REHABILITATION OF I-278 BRIDGES

PIN X731.47, Contract D900041

DB CONTRACT DOCUMENTS

PART 3
PROJECT REQUIREMENTS

FINAL JANUARY 24, 2018
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SECTION 1   GENERAL

1.1 PURPOSE

This Part 3 establishes the basic Requirements of the Project. The Contract Documents, NYSDOT standard drawings, manuals and specifications, and the referenced Design Codes and Manuals shall be followed for the preparation of design and construction documents and the execution of the Work. Any proposed deviation from the Contract requirements or NYSDOT standards shall be submitted to the Department’s Design Quality Assurance Engineer for review, and shall require the submission of a Non-conformance Report, where the Design-Builder is to identify, explain, and justify any deviation from the established criteria to the Department’s Design Quality Assurance Engineer.

All designs shall be prepared in U.S. Customary units. The Design-Builder shall be responsible for converting any mapping, plans, etc. into U.S. Customary units as necessary for the completion of the Project.

The design and construction shall be in conformance with the latest edition of the New York State Department of Transportation, Standard Specifications, with addenda, issued by the Office of Engineering, current as of the date of Proposal submission, excluding Section 100, which is superseded by Part 2, Section DB 100 of the Contract Documents, and except as otherwise noted in these Contract Documents.

The Design-Builder shall prepare Project Specifications for the Project, for Work Items not covered by the NYSDOT Standard Specifications or applicable Special Specifications, and shall prepare Design Plans for the Project in accordance with NYSDOT standards for general content and format, and in accordance with the Contract.

The Design-Builder shall prepare and submit a Non-conformance Report (in accordance with the provisions of DB §105-16) for any Work proposed to be or actually performed that does not conform to the Contract requirements and for any deviations from NYSDOT standards.

1.2 SCOPE

The Design-Builder shall be responsible for complying with all terms of the Contract Documents. The Design-Builder shall review and understand all terms and conditions of the Contract Documents prior to the commencement of the Project and shall be responsible for determining the full Scope of the Project by undertaking a thorough examination of the Contract Documents, the Reference Documents and the Project Site.

1.3 SCOPE OF WORK – MAJOR ITEMS

The scope of work for the Project, for the locations and BINS listed below, includes but is not limited to the following items:

<table>
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<th>BIN</th>
<th>County</th>
<th>Municipality</th>
<th>Carried</th>
<th>Crossed</th>
<th>Spans</th>
<th>Existing Bridge Length</th>
<th>Bridge Roadway Width</th>
<th>Existing Type of Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1067821</td>
<td>Richmond</td>
<td>City of New York</td>
<td>I-278 SIE WB and</td>
<td>Mosel Ave</td>
<td>3</td>
<td>177 ft</td>
<td>Width varies - ave width</td>
<td>Steel multi girder</td>
</tr>
</tbody>
</table>

Rehabilitation of I-278 Bridges 1 Part 3 - Project Requirements
PIN X731.47, Contract D900041 Addendum #3 March 15, 2018
A) Remove the existing structures and replace with single span structures. The design builder can incorporate portions of the existing bridge identified in the Directive Plans into the proposed final structures.

B) Maintenance and relocation of existing utilities, and replacement of utility supports

C) Work Zone Traffic Control

D) ITS/VMS/Traffic Monitoring features

E) Coordination with the local community to inform them of potential impacts and mitigations during various construction stages.

F) Coordination with MTA for work over Staten Island Rapid Transit (SIRT) for BINs 1075751 and 1075752.

G) Replace underdeck lighting and street light.

A) Superstructure and Substructure Repairs

B) Deck Replacement
C) Approach slab and pavement replacement

D) Eliminate (or minimize) Deck joints

E) Column and Pier capbeam replacement at all Piers 2

F) Bearing and pedestal replacement

G) Replacement of all existing bridge deck features, including parapets, fencing and guardrails

H) Replace underdeck lighting and street light

I) Maintenance of existing utilities, and replacement of utility supports

J) Work Zone Traffic Control

K) ITS/Traffic Monitoring features

L) Coordination with the local community to inform them of potential impacts and mitigations during various construction stages.

1.4 COORDINATION WITH OTHER PROJECTS

The Design-Builder shall coordinate the work so as not to conflict with others projects occurring within or abutting the Contract limits. It is expected that the following projects will be under construction during construction of this Contract:

PIN/Description: X807.23/D900037 – Deck Replacements for 3 Bridges (Bronx, Kings, Queens).

WZTC: TBD

Current schedule: Expected Completion 12/31/2018.

Contractor: TBD

Contact Information: TBD

Brief Project Description TBD

1.5 THIRD PARTY AGREEMENTS (NON-UTILITY)

The Department is in the process of obtaining the following Permit(s), which will be included in the Final RFP, Part 7 – Engineering Data:

- New York City Department of Transportation (NYCDOT): NYCDOT Bureau of Permit Management and Construction Control Work Permit;
The Department is in the process of obtaining an Agreement with the Staten Island Rapid Transit (SIRT) for BINs 1075751 and 1075752. Refer also to the Railroad Requirements in RFP Part 3 Section 6.2.3 and Part 5, Special Provisions.

For information regarding Preliminary DB Utility Work Agreements, refer to Section 8 of this Part 3.

1.6 DESIGN CODES AND MANUALS

In addition to this Part 3, Project Requirements, the Design-Builder must comply with all applicable engineering codes and standards, including those of the various Federal, State, and local jurisdictions.

If codes, standards and/or manuals are specified herein for the design of an element of the Project, then the edition(s) in effect on the Proposal due date shall be applicable to the Project. Responsibility for design remains with the Design-Builder in accordance with the terms and conditions of the Contract. If a code, manual or standard is subsequently modified by the issuer, the Design-Builder shall notify the Department of such modification(s) and request the Department’s decision regarding application of the modification(s).

All Work shall conform to the following documents. In the event of a conflict between the codes and the referenced documents listed below, the more stringent requirements, as determined by the Department, shall apply.

For Work not specifically covered by the individual sections of the Project Requirements, the Design-Builder shall, at a minimum, apply the Standards normally applied by NYSDOT for such Work, to the extent they do not conflict with express requirements in the Contract Documents. The Design-Builder shall be solely responsible for ensuring that it identifies and applies all correct Standards.

AASHTO:

- A Guide for Accommodating Utilities within Highway Right-of-Way
- A Policy on Design Standards - Interstate System
- A Policy on Geometric Design of Highways and Streets
- Construction Handbook for Bridge Temporary Works
- Guide Design Specifications for Bridge Temporary Works
- Guide for the Design of Pavement Structures (with Supplement)
- Guide Specifications for LRFD Seismic Bridge Design
- LRD Bridge Construction Specifications
- Manual for Assessing Safety Hardware (MASH)
- Manual for Bridge Evaluation
- Manual on Subsurface Investigations
- Mechanistic-Empirical Pavement Design Guide (MEPDG),
- Roadside Design Guide
• Roadway Lighting Design Guide

AISC:
• Steel Construction Manual

ANSI
• ANSI/AASHTO/AWS D1.5 Bridge Welding Code
• ANSI/IES Approved Recommended Practice for Roadway Lighting, RP-8-14
• ANSI/IEEE 1455-1999 Standards for Message Sets for Vehicle/Roadside Communications

Asphalt Institute:
• Drainage of Asphalt Pavement Structures

ASTM:
• E2213-03 Standard Specification for Telecommunications and Information Exchange Between Roadside and Vehicle Systems
• E2259-03 Standard Guide for Archiving and Retrieving ITS-Generated Data
• E2468-05 Standard Practice for Metadata to Support Archived Data Management Systems
• E2655-08 Standard Guide for Reporting Uncertainty of Test Results and Use of the Term Measurement Uncertainty in ASTM Test Methods

Federal Geographic Data Committee:
• GIS Standards

FHWA:
• FHWA NHI-00-043 Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines
• FHWA NHI-01-004 River Engineering for Highway Encroachments
• FHWA NHI-05-123 Soil Slope and Embankment Designs
• FHWA NHI-11-032 GEC No. 3 LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations
• FHWA HI-99-007 Rock Slopes Reference Manual
• HEC 18 Evaluating Scour at Bridges
• HEC 23 Bridge Scour and Stream Instability Countermeasures
• Manual of Uniform Traffic Control Devices (MUTCD)
• Pavement Publications
• Standard Highway Signs and Markings (SHSM) Book
• Steel Bridge Design Handbook
New York State Department of Transportation

- Technical Advisory T6640.8A, 10/30/87 (environmental analyses)
- Traffic Monitoring Guide

NFPA:
- NFPA 70 – National Electrical Code (NEC)
- 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways

NYCDEP:
- Sewer Design Standards
- Title 15 of the Rules of the City of New York Chapter 20, Rules Governing and Restricting the Use and Supply of Water
- Title 15 of the Rules of the City of New York Chapter 31, Rules Governing House/Site Connections to the Sewer System

NYCDOT:
- City of New York DOT Systems Engineering Specifications
- Specifications for furnishing all labor and material necessary and required for the installation, removal or relocation of street lighting equipment in the City of New York
- Standard Specifications, Bureau of Highway Operations
- Standard Drawings, Division of Street Lighting
- Standard Details of Construction, Bureau of Highways, Roadway Design
- Street Design Manual
- Department of Design and Construction Design Guidelines and Directives

NYSDEC:
- Standards and Specifications for Erosion and Sediment Control (SESC)
- Stormwater Management Design Manual (SMDM)

NYSDOT:
- Annual Report titled "Axle Factor Update"
- Approved Materials List
- Bridge Detail (BD) Sheets US Customary (NYSDOT BD Sheets)
- Bridge Inspection Manual
- Bridge Inventory Manual
- Bridge Manual
• Bridge Safety Assurance Seismic Vulnerability Manual
• Comprehensive Pavement Design Manual
• Consultant Instructions (CIs)
• Design Consultant Manual
• Design Guide for Fiber Optic Installation on Freeway Right-of-Way
• Engineering Bulletins (EBs)
• Engineering Instructions and Directives (EIs and EDs)
• Environmental Procedures Manual (EPM) / The Environmental Manual (TEM)
• GCP-17, Procedure for the Control of Granular Materials
• Geotechnical Design Manual, including all appendices
• Highway Design Manual (HDM)
• Land Surveying Standards and Procedures Manual
• NYSDOT LRFD Bridge Design Specifications
• Manual for Uniform Record Keeping
• New York State Supplement to the Manual on Uniform Traffic Control Devices
• Overhead Sign Structure Design Manual
• Policy and Standards for the Design of Entrances to State Highways
• Policy on Highway Lighting
• Prestressed Concrete Construction Manual (PCCM)
• Project Development Manual
• Reference Marker Manual
• Rules and Regulations Governing the Accommodation of Utilities within the State Highway Right of Way
• Special Specifications as indicated in the Contract Documents
• Standard Specifications for Construction and Materials
• Steel Construction Manual (SCM)
• Structures Design Advisories
• Structures Technical Advisories
• U.S. Customary Standard Sheets
• Work Zone Traffic Control Manual
• ROW Mapping Procedure Manual

The above is a partial listing of applicable NYSDOT Engineering Manuals and Guidelines. The Design-Builder shall perform the Work in conformance with all NYSDOT Engineering Manuals and Guidelines in effect on the Proposal due date.
OSHA:
- PART 1926 - Safety And Health Regulations For Construction

SPC:
- Society of Protective Coatings Standards

USDOJ:
- ADA Accessibility Guidelines for Buildings and Facilities

USDOT:
- ADA Standards for Transportation Facilities

1.7 REQUIREMENTS

The “Requirements” subsection of the individual sections of Part 3 – Project Requirements establishes the Department’s expectations with respect to specific Project elements. These include administrative, managerial and technical considerations as deemed appropriate to the subject, and encompass performance specifications, design criteria, and directive instructions as the Department deems best suited to the subject. The Design-Builder shall develop its Definitive Design, Design Plans and Project Specifications in conformance with this Part 3 – Project Requirements.

The Design-Builder shall be responsible for meeting all requirements and terms contained in this Part 3 – Project Requirements unless explicitly stated otherwise.

The specific requirements in this Part 3 – Project Requirements may be more stringent and shall govern over the criteria given in the Standards. Where a specific requirement in this Part 3 – Project Requirements is more stringent than the criteria specified in a Standard, said specific requirement shall become the basis for determining compliance. Non-standard features needing justification and FHWA and/or NYSDOT approval are defined as those not meeting the criteria cited in the Standards listed in this Part 3 – Project Requirements.

1.8 DELIVERABLES

Deliverables to be submitted by the Design-Builder throughout the design and construction of this Project, and upon completion of the Project, are specified in the NYSDOT manuals listed in Section 1.6 of this Part 3 – Project Requirements. These shall supplement the review plan and consultation and written comment cycles cited in DB §111-8 through DB §111-14. The Design-Builder may submit deliverables for the Department’s consideration or consultation and written comment in addition to those cited in the NYSDOT manuals. The Design-Builder shall include such additional submittals in its review plan and revise the review plan as necessary to incorporate sufficient advance notice to the Department. It is the goal of the Department that all review and comments be completed within 10 business days.

Unless otherwise indicated elsewhere in the Contract Documents, or directed by the Department’s Project Manager, all deliverables shall be submitted in both electronic format and hardcopy.
format. Acceptable electronic formats include Bentley Microstation .dgn format and Bentley InRoads.alg and dtm format, Microsoft Word®, Microsoft Excel®, ArcMAP, or searchable portable document format (PDF) files, with no copy or password protection on the file content, unless otherwise indicated in a specific section of this Part 3 - Project Requirements or a Standard cited in a specific section of this Part 3 - Project Requirements.

1.9 INDICATIVE PLANS

The Indicative Plans, if provided to the Design-Builder in Part 6 – RFP Plans, convey an overall potential solution to the Project’s needs that the Design-Builder may choose to consider in developing its design. The designs presented herein have been developed to a point sufficient to present the general concepts of the Project and specifically to show the current highway boundaries and the extent of property acquisitions provided by the Department. The Indicative Plans are not mandatory, with the exception of elements specifically mentioned elsewhere in this Part 3.

1.10 DIRECTIVE PLANS

The Directive Plans, if provided to the Design-Builder in Part 6 – RFP Plans, depict required elements and components of the Project within specifically defined parameters. The Design-Builder has no latitude to adjust components or details shown on Directive Plans, unless specifically noted or through an approved Alternative Technical Concept (ATC).

1.11 CADD

CADD formatting for Design and As-Built Plans shall conform to the Department’s CADD Drafting Standards and CADD Design Standards in effect on the Proposal due date.

1.12 SCHEDULE OF PROJECT COMPLETION

All work on the design and on the construction shall be completed in accordance with Part 1, DB Agreement, Article 2, Contract Time, but in no case shall the Project Completion Date be later than June 01, 2020December 31, 2019.

1.13 WORK PAYMENT SCHEDULE

Progress Payments will be made as each Work Item is completed to the satisfaction of the Department’s Construction Quality Assurance Engineer. Progress payments shall be subject to the requirements of DB §109-2. Payments for Design, Construction Inspection and Laboratory activities will be made in conformance with DB § 109-2.2.

<table>
<thead>
<tr>
<th>WORK PAYMENT SCHEDULE – (BIN 1067821 I-278 WB over Mosel Avenue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORK ITEM</td>
</tr>
<tr>
<td>Work Zone Traffic Control</td>
</tr>
</tbody>
</table>

Rehabilitation of I-278 Bridges PIN X731.47, Contract D900041 Part 3 - Project Requirements FINAL JANUARY 24, 2018
<table>
<thead>
<tr>
<th>WORK ITEM</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demolition and Removal of Existing Concrete Deck, Piers, Parapets, Railing, Approach Slabs, and Drainage System</td>
<td>34%</td>
</tr>
<tr>
<td>Jacking and Removal of Existing Bearings and Pedestals</td>
<td>5%</td>
</tr>
<tr>
<td>Removal of Existing Lighting, Signage, and Installation of Temporary Lighting</td>
<td>5%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Piers, Barrier, Approach Slabs, and Curbs</td>
<td>20%</td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>3%</td>
</tr>
<tr>
<td>Fabricate and Install Roadway Lighting and Signage</td>
<td>3%</td>
</tr>
<tr>
<td>Repair Deteriorated Steel Members; Paint Steel</td>
<td>7%</td>
</tr>
<tr>
<td>Substructure and Superstructure Alterations, including pavement section, to Achieve One Span Final Configuration</td>
<td>28%</td>
</tr>
<tr>
<td>Highway Approach Milling, Paving, and Striping</td>
<td>2%</td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-12.1)</td>
<td>1% (fixed)</td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-12.2)</td>
<td>2% (fixed)</td>
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**WORK PAYMENT SCHEDULE BIN – (1067822 I-278 EB over Mosel Avenue)**

<table>
<thead>
<tr>
<th>WORK ITEM</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
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<tbody>
<tr>
<td>Work Zone Traffic Control</td>
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</tr>
<tr>
<td>Demolition and Removal of Existing Concrete Deck, Piers, Parapets, Railing, Approach Slabs, and Drainage System</td>
<td>34%</td>
</tr>
<tr>
<td>Jacking and Removal of Existing Bearings and Pedestals</td>
<td>5%</td>
</tr>
<tr>
<td>Removal of Existing Lighting, Signage, and Installation of Temporary Lighting</td>
<td>5%</td>
</tr>
</tbody>
</table>
Construct Reinforced Concrete Bridge Deck Slab, Piers, Barrier, Approach Slabs, and Curbs | 20%
---|---
Construct Drainage System | 3%
Fabricate and Install Roadway Lighting and Signage | 3%
Repair Deteriorated Steel Members; Paint Steel | 7%
Substructure and Superstructure Alterations, including pavement section, to Achieve One Span Final Configuration | 28%

**Highway Approach Milling, Paving, and Striping** | 2%
Punch list work, Site Cleanup and Restoration | 2% (fixed)
Final Acceptance (Per DB §109-12.1) | 1% (fixed)
Final Agreement (Per DB §109-12.2) | 2% (fixed)

### WORK PAYMENT SCHEDULE BIN – (BIN 1075751 I-278 WB over SIRT)

<table>
<thead>
<tr>
<th>WORK ITEM</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
<th>PERCENT OF LUMP SUM PRICE (To be completed by D-B)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Demolition and Removal of Existing Concrete Deck, Piers, Parapets, Railing, Approach Slabs, and Drainage System</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Jacking and Removal of Existing Bearings and Pedestals</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Removal of Existing Lighting, Signage, and Installation of Temporary Lighting</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Barrier, Approach Slabs, and Curbs</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Roadway Lighting and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Repair Deteriorated Steel Members; Paint Steel</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Substructure and Superstructure Alterations, including pavement section, to Achieve One Span Final Configuration.</td>
<td>28%</td>
<td></td>
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</tbody>
</table>
## Rehabiliation of I-278 Bridges

### Part 3 - Project Requirements

**PIN X731.47, Contract D900041 Addendum #4 March 27, 2018**

### Highway Approach Milling, Paving, and Striping

<table>
<thead>
<tr>
<th>WORK ITEM</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
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<tbody>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2%</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-12.1)</td>
<td>1% (fixed)</td>
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</tr>
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<td>Final Agreement (Per DB §109-12.2)</td>
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### WORK PAYMENT SCHEDULE – (BIN 1075752 I-278 EB over SIRT)

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<td>Demolition and Removal of Existing Concrete Deck, Piers, Parapets, Railing, Approach Slabs, and Drainage System</td>
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### Highway Approach Milling, Paving, and Striping

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
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### WORK PAYMENT SCHEDULE BIN – (BIN 1065260 79th Street Bridge over I-278)

<table>
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<td>Work Zone Traffic Control</td>
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<tr>
<td>Demolition and Removal of Existing Concrete Deck, Piers, Parapets, Railing, Approach Slabs, and Drainage System</td>
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<tr>
<td>Jacking and Removal of Existing Bearings and Pedestals</td>
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<tr>
<td>Removal of Existing Lighting, Signage, and Installation of Temporary Lighting</td>
<td>5%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Barrier, Approach Slabs, and Curbs</td>
<td>20%</td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>3%</td>
</tr>
<tr>
<td>Fabricate and Install Roadway Lighting and Signage</td>
<td>3%</td>
</tr>
<tr>
<td>Repair Deteriorated Steel Members; Paint Steel</td>
<td>7%</td>
</tr>
<tr>
<td>Substructure and Superstructure Alterations, including pavement section, to Achieve One Span Final Configuration</td>
<td>28%</td>
</tr>
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### Highway Approach Milling, Paving, and Striping

<table>
<thead>
<tr>
<th>WORK ITEM</th>
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<th>PERCENT OF LUMP SUM PRICE (To be completed by D-B)</th>
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</thead>
<tbody>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
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<tr>
<td>Final Acceptance (Per DB §109-12.1)</td>
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<tr>
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<td></td>
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<tr>
<td>Work Zone Traffic Control</td>
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<td>-----------------------------------------------</td>
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<tr>
<td>Demolition and Removal of Existing Concrete Deck, Parapets, Railing, Approach Slabs, and Drainage System</td>
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<tr>
<td>Jacking and Removal of Existing Bearings and Pedestals</td>
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<td></td>
</tr>
<tr>
<td>Removal of Existing Lighting, Signage, and Installation of Temporary Lighting</td>
<td>5%</td>
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<td>Demolition and Removal of all Columns and Pier Caps, Construct Reinforced Concrete Columns and Pier Caps</td>
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<td>Install New Pedestals</td>
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<tr>
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<td>12%</td>
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<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Barrier, Approach Slabs, Sidewalk, and Curbs</td>
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<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Roadway Lighting and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Repair Deteriorated Steel Members; Paint Steel</td>
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<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
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<tr>
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<td>2% (fixed)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: (1) See Work Payment Schedule included in ITP, Appendix E. Percent of Lump Sum Price to be completed by the Proposer. Total percentage for all work items shall equal 100%.

