**Maumee River Bridge: Preliminary Engineering Report**

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**C.1 DESCRIPTION OF PROJECT COMPONENTS**

The proposed project will consist of the construction of a new bridge to connect two industrial areas located north and south of the Maumee River in Henry County, Ohio. The proposed bridge will be multi-span with a total span of approximately 1,125 feet. The project also includes 625 feet of roadway to be installed and two roundabouts to be constructed at either end of the project termini. The total construction cost of the proposed bridge totals $13,593,223. The project components and quantities are as shown in the following table:

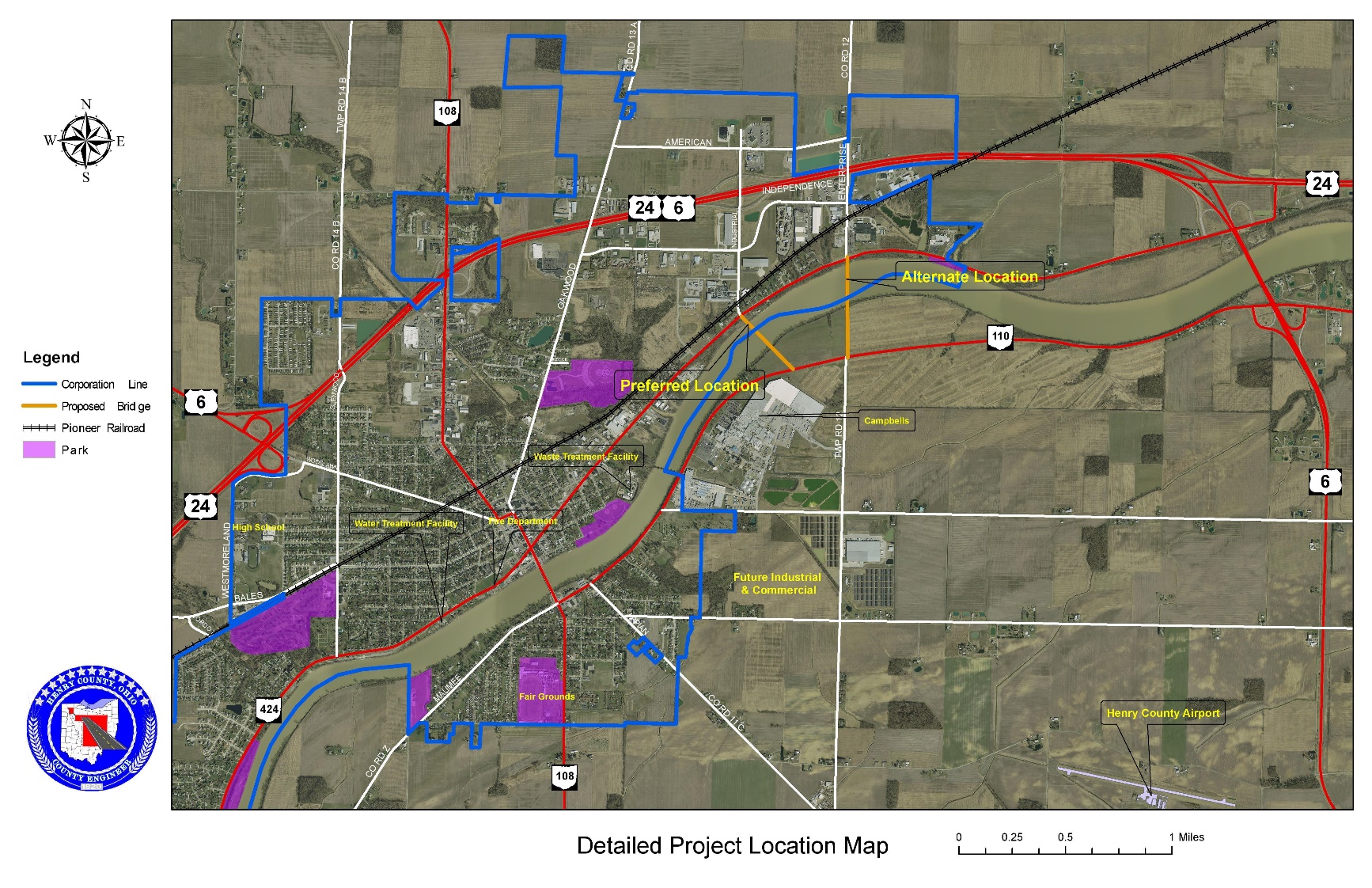
Table 1: Project Components and Quantities

