ODOT

DESIGN BUILD

SCOPE OF SERVICES

PID: 107714 **State Project Number:** 439349

County: Lorain **Route:** IR 90 **Section:** 10.76

1 PROJECT IDENTIFICATION & GENERAL INFORMATION

Table 1-1: Project Identification

PID	107714
State Project Number	439349
County-Route-Section	LOR-90-10.76
Local Route Name (if applicable)	N/A
Highway Functional Classification & Federal Aid System	Interstate

1.1 Design Designation

The DBT shall use the design designations for each of the facilities below various design elements as specified within the Scope of Services.

Table 1-2: Design Designation

Location	I-90 (SLM 10.76 to SLM 11.96)	I-90 (SLM 11.96 to SLM 18.61)	SR-2
Current ADT*	14,900	65,600	53,930
Design Year ADT*	20,420	77,430	60,590
Design Hourly Volume*	1,980	7,930	6,280
Directional Distribution*	0.56	0.57	0.54
Trucks*	37%	11%	6%
Design Speed	65 mph	65 mph	65 mph
Legal Speed	65 mph	65 mph	65 mph
Design Functional Classification	Urban Interstate	Urban Interstate	Urban Interstate
NHS Project	Yes	Yes	Yes

*See Appendix TC-03 (Certified Traffic)

1.2 Existing Plans and Project Information

Available information related to the Project is available in the Document Inventory shown in Table 1-3. The Document Inventory will identify whether the document is designated as “Reference Documents” or “Contractual Appendices”.

Reference Documents appendices are provided for informational purposes only. The Department makes no representation or warranty as to the accuracy, adequacy, applicability, or completeness of the Reference Documents. Except to the extent set forth to the contrary in the Contract Documents, reliance upon the Reference Documents shall be at the Offeror’s risk, and the Department shall have no liability or obligation as a result of the inaccuracy, inadequacy, inapplicability, or incompleteness of the Reference Documents, regardless of the contents thereof.

Contractual Appendices in the Document Inventory are considered binding obligations of the DBT. The DBT shall meet requirements identified in the Contractual Appendices and shall implement the Work in accordance with these requirements.

The Offerors (i.e. prospective Design-Build Teams) shall examine the information provided in the Document Inventory to determine if the information accurately depicts existing field conditions.

Existing plans are considered part of the Document Inventory and are available for review. These plans are identified in the Document Inventory and are not as-built plans. All existing plans are considered Reference Documents.

In addition to the existing plans, appendices to the Scope of Services are listed in the Document Inventory and available at the following location:

https://ftp.dot.state.oh.us/pub/Contracts/Attach/LOR-107714/REFERENCE FILES/SCOPE APPENDICES/

Table 1-3: Document Inventory

Appendix #	Appendix Title	Contractual/Reference Designation
DR - Drainage		
DR-01	Internal Joint Repair	Contractual
EN - Environmental		
EN-01	Noise Measurement Plan	Reference
EN-02	Noise Analysis Report	Reference
EN-03	Noise Public Involvement Summary Report	Reference
EN-04	Qualitative MSAT Analysis	Reference
EN-05	Level 1 Ecological Survey Report	Reference
EN-06	Regulated Material Review Screening Summary	Reference
EN-07	Water Resources Map	Reference
EN-08	Environmental Document (D1)	Reference
EN-09	Asbestos Survey – Bridges of Murray Ridge Road	Contractual
EN-10	Noise Barrier Logo Panels	Contractual
EN-11	Water Resources Shapefiles	Reference
EN-12	Level 1 Ecological Survey Report Amended	Reference
EN-13	Supplemental Re-Evaluation	Reference
EX - Existing Plans		
EX-01	LOR-2-3.50 LOR-90-10.78	Reference
EX-02	LOR-57-19.42	Reference
EX-03	LOR-90-9.48	Reference
EX-04	LOR-90-10.76	Reference
EX-05	LOR-90-11.78	Reference
EX-06	LOR-90-12.42	Reference
EX-07	LOR-90-13.01	Reference

Appendix #	Appendix Title	Contractual/Reference Designation
EX-08	LOR-90-13.20	Reference
EX-09	LOR-90-14.26	Reference
EX-10	LOR-90-14.78	Reference
EX-11	LOR-90-15.26 LOR-2-15.29	Reference
EX-12	LOR-90-15.56 Part 2	Reference
EX-13	LOR-90-17.21	Reference
EX-14	LOR-90-17.53	Reference
EX-15	LOR-90-17.85	Reference
EX-16	LOR-254-2.03	Reference
EX-17	LOR-254-4.-8-B LOR-90-11.90	Reference
EX-18	LOR-301-23.49	Reference
EX-19	LOR-611-9.63 Part 1	Reference
EX-20	LOR-254-2.03_PID102027	Reference
EX-21	D3-D4-D12-ITS_PID_118895_Addendum_R1	Reference
EX-22	LOR-2-6.62 LOR-90-11.96	Reference
GE – Geotech		
GE-01	Pavement Core Data	Contractual
GE-02	Soil Boring Data	Contractual
GE-03	Subgrade Exploration Data Report	Reference
GE-04	Noise Wall Structural Exploration Data Report	Reference
GE-05	Noise Wall Barrier Boring Data	Contractual
GE-06	Soil Profile Sheets	Contractual
LD – Location and Design		
LD-01	Approved Design Exceptions	Contractual
MT – Maintenance of Traffic		
MT-01	MOT Notes	Contractual
MT-02	MOTAA	Reference
MT-03	MOTEC Presentation	Reference
MT-04	MOTEC Approval	Reference
PA – Pavement		
PA-01	LCCA Pavement Type Selection	Reference
PA-02	Pavement Type	Reference
PA-03	Pavement Overlay Fabric Composite	Contractual
PA-04	Pavement Work	Reference
RR – Railroad		

Appendix #	Appendix Title	Contractual/Reference Designation
RR-01	Railroad Agreement	Contractual
RR-02	CSXT General Notes	Contractual
SU – Survey		
SU-01	Survey & Mapping	Reference
SU-02	Bridge Clearance Survey	Reference
SU-03	Centerline Plat	Contractual
SU-04	ODOT Vertical Clearance Survey Form	Contractual
ST – Structures		
ST-01	Parapet Crack Repair	Contractual
ST-02	Culvert Repairs	Contractual
ST-03	LOR-00090-16580 (SFN 4704800) Photos	Reference
ST-04	LOR-00090-18150 (SFN 4704967) Photos	Reference
TC – Traffic Control		
TC-01	IOS I90-SR2	Contractual
TC-02	IOS I90-SR254	Contractual
TC-03	LOR-254 Operational Report and Analysis Files	Reference
UT - Utilities		
UT-01	Existing Utility Information	Reference

1.3 Railroad Coordination

A Railroad Agreement with CSX for the Project is included as RR-01. Unless otherwise specified in the Contract Documents, the District Railroad Coordinator will be responsible for managing technical coordination regarding Railroad Agreements.

The DBT shall:

1. Coordinate with the State Rail Coordinator prior to contacting the railroad to verify the line in question, necessary clearances for rail operations (both permanent and temporary), and/or to acquire the milepost and line identification information, etc.
2. Direct questions regarding requests by the railroad(s) for future track accommodations within railroad Right-of-Way to the State Rail Coordinator.
3. Perform ongoing coordination of their design and construction with the railroad throughout the Project.

   The Project will require the DBT to perform Work on and around rail lines during execution of the Work. The DBT shall coordinate demolition and construction activities with the Railroad and/or the Railroad's General Engineering Consultant to ensure there will be minimized impacts to Railroad operations, property, or right-of-way. The Department has entered into agreements with the railroad(s). The DBT's operations shall be conducted in accordance with

the agreement(s) and any applicable special provisions, special clauses, construction requirements, and demolition requirements.

The DBT is to include the State Rail Coordinator and the District Railroad Coordinator in all communications with the railroad(s) to verify the line(s) in question, necessary clearances for rail operations (both permanent and temporary), and/or to acquire the milepost and line identification information, etc.

4. Provide a monthly railroad coordination report to the Department and the railroad, including anticipated dates and milestones for the following items:

    a. Railroad Buildable Unit Plan Submittal (see Section 18);

    b. Construction submittals requiring railroad review and approval prior to beginning construction (in accordance with RR-01 (Railroad Agreement));

    c. Anticipated dates for flaggers;

    d. Anticipated dates for potential outage request; and

    e. Any other milestones that may impact railroad facilities or operations.

5. Additional Railroad Information

    a. The DBT is responsible for establishing a schedule of formal RR coordination meetings commensurate with the complexity of each RR issue. RR coordination meetings will include both formal and informal meetings between the DBT, the impacted RR owner and the ODOT-District RR Coordinator. The DBT shall notify the ODOT-District RR Coordinator and Engineer at least three (3) business days in advance of all RR coordination meetings. The Department will participate as necessary. The DBT is responsible for generating meeting minutes within two (2) business days after every RR coordination meeting and submitting those meeting minutes to the ODOT-District RR Coordinator and Engineer.

    b. Means and Methods Planning - The DBT shall develop a detailed submission indicating the progression of work with specific times when tasks will be performed for work activities that are on or in the vicinity of the railroad property. Construction start and end dates for work that may create an impact on the railroad facility/operations must be clearly described. This submission may require a walkthrough at which railroad representatives will be present. Work will not be permitted to commence until the DBT has provided the railroad with a satisfactory plan that the Project will be undertaken without scheduling, performance, or safety related issues. Provide a listing of the anticipated equipment to be used, the location of all equipment to be used and ensure a contingency plan of action is in place should a primary piece of equipment malfunction. All work in the vicinity of the railroad property that has the potential of affecting train operations must be submitted and approved by the railroad prior to work being performed. This submission will also include a detailed narrative discussing the coordination of project safety issues between DBT and the railroad Representative. The narrative shall address project level coordination and day to day, specific work operations including crane and equipment operations, erection plans and temporary works.

    c. Submit an emergency action plan indicating the location of the site, contact numbers, access to the site, instructions for emergency response and location of the nearest hospitals. This plan should cover all items required in the event of an emergency at the site including fire suppression. Coordinate the Emergency Action Plan with the safety related discussion of the Means and Methods submission discussed above. The

plan should also include a method to provide this information to each project worker each day on site.

1.4 Airway/Highway Clearance

The DBT shall prepare and submit (file) the Airway/Highway Clearance Analysis in accordance with Federal Aviation Administration (FAA) and the FAA Notice Criteria Tool. The DBT shall convey all relevant documentation to the Department and coordinate with the ODOT District 3 FAA Coordinator, Ethan Caudill for review and obtain all necessary approvals. The DBT shall account for the required time to obtain approvals in their schedule and shall not start work until the approvals and documentation are received by the ODOT District 3 FAA Coordinator.

The FAA will reach determinations which may require additional actions from the DBT. The DBT shall comply with all requirements the FAA includes in the determination letters and maintain the determination letter as per the FAA's requirements for the duration of the Project.

The following airway facilities are within the vicinity of the Project:

1. Lorain Community Regional Airport – 3.4 miles
2. Elyria Airport – 4.8 miles
3. Elyria Memorial Hospital Heliport – 2.7 miles
4. Cleveland Clinic Avon Heliport – 4.0 miles
5. Lorain Community Hospital Heliport – 4.2 miles

2 SCOPE OF WORK

Project Description	This Project will replace 7.50 miles and resurface 0.30 miles of IR-90 while widening to add a third lane in each direction from the I-90/SR-2 split to the French Creek Bridge. This Project will also replace approximately 0.52 miles of SR-2 from the Murray Ridge Road bridges to IR-90. Work also includes: Full ramp replacement and widening at the SR-254 interchange; noise wall construction; drainage and BMP modifications; lighting modifications; ITS; guardrail replacement; traffic control; bridge deck replacement for two bridges, right of way fence replacement, and miscellaneous bridge repairs.
Completion Date	August 31, 2028
Warranties:	N/A

The approximate Project Limits for each applicable roadway are provided in Table 2-1.

Table 2-1: Approximate Project Limits

Roadway Name	Begin	End
I-90	SLM 10.79 (End full depth concrete at Ohio Turnpike Toll Booth)	SLM 18.61 (Begin rear approach slab I-90 over French Creek)*
SR-2	SLM 10.73 (End forward approach slab SR-2 over Murray Ridge Road)	SLM 11.14 (Merge with I-90)
SR-57 Ramps (all ramps)	I-90	Full depth concrete limit
SR-254 Ramps (all ramps)	I-90	SR-254 edge of pavement
SR-611 Ramps (EB off-ramp and WB on-ramp)	I-90 (acceleration and deceleration lanes only)	Begin rear approach slab over French Creek

* Suspend pavement replacement and widening at SLM 13.20; begin planing, resurfacing, and widening at SLM 13.24; end planing, resurfacing, and widening at SLM 13.54; resume pavement replacement and widening at SLM 13.59.

Work Limits shall be determined by the DBT.

The Consultant shall provide for the engineering services, design, and preparation of detail construction plans for the construction of the proposed Project.

The Contractor shall provide for the furnishing of materials, construction, and completion in every detail of all the work described in the Contract Documents to fulfill the intent of the Contract.

3 FIELD OFFICE

The DBT shall secure and provide field office Type C as required by Construction and Material Specification Item 619, except as modified herein:

1. The field office shall be a suite type office (no trailer or modular office) with a minimum of 4,000 square feet and at ground level with a minimum ceiling height of eight (8) feet.
2. Provide two (2) outside doors, lockable vandal proof cylinder type dead bolts and lockable windows. The floor space will be divided into two restrooms, one general office area (minimum 400 square feet), not less than seven individual offices (minimum 300 square feet) as separate enclosed rooms (no cubicle dividers will be accepted), one kitchen space including sink, refrigerator, and microwave, and one conference room (minimum 1000 square feet).
3. Furnish neat, sanitary, enclosed toilet accommodations connected to an existing sanitary sewer line for the use of the occupants of the field office, meeting applicable state and local codes and ordinances. Furnish associated lavatory and sanitary supplies. Potable hot and cold running water will be provided in the restrooms for sanitary purposes.
4. Furnish Trash collection Service/Dumpster
5. Furnish professional, bonded, and insured janitorial services with a weekly cleaning of the entire office to include the restroom facilities for the duration of the project.
6. Furnish bottled drinking water service with a hot and cold dispenser and associated supplies.
7. Furnish a box for storing a nuclear density gauge with requirements as set forth in the C&MS 109.02
8. Furnish and maintain a broadband internet connection capable of minimum download speeds of 1.0 Gb/S. Provide a wireless router that supports wi-fi standard 802.11Ax (Wi-Fi 6) and a minimum, wireless data transfer rate of 4000 Mb/S/ Provide pre-wired ethernet access for all individual offices and the conference room.
9. Furnish ten (10) desk and chair sets, thirty (30) stackable chairs, twenty (20) work tables (30”x72”), and twelve (12) 24-quart waste baskets with appropriate sized trash bags.
10. Furnish and install two (2) wall-mounted 8’x4’ glass magnetic dry erase boards.
11. Furnish one new television with the following specifications:
    a. Diagonal screen size 70” minimum
    b. Native resolution 4K
    c. HDMI ports:3
    d. Video interfaces: HDMI, USB
    e. All accessories necessary to operate.
    f. All hardware installation necessary to hand the television on the wall in the conference room.

The field office will be approved in advance by the engineer and fully operational within 30 days after the signing and execution of the Contract or prior to the start of any construction Work, whichever comes first.

The Department will measure field office, type C, as per plan by the number of months the office is maintained. A partial month at the end of the project will be paid as a full month.

The Department will pay for accepted quantities at the contract price in months as follows (Item 106-Field office, Type C, as per plan) - 45 Month.

4 GENERAL PROVISIONS FOR THE WORK

4.1 Governing Regulations

All services, including but not limited to survey, design and construction work, performed by the DBT and all subcontractors (including sub-consultants), shall be in compliance with all applicable ODOT Manuals and Guidelines.

It will be the responsibility of the DBT to acquire and utilize the necessary ODOT manuals that apply to the design and construction work required to complete this Project.

The current edition, including updates released on or before the date of original advertisement, of the following ODOT Manuals and Guidelines shall be met or exceeded in the performance of the design and construction work required to complete this Project:

Bridge Design Manual
Location and Design Manuals
- Volume One - Roadway Design
- Volume Two - Drainage Design
- Volume Three - Plan Preparation

Pavement Design & Rehabilitation Manual
Specifications for Geotechnical Explorations
Geotechnical Design Manual
Survey Manual
Construction and Material Specifications
Proposal Notes for Construction and Material Specifications
Supplemental Specifications for Construction and Material Specifications
Item Master
Manual for Abandoned Underground Mines - Inventory and Risk Assessment
Pavement Design and Rehabilitation Manual
State Highway Access Management Manual Standard Construction Drawings
Plan Insert Sheets
Traffic Engineering Manual
Ohio Manual of Uniform Traffic Control Devices
Real Estate Administration Policies and Procedures Manual:
- Appraisal
- Acquisition Property Management
- Relocation
- ROW Plans
- Utilities

Wireless Communication Tower Manual
Environmental Services Handbooks and Guidelines
Waterway Permit Manual
Design Mapping Specifications
CADD Engineering Standards Manual
Federal Aviation Administration
Noise Analysis Manual

4.2 CADD files supplied by the DBT

The DBT shall comply with ODOT's CADD Standards, and supply files in accordance with the CADD Engineering Standards Manual for OHDOT CONNECT. All data shall be provided to the Department

according to the provisions as detailed under the appropriate CADD links accessed from the Department's Division of Engineering's website. This includes, but is not limited to, the level assignments, symbols, lines and line styles that are to be used, line weights, cells, placement of text and file naming conventions.

The websites can be accessed at the following URL addresses:

https://www.transportation.ohio.gov/working/engineering/cadd-mapping/cadd/

The Department will accept CADD files through electronic media.

1. The DBT shall submit all CADD information produced in the process of plan development. All CADD information shall be submitted in the current version of MicroStation (*.dgn) format as indicated in the CADD Engineering Standards Manual for OHDOT CONNECT. The DBT shall provide a comprehensive set of complete and accurate CADD data which is compatible with ODOT's CADD systems with no additional work or modification.

2. The DBT shall submit all information produced in the process of plan development according to L&D Volume 3, Section 1500.

The DBT shall use a separate file name for each horizontal or vertical alignment. The DBT shall provide required ASCII report content in accordance with the CADD Engineering Standards Manual.

These requirements and procedures may be updated from time to time with notification provided on the ODOT Division of Engineering website. The DBT shall use ODOT cell files and ODOT seed files consistent with the version of the requirements identified in Section 4.1 (Governing Regulations).

4.3 Partnering Agreement

The DBT is required to enter into a partnering agreement with the Department that is:

☒ Facilitated

☐ Self-Facilitated

The objective of this agreement is the timely completion of the Work and a quality product that will be a source of pride to both the Department and the DBT. Partnering will not affect the terms and conditions of the contract. The partnering agreement is a document which is solely intended to establish an environment of cooperation between the parties. The costs associated with the partnering process will be in accordance with Proposal Note 111 (Facilitated Partnering).

4.4 Communication

All communication during design and construction shall be with the District Project Manager and the District Project Engineer.

District's Project Manager's Name:	Karla Bohmer
Phone number:	419-207-7166
E-mail:	Karla.Bohmer@dot.ohio.gov

District's Project Engineer's Name:	The District Project Engineer will be named at the Pre-Design Meeting
Phone number:	TBD
E-mail:	TBD

At the Pre-Design Meeting, the DBT shall name a Project Manager who will act as a liaison between the DBT and the Department.

4.4.1 Task Force Design Meetings

The DBT shall conduct Task Force Design meetings. These meetings will be held to discuss specific design-build solutions, resolve issues with the design and update the Department with the status of the design. At a minimum, these meetings shall include the Designer (and specifically the design element lead engineer or representative) and the Contractor. The DBT shall invite the Department to each Task Force Design meeting. The Task Force Design meetings shall be held every other week for the duration of the design or until mutually agreed by the Department and the DBT.

The Task Force Design meetings shall be integrated multi-discipline design meetings, led by the DBT, focusing on integrating design elements into a single, comprehensive, and buildable design. The Department will participate, but the Department's participation will be limited to general opinions and suggestions which shall not be deemed to be direction. The DBT shall maintain its responsibility to ensure adherence to design requirements and schedule.

During the design process, these meeting shall occur at a location agreeable and accessible to all parties. If the co-located field offices are utilized and operational, these meetings should be held at the Department's or DBT's Field Office. The DBT shall provide an agenda two days prior to the meeting.

The DBT shall be responsible to notify any interested or affected third-parties at least two days prior to the meeting. "Virtual" meetings (i.e. Skype, WebEx, Teams) may be acceptable, if approved by the Department.

4.4.2 Value Engineering Change Proposals

Value Engineering Change Proposals (VECPs)

☒ will be accepted for consideration on this Project.

☐ are not permitted on this Project.

A DBT proposed change of an alternative material, article, product, process, design method, design approach, construction method, or construction approach or item that meets or exceeds the requirements and intent of the Basic Configuration may be submitted for review to the Project Engineer as a design-build Value Engineering Change Proposal (VECP). The proposed change should be functionally equal, in the judgement of the Department.

The Department will not consider any VECP which, in the Department's sole judgement, impairs any of the essential functions, intent, or key characteristics of the Project such as service life, reliability, economy of operation, ease of maintenance, safety, necessary standardized features, or any other consideration the Department deems necessary. The Department will not consider any VECP which, in the Department's sole determination, is a reduction of a Project objective. The

Department will not approve a VECP with the listed characteristics A-E found in CMS 105.19. The Department may reject a VECP for any reason.

Changes or revisions in the DBT's developed Preliminary Designs, Final Designs, or Plan Revision Designs allowable per the Basic Configuration's requirements are not VECPs.

The Department's decision of the acceptability of a VECP is final.

4.5 Permits

The DBT shall ensure that the Project is constructed and maintained in accordance with all requirements, regulations, and applicable permits required for the Project. This includes the permits described herein and any additional permits not specifically identified in the Contract Documents.

Unless noted otherwise in the Contract Documents, the DBT shall obtain all necessary permits and pay all charges, fees and taxes associated with these permits (e.g., city street opening permits, street crossing/equipment moving permits, water department fees, sewer permits , etc.). The DBT shall be responsible for any fines levied by regulatory agencies as a result of their construction activities or non-compliance with any permit special or general conditions.

The DBT shall obtain a permit from the State or local government having jurisdiction to perform any non-construction work within the existing Right of Way and/or limited access.

4.6 Entry on Private Property

The DBT, acting as The Department's agent, may enter upon any lands within the State for the purpose of inspecting, surveying, leveling, digging, drilling, or doing any work deemed necessary in the execution of any survey authorized by the Director of Transportation in accordance with Section 5517.01 of the Ohio Revised Code and ODOT's Survey Manual. Prior to performing said survey, the DBT will send notification letters indicating the date and duration of entry to the affected property owners no less than forty-eight hours nor more than 30 days prior to the date of entry for said survey in accordance with ODOT's Survey Manual. The DBT shall forward copies of all notification letters distributed to ODOT's Project Manager.

