VAN WYCK EXPRESSWAY (VWE) CAPACITY AND ACCESS IMPROVEMENTS TO JOHN F. KENNEDY (JFK) AIRPORT PROJECT - CONTRACT 1

PIN X735.82, Contract D900048

DB CONTRACT DOCUMENTS

PART 3
PROJECT REQUIREMENTS

Final August 30, 2019
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APPENDIX B  CONSTRUCTION QUALITY CONTROL MATERIAL TESTING
APPENDIX C  DESIGN AND CONSTRUCTION QUALITY CONTROL PLAN TEMPLATE
APPENDIX D  QUALITY ASSURANCE PLAN PROGRAM GUIDE
APPENDIX D, ATTACHMENT 1  SCHEDULE OF CONSTRUCTION QUALITY ASSURANCE AND VERIFICATION INSPECTION
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issued by the Office of Engineering, current as of the date of Proposal submission, excluding Section 100, which is superseded by Part 2, Section DB 100 of the Contract Documents, and except as otherwise noted in these Contract Documents.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 includes but is not limited to the following items:

- Replacement to lengthen the following structures:
  - BIN 1055630 – Rockaway Boulevard over the Van Wyck Expressway
  - BIN 1055650 – Linden Boulevard over the Van Wyck Expressway
  - BIN 1055670 – Liberty Avenue over the Van Wyck Expressway
  - BIN 1055680 – 101st Avenue over Van Wyck Expressway

- Retrofit to lengthen the following structures:
• Entrance and Exit Ramp Relocation
  o NB VWE exit ramp to Linden Boulevard
  o N. Conduit Ave entrance ramp to WB Belt Parkway, including associated intersection and SB Van Wyck Expressway exit ramp (Exit 1W) to N. Conduit Ave work

• Upgrading curb ramps for ADA compliance
• Replacing/upgrading the traffic signals

1.4 COORDINATION WITH OTHER PROJECTS

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

<table>
<thead>
<tr>
<th>PIN/Description</th>
<th>WZTC Description</th>
<th>Current schedule</th>
<th>Contractor</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>X735.85 – LIRR Atlantic 6 Bridge Replacement</td>
<td>Brief WZTC Description</td>
<td>Letting Date or Substantial Completion Date</td>
<td>Contractor Name</td>
<td>Resident Engineer / Project Manager or equivalent</td>
</tr>
<tr>
<td>X051.60 – Kew Gardens Interchange - Phase 4</td>
<td>Brief WZTC Description</td>
<td>Approximate Completion Date, Summer 2022</td>
<td>Halmar International</td>
<td>Resident Engineer / Project Manager or equivalent</td>
</tr>
</tbody>
</table>

1.5 THIRD PARTY AGREEMENTS (NON-UTILITY)

No Third-Party Agreements have been developed in connection with this Project.
For information regarding Preliminary DB Utility Work Agreements, refer to Section 12 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, as adopted by the Department, 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
- LRFD Bridge Construction Specifications
- Manual for Assessing Safety Hardware (MASH)
- Manual for Bridge Evaluation
- Manual on Subsurface Investigations
- Roadside Design Guide
- Roadway Lighting Design Guide
AISC:
- Steel Construction Manual

ANSI
- ANSI/AASHTO/AWS D1.5 Bridge Welding Code
- ANSI/IES Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting, RP-8-18

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
- HEC 18 Evaluating Scour at Bridges
- HEC 23 Bridge Scour and Stream Instability Countermeasures
- Manual of Uniform Traffic Control Devices (MUTCD)
- Standard Highway Signs and Markings (SHSM) Book
- Steel Bridge Design Handbook
- Technical Advisory T6640.8A, 10/30/87 (environmental analyses)
- Traffic Monitoring Guide

IEEE:
- IEEE 1455-1999 Standards for Message Sets for Vehicle/Roadside Communications

ITE:
- ITE TMDD v3 Traffic Management Data Dictionary (TMDD) Requirements
NFPA:
- NFPA 70 – National Electrical Code (NEC)
- NFPA 70E – Standard for Electrical Safety in the Workplace
- 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways

NYCDDC:

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/Street Connections to the Sewer System
- NYC Environmental Protection Standard Sewer and Water Main Specifications
- Design Criteria and Procedures for the Preparation of Drainage Plans
- Water Main Standard Drawings

NYCDOT:
- Seismic Design Guidelines for Bridges in Downstate Region
- City of New York DOT Systems Engineering Specifications
- Specifications for furnish 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 Specifications, Traffic Signals & ITS Systems
- 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
• 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
• Standard Highway Specifications

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. 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. Should the Design-Builder elect to skip the Interim design review, the Department’s total review time as defined in Part 2 – Section 111-9.5 (20 days = Definitive design review + Interim design review + Release for Construction review) will not change.
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 December 2022.

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</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
<th>PERCENT OF LUMP SUM PRICE (To be completed by D-B)¹</th>
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</thead>
<tbody>
<tr>
<td>WORK PAYMENT SCHEDULE NO. 1 – ITEM 800.06000115</td>
<td></td>
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<tr>
<td>BIN 1055630 – ROCKAWAY BOULEVARD OVER THE VAN WYCK EXPRESSWAY – BRIDGE REPLACEMENT</td>
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<tr>
<td>Work Zone Traffic Control</td>
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VAN WYCK EXPRESSWAY (VWE) CAPACITY AND ACCESS IMPROVEMENTS TO JOHN F. KENNEDY (JFK) AIRPORT PROJECT 8 Part 3 - Project Requirements PIN X735.82, Contract D900048 Final August 30, 2019
<table>
<thead>
<tr>
<th>Work Item</th>
<th>Percent of Lump Sum Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
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</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>14%</td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>14%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>17%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and</td>
<td>15%</td>
</tr>
<tr>
<td>sidewalk) and adjacent service road intersections</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway</td>
<td>3%</td>
</tr>
<tr>
<td>Lighting, and Signage</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide</td>
<td>5%</td>
</tr>
<tr>
<td>Railing and Fencing</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
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**WORK PAYMENT SCHEDULE ITEM NO. 2 – ITEM 800.06000215**

<table>
<thead>
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<th>Work Zone Traffic Control</th>
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<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>6%</td>
</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>14%</td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>13%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>17%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
</tr>
</tbody>
</table>
### Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk) and adjacent service road intersections

<table>
<thead>
<tr>
<th>Description</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
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### WORK PAYMENT SCHEDULE NO. 3 – ITEM 800.06000315

**BIN 1055670 – LIBERTY AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE REPLACEMENT**

<table>
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<tr>
<th>Description</th>
<th>Maximum Percent of Lump Sum Price</th>
<th>Percent of Lump Sum Price (To be completed by D-B)</th>
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<tbody>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
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<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk) and adjacent service road intersections</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
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### WORK PAYMENT SCHEDULE NO. 4 – ITEM 800.06000415
BIN 1055680 – 101ST AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE REPLACEMENT

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<th>Description</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
<th>PERCENT OF LUMP SUM PRICE (To be completed by D-B)¹</th>
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<tr>
<td>Work Zone Traffic Control</td>
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<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>6%</td>
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</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk) and adjacent service road intersections</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Work Associated with the Closure of SB Entrance Ramp at 101st Ave, and Redirection of SB Exit Ramp to Entrance Ramp at Atlantic Ave</td>
<td>2%</td>
<td></td>
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<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
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</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
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### WORK PAYMENT SCHEDULE NO. 5 – ITEM 800.06000515
BIN 1055620 – 133RD AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE RETROFIT

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<tr>
<th>Description</th>
<th>MAXIMUM PERCENT OF LUMP SUM PRICE</th>
<th>PERCENT OF LUMP SUM PRICE (To be completed by D-B)¹</th>
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<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
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<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>5%</td>
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</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
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</tr>
<tr>
<td>Work Activity</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk and adjacent service road intersections)</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
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</tr>
<tr>
<td>NB CD Road Realignment – Pavement, Utilities, Drainage, etc.</td>
<td>9%</td>
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</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
</tbody>
</table>

<p>| Work Zone Traffic Control | 5% |
| Demolition and Removal of Existing Bridge Elements | 5% |
| Demolition and Removal of Existing Approach Slabs | 2% |
| Construct Pier and Abutment Foundations | 12% |
| Construct Pier | 8% |
| Construct Abutments and Wing Walls | 16% |
| Fabricate and Install Bearings and Superstructure | 12% |
| Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs | 15% |
| Construct Reinforced Concrete Approach Slabs | 3% |
| Construct Drainage System | 4% |</p>
<table>
<thead>
<tr>
<th>Work Item</th>
<th>Max Percent of Lump Sum Price</th>
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</thead>
<tbody>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and</td>
<td>16%</td>
</tr>
<tr>
<td>sidewalk) and adjacent service road intersections</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
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<td>Final Agreement (Per DB §109-09D)</td>
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### WORK PAYMENT SCHEDULE NO. 7 – ITEM 800.06000715 BIN 1055660 – 109TH AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE RETROFIT

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<tr>
<td>Work Zone Traffic Control</td>
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<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>5%</td>
</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>12%</td>
</tr>
<tr>
<td>Construct Pier</td>
<td>8%</td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>16%</td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>12%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>15%</td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and</td>
<td>16%</td>
</tr>
<tr>
<td>sidewalk) and adjacent service road intersections</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
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<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
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## WORK PAYMENT SCHEDULE NO. 8 – ITEM 800.06000815
**BIN 1055700 – JAMAICA AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE RETROFIT**

<table>
<thead>
<tr>
<th>Description</th>
<th>Maximum Percent of Lump Sum Price</th>
<th>Percent of Lump Sum Price (To be completed by D-B)</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 Bridge Elements</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
<td></td>
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<tr>
<td>Construct Pier</td>
<td>11%</td>
<td></td>
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<tr>
<td>Construct Abutments and Wing Walls</td>
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</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk) and adjacent service road intersections</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>NB VWE Realignment (Jamaica Ave to Hillside Ave)</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
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</table>

## WORK PAYMENT SCHEDULE NO. 9 – ITEM 800.06000915
**BIN 1055710 – HILLSIDE AVENUE OVER THE VAN WYCK EXPRESSWAY – BRIDGE RETROFIT**

<table>
<thead>
<tr>
<th>Description</th>
<th>Maximum Percent of Lump Sum Price</th>
<th>Percent of Lump Sum Price (To be completed by D-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Demolition and Removal of Existing Bridge Elements</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Demolition and Removal of Existing Approach Slabs</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier and Abutment Foundations</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Construct Pier</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Work</td>
<td>Maximum Percent of Lump Sum Price</td>
<td>Percent of Lump Sum (To be completed by D-B)</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Construct Abutments and Wing Walls</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bearings and Superstructure</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Bridge Deck Slab, Sidewalk and Curbs</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Construct Reinforced Concrete Approach Slabs</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Construct Drainage System</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the bridge approaches (including curbs, drainage, and sidewalk) and adjacent service road intersections</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Traffic Signals, Roadway Lighting, and Signage</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Fabricate and Install Bridge Rail, Approach Guide Railing and Fencing</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
<td></td>
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**WORK PAYMENT SCHEDULE NO. 10 – ITEM 800.06001015**

<table>
<thead>
<tr>
<th>Work</th>
<th>Maximum Percent of Lump Sum Price</th>
<th>Percent of Lump Sum (To be completed by D-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Ramp Construction and VWE Resurfacing Work, Including Drainage and Relocation of Utilities</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Existing Ramp Removal</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>North Service Road Work</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Removal and Installation of Lighting, Striping, Signage, and Signals</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
</tbody>
</table>

**WORK PAYMENT SCHEDULE NO. 11 – ITEM 800.06001115**

<table>
<thead>
<tr>
<th>Work</th>
<th>Maximum Percent of Lump Sum Price</th>
<th>Percent of Lump Sum (To be completed by D-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Conduit Ave. Entrance Ramp to WB Belt Parkway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Ramp Construction and VWE Resurfacing Work, Including Drainage and Relocation of Utilities</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Existing Ramp Removal</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>North Service Road Work</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Removal and Installation of Lighting, Striping, Signage, and Signals</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Work Zone Traffic Control</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>----</td>
<td></td>
</tr>
<tr>
<td>Ramp Construction and VWE Reconstruction Work, Including Drainage and Relocation of Utilities</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Exit Ramp to N. Conduit Ave. Reconstruction</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Existing Ramp Removal</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Removal and Installation of Lighting, Striping, Signage, and Signals</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</td>
<td></td>
</tr>
</tbody>
</table>

### WORK PAYMENT SCHEDULE NO. 12 – ITEM 800.06001215
NYCDEP UTILITY RELOCATIONS – SERVICE ROADS UNDER LIRR BRIDGE

<table>
<thead>
<tr>
<th>DEP Utility Relocations – Service Roads Under LIRR Bridges</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punch list work, Site Cleanup and Restoration</td>
<td>2% (fixed)</td>
</tr>
<tr>
<td>Final Acceptance (Per DB §109-09B)</td>
<td>1% (fixed)</td>
</tr>
<tr>
<td>Final Agreement (Per DB §109-09D)</td>
<td>1% (fixed)</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-8 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 3, Section 4,5 and 6. This section summarizes the Management Plans to be produced by the Design-Builder in accordance with the Contract Documents.

2.2 MANAGEMENT PLANS AND SCHEDULES

2.2.1 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 105-21B</td>
<td>No</td>
<td>60 Days after NTP</td>
</tr>
<tr>
<td>Safety Plan</td>
<td>Part 3, Section 2.2.3</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>Part 3, Section 4.2.3</td>
<td>Yes</td>
<td>30 Days after NTP</td>
</tr>
<tr>
<td>Overall Design-Build Team Organization Plan</td>
<td>Part 3, Section 2.2.5</td>
<td>Yes</td>
<td>25 Days after NTP</td>
</tr>
<tr>
<td>Design Management Plan</td>
<td>Part 3, Section 2.2.6</td>
<td>No</td>
<td>30 Days after NTP</td>
</tr>
<tr>
<td>Construction Management Plan</td>
<td>Part 3, Section 2.2.7</td>
<td>No</td>
<td>45 Days after NTP</td>
</tr>
<tr>
<td>Design Review Plan</td>
<td>Part 3, Section 2.2.8</td>
<td>No</td>
<td>10 Days after NTP</td>
</tr>
<tr>
<td>Transportation Management Plan/Emergency Response Plan</td>
<td>Part 3, Section 19.3.10</td>
<td>No</td>
<td>30 Days after NTP</td>
</tr>
<tr>
<td>Initial Baseline Progress Schedule</td>
<td>Part 3, Section 2.3</td>
<td>Yes</td>
<td>15 Days after NTP</td>
</tr>
<tr>
<td>Risk Management Plan</td>
<td>Project Requirements 2.2.10</td>
<td>Yes</td>
<td>75 Days after NTP</td>
</tr>
</tbody>
</table>

* Requires Department approval

2.2.2 Workforce Participation Plan

The Design-Builder shall develop a Workforce Participation Plan to meet the requirements of DB §105-21B and submit it to the Department’s Project Manager for review and comment.
2.2.3 Safety Plan

The Design-Builder shall submit a written Project-specific Safety Plan which documents the Design-Builder's safety policy and which identifies and addresses specific health and safety concerns to be encountered on the Project to the Department for review and acceptance. Before the Work begins, and periodically throughout the Project, the Design-Builder's Project supervision staff shall meet with the Department's Project Manager to review and discuss the status of safety issues on the Project. An appropriate notice shall be posted at the job Site that the Project's Safety Plan is available for examination by any worker employed on the Project.

The Design-Builder shall implement, review, and update the Safety Plan and introduce a program for assuring that the Safety Plan is followed at all times. The Design-Builder shall coordinate with all authorities and relevant entities as necessary to ensure compliance with the Safety Plan.

The Design-Builder's Safety Plan shall provide for the following:

A) Planning, management, and design to avoid hazards;
B) Detection of potential hazards;
C) Timely correction of hazards;
D) Dedication to the protection of the public and the workers;
E) Active participation of all persons involved with the Contract;
F) Dedicated safety staff;
G) Liaison with the Department's safety monitoring staff; and
H) Safety training and safety meetings.
I) The Department will monitor and audit the Design-Builder’s safety performance.

The Design-Builder shall ensure that all its employees and those of the Subcontractors of any tier (including labor-only) are under an obligation at all times to fully conform to the provisions of the Safety Plan. In the event that the Design-Builder’s employees or its Subcontractors fail to conform to the provisions of the Safety Plan, the Design-Builder shall take appropriate disciplinary measures. Such measures shall include suspension, removal of offending employees from the Site, and dismissal. The obligations and requirements of this Section shall be included in the terms and conditions of employment of all employees of the Design-Builder and all Subcontractors of any tier, including labor-only Subcontractors.

No construction Work shall progress, and no payment shall be made to the Design-Builder until the Safety Plan is approved by the Department.

2.2.3.1 Content of the Safety Plan

The Safety Plan shall be comprehensive and include all required actions, activities, rules, and mitigation relative to the safety of the Work. An appropriate notice shall be posted on the Project.
Site that the Project Safety and Health Plan is available for examination by any worker employed on the Project. The Safety Plan shall include the following items:

A) Policy statement indicating the Design-Builder’s commitment to safety, stating goals for OSHA recordable and lost-time incidence rates;

B) Identification of Department and Design-Builder safety officers, including responsibility definitions, an organization chart, reporting procedures, safety inspection procedures, and audit programs;

C) References to all applicable Governmental Rules;

D) An employee safety education and training plan for required training for all workers, including a separate program and Hazardous Materials Communications Plan for workers involved with Hazardous Materials remediation, required toolbox meetings, and required posting of information, Hazard Communication Training (29 CFR Section 1926.59), Safety Training and Education (29 CFR Section 1926.21), and other training required by 29 CFR Section 1926;

E) Procedures to address Project health and safety concerns, including housekeeping, material handling and storage, personal protective equipment, wall and floor openings, scaffolds, ladders, welding, flame cutting, electrical equipment, lock-out or tag-out, motor vehicles, heavy equipment, small tools, concrete forms, steel erection, cranes and hoisting, work platforms, fire prevention and protection, sanitation, confined space entry, blasting and explosives, identification of restricted areas and measures to barricade, fence, cover and otherwise prevent access to such areas, fall protection, working over water, electrical safety, drilling, lifting, work zone safety, night time safety, excavation and trench, silica, lead safety, asbestos, backing policy, overhead and underground utilities, pavement striping, radiation safety, power tools, lifting, histoplasmosis, and other items;

F) Industrial hygiene, including respiratory protection, noise, Hazardous Materials, MSDS, and lists of hazardous chemicals present;

G) Fire protection and prevention (including provisions prohibiting the storage of any flammable materials beneath, or within the proximity of any structure, at any time);

H) Emergency and rescue procedures, including detailed procedures for all types of emergencies, such as medical, fire, chemical spill, property damage, bomb threat, severe weather, flooding, explosion, and earthquakes;

I) Incident investigation, reporting, and record keeping;

J) Policy for substance abuse;

K) Security provisions;

L) Safety requirements and procedures for surveyors and engineering personnel conducting Site Investigations and Verification Sampling and Testing;

M) Procedures for compelling worker compliance with health and safety requirements; and
N) Procedures to address distraught, emotionally disturbed persons and/or homeless persons.

The Safety Plan shall contain a list of the detailed safety procedures to be followed. Safety procedures shall be prepared separately for individual activities and these detailed procedures shall be appendices to the Safety Plan.

Certain of these items may be submitted in the format of the Design-Builder's health and safety program, with the Project's Safety Plan limited to Project-specific issues.

The Design-Builder shall be responsible for ensuring that each Subcontractor employed on the Project complies with the requirements of this Section. The Design-Builder shall provide to the Department a Safety Plan covering all Work to be done by a specific Subcontractor prior to that Subcontractor starting Work. As an alternative, the Design-Builder may provide a certification that all activities performed by, and workers employed by, Subcontractors will be subject to the Design-Builder's Safety Plan. Submission of the required Safety Plan by the Design-Builder and its acceptance by the Department shall not be construed to imply approval of any particular method or sequence for addressing health and safety concerns or to relieve the Design-Builder from the responsibility to adequately protect the health and safety of all workers involved in the Project as well as any members of the public who are affected by the Project.

In accordance with the New York State Labor Law §220-h, all laborers, workers, and mechanics shall be certified prior to performing any work on the Contract as having successfully completed a course in construction safety and health approved by the US Department of Labor's Occupational Safety and Health Administration (OSHA) that is at least 10 hours in duration. The Design-Builder shall attach proof of completion to first certified payroll for initial workers, and to subsequent payrolls for new or additional workers. The Design-Builder shall clearly indicate on subsequent payrolls any workers not previously employed on that Contract. If no proof of completion has been submitted for a worker listed on a certified payroll, the Department’s Project Manager will alert the Design-Builder to this fact. If the Design-Builder cannot provide proof of completion and the worker continues to work, the Department will notify the Design-Builder in writing with a copy to the NYSDOL by e-mail at PWAk@labor.state.ny.us.

2.2.3.2 Submittal of the Safety Plan

Prior to the start of any field Work or construction, the Design-Builder shall submit its Safety Plan to the Department’s Project Manager and the Department’s Safety Construction Coordinator for written acceptance, based on the Design-Builder's Safety Plan information contained in its Proposal along with the incorporated comments of the Department’s Project Manager and any other required updating. The Safety Plan shall be a controlled document to be issued by the Design-Builder to, at least, the following persons:

A) The Department’s Project Manager;

B) The CQAE;

C) The Department’s safety monitoring coordinator;

D) The Design-Builder’s Project Manager;

E) The Design-Builder’s Safety Manager;
F) Subcontractors of any tier, including labor-only Subcontractors; and

G) The Design-Builder’s Quality Manager.

Other controlled copies shall be distributed as determined by the Design-Builder and the Department’s Project Manager. Uncontrolled copies shall be issued as considered necessary by the Design-Builder.

The Design-Builder shall maintain a traceable record of the issuance of the controlled copies including numbering and acknowledgement of receipt. Revisions of the Safety Plan shall be issued to all recipients of the controlled copies and managed in the same way as the controlled copies.

2.2.3.3 Revisions to the Safety Plan and Procedures

The Department’s Project Manager may require a revision to the Safety Plan or any safety procedure in order to ensure compliance with the Contract. The Design-Builder shall, following discussion with the Department’s Project Manager, issue such revision within 30 days of receipt of the instruction. A revision shall include an addition, omission, or revision, as applicable.

The Design-Builder shall review the Safety Plan and any safety procedure in order to revise it in accordance with activities and experiences on the Site. Such revision, from time to time, shall enhance the standards of safety being implemented on the Site. At the very least, procedures shall be reviewed and new procedures issued whenever the character or extent of any activity is changed or a new activity of a different nature is introduced which necessitates such revision.

In addition to such revision, the Design-Builder shall make a formal review of the Safety Plan once every 12 months on or near the anniversary of NTP. Such formal review shall consider all matters pertaining to safety planning and implementation, including accident reports, inspections, audits, suggestions from meetings, and other sources, such as, the Department’s Project Manager and hazard analysis reviews. Within seven days of finishing this review, the Design-Builder shall issue a review report to the Department’s Project Manager, giving the conclusions of the review and identifying the revisions to be made to the Safety Plan.

Within 30 days of the issue of the review report, the Design-Builder shall issue a revised Safety Plan for review and written acceptance by the Department’s Project Manager.

2.2.3.4 The Design-Builder’s Safety Organization

The Design-Builder shall designate a member of its board of directors, if it is a corporation or a joint venture, or a principal of its organization who shall be responsible and directly accountable to the Department in all matters concerning safety. The Design-Builder shall also require the Design-Builder’s Project Manager to be responsible and directly accountable to this designated safety board member or principal in all matters concerning construction safety.

The Design-Builder shall appoint, within 30 days of NTP, a Safety Manager whose Project duty shall be solely connected with the safety aspects of the Project and who shall report directly to the designated safety board member or principal. Such an appointment shall be subject to written acceptance by the Department’s Project Manager. The Safety Manager shall implement, maintain, and monitor compliance with the Safety Plan and all safety procedures, and be based full-time at the Site.
The Safety Manager is responsible for adopting and implementing the company’s health and safety program and ensuring that the program complies with Occupational Safety and Health Administration (OSHA) and NYSDOT Standard Specifications. The Safety Manager must also identify health and safety concerns that apply to each construction site, investigate any safety concerns brought to their attention and administer the proper procedure to correct the concern. The Safety Manager shall train new construction workers and current employees the proper safety and health procedures to be in compliance with OSHA and NYSDOT Standard Specifications, conduct annual employee training sessions to update workers on safety procedures and responsibilities and ensure that all employees have the required Proper Protective Equipment and that it is utilized during the construction operation being performed.

