16	2	0	0	0	18	5	123	12	0	0	140	8	1	14	0	0	23	
1:30 PM	28	100	17	0	0	145	4	6	1	0	0	11	7	117	6	0	0	130	4	2	26	0	0	32	
1:45 PM	34	108	25	0	0	167	10	2	0	0	0	12	5	118	5	0	0	129	4	1	21	0	0	26	
Hourly Total	98	426	70	0	0	594	46	10	2	0	0	58	22	467	29	0	0	518	21	4	81	0			

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	260	85																
12:15 AM	220	30																
12:30 AM	194	29																
12:45 AM	191	26																
1:00 AM	188	25																
1:15 AM	195	13																
1:30 AM	196	19																
1:45 AM	176	81																
2:00 AM	172	84																
2:15 AM	167	83																
2:30 AM	179	81																
2:45 AM	294	74																
3:00 AM	348	80												1				
3:15 AM	412	80																
3:30 AM	482	73			1					1								
3:45 AM	539	25																1
4:00 AM	687	24	1						1					1				
4:15 AM	721	31											1					
4:30 AM	828	40			1					1								
4:45 AM	940	47					1										1	1
5:00 AM	1156	61	1						1	1				1				
5:15 AM	1329	66											1	1				
5:30 AM	1446	72			1						1							
5:45 AM	1544	79					1	1									1	1
6:00 AM	1569	72	1						1	1				1				
6:15 AM	1570	65											1	1				
6:30 AM	1598	51			1						1							
6:45 AM	1547	47					1										1	1
7:00 AM	1467	42	1						1					1				
7:15 AM	1492	41											1					
7:30 AM	1399	42			1						1							
7:45 AM	1300	55					1										1	1
8:00 AM	1169	56	1						1	1				1				
8:15 AM	1066	71											1	1				
8:30 AM	1010	84			1						1							
8:45 AM	970	73					1										1	1
9:00 AM	937	72	1						1	1				1				
9:15 AM	909	70											1	1				
9:30 AM	871	59			1						1							
9:45 AM	863	69															1	1

10:00 AM	865	77	1					1	1				1					
10:15 AM	913	95				1	1					1	1					
10:30 AM	969	100			1					1								
10:45 AM	1006	105														1	1	
11:00 AM	1044	112	1					1	1					1	1			
11:15 AM	1067	120				1	1					1	1					
11:30 AM	1113	118			1	1				1								
11:45 AM	1124	112														1	1	
12:00 PM	1097	104	1					1	1					1	1			
12:15 PM	1053	84				1	1					1	1					
12:30 PM	1053	87			1					1								
12:45 PM	1066	97														1	1	
1:00 PM	1112	106	1					1	1					1	1			
1:15 PM	1150	118				1	1					1	1					
1:30 PM	1177	135			1	1				1	1							
1:45 PM	1267	169														1	1	
2:00 PM	1369	203	1	1				1	1					1	1			
2:15 PM	1419	296				1	1					1	1					
2:30 PM	1491	271			1	1				1	1							
2:45 PM	1515	377														1	1	
3:00 PM	1506	398	1	1				1	1					1	1			
3:15 PM	1510	413				1	1					1	1					
3:30 PM	1460	376			1	1				1	1							
3:45 PM	1514	254														1	1	
4:00 PM	1540	245	1	1				1	1					1	1			
4:15 PM	1530	232				1	1					1	1					
4:30 PM	1460	198			1	1				1	1							
4:45 PM	1289	149														1	1	
5:00 PM	1132	136	1					1	1					1	1			
5:15 PM	1020	101				1	1					1	1					
5:30 PM	963	80			1					1								
5:45 PM	881	75														1	1	
6:00 PM	792	80	1					1	1					1				
6:15 PM	723	66										1	1					
6:30 PM	656	55			1					1								
6:45 PM	588	54														1	1	
7:00 PM	529	45												1				
7:15 PM	532	52																
7:30 PM	536	50			1					1								
7:45 PM	542	42														1	1	
8:00 PM	558	35												1				
8:15 PM	530	43																
8:30 PM	495	47			1					1								
8:45 PM	519	53														1	1	
9:00 PM	504	58												1				
9:15 PM	497	48																
9:30 PM	483	47			1					1								
9:45 PM	439	45																
HOURS MET			15	3	19	5	13	9	15	13	19	4	15	13	21	8	18	17
WARRANT SATISFIED?			NO		NO		YES		YES		NO				YES			

Warrant Met: **Yes**

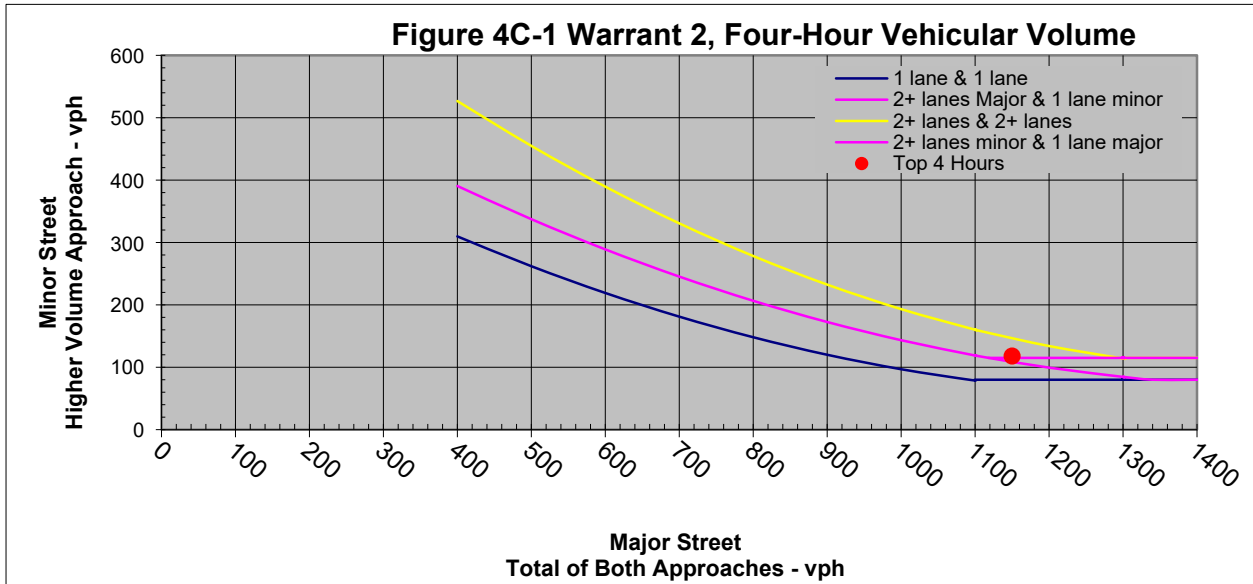
Notes: Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	5
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	12
Minor Street: 1 Lane		

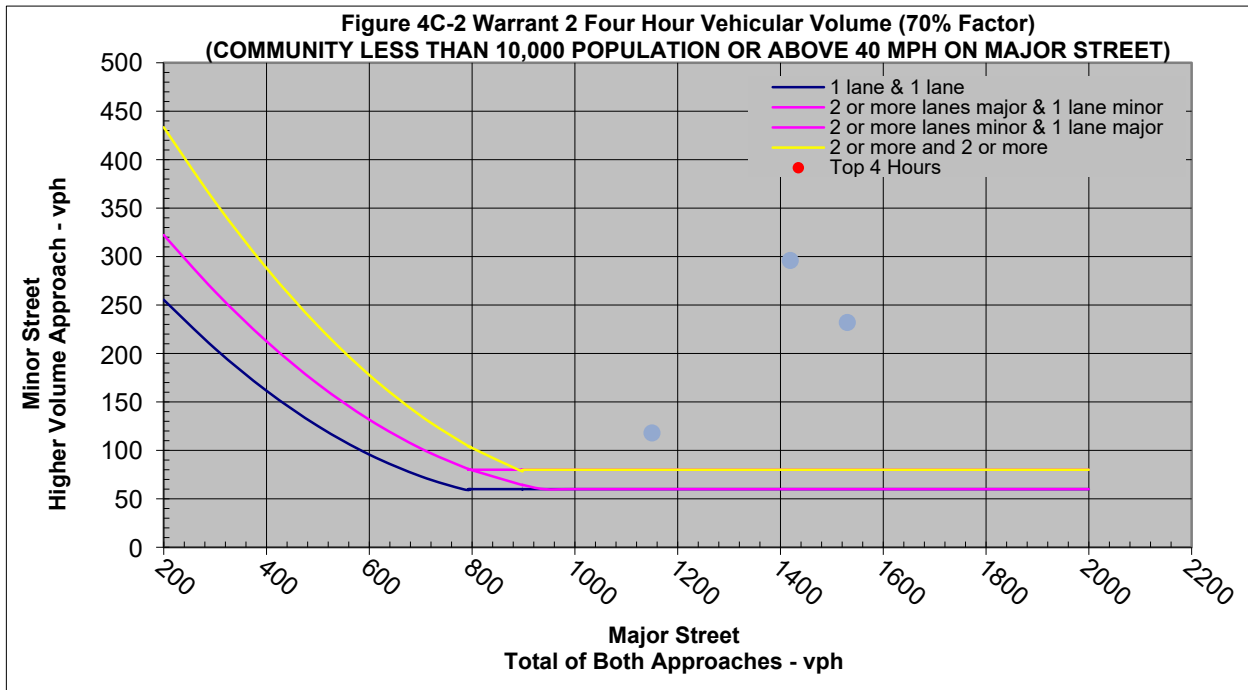
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Spiegel Drive					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	648	921	54	72	1569	72		Met
6:15 AM	688	882	37	65	1570	65		
6:30 AM	725	873	37	51	1598	51		
6:45 AM	696	851	37	47	1547	47		
7:00 AM	633	834	39	42	1467	42		
7:15 AM	613	879	41	34	1492	41		
7:30 AM	543	856	42	42	1399	42		
7:45 AM	489	811	33	55	1300	55		
8:00 AM	441	728	31	56	1169	56		
8:15 AM	409	657	35	71	1066	71		Met
8:30 AM	412	598	31	84	1010	84		
8:45 AM	390	580	39	73	970	73		
9:00 AM	378	559	33	72	937	72		
9:15 AM	367	542	23	70	909	70		Met
9:30 AM	359	512	18	59	871	59		
9:45 AM	373	490	8	69	863	69		
10:00 AM	406	459	15	77	865	77		
10:15 AM	439	474	27	95	913	95		Met
10:30 AM	455	514	42	100	969	100		
10:45 AM	479	527	48	105	1006	105		
11:00 AM	500	544	54	112	1044	112		
11:15 AM	511	556	72	120	1067	120		Met
11:30 AM	550	563	66	118	1113	118	Met	
11:45 AM	545	579	73	112	1124	112		
12:00 PM	522	575	77	104	1097	104		
12:15 PM	496	557	62	84	1053	84		Met
12:30 PM	493	560	69	87	1053	87		
12:45 PM	504	562	65	97	1066	97		
1:00 PM	518	594	58	106	1112	106		
1:15 PM	531	619	57	118	1150	118	Met	Met
1:30 PM	527	650	88	135	1177	135		
1:45 PM	559	708	140	169	1267	169		
2:00 PM	583	786	203	173	1369	203		
2:15 PM	615	804	296	172	1419	296	Met	Met
2:30 PM	652	839	271	242	1491	271		
2:45 PM	671	844	235	377	1515	377		
3:00 PM	656	850	188	398	1506	398		
3:15 PM	651	859	108	413	1510	413	Met	Met
3:30 PM	603	857	99	376	1460	376		
3:45 PM	651	863	89	254	1514	254		
4:00 PM	693	847	87	245	1540	245		
4:15 PM	710	820	134	232	1530	232	Met	Met
4:30 PM	702	758	149	198	1460	198		
4:45 PM	612	677	149	145	1289	149		
5:00 PM	545	587	136	123	1132	136		
5:15 PM	468	552	89	101	1020	101		Met
5:30 PM	439	524	80	77	963	80		
5:45 PM	394	487	75	62	881	75		
6:00 PM	352	440	80	61	792	80		
6:15 PM	321	402	66	54	723	66		
6:30 PM	296	360	55	46	656	55		
6:45 PM	257	331	54	43	588	54		
7:00 PM	236	293	45	32	529	45		
7:15 PM	247	285	52	31	532	52		
7:30 PM	247	289	50	30	536	50		
7:45 PM	258	284	42	30	542	42		
8:00 PM	249	309	35	31	558	35		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	1510	413
2nd Highest Hour	2:15 PM	3:15 PM	1419	296
3rd Highest Hour	4:15 PM	5:15 PM	1530	232
4th Highest Hour	1:15 PM	2:15 PM	1150	118

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:15 PM	4:15 PM	1510	413
2nd Highest Hour	2:15 PM	3:15 PM	1419	296
3rd Highest Hour	4:15 PM	5:15 PM	1530	232
4th Highest Hour	1:15 PM	2:15 PM	1150	118



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:15 PM
Minor Street:	1 Lane		

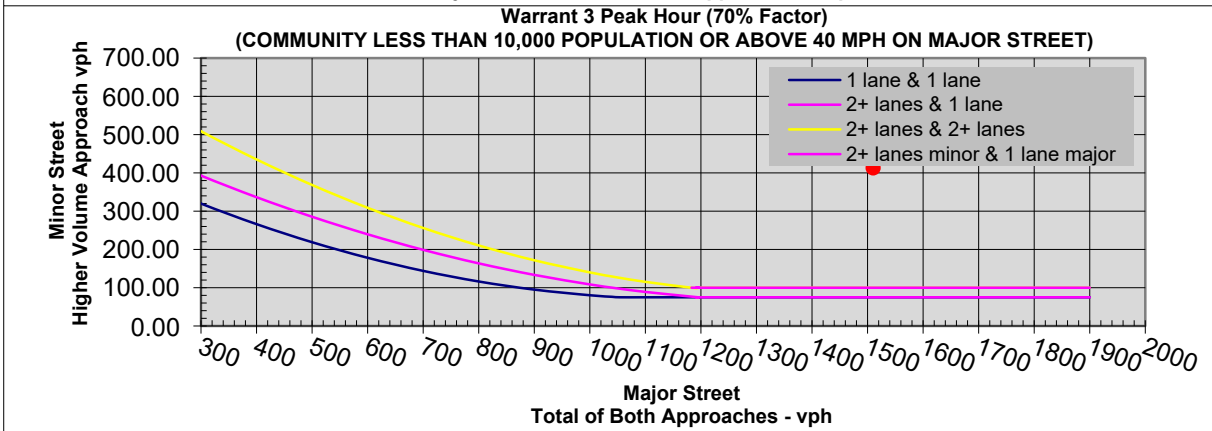
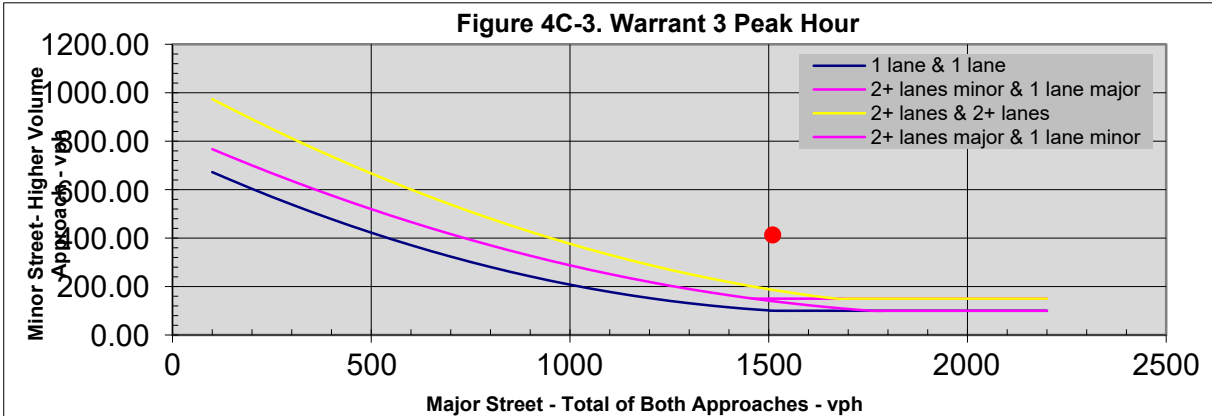
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1569	72	1641	1695
6:15 AM	1570	65	1635	1672
6:30 AM	1598	51	1649	1686
6:45 AM	1547	47	1594	1631
7:00 AM	1467	42	1509	1548
7:15 AM	1492	41	1533	1567
7:30 AM	1399	42	1441	1483
7:45 AM	1300	55	1355	1388
8:00 AM	1169	56	1225	1256
8:15 AM	1066	71	1137	1172
8:30 AM	1010	84	1094	1125
8:45 AM	970	73	1043	1082
9:00 AM	937	72	1009	1042
9:15 AM	909	70	979	1002
9:30 AM	871	59	930	948
9:45 AM	863	69	932	940
10:00 AM	865	77	942	957
10:15 AM	913	95	1008	1035
10:30 AM	969	100	1069	1111
10:45 AM	1006	105	1111	1159
11:00 AM	1044	112	1156	1210
11:15 AM	1067	120	1187	1259
11:30 AM	1113	118	1231	1297
11:45 AM	1124	112	1236	1309
12:00 PM	1097	104	1201	1278
12:15 PM	1053	84	1137	1199
12:30 PM	1053	87	1140	1209
12:45 PM	1066	97	1163	1228
1:00 PM	1112	106	1218	1276
1:15 PM	1150	118	1268	1325
1:30 PM	1177	135	1312	1400
1:45 PM	1267	169	1436	1576
2:00 PM	1369	203	1572	1745
2:15 PM	1419	296	1715	1887
2:30 PM	1491	271	1762	2004
2:45 PM	1515	377	1892	2127
3:00 PM	1506	398	1904	2092
3:15 PM	1510	413	1923	2031
3:30 PM	1460	376	1836	1935
3:45 PM	1514	254	1768	1857
4:00 PM	1540	245	1785	1872
4:15 PM	1530	232	1762	1896
4:30 PM	1460	198	1658	1807
4:45 PM	1289	149	1438	1583
5:00 PM	1132	136	1268	1391
5:15 PM	1020	101	1121	1210
5:30 PM	963	80	1043	1120
5:45 PM	881	75	956	1018
6:00 PM	792	80	872	933
6:15 PM	723	66	789	843
6:30 PM	656	55	711	757
6:45 PM	588	54	642	685
7:00 PM	529	45	574	606
7:15 PM	532	52	584	615
7:30 PM	536	50	586	616
7:45 PM	542	42	584	614
8:00 PM	558	35	593	624

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1510	413	140	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

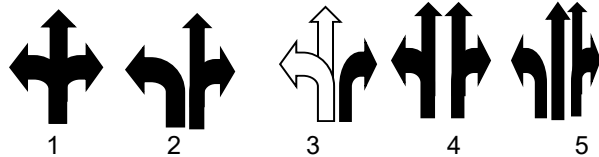
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR-317

Minor Street Approach Configuration: 5 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> <tr><td style="text-align: center;">5:15 PM</td></tr> </table>				Peak Hour	4:15 PM	5:15 PM
Peak Hour						
4:15 PM						
5:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> </table>				Peak Hour	3:15 PM	4:15 PM
Peak Hour						
3:15 PM						
4:15 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection.

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	5	19	20	0	0	44	5	6	4	0	0	15	6	54	7	0	0	67	2	7	4	0	0	13	
12:15 AM	8	6	4	0	0	18	3	1	3	0	0	7	3	30	5	0	0	38	5	8	6	0	0	19	
12:30 AM	5	18	3	0	0	26	1	7	3	0	0	11	3	14	3	0	0	20	0	11	6	0	0	17	
12:45 AM	8	13	3	0	0	24	3	4	3	0	0	10	2	9	3	0	0	14	2	3	4	0	0	9	
Hourly Total	26	56	30	0	0	112	12	18	13	0	0	43	14	107	18	0	0	139	9	29	20	0	0	58	
1:00 AM	11	13	1	0	0	25	3	4	1	0	0	8	4	13	2	0	0	19	4	5	4	0	0	13	
1:15 AM	3	12	2	0	0	17	3	5	1	0	0	9	0	13	0	0	0	13	4	2	5	0	0	11	
1:30 AM	16	11	1	0	0	28	3	5	5	0	0	13	1	12	2	0	0	15	2	4	13	0	0	19	
1:45 AM	5	4	1	0	0	10	4	4	0	0	0	8	1	10	2	0	0	13	4	9	13	0	0	26	
Hourly Total	35	40	5	0	0	80	13	18	7	0	0	38	6	48	6	0	0	60	14	20	35	0	0	69	
2:00 AM	0	11	1	0	0	12	4	5	6	0	0	15	4	14	4	1	0	59	1	2	3	0	0	6	
2:15 AM	6	11	3	0	0	20	1	1	1	0	0	3	2	11	1	0	0	14	2	2	5	0	0	9	
2:30 AM	2	13	7	0	0	22	1	3	0	0	0	4	1	7	0	0	0	8	0	5	2	0	0	7	
2:45 AM	8	16	2	0	0	26	6	6	3	0	0	15	2	6	1	0	0	9	2	4	4	0	0	10	
Hourly Total	16	51	13	0	0	80	12	15	10	0	0	37	19	68	3	0	0	90	5	13	14	0	0	32	
3:00 AM	16	15	1	0	0	32	4	7	4	0	0	15	3	12	3	0	0	18	0	3	3	0	0	6	
3:15 AM	24	8	1	0	0	33	4	6	11	0	0	21	0	11	4	0	0	15	5	6	4	0	0	15	
3:30 AM	22	13	4	0	0	39	1	11	11	0	0	23	29	84	6	0	0	119	5	11	19	0	0	35	
3:45 AM	23	36	2	0	0	61	7	9	11	0	0	27	43	19	4	0	0	64	11	17	18	0	0	32	
Hourly Total	82	72	8	0	0	162	10	33	37	0	0	80	36	126	17	0	0	179	15	29	44	0	0	88	
4:00 AM	17	33	3	0	0	53	4	8	12	0	0	24	5	19	3	0	0	27	7	14	31	0	0	52	
4:15 AM	4	33	2	0	0	39	4	7	20	0	0	24	5	11	6	0	0	22	13	16	32	0	0	61	
4:30 AM	6	32	6	0	0	44	9	7	20	0	0	36	4	30	21	5	0	54	11	17	22	0	0	44	
4:45 AM	4	55	2	0	0	61	11	13	26	0	0	50	6	32	3	0	0	41	9	21	20	0	0	50	
Hourly Total	31	183	13	0	0	227	28	32	74	0	0	134	20	93	17	0	0	130	40	62	105	0	0	207	
5:00 PM	5	59	2	0	0	66	5	12	9	0	0	26	14	54	6	0	0	74	4	11	12	0	0	27	
5:15 PM	16	83	9	0	0	108	6	12	38	0	0	56	10	48	7	0	0	65	19	19	16	0	0	54	
5:30 AM	22	123	7	0	0	152	5	32	65	0	0	102	10	55	13	0	0	78	16	20	16	0	0	56	
5:45 AM	27	141	16	0	0	184	13	32	74	0	0	119	9	102	17	0	0	128	32	28	13	0	0	73	
Hourly Total	70	406	34	0	0	510	29	88	166	0	0	303	43	259	43	0	0	345	71	78	61	0	0	210	
6:00 AM	17	103	13	0	0	133	7	21	38	0	0	66	16	39	22	0	0	130	30	23	16	0	0	69	
6:15 AM	15	109	12	0	0	136	13	31	39	0	0	83	12	97	16	0	0	125	27	18	21	0	0	66	
6:30 AM	15	80	11	0	0	106	12	27	38	0	0	77	9	120	14	0	0	143	19	8	52	0	0	79	
6:45 AM	16	145	17	0	0	178	2	28	52	0	0	82	25	149	25	0	0	199	30	35	25	0	0	90	
Hourly Total	63	437	53	0	0	553	34	107	167	0	0	308	62	458	77	0	0	597	106	84	114	0	0	304	
7:00 AM	12	96	19	0	0	127	8	23	31	0	0	62	16	128	21	0	0	165	33	30	27	0	0	90	
7:15 AM	12	126	13	0	0	151	7	26	37	0	0	70	14	135	27	0	0	176	36	40	22	0	0	98	
7:30 AM	18	124	8	0	0	150	11	23	38	0	0	72	19	134	33	0	0	185	22	38	15	0	0	73	
7:45 AM	23	133	20	0	0	176	12	32	38	0	0	82	21	108	13	0	0	142	33	33	21	0	0	87	
Hourly Total	65	479	60	0	0	604	38	104	144	0	0	286	69	505	94	0	0	668	124	139	85	0	0	348	
8:00 AM	25	95	12	0	0	139	13	24	38	0	0	75	17	85	14	0	0	116	27	33	35	0	0	95	
8:15 AM	16	94	12	0	0	122	4	25	28	0	0	67	14	71	19	0	0	104	17	14	19	0	0	50	
8:30 AM	20	70	9	0	0	99	4	14	31	0	0	49	14	80	25	0	0	119	25	31	25	0	0	81	
8:45 AM	25	81	25	0	0	131	8	19	19	0	0	46	19	76	21	0	0	116	17	25	18	0	0	85	
Hourly Total	86	340	65	0	0	431	39	82	116	0	0	237	64	312	79	0	0	455	86	108	92	0	0	286	
9:00 AM	30	15	27	0	0	72	15	23	27	0	0	65	10	80	12	0	0	105	17	21	15	0	0	57	
9:15 AM	16	73	16	0	0	105	12	33	18	0	0	63	11	64	16	0	0	91	13	18	14	0	0	45	
9:30 AM	21	72	19	0	0	112	7	33	12	0	0	52	17	60	15	0	0	92	12	17	19	0	0	48	
9:45 AM	24	73	16	0	0	113	11	35	25	0	0	71	18	61	18	0	0	105	18	32	13	0	0	65	
Hourly Total	17	308	78	0	0	463	45	124	82	0	0	251	57	265	65	0	0	396	65	88	61	0	0	269	
10:00 AM	23	63	18	0	0	104	9	31	32	0	0	72	17	72	15	0	0	104	27	17	17	0	0	61	
10:15 AM	16	65	6	0	0	87	9	16	18	0	0	43	17	71	17	0	0	105	14	19	16	0	0	49	
10:30 AM	25	62	9	0	0	96	15	23	23	0	0	61	14	54	21	0	0	89	21	33	25	0	0	79	
10:45 AM	27	65	11	0	0	103	9	24	19	0	0	52	21	81	31	0	0	133	19	20	20	0	0	71	
Hourly Total	91	255	44	0	0	390	42	94	92	0	0	228	69	278	84	0	0	431	81	89	78	0	0	248	
11:00 AM	26	70	13	0	0	109	14	24	31	0	0	69	25	95	17	0	0	137	32	26	31	0	0	89	
11:15 AM	15	74	22	0	0	111	11	27	40	0	0	78	22	96	20	0	0	138	31	24	16	0	0	87	
11:30 AM	17	69	16	0	0	102	11	20	43	0	0	71	11	20	43	0	0	102	22	24	21	0	0	71	
11:45 AM	16	94	17	0	0	127	14	37	32	0	0	83	22	98	19	0	0	139	26	19	22	0	0	87	
Hourly Total	74	307	68	0	0	449	50	108	146	0	0	304	96	377											

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	251	58																
12:15 AM	184	58																
12:30 AM	158	50																
12:45 AM	155	52																
1:00 AM	140	69																
1:15 AM	167	62																
1:30 AM	171	60																
1:45 AM	158	48																
2:00 AM	170	37																
2:15 AM	149	37																
2:30 AM	163	55																
2:45 AM	291	74																
3:00 AM	341	88												1	1			
3:15 AM	371	134																
3:30 AM	384	180																
3:45 AM	340	189																
4:00 AM	357	207												1	1			
4:15 AM	417	182																
4:30 AM	529	175			1	1				1	1						1	1
4:45 AM	645	234	1	1					1	1								
5:00 AM	855	303										1	1	1	1			
5:15 AM	978	343					1	1										
5:30 AM	1066	370			1	1				1	1						1	1
5:45 AM	1085	345	1	1					1	1								
6:00 AM	1150	308										1	1	1	1			
6:15 AM	1179	325					1	1										
6:30 AM	1245	357			1	1				1	1						1	1
6:45 AM	1331	351	1	1					1	1								
7:00 AM	1272	348										1	1	1	1			
7:15 AM	1235	353					1	1										
7:30 AM	1134	305			1	1				1	1						1	1
7:45 AM	1017	313	1	1					1	1								
8:00 AM	946	286										1	1	1	1			
8:15 AM	932	244					1	1										
8:30 AM	902	239			1	1				1	1						1	1
8:45 AM	888	226	1	1					1	1								
9:00 AM	849	251										1	1	1	1			
9:15 AM	816	258																
9:30 AM	812	238			1	1				1	1						1	1
9:45 AM	793	252	1	1					1	1								

10:00 AM	821	248										1	1	1	1			
10:15 AM	859	276																
10:30 AM	916	298			1	1	1	1			1	1				1	1	
10:45 AM	973	286	1	1						1	1							
11:00 AM	1003	304										1	1	1	1			
11:15 AM	1064	326																
11:30 AM	1076	347			1	1	1	1			1	1				1	1	
11:45 AM	1060	369	1	1						1	1							
12:00 PM	1013	379										1	1	1	1			
12:15 PM	959	365																
12:30 PM	955	339			1	1	1	1			1	1				1	1	
12:45 PM	985	300	1	1						1	1							
1:00 PM	1024	299										1	1	1	1			
1:15 PM	1035	332																
1:30 PM	1064	336			1	1	1	1			1	1				1	1	
1:45 PM	1201	387	1	1						1	1							
2:00 PM	1288	392										1	1	1	1			
2:15 PM	1387	404																
2:30 PM	1488	399			1	1	1	1			1	1				1	1	
2:45 PM	1591	389	1	1						1	1							
3:00 PM	1634	392										1	1	1	1			
3:15 PM	1671	383																
3:30 PM	1635	391			1	1	1	1			1	1				1	1	
3:45 PM	1632	395	1	1						1	1							
4:00 PM	1644	403										1	1	1	1			
4:15 PM	1602	443																
4:30 PM	1538	438			1	1	1	1			1	1				1	1	
4:45 PM	1316	432	1	1						1	1							
5:00 PM	1168	400										1	1	1	1			
5:15 PM	1032	340																
5:30 PM	951	325			1	1	1	1			1	1				1	1	
5:45 PM	856	285	1	1						1	1							
6:00 PM	749	278										1	1	1	1			
6:15 PM	671	269																
6:30 PM	616	254			1	1					1	1				1	1	
6:45 PM	558	255																
7:00 PM	535	238												1	1			
7:15 PM	535	241																
7:30 PM	512	239			1	1					1	1				1	1	
7:45 PM	521	225																
8:00 PM	526	217												1	1			
8:15 PM	523	197																
8:30 PM	514	200			1	1					1	1				1	1	
8:45 PM	531	175																
9:00 PM	511	168												1	1			
9:15 PM	493	148																
9:30 PM	473	118			1	1												
9:45 PM	431	118																
HOURS MET			14	14	19	18	12	12	14	14	17	17	14	14	21	20	17	17
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

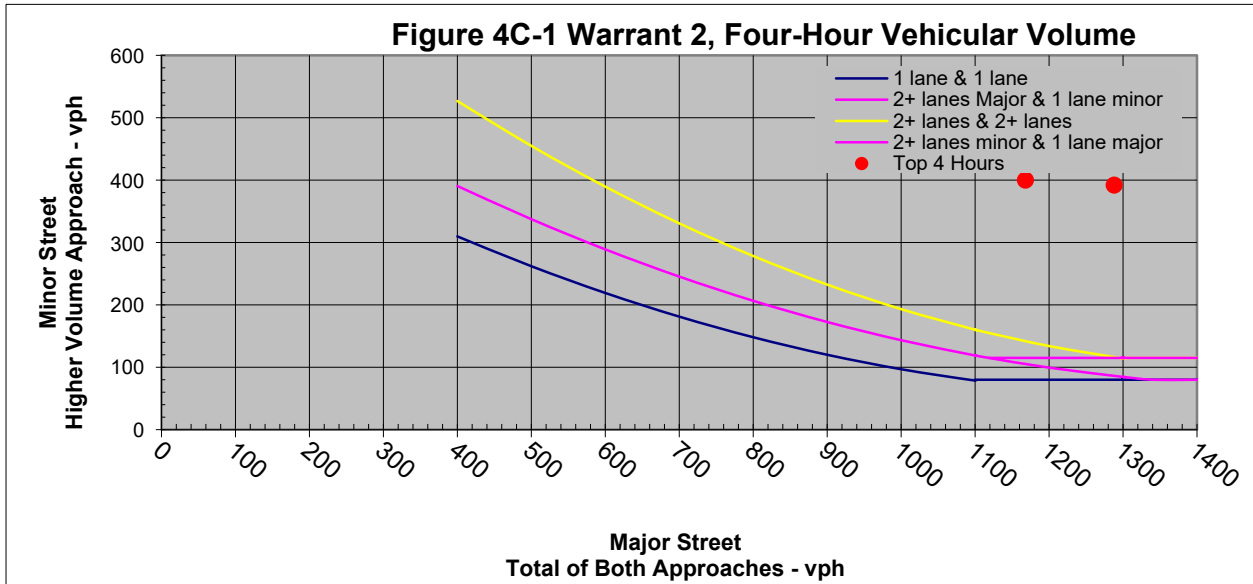
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	14
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	17
Minor Street: 1 Lane		

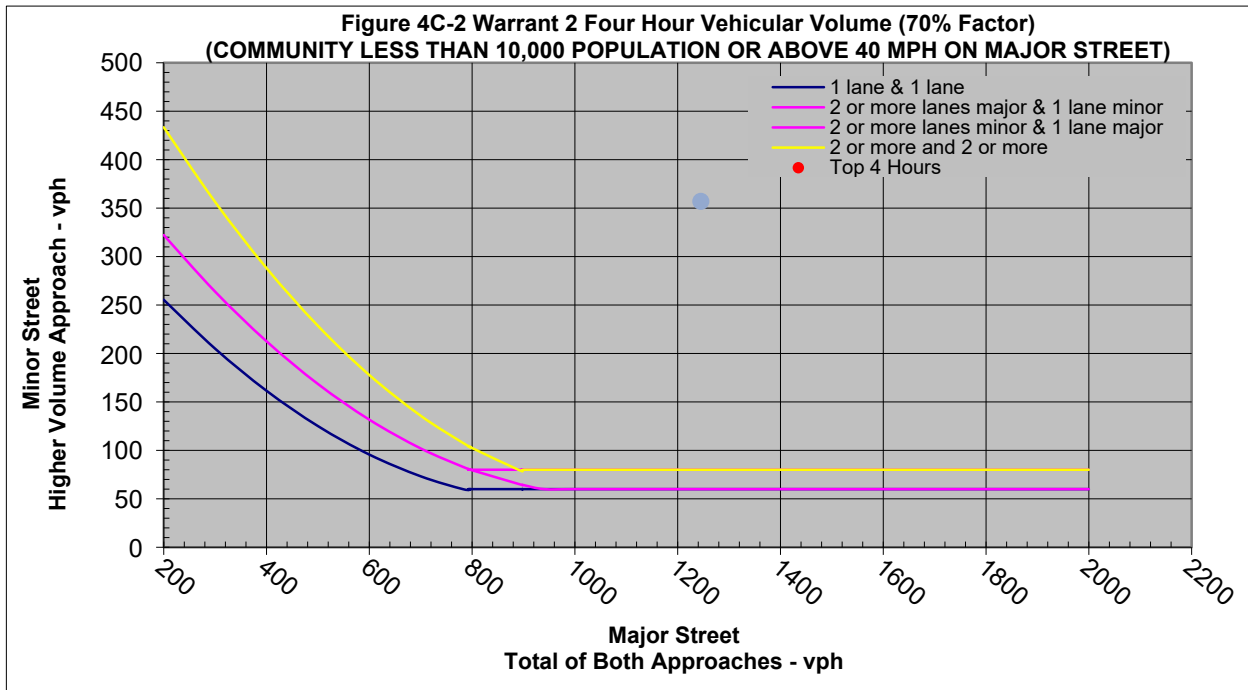
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - SR-317					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	597	553	308	304	1150	308	Met	
6:15 AM	632	547	304	325	1179	325		
6:30 AM	683	562	291	357	1245	357		Met
6:45 AM	725	606	286	351	1331	351		
7:00 AM	668	604	286	348	1272	348	Met	
7:15 AM	619	616	299	353	1235	353		
7:30 AM	547	587	296	305	1134	305		Met
7:45 AM	481	536	273	313	1017	313		
8:00 AM	455	491	237	286	946	286	Met	
8:15 AM	447	485	227	244	932	244		
8:30 AM	434	468	223	239	902	239		Met
8:45 AM	407	481	226	206	888	226		
9:00 AM	386	463	251	209	849	251	Met	
9:15 AM	382	434	258	217	816	258		
9:30 AM	396	416	238	221	812	238		Met
9:45 AM	393	400	247	252	793	252		
10:00 AM	431	390	228	248	821	248	Met	
10:15 AM	464	395	225	276	859	276		
10:30 AM	497	419	260	298	916	298		Met
10:45 AM	548	425	273	286	973	286		
11:00 AM	554	449	304	294	1003	304	Met	
11:15 AM	592	472	326	278	1064	326		
11:30 AM	605	471	347	266	1076	347		Met
11:45 AM	586	474	369	258	1060	369		
12:00 PM	564	449	379	260	1013	379	Met	
12:15 PM	543	416	365	235	959	365		
12:30 PM	520	435	339	276	955	339		Met
12:45 PM	550	435	300	284	985	300		
1:00 PM	581	443	299	280	1024	299	Met	
1:15 PM	563	472	311	332	1035	332		
1:30 PM	579	485	336	324	1064	336		Met
1:45 PM	652	549	387	337	1201	387		
2:00 PM	682	606	392	362	1288	392	Met	
2:15 PM	774	613	404	379	1387	404		
2:30 PM	835	653	399	381	1488	399		Met
2:45 PM	871	720	389	380	1591	389		
3:00 PM	878	756	392	383	1634	392	Met	
3:15 PM	873	798	383	352	1671	383		
3:30 PM	828	807	391	350	1635	391		Met
3:45 PM	865	767	395	368	1632	395		
4:00 PM	888	756	403	367	1644	403	Met	
4:15 PM	859	743	443	361	1602	443		
4:30 PM	843	695	438	369	1538	438		Met
4:45 PM	693	623	432	356	1316	432		
5:00 PM	613	555	400	333	1168	400	Met	
5:15 PM	533	499	340	323	1032	340		
5:30 PM	485	466	325	297	951	325		Met
5:45 PM	435	421	285	280	856	285		
6:00 PM	374	375	275	278	749	278	Met	
6:15 PM	330	341	258	269	671	269		
6:30 PM	311	305	240	254	616	254		Met
6:45 PM	271	287	230	255	558	255		
7:00 PM	271	264	207	238	535	238		
7:15 PM	280	255	205	241	535	241		
7:30 PM	263	249	194	239	512	239		Met
7:45 PM	272	249	207	225	521	225		
8:00 PM	258	268	207	217	526	217		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	1644	403
2nd Highest Hour	3:00 PM	4:00 PM	1634	392
3rd Highest Hour	2:00 PM	3:00 PM	1288	392
4th Highest Hour	5:00 PM	6:00 PM	1168	400

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	4:30 PM	5:30 PM	1538	438
2nd Highest Hour	2:30 PM	3:30 PM	1488	399
3rd Highest Hour	3:30 PM	4:30 PM	1635	391
4th Highest Hour	6:30 AM	7:30 AM	1245	357



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	4:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	5:15 PM
Minor Street:	1 Lane		

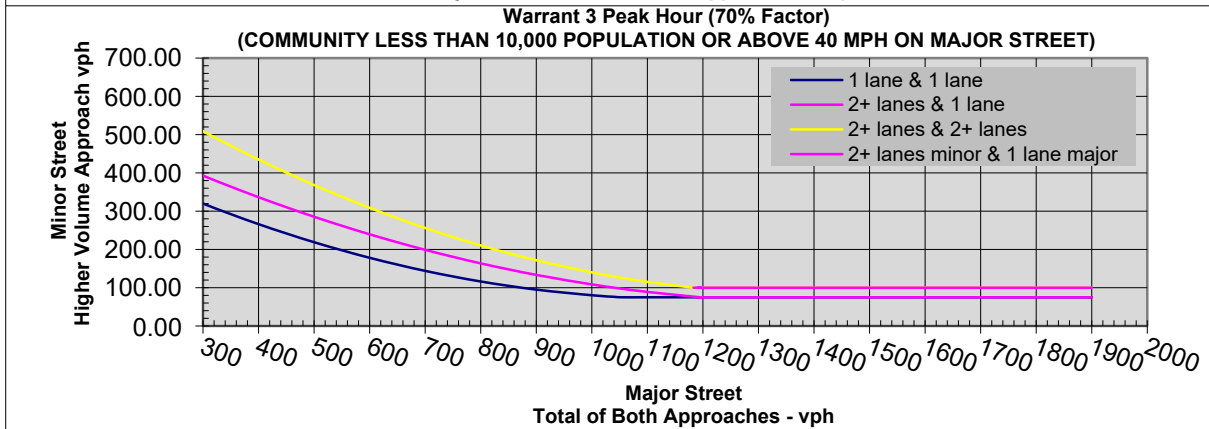
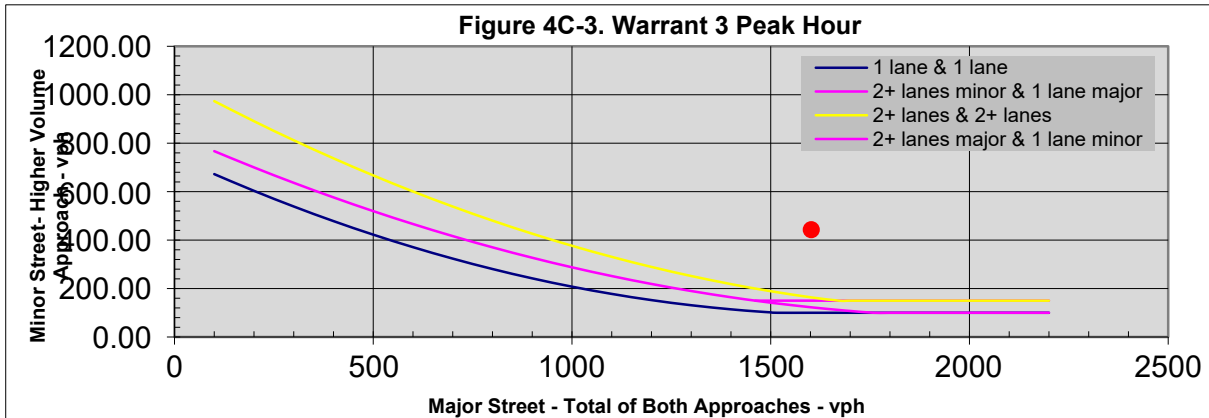
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1150	308	1458	1762
6:15 AM	1179	325	1504	1808
6:30 AM	1245	357	1602	1893
6:45 AM	1331	351	1682	1968
7:00 AM	1272	348	1620	1906
7:15 AM	1235	353	1588	1887
7:30 AM	1134	305	1439	1735
7:45 AM	1017	313	1330	1603
8:00 AM	946	286	1232	1469
8:15 AM	932	244	1176	1403
8:30 AM	902	239	1141	1364
8:45 AM	888	226	1114	1320
9:00 AM	849	251	1100	1309
9:15 AM	816	258	1074	1291
9:30 AM	812	238	1050	1271
9:45 AM	793	252	1045	1292
10:00 AM	821	248	1069	1297
10:15 AM	859	276	1135	1360
10:30 AM	916	298	1214	1474
10:45 AM	973	286	1259	1532
11:00 AM	1003	304	1307	1601
11:15 AM	1064	326	1390	1668
11:30 AM	1076	347	1423	1689
11:45 AM	1060	369	1429	1687
12:00 PM	1013	379	1392	1652
12:15 PM	959	365	1324	1559
12:30 PM	955	339	1294	1570
12:45 PM	985	300	1285	1569
1:00 PM	1024	299	1323	1603
1:15 PM	1035	332	1367	1678
1:30 PM	1064	336	1400	1724
1:45 PM	1201	387	1588	1925
2:00 PM	1288	392	1680	2042
2:15 PM	1387	404	1791	2170
2:30 PM	1488	399	1887	2268
2:45 PM	1591	389	1980	2360
3:00 PM	1634	392	2026	2409
3:15 PM	1671	383	2054	2406
3:30 PM	1635	391	2026	2376
3:45 PM	1632	395	2027	2395
4:00 PM	1644	403	2047	2414
4:15 PM	1602	443	2045	2406
4:30 PM	1538	438	1976	2345
4:45 PM	1316	432	1748	2104
5:00 PM	1168	400	1568	1901
5:15 PM	1032	340	1372	1695
5:30 PM	951	325	1276	1573
5:45 PM	856	285	1141	1421
6:00 PM	749	278	1027	1302
6:15 PM	671	269	940	1198
6:30 PM	616	254	870	1110
6:45 PM	558	255	813	1043
7:00 PM	535	238	773	980
7:15 PM	535	241	776	981
7:30 PM	512	239	751	945
7:45 PM	521	225	746	953
8:00 PM	526	217	743	950

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1602	443	123	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:

Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

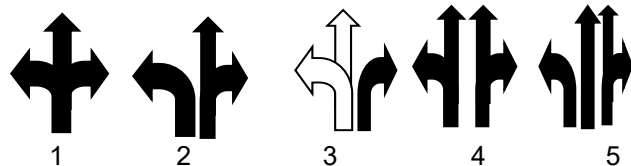
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
 *Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration: E-Bound
 W-Bound



Number of Thru Lanes on Each Minor Street Approach: LANE(S)

Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
			<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:45 PM</td></tr> <tr><td style="text-align: center;">4:45 PM</td></tr> </table>	Peak Hour	3:45 PM	4:45 PM
Peak Hour						
3:45 PM						
4:45 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
			<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">6:30 PM</td></tr> <tr><td style="text-align: center;">7:30 PM</td></tr> </table>	Peak Hour	6:30 PM	7:30 PM
Peak Hour						
6:30 PM						
7:30 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

- If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
 2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
 3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, 3 were met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
	12:00 AM	5	42	11	0	0	58	16	0	0	0	0	16	1	258	14	0	0	0	273	13	0	0	0	
12:15 AM	5	39	14	0	0	58	19	0	0	0	0	19	1	117	1	0	0	0	119	5	0	0	0	0	5
12:30 AM	5	57	9	0	0	71	15	0	0	0	0	15	1	81	6	0	0	0	88	10	0	0	0	0	10
12:45 AM	13	50	10	0	0	73	13	0	0	0	0	13	0	62	0	0	0	0	62	4	0	0	0	0	4
Hourly Total	31	188	44	0	0	263	63	0	0	0	0	63	3	518	21	0	0	0	542	32	0	0	0	0	32
1:00 AM	10	42	9	0	0	61	25	0	0	0	0	25	1	82	4	0	0	0	87	3	0	0	0	0	3
1:15 AM	8	49	5	0	0	62	7	0	0	0	0	7	0	87	3	0	0	0	90	3	0	0	0	0	3
1:30 AM	4	44	6	0	0	54	7	0	0	0	0	7	0	45	1	0	0	0	46	8	0	0	0	0	8
1:45 AM	8	55	9	0	0	72	8	0	0	0	0	8	3	42	4	0	0	0	49	3	0	0	0	0	3
Hourly Total	30	190	29	0	0	249	47	0	0	0	0	47	4	256	12	0	0	0	272	17	0	0	0	0	17
2:00 AM	4	45	8	0	0	57	19	0	0	0	0	19	0	158	9	0	0	0	167	3	0	0	0	0	3
2:15 AM	16	42	5	0	0	63	20	0	0	0	0	20	1	71	4	0	0	0	76	4	0	0	0	0	4
2:30 AM	9	40	6	0	0	55	5	0	0	0	0	5	1	98	5	0	0	0	104	1	0	0	0	0	1
2:45 AM	8	62	4	0	0	74	11	0	0	0	0	11	0	45	4	0	0	0	49	3	0	0	0	0	3
Hourly Total	39	189	23	0	0	251	55	0	0	0	0	55	2	372	22	0	0	0	396	11	0	0	0	0	11
3:00 AM	5	67	8	0	0	80	24	0	0	0	0	24	0	53	3	0	0	0	56	9	0	0	0	0	9
3:15 AM	11	88	6	0	0	105	17	0	0	0	0	17	1	67	4	0	0	0	72	6	0	0	0	0	6
3:30 AM	10	113	9	0	0	132	20	0	0	0	0	20	3	204	9	0	0	0	216	6	0	0	0	0	6
3:45 AM	10	126	3	0	0	139	37	0	0	0	0	37	0	98	10	0	0	0	108	0	0	0	0	0	0
Hourly Total	36	394	26	0	0	456	98	0	0	0	0	98	5	422	26	0	0	0	453	26	0	0	0	0	26
4:00 AM	14	149	14	0	0	177	21	0	0	0	0	21	3	145	10	0	0	0	158	8	0	0	0	0	8
4:15 AM	15	207	15	0	0	237	25	0	0	0	0	25	0	103	1	0	0	0	104	10	0	0	0	0	10
4:30 AM	23	291	18	0	0	332	40	0	0	0	0	40	6	200	5	0	0	0	213	20	0	0	0	0	20
4:45 AM	26	348	30	0	0	404	39	0	0	0	0	39	1	122	5	0	0	0	128	25	0	0	0	0	25
Hourly Total	78	995	77	0	0	1150	125	0	0	0	0	125	12	570	21	0	0	0	603	63	0	0	0	0	63
5:00 PM	25	281	21	0	0	327	32	0	0	0	0	32	4	175	14	0	0	0	181	10	0	0	0	0	10
5:15 PM	34	438	47	0	0	519	55	0	0	0	0	55	5	117	8	0	0	0	130	30	0	0	0	0	30
5:30 AM	45	641	44	0	0	730	68	0	0	0	0	68	1	101	8	0	0	0	110	43	0	0	0	0	43
5:45 AM	83	774	60	0	0	917	64	0	0	0	0	64	9	154	18	0	0	0	161	63	0	0	0	0	63
Hourly Total	187	2114	172	0	0	2473	219	0	0	0	0	219	19	545	48	0	0	0	612	146	0	0	0	0	146
6:00 AM	45	46	0	0	496	88	0	0	0	0	0	88	4	228	9	0	0	0	243	32	0	0	0	0	32
6:15 AM	64	469	54	0	0	587	123	0	0	0	0	123	3	202	13	0	0	0	218	47	0	0	0	0	47
6:30 AM	63	636	95	0	0	794	177	0	0	0	0	177	4	234	15	0	0	0	253	45	0	0	0	0	45
6:45 AM	101	737	137	0	0	975	183	0	0	0	0	183	5	237	19	0	0	0	231	72	0	0	0	0	72
Hourly Total	273	2253	326	0	0	2852	571	0	0	0	0	571	18	921	56	0	0	0	995	196	0	0	0	0	196
7:00 AM	68	329	91	0	0	488	219	0	0	0	0	219	4	244	21	0	0	0	269	29	0	0	0	0	29
7:15 AM	74	465	76	0	0	615	189	0	0	0	0	189	8	260	24	0	0	0	292	35	0	0	0	0	35
7:30 AM	92	509	83	0	0	684	238	0	0	0	0	238	9	288	23	0	0	0	300	44	0	0	0	0	44
7:45 AM	108	610	82	0	0	800	201	0	0	0	0	201	6	207	25	0	0	0	238	50	0	0	0	0	50
Hourly Total	342	1913	332	0	0	2587	847	0	0	0	0	847	27	979	93	0	0	0	1099	158	0	0	0	0	158
8:00 AM	84	408	76	0	0	568	196	0	0	0	0	196	10	199	26	0	0	0	235	34	0	0	0	0	34
8:15 AM	59	369	44	0	0	432	173	0	0	0	0	173	3	216	16	0	0	0	216	24	0	0	0	0	24
8:30 AM	60	355	60	0	0	475	150	0	0	0	0	150	10	213	21	0	0	0	244	44	0	0	0	0	44
8:45 AM	53	341	69	0	0	463	157	0	0	0	0	157	5	203	16	0	0	0	224	34	0	0	0	0	34
Hourly Total	258	1503	249	0	0	2008	696	0	0	0	0	696	25	815	79	0	0	0	919	136	0	0	0	0	136
9:00 AM	47	243	44	0	0	334	171	0	0	0	0	171	2	199	24	0	0	0	239	24	0	0	0	0	24
9:15 AM	52	246	39	0	0	337	223	0	0	0	0	223	6	176	18	0	0	0	200	26	0	0	0	0	26
9:30 AM	54	249	43	0	0	346	123	0	0	0	0	123	6	209	28	0	0	0	243	25	0	0	0	0	25
9:45 AM	48	239	53	0	0	340	124	0	0	0	0	124	2	193	13	0	0	0	207	30	0	0	0	0	30
Hourly Total	201	977	179	0	0	1357	641	0	0	0	0	641	19	777	93	0	0	0	899	110	0	0	0	0	110
10:00 AM	48	185	33	0	0	266	127	0	0	0	0	127	3	178	30	0	0	0	211	26	0	0	0	0	26
10:15 AM	59	186	55	0	0	300	135	0	0	0	0	135	10	189	21	0	0	0	220	30	0	0	0	0	30
10:30 AM	58	198	44	0	0	300	122	0	0	0	0	122	5	202	23	0	0	0	230	35	0	0	0	0	35
10:45 AM	69	226	50	0	0	345	98	0	0	0	0	98	15	198	24	0	0	0	237	33	0	0	0	0	33
Hourly Total	234	798	182	0	0	1214	482	0	0	0	0	482	33	767	98	0	0	0	898	124	0	0	0	0	124
11:00 AM	58	224	59	0	0	341	128	0	0	0	0	128	15	253	43	0	0	0	311	44	0	0	0	0	44
11:15 AM	64	221	62	0	0	347	154	0	0	0	0	154	19	199	40	0	0	0	258	50	0	0	0	0	50
11:30 AM	82	234	63	0	0	379	122	0	0	0	0	122	16	244	44	0	0	0	294	59	0	0	0	0	59
11:45 AM	58	232	60																						

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	805	63	1		1				1	1	1		1	1		1	1	
12:15 AM	622	72																
12:30 AM	597	60																
12:45 AM	535	52																
1:00 AM	521	47			1						1			1		1	1	
1:15 AM	599	41																
1:30 AM	586	54																
1:45 AM	645	52	1						1									
2:00 AM	647	55			1						1			1		1	1	
2:15 AM	557	60																
2:30 AM	595	57																
2:45 AM	784	72	1						1	1			1	1				
3:00 AM	909	98			1		1	1			1			1	1	1	1	
3:15 AM	1108	95																
3:30 AM	1272	103																
3:45 AM	1469	123	1						1	1			1	1				
4:00 AM	1753	125			1	1	1	1			1	1		1	1	1	1	
4:15 AM	1916	136																
4:30 AM	2224	166																
4:45 AM	2519	194	1	1					1	1			1	1				
5:00 AM	3085	219			1	1	1	1			1	1		1	1	1	1	
5:15 AM	3326	275																
5:30 AM	3482	343																
5:45 AM	3689	452	1	1					1	1			1	1				
6:00 AM	3847	571			1	1	1	1			1	1		1	1	1	1	
6:15 AM	3865	702																
6:30 AM	3967	768																
6:45 AM	3904	829	1	1					1	1			1	1				
7:00 AM	3686	847			1	1	1	1			1	1		1	1	1	1	
7:15 AM	3732	814																
7:30 AM	3543	798																
7:45 AM	3278	710	1	1					1	1			1	1				
8:00 AM	2927	666			1	1	1	1			1	1		1	1	1	1	
8:15 AM	2697	651																
8:30 AM	2516	701																
8:45 AM	2386	675	1	1					1	1			1	1				
9:00 AM	2246	642			1	1	1	1			1	1		1	1	1	1	
9:15 AM	2150	598																
9:30 AM	2133	510																
9:45 AM	2074	508	1	1					1	1			1	1				

10:00 AM	2112	482			1	1	1	1			1	1			1	1	1	1
10:15 AM	2287	483																
10:30 AM	2372	502																
10:45 AM	2475	502	1	1					1	1			1	1				
11:00 AM	2513	523			1	1	1	1			1	1			1	1	1	1
11:15 AM	2557	501																
11:30 AM	2600	457																
11:45 AM	2600	488	1	1					1	1			1	1				
12:00 PM	2624	493			1	1	1	1			1	1			1	1	1	1
12:15 PM	2629	521																
12:30 PM	2678	514																
12:45 PM	2851	518	1	1					1	1			1	1				
1:00 PM	3004	514			1	1	1	1			1	1			1	1	1	1
1:15 PM	3253	543																
1:30 PM	3552	587																
1:45 PM	3797	627	1	1					1	1			1	1				
2:00 PM	4162	661			1	1	1	1			1	1			1	1	1	1
2:15 PM	4308	700																
2:30 PM	4348	780																
2:45 PM	4391	857	1	1					1	1			1	1				
3:00 PM	4431	933			1	1	1	1			1	1			1	1	1	1
3:15 PM	4383	1013																
3:30 PM	4466	1048																
3:45 PM	4540	1052	1	1					1	1			1	1				
4:00 PM	4516	1009			1	1	1	1			1	1			1	1	1	1
4:15 PM	4461	987																
4:30 PM	4378	930																
4:45 PM	4134	855	1	1					1	1			1	1				
5:00 PM	3784	819			1	1	1	1			1	1			1	1	1	1
5:15 PM	3497	734																
5:30 PM	3112	672																
5:45 PM	2781	589	1	1					1	1			1	1				
6:00 PM	2460	565			1	1	1	1			1	1			1	1	1	1
6:15 PM	2186	501																
6:30 PM	1957	464																
6:45 PM	1716	460	1	1					1	1			1	1				
7:00 PM	1590	407			1	1	1	1			1	1			1	1	1	1
7:15 PM	1524	367																
7:30 PM	1485	335																
7:45 PM	1490	286	1	1					1	1			1	1				
8:00 PM	1417	275			1	1	1	1			1	1			1	1	1	1
8:15 PM	1400	263																
8:30 PM	1344	239																
8:45 PM	1334	207	1	1					1	1			1	1				
9:00 PM	1328	196			1	1	1	1			1	1			1	1	1	1
9:15 PM	1331	188																
9:30 PM	1308	171																
9:45 PM	1224	164	1	1					1	1			1	1				
HOURS MET			23	18	24	20	21	21	23	22	24	19	22	22	24	21	24	24
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

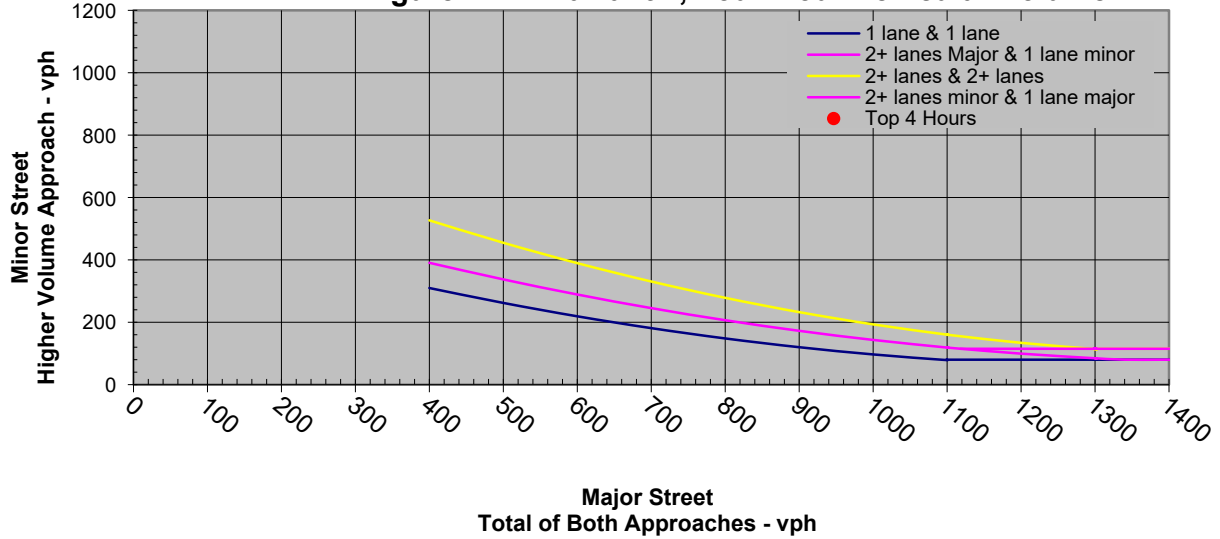
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	20
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	21
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Groveport Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	995	2852	571	196	3847	571		Met
6:15 AM	1021	2844	702	193	3865	702		
6:30 AM	1095	2872	768	181	3967	768	Met	
6:45 AM	1142	2762	829	180	3904	829		
7:00 AM	1099	2587	847	158	3686	847		Met
7:15 AM	1065	2667	814	163	3732	814		
7:30 AM	989	2554	798	152	3543	798	Met	
7:45 AM	933	2345	710	152	3278	710		
8:00 AM	919	2008	666	136	2927	666		Met
8:15 AM	923	1774	651	131	2697	651		
8:30 AM	907	1609	701	133	2516	701	Met	
8:45 AM	906	1480	675	114	2386	675		
9:00 AM	889	1357	642	110	2246	642		Met
9:15 AM	861	1289	598	107	2150	598		
9:30 AM	881	1252	510	111	2133	510	Met	
9:45 AM	868	1206	508	121	2074	508		
10:00 AM	898	1214	482	124	2112	482		Met
10:15 AM	998	1289	483	142	2287	483		
10:30 AM	1036	1336	502	162	2372	502	Met	
10:45 AM	1100	1375	502	186	2475	502		
11:00 AM	1136	1377	523	216	2513	523		Met
11:15 AM	1178	1379	501	222	2557	501		
11:30 AM	1227	1373	457	251	2600	457	Met	
11:45 AM	1204	1396	488	259	2600	488		
12:00 PM	1230	1394	493	246	2624	493		Met
12:15 PM	1210	1419	521	231	2629	521		
12:30 PM	1189	1489	514	211	2678	514	Met	
12:45 PM	1260	1591	518	193	2851	518		
1:00 PM	1257	1747	514	188	3004	514		Met
1:15 PM	1388	1865	543	187	3253	543		
1:30 PM	1626	1926	587	166	3552	587	Met	
1:45 PM	1781	2016	627	152	3797	627		
2:00 PM	2087	2075	661	160	4162	661		Met
2:15 PM	2212	2096	700	164	4308	700		
2:30 PM	2161	2187	780	192	4348	780	Met	
2:45 PM	2211	2180	857	210	4391	857		
3:00 PM	2223	2208	933	204	4431	933		Met
3:15 PM	2096	2287	1013	204	4383	1013		
3:30 PM	2132	2334	1048	180	4466	1048	Met	
3:45 PM	2131	2409	1052	166	4540	1052		
4:00 PM	2097	2419	1009	172	4516	1009		Met
4:15 PM	2148	2313	987	159	4461	987		
4:30 PM	2114	2264	930	154	4378	930	Met	
4:45 PM	1975	2159	855	152	4134	855		
5:00 PM	1721	2063	819	139	3784	819		Met
5:15 PM	1543	1954	734	142	3497	734		
5:30 PM	1324	1788	672	138	3112	672	Met	
5:45 PM	1187	1594	589	124	2781	589		
6:00 PM	1084	1376	565	107	2460	565		Met
6:15 PM	980	1206	501	95	2186	501		
6:30 PM	909	1048	464	83	1957	464	Met	
6:45 PM	811	905	460	83	1716	460		
7:00 PM	747	843	407	80	1590	407		Met
7:15 PM	682	842	367	79	1524	367		
7:30 PM	665	820	335	78	1485	335	Met	
7:45 PM	653	837	286	76	1490	286		
8:00 PM	612	805	275	76	1417	275		Met

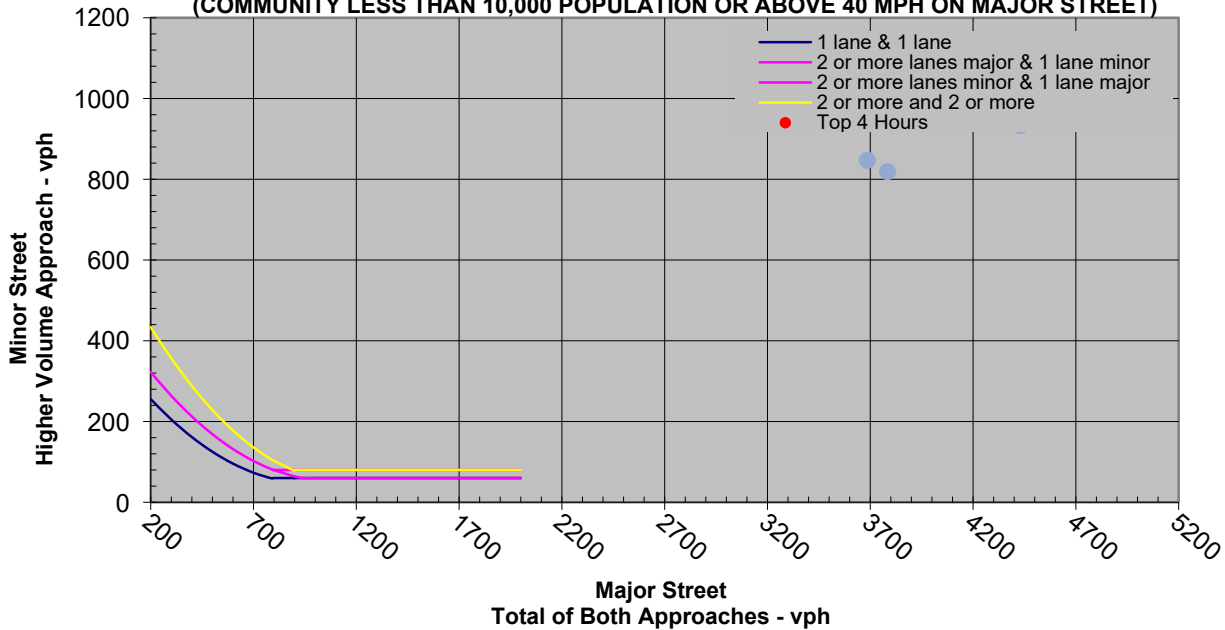
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	4466	1048
2nd Highest Hour	4:30 PM	5:30 PM	4378	930
3rd Highest Hour	7:30 AM	8:30 AM	3543	798
4th Highest Hour	2:30 PM	3:30 PM	4348	780