Any subsequent claims for compensation due to damages incurred while said activities were performed will be negotiated between the DBT and the affected property owners with final approval from ODOT's Project Manager. Crop and property damage minimization and reimbursement information, together with the crop damage reimbursement formula and Special Waiver of Damage form, will be provided to the DBT by ODOT's Project Manager.

Any subsequent entries onto private property for the purpose of obtaining additional survey or soil information prior to the submission of the Bid will be made in accordance with the procedures outlined in this section.

5 ENVIRONMENTAL

The DBT shall ensure that the Project is designed, constructed and maintained in accordance with all environmental requirements, regulations, and applicable permits required for this Project.

5.1 NEPA & Environmental Commitments

The DBT shall perform all environmental commitments as described below, unless otherwise specified in the Contract Documents.

1. General Project Information
    a. The DBT shall coordinate with utility companies during each stage of Project design in accordance with Contract Documents.
2. Air
    a. This Project will minimize emissions while under construction by having the project traffic plans include detours and strategic construction timing (like night work) to continue moving traffic through the area and reduce backups to the traveling public to the extent possible. The DBT shall set up active construction areas, staging areas, and material transfer sites in a way that reduces standing wait times for equipment.

3. Noise
    a. The DBT shall not perform construction involving the use of power-operated equipment from [9:00 p.m. to 7:00 a.m.] without the prior permission of the Project Engineer, including, but not limited to: front loaders, backhoes, dozers, tractors, scrapers, graders, pavers, roller compactors, slip form equipment, pavement planing equipment, dump trucks, concrete mixers, concrete pumps, cranes, compressors, generators, pumps, pile drivers, jack hammers, rock drills, pneumatic tools, saws, and vibrators. The Project Engineer's permission will not be unreasonably withheld.
    b. The DBT shall design and incorporate project specific noise wall designs, including the results of public involvement, into the plans in accordance with and approval from ODOT's Office of Environmental Services.
    c. The Department will have a conference call with the noise wall designer prior to commencing noise wall fabrication. The DBT will provide all noise wall plan submittals to the Office of Environmental Services for review and approval with each review submission.
    d. The DBT will design and construct noise barriers in accordance with the public involvement surveys that showed that the benefited receptors strongly favored the construction of noise barriers. See Section 14.3 for noise barrier requirements.

4. RMR
    a. The DBT shall submit the OEPA Demolition/Renovation Form to the OEPA within ten (10) business days prior to demolition.

5. Ecological

a. The DBT shall ensure impacts to the federally listed and protected Indiana bat and northern long-eared bat and the State listed and protected little brown bat and tricolored bat are avoided and minimized. The DBT shall not remove trees from April 1 through September 30 and perform all necessary tree removal from October 1 through March 31. Demarcate clearing limits in the field to avoid any unauthorized tree clearing. For the purposes of this note, a tree is defined as a live, dying, or dead woody plant, with a trunk three inches or greater in diameter at a height of 4.5 feet above the ground surface, and with a minimum height of 13 feet.
b. The Department will subtract 10.66 acres of credits from the acreage credit available at the Sunday Creek Coal Company 2 Bat Conservation Area as mitigation for due to 6.09 acres of SWH being removed between 100 and 300 feet from the edge of pavement.
c. The Department will complete a plant survey in the Spring of 2025 for round-leaved dogwood (Cornus rugosa), Canada buffalo-berry (Shepherdia canadensis) and tower mustard (Turritis glabra) prior to earth disturbing activities. The Department will coordinate findings with ODNR and perform mitigation efforts if necessary.

6. Other Resources - Drinking Water
    a. Should remnants of a drinking water well be encountered during construction, proper sealing and coordination shall be performed by the DBT. The DBT shall be compensated in accordance with CMS 109.05 (Changes and Extra Work).

7. Section 4(f)
    a. The DBT shall incorporate the known boundary of the Black River Reservation and the Black River Bikeway/Bridgeway Trail within the Project area in the plans and label it accordingly. No work shall be completed within the Black River Reservation on the Black River Bikeway/Bridgeway Trail by the DBT.
    b. The DBT shall maintain safe public access to the Black River Reservation and Black River Bikeway/Bridgeway Trail at all times throughout construction activities.

8. Community Impacts
    a. The Department will continue early and ongoing communication and coordination with nearby public facilities, services, institutions, & Lorain County Transit concerning start & end dates of construction, partial closures, & detours based on information provided by the DBT.

9. Permits - Waterway Permits
    a. The Department will obtain all appropriate waterway permits and mitigation prior to any work within the jurisdictional boundary of any waterway, including wetlands, and all Waterway Permit Special Provisions will be included in the plans and adhered to throughout construction. The DBT shall provide the Department with plans showing all impacts to streams and wetlands within the project limits and prepare the Department's Office of Environmental Services Permit Determination Request form.

The Department will use this information to apply for the appropriate waterway permits. The DBT shall assume a minimum of twelve (12) months in their schedule from the time DBT provides the plans and summary data to the Department until the permit is obtained. If the DBT subsequently revises the plans and impacts, then the 12-month time frame shall restart.

b. The DBT shall not perform any work within the jurisdictional boundaries of any waterway, including wetlands, until the Department obtains the necessary waterway permit(s). Work includes the placement of any temporary or permanent fills.
c. Aquatic resources adjacent to the Project shall be indicated on the plans, and the DBT shall demarcate all aquatic resources in the field per SS 832 and the Waterway Permits Special Provisions. Areas marked for avoidance will not be impacted. In riparian areas, only the minimum amount of vegetated buffer necessary for work will be removed. Temporary and permanent fill materials will consist of suitable materials and be free from toxic contaminants in other than trace quantities. Chromated Copper Arsenate and other pressure treated lumber shall not be used in structures placed within aquatic resources. Temporary or permanent fill cannot consist of broken asphalt. An oil spill kit shall be located within 150 feet on any equipment working in an aquatic resource and shall be maintained for the life of the Project.

10. Permits - Floodplains
    a. The Department will self-permit the floodplain permit or documentation of exemption prior to the start of construction.

The DBT shall:

1. Monitor and document Work to demonstrate compliance with environmental commitments.
2. Provide documentation of environmental commitment compliance at request of the Department.
3. Follow Department and local regulations regarding dust control, adhering to dust control measures outlined in C&MS 616.
4. Adhere to local City ordinances for vehicle idling and all current U.S. Environmental Protection Agency (EPA) air quality regulations.

If the DBT becomes aware of any failure to perform an environmental commitment, the DBT shall notify the Department immediately.

5.2 Environmental Permits

The DBT shall:

1. Be aware of all applicable environmental permits related to the Work.
2. Coordinate with the Department and prepare applications and other relevant information necessary to obtain all environmental permits required to perform the Work.
3. Comply with all conditions imposed by environmental permits in design and construction.
4. Notify the Department regarding any failure to comply with conditions of the environmental permits.

5. Maintain and update environmental permits to ensure they are in effect during the Work.
6. Coordinate with the Department and submit any documents regarding updates required for environmental approvals to the Department for coordination with the regulatory agency.

If the DBT modifies elements of the Conceptual Design used as the basis for obtaining a permit, the DBT accepts all responsibility for associated cost and schedule impacts resulting from the permit modification process and accepts the risk that the regulatory agency may not approve the proposed permit modification.

At no time shall the DBT coordinate environmental permitting issues directly with the regulatory agencies, unless directed to do so by the Department. The DBT shall not commence with Work covered by environmental permits until the applicable permit approval is obtained from the regulatory agency.

Table 5-1 identifies work performed by the Department related to various environmental permits and the status of Department activities. Table 5-1 is not a comprehensive list of the environmental permits required to perform the Work. Unless otherwise noted, the DBT shall be responsible to obtain all necessary environmental permits and pay all charges, fees and taxes associated with these permits.

Table 5-1: Status of Department Activities for Environmental Permits

Agency	Permit/Approval	Status
Ohio Environmental Protection Agency	NPDES	To be submitted by the Department to OEPA upon receipt of NOI from the DBT
United States Army Corp of Engineers and OEPA (if necessary)	Waterway	To be submitted by the Department to USACE and OEPA (if necessary) upon receipt of plan information and Department's Office of Environmental Services Permit Determination Request form from the DBT

The DBT shall acquire required noise permits and/or variances from the local jurisdiction.

The DBT shall be responsible for any fines levied by regulatory agencies as a result of their construction activities or non-compliance with any permit special or general conditions.

5.3 Temporary Sediment and Erosion Control

The DBT shall be responsible for designing and implementing all temporary sediment and erosion controls in accordance with SS 832 and the Ohio NPDES general permit for storm water discharges from construction activities (NPDES Permit). For information about OEPA's NPDES Permit requirements, see: https://epa.ohio.gov/dsw/permits/GP_ConstructionSiteStormWater.

The DBT shall submit information to the Department for development of the Notice of Intent for the NPDES Permit, including the total acreage of earth disturbing activities for both off Project and on Project work. The DBT shall assume that approval from OEPA will require a minimum of 31 days

following submittal to the ODOT Project Manager. Earth disturbing activity is not permitted prior to approval of coverage under the NPDES Permit.

For projects that require an NOI, the DBT must develop a Storm Water Pollution Prevention Plan in accordance with SS832 and the NPDES Permit. The DBT shall not initiate any earth disturbing activity until the SWPPP is approved. Preparation of the SWPPP, along with all 832 items for maintaining, inspecting, modifying and updating the SWPPP are incidental to the Project; this includes inspections and inspection software.

The DBT shall be compensated for furnishing and installing items related to temporary sediment and erosion control requirements. The Department will compensate the DBT through an encumbered amount included in the Proposal as a non-bid reference number. The Proposal specifies the unit prices for the temporary sediment and erosion control items. Payments for temporary sediment and erosion control items that exceed the encumbered amount will be made through an Extra Work Change Order using the specified unit prices. The specified unit prices are fixed for the Contract Documents and may not be negotiated or adjusted for inflation or claimed changed condition.

All temporary erosion control items shall be removed before the Project is accepted. Removed materials shall become the property of the DBT and shall be disposed of in accordance with the appropriate C&MS specifications.

5.4 Regulated Materials

The DBT shall meet all regulatory conditions imposed with regulated materials, including hazardous materials, associated with the Project. The DBT shall characterize, collect, contain, and properly dispose of all waste generated or encountered during the Work. The DBT shall ensure that the site is properly contained during construction so that regulated materials do not migrate off-site. The DBT shall prepare and implement a Spill Prevention Control and Countermeasures (SPCC) Plan per the requirements of 40 CFR Part 112 that provides specific guidance for managing, handling, and disposing of regulated materials that may be encountered within the Right-of-Way and for protecting the health and safety of all on-site personnel and the general public.

If any unknown regulated materials are discovered through work on the Project, the DBT shall notify the Department immediately and shall follow the SPCC Plan, as well as all appropriate regulations.

Asbestos testing on the LOR- 00090-11570R and LOR- 00090-11385L bridges was performed by the Department and results are included in Appendix EN-09 (Asbestos Survey – Bridges of Murray Ridge Road).

5.5 Noise Analysis and Noise Barriers

The Department performed a noise analysis along with public outreach and determined noise barriers are required. Specifications and details are included in Section 14.3 (Noise Barrier).

6 RIGHT OF WAY (ROW)

The DBT shall perform all necessary construction work for the Project within the Project Right of Way (ROW). The DBT shall notify the Department as soon as possible if work outside of the existing ROW is needed.

The DBT shall locate existing right of way lines based on requirements specified in Chapter 4733-37 of the Ohio Revised Administrative Code (Board Rules) governed by regulations outlined in Chapter 4733, Ohio Revised Code (Regulation Laws). The DBT shall research existing right of way information from all available sources including but not limited to ODOT records, County road records, Commissioners' Journals and records of other County offices to the extent necessary to provide an accurate basis for the establishment of the existing right of way.

The DBT will stake and flag the existing right of way in the field prior to the start of construction and will maintain stakes and flags throughout the duration of the Project.

The DBT shall identify all right of way encroachments on the construction plans with the Interim Design submission. ODOT's Project Manager will be responsible for clearing all encroachments on Federal-aid projects in accordance with standard encroachment removal.

7 UTILITIES

Due to the nature of Project work, only isolated utility impacts are anticipated by proposed construction activities. Utility contact information is provided in this section however utility coordination has not occurred. The DBT shall coordinate all permanent and temporary utility impacts with the respective utility owners. Unless indicated elsewhere in this document, the DBT is only responsible to relocate/adjust publicly owned utilities within public right of way outside of the limited access right of way.

7.1 Existing Utilities

The District Utility Coordinator, in coordination with the registered underground utility protection services, Ohio 811, and other utility owners that are non-members of any utility protection services, has determined that the utilities identified in Table 7-1 are located in the area of the Project.

Table 7-1: Utility Contacts and Status

Utility Owner	Utility Contact	Relocation Status
Ohio Edison Transmission	Bryan Hunsche 76 South Main Street Akron, Ohio 44308 330.384.5180 bhunsche@firstenergycorp.com	
Ohio Edison	Jeff Hall 6326 Lake Avenue Elyria, Ohio 44035 440.326.3207 halljb@firstenergycorp.com	
Cleveland Electric Illuminating	John Zassick 6896 Miller Road, Suite 101 Brecksville, Ohio 44141 440.546.8706 jmzassick@firstenergycorp.com	
BrightspeedLumen	Geronimo Sales 203 W 9th Street Lorain, Ohio 44052 440.244.8330 Geronimo.O.Sales@Brightspeed.com Relocation requests/notifications shall be coordinated with the following addresses: relocations@Lumen.com and Relocations@Brightspeed.com	
Charter Communications	Dan McCafferty 8150 Dow Circle Strongsville, Ohio 44136	

Utility Owner	Utility Contact	Relocation Status
	216.555.4262 Daniel.McCafferty@charter.com	
Columbia Gas of Ohio	Adam Woodie 3101 North Ridge Road E Lorain, Ohio 44055 440.240.6144 AWoodie@nisource.com	
MCI MetroCharter	Jeff (Thomas) Kadusky 1150 West 3rd Street Cleveland, Ohio 44256 330.819.1444 thomas.kadusky@verizon.com	
Village of Sheffield	Ken Kaczay 4820 Detroit Road Elyria, Ohio 44035 440.949.6209 kenk@sheffieldvillage.com	
Rural Lorain County Water Authority	Joe Demczyk 42401 S.R. 303 P.O. Box 567 LaGrange, Ohio 44050 440.355.1521 jdemczyk@rlcwa.com	
Park View Federal Savings Bank	Robert J. Nagy 30000 Aurora Road Solon, Ohio 44139 440.914.3882 Robert.Nagy@pvfsb.com	
City of North Ridgeville	Christina Eavenson 7307 Avon Belden Road North Ridgeville, Ohio 44039 440.353.0842 ceavenson@nridgeville.org	
City of Elyria (Water)	John Schneider 131 Court Street, Suite 303 Elyria, Ohio 44035 440.326.1444 Jschneider@cityofelyria.org	
Windstream	Kevin Dembiec 560 Ternes Ave. Elyria, Ohio 44035	

Utility Owner	Utility Contact	Relocation Status
	440.329.4247 Kevin.Dembiec@windstream.com Relocation requests/notifications shall be coordinated with the following address: WCI.OSP.PERMITS@windstream.com	

7.2 General Requirements

The DBT shall:

1. Coordinate with the owners of all public and private/investor utility facilities affected by the Project.
2. Coordinate with the utility owners, third-parties and stakeholders to resolve all utility conflicts encountered on the Project.
3. Resolve any conflicts between utility facilities and the construction of the Project.
4. Coordinate the completion of all utility relocations with the respective utility owners and stakeholders.

The DBT shall put forth all efforts required to coordinate and resolve utility conflicts within the schedule and shall accept the associated cost and schedule risk, regardless of the entity performing the utility adjustment work, except as described in 7.8 (Deadlines and Delays).

The Department will solely determine compensable rights related to utility design, relocation, modification and construction for each conflict. When warranted, the Department will compensate the respective utility owner directly as outlined in Section 7.11(Reimbursement and Deposit Processes).

No additional compensation will be made to the DBT for delays, inconveniences, or damages sustained by the DBT due to interference from the utilities or utility work.

The DBT shall be responsible to verify all utility relocation to ensure that the relocation work does not interfere with other proposed construction activities, including relocations of other utilities.

All new utility installation requests within limited access right of way shall be subject to the ODOT permitting process.

7.3 Governing Regulations for Utility Design and Construction

The DBT shall be responsible for the design and construction of utility adjustments for municipally owned sewers, waterlines, force mains, and lighting systems within public right of way outside of the limits of limited access right of way.

All utility work performed by the DBT shall be consistent with the Department's Utility Relocation Manual and must meet the Federal Highway Administration (FHWA) "Buy America" policy requirements of 23 USC313 and 23 CFR 635.410. Utility work shall be in accordance with ODOT's 8100 Policy for Accommodation of Utilities and 8200 Procedure for Utility Relocations, Adjustments and Reimbursement.

The DBT shall perform all utility work in compliance with the following:

1. The utility owner's specifications, standards of practice and construction methods;
2. Applicable ODOT design and construction standards;
3. Local public agency specifications, standards of practice and construction methods; and/or

The DBT shall prepare utility relocation plans in accordance with the requirements of the Contract Documents for plan preparation and show, at a minimum, the following information: existing topography, right-of-way, lanes of travel, and the location of the existing utilities. When the DBT develops utility relocation plans, they shall be subject to review and approval by the utility owner in accordance with the design submittal requirements of the Contract Documents.

7.4 Utility Coordination

The DBT shall design the Project construction work to minimize the scope and extent of utility conflicts and relocations. The DBT shall not design or construct the Work in a way that precludes legal occupancy of the highway right-of-way by the adjusted utility.

When utility relocations are necessary, coordination and scheduling of these relocations with the involved utilities shall be the responsibilities of the DBT.

Only those utilities affected by the Project shall be relocated or adjusted. If the DBT desires the temporary or permanent relocation or adjustment of the utilities for the DBT's benefit, the DBT shall conduct all negotiations with the utility owners and pay all costs associated with the relocation or adjustment. The DBT shall assume all schedule and cost impacts from these relocations or adjustments.

The DBT shall perform the following services related to utility coordination:

1. Identify and locate all utility conflicts.
2. Confirm the identification and contact information of the utilities within the Project area as provided by the District Utility Coordinator to verify the nature, extent and location of their existing facilities.
3. Minimize potential delays and coordinate the efficient relocation of affected utilities.
4. Provide all Project construction documents, other utility relocation plans, subsurface utility engineering (SUE) information, and geotechnical information for relocation of utilities.
5. Coordinate all Project work and utility work with the affected utility owners.
6. Schedule and conduct utility coordination meetings during the Project design and construction process.
7. Maintain and update the utility coordination information monthly and make that information available to the District Utility Coordinator.

7.5 Notification

In accordance with ORC 153.64 and at least two (2) days prior to commencing construction operations in an area that may affect underground utilities, the DBT shall notify the Department, registered underground utility protection services, Ohio 811, and other utility owners that are non-members of any utility protection services.

7.6 Utility Coordination Meetings

The DBT shall schedule and conduct utility coordination meetings commensurate with the complexity of each utility's relocation issues. The DBT shall notify the Department at least three (3) business days in advance of each of the meetings. The Department will participate as necessary. The DBT is responsible for generating meeting minutes within two (2) business days after the meeting and submitting those meeting minutes to the Department.

7.7 Scheduling of Utility Relocation Work

The DBT shall obtain activity durations for all utility relocation work-related activities from the representative utility owner for incorporation into the DBT's Project Schedule. The DBT shall provide all documentation supporting the utility owner's concurrence with the activity durations included in the Project schedule.

The DBT shall pay all related acceleration costs incurred by the utility owner if the DBT requests acceleration of utility relocation work. These acceleration costs are NOT eligible for reimbursement to the Utility by the Department.

The DBT shall review the utility's design and/or permit application to ensure that the relocation does not interfere with other proposed construction activities, including relocations of other utilities. The DBT shall complete this review no later than fourteen (14) calendar days after its submission to the DBT, unless a different time period is expressly agreed to by both parties. The DBT shall compile and provide written review comments to the Department and the utility owner.

7.8 Deadlines and Delays

The DBT shall monitor the progress of all activities associated with utility relocations and promptly notify the Department when the progress of the activity controlled by a utility owner or a duration of relocation provided by the utility is not consistent with the durations obtained in Section 7.7 (Scheduling of Utility Relocation Work).

The DBT may ask the Department to issue an Obstructive Removal Notice upon submission of sufficient documentation confirming that a utility owner has failed to perform within the schedule activity durations developed in Section 7.7 (Scheduling of Utility Relocation Work).

The Department will solely determine if the Obstruction Removal Notice is to be issued. An Obstruction Removal Notice only governs the relocation process when the utility in question is located within the public road right-of-way. If a utility is located within the utility owner's easement, the notice does not apply and the relocation delay responsibility is based on the relocation schedule provided by the utility.

The Department will not be responsible for payment of delay claims associated with utility coordination/relocation unless the DBT is able to provide the Department with sufficient documentation for an Obstruction Removal Notice or failure of the utility to meet its utility relocation schedule.

7.9 Changes to Utility Relocation Work

The DBT shall not make any changes to the Project that would necessitate additional relocation of the utility once a utility relocation by the utility has begun. The DBT shall absorb the schedule

impact and provide full compensation for one hundred percent (100%) of all costs (design and construction) associated with the additional relocation incurred by the utility owner if changes occur after relocation design or construction work has begun. The DBT shall provide all documentation related to changes in utility relocation work.

7.10 Utility Owner Inspections

The utility owner may inspect construction of any utility work performed by the DBT on the utility owner's facility. The DBT shall notify the Department of any such inspections. The DBT shall provide the Department with written documentation of all utility comments and resolutions.

The DBT shall provide safe access, including any necessary traffic control, for any utility work inspections performed by the utility owner.

7.11 Reimbursement and Deposit Processes

The DBT shall immediately notify the Department if a utility owner notifies the DBT that it believes any utility relocation work is reimbursable to that utility owner or if the utility believes an easement acquisition is required. The Department's District Utility Coordinator will work with the utility owner to confirm the compensable position and perform the Department's utility reimbursement process.

The DBT shall work with the District Utility Coordinator to determine how the utility will be made responsible for providing a deposit to cover the cost of that utility installation support if the Project contains construction work to support the installation of a private/investor owned utility company's facilities.

7.12 Continuity of Utility Service

The DBT shall ensure that all utilities remain fully operational during all phases of the Project, except as specifically approved by the utility owner. The DBT shall obtain approvals from the applicable utility owners for all necessary interruptions of service, including proposals for shutdowns and temporary diversions of affected utilities.

The DBT shall immediately alert the utility owner, the Department and occupants of nearby premises as to any utility related emergency (e.g., accidental breakage) which interrupts service. The DBT will coordinate with the utility owner to restore service. If service is interrupted, the DBT shall continue efforts to repair until any interrupted service is restored.