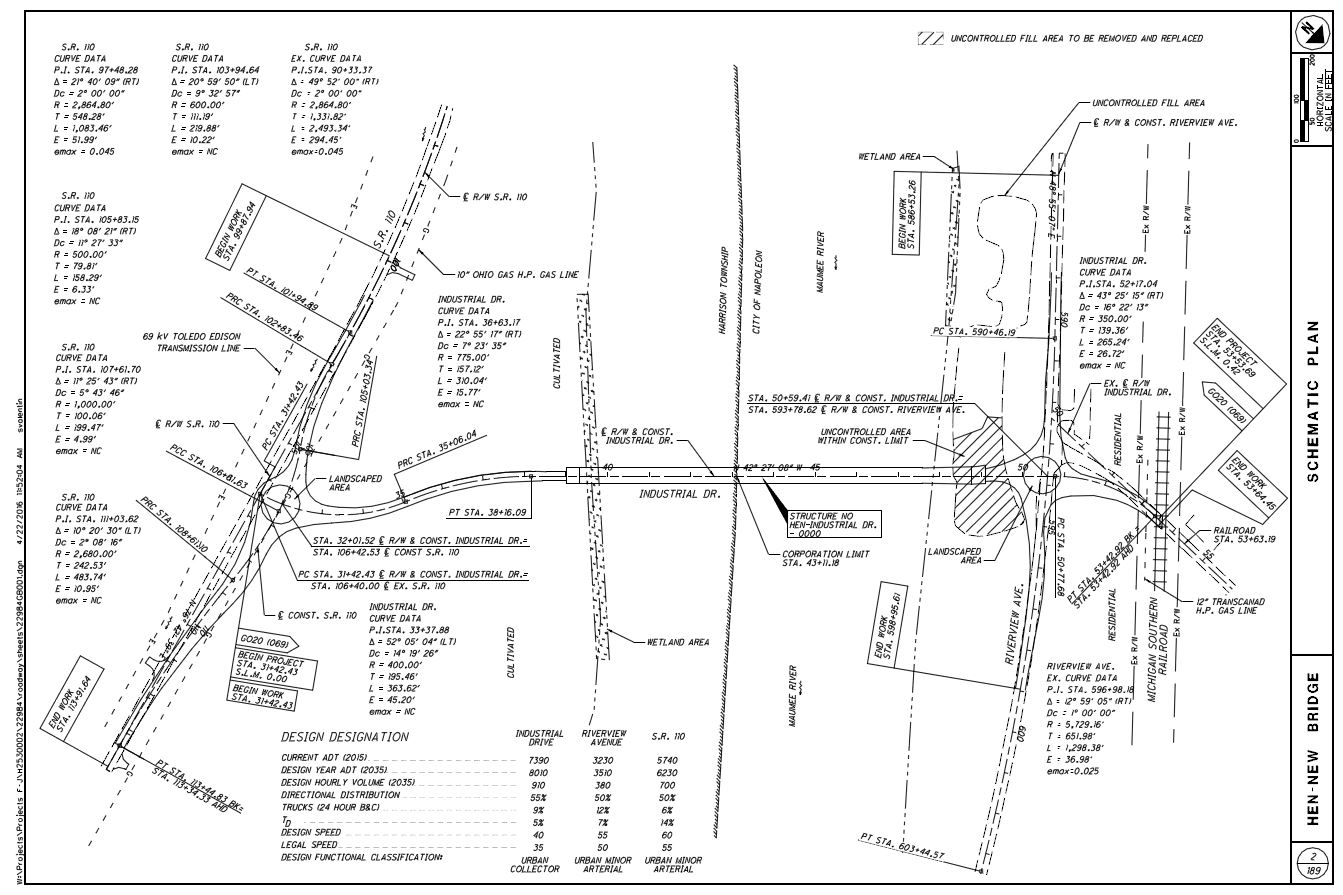
|  |  |  |
| --- | --- | --- |
| **DESCRIPTION** | **UNIT** | **QUANTITY** |
| CLEARING AND GRUBBING | LS | 1.000 |
| PAVEMENT REMOVED | SY | 76.000 |
| PAVEMENT REMOVED, ASPHALT | SY | 8,563.000 |
| GUARDRAIL REMOVED | FT | 1,207.000 |
| BUILDING DEMOLISHED: 16'x12' SHED WITH FOUNDATION | LS | 1.000 |
| REMOVAL MISC.: FLOWER BED REMOVED | SF | 180.000 |
| EXCAVATION | CY | 10,617.000 |
| EXCAVATION, AS PER PLAN | CY | 16,879.000 |
| EMBANKMENT | CY | 64,482.000 |
| SPECIAL - SETTLEMENT PLATFORM | EACH | 4.000 |
| GUARDRAIL, TYPE MGS | FT | 87.500 |
| GUARDRAIL, TYPE MGS WITH LONG POSTS | FT | 1,700.000 |
| ANCHOR ASSEMBLY, TYPE E | EACH | 2.000 |
| ANCHOR ASSEMBLY, TYPE T | EACH | 1.000 |
| BRIDGE TERMINAL ASSEMBLY, TYPE 1 | EACH | 2.000 |
| BRIDGE TERMINAL ASSEMBLY, TYPE 2 | EACH | 2.000 |
| 4" CONCRETE WALK | SF | 2,852.000 |
| CURB RAMP | SF | 1,118.000 |
| MONUMENT ASSEMBLY | EACH | 7.000 |
| MONUMENT BOX ADJUSTED TO GRADE | EACH | 1.000 |
| REFERENCE MONUMENT | EACH | 1.000 |
| FIRE HYDRANT ADJUSTED TO GRADE | EACH | 1.000 |
| VALVE BOX ADJUSTED TO GRADE | EACH | 2.000 |
| SPECIAL - MAILBOX SUPPORT | EACH | 2.000 |
| SPECIAL - MAILBOX REMOVED AND RESET | EACH | 3.000 |
| TIED CONCRETE BLOCK MAT, TYPE 2 | SY | 88.000 |
| ROCK CHANNEL PROTECTION, TYPE C WITH FILTER | CY | 14.000 |
| TOPSOIL | CY | 3,156.000 |
| SEEDING AND MULCHING | SY | 28,428.000 |
| REPAIR SEEDING AND MULCHING | SY | 1,421.000 |
| INTER-SEEDING | SY | 1,421.000 |
| COMMERCIAL FERTILIZER | TON | 3.960 |
| LIME | ACRE | 5.880 |
| **DESCRIPTION** | **UNIT** | **QUANTITY** |
| WATER | MGAL | 158.000 |
| MOWING | MSF | 64.000 |
| DITCH EROSION PROTECTION | SY | 1,506.000 |
| STORM WATER POLLUTION PREVENTION PLAN | LS | 1.000 |
| EROSION CONTROL | EACH | 110,000.000 |
| PIPE REMOVED | FT | 232.000 |
| CATCH BASIN REMOVED | EACH | 2.000 |
