

FRA-CR122-0.00 (PID 115792) ALUM CREEK DRIVE FEASIBILITY STUDY

January 31, 2024

Prepared by:
**Stantec Consulting
Services
and
Kimley-Horn &
Associates**

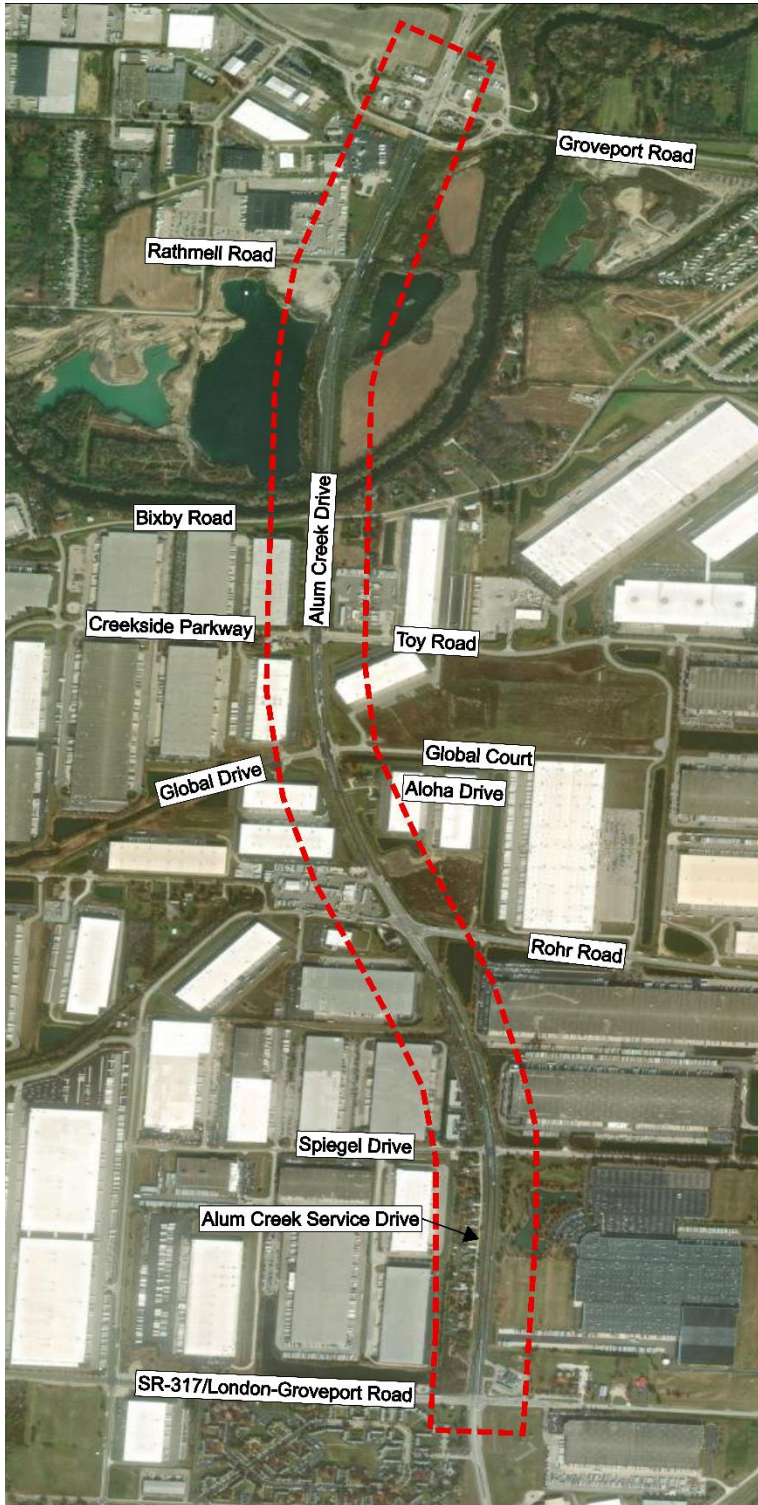


TABLE OF CONTENTS

	<u>Page No.</u>
INTRODUCTION	2
Project Background.....	2
Purpose and Need	2
Previous Studies	3
ALTERNATIVES CONSIDERED	3
Alternatives Considered and Dismissed	3
ROADWAY ASSESSMENT	5
Functional Classification and Posted Speed.....	5
Multimodal Connectivity.....	8
TRAFFIC ANALYSIS	8
Traffic Volumes	8
Capacity Analysis	10
Signal Warrant Analysis	11
Safety.....	12
STRUCTURAL DESIGN FOR THE BRIDGES OVER BIG WALNUT CREEK	13
MAINTENANCE OF TRAFFIC	14
RIGHT-OF-WAY REQUIREMENTS	15
UTILITY ISSUES AND COORDINATION	16
DRAINAGE/BMP	16
ENVIRONMENTAL ANALYSIS	17
STAKEHOLDER & PUBLIC INVOLVEMENT	18
ALTERNATIVES ANALYSIS	18
No Build Alternative	18
Build Alternative.....	18
CONCLUSIONS	19
NEXT STEPS	19

TABLE OF CONTENTS (continued)

Page No.

LIST OF TABLES

Table 1: Linear Annual Growth Rates for Alum Creek Drive 8
Table 2: Traffic Volumes Existing Year and Design Year for Study Intersections 9
Table 3: Comparison of Truck Percentages Throughout Central-Ohio 9
Table 4: Weekdays AM - Study Intersections Capacity Analysis..... 10
Table 5: Weekday PM - Study Intersections Capacity Analysis 10
Table 6: Study Intersection Traffic Signal Warrants 11
Table 7: Donated Right-of-Way in the Global Logistics Park 16

LIST OF TABLES

Figure 1: Alum Creek Drive Study Corridor 4
Figure 2: Heat Map Illustrating Density of Crashes in the Corridor 13
Figure 3: MOT Alternative 1 Typical Sections..... 14
Figure 4: MOT Alternative 2 Typical Sections..... 15

APPENDICES

- Appendix A:** Structure Type Study and Hydraulic Study
- Appendix B:** Raw Traffic Counts
- Appendix C:** MORPC Growth Rate Request
- Appendix D:** Certified Traffic Volumes
- Appendix E:** Expanded Capacity Analysis Tables
- Appendix F:** Synchro Outputs
- Appendix G:** HCS Outputs
- Appendix H:** Signal Warrant Analysis
- Appendix I:** Crash Data List
- Appendix J:** Planning Level Cost Estimation
- Appendix K:** Utility Conflicts Sheet
- Appendix L:** Secondary Source Environmental Review
- Appendix M:** Public Involvement Plan
- Appendix N:** Plan, Profiles, and Typical Sections

INTRODUCTION

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.