The DBT shall obtain approval for continued service from the local fire department authority prior to initiating Work which may impact fire hydrants.

Where the DBT is responsible for performance of utility relocation work, the DBT shall:

A. Maintain service continuity to the extent practicable while performing the utility relocation work.
B. Keep the utility owner fully informed of schedules, including coordinating with the utility owner with regard to the DBT's design, construction and inspection of the utility relocation work.
C. Coordinate any changes with the utility owner.
D. Keep the utility owner involved in making decisions that affect the utility owner's facilities so the utility owner is able to provide uninterrupted service to its customers, or be subject to the least interruptions practicable.

7.13 Existing Utility Locations

The DBT shall verify the actual location of all underground utilities, including type, number and depth. The DBT is responsible for verifying the actual location of all overhead utilities including type, number, and elevation of lines and all above ground utility facilities.

The DBT shall disconnect and remove or abandon to ground (abandon in place) all existing underground utilities to be abandoned, including service connections. The DBT shall remove all utility poles and other above ground utility facilities to be abandoned in their entirety.

7.14 Utility Conflicts

Additional unknown utilities may be present that may or may not conflict with the Project The DBT shall identify, verify and document all utility conflicts and potential utility conflicts encountered during the performance of both design and construction work.

7.15 Protection of Utilities

The DBT shall take all necessary precautions to prevent disturbance to utility facilities and coordinate Project design and construction with utility adjustments.

The DBT shall perform work in a manner that will cause the least reasonable inconvenience to the utility owner and those being served by the utility. Existing, adjusted or new utilities remaining within the right-of-way of the Project shall be properly protected by the DBT to prevent disturbance or damage. If the DBT encounters a previously unknown utility that requires adjustment, the DBT shall not interfere with the utility, but shall take the proper precautions to protect the utility or take appropriate actions, per Contract Documents, to coordinate the adjustment of the facility.

7.16 Utility Relocations

The DBT shall coordinate and resolve all utility conflicts with the affected utility owner at no additional cost to the Department.

7.17 Utility Betterments

Any ineligible, unnecessary or betterment to the utility facility will be the responsibility of the utility owner and not the DBT. Determination of eligibility shall be coordinated through the Department. Payment for betterment or ineligibility costs shall be made by the appropriate utility owner through the Department to the utility contractor. Betterment procedures shall follow the Department's Utilities Relocation Manual.

7.18 Subsurface Utilities Engineering (SUE)

Subsurface Utility Engineering Required: ☒ Yes ☐ No

If marked yes, the DBT shall use a state approved subsurface utilities engineering location service to field verify all underground utilities prior to beginning of any design work and shall incorporate the results in the design.

DBT shall have the SUE perform the following Quality Levels:

☒ SUE Level A

☒ SUE Level B

☐ SUE Level C

☐ SUE Level D

SUE Level A test holes must include the utility owner, type and size of utility, station and offset of test hole, elevation of top of the existing grade, elevation of top of the utility and depth of utility from existing grade. A plan sheet(s) will need to be added to the plans with the final test hole information. All test hole locations shall be approved by the Department prior to performance. For estimating purposes the DBT shall assume that up to 20 test holes shall be obtained to locate utility facilities that cannot be located by conventional survey methods.

8 MAINTENANCE OF TRAFFIC (MOT)

8.1 General

The DBT shall be responsible for designing, providing, and maintaining safe and effective traffic control 24 hours a day for the duration of the Project. The DBT shall furnish, install, maintain and remove all traffic control devices. The DBT shall implement Maintenance of Traffic (MOT) in a manner that minimizes both construction duration and impact to the traveling public.

The DBT shall provide written notice to the Department fourteen (14) days in advance of modifications in MOT or traffic patterns, including modifications to the following:

A. MOT configuration
B. Access
C. Detours
D. Schedule
E. Duration

In addition to the Department, please also copy the following with all MOT notifications:

- Ohio Turnpike
- City of Avon (Engineer, Police, Fire)
- City of Elyria (Engineer, Police, Fire)
- Elyria Township Fire Department
- Lorain County Transit
- Village of Sheffield (Administrator, Police, Fire)

The DBT shall furnish temporary MOT devices compliant with the AASHTO Manual for Assessing Safety Hardware (MASH), as applicable.

All detour routes will be provided by the Department and shall be signed by the DBT. The designated local detour will be provided by the Department.

8.2 MOT Requirements

The DBT shall be design and implement the MOT in accordance with the requirements referenced in Table 8-1.

Table 8-1: MOT Requirements

Requirement	Detailed Requirement Information
Minimum number of lanes in each direction to remain open during construction	• I-90 from Begin Project to SR-2 split – maintain one lane of traffic in each direction, except when westbound traffic is detoured. • I-90 from SR-2 split to End Project – maintain two lanes of traffic in each direction. • SR-2 – maintain two lanes of traffic in each direction.

Requirement	Detailed Requirement Information
	• SR-57 Ramps – maintain one lane of traffic, except when ramp traffic is detoured. • SR-254 On-Ramps – maintain one lane of traffic, except when traffic is detoured. • SR-254 Off-ramps – maintain one lane of traffic at the exit from I-90 and two lanes of traffic at SR-254, except when traffic is detoured. Turn lanes lengths shall not be less than existing. • SR-611 Ramps – maintain all existing ramp lanes, except when traffic is detoured. • Murray Ridge Road – maintain one lane in each direction, except when traffic is detoured. • SR-254 – maintain two through lanes in each direction, except during installation of vandal protection fence, when the outer through lane may be closed. The eastbound and westbound curb lanes cannot be closed at the same time. Maintain dual left turn lanes to each on-ramp except during times of ramp construction when one left turn lane can be closed.
Phase Changes	Phase change/traffic pattern change restrictions not to occur weekdays from 6 AM – 9 AM or 3 PM – 6 PM
Minimum lane width	11’
Minimum shoulder/buffer width	2 feet wide*
Protect phase line drop off	Portable Barrier
Back of barrier to phase line drop-off width	2 feet wide
Maximum duration of detour	See Section 8.2.2
Restriction related to hospitals, fire and police, schools, etc.	The DBT shall provide 14-day written advance notice to all agencies listed within Section 8.1 prior to implementing each detour.
Storage of Portable Barrier over Winter Shutdown	Median barrier storage is not permitted. Storage within ramp infield areas is permitted, provided that required clear zone widths and sight distances are provided.

*The minimum shoulder/buffer width may be reduced to one foot when necessary in spot locations per Section 640-2 of the TEM. Spot locations include bridge decks, on approach slabs, between bridge piers and roadway sections where temporary sliver fills could be avoided by said allowance. Final approval of locations shall be at the discretion of the Department. Standard taper rates shall apply in the shoulder transition from 2 foot to 1 foot and vice-versa.

If the DBT has questions regarding the above table, they shall contact the District Work Zone Traffic Manager (DWZTM):

Jared Feller, P.E.
ODOT District 3 – Work Zone Traffic Manager
Phone: (419) 207-7058
Email: Jared.Feller@dot.ohio.gov

8.2.1 Detours

All detour routes have been provided by the Department below and shall be signed by the DBT.

The DBT shall not install conflicting or overlapping detour routes. For any interchange ramps or movements that are closed, black on orange "Closed" plaques shall be mounted to the face of any associated existing, proposed, or temporary guide signs.

All facilities shall remain open, except when the following facilities may be detoured using the following routes:

Table 8-2: Ramp Detour Routes

Facility	Description	Detour Route
I-90 Westbound	Between SR-2 split and Ohio Turnpike gate	Southbound SR-57 to westbound I-80
SR-57	Eastbound Off-ramp	Eastbound I-90 to westbound SR-254 to westbound I-90
	Eastbound On-ramp	Northbound SR-57 to eastbound SR-254
	Westbound On-ramp	Northbound SR-57 to eastbound SR-254
	Westbound Off-ramp	Westbound SR-2 to southbound SR-58 to eastbound SR-2
SR-254	Eastbound Off-ramp	Eastbound I-90 to westbound SR-611 to westbound I-90
	Eastbound On-ramp	Eastbound SR-254 to northbound SR-301 to eastbound SR-611
	Westbound On-ramp	Westbound SR-254 to southbound SR-57
	Westbound Off-ramp	Westbound I-90 to southbound SR-57 to eastbound I-90
SR-611	Westbound On-ramp	Eastbound I-90 to northbound SR-83 to westbound I-90
	Eastbound Off-ramp	Eastbound I-90 to northbound SR-83 to westbound I-90
Murray Ridge Road	Both directions	Lake Avenue to Griswold Road

8.2.2 Window Contract

Disincentives for violations of MOT durations shall be assessed per Proposal Note 129, Table 8-3 (Window Contract Table), and Table 8-4 (Disincentive for Violation of PLCS and Holiday Restrictions):

Table 8-3: Window Contract Table

Description of Critical Work	Days to Complete	Disincentive	Work Window	
		$ Per Day	Start	End
I-90 Westbound (West of SR-2 split)	90 consecutive days	$8,000	Contract Execution Date	Project Completion Date
SR-57 (each ramp)	14 consecutive days/ 1 phase	$23,000		
SR-254 (each ramp)	14 consecutive days/ 1 phase	$16,000		
SR-611 WB On-Ramp and EB Off-Ramp	nighttime only	$12,000		
Murray Ridge Road	240 consecutive days	$4,000		
All lanes on all roads returned to original or final configuration with all signs and long-term or final pavement markings installed (Winter Shut-Down)	See Work Window	$5,000	Second Friday in November	First Monday in April

Table 8-4 includes disincentive amounts for violation of PLCS and holiday restrictions.

Table 8-4: Disincentive for Violation of PLCS and Holiday Restrictions

Roadway	Segment	Disincentive ($ Per Minute)
I-90	Ohio Turnpike to SR-2	$125
I-90	SR-2 to SR-57	$420
I-90	SR-57 to SR-254	$375
I-90	SR-254 to SR-611	$395
I-90	SR-611 to SR-83	$465
SR-2	Middle Ridge Road to I-90	$300

8.2.3 Additional MOT Requirements

In addition to the requirements and restrictions listed within this section, the DBT shall also meet the following Project-specific MOT requirements:

A. All temporary MOT devices will comply with the Manual for Assessing Safety Hardware (MASH) report and NCHRP-350 report if devices are manufactured prior to 12/31/2019 and meet the Quality Standards for Temporary Traffic Control Devices as applicable.

B. The limits of the construction zone include the length of roadway where work is being performed as well as the limits of the roadway where lane and shoulder restrictions are in-place using pavement markings or channelizing devices, etc.

C. All intersections within the Project shall always maintain stopping sight distance and

intersection sight distance per design standards, or at a minimum, sight distance shall not be restricted to less than what is available in the pre-construction condition.

D. Work zone Class I pavement markings on any existing multi-lane facility, including all ramps, shall comply with wet-reflective requirements per SS 807 and/or SS 873. Wet-reflective work zone pavement markings are not required for any Winter Shut-Down periods. Grooving for recessed pavement markings per SS 850 shall not be used for work zone wet-reflective pavement markings.

E. The DBT shall resurface all transition areas within the construction zone at the time the associated surface course is being applied (or at the end of the Project). No temporary markings or MOT phase changes are to be placed on the final surface course. The resurfacing of all transition areas shall also include the tangent area extending beyond the proposed work limits to the limits of any temporary pavement markings. The resurfacing shall include the entire width of the roadway, including shoulders.

F. The DBT shall provide temporary pavement wedges where traffic is required to travel from or onto a pavement surface of a different elevation, including bridge decks. It is not necessary to provide a temporary wedge along lane lines between two thru lanes for a drop-off in conformance with SCD MT-101.90. The minimum slope of the temporary pavement wedge shall be 3:1 along longitudinal joints and 120:1 at transverse joints. These wedges shall be removed prior to placing the specified pavement course. Elevation differences along longitudinal joints located within the traveled lane, between traveled lanes, or between the shoulder and a traveled lane are not permitted during the Winter Shut-down periods.

G. The DBT shall anticipate the need to make pavement repairs prior to implementing long term work zones. Repairs to the existing pavement within the construction zone may be required throughout the Project to ensure that existing pavement is traffic-worthy. The Engineer and the DBT shall coordinate to determine required repairs (location and type). The DBT shall make repairs as soon as feasible. Pavement repair work shall be included in the Project Schedule. No additional compensation will be made to the DBT for delays sustained by the DBT due to performance of pavement repairs. The DBT shall be compensated for these repairs, including maintenance of traffic and mobilization cost, by force account, through the Item 615 Pavement Repairs allowance budget. Any remaining Item 615 Pavement Repairs allowance budget not utilized will be non-performed. If necessary, the allowance budget will be increased as required and as directed by the Engineer.

H. If the DBT determines that existing guide signs be removed for construction phasing purposes, they shall either be re-erected or replaced with ground-mounted guide signs on temporary supports and replaced at the end of the Project per the requirements of Section 15.

I. Due to sign conditions, the DBT shall perform the Work as identified in 15.3.2 C.

J. All crossovers shall be lit per MT-100.00.

K. If any existing lighting is taken out of service for longer than 24 hours, temporary lighting shall be provided by the DBT, including crossover lighting (if applicable).

L. The depth of the existing asphalt shoulders is not adequate for maintenance of traffic purposes. If the DBT elects to maintain traffic on existing asphalt shoulders, the existing shoulder pavement shall be removed and replaced with Item 615, Pavement for Maintaining Traffic, Class A.

M. The DBT shall submit the location of work zone access/egress points for Department review and approval before installation. Design of such access/egress points and acceleration/deceleration areas shall be in accordance with SCD MT-101.30 and the TEM.

N. The length of acceleration or deceleration lanes for ramps or access points shall be maximized using existing and proposed pavement as much as possible and shall be installed and signed according to appropriate SCDs. If the minimum required acceleration or deceleration distance cannot be achieved by use of existing or proposed pavement, temporary pavement shall be installed.

O. Where not stated elsewhere in this document, drop-offs in work zones shall be maintained per SCD MT-101.90.

P. When developing MOT plans, the DBT shall ensure that drainage is maintained during all phases of construction, and for any temporary pavement that is constructed, and shall include any grading, conduit, and/or structures required to do so.

Q. If the DBT's MOT plans include the removal and replacement of any existing concrete median barrier, the cost for replacement of the barrier and associated anchorages and assemblies in a shape matching what was removed shall be incidental to Item 614 Maintaining Traffic.

R. When opening pavement to traffic, traffic shall only be placed on existing full-depth pavement or new intermediate or surface course asphalt, and all pavement markings shall be in-place.

S. When opening traffic for the winter shut-down period on existing pavement or new pavement, new pavement markings conforming with CMS 642 shall be installed on all existing pavement, whether they were removed for MOT purposes or not.

T. Work zone pavement markings placed on final pavement surfaces which conflict with permanent traffic configuration pavement markings shall be temporary tape per CMS 740.06.

U. The DBT shall perform a pre-construction video and a post-construction video for all detour routes and off-state-system haul routes and identified local maintenance detour routes. Post construction videos shall be obtained as soon as the affected routes are no longer used as a detour or haul route.

V. The DBT shall maintain transverse rumble stripes across all active lanes of the westbound I-90 approach to the Ohio turnpike toll gates.

W. Signal operation shall be maintained at all times at the SR-254 ramps by use of existing, temporary, or proposed signal equipment. The DBT shall not add additional splices into existing signal conductors that are to remain after completion of the project.

X. Portable changeable message signs (PCMS) shall be provided each construction season. The PCMS should be utilized as required by all applicable maintenance of traffic standard construction drawings, and on the advance approaches to the Project limits for eastbound I-90, eastbound SR-2, and westbound I-90 to alert the traveling public of construction activities. The DBT shall also utilize PCMS's in advance of any ramp closures. PCMS's shall be activated 14-days in advance of any scheduled ramp closure and remain in service whenever the ramp is closed.

Y. The DBT shall construct and maintain one eastbound and one westbound emergency pull-off in accordance with Plan Insert Sheet 2010350 along I-90 for all phases when the outside shoulder is less than 8' width. The emergency pull-offs shall be located between Abbe Road and French Creek Road.

Z. The DBT shall provide and use LEOs for the following situations in accordance with TEM note 642-55:

1. For lane closures, the use of LEOs is required during initial setup periods, tear down periods, substantial shifts of a closure point, or when new lane closure arrangements are initiated. LEOs shall be positioned in advance of and on the same side of the lane restrictions or at the point of road closure, and to manually control traffic movements through intersections in work zones.
2. Use of LEOs is required during the entire advance preparation and closure sequence where complete blockage of traffic is required, and at traffic signal installation when impacting the normal function of the signal or the flow of traffic, or when traffic needs to be directed through an energized traffic signal contrary to the signal display.

The above LEO work shall be included in the DBT's bid for Item 614E99000 – Special Maintaining Traffic.

8.3 Work Zone Speed Reduction

The DBT shall evaluate if a work zone speed reduction is warranted based on the final MOT scheme. The evaluation requirements are listed in Section 600 of the Traffic Engineering Manual.

If a work zone speed reduction is warranted, the DBT shall design and implement signing in accordance with the requirements of the Traffic Engineering Manual with the exception that Digital Speed Limit (DSL) Sign Assemblies shall be used.

8.4 Haul Routes

In addition to the requirements of C&MS 105.13, the Progress Schedule shall account for 30 Days for the Department to secure approval for haul routes.

8.5 Additional Plan Submittal Requirements

The DBT shall prepare and submit, as part of each Buildable Unit submittal, a Maintenance of Traffic Plan (MOTP) to the Department for each Buildable Unit. In addition to compliance with all referenced design standards, the MOTP shall also address all aspects of MOT and shall contain specific MOT phasing plans and shall comply with the requirements listed below:

A. Cover page/title sheet sealed by an Ohio registered Professional Engineer (P.E.)
B. A schedule showing MOT phases and durations. All long-term (as defined in TEM 606-3) lane closures and lane restrictions shall be included and identified. All complete directional roadway closures shall also be identified.
C. Discussion of sequence of operations and MOT procedures
D. Comply with ODOT Standard Procedure 123-001(SP) Traffic Management in Work Zones
E. Plans at 40-scale showing:
    1. The work area
    2. Horizontal Lane and Pavement begin/end tapers
    3. Temporary pavements and/or structures
    4. Location of signs (existing, proposed, covered, and modified, and PCMS units)
    5. Locations of typical sections
    6. References to applicable Standard Construction Drawings (SCD), Plan Insert Sheets (PIS), and Plan Notes

F. Typical sections showing lane widths, pavements markings, drums, portable barrier (PB), limiting stations, work area, drop-offs, etc.

G. Sign details for proposed signs and overlays/modifications of existing signs

8.6 Traffic Engineering Manual Notes

The DBT shall design and implement the MOT in accordance with the following TEM notes:

- 642-3 Maintaining Traffic (At All Times)
- 642-4 Maintaining Traffic (Time Limitation on a Detour)
- 642-5 Maintaining Traffic (Winter Time Limitations – use dates in Table 8-3)
- 642-6 Maintaining Traffic (Lanes Open During Holidays or Special Events)(See Table 8-4)
- 642-7 Maintaining Traffic (Lane Closure/Reduction Required)
- 642-8 Maintaining Traffic (Notice of Closure Sign)
- 642-10 Maintaining Traffic (Road Closed Sign)
- 642-12 Maintain Traffic (Closing Paragraph)
- 642-17 Drum Requirements
- 642-18 Permitted Lane Closure Schedule (See Table 8-4)
- 642-19 Dust Control
- 642-22 Replacement Sign (incidental to Item 614, Maintaining Traffic)
- 642-23 Replacement Drum (incidental to Item 614, Maintaining Traffic)
- 642-24 Work Zone Speed Zones
- 642-25 Designated Local Detour Route information
- 642-27 Work Zone Increased Penalties Sign
- 642-28 Earthwork for Maintaining Traffic
- 642-29 Floodlighting
- 642-30 Work Zone Impact Attenuator for 24" wide hazards
- 642-32 Approved Maintenance of Traffic (MOT) Policy Exception (See Section 8.6.2)
- 642-41 Portable Changeable Message Sign
- 642-42 Maintenance of Traffic Signal/Flasher Installation
- 642-44 Worksite Traffic Supervisor (WTS)
- 642-45 TIM During MOT
- 642-51 Barrier Delineation
- 642-52 Guardrail Delineation
- 642-55 Law Enforcement Officer (with Patrol Car)
- 642-57 Work Zone Queue Detection Warning System
- 642-58 Notification of Traffic Restrictions

Depending on the maintenance of traffic plan implemented by the DBT, these TEM notes shall be used as applicable:

- 642-14 Trench for Widening
- 642-15 Overnight Trench Closing (no more than the depth of the surface course of asphalt)
- 642-21 Portable Barrier, 50", As Per Plan
- 642-31 Work Zone Impact Attenuator for Hazards Over 24" and less than 36" Wide
- 642-35 Work Zone Crossover Lighting System
- 642-43 Advance Work Zone Information (required for work zones with a crossover)
- 642-48 Work Zone RPM, As Per Plan

8.6.1 District MOT Notes

The DBT shall design and implement the MOT in accordance with District 3 MOT notes and requirements as shown in MT-01 (MOT Notes). Some of these District requirements are modifications to MOT notes found in the TEM and referenced in Section 8.6 (Traffic Engineering Manual Notes). These modifications shall be incorporated into the MOT plans.

8.6.2 Maintenance of Traffic (MOT) Policy Exception

Per the MOTEC approval for the I-90 Westbound connector detour, a Class 1 Work Zone Queue Detection Warning System shall be provided, installed and maintained in accordance with TEM Section 642-57. A designated on-site point of contact shall communicate with the TMC as the status of the closure changes. Contact the TMC if: the closure is postponed or cancelled; at the time the closure is implemented; at the time the closure is removed and all lanes restored; if the closure will not be opening on time. This warning system shall remain in place for the duration of the closure. In addition, the DBT shall provide, install and maintain two additional Class 1 Work Zone Queue Detection Warning Systems for the duration of construction activities. They shall be located on eastbound SR-2 and on westbound I-90 on the approaches to the Project.

9 SURVEY

A. ODOT Survey Responsibilities

The Department survey crews have provided the following survey information, listed below:

1. Centerline control and benchmarks
2. Beginning and ending centerline points for the Project
3. At least two benchmarks for the Project (the datum used was that which the Project was originally laid out by)
4. Critical points such as P.C., P.I., P.T., T.S., C.S.
5. Vertical clearances for the overhead structures, to serve as a check for the existing vertical clearances.

B. DBT Survey Responsibilities

The DBT shall submit all survey data using ODOT's standard field codes and ODOT's standard mapping codes. Reduced point data, in comma delimited ASCII text format, will be provided for all surveyed points. This data will include point number, North (y) coordinate, East (x) coordinate, elevation and point ID.