(2) Subsequent to Selection of Best Value, the Design-Builder may submit to the Department a more detailed Work Payment Schedule which breaks individual work items into multiple stages, for the Department’s review and acceptance. However, the sum of the percentages proposed for each stage shall equal the percentage for that work item submitted by the Design-Builder included on Form WPS, and in no case shall the payment for any individual stage be more than 50% nor less than 10% of the total percentage bid for that work item.

(3) Payment will be verified through the CPM Cost Loaded schedule per SP-10 and SP-3.

1.14 INTERIM COMPLETION MILESTONE

This Project’s Interim Completion Milestones, if applicable, are defined as shown in Part 5 – Special Provisions.

The Interim Completion Milestone Dates may not be changed without written approval by the Department’s Project Manager.
SECTION 2 PROJECT MANAGEMENT

2.1 DESIGN-BUILDER’S ROLE

The Design-Builder shall have responsibility for controlling and managing the Work, including the responsibility for quality management as defined in the Contract Documents, Part 2 - DB §§ 111, 112 and 113. This section identifies the Design-Builder’s Key personnel and summarizes the Management Plans to be produced by the Design-Builder in accordance with the Contract Documents.

2.2 DESIGN-BUILDER’S KEY PERSONNEL

The positions listed below shall be the Design-Builder’s key personnel for the Project. Key Personnel are preferred to have experience on projects of a similar size, type of work, and complexity as this Project, and should meet the qualifications described below. Proposed staff with qualifications less than those described below will receive a reduced score compared to staff that meet or exceed the described qualifications. Any requirements described as “shall have...” or “shall be...” are determined to be minimum response requirements. The Design-Builder shall provide personnel that meet these minimum requirements.

The Design-Builder’s Project Manager shall be the Design-BUILDER’s representative and single point of contact with the Department.

The Department’s Project Manager may designate other Key Personnel positions as needed at any time during the Contract.

A) **Project Manager: Shall** have a minimum of 10 years, but preferably 15 years, demonstrated experience in construction and construction management of bridge and transportation and infrastructure projects with preferably similar size and type of work as this Project, and preferably including projects with compressed timelines, and community information requirements. Such experience in construction and management-of-construction should include at least one bridge construction project having a construction value in excess of $25 million. The Project Manager, who should have Design-Build experience and have extensive project management experience, can hold only this one Key Personnel position. It is preferred, but not required, that this individual be licensed and currently registered as a Professional Engineer in the State of New York. The Project Manager shall dedicate no less than 50% of their work time to this Project.

B) **Design Manager: Shall** be licensed and currently registered as a Professional Engineer in the State of New York, shall be an owner or employee of the Designer and shall have a minimum of 10 years demonstrated experience in managing design for infrastructure and bridge projects preferably of similar scope as this Project. The Design Manager should have Design-Build experience, and should have specific experience on projects of similar size and type. The Design Manager can hold only this one Key Personnel position. The Design
Manager shall dedicate no less than 75% of their work time to this Project.

C) **Quality Manager:** Shall have demonstrated experience in bridge design and infrastructure construction with at least 10 years experience in quality assurance and quality control activities, including preparation and implementation of Quality Plans and procedures for design and construction. The Quality Manager can hold only this Key Personnel position. The Quality Manager should have experience of quality systems based on ISO 9001, and should have experience with the quality systems of the Department. The Quality Manager shall dedicate no less than 50% of their work time to this Project.

D) **Resident Engineer:** Should be licensed and currently registered as a Professional Engineer in the State of New York and should have demonstrated at least 10 years experience in bridge and highway construction inspection, including at least 5 years as a Resident Engineer. The Resident Engineer shall have performed Resident Engineer duties on a project within the last 3 years.

E) **Lead Structural Engineer:** Shall be licensed and currently registered as a Professional Engineer in the State of New York and shall have demonstrated at least 10 years experience in structural analysis and design of new and replacement bridges.

F) **Lead Civil Engineer:** Shall be licensed and currently registered as a Professional Engineer in the State of New York and shall have at least 10 years experience in civil roadway design, including congestion management and the preparation of Work Zone Traffic Control Plans.

F) **Lead Geotechnical Engineer:** Shall be licensed and currently registered as a Professional Engineer in the State of New York and shall have a minimum of 10, but preferably 15, years of experience which should include the following: planning and overseeing subsurface exploration programs for highway structures/facilities; the development of design soil/rock profiles, for the purpose of geotechnical analysis, design, and construction; design of structure foundations and earth support structures; analysis and design for static and dynamic (seismic) loading under current LRFD; analysis and design of mitigation measures for embankment settlement and stability; analysis and design of both temporary and permanent earth support structures; and interpreting geotechnical instrumentation programs.

G) **Project Superintendent:** Should have at least 10, but preferably 15 years of demonstrated experience overseeing work on bridge and highway construction projects. Experience should include directing and coordinating the activities of a contractor’s workforce and all subcontractors, ensuring work progressed according to schedule, within budget and that material and equipment were delivered to the
site on time. The Project Superintendent should have experience as Project Superintendent on a bridge project valued at $15M or more.

2.3 MANAGEMENT PLANS AND SCHEDULES

2.3.1 Management Plans and Schedule Requirements

The Design-Builder shall submit to the Department’s Project Manager, for review and comment or approval (as applicable), all the Management Plans listed in Table 2-1. Following receipt of the Department’s acceptance or approval of the individual Management Plans, as described in the Contract Documents, the Management Plans shall be resubmitted to the Department’s Project Manager as the Design-Builder’s consolidated Project Management Plan for the Project.

Table 2-1 – Project Management Plans

<table>
<thead>
<tr>
<th>Plan Title</th>
<th>Contract Document Reference</th>
<th>Initial Plan Submitted with the Proposal?</th>
<th>Submittal Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workforce Participation Plan</td>
<td>DB § 102-9.4B</td>
<td>No</td>
<td>60 Days after NTP</td>
</tr>
<tr>
<td>Safety Plan*</td>
<td>DB § 107-7.5</td>
<td>No</td>
<td>30 Days after NTP or 30 days prior to beginning any construction Work</td>
</tr>
<tr>
<td>Quality Control Plan*</td>
<td>DB § 113</td>
<td>Yes</td>
<td>45 Days after NTP</td>
</tr>
<tr>
<td>Overall Design-Build Team Organization Plan</td>
<td>Project Requirement Section 2.3.5</td>
<td>Yes</td>
<td>25 Days after NTP</td>
</tr>
<tr>
<td>Design Management Plan</td>
<td>Project Requirement Section 2.3.6</td>
<td>No</td>
<td>30 Days after NTP</td>
</tr>
<tr>
<td>Construction Management Plan</td>
<td>Project Requirements Section 2.3.7</td>
<td>No</td>
<td>45 Days after NTP</td>
</tr>
<tr>
<td>Design Review Plan</td>
<td>DB § 111-7</td>
<td>No</td>
<td>10 Days after NTP</td>
</tr>
<tr>
<td>Transportation Management Plan/Emergency Response Plan</td>
<td>Part 3, Section 15.3.10</td>
<td>No</td>
<td>30 Days after NTP</td>
</tr>
<tr>
<td>Initial Baseline Progress Schedule</td>
<td>Project Requirements Section 2.4</td>
<td>Yes</td>
<td>15 Days after NTP</td>
</tr>
</tbody>
</table>

* Requires Department approval

2.3.2 Workforce Participation Plan

The Design-Builder shall develop a Workforce Participation Plan to meet the requirements of DB §102-9.4B and submit it to the Department’s Project Manager for review and comment.

2.3.3 Safety Plan

The Design-Builder shall develop a Safety Plan to meet the requirements of Part 2, DB §107-7.5 and submit it to the Department’s Project Manager for written approval in accordance with DB §107-7.7. No construction Work shall progress and no payment shall be made to the Design-Build until the Safety Plan is approved by the Department.
2.3.4 Quality Control Plan

The Design-Builder shall use the Initial Quality Control Plan submitted with the Technical Proposal, modify and develop it, as necessary, to include the content required by Part 2, and submit it to the Department’s Project Manager for written approval in accordance with Part 2 DB §113. The Quality Control Plan shall be revised and resubmitted to the Department’s Project Manager within 14 calendar days of receipt of the Department’s written comments and resubmitted as required until Approved by the Department’s Project Manager. No offsite fabrication Work or Construction Work shall commence before the Quality Control Plan has been approved by the Department’s Project Manager. No payment will be made to the Design-Builder until the Quality Control Plan has been approved by the Department.

2.3.5 Overall Design-Build Team Organizational Plan

The Design-Builder shall update the Initial Overall Design-Build Team Organization Plan by combining the Organizational Structure Chart and the Communication Protocol Graphic and narrative and expanding upon these initial submittals into a more comprehensive document. It shall describe the design and construction organizational arrangements it intends to implement. The organizational arrangements described should clearly identify responsibilities and reporting lines of staff, particularly relating to Key Personnel.

The Design-Builder shall include an organization chart and communication protocol graphic (on an 11” x 17” sheet of paper), illustrating the Proposer’s Key Personnel and their prospective roles and responsibilities, as well as other principal participants and any known Subcontractors having a material role in the Project’s design Work, design check Work, construction Work and construction inspection Work.

The Design-Builder shall describe the interrelationships and interfaces between each discipline within the Proposer's organization (e.g., design, design check, shop drawing preparation and review, construction, and quality management).

The Overall Design-Build Team Organization Plan shall also describe the interrelationships and interfaces between the Design-Builder’s organization, the Department and other governmental agencies, utility owners, stakeholders, businesses, the public and other contractors working in the vicinity and impacted by the construction of the Project. This description shall also, at a minimum, address the following activities:

A) Reviews of plans and permits;
B) Progress, workshop, partnering and utility coordination meetings; and
C) Construction, engineering and inspection activities.

2.3.6 Design Management Plan

The Design-Builder shall provide a Design Management Plan and submit it to the Department’s Project Manager for Review and Comment.

The Design Management Plan shall include the Design-Builder’s approach to managing the Project, including:
A) The Design-Builders understanding of the Project Requirements.

B) The Design-Build Team’s organizational structure and lines of responsibility.

C) The Design Builder’s approach to delivering the Project, including how the Design-Builders will address logistical challenges of the Project, scheduling to complete the Project on time and on or under budget with emphasis on quality, design, and construction.

D) How the Design-Builders will manage and coordinate the design, design quality control and design reviews.

E) The means of reporting on the design progress; the means of tracking quality control reviews and the resolution of comments on the design and describes how design non-conformance issues will be resolved.

F) How the design effort will be coordinated with construction activities and construction means and methods for the Project.

G) A description of the proposed methods to control the design progression for the overall project to support the construction schedule.

2.3.7 Construction Management Plan

The Design-Builders shall provide a Construction Management Plan, which may include relevant material submitted with its Proposal and submit it to the Department’s Project Manager for Review and Comment.

The Construction Management Plan shall provide how well the Design-Builders understands and is organized to manage construction, construction quality control and the tools that will be implemented to provide seamless interaction with the Department’s Construction Quality Assurance Engineer for the construction of a quality Project; provides how the progress of the construction work is reported to the Department and for control of the Work; provides how non-conformance issues in construction will be resolved; provides the method of updating the Baseline Schedule; provides how the work will be progressed in coordination with other agencies; provides the methods of maintaining detours and evaluates how the interaction with the Construction Inspection Professional Engineering Firm and the Materials Testing Firm/Laboratory will occur and how these firms will contribute to the Construction Management and quality of the Project.

2.3.8 Design Review Plan

The Design-Builders shall develop a Design Review Plan to meet the requirements of DB §111-7 and submit it to the Department’s Project Manager for review and comment.

2.3.9 Transportation Management Plan/Emergency Response Plan

The Design-Builders shall develop a Transportation Management Plan/Emergency Response Plan to meet the requirements of Part 3, Section 15.3.10 and submit it to the Department’s Project Manager for review and comment.
2.4 BASELINE PROGRESS SCHEDULE

The Design-Builder shall submit the Initial Baseline Progress Schedule that was submitted with the Technical Proposal, including any updates that may be necessary due to a NTP date change.

In addition, the Design-Builder shall expand and develop the Initial Baseline Progress Schedule in accordance with DB §108-1 and Part 5, Special Provision SP-3.

Design shall be considered complete when all Design related documents have been completed and accepted by the Department including: all calculations, specifications, records of design quality control reviews and procedures; descriptions of and justification for any non-standard features created or retained as a result of the design; resolution of any non-conformance reports; and submission of “As Built” drawings.

Construction shall be considered complete when: the entire Scope of Work has been completed; any damage to the area caused by the Design-Builder’s performance of the Work has been repaired to the satisfaction of the Department; all construction quality control documents, test and inspection reports and forms have been completed; As-Built drawings have been completed; and the work site(s) have been cleaned of any debris.

2.5 MEETINGS

The Design-Builder shall convene or participate in meetings as indicated in Part 2 DB §105-17.

It is the Department’s policy to use the principles of partnering to guide the management of Design-Build contracts and the Design-Build program within the parameters covered by the laws, regulations, and other policies that govern the work. The Design-Builder shall convene or participate in meetings designed to foster the principles of partnering in accordance with Part 2 DB §103-2.

The Design-Builder shall record the minutes for each meeting.

2.6 COMPUTER AND NETWORKING REQUIREMENTS

The Department will issue Citrix connection accounts to the Design-Builder and its Construction Inspection Professional Engineering Firm (CIPE).

Upon request, the Department will also supply the Design Builder with a CSMIN network connection at the CIPE Field Office with the following Computer and Networking equipment through a third party vendor:

- 1 Wireless connection with Router
- 3 fully configured laptops w/ accessories (for RE, OE, and Chief Inspector)
- 1 Multi Function Printer

The Design-Builder shall provide ALL additional Computer and Networking equipment to the CIPE as necessary. The Design-Build will need to provide separate high-speed communication into the CIPE office for all non-CSMIN users. A separate printer will be needed for the non-CSMIN users, as their laptops/computers will not be networked to the CSMIN MFP. It is recommended that the Design-Builder test the network connection success prior to fully equipping its staff and the CIPE firm, to ensure both hardware and software compatibility.
The following computer related specifications reflect the current technology utilized by the Department when making Citrix Connections and are provided for informational purposes only:

- 2/HM65 Chipset, and Intel HD Graphics 3000 (or equivalent);
- 2nd Generation Intel Core i5 2620M Processor, 2.70GHz (Turbo up to 3.40GHz), 1333MHz, 4MB L3 Cache;
- Mobile Intel HM65 Chipset;
- 14” diagonal LED-backlit HD anti-glare (1366x768);
- Mobile Intel HM65 Chipset;
- Intel HD Graphics 3000;
- 4 GB 1333 MHz DDR3 SDRAM – Dual Channel Active;
- 250 GB 7200 RPM 2.5 inch hard drive – or 120 GB Intel SSD;
- DVD R/W SuperMulti DL Drive;
- Full Keyboard;
- Broadcom 4313 GN 802.11 g/b/n 1x1 Wi-Fi Adapter;
- 65W Hardware Kit;
- 6 cell Li-ion Battery; and
- Integrated Gigabit Ethernet

Computers shall have Citrix Receiver installed, which can be accessed at:

http://receiver.citrix.com/

2.7 DEPARTMENT’S CONSULTATION AND WRITTEN COMMENTS

The Department’s review, oversight, audit, and inspection activities are referred to as “consultation and written comment” (see Part 2, DB §105-16). The Department’s consultation and written comment will be provided to the Design-Builder in writing. The Design-Builder shall be responsible for addressing the Department’s comments and shall indicate in writing whether it concurs with the comments. If the Design-Builder does not concur with the Department’s comments, then the Department and Design-Builder will work together to resolve the issue before proceeding.

If agreement cannot be reached, the issue must be resolved as provided in the Contract Documents for dispute resolution in accordance with Part 2 DB §109-10.

2.8 PROJECT WISE

ProjectWise is the preferred platform to be used to organize, manage, distribute/share and archive electronic Project design documents for NYSDOT. However, the Design-Builder may propose to utilize another internet-based platform for these purposes, subject to the Department’s acceptance. Should an alternate platform be selected, access is to be provided to FHWA-NY Division personnel. The documents to be posted to the selected platform typically include but are not limited to:

- Final design report and any modifications predicated by the Design-Builder’s actions;
- All studies and supporting reports;
- Permit Applications and Permits;
- Survey and ROW mapping;
- Photos taken prior to and during design;
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- CADD and 2D/3D models files including current NYSDOT-supported Microstation and InRoads file formats;
- Engineering calculations to support designs;
- All drawing submissions (Definite, Interim, RFC, Final, As-Built, etc.);
- Engineer of Record’s estimate based on Work Payment Schedule; and
- Public Information.

All files posted to the selected platform shall be in accordance with the file naming convention and submission procedures as defined in Appendix 14 of the NYSDOT Project Development Manual.

The Design-Builders shall ensure that all electronic design documents are stored on the selected platform. Updates of engineering documents shall be provided on a monthly basis.

Regardless of the platform utilized during the progression of the Project, prior to Project completion all files shall be posted to ProjectWise in accordance with the criteria listed above.

The Design-Builders may obtain a ProjectWise account by contacting the Department’s Project Manager and providing the required account information per Appendix 14 of the Project Development Manual.
SECTION 3 ENVIRONMENTAL

3.1 SCOPE

Except as otherwise detailed herein, the Design-Builder shall be responsible for preparing its design, obtaining environmental approvals, carrying out construction activities, performing Quality Control, and undertaking other activities, including hazardous materials inspection and testing, as needed to ensure compliance with the Project’s Environmental Requirements and all applicable environmental laws and regulations.

This Project Requirement identifies certain required actions to be performed by the Design-Builder to ensure that the Environmental Requirements are complied with throughout the duration of the Project.

3.2 ENVIRONMENTAL APPROVALS

The Department has determined that this Project is a NEPA Class II, Categorical Exclusion. Class II actions that do not individually or cumulatively have a significant environmental effect are excluded from the requirement to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).

The Department has determined that this project is a SEQRA Type II Action in accordance with 17 NYCRR, Part 15. No further SEQRA processing is required.

The Department has not secured any environmental permits associated with this Project. It is the Design-Builder’s responsibility to secure all environmental permits associated with and required for construction of this Project. As noted in the Project Scoping Report/Final Design Report, BIN 1075752 is located approximately 65 feet from a mapped NYSDEC wetland; therefore, a portion of the project is located within the 100-foot boundary of NYSDEC’s freshwater wetland regulated adjacent area. The Design-Builder is responsible for confirming coverage of the project’s construction activities in regulated areas under NYSDOT General Permit GP-0-11-002, which is located in Part 7 – Engineering Data, and ensuring conformance to all (of the General Permit) conditions and requirements; otherwise, an individual (NYSDEC freshwater wetland/water quality certification) may need to be obtained (by the Design/Builder).