| CONCRETE MASONRY | CY | 2.000 |
| 6" SHALLOW PIPE UNDERDRAINS | FT | 5,873.000 |
| 6" CONDUIT, TYPE B | FT | 201.000 |
| 6" CONDUIT, TYPE E | FT | 100.000 |
| 6" CONDUIT, TYPE F | FT | 455.000 |
| 12" CONDUIT, TYPE B | FT | 664.000 |
| 12" CONDUIT, TYPE C | FT | 676.000 |
| 12" CONDUIT, TYPE D | FT | 20.000 |
| 12" CONDUIT, TYPE F | FT | 94.000 |
| 15" CONDUIT, TYPE C | FT | 149.000 |
| 18" CONDUIT, TYPE B | FT | 63.000 |
| 18" CONDUIT, TYPE C | FT | 141.000 |
| 24" CONDUIT, TYPE C | FT | 155.000 |
| CATCH BASIN, NO. 3 | EACH | 6.000 |
| CATCH BASIN, NO. 3A | EACH | 12.000 |
| CATCH BASIN, NO. 2-2B | EACH | 5.000 |
| CATCH BASIN, NO. 2-3 | EACH | 1.000 |
| MANHOLE ADJUSTED TO GRADE | EACH | 3.000 |
| PRECAST REINFORCED CONCRETE OUTLET | EACH | 3.000 |
| SUBGRADE COMPACTION | SY | 10,733.000 |
| EXCAVATION OF SUBGRADE | CY | 4,226.000 |
| GRANULAR MATERIAL, TYPE B | CY | 4,226.000 |
| PROOF ROLLING | HOUR | 4.000 |
| PAVEMENT PLANING, ASPHALT CONCRETE | SY | 590.000 |
| ASPHALT CONCRETE BASE, PG64-22 | CY | 2,037.000 |
| AGGREGATE BASE | CY | 3,254.000 |
| TACK COAT | GAL | 1,544.000 |
| SEALING, MISC.: LONGITUDINAL JOINT SEALER | LB | 2,498.000 |
| ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (446), AS PER PLAN | CY | 442.000 |
| ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (446), AS PER PLAN | CY | 618.000 |
| ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448) (WEDGING) | CY | 13.000 |
| 6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC1 | SY | 44.000 |
| NON-REINFORCED CONCRETE PAVEMENT, MISC.: DECORATIVE, TRUCK APRON | SY | 754.000 |
| AGGREGATE WALK: 1" LIMESTONE SCREENINGS | SF | 4,178.000 |
| WALKWAY, MISC.: DECORATIVE CONCRETE, 6" SPLITTER ISLAND | SF | 13,284.000 |
| COMBINATION CURB AND GUTTER, TYPE 2 | FT | 3,607.000 |
| COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN | FT | 32.000 |
| CURB, TYPE 2-A | FT | 376.000 |