The DBT shall replace monumentation along I-90 and SR-2 as indicated Appendix SU-03 (Centerline Plat). The intent is to not disturb other existing monumentation. If the DBT disturbs additional monumentation within or adjacent to the Project limits due to permanent or temporary construction activities, then the DBT shall replace the monument, in-kind. If the DBT cannot reestablish existing monumentation due to construction conflicts, then the DBT shall establish new reference monumentation and provide a revised centerline plat. All monumentation shall be established by a Registered Surveyor, with current registration, recognized by the Ohio State Board of Registration for Professional Engineers and Surveyors. Costs associated with monument replacement caused by DBT disturbance shall be borne by the DBT. The DBT shall provide copies of all monumentation changes to the District Real Estate Administrator.

The DBT shall include all control points, provided by the Department, in the ASCII file supplied by the DBT to the Department. They shall retain the original point numbers and coordinate values as assigned by the Department.

The DBT shall provide The Department with electronic instrumentation per C&MS 623.09. Two sets of field equipment including receivers and data collectors shall be provided.

The DBT shall provide the following items prior to final acceptance of the Record-Drawing plans:

1. Copies of all field notes (written or electronic) which shall include the following information:
    a. Date
    b. Crew members
    c. Weather conditions, including temperature, barometric pressure, etc.
    d. Instrument(s) used (Serial Number)
    e. Raw observation field data
    f. Other notes as needed

2. Copies of all Deeds, Plats, Maps and other written evidence used to establish points related to the Project including summaries of all parole evidence acquired as a part of the survey operation.
3. Listing of all found monumentation (Horizontal and Vertical).
4. Listing of all monumentation set as part of the Project (Horizontal and Vertical) including reference ties for recovery.
5. All monumentation shall be located utilizing NAD 83 (Horizontal Data), NAVD 88 (Vertical Data).
6. Short report indicating adjustment factors and methods, signed and certified by a Registered Surveyor (State of Ohio). The Registered Surveyor (State of Ohio) shall include in the report the datum used and all associated adjustments used.
7. After completion of all work, but prior to final acceptance of the Project, an Ohio professional surveyor shall determine the minimum vertical clearances of the following bridges within the project limits:
    a. EB I-90 over Murray Ridge Rd
    b. WB I-90 over Murray Ridge Rd
    c. WB I-90 over SR-2
    d. Gulf Rd over I-90
    e. SR-254 over I-90
    f. Abbe Rd over I-90
    g. French Creek Rd over I-90

    At a minimum, measurements shall be taken along each fascia beam at the edge of shoulders, edge lines, lane lines, and crown of the roadway below. The ODOT Vertical Clearance Survey Form (Appendix SU-04) shall be used, where applicable, to document the measurements. Where the ODOT Vertical Clearance Survey Form is not applicable, the measurements shall be documented on a contractor-developed form that closely resembles the ODOT Vertical Clearance Survey Form and accurately depicts the bridge and the lane and shoulder configuration of the roadway that passes below the bridge. The completed form shall bear the stamp or seal of the Ohio professional surveyor who has taken the measurements and shall be submitted to the project engineer prior to final acceptance of the project.

10 PAVEMENT

Full Depth Pavement and Shoulder Replacement Limits (including locations of lane additions):

- I-90 –
    - from SLM 10.79 (End full depth concrete at Ohio Turnpike Toll Booth) to SLM 12.44 (Begin rear approach slab I-90 over Lake Avenue);
    - from SLM 12.58 (End forward approach slab I-90 over CSX Railroad) to SLM 13.20 (Begin rear approach slab I-90 over LOR 57);
    - from SLM 13.59 (End forward approach slab I-90 over West River Road) to SLM 14.26 (Begin rear approach slab I-90 over the Black River); and
    - from SLM 14.47 (End forward approach slab I-90 over Ford Road) to 18.61 (Begin rear approach slab I-90 over French Creek).
- SR-2 – from SLM 10.73 (End forward approach slab SR-2 over Murray Ridge Road) to SLM 11.14 (Merge with I-90).
- SR-57 Ramps – replace pavement along I-90 and all ramps to limit of full depth concrete ramp pavement.
- SR-254 Ramps – complete ramp replacement to edge of pavement of SR-254 for all ramps.
- SR-611 Ramps – replace pavement along I-90 and ramps acceleration and deceleration lanes for the IR 90 eastbound exit and westbound entrance ramps to begin rear approach slab over French Creek).

Planing, resurfacing, and widening Limits:

- I-90 from SLM 13.24 (End forward approach slab I-90 over LOR 57) to SLM 13.54 (Begin rear approach slab I-90 over West River Road).

Planing and resurfacing Limits:

- I-90 from SLM 12.48 (End forward approach slab I-90 over Lake Avenue) to SLM 12.55 (Begin rear approach slap I-90 over CSX Railroad); and
- I-90 from SLM 14.34 (End forward approach slab I-90 over Black River) to SLM 14.43 (Begin rear approach slap I-90 over Ford Road).

See Appendix PA-04 for illustration of approximate pavement limits.

The following pavement designs have been approved for the Project:

A. Design 1

   Design 1 applies to full depth pavement replacement areas and pavement widening areas on I-90 and SR-2 travel lanes and paved shoulders; ramp pavements and shoulders on the mainline side of the physical gores, and emergency vehicle paved crossover areas.

   - Item 202 – Pavement Removed
   - Item 442 - 1.50” Asphalt Concrete Surface Course, 12.5mm, Type A (447)
   - Item 407 - Tack Coat

- Item 442 - 1.75" Asphalt Concrete Intermediate Course, 12.5mm, Type A (446)
- Item 407 - Tack Coat for Intermediate Course
- Item 302 - 8" Asphalt Concrete Base (two lifts with tack coat)
- Item 304 - 6" Aggregate Base
- Chemical subgrade stabilization – see Section 10.2 (Subgrade Stabilization)

In accordance with the Pavement Design Manual, anti-segregation equipment is required for the surface and intermediate courses and tack coat is required between all lifts of asphalt. For this build-up, three applications of tack coat are required. For pavement widening area from SLM 13.24 to SLM 13.54, increase the aggregate base layer thickness from 6" to 6.5" to align bottom of existing and proposed aggregate base layers. From SLM 13.24 to SLM 13.54 the DBT shall remove the existing pavement areas and widen the pavements as follows:

- Eastbound – saw cut pavement full depth along the profile grade line and construct full depth inside travel lane and inside shoulder. Remove existing intermediate and surface courses full width of existing travel lanes and outside shoulder, install pavement fabric per Appendix PA-03 (Pavement Overlay Fabric Composite) over the joint between existing and proposed asphalt base layers and construct new intermediate and surface course asphalts per this section. Pavement fabric shall be a minimum 3' width and centered over pavement joint.
- Westbound – saw cut pavement full depth 12' right of profile grade line and construct full depth inside shoulder. Remove existing intermediate and surface courses full width of existing travel lanes and outside shoulder, install pavement fabric per Appendix PA-03 (Pavement Overlay Fabric Composite) over the joint between existing and proposed asphalt base layers and construct new intermediate and surface course asphalts per this section.

For the existing full-depth asphalt pavement to remain from SLM 13.24 to SLM 13.54, any cost associated with resurfacing the existing asphalt pavement including: pavement planing, pavement repairs, tack coat, and asphalt intermediate and surface courses shall be incidental to Item 690 SPECIAL – MISCELLANEOUS PAVEMENT FOR DESIGN BUILD. All other costs within this section of roadway such as: pavement removal, full depth pavement widening, earthwork, subgrade stabilization, seeding and mulching, drainage, traffic control, guardrail, etc. shall be incidental to their other respective bid items.

B. Design 2

Design 2 applies to full depth pavement replacement areas and pavement widening areas on I-90 and SR-2 travel lanes and paved shoulders; ramp pavements and shoulders on the mainline side of the physical gores, and emergency vehicle paved crossover areas.

- Item 202 – Pavement Removed
- Item 442 - 1.50" Asphalt Concrete Surface Course, 12.5mm, Type A (447)
- Item 407 - Tack Coat
- Item 442 - 1.75" Asphalt Concrete Intermediate Course, 12.5mm, Type A (446)
- Item 407 - Tack Coat for Intermediate Course

- Item 302 - 10” Asphalt Concrete Base (two lifts with tack coat)
- Item 304 - 6” Aggregate Base
- Undercut and granular subgrade stabilization – see Section 10.2 (Subgrade Stabilization)

In accordance with the Pavement Design Manual, anti-segregation equipment is required for the surface and intermediate courses and tack coat is required between all lifts of asphalt. For this build-up, three applications of tack coat are required.

C. Design 3

Design 2 applies to ramp travel lanes and shoulders to the physical gore of mainline I-90.

- Item 452 – 10.5” Non-Reinforced Concrete Pavement, Class QC1P with QC/QA
- Item 304 – 6” Aggregate Base
- Subgrade stabilization – see Section 10.2 (Subgrade Stabilization)

D. Design 4

Design 4 applies to pavement resurfacing areas within the Project Limit.

- Item 254 - Pavement Planing
- Item 442 - 1.50” Asphalt Concrete Surface Course, 12.5mm, Type A (447)
- Item 407 - Tack Coat
- Item 442 - 1.75” Asphalt Concrete Intermediate Course, 12.5mm, Type A (446)
- Item 407 - Tack Coat for Intermediate Course

The DBT shall remove the existing intermediate and surface courses full width of existing travel lanes and shoulders. In accordance with the Pavement Design Manual, anti-segregation equipment is required for the surface and intermediate courses.

E. Design 5

Design 5 applies to pavement areas within or beyond the Project Limit where the permanent surface course is impacted by removal of temporary pavement markings.

- Item 254 - Pavement Planing 1.5”
- Item 442 - 1.50” Asphalt Concrete Surface Course, 12.5mm, Type A (447)
- Item 407 - Tack Coat

Pavement planing and resurfacing shall be performed for the full width of the direction of travel of the freeway beginning at the furthest point of impact. In accordance with the Pavement Design Manual, anti-segregation equipment is required for the surface course.

The DBT shall perform shoulder preparation and provide and construct compacted aggregate (2’ wide x 2” deep), all in accordance with CMS 617 along all non-curbed inside and outside shoulders within

the project limits. This applies to mainline and ramps where full depth pavement and pavement resurfacing is being performed.

The existing retaining walls and moment slab barriers along the eastbound and westbound outside shoulders between the I-90 bridges over the Black River and the I-90 bridges over Ford Road shall remain in place unless impacted by the DBT's design.

The DBT shall install longitudinal rumble strips along the inside and outside shoulders of I-90 and SR-2 in accordance with CMS 618 and standard construction drawing BP-9.1 within the Project limits and for resurfacing areas outside of the Project limits. The DBT shall install transverse rumble strips across westbound I-90 on the approach to the Ohio Turnpike gates in accordance with CMS 618 and standard construction drawing BP-9.2.

10.1 Approach Slab Overlays

The DBT shall correct non-uniform approach slab settlement that has occurred on the roadway ends of approach slabs at the following locations:

- LOR-00090-13550L (Westbound over West River Road) rear approach slab
- LOR-00090-13550R (Eastbound over West River Road) forward approach slab

The DBT shall:

- Collect surface smoothness measurements in accordance with PN 555 (Surface Smoothness For Bridges and Approaches).
- Design improvements consisting of approach slab pavement planing; variable depth intermediate course; and uniform depth surface course across the approach slabs and adjoining pavements.
- Construct improvements, obtain subsequent surface smoothness measurements and perform mandatory corrective actions per PN 555.

The intent of this work is to improve rideability through correction of approach slab settlement without modification to the bridge deck. While the DBT is required to collect surface smoothness measurements across the bridge decks, no corrective action will be required for the existing bridge decks. The following additional requirements apply.

- Approach slab pavement planing shall be 1.5" depth at the new butt joint created 1' from the bridge end of the approach slab.
- Tack Coat (702.13) shall be placed on all concrete surfaces at the maximum application rate of 0.08 Gal/Sq. Yd.
- Uniform surface course thickness shall be 1.5"; shall be constructed for the full width of the approach slab; shall be constructed to 1' from the bridge end of the approach slab; and shall be performed in conjunction with the adjoining roadway paving.
- Variable depth intermediate course or scratch course shall be utilized to achieve profile revisions required to correct approach slab settlement.
- A 1.5" wide by 3" deep sawed and sealed control joint shall be constructed at the interface of the approach slab and adjoining pavement section across the full width of the approach slab. Control joint depth may be reduced if overall asphalt depth over approach slab is less than 3".

10.2 Subgrade Stabilization

The DBT shall prepare stable subgrade conforming to CMS 204. Stable subgrade is defined as subgrade where proof rolling results in permanent rutting of 1 inch or less and elastic (rebound) movement of 1 inch or less.

The DBT shall globally chemically stabilize the entire subgrade. Global chemical stabilization shall be 12" below the subgrade level and extending 18" outside of the outside edge of the proposed widened pavement and paved shoulder. In addition to global chemical stabilization, supplemental subgrade remediation shall be performed per Table 10-1 (Supplemental Subgrade Remediation Requirements). The Item 206 Cement Stabilized Subgrade shall include all requirements per Item 206, including curing coat and mix design.

Table 10-1: Supplemental Subgrade Remediation Requirements

Estimated Station Range	Supplemental Remediation Effort	Width of Remediation	Boring(s) Included
SR-2 WB			
STA 624+35 to STA 626+35	Increase Cement Stabilization for Unsuitable Silt from 12" to 14"	At least 18 inches beyond the outside edge of the proposed widened pavement or paved shoulder, including beneath any curbs and gutters	B-015-0-22
IR-90 Mainline			
STA 733+50 EB to STA 753+55 EB	18" Shallow Bedrock Over-excavation and replacement in EB Direction prior to global stabilization*	12" beyond edge of new pavement or pavement shoulders	B-037-0-22, B-039-0-22, B-041-0-22
STA 798+50 to STA 802+25	Increase Cement Stabilization for Unstable Soils from 12" to 14"	At least 18 inches beyond the outside edge of the proposed widened pavement or paved shoulder, including beneath any curbs and gutters	B-053-0-22
STA 918+25 (Milepost 15.0) to End of Project	12" Undercut and Replace with Item 204 Granular Material Type C in lieu of cement stabilization due to high sulfate soils OR 18" over-excavation and replacement prior to global stabilization*		B-083-0-22 through B-098-0-22

*Over-excavation and replacement consists of excavating and replacing with ODOT CMS Item 703.16.A Natural Soil with an ODOT Classification of A-4a, A-6a, A-6b, or A-7-6 having a plasticity index less than 20 and sulfate content less than 5,000 ppm. Test Soil every 5,000 cubic yards per Supplement 1120 Table 1120.03-1.

The DBT shall perform subgrade chemical stabilization to conform to the requirements of Item 206 Chemically Stabilized Subgrade. Use the assumed spreading rate as specified by ODOT Geotechnical Bulletin 1, Figure C for estimating purposes. The Department will adjust the Contract for actual cement amount required by Supplement 1120 per CMS 109.05 B.

The DBT shall perform Mixture Design for Chemically Stabilized Soils per Supplement 1120. Use the assumed chemical spreading rates unless the ODOT Construction Engineer approves a change or as required by Supplement 1120.

The DBT shall locate and verify the depth of all existing underground utilities and sewers present in the areas of subgrade stabilization to ensure no impacts or damage during construction. Stabilization depths may be adjusted or non-performed with Approval of the Department to accommodate utilities. Specific attention is directed to all existing waterlines and force mains. A 12-inch depth of undisturbed earth shall be kept above all waterlines and force mains during subgrade construction. Where chemical stabilization is not possible, the DBT shall stabilize the subgrade by undercutting a minimum depth of 12 inches with geogrid and 304 materials, unless additional undercutting depth is required per Table 10-1. If utilizing the undercut method, the DBT shall include plan note G121 from the ODOT L&D Volume 3 – Plan Preparation manual in submittals. However, when the stabilization is complete this area shall pass the proof rolling. Rollers shall be used for subgrade and base compaction in areas of existing waterlines and force mains. Vibratory equipment over water lines is strictly prohibited.

The DBT shall be responsible for up to 5% of the repair areas failing proof roll after chemical stabilization. Should the total of the repair areas exceed 5% of the total subgrade treated area, ODOT will compensate the DBT per CMS 109.05 for the area more than 5%. The Department will only compensate the DBT once for each repair area.

To facilitate faster construction of concrete ramps, the DBT may design and perform undercuts in lieu of global chemical stabilization under proposed concrete ramps.

11 ROADWAY

The DBT shall reconstruct existing pavements and paved shoulders along I-90, SR-2 and ramps while generally retaining the existing constructed horizontal and vertical alignments and lateral position of existing travel lanes. The DBT shall establish a new centerline construction to best fit the existing centerline construction based on observed field data. Minor changes to the horizontal and vertical alignment, lateral position of travel lanes, and superelevation rate/position shall be incorporated to accommodate IOS revisions at the I-90/SR-2 interchange, and at other locations to improve geometric conditions and accommodate the proposed typical section.. The DBT shall incorporate the addition of the third eastbound and westbound lanes on I-90 between SR-2 and SR-611 by narrowing of the existing median. The DBT shall make minor adjustments to the vertical alignment: to accommodate bridge changes at Murray Ridge Road; to maintain existing eastbound and westbound vertical clearances under SR-254; to ensure a smooth profile between the new roadway pavement and existing bridge pavements/approach slabs to remain; and to ensure that minimum stopping sight distances are provided. The DBT shall ensure that construction of noise barriers and associated barrier systems provide minimum stopping sight distance requirements.

The DBT shall provide 12’ paved eastbound and westbound inside shoulders along the three-lane section of I-90 from SR-2 to SR-611. All other shoulder and lane widths shall be in accordance with L&D Figures 301-3, 301-4 and 303-1, except at the ITS camera installation near the I-90 bridges over Murray Ridge Road where the 4’ westbound inside paved shoulder shall be increased to 12’ for a length of 250’ and the area graded per the requirements of TEM Section 1303-3.

The DBT shall incorporate the recommendations of interchange operational studies at the I-90/SR-2 interchange and the I-90/SR-254 interchange in accordance with Section 11.2 (Interchange Operational Studies). At I-90/SR-2 the westbound split shall be designed per Appendix TC-01, Figure 1; and the eastbound I-90 lane shall abut the two eastbound SR-2 lanes to form the three-lane section. The horizontal alignment of eastbound SR-2 shall be modified to accommodate the third lane within the median of I-90. The DBT may make minor adjustments to the alignment of the eastbound exit ramp to SR-254 to minimize utility, drainage and signal impacts associated with incorporation of the eastbound slip ramp. The DBT shall construct a 6” tall concrete traffic island in accordance with TC-02 between the free flow right turn lane and the inner right turn lane at the I-90 eastbound exit to SR-254. The traffic island shall include an eastern 3’ wide extension parallel to SR-254 for a minimum length of 50’ to direct traffic into the eastern curb lane.

The DBT shall improve the ramp acceleration and deceleration length at the SR-57, SR-254, and SR-611 interchanges in accordance with L&D requirements, unless physically constrained. Physical constraints shall be defined as: grading revisions that require additional right of way; bridge widening; construction of retaining walls or similar structures; lengthening of culverts with a rise of 48” or greater; or would preclude noise wall installation. At constrained locations the DBT shall improve the ramp acceleration and deceleration lengths to the extent possible.

The DBT shall remove the five existing emergency vehicle median cross overs within the Project limits and construct two new median cross overs in accordance with L&D requirements. The new median cross overs shall be located as follows:

- I-90 west of Lake Avenue – replace existing median cross over. Cross over to be designed to accommodate both emergency vehicles and ODOT maintenance vehicle access to new median dynamic message sign (see Section 15.5 (Intelligent Transportation System)
- I-90 between SR-254 and SR-611 – one new emergency vehicle crossover located approximately mid distance between interchanges.

The existing corridor was designed for a maximum superelevation rate of 0.083 (rural criteria). Existing bridge infrastructure to remain prevents full conversion to maximum superelevation rate of 0.060 (urban criteria). The Department has processed design exceptions to allow the 0.083 maximum superelevation rate to remain. The DBT may use either rural or urban superelevation rates along I-90, SR-2, and SR-57 ramps in the design. Urban rates shall be used for the reconstructed SR-254 ramps. The DBT shall submit superelevation transition calculations for the three lane sections of I-90 with the Interim Design submission showing how the three lane transitions will be developed.

The DBT shall remove all existing guardrail, including anchor assemblies and end treatments. The DBT shall design and construct new guardrail, end treatments, and assemblies per ODOT L&D Manual Volume 1, Section 600 and MASH compliant within the proposed Project limits and existing right of way limits.

- Any new guardrail that is installed shall comply with Midwest Guardrail System (MGS) requirements.
- If the replacement of a guardrail within the pavement replacement limits is part of guardrail that extends outside the pavement replacement limits, the entire run of guardrail shall be replaced.
- If there are any existing or proposed roadside objects or drop-offs that require protection, the DBT shall design and install adequate protection for those warranting features, even if those features are not currently protected.
- Where noise walls are present, provide a minimum of 5’ working width between guardrail and the nearest part of noise barriers.

The DBT shall remove all existing roadway barriers; redesign and reconstruct new barrier within the Project limits. This does not include the structural barriers/moment slabs along the outside shoulders between the existing I-90 bridge over Blank River and the I-90 bridge over Ford Road which are to remain unless disturbed by the DBT’s operations.

The DBT shall design and construct new median cable guardrail along the three-lane section of I-90 between SR-2 and SR-611 in accordance with L&D Volume 1 and note “R-127 – Item 606 – Cable Guardrail.”

The DBT shall remove, redesign and reconstruct all curb and curb transition areas at the ends of bridges.

The DBT shall regrade along SR-2, I-90 and ramps to accommodate third lane widening, profile and alignment changes, guardrail, barrier and cable barrier systems, post construction BMP’s, drainage requirements and other items resulting from the DBT’s design. The mounded median areas east of West River Road shall be replaced with depressed medians with a singular ditch.

Safety grading shall be used for all areas and where full-depth pavement is being constructed with the following exceptions:

- Common grading shall be used where safety grading would require the installation of new drainage conduit, barrier or guardrail, right of way encroachment or additional environmental impacts,
- If common grading in the above condition would require the installation of new drainage conduit, barrier or guardrail, right of way encroachment or additional environmental impacts, barrier grading shall be used.
- Where existing barrier or guardrail is present, barrier grading may be used.

The DBT shall provide ditch calculations for any ditch modifications and for all ditches receiving additional flow. Any new fill materials placed in FEMA floodplains shall be coordinated, as required by Section 12 (Drainage) and Section 5 (Environmental).

The DBT shall provide cross sections at 50' (max.) intervals for evaluation of grading changes, and guardrail length of need confirmation.

The DBT shall remove, design and construct new L/A fencing including fence and gates (if present) within Project limits. New L/A fence shall be Type 47 wire woven fence (SCD F-2.1) to replace existing fence at existing locations. To minimize ecological impacts the DBT shall, to the extent possible, minimize clearing and grubbing activities for fence replacements. Fence replacement is an earth disturbing activity and must be included in the DBT's calculation for earth disturbance.