It is advisable that the Design-Builder hold a pre-application meeting with NYSDEC and coordinate with NYCDEP, as appropriate, within 60 days from NTP.

The Design-Builder may request a review by the Department of any permit/approval applications which must be submitted to third parties. For any such review requested, the Design-Builder shall allot five (5) business days for the Department to review and comment on the completeness and adequacy of the application materials. It shall then be the Design-Builder’s discretion to address any Department comments or elect to move forward with the application materials as submitted.

If during detailed design and/or construction the Design-Builder introduces design elements, variations, or methodologies that potentially induce environmental impacts not covered under the obtained approvals/permits by the Department, then the Design-Builder shall re-evaluate the NEPA process for this Project and obtain the necessary Environmental Approvals/Permits for the Project prior to proceeding with construction. This requirement also applies to proposed variations which may affect resources covered under Section 106, Section 4(f), Executive Order 11990 (wetlands), and other applicable federal and state environmental regulations.

3.3 REQUIREMENTS

3.3.1 General

A) The Design-Builder shall procure all Environmental Approvals as needed for all Design-Builder-located areas, including staging, borrow and disposal sites, and any other areas used by the Design-Builder, for its convenience, in the execution of the Project;
B) The Design-Builder shall be responsible for preparing all permit application materials and obtaining all Environmental Approvals necessary for the Project and not already obtained by the Department, including those that are precipitated by the Design-Builder’s design or actions that deviate from the requirements of any acquired permit(s) (if any). For any such approvals required to be obtained by the Design-Builder that must formally be issued in the Department’s name, the Department will cooperate with the Design-Builder as reasonably requested by the Design-Builder, including execution and delivery of appropriate applications and other documentation as prepared by the Design-Builder;

C) The Design-Builder shall be solely responsible for compliance with and violations of any Environmental Requirements; and

D) The Design-Builder is responsible for any fines, non-compliance, violations, or damages incurred by reason of failure of the Design-Builder to comply with Environmental Approvals. Resulting fines or damages shall be deducted from monies owed the Design-Builder.

3.3.2 Environmental Plans

The Design-Builder shall be responsible for preparing the following documents in conformity with all Environmental Requirements:

A) State Pollutant Discharge Elimination System (SPDES) Permit application; see Soil Erosion and Water Pollution Control;

B) Stormwater Pollution Prevention Plan (SWPPP).

3.3.3 Soil Erosion and Water Pollution Control

The Design-Builder shall prepare and maintain on file a SWPPP complying with the New York State SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0.15-002 or current version). The SWPPP is to include but is not limited to construction entrance(s), construction phasing, drawings showing size and location of permanent (e.g., swales, check dams, etc.) and temporary (e.g., silt fence, temporary seed, mulch, etc.) erosion controls, and details. The SWPPP shall include plans and details for water quality volume, runoff reduction volume, stream channel protection, overbank flood, and extreme flood controls, as appropriate. The Design-Builder shall apply for coverage under the SPDES General Permit for Stormwater Discharges from Construction Activities after preparing a compliant Erosion Control Plan and SWPPP as noted. The Design-Builder shall prepare the final SWPPP and a conforming Notice of Intent (NOI), sign/complete the Contractor/Subcontractor SPDES Permit Certification form (CONR 5), and submit the NOI to NYSDEC for approval. Discharges covered under the SPDES general permit shall not commence until the date authorized on the SPDES Acknowledgement Letter from NYSDEC.

3.3.4 Threatened And Endangered Species Coordination

Section not used.

3.3.5 Asbestos Containing Materials

An Asbestos Screening and Assessment of the impacted right-of-way and structures was performed by a NYS Department of Labor licensed firm using certified inspection staff. Asbestos
Containing Materials (ACMs) identified during this screening/assessment were sampled and positively analyzed for asbestos content; suspect asbestos-containing materials are presumed positive. The complete Asbestos Containing Material Survey and Design Reports, dated MMMM 20YYDecember 2017 for BINs 1067821, 1067822, 1075751, 1075752 and January 2018 for BIN 1065260, are located in Part 7 – Engineering Data.

The Design-Build shall be responsible for the abatement design, asbestos abatement, waste disposal and any required project monitoring/compliance air sampling during abatement of all confirmed and assumed asbestos containing materials if such materials will be disturbed during the performance of the Work. All asbestos abatement and waste disposal shall be performed in accordance with applicable safety and health codes and all applicable State and Federal regulations. See also DB Section 112-5.5, Asbestos.

The Design-Build (in particular, the lead constructor on the Design-Build team) is also made aware that 12 NYCRR 56 specifically prohibits the abatement contractor from directly contracting project monitoring and/or compliance air monitoring services. In order to comply with this regulatory requirement, no Principal Participant may perform any asbestos abatement work for this Project. The Design-Build shall subcontract asbestos abatement and Project monitoring/compliance air sampling services to separate and independent firms.

If during the course of work, any asbestos-containing materials not already documented in the asbestos screening/assessment report or Project record plans are encountered and require disturbance, the Design-Build shall be responsible for any needed additional asbestos assessment, abatement design, asbestos abatement, waste disposal, and Project monitoring/compliance air sampling. All additional work shall be paid for under the Force Account pay item.

New York State Department of Labor (NYSDOL) asbestos licensure and applicable staff certification(s) are required for Work where confirmed or presumed asbestos-containing materials are impacted. All necessary asbestos assessment and Project design Work shall be performed in conformance with policy and guidance provided in NYSDOT’s The Environmental Manual (TEM).

Any ACMs associated with private utilities located within the Project limits shall be the responsibility of the private utility owner. The Design-Build shall coordinate with the private utility owners for the remediation of any ACMs which may be identified.

3.3.6 Environmental Plan Deliverables

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 4  GENERAL PROJECT SCOPE OF WORK

4.1  SCOPE

The Design-Builder shall perform all Work necessary to prepare the Project site(s) for construction, maintain the site(s) in suitable condition during all stages of construction and provide cleanup and restoration of the construction site(s) and all disturbed areas.

4.2  STANDARDS

The Design-Builder shall perform the Work in accordance with the applicable Standards, Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement, or otherwise applicable to the Project.

4.3  REQUIREMENTS

The Design-Builder shall prepare site work plans showing the extent of site works; disposal and storage locations; facility removal details; and approximate volumes; and shall provide for uninterrupted Department maintenance and operations. All regulated waste shall be handled according to Section 3 – Environmental Compliance.

The site work may include but not be limited to: clearing and grubbing; excavation and embankment; removal of pavement and pavement markings, road barriers, soil, drainage facilities, fencing, signs, and miscellaneous structures; subgrade preparation and stabilization; dust control; removal of abandoned above-ground and shallow piping and wiring, valves, meters, and other waste materials; and aggregate surfacing.

Unless specified otherwise in the Contract Documents, the Design-Builder shall remove all obstructions down to a minimum of 2 feet below the existing or proposed surrounding ground elevation or to the elevation necessary to properly construct the Work, whichever is lower.

The Design-Builder shall grade and restore all disturbed areas to match the existing surrounding ground elevation unless otherwise specified elsewhere in the Contract Documents. The Design-Builder shall cut pavement or sidewalk to full depth with straight lines at removal terminations.

The Design-Builder shall over-excavate as necessary to remove unsuitable material from under the footprint of pavements and structures and backfill with properly compacted suitable material. Topsoil may be stripped, stockpiled, and reused within the Project Limits.

The Design-Builder may only reuse materials on the Project that meet the requirements for grading and backfill materials. Disposal of obsolete, unsuitable, and surplus material is not allowed within the Right-of-Way and shall be removed.

4.3.1  Field Office

The Design-Builder shall provide, furnish and maintain a Field Office for use by the Department in accordance with the NYSDOT Standard Specifications. The Field Office shall be a Type 3 Office as described in the NYSDOT Standard Specifications.
4.3.2 Salvage

All materials removed from the Project site shall become the property of the Design-Builder, unless specifically stated elsewhere in this Part 3 - Project Requirements.

4.3.3 Surplus Quantity

Section not used.

4.3.4 Sidewalk Plowing Coordination During Winter Shutdown

Snow removal on the traveled roadways within Project limits shall be the responsibility of the City of New York unless cattle-chute lane width is reduced below 14’-0”. If cattle-chute lane width is reduced below 14’-0”, snow removal shall become the responsibility of the Design-Builder. The snow on sidewalks within the Project limits, including on the bridges and approaches, shall be removed by the Design-Builder from start of construction to completion of work at each Bridge Site.

4.3.5 Staging Areas

The Design-Builder may use the staging areas as shown in the Plans included in Part 7 – Engineering Data. Please note that the use of the area is to be coordinated with the Department. Upon Substantial Completion of the Project, the Design-Builder shall be responsible for the final restoration of this staging area.

4.3.6 Inspection Vehicles

The Design-Builder shall provide and maintain two (2) inspection vehicles for use by the Department, for the duration of the Project, in accordance with Special Specification 637.31020020.

4.3.7 Homeless Encampments

Homeless people and their possessions may be encountered within the Project limits. Prior to establishing a work site which has homeless people at that site, the Design-Builder shall contact the Department’s Project Manager, in writing, approximately one month before establishing the work site. The letter shall inform the Department’s Project Manager of the Design-Builder’s work which may affect the homeless people. The Design-Builder shall provide the location of the homeless people and date and time which the Design-Builder plans to establish the work site. The Department’s Project Manager will then contact the Regional Office (Operations/Maintenance). The Design-Builder shall immediately move into the work site after the homeless people have been relocated (by the appropriate agencies) and the location has been cleared. In the case where homeless people are encountered during the course of the Design-Builder’s activities, the Design-Builder shall immediately remove its employees from the affected site and contact the Department’s Project Manager.
SECTION 5  SURVEYING AND GIS

5.1  SCOPE

The Design-Builder shall perform all surveying tasks necessary to undertake and complete the Project including but not limited to: acquisition of terrain data (topography); mapping of roadways and appurtenances, features, bridges, and utilities as needed; locating boundaries; waterway surveys; contract control plan; construction and stakeout surveys; As-Built surveys; surveys that arise from other Project Requirements; asset inventory; and all other surveying services as necessary.

5.2  STANDARDS

The Design-Builder shall perform the surveying activities in accordance with the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

5.3  REQUIREMENTS

5.3.1  Project Survey Control

Survey control, if available, will be provided as Reference Documents. The Design-Builder may supplement that information or conduct complete new survey as necessary to perform all the necessary surveys required to complete the Project, as the Design-Builder deems appropriate.

5.3.2  Department-supplied Data

The Department will provide the Design-Builder with the following Survey-Related Data as Reference Documents:

- ROW / Highway Boundary Geometry;
- Survey / Photogrammetric Base Mapping Planimetrics;
- CADD files; and
- Record Plans (BINs 1067821, 1067822, 1075751, and 1075752).

The Design-Builder shall be responsible for verifying any data used for the Project.

5.3.3  Survey Reports, Records and Maps

The Design-Builder shall submit to the Construction Inspection Professional Engineering Firm, all information listed under the ‘Documentation’ sub-section of each chapter of the NYSDOT Land Surveying Standards and Procedures Manual that is applicable to its survey work. The Design-Builder shall index and submit all calculations, notes, computer files, raw data, Project reports, meeting notes, correspondence, digital images, maps, corner records, records of survey, aerial photogrammetric products, centerline alignment maps, and other maps and related items.

The Design-Builder shall be responsible for ensuring that information submitted is compatible with the applicable NYSDOT CADD standards, software and operating systems and formats.

All survey reports and maps, including bathymetric survey plans, shall be signed-and-sealed by a New York State licensed professional land surveyor.
5.3.4 Permanent Survey Markers

This Section not used.

5.4 SURVEYING AND GIS DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 6 RIGHT-OF-WAY

6.1 SCOPE

Plans showing the existing Highway owned Right-of-Way (ROW) are included in the Reference Documents. The Design-Build shall perform all the permanent Project Work within the existing Highway owned ROW and any additional ROW that has been, or will be, obtained for the Project. No additional Highway ROW will be obtained or is necessary for the project.

Property releases for driveway reconnections or other work that is required are the responsibility of the Design-Build, in close coordination with the Construction Quality Assurance Engineer.

Right of ownership of all ROW and the improvements made thereon by the Design-Build shall remain at all times with the Department. The Design-Build's right to entry and use of the ROW arises solely from permission granted by the Department under the Contract. If the Design-Build desires to enter the existing Highway ROW, during the procurement or prior to issuance of the Notice to Proceed, for the purposes of gathering engineering related data, the Design-Build shall make application for a NYSDOT Highway Work Permit by contacting the Regional Office.

6.2 REQUIREMENTS

6.2.1 Right-of-Way Fencing

Any ROW fencing that has been damaged due to construction of the Project or removed by the Design-Build shall be replaced by the Design-Build with new ROW fencing meeting current NYSDOT standards.

6.2.2 Property Interests Identified by the Design-Build for its Convenience

The Design-Build shall be responsible for the acquisition and all costs associated therewith for any temporary land or other property required for the Design-Build's convenience outside the ROW Limits, such as for staging, lay-down, access, office space, temporary works, or other purposes. The Design-Build shall assume responsibility for satisfying all Federal and State regulations, identifying, analyzing, and documenting the environmental impacts associated with the additional space and securing all necessary consent, including that of the Department, prior to initiating use of the space, in accordance with DB §107-22.

6.2.3 Railroad Right of Way – Right of Entry

Refer to Part 5, Special Provision, SP-8 – Railroad Requirements.

SIRT flagging services and track closures for weekdays and weekends are as follows. SIRT weekend track outages require an 8 week lead time.

- Contractor Mobilization: 9:00 am to 10:00 am
- Weekdays (Day) Track Closures: 10:00 am to 2:30 pm
- Weekdays (Night) Track Closures: 10:00 pm to 04:00 am
- Flagging services for weekdays: 9:00 am to 3:00 pm
- Contractor Demobilization: 2:30 pm to 3:00 pm
- The flagging can be placed weekdays (night) between 11:00 pm to 4:00 am
- Weekend Track Closures: 10:00 pm Friday to 4:00 am Monday
The flagging can be placed Saturday or Sunday between 06:00 am to 06:00 pm. Before entering NYCT property, the Design-Builder’s personnel shall have attended NYCT Track Safety Training and Staten Island Railway (SIR RWP) training, and expect to follow NYCT rules and regulations as per training and Engineer instructions. The Design-Builder shall coordinate with the Department’s Project Manager to arrange training.
SECTION 7  PUBLIC INVOLVEMENT

7.1  SCOPE

Under the direction of the Department, the Design Builder shall develop and implement a Public Outreach Plan with an educational component that is reviewed, approved and monitored by the Department. The goal of the public involvement activities is to inform and educate the public and agency participants/key stakeholders by providing timely information throughout the design and construction process, as well as to promote the project to the public and key stakeholders. The Design-Builder shall be responsible for supporting and cooperating with the Department for all public involvement activities.

7.2  STANDARDS

The Design-Builder, in close coordination with the Department, shall perform the Public Involvement activities in accordance with the NYSDOT Project Development Manual: Appendix 2, Public Involvement Manual.

7.3  REQUIREMENTS

7.3.1  Public Outreach

Under the direction of the Department, the Design-Builder shall have the primary responsibility for performing public outreach activities for the Project, and shall have a Community Liaison as a member of the Design-Build Team, with at least five years of Public Outreach experience, who shall be the Design-Builder’s primary point of contact for Public Outreach activities. The lead in all public outreach activities, however, shall be the Department. All public outreach activities shall be coordinated through the Department’s Construction Quality Assurance Engineer (CQAE). All public communication activities must be reviewed and approved by the Department. This includes communication and notifications of key stakeholders (motorists, general public, area residents, educational institutions, emergency services, businesses, etc.) of road closure information or changes in traffic patterns, promotion of the project, Project milestones or Project construction related activities that have the potential to affect the general public and/or residents in proximity to the Project area. Project milestones include, but are not limited to: the visible start of construction activities; travel pattern changes; significant Project accomplishments, and construction completion.

The Design-Builder shall be aware that outreach to the public is a critical component to the successful completion of any NYSDOT project. Design-Build projects by their nature introduce unknowns and variables that the public is not aware of due to the fact the design is not complete. In an effort to offset those potential concerns and anxieties that a yet fully vetted design could create, in the eyes of the public, outreach to the public shall commence early on this project. The Design-Builder shall be prepared to notify and/or meet with appropriate stakeholders and the elected officials and the general public within 60 days following the issuance of the Notice to Proceed. The Department remains the lead on this activity but the Design-Builder will assist in play the key role in coordinating the logistics, preparing the presentation material, the announcement of the meeting(s), and other outreach efforts necessary to capture the communities interest and participation. The Design-Builder shall be prepared at this time to discuss the design, the reason for said design, the construction methods, the schedule of the construction contract, the time periods of the day that the work will be on-going, and how traffic and pedestrians will be accommodated, as a minimum. This will all be coordinated with the Department’s Project Manager and the discussion of this meeting and coordination will begin at the Design Workshop and shall be so listed as an agenda item for the Design Workshop.
Under the Department’s direction, the Design Builder shall develop all written and digital material required to notify the public about the project, its impacts and its various milestones, as well as to promote the project. Examples include, but are not limited to, press releases, travel advisories, construction notices and content for the Department’s website and social media. All material will be reviewed and approved by the Department.

The Design Builder shall also be responsible for an educational component of the Public Outreach Plan, which includes printing and distributing safety brochures developed by the Department.

As part of the Public Outreach Plan implementation, the Community Liaison shall attend the weekly project progress meetings in order to identify and develop necessary communication materials.

Because the Community Liaison will be responsible for addressing the public’s day-to-day concerns and for providing project information, the Design Builder will provide the Community Liaison with a cell phone for this purpose.

The Design-Builder shall coordinate with and provide a minimum of two weeks advance notice to the CQAE prior to all changes to traffic patterns and the following Project milestones: start of construction; Project completion; and any other interim completion milestone(s) determined by the Department.

The Design-Builder shall provide the Department with a minimum of two weeks advance notification for each public information activity (press announcements, travel advisories, PVMS postings, etc.) to allow for proper review and comment by the Department.

The Design-Builder shall provide the Department’s CQAE with a written work Schedule (including anticipated traffic changes) two weeks in advance of work that will change traffic patterns.

7.3.2 Media Relations

Media Inquiries: All media inquiries, requests for interviews from local print or broadcast news media, trade magazines or other media outlets must be referred to the CQAE for direction. The Department will coordinate and respond to all media requests. The Design-Builder shall alert all project personnel about this policy.

Press Releases and Travel Advisories: To allow for timely notice to the public, two weeks advance notice of the start of work, any lane closures, road closures, or changes to traffic patterns, or project milestones is required to be given to the CQAE and the Department's Project Manager.

Notifications referenced above are in addition to the written work schedule discussed in Section 7.3.1. The Community Liaison will develop a draft travel advisory and/or press release for content and quality, which is reviewed and approved by the Department and other Department staff as deemed appropriate. The Department will distribute finalized press releases and travel advisories will be finalized and distributed to the press and appropriate state elected officials, and will also posted this material on the Project website by the Department. However, the Design-Builder, with the direction of the Department, is responsible for the notification of local public officials, emergency service providers, schools, residents, businesses, and other affected parties, of any major travel pattern change. The list of all project stakeholders should be included in the Public Outreach Plan.
The strategies described above are consistent with the requirements of Part 3 Section 15 – Work Zone Traffic Control and Access, and shall include Construction Bulletins, which are reviewed and approved by the Department, and published by the Department, based on information provided by the Design-Build, especially focused on traffic changes, night time work, higher-noise construction periods or locations, or other construction activities of potential concern to the public. Under the direction of the Department, the Design-Build shall be responsible for interaction with the affected homeowners, tenants and businesses with regards to issues including but not limited to, security of and access to their property or properties, utility services, night time operation, etc.

### 7.3.3 Public Information Meeting

The Design-Build shall be prepared to partner with the Department on additional Public Information Meeting(s) to discuss the Project’s progress with the community in an open forum format. The Design-Build shall prepare design and construction-related information about the Project and the Design-Build process and progress, schedule or construction methods being used to advance the Project, etc., that will help inform Project stakeholders. The Design-Build shall work in cooperation with the CQAE in determining the necessary presentation materials. But PowerPoint material shall be required. The PowerPoint and other necessary presentation materials must be approved by the Department.