In recognition of this important asset, the Mid-Ohio Regional Planning Commission (MORPC) completed *The 2018 Rickenbacker Area Study* which presented a high-level comprehensive plan for the area, examining safety, freight routing, workplace mobility, economic development, employment forecasts, and quality of life. From a transportation investment perspective, the MORPC study recommended Alum Creek Drive widening from Groveport Road to SR-317. Currently, Alum Creek Drive (CR-122) is a four-lane divided Principal Arterial which functions as the main entrance to the Rickenbacker Global Logistics Park from I-270. As such, the existing Average Daily Traffic (ADT) in the corridor is 37,400 vehicles with 25% trucks. Cumulatively, traffic is expected to grow between 25-28% from 2022 to 2048. Roughly, this equates to an additional 10,000 vehicles per day (including 2,500 more trucks). Alum Creek Drive serves as the primary access route to I-270. Correspondingly, the traffic volumes progressively increase from south to north along the corridor (e.g., the existing ADT north of SR-317 is 16,100 and the existing ADT north of Rathmell Road is 37,400).

In addition, the Insight 2050 Corridor Concepts study report recommended the 'Southeast Corridor' be studied for premium transit and redevelopment, which extends from downtown Columbus to Rickenbacker via the Alum Creek Drive corridor. LinkUS has since been formed to begin prioritizing and studying corridors in greater detail. Three other corridors are currently in project development stages, but the Southeast Corridor remains a viable corridor for premium transit given the workforce center in the greater Rickenbacker area.

Purpose and Need

The purpose of the FRA-CR122-0.00 project is to improve capacity and safety along the Alum Creek Drive corridor between London-Groveport Road (SR-317) and Groveport Road (2.7 miles) to serve vehicular, pedestrian, and bicycle traffic demand. Further, there is a need to improve operations at intersections along the corridor, given the high percentage of trucks serving the Rickenbacker Global Logistics Park.

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Previous Studies

Franklin County Engineer previously completed a traffic analysis and a preliminary engineering study for a widening of Alum Creek Drive. A draft report was prepared by Stantec in July 2017 but not finalized. The preliminary engineering study analyzed potential typical sections for a six-lane facility, along with drainage considerations, bridge construction, and MOT for the corridor with the purpose of minimizing cost, right-of-way, and other factors.

ALTERNATIVES CONSIDERED

The following alternatives have been considered as part of the Alum Creek Drive Feasibility Study:

- **No Build** – This alternative would maintain the existing 4-lane divided facility without pedestrian/bicyclist accommodations.
- **Build Alternative** – This alternative includes widening Alum Creek Drive to a 6-lane facility, including the structures over Big Walnut Creek, as well as adding pedestrian/bicycle facilities and improvements to existing intersections along the corridor.

Alternatives Considered and Dismissed

The following alternative was considered early in the study process but was eliminated from future consideration:

- Making capacity improvements at intersections only. While this may improve level of service at intersections, it would not improve capacity along the corridor as a whole. Further, tapering and merging between the closely spaced intersections is not reasonable, and would likely produce unsafe conditions that currently do not exist between intersections.

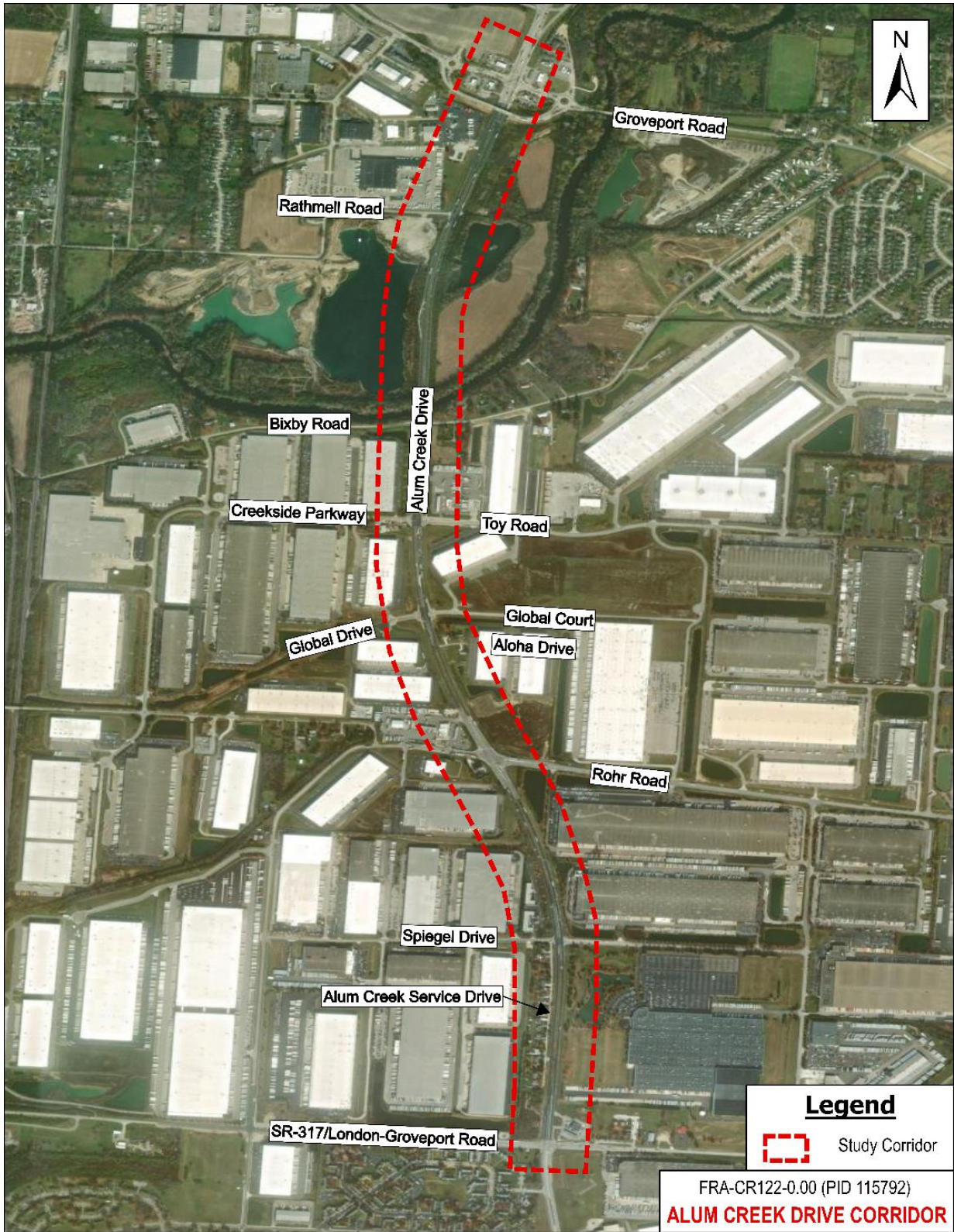


Figure 1: Alum Creek Drive Study Corridor

ROADWAY ASSESSMENT

Functional Classification and Posted Speed

The subject of the feasibility study is the Alum Creek Drive corridor between Groveport Road and London-Groveport Road (SR-317). This 2.7-mile corridor includes 10 intersections, most of which are signalized (see below). Alum Creek Drive is currently the main entrance to the Rickenbacker Global Logistics Park from I-270. Alum Creek Drive is currently a four-lane divided Principal Arterial running north-south and provides two travel lanes in each direction. Alum Creek Drive is posted as 45 miles per hour north of Rathmell Road and 50 miles per hour south of Rathmell Road and is unposted in Obetz. The Franklin County Engineer's Office has completed a speed study and plans to reduce the speed limit to 50 mph for the unincorporated portions of the corridor. Pedestrian facilities are currently limited to the four quadrants of the Groveport Road and Rohr Road intersections with Alum Creek Drive, north of Toy Road along the east side of Alum Creek Drive (700'), and north of London-Groveport Road along the east side of Alum Creek Drive (175'). There is also an existing shared use path on the west side and existing sidewalk on the east side of Alum Creek Drive south of London-Groveport Road to Rickenbacker Parkway. The shared use path and sidewalk continue south around the west side of Rickenbacker Airport and the Franklin/Pickaway County Line.