All existing infrastructure items removed or made obsolete by the Project shall become the property of the DBT and shall be removed from the Project site.

The disposal of any material from the Project within state right of way shall not be permitted.

11.1 Design Exceptions

The Department has obtained approval for the following design exceptions as included in Appendix LD-01 (Approved Design Exceptions):

A. Superelevation Rate (0.083) - (I-90, SR-2 and SR-57 Ramps)
B. Vertical Clearance – (I-90 under SR-254)
C. Stopping Sight Distance (I-90 and SR-2)

The DBT shall notify ODOT regarding any design features that are believed to not meet the minimum design criteria and require a design exception.

11.2 Interchange Operational Studies

The DBT shall prepare a design compliant with the Interchange Operational Study for the I-90/SR-2 Interchange (Appendix TC-01) and the Interchange Operational Study for the I-90/SR-254 interchange (Appendix TC-02) except where modified within this Scope of Services.

12 DRAINAGE

The DBT shall remove and replace all existing drainage features within the limited access right of way of the Project limits, except as indicated in Section 12.1 (Culverts and Storm Sewers) and 12.2 (Unknown Farm Tiles Connections).

All drainage items within the Project limits including both open and closed drainage systems shall be designed per the L&D Manual, Volume 2. Culverts and storm sewers shall have materials specified per CMS 611.02 and per the ODOT Culvert and Storm Sewer Durability Design spreadsheet (L&D Manual, Volume 2, Section 1002.2.2). Drainage work shall also include the hydraulic and structural analysis, and potential modification or replacement, of existing storm sewer and culvert systems identified in Section 12.1 (Culverts and Storm Sewers) based on the DBT's design. Note: Existing culverts to remain listed in Table 12.1 have not been hydraulically evaluated for the add lane condition.

Wherever possible, open roadside drainage shall be maintained or modified accordingly to meet altered grading. Roadside ditches which outlet to existing streams are preferred, however, replacement of ditches with enclosed conduit is permitted.

If a drainage structure is replaced and an existing conduit that ties into that drainage structure will remain, the existing conduit shall be removed from the structure to the joint nearest the structure. A new conduit of the same size shall be installed that will tie into the structure and connect to the existing conduit by a masonry collar per standard drawing DM-1.1.

Any proposed sewer or culvert that runs under existing pavement that is to remain, shall be jack and bored.

Existing sewers and culverts to be replaced shall either be removed or plugged and filled.

The DBT shall provide underdrains (base pipe, shallow pipe, deep pipe) and underdrain outlets in accordance with Section 205.1 of the ODOT Pavement Design Manual for all new pavement areas within the Project limits. All underdrains shall be 6" diameter.

Existing sewers (storm and sanitary) and culverts to remain that are within the zone of influence of construction activity shall be video inspected per C&MS 611 twice during this Project: first, before construction begins; and second, after construction is completed and prior to final Acceptance of the Work. Construction activity as it relates to storm sewer, sanitary sewer and culvert inspection shall be defined as permanent or temporary roadway, pavement, bridge, traffic control, noise barrier, and drainage construction activities crossing or adjacent to an existing sewer. The zone of influence areas shall be determined by the DBT and approved by the Department. The video inspection requirement shall apply to all impacted sewers and culverts regardless of size, depth, or type.

Unless otherwise specified in this Scope of Services, video inspection limits shall include the length of sewer within the influence area and extend 50 feet upstream and downstream beyond the influence area limits. Video inspection limits shall be approved by the Department and the maintaining agency of the sewer prior to commencement of Work. The DBT shall provide electronic copies of all video/inspection reports to the Department of all inspections performed.

Sewers to be video inspected shall be cleaned to facilitate the video inspection. The cleaning limits may exceed the video inspection limits based upon point of access for inspection equipment. The DBT shall also bypass pump any flow as necessary to access the sewer to perform the video inspection.

The Department shall determine the necessary amount of casting replacements on existing drainage structures to be retained. The DBT shall include a contingency quantity of 25,000 pounds of Miscellaneous Metal per C&MS 611 within the lump sum bid for drainage work for structures requiring casting replacement. If the quantity of Miscellaneous Metal per C&MS 611 exceeds 25,000 pounds, the Department will pay for additional quantities in accordance with the Contract Documents. This shall include, but is not limited, to any structure located within the proposed roadway that is not already being modified or addressed within the proposed drainage work or a structure which is within MOT resurfacing limits, which is not being affected by any proposed drainage work.

Post-construction storm water Best Management Practices (BMP) are required as per Location and Design Manual, Volume 2 and as indicated in this section. The following BMP's are approved for use on this Project for water quality treatment:

- Vegetated biofilters
- Vegetated filter strips

In addition to the Project specific treatment requirements, the DBT shall provide 10 additional acres of treatment area for water quality and quantity. This additional treatment is mitigation for impacts on other ODOT projects. The following BMP's are approved for use on this Project for water quality and quantity treatment:

- Bioretention cells
- Amended vegetated filter strips

All BMP's must be located in areas suitable for required maintenance activities, therefore BMP's cannot be located behind noise barriers.

The DBT shall perform a detailed flood plain analysis for all highways that encroach on floodplains, bodies of water or streams. The analysis shall be in accordance with the L&D Volume 2 and the Bridge Design Manual. The extent of the analysis shall be from a minimum of 500' downstream, to the greater of either one bridge opening/width upstream, or to the limits of the area inundated by the 100-year event.

The results of the detailed flood plain study, supporting hydraulic calculations, and recommendations shall be submitted to the Department for review and comment prior to construction of the drainage structure. Submittal of documents to the local floodplain coordinator shall be performed by the Department. With the exception of the concrete field paving on the LOR-00090-16580 structure, the floodplain coordination on the project will require an LD-53 Letter of Exemption. The LOR-00090-16580 structure will require the Letter of Notification and Letter of Compliance with associated documentation due to change in hydraulic capacity of the structure.

City of Elyria Floodplain Administrator Contact Information:

Kathryn McKillips, P.E.
City Engineer, City of Elyria
131 Court Street
Elyria, OH 44035
(440) 326-1444
engineer@cityofelyria.org

Village of Sheffield Floodplain Administrator Contact Information:

Dennis Shawver
Village Administrator
4480 Colorado Avenue
Sheffield, OH 44054
(440) 949-6209
dshawver@sheffieldvillage.com

The Department will prepare the Letter of Notification and Letter of Compliance (LOR-00090-16580 structure), and Letter of Exemption (other remaining work within FEMA zones), and FEMA FIRM Mapping. The DBT shall prepare the hydrologic and hydraulic calculations and the completed Interim Design. The no-rise certification will not be required on this project due to no work within a FEMA Zone AE floodplain or regulated floodway.

This includes, but is not limited to, hydrologic and hydraulic calculations, no- rise certification (if applicable), associated FEMA FIRM mapping showing the area of impact to the floodplain, and completed Interim Design (roadway, drainage, and structure plans with review comments addressed). These documents shall be submitted to the District 3 Hydraulic Engineer.

12.1 Culverts and Storm Sewers

The DBT shall perform work on I-90/SR-2 and ramp culverts within the Project limits as described in Table 12-1 (Culvert and Storm Sewer Information). These culvert repairs are based on a conditions assessment and have not been hydraulically evaluated.

Table 12-1: Culvert and Storm Sewer Information

Route	Approximate Station	CFN	Description	Required Repairs
I-90	542+00	1873035	36" x 54" Concrete 232' long	Internal joint seal on first joint from inlet.
I-90	561+06	1873039	96" Concrete - 236' long	Repair a 2' X 3' section - 7' from inlet.
I-90	570+83	1873038	42" Concrete-337'	No repairs identified
I-90	576+25	1987498	90" diameter-430'	Repair spalled concrete
I-90	589+00	1872957	42" Concrete - 88' long	No repairs identified
I-90	589+00	1872958	42" Concrete - 80' long	No repairs identified
SR-2	575+10	1872955	36" Concrete - 92' long	No repairs identified
SR-2	575+10	1872956	36" Concrete - 82' long	No repairs identified
Lake Ave	613+00	No CFN	66" Concrete - 380' long	No repairs identified
CSXT RR	619+20	No CFN	56"x 24" Box	No repairs identified
I-90	641+00	1864081	36" Concrete - 250' long	Internal joint seal the first joint from the inlet end. Place dumped rock at the outlet.
I-90	691+00	No CFN	84" CMP - 468' long	Line full length of culvert per ODOT Supplemental Specification 837
I-90	697+50	1829951	108" Concrete - 342' long	Install dump rock at outlet
I-90	723+50	No CFN	108" CMP - 310' long	Line cull length of culvert per ODOT Supplemental Specification 837

Route	Approximate Station	CFN	Description	Required Repairs
I-90	731+00	1974912	36" PVC - 220' south of Black River	No repairs identified
Ford Rd.	746+00	No CFN	30" West of I-90	No repairs identified
Ford Rd.	746+50	No CFN	42" Concrete east of I-90	No repairs identified
Gulf Rd.	765+00	No CFN	42" Concrete east of I-90	No repairs identified
I-90	785+00	1873014	53"x34" Concrete - 348' long	Repair spalled concrete
I-90	815+00	1987603	Ramp J - 42" concrete - 87' long	Replace manhole as an access chamber with grate. Pipe to remain.
I-90	879+00	1873019	53" x34" Concrete - 186' long	Repair concrete delaminations.
I-90	885+00	1873021	76"x48" Concrete -196' long	No repairs identified
I-90	903+00	1873023	68" x 106" Concrete 281' long	Internal joint seal at 3rd joint from outlet.
I-90	926+50	1873026	84" CMP - 294' long	Line full length of culvert per ODOT Supplemental Specification 837
NS RR	928+25	No CFN	Twin 42" Concrete - 50' longs	No repairs identified
I-90	929+00	1873028	33" Concrete-302' long	No repairs identified
I-90	929+35	No CFN	12" median storm	No repairs identified
I-90	966+50	No CFN	12" median storm	Replace pipe from CB to creek

Internal joint seal repairs, as indicated in Table 12-1 shall be per Appendix DR-01.

12.2 Unknown Farm Tile Connections

Initial construction of the roadway included contingent quantities for connections of unknown Farm Drains; final locations and usage were not identified in original as-build drawings. If the DBT encounters unknown farm drain connections, immediately notify the Engineer. The Engineer shall determine if such locations are still operational.

Encountered operational unknown farm tile connection locations shall be connected to the Project's drainage and the contract will be adjusted per 109.05.

13 LANDSCAPING

Landscaping Required: ☒ Yes ☐ No

The DBT shall re-establish vegetation on all disturbed earth areas in accordance with CMS 659 or CMS 660. This includes soil analysis testing, providing and placing topsoil (if necessary) commercial fertilizer, lime, seeding and mulching or sodding, watering, mowing, and inter-seeding, all as necessary to achieve NPDES final stabilization per CMS 659.

14 STRUCTURES

14.1 Existing Structures Identification

Table 14-1: Existing Structures Identification

Structure ID	Structure File Number	Feature Intersection
LOR-00090-11570R	4704371	EB I-90 over Murray Ridge Rd
LOR-00090-11385L	4704398	WB I-90 over Murray Ridge Rd
LOR-00090-11780L*	4704401	WB I-90 over SR-2
LOR-00090-12106L	4704355	WB I-90 over Lake Ave
LOR-00090-12440R	4704444	EB I-90 over Lake Ave
LOR-00090-12560L	4704487	WB I-90 over CSXT RR
LOR-00090-12560R	4704517	EB I-90 over CSXT RR
LOR-00090-13200L	4710000	WB I-90 over SR-57
LOR-00090-13200R	4710001	EB I-90 over SR-57
LOR-00090-13550L	4710002	WB I-90 over West River Rd
LOR-00090-13550R	4710003	EB I-90 over West River Rd
LOR-00090-14118L	4704665	WB I-90 over Black River/Park Rd
LOR-00090-14260R	4704703	EB I-90 over Black River/Park Rd
LOR-00090-14254L	4704738	WB I-90 over Ford Rd
LOR-00090-14430R	4704754	EB I-90 over Ford Rd
LOR-C0017-3370*	4704789	Gulf Rd over I-90
LOR-00254-01910	4706277	SR-254 over I-90
LOR-00090-16580	4704800	I-90 over Jungbluth Ditch
LOR-00301-23490*	4706730	Abbe Rd over I-90
LOR-00606-9271*	4704835	French Creek Rd over I-90
LOR-00090-1785R*	4704925	EB I-90 over N/S RR
LOR-00090-1785L*	4704895	WB I-90 over N/S RR
LOR-00090-18150	4704967	I-90 over Klein Main
LOR-00090-18610L	4704959	WB I-90 over French Creek
LOR-00090-18610R	4704983	EB I-90 over French Creek

*No Work anticipated

14.2 General Requirements

The DBT shall repair/replace slope erosion protection in-kind if disturbed by construction.

All Shop Drawings shall comply with Item 501.

The DBT shall determine the need for additional subsurface investigations necessary to complete the Project. Geotechnical explorations shall be performed and documented in accordance with the Specifications for Geotechnical Explorations.

Design and Construction Requirements of Structure

A. Str: LOR-00090-11570R (EB I-90 over Murray Ridge Road)

Existing Structure Data

Overall Length:	122’
Width o/o:	42.0’
Design Loading:	HS20-44 & Alt. Military Load
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	1974

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 40.5’ curb to curb

Railing: ☒ Yes ☐ No Type: 42” single Slope

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Remove the existing bridge deck and parapets along with the approach slabs. Remove existing deck scuppers.
2. Salvage the beams, piers and abutments.
3. Provide new reinforced concrete deck matching existing face to face of parapet width (40'-6"+/-). Deck design to conform to Bridge Design Manual (BDM) Section 309.3. Deck cross slopes (pavement and shoulders) shall match adjoining roadway section with rounding in accordance with BDM Section 309.3.6.1.
4. Provide a deck haunch of at least 1.0 inches thick over existing beam moment and splice plates.
5. Superstructure to remain integral with the substructure.
6. Provide new 42" single slope parapets per current standards. Seal the deck and parapets in accordance with the current BDM.
7. Add shear studs to beams to make new deck composite.
8. Retrofit beam moment plates over piers in accordance with BDM section 404.1.2.4.a. Remaining Fatigue Life Analysis is not required.
9. Surface prepare and paint existing structural steel with three coat OZEU paint system per CMS 514. Finish coat color to be in conformance with CMS. Color to match left bridge.
10. Provide analysis and load rating of bridge superstructure in accordance with the current Bridge Design Manual. Include a 60 psf future wearing surface per BDM.
11. Evaluate the deck drainage. Eliminate scuppers if possible. Provide drainage facilities immediately off the bridge if scuppers are not required. Install scuppers if needed.
12. Remove bearing fixity at the piers and replace all bearings. Install new elastomeric bearings, or high load multirotational bearings (if needed).
13. Reuse existing abutments. Install new integral superstructure blocks on existing seats. Preserve the existing #6 integral bars sticking up from abutment into the superstructure integral block.
14. Sound abutments; patch abutments per CMS 519 – estimated quantity = 15 sf.
15. Refurbish/strengthen wingwalls as needed to provide lateral seismic restraint; or provide a new abutment keyway for seismic loading.
16. Remove existing coatings from the abutment surfaces and re-seal the abutments with epoxy-urethane.
17. Sound the pier caps and columns; patch per CMS 519. Estimated Quantity = 60 sf.
18. Remove existing coatings from the pier surfaces and re-seal the piers with epoxy-urethane. Evaluate pier caps and columns for additional shear strength and seismic loading. If additional strength is needed, include the additional strength requirements in the plan that is to be provided by fiber wrap. At a minimum, provide protective fiber wrap for full height of pier columns for corrosion protection. Corrosion protection installation shall be per manufacturer's recommendation. Fiber wrapping shall be in accordance with PN 519 – Composite Fiber Wrap System.

19. Install new full-width approach slabs, minimum length of 25 feet. No asphalt wearing surface on new deck and approach slabs.

20. Maintain existing minimum vertical clearance over Murray Ridge Road (currently 14'-7"). Adjust vertical profile of bridge deck and adjacent roadway as necessary to accommodate bridge modifications (including but not limited to bearing modifications, incorporation of haunches, and modifications to pavement and shoulder cross slopes).

B. Str: LOR-00090-11385L (WB I-90 over Murray Ridge Road)

Existing Structure Data:

Overall Length:	129’
Width o/o:	44.0’
Design Loading:	HS20-44 & Alt. Military Load
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	1974

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 40.5’ curb to curb

Railing: ☒ Yes ☐ No Type: 32” Defl Type Para (NJ Shape)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Remove the existing bridge deck and parapets along with the approach slabs. Remove existing deck scuppers.
2. Salvage the beams, piers and abutments.
3. Provide new reinforced concrete deck matching existing face to face of parapet width (40'-6"+/-). Deck design to conform to Bridge Design Manual (BDM) Section 309.3. Deck cross slopes (pavement and shoulders) shall match adjoining roadway section.
4. Provide a deck haunch at least 1.0 inches thick over existing beam moment and splice plates. Superstructure to remain integral with the substructure.
5. Superstructure to remain integral with the substructure.
6. Provide new 42" single slope parapets per current standards. Seal the deck and parapets with epoxy-urethane in accordance with the current BDM.
7. Add shear studs to beams to make new deck composite.
8. Retrofit beam moment plates over piers in accordance with BDM section 404.1.2.4.a. Remaining Fatigue Life Analysis is not required.
9. Surface prepare and paint existing structural steel with three coat OZEU paint system per CMS 514. Finish coat color to be in conformance with CMS. Color to match right bridge.
10. Provide analysis and load rating of bridge superstructure in accordance with the current Bridge Design Manual. Include a 60 psf future wearing surface per BDM.
11. Evaluate the deck drainage. Eliminate scuppers if possible. Provide drainage facilities immediately off the bridge if scuppers are not required. Install scuppers if needed.
12. Remove bearing fixity at the piers and replace all bearings. Install new elastomeric bearings, or high load multirotational bearings (if needed).
13. Reuse existing abutments. Install new integral superstructure blocks on existing seats. Preserve the existing #6 integral bars sticking up from abutment into the superstructure integral block.
14. Sound the abutments; patch abutments per CMS 519. Estimated Quantity = 15 SF.
15. Refurbish/strengthen wingwalls as needed to provide lateral seismic restraint; or provide a new abutment keyway for seismic loading.
16. Remove existing coatings from the abutment surfaces and re-seal the abutments with epoxy-urethane.
17. Sound the pier caps and columns; patch piers per CMS 519. Estimated Quantity = 200 SF.
18. Remove existing coatings from the pier surfaces and re-seal the piers with epoxy-urethane. Evaluate the pier caps and columns for additional shear strength and seismic loading, if additional strength is needed, include the additional strength requirements in the plan that is to be provided by fiber wrap. At a minimum, provide protective fiber wrap for full height of pier columns for corrosion protection. Corrosion protection installation shall be per manufacturer's recommendation. Fiber wrapping shall be in accordance with PN 519 – Composite Fiber Wrap System.
19. Install new full-width approach slabs, minimum length of 25 feet. No asphalt wearing surface on new deck and approach slabs.

20. Closely match vertical and horizontal alignments of the roadway. Maintain minimum vertical clearance with Murray Ridge below bridge (20.0 feet). Adjust vertical profile of bridge deck and adjacent roadway as necessary to accommodate bridge modifications (including but not limited to bearing modifications, incorporation of haunches, and modifications to pavement and shoulder cross slopes).

C. Str: LOR-00090-12106L (WB I-90 over Lake Avenue)

Existing Structure Data:

Overall Length:	166.6’
Width o/o:	63.0’
Design Loading:	HS25 or Greater
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	1967

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.

2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 240 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.
4. Clear and grub vegetation around bridge.

Note: Existing bridge terminal assemblies are Type 1 except inside trailing end has "T-Type" hole pattern drilled for Type 2.

D. Str: LOR-00090-12440R (EB I-90 over Lake Avenue)

Existing Structure Data:

Overall Length:	163'
Width o/o:	63.0'
Design Loading:	HS25 or Greater
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	1967

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60' curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 192 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.
4. Clear and grub vegetation around bridge.

Note: Existing bridge terminal assemblies are Type 1 except inside trailing end has "T-Type" hole pattern drilled for Type 2.

E. Str: LOR-00090-12560L (WB I-90 over CSXT RR)

Existing Structure Data:

Overall Length:	145'
Width o/o:	63.0'
Design Loading:	HS25 or Greater
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2009

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60' curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 144 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.
4. Clear and grub vegetation around bridge.

Note: Existing bridge terminal assemblies are Type 1 or continuous parapet wall.

F. Str: LOR-00090-12560R (EB I-90 over CSXT RR)

Existing Structure Data:

Overall Length:	145’
Width o/o:	63.0’
Design Loading:	HS25 or Greater
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2009

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60’ curb to curb

Railing:	☒ Yes ☐ No	Type: (existing)
Fence:	☐ Yes ☒ No	Height/Type: N/A
Sidewalks:	☐ Yes ☒ No	Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 144 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.
4. Clear and grub vegetation around bridge.

Note: Existing bridge terminal assemblies are Type 1 except inside trailing end has "T-Type" hole pattern drilled for Type 2.

G. Str: LOR-00090-13200L (WB I-90 over SR-57)

Existing Structure Data:

Overall Length:	182'
Width o/o:	63.4'
Design Loading:	HL93
Type:	Prestressed Concrete Continuous/Stringer/Multi-beam or Girder
Spans:	2
Date Built:	2018

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☒ Yes ☐ No Height/Type: (existing)

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies – Leading Ends – Type 1; Trailing End Outside – Type 2; Trailing End Inside - None

H. Str: LOR-00090-13200R (EB I-90 over SR-57)

Existing Structure Data:

Overall Length:	182’
Width o/o:	63.4’
Design Loading:	HL93
Type:	Prestressed Concrete Continuous/Stringer/Multi-beam or Girder
Spans:	2
Date Built:	2017

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 60’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☒ Yes ☐ No Height/Type: (existing)

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies– Leading Ends – Type 1; Trailing End Outside Type 2; Trailing End Inside Type 1.

I. Str: LOR-00090-13550L (WB I-90 over West River Road)

Existing Structure Data:

Overall Length:	98’
Width o/o:	71.4’
Design Loading:	HL93
Type:	Prestressed Concrete/Stringer/Multi-beam or Girder
Spans:	1
Date Built:	2017

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 68’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☒ Yes ☐ No Height/Type: (existing)

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies– Leading Ends – Type 1; Trailing End Outside Type 2; Trailing End Inside Type 1

2. Perform corrective action to the approach slabs as described in 10.1.

J. Str: LOR- 00090-13550R (EB I-90 over West River Road)

Existing Structure Data:

Overall Length:	98.1’
Width o/o:	73.3’
Design Loading:	HL93
Type:	Prestressed Concrete/Stringer/Multi-beam or Girder
Spans:	1
Date Built:	2018

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 70’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☒ Yes ☐ No Height/Type: (existing)

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies– Leading Ends – Type 1; Trailing End Outside Type 2; Trailing End Inside Type 1.