Project update meetings including public informational meetings, as discussed above, may be required during the course of construction, depending on how smoothly the Project is progressing and the community(s)’s reaction and receptiveness to the construction of the Project.
SECTION 8 UTILITIES

8.1 SCOPE

The utility requirements set forth in Part 4 – Utility Requirements and DB §102-5 present the Design-Builder’s responsibilities as they relate to existing and/or new utilities, the manner in which utilities shall be protected, relocated, upgraded, constructed or incorporated into the construction, and responsibilities for the Work.

8.2 STANDARDS

The Design-Builder shall perform all utility activities in accordance with the Contract Requirements, the applicable Standards, Codes and Manuals listed in Section 1.6 or otherwise applicable to the Project, and the standards required by the various utility companies affected by the work.

8.3 GENERAL REQUIREMENTS

The Design-Builder shall examine the record plans of the work site, make a field survey of the work site and examine all other available documents to determine the type and location of all utilities that may be affected by the Design-Builder’s Work. Before any work begins the Design-Builder shall inform the Department’s Project Manager what utilities are present and how they may be affected by the work.

The Design-Builder, in coordination with the Department’s Project Manager (or designee) and the Regional Utility Engineer, shall meet with all the affected Utility owners or operators for the purpose of discussing the effect on the utility facilities and to agree on a plan to maintain, protect, relocate, reinstall, or other action that may be necessary for the work to progress.

All utilities must be maintained, supported and protected during construction, unless otherwise directed by the utility owner.

Any utility conduit, conductor, splice box, pull box or other item that is part of a utility system or street light system that is embedded in a concrete deck, sidewalk or other concrete element that is being removed and replaced as part of this Project shall be replaced and its location coordinated with the utility owner unless the utility owner indicates that replacement is not required. The design and construction of the replaced utility shall be in conformance with the current standards of the Utility owner.

The Design-Builder shall be responsible for repair to any damage and consequential damages to those utilities caused by his operations at the Design-Builder’s expense. If the nature of the damage is such as to endanger the satisfactory operations of the utilities and the necessary repairs are not immediately made by the Design-Builder, the work may be done by the respective owning companies and the cost thereof charged against the Design-Builder.

The Design-Builder shall provide notice to the Construction Quality Assurance Engineer (CQAE) at least two weeks before construction begins on any portion of the Project. The CQAE will notify the Regional Utility Engineer of the pending construction and of any planned interruptions to service. It should be noted that utility companies set their own notification time frames and requirements. Preliminary time frames have been identified in Part 4 – Utility Requirements of these Contract Documents. The Design-Builder shall coordinate with respective Utility Owners.
8.3.1 Utility Relocation Agreements

It is anticipated that the required Final Utility Work Agreements will be executed between the Department, the Design-Builder and the owners of impacted utilities once the Design-Builder has determined the final locations of the impacted utilities. See Part 4 for details on utility inventory, coordination and relocations.

The Design Builder shall be responsible for the design and construction of these facilities as outlined in Part 4 - Utilities.

8.3.2 Other Utility Conflicts

Please see Part 4 – Utility Requirements for additional utilities in the project vicinity that may require relocation and modification.
SECTION 9 GEOTECHNICS

9.1 SCOPE

The Design-Builder shall be responsible for all Geotechnical Work necessary for the design and construction of all permanent and temporary structures, including assessing available information, planning and implementing subsurface investigations, geotechnical analysis and reporting, geotechnical instrumentation and monitoring, and protection of existing infrastructure, structures and utilities in accordance with the requirements of the Contract Documents.

These requirements are considered as a minimum and do not include all possible conditions that may be encountered in the Design-Builder’s final design.

The Design-Builder shall be familiar with available geotechnical, geologic, seismic, hydrogeology, soils literature, and existing site conditions (both native and man-made), and shall interpret the existing geotechnical data pertaining to the Project Site. The Design-Builder shall form its own interpretation of the existing geotechnical data, and any additional geotechnical data the Design-Builder may obtain from its own investigations, and shall produce designs compatible with geotechnical site conditions and provide for the durability of the finished product.

9.2 STANDARDS

The Design-Builder shall perform geotechnical activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6 or otherwise applicable to the Project.

The Design-Builder shall use Bentley gINT® or similar commercial software to develop and maintain an electronic database of subsurface information including in-situ test and laboratory test results, and to produce all final subsurface exploration logs or records.

9.3 DESIGN REQUIREMENTS

9.3.1 Geotechnical Work Plan

The Design-Builder shall prepare a Geotechnical Work Plan for the project that identifies the geotechnical scope of work that the Design-Builder plans to complete for the design and construction of the project. The Geotechnical Work Plan shall include:

A) Design-Builder’s knowledge and understanding of the geotechnical, geologic, hydrogeologic and seismic settings of the Project Site and how the nature and behavior of the soil, rock, groundwater and subsurface conditions will affect the investigation, design, and methods of construction;

B) Identification of key constraints, site and subsurface conditions, and a description of how the geotechnical activities will be designed and constructed to meet these constraints and conditions;

C) Types of subsurface investigations to be carried out for the Project, including locations and depths of borings and other field testing with a narrative of the in-situ tests (if applicable) and laboratory tests to be carried out; and
D) A summary of the proposed geotechnical works including identification of major design
and construction risks, and how these risks will be managed and mitigated.

9.3.2 Geotechnical Investigations

The Design-Builder shall plan and conduct geotechnical investigations in accordance with the
Department’s and AASHTO Standards for subsurface exploration programs, and as deemed
necessary by the Design-Builder’s Lead Geotechnical Engineer to establish the geotechnical
conditions and to perform all geotechnical and foundation design and analysis.

The Design-Builder shall determine the State Plane coordinate location and ground surface
elevation for each boring and field exploration position, and shall show the actual coordinates and
the datum version, the station and offset, and the elevation for each individual boring log or
exploration record in accordance with Department standards. Boring shall be located using
NAD83 Geodetic Reference System. Elevations shall be referenced to the Project datum and
horizontal control system.

9.3.3 Geotechnical Data Report

The Design-Builder shall be responsible for preparing a Geotechnical Data Report, signed and
stamped by the Lead Geotechnical Engineer. The Geotechnical Data Report shall serve as a
factual depiction of the subsurface conditions and at a minimum it shall include:

A) A detailed description of the geotechnical investigation methods;
B) Complete records with summary tables of investigation;
C) Complete records with summary tables of laboratory test results; and
D) A subsurface exploration plan, showing locations of any existing (pre-award) explorations
for which data was used by the Design-Builder, plus locations of post-award exploration
locations undertaken by the Design-Builder; and
E) Final logs for all subsurface explorations progressed by the Design-Builder.

The Design-Builder shall provide the Department with a copy of the Geotechnical Data Report,
including a final log for each subsurface investigation exploratory hole progressed.

9.3.4 Foundation Design Report

The Design-Builder shall prepare a Foundation Design Report for each structure included in the
Project which requires a foundation. The Foundation Design Report shall detail the analysis and
design of each foundation element in accordance with NYSDOT and AASHTO specifications and
standards. The Foundation Design Report shall be signed and stamped by the Lead Geotechnical
Engineer, and as a minimum should include:

A. Description of the geology and subsurface conditions at the structure location;
B. A summary and interpretation of geotechnical engineering conditions based on the
available subsurface information, including geotechnical design parameters;
C. Foundation design summary including design assumptions, design methods, design
criteria, calculations, and design software output files;
D. Assessment of short-term and long-term performance of foundation elements including settlement, lateral deformation, and effects on adjacent structures;

E. Construction considerations including obstructions, dewatering, support of excavation, impact on existing structures and utilities, staging requirements, and summary of field testing needed to verify that project requirements are met.

Augercast piles and helical piles are not allowed for structure foundations.

9.3.5 **Excavations and Embankments**

The Design-Builder shall be responsible for assessing the stability and impacts of any new fill and cut slopes (permanent and temporary) required for the Project, and ensuring the short and long term stability of these slopes.

The Design-Builder shall assess the settlement induced by fill placements, including immediate settlement in granular soils, and both immediate and consolidation (time-dependent) settlement in cohesive soils.

Embankments for roadway foundations shall be designed so that post construction settlement within a 50-year timeframe is expected to remain within two inches of the design grade line at any point along the entire roadway surface, and differential settlement along the travel lane or shoulder surfaces shall not exceed one inch over a 100-foot length in the longitudinal direction and one-half inch along a 10 foot length in the transverse direction, or one-half inch along a 10 foot length within 10 feet of an approach slab or edge of structure. The effect of settlement on existing and proposed buried utilities shall be considered over a 100-year timeframe.

9.3.5.1 **Geotechnical Design Report**

The Design-Builder shall prepare a Geotechnical Design Report for areas where a proposed permanent raise in grade exceeds two feet, or where ground improvement is proposed to improve foundation soil conditions for embankment construction. Ground improvement is defined as the use of lightweight materials (expanded polystyrene, foamed lightweight concrete, expanded shale, etc.), excavation and replacement with granular soils, or ground improvement techniques as detailed in FHWA NHI-16-027 and NHI-16-028. The Geotechnical Design Report shall be signed and stamped by the Lead Geotechnical Engineer, and as a minimum should include:

A. Description of the geology and subsurface conditions at the site;

B. A summary and interpretation of geotechnical engineering conditions based on the available subsurface information;

C. Recommended geotechnical treatment(s) and geotechnical design parameters, including design assumptions, design methods, design criteria, calculations, and design software output files;

D. Assessment of short-term and long-term performance of embankment construction and/or proposed ground improvement including slope stability, effects of time-related settlement, and lateral deformation;
E. Construction considerations including dewatering, support of excavation, impact on existing structures and utilities, and staging requirements;

F. Proposed geotechnical instrumentation for monitoring project performance. Proposed instrumentation shall verify at project acceptance that measured performance is in line with predicted performance. Details for the proposed instrumentation shall be included in the Geotechnical Instrumentation and Construction Monitoring Plan.

9.3.6 Retaining Walls

The Design-Builder shall design and construct retaining walls, if required, in accordance with Section 10 of this Part 3 - Project Requirements. The Design-Builder shall provide retaining wall designs to address internal, external, and global (overall) stability and settlements (total and differential) of the walls in accordance with the AASHTO LRFD Bridge Design Specifications.

All retaining walls shall be evaluated and designed for seismic stability internally and externally (i.e. sliding and overturning). With regard to overall seismic slope stability (global stability) involving a retaining wall, with or without liquefaction, the Lead Geotechnical Engineer shall evaluate the impacts of failure due to seismic loading, if failure is predicted to occur.

Gabion and crib walls (stretcher and header type) shall not be used.

9.3.7 Geotechnical Instrumentation and Construction Monitoring

The Design-Builder shall develop, implement, and maintain a Geotechnical Instrumentation and Construction Monitoring Plan to monitor vibrations, accelerations, vertical settlement, and lateral movement of temporary support structures and adjacent ground, and existing structures and infrastructure during construction, including ancillary structures and infrastructure within the zone of influence of construction.

Wherever vibration-producing activities are located within 100 feet of a structure, building, or utility, the Design-Builder shall perform vibration monitoring in accordance with NYSDOT Special Specification 634.99020017 to address the potential impacts to nearby receptors due to construction or demolition activities associated with this Project. The term “receptor” includes buildings, utilities, newly constructed elements, and existing structures, for which construction impacts or Work above recommended limits may be detrimental.

The Design-Builder shall provide weekly construction instrumentation monitoring reports to the Department. Monitoring reports shall be interpretive in nature, and shall enumerate any corrections applied to the data including, but not limited to any notification measures taken regarding data. The weekly reports shall include clear and explicit statements of readings(s) exceeding any pre-determined threshold values. The Design-Builder shall maintain the instrumentation and monitor the measurements during and after construction up to Final Acceptance.

The Geotechnical Instrumentation and Construction Monitoring Plan shall be signed and stamped by the Lead Geotechnical Engineer, and as a minimum shall include:
A. Identification of receptors, including structures and/or utilities located within 100 feet of vibration-producing activities that require vibration monitoring;

B. The types and quantities of instruments to be used for monitoring, and the proposed location of the instruments;

C. Alert and Action level vibration limits for monitored structures and/or utilities, and notification protocol for instances where the limits are exceeded;

D. The frequency and duration of instrument readings; and

E. When necessary, geotechnical instrumentation for design verification including the types, quantities, locations, and frequency of readings for proposed instrumentation.

The Design-Build shall install and take readings on vibration monitoring instruments at least two weeks prior to construction activities within the 100 foot zone of influence to establish baseline readings.

The geotechnical instrumentation shall be used to demonstrate at project acceptance that measured geotechnical performance is in line with predicted performance.

9.3.8 Temporary Works

The Design-Build shall be responsible for the design and construction of all temporary works required for the Project.

9.4 CONSTRUCTION REQUIREMENTS

9.4.1 Dewatering and Groundwater Control

The Design-Build shall be responsible for evaluating the potential need for dewatering and groundwater control, and for implementing such measures as appropriate, and shall evaluate the effects on existing facilities resulting from any dewatering and draw down.

9.4.2 Structure Foundations

9.4.2.1 Deep Foundations

The Design-Build shall provide integrity, verification, and proof testing of all deep foundation elements as stated below and in accordance with Department standards. The below requirements supplement, but do not supersede, Department standards.

Drilled Shafts

- Static axial compressive load tests must be performed on 1% of all drilled shafts, with a minimum of one per substructure. This testing must be completed on a non-production shaft at each substructure prior to production shaft installation. Alternatively, a bi-directional static load test may be performed on the first production drilled shaft installed at each substructure (1% requirement still applies).

- Crosshole sonic logging must be performed on all drilled shafts. This testing may be supplemented by thermal integrity profiling.
- The bottom of drilled shafts shall be inspected using a shaft inspection device (SID) if the shaft design relies on end bearing resistance.

- All production drilled shafts must have a similar design and be constructed using similar methods, including concrete placement volumes and installation pressures, as the closest test shaft. All installation data and observations must be recorded on an installation log.

### Micropiles

- Static axial compressive load tests must be performed on 1% of all micropiles, with a minimum of one test per substructure. This testing must be completed on a non-production test pile at each substructure prior to production micropile installation. If the Design-Builder decides to alter the installation methods, or if changed subsurface conditions are encountered, additional load tests are required on non-production micropiles installed with the new methods/subsurface conditions.

- Proof testing of production micropiles must be performed on a minimum of two piles per substructure. Tension testing is allowed if site conditions permit.

- All production micropiles must have a similar design and be constructed using similar methods, including grout placement volumes and installation pressures, as the closest test pile. All installation data and observations must be recorded on an installation log.

### Driven Piles

- Dynamic pile load tests, or equivalent verification testing, must be performed on a minimum of 2% of all driven piles, with a minimum of two tests per substructure.

- All driven piles must have a similar design and be driven to similar termination criteria as the closest load tested pile.

As part of the As-Built Plans, the Design-Builder shall provide installation records for all deep foundations installed in accordance with Department standards.

### 9.4.3 Excavations and Embankments

The Design-Builder shall progress all excavations in accordance with Department standards and specifications. Trench boxes are not allowed to support live traffic.

The Design Builder shall construct embankments in accordance with Department standards and specifications. For ground improvement methods not covered by Department standards and specifications, construction methods, quality control, and quality assurance shall be in accordance with: FHWA NHI-16-027 and NHI-16-028, Ground Improvement Methods Volumes 1 and 2, and FHWA GEC 8, Design and Construction of Continuous Flight Auger Piles.

### 9.4.3.1 Expanded Polystyrene

Verification testing must be performed on a minimum of one block per 10,000 cubic feet of expanded polystyrene to ensure specification compliance. Random blocks are to be selected from
material delivered to the job site, and are to be sent to the NYSDOT Soil Mechanics Laboratory for testing.

9.4.3.2 Column Supported Embankments

Section not used.

9.4.4 Condition Surveys

9.4.4.1 Pre-Construction Condition Survey

The Design-Builder shall conduct a pre-construction inspection and survey of the existing condition of all structures and properties within 100 feet of vibration or settlement causing construction activities and generate photographic and video documentation of existing damage, leaks and cracks, in accordance with the requirements of NYSDOT Special Specification 634.99010017. The pre-construction condition survey shall form the basis against which all new cracks, existing progressive cracks, or damage will be measured.

The Design-Builder shall ensure that the pre-construction condition survey encompasses at a minimum all properties within areas that are identified by the Design-Builder to be potentially prone to: (i) ground vibration levels, expressed as resultant peak particle velocity, in excess of 2.0 inches per second; and (ii) predicted ground settlements of greater than ¼ inch.

The Design-Builder shall record the results of the pre-construction condition survey, which shall be signed and stamped by a Professional Engineer registered in the State of New York.

9.4.4.2 Post-Construction Condition Survey

The Design-Builder shall conduct a post-construction inspection and survey of the properties covered by the pre-construction survey. The post-construction condition survey shall be performed by the Design-Builder within 20 calendar days of Project Completion, and it shall compare the post-construction conditions with the conditions documented in the pre-construction condition survey. A summary of the damages observed, if any, shall be provided at the end of the report. The location and scope of the post-construction condition survey shall match those of the pre-construction condition survey. The complete documentation of the post-construction survey, describing the comparison with the preconstruction conditions and signed by a Professional Engineer registered in the State of New York, shall be submitted to the Department, both in hardcopy and electronic format.

9.5 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 10 STRUCTURES

10.1 SCOPE

The Design-Builder shall be responsible for all work necessary to complete the design and construction of all permanent and temporary structures required to complete the Project. The design and construction of all structural systems and components shall provide functionality, durability, ease of maintenance and inspection, and safety. The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan.

10.2 STANDARDS

The Design-Builder shall perform structural design and construction activities in accordance with the Contract Requirements and the applicable Standards, Design Codes, and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

Special Provision 10 entitled DB Performance Engineered Concrete Mixtures provides the requirements for a Design Builder’s designed concrete mixtures that achieve certain performance criteria to be used in lieu of standard concrete classes per NYSDOT Standard Specification Section 501 for cast in place concrete when so desired. Note these Special Provision requirements address the mixture performance criteria and development tied to NYSDOT Standard Specification 501 and do not modify any other construction specifications (i.e. 555, 557, etc.).

10.3 DESIGN REQUIREMENTS – I-278 OVER MOSEL AVE. (BINS 1067821 AND 1067822) AND I-278 OVER SIRT (BINS 1075751 AND 1075752)

Remove Existing Structures and Replace with Single Span Structures.

10.3.1 Bridge Replacement (Single Span Structure) – BINs 1067821, 1067822, 1075751, and 1075752

The Design-Builder shall eliminate spans 1 and 3.

The Design-Builder shall design new bridge components(s), including but not limited to the following: reinforced concrete deck, deck joints, sidewalk(s), curb(s), approach slabs, concrete barriers, pedestrian fencing and bearings.

It is the Department’s desire to eliminate the existing longitudinal joints between the Expressways and the HOV lanes. As such, the Design-Builder shall investigate said joint and determine if it can be eliminated. The Design-Builder’s determination shall be stated in their Design Narrative. If a determination is made that the joints can be eliminated, the following applies: (1) sketch(s) detailing the design shall be included in the proposal (2) the existing superstructures shall be connected with full depth diaphragms located at the interior boxbeam diaphragms (three locations per beam) (3) drilling and grouting into the boxbeams at these locations are permitted and shall miss all pre-stressing strands (4) the boxbeam and steel superstructures shall be load rated assuming no load transfer between them (5) joint reinforcement shall be stainless steel (6) the decks shall be joined with UHPC and the design criteria, based on factored loads, is as follows: (a) maximum strain in tension shall be 0.0035 (b) maximum UHPC stress of 14 ksi in compression (c) Stress in rebar shall not exceed 60 ksi (7) expansion bearings on both abutments are required to allow transverse temperature related movement of the superstructure. Section 5.5.2 Longitudinal Joints of the NYSDOT Bridge Manual, requiring a longitudinal joint when the bridge width exceeds 90 feet, is waived for the joints stated above. All bearings shall be designed to accommodate movement and fixity as directed in said section.