Groveport Road is currently a 2-lane urban minor arterial generally running east-west in the project vicinity and provides one travel lane in each direction. Groveport Road has a posted speed limit of 45 miles per hour. At the intersection with Alum Creek Drive, Groveport Road is restricted to right-turning movements with one eastbound right-turn lane and two westbound right-turn lanes. The Groveport Road and Alum Creek Drive intersection is signal controlled and maintained by the City of Obetz. Sidewalks are present on Groveport Road at the intersection with Alum Creek Drive. Regionally, Groveport Road connects from Parsons Ave in Columbus, Ohio to Washington Street in Canal Winchester, Ohio.

Rathmell Road is currently a 2-lane urban minor collector generally running east-west in the project vicinity and provides one travel lane in each direction. The east leg of Rathmell Road is an unimproved gravel road/drive, so the Alum Creek Drive and Rathmell drive operates like a 3-legged intersection. Rathmell Road has a posted speed limit of 35 miles per hour. Sidewalks are not present on either side of Rathmell Road. The Rathmell Road and Alum Creek Drive intersection is stop-controlled for Rathmell Road. This intersection is maintained by the City of Obetz. There is an opening in the Alum Creek Drive median at this intersection and all traffic movements are currently allowed. Regionally, Rathmell Road connects from US-23 in Columbus, Ohio to Alum Creek Drive in Obetz, Ohio. There are several 90-degree turns along Rathmell Road, as well as multiple low clearance bridges.

Bixby Road is currently a 2-lane urban local road generally running east-west in the project vicinity and provides one travel lane in each direction. Bixby Road has an unposted speed limit of 55 miles per hour. At the intersection with Alum Creek Drive, Bixby Road is stop-controlled and maintained by the Franklin County Engineers Office. The Alum Creek median is closed off with guardrail at this intersection, restricting movements to right-turns to and from both the east and west legs of Bixby Road. There is one right-turn lane in both the westbound and eastbound directions on Bixby Road at this intersection. Sidewalks are not present on either side of Bixby

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Road. Just north of the Alum Creek Drive and Bixby Road intersection Big Walnut Creek bridges Alum Creek Drive. To the west, Bixby Road connects to Rohr Road and to the east connects US-33 in Groveport, Ohio. Along Bixby Road to the west, there are several 90-degree turns, as well as multiple low clearance bridges.

Creekside Parkway is currently a 3-lane urban local road generally running east-west in the project vicinity and provides one travel lane in each direction with a two-way left-turn lane in the middle. Creekside Parkway has a posted speed limit of 35 miles per hour. The Alum Creek Drive and Creekside Parkway intersection is signal controlled and maintained by the Franklin County Engineer's Office. At this intersection, Creekside Parkway provides two eastbound left-turn lanes. Sidewalks are not present on either side of Creekside Parkway. In the project vicinity, Creekside Parkway services industrial buildings in the Creekside Industrial Center and connects from Rohr Road to Alum Creek Drive. *Toy Road* forms the east leg of the Alum Creek Drive and Creekside Parkway intersection. Toy Road is an urban local road generally running east-west in the project vicinity. At the intersection with Alum Creek Drive, Toy Road includes a westbound left-turn lane, a westbound through lane, and two westbound right-turn lanes. Immediately east of Alum Creek Drive, Toy Road includes two eastbound through lanes and one westbound through lane. Toy Road has a posted speed limit of 35 miles per hour. Sidewalks are present on both sides of Toy Road at the intersection with Alum Creek Drive. In the project vicinity, Toy Road connects Alum Creek Drive to Centerpoint Parkway. Toy Road also services the CenterPoint Business Park and the Rickenbacker Global Logistics Park – Gateway Campus. East of the industrial area, Toy Road includes a cul-de-sac to prevent trucks from using the adjacent residential area.

Global Court and *Global Drive* are urban local roads that intersect Alum Creek Drive at the same signalized intersection. Global Court is east of Alum Creek Drive and provides two eastbound travel lanes and one travel lane westbound. Global Drive is west of Alum Creek Drive and provides one eastbound travel lane and one travel lane westbound. Both Global Court and Global Drive have a posted speed limit of 35 miles per hour. The Global Court/Global Drive intersection with Alum Creek Drive is signal controlled and maintained by the Franklin County Engineer's Office. At the intersection with Alum Creek Drive, Global Court provides one westbound right-turn lane and Global Drive includes one eastbound left turn lane. The only sidewalk in the vicinity of the intersection is south of Global Drive. Global Court services the Rickenbacker Global Logistics Park – Gateway Campus and Global Drive services Anheuser-Busch Distribution Center, EFL Global, and US Logistics Solutions.

Aloha Drive is currently a 2-lane urban local road generally running east-west and provides one travel lane in each direction. Aloha Drive is a 3-legged unsignalized full-access intersection with Alum Creek Drive and is maintained by the Franklin County Engineers Office. Aloha Drive has an unposted speed limit (assumed 25 miles per hour). Sidewalks are not present on either side of Aloha Drive. In the project vicinity, Aloha Drive services three residences and dead ends approximately 300' east of Alum Creek Drive. Just south of Aloha Drive, an existing pair 42"x30" elliptical storm pipes formerly conveyed Swisher Ditch under Alum Creek Drive. These culverts preceded development in the area and formerly conveyed Swisher Ditch across the road. Warehouse development has eliminated Swisher Ditch with stormwater in the area collected by private systems and conveyed to the storm trunkline in the median of Alum Creek Drive after water quality and quantity treatment.

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Rohr Road is currently an urban major collector generally running east-west with a posted speed limit of 45 miles per hour in the project vicinity. The Franklin County Engineer's Office maintains the intersection of Alum Creek Drive and Rohr Road, which was recently improved in 2021. The signalized intersection now provides two eastbound left-turn lanes, one westbound left-turn lane, and one westbound right-turn lane. West of Alum Creek Drive, Rohr Road includes one through lane in both the east and westbound directions. East of Alum Creek Drive, Rohr Road includes two eastbound through lanes and one westbound through lane with a two-way left turn lane. Sidewalks are present on both sides of Rohr Road at the intersection with Alum Creek Drive. In the project vicinity, Rohr Road connects to Lockbourne Road and Shook Road to the west and to College Street in Groveport, Ohio to the east. Rohr Road also services several industrial facilities including the Coca-Cola Distribution Center (1489 Rohr Road) and the Opus Business Center at Rickenbacker. Rohr Road also has connections to the Creekside Business Park, Shook Road, and multiple industrial businesses along Shook Road.