2. Perform corrective action to the approach slabs as described in 10.1.

K. Str: LOR-00090-14118L (WB I-90 over Black River/Park Road)

Existing Structure Data:

Overall Length:	363’
Width o/o:	67.0’
Design Loading:	HL93
Type:	Prestressed Concrete Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2013

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 64’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 96 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.
4. Patch left rear approach slab per CMS 511 – estimated quantity = 14 SY.

Note: Existing bridge terminal assemblies are – Leading Inside Type 1; Outside – concrete barrier; Trailing Type 2.

L. Str: LOR-00090-14260R (EB I-90 over Black River/Park Road)

Existing Structure Data:

Overall Length:	363’
Width o/o:	67.0’
Design Loading:	HL93
Type:	Prestressed Concrete Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2013

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 64’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 72 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.

Note: Existing bridge terminal assemblies are – Leading Type 1; Trailing outside concrete barrier; Trailing inside holes for Type 1 and Type 2.

M. Str: LOR-00090-14254L (WB I-90 over Ford Road)

Existing Structure Data:

Overall Length:	151.5’
Width o/o:	65.0’
Design Loading:	HL93
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2013

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 62’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 60 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.

Note: Existing bridge terminal assemblies are – Leading Type 1; Trailing outside concrete barrier; Trailing inside Type 2.

N. Str: LOR-00090-14430R (EB I-90 over Ford Road)

Existing Structure Data:

Overall Length:	179’
Width o/o:	65.0’
Design Loading:	HL93
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	3
Date Built:	2013

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 62’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin in accordance with CMS 512.
2. Repair horizontal cracks in the tops of parapets per Appendix ST-01 (Parapet Crack Repairs) – estimated quantity = 120 ft.
3. Remove existing coatings and re-seal entire inside and top face of concrete parapets and approach slab barriers and seal the back side of barriers at repair areas, with epoxy-urethane sealer per CMS 512.

Note: Existing bridge terminal assemblies are – Leading Inside Type 1; Leading outside concrete barrier; Trailing outside concrete barrier; Trailing inside holes for Type 1 and Type 2

O. Str: LOR-00254-01910 (SR-254 over I-90)

Existing Structure Data:

Overall Length:	304’
Width o/o:	91.0’
Design Loading:	HS20-44 & Alt. Military Load
Type:	Steel Continuous/Stringer/Multi-beam or Girder
Spans:	4
Date Built:	1970

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 88’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☒ Yes ☐ No Height/Type: 6’/straight

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☐ No

Scope of Work:

1. Install 6’ tall vandal protection fence per SCD VPF-1-90 for the full length of both bridge parapets.

P. Str: LOR-00090-16580 (I-90 over Jungbluth Ditch)

Existing Structure Data:

Overall Length:	286’
Dimensions o/o:	14’-3” x 8’-11”
Design Loading:	HS20-44 & Alt. Military Load
Type:	Steel Corrugated Plate Arch Culvert
Spans:	1
Date Built:	1970

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: N/A

Railing: ☐ Yes ☒ No Type: N/A

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Field pave culvert full length per CMS 611 and perform discrete repairs to CMP above invert paving.
2. Discrete repairs are: Method A (5 each); Method B (1 each); Method C (1 each) and shall be performed in accordance with Appendix ST-02. The DBT shall assume that each repair is 1 sq ft in area.

Q. Str: LOR-00090-18150 (I-90 over Klein Main)

Existing Structure Data:

Overall Length:	230’
Width o/o:	12.0’
Design Loading:	HS20-44 & Alt. Military Load
Type:	Steel/Culvert (Includes Frame Culverts)
Spans:	1
Date Built:	1970

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: N/A

Railing: ☐ Yes ☒ No Type: N/A

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☐ No

Scope of Work:

1. Field pave culvert full length per CMS 611 and perform discrete repairs to CMP above invert paving.
2. Discrete repairs are: Method A (5 each); Method B (1 each); Method C (1 each) and shall be performed in accordance with Appendix ST-02. The DBT shall assume that each repair is 1 sq ft in area.

R. Str: LOR-00090-18610L (WB I-90 over French Creek)

Existing Structure Data:

Overall Length:	105’
Width o/o:	Varies from 90.6’ to 92.94’
Design Loading:	HS25 or Greater
Type:	Concrete Continuous/Slab
Spans:	3
Date Built:	1970

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width: 72.5’ curb to curb

Railing: ☒ Yes ☐ No Type: (existing)

Fence: ☐ Yes ☒ No Height/Type: N/A

Sidewalks: ☐ Yes ☒ No Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies– Leading Ends – Type 1; Trailing End Outside Type 2; Trailing End Inside – None.

S. Str: LOR-00090-18610R (EB I-90 over French Creek)

Existing Structure Data:

Overall Length:	105’
Width o/o:	Varies from 75.54’ to 79.29’
Design Loading:	HS25 or Greater
Type:	Concrete Continuous/Slab
Spans:	3
Date Built:	1970

Alignment & Profile

Alignment: ☒ Follow Existing

☐ Relocated: ☐ Per ODOT ☐ Per DBT

Profile: ☒ Follow Existing

☐ Relocate: ☐ Per ODOT ☐ Per DBT

☐ Feathered (Adjustment): ☐ Per ODOT ☐ Per DBT

Span Configuration: ☒ Per Original

Span Lengths: ☐ Per ODOT ☐ Per DBT

☐ Variable

Transverse Sections

Roadway Width:	72.5’ curb to curb	
Railing:	☒ Yes ☐ No	Type: (existing)
Fence:	☐ Yes ☒ No	Height/Type: N/A
Sidewalks:	☐ Yes ☒ No	Width: N/A

Investigate the need for Prefabricated Structure: ☐ Yes ☒ No

Investigate the need for Retaining Walls: ☐ Yes ☒ No

Scope of Work:

1. Seal bridge deck and approach slabs with gravity-fed resin per CMS 512.

Note: Existing bridge terminal assemblies– Leading Ends – Type 1; Trailing End Outside Type 2; Trailing End Inside - None

14.3 Noise Barrier

Noise Barrier Construction Required: ☒ Yes ☐ No

The DBT shall design, prepare the detail construction plans, and construct the noise barriers at the locations identified in Appendix EN-01 (Noise Measurement Plan) and according to the following design requirements:

A. General Noise Barrier Requirements: Noise wall shall be designed and constructed in accordance with SCD NBS-1-09. Noise barriers shall be located proximate to the I-90 or ramp edge of outside shoulder. Noise barriers shall be parallel to the edge of shoulder and shall provide a minimum 5’ working width for guardrail per ODOT SCD MGS-2.1. Note that additional offset may be required on the inside of curves to ensure that the noise wall and guardrail system provide minimum stopping sight distances. The DBT may slightly increase noise wall offsets to avoid impacts to lighting systems and sign supports, however the noise walls shall maintain a generally uniform alignment. Due to maintenance considerations noise walls shall be located such that all highway light pole and guide sign foundations are located between the pavement and the noise wall. If offset revisions are required for light poles, increase the offset uniformly for the entire run when lights are present. When offset revisions are required to accommodate overhead sign supports, the deflection shall occur one full panel length on either side of the sign, and provide one full panel at the widened offset, centered about the sign. Noise walls shall be designed to avoid and minimize utility impacts to the extent possible.
B. Noise Barrier Panels and Posts: Precast Concrete with reflective concrete panels
C. Noise Barrier Foundations: Cast-in-place concrete
D. Location Specific Barrier requirements in accordance with Table 14-2.

Table 14-2: Specific Noise Barrier Requirements

Name	Location	Effective Length*	Effective Height
A	Eastbound shoulder between Ohio Turnpike gate and I-90 Split	1,300’	12’
E-East	Eastbound shoulder north of Gulf Road	2,550’	12’
F-North	Eastbound shoulder north of Abbe Road	2,800’	12’
F-South	Eastbound shoulder south of Abbe Road	6,000’	12’
G-North	Eastbound shoulder south of SR-611	4,452’	12’

*The effective length is required for noise abatement. The DBT shall utilize transition sections beyond these limits to terminate the noise barriers in accordance with the ODOT Noise Analysis Manual.

14.3.1 Noise Barrier Aesthetic Requirements

A. The highway side of all barriers shall have the Architectural Polymers Brick form liner #111 Ohio Sand Brick, or Engineer approved equal, and be sealed federal color number 595B-20109.

B. The residential side of Wall A, Wall E-East, Wall F-North and Wall F-South shall have Architectural Polymers Ashlar form liner #905, or Engineer approved equal, and be sealed grey (federal color 595B-16515).

C. The residential side of Wall G-North shall have Architectural Polymers Large Ohio Stone Drystack form liner #9110, or Engineer approved equal, and be sealed grey (federal color 595B-16515).

D. Panel caps will be a natural concrete color and will be left unsealed.

E. “Concrete posts will use a Department approved concrete waterproofing admixture. BASF Masterlife 300D, Pentron, SIKA WT-240, SIA MIX AE-6, Conblock CDA, AND Idocrete KR 1000 are approved CWA suppliers. Concrete posts will not use an exterior sealer.

F. “The 6” rustication groove on the post shall meet the top of the highest adjacent panel cap.

G. All noise barriers shall utilize logo panels with community icons constructed integral with the noise barrier panels. Four different logos shall be utilized as shown in Appendix EN-10 (Noise Barrier Logo Panels). Exact icon design shall be developed by DBT for the Department’s coordination with local communities. The logo panels shall be 9’ to 9’-6” wide by 4’-6” tall, horizontally centered within the wall panel; The logo panel shall be fully contained within a single 8’ tall top wall panel, with the top of logo panel located 2’ below the wall cap. The embossment depth for the logos shall be 1-inch. The brick finish will fill the face of the panel outside of the logo. The panel color shall match the adjacent wall panels. The raised embossed logo shall be federal color 595B-17886. Logo panels shall be located at roughly even spacings along the length of the wall in accordance with Table 14-3. Prepare shop drawings of the Logo Panels and drawings depicting location and an elevation view. Provide these Logo

Panel specific drawings a minimum of 120 calendar days prior to fabrication. Do not begin fabrication until receiving concurrence of the Logo Panel design from the Engineer.

Table 14-3: Community Icon Logo Panels

Name	Community Icon	Number of Logo Panels
A	Lorain County	4
E-East	Elyria/Sheffield Village	7/1
F-North	Sheffield Village	8
F-South	Sheffield Village	18
G-North	Sheffield Village/Avon	2/11

H. Initial foundation investigation has been provided by the Department as Appendix GE-05 (Noise Wall Barrier Boring Data).

I. The DBT shall determine the need for additional subsurface investigations necessary to complete the Project. Geotechnical explorations shall be performed and documented in accordance with the Specifications for Geotechnical Explorations. It is noted that the Jungbluth Ditch culvert (14'-3" x 8'-11" skewed corrugated metal plate arch) and the Klein Ditch culvert (12' diameter plate corrugated pipe) will need to be accommodated in the DBT's noise wall design.

15 TRAFFIC CONTROL

15.1 General

TEM Note 1142-21 (Special, Maintain Existing Lighting) shall be utilized, however, paragraph 10 shall be replaced as follows:

When the project begins and the DBT has taken over maintenance of the existing facilities, the DBT is responsible for all required layouts and locations of the existing, proposed, and temporary electrical circuits and related items within the Project limits. The DBT shall locate and mark all existing, proposed, and temporary underground electrical circuits (including traffic loops and loop lead-ins) for the duration of the project.

15.2 Pavement Markings and Delineators

The DBT shall perform Work related to pavement markings and delineators in accordance with Section 4.1 and the following sections.

A. Pavement Marking Requirements and Locations

Design and install all necessary pavement markings along I-90, SR-2 and all ramps within the Project limits in accordance with the OMUTCD and applicable standard construction drawings.

Longitudinal pavement markings shall be thermoplastic Recessed Wet Reflective per SS 807 and 850 unless on concrete surfaces, including bridge decks, where epoxy Recessed Wet Reflective markings (CMS 646) shall be utilized.

Auxiliary pavement markings shall be thermoplastic (CMS 644).

B. Raised Pavement Markers: ☒ Yes ☐ No.

Provide raised pavement markers along I-90, SR-2 and all ramps within the Project limits in accordance with the OMUTCD and applicable standard construction drawings, including TC 73.20.

C. Delineators: ☒ Yes ☐ No.

All flexible delineators shall conform to Item 620 and shall be placed in accordance with current design standards. Confirmation that no conflicts exist between the proposed locations of delineators and any underground utilities shall be made prior to the installation of the delineators.

D. Barrier Reflectors: ☒ Yes ☐ No.

All barrier reflectors shall confirm to Item 626 and shall be placed on bridge parapets, concrete barrier walls, retaining walls and guardrail, in accordance with current design standards. Guardrail blockout reflectors shall be installed on the side of the blockout away from traffic and shall be Type 3 or type 5. All existing barrier reflectors on barrier sections that are to remain in-place shall also be replaced.

E. Object Markers: ☒ Yes ☐ No.

All object markers shall conform to Item 630, Sign, Flat Sheet.

F. Shoulder Rumble Strips: ☒ Yes ☐ No

All rumble strips shall confirm to Item 618.
Locations and requirements: Shoulder rumble strips shall be installed on all mainline shoulders within the project limits or MOT transition zones per SCD BP-9.1. Outside shoulder rumble strips shall be offset 3 feet from the edge line. Inside shoulder rumble strips shall be offset 3 feet from the edge line if shoulder width is 10 feet or greater.

15.3 Signing

The DBT shall perform Work related to signs in accordance with Section 4.1 and the following sections. The DBT shall redesign and construct new signage within the Project Limits and as indicated in this section. Signage revisions shall accommodate lane configuration changes necessitated by addition of the third lane on I-90, and the interchange operational study changes at I-90/SR-2 (Appendix TC-01) and I-90/SR-254 (Appendix TC-02). In addition, the signing design shall be coordinated with and accommodate new noise wall construction, BMP's, ITS equipment, and all other design elements of the Project. Supplemental signage (e.g. recreational and cultural interest signs, destination guide signs, memorial signs, road user service guidance signs, tourist information signs, etc.) existing along the corridor shall be incorporated into the new design, unless otherwise indicated in this section, or directed by the Department.

15.3.1 Flat Sheet Signs

A. Flat Sheet Sign work required: ☒ Yes ☐ No.

1. Redesign and replace all existing flat sheet signs with new signs, except as indicated below. This includes all signs on the mainline, and portion of interchange ramps within the Project limits. Size the signs in accordance with the OMUTCD.

2. The following signs shall remain in place and not be replaced:
The solar flashing "stop ahead" and "all lanes" signs and supports on the I-90 approach to the Ohio Turnpike gates are to remain.

3. At the following locations, the signs shall be mounted overhead:
SR-254 exit ramp lane use and route trailblazing signs as indicated in Appendix TC-01 (Interchange Operation Study I-90/SR-254).

Removed flat sheet signs shall become the property of the DBT.

15.3.2 Extrusheet Signs

A. Extrusheet Sign Work Required: ☒ Yes ☐ No.

1. Redesign and replace all existing extrusheet signs with new signs, except at the locations indicated below. This includes all signs on the mainline and interchanges ramps. Size the

signs in accordance with the OMUTCD (exceptions are noted below). The DBT shall coordinate sign and noise wall layouts to ensure required sign visibility is provided.

2. The following signs shall remain in place and not be replaced:

   a) Entrance ramp approach signs on SR-57 and SR-254;
   b) "Check Brakes-Stop Ahead For Gates" on westbound I-90 approach to Ohio Turnpike Gates – two sign installations;
   c) Turnpike Vehicle size Restrictions Signs – two sign installations

3. The following signs shall be removed and not replaced: The DBT shall remove the freeway transitional "Left Lane Ends 1 mile"; "Left Lane Ends ½ mile" and "Left Lane Ends Merge right" signs, supports, and foundations along westbound I-90, east of the End Project limit, that will become obsolete at completion of the Project – six sign installations total.

B. At the following locations, the signs shall be mounted overhead: All mainline major guide signing (e.g. 1 mile, ½ mile, next exit, exit), mainline pull-through signs, mainline lane ends warning signs along SR-2 and I-90 and the "Check Brakes Prepare To Stop ½ mile" sign shall be redesigned and reconstructed in an overhead configuration. The DBT shall coordinate sign and noise wall layouts to ensure required sign visibility is provided.

C. Within 90 Days of Contract Execution or prior to the initiation of the first MOT phase (whichever is earlier):

   a. the DBT shall remove the overhead box truss sign installation for I-90 EB at Exit 145. The SR-57 Lorain/Elyria, Exit 145 sign shall be temporarily ground mounted to the right side of I-90 in close proximity to the existing sign location. The DBT shall remove the existing truss support the same day as the signs are removed.
   b. the DBT shall remove and replace the two existing overhead guide signs for I—90 WB at milepost 145.1 (450' east of Lake Ave.). The guide signs by be replaced and installed on the existing overhead truss support or may be temporarily ground mounted supports. At the completion of the Project, the signs must be new and permanently mounted on the overhead truss.

      The DBT shall be assessed a disincentive of $1000 per week (or any portion therefore) for each week the above work in 15.3.2 C is not completed.

Removed extrusheet signs shall become the property of the DBT.

15.3.3 Tourist-Oriented Directional Signs (TODS) and Logo Signs

A. Tourist-Oriented Directional Signs (TODS) and logo signs: ☒ Yes ☐ No.

Tourist-Oriented Directional Signs (TODS) and logo signs are installed and maintained by Ohio Logos, Inc., under contract with and in locations approved by ODOT. Under the terms of the contract, the DBT shall be required to temporarily relocate the signs during construction. The DBT shall provide temporary suitable supports, adjust the location with the Engineer's approval, and temporarily re-erect the signs. Signs shall be re-erected within 72hrs of removal. The DBT shall remove and dispose of the existing foundations. The DBT shall

visually document the condition of the signs prior to disturbance by the DBT. The DBT is responsible for any damage to the sign during construction.

Upon completion of the Project, the DBT shall contact Ohio Logos at 1-800-860-5646 to coordinate permanent relocations of TODS and logo signs.

15.3.4 Ground Mounted Post Supports

A. Replace: ☒ Yes ☐ No.
   1. Redesign and replace all existing ground mounted post supports with new supports. New sign installations shall be on new supports. No reuse of existing ground mounted supports shall be allowed.
   2. All post-mounted signs shall be 3# posts 72 inch stub with 18 inches above ground using aluminum bolts, stainless steel washers, stainless steel lock washers, and stainless steel nuts.
   3. Removed ground mounted supports shall become the property of the DBT.
   4. The solar, flashing “stop ahead” and “all lanes” sign and supports on the I-90 approach to the Ohio Turnpike gates are to remain.

15.3.5 Ground Mounted Beam Supports

A. Ground Mounted Beam required: ☒ Yes ☐ No.
   1. Redesign and replace all existing ground mounted beam supports with new ones, except at the locations indicated below:
      a) “Check Brakes-Stop Ahead For Gates" on westbound I-90 approach to Ohio Turnpike Gates – two sign installations shall remain.
      b) Turnpike Vehicle size Restrictions Signs – two sign installations shall remain.

   2. Supports subject to multidirectional impacts at intersections shall use the alternate connection on sizes larger than S4 x 7.7.
   3. Removed ground mounted beam supports shall become the property of the DBT.
   4. Remove all existing foundations.
   5. The DBT shall remove the freeway transitional “Left Lane Ends 1 mile”; “Left Lane Ends ½ mile” and “Left Lane Ends Merge right” signs, supports, and foundations along westbound I-90, east of the End Project limit, that will become obsolete at completion of the Project – six sign installations total.

B. Overhead Supports: ☒ Yes ☐ No.
   1. Design all location of all supports per the Traffic Engineering Manual unless otherwise specified in the Scope of Services. All mainline major guide signing (e.g. 1 mile, ½ mile, next exit, exit), mainline pull-through signs, mainline lane ends warning signs along SR-2 and I-90 and the “Check Brakes Prepare To Stop ½ mile” sign shall be redesigned and reconstructed in an overhead configuration. The DBT shall coordinate sign and noise wall layouts to ensure required sign visibility is provided.
   2. Sign supports for overhead lane use control signs on the SR-254 exit ramps shall be per SCD TC-16.22 with signs rigidly mounted.

3. The following overhead supports shall be reused in place: “Check Brakes-Prepare to Stop ½ Mile" on westbound I-90 approach to Ohio Turnpike Gates – DBT to replace extrusheet sign on existing truss support with existing flasher assemblies.
4. At all locations, a minimum vertical clearance shall be per the Traffic Engineering manual unless otherwise listed.

Removed overhead supports and sign lighting components shall become the property of the DBT.

15.4 Lighting

The DBT shall perform Work related to lighting in accordance with Section 4.1 and the following sections.

A. LOR-IR-90-(10.76-13.171):
   1. Maintain existing lighting systems from begin Project limit to approximately 2450’ east of begin Project limit. Replace any lighting system components impacted by the DBT’s design and construction activities, including noise wall construction on the east side of I-90.
   2. I-90/SR-2 Interchange: Completely remove and dispose of the existing partial interchange lighting system including, but not limited to power service, control center, conduits, pull boxes, conductors, splice kits, poles, fixtures, etc. Design and construct a new complete interchange lighting system including, but not limited to power service, control center, work pads, conduits, pull boxes, conductors, splice kits, poles, fixtures, ground rods, etc. The existing power service is located on the south side of I-90, west of Lake Avenue with access from a private driveway (Idlewood Dr.). The DBT shall ensure that all residential properties are shielded from freeway spillover lighting. The DBT shall coordinate with the local power provider for a new lighting power service from Murray Ridge Road at the same location as the CCTV camera installation.

      The Complete Interchange Lighting (CIL) average maintained illuminance design values shall follow TEM 1106 and Table 1197-4 for freeway. Allowable initial average intensity for freeways shall be 0.9 to 1.2 footcandles. Low mast towers and conventional poles may be used throughout. High mast towers are permitted, in the median or infield (clear zone permitting), from the west end of the analysis area to the east end at I-90 12.06 SLM. These limits prevent high mast towers being located within 750 feet of a residential home. The illumination analysis area shall consist between:
      a. I-90 Eastbound: 11.82 SLM to 12.20 SLM
      b. SR-2 Eastbound: 11.00 SLM to I-90 Eastbound 12.20 SLM
      c. I-90 Westbound: 11.90 SLM to 12.19 SLM
      d. SR-2 Westbound: 11.06 SLM to I-90 Westbound 12.19 SLM

B. LOR-IR-90-(13.171-13.57):
   1. SR-57 Interchange area: Complete high-mast interchange lighting was installed in 2016 and is to generally be retained however the tower lighting east of West River Road is

located in an elevated median area and will require foundation replacement due to regrading of the median. The DBT shall restore lighting system components that are impacted by the DBT's design and construction activities. Existing light poles and luminaires requiring relocation may be reused on new light foundations.