The existing roadway alignment and overall bridge width shall remain unchanged. The Design Builder shall adjust the roadway profiles to satisfy the requirement that the expressway and service road structural decks be made continuous per the Directive Plans. The Design Builder’s attention is directed to the fact that the bridge and roadway profiles and elevations along the expressway and adjacent service roads are not on the same plane when cross slopes are projected from one roadway onto the other. In fact, the delta in vertical roadway and bridge elevations may exceed 12” in some areas. The Department has not provided accurate survey data that reflects this condition. In addition to analyzing the Record Plans, it is advised that the Design builder perform the necessary field investigation and survey to fully understand the existing condition so that they may appropriately design the final roadway and bridge grades and profiles. Please
be reminded that the Design-Builder may obtain a Highway Work Permit if necessary to perform its investigation and survey. New bridge components shall be designed per the NYSDOT LRFD Bridge Design Specifications. The Design Builder can retain or incorporate existing bridge components specified in the Directive plans into their design. Existing bridge elements that are retained or a portion of the element retained can be designed per (1) 17th edition of the AASHTO Standard Specifications for Highway Bridges together with 2002 and 2003 New York State “Blue Pages” or (2) NYSDOT LRFD Bridge Design Specifications.

The following work shall be performed:

- Replace the deck slab to satisfy current NYSDOT Standards and shall use Type 1 Friction aggregate. The new/replacement deck shall be made composite with the steel superstructure. All existing shear studs shall be replaced.
- The HOV Lanes structures (BINS 1067823 and 1075753), including both approach slabs, shall have a nominal 1 inch Polyester Polymer Concrete overlay per NYSDOT Special Specification Item Number 584.40000009.
- Crash Walls at Bins 1075751 and 1075752 shall be retained.
- Replace all columns and pier caps with new reinforced concrete substructure.
- If the existing steel is used in the proposed solution, replace the span 2 end diaphragms and connection plates. Any additional steel repairs required will be paid through the force account item.
- If the Design Builder elects to replace the existing steel superstructure with adjacent concrete box beams, the following applies (1) integral abutments shall be utilized (2) the longitudinal joints between the HOV Lanes and the expressways shall be eliminated (3) modified adjacent box beam superstructure (integral non-replaceable deck) shall have a nominal 1 inch Polyester Polymer Concrete overlay (4) Transverse tendons are not required. Bridge Details Sheets provided as Reference Documents in Directive Plans Sheet will be provided. The 2017 NYSDOT Bridge Manual, Section 3.2.5 Superstructure Selection Guidelines, Table 3-4 Superstructure Types Requiring Approval is amended as follows: seventh row named “Adjacent Concrete Box Beam” is deleted.
- All rebar in the deck is to be stainless steel.
- Remove and replace the top 2.5 feet of the existing wingwalls. For BINS 1067821 and 1067822 the brick facing shall be replaced in kind. Note: existing gray caulking under railings base plates contain asbestos.
- Deck joints at abutments shall be eliminated if permitted by the NYSDOT Bridge Manual, otherwise design and install armorless joint systems.
- Replace existing raised median bridge railing between the mainline and service roadways with a TL-5 single slope median concrete barrier. The street lighting lampposts shall be mounted on the new median barrier.
- Replace non-conforming bridge railing at the north and south fascias with a TL-4 vertical faced concrete parapet and pedestrian fence at sidewalk to meet current bridge standards. Limits of replacement and transitions to existing as shown on Directive Plans.
- Paint all structural steel (including existing). Paint color shall match existing paint color. Class A containment shall be provided for painting operations.
- All utilities currently embedded in the concrete deck/sidewalk shall have new supports from the superstructure.
- Maintain or protect utilities embedded in the existing deck, median, or sidewalk.
- Replace street lighting and underdeck lighting.
- If the existing steel superstructure is utilized in the proposed solution, the fascia beams adjacent to the HOV Lane Adjacent Boxbeam superstructures shall be relocated to provide 2.5 feet clear distance between the bottom flange of the existing stringers and the boxbeams.
• Hidden portions of the existing box beams (4 locations) adjacent to the expressway shall be protected from all sources of moisture.
• Approach slab reinforcement shall be the same material type as the structural deck.
• Install one diaphragm between the Service Road and Expressway superstructures (4 locations) located at the diaphragm closest to mid-span of the expressway superstructure.
• Field cast joints between prefabricated superstructure components with integral non-replaceable deck shall satisfy Special Specification Item 557.21020016 – FIELD CAST JOINTS BETWEEN PRECAST CONCRETE UNITS.

10.3.1.1 Components

A) Barriers, Railings and Pedestrian Fencing: Temporary traffic barriers shall meet, as a minimum, the testing requirements of TL 2 and permanent traffic barriers shall meet, as a minimum, the testing requirements noted above. Refer to Section 10.5 for aesthetic requirements related to bridge parapet walls, bridge railing, and fencing, if any.

B) Decks: Decks shall be precast panel and/or cast in place. Cast in place deck shall use High Performance - Internal Curing (HPIC) concrete. The 2017 NYSDOT Bridge Manual amended as follows: (1) Table 5-1 Deck Requirements, 1st row named “Monolithic Slab”, 4th column named “Concrete”, text box revised as follows “Class HPIC for single and continuous spans” (2) Section 5.1.2.3 Internal Curing Concrete (HPIC), the first paragraph revised to “High Performance - Internal Curing (HPIC) concrete shall be used for all simple and continuous span configurations. Unfilled steel grating decks and orthotropic steel decks are not permitted. Bridge decks shall be made fully composite with the underlying primary member system. All decks shall be protectively sealed. Top surfaces of all newly placed decks including approach slabs and sidewalks shall be inspected by the Design-Builder’s Construction Quality Control Engineer after completion of curing and prior to diamond grinding and sawcut grooving. A report shall be generated and submitted to the Department’s CQAE identifying all cracks wider than 0.02 inches. Cracks wider than 0.02 inches shall be epoxy injected as per ITEM 555.80020001 - CRACK REPAIR BY EPOXY INJECTION (RESTORATION).

This work shall be completed prior to grinding and grooving. Penetrating sealer shall than be applied in accordance with the NYSDOT Bridge Manual.

C) Deck Joints: A jointless deck system shall be used at one abutment if permitted by the NYSDOT Bridge Manual. Otherwise an armorless bridge joint system as per the NYSDOT BD sheets shall be used.

If a combination of cast-in-place and precast deck solution is utilized, the Design-Builder must diamond grind the entire deck surface between expansion joints. An additional ½” slab thickness over the top mat reinforcement will be added to accommodate diamond grinding.

If a precast deck is set, followed by placement of an adjacent cast-in-place deck, a closure pour is required between the deck systems if the precast deck is under live load during the placement. Additionally, a Cast-in-Place (CIP) slab poured adjacent to previously placed CIP slabs with active live loads require a closure pour.

All closure pours shall be UHPC in conformance with NYSDOT Special Specifications Item 557.64010103. Closure pours shall not be placed adjacent to cast in place deck pours for a minimum of 72 hrs.

The use of prestressed concrete panels for forms is not allowed.

All joint headers shall be constructed using stainless steel reinforcement.

D) Precast bridge deck panels: If precast bridge deck panels are used, field cast joints between panels shall be made with Ultra-High-Performance Concrete (UHPC).
For precast decks: (1) lifting hardware shall not be permitted on the top of the slab (2) shall be per NYSDOT Special Specifications ITEM 557.64010103 and the “Precast Deck Panel Connection Details” per the Directive Plans (3) wearing surface shall be diamond ground and (4) Integral Precast Concrete Barrier per NYSDOT Special Specification ITEM 557.11010003 is optional.

E) Bearings: Existing bearings shall be replaced with elastomeric bearings designed using the provisions of the NYSDOT LRFD Bridge Design Specifications. The Design Builder is permitted to design and execute a lifting operation to facilitate the construction of the new pedestals and bearing installation under active live loads prior to placement of the new superstructure deck. The design of the lifting system shall account for all appropriate lateral and longitudinal loads and include a narrative of how the lateral and longitudinal stability of the structure is maintained while in a supported position. The new pedestals and bearings shall be directly receiving all superstructure loads prior to the placement of the new concrete deck.

F) Substructures: If the existing piles and footing are incorporated into the proposed solution per the Directive Plans, the following applies: (1) The vertical and horizontal loads imposed on the proposed structures, based on the NYSDOT Standard Specifications for Highway Bridges, shall not exceed the existing loads in the current three span configuration. Live load shall be based on HS-20 Loading, or two 24 kip axles spaced 4 feet on center. Abutments: The tops of all bridge seats, all bearing pedestal surfaces, and the backwall tops and face below expansion joints shall be coated with penetrating type protective sealers. Stainless Steel reinforcement shall be utilized at all exposed surfaces of bridge seats, all bearing pedestals, and backwalls below expansion joints. Reinforcing bars that extend from the abutment stem into the backwall below expansion joints shall not be plain steel. The tops of all bridge seats shall be pigeon proofed using type 316 stainless steel bird spikes or type 316 stainless steel screens. All concrete substructure repairs shall have a finish surface that is surface true to and with the existing unprepared concrete surfaces. The new repaired areas shall not be recessed nor protruding.

G) Earth Retaining Structures: The Design-Builder shall construct and determine the types of earth retaining structures. Wall type selection and design by the Design-Builder shall meet all applicable Project Requirements. Wingwalls shall be considered as part of the abutment for a distance, measured along the wingwall from the centerline of bearings, equal to the maximum height of the abutment wall (as measured from top of grade at the base of the abutment to the bottom of lowest girder). Gabion and crib walls are not permitted.

H) Drainage: Drainage requirements are outlined in Section 17 of these Project Requirements.

I) BIN Plate Sign: The Design-Builder shall furnish and install a new BIN plate meeting the requirements set forth in this section. The material requirements for the BIN plate are:

- Panel with reflective background: The aluminum panel shall conform to the requirements of the NYSDOT Standard Specifications. The background material shall be green reflective sheeting conforming to the requirements of the NYSDOT Standard Specifications for Class A Sheeting. The size of the panels shall be 1/8 inch thick by 3 inches by 12 inches. A thin rubber or plastic gasket or sheeting matching the plate size shall be placed behind the plate prior to installation.
- Numbers: The numbers shall be reflective sheeting conforming to the requirements of the NYSDOT Standard Specifications for Class A Sheeting, except that the adhesive shall be pressure-sensitive such that the numbers can be applied to the background in the field. The numbers shall be 2 inches high and silver-white in color conforming to FHWA series C dimensions. Prior to placing the numbers on the panel, the reflective background shall be clean and free of dirt and oil which may adversely affect proper adhesion. The numbers shall be placed on the reflective background, perpendicular to the longitudinal axis of the panel and vertically centered. The reflective background and numbers shall be coated and/or edge sealed in accordance with the recommendations of the sheeting manufacturer.
The BIN plate shall be attached to the beginning abutment, right side of the bridge using expansion anchors. The plate shall be placed high on the abutment, near the fascia of the bridge so that it cannot be painted over via a spray paint can or easily removed or damaged.

10.4 DESIGN REQUIREMENTS – 79TH ST. OVER I-278 (BIN 1065260)

The Design-Builder shall design a new bridge component(s), including but not limited to the following: reinforced concrete deck, deck joints, concrete capbeams, sidewalk(s), curb(s), approach slabs, bridge railings, and bearings.

The existing roadway alignment, profile and overall bridge width shall remain unchanged. New bridge components shall be designed per the NYSDOT LRFD Bridge Design Specifications. The Design Builder can retain or incorporate existing bridge components specified in the Directive plans into their design. Existing bridge elements that are retained or a portion of the element retained can be designed per (1) 17th edition of the AASHTO Standard Specifications for Highway Bridges together with 2002 and 2003 New York State “Blue Pages” or (2) NYSDOT LRFD Bridge Design Specifications.

The following work shall be performed:

- Replace the deck slab to satisfy current NYSDOT Standards and shall use Type 1 Friction aggregate. The new/replacement deck shall be made composite with the steel superstructure. All existing shear studs shall be replaced.
- Eliminate existing joints at Piers 1, 2 and 3 by utilizing link slabs.
- The West Abutment bearings shall be fixed, East Abutment Bearings expansion with the joint above the backwall. Refer to the reference documents for expansion joint details.
- Replace sidewalks and curbs on the Bridge. Curbs shall be steel faced concrete in accordance with Special Specifications 609.26020011 and 609.26520011.
- Replace existing barriers, bridge railing and guide railing at approaches, complying with safety standards.
- Repair areas with concrete spalling or cracking in the exposed faces of the substructure.
- Replace all columns and pier caps with new reinforced concrete columns and pier caps.
- Replace existing bearings with elastomeric bearings.
- Replace backwalls and top 2 feet of the abutment (stem) below the bridge seat at both abutments.
- Replace all end diaphragms and connection plates. Any additional steel repairs required will be paid through the force account item.
- The deterioration at the End Left Wingwall shall be repaired.
• All utilities currently supported by concrete deck shall have new supports from the superstructure steel girders. Utility lines shall be relocated prior to work starting.
• Replace street lighting and underdeck lighting.
• Replace existing curb ramps in locations #1, 2, and 3 within the Project limits with new ramps meeting current NYSDOT ADA standards. Eliminate the existing curb ramp in location #7 and extend the guide rail or pedestrian fencing to prevent unintended access. The ramp locations are shown in Part 7 – Engineering Data.
• Replace bridge railing at north fascia with TL-4 vertical faced concrete parapet with pedestrian fencing to meet current bridge standards. Replace bridge railing at south fascia with TL-4 single slope barrier to meet current bridge standards.
• Install 8-foot approach slab at East abutment. At West abutment, in lieu of an approach slab, backfill with Controlled Low Strength Material (CLSM) with full depth pavement reconstruction per requirements in Section 16.
• Field cast joints between prefabricated superstructure components with integral non-replaceable deck shall satisfy Special Specification Item 557.21020016 – FIELD CAST JOINTS BETWEEN PRECAST CONCRETE UNITS.

10.4.1 Components

A) Barriers, Railings and Pedestrian Fencing: Temporary traffic barriers shall meet, as a minimum, the testing requirements of TL 2 and permanent traffic barriers shall meet, as a minimum, the testing requirements of TL 4.
Barriers, railings and/or fencing that will be designed and constructed to contain users and materials, shall be designed for bicycle traffic, detailed to prevent people from climbing, and provide for maximum safety and security.
The end limits for the guiderail replacement on the Northeast side of BIN 1065260 shall be at the start of the Pedestrian fencing, approximately 70 feet from the existing cross walk paint. The end limits for the guiderail replacement on the Southeast side of BIN 1065260 shall be at the traffic signal pole. The guiderail will wrap around the existing curb radii as the existing curb ramp is being removed as part of this project. The end limits for the guiderail replacement on the Northwest side of BIN 1065260 shall be at the start of the W-beam barrier, approximately 172 feet from the 90 degree corner. All existing 4-Rail Bridge rail will be replaced. The end limits for the guiderail replacement on the Southwest side of BIN 1065260 shall be at the break in existing 4-Rail at the Con-Ed utility pole, approximately 80 feet from the traffic signal pole at the corner. A map showing the guiderail limits is located in Part 7 – Engineering Data.
Refer to Section 10.5 for aesthetic requirements related to bridge parapet walls, bridge railing, and fencing, if any.

B) Decks: Decks shall be precast panel and/or cast in place. Cast in place decks shall use internally curing concrete as per NYSDOT Special Specifications 557.51010018 and 557.54010018. Unfilled steel grating decks and orthotropic steel decks are not permitted. Bridge decks shall be made fully composite with the underlying primary steel member system. All decks shall be protectively sealed.
Top surfaces of all newly placed decks including approach slabs and sidewalks shall be inspected by the Design-Builder’s Construction Quality Control Engineer after completion of curing and prior to diamond grinding and sawcut grooving. A report shall be generated and submitted to the Department’s CQAE identifying all cracks wider than 0.02 inches. Cracks wider than 0.02 inches shall be epoxy injected as per ITEM 555.80020001 - CRACK REPAIR BY EPOXY INJECTION (RESTORATION).
This work shall be completed prior to grinding and grooving. Penetrating sealer shall then be applied in accordance with the NYSDOT Bridge Manual.

C) Deck Joints: The deck joints at the piers shall be eliminated to reduce future maintenance. The joints shall be replaced with a link slab system. The East Abutment joint shall be behind the backwall if possible.
If a combination of cast-in-place and precast deck solution is utilized, the Design-Builder must diamond grind the entire deck surface between expansion joints. An additional \( \frac{1}{2} \)" slab thickness over the top mat reinforcement will be added to accommodate diamond grinding.

If a precast deck is set, followed by placement of an adjacent cast-in-place deck, a closure pour is required between the deck systems if the precast deck is under live load during the placement. Additionally, a Cast-in-Place (CIP) slab poured adjacent to previously placed CIP slabs with active live loads require a closure pour.

All closure pours shall be UHPC in conformance with NYSDOT Special Specifications Item 557.64010103. Closure pours shall not be placed adjacent to cast in place deck pours for a minimum of 72 hrs.

The use of prestressed concrete panels for forms is not allowed.

Link Slab: The link slab used shall be of one of the following two types:

1. Ultra-High-Performance Concrete (UHPC): The design shall follow the design method developed by the NYSDOT office of structures.

2. Link slab using the same concrete as for the deck: The design shall follow the method described in the PCI Journal paper titled “Behavior and Design of Link Slabs for Jointless Bridge Decks” by authors Alp Caner and Paul Zia, May-June 1988, Volume 43, issue 3. The use of prestressed concrete panels for forms is not allowed.

   Link slab example is shown in the reference documents.

   All joint headers shall be constructed using stainless steel reinforcement.

D) Precast Bridge Deck Panels: If precast bridge deck panels are used, field cast joints between panels shall be made with Ultra-High-Performance Concrete (UHPC).

For precast decks: (1) lifting hardware shall not be permitted on the top of the slab (2) shall be per NYSDOT Special Specifications ITEM 557.64010103 and the “Precast Deck Panel Connection Details” per the Directive Plans (3) wearing surface shall be diamond ground and (4) Integral Precast Concrete Barrier per NYSDOT Special Specification ITEM 557.11010003 is optional.

E) Bearings: Existing bearings shall be replaced with elastomeric bearings designed using the provisions of the NYSDOT LRFD Bridge Design Specifications.

The Design Builder is permitted to design and execute a lifting operation to facilitate the construction of the new pedestals and bearing installation under active live loads prior to placement of the new superstructure deck. The design of the lifting system shall account for all appropriate lateral and longitudinal loads and include a narrative of how the lateral and longitudinal stability of the structure is maintained while in a supported position.

The new pedestals and bearings shall be directly receiving all superstructure loads prior to the placement of the new concrete deck.

F) Substructures:

Abutments: The tops of all bridge seats, all bearing pedestal surfaces, and the backwall tops and face below expansion joints shall be coated with penetrating type protective sealers. Stainless Steel reinforcement shall be utilized at all exposed surfaces of bridge seats, all bearing pedestals, and backwalls below expansion joints. Reinforcing bars that extend from the abutment stem into the backwall below expansion joints shall not be plain steel.
The tops of all bridge seats shall be pigeon proofed using type 316 stainless steel bird spikes or type 316 stainless steel screens.

Pier Caps (if necessary): The tops of all piers and bearing pedestals surfaces below expansion joints shall be coated with penetrating type protective sealers. Stainless Steel reinforcement shall be utilized at all exposed surfaces of pedestals and pier caps below expansion joints. Reinforcing bars in the pier cap below expansion joints shall not be plain steel.

All concrete substructure repairs shall have a finish surface that is surface true to and with the existing unprepared concrete surfaces. The new repaired areas shall not be recessed nor protruding.

G) Drainage: Drainage requirements are outlined in Section 17 of these Project Requirements.

H) BIN Plate Sign: The Design-Builder shall furnish and install a new BIN plate meeting the requirements set forth in this section.

The material requirements for the BIN plate are:

- Panel with reflective background: The aluminum panel shall conform to the requirements of the NYSDOT Standard Specifications. The background material shall be green reflective sheeting conforming to the requirements of the NYSDOT Standard Specifications for Class A Sheeting. The size of the panels shall be 1/8 inch thick by 3 inches by 12 inches. A thin rubber or plastic gasket or sheeting matching the plate size shall be placed behind the plate prior to installation.

- Numbers: The numbers shall be reflective sheeting conforming to the requirements of the NYSDOT Standard Specifications for Class A Sheeting, except that the adhesive shall be pressure-sensitive such that the numbers can be applied to the background in the field. The numbers shall be 2 inches high and silver-white in color conforming to FHWA series C dimensions.