| COMBINATION CURB AND GUTTER, TYPE 3, AS PER PLAN | FT | 590.000 |
| CURB, TYPE 4-C | FT | 52.000 |
| CURB, TYPE 6 | FT | 2,690.000 |
| CONNECTION, FUSED PULL APART | EACH | 28.000 |
| CONNECTION, UNFUSED PERMANENT | EACH | 8.000 |
| LIGHT POLE, CONVENTIONAL AT08B30 | EACH | 6.000 |
| LIGHT POLE, CONVENTIONAL AT14B30 | EACH | 8.000 |
| LIGHT POLE FOUNDATION, 24" X 6' DEEP | EACH | 14.000 |
| NO. 8 AWG 600 VOLT DISTRIBUTION CABLE | FT | 6,652.000 |
| NO. 10 AWG POLE AND BRACKET CABLE | FT | 1,160.000 |
| CONDUIT, 1-1/2", 725.04 | FT | 1,423.000 |
| CONDUIT, 3", 725.04 | FT | 311.000 |
| LUMINAIRE, CONVENTIONAL 150 W, TYPE II DISTRIBUTION | EACH | 8.000 |
| LUMINAIRE, CONVENTIONAL 250 W, TYPE II DISTRIBUTION | EACH | 6.000 |
| TRENCH, 24" DEEP | FT | 1,423.000 |
| PULL BOX, 725.08, 18" | EACH | 10.000 |
| GROUND ROD | EACH | 14.000 |
| POWER SERVICE, AS PER PLAN | EACH | 2.000 |
| PLASTIC CAUTION TAPE | FT | 1,423.000 |
| DELINEATOR, POST SURFACE MOUNTED | EACH | 7.000 |
| RPM | EACH | 17.000 |
| BARRIER REFLECTOR | EACH | 59.000 |
| GROUND MOUNTED SUPPORT, NO. 3 POST, AS PER PLAN | FT | 836.500 |
| SIGN POST REFLECTOR | EACH | 22.000 |
| SIGN, FLAT SHEET | SF | 365.300 |
| SIGN ERECTED, FLAT SHEET | SF | 365.300 |
| REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL | EACH | 1.000 |
| REMOVAL OF GROUND MOUNTED SIGN AND REERECTION | EACH | 2.000 |
| REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL | EACH | 10.000 |
| REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL | EACH | 7.000 |
| SIGNING, MISC.: REMOVAL OF SOLID WOOD POST | EACH | 1.000 |
| SIGNING, MISC.: 4"x6" SOLID WOOD POST | FT | 15.200 |
| EDGE LINE, 4" | MILE | 1.610 |
| CENTER LINE | MILE | 0.770 |
| CROSSWALK LINE, AS PER PLAN | FT | 260.000 |
| TRANSVERSE/DIAGONAL LINE | FT | 144.000 |
| RAILROAD SYMBOL MARKING | EACH | 1.000 |
| LANE ARROW | EACH | 8.000 |