The Design-Builder shall provide and maintain an organizational structure that shall ensure the effective control of the Project’s safety assurance tasks by the Design-Builder’s safety staff. Such staff shall be engaged solely in safety assurance. Responsibilities and task subdivision shall be clearly identified in the Safety Plan, and shall show direct lines of communication and reporting between the Design-Builder’s Safety Manager and the designated safety board member or principal and between the Design-Builder's Safety Manager and the Design-Builder's Project Manager.

The Design-Builder shall not remove the appointed Safety Manager without the prior written consent of the Department’s Project Manager. The Design-Builder shall nominate a replacement at the same time consent is sought.

If the Safety Manager is removed from the Project, a suitably qualified and immediately available replacement shall be proposed to the Department's Project Manager within 14 days of receipt of the notice requiring the removal.

The Design-Builder shall provide adequate numbers of supporting staff for the Safety Manager, including a deputy to act in his/her absence.

The Design-Builder shall not commence any Work on the Site until the Safety Manager has been appointed and accepted by the Department’s Project Manager, and has commenced duties on the Site.

The Design-Builder shall ensure that all Subcontractors of any tier whatsoever, including labor-only Subcontractors, shall provide adequate safety staff.

Each Subcontractor of every tier, including labor-only Subcontractors, shall have a safety supervisor who shall have appropriate experience and training. Each Subcontractor safety supervisor shall be responsible for implementing and maintaining its respective safety plan. Subcontractor safety supervisors shall devote a substantial amount of their time to such duties. All Subcontractor safety plans shall at all times conform to the Design-Builder’s Safety Plan.

Breaches of the Design-Builder’s Safety Plan or other conduct prejudicial to safety may be cause for the Department’s Project Manager to require the removal of any employee, including the Design-Builder's Project Manager or Safety Manager, from the Site.

The Design-Builder shall give authority to the Safety Manager and safety staff to issue stop orders that instruct employees of the Design-Builder and its Subcontractors of any tier, including labor-only Subcontractors, to cease operations and take urgent and appropriate action to make the Site
safe and prevent unsafe working practices or other infringements of the Safety Plan or breach of any Governmental Rules.

The Design-Builder shall require its Safety Manager to verify by Inspection that the requirements of this Section and the Design-Builder’s Safety Plan and safety procedures are being strictly complied with. In the event of any non-compliance, the Safety Manager shall forthwith issue an instruction to stop Work until the non-compliance is rectified. If the Design-Builder considers the non-compliance to be of a minor nature, implementation may be delayed 24 hours, with the Department’s consent. If the Department’s Project Manager states that such delay is acceptable, the Design-Builder may suspend implementing the instruction for 24 hours and resume working. During the 24-hour period, the Design-Builder shall rectify the non-compliance.

No Work shall be performed on Site unless the Design-Builder’s Safety Manager or designated deputy is on Site. Subcontractors shall not perform work at the Site unless the specified safety supervisors are on the Site.

2.2.4 Quality Control Plan

See Section 4.2.3.1.

2.2.5 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.
2.2.6 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-Builder’s 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-Builder 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-Builder 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.

2.2.7 Construction Management Plan

The Design-Builder 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-Builder 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.

2.2.8 Design Review Plan

The Design-Builder shall prepare and submit a written Design Review Plan within 10 days of NTP to the Department’s Project Manager for review and comment. The Plan shall describe the level
of design that the Designer will accomplish for each of the planned stages of design development and provide a description and/or checklist for each Design Unit clearly identifying the design product that will be reviewed.

2.2.9 Transportation Management Plan/Emergency Response Plan

The Design-Builder shall develop a Transportation Management Plan/Emergency Response Plan to meet the requirements of Part 3, Section 19.3.10 and submit it to the Department’s Project Manager for review and comment.

2.2.10 Project Risk Management

2.2.10.1 Project Risk Management Plan

During the conceptual design phase, project risks were identified by NYSDOT. These risks, the *NYSDOT Van Wyck Contract 1 Risk Register*, can be found in Part 5. The Design-Builder, as part of their proposal, submitted additional risks in Form R2 as per ITP Appendix C3.1 A 2. Forms R1 and R2 are located in the ITP, Appendix E.

The Design-Builder’s Quality Manager shall prepare a Risk Management Plan (RMP) and submit it to the Department’s Project Manager for review and comment. The Design-Builder’s RMP shall cover all phases of the Project including design, procurement, construction and demolition, and shall include but not be limited to the following elements as a minimum:

A) The Design-Builder’s risk management policy for the Project;
B) Project team roles and responsibilities concerning risk management;
C) A “Unified Project Risk Register” (to be provided at a later date) consisting of all identified risks from NYSDOT’s *Van Wyck Contract 1 Risk Register*, the Design-Builder’s additional risks identified in Form R2, and any new risks that may have developed since the Design-Builder submitted their proposal. The “Unified Project Risk Register” shall be in the same MS Excel format as the *NYSDOT Van Wyck Contract 1 Risk Register* found in Part 5 and in the reference documents. The Design-Builder shall review, assess, and modify the “Unified Project Risk Register” as follows:

1) Assign risk ratings (Probability, Time, and Cost Impact) to the additional risks submitted by the Design-Builder in Form R2 as part of their proposal, and any new risks; the Department’s instructions for rating risks can be found on the Instructions worksheet within the MS Excel *NYSDOT Van Wyck Contract 1 Risk Register*.
2) Revise risk ratings that were identified in the *NYSDOT Van Wyck Contract 1 Risk Register* as necessary
3) Revise risk response strategies as necessary for all risks

D) The Design-Builder’s Quality Manager’s proposed approach to monitoring and managing risks including monthly risk reviews and updates at appropriate milestones and whenever risk levels change, status reporting, and/or when new risks are identified that may impact risks already identified. The Department may elect to observe risk identification workshops;
The Design-Builder’s Quality Manager shall provide a copy of the RMP and the Unified Project Risk Register to the Department within 75 days after NTP. When there is substantive change to the RMP or the Risk Register, a revised RMP and Register shall be provided to the Department for review and comment. The Department reserves the right, throughout the entire duration of the project, to review and provide written comment on any item in the risk register that, in the opinion of the Department, is of relevance or concern to the Department.

2.2.10.2 Risk Identification Workshop

During the RMP development process, the Design-Builder shall hold a minimum of one (1) risk identification workshop. The Quality Manager shall be responsible for facilitating the workshop including but not limited to the following:

1. Developing a workshop agenda and determining the length of the risk identification workshop;
2. Scheduling the risk identification workshop at a location agreed to by invited participating risk stakeholders (risk owners);
3. Sending out pre-risk identification workshop materials including but not limited to the draft RMP;
4. Facilitating and conducting the workshop;
5. Documenting, compiling, and communicating any feedback, comments, results, and action items identified during the risk identification workshop;
6. Revising the RMP to reflect any necessary changes resulting from the workshop.

The Quality Manager shall send workshop participant materials, including but not limited to the draft RPM, a minimum of 10 calendar days prior to the scheduled workshop. The Risk Identification Workshop shall occur prior to the RMP submittal deadline (within 75 calendar days after NTP) and at a time where comments and/or revisions based on the Risk Identification Workshop can be incorporated into the Final RMP submittal.

2.2.10.3 Risk Management Meetings

The Quality Manager shall conduct a minimum of one (1) risk management meeting per month throughout the duration of the project. Risk management meetings shall be attended by risk owners. At the risk management meetings, the Quality Manager shall review and discuss the unified risk register with participants and document the following:

- Status of active risks;
- Any on-going work efforts regarding active risks;
- Future workplan for each active risk;
- How each active risk could impact the current and future cost, schedule, scope, or quality of the project;
- Risk response strategies to address each active risk.

After each risk management meeting, the Quality Manager shall document and communicate the results within a maximum of 5 work days to all stakeholders.

2.2.10.4 Risk Management Documentation

The final submittal RMP, any revisions to the RMP during the contract, along with all risk management meeting reports shall be made part of the official project documentation files.
2.3 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 §108-01 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.

2.4 MEETINGS

The Design-Builder shall participate in meetings as indicated in this Section. The Design-Builder shall record minutes of all meetings and distribute them within five days of the meeting. Meeting minutes shall clearly identify the following:

A) Action items and issues;
B) The party responsible for the action item;
C) The status of issues; and
D) Due dates for identified action items.

Action items and issues shall be retained on the minutes until the required action is completed and/or the issue is resolved.

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 103-05.

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

2.4.1 Pre-Work Conference

The Department’s Project Manager will consult with the Design-Builder and arrange and lead a Pre-Work Conference meeting promptly after issuance of NTP.
The Design-Builder shall be represented by all appointed key personnel. See Section 3 for information regarding the Design-Builder’s key personnel.

The Pre-Work Conference will take place at a location determined by the Department’s Project Manager in the Project vicinity.

The agenda of the Pre-Work Conference shall include the following items:

A) Submission of executed bonds, guarantees, Warranties, and insurance policies and certificates, if not already provided;

B) Planned activity for the first 60 days after NTP;

C) Submission of the list of intended Subcontractors;

D) Submission of the Plans required under the Contract (Reference Part 3, Section 2.2);

E) The Department’s Project Manager or the Design-Builder may add other items to this agenda; and

F) Schedule Development and Submissions.

At the Pre-Work Conference, the Design-Builder shall submit a list of intended Subcontractors and vendors. In addition, the Design-Builder will be required to update the list of Subcontractors and vendors as the Work progresses so that the Department will have, at all times, a current and accurate list of Subcontractors along with the Work that they perform and vendors along with the items that they supply. The required forms for the submission of Subcontractor information will be supplied by the Department.

2.4.2 Value Engineering and Proposal Concepts Evaluation Meetings

This meeting may be combined with the Pre-Work Conference.

2.4.3 Design Mobilization Meeting

The Design-Builder’s Project Manager will consult with the Department’s Project Manager and will arrange and lead a meeting at the Designer-Builders Project office prior to the Design-Builder’s initiating design Work. The Design-Builder’s key personnel who will be responsible for activities on the agenda shall attend the meeting.

The agenda shall be developed in consultation between the Department’s Project Manager and the Design-Builder and prepared by the Design-Builder and shall include the following:

A) Organization for design;

B) Review of qualifications of design QC staff;

C) Design workshop agenda (see Section 5.11.1);

D) Location of design personnel;
E) Design schedule and time allocations for Design Reviews; and

F) Design Quality Control and Quality Assurance.

2.4.4 Site Mobilization Meeting

The Design-Builder’s Project Manager will consult with the Department’s Project Manager and arrange and lead a meeting at the Design-Builder’s office prior to the Design-Builder’s occupying any part of the Site. The Design-Builder’s key personnel who will be responsible for activities on the agenda shall attend the meeting.

The agenda shall be developed in consultation between the Department’s Project Manager and the Design-Builder and prepared by the Design-Builder and shall include the following items:

A) Use of premises by the Department and the Design-Builder;

B) Department’s requirements;

C) Temporary utilities and facilities;

D) Security and “housekeeping”;

E) Right-of-way and construction survey;

F) Schedule for establishing Work areas, temporary facilities, and facilities and equipment for Department’s staff;

G) Temporary works; and

H) Plans for early construction, if any.

2.4.5 Progress Meetings

Progress meetings shall be held at least weekly throughout the duration of the Project. The Design-Builder shall prepare (1) a meeting agenda in consultation with the Department’s Project Manager and (2) a current summary of all issues (including reference to the relevant version of any report, schedule or other document) to be included in the next monthly progress report with respect to each item listed in § DB 108-01 (E), and distribute copies of the meeting agenda, the issues summary and draft minutes of the previous meeting to all planned participants at least five days prior to the meeting. The Design-Builder shall lead the meetings.

The Design-Builder’s key personnel shall attend the progress meetings.

A typical agenda shall include the following items:

A) Confirmation of minutes of the previous meeting and matters arising at the previous meeting;

B) Review of Work progress;
2.4.6 Special Meetings

The Department’s Project Manager may require special meetings at any time and that all or specified Design-Builder key personnel attend.

2.5 COMPUTER AND NETWORKING REQUIREMENTS

The Department requires the Design-Builder and its Construction Inspection Professional Engineering Firm (CIPE) to obtain NYSDOT RSA Tokens (software tokens preferably), the multi-factor authentication necessary to access the Virtual Desktop Infrastructure (VDI). VDI is the interface where the Design-Builder and its CIPE can access software applications required for the contract, such as Site Manager and Primavera P6. Instructions for obtaining RSA tokens and installing and using VDI may be accessed here: https://www.dot.ny.gov/portal/page/portal/main/business-center/contractors/constructiondivision.

Upon request, the Department will also supply the CIPE with a CSMIN network connection for their use with the following Computer and Networking equipment:

- 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-Builder 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 Multi-Function Printer.
The Design-Builder’s hardware and software compatibility with the Department’s network is the responsibility of the Design-Builder: therefore, it is recommended that the Design-Builder test the hardware, software, and network connections prior to fully equipping its staff and the CIPE firm, and as NYSDOT systems are upgraded through the contract term.

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);
- 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 VDI Horizon Client installed, which can be accessed at:

https://desktop.ny.gov/

2.6 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 §105-23). 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 §105-14.

2.7 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;
- 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-Builder 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-Builder 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  PROJECT TEAM

3.1  SECTION INCLUDES

This section sets out requirements relating to the Design-Builder’s Key Personnel and Other Personnel.

3.2  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.

3.2.1  Directory / Organization Chart

Within 15 days after NTP, the Design-Builder shall submit to the Department’s Project Manager a directory and organizational chart showing all of its Key Personnel. The directory shall be updated throughout the Contract as changes occur. The directory shall include the names, titles, areas of responsibility, office address and location, office telephone and fax numbers, and cellular and/or pager numbers of key personnel. The Design-Builder shall provide information sufficient for the Department to contact any of the Key Personnel on a 24-hour basis for the duration of the Contract.

The Department’s Project Manager shall provide a directory of the Department’s Project staff to the Design-Builder.

3.2.2  Availability of Key Personnel

Key Personnel shall be available to work on the Project for the duration of the Contract.

If any of the Key Personnel are to be unavailable from the Project for more than one week, the Design-Builder shall designate a deputy to represent the absent Key Personnel and inform the Department’s Project Manager accordingly.

3.2.3  Changes in Key Personnel

The Design-Builder shall assign the Key Personnel identified in the Design-Builder’s Proposal to this Project. Except in exceptional circumstances, as determined by the Department’s Project Manager, the Design-Builder shall submit the names and qualifications of proposed replacement Key Personnel to the Department’s Project Manager 30 days in advance of any replacement of any Key Personnel.
Requests for changes must be made using Form RFC, and shall be submitted along with a completed Form R – Summary of Individual’s Experience and the information specified in the Form RFC for that Key Personnel position, including a narrative (max one page) justifying why the proposed Key Personnel change is being requested. In any event, the Design-Builder shall promptly notify the Department’s Project Manager if any Key Personnel leaves the Design-Build Team.

The Design-Builder may change Key Personnel only upon receipt of a written consent from the Department’s Project Manager. Replacement personnel must have equal or better qualifications than the Key Personnel identified in the Proposal. The Department’s Project Manager may require written justification from the Design-Builder explaining the replacement of any Key Personnel. The Department’s Project Manager shall be the sole judge as to whether replacement staff members are acceptable.

It is imperative that the Key Personnel identified in the Design-Builder’s Proposal remain on the Project for the duration of the Project until Project Completion. Changes to the Key Personnel shall result in a Key Personnel Change Assessment Fee in the amount listed in the ITP for each Key Personnel position substitution, regardless of whether the Department accepts the alternate personnel as equal or better.

3.2.4 Key Personnel

A) **Project Manager:** Shall have a minimum of 15 years, but preferably 20 years, demonstrated experience in construction and construction management of bridge and/or transportation and/or infrastructure projects with preferably similar size and type of work as this Project, and preferably including projects with compressed timelines, and community information requirements. The Project Manager’s experience in construction and management-of construction **shall** include at least one (1) bridge infrastructure construction project having a construction value in excess of $50,000,000. The Project Manager should have Design-Build experience and have extensive project management experience. It is preferred, but not required that the Project Manager be licensed and currently registered as a Professional Engineer in the State of New York. The Project Manager can hold only this one Key Personnel and **shall** dedicate no less than 100% 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 100% of their work time to this Project for the first year and no less than 30% of their work time for the remainder of the project.

The Design Manager manages the design and design support during construction, design changes, and completion of As-Built Plans. The Design Manager, and/or staff working under the direct supervision of the Design Manager, **shall** conduct an assessment and evaluation of design such that the Design Manager can certify to the Design-Builder and to the Department that the design satisfies the Contract requirements, including the following requirements:
New York State Department of Transportation

- Accuracy;
- Adequacy;
- Conformance to standards of practice;
- Compliance with codes and standards;
- Cost effectiveness;
- Quality;
- Fitness for purpose and/or function as specified and/or implied in the Contract; and
- Conformance with the standard practices and specifications of New York State Department of Transportation.

C) **Quality Manager:** Shall have demonstrated experience in bridge design and infrastructure construction with at least 10 years’ experience in quality management, quality assurance and quality control activities, including preparation and implementation of Quality Plans and procedures for design and construction. The Quality Manager shall additionally have at least 5 years’ experience in the design of bridges, highways, and civil infrastructure; at least 5 years’ experience in construction field engineering and inspection of bridges, highways, and civil infrastructure; and at least 5 years of Project Management experience. 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 in both design and construction standards. The Quality Manager shall dedicate no less than 100% of their work time to this Project for the first year and no less than 30% thereafter.

D) **Resident Engineer:** Shall 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. A Resident Engineer with NYSDOT Construction Engineer in Charge (EIC) experience greater than 10 years or a combination of EIC and Area Construction Supervisor (ACS) experience of 20 years with no less than 5 years EIC experience is also acceptable as demonstrated on Form R. The Resident Engineer shall have performed the above duties on a project within the last 5 years. The Resident Engineer shall dedicate no less than 100% of their work time to this Project.

E) **Lead Structural Engineer:** 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 15 years’ demonstrated experience in managing structural design for infrastructure and bridge projects, preferably of similar scope as this Project; also, shall have Design-Build experience and shall have specific structural experience on projects of similar size and type. The Lead Structural Engineer can hold only this one Key Personnel position. The Lead Structural Engineer shall dedicate no less than 75% of their work time to this Project.
F) **Lead Geotechnical Engineer:** Shall be a licensed Professional Engineer registered in the state of New York. 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:** Shall have at least 15, but preferably 20 years of demonstrated experience overseeing work on bridge and highway construction projects. Experience shall 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 shall have experience as Project Superintendent on a bridge project valued at $100M or more. The Project Superintendent shall dedicate no less than 100% of their work time to this Project.

### 3.3 OTHER PERSONNEL

#### 3.3.1 M/WBE Civil Rights Compliance Manager

The Design-Builder shall provide for at least one employee or subcontractor (the M/WBE/Civil Rights Compliance Manager), who has at least four years of experience in the areas of civil rights compliance, including contract compliance, M/WBE, EEO and OJT administration, or who has other substantially equal qualifications subject to review and approval by the Department. The responsibilities of the M/WBE/Civil Rights Compliance Manager shall be ensuring compliance with all civil rights requirements of the Contract. These responsibilities include but are not limited to: monitoring compliance on a day-to-day basis; conducting contract compliance reviews; coordinating technical assistance activities for M/WBEs; disseminating information on available business and subcontracting opportunities so that M/WBEs are provided an equitable opportunity to compete and perform the work on behalf of the Contractor; disseminating information on available employment and training opportunities so that minorities, females, and economically disadvantaged persons are provided an equitable opportunity to perform the work of the Contract. All M/WBE participation will be reviewed and approved by the Agencies prior to being counted towards the Contract M/WBE goal.
SECTION 4  DESIGN-BUILDER’S QUALITY PROGRAM

4.1  GENERAL

A) The Design-Builder shall implement and maintain an effective quality program to manage, control, document, and ensure that the Work complies with the requirements of the Contract Documents.

B) The Design-Builder shall designate a Quality Manager (QM), who shall be identified as one of the Design-Builder’s Key Personnel, shall be responsible for overseeing the overall quality program and the preparation, implementation and update of the DBQP, including management, design and construction.

C) The Design-Builder's executive management shall review the quality program at defined intervals sufficient to ensure its continuing suitability and effectiveness in satisfying the requirements of this standard and the Design-Builder's stated quality policy and objectives. Management reviews shall be held at least at 3-month intervals. Records of such reviews shall be maintained. Minutes shall be taken of the review meetings and these minutes shall be maintained as quality records. Copies of minutes shall be provided to the Department's Project Manager on request.

4.2  ELEMENTS OF THE DESIGN-BUILDER QUALITY PROGRAM

4.2.1  Quality Policy

The Design-Builder's executive management shall define and document its policy for quality, including objectives for quality and its commitment to quality. (In the context of this Section 4, “executive management” shall mean those persons to whom the Design-Builder’s Project Manager reports and who has overall responsibility for the Design-Builder’s performance.) The quality policy shall be relevant to the Design-Builder’s organizational goals and the expectations and needs of the Department. The Design-Builder shall ensure that this policy is understood, implemented and maintained at all levels of the organization.

The Design-Builder shall have a published statement of its commitment to quality and the organization's quality objectives signed by its responsible executive(s). It shall explain the commitment in terms of the services provided to the Department, and the responsibilities assumed by the Design-Builder to discharge its contracted accountabilities relative to the Department's overall responsibility to Stakeholders and the public-at-large, for assuring quality in the constructed facility. The statement shall be made known to and understood by all staff and be included in the Quality Control Plan.

Executive management's commitment to quality shall be demonstrated by the quality policy being signed by the responsible executive(s) and management's direct involvement in verifying the implementation and understanding of the quality policy.

All employees shall be made aware of the Design-Builder's quality policy. The indoctrination on quality policy may be formal and can be accomplished by various means depending on the size of the Project, the structure of the Design-Builder's management staff and number of employees.
4.2.2 Quality Program Organization

A) General

The Quality Program shall set up a “quality program team” which shall be distinct and separate from the design and construction production organization. The quality program team shall report directly to the Design-Builder’s management through the Design-Builder’s Quality Manager. The Quality Program shall include an organization chart showing names, titles, responsibilities, authority, and the interrelationship between those involved in managing and directing the Quality Program, including all subcontractors, vendors, suppliers and consultants.

B) Responsibility and Authority

1) Executive management shall have the responsibility to plan and determine the overall direction of the Design-Builder and its relationship to the quality efforts. Executive management shall ensure the quality policy is documented and understood by all employees and management shall further ensure the implementation of the quality policy by everyone in the organization.

2) The quality program shall be an integral part of the overall management system and as such shall be supported and implemented from the top down. On a Design-Build project most employees are involved in either managing, performing or verifying work that affects quality. It shall not be the sole domain of the design checkers, quality control (QC) inspectors or QC personnel. All workers, including design and construction production personnel (including those of subcontractors) shall be aware of the quality program requirements that govern their respective work.

3) A description of the organizational arrangements (such as a chart) shall be available and be maintained up to date. All key roles and persons, and lines of communication and authority between the Design-Builder and the Department and their representative(s), and with other organizations involved shall be identified.

4) The responsibility, authority and the interrelation of personnel who manage, perform and verify work affecting quality shall be defined and documented, particularly for personnel who need the organizational freedom and authority to:

   a) Initiate action to prevent the occurrence of any nonconformities relating to the product, process and quality system;

   b) Identify and record any problems relating to the product, process and quality system;

   c) Initiate, recommend or provide solutions through designated channels. It shall be everyone’s responsibility to report any and all quality and safety problems;

   d) Verify the implementation of the solutions to quality problems in a timely manner. The verification shall also investigate if the solution to the identified problem created another quality problem; and
e) Establish controls, including stopping work, if necessary, once a significant quality problem is identified until the cause of the problem can be identified and the required corrective action can be implemented.

C) Design-Builder’s Quality Manager

1) The Design-Builder's executive management shall appoint a Quality Manager who, irrespective of other responsibilities, shall have a defined authority for:

   a) Ensuring that a quality program is established, implemented and maintained; and

   b) Reporting on the performance of the quality program to the Design-Builder's management for review and as a basis for improvement of the quality system.

2) The Quality Manager shall not report to the Design-Builder’s Project Manager, but shall be directly responsible to and report on the performance of the quality program to executive management not directly responsible for design or construction.

3) The Quality Manager shall be present and available for consultation with the Department’s Project Manager and other Department staff on an on-call basis throughout the duration of the Project. The Quality Manager shall attend the scheduled progress meetings as a minimum and such other meetings as the Department’s Project Manager may request, including individual meetings between the Quality Manager and Department staff.

4) The Quality Manager shall be the primary point of contact to the Department for all issues relating to the Design-Builder’s Quality Control Plan (preparation, review, implementation and updates).

5) The Proposer’s Design QC Engineer and Construction QC Engineer and their respective staffs shall report directly to the Quality Manager.