Prior to placing the numbers on the panel, the reflective background shall be clean and free of dirt and oil which may adversely affect proper adhesion. The numbers shall be placed on the reflective background, perpendicular to the longitudinal axis of the panel and vertically centered. The reflective background and numbers shall be coated and/or edge sealed in accordance with the recommendations of the sheeting manufacturer.

The BIN plate shall be attached to the beginning abutment, right side of the bridge using expansion anchors. The plate shall be placed high on the abutment, near the fascia of the bridge so that it cannot be painted over via a spray paint can or easily removed or damaged.

10.5 AESTHETICS

Any superstructure steel that utilizes a protective coating of paint shall be painted with a coating matching the paint color on the existing structures. Architectural treatment shall be applied to the new abutments at Mosel Avenue bridges to match the architectural treatment of the existing HOV Lane structure.
**10.6 DEMOLITION REQUIREMENTS**

**10.6.1 Scope**

The Design-Builder shall demolish and remove the existing bridge deck and other elements (e.g., superstructure, piers, abutments, and pavement) noted elsewhere in the RFP within the Project Limits in a safe and environmentally acceptable manner.

The demolition of the existing Bridge superstructure elements and substructure elements shall be indicated elsewhere in the RFP and be as per NYSDOT Standards and BD Sheets and/or in accordance with environmental permitting. Where new foundations are placed at the locations of existing foundations the existing foundations shall be removed to the extent needed to construct the new foundations.

The Design-Builder shall test for the presence of Hazardous Materials in all structures to be disturbed to ensure the handling, removal and disposal is done in accordance with all applicable laws and standards.

The abatement of all Hazardous Materials shall be completed to the greatest extent possible prior to any demolition taking place unless a legal variation from related laws, rules and regulations can be obtained. If the Hazardous Material has been identified through the Hazardous or Asbestos Screening document and/or the record plans, the Design-Builder is responsible for all costs. Should Hazardous Material or Asbestos be found and information related to its presence not previously available to the Design-Builder, all costs associated with abatement, containment, removal, and disposal shall be covered under the Fixed Force Account item.

The Design-Builder shall perform all Work with care so that any materials that are to remain in place, or that are to remain the property of the Department shall not be damaged. If the Design-Builder damages any materials that are to remain in place or which are to become or to remain the property of the Department, the damaged materials shall be repaired or replaced in a manner satisfactory to the Department at no cost to the Department.

The Design-Builder shall ensure that no aspects of the Works have a detrimental effect on public safety or the environment. Primary protective shields shall be provided in accordance with Item 634.20010111 at all locations where the existing concrete deck is being removed and/or replaced or where new deck is being installed. Secondary Protective Shields shall be provided in accordance with Item 634.20010211 in addition to primary protective shields where live traffic or pedestrians are present. The protective shields shall be designed to support a minimum load as follows:

Primary Shields – 200 #/ft². Additional loading shall be considered to take into account loads that may be imposed on it by drop induced impact and/or a person falling from the structure. In areas where only primary shields are provided, the design builder shall additionally install a plywood layer with all edges and seams sealed, to prevent any dust, particles or debris from falling to the area below the shields. When secondary shields are also required, see below, the primary protective shielding shall be designed to support a minimum load of 100 #/ft².

Secondary Shields – 100 #/ft². Additionally, the localized area where Secondary Shields are required shall not be less than 12’ x 12’. Shielding system’s cables, clips, hangers, decking, fittings and other components of the shielding shall be capable of supporting these loads.
Shielding has been installed over BIN 1075751 (WB SIE over SIRT) span 2, which meets NYCT standards, and will be has been left in place for the Design-Builders use. It is to be removed after completion of the proposed work. The Protective Shielding Plan is included as a Reference Document.

The Design-Builder shall assume responsibility for safety and maintenance of all existing structures within the Project Limits, identified for removal in accordance with DB §105-12.

Utility connections shall be discontinued and capped in accordance with the requirements of the utilities companies or the Department prior to demolition works.

10.6.2 Standards

The Design-Builder shall perform the demolition activities in accordance with the Contract Requirements and the applicable Standards, Codes and Manuals listed in Section 1.6 unless otherwise stipulated in this Project Requirement, or otherwise applicable to the Project.

10.7 CONSTRUCTION REQUIREMENTS

The Design-Builder shall develop erection procedures for the bridge that include complete detailed erection sequence drawings; erection stresses in permanent and temporary members; bent and falsework reactions determined for each construction stage.

10.7.1 Construction Vehicles on Bridge

The Design-Builder is prohibited from running equipment that does not operate on rubber tires (milling machines, rollers, etc) across bridge decks unless proper precautions (mats, etc) are provided to prevent damage to the deck. The methods used to move equipment across bridge decks shall be subject to approval by the Construction Inspection Professional Engineering Firm with comments from the CQAE.

10.8 LOAD RATING REQUIREMENTS

Prior to Release-for-Construction of any Bridge design, the Design-Builder shall submit draft Load Rating Summaries of all ratable elements of the Bridges to the Design Quality Assurance Engineer for review. The draft Load Rating Summary shall be accompanied by backup calculations (Level 1) and one (1) electronic copy of the input files.

Prior to any bridge in this Project being opened to traffic, including temporary bridges, the Design-Builder shall provide to the Department, the load rating computations, including AASHTOWare Bridge Rating, BrR (formerly known as Virtis) load rating files, as per NYSDOT standards and manuals for review and acceptance by the Design Quality Assurance Engineer. Load rating computation submission(s) in any format other than BrR shall be pre-approved by the Department. The final stamped and signed load rating package shall be submitted to the Design Quality Assurance Engineer no later than 30 calendar days prior to the scheduled opening to traffic of the structure. The submitted package shall have both LRFR and LFR packages.

All Rehabilitated bridges shall have load ratings equal or greater than the rating prior to the proposed rehabilitation unless stated otherwise in the RFP. The Load Ratings of the existing structures are:

- BIN.1065260 79th Street over I-278 Gowanus Expressway
New York State Department of Transportation

- BINs 1067821 and 1067822 I-278 over Mosel Avenue
  - HS20 INV/OP = 45 T/76 T

- BINs 1075751 and 1075752 I-278 Service Road over SIRT
  - HS20 INV/OP = 53 T/90 T

10.9 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 11  LANDSCAPE ARCHITECTURE

11.1  SCOPE

The Design-Builder shall perform the landscape architectural activities as described in this Section 11.

11.2  STANDARDS

The Design-Builder shall perform site work in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

11.3  GENERAL LANDSCAPE DEVELOPMENT

11.3.1  Existing Vegetation

Existing vegetation removal and disturbance should be minimized to the cut/fill limits and any removals, whether within the cut/fill limits or beyond those areas, shall be replaced in kind with native species appropriate for USDA NY Plant Hardiness Planting Zone 7a, as described in Section 11.3.2.

Prior to the removal of any trees or shrubs, an inventory of existing trees and shrubs shall be prepared by the Design-Builder and a copy provided to the CQAE. The inventory shall include major deciduous trees over 6 inches in diameter at breast height (DBH), coniferous trees over 6 feet in height, and deciduous or evergreen shrubs between 3 feet and 6 feet in height. The inventory shall include the size, location and species of each tree or shrub. Only living trees and shrubs shall be included in the existing tree inventory.

Vegetation outside the limits of disturbance shall be protected with temporary plastic barrier fence along the limit of disturbance line.

Disturbed areas shall receive topsoil and turf establishment. The type of topsoil and turf establishment, either roadside or lawn, will vary based on location.

The Design Builder shall obtain a Forestry Permit.

11.3.2  Tree Replacement Factors

A) Every live, deciduous tree greater than six inches diameter at breast height (“DBH”) which is removed must be replaced with a total quantity of deciduous trees a minimum of 2 inch caliper (size measured 6 inches above the base of the tree) equal to the total DBH size of the tree removed. For example, a 10 inch DBH tree removed could be replaced with (5) two inch caliper trees or (2) three inch and (1) four inch caliper trees; however the replacement quantity will go down if larger caliper trees are used for replacement.

B) Every live, coniferous tree removed must be replaced with a total quantity of coniferous trees equal to the height and width of the tree removed. For example, a 20 ft high x 10 ft wide coniferous tree could be replaced by two (2) 10 ft high x 5 ft wide coniferous trees.

C) Every live shrub, between 3 foot height and 6 foot height, removed must be replaced with a total quantity of shrubs equal to the quantity of shrubs removed.
D) Each replacement tree should be the same genus and species of the tree removed, unless the tree being removed was identified by the Design-Builder as an invasive plant species.

E) The minimum replacement sizes shall be as follows: 2-inch caliper for major deciduous trees, 1.5-inch caliper for minor deciduous trees, 6-foot height for coniferous trees, 3-foot height for deciduous shrubs, and 2-foot height for evergreen shrubs.

11.3.3 Replacement Locations

Replacement planting may be located in the available right-of-way near the original locations of the trees that were removed.

Replacement planting may also be done near the right-of-way line or on private property. Planting on private property may only be done if private property owners provide written permission to the Design-Builder and agree to take over the long term care and maintenance of the plant material, and the appropriate release is obtained by the Design-Builder and in consultation with the adjoining property owner in accordance with NYSDOT EI 11-010.

The removal of any major deciduous trees over 6 inches in diameter at breast height shall be documented and the species noted in the existing tree inventory prepared by the Design-Builder. Note that all trees, living and dead, shall be included in the existing tree inventory and calculations for tree replacement.

11.3.4 Proposed Planting

Section not used.
SECTION 12 SIGNAGE, PAVEMENT MARKING AND SIGNALS

12.1 SCOPE

The Design-Builder shall provide all permanent fixed signing, permanent pavement markings and signal work required for the Project.

The Design-Builder shall be responsible for identifying, designing, detailing, fabricating, delivering and installing all signing (including reference markers) and pavement marking materials and shall install all components necessary for a complete and functional system which, in addition to meeting the design and construction criteria specified above, meets the following requirements:

A) Provides for the orderly and predictable movement of all traffic;

B) Provides such regulation, guidance, warnings and advisories as are needed to ensure safe and informed operation;

C) Is fully and seamlessly integrated into the existing signing elements beyond the Project limits; and

D) Is integrated into the existing intelligent transportation system (ITS) components, if applicable.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan.

12.2 STANDARDS

The Design-Builder shall perform the signage, pavement marking and signals activities in accordance with Contract Requirements and the applicable Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

NYCDOT TS specifications can be found here:

12.3 REQUIREMENTS

12.3.1 Design Requirements

The Design-Builder shall develop a signing and pavement marking plan and a traffic signal plan for the Project that shall:

A) Provide for all components as called for in this Section 12;

B) Encompass the replacement of all existing signs within the Project limits;

C) Provide signing, traffic signals and pavement markings for bicycle and pedestrian facilities within the Project Limits, where applicable;

D) Locate signs in accordance with the MUTCD and the NYS supplement; and

E) Provide signs with high reflectivity with Type IX sheeting such as to not warrant sign lighting.
12.3.2 Construction Requirements

12.3.2.1 Signs

The Design-Builder shall replace all sign materials as part of the permanent signing installation and shall be responsible for the disposal of all signing materials and structures that are removed from the Project. Standard signs owned by municipalities other than NYSDOT, and non-standard signs owned by private entities but placed within NYSDOT right-of-way, with the acceptance of the Department, shall be removed, stored and reinstalled as required.

The Design-Builder shall be responsible for the provision of all signs, posts, frames and other structural components required for the installation and support of the sign panels.

There are two cantilever sign structures located on the west side of BIN 1067821 (I-278 over Mosel Ave.). These sign structures are to be protected from SIE traffic and service road traffic by barrier/guiderail consistent with applicable standards. In addition, the location of these structures is to be adjusted (if necessary) consistent with the proposed cross section of the bridge and at grade transition. The existing overhead sign structure located at approximate station 312+00 is to be modified due to planned construction in this area. The Design-Builder shall refer to the directive plans for additional information.

There is one HOV sign attached to the fascia on the south side of BIN 1065260 (79th Street over I-278 Gowanus Expressway), which will not require replacement. This signage is to be protected and maintained.

12.3.2.2 Pavement Markings

All pavement markings shall be Epoxy and be uniform in type, color, dimensions, location, and reflectivity. Pavement markings shall be 20 mil thickness and shall be furnished and installed in conformance with the Standard Specifications.

For BIN 1065260 (79th Street over I-278), the existing pavement markings associated with the school zone shall be reinstalled after completion of construction.

12.3.2.3 Traffic Signals

There are signalized intersections within the limits of the Project that include traffic signals as well as pedestrian crossing signals, locations of which are listed below:

BIN 1065260 (79th Street over I-278):
- Intersection of 79th Street and 7th Avenue SB;
- Intersection of 79th Street and Fort Hamilton Parkway.

The Design-Builder shall replace the existing traffic and pedestrian crossing signals with the latest current standard of traffic signal pole and cable supports, and also the latest standard for the push button control systems with count-down timers at the pedestrian safety walks.

At each intersection, the Design-Builder shall design and install new traffic signal infrastructure. The traffic signal infrastructure shall include all components required to provide a fully functioning and integrated Signal including, but not limited to: cabinets and controllers, span poles and foundations, signal heads including backplates with retro-reflective tape in all directions, pedestrian signal poles, pedestrian signals and push buttons, cable and conduits, interconnect cable to adjacent signalized intersections, and loop detectors. The work shall include all equipment, hardware mountings, cabling, software modifications and labor necessary to install and integrate a fully operational signalized intersection. All work shall be performed by personnel certified by the NYCDOT.

The traffic and pedestrian crossing signals, including poles, foundations, cable supports, push button control systems, count-down timers, cables, conduits and all traffic and pedestrian signal...
components shall conform to the current New York City Department of Transportation Standards and Specifications (see section 1.6). Where insufficient depth exists for NYCDOT Standard traffic signal foundations on bridge decks, the Design-Builder shall be responsible for designing these foundations in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

**During construction, the Design-Builder shall maintain two signal heads controlling each direction of traffic, and shall install a temporary alternate for any signal heads that are removed. If the Design-Builder closes any crosswalks or sidewalks that are permitted to be temporarily closed by OCMC, the Design-Builder shall “bag” and remove from view any pedestrian signals controlling the temporarily closed crosswalk.**

The Design-Builder shall submit the design of the traffic and pedestrian signals to the NYCDOT Traffic Signals group for review and approval with a copy to the Department’s Project Manager. The Design-Builder shall allow at least three (3) weeks for review of submittals by the NYCDOT Traffic Signals Group.

New LED Pedestrian signal and Countdown Timer displays along with ADA compliant latching pushbuttons shall be installed at the intersection. Unless otherwise directed by the Department, the Design-Builder shall maintain the existing signal phasing for the new system.

Unless otherwise directed by the NYCDOT Traffic Signals Group, the Design-Builder shall maintain the existing signal phasing for the new system. The Design-Builder will be responsible for maintaining the existing signal until the new signal is activated.

The Design-Builder shall furnish and install temporary traffic and pedestrian signals as required to accommodate construction operations and phasing, and as approved by the NYCDOT Traffic Signals Group.

Traffic signal activation of the completed signal system shall be performed by NYCDOT Traffic Signals Group Personnel only. The Design-Builder shall notify the NYCDOT Traffic Signals Group two weeks prior to the requested date of activation.

**12.3.2.4 Loop Detectors**

Section not used.

**12.3.3 Conduit/Cabling Requirements**

Traffic signal conduits and cabling on the Bridges shall be replaced in conformance with NYCDOT Standards and Specifications. The Design-Builder shall coordinate with the NYCDOT Traffic Group to determine other conduit and cabling requirements. The electrical conduits for traffic signals shall not be surface mounted nor visible to the traveling public.
12.3.4 **Signal Heads/ Signal Poles**

All signal faces to be installed as part of this Project shall be 12” LED. Mainline approaches require one through head for every through lane for multilane approaches. **For the purposes of traffic signal design, signal heads not facing the mainline approach shall have 5” back plates with 3” yellow reflective tape.**

All pedestrian signals shall be 16” LED and shall consist of combination “Walking Man”/“Hand” symbols with countdown timers. Pedestrian signal installations shall also include audible signals, countdown timers and ADA compliant pedestrian pushbuttons for all marked, signalized crosswalks. Pedestrian countdown timers shall meet the requirements of Special Specification 680.81500010.

12.3.5 **Cabinet/Disconnect Switch**

The Design-Builder shall install one state supplied microcomputer cabinet at each of the signalized intersections. The Design-Builder shall also install a disconnect generator transfer switch on the span pole to which the cabinet has been mounted, at a minimum of 8’ above ground level. The cabinet and disconnect switch shall meet the requirements of Special Specifications 680.80324515 and 680.94997008, respectively.

12.3.6 **Pullbox**

Where a fiber optic interconnect exists, a 30” square fiber optic pullbox shall be installed adjacent to the cabinet. All other pullboxes required shall be standard 26”x18” pullboxes. Pullboxes may be either reinforced concrete or reinforced concrete/bituminous fiber.

12.3.7 **Power Supply**

Power shall be supplied to the microcomputer cabinet from the nearest available utility pole. The power supply cable shall be a 2 conductor, 6awg cable conforming to the requirements of Special Specification 680.95020615.

For 79th Street bridge, the existing traffic signals feed from the lighting (signal information provided in Reference Documents).

12.4 **DELIVERABLES**

Section not used.
SECTION 13 LIGHTING

13.1 SCOPE

The Design-Builder shall conduct all Work necessary to provide all required lighting and lighting components required for the Project. This includes design, fabrication and construction of all transportation related permanent and temporary roadway lighting of the bridges (on and under) and roadway within the Project Limits.

The Design-Builder shall be responsible for, and submit for review and approval all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan.

13.2 STANDARDS

The Design-Builder shall perform the lighting activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, or otherwise applicable to the Project, the New York City Department of Transportation Standards, Specifications and Notes included in Part 7, ___Engineering Data,___ and the following additional Standards:

13.3 REQUIREMENTS

13.3.1 General Requirements

The Design-Builder shall be responsible for designing, fabricating, furnishing and installing all new components (from the utility company’s power supply connection forward to the luminaries) required to provide fully functioning, integrated lighting systems for the Project including, but not limited to, new luminaires, controls, poles, mounting, panels, cabinets, enclosures, wiring, conduits, and support hardware.

The Design-Builder shall prepare all lighting calculations for all temporary and permanent lighting for the Project, including IES files, and submit them to the Department and the New York City Department of Transportation Division of Street Lighting (NYCDOT-DSL) for review and approval. The Design-Builder shall assume that NYCDOT-DSL will require a minimum of four (4) weeks for review of the Lighting submittals. The contact person for NYCDOT-DSL is Mr. Akmal M. Mikhail, 34-02 Queens Blvd., Rm #218, Long Island City, NY 11101; 212-839-3368 (amikhail@dot.nyc.gov).

Submit Lighting Calculation that shall conform to Street Lighting requirements:

- Staten Island Expressway with Average of 0.6 fc – 0.8 fc and a max Ave./Min. ratio of 4:1.
- Underdeck Lighting for Mosel Avenue with Average of 3.0 fc and a max Ave./Min ratio of 4:1.

Submit voltage drop calculations & wiring diagrams that is related to the same Control Cabinet. (Inside and/or Outside of contract limits) and as conforms to approved Lighting Calculation.

Street Lighting plans package shall include:

- Street Lighting notes.
- Street Lighting legend of all used street lighting items on plans.
- List of all applicable Street Lighting Standard Drawings & Specifications.
- List of all applicable State pay item numbers.
- Existing Street Lighting plans.
- Proposed Street Lighting plans.
- Street lighting details.
- Temporary Street Lighting plans and notes.

For bridge lighting, conduits for electrical cables and electric boxes shall be embedded in concrete parapets. Light posts shall be mounted on top of concrete parapets where practical. The electrical conduits for bridge deck lighting should not be surface mounted nor visible to the traveling public.

For underdeck lighting, luminaries shall be placed perpendicular to traffic. The Design-Builder shall use type 2 luminaries, which shall be surface mounted on the abutment to the right of traffic to ease lane closures and provide access to related maintenance. If type 2 luminaries are not sufficient or practical, type 5 luminaries may be suspended from above and placed above the right curb line.

The Design-Builder shall provide street lighting on the sidewalks consistent with NYCDOT Standards and shall install/upgrade the system to the current standard design required by NYC Street Lighting Division. Design Build team shall provide new wiring, junction boxes, poles etc. as needed to satisfy the requirements of NYC Street Lighting Division.