Spiegel Drive is currently a 3-lane urban local road generally running east-west with a posted speed limit of 35 miles per hour in the project vicinity. Spiegel Drive provides one travel lane in each direction and a center left turn lane. At the intersection with Alum Creek Drive, Spiegel Drive provides an eastbound left-turn lane, a westbound left-turn lane, and a westbound right-turn lane. The intersection of Alum Creek Drive and Spiegel Drive is signal controlled and is maintained by the Franklin County Engineer's Office. Sidewalks are not present on either side of Spiegel Drive. In the project vicinity, Spiegel Drive connects to Shook Road to the west and to Port Road to the east. Spiegel Drive also services several industrial facilities.

Alum Creek Service Drive is currently a 2-lane urban local road situated parallel to Alum Creek Drive and provides one travel lane in each direction. Alum Creek Service Drive has an unposted speed limit (assumed 25 miles per hour). Sidewalks are not present on either side of the Alum Creek Service Drive. In the project vicinity, the Alum Creek Service Drive connects to Spiegel Drive to the north with a stop-controlled intersection. The Alum Creek Drive and Alum Creek Service Drive intersection to the south is stop-controlled for Alum Creek Service Road. There is an opening in the Alum Creek Drive median at this intersection, and all traffic movements are currently allowed. Alum Creek Service Drive services 18 residential parcels.

London-Groveport Road (SR-317) is currently a 2-lane urban principal arterial generally running east-west in the project vicinity and provides one travel lane in each direction. SR-317 has a posted speed limit of 55 miles per hour. At the intersection with Alum Creek Drive, SR-317 widens to provide a left-turn and a right-turn lane in both the eastbound and westbound directions. The intersection of Alum Creek Drive and SR-317 is signal controlled and maintained by the Ohio Department of Transportation (ODOT). Sidewalks are not present on either side of SR-317. Regionally, SR-317 connects US-23 to the west in Columbus, Ohio and to US-62 to the east in Gahanna, Ohio.

It should be mentioned that while SR-317 does provide access east and west to major routes, all the intersections above funnel traffic to/from Alum Creek Drive to access I-270. There are no real parallel routes to Alum Creek Drive to distribute traffic since every intersection but SR-317 provides access to warehouse and distribution centers.

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Multimodal Connectivity

Currently, very few active transportation facilities exist on Alum Creek Drive between Groveport Road and SR-317. These are essentially limited to sidewalks and ADA ramps at the intersections of London-Groveport Road, Rohr Road, Global Drive/Court, Toy Road, as well as sidewalk along the Sheetz development north of Toy Road. The build alternative would provide a 11' shared use path on the east side of Alum Creek Drive (connecting to the shared use path south of SR-317) and an 8-foot sidewalk on the west side of Alum Creek Drive. We recommend providing an 8' walk on the west side of Alum Creek Drive so that bicyclists will not have to cross six lanes of traffic to travel to/from destination on the west side of the road. This does not create a significant difference in right of way impacts for most of the project. The width will be reduced in the area of the Alum Creek Drive Service Road where right-of-way impacts would be more significant, and bicyclists can use the service road. The sidewalk/SUP locations were placed based on the availability of room on the east side of Alum Creek Drive. In addition, the replacement structures will accommodate a future extension of a greenway trail along the Big Walnut Creek, from Three Creeks Metro Park to Scioto Grove Metro Park.

COTA routes #22 and #24 service the Rickenbacker area, both of which terminate near the intersection of Alum Creek Drive and SR-317. The #22 follows Alum Creek Drive to Toy, to Gateway Court to Rohr Road to Port Road, to London-Groveport Road. The #24 follows South Hamilton Road to London-Groveport Road. Currently the only bus stops along Alum Creek Drive are located at Groveport Road and the intersection of London-Groveport Road. In addition, the Groveport Rickenbacker Employee Access Transit (GREAT) operates multiple routes in the general area and currently uses the Marathon Station at Alum Creek Drive and SR-317 as its coordination point with COTA.

TRAFFIC ANALYSIS

Traffic Volumes

Traffic counts were taken on Tuesday, August 16, 2022, and Thursday, August 18, 2022, at nine intersections in the Alum Creek Drive Corridor (Appendix B). In coordination with MORPC, the team received linear annual growth rates (Appendix C) for Alum Creek Drive by segment (Table 1). This information formed the basis for the traffic volume calculations for the nine intersections presented below (Table 2) and which were certified by ODOT (Appendix D).

Table 1: Linear Annual Growth Rates for Alum Creek Drive

Location	Linear Annual Growth Rate
Alum Creek Dr s/o Groveport Rd	1.00%
Alum Creek Dr s/o Rathmell Rd	1.00%
Alum Creek Dr s/o Bixby Rd	0.90%
Alum Creek Dr s/o Toy Rd	1.00%
Alum Creek Dr s/o Global Ct	0.90%
Alum Creek Dr s/o Rohr Rd	0.90%
Alum Creek Dr s/o Spiegel Dr	0.90%
Alum Creek Dr s/o Alum Creek Service Dr	0.90%
Alum Creek Dr s/o SR-317	1.10%

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Table 2: Traffic Volumes Existing Year and Design Year for Study Intersections

Intersecting Roadway	West					East				
	2022	2048	Growth	Growth %	Truck %	2022	2048	Growth	Growth %	Truck %
Groveport Road	6,750	8,510	1,760	26%	18%	11,820	15,460	3,640	31%	12%
Rathmell Road	2,540	3,210	670	26%	12%					
Bixby Road	430	540	110	26%	10%	480	660	180	38%	5%
Creekside Parkway / Toy Road	4,090	6,100	2,010	49%	16%	8,500	10,320	1,820	21%	21%
Global Drive/Court	790	980	190	24%	44%	790	1,000	210	27%	69%
Rohr Road	7,610	10,420	2,810	37%	31%	9,200	11,770	2,570	28%	28%
Spiegel Drive	4,060	4,960	900	22%	20%	2,950	3,490	540	18%	23%
Alum Creek Service Drive	150	210	60	40%	10%					
SR-317	9,400	11,680	2,280	24%	20%	9,150	11,360	2,210	24%	16%
	South									
Alum Creek Drive South	12,890	16,710	3,820	30%	21%					

*Volumes were not created for Aloha because only three residences present on the road.

Table 3 illustrates truck percentages for other major routes in throughout Central-Ohio. Average daily traffic and truck percentages were referenced from the ODOT Management System (TDMS). This table indicates that Alum Creek Drive has one of the highest truck percentages in the central Ohio region, second only to I-71 north of Polaris Parkway.