D) Resources

1) The Design-Builder shall identify resource requirements and provide adequate resources, including the assignment of trained personnel, for management, performance of work and verification activities including internal quality audits.

2) The Design-Builder shall have a system for assuring that the project is adequately staffed and that resources are provided. In addition, the Design-Builder shall have in place adequate training measures to perform such activities as design reviews, verification activities, receiving, in-process and final inspections and internal quality audits.

3) The Quality Program shall outline DBQP personnel staffing levels for the duration of the project and identify the source of staffing (management, professional, technical, and labor) and shall deal with the integration of resources into the specific Contract requirements.
4) Other resources shall also be addressed such as computers, craft tools, equipment and facilities to execute the DBQP and the project successfully.

4.2.3 Quality Control Plan (Design and Construction)

The Quality Control Plan shall cover the following items:

A) The Design-Builder Quality Control Plan (QCP) shall contain all processes and procedures necessary to ensure complete quality assurance and quality control for all major activity categories: design; materials; equipment; testing; construction; start-up; coordination; workmanship; fabrication; and, document control for both on-Site and off-Site Work by the Design-Builder (including subcontractors, suppliers, laboratories and consultants).

B) The QCP shall include a list of RF-1 items and estimated quantities to facilitate the decision-making regarding the items of work that provide an opportunity for statistical verification and testing of materials by the CQAE.

C) The QCP shall describe the quality system to be implemented at all levels of the Design-Builder's organization, to include Sub-Design-Builders (design and construction).

D) The QCP shall detail the role of the Design-Builder, each Principal Participant, the Designer, the Design and Construction QC Engineers, and other team members having a significant quality role.

E) The Quality Control Plan shall cover temporary and permanent components.

F) the Quality Control Plan shall detail how the Design-Builder intends to engage the Department's Design Quality Assurance Engineer and Construction Quality Assurance Engineer during all activities described in the Quality Control Plan.

G) The QCP shall address the topics contained in the Quality Control Plan Outline included in Appendix C and follow the format presented in same appendix.

H) Separate volumes addressing design (Design Quality Control Plan (DQCP)) and construction (Construction Quality Control Plan (QCCP)) maybe be produced which shall comprise the QCP.

I) The Design-Builder shall submit the Design-Builders QCP for Review and Approval within 30 Calendar Days after the Notice to proceed. The CQCP shall be approved by the by the Department before commencement of construction Work.


K) In developing its Quality Control Plan, the Design-Builder shall establish appropriate controls in its management, design, construction / installation and documentation.
procedures to ensure that environmental mitigation requirements are met and documented.

NEPA environmental approval for the subject project has been granted based on analysis and documentation of potential environmental impacts of the identified preferred alternative. This analysis is summarized along with any identified environmental commitments and depicted in the Design Report/Environmental Document for the subject project. If during detailed design and/or construction the Design-Builder introduces design elements, variations, or methodologies that potentially induce environmental impacts that differ from those identified in the approved Design Report/Environmental Document or is unable to comply with established environmental commitments then the NEPA process for this project will need to be re-evaluated 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. The need to re-evaluate the NEPA process may impact the overall project schedule.

4.2.3.1 Quality Control Plan Submittal

A) The Design-Builder shall use the Initial Quality Control Plan submitted with the Technical Proposal, modify and develop it, as necessary per this provision of this requirement and submit it to the Department’s Project Manager for written approval.

B) If the Department provides comments, 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.

C) No offsite fabrication Work or Construction Work shall commence before the Construction 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.

4.2.3.2 Quality Control Plan Reviews and Updates

As work progresses, the Design-Builder shall update the Quality Control Plan to reflect current conditions. The Design-Builder and/or the Department’s Project Manager may identify the need for revisions to the Quality Control Plan. The Design-Builder shall submit any revisions or updates to the Quality Control Plan to the Department’s Project Manager for approval within 30 days of the identification of the need for a revision.

4.2.4 Document and Data Control

4.2.4.1 General

The Design-Builder shall establish and maintain documented procedures to control all documents and data that relate to the requirements of this Section 4.2.4 including, to the extent applicable, documents of external origin such as standards and the Department plans.
The Design-Builder shall be responsible for the establishment and implementation of documented procedures for ensuring all documents essential to the quality of the delivered product or service are properly controlled. This shall include, but is not limited to, contracts, plans, specifications, master drawing lists or equivalent documents, critical procedures and work instructions, Quality System manuals, Project Quality Control Plans and data (e.g., computer data bases, computer files).

Procedures should recognize that there is a finite life to electronic storage media. Consideration should be made for those “documents” which only exist in the electronic media.

4.2.4.2 Document and Data Approval and Issue

The Design-Builder shall be responsible to see that the documents and data are reviewed and approved for adequacy by authorized personnel prior to issue. A master list or equivalent document-control procedure identifying the current revision status of documents shall be established and be readily available to preclude the use of invalid and/or obsolete documents.

The Design-Builder shall be responsible for establishing, documenting, maintaining, and implementing a procedure which clearly defines the process for document review, resolution of comments and approval authority.

Quality Management System documentation shall also be controlled to ensure its proper authorization and distribution.

No construction work activities shall be accomplished using unreleased, unauthorized or outdated design documents.

This control shall ensure that:

A) The pertinent issues of appropriate documents are available at all locations where operations essential to the effective functioning of the quality system are performed; and

B) Invalid and/or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use:

1) Superseded, revised and voided documents shall be removed from all work areas and the employees whose work is governed by those documents shall be informed of the changes to ensure compliance to the new or revised requirements;

2) A master document list, or equivalent, shall be maintained to identify the status and current revision of all controlled documents. The Master List, or equivalent, shall be controlled and be available to all holders of controlled documents; and

3) Any obsolete documents retained for legal and/or knowledge-preservation purposes are suitably identified. Superseded, revised and voided documents can be maintained for legal and/or historic information. However, the documented procedure must describe the method of identifying and storing these documents in a manner that ensures they are not inadvertently used by an unknowing individual. There shall also be a record retention plan for the Design-Builder.
4.2.4.3 Document and Data Changes

The Design-Builder shall identify and include in the Quality Control Plan, the process for the initiation, review and approval of all document changes prior to issuance of those changes.

Changes to documents and data shall be reviewed and approved by the same functions/organizations that performed the original review and approval, unless specifically designated otherwise. If this is not possible then the designated approval authority shall have adequate background and experience upon which to base the decision. The designated functions/organizations shall have access to pertinent background information upon which to base their review and approval.

Where practical, the nature of the change shall be identified in the document or the appropriate attachments.

4.2.5 Procurement and Purchasing

4.2.5.1 General

The Design-Builder shall establish and maintain documented procedures to ensure that purchased services and products conform to Department requirements.

The Design-Builder shall be responsible for establishing, documenting and maintaining procedures for the evaluation and selection of suppliers, vendors and subcontractors. The procedures shall detail the requirements for all important activities, such as preparation of purchase orders, contracts for services, bid lists and vendor quality requirements, including pre-award audits, in-process inspections and product acceptance.

4.2.5.2 Evaluation of Subcontractors, Suppliers and Vendors

The Design-Builder shall:

A) Evaluate and select subcontractors on the basis of their ability to meet subcontract requirements including the quality system and any specific quality-control requirements;

B) Control the evaluation and selection of suppliers, vendors and subcontractors. Procedures, rather than just a statement of policy in the Quality Control Plan, shall be used;

C) Describe the evaluation and selection process for suppliers, vendors and subcontractors of all tiers and describe the priority of quality in the evaluation and selection criteria in the Quality Control Plan;

D) Define the type and extent of control exercised by the Design-Builder over subcontractors. This shall be dependent upon the type of services or products, the impact of subcontracted Work on the quality of final product and, where applicable, on the quality audit reports and/or quality records of the previously demonstrated capability and performance of subcontractors; and
E) Establish and maintain quality records of acceptable subcontractors. Records shall be maintained to document the selection, control exercised over, performance, delivery, quality, etc. of all contractors (subconsultants, vendors) and subcontractors.

The methods the Design-Builder elects to use to control the delivery of the contracted service or product may include, but are not limited to:

A) Design reviews;
B) Shop inspection;
C) Receiving inspection;
D) Witnessed inspection hold points;
E) Issuance of a certificate of compliance or analysis;
F) Testing and approval of a prototype or sample;
G) Provision and approval of a Quality Control Plan prior to contract award; and
H) Quality system audits.

The procedures shall detail how subcontractors (including consultants) will be presented to the Department for approval (DB §108-05).

4.2.5.3 Procurement and Purchasing Data

Procurement and purchasing documents shall contain data clearly describing the service or product ordered, including where applicable:

A) The type, class, grade or other precise identification. For steel products purchase documentation shall include mill certifications which indicate domestic steel origin-Buy America;
B) The title or other positive identification, and applicable issues of specifications, plans, process requirements, inspection instructions and other relevant technical data, including requirements for approval or qualification of product, procedures, process equipment and personnel; and
C) The title, number and issue of the quality-system standard to be applied.

The Design-Builder shall review and approve procurement/purchasing documents for adequacy of the specified requirements prior to release.

The documented procedure shall identify how and by whom procurement and purchasing documents are reviewed, how comments are resolved and who in the organization has the authorization for final approval of the document.

4.2.5.4 Verification of Purchased Service or Product

A) Design-Builder Verification at Subcontractor’s Premises
1) Where the Design-Builder proposes to verify purchased product or service at the subcontractor’s premises, the Design-Builder shall specify verification arrangements and the method of product release in the procurement/purchasing documents.

2) The procurement/purchasing document shall include any requirement for the organization performing verification at its subcontractor’s facilities. The method of verification and release of the product or service shall be specified in advance. This may also mean the purchase order or specifications carry specific instructions on how the process verification will be performed to assure the final product will meet all of the procurement/purchasing requirements.

B) The Department Verification of Subcontracted Product or Service

1) The Design-Builder or the Department’s representative shall be afforded the right to verify at the subcontractor’s premises and the Design-Builder’s premises that subcontracted product or service conforms to specified requirements. Such verification shall not be used by the Design-Builder as evidence of effective control of quality by the subcontractor.

2) The Department shall have the right of access to the Design-Builder and/or subcontractor facility to inspect, audit or otherwise verify the specified procurement/purchasing requirements are being fulfilled. The right of access may be extended to authorized personnel and contracted third parties. The Design-Builder is obligated to perform verification actions, regardless of what the Department does. The Department's verification may not be substituted for the Design-Builder's actions.

3) Verification by the Department shall not absolve the Design-Builder of the responsibility to provide acceptable product or service, nor shall it preclude subsequent rejection by the Department.

4) The subcontractors shall be responsible for fulfilling all of the specified procurement requirements regardless if the Department, Design-Builder or agent performed any tests or inspections. The Design-Builder shall provide the Department an acceptable product or service, regardless of the extent of the Department's verification. Even if the Department has performed verification actions at the Design-Builder’s facilities, the product may still be rejected if it is not acceptable.

4.2.6 Control of Department Supplied Items

The Design-Builder shall establish and maintain documented procedures for the control of verification, storage and maintenance of the Department-supplied items provided for incorporation into the Project or for related activities. Any such item that is lost, damaged or is otherwise unsuitable for use shall be recorded and reported to the Department (see Section 4.2.15).

One of the most significant products provided to the Design-Builder by the Department is design information in the form of plans and specifications, as well as proprietary information, and these items shall be protected with the same vigilance as any hardware items supplied. Any apparent deficiency or ambiguity shall be identified to the Department for its necessary action.
The technical characterizations of the site, such as the boring log or soil report data supplied by the Department for consideration in designing the structural system for the product are examples of the Department supplied products for the structural consultant.

When such items are encountered, documented procedures shall exist which detail the receipt/acceptance, storage and maintenance (preservation) of these items.

When items are considered inadequate for the task required, documented procedures shall detail the process used to report such deficiencies to the Department.

4.2.7 Product Identification and Traceability

Where appropriate, the Design-Builder shall establish and maintain documented procedures for identifying the product by suitable means from receipt and during all stages of production, delivery and installation.

This means that the Design-Builder shall establish and maintain documented procedures whereby items of work for which records are to be kept shall be identifiable. Examples of this on a construction site include the numbering of concrete pours in a structure or the establishment of a grid matrix for identifying columns.

The Design-Builder shall include document title, a unique document number, the Contract Number, the Bridge BIN (when applicable), the Department's name, the Design-Builder's name, the preparer's name, the date and revision number on all Project deliverables.

The filing and retrieval of operating manuals, certificates of compliance and/or analysis, inspection status and nonconforming product shall be traceable to the items. Records shall be kept that identify the installed location of the equipment/materials.

Where and to the extent that traceability is a specified requirement, the Design-Builder shall establish and maintain documented procedures for unique identification of individual product or batches. This identification shall be recorded.

The intent of this Section 4.2.7 is to ensure the Design-Builder can effectively identify the root cause of a problem and to implement effective corrective and preventive actions to resolve and prevent future occurrences of the problem.

4.2.8 Process Control

The Design-Builder shall plan and control the work and when necessary, shall prepare a documented process plan defining how work is to be carried out. Documentation may be in the form of a narrative, flow chart or control points.

The Design-Builder shall identify and plan the production, installation and servicing processes which directly affect quality and shall ensure that these processes are carried out under controlled conditions. Controlled conditions shall include the following:

A) Documented procedures defining the manner of production, installation and servicing, where the absence of such procedures could adversely affect quality. This requirement deals with the planning and control of all work processes, other than design control processes, that are critical to the adequacy of the delivered Project;
B) Establishment and documentation of the method(s) for scheduling, monitoring, and reporting on the status of each significant aspect of the design or other Project tasks. The methods shall be consistent with the size and complexity of the effort. Such schedules shall identify required inputs from others and submittals to the Department and to relevant government authorities;

C) An assessment by the Design-Builder of this requirement is essential to ensure compliance. The key phrase of this requirement is “where the absence of such procedures could adversely affect quality”;

D) Use of suitable production, installation and servicing equipment, and a suitable working environment;

E) Compliance with reference standards/ codes, Quality Control Plans and/or documented procedures. Referenced standards shall be available to the people of the location where the work is to be performed to ensure compliance to the specified requirements;

F) Monitoring and control of suitable process parameters and product characteristics;

G) The approval of processes and equipment, as appropriate. Procedures shall identify who has the responsibility, authority and expertise for the approval of various processes to ensure their adequacy;

H) Criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations); and

I) Suitable maintenance of equipment to ensure continuing process capability.

4.2.9 Inspection and Testing

4.2.9.1 General

The Design-Builder shall establish and maintain documented procedures for inspection and testing activities in order to verify that the specified requirements for the Project are met. The required inspection and testing, and the records to be established, shall be detailed in the Quality Control Plan or documented procedures.

This section shall address inspection/testing methodology, methods of control, documentation, acceptance and distribution of results.

Written procedures are required. In general, QC inspections shall be performed to written criteria with specified levels of acceptability based on clearly defined accept/reject criteria. Reports shall be signed and dated by QC inspection personnel and results clearly indicated.

The Design-Builder shall establish, document and maintain procedures for inspection and testing activities.

QC Inspection and testing shall be performed in accordance with written procedures developed by the Design-Builder, or the proper issue of test procedures issued by industry, government and/or code bodies available to test personnel.
Verification of compliance with specifications and/or requirements by means of inspection and testing is required:

A) On receipt of materials;
B) At intermediate stages; and
C) When work is completed.

The criteria for compliance are defined in the contract specification, as are appropriate sampling and testing requirements.

Checkpoints and hold points (Work that must be inspected and approved by the assigned QC Inspector before Work can proceed), shall be clearly established and identified on the Project execution schedule or other suitable means. QC Inspection procedures, logistics and reporting of results shall be clearly defined, developed and implemented.

4.2.9.2 Incoming Product Inspection and Testing

The Design-Builder shall ensure that incoming product is not used or processed (except in the circumstances described in Section 4.2.10.2) until it has been inspected or otherwise verified as conforming to specified requirements. Verification of the specified requirements shall be in accordance with the Quality Control Plan and/or documented procedures.

The Plan shall include incoming product inspection that shall include but not be limited to:

A) Documentation review;
B) Physical inspection of materials and/or equipment;
C) Identification of items per the purchase order and shipping list, tag number or marking;
D) Verification of quantity and size;
E) Dimensional checks, when applicable;
F) Verification of protective coatings if applicable; and
G) Examination of item(s) for condition and shipping damage.

The Design-Builder shall maintain an adequate checking and approving procedure to ensure that all its work, including the monitoring, testing and approving of such work at the head office and on-site meets the Department's requirements and the Contract specifications.

In determining the amount and nature of receiving inspection, the Design-Builder shall consider the amount of control exercised at the subcontractor’s premises and the recorded evidence of conformance provided.

4.2.9.3 In-Process Inspection and Testing

The Design-Builder shall:
A) Inspect and test the product as required by the Quality Control Plan and/or documented procedures; and

B) Hold product until the required inspection and tests have been completed or necessary reports have been received and verified.

4.2.9.4 Final Inspection and Testing

The Design-Builder shall jointly conduct all final inspection and testing with the Department in accordance with the Contract requirements and the Quality Control Plan and/or documented procedures to complete the evidence of conformance of the finished Project to the specified requirements.

The Design-Builder shall have documented procedures to ensure that the final observation and testing where applicable have been completed.

Records of final inspection and test are required to verify compliance to specified requirements has been achieved (see Section 4.2.16).

The Quality Control Plan and/or documented procedures for final inspection and testing shall require that all specified inspection and tests, including those specified either on receipt of product or in-process, have been carried out and that the results meet specified requirements.

4.2.9.5 Inspection and Test Records

The Design-Builder shall establish and maintain records which provide evidence that the product has been inspected and/or tested. These records shall show clearly whether the product has passed or failed the inspections and/or tests according to defined acceptance criteria. Where the product fails to pass any inspection and/or test, the procedures for control of nonconforming product shall apply (see Section 4.2.13).

Inspection and test records for inspections and tests performed by Design-Builder, the Department and/or third party shall show whether the product has passed or failed according to defined acceptance criteria. Product that fails inspection becomes nonconforming product. Also, the records shall identify the inspection authority responsible.

4.2.10 Control of Inspection, Measuring and Test Equipment

4.2.10.1 General

The Design-Builder shall establish and maintain documented procedures to control, calibrate and maintain inspection, measuring and test equipment (including test software) used by the Design-Builder to demonstrate the conformance of product to the specified requirements. Inspection, measuring and test equipment shall be used in a manner which ensures that the measurement uncertainty is known and is consistent with the required measurement capability.

Where test software or comparative references such as test hardware are used as suitable forms of inspection, they shall be checked to prove that they are capable of verifying the acceptability of product, prior to release for use during production, installation or servicing, and shall be rechecked at prescribed intervals. The Design-Builder shall establish the extent and frequency of such checks and shall maintain records as evidence of control (see Section 4.2.16).
Where the availability of technical data pertaining to the measuring equipment is a specified requirement, such data shall be made available, when required by the Department for verification that the measuring equipment is functionally adequate.

Effective test procedures shall contain comprehensive listings of required equipment, tools, and apparatus to successfully and conclusively perform the test. Matters of “repeatability” and “reproducibility” shall also be addressed together with precision of measured results and calibration thresholds of measuring devices.

Comprehensive operations, maintenance, setup, and dimensional arrangements for the measuring, testing devices and equipment shall also be included in order to allow for their practical layout and installation at the measuring location. The Design-Builder’s QC Engineering Firm shall establish, document, and maintain procedures for the control of inspection, measuring, and test equipment. It shall be the Design-Builder’s responsibility through the Quality Manager, to assess the subcontractor (see Section 4.2.5.2) to ensure the required procedures exist and are implemented.

The Design-Builder and the QC Engineering Firm shall be responsible for ensuring applicable requirements of this section are addressed.

This Section 4.2.10 applies to inspection or testing and surveying equipment. The Quality Control Plan shall address:

A) Definition of the responsibility and authority for the inspection, measuring and test equipment;

B) Procedures for selecting measurements, determining accuracy and precision required, and obtaining equipment which meets those requirements;

C) Disposition of nonconforming equipment;

D) Procedures for identification, maintenance, and storage of measuring equipment;

E) Record keeping;

F) Calibration frequency;

G) Calibration status including indicators;

H) Disposition of items checked with equipment found to be out of calibration; and

I) Traceability of primary and secondary calibration standards.

4.2.10.2 Control Procedure

The Design-Builder, through the QC Engineering Firm, shall:

A) Determine the measurements to be made and the accuracy required, and select the appropriate inspection, measuring and test equipment that is capable of the necessary accuracy and precision;
B) Identify all inspection, measuring and test equipment that can affect product quality, and calibrate and adjust them at prescribed intervals, or prior to use, against certified equipment having a known valid relationship to internationally or nationally recognized standards. Where no such standards exist, document the basis used for calibration;

C) Develop a master calibration listing indicating the inspection and test equipment that is used. The log shall include as a minimum, the identification number, item description, and the required frequency of calibration and accuracy requirements. It is not intended that calibration is required for non-precision tools and instruments such as measuring tapes, concrete slump cones, rulers, weld radius gauges, etc.;

D) Define the process employed for the calibration of inspection, measuring and test equipment, including details of equipment type, unique identification, location, frequency of checks, check method, acceptance criteria and the action to be taken when results are unsatisfactory;

E) Identify inspection, measuring and test equipment with a suitable indicator or approved identification record to show the calibration status;

F) Maintain calibration records for inspection, measuring and test equipment (see Section 4.2.16);

G) Assess and document the validity of previous inspection and test results when inspection, measuring or test equipment is found to be out of calibration;

H) Ensure that the environmental conditions are suitable for the calibrations, inspections, measurements and tests being carried out;

I) Ensure that the handling, preservation and storage of inspection, measuring and test equipment is such that the accuracy and fitness for use are maintained; and

J) Safeguard inspection, measuring and test facilities, including both test hardware and test software, from adjustments which would invalidate the calibration setting.

4.2.11 Inspection and Test Status

The inspection and test status of product shall be identified by suitable means, which indicate the conformance or nonconformance of product with regard to inspection and test performed. The identification of inspection and test status shall be maintained, as defined in the Quality Control Plan and/or documented procedures, throughout production, installation, and servicing of the product to ensure that only product that has passed the required inspections and tests is dispatched, used or installed.

The Design-Builder shall establish, document, implement and maintain an effective system for identifying and implementing the inspection and test status of Project products and services. The system shall utilize a method to identify conforming, nonconforming, indeterminate, downgraded, scrap, and rejected material.

Lack of nonconformance identification shall not be an indication of acceptance.
4.2.12 Control of Nonconforming Product

4.2.12.1 General

The Design-Builder shall establish and maintain documented procedures to ensure that product that does not conform to specified requirements is prevented from unintended use or installation. This control shall provide for identification, documentation, evaluation, segregation (when practical), disposition of nonconforming product, and for notification to the functions concerned.

There shall be documented procedures to assess nonconformance in the Design-Builder's work and in the work provided by other contractors, including the Department. The procedures shall safeguard against use of inaccurate or otherwise inappropriate information or data.

The procedures shall identify the individual(s) responsible for verifying the nonconformance, documenting it, processing the documentation in accordance with the procedures, and determining the effective corrective action/preventive action (see Section 6.2.14) to resolve the nonconformance.

Procedures shall also cover nonconformance which arise during construction. They shall address the situation where it is discovered that work does not conform to the requirements after the work item has previously been subjected to the established checking and approval process. The procedures shall also address work that is discovered or suspected to contain errors or omissions after delivery to the Department.

Work shall be immediately brought under control to limit the impact it could have on associated work, where it may have been used as input. Procedures shall include methods to inform those to whom the nonconforming material had been provided as valid information and to retrieve and isolate from use known copies of the material until a determination can be made about how to proceed. Nonconformance might be manifested as incorrect plans, errors in calculation (numerical or procedural), survey data that might be based on an incorrect benchmark or route, or even a correct design based on superseded specifications.

4.2.12.2 Review and Disposition of Nonconforming Product

The Design-Builder shall define the responsibility for review and authority for the disposition of nonconforming product.

A nonconformance shall be defined as any condition in equipment, materials, or processes which does not comply with required plans, specifications, codes, standards, documentation, records, procedures, or contract requirements which cause the acceptability of equipment, materials, or processes to be unacceptable or indeterminate.

Nonconforming product shall be reviewed in accordance with documented procedures. It may be:

A) Reworked to meet the specified requirements;
B) Required that further engineering evaluation be performed to determine if the non-conformance effects design intent/contract compliance;
C) Accepted with or without repair by consent of the Department;
D) Regarded for alternative applications; or

E) Rejected or scrapped.

The procedures shall also address the disposition of nonconforming items and the steps necessary to verify that the nonconformance have been adequately addressed and that the item then be characterized as conforming.