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	4516	1009
2nd Highest Hour	3:00 PM	4:00 PM	4431	933
3rd Highest Hour	7:00 AM	8:00 AM	3686	847
4th Highest Hour	5:00 PM	6:00 PM	3784	819

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:45 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:45 PM
Minor Street:	1 Lane		

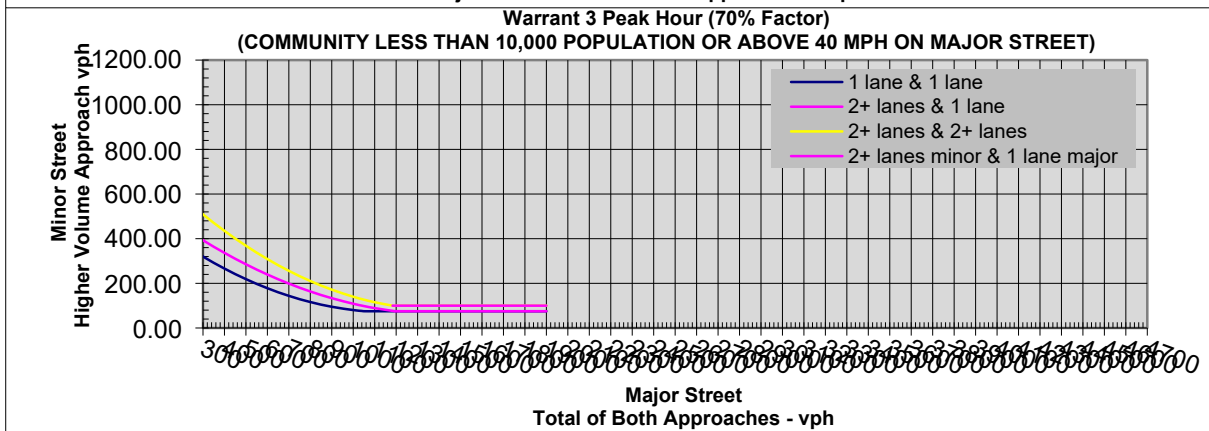
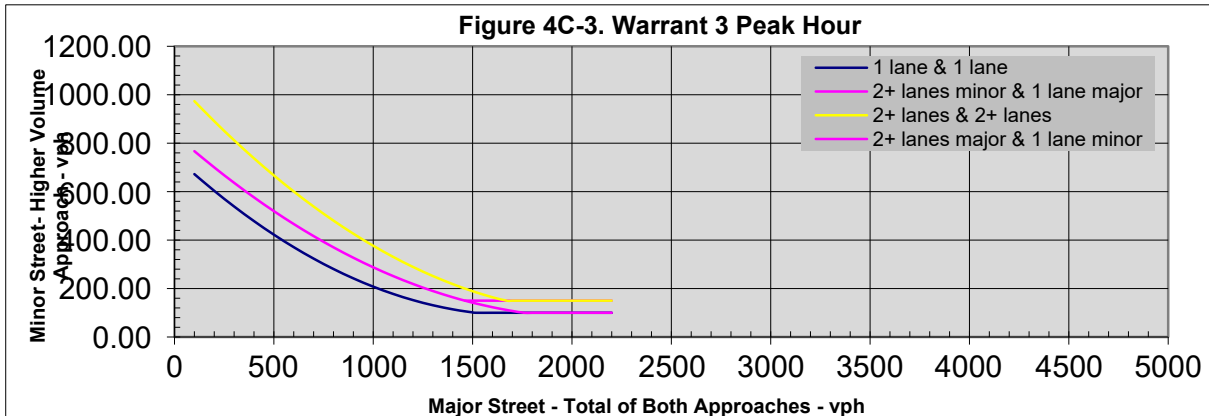
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3847	571	4418	4614
6:15 AM	3865	702	4567	4760
6:30 AM	3967	768	4735	4916
6:45 AM	3904	829	4733	4913
7:00 AM	3686	847	4533	4691
7:15 AM	3732	814	4546	4709
7:30 AM	3543	798	4341	4493
7:45 AM	3278	710	3988	4140
8:00 AM	2927	666	3593	3729
8:15 AM	2697	651	3348	3479
8:30 AM	2516	701	3217	3350
8:45 AM	2386	675	3061	3175
9:00 AM	2246	642	2888	2998
9:15 AM	2150	598	2748	2855
9:30 AM	2133	510	2643	2754
9:45 AM	2074	508	2582	2703
10:00 AM	2112	482	2594	2718
10:15 AM	2287	483	2770	2912
10:30 AM	2372	502	2874	3036
10:45 AM	2475	502	2977	3163
11:00 AM	2513	523	3036	3252
11:15 AM	2557	501	3058	3280
11:30 AM	2600	457	3057	3308
11:45 AM	2600	488	3088	3347
12:00 PM	2624	493	3117	3363
12:15 PM	2629	521	3150	3381
12:30 PM	2678	514	3192	3403
12:45 PM	2851	518	3369	3562
1:00 PM	3004	514	3518	3706
1:15 PM	3253	543	3796	3983
1:30 PM	3552	587	4139	4305
1:45 PM	3797	627	4424	4576
2:00 PM	4162	661	4823	4983
2:15 PM	4308	700	5008	5172
2:30 PM	4348	780	5128	5320
2:45 PM	4391	857	5248	5458
3:00 PM	4431	933	5364	5568
3:15 PM	4383	1013	5396	5600
3:30 PM	4466	1048	5514	5694
3:45 PM	4540	1052	5592	5758
4:00 PM	4516	1009	5525	5697
4:15 PM	4461	987	5448	5607
4:30 PM	4378	930	5308	5462
4:45 PM	4134	855	4989	5141
5:00 PM	3784	819	4603	4742
5:15 PM	3497	734	4231	4373
5:30 PM	3112	672	3784	3922
5:45 PM	2781	589	3370	3494
6:00 PM	2460	565	3025	3132
6:15 PM	2186	501	2687	2782
6:30 PM	1957	464	2421	2504
6:45 PM	1716	460	2176	2259
7:00 PM	1590	407	1997	2077
7:15 PM	1524	367	1891	1970
7:30 PM	1485	335	1820	1898
7:45 PM	1490	286	1776	1852
8:00 PM	1417	275	1692	1768

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
4540	1052	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:

Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

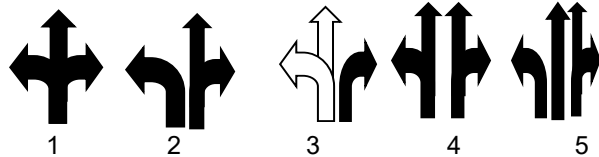
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration:



Number of Thru Lanes on Each Minor Street Approach: LANE(S)

Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">8:45 AM</td></tr> <tr><td style="text-align: center;">9:45 AM</td></tr> </table>				Peak Hour	8:45 AM	9:45 AM
Peak Hour						
8:45 AM						
9:45 AM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">6:00 PM</td></tr> <tr><td style="text-align: center;">7:00 PM</td></tr> </table>				Peak Hour	6:00 PM	7:00 PM
Peak Hour						
6:00 PM						
7:00 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Install New Traffic Signal

Notes: Warrants 1, 2, and 3 were met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	8	52	0	0	0	60	0	0	0	0	0	0	0	295	1	0	0	0	296	1	0	4	0	0	5
12:15 AM	5	38	0	0	0	43	0	0	0	0	0	0	0	115	0	0	0	0	115	0	0	1	0	0	1
12:30 AM	14	55	0	0	0	69	0	0	0	0	0	0	0	83	0	0	0	0	83	0	0	3	0	0	3
12:45 AM	18	38	0	0	0	56	0	0	0	0	0	0	0	62	1	0	0	0	63	1	0	3	0	0	4
Hourly Total	45	183	0	0	0	228	0	0	0	0	0	0	0	555	2	0	0	0	557	2	0	9	0	0	11
1:00 AM	4	37	0	0	0	41	0	0	0	0	0	0	0	83	1	0	0	0	84	1	0	3	0	0	4
1:15 AM	11	39	0	0	0	50	0	0	0	0	0	0	0	78	3	0	0	0	81	0	0	3	0	0	3
1:30 AM	13	38	0	0	0	51	0	0	0	0	0	0	0	45	3	0	0	0	48	0	0	1	0	0	1
1:45 AM	26	32	0	0	0	58	0	0	0	0	0	0	0	47	4	0	0	0	51	0	0	1	0	0	1
Hourly Total	54	146	0	0	0	200	0	0	0	0	0	0	0	253	11	0	0	0	264	1	0	8	0	0	9
2:00 AM	3	42	0	0	0	45	0	0	0	0	0	0	0	159	0	0	0	0	159	0	0	1	0	0	1
2:15 AM	6	43	0	0	0	49	0	0	0	0	0	0	0	78	0	0	0	0	78	3	0	3	0	0	6
2:30 AM	8	34	0	0	0	42	0	0	0	0	0	0	0	101	0	0	0	0	101	1	0	3	0	0	4
2:45 AM	6	67	0	0	0	73	0	0	0	0	0	0	0	48	0	0	0	0	48	1	0	3	0	0	4
Hourly Total	28	186	0	0	0	244	0	0	0	0	0	0	0	386	0	0	0	0	386	5	0	10	0	0	15
3:00 AM	6	69	0	0	0	75	0	0	0	0	0	0	0	48	0	0	0	0	48	3	0	4	0	0	7
3:15 AM	5	98	0	0	0	103	0	0	0	0	0	0	0	72	0	0	0	0	72	0	0	1	0	0	1
3:30 AM	3	120	0	0	0	123	0	0	0	0	0	0	0	232	1	0	0	0	233	3	0	3	0	0	6
3:45 AM	4	0	0	0	138	0	0	0	0	0	0	0	32	1	0	0	0	33	1	0	8	0	0	10	
Hourly Total	18	421	0	0	0	439	0	0	0	0	0	0	0	444	2	0	0	0	446	7	0	17	0	0	24
4:00 AM	4	147	0	0	0	151	0	0	0	0	0	0	0	146	0	0	0	0	146	4	0	10	0	0	14
4:15 AM	0	222	0	0	0	222	0	0	0	0	0	0	0	96	0	0	0	0	96	0	0	10	0	0	10
4:30 AM	5	355	0	0	0	360	0	0	0	0	0	0	0	209	0	0	0	0	209	1	0	10	0	0	11
4:45 AM	3	278	0	0	0	281	0	0	0	0	0	0	0	125	0	0	0	0	125	1	0	0	0	0	1
Hourly Total	12	1052	0	0	0	1064	0	0	0	0	0	0	0	576	0	0	0	0	576	6	0	24	0	0	30
5:00 AM	4	271	0	0	0	275	0	0	0	0	0	0	0	169	0	0	0	0	169	4	1	0	0	0	5
5:15 AM	3	469	0	0	0	472	0	0	0	0	0	0	0	129	1	0	0	0	130	5	0	6	0	0	11
5:30 AM	3	683	0	0	0	686	0	0	0	0	0	0	0	103	0	0	0	0	103	3	0	3	0	0	6
5:45 AM	6	864	0	0	0	870	0	0	0	0	0	0	0	174	0	0	0	0	174	4	0	5	0	0	9
Hourly Total	16	2287	0	0	0	2303	0	0	0	0	0	0	0	595	1	0	0	0	596	16	0	15	0	0	31
6:00 AM	5	446	0	0	0	451	0	0	0	0	0	0	0	232	3	0	0	0	235	1	0	10	0	0	11
6:15 AM	9	510	0	0	0	519	0	0	0	0	0	0	0	213	4	0	0	0	217	1	0	10	0	0	11
6:30 AM	9	672	0	0	0	681	0	0	0	0	0	0	0	252	3	0	0	0	255	4	0	10	0	0	14
6:45 AM	20	795	0	0	0	815	0	0	0	0	0	0	0	272	3	0	0	0	275	5	0	13	0	0	18
Hourly Total	43	2423	0	0	0	2466	0	0	0	0	0	0	0	969	13	0	0	0	982	10	0	41	0	0	51
7:00 AM	26	323	0	0	0	349	0	0	0	0	0	0	0	276	8	0	0	0	284	13	0	16	0	0	29
7:15 AM	25	449	0	0	0	474	0	0	0	0	0	0	0	263	1	0	0	0	264	4	0	20	0	0	24
7:30 AM	14	549	0	0	0	563	0	0	0	0	0	0	0	289	4	0	0	0	293	11	0	23	0	0	34
7:45 AM	8	662	0	0	0	670	0	0	0	0	0	0	0	258	3	0	0	0	261	5	0	6	0	0	11
Hourly Total	73	1983	0	0	0	2056	0	0	0	0	0	0	0	1086	16	0	0	0	1102	33	0	65	0	0	98
8:00 AM	21	420	0	0	0	441	0	0	0	0	0	0	0	205	5	0	0	0	210	3	0	19	0	0	22
8:15 AM	34	369	0	0	0	433	0	0	0	0	0	0	0	197	6	0	0	0	203	8	0	11	0	0	19
8:30 AM	40	368	0	0	0	408	0	0	0	0	0	0	0	234	11	0	0	0	245	1	0	18	0	0	19
8:45 AM	29	354	0	0	0	383	0	0	0	0	0	0	0	198	4	0	0	0	202	8	0	29	0	0	37
Hourly Total	124	1541	0	0	0	1665	0	0	0	0	0	0	0	834	26	0	0	0	860	20	0	77	0	0	97
9:00 AM	19	251	0	0	0	270	0	0	0	0	0	0	0	214	3	0	0	0	217	2	0	15	0	0	17
9:15 AM	21	258	0	0	0	279	0	0	0	0	0	0	0	209	3	0	0	0	212	5	0	20	0	0	25
9:30 AM	18	271	0	0	0	289	0	0	0	0	0	0	0	221	6	0	0	0	227	9	0	24	0	0	33
9:45 AM	16	265	0	0	0	281	0	0	0	0	0	0	0	200	3	0	0	0	203	3	0	10	0	0	11
Hourly Total	74	1045	0	0	0	1119	0	0	0	0	0	0	0	844	20	0	0	0	864	23	0	78	0	0	101
10:00 AM	13	207	0	0	0	220	0	0	0	0	0	0	0	192	4	0	0	0	196	3	0	11	0	0	14
10:15 AM	9	214	0	0	0	226	0	0	0	0	0	0	0	199	5	0	0	0	204	6	0	19	0	0	25
10:30 AM	11	214	0	0	0	226	0	0	0	0	0	0	0	224	4	0	0	0	228	5	0	15	0	0	20
10:45 AM	11	263	0	0	0	284	0	0	0	0	0	0	0	244	5	0	0	0	249	5	0	15	0	0	20
Hourly Total	44	891	0	0	0	935	0	0	0	0	0	0	0	859	18	0	0	0	877	19	0	60	0	0	79
11:00 AM	9	271	0	0	0	280	0	0	0	0	0	0	0	278	4	0	0	0	282	3	0	14	0	0	17
11:15 AM	18	271	0	0	0	289	0	0	0	0	0	0	0	241	8	0	0	0	249	3	0	6	0	0	9
11:30 AM	25	275	0	0	0	300	0	0	0	0	0	0	0	275	1	0	0	0	276	5	0	14	0	0	20
11:45 AM	23	270	0	0	0	293	0	0	0	0	0	0	0	263	8	0	0	0	271	4	0	8	0	0	12

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	785	11	1		1				1		1		1			1		
12:15 AM	554	10																
12:30 AM	527	12																
12:45 AM	474	12																
1:00 AM	464	9			1										1			
1:15 AM	548	6									1						1	
1:30 AM	544	9																
1:45 AM	588	12																
2:00 AM	600	14	1		1										1			
2:15 AM	514	18									1							1
2:30 AM	562	15																
2:45 AM	775	16							1				1					
3:00 AM	885	23	1		1										1			
3:15 AM	1059	30					1				1							1
3:30 AM	1202	33																
3:45 AM	1365	38							1				1					
4:00 AM	1640	29	1		1										1			
4:15 AM	1807	20					1				1							1
4:30 AM	2091	25																
4:45 AM	2361	20							1				1					
5:00 AM	2899	28	1		1										1			
5:15 AM	3121	33					1				1							1
5:30 AM	3255	35																
5:45 AM	3402	43							1				1					
6:00 AM	3448	52	1		1										1			
6:15 AM	3395	72					1				1							1
6:30 AM	3397	85																1
6:45 AM	3317	105							1	1			1	1				
7:00 AM	3158	97	1		1										1	1		
7:15 AM	3176	90					1	1			1							1
7:30 AM	3074	85																1
7:45 AM	2871	71							1	1			1	1				
8:00 AM	2525	95	1		1										1	1		
8:15 AM	2366	104					1	1			1							1
8:30 AM	2221	110																
8:45 AM	2084	121							1	1			1	1				
9:00 AM	1983	97	1		1										1	1		
9:15 AM	1907	80					1	1			1							1
9:30 AM	1846	80																
9:45 AM	1783	67							1	1			1	1				

10:00 AM	1812	76	1		1									1				
10:15 AM	1958	79					1	1			1					1	1	
10:30 AM	2066	63																
10:45 AM	2189	63							1	1			1	1				
11:00 AM	2240	55	1		1									1				
11:15 AM	2277	54					1				1					1	1	
11:30 AM	2325	59																
11:45 AM	2322	55							1	1			1					
12:00 PM	2330	72	1		1									1				
12:15 PM	2334	75					1	1			1					1	1	
12:30 PM	2356	87																
12:45 PM	2505	86							1	1			1	1				
1:00 PM	2639	78	1		1									1				
1:15 PM	2876	75					1	1			1					1	1	
1:30 PM	3144	62																
1:45 PM	3437	59								1	1			1				
2:00 PM	3723	54	1		1									1				
2:15 PM	3863	59					1				1					1	1	
2:30 PM	3898	71																
2:45 PM	3877	70							1	1			1	1				
3:00 PM	3862	73	1		1									1				
3:15 PM	3805	69					1				1					1	1	
3:30 PM	3789	51																
3:45 PM	3854	58								1	1			1				
4:00 PM	3869	55	1		1									1				
4:15 PM	3907	53					1				1					1	1	
4:30 PM	3802	68																
4:45 PM	3507	80								1	1			1	1			
5:00 PM	3198	85	1		1									1	1			
5:15 PM	2803	92					1	1			1					1	1	
5:30 PM	2534	99																
5:45 PM	2267	91							1	1			1	1				
6:00 PM	2004	89	1		1									1	1			
6:15 PM	1799	87					1	1			1					1	1	
6:30 PM	1598	96																
6:45 PM	1378	91								1	1			1	1			
7:00 PM	1244	94	1		1									1	1			
7:15 PM	1182	80					1	1			1					1	1	
7:30 PM	1154	70																
7:45 PM	1150	88								1	1			1	1			
8:00 PM	1111	84	1		1									1	1			
8:15 PM	1110	93					1	1			1					1	1	
8:30 PM	1061	94																
8:45 PM	1078	79								1	1			1	1			
9:00 PM	1100	86	1		1									1	1			
9:15 PM	1123	85					1	1			1					1	1	
9:30 PM	1148	68																
9:45 PM	1105	68							1	1			1	1				
HOURS MET			23	0	24	0	20	11	22	16	23	0	22	13	24	8	23	17
WARRANT SATISFIED?			NO		NO		YES		YES		NO		YES					

Warrant Met: **Yes**

Notes: Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*

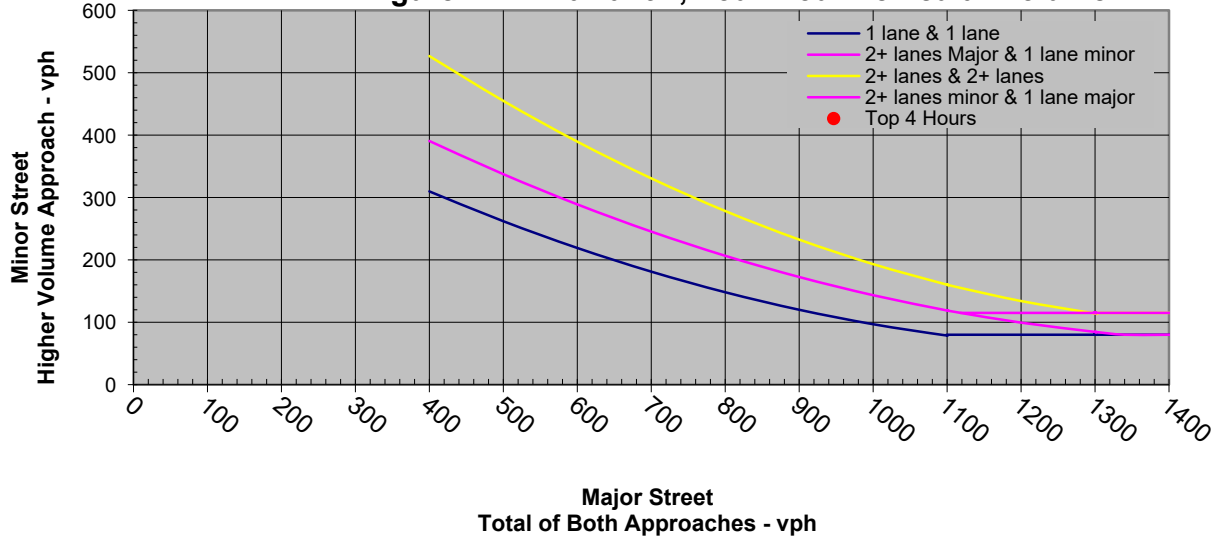
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	7
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	14
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rathmell Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	982	2466	0	52	3448	52		
6:15 AM	1031	2364	0	72	3395	72		Met
6:30 AM	1078	2319	0	85	3397	85	Met	
6:45 AM	1116	2201	0	105	3317	105		
7:00 AM	1102	2056	0	97	3158	97		
7:15 AM	1028	2148	0	90	3176	90		Met
7:30 AM	967	2107	0	85	3074	85	Met	
7:45 AM	919	1952	0	71	2871	71		
8:00 AM	860	1665	0	95	2525	95		
8:15 AM	872	1494	0	104	2366	104		Met
8:30 AM	881	1340	0	110	2221	110	Met	
8:45 AM	863	1221	0	121	2084	121		
9:00 AM	864	1119	0	97	1983	97		
9:15 AM	838	1069	0	80	1907	80		Met
9:30 AM	830	1016	0	80	1846	80		
9:45 AM	831	952	0	67	1783	67		
10:00 AM	877	935	0	76	1812	76		
10:15 AM	963	995	0	79	1958	79		Met
10:30 AM	1008	1058	0	63	2066	63		
10:45 AM	1056	1133	0	63	2189	63		
11:00 AM	1078	1162	0	55	2240	55		
11:15 AM	1137	1140	0	54	2277	54		
11:30 AM	1180	1145	0	59	2325	59		
11:45 AM	1168	1154	0	55	2322	55		
12:00 PM	1195	1135	0	72	2330	72		Met
12:15 PM	1152	1182	0	75	2334	75		
12:30 PM	1114	1242	0	87	2356	87	Met	
12:45 PM	1165	1340	0	86	2505	86		
1:00 PM	1140	1499	0	78	2639	78		Met
1:15 PM	1315	1561	0	75	2876	75		
1:30 PM	1586	1558	0	62	3144	62		
1:45 PM	1867	1570	0	59	3437	59		
2:00 PM	2138	1585	0	54	3723	54		
2:15 PM	2282	1581	0	59	3863	59		
2:30 PM	2257	1641	0	71	3898	71		Met
2:45 PM	2237	1640	0	70	3877	70		
3:00 PM	2244	1618	0	73	3862	73		
3:15 PM	2180	1625	0	69	3805	69		
3:30 PM	2156	1633	0	51	3789	51		
3:45 PM	2184	1670	0	58	3854	58		
4:00 PM	2196	1673	0	55	3869	55		
4:15 PM	2260	1647	0	53	3907	53		
4:30 PM	2217	1585	0	68	3802	68		Met
4:45 PM	2054	1453	0	80	3507	80		
5:00 PM	1825	1373	0	85	3198	85	Met	
5:15 PM	1531	1272	0	92	2803	92		
5:30 PM	1339	1195	0	99	2534	99		Met
5:45 PM	1190	1077	0	91	2267	91		
6:00 PM	1075	929	0	89	2004	89	Met	
6:15 PM	979	820	0	87	1799	87		
6:30 PM	898	700	0	96	1598	96		Met
6:45 PM	760	618	0	91	1378	91		
7:00 PM	684	560	0	94	1244	94	Met	
7:15 PM	615	567	0	80	1182	80		
7:30 PM	599	555	0	70	1154	70		Met
7:45 PM	578	572	0	88	1150	88		
8:00 PM	541	570	0	84	1111	84		

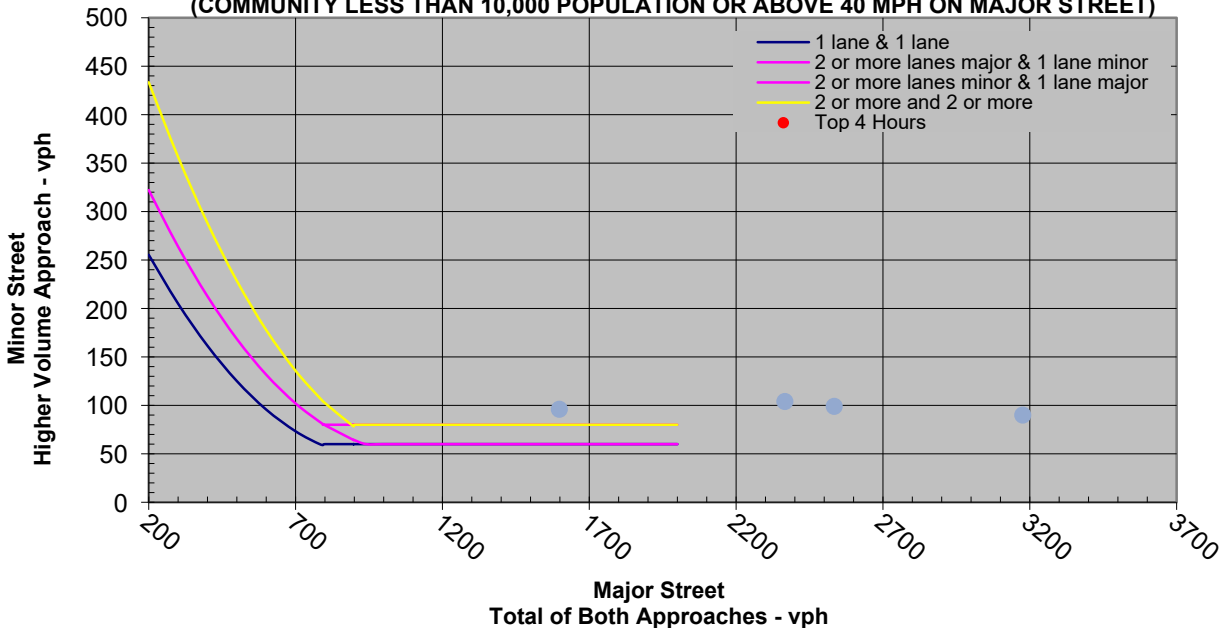
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	8:30 AM	9:30 AM	2221	110
2nd Highest Hour	6:00 PM	7:00 PM	2004	89
3rd Highest Hour	12:30 PM	1:30 PM	2356	87
4th Highest Hour	6:30 AM	7:30 AM	3397	85

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	8:15 AM	9:15 AM	2366	104
2nd Highest Hour	5:30 PM	6:30 PM	2534	99
3rd Highest Hour	6:30 PM	7:30 PM	1598	96
4th Highest Hour	7:15 AM	8:15 AM	3176	90

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	8:45 AM
Major Street:	2 or More Lanes	Peak Hour End Time	9:45 AM
Minor Street:	1 Lane		

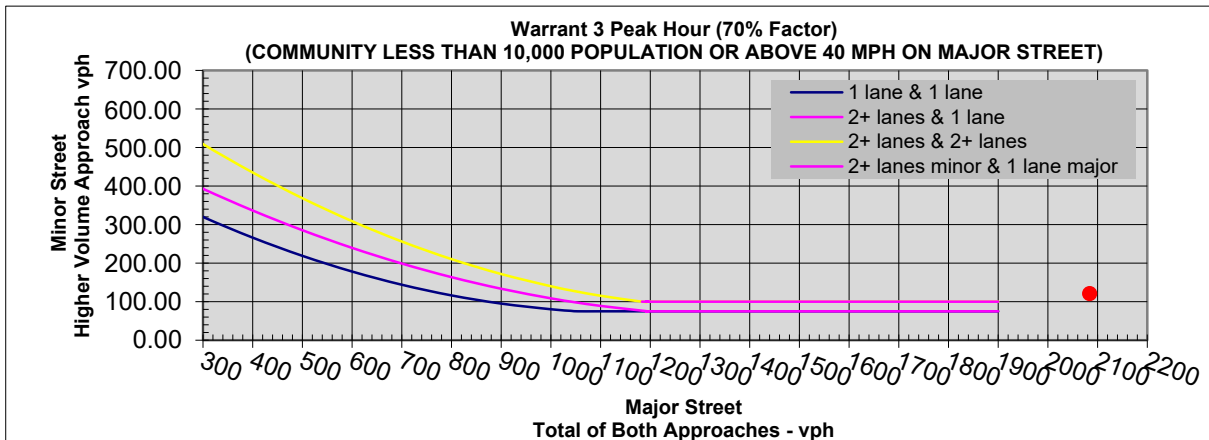
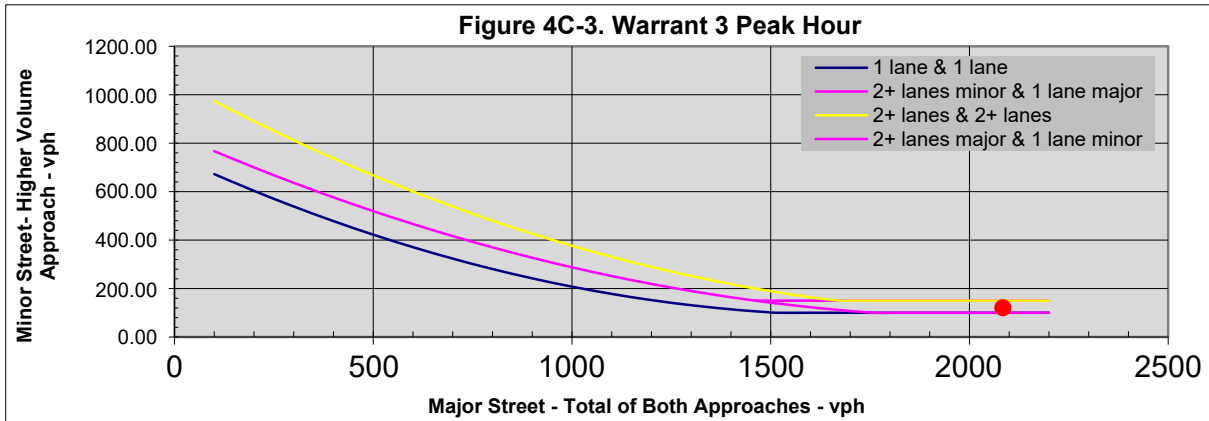
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3448	52	3500	3500
6:15 AM	3395	72	3467	3467
6:30 AM	3397	85	3482	3482
6:45 AM	3317	105	3422	3422
7:00 AM	3158	97	3255	3255
7:15 AM	3176	90	3266	3266
7:30 AM	3074	85	3159	3159
7:45 AM	2871	71	2942	2942
8:00 AM	2525	95	2620	2620
8:15 AM	2366	104	2470	2470
8:30 AM	2221	110	2331	2331
8:45 AM	2084	121	2205	2205
9:00 AM	1983	97	2080	2080
9:15 AM	1907	80	1987	1987
9:30 AM	1846	80	1926	1926
9:45 AM	1783	67	1850	1850
10:00 AM	1812	76	1888	1888
10:15 AM	1958	79	2037	2037
10:30 AM	2066	63	2129	2129
10:45 AM	2189	63	2252	2252
11:00 AM	2240	55	2295	2295
11:15 AM	2277	54	2331	2331
11:30 AM	2325	59	2384	2384
11:45 AM	2322	55	2377	2377
12:00 PM	2330	72	2402	2402
12:15 PM	2334	75	2409	2409
12:30 PM	2356	87	2443	2443
12:45 PM	2505	86	2591	2591
1:00 PM	2639	78	2717	2717
1:15 PM	2876	75	2951	2951
1:30 PM	3144	62	3206	3206
1:45 PM	3437	59	3496	3496
2:00 PM	3723	54	3777	3777
2:15 PM	3863	59	3922	3922
2:30 PM	3898	71	3969	3969
2:45 PM	3877	70	3947	3947
3:00 PM	3862	73	3935	3935
3:15 PM	3805	69	3874	3874
3:30 PM	3789	51	3840	3840
3:45 PM	3854	58	3912	3912
4:00 PM	3869	55	3924	3924
4:15 PM	3907	53	3960	3960
4:30 PM	3802	68	3870	3870
4:45 PM	3507	80	3587	3587
5:00 PM	3198	85	3283	3283
5:15 PM	2803	92	2895	2895
5:30 PM	2534	99	2633	2633
5:45 PM	2267	91	2358	2358
6:00 PM	2004	89	2093	2093
6:15 PM	1799	87	1886	1886
6:30 PM	1598	96	1694	1694
6:45 PM	1378	91	1469	1469
7:00 PM	1244	94	1338	1338
7:15 PM	1182	80	1262	1262
7:30 PM	1154	70	1224	1224
7:45 PM	1150	88	1238	1238
8:00 PM	1111	84	1195	1195

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2084	121	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

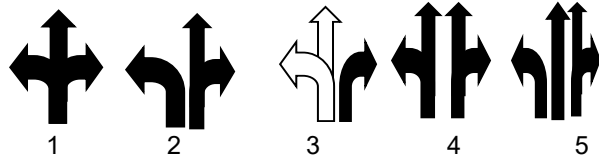
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Bixby Road

Minor Street Approach Configuration: 3 E-Bound
3 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">7:00 AM</td></tr> <tr><td style="text-align: center;">8:00 AM</td></tr> </table>	Peak Hour	7:00 AM	8:00 AM
Peak Hour						
7:00 AM						
8:00 AM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">10:30 AM</td></tr> <tr><td style="text-align: center;">11:30 AM</td></tr> </table>	Peak Hour	10:30 AM	11:30 AM
Peak Hour						
10:30 AM						
11:30 AM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Do Not Install New Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection.

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	709	4	1		1				1		1			1		1		
12:15 AM	506	2																
12:30 AM	462	1																
12:45 AM	415	1																
1:00 AM	402	1												1				
1:15 AM	485	0			1					1								
1:30 AM	498	0																
1:45 AM	544	0															1	
2:00 AM	574	0												1				
2:15 AM	488	0			1					1								
2:30 AM	536	0																
2:45 AM	761	0	1						1			1					1	
3:00 AM	875	0												1				
3:15 AM	1045	0			1		1			1								
3:30 AM	1186	1																
3:45 AM	1350	1	1						1			1					1	
4:00 AM	1639	2												1				
4:15 AM	1802	3			1		1			1								
4:30 AM	2093	3																
4:45 AM	2365	4	1						1			1					1	
5:00 AM	2912	3												1				
5:15 AM	3142	2			1		1			1								
5:30 AM	3267	4																
5:45 AM	3350	6	1						1			1					1	
6:00 AM	3428	8												1				
6:15 AM	3375	14			1		1			1								
6:30 AM	3360	16																
6:45 AM	3302	18	1						1			1					1	
7:00 AM	3073	28												1				
7:15 AM	3142	26			1		1			1								
7:30 AM	3040	22																
7:45 AM	2841	18	1						1			1					1	
8:00 AM	2515	10												1				
8:15 AM	2322	8			1		1			1								
8:30 AM	2173	8																
8:45 AM	2039	12	1						1			1					1	
9:00 AM	1915	10												1				
9:15 AM	1821	11			1		1			1								
9:30 AM	1800	12																
9:45 AM	1764	12	1						1			1					1	

10:00 AM	1809	14											1					
10:15 AM	1968	14			1		1				1							
10:30 AM	2058	13																
10:45 AM	2187	16	1					1				1				1		
11:00 AM	2255	16											1					
11:15 AM	2281	12			1		1				1							
11:30 AM	2299	11																
11:45 AM	2278	14	1					1				1				1		
12:00 PM	2283	14											1					
12:15 PM	2292	13			1		1				1							
12:30 PM	2351	13																
12:45 PM	2528	14	1					1				1				1		
1:00 PM	2654	12											1					
1:15 PM	2887	18			1		1				1							
1:30 PM	3132	20																
1:45 PM	3455	22	1					1				1				1		
2:00 PM	3694	22											1					
2:15 PM	3843	26			1		1				1							
2:30 PM	3901	26																
2:45 PM	3913	18	1					1				1				1		
3:00 PM	3940	18											1					
3:15 PM	3818	16			1		1				1							
3:30 PM	3716	12																
3:45 PM	3750	14	1					1				1				1		
4:00 PM	3699	16											1					
4:15 PM	3774	16			1		1				1							
4:30 PM	3692	16																
4:45 PM	3321	18	1					1				1				1		
5:00 PM	3062	16											1					
5:15 PM	2637	12			1		1				1							
5:30 PM	2430	12																
5:45 PM	2160	10	1					1				1				1		
6:00 PM	1870	8											1					
6:15 PM	1712	6			1		1				1							
6:30 PM	1504	4																
6:45 PM	1300	3	1					1				1				1		
7:00 PM	1207	4											1					
7:15 PM	1134	10			1		1				1							
7:30 PM	1120	12																
7:45 PM	1129	18	1					1				1				1		
8:00 PM	1095	18											1					
8:15 PM	1090	10			1		1				1							
8:30 PM	1035	10																
8:45 PM	1042	6	1					1				1				1		
9:00 PM	1081	6											1					
9:15 PM	1111	6			1		1				1							
9:30 PM	1131	6																
9:45 PM	1111	4	1					1				1				1		
HOURS MET			22	0	23	0	20	0	22	0	23	0	21	0	24	0	23	0
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO	

Warrant Met: **No**

Notes:

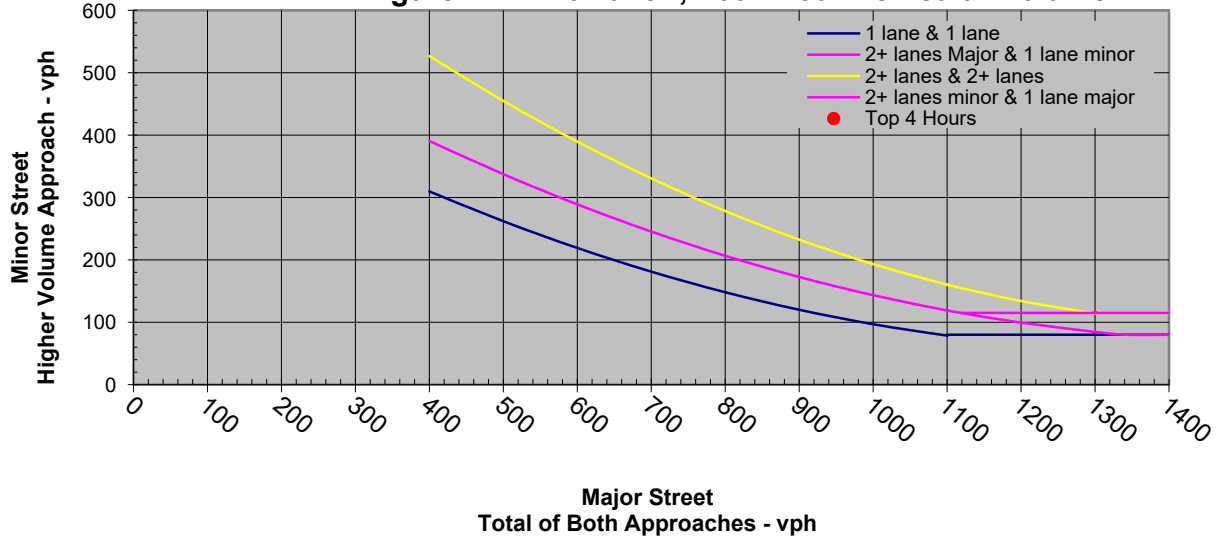
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Bixby Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	976	2452	8	4	3428	8		
6:15 AM	1006	2369	14	7	3375	14		
6:30 AM	1064	2296	16	7	3360	16		
6:45 AM	1108	2194	18	4	3302	18		
7:00 AM	1066	2007	28	9	3073	28		
7:15 AM	1013	2129	26	7	3142	26		
7:30 AM	953	2087	22	10	3040	22		
7:45 AM	901	1940	18	11	2841	18		
8:00 AM	850	1665	10	6	2515	10		
8:15 AM	865	1457	8	6	2322	8		
8:30 AM	863	1310	8	3	2173	8		
8:45 AM	849	1190	12	5	2039	12		
9:00 AM	846	1069	10	8	1915	10		
9:15 AM	820	1001	10	11	1821	11		
9:30 AM	820	980	12	10	1800	12		
9:45 AM	826	938	12	8	1764	12		
10:00 AM	871	938	14	8	1809	14		
10:15 AM	978	990	14	9	1968	14		
10:30 AM	1037	1021	12	13	2058	13		
10:45 AM	1085	1102	12	16	2187	16		
11:00 AM	1133	1122	10	16	2255	16		
11:15 AM	1174	1107	8	12	2281	12		
11:30 AM	1196	1103	10	11	2299	11		
11:45 AM	1182	1096	10	14	2278	14		
12:00 PM	1195	1088	12	14	2283	14		
12:15 PM	1158	1134	12	13	2292	13		
12:30 PM	1135	1216	12	13	2351	13		
12:45 PM	1205	1323	14	11	2528	14		
1:00 PM	1206	1448	12	9	2654	12		
1:15 PM	1370	1517	18	17	2887	18		
1:30 PM	1623	1509	20	18	3132	20		
1:45 PM	1924	1531	22	14	3455	22		
2:00 PM	2122	1572	22	16	3694	22		
2:15 PM	2272	1571	26	12	3843	26		
2:30 PM	2261	1640	26	12	3901	26		
2:45 PM	2293	1620	18	11	3913	18		
3:00 PM	2332	1608	18	11	3940	18		
3:15 PM	2244	1574	16	10	3818	16		
3:30 PM	2172	1544	12	6	3716	12		
3:45 PM	2172	1578	14	14	3750	14		
4:00 PM	2159	1540	16	15	3699	16		
4:15 PM	2243	1531	16	13	3774	16		
4:30 PM	2212	1480	16	16	3692	16		
4:45 PM	1979	1342	18	13	3321	18		
5:00 PM	1786	1276	16	10	3062	16		
5:15 PM	1461	1176	12	12	2637	12		
5:30 PM	1313	1117	12	10	2430	12		
5:45 PM	1150	1010	10	5	2160	10		
6:00 PM	1012	858	8	5	1870	8		
6:15 PM	937	775	6	2	1712	6		
6:30 PM	844	660	4	2	1504	4		
6:45 PM	718	582	2	3	1300	3		
7:00 PM	666	541	4	3	1207	4		
7:15 PM	610	524	10	4	1134	10		
7:30 PM	607	513	12	3	1120	12		
7:45 PM	588	541	18	3	1129	18		
8:00 PM	547	548	18	5	1095	18		

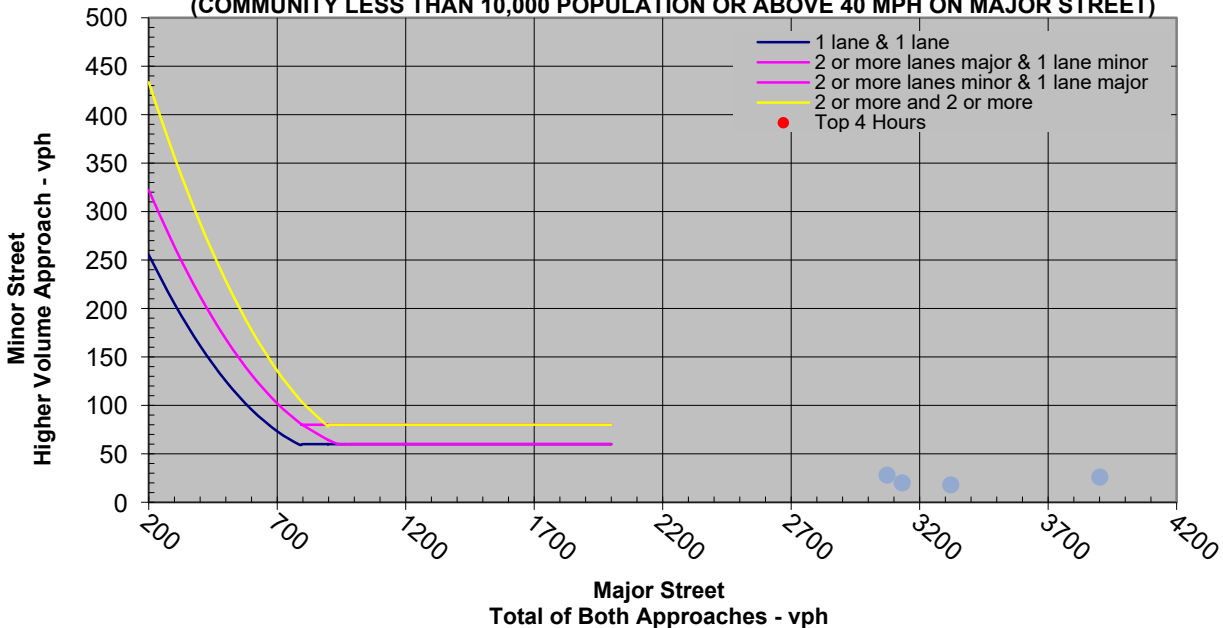
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	7:00 AM	8:00 AM	3073	28
2nd Highest Hour	2:30 PM	3:30 PM	3901	26
3rd Highest Hour	1:30 PM	2:30 PM	3132	20
4th Highest Hour	4:45 PM	5:45 PM	3321	18

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	7:00 AM	8:00 AM	3073	28
2nd Highest Hour	2:30 PM	3:30 PM	3901	26
3rd Highest Hour	1:30 PM	2:30 PM	3132	20
4th Highest Hour	4:45 PM	5:45 PM	3321	18

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?:

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	7:00 AM
Major Street:	2 or More Lanes	Peak Hour End Time	8:00 AM
Minor Street:	1 Lane		

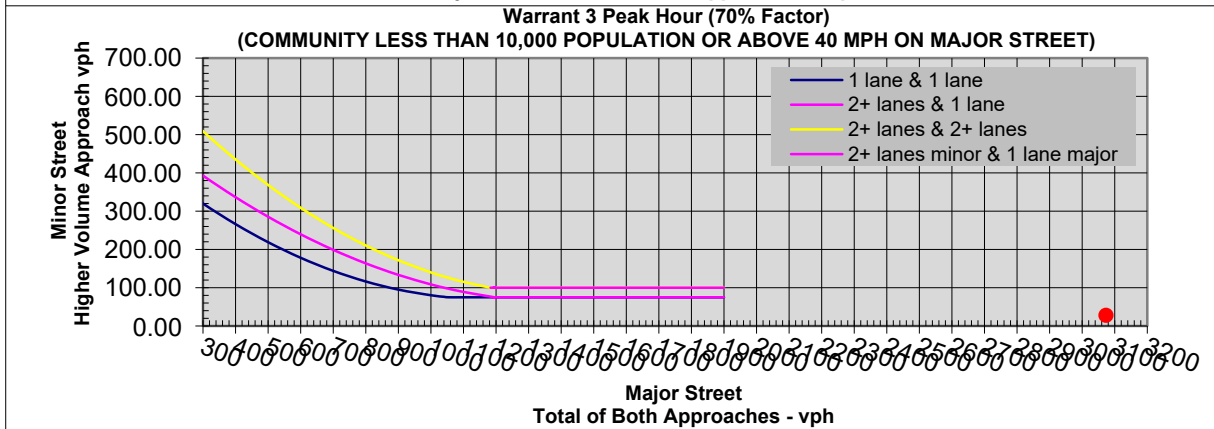
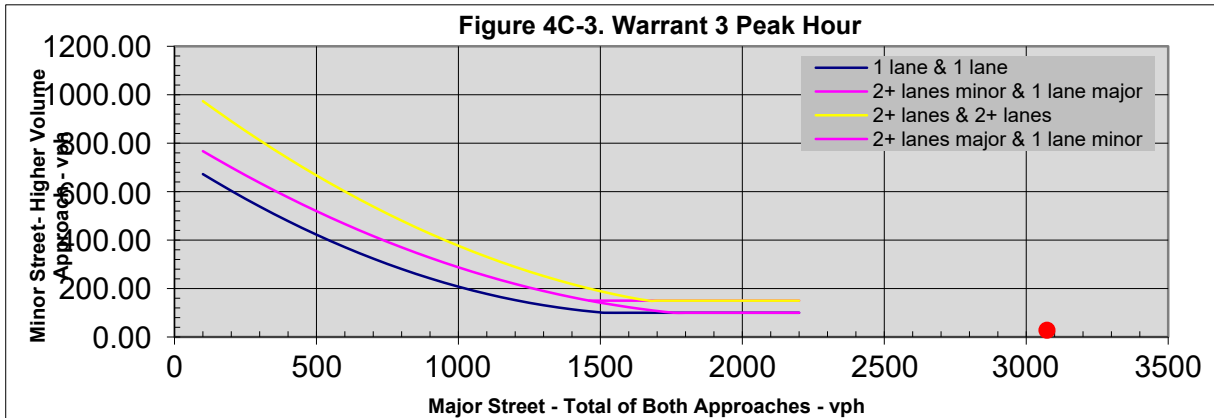
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3428	8	3436	3440
6:15 AM	3375	14	3389	3396
6:30 AM	3360	16	3376	3383
6:45 AM	3302	18	3320	3324
7:00 AM	3073	28	3101	3110
7:15 AM	3142	26	3168	3175
7:30 AM	3040	22	3062	3072
7:45 AM	2841	18	2859	2870
8:00 AM	2515	10	2525	2531
8:15 AM	2322	8	2330	2336
8:30 AM	2173	8	2181	2184
8:45 AM	2039	12	2051	2056
9:00 AM	1915	10	1925	1933
9:15 AM	1821	11	1832	1842
9:30 AM	1800	12	1812	1822
9:45 AM	1764	12	1776	1784
10:00 AM	1809	14	1823	1831
10:15 AM	1968	14	1982	1991
10:30 AM	2058	13	2071	2083
10:45 AM	2187	16	2203	2215
11:00 AM	2255	16	2271	2281
11:15 AM	2281	12	2293	2301
11:30 AM	2299	11	2310	2320
11:45 AM	2278	14	2292	2302
12:00 PM	2283	14	2297	2309
12:15 PM	2292	13	2305	2317
12:30 PM	2351	13	2364	2376
12:45 PM	2528	14	2542	2553
1:00 PM	2654	12	2666	2675
1:15 PM	2887	18	2905	2922
1:30 PM	3132	20	3152	3170
1:45 PM	3455	22	3477	3491
2:00 PM	3694	22	3716	3732
2:15 PM	3843	26	3869	3881
2:30 PM	3901	26	3927	3939
2:45 PM	3913	18	3931	3942
3:00 PM	3940	18	3958	3969
3:15 PM	3818	16	3834	3844
3:30 PM	3716	12	3728	3734
3:45 PM	3750	14	3764	3778
4:00 PM	3699	16	3715	3730
4:15 PM	3774	16	3790	3803
4:30 PM	3692	16	3708	3724
4:45 PM	3321	18	3339	3352
5:00 PM	3062	16	3078	3088
5:15 PM	2637	12	2649	2661
5:30 PM	2430	12	2442	2452
5:45 PM	2160	10	2170	2175
6:00 PM	1870	8	1878	1883
6:15 PM	1712	6	1718	1720
6:30 PM	1504	4	1508	1510
6:45 PM	1300	3	1303	1305
7:00 PM	1207	4	1211	1214
7:15 PM	1134	10	1144	1148
7:30 PM	1120	12	1132	1135
7:45 PM	1129	18	1147	1150
8:00 PM	1095	18	1113	1118

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
3073	28	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
 Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

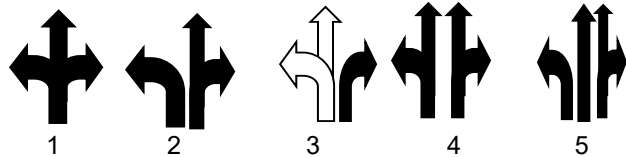
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Creekside Parkway/ Toy Road

Minor Street Approach Configuration: 2 E-Bound
2 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">2:15 PM</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> </table>				Peak Hour	2:15 PM	3:15 PM
Peak Hour						
2:15 PM						
3:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">12:30 PM</td></tr> <tr><td style="text-align: center;">1:30 PM</td></tr> </table>				Peak Hour	12:30 PM	1:30 PM
Peak Hour						
12:30 PM						
1:30 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	1	39	7	0	0	47	34	5	6	0	0	45	8	184	3	0	4	195	0	3	43	0	0	46	
12:15 AM	1	26	12	0	0	39	11	0	6	0	0	16	5	76	1	0	0	82	0	1	16	0	0	17	
12:30 AM	2	38	10	0	0	50	11	0	6	0	0	17	6	49	0	0	0	65	0	1	15	0	0	17	
12:45 AM	0	32	5	0	0	37	13	1	5	0	0	19	5	30	0	0	0	35	0	0	6	0	0	6	
Hourly Total	4	135	34	0	0	173	69	6	22	0	0	97	24	339	4	0	0	367	1	5	80	0	0	86	
1:00 AM	0	36	2	0	0	38	19	1	6	0	0	26	3	67	0	0	0	70	1	0	1	0	0	2	
1:15 AM	5	31	4	0	0	40	24	0	7	0	0	31	1	43	3	0	0	44	0	1	0	0	0	1	
1:30 AM	4	30	4	0	0	38	2	1	1	0	0	4	4	47	0	0	0	51	0	0	1	0	0	1	
1:45 AM	4	21	5	0	0	30	2	0	4	0	0	6	6	43	0	0	0	49	0	0	5	0	0	5	
Hourly Total	13	118	15	0	0	146	47	2	18	0	0	67	14	200	0	0	0	214	1	1	7	0	0	9	
2:00 AM	1	36	5	0	0	42	12	0	4	0	0	16	14	83	0	0	0	37	0	3	62	0	0	65	
2:15 AM	6	32	6	0	0	44	4	2	5	0	0	11	4	49	0	0	0	53	0	1	9	0	0	10	
2:30 AM	2	26	2	0	0	30	6	2	5	0	0	13	6	89	0	0	0	95	0	0	6	0	0	6	
2:45 AM	2	47	15	0	0	64	5	0	5	0	0	10	1	35	0	0	0	36	0	0	2	0	0	2	
Hourly Total	11	141	28	0	0	180	27	4	19	0	0	50	25	236	0	0	0	281	0	4	79	0	0	83	
3:00 AM	1	51	16	0	0	68	1	0	4	0	0	5	4	52	0	0	0	56	0	1	6	0	0	7	
3:15 AM	6	49	41	0	0	96	4	1	7	0	0	12	0	43	0	0	0	43	1	1	17	0	0	19	
3:30 AM	2	70	51	0	0	123	5	1	6	0	0	12	9	168	0	0	0	177	3	3	45	0	0	51	
3:45 AM	6	96	28	0	0	130	4	1	2	0	0	10	2	66	0	0	0	77	5	5	33	0	0	23	
Hourly Total	15	266	136	0	0	417	14	3	19	0	0	36	22	329	0	0	0	351	9	10	81	0	0	100	
4:00 AM	11	84	47	0	0	142	5	2	4	0	0	11	14	110	0	0	0	124	2	2	27	0	0	31	
4:15 AM	22	111	79	0	0	212	11	0	8	0	0	19	16	58	4	0	0	78	1	9	13	0	0	23	
4:30 AM	46	195	60	0	0	301	30	1	9	0	0	40	12	103	1	0	0	123	6	6	67	0	0	79	
4:45 AM	60	243	63	0	0	366	12	2	9	0	0	23	9	82	3	0	0	94	3	2	16	0	0	21	
Hourly Total	139	633	249	0	0	1021	58	5	30	0	0	93	58	353	8	0	0	419	12	19	123	0	0	154	
5:00 AM	26	173	63	0	0	262	46	2	5	0	0	53	15	115	8	0	0	138	1	2	5	0	0	8	
5:15 AM	48	307	78	0	0	435	19	2	14	0	0	35	15	87	11	0	0	111	2	2	10	0	0	14	
5:30 AM	81	434	112	0	0	627	13	2	9	0	0	24	15	93	9	0	0	117	5	13	7	0	0	25	
5:45 AM	153	624	126	0	0	803	18	8	12	0	0	38	23	141	18	0	0	182	6	7	10	0	0	23	
Hourly Total	309	1438	389	0	0	2127	96	14	40	0	0	150	66	436	46	0	0	548	14	24	32	0	0	70	
6:00 AM	84	306	69	0	0	459	17	0	15	0	0	32	14	178	5	0	0	197	3	5	20	0	0	26	
6:15 AM	79	342	93	0	0	514	15	4	13	0	0	32	15	161	5	0	0	181	3	5	18	0	0	28	
6:30 AM	70	424	125	0	0	619	22	4	11	0	0	37	20	203	8	0	0	240	5	6	14	0	0	25	
6:45 AM	95	526	153	0	0	774	25	7	20	0	0	52	35	217	6	0	0	258	3	13	8	0	0	29	
Hourly Total	328	1598	440	0	0	2366	79	15	59	0	0	153	93	759	24	0	0	876	14	34	60	0	0	108	
7:00 AM	38	242	104	0	0	384	22	0	7	0	0	29	26	234	6	0	0	266	2	6	9	0	0	17	
7:15 AM	44	320	75	0	0	439	18	1	11	0	0	30	24	189	6	0	0	219	2	2	12	0	0	16	
7:30 AM	58	386	80	0	0	534	17	4	15	0	0	36	20	232	4	0	0	262	0	5	12	0	0	17	
7:45 AM	84	470	84	0	0	638	20	4	14	0	0	38	21	194	6	0	0	221	5	5	15	0	0	25	
Hourly Total	234	1418	343	0	0	1955	77	9	47	0	0	133	97	849	22	0	0	968	9	18	48	0	0	75	
8:00 AM	56	280	77	0	0	413	15	6	13	0	0	34	19	175	3	0	0	197	5	1	9	0	0	15	
8:15 AM	68	396	82	0	0	495	14	5	15	0	0	37	18	226	3	0	0	217	4	2	13	0	0	24	
8:30 AM	36	243	85	0	0	364	28	5	14	0	0	47	26	179	3	0	0	208	2	3	10	0	0	15	
8:45 AM	27	237	65	0	0	329	25	4	21	0	0	50	15	141	1	0	0	157	1	1	16	0	0	18	
Hourly Total	163	1059	289	0	0	1511	86	20	63	0	0	169	78	621	10	0	0	709	8	5	59	0	0	72	
9:00 AM	196	44	0	0	240	24	2	18	4	0	0	44	2	18	4	0	0	274	8	2	25	0	0	25	
9:15 AM	25	178	43	0	0	246	19	5	13	0	0	37	18	154	5	0	0	177	5	2	12	0	0	19	
9:30 AM	25	189	53	0	0	267	30	2	19	0	0	51	10	152	3	0	0	165	5	1	15	0	0	21	
9:45 AM	23	204	39	0	0	266	37	4	17	0	0	58	13	130	3	0	0	146	5	5	25	0	0	35	
Hourly Total	390	787	179	0	0	1045	110	13	67	0	0	190	61	607	17	0	0	648	16	14	70	0	0	100	
10:00 AM	26	151	30	0	0	207	24	5	20	0	0	49	18	149	4	0	0	171	2	5	17	0	0	24	
10:15 AM	20	152	44	0	0	216	20	5	14	0	0	39	16	151	5	0	0	172	5	1	18	0	0	24	
10:30 AM	22	148	33	0	0	213	15	4	12	0	0	31	19	166	4	0	0	189	5	2	24	0	0	43	
10:45 AM	29	165	53	0	0	244	22	5	22	0	0	54	21	161	3	0	0	195	12	2	24	0	0	24	
Hourly Total	94	616	160	0	0	870	86	19	68	0	0	173	74	627	16	0	0	717	24	11	87	0	0	122	
11:00 AM	21	191	49	0	0	261	33	13	17	0	0	63	32	212	5	0	0	249	7	7	25	0	0	39	
11:15 AM	19	166	57	0	0	242	33	5	21	0	0	61	21	170	4	0	0	195	5	6	20	0	0	31	
11:30 AM	43	202	38	0	0	283	33	4	17	0	0	54	21	178	5	0	0	213	14	7	28	0	0	48	
11:45 AM	27	196	48	0	0	271	37	6	26	0	0	69	26	200	4	0	0	230	10	8	12	0	0	30	
Hourly Total	110	775	192	0	0	1077	138	28	81	0	0	247	109	760											

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	540	97			1						1				1	1	1	1
12:15 AM	406	78																
12:30 AM	369	93																
12:45 AM	353	80																
1:00 AM	360	67												1				
1:15 AM	391	72																
1:30 AM	404	81																
1:45 AM	440	86			1													
2:00 AM	461	83												1				
2:15 AM	446	39																
2:30 AM	488	40								1								
2:45 AM	663	79	1		1				1	1							1	1
3:00 AM	768	100									1	1		1	1	1		
3:15 AM	910	124					1	1										
3:30 AM	1061	128								1	1							
3:45 AM	1185	156	1	1	1	1			1	1							1	1
4:00 AM	1440	154										1	1	1	1			
4:15 AM	1574	135					1	1										
4:30 AM	1830	151								1	1							
4:45 AM	2150	135	1		1	1			1	1							1	1
5:00 AM	2675	150										1	1	1	1			
5:15 AM	2931	129					1	1										
5:30 AM	3080	126								1	1							
5:45 AM	3195	139	1		1	1			1	1							1	1
6:00 AM	3242	153										1	1	1	1			
6:15 AM	3236	150					1	1										
6:30 AM	3199	148								1	1							
6:45 AM	3136	147	1		1	1			1	1							1	1
7:00 AM	2963	133										1	1	1	1			
7:15 AM	2923	138					1	1										
7:30 AM	2817	146								1	1							
7:45 AM	2593	157	1	1	1	1			1	1							1	1
8:00 AM	2220	169										1	1	1	1			
8:15 AM	2066	179					1	1										
8:30 AM	1937	178								1	1							
8:45 AM	1797	182	1	1	1	1			1	1							1	1
9:00 AM	1723	190										1	1	1	1			
9:15 AM	1645	195					1	1										
9:30 AM	1610	197								1	1							
9:45 AM	1570	177	1	1	1	1			1	1							1	1

10:00 AM	1587	173										1	1	1	1			
10:15 AM	1719	187				1	1											
10:30 AM	1788	209							1	1								
10:45 AM	1892	232	1	1	1	1			1	1						1	1	
11:00 AM	1964	247										1	1	1	1			
11:15 AM	1971	268					1	1										
11:30 AM	2004	258								1	1							
11:45 AM	2012	269	1	1	1	1			1	1						1	1	
12:00 PM	2007	262										1	1	1	1			
12:15 PM	1992	245					1	1										
12:30 PM	2044	253								1	1							
12:45 PM	2186	266	1	1	1	1			1	1						1	1	
1:00 PM	2309	289										1	1	1	1			
1:15 PM	2444	350					1	1										
1:30 PM	2592	404								1	1							
1:45 PM	2709	502	1	1	1	1			1	1						1	1	
2:00 PM	2838	533										1	1	1	1			
2:15 PM	2943	569					1	1										
2:30 PM	3031	540								1	1							
2:45 PM	3021	549	1	1	1	1			1	1						1	1	
3:00 PM	3060	519										1	1	1	1			
3:15 PM	3021	460					1	1										
3:30 PM	2901	462								1	1							
3:45 PM	3011	419	1	1	1	1			1	1						1	1	
4:00 PM	2974	406										1	1	1	1			
4:15 PM	2987	417					1	1										
4:30 PM	2913	407								1	1							
4:45 PM	2606	373	1	1	1	1			1	1						1	1	
5:00 PM	2362	388										1	1	1	1			
5:15 PM	2102	333					1	1										
5:30 PM	1953	305								1	1							
5:45 PM	1760	243	1	1	1	1			1	1						1	1	
6:00 PM	1600	186										1	1	1	1			
6:15 PM	1438	176					1	1										
6:30 PM	1284	160								1	1							
6:45 PM	1161	139	1		1	1			1	1						1	1	
7:00 PM	1064	128										1	1	1	1			
7:15 PM	1031	110					1	1										
7:30 PM	1021	105								1								
7:45 PM	1014	115	1		1	1			1	1						1	1	
8:00 PM	981	102										1	1	1	1			
8:15 PM	966	85					1	1										
8:30 PM	903	81								1								
8:45 PM	929	69	1		1				1	1						1	1	
9:00 PM	965	85										1	1	1	1			
9:15 PM	960	98					1	1										
9:30 PM	968	94								1								
9:45 PM	927	99	1		1				1	1						1	1	
HOURS MET			21	13	23	18	19	19	21	21	22	17	21	21	24	22	22	22
WARRANT SATISFIED?			YES		YES		YES		YES		YES		YES		YES		YES	