The Design-Builder shall inspect all electrical cabinets to determine their conditions and functionality. The Design-Builder shall prepare and submit an Electric Cabinet Inspection Report for each Cabinet, along with recommended actions, to the Department for review.

The Lighting System within the Project limits shall be protected (including at grade system) and fully maintained by the Design-Builder for the duration of the Project.

13.3.1.1 Power Supply Requirements

For reference, the lighting installation shall comply with the following:

A) Meet all requirements of NFPA 70 – National Electrical Code (NEC);

B) All outdoor electrical enclosures shall be type cast iron, rated NEMA 4X or a higher degree of protection;

C) Meet all requirements per NYCDOT Street Lighting Standards; and

D) Meet all requirements of applicable IEEE and ANSI power engineering standards.

For 79th Street bridge, the existing lighting feed on the east side of the structure is shown in the Reference Documents (Low Tension Mains and Service Plate). There does not appear to be a feed on the west side of the structure.
13.3.1.2 Removal of Existing Equipment

All disconnected luminaires, light poles, and associated equipment shall be removed and disposed of by the Design-BUILDER. All wiring, switches, panels, cabinets, enclosures, and other electrical equipment shall be removed and disposed of by the Design-BUILDER.

All removed LED luminaires shall be carefully removed, neatly stored and delivered to NYCDOT Street Lighting store yard. The Design-BUILDER shall coordinate delivery with NYCDOT Street Lighting Electrical Inspection Unit.

13.3.2 Permanent Lighting System

13.3.2.1 General

The Design-BUILDER shall be responsible for ensuring that the permanent lighting system meets the following requirements:

A) Provide lighting calculations for review and approval prior to Design Plans;

A)B) Provides illumination such that the road surface illumination, over the Bridges and approach roadways and under the Bridges, meets or exceeds the uniformity and the illuminance and/or luminance Average criteria during darkness as conforms to NYCDOT Street Lighting Standards;

B)C) Can be fully and seamlessly integrated into the existing permanent lighting elements adjacent to the Project limits;

C)D) Utilizes a photo-control switch and control Cabinet system that automatically activates lighting before dusk and deactivates the system past dawn;

D) Contains surge suppression devices for protection against damage by lightning strikes and complying with NFPA-780 and UL-96;

E) Provides fixtures that are water tight and intended for a marine/industrial environment;

F) Provides LED lighting fixtures above and below deck at all bridges as per NYCDOT Street Lighting Standard specifications;

G) Provides lighting having a color temperature of 3,000 Kelvin;

H) Provides the following Lighting levels above deck:

- If commercial area Roadway (street/bridges) – maintain 1 foot-candle with ratio between average to minimum 4:1 maximum.
- Otherwise Sidewalks – 0.6-0.8 foot-candle with ratio between average to minimum 6:1 maximum.
- At Street intersection – 1.2-1.52.5 foot-candle with ratio between average to minimum 4:1 maximum.
• Staten Island Expressway with average of 0.6 fc – 0.8 fc and a maximum Ave./Min. ratio of 4:1. Ratio between average to minimum should be 4:1 maximum.
• Underdeck (Highway under Street) average of 5 foot-candle.
• Underdeck (Street under Highway) average of 3 foot-candle.

I) Provides the following Lighting levels under deck:
• I-278 over Mosel Avenue: (BINs 1067821, 1067822):
• 79th Street Bridge over I-278: (BIN 1065260): Maintain 5 foot-candle average, with a ratio of average to minimum of 4:1 (max.)

J) Utilizes lighting components that are readily available and not proprietary equipment.

13.3.2.2 Construction Requirements

The Design-Builder shall use materials listed on the NYSDOT approved list of materials and consistent with the details shown on the Department’s Standard Sheets.

The Design-Builder shall provide permanent lighting materials that satisfy the Project Requirements and applicable codes and standards. In addition, the Design-Builder shall:

Ensure that all exposed raceways/conduits are made of PVC coated rigid galvanized steel (RGS). Short runs (no longer than xx feet) of liquid-tight flexible metal conduit may only be used to make a final connection between the main power feeder and a light pole or fixture;

Ensure that all outdoor electrical enclosures and attached parts (e.g. breather drain) shall be type 316 stainless steel, rated NEMA 4X or a higher degree of protection;

Ensure that any new electrical enclosures shall have a key lock;

Ensure all lighting shall include breakaway devices, unless protected by concrete barrier. Light poles shall feature a breakaway base, except where located behind bridge rails.

13.3.3 Temporary Lighting System

The Design-Builder shall ensure that the existing lighting levels within the Project limits are maintained at all times. A temporary lighting system shall be installed as necessary to meet this requirement.

The Design-Builder shall be aware that:

A) During each construction stage, the Design-Builder shall maintain temporary, existing, and proposed light standards used as temporary until the construction stage or construction is complete.

B) Design-Builder shall provide temporary power during each construction stage, either available from the existing control cabinets or by providing temporary lighting control cabinets.
C) Minimum cable clearance above roadway shall be maintained during construction. Maximum wire SAG shall not exceed 18 inches. Any additional supports or equipment used to satisfy this condition shall be included under the temporary wiring pay items.

D) Add temporary support for overhead wiring every 65 feet and provide wooden poles for roadway crossing.

E) Attach overhead temporary connectors, if necessary, to structures in the vicinity.

F) Permanent lights used as temporary in each stage are to be connected to the new control cabinet when it is installed and operational, by disconnecting from the temporary network.

G) NYCDOT does not supply equipment for temporary conduits, conductors used and/or required to maintain power to the connected load during various stages of construction.

H) Design-Build is responsible for relocating temporary lighting poles at each stage, including all maintenance and energy cost during the duration of the project and other work and items related to temporary lighting system, inside and outside of the contract limits, not identified in any payment item.

I) Contractor shall provide and maintain temporary lighting of:
   a. Roadway (street/bridges) – 1 foot-candle
   b. Sidewalks – 0.6-0.8 foot-candle
   c. Ratio between average to minimum should be a 4:1 maximum
   d. Underdeck (Highway under Street) average of 5 foot-candle.
   e. Underdeck (Street under Highway) average of 3 foot-candle.

13.4 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 14 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

14.1 SCOPE

The Design-Builder shall protect and perform all work necessary to design, furnish, build, and install temporary and permanent replacement of all ITS communication system field devices for uninterrupted service of the Region 11 Joint Transportation Management Center (JTMC) and Triborough Bridge and Tunnel Authority (TBTA) VN Communications Center. Reference to and requirements of the TBTA mentioned in Section 14 apply only to the bridges located in Staten Island.

The ITS System work in the Project shall consist of the following:

The existing ITS fiber and power cables attached to the superstructure and the existing ITS facilities in the roadway approaches of the Mainline EB and Narrows Road South over Mosel Avenue (BIN 1067822) and the Mainline EB and Narrows Road South over SIRT (BIN 1075752) are to be replaced to the nearest splice points of communication and power (work may go beyond the project limits). ITS is to be mounted in between 1st and 2nd girders supported by the steel. New conduits shall be installed to the nearest pullboxes adjacent to the structures’ outer abutments. The existing VMS attached to overhead sign structure spanning the Mainline EB between the bridges and the control box located in the median are to be removed and stored during construction. Existing pullboxes located in the median are to be removed. Upon completion of work, the VMS shall be re-installed onto the new existing modified sign structure and the control box and new pullboxes shall be installed in a location accessible from Narrows Road South with minimal lane closures required for access. The control cabinet for the MTA overhead VMS located between BIN 1067822 and 1075752, and the power and fiber pull boxes near the south leg of the sign structure will be relocated to the south side of the Service Road/Narrows Road South on ground and beyond the guide rail. The Design builder team shall install cabinet and the pull boxes on ground and shall be located such that a splice can be extended from the pull box to a vehicle where splicing work can be performed. The Design-Builder shall provide a temporary ITS system from the nearest splice points of communication and power as to maintain the TBTA fiber loop and ITS services.

ITS facilities are attached to the superstructure and substructures of 79th Street over I-278 / Gowanus Expressway (BIN 1065260), and exist at the vicinity of the bridge’s substructures in the median of I-278. The Design-Builder shall maintain the existing system in its present location and condition during the performance of the work and at the completion of the project. The Design-Builder shall maintain and protect the existing Fiber Optic trunk cables located in the NYSDOT Right of Way.

A temporary communication system or bypass communication linked to the Region 11 JTMC and TBTA VN Communications Center shall be provided for work that disrupts the existing Fiber Optic network. None of the current functionality of the existing system may be lost or negatively affected by construction activities related to this Project.

Any disruptions to the existing system caused by the Design-Builder’s operation shall be repaired within 48 hours at the Design-Builder’s expense at no additional cost to the Department or TBTA.

The Design-Builder shall design, furnish, install and test an operational ITS system including all required electronic devices for the system related to systems communication, traveler information, traffic monitoring and detection systems, all associated mounting hardware, and all associated cabling and the Design-Builder shall integrate those devices into the respective owner’s system: the NYS DOT system that connects to the Region 11 JTMC or the TBTA system that connects to the TBTA VN Communications Center. For the Region 11 JTMC system, the Design-Builder shall integrate the ITS devices from the field to the JTMC rack room at the basement and the equipment/system shall work continuously for a 30-day testing period. The Design-Builder shall work with JTMC consultant support staff for the rack room integration. The State JTMC Consultant Staff will integrate the tested system into the Operation floor. For the TBTA system, the Design-Builder shall integrate the ITS devices from the field to the TBTA VN Communications Center.

The Design-Builder shall prepare As-Built plans that detail any ITS work completed as part of this project including but not limited to the fiber optic backbone, fiber assignments, test results pullboxes, splicing, ITS cabinets, CCTV installation, radar detection, Variable Message Signs (VMS), and TRANSMIT related equipment. The design, construction and installation of all the devices, facilities and appurtenances shall address functionality, redundancy, reliability, durability, ease of maintenance, maintenance access, safety and protection against vandalism and shall meet the latest TBTA and NYSDOT Region 11 specifications and NTCIP standards.

The Design-Builder shall be responsible for obtaining from the Department and TBTA all available existing as-built plans of existing ITS elements and systems that will be affected by the Project. The Design-Builder shall investigate and survey all relevant areas, including areas one quarter mile beyond the project limits to ensure that all existing ITS-related features are identified and accounted for in the design.

The Design-Builder shall be responsible for ensuring that the following requirements are met:

A) The existing ITS network shall remain operational during the Project;
B) The Design-Builder shall identify the location, size, function and condition of all existing ITS features within, and one quarter mile beyond, the Project Limits based on pre-construction as-built plans and field investigations. The Design-Builder shall prepare and submit to the Department and TBTA an ITS plan describing how the ITS features shall remain operational throughout construction, up to the Final Acceptance; and submitted to the Department.

C) All new ITS features shall be clustered when possible and shall be designed to incorporate maintenance access features inclusive of access steps/ladders, walkways, as required for access per Department or TBTA practice. The Design-Builder shall locate ITS features so that the need for lane closures will be minimized. For safety purposes, no ITS equipment shall be positioned such that the Department’s respective owner’s maintenance personnel would have to climb over barriers to reach equipment being maintained.

D) For maintenance purpose ITS pullboxes shall be located so that they can be reached from the underside of the bridge by ground based equipment and cannot be located on the Main Span. ITS conduit shall be located so that they are within the fascia beams or girders and not exposed to view in elevation.

E) All existing ITS elements outside the project limits will continue to be maintained by the Department’s respective owners. Access to these features shall be retained for Department maintenance. Any such elements installed or damaged by the Design-Builder shall be repaired, at no cost to the element’s respective owner by the Design-Builder and shall be maintained by the Design-Builder until Final Acceptance and any warranty period.

F) The Design-Builder shall be responsible for the design, installation and maintenance of services for the duration of the Project for all temporary and new ITS elements included in the Project. The Design-Builder shall be responsible for identifying all items necessary to install and shall coordinate with TBTA and the Department to operate all required ITS elements.

G) The Design-Builder shall coordinate with the Department and TBTA to ensure the availability and use by the Design-Builder of the latest version of the Department’s respective owner's ITS equipment and system specifications.

H) The Design-Builder shall provide the Department and TBTA access to the construction site for maintenance by the Department and TBTA of the existing ITS facilities.

I) Prior to and upon completion of construction, the Design-Builder shall test ITS devices within the Project Limits under the supervision of the devices’ respective owner.

J) All ITS devices removed during construction shall be performed by the Design-Builder. The Design-Builder shall store, re-install and test the devices. The devices’ respective owner shall supervise these operations.

14.2 STANDARDS

The Design-Builder shall perform ITS activities in accordance with the Contract Requirements, the applicable Standards including NTCIP Standards, Design Codes and Manuals cited in Section 1.6, unless otherwise applicable to the Project.

14.3 REQUIREMENTS

14.3.1 Variable Message Sign (VMS)

Section not used.
14.3.1.1 Removal of Existing VMS

Section not used. Any existing VMS, where required, shall be removed by qualified technicians, including cabinets and all electronics, and shall be stored in the Design-Builder's yard for pickup by the Department. The Design-Builder shall remove 1 VMS located at:

- Mainline EB over Mosel Avenue (BIN 1067822)
- Mainline EB over SIRT (BIN 1075752)

Equipment damaged as a result of improper removal or handling of any of the components shall be replaced with new in kind equipment at the Design-Builder's expense.

14.3.1.2 Installation of New VMS

Section Not Used.

14.3.2 Fiber Optic Cable System

The Fiber Optic Cable installed for the fiber optic mainline and trunk line shall meet or exceed the requirements of the following NYSDOT Special Specifications, as required:

- Special Specification 680.9217211

The Design-Builder shall install new fiber feeds and new interconnect Fiber Optic Cables for all temporary and new installment. All Fiber Optic Cables shall be installed underground in conduit, or structure attached conduit, or inner-duct placed in conduit. The Design-Builder shall design the pullboxes and manholes on the Fiber Optic Cable routes per Department specifications and overall Department requirements. The project limits for the Fiber and power work may go beyond the Capital Construction limits (to the nearest Splice points of communication and power).

The Fiber Optic network in the construction area includes mainlines, trunk lines, feeder lines and interconnect cables. These include the following components:

Staten Island Expressway over Mosel Avenue on the south fascia of BIN 1067822 and Staten Island Expressway over SIRT in the south sidewalk of BIN 1075752:

- Two (2) 72 Fiber Optic Cable

14.3.3 Fiber Optic Backbone

Section Not Used.

14.3.4 Closed Circuit Television (CCTV) System

There is a CCTV (VNPC-100) located in the median west of the State Island bridges at Exit 14 of the Mainline EB and a CCTV (VNPC-101) located in the median east of the State Island bridges near the SB Hylan Blvd overpass. The Design-Builder shall remove, re-install and test the CCTV camera assemblies, mounting poles and cabinets, if necessary, under the supervision of the TBTA. Any elements damaged by the Design-Builder shall be repaired, at no cost to the TBTA.

14.3.5 Variable Message Signs

The Design-Builder shall remove, store and reinstall, upon completion of work, the existing VMS attached to overhead sign structure spanning the Mainline EB between the bridges. TBTA shall supervise the above-mentioned operations. Any elements damaged by the Design-Builder shall be repaired, at no cost to the TBTA.

14.3.6 Electrical Work

Section Not Used.
14.3.4.1  Cabling Requirements

Section Not Used.

14.4  SYSTEM TEST PROCEDURES

The Design-Builder shall test all existing ITS elements prior to removal and after re-installation. The Design-Builder shall test all permanent ITS elements after installation. The Department and TBTA shall supervise the tests. Section Not Used.

14.5  DOCUMENTATION REQUIREMENTS

Section Not Used.

14.6  TEMPORARY ITS SYSTEM

All ITS elements and services that may be affected during construction require that maintenance, protection or mitigation measures shall be provided by the Design-Builder in order to keep the systems operational during all phases of construction. Downtime for existing fibers requiring cut-over shall not exceed 48 hours. Multiple cutting of the existing fiber optic cable at the same time shall not be allowed. All plans for removal of the temporary system shall be approved by the Department. A 72 hour lead time shall be provided to the Regional ITS group, and JTMC, and TBTA before any disconnects to the existing system can be made.

Temporary power and fiber cables shall run aerially with pole supports.

For the bridges located in Staten Island, the Design-Builder, prior to construction, shall coordinate with and obtain approval from TBTA to revise the TBTA fiber loop. The TBTA fiber loop consists of a series of ITS facilities (VMS, CCTV, control cabinets, etc.); see RFP Part 7 – Engineering Data for TBTA’s fiber loop diagram. The Design-Builder shall coordinate and obtain approval from the TBTA to remove facilities in the loop and provide and maintain a temporary fiber optic line to connect, at the nearest location, the facilities adjacent to those removed so that communication will be maintained to all associated sites in the loop.

All plans for removal of the temporary system shall be approved by the Department and TBTA.

The Design-Builder shall provide a Portable Variable Message Sign (PVMS) Standard Size – Full Matrix (LED) Radar, Cellular Communications west of the Staten Island Project Site for TBTA’s use for the duration of the existing VMS outage.

14.7  DELIVERABLES

If required, at a minimum, the deliverables shall include the items listed in Table 14.7-1 for the Department’s consultation and written comment.

Table 14.7-1 – Deliverables

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SECTION 15 WORK ZONE TRAFFIC CONTROL AND ACCESS

15.1 SCOPE

The Design-Builder shall be responsible for the planning and provision of Work Zone Traffic Control (WZTC), required to perform the Project Work until Project Completion. This Project Requirement applies to any roads, ramps, cross roads, local streets, maintenance roads, driveways, and active paths within and/or affected by the Project.

The Design-Builder shall provide WZTC for the safe and efficient movement of people, goods, and services through the Project area(s) while maintaining access and minimizing negative impacts to residents, commuters, businesses, and NYSDOT maintenance operations.

Any noise barriers removed due to the Design Builders WZTC scheme shall be reinstalled and match the location, color, and pattern of existing noise barriers.

Should the Design-Builder’s WZTC scheme require the removal of the existing cantilever overhead sign structures, the sign panels and structure(s) are to be stored and replaced in kind at their existing location.

Any barriers or other devices removed that separate the service road and mainline traffic due to the Design-Builder’s WZTC scheme shall be replaced with a temporary concrete barrier at its existing location.

Note that, as used in this section, “Work Zone Traffic Control plan” or “WZTC plan” is the equivalent of “Maintenance and Protection of Traffic plan” or “MPT plan” as described in Chapter 16 of the Highway Design Manual (HDM).

15.2 STANDARDS

The Design-Builder shall perform the work zone traffic control activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirements, or otherwise applicable to the Project.

15.3 REQUIREMENTS

15.3.1 General Requirements

Work Zone Traffic Control shall be performed in accordance with this Part 3, Section 15 and the New York City Department of Transportation Bureau of Permit Management and Construction Control Work Permit, included in Part 7 – Engineering Data. Use of Traffic Enforcement Agents shall be approved by the Department’s Project Manager and provided in accordance with Special Specification 619.22970011.

15.3.2 Work Zone Traffic Control Plan

The Design-Builder shall prepare and submit a WZTC Plan for managing traffic operations and controlling access until Project Completion. A WZTC Plan must be submitted in advance of any work that restricts the roadway cross section.

The WZTC Plan shall be submitted to the Department’s Design Quality Assurance Engineer a minimum of two weeks prior to initiation of any Work requiring a lane closure or the implementation of any change in traffic patterns.

The WZTC Plan shall include:

A) Contingency plans for reasonable unforeseen interruptions;
B) Duration of each WZTC stage, including duration of lane closure(s), if any;
C) Provisions for maintaining pedestrian traffic through the Project area at all times at all locations where pedestrian access through the Project area currently exists. Please refer to Section 15.3.5 for 79th Street Bridge over I-278. For Narrows Road North and Narrows Road South, provisions for maintaining pedestrian traffic through the Project area shall be provided at all times on at least one service road (i.e., Narrows Road North or Narrows Road South).

The Design-Builder shall notify local officials, and affected police jurisdictions to facilitate safe and effective enforcement. The WZTC Plan shall recognize the need for approval of the use of local public roads, if applicable. The Design-Builder shall be responsible for updating the WZTC Plan as necessary throughout the Contract, so that at all times the current traffic control on site is representative of the design drawings that have been accepted by NYSDOT.
15.3.3 General Restrictions

Temporary lane closures shall be in accordance with the NYCDOT Work Permit Stipulations included in Part 7 – Engineering Data. A maximum 15 MPH reduction in the existing regulatory speed limit will be allowed for work zones, but not below 35 MPH. Any 15 MPH speed reduction must be accomplished in two steps of 10 MPH, maximum, ie. 50 MPH to 40 MPH to 35 MPH. Pinning of Temporary Concrete barrier to the new concrete deck is prohibited.