C. LOR-IR-90-(13.57-18.611):
   1. SR-254 Interchange: The DBT shall completely remove and dispose of the existing partial interchange lighting system including, but not limited to power service, control center, conduits, pull boxes, conductors, splice kits, poles, fixtures, etc. The existing combination sign/light supports at the freeway on-ramps may remain, but with lighting fixtures, truss arms and conductors removed. The DBT shall design and construct a new complete interchange lighting system including, but not limited to power service, control center, work pads, conduits, pull boxes, conductors, splice kits, poles, fixtures, ground rods, etc. The DBT shall ensure that the residential property at the northeast quadrant of the interchange is shielded from freeway spillover lighting.

      The Complete Interchange Lighting (CIL) average maintained illuminance design values shall follow TEM 1106 and Table 1197-4 for Freeway. Allowable initial average intensity for Freeways shall be 0.9 to 1.2 footcandles. Low mast towers and conventional poles may be used throughout. High mast towers are permitted between the west end at 15.38 SLM to the east end at 15.80 SLM. Maintain a 750 foot clearance from the placement of a high mast tower to a residential home. The illumination analysis area shall consist between:
      a. I-90 Eastbound: 15.30 SLM to 16.15 SLM
      b. I-90 Westbound: 15.10 SLM to 16.00 SLM
      c. Sheffield Village will be the maintaining agency for any Low mast towers and conventional poles installed along SR 254. For this situation, a separate power service, lighting control center (LCC), circuitry will need to be provided for the Village. High mast lighting that illuminates SR-254, along with the I-90 mainline and the ramps, should be included as the Department's maintenance responsibility, a separate power service or circuitry for the high mast lighting is not required. If needed to illuminate SR-254 at the ramp's intersection, Village owned signal supports should be considered to mount LED conventional luminaires. Power for this option could come from the signal cabinet; install a HOA switch, photocell inside the signal cabinet, run 110V distribution cable.
   2. SR-611 Interchange: Maintain existing lighting systems from beginning of ramp tapers to the end Project limit. Replace any lighting system components impacted by the DBT's design and construction activities, including noise wall construction on the east side of I-90.

D. All locations:
   1. Provide LED luminaires.
   2. Power service shall be: 120/240 Volt circuits. 3 conductors (line-line) w/ground. 2400 Volt cable. The DBT shall coordinate power service availability with the local power service

provider. To facilitate future maintenance power services and lighting control centers shall be placed in accessible areas - not behind guardrail and in areas with flat slopes.

3. All power service(s) shall have a meter base and a fused disconnect switch. The fused disconnect switch shall be installed on the load side of the meter base and line side of the lighting control center.
4. The Department will pay the local power service provider for costs to obtain the power supply up to the LA/RW line. The DBT shall pay all costs for work within the LA/RW.
5. If located along I-90, ensure power service and lighting control centers area at least 30' away from the edge of pavement.
6. Voltage drop permitting, use #4 AWG duct cable/distribution cable.
7. Provide ground mounted lighting control centers w/concrete work pads.
8. If the lighting control center is behind a ditch, provide a 10' conduit in the ditch to allow access for maintenance staff/vehicle.
9. Provide minimum 15' clearance w/ overhead electric lines. If conventional poles are utilized, offset poles 8' from the edge of the paved shoulder.
10. To support future maintenance, conventional luminaires shall be located at least 3'-5' outside of the edge of pavement, so as to avoid lane closures.
11. Do not locate pole foundations in ditches.
12. Do not locate high mast lighting near residential areas.
13. Provide 24" pull boxes for more than two (2) entrances into pull boxes.
14. Provide a pull box in between long circuit runs, 490' max spacing.
15. For directional bores under roadways, provide a pull box at both sides.
16. The DBT shall maintain lighting at existing locations at all times that roadways are open to traffic. This may be accomplished using the existing, temporary, or permanent lighting systems.
17. Fully replace conductors between existing splice points for any circuits being retained that are impacted by the DBT's design or construction activities – no new intermediate splices allowed.
18. All existing aluminum transformer bases and LED luminaires that are to be removed shall be salvaged for the Department. The DBT shall carefully remove and deliver the equipment to District 3 in Ashland.

15.5 Traffic Signals

The DBT shall perform Work related to traffic signals in accordance with Section 4.1 and the following sections.

The DBT shall modify the existing traffic signals at the SR-254/ I-90 interchange ramps. The modified signal installations shall accommodate the Interchange Operational Study for the I-90/SR-254 interchange (Appendix TC-02) and the signal design shall be capable of future implementation of overlap of ramp and SR-254 turn movements. Traffic signal equipment, including poles, arms, heads, controller/cabinet, detection, pre-emption, interconnect, etc., shall be compatible with and provide the same functionality of the existing signal system. The DBT may reuse existing signal equipment, excluding conduit and conductors, that are impacted by the project, provided that reused equipment meets design requirements and is not damaged by the DBT.

Signal System Analysis: The Department has provided existing SR-254 signal phasing and timing information including record plans and Synchro files for reference. The Department shall obtain and provide new traffic count data along the SR-254 corridor. The DBT shall evaluate the corridor utilizing the provided data and provide post construction recommendations for changes to signal timing and phasing to optimize corridor traffic operations. The analysis shall include all signalized intersections from East River Road to North Abbe Road, including analysis of the AM, mid-day, and PM peak periods. Recommendations shall be provided in signal plan sheet format and updated Synchro files shall be provided. Implementation of post construction signal timing and or phasing changes shall be performed by the Department or Sheffield Village.

A. Signal Support work required: ☒ Yes ☐ No.

1. Signal supports shall be galvanized steel mast arm design (SCD TC-81.22) with continuous tapered tubes per CMS 732.11.
2. Location of the supports shall be as per the Traffic Engineering Manual and shall be designed to minimize utility relocation.
3. Clearance from overhead electric wires shall be as per utility company requirements.

B. Vehicle Signal Heads: ☒ Yes ☐ No

1. Shall be made of polycarbonate.
2. Lenses shall be 12-inch LED.
3. Shall be completely black.
4. Tri-stud wire entrance fitting
5. Far side mounting of signal heads shall be used except that a near side signal support shall be located on the east side of the eastbound exit ramp to SR-254 for the single continuous green arrow for the free-flow eastbound movement. This signal head shall be attached to the side of the pedestal/pole as shown in the Steel Pole Detail of SCD TC-85.10. Mounting on the top of the pedestal/pole is not permitted.
6. All far-side signal heads shall be located on the same pole/arm installation.
7. Shall have backplates.
8. Shall be rigidly mounted on mast arms or signal poles.
9. At the four-lane Westbound exit ramp to SR-254 use four far-side mounted three section signal heads. All heads shall use red, yellow and green arrows for left or right turn movements.
10. At the three-lane eastbound exit ramp to SR-254 use three far-side mounted three section signal heads, however design the mast arm to accommodate a fourth three section head for second westbound left turn head (required for future overlap phasing). All heads shall use red, yellow, and green arrows for left or right turn movements. In addition, provide one near-side mounted one section signal head with a continuous green arrow.

C. Pull box: ☒ Yes ☐ No

1. Shall be concrete, CMS 725.08, 18-inch minimum opening size.
2. Shall not be located in curb ramp areas.
3. Shall not be located where subject to vehicular traffic.

D. Conduit: ☒ Yes ☐ No

1. Maximum conduit run length between pull boxes and/or poles is 200 feet.
2. Conduit under roadway pavement shall be 3-inch diameter minimum.

3. Conduit must be sized for the number and size of the conductors contained in the conduit. Cable fill shall not exceed the allowable amount inside of the cross sectional area of the conduit as stated in the TEM.
4. Conduit shall be per CMS 725.04.

E. Cable and Wire: ☒ Yes ☐ No

1. Unswitched power cable shall not be run inside of conduit, poles or pull boxes containing other signal cables.
2. Lighting cables operating at voltages higher than 120 volts shall not be run inside of conduit, poles or pull boxes with signal cables.
3. Utility company approval shall be obtained for the attachment of any interconnect cables to utility poles, and for the location of power sources.
4. All abandoned cables shall be removed from aerial spans, conduit and pull boxes. Direct burial cables will be abandoned in place.
5. Signal messenger wire size shall be 3/8-inch diameter.

Signal(s) part of an Intelligent Transportation System (as defined by the Traffic Engineering Manual, Part 13): ☒ Yes ☐ No

15.6 Intelligent Transportation Systems (ITS)

A. ITS Work Required: ☒ Yes ☐ No

The DBT shall construct ITS devices including DMS, CCTV, and Queue Warning as described in the following sections.

B. Traffic Approved Product List

The Department has developed a Traffic Approved Product (TAP) list to ensure ITS components such as CCTV, DMS, detection, and network equipment are compatible with the statewide ITS architecture and operating systems currently in place. Unless otherwise stated, all ITS related materials and equipment furnished by the DBT shall be listed on the most current ODOT Traffic Approved Product (TAP) list.

15.6.1 Dynamic Message Sign

The DBT shall construct a pedestal mounted, full-size walk-in DMS in the center I-90 median west of Lake Ave, facing the westbound direction of travel, in accordance with TEM-1303-6 Dynamic Message Signs. The location of the DMS installation shall be selected to provide maximum visibility of the sign display to upstream vehicle traffic. The DMS shall not obstruct or be obstructed by static signage and minimum spacing between the DMS and other signage shall be per TEM sign guidance.

A. Site Preparation

1. The DBT shall adhere to TEM 1303-3 “Requirements for All ITS Devices” to ensure adequate access for ODOT ITS maintenance operations.
2. The DBT shall be responsible for grading, aggregate fill, and pavement that may be necessary to meet TEM 1303-03 accessibility requirements. Access is to be provided from the emergency vehicle median cross over.
3. The DBT shall install guardrail protection of the DMS pedestal support and DMS cabinet in accordance with TEM.

B. Full-Size Walk-in DMS

The DBT shall furnish and install a DMS model listed in the most current ODOT TAP list under Full-Size Walk-in DMS category.

C. Pedestal DMS Support
1. Refer to SCD ITS-30.11 for pedestal catwalk details.
2. Refer to SCD ITS-30.12 for pedestal foundation details.
3. Refer to SCD ITS-30.13 for pedestal support details.

D. DMS Equipment Cabinet

1. The DBT shall furnish and install a cabinet foundation and enclosure adjacent to the pedestal.
2. Equipment cabinet shall include all DMS applicable components such as an equipment rack, environmentally hardened layer 3 ethernet switch, power panel assembly, power distribution unit, and shelving.
3. Refer to SCD-ITS-18.10 for DMS equipment cabinet details.

E. Power

1. The DBT shall construct a dedicated 120V/80A power service for powering the DMS and is responsible for utility coordination required to establish an available power source.
2. The DBT may use utility pole and aerial span, on the north side of I-90, to connect service cables to the utility power source, however the service cables shall be transitioned to underground conduit beyond the initial connection point. The use of aerial power spans crossing I-90 are not permitted.
3. A power service disconnect switch shall be installed directly downstream of the power source connection, either on a wood utility pole or on a post mounted equipment rack. The disconnect switch shall be located on level ground, readily accessible to maintenance personnel.
4. Power service cables shall be adequately sized to ensure less than 5% voltage drop between the power source and DMS cabinet.
5. Refer to SCD-ITS-15.11 for power service details.
6. Refer to SCD-ITS-14.10 for pull box and conduit details.
7. All DMS related equipment shall be electrically grounded as described in SCD-ITS-50.10.

F. Communications
1. The DMS site will utilize a cellular ethernet modem for network connectivity.
2. The DBT shall furnish and install a cellular ethernet modem listed in the most current ODOT Traffic Approved Product list.
3. Network equipment requiring configuration by ODOT personnel – DBT shall coordinate in advance and equipment delivered to the Central Office ITS Lab, which has up to 15 working days to configure equipment and notify DBT for pickup.

All cabling, connections, testing work, and MOT associated with commissioning the DMS shall be the responsibility of the DBT.

G. Applicable DMS supplemental specifications:

809.08 Dynamic Message Signs
809.09 ITS Cabinets
809.15 Pull Boxes and Junction Boxes

15.6.2 Queue detection system

The DBT shall install radar vehicle detectors for the purpose of monitoring reoccurring traffic congestion zones as part of the advance queue warning notification system operated at the Traffic Management Center.

Refer to ITS-SCD-60.10 for 30' steel pole details and radar detector mounting and cable installation details.

A. Vehicle Detection, SR-2

1. A side-fired radar detector unit shall be installed on an existing30' steel pole located on the outside shoulder of westbound SR-2 approximately 1100' east of the beginning of the westbound Middle Ridge Rd exit ramp.
2. A second side-fired radar detector unit shall be installed on a new 30' steel pole located on the outside shoulder of westbound SR-2 just west of the physical gore of the SR-2 split from I-90.
3. The mounting orientation of the radar detectors shall permit the configuration of unobstructed detection zones to be created for westbound SR-2 travel lanes.
4. Refer to ITS-SCD-60.10 for steel pole details and radar detector mounting and cable installation details.

B. ITS Equipment Cabinet

1. The DBT shall furnish and install a ground mounted cabinet foundation and enclosure adjacent to each radar detector pole.
2. Equipment cabinet shall include all radar detector applicable components such as an equipment rack, environmentally hardened layer 3 ethernet switch, power panel assembly, power distribution unit, and shelving.
3. Refer to SCD-ITS-18.00 for ground mounted ITS equipment cabinet details.

C. Power

1. The DBT shall construct a dedicated 120V/30A power service for powering each radar detector and is responsible for utility coordination required to establish an available power source.

2. The power service shall be installed through underground conduit and tie into an underground power source.
3. A power service disconnect switch shall be installed directly downstream of the power source connection on a post mounted equipment rack.
4. Power service cables shall be adequately sized to ensure less than 5% voltage drop between the power source and ITS cabinet.
5. All radar detector related equipment shall be electrically grounded as described in SCD-ITS-50.10.
6. Refer to SCD-ITS-15.10 for power service details.
7. Refer to SCD-ITS-14.10 for pull box and conduit details.

D. Communications

1. The radar detector sites will utilize a cellular ethernet modem for network connectivity.
2. The DBT shall furnish and install a cellular ethernet modem listed in the most current ODOT Traffic Approved Product list.
3. Network equipment requiring configuration by ODOT personnel – DBT shall coordinate in advance and equipment delivered to the Central Office ITS Lab, which has up to 15 working days to configure equipment and notify DBT for pickup.
4. Coordinate with Central Office ITS staff to establish communications link and data flow between radar detectors and the Traffic Management Center queue warning notification software.
5. All cabling, connections, testing work, and MOT associated with commissioning the radar detectors shall be the responsibility of the DBT.

E. Applicable Detection system supplemental specifications:

809.09 ITS Cabinets
809.12 Detection

15.6.3 CCTV Replacement (Camera Only)

A. The DBT shall replace the existing CCTV camera located in the I-90 median at Murray Ridge Rd. The existing pole, CCTV lowering unit, and pole mounted equipment cabinet shall remain in place and operational. The replacement camera shall be a model listed in the most current ODOT TAP list under the CCTV IP-Camera System, Dome-Type category. Existing CCTV equipment shall be turned in to ODOT after removal.

B. Applicable CCTV system supplemental specifications: 809.05 CCTV IP-Camera Systems

15.6.4 CCTV Site Upgrade

The DBT shall replace the existing CCTV installation located in the I-90 median at SR-57 with a new 70ft concrete CCTV pole, CCTV lowering unit, dome-type IP CCTV camera, and ground mounted ITS equipment cabinet in accordance with TEM 1304-4 “CCTV”.

A. Site Preparation
   1. The DBT shall adhere to TEM 1303-3 “Requirements for All ITS Devices” to ensure adequate access for ODOT ITS maintenance operations.
   2. The DBT shall be responsible for grading, aggregate fill, and pavement that may be necessary to meet TEM 1303-03 accessibility requirements.
   3. The DBT shall install guardrail protection of the concrete CCTV pole and ITS cabinet in accordance with TEM.

B. CCTV System
   1. The DBT shall furnish and install a 70ft concrete CCTV pole with lowering unit adjacent to the existing wood CCTV pole.
   2. Refer to SCD-ITS-12.10 for concrete CCTV pole details.
   3. The DBT shall furnish and install a CCTV unit listed in the current ODOT TAP list under the CCTV IP-Camera System, Dome-Type category.
   4. Refer to SCD ITS-10.10 for CCTV assembly details.

C. ITS Equipment Cabinet
   1. The DBT shall furnish and install a ground mounted cabinet foundation and enclosure adjacent to the CCTV pole.
   2. Equipment cabinet shall include all CCTV applicable components such as an equipment rack, environmentally hardened layer 3 ethernet switch, power panel assembly, power distribution unit, and shelving.
   3. Refer to SCD-ITS-18.00 for ground mounted ITS equipment cabinet details.

D. Work Pad
   1. The DBT shall construct a concrete work pad around the CCTV pole and ITS cabinet foundation.
   2. Refer to SCD-ITS-10.11 for CCTV work pad details.

E. Power
   1. Re-use existing CCTV site power service. Install connecting conduit between the ITS equipment cabinet to the existing power pull box, install new power service cable from the ITS equipment cabinet and splice to existing power service cable.
   2. Refer to SCD-ITS-14.10 for pull box and conduit details.
   3. All CCTV related equipment shall be electrically grounded as described in SCD-ITS-50.10.

F. Communications
   1. The CCTV site will utilize a cellular ethernet modem for network connectivity.
   2. The DBT shall furnish and install a cellular ethernet modem listed in the most current ODOT TAP list.
   3. Network equipment requiring configuration by ODOT personnel – DBT shall coordinate in advance and equipment delivered to the Central Office ITS Lab, which has up to 15 working days to configure equipment and notify DBT for pickup.

All cabling, connections, testing work, and MOT associated with commissioning the CCTV site shall be the responsibility of the DBT.

G. Applicable CCTV System supplemental specifications:

809.05 CCTV IP-Camera Systems.
809.07 CCTV Lowering Units.
809.09 ITS Cabinets.
809.15 Pull Boxes and Junction Boxes

15.6.5 RWIS

The existing RWIS located in the I-90 median immediately east of Lake Avenue will be removed by the Department.

15.6.6 Existing ITS equipment – not to be disturbed.

Existing CCTV camera at SW quadrant of I-90/SR-254 interchange to remain and not be impacted.

There will be newly-installed CCTV camera at the SR 611 interchange during the construction of this project. Coordinate any work at the SR 611 interchange to not interfere with the installation of the CCTV camera at SR 611.

16 PROJECT SCHEDULE REQUIREMENTS

The DBT shall develop and maintain a Project schedule in accordance with the selected note:

☐ CM&S 108.03 A. Progress Schedule

☐ Proposal Note 105 - Critical Path Method Progress Schedule for Single Season Projects

☐ Proposal Note 107 - Critical Path Method Progress Schedule for Multi-Season Projects

☒ Proposal Note 132 - Critical Path Method Progress Schedule for Design/Build Multi-Season Projects including updates released on or before the date of advertisement, shall be met or exceeded.

17 PLAN SUBMITTALS AND REVIEW REQUIREMENTS

17.1 Plan Components

All plans submitted by the DBT shall be in conformance with the following ODOT manuals:

1. Real Estate Policies and Procedures Manual Section 3100.
   The DBT shall also identify all topographic features within the existing and proposed Right-Of-Way limits, including underground utilities.

2. Bridge Design Manual.
   Note: Bridge subsummaries are required.

3. Location and Design Manual, Volume 3:
   The following sections of the Location and Design Manual, Volume 3 are NOT required:

1302.13	Plan Signatures
1307.2	General summary sheet
1307.4	Quantity Calculations
1310.3	Earthwork and Seeding Quantities

   Units of measure are **NOT** required.

   Simplified plans (section 1301.2) are **NOT** allowed.

17.2 Quality Control

The DBT is responsible for the professional quality, technical accuracy and adherence to the Governing Regulations listed in Section 4.1 (Governing Regulations) of this document, for all plan submittals required under this contract.

The DBT shall immediately notify the Department of any apparent discrepancy between the various design and construction manuals and the Contract Documents.

The Department shall have the discretion to dictate the level of Design review. The Department's acceptance of the design or failure to identify improper design does not, in any way, relieve the DBT of the responsibility for the quality, accuracy, or feasibility of the Design.

In the event the Department determines that any required submission is incomplete, contains inaccuracies which preclude a meaningful review, or does not adhere to the Governing Regulations listed in Section 4.1 (Governing Regulations) of this document, the Department will advise the DBT of the shortcomings and direct the DBT to revise and resubmit the plan. No time extension will be granted as a result of such action. The Department will schedule a review meeting or issue review comments as appropriate.

17.3 Comment Resolution Process

This section establishes transmittal processes and interaction between the Department and the DBT during submittal reviews in addition to the requirements found within the Scope of Services and other Contract Documents. The process can be modified upon mutual agreement between the DBT

and the Department with the intention of meeting the requirements of the Contract or specific submission needs. This process may be revised by mutual agreement of both parties.

Specific identified procedures may be amended, revised, eliminated, or added to address Project specific needs or mutual party understanding.

This process shall utilize electronic transmittals for all design submissions unless otherwise specified in the Scope of Services. Plan and design submissions shall be in PDF format, Microsoft Excel, Microsoft Word, or other document types as mutually agreed and appropriate to and for the submission.

Submissions shall conform to the Scope of Service and other specification included in the Contract Documents, as appropriate, with variations as mutually agreed.

The Department shall establish a file transfer website (typically, an ODOT Project SharePoint, ProjectWise site, or other appropriate file transfer and storage site), with controlled and controllable access, for uploading design submissions and subsequent transmittal of design review comments.

Project specific process details shall be discussed at the Pre-Design Meeting. These details include the responsible contacts (Department and DBT), file server location/IP address, known required persons needing access, and login requirements.

A. Procedure

The Department will grant access to an identified DBT representative who will have authority and responsibility to create Buildable Unit Submission (BUS) folders and other folders within the transfer website. Each folder shall be logically named. Within each BUS folder, additional folders representing each stage of review (i.e.Interim/Final/Construction) will be created. If mutually agreeable, the DBT may perform this role if management by the DBT facilitates submissions.

With each Buildable Unit with each Design Submission, the DBT shall include a transmittal sheet describing the BUS, the BUS stage (Interim/Final/Construction), the contractual review response date (from the Department as well as any other third-party reviewer, if applicable), critical assumptions made for the BUS impacting subsequent BUS submissions, and any information which could facilitate review.

The DBT shall develop and utilize a Comment Resolution Spreadsheet (CRS) for each Buildable Unit with each Design Submission (Interim, Final, Construction) for use in logging and tracking review comments. The DBT shall provide a blank CRS to the Department and other third-party reviewers at Interim Design Submission. The Department and applicable reviewing agencies shall review for Contract requirements. The Department will utilize the CRS document to centralize all Department employee Buildable Unit Design Submission comments.

Department review comments will primarily focus on compliancy with the Contract Documents. The Department will refrain from making excessive preferential and formatting comments. Reviewer preferential comments shall be marked “Preference” within the CRS. While formatting comments do not need responded to, the Department reserves it’s right to reject a submission which, in its judgement, is not reasonably following required ODOT CADD standards.