Table 3: Comparison of Truck Percentages Throughout Central-Ohio

Location	Average Daily Traffic	Truck Percentage (%)
I-71 n/o Polaris Parkway	84,500	25%
Alum Creek Drive n/o Creekside Parkway/Toy Road	40,500	24%
Alum Creek Drive n/o Spiegel Drive	27,000	20%
I-71 s/o SR-665	54,400	15%
I-70 e/o North Wilson Road	126,000	14%
I-270 n/o Tuttle Crossing Boulevard	111,000	13%
I-270 e/o I-71	149,000	13%
I-270 s/o I-670	126,500	13%
I-270 w/o Alum Creek Drive	63,800	13%
I-70 w/o SR-256	94,400	12%

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Capacity Analysis

A capacity analysis was performed for the corridor with the projected traffic volumes and truck percentages as described above, using the Highway Capacity Software (Appendix E-G). The analysis was completed for the following four scenarios:

- No Build – Opening year 2028 AM/PM peaks
- No Build – Design year 2048 AM/PM peaks
- Build – Opening year 2028 AM/PM peaks
- Build – Design year 2048 AM/PM peaks

As illustrated in Tables 4 and 5, capacity analysis of No Build traffic volumes indicates there are volume to capacity issues for northbound and southbound traffic along the corridor during AM and PM. Over the past decade there have been improvement projects for the intersections of Toy Road, Global Court, and Rohr Road that have added auxiliary lanes at these intersections. These are indicators that additional thru lanes are needed on Alum Creek Drive.

An iterative process of analysis was performed to identify the necessary improvements to accommodate the build traffic volumes. The results of this analysis are shown in Tables 4 and 5 for AM and PM and include the following improvements by 2048: Additional southbound left at Groveport; signal, northbound left, and southbound right at Rathmell Road; additional through lane on Alum Creek Drive.

Table 4: Weekdays AM - Study Intersections Capacity Analysis

Alum Creek Drive	2028 No Build			2028 Build			2048 No Build			2048 Build		
	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS
Groveport	0.83	23.6	C	0.78	10.4	B	0.95	28.8	C	0.88	16.1	B
Rathmell	0.41	98.0	F	0.93	32.4	C	0.81	285.9	F	0.99	27.0	C
Bixby*	0.14	47.4	E	0.03	14.7	B	0.22	79.1	F	0.05	19.8	C
Toy-Crekside	1.02	49.8	D	0.90	44.9	D	1.11	56.0	E	0.99	39.1	D
Global	1.02	38.5	D	0.77	36.0	D	1.04	40.9	D	0.83	39.5	D
Rohr	1.06	40.6	D	0.95	36.9	D	1.06	39.3	D	0.79	34.8	C
Spiegel	0.80	32.9	C	0.53	31.9	C	0.88	29.4	C	0.59	24.3	C
Alum Creek Service Drive*	0.07	11.2	C	0.06	15.6	C	0.09	20.2	C	0.04	11.9	B
SR-317	0.74	42.6	D	0.70	41.6	D	0.87	45.6	D	0.78	45.2	D

*Two-Way Stop Controlled

Table 5: Weekday PM - Study Intersections Capacity Analysis

Alum Creek Drive	2028 No Build			2028 Build			2048 No Build			2048 Build		
	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS	V/C Ratio	Delay	LOS
Groveport	0.94	29.5	C	0.78	14.9	B	1.14	70.3	E	0.88	18.5	B
Rathmell	4.82	2205.3	F	0.89	37.4	D	12.69	6307.4	F	0.99	32.6	C
Bixby*	0.07	18.0	C	0.09	19.9	C	0.11	25.8	D	0.06	14.3	B
Toy-Crekside	1.16	83.7	F	0.96	43.7	D	1.17	66.5	E	0.99	49.6	D
Global	1.01	32.2	C	0.79	28.2	C	1.03	30.5	C	0.99	28.8	C
Rohr	1.00	51.0	D	0.83	41.0	D	1.17	77.7	E	0.99	55.7	E
Spiegel	0.86	34.6	C	0.62	33.6	C	0.79	43.8	D	0.76	39.7	D
Alum Creek Service Drive*	0.04	11.8	B	0.04	18.1	C	0.11	25.2	D	0.04	11.9	B
SR-317	0.91	49.0	D	0.91	48.9	D	1.11	52.8	D	0.95	51.5	D

*Two-Way Stop Controlled

FRA-CR122-0.00 (PID 115792) – Feasibility Study

Signal Warrant Analysis

The signal warrant analysis was completed for the Alum Creek Drive intersections using the collected traffic counts (Appendix H) and growth rates provided by MORPC (Appendix C). The Rathmell Road intersection warrants a signal starting in the Opening Year (2028). This analysis indicates that the intersections of Bixby Road and Global Court do not meet the volume-based warrants.

Table 6: Study Intersection Traffic Signal Warrants

Alum Creek Drive	2022	2028	2048
Groveport	✓	✓	✓
Rathmell	✗	✓	✓
Bixby	✗	✗	✗
Toy-Creekside	✓	✓	✓
Global	✗	✗	✗
Rohr	✓	✓	✓
Spiegel	✓	✓	✓
SR-317	✓	✓	✓

Rathmell Road

- 2028 and 2048 volumes are expected to meet signal warrant thresholds.
- At the Alum Creek Drive and Rathmell Road intersection, a right-in and right-out only would be most effective treatment to improve safety. However, traffic volumes at the intersection are projected to meet the warrants for installation of a traffic signal by opening year of the project. The determination as to whether a traffic signal should be installed at this intersection should consider the potential impacts to traffic flow along the Alum Creek. The Alum Creek Drive and Rathmell intersection is a T-intersection that would only require a 3-phase signal on opening day, which would not degrade traffic flow along Alum Creek Drive as much as a four-way intersection with more phasing. Therefore, the recommendation is to signalize the intersection of Alum Creek Drive and Rathmell Road, which meets the purpose and need of this project. Should a fourth leg of the intersection be proposed in the future, additional traffic analysis would be required at that time, and could be an opportunity for innovative intersection treatments that limit the number of vehicular movements and signal phases at this intersection.

Bixby Road

- The volumes at this intersection do not meet signal warrant thresholds.
- This was expected, as this intersection is currently a RIRO.

Global Drive/Court

- The volumes at this intersection do not meet the signal warrant thresholds.
 - This is based on using the 70% thresholds, which is the standard for evaluating warrants at an existing signal.
- Two new warehouses (Bluestone Development) totaling approximately 100 KSF have been constructed on the south side of Global Court; these facilities may not have been operational when counts were collected for this study.

FRA-CR122-0.00 (PID 115792) – Feasibility Study

- There is also a vacant parcel on the north side of Global Court; this parcel is planned for a 800 KSF logistics building, which will increase traffic on Global Court.
- This signal should be retained. While certified traffic only suggested 1% growth, the threshold would be met with the addition of just two warehouses.

Safety

A review of safety data over the 5-year period 2017-2022 indicates there were 260 crashes in the corridor limits (Appendix I), including two (2) Fatalities, eight (8) Serious Injury crashes, and 101 Injury Related crashes.