Where required by the Contract, the proposed use or repair of product which does not conform to specified requirements shall be reported for consent by the Department. The description of the nonconformity that has been accepted, and repairs shall be recorded to denote the actual condition (see Section 4.2.16).

The Design-Builder shall keep and maintain records of nonconforming findings (see Section 4.2.16). Also, each nonconformance record shall contain all deliberations, retesting, and resolution activities, findings, and decisions.

Repaired and/or reworked product shall be re-inspected in accordance with the Quality Control Plan and/or documented procedures.

Repair shall require the involvement of the Department, the Designer, and/or an authorized third party to review the condition and determine that although it does not meet the specified requirements, the overall impact is such that the resulting condition is acceptable.

4.2.13 Corrective and Preventive Action

4.2.13.1 General

The Design-Builder shall establish and maintain documented procedures for implementing corrective and preventive action.

This Section 4.2.13 encompasses two aspects of dealing with nonconformities. The first is implementation and effectiveness of previously implemented corrective actions.

The second is preventive action (P/A) which plays a major role in this requirement. Most procedures addressing corrective action (C/A) need to include preventive action. The investigation of nonconformance needs to look into three possible causes. They are the product, the process, and the quality system.

This nonconformance may be identified by either internal or external audits or during regular inspections or design reviews. The appropriate authority to implement, verify, and review the effectiveness of both preventive and corrective actions shall be identified. Written procedures shall be prepared and implemented to determine the root causes of nonconformance and to revise existing procedures and work instructions or to establish new ones to prevent the identified situations that cause or allow nonconformance to develop.

Any corrective or preventive action taken to eliminate the causes of actual or potential nonconformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered.
The Design-Builder shall implement and record any changes to the documented procedures resulting from corrective and preventive action.

4.2.13.2 Corrective Action

The Design-Builder shall maintain and document a procedure for dealing with complaints, ensuring the recording, investigating and determining the appropriate corrective action, if any, that shall be taken.

The procedures for corrective action shall include:

A) The effective handling of complaints and reports of product nonconformities;

B) Investigation of the cause of nonconformities relating to product, process and quality system, and recording the results of the investigation (see Section 4.2.16);

C) Determination of the corrective action needed to eliminate the cause of nonconformities;

D) Application of controls to ensure that corrective action is taken and that it is effective; and

E) The tracking of complaints and identified nonconformance, and the actions taken to resolve them is an indicator of the effectiveness of the quality system.

Determination and implementation of an effective corrective action requires knowing the root cause of the problem and planning the most effective method of resolving the problem.

Follow-up action shall investigate to see if the corrective action resolved the identified problem, and also to ensure the corrective action did not have an undesirable effect on another element of the quality system.

4.2.13.3 Preventive Action

The Design-Builder shall establish, document, and maintain procedures for implementing preventive actions.

The procedures for preventive action shall include:

A) The use of appropriate sources of information such as processes and work operations which affect product quality, concessions, audit results, quality records, service reports and the complaints to detect, analyze, and eliminate potential causes of nonconformities;

B) Determination of the steps needed to deal with any problems requiring preventive action;

C) Initiation of preventive action and application of controls to ensure that it is effective; and

D) Confirmation that relevant information on actions taken is submitted for management review (see Section 4.1.C).
4.2.14 Handling, Storage, Packaging, Preservation, and Delivery

4.2.14.1 General

The Design-Builder shall establish and maintain documented procedures for handling, storage, packaging, preservation and delivery (HSPPD) of product.

The procedures which shall be developed apply to all parties involved on a Project, beginning with the Design-Builder writing the specifications all the way through to the personnel responsible for the start-up and turn-over of the facility to the Department. The specific application of the requirements is determined by the function performed: Design-Builder, manufacturer, distributor, vendor, warehousing, equipment operators, and installer.

The engineer writing the specifications shall be responsible for identifying any special HSPPD requirements and assuring the requirements are identified in the appropriate Project documents. Procurement shall be responsible for assuring the vendor, distributor and/or subcontractors are aware of the requirements and are also aware of their responsibilities to identify all requirements to their subcontractors.

Procedures shall be developed and implemented for designating which items require special handling, storage or maintenance. Development of the HSPPD procedures and work instructions are affected by the other elements of this Part 3 and therefore should be reviewed for applicability and requirement inclusion.

4.2.14.2 Handling

The Design-Builder shall provide methods of handling products that prevent damage or deterioration.

Handling is any physical or electronic movement. Project materials are usually handled numerous times from producer to installation and start-up. Procedures appropriate to the circumstances shall be developed and implemented to assure handling is done in a manner that prevents damage or deterioration of the material/equipment. There shall be assurances that handling requirements are documented and understood.

The procedures shall cover special handling by people and/or machines. Requirements for maintenance of identification and traceability shall be identified.

Special handling clothing and precautions shall be identified for all hazardous materials with assurances that only qualified and trained personnel handle the material. The handling procedures shall include instructions to follow for decontamination and notification of authorities and responsible parties in the event of an accident.

4.2.14.3 Storage

The Design-Builder shall use designated storage areas or stock rooms to prevent damage or deterioration of product, pending use or delivery. Appropriate methods for authorizing receipt to and dispatch from such areas shall be stipulated.

In order to detect deterioration, the condition of product in stock shall be assessed at appropriate intervals.
Items requiring protection shall be identified and protected as necessary to prevent loss, damage deterioration or loss of identification.

Special storage requirements shall be clearly defined for materials and equipment which is received on the Project; this includes plans, records and operating manuals. A master list shall be maintained indicating applicable purchase orders, including quantity, product identification, documentation and records required, receiving inspection requirements and items requiring special storage or maintenance.

Materials shall be segregated to prevent cross contamination or environmental contamination.

Material with limited shelf life shall be identified and procedures developed and implemented to identify means of assuring usage of material prior to expiration date. The procedures shall also identify the disposal of materials that may be toxic, hazardous or might otherwise have an adverse effect on the environment or on unsuspecting humans.

**4.2.14.4 Packaging**

The Design-Builder shall control packing, packaging, and marking processes (including materials used) to the extent necessary to ensure conformance to specified requirements.

Engineering or procurement documents shall specify applicable packaging requirements to ensure no damage, contamination or deterioration occurs in the course of packaging and transporting the material and equipment. Procedures/work instructions shall clearly define all special packing and packaging and marking process requirements (i.e., export crating, moisture barrier, regulatory requirements, climate control, identification, and all contract requirements).

Labeling of hazardous materials, special handling instructions and notification of authorities and Design-Builder shall be clearly and plainly identified on the packaging.

**4.2.14.5 Preservation**

The Design-Builder shall apply appropriate methods for preservation and segregation of product when the product is under the Design-Builder's control.

Procedures shall include special unpacking instructions, controlled conditions necessary to prevent or deter deterioration of material or equipment, prevention of corrosion and/or contamination, and required servicing.

**4.2.14.6 Delivery**

The Design-Builder shall arrange for the protection of the quality of product after final inspection and test. Where contractually specified, this protection shall be extended to include delivery to destination.

When delivery of equipment and/or materials to the job site is the responsibility of the Design-Builder, they shall develop procedures or reference appropriate standards to protect the items during delivery.
4.2.15 Control of Quality Records

The Design-Builder shall establish and maintain documented procedures for identification, collection, indexing, access, filing, storage, maintenance, and disposition of quality records.

Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system. Pertinent quality records from the subcontractor shall be an element of these data.

Records shall be kept of documents which serve as evidence that quality is achieved in work on a Project. Records shall be adequately identified, filed, and stored. Retention periods and the storage medium of such records shall be established in accordance with Contract requirements.

All quality records shall be legible and shall be stored and retained in such a way that they are readily retrievable in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss. Quality records shall be made available for evaluation by the Department per Contract requirements.

The Design-Builder shall develop and implement procedures to store, retrieve, and dispose of the documents required by the quality management system, including but not limited to correspondence, certifications, design calculations, plans, reports of design reviews, and audit reports. In storage, whether active Project files or long-term archives, documents that are designated as records shall be originals or reproducible copies and shall be legible, accurate, identified, and indexed so they can be associated with specific Projects. They shall be retrievable in a timely manner. Storage criteria shall be set to specify allowable storage media and ensure physical protection from damage or loss, which could involve duplicate storage facilities for some types of records.

Management shall identify records necessary to provide objective evidence of contract review, procedure compliance, design review (when applicable), training, and completion and acceptance of inspection and testing, or to provide traceability of equipment or items to documentation.

A list of Project-required records shall be developed, retained and/or turned over to the Department prior to completing the Work.

4.2.16 Internal Quality Audits

The Design-Builder shall establish and maintain documented procedures for planning and implementing internal quality audits to verify whether quality activities and related results comply with planned arrangements and to determine the effectiveness of the quality system.

Internal quality audits shall be conducted in accordance with sound auditing principles. The frequency of the audits shall be appropriate to the importance and complexity of a Project or corporate operation, but shall at least be on a quarterly basis. Audits shall be initiated early enough in the life of a Project to assure effective quality control during all phases. The audits shall include Project management as well as technical work activities.

Internal quality audits shall be carried out by personnel independent of those having direct responsibility for the activity being audited.
The internal quality audit program shall provide verification that the quality system is operating and being implemented as planned. Audits should be conducted on a planned and scheduled basis, consistent with the importance of the activities being performed.

The results of the audits shall be recorded and brought to the attention of the personnel having responsibility in the area audited. The management personnel responsible for the area shall take timely corrective action on deficiencies found during the audit.

Follow-up audit activities shall verify and record the implementation and effectiveness of the corrective action taken.

The results of internal quality audits shall be reviewed in management review meetings. In accomplishing management review the results of internal audits and their attendant C/A status shall be reviewed for adequacy and effectiveness.

Auditor qualifications shall be established and documented by the Design-Builder. Staff assigned auditing tasks shall be qualified accordingly, with qualification records maintained as quality records. Auditing need not be a full-time assignment, but staff assigned auditing tasks shall have no direct responsibilities for the function or work they audit.

Audits shall be carefully planned and executed to avoid or minimize disruption of the audited activity. Results shall be provided promptly to personnel responsible for the audited activity and their management. Corrective action shall be developed to identify the root causes and to institute measures to prevent the types of deficiencies identified in the audit. Corrective actions shall be monitored through review of documents, surveillance, or follow-up audits. These actions should be conducted in a timely manner to determine the effectiveness of corrective action that is implemented. Records of corrective actions should be kept together with the respective audit records.

Records of internal audits shall be maintained by the Design-Builder.

4.2.17 Training

The Design-Builder shall establish and maintain documented procedures for identifying training needs and provide for the training of all personnel performing activities affecting quality. Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required. Appropriate records of training shall be maintained (see Section 4.2.16).

The Design-Builder shall establish documented procedures and records to ensure that the skills and professional judgment of their personnel are developed appropriately for their intended roles, through training and/or the recorded accumulation of experience; with systematic reviews of their competence at determined levels, and before any deployment of new roles.

Training shall focus on improving competency and skill for those performing activities that materially impact quality.

Procedures established shall include:

A) Position descriptions defining the requirements of the various positions required in conducting activities affecting quality;
B) Personnel records documenting each person's experience and current education and training accomplished, both formal and informal, relative to current or projected position assignments;

C) Documented evaluation of that experience and training, including a determination of what training is required to become fully qualified for the activities to which the person is intended to be assigned;

D) A documented plan to accomplish the training deficiency;

E) Records documenting accomplishment of that training; and

F) Education, experience and licensure used as a basis for qualifications of individuals should be verified.

All qualification and training records are quality records and shall be maintained accordingly (Section 4.2.16).

Project personnel shall be trained in all the special Project procedures applicable to their work.

Craft journeymen with special skills need not be trained but their competency shall be verified and a record maintained of the verification.
SECTION 5 DESIGN, DESIGN QUALITY CONTROL AND QUALITY ASSURANCE

This section sets out requirements relating to the development of designs by the Design-Builder, and design review processes.

5.1 DESIGN REQUIREMENTS

A) The Design-Builder shall provide design studies, reports, calculations, computer input and output files, plans, and specifications as required for the Design-Builder to provide all documents and files in accordance with the requirements of the Contract. The Design-Builder shall:

1) Manage and perform the Design Work pursuant to the requirements of the Contract Documents.
2) Manage and perform the Quality Control and Quality Assurance for the Design Work.
3) Manage, coordinate, and obtain all necessary approvals and permits.
4) Prepare all Design Documents under the direct supervision of the Design-Builder’s Designer.
5) Verify pertinent dimensions and other relevant existing conditions in the field prior to the Submittal of the design plans.

B) In addition to the Contract Documents, the Design-Builder shall comply with all other applicable engineering codes and standards, including those of the various Federal, State, and local jurisdictions. Codes, standards and/or manuals in effect on the proposal due date, as adopted by the Department, shall be applicable to the Project.

C) Design plans and specifications, together with all pertinent supporting documents and data, shall be subject to Review by the Department. See Appendix D – Quality Assurance Plan Program Guide.

D) Third Party, Utility, County or locality specific requirements, to the extent cited, apply only with respect to that portion of the Work performed for such Third Party, Utility Owners, or County.

5.2 DESIGN UNITS

A) A Design Unit is a distinct portion of the Project of which the design is performed as a contiguous, integrated unit.

B) It is the intent of the Department to allow construction of specific Design Units to begin prior to completing the final design of all Design Units. Construction of a specific Design Unit may begin at any time after the applicable design review and comment and acceptance by the Department of the Release for Construction Design, provided that the design conforms to all applicable codes and Contract requirements, all safety measures are in place, equipment/material are ready and all the Department’s concerns have been addressed to the satisfaction of the Department’s Project Manager. Construction may progress in increments determined by the Design-Builder, at the Design-Builder’s risk,
provided each increment of construction is covered by calculations, drawings and specifications that have been reviewed by the Department and meet the requirements for Release for construction.

C) The Design-Builder shall package all calculations, designs, and drawings for the Work into separate Design Units and, if necessary, sub-units. Design of each Design Unit or sub-unit shall be performed in a contiguous, integrated manner. Each Design Unit shall comprise similar and coherent parts of the Project that can be checked and reviewed as a self-contained package with due consideration for accommodating interfaces with other Project components.

D) Within 30 Calendar Days of NTP, the Design-Builder shall provide a written report and schedule updating information submitted with the Design-Builder’s Proposal and identifying each Design Unit. The Design-Builder shall prepare and submit the Design Unit report to the Department for Review and Comment. The written report shall include the following:

1) Design Unit description, including scope of design Work within each Design Unit (including sub-units, if necessary), including limits and interface points.

2) Planned review stages and dates, including specific information to be reviewed, planned review dates (measured from NTP date) and percent complete represented by each review.

3) Responsible Engineer for the Design Unit.

4) Locations where design Work will be performed.

5.3 DESIGN DOCUMENT ORGANIZATION

The Design-Builder shall arrange Design Documents in a systematic order and identify them with alpha/numeric designations based on discipline designations, locations, and sequential numbering.

5.4 DESIGN CERTIFICATION

5.4.1 General

The Design-Builder shall provide Design Certification by the Project Manager, the Designer, the Design QC Engineer, and the Quality Manager that each design unit Submittal at every stage of design development, as described in Section 5.7, is:

A) Consistent and compliant with all applicable requirements of the Contract Documents.

B) Consistent with all other elements of the Project.

C) Accurate, complete, and in a form and level of detail that is appropriate to the design stage to which it applies.

D) Coordinated among all requirements of the Contract Documents.
5.4.2 Design Quality Control Engineer

The Design-Builder shall assign a Design QC Engineer. The Design QC Engineer shall report to the Design-Builder's Quality Manager.

The Design QC Engineer shall be responsible for the Quality Control of all Work conducted by the Designer, including Quality Control related to design support during construction, design changes, and completion of As-Built Plans. The Design QC Engineer shall be a licensed Professional Engineer in the State of New York.

The Design-Builder’s Design QC Engineer shall assess and evaluate the Design-Builder’s design QC activities in order to be able to certify to the Design-Builder and to the Department that the design Quality Control activities comply with the Quality Control Plan and Contract requirements.

The Design QC Engineer shall have Quality Control responsibilities related to the following:

A) Design of permanent and major temporary components;
B) Changes in design of permanent components;
C) As Built Plans
D) Identifying and reporting non-conformities/non-compliance;
E) Tracking, monitoring, and reporting on status of outstanding design-related non-conformance reports; and

5.4.3 Supervision and Seals

A) Prior to delivering any Release for Construction Documents to the Department or to any of the Design-Builder’s construction teams:

1) The contents of the Release for Construction Documents shall be individually signed and sealed by the licensed Professional Engineer or Architect under the laws of the State of New York responsible for the specific content included in the documents.

2) The Designer shall sign and seal the title sheet.

5.5 DESIGN EXCEPTIONS

All deviations (design exceptions) from specified standards must be submitted to the Department’s Design QA Engineer for review and Approval. All requests for deviations and exceptions must be submitted with a justification report detailing the reasons to retain a non-standard or substandard feature or for providing an improvement that does not bring the feature up to standard. Requests for design deviations and exceptions must be submitted not later than the Definitive Design Review by the Department in writing before the affected Design Units will be released for construction.
If a design review reveals a non-conformance with the Contract requirements, the Department will prepare a Design Non-Conformance Report and submit it to the Design-Builder for action. The Design-Builder shall note the Non-Conformance and resolution in the monthly report and provide written confirmation to the Department when the Non-Conformance is corrected.

All Design Reviews shall include a comment and Non-Conformance report resolution process where unresolved comments and non-conformance reports are discussed and a written action plan and schedule for resolution of unresolved comments and Non-Conformance reports is developed. The Design QC Engineer will lead the process.

Any Design Non-Conformance Reports issued by the Design QC Engineer or the Department must be addressed and resolved by the Design-Builder to the satisfaction of the Department prior to any design being released for construction.

5.6 EXISTING CONDITIONS

The Design-Builder shall ensure that the condition of existing buildings, structures, roadways, sidewalks, paths, trails, lighting, and signal and/or ITS equipment, or other property that is to remain in place or is to be modified is not adversely affected by the performance of the Work. The Design-Builder shall perform appropriate property pre-condition surveys and associated monitoring, and shall repair any damage determined to be caused by the Work. All repair to damage shall be at the Design-Builder’s expense.

5.7 STAGES OF DESIGN DEVELOPMENT

The Design-Builder shall make a single comprehensive design check and Design Review for each Design Unit at the stages of design development specified below:

1) Definitive Design;
2) Interim Design;
3) Release for Construction Design;
4) Final Design Set (compilation of all Design Units);
5) Working Plans; and
6) As-Built Plans.

The intent of each stage of design development and Design Review is to verify that the design complies with the Contract requirements; allows components of Design Units to be released for construction; and/or in the case of reviews of Work Plans, to allow construction to continue.

Design Reviews or design checks shall be completed as specified in Section 5.8, for each Design Unit at each stage of design development.

The Design-Builder shall time the Design Review to be consistent with the Baseline Progress Schedule.

The Design-Builder shall determine the appropriate level of design completion for each stage using the requirements of the Contract Documents, good industry practice, and the designated Submittal requirements for each stage in order to ensure all Project requirements are met.
5.7.1 **Definitive Design**

A) The Design-Builder shall provide a Definitive Design Submittal.

B) The Definitive Design submission shall represent conceptual design of the character and all features of the project and serve to validate project requirements and the construction cost. The Design-Builder shall prepare and submit the Definitive Designs to the Department for Review and Comment.

5.7.2 **Interim Design**

The Interim Design submission shall represent the overall size, character, and features of the Project and serve to thoroughly convey the designer’s intentions, define elements such as major demolition, structural, track work, utilities, earth work, environmental considerations, shoring and temporary support and ancillary, work, operations, and materials. The Design-Builder shall prepare and submit the Interim Designs to the Department for Review and Comment.

5.7.3 **Release For Construction Documents**

A) Release for Construction Documents (RFCD) shall be signed and sealed by the Design-Builder, and shall be used by the Design-Builder to construct the Project.

B) The RFCD shall include plan sheets, specifications, shop drawings, working plans, and other pertinent information as applicable. The RFCD may only be issued by the Design-Builder after all previous comments related to the elements, whether in the subject Submittal or not, have been addressed and appropriately incorporated, non-conformances have been corrected, and appropriate approvals and permits have been obtained.

C) The Design-Builder shall submit Release for Construction Documents to the Department for Review and Comment before commencing the Construction Work contained in the RFCD.

5.7.4 **Final Design**

A) The Final Design submission shall be a complete set of all of the Release for Construction submissions, incorporate comments generated by the Release for Construction Reviews and bring construction documents to a substantially complete level. The technical specifications shall be in sufficient detail to complement the Release for Construction drawings.

B) The Design-Builder shall prepare and submit the Final Designs to the Department for Review and Comment.

5.7.5 **Conformed Release For Construction Documents**

A) The Design-Builder shall at all times maintain a conformed, electronic .dwg and .pdf format, set of all RFCD plans, specifications, and shop drawings. The conformed RFCD shall also include formally issued revisions made after release for construction, but are not construed as as-built records.
B) The conformed RFCD shall be electronically accessible to the Department from Project and remote locations at all times. The conformed RFCD shall contain master indexes such that relevant plans, specifications, or shop drawings can be easily located.

5.7.6 Working Plans

The Design-Builder shall submit Working Plans as applicable for all Project elements. Working Plans shall comprise the development and production of working drawings. The Design-Builder shall check, review, and certify working drawings in accordance with Section 5.8 and Section 5.10.7, and submit them to the Department for review, prior to their being issued for construction.

The Design-Builder shall invite the Department to participate in the review of Working Plans before formal submittal. The Department may invite the Stakeholders to participate in reviews of Working Plans.

Working Plans include those documents prepared by the Design-Builder to supplement Design Plans to specify additional details and procedures for construction of the Project, including the following:

A) Construction details;
B) Demolition Plans;
C) Erection plans;
D) Fabrication plans;
E) Transportation plans;
F) Storage plans;
G) Field design change plans;
H) Stress sheets;
I) Shop plans;
J) Lift plans;
K) Bending diagrams for reinforcing steel;
L) Falsework plans;
M) Temporary Structure Plans;
N) Material Waste Area Grading Plans;
O) Other Plans required to adequately describe the Work in accordance with the Contract;
P) Similar data required for the successful completion of the Work;
Q) Material and product data from Manufacturers; and

R) Calculations.

The Design-Builder shall be responsible for the review and approval of all Working Plans, including 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.

For Lifting Plans and Temporary Structure Plans, the Design-Builder shall submit to the DQAE and CQAE Plans, Load Ratings, Project site activity start date and expected completion date.

DQAE/CQAE conducts review and provide comments back to Design-builder.

Once Plans are approved by Design-Builder and accepted by DQAE and CQAE, the Office of Structure Construction Unit and Permit Group of temp Structures will be notified and copies of approved Plans and Load Ratings will be provided for their records.

5.7.7 As-Built Plans

The Design-Builder shall submit the As-Built Plans, in electronic and print formats, for each Design Unit in accordance with Section 5.8.5.

5.8 DESIGN REVIEWS

The Designer’s organization shall check all design documents (drawings, plans, specifications, calculations, and reports) produced by the Design-Builder’s organization. The Design QC Engineer shall certify that these documents have been checked per Contract requirements and the Design-Builder’s Quality Control Plan. The Design QC Engineer’s written certification shall provide the certification specified in Section 5.5.

The Design-Builder shall invite the Department to participate in Definitive, Interim, Release for construction, and final Design Reviews. The Department may invite other Project Stakeholders to participate. The Design-Builder shall address and/or resolve the Department comments in consultation with the Department.

The Design-Builder’s time and cost impacts of revisions arising from Department’s and Stakeholders’ participation in Design Reviews and/or caused by Design-Builder’s non-compliance with Contract requirements, including the Department’s and Stakeholder's time for reviewing revisions, shall be borne by the Design-Builder.

The Design-Builder shall notify and invite the Department to participate in all Design Reviews conducted by the Design QC Engineer. The Department may also invite Project Stakeholders and affected Utility Owners to participate. The Department will provide Consultation and Written Comment (based on the Department and Stakeholder participation) regarding these Design Reviews.

The Design-Builder shall notify and invite the Department to participate in all Design Reviews conducted by the Design QC Engineer. The Design QC Engineer shall provide a Design Review report (a tabulation of comments and resolutions) for each Design Unit at the conclusion of each Design Review. The Design Review reports will identify any actions arising from the reviews. The report shall note items requiring corrective action on the Design
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Non-Conformance Report. The Design QC Engineer shall send the Design Non-Conformance Report to the Designer and a copy to the Department.