Warrant Met: **Yes**

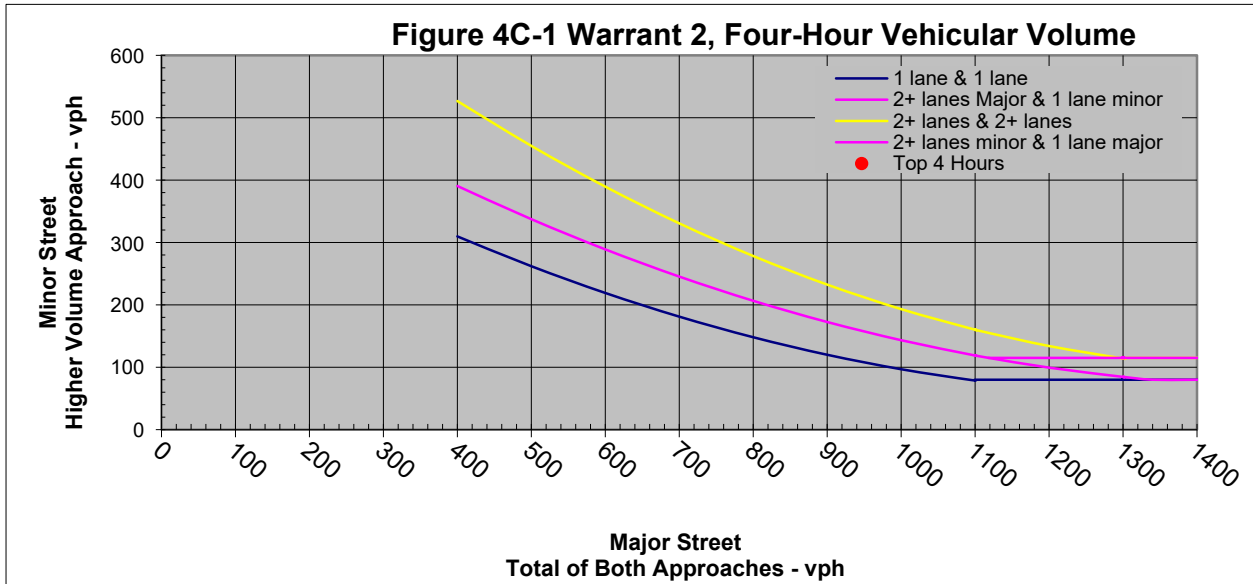
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	17
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	21
Minor Street: 1 Lane		

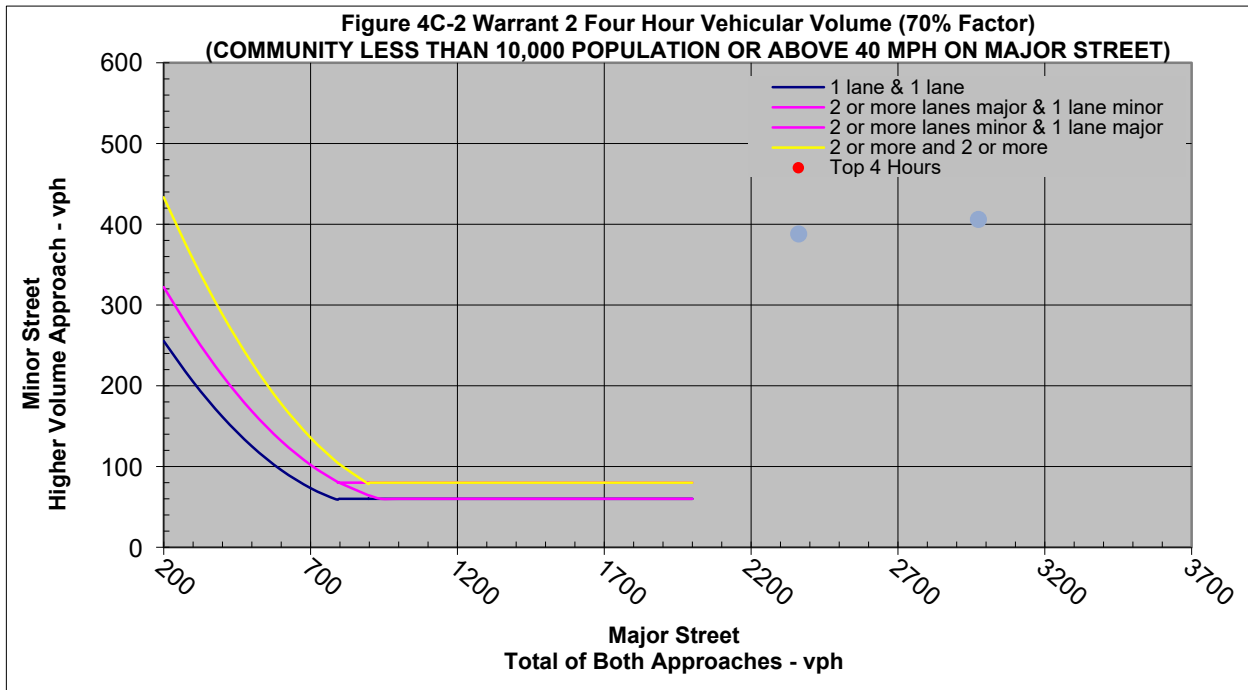
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Creekside Parkway/ Toy Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	876	2366	153	108	3242	153		Met
6:15 AM	945	2291	150	97	3236	150		
6:30 AM	983	2216	148	87	3199	148	Met	
6:45 AM	1005	2131	147	79	3136	147		
7:00 AM	968	1995	133	75	2963	133		Met
7:15 AM	899	2024	138	73	2923	138		
7:30 AM	827	1990	146	81	2817	146	Met	
7:45 AM	773	1820	157	79	2593	157		
8:00 AM	709	1511	169	72	2220	169		Met
8:15 AM	702	1364	179	82	2066	179		
8:30 AM	732	1205	178	77	1937	178	Met	
8:45 AM	689	1108	182	83	1797	182		
9:00 AM	678	1045	190	100	1723	190		Met
9:15 AM	659	986	195	99	1645	195		
9:30 AM	654	956	197	104	1610	197	Met	
9:45 AM	678	892	177	114	1570	177		
10:00 AM	717	870	173	122	1587	173		Met
10:15 AM	795	924	187	137	1719	187		
10:30 AM	818	970	209	144	1788	209	Met	
10:45 AM	842	1050	232	161	1892	232		
11:00 AM	887	1077	247	148	1964	247		Met
11:15 AM	912	1059	268	150	1971	268		
11:30 AM	950	1054	258	149	2004	258	Met	
11:45 AM	970	1042	269	130	2012	269		
12:00 PM	985	1022	262	130	2007	262		Met
12:15 PM	940	1052	245	128	1992	245		
12:30 PM	918	1126	253	131	2044	253	Met	
12:45 PM	942	1244	266	144	2186	266		
1:00 PM	919	1390	289	168	2309	289		Met
1:15 PM	986	1458	350	254	2444	350		
1:30 PM	1112	1480	404	282	2592	404	Met	
1:45 PM	1221	1488	502	354	2709	502		
2:00 PM	1325	1513	533	345	2838	533		Met
2:15 PM	1425	1518	569	315	2943	569		
2:30 PM	1469	1562	540	315	3031	540	Met	
2:45 PM	1508	1513	549	325	3021	549		
3:00 PM	1580	1480	519	382	3060	519		Met
3:15 PM	1570	1451	460	355	3021	460		
3:30 PM	1492	1409	462	349	2901	462	Met	
3:45 PM	1516	1495	419	375	3011	419		
4:00 PM	1502	1472	406	351	2974	406		Met
4:15 PM	1541	1446	417	401	2987	417		
4:30 PM	1517	1396	407	394	2913	407	Met	
4:45 PM	1387	1219	373	284	2606	373		
5:00 PM	1236	1126	388	236	2362	388		Met
5:15 PM	1057	1045	333	150	2102	333		
5:30 PM	956	997	305	120	1953	305	Met	
5:45 PM	840	920	243	118	1760	243		
6:00 PM	780	820	186	110	1600	186		Met
6:15 PM	700	738	176	103	1438	176		
6:30 PM	651	633	160	99	1284	160	Met	
6:45 PM	596	565	139	82	1161	139		
7:00 PM	539	525	128	74	1064	128		Met
7:15 PM	516	515	110	60	1031	110		
7:30 PM	519	502	105	61	1021	105		
7:45 PM	491	523	115	55	1014	115		
8:00 PM	458	523	102	59	981	102		Met



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	2:30 PM	3:30 PM	3031	540
2nd Highest Hour	3:30 PM	4:30 PM	2901	462
3rd Highest Hour	4:30 PM	5:30 PM	2913	407
4th Highest Hour	1:30 PM	2:30 PM	2592	404

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:00 PM	3:00 PM	2838	533
2nd Highest Hour	3:00 PM	4:00 PM	3060	519
3rd Highest Hour	4:00 PM	5:00 PM	2974	406
4th Highest Hour	5:00 PM	6:00 PM	2362	388



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	2:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street:	1 Lane		

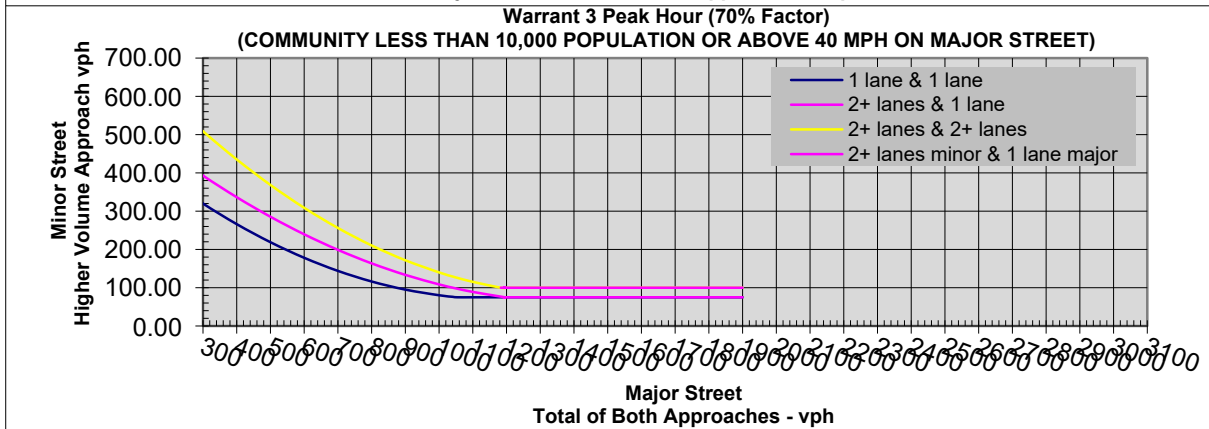
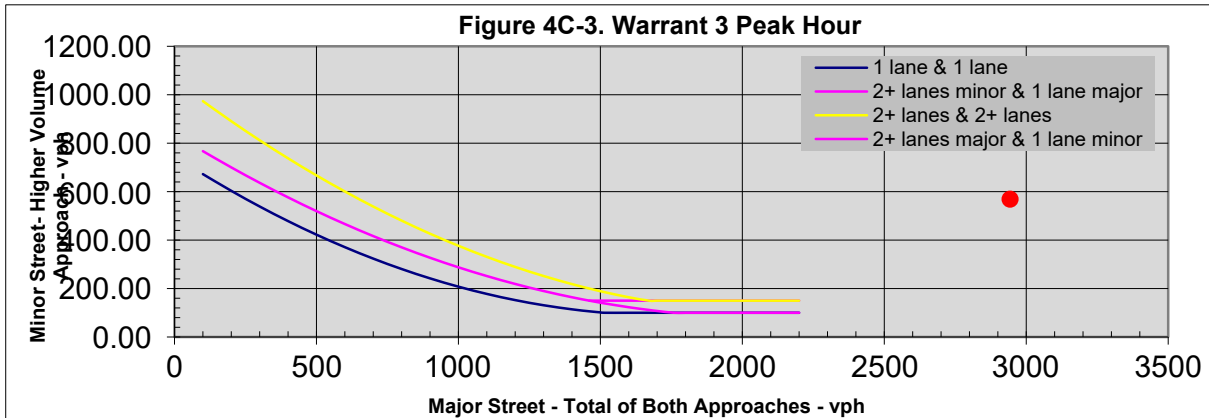
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	3242	153	3395	3503
6:15 AM	3236	150	3386	3483
6:30 AM	3199	148	3347	3434
6:45 AM	3136	147	3283	3362
7:00 AM	2963	133	3096	3171
7:15 AM	2923	138	3061	3134
7:30 AM	2817	146	2963	3044
7:45 AM	2593	157	2750	2829
8:00 AM	2220	169	2389	2461
8:15 AM	2066	179	2245	2327
8:30 AM	1937	178	2115	2192
8:45 AM	1797	182	1979	2062
9:00 AM	1723	190	1913	2013
9:15 AM	1645	195	1840	1939
9:30 AM	1610	197	1807	1911
9:45 AM	1570	177	1747	1861
10:00 AM	1587	173	1760	1882
10:15 AM	1719	187	1906	2043
10:30 AM	1788	209	1997	2141
10:45 AM	1892	232	2124	2285
11:00 AM	1964	247	2211	2359
11:15 AM	1971	268	2239	2389
11:30 AM	2004	258	2262	2411
11:45 AM	2012	269	2281	2411
12:00 PM	2007	262	2269	2399
12:15 PM	1992	245	2237	2365
12:30 PM	2044	253	2297	2428
12:45 PM	2186	266	2452	2596
1:00 PM	2309	289	2598	2766
1:15 PM	2444	350	2794	3048
1:30 PM	2592	404	2996	3278
1:45 PM	2709	502	3211	3565
2:00 PM	2838	533	3371	3716
2:15 PM	2943	569	3512	3827
2:30 PM	3031	540	3571	3886
2:45 PM	3021	549	3570	3895
3:00 PM	3060	519	3579	3961
3:15 PM	3021	460	3481	3836
3:30 PM	2901	462	3363	3712
3:45 PM	3011	419	3430	3805
4:00 PM	2974	406	3380	3731
4:15 PM	2987	417	3404	3805
4:30 PM	2913	407	3320	3714
4:45 PM	2606	373	2979	3263
5:00 PM	2362	388	2750	2986
5:15 PM	2102	333	2435	2585
5:30 PM	1953	305	2258	2378
5:45 PM	1760	243	2003	2121
6:00 PM	1600	186	1786	1896
6:15 PM	1438	176	1614	1717
6:30 PM	1284	160	1444	1543
6:45 PM	1161	139	1300	1382
7:00 PM	1064	128	1192	1266
7:15 PM	1031	110	1141	1201
7:30 PM	1021	105	1126	1187
7:45 PM	1014	115	1129	1184
8:00 PM	981	102	1083	1142

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2943	569	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

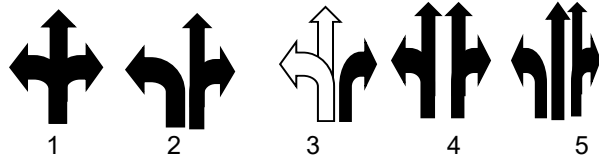
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration: E-Bound
 W-Bound



Number of Thru Lanes on Each Minor Street Approach: LANE(S)
 Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	No				
Warrant 2, Four-Hour Vehicular Volume	Yes	No				
Warrant 3, Peak Hour	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:30 PM</td></tr> <tr><td style="text-align: center;">4:30 PM</td></tr> </table>	Peak Hour	3:30 PM	4:30 PM
Peak Hour						
3:30 PM						
4:30 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">12:15 PM</td></tr> <tr><td style="text-align: center;">1:15 PM</td></tr> </table>	Peak Hour	12:15 PM	1:15 PM
Peak Hour						
12:15 PM						
1:15 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:
1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are not met for the intersection

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:							
	Right	Thru	Left	U-Turn	Peds	App Total	Westbound					App Total	Northbound					App Total	Eastbound													
							Right	Thru	Left	U-Turn	Peds		Right	Thru	Left	U-Turn	Peds		Right	Thru	Left	U-Turn	Peds	App Total								
12:00 AM	0	37	0	0	0	37	4	0	0	0	0	4	2	189	0	0	0	0	191	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	1	47	1	0	0	49	1	0	1	0	0	2	2	73	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 AM	0	40	1	0	0	41	0	0	0	0	0	0	0	48	0	0	0	0	48	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 AM	1	37	1	0	0	39	1	0	0	0	0	1	0	37	1	0	0	0	39	1	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	2	161	3	0	0	166	6	0	1	0	0	7	5	348	1	0	0	0	354	1	0	0	0	0	0	0	0	0	0	0	0	
1:00 AM	0	40	1	0	0	41	4	0	0	0	0	4	1	80	0	0	0	0	81	0	0	0	1	0	0	0	0	0	0	0	0	
1:15 AM	0	30	3	0	0	33	3	0	3	0	0	6	0	38	1	0	0	0	39	0	0	1	0	0	0	0	0	0	0	0	0	
1:30 AM	0	38	0	0	0	38	3	0	0	0	0	3	0	41	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	
1:45 AM	0	42	3	0	0	45	0	0	0	0	0	0	0	46	1	0	0	0	47	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	0	150	7	0	0	157	10	0	3	0	0	13	1	205	2	0	0	0	208	0	0	0	2	0	0	0	0	0	0	0	0	
2:00 AM	1	33	1	0	0	35	3	0	0	0	0	3	0	114	0	0	0	0	114	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 AM	0	47	0	0	0	47	1	0	0	0	0	1	1	42	0	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 AM	0	34	0	0	0	34	1	0	0	0	0	1	1	109	0	0	0	0	110	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 AM	1	43	0	0	0	44	3	0	3	0	0	6	0	59	1	0	0	0	60	1	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	2	157	1	0	0	160	8	0	3	0	0	11	2	324	1	0	0	0	327	1	0	0	0	0	0	0	0	0	0	0	0	
3:00 AM	0	43	0	0	0	43	0	0	0	0	0	0	0	44	0	0	0	0	44	0	0	0	4	0	0	0	0	0	0	0	0	
3:15 AM	3	55	1	0	0	59	0	0	0	0	0	0	0	35	1	0	0	0	36	1	0	0	5	0	0	0	0	0	0	0	0	
3:30 AM	0	87	1	0	0	88	1	0	1	0	0	2	1	184	1	0	0	0	186	2	0	0	0	0	0	0	0	0	0	0	0	
3:45 AM	3	96	4	0	0	103	8	0	3	0	0	4	0	83	0	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	6	281	6	0	0	293	2	0	4	0	0	6	1	346	2	0	0	0	349	3	0	0	9	0	0	0	0	0	0	0	0	
4:00 AM	0	77	1	0	0	78	0	0	1	0	0	1	1	112	0	0	0	0	113	2	0	0	0	0	0	0	0	0	0	0	0	
4:15 AM	0	132	5	0	0	137	3	0	1	0	0	4	1	93	1	0	0	0	95	0	0	0	2	0	0	0	0	0	0	0	0	
4:30 AM	1	199	5	0	0	205	3	0	0	0	0	4	0	114	0	0	0	0	115	1	0	0	0	0	0	0	0	0	0	0	0	
4:45 AM	3	233	1	0	0	237	4	0	1	0	0	4	0	89	4	0	0	0	93	2	0	0	1	0	0	0	0	0	0	0	0	
Hourly Total	4	641	12	0	0	657	9	0	3	0	0	12	2	408	6	0	0	0	416	5	0	0	3	0	0	0	0	0	0	0	0	
5:00 AM	1	169	1	0	0	171	1	0	0	0	0	1	0	128	1	0	0	0	129	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 AM	0	259	4	0	0	303	3	0	0	0	0	3	0	101	1	0	0	0	103	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 AM	1	445	0	0	0	446	1	0	1	0	0	4	1	141	2	0	0	0	144	0	0	0	1	0	0	0	0	0	0	0	0	
5:45 AM	5	536	1	0	0	542	4	0	3	0	0	4	1	174	4	0	0	0	179	1	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	7	1469	6	0	0	1482	8	0	4	0	0	12	3	544	8	0	0	0	555	2	0	0	2	0	0	0	0	0	0	0	0	
6:00 AM	3	262	0	0	0	265	0	0	0	0	0	2	2	189	4	0	0	0	195	6	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	5	374	4	0	0	383	0	0	1	0	0	1	1	195	4	0	0	0	200	0	0	0	2	0	0	0	0	0	0	0	0	
6:30 AM	8	486	1	0	0	495	0	0	1	0	0	1	0	252	5	0	0	0	257	2	1	0	0	0	0	0	0	0	0	0	0	
6:45 AM	10	501	10	0	0	521	1	0	1	0	0	2	1	234	5	0	0	0	244	2	0	0	6	0	0	0	0	0	0	0	0	
Hourly Total	26	1623	15	0	0	1664	1	0	3	0	0	4	8	870	18	0	0	0	896	10	1	0	8	0	0	0	0	0	0	0	0	
7:00 AM	18	270	13	0	0	301	1	0	1	0	0	2	6	255	9	0	0	0	270	2	0	0	5	0	0	0	0	0	0	0	0	
7:15 AM	8	377	4	0	0	389	3	0	1	0	0	4	2	221	4	0	0	0	227	5	0	0	6	0	0	0	0	0	0	0	0	
7:30 AM	11	364	6	0	0	381	1	0	1	0	0	6	4	249	6	0	0	0	259	4	0	0	2	0	0	0	0	0	0	0	0	
7:45 AM	23	447	5	0	0	475	4	0	3	0	0	7	4	199	7	0	0	0	200	1	0	0	4	0	0	0	0	0	0	0	0	
Hourly Total	60	1458	28	0	0	1546	9	0	6	0	0	15	16	914	26	0	0	0	956	12	0	0	15	0	0	0	0	0	0	0	0	
8:00 AM	5	336	4	0	0	345	5	0	3	0	0	8	2	191	2	0	0	0	195	4	1	0	5	0	0	0	0	0	0	0	0	
8:15 AM	6	260	3	0	0	269	3	0	1	0	0	6	1	197	4	0	0	0	201	0	0	0	2	0	0	0	0	0	0	0	0	
8:30 AM	0	281	8	0	0	289	4	0	1	0	0	5	0	158	5	0	0	0	163	0	1	0	1	0	0	0	0	0	0	0	0	
8:45 AM	10	271	4	0	0	285	6	0	1	0	0	7	4	164	2	0	0	0	170	2	0	0	1	0	0	0	0	0	0	0	0	
Hourly Total	21	1148	19	0	0	1188	18	0	6	0	0	24	7	710	13	0	0	0	730	8	2	0	9	0	0	0	0	0	0	0	0	
9:00 AM	3	219	1	0	0	223	3	0	3	0	0	6	4	169	1	0	0	0	174	1	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM	4	202	9	0	0	215	1	0	3	0	0	4	0	184	6	0	0	0	190	1	0	0	4	0	0	0	0	0	0	0	0	
9:30 AM	1	215	10	0	0	226	4	0	1	0	0	5	2	183	1	0	0	0	186	2	0	0	4	0	0	0	0	0	0	0	0	
9:45 AM	8	272	8	0	0	288	5	0	1	0	0	6	2	181	0	0	0	0	183	0	0	0	1	0	0	0	0	0	0	0	0	
Hourly Total	19	908	28	0	0	952	13	0	8	0	0	21	5	717	8	0	0	0	733	4	0	0	14	0	0	0	0	0	0	0	0	
10:00 AM	4	249	4	0	0	257	9	0	0	0	0	9	6	194	5	0	0	0	205	6	1	0	2	0	0	0	0	0	0	0	0	
10:15 AM	3	198	5	0	0	206	9	0	0	0	0	9	1	180	4	0	0	0	185	6	0	0	1	0	0	0	0	0	0	0	0	
10:30 AM	0	213	3	0	0	216	5	0	1	0	0	11	0	222	4	0	0	0	226	4	0	0	2	0	0	0	0	0	0	0	0	
10:45 AM	5	246	4	0	0	255	3	1	1	0	0	5	0	230	1	0	0	0	231	1	0	0	0	0	0	0	0	0	0	0	0	
Hourly Total	12	896	16	0	0	924	26	1	7	0	0	34	7	826	14	0	0	0	847	18	1	0	7	0	0	0	0	0	0	0	0	
11:00 AM	5	198	4	0	0	207	5	1	6	0	0	12	5	270	2	0	0	0	277	1	0	0	2	0	0	0	0	0	0	0	0	
11:15 AM	10	256	5	0	0	262	9	0	4	0	0	13	1	204	0	0	0	0	205	1	0	0	5	0	0	0	0	0	0	0	0	
11:30 AM	5	268	6	0	0	279	8	0	5	0	0	13	5	226	2																	

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	520	7			1						1				1		1	
12:15 AM	414	7																
12:30 AM	362	11																
12:45 AM	351	14																
1:00 AM	365	13												1				
1:15 AM	392	12																
1:30 AM	410	7																
1:45 AM	475	5			1													
2:00 AM	487	11									1				1			
2:15 AM	425	8																
2:30 AM	430	11																
2:45 AM	560	13			1												1	
3:00 AM	642	12	1						1		1				1			
3:15 AM	746	10										1						
3:30 AM	883	11																
3:45 AM	929	12			1		1										1	
4:00 AM	1073	12	1						1		1				1			
4:15 AM	1202	12										1						
4:30 AM	1376	11																
4:45 AM	1646	12			1		1										1	
5:00 AM	2037	12	1						1		1				1			
5:15 AM	2177	11										1						
5:30 AM	2354	10																
5:45 AM	2516	12			1		1										1	
6:00 AM	2560	19	1						1		1				1			
6:15 AM	2671	20										1						
6:30 AM	2704	29																
6:45 AM	2592	30			1		1										1	
7:00 AM	2502	27	1						1		1				1			
7:15 AM	2471	30										1						
7:30 AM	2326	23																
7:45 AM	2138	24			1		1										1	
8:00 AM	1918	24	1						1		1				1			
8:15 AM	1775	22										1						
8:30 AM	1709	22																
8:45 AM	1669	23			1		1										1	
9:00 AM	1685	21	1						1		1				1			
9:15 AM	1750	24										1						
9:30 AM	1736	29																
9:45 AM	1766	35			1		1										1	

10:00 AM	1771	34	1					1		1			1					
10:15 AM	1793	37									1							
10:30 AM	1869	41																
10:45 AM	1952	43		1		1									1	1		
11:00 AM	1989	44	1					1		1			1					
11:15 AM	2026	45									1							
11:30 AM	2098	40																
11:45 AM	2131	32		1		1									1			
12:00 PM	2083	30	1					1		1			1					
12:15 PM	2045	28									1							
12:30 PM	1992	21																
12:45 PM	1982	27		1		1									1			
1:00 PM	2076	26	1					1		1			1					
1:15 PM	2210	26									1							
1:30 PM	2423	38																
1:45 PM	2653	51		1		1									1	1		
2:00 PM	2847	48	1					1		1			1					
2:15 PM	3024	56									1							
2:30 PM	3084	48																
2:45 PM	3108	46		1		1									1	1		
3:00 PM	3078	51	1					1		1			1					
3:15 PM	2975	56									1							
3:30 PM	2911	62																
3:45 PM	2986	49		1		1									1	1		
4:00 PM	2944	44	1					1		1			1					
4:15 PM	2963	38									1							
4:30 PM	2817	34																
4:45 PM	2552	31		1		1									1			
5:00 PM	2401	30	1					1		1			1					
5:15 PM	2161	28									1							
5:30 PM	2030	29																
5:45 PM	1852	22		1		1									1			
6:00 PM	1676	25	1					1		1			1					
6:15 PM	1556	16									1							
6:30 PM	1451	19																
6:45 PM	1259	20		1		1									1			
7:00 PM	1162	13	1					1		1			1					
7:15 PM	1053	17									1							
7:30 PM	977	11																
7:45 PM	957	10		1		1									1			
8:00 PM	894	13	1					1		1			1					
8:15 PM	863	11									1							
8:30 PM	795	15																
8:45 PM	794	19		1											1			
9:00 PM	803	17	1					1		1			1					
9:15 PM	826	22									1							
9:30 PM	883	19																
9:45 PM	869	22		1											1			
HOURS MET			21	0	23	0	17	0	21	0	23	0	20	0	24	0	22	4
WARRANT SATISFIED?			NO		NO		NO		NO		NO		NO		NO		NO	

Warrant Met: **No**

Notes:

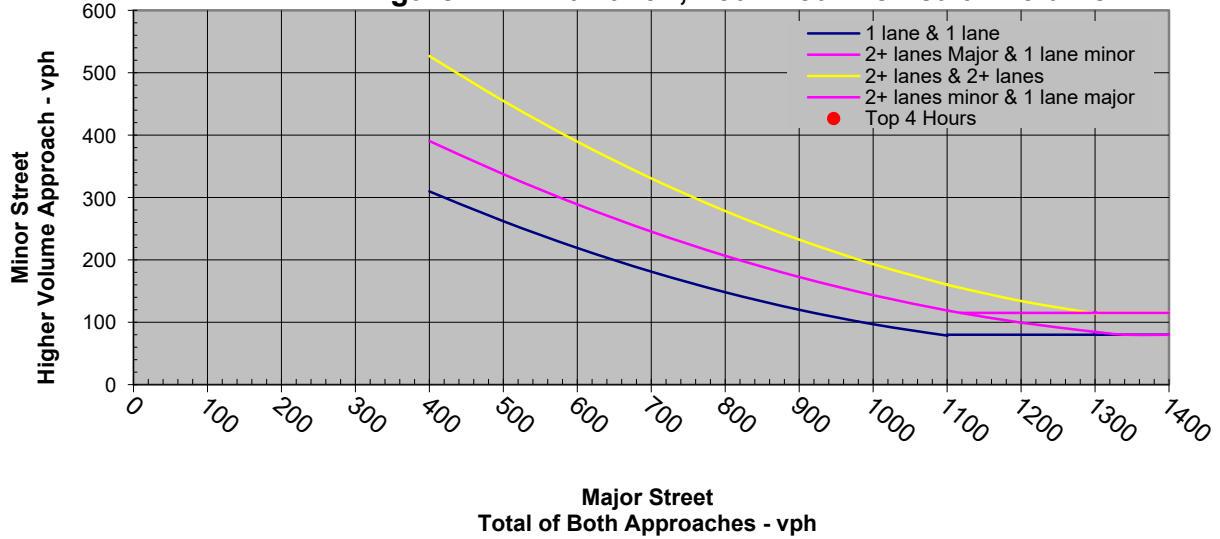
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	0
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	1
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Global Court					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	896	1664	4	19	2560	19		
6:15 AM	971	1700	6	20	2671	20		
6:30 AM	998	1706	9	29	2704	29		
6:45 AM	1000	1592	10	30	2592	30		
7:00 AM	956	1546	15	27	2502	27		
7:15 AM	881	1590	21	30	2471	30		
7:30 AM	856	1470	21	23	2326	23		
7:45 AM	760	1378	24	21	2138	24		
8:00 AM	730	1188	24	19	1918	24		
8:15 AM	709	1066	22	18	1775	22		
8:30 AM	697	1012	22	19	1709	22		
8:45 AM	720	949	22	23	1669	23		
9:00 AM	733	952	21	21	1685	21		
9:15 AM	764	986	24	21	1750	24		
9:30 AM	759	977	29	23	1736	29		
9:45 AM	799	967	35	23	1766	35		
10:00 AM	847	924	34	26	1771	34		
10:15 AM	919	874	37	20	1793	37		
10:30 AM	939	930	41	19	1869	41		
10:45 AM	946	1006	43	18	1952	43		
11:00 AM	949	1040	44	23	1989	44		
11:15 AM	924	1102	45	27	2026	45		
11:30 AM	1016	1082	40	31	2098	40		
11:45 AM	1095	1036	32	29	2131	32		
12:00 PM	1076	1007	28	30	2083	30		
12:15 PM	1063	982	21	28	2045	28		
12:30 PM	967	1025	20	21	1992	21		
12:45 PM	921	1061	21	27	1982	27		
1:00 PM	967	1109	23	26	2076	26		
1:15 PM	1067	1143	26	23	2210	26		
1:30 PM	1230	1193	38	34	2423	38		
1:45 PM	1382	1271	36	51	2653	51		
2:00 PM	1494	1353	47	48	2847	48		
2:15 PM	1624	1400	48	56	3024	56		
2:30 PM	1692	1392	41	48	3084	48		
2:45 PM	1725	1383	43	46	3108	46		
3:00 PM	1736	1342	33	51	3078	51		
3:15 PM	1642	1333	31	56	2975	56		
3:30 PM	1544	1367	24	62	2911	62		Met
3:45 PM	1537	1449	23	49	2986	49		
4:00 PM	1476	1468	23	44	2944	44		
4:15 PM	1513	1450	26	38	2963	38		
4:30 PM	1451	1366	27	34	2817	34		
4:45 PM	1310	1242	31	31	2552	31		
5:00 PM	1218	1183	30	27	2401	30		
5:15 PM	1047	1114	28	28	2161	28		
5:30 PM	963	1067	29	23	2030	29		
5:45 PM	910	942	22	19	1852	22		
6:00 PM	880	796	18	25	1676	25		
6:15 PM	858	698	14	16	1556	16		
6:30 PM	857	594	13	19	1451	19		
6:45 PM	734	525	11	20	1259	20		
7:00 PM	648	514	12	13	1162	13		
7:15 PM	561	492	10	17	1053	17		
7:30 PM	480	497	5	11	977	11		
7:45 PM	468	489	7	10	957	10		
8:00 PM	454	440	13	11	894	13		

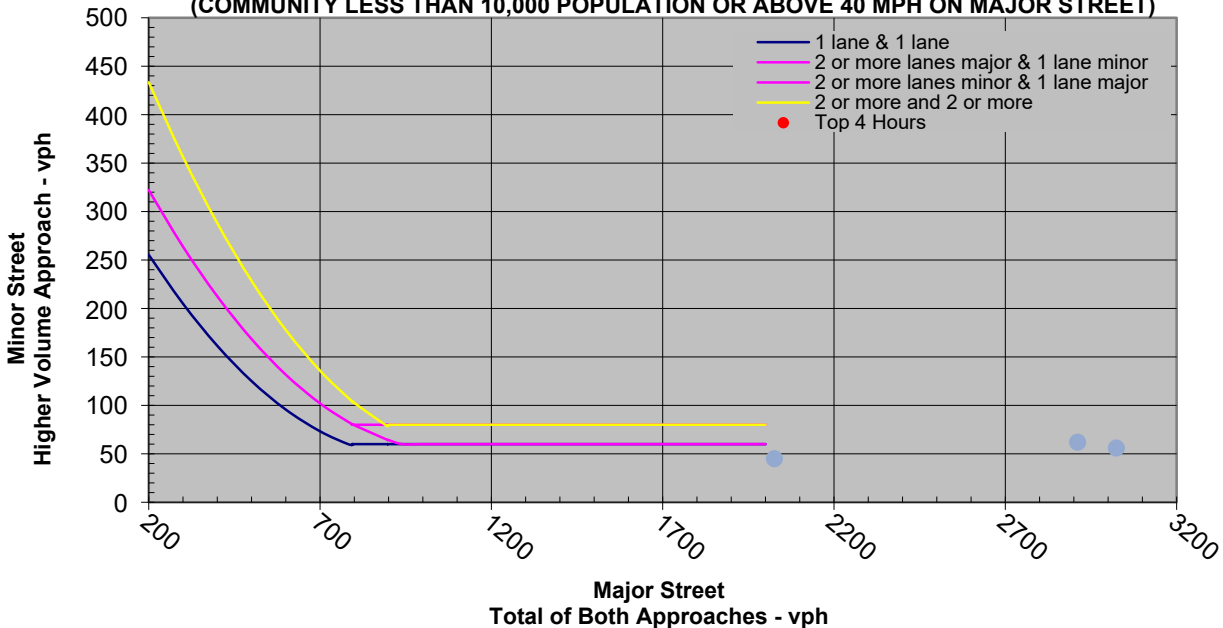
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2911	62
2nd Highest Hour	2:15 PM	3:15 PM	3024	56
3rd Highest Hour	11:15 AM	12:15 PM	2026	45
4th Highest Hour	10:15 AM	11:15 AM	1793	37

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	2911	62
2nd Highest Hour	12:00 AM	1:00 AM	0	56
3rd Highest Hour	2:15 PM	3:15 PM	3024	56
4th Highest Hour	11:15 AM	12:15 PM	2026	45

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?:

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:30 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:30 PM
Minor Street:	1 Lane		

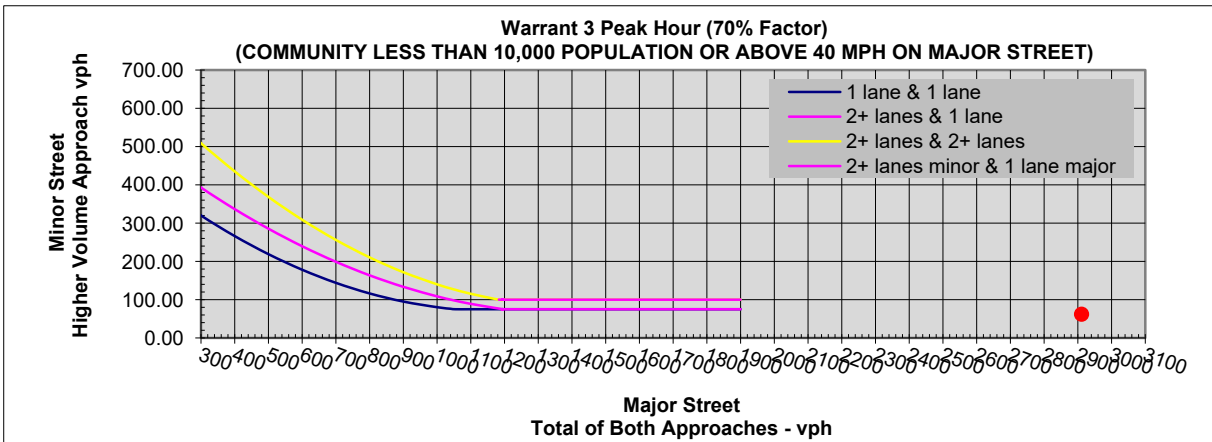
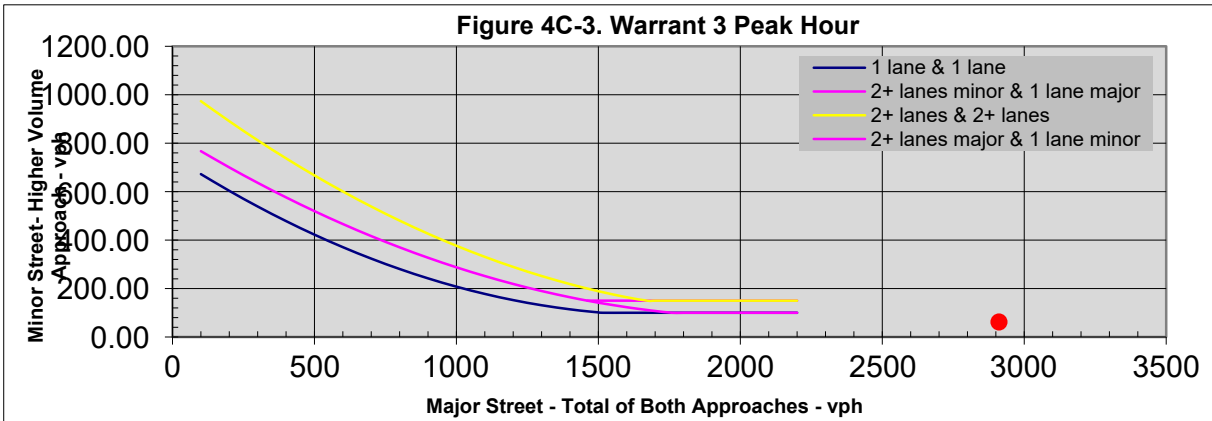
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	No
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **No**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2560	19	2579	2583
6:15 AM	2671	20	2691	2697
6:30 AM	2704	29	2733	2742
6:45 AM	2592	30	2622	2632
7:00 AM	2502	27	2529	2544
7:15 AM	2471	30	2501	2522
7:30 AM	2326	23	2349	2370
7:45 AM	2138	24	2162	2183
8:00 AM	1918	24	1942	1961
8:15 AM	1775	22	1797	1815
8:30 AM	1709	22	1731	1750
8:45 AM	1669	23	1692	1714
9:00 AM	1685	21	1706	1727
9:15 AM	1750	24	1774	1795
9:30 AM	1736	29	1765	1788
9:45 AM	1766	35	1801	1824
10:00 AM	1771	34	1805	1831
10:15 AM	1793	37	1830	1850
10:30 AM	1869	41	1910	1929
10:45 AM	1952	43	1995	2013
11:00 AM	1989	44	2033	2056
11:15 AM	2026	45	2071	2098
11:30 AM	2098	40	2138	2169
11:45 AM	2131	32	2163	2192
12:00 PM	2083	30	2113	2141
12:15 PM	2045	28	2073	2094
12:30 PM	1992	21	2013	2033
12:45 PM	1982	27	2009	2030
1:00 PM	2076	26	2102	2125
1:15 PM	2210	26	2236	2259
1:30 PM	2423	38	2461	2495
1:45 PM	2653	51	2704	2740
2:00 PM	2847	48	2895	2942
2:15 PM	3024	56	3080	3128
2:30 PM	3084	48	3132	3173
2:45 PM	3108	46	3154	3197
3:00 PM	3078	51	3129	3162
3:15 PM	2975	56	3031	3062
3:30 PM	2911	62	2973	2997
3:45 PM	2986	49	3035	3058
4:00 PM	2944	44	2988	3011
4:15 PM	2963	38	3001	3027
4:30 PM	2817	34	2851	2878
4:45 PM	2552	31	2583	2614
5:00 PM	2401	30	2431	2458
5:15 PM	2161	28	2189	2217
5:30 PM	2030	29	2059	2082
5:45 PM	1852	22	1874	1893
6:00 PM	1676	25	1701	1719
6:15 PM	1556	16	1572	1586
6:30 PM	1451	19	1470	1483
6:45 PM	1259	20	1279	1290
7:00 PM	1162	13	1175	1187
7:15 PM	1053	17	1070	1080
7:30 PM	977	11	988	993
7:45 PM	957	10	967	974
8:00 PM	894	13	907	918

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2911	62	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

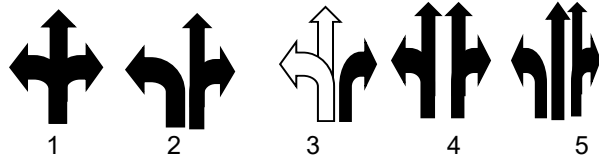
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: Rohr Road

Minor Street Approach Configuration: 2 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">2:15 PM</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> </table>				Peak Hour	2:15 PM	3:15 PM
Peak Hour						
2:15 PM						
3:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">1:45 PM</td></tr> <tr><td style="text-align: center;">2:45 PM</td></tr> </table>				Peak Hour	1:45 PM	2:45 PM
Peak Hour						
1:45 PM						
2:45 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 are met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	
12:00 AM	10	34	10	0	0	54	30	9	1	0	0	40	2	135	2	0	0	139	4	3	35	0	0	42	
12:15 AM	9	19	5	0	0	33	15	1	1	0	0	17	1	52	9	0	0	62	9	7	17	0	0	33	
12:30 AM	3	33	3	0	0	44	13	8	1	0	0	22	0	30	6	0	0	36	6	9	13	0	0	28	
12:45 AM	5	29	5	0	0	39	9	6	0	0	0	15	0	16	7	0	0	23	6	4	9	0	0	19	
Hourly Total	27	115	28	0	0	170	67	24	3	0	0	94	4	233	24	0	0	261	25	23	74	0	0	122	
1:00 AM	8	34	6	0	0	48	14	8	1	0	0	23	5	33	5	0	0	43	9	7	14	0	0	30	
1:15 AM	10	15	8	0	0	33	5	4	1	0	0	10	0	30	6	0	0	36	3	6	4	0	0	13	
1:30 AM	5	25	4	0	0	34	13	4	1	0	0	18	0	23	4	0	0	27	7	3	10	0	0	20	
1:45 AM	4	11	6	0	0	21	5	3	0	0	0	8	0	35	4	0	0	39	4	0	6	0	0	10	
Hourly Total	27	85	24	0	0	136	37	19	3	0	0	59	5	121	19	0	0	145	23	16	34	0	0	73	
2:00 AM	13	16	6	0	0	35	20	9	0	0	0	29	4	59	6	0	0	65	4	16	22	0	0	42	
2:15 AM	11	20	9	0	0	40	10	5	0	0	0	15	1	27	2	0	0	30	6	4	12	0	0	22	
2:30 AM	9	19	5	0	0	33	14	9	0	0	0	23	5	70	2	0	0	77	1	3	12	0	0	16	
2:45 AM	9	30	14	0	0	53	10	7	1	0	0	12	0	19	9	0	0	28	1	1	12	0	0	14	
Hourly Total	42	85	34	0	0	161	54	24	1	0	0	79	6	175	19	0	0	200	12	24	58	0	0	94	
3:00 AM	9	45	3	0	0	57	23	3	0	0	0	26	0	22	2	0	0	24	4	10	12	0	0	26	
3:15 AM	6	33	13	0	0	52	8	4	0	0	0	12	4	26	0	0	0	30	4	0	12	0	0	16	
3:30 AM	13	53	23	0	0	89	20	8	0	0	0	28	12	151	6	0	0	169	6	1	17	0	0	24	
3:45 AM	11	68	28	0	0	106	13	5	1	0	0	19	7	89	1	0	0	97	1	3	10	0	0	19	
Hourly Total	39	199	65	0	0	303	64	20	1	0	0	85	23	238	9	0	0	270	21	14	50	0	0	85	
4:00 AM	8	69	14	0	0	91	26	1	4	0	0	31	4	63	6	0	0	73	3	10	30	0	0	43	
4:15 AM	15	82	19	0	0	116	24	9	1	0	0	34	5	56	5	0	0	66	3	7	7	0	0	17	
4:30 AM	28	145	34	0	0	207	53	18	15	0	0	80	5	58	5	0	0	86	12	9	7	0	0	28	
4:45 AM	21	198	37	0	0	256	19	23	5	0	0	47	4	59	5	0	0	68	13	9	14	0	0	36	
Hourly Total	72	494	104	0	0	670	122	51	25	0	0	198	18	236	21	0	0	275	31	35	58	0	0	124	
5:00 PM	28	93	44	0	0	165	38	19	9	0	0	66	5	68	9	0	0	82	10	14	10	0	0	34	
5:15 AM	44	169	82	0	0	295	32	18	10	0	0	60	6	70	10	0	0	86	6	13	16	0	0	38	
5:30 AM	66	292	112	0	0	470	33	26	9	0	0	68	10	74	9	0	0	93	12	25	19	0	0	56	
5:45 AM	73	359	137	0	0	569	60	29	14	0	0	103	12	112	11	0	0	135	17	40	27	0	0	84	
Hourly Total	211	913	375	0	0	1469	163	92	42	0	0	297	33	344	39	0	0	416	48	92	72	0	0	212	
6:00 AM	57	218	38	0	0	333	43	29	1	0	0	73	10	135	12	0	0	157	20	16	26	0	0	62	
6:15 AM	64	233	69	0	0	366	30	44	5	0	0	79	7	126	10	0	0	143	23	22	19	0	0	64	
6:30 AM	69	248	100	0	0	417	33	40	13	0	0	86	16	181	10	0	0	207	29	30	33	0	0	92	
6:45 AM	97	282	125	0	0	504	54	40	6	0	0	100	12	191	25	0	0	228	42	32	25	0	0	69	
Hourly Total	287	981	352	0	0	1620	160	153	25	0	0	338	45	633	57	0	0	735	84	100	103	0	0	287	
7:00 AM	45	178	77	0	0	300	66	37	4	0	0	107	11	146	9	0	0	166	17	16	40	0	0	73	
7:15 AM	39	213	59	0	0	311	32	33	11	0	0	76	9	172	10	0	0	191	25	25	35	0	0	90	
7:30 AM	67	218	66	0	0	351	44	29	5	0	0	78	6	190	10	0	0	206	17	14	35	0	0	66	
7:45 AM	83	282	115	0	0	480	49	34	5	0	0	88	6	144	12	0	0	162	25	16	23	0	0	64	
Hourly Total	234	891	317	0	0	1442	191	133	25	0	0	349	32	652	41	0	0	725	84	71	138	0	0	293	
8:00 AM	32	218	81	0	0	331	23	34	9	0	0	66	5	138	12	0	0	155	14	17	30	0	0	61	
8:15 AM	35	185	84	0	0	304	24	14	8	0	0	67	6	99	12	0	0	117	17	19	36	0	0	72	
8:30 AM	28	176	53	0	0	257	49	13	3	0	0	65	5	121	5	0	0	131	6	9	29	0	0	44	
8:45 AM	35	198	57	0	0	290	29	18	5	0	0	52	12	95	12	0	0	119	14	9	30	0	0	53	
Hourly Total	150	780	255	0	0	1185	125	79	25	0	0	229	28	453	41	0	0	522	51	54	125	0	0	230	
9:00 AM	44	146	44	0	0	233	38	16	3	0	0	57	6	121	12	0	0	121	37	23	52	0	0	63	
9:15 AM	34	117	28	0	0	179	40	18	9	0	0	67	9	116	12	0	0	137	20	17	33	0	0	70	
9:30 AM	29	142	37	0	0	208	48	24	6	0	0	78	6	93	11	0	0	110	17	7	35	0	0	59	
9:45 AM	25	155	44	0	0	224	33	30	10	0	0	73	9	103	12	0	0	104	10	22	37	0	0	64	
Hourly Total	121	560	153	0	0	1154	159	88	28	0	0	327	40	413	47	0	0	490	62	53	142	0	0	261	
10:00 AM	29	118	38	0	0	185	30	20	3	0	0	53	1	104	15	0	0	120	22	17	35	0	0	74	
10:15 AM	26	111	45	0	0	182	44	21	8	0	0	73	2	106	12	0	0	120	13	9	33	0	0	55	
10:30 AM	29	103	42	0	0	174	43	16	4	0	0	63	4	116	16	0	0	136	19	10	33	0	0	62	
10:45 AM	33	125	39	0	0	197	44	15	4	0	0	63	7	118	21	0	0	146	21	17	35	0	0	75	
Hourly Total	117	457	164	0	0	738	161	72	19	0	0	252	14	444	64	0	0	522	77	53	136	0	0	266	
11:00 AM	25	140	47	0	0	212	54	33	9	0	0	96	10	154	20	0	0	184	16	25	37	0	0	78	
11:15 AM	39	131	38	0	0	208	47	20	10	0	0	77	10	126	17	0	0	153	17	17	32	0	0	66	
11:30 AM	45	131	55	0	0	231	55	38	3	0	0	96	9	130	19	0	0	167	22	23	59	0	0	97	
11:45 AM	35	149	53	0	0	237	53	30	4	0	0	87	6	138	23	0	0	167	19	23	33	0	0	75	
Hourly Total	144	551	193	0	0	888	209	121	26	0	0	356	35	548	79	0	0	662	74	88	154	0	0	316	
12:00 PM	48	126	43	0	0	217	50	35	13	0	0	106	11	108	42	0	0	219	47	33	52	0	0	112	
12:15 PM	32	147	47	0	0	206	53	30	4	0	0	87	12	154	23	0	0	189	46	33	40	0	0	119	
12:30 PM	50	134	44	0	0	228	54	32	6	0	0	92	7	147	16	0	0	170	27	20	43	0	0	90	
12:45 PM	44	134	38	0	0	216	52	15	9	0	0	76	6	128	11	0	0	145	16	22	43	0	0	81	
Hourly Total	174	524	172	0	0	870	217	112	32	0	0	361	34	507	92	0	0	723	126	98	178	0	0	402	
1:00 PM	43	158	59	0	0	260	47	23	5	0	0	87	6	135	15	0	0	164	22	27	33	0	0	82	
1:15 PM	47	140	63	0	0	290	64	24	11	0	0	99	5	163	11	0	0	179	13	23	35	0	0	71	
1:45 PM	47	180	91	0	0	318	53	19	10	0	0	82	11	138	20	0	0	169	17	23	39	0	0	79	
Hourly Total	176	608	272	0	0</																				

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	431	122			1	1									1	1		
12:15 AM	329	110																
12:30 AM	303	90																
12:45 AM	283	82																
1:00 AM	281	73																
1:15 AM	290	85																
1:30 AM	291	94																
1:45 AM	340	90												1	1			
2:00 AM	361	94																
2:15 AM	342	78																
2:30 AM	354	73																
2:45 AM	502	80			1					1				1				
3:00 AM	573	85															1	1
3:15 AM	656	102	1						1	1								
3:30 AM	756	112										1	1					
3:45 AM	773	170			1	1				1	1			1	1			
4:00 AM	945	198					1	1									1	1
4:15 AM	1048	233	1	1					1	1								
4:30 AM	1247	259										1	1					
4:45 AM	1535	241			1	1					1	1		1	1			
5:00 AM	1915	297					1	1									1	1
5:15 AM	2138	304	1	1					1	1								
5:30 AM	2266	323										1	1					
5:45 AM	2327	341			1	1				1	1			1	1			
6:00 AM	2355	338					1	1									1	1
6:15 AM	2331	372	1	1					1	1								
6:30 AM	2324	369										1	1					
6:45 AM	2257	361			1	1				1	1			1	1			
7:00 AM	2167	349					1	1									1	1
7:15 AM	2187	308	1	1					1	1								
7:30 AM	2109	278										1	1					
7:45 AM	1940	265			1	1					1	1		1	1			
8:00 AM	1707	230					1	1									1	1
8:15 AM	1583	232	1	1					1	1								
8:30 AM	1475	241										1	1					
8:45 AM	1405	254			1	1				1	1			1	1			
9:00 AM	1324	275					1	1									1	1
9:15 AM	1267	272	1	1					1	1								
9:30 AM	1253	277										1	1					
9:45 AM	1245	262			1	1					1	1		1	1			

10:00 AM	1260	266					1	1									1	1
10:15 AM	1351	295	1	1					1	1								
10:30 AM	1410	299										1	1					
10:45 AM	1489	332			1	1				1	1			1	1			
11:00 AM	1550	356					1	1									1	1
11:15 AM	1590	366	1	1					1	1								
11:30 AM	1627	403										1	1					
11:45 AM	1636	396			1	1					1	1			1	1		
12:00 PM	1593	402					1	1									1	1
12:15 PM	1549	372	1	1					1	1								
12:30 PM	1567	331										1	1					
12:45 PM	1598	337			1	1					1	1			1	1		
1:00 PM	1724	343					1	1									1	1
1:15 PM	1776	410	1	1					1	1								
1:30 PM	1823	472										1	1					
1:45 PM	1994	539			1	1					1	1			1	1		
2:00 PM	2098	568					1	1									1	1
2:15 PM	2218	583	1	1					1	1								
2:30 PM	2340	552										1	1					
2:45 PM	2407	550			1	1					1	1			1	1		
3:00 PM	2446	536					1	1									1	1
3:15 PM	2431	527	1	1					1	1								
3:30 PM	2370	546										1	1					
3:45 PM	2391	528			1	1					1	1			1	1		
4:00 PM	2369	538					1	1									1	1
4:15 PM	2413	491	1	1					1	1								
4:30 PM	2345	431										1	1					
4:45 PM	2094	414			1	1					1	1			1	1		
5:00 PM	1907	373					1	1									1	1
5:15 PM	1655	367	1	1					1	1								
5:30 PM	1532	363										1	1					
5:45 PM	1407	290			1	1					1	1			1	1		
6:00 PM	1269	271					1	1									1	1
6:15 PM	1147	238	1	1					1	1								
6:30 PM	1028	215										1	1					
6:45 PM	914	197			1	1					1	1			1	1		
7:00 PM	820	183															1	1
7:15 PM	799	183	1	1					1	1								
7:30 PM	809	171										1	1					
7:45 PM	779	173			1	1					1	1			1	1		
8:00 PM	769	176															1	1
8:15 PM	744	167	1	1					1	1								
8:30 PM	687	177																
8:45 PM	739	164			1	1					1	1	1	1	1	1		
9:00 PM	733	140															1	1
9:15 PM	712	165	1	1					1	1								
9:30 PM	693	176																
9:45 PM	636	194			1	1					1	1			1	1		
HOURS MET			20	19	22	21	15	15	20	20	21	20	18	18	23	22	21	21
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

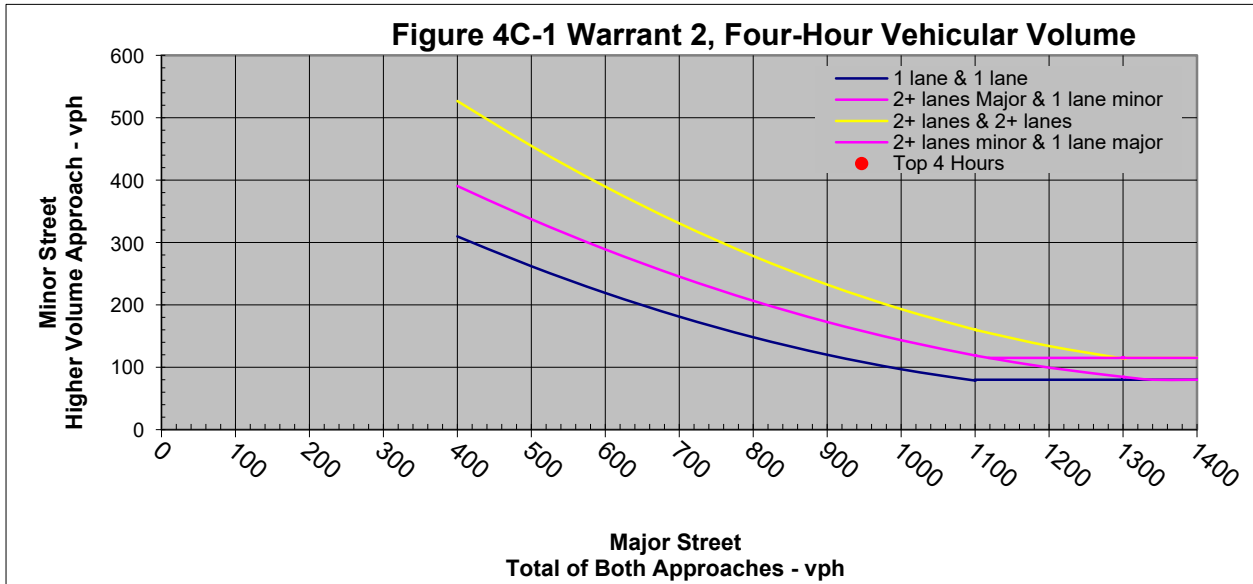
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	15
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	20
Minor Street: 1 Lane		

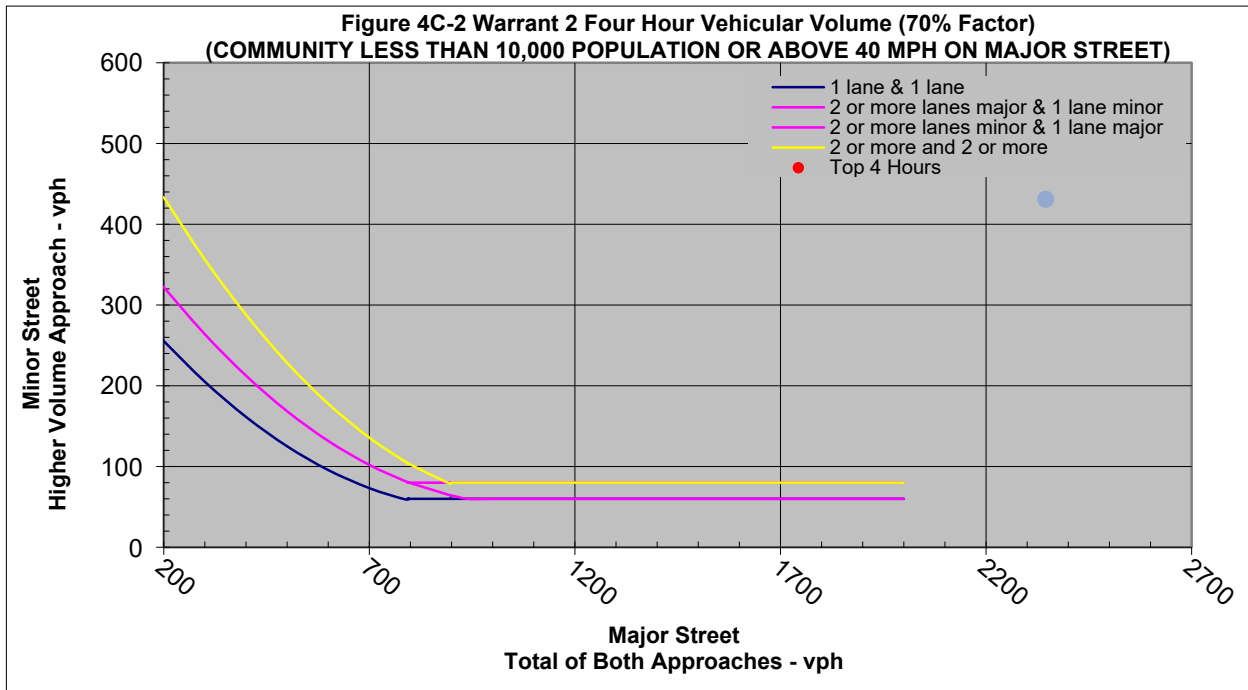
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Rohr Road					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	735	1620	338	287	2355	338	Met	
6:15 AM	744	1587	372	298	2331	372		
6:30 AM	792	1532	369	324	2324	369		Met
6:45 AM	791	1466	361	298	2257	361		
7:00 AM	725	1442	349	293	2167	349	Met	
7:15 AM	714	1473	308	281	2187	308		
7:30 AM	640	1469	278	263	2109	278		Met
7:45 AM	565	1375	265	241	1940	265		
8:00 AM	522	1185	229	230	1707	230	Met	
8:15 AM	506	1077	220	232	1583	232		
8:30 AM	526	949	241	230	1475	241		Met
8:45 AM	505	900	254	245	1405	254		
9:00 AM	490	834	275	261	1324	275	Met	
9:15 AM	471	796	271	272	1267	272		
9:30 AM	454	799	277	257	1253	277		Met
9:45 AM	480	765	262	260	1245	262		
10:00 AM	522	738	252	266	1260	266	Met	
10:15 AM	586	765	295	270	1351	295		
10:30 AM	619	791	299	281	1410	299		Met
10:45 AM	641	848	332	316	1489	332		
11:00 AM	662	888	356	316	1550	356	Met	
11:15 AM	697	893	366	350	1590	366		
11:30 AM	733	894	376	403	1627	403		Met
11:45 AM	745	891	372	396	1636	396		
12:00 PM	723	870	361	402	1593	402	Met	
12:15 PM	668	881	342	372	1549	372		
12:30 PM	635	932	330	331	1567	331		Met
12:45 PM	644	954	337	312	1598	337		
1:00 PM	668	1056	343	310	1724	343	Met	
1:15 PM	677	1099	410	307	1776	410		
1:30 PM	747	1076	472	313	1823	472		Met
1:45 PM	844	1150	539	371	1994	539		
2:00 PM	904	1194	568	389	2098	568	Met	
2:15 PM	1040	1178	583	443	2218	583		
2:30 PM	1077	1263	552	465	2340	552		Met
2:45 PM	1115	1292	550	525	2407	550		
3:00 PM	1139	1307	536	529	2446	536	Met	
3:15 PM	1070	1361	527	507	2431	527		
3:30 PM	1027	1343	546	480	2370	546		Met
3:45 PM	1047	1344	528	438	2391	528		
4:00 PM	1059	1310	538	431	2369	538	Met	
4:15 PM	1117	1296	491	428	2413	491		
4:30 PM	1104	1241	431	422	2345	431		Met
4:45 PM	969	1125	414	380	2094	414		
5:00 PM	862	1045	373	341	1907	373	Met	
5:15 PM	722	933	367	305	1655	367		
5:30 PM	645	887	363	279	1532	363		Met
5:45 PM	583	824	290	228	1407	290		
6:00 PM	539	730	271	220	1269	271	Met	
6:15 PM	475	672	238	202	1147	238		
6:30 PM	433	595	215	201	1028	215		Met
6:45 PM	381	533	197	187	914	197		
7:00 PM	352	468	181	183	820	183		
7:15 PM	355	444	135	183	799	183		
7:30 PM	360	449	127	171	809	171		Met
7:45 PM	343	436	127	173	779	173		
8:00 PM	321	448	123	176	769	176		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	2:00 PM	3:00 PM	2098	568
2nd Highest Hour	4:00 PM	5:00 PM	2369	538
3rd Highest Hour	3:00 PM	4:00 PM	2446	536
4th Highest Hour	12:00 PM	1:00 PM	1593	402

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:30 PM	3:30 PM	2340	552
2nd Highest Hour	3:30 PM	4:30 PM	2370	546
3rd Highest Hour	1:30 PM	2:30 PM	1823	472
4th Highest Hour	4:30 PM	5:30 PM	2345	431



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	2:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	3:15 PM
Minor Street:	1 Lane		