- Both Fatal Crashes occurred at Rathmell and were either a left turn or angle type crash.
- The Serious Injury crashes (8) occurred at the following intersections:
 - Rathmell Road (2)
 - Spiegel Drive (2), one of which was pedestrian injury
 - Rohr Road (2)
 - Bixby Road (1)
 - Toy Road/Creekside Pkwy (1)
- Rear End crashes in the corridor represent 31% (vs statewide average 9.1%)
- Sideswipe-Passing crashes in the corridor represent 23% (vs statewide average 3.9%)

As depicted in Figure 2, the distribution of crashes was the greatest at a few specific study intersections. Approximately two-thirds of the crashes occurred at three intersections: Rohr Road (63), Rathmell Road (49), and Toy Road/Creekside Pkwy (49). It should be noted that there have been improvements to a couple of the intersections along the corridor within the past five years, which would likely improve the operation and safety at these intersections. The Bixby Road intersection was converted to a right-in/right-out intersection in 2019. The Rohr Road intersection was improved to include a second southbound left turn lane and widening of Rohr Road in 2020.

Timing of the crashes reflects industrial travel patterns:

- Higher number of crashes during weekdays
- Increase during peak commute times
 - 6 AM – 38 (15%)
 - 3 PM – 23 (9%)
- Higher number of crashes in October (13%), November (10%), and December (15%)

The No Build option would maintain existing conditions at these intersections along the Alum Creek Drive Corridor. The Build option would not only add capacity to Alum Creek Drive but include safety improvements at intersections represented by high crash rates.



Figure 2: Heat Map Illustrating Density of Crashes in the Corridor

STRUCTURAL DESIGN FOR THE BRIDGES OVER BIG WALNUT CREEK (FRA-CR122-1.86L & FRA-CR122-1.87R)

Stantec performed a preliminary analysis of replacement structure types within the Structure Type Study (Appendix A). This analysis suggests that the replacement structures will be replaced with 3-spans of pre-stressed, pre-cast, concrete I-beams. The new bridge will achieve clearance of the low chord from the 100-year flood elevation as well as eliminating one of the current piers in Big Walnut Creek. The new bridges will be slightly longer so that the abutments can be constructed behind the existing abutments to facilitate construction of piling as well as providing protection from erosion. The longer structure will also accommodate the potential future extension of the Big Walnut Trail under the bridge. For detailed information regarding the proposed structures and alternatives considered, please refer to the submitted Structure Type Study and Hydraulic Study (Appendix A).

MAINTENANCE OF TRAFFIC

The maintenance of traffic (MOT) plan for the improvements shall facilitate the safe movement of traffic through the work zone while providing adequate workspace for the contractor. Alum Creek Drive will not be completely closed during construction and there are two options considered. The first option shall maintain a minimum two southbound lanes and one northbound lane at all times. While this does limit outbound capacity on Alum Creek Drive, there are other logical secondary routes to I-270, particularly for trucks, and these routes will be shared with stakeholders and the public prior to construction. For example, west of Alum Creek Drive vehicles may use SR-317 west to US-23 north. East of Alum Creek Drive, vehicles may use SR-317 north to US-33 west. For the bridge construction and MOT, the Structure Type Study Report (Appendix A) presented three bridge construction options that would provide for two southbound lanes and one northbound lane during all phases of construction. This MOT alternative, Alternative 1, is estimated to cost \$607,825. Therefore, bridge constructability will not preclude this MOT commitment.

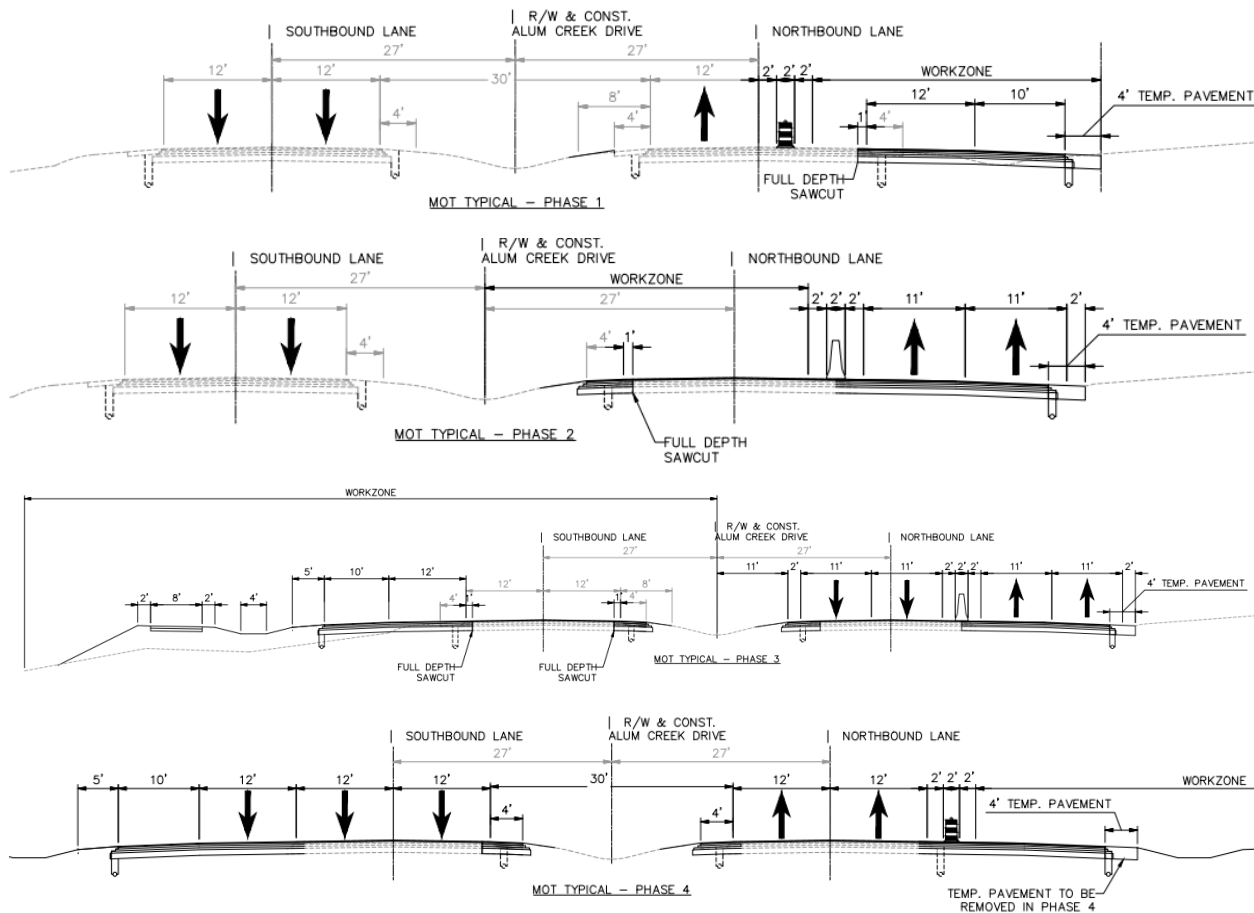


Figure 3: MOT Alternative 1 Typical Sections

A second MOT option is to maintain two southbound and two northbound lanes, which requires the addition of three feet of temporary pavement on the median side of the roadway. The additional pavement placement will require the use of one northbound lane during one phase of

FRA-CR122-0.00 (PID 115792) – Feasibility Study

placement, but it will facilitate two lanes for the remainder of the project. Bridge construction with the maintained dual northbound lanes is possible due to the proposed sidewalk along the bridge. The barrier wall separating the proposed walkway and traffic lanes will not be installed until the last phase of construction, allowing the required additional room for traffic. Alternative 2 is estimated to cost \$1,346,326. The phasing for the preferred method of maintaining two northbound lanes is as follows. Phase 1 is utility relocation and underground construction activities (traffic varies based on location). Phase 2 maintains one 11' northbound lane, shifting the remaining lane to the outside (eastern most) lane, construct proposed pavement section and proposed temporary pavement. Southbound lanes remain in existing condition. Phase 3 maintains two 11' northbound lanes, shifting both lanes to the inside (westernmost side). Southbound lanes remain in existing condition. Construct all roadway and bridge improvements on the east side of Alum Creek Drive. Phase 4 maintains two 11' northbound lanes, shifting to the newly constructed outside (eastern most side) of the road. Shift southbound traffic into existing northbound lanes for contraflow condition, maintaining two 11' lanes. Construct entire southbound lane improvements.