5.8.1 Definitive Design Review

The Design Review of Definitive Design shall be the first Design Review after Award and is intended to verify that the design concepts proposed by the Design-Builder meet Contract requirements. The Definitive Design Review may also serve as a Release for construction review. The Definitive Design Review shall verify the following:

A) The design concepts, including conceptual construction phasing, constructability, governing future design development are defined consistent with Contract requirements;

B) The final Basic Project Configuration, including any additional non-standard features not previously defined in the RFP Project Requirements; For projects that are classified Projects of Division Interest (PODI) Level 1 – Full Federal Oversight, these additional non-standard features shall be submitted to the Department’s Project Manager for review and approval by FHWA;

C) The design concepts are substantiated and justified by adequate Site investigation and analysis, including confirmation of the presence or non-presence of hazardous materials (asbestos, lead paint, contaminated soils in bridge approach areas);

D) Final Rights-Of-Way requirements;

E) The specific standards applicable to the proposed concepts are identified and appropriate;

F) The availability of required Materials/Equipment; and

G) The design meets Project quality requirements and required design QC procedures have been followed.

If the Definitive Design is amended subsequent to the Definitive Design Review, the Design-Builder shall re-check and re-certify the design as an additional Definitive Design Review.

5.8.2 Interim Design Reviews

The Design-Builder may submit for Design Quality Assurance review, one or more Interim Design submission(s), for each Design Unit, between the Definitive Design Review and completion of design for that Design Unit.

The Design-Builder and the Department may use the interim Design Review(s) to verify that the concepts and parameters established and represented by Definitive Design are being followed and that Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the Department any changes to information presented at Definitive Design. If the Design-Builder chooses to submit Interim Design Submissions, the Design-Builder shall submit the Interim Design for Consultation and Written Comment by the Department’s Design QA Engineer.
5.8.3 Release for Construction Review

The Design-Builder and the Department shall use the Design Review(s) of Release for Construction design to verify that the concepts and parameters established and represented by Definitive Design are being followed and that Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the Department any changes to information presented at the Definitive and/or Interim Design stages. Interim Design Plans and Release for Construction Plans shall include Standard Specification and/or Special Specification Pay Items for all construction items presented in the Plans. The Design-Builder shall present the information for Release for construction review to the Department for Consultation and Written Comment by the Department’s Design QA Engineer.

By submitting the Release for Construction Packages, the Design-Builder is confirming that the following items have occurred:

A) The Designer has conducted its design QC checks throughout the design process in compliance with the Quality Control Plan and certifies in writing that the design is complete to the appropriate level or stage of review, checked and ready to be released for construction;

B) The Design QC Engineer has signed the title sheet for the drawings, certifying the following (the title sheet can be formatted to include the items of certification):
   1) Design checks have been completed;
   2) Work conforms to Contract requirements;
   3) Any deviations or design exceptions have been approved in writing by the Department;
   4) Design QC activities are following the Design-Builder’s Quality Control Plan; and
   5) All outstanding issues or comments from Design Reviews have been resolved;

C) The Responsible Engineer has signed all drawings prepared under his/her direction. For those drawings and documents included in the submittal that are prepared by a Manufacturer or Supplier or other Persons not under his/her direct supervision, the Responsible Engineer will affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and Contract requirements;

D) The Design Manager has signed the title sheet to the drawings certifying to the items contained in Section 3.4.4.2. (The title sheet can be formatted to include the items of certification);

E) The design has undergone constructability review and is constructible as represented;

F) Work Plans, Project Specifications and related documents for the portion of the Project to be constructed are complete and checked in accordance with this Section 5.8;

G) The design and drawings for WZTC and temporary erosion control and environmental measures applicable to the Work are complete;
H) Adequate stakes, lines, and/or monuments necessary to control the Work have been established on the Site;

I) The Release for Construction plans and specifications have been stamped “Release for Construction” and signed by the Designer before being issued; and

J) The Department’s Design Quality Assurance Engineer has provided Consultation and Written Comment regarding the design.

The Design-Builder shall not begin any demolition or construct any permanent components or major temporary components until the Department has initialed the Release for Construction package to verify that all the reviews are complete and that all comments have been resolved satisfactorily.

5.8.4 Final Design Review

The Design-Builder shall schedule and conduct a final design review when the Design Plans and Project Specifications for the Design Units are 100% complete. The Design-Builder shall specifically highlight, check and bring to the attention of the Department any changes to information presented at previous design reviews. The Design-Builder shall submit final design for Consultation and Written Comment by the Department’s Design QA Engineer.

5.8.5 As-Built Review

As-Built Plans and Project Specifications shall incorporate complete information that defines the Work as constructed to meet the Contract requirements.

The Design-Builder shall submit As-Built Plans complete for each Design Unit to the Department for review and Design Acceptance in accordance with Section 5.7.7. The Design-Builder shall submit As-Built Plans to the Department’s Project Manager within two weeks following completion of all Work. Design Acceptance by the Department will not occur until the As-Built Plans are submitted, reviewed and corrected to the satisfaction of the Department.

5.8.6 Design Quality Assurance Review Durations

It is intended that design review durations by the Design Quality Assurance Engineer be as short as possible. To make this possible the Design-Builder shall develop a design schedule that clearly shows the occurrence of design reviews (definitive designs, interim designs, Release for Construction designs, etc.) so that the Design Quality Assurance Engineer can be prepared to receive the documents and set time aside to complete the review.

Also, it is intended that the Design Quality Assurance Engineer will be at the designer’s office as often as necessary to comment on the design and attend the designer’s progress and quality review meetings so as to be fully aware what the details of the design are and to give early comments on the design. It would be expected that these informal “over the shoulder” reviews will allow the formal submission of designs to be reviewed quickly and with few if any comments.

Designs will be reviewed by the Design Quality Assurance Engineer and the formal reviews will be completed within the following time frames after the design documents are received.

- Definitive design review – 5 business days
• Interim design review – 10 business days
• Release for Construction design review – 5 business days
• Working Plan review – 5 business days

Review durations for Design Unit Submittals that contain Special Specifications, including Special Specifications that are being submitted to the Department for the first time, shall be determined on a case by case basis.

As a prerequisite to ensuring that these review durations by the Design Quality Assurance Engineer are achieved, the Design-Builder shall provide documentation demonstrating that all the Designer’s Quality Control activities have been completed for the plans, specifications, and necessary calculations in accordance with the Design-Builder’s Quality Control Plan and the Contract Requirements.

5.8.7 Comment Resolution

Department comments from Design Reviews will be recorded and transmitted to the Design-Builder. The Design-Builder shall record its proposed disposition and response to each comment and meet with the Department to resolve outstanding comments and dispositions.

5.9 SCHEDULE FOR DESIGN CHECKS AND REVIEWS

The Design-Builder is responsible for scheduling and conducting Design Reviews to meet design and/or construction needs of the Baseline Progress Schedule. It is recognized and anticipated that the Design Review process and frequency, duration and intensity of Design Reviews may vary with the complexity of the individual Design Units and the associated construction activities. The duration of Design Reviews shall be discussed and mutually agreed between the Department and Design-Builder during the Design Workshop (Section 5.11.1) and verified and modified by mutual agreement during the course of the Project. The Design-Builder shall give written notice of scheduled Design-Reviews to the Design Quality Assurance Engineer at least one week prior to any review.

The Design-Builder shall include the agreed Design Review schedule for all Design Units as part of the Baseline Progress Schedule. The Design Review schedule shall be reviewed monthly. The Design-Builder shall not schedule more than two concurrent Design Reviews without the Department’s concurrence.

Except for As-Built Plans, plans to be reviewed shall be in the form of sufficient copies of Design Plans and Project Specifications and supporting data and reports assembled for review to accommodate participants in the Design Review(s).

The Design-Builder shall make specified submittals of checked designs in accordance with Section 5.8. Submissions shall be complete for each Design Unit, but may be combined for multiple Design Units at any one time upon the Department’s concurrence. The Design-Builder shall submit each Design Unit for Consultation and Written Comment by the Design QA Engineer. The Design-Builder shall provide written responses to all comments provided by the Design QA Engineer.

For each Design Unit, the Design-Builder shall include design checks and Design Reviews as indicated in Section 5.8, and such additional reviews as may arise. The Design-Builder shall allow
the time for the Department's participation and input to any Design Review conducted by the Design-Builder's Design QC Engineer. The Design-Builder shall incorporate this schedule into Design-Builder’s Baseline Progress Schedule and report progress and updates in the monthly updates. The Design-Builder shall keep the Department up to date on exact timing of reviews and Release for construction Design Reviews through the scheduled progress meetings.

5.10 COMMON DESIGN DOCUMENTS

Certain types of Design Documents are required for all elements and engineering disciplines. In addition to the Submittal requirements listed in each Section of the Technical Provisions, the Design-Builder shall prepare and submit the following Design Documents for every element and engineering discipline.

5.10.1 Design Criteria Report

A) The Contract Documents provide design criteria for some elements. The Design-Builder shall develop design criteria for the remaining elements. The Design Criteria Report shall identify how the requirements of the Contract Documents have been interpreted in terms of the configuration, performance, and all other requirements;

B) The first submittal related to an element shall include, or be preceded by, a Design Criteria Report. The Design-Builder shall prepare and submit the Design Criteria Report to the Department for Review and Comment.

5.10.2 Basis of Design Report

A) The Design-Builder shall create and maintain a comprehensive Basis of Design Report (BODR) for the Project.

B) The first submittal related to an element shall include a BODR. Each BODR submitted shall be a portion of the overall BODR.

C) The Design-Builder shall submit the Basis of Design Report Record Document for Review and Comment upon completion of all elements of the BODR.

D) The BODR Record Document shall be logically organized wherein each of the major Work elements are organized, including:

1) Table of Contents.
2) Executive Summary.
3) Project Controls.
4) Design Work.

E) The BODR shall address the following as applicable to each element:

1) Design methodology and approach.
2) Key assumptions:
   i. Identify applicable design criteria, considerations, influences, and factors.
ii. Identify concurrent design activities.

iii. Identify construction approach, including sequence, phasing and staging (if applicable).

iv. Identify any deviations from the FEIS and any associated revisions to governmental approvals.

5.10.3 Project Plans

The Work shall be performed in accordance with the details as shown on the Design Plans prepared by the Designer and those Work Plans prepared by the Design-Builder. It shall be solely the Design-Builder’s responsibility to provide Work Plans of such a nature as to develop a finished product in accordance with Design Plans, Project Specifications, and Contract requirements. The Design-Builder shall verify pertinent dimensions in the field prior to conducting a Work Plans review. Participation in the review of the Design-Builder’s Design Plans and/or Work Plans by the Department (or Stakeholders, if invited by the Department) shall not relieve the Design-Builder of the responsibility for the satisfactory completion of the Work.

All Release for Construction Design, Final Design and As-Built Plans shall be signed and stamped/sealed by the appropriate Responsible Engineer and shall include, on the title sheet for the plans, certification signatures of the Design Manager and the Design QC Engineer.

5.10.4 Project Specifications

Written specifications shall be provided that document the requirements for materials, equipment, systems, standards and workmanship for the Work and performance of related services. Every submittal starting with Intermediate Design shall include specifications.

The Design-Builder shall prepare Project Specifications based on Contract requirements, including the Department’s Standard Specifications, Construction and Materials Section 200 through 700). The Design-Builder may perform the following activities:

A) Use the Department’s Standard Specifications as supplemented by the Contract;

B) Prepare supplements to the Standard Specifications; and/or

C) Prepare new Specifications to cover Work not covered by the Standard Specifications.

Project Specifications, including the Sections 200 through 700 of the Department’s Standard Specifications, will be reviewed by the Design-Builder and the Department during Design Reviews to verify that the Project Specifications provide a level of quality that meets or exceeds the Contract requirements and are suitable and appropriate to control the Work. Development and implementation of Project Specifications will not require a Change Order provided that the Project Specifications are of equal or greater quality than the Specifications presented in Contract Documents. The Design-Builder shall be responsible for demonstrating that the Project Specifications meet or exceed the standard of quality established by the Specifications in the Contract Documents. Any deviation that results in lesser quality will require Department approval and may require the execution of an Order-on-Contract. The Department shall determine, at its sole discretion, if the Project Specifications meet the Contract Requirements.
Project Specifications shall define the type and frequency of QC sampling and testing to be conducted for the Work covered by a Project Specification.

5.10.5 Calculations

The Design-Builder shall prepare and submit calculations for Design Units including but not limited to structural elements, final geometry, pavement, hydraulics, hydrology, storm water management, mechanical, electrical, and drainage. The Design-Builder shall prepare and submit calculations necessary to support that the design meets all Contract requirements.

5.10.6 Revisions to Design

After a design is complete and the Work is ready to be executed, or is being executed, or is complete, all subsequent design changes and modifications shall be identified, documented, reviewed and approved by authorized personnel before their implementation.

The Design-Builder shall deal with any changes to design initiated by the Design-Builder as an entirely new design. The Design-Builder shall not be entitled to any increase in the Contract Price or extension of time in such circumstances.

5.10.7 Design Changes Before Construction

Design changes may occur prior to construction or may occur after final design, and may be initiated by the Design-Builder or the Department.

For all design changes requiring calculations, the Designer and the Design QC Engineer shall conduct a documented check of all calculations. All design changes requiring alteration of design documents released for construction shall undergo all review and certification procedures included for original design documents in the Design-Builder's Quality Control Plan.

If a design change takes place after sign-off of the Released for Construction Documents, the Design-Builder shall prepare a Design Change Notice (DCN) and submit it the Design Quality Assurance Engineer for review and comment. The DCN shall describe the change; identify and provide the Design Unit Plans, Specifications, calculations and other documents impacted by the change; explain the reason for the change; list other Design Units that will be impacted by the change; and describe the impacts to the Project schedule if any.

5.10.8 Design Support During Construction

The Designer shall verify during construction that the conditions actually encountered are consistent with the design and related Contract Documents. The Designer shall prepare necessary adjustments in the Design Plans, Work Plans, and Project Specifications, and the Design-Builder shall obtain required Department Consultation and written comment. The Designer and the Design QC Engineer shall check any such changes in accordance with the Quality Control Plan. The Design QC Engineer shall certify the change in writing as meeting the Contract requirements. The Design-Builder shall incorporate the adjustments in the As-Built Plans. The Design-Builder shall retain copies of the Design QC Engineer’s written certifications and submit the certifications to the Department.
5.11 DESIGN COORDINATION

5.11.1 Design Workshop

Within 10 Calendar Days of NTP, the Design-Builder shall arrange a design workshop to familiarize the Design-Builder’s personnel, Department staff, and others associated with design to review design concepts, issues, status, and review procedures. The Department and the Design-Builder shall jointly develop the agenda of the workshop and how it will be organized (e.g., by Design Unit and engineering discipline). The intent of the workshop is to make the subsequent Design Reviews more effective and efficient for all parties. The workshop will focus on a review of the critical design elements and criteria and on how the Designer plans to organize its design and conduct the reviews.

5.11.2 Over the Shoulder Reviews

The interaction between Designer and Department staff or Department appointed consultant staff will be continuous throughout the design process through the “over-the-shoulder” reviews that typically would consist of activities, such as:

A) Participating in design meetings.

B) Responding to design requests for information or clarification.

C) Auditing of design quality process and records.

5.12 QUANTITY ESTIMATES

To facilitate determining sampling and testing requirements, the Design-Builder shall provide quantity estimates for the Work. The quantity estimates shall be in units that facilitate sampling and testing, i.e., the units shall be consistent with the units used to determine frequency of sampling and testing. For example, if “X” numbers of compaction tests are specified to be taken for every “Y” cubic yards of embankment, the quantity estimate would need to be in cubic yards of embankment.

5.13 DESIGN DOCUMENTATION

5.13.1 Progress Tracking

The Design-Builder shall include engineering and design progress and changes in its Baseline Progress Schedule (including Work on any design change) in the monthly updates.

5.13.2 Design Quality Records

The Design QC Engineer shall prepare and submit monitoring reports to the Department of all design issues and review comments resulting from the scheduled and additional checks and reviews, including “over-the-shoulder” reviews.

The Design-Builder shall also maintain an auditable record of all Quality Control Plan procedures. An independent auditor shall be able to determine by reviewing documentation if all procedures included in the Quality Control Plan have been followed.
The Design-Builder shall submit reports of checks and reviews within seven Calendar Days of the completion of the review.

The Design-Builder shall develop, implement, and maintain a log of design Non-Conformance Reports and/or notices indicating dates issued, reasons, status, or resolution and date of resolution.

5.13.3 Design QC Engineer Report

The Design QC Engineer shall submit a monthly report directly to the Department’s Project Manager by the third working day of the following month that includes the following:

A) Summary of reviews conducted;

B) Nonconforming Work and current status and/or disposition (based on design non-conformance log, Section 5.13); and

C) Submission(s) from Design-Builder and status.

5.13.4 Final Design Report

Upon completion of the final design for each Design Unit, including all its components and elements, the Design QC Engineer shall notify the Design-Builder, with a copy to the Department, of any outstanding monitoring report issues or unresolved review comments.

5.14 SUMMARY OF SUBMITTALS

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SECTION 6 CONSTRUCTION QUALITY CONTROL AND QUALITY ASSURANCE

6.1 GENERAL

The Design-Builder shall develop and implement a quality program for all phases of the Project, including design, construction, maintenance, safety and environmental compliance. The Design-Builder, through its Design-Build Quality Control Plan, shall have the responsibility for the quality of the Work, including all Work and products of Subcontractors, fabricators, Suppliers, and vendors. The Department, in its oversight role through Quality Assurance (QA), reserves the right to and will conduct verification oversight inspections, acceptance testing, audits, sampling and testing, and Independent Assurance (IA).

The Design-Builder shall be capable of ensuring that procurement, shipping, handling, fabrication, installation, cleaning, Inspection, construction, testing, storage, examination, repair, maintenance, and required modifications of all Materials, Equipment, and elements of the Work will comply with the requirements of the Contract Documents and that all Materials incorporated in the Work and all Equipment and all elements of the Work will perform satisfactorily for the purpose intended.

6.2 QUALITY CONTROL – CONSTRUCTION INSPECTION – AND TESTING OF MATERIALS

The Design-Builder’s Quality Control responsibilities during construction include Construction Inspection as well as sampling and testing of materials.

6.2.1 Construction Inspection Quality Control

All construction processes, procedures, and workmanship shall be inspected by the Design-Builder’s Construction Quality Control (QC) Inspectors. The QC Inspectors shall include the observations, measurements, and documentation specified in Appendix A, and/or included in the Design-Builder’s Quality Control Plan. Inspection observations, measurement, results, non-conformances, and corrective actions shall be documented on the Design-Builders forms acceptable to the Department and/or on the appropriate MURK form or Department reporting form. Inspection observation and documentation shall include description of the construction activity and location by Specification section.

The Design-Builder’s Independent Construction Inspection Professional Engineering Firm shall provide all required oversight, direction, testing, reviews and inspections for the purpose of assuring that the construction and inspection activities are being performed in compliance with the Contract requirements, including, but not limited to, the Design Plans, Specifications and the Design-Builder’s approved Quality Control Plan and the Department’s standards and practices. In addition, the Independent Construction Inspection Professional Engineering Firm shall have the responsibility to perform sufficient inspections and/or tests of the Design-Builder’s Work to determine that the Work performed by the Design-Builder and the inspections and/or tests performed by the Materials Testing Firm or Laboratory are in compliance with the Contract requirements (See Appendix A). This includes a determination that the Work is constructed to established lines and grades and that any required measurements for payments are performed to the prescribed accuracy. QC Inspections shall verify that the standards for methods of construction are followed by the Design-Builder. The Independent Construction Inspection Professional Engineering Firm’s Resident Engineer shall also verify that all required Construction QC Inspection and testing occurs as specified, and that daily reports and other required Contract administration documents are prepared and provided as specified. The Independent Construction Inspection Professional Engineering Firm’s Resident Engineer shall provide information to the
Department's Construction Quality Assurance Engineer regarding percentages of Work complete for monthly payment estimates and verify quantities of any unit-priced Work items.

In addition, the Resident Engineer shall prepare daily reports that describe the Construction QC activities performed each day, relevant conversations with the Construction QA Engineer, discussions with the Design-Builder, visits by agencies with regulatory responsibility and indications of acceptable or unacceptable work (as recorded by Non-Conformance Reports) by the construction inspectors.

The Resident Engineer and their staff shall have the responsibility and authority to direct the Design-Builder to take the necessary corrective action if any deviations from the Contract requirements occur and, if necessary, order the Work to be suspended. The Quality Control activities that shall be performed by the Resident Engineer and their staff shall include, but not be limited to:

A) Ensure that adequate staffing and supervision of appropriately qualified inspection staff is maintained at all times;

B) Review the performance of the Materials Testing Laboratory for compliance;

C) Review the Design-Builder’s construction activities for compliance to the Department’s standards and specifications;

D) Ensure that any construction is in conformance with plans and specifications that have been stamped and signed by the designer and initialed by the Department’s Design QA Engineer;

E) Daily (twice or more for night time operations) review the Work Zone Traffic Control for all Work Sites to ensure that they comply with all Department Standards and they are safe for the traveling public and workers;

F) Review the overall safety of all Work Sites to ensure that they are safe for the workers, the inspection staff and the public;

G) Review the Project records (including procurement documentation) to ensure they are compliant with MURK, Site Manager Requirements (see Section 6.9.1), and NYSDOT practice;

H) Perform inspections and tests to document acceptability of the work for payment;

I) Review and approve the Design-Builder’s invoices and recommend payment to the Department’s Construction Quality Assurance Engineer;

J) Originate non-conformance reports for any material test failures or construction work effort, safety, or work-zone non-compliance;

K) Maintain a log with the status of all non-conformance reports, with an emphasis on outstanding resolutions to non-conformances;

L) Recommend corrective action to the Department’s Construction Quality Assurance Engineer if there are deficiencies found in the Work performed by the Design-Builder;
M) Coordinate field inspection activities between the Design-Builder’s Construction personnel, QC inspection staff, and Department QA staff; and

N) Recommend acceptance to the Department’s Construction Quality Assurance Engineer.

6.2.2 Construction Quality Control Testing and Sampling

Materials shall be sampled and tested by the Construction QC Inspectors working for the Design-Builder’s Professional Engineering Construction Inspection Firm or Materials Testing Firm or Laboratory in accordance with Appendix B. Copies of all test results shall be furnished to the Design-Builder’s Project Manager, the Design-Builder’s Quality Manager, and the Department’s Construction Quality Assurance Engineer within 24 hours of the test results.

References in the Contract to a New York Department of Transportation test method or test designation of the American Association of State Highway and Transportation Officials (AASHTO.), the American Society for Testing and Materials (ASTM) or any other recognized national organization, shall mean the latest revision of that test method or Specification for the Work in effect on the Proposal Due Date, as adopted by the Department, unless otherwise noted. The Design-Builder shall comply with the latest modifications as published by the Department’s Materials Bureau (see EB11-043). All Inspection, Sampling and Testing shall be in accordance with the procedural directives issued by the NYSDOT Materials Bureau.

6.2.3 Quality Control Personnel – Certifications/Qualifications

The Design-Builder shall maintain a list of construction QC staff that describes what test certifications each person currently holds and the certification expiration date. The Design-Builder’s QC staff will be allowed 30 Days from Award of the Contract to obtain the certifications.

QC Inspectors shall test and sample only those Materials for which they are certified to test. Reports of each test shall be recorded on the MURK form prescribed for that test. All tests that do not pass specified requirements will be added to a log of non-conformance reports for resolution and corrective action.

The minimum frequency of QC sampling and testing shall be consistent with Appendix A and the individual Project Specifications accepted by the Department’s Project Manager.

The Design-Builder’s staffing levels for inspection and materials samplers shall be consistent with those for NYSDOT-inspected Projects.

All Design-Builder QC Inspectors are required to be certified, for the type of work they are inspecting, in accordance with NHI, NYSDOT Technician Certification Program, or the North East Transportation Technician Certification Program (NETTCP; www.nettcp.com) for the following technician roles: Concrete Inspector, HMA Paving Inspector, Soils and Aggregate Inspector, Drilled Shaft Inspector, Driven Pile Inspector, and Subsurface Inspector; and Concrete, HMA Plant, Soils and Aggregate Lab, and PG Asphalt Binder technicians. Technicians that perform field inspection of Portland cement concrete shall possess a current certification from the American Concrete Institute as Concrete Field-Testing Technician Grade I. NYSDOT’s HMA Plant QC/QA Technician Certification Program is administered by the New York State Construction Materials Association; NYSDOT’s Concrete Field Inspection certification is the American Concrete Institute (ACI) Level I; the HMA Density Monitoring Technician Certification Program is administered by NYS Chapter of Association of General Contractors, Albany, NY.
The Design-Builder’s QC Inspector(s) designated as the responsible person in charge of Work Zone Traffic Control shall have sufficient classroom training, or a combination of classroom training and experience, to develop needed knowledge and skills. Acceptable training should consist of a formal course presented by a recognized training program which includes at least two full days of classroom training within the last 5 years. A minimum of two days classroom training is normally required, although one day of classroom training plus responsible experience may be considered. Recognized training providers include American Traffic Safety Services Assoc. (ATSSA), National Safety Council (NSC), Federal Highway Administration’s National Highway Institute (FHWA-NHI), and accredited colleges and universities with advanced degree programs in Civil/Transportation/Traffic Engineering. Former DOT employees may be considered on the basis of at least one day of formal classroom training combined with responsible M&PT experience within the last 5 years.