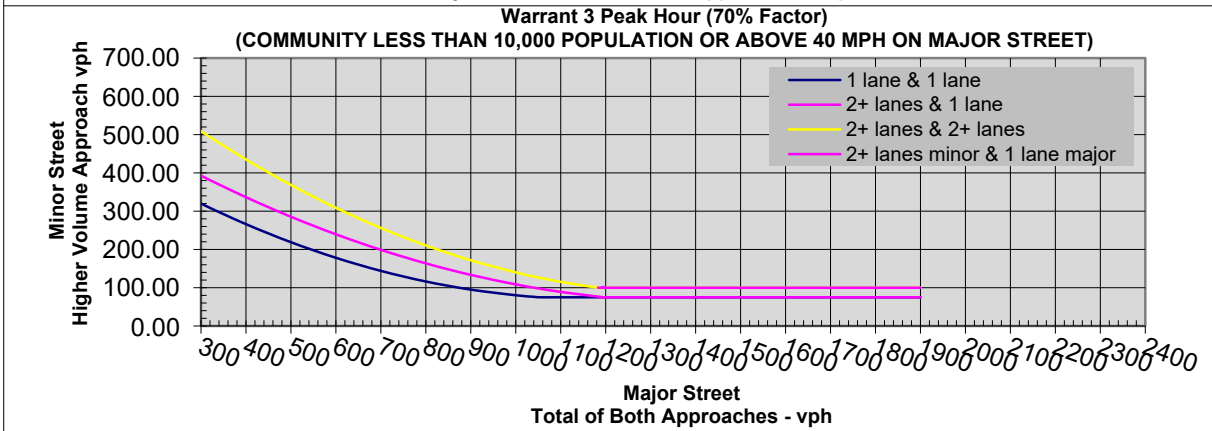
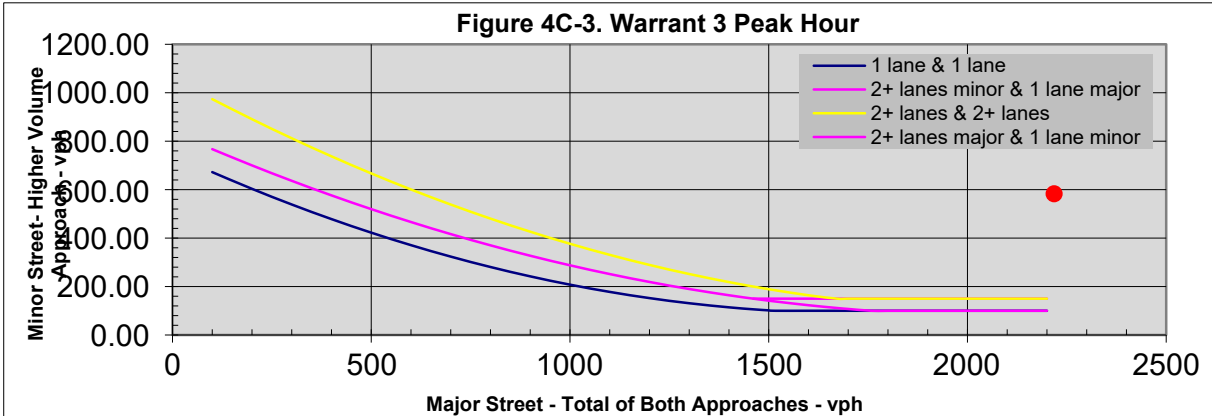
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	2355	338	2693	2980
6:15 AM	2331	372	2703	3001
6:30 AM	2324	369	2693	3017
6:45 AM	2257	361	2618	2916
7:00 AM	2167	349	2516	2809
7:15 AM	2187	308	2495	2776
7:30 AM	2109	278	2387	2650
7:45 AM	1940	265	2205	2446
8:00 AM	1707	230	1937	2166
8:15 AM	1583	232	1815	2035
8:30 AM	1475	241	1716	1946
8:45 AM	1405	254	1659	1904
9:00 AM	1324	275	1599	1860
9:15 AM	1267	272	1539	1810
9:30 AM	1253	277	1530	1787
9:45 AM	1245	262	1507	1767
10:00 AM	1260	266	1526	1778
10:15 AM	1351	295	1646	1916
10:30 AM	1410	299	1709	1990
10:45 AM	1489	332	1821	2137
11:00 AM	1550	356	1906	2222
11:15 AM	1590	366	1956	2306
11:30 AM	1627	403	2030	2406
11:45 AM	1636	396	2032	2404
12:00 PM	1593	402	1995	2356
12:15 PM	1549	372	1921	2263
12:30 PM	1567	331	1898	2228
12:45 PM	1598	337	1935	2247
1:00 PM	1724	343	2067	2377
1:15 PM	1776	410	2186	2493
1:30 PM	1823	472	2295	2608
1:45 PM	1994	539	2533	2904
2:00 PM	2098	568	2666	3055
2:15 PM	2218	583	2801	3244
2:30 PM	2340	552	2892	3357
2:45 PM	2407	550	2957	3482
3:00 PM	2446	536	2982	3511
3:15 PM	2431	527	2958	3465
3:30 PM	2370	546	2916	3396
3:45 PM	2391	528	2919	3357
4:00 PM	2369	538	2907	3338
4:15 PM	2413	491	2904	3332
4:30 PM	2345	431	2776	3198
4:45 PM	2094	414	2508	2888
5:00 PM	1907	373	2280	2621
5:15 PM	1655	367	2022	2327
5:30 PM	1532	363	1895	2174
5:45 PM	1407	290	1697	1925
6:00 PM	1269	271	1540	1760
6:15 PM	1147	238	1385	1587
6:30 PM	1028	215	1243	1444
6:45 PM	914	197	1111	1298
7:00 PM	820	183	1003	1184
7:15 PM	799	183	982	1117
7:30 PM	809	171	980	1107
7:45 PM	779	173	952	1079
8:00 PM	769	176	945	1068

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
2218	583	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date:
 Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

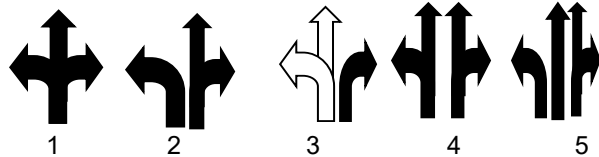
Number of Thru Lanes on Each Major Street Approach: LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration: E-Bound
 W-Bound



Number of Thru Lanes on Each Minor Street Approach: LANE(S)
 Apply Right Turn Lane Reduction*:

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> </table>				Peak Hour	3:15 PM	4:15 PM
Peak Hour						
3:15 PM						
4:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="float: right; border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">6:30 AM</td></tr> <tr><td style="text-align: center;">7:30 AM</td></tr> </table>				Peak Hour	6:30 AM	7:30 AM
Peak Hour						
6:30 AM						
7:30 AM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						NOTES:					
	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total	Right	Thru	Left	U-Turn	Peds	App Total						
							Westbound						Northbound						Eastbound											
12:00 AM	2	33	1	0	0	36	8	0	1	0	0	9	0	74	1	0	0	75	18	8	56	0	0	82	8	0	0	0	0	8
12:15 AM	4	22	2	0	0	28	3	0	0	0	0	3	0	46	2	0	0	48	1	0	7	0	0	8	7	0	0	0	0	7
12:30 AM	6	20	4	0	0	30	6	0	0	0	0	6	0	25	2	0	0	27	0	0	7	0	0	7	1	0	0	0	0	1
12:45 AM	5	26	4	0	0	35	2	0	0	0	0	2	0	20	1	0	0	21	1	0	0	0	0	1	0	0	0	0	0	0
Hourly Total	13	111	11	0	0	135	19	0	1	0	0	20	0	165	6	0	0	171	20	8	70	0	0	98	17	0	0	0	0	17
1:00 AM	2	30	10	0	0	42	21	0	0	0	0	21	0	23	0	0	0	23	1	0	2	0	0	3	3	0	0	0	0	3
1:15 AM	2	16	2	0	0	20	2	0	0	0	0	2	0	25	0	0	0	25	1	0	7	0	0	8	2	0	0	0	0	2
1:30 AM	1	31	1	0	0	33	1	1	0	0	0	2	0	23	2	0	0	25	0	0	0	0	0	0	25	0	0	0	0	25
1:45 AM	1	14	1	0	0	16	1	0	0	0	0	1	0	35	0	0	0	35	0	0	2	0	0	2	0	0	0	0	0	0
Hourly Total	6	91	14	0	0	111	25	1	0	0	0	26	0	106	2	0	0	108	2	0	11	0	0	13	10	0	0	0	0	10
2:00 AM	4	11	4	0	0	19	5	0	0	0	0	5	0	54	1	0	0	55	1	0	4	0	0	5	5	0	0	0	0	5
2:15 AM	1	23	1	0	0	25	2	0	0	0	0	2	0	20	1	0	0	21	4	0	12	0	0	16	3	0	0	0	0	3
2:30 AM	4	16	0	0	0	20	0	0	0	0	0	0	0	15	0	0	0	15	5	6	62	0	0	73	1	0	0	0	0	1
2:45 AM	0	30	1	0	0	31	3	0	0	0	0	3	0	15	1	0	0	16	1	1	4	0	0	6	6	0	0	0	0	6
Hourly Total	9	80	6	0	0	95	10	0	0	0	0	10	0	104	3	0	0	107	11	7	82	0	0	100	10	0	0	0	0	10
3:00 AM	4	37	2	0	0	43	6	1	0	0	0	7	0	21	2	0	0	23	2	0	1	0	0	3	3	0	0	0	0	3
3:15 AM	4	36	1	0	0	41	3	0	0	0	0	3	2	16	1	0	0	19	1	0	12	0	0	13	1	0	0	0	0	1
3:30 AM	6	43	2	0	0	51	2	0	0	0	0	2	0	115	4	0	0	119	6	2	56	0	0	64	1	0	0	0	0	1
3:45 AM	10	59	2	0	0	71	0	0	0	0	0	0	0	38	0	0	0	38	5	0	8	0	0	13	1	0	0	0	0	1
Hourly Total	24	175	7	0	0	206	11	1	0	0	0	12	2	190	7	0	0	199	14	2	77	0	0	93	10	0	0	0	0	10
4:00 AM	9	59	5	0	0	73	0	0	0	0	0	0	0	65	4	0	0	69	0	0	4	0	0	4	5	0	0	0	0	5
4:15 AM	23	48	9	0	0	80	0	0	0	0	0	0	1	58	4	0	0	63	0	0	5	0	0	5	8	0	0	0	0	8
4:30 AM	52	86	23	0	0	161	0	0	0	0	0	0	0	62	12	0	0	74	0	1	7	0	0	8	12	0	0	0	0	12
4:45 AM	85	79	57	0	0	221	0	3	0	0	0	3	2	46	15	0	0	63	0	1	11	0	0	12	12	0	0	0	0	12
Hourly Total	169	272	94	0	0	535	0	3	0	0	0	3	3	231	35	0	0	269	0	2	27	0	0	29	24	0	0	0	0	24
5:00 AM	16	69	17	0	0	102	5	16	2	0	0	20	5	70	4	0	0	79	1	0	10	0	0	11	12	0	0	0	0	12
5:15 AM	23	128	36	0	0	187	6	2	1	0	0	9	5	65	10	0	0	80	1	0	13	0	0	14	19	0	0	0	0	19
5:30 AM	49	167	58	0	0	274	17	1	2	0	0	20	7	107	16	0	0	130	9	1	2	0	0	12	23	0	0	0	0	23
5:45 AM	97	210	84	0	0	391	12	7	0	0	0	19	5	107	63	0	0	145	11	4	12	0	0	27	27	0	0	0	0	27
Hourly Total	185	574	195	0	0	854	53	12	3	0	0	58	22	312	63	0	0	387	14	7	41	0	0	62	82	0	0	0	0	82
6:00 AM	22	135	81	0	0	238	20	3	1	0	0	24	11	118	16	0	0	145	7	2	14	0	0	23	25	0	0	0	0	25
6:15 AM	54	165	38	0	0	257	7	5	0	0	0	12	9	117	22	0	0	148	5	4	16	0	0	25	23	0	0	0	0	23
6:30 AM	69	168	22	0	0	259	8	7	0	0	0	15	6	199	19	0	0	224	2	0	14	0	0	16	25	0	0	0	0	25
6:45 AM	73	211	39	0	0	323	1	7	1	0	0	9	5	222	15	0	0	242	2	1	13	0	0	16	25	0	0	0	0	25
Hourly Total	218	679	180	0	0	1077	36	22	2	0	0	60	31	656	72	0	0	759	16	7	57	0	0	80	100	0	0	0	0	100
7:00 AM	37	142	14	0	0	193	6	1	0	0	0	7	6	178	9	0	0	193	5	0	12	0	0	17	18	0	0	0	0	18
7:15 AM	39	185	22	0	0	246	8	2	1	0	0	11	6	179	6	0	0	191	1	0	7	0	0	8	17	0	0	0	0	17
7:30 AM	33	163	37	0	0	233	9	5	1	0	0	15	5	181	4	0	0	190	6	0	7	0	0	13	13	0	0	0	0	13
7:45 AM	53	205	46	0	0	304	6	5	1	0	0	12	5	159	5	0	0	169	1	4	7	0	0	12	12	0	0	0	0	12
Hourly Total	162	656	119	0	0	976	29	13	3	0	0	45	22	697	24	0	0	743	13	4	33	0	0	50	52	0	0	0	0	52
8:00 AM	42	157	47	0	0	246	7	2	0	0	0	9	5	155	9	0	0	169	0	1	6	0	0	7	27	0	0	0	0	27
8:15 AM	38	138	37	0	0	219	9	3	0	0	0	12	10	94	6	0	0	110	7	2	1	0	0	10	17	0	0	0	0	17
8:30 AM	30	130	21	0	0	181	3	1	0	0	0	4	2	121	4	0	0	127	8	1	18	0	0	27	17	0	0	0	0	17
8:45 AM	32	143	32	0	0	207	5	3	1	0	0	9	4	104	5	0	0	113	5	0	8	0	0	13	27	0	0	0	0	27
Hourly Total	148	568	137	0	0	853	24	9	1	0	0	34	21	474	24	0	0	519	20	4	40	0	0	84	100	0	0	0	0	100
9:00 AM	31	123	11	0	0	165	9	3	5	1	0	14	6	117	9	0	0	132	7	2	1	0	0	10	24	0	0	0	0	24
9:15 AM	20	121	11	0	0	152	6	0	2	0	0	8	5	105	2	0	0	112	8	5	19	0	0	32	12	0	0	0	0	12
9:30 AM	32	121	7	0	0	160	9	3	1	0	0	13	6	89	6	0	0	101	2	1	12	0	0	15	12	0	0	0	0	12
9:45 AM	31	136	15	0	0	182	2	0	0	0	0	2	0	99	2	0	0	101	7	0	11	0	0	18	12	0	0	0	0	12
Hourly Total	113	501	44	0	0	658	26	3	4	0	0	37	17	406	21	0	0	444	18	7	58	0	0	83	62	0	0	0	0	62
10:00 AM	11	120	12	0	0	143	2	0	0	0	0	2	4	107	7	0	0	118	8	4	11	0	0	23	23	0	0	0	0	23
10:15 AM	14	93	10	0	0	117	0	0	2	0	0	2	2	97	4	0	0	103	0	1	18	0	0	19	26	0	0	0	0	26
10:30 AM	16	104	12	0	0	132	2	0	0	0	0	2	9	106	2	0	0	117	1	2	23	0	0	26	26	0	0	0	0	26
10:45 AM	14	122	10	0	0	146	6	2	2	0	0	10	4	131	2	0	0	137	4	0	17	0	0	21	21	0	0	0	0	21
Hourly Total	55	439	44	0	0	538	10	2	4	0	0	16	19	441	15	0	0	475	13	7	69	0	0	89	100	0	0	0	0	100
11:00 AM	27	121	12	0	0	160	15	1	0	0	0	16	10	142	6	0	0	158	13	1	28	0	0	42	42	0	0	0		

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
			Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	306	98																
12:15 AM	260	32																
12:30 AM	229	31																
12:45 AM	224	27																
1:00 AM	219	26																
1:15 AM	228	15																
1:30 AM	229	23																
1:45 AM	206	96																
2:00 AM	202	100																
2:15 AM	194	98																
2:30 AM	208	95																
2:45 AM	343	86													1	1		
3:00 AM	405	93																
3:15 AM	481	94			1					1								
3:30 AM	564	86															1	1
3:45 AM	629	30	1												1			
4:00 AM	804	29						1				1						
4:15 AM	843	37			1					1								
4:30 AM	967	46				1											1	1
4:45 AM	1099	52	1											1				
5:00 AM	1351	68						1	1			1	1					
5:15 AM	1553	73			1					1								
5:30 AM	1691	84				1	1										1	1
5:45 AM	1807	91	1											1	1			
6:00 AM	1836	80						1	1			1	1					
6:15 AM	1839	74			1					1								
6:30 AM	1871	57				1											1	1
6:45 AM	1811	54	1											1				
7:00 AM	1719	50						1				1						
7:15 AM	1748	47			1					1								
7:30 AM	1640	49				1											1	1
7:45 AM	1525	63	1											1				
8:00 AM	1372	64						1	1			1	1					
8:15 AM	1253	81			1					1								
8:30 AM	1188	96				1	1										1	1
8:45 AM	1141	84	1											1	1			
9:00 AM	1102	83						1	1			1	1					
9:15 AM	1067	82			1					1								
9:30 AM	1023	69				1											1	1
9:45 AM	1011	80	1											1				

10:00 AM	1013	89							1	1			1	1				
10:15 AM	1070	108			1	1					1							
10:30 AM	1135	114					1	1								1	1	
10:45 AM	1179	120	1											1	1			
11:00 AM	1221	127							1	1			1	1				
11:15 AM	1247	137			1	1					1	1						
11:30 AM	1302	135					1	1								1	1	
11:45 AM	1316	128	1											1	1			
12:00 PM	1286	119							1	1			1	1				
12:15 PM	1234	96			1						1							
12:30 PM	1232	100					1	1								1	1	
12:45 PM	1248	112	1											1	1			
1:00 PM	1302	123							1	1			1	1				
1:15 PM	1347	137			1	1					1	1						
1:30 PM	1380	156					1	1								1	1	
1:45 PM	1484	195	1	1										1	1			
2:00 PM	1603	224							1	1			1	1				
2:15 PM	1662	327			1	1					1	1						
2:30 PM	1746	300					1	1								1	1	
2:45 PM	1775	435	1	1										1	1			
3:00 PM	1764	460							1	1			1	1				
3:15 PM	1768	476			1	1					1	1						
3:30 PM	1709	435					1	1								1	1	
3:45 PM	1773	295	1	1										1	1			
4:00 PM	1805	284							1	1			1	1				
4:15 PM	1795	271			1	1					1	1						
4:30 PM	1714	232					1	1								1	1	
4:45 PM	1513	170	1	1										1	1			
5:00 PM	1329	151							1	1			1	1				
5:15 PM	1197	118			1	1					1							
5:30 PM	1129	89					1	1								1	1	
5:45 PM	1032	83	1											1				
6:00 PM	926	88							1	1			1	1				
6:15 PM	846	73			1						1							
6:30 PM	766	62														1	1	
6:45 PM	686	60	1											1				
7:00 PM	619	50																
7:15 PM	622	56			1						1							
7:30 PM	628	54														1	1	
7:45 PM	636	45	1						1					1				
8:00 PM	654	37																
8:15 PM	621	51			1						1							
8:30 PM	580	55														1	1	
8:45 PM	609	62	1											1				
9:00 PM	592	69																
9:15 PM	584	58			1						1							
9:30 PM	569	56														1	1	
9:45 PM	516	54												1				
HOURS MET			18	4	20	7	14	10	16	13	19	5	15	13	21	10	19	19
WARRANT SATISFIED?			NO		NO		YES		YES		NO				YES			

Warrant Met: **Yes**

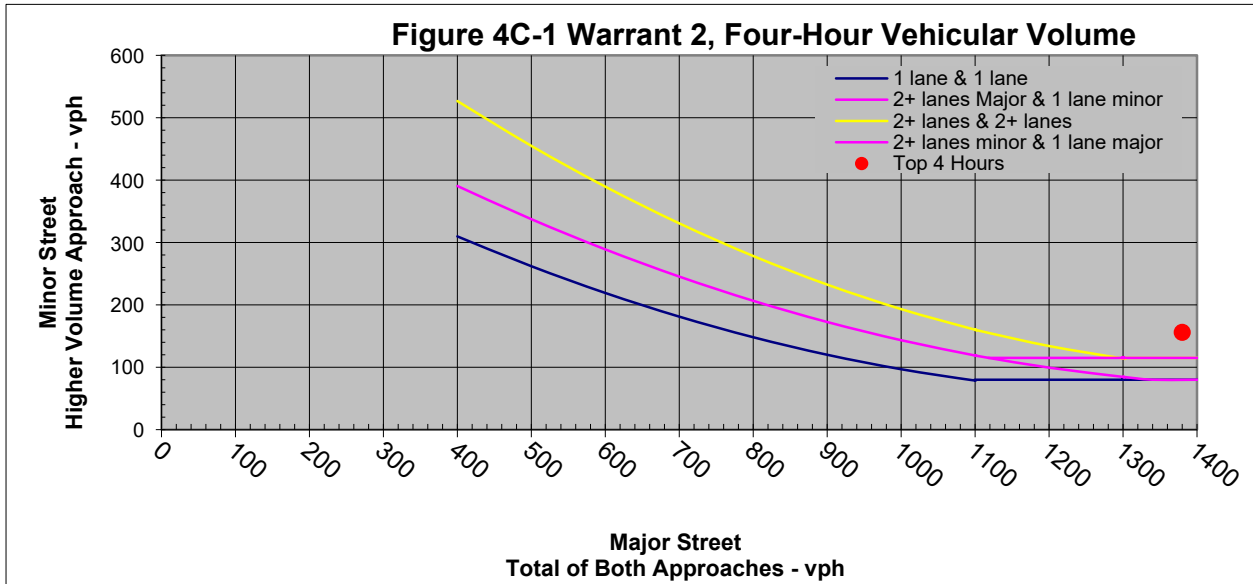
Notes: Condition B was met. Condition B (70%) was met. Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	8
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	13
Minor Street: 1 Lane		

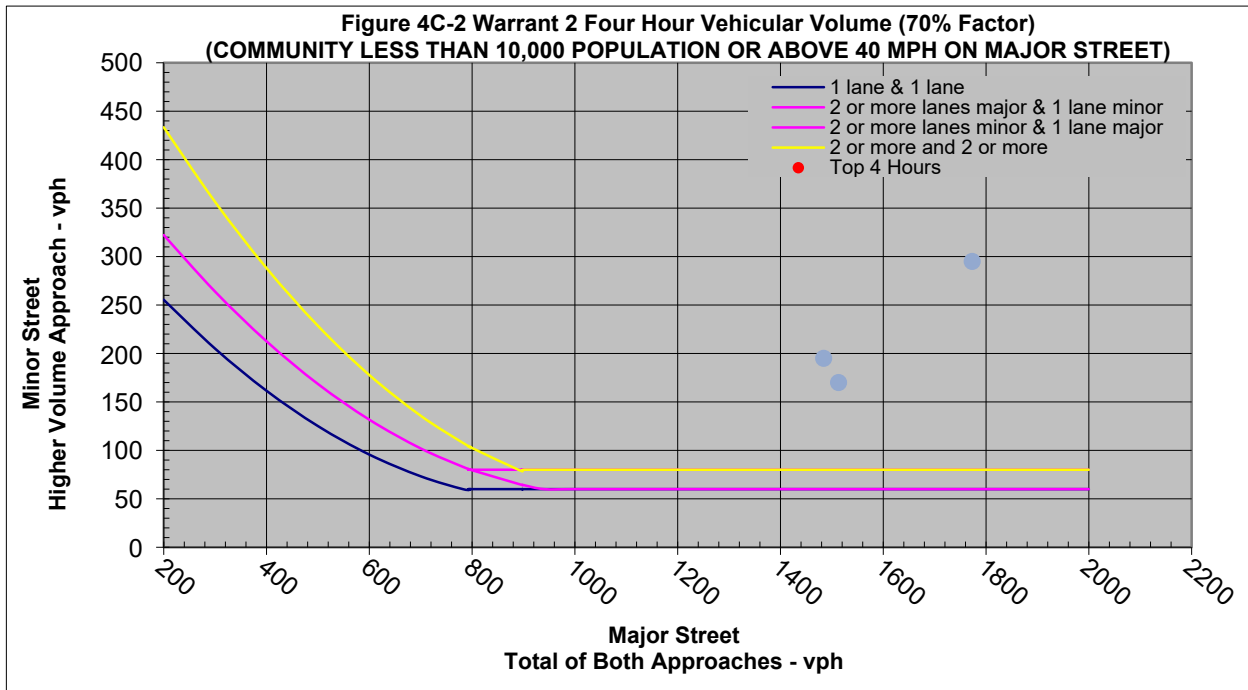
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - Spiegel Drive					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	759	1077	60	80	1836	80		Met
6:15 AM	807	1032	43	74	1839	74		
6:30 AM	850	1021	42	57	1871	57		
6:45 AM	816	995	42	54	1811	54		
7:00 AM	743	976	45	50	1719	50		
7:15 AM	719	1029	47	40	1748	47		
7:30 AM	638	1002	48	49	1640	49		
7:45 AM	575	950	37	63	1525	63		Met
8:00 AM	519	853	34	64	1372	64		
8:15 AM	482	771	39	81	1253	81		
8:30 AM	484	704	35	96	1188	96		
8:45 AM	458	683	44	84	1141	84		Met
9:00 AM	444	658	37	83	1102	83		
9:15 AM	430	637	25	82	1067	82		
9:30 AM	421	602	19	69	1023	69		
9:45 AM	437	574	8	80	1011	80		Met
10:00 AM	475	538	16	89	1013	89		
10:15 AM	515	555	30	108	1070	108		
10:30 AM	534	601	47	114	1135	114	Met	
10:45 AM	562	617	54	120	1179	120		Met
11:00 AM	586	635	61	127	1221	127		
11:15 AM	598	649	80	137	1247	137		
11:30 AM	644	658	73	135	1302	135	Met	
11:45 AM	638	678	81	128	1316	128		Met
12:00 PM	612	674	85	119	1286	119		
12:15 PM	581	653	69	96	1234	96		
12:30 PM	577	655	77	100	1232	100	Met	
12:45 PM	591	657	73	112	1248	112		Met
1:00 PM	607	695	65	123	1302	123		
1:15 PM	623	724	63	137	1347	137		
1:30 PM	620	760	98	156	1380	156	Met	
1:45 PM	657	827	154	195	1484	195		Met
2:00 PM	685	918	224	200	1603	224		
2:15 PM	722	940	327	199	1662	327		
2:30 PM	764	982	300	279	1746	300	Met	
2:45 PM	787	988	260	435	1775	435		Met
3:00 PM	770	994	208	460	1764	460		
3:15 PM	764	1004	119	476	1768	476		
3:30 PM	708	1001	107	435	1709	435	Met	
3:45 PM	764	1009	97	295	1773	295		Met
4:00 PM	813	992	94	284	1805	284		
4:15 PM	834	961	147	271	1795	271		
4:30 PM	824	890	164	232	1714	232	Met	
4:45 PM	718	795	164	170	1513	170		Met
5:00 PM	639	690	151	145	1329	151		
5:15 PM	548	649	99	118	1197	118		
5:30 PM	514	615	88	89	1129	89		
5:45 PM	461	571	83	72	1032	83		Met
6:00 PM	411	515	88	69	926	88		
6:15 PM	375	471	73	61	846	73		
6:30 PM	346	420	62	52	766	62		
6:45 PM	299	387	60	48	686	60		
7:00 PM	276	343	50	36	619	50		
7:15 PM	288	334	56	35	622	56		
7:30 PM	287	341	54	35	628	54		
7:45 PM	302	334	45	36	636	45		
8:00 PM	290	364	37	37	654	37		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:30 PM	4:30 PM	1709	435
2nd Highest Hour	2:30 PM	3:30 PM	1746	300
3rd Highest Hour	4:30 PM	5:30 PM	1714	232
4th Highest Hour	1:30 PM	2:30 PM	1380	156

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	2:45 PM	3:45 PM	1775	435
2nd Highest Hour	3:45 PM	4:45 PM	1773	295
3rd Highest Hour	1:45 PM	2:45 PM	1484	195
4th Highest Hour	4:45 PM	5:45 PM	1513	170



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	4:15 PM
Minor Street:	1 Lane		

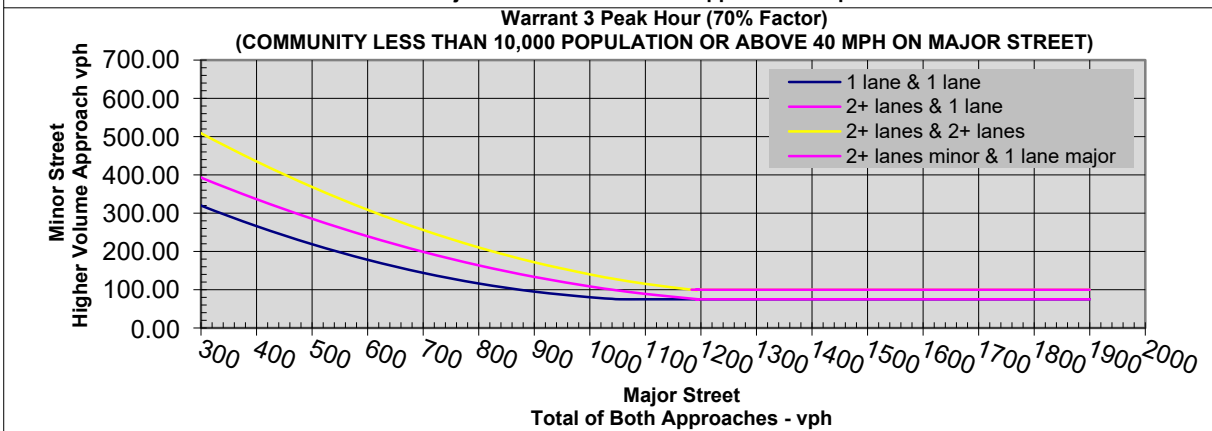
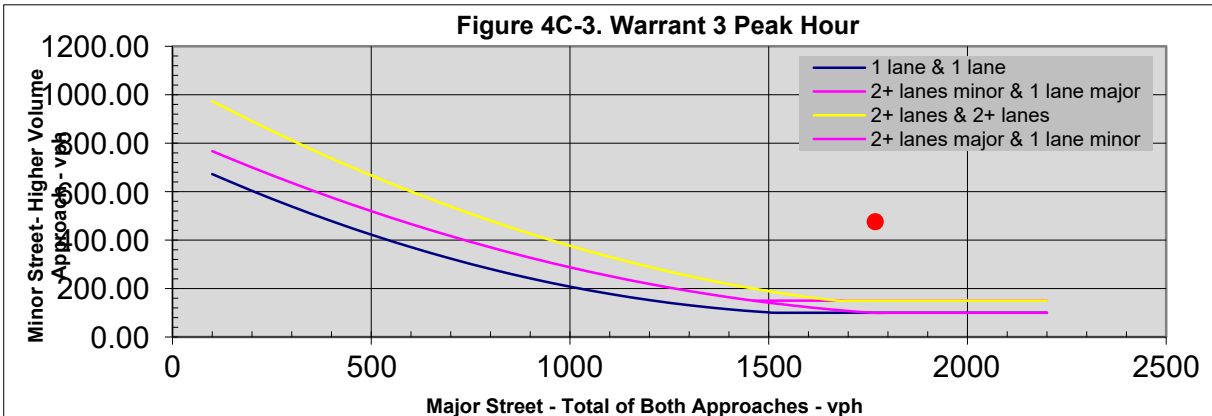
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1836	80	1916	1976
6:15 AM	1839	74	1913	1956
6:30 AM	1871	57	1928	1970
6:45 AM	1811	54	1865	1907
7:00 AM	1719	50	1769	1814
7:15 AM	1748	47	1795	1835
7:30 AM	1640	49	1689	1737
7:45 AM	1525	63	1588	1625
8:00 AM	1372	64	1436	1470
8:15 AM	1253	81	1334	1373
8:30 AM	1188	96	1284	1319
8:45 AM	1141	84	1225	1269
9:00 AM	1102	83	1185	1222
9:15 AM	1067	82	1149	1174
9:30 AM	1023	69	1092	1111
9:45 AM	1011	80	1091	1099
10:00 AM	1013	89	1102	1118
10:15 AM	1070	108	1178	1208
10:30 AM	1135	114	1249	1296
10:45 AM	1179	120	1299	1353
11:00 AM	1221	127	1348	1409
11:15 AM	1247	137	1384	1464
11:30 AM	1302	135	1437	1510
11:45 AM	1316	128	1444	1525
12:00 PM	1286	119	1405	1490
12:15 PM	1234	96	1330	1399
12:30 PM	1232	100	1332	1409
12:45 PM	1248	112	1360	1433
1:00 PM	1302	123	1425	1490
1:15 PM	1347	137	1484	1547
1:30 PM	1380	156	1536	1634
1:45 PM	1484	195	1679	1833
2:00 PM	1603	224	1827	2027
2:15 PM	1662	327	1989	2188
2:30 PM	1746	300	2046	2325
2:45 PM	1775	435	2210	2470
3:00 PM	1764	460	2224	2432
3:15 PM	1768	476	2244	2363
3:30 PM	1709	435	2144	2251
3:45 PM	1773	295	2068	2165
4:00 PM	1805	284	2089	2183
4:15 PM	1795	271	2066	2213
4:30 PM	1714	232	1946	2110
4:45 PM	1513	170	1683	1847
5:00 PM	1329	151	1480	1625
5:15 PM	1197	118	1315	1414
5:30 PM	1129	89	1218	1306
5:45 PM	1032	83	1115	1187
6:00 PM	926	88	1014	1083
6:15 PM	846	73	919	980
6:30 PM	766	62	828	880
6:45 PM	686	60	746	794
7:00 PM	619	50	669	705
7:15 PM	622	56	678	713
7:30 PM	628	54	682	717
7:45 PM	636	45	681	717
8:00 PM	654	37	691	728

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1768	476	100	75

STUDY AND ANALYSIS INFORMATION

Municipality:	ODOT	Traffic Volumes Obtained By:	Smart Services
County:	Franklin	Analysis Date:	3/17/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	Kimley-Horn
Google map link:	Map		

Analysis Information

Data Collection Date: 8/16/2022
Day of the Week: Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: Alum Creek Drive

Major Street Approach Direction: N-Bound
S-Bound

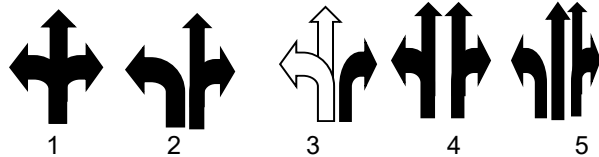
Number of Thru Lanes on Each Major Street Approach: 3 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 55 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR-317

Minor Street Approach Configuration: 5 E-Bound
5 W-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)
Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> <tr><td style="text-align: center;">5:15 PM</td></tr> </table>				Peak Hour	4:15 PM	5:15 PM
Peak Hour						
4:15 PM						
5:15 PM						
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
<table border="1" style="border-collapse: collapse;"> <tr><td style="text-align: center;">Peak Hour</td></tr> <tr><td style="text-align: center;">3:15 PM</td></tr> <tr><td style="text-align: center;">4:15 PM</td></tr> </table>				Peak Hour	3:15 PM	4:15 PM
Peak Hour						
3:15 PM						
4:15 PM						
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

<p>If no warrants are satisfied, additional options may be considered:</p> <p>1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.</p> <p>2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The Modeling and Forecasting Section should provide the projected traffic volumes.</p> <p>3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. Please fill inputs on PHB Score Sheet and submit to ODOT.</p>

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes: Warrants 1, 2, and 3 were met for the intersection.

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		80%		80%		56%		56%	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1			500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1	X		600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	304	69																
12:15 AM	221	69																
12:30 AM	188	59																
12:45 AM	182	62																
1:00 AM	164	82																
1:15 AM	197	73																
1:30 AM	202	70																
1:45 AM	188	56																
2:00 AM	203	44																
2:15 AM	178	45																
2:30 AM	195	66																
2:45 AM	350	86												1	1			
3:00 AM	407	104																
3:15 AM	443	157			1	1												
3:30 AM	458	210																
3:45 AM	402	220												1	1			
4:00 AM	424	241																
4:15 AM	497	211			1	1				1	1							
4:30 AM	631	203	1	1					1	1							1	1
4:45 AM	769	274										1	1	1	1			
5:00 AM	1017	354					1	1										
5:15 AM	1162	401			1	1				1	1							
5:30 AM	1264	433	1	1					1	1							1	1
5:45 AM	1286	403										1	1	1	1			
6:00 AM	1365	360					1	1										
6:15 AM	1399	381			1	1				1	1							
6:30 AM	1480	418	1	1					1	1							1	1
6:45 AM	1586	411										1	1	1	1			
7:00 AM	1513	406					1	1										
7:15 AM	1470	412			1	1				1	1							
7:30 AM	1350	355	1	1					1	1							1	1
7:45 AM	1207	366										1	1	1	1			
8:00 AM	1126	336					1	1										
8:15 AM	1108	287			1	1				1	1							
8:30 AM	1071	281	1	1					1	1							1	1
8:45 AM	1055	264										1	1	1	1			
9:00 AM	1006	293					1	1										
9:15 AM	968	301			1	1				1	1							
9:30 AM	967	279	1	1					1	1							1	1
9:45 AM	948	295										1	1	1	1			

10:00 AM	984	290					1	1										
10:15 AM	1028	322			1	1				1	1							
10:30 AM	1093	348	1	1					1	1						1	1	
10:45 AM	1158	334										1	1	1	1			
11:00 AM	1193	353					1	1										
11:15 AM	1266	379			1	1				1	1							
11:30 AM	1281	402	1	1					1	1						1	1	
11:45 AM	1261	428										1	1	1	1			
12:00 PM	1202	441					1	1										
12:15 PM	1136	426			1	1					1	1						
12:30 PM	1132	398	1	1					1	1						1	1	
12:45 PM	1169	354										1	1	1	1			
1:00 PM	1219	353					1	1										
1:15 PM	1234	388			1	1					1	1						
1:30 PM	1267	394	1	1					1	1						1	1	
1:45 PM	1429	453										1	1	1	1			
2:00 PM	1531	459					1	1										
2:15 PM	1651	474			1	1					1	1						
2:30 PM	1771	469	1	1					1	1						1	1	
2:45 PM	1893	457										1	1	1	1			
3:00 PM	1942	461					1	1										
3:15 PM	1985	450			1	1					1	1						
3:30 PM	1942	457	1	1					1	1						1	1	
3:45 PM	1943	462										1	1	1	1			
4:00 PM	1961	469					1	1										
4:15 PM	1910	516			1	1					1	1						
4:30 PM	1835	512	1	1					1	1						1	1	
4:45 PM	1568	504										1	1	1	1			
5:00 PM	1392	468					1	1										
5:15 PM	1230	397			1	1					1	1						
5:30 PM	1134	380	1	1					1	1						1	1	
5:45 PM	1021	335										1	1	1	1			
6:00 PM	891	325																
6:15 PM	798	315			1	1					1	1						
6:30 PM	732	297	1	1					1	1						1	1	
6:45 PM	662	298												1	1			
7:00 PM	635	278																
7:15 PM	635	280			1	1					1	1						
7:30 PM	608	278	1	1												1	1	
7:45 PM	619	262											1	1				
8:00 PM	625	253																
8:15 PM	621	230			1	1					1	1						
8:30 PM	610	232	1	1												1	1	
8:45 PM	630	204							1	1				1	1			
9:00 PM	607	197																
9:15 PM	587	175			1	1					1	1						
9:30 PM	562	142														1	1	
9:45 PM	511	141												1	1			
HOURS MET			17	17	20	20	13	13	16	16	19	18	14	14	21	21	19	19
WARRANT SATISFIED?			YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

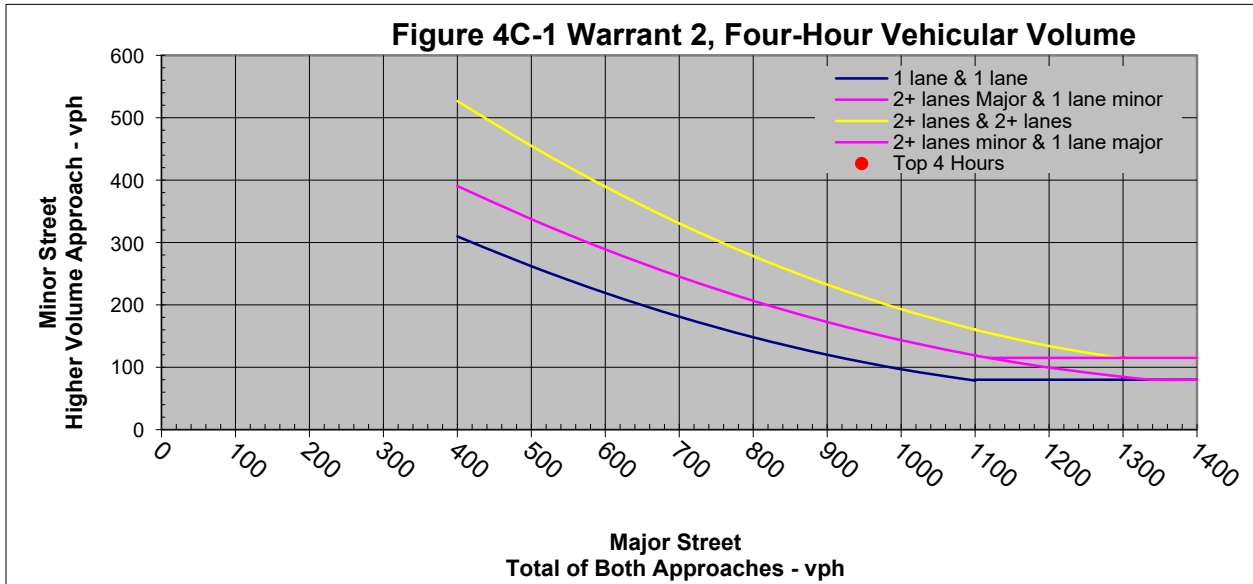
Notes: Condition A was met. Condition B was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	15
Major street: 2 or More Lanes	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	18
Minor Street: 1 Lane		

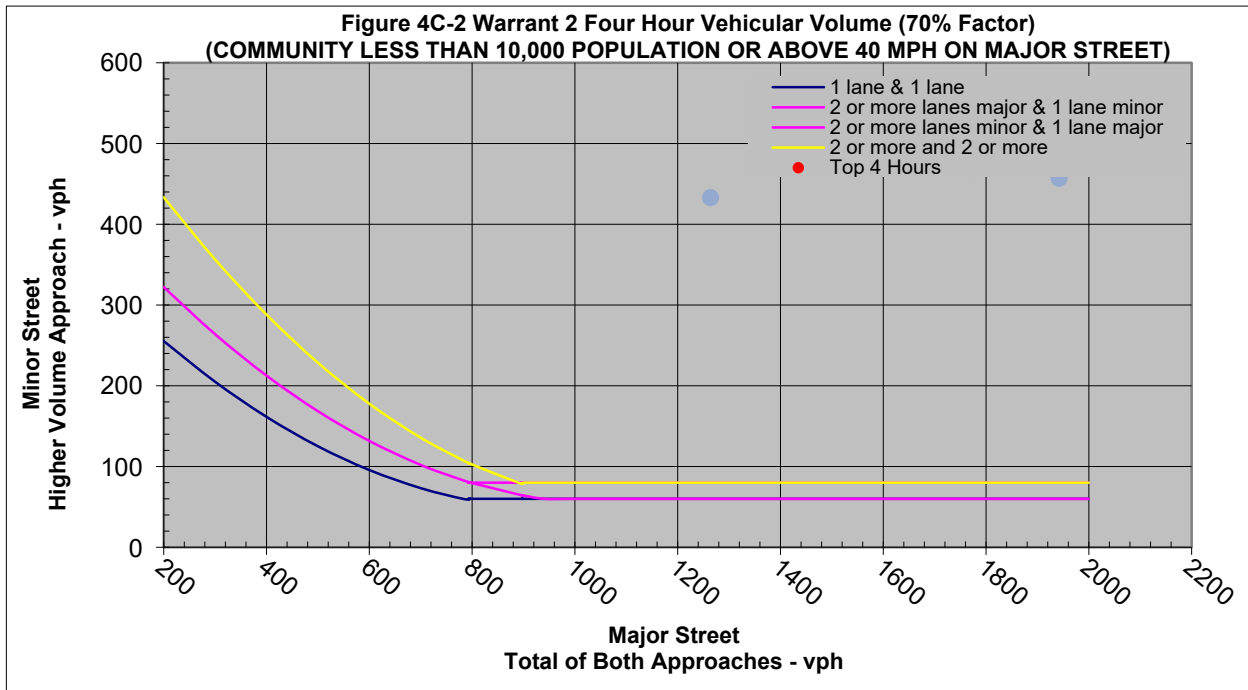
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Major - Alum Creek Drive		Minor - SR-317					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	719	646	360	357	1365	360		
6:15 AM	761	638	355	381	1399	381		
6:30 AM	823	657	341	418	1480	418		Met
6:45 AM	875	711	334	411	1586	411	Met	
7:00 AM	806	707	334	406	1513	406		
7:15 AM	748	722	348	412	1470	412		
7:30 AM	662	688	344	355	1350	355		Met
7:45 AM	581	626	318	366	1207	366	Met	
8:00 AM	550	576	277	336	1126	336		
8:15 AM	539	569	266	287	1108	287		
8:30 AM	522	549	260	281	1071	281		Met
8:45 AM	490	565	264	241	1055	264	Met	
9:00 AM	464	542	293	243	1006	293		
9:15 AM	460	508	301	253	968	301		
9:30 AM	479	488	279	258	967	279		Met
9:45 AM	477	471	289	295	948	295	Met	
10:00 AM	524	460	267	290	984	290		
10:15 AM	563	465	263	322	1028	322		
10:30 AM	602	491	303	348	1093	348		Met
10:45 AM	662	496	318	334	1158	334	Met	
11:00 AM	669	524	353	345	1193	353		
11:15 AM	714	552	379	326	1266	379		
11:30 AM	729	552	402	312	1281	402		Met
11:45 AM	706	555	428	303	1261	428	Met	
12:00 PM	678	524	441	304	1202	441		
12:15 PM	653	483	426	275	1136	426		
12:30 PM	627	505	398	322	1132	398		Met
12:45 PM	664	505	354	331	1169	354	Met	
1:00 PM	704	515	353	328	1219	353		
1:15 PM	683	551	366	388	1234	388		
1:30 PM	701	566	394	379	1267	394		Met
1:45 PM	788	641	453	394	1429	453	Met	
2:00 PM	823	708	459	421	1531	459		
2:15 PM	935	716	474	442	1651	474		
2:30 PM	1008	763	469	445	1771	469		Met
2:45 PM	1051	842	457	443	1893	457	Met	
3:00 PM	1059	883	461	448	1942	461		
3:15 PM	1053	932	450	411	1985	450		
3:30 PM	999	943	457	408	1942	457		Met
3:45 PM	1045	898	462	430	1943	462	Met	
4:00 PM	1073	888	469	429	1961	469		
4:15 PM	1037	873	516	423	1910	516		
4:30 PM	1018	817	512	432	1835	512		Met
4:45 PM	836	732	504	416	1568	504	Met	
5:00 PM	740	652	468	389	1392	468		
5:15 PM	643	587	397	377	1230	397		
5:30 PM	585	549	380	348	1134	380		Met
5:45 PM	525	496	335	328	1021	335	Met	
6:00 PM	450	441	324	325	891	325		
6:15 PM	398	400	305	315	798	315		
6:30 PM	375	357	284	297	732	297		Met
6:45 PM	327	335	272	298	662	298	Met	
7:00 PM	326	309	244	278	635	278		
7:15 PM	334	301	240	280	635	280		
7:30 PM	314	294	227	278	608	278		Met
7:45 PM	323	296	241	262	619	262		
8:00 PM	307	318	241	253	625	253		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	4:45 PM	5:45 PM	1568	504
2nd Highest Hour	3:45 PM	4:45 PM	1943	462
3rd Highest Hour	2:45 PM	3:45 PM	1893	457
4th Highest Hour	1:45 PM	2:45 PM	1429	453

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	4:30 PM	5:30 PM	1835	512
2nd Highest Hour	2:30 PM	3:30 PM	1771	469
3rd Highest Hour	3:30 PM	4:30 PM	1942	457
4th Highest Hour	5:30 AM	6:30 AM	1264	433



Are the requirements for Warrant 2 met?: Yes

OMUTCD WARRANT 3, PEAK HOUR			
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	4:15 PM
Major Street:	2 or More Lanes	Peak Hour End Time	5:15 PM
Minor Street:	1 Lane		

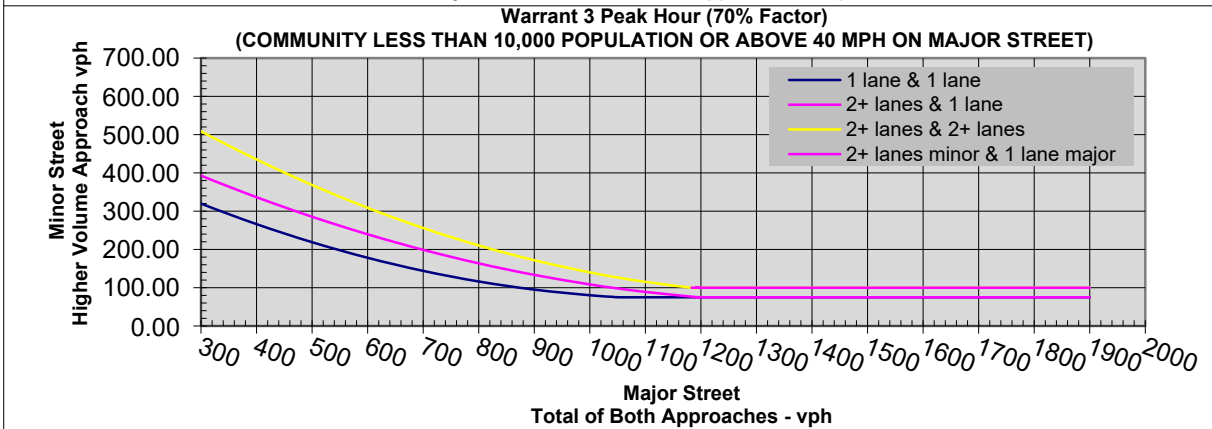
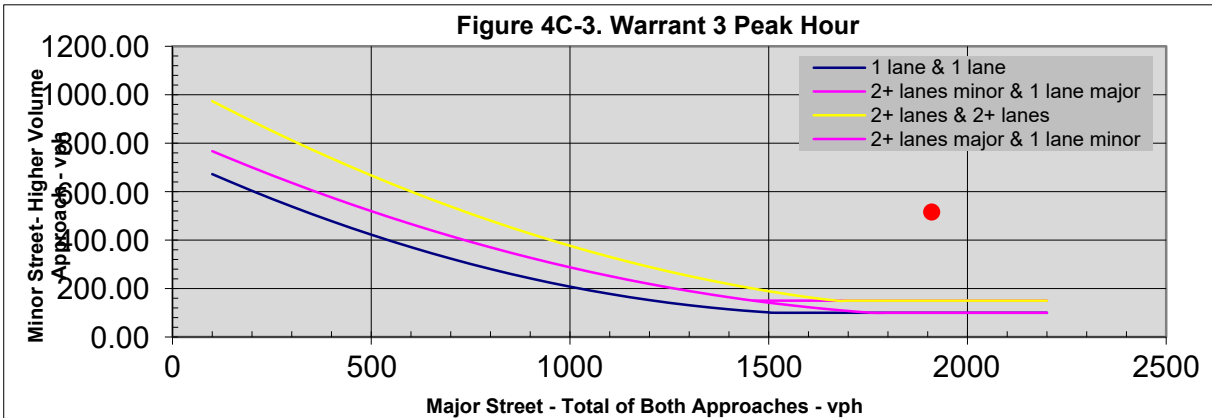
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

**If applicable, attach all supporting calculations and documentation.*

Are the requirements for Warrant 3 met?: **Yes**



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	1365	360	1725	2082
6:15 AM	1399	381	1780	2135
6:30 AM	1480	418	1898	2239
6:45 AM	1586	411	1997	2331
7:00 AM	1513	406	1919	2253
7:15 AM	1470	412	1882	2230
7:30 AM	1350	355	1705	2049
7:45 AM	1207	366	1573	1891
8:00 AM	1126	336	1462	1739
8:15 AM	1108	287	1395	1661
8:30 AM	1071	281	1352	1612
8:45 AM	1055	264	1319	1560
9:00 AM	1006	293	1299	1542
9:15 AM	968	301	1269	1522
9:30 AM	967	279	1246	1504
9:45 AM	948	295	1243	1532
10:00 AM	984	290	1274	1541
10:15 AM	1028	322	1350	1613
10:30 AM	1093	348	1441	1744
10:45 AM	1158	334	1492	1810
11:00 AM	1193	353	1546	1891
11:15 AM	1266	379	1645	1971
11:30 AM	1281	402	1683	1995
11:45 AM	1261	428	1689	1992
12:00 PM	1202	441	1643	1947
12:15 PM	1136	426	1562	1837
12:30 PM	1132	398	1530	1852
12:45 PM	1169	354	1523	1854
1:00 PM	1219	353	1572	1900
1:15 PM	1234	388	1622	1988
1:30 PM	1267	394	1661	2040
1:45 PM	1429	453	1882	2276
2:00 PM	1531	459	1990	2411
2:15 PM	1651	474	2125	2567
2:30 PM	1771	469	2240	2685
2:45 PM	1893	457	2350	2793
3:00 PM	1942	461	2403	2851
3:15 PM	1985	450	2435	2846
3:30 PM	1942	457	2399	2807
3:45 PM	1943	462	2405	2835
4:00 PM	1961	469	2430	2859
4:15 PM	1910	516	2426	2849
4:30 PM	1835	512	2347	2779
4:45 PM	1568	504	2072	2488
5:00 PM	1392	468	1860	2249
5:15 PM	1230	397	1627	2004
5:30 PM	1134	380	1514	1862
5:45 PM	1021	335	1356	1684
6:00 PM	891	325	1216	1540
6:15 PM	798	315	1113	1418
6:30 PM	732	297	1029	1313
6:45 PM	662	298	960	1232
7:00 PM	635	278	913	1157
7:15 PM	635	280	915	1155
7:30 PM	608	278	886	1113
7:45 PM	619	262	881	1122
8:00 PM	625	253	878	1119

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
1910	516	100	75

APPENDIX

I.

Alum Creek Drive Crash Data Table

Crash Data Table

Crash Type	Total Crashes	Total Crashes (%)	Statewide Average (%)
Unknown	2	0.8%	0.28%
Head On	6	2.3%	2.67%
Rear End	82	31.1%	9.11%
Backing	5	1.9%	1.15%
Sideswipe - Meeting	0	0.0%	0.12%
Sideswipe - Passing	61	23.1%	3.93%
Angle	32	12.1%	3.13%
Parked Vehicle	3	1.1%	0.86%
Pedestrian	1	0.4%	0.27%
Animal	0	0.0%	32.25%
Train	0	0.0%	0.02%
Pedalcycles	1	0.4%	0.14%
Other Non-Vehicle	0	0.0%	0.01%
Fixed Object	13	4.9%	36.90%
Other Object	0	0.0%	0.68%
Falling From Or In Vehicle	0	0.0%	0.00%
Overturning	4	1.5%	2.55%
Other Non-Collision	2	0.8%	1.69%
Left Turn	21	8.0%	3.72%
Right Turn	31	11.7%	0.52%
Total Crashes	264		

APPENDIX

J.

Planning Level Cost Estimation

Alum Creek Drive - State Route 317 to Rohr Road

CONSTRUCTION COSTS

Roadway	\$ 1,280,000	Signals	\$ 525,000
Erosion Control	\$ 518,000	Street Lighting	\$ 422,000
Drainage	\$ 656,000	Structures	\$ -
Pavement	\$ 3,635,000	Landscaping	\$ -
Water	\$ -	Miscellaneous	\$ 554,000
Traffic Control	\$ 41,000		
Construction Item Subtotal (rounded)			\$ 7,631,000
Project Scale Factor*	0%	Project Scale Unit Cost Cont.	\$ -
General Contingency	20%	General Contingency	\$ 1,526,200
Inflation Rate**	21.6%	Inflation**	\$ 1,978,000
Year of Estimate/Construction	2024 2028	Subtotal of Construction Costs	\$ 11,135,200

**Smaller projects typically have higher unit costs due to a loss of economies of scale. The Project Scale Factor is a rough adjustment to unit costs provided for projects which are often significantly larger.*

***General inflation rate calculated via ODOT Office of Estimating Business Plan Inflation Calculator*

OTHER PROJECT COSTS

Utility Relocation		\$ 177,858
Right-of-Way		\$ 1,033,000
Environmental	1.5%	\$ 168,000
Engineering	13% of Construction Subtotal	\$ 1,448,000
Construction Observ., Services	7% of Construction Subtotal	\$ 780,000
Subtotal of Other Project Costs		\$ 3,606,858

ESTIMATED TOTAL PROJECT COST	\$ 14,742,058
-------------------------------------	----------------------

Estimate prepared by Stantec Consulting Services

1/24/2024

These cost estimates were developed at a planning level of analysis and many factors, some of which could affect the total project cost, remain unknown at this time. This estimates provides our best judgment of project cost based on the level of analysis (planning leve) by design professionals familiar with the construction industry. Bid item costs are based, in part, on previous bids tabulated by ODOT's Estimator software, and will vary as the Stantec has no control over a contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Stantec cannot and does not guarantee that bids or prices will not vary from this estimate.

Alum Creek Drive - State Route 317 to Rohr Road

Detailed Construction Estimate

Item	Description	Quantity	Unit	Unit Cost	Total
ROADWAY					
201	Clearing & Grubbing	-	Lump	\$ 20,000.00	\$ -
202	Walk Removed		SF	\$ 1.50	\$ -
203	Excavation	18,116.10	CY	\$ 25.00	\$ 452,903
203	Embankment	9,523.54	CY	\$ 25.00	\$ 238,088
	Cut and Reuse as Fill	-	CY	\$ 18.00	\$ -
	Place Excavated Materials as Embankment	-	CY	\$ 15.00	\$ -
204	Subgrade Compaction	31,424	SY	\$ 4.00	\$ 125,697
606	Cable Barrier	-	FT	\$ 15.00	\$ -
607	Fence, Misc.: Wood Fence (fall protection along path)	-	FT	\$ 30.00	\$ -
608	Concrete Walk, 4"	28,971	SF	\$ 10.00	\$ 289,710
608	Concrete Walk, 8"	-	SF	\$ 9.00	\$ -
608	Curb Ramps	8	EA	\$ 1,000.00	\$ 8,000
	Concrete Steps APP	-	SF	\$ 150.00	\$ -
	Brick Walk A.P.P.	-	SF	\$ 23.00	\$ -
609	Curb and Gutter, Type 2	8,255	LF	\$ 20.00	\$ 165,108
622	Concrete Barrier, Single Slope	-	FT	\$ 80.00	\$ -
622	Concrete Barrier End Section	-	EA	\$ 3,000.00	\$ -
	Subtotal				\$ 1,279,506
EROSION CONTROL					
	Temporary Erosion and Sediment Control	5,100	FT	\$ 41.00	\$ 209,100
207	Perimeter Filter Fabric Fence	-	FT	\$ 3.00	\$ -
659	Water	254	M GAL	\$ 100.00	\$ 25,400
659	Topsoil	5,221	CY	\$ 35.00	\$ 182,723
659	Agricultural Lime	10	ACRE	\$ 100.00	\$ 972
659	Commercial Fertilizer	6	TON	\$ 800.00	\$ 5,080
659	Seeding & Mulching	47,033	SY	\$ 2.00	\$ 94,066
	Subtotal				\$ 517,341
DRAINAGE					
611	12" Conduit, Type B	1,240	FT	\$ 130.00	\$ 161,200
611	15" Conduit, Type B	1,200	FT	\$ 130.00	\$ 156,000
611	18" Conduit, Type B	500	FT	\$ 165.00	\$ 82,500
611	24" Conduit, Type B	100	FT	\$ 185.00	\$ 18,500
611	60" Conduit, Type B	0	FT	\$ 825.00	\$ -
611	Catch Basin No. 2-2B	13	EA	\$ 2,100.00	\$ 26,775
611	Catch Basin No.3	2	EA	\$ 2,500.00	\$ 5,000
611	Catch Basin No. 3A	8	EA	\$ 3,200.00	\$ 25,600
611	Manhole No. 3	13	EA	\$ 4,500.00	\$ 57,375
605	4" Base Pipe Underdrain	10,200	FT	\$ 12.00	\$ 122,400
	Subtotal				\$ 655,350
PAVEMENT					
254	Pavement Planing	365,049	SY	\$ 4.25	\$ 1,551,460
301	Asphalt Concrete Base	7,576	CY	\$ 120.00	\$ 909,164
304	Aggregate Base	4,701	CY	\$ 60.00	\$ 282,053
408	Prime Coat	-	Gal	\$ 4.00	\$ -
441	Asphalt Concrete Surface Course	2,827	CY	\$ 185.00	\$ 523,039
441	Asphalt Concrete Intermediate Course	1,845	CY	\$ 200.00	\$ 368,924
	Subtotal				\$ 3,634,640

Alum Creek Drive - State Route 317 to Rohr Road

Detailed Construction Estimate

WATER

638	6" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$	100.00	\$	-
638	8" Ductile Iron Water Pipe and Fittings, Class 54	-	FT	\$	125.00	\$	-
638	16" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$	200.00	\$	-
638	6" Valve and Appurtenances	-	EA	\$	600.00	\$	-
638	Fire Hydrant	-	EA	\$	2,500.00	\$	-
638	Valve Box Adjusted to Grade	-	EA	\$	300.00	\$	-
638	Fire Hydrant Adjusted to Grade	-	EA	\$	800.00	\$	-
	Water Line to Irrigation	-	FT	\$	20.00	\$	-
	Water Service and Meter	-	Lump	\$	3,000.00	\$	-
816	3/4" Water Service Tap Relocated	-	EA	\$	1,000.00	\$	-
	Subtotal					\$	-

TRAFFIC CONTROL

621	RPM	510	EA	\$	25.00	\$	12,750
630	Removal of Ground Mounted Sign and Disposal	-	EA	\$	15.00	\$	-
630	Removal of Ground Mounted Post Support and Disposal	-	EA	\$	20.00	\$	-
630	Sign, Flat Sheet	-	SF	\$	20.00	\$	-
631	Sign, Double faced, Street Name	-	EA	\$	90.00	\$	-
630	Ground Mounted Support, No. 3 Post	-	FT	\$	15.00	\$	-
630	Street Name Sign Support, No. 3 Post	-	FT	\$	20.00	\$	-
644	Center Line	-	MI	\$	3,800.00	\$	-
644	Edge Line	3.86	MI	\$	2,000.00	\$	7,727
644	Lane Line	1.93	MI				
644	Channelizing Line	1,790	FT	\$	3.00	\$	5,370
644	Transverse Line	-	FT	\$	5.00	\$	-
644	Stop Line	290	FT	\$	15.00	\$	4,350
644	Crosswalk Line	654	FT	\$	12.00	\$	7,848
644	Parking Stall Line	-	FT	\$	1.50	\$	-
644	Lane Arrow	26	EA	\$	85.00	\$	2,210
644	Word on Pavement	-	EA	\$	100.00	\$	-
	Markings Removal	-	LF	\$	2.50	\$	-
	RRFB	-	EA	\$	15,000.00	\$	-
	Subtotal					\$	40,255

LIGHTING

625	Connector Kit, Type II	104	EA	\$	60.00	\$	6,240
625	Conventional Lighting Pole, APP, with foundation, installed	52	EA	\$	3,300.00	\$	171,600
625	Luminaire, Conventional, APP	52	EA	\$	500.00	\$	26,000
625	Parking Lot Lighting, with Luminaires	-	EA	\$	7,000.00	\$	-
625	Conduit and Wiring	10,980	LF	\$	7.00	\$	76,860
625	Trench	10,200		\$	8.00	\$	81,600
625	Power Service, A.P.P.	1	EA	\$	3,000.00	\$	3,000
625	Control Center	1	EA	\$	3,000.00	\$	3,000
625	High Voltage Test		Lump	\$	6,000.00	\$	-
625	Pole and Bracket Cable	4,680	LF	\$	2.00	\$	9,360
625	Pull Box	26	EA	\$	1,200.00	\$	31,200
625	Ground Rod	52	EA	\$	250.00	\$	13,000
	Misc.	-	Lump	\$	15,000.00	\$	-
	Subtotal					\$	421,860

Alum Creek Drive - State Route 317 to Rohr Road

Detailed Construction Estimate

SIGNALS

Signal (Full Replacement)	2	Lump	\$ 250,000.00		\$ 500,000
Signal (Minor Modifications)	1	Lump	\$ 25,000.00		\$ 25,000
Signal (Major Modifications)		Lump	\$ 100,000.00		\$ -
TRENCH	-	FT	\$ 5.75		\$ -
Pull Box	-	EA	\$ 1,700.00		\$ -
Interconnect	-	EA	\$ 45.00		\$ -
Subtotal					\$ 525,000

STRUCTURES

Spec Bridge over Big Walnut	-	SF	\$ 300.00		\$ -
	-	Lump	\$ -		\$ -
	-	Lump	\$ -		\$ -
Subtotal					\$ -

LANDSCAPING

-	SF	\$ -		\$ -
-	SF	\$ -		\$ -
-	SF	\$ -		\$ -
-	EA	\$ -		\$ -
-	Lump	\$ 50,000.00		\$ -
-	Lump	\$ -		\$ -
-	Lump	\$ -		\$ -
Subtotal				\$ -

MISCELLANEOUS

614 Maintaining Traffic (1/3 of Project Total)	-	Lump	\$ 448,776.00		\$ 448,776
623 Construction Layout Stakes	-	Lump	\$ 30,000.00		\$ 30,000
624 Mobilization	-	Lump	\$ 75,000.00		\$ 75,000
Subtotal					\$ 553,776

					\$ 7,628,000
--	--	--	--	--	---------------------

Statements of Probable Construction and Right-of-Way Costs and Detailed Cost Estimates prepared by the Engineer represent his best judgment as a design professional familiar with the construction industry. It is recognized, however, that the Engineer has no control over the Contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Engineer cannot and does not guarantee that bids or prices will not vary from any Statement of Probable Construction Cost or other cost estimate prepared by him.