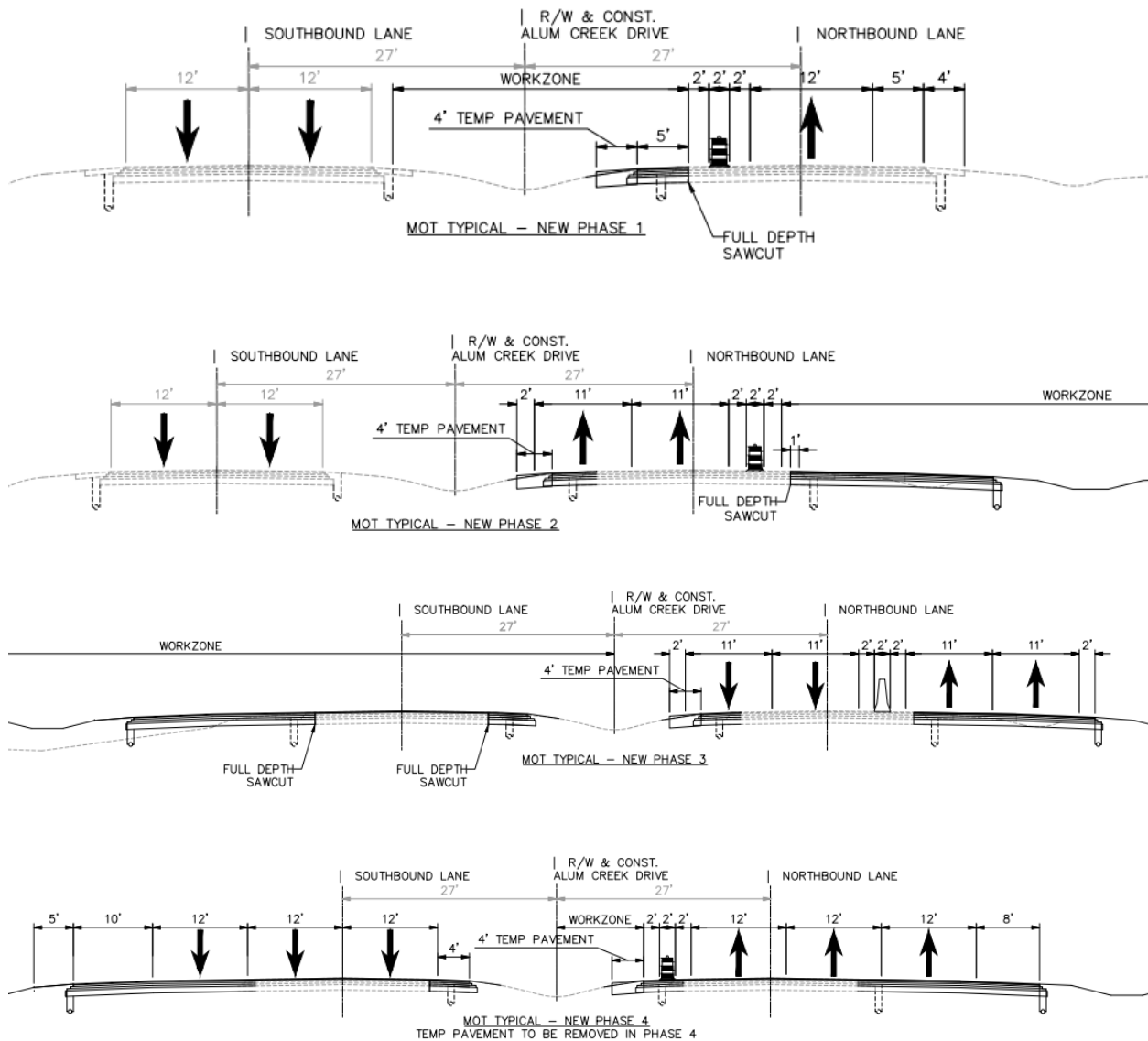


Figure 4: MOT Alternative 2 Typical Sections

RIGHT-OF-WAY REQUIREMENTS

Existing right-of-way width in the corridor varies from 165’ to 210’ wide. The No-Build would maintain the existing configuration of two lanes in both directions and require no new right-of-way. The Build option adds a lane in each direction as well as shared-use path and sidewalk. Right-of-way north of Big Walnut Creek varies with a minimum width of 180’. The terrain here will likely require additional right of way to accommodate slopes and drainage. Initially, consideration was given to widening toward the median, however maintenance of traffic and intersection improvements at Rathmell Road preclude this option. To the south, it is important to note that right-of-way has been donated over the years to Franklin County as the Global Logistics Park developed. Specifically, an additional 2.8+ acres of right-of-way/easement exists along Alum Creek Drive between Bixby Road and SR-317 (Table 7). As such, widening in this area of the corridor will take advantage of available land to the maximum extent possible.

Table 7: Donated Right-of-Way in the Global Logistics Park

Development	Side	Length (ft)	Width (ft)	Area (ac.)	Type
Gateway Campus (RGLP)	East	1,303	25	0.75	Right-of-way
Creekside Business Park Expansion	West	1,161	25	0.67	Right-of-way
Global Court Development	East	1,229	10/15	0.71	RoW/Esmt
Sheetz	East	685	25	0.39	Right-of-way
Love’s	West	534	25	0.31	Right-of-way
Total		4,912		2.83	

UTILITY ISSUES AND COORDINATION

The Alum Creek Drive corridor from Groveport Road to SR-317 contains multiple public and privately owned utilities, including water, natural gas, sanitary sewer, storm sewer, lighting, overhead power, underground electric, fiber optic, interconnect, and telecommunications. There is signal conduit and underground wiring present at the intersections of Creekside Parkway/Toy Road, Rohr Road, Spiegel Road, and London-Groveport Road. Utilities occupy the greenspace on both the east and west sides of the corridor, and a major storm sewer trunk line runs down the median. Major relocation efforts and facility upgrades will be required to maintain service to residential and commercial properties along the corridor, including water line relocations. Private utilities should hold a very low/no cost as no additional easements are expected to be needed. A utility conflict sheet has been initiated (Appendix K) and coordination with utility owners will begin when more design details are known.