Courses considered acceptable include the following:

A) FHWA – NHI 38003 – Design and Operation of Work Zone Traffic Control

B) NSC – Work Zone Traffic/Traffic Control Zone

C) ATSSA – Worksite Traffic Supervision
   1) Construction Zone Safety Inspector
   2) Traffic Control in Urban and Utility Work Areas

D) DOT – M&PT for EIC’s and Responsible Persons

6.3 QUALITY ASSURANCE – ACCEPTANCE AND/OR VERIFICATION AND AUDITING, SAMPLING AND TESTING

6.3.1 Quality Assurance Verification and Auditing

Construction Quality Assurance acceptance or verification and auditing of the Design-Builder’s work will be performed by the Department’s Construction Quality Assurance Engineer assigned to the Project, as outlined in Appendix D – Quality Assurance Plan Program Guide. The Construction Quality Assurance Engineer may have additional staff to assist him/her in performing Construction Quality Assurance activities.

The Construction Quality Assurance Engineer and staff shall have access to all activities and records of the Design-Builder, the Independent Construction Inspection Professional Engineering Firm, and the Materials Testing Firm or Laboratory retained by the Design-Builder for the purpose of assuring that the construction and inspection activities are being performed in compliance with the Contract requirements, including, but not limited to, the Design Plans, Specifications and the Design-Builder’s approved Quality Control Plan and the Department’s standards and practices.

In addition, the Department’s Construction QA Engineer and staff shall have the authority to perform sufficient inspections and/or tests of the Design-Builder’s Work to either accept or verify that the Work performed by the Design-Builder and the inspections and/or tests performed by the Independent Construction Inspection Professional Engineering Firm and the Materials Testing Firm or Laboratory are in compliance with the Contract requirements (See Appendix A). This includes assurance that the Work is constructed to established lines and grades and that any
required measurements for payments are performed to the prescribed accuracy. Periodic QA Inspections will verify that the standards for critical methods of construction are followed by the Design-Builder. The Department’s Construction QA Engineer and staff will also audit and verify that the Construction QC Inspection occurs as specified, including but not limited to all QC tasks outlined in Section 6.2, and that daily reports and other required Contract administration documents are prepared and provided as specified.

The Department’s Construction Quality Assurance Engineer may observe any testing performed by the QC Inspectors or the Materials and Testing Firm or Laboratory. If the Construction Quality Assurance Engineer observes a deviation from the specified sampling or testing procedures, the Construction Quality Assurance Engineer will verbally describe the observed deviation to the Design-Builder’s Construction QC Engineer, followed by a written Non-Conformance Report covering the deviation to the Design-Builder’s Construction QC Engineer and Design-Builder’s Project Manager within twenty-four hours.

Members of the Department’s Construction QA staff will be assigned responsibility for verifying and auditing the Quality Control Construction Inspection and materials sampling and testing activities of the Design-Builder. The methods employed for verification may include audits of items and processes defined in the Design-Builder’s Quality Control Plan to ensure compliance with the plan. In addition, the Department’s Construction QA staff will conduct periodic reviews and audits of construction activities to verify that the methods and in-process and/or completed work elements meet the Contract specifications and standards. The Department will perform sampling and testing for either acceptance or verification of the sampling and testing performed by the Design-Builder. The Department may also direct the Design-Builder to perform sampling and testing of materials. At no point may the inspections performed through the Department’s Quality Assurance substitute for the Design-Builder’s Quality Control requirements.

The acceptance testing and/or verification and auditing performed by the Department’s Construction QA Engineer and staff will document the acceptance of the Work for payment purposes. Discrepancies (failures of QA test results, significant audit findings) will be documented in Non-Conformance Reports which the Design-Builder must address.

### 6.3.2 Quality Assurance Sampling and Testing

Quality Assurance Sampling and Testing will be performed by the Department or its designated representatives assigned to this Project. QA technicians will be certified in accordance with the Department’s Technician Certification Program. The Quality Assurance testing will be performed independently from the construction QC sampling and testing.

All Materials are subject to inspection, sampling, and testing at any time before Final Acceptance of the Work by the Department’s Construction Quality Assurance Engineer and their staff.

All sampling and testing for acceptance will be in conformance with 23 CFR 637 and approved Department procedures using qualified, certified individuals and utilize qualified, accredited materials laboratories. When the Design-Builder’s QC materials test results are used in the acceptance decision, the Department will verify the QC data through random independent QA sampling and testing. When the Design-Builder’s QC materials test results are not used in the acceptance decision, QA data will be used to form the acceptance decision.

At no time will QA testing be performed with the same sampling and testing devices as the QC testing. QA Sampling and Testing will be conducted randomly and independently to verify
acceptance decisions on materials. QA Sampling and Testing will be performed as directed by the Department’s Construction Quality Assurance Engineer. The QA technicians will complete daily inspection records. The reports will detail the Work performed that Day clearly indicating pass/fail test results. All QA tests which do not conform to the Contract requirements will immediately trigger a Construction Non-Conformance Report for the Design-Builder’s reconciliation. The QA technicians will be familiar with the Quality Control Plan and assure that construction QC samplers and testers adhere to that plan. A list of QA technicians will be maintained that indicates what test certifications each person currently holds and the certification expiration date.

### 6.3.3 Independent Assurance

The Department will conduct all Independent Assurance (IA) activities with a goal of conducting a minimum of one IA inspection annually on all inspection personnel whose data is used in the acceptance decisions on this Project. Results from the IA testing may not be used as part of the acceptance data.

### 6.4 COMPETENCE

If a concern arises as to the competence of any certified individual conducting Construction Inspection or Quality Control activities, including the Resident Engineer, regardless of their specific role on the project, this concern must be documented in writing to the Design-Builder’s Project Manager and the Department’s Project Manager. The concern will be investigated as deemed necessary by the Department’s Project Manager. If this investigation substantiates the concern, corrective action or decertification will follow the established technician certification processes and protocols.

### 6.5 DESIGN-BUILDER’S CONSTRUCTION QUALITY CONTROL ORGANIZATION

All QC sampling and testing staff and laboratories shall meet the qualification requirements of 23 CFR 637 and be subject to the Approval of the Department.

#### 6.5.1 Independent Construction Inspection Professional Engineering Firm (Quality Control Engineering Firm)

The Design-Builder shall retain the services of an Independent Construction Inspection Professional Engineering Firm, to oversee, manage, certify and perform construction QC activities as specified in this Section 6, other Contract Documents and the Design-Builder’s Quality Control Plan. The Independent Construction Inspection Professional Engineering Firm shall not be owned by or be an affiliate of the Design-Builder, any Principal Participant or construction Subcontractor. The Independent Construction Inspection Professional Engineering Firm shall be responsible for management and scheduling all QC Inspection and quality control sampling and testing of all items of construction Work for this Contract, as well as inspection of its Work for conformance to the Contract requirements.

The Construction QC Engineer and all Construction QC Inspection Personnel and their support staff shall be employees of the QC Engineering firm or employees of firm(s) acting as subconsultants to the QC Engineering Firm. The QC Engineering Firm shall report directly to the Design-Builder’s Quality Manager and shall not report to the Design-Builder’s Project Manager.
6.5.2 Construction Quality Control Engineer

The Design-Builder shall assign a full time on-site Construction QC Engineer, who may be the Resident Engineer working for the Independent Construction Inspection Professional Engineering Firm as described in Section 6.2.1. This individual shall meet the minimum qualifications as described in Section 3.4.

The Design-Builder’s Construction QC Engineer shall be responsible for overall management and supervision of the Design-Builder’s construction QC programs and shall be a New York-licensed professional engineer. The Design-Builder’s Construction QC Engineer shall report directly to the Design-Builder’s Quality Manager. The Design-Builder’s Construction QC Engineer shall also maintain open and frequent communication with the Department’s Construction QA Engineer.

The Design-Builder’s Construction QC Engineer, or his/her designees, shall be granted the authority to make needed improvements to the quality of Work, including the suspension of the Work if required.

The Design-Builder’s Construction QC Engineer shall be responsible for coordinating the schedules of construction QC Inspectors with the Design-Builder’s construction activities so as not to delay Design-Builder’s operations due to Construction QC Inspection, sampling, and testing activities. Daily interaction between the Design-Builder’s QC staff and the Department’s QA staff will be a critical element to avoid delay of the Design-Build operations and schedule.

6.5.3 Staffing Levels

The actual size of the field/Site staff shall reflect the complexity, needs, shifts and composition of QC activities consistent with Work in progress. See Section 6.2.3 for staff qualifications and certifications required.

Minimum staff requirements are described in Section 3.

The resumes of the staff shall be submitted to the Department’s Construction QA Engineer for review. Any QC staff not having the qualifications or certifications specified will be removed from the Project and replaced with a person qualified for that position (see Section 6.2.3).

At any time that any QC staff causes the Department’s QA Engineer to have concerns regarding their competency, the actions in Section 6.4 shall apply.

The Design-Builder shall obtain Department approval before removal or dismissal of any construction QC staff.

The QC staffing schedule shall be updated as necessary throughout the Contract duration to reflect accurate forecasting of QC staffing requirements.

6.6 QUALITY CONTROL LABORATORIES

Laboratory QC testing shall be conducted by testing laboratories, retained by the Design-Builder or the QC Engineering firm under subcontract, that comply with the requirements for Department certification for applicable tests. Laboratories shall be accredited by the AASHTO Material Reference Laboratory (AMRL), the Concrete Cement Reference Laboratory (CCRL), the National Precast Concrete Association (NPCA) for precasters, and the Prestressed Concrete Institute
(PCI), as appropriate for the work being constructed. Department certification shall be obtained for all AASHTO and ASTM test methods to be performed by the testing laboratory. Certification shall also be obtained for AASHTO and ASTM test methods that are modified or referenced by NYSDOT test methods.

Satellites (field laboratories) of these laboratories may be used where appropriate for the tests being conducted. The Equipment in the satellite laboratories shall be certified and calibrated at the start of Work and as required thereafter. Certification shall be the responsibility of the Design-Builder and will be audited by the Department.

The laboratory shall have written policies and procedures to assure portable and satellite laboratories performing testing activities on the Project are capable of providing testing services in compliance with applicable test methods. The policy and procedures shall address Inspection and calibration of testing Equipment as well as a correlation testing program between the accredited laboratory and portable or satellite facilities.

The Department reserves the right to evaluate testing Equipment for compliance with specified standards and to check testing procedures and techniques and equipment calibration dates.

The Department also reserves the right to access the testing facilities of the testing laboratories, to witness the testing and verify compliance of the testing procedures, testing techniques, and test results.

The Department's rights to check Equipment, procedures, and techniques and to access testing facilities shall also apply to the Federal Highway Administration (FHWA) for Federal-aid projects and to other Project Stakeholders when the Design-Builder is performing Work on their facilities.

6.6.1 Field Laboratories

A) QA Field Laboratory

The Design-Builder shall furnish field laboratories and field offices in accordance with the Quality Control Plan as approved by the Department. The Design-Builder shall provide a separate field verification laboratory in accordance with Standard Specifications § 637-2.02, Field Laboratory, and any other requirements included in the Contract Documents, for the exclusive use by the Department.

B) QC Laboratory

All laboratories and tests used by the Design-Builder shall be performed by qualified laboratories. The Department shall have access to the laboratories as and when requested to observe the testing and review documentation. Independent verification testing may be performed at the Department's field laboratory or any laboratory of their choosing.

6.7 Asbestos

Asbestos Containing Materials (ACMs) and locations may have been preliminarily identified in the Project area. The Design-Builder shall be responsible for confirming and identifying any other materials or locations that contain asbestos that will be impacted as part of the work.
The Design-Builder shall monitor the abatement of any ACM by licensed asbestos contractors for compliance with the Contract documents, applicable Federal EPA and OSHA regulations, Industrial Code Rule 56 and any specified regulatory variance of the code. This shall include review of all abatement contractor submittals, monitoring of on-site use of personal protective equipment, and enforcement of work area delineation and operation requirements as prescribed by the aforementioned laws. The Design-Builder shall be responsible for any required project monitoring/compliance air sampling as required by subpart 56-17 of Industrial Code Rule 56 and/or any specified regulatory variance of the code. The Design-Builder shall provide the Department with an asbestos monitoring report, including daily contractor activity logs, work area inspection reports, final visual reports, compliance air sampling results, removed ACM quantities, and any other associated record keeping documentation maintained for the asbestos work. If additional suspected ACMs are encountered during construction, which require abatement, the Design-Builder shall immediately notify the Construction Quality Assurance Engineer and perform any needed material sampling and laboratory testing required. In addition, the Design-Builder shall advise the Construction Quality Assurance Engineer of any necessary project design modifications needed due to the additional ACM and perform such modifications.

Due to conflict of interest, the equity partners (i.e. the Design-Builder constructor and possibly others) cannot directly perform the abatement and/or monitoring component of the Asbestos work and shall be required to subcontract the abatement and monitoring work to qualified subcontractors that meet the regulatory requirements for performing such work.

Required Qualifications: These asbestos management services must be separate and independent from the abatement contractor and accomplished by a New York State Department of Labor (NYSDOL) licensed handler(s) that employ appropriately certified personnel for Project monitoring and compliance air sampling. Laboratory services for asbestos compliance air and material bulk samples must be appropriately accredited by the New York State Department of Health (NYSDOH) under the Environmental Laboratory Approval Program (ELAP). The staff of the independent monitoring/compliance air sampling firm shall demonstrate previous project oversight/compliance monitoring work conducted in accordance with the rules and regulations of 12 NYCRR Part 56. Previous asbestos monitoring/compliance air sampling work shall demonstrate specification/regulatory enforcement during abatement, compliance air sampling and bulk sample collection/analysis, and project documentation preparation. While not mandatory, previous transportation-related asbestos experience is preferred.

6.7.1 Documentation Required

A) Current NYSDOL Handler License

B) Current NYSDOL Staff Certifications

C) Current NYSDOH ELAP accreditation of laboratory for respective analysis (bulk or air)

6.8 DESIGN-BUILDER SCHEDULING AND NOTICE TO THE DEPARTMENT

The Design-Builder shall notify the Department in writing by Friday noon of each week of planned construction activities, including fabrication, for the following two weeks to allow the Department to schedule its resources. The Design-Builder shall deliver this information at the weekly coordination meeting where related discussion will occur. For activities (such as, fabrication) occurring out of the immediate Project area or out of state (beyond 100 miles of the Project), the Design-Builder shall give the Department at least 21 Calendar Days’ notice of planned Work.
6.9 DOCUMENTATION

The Design-Builder shall collect and preserve each of the following types of data in written form concurrently during Design-Builder’s performance of the Work, all of which shall be in a form acceptable to the Department and in conformance with MURK.

A daily log for construction-related activities shall be maintained by Design-Builder’s Project Manager or his/her designee(s), using Form MURK 2 or another form acceptable to the Department’s Project Manager. The Design-Builder’s Project Manager shall record daily, in a narrative form, all significant occurrences on the Project, including unusual weather, asserted occurrences, events and conditions causing or threatening to cause any significant delay or disruption or interference with the progress of any of the Work, significant injuries to person or property and a listing of each activity depicted on the current monthly plan update which is being actively performed. Also, traffic accidents in the Project area shall be noted, as well as lane closures in effect at the time of the accident.

For Utility-related Work such data shall be maintained separately for each Utility facility.

For harmful/Hazardous Material Remediation Work, such data shall be maintained separately for each site.

Records shall include the Contract Number, the specific Bridge BIN (where applicable) and document all QC operations, Inspections, activities, and tests performed, including the Work of Subcontractors. The Design-Builder may use the forms provided by the Department or its own forms providing equivalent information. Such records shall include any delays encountered and Work noted that does not conform to the requirements of the Contract and design together with the corrective actions taken regarding such Work.

The Design-Builder shall complete and submit appropriate documentation at the following times and frequencies:

A) Monthly: See DB §108;

B) Weekly: The Design-Builder shall maintain and submit records that include factual evidence that required activities or tests to have been performed, including the following:

1) Type, number, and results of QC and control activities, including reviews, Inspections, tests, audits, monitoring of Work performance, and Materials analysis;

2) Closely-related data such as qualifications of personnel, procedures, and Equipment used;

3) The identity of the QC Inspector or data recorder, the type of test or observation employed, the results, and the acceptability of the Work, and action taken in connection with any deficiencies noted;

4) Nature of non-conforming Work and causes for rejection;

5) Proposed corrective action;

6) Corrective actions taken; and
6.9.1 SiteManager Software

SiteManager is a comprehensive web-based construction management software product used by the Department that covers the complete construction and materials management process from contract award through contract finalization. The Design-Builder and the Department shall use SiteManager for activities including the following:

A) Field Collection Daily Work Report (DWR) – Every member of the Design-Builder’s Construction Inspection Professional Engineering Firm shall produce Daily Work Report(s) that shall be input into SiteManager. The DWRs shall include weather, staff and equipment, Work Item progress, sampling and testing, the progress of the work activity being monitored, information on any Work Zone Traffic Control that was in place during the Work activity, information on any incidents that may have occurred during the course of the day, and diaries. The DWR and Diary entries shall conform to the NYSDOT Manual of Uniform Record Keeping Contract Administration Manual. In general, each inspector shall produce a DWR. The Construction Inspection Professional Engineering Firm shall enter the material approval information into SiteManager and generate the payment request;

B) SiteManager shall be used for Orders-on-Contract such as Time Extensions and Scope of Contract. SiteManager has an automated Approval Work Flow. The Work Flow for approval of DWRs, payments and change orders will be determined by the Department in consultation with the Construction Inspection Professional Engineering Firm;

C) SiteManager shall be used by the Construction Inspection Professional Engineering Firm to generate Progress Payment requests subject to the review and approval of the Department’s Project Manager;

D) SiteManager shall be used for materials management. Material management within Site Manager includes item master and automated contract material associations; approved lists (inspectors, testers, calibrated equipment, welders, qualified labs, producers/suppliers); sampling and testing requirement definition, and tracking of standard AASHTO tests. The Construction Inspection Professional Engineering Firm staff shall be responsible for entering material test results into SiteManager. Test results for all material testing (e.g. concrete cylinders, elastomeric bearings, etc.) shall be conducted in certified labs and shall be transmitted to the CI Firm for entry into SiteManager.

Following the Notice To Proceed the Design-Builder shall populate SiteManager, via the SiteManager function labeled “Change Order”, with the Work Payment Schedule Work Items (Note: Not an actual Change Order). As a design is developed by the Design-Builder’s Designer, the Designer shall produce a list of Specification Items that can be associated with a NYSDOT Standard Specification Item and a corresponding quantity for that Work Item. The development and use of special specifications will be permitted.

As designs are finalized and prior to construction activities, the Construction Inspection Professional Engineering Firm shall populate SiteManager with the Specification Items and quantities used in those designs using the “Orders-on-Contract” function. This will be a zero-value Order-on-Contract entered using the SiteManager function labeled “Change Order” (Note: Not an actual Change Order). The entries will be subject to review and approval by the Department’s Project Manager. These items shall be entered into SiteManager prior to the start
of construction so that the full functionality of SiteManager may be utilized by the Construction Inspection Professional Engineering Firm to monitor the progress of Work.

The Construction Inspection Professional Engineering Firm shall perform sampling/testing and obtain appropriate material certifications for all permanently incorporated Work and shall enter second level work breakdown items into SiteManager, detailed to the degree necessary, to assign and quantify subcontractor work and to allow for the inspection and material testing of all work permanently incorporated into the Project. Special Specification Items will require manual entry for material testing and certification requirements.

The percent complete value of all Work Payment Schedule Work Items shall be determined from the progress of completed Work as shown on the Design-Builder’s approved P6 CPM Schedule.

The Department will provide the necessary software and training for the use of SiteManager. The training requires approximately one week to be completed. Following Notice To Proceed, the Design-Builder shall contact the Department’s Project Manager to arrange for the training of the Design-Builder’s and Construction Inspection Professional Engineering Firm’s staff. The cost of time for the training for the Design-Builder’s and Construction Inspection Professional Engineering Firm’s staff will be the Design-Builder’s responsibility. The Construction Inspection Professional Engineering Firm shall access SiteManager over the Internet through Citrix. Details on how to access SiteManager will be provided at the time of the training.

Items and quantities that are input into SiteManager will be transferred into EBO, which is the Department’s software package for monitoring Sub-Contractors and the Design-Builder’s M/WBE compliance. The Design-Builder’s M/WBE - Civil Rights Compliance Manager shall assign all items of Work which are being performed by a M/WBE Sub-Contractor to that Sub-Contractor in EBO to facilitate monitoring of the Design-Builder’s compliance with M/WBE goals.

6.9.2 Computer and Networking Requirements

Computer and Networking equipment described in Contract Document, Part 3, Project Requirements, shall be provided by the Design-Builder for the duration of the Project.

6.10 MATERIAL CERTIFICATES OF COMPLIANCE

When the Design-Builder purchases materials from providers/suppliers on the Department’s approved Materials or source list, the Design-Builder shall obtain and retain a certificate of compliance from the provider/supplier covering the Material and/or the source.

Documentary evidence that Material and Equipment conform to the procurement requirements shall be available at the job Site no less than 24 hours prior to installation or use of such Material and Equipment. This documentary evidence shall be retained at the job Site and shall be sufficient to identify the specific requirements, such as Contract Documents, codes, standards, or specifications, met by the purchased Material and Equipment. The effectiveness of the QC by the Design-Builder’s own forces and Subcontractors shall be assessed by the Design-Builder and the QC engineering firm at intervals consistent with the importance, complexity, and quantity of the product or services.

The Department reserves the right to inspect and review these documents at any time.
At the completion of the Project, the Design-Builder shall submit with the final invoice a certificate of compliance signed by the Design-Builder’s Project Manager and the Construction QC Engineer indicating that all materials incorporated in the Project conform to the Contract requirements.

6.11 FINAL ACCEPTANCE

The Department has the responsibility and authority for Final Acceptance of all Work.

The Design-Builder shall complete all Work and provide all documents, certifications, and other information in accordance with the Contract Documents. Final Acceptance shall be based on QA acceptance testing and/or QC testing verified by verification testing and the final Inspection. Any deviations from the sampling and testing methods and frequencies indicated in the individual Specifications shall require Department Approval prior to the start of construction on any affected Work.

Final Acceptance shall be based on certificates of compliance and/or Manufacturer’s test results where specified in the individual specification.

Deficient Materials and products shall be brought into compliance with Specifications or replaced. The method of reconciliation shall be noted in the log of failed tests.

Upon Final Acceptance copies of all project records shall be transferred to the Department.
SECTION 7 ENVIRONMENTAL

7.1 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.

7.2 ENVIRONMENTAL APPROVALS

The Department has determined that this Project is a NEPA Class I action under 23 CFR 771, which requires the preparation of a federal Environmental Impact Statement (EIS) to determine the likely impacts of the Project on the environment. The NYSDOT and FHWA, as joint lead agencies, have advanced the Project through the NEPA EIS process in consideration of public and agency comments received about the project. The FHWA and NYSDOT have selected the Build Alternative for the Project; the decision is documented in the Record of Decision. The selected alternative is fully described in Chapter 3, Section 3.3.2 (Build Alternative) of the FDR/FEIS.

The Department has determined that this project is a SEQRA non-Type II action, indicating that it has the potential for significant environmental impacts or substantial controversy on environmental grounds. Under 17 NYCRR Part 15, given that a federal EIS has been prepared, the NYSDOT and other State of New York agencies undertaking a discretionary action for the Project have no obligation to prepare an additional EIS under SEQRA. The NYSDOT has given full consideration to the federal Final EIS (FEIS) and has prepared a joint Record of Decision (ROD) with the FHWA.

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.

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.

7.3 REQUIREMENTS

7.3.1 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.

7.3.2 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).