Alum Creek Drive - Rohr Road to Toy Road

CONSTRUCTION COSTS

Roadway	\$ 800,000	Signals	\$ 25,000
Erosion Control	\$ 315,000	Street Lighting	\$ 247,000
Drainage	\$ 302,000	Structures	\$ -
Pavement	\$ 2,401,000	Landscaping	\$ -
Water	\$ -	Miscellaneous	\$ 529,000
Traffic Control	\$ 28,000		
Construction Item Subtotal (rounded)			\$ 4,647,000
Project Scale Factor*	0%	Project Scale Unit Cost Cont.	\$ -
General Contingency	20%	General Contingency	\$ 929,400
Inflation Rate**	21.6%	Inflation**	\$ 1,205,000
Year of Estimate/Construction	2024 2028	Subtotal of Construction Costs	\$ 6,781,400

**Smaller projects typically have higher unit costs due to a loss of economies of scale. The Project Scale Factor is a rough adjustment to unit costs provided for projects which are often significantly larger.*

***General inflation rate calculated via ODOT Office of Estimating Business Plan Inflation Calculator*

OTHER PROJECT COSTS

Utility Relocation		\$ 177,858
Right-of-Way		\$ 451,000
Environmental	1.5%	\$ 102,000
Engineering	13% of Construction Subtotal	\$ 882,000
Construction Observ., Services	7% of Construction Subtotal	\$ 475,000
Subtotal of Other Project Costs		\$ 2,087,858

ESTIMATED TOTAL PROJECT COST	\$ 8,869,258
-------------------------------------	---------------------

Estimate prepared by Stantec Consulting Services

1/24/2024

These cost estimates were developed at a planning level of analysis and many factors, some of which could affect the total project cost, remain unknown at this time. This estimates provides our best judgment of project cost based on the level of analysis (planning leve) by design professionals familiar with the construction industry. Bid item costs are based, in part, on previous bids tabulated by ODOT's Estimator software, and will vary as the Stantec has no control over a contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Stantec cannot and does not guarantee that bids or prices will not vary from this estimate.

Alum Creek Drive - Rohr Road to Toy Road

Detailed Construction Estimate

Item	Description	Quantity	Unit	Unit Cost	Total
ROADWAY					
201	Clearing & Grubbing	-	Lump	\$ 35,000.00	\$ -
202	Walk Removed	23,725	SF	\$ 1.50	\$ 35,588
203	Excavation	11,756.85	CY	\$ 25.00	\$ 293,921
203	Embankment	4,763.79	CY	\$ 25.00	\$ 119,095
	Cut and Reuse as Fill	-	CY	\$ 18.00	\$ -
	Place Excavated Materials as Embankment	-	CY	\$ 15.00	\$ -
204	Subgrade Compaction	21,502	SY	\$ 4.00	\$ 86,010
606	Cable Barrier	-	FT	\$ 15.00	\$ -
607	Fence, Misc.: Wood Fence (fall protection along path)	-	FT	\$ 30.00	\$ -
608	Concrete Walk, 4"	23,725	SF	\$ 10.00	\$ 237,250
608	Concrete Walk, 8"	-	SF	\$ 9.00	\$ -
608	Curb Ramps	8	EA	\$ 1,000.00	\$ 8,000
	Concrete Steps APP	-	SF	\$ 150.00	\$ -
	Brick Walk A.P.P.	-	SF	\$ 23.00	\$ -
609	Curb and Gutter, Type 2	964	LF	\$ 20.00	\$ 19,280
622	Concrete Barrier, Single Slope	-	FT	\$ 80.00	\$ -
622	Concrete Barrier End Section	-	EA	\$ 3,000.00	\$ -
	Subtotal				\$ 799,143
EROSION CONTROL					
	Temporary Erosion and Sediment Control	3,100	FT	\$ 41.00	\$ 127,100
207	Perimeter Filter Fabric Fence	-	FT	\$ 3.00	\$ -
659	Water	155	M GAL	\$ 100.00	\$ 15,500
659	Topsoil	3,173	CY	\$ 35.00	\$ 111,068
659	Agricultural Lime	6	ACRE	\$ 100.00	\$ 591
659	Commercial Fertilizer	4	TON	\$ 800.00	\$ 3,088
659	Seeding & Mulching	28,589	SY	\$ 2.00	\$ 57,178
	Subtotal				\$ 314,525
DRAINAGE					
611	12" Conduit, Type B	500	FT	\$ 130.00	\$ 65,000
611	15" Conduit, Type B	250	FT	\$ 130.00	\$ 32,500
611	18" Conduit, Type B	250	FT	\$ 165.00	\$ 41,250
611	24" Conduit, Type B	100	FT	\$ 185.00	\$ 18,500
611	60" Conduit, Type B	0	FT	\$ 825.00	\$ -
611	Catch Basin No. 2-2B	7	EA	\$ 2,100.00	\$ 14,700
611	Catch Basin No. 3	6	EA	\$ 2,500.00	\$ 15,000
611	Catch Basin No. 3A	4	EA	\$ 3,200.00	\$ 12,800
611	Manhole No. Type C	6	EA	\$ 4,500.00	\$ 27,000
605	4" Base Pipe Underdrain	6,200	FT	\$ 12.00	\$ 74,400
	Subtotal				\$ 301,150
PAVEMENT					
254	Pavement Planing	275,014	SY	\$ 4.25	\$ 1,168,810
301	Asphalt Concrete Base	3,483	CY	\$ 120.00	\$ 417,924
304	Aggregate Base	3,144	CY	\$ 60.00	\$ 188,664
408	Prime Coat	-	Gal	\$ 4.00	\$ -
448	Asphalt Concrete Surface Course	2,037	CY	\$ 185.00	\$ 376,869
448	Asphalt Concrete Intermediate Course	1,244	CY	\$ 200.00	\$ 248,724
	Subtotal				\$ 2,400,991

Alum Creek Drive - Rohr Road to Toy Road

Detailed Construction Estimate

WATER

638	6" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$ 100.00	\$ -
638	8" Ductile Iron Water Pipe and Fittings, Class 54	-	FT	\$ 125.00	\$ -
638	16" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$ 200.00	\$ -
638	6" Valve and Appurtenances	-	EA	\$ 600.00	\$ -
638	Fire Hydrant	-	EA	\$ 2,500.00	\$ -
638	Valve Box Adjusted to Grade	-	EA	\$ 300.00	\$ -
638	Fire Hydrant Adjusted to Grade	-	EA	\$ 800.00	\$ -
	Water Line to Irrigation	-	FT	\$ 20.00	\$ -
	Water Service and Meter	-	Lump	\$ 3,000.00	\$ -
816	3/4" Water Service Tap Relocated	-	EA	\$ 1,000.00	\$ -
	Subtotal				\$ -

TRAFFIC CONTROL

621	RPM	310	EA	\$ 25.00	\$ 7,750
630	Removal of Ground Mounted Sign and Disposal	-	EA	\$ 15.00	\$ -
630	Removal of Ground Mounted Post Support and Disposal	-	EA	\$ 20.00	\$ -
630	Sign, Flat Sheet	-	SF	\$ 20.00	\$ -
631	Sign, Double faced, Street Name	-	EA	\$ 90.00	\$ -
630	Ground Mounted Support, No. 3 Post	-	FT	\$ 15.00	\$ -
630	Street Name Sign Support, No. 3 Post	-	FT	\$ 20.00	\$ -
644	Center Line	-	MI	\$ 3,800.00	\$ -
644	Edge Line	2.35	MI	\$ 2,000.00	\$ 4,697
644	Lane Line	1.17	MI		
644	Channelizing Line	2,055	FT	\$ 3.00	\$ 6,165
644	Transverse Line	-	FT	\$ 5.00	\$ -
644	Stop Line	240	FT	\$ 15.00	\$ 3,600
644	Crosswalk Line	320	FT	\$ 12.00	\$ 3,840
644	Parking Stall Line	-	FT	\$ 1.50	\$ -
644	Lane Arrow	16	EA	\$ 85.00	\$ 1,360
644	Word on Pavement	-	EA	\$ 100.00	\$ -
	Markings Removal	-	LF	\$ 2.50	\$ -
	RRFB	-	EA	\$ 15,000.00	\$ -
	Subtotal				\$ 27,412

LIGHTING

625	Connector Kit, Type II	64	EA	\$ 60.00	\$ 3,840
625	Conventional Lighting Pole, APP, with foundation, installed	32	EA	\$ 3,300.00	\$ 105,600
625	Luminaire, Conventional, APP	32	EA	\$ 500.00	\$ 16,000
625	Parking Lot Lighting, with Luminaires	-	EA	\$ 7,000.00	\$ -
625	Conduit and Wiring	5,756	LF	\$ 7.00	\$ 40,292
625	Trench	5,276		\$ 8.00	\$ 42,208
625	Power Service, A.P.P.	1	EA	\$ 3,000.00	\$ 3,000
625	Control Center	1	EA	\$ 3,000.00	\$ 3,000
625	High Voltage Test		Lump	\$ 6,000.00	\$ -
625	Pole and Bracket Cable	2,880	LF	\$ 2.00	\$ 5,760
625	Pull Box	16	EA	\$ 1,200.00	\$ 19,200
625	Ground Rod	32	EA	\$ 250.00	\$ 8,000
	Misc.	-	Lump	\$ 15,000.00	\$ -
	Subtotal				\$ 246,900

Alum Creek Drive - Rohr Road to Toy Road

Detailed Construction Estimate

SIGNALS

Signal (Full Replacement)		Lump	\$ 250,000.00		\$ -
Signal (Minor Modifications)	1	Lump	\$ 25,000.00		\$ 25,000
Signal (Major Modifications)		Lump	\$ 100,000.00		\$ -
TRENCH	-	FT	\$ 5.75		\$ -
Pull Box	-	EA	\$ 1,700.00		\$ -
Interconnect	-	EA	\$ 45.00		\$ -
Subtotal					\$ 25,000

STRUCTURES

					\$ -
--	--	--	--	--	-------------

LANDSCAPING

	-	SF	\$ -		\$ -
	-	SF	\$ -		\$ -
	-	SF	\$ -		\$ -
	-	EA	\$ -		\$ -
	-	Lump			\$ -
	-	Lump	\$ -		\$ -
	-	Lump	\$ -		\$ -

					\$ -
--	--	--	--	--	-------------

MISCELLANEOUS

614 Maintaining Traffic (1/3 of Project Total)		Lump	\$ 448,776.00		\$ 448,776
623 Construction Layout Stakes	-	Lump	\$ 20,000.00		\$ 20,000
624 Mobilization	-	Lump	\$ 60,000.00		\$ 60,000
Subtotal					\$ 528,776

					\$ 4,644,000
--	--	--	--	--	---------------------

Statements of Probable Construction and Right-of-Way Costs and Detailed Cost Estimates prepared by the Engineer represent his best judgment as a design professional familiar with the construction industry. It is recognized, however, that the Engineer has no control over the Contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Engineer cannot and does not guarantee that bids or prices will not vary from any Statement of Probable Construction Cost or other cost estimate prepared by him.

Alum Creek Drive - Toy Road to Groveport Road

CONSTRUCTION COSTS

Roadway	\$ 3,071,000	Signals	\$ -
Erosion Control	\$ 557,000	Street Lighting	\$ 339,000
Drainage	\$ 554,000	Structures	\$ 13,079,000
Pavement	\$ 2,984,000	Landscaping	\$ -
Water	\$ -	Miscellaneous	\$ 554,000
Traffic Control	\$ 22,000		
Construction Item Subtotal (rounded)			\$ 21,160,000
Project Scale Factor*	0%	Project Scale Unit Cost Cont.	\$ -
General Contingency	20%	General Contingency	\$ 4,232,000
Inflation Rate**	21.6%	Inflation**	\$ 5,485,000
Year of Estimate/Construction	2024 2028	Subtotal of Construction Costs	\$ 30,877,000

**Smaller projects typically have higher unit costs due to a loss of economies of scale. The Project Scale Factor is a rough adjustment to unit costs provided for projects which are often significantly larger.*

***General inflation rate calculated via ODOT Office of Estimating Business Plan Inflation Calculator*

OTHER PROJECT COSTS

Utility Relocation		\$ 162,858
Right-of-Way		\$ 467,000
Environmental	1.5%	\$ 464,000
Engineering	13% of Construction Subtotal	\$ 4,015,000
Construction Observ., Services	7% of Construction Subtotal	\$ 2,162,000
Subtotal of Other Project Costs		\$ 7,270,858

ESTIMATED TOTAL PROJECT COST	\$ 38,147,858
-------------------------------------	----------------------

Estimate prepared by Stantec Consulting Services

1/24/2024

These cost estimates were developed at a planning level of analysis and many factors, some of which could affect the total project cost, remain unknown at this time. This estimates provides our best judgment of project cost based on the level of analysis (planning leve) by design professionals familiar with the construction industry. Bid item costs are based, in part, on previous bids tabulated by ODOT's Estimator software, and will vary as the Stantec has no control over a contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Stantec cannot and does not guarantee that bids or prices will not vary from this estimate.

Alum Creek Drive - Toy Road to Groveport Road

Detailed Construction Estimate

Item	Description	Quantity	Unit	Unit Cost	Total
ROADWAY					
201	Clearing & Grubbing	-	Lump	\$ 35,000.00	\$ -
202	Walk Removed	40,800	SF	\$ 1.50	\$ 61,200
203	Excavation	18,520.34	CY	\$ 25.00	\$ 463,009
203	Embankment	72,431.02	CY	\$ 25.00	\$ 1,810,776
	Cut and Reuse as Fill	-	CY	\$ 18.00	\$ -
	Place Excavated Materials as Embankment	-	CY	\$ 15.00	\$ -
204	Subgrade Compaction	35,448	SY	\$ 4.00	\$ 141,794
606	Cable Barrier	-	FT	\$ 15.00	\$ -
607	Fence, Misc.: Wood Fence (fall protection along path)	4,000	FT	\$ 30.00	\$ 120,000
608	Concrete Walk, 4"	40,800	SF	\$ 10.00	\$ 408,000
608	Concrete Walk, 8"	-	SF	\$ 9.00	\$ -
608	Curb Ramps	7	EA	\$ 1,000.00	\$ 7,000
	Concrete Steps APP	-	SF	\$ 150.00	\$ -
	Brick Walk A.P.P.	-	SF	\$ 23.00	\$ -
609	Curb and Gutter, Type 2	2,952	LF	\$ 20.00	\$ 59,040
622	Concrete Barrier, Single Slope	-	FT	\$ 80.00	\$ -
622	Concrete Barrier End Section	-	EA	\$ 3,000.00	\$ -
	Subtotal				\$ 3,070,818
EROSION CONTROL					
	Temporary Erosion and Sediment Control	4,950	ft	\$ 41.00	\$ 202,950
207	Perimeter Filter Fabric Fence	-	FT	\$ 3.00	\$ -
659	Water	292	M GAL	\$ 100.00	\$ 29,200
659	Topsoil	5,983	CY	\$ 35.00	\$ 209,402
659	Agricultural Lime	11	ACRE	\$ 100.00	\$ 1,114
659	Commercial Fertilizer	7	TON	\$ 800.00	\$ 5,824
659	Seeding & Mulching	53,900	SY	\$ 2.00	\$ 107,800
	Subtotal				\$ 556,290
DRAINAGE					
611	12" Conduit, Type B	740	FT	\$ 130.00	\$ 96,200
611	15" Conduit, Type B	1,000	FT	\$ 130.00	\$ 130,000
611	18" Conduit, Type B	500	FT	\$ 165.00	\$ 82,500
611	24" Conduit, Type B	100	FT	\$ 185.00	\$ 18,500
611	60" Conduit, Type B	0	FT	\$ 825.00	\$ -
611	Catch Basin No. 2-2B	12	EA	\$ 2,100.00	\$ 25,988
611	Catch Basin No. 3A	8	EA	\$ 3,200.00	\$ 25,600
611	Manhole No. 3	12	EA	\$ 4,500.00	\$ 55,688
605	4" Base Pipe Underdrain	9,900	FT	\$ 12.00	\$ 118,800
	Subtotal				\$ 553,275
PAVEMENT					
254	Pavement Planing	266,797	SY	\$ 4.25	\$ 1,133,887
301	Asphalt Concrete Base	5,624	CY	\$ 120.00	\$ 674,867
304	Aggregate Base	5,153	CY	\$ 60.00	\$ 309,153
408	Prime Coat	-	Gal	\$ 4.00	\$ -
441	Asphalt Concrete Surface Course	2,484	CY	\$ 185.00	\$ 459,608
441	Asphalt Concrete Intermediate Course	2,030	CY	\$ 200.00	\$ 406,014
	Subtotal				\$ 2,983,530

Alum Creek Drive - Toy Road to Groveport Road

Detailed Construction Estimate

WATER

638	6" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$ 100.00	\$ -
638	8" Ductile Iron Water Pipe and Fittings, Class 54	-	FT	\$ 125.00	\$ -
638	16" Ductile Iron Water Pipe and Fittings, Class 53	-	FT	\$ 200.00	\$ -
638	6" Valve and Appurtenances	-	EA	\$ 600.00	\$ -
638	Fire Hydrant	-	EA	\$ 2,500.00	\$ -
638	Valve Box Adjusted to Grade	-	EA	\$ 300.00	\$ -
638	Fire Hydrant Adjusted to Grade	-	EA	\$ 800.00	\$ -
	Water Line to Irrigation	-	FT	\$ 20.00	\$ -
	Water Service and Meter	-	Lump	\$ 3,000.00	\$ -
816	3/4" Water Service Tap Relocated	-	EA	\$ 1,000.00	\$ -
	Subtotal				\$ -

TRAFFIC CONTROL

621	RPM	495	EA	\$ 25.00	\$ 12,375
630	Removal of Ground Mounted Sign and Disposal	-	EA	\$ 15.00	\$ -
630	Removal of Ground Mounted Post Support and Disposal	-	EA	\$ 20.00	\$ -
630	Sign, Flat Sheet	-	SF	\$ 20.00	\$ -
631	Sign, Double faced, Street Name	-	EA	\$ 90.00	\$ -
630	Ground Mounted Support, No. 3 Post	-	FT	\$ 15.00	\$ -
630	Street Name Sign Support, No. 3 Post	-	FT	\$ 20.00	\$ -
644	Center Line	-	MI	\$ 3,800.00	\$ -
644	Edge Line	3.75	MI	\$ 2,000.00	\$ 7,500
644	Lane Line	1.88	MI		
644	Channelizing Line	262	FT	\$ 3.00	\$ 786
644	Transverse Line	-	FT	\$ 5.00	\$ -
644	Stop Line	75	FT	\$ 15.00	\$ 1,125
644	Crosswalk Line	-	FT	\$ 12.00	\$ -
644	Parking Stall Line	-	FT	\$ 1.50	\$ -
644	Lane Arrow	-	EA	\$ 85.00	\$ -
644	Word on Pavement	-	EA	\$ 100.00	\$ -
	Markings Removal	-	LF	\$ 2.50	\$ -
	RRFB	-	EA	\$ 15,000.00	\$ -
	Subtotal				\$ 21,786

LIGHTING

625	Connector Kit, Type II	100	EA	\$ 60.00	\$ 6,000
625	Conventional Lighting Pole, APP, with foundation, installed	50	EA	\$ 3,300.00	\$ 165,000
625	Luminaire, Conventional, APP	50	EA	\$ 500.00	\$ 25,000
625	Parking Lot Lighting, with Luminaires	-	EA	\$ 7,000.00	\$ -
625	Conduit and Wiring	3,400	LF	\$ 7.00	\$ 23,800
625	Trench	8,350		\$ 8.00	\$ 66,800
625	Power Service, A.P.P.	1	EA	\$ 3,000.00	\$ 3,000
625	Control Center	-	EA	\$ 3,000.00	\$ -
625	High Voltage Test		Lump	\$ 6,000.00	\$ -
625	Pole and Bracket Cable	3,000	LF	\$ 2.00	\$ 6,000
625	Pull Box	25	EA	\$ 1,200.00	\$ 30,000
625	Ground Rod	50	EA	\$ 250.00	\$ 12,500
	Misc.	-	Lump	\$ 15,000.00	\$ -
	Subtotal				\$ 338,100

Alum Creek Drive - Toy Road to Groveport Road

Detailed Construction Estimate

SIGNALS

Signal (Full Replacement)		Lump	\$ 250,000.00	\$	-
Signal (Minor Modifications)		Lump	\$ 25,000.00	\$	-
Signal (Major Modifications)		Lump	\$ 100,000.00	\$	-
TRENCH	-	FT	\$ 5.75	\$	-
Pull Box	-	EA	\$ 1,700.00	\$	-
Interconnect	-	EA	\$ 45.00	\$	-
Subtotal				\$	-

STRUCTURES

Spec Bridge over Big Walnut - (Alt 3 Structure Type Study)	10,325,526	EA	\$ 1.00	\$	10,325,526
Spec Bridge over Big Walnut - (Alt 3 Structure Type Study) - Life Cycle Co:	2,752,730	EA	\$ 1.00	\$	2,752,730
	-	EA	\$ -	\$	-
Subtotal				\$	13,078,256

LANDSCAPING

	-	SF	\$ -	\$	-
	-	SF	\$ -	\$	-
	-	SF	\$ -	\$	-
	-	EA	\$ -	\$	-
	-	Lump	\$ 50,000.00	\$	-
	-	Lump	\$ -	\$	-
	-	Lump	\$ -	\$	-
Subtotal				\$	-

MISCELLANEOUS

614 Maintaining Traffic (1/3 of Project Total)		Lump	\$ 448,776.00	\$	448,776
623 Construction Layout Stakes		Lump	\$ 30,000.00	\$	30,000
624 Mobilization		Lump	\$ 75,000.00	\$	75,000
Subtotal				\$	553,776

		Construction Total	\$ 21,156,000
--	--	---------------------------	----------------------

Statements of Probable Construction and Right-of-Way Costs and Detailed Cost Estimates prepared by the Engineer represent his best judgment as a design professional familiar with the construction industry. It is recognized, however, that the Engineer has no control over the Contractor's methods of determining bid prices, or over competitive bidding or market conditions. Accordingly, the Engineer cannot and does not guarantee that bids or prices will not vary from any Statement of Probable Construction Cost or other cost estimate prepared by him.

UTILITY COST ESTIMATE

Item	Description	Unit	QTY	Unit Price	Total
Sanitary Sewer					
	Sanitary Manhole Adjusted to Grade	Each	19	\$ 1,500.00	\$ 28,500.00
Communications					
625	Telecom Manhole (Adjusted to Grade)	Each	19	\$ 1,500.00	\$ 28,500.00
625	Telecom Pull Box (Adjusted to Grade)	Each	13	\$ 1,225.00	\$ 15,925.00
Interconnect					
625	Interconnect Pull Box (Relocated or Adjusted to Grade)	Each	33	\$ 1,225.00	\$ 40,425.00
Electric					
625	Electric Pull Box (Relocated or Adjusted to Grade)	Each	5	\$ 1,225.00	\$ 6,125.00
632	Wood Pole	Each	10	\$ 10,000.00	\$ 100,000.00
Water					
638	6" Ductile Iron Anchoring Pipe and Fittings	Ft	250	\$ 200.00	\$ 50,000.00
638	6" Vavle and Appurtencances	Each	10	\$ 600.00	\$ 6,000.00
638	Fire Hydrant	Each	10	\$ 3,500.00	\$ 35,000.00
638	Valve Box Adjusted to Grade	Each	17	\$ 300.00	\$ 5,100.00
Gas					
611	Gas Valves (Adjusted to Grade)	Each	10	\$ 300.00	\$ 3,000.00
Total					\$ 318,575.00

PART 1 R/W COST - 317 TO ROHR

PARCEL #	ID	Description of Affected Property	Zestimate -or- Total Value	Improved Value (auditor)	Land Value (auditor)	Total Value (auditors)	Adjustment Factor	Adjusted Improved Value	Adjusted Land Value	Land Takes (provide distance measurements in feet, or indicate the percent take)				Damages Based on highest and best use. Indicate 100% for total takes.		Subtotal	Transaction Costs (automatically calculated)		Total by Property	TOTAL R/W Costs
										Land Acreage	Cost per Acre	Take in Acres	Land Costs	Damages SWAG	Damages		Appraisal and Title Fees	Relocation Expenses		
18	185-001559	B B COMPANY LLC	1,958,000	525,900	1,822,400	\$ 2,348,300	1	\$ 525,900	\$ 1,822,400	4.38	\$ 415,615	0.24	\$ 98,091	15%	\$ 50,000	\$ 148,090.51	\$ 5,000	\$ -	\$ 153,091	\$ 1,033,000
26	185-001461	ALUM CREEK DRIVE OWNER LLC	31,744,000	71,941,500	4,972,000	\$ 76,913,500	1	\$ 71,941,500	\$ 4,972,000	49.72	\$ 99,998	0.54	\$ 53,922	0%	—	\$ 53,922.02	\$ 5,000	\$ -	\$ 58,922	
51	185-002924	DRCS 936 LLC	3,664,300	46,122,900	3,760,000	\$ 49,882,900	1	\$ 46,122,900	\$ 3,760,000	55.34	\$ 67,944	0.58	\$ 39,286	0%	\$ 40,000	\$ 79,286.25	\$ 5,000	\$ -	\$ 84,286	
53	185-002923	2829 ROHR ROAD HOLDING LLC	3,830,900	60,431,300	3,830,900	\$ 64,262,200	1	\$ 60,431,300	\$ 3,830,900	59.32	\$ 64,584	0.33	\$ 21,089	0%	\$ 50,000	\$ 71,089.40	\$ 5,000	\$ -	\$ 76,089	
53	154-000006	2829 ROHR ROAD HOLDING LLC	162,700	-	78,800	\$ 78,800	1	\$ -	\$ 78,800	3.71	\$ 21,251	0.49	\$ 10,409	0%	\$ 20,000	\$ 30,409.24	\$ 5,000	\$ -	\$ 35,409	
55	154-000004	INTEGRITY REAL ESTATE HOLDINGS LLC	24,200	-	23,800	\$ 23,800	1	\$ -	\$ 23,800	0.56	\$ 42,576	0.33	\$ 13,931	0%	—	\$ 13,930.58	\$ 5,000	\$ -	\$ 18,931	
21	010-237812	ANGEL PETROLEUM LLC	318,500	11,400	399,800	\$ 411,200	1	\$ 11,400	\$ 399,800	3.17	\$ 126,319	0.16	\$ 19,858	0%	—	\$ 19,857.68	\$ 5,000	\$ -	\$ 24,858	
47	180-000249	CAUTHEN GERALD P TR	171,900	-	177,100	\$ 177,100	1	\$ -	\$ 177,100	3.21	\$ 55,240	0.36	\$ 19,880	0%	\$ 10,000	\$ 29,879.91	\$ 5,000	\$ -	\$ 34,880	
46	495-249651	THOMSON LOGISTICS ASSETS LLC	13,800,000	13,041,300	2,136,500	\$ 15,177,800	1	\$ 13,041,300	\$ 2,136,500	23.74	\$ 90,000	0.46	\$ 40,957	0%	\$ 50,000	\$ 90,956.59	\$ 5,000	\$ -	\$ 95,957	
47	495-258062	CAUTHEN GERALD P TR	4,172,100	3,071,500	368,500	\$ 3,440,000	1	\$ 3,071,500	\$ 368,500	3.69	\$ 100,000	0.36	\$ 35,988	0%	\$ 15,000	\$ 50,988.14	\$ 5,000	\$ -	\$ 55,988	
60	495-263053	ANSON LOGISTICS ASSETS LLC	14,515,600	14,637,500	2,032,500	\$ 16,670,000	1	\$ 14,637,500	\$ 2,032,500	20.33	\$ 100,000	0.53	\$ 53,004	0%	\$ 40,000	\$ 93,004.13	\$ 5,000	\$ -	\$ 98,004	
64	150-000707	GUTIERREZ GUILLERMO CRUZ	335,000	144,900	86,300	\$ 231,200	1	\$ 144,900	\$ 86,300	0.86	\$ 100,000	0.13	\$ 13,211	0%	\$ 15,000	\$ 28,211.02	\$ 5,000	\$ -	\$ 33,211	
44	180-001841	CAMPBELL JAMES MICHAEL		137,600	95,300	\$ 232,900	1	\$ 137,600	\$ 95,300	0.53	\$ 178,565	0.06	N/A	100%	\$ 250,000	\$ 232,900.00	\$ 5,000	\$ 25,000.00	\$ 262,900	

PART 2 R/W COST - ROHR TO TOY

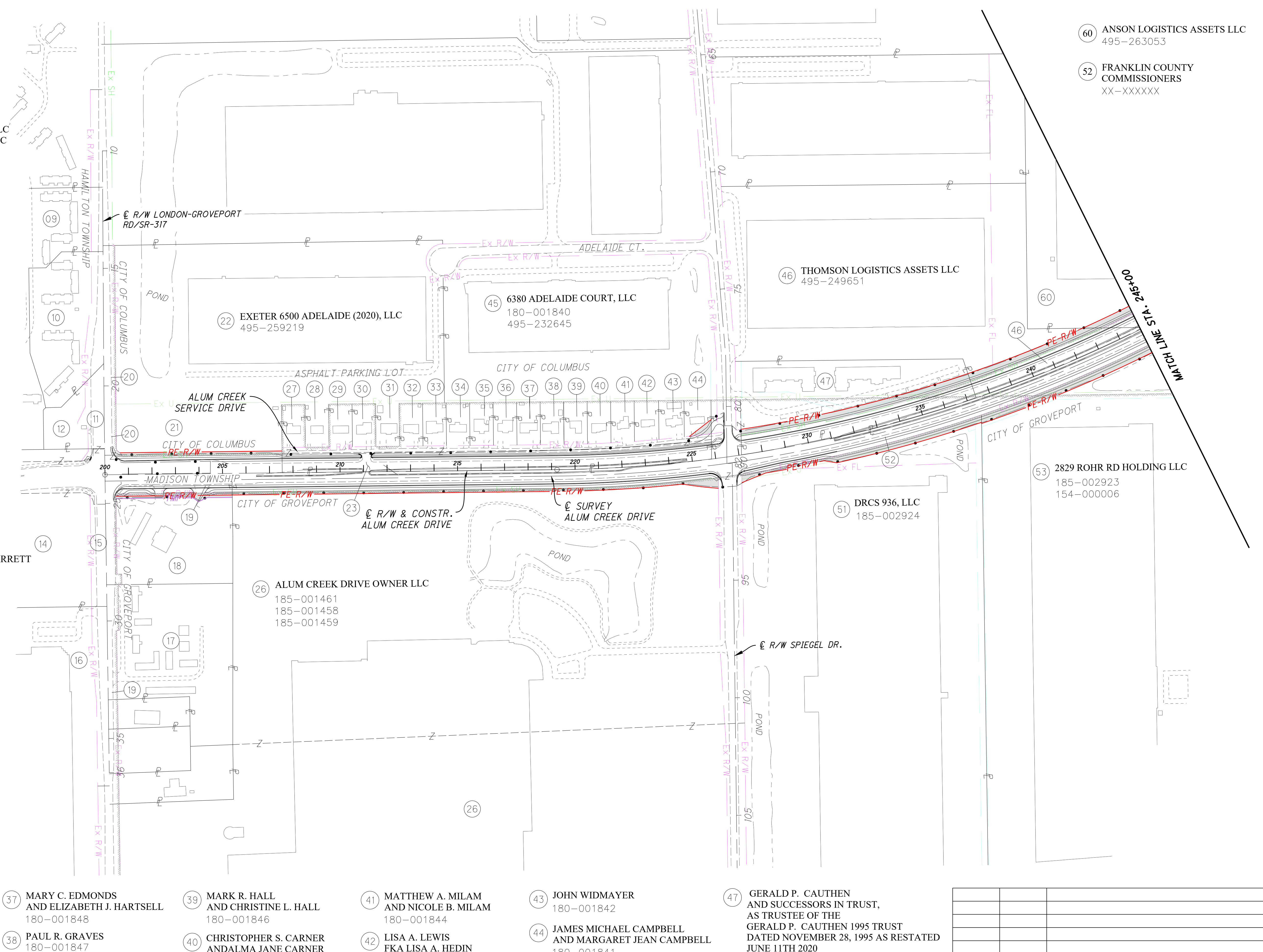
PARCEL #	ID	Description of Affected Property	Zestimate -or- Total Value	Improved Value (auditor)	Land Value (auditor)	Total Value (auditors)	Adjustment Factor	Adjusted Improved Value	Adjusted Land Value	Land Takes (provide distance measurements in feet, or indicate the percent take)				Damages Based on highest and best use. Indicate 100% for total takes.		Subtotal	Transaction Costs (automatically calculated)		Total by Property	TOTAL R/W Costs
										Land Acreage	Cost per Acre	Take in Acres	Land Costs	Damages SWAG	Damages		Appraisal and Title Fees	Relocation Expenses		
78	154-000002	NNN GROVEPORT LLC	-	-	95,900	\$ 95,900	1	\$ -	\$ 95,900	1.13	\$ 85,018	0.07	\$ 5,856	0%	—	\$ 5,856.02	\$ 5,000	\$ -	\$ 10,856	\$ 451,000
82	150-002195	WALKER WALLACE W JR	29,800	-	88,600	\$ 88,600	1	\$ -	\$ 88,600	0.50	\$ 178,557	0.11	\$ 19,952	0%	—	\$ 19,952.31	\$ 5,000	\$ -	\$ 24,952	
83	150-002198	WALKER WALLACE W JR	155,200	131,100	93,600	\$ 224,700	1	\$ 131,100	\$ 93,600	0.60	\$ 155,559	0.14	\$ 22,142	0%	\$ 50,000	\$ 72,142.05	\$ 5,000	\$ -	\$ 77,142	
67	152-001650	ROSEROCK HOLDINGS LLC	5,562,600	2,947,400	2,640,000	\$ 5,587,400	1	\$ 2,947,400	\$ 2,640,000	5.39	\$ 490,251	0.16	\$ 76,655	0%	—	\$ 76,654.68	\$ 5,000	\$ -	\$ 81,655	
88	152-001936	BVK US II POOL 01 LLC	1,029,000	14,719,400	2,741,500	\$17,460,900	1	\$ 14,719,400	\$ 2,741,500	17.13	\$ 160,088	0.65	\$ 104,691	0%	—	\$ 104,690.52	\$ 5,000	\$ -	\$ 109,691	
89	150-000206	LOCKBOURNE PROPERTIES LLC	291,800	143,600	156,300	\$ 299,900	1	\$ 143,600	\$ 156,300	1.95	\$ 80,072	0.10	\$ 7,891	0%	\$ 25,000	\$ 32,890.70	\$ 5,000	\$ -	\$ 37,891	
77	154-000007	AGREE CONVENIENCE NO 1 LLC	904,800	-	854,500	\$ 854,500	1	\$ -	\$ 854,500	10.05	\$ 85,000	0.28	\$ 23,815	0%	—	\$ 23,814.52	\$ 5,000	\$ -	\$ 28,815	
79	154-000008	RE PLUS SCP LLC	19,494,100	22,871,100	2,074,900	\$24,946,000	1	\$ 22,871,100	\$ 2,074,900	20.75	\$ 100,000	0.20	\$ 20,287	0%	—	\$ 20,287.17	\$ 5,000	\$ -	\$ 25,287	
84	152-001983	INDUSTRIAL FUND OBETZ LLC	18,208,200	19,385,500	1,124,800	\$20,510,300	1	\$ 19,385,500	\$ 1,124,800	11.25	\$ 100,000	0.08	\$ 8,452	0%	—	\$ 8,452.07	\$ 5,000	\$ -	\$ 13,452	
84	152-001982	INDUSTRIAL FUND OBETZ LLC	13,691,800	12,821,600	826,500	\$13,648,100	1	\$ 12,821,600	\$ 826,500	8.27	\$ 100,000	0.04	\$ 4,032	0%	—	\$ 4,031.93	\$ 5,000	\$ -	\$ 9,032	
85	152-001938	COLUMBUS REGIONAL AIRPORT AUTHORITY	6,800	-	1,000	\$ 1,000	6.8	\$ -	\$ 6,800	1.98	\$ 506	0.02	\$ 12	0%	—	\$ 12.04	\$ 5,000	\$ -	\$ 5,012	
90	152-001937	COLUMBUS REGIONAL AIRPORT AUTHORITY	1,708,800	-	1,981,200	\$ 1,981,200	1	\$ -	\$ 1,981,200	20.47	\$ 96,800	0.06	\$ 5,996	0%	—	\$ 5,995.92	\$ 5,000	\$ -	\$ 10,996	
87	152-001941	BVK US II POOL 01 LLC	14,200,000	13,303,500	1,203,400	\$14,506,900	1	\$ 13,303,500	\$ 1,203,400	12.67	\$ 95,003	0.11	\$ 10,831	0%	—	\$ 10,830.55	\$ 5,000	\$ -	\$ 15,831	

PART 3 R/W COST - TOY TO GROVEPORT

PARCEL #	ID	Description of Affected Property	Zestimate -or- Total Value	Improved Value (auditor)	Land Value (auditor)	Total Value (auditors)	Adjustment Factor	Adjusted Improved Value	Adjusted Land Value	Land Takes (provide distance measurements in feet, or indicate the percent take)				Damages Based on highest and best use. Indicate 100% for total takes.		Subtotal	Transaction Costs (automatically calculated)		Total by Property	TOTAL R/W Costs	
										Land Acreage	Cost per Acre (Auditor)	Cost per Acre (Estimated)	Take in Acres	Land Costs	Damages SWAG		Damages	Appraisal and Title Fees		Relocation Expenses	\$ 467,000
104	152-001637	THOMSON LOGISTICS ASSETS LLC	9,598,000	9,879,800	1,459,500	\$ 11,339,300	1	\$ 9,879,800	\$ 1,459,500	14.60	\$ 100,000		0.41	\$ 41,447	0%	\$ 50,000	\$ 91,446.97	\$ 5,000	\$ -	\$ 96,447	
106/108	150-000356	KENDALL ROBERT L III		93,900	49,100	\$ 143,000	1	\$ 93,900	\$ 49,100	3.51	\$ 13,989		0.05	\$ 696	0%		\$ 695.73	\$ 5,000	\$ -	\$ 5,696	
112/113	152-001544	KENMORE AGGREGATES I LLC	750,000	-	229,900	\$ 229,900	3	\$ -	\$ 750,000	124.00	\$ 1,854	\$ 100,000	2.73	\$ 272,885	0%	—	\$ 272,885.15	\$ 5,000	\$ -	\$ 277,885	
114	152-000717	BT PROPERTY LLC	4,070,100	3,811,400	1,176,600	\$ 4,988,000	1	\$ 3,110,020	\$ 960,080	23.04	\$ 51,067.71	\$ 100,000	0.23	\$ 18,628	0%	—	\$ 18,628.44	\$ 5,000.00	\$ -	\$ 23,628.44	
	152-000716	BT PROPERTY LLC		-	283,400	\$ 283,400	1	\$ -	\$ 283,400	5.59	\$ 50,697.67	\$ 100,000		\$ 4,657	0%	—	\$ 4,657.11	\$ 5,000.00	\$ -	\$ 9,657.11	
117	152-000851	3-D DEVELOPMENT LLC		-	641,400	\$ 641,400	1	\$ -	\$ 641,400	30.40	\$ 21,099.38	\$ 100,000	0.22	\$ 21,603	0%	—	\$ 21,603.19	\$ 5,000.00	\$ -	\$ 26,603.19	
107	152-002034	SHOWALTER DOUGLAS W	159,500	97,800	87,200	\$ 185,000	1	\$ 84,319	\$ 75,181	5.00	\$ 17,440.00		0.13	\$ 2,233	0%		\$ 2,232.86	\$ 5,000.00	\$ -	\$ 7,232.86	
100	152-002035	SHEETZ, INC.		1,018,500	883,700	\$ 1,902,200	1	\$ 1,018,500	\$ 883,700	8.84	\$ 100,000		0.14	\$ 14,139	0%		\$ 14,138.54	\$ 5,000	\$ -	\$ 19,139	

C:\pw_working\infra01\sbhattarai\115792_RM001.dwg LAST SAVED BY: sbhattarai, 1/18/2024 11:44 AM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 7:22 AM

- 09 COLUMBUS REGIONAL AIRPORT AUTHORITY
512-291763
- 10 COLUMBUS REGIONAL AIRPORT AUTHORITY
150-002693
180-005385
- 11 STATE OF OHIO
180-004984
- 12 14 OAK ROAD COLUMBUS LLC
SF ALUM CREEK OWNER, LLC
180-005004
512-232661
- 13 COLUMBUS MUNICIPAL AIRPORT AUTHORITY
180-004984
- 14 COLUMBUS MUNICIPAL AIRPORT AUTHORITY
180-004984
- 15 STATE OF OHIO
180-004984
- 16 LIBERTY PROPERTY LIMITED PARTNERSHIP
430-242627
- 17 NAS 8 LLC
185-001556
- 18 B B COMPANY LLC
185-001559
- 19 COLUMBUS REGIONAL AIRPORT AUTHORITY
185-002936
185-002937
- 20 COLUMBUS REGIONAL AIRPORT AUTHORITY
010-291765
495-291764
- 21 ANGEL PETROLEUM, LLC
010-237812
- 23 WILHELMINA I. LIPPERT
180-000244
- 27 STEVIE HILL AND TRENT BARRETT WIFE AND HUSBAND
180-001858
- 28 GREGORY J. PROROCK AND LINDA K. PROROCK
430-288511
- 29 PARADISE D. TACKETT AND JASON W. REID
180-001856
- 30 BRYAN M. HERDMAN
180-001855
- 31 JESSIE R. KEYES
430-269186
- 32 KEVIN SANDERS
180-001853
- 33 LORI A. BOYER AND LAWRENCE A. BOYER
180-001852
- 34 MICHAEL A. DENT AND KAY A. DENT
180-001851
- 35 DAVID P. JONES AND JANET L. JONES
180-001850
- 36 ANTONIO QUINTANA AND CENEDY GLASS
180-001849



- 37 MARY C. EDMONDS AND ELIZABETH J. HARTSELL
180-001848
- 39 MARK R. HALL AND CHRISTINE L. HALL
180-001846
- 41 MATTHEW A. MILAM AND NICOLE B. MILAM
180-001844
- 43 JOHN WIDMAYER
180-001842
- 47 GERALD P. CAUTHEN AND SUCCESSORS IN TRUST, AS TRUSTEE OF THE GERALD P. CAUTHEN 1995 TRUST DATED NOVEMBER 28, 1995 AS RESTATED JUNE 11TH 2020
495-258062
180-000249
- 38 PAUL R. GRAVES
180-001847
- 40 CHRISTOPHER S. CARNER AND DALMA JANE CARNER
180-001845
- 42 LISA A. LEWIS FKA LISA A. HEDIN
180-001843
- 44 JAMES MICHAEL CAMPBELL AND MARGARET JEAN CAMPBELL
180-001841

- 60 ANSON LOGISTICS ASSETS LLC
495-263053
- 52 FRANKLIN COUNTY COMMISSIONERS
XX-XXXXXX

REV.	DATE	DESCRIPTION

DATE COMPLETED:

0 200 400
HORIZONTAL SCALE IN FEET

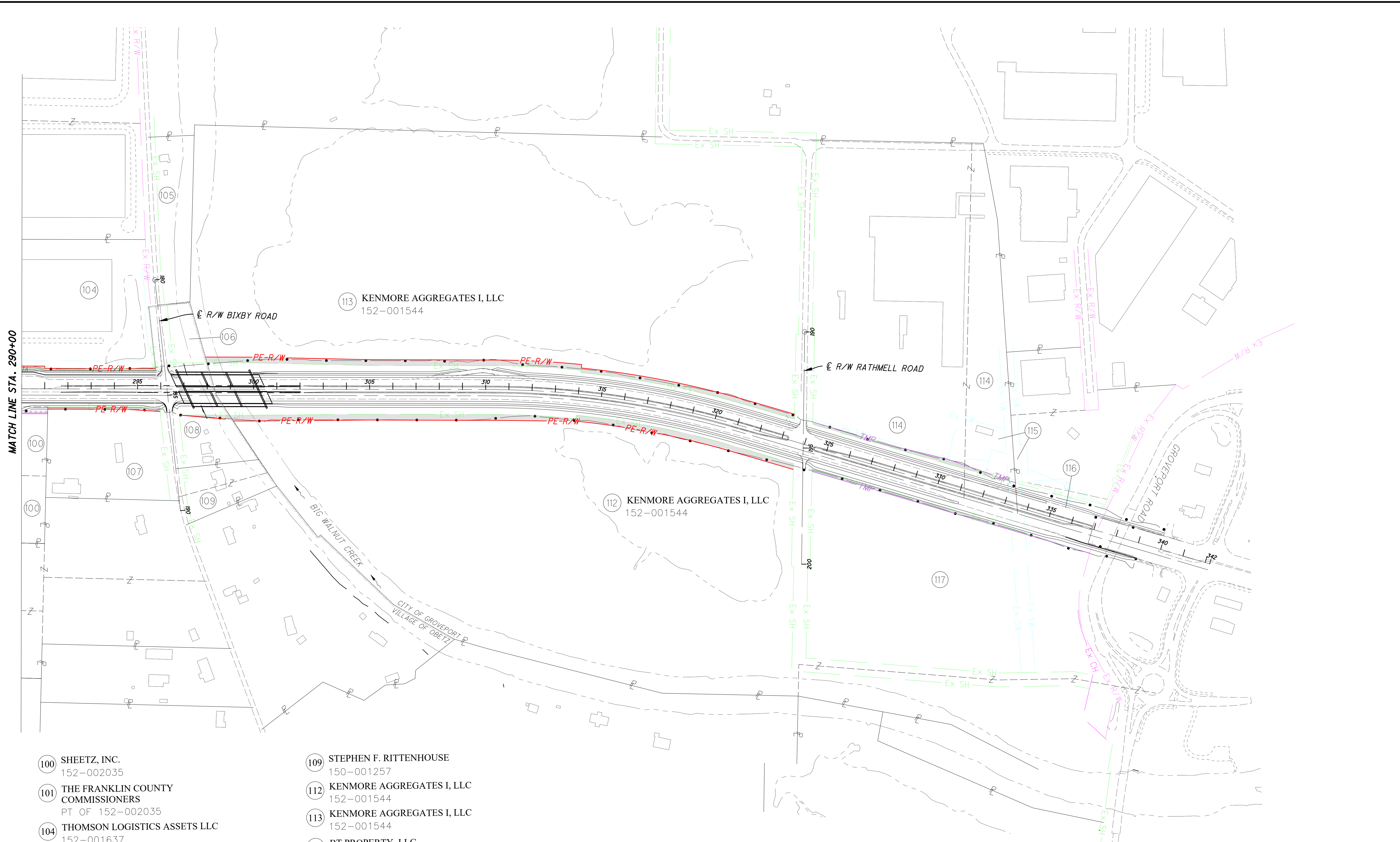
CALCULATED NMG CHECKED BMH

CONCEPTUAL RIGHT OF WAY EXHIBIT
STA. 200+00 TO STA. 245+00

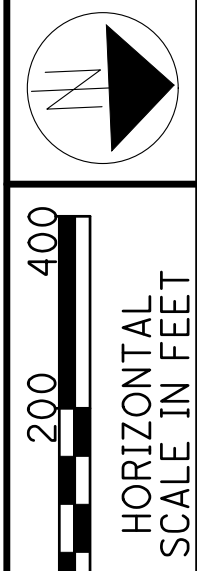
FRA-CR122-0.00

1
3

C:\pw_working\infra01\sbhattarai\115792_RM001.dwg LAST SAVED BY: sbhattarai, 1/18/2024 11:44 AM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 7:22 AM



MATCH LINE STA. 290+00



CALCULATED NMG
CHECKED BMH

CONCEPTUAL RIGHT OF WAY EXHIBIT
STA. 290+00 TO GROVEPORT ROAD

FRA-CR122-0.00

3/3

- 100 SHEETZ, INC.
152-002035
- 101 THE FRANKLIN COUNTY COMMISSIONERS
PT OF 152-002035
- 104 THOMSON LOGISTICS ASSETS LLC
152-001637
- 105 NORMAN F. A. THOMAS.
152-001929
- 106 ROBERT L. KENDALL, III
150-000356
- 107 DOUGLAS W. SHOWALTER
152-002034
- 108 ROBERT L. KENDALL, III
150-000356
- 109 STEPHEN F. RITTENHOUSE
150-001257
- 112 KENMORE AGGREGATES I, LLC
152-001544
- 113 KENMORE AGGREGATES I, LLC
152-001544
- 114 BT PROPERTY, LLC
152-000717
152-000716
152-001441
- 115 CITY OF COLUMBUS, OHIO
152-001985
- 116 THE VILLAGE OF OBETZ, OHIO
PT OF 152- 001456
- 117 3-D DEVELOPMENT LLC
152-000851

REV.	DATE	DESCRIPTION
DATE COMPLETED:		

APPENDIX

K.

Utility Conflicts

Utility Conflict Spreadsheets

Project: Alum Creek Drive **PID #**

Date: 30-Oct-23

Plan Sheet #	Company	Utility Type	Station	Location	Aerial or Underground	Conflict?	Test Hole Required (Level A)	Comments
	Franklin County	Pedestrian Control Pole	Before Stationing	LT	Aerial			Signal Pole near proposed Sidewalk south of 317
	Franklin County	Traffic Control Pole	Before Stationing	LT	Aerial			Traffic Pole near proposed Sidewalk south of 317
		Pull Box	Before Stationing	LT	Aerial			Pull Box near proposed sidewalk south of 317
	City of Co. or SCP	Utility Pole	200+45.00	RT	Aerial			Utility Pole edge of construction Limit
	Franklin County	Traffic Control Pole	200+58.00	LT	Aerial			Traffic control pole
	Franklin County	Traffic Control Pole	200+60.00	RT	Aerial			Traffic control pole
	Franklin County	Traffic Pull Box	200+60.00	RT	Aerial			Pull Box
	Columbia Gas	Gas	200+66.00 to 207+60.00	LT	Underground			Gas Line entering then leaves workzone
	City of Co. or SCP	Electric	201+00.00 to 237+25.00	RT	Underground			Underground elec. For lighting
	City of Co. or SCP	Light Pole	200+97.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	205+00.00	LT	Aerial			Light Pole in Prop Shoulder
		Interconnect Cable	200+80.00	RT	Underground			Interconnect Cable along Prop Shoulder
	City of Co.	SAN (Abandoned)	200+50.00 to 335+00.00	Crossing	Underground			SAN line running along East side of Alum
	City of Co.	STM Line	201+80.00 to 204+70.00	RT	Underground			STM Line underneath Prop shoulder
	City of Co.	Curb Inlet	201+80.00	RT	Underground			Curb Inlet In Roadway
	City of Co.	Manhole	201+80.00	RT	Underground			Curb Inlet In Roadway
	City of Co.	Catch Basin	201+80.00	RT	Underground			Curb Inlet
	City of Co.	Catch Basin	202+25.00	RT	Underground			Curb Inlet In Roadway
	City of Co. or SCP	Light Pole	202+15.00	RT	Aerial			Light Pole off drive and Prop SUP
	Columbia Gas	Gas Valve	202+20.00	RT	Underground			Gas Valve in Drive
	Columbia Gas	Gas	202+79.00 to 202+81.00	LT	Underground			Gas Line under prop sidewalk
	City of Co. or SCP	Light Pole	203+40.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	Catch Basin	203+60.00	RT	Underground			Curb Inlet In Roadway
	City of Co.	SAN MH (Abandoned)	204+00.00	RT	Underground			SAN MH in proposed Drive
	City of Co. or SCP	Light pole	204+25.00	RT	Aerial			Light Pole off drive
	City of Co. or SCP	Electric	201+00.00 to 237+50.00	LT	Underground			Underground elec. For lighting
	Columbia Gas	Gas	204+50.00 to 204+90.00	LT	Underground			Gas Line entering workzone then crosses
		Utility Witness Post	204+60.00	RT	Aerial			Tele post between prop Shoulder and SUP
	Columbia Gas	Gas	204+90.00	Crossing	Underground			Gas Line Crossing Alum
	Columbia Gas	Gas	204+90.00 to 205+60.00	RT	Underground			Gas Line
	City of Co.	Water Line	204+50.00 to 296+60.00	LT	Underground			Water line running west side of Alum
	City of Co. or SCP	Light Pole	205+03.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Elec. Pull Box	205+03.00	LT	Underground			Elec pull box for lighting

Utility Conflict Spreadsheets

	City of Co. or SCP	Light Pole	205+25.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM Line	205+40.00	RT	Underground			Drain outlet in Prop work area
	Columbia Gas	Utility Witness Post	205+60.00	RT	Aerial			Gas posts in SUP area
	Columbia Gas	Gas Line	205+60.00	RT	Underground			Gas Line in SUP area
	Columbia Gas	Gas Line	205+60.00 to 249+30.00	RT	Underground			Gas Line running up east side Alum
	City of Co.	Water	205+80.00	RT	Underground			Water Valve just off SUP
	City of Co.	Water line	205+80.00	Crossing	Underground			Water Line Crossing Alum
	City of Co. or SCP	Light Pole	206+96.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	207+09.00	RT	Aerial			Light Pole in Prop Shoulder
		Tele. Pull Box	207+58.00	RT	Underground			Tele pull box in SUP
	City of Co.	SAN MH (Abandoned)	208+75.00	RT	Underground			Sanitary MH in Work Zone
	City of Co. or SCP	Light Pole	208+82.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	208+96.00	RT	Aerial			Light Pole in Prop Shoulder
		Tele. Pull Box	209+65.00	RT	Underground			Tele pull box just off SUP
	City of Co.	Hydrant	210+00.00	LT	Aerial			Hydrant in Prop Shoulder
	City of Co.	STM Line	210+61.00 to 211+61.00	CNTR	Underground			STM Drain in median
	City of Co. or SCP	Light Pole	210+70.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	210+83.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	212+69.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	212+60.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	SAN MH (Abandoned)	213+52.00	RT	Underground			Sanitary Manhole in Workzone
	City of Co. or SCP	Light Pole	214+44.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	214+57.00	RT	Aerial			Light Pole in Prop Shoulder
		Tele. Pull Box	214+88.00	RT	Aerial			Tele pull box just off SUP
	City of Co.	STM Line	214+96.00	Crossing	Underground			STM Line crossing alum creek drive
	City of Co.	Catch Basin	214+96.19	LT	Underground			Catch basins in Prop work
	City of Co.	Catch Basin	214+97.23	CNTR	Underground			Catch basins in Prop work
	City of Co.	Catch Basin	214+95.53	RT	Underground			Catch basins in Prop work
	City of Co.	STM Line	214+96.00 to 297+55.00	CNTR	Underground			STM line Running down median
		Tele. Pull Box	215+46.00	RT	Aerial			Tele pull box just off SUP
	City of Co. or SCP	Light Pole	216+31.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	216+43.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	Hydrant	217+98.00	LT	Aerial			Hydrant in Prop Shoulder
	City of Co. or SCP	Light Pole	218+18.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co.	SAN MH (Abandoned)	218+22.00	RT	Underground			Sanitary Manhole in Workzone
	City of Co. or SCP	Light Pole	218+32.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM Line	219+92.00	Crossing	Underground			STM line Alum Creek Drive
	City of Co.	Catch Basins	219+92.00	LT	Underground			catch basins in prop work area

Utility Conflict Speadsheet

	City of Co.	Catch Basins	219+92.00		CNTR	Underground			catch basins in prop work area
	City of Co.	Catch Basins	219+92.00		RT	Underground			catch basins in prop work area
	City of Co. or SCP	Light Pole	220+05.00		LT	Aerial			Light Pole in Prop Shoulder
	City of Co. or SCP	Light Pole	220+18.00		RT	Aerial			Light Pole in Prop Shoulder
		Tele. Pull Box	220+50.00		RT	Underground			Tele pull box just off SUP
	SCP	Light Pole	221+94.00		LT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	222+02.00		RT	Aerial			Light Pole in Prop Shoulder
		Utility Access Box	222+02.00		RT	Underground			Utility access box at base of light post
	City of Co.	SAN MH (Abandoned)	222+95.00		RT	Underground			Sanitary Manhole in Workzone
	Columbia Gas	Utility Witness Post	223+19.00		RT	Aerial			Tele post just off SUP
	SCP	Light Pole	223+82.00		LT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	223+89.00		RT	Aerial			Light Pole in Prop Shoulder
		Utility Access Box	223+98.00		RT	Underground			Utility access box in prop shoulder
	City of Co.	STM MH	224+97.00		CNTR	Underground			STM MH in Median
	City of Co.	STM Curb Inlet	224+98.00		CNTR	Underground			Curb Inlet In Roadway
		Septic Tank	225+52.00		LT	Underground			Septic tank in proposed drive for Spiegel Dr
		Tele. Pull Box	225+43.00		RT	Aerial			Tele pull box just off SUP
		Utility Access Box	225+57.00		RT	Aerial			Utility access box in prop shoulder
		Utility Access Box	225+57.00		RT	Aerial			utility access box in work zone
	SCP	Light Pole	225+71.00		LT	Aerial			Light Pole in Prop Shoulder
	Franklin County	Traffic Control Pole	225+92.00		LT	Aerial			Traffic Control Pole
		Utility Access Box	226+08.00		LT	Aerial			utility access Box in work zone
		Utility Access Box	226+15.00		LT	Aerial			Utility access box
	SCP	Light Pole	225+73.00		RT	Aerial			Light Pole in Prop Shoulder
		Utility Access Box	225+73.00		RT	Aerial			utility access Box in work zone
		Utility Witness Post	225+85.00		RT	Aerial			Tele post between prop Shoulder and SUP
	Franklin County	Traffic Control Pole	225+94.00		RT	Aerial			Traffic Control Pole
	Columbia Gas	Utility Witness Post	226+03.00		RT	Aerial			Gas Post just off SUP
	City of Co.	Curb Inlet	226+12.00		RT	Aerial			Curb inlet in proposed Intersection
		Utility Access Box	226+18.00		LT	Aerial			utility access box in work zone
		Utility Access Box	226+46.00		LT	Aerial			utility access box in work zone
	City of Co.	Curb Inlet	226+51.00		LT	Aerial			Curb inlet in proposed Intersection
	City of Co.	Curb Inlet	226+74.00		RT	Aerial			Curb inlet in proposed Intersection
	City of Co.	Curb Inlet	226+87.00		LT	Aerial			Curb inlet in proposed Intersection
	City of Co.	STM MH	227+11.00		CNTR	Aerial			MH in mediam of Alum
	Franklin County	Traffic Control Pole	227+16.00		LT	Aerial			Traffic Control Pole
	City of Co.	STM Line	226+76.00	to	227+11.00	CNTR	Underground		MH in mediam of Alum
	City of Co.	STM Line	227+11.00	to	230+98.00	CNTR	Underground		MH in mediam of Alum

Utility Conflict Speadsheet

	Franklin County	Traffic Control Pole	227+13.00	RT	Aerial			Traffic Control Pole
	SCP	Light Pole	227+39.00	LT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	227+35.00	RT	Aerial			Light Pole in Prop Shoulder
	SCP	Pull Box	227+45.00	RT	Aerial			Electrical Pull Box
	Columbia Gas	Utility Witness Post	227+35.00	LT	Aerial			Gas Post in proposed shoulder
		Utility Witness Post	227+42.00	LT	Aerial			Tele Post in proposed shoulder
		Utility Access Box	227+48.00	LT	Aerial			Utility access box
	City of Co.	SAN MH (Abandoned)	227+66.00	RT	Aerial			Abandoned San MH in prop shoulder
	Columbia Gas	Utility Witness Post	227+66.00	RT	Aerial			Gas Post in prop SUP
		Tele. Pull Box	228+91.00	LT	Aerial			Pull Box in Prop SUP
		Utility Access Box	229+23.00	LT	Aerial			Utility access box
	SCP	Light Pole	229+33.00	LT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	229+33.00	RT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM MH	229+88.00	CNTR	Aerial			Storm Manhole in median of Alum Creek Drive
	City of Co.	STM Catch Basin	229+88.00	LT	Aerial			Storm Catch Basin in Prop Shoulder
	City of Co.	STM	229+88.00	Crossing	Aerial			STM line in prop work area
	City of Co.	STM Catch Basin	229+88.00	LT	Aerial			Storm Catch Basin in Prop Shoulder
	City of Co.	Water Valve	229+93.00	LT	Aerial			Water Valve in prop shoulder
	City of Co.	Water Valve	230+04.00	LT	Aerial			Water Valve in prop shoulder
		Utility Access Box	230+62.00	LT	Aerial			Utility access box
	City of Co.	STM MH	230+74.00	RT	Aerial			STM MH in edge of Workzone
		Utility Access Box	230+99.00	LT	Aerial			Utility access box
	SCP	Light Pole	231+30.00	RT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	231+67.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM	231+75.00 to 238+50.00	LT	Underground			STM Line entering and exiting construction limits
		Tele. Pull Box	232+16.00	RT	Aerial			Pull Box in Prop SUP
	City of Co.	SAN MH (Abandoned)	232+41.00	RT	Aerial			Abandoned SAN MH edge of prop shoulder
	City of Co.	STM MH	232+32.00	LT	Aerial			MH in SUP
	SCP	Light Pole	233+28.00	RT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	233+38.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM Catch Basin	233+42.00	CNTR	Aerial			Catch basin in Median of Alum
		Utility Access Box	234+67.00	LT	Aerial			Utility access box
	City of Co.	STM MH	234+86.00	CNTR	Aerial			MH in mediam of Alum
	SCP	Light Pole	235+26.00	RT	Aerial			Light Pole in Prop Shoulder
	SCP	Light Pole	235+35.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM MH	235+41.00	LT	Aerial			MH in SUP
		Utility Witness Post	236+65.00	RT	Aerial			Tele post just off SUP
	City of Co.	SAN MH (Abandoned)	237+13.00	RT	Aerial			Abandoned SAN MH edge of prop shoulder

Utility Conflict Speadsheet

	SCP	Light Pole	237+24.00	RT	Aerial			Light Pole in Prop Shoulder
		Utility Access Box	237+37.00	RT	Aerial			Utility access box
	SCP	Light Pole	237+39.00	LT	Aerial			Light Pole in Prop Shoulder
	City of Co.	STM MH	238+24.00	LT	Aerial			MH in Proposed Shared use Path
	City of Co.	SAN 144"	239+00.00 to 331+42.00	LT	Underground			144" San Line enters R/W, under west side of roadway
	Columbia Gas	Utility Witness Post	239+48.00	RT	Aerial			Gas post in proposed Shared use path
	City of Co.	STM Catch basin	239+85.00	LT	Aerial			Catch Basin edge of prop shoulder
	City of Co.	STM Catch basin	239+74.00	CNTR	Aerial			Catch basin in Median of Alum
	City of Co.	STM	239+86.00	Crossing	Underground			Storm line in the Prop work area
	City of Co.	STM MH	239+86.00	CNTR	Aerial			Manhole in median of Alum Creek
	City of Co.	STM Catch basin	239+86.00	RT	Aerial			Catch Basin edge of prop shoulder
	City of Co.	STM	239+86.00 to 240+11.00	CNTR to LT	Underground			Storm line from MH to Catch Basin Crossing to east side of roadway
		Tele. Pull Box	239+73.00	LT	Aerial			Tele pull boxes and posts located in proposed SUP
		Utility Witness Post	241+60.00	RT	Aerial			Tele Post, between prop shoulder and SUP
	City of Co.	SAN MH (Abandoned)	241+87.00	RT	Aerial			Abandoned MH that will be just off prop edge of Sholder
	City of Co.	STM MH	244+80.00	CNTR	Aerial			Storm MH in Center of median
		Utility Access Box	245+77.00	RT	Aerial			utility access Box in work zone
		Utility Witness Post	246+62.00	RT	Aerial			Tele. Post Located in SUP
		Utility Access Box	246+63.00	RT	Aerial			utility access Box in work zone
		Utility Witness Post	249+78.00	RT	Aerial			Tele. Post Located in SUP
	City of Co.	STM Catch Basin	248+85.00	LT	Aerial			Catch Basin edge of prop shoulder
	City of Co.	STM MH	248+85.00	CNTR	Aerial			Storm Manhole in median of Alum Creek Drive
	City of Co.	STM	248+85.00	Crossing	Underground			STM Line In Work Zone
	City of Co.	STM MH	248+86.00	RT	Aerial			Storm Manhole in prop work zone
	City of Co.	STM Catch Basin	248+86.00	RT	Aerial			Catch Basin edge of prop shoulder
		Utility Access Box	249+12.00	RT	Aerial			utility access Box in work zone
	City of Co.	STM	249+00.00 to 249+53.00	CNTR	Underground			STM in center of Median
	City of Co.	Catch Basin	249+53.00	CNTR	Underground			Cathc Basin in center of Median
		Utility Access Box	249+58.00	RT	Aerial			utility access Box in work zone
		Utility witness post	249+79.00	RT	Aerial			Tele Post, between prop shoulder and SUP
		Utility Access Box	249+82.00	RT	Aerial			utility access Box in work zone
		Utility Pole	249+79.00	RT	Aerial			Utility Pole
	Franklin County	Traffic Signal Pole	249+88.00	RT	Aerial			Traffic Signal Pole
		Utility Access Box	249+63.00	LT	Aerial			Utility access box in prop SUP
		Utility Pole	249+91.00	LT	Aerial			Light Pole in Prop SUP
	City of Co.	Hydrant	250+20.00	LT	Aerial			Hydrant located in prop shoulder
	City of Co.	Water Valve	250+18.00	LT	Aerial			Water Valve in roadway
	City of Co.	Waterline	250+43.00	Crossing	Underground			Water line crossing intersection