| DOTTED LINE, 12" | FT | 306.000 |
| YIELD LINE | FT | 113.000 |
| MULCH | CY | 74.000 |
| GROUNDCOVER AND VINES, 1 YEAR, POTTED SCHIZACHYRIUM SCOPARIUM - 'LITTILE BLUESTEM' | EACH | 176.000 |
| EVERGREEN SHRUB, 12" HEIGHT JUNIPERUS HORIZONTALIS - 'ANDORRA YOUNGSTOWN' | EACH | 64.000 |
| LANDSCAPE WATERING | GAL | 1,400.000 |
| EVERGREEN TREE, 8' HEIGHT TAXODIUM DISTICHUM - 'BALDCYPRESS' | EACH | 6.000 |
| **DESCRIPTION** | **UNIT** | **QUANTITY** |
| COFFERDAMS AND EXCAVATION BRACING | LS | 1.000 |
| UNCLASSIFIED EXCAVATION, AS PER PLAN | LS | 1.000 |
| PILE DRIVING EQUIPMENT MOBILIZATION | LS | 1.000 |
| STEEL PILES HP12X53, FURNISHED | FT | 1,630.000 |
| STEEL PILES HP12X53, DRIVEN | FT | 1,360.000 |
| EPOXY COATED REINFORCING STEEL, AS PER PLAN | LB | 606,696.000 |
| CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN | CY | 1,060.000 |
| CLASS QC2 CONCRETE WITH QC/QA, SUPERSTRUCTURE | CY | 93.000 |
| CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET) | CY | 152.000 |
| CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS, AS PER PLAN | CY | 499.000 |
| CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING | CY | 409.000 |
| CLASS QC2 CONCRETE WITH QC/QA, SIDEWALK | CY | 205.000 |
| SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) | SY | 5,528.000 |
| TYPE 2 WATERPROOFING | SY | 1.000 |
| STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN | LB | 9,389.000 |
| DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LE VEL 3, TYPE WF72-49 | EACH | 32.000 |
| INTERMEDIATE DIAPHRAGMS, AS PER PLAN | EACH | 72.000 |
| SPECIAL - MODULAR EXPANSION JOINT | FT | 78.000 |
| 1" PREFORMED EXPANSION JOINT FILLER | SF | 115.000 |
| 1-1/2" PREFORMED EXPANSION JOINT FILLER | SF | 126.000 |
| ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 15"x41"x2" | EACH | 52.000 |
| ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 15"x41"x2.1875" | EACH | 4.000 |
| ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE) 15.5"x41"x2" | EACH | 8.000 |
| RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING) | FT | 1,008.000 |
| SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN | EACH | 8.000 |
| POROUS BACKFILL WITH GEOTEXTILE FABRIC | CY | 189.000 |
| 6" PERFORATED CORRUGATED PLASTIC PIPE | FT | 137.000 |
| 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIAL S | FT | 56.000 |
| 6" PIPE DOWNSPOUT, INCLUDING SPECIALS | FT | 25.000 |
| DRILLED SHAFTS, 66" DIAMETER, INTO BEDROCK, AS PER PLAN | FT | 231.000 |
| DRILLED SHAFTS, 72" DIAMETER, ABOVE BEDROCK, AS PER PLAN | FT | 104.000 |
| DRILLED SHAFTS, MISC.: DRILLED SHAFT OSTERBERG LOAD TEST, AS PER PLAN | EACH | 1.000 |
| REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN | SY | 265.000 |
| TYPE A INSTALLATION | FT | 81.000 |
| ROCK CHANNEL PROTECTION, TYPE C WITH AGGREGATE FILTER | CY | 615.000 |
| 12" CONDUIT, TYPE C 707.45 | FT | 784.000 |
| POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM | CF | 81.000 |
| TRAFFIC COMPACTED SURFACE, TYPE A OR B | CY | 100.000 |
| WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL) | EACH | 4.000 |
| DETOUR SIGNING | LS | 1.000 |
| BARRIER REFLECTOR, TYPE B2 | EACH | 24.000 |
| OBJECT MARKER, TWO WAY | EACH | 24.000 |
| WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I | MILE | 0.370 |
| **DESCRIPTION** | **UNIT** | **QUANTITY** |
| WORK ZONE EDGE LINE, CLASS I, 642 PAINT | MILE | 0.540 |
| PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A | SY | 239.000 |
| WATER | MGAL | 230.000 |
| PORTABLE BARRIER, 32" | FT | 1,070.000 |
| PREMIUM FOR CONTRACT PERFORMANCE BOND AND FOR PAYMENT BOND | LS | 1.000 |
| MAINTAINING TRAFFIC | LS | 1.000 |
| FIELD OFFICE, TYPE C | MNTH | 24.000 |
| CONSTRUCTION LAYOUT STAKES AND SURVEYING | LS | 1.000 |
| MOBILIZATION | LS | 1.000 |
|  |  |  |