7.3.3 Soil Erosion and Water Pollution Control

The Design-Builder shall prepare and maintain on file a Stormwater Pollution Prevention Plan (SWPPP) complying with the New York State SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002 or current version). When phasing a project is necessary to allow for the commencement of initial site preparation and demolition work while the final site design is being prepared, the first phase (“Phase 1”) shall include site preparation and demolition work limited to temporary traffic shifts and crossovers, bridge foundation excavation and construction, embankment construction and/or removal, temporary drainage, temporary road widening, critical utility relocation excavation and installation, temporary erosion and sediment control measures and temporary stormwater management practices. Phase 1 work shall not include the construction of new permanent impervious surfaces. The Design-Builder shall prepare a separate SWPPP for each phase.
The SWPPPs for all phases shall include erosion and sediment controls. At a minimum, the SWPPP shall include construction sequencing and phasing, cuts and fills, grading, pollution prevention measures, inspection and maintenance schedules, and drawings showing size, location and details of permanent (e.g., swales, check dams, etc.) and temporary (e.g., silt fence, construction entrance(s)/exit(s), temporary seed, mulch, etc.) erosion and sediment controls. The SWPPPs for Phase 2 and any subsequent phases that will include permanent impervious or other construction that requires post-construction stormwater management shall include plans, details and design calculations for stormwater management practices to provide treatment of water quality volume and 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 Activity for each phase after preparing a compliant SWPPP as noted above. The Design-Builder shall submit the SWPPP and a corresponding SPDES electronic Notice of Intent (eNOI) for Phase 1 and an “MS4 SWPPP Acceptance Form” to the NYSDOT Project Manager for review and acceptance prior to the scheduled start of construction. The eNOI shall include the text “DB: Site Preparation, Temporary Work and Demolition” along with the Project/Site Name. The “Post-construction Stormwater Management Practice Requirements” section of the eNOI (Questions 27-39) shall not be completed for compliant Phase 1 work. The Design-Builder shall submit the following items to the New York State Department of Environmental Conservation (NYSDEC) to obtain coverage under the SPDES General Permit: the eNOI, a SWPPP Preparer Certification and Owner/Operator Certification signed by the Design-Builder, and the MS4 SWPPP Acceptance Form signed by the NYSDOT. Phase 1 construction activities shall not commence until the date authorized on the SPDES Acknowledgement Letter from the NYSDEC.

The Design-Builder shall prepare and submit a compliant Phase 2 package inclusive of the final design SWPPP and all required Post-construction Stormwater Management Practices, a fully completed SPDES eNOI, and an “MS4 SWPPP Acceptance Form,” to the NYSDOT Project Manager for review and acceptance prior to the scheduled start of construction for Phase 2 and each phase subsequent to Phase 1 (for SWPPPs that are in compliance with the NYSDEC Technical Design Standards). SWPPPs that deviate from NYSDEC Technical Design Standards are subject to a 60-business-day NYSDEC review and authorization period. The eNOI shall include the text “DB: Phase [Phase Number]” along with the Project/Site Name. The Design-Builder shall submit the following items to the NYSDEC to obtain coverage under the SPDES General Permit: the eNOI, a SWPPP Preparer Certification and Owner/Operator Certification signed by the Design-Builder, and the MS4 SWPPP Acceptance Form signed by the NYSDOT. Construction activities for Phase 2 and subsequent phases shall not commence until the date authorized on the SPDES Acknowledgement Letter from NYSDEC. The Design-Builder shall submit a revised eNOI to the NYSDOT and NYSDEC if changes to the project require revisions to the SWPPP regarding the type, size and/or location of post-construction stormwater management practices, or increase in the acreage of disturbance or acreage of new impervious.

The Design-Builder shall maintain SPDES General Permit coverage for Phase 1 and each subsequent phase until the entire project is complete. Upon project completion, The Design-Builder shall prepare Notices of Termination (NOTs) for each phase, complete final inspections and sign Parts VII, VIII and IX of the NOT. The Design-Builder shall submit the NOTs to the NYSDOT Project Manager for acceptance and Part VI signature prior to submitting the NOTs to the NYSDEC to terminate SPDES General Permit coverage.
SPDES General Permit, electronic Notice of Intent, MS4 SWPPP Acceptance, SWPPP Preparer Certification, Owner/Operator Certification and Notice of Termination Forms and Instructions are located at:

http://www.dec.ny.gov/chemical/43133.html

7.3.4 Threatened and Endangered Species Coordination

“No effect, no habitat” on identified federally listed species (Piping Plover, Roseate Tern, Red Knot, Seabeach Amaranth, and Stiff Cowbane – NYS listed only); “not likely to result in a take” or taking of identified state-listed species and is therefore not subject to regulation under 6 NYCRR Part 182.

A review of the NYNHP databases indicates that there are no special habitats or breeding areas for protected plants or animals in the Study Area. The Build Alternative would not affect state shorelines or habitats and breeding along state shorelines. Moreover, the Study Area consists of highly traveled transportation corridors and maintained and mowed grassy areas/medians. In addition, the Build Alternative would not involve work in, or adjacent to, a wildlife or waterfowl refuge.

7.3.5 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 Report, dated MMMM 20YY, is located in Part 7 – Engineering Data.

The Design-Builder 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 Section 6.7, Asbestos.

The Design-Builder (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-Builder 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-Builder 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 Transportation

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-Builder shall coordinate with the private utility owners for the remediation of any ACMs which may be identified.

7.3.6 Migratory Bird Protection and Avoidance

Prior to commencing vegetation clearing and bridge work, a nest survey shall be completed to identify any active nests of bird species protected by the Migratory Bird Treaty Act (MBTA). See the Migratory Bird Protection and Avoidance Special Provision 13.1 and the Migratory Bird Treaty Act Birds Nesting on or Under Bridges Special Provision 13.2 in Part 5 for requirements and procedures.

7.3.7 Environmental Plan Deliverables

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 8  GENERAL PROJECT SCOPE OF WORK

8.1  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 including removal of all on site garbage, debris, and trash and provide cleanup and restoration of the construction site(s) and all disturbed areas within the Project Limits.

8.2  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.

8.3  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.

8.3.1  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.
8.3.2 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.

8.3.3 Surplus Quantity

The Design-Builder shall manage all surplus quantities according to NYSDOT Standard Specification 107-10 – Managing Surplus Material and Waste.

8.3.4 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.

8.3.5 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.

8.3.6 Legal Loads

These requirements supplement those as shown in Section 105-12 of the Standard Specifications. They are intended to prohibit the hauling of materials to or from the contract site in hauling units which exceed the legal load limits without proper permits. Legal load limitation also applies to all hauling units and construction equipment which do not operate on structures or pavement systems operating, within the project limits, to be retained in the finished work.

Bidders are cautioned to reflect in their bid prices the costs of operating all affected hauling units and construction equipment within the legal load limitations including the cost of operating presently owned equipment at less than full vehicle capacity as well as the costs involved in mobilizing, leasing or purchasing new equipment.

For operations solely within the project limits, there shall be no waivers of the legal load limitations for construction or hauling equipment or trucks, whether owned or operated by the Design-Builder, a subcontractor, or a supplier, on any new existing course of pavement or structure to be retained in the finished work, except in very unusual instances if authorized in writing by the Deputy Chief Department’s Project Manager for Construction.

The Design-Builder should anticipate that no waivers for off-site operations, deliveries, or
removals will be granted. This may require the use of existing concrete, asphalt or aggregate delivery units at less than optimum load capacity. Such units may be used only to the extent that their partial loading is within the legal load limitations and conforms to other materials specification requirements.

To provide for effective and orderly enforcement of these requirements, the Design-Builder shall, to the extent feasible, before the start of work on any phase or operation and in coordination with all his subcontractors and suppliers involved therewith, provide the following certification to the Department’s Project Manager:

1. Identification of all vehicles or equipment:
   a. Hauling materials over the public road system to the project site
   b. Intending to operate on pavement courses or structures within the project limits

2. Unladen vehicle weight

3. Maximum payload pursuant to legal weight limitations

4. Actual payload

5. Copy of permit, when applicable

The Design-Builder shall notify all his subcontractors and suppliers that material may be subject to on-site rejection because of failure to provide such advance information or at least to have the drivers provide it with the delivery ticket.

Material delivered to the project site in hauling units which, as loaded, exceed the legal weight and size limits, except as authorized by permit, will not be accepted or used on the project. Failure to provide advance documentation of legal payload limits may be considered by the Department’s Project Manager as prima facie evidence that the legal load limitations are exceeded and the material may be promptly rejected solely on such basis. The Design-Builder shall have no claim for reimbursement for such material rejection or for any other costs if subsequent weighting indicates the load to be within the legal limitations.

Any use of the existing roadway for Design-Builder’s equipment or materials shall be approved by the Department’s Project Manager. Where directed, the Design-Builder shall submit calculations signed and sealed by a professional Department’s Project Manager, licensed to practice in the State of New York, to verify that the existing structure can support proposed loads.

8.3.7 Stockpile Site

The Design-Builder is advised that if during the course of this contract, it is necessary to stockpile any construction material which in the opinion of the Department’s Project Manager, may be offensive in nature to “sensitive receptors” (i.e. homes, public places, hospitals, or schools) because of appearance, odor, potential for airborne disbursement or hazardous in nature, the Design-Builder must obtain permission from the Department’s Project Manager prior to placing the stockpile. As a guideline, no such stockpiling is permitted within 200 feet of any sensitive receptor.

Furthermore, the Design-Builder should also keep in mind that:

a. The stockpile site shall not be used for storing/dumping debris from Design-Builder’s other projects.

b. New York City Department of Sanitation and Department of Transportation must be contacted for issuance of a permit on any project if the Design-Builder wants to store
materials on highway right of ways other than New York State Department of Transportation highway right of ways.

8.3.8 Rodent Control

The Design-Builder shall notify, in writing, three (3) weeks prior to the start of construction:

New York City Department of Health Bureau of Pest Control
12-26 31st Avenue
Astoria, New York 11106 (718) 956-7102
Fax: (718) 932-8318

Notification shall include area of the work, the name of the pest control company, and the name and phone number of the pest control representative.
Follow all requirements stated in NYSDOT Special Specification 634.900X0011 found in Part 8 – Special Specifications.

8.3.9 Snow Removal

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.

8.3.10 Final Cleanup

As a prerequisite to Project Completion, the construction area and all other adjoining areas, other than those owned by the Design-Builder, occupied by the Design-Builder in connection with the construction Work shall be cleaned of all surplus and discarded materials, spilled materials, excess materials left deposited on the permanent Work as a result of the Design-Builder's operations, falsework, and rubbish and temporary structures and buildings, that were placed thereon by the Design-Builder. The adjoining areas mentioned above, outside the normal limits for seeding, shall be reshaped, seeded and mulched, or otherwise restored as directed by the Department’s Project Manager at the Design-Builder's expense.

8.3.11 Partnering Workshop

The Department plans to utilize Partnering as described in the NYSDOT Standard Specifications. The Department’s reimbursement for this work will be paid for out of the Design-Builder’s Force Account Item.
SECTION 9  SURVEYING AND GIS

9.1  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.

9.2  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.

9.3  REQUIREMENTS

9.3.1  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.

9.3.2  Department-supplied Data

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

- Survey Baseline Control Data;
- ROW / Highway Boundary Geometry;
- Survey / Photogrammetric Base Mapping Planimetrics;
- Survey / Photogrammetric Digital Terrain Model; and
- Record Plans.

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

9.3.3  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.
9.3.4 Permanent Survey Markers

This Section not used.

9.4 SURVEYING AND GIS DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 10  RIGHT-OF-WAY

10.1  SCOPE

Plans showing the existing State-Owned Right-of-Way (ROW) are included in the Reference Documents. The Design-Builder shall perform all the permanent Project Work within the existing State-owned ROW and any additional ROW that has been, or will be, obtained for the Project.

Property releases for driveway reconnections or other work that is required are the responsibility of the Design-Builder, in close coordination with the Construction Quality Assurance Engineer. If the Design-Builder 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-Builder shall make an application for a NYSDOT Highway Work Permit by contacting the Regional Office.

Right of ownership of all ROW and the improvements made thereon by the Design-Builder shall remain at all times with the Department. The Design-Builder’s right to entry and use of the ROW arises solely from permission granted by the Department under the Contract.

10.2  REQUIREMENTS

10.2.1  Right-of-Way Fencing

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

10.2.2  Property Interests Identified by the Design-Builder for its Convenience

The Design-Builder shall be responsible for the acquisition and all costs associated therewith for any temporary land or other property required for the Design-Builder’s convenience outside the ROW Limits, such as for staging, lay-down, access, office space, temporary works, or other purposes. The Design-Builder 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 §105-15.

10.2.3  Right of Way Markers

This Section not used.
SECTION 11  PUBLIC INVOLVEMENT

11.1  SCOPE

The goal of the public involvement activities is to inform the public and agency participants by providing timely information throughout the design and construction process. The Design-Builder shall be responsible for supporting and cooperating with the Department for all public involvement activities.

11.2  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.

11.3  REQUIREMENTS

11.3.1  Public Outreach

The Design-Builder shall have the primary responsibility for performing public outreach activities for the Project, but the lead in all public outreach activities 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, 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 meet with appropriate stakeholders and the elected officials and the general public within 75 days following the issuance of the Notice to Proceed. The Department remains the lead on this activity but the Design-Builder will assist 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.

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.

11.3.2 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 11.3.1. The Community Liaison will develop a draft travel advisory and/or press release for content and quality, which is reviewed by the Design-Builder and approved by the Department. The Department will distribute finalized press releases and travel advisories to the press and appropriate elected officials. However, the Design-Builder, under 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 shall be included in the Public Involvement Plan.

The strategies described above are consistent with the requirements of Part 3 Section 19 – Work Zone Traffic Control and Access, and shall include Construction Bulletins published by the Department, based on information provided by the Design-Builder, especially focused on traffic changes, night time work, higher-noise construction periods or locations, or other construction activities of potential concern to the public. The Design-Builder 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.

11.3.3 Public Information Meeting

The Design-Builder 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-Builder 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-Builder shall work in cooperation with the CQAE in determining the necessary presentation materials, but PowerPoint material shall be required. The PowerPoint and any other necessary presentation materials shall 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) reaction and receptiveness to the construction of the Project. The
Department will determine the number, frequency, schedule, and locations of update meetings and public informational meetings, and will update this information as the project progresses.

11.3.4 Community Relations Office

The Community Relations Office shall be centrally located within the Project area and accessible to the public via transit, where information about the Project may be obtained and where the public can communicate with the Community Liaison. The office shall be staffed by at least one full-time person and open Monday through Friday during normal business hours (i.e. 9 am to 5 pm) and four hours on Saturdays. The office shall be open to the public beginning four weeks prior to the start of construction work and ending with the project completion. The office shall be ADA compliant and may be co-located with other Design-Builders offices. The Community Liaison shall be staffed for the duration of the project.
SECTION 12 UTILITIES

12.1 SCOPE

The utility requirements set forth in Part 4 – Utility Requirements 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.

12.2 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.

12.3 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.
12.3.1 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.

12.3.2 Other Utility Conflicts

Please see Part 4 – Utility Requirements for additional utilities in the project vicinity that may require relocation and modification.
SECTION 13 GEOTECHNICS

13.1 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 Department has performed limited subsurface investigations in the vicinity of the Project Site. Information from these previous subsurface investigations has been provided as Reference Documents. Presentation of this information in no way implies that subsurface conditions are the same at other locations.

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.

Unless otherwise noted in the RFP, existing substructures and retaining walls shall not be re-used or incorporated into new work unless the Design-Builder provides detailed analysis showing that all design standards associated with new structures are met, and verification that the condition of the existing structure demonstrates a remaining service life that meets or exceeds project requirements.

13.2 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.

13.3 DESIGN REQUIREMENTS

13.3.1 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.

13.3.2 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.

Information from existing borings provided by the Department as Reference Documents may be combined by the Design-Builder with the Design-Builder’s subsurface investigation to comply with the requirements of the applicable standards. It is the sole responsibility of the Design-Builder to determine if the existing borings are suitable for use in the Project. It is the sole responsibility of the Design-Builder to determine the extent to which further borings by the Design-Builder are necessary for the Project.

For each subsurface exploration, the Design-Builder shall be responsible for keeping a continuous and accurate log.

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.

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

13.3.4 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.

13.3.5 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. The Design-Builder shall assess the impact of settlement on adjacent structures and provide appropriate engineering design and controls to ensure that the proposed work will not be detrimental to their long-term performance.

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.

13.3.5.1 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. Ground improvement methods not covered by department standards and specifications require an approved ATC. 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.

13.3.6 Retaining Walls

The Design-Builder shall design and construct retaining walls, if required, in accordance with Section 14 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 NYSDOT 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, crib walls (stretcher and header type), and MSES walls shall not be used.

13.3.7 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.
The Geotechnical Instrumentation and Construction Monitoring Plan shall also include, when necessary, details of design verification geotechnical instrumentation such as settlement monitoring for embankment construction, groundwater monitoring for dewatering operations, and monitoring of other geotechnical operations proposed by the Design-Builder.

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 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-Builder 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.

13.3.8 Temporary Works

The Design-Builder shall be responsible for the design and construction of all temporary works required for the Project.
13.3.9 Seismic Soil Classification

The Seismic Soil Classification has been determined to be Site Class D for all structures in this contract.

13.4 CONSTRUCTION REQUIREMENTS

13.4.1 Dewatering and Groundwater Control

The Design-Builder 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.

13.4.2 Structure Foundations

The Design-Builder 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 Shaft

• 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). The Department may waive the minimum requirement of one Static Axial Load Test per substructure provided that the DB team demonstrates through a detailed subsurface exploration program that the project can be broken into sites with similar geologic subsurface conditions of low variability in accordance with AASHTO requirements.

• 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. The Department may waive the minimum requirement of one Static Axial Load Test per substructure provided that the DB team demonstrates through a detailed subsurface exploration program that the project can be broken into sites with similar geologic subsurface conditions of low variability in accordance with AASHTO requirements. 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.

### 13.4.3 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, an approved ATC is required.

#### 13.4.3.1 Expanded Polystyrene

Section not used.

### 13.4.4 Condition Surveys

#### 13.4.4.1 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.

13.4.4.2 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.

13.5 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 14 STRUCTURES

14.1 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, including, but not limited to, the permanent bridge, bikeway/walkway, retaining walls, barriers, and miscellaneous structures. The design and construction of all structural systems and components shall provide functionality, durability, ease of maintenance and inspection, and safety.

The project includes nine existing bridge structures.

- The following structures shall be replaced:
  - BIN 1055630 – Rockaway Boulevard over the Van Wyck Expressway
  - BIN 1055650 – Linden Boulevard over the Van Wyck Expressway
  - BIN 1055670 – Liberty Avenue over the Van Wyck Expressway
  - BIN 1055680 – 101st Avenue over Van Wyck Expressway

- The following structures shall be retrofitted:
  - BIN 1055620 – 133rd Avenue over the Van Wyck Expressway
  - BIN 1055640 – Foch Boulevard over the Van Wyck Expressway
  - BIN 1055660 – 109th Avenue over the Van Wyck Expressway
  - BIN 1055700 – Jamaica Avenue over the Van Wyck Expressway
  - BIN 1055710 – Hillside Avenue over the Van Wyck Expressway

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.

14.2 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 9 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 by the Design-Builder. 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.)."

14.3 DESIGN REQUIREMENTS

The Design-Builder shall design replacement or retrofit bridge structure(s), including but not limited to the following: primary and secondary structural elements, reinforced concrete deck, deck joints, sidewalk(s), curb(s), pier structure(s), pier foundation(s), abutment structures,
abutment foundations, retaining structures, bridge railings, bearings and drainage systems as noted in this section.

All nine bridge structure(s) shall be designed and constructed to have a minimum vertical clearance as follows:

- 14'-6" above all crossed travel lanes and shoulders of the existing roadways (Van Wyck Expressway and Service Roads); and
- 14'-6" above all crossed travel lanes and shoulders of the proposed roadways (Van Wyck Expressway and Service Roads) constructed under Contract 3 (see Part 7 for additional information relative to Contract 3 elevations); and
- 15'-6" minimum (travel lanes and shoulders) below the JFK AIRTRAIN box girder structure.

The Design-Builder may propose to raise the existing superstructure to achieve the Minimum Vertical Clearance required. All jacking shall be completed and the bridge shall be supported on its permanent bearings and pedestals prior to the placement of the new deck. The Design-Builder shall submit calculations demonstrating adherence to the above requirements.

The operational classification for all bridges within the project is Essential.

14.3.1 Components

Existing bridge components may only be reused if specifically stated in the RFP.

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.

Refer to Section 14.3.2 for aesthetic requirements related to bridge parapets, protective fencing, and decorative fencing, if any.

B) Decks: Precast panel and/or cast in place decks shall be provided. Deck thickness for replacement bridges shall be 9 ½". Deck thickness for retrofit bridges shall be as indicated on the Directive Plans. Cast in place and precast decks shall use High Performance - Internally Curing (HPIC) Concrete or Lightweight, High Performance Concrete as per NYSDOT Special Specifications 557.01040018. Two-course decks with asphalt overlays as defined in the NYSDOT Bridge Manual are not permitted. 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. Deck reinforcement shall be epoxy coated. All existing shear connectors shall be replaced where deck is being replaced.

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 greater than or equal to 0.02 inches and less than 0.06 inches shall require repair with methacrylate (HMWM) using special specification 557.25000016 or 557.26000016. Cracks equal to or wider than 0.06 inches shall be epoxy injected as per NYSDOT Special Specification Item 555.80020001, Crack Repair by Epoxy Injection (Restoration). This work shall be completed prior to grinding and grooving and only when the concrete moisture content is at an acceptable level; no greater than 5% using a moisture detector meter, or no visible moisture after performing ASTM D4263 test method for a minimum of 4 hours. Penetrating sealer shall then be applied in accordance with the NYSDOT Bridge Manual.

The pinning of temporary barrier to new or existing decks to remain in place will not be permitted.

C) Joints: The decks shall be jointless and shall be designed in accordance with the NYSDOT Bridge Manual. When thermal movements need to be accommodated at the end of an approach slab, an Armorless Joint System shall be used unless the magnitude and/or transverse component of the structures thermal movements precludes their use. In situations where Armorless Joint Systems are not appropriate, an elastomeric expansion joint system conforming to NYSDOT Special Specification Item 566.13142001 shall be used. An example detail for this joint system is provided in the Reference Documents. Longitudinal deck joints are not permitted. Section 5.5.2 Longitudinal Joints of the NYSDOT Bridge Manual, requiring a longitudinal joint when the bridge width exceeds 90 feet, is waived. Bearings shall be designed to allow transverse temperature related movement of the superstructure.

All joint headers shall be anchored to the approach and sleeper slabs using epoxy coated reinforcement.

D) Ultra-High Performance Concrete closure pours between construction stages, in conformance with NYSDOT Special Specifications Item 557.22040016, is required and shall not be placed adjacent to cast in place deck pours for a minimum of 72 hours. Refer to “Longitudinal UHPC Joint Details” in the Reference Documents.

E) 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).
   a. The UHPC shall be per NYSDOT Special Specifications Item 557.64010103
   b. The Integral Precast Concrete Barrier is optional, but if used shall be per NYSDOT Special Specification Item 557.11010003

Isotropic deck reinforcement is permitted for full depth precast concrete decks with UHPC joints. All NYSDOT Bridge Manual conditions for its use apply. The provisions of the NYSDOT PCCM Article 6.2.3 shall apply except that any precast surface that is to be diamond ground and/or longitudinally grooved after installation shall have penetrating sealer applied after grinding and/or grooving operations in lieu of the requirement to coat all surfaces at the fabrication plant.

F) Bearings: With the exception of fully integral abutments, all beam/girder supports shall utilize bearings that conform with Section 12 of the NYSDOT Bridge Manual. Design and location of bearings for replacement bridges shall provide for easy maintenance and accessibility and future bearing replacement. For replacement bridges, bearing replacement
shall be easily accomplished via jacking points off the top of the substructure with no additional strengthening of members required. Jacking points with sufficient capacity (full dead load and live load) to allow the superstructure to be lifted for future bearing replacement under live load shall be provided on replacement bridges. The plans shall include the location of the jacking points and the jacking loads.

G) Substructures:

All new, modified, or replaced substructures shall be designed in accordance with the NYSDOT Bridge Manual.

Abutments: All reinforcement shall be epoxy coated unless stainless steel is required as per the NYSDOT Bridge Manual.

For any bridge that utilizes a fixed frame abutment in combination with an integral or semi-integral abutment, a refined analysis is required. A 3D finite element model of the entire structure shall be used to determine the maximum force effects due to dead and live loads, and thermal movements, where the resistance of soil and friction between moving components is accounted for.

The requirements given in the NYSDOT Bridge Manual for footing depth and stem embedment shall be met on all new substructures for both the final Contract 1 and Contract 3 conditions.

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.

Piers: Solid wall piers are required for all new piers.

Pier Caps: The tops of all piers and bearing pedestal 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.

H) Earth Retaining Structures: The Design-Builder shall determine the location(s) and types of earth retaining structures. Wall type selection and design by the Design-Builder shall meet all applicable Project Requirements. Gabion, crib walls, and MSES walls are not permitted. New retaining walls shall not rely on existing structures to derive support or reduce loading on the walls.