Utility Conflict Spreadsheets

	City of Co.	Water Valve	250+44.00	LT	Aerial			Water Valve in roadway
	Franklin County	Cross walk Sign	250+63.00	LT	Aerial			Cross walk light for foot traffic
		Utility Access Box	250+88.00	LT	Aerial			Utility access box in construction limits
		Utility Pole	251+19.00	LT	Aerial			Utility pole in construction limits
	City of Co.	Water Valve	251+19.00	LT	Aerial			Water Valve in roadway
	Franklin County	Traffic Signal pole	251+28.00	LT	Aerial			Traffic Signal Pole
	City of Co.	Stm MH	251+08.00	RT	Aerial			MH in intersection
	City of Co.	STM Catch Basin	251+32.00	LT	Aerial			Catch basin in construction limits
	City of Co.	STM Manhole	251+56.00	LT	Aerial			Manhole in existing sidewalk
	City of Co.	Water Valve	251+57.00	LT	Aerial			Water Valve in roadway
	City of Co.	SAN MH (Abandoned)	251+31.00	RT	Aerial			Abandoned MH in Roadway
	Franklin County	Cross walk Sign	251+21.00	LT	Aerial			Cross walk light for foot traffic
	Columbia Gas	Utility Witness Post	251+72.00	RT	Aerial			Gas Post
		Utility Access Box	251+72.00	RT	Aerial			Utility access box
	Franklin County	Cross Walk Sign	251+82.00	RT	Aerial			Cross Walk
	City of Co.	STM	251+55.00 to 253+02.00	Crossing	Underground			STM Line crossing Highway at Intersection along Rohr Rd
	City of Co.	STM MH	252+05.00	CNTR	Aerial			STM MH in center of roadway
	City of Co.	STM MH	252+15.00	CNTR	Aerial			STM MH in center of roadway
		Utility Pole	252+99.00	LT	Aerial			Utility Pole in construction limits
		Utility Access Box	252+99.00	LT	Aerial			Tele box in roadway
	Franklin County	Cross walk Sign	253+07.00	LT	Aerial			Cross walk light for foot traffic
		Utility Access Box	253+81.00	LT	Aerial			Utility access box in construction limits
		Utility Witness Post	254+51.00	LT	Aerial			Utility post in prop SUP
		Light pole	254+55.00	LT	Aerial			Lightpole for LOVES, edge of const. limits
		Utility Witness Post	255+80.00	LT	Aerial			Utility post in prop SUP
	SCP	Elec pull box	255+80.00	LT	Aerial			Elec pull box Edge of const. limits
	City of Co.	Water Valve	255+90.00	LT	Aerial			Water Valve just off SUP
		Utility Access Box	256+41.00	LT	Aerial			Utility access box in Prop Shoulder
		Electrical Pull boxes	256+56.00	LT	Aerial			Electrical Pull box located in SUP
	City of Co.	Catch Basin	256+30.00	LT	Aerial			Catch basin for Loves Drive
	City of Co.	STM	256+53.00 to 258+07.00	LT	Underground			Stm line crossing Loves Drive
	City of Co.	Catch Basin	258+07.00	LT	Aerial			Catch basin for Loves Drive
		Utility Witness Post	256+66.00	LT	Aerial			Tel. post inbetween Shoulder and SUP
		Utility Access Box	256+61.00	LT	Aerial			Utility access box in construction limits
		Utility Access Box	257+01.00	RT	Aerial			Utility access box in construction limits
	City of Co.	STM Catch Basin + Line	257+32.00 to 257+86.00	CNTR	Underground			Catch Basin and STM line connecting to main line
		Utility Witness Post	257+86.00	LT	Aerial			post inbetween Shoulder and SUP
	City of Co.	STM + Catch Basins	257+86.00	Crossing	Underground			STM Line crossing highway to catch basins and MHs

Utility Conflict Speadsheet

	City of Co.	STM MH	257+86.00	LT	Aerial			STM MH in Driveway
	City of Co.	STM MH	257+86.00	CNTR	Aerial			STM MH in Median
	City of Co.	STM Catch Basins	257+86.00	RT	Aerial			Catch basin edge of proposed shoulder
	City of Co.	SAN MH	258+49.00	LT	Aerial			SAN MH for 144"
	City of Co.	SAN	257+85.00	Crossing	Underground			Sanitary Line crossing and connecting to 144" SAN
	City of Co.	STM Catch Basin	258+87.00	LT	Aerial			STM Catch basin edge of prop shoulder
	City of Co.	Water Valve	258+86.00	LT	Aerial			Water Valve in prop work
	City of Co.	Water valve + Line	258+86.00	Crossing	Underground			Water Line crossing Alum
	City of Co.	Water Line	258+87.00 to 259+65.00	RT	Underground			Water line in Workzone
	City of Co.	STM MH	259+12.00	LT	Aerial			STM MH in edge of construction limits
		Utility Access Box	259+30.00	LT	Aerial			Utility access box in construction limits
	Columbia/Obetz	Gas line	259+38.00	Crossing	Underground			Gas line crossing Alum Creek connecting Columbia gas and UTI
	City of Co.	Hydrant	259+50.00	RT	Aerial			Hydrant located in Prop Shoulder
	City of Co.	SAN MH (Abandoned)	260+86.00	RT	Aerial			Abandoned San MH in prop shoulder
	Obetz Gas	Gas Line	259+75.00 to 284+55.00	LT	Underground			Gas Line edge of construction limits
	City of Co.	Catch Basin	261+78.00	CNTR	Aerial			Catch Basin center of road
		Tele pull box	261+65.00	RT	Aerial			Pull Box in workzone
	City of Co.	STM Line	262+35.00 to 263+35.00	Crossing	Underground			STM Line crossing Alum diagonally
	Obetz Gas	Utility Witness Post	262+31.00	LT	Aerial			Gas post egde of construction limits
	City of Co.	STM MH	263+35.00	LT	Aerial			STM MH edge of construction limits
	City of Co.	STM Catch Basin + Line	263+77.00	CNTR to RT	Underground			Stm Line crossing from Center to east side
	City of Co.	STM + Catch basins and MH	263+88.00	Crossing	Underground			Catch Basins in Prop Shoulders
	City of Co.	SAN MH (Abandoned)	265+67.00	RT	Aerial			Abandoned San MH in prop shoulder
	Obetz Gas	Gas Main	265+76.00	LT	Aerial			Gas Main edge of construction limits
	Obetz Gas	Utility Witness Post	265+76.00	LT	Aerial			Gas post in proposed Shared use path
		Utility Witness Post	266+53.00	RT	Aerial			Tele post in Workzone
	City of Co.	STM Line	266+60.00 to 267+37.00	RT	Underground			STM running under Aloha Dr.
	City of Co.	Hydrant	266+17.00	LT	Aerial			Hydrant in Prop Shoulder
	City of Co.	Curb Inlet	267+62.00	CNTR	Aerial			Curb inlet center of Alum
	Obetz Gas	Utility Witness post	269+71.00	LT	Aerial			Gas post in proposed Shared use path
		Utility Access Box	267+37.00	RT	Aerial			Access box in Prop Shoulder
	City of Co.	Catch Basin	270+00.00	CNTR	Aerial			Catch Basin in center of Alum
	Obetz Gas	Gas Line	269+97.00 to 270+25.00	Crossing	Underground			Gas Line crossing alum creek
	Obetz Gas	Utility Witness post	270+25.00	LT	Aerial			Gas post in proposed Shared use path
		Tele pull box	270+22.00	RT	Aerial			Tele Pull Box edge of work zone
		Utility access box	270+22.00	LT	Aerial			Access Box edge of existing pavement
		Utility Witness Post	270+43.00	LT	Aerial			Tele post in construction limits
		Utility access box	270+54.00	RT	Aerial			Access Box

Utility Conflict Speadsheet

	SCP	Underground Elec line	270+14.00	to	270+68.00	Crossing	Underground		Electrical lines crossing intersection
	SCP	Underground Elec line	270+38.00	to	270+85.00	Crossing	Underground		Electrical lines crossing intersection
	City of Co.	STM MH	270+56.00			RT	Aerial		Manhole, edge of workzone
	Franklin County	Walk Signal pole	270+70.00			LT	Aerial		Traffic control Pole
		Pull Box	270+72.00			RT	Aerial		Pull Box Edge of workzone
		Utility Pole	270+75.00			RT	Aerial		Tele Utility Pole in construction limits
	Franklin County	walk signal pole	270+61.00			RT	Aerial		Walk Signal Pole
	Franklin County	Traffic Signal pole	270+86.00			RT	Aerial		Traffic Signal Pole
	Franklin County	Traffic Signal pole	270+97.00			LT	Aerial		Traffic Signal Pole
		Interconnect Cable	272+04.00	to	277+00.00	LT	Underground		Underground Cable along Existing pavement
	Franklin County	Utility Access Box	272+03.00			LT	Aerial		Access box beside traffic control post
	Franklin County	walk signal pole	272+03.00			LT	Aerial		Walk Signal Pole
	Franklin County	Utility Access Box	271+92.00			RT	Aerial		Access box on edge of curb
	Franklin County	Traffic Signal pole	272+07.00			RT	Aerial		Traffic control Pole
	Franklin County	Utility Access Box	272+43.00			LT	Aerial		Access box on edge of existing pavement
		Utility Witness Post	273+13.00			RT	Aerial		Tele post in SUP
	SCP	Electric Pull Box	273+19.00			RT	Aerial		Pull box edge of workzone
	Obetz Gas	Utility Witness Post	273+38.00			LT	Aerial		Gas post in construction limits
		Utility Access Box	273+43.00			LT	Aerial		Access box in prop shoulder
	City of Co.	STM + Catch basins and MH	273+92.00			Crossing	Underground		MH and Catchbasins in Prop work area
	City of Co.	SAN MH (Abandoned)	2742+43.00			RT	Underground		MH in prop shoulder
	Obetz Gas	Utility Witness Post	274+42.00			LT	Aerial		Gas post in construction limits
	SCP	Utility Pole	274+63.00			RT	Aerial		Utility Pole near Prop SUP
		Utility Access Box	274+51.00			RT	Aerial		Access box in prop SUP
		Utility Access Box	275+92.00			LT	Underground		Access box in prop shoulder
	Obetz Gas	Utility Witness Post	276+15.00			LT	Aerial		Gas post in construction limits
		Utility Access Box	277+00.00			LT	Underground		Access box in prop shoulder
		Utility Access Box	277+27.00			RT	Underground		Access box in prop SUP
		Utility witness post	277+25.00			RT	Aerial		Tele posts around SUP
	SCP	Utility Pole	277+29.00			RT	Aerial		Utility Pole near Prop SUP
		Utility Access Box	277+83.00			RT	Aerial		Access box in prop SUP
		Utility witness post	277+83.00			RT	Aerial		Tele posts around SUP
	Obetz Gas	Utility witness post	277+90.00			LT	Aerial		Gas Post inbetween SUP and Shoulder
	City of Co.	STM Curb Inlet	278+37.00			CNTR	Underground		Curb inlet in median of Alum
	City of Co.	SAN MH (Abandoned)	278+53.00			RT	Underground		Abandoned MH in Prop Shoulder
	City of Co.	STM MH	278+86.00			CNTR	Underground		Storm MH in Center of median
		Utility Pole	279+10.00			RT	Aerial		Utility Pole in Prop Shoulder
		Utility Access Box	279+33.00			RT	Underground		Access box on edge of curb

Utility Conflict Spreadsheets

	City of Co.	STM catch basin	280+37.00	CNTR	Aerial			Storm catch basin in median of Alum
		Utility witness post	281+00.00	RT	Aerial			Tele posts in workzone
		Utility Pole	281+06.00	RT	Aerial			Utility Pole in Prop Shoulder
	Obetz Gas	Utility witness pole	281+13.00	LT	Aerial			Gas Post edge of driveway
	City of Co.	STM catch basin	281+11.00	CNTR	Underground			Storm catch basin in median of Alum
	City of Co.	STM catch basin	281+87.00	CNTR	Underground			Storm catch basin in median of Alum
		Utility Access Box	281+85.00	RT	Underground			Access box in Prop Shoulder
	City of Co.	San line	281+52.00	Crossing	Underground			SAN Line Crossing Alum to connect to 144" SAN
	Obetz Gas	Gas Valve	281+62.00	LT	Underground			Gas valve in prop SUP
	Obetz Gas	Utility witness pole	281+69.00	LT	Aerial			Gas Post edge of driveway
		Utility Pole	282+26.00	RT	Aerial			Utility Pole In Workzone
		Utility Access Box	282+39.00	RT	Underground			Access box in Prop Shoulder
		Utility Access Box	282+61.00	RT	Underground			Access box in Workzone
	SCP	Utility Pole	282+68.00	RT	Aerial			Utility Pole In workzone
		Utility access box	282+68.00	RT	Aerial			Access box in workzone
	SCP	Utility Pole	282+86.00	LT	Aerial			Utility pole in prop SUP
	UTI	Gas Valve	282+91.00	LT	Underground			Gas Valve in construction limits
	UTI	Utility Witness Post	282+91.00	LT	Aerial			Gas pole in prop SUP
	SCP	Elec. Pull Box	282+73.00	RT	Underground			Pull box
	Franklin County	Traffic control Box	282+73.00	RT	Underground			Traffic control box
	City of Co.	SAN MH	282+78.00	RT	Underground			Manhole, edge of workzone
	City of Co.	SAN MH (Abandoned)	283+01.00	RT	Underground			Abandoned MH in Workzone
	Franklin County	Traffic Signal Pole	283+03.00	RT	Aerial			Traffic Signal Pole
		Utility access box	283+04.00	RT	Aerial			Access box in workzone
	Franklin County	Walk Signal Pole	283+23.00	LT	Aerial			Walk Signal Pole
	City of Co.	Curb inlet	283+46.00	LT	Aerial			Curb inlet edge of construction limits
	City of Co.	STM MH	283+47.00	LT	Underground			Storm manhole edge of construction limits
	City of Co.	STM line	283+49.00 to 284+31.00	LT	Underground			Storm line with catch basin in const limits
	City of Co.	Curb inlet	284+08.00	LT	Underground			Curb inlet edge of construction limits
	City of Co.	STM MH	284+28.00	LT	Underground			Storm manhole edge of existing pavement
	City of Co.	STM line + Catch Basin	284+28.00 to 284+50.00	LT	Underground			Storm line with catch basin in Prop shoulder
	City of Co.	STM + Catch basins and MH	284+28.00	Crossing	Underground			Various Catch Basins and MHs crossing Alum
	City of Co.	STM Line	284+28.00 to 287+34.00	CNTR	Underground			STM line and catch basins in center of Alum
	City of Co.	Storm Line	284+27.00 to 289+87.00	RT	Underground			Stm Running along east side of Alum Creek Drive
	Franklin County	Walk Signal Pole	284+28.00	RT	Aerial			Walk Signal Pole
		Utility access box	284+28.00	RT	Aerial			Access box in workzone
		Utility Witness Post	284+33.00	RT	Aerial			Tele Post on near Prop SUP
	Franklin County	Traffic Signal pole	284+60.00	LT	Aerial			Traffic Signal Pole

Utility Conflict Speadsheet

	City of Co.	SAN MH	284+46.00	RT	Underground			MH edge of workzone
	Franklin County	Traffic Signal pole	284+54.00	RT	Aerial			Traffic Signal Pole
	City of Co.	Storm Curb Inlet	284+60.00	RT	Underground			Curb Inlet on east side of Alum Creek Drive
	City of Co.	Storm Curb Inlet	285+10.00	RT	Underground			Curb Inlet on east side of Alum Creek Drive
	City of Co.	Hydrant	285+38.00	RT	Aerial			Hydrant near Prop Shoulder
		Utility access box	285+55.00	LT	Underground			Access box in prop shoulder
	Obetz Gas	Gas Valve	285+60.00	LT	Aerial			Gas Valve in construction limits
	City of Co.	Catch Basin	285+64.00	CNTR	Underground			Catch Basin in center of Alum
	City of Co.	water Valve	286+00.00	LT	Underground			Water Valve edge of existing pavement
	SCP	Utility Pole	286+06.00	RT	Aerial			Utility pole in Work zone
	Obetz Gas	Gas Valve	286+55.00	LT	Underground			Gas Valve in construction limits
	City of Co.	Curb inlet + MH	286+54.00	RT	Underground			Curb inlet and MH on East side of Alum creek
	City of Co.	Catch Basin	286+61.00	CNTR	Underground			Catch basin in Median of Alum
	Obetz Gas	Gas Valve	287+03.00	LT	Underground			Gas Valve in construction limits
	City of Co.	Curb inlets	287+34.00	CNTR	Underground			Back to back Curb inlets in median
	City of Co.	Curb inlet + MH	287+34.00	RT	Underground			Curb inlet and MH on East side of Alum creek
		Tele Pull Box	287+34.00	RT	Underground			Pull Box in work zone
	City of Co.	Hydrant	287+92.00	RT	Aerial			Hydrant near Prop Curb
	City of Co.	Curb inlet + MH	288+15.00	RT	Underground			Curb inlet and MH on East side of Alum creek
	SCP	utility post	288+15.00	RT	Aerial			Utility Post in Work zone
		Utility access box	288+85.00	LT	Underground			Utility access box edge of prop shoulder
	Obetz Gas	Gas Valve	289+19.00	LT	Underground			Gas Valve in construction limits
	City of Co.	Stm Catch Basin	289+87.00	RT	Underground			Catch Basin In prop Shoulder
	City of Co.	STM MH	289+99.00	CNTR	Underground			Manhole in median of Alum Creek
	City of Co.	SAN MH (Abandoned)	290+27.00	RT	Underground			Abandoned Manhole edge of prop Shoulder
		Utility Witness Post	290+27.00	LT	Aerial			Tele post in prop shoulder
	Verizon	Tele. Pull Box	290+75.00	RT	Aerial			Tele pull box in Workzone
	Verizon	Tele. Pull Box	290+80.00	RT	Aerial			Tele pull box in prop shoulder
	City of Co.	Hydrant	290+91.00	RT	Aerial			Hydrant in Prop Shoulder
	SCP	Utility Pole	291+04.00	RT	Aerial			Utility Pole in workzone
	City of Co.	SAN MH (Abandoned)	292+56.00	RT	Underground			Abandoned Manhole edge of Shoulder
	City of Co.	Hydrant	294+04.00	LT	Aerial			Hydrant in Prop Shoulder
	SCP	Utility Pole	294+04.00	RT	Aerial			Utility Pole in workzone
		Utility access box	294+87.00	LT	Underground			Utility access box in construction limits
	City of Co.	Water Valve	295+26.00	LT	Aerial			Water Valve in construction limits
	City of Co.	STM Catch basin	295+48.00	LT	Aerial			Catch Basin in prop shoulder
	City of Co.	STM + Catch Basins	295+48.00	Crossing	Underground			STM with Catch basins in Prop work
	Verizon	Tele. Pull Box	295+58.00	RT	Aerial			Tele pull box in Workzone

Utility Conflict Speadsheet

	Verizon	Tele Pull Box and Post	295+95.00		LT	Aerial			Tele Box in Prop SUP
	City of Co.	Water Valve	295+95.00		LT	Aerial			Water Valve edge of shoulder
	City of Co.	Catch Basins + Stm line	295+93.00	to	296+38.00	LT	Aerial		STM running under Bixby Rd with catch basins
	Verizon	Tele Pull Box and Post	295+94.00		RT	Aerial			Tele Box in Prop SUP
	Verizon	FO cable	295+94.00	to	295+79.00	Crossing	Underground		FO Cable crossing Alum
	City of Co.	STM Catch Basin	296+14.00		RT	Underground			STM Catch Basin on edge of Bixby Rd
	City of Co.	STM Line	296+14.00	to	296+58.00	RT	Underground		Storm pipe across Bixby Rd
	City of Co.	STM Catch Basin	296+59.00		RT	Underground			STM Catch Basin on edge of Bixby Rd
	City of Co.	STM Line	296+59.00	to	298+78.00	RT/CNTR	Underground		Storm pipe from Bixby Rd to Median of Alum Creek
	City of Co.	STM Line	296+38.00	to	298+78.00	LT/CNTR	Underground		Storm pipe from Bixby Rd to Median of Alum Creek
	Verizon	Utility Witness post	296+95.00		LT	Aerial			Tele post beside existing bridge
	Verizon	Utility Witness Post	297+07.00		RT	Aerial			Tele Post in prop Shoulder
	City of Co.	Water Line	297+00.00	to	323+47.00	LT to CNTR	Underground		Water Line Crossing into Median
	City of Co.	SAN MH (Abandoned)	297+21.00		RT	Underground			Abandoned San MH in prop SUP
	City of Co.	SAN (Abandoned)	299+26.94		Crossing	Underground			Abandoned SAN Line crossing under bridge
	City of Co.	SAN (Abandoned)	299+30.48	to	332+05.56	LT	Underground		Abandoned SAN Line crossing under bridge
		Tele Pull Box and Post	300+49.00		RT	Underground			Tele Box in Prop Shoulder
		Fiber Optic Line	300+49.00	to	300+95.00	RT	Underground		Fiber optic line
		Tele Pull Box and Post	300+95.00		RT	Aerial			Tele Box in Prop Shoulder
		Fiber Optic Line	300+95.00	to	301+03.00	RT to CNTR	Underground		Fiber optic line running from shoulder to median
		Tele Pull Box and Post	301+03.00		CNTR	Aerial			Tele Box in Prop Shoulder
		Fiber Optic Line	301+03.00	to	334+02.00	CNTR	Underground		Fiber optic line running down median
	City of Co.	STM Manhole	305+53.00		CNTR	Underground			Manhole in median of Alum Creek
		Utility Witness Post	306+03.00		CNTR	Aerial			Tele Post in Median
		Elec pull box	309+59.00		LT	Underground			Elec pull box and pole edge of prop shoulder
	City of Co.	144" SAN MH	309+84.00		LT	Underground			144" MH in construction limits
		Utility Witness Post	311+09.00		CNTR	Aerial			Tele Post in Median
	City of Co.	Catch Basin	311+38.00		CNTR	Underground			Catch basin in Median of Alum
	City of Co.	STM MH	311+50.00		CNTR	Underground			Manhole in Median of Alum
		Utility witness post	314+00.00		LT	Aerial			Utility witness post in construction limits
		Utility Witness Post	316+12.00		CNTR	Aerial			Tele Post in Median
	SCP	Utility Pole	318+20.00		RT	Aerial			Utility pole in workzone
		Utility Witness Post	321+01.00		CNTR	Aerial			Tele Post in Median
	City of Co.	STM + Catch basin and MH	322+57.00		CNTR to RT	Underground			MH and Catchbasins in Prop work area with STM line going East
		Utility witness post	323+52.00		LT	Aerial			Utility witness post in construction limits
	SCP	Utility Pole	323+86.00		RT	Aerial			Utility pole in workzone
	City of Co.	Catch Basin	324+05.00		LT	Underground			Catch Basin off Rathmell Rd
	City of Co.	STM Line	324+05.00	to	324+38.00	LT	Underground		STM Line off Rathmell Rd

Utility Conflict Spreadsheets

	City of Co.	Catch Basin	324+38.00	LT	Underground			Catch Basin off Rathmell Rd
	City of Co.	STM Line	324+38.00 to 324+59.00	LT to CNTR	Underground			STM Line off Rathmell Rd to Alum Creek Drive median
	City of Co.	STM MH	324+59.00	CNTR	Underground			Manhole in Median of Alum
	City of Co.	STM Catch Basin	324+68.00	CNTR	Underground			Catch Basin in Median of Alum
	City of Co.	STM Line	324+59.00 to 324+53.00	RT to CNTR	Underground			STM Line off Drive to Alum Creek Drive median
	City of Co.	Catch Basin	324+53.00	RT	Underground			Catch Basin off drive of east side of Alum
	SCP	Utility Pole	324+62.00	RT	Aerial			Utility Pole in construction limits
		Utility Witness Post	325+35.00	CNTR	Aerial			Tele Post in Median
	City of Co.	SAN MH (Abandoned)	325+47.00	LT	Underground			Abandoned SAN MH in construction limits
	SCP	Utility Pole	327+39.00	RT	Aerial			Utility pole in workzone
		Utility Witness Post	329+90.00	CNTR	Aerial			Tele Post in Median
	SCP	Utility Pole	329+99.00	RT	Aerial			Utility Pole in construction limits
	SCP	Utility pole	330+12.00	LT	Aerial			Utility Pole in construction limits
	City of Co.	STM Catch Basin	330+10.00	LT	Underground			Catch basin in construction limits
	City of Co.	STM Line	330+10.00 to 330+15.00	LT	Underground			STM Line connecting Catch Basins
	City of Co.	STM Catch Basin	330+15.00	LT	Underground			Catch basin in construction limits
	City of Co.	STM Line	330+10.00 to 331+05.00	LT to CNTR	Underground			STM Line connecting to MH in median
	Columbia Gas	Gas Valve	330+46.00	LT	Underground			Gas Valve on edge of prop shoulder
	Columbia Gas	Gas Line	330+46.00 to 334+75.00	LT	Underground			Gas line edge of prop shoulder to end of construction
		Utility Witness Post	330+57.00	LT	Aerial			Tele Post in proposed shoulder
	City of Co.	STM MH	331+04.00	CNTR	Underground			Manhole in Median of Alum

APPENDIX

L.

Secondary Source Environmental Review

Environmental Literature/Data Review

The project corridor bisects a heavily developed logistics park, surrounded by 75 million square feet of warehouse, industrial, and distribution facilities (Figure 1). For this feasibility study, the environmental analysis has been limited to research of existing data sources and a field review of the corridor. Known resources in the corridor include Big Walnut Creek, 18 residences older than 50 years, and several gas stations. A summary of preliminary environmental studies for the project corridor is provided below.

Kimley-Horn reviewed available topographic maps, the National Wetlands Inventory (NWI), the National Hydrography Dataset (NHD), LiDAR, soil survey data, public lands and waters information, floodplain data, protected species information, and aerial photography to identify potential environmental constraints within and along the project corridor.

U.S. Geological Survey (USGS) Topographic Map

A review of the Lockbourne, Ohio 7.5-minute topographic quadrangle indicates that the study area is relatively flat, developed land. At the northern end of the corridor, Alum Creek Drive crosses a mapped perennial stream near its intersection with Groveport Road. In the central portion of the project corridor, Alum Creek Drive crosses Big Walnut Creek just north of Bixby Road. In addition, the project corridor runs adjacent to several sand and gravel quarry ponds to the south of Rathmell Road. Nearing the southern terminus, the project corridor crosses one intermittent stream and one perennial stream just north of Rohr Road.

National Wetlands Inventory (NWI)

Based on a review of the U.S. Fish and Wildlife Service (USFWS) NWI, a total of 18 aquatic resources were identified within or immediately adjacent to the project corridor. The majority of these aquatic resources are excavated ponds that have been constructed for quarry operations or stormwater management purposes and are located adjacent to Alum Creek Drive. NWI-mapped aquatic resources are summarized below.

- A perennial stream (R2UBH) flows west-to-east across the project corridor at the Groveport Road intersection before flowing into Big Walnut Creek.
- Quarry ponds (L1UBH, PUBGx) are located on either side of Alum Creek Drive south of Rathmell Road. An emergent wetland fringe (PEM1Fx) is mapped on the southwest side of the oldest quarry pond east of Alum Creek Drive.
- A very large perennial stream, Big Walnut Creek (R2UBH), flows east-to-west across the project corridor just north of the Bixby Road intersection.
- A small freshwater pond (PUBGx) is mapped southwest of the Bixby Road intersection, and a small emergent wetland (PEM1C) is mapped southeast of the intersection.
- A series of ponds (PUBGx) to the west of the Global Drive intersection provide hydrology to an intermittent stream (R4SBC) that is mapped as crossing Alum Creek Drive between Global Drive and Rohr Road.
- Immediately north of the Rohr Road intersection, a perennial stream (R5UBFx) is mapped as crossing Alum Creek Drive.
- To the southeast of the Rohr Road intersection are a series of mapped ponds (PUBGx) both along Rohr Road and along the east side of Alum Creek Drive. These ponds extend to the south to either side (i.e., north and south) of the Spiegel Drive intersection.
- To the northwest of the intersection with London-Groveport Rd is a mapped pond (PUBGx) and a mapped emergent wetland (PEM1A).

A review of current and historic aerials confirms the likely presence of these aquatic resources through the identification of areas of inundation and saturation. The presence of these aquatic resources should be field verified.

USGS National Hydrography Dataset (NHD) and StreamStats

Based on a review of the USGS NHD, there are two stream features depicted within the project corridor: a perennial stream at the Groveport Road intersection and Big Walnut Creek, which is crossed north of Bixby Road. USGS StreamStats, which maps drainages in finer detail, also identifies these two perennial streams, and also depicts smaller ephemeral and intermittent drainages north of the Rohr Road intersection, between Rohr Road and Spiegel Drive, and north of the London-Groveport Road intersection.

Franklin County Soil Survey

A review of the Franklin County soil survey via the Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) database identified 16 soil map units within the study area. Two of those soil map units, together comprising approximately 19% of the study area, are characterized as hydric (i.e., having 90% or more hydric components) or partially hydric (i.e., having 50-90% hydric components): the hydric, Kokomo silty clay loam, 0 to 2 percent slopes (Ko), and the partially hydric, Kokomo-Urban land complex (Ku). Hydric soils can be found south of Toy Road to the southern terminus at London-Groveport Road, with the largest mapped areas of hydric soils in the vicinity of the Rohr Road intersection. The remainder of the study area has been mapped as containing non-hydric soils, with a hydric rating of 10% or less.

Ohio Department of Natural Resources (ODNR) Public Lands and Facilities Inventory

A review of the ODNR Public Lands and Facilities Inventory was completed. No ODNR Public Lands or Facilities are located within, or in the vicinity of, the project corridor. The nearest ODNR property is the Mackey Ford Wildlife Area located between US-23 and the Scioto River, approximately 4.5 miles southeast of the southern end of the project corridor.

FEMA Floodplain

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) Viewer was reviewed to determine if the project corridor crosses a FEMA 100-year floodplain. Based on Panels 39049C0427K, 39049C0431K, 39049C0429K, and 39049C0433K (all effective June 17, 2008), the project corridor to the south of Groveport Road and to the north of Bixby Road is located within the FEMA-designated regulatory floodway and/or the 100-year floodplain (Zone AE) of Big Walnut Creek. Outside of a small segment immediately north of Bixby Road, Alum Creek Drive itself is not located within a FEMA-designated flood hazard areas; however, flood hazard areas extend to the toe of slope of the roadway on both the east and west sides of the road. Mapped base flood elevations (BFEs) range from 722 feet to 725.2 feet. The project corridor south of Bixby Road is not located in a designated flood hazard area and is in an area of minimal flood hazard (Zone X).

USFWS Federally Listed Threatened and Endangered Species

Kimley-Horn conducted a preliminary review of the potential for federally listed threatened, endangered, and proposed species to occur within the study area or be affected by the proposed project for the purposes of due diligence in compliance with the Endangered Species Act (ESA). An official list of the threatened, endangered, and proposed species, and any designated critical habitats, was obtained for the study area and evaluated using the USFWS Information for Planning and Consultation (IPaC) online planning tool. Habitat descriptions for the identified species were compared to the habitat within or near the project corridor. The

official species list obtained via the USFWS IPaC for the project identified six species that should be considered in an effects analysis. The six identified species are reviewed below in Table 1.

Table 1. USFWS Listed Threatened and Endangered Species

Species	Status	Preferred Habitat	Preliminary Findings
<i>Myotis sodalis</i> (Indiana Bat)	Endangered	During summer, Indiana bats roost under loose bark or in hollows and cavities of mature trees in the floodplain forest or savanna habitats adjacent to riparian corridors. In winter, Indiana bats hibernate in caves and mines.	There is no designated critical habitat for the Indiana bat within the study area. There is very little potentially suitable forested summer roost habitat within the study area, with most of it located between Rathmell Road and Bixby Road. The rest of the corridor has largely been cleared and developed. Any tree trimming or removal should be completed between October 1 and March 31.
<i>Myotis septentrionalis</i> (Northern Long-Eared Bat [NLEB])	Endangered	During summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. This bat uses tree species based on exfoliating bark or presence of cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines.	There is no designated critical habitat for the NLEB within the study area. There is very little potentially suitable forested summer roost habitat within the study area, with most of it located between Rathmell Road and Bixby Road. Other than the bridge over Big Walnut Creek, there are also no apparent suitable roost structures within the corridor. Any structure maintenance or removal and tree trimming or removal should be completed between October 1 and March 31.
<i>Perimyotis subflavus</i> (Tricolored Bat)	Proposed Endangered	During the spring, summer, and fall, tricolored bats roost among leaf clusters of live or recently dead deciduous hardwood trees. They are also found in Spanish moss, pine trees, and human structures. In winter, tricolored bats hibernate in caves and mines.	As a proposed species, there is no designated critical habitat for the tricolored bat. There is very little potentially suitable forested summer roost habitat within the study area, with most of it located between Rathmell Road and Bixby Road. Other than the bridge over Big Walnut Creek, there are also no apparent suitable roost structures within the corridor. Structure maintenance or removal and tree trimming or removal would not be restricted to a specific season; however, USFWS recommends these activities be conducted between October 1 and March 31 to

Species	Status	Preferred Habitat	Preliminary Findings
			be protective of all summer roosting bats.
<i>Obovaria subrotunda</i> (Round hickorynut)	Threatened	Preferred habitat is sand and gravel substrates in riffle, run and pool habitats in streams and rivers. It may also be found in sandy mud. They can be found in shallow habitats with gentle flows at less than one foot with abundant American water-willow (<i>Justicia americana</i>) but are commonly found to depth up to 6.5 feet in larger rivers.	Critical habitat has been designated for this species, but it is not located in the project corridor. The only potentially suitable habitat would be in Big Walnut Creek, which is crossed by Alum Creek Drive just north of the Bixby Road intersection. A 2012 survey did locate three specimens in Big Walnut Creek in Franklin and Pickaway Counties. Per the Ohio Mussel Survey Protocol, Big Walnut Creek in Franklin County is a Group 2 stream and would require a summer survey (May 1-October 1) by a qualified malacologist with a USFWS federal permit.
<i>Simpsonaias ambigua</i> (Salamander mussel)	Proposed Endangered	Although occasionally found elsewhere, preferred habitat is under large, flat stones in areas of swift currents in medium to large rivers and lakes. Its presence is linked to its host, the mudpuppy (<i>Necturus maculosus</i>).	As a proposed species, there is no designated critical habitat for the salamander mussel. The only potentially suitable habitat would be in Big Walnut Creek, which is crossed by Alum Creek Drive just north of the Bixby Road intersection. A 2012 survey of Big Walnut creek did not observe any specimens. Per the Ohio Mussel Survey Protocol, Big Walnut Creek in Franklin County is a Group 2 stream and would require a summer survey (May 1-October 1) by a qualified malacologist with a USFWS federal permit.

Species	Status	Preferred Habitat	Preliminary Findings
<i>Danaus plexippus</i> (Monarch butterfly)	Candidate	The monarch butterfly requires grassland habitats where milkweed and native wildflowers are present. North American populations of the monarch butterfly typically follow a seasonal migration pattern.	As a candidate species, there is no critical habitat designated for this species. Minimal preferred habitat may appear within the project corridor along un-maintained roadside ditches and narrow strips of vegetation. Because the area is primarily developed, and unmaintained areas are forested, forested, significant populations of milkweed are unlikely to be present. As such, no adverse impacts to monarch butterfly are anticipated. Re-seeding suitable project areas with native milkweed seed mixes is recommended, although not required.

The entire state of Ohio is within range of two federally endangered (Indiana bat, northern long-eared bat) and two state endangered (little brown bat, tricolored bat) protected bat species. Although mature trees are uncommon in the project corridor, primarily limited to between Rathmell Road and Bixby Road, any anticipated tree clearing or structure demolition should occur from October 1 to March 31, and trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with diameters at breast height (DBH) \geq 20 inches, should be conserved, if possible.

Eagles and Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the 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. According to the IPaC planning tool and the ODNR Natural Heritage Database (NHD), there are no known bald or golden eagle nests or concentration areas within or in the vicinity of the study area. In addition, the study area does not possess perennial waterbodies or large trees in proximity to perennial waterbodies that would be suitable nesting or roosting habitat for bald eagles.

According to the IPaC official species list, no migratory species on the Birds of Conservation Concern (BCC) list have been identified within the study area. The BCC list was updated in 2021 by the USFWS and is an effort to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act.”

The Migratory Bird Treaty Act (MBTA) makes it illegal for anyone to “take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations by the USFWS”. Typically, if active nests of bird species protected by the MBTA are identified, the USFWS recommends avoiding tree clearing or nest removal until at least the peak of the nesting season has passed or until the nest is abandoned.

Kimley-Horn recommends evaluating the MBTA regulation prior to ground disturbance activities commencing, particularly if construction activities are scheduled to occur during the primary nesting season in Ohio, which is March 15-July 15.

ODNR State Listed Threatened, Endangered, and Species of Special Concern

A review of the ODNR database of state listed species and species of special concern identified a total of 26 state threatened or endangered species for Franklin County (Table 2). A total of 18 state listed species are fish and freshwater mussels; therefore, project impacts to perennial streams should be avoided to the extent practicable.

Table 2. ODNR State Listed Threatened and Endangered Species for Franklin County (June 23, 2023)

Species Name	Common Name	State Status
<i>Antigone canadensis</i>	Sandhill crane	State Threatened
<i>Bartramia longicauda</i>	Upland sandpiper	State Endangered
<i>Botaurus lentiginosus</i>	American bittern	State Endangered
<i>Chondestes grammacus</i>	Lark sparrow	State Endangered
<i>Ixobrychus exilis</i>	Least bittern	State Threatened
<i>Tyto alba</i>	Barn owl	State Threatened
<i>Opheodrys vernalis</i>	Smooth greensnake	State Endangered
<i>Erimyzon sucetta</i>	Lake chubsucker	State Threatened
<i>Etheostoma exile</i>	Iowa darter	State Endangered
<i>Etheostoma maculatum</i>	Spotted darter	State Endangered
<i>Lepisosteus platostomus</i>	Shortnose gar	State Endangered
<i>Notropis heterolepis</i>	Blacknose shiner	State Endangered
<i>Polyodon spathula</i>	Paddlefish	State Threatened
<i>Neurocordulia yamaskanensis</i>	Stygian shadowdragon dragonfly	State Endangered
<i>Alasmidonta viridis</i>	Slippershell mussel	State Threatened
<i>Elliptio crassidens</i>	Elephant-ear mussel	State Endangered
<i>Epioblasma rangiana</i>	Northern riffleshell	State Endangered
<i>Epioblasma triquetra</i>	Snuffbox mussel	State Endangered
<i>Lampsilis ovata</i>	Pocketbook mussel	State Endangered
<i>Megaloniaias nervosa</i>	Washboard mussel	State Endangered
<i>Obovaria subrotunda</i>	Round hickorynut mussel	State Threatened
<i>Pleurobema clava</i>	Clubshell mussel	State Endangered
<i>Simpsonaias ambigua</i>	Salamander mussel	State Threatened
<i>Theliderma cylindrica</i>	Rabbitsfoot mussel	State Endangered
<i>Unio merus tetralasmus</i>	Pondhorn mussel	State Threatened
<i>Villosa fabalis</i>	Rayed bean mussel	State Endangered

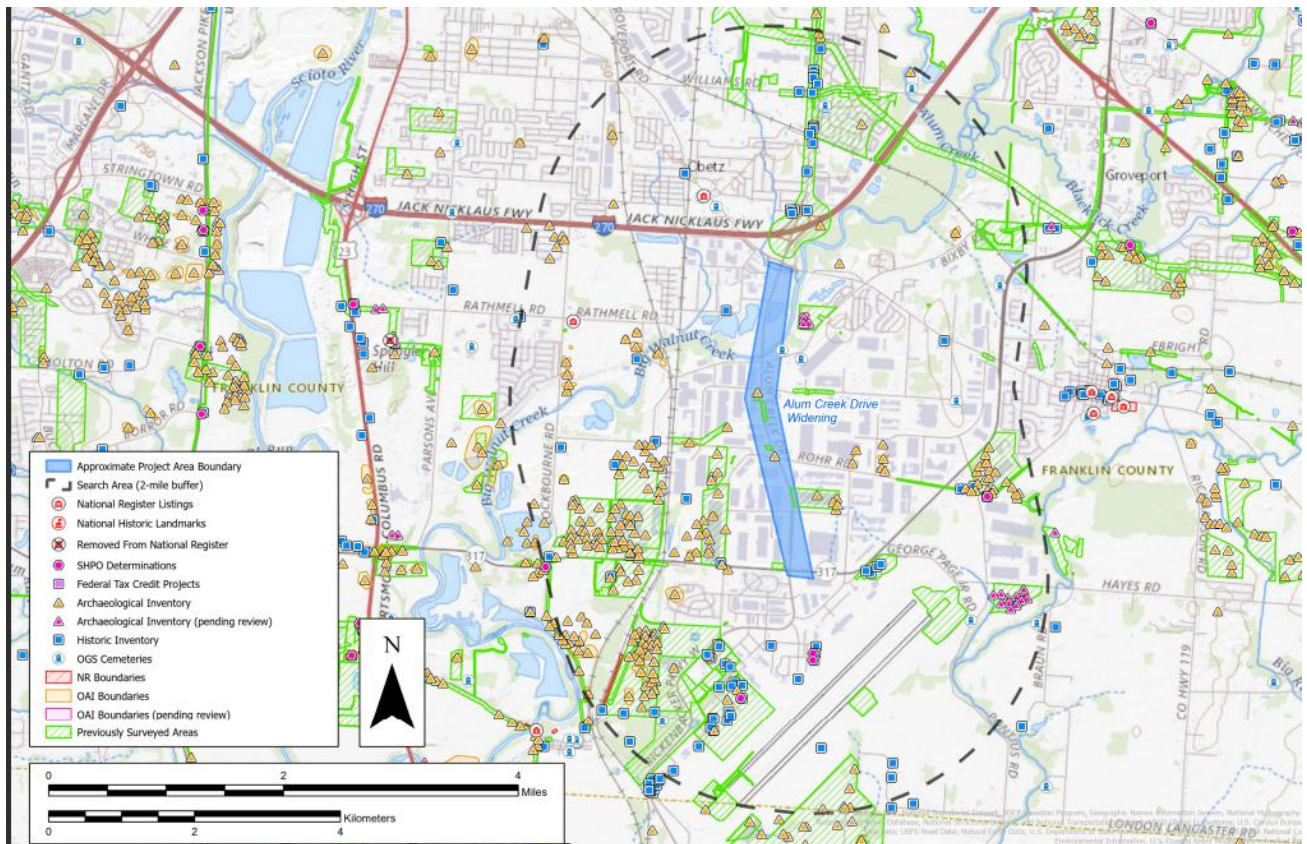
All native mussels are protected in the State of Ohio (Section 1533.324 of the Ohio Revised Code). Impacts to protected mussels and their habitats should be avoided and minimized to the maximum extent practicable. If impacts cannot be avoided, all streams which contain mussels or potential mussel habitat must be surveyed prior to any proposed stream disturbance. Any perennial tributaries to Big Walnut Creek, including those mapped at the Groveport Road intersection and north of the Rohr Road intersection, would be unlisted streams in which federally listed species are not expected. If their watersheds are greater than 5 mi², these streams would require a reconnaissance level survey. Big Walnut Creek, which is crossed by Alum Creek Drive north of Bixby Road, is a Group 2 stream with documented presence of

federally listed mussel species. Group 2 streams require a Phase 1 transect survey within the May 1-October 1 survey window by qualified malacologists holding the appropriate permit from USFWS. If a trigger is met and avoidance is not an option, a Phase 2 quadrat and excavation survey is required.

In addition to the listed species identified above, a total of 24 Species of Concern or Species of Special Interest were identified for Franklin County. It is recommended that a review of the project corridor be requested from ODNR to identify any Natural Heritage Database (NHD) records for state listed species within one mile of the project area.

Cultural Resources

Review of OHPO records for a 500-foot wide study corridor indicates no buildings listed in the Ohio Historic Inventory or the National Register of Historic Places, and no cemeteries. There are two previously recorded archaeological sites and portions of two archaeological surveys in the vicinity of the Alum Creek Drive. Within a one-mile radius, there are 242 previously identified archaeological sites, 71 sites listed in the Ohio Historic Inventory, 51 known cemeteries, more than 50 archaeological surveys, two sites listed in the NRHP (Christian S. Herr House in Lockbourne and Zion's Evangelical Lutheran Church in Obetz), and one NRHP District (Ohio and Erie Canal Southern Descent Historic District).



Regulated Materials Review

The project corridor was evaluated for potential regulated materials, including documented hazardous materials and contaminated sites. The review included evaluating information from the ODOT Ohio Regulated Properties Search (ORPS) tool and publicly available contaminated sites databases for parcels adjacent to the project corridor, including:

- Superfund-NPL and Non-NPL Sites
- RCRA and RCRA Corrective Action Sites
- Leaking Underground Storage Tanks (LUST)
- Bureau of Underground Storage Tank Regulations (BUSTR)
- Ohio Geographically Referenced Information Program (OGRIP)
- Ohio EPA Spills
- Toxics Release Inventory (TRI) Sites
- Brownfields Properties

As a result of this desktop review, the following records of hazardous or contaminated sites were found along the project corridor, listed from north to south in the table below.

Facility Name	Facility Address	Facility ID	Database	Material	Status
#630 Groveport Duchess	5100 Groveport Rd	25001497	BUSTR/OGRIP	Gasoline	REM-Inactive
Columbus Fair Auto Auction Property	Groveport Rd & Alum Creek Dr	249928	Brownfields	VOCs	Ready for Anticipated Use
BP Oil Co	5100 Groveport Rd	OHD9877013166	RCRA	Gasoline, Ignitable Waste	Unknown
-	2499 McGaw Rd	2764-2499	OEPA Spills	Diesel Fuel	Unknown
Emhart Corp Hartford Div	4851 McGaw Rd	OHD079432712	RCRA	Corrosive Waste	Unknown
Galloway Industrial Properties I	2499 McGaw Rd	25002738	BUSTR/OGRIP	Gasoline	Closed-Inactive
Mideast Service O CTR	2490 McGaw Rd	OHD981790504	RCRA	Ignitable Waste	Unknown
United Parcel Service (UPS)	2450 Rathmell Rd	25007303	BUSTR/OGRIP	Gasoline, Diesel, Heating Oil, Used Oil	No further action- Inactive
United Parcel Service (UPS)	2450 Rathmell Rd	OHD982423428	RCRA	Ignitable Waste, Corrosive Waste, Reactive Waste, Benzene	Unknown
Alum Creek Shell	4425 Alum Creek Dr	25001542	BUSTR/OGRIP	Gasoline, Diesel	No further action- Inactive
Marble Cliff Block & Bldrs	4033 Alum Creek Dr	-	BUSTR/OGRIP	Unspecified	No further action- Inactive
-	Bixby Rd & Alum Creek Dr	2279	OEPA Spills	Diesel Fuel, Hydraulic Oil	Unknown
-	Alum Creek Dr at Big Walnut Creek	2281	OEPA Spills	Suspended Solids	Unknown
Dukes Garage	3167 Toy Rd	OHR000026963	RCRA	Lead	Unknown
Canon USA	2525 Rohr Rd, Suite C	OHR000202465	RCRA	Ignitable Waste	Unknown
VSPONE Columbus	2605 Rohr Rd	OHR000155549	RCRA, TRI	Ignitable Waste, Corrosive Waste, Cadmium, Lead	Unknown

Facility Name	Facility Address	Facility ID	Database	Material	Status
-	Alum Creek Dr & Rohr Rd	4357	OEPA Spills	Motor Oil	Unknown
Golden Wedge Golf Ctr	2525 Rohr Rd	-	BUSTR/OGRIP	Unspecified	No further action-Inactive
-	2525 Rohr Rd E Parking Lot	3050	OEPA Spills	Hydraulic Oil	Unknown
-	2235 Spiegel Dr	2905	OEPA Spills	Diesel Fuel	Unknown
Microdyne Outsourcing	2450 Spiegel Dr – STE E	OHR000120097	RCRA	Lead, Silver	Unknown
Chempoint.com at DHL Warehouse	2450 Spiegel Dr	OHR000135004	RCRA	Ignitable Waste, Corrosive Waste, Cadmium, Lead, Mercury, Non-halogenated Solvents	Unknown
Penske Logistics	2842 Spiegel Dr	OHR000212654	RCRA	Unspecified	Unknown
Trilogy Fulfillment Services	6600 Alum Creek Dr	OHR000119099	RCRA	Corrosive Waste, Lead, Mercury, Silver, Non-halogenated Solvents	Unknown
Anda Pharmaceuticals, Inc.	6500 Adelaide Ct	OHR000167437	RCRA	Unspecified	Unknown
-	2600 E London Groveport Rd	1846	OEPA Spills	Diesel Fuel	Unknown
-	Groveport Rd & Alum Creek Dr	4145	OEPA Spills	Hydraulic Oil	Unknown
Rickenbacker Marathon	2560 London Groveport Rd	25003475	BUSTR/OGRIP	Gasoline, Diesel	No further action-Inactive
Rickenbacker BP	2560 London Groveport Rd	OHD987054137	RCRA	Ignitable Waste, Benzene	Unknown

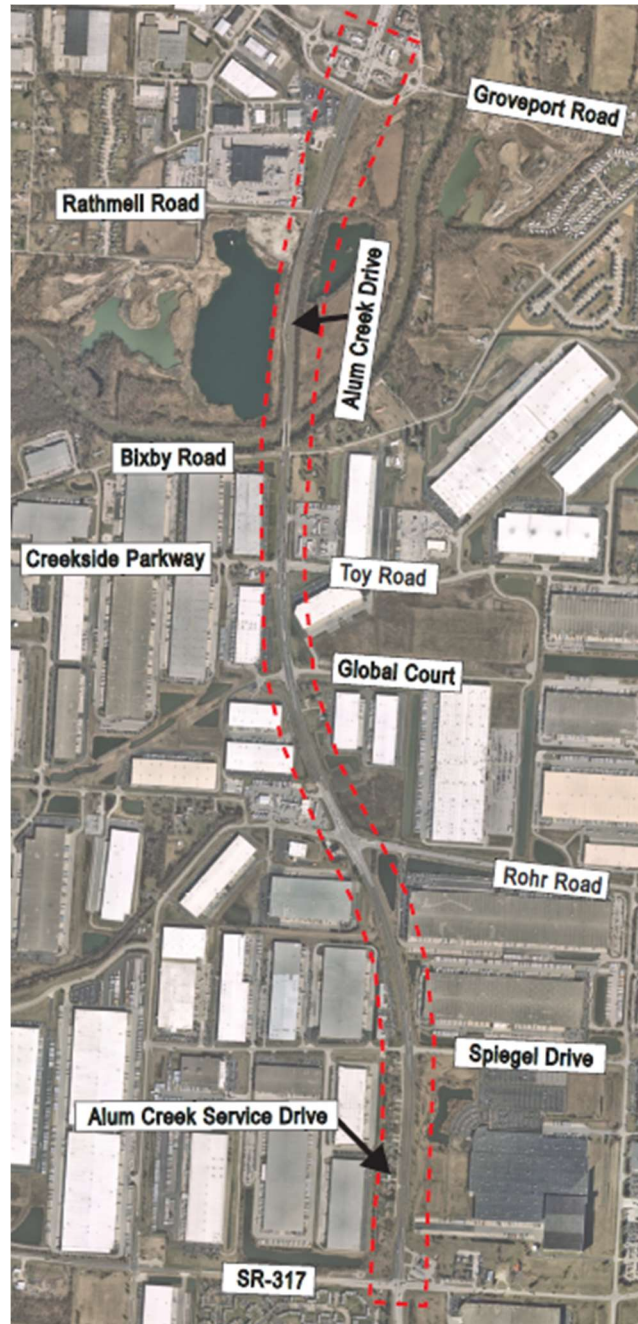
APPENDIX

M.

Public Engagement Plan

PUBLIC ENGAGEMENT PLAN

FRA-CR122-0.00 (PID 115792) Alum Creek Drive



April 4, 2023



Project Background

Located on the south side of Columbus, Ohio, the Rickenbacker area has been the focus of public and private development for decades. As a critical intermodal asset that connects air, rail, and truck freight modes, Rickenbacker Global Logistics Park is one of the region's most important and valuable economic assets.

The area is anchored by the Rickenbacker International Airport, a cargo-focused airport through which 300+ million pounds of domestic and international freight flows, and the Norfolk Southern Intermodal Terminal, a rail-to-truck facility with a 400,000-container annual capacity. Combined with the Foreign Trade Zone (#138), it is no surprise the area has grown into a globally competitive logistics hub with more than 75 million square feet of warehouse, industrial, and distribution facilities.

Alum Creek Drive is currently a four-lane divided Principal Arterial which functions as the main entrance to the Rickenbacker Global Logistics Park from I-270. The existing average daily traffic (ADT) in the corridor is a maximum 37,490 vehicles with 23-29% trucks. Traffic is generally expected to grow between 25-28% over the 26 years from 2022 to 2048. This consists of an additional ~10,000 vehicles per day in the segment north of Rathmell Road.

Purpose and Need Summary

The purpose of the FRA-CR122-0.00 Alum Creek Drive project is to improve capacity and safety along the Alum Creek Drive corridor between London-Groveport (SR 317) and Groveport Road to serve vehicular, pedestrian, and bicycle traffic demand. Further, there is a need to improve the operations of the intersections along the corridor, given the high percentage of trucks serving the Rickenbacker Global Logistics Park.

Project Sponsor and PEP Team

The FRA-CR122-0.00 Alum Creek Drive project sponsor is the Franklin County Engineer's Office (FCEO). The FCEO will be responsible for planning, preliminary engineering, environmental engineering, final engineering, right-of-way acquisition, and public involvement. The Consultant Team is led by Stantec and Kimley-Horn. As an LPA project with ODOT TRAC funding, ODOT will have oversight of the project to ensure compliance with federal requirements.

Goals and Objectives

The goal of this Public Engagement Plan (PEP) is to outline and communicate a program that will build understanding and engage nearby residents, businesses, and other affected users regarding proposed improvements along Alum Creek Drive. This public and stakeholder involvement effort will provide the constructive feedback necessary to shape and confirm transportation improvements on Alum Creek Drive. This PEP is intended to be flexible and recognize varying degrees of public engagement to meet the needs of different stakeholder interests.

The Franklin County Engineer's public involvement goals are to:

- Inform, consult, and engage the public throughout the project development process.
- Provide opportunities for meaningful, informed input on proposed improvements.
- Ensure stakeholders and local residents and business are aware their issues have been heard and addressed to the extent practical.

FCEO commits to continuing public involvement throughout all phases of the Project Development Process (PDP) to ensure that communication is maintained through development, design, and construction. This PEP outlines a series of proactive steps to ensure stakeholders and the public are engaged and informed in a methodical, inclusive, and transparent manner. Specific objectives of this PEP include:

- Outline a clear strategy and process that engages key stakeholders and the public early and throughout the study effort.
- Establish easy to understand communication materials to clearly communicate what the project is/isn't.
- Develop a dialogue with key community leaders to ensure multiple interests are considered as the project develops.
- Inform the public, community, and local jurisdictions about the project, progress being made, and opportunities for input.
- Provide information on the potential impacts and benefits of the project.
- Solicit input on the conclusions and recommendations of the Feasibility Study from stakeholders.

Stakeholders

Stakeholders will include the following authorities with jurisdiction in or near the Alum Creek Drive corridor:

- Franklin County Engineers Office
- ODOT
- Columbus Department of Public Utilities
- Columbus Department of Public Service
- Central Ohio Transit Authority
- Groveport Rickenbacker Employee Access Transit
- City of Groveport
- City of Obetz
- Hamilton Township
- Madison Township
- Columbus Regional Airport Authority

Residents, local business owners, representatives of nearby police and fire stations, schools and state legislative officials will also be invited to participate. A contact database of stakeholders will be maintained by Kimley-Horn. This database will be revisited and updated throughout the project development process.

Adjacent Property Owners

A mailing list will be compiled using map-based parcel data to identify all property owners/residents located within or adjacent to the project area. A map showing the project environmental study area that will be used to create the address list is included in Attachment A. This list will be revisited throughout the project development process. A copy of the property owner mailing list will be included in Attachment B.

Underserved Populations

In accordance with Executive Order (E.O.) 12898, federal agencies are required to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations. The Project Management Team will be responsible for ensuring that PI activities are inclusive of underserved populations in accordance with ODOT's Public Involvement Manual, ODOT's Underserved Populations Guidance (1/2018), E.O. 12898, FHWA Order 6640.23A and Title VI. Information on

population demographics in the project area was available through the ODOT Transportation Information Mapping System (TIMS) tool at the Block Group level and does not appear to show a high percentage of minority, low-income, or linguistically isolated populations in the area. However, the project team should still be available to discuss the project and answer questions via phone, should be prepared to send out hard copies of requested project materials, and should accept phone and mailed-in comments related to the project.

Public Involvement Activities

Stakeholder Meetings-- A list of key project stakeholders has been developed for consideration throughout the PEP process. A stakeholder meeting will be held to present the proposed project and solicit input regarding the proposed undertaking. A second stakeholder meeting may be held after the initial stakeholder and public involvement meetings, if necessary. The consultant team will work closely with FCEO staff to prepare for and conduct the stakeholder coordination meetings. Feedback received through this effort will be considered as the project is advanced through the project development process.

Mailings—A public contact list of adjacent property owners and companies in the Rickenbacker Global Logistics Park will serve as the basis for mailings and notifications. The list will be updated throughout the process with names and contact information from meeting attendance sheets and submitted comment forms.

Public Meeting(s)—At least one public meeting will be held during project development. The Project Management Team will prepare for and conduct one combined public meeting/open house in person to present the proposed project. The consultant team will draft public meeting notifications (to be sent by FCEO), meeting handouts, comment forms, and sign-in sheets, as well as produce exhibits for the meeting. Draft copies of these documents will be provided to the FCEO and ODOT staff for review and comment 30 days prior to distribution. Once approved, the consultant team will oversee the printing of meeting materials. It is assumed the invitation mailing will be sent by FCEO at least 30 days prior to the scheduled meeting date. The consultant team will be present at the public open house meeting in support of FCEO efforts.

Feedback received through the public meeting(s) will be considered as the project is advanced through the project development process. Comments will be accepted by mail, phone, email (all directed to a designated FCEO staff member), or through ODOT's online comment system for a 30-day period following the meeting. Additionally, comments and concerns raised during the meeting should also be addressed and included in a summary of comments that will be published to the online CE form.

Implementation Strategy and Schedule

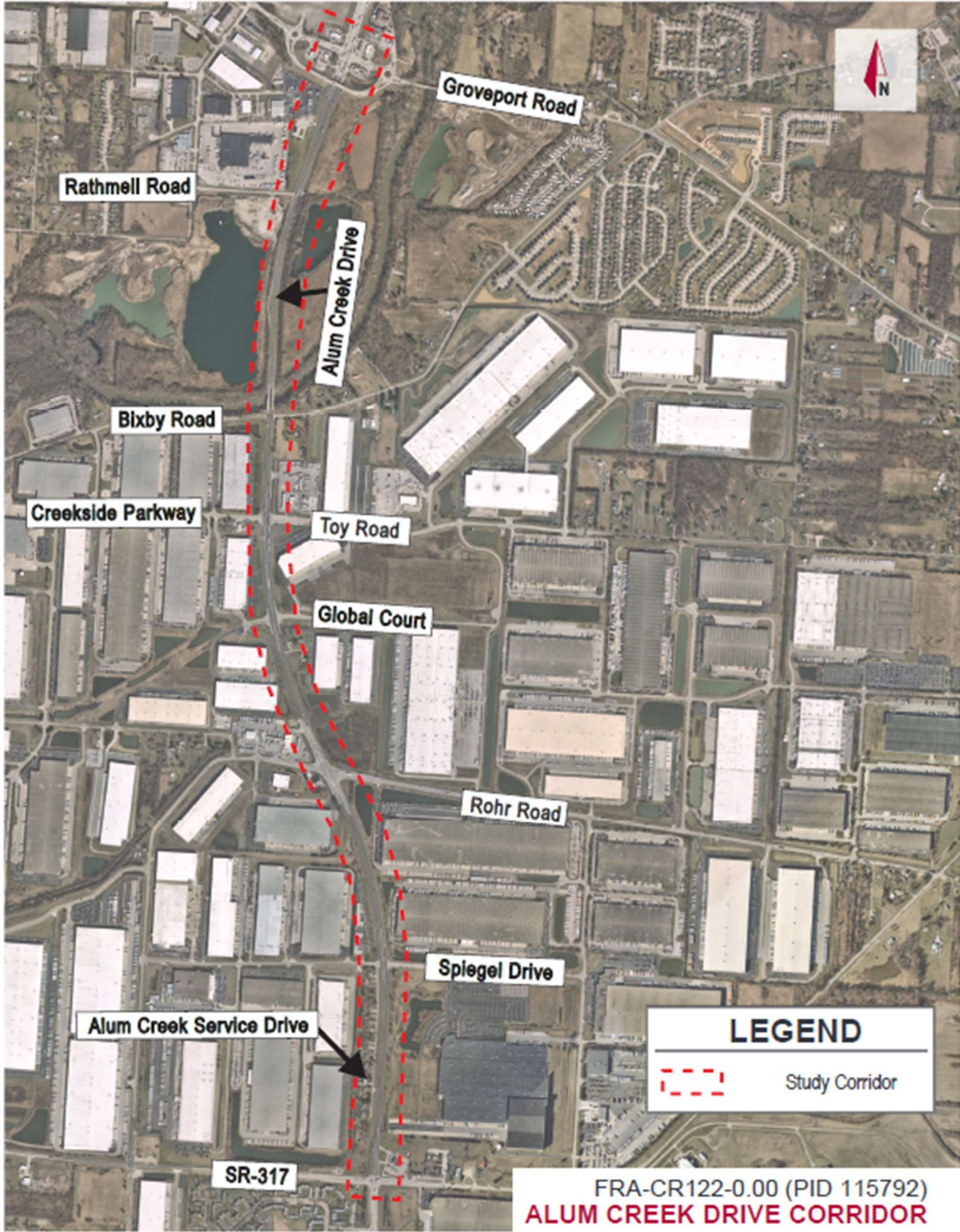
This PEP has been created during the study phase to establish a strategy for engaging stakeholders and the public so they can provide informed input on the development of the FRA-CR122-0.00 Alum Creek Drive. The approaches being used for this project will be examined throughout the project and adjusted as necessary. Public involvement milestones are presented in the table below:

Public Involvement Task	Estimated Timeframe
Identify key stakeholders	Winter 2022/2023
Stakeholder Meeting coordination <ul style="list-style-type: none"> • Includes determining the date and format/platform for the meeting. • May include multiple planning calls with the consultant team to coordinate. 	Spring 2023
Prepare materials for Stakeholder Meeting <ul style="list-style-type: none"> • To be done 30 days prior to distribution 	Spring 2023
Hold Stakeholder Meeting	Spring/Summer 2023
Public Involvement Meeting coordination <ul style="list-style-type: none"> • Includes determining the date and format/platform for the meeting. • May include multiple planning calls with the consultant team to coordinate. 	Spring/Summer 2023
Prepare materials for Public Involvement Meeting <ul style="list-style-type: none"> • To be done 30 days prior to distribution. 	Spring/Summer 2023
Issue Press Release and send meeting notifications <ul style="list-style-type: none"> • To be done 30-45 days prior to meeting date. • Meeting notifications should be mailed as well as posted in locations throughout the corridor that residents, especially those identified in the Community Demographics section, will have access to. 	Spring/Summer 2023
Hold Public Involvement Meeting	Summer 2023
Respond to comments <ul style="list-style-type: none"> • Comment period to last for 30 days after the Public Involvement Meeting. 	Summer 2023

PI Comments and Responses

As discussed in the engagement activities section above, comments will be accepted during the public meeting as well as for a 30-day period following the meeting. Following the public involvement meeting and throughout the public comment period, FCEO and the consultant team will respond to comments received from the public. Kimley-Horn will provide help addressing comments as needed. The PEP Team may wish to prepare responses to common comments they expect to receive so the response can be given during the meeting as well as in response to comments received after the meeting. Comments received during the meeting may be addressed at that time, or the PEP Team may choose to follow-up after the meeting. Comments received via email and phone during the comment period may be responded to directly. At the end of the public comment period, all comments will be responded to in a summary comment matrix that will be posted to the online CE form.