An updated copy of the CRS shall be provided to all reviewers at the Final Submission. With the Final Submission on the transmittal page, the DBT shall identify major design revisions and design approaches made between Interim and Final Submission being outside the course of typical design progression and were not made to address Interim Review comments. The updated copy

shall include all comments received at Interim submittal along with the DBT's written disposition of all Non-Compliant comments made during formal Interim design submittals. The Department and other appropriate third-party reviewing agencies will review the DBT's formal disposition to Interim Submittal review comments as well as revised plans to respond to previous comments. The Department will include any additional comments based on the Final Design Submittal review within the CRS.

The DBT shall clearly identify if an ODOT Interim review comment responded with an "Accept" by the DBT is not being corrected within a Final submission. If an "Accept" comment is not being addressed, the DBT shall clearly describe the intended resolution for the RFC submission. The Department may require additional information before the Construction Plan submission, or may request a Comment Resolution meeting (or phone call if appropriate) to understand the DBT's design direction. The DBT shall memorialize the time of the Comment Resolution Meeting within the CRS submitted with the Construction Plans.

In the event the DBT believes that any review comment, or direction issued by the Department or other third-party review, require a change to a Contract, the DBT shall first contact the Department for clarification and shall, within 10 days of receipt of the comments or direction, provide written notice to the District Project Manager and Project Engineer concerning the reasons why the DBT believes the scope has been changed.

The DBT is not required to comment nor respond to ODOT identified Preference comments.

For comments considered substantial to the Department or the DBT, the DBT shall schedule a Comment Resolution Meeting with the Department to discuss.

1. The Department shall notify the DBT, either within the CRS or other notice, if the Department requires a Comment Resolution Meeting.
2. The DBT shall notify the Department within seven days of any "Non-Compliant" comments they intend to "Dismiss" or "Resolve". The DBT shall schedule a Comment Resolution Meeting prior to the next stage submittal.
3. For less substantial comments and as agreed by the Department and the DBT, a comment resolution conference call may be sufficient.

The DBT shall obtain Department concurrence with the "Non-Compliant" comment dismissal and this concurrence shall be documented on the CRS.

The DBT shall resolve all outstanding issues and comments from the Final Submittal (or other outstanding comments) and prepare a full set of Design Documents stamped "Checked and Ready for Released for Construction" (RFC). The Department's expectation is that no revisions shall be made except for those required to address Final review comments. In the event that other revisions are required unrelated to review comments, the DBT shall notify the Department and coordinate revisions for concurrence.

The Department shall review to ensure all comments from final reviews have been resolved or "Closed" to the satisfaction of the Department. There is no formal review period for Construction submission.

The DBT has the responsibility for ensuring the RFC meets all contract requirements. If upon Department review it is determined that it is questionable as to whether comments received from the Department or other agencies have been resolved or addressed appropriately, the DBT shall stop construction of the portion of the Buildable Unit in question, consult with the

commenter to resolve such comments. The DBT shall document resolution of the comment within the CRS.

The DBT continues to be liable for design accuracy regardless of ODOT review.

B. General Third-Party Requirements

A "Third-Party", in regard to the Design-Build Comment Resolution process, is any overseeing agency with oversight and design approval authority of relevant portions of the design as identified in the Contract.

Other third-party reviewers may not utilize the CRS.

It is the DBT's responsibility to reasonably add all third-party markups and comments received; the DBT shall consolidate third-party comments into the CRS corresponding to each Buildable Unit and save on the ODOT Project SharePoint site. Any plan markups shall also be scanned by the DBT and included on SharePoint within the appropriate BUS folder.

The DBT shall address all third-party review comments. All third-party review comments shall be, initially, considered as a "Non-compliant" comment type, as identified below.

With ODOT's concurrence, the DBT may subsequently identify comments as potentially a "Preference" or "Recommendation". The DBT shall obtain Department concurrence with the "Non-Compliant" comment dismissal and this concurrence shall be documented on the CRS.

C. Comment Resolution Spreadsheet

Minimum requirements of the CRS along with information on content is included below. The DBT may modify format or include additional information with Department concurrence.

Table 17-1: Comment Resolution Tracking Contents

Reviewer	
Comment ID No	Consecutive listing
Document	Submittals may include multiple components including plans, reports, calculations, etc. This column will list which item the comment is on.
Page	Page reference/location comment refers to
Comment type	Either "Non-compliant", "Preference", or "Recommendation". Non-compliant – elements that do not meet requirements of the Contract. Preference – elements which depict the owner's preferred design method or result but are not required by the Contract. Recommendation – a general noted item intended to make the designer aware of potential troublesome design methods.
Contract Section	If Comment Type is Non-compliant to the Contract, the reviewer shall include the Contract Document of the requirement that is non-compliant (for example, Scope Section 8.2, L&D Volume 1, BDM, etc)
Reviewer Note	A Reviewer Note is optional but is recommended to ensure the designer understands the intent to the comment made. Reviewer shall note if a Comment Resolution Meeting or discussion is desired.
Reviewer Agency	Representing Agency
Reviewer Name	Name of reviewer

DBT Response	
Resolution Code (Approve, Dismiss, or Resolve)	Accept – DBT agrees with the comment and addressed the comments Dismiss – DBT disagrees with the comment based on comment no longer applying because the design has changed, reviewer error, or other reasons. Resolve – DBT needs additional clarification and/or coordination to address the comment accordingly. Comment may also reflect a change to the Contract Documents which will require additional discussion and direction by the Department due to the financial/schedule impacts.
DBT Comment/Disposition	The DBT shall provide a more detailed response to the comment as necessary. Response shall note if a Comment Resolution Meeting or discussion is desired.
Reviewer Response	
Status	Open – the submittal did not address the original comment made. Closed – the submittal or disposition addresses the original comment. The DBT shall schedule a comment resolution meeting with the Department to discuss any comments from previous submittals that remain "Open" according to the reviewer. The DBT and the Department will also discuss whether review comments are in conformance with the Contract Document requirements or preferential comments. For less substantial comments and as agreed by the Department and the DBT, a comment resolution conference call may be sufficient.
Reviewer Name	Name of reviewer
Date Closed	Date that the reviewer responded to the comment.
Comments	Provide a more detailed response clarifying why comment remains "Open" or other information

17.4 Document Management

The DBT shall create and maintain a BUS Log sheet to facilitate submission tracking. The BUS Log shall identify the name of the Buildable Unit, brief description of the BUS, Interim Design submission date, Interim Submission review comments transmittal date, Final Submission date, Final Submission comments transmittal date, Released for Construction date, and a BUS Comments field. The BUS Comments field shall note any necessary resubmissions, dates of Comment Resolution meetings with noted submission stages, Over-the-Shoulder meeting dates resulting in design adjustments, or any other needed summarized data to help understand the BU submission process. The BUS Log Sheet may be modified as necessary to facilitate review. The BUS Log shall be maintained in the master project folder, or in a location mutual agreeable and accessible to the DBT and the Department.

The DBT shall create a folder for each BU on the Department's Project SharePoint Site. Each BU folder shall have an "Interim", "Final", and "RFC" folder. All Design Documents (plans, calculations, reports, etc) submitted at each phase (Final, Interim, RFC) shall be uploaded by the DBT to the Project SharePoint Site. An updated CRS at each submittal shall be included in each folder with the latest including all comments "closed". Meeting minutes from comment resolution meetings or over-the-shoulder reviews shall be prepared by the DBT and also saved to SharePoint.

17.5 Optional Pre-submission Meeting

The DBT may request a Pre-submission Meeting to be held prior to, or concurrent with, the submission of a buildable unit. The intention of the Pre-submission meeting is an opportunity for the DBT to explain design intent to facilitate owner review. Formal assembly and submittal of drawings

or other documents will not be required, but the DBT is encouraged to provide informal submittals to facilitate reviews.

17.6 Optional Over-the-Shoulder Reviews

The DBT or the Department may request "Over-The-Shoulder" (OTS) review of designs at any time in the design process. The OTS is an informal review of a partial design during development. This may include in-progress drawings, calculations, sketches, design concepts, proposed specifications, or any other document used or created during the design. They are to facilitate communication and the design process. These can be in the form of a phone call, meeting, correspondence, or any other means of information sharing between the DBT and the Department.

An Over-the-Shoulder review may be necessary to discuss direction on potential design changes. An OTS may be requested during any period in the design development. Appropriate third-party agencies, as well as the DBT and Department, may also participate in these meetings. The DBT or the Department may include the decision or direction given in an OTS within the applicable CRS submission.

The OTS reviews shall not replace the formal Interim and Final Review. Likewise, the Department may also request an OTS review during any stage of design to facilitate review or design development.

17.7 Major Design Decision

Separate submittals for concurrence with major design decisions are required. The submittals may be required during any phase of Design. Major design decisions involve significant utility relocation, unforeseen acquisition of ROW by the Department, traffic operation or geometric decisions that involve two or more viable solutions, designs not typical nor standards not ordinarily exercised by members of the engineering profession practicing under similar conditions at the same time and locality, and any other decision that impacts the public, operation of the facility or designs which require future long term excessive maintenance. The level of development of the submittal is dependent upon the level of detail necessary to accurately depict the major design decision.

When the DBT becomes aware of additional decisions during the design, they must advise the District Project Manager in writing.

17.8 Interim Design Review Submission

For each Buildable Unit, the DBT shall submit the Interim Design submission for review by the Department and other third-party agencies as appropriate.

Interim Design Submission is defined as followed:

A. Maintenance of traffic, traffic signals, lighting, utilities (water, power, sanitary, etc.), and landscaping shall be developed to Stage 2 level of detail as defined the ODOT Location & Design, Volume 3.
B. Full signing plans are not required at Interim, however, all overhead signage and major ground mounted signage shall be shown on plan sheets (may be shown on pavement marking plans if signing plans are not submitted).

C. All other plan components and supplemental submittal requirements as defined as Stage 1 per the ODOT Location & Design, Volume 3.

Unless indicated below, the Department will have 10 Work Days from receipt to review complete submissions. The following are excluded as Work Days: State Holidays, Federal Holidays, Saturdays, Sundays, the Friday after Thanksgiving, Christmas Eve, and the days between Christmas and New Year's Day. This review time must be shown on the required Progress Schedule.

Table 17-2: Agency Review Times (Interim Design Review)

Submittal	Adjusted Review Time
Utility Companies	30 Calendar Days

Following this review, the DBT shall correct any errors, incorporate modifications, perform required investigations and make related changes to the plans and supporting documents prior to submitting the plans for Final Design review.

The DBT shall submit an electronic version (in PDF format) and hard copies as required by Table 17-3 simultaneously in accordance with Table 17-3.

Table 17-3: Interim Design Plan Review Distribution

Agency	Submittal Format
ODOT District Production	Electronic PDF Submission
ODOT District Construction	Electronic PDF Submission
ODOT Central Office, Division of Highway Operations	Electronic PDF Submission
District Utility Coordinator	Electronic PDF Submission
Each affected utility or railroad company	Electronic PDF Submission One full size (22" x 34") paper copy (if requested by utility company)

17.9 Final Design Review Submission

For each Buildable Unit the DBT shall submit the Final Design submission for review by the Department and other third-party agencies as appropriate.

The Final Design submission shall include submittal requirements as defined as Stage 3 per the ODOT Location & Design, Volume 3, however, subsummary and general summary sheets are not required. Quantity summaries shall be provided in electronic format (Excel and PDF) prior to construction for the Department's use in establishing testing requirements.

The Department shall have 10 Work Days from receipt to review complete submissions. The following are excluded as Work Days: State Holidays, Federal Holidays, Saturdays, Sundays, the Friday after Thanksgiving, Christmas Eve, and the days between Christmas and New Year's Day. This review time must be shown on the required Progress Schedule.

Table 17-4: Agency Review Times (Final Design Review)

Submittal	Adjusted Review Time
Utility Companies	30 calendar days

Following the review, the Department will return to the DBT marked plans noted 'ACCEPTED', 'ACCEPTED AS NOTED' or 'NOT ACCEPTED' as described in section 105.02 of the Construction and Material Specifications. The DBT shall correct errors, incorporate changes, perform investigations and make related changes to the plans and supporting documents prior to submitting construction plans.

The DBT shall submit an electronic version (in PDF format) and hard copies as required by Table 17-5 simultaneously in accordance with Table 17-5.

Table 17-5: Final Design Plan Review Distribution

Agency	Submittal Format
ODOT District Production	Electronic PDF Submission
ODOT District Construction	Electronic PDF Submission
ODOT Central Office, Division of Highway Operations	Electronic PDF Submission
District Utility Coordinator	Electronic PDF Submission
Each affected utility or railroad company	Electronic PDF Submission One full size (22" x 34") paper copy (if requested by utility company)

17.10 Released for Construction Plans

After the review comments for the Final Design review submission have been complied with, and following approval of the design documentation, the DBT shall prepare plan sets for use during construction. All review comments shall be resolved in writing by the DBT to the satisfaction of the Department and appropriate third-party agencies before the DBT submits the construction plans. No revisions shall be made except for those revisions needed to address Final Design review comments.

Each plan sheet shall have its last revised date noted on the sheet and clearly marked 'Released for Construction'. The 'Released for Construction' plan set shall be signed, dated and sealed by a Professional Engineer. Physical construction shall not begin until the plans marked 'Released for Construction' are delivered to each party on the Plan Distribution Table below.

No time extensions will be approved by the District Construction Engineer if the plan distribution is not completed, and Project delays occur as a result.

The DBT shall submit an electronic version (in PDF format) and hard copies as required by Table 17-6 simultaneously in accordance with Table 17-6.

Table 17-6: RFC Plan Distribution

Agency	Submittal Format
ODOT District Production	Electronic PDF Submission
ODOT District Construction	Electronic PDF Submission
ODOT Central Office, Division of Highway Operations	Electronic PDF Submission
ODOT Central Office, Division of Construction Management	Electronic PDF Submission
ODOT District Utility Coordinator	Electronic PDF Submission
Federal Highway Administration	Electronic PDF Submission
Lorain County Engineer	Electronic PDF Submission
City of Avon	Electronic PDF Submission

Agency	Submittal Format
City of Elyria	Electronic PDF Submission
Sheffield Village	Electronic PDF Submission
Each affected utility or railroad company	Electronic PDF Submission One paper copy (if requested by utility company)

17.11 Railroad Submittals

The DBT shall perform ongoing coordination of their design, and anticipated construction schedule with the railroad throughout the Project. This coordination shall include, but is not limited to, Interim and Final BU plan submittals as well as informal submittals and resubmittals, as determined by the DBT, in accordance with the Governing Regulations to ensure a design acceptable to the railroad. Upon concurrence of design with the railroad, the DBT shall submit professional engineer signed, stamped and dated RFC plans to the railroad for final review and approval. This submission shall include resolution of all comments received throughout the design process. The railroad will attempt to complete their review of BU's within the timeframes identified in the contract, however for all BU submittals, the DBT shall include at least 90 Calendar Days for railroad review for Interim, Final, and Construction Plans in the Project Progress Schedule.

A. Construction Submittals to Railroads

The DBT shall continue coordination with the railroad after design is complete. This coordination shall include, but is not limited to, required construction submittals in accordance with the Governing Regulations. Unless otherwise approved by the Department and railroad, the DBT shall not make construction submittals to the railroad until railroad approval of the Construction Plan BU submission. Railroad review times for these submittals are in accordance with the Rail Agreement.

17.12 Plan Distribution Addresses

Ohio Department of Transportation, District 3
906 Clark Avenue
Ashland, Ohio 44805
Attn: Karla Bohmer, P.E.
Karla.Bohmer@dot.ohio.gov

Ohio Department of Transportation Central Office
Division of Construction Management
1980 West Broad Street
Columbus, Ohio 43223
Attn: Eric Kahlig, P.E.
Eric.Kahlig@dot.ohio.gov
(Notification only)

Ohio Department of Transportation Central Office
Office of Environmental Services
1980 West Broad Street
Columbus, Ohio 43223
Attn: Timothy Hill
Tim.Hill@dot.ohio.gov

Federal Highway Administration
200 North High Street
Room 328
Columbus, Ohio 43215-2408
Attn: Charmagne' Crook
Charmagne.Crook@dot.ohio.gov

Ohio Turnpike & Infrastructure Commission (address and contact person to be provided)

Lorain County (address and contact person to be provided)

City of Avon (address and contact person to be provided)

City of Elyria (address and contact person to be provided)

Sheffield Village (address and contact person to be provided)

Utility Companies
(As shown in Section 7)

17.13 As-Built Construction Record-Drawing Plans

At the completion of the construction work for each respective Buildable Unit, the DBT shall provide a "Red-Line" set of drawings that clearly identify all changes made to the Construction Documents. They may be noted by hand markup of the revisions, utilizing the Clouding command in MicroStation (or other CAD software) or the Clouding command in PDF editing software. The red-lined drawings shall have a Contractor signed verification on the title sheet indicating all field changes are being incorporated into the red-lined drawings.

Prior to Final Acceptance of the Work, the DBT shall furnish the Department formal As-Built Construction Record-Drawing plans. The DBT shall provide a general summary within the final As-Built Construction Record-Drawing plans. The formal As-Built Construction Record-Drawing shall include all red-lined changes. Red-line change shall be denoted utilizing the Clouding command in MicroStation (or other CAD software) or the Clouding command in PDF editing software. The As-Built Construction Record-Drawing shall have a signed verification on the title sheet from the Designer and the Contractor indicating that all red-lined and field changes have been incorporated into the As-Built Construction Record-Drawing.

> Note: The Contractor's verification statement indicates all known field modifications made after the RFC plans where sealed by the Designer have been included in the formal Record-Drawing. The Contractor's verification statement shall be signed by the Contractor's Project Manager (or acceptable representative).
>
> Note: The Designer's verification indicates the Designer's acknowledgement of the red-line and field changes, the presented field changes have been included within the As-Built Construction Record-Drawing and is the Designer's concurrence that these changes meet the design intent of the Contract. The Designer's verification statement shall be signed by the Lead Designer's representative.

The DBT may choose to omit the "Red-Line" submission and submit only formal As-Built Construction Record-Drawing.

The DBT shall prepare As-Built Documents in conformance with ODOT's Location and Design Manual, Volume 3, Section 1200 - Plan Preparation. and submit them in both hardcopy and electronic (PDF, TIFF, and CADD) format, including MicroStation and Open Roads Designer (ORD) files, conforming to ODOT CADD standards. As-Built Documents shall include quantities for the Work associated with each Buildable Unit.

In addition to the information shown on the construction plans, the Record-Drawing plans shall show the following:

1. All deviations from the original approved construction plans which result in a change of location, material, type or size of work.
2. Any utilities, pipes, wellheads, abandoned pavements, foundations or other major obstructions discovered and remaining in place which are not shown, or do not conform to locations or depths shown in the plans. Underground features shall be shown and labeled on the Record-Drawing plan in terms of station, offset and elevation.
3. The final option and specification number selected for those items which allow several material options under the specification (e.g., conduit).
4. Additional plan sheets may be needed if necessary to show work not included in the construction plans.

Notation shall also be made of locations and the extent of use of materials, other than soil, for embankment construction (rock, broken concrete without reinforcing steel, etc.).

The Plan index shall show the plan sheets which have changes appearing on them.

Two copies of the As-Built Construction Record-Drawing plans shall be delivered to the Project Engineer for approval upon completion of the physical work but prior to the request for final payment. After the Department has approved the As-Built Construction Record-Drawings, the associated electronic files shall be delivered to the District Capital Programs Administrator. Acceptance of these plans and delivery of the associated electronic files is required prior to the work being accepted and the final estimate approved.

18 BUILDABLE UNITS (BU)

Buildable Units are portions of the Project which can be designed, reviewed and built with only limited controls and assumptions coming from the design of other portions of the Project. Often a Buildable Unit will be defined by a geographic area within the plan, but it may also be defined by types of work or construction stages which may require or permit similar, nearby work to be divided into separate Buildable Units. All Buildable Units shall summarize the materials required to construct that portion of the Project. The summary shall include the Construction and Material Specifications Item Number, and a description of the materials to be used.

For the Interim and Final Design submittals, the DBT may break the Project work into two or more separate BU which can be progressed through design and construction with minimal or known effect on each other and/or which can be dealt with sequentially such that sufficient data is available for design and review of each BU. In order that the design and construction of one BU may proceed without significant approved information from an associated BU, the DBT may develop and propose assumptions which will allow for the first BU to proceed through design and/or construction. These assumptions shall be submitted for review and comment but their accuracy and effort upon the final design are the sole responsibility of the DBT. Should error in these assumptions result in additional work, remedial work or other changes to assure an acceptable design or should they result in the need to remove work and substitute additional work, the DBT shall be responsible for all such costs including, removal of unacceptable materials from the site, modification, additional work, repairs, etc. as necessary to produce an acceptable result.

If the DBT elects to develop Buildable Units, the DBT shall prepare, for review by the Department, a table of Buildable Units for the Project with each BU described in detail. If the table is approved, the DBT shall modify the Progress Schedule to show a separate group of activities for BU and these activities shall encompass all of the design and construction work in each BU. The Progress Schedule for design review shall be developed such that information from other dependent BUs is available at the time of submission of the BU at hand. Work activities shall be further separated in the Progress Schedule to show a meaningful completion status (i.e. separate activities comprising the placement of a bridge deck on steel beams shall describe; shoring, form building, steel placement, placement of conduit & joints, pouring concrete, forming parapets, pouring or slip forming parapets, provision of membranes, provision of wearing surfaces, curing, repair, form removal, cleaning, etc.).

The Final Review Submission and Construction Plans shall specifically be identified by the Buildable Unit code. If the design of a BU requires input information from an adjacent or related BU, the source for that information in previously approved plans shall be cited or the DBT shall provide an estimated value of the data. The input data shall also be carefully identified. In the same way any assumption, calculations or results from the stage and BU which are used as input to another BU shall be similarly identified, and where appropriate, compared back to that BU to verify previous assumptions. Should assumptions not match values calculated later, the DBT shall re-analyze all affected components and determine appropriate changes. Should those elements have already been constructed, the DBT shall recommend repairs, adjustments, modifications or replacement of the existing work as necessary to comply with the Scope of Work. All costs for re-design, re-submissions, modifications, removals, disposal of materials and new work needed to remedy the Project and bring it to compliance shall be borne by the DBT and no time extensions shall be approved for this.

For projects with railroad involvement, a separate BU shall be submitted for review that includes all work components over, under, within and adjacent to the railway that could impact or influence railroad operations. Buildable units for railroad review submissions shall not be defined by types of work but shall be determined by the limits of railroad regions of concern. The BU shall include all

work within the applicable railroad region of concern (as agreed with the railroad and DBT) and shall not be segmented partial design pieces of an entity but shall be the overall design phased submission of the entity. Subdivision of work components that impact or influence railroad operations into multiple BU's shall not be performed unless previously agreed to by the Department and railroad.