I) Foundations: The Design-Builder shall calculate settlements for the different geotechnical conditions along the bridge. Long-term settlements for bridge foundations shall not exceed one inch over a fifty-year timeframe. Allowable vertical clearance shall be based upon the final long-term settlement calculated.

J) Mass Concrete: Mass Concrete Placements shall be in accordance with the NYSDOT Bridge Manual.
K) Drainage: Drainage requirements are outlined in Section 21 of these Project Requirements. Complete new drainage system (scuppers, downspouts, etc.) shall be provided in areas of deck replacement and approach slab replacement (drainage structures, frames, and grates).

L) 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.

M) Superstructure: Structural steel shall be used for all new primary and secondary members; weathering steel is not permitted.

Refer to Section 14.3.2 for color requirements related to painted steel superstructure elements.

Timber superstructure systems or decks are not permitted. Composite beams, such as fiber reinforced polymer beams, are not permitted.

Live Load Lifting Operations: 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 new pedestals and bearings shall be directly receiving all superstructure loads prior to the placement of the new concrete deck.

14.3.2 Aesthetics

At a minimum, aesthetic treatments shall include the following:

A) All retaining walls and abutment wingwalls, unless otherwise noted on the Directive Plans, shall receive custom formliner architectural treatment in accordance with the
details shown on the Directive Plans included in Part 6 – RFP Plans Drawing Number MD-1. Anti-graffiti protective coating conforming to the requirements of Special Specification 559.91100010 shall be used on all architecturally treated concrete surfaces. The design-builder shall construct a 6’x6’ concrete test panel for each wall type to be used - i.e. one test panel for a Cast-in-place retaining wall or cast in place wingwall, and one test panel for a pre-cast retaining wall. Test panels shall be provided on site for review and approval by the Department’s Project manager prior to the fabrication of final walls.

B) Protective fencing shall be installed in accordance with the locations noted and details included in Part 6 – RFP Plans Drawing Number MD-2 (reference Item No.).

C) Superstructure steel
   a. Replacement bridges – Entire structure shall be metalized and/or galvanized in accordance with Special Specifications 572.000200101 and 564.20010008.
   b. Retrofit bridges:
      i. All existing steel shall be cleaned and painted consistent with Standard Specifications Section 574 - Structural steel painting: overcoating and localized.
      ii. All new steel shall be shop painted consistent with Standard Specification Section 572 Structural Steel Painting: Shop Applied.
      iii. All paint shall be Federal Color Standard 595, FED USC 15450 color.

14.4 DEMOLITION REQUIREMENTS

14.4.1 Scope

The Design-Builder shall demolish and remove the existing bridge superstructure, piers, abutments, foundations, retaining walls, and pavement within the Project Limits in a safe and environmentally acceptable manner.

The demolition of the existing Bridge(s) shall include all existing superstructure elements and all substructure elements 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 as determined by 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.

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 §105-22.

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

14.4.2 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.

14.5 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, meeting all WZTC requirements as described in Section 19.

14.5.1 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.

14.6 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 AASHTO 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 new bridges, replacement bridges and superstructure replacements shall have a final LRFR Inventory Rating greater than 1.2.

All retrofitted bridges shall have a final LRFR Inventory Rating greater than 1.0.
14.7 TEMPORARY STRUCTURES AND STRUCTURAL LIFTING OPERATIONS

The Design-Builder shall submit Lifting Plans and Temporary Structure Plans to the DQAE. Plans shall include Load Ratings, Project site activity start date and expected completion date. DQAE conducts review and provides comments back to Design-Builder. Once Plans are approved by Design-Builder and accepted by DQAE, the DQAE shall notify the Office of Structure Construction Unit and Permit Group of Structural Lifting Operations and temporary Structures use & details. Copies of approved plans and load ratings shall be provided to the Office of Structures Construction Unit and Permit Group for their records.

14.8 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.

14.9 INVENTORY REQUIREMENTS

Forty-five days prior to a bridge being opened to traffic, the Design-Builder shall submit two copies of the following:

(1) Inventory Updates or new bridge Inventory per the current NYSDOT Bridge Inventory Manual, reflecting the physical condition and/or changes resulting from the construction and

(2) Element quantities, on a span basis and for the entire bridge, per the current NYSDOT Bridge Inspection Manual and AASHTO Manual for Bridge Element Inspection.

Blank inventory forms will be provided to the Design-Builder upon request to the Department's Project Manager.
SECTION 15  LANDSCAPE ARCHITECTURE

15.1  SCOPE

The Design-Builder shall perform the landscape architectural activities as described in this Section 15.

15.2  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.

15.3  GENERAL LANDSCAPE DEVELOPMENT

15.3.1  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 15.3.2.

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.

15.3.2  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.

15.3.3 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.

15.3.4 Proposed Planting

The Design-Builder shall not use invasive plant species for any of the proposed planting as required by the New York State 2012 Invasive Species Prevention Act, or a monoculture of plant species, to reduce the potential for disease or invasive insect species to eradicate the proposed planting. Planting shall be located in a manner that does not interfere with the safe use of travel ways. Planting should be designed in a manner that provides a mix of plant material species to create seasonal interest for the traveling public.

Post planting care and replacement plantings shall be as per the requirements of Special Specification 611.190X0024, Post Planting Care with Replacement.
SECTION 16  SIGNAGE, PAVEMENT MARKINGS, AND SIGNALS

16.1  SCOPE

The Design-Builder shall provide all permanent fixed signing, permanent pavement markings and signal work (if applicable) 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.

16.2  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.

16.3  REQUIREMENTS

16.3.1  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 16;
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 National MUTCD and the NYS supplement to the National MUTCD. Design overhead sign structures in accordance with the NYSDOT Overhead Sign Structures Design Manual;
E) Provide signs with high reflectivity with Type IX sheeting such as to not warrant sign lighting; and
F) Provide proposed temporary and permanent traffic signalization and intersection design on local streets.

Plans, Details and Specifications for all Temporary and Permanent signs, pavement markings, and signals shall be submitted to the CQAE for review.

Temporary signs, pavement markings and signals shall be provided for all stages of construction as required until permanent signs, pavement markings and signals are installed.

16.3.2 Construction Requirements

16.3.2.1 Signs

The Design-Builder shall not reuse any existing NYSDOT 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 NYCDOT or other 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. If these signs and associated components are damaged during the removal and storage operation, they must be replaced with new signs and supports. 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.

The Design-Builder shall prepare and submit the proposed signage, striping layout and signage design data sheets for required sign panels details to the NYSDOT for their review and acceptance prior to fabrication and installation of any sign structures and associated sign panels.

16.3.2.2 Pavement Markings

All pavement markings shall be Epoxy and be uniform in type, color, dimensions, location, and reflectivity. Pavement markings on the Van Wyck Expressway and service roads shall be 20 mil thickness and shall be furnished and installed in conformance with the Standard Specifications. Pavement markings on the city streets shall be consistent with NYCDOT requirements.

16.3.2.3 Traffic Signals

The Design-Builder shall develop a traffic signal plan for the Project that shall:

A) Provide for all traffic signal components; and
B) Provide signing, traffic signals for bicycle and pedestrian crossings within the Project Limits, where applicable.

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 1055630 – Rockaway Boulevard over the Van Wyck Expressway – North and South service road intersections
- BIN 1055650 – Linden Boulevard over the Van Wyck Expressway – North and South service road intersections
The Design-Builder’s design for the traffic signal work must meet the standards of Traffic Signal Design, NYCDOT. All traffic signal work shall be performed by a licensed, bonded and insured electrical contractor in compliance with the NYCDOT specifications. All field personnel shall be trained and approved in a work zone safety certificate program equal to or greater than the program outlined by the International Municipal Signal Association (IMSA).

The Design-Builder shall re-construct the above specified existing signal locations, and install new traffic signals and pedestrian crossings to meet current NYCDOT standards for all traffic signal equipment, including but not limited to traffic signal poles, foundations, controller cabinets, and wiring, and shall also meet the latest standard for accessible and countdown pedestrian signals at all pedestrian crossings. All traffic, pedestrian, and bicycle signals at above specified existing signal locations shall be replaced with LED signal heads. Where appropriate, new LED vehicle, bicycle, pedestrian, and countdown pedestrian signals shall be installed at any additional locations affected by project work.

All local street traffic signalization shall be developed as per the NYCDOT standards for traffic signal and intersection design. Traffic rules can be downloaded from NYCDOT website at http://www.nyc.gov/html/dot/downloads/pdf/trafrule.pdf.


The Design-Builder shall coordinate with NYC agencies and prepare traffic signal plans for submission to NYCDOT Traffic Signals four weeks prior to work in the appropriate format per the NYCDOT policies. Upon approval (by NYCDOT) of traffic signal and intersection design, the Design-Builder shall incorporate and provide Traffic signal and intersection design drawings per
the NYSDOT policies and most current CADD Standards. Preliminary traffic signal plans in NYCDOT format have been provided in Part 7 – Engineering Data of the RFP.

The Design-Builder shall coordinate all work with Albert Kong, supervisor of Queens Electrical Inspection. Mr. Kong must be contacted at least 48 hours prior to any traffic signal or street lighting work at 212-839-3302. In addition, the Design-Builder or his duly authorized representative shall email the following NYCDOT traffic signal personnel before 7 am on the days of the work:
ksoutherland@dot.nyc.gov akong@dot.nyc.gov

The Design-Builder shall submit to NYC Traffic and Signals a written notification of the date they will assume responsibility for traffic signal maintenance. No construction work shall proceed until traffic signal maintenance is assumed by the Design-Builder. The existing traffic signal shall be maintained by the Design-Builder under the requirements of Section 619 of the Standard Specifications, except for the controller, programming, and timing which shall be maintained by NYC Traffic and Signals.

The Design-Builder shall be responsible for maintaining the existing traffic signal equipment including underground conduit and cable and the safety of traffic for the duration of this project. All signals must remain operational during construction. This includes preparing and submitting temporary signal design plans to NYCDOT Traffic and Signals for their review and approval during construction. Traffic signal activation shall be done by NYC Traffic and Signals Personnel only. The Design-Builder shall notify the NYC Traffic and Signals section two weeks prior to the requested date of activation.

The Design-Builder shall integrate the signals into the existing ITS system, where applicable.

16.3.2.4   Loop Detectors
This Section not used.

16.3.3   Conduit/Cabling
The following cables shall be utilized during the installation of new signal heads, pedestrian/countdown timers, interconnect and pushbutton signs:

A) Accessible Pedestrian Unit and Pushbutton: furnish and install APS cable (per NYCDOT specification 5) for each set display;

B) Pedestrian signal: furnish and install 5C#14 awg cable for each set display;

C) One-way signal heads: furnish and install a minimum of 5C#14 awg cable;

D) Two-way signal heads: furnish and install a minimum of 10C#14 awg cable; and

E) Three-way signal heads: furnish and install a minimum of 15C#14 awg cable.

The Design-Builder shall furnish and install fiber optic cable for any underground interconnect installation.
The Design-Builder shall furnish and install the following conduit as a minimum:

A) Detection loop conduits shall be 1” Flex between the first junction box and loop.

B) Conduits under roadway shall be 3” RGS.

C) Conduits between Span or Mast Arm poles and nearest junction box shall include a 1” RGS and 4” RGS.

D) Conduits between Pedestrian poles and nearest junction box shall use a 2” RGS.

E) All other underground conduit installations shall be 2” RGS.

16.3.4 Signal Heads/Signal Poles

All signal faces to be installed as part of this Project shall be LED and of a size indicated on the signal design plans.

All pedestrian signals shall be 16” LED unless otherwise noted on the signal design plans and shall consist of combination “Walking Man”/“Hand” symbols with countdown timers.

16.3.5 Cabinet/Disconnect Switches

The Design-Builder shall furnish and install one Advanced Solid State Controller (ASTC) type non-actuated microcomputer controller in a pole-mounted cabinet in accordance with NYCDOT specifications at each of the signalized intersections. The Design-Builder shall also install a disconnect generator transfer switch on the signal 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 NYCDOT.

16.3.6 Pullboxes

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

16.3.7 Power Supply

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

16.3.8 NYCDOT Adopt-a-Highway (AAH) Signs Protection

The Design-Builder shall not damage or alter NYCDOT Adopt-A-Highway (AAH) signs. At least two weeks prior to commencing work in an area containing a AAH sign, the Design-Builder shall cover all AAH signs in the project limits that will not interfere with the work. NYCDOT Roadway Repair and Maintenance, Adopt-A-Highway Unit, must be contacted by the Project Engineer at 718-712-7563 prior to having any AAH signs removed. If it is agreed that the said Signs will interfere with their work, they shall be removed, stored, and the re-installed by NYCDOT. Removed AAH signs will be stored by NYCDOT during the work and then re-installed by NYCDOT during the work and re-installed by the Department’s Project Manager notifies.
the City that this Contract is completed. Those AAH Signs interfering with the work and not removed by the City in a timely manner shall be, after receiving permission from the Engineer, removed by the Design-Builder and given to the Engineer.

16.4 CONSTRUCTION REQUIREMENTS

16.4.1 Signs

The Design-Builder shall not reuse any existing NYSDOT 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. All signs and associated supports attached to structures shall be replaced. 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.

16.4.2 Pavement Markings

All pavement markings shall be Epoxy and be uniform in type, color, dimensions, location, and reflectivity. Pavement markings on the Van Wyck Expressway shall be 20 mil thickness and shall be furnished and installed in conformance with the Standard Specifications. Pavement markings on city streets shall be consistent with NYCDOT requirements.

16.5 DELIVERABLES

Section not used.
SECTION 17 LIGHTING

17.1 SCOPE

The Design-Builder shall conduct all Work necessary to provide all required lighting and lighting components required for the Project. This includes design as per NYCDOT Street Lighting latest standards and specifications, fabrication and construction of all transportation related permanent and temporary roadway lighting for the bridges and roadways within the Project Limits.

The Design-Builder shall be responsible for submitting to NYCDOT Street Lighting engineering all shop drawings and design plans needed for the scope of work. The review and approval process shall be in conformance with the Design-Builder’s Quality Control Plan and latest NYCDOT Street Lighting Standards and Specifications.

17.2 STANDARDS

The Design-Builder shall perform the lighting work 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, and NYCDOT Standards, Specifications and Notes included in Part 7 – Engineering Data.

17.3 REQUIREMENTS

17.3.1 General Requirements

The Design-Builder shall be responsible for designing, submitting design plans for approvals, furnishing and installing all new components as conforms to design plans and applicable NYC DOT Street Lighting Standard Drawings and Specifications (from the utility company’s power supply connection forward to the luminaires) required for the implementation of the lighting system for the Project including new luminaires, photo controls, poles, mounting, cabinets, Boxes, wiring, conduits, and support hardware, etc. as necessary for delivering a complete and functional and acceptable lighting system. Existing lighting impacted by the Project shall be replaced to meet the Project requirements.

The Design-Builder shall prepare all lighting calculations for all temporary and permanent lighting system for the Project and submit to the Construction Quality Assurance Engineer and the New York City Department of Transportation Division of Street Lighting (NYCDOT-DSL) for review and approval. Lighting calculations shall be submitted for review and approval prior to the submittal of design plans. The Design-Builder shall assume that NYCDOT-DSL will require four (4) weeks for review of the lighting submittals. The street lighting design contact person for NYCDOT-DSL is Mr. Akmal Mikhail, 34-02 Queens Blvd., Long Island City, NY 11101; 212-839-3368 (amikhail@dot.nyc.gov) and for Street Lighting Inspection, the contact person is Mr. Alber Kong at 212-839-3302 (akong@dot.nyc.gov).

All illumination calculations shall be submitted in a format compatible with either AGi32 by Lighting Analysts or Visual by Acuity Brands Lighting along with PDF printouts.

Conduits for electrical cables and electric boxes shall be embedded in concrete parapets and light lampposts shall be mounted on concrete parapets where practical. For at-grade, conduits and electrical boxes shall be embedded in the ground. At-grade local street lamppost shall be 3’ behind curb line. At-grade Highway lampposts shall be on barrier, 3’ behind guide-rail, or 8’ behind curb line. All exposed conduits shall be PVC coated rigid galvanized steel (RGS). All light posts
to be installed, including at-grades, shall be on level foundations built as part of the structure or on separate foundation for installation.

Submit Lighting Calculation that shall conform to NYCDOT Street Lighting requirements per Section 17.3.2.1 for review and approval.

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

Submit Street Lighting plans package that 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 and Removal of Street Lighting plans
- Proposed Street Lighting plans
- Street Lighting details
- Temporary Street Lighting plans and notes
- One-line wiring diagram

After having an approved Street Lighting Design Plan, the Design-Builder shall start submitting Street Lighting materials shop drawings for review and approval before purchasing/installation. For bridge lighting, conduits for electrical cables and electric boxes are preferred to be (if possible) embedded in concrete parapets. Light posts shall be mounted on top of concrete parapets where practical. The electrical conduits for bridge deck lighting shall conform to approved lamppost barrier foundation detail.

The Design-Builder shall inspect all existing electrical cabinets and its distribution and lighting 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 maintained by the Design-Builder for the duration of the Project.

The Design-Builder shall insure that existing installations are not disturbed. Any damage by the Design-Builder to existing facilities or equipment shall be corrected by replacement or restoration by the Design-Builder to the satisfaction of NYCDOT Street Lighting at no extra cost to the State or City. The Design-Builder shall replace any luminaire within the Project limits that is not functional. The Design-Builder shall be responsible for any lighting system (inside and outside contract limit) that loses power due to the Project’s Construction. The Design-Builder shall restore and put back on service any lighting system lost to the satisfaction of NYCDOT Street Lighting.

### 17.3.1.1 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 316 Steel Type, rated NEMA 4X or a higher degree of protection, as conforms to NYCDOT Street Lighting Standard Drawings & Specifications;

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

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

17.3.1.2 Removal of Existing Equipment

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. Coordination for delivery shall be done with NYCDOT Street Lighting Electrical Inspection Unit. The Design-Builder shall notify the Department’s Project Manager prior to contacting the NYC DOT Electrical Inspection Unit (212-839-3285). Existing spun aluminum bracket arms and lampposts (except type 10) which are removed and not re-used in the finished work, shall be inspected by the NYC DOT Electrical Inspection Unit within 30 days after being contacted by the Design-Builder. NYCDOT will determine, in writing, whether the Design-Builder should dispose of these items or deliver them to the NYC storage facility designated by NYCDOT. A minimum of two weeks advance notice shall be given to the storage facility prior to the delivery of any materials, and all appropriate forms are to be signed and completed.

17.3.2 Permanent Lighting System

17.3.2.1 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 by NYCDOT Street Lighting Engineering prior to Design Plans;

B) Provides illumination such that the road surface illumination meets or exceeds the uniformity and the illuminance and/or luminance criteria during darkness. Average lighting level shall conform to NYCDOT Street Lighting Standards:
   a. Average illumination for expressways – 0.8 to 1.0 foot-candles (fc) with average to Min. Ratio of 3:1
   b. Average illumination for local commercial streets - 0.8 to 1.0 foot-candles (fc) with average to Min. Ratio of 4:1.
   c. Average illumination for Street Intersections – 2.0 to 2.5 foot-candles (fc) with average to Min. Ratio of 4:1
   d. Average illumination for Highway Gore Areas – 1.2fc with average to Min. Ratio of 4:1
   e. Average illumination for ramps – 1.2fc with average to Min. Ratio of 4:1

Correlated Color Temperature (CCT) of luminaire shall be 3000 Kelvin. Light Loss Factor (LLF) shall be 0.89 and uniformity ratio shall be 4:1. All above values are general design values, exact design shall conform to agreed upon values at review process between State and NYCDOT;
C) Utilizes approved items that conform to latest NYCDOT Street Lighting Standard Specifications and Drawings;

D) Can be fully and seamlessly integrated into the existing-to-remain lighting elements adjacent to the Project limits;

E) Utilizes control Cabinet system that automatically controls lighting operation between dusk and dawn;

F) Utilizes lighting components that are readily available and not proprietary equipment; and

G) Existing service point locations and control cabinet locations are provided in the “Electrical Inspection and Load Testing Report” provided in the Reference Documents. The Design-Builder shall replace all existing service point components and feeders and property line boxes consistent with approved NYCDOT-DSL plans. If additional service points are required, the Design-Builder will request new service from Con Edon with coordination with NYCDOT Street Lighting upon approval of the design. The Design-Builder shall provide similar additional components associated with the proposed lighting design.

17.3.2.2 Construction Requirements

The Design-Builder shall provide permanent lighting materials that conform to NYCDOT Street Lighting applicable standards and requirements and satisfy the Project Requirements and applicable codes. In addition, the Design-Builder shall:

A) Ensure that all exposed raceways/conduits are made of PVC coated rigid galvanized steel (RGS). Short runs (no longer than 5 feet) of liquid-tight flexible metal conduit may only be used to make a final connection between the Box and Underdeck fixture;

B) Ensure that all outdoor attached parts shall be type 316 stainless steel, rated NEMA 4X or a higher degree of protection;

17.3.3 Temporary Lighting System

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 poles for roadway crossing;

E) 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;
F) NYCDOT does not supply equipment for temporary Lighting System;

G) Design-Builder 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; and

H) Design-Builder shall provide and maintain temporary lighting of an average illumination of 1 FC and avg./min ratio of a max 4:1, as per NYCDOT Street Lighting Standards.

I) The Design-Builder shall protect all temporary Conduit/Conductors used/required to maintain power to the connected load during various stages of construction.

17.4 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 18 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

18.1 SCOPE

The Design-Builder shall 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) system. Due to the proposed work on the 133rd Avenue, Rockaway Boulevard, Foch Avenue, Linden Boulevard, 109th Avenue, Liberty Avenue, 101st Avenue, Jamaica Avenue, and Hillside Avenue bridges, the ITS System work in the Project shall consist of the following:

A. Relocation of existing ITS equipment including fiber and electric pull boxes present on the bridge abutments, parapets, and bridge rail.

B. Relocation of 1-4” PVC Multicell conduit and (1)-single mode fiber optic cable 72 Fiber under the southbound Van Wyck main line’s shoulder, running parallel to the main line’s alignment, due relocation of the bridge abutments.

C. Relocation of 1-4” PVC Multicell conduit, (1) single mode fiber optic cable 72 Fiber, and (1) single mode fiber optic trunk cable 144 Fiber optic cables under the northbound Van Wyck main line’s shoulder running parallel to the main line’s alignment, due relocation of the bridge abutments.

D. Relocation of (1) single-mode fiber optic cable 72 Fiber and 1-4” PVC multicell conduit on the 133rd Avenue bridge’s north fascia, which cross over the Van Wyck Main line, due to the proposed work on 133rd Avenue Bridge.

E. Positively identify and expose the existing 4” PVC Multicell conduit owned by PANYNJ AirTrain, under the median barrier from south of 133rd Avenue bridge to north of Atlantic Avenue, before any proposed work on the bridge center piers.

The Design-Builder shall design, furnish and install a complete, operational and tested ITS system including all required electronic devices for the System, all associated mounting hardware, and all associated cabling and integrate those devices into the NYSDOT Transportation Management Center (TMC). Final integration to the NYSDOT TMC system will be by NYSDOT. The Design-Builder shall be responsible for all other work related to the ITS within the Project limits.

The Design-Builder shall maintain and protect the existing Fiber Optic trunk cables located in the NYSDOT Right of Way. Should any disruptions of the existing Fiber Optic network be required due to the Design-Builders operations, a temporary communication system or bypass communication linked to the NYSDOT TMC shall be provided. 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 operations shall be repaired by the Design-Builder at no additional cost to the Department.

For the duration of this contract, the Design-Builder shall be responsible for all other work related to the ITS System within the Project limits.

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

VAN WYCK EXPRESSWAY (VWE) CAPACITY AND ACCESS IMPROVEMENTS TO JOHN F. KENNEDY (JFK) AIRPORT PROJECT 136 Part 3 - Project Requirements
PIN X735.82, Contract D900048 Final August 30, 2019
A) The existing ITS system shall remain operational during the Project.

B) The Design-Builder shall confirm the existing ITS system components in the field including the location, size, function and condition of all ITS features within the Project Limits from preconstruction as-built plans and field investigations and prepare an ITS plan describing how the ITS features shall remain operational throughout construction, up to the Final Acceptance and submitted to the Department.

C) For maintenance purposes, 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. All new manholes shall be labeled with ‘NYSDOT Fiber’ or ‘NYSDOT Electric’.

D) All existing ITS elements outside the project limits will continue to be maintained by the Department. Access to these features shall be retained for Department maintenance. Any such elements installed or damaged by the Design-Builder shall be repaired by the Design-Builder and shall be maintained by the Design-Builder until Final Acceptance and any warranty period.

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

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

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

H) The Design-Builder shall install all necessary ITS temporary components and shall remove the old ITS components.