

Prepared By:



PID 97346

MUS-CR32-0.00
Muskingum County, Ohio

PHILO BRIDGE

Prepared for:



E.L. Robinson Engineering
1801 Watermark Drive, Suite 310
Columbus, OH 43215

FEASIBILITY STUDY

FEBRUARY 2016

Muskingum County Engineer's Office
155 Rehl Rd., Zanesville, OH 43701



TABLE OF CONTENTS	
I.	EXECUTIVE SUMMARY 1
II.	INTRODUCTION/BACKGROUND 6
III.	ALTERNATIVES 7
IV.	TRAFFIC ANALYSIS 15
V.	ROADWAY ASSESSMENT 17
VI.	STRUCTURE ASSESSMENT 17
VII.	PRELIMINARY GEOTECHNICAL ASSESSMENT 19
VIII.	RIGHT OF WAY ASSESSMENT 19
IX.	UTILITY ASSESSMENT 20
X.	ENVIRONMENTAL ANALYSIS 21
XI.	PUBLIC INVOLVEMENT 29
XII.	ALTERNATIVE COMPARISON 29
XIII.	RECOMMENDATIONS 34

LIST OF FIGURES	
	Figure 1: Project Location Map 6
	Figure 2: Study Area 7
	Figure 3: Existing Alignment Alternative..... 11
	Figure 4: Alternative A - Mound Road 12
	Figure 5: Alternative B - Millers Lane 13
	Figure 6: Alternative C - Bridge Street..... 14
	Figure 7: Environmental Resource Map 24
	Figure 8: Ecological Resource Map 25
	Figure 9: Cultural Resource Map 28
	Figure 10: Preferred Alternative 35
	Figure 11: Project Schedule 36

LIST OF TABLES	
	Table 1: Overall Project Cost..... 2
	Table 2: Alternative Comparison Matrix 3-5
	Table 3: Traffic Signal Warrant Analysis Summary 15
	Table 4: Auxiliary Turn Lane Warrant Analysis Summary 16
	Table 5: Auxiliary Turn Lane Recommended Storage Lengths..... 16
	Table 6: Properties of Environmental Significance 21
	Table 7: Overall Project Costs..... 30
	Table 8: Alternative Comparison Matrix 31-33

APPENDIX	
	APPENDIX A PROJECT INITIATION PACKAGE
	APPENDIX B TRAFFIC DATA, VOLUME CALCULATIONS
	APPENDIX C TYPICAL SECTIONS
	APPENDIX D ALTERNATIVES EXHIBITS (UNBOUND ROLL PLOTS INCLUDED)
	APPENDIX E PUBLIC INVOLVEMENT DOCUMENTS
	APPENDIX F COST ESTIMATES
	APPENDIX G ENVIRONMENTAL REPORTS (SEPARATELY BOUND REPORT)
	APPENDIX H UNITED STATES COAST GUARD COORDINATION
	APPENDIX I UNITED STATES ARMY CORPS OF ENGINEERS COORDINATION
	APPENDIX J AT&T UTILITY RELOCATION COORDINATION
	APPENDIX K PREVIOUS STRUCTURE MAINTENANCE COSTS

I. Executive Summary

Summary and Recommendations

Located in Muskingum County, Ohio, north of the Village of Philo, and within the community of Duncan Falls, the existing Philo Bridge (MUS-CR32-0.00), is a 5 span, steel truss structure that has connected the two communities since it was built in 1953. Recent inspections conducted by the Muskingum County Engineer's Office (County) concluded that the existing bridge over the Muskingum River is Structurally Deficient and Functionally Obsolete. The detailed visual inspection also concluded the existing superstructure and substructure are in critical and poor condition, respectively. The existing bridge cannot carry the legal loads that similar bridges are being designed and constructed for today. As a result, the weight limit on the structure is currently reduced to 15 tons. The purpose of this Feasibility Study was to evaluate alternatives to provide a crossing over the Muskingum River which will continue to support cross-river mobility and community connectivity between Philo and Duncan Falls.

A No-Build Alternative and four Build Alternatives that replace the existing river crossing were evaluated based on various project aspects such as traffic, roadway, and environmental impacts. The No-Build Alternative consisted of maintaining the current alignment and structure. Within this project, design improvements were not applied to the structure or approach roadway for evaluation of this alternative. The No-Build Alternative assumed that outside of this project continuous maintenance would be required which necessitates undesirable traffic restrictions. With continued use and only routine maintenance, the existing structure condition would continue to decline. The posted load limit for the structure would also continue to be reduced until ultimately the structure would be permanently closed due to safety concerns. Given the poor condition of the structure and the undesirable load restrictions, it was determined that the No-Build Alternative did not satisfy the purpose and need of this project.

The four proposed improvement alternatives each crossed the Muskingum River on different roadway alignments within the study area. Two alternatives evaluated crossing close to the existing structure at Bridge Street on the downstream side of the existing dam, while two alternatives evaluated relocation of the crossing upstream of the existing dam near Mound Road and Millers Lane. The descriptions of the four Build Alternatives are provided below.

- Existing Alignment Alternative: Replacement of the structure on the existing Bridge Street alignment
- Alternative A – Mound Road: Replacement of the structure on a new alignment crossing the Muskingum River 2400' upstream of the existing structure utilizing a tie-in of Mound Road at SR 60
- Alternative B – Millers Lane: Replacement of the structure on a new alignment crossing the Muskingum River 3500' upstream of the existing structure utilizing a tie-in of Millers Lane/Water Street at SR 60
- Alternative C – Bridge Street: Replacement of the structure on a new alignment crossing the Muskingum River 96' downstream of the existing structure utilizing a tie in on Bridge Street just north of SR 60

Traffic signal warrant analyses and turn lane calculations were performed for each of the Build Alternatives. Each of the intersections analyzed were located within the built-up area of an isolated community such as Duncan Falls. As a result, the 70% threshold volumes were used for the signal warrant analyses. None of

the alternatives were found to warrant a signal at the intersection with State Route (SR) 60. Further investigations found that the intersections of Mound Road and Bridge Street with SR 60 each had structures located in close proximity to the intersections that limited the available sight distance. As a result, installation or improvement to existing signals were considered justified for the SR 60 intersections of all the Build Alternatives except Alternative B – Millers Lane. At the Millers Lane and SR 60 intersection, adequate site distance was available and the intersection did not meet signal warrant volume requirements, so the existing signal was planned to be removed with this project. If traffic volumes change, future analyses can be performed to determine if a signal is warranted by the anticipated construction year. Turn lane storage calculations showed that a westbound left turn lane of 100' was recommended for both Alternative A and Alternative B; however, due to SR 60 right of way constraints, the recommended turn lane was not planned to be included with this project. The intersection of Bridge Street and SR 60 also showed a 100' westbound left turn lane was needed. The existing westbound left turn lane was found to be adequate to accommodate the recommended storage. In the eastbound direction, the outside lane of the two lane section of SR 60 is dropped at the Bridge Street and SR 60 intersection. This outside lane functions as a right turn lane, thus ample storage is available.

Each of the Build Alternatives utilized the same roadway typical section and bridge transverse section consisting of two 12' lanes with 4' paved or 2' curbed shoulders on the approach and 6' shoulders on the structure. A 7' walk was provided on the east side of the approach while a 5' barrier separated walk was provided on the east side of the structure. Overall roadway and structure characteristics were relatively similar among Build Alternatives. Primary differences were found to be the length of structure or approach work, the skew of the structures, and the volume of approach roadway embankment. Alternative C – Bridge Street was unique in that this alternative required a second structure to carry the roadway over the water inlet to a former electric facility. This second structure was anticipated to be a single span structure approximately 125' in length, located just south of the Muskingum River structure. Additional investigation and coordination into the recommended structure type for both the Muskingum River structure and the water inlet structure will be performed during the Structure Type Study portion of the project.

Right of way impacts varied among the Build Alternatives. Each alternative was anticipated to require at least two total takes of adjacent property, with Alternative A – Mound Road anticipated to require four total takes. The Existing Alignment Alternative and Alternative C impacted the fewest parcels and least acreage, five parcels totaling 0.57 acres and seven parcels totaling 2.34 acres, respectively. These impacted parcels were commercial or industrial in nature. Both required the total take of the former B&B Bait and Tackle, while the Existing Alignment Alternative also impacted Fondales II and Alternative C impacted the storage unit at the corner of SR 60 and Bridge Street. Alternative B was anticipated to require slightly more acreage than Alternative C, 2.40 acres; however, this alternative impacted the largest number of parcels, eleven. Total takes required by Alternative C were the former Hamilton Antiques building and a vacant lot near the river. The alternative that required the largest amount of additional right of way was Alternative A. This alternative impacted ten parcels totaling 3.51 acres requiring two residential total takes, a vacant lot and a gift shop business.

To date, few utility responses have been received. At this time, it was assumed that the utility impacts among the Build Alternatives were relatively similar. The residential nature of the project area leads to potential design and construction conflicts with the existing locations of electric, cable, telephone, water and gas facilities. Alternative C was anticipated to also require the removal of an existing unused electric

tower near the southeast corner of the existing bridge. Additional coordination will be required to determine the exact impacts of the proposed improvements.

Environmental and ecological literature reviews identified and described existing features in the project study area and the Phase I and Phase II Environmental Site Assessment (ESA) Screening Reports for the Ohio Ferro Alloys Corporation site have been completed to date. While the results of the literature review indicated that several important environmental or ecological features were present within or near the project area, only a few were impacted by the proposed Build Alternatives. Since all alternatives include demolition of the existing structure, all alternatives had the potential for impacts to the eastern sand darter which may be located near the existing dam. Alternative B was anticipated to impact the property at 524 Main Street, a vacant lot, which has potential to encounter Leaking Underground Storage Tanks (LUST).

The primary area of concern was the former Ohio Ferro Alloys site which was impacted by Alternatives A and B. Through extensive coordination, research, and testing, the results of the ESAs found that elevated levels of inorganic metals were detected in all of the soil borings, and slightly elevated levels of metals were detected in all five ground water samples. Lead, arsenic, and benzo(a)pyrene concentrations were found to exceed regulatory standards in one sample each. Chromium exceeded standards in all ten borings. As a result, it was recommended that site-specific health and safety plans should be in place during construction of Alternative A and B. Excavated material should be stockpiled prior to offsite disposal for sampling to confirm the material is manageable as non-hazardous waste under RCRA. The Existing Alignment Alternative and Alternative C did not impact the Ohio Ferro Alloys site, so no restrictions were anticipated to be required.

The existing structure over the Muskingum River serves as a vital link between the communities of Duncan Falls on the north side and the Village of Philo (Philo) on the south side of the river. The two communities share a school system and many local business. Three of the schools are located on the Philo side of the river. The Duncan Falls Elementary, located on Mound Road, the High School, located on Millers Lane, and the athletic fields, located on Bridge Street are all located on the north side of the river. Alternatives that relocate the river crossing to Mound Road or Millers Lane may provide a minor improvement in connectivity to the individual schools; however, overall connectivity will be reduced slightly as the crossing is located farther from Philo. Some business services are available on both sides of the river; however, banking and gas stations are only available of the Duncan Falls side. Following construction, traffic pattern changes are likely to occur in alternatives that shift the river crossing upstream of the existing bridge. Mound Road or Millers Lane may experience an increase in traffic, while Bridge Street may experience a decrease in traffic. Changes in traffic patterns will likely influence future business location changes in the area. The Existing Alignment Alternative and Alternative C were not expected to experience these traffic pattern changes as the tie-in points are effectively the same as the existing conditions.

Cost Summary

In addition to the many design and construction aspects discussed in this study, project costs must also be considered when evaluating the improvement alternatives. Preliminary project costs were developed for each alternative. The project costs estimated for each alternative are tabulated in Table 1.

MUS-CR32-0.00
OVERALL PROJECT COST ESTIMATE

Category	Existing Alignment Alternative	Alternative A: Mound Road	Alternative B: Millers Lane	Alternative C: Bridge Street
Roadway	\$65,000.00	\$280,000.00	\$183,000.00	\$164,000.00
Erosion Control	\$10,000.00	\$75,000.00	\$75,000.00	\$75,000.00
Drainage	\$32,000.00	\$79,000.00	\$78,000.00	\$95,000.00
Pavement	\$229,000.00	\$277,000.00	\$260,000.00	\$362,000.00
Traffic Control	\$6,000.00	\$8,000.00	\$8,000.00	\$8,000.00
Traffic Signal	\$153,000.00	\$150,000.00	\$5,000.00	\$153,000.00
Maintenance of Traffic	\$60,000.00	\$50,000.00	\$50,000.00	\$50,000.00
Structure	\$9,988,000.00	\$10,444,000.00	\$10,838,000.00	\$10,932,000.00
Project Startup/Incidentals	\$506,000.00	\$514,000.00	\$514,000.00	\$518,000.00
Contingency (20%)	\$2,210,000.00	\$2,375,000.00	\$2,402,000.00	\$2,471,000.00
Construction Cost Subtotal	\$13,259,000.00	\$14,252,000.00	\$14,413,000.00	\$14,828,000.00
Inflation (15.8% to inflate to December 2019)	\$2,095,000.00	\$2,252,000.00	\$2,277,000.00	\$2,343,000.00
Total Construction Cost	\$15,354,000.00	\$16,504,000.00	\$16,690,000.00	\$17,171,000.00
Right of Way	\$138,000.00	\$382,000.00	\$127,000.00	\$225,000.00
Right of Way Admin Costs (\$5000/Parcel)	\$25,000.00	\$50,000.00	\$55,000.00	\$35,000.00
Total Project Costs	\$15,517,000.00	\$16,936,000.00	\$16,872,000.00	\$17,431,000.00
Improvements to Old River Rd (CR 6) *	\$0.00	\$770,000.00	\$981,000.00	\$0.00
Grand Total All Improvements	\$15,517,000.00	\$17,706,000.00	\$17,853,000.00	\$17,431,000.00

Table 1: Overall Project Cost

Alternatives A and B propose to relocate the structure west of the existing structure and tie-in to Old River Road (CR 6). Old River Road is a winding road that approximately parallels the Muskingum River. The road is characterized by little to no shoulder width and steep slopes on both sides of the roadway. The relocation of the structure was projected to increase traffic on the section of Old River Rd between the existing crossing and the proposed alignment. As a result, safety improvements were anticipated to be needed for this section of Old River Road. The costs for the Old River Road improvements are identified by the addition of an asterisk in the table above. The Old River Road improvements were considered to be outside of the project scope of work, and thus, additional funding will be needed for construction of this work. Currently, funding sources have not been identified for the Old River Road improvements, but potential costs were included to give overall project funding needed.

A summary of the factors evaluated for each alternative is included in the Alternative Comparison Matrix presented in Table 2. After considering all the major factors involved with this project the preferred alternative was found to be Alternative C – Bridge Street. While the initial project costs were the highest of the feasible alternatives, the complete improvement costs, which included Old River Road improvements performed outside of this project, were the least of the feasible alternatives. Alternative C maintains relatively the same tie-in points as the existing crossing resulting in little to no impacts to future traffic patterns.

Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Purpose And Need					
Meets Purpose and Need	Not Satisfied	Satisfied	Satisfied	Satisfied	Satisfied
Roadway					
Length of Work	No Work Performed	1285' on Bridge Street	1640' on the new alignment and 2500' on Old River Road	1600' on the new alignment and 3600' on Old River Road	1800' on the new alignment
Connection with Water Street	Yes, Existing Intersection Retained	Yes, Existing Intersection Improved	Yes, Existing Intersection Improved	No, Water Street Dead Ends South of Proposed Road	Yes, Existing Intersection Improved
Meets Intersection Sight Distance at intersections of SR 60	Potential Impedance by Building on Northwest Corner	Potential Impedance by Building on Northwest Corner	Potential Impedance by Building on Northwest Corner	No Impedance Anticipated	Potential Impedance by Building on Northwest Corner
Traffic					
Maintenance of Traffic Impacts	None	Closure of existing Bridge Street Structure requiring detour; minor lane or shoulder closures on SR 60	Existing Bridge Street Structure remains open; minor lane or shoulder closures on SR 60 and Old River Road; part width construction of existing Mound Road between Water Street and SR 60	Existing Bridge Street Structure remains open; minor lane or shoulder closures on SR 60 and Old River Road; short term closure of existing Millers Lane between Water Street and SR 60	Existing Bridge Street Structure remains open; short duration closures for intersection tie-ins at SR 60; minor lane or shoulder closures on Circular Street will be required
Construction Duration	None	2 seasons	2 seasons	2 seasons	2 seasons
Can the Existing Philo Bridge (Bridge Street Structure) Remain in Operation?	Yes except during anticipated future repairs	No	Yes	Yes	Yes
Bridge Street Detour Duration	None	2 years	None	None	None
Can Emergency Services Access be Maintained?	Yes	No	Yes	Yes	Yes
User Cost Associated with Detour	Very Substantial	Very Substantial	None	None	None
Signal Warranted at Intersection with SR 60?	No; however, due to the limited sight distance at the intersection the signal will remain.	No; however, due to the limited sight distance at the intersection the signal will remain.	No; however, due to the limited sight distance at the intersection a signal will be installed.	No; Removal of Existing Signals Required at SR 60 intersection with Millers Lane	No; however, due to the limited sight distance at the intersection the signal will remain.
Structure					
Preliminary Length of Proposed Structure	None	790'	795'	830'	825' over Muskingum River New Culvert Carrying Water Inlet
Approximate Skew to River	None	0°	0° to 5°	10° to 15°	0° over Muskingum River

Table 2: Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Geotechnical					
Likely Structure Foundation	None	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock
Roadway Subgrade/Embankment Issues	None	Existing embankment used; No settlement issues	Large amount of embankment required; Greatest potential for settlement issues	Moderate amount of embankment, Moderate potential for settlement issues	Existing embankment used; No settlement issues
Right of Way					
Preliminary Parcels Impacted	None	5	10	11	7
Classification of Impacted Parcels	None	4 Commercial, 1 Industrial	3 Commercial, 4 Residential, 2 Agricultural, 1 Industrial	4 Commercial, 4 Residential, 2 Agricultural, 1 Industrial	5 Commercial, 2 Industrial
Preliminary Total Takes	None	Fondales II, Former B&B Bait and Tackle	2 residences, 1 vacant lot, Gift Shop business	Former Hamilton Antiques Building	Former B&B Bait and Tackle Storage Units
Permanent Right of Way (Acres)	None	0.52	3.51	2.39	2.2
Temporary Right of Way (Acres)	None	0.05	0.00	0.01	0.14
Utilities					
Preliminary Impacts Anticipated	None	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas
Impacts to Existing AEP Tower	None	None	None	None	Yes
Environmental					
Impacts to Phase II ESA Site – Ohio Ferro Alloys Site (Recommendations During Construction)	None	None	Site Specific Health and Safety Plan Recommended Additional Sampling and Stockpiling of Material to Confirm Material Type RCRA Non-Hazardous Waste Disposal Required for Excavated Material Clean Fill Required	Site Specific Health and Safety Plan Recommended Additional Sampling and Stockpiling of Material to Confirm Material Type RCRA Non-Hazardous Waste Disposal Required for Excavated Material Clean Fill Required	None
Potential Hazardous Material and/or Petroleum Product Sites Impacted	None	None	Ohio Ferro Alloys Site	Ohio Ferro Alloys Site 524 Main Street (Potential LUST)	None
Cultural Resources Impacted	None	None Anticipated	None Anticipated	None Anticipated	None Anticipated
Wetlands or Streams Impacted	None	Muskingum River	Muskingum River	Muskingum River Sycamore Hollow	Muskingum River

Table 2: Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Preliminary Waterway Permit Impact Length (For Causeway Construction)	None	135'	260'	260'	135'
Preliminary Coast Guard Coordination	None	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided
Threatened or Endangered Species	None	Eastern Sand Darter	Eastern Sand Darter	Eastern Sand Darter	Eastern Sand Darter
Within National Register of Historic Places District	None	Yes	Yes	Yes	Yes
Historic Bridge Impacts	None	None	None	None	None
Stakeholder/Public Impact Following Completion of Construction					
Impacts to Pedestrians Between Philo and Duncan Falls	No Changes	Improved Pedestrian Facilities Along Bridge Street	2500' Walk Along Old River Road to Access Propose River Crossing	3600' Walk Along Old River Road to Access Propose River Crossing	100' Shorter Walk, Improved Pedestrian Facilities Along Bridge Street
Impacts to Businesses	No Changes in Traffic Patterns	No Changes in Traffic Patterns	Changes in Traffic Patterns	Changes in Traffic Patterns	No Changes in Traffic Patterns
Impacts to Schools	No Changes in Bus Routes	No Changes in Bus Routes	Improved Access to Duncan Falls Elementary School; Reduced Access to Athletic Facilities	Improved Access to Philo High School; Reduced Access to Athletic Facilities	No Changes in Bus Routes
Preliminary Costs					
Total Construction Costs	\$0.00	\$15,354,000.00	\$16,504,000.00	\$16,690,000.00	\$17,171,000.00
Right of Way Costs	\$0.00	\$138,000.00	\$382,000.00	\$127,000.00	\$225,000.00
Right of Way Admin Costs (\$5000/Parcel)	\$0.00	\$25,000.00	\$50,000.00	\$55,000.00	\$35,000.00
Total Project Costs	\$0.00	\$15,517,000.00	\$16,936,000.00	\$16,872,000.00	\$17,431,000.00
Old River Road Improvement Costs (No funding source has been identified)	\$0.00	\$0.00	\$770,000.00	\$981,000.00	\$0.00
Grand Total All Improvements	\$0.00	\$15,517,000.00	\$17,853,000.00	\$17,853,000.00	\$17,431,000.00

Table 2: Alternative Comparison Matrix

II. Introduction/Background

Purpose and Need

The purpose of the proposed transportation improvement project is to replace the Bridge Street (County Route 32) crossing over the Muskingum River which will continue to provide cross-river mobility and community connectivity between Philo and Duncan Falls which are located in Muskingum County, Ohio.

The existing Philo Bridge (MUS-CR32-0.00) (SFN 6054129), built in 1953, is a 5 span, steel truss structure with a total length of 828' and a bridge deck roadway width of 26'. A detailed visual inspection conducted on September 22, 2015 by the Muskingum County Engineer's Office concluded that the existing bridge over the Muskingum River is Structurally Deficient and Functionally Obsolete; therefore, it meets the criteria for replacement based upon the Federal Highway Bridge Inventory & Appraisal System. The detailed visual inspection also concluded the existing bridge requires posting for load-carrying capacity restrictions.

Currently, the existing Philo Bridge has an overall General Appraisal and an Operational Status Rating of 2P. The "2" rating indicates the bridge is in critical condition. The "P" rating means that the structure is currently posted for load-carrying restrictions. Based on the September 22, 2015 inspections, the existing superstructure and substructure are in critical and poor condition, respectively.

Structural analysis has determined that the existing structure must be posted, thereby, qualifying the bridge for a "Structurally Deficient" (SD) designation. The bridge has been assigned a sufficiency rating of 2.0. A structure having sufficiency rating of less than 50 along with a SD classification qualifies the structure for replacement with the use of federal funding. Structures that have a sufficiency rating of 2.0 are not considered as appropriate candidates for rehabilitation, and thus, warrant replacement.

The weight limit on the existing Philo Bridge is currently limited to 15 tons. This is well below the Ohio legal load limit; therefore the existing bridge cannot carry the legal loads that similar bridges are being designed and constructed for today. The geometrics of the existing bridge are below today's standards which places the structure in a classification referred to as Functionally Obsolete. The Functionally Obsolete classification means the bridge was not constructed to current design standards.

Study Area (Logical Termini)

This project is located in Muskingum County, Ohio, north of the Village of Philo, and within the community of Duncan Falls as shown in Figure 1. The southern boundary of the project study area is the existing Old River Road (CR 6) while the northern boundary is existing SR 60. The western boundary is taken 100' west of existing Millers Lane (CR 73), while the eastern boundary is approximately 400' east of the existing Bridge Street crossing over the Muskingum River. See Figure 2 for the project study limits.

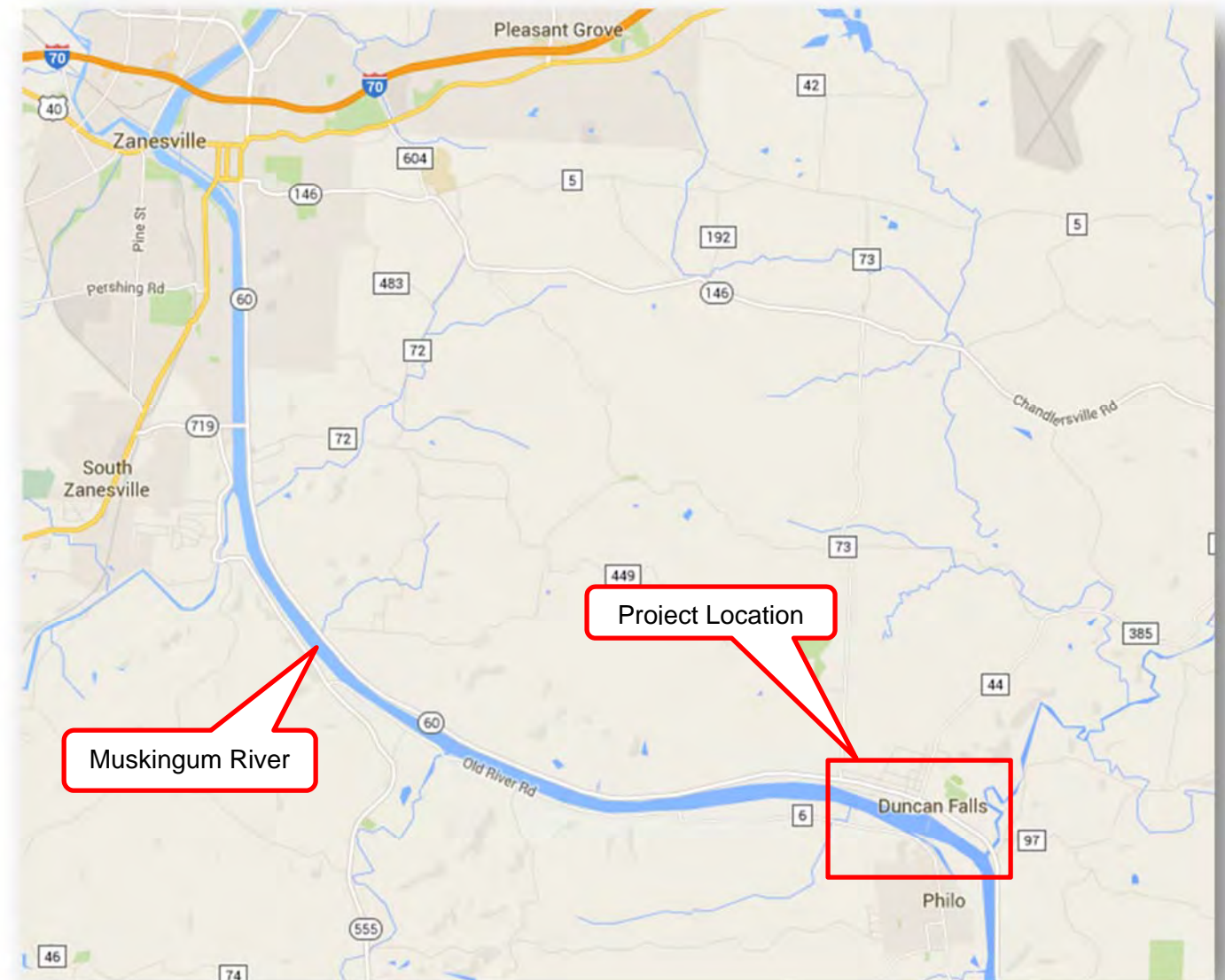


Figure 1: Project Location Map



Figure 2: Study Area

Study Approach

The Feasibility Study has been developed as part of the Preliminary Engineering phase of ODOT's Project Development Process to evaluate the alternatives to replace the existing Bridge Street structure and provide a Muskingum River crossing between Philo and Duncan Falls. The existing project features were assessed to gain an overview of the study area. This study was developed in accordance with the latest ODOT design manuals and specifications. Comparisons and recommendations presented herein are based on criteria discussed in each section.

III. Alternatives

Alternatives Considered

Five alternatives were evaluated for the purpose of improving the Muskingum River crossing located between Duncan Falls and Philo. These alternatives included a No-Build Alternative and four Build Alternatives that replaced the existing river crossing. The four proposed improvement alternatives each crossed the Muskingum River on different roadway alignments within the study area.

The No-Build Alternative consisted of maintaining the current alignment and structure. Design improvements were not applied to the structure or approach roadway with this project for evaluation of this alternative. The existing bridge over the Muskingum River is Structurally Deficient and Functionally Obsolete. Due to the poor structural condition of the existing bridge, the existing structure load limit has been reduced to 15 tons. The No-Build Alternative assumed that outside of this project continuous maintenance would be required, along with major rehabilitation efforts for many years, in order to preserve the existing structure as long as practical. Performing routine maintenance on the structure will require undesirable traffic restrictions. Near the end of 2015, the County closed the existing structure for approximately two months to replace several of the floor beams costing over \$50,000 in materials. Currently eighteen of the forty-five 36" deep floor beams exhibit holes in the webs close to the connections to the truss. The County performs monthly inspections to ensure the existing structure remains safe for carrying traffic. Based on the County's documented evidence of continued rapid deterioration of structural members, it is anticipated that annual closures lasting six to eight weeks in duration will be required to perform the necessary bridge repair work. As shown in Appendix K, the County has spent more than \$800,000 in repairs to date on the existing structure with more costs being incurred yearly. With continued use and only routine maintenance, the existing structure condition would continue to decline at an unacceptable rate. The posted load limit for this structure is expected to continue to be reduced and ultimately the structure would be permanently closed due to safety concerns. Given the poor condition and load restrictions, it was determined that the No-Build Alternative did not satisfy the purpose and need of this project.

The remaining four alternatives all remove the existing structure and constructed a new structure along various roadway alignments within the study area. The Existing Alignment Alternative considered replacing the existing structure on the existing alignment. This alignment crossed the river on the downstream side of the existing dam near the eastern end of Duncan Falls and the western end of Philo. Other logical river crossing locations consisted of primarily north-south roads in Duncan Falls that intersected SR 60 and continued north through the community. The alignment alternatives that were evaluated consisted of Alternative A – Mound Road and Alternative B – Millers Lane. These routes were extended south across the river and tied into Old River Road. The last alternative evaluated was a slight offset of the existing alignment. Alternative C – Bridge Street parallels the existing Bridge Street alignment 96' east of the existing structure. Reverse horizontal curves are utilized to tie into SR 60 just east of the existing intersection.

As mentioned previously, the purpose of this proposed transportation improvement project is to replace the Muskingum River crossing which will continue to provide cross-river mobility and community connectivity between Philo and Duncan Falls. A discussion of the various project aspects such as traffic, roadway,

environmental, etc. is provided in the respective sections of this report. If aspects differ between alternatives, comparisons and evaluations are provided.

Existing Alignment Alternative

The horizontal alignment at the existing location was checked for concurrence with current geometric design standards for an urban street with a design speed of 35 mph. Going north from Old River Road, Bridge Street is on a tangent alignment across the river, with a slight horizontal curve of approximately 2°-23’ Rt. (Radius = 2,400’) between Water Street and SR 60. This alignment met criteria for normal crown. Therefore, the existing alignment as shown in Figure 3 was maintained. A property on the northwest corner of the existing intersection of Bridge Street and SR 60 limits the available intersection sight distance due to the close proximity of an existing retaining wall and building.

The preliminary profile consisted of a grade of -0.40% from the south side of the bridge to a sag vertical curve located between Water Street and SR 60. To minimize impacts to abutting properties north of the bridge, the preliminary profile closely matched existing grades; however, at this stage of design, impacts to the two commercial properties on the corner of Water Street and Bridge Street were anticipated.

A traffic signal warrant analysis was completed and is discussed further in the next section. Using Existing Year 2015 traffic volumes, it was determined that the intersection of Bridge Street and SR 60 did not meet minimum volume thresholds necessary to warrant a traffic signal based on the 70% warrant criteria; however, due to the limited sight distance at the intersection the signal will remain. With the signal anticipated to remain, storage length calculations were performed in order to determine the required length for each auxiliary turn lane at the intersection. Based on Existing Year 2015 build conditions, the eastbound right turn lane length was calculated to be 200’ (50’ taper + 150’ storage), while the westbound left turn lane was calculated to be 100’ (50’ taper + 50’ storage). In the current configuration, the outside eastbound lane of SR 60 is dropped at the Bridge Street intersection. This drop lane functions as a right turn lane, thus providing adequate turn lane storage. The existing westbound left turn lane currently exceeded the calculated length, thus no improvements were necessary.

The replacement of the bridge on existing alignment will require extended closure of the bridge crossing. Traffic would be detoured to either the SR 719 crossing located 6.5 miles upstream, or the Gaysport (CR 66) crossing located approximately 4.85 miles downstream which is currently limited to a single lane. The user costs associated with the lengthy detours were substantial. An estimated 4500 vehicles per day utilize the existing river crossing. With each vehicle traveling the shortest detour, an average delay of 15 minutes per trip is anticipated. This resulted in an estimated detour cost of \$20,000 per day based on ODOT’s Work Zone User Cost Calculation spreadsheet. Construction of the proposed structure was estimated to require 18 to 24 months to complete. Conservatively, this resulted in more than \$10,000,000 in road user costs due to the closure of the existing structure for construction.

Located between Old River Road and the existing Muskingum River structure is an existing water inlet to a previous American Electric Power (AEP) facility. Bridge Street is currently carried over the existing water inlet by a single span structure (SFN 6034330) built in 1953. The proposed improvements were anticipated to tie-in prior to this structure, so no work was anticipated on the inlet structure with this alternative.

Alternative A – Mound Road

Alternative A, shown in Figure 4, consisted of relocation of the Muskingum River crossing bridge to approximately 2,400’ upstream of the existing bridge as an extension of Mound Road. The horizontal alignment was derived as an extension of the tangential Mound Road alignment, crossing nearly perpendicular to the Muskingum River. South of the bridge, where the alignment crossed the eastern end of the former Ohio Ferro Alloys site, a horizontal curve of 5°-43’-46” (Radius = 1,000’) was provided to form a perpendicular intersection with Old River Road. By maintaining the existing centerline of Mound Road, the proposed sidewalk on the east side of Mound Road impacted the Gift Shop commercial business and was located in close proximity to the existing residence on the northeast corner of Water Street and Mound Road. As such, both parcels were anticipated to be total takes. Based on current geometric design standards for an urban street with a design speed of 35 mph, this alignment met criteria for normal crown. A property on the northwest corner of the existing intersection of Mound Road and SR 60 limits the available intersection sight distance due to the close proximity of an existing building.

The preliminary profile consisted of a grade of -1.60% from Old River Road to a sag vertical curve centered approximately 115’ north of Old River Road. From this point of vertical intersection (PVI), a grade of +0.64% was carried 1,345’ across the river to the PVI of a crest vertical curve centered between Water Street and SR 60. Finally, a short sag vertical curve was provided as Mound Road approaches SR 60. North of the bridge, the preliminary profile closely matched existing grades in the area. However, a large amount of fill was required between Old River Road and the south abutment in order to maintain required clearance over the navigational channel.

As discussed in the next section, a traffic signal warrant analysis using Existing Year 2015 traffic volumes, including redistribution of 100% of current bridge traffic to the alternative bridge location, was completed. It was determined that the intersection of Mound Road and SR 60 did not meet minimum volume thresholds necessary to warrant a traffic signal based on the 70% warrant criteria; however, due to the limited sight distance at the intersection a signal should be installed as part of this project. Turn lane storage length calculations were performed in order to determine the required length for each auxiliary turn lane from SR 60 at the intersection. Using Existing Year 2015 traffic volumes, the westbound left turn lane was recommended, while the eastbound right turn lane was not necessary. The westbound left turn lane length was calculated to be 100’ (50’ taper + 50’ storage); however, right of way constraints at the intersection may prevent the turn lane from being constructed at this time.

Alternative A did not require detouring of traffic crossing the river. The relocated bridge crossing can be completed while traffic utilizes the existing bridge. Once the proposed improvements are completed, traffic can be redirected to the new river crossing, and the existing bridge subsequently removed.

Lastly, it was anticipated that Alternative A will also require improvement of the section of Old River Road between the existing bridge crossing and the new crossing, a length of approximately 2,500’. Current project funding will not allow the inclusion of the Old River Road improvements to be completed with this project. As such, it is not depicted on the exhibit. For preliminary estimation purposes, improvements to this portion of Old River Road were assumed to cost \$1,500,000 per mile based on estimates from similar two lane rural roadway projects including pavement, embankment, guardrail, and drainage improvements. While the physical roadway improvements were expected to be contained within the existing 40’ right of way, temporary easements would be necessary for grading. Due to the existing rock face along much of

the south side of Old River Road, the majority of the widening and right of way impacts were anticipated to be along the north side of the road. Approximately 25' of temporary easement was expected to be necessary to encompass the widening. Much of the land located within the 25' construction easement is within the 100 year flood plain. Potential impacts to the former Ohio Ferro Alloy site and Indiana bat or Northern long eared bat roost trees exist along the Old River Road improvement corridor. Additional coordination would be required during the development of the Old River Road improvement plans. Currently, no funding sources have been identified for the Old River Road improvements.

Alternative B – Millers Lane

Alternative B consisted of relocation of the river crossing approximately 3,500' upstream of the existing bridge as an extension of Water Street/Millers Lane, a north south connector between SR 60 and SR 146. As shown in Figure 5, the horizontal alignment was derived as an extension of the Water Street alignment south of SR 60. By maintaining the existing east edge of pavement of Water Street, the roadway alignment south of SR 60 (Water Street approach) shifted slightly west of its current location. The tangent was continued south across the Muskingum River creating a slightly skewed (12°) crossing. South of the bridge, where the alignment crossed the former Ohio Ferro Alloys site, a horizontal curve of 2°-17'-31" (Radius = 2,500') was provided to form a perpendicular intersection with Old River Road. Based on current geometric design standards for an urban street with a design speed of 35 mph, this alignment met criteria for normal crown. This alignment was expected to require total takes of the old commercial building abutting the west side of Water Street and a vacant lot between the river and Water Street. In addition, it was recommended that Water Street be terminated with a dead-end east of the new alignment due to elevation differences and horizontal sight distance constraints resulting from the new bridge. Intersection sight distance did not appear to be limited at the existing intersection of Millers Lane and SR 60.