15.3.4 Access to Commercial Properties and Driveways

The Design-Builder shall provide uninterrupted access to all commercial properties and driveways within the Project Limits at all times.

15.3.5 Closure Restrictions

Closure Restrictions shall be as described in the NYCDOT Work Permit included in Part 7 – Engineering Data. For 79th Street Bridge over I-278 (BIN 1065260), the Design-Builder shall maintain two travel lanes of one-way vehicular traffic and one sidewalk for pedestrian traffic during construction. The Design-Builder shall contact NYS DOT’s Project Manager for the operational requirements for the HOV lane on the Gowanus Expressway (I-278) are as follows:

- Hours of operation of the HOV Lane - 6am to 10am, and 3pm to 8pm – Monday thru Friday
- Movable barrier repositioning - 2X a day: machine movements 2am to 6am for morning rush opening movement, and 10am to 12pm for Afternoon closing movement. Note: This can be affected by early or late openings/closings of the HOV due to snow/weather, equipment issues, motor vehicle accidents, etc.
- Window of work for the HOV lane during the day - Window of work between movements, 12 noon to 2 pm, and 9pm to 2am weekdays. Note: This can be affected by early or late openings/closings of the HOV due to snow/weather, equipment issues, motor vehicle accidents, etc.
- HOV is closed Friday 8pm to Monday 2am

It is strongly suggested that the Proposers visit the 79th street bridge site so that they may observe the HOV lane operation and field conditions.

For I-278 over Mosel Avenue and the SIRT (BINs 1067821, 1067822, 1075751, 1075752), the Design-Builder shall maintain, in both directions, 2 lanes of service road traffic, 3 lanes of SIE traffic, and the HOV lane at all times for a minimum of 12 total lanes of vehicular traffic for its traffic management plan. Offsite detours will not be permitted.

15.3.6 Minimum Lane Widths during Construction

The Design-Builder shall maintain a minimum travel lane width of 11 feet (10 foot minimum travel lane width for service road traffic) during construction and accommodate the Design Vehicle with a minimum 1’ offset from the vehicle to the concrete barrier on each side. Due to operational and physical constraints associated with the operation of the HOV lane on the Gowanus Expressway, a minimum travel lane width of 11 feet on the HOV lane will be allowed where necessary.

Minimum lane widths shall be in accordance with the NYCDOT Work Permit Stipulations included in Part 7 – Engineering Data.

15.3.7 Portable Variable Message Signs

The Design-Builder shall provide, Portable Variable Message Signs, to satisfy the Design-Builders design, for the duration of this Contract. The Portable Variable Message Signs shall be deployed as necessary for the various WZTC schemes developed in coordination with, and with concurrence/acceptance from, the Department’s Project Manager. The portable variable message signs provided shall meet the requirements of NYS DOT Item No. 619.110512 (Portable Variable Message Sign (PVMS) Standard Size – Full Matrix (LED) No Optional Equipment Specified, Cellular Communications).

The development of messages for the Variable Message Sign(s) shall be the responsibility of the Department’s CQAE and operations staff at the NYSDOT’s Transportation Management Center. The Design-Builder shall contact the Department’s CQAE at least two weeks prior to placement of any Variable Message Sign regarding their location and receive concurrence of the location.
15.3.8  **Temporary and Interim Pavement Markings**

The Design-Builder shall provide temporary and interim pavement markings during all construction phases conforming to the requirements of the NYSDOT Standard Specifications.

15.3.9  **Coordination with Regional Traffic Management Center**

The Design-Builder is advised that the NYSDOT’s Traffic Management Center will provide support for the Project's WZTC activities. Therefore, coordination among the Department’s Construction Quality Assurance Engineer, Design-Builder, and NYSDOT’s Traffic Management Center, will be required for all WZTC activities, particularly with respect to the use of Variable Message Signs (VMS) in the Project area. The Design-Builder shall notify the Department’s Project Manager of all lane and/or shoulder closures prior to implementation.

15.3.10  **Emergency Response and Transportation Management Plans**

The Design-Builder shall notify the Department’s CQAE immediately following any impacts to motorists due to construction activities and/or unforeseen circumstances. The CQAE will be responsible for disseminating the information to the appropriate personnel/entities for appropriate response to mitigate impacts to motorists. The Design-Builder shall prepare an Emergency Response Plan to be implemented in the event the roadway is shut down for unforeseen or unplanned circumstances. The Plan shall be implemented when the anticipated duration of closure exceeds twenty (20) minutes. The Plan shall be submitted to the Department’s Project Manager for review and comment a minimum of two weeks prior to the beginning of Work. Work on this Project shall not begin until the Design-Builder receives written notification from the Department’s Project Manager that the Emergency Response Plan has been reviewed by the Department and all Department comments have been resolved.

The Emergency Response Plan shall include a notification and communication plan that describes how the Design-Builder will promptly inform the appropriate personnel/entities of an unforeseen or unplanned circumstance. No later than 30 calendar days following NTP, the Department’s Project Manager will provide the Design-Builder with a list of personnel and entities that need to be contacted in this section of the Emergency Response Plan.

The Design-Builder shall also provide the Department’s Project Manager a Transportation Management Plan (TMP) per FHWA’s Final Rule on Work Zone Safety and Mobility, 23 CFR 630 Subpart J. The intent of the TMP is to minimize impacts to the travelling public and to provide continuity of reasonably safe and efficient road user flow and highway worker safety. The Emergency Response Plan shall be a component of the TMP and shall be located in the contingency section of the TMP.

15.3.11  **Lifting Operations**

The Design-Builder shall be aware that under no circumstances shall lifting operations for bridge superstructure elements, overhead sign structures, or any other items, be carried out over active traffic lanes. All such operations shall at a minimum require short-duration roadway closures in accordance with the provisions of this Section 15.

15.3.12  **Temporary Roadway Pavement**

Temporary roadway pavement, as required, for maintaining traffic during construction related to work zone traffic control (WZTC), shall be placed on compacted subgrade not lower than 95% of Standard Proctor Maximum Density and shall be as follows:

- 6-inch Subbase
- 5-inch Base Course
- 3-inch Binder Course
- 2-inch Top Course

Tack Coat shall be applied between the base course and binder course as well as between binder course and top course.

After completion of rehabilitation construction, the temporary pavement shall be removed and disposed and the original grade shall be restored to the original condition.
SECTION 16 PAVEMENT DESIGN AND CONSTRUCTION

16.1 SCOPE

The Design-Builder shall perform all Work necessary to provide all pavement required for the Project. This includes design, furnishing of materials, fabrication and construction of all temporary and permanent pavement for roadways within the Project Limits. The Design-Builder shall be responsible for the review and approval of all submittals needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan.

16.2 STANDARDS

The Design-Builder shall perform the pavement activities in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement, or otherwise applicable to the Project.

16.3 REQUIREMENTS

All pavement materials and construction methods shall be in accordance with the requirements of the NYSDOT Standard Specifications and the NYSDOT materials and pavement installation methods. Limestone and/or dolomite, regardless of the acid insoluble residue content, shall not be allowed for Type 1 or F1 friction aggregate requirements.

If the existing roadway section at the limits of work varies from the standards applicable for new or resurfaced sections, the roadway features (lane & shoulder widths and cross slope) shall be transitioned to meet the existing conditions.

16.3.1 Full Depth Reconstruction

The Design-Builder shall develop and construct Unreinforced Portland Cement Concrete Pavement for full depth reconstruction (travel lanes and shoulders), including subbase, of the Project roadways in conformance with the Comprehensive Pavement Design Manual, using the ESAL-based pavement design method and Standard Specification Sections 501 and 502 and 502 Standard Sheets, with the following exceptions:

- The maximum water/cement ratio of the proposed concrete mix will be less than 0.4. The use of NYSDOT approved water reducing admixtures will be allowed to achieve this requirement.
- Portland Cement Treated Permeable Base will be not be used unless tying into adjacent existing lanes constructed with Permeable Base.
- Diamond grind the pavement and remove slurry in accordance with Special Specification 502.81010018_Full Diamond Grinding of PCC Pavement.
- Silicone Joint Sealant will not be used.
- Use Highway Joint Sealant for both the transverse and longitudinal joints. Widen joints to 1/4” – 3/8” width for a depth of 1” when the first stage saw cut is less than 1/4”
- Submit a joint layout to the Engineer at least 14 days prior to paving.
- Type 1 Friction Type

Full depth reconstruction is required on BIn 1067821 and 1067822 (I-278 over Mosel Avenue) and BIn 1075751 and 1075752 (I-278 over SIRT):

- Replace the pavement adjacent to the approaches, reconstruct the existing pavement between the bridges (travel lanes and shoulders), construct pavement due to elimination of spans, and repair any damage to the existing pavement on the roadway approaches due to the implementation of WZTC.
- Replace pavement within project limits to complement deck replacement.

16.3.2 Milled and Resurfaced Roadways

For BIn 1067821 and 1067822 (I-278 over Mosel Avenue) and BIn 1075751 and 1075752 (I-278 over SIRT), the Design Builder shall mill and resurface 1.5” of pavement (SIE and Service Roads) 500’ beyond the limits of full depth reconstruction on the bridge approaches. This milling and paving is to occur after all other construction work is performed which would require existing pavement disturbance (e.g., pavement marking grinding).

The Design-Builder shall mill and resurface pavement areas as necessary to provide for a smooth transition between the existing and fully reconstructed pavement surfaces in accordance with the applicable Standard Sheets. **The Design-Builder shall mill a minimum of 50’ beyond the limits of any full depth reconstructed pavement sections.**

Within the horizontal limits of any widened pavement section, the existing pavement shall be milled and resurfaced in conjunction with the top course placement for the widened section in order to provide a uniform pavement within the widened section of roadway.

16.3.3 Utility Trench Restoration

Outside areas of full depth reconstruction, pavements in trench restoration areas shall match the adjacent pavement section.
SECTION 17 DRAINAGE AND STORMWATER

17.1 SCOPE

The Design-Builder shall design and construct a drainage system as needed for the estimated storm runoff that provides functionality, durability, ease of maintenance, maintenance access, safety, and pleasant aesthetics.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan.

Where drainage patterns will or must be changed from existing patterns, the Design-Builder shall be responsible for securing all necessary permits prior to construction of any drainage facilities.

After all paving and earthwork operations are completed, prior to Project Completion, the Design-Builder shall be responsible for cleaning all new and existing drainage facilities within the Project Limits.

17.2 STANDARDS

The Design-Builder shall perform the drainage and stormwater activities, including highway, bridge and site systems, in accordance with the Contract Requirements and the applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

Stormwater shall be conveyed from point to point through the use of a single pipe. Smaller pipes in parallel shall not be permitted.

17.3 REQUIREMENTS

17.3.1 Drainage Report

The Design-Builder shall provide a Drainage Report to the Department and any other entities whose facilities will be impacted by the Project in accordance with HDM Chapter 8. The Design-Builder shall be responsible for coordination in advance with any third party to determine the necessary document submission required by the third party. At least two weeks prior to providing documents to any third party, the Design-Builder shall submit a draft Drainage Report to the Department’s Design Quality Assurance Engineer for consultation and written comment.

The Drainage Report shall document the design criteria used, final design basis, and all supporting calculations and computer model output.

17.3.2 Connections to Existing Systems

The Design-Builder shall develop Design Plans and Project Specifications for any connections to existing storm systems. The Design-Builder shall be responsible for calculations performed to ensure there is sufficient capacity to accommodate any increase in flow due to changes in drainage catchment area and/or to land use. This paragraph shall not be construed to relieve the Design-Builder of the obligation to treat runoff water that requires treatment.
Prior to the start of pavement or earthwork operations, the Design-Builder shall clean the existing at-grade drainage system on the Staten Island Expressway and the Service Roads within the project limits to clear any obstructions.

The Design-Builder shall be responsible for video inspection of existing closed drainage facilitates on the Staten Island Expressway and the Service Roads within the limits of construction. The Design-Builder shall also inspect all drainage structures and prepare an inspection report with recommendations for repair or reconstruction of any drainage structures and provide to the Department’s Project Manager for approval. Any resulting work shall be coordinated with the Department and paid for under force account. This work shall be coordinated with NYC Department of Environmental Protection. During rehabilitation construction, the Design-Builder shall maintain all drainage inlets in working condition and properly clean them as required. **Within the 500’ limits of milling and paving at the West and East ends of the Staten Island Expressway, the existing storm drains, frames and grates are to be cleaned. The frames and grates are to be visually inspected and damaged frames and grates replaced, as directed by the Department Project Manager.**

As shown in the Directive Plans, at some locations the proposed curb lines are realigned away from the existing catch basins. In such case, the proposed drainage system shall be constructed aligned with the new curb line. The Design-Builder shall relocate the catch basin as necessary to the proposed curb line.

The catch basin locations within the project limits are shown in the reference documents for inspection.

**17.3.3 Spill Management**

Spill prevention and response measures shall be described in the SWPPP.

**17.4 DELIVERABLES**

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 18  HIGHWAY DESIGN

18.1  SCOPE

The Design-Builder shall be responsible for the design, construction and reconstruction of the permanent roadway(s) to be constructed within the Project Limits, and any other roads damaged by construction operations, or necessary for permanent operations, all in accordance with the design requirements stated herein. Highway design, construction and reconstruction shall be understood to include the design, furnishing, and construction of all road appurtenances, protections, and safety devices not specifically cited in other Project Requirements.

In addition, the Design-Builder shall be responsible for the removal of non-standard systems that currently exist within the Project limits, whether they are affected by the proposed work or not, and replacement with systems meeting current Department Standards, unless specified differently in the Project Requirements Sections 1-17 and 19-20.

18.2  STANDARDS

The Design-Builder shall perform the Work in accordance with the Contract Documents and the Applicable Standards, Design Codes and Manuals listed in Section 1.6, unless otherwise stipulated in this Project Requirement or otherwise applicable to the Project.

18.3  REQUIREMENTS

18.3.1  General

The Design-Builder shall be responsible for performing the detailed highway design and construction within the Project Limits in accordance with the Project Requirements set forth herein.

18.3.2  Design Requirements

Design requirements for the reconstruction of the Bridges are provided in Part 7, Engineering Data.

18.3.3  Guide Railing, Barrier Systems and Impact Attenuators

The Design-Builder shall remove and dispose of all existing barrier systems and/or impact attenuators within the Project limits, and replace with new barrier systems and/or impact attenuators to current NYSDOT Standards. Any guide rail and barrier systems removed due to the MPT scheme shall be replaced with a new system and new materials.

The limits of work for new roadside and new median barrier shall be the lesser of the following:

1) The point where barrier is no longer warranted; or
2) A point where the proposed barrier can be transitioned to an existing barrier system which conforms to current standards.

All existing barrier systems that are removed shall become property of the Design-Builder.

The following impact attenuators shall be used:
1. Expendable Impact Attenuators:
   - QuadGuard Standard – Narrow and Wide Hazards (TL2 & TL3).
   - QuadGuard Non-Standard – Narrow and Wide Hazards (TL2 & TL3).
   - QuadGuard II – Narrow and Wide Hazard (TL2 & TL3).
   - TAU II – 24” to 102” Backstop Widths (TL2 & TL3).

2. Reusable Impact Attenuators:
   - REACT-350 standard 36” width (TL2 & TL3) (Can be customized to accommodate wider width hazards).
   - SCI – 70GM and 100GM (TL2 & TL3, respectively) (24” to 30”standard and 36” to 60” custom Backstop/Transitions).
     The SCI is preferred over the REACT 350.

3. Inertial Barrel Modules/ Sand Barrels:
   - Energite III - Universal Module System only. (Arrays based on Design Velocity and Hazard Width).

18.3.4 Clear zone

The Design–Builder shall document clear zone on the final record plans.

18.3.5 Sidewalks

The Design Builder shall construct a Portland Cement Concrete sidewalk, width varies, 5’ minimum in-width, along Narrows Road North in two sections: from the existing sidewalk at (from Neckar Avenue to Mosel Avenue Bridge and from to Kansas Avenue) to SIRT Bridge; and along Narrows Road South in two sections: (from Sable Avenue to Mosel Avenue Bridge and from Hylan Boulevard to SIRT Bridge) as illustrated on the Sidewalk and Curb Ramp Diagram located in Part 7 – Engineering Data. In addition, a PCC sidewalk, 9’ in width shall be constructed between the two bridges on the north and south side, connecting the proposed sidewalk on BINs 1067822 and 1075752.

For all sidewalks constructed, the Design-Builder shall comply with all requirements in ED 15-004 Design, Construction and Inspection of Pedestrian Facilities in the Public Right of Way and the sidewalk running slope and cross-slope shall be as follows:

- **Running Slope**:
  - if the highway/bridge grade is 5% or less: running slope is 4.5% max
  - if the highway/bridge grade more than 5%: running slope follows highway edge of pavement max

- **Cross Slope**: 1.5% max

18.3.6 Curb Ramps

The Design Builder shall construct Portland Cement Concrete curb ramps in the following locations:

- 1 new curb ramp at NW corner of Kansas Ave. and Narrows Road N (Photo Location1)
- 2 new curb ramps and new crosswalk at SW corner of Sable Ave. and Narrows Road S (Photo Location 3)
- 2 new curb ramps at SW corner of Hylan Blvd. and Narrows Road S (Photo Location 4)
- 1 new curb ramp at SE corner of Hylan Blvd. and Narrows Road S (Photo Location 4)

Refer to Photo Locations located in Part 7 – Engineering Data.

For all curb ramps constructed, the Design-Builder shall comply with all requirements in ED 15-004 Design, Construction and Inspection of Pedestrian Facilities in the Public Right of Way, and NYSDOT Standard Sheets 608 Series.

18.4 DESIGN EXCEPTIONS AND NON-STANDARD FEATURES

It is the responsibility of the Design-Builder, in coordination with the Department, to obtain acceptance of any non-standard features included in the final design. Non-standard features that have previously been approved in the Design Approval Document, and are included in Part 7, Engineering Data, do not need to be submitted for approval. The approved non-standard value shall be adhered to.
SECTION 19  STANDARDS

19.1  GENERAL REQUIREMENTS

The Design-Builder shall identify the specific version of each Standard it uses. It is the Design-Builder’s responsibility to obtain clarification of any apparent error, omission, ambiguity or conflict regarding any Standard in accordance with DB §102-2.

19.2  SPECIFIC REQUIREMENTS

The Design-Builder shall assume that all provisions of the Standards, including the figures and tables, are mandatory and guidelines contained therein shall be assumed to be requirements. All words such as “should,” “may,” “must,” “might,” “could,” and “can” shall mean “shall” unless the context requires otherwise, as determined in the sole discretion of the Department. It shall be in the Department’s sole discretion to determine when the context does not require a provision to be mandatory.

Except as expressly otherwise provided in the Contract Documents, any reference to NYSDOT under a Standard shall mean the Department.

When a Standard refers to an action being necessary, needed, or recommended, the Design-Builder shall construe the action as required unless the context requires otherwise, as determined in the sole discretion of the Department.

Where reference is made in the Standards to items that are indicated in the plans or special provisions or required in the plans or special provisions, the plans or special provisions shall mean the Design-Builder’s Plans or the Special Provisions.

References in the Standards to approved products or materials shall mean approved by the Department.

All references in the Standards to the inspector, the field inspector, the project engineer, the engineer, the materials engineer, the district materials engineer, the survey crew, the project supervisor, the agency certified technician, the certified plant technician, and the representative of the Office of Materials shall mean the Design-Builder, except as otherwise expressly provided in the Contract Documents or otherwise directed by the Department.

When a Standard refers to an approval of any correction or repair that deviates from the Contract requirements, the Acceptance must be by the Department.

When a Standard refers to items that will be performed or provided by NYSDOT or by a division or employee of NYSDOT, the Design-Builder shall construe the requirements as applying to the Design-Builder unless otherwise specified in the Contract Documents, or unless the context requires otherwise. It shall be in the Department’s sole discretion to determine when the context requires otherwise.
SECTION 20  SECURITY

Section not used.