ATTACHMENT A



ATTACHMENT B

FRA-CR122-0.00 (PID 115792) – Public Engagement Plan

Parcel ID	Owner Name	Tax Billing Address	Property Address
010-237812	SPEEDWAY SUPERAMERICA LLC	SPEEDWAY LLC 539 S MAIN ST FINDLAY OH, 45840-3229	ALUM CREEK RD
180-001858	STEVIE HILL TRENT BARRETT	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6659 ALUM CREEK DR
430-288511	GREGORY J PROROCK LINDA K PROROCK	GREGORY J PROROCK 3711 PEVENSEY DR COLUMBUS OH, 43220-4822	6649 ALUM CREEK DR
180-001856	PARADISE D TACKETT JASON W REID	PARADISE D TACKETT 6635 ALUM CREEK DR GROVEPORT OH, 43125-9491	6635 ALUM CREEK DR
180-001855	BRYAN M HERDMAN	PEGGY A HERDMAN 3212 FONTAINE RD COLUMBUS OH, 43232-5830	6621 ALUM CREEK DR
430-269186	JESSIE R KEYES	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6607 ALUM CREEK DR
180-001853	KEVIN SANDERS	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6595 ALUM CREEK DR
180-001852	LORI A BOYER LAWRENCE A BOYER	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6583 ALUM CREEK DR
180-001851	MICHAEL A DENT KAY A DENT	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6571 ALUM CREEK DR
180-001850	DAVID P & JANET L JONES	DAVID P JONES 6557 ALUM CREEK DR GROVEPORT OH, 43125-9490	6557 ALUM CREEK DR

FRA-CR122-0.00 (PID 115792) – Public Engagement Plan

180-001849	ANTONIO QUINTANA CENEDY GLASS	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6543 ALUM CREEK DR
180-001848	MARY C EDMONDS ELIZABETH J HARTSELL	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6529 ALUM CREEK DR
180-001847	PAUL R GRAVES	PAUL R GRAVES 6515 ALUM CREEK DR GROVEPORT OH, 43125-9490	6515 ALUM CREEK DR
180-001846	MARK R HALL CHRISTINE L HALL	CIVISTA BANK 100 E WATER STREET PO BOX 5016 SANDUSKY OH, 44871-5016	6503 ALUM CREEK DR
180-001845	CHRISTOPHER S CARNER ALMA JANE CARNER	CORELOGIC PO BOX 9202 COPPELL TX, 75019-9208	6489 ALUM CREEK DR
180-001844	KENNETH W & LINDA M MILAM	KENNETH MILAM 6477 ALUM CREEK DR GROVEPORT OH, 43125-9490	6477 ALUM CREEK DR
180-001843	LISA A LEWIS	LISA A LEWIS 6463 ALUM CREEK DR GROVEPORT OH, 43125-9490	6463 ALUM CREEK DR
180-001842	JOHN WIDMAYER	JOHN WIDMAYER 6449 ALUM CREEK DR GROVEPORT OH, 43125-9490	6449 ALUM CREEK DR
180-001841	JAMES MICHAEL CAMPBELL MARGARET JEAN CAMPBELL	JAMES MICHAEL CAMPBELL & 6437 ALUM CREEK DR GROVEPORT OH, 43125-9490	6437 ALUM CREEK DR
180-001840	6380 ADELAIDE COURT LLC	6380 ADELAIDE COURT LLC 4400 POST OAK PKWY STE 2350 HOUSTON TX, 77027-3499	6419 ALUM CREEK DR

FRA-CR122-0.00 (PID 115792) – Public Engagement Plan

180-000249	GERALD P TR CAUTHEN	GERALD P CAUTHEN TRUSTEE 900 PARAMOUNT RD OAKLAND CA, 94610-2439	6431 ALUM CREEK DR
185-001559	B B COMPANY LLC	SOMERVILLE BANK 8435 MALLARD CIR PLAIN CITY OH, 43064-6001	2560 LONDON GROVEPORT RD
185-001461	ALUM CREEK DRIVE OWNER LLC	ALUM CREEK DRIVE OWNER LLC 888 7TH AVE NEW YORK NY, 10106-0001	6600 ALUM CREEK DR
495-258062	GERALD P TR CAUTHEN	GERALD P CAUTHEN TRUSTEE 900 PARAMOUNT RD OAKLAND CA, 94610-2439	6425 ALUM CREEK DR
495-249651	THOMSON LOGISTICS ASSETS LLC	THOMSON LOGISTICS ASSETS LLC 251 LITTLE FALLS DR WILMINGTON DE, 19808-1674	2450 SPIEGEL DR
150-000707	GUILLERMO CRUZ GUTIERREZ & CORNELIA CRUZ GERSTBAUER	GUILLERMO CRUZ GUTIERREZ 1618 PERRIS CT NEW ALBANY OH, 43054-8586	6105 ALUM CREEK RD
185-002924	DRCS 936 LLC	DUKE REALITY PO BOX 40509 INDIANAPOLIS IN, 46240-0509	2842-2882 SPIEGEL DR
185-002923	2829 ROHR RD HOLDING LLC	2829 ROHR RD HOLDING LLC 2525 MCKINNON ST STE 530 DALLAS TX, 75201-1542	2829-2869 ROHR RD
154-000006	2829 ROHR RD HOLDING LLC	2829 ROHR RD HOLDING LLC 2525 MCKINNON ST STE 530	ALUM CREEK DR
154-000004	INTEGRITY REAL ESTATE HOLDINGS LLC	INTEGRITY REAL ESTATE HOLDINGS LLC 2860 FISHER RD COLUMBUS OH, 43204-3538	ALUM CREEK DR
154-000003			

FRA-CR122-0.00 (PID 115792) – Public Engagement Plan

154-000002	NNN GROVEPORT LLC	NNN GROVEPORT LLC 26W490 CHURCHILL RD WINFIELD IL, 60190-2114	2400 ROHR RD
152-001650	ROSE ROCK HOLDINGS LLC	RYAN LLC 15 W 6TH ST STE 2400 TULSA OK, 74119-5417	6023 ALUM CREEK DR
152-001641			
152-001936	BVK US II POOL 01 LLC	BVK US II POOL 01 LLC 1 BEACON ST STE 1700 BOSTON MA, 02108-3106	2820 GLOBAL DR
150-002195	WALLACE W WALKER JR	WALLACE W WALKER JR 2434 ALOHA DR GROVEPORT OH, 43125-9423	ALOHA DR
150-002198	WALLACE W WALKER JR & MARLENE K WALKER	WALLACE W WALKER JR 2434 ALOHA DR GROVEPORT OH, 43125-9423	2434 ALOHA DR
152-001938	COLUMBUS REGIONAL AIRPORT AUTHORITY	COLUMBUS REGIONAL AIRPORT 4600 INTERNATIONAL GTWY COLUMBUS OH, 43219-1779	GLOBAL CT
152-001937	COLUMBUS REGIONAL AIRPORT AUTHORITY	DRCS LLC PO BOX 40509 INDIANAPOLIS IN, 46240-0509	TOY RD
152-001941	BVK US II POOL 01 LLC	BVK US II POOL 01 LLC 1 BEACON ST STE 1700 BOSTON MA, 02108-3106	2950 2980 TOY RD
150-000206	LOCKBOURNE PROPERTIES LLC	LOCKBOURNE PROPERTIES LLC 2440 LOCKBOURNE RD COLUMBUS OH, 43207-2168	3167 TOY RD
152-001637	THOMSON LOGISTICS ASSETS LLC	THOMSON LOGISTICS ASSETS LLC 251 LITTLE FALLS DR	5653 CREEKSIDE PW

		WILMINGTON DE, 19808-1674	
150-000356	ROBERT L KENDALL III	ROBERT L KENDALL III 2626 BIXBY RD	2626 BIXBY RD
		GROVEPORT OH, 43125-9427	
152-001544	KENMORE AGGREGATES I LLC	KENMORE AGGREGATES I LLC 700 HOME AVE	RATHMELL RD
		AKRON OH, 44310-4190	
150-000816			
150-000371			
150-000068			
150-000808			
150-000798			
152-000717	BT PROPERTY LLC	BT-OH, LLC-00 55 GLENLAKE PKWY	2450 RATHMELL RD
		ATLANTA GA, 30328-3474	
152-000716	BT PROPERTY LLC	BT PROPERTY LLC 55 GLENLAKE PKWY	5101 ALUM CREEK DR
		ATLANTA GA, 30328-3474	
152-001456	BLUE REAL ESTATE III LLC	BLUE REAL ESTATE III LLC 2150 SCHUETZ RD STE 210	2499 MC GAW RD
		SAINT LOUIS MO, 63146-3517	
152-000851	BENNINGTON KEVIN G SU TR DUROC TRUST @ (4)	THE DUROC TRUST PO BOX 357	GROVEPORT RD
		WILLIAMSPORT OH, 43164-0357	

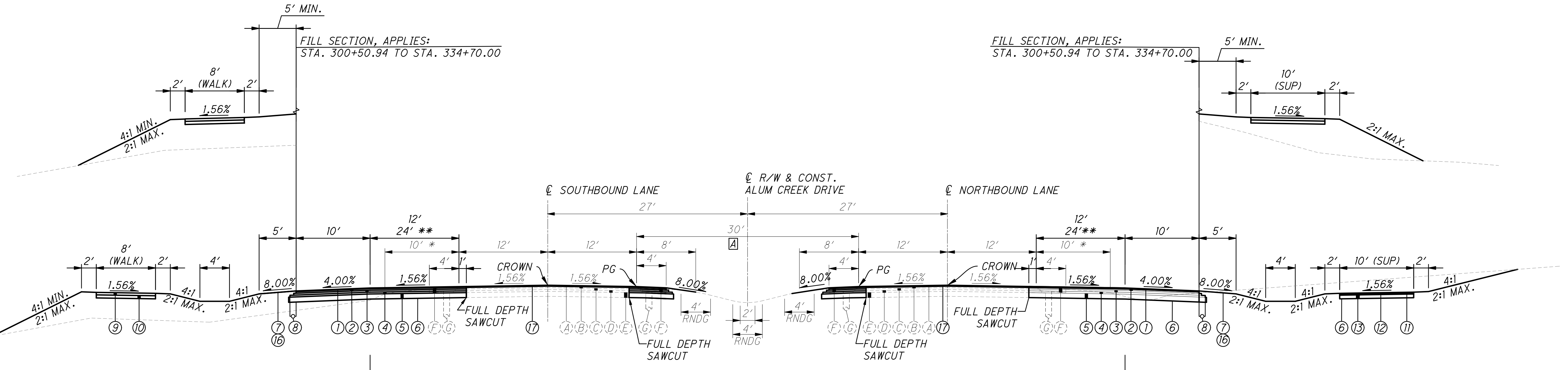
ATTACHMENT C

APPENDIX

N.

Plan Profile and Typical Sections

c:\pw_working\infra01\sphattarai\d0165401\115792_GY001.dwg LAST SAVED BY: ngoodman, 1/18/2024 3:21 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:16 PM

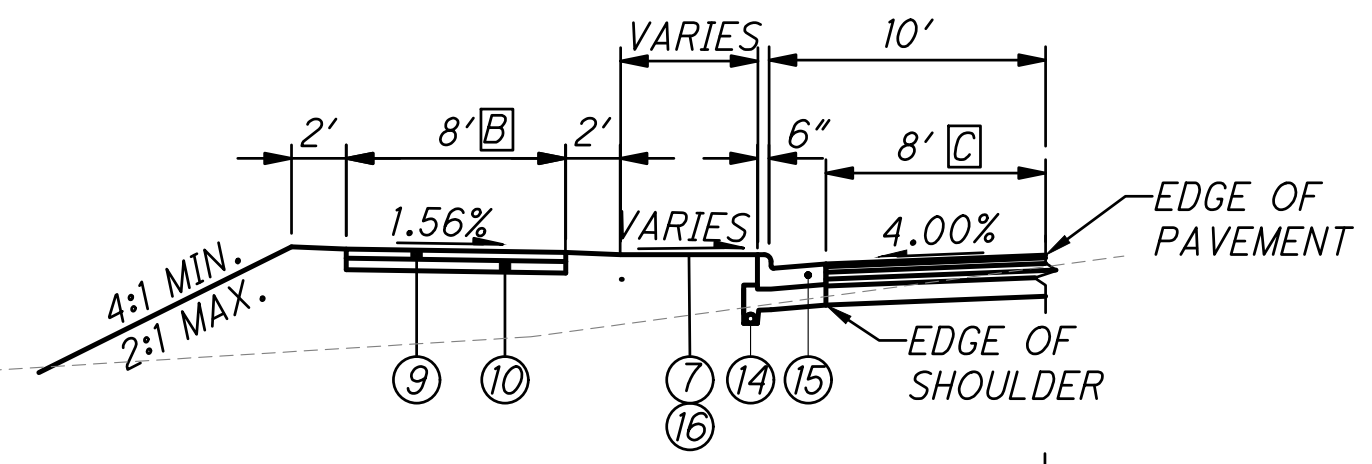


NORMAL SECTION - ALUM CREEK DRIVE
 STA. 200+73.07 TO STA. 217+46.30
 STA. 249+32.04 TO STA. 255+07.79
 STA. 285+88.09 TO STA. 308+65.72
 STA. 322+71.72 TO STA. 334+70.00

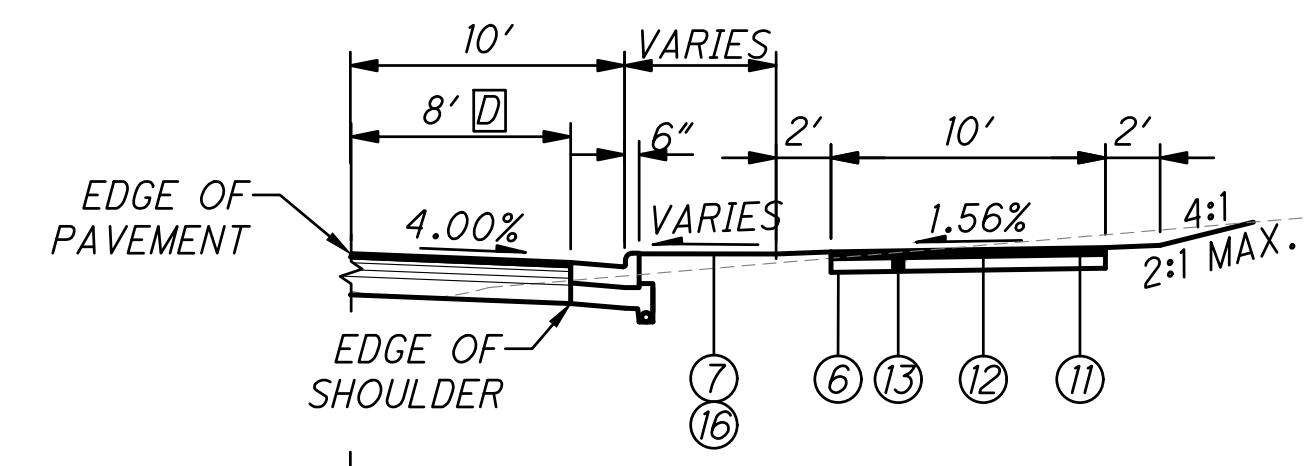
GRASS-MEDIAN DEVIATIONS [A]
 STA. 200+73.07 TO STA. 208+42.84 (CONC. MEDIAN)
 STA. 211+00.00 TO STA. 211+23.85 (PAVED)
 STA. 224+77.55 TO STA. 231+10.41 (CONC. MEDIAN)
 STA. 248+51.71 TO STA. 253+43.38 (PAVED)
 STA. 253+43.38 TO STA. 247+29.44 (CONC. MEDIAN)
 STA. 267+33.18 TO STA. 269+52.58 (CONC. MEDIAN)
 STA. 269+52.58 TO STA. 273+90.93 (PAVED)
 STA. 273+90.93 TO STA. 279+67.49 (CONC. MEDIAN)
 STA. 279+67.49 TO STA. 287+26.30 (PAVED)
 STA. 287+26.30 TO STA. 291+71.84 (CONC. MEDIAN)
 STA. 323+28.13 TO STA. 324+41.95 (PAVED)

[B] 5' FROM STA. 207+75.00 TO STA. 226+42.42
 [C] 0' FROM STA. 200+55.96 TO STA. 204+52.44

PG: PROFILE GRADE
 * 12' WHERE GUARDRAIL IS USED
 ** 24' FOR TURN LANES, RANGES BELOW:
 STA. 247+10.00 TO STA. 249+39.50 (RT-SIDE)
 STA. 253+38.51 TO STA. 260+58.00 (LT-SIDE)
 STA. 279+06.00 TO STA. 282+74.56 (RT-SIDE)
 STA. 284+45.77 TO STA. 290+50.00 (LT-SIDE)
 STA. 286+20.00 TO STA. 288+36.21 (RT-SIDE)
 [D] 0' FROM STA. 335+94.17 TO STA. 339+05.16



CURB AND GUTTER SECTION APPLIES:
 STA. 200+55.96 TO STA. 250+42.98
 STA. 284+28.31 TO STA. 296+76.34
 STA. 334+70.00 TO STA. 339+92.03 (WALK-ONLY)



CURB AND GUTTER SECTION APPLIES:
 STA. 200+44.53 TO STA. 231+09.98
 STA. 252+76.87 TO STA. 253+21.46
 STA. 275+35.71 TO STA. 297+33.22
 STA. 335+94.17 TO STA. 339+05.16

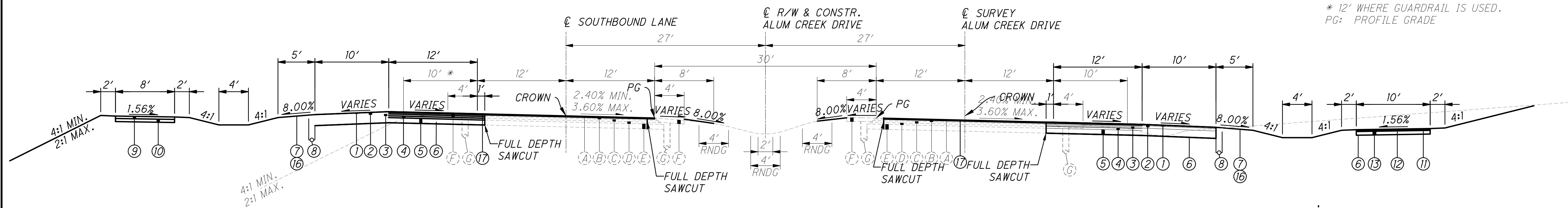
LEGEND

- | | | | |
|--|--|---|--|
| (A) - 1 1/2" ASPHALT SURFACE COURSE | (1) - 1 1/2" ASPHALT SURFACE COURSE | (8) - 6" PIPE UNDERDRAINS | (15) - COMBINATION CURB AND GUTTER, TYPE 2 |
| (B) - 2 1/2" ASPHALT INTERMEDIATE COURSE | (2) - 2 1/2" ASPHALT INTERMEDIATE COURSE | (9) - 4" CONCRETE WALK | (16) - SEEDING AND MUCHING |
| (C) - 3" ASPHALT BASE COURSE | (3) - 3" ASPHALT BASE COURSE | (10) - 4" ASPHALT BASE COURSE | (17) - 1 1/2" PAVEMENT PLANING |
| (D) - 3" ASPHALT BASE COURSE | (4) - 3" ASPHALT BASE COURSE | (11) - 1 1/4" ASPHALT SURFACE COURSE | |
| (E) - 8" AGGREGATE BASE COURSE | (5) - 8" AGGREGATE BASE COURSE | (12) - 1 3/4" ASPHALT INTERMEDIATE COURSE | |
| (F) - 6" STABILIZED CRUSHED AGGREGATE | (6) - SUBGRADE COMPACTION | (13) - 6" AGGREGATE BASE COURSE | |
| (G) - 6" UNDERDRAIN | (7) - 4" TOPSOIL FURNISHED AND PLACED | (14) - 4" PIPE UNDERDRAINS | |

TYPICAL SECTIONS

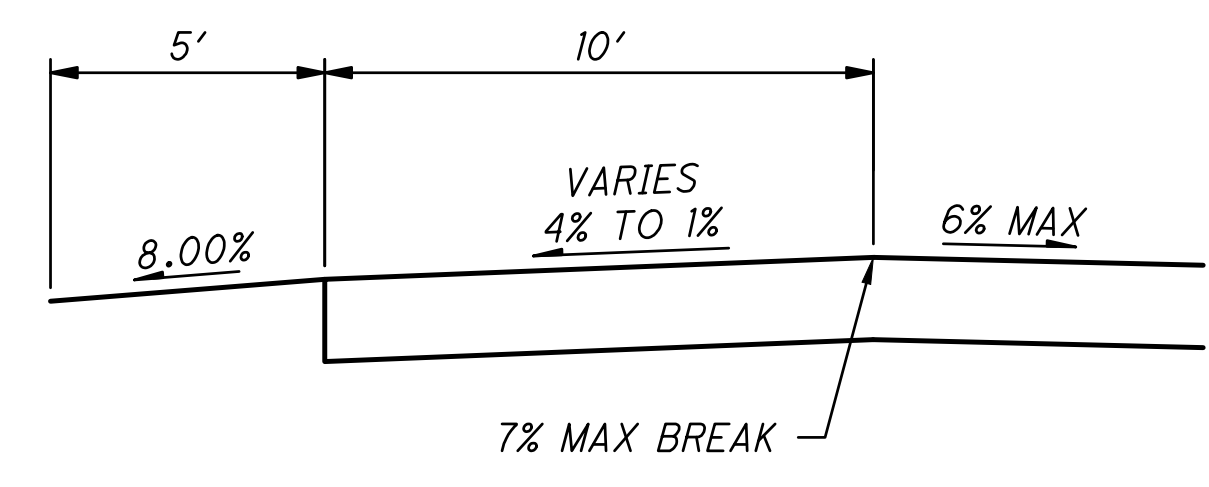
FRA-CR122-0.00

c:\pw_working\infra01\sbhattarai\d0165401\115792_GY001.dwg LAST SAVED BY: ngoodman, 1/18/2024 3:21 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:16 PM

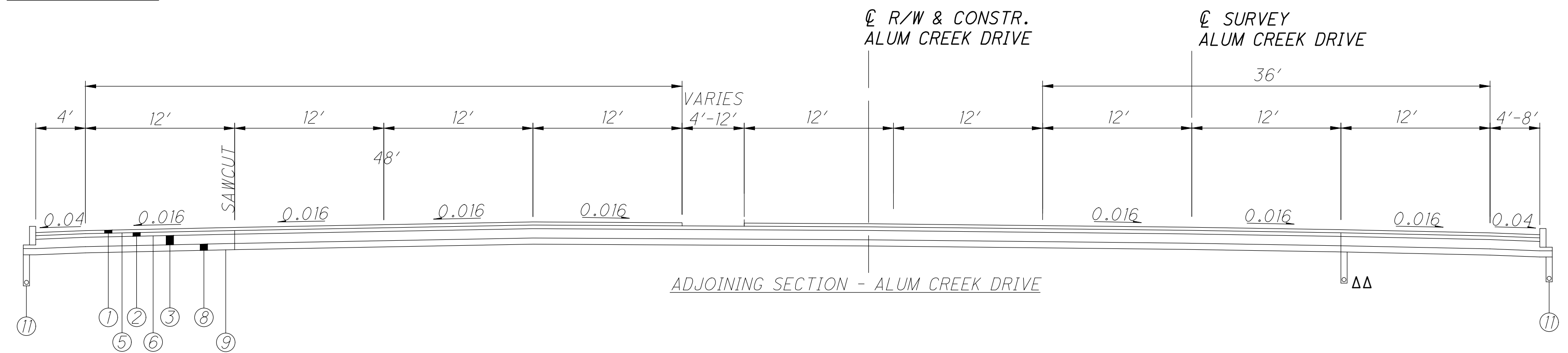


* 12' WHERE GUARDRAIL IS USED.
PG: PROFILE GRADE

SUPERELEVATED SECTION - ALUM CREEK DRIVE
 STA. 217+46.30 TO STA. 249+32.04
 STA. 255+07.79 TO STA. 285+88.09
 STA. 308+65.72 TO STA. 322+71.72
 (FOR SUPERELEVATION TABLE, SEE SHEETS 136-140)



HIGH SIDE SUPERELEVATION



ADJOINING SECTION - ALUM CREEK DRIVE

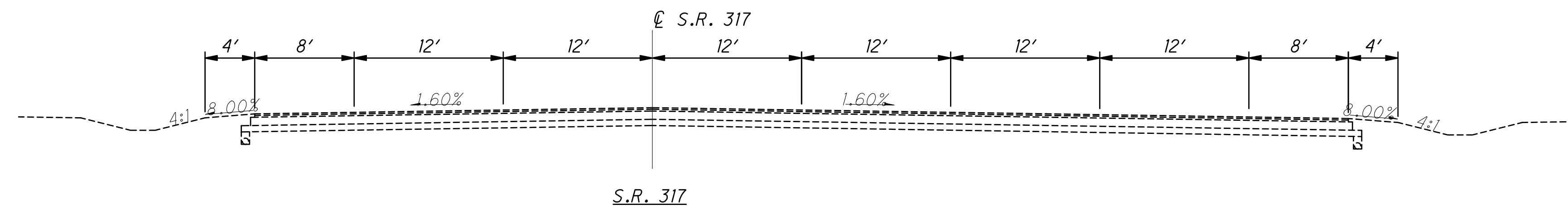
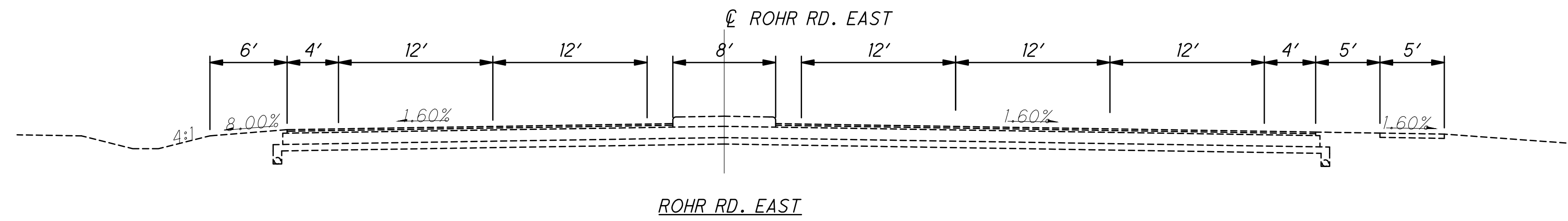
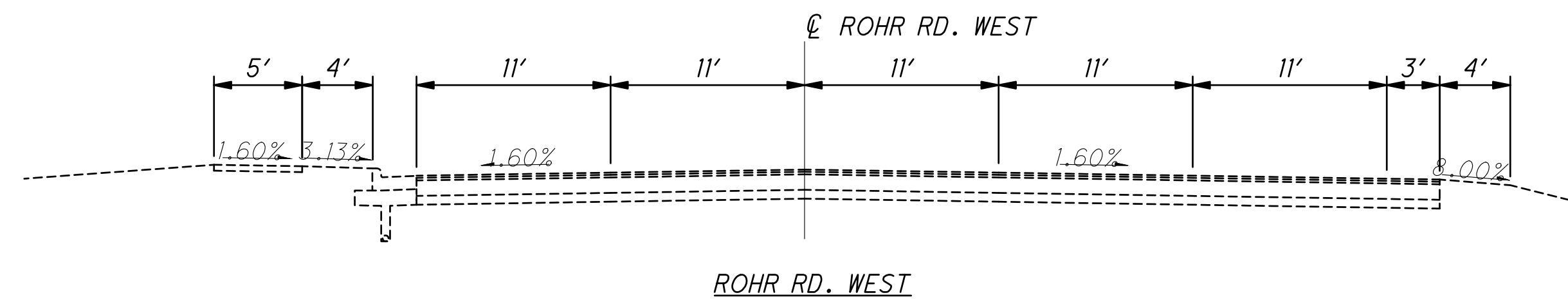
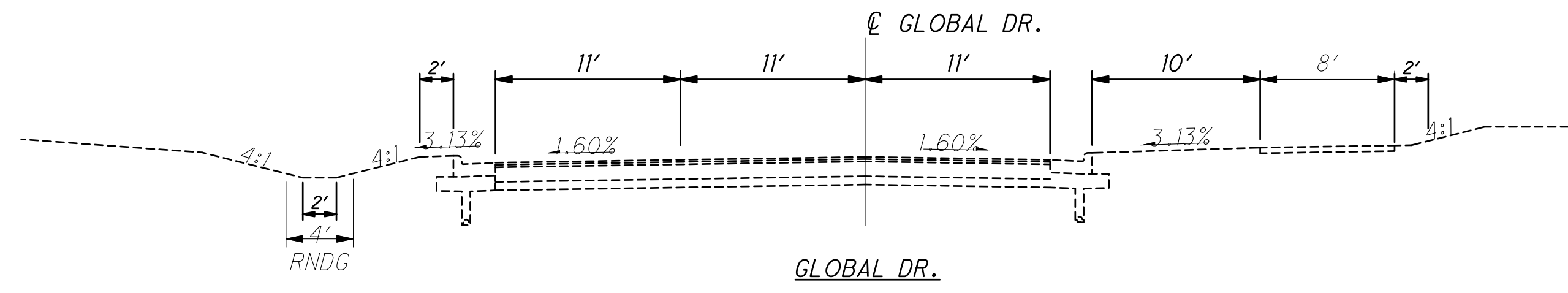
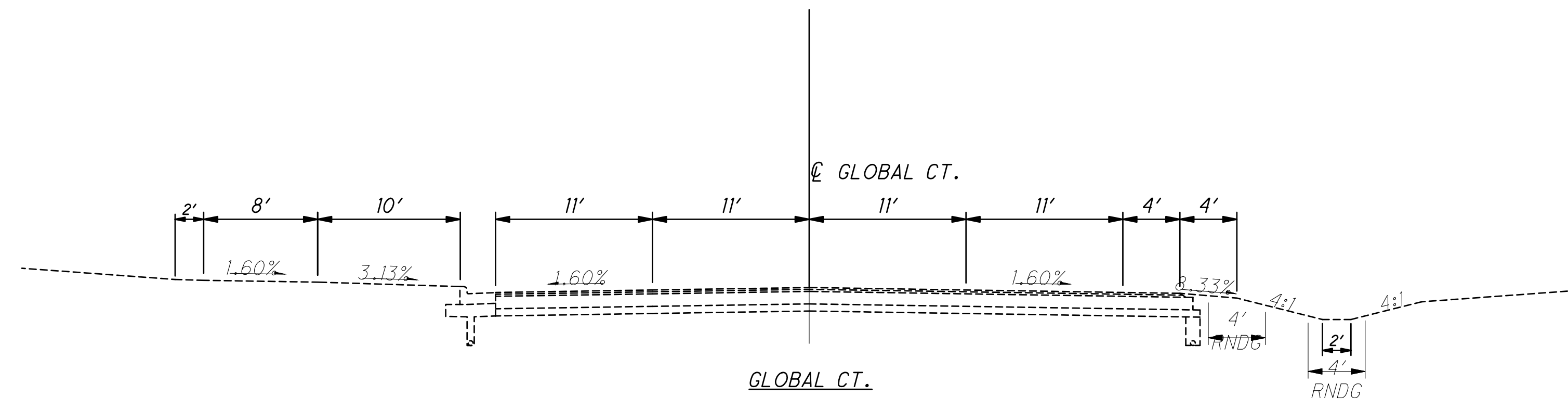
LEGEND

- | | | | |
|--|--|---|--|
| (A) - 1 1/2" ASPHALT SURFACE COURSE | (1) - 1 1/2" ASPHALT SURFACE COURSE | (8) - 6" PIPE UNDERDRAINS | (15) - COMBINATION CURB AND GUTTER, TYPE 2 |
| (B) - 2 1/2" ASPHALT INTERMEDIATE COURSE | (2) - 2 1/2" ASPHALT INTERMEDIATE COURSE | (9) - 4" CONCRETE WALK | (16) - SEEDING AND MUCHING |
| (C) - 3" ASPHALT BASE COURSE | (3) - 3" ASPHALT BASE COURSE | (10) - 4" ASPHALT BASE COURSE | (17) - 1 1/2" PAVEMENT PLANING |
| (D) - 3" ASPHALT BASE COURSE | (4) - 3" ASPHALT BASE COURSE | (11) - 1 1/4" ASPHALT SURFACE COURSE | |
| (E) - 8" AGGREGATE BASE COURSE | (5) - 8" AGGREGATE BASE COURSE | (12) - 1 3/4" ASPHALT INTERMEDIATE COURSE | |
| (F) - 6" STABILIZED CRUSHED AGGREGATE | (6) - SUBGRADE COMPACTION | (13) - 6" AGGREGATE BASE COURSE | |
| (G) - 6" UNDERDRAIN | (7) - 4" TOPSOIL FURNISHED AND PLACED | (14) - 4" PIPE UNDERDRAINS | |

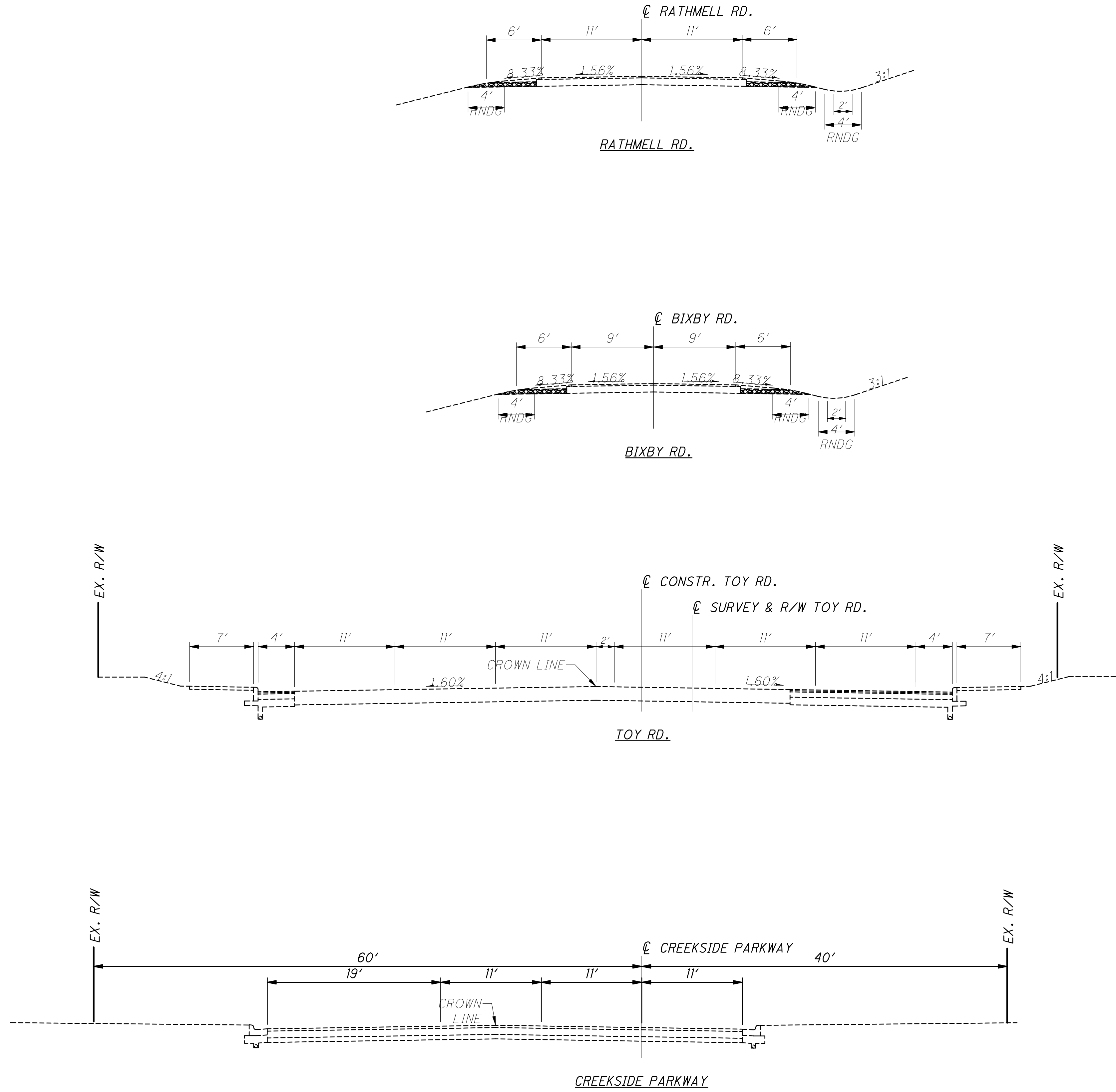
TYPICAL SECTIONS

FRA-CR122-0.00

c:\pw_working\infra01\sphatarai\0194547\115792_GY001_Void.dwg LAST SAVED BY: sphatarai, 1/19/2024 2:45 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:16 PM

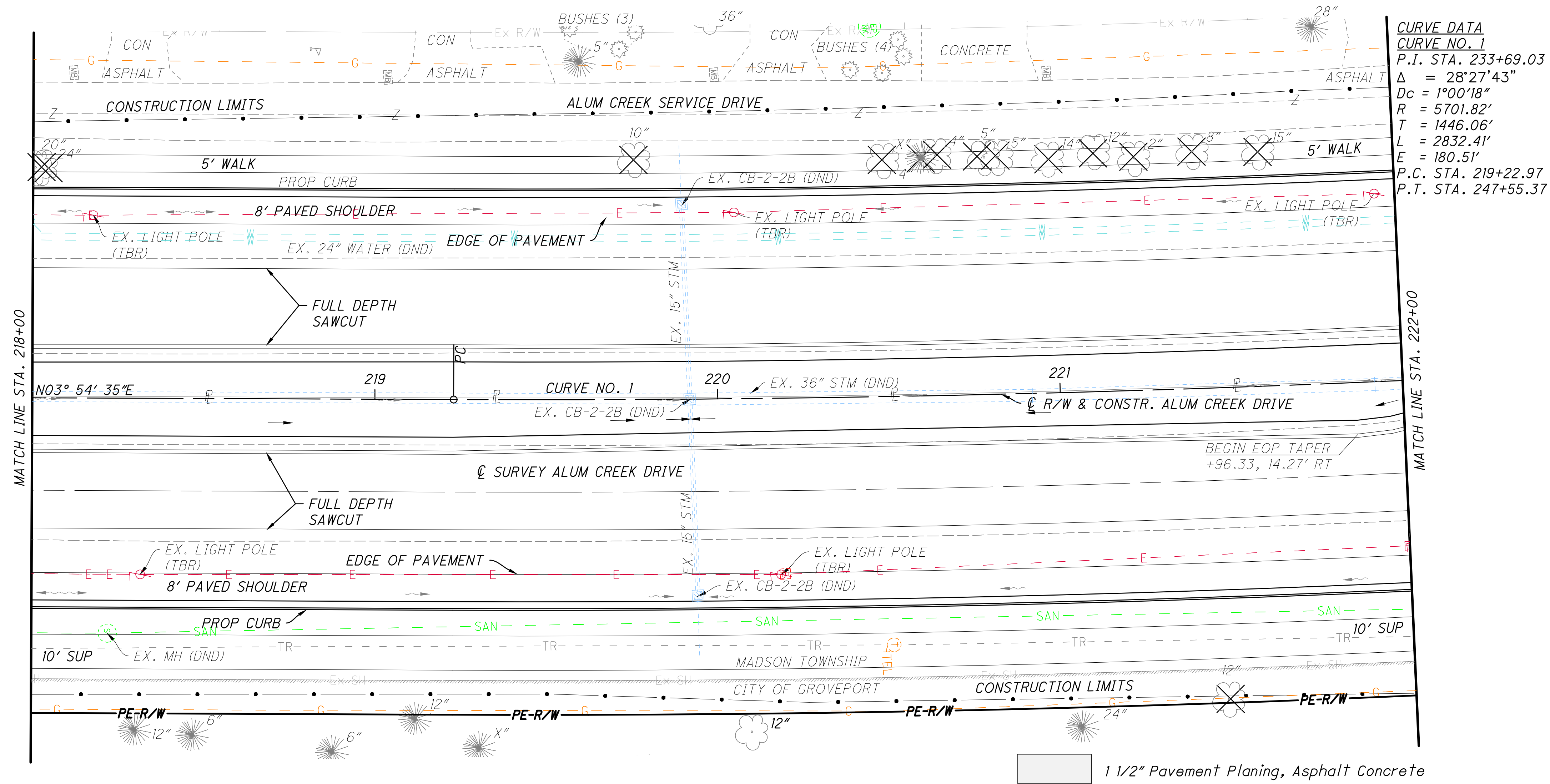


c:\pw_working\infra01\sphattara\0194547\115792_GY001_Void.dwg LAST SAVED BY: sphattara, 1/19/2024 2:45 PM LAST PRINTED BY: Bhattara, Shristi, 1/19/2024 4:17 PM

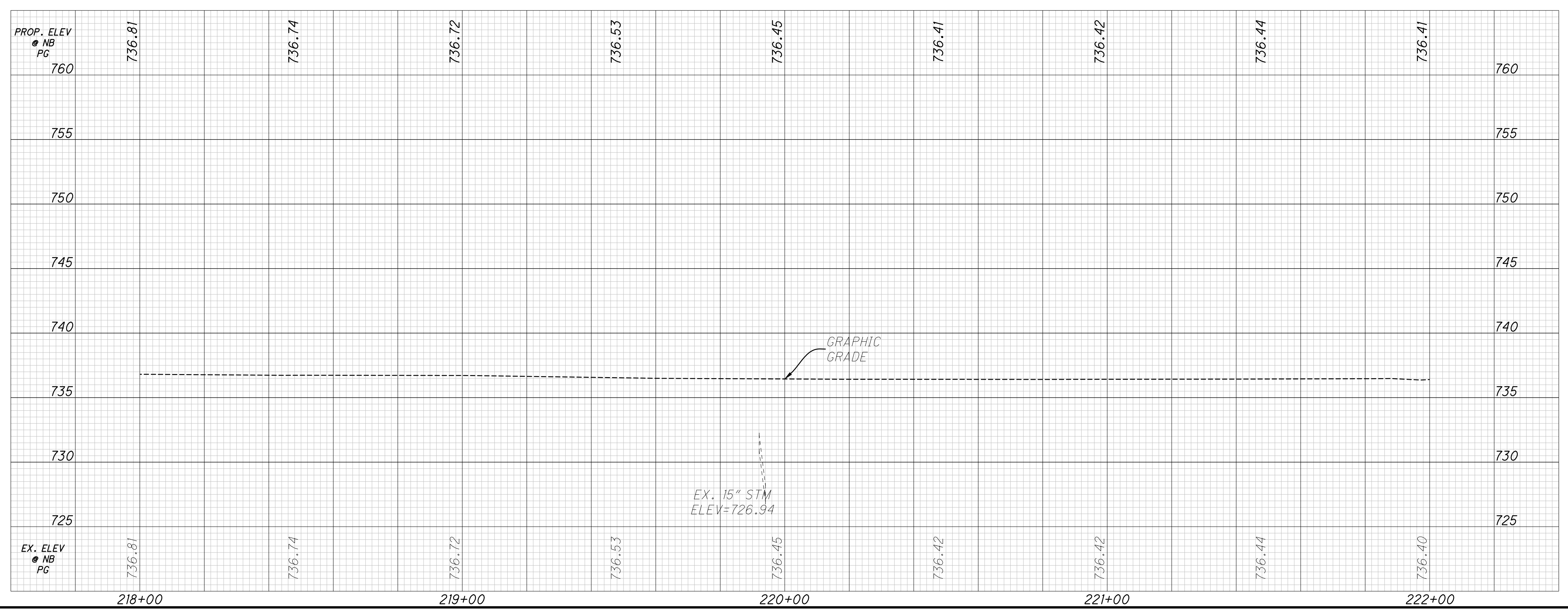


c:\pw_working\infra01\sbhattarai\0165401\115792_GP006.dwg LAST SAVED BY: sbhattarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:22 PM

0 20 40
 HORIZONTAL SCALE IN FEET



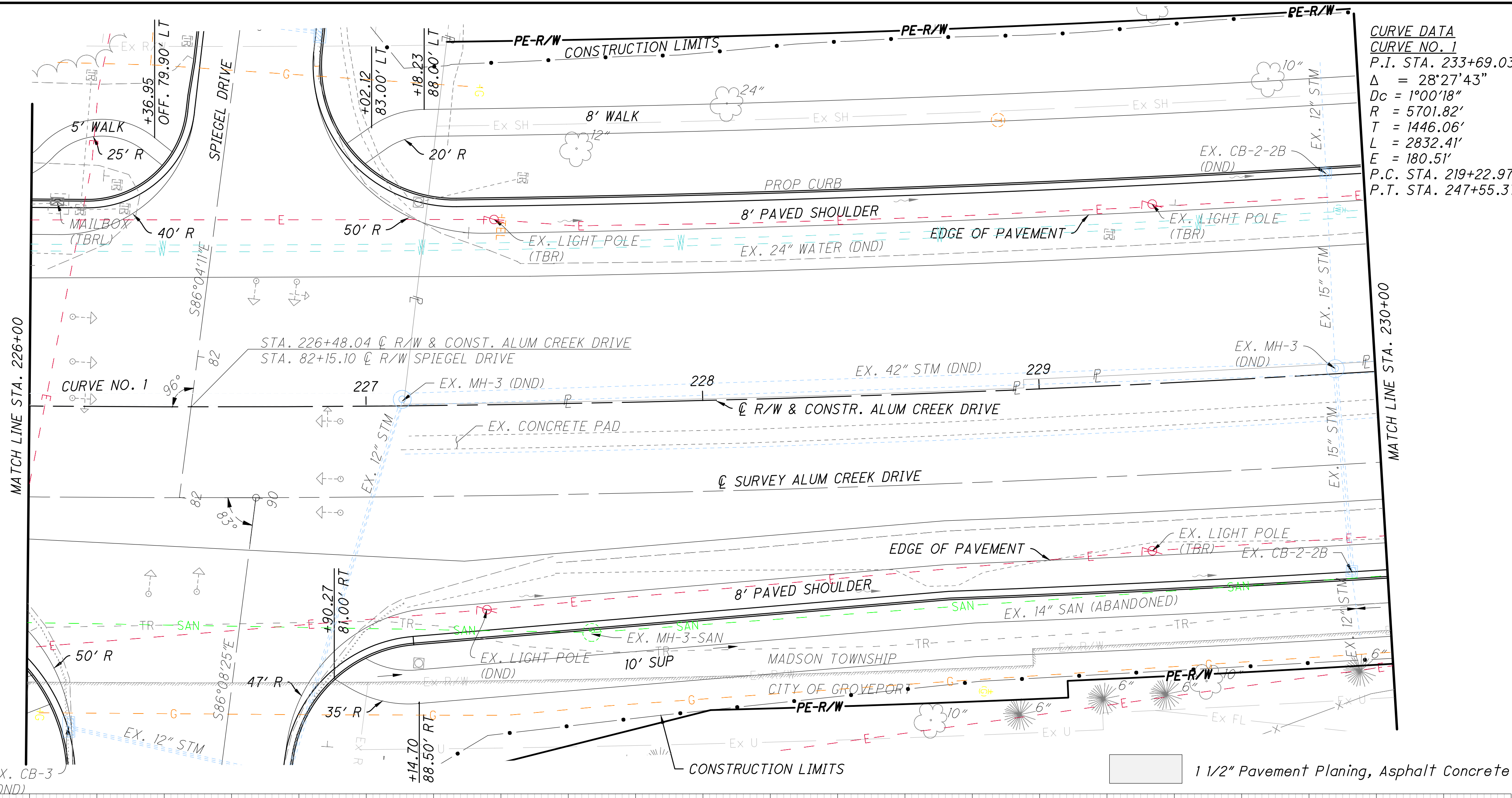
CURVE DATA
 CURVE NO. 1
 P.I. STA. 233+69.03
 $\Delta = 28^{\circ}27'43''$
 $Dc = 1^{\circ}00'18''$
 $R = 5701.82'$
 $T = 1446.06'$
 $L = 2832.41'$
 $E = 180.51'$
 P.C. STA. 219+22.97
 P.T. STA. 247+55.37



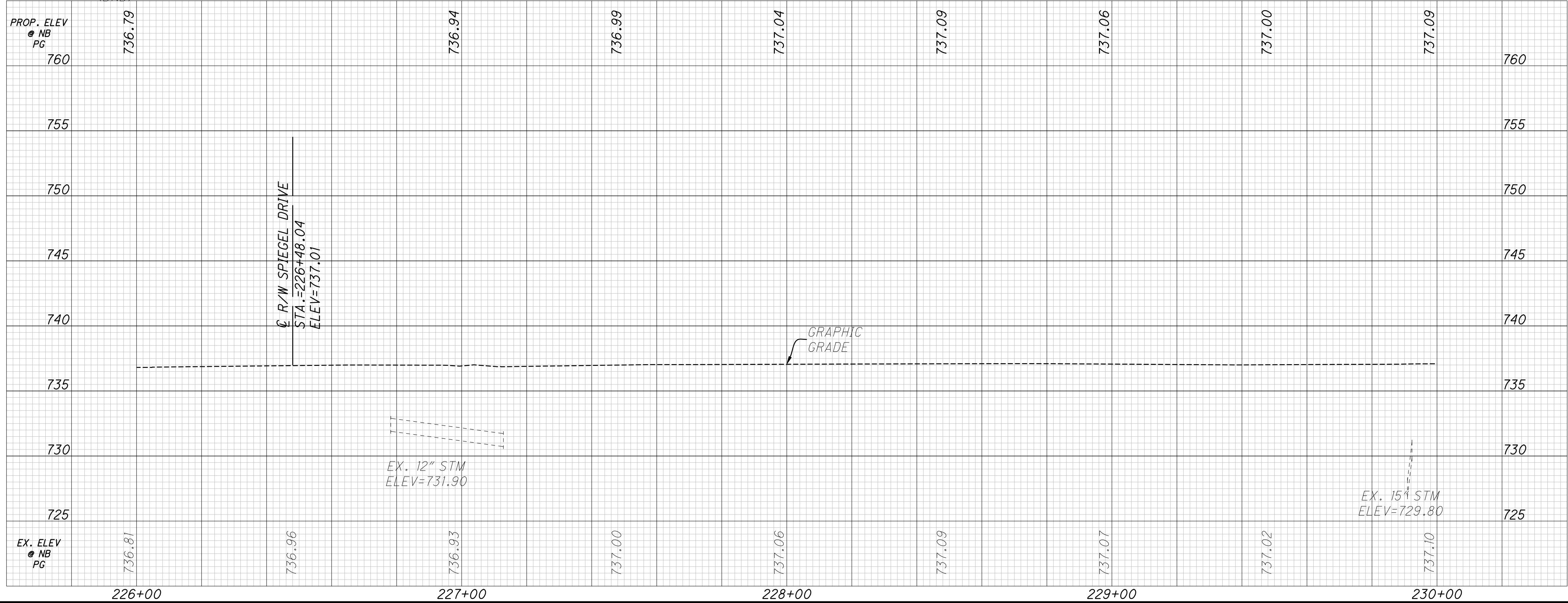
REF. NO.	STATION		SIDE
	FROM	TO	

PLAN AND PROFILE
 STA. 218+00 TO STA. 222+00
 FRA-CR122-0.00

c:\pw_working\infra01\sbatatarai\d0165401\115792_GPO08.dwg LAST SAVED BY: sbhatatarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shruti, 1/19/2024 4:24 PM

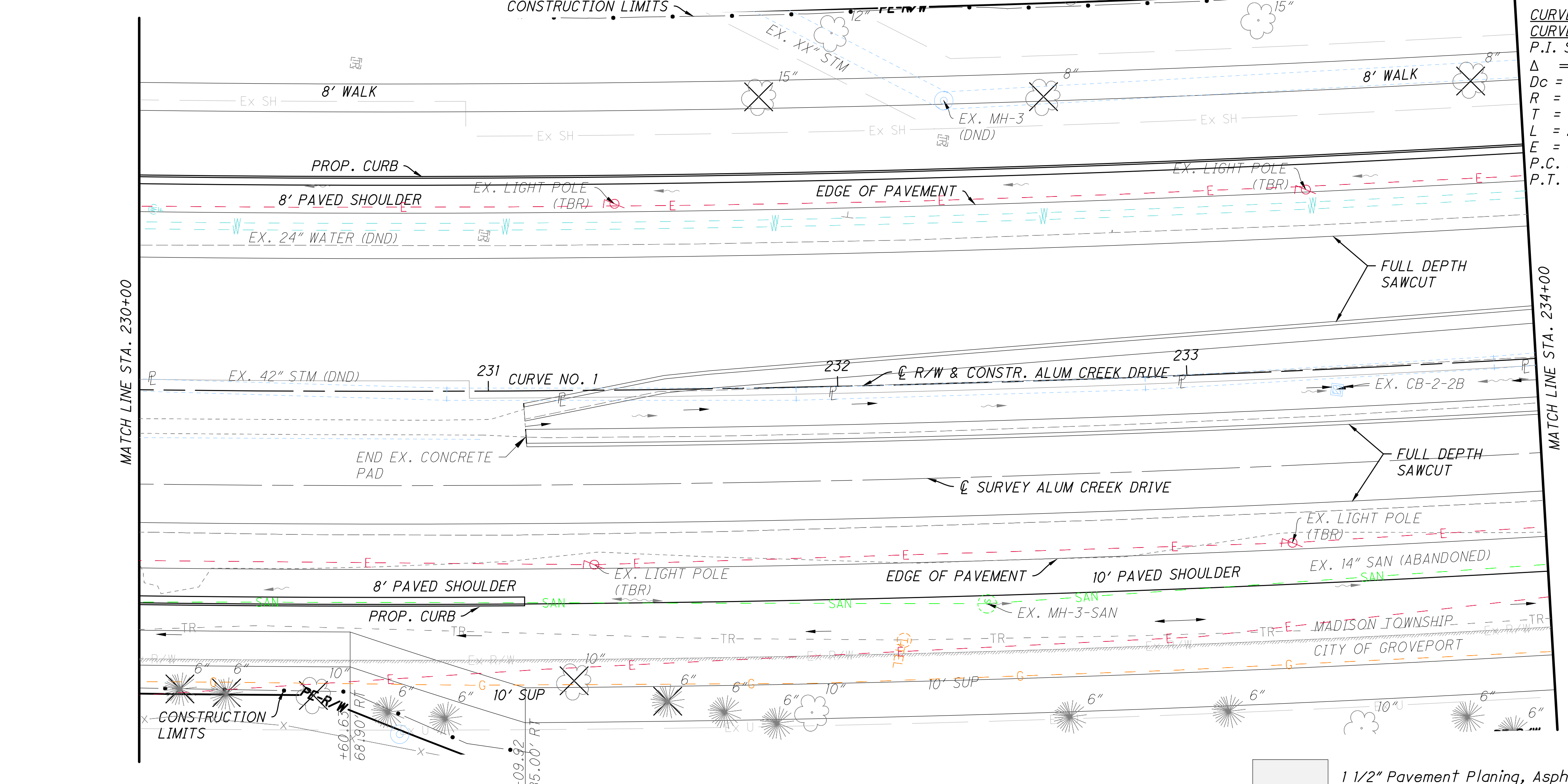


CURVE DATA
CURVE NO. 1
P.I. STA. 233+69.03
$\Delta = 28^{\circ}27'43"$
$Dc = 1^{\circ}00'18"$
$R = 5701.82'$
$T = 1446.06'$
$L = 2832.41'$
$E = 180.51'$
P.C. STA. 219+22.97
P.T. STA. 247+55.37



REF. NO.	STATION		SIDE																
	FROM	TO																	

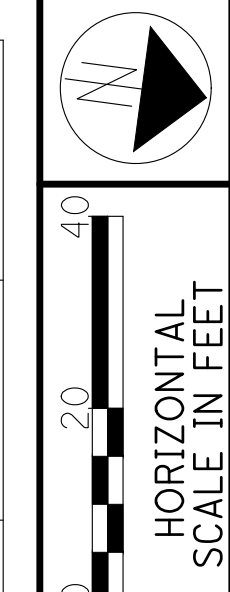
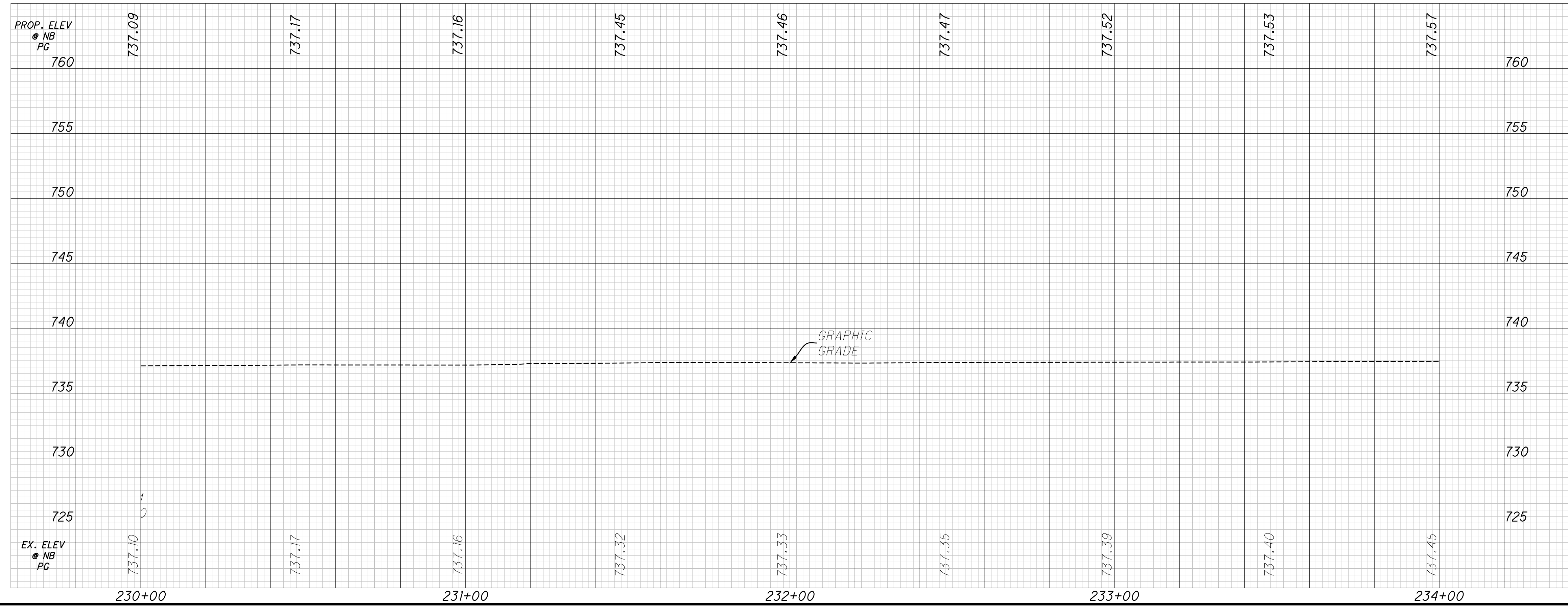
c:\pw_working\infra01\sphatitarai\d0165401\115792_GP009.dwg LAST PRINTED BY: sphatitarai, Shristi, 1/19/2024 2:48 PM LAST SAVED BY: sphatitarai, Shristi, 1/19/2024 4:25 PM



CURVE DATA
 CURVE NO. 1
 P.I. STA. 233+69.03
 Δ = 28°27'43"
 Dc = 1°00'18"
 R = 5701.82'
 T = 1446.06'
 L = 2832.41'
 E = 180.51'
 P.C. STA. 219+22.97
 P.T. STA. 247+55.37

STATION		SIDE	STATION		REF. NO.
FROM	TO		FROM	TO	

1 1/2" Pavement Planing, Asphalt Concrete



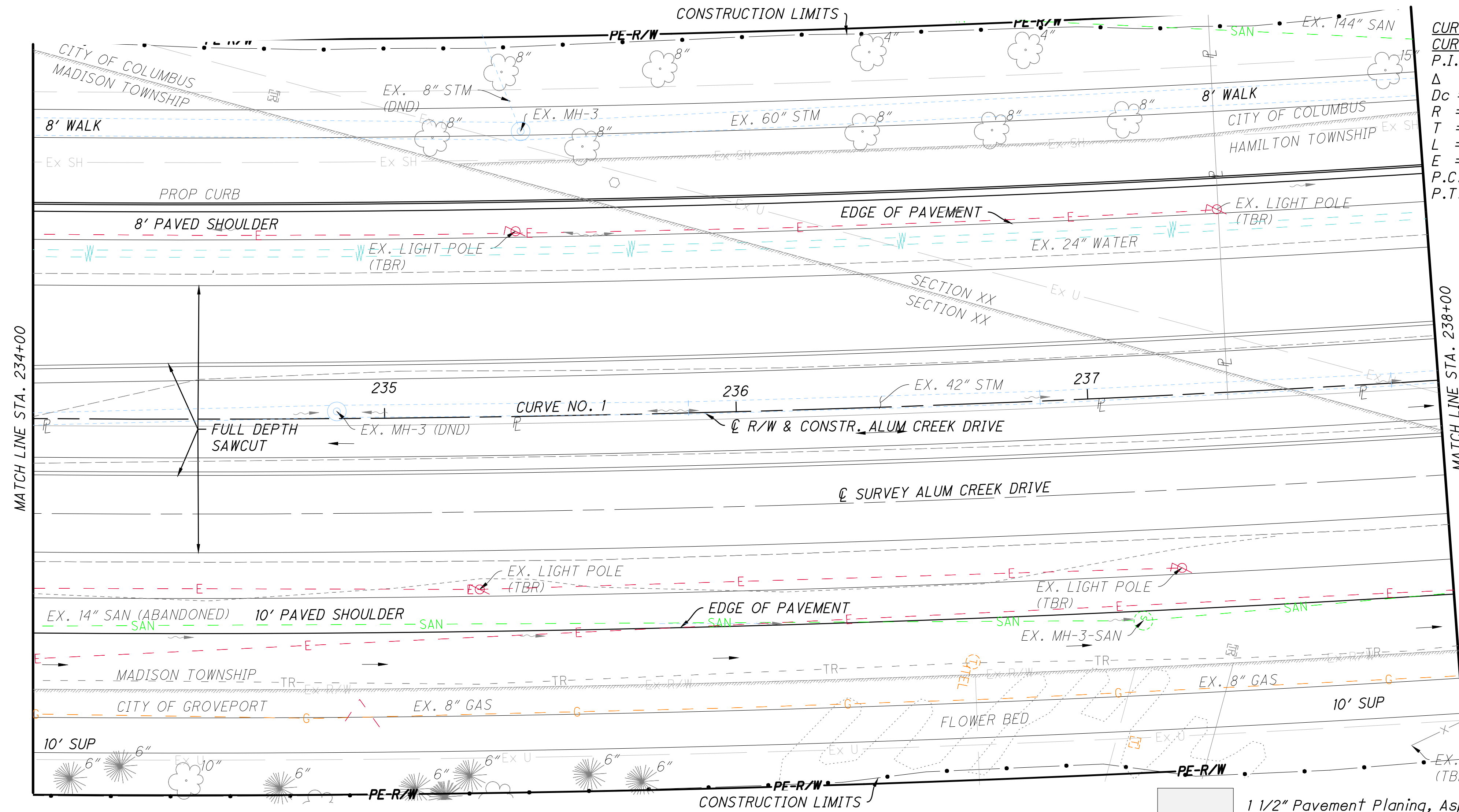
CALCULATED
 NMG
 CHECKED
 BMH

PLAN AND PROFILE
 STA. 230+00 TO STA. 234+00

FRA-CR122-0.00

13
 40

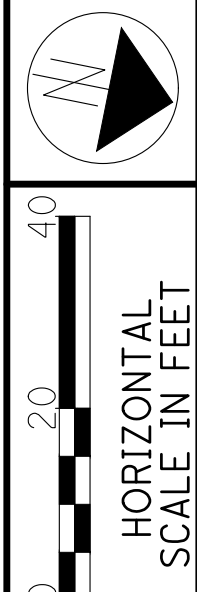
c:\pw_working\infra01\sbhattarai\115792_GP010.dwg LAST SAVED BY: sbhattarai, 1/19/2024 2:48 PM LAST PRINTED BY: sbhattarai, 1/19/2024 4:26 PM



CURVE DATA
CURVE NO. 1
 P.I. STA. 233+69.03
 $\Delta = 28^\circ 27' 43''$
 $D_c = 1^\circ 00' 18''$
 $R = 5701.82'$
 $T = 1446.06'$
 $L = 2832.41'$
 $E = 180.51'$
 P.C. STA. 219+22.97
 P.T. STA. 247+55.37

PROP. ELEV NB PG	737.57	737.65	737.70	737.75	737.77	737.81	737.86	737.88	737.95
EX. ELEV NB PG	737.45	737.52	737.57	737.62	737.64	737.69	737.73	737.76	737.82
STATION	234+00	235+00	236+00	237+00	238+00				

REF. NO.										
	FROM					TO				
STATION										
	FROM					TO				
SIDE										
<div style="display: flex; justify-content: space-between;"> 14 40 </div>										

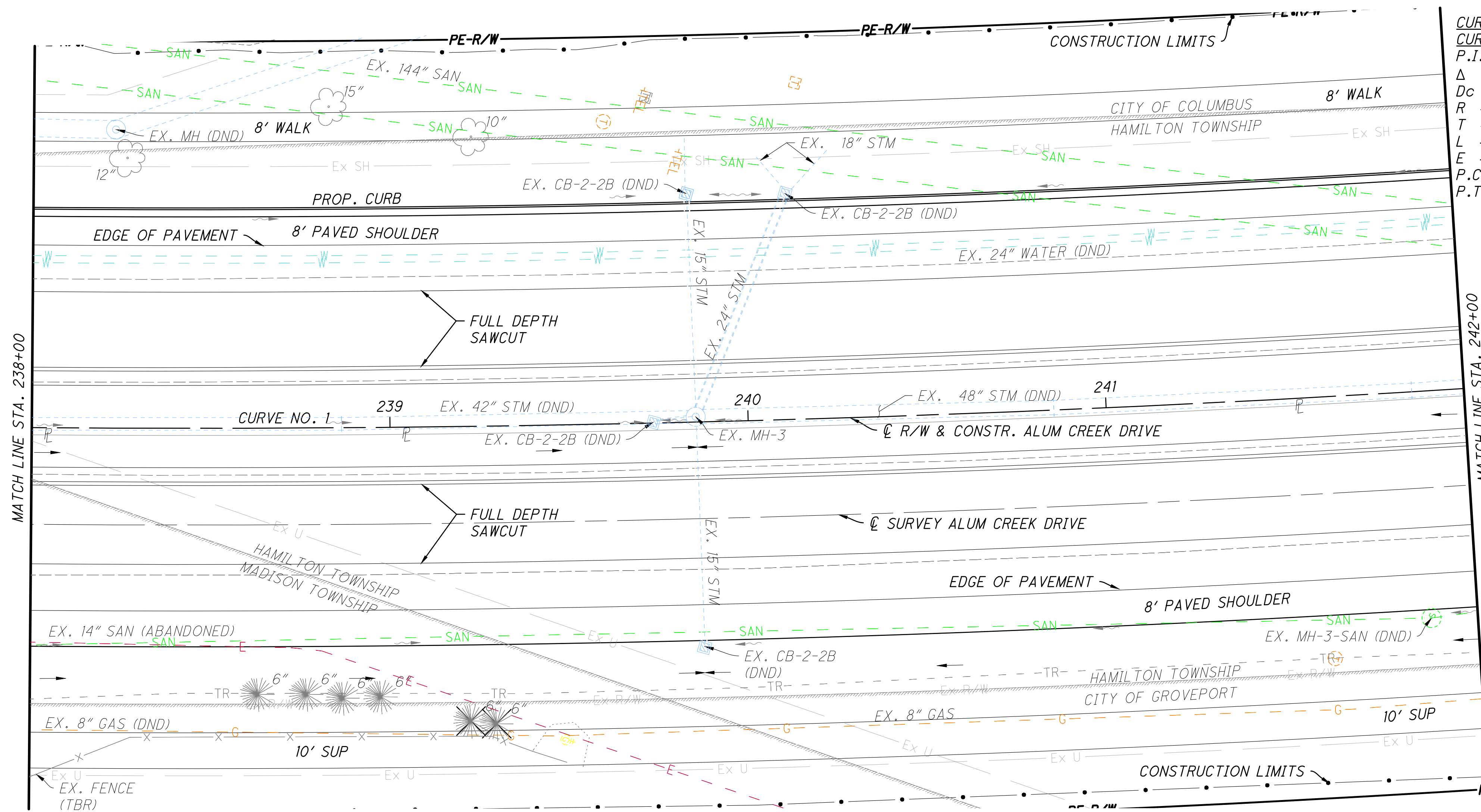


PLAN AND PROFILE
STA. 234+00 TO STA. 238+00

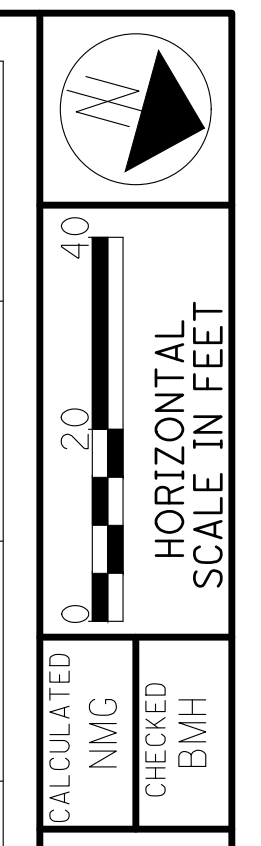
FRA-CR122-0-00

14
40

c:\pw_working\infra01\sphattarai\d0165401\115792_GPO1.1.dwg LAST SAVED BY: sphattarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:27 PM



CURVE DATA
CURVE NO. 1
P.I. STA. 233+69.03
 $\Delta = 28^\circ 27' 43''$
 $Dc = 1^\circ 00' 18''$
 $R = 5701.82'$
 $T = 1446.06'$
 $L = 2832.41'$
 $E = 180.51'$
P.C. STA. 219+22.97
P.T. STA. 247+55.37



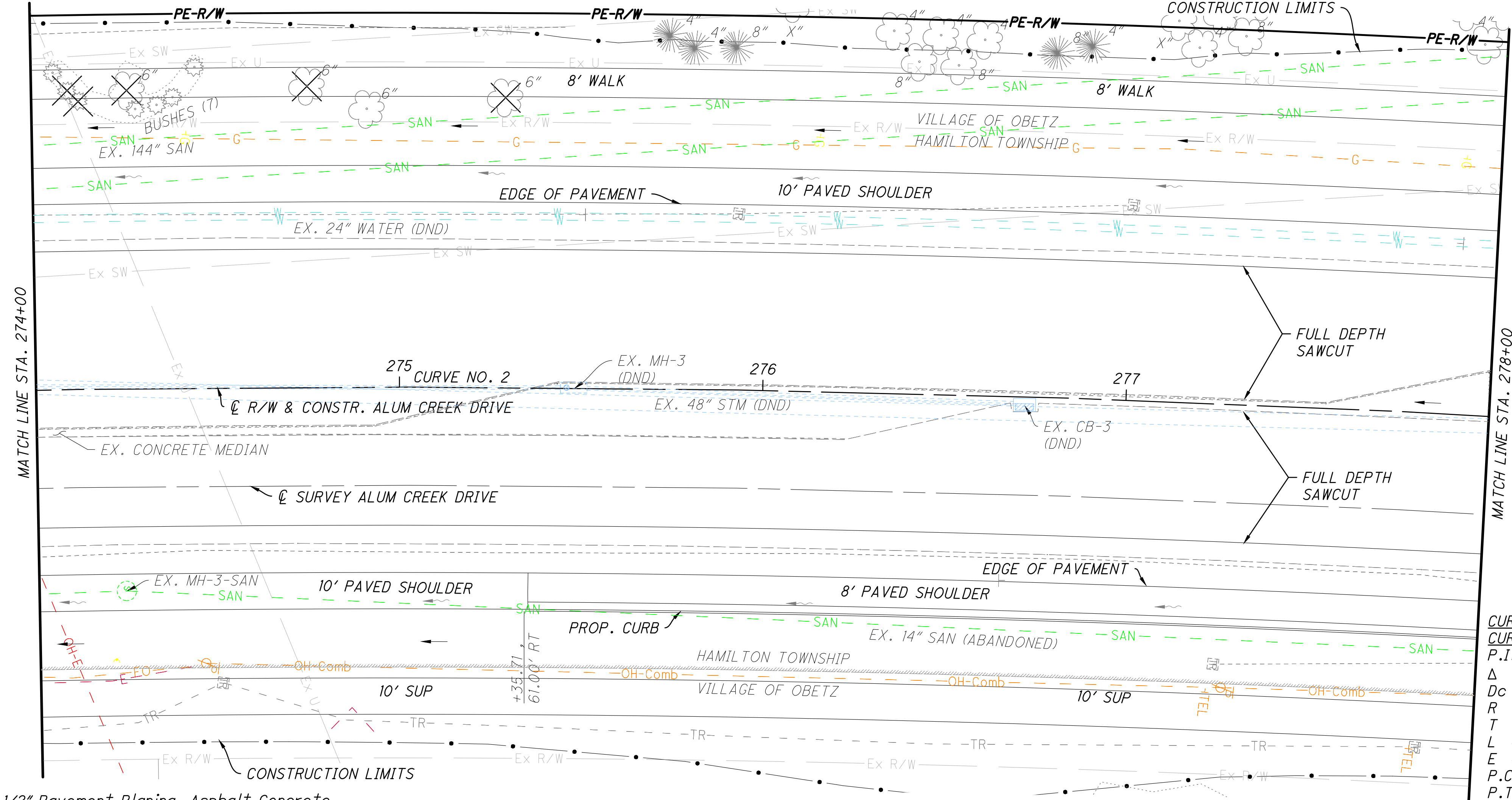
PLAN AND PROFILE
STA. 238+00 TO STA. 242+00

1 1/2" Pavement Planing, Asphalt Concrete

PROP. ELEV NB PG	737.95	738.03	738.08	738.09	738.17	738.15	738.24	738.33	738.36	760
760										760
755										755
750										750
745										745
740										740
735										735
730										730
725										725
EX. ELEV NB PG	737.82	737.90	737.96	737.97	738.04	738.02	738.11	738.21	738.23	
	238+00	239+00			240+00		241+00		242+00	

REF NO.	STATION		SIDE
	FROM	TO	

c:\pw_working\infra01\sphatitarai\0165401\115792_GPO20.dwg LAST SAVED BY: sphatitarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:36 PM



CURVE DATA
CURVE NO. 2
P.I. STA. 270+74.03
 $\Delta = 27^\circ 08' 37''$
 $D_c = 0^\circ 59' 43''$
 $R = 5756.17'$
 $T = 1389.57'$
 $L = 2726.97'$
 $E = 165.35'$
P.C. STA. 256+84.46
P.T. STA. 284+11.42

1 1/2" Pavement Planing, Asphalt Concrete

PROP. ELEV NB PG	738.89		739.07		739.21		739.32		739.32		739.24		739.22		739.30		739.34	760
760																		760
755																		755
750																		750
745																		745
740											GRAPHIC GRADE							740
735																		735
730																		730
725																		725
EX. ELEV NB PG	739.92		739.07		739.21		739.33		739.33		739.36		739.41		739.48		739.58	
	274+00				275+00				276+00				277+00		278+00			

HORIZONTAL SCALE IN FEET

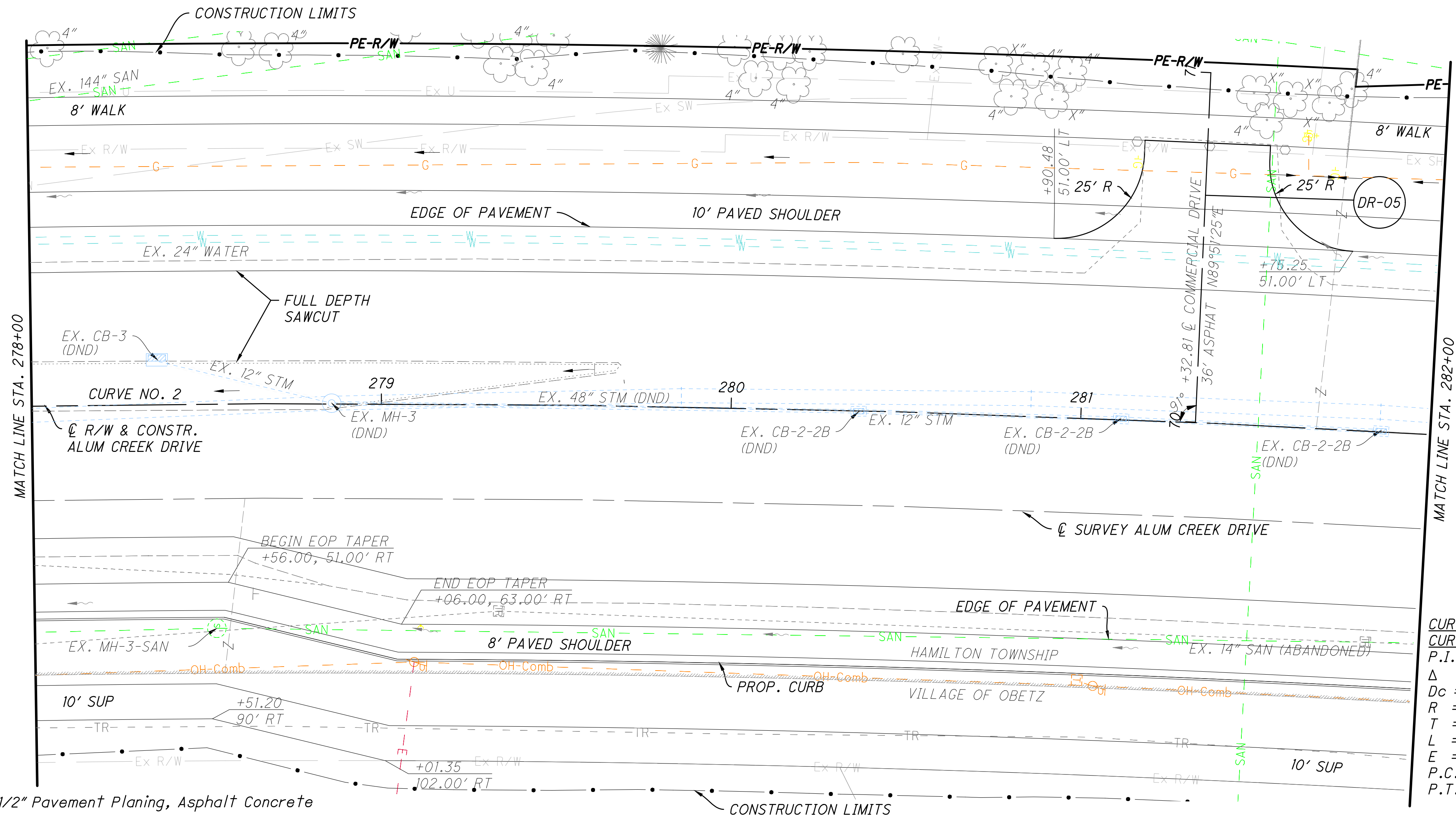
CALCULATED	
NMG	
CHECKED	
BMH	

PLAN AND PROFILE
STA. 274+00 TO STA. 278+00

FRA-CR122-0.00

24
40

c:\pw_working\infra01\sbhattarai\d0165401\115792_GPO21.dwg LAST SAVED BY: sbhattarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:37 PM

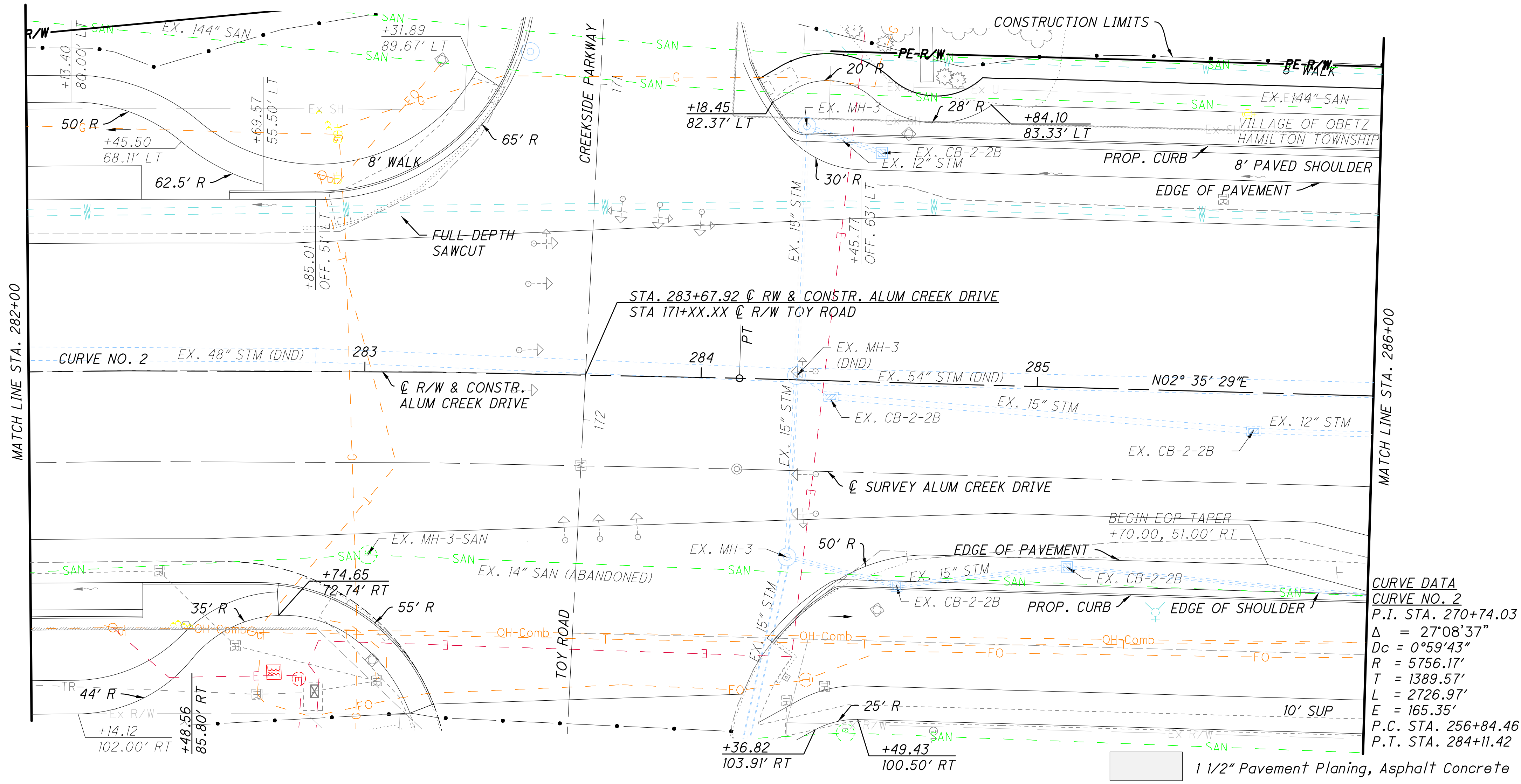


CURVE DATA
CURVE NO. 2
 P.I. STA. 270+74.03
 $\Delta = 27^\circ 08' 37''$
 $Dc = 0^\circ 59' 43''$
 $R = 5756.17'$
 $T = 1389.57'$
 $L = 2726.97'$
 $E = 165.35'$
 P.C. STA. 256+84.46
 P.T. STA. 284+11.42

STATION	PROP. ELEV NB PG	EX. ELEV NB PG
278+00	739.34	739.58
279+00	739.47	739.70
280+00	739.61	739.81
281+00	739.73	739.93
282+00	739.84	740.02
	739.96	740.14
	740.11	740.25
	740.24	740.38
	740.38	740.50

REF. NO.	STATION	SIDE	STATION		FROM	TO

c:\pw_working\infra01\sphatarai\d0165401\115792_GP022.dwg LAST SAVED BY: sphatarai, 1/19/2024 2:48 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:39 PM



CURVE DATA

CURVE NO. 2

P.I. STA. 270+74.03

$\Delta = 27^\circ 08' 37''$

$Dc = 0^\circ 59' 43''$

$R = 5756.17'$

$T = 1389.57'$

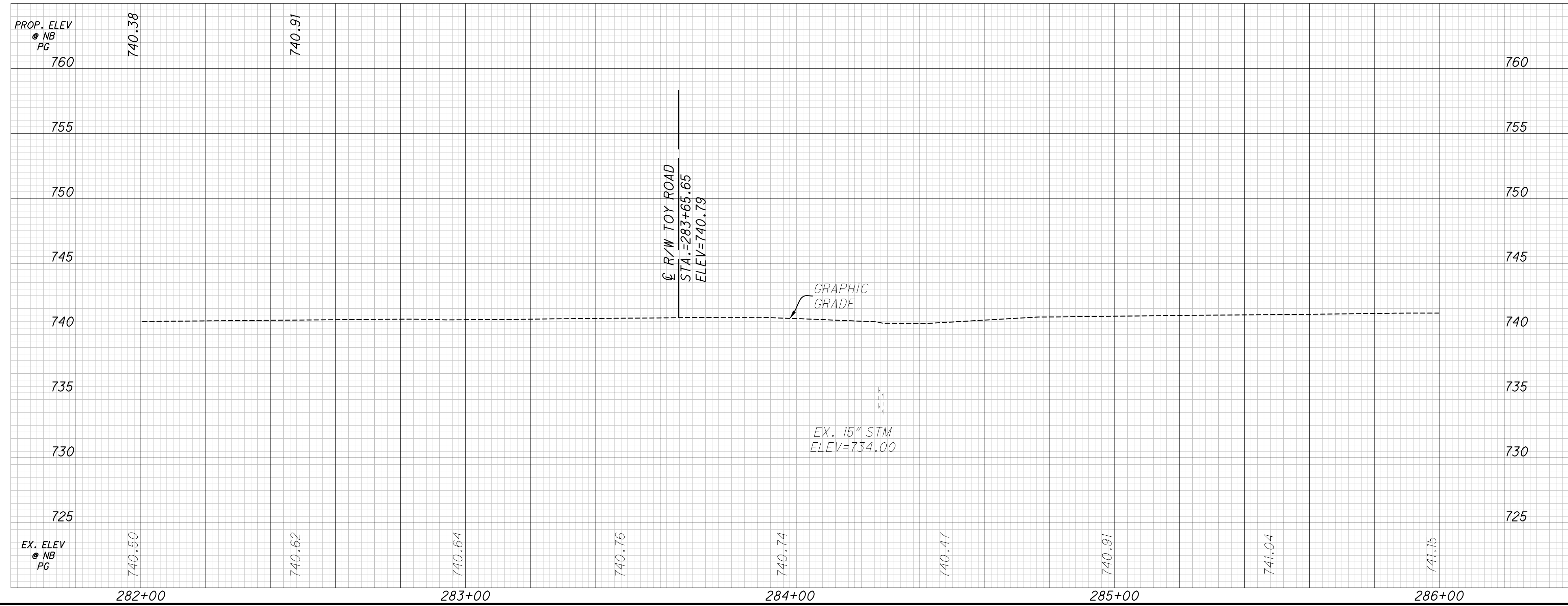
$L = 2726.97'$

$E = 165.35'$

P.C. STA. 256+84.46

P.T. STA. 284+11.42

1 1/2" Pavement Planing, Asphalt Concrete



STATION		SIDE	
REF NO.	FROM		
	TO		

FRA-CR122-0.00

STA. 282+00 TO STA. 286+00

HORIZONTAL SCALE IN FEET

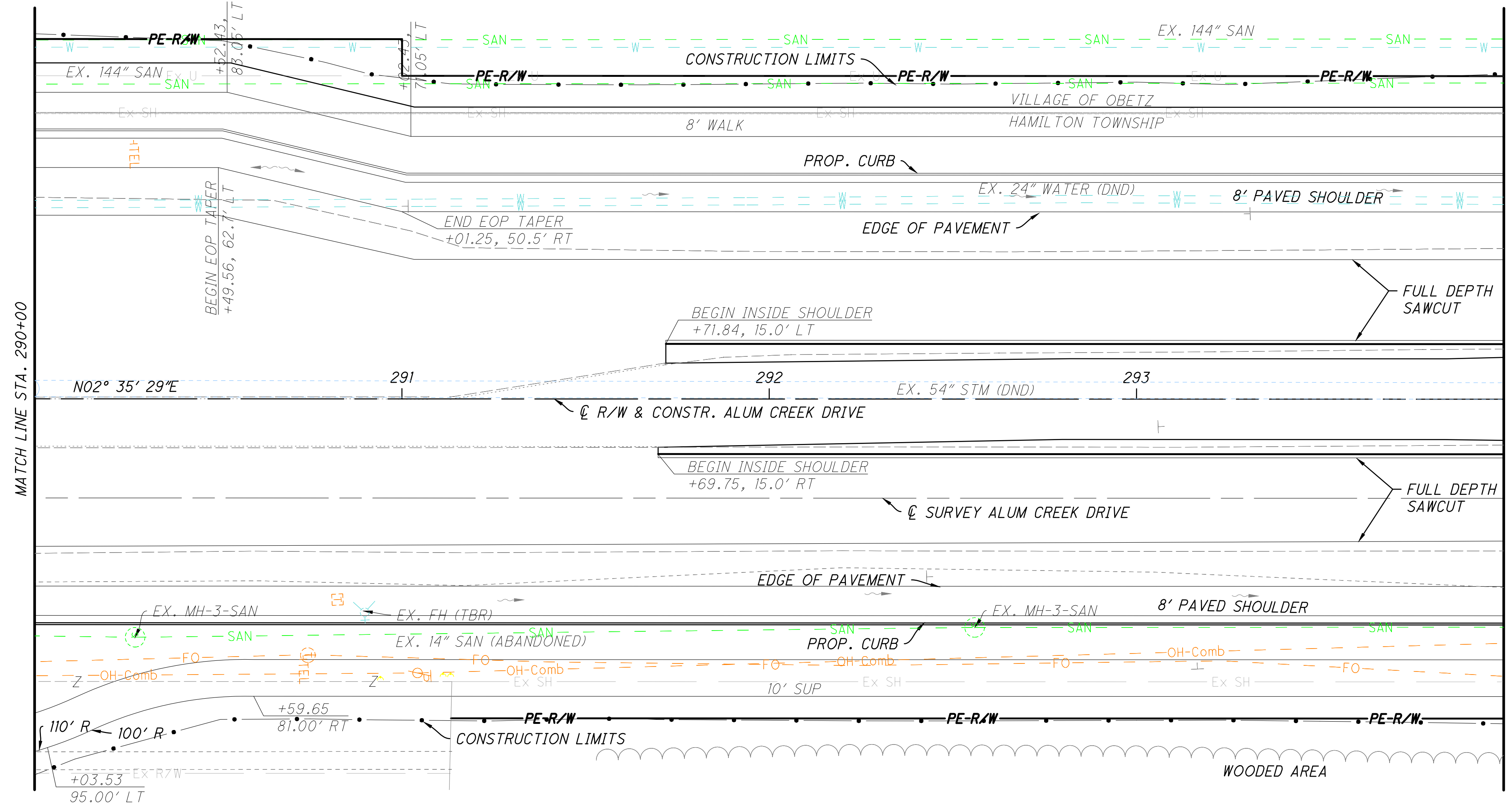
0 20 40

CALCULATED: NMG

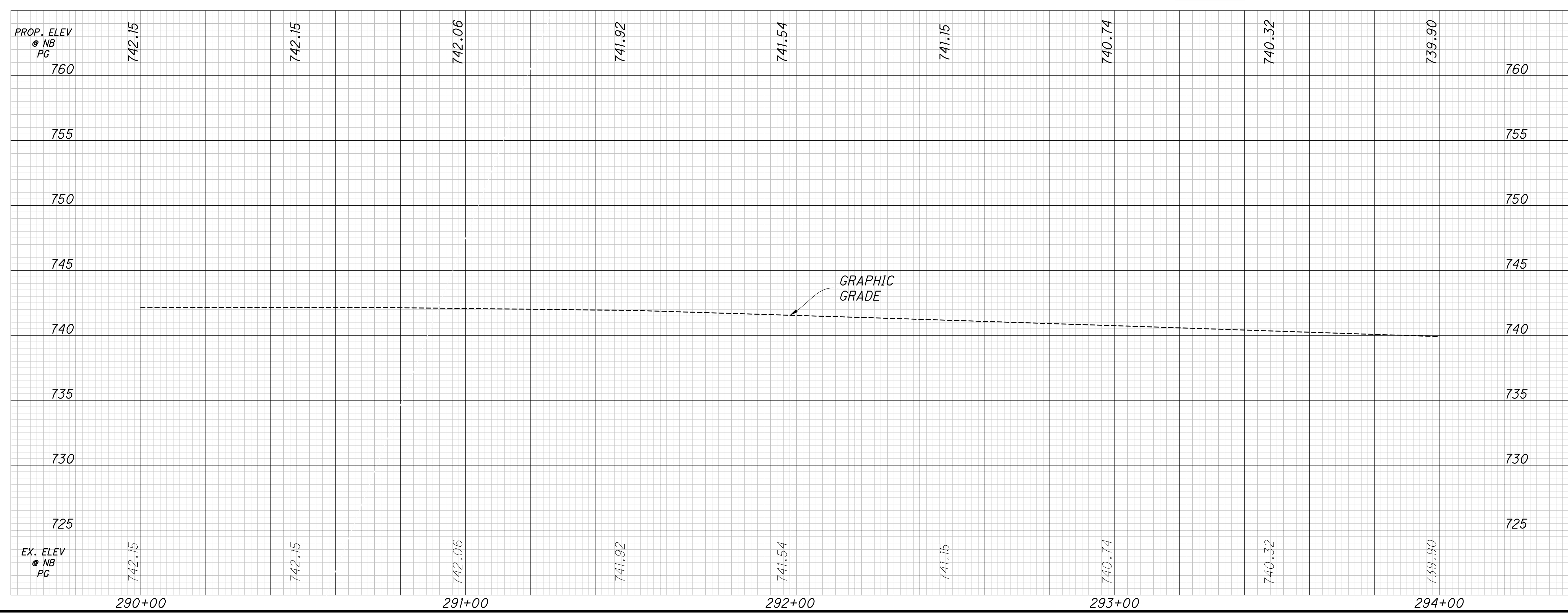
CHECKED: BMH

MATCH LINE STA. 290+00

MATCH LINE STA. 294+00



1 1/2" Pavement Planing, Asphalt Concrete



REF. NO.	STATION		SIDE
	FROM	TO	

28
40

FRA-CR122-0.00

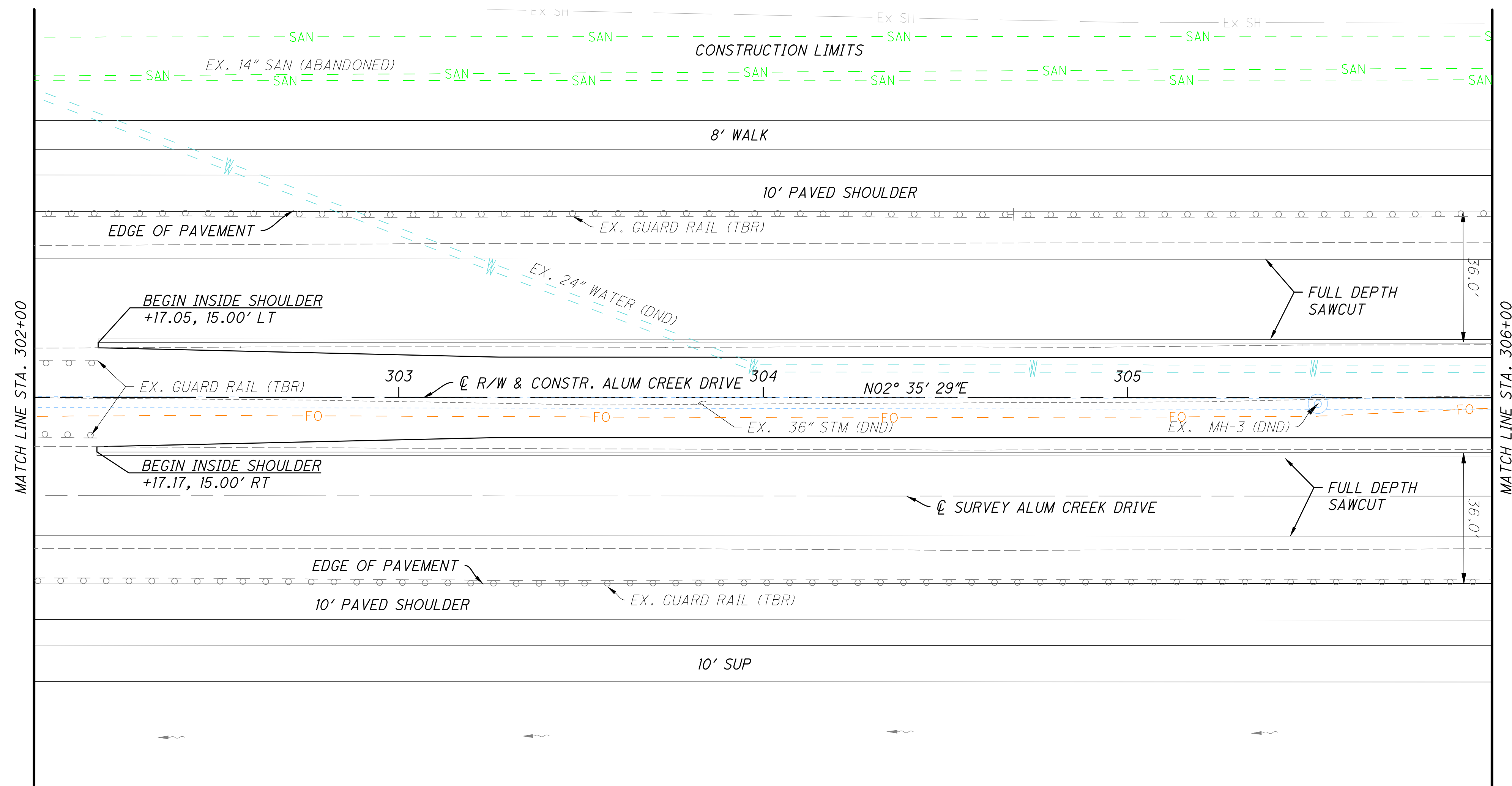
PLAN AND PROFILE

STA. 290+00 TO STA. 294+00

HORIZONTAL SCALE IN FEET

CALCULATED
NMG
CHECKED
BMH

c:\pw_working\infra01\sbhattarai\d0165401\115792_GPO27.dwg LAST SAVED BY: sbhattarai, 1/19/2024 2:49 PM LAST PRINTED BY: Bhattarai, Shruti, 1/19/2024 4:51 PM



1 1/2" Pavement Planing, Asphalt Concrete

PROP. ELEV	733.16		732.88		732.49		732.10		731.85		731.60		731.38		731.16		731.05				
NB																					
PG																					
745																					745
740																					740
735																					735
730																					730
725																					725
720																					720
715																					715
710																					710
EX. ELEV	733.17		732.88		732.49		732.10		731.86		731.61		731.39		731.16		731.05				
NB																					
PG																					
302+00					303+00					304+00					305+00						306+00

GRAPHIC GRADE

CALCULATED		NMG		CHECKED		BMH															
								PLAN AND PROFILE													
								STA. 302+00 TO STA. 306+00													
								SIDE													
REF. NO.																					
				STATION				FROM				TO									

Horizontal Scale in Feet: 0, 20, 40

Scale: 1" = 40'

North Arrow

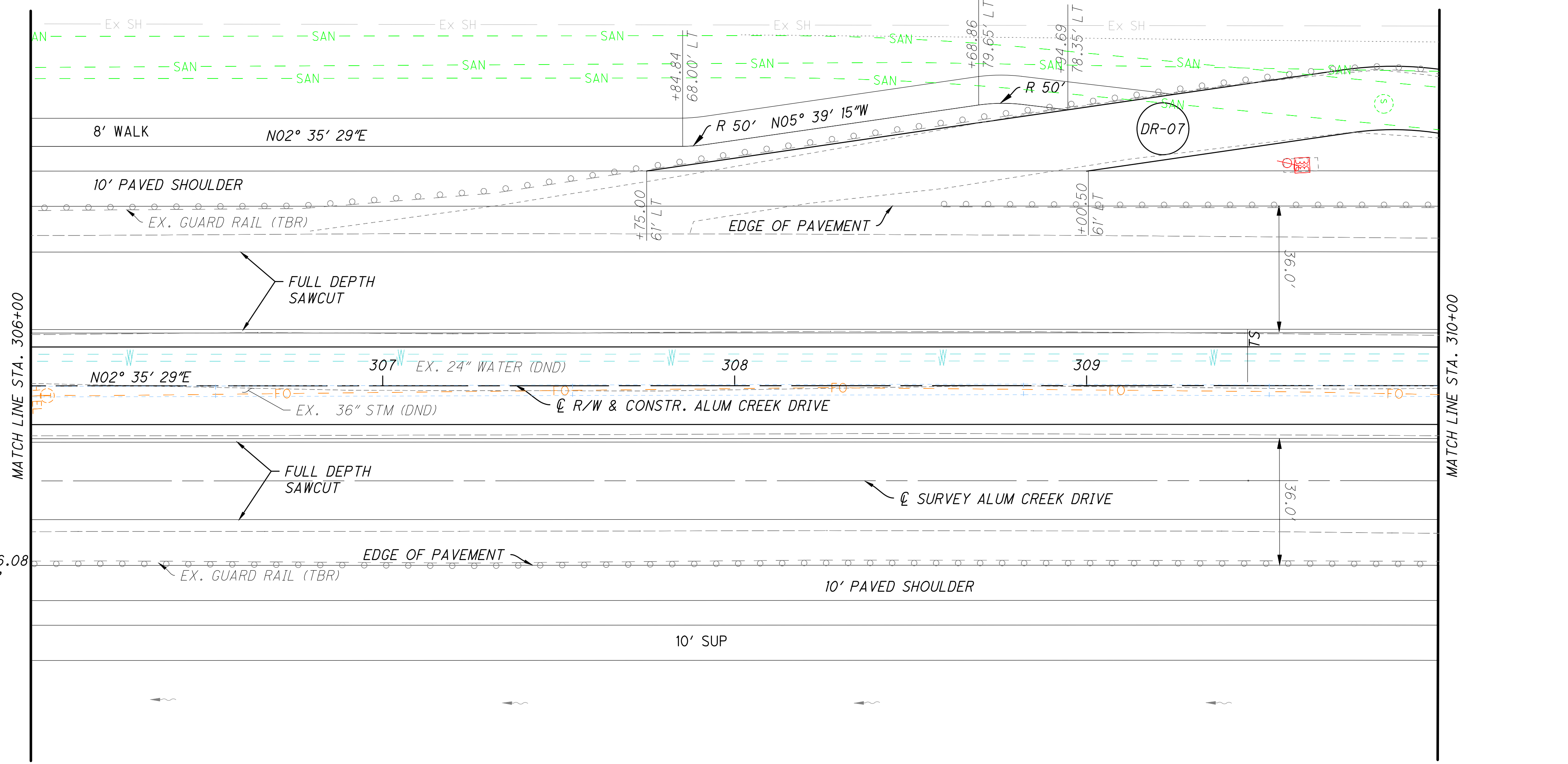
CALCULATED: NMG, CHECKED: BMH

FRA-CR122-0.00

31/40

c:\pw_working\infra01\sphatarai\d0165401\115792_GP028.dwg LAST SAVED BY: sphatarai, 1/19/2024 10:56 AM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:53 PM

CURVE DATA
SPIRAL CURVE
 NO. 1
 P.I. STA. 310+46.08
 $\Delta = 14^{\circ}04'28''$
 $D_c = 1^{\circ}29'22''$
 $R = 3846.72'$
 $L_s = 150.53'$
 $\theta_s = 1^{\circ}07'16''$
 $LT = 100.36'$
 $ST = 50.18'$
 $x = 150.52'$
 $y = 0.98'$
 $K = 75.264'$
 $P = 75.26'$



1 1/2" Pavement Planing, Asphalt Concrete

EX. ELEV NB PG	731.05	730.94	730.77	730.60	730.39	730.17	730.03	729.89	729.76	
PROP. ELEV NB PG	731.05	730.94	730.77	730.60	730.39	730.17	730.03	729.89	729.76	745
										740
										735
										730
										725
										720
										715
										710
306+00	307+00	308+00	309+00	310+00						

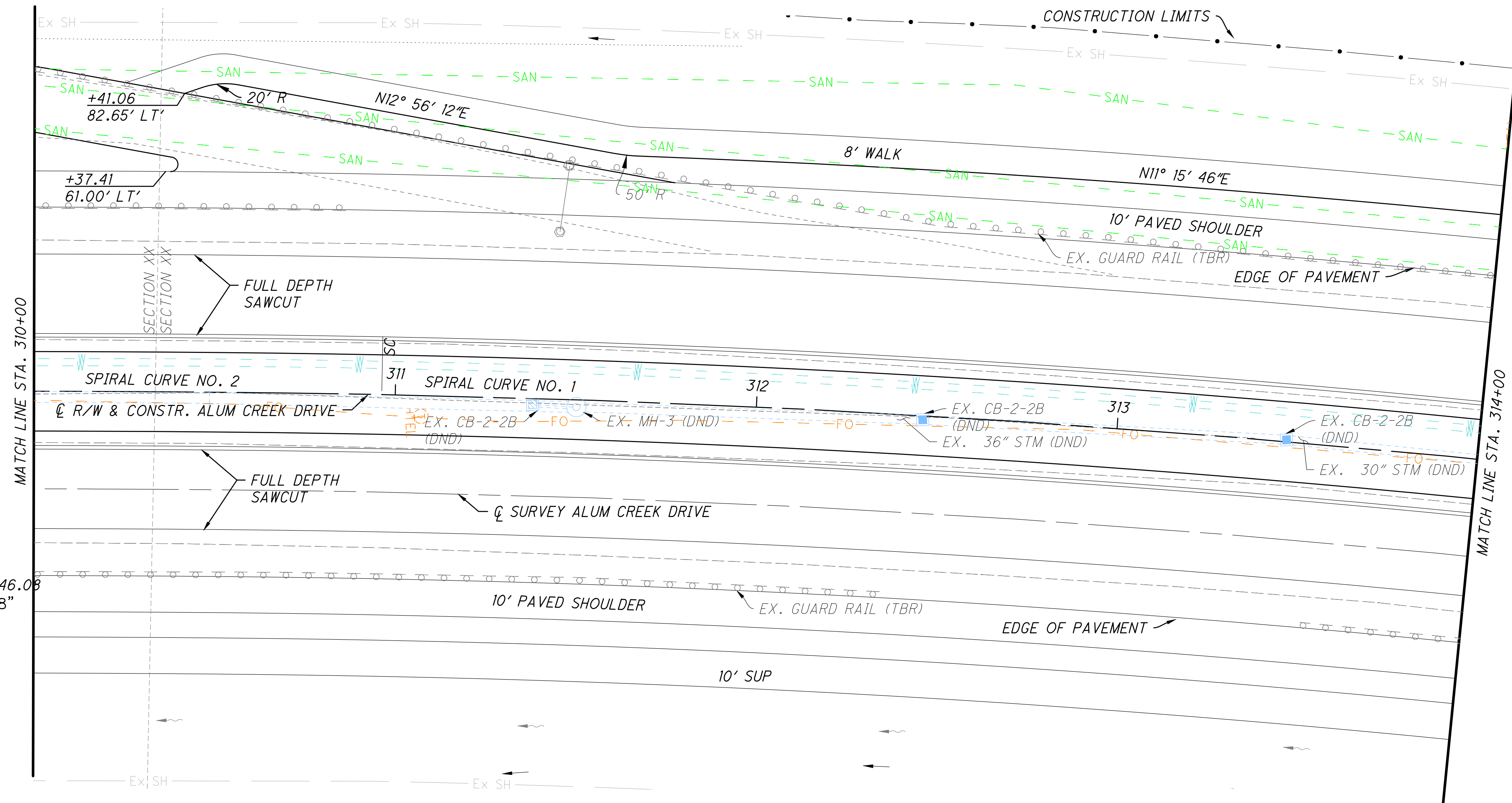
REF. NO.	STATION		SIDE	CALCULATED	CHECKED
	FROM	TO			

PLAN AND PROFILE
STA. 306+00 TO STA. 310+00

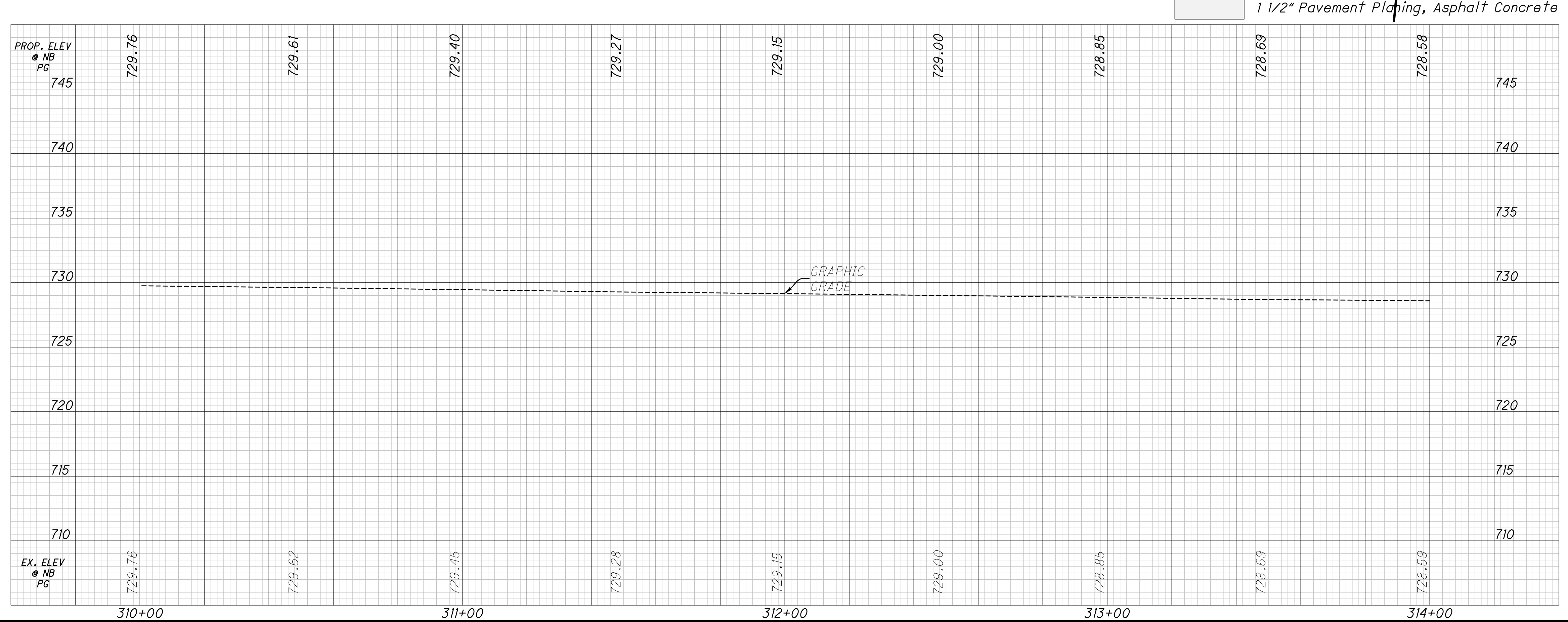


FRA-CR122-0.00

c:\pw_working\infra01\sbhattarai\0165401\115792_GP029.dwg LAST SAVED BY: sbhattarai, 1/19/2024 2:49 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 4:56 PM



CURVE DATA
 SPIRAL CURVE
 NO. 1
 P.I. STA. 310+46.08
 Δ = 14°04'28"
 Dc = 1°29'22"
 R = 3846.72'
 Ls = 150.53'
 θs = 1°07'16"
 LT = 100.36'
 ST = 50.18'
 x = 150.52'
 y = 0.98'
 k = 75.264'
 p = 75.26'



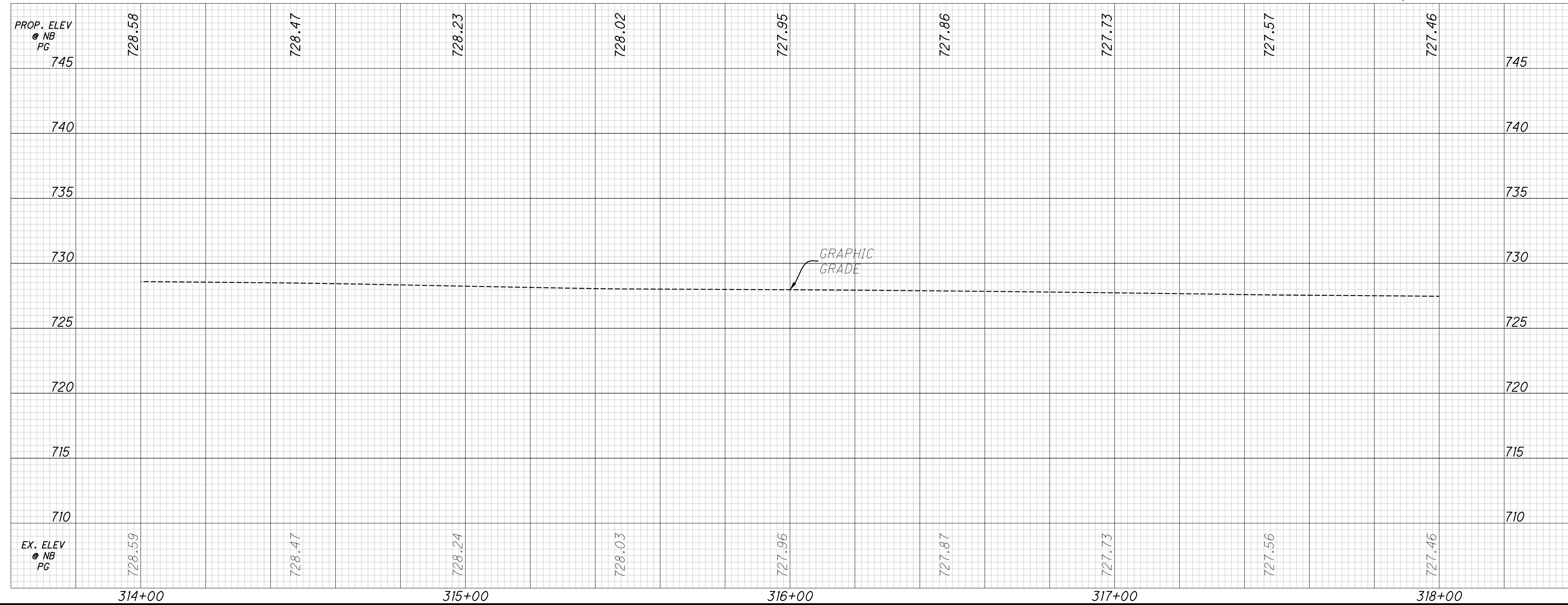
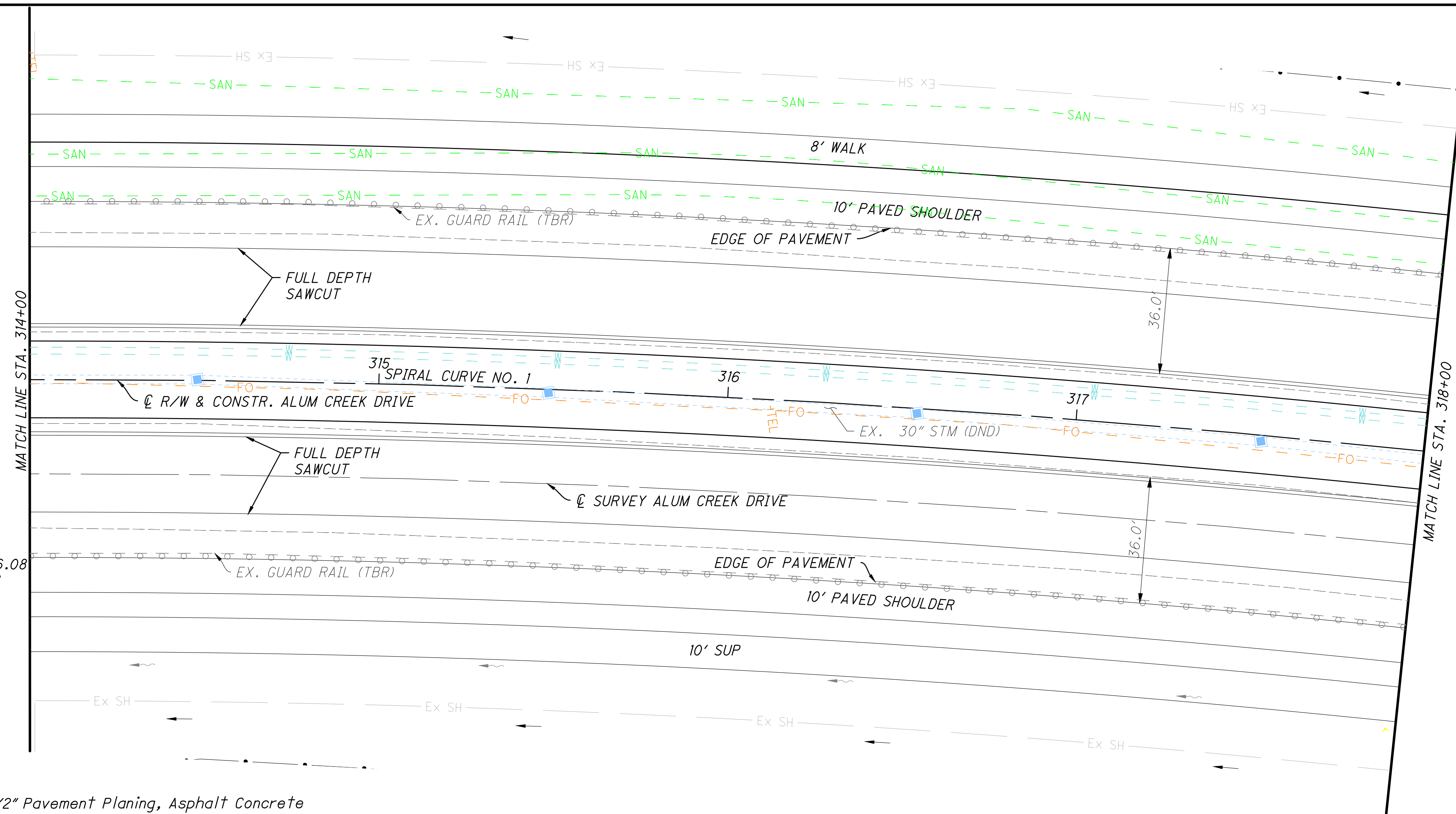
REF. NO.	STATION		SIDE
	FROM	TO	

CURVE DATA
SPIRAL CURVE
NO. 1

P.I. STA. 310+46.08
 $\Delta = 14^\circ 04' 28''$
 $D_c = 1^\circ 29' 22''$
 $R = 3846.72'$
 $L_s = 150.53'$
 $\theta_s = 1^\circ 07' 16''$
 $LT = 100.36'$
 $ST = 50.18'$
 $x = 150.52'$
 $y = 0.98'$
 $k = 75.264'$
 $p = 75.26'$

MATCH LINE STA. 314+00

1 1/2" Pavement Planing, Asphalt Concrete



REF. NO.	STATION		SIDE
	FROM	TO	

PLAN AND PROFILE

STA. 314+00 TO STA. 318+00

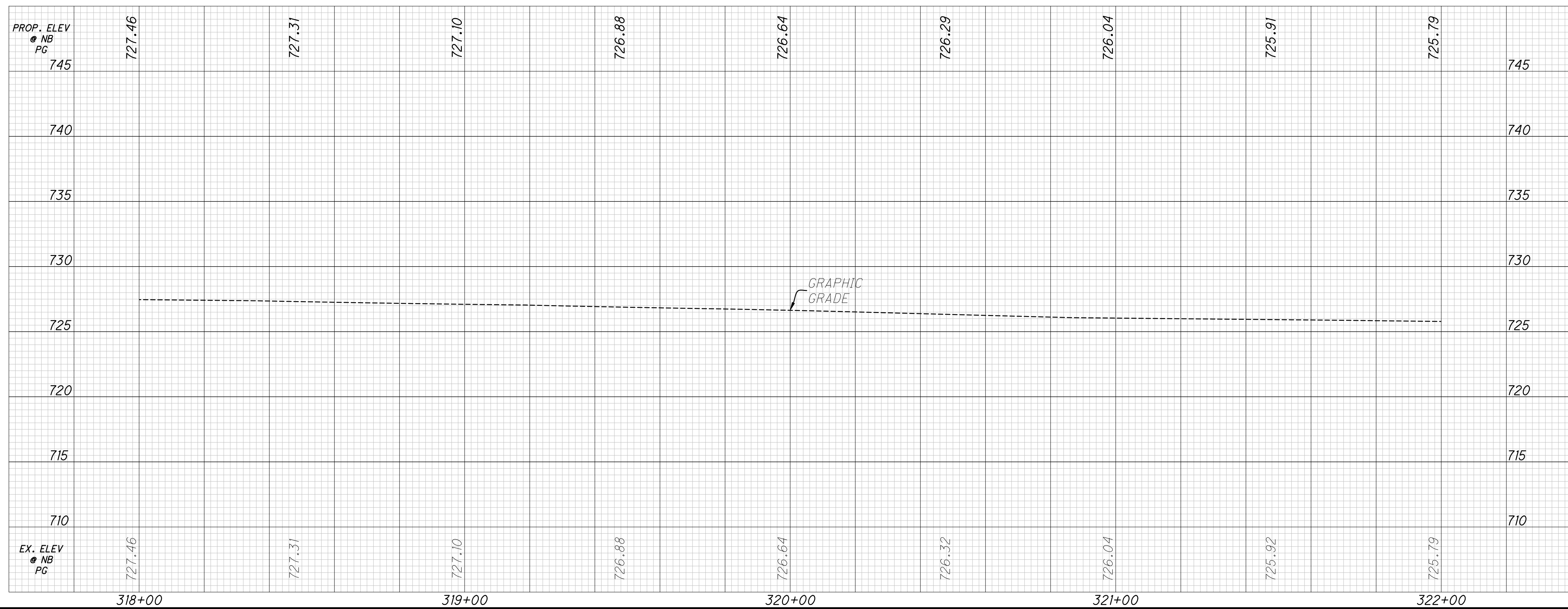
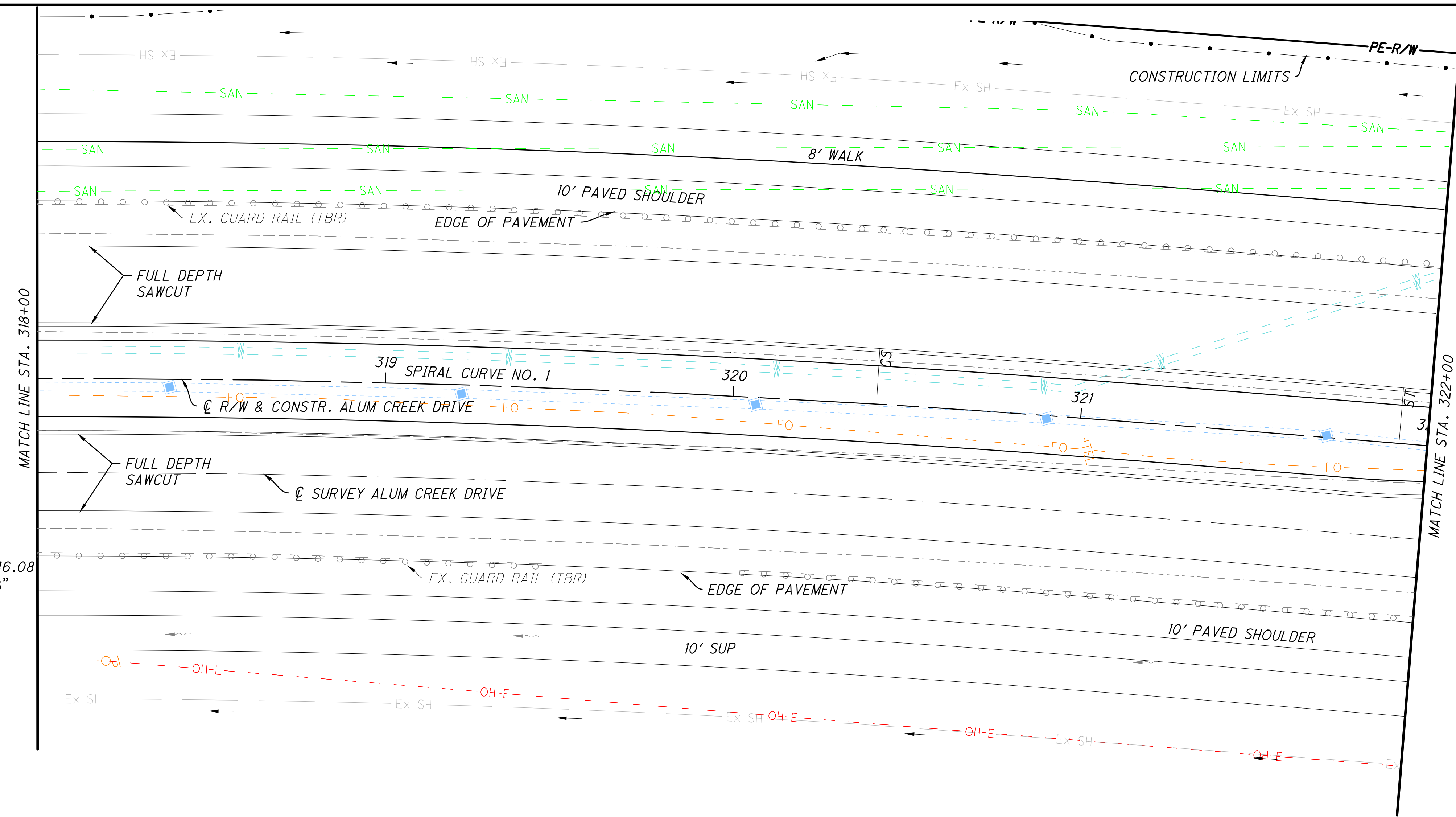
FRA-CR122-0.00

HORIZONTAL SCALE IN FEET
 CALCULATED: NMG
 CHECKED: BMH

34
40

c:\pw_working\infra01\sphattarai\d0165401\115792_GP031.dwg LAST SAVED BY: sphattarai, 1/19/2024 2:49 PM LAST PRINTED BY: Bhattarai, Shristi, 1/19/2024 5:01 PM

CURVE DATA
SPIRAL CURVE
NO. 1
P.I. STA. 310+46.08
 $\Delta = 14^{\circ}04'28"$
 $D_c = 1^{\circ}29'22"$
 $R = 3846.72'$
 $L_s = 150.53'$
 $\theta_s = 1^{\circ}07'16"$
 $LT = 100.36'$
 $ST = 50.18'$
 $x = 150.52'$
 $y = 0.98'$
 $k = 75.264'$
 $p = 75.26'$



REF. NO.																		
	STATION	FROM																
		TO																
SIDE																		

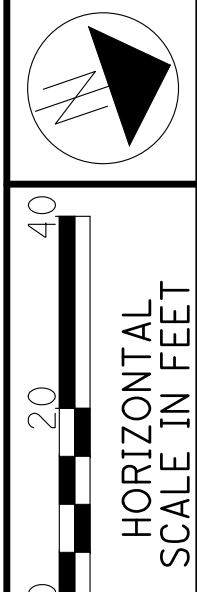
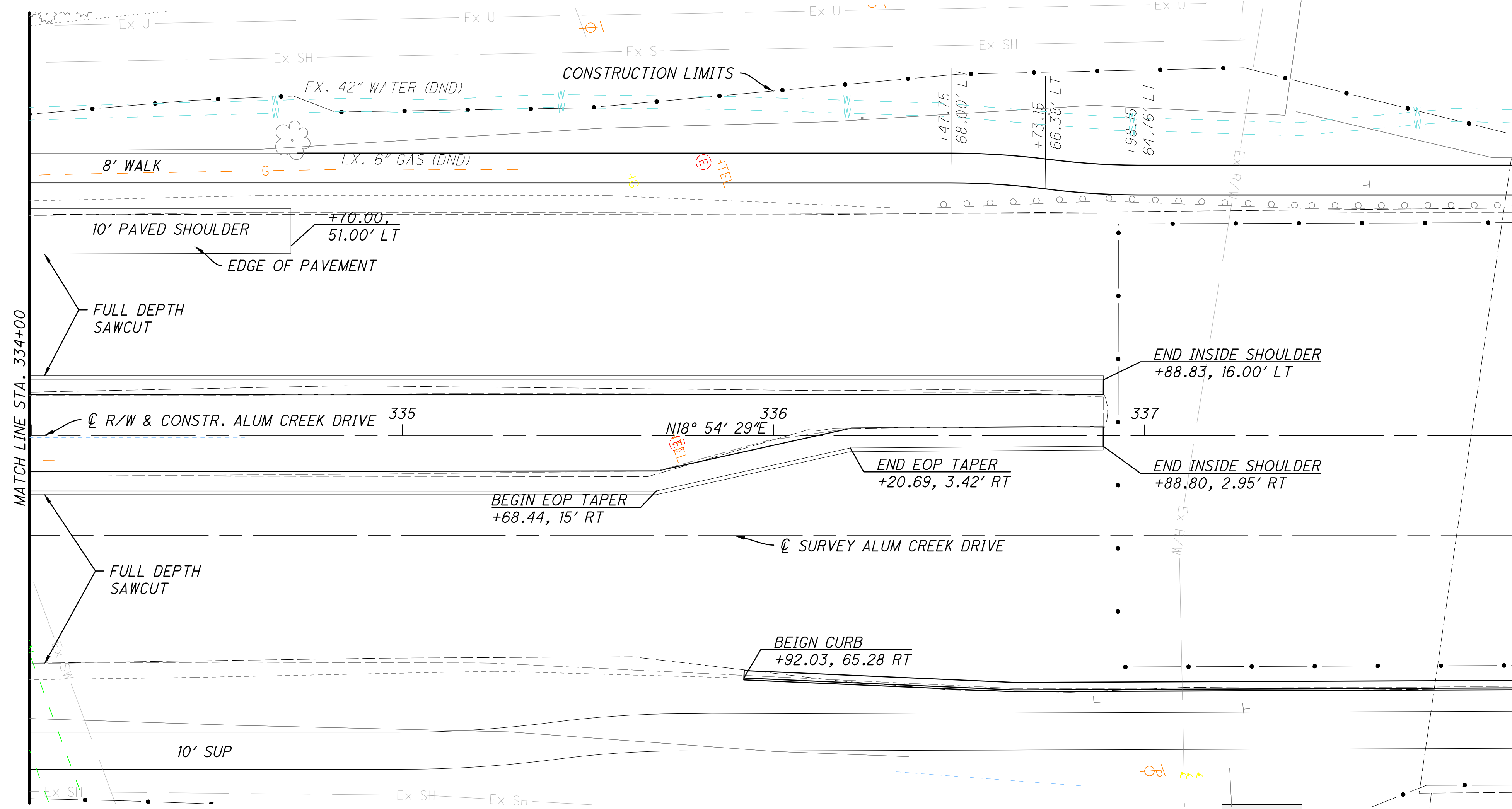
PLAN AND PROFILE
STA. 318+00 TO STA. 322+00

35
40

CALCULATED NMG
 CHECKED BMH

HORIZONTAL SCALE IN FEET

c:\pwworking\infra01\sphattara\115792_GP035.dwg LAST SAVED BY: sphattara, 1/19/2024 2:49 PM LAS PPRINTED BY: sphattara, 1/19/2024 5:09 PM



CALCULATED	NMG
CHECKED	BMH

PLAN AND PROFILE
 STA. 334+00 TO STA. 338+00

FRA-CR122-0.00

39
40

10' PAVED SHOULDER

PROP. ELEV											745								
PG	730.56		730.88		731.20		731.50		731.77		732.04		731.51		731.68		731.91	745	
EX. ELEV	730.56		730.88		731.20		731.50		731.83		732.12								710
NB																			
PG																			
	334+00				335+00				336+00					337+00					338+00

REF. NO.	STATION		SIDE
	FROM	TO	

GRAPHIC GRADE

1 1/2" Pavement Planing, Asphalt Concrete