DRAINAGE/BMP

While Alum Creek Drive is not owned by ODOT, the Franklin County Engineer’s Office does use ODOT standards for drainage design. The project will follow the drainage standards set forth within the ODOT L&D Volume 2 manual. Based on the preliminary calculations and proposed corridor footprint, the anticipated project earth disturbed area (EDA) is 43.6 acres. This identifies that BMP’s would be required for this project and that water quality and quantity should be treated. However, LDV2 Section 1111.3 mentions that portions of a project which drain directly from right-of-way into a large river that has a drainage area greater than 100 square miles or is

FRA-CR122-0.00 (PID 115792) – Feasibility Study

a fourth order stream or greater, are not required to address water quantity. ODOT TIMS application and USGS StreamStats station number 03229500, Big Walnut Creek at Rees, Ohio, notes that the contributing drainage area is 544 square miles and is a 4th order stream. Therefore, the designers intend to utilize enhanced bank width roadside ditches with vegetated biofilters to address water quality treatment only, as quantity treatment is not required.

Preliminary calculations have determined that this project would require a treatment area of 9.0 acres. When surveying the corridor, the designers noted certain areas in which stormwater sheet flows, from the road right of way, toward adjacent property. Since these flows are concentrated and conveyed by the roadway, they do not have to be treated per L&D Volume 2. This takes place specifically north of Big Walnut Creek on the east side of the corridor.

ENVIRONMENTAL ANALYSIS

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 the existing data is listed below, with supporting information located in Appendix L.

- Aquatic Resources – primarily the Big Walnut Creek crossing and 11 excavated stormwater and quarry ponds within the project corridor adjacent to Alum Creek Drive.
- FEMA Floodplains – 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.
- Protected Bats – most of the project corridor does not contain mature trees; however, forested areas that potentially provide suitable summer roosting habitat for protected bats is present between Rathmell Road and Bixby Road. The Big Walnut Creek bridge just north of Bixby Road is also a potential summer roost structure. If tree removal or bridge work is required, it may need to occur in the allowed winter window (October 1 to March 31).
- Protected Mussels – 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.
- Contaminated/Hazardous Sites – a review of the ODOT Ohio Regulated Properties Search (ORPS) and publicly available databases identified 29 records of hazardous or contaminated sites along the project corridor. Most of them are gas stations or similar transportation facilities with storage and/or minor spills of gasoline and diesel fuel.

FRA-CR122-0.00 (PID 115792) – Feasibility Study

There are also several identified RCRA facilities with ignitable/corrosive wastes, metals, and solvents. None of the records stand out as an alarming red flag, but advanced due diligence will be required to gain additional information on these sites.

- Cultural Resources – a review of the OHPO database within 500 feet of Alum Creek Drive identified two previously recorded archaeological sites, no buildings listed in the Ohio Historic Inventory or the National Register of Historic Places, and no cemeteries. Two small areas adjacent to the corridor have been previously subject to archaeological survey.

Based on this preliminary review and the fact that limited R/W will be required for the project, there are no known resources which would be expected to impact the comparison of Build vs No Build alternatives. That said, the structure type study for the mainline bridge(s) calls for removal of two existing piers in Big Walnut Creek and new structures spanning Big Walnut Creek. Future environmental studies shall include Regulated Materials Review (RMR), Level 1 Ecological Survey Report (ESR), Cultural Resources study, and floodplain coordination. A noise analysis will also be required for the 18 adjacent residences along Alum Creek Service Drive and Aloha Drive as the build scenario will add capacity to Alum Creek Drive.

STAKEHOLDER & PUBLIC INVOLVEMENT

A public engagement plan has been created and uploaded to Environet (see also Appendix M). The plan defines a stakeholder group and outlines an approach to updating stakeholders on the status of the project moving forward. The plan also proposes holding a public open house meeting to gather input on the project from the public. Summaries of all meetings will be documented for the purposes of selecting a preferred alternative. An additional round of (stakeholder) engagement is proposed prior to construction to inform the logistics community, as well as the public, about MOT during construction.

ALTERNATIVES ANALYSIS

The following summary provides a comparison of the alternatives considered.

No Build Alternative

The No Build alternative would leave the corridor as four lanes, two in each direction, and intersections would remain as they are. Two intersections would fail by 2028 while most of the intersections would fail by 2048 (Table 3). The No Build alternative would not improve safety in the corridor, which is marked by crashes well above the statewide average in various categories. Bike/pedestrian facilities would remain mostly non-existent along the corridor. Therefore, the No Build alternative is not consistent with MOPRC's *The 2018 Rickenbacker Area Study* and does not meet the purpose and need.

Build Alternative

The Build Alternative would widen Alum Creek Drive from four lanes to six lanes and include spot improvements to improve intersection operations in the corridor (Appendix N). By adding a lane in each direction, the Build alternative significantly improves traffic operations (Table 5). Further, the Build alternative will significantly improve safety in the corridor, as 31% (81/260) of

FRA-CR122-0.00 (PID 115792) – Feasibility Study

crashes are rear-end crashes and 23% (60/260) are sideswipe/passing crashes resulting from traffic congestion. In addition, a shared use path and a sidewalk would be added to opposite sides of Alum Creek Drive between Groveport and SR-317, which is identified as a “high-stress route” in MORPC’s *The 2018 Rickenbacker Area Study*.

Right-of-way impacts would be minimal given the availability of 2.5+ acres of donated right-of-way from nearby developments over the years. The most noteworthy environmental resource in the corridor is Big Walnut Creek. While the bridges over the creek will be replaced/widened, one of the existing piers in the Big Walnut Creek will be removed.

Order of magnitude costs have been estimated from preliminary engineering of the build alternative and are included within Appendix J. Construction and right-of-way costs are presented in Table 8. Note, approximately 2.5 acres of right-of-way have been donated to Franklin County over the years, as Rickenbacker has continued to develop.

Table 8: Estimated Construction Costs

Alternative	Construction Cost	Right-of-Way Cost	Total Cost
No Build	\$0	\$0	\$0
Build	\$59,808,174	\$1,951,000	\$61,759,174

CONCLUSIONS

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. From a transportation perspective, MORPC’s *The 2018 Rickenbacker Area Study* recommended Alum Creek Drive widening from Groveport Road to SR-317, and a preliminary engineering study was previously completed on behalf of the Franklin County Engineer. This Feasibility Study builds upon that analysis and presents additional information as it relates to the Build and No Build scenarios. The preferred alternative recommended from this Feasibility Study is the Build alternative which includes widening Alum Creek Drive from four lanes to six lanes with improvements at intersections along the corridor. The alternative satisfies the purpose and need of the project by improving capacity and safety within the corridor. The Build alternative also provides for pedestrian and bikeway facilities along the corridor. The Build alternative is therefore recommended to be carried forward into the next design phase.

NEXT STEPS

This alternatives analysis will be presented to stakeholders and the public in upcoming meetings in order to receive feedback on the alternatives. Following the meetings and the comment period, the project team will officially select the Preferred Alternative. Once the Preferred Alternative is selected, the next phase of the PDP will include detailed design, agency coordination, and environmental clearance. When detailed design is further along, another stakeholder coordination point will address right-of-way impacts along the corridors with adjacent property owners.