**C.2 VERIFICATION OF PROJECT COMPONENTS**

The Project components listed in item 1 above are consistent with the EDA investment project description in Section A.2 of Form ED-900.

**C.3 SCHEMATIC DRAWINGS**

The following images show the layout of the proposed project along with various project components.





**C.4 FEASIBILITY STUDY**

A feasibility study for the project was completed in October 2013 by the Mannik and Smith Group, Inc. The study is included as an attachment with this application.

**C.5 PROPOSED METHOD OF CONSTRUCTION**

The proposed project will be constructed using the traditional design, bid, and build with sealed competitive bids.

**C.6 CONSTRUCTION CONTRACTS**

There will only be one construction contract for this project. However, other contracts may be needed for other project elements such as inspection and testing services, mussel relocation, etc.

**C.7 DETAILED COST ESTIMATE**

The detailed cost estimate for the proposed project is included as an attachment with this application.

**C.8 REAL PROPERTY ACQUISITION**

The project cost does not include any costs for real property acquisition.

**C.9 LIST OF PERMITS**

Table 2: List of Permits

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Permit** | **Submittal Status** | **Approval Date** | **Review Agency** | **Comments/Notes** |
| **Permit Determination Request (for Bridge)** | Approved | 02-05-2016 | Ohio Department of Transportation Office of Environmental Services | PDR approval received from ODOT-OES on 02-05-2016. |
| **Army Corps of Engineers Section 404 Nationwide Permit (NWP)**  **and Section 10 Coordination for Bridge** | Work has been initiated  (on-going through PDP) | Final approval  not required for CE | Ohio Department of Transportation Office of Environmental Services | Preparation of permit applications have been initiated. Permit finalization is not required for CE clearance.  On hold until the sign -offs occur on the Section 106 items. |
| **Coordination with U.S. Coast Guard (USCG)** | Complete | Final approval  not required for CE | U.S. Coast Guard/Ohio Department of Transportation Office of Environmental Services | Coordination with USCG has been completed by ODOT‐OES. Permit finalization is not required for CE clearance.  A Section 9 Permit will not be required. |
| **Floodplains Coordination** | Approved | 05-07-2015 | Local Floodplain Coordinator | Floodplain Permit signed/approved by Henry County Planning Commission Flood Plain coordinator on 05‐07‐2015. |
| **Ohio EPA Section 401 Water Quality Certification (for Bridge)** | Work has been initiated  (on-going through PDP) | Final approval  not required for CE | Ohio Department of Transportation Office of Environmental Services | Preparation of permit application has been initiated. Permit finalization is not required for CE clearance.  Submittal On Hold until the USACE Section 404 Permit is received. |
| **NPDES Construction General Permit for Stormwater (NOI)** | Coordination is on-going through the  project development process | Final approval  not required for CE | Ohio Department of Transportation Office of Environmental Services | Continued development & coordination to obtain permit is being started now. Will be finalized in next phase of project development.  Finalization is not needed for CE clearance. |
| **Mussel Survey** | Does not have to be completed for  submittal of CE document | Final approval  not required for CE | Ohio Department of Transportation Office of Environmental Services | The mussel survey and relocation will take place in the next phase of the project nearer to construction of project.  Finalization is not needed for CE clearance. |

For construction of the proposed project, entry will be required onto the Napoleon, Defiance and Western Railway (Pioneer Railcorp) right-of-way. Therefore, a right of entry permit will need to be obtained. This process will take approximately 30 days to complete.

**C.10 Overall Estimated Project Schedule**

Table 3: Overall Estimated Project Schedule

|  |  |  |
| --- | --- | --- |
| **Schedule Item** | **Status** | **Number of Months to Complete** |
| **Design Period** | Stage 3 Design Plans have been completed and have been sent to the Ohio Department of Transportation for approval | 3 months |
| **Obtaining of required permits** | In progress | 12 months |
| **Obtaining of required easements or rights-of-way** | Final Right of Way Plans have been submitted to ODOT and approved as of 9/12/16 | 6 months |
| **Solicitation of bids and awarding of contracts** | Not yet begun | 9/1/17-12/1/17 |
| **Construction Period** | Not yet begun | 4/1/18-9/30/19 |
|  |  |  |

**C.11 OVERALL PROJECT BUDGET BREAKDOWN**

Table 4: Overall Project Budget Breakdown

|  |  |  |
| --- | --- | --- |
| **Cost Classification** | **Tasks** | **Total Cost** |
| **Land structures, right-of-way, appraisals, etc.** | Environmental mitigation | $500,000.00 |
| **Relocation expenses and payments** | Mussel relocation | $250,000.00 |
| **Project inspection fees** | Construction materials testing and inspection | $1,200,000.00 |
| **Construction** | Roadway | $824,438.59 |
|  | Erosion control | $213,344.69 |
|  | Drainage | $267,470.70 |
|  | Pavement | $1,136,111.44 |
|  | Lighting | $96,913.67 |
|  | Traffic control | $30,009.90 |
|  | Landscaping | $11,419.49 |
|  | Structure 20 foot span and over | $7,121,724.14 |
|  | Maintenance of traffic | $76,850.05 |
|  | Incidentals | $554,532.19 |
|  | Contingency (12.68%) | $1,310,408.00 |
|  | **TOTAL** | **$13,593,223** |

This report was prepared under my direction and supervision.

Patrick M. McColley, P.E., S.I.

Ohio P.E. Number: 76703

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