The preliminary profile consisted of a short drainage tangent of -1.60% from Old River Road to a sag vertical curve centered approximately 30' north of Old River Road. From this PVI, a grade of 3% was carried 510' to the PVI of a crest vertical curve just north of the rear abutment. A 0.64% tangent crossed over the Muskingum River in order to maintain required clearance over the navigational channel to a crest curve just north of the forward abutment. Finally, a short sag vertical curve was provided just before the tie-in to SR 60.

Again, a traffic signal warrant analysis using Existing Year 2015 traffic volumes, including redistribution of 100% of current bridge traffic to the alternative bridge location, was completed. Results of the analysis are discussed further in the next section; however, it was determined that the intersection of Millers Lane and SR 60 did not meet minimum volume thresholds necessary to warrant a traffic signal based on the 70% warrant criteria. Therefore, relocation of the bridge crossing to Millers Lane was anticipated to include removal of the existing unwarranted traffic signal at Millers Lane / SR 60. Given the unsignalized condition, auxiliary turning lane warrant analyses were performed for the SR 60 free flow approach to the intersection of SR 60 and Millers Lane using Existing Year 2015 traffic volumes. The westbound left turn lane warrant was satisfied, while the eastbound right turn lane warrant was not satisfied. Using Existing Year 2015 traffic conditions, the northbound left turn lane length was calculated to be 100' (50' taper + 50' storage); however, right of way constraints at the intersection may prevent the turn lane from being constructed at this time.

Alternative B did not require detouring of traffic crossing the river. The relocated bridge crossing can be completed while traffic utilizes the existing bridge. Once the proposed improvements are completed, traffic can be redirected to the new river crossing, and the existing bridge subsequently removed.

It was anticipated that Alternative B will require improvement of the section of Old River Road between the existing bridge crossing and the new crossing, a length of approximately 3,300'. Current project funding will not allow the inclusion of the Old River Road improvements to be completed with this project. As such, it is not depicted on the exhibit. For preliminary estimation purposes, improvements to this portion of Old River Road were assumed to cost \$1,500,000 per mile based on estimates from similar two lane rural roadway projects including pavement, embankment, guardrail, and drainage improvements. Again, the physical roadway improvements were expected to be contained within the existing 40' right of way; however, temporary easements were anticipated for grading. Due to the existing rock face along much of the south side of Old River Road, the majority of the widening and right of way impacts were anticipated to be along the north side of the road. Approximately 25' of temporary easement was expected to be necessary to encompass the widening. Much of the land located within the 25' construction easement is within the 100 year flood plain. Potential impacts to the former Ohio Ferro Alloy site and Indiana bat or Northern long eared bat roost trees exist along the Old River Road improvement corridor. Additional coordination would be required during the development of the Old River Road improvement plans. Currently, no funding sources have been identified for the Old River Road improvements.

Alternative C – Bridge Street

Alternative C consisted of the relocation of the Muskingum River crossing approximately 96' downstream of the existing bridge. The horizontal alignment was derived by providing 55' of separation between the existing and proposed structures (out to out), such that a single temporary causeway can be constructed between the bridges to accommodate construction of the proposed bridge, and subsequent demolition of the existing bridge. As shown in Figure 6, going north from Circular Street (also called Front Street which is an extension of Old River Road south of Bridge Street) the alignment was tangent across the river for a length of approximately 1,135'. Between the Muskingum River and SR 60, the alignment consisted of reverse curves of 11°-27'-33" Lt. (Radius = 500') and 11°-27'-33" Rt. (Radius = 500'), respectively. The alignment extended across SR 60 on a tangent, before again forming reverse curves of 17°-21'-44" Rt. (Radius = 330') and 22°-55'-06" Lt. (Radius = 250'), respectively, and tying into an existing curve to the left approximately 250' north of SR 60. Based on current geometric design standards for an urban street with a design/legal speed of 35 mph south of SR 60 and 20 mph north of SR 60, this alignment met criteria for normal crown. This alignment was anticipated to require total takes of two commercial properties on the east side of Bridge Street between Water Street and SR 60, including a former business and storage units.

The preliminary profile consisted of a grade of -1.60% from Circular Street to a sag vertical curve centered approximately 100' north of Circular Street. From this PVI, a grade of +1.05% was carried 200' to the PVI of a crest vertical curve just south of the proposed Muskingum River structure. A grade of -1.28% was then drawn 860' to the PVI of a sag vertical curve centered immediately north of the proposed bridge. From there, a grade of +4.92% was extended 440' to the PVI of a crest vertical curve centered approximately 100' north of SR-60. Finally, a short sag vertical curve was provided to tie back into existing grade.

Through completion of a traffic signal warrant analysis using Existing Year 2015 traffic volumes and 70% thresholds, including redistribution of 100% of current bridge traffic to the alternative bridge location, it was

determined that the realigned intersection of Bridge Street and SR 60 did not meet minimum volume thresholds necessary to warrant a traffic signal. However, a signal was justified at this location due to deficient horizontal sight distance resulting from a residential retaining wall located in the southwesterly quadrant of the intersection in close proximity of the roadway. Turn lane storage length calculations were performed in order to determine the required length for each auxiliary turn lane at the intersection. Based on Existing Year 2015 build conditions, the eastbound right turn lane length was calculated to be 200' (50' taper + 150' storage), while the westbound left turn lane was calculated to be 100' (50' taper + 50' storage). In the current configuration, the outside eastbound lane of SR 60 is dropped at the Bridge Street intersection. This drop lane functions as a right turn lane, thus providing adequate turn lane storage. The existing westbound left turn lane currently exceeds the calculated length. The modifications to the intersection required for this alternative were not expected to reduce the storage length below the calculated amount.

Alternative C did not require detouring of traffic crossing the river. The relocated bridge crossing can be completed while traffic utilizes the existing bridge. Once the proposed improvements are completed, traffic can be redirected to the new river crossing, and the existing bridge subsequently removed.

Given the close proximity to the existing crossing, Alternative C will not require improvement of Old River Road; however, as previously mentioned, just north of the tie-in to Circular Street is an existing water inlet for a former AEP facility. Similar to the existing conditions, a second structure was required to span this inlet. The smaller structure connected the proposed alignment from Circular Street to a strip of land currently used as facility access by AEP. The County has expressed interest in utilizing a proposed culvert to span the water inlet. Additional permitting and coordinating will be required during the Structure Type Study to determine the appropriate structure to span the water inlet. Approximately 40' of approach roadway separated the smaller structure from the Muskingum River crossing. Access to the AEP facility was maintained; however, an unused AEP electric tower was likely to be impacted by the proposed construction. Given that this alternative creates a new access point to the strip of land, the existing structure just south of the existing Muskingum River Bridge (SFN 6034330) was no longer needed. With the close proximity of the proposed intersection along Circular Street to the existing Bridge Street intersection with Circular Street, it was recommended that the existing water inlet structure and approach roadway intersection be removed with this alternative.

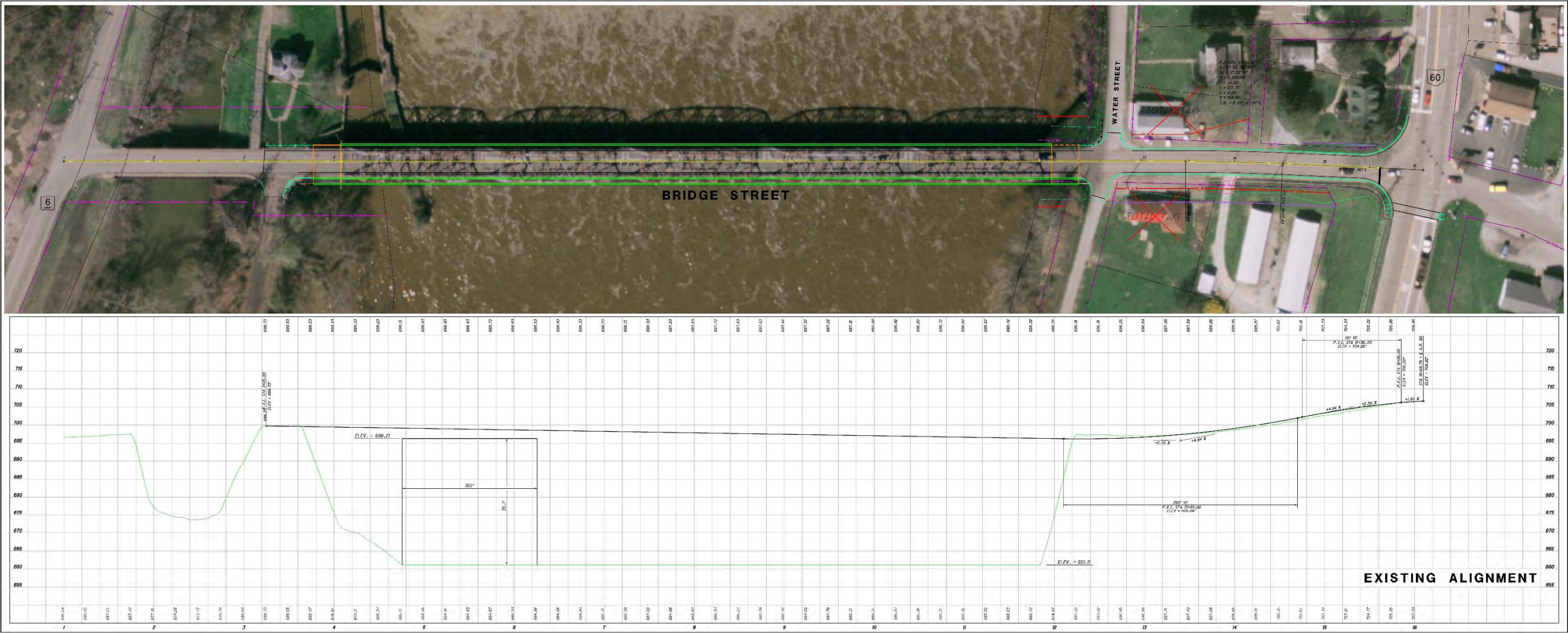


Figure 3: Existing Alignment Alternative

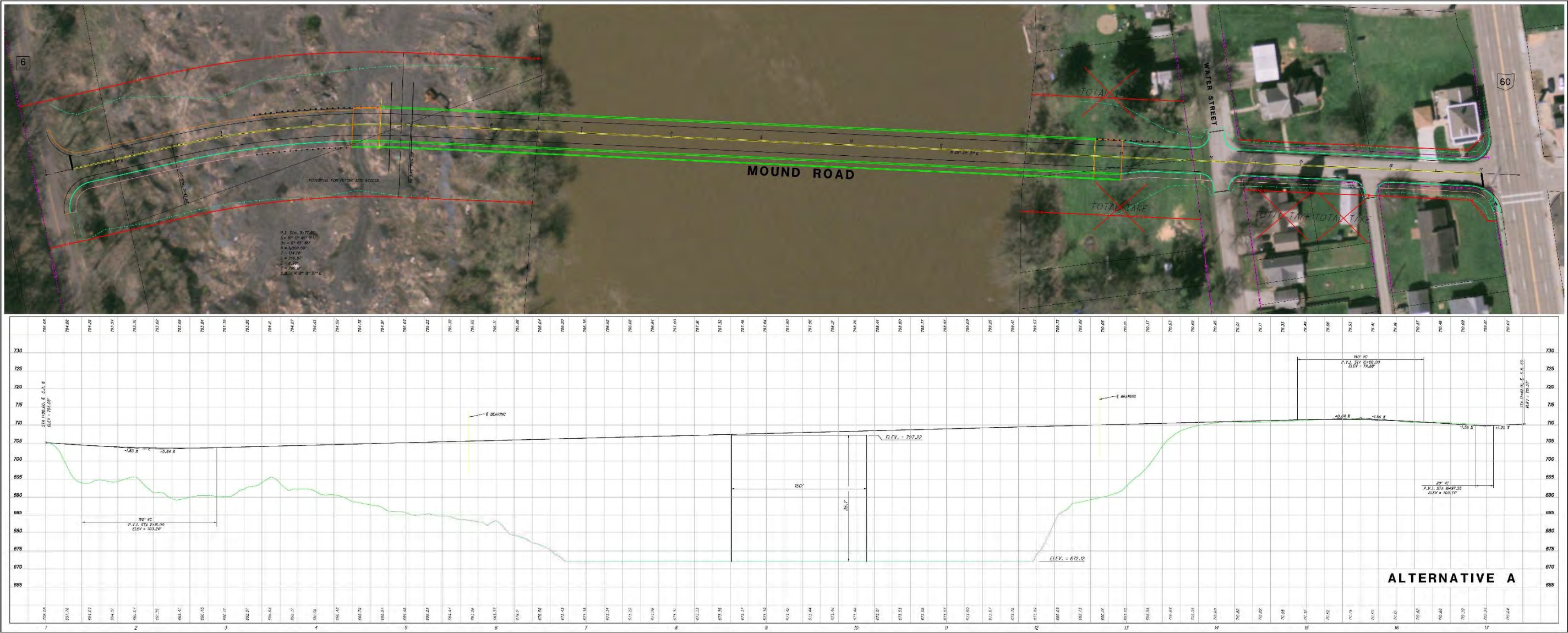


Figure 4: Alternative A - Mound Road

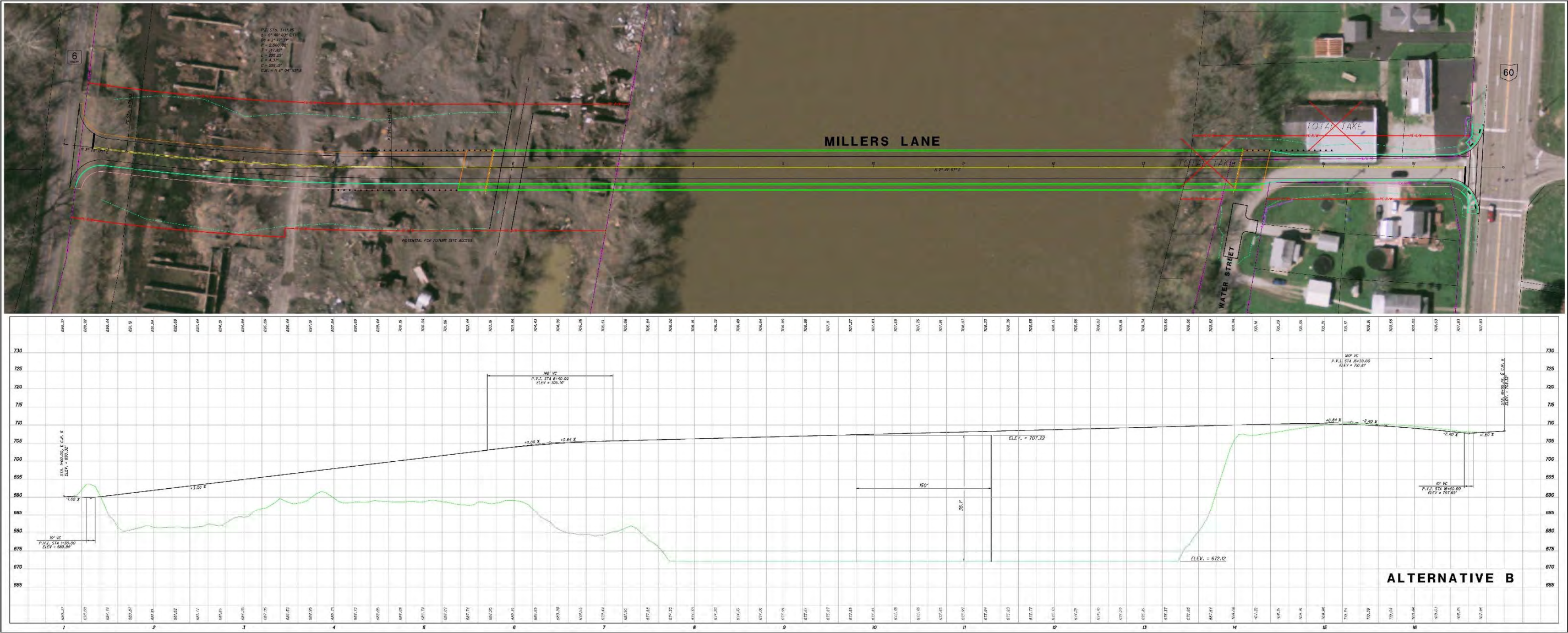


Figure 5: Alternative B - Millers Lane

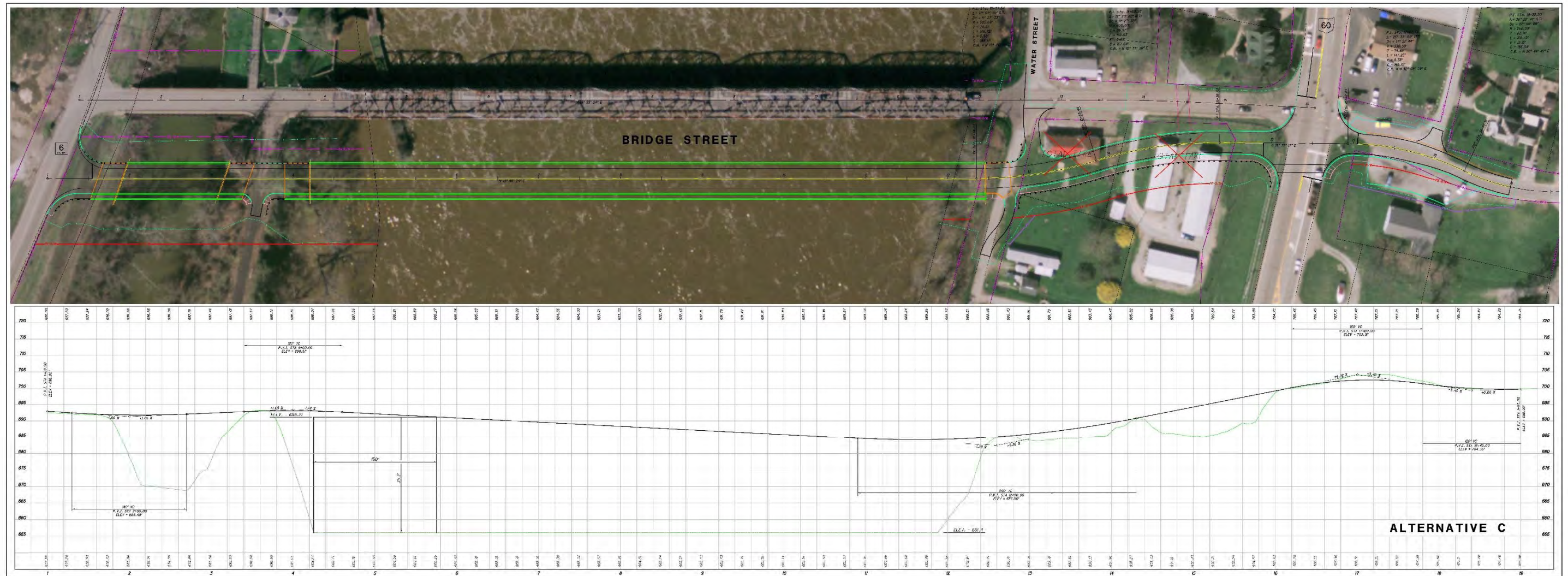


Figure 6: Alternative C - Bridge Street

IV. Traffic Analysis

Manual Traffic Counts

Muskingum County performed manual turning movement traffic counts along the intersections of interest for this project. All traffic counts were performed on Wednesdays in April 2015 from 8:00 A.M. – 8:00 P.M. See Appendix B for the raw traffic counts provided by Muskingum County personnel.

These manual traffic counts were used as a basis for establishing existing year 2015 traffic volumes for each of the build alternatives. For the new alignment alternatives, traffic was redistributed assuming that 100% of traffic currently going over the bridge would continue to do so should the bridge be reconstructed at a new location. All other traffic volumes were assumed to remain relatively unchanged due to the realignment of the river crossing. Certified traffic will be developed for the selected alternative in the detailed design phase.

Traffic Signal Warrant Analysis

Utilizing the existing and proposed traffic volumes, as specified in Section 402-2 of the ODOT Traffic Engineering Manual (TEM), traffic signal warrant analyses were performed for the study intersections. A traffic signal was considered warranted for construction if at least one of a possible nine 2009 Manual of Traffic Control Devices (MUTCD) warrant requirements were satisfied. Because of the availability of twelve hour turning movement traffic count data at the study area intersections, three of the nine possible warrant requirements were deemed applicable for the Existing Year 2015 warrant analysis (i.e. Warrant #1, #2, and #3). The remaining six signal warrants were investigated within the context of the project and did not provide any additional viable signal warrants for use in the study.

When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or rural area, or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the criteria for Warrants #1, #2, and #3 were seventy percent (70%) of the base requirements. Given the population of the Duncan Falls community, the 70% threshold was used.

Warrant #1 Eight Hour Vehicular Volume

The Eight Hour Vehicular Volume warrant is intended for application where the volume of intersection traffic is the principal reason for consideration of the signal installation. Three conditions are possible to satisfy this particular warrant. Condition A applies to specifically minimum vehicular volume requirements. Condition B deals with the interruption of continuous traffic flow. Condition C represents a combination of Conditions A and B being met at reduced volume requirements.

Warrant #2 Four Hour Vehicular Volume

The Four Hour Vehicular Volume warrant is satisfied when for four hours of an average day, minimum volumes are reached on both the major street (total of both approaches) and the highest volume minor street approach (one direction only).

Warrant #3 Peak Hour Vehicular Volume

The Peak Hour Vehicular Volume warrant is intended for application when traffic conditions are such that for one hour of the day, minor street traffic suffers undue delay in entering or crossing the major street.

The Peak Hour Vehicular Volume warrant is satisfied when the minimum required volumes on the major and highest volume minor approach are met for any one hour period (any four consecutive 15-minute periods) on an average day.

Analysis was performed for all four build alternatives studied in this project. Traffic signal warrant analyses was performed at the three study intersections, all under different conditions. The signal warrant at the SR 60 / Bridge Street intersection was performed assuming the bridge would be replaced on its existing alignment and still tie into SR 60 at the current Bridge Street intersection (Existing Alignment Alternative). The SR 60 / Mound Road signal warrant was performed under the assumption that the bridge would be replaced to tie into the existing Mound Road intersection, meaning the bridge traffic would now be using the SR 60 / Mound Road intersection (Alternative A – Mound Road). The SR 60 / Millers Lane signal warrant was performed under the assumption that the bridge would be replaced and would tie into the existing Millers Lane intersection, meaning the bridge traffic would now be using the SR 60 / Millers Lane intersection (Alternative B – Millers Lane). The final option that was considered was reconstructing the bridge adjacent to the existing bridge. This option realigned Bridge Street to access the newly constructed bridge (Alternate C – Bridge Street). This option was considered equivalent to the Existing Alignment Alternative from a traffic standpoint as the tie-in locations are in relatively the same position.

In order to determine whether the intersections met the warrant requirements to justify a traffic signal based on the current traffic conditions, the traffic count data was compared to the volume thresholds for each of the three volume warrants. The traffic signal warrant analysis for all alternatives used the 70% volume thresholds as all three intersections within the study area are located within a built-up community with a population that is less than 10,000 people. The results of the Existing Year 2015 traffic signal warrant analyses are shown in Table 3. See Appendix B for the complete traffic signal warrant analysis.

Traffic Signal Warrant Analysis Summary – Existing Year 2015 Conditions			
Intersection	Signal Warrants		
	Warrant #1 (Eight Hour Volume)	Warrant #2 (Four Hour Volume)	Warrant #3 (Peak Hour Volume)
Existing Alignment Alternative: SR 60 / Bridge Street	Not Satisfied	Not Satisfied	Not Satisfied
Alternative A – Mound Road: SR 60 / Mound Road	Not Satisfied	Not Satisfied	Not Satisfied
Alternative B – Millers Lane: SR 60 / Millers Lane	Not Satisfied	Not Satisfied	Not Satisfied
Alternative C – Bridge Street: SR 60 / Bridge Street	Not Satisfied	Not Satisfied	Not Satisfied

Table 3: Traffic Signal Warrant Analysis Summary

As shown in Table 3, the intersections did not meet the minimum volume thresholds necessary to warrant a traffic signal, regardless of where the replacement bridge is constructed under the Existing Year 2015 traffic volumes. If traffic volumes change, future analyses can be performed to determine if a signal is warranted by the anticipated construction year.

From field observations and historical research, existing intersection sight distance deficiencies were identified at the SR 60 / Bridge Street and SR 60 / Mound Road intersections. On the south approach of

both intersections there are obstructions just west of the northbound stop bar that impair the northbound driver's available sight distance. At Bridge Street, there was a 4' tall retaining wall that extends approximately 10'-12' past the stop bar placement toward the intersection. At Mound Street, there was a two story residence built on the north property line which is approximately 12' from the edge of pavement for SR 60. Neither of these conditions were anticipated to change with the project. The existing Bridge Street signal was initially installed based on the current deficient intersection sight distance. The existing signal at SR 60 / Bridge is not recommended for removal, as removing the signal would create a safety hazard regardless of the final bridge relocation option. With Alternative A – Mound Road, the intersection of SR 60 / Mound Road should be signalized as the bridge alignment would greatly increase traffic. See Appendix B for the intersection Sight Distance Exhibits.

Auxiliary Turning Lane Warrants

Utilizing the projected existing year 2015 traffic volumes, auxiliary turn lane warrant analyses were performed for each of the previously mentioned intersections under the redistributed volume traffic volume scenario. ODOT publishes the Location and Design Manual, Volume 1 which includes warrant charts for auxiliary turn lanes. These warrant charts were utilized to determine if auxiliary turn lanes on SR 60 were justified at the project intersection for each alternative evaluated. Turn lane warrant analyses were only applicable to unsignalized intersections and only on the free flow approaches. Capacity analyses was the only method to determine the number of lanes necessary for the stop controlled approaches if the existing lane configuration is suspect of being deficient. SR 60 is currently a 4-lane roadway with two lanes in each direction. Additional left or right turn lanes were not required as their additional turning capacity is currently present in the existing left-through and the through-right lanes. A cursory look at the proposed signalized operation showed that all project intersections on SR 60 will operate at Level of Service A and have a volume-to-capacity ratio of less than 0.55 indicating that no additional lanes were needed on a capacity basis.

Prior to the inclusion of a proposed turn lane addition to the project at an unsignalized mainline intersection approach, the turn lane first must meet turn lane warrants. However, this does not mandate that the turn lane be installed but rather provides state design justification that the turn lane can be constructed. As previously discussed, the intersection of SR 60 / Millers Lane did not satisfy a traffic signal warrant, and, as such, was been analyzed as stop controlled intersection with the SR 60 approaches operating as free flow. The results of the auxiliary turn lane analyses are summarized in Table 4. As shown, a westbound left turn lane was warranted should the bridge be reconstructed to tie into the existing Millers Lane roadway. See Appendix B for auxiliary turn lane computations.

Auxiliary Turn Lane Warrant Analysis Summary – Existing Year 2015 Conditions		
Intersection	Auxiliary Turn Lane Warrants	
	Westbound Left Turn Lane Warrant	Eastbound Right Turn Lane Warrant
Alternative B – Millers Lane: SR 60 / Millers Lane	Satisfied	Not Satisfied

Table 4: Auxiliary Turn Lane Warrant Analysis Summary

Turn Lane Storage Length Recommendations

Storage length calculations were performed in order to determine the required length for each auxiliary turn lane based on the peak hour traffic volumes. The required storage length was a function of the signal cycle length (if a signalized intersection was being analyzed), lane assignments, and turning movement demand. The required storage length at a signalized intersection could be minimized by utilizing the shortest, most reasonable signal cycle length. For determination of mainline turn lanes at intersections under stop controlled operations at the side streets, the intersection cycle length for calculation purposes was 60 seconds. The ODOT Location and Design Manual, Volume I specified that a storage length must provide enough storage to contain the number of vehicles per lane group per signal cycle. The manual stated that turn lane storage lengths should be a minimum of 100' with a maximum of 600' for left turn lanes and 800' for right turn lanes.

The recommended lengths were determined based on these calculations, site conditions (i.e. the locations of existing sides streets), access management, and engineering judgment. Turn lane length calculations were performed for all warranted, existing and potential turn lanes based on the four bridge replacement design alternatives. The Existing Alignment Alternative and Alternate C – Bridge Street were for the currently signalized intersection with the existing geometry anticipated to remain. The recommendations for Alternative A – Mound Road and Alternative B – Millers Lane were a pavement marking improvement on the existing 4-lane SR 60. See Table 5 for a summary of the recommended storage lengths for auxiliary turn lanes. All storage lengths shown in the table include the 50' diverging taper. See Appendix B for actual storage length calculations.

Auxiliary Turn Lane Recommended Storage Lengths – Existing Year 2015 Conditions			
Intersection	Storage Length (feet)		
	Turn Lane Calculated Length	Thru Back-Up	Recommended
Existing Alignment Alternative: SR 60 / Bridge Street Westbound Left Turn Lane	100'	N/A	100'
Existing Alignment Alternative: SR 60 / Bridge Street Eastbound Right Turn Lane	200'	N/A	200'
Alternative A – Mound Road: SR 60 / Mound Road Westbound Left Turn Lane	100'	N/A	100'
Alternative B – Millers Lane: SR 60 / Millers Lane Westbound Left Turn Lane	100'	N/A	100'
Alternative C – Bridge Street: SR 60 / Bridge Street Westbound Left Turn Lane	100'	N/A	100'
Alternative C – Bridge Street: SR 60 / Bridge Street Eastbound Right Turn Lane	200'	N/A	200'

Table 5: Auxiliary Turn Lane Recommended Storage Lengths

As shown on Tables 4 and 5, the westbound left turn lane was deemed to be a viable addition to the unsignalized intersection under Alternative B – Millers Lane. Due to the lack of available right-of-way on SR 60, the westbound left turn lane would not be feasible to construct as a lane addition but could be included with the conversion of the inside westbound through / left turn lane to a dedicated left turn lane through pavement marking and signing revisions. The conversion of the inside through lane would better define the intersection turning movements and prevent westbound through vehicles from being trapped behind left turning vehicles in the inside through lane. The existing eastbound right and westbound left turn lanes on SR 60 and Bridge Street exceeded the recommended calculated storage lengths.

The auxiliary turning lane warrant cursory capacity analysis showed that two westbound thru lanes on SR 60 have approximately 35% reserve capacity. With no apparent capacity or operational issues, the inside westbound thru lane could possibly be converted to a dedicated left turn lane at the SR 60 / Mound Road and SR 60 / Millers Lane intersections under Alternate B and Alternate A, respectively. With each option, it is a consideration that the inside westbound lane could operate as a defacto left turn based on the newly routed westbound to southbound bridge traffic. For the various bridge design options, consideration of a two-way left turn lane will be explored as a means to begin and terminate this westbound left turn lane conversion. The conversion of a two-way-left-turn-lane (TWLTL) on SR 60 through the Duncan Falls area would be best included as part of a SR 60 resurfacing project independent of the bridge replacement project. The design of the bridge tie-in points to SR 60 should allow for this potential change.

V. Roadway Assessment

Existing Roadway Assessment

Within the project area the majority of the affected facilities are classified as 2-lane Rural Local roads with a legal speed of 25 mph, except Old River Road which has a speed limit of 55 mph. SR 60 is an important north south facility within Muskingum County. North of the project area, SR 60 is a 4-lane Rural Minor Arterial with a legal speed of 55 mph. The speed limit of SR 60 decreases to 35 mph just before the project area and returns to 55 mph just south of the project area. The 4-lane to 2 lane transition occurs at the existing intersection with Bridge Street and SR 60. At this intersection the eastbound (southbound) outside lane functions as a right turn only lane and is dropped at the intersection.

Existing Bridge Street and SR 60 are curbed facilities within the project area, while Water Street, Mound Road are uncurbed residential streets without shoulders. Old River Road is a winding road that approximately parallels the Muskingum River. Within the project area the roadway is characterized by little to no shoulder width and steep slopes on both sides of the roadway. Much of the southern side of Old River Road has exposed rock faces located within several feet of the travel way. Alternatives A and B relocated the Muskingum River crossing west of the current structure. Traffic was projected to greatly increase on the section of Old River Rd between the existing crossing and the proposed alignment. As a result, safety improvements were anticipated for this section of Old River Road. As previously discussed, current project funding will not allow the inclusion of the Old River Road improvements to be completed with this project, but were quantified for comparative purposes given the necessity of the improvements if either Alternative A or B were furthered for design. Several representative projects were evaluated to develop a rough cost per mile for the Old River Road improvements. Additional evaluation should be performed under a separate project to determine the full extent of improvements necessary.

Proposed Typical Sections

Subsurface investigation was to be completed in the next phase; however, in order to determine an approximate pavement composition a conservative assumption for CBR was used. All alternatives that required full depth pavement used the same pavement build up. The results of the preliminary pavement design gave the pavement build-up listed below. During the next phase, the pavement design will be verified based on updated geotechnical and traffic data.

Proposed Pavement Build Up

- Item 441 – 1½” Asphalt Concrete Surface Course, Type 1, (448), PG64-22
- Item 407 – Tack Coat for Intermediate Course
- Item 441 – 1¾” Asphalt Concrete Intermediate Course, Type 2, (448), PG64-22
- Item 407 – Tack Coat
- Item 301 – 6” Asphalt Concrete Base, PG64-22
- Item 304 – 6” Aggregate Base

Per ODOT’s Location & Design Manual, Volume 1, lane widths of 12’ were used in all alternatives. A minimum paved shoulder width of 4’ was used for the uncurbed approaches, while a shoulder width of 2’ was used for curbed approaches. A 7’ walk was provided on the east side of the approach roadway per Figure 306-2E which transitions to a 5’ walk on the structure. Cross slopes of 1.6% were used on all streets as superelevation was not required for any of the alternatives. Side slope grading was developed based on the various figures in ODOT’s Location & Design Manual, Volume 1. Given the terrain, barrier grading with guardrail was anticipated for the majority of the proposed alternatives. Where possible, clear zone, and preferably safety grading, was utilized. A general typical section for each alternative is included in Appendix C for reference.

VI. Structure Assessment

Existing Structure Assessment

The existing Philo (MUS-CR32-0.00) Bridge (SFN 6054129) was built in 1953. It is a 5 span, steel truss structure with a total length of 828’ and a bridge deck width of 26’. The existing structure has a reinforced concrete deck for four spans and an asphalt wearing course over steel decking for the swing span. The existing piers are stone with concrete caps while the existing abutments are concrete.

The existing steel truss bridge was identified in ODOT’s Historic Bridge List, but was found to have no historical significance. The existing structure has an overall General Appraisal and an Operational Status Rating of 2P. The “2” rating indicated the bridge is in critical condition while the “P” rating means that the structure is currently posted for load-carrying restrictions. Currently, the weight limit of the existing structure is 15 tons, well below the Ohio legal load limit. Based on recent inspections, the existing superstructure and substructure are in critical and poor condition, respectively.

In addition to the General Appraisal and Operational Status Rating, the bridge has been assigned a sufficiency rating of 2.0 which corresponds to a “Structurally Deficient” (SD) designation. Structures that

have a sufficiency rating of 2.0 are not considered as appropriate candidates for rehabilitation, and thus, warrant replacement. Given the weight restriction on the existing bridge, it cannot carry the legal loads that similar bridges are being designed and constructed for today. The geometrics of the existing bridge are below today's standards which places the structure in a classification referred to as Functionally Obsolete. The Functionally Obsolete classification means the bridge was not constructed to current design standards.

Proposed Structure Improvements

A Structure Type Study will be prepared following the selection of a preferred alignment alternative to study various structure types for the removal and replacement of the existing structure. Preliminary details were developed during this study for the proposed replacement structure in order to determine the impacts of the structure on each of the alternatives. Each of the structure alternatives will utilize the same bridge width which was anticipated to be 45'-2" out to out of deck. This bridge width provided two 12' lanes, two 6' shoulders, and a 5' sidewalk that is raised 8" and sloped to drain back toward the inside barrier. The proposed shoulders on the structure were wider than the standard 4' to accommodate the need to maintain traffic and inspect the bridge. A 1'-6" barrier was located between the sidewalk and the shoulder, a 1'-0" barrier was located on the outside of the sidewalk, and a 1'-2.5" barrier was provided on the left side of the bridge. In order to provide a view of the river for the pedestrians, the barrier on the outside of the sidewalk was similar to Section A-A of ODOT's BR-2-15 standard drawing. The traffic barrier located between the sidewalk and the roadway shoulder will be tapered down within the length of the approach slab as guardrail was not anticipated to be provided at this location off of the bridge. The proposed bridge transverse section is shown in Appendix C. The barriers shown in the transverse section are considered to be preliminary at this time. Alternative barrier types will be provided in the Structure Type Study.

While each alternative has a slightly different total bridge length and span arrangement, many of the details for the proposed structures were quite similar. The structure length for each alternative for the proposed Muskingum River crossing was estimated to be:

- Existing Alignment Alternative – 790' long at a 0° skew
- Alternative A – Mound Road – 795' long at a 0° to 5° skew
- Alternative B – Millers Lane – 830' long at a 10° to 15° skew
- Alternative C – Bridge Street – 825' long at a 0° skew

It is anticipated that two basic superstructure types will be considered for the proposed structure:

1. Prestressed concrete I-beams
2. Painted steel, galvanized/metalized steel and weathering steel girders (straight or haunched)

The most economical span length for prestressed concrete I-beams are often approximately 125' (prestressed concrete I-beams can be designed as long as 160'). Concrete beam shapes from ODOT Standard Drawings PSID-1-99 will be considered; however, to provide the optimal beam section for this site, deeper beam shapes with wider top flanges will also be considered. These larger shapes can be accomplished by working with ODOT and confirming the fabrication limitations of the beam shape with regional suppliers. The bridge lengths being considered range from 790' to 830', which may require approximately seven spans at approximately 120' in length.

Constant depth structural steel plate girders will be considered. Haunched girders will be considered because of their desirable aesthetic appearance and ability to span longer distances than constant depth girders. Painted steel will be considered if a specific color is preferred for the structural steel members. Galvanized steel is becoming a very popular preferred design because of the documented low maintenance costs and very desirable life-cycle cost features. In the past, weathering steel has been a common choice for this type of structure. For the approximately 800' long bridge length being proposed to span the Muskingum River, a structural steel bridge could consist of five spans (150'-180'-180'-180'-150'), although longer spans with fewer piers may be determined to be more desirable.

Section 205.2 of the ODOT Bridge Design Manual states that when 4 or more spans are required for a structure, the designer should perform a cost analysis study to determine the most economical number of spans required based on total bridge costs. This study is referred to as a substructure and superstructure cost optimization study. A minimum span of 100' is required for the navigable waterway opening.

The bridge abutments are expected to be relatively tall stub abutments founded on piles driven to bedrock. Spill-through slopes graded at approximately 2:1 will be provided in front of the abutment and the location of the abutment will be such that the slopes will not encroach on the area bound by the ordinary high-water elevation. The pier was expected to be wall type piers supported on five drilled shafts, six feet diameter, socketed into bedrock.

Based on direction provided by the County, the overall length of structure required for Alternative A and B was to be long enough to accommodate the potential for future access under the structure at the former Ohio Ferro Alloys site. The site includes multiple right of way parcels which are divided by the proposed alternatives. Access between parcels from one side of the proposed roadway to the other was anticipated. No access improvements were completed with this project; however, an open area in the southern most span is available to accommodate potential future access needs.

In addition to spanning over the Muskingum River, Alternative C – Bridge Street required a second crossing just south of the proposed Muskingum River structure. This smaller structure connected the proposed alignment from Circular Street to a strip of land currently used as facility access by AEP. Approximately 40' of approach roadway separated the smaller structure from the Muskingum River crossing. During the Structure Type Study, additional coordination and investigation will be required to determine the appropriate type of crossing over the water inlet. Alternatives that may be considered are a new single span structure, an extended Muskingum River structure that spans both the Muskingum River and the water inlet, and placing a proposed culvert to carry the inlet under the roadway. A single span structure (SFN 6034330) currently exists just south of the existing Muskingum River Structure. Recently, the County submitted an USACE 404 construction notification to replace the existing structure (SFN 6034330) with a culvert. Preliminary comments have been received by the County indicating future coordination will be required. The notification submitted by the County and comments received are shown in Appendix I. It is anticipated that continued coordination will result in the use of a culvert with Alternative C.

Initially, the County had hoped to retain the existing Muskingum River structure for pedestrian access; however, further discussions and coordination with ODOT have indicated that the existing structure will be removed with all build alternatives. With Alternative C providing new access to the land between the Muskingum River and AEP water inlet, the existing structure over the water inlet (SFN 6034330) was also planned to be removed with this alternative. Removal of the existing water inlet structure enables the

existing intersection of Bridge Street and Circular Street to be eliminated, thereby reducing concerns over safety of the two closely spaced intersections. Coordination during detailed design will be required to determine the extent of removal of each structure given the close proximity to the existing lock walls.

VII. Preliminary Geotechnical Assessment

Summary of Geologic and Geotechnical Concerns

Subsurface investigations will be completed in the next phase of the project. Existing geological and geotechnical data was obtained from a search of generalized geological references available from ODNR and available geotechnical data from ODOT records. The search of ODOT records resulted in the original subsurface investigation records from 1963 for the construction of SR 60 on its current alignment through Duncan Falls, along with another subsurface investigation in 1968 for a reported landslide along Main Street in Duncan Falls. A subsurface investigation for the SR 60 Bridge over Salt Creek was also found. A summary of the findings is given below.

The project area is located in the Muskingum-Pittsburgh Plateau physiographic region. The area is a dissected plateau with moderately high to high relief (300’ to 600’). This area was not glaciated. The soil in the area consists of glacial outwash deposits, fluvial and alluvial deposits in the flood plains and stream valleys with colluvium deposits on the hillsides. The ground surface within the Muskingum River flood plain is generally at elevation 660’-700’, while the hills to the south of the river extend to elevation 920’.

Based on the ODNR Bedrock Geology and Topography maps of the area, the underlying bedrock consists of the Allegheny and Pottsville Groups, which include shale siltstone, sandstone, limestone, and some coal. The hills to the southwest of the project area may also include rocks from the Conemaugh Group, which include shale siltstone, claystone, sandstone, limestone, and coal. When subject to weathering, the claystone in the Conemaugh Group can weaken and cause landslides. The top of bedrock in the area is generally between elevations 650 to 700, and increasing in elevation away from the Muskingum River. The depth to bedrock is anticipated to be 20’ to 80’ in the floodplain and decreasing in depth along the hillside slopes away from the river. The project is not in an area where karst would normally be encountered. There are two abandoned underground coal mines in the area south of the river, but unfortunately there are no mine maps for those particular mines.

The subsurface investigation from 1963 for the construction of SR 60 on its current alignment indicated that the soil north of the river generally consists of five to ten feet of fine-grained soil (such as silty clay, silt and clay, and silt) overlying sand and gravel. The subsurface investigation from 1968 includes six boring logs for two reported landslides. Unfortunately, only the borings logs are available. There are no reports or other communication that describe the landslides further. The boring logs do not record any conditions that are typically associated with landslides (e.g. soft clay or water) but did encounter loose cinders and sand in some borings and open voids in the rock. Depending on the selected alignment for the project, these conditions may need to be investigated further.

Although it is east of the project area, the subsurface conditions encountered by the 1983 investigation for the bridge carrying SR 60 over Salt Creek should be similar to the soil and rock conditions at the bridge over the Muskingum River. These borings encountered medium stiff to stiff clay and silt to a depth of about 30’, underlain by medium dense to dense sand and gravel. One boring encountered shale bedrock at a depth of 50’, while the other boring extended to 60’ without encountering bedrock.

Foundation recommendations are to be finalized after the soil investigation is complete. The abutments and piers are expected to be supported on drilled shafts socketed into bedrock. Shale bedrock is located at approximately elevation 655.

VIII. Right of Way Assessment

Existing Right of Way Assessment

The existing right of way information was obtained from Muskingum County GIS property line data. This data was used to approximate the existing right of way limits for each of the alternatives. Along Bridge Street, the existing right of way width varied from approximately 45’ to 50’ on the north side of the Muskingum River and 105’ to 120’ on the south side of the river. The existing right of way width along Mound Road was estimated to be 35’. The existing right of way width along Water Street varied greatly between sections of the road. The existing right of way width was found to be 30’ at the tie-in to SR 60 and varied to 25’ where the road turns to the west. The east-west section of Water Street has an existing right of way width varying between 50’ and 60’. On the south side of the Muskingum River, Old River Road has an existing right of way width of approximately 40’ near the tie-ins for Alternative A and Alternative B. Additional right of way research will be performed in the next phase of design to more accurately determine the existing right of way limits.

Right of Way Impacts

The proposed alternatives were laid out and preliminary construction limits developed based on the preliminary alignment and profile established. Tie-in points were established for grading and offset four feet for the preliminary construction limits. Preliminary proposed right of way was placed to encompass the project footprint and is shown on the alternative exhibits in Figures 3 through 6. Where construction limits infringed upon an existing structure or were deemed too close to an existing structure to provide adequate setback from the proposed right of way, the existing structure and parcel were considered a total take. At this point in the design process, it was estimated that at all Build Alternatives would require at least two total takes, with one alternative (Alternative A) requiring four total takes. During future design stages, additional right of way research will be required to more accurately assess the existing right of way and parcel information. Additionally, refinements to design elements such as grading may be implemented to narrow the project footprint and lessen the right of way impacts. Preliminary cost estimates for the proposed right of way impacts have been developed for each alternative and are shown in Appendix F. Costs, \$5000 per parcel, were also added to each alternative for the administrative portion of the right of way acquisition process.

It was anticipated that temporary construction easements and aerial easements will likely be required over the Muskingum River for construction and the final bridge span. Additionally, standard highway easements will likely be required for pier foundations located within the river. Additional right of way research will be required to determine ownership of the river and transfer requirements. At this stage in the project, it was assumed that the Muskingum River was owned by the State of Ohio and a nonmonetary transfer of ownership will be required for the proposed bridge. As such, the impacts were considered equivalent for all Build Alternatives and not tabulated with the rest of the right of way impacts below.

While all the alternatives required proposed right of way and total takes of parcels, the amount of additional right of way and relocations varied between the alternatives. The Existing Alignment Alternative required the least amount of new right of way of all Build Alternative at an estimated 0.52 acres of permanent and 0.05 acres of temporary right of way. The Existing Alignment Alternative impacted five parcels, including the total take of two commercial properties at the corner of Bridge Street and Water Street due to grading. The estimated right of way cost for this alternative was found to be \$163,000.

The alternative found to have the largest right of way impact in terms of area and total takes was Alternative A – Mound Road. This alternative impacted ten parcels totaling 3.51 acres of permanent right of way required. All grading was contained within the proposed permanent right of way, so no temporary construction easements were required. Alternative A required four total takes including two residences and a gift shop business. Along the river, one residence and a vacant lot were determined to be too close to the grading around the proposed abutment to remain. The other total takes were along the east side of Mound Road where the proposed sidewalk was roughly five feet away from the residence and encroached on the gift shop building which necessitated the total take. More than half of the permanent right of way was proposed to come from parcels on the south side of the river. These parcels included the former Ohio Ferro Alloys site (two parcels) and a former CSX Transportation rail line. Additional right of way coordination was expected to be required for these site given the nature of the facilities. The total estimated right of way cost for this alternative was expected to be \$432,000. Additional impacts were anticipated along the section of Old River Road which would need to be improved if this alternative was selected. The physical roadway improvements were expected to be contained within the existing 40' right of way; however, temporary easements would be necessary for grading. Due to the existing rock face along much of the south side of Old River Road, the majority of the widening and right of way impacts were anticipated to be along the north side of the road. It was estimated that approximately 2500' of Old River Road would require improvement with approximately 25' of temporary easement necessary to encompass the widening. This results in roughly 1.45 acres of temporary easement from the CSX Transportation property. Using a similar cost per acre and administrative costs to that of the new alignment impacts to CSX Transportation, the estimated right of way cost for the Old River Road improvements was \$31,000.

Alternative B – Millers Lane was anticipated to impact the most parcels of any of the Build Alternatives. A total of eleven parcels were expected to be impacted including two total takes. One total take was a small vacant lot between Water Street and the river; however, the other total take was the commercial building along the west side of Water Street called Hamilton Antiques. The total permanent right of way required for this alternative was estimated to be 2.39 acres, with an additional .01 acres of temporary construction easements necessary. Nearly 2.0 acres of the 2.39 total acres included the former Ohio Ferro Alloys site (two parcels) and a former CSX Transportation rail line. Again, additional right of way coordination was expected to be required for these site given the nature of the facilities. At an estimated \$182,000, this alternative was anticipated to have the second least right of way costs of the Build Alternatives. Similar to Alternative A, additional impacts were anticipated along the section of Old River Road which would need to be improved if this alternative was selected. It was estimated that approximately 3600' of Old River Road would require improvement with approximately 25' of temporary easement necessary to encompass the widening. This results in roughly 2.1 acres of temporary easement from the CSX Transportation property. Using a similar cost per acre to that of the new alignment impacts to CSX Transportation, the estimated right of way cost for the Old River Road improvements was \$43,000.

Impacts due to Alternative C – Bridge Street were similar to that of the other Build Alternatives. Alternative C also required the total take of two parcels. The first parcel on the northeast corner of the Bridge Street and Water Street intersection was also anticipated to be a total take with the Existing Alignment Alternative. The second total take is the commercial property on the southeast corner of the SR 60 and Bridge Street intersection. The property is currently used for a storage unit rental business. In total, 2.2 acres of permanent right of way and 0.14 acres of temporary construction easements were anticipated for this alternatives. On the south side of the river, this alternative again impacts the existing CSX Transportation parcel; however, impacts to the Ohio Ferro Alloys site were avoided. Given the substantial impacts to the two commercial properties, the estimated cost for the proposed right of way for this alternative was found to be \$260,000.

IX. Utility Assessment

Existing Utility Assessment

Early in the design process, possible utility impacts within the study area were investigated. The Ohio Utility Protection Service (OUPS) was contacted to obtain a listing of utility companies in the area. Seven utility owners were identified based on the results of the OUPS request. These owners and their addresses are listed below.

AEP Ohio Power 850 Tech Center Dr. Gahanna, OH 43230	AT&T Ohio 160 N. 6 th Street Zanesville, OH 43081
Muskingum County Water Department 375 Richards Road Zanesville, OH 43701	National Gas and Oil Cooperative 1500 Granville Road P.O. Box 4970 Newark, OH 43058
ODOT District 5 Traffic Department 9600 Jacksontown Road Jacksontown, OH 43030	Time Warner Communications 3760 Interchange Road Columbus, OH 43231
City of Zanesville Water Department 14 Buckeye Dr. Zanesville, OH 43701	

A record request for available information was sent to each of the utility companies above via the OUPS system. To date, three responses to the records request have been received with additional coordination conducted by the County. Project plans will be sent to each company for their review and coordination as the project progresses. Letters to each company detailing the preliminary information provided, if any, will be sent with the plans. Additionally, a request for existing information for facilities in the project area or a letter from the utility company stating that they have no facilities in the project area will be sent with the

plans. If letters stating the utility company has no facilities in the area are received, the company will be removed from the project utility list.

In the next phase of the project, a field survey and Subsurface Utility Exploration (SUE) should be performed and locations of the utility lines can be more accurately determined.

Utility Impacts

Regardless of Build Alternative, the existing Muskingum River crossing will be removed and replaced. Existing utilities nearby will likely be affected by the demolition process. Through coordination with the County, it has been determined that AT&T has facilities crossing the Muskingum River on the west side of the existing bridge. The County submitted a utility relocation request to AT&T, shown in Appendix J, in December 2015 and coordination is ongoing.

In a residential environment such as the portion of the project north of the Muskingum River in Duncan Falls, many utilities lines will be present. Existing gas, water, electric, cable and telephone are likely to be providing service to homes and businesses in the area. It was anticipated that several utility poles, water valves or hydrants, and gas appurtenances or lines will be impacted in each alternative.

Based on the response from the Muskingum County Water Department, there are 2” to 6” water lines along most of the roads in the area. The lines are within the existing right of way, typically located no more than 3’ off the existing edge of pavement. Several valves are located within the roadways, which will require adjustment to grade if roadway work is performed in the area. While no response has been received, it is assumed that ODOT District 5 maintains the existing signals along SR 60. Alternatives that impacted the existing signals will require further coordination with District officials. Aerial electric, cable, and telephone are believed to be located on poles throughout the project area; however, no responses have been received to date. Removal of the existing structure was anticipated to impact up to five utility poles in the area of the existing structure. The Existing Alignment Alternative, Alternative A – Mound Road, and Alternative C – Bridge Street were anticipated to impact an additional five more poles each with Alternative B – Millers Lane only anticipated to impact three additional poles. The National Gas and Oil Cooperative provided maps showing the approximate location and size of underground gas facilities in the project area. As expected, small, 2” or less, gas lines run along Millers Lane, Mound Road, Water Street, and Bridge Street within the Duncan Falls portion of the project area. The lines cross from one side of the street to the other, so impacts were likely with all Build Alternatives.

A large existing electric tower is located just east of existing Bridge Street, on the strip of land between the Muskingum River and the AEP water inlet. The tower appears unused as no electric lines are currently connected to the structure. The tower is believed to be owned by AEP. Additional coordination will be required to determine the disposition of the existing tower and AEP’s future plans for the tower. With Alternative C – Bridge Street, construction of the proposed smaller bridge over the existing water inlet was anticipated to impact the existing tower.

X. Environmental Analysis

Environmental Methodology

Environmental studies relating to the replacement of the MUS-CR 32-0.00 structure over the Muskingum River have been performed. Additional studies will be performed for the recommended alternative in the future phases of the project. To date, environmental and ecological literature reviews identifying and describing existing features in the project study area have been done, and a Phase I and Phase II Environmental Site Assessment (ESA) Screening Reports, included in Appendix G, were completed. These documents were developed in accordance with the ODOT Office of Environmental Services manuals and requirements. The methodology used was unique to each study. For details and specifics, refer to the individual report.

Environmental Resource Review

A listing (radius report) of federal and state enforcement sites in the area where the proposed project is located was obtained. These lists are compiled from government agency sources and are presented in a consolidated format. Additionally, a site reconnaissance was conducted on April 23, 2015 to identify properties within the project study area that have the potential to contain hazardous materials and/or petroleum products.

During the review of the radius report and during the April 23, 2015 site reconnaissance, fourteen (14) properties were identified that have the potential to contain hazardous materials and/or petroleum products. These properties are listed in Table 6 and are depicted on the Environmental Resources Map (Figure 7).

ID	Current Tenant	Address	Reason for Noting
A	Vacant	524 Main Street	LUST, RGA LUST
B	Flo-Pro Performance Exhaust	493 Main Street	LUST, UST, Archive UST, RGA LUST (two listings), Commercial Garage
C	Butler Pottery	465 Main Street	UIC (two listings), RGA LUST
D	DJ's Drive Thru	454 Main Street	RGA LUST
E	Campbell's Market/ Red Head Gas Station	414-436 Main Street 437-443 Water Street	LUST, UST, Archive UST, RGA LUST (two listings), SPILLS, FINDS, Gas Station
F	Dollar General	373 Main Street	RCRA-CESQG
G	Residential	334 Main Street	UIC
H	Unknown	333 Main Street	RCRA NonGen, FINDS
I	Duncan Falls Auto Repair	253 Main Street	RCRA NonGen, Finds, EDR's Historic Auto Station, Commercial Garage
J	BP	252 Main Street	LUST, UST, Archive UST, RGR LUST (three listings), FINDS, Gas Station
K	Vacant	241-247 Main Street	LUST, UST, Archive UST, RGA LUST
L	Jay Baker Construction	120 Mill Street	Construction debris, five-gallon buckets, and an AST observed during site reconnaissance
M	Lock 9 Pizza	175 Main Street	Historically a dry cleaner or laundromat
N	Ohio Power Co.	Old River Road	DERR

Table 6: Properties of Environmental Significance

Additionally, the Ohio Ferro Alloys Corporation site that was identified in the orphan summary is discussed in separate ESA reports. Ohio Ferro Alloys operated as an iron alloy manufacturing plant at the subject site from 1930 to 1987. When the site was purchased in 1988, the new owner submitted a Notification of Hazardous Waste Treatment, Storage, or Disposal Form, which triggered a preliminary assessment of the site by the Ohio Environmental Protection Agency (EPA).

A Phase II ESA was completed on the Ohio Ferro Alloys site in January of 2016. The objective of this assessment was to determine the presence or absence of hazardous substances and/or petroleum products on the Subject Site through intrusive sampling and testing of soils and/or groundwater, if encountered. A total of ten (10) soil borings were advanced within the proposed Millers Lane and Mound Road alignments on the Subject Site based on ODOT's concurrence with the recommendations from the Phase I Environmental Site Assessment conducted in May of 2015.

Based on the results of the Phase II ESA, the following were recommended:

- It is recommended that the construction contractor implement a site-specific health and safety plan based on the findings within this report to account for the potential for exposure to construction and excavation employees. This health and safety plan should remain on-site and accessible at all times throughout the duration of construction activities.
- Since concentrations of contaminants in all of the samples analyzed are below RCRA-regulated levels, such excavated materials may be managed as non-hazardous wastes under RCRA assuming contaminant levels are consistent with those encountered throughout this investigation. However, due to the OEPA VAP residential DCSS contaminant exceedances in all ten (10) borings, it is recommended that such excavated soil be managed as a solid waste and disposed of at a non-hazardous landfill licensed to accept such wastes. Clean fill should be applied on-site as needed.
- Data presented within this report is based entirely on conditions encountered within the footprint of each boring, and it cannot be guaranteed that contamination does not exist at higher concentrations throughout the proposed alignments. As such, it is recommended that any soil excavated within the proposed alignments during the construction phase of the project be stockpiled and sampled to confirm that such material may be managed as a non-hazardous waste under RCRA prior to final off-site disposal.

It is anticipated that soils excavated and removed from the both the Millers Lane and Mound Road alignments are RCRA non-hazardous wastes as indicated through data obtained from the Phase II ESA. As such, it is estimated that costs for transportation and disposal of such non-hazardous material within both the Millers Lane and Mound Road alignments would average anywhere between \$100 and \$145/ton, depending on volume and load frequency. Preliminary estimates indicate that approximately 285 and 225 cubic yards of soil would be excavated from Alternative A – Mound Road and Alternative B – Millers Lane, respectively. Assuming that one (1) cubic yard of soil weighs roughly one (1) ton, the estimated worst-case scenario total for soil transportation and disposal is \$41,325 and \$32,625, respectively.

Waterway Information

The proposed MUS-CR32-0.00 project is located within the Flat Run-Muskingum River (HUC 12: 05040004-0802) watershed. The U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) mapping depicts four (4) features within the project study area: three (3) palustrine unconsolidated

bottom (PUBGx) deep water habitats and one (1) riverine lower perennial unconsolidated bottom (R2UBH) deep water habitat. The R2UBH feature was identified as the Muskingum River. Two (2) streams, the Muskingum River and Sycamore Hollow, were identified within the project study area on the USGS 7.5-Minute Topographic Quadrangle Map. However, neither of these streams was identified as scenic rivers or outstanding resource waters during the literature review. The Muskingum River is a Section 10 (Navigable Water of the U.S.) stream from the mouth to River Mile (RM) 112.5 which includes the location of the MUS-CR32-0.00 project. Through preliminary coordination with the United States Coast Guard, shown in Appendix H, it was found that the minimum horizontal and vertical clearance to be provided by the proposed structure is 100' face to face of pier and 28' above normal pool state. The locations of the streams and NWI features are depicted on the Ecological Resources Map shown in Figure 8.

Threatened and Endangered Species

The October 2015 USFWS List of Federally Threatened and Endangered Species indicates that there are eight (8) species with known ranges in Muskingum County:

- Indiana bat (*Myotis sodalist*) – Endangered
- Fanshell [*Cyprogenia stegaria* (=C. *irrorata*)] – Endangered
- Sheepnose (*Plethobasus cyphus*) – Endangered
- Snuffbox (*Epioblasma triquetra*) – Endangered
- Northern long-eared bat (*Myotis septentrionalis*) – Threatened
- Rabbitsfoot (*Quadrula cylindrica cylindrica*) – Threatened
- Eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) – Species of Concern
- Bald eagle (*Haliaeetus leucocephalus*) – Species of Concern

A search of the Ohio Department of Natural Resources – Division of Wildlife (ODNR-DOW) Ohio Natural Heritage Program database was completed on January 6, 2016 to identify any known records of rare or endangered species within 1-mile of the project study area and any known records of Indiana bat hibernacula within 10-miles of the project study area and/or any known capture records within 5-miles of the project study area. The review of the ODNR-DOW Ohio Natural Heritage Database returned records for five (5) rare and/or endangered species within 1-mile of the project study area:

- Northern madtom (*Noturus stigmosus*) – Endangered
- Eastern spadefoot (*Scaphiopus holbrookii*) – Endangered
- Fawnsfoot (*Truncilla donaciformis*) – Threatened
- Mountain madtom (*Noturus eleutherus*) – Threatened
- Eastern sand darter (*Ammocrypta pellucida*) – Species of Concern

Four (4) of these records are located within or downstream of the project study area and are depicted on the Ecological Resources Map shown in Figure 8. The Natural Heritage Program database search indicated that there are no records for Indiana bat capture locations within a 5-mile radius or for hibernacula within a 10-mile radius of the project study area. Additionally, ODNR-DOW indicated that their

records show the closest known Bald eagle nest is 13-miles to the northwest of the project study area; however, it should be noted that the Bald eagle nest locations are based on survey data that was last collected in 2012 since the Bald eagle was removed from the state rare species list.

Parkland, Nature Preserves, and Wildlife Areas

There were no state parks, nature preserves, or waterfowl/wildlife refuge areas identified within the project study area during the ODNR-DOW Ohio Natural Heritage Database search completed on January 6, 2016.

A portion of Muskingum River State Park was identified within the project study area during the site reconnaissance conducted on April 23, 2015. Specifically, the Lock No. 9 and Dam No. 9 (Philo Dam), an area that has been placed on the National Register of Historic Places (NRHP) and is recognized as part of the Muskingum River Navigation Historic District, was identified just west of the Philo (MUS-CR32-0.00) Bridge (SFN 6054129). The boundary of this NRHP District is depicted on the Ecological Resources Map shown in Figure 8.

Miscellaneous Ecological Information

- The Muskingum County, Ohio Flood Insurance Rate Map (FIRM) number is 39119C0431G. A portion of the project study area along the Muskingum River is located within a 100-year floodplain.
- There are no sole source aquifers located within or adjacent to the project study area.
- The closest wellhead protected area is the Muskingum County Water - SE system which is located 0.3-miles west of the project study area.

The environmental impacts shown in Figure 7 and ecological impacts shown in Figure 8 varied by alternative. The Existing Alignment Alternative and Alternative C – Bridge Street had the least impacts as the Ohio Ferro Alloys Corporation site and other hazardous material sites were avoided. Alternative A – Mound Road and Alternative B – Millers Lane both impacted a portion of the Ohio Ferro Alloys Corporation site. At this point in the project, the impacts to the site were considered equal for each alternative except that Alternative A is anticipated to require slightly more excavation of the RCRA non-hazardous wastes than Alternative B. Alternative B also impacts Property A on Figure 7. This property is 524 Main Street, a vacant site with potential for Leaking Underground Storage Tanks (LUST), RGA LUSTs. The impacts to ecological resources such as Endangered Species were anticipated to be minor and considered equivalent for all alternatives. One area in which the alternatives differed was stream impacts. In order to construct the proposed structure and remove the existing structure a temporary causeway will be required. Alternatives located near the existing structure, Existing Alignment Alternative and Alternative C, have been developed to utilize the same causeway for both construction and demolition. Alternatives A and B will require separate causeways for construction and demolition, which almost doubles the impacts to the Muskingum River. Additionally, Alternative B will cross Sycamore Hollow just north of the tie-in with Old River Road. This crossing was anticipated to require a small culvert to carry the stream under the proposed roadway.

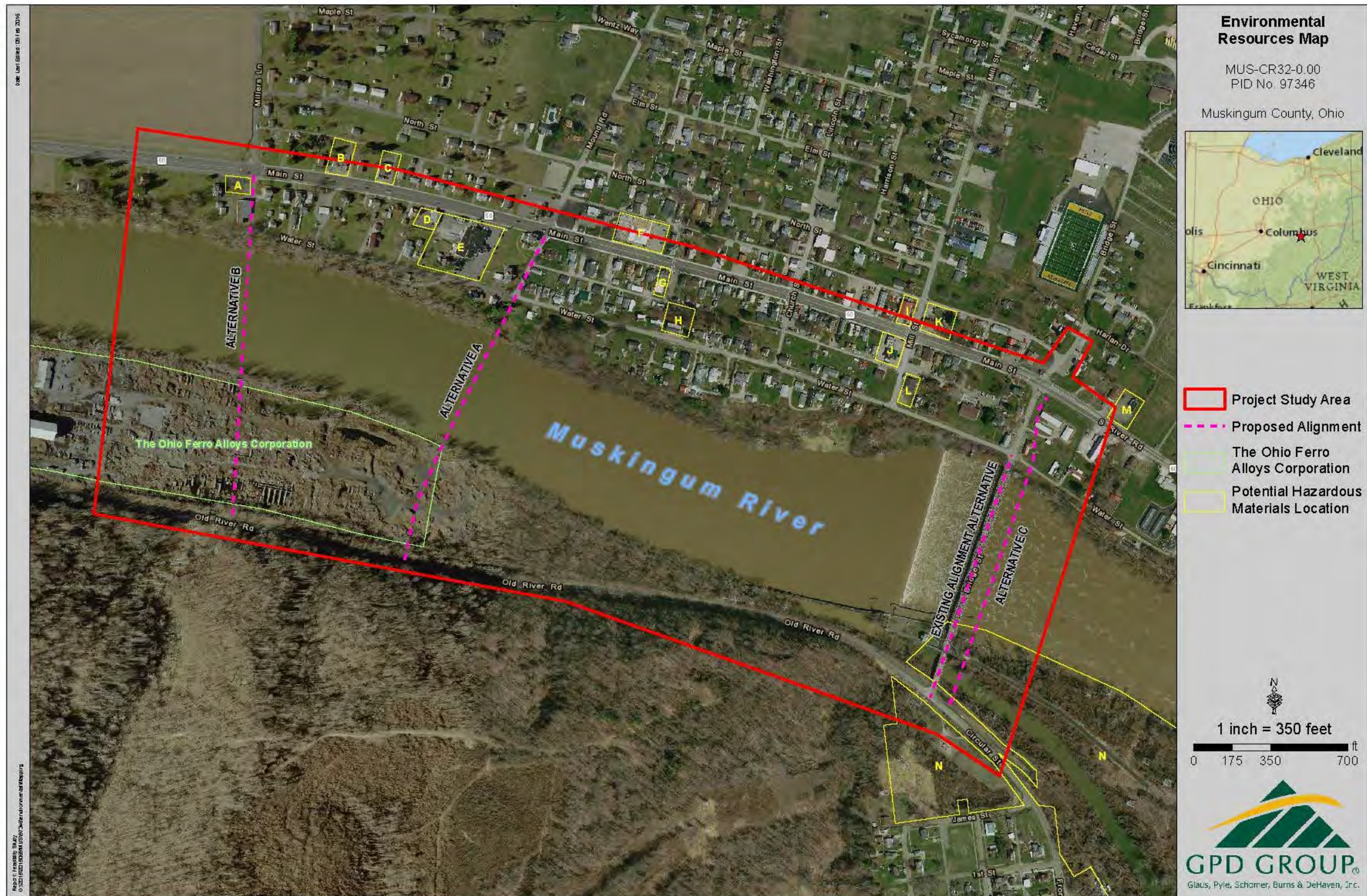


Figure 7: Environmental Resource Map

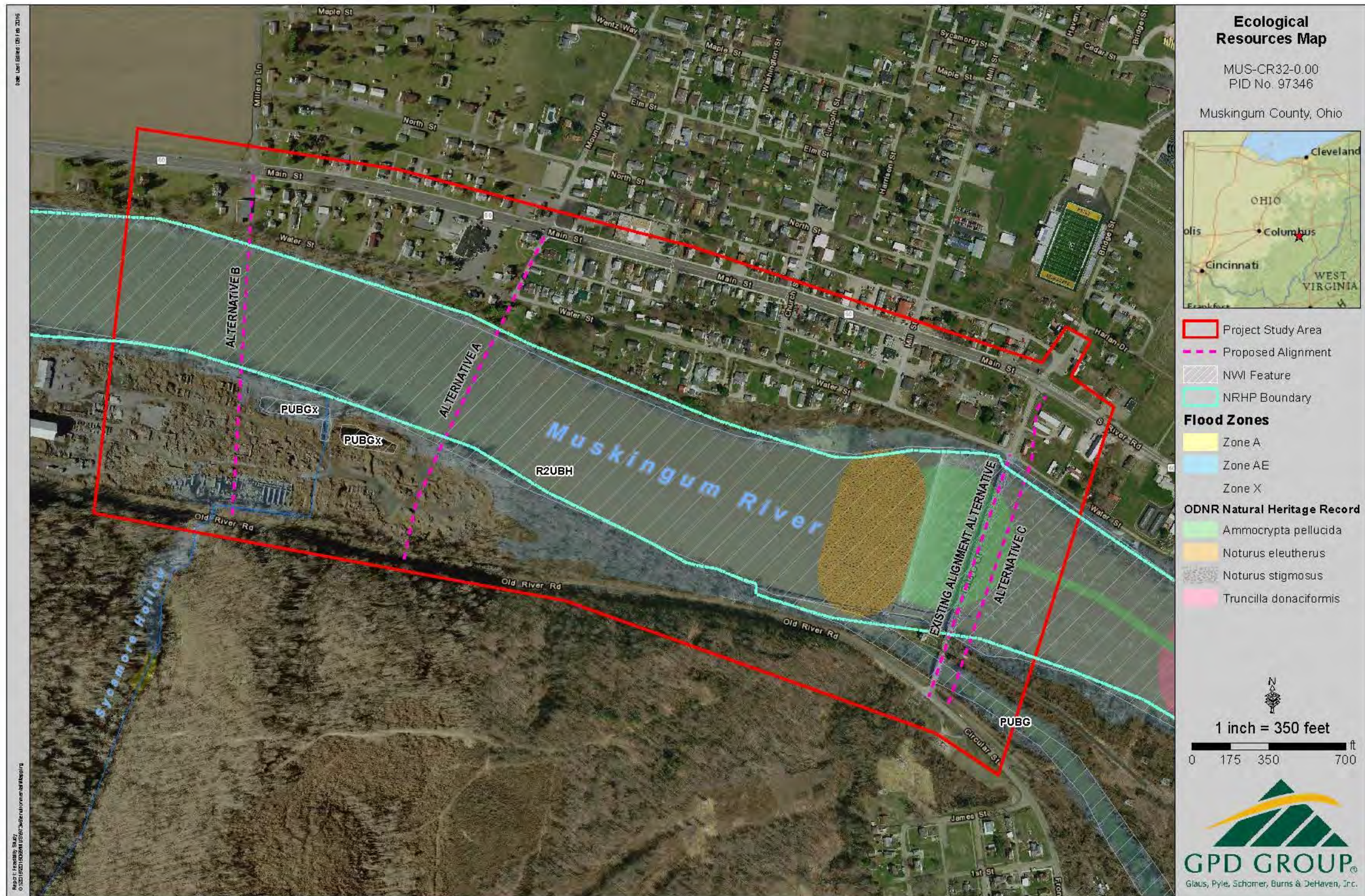


Figure 8: Ecological Resource Map

Cultural Resource Review

A cursory literature review and website search was completed to identify potential historic resources within the project study area. The cursory literature review was completed by conducting a records review with the Ohio Historic Preservation Office (OHPO). The records review was conducted on December 6, 2015 utilizing the OHPO Online Mapping System. The ODOT’s Historic Bridge List (2014) and the Buckeye Assets website was also reviewed to determine if any historic bridges are located within the project study area. For the records review, the following sources were searched:

Source	Resources Only Within or Adjacent to the Study Area
National Register of Historic Places (NRHP)	1
National Register Determinations of Eligibility (DOE)	0
National Historic Landmarks	0
Ohio Historic Inventory (OHI)	0
Ohio Archaeological Inventory (OAI)	2
Previously Surveyed Areas (PSA)	1
Ohio Genealogical Society (OGS) Cemeteries	0
OHPO Historic Bridges	1
Buckeye Assets Historic Bridges	3

The historic records identified within the project study are listed below and are depicted on Figure 9, the Cultural Resources Map.

National Register of Historic Places

The Muskingum River Navigation Historic District (Ref No. 7000025) is known as a slackwater navigation system whose purpose is to enable boat traffic to travel the waterway during all seasons of the year. “Slackwater” is another term for still water, that which is unaffected by a current. In essence, the dams created navigable pools for boat travel over long river distances.

It was determined to define the boundaries of the District to the low-water bank of the Muskingum River from its beginning at Coshocton to its terminus 115 miles downstream to the Ohio River. This boundary also includes the canals that serve several of the locks that are within the river. Consequently, the District includes the dams, the locks, the by-pass canals, and the islands that are formed by these canals that are all an integral part of this system. It also includes two (2) boats that are permanently moored within the river bank as well as several buildings that are on the islands formed by the canal or situated within the bank of the river.

These boundaries were established to concentrate on the historic importance of the navigational features designed and constructed within the Muskingum River in the mid-nineteenth century. The slackwater improvement to the Muskingum River to expedite steamboat transportation still operates as designed over 160 years ago and is a most valuable resource to the history of river navigation.

Contributing resources to the District that are located within the project study area include Dam No. 9 (Philo Dam), Lock No. 9, and a steel thru truss type bridge (SFN: 6054129). Although the Philo (MUS-CR32-0.00) Bridge was listed as a contributing factor to the District on the unsigned February 9, 2007 NRHP Form, the existing structure was found to be not eligible for the NRHP based on the 2004 report *The Third Ohio Historic Bridge Inventory, Evaluation, and Management Plan for Bridges Built 1951-1960* and *The Development of the Ohio’s Interstate Highway System* completed by ODOT in cooperation with the Federal Highway Administration and the Ohio Historic Preservation Office. It is therefore considered to be a non-contributing resource in the District.

OAI Records

Two (2) OAI records (OAI No. MU1368 and MUA1369) were identified within the project study area. Neither of these sites is listed as being eligible for the NRHP.

Previously Surveyed Areas

One (1) previously surveyed area was identified within the project study area. In April 2010, ASC Group, Inc. was contracted by ODNR to conduct a Phase I archaeological investigation (NADB: 18372) on a 0.20-acre study area related to the retrieval of a large block of Lock No. 9, part of the Muskingum River Navigation Historic District, which had fallen into the Muskingum River. The Phase I investigation consisted of a visual inspection of the project area as well as the excavation of three shovel probes. While some artifacts were identified, it was determined that they were recent and/or secondary in deposition. Additionally, it was confirmed that the structure remnant was located outside the area to be impacted by a proposed access road. Since the construction of the proposed access road was determined to have no adverse effects on any archaeological resources, no further work was recommended for this project.

OHPO Historic Bridges

One (1) bridge (SFN: 6026117) was identified within the project study area. The 8-span, 119-foot long steel stringer bridge carries a one-lane drive over dry land. At its east end, the bridge connects with the approach roadway to the truss highway bridge over the Muskingum River at Philo-Duncan Falls. At its west end, the bridge connects with the grounds of the Muskingum River Lock No. 9.

According to ODOT’s Historic Bridge List (February 2014), the ca. 1903 steel stringer bridge is within the boundaries and evaluated as a contributing resource in the Muskingum River Navigation Historic District. It historically provided access between Lock No. 9 and the bridge/roadway over the Muskingum River. Among the earliest examples of a common bridge type, this bridge is an important example for its position in the development of the standardized design. It has high significance for its early and unique details. While this structure was identified on the OHPO historic bridge layer and ODOT’s Historic Bridge List, this structure was unable to be identified on the unsigned February 9, 2007 Muskingum River Navigation Historic District (Ref No. 7000025) NRHP form.

Buckeye Assets Historic Bridges

The Buckeye Assets website’s historic bridge layer was examined to determine if any previously documented historic bridges are located within the project study area. These records list three (3) bridges within the project study area.

Two (2) beam type bridges (SFN: 6034276 and 6034330) located within the project study area have been recommended as not eligible for inclusion on the NRHP based on the context of their type/design and date of construction.

One (1) steel thru truss type bridge, the Philo (MUS-CR32-0.00) Bridge (SFN: 6054129), located within the project study area carries a two-lane road and one (1) sidewalk over the Muskingum River and Lock No. 9. According to the NRHP registration form for the Muskingum River Navigation Historic District, while this bridge has supports in the river (within the NRHP district's boundary), the bridge is considered to be a non-contributing resource in the District because it is not part of the slackwater navigation system.

None of these structures are listed as “historic” on the Buckeye Assets website or the OHPO Online Mapping System.

With the exception of the existing Philo Bridge which is to be removed in all build alternatives, none of the alternatives were anticipated to have impacts to cultural resources noted above. All alternatives cross the NRHP boundary with work within the NRHP boundary expected to consist of pier construction from a causeway. Impacts within the NRHP boundary were anticipated to be minor and equivalent for all alternatives as the number of piers and size of causeway was assumed to be similar as this stage. As shown on Figure 9, none of the alternatives impacted the existing OHPO structure at Lock No. 9 or structures of historical significance.

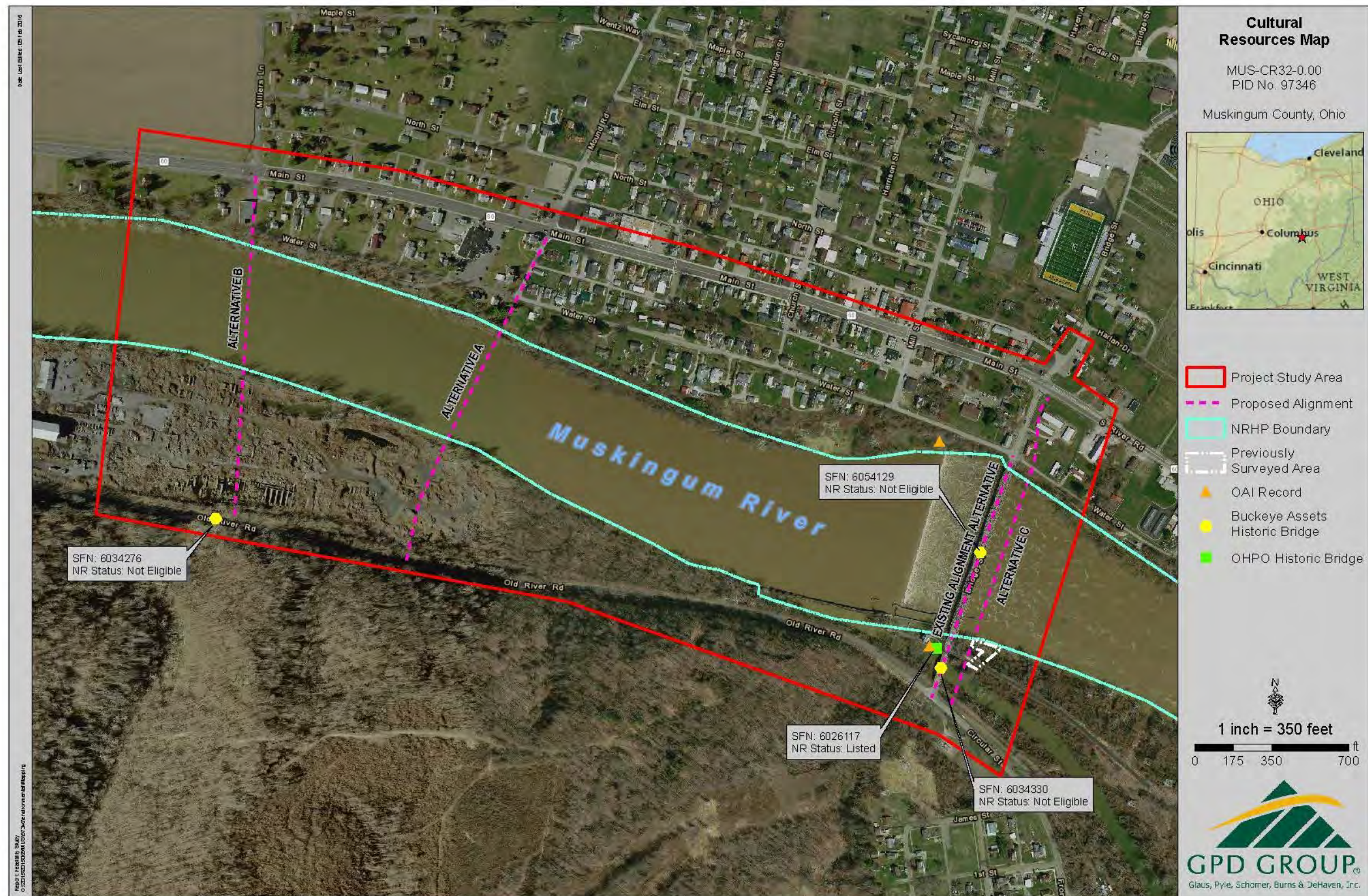


Figure 9: Cultural Resource Map

XI. Public Involvement

Stakeholder Issues/Comments

The Bridge Street Structure over the Muskingum River serves as a vital link between the communities of the Village of Philo on the south side of the river and Duncan Falls on the north side. The two communities make up the rural Franklin Local School District which serves over 2,000 students in five different buildings. The building locations are divided by the river. Located on the Duncan Falls side of the river are Duncan Falls Elementary, located on Mound Road, the High School, located on Millers Lane, and the athletic fields, located on Bridge Street. While the Junior High School, Roseville Elementary, and Franklin Local Community School are on the Philo side of the river. Alternatives that relocate the river crossing to Mound Road or Millers Lane may provide a minor improvement in connectivity to the individual schools; however, overall connectivity will be reduced slightly as the crossing is located farther from Philo.

As a result of the school district being divided by the Muskingum River, the bridges crossing the river are vital links for the school district. Currently two county bridges (one located at Philo/Duncan Falls and the second to the south at Gaysport) are the main crossings of the river in the area. When one of the two bridges over the river is closed the resulting effect is a roughly ten mile detour for school buses which adds fuel and labor costs. Two detour routes for the Philo/Duncan Falls Bridge exist, both of these routes result in a five mile trip on Old River Road, which is a curvy two lane road that closely follows the river. The route to the south requires crossing the Gaysport Bridge which is currently limited to one lane traffic with traffic signals due to failing exterior floor stringers.

The detour impact to the local business community is substantial. The ten mile detour effects food delivery, groceries, banking, gas stations, and convenience items all of which are limited to crossing of the existing bridge sidewalk. Some services are available on both sides of the river; however, banking and gas stations are only available of the Duncan Falls side. Business from commuter traffic is impacted due to the northern detour route passing the larger community of South Zanesville resulting in a ten mile trip for services to South Zanesville in lieu of a twenty mile trip to Duncan Falls and back. Following construction, traffic pattern changes are likely to occur in alternatives that shift the river crossing upstream of the existing bridge. Some areas may experience an increase in traffic, Mound Road or Millers Lane, while other areas, Bridge Street, may experience a decrease in traffic. Changes in traffic patterns will likely influence future business changes in the area. The Existing Alignment Alternative and Alternative C were not expected to experience these traffic pattern changes as the tie-in points are effectively the same as the existing conditions.

Emergency services are always a concern, these two communities rely on support from each other for fire and emergency medical services; however, when the bridge is closed response time is delayed due to the detour. Both communities serve aging residents in a rural setting with long travel time to hospitals and any added delay can be the difference between life and death.

Public Involvement Plan

Prior to the development of this study, Muskingum County officials held a public meeting to share the goals and plans for the future of the Philo Bridge (Bridge Street Structure) with the communities of Philo and Duncan Falls. The meeting was held on November 13, 2014 at the Philo Junior High School. An

estimated 130 people attended the meeting with 90 comments sheets and letters received. The majority of the comments were related to location of the new structure. The next most received concerns were local considerations such as the alloy contamination, eagle’s nest, rock wall on Old River Road and history of the bridge, business impacts, and funding. Other items of interest were structure type, pedestrian safety, detour length, community connectivity, school district impacts, timeline and condition of the existing bridge. A follow up letter from the Muskingum County Engineer’s Office to the community attendees is included in Appendix E.

Following completion of study data, a public involvement meeting will be held. The results of the study data will be shared with local community members and stakeholders. Attendees will have the opportunity to view exhibits and handouts on the project’s progress. Members of the project team will be on hand to present information and answer questions as needed. Following the public meeting, a recommended alternative will be selected and furthered for design in the next phase of the project.

XII. Alternative Comparison

Cost Summary

Preliminary project costs were developed for each alternative. These costs include various roadway, erosion control, drainage, pavement, traffic control, maintenance of traffic, structure, and incidental/startup items. Project costs include a design contingency of 20%. A 15.8% inflation rate is also included based on a midpoint construction date of December 2019 using the ODOT Office of Estimating FY 16-20 Business Plan Inflation Calculator. The costs for these categories are shown in Table 7. For details on construction costs for the build alternatives, see Appendix F for the construction cost estimation spreadsheet.

Alternatives A and B propose to relocate the structure west of the existing structure and tie-in to Old River Road. Old River Road is a winding road that approximately parallels the Muskingum River and is characterized by little to no shoulder width and steep slopes on both sides of the roadway. The relocation of the structure was projected to greatly increase traffic on the section of Old River Rd between the existing crossing and the proposed alignment. As a result, safety improvements were anticipated to be needed for this section of Old River Road. The costs for the Old River Road improvements are identified by the addition of an asterisk in Table 7. The Old River Road improvements were considered to be outside of the project scope of work, and thus, additional funding will be needed for construction of this work. Currently, funding sources have not been identified for the Old River Road improvements, but potential costs were included to give overall project funding needed.

The No-Build Alternative consisted of maintaining the current alignment and structure. No improvements to the structure or approach roadway were to be completed with this alternative. As such, there were no costs included with this project for the No-Build Alternative.

MUS-CR32-0.00
OVERALL PROJECT COST ESTIMATE

Category	Existing Alignment Alternative	Alternative A: Mound Road	Alternative B: Millers Lane	Alternative C: Bridge Street
Roadway	\$65,000.00	\$280,000.00	\$183,000.00	\$164,000.00
Erosion Control	\$10,000.00	\$75,000.00	\$75,000.00	\$75,000.00
Drainage	\$32,000.00	\$79,000.00	\$78,000.00	\$95,000.00
Pavement	\$229,000.00	\$277,000.00	\$260,000.00	\$362,000.00
Traffic Control	\$6,000.00	\$8,000.00	\$8,000.00	\$8,000.00
Traffic Signal	\$153,000.00	\$150,000.00	\$5,000.00	\$153,000.00
Maintenance of Traffic	\$60,000.00	\$50,000.00	\$50,000.00	\$50,000.00
Structure	\$9,988,000.00	\$10,444,000.00	\$10,838,000.00	\$10,932,000.00
Project Startup/Incidentals	\$506,000.00	\$514,000.00	\$514,000.00	\$518,000.00
Contingency (20%)	\$2,210,000.00	\$2,375,000.00	\$2,402,000.00	\$2,471,000.00
Construction Cost Subtotal	\$13,259,000.00	\$14,252,000.00	\$14,413,000.00	\$14,828,000.00
Inflation (15.8% to inflate to December 2019)	\$2,095,000.00	\$2,252,000.00	\$2,277,000.00	\$2,343,000.00
Total Construction Cost	\$15,354,000.00	\$16,504,000.00	\$16,690,000.00	\$17,171,000.00
Right of Way	\$138,000.00	\$382,000.00	\$127,000.00	\$225,000.00
Right of Way Admin Costs (\$5000/Parcel)	\$25,000.00	\$50,000.00	\$55,000.00	\$35,000.00
Total Project Costs	\$15,517,000.00	\$16,936,000.00	\$16,872,000.00	\$17,431,000.00
Improvements to Old River Rd (CR 6) *	\$0.00	\$770,000.00	\$981,000.00	\$0.00
Grand Total All Improvements	\$15,517,000.00	\$17,706,000.00	\$17,853,000.00	\$17,431,000.00

Table 7: Overall Project Costs

Constructability

Regardless of Build Alternative, the anticipated construction duration for the project is two construction seasons. The main constructability issues that affected all alternatives include river access, material fabrication, and minimizing tie-in work with SR 60 and other local roads. The Existing Alignment Alternative had the added challenge of avoiding the existing substructure units while constructing the proposed structure. In addition, full closure of the existing structure was recommended requiring a long-term detour. The Existing Alignment Alternative and Alternative C – Bridge Street each constructed the new structure at or near the location of the existing structure. This allowed the contractor to utilize a single causeway for river access. This causeway was anticipated to be located on the downstream side of the dam resulting in lower water levels and thus, less fill material. Alternative A – Mound Rd and Alternative B – Millers Lane each relocated the crossing upstream of the existing bridge. This was anticipated to require two causeways, one for construction of the new bridge in deeper water and one for the demolition of the existing bridge in shallower water. Each alternative was expected to require minor tie-in work with SR 60 and Water Street; however, only the Existing Alignment Alternative was expected to avoid additional tie-in work with Old River Road or Circular Street. Alternative C had additional impacts to Bridge Street on the north side of SR 60 as approximately 200’ of Bridge Street was reconstructed to align with the new structure.

Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Purpose And Need					
Meets Purpose and Need	Not Satisfied	Satisfied	Satisfied	Satisfied	Satisfied
Roadway					
Length of Work	No Work Performed	1285' on Bridge Street	1640' on the new alignment and 2500' on Old River Road	1600' on the new alignment and 3600' on Old River Road	1800' on the new alignment
Connection with Water Street	Yes, Existing Intersection Retained	Yes, Existing Intersection Improved	Yes, Existing Intersection Improved	No, Water Street Dead Ends South of Proposed Road	Yes, Existing Intersection Improved
Meets Intersection Sight Distance at intersections of SR 60	Potential Impedance by Building on Northwest Corner	Potential Impedance by Building on Northwest Corner	Potential Impedance by Building on Northwest Corner	No Impedance Anticipated	Potential Impedance by Building on Northwest Corner
Traffic					
Maintenance of Traffic Impacts	None	Closure of existing Bridge Street Structure requiring detour; minor lane or shoulder closures on SR 60	Existing Bridge Street Structure remains open; minor lane or shoulder closures on SR 60 and Old River Road; part width construction of existing Mound Road between Water Street and SR 60	Existing Bridge Street Structure remains open; minor lane or shoulder closures on SR 60 and Old River Road; short term closure of existing Millers Lane between Water Street and SR 60	Existing Bridge Street Structure remains open; short duration closures for intersection tie-ins at SR 60; minor lane or shoulder closures on Circular Street will be required
Construction Duration	None	2 seasons	2 seasons	2 seasons	2 seasons
Can the Existing Philo Bridge (Bridge Street Structure) Remain in Operation?	Yes except during anticipated future repairs	No	Yes	Yes	Yes
Bridge Street Detour Duration	None	2 years	None	None	None
Can Emergency Services Access be Maintained?	Yes	No	Yes	Yes	Yes
User Cost Associated with Detour	Very Substantial	Very Substantial	None	None	None
Signal Warranted at Intersection with SR 60?	No; however, due to the limited sight distance at the intersection the signal will remain.	No; however, due to the limited sight distance at the intersection the signal will remain.	No; however, due to the limited sight distance at the intersection a signal will installed.	No; Removal of Existing Signals Required at SR 60 intersection with Millers Lane	No; however, due to the limited sight distance at the intersection the signal will remain.
Structure					
Preliminary Length of Proposed Structure	None	790'	795'	830'	825' over Muskingum River New Culvert Carrying Water Inlet
Approximate Skew to River	None	0°	0° to 5°	10° to 15°	0° over Muskingum River

Table 8: Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Geotechnical					
Likely Structure Foundation	None	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock	Piles on Bedrock or Drilled Shafts into Rock
Roadway Subgrade/Embankment Issues	None	Existing embankment used; No settlement issues	Large amount of embankment required; Greatest potential for settlement issues	Moderate amount of embankment, Moderate potential for settlement issues	Existing embankment used; No settlement issues
Right of Way					
Preliminary Parcels Impacted	None	5	10	11	7
Classification of Impacted Parcels	None	4 Commercial, 1 Industrial	3 Commercial, 4 Residential, 2 Agricultural, 1 Industrial	4 Commercial, 4 Residential, 2 Agricultural, 1 Industrial	5 Commercial, 2 Industrial
Preliminary Total Takes	None	Fondales II, Former B&B Bait and Tackle	2 residences, 1 vacant lot, Gift Shop business	Former Hamilton Antiques Building	Former B&B Bait and Tackle Storage Units
Permanent Right of Way (Acres)	None	0.52	3.51	2.39	2.2
Temporary Right of Way (Acres)	None	0.05	0.00	0.01	0.14
Utilities					
Preliminary Impacts Anticipated	None	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas	Electric, Cable, Telephone, Water, Gas
Impacts to Existing AEP Tower	None	None	None	None	Yes
Environmental					
Impacts to Phase II ESA Site – Ohio Ferro Alloys Site (Recommendations During Construction)	None	None	Site Specific Health and Safety Plan Recommended Additional Sampling and Stockpiling of Material to Confirm Material Type RCRA Non-Hazardous Waste Disposal Required for Excavated Material Clean Fill Required	Site Specific Health and Safety Plan Recommended Additional Sampling and Stockpiling of Material to Confirm Material Type RCRA Non-Hazardous Waste Disposal Required for Excavated Material Clean Fill Required	None
Potential Hazardous Material and/or Petroleum Product Sites Impacted	None	None	Ohio Ferro Alloys Site	Ohio Ferro Alloys Site 524 Main Street (Potential LUST)	None
Cultural Resources Impacted	None	None Anticipated	None Anticipated	None Anticipated	None Anticipated
Wetlands or Streams Impacted	None	Muskingum River	Muskingum River	Muskingum River Sycamore Hollow	Muskingum River

Table 8: Alternative Comparison Matrix

Evaluation Factor	No Build Alternative	Existing Alignment Alternative	Alternative A – Mound Road	Alternative B – Millers Lane	Alternative C – Bridge Street
Preliminary Waterway Permit Impact Length (For Causeway Construction)	None	135'	260'	260'	135'
Preliminary Coast Guard Coordination	None	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided	150' x 28' Clearance Opening or Larger Provided
Threatened or Endangered Species	None	Eastern Sand Darter	Eastern Sand Darter	Eastern Sand Darter	Eastern Sand Darter
Within National Register of Historic Places District	None	Yes	Yes	Yes	Yes
Historic Bridge Impacts	None	None	None	None	None
Stakeholder/Public Impact Following Completion of Construction					
Impacts to Pedestrians Between Philo and Duncan Falls	No Changes	Improved Pedestrian Facilities Along Bridge Street	2500' Walk Along Old River Road to Access Propose River Crossing	3600' Walk Along Old River Road to Access Propose River Crossing	100' Shorter Walk, Improved Pedestrian Facilities Along Bridge Street
Impacts to Businesses	No Changes in Traffic Patterns	No Changes in Traffic Patterns	Changes in Traffic Patterns	Changes in Traffic Patterns	No Changes in Traffic Patterns
Impacts to Schools	No Changes in Bus Routes	No Changes in Bus Routes	Improved Access to Duncan Falls Elementary School; Reduced Access to Athletic Facilities	Improved Access to Philo High School; Reduced Access to Athletic Facilities	No Changes in Bus Routes
Preliminary Costs					
Total Construction Costs	\$0.00	\$15,354,000.00	\$16,504,000.00	\$16,690,000.00	\$17,171,000.00
Right of Way Costs	\$0.00	\$138,000.00	\$382,000.00	\$127,000.00	\$225,000.00
Right of Way Admin Costs (\$5000/Parcel)	\$0.00	\$25,000.00	\$50,000.00	\$55,000.00	\$35,000.00
Total Project Costs	\$0.00	\$15,517,000.00	\$16,936,000.00	\$16,872,000.00	\$17,431,000.00
Old River Road Improvement Costs (No funding source has been identified)	\$0.00	\$0.00	\$770,000.00	\$981,000.00	\$0.00
Grand Total All Improvements	\$0.00	\$15,517,000.00	\$17,706,000.00	\$17,853,000.00	\$17,431,000.00

Table 8: Alternative Comparison Matrix

XIII. Recommendations

Conclusion

The existing Philo Bridge (MUS-CR32-0.00) over the Muskingum River is Structurally Deficient and Functionally Obsolete. The purpose of this Feasibility Study was to evaluate alternatives to provide a crossing over the Muskingum River which will continue to provide cross-river mobility and community connectivity between Philo and Duncan Falls.

A No-Build Alternative and four Build Alternatives that replaced the existing river crossing were evaluated. The proposed Build Alternatives included the Existing Alignment Alternative, Alternative A – Mound Road, Alternative B – Millers Lane, and Alternative C – Bridge Street. The No-Build Alternative consisted of maintaining the current alignment and structure. In this alternative, design improvements were not applied to the structure or approach roadway with this project. Given the poor condition and load restrictions, it was determined that the No-Build Alternative did not satisfy the purpose and need of this project. As such, this alternative was not considered feasible.

Although it is the least cost option, the Existing Alignment Alternative will require long-term traffic disruption for the traveling public during construction. Many local residents and businesses rely on the crossing to perform daily functions such as traveling to work or school, obtaining food or gas, and receiving emergency services. The anticipated two year construction time frame was projected to result in large road user costs. Given the substantial importance of this crossing to the neighboring communities, a lengthy closure was considered not acceptable. Therefore, this alternative was considered not feasible.

Following construction, traffic pattern changes are likely to occur in alternatives that shift the river crossing upstream of the existing bridge. Some local areas may experience an increase in traffic such as Mound Road or Millers Lane, while other areas like Bridge Street may experience a decrease in traffic. Changes in traffic patterns will likely influence future business changes in the area. Alternative C was not expected to experience these traffic pattern changes as the tie-in points are effectively the same as the existing conditions.

Among the remaining Build Alternatives (Alternatives A, B, and C), right of way impacts were relatively similar. Alternative A was anticipated to require four total takes of adjacent property, two residential, one business, and one vacant lot, while Alternatives B and C were only anticipated to require at least two total takes, one vacant lot and one former business, and one current business and one former business, respectively. Alternative B was anticipated to require slightly more acreage than Alternative C, 2.40 acres compared to 2.34 acres; however, Alternative A required the most new right of way at 3.51 acres.

Environmental and ecological literature reviews, along with Phase I and Phase II ESAs have been completed for the study. While the results of the literature review indicated that several important environmental or ecological features were present within or near the project area, only a few were impacted by the proposed Build Alternatives. Since all alternatives include demolition of the existing structure, all had the potential for impacts to the eastern sand darter which may be located near the existing dam. Additionally, Alternative B was anticipated to impact the property at 524 Main Street, a vacant lot, which has potential to encounter Leaking Underground Storage Tanks (LUST).

The primary area of environmental concern was the former Ohio Ferro Alloys site which was impacted by Alternatives A and B. It was recommended that site-specific health and safety plans be in place during construction of Alternative A and B, and any excavated material be stockpiled for sampling to confirm the material is manageable as non-hazardous waste under RCRA prior to offsite disposal. Alternative C did not impact the site, so no environmental restrictions were anticipated to be required.

Alternative C was unique in that this alternative required a second structure to carry the roadway over a water inlet to a former electric facility. This second structure was initially anticipated to be a single span structure approximately 125' in length, located just south of the Muskingum River structure. The County has expressed interest in utilizing a proposed culvert to cross the inlet. The culvert option required additional permitting due to the impacts to the exiting water inlet; however, further conversations with ODOT officials indicate the culvert option may be feasible. Additional investigation and coordination into the recommended structure type for both the Muskingum River structure and the water inlet structure will be performed during the Structure Type Study portion of the project. Given the close proximity to the existing alignment and creation of a new access point to the strip of land between the water inlet and the Muskingum River, Alternative C included the removal of the existing single span structure (SFN 6034330) located just south of the existing Muskingum River Bridge. Alternative C was also anticipated to require the removal of an existing unused electric tower near the southeast corner of the existing bridge. Additional coordination will be required to determine the exact impacts of the proposed improvement.

Relocation of the structure west of the existing structure in Alternatives A and B will tie-in to Old River Road. The existing windy road is narrow with little to no shoulder width and steep slopes on both sides of the roadway. The relocation of the river crossing was projected to greatly increase traffic on the section of Old River Rd between the existing crossing and the proposed alignment. As a result, safety improvements were anticipated to be needed for this section of Old River Road. While the extent of improvement is not yet known, the approximate costs for the Old River Road improvements were estimated based on similar roadway improvement projects. While the physical roadway improvements were expected to be contained within the existing 40' right of way, temporary easements would be necessary for grading. Due to the existing rock face along much of the south side of Old River Road, the majority of the widening and right of way impacts were anticipated to be along the north side of the road. Approximately 25' of temporary easement was expected to be necessary to encompass the widening, with much of the land located within the 100 year flood plain. Potential impacts to the former Ohio Ferro Alloy site and Indiana bat or Northern long eared bat roost trees exist along the Old River Road improvement corridor. Additional coordination would be required during the development of the Old River Road improvement plans if Alternative A or B were furthered for detailed design.

After considering all the major factors involved with this project the preferred alternative was found to be Alternative C – Bridge Street, shown in Figure 10. While the initial project costs were the highest of the feasible alternatives, the complete improvement costs, which included Old River Road improvements performed outside of this project, were the least of the feasible alternatives. Additionally, Alternative C maintains relatively the same tie-in points as the existing crossing resulting in little to no impacts to future traffic patterns. Given the close proximity to the current structure, Alternative C retains many of the community access features associated with the existing alignment. However, Alternative C avoid the major access disruption during construction as the existing structure can be maintained while the proposed work is completed.

Preferred Alternative

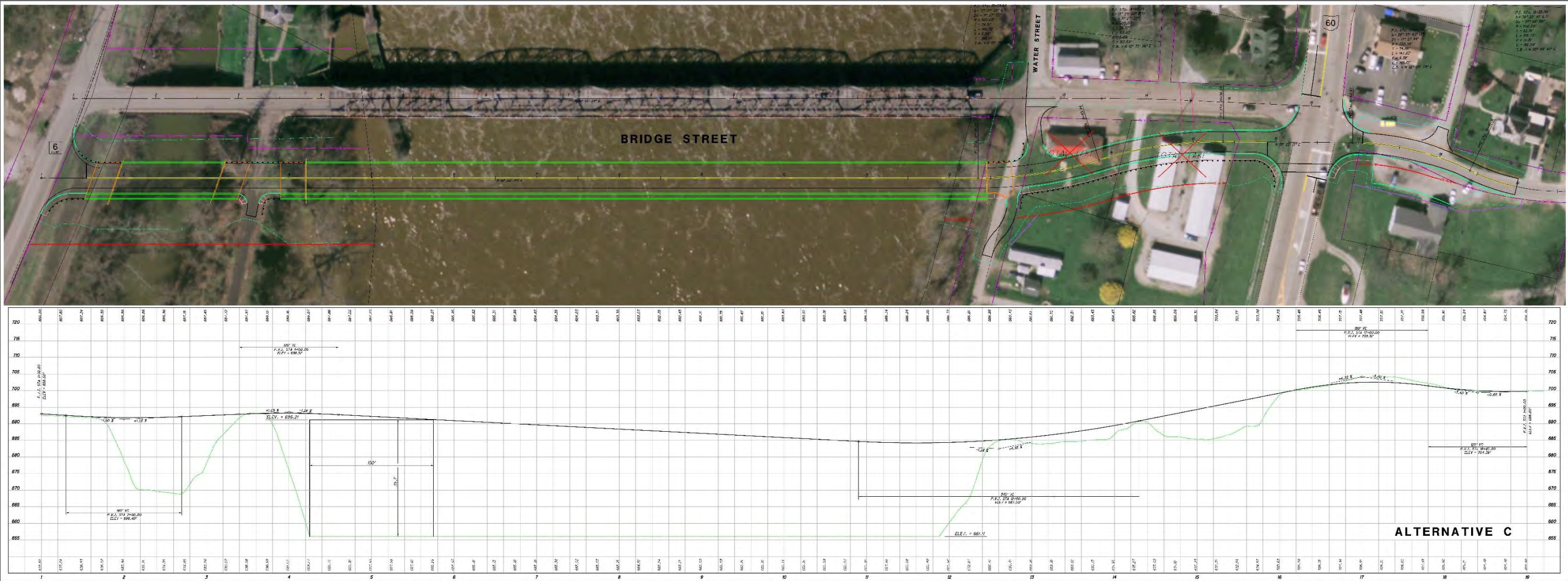


Figure 10: Preferred Alternative

Next Steps/Schedule

Following completion of this study, a public involvement meeting will be held. The results of the study data will be shared with local community members and stakeholders. After the public meeting, a recommended alternative will be selected and furthered for design in the next phase of the project. Currently, County officials are working with ODOT representatives to determine if portions of the environmental and right of way process can be expedited to construct the project sooner.

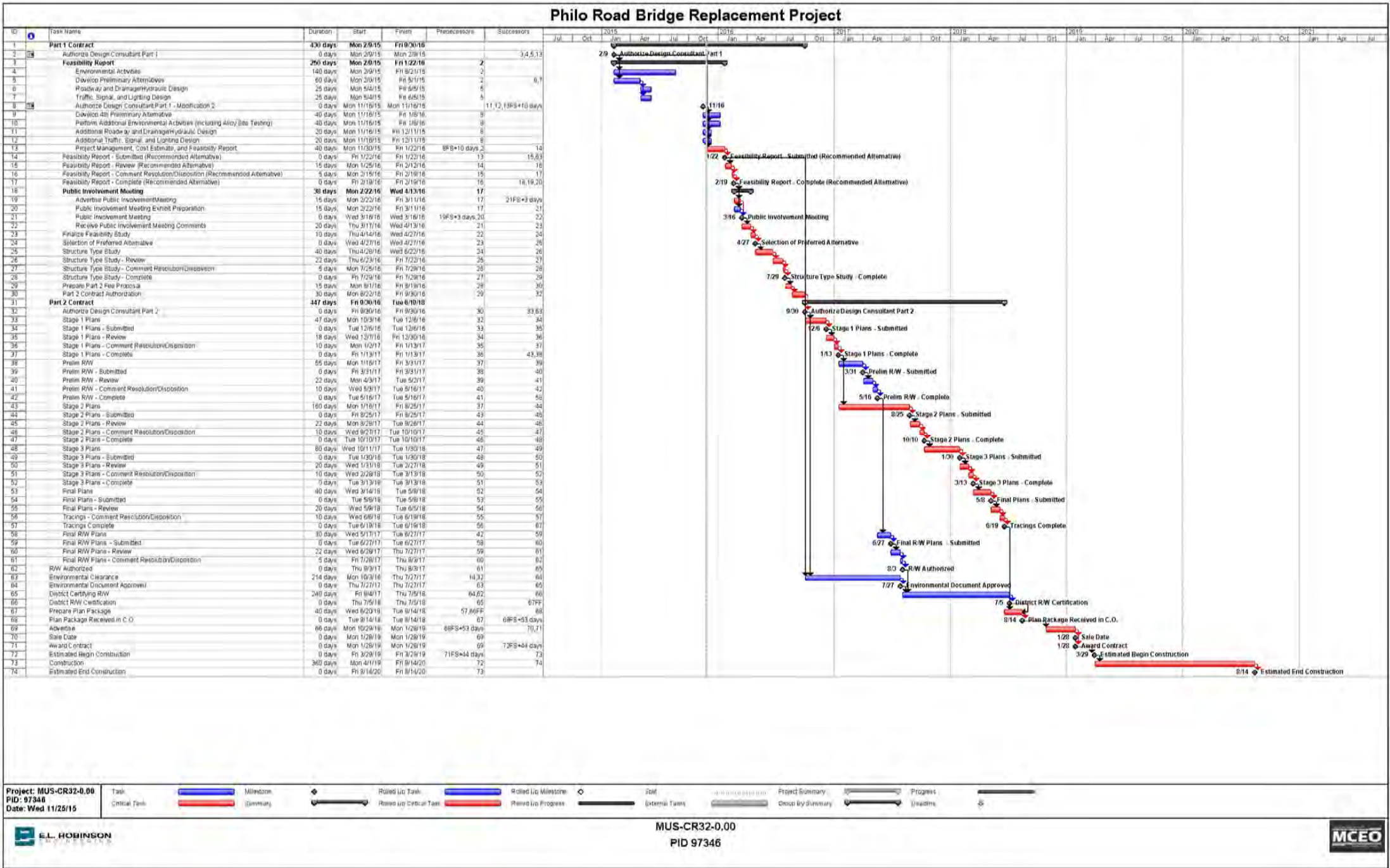


Figure 11: Project Schedule

APPENDICES

- APPENDIX A PROJECT INITIATION PACKAGE
- APPENDIX B TRAFFIC DATA, VOLUME CALCULATIONS
- APPENDIX C TYPICAL SECTIONS
- APPENDIX D ALTERNATIVES EXHIBITS (UNBOUND ROLL PLOTS INCLUDED)
- APPENDIX E PUBLIC INVOLVEMENT DOCUMENTS
- APPENDIX F COST ESTIMATES
- APPENDIX G ENVIRONMENTAL REPORTS (SEPARATELY BOUND REPORT)
- APPENDIX H UNITED STATES COAST GUARD COORDINATION
- APPENDIX I UNITED STATES ARMY CORPS OF ENGINEERS COORDINATION
- APPENDIX J AT&T UTILITY RELOCATION COORDINATION
- APPENDIX K PREVIOUS STRUCTURE MAINTENANCE COSTS

Project Initiation Package

Instructions

- The Project Initiation Package is intended to focus on critical issues that can be identified with existing information from secondary sources or identified during a site visit.
- Each specialty area of the Project Initiation Package should be completed by individuals who possess sufficient experience to enable them to correctly identify and evaluate issues arising from the field review.
- In the Location/Comments field provide information concerning potential impacts that is brief, but gives enough detail to allow an understanding of the issue(s).
- The scope of services document should account for any issues identified in the Project Initiation Package that have the potential to affect scope, schedule, and budget.
- A list of resources that may need to be consulted in order to complete this form can be found on the PDP website.

Project Initiation Package Deliverables

Provide an expanded Study Area Map identifying project design, utility, right of way and environmental constraints identified through the Project Initiation Package. Tables, photographs or other support material may also be submitted with the Project Initiation Package to illustrate specific problem areas. =

General

Date(s) of field review:	
--------------------------	--

Project Name (County, Route, Section):	MUS-CR32-0.00	PID:	97346
Date Project Initiation Package Completed:	3/18/2014	Prepared By:	Randy Comisford
City, Township or Village Name(s):	Muskingum County	ODOT Project Manager:	Randy Comisford

Project Description: Replacement of deficient bridge on Muskingum County Road 32 (Philo Bridge) over Muskingum River.

Project Limits/Study Area/General Location: 2000' North of Miller Avenue to existing bridge structure

ODOT DISCIPLINE INVOLVEMENT:		
List name and phone number of individual(s) representing each discipline during the site visit and preparation of the Project Initiation Package. One individual may represent multiple disciplines.		
DISCIPLINE	NAME	PHONE NUMBER
ODOT Manager	Randy Comisford	740-323-5184
Muskingum County Engineer	Doug Davis	740-454-0155
ODOT Environmental	Amy Toohey	740-323-5191
ODOT Construction Monitor	Peggy Hatem	740-323-5246
ODOT Right-of-Way	Michele Sines	740-323-5426

Project Initiation Package

EXTERNAL AGENCY INVOLVEMENT:		
Indicate external agency involvement during identification of project issues affecting scope development. List the name and phone number of individual(s) representing each agency during the site visit.		
AGENCY	NAME	PHONE NUMBER
FHWA Engineer		
*** The FHWA Engineer should be invited on projects expected to require approval from Federal Highway Administration.		

GENERAL EXISTING INFORMATION:	
Legal Speed:	55
Design Speed:	35
Opening Year ADT:	
Design Year ADT:	4384
Trucks (24 Hour B&C):	
Functional Classification:	Local Road
Locale (Rural or Urban):	Urban
National Highway System (NHS):	No

ODOT COUNTY MANAGER CONCERNS:
List any comments/requests from the ODOT County Manager.

CRASH DATA:
Briefly summarize crash history. Indicate any design features that should be revised to increase safety.
None available.

ENVIRONMENTAL ISSUES:	
Make a preliminary determination on whether the following resources will be affected by the proposed project. Include the location and any other pertinent information for resources that may be affected.	
Resource/Feature	Location/Comments
Parkland, nature preserves and wildlife areas	No
Cemetery	No
Scenic River	Yes
Public Facilities	No
Threatened and Endangered Species and/or habitat	Yes
Existing cat tails	No
Existing wet areas	No
Streams, rivers and watercourses	Muskingum River / Sycamore Hollow
Historic Building(s)	No

Project Initiation Package

ENVIRONMENTAL ISSUES:	
Make a preliminary determination on whether the following resources will be affected by the proposed project. Include the location and any other pertinent information for resources that may be affected.	
Resource/Feature	Location/Comments
Historic Bridge(s)	Possible
Farmland	Yes
Air Quality non-attainment area or concerns	No
Landfill(s), Superfund Site(s) and/or evidence of hazardous materials	Yes
Known Archaeological Sites	No
Watershed Specific (i.e. Darby or Olentangy) NPDES Permit Area	No
Sensitive environmental justice areas	No
Federal Emergency Management Agency (FEMA) floodplains	No
Lake Erie Coastal Management Area	No
Sole Source Aquifers	No
Wellhead Protection Areas	No
Noise abatement issues	No
Other environmental issues	Yes

GEOMETRIC ISSUES:	
Use the design speed, design functional classification and available traffic data to make a preliminary determination as to the geometric standards for the project. Compare these requirements to crash data and impacts if deviations from standard are being considered.	
Design Feature	Location/Comments
Lane Width	12'
Graded Shoulder Width	10'
Bridge Width	44'
Horizontal Alignment (including Excessive Deflections, Degree of Curve, Transition/Taper Rates, Intersection Angles, etc.)	None
Vertical Alignment (including grade breaks)	No
Grades	No
Stopping Sight Distance	OK
Pavement Cross Slopes	n/a
Superelevation (Maximum rate, transition, position)	n/a
Horizontal Clearance	n/a
Vertical Clearance	n/a
GEOMETRIC ISSUES:	
Indicate if the following geometric issues are present or should be considered during project development. Consider work on the mainline as well as any side roads or service roads. Provide additional comments as needed.	
Design Issue	Location/Comments
Does intersection sight distance need to be improved?	Need to investigate with relocation of bridge
Are there geometric issues that may affect traffic safety? Describe.	Intersection on to Muskingum County Road 6

Project Initiation Package

GEOMETRIC ISSUES:	
Use the design speed, design functional classification and available traffic data to make a preliminary determination as to the geometric standards for the project. Compare these requirements to crash data and impacts if deviations from standard are being considered.	
List unprotected hazards that appear to be in the clear zone.	None
Should existing access control be revised to improve safety?	Yes
Are there any drive locations that will require special attention during design (e.g., very steep grades, high volume commercial drives, drives close to bridges or intersections)?	Yes – East of Enterprise
Do the existing intersection radius returns need to be modified to accommodate turning movements of large trucks?	Yes
Does grading need to be upgraded? To what criteria (e.g., clear zone, safety, standard)? Consider potential right of way and other impacts when considering grading method.	Yes
Are there any other geometric issues? Describe	Possible turn lanes on either side of structure

GEOTECHNICAL ISSUES	
Based on the information compiled during this study indicate whether or not the following geotechnical issues are present or should be further considered during project development. Provide additional comments as needed.	
Design Issues	Location/Comments
Is there evidence of soil drainage problems (e.g., wet or pumping subgrade, standing water, the presence of seeps, wetlands, swamps, bogs)?	No
Will construction be impacted based on the groundwater table?	No
Is there evidence of any embankment or foundation problems (e.g., differential settlement, sag, foundation failures, slope failures, scours, evidence of channel migrations)?	No
Is there evidence of any slope instability (soil or rock)?	No
Is there evidence of unsuitable materials (e.g., presence of debris or man-made fills or waste pits containing these materials, indications from old soil borings)?	Yes
Is there evidence of rock strata (e.g., presence of exposed bedrock, rock on the old borings)?	Yes – County Road 6 side of river
Is there evidence of active, reclaimed or abandoned surface mines?	No
Is there information pertaining to the existence of underground mines?	No
Is there Acid Mine Drainage present within the study area?	No

Project Initiation Package

GEOTECHNICAL ISSUES	
<i>Based on the information compiled during this study indicate whether or not the following geotechnical issues are present or should be further considered during project development. Provide additional comments as needed.</i>	
Are there any other geotechnical issues? <i>Specify.</i>	No

PAVEMENT ISSUES:	
<i>Indicate if the following pavement issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Provide additional comments as needed.</i>	
Design Issue	Location/Comments
Do dynaflect tests indicate the existing pavement is in poor condition?	No
Are joint repairs needed?	No
Are pressure relief joints needed?	No
Does curb need to be replaced due to deteriorated condition or lack of curb reveal?	No
Does sidewalk need to be replaced or installed?	No
Has the site received repeated resurfacings in recent years?	n/a
Does pavement deterioration appear to be caused by drainage or geotechnical problems?	n/a
Are there any other pavement issues? <i>Specify.</i>	No

STRUCTURAL ISSUES:	
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. The Bridge Inspection reports should be evaluated and attached. Provide a separate table for each structure.</i>	
Structure Number:	
Design Issue	Location/Comments
Is it possible for the structure to be replaced with a prefabricated box culvert or 3-sided box?	No
Is the deck delaminated? <i>Specify.</i>	Bridge to be replaced
Is non-destructive testing needed to determine the amount of delamination?	n/a
Are there areas to be patched/repared on the deck?	n/a
Is the bridge a poor candidate for an overlay? <i>Specify type of overlay if known.</i>	n/a
Does the bridge rail violate current standards?	n/a
Is fatigue analysis required?	n/a
Should all fatigue prone details be retrofitted or replaced? <i>Specify.</i>	n/a
Is there any evidence of substructure movement (e.g., settlement, rotation)?	n/a
Is elimination of the deck joint possible? What modifications are necessary?	n/a
Is it possible for the hinges to be removed to make the members continuous?	n/a
Is there any evidence that the bridge does not meet hydraulic capacity?	n/a
Are there existing sidewalks on or adjacent to the bridge?	Yes

Project Initiation Package

STRUCTURAL ISSUES:	
<i>Indicate if the following structure issues are present or should be considered during project development. Provide additional comments as needed. The Bridge Inspection reports should be evaluated and attached. Provide a separate table for each structure.</i>	
Structure Number:	
Design Issue	Location/Comments
Is Vandal Protection Fencing required in accordance with the BDM?	No
Will the structure work require any special maintenance of traffic (e.g., closing of roadway for erection of beams, maintenance of waterway traffic, location of cut line, etc.)? <i>Specify.</i>	Yes
Does the bridge need to accommodate future roadway lanes or railroad tracks?	No
Will temporary shoring be required next to the railroad?	No
Describe any issues with the bridge deck (curb, sidewalk, railing, surface, median, drainage, expansion joints, etc.).	n/a
Describe any issues with the bridge superstructure (alignment, beams/girders/slab, bearing devices, etc.).	n/a
Describe any issues with the bridge substructure (abutments, piers, backwalls, wingwalls, scour, etc.).	n/a
Describe any issues with the channel (i.e. alignment, erosion, etc.)	n/a
Describe any issues with the bridge approaches (i.e. pavement, guardrail, etc.)	n/a
Are there any other structure related issues? <i>Specify.</i>	n/a

HYDRAULIC ISSUES:	
<i>Indicate if the following drainage issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Any available Culvert Inspection reports should be evaluated and attached. Provide additional comments as needed.</i>	
Design Issue	Comments
Does the existing drainage system appear to be appropriately sized and functioning properly? <i>Describe deficiencies.</i>	Yes
Is there evidence of alignment or flow velocity problems (e.g., scour, bank erosions, silting) at culvert inlets or outlets?	No
Are there sinkholes or other deterioration in the pavement that would indicate separations in the existing pipes?	No
Is the exposed curb height in existing gutters inadequate to contain flow (include height of proposed resurfacing)?	n/a
Does the project affect a wetland or waterway (e.g., stream, river, jurisdictional ditch)?	No
Will channel relocation be required?	No
Will post construction BMPs be required that could impact R/W or utilities?	No
Are existing underdrain outlets functioning properly?	n/a

Project Initiation Package

HYDRAULIC ISSUES:	
<i>Indicate if the following drainage issues are present or should be considered during project development. Side road and service road work should be considered in this assessment. Any available Culvert Inspection reports should be evaluated and attached. Provide additional comments as needed.</i>	
Does the drainage work warrant any special maintenance of traffic considerations?	Possible
Are there any other hydraulic issues? <i>Describe.</i>	No

TRAFFIC CONTROL ISSUES:	
<i>Indicate if the following traffic control (signals, signing, pavement markings, etc.) issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Design Issue	Comments
Are there any obvious deviations from requirements of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD)?	No
Will coordination with Ohio Rail Development Commission (ORDC) be required (i.e. at-grade railroad crossings located within 400' of an intersection within the project area)?	No
Is the project considered an ITS project?	No
Will pavement widening affect pole locations?	No
Will resurfacing affect signal height?	No
Does it appear that any traffic control items will fall outside the existing right of way limits (e.g., large signs, strain poles)?	Yes
Are there any crashes that can be related to existing signal deficiencies (e.g., timing, lack of turn lanes)?	No
Are new or updated curb ramps needed?	Possible
Do turn lane lengths appear to have sufficient storage capacity?	n/a
Does the controller need to be upgraded?	Yes
Do proprietary materials need to be specified?	No
Should signs or signal installations be supplemented with lighting?	No
Are any Tourist Oriented Directional Signs (TODS) or LOGO signs present?	No
If traffic control at an intersection is being changed from stop control to signalization, does the stop condition road need to be upgraded to accommodate faster traffic?	No
Are there any other traffic control issues? <i>Specify.</i>	No

Project Initiation Package

MAINTENANCE OF TRAFFIC ISSUES:
<i>Briefly describe the maintenance of traffic and any constraints. A list of considerations has been provided below.</i>
Maintenance of Traffic Considerations: Limits on traffic detour (including local alternate detours) due to load limits, bridge width restrictions, shoulder condition, emergency vehicle impact, temporary pavement requirements, speed limit during construction, pedestrian traffic, additional width at culverts, drive access, stopping sight distance, construction access, right of way acquisition, permitted lane closures, cross-overs, short duration road closures, temporary structure requirements, additional signal heads (drives and/or side roads), construction timeframe issues, innovative contracting, maintaining railroad traffic, turn movement restrictions
MAINTENANCE OF TRAFFIC DESCRIPTION:
Maintain Connectivity during construction Maintain River Traffic during construction

RIGHT OF WAY/SURVEY ISSUES:	
<i>Indicate if right of way or survey issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Design Issue	Location/Comments
Will there be any work beyond the existing right of way limits?	Yes
Will relocation of residences be involved?	Yes
Will relocation of businesses be involved?	No
Will the project require modifying the access control to any properties?	Possible
Identify significant right of way encroachments (i.e. large commercial business signs, etc.)?	No
Will temporary parcels be needed (e.g., for drive work)?	Possible
Will additional right of way be needed for utility relocations?	Possible
Are there any specific property owner concerns? If so, list property owners and concerns.	No
Are work agreements prohibited for any reason?	Yes
Are there any other right of way or survey issues? <i>Specify.</i>	No

UTILITY ISSUES:	
<i>Indicate if the following utility issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Design Issue	Location/Comments
Do existing utilities need to be relocated? <i>If so, please identify.</i>	Possible
Would the project benefit from Subsurface Utility Engineering (SUE) Level A?	Yes
Are there existing utilities on an existing structure that need to be relocated?	Yes
Are there any specific utility requirements or concerns? <i>Specify.</i>	No
Are there water or sanitary lines that will be relocated as part of the ODOT contract?	No

Project Initiation Package

UTILITY ISSUES:	
<i>Indicate if the following utility issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Design Issue	Location/Comments
Are there any other utility issues? <i>Specify.</i>	No

MISCELLANEOUS ISSUES:	
<i>Indicate if the following issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Design Issue	Location/Comments
Will any of the construction activity take place over, under, or near railroad property?	No
Could material with long lead times for delivery have an impact on the construction schedule (e.g., strain poles, large box culverts, steel beams, etc.)?	No
Are there any specific concerns related to pedestrian or bicycle access?	No
Are there any concerns related to existing or proposed lighting (e.g., light trespass, river navigation, airway clearance)?	No
Are there any other project concerns? <i>Specify</i>	No

PERMIT ISSUES:	
<i>Indicate if the following permit issues are present or should be considered during project development. Provide additional comments as needed.</i>	
Issue	Location/Comments
Will an individual Corps of Engineers/ Environmental Protection Agency 404/401 permit be required?	Yes
Will a Coast Guard permit be required?	Yes
Is review by a local public agency or project sponsor required? <i>Specify.</i>	Yes
Is State Historic Preservation Office (SHPO) coordination for work involving historic bridges or historic properties required?	Yes
Is coordination with ODNR for work involving State Scenic Rivers, State Wildlife Areas or State Recreational Areas required?	Yes
Is coordination with any other agency required?	Yes

SCOPE, SCHEDULE AND BUDGET CONSIDERATIONS:	
<i>Based on the responses to the above items, do any of the following need to be modified?</i>	
Issue	Comments
Conceptual scope	
Work limits	
Probable environmental document type	CE-2
Project Path classification	Path 3
Schedule	2019
Budget	Estimated total cost \$15 million



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

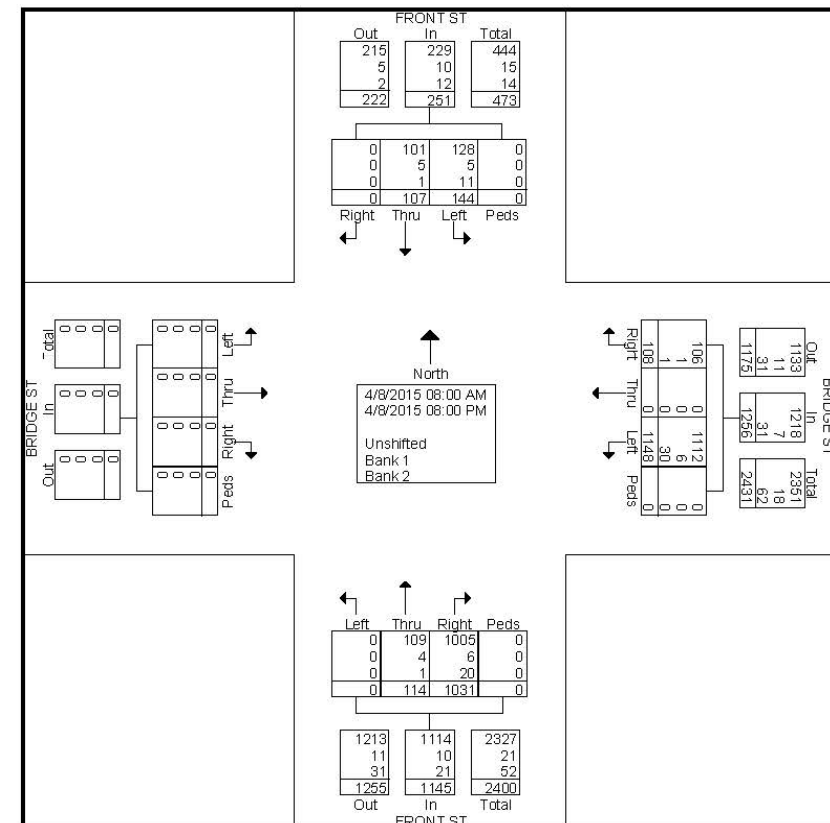
Groups Printed- Unshifted - Bank 1 - Bank 2																					
	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
08:00 AM	0	1	1	0	2	0	0	6	0	6	25	1	0	0	26	0	0	0	0	0	34
08:15 AM	0	0	0	0	0	2	0	4	0	6	16	2	0	0	18	0	0	0	0	0	24
08:30 AM	0	0	2	0	2	2	0	4	0	6	14	2	0	0	16	0	0	0	0	0	24
08:45 AM	0	1	3	0	4	1	0	10	0	11	26	2	0	0	28	0	0	0	0	0	43
Total	0	2	6	0	8	5	0	24	0	29	81	7	0	0	88	0	0	0	0	0	125
09:00 AM	0	0	5	0	5	3	0	18	0	21	20	0	0	0	20	0	0	0	0	0	46
09:15 AM	0	0	2	0	2	0	0	7	0	7	12	4	0	0	16	0	0	0	0	0	25
09:30 AM	0	1	1	0	2	3	0	12	0	15	18	1	0	0	19	0	0	0	0	0	36
09:45 AM	0	1	0	0	1	1	0	16	0	17	28	2	0	0	30	0	0	0	0	0	48
Total	0	2	8	0	10	7	0	53	0	60	78	7	0	0	85	0	0	0	0	0	155
10:00 AM	0	0	1	0	1	1	0	12	0	13	18	1	0	0	19	0	0	0	0	0	33
10:15 AM	0	1	0	0	1	0	0	14	0	14	21	3	0	0	24	0	0	0	0	0	39
10:30 AM	0	0	0	0	0	2	0	11	0	13	13	3	0	0	16	0	0	0	0	0	29
10:45 AM	0	0	2	0	2	1	0	4	0	5	17	0	0	0	17	0	0	0	0	0	24
Total	0	1	3	0	4	4	0	41	0	45	69	7	0	0	76	0	0	0	0	0	125
11:00 AM	0	2	3	0	5	2	0	15	0	17	9	1	0	0	10	0	0	0	0	0	32
11:15 AM	0	3	1	0	4	0	0	19	0	19	18	2	0	0	20	0	0	0	0	0	43
11:30 AM	0	1	2	0	3	2	0	19	0	21	19	1	0	0	20	0	0	0	0	0	44
11:45 AM	0	1	2	0	3	3	0	15	0	18	19	2	0	0	21	0	0	0	0	0	42
Total	0	7	8	0	15	7	0	68	0	75	65	6	0	0	71	0	0	0	0	0	161
12:00 PM	0	2	2	0	4	1	0	11	0	12	19	1	0	0	20	0	0	0	0	0	36
12:15 PM	0	0	2	0	2	1	0	15	0	16	18	1	0	0	19	0	0	0	0	0	37
12:30 PM	0	2	1	0	3	0	0	13	0	13	8	1	0	0	9	0	0	0	0	0	25
12:45 PM	0	0	2	0	2	2	0	12	0	14	24	3	0	0	27	0	0	0	0	0	43
Total	0	4	7	0	11	4	0	51	0	55	69	6	0	0	75	0	0	0	0	0	141
01:00 PM	0	1	1	0	2	0	0	27	0	27	14	1	0	0	15	0	0	0	0	0	44
01:15 PM	0	2	1	0	3	2	0	14	0	16	12	3	0	0	15	0	0	0	0	0	34
01:30 PM	0	2	0	0	2	1	0	11	0	12	11	1	0	0	12	0	0	0	0	0	26
01:45 PM	0	1	7	0	8	2	0	28	0	30	22	2	0	0	24	0	0	0	0	0	62
Total	0	6	9	0	15	5	0	80	0	85	59	7	0	0	66	0	0	0	0	0	166
02:00 PM	0	2	2	0	4	1	0	34	0	35	10	1	0	0	11	0	0	0	0	0	50
02:15 PM	0	3	3	0	6	1	0	29	0	30	56	0	0	0	56	0	0	0	0	0	92
02:30 PM	0	2	7	0	9	4	0	52	0	56	28	2	0	0	30	0	0	0	0	0	95
02:45 PM	0	4	3	0	7	2	0	26	0	28	23	6	0	0	29	0	0	0	0	0	64
Total	0	11	15	0	26	8	0	141	0	149	117	9	0	0	126	0	0	0	0	0	301
03:00 PM	0	1	4	0	5	0	0	27	0	27	29	3	0	0	32	0	0	0	0	0	64
03:15 PM	0	1	7	0	8	0	0	34	0	34	20	1	0	0	21	0	0	0	0	0	63
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	3	2	0	5	9	0	41	0	50	25	4	0	0	29	0	0	0	0	0	84
Total	0	5	13	0	18	9	0	102	0	111	74	8	0	0	82	0	0	0	0	0	211
04:00 PM	0	2	3	0	5	3	0	43	0	46	18	5	0	0	23	0	0	0	0	0	74
04:15 PM	0	8	5	0	13	3	0	34	0	37	18	2	0	0	20	0	0	0	0	0	70
04:30 PM	0	5	8	0	13	8	0	38	0	46	42	6	0	0	48	0	0	0	0	0	107
04:45 PM	0	3	8	0	11	2	0	44	0	46	40	4	0	0	44	0	0	0	0	0	101
Total	0	18	24	0	42	16	0	159	0	175	118	17	0	0	135	0	0	0	0	0	352
05:00 PM	0	4	10	0	14	8	0	43	0	51	36	1	0	0	37	0	0	0	0	0	102
05:15 PM	0	4	5	0	9	11	0	50	0	61	25	2	0	0	27	0	0	0	0	0	97
05:30 PM	0	2	6	0	8	1	0	35	0	36	30	2	0	0	32	0	0	0	0	0	76
05:45 PM	0	5	3	0	8	5	0	31	0	36	33	5	0	0	38	0	0	0	0	0	82
Total	0	15	24	0	39	25	0	159	0	184	124	10	0	0	134	0	0	0	0	0	357
06:00 PM	0	5	3	0	8	5	0	36	0	41	21	3	0	0	24	0	0	0	0	0	73
06:15 PM	0	1	3	0	4	3	0	34	0	37	29	5	0	0	34	0	0	0	0	0	75
06:30 PM	0	7	6	0	13	1	0	28	0	29	18	2	0	0	20	0	0	0	0	0	62



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Unshifted - Bank 1 - Bank 2																					
	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 PM	0	4	2	0	6	2	0	28	0	30	14	2	0	0	16	0	0	0	0	0	52
Total	0	17	14	0	31	11	0	126	0	137	82	12	0	0	94	0	0	0	0	0	262
07:00 PM	0	6	2	0	8	0	0	18	0	18	13	7	0	0	20	0	0	0	0	0	46
07:15 PM	0	3	4	0	7	1	0	34	0	35	25	1	0	0	26	0	0	0	0	0	68
07:30 PM	0	6	2	0	8	2	0	30	0	32	21	3	0	0	24	0	0	0	0	0	64
07:45 PM	0	1	2	0	3	2	0	39	0	41	20	5	0	0	25	0	0	0	0	0	69
Total	0	16	10	0	26	5	0	121	0	126	79	16	0	0	95	0	0	0	0	0	247
08:00 PM	0	3	3	0	6	2	0	23	0	25	16	2	0	0	18	0	0	0	0	0	49
Grand Total	0	107	144	0	251	108	0	1148	0	1256	1031	114	0	0	1145	0	0	0	0	0	2652
Apprch %	0	42.6	57.4	0		8.6	0	91.4	0		90	10	0	0		0	0	0	0		
Total %	0	4	5.4	0	9.5	4.1	0	43.3	0	47.4	38.9	4.3	0	0	43.2	0	0	0	0	0	
Unshifted	0	101	128	0	229	106	0	1112	0	1218	1005	109	0	0	1114	0	0	0	0	0	2561
% Unshifted	0	94.4	88.9	0	91.2	98.1	0	96.9	0	97	97.5	95.6	0	0	97.3	0	0	0	0	0	96.6
Bank 1	0	5	5	0	10	1	0	6	0	7	6	4	0	0	10	0	0	0	0	0	27
% Bank 1	0	4.7	3.5	0	4	0.9	0	0.5	0	0.6	0.6	3.5	0	0	0.9	0	0	0	0	0	1
Bank 2	0	1	11	0	12	1	0	30	0	31	20	1	0	0	21	0	0	0	0	0	64
% Bank 2	0	0.9	7.6	0	4.8	0.9	0	2.6	0	2.5	1.9	0.9	0	0	1.8	0	0	0	0	0	2.4





Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 1

Start Time	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
09:00 AM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
10:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	3
11:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
11:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	1	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
01:45 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	0	1	1	0	2	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	5
02:00 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
02:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	2	2	0	4	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	6
03:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Total	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 1

Start Time	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	5	5	0	10	1	0	6	0	7	6	4	0	0	10	0	0	0	0	0	27
Approch %	0	50	50	0		14.3	0	85.7	0		60	40	0	0		0	0	0	0		
Total %	0	18.5	18.5	0	37	3.7	0	22.2	0	25.9	22.2	14.8	0	0	37	0	0	0	0	0	



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 2

Start Time	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	3
Total	0	0	1	0	1	0	0	1	0	1	3	0	0	0	3	0	0	0	0	0	5
09:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	1	0	0	1	0	0	9	0	9	0	0	0	0	0	0	0	0	0	0	10
02:15 PM	0	0	0	0	0	0	0	2	0	2	11	0	0	0	11	0	0	0	0	0	13
02:30 PM	0	0	0	0	0	0	0	8	0	8	1	1	0	0	2	0	0	0	0	0	10
02:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	20	0	20	12	1	0	0	13	0	0	0	0	0	34
03:00 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
03:15 PM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	1	0	1	0	0	4	0	4	2	0	0	0	2	0	0	0	0	0	7
04:00 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	2	0	2	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	4
04:30 PM	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
04:45 PM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Total	0	0	7	0	7	0	0	3	0	3	2	0	0	0	2	0	0	0	0	0	12
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : FrontSt@BridgeSt_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 2

Start Time	FRONT ST Southbound					BRIDGE ST Westbound					FRONT ST Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	11	0	12	1	0	30	0	31	20	1	0	0	21	0	0	0	0	0	64
Apprch %	0	8.3	91.7	0		3.2	0	96.8	0		95.2	4.8	0	0		0	0	0	0		
Total %	0	1.6	17.2	0	18.8	1.6	0	46.9	0	48.4	31.2	1.6	0	0	32.8	0	0	0	0	0	



Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2																					
	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
08:00 AM	7	24	2	0	33	2	1	1	0	4	0	47	0	0	47	0	1	14	0	15	99
08:15 AM	7	25	2	0	34	2	1	2	0	5	0	53	1	0	54	0	1	13	0	14	107
08:30 AM	3	25	1	0	29	0	0	0	0	0	1	53	1	0	55	2	0	20	0	22	106
08:45 AM	7	22	0	0	29	0	1	2	0	3	0	71	3	0	74	5	1	23	0	29	135
Total	24	96	5	0	125	4	3	5	0	12	1	224	5	0	230	7	3	70	0	80	447
09:00 AM	8	29	2	0	39	3	5	2	0	10	1	43	2	0	46	1	0	18	0	19	114
09:15 AM	1	19	2	0	22	3	1	1	0	5	0	54	1	0	55	1	1	12	0	14	96
09:30 AM	5	34	1	0	40	4	0	0	0	4	1	42	0	0	43	2	1	17	0	20	107
09:45 AM	12	31	1	0	44	0	3	0	0	3	0	37	0	0	37	2	1	11	0	14	98
Total	26	113	6	0	145	10	9	3	0	22	2	176	3	0	181	6	3	58	0	67	415
10:00 AM	13	21	0	0	34	3	1	0	0	4	0	25	2	0	27	2	0	11	0	13	78
10:15 AM	13	32	0	0	45	2	0	0	0	2	0	47	3	0	50	0	0	12	0	12	109
10:30 AM	10	29	5	0	44	5	2	0	0	7	0	48	2	0	50	2	0	9	0	11	112
10:45 AM	9	29	1	0	39	2	0	2	0	4	0	46	0	0	46	2	0	10	0	12	101
Total	45	111	6	0	162	12	3	2	0	17	0	166	7	0	173	6	0	42	0	48	400
11:00 AM	12	26	1	0	39	2	1	2	0	5	0	39	2	0	41	2	1	7	0	10	95
11:15 AM	9	27	3	0	39	2	4	0	0	6	2	39	1	0	42	3	2	10	0	15	102
11:30 AM	12	35	2	0	49	3	1	0	0	4	2	39	1	0	42	0	0	18	0	18	113
11:45 AM	13	31	4	0	48	0	1	1	0	2	1	37	2	0	40	4	3	17	0	24	114
Total	46	119	10	0	175	7	7	3	0	17	5	154	6	0	165	9	6	52	0	67	424
12:00 PM	12	37	1	0	50	3	1	1	0	5	0	22	1	0	23	0	0	14	0	14	92
12:15 PM	14	37	0	0	51	4	2	4	0	10	0	40	1	0	41	1	1	15	0	17	119
12:30 PM	10	33	2	0	45	1	1	2	0	4	1	41	3	0	45	1	1	18	0	20	114
12:45 PM	10	32	0	0	42	3	0	4	0	7	0	37	0	0	37	1	2	10	0	13	99
Total	46	139	3	0	188	11	4	11	0	26	1	140	5	0	146	3	4	57	0	64	424
01:00 PM	7	27	0	0	34	0	5	1	0	6	0	28	1	0	29	2	1	8	0	11	80
01:15 PM	5	37	0	1	43	1	0	0	0	1	3	32	1	0	36	4	0	10	0	14	94
01:30 PM	14	47	0	0	61	0	2	0	0	2	4	42	4	0	50	1	0	21	0	22	135
01:45 PM	11	31	1	0	43	6	0	1	0	7	0	32	0	0	32	2	2	23	0	27	109
Total	37	142	1	1	181	7	7	2	0	16	7	134	6	0	147	9	3	62	0	74	418
02:00 PM	16	39	4	0	59	10	13	2	0	25	0	32	7	0	39	4	0	14	0	18	141
02:15 PM	31	52	8	0	91	0	4	1	0	5	0	40	2	0	42	3	6	33	0	42	180
02:30 PM	24	51	4	0	79	5	3	1	0	9	3	34	1	0	38	2	2	27	0	31	157
02:45 PM	32	35	0	0	67	2	2	0	0	4	1	37	1	0	39	2	3	18	0	23	133
Total	103	177	16	0	296	17	22	4	0	43	4	143	11	0	158	11	11	92	0	114	611
03:00 PM	17	48	4	0	69	2	4	1	0	7	0	20	3	0	23	2	2	24	0	28	127
03:15 PM	15	39	3	0	57	5	0	1	0	6	2	41	3	0	46	3	0	27	0	30	139
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	33	53	2	0	88	1	11	5	0	17	2	55	3	0	60	5	0	17	0	22	187
Total	65	140	9	0	214	8	15	7	0	30	4	116	9	0	129	10	2	68	0	80	453
04:00 PM	18	60	1	0	79	3	5	3	1	12	2	40	0	0	42	2	1	13	0	16	149
04:15 PM	27	67	7	0	101	4	3	5	0	12	0	37	4	0	41	4	6	19	0	29	183
04:30 PM	15	70	8	0	93	5	3	6	0	14	0	28	8	0	36	3	5	25	0	33	176
04:45 PM	26	89	8	0	123	10	5	4	0	19	2	34	2	0	38	9	6	16	0	31	211
Total	86	286	24	0	396	22	16	18	1	57	4	139	14	0	157	18	18	73	0	109	719
05:00 PM	31	79	9	0	119	11	4	7	0	22	0	35	2	0	37	2	2	29	0	33	211
05:15 PM	38	66	7	0	111	12	13	7	0	32	1	41	4	0	46	2	2	29	0	33	222
05:30 PM	45	64	9	0	118	5	8	4	0	17	3	47	2	0	52	4	3	25	0	32	219
05:45 PM	41	78	4	0	123	4	4	4	0	12	1	50	3	0	54	2	2	21	0	25	214
Total	155	287	29	0	471	32	29	22	0	83	5	173	11	0	189	10	9	104	0	123	866
06:00 PM	25	70	3	0	98	2	6	3	0	11	2	43	3	0	48	2	1	19	0	22	179
06:15 PM	28	66	2	0	96	3	7	1	0	11	1	40	9	0	50	8	3	14	0	25	182
06:30 PM	21	61	1	0	83	2	9	4	0	15	1	44	5	0	50	4	5	16	0	25	173



Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Unshifted - Bank 1 - Bank 2																					
	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 PM	24	59	0	0	83	2	3	2	0	7	0	20	5	0	25	4	2	30	0	36	151
Total	98	256	6	0	360	9	25	10	0	44	4	147	22	0	173	18	11	79	0	108	685
07:00 PM	14	45	3	0	62	1	4	6	0	11	5	27	2	0	34	1	2	19	0	22	129
07:15 PM	11	40	2	0	53	1	1	2	0	4	1	28	7	0	36	3	6	12	0	21	114
07:30 PM	18	50	4	0	72	0	2	4	0	6	0	21	6	0	27	4	1	14	0	19	124
07:45 PM	17	30	1	0	48	0	1	0	0	1	0	26	7	0	33	3	2	7	0	12	94
Total	60	165	10	0	235	2	8	12	0	22	6	102	22	0	130	11	11	52	0	74	461
08:00 PM	20	28	5	0	53	10	7	2	0	19	0	21	1	0	22	1	4	9	0	14	108
Grand Total	811	2059	130	1	3001	151	155	101	1	408	43	1835	122	0	2000	119	85	818	0	1022	6431
Apprch %	27	68.6	4.3	0		37	38	24.8	0.2		2.2	91.8	6.1	0		11.6	8.3	80	0		
Total %	12.6	32	2	0	46.7	2.3	2.4	1.6	0	6.3	0.7	28.5	1.9	0	31.1	1.9	1.3	12.7	0	15.9	
Unshifted	789	1943	121	1	2854	128	138	94	1	361	37	1690	119	0	1846	114	70	792	0	976	6037
% Unshifted	97.3	94.4	93.1	100	95.1	84.8	89	93.1	100	88.5	86	92.1	97.5	0	92.3	95.8	82.4	96.8	0	95.5	93.9
Bank 1	9	112	5	0	126	4	2	5	0	11	3	136	3	0	142	4	1	11	0	16	295
% Bank 1	1.1	5.4	3.8	0	4.2	2.6	1.3	5	0	2.7	7	7.4	2.5	0	7.1	3.4	1.2	1.3	0	1.6	4.6
Bank 2	13	4	4	0	21	19	15	2	0	36	3	9	0	0	12	1	14	15	0	30	99
% Bank 2	1.6	0.2	3.1	0	0.7	12.6	9.7	2	0	8.8	7	0.5	0	0	0.6	0.8	16.5	1.8	0	2.9	1.5



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 1

Start Time	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
08:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
08:45 AM	0	5	0	0	5	0	0	1	0	1	0	3	0	0	3	1	0	0	0	1	10
Total	0	13	0	0	13	0	0	1	0	1	0	8	0	0	8	1	0	0	0	1	23
09:00 AM	0	7	0	0	7	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	11
09:15 AM	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	12
09:30 AM	0	8	1	0	9	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	12
09:45 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
Total	0	20	1	0	21	0	0	0	0	0	1	15	0	0	16	1	0	1	0	2	39
10:00 AM	1	1	0	0	2	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	5
10:15 AM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
10:30 AM	2	3	2	0	7	0	0	0	0	0	0	3	1	0	4	1	0	1	0	2	13
10:45 AM	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7
Total	4	7	2	0	13	1	0	0	0	1	0	12	1	0	13	1	0	1	0	2	29
11:00 AM	0	4	0	0	4	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	9
11:15 AM	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	7
11:30 AM	0	3	0	0	3	0	1	0	0	1	0	5	0	0	5	0	0	0	0	0	9
11:45 AM	1	1	0	0	2	0	0	0	0	0	0	6	0	0	6	1	0	1	0	2	10
Total	1	11	0	0	12	0	1	1	0	2	0	19	0	0	19	1	0	1	0	2	35
12:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
12:15 PM	1	7	0	0	8	1	0	0	0	1	0	3	0	0	3	0	0	1	0	1	13
12:30 PM	0	1	0	0	1	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	4
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Total	1	11	0	0	12	1	0	0	0	1	1	10	1	0	12	0	0	1	0	1	26
01:00 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	6
01:30 PM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	9
01:45 PM	0	2	1	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
Total	0	9	1	0	10	0	0	0	0	0	0	11	0	0	11	0	0	2	0	2	23
02:00 PM	0	5	1	0	6	0	1	0	0	1	0	4	0	0	4	0	0	0	0	0	11
02:15 PM	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	8
02:30 PM	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	2	0	2	9
02:45 PM	1	4	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
Total	1	15	1	0	17	0	1	0	0	1	0	14	0	0	14	0	0	2	0	2	34
03:00 PM	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7
03:15 PM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	7
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Total	1	5	0	0	6	0	0	0	0	0	0	11	0	0	11	0	0	1	0	1	18
04:00 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
04:30 PM	0	3	0	0	3	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	5
04:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Total	0	9	0	0	9	0	0	1	0	1	0	4	0	0	4	0	0	1	0	1	15
05:00 PM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	6
05:45 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	6
Total	0	5	0	0	5	0	0	1	0	1	0	10	1	0	11	0	0	1	0	1	18
06:00 PM	0	1	0	0	1	0	0	0	0	0	1	6	0	0	7	0	0	0	0	0	8
06:15 PM	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	8
06:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 1

Start Time	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total	0	4	0	0	4	1	0	0	0	1	1	14	0	0	15	0	0	0	0	0	20
07:00 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
07:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
07:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
07:45 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	1	3	0	0	4	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	12
08:00 PM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	3
Grand Total	9	112	5	0	126	4	2	5	0	11	3	136	3	0	142	4	1	11	0	16	295
Apprch %	7.1	88.9	4	0		36.4	18.2	45.5	0		2.1	95.8	2.1	0		25	6.2	68.8	0		
Total %	3.1	38	1.7	0	42.7	1.4	0.7	1.7	0	3.7	1	46.1	1	0	48.1	1.4	0.3	3.7	0	5.4	



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 2

Start Time	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	1	0	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	4
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	3	0	3	5
Total	1	0	0	0	1	2	1	0	0	3	1	3	0	0	4	0	0	4	0	4	12
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	1	0	1	5
02:00 PM	0	0	0	0	0	9	9	0	0	18	0	0	0	0	0	0	0	0	0	0	18
02:15 PM	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	1	3	6	0	10	17
02:30 PM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
02:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
Total	8	2	0	0	10	9	10	0	0	19	0	0	0	0	0	1	4	6	0	11	40
03:00 PM	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	1	0	2	5
03:15 PM	0	0	1	0	1	1	0	0	0	1	1	1	0	0	2	0	0	2	0	2	6
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	1	2	1	0	4	0	3	2	0	5	1	0	0	0	1	0	0	0	0	0	10
Total	3	2	2	0	7	1	3	2	0	6	2	2	0	0	4	0	1	3	0	4	21
04:00 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
Total	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	7	0	0	7	10
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	4
05:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	1	1	0	2	6
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@BridgeSt_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 2

Start Time	SR 60 Southbound					BRIDGE ST Westbound					SR 60 Northbound					BRIDGE ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	13	4	4	0	21	19	15	2	0	36	3	9	0	0	12	1	14	15	0	30	99
Approch %	61.9	19	19	0		52.8	41.7	5.6	0		25	75	0	0		3.3	46.7	50	0		
Total %	13.1	4	4	0	21.2	19.2	15.2	2	0	36.4	3	9.1	0	0	12.1	1	14.1	15.2	0	30.3	



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

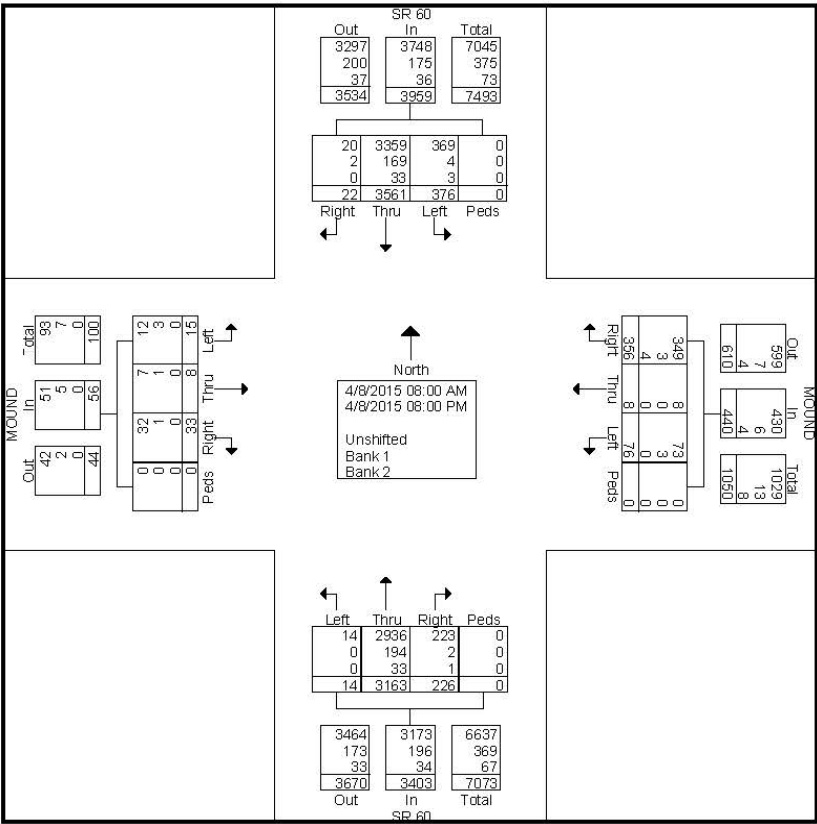
Groups Printed- Unshifted - Bank 1 - Bank 2																				
Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound				
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total
08:00 AM	0	33	7	0	40	19	0	0	0	19	1	84	0	0	85	1	0	1	0	2
08:15 AM	0	32	11	0	43	4	0	0	0	4	8	77	0	0	85	0	0	1	0	1
08:30 AM	0	31	13	0	44	4	0	1	0	5	3	76	0	0	79	0	0	0	0	0
08:45 AM	0	32	24	0	56	19	0	2	0	21	9	65	0	0	74	1	1	1	0	3
Total	0	128	55	0	183	46	0	3	0	49	21	302	0	0	323	2	1	3	0	6
09:00 AM	1	27	23	0	51	33	0	16	0	49	16	68	0	0	84	1	0	1	0	2
09:15 AM	0	53	5	0	58	7	0	2	0	9	2	67	0	0	69	0	0	0	0	0
09:30 AM	0	33	5	0	38	5	0	0	0	5	4	81	0	0	85	0	0	0	0	0
09:45 AM	0	30	4	0	34	3	0	2	0	5	1	53	0	0	54	0	0	0	0	0
Total	1	143	37	0	181	48	0	20	0	68	23	269	0	0	292	1	0	1	0	2
10:00 AM	0	55	5	0	60	3	1	2	0	6	3	57	1	0	61	0	0	0	0	0
10:15 AM	0	32	2	0	34	2	0	0	0	2	2	59	0	0	61	0	1	0	0	1
10:30 AM	2	29	3	0	34	5	0	1	0	6	5	66	0	0	71	0	0	0	0	0
10:45 AM	0	46	3	0	49	4	0	1	0	5	3	69	0	0	72	0	0	0	0	0
Total	2	162	13	0	177	14	1	4	0	19	13	251	1	0	265	0	1	0	0	1
11:00 AM	0	42	1	0	43	4	0	3	0	7	6	64	0	0	70	1	0	0	0	1
11:15 AM	0	54	3	0	57	4	0	3	0	7	4	56	0	0	60	2	0	1	0	3
11:30 AM	0	61	5	0	66	5	0	0	0	5	6	48	1	0	55	2	0	0	0	2
11:45 AM	0	51	3	0	54	6	0	1	0	7	2	51	0	0	53	0	0	1	0	1
Total	0	208	12	0	220	19	0	7	0	26	18	219	1	0	238	5	0	2	0	7
12:00 PM	0	48	5	0	53	2	0	1	0	3	4	42	0	0	46	0	0	0	0	0
12:15 PM	0	51	8	0	59	3	0	1	0	4	1	57	0	0	58	0	0	0	0	0
12:30 PM	0	57	7	0	64	9	0	1	0	10	2	55	0	0	57	1	0	1	0	2
12:45 PM	0	54	2	0	56	8	0	0	0	8	2	70	1	0	73	1	0	0	0	1
Total	0	210	22	0	232	22	0	3	0	25	9	224	1	0	234	2	0	1	0	3
01:00 PM	1	72	6	0	79	3	0	2	0	5	8	51	1	0	60	2	0	0	0	2
01:15 PM	0	52	1	0	53	2	0	1	0	3	6	55	0	0	61	1	0	1	0	2
01:30 PM	0	58	4	0	62	1	0	0	0	1	6	58	0	0	64	0	0	0	0	0
01:45 PM	1	64	4	0	69	7	0	0	0	7	5	55	0	0	60	0	0	0	0	0
Total	2	246	15	0	263	13	0	3	0	16	25	219	1	0	245	3	0	1	0	4
02:00 PM	1	60	8	0	69	3	1	0	0	4	1	51	0	0	52	2	0	0	0	2
02:15 PM	0	108	3	0	111	4	0	0	0	4	8	82	2	0	92	0	1	0	0	1
02:30 PM	1	119	7	0	127	12	0	2	0	14	3	77	0	0	80	0	0	2	0	2
02:45 PM	2	60	10	0	72	4	0	1	0	5	6	55	1	0	62	0	0	0	0	0
Total	4	347	28	0	379	23	1	3	0	27	18	265	3	0	286	2	1	2	0	5
03:00 PM	0	81	10	0	91	10	0	0	0	10	5	72	0	0	77	2	0	0	0	2
03:15 PM	2	83	13	0	98	8	0	0	0	8	14	70	0	0	84	2	0	1	0	3
03:30 PM	0	86	16	0	102	16	1	2	0	19	10	57	0	0	67	0	1	0	0	1
03:45 PM	1	121	10	0	132	41	0	5	0	46	7	58	1	0	66	2	0	0	0	2
Total	3	371	49	0	423	75	1	7	0	83	36	257	1	0	294	6	1	1	0	8
04:00 PM	0	97	7	0	104	5	1	1	0	7	6	49	0	0	55	1	0	0	0	1
04:15 PM	0	107	7	0	114	9	0	2	0	11	5	69	0	0	74	0	0	0	0	0
04:30 PM	0	147	16	0	163	4	1	1	0	6	2	79	0	0	81	1	1	0	0	2
04:45 PM	0	140	8	0	148	7	1	2	0	10	5	96	0	0	101	0	0	1	0	1
Total	0	491	38	0	529	25	3	6	0	34	18	293	0	0	311	2	1	1	0	4
05:00 PM	0	136	13	0	149	2	0	3	0	5	5	75	0	0	80	1	0	1	0	2
05:15 PM	2	170	15	0	187	5	0	3	0	8	5	67	0	0	72	1	0	0	0	1
05:30 PM	0	122	18	0	140	5	0	2	0	7	5	95	0	0	100	3	0	0	0	3
05:45 PM	0	135	7	0	142	6	2	2	0	10	3	72	0	0	75	0	0	0	0	0
Total	2	563	53	0	618	18	2	10	0	30	18	309	0	0	327	5	0	1	0	6
06:00 PM	1	104	12	0	117	6	0	1	0	7	4	54	0	0	58	2	0	0	0	2
06:15 PM	0	103	7	0	110	17	0	2	0	19	2	62	2	0	66	1	0	0	0	1
06:30 PM	0	89	9	0	98	7	0	0	0	7	2	62	0	0	64	1	2	0	0	3



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Unshifted - Bank 1 - Bank 2																				
Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound				
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total
06:45 PM	1	84	6	0	91	2	0	1	0	3	2	65	0	0	67	1	0	0	0	1
Total	2	380	34	0	416	32	0	4	0	36	10	243	2	0	255	5	2	0	0	7
07:00 PM	0	85	9	0	94	2	0	1	0	3	2	56	2	0	60	0	0	1	0	1
07:15 PM	1	70	1	0	72	6	0	0	0	6	4	70	2	0	76	0	0	0	0	0
07:30 PM	1	38	2	0	41	3	0	1	0	4	5	68	0	0	73	0	1	0	0	1
07:45 PM	1	55	1	0	57	6	0	1	0	7	3	73	0	0	76	0	0	0	0	0
Total	3	228	13	0	244	17	0	3	0	20	14	267	4	0	285	0	1	1	0	2
08:00 PM	3	84	7	0	94	4	0	3	0	7	3	45	0	0	48	0	0	1	0	1
Grand Total	22	3561	376	0	3959	356	8	76	0	440	226	3163	14	0	3403	33	8	15	0	56
Approch %	0.6	89.9	9.5	0		80.9	1.8	17.3	0		6.6	92.9	0.4	0		58.9	14.3	26.8	0	
Total %	0.3	45.3	4.8	0	50.4	4.5	0.1	1	0	5.6	2.9	40.3	0.2	0	43.3	0.4	0.1	0.2	0	0.7
Unshifted	20	3359	369	0	3748	349	8	73	0	430	223	2936	14	0	3173	32	7	12	0	51
% Unshifted	90.9	94.3	98.1	0	94.7	98	100	96.1	0	97.7	98.7	92.8	100	0	93.2	97	87.5	80	0	91.1
Bank 1	2	169	4	0	175	3	0	3	0	6	2	194	0	0	196	1	1	3	0	5
% Bank 1	9.1	4.7	1.1	0	4.4	0.8	0	3.9	0	1.4	0.9	6.1	0	0	5.8	3	12.5	20	0	8.9
Bank 2	0	33	3	0	36	4	0	0	0	4	1	33	0	0	34	0	0	0	0	0
% Bank 2	0	0.9	0.8	0	0.9	1.1	0	0	0	0.9	0.4	1	0	0	1	0	0	0	0	0.9





Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 1																				
Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound				
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total
08:00 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
08:15 AM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1
08:30 AM	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
08:45 AM	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1
Total	0	13	0	0	13	0	0	0	0	0	0	12	0	0	12	0	0	2	0	2
09:00 AM	1	6	0	0	7	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1
09:15 AM	0	10	0	0	10	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0
09:30 AM	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
09:45 AM	0	9	1	0	10	0	0	1	0	1	1	6	0	0	7	0	0	0	0	0
Total	1	30	1	0	32	0	0	1	0	1	1	18	0	0	19	1	0	0	0	1
10:00 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0
10:15 AM	0	6	0	0	6	0	0	0	0	0	0	9	0	0	9	0	1	0	0	1
10:30 AM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
10:45 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
Total	0	20	0	0	20	0	0	0	0	0	0	20	0	0	20	0	1	0	0	1
11:00 AM	0	2	0	0	2	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0
11:15 AM	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0
11:30 AM	0	3	1	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
11:45 AM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
Total	0	13	1	0	14	0	0	0	0	0	1	19	0	0	20	0	0	0	0	0
12:00 PM	0	6	0	0	6	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0
12:15 PM	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
12:30 PM	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
Total	0	18	0	0	18	0	0	1	0	1	0	17	0	0	17	0	0	0	0	0
01:00 PM	0	7	0	0	7	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0
01:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
01:30 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
01:45 PM	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
Total	0	15	0	0	15	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0
02:00 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
02:15 PM	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0
02:30 PM	0	1	1	0	2	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1
02:45 PM	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0
Total	0	12	1	0	13	0	0	0	0	0	0	23	0	0	23	0	0	1	0	1
03:00 PM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0
03:15 PM	0	4	0	0	4	1	0	0	0	1	0	8	0	0	8	0	0	0	0	0
03:30 PM	0	4	0	0	4	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0
03:45 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
Total	0	14	0	0	14	2	0	0	0	2	0	22	0	0	22	0	0	0	0	0
04:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
04:15 PM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
04:30 PM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
04:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Total	0	12	0	0	12	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0
05:00 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
05:15 PM	0	4	0	0	4	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0
05:30 PM	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
05:45 PM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
Total	0	13	0	0	13	0	0	1	0	1	0	18	0	0	18	0	0	0	0	0
06:00 PM	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0
06:15 PM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0
06:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 1																				
Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound				
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total
06:45 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	7	0	0	8	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
07:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0
08:00 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	169	4	0	175	3	0	3	0	6	2	194	0	0	196	1	1	3	0	5
Apprch %	1.1	96.6	2.3	0		50	0	50	0		1	99	0	0		20	20	60	0	
Total %	0.5	44.2	1	0	45.8	0.8	0	0.8	0	1.6	0.5	50.8	0	0	51.3	0.3	0.3	0.8	0	1.3



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 2

Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
08:45 AM	0	1	2	0	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	4
Total	0	2	2	0	4	0	0	0	0	0	1	6	0	0	7	0	0	0	0	0	11
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
09:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	8
02:15 PM	0	1	0	0	1	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	10
02:30 PM	0	10	0	0	10	2	0	0	0	2	0	3	0	0	3	0	0	0	0	0	15
02:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	12	0	0	12	2	0	0	0	2	0	20	0	0	20	0	0	0	0	0	34
03:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:15 PM	0	1	1	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
03:45 PM	0	4	0	0	4	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
Total	0	6	1	0	7	2	0	0	0	2	0	3	0	0	3	0	0	0	0	0	12
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
04:30 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	7	0	0	7	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@Mound_Combined
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 2

Start Time	SR 60 Southbound					MOUND Westbound					SR 60 Northbound					MOUND Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
08:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	33	3	0	36	4	0	0	0	4	1	33	0	0	34	0	0	0	0	0	74
Approch %	0	91.7	8.3	0		100	0	0	0		2.9	97.1	0	0		0	0	0	0		
Total %	0	44.6	4.1	0	48.6	5.4	0	0	0	5.4	1.4	44.6	0	0	45.9	0	0	0	0	0	



Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2																					
	SR 60 Southbound					MILLERS LN Westbound					SR 60 Northbound					MILLERS LN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
08:00 AM	0	29	1	0	30	1	0	4	0	5	5	74	1	0	80	0	0	2	0	2	117
08:15 AM	0	32	2	0	34	4	0	5	0	9	4	68	0	0	72	0	0	1	0	1	116
08:30 AM	0	42	3	0	45	1	1	7	0	9	5	72	0	0	77	0	1	1	0	2	133
08:45 AM	0	60	2	0	62	7	0	4	0	11	8	93	0	0	101	0	0	3	0	3	177
Total	0	163	8	0	171	13	1	20	0	34	22	307	1	0	330	0	1	7	0	8	543
09:00 AM	1	30	3	0	34	4	0	2	0	6	9	76	0	0	85	0	0	1	0	1	126
09:15 AM	0	34	1	0	35	5	0	5	0	10	4	49	0	0	53	0	0	2	0	2	100
09:30 AM	1	31	0	0	32	5	0	6	0	11	6	52	3	0	61	1	0	0	0	1	105
09:45 AM	0	26	1	0	27	1	1	7	0	9	2	58	0	0	60	0	0	2	0	2	98
Total	2	121	5	0	128	15	1	20	0	36	21	235	3	0	259	1	0	5	0	6	429
10:00 AM	0	23	1	0	24	4	0	6	0	10	4	46	0	0	50	1	0	0	0	1	85
10:15 AM	0	31	3	0	34	5	0	3	0	8	4	68	0	0	72	0	1	0	0	1	115
10:30 AM	0	33	4	0	37	3	0	3	0	6	11	47	0	0	58	0	1	0	0	1	102
10:45 AM	1	36	3	0	40	1	1	8	0	10	4	54	1	0	59	0	0	0	0	0	109
Total	1	123	11	0	135	13	1	20	0	34	23	215	1	0	239	1	2	0	0	3	411
11:00 AM	1	36	5	0	42	3	1	4	0	8	4	58	1	0	63	0	0	1	0	1	114
11:15 AM	0	48	1	0	49	3	0	6	0	9	4	37	0	0	41	1	0	1	0	2	101
11:30 AM	0	54	3	0	57	2	0	12	0	14	10	48	2	0	60	0	1	0	0	1	132
11:45 AM	1	46	0	0	47	1	0	6	0	7	9	44	0	0	53	1	2	0	0	3	110
Total	2	184	9	0	195	9	1	28	0	38	27	187	3	0	217	2	3	2	0	7	457
12:00 PM	0	36	4	0	40	3	0	7	0	10	5	47	0	0	52	0	0	0	0	0	102
12:15 PM	0	36	0	0	36	3	0	6	0	9	12	33	1	0	46	0	1	2	0	3	94
12:30 PM	1	46	2	0	49	4	0	3	0	7	5	51	0	0	56	2	1	1	0	4	116
12:45 PM	1	47	1	0	49	4	1	8	0	13	5	51	0	0	56	1	0	2	0	3	121
Total	2	165	7	0	174	14	1	24	0	39	27	182	1	0	210	3	2	5	0	10	433
01:00 PM	0	47	1	0	48	1	0	4	0	5	3	57	0	0	60	0	0	0	0	0	113
01:15 PM	2	56	3	0	61	3	0	3	0	6	8	56	0	0	64	0	1	2	0	3	134
01:30 PM	3	56	4	0	63	4	0	9	0	13	7	57	1	0	65	0	1	2	0	3	144
01:45 PM	0	54	5	0	59	1	1	12	0	14	18	56	0	0	74	0	0	1	0	1	148
Total	5	213	13	0	231	9	1	28	0	38	36	226	1	0	263	0	2	5	0	7	539
02:00 PM	0	61	5	0	66	4	0	10	0	14	17	52	0	0	69	1	2	1	0	4	153
02:15 PM	0	65	1	0	66	32	2	70	0	104	26	61	0	0	87	0	1	1	0	2	259
02:30 PM	0	61	3	0	64	11	0	16	0	27	12	58	0	0	70	1	3	0	0	4	165
02:45 PM	0	62	4	0	66	9	0	12	0	21	10	44	0	0	54	0	0	1	0	1	142
Total	0	249	13	0	262	56	2	108	0	166	65	215	0	0	280	2	6	3	0	11	719
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	1	98	2	0	101	6	1	21	0	28	11	89	0	0	100	0	1	1	0	2	231
Total	1	98	2	0	101	6	1	21	0	28	11	89	0	0	100	0	1	1	0	2	231
04:00 PM	0	112	1	0	113	2	0	12	0	14	7	71	0	0	78	1	1	0	0	2	207
04:15 PM	5	119	3	0	127	2	0	20	0	22	8	51	0	0	59	0	1	0	0	1	209
04:30 PM	2	135	7	0	144	3	0	37	0	40	13	71	0	0	84	0	1	0	0	1	269
04:45 PM	0	127	8	0	135	5	0	19	0	24	15	65	0	0	80	1	2	1	0	4	243
Total	7	493	19	0	519	12	0	88	0	100	43	258	0	0	301	2	5	1	0	8	928
05:00 PM	1	141	6	0	148	2	1	27	0	30	16	64	0	0	80	0	4	3	0	7	265
05:15 PM	0	124	4	0	128	4	2	14	0	20	10	50	0	0	60	0	0	1	0	1	209
05:30 PM	2	137	5	0	144	3	0	21	0	24	7	64	1	0	72	1	3	1	0	5	245
05:45 PM	0	114	6	0	120	1	1	16	0	18	11	62	0	0	73	0	0	0	0	0	211
Total	3	516	21	0	540	10	4	78	0	92	44	240	1	0	285	1	7	5	0	13	930
06:00 PM	3	93	2	0	98	1	3	16	0	20	8	48	1	0	57	1	3	2	0	6	181
06:15 PM	0	95	1	0	96	0	1	11	0	12	8	47	1	0	56	0	1	2	0	3	167
06:30 PM	3	95	2	0	100	4	1	9	0	14	9	48	1	0	58	0	2	0	0	2	174



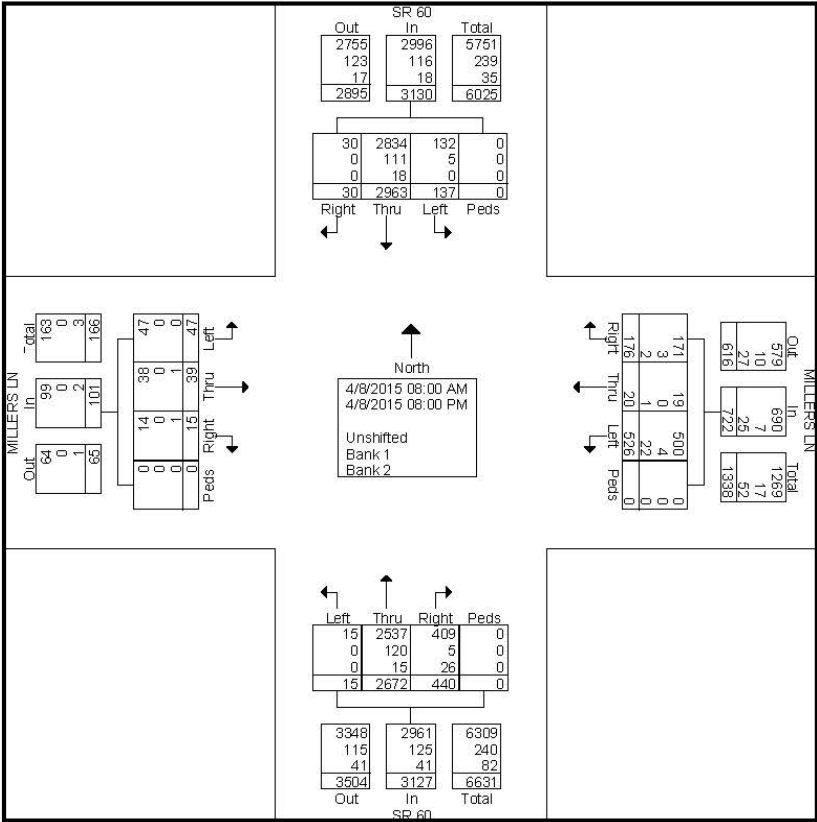
Ohio Department of Transportation

District 5

9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Unshifted - Bank 1 - Bank 2																					
	SR 60 Southbound					MILLERS LN Westbound					SR 60 Northbound					MILLERS LN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:45 PM	0	71	5	0	76	1	0	12	0	13	18	41	0	0	59	1	1	0	0	2	150
Total	6	354	10	0	370	6	5	48	0	59	43	184	3	0	230	2	7	4	0	13	672
07:00 PM	0	73	2	0	75	1	0	8	0	9	12	91	0	0	103	0	0	3	0	3	190
07:15 PM	0	60	3	0	63	1	1	9	0	11	17	77	1	0	95	1	0	1	0	2	171
07:30 PM	1	47	7	0	55	5	0	12	0	17	17	58	0	0	75	0	2	0	0	2	149
07:45 PM	0	45	3	0	48	2	0	5	0	7	22	70	0	0	92	0	0	4	0	4	151
Total	1	225	15	0	241	9	1	34	0	44	68	296	1	0	365	1	2	8	0	11	661
08:00 PM	0	59	4	0	63	4	1	9	0	14	10	38	0	0	48	0	1	1	0	2	127
Grand Total	30	2963	137	0	3130	176	20	526	0	722	440	2672	15	0	3127	15	39	47	0	101	7080
Apprch %	1	94.7	4.4	0		24.4	2.8	72.9	0		14.1	85.4	0.5	0		14.9	38.6	46.5	0		
Total %	0.4	41.9	1.9	0	44.2	2.5	0.3	7.4	0	10.2	6.2	37.7	0.2	0	44.2	0.2	0.6	0.7	0	1.4	
Unshifted	30	2834	132	0	2996	171	19	500	0	690	409	2537	15	0	2961	14	38	47	0	99	6746
% Unshifted	100	95.6	96.4	0	95.7	97.2	95	95.1	0	95.6	93	94.9	100	0	94.7	93.3	97.4	100	0	98	95.3
Bank 1	0	111	5	0	116	3	0	4	0	7	5	120	0	0	125	0	0	0	0	0	248
% Bank 1	0	3.7	3.6	0	3.7	1.7	0	0.8	0	1	1.1	4.5	0	0	4	0	0	0	0	0	3.5
Bank 2	0	18	0	0	18	2	1	22	0	25	26	15	0	0	41	1	1	0	0	2	86
% Bank 2	0	0.6	0	0	0.6	1.1	5	4.2	0	3.5	5.9	0.6	0	0	1.3	6.7	2.6	0	0	2	1.2





Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 1

	SR 60 Southbound					MILLER'S LN Westbound					SR 60 Northbound					MILLER'S LN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
08:15 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
08:30 AM	0	1	0	0	1	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	5
08:45 AM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
Total	0	9	0	0	9	0	0	2	0	2	0	11	0	0	11	0	0	0	0	0	22
09:00 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
09:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
09:30 AM	0	7	0	0	7	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	11
09:45 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Total	0	14	0	0	14	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	29
10:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
10:15 AM	0	8	0	0	8	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	11
10:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
10:45 AM	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	7
Total	0	14	0	0	14	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	25
11:00 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
11:15 AM	0	7	0	0	7	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	9
11:30 AM	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
11:45 AM	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	8
Total	0	20	0	0	20	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	27
12:00 PM	0	4	2	0	6	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	9
12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:30 PM	0	1	1	0	2	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	5
12:45 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Total	0	9	3	0	12	1	0	1	0	2	0	7	0	0	7	0	0	0	0	0	21
01:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
01:15 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
01:30 PM	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	12
01:45 PM	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	11
Total	0	10	0	0	10	0	0	0	0	0	0	22	0	0	22	0	0	0	0	0	32
02:00 PM	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
02:15 PM	0	3	0	0	3	2	0	0	0	2	0	6	0	0	6	0	0	0	0	0	11
02:30 PM	0	3	1	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7
02:45 PM	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Total	0	12	1	0	13	2	0	0	0	2	0	17	0	0	17	0	0	0	0	0	32
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
Total	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
04:00 PM	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	9
04:15 PM	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
04:30 PM	0	5	0	0	5	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	10
04:45 PM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Total	0	13	1	0	14	0	0	0	0	0	2	10	0	0	12	0	0	0	0	0	26
05:00 PM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	4
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
05:30 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
05:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	0	5	0	0	5	0	0	1	0	1	0	11	0	0	11	0	0	0	0	0	17
06:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 1

	SR 60 Southbound					MILLER'S LN Westbound					SR 60 Northbound					MILLER'S LN Eastbound						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	2
Total	0	2	0	0	2	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	4
07:00 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	4
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	0	6
08:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	111	5	0	116	3	0	4	0	7	5	120	0	0	125	0	0	0	0	0	0	248
Approch %	0	95.7	4.3	0		42.9	0	57.1	0		4	96	0	0		0	0	0	0	0	0	
Total %	0	44.8	2	0	46.8	1.2	0	1.6	0	2.8	2	48.4	0	0	50.4	0	0	0	0	0	0	



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 1

Groups Printed- Bank 2

Start Time	SR 60 Southbound					MILLERS LN Westbound					SR 60 Northbound					MILLERS LN Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
08:15 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
08:30 AM	0	1	0	0	1	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	3
08:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	3	0	0	3	0	1	1	0	2	1	3	0	0	4	0	0	0	0	0	9
09:00 AM	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4
09:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	0	0	4	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	5
10:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	4	2	0	0	6	0	0	0	0	0	6
Total	0	0	0	0	0	0	0	1	0	1	4	2	0	0	6	0	0	0	0	0	7
02:00 PM	0	0	0	0	0	0	0	1	0	1	7	0	0	0	7	0	0	0	0	0	8
02:15 PM	0	0	0	0	0	0	0	11	0	11	10	0	0	0	10	0	1	0	0	1	22
02:30 PM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
02:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	2	0	13	0	15	17	0	0	0	17	0	1	0	0	1	34
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	2	0	0	2	0	0	2	0	2	1	5	0	0	6	0	0	0	0	0	10
Total	0	2	0	0	2	0	0	2	0	2	1	5	0	0	6	0	0	0	0	0	10
04:00 PM	0	1	0	0	1	0	0	2	0	2	0	0	0	0	0	1	0	0	0	1	4
04:15 PM	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4
04:30 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	6	0	0	6	0	0	4	0	4	0	1	0	0	1	1	0	0	0	1	12
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Ohio Department of Transportation
District 5
9600 Jacksontown Road
Jacksontown, OH 43030
740-323-4400

File Name : SR60@MillersLn_Combinec
Site Code : 00000000
Start Date : 4/8/2015
Page No : 2

Groups Printed- Bank 2

Start Time	SR 60 Southbound					MILLERS LN Westbound					SR 60 Northbound					MILLERS LN Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
07:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	4
08:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Grand Total	0	18	0	0	18	2	1	22	0	25	26	15	0	0	41	1	1	0	0	2	86
Apprch %	0	100	0	0		8	4	88	0		63.4	36.6	0	0		50	50	0	0		
Total %	0	20.9	0	0	20.9	2.3	1.2	25.6	0	29.1	30.2	17.4	0	0	47.7	1.2	1.2	0	0	2.3	

Signal Warrants - Summary

Existing Alignment and Alternate C

Major Street Approaches

Northbound: State Route 60

Number of Lanes: 1
Approach Speed: 35
Total Approach Volume: 2,000

Southbound: State Route 60

Number of Lanes: 1
Approach Speed: 35
Total Approach Volume: 3,000

Minor Street Approaches

Eastbound: Bridge Street

Number of Lanes: 1
Total Approach Volume: 1,022

Westbound: Bridge Street

Number of Lanes: 1
Total Approach Volume: 407

Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes Not Satisfied

Warrant 1A - Minimum Vehicular Volume Not Satisfied
Required volumes reached for 4 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic Not Satisfied
Required volumes reached for 3 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants Not Satisfied
Required volumes reached for 4 hours, 8 are needed

Warrant 2 - Four Hour Volumes Not Satisfied

Number of hours (2) volumes exceed minimum < minimum required (4)

Warrant 3 - Peak Hour Not Satisfied

Warrant 3A - Peak Hour Delay Not Satisfied
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes Not Satisfied
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes Not Evaluated

Warrant 5 - School Crossing Not Evaluated

Warrant 6 - Coordinated Signal System Not Evaluated

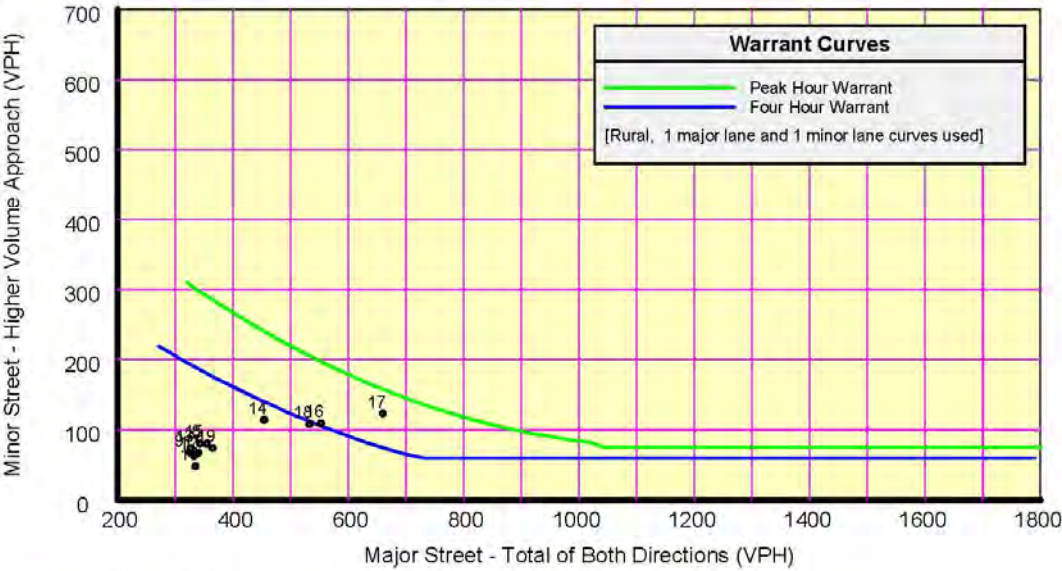
Warrant 7 - Crash Experience Not Evaluated

Warrant 8 - Roadway Network Not Evaluated

SR-60 and Bridge Street 2015 Signal Warrants - Summary

Signal Warrants - Summary

Existing Alignment and Alternate C

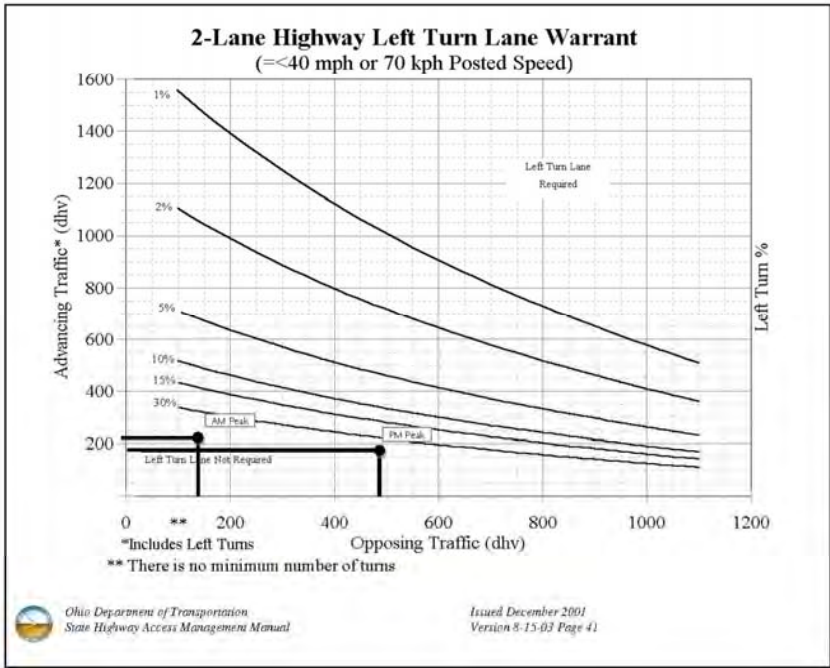


SR-60 and Bridge Street 2015 Signal Warrants - Summary

Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher	Minor	War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
01:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
02:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
03:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
04:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
05:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
06:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
07:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
08:00	355	80	EB	350-Yes	105-No	Major	525-No	53-Yes	Minor	420-No	84-No	---
09:00	326	67	EB	350-No	105-No	---	525-No	53-Yes	Minor	420-No	84-No	---
10:00	335	48	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
11:00	340	67	EB	350-No	105-No	---	525-No	53-Yes	Minor	420-No	84-No	---
12:00	334	64	EB	350-No	105-No	---	525-No	53-Yes	Minor	420-No	84-No	---
13:00	327	74	EB	350-No	105-No	---	525-No	53-Yes	Minor	420-No	84-No	---
14:00	454	114	EB	350-Yes	105-Yes	Both	525-No	53-Yes	Minor	420-Yes	84-Yes	Both
15:00	343	80	EB	350-No	105-No	---	525-No	53-Yes	Minor	420-No	84-No	---
16:00	553	109	EB	350-Yes	105-Yes	Both	525-Yes	53-Yes	Both	420-Yes	84-Yes	Both
17:00	660	123	EB	350-Yes	105-Yes	Both	525-Yes	53-Yes	Both	420-Yes	84-Yes	Both
18:00	533	108	EB	350-Yes	105-Yes	Both	525-Yes	53-Yes	Both	420-Yes	84-Yes	Both
19:00	365	74	EB	350-Yes	105-No	Major	525-No	53-Yes	Minor	420-No	84-No	---
20:00	75	19	WB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
21:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
22:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
23:00	0	0	EB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---

State Route 60 / Bridge Street Intersection
Northbound Left Turn



Existing Year 2015 Conditions

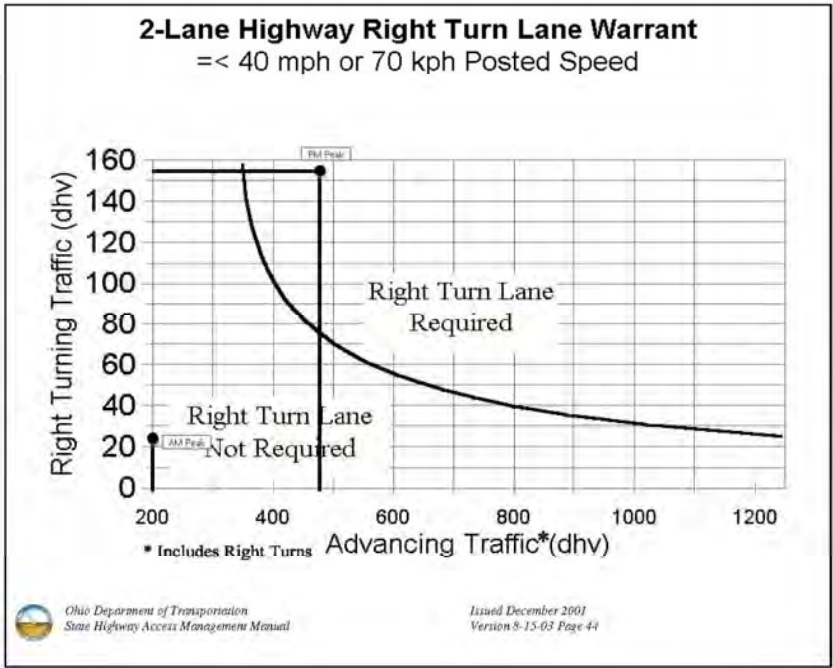
AM Peak Hour:
Advancing Traffic = 229 Veh
Left Turn Traffic = 7 Veh
Opposing Traffic = 131 Veh
Left Turn % = 3.1%

PM Peak Hour:
Advancing Traffic = 189 Veh
Left Turn Traffic = 11 Veh
Opposing Traffic = 471 Veh
Left Turn % = 5.8%

Turn Lane Not Warranted



State Route 60 / Bridge Street Intersection
Southbound Right Turn



Design Year 2034 'Build' Conditions

AM Peak Hour:
Advancing Traffic = 131 Veh
Right Turn Traffic = 25 Veh

PM Peak Hour:
Advancing Traffic = 471 Veh
Right Turn Traffic = 155 Veh

Turn Lane Warranted



Signal Warrants - Summary

Major Street Approaches

Northbound: State Route 60
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **2,862**

Southbound: State Route 60
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **3,959**

Minor Street Approaches

Eastbound: Mound Road
Number of Lanes: **1**

Total Approach Volume: **1,078**

Westbound: Mound Road
Number of Lanes: **1**

Total Approach Volume: **440**

Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume **Not Satisfied**
Required volumes reached for 4 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic **Not Satisfied**
Required volumes reached for 4 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants **Not Satisfied**
Required volumes reached for 5 hours, 8 are needed

Warrant 2 - Four Hour Volumes **Not Satisfied**

Number of hours (3) volumes exceed minimum < minimum required (4)

Warrant 3 - Peak Hour **Not Satisfied**

Warrant 3A - Peak Hour Delay **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes **Not Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes Not Evaluated

Warrant 5 - School Crossing Not Evaluated

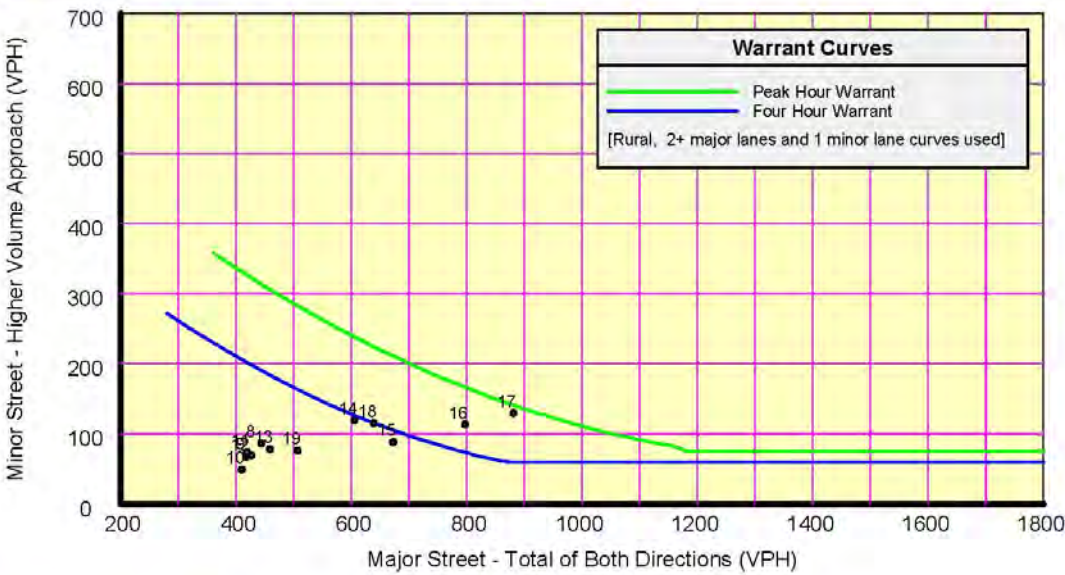
Warrant 6 - Coordinated Signal System Not Evaluated

Warrant 7 - Crash Experience Not Evaluated

Warrant 8 - Roadway Network Not Evaluated

SR-60 and Mound Street 2015 Signal Warrants - Summary

Signal Warrants - Summary



SR-60 and Mound Street 2015 Signal Warrants - Summary

Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Vol	Minor Dir	War-1A			War-1B			War-1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
01:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
02:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
03:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
04:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
05:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
06:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
07:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
08:00	444	86	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-Yes	Minor
09:00	427	69	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-No	---
10:00	410	49	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
11:00	419	74	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
12:00	418	67	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
13:00	459	78	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-No	---
14:00	606	119	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
15:00	673	88	EB	420-Yes	105-No	Major	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
16:00	797	113	EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
17:00	881	129	EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
18:00	639	115	EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
19:00	507	76	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-Yes	84-No	Major
20:00	141	15	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
21:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
22:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
23:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---

State Route 60 / Mound Road Intersection
Northbound Left Turn



Existing Year 2015 Conditions

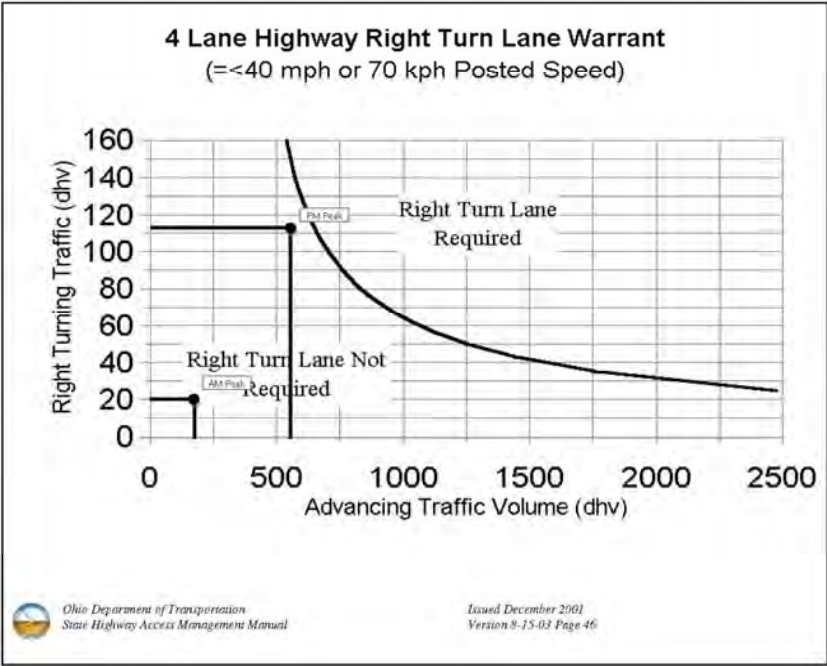
AM Peak Hour:
Left Turn Traffic = 14 Veh
Opposing Traffic = 209 Veh
Median Type = Undivided

PM Peak Hour:
Left Turn Traffic = 41 Veh
Opposing Traffic = 647 Veh
Median Type = Undivided

Turn Lane Warranted



State Route 60 / Mound Road Intersection
Southbound Right Turn



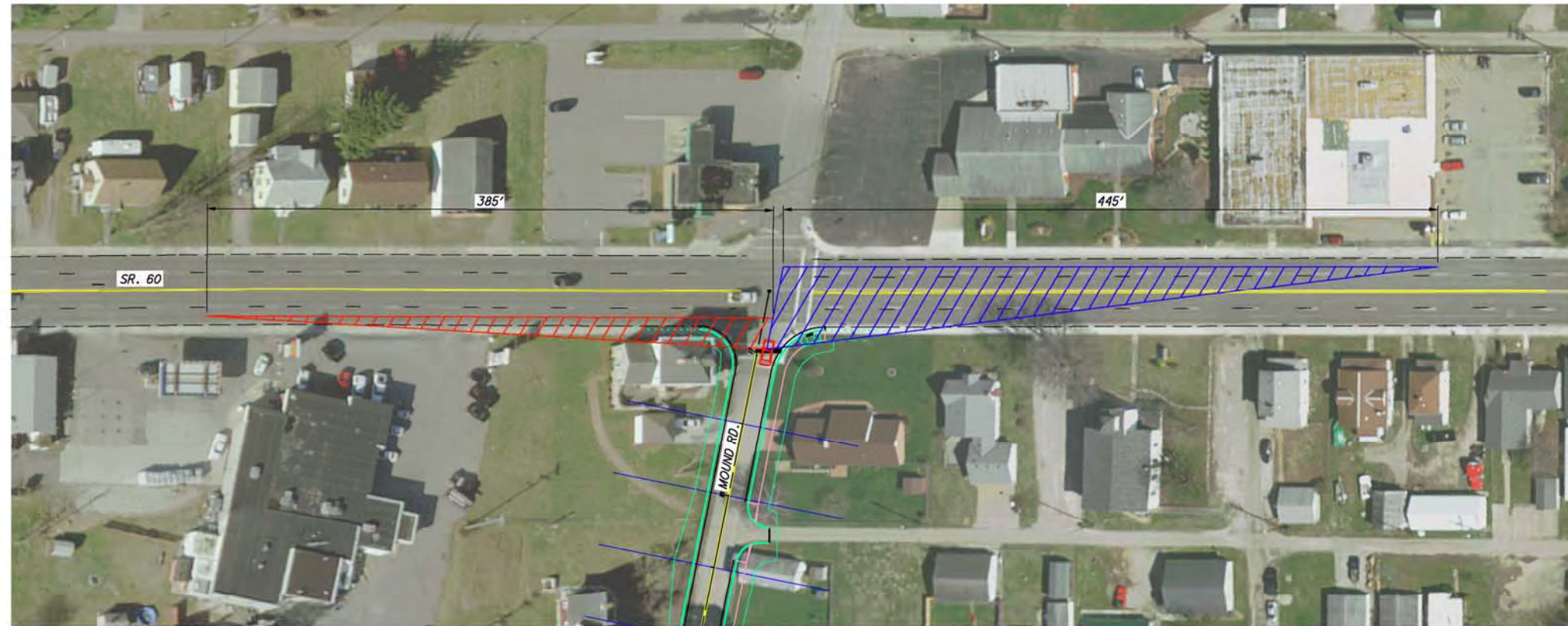
Existing Year 2015 Conditions

AM Peak Hour:
Advancing Traffic = 189 Veh
Right Turn Traffic = 20 Veh

PM Peak Hour:
Advancing Traffic = 535 Veh
Right Turn Traffic = 112 Veh

Turn Lane Not Warranted






GPD GROUP.
Glass, Pyle, Schermer, Burns & Redman, Inc.
 1801 Watermark Dr., Suite 150 614-210-0751
 Columbus, Ohio 43215 Fax 614-210-0752

MUSKINGUM COUNTY

SIGHT DISTANCE EVALUATION
MOUND ROAD

SEPTEMBER 2015

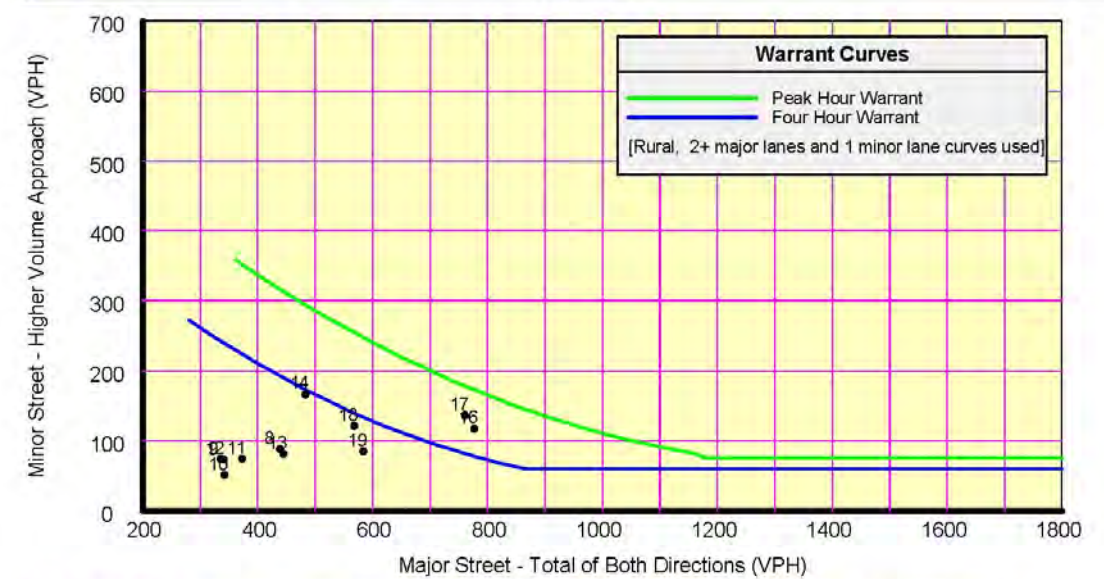
G:\2015\20150909\MAK\97246\TRAFFIC\DESIGN\FIGURES\FIGURE 1 - MOUND RD.DWG
 9/1/2015
 12:03:03 PM

Major Street Approaches	Minor Street Approaches
Northbound: State Route 60 Number of Lanes: 2 Approach Speed: 55 Total Approach Volume: 2,627	Eastbound: Water Street Number of Lanes: 1 Total Approach Volume: 1,065
Southbound: State Route 60 Number of Lanes: 2 Approach Speed: 55 Total Approach Volume: 3,130	Westbound: Millers Lane Number of Lanes: 1 Total Approach Volume: 722

Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume Required volumes reached for 4 hours, 8 are needed	Not Satisfied
Warrant 1B - Interruption of Continuous Traffic Required volumes reached for 2 hours, 8 are needed	Not Satisfied
Warrant 1 A&B - Combination of Warrants Required volumes reached for 4 hours, 8 are needed	Not Satisfied
Warrant 2 - Four Hour Volumes Number of hours (2) volumes exceed minimum < minimum required (4).	Not Satisfied
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Delay Total approach volumes and delays on minor street do not exceed minimums for any hour.	Not Satisfied
Warrant 3B - Peak Hour Volumes Volumes do not exceed minimums for any hour.	Not Satisfied
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated

SR-60 and Millers Lane/Water Street 2015 Signal Warrants - Summary

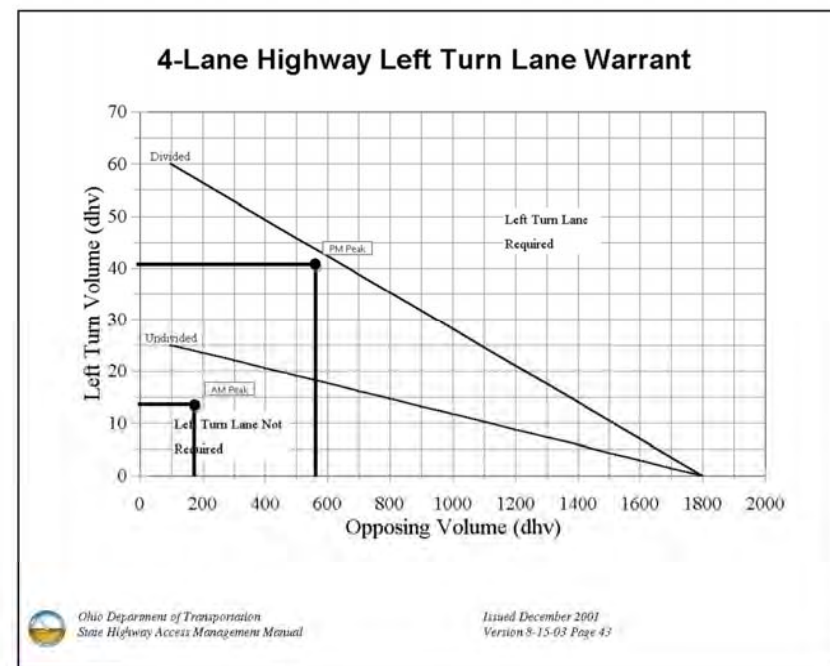


SR-60 and Millers Lane/Water Street 2015 Signal Warrants - Summary

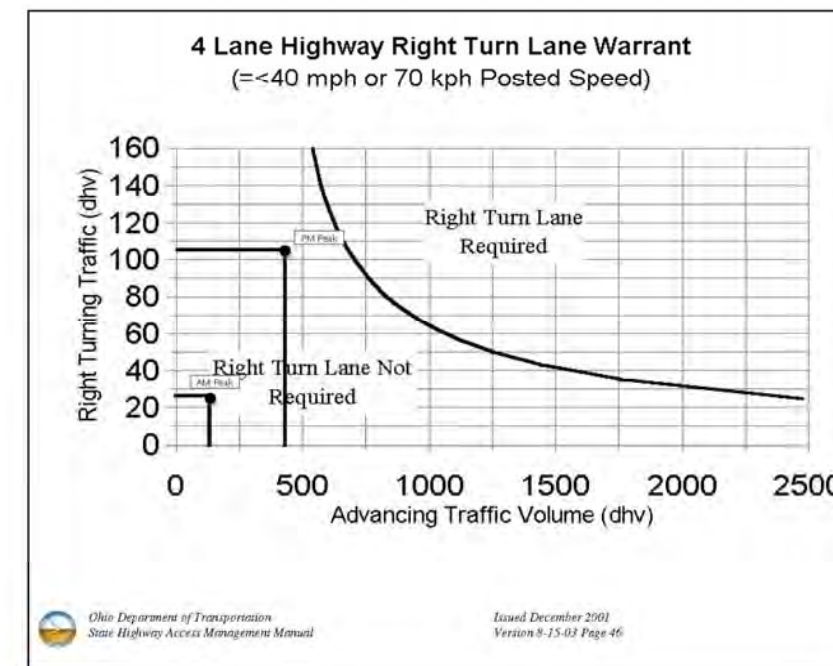
Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor	War-1A			War-1B			War-1A&B		
Begin	Total	Vol Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
01:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
02:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
03:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
04:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
05:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
06:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
07:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
08:00	439	88 EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-Yes	Minor
09:00	341	73 EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
10:00	342	51 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
11:00	373	74 EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
12:00	336	74 EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
13:00	445	81 EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-No	---
14:00	483	166 WB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-No	84-Yes	Minor
15:00	198	28 WB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
16:00	777	117 EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
17:00	761	136 EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
18:00	568	121 EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
19:00	584	85 EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
20:00	110	16 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
21:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
22:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
23:00	0	0 EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---

State Route 60 / Millers Lane Intersection
Northbound Left Turn



State Route 60 / Millers Lane Intersection
Southbound Right Turn



STORAGE LENGTH CALCULATIONS

EXISTING YEAR 2015 TRAFFIC VOLUMES - AM PEAK HOUR



Existing Alignment and Alternate C
STATE ROUTE 60 / BRIDGE STREET

ANTICIPATED CYCLE LENGTH: 60 SEC.
DESIGN SPEED: 35 MPH

EASTBOUND BRIDGE STREET

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	74	2	8
LANE GROUP:			
LANE GROUP VOLUME:			
NUMBER OF LANES:			
VEHICLES PER CYCLE:			
CONTROLLING LANE GROUP:			
DECELERATION LENGTH:			
STORAGE LENGTH:			
TOTAL TURN LANE LENGTH:			
TURN LANE LENGTH PER LANE			

WESTBOUND BRIDGE STREET

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	6	7	5
LANE GROUP:			
LANE GROUP VOLUME:			
NUMBER OF LANES:			
VEHICLES PER CYCLE:			
CONTROLLING LANE GROUP:			
DECELERATION LENGTH:			
STORAGE LENGTH:			
TOTAL TURN LANE LENGTH:			
TURN LANE LENGTH PER LANE			

NORTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	7	220	2
LANE GROUP:	LEFT		
LANE GROUP VOLUME:	7		
NUMBER OF LANES:	1		
VEHICLES PER CYCLE:	1		
CONTROLLING LANE GROUP:	X		
DECELERATION LENGTH:	50		
STORAGE LENGTH:	50		
TOTAL TURN LANE LENGTH:	100		
TURN LANE LENGTH PER LANE	100		

SOUTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	5	101	25
LANE GROUP:			RIGHT
LANE GROUP VOLUME:			25
NUMBER OF LANES:			1
VEHICLES PER CYCLE:			1
CONTROLLING LANE GROUP:			X
DECELERATION LENGTH:			50
STORAGE LENGTH:			50
TOTAL TURN LANE LENGTH:			100
TURN LANE LENGTH PER LANE			100

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

EXISTING YEAR 2015 TRAFFIC VOLUMES - PM PEAK HOUR



Existing Alignment and Alternate C
STATE ROUTE 60 / BRIDGE STREET

ANTICIPATED CYCLE LENGTH: 60 SEC.
DESIGN SPEED: 35 MPH

EASTBOUND BRIDGE STREET

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	104	9	10
LANE GROUP:			
LANE GROUP VOLUME:			
NUMBER OF LANES:			
VEHICLES PER CYCLE:			
CONTROLLING LANE GROUP:			
DECELERATION LENGTH:			
STORAGE LENGTH:			
TOTAL TURN LANE LENGTH:			
TURN LANE LENGTH PER LANE			

WESTBOUND BRIDGE STREET

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	22	29	32
LANE GROUP:			
LANE GROUP VOLUME:			
NUMBER OF LANES:			
VEHICLES PER CYCLE:			
CONTROLLING LANE GROUP:			
DECELERATION LENGTH:			
STORAGE LENGTH:			
TOTAL TURN LANE LENGTH:			
TURN LANE LENGTH PER LANE			

NORTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	11	173	5
LANE GROUP:	LEFT		
LANE GROUP VOLUME:	11		
NUMBER OF LANES:	1		
VEHICLES PER CYCLE:	1		
CONTROLLING LANE GROUP:	X		
DECELERATION LENGTH:	50		
STORAGE LENGTH:	50		
TOTAL TURN LANE LENGTH:	100		
TURN LANE LENGTH PER LANE	100		

SOUTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT	THRU	RIGHT
VOLUME:	29	287	155
LANE GROUP:			RIGHT
LANE GROUP VOLUME:			155
NUMBER OF LANES:			1
VEHICLES PER CYCLE:			3
CONTROLLING LANE GROUP:			X
DECELERATION LENGTH:			50
STORAGE LENGTH:			150
TOTAL TURN LANE LENGTH:			200
TURN LANE LENGTH PER LANE			200

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS
EXISTING YEAR 2015 TRAFFIC VOLUMES - AM PEAK HOUR
Alternate A



STATE ROUTE 60 / MOUND ROAD

ANTICIPATED CYCLE LENGTH: 60 SEC.
DESIGN SPEED: 35 MPH

EASTBOUND MOUND ROAD

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	77		1		12
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

WESTBOUND MOUND ROAD

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	19		0		60
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

NORTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	14		212		36
LANE GROUP:	RIGHT				
LANE GROUP VOLUME:	14				
NUMBER OF LANES:	1				
VEHICLES PER CYCLE:	1				
CONTROLLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	50				
TOTAL TURN LANE LENGTH:	100				
TURN LANE LENGTH PER LANE	100				

SOUTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	71		97		26
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS
EXISTING YEAR 2015 TRAFFIC VOLUMES - PM PEAK HOUR
Alternate A



STATE ROUTE 60 / MOUND ROAD

ANTICIPATED CYCLE LENGTH: 60 SEC.
DESIGN SPEED: 35 MPH

EASTBOUND MOUND ROAD

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	101		0		35
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

WESTBOUND MOUND ROAD

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	10		1		19
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

NORTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	40		234		20
LANE GROUP:	RIGHT				
LANE GROUP VOLUME:	40				
NUMBER OF LANES:	1				
VEHICLES PER CYCLE:	1				
CONTROLLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	50				
TOTAL TURN LANE LENGTH:	100				
TURN LANE LENGTH PER LANE	100				

SOUTHBOUND STATE ROUTE 60

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	54		428		142
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS
EXISTING YEAR 2015 TRAFFIC VOLUMES - AM PEAK HOUR
Alternate B



STATE ROUTE 60 / MILLERS LANE / WATER STREET

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

EASTBOUND MILLERS LANE				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	80		1	10
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

WESTBOUND WATER STREET				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	18		1	18
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

NORTHBOUND STATE ROUTE 60				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	14		235	26
LANE GROUP:	RIGHT			
LANE GROUP VOLUME:	14			
NUMBER OF LANES:	1			
VEHICLES PER CYCLE:	1			
CONTROLLING LANE GROUP:	X			
DECELERATION LENGTH:	50			
STORAGE LENGTH:	50			
TOTAL TURN LANE LENGTH:	100			
TURN LANE LENGTH PER LANE	100			

SOUTHBOUND STATE ROUTE 60				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	10		139	26
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS
EXISTING YEAR 2015 TRAFFIC VOLUMES - PM PEAK HOUR
Alternate B



STATE ROUTE 60 / MILLERS LANE / WATER STREET

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

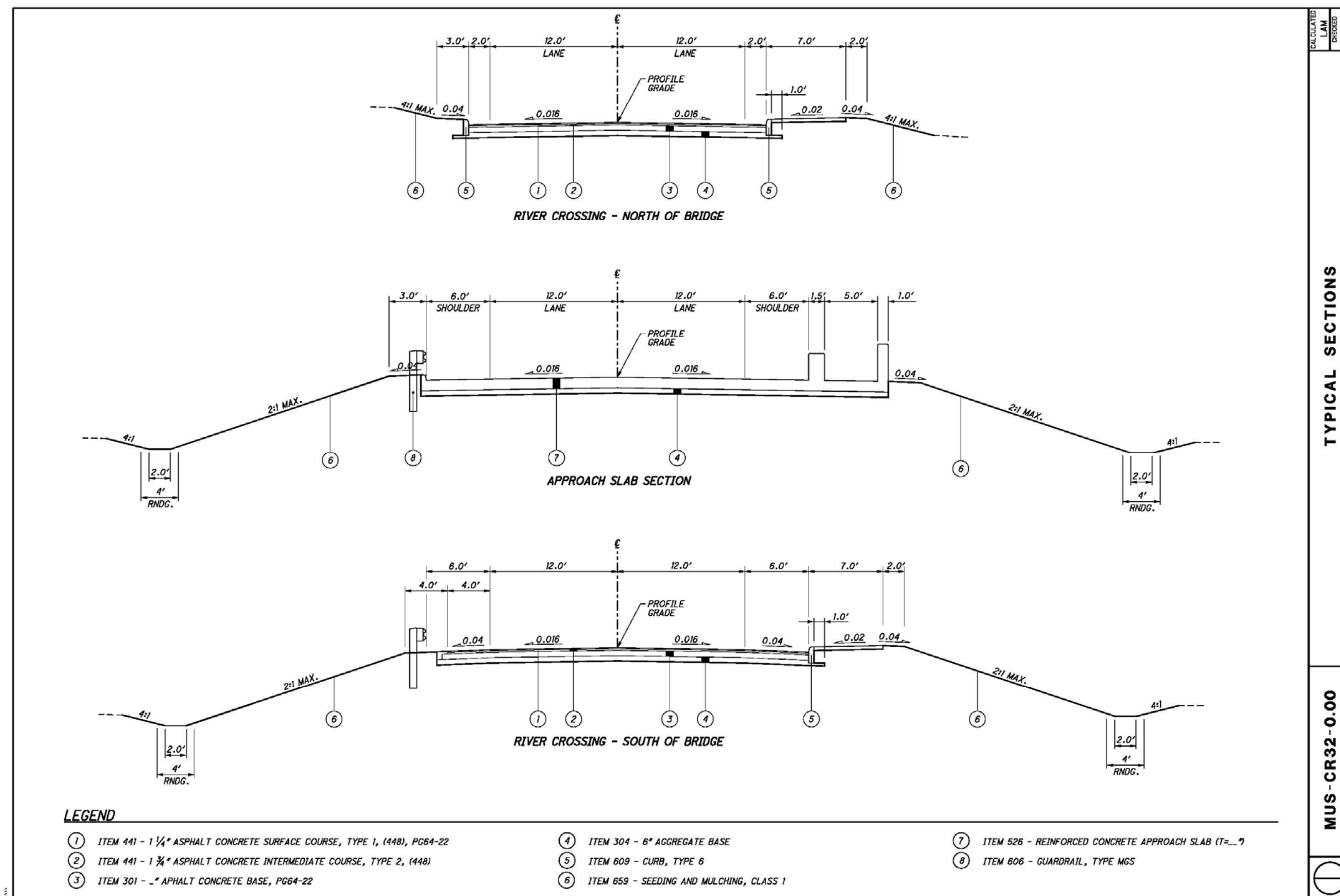
EASTBOUND MILLERS LANE				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	105		8	32
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

WESTBOUND WATER STREET				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	81		3	14
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

NORTHBOUND STATE ROUTE 60				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	41		144	48
LANE GROUP:	RIGHT			
LANE GROUP VOLUME:	41			
NUMBER OF LANES:	1			
VEHICLES PER CYCLE:	1			
CONTROLLING LANE GROUP:	X			
DECELERATION LENGTH:	50			
STORAGE LENGTH:	50			
TOTAL TURN LANE LENGTH:	100			
TURN LANE LENGTH PER LANE	100			

SOUTHBOUND STATE ROUTE 60				
MOVEMENT:	LEFT		THRU	RIGHT
VOLUME:	23		389	143
LANE GROUP:				
LANE GROUP VOLUME:				
NUMBER OF LANES:				
VEHICLES PER CYCLE:				
CONTROLLING LANE GROUP:				
DECELERATION LENGTH:				
STORAGE LENGTH:				
TOTAL TURN LANE LENGTH:				
TURN LANE LENGTH PER LANE				

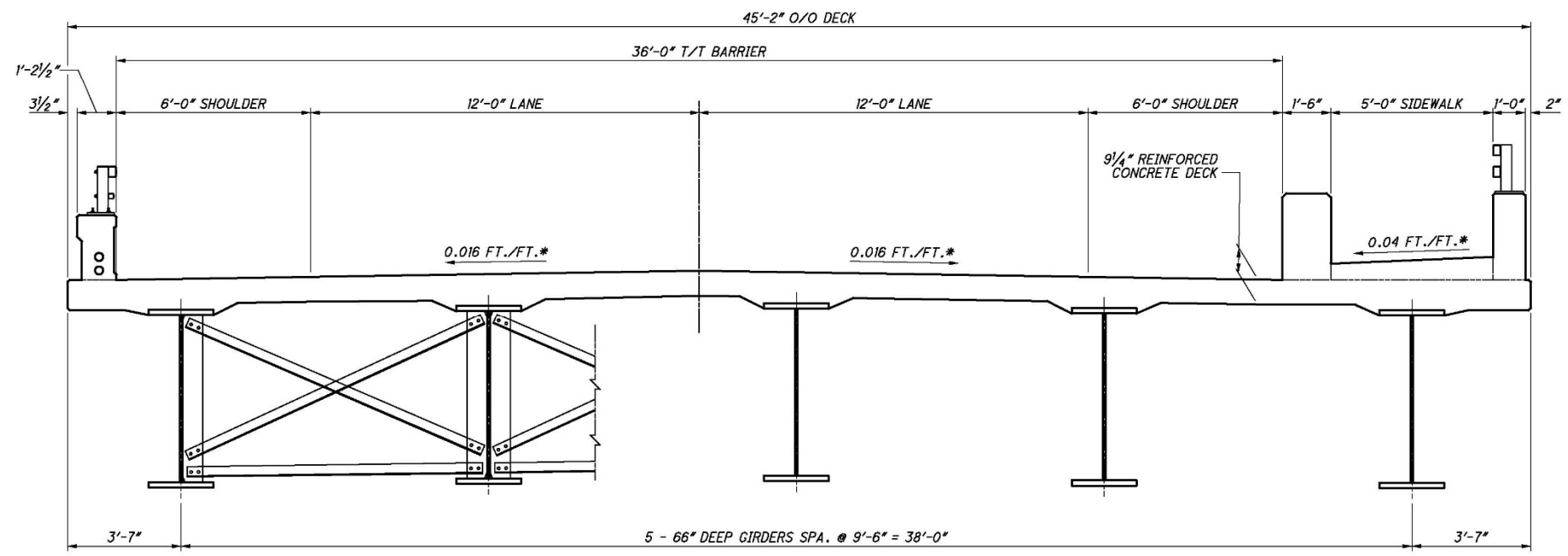
RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER



TYPICAL SECTIONS

MUS-CR32-0.00

P:\97346\structures\Types Selection\MUS-Philo Bridge - TS Standard Steel.dgn 1/21/2016 12:12:51 PM tsheldon



REVIEWED DATE
STRUCTURE FILE NUMBER

DESIGNED
TAS
CHECKED

TYPICAL WIDTH TRANSVERSE SECTION
BRIDGE NO. MUS-PHILO BRIDGE
OVER THE MUSKINGUM RIVER

MUS-PHILO
PID No. 87346

1/1



Appendix D Alternatives Exhibits (Unbound Roll Plots Included)



Douglas R. Davis P.E., P.S. - County Engineer
155 Rehl Road - Zanesville, Ohio 43701
Phone - 740-454-0155
Fax - 740-455-7180
email - mceo@rrohio.com
website - www.mceo.org

Dear Philo-Duncan Falls Bridge Interested Parties,

We want to thank everyone who attended the public meeting on November 13, 2014 and those who sent in emails and letters with questions and concerns about the Philo-Duncan Falls Bridge. Many of the questions and concerns cannot yet be addressed; but they are very helpful in gauging concerns and aspects that we need to evaluate before a decision is made as to the location and type of structure to be built. Enclosed is a Frequently Asked Questions (FAQ) sheet with updated responses underlined. On the back is a summary of the comments received. We hope you find this information helpful. Current and future meeting info, including displays and summaries, can be found on our website, www.mceo.org.

Please understand that no location or structure type is perfect; they each provide tradeoffs that must be balanced. Again, thank you for participating and we look forward to sharing pros and cons of each option at a future public meeting.

Sincerely,

Douglas R. Davis, P.E., P.S.
Muskingum County Engineer

Philo-Duncan Falls Bridge

Summary of Questions & Comments

Received at November 13, 2014 public meeting and via email/letter during October & November 2014

# Comments	Question/Comment Topic
25	Location preference for new bridge <ul style="list-style-type: none">• Current or Adjacent location• Not specified• Miller's Lane• Cutler Lake
15	Local considerations: <ul style="list-style-type: none">• Alloy contamination• Eagle nest• Rock Wall on CR 6• Document history of bridge
14	Business Impacts, during closures or based on future location
12	Funding <ul style="list-style-type: none">• Concerns/Questions• Ideas - Tolling oil/gas impact, scales, etc.
10	Structure type and construction phasing suggestions <ul style="list-style-type: none">• Build offsite• Full rehab in phases• Truss requested, etc.
9	Pedestrian/Bike Usage/Safety
8	Detour – No detour or minimize detour
7	Community connectivity
7	Thank You
6	Roadway condition adjacent to bridge locations
5	School District Impacts
4	Other concerns, unrelated to this project
3	Timeline
3	Condition of current bridge
2	Traffic concerns /Routing of traffic

Meeting held at Philo Junior High School – Open House and Question/Answer format

Estimated attendance- 130 people

79 comment sheets returned – 53 with written comments, 26 with contact information only

9 emails and 2 letters received

PHILO/DUNCAN FALLS BRIDGE -FREQUENTLY ASKED QUESTIONS-
November 13, 2014 Public Open House – **Updated December 1, 2014**



The current bridge:



When was the bridge last inspected? The last official inspection was November 2013. Additional special inspections, such as a detailed fracture critical inspection, and underwater inspection have also been completed in recent years.

Is the bridge safe? Yes. The safety of the public is our highest priority. If it becomes unsafe, we will take appropriate action.

What is the life expectancy of the current bridge? An exact life expectancy cannot be determined. We will continue to make repairs to maintain the integrity of the structure and perform inspections to insure the safety of the public.

Why wasn't the bridge open during the last round of repairs? The bridge is narrow and we were unable to complete the repairs in a manner that was safe for our employees and the traveling public without closing the bridge.

What is wrong with the bridge? There is significant deterioration in all elements of the bridge. The piers have cracks and are missing portions in the sandstone base. The steel superstructure has large areas of section loss in the bottom cord, floor beams and verticals. The concrete deck has spalling with large areas of exposed rebar.

Why does the bridge need replaced? Most bridges have a life span of 50 years. The Philo/Duncan Falls Bridge is 60 years old. There are many areas that are in poor condition. It is considered a fracture critical bridge, meaning that certain structural elements MUST be in acceptable condition for the bridge to be safe. This bridge is beyond its' expected life and is narrow, making it functionally obsolete.

Are more repairs needed? There are no repairs scheduled at this time. We will continue to monitor the bridge and schedule repairs as necessary.

What about other bridges in the county? Muskingum County has 412 bridges. 213 are over 50 years old and 82 are load limited.

Can the current piers be used for a new bridge? The existing piers would need to be fully encapsulated and the piers enlarged. There are structural issues with portions of the existing piers. This will be further evaluated.

Planning for a new bridge:

Where will the new bridge be located? The new bridge *location is not yet determined*. We are in the early planning portion of the bridge replacement process. There are many considerations; including traffic patterns, right of way impacts, economic effects, and environmental impacts. We want the community to understand the process and be involved. ***Multiple locations and a No-Build option will be evaluated.*** The study area for the project is from Miller's Lane to Cutler Lake Road. Locations outside of the study area are not included in the analysis. The analysis of various alternatives will be shared at a future public meeting before any decision is made. Pros and cons will be summarized for each option. Following that public meeting an alignment will be selected.

We are in the early planning stages of the project development process. The public will be included at key decision points along the path.



How will the location be selected? There are many factors that will go into the decision making process. The public and other stakeholders' input will be important in the selection process. A No- Build option must also be considered.

What is a No-Build option? A No-Build option would mean that the current bridge would remain in place until it is no longer serviceable. At that time the bridge would be closed and not reopened. No new bridge would be built.

What items will be evaluated before a bridge type and location is selected? Many of the items that were included in comments and questions received will be included for consideration in selecting a new bridge location and type of bridge to be built. Costs for each location and various structure types, roadway needs and cost drivers, such as the rock wall, traffic patterns, right of way impacts to both residential and commercial properties, environmental considerations such as possible alloy contamination, endangered species, pedestrian connections etc. and construction timing estimates.

When will a new bridge be built? We are hopeful that we can have design, right of way and funding in place to begin construction in 2019.

How long will it take to build a new bridge? Construction of a bridge this size is generally a minimum of 2 years.

Can a bridge be built off-site and then installed to reduce closure time? Different structure types and associated closure times will be evaluated as part of the selection process.

What is the cost for a new bridge? Estimates will be prepared for each alternative and will be part of the decision making process. \$15 million is the preliminary construction estimate at this time. It will be refined as more details are determined.

Who will pay for the costs? Currently, the county engineer has been able to secure \$5 million in federal funds for engineering and right-of-way acquisition. When we have a selected alternative that includes refined costs the county engineer will be able to apply for additional federal funds for construction. Federal bridge funds require a 20% match in local funds.

What are credit bridge funds? When the county builds a bridge without using federal funds to federal standards we are given 'credit' that can be used towards the 20% local match required for federally funded bridges. The county actively pursues this credit when we build bridges with our own personnel or via other non-federal funds. These funds will only cover a portion of the local match needed. Additional funds will still be needed.

Why do we have to do environmental studies? The use of federal funds requires specific studies evaluating the impact on human and natural environments. Identification and mitigation may include human, cultural and ecological impacts.

What is the economic impact of the bridge being closed? This is very hard to quantify. It varies for individuals' vs different types of businesses. Some will be more affected than others.

What about pedestrian and bicycle needs? These will be considered for each alternative. Many people pointed out that the current bridge is used by pedestrians to get back and forth to school events, ball fields, and between the two communities.

What about the existing businesses near the current bridge? Commercial and residential properties affected will be part of the decision making process.

What about impacts to schools and EMS? The school district and local EMS will be asked for input during the alternative evaluation process.

When is the next public meeting? A specific date has not been set, but is anticipated later in 2015.

How do I stay informed? We are committed to keeping the public informed as we advance through the process. We will advertise our next public meeting via our website, and the media. If you want to be notified personally, please send us either your mailing address or email.

When will the consultant start work? The county is in the final stages of completing a contract with a team consultants led by EL Robinson and assisted significantly by GPD Group. We anticipated they will be given authorization to begin in December 2014.

What was the largest concern? The underlying theme we heard from the public was that they want to be included and that the two communities need to be connected. The public shared many items to be considered for each alternative. There was also concern about how to fund the bridge and impact of the bridge closure and location of businesses.

How can I get information on the history of the various Philo-Duncan Falls bridges? We have had several individuals share copies and files from their personal archives of the current bridge and the past bridges that connected Philo and Duncan Falls. These are available by visiting our office. In the future, we will try to make them available digitally.

Construction Cost Estimate

MUS-CR32-0.00

		EXISTING ALIGNMENT (BRIDGE STREET)				ALTERNATIVE A (MOUND ROAD)				ALTERNATIVE B (MILLERS LANE)				ALTERNATIVE C (BRIDGE STREET SHIFTED)			
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST
ROADWAY																	
201	CLEARING AND GRUBBING	1	LS	\$2,000.00	\$2,000.00	1	LS	\$10,000.00	\$10,000.00	1	LS	\$10,000.00	\$10,000.00	1	LS	\$10,000.00	\$10,000.00
202	WALK REMOVED	1,100	SF	\$2.00	\$2,200.00	230	SF	\$2.00	\$460.00	285	SF	\$2.00	\$570.00	675	SF	\$2.00	\$1,350.00
202	CURB REMOVED	950	FT	\$4.00	\$3,800.00	100	FT	\$5.50	\$550.00	75	FT	\$5.50	\$412.50	500	FT	\$4.25	\$2,125.00
202	GUARDRAIL REMOVED	340	FT	\$2.50	\$850.00									225	FT	\$2.50	\$562.50
203	EXCAVATION	1,000	CY	\$13.00	\$13,000.00	3,000	CY	\$12.00	\$36,000.00	3,500	CY	\$12.00	\$42,000.00	900	CY	\$13.00	\$11,700.00
203	EXCAVATION OF RCRA NON HAZARDOUS WASTE	0	CY	\$145.00	\$0.00	285	CY	\$145.00	\$41,325.00	225	CY	\$145.00	\$32,625.00	0	CY	\$145.00	\$0.00
203	EMBANKMENT	1,000	CY	\$13.00	\$13,000.00	20,000	CY	\$7.00	\$140,000.00	5,000	CY	\$9.00	\$45,000.00	10,400	CY	\$8.00	\$83,200.00
204	SUBGRADE COMPACTION	2,450	SY	\$2.50	\$6,125.00	3,400	SY	\$2.50	\$8,500.00	3,150	SY	\$2.50	\$7,875.00	4,100	SY	\$2.50	\$10,250.00
606	GUARDRAIL, TYPE MGS	37.5	FT	\$20.00	\$750.00	175	FT	\$17.00	\$2,975.00	225	FT	\$17.00	\$3,825.00	425	FT	\$16.00	\$6,800.00
606	ANCHOR ASSEMBLY, MGS TYPE T	2	EACH	\$800.00	\$1,600.00									7	EACH	\$800.00	\$5,600.00
606	ANCHOR ASSEMBLY, TYPE F	2	EACH	\$1,800.00	\$3,600.00	3	EACH	\$1,800.00	\$5,400.00	3	EACH	\$1,800.00	\$5,400.00				
606	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	3	EACH	\$1,900.00	\$5,700.00	3	EACH	\$1,900.00	\$5,700.00	3	EACH	\$1,900.00	\$5,700.00	6	EACH	\$1,900.00	\$11,400.00
608	4" CONCRETE WALK	1,750	SF	\$6.00	\$10,500.00	4,500	SF	\$6.00	\$27,000.00	4,500	SF	\$6.00	\$27,000.00	3,150	SF	\$6.00	\$18,900.00
608	CURB RAMP	4	EACH	\$400.00	\$1,600.00	5	EACH	\$400.00	\$2,000.00	4	EACH	\$400.00	\$1,600.00	5	EACH	\$400.00	\$2,000.00
				ROUNDED SUBTOTAL	\$65,000.00			ROUNDED SUBTOTAL	\$280,000.00			ROUNDED SUBTOTAL	\$183,000.00			ROUNDED SUBTOTAL	\$164,000.00
EROSION CONTROL																	
832	SWPPP					1	EA	\$10,000.00	\$10,000.00	1	EA	\$10,000.00	\$10,000.00	1	EA	\$10,000.00	\$10,000.00
832	EROSION CONTROL	10,000	EA	\$1.00	\$10,000.00	50,000	EA	\$1.00	\$50,000.00	50,000	EA	\$1.00	\$50,000.00	50,000	EA	\$1.00	\$50,000.00
895	MANUFACTURED WATER QUALITY STRUCTURE, TYPE 1					1	EACH	\$15,000.00	\$15,000.00	1	EACH	\$15,000.00	\$15,000.00	1	EACH	\$15,000.00	\$15,000.00
				ROUNDED SUBTOTAL	\$10,000.00			ROUNDED SUBTOTAL	\$75,000.00			ROUNDED SUBTOTAL	\$75,000.00			ROUNDED SUBTOTAL	\$75,000.00
DRAINAGE																	
605	4" BASE PIPE UNDERDRAINS	900	FT	\$9.00	\$8,100.00	1,600	FT	\$9.00	\$14,400.00	1,500	FT	\$9.00	\$13,500.00	1,100	FT	\$9.00	\$9,900.00
611	12" CONDUIT, TYPE B	130	FT	\$62.00	\$8,060.00	420	FT	\$62.00	\$26,040.00	450	FT	\$62.00	\$27,900.00	400	FT	\$62.00	\$24,800.00
611	12" CONDUIT, TYPE C	30	FT	\$58.00	\$1,740.00	120	FT	\$58.00	\$6,960.00	120	FT	\$58.00	\$6,960.00	350	FT	\$58.00	\$20,300.00
611	CATCH BASIN, NO. 3	2	EACH	\$2,900.00	\$5,800.00	3	EACH	\$2,900.00	\$8,700.00	3	EACH	\$2,900.00	\$8,700.00	4	EACH	\$2,900.00	\$11,600.00
611	CATCH BASIN, NO. 3A	2	EACH	\$2,400.00	\$4,800.00	5	EACH	\$2,400.00	\$12,000.00	4	EACH	\$2,400.00	\$9,600.00	6	EACH	\$2,400.00	\$14,400.00
611	MANHOLE, NO. 3	1	EACH	\$3,200.00	\$3,200.00	1	EACH	\$3,200.00	\$3,200.00	1	EACH	\$3,200.00	\$3,200.00	2	EACH	\$3,200.00	\$6,400.00
611	MANHOLE, NO. 3 WITH 84" BASE I.D. AND 6" WEIR					1	EACH	\$7,500.00	\$7,500.00	1	EACH	\$7,500.00	\$7,500.00	1	EACH	\$7,500.00	\$7,500.00
				ROUNDED SUBTOTAL	\$32,000.00			ROUNDED SUBTOTAL	\$79,000.00			ROUNDED SUBTOTAL	\$78,000.00			ROUNDED SUBTOTAL	\$95,000.00
PAVEMENT																	
301	ASPHALT CONCRETE BASE, PG64-22	274	CY	\$190.00	\$52,060.00	473	CY	\$170.00	\$80,410.00	444	CY	\$170.00	\$75,480.00	450	CY	\$170.00	\$76,500.00
304	AGGREGATE BASE	411	CY	\$75.00	\$30,825.00	551	CY	\$75.00	\$41,325.00	526	CY	\$75.00	\$39,450.00	719	CY	\$75.00	\$53,925.00
407	TACK COAT FOR INTERMEDIATE COURSE	82	GAL	\$2.50	\$205.00	146	GAL	\$2.50	\$365.00	133	GAL	\$2.50	\$332.50	135	GAL	\$2.50	\$337.50
441	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), (DRIVEWA	15	CY	\$300.00	\$4,500.00					1	CY	\$300.00	\$300.00	28	CY	\$300.00	\$8,400.00
441	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	81	CY	\$220.00	\$17,820.00	138	CY	\$190.00	\$26,220.00	129	CY	\$190.00	\$24,510.00	132	CY	\$190.00	\$25,080.00
441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS)	11	CY	\$300.00	\$3,300.00					1	CY	\$300.00	\$300.00	24	CY	\$300.00	\$7,200.00
441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	57	CY	\$240.00	\$13,680.00	98	CY	\$210.00	\$20,580.00	92	CY	\$210.00	\$19,320.00	94	CY	\$210.00	\$19,740.00
452	6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1	50	SY	\$75.00	\$3,750.00	40	SY	\$75.00	\$3,000.00	35	SY	\$75.00	\$2,625.00	15	SY	\$75.00	\$1,125.00
452	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1	85	SY	\$75.00	\$6,375.00												
526	REINFORCED CONCRETE APPROACH SLAB (T = 12")	293	SY	\$250.00	\$73,250.00	293	SY	\$250.00	\$73,250.00	293	SY	\$250.00	\$73,250.00	581	SY	\$250.00	\$145,250.00
609	CURB, TYPE 6	925	FT	\$25.00	\$23,125.00	1,250	FT	\$25.00	\$31,250.00	975	FT	\$25.00	\$24,375.00	975	FT	\$25.00	\$24,375.00
				ROUNDED SUBTOTAL	\$229,000.00			ROUNDED SUBTOTAL	\$277,000.00			ROUNDED SUBTOTAL	\$260,000.00			ROUNDED SUBTOTAL	\$362,000.00
TRAFFIC CONTROL																	
630	SIGNING	1	LS	\$2,000.00	\$2,000.00	1	LS	\$3,000.00	\$3,000.00	1	LS	\$3,000.00	\$3,000.00	1	LS	\$3,000.00	\$3,000.00
644	PAVEMENT MARKING	1	LS	\$4,000.00	\$4,000.00	1	LS	\$5,000.00	\$5,000.00	1	LS	\$5,000.00	\$5,000.00	1	LS	\$5,000.00	\$5,000.00
				ROUNDED SUBTOTAL	\$6,000.00			ROUNDED SUBTOTAL	\$8,000.00			ROUNDED SUBTOTAL	\$8,000.00			ROUNDED SUBTOTAL	\$8,000.00
TRAFFIC SIGNALS																	
632	NEW TRAFFIC SIGNAL INSTALLATION	1	EACH	\$150,000.00	\$150,000.00	1	EACH	\$150,000.00	\$150,000.00					1	EACH	\$150,000.00	\$150,000.00
632	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	1	EACH	\$3,000.00	\$3,000.00					1	EACH	\$5,000.00	\$5,000.00	1	EACH	\$3,000.00	\$3,000.00
				ROUNDED SUBTOTAL	\$153,000.00			ROUNDED SUBTOTAL	\$150,000.00			ROUNDED SUBTOTAL	\$5,000.00			ROUNDED SUBTOTAL	\$153,000.00

Construction Cost Estimate

MUS-CR32-0.00

		EXISTING ALIGNMENT (BRIDGE STREET)				ALTERNATIVE A (MOUND ROAD)				ALTERNATIVE B (MILLERS LANE)				ALTERNATIVE C (BRIDGE STREET SHIFTED)			
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST	QUANTITY	UNIT	UNIT PRICE	COST
MAINTENANCE OF TRAFFIC																	
614	MAINTAINING TRAFFIC	1	LS	\$50,000.00	\$50,000.00	1	LS	\$50,000.00	\$50,000.00	1	LS	\$50,000.00	\$50,000.00	1	LS	\$50,000.00	\$50,000.00
614	DETOUR SIGNING	1	EACH	\$10,000.00	\$10,000.00												
				ROUNDED SUBTOTAL	\$60,000.00			ROUNDED SUBTOTAL	\$50,000.00			ROUNDED SUBTOTAL	\$50,000.00			ROUNDED SUBTOTAL	\$50,000.00
STRUCTURES																	
202	STRUCTURE REMOVED	1	LS	\$500,000.00	\$500,000.00	1	LS	\$500,000.00	\$500,000.00	1	LS	\$500,000.00	\$500,000.00	1	LS	\$750,000.00	\$750,000.00
530	STRUCTURE, MISC: MUSKINGUM RIVER BRIDGE	35,550	SF	\$250.00	\$8,887,500.00	35,775	SF	\$250.00	\$8,943,750.00	37,350	SF	\$250.00	\$9,337,500.00	37,125	SF	\$250.00	\$9,281,250.00
530	STRUCTURE, MISC: WATER INLET CULVERT													1	LS	\$300,000.00	\$300,000.00
530	STRUCTURE, MISC: CAUSEWAY	1	LS	\$600,000.00	\$600,000.00	1	LS	\$1,000,000.00	\$1,000,000.00	1	LS	\$1,000,000.00	\$1,000,000.00	1	LS	\$600,000.00	\$600,000.00
				ROUNDED SUBTOTAL	\$9,988,000.00			ROUNDED SUBTOTAL	\$10,444,000.00			ROUNDED SUBTOTAL	\$10,838,000.00			ROUNDED SUBTOTAL	\$10,932,000.00
PROJECT STARTUP/INCIDENTALS																	
103	PREMIUM FOR CONTRACT PERFORMANCE BOD	1	LS	\$53,000.00	\$53,000.00	1	LS	\$57,000.00	\$57,000.00	1	LS	\$57,000.00	\$57,000.00	1	LS	\$59,000.00	\$59,000.00
623	CONSTRUCTION LAYOUT STAKES AND SURVEYING	1	LS	\$53,000.00	\$53,000.00	1	LS	\$57,000.00	\$57,000.00	1	LS	\$57,000.00	\$57,000.00	1	LS	\$59,000.00	\$59,000.00
624	MOBILIZATION	1	LS	\$400,000.00	\$400,000.00	1	LS	\$400,000.00	\$400,000.00	1	LS	\$400,000.00	\$400,000.00	1	LS	\$400,000.00	\$400,000.00
				ROUNDED SUBTOTAL	\$506,000.00			ROUNDED SUBTOTAL	\$514,000.00			ROUNDED SUBTOTAL	\$514,000.00			ROUNDED SUBTOTAL	\$518,000.00
SUBTOTAL					\$11,049,000.00	SUBTOTAL					\$11,877,000.00	SUBTOTAL					\$12,011,000.00
CONTINGENCY (20%)					\$2,210,000.00	CONTINGENCY (20%)					\$2,375,000.00	CONTINGENCY (20%)					\$2,402,000.00
TOTAL					\$13,259,000.00	TOTAL					\$14,252,000.00	TOTAL					\$14,413,000.00
INFLATION (15.8%)					\$2,095,000.00	INFLATION (15.8%)					\$2,252,000.00	INFLATION (15.8%)					\$2,277,000.00
TOTAL					\$15,354,000.00	TOTAL					\$16,504,000.00	TOTAL					\$16,690,000.00

Estimated Right of Way Costs													
Project Parcel No.	Owner	MUS CR 32.00-Philo Road Bridge - Existing Allignment											
		Auditor's Parcel No.	Larger Parcel Acreage	Property Type/ Zoning	WD Take	Temp	\$/Acre	\$WD	\$Temp	\$Site Improvements Grass/Pavg. Building Damages			Total
1	Cunningham Martha	73900136000	0.2800	Commercial	0.2800	0.0000	\$87,120	\$24,394	\$0.00	\$1,800	\$20,000	\$0	\$46,194
2	Matthews & Schilling Commercial LLC	73900132000	0.6600	Commercial	0.0126	0.0449	\$87,120	\$1,098	\$391	\$200	\$0	\$0	\$1,689
3	Huffman Chad E & Tricia R	73900301000 & 73900302000	0.3246	Commercial	0.0000	0.0064	\$87,120	\$0	\$56	\$3,000	\$0	\$0	\$3,056
4	Yerian Anthony & Jennifer	73900320001	0.1700	Commercial	0.1700	0.0000	\$87,120	\$14,810	\$0	\$2,500	\$60,000	\$0	\$77,310
5	Ohio Power Company	73900140000	13.8000	Industrial	0.0600	0.0000	\$25,000	\$1,500	\$0	\$0	\$0	\$0	\$1,500
											Gross Acquisition Cost		\$129,749
												Trend	\$7,785
	Total Right of Way				0.5226	0.0513					TOTAL R/W COSTS		\$137,534
											ROUNDED		\$138,000

Estimated Right of Way Costs													
Project Parcel No.	Owner	MUS CR 32.00-Philo Road Bridge - Alternative A - Mound Rd.											
		Auditor's Parcel No.	Larger Parcel Acreage	Property Type/ Zoning	WD Take	Temp	\$/Acre	\$WD	\$Temp	\$Site Improvements Grass/Pavg. Building Damages			Total
1	Blake Joshua Lee	73840601000	0.5000	Residential	0.5000	0.0000	\$65,340	\$32,670	\$0	\$5,445	\$25,000	\$0	\$63,115
2	Blake Robert T & Diane	73840602000	0.6800	Residential	0.6800	0.0000	\$65,340	\$44,431	\$0	\$7,405	\$16,000	\$0	\$67,836
3	Blake Steven C	73840534000	0.5000	Residential	0.0198	0.0000	\$65,340	\$1,294	\$0	\$300	\$0	\$0	\$1,594
4	Spires Martin P	73840501000	0.4930	Commercial	0.0203	0.0000	\$87,120	\$1,769	\$0	\$2,300	\$0	\$25,000	\$29,069
5	Wells Gary A II Etal	73840832000	0.2699	Commercial	0.0467	0.0000	\$87,120	\$4,069	\$0	\$509	\$0	\$40,000	\$44,577
6	Fenton Thomas F Jr & Pam	73840833000	0.0700	Commercial	0.0700	0.0000	\$87,120	\$6,098	\$0	\$762	\$24,000	\$0	\$30,861
7	Smart Amy L	73840833001	0.1070	Residential	0.1070	0.0000	\$65,340	\$6,991	\$0	\$350	\$80,000	\$0	\$87,341
8	Ohio Franklin Realty LLC	20100103000	91.4800	Agricultural	0.6190	0.0000	\$15,000	\$9,285	\$0	\$0	\$0	\$0	\$9,285
9	Eastco Enterprises Inc.	20100104000	8.2900	Agricultural	1.1173	0.0000	\$18,000	\$20,111	\$0	\$0	\$0	\$0	\$20,111
10	CSX Transportation, Inc.	20200000900	4.7400	Industrial	0.3300	0.0000	\$18,000	\$5,940	\$0	\$0	\$0	\$0	\$5,940
											Gross Acquisition Cost		\$359,729
												Trend	\$21,584
	Total Right of Way				3.5101	0.0000					TOTAL R/W COSTS		\$381,313
											ROUNDED		\$382,000

Estimated Right of Way Costs												
Project Parcel No.	Owner	MUS CR 32.00-Philo Road Bridge - Alternative B - Millers Ln.										
		Auditor's Parcel No.	Larger Parcel Acreage	Property Type/ Zoning	WD Take	Temp	\$/Acre	\$WD	\$Temp	\$Site Imp. Grass/Pavg. Other		Damages Total
1	Lincicome Cynthia J	73811025000	0.24	Commercial	0.2400	0.0000	\$87,120	\$20,909	\$0	\$2,614	\$30,000	\$0 \$53,522
2	Carter Farms LLC	73811024000	0.3000	Commercial	0.0403	0.0023	\$87,120	\$3,511	\$20	\$2,100	\$0	\$0 \$5,631
3	Williams John E Sr & Lori A	73840518000 & 73840517000	0.3130	Commercial	0.0468	0.0000	\$87,120	\$4,077	\$0	\$2,000	\$0	\$14,000 \$20,077
4	Williams Michael V Tod@2	73840519000 & 73840520000	0.2127	Residential	0.0367	0.0049	\$65,340	\$2,398	\$32	\$400	\$0	\$0 \$2,830
5	EastCo Enterprises Inc	20100104000 & 20011002000	54.5900	Agricultural	1.7689	0.0000	\$15,000	\$26,534	\$0	\$0	\$0	\$0 \$26,534
6	CSX Transportation, Inc.	20200000900	4.7400	Industrial	0.2000	0.0000	\$18,000	\$3,600	\$0	\$0	\$0	\$0 \$3,600
7	Williams Michael V Tod@2	73840615000 & 74840616000	0.1122	Residential	0.0545	0.0000	\$65,340	\$3,561	\$0	\$594	\$0	\$3,000 \$7,155
											Gross Acquisition Cost	\$119,348
											Trend	\$7,161
	Total Right of Way				2.3872	0.0072					TOTAL R/W COSTS	\$126,509
											ROUNDED	\$127,000

Estimated Right of Way Costs												
Project Parcel No.	Owner	MUS CR 32.00-Philo Road Bridge - Alternative C - Bridge St.										
		Auditor's Parcel No.	Larger Parcel Acreage	Property Type/ Zoning	WD Take	Temp	\$/Acre	\$WD	\$Temp	\$Site Imp. Grass/Pavg. Other		Damages Total
1	Matthews & Schilling Commercial LLC	73900132000	0.6600	Commercial	0.6600	0.0000	\$87,120	\$57,499	\$0	\$7,200	\$60,000	\$0 \$124,699
2	Cunningham Martha	73900136000	0.2800	Commercial	0.2800	0.0000	\$87,120	\$24,394	\$0	\$1,800	\$20,000	\$0 \$46,194
3	Wayne Township Trustees	73900118000	0.5800	Commercial	0.0262	0.1246	\$87,120	\$2,283	\$10,855	\$2,900	\$0	\$0 \$16,038
4	Varner Jody L	73900130000	0.8600	Commercial	0.0247	0.0116	\$87,120	\$2,152	\$1,011	\$500	\$0	\$0 \$3,662
5	Ohio Power Co	20200101000	31.9500	Commercial	0.9700	0.0000	\$15,000	\$14,550	\$0	\$0	\$0	\$0 \$14,550
6	CSX Transportation, Inc.	20200000900	4.7400	Industrial	0.1500	0.0000	\$18,000	\$2,700	\$0	\$0	\$0	\$0 \$2,700
5	Ohio Power Company	73900140000	13.8000	Industrial	0.0900	0.0000	\$25,000	\$2,250	\$0	\$0	\$0	\$1,500 \$3,750
											Gross Acquisition Cost	\$211,593
											Trend (6)	\$12,696
	Total Right of Way				2.2009	0.1362					TOTAL R/W COSTS	\$224,289
											ROUNDED	\$225,000



Appendix G Environmental Reports (Separately Bound Report)

U.S. Department of
Homeland Security

United States
Coast Guard



Commander
Eighth Coast Guard District

1222 Spruce Street, Room 2.102D
St. Louis, MO 63103-2832
Staff Symbol: dwb
Phone: (314)269-2379
Fax: (314)269-2737
Email: rodney.l.wurgler@uscg.mil
www.uscg.mil/d8/westernriversbridges

16591.1/ 69.0 MUS
January 15, 2014

Mr. Denis Swierz, P.S.
Muskingum County Engineer's Office
155 Rehl Road
Zanesville, Ohio 43701

Subj: PROPOSED PHILO-DUNCAN FALLS BRIDGE, MILE 69.0, MUSKINGUM RIVER

Dear Mr. Swierz:

Please refer to your correspondence of November 27, 2013, regarding the subject bridge project. After careful consideration, we have determined that a Coast Guard Bridge Permit will be required for the proposed project.

The General Bridge Act of 1946 requires that the location and plans for bridges over navigable waters of the United States be approved by the Commandant, U.S. Coast Guard prior to commencing construction. The Muskingum River is considered to be a navigable waterway of the United States for bridge administration purposes at the project site.

Application for the bridge permit should be addressed to Commander (dwb), Eighth Coast Guard District, Bridge Branch, 1222 Spruce Street, Room 2.102D, St. Louis, Missouri 63103-2832. The application must be supported by sufficient information to permit a thorough assessment of the impact of the bridge and its immediate approaches on the environment. We recommend that the impacts of procedures for constructing cofferdams, sand islands, and falsework bents, etc., that will be employed to build the bridge be discussed in detail. Environmental documentation included with the permit application should contain data on the number, size, and types of vessels using the waterway and anticipated effects the proposed project will have on them.

Assuming the Federal Highways Administration (FHWA) is the lead federal agency, we agree to serve as a Cooperating Agency for the project from a navigation standpoint. We should be given the opportunity to review the environmental document before it is finalized. If no federal funds are involved, we will serve as the lead federal agency.

Vertical clearance of the proposed bridge's navigation span must at least match or be higher than the existing structure, which is 33 feet above normal pool. Horizontal clearance is a function of the channel pier locations; this clearance will normally not be allowed to be less than existing bridges in the area. A 100-foot minimum channel is acceptable depending on exact bridge location. If the new bridge is near a bend in the river, a wider horizontal clearance will be required.

Enclosed for your use is a Coast Guard Bridge Permit Application pamphlet, and below is a link to the application process on the Coast Guard Bridge Branch's website.
http://www.uscg.mil/hq/cg5/cg551/BPAG_Page.asp

Subj: PROPOSED PHILO-DUNCAN FALL BRIDGE, MILE 69.0 16591.1/69.0 MUS
MUSKINGUM RIVER January 15, 2014

The opportunity to comment on this project that could have impact on matters under jurisdiction of the Coast Guard is appreciated. Please contact Mr. Rodney Wurgler at the above number to provide updates or for additional information.

Sincerely,

ERIC A. WASHBURN
Bridge Administrator, Western Rivers
By direction of the District Commander

Enclosure: Coast Guard Bridge Permit Application



1 April 2015

PUBLIC NOTICE (D8 DWB-861)

All interested parties are notified that a proposal, dated November 27, 2013 has been received from the Muskingum County Engineer's Office by the Commander, Eighth Coast Guard District, for a review of location and plans for the construction of a Philo-Duncan Falls Bridge Replacement Project over a navigable waterway of the United States. The existing bridge will not be removed.

WATERWAY AND LOCATION: Muskingum River, Mile 69.0, Muskingum County, Ohio.

CHARACTER OF WORK: Construct a fixed highway bridge, the existing Philo-Duncan Bridge to remain.

MINIMUM NAVIGATIONAL CLEARANCES:

<u>Existing to remain Philo-Duncan Bridge</u>	<u>Proposed new highway bridge</u>
Horizontal: 56.0 feet measured in the lock chamber	Horizontal: 100.0 feet measured pier face to the pier face
Vertical: 33.0 feet above normal pool stage 694.0 feet m.s.l.	Vertical: 28.0 feet above normal pool stage 694.0 feet m.s.l.

ENVIRONMENTAL CONSIDERATIONS:

The United States Coast Guard, as lead federal agency, will approve the proposed bridge project, based on its conclusion that there are no significant environmental impacts. The Coast Guard anticipates issuing a Categorical Exclusion. The existing bridge will remain and be used for pedestrian crossing only.

SOLICITATION OF COMMENTS:

Interested parties are requested to express their views, in writing, on the proposed replacement bridge. Give sufficient details to establish a clear understanding of the reasons for support or opposition to the proposal. Comments will be received for the record at the office of the Commander (dwb), Eighth Coast Guard District Bridge Branch, Room 2.102D, 1222 Spruce Street, St. Louis, Missouri 63103-2832 through April 29, 2015. These comments will be made part of the case record.

ERIC A. WASHBURN
Bridge Administrator, Western Rivers
By direction of the District Commander

POSTMASTER: Official business. Please post.



Douglas R. Davis P.E., P.S. - County Engineer
155 Rehl Road - Zanesville, Ohio 43701
Phone - 740-454-0155
Fax - 740-455-7180
email - mceo@rrohio.com
website - www.mceo.org

December 10, 2015

District Engineer
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, WV 25701-2070

Re: Bridge Street/Access Road Replacement - Preconstruction Notification

Dear District Engineer:

This letter shall serve as the Preconstruction Notification for the above referenced project. Muskingum County intends to reconstruct an access road through non tidal waters in Muskingum County, Ohio.

Upon review of the Public Notice LRH-201100098 (PN) dated March 19, 2012, it appears these improvements qualify under the Nationwide 404 Permit requirements under Item B.12 *Utility Line Activities - Access Roads* information is being provided as required by Item F *Nationwide Permit Regional General Conditions* of the PN.

The following paragraphs are the applicable sections of the PN shown in italics and the required information.

I. *Item F.6 Notification Submittals*

a. *Drawings:* The following items are enclosed:

- (1) Vicinity Map
- (2) Site Plan and Cross Section

b. *United States Fish & Wildlife Service (USFWS):*

- (1) No contact has been made to date.

c. *Cultural Resources:*

- (1) The following is a description of the project site. The project site is located at approximate coordinates 81° 54' 35.44" W Longitude 39° 52' 3.48" N Latitude crossing an existing drainage channel south of the Muskingum River at approximate river mile 68.6. The current site is located within a public right of way and is covered by grass and small woody brush. The topography of the area is river valley surrounded by rolling hills. See attached Site Plan and photographs for more information.
- (2) The existing access road and bridge were improved in 1954 and serve American Electric Power's Electrical Substation as well as Muskingum River State Park. Access for both of these facilities is from County Road 32 (Bridge Street); however, the access from the north is closed due to the closing of the bridge over the River, resulting in the only access being from the south across the drainage channel. The adjoining land is undeveloped to the east and contains a state park to the west. The site usage appears unchanged since the construction of the existing roadway and bridge.
- (3) The proposed improvements as shown on the Site Plan include the removal of the existing 162-foot long steel bridge over the drainage channel. This structure will

USACE Pre-Con Notification 12.10.15.rch.

District Engineer
U.S. Army Corps of Engineers
Page 2
December 10, 2015

be replaced with a seven foot diameter culvert covered by an earth embankment. Photos of the current project site are included for reference.

- (4) See enclosed: *Phase I Archaeology Survey for Proposed Lock 9 Guard Wall Retrieval in Philo Harrison Township, Muskingum County, Ohio* dated May 13, 2010.

g. *Flood plain Coordination:*

Enclosed is a copy of the required FIRMette for the project area.

As requested, we are providing two copies of the notification and enclosures. Please contact us should you have any questions or need additional information. The County intends to begin construction of the project as soon we receive your determination.

Sincerely,

Douglas R. Davis, P.E., P.S.

Enclosures

c/enc.: R. Heady, MCEO

From: Morgan, Leah S LRH [<mailto:Leah.S.Morgan@usace.army.mil>]
Sent: Thursday, January 07, 2016 10:01 AM
To: mceo@rrohio.com
Subject: RE: Incomplete Preconstruction Notification - Bridge Street/Access Road Replacement (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Additionally, due to the historic nature of the area, a cultural resources literature survey is necessary to determine if a Phase I should be conducted within the area of impacts. There appear to be several historic structures adjacent to the bridge were not addressed in the Phase I survey included with the application.

Thank you,

Leah S. Morgan
Regulatory Specialist
U.S. Army Corps of Engineers
Huntington District
502 8th Street
Huntington, WV 25701
304-399-5548 (office)
304-399-5085 (fax)

-----Original Message-----

From: Morgan, Leah S LRH
Sent: Thursday, January 07, 2016 9:43 AM
To: 'mceo@rrohio.com' <mceo@rrohio.com>
Subject: Incomplete Preconstruction Notification - Bridge Street/Access Road Replacement (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good morning Mr. Davis,

I have received and will be processing the Preconstruction Notification for the Bridge Street/Access Road Replacement located along County Road 32. I have assigned the project USACE number LRH-2016-19-MUS. Upon initial review, it appears the proposed project may not comply with the following conditions of the Nationwide Permits:

Nationwide Permit General Conditions

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary

crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

General Limitations and Conditions for all Ohio EPA Certified Nationwide Permits:

A. Culverts

1. Bottomless or buried culverts are required when culvert size is greater than 36" diameter. This condition does not apply if the culverts will have a gradient of greater than 1% grade or is installed on bedrock. A buried culvert means that the bottom 10% by dimension shall be buried below the existing stream bed elevation.

2. The culvert shall be designed and sized to accommodate bankfull discharge and match the existing depth of flow to facilitate the passage of aquatic organisms.

Please address above conditions and submit justification for the proposed culvert/embankment approach as opposed to bridge rehabilitation/construction of a new stream-spanning bridge. If you have any questions, please don't hesitate to contact me at the number below.

Thank you,

Leah S. Morgan
Regulatory Specialist
U.S. Army Corps of Engineers
Huntington District
502 8th Street
Huntington, WV 25701
304-399-5548 (office)
304-399-5085 (fax)

CLASSIFICATION: UNCLASSIFIED
CLASSIFICATION: UNCLASSIFIED



MUSKINGUM COUNTY

MCEO

ENGINEER'S OFFICE

Douglas R. Davis P.E., P.S. - County Engineer

155 Rehl Road - Zanesville, Ohio 43701

Phone - 740-454-0155

Fax - 740-455-7180

email - mceo@rrhio.com

website - www.mceo.org

VIA E-MAIL and USPS

December 21, 2015

Ms. Jeanine Young
C&E Manager
AT&T
160 N. 6th Street
Zanesville, Ohio 43701
ey2327@att.com

Re: Bridge Street Bridge (Philo Bridge) Replacement -Utility Relocation Request

Dear Ms. Young:

This letter shall serve as our utility relocation request. We request the relocation of AT&T facilities located on our bridge structure (number 6054129) located over the Muskingum River carrying Bridge Street (CR 32) in Wayne Township in Muskingum County, Ohio. Please see enclosed photograph and location *Map 6054129* illustrating the location of the existing structure.

We intend to replace the existing structure and physical information noted during our survey indicated that AT&T has facilities on the south side of the bridge that will be impacted and require relocation.

This project is scheduled to begin 2018; we request that all facilities be removed from the bridge prior to January 1, 2017. We are available to meet to discuss relocation of these facilities. Please contact us Bob Heady heady.mceo@rrhio.com or 740-707-4581 in our office to establish a time to meet to discuss this issue.

Sincerely,



Douglas R. Davis, P.E., P.S.

Enclosures

c/enc.: R. Heady, MCEO

ATT Relocation Request 12.21.2015.rch

Appendix K

Previous Structure Maintenance Costs

MAINTENANCE & REPAIRS

2014 REPAIRS SHOWN

Year	Description	Cost
1978	Removal of open grate decking from swing span, Ohio Bridge Corp.	\$143,170.00
1989	Repainting of entire bridge, RIE Sandblasting and Painting	\$86,250.00
1992	Repainting of floor beams and stringers, Ohio Bridge Corp.	\$9,600.00
1992	Repair of stringers, Ohio Bridge Corp.	\$7,292.52
1994	Replacement of curbs and 64 floor stringers, Ohio Bridge Corp.	\$269,583.40
1995	Replacement of 4 sections of the deck, Ohio Bridge Corp.	\$18,222.00
1995	Repainting of railings and repair of swing span supports, Ohio Bridge Corp.	\$23,189.25
2006	Reinforcement of one floor beam and replacement of stringers on swing span, MCEO	\$76,357.48
2007	Resurfacing of asphalt on entire bridge, Shelly and Sands, Inc.	\$50,760.71
2011	Replacement of a portion of 1978 steel deck in north bound lane on swing span, MCEO	\$91,100.01
2014	Replacement of a portion of 1978 steel deck in south bound lane, expansion joint on swing span, approach slab and expansion joint on Duncan Falls side, MCEO	\$43,453.67
Repairs Total		\$818,979.04

Deck Repairs



Swing Span Expansion Joint Repair



Duncan Falls Approach Slab & Expansion Joint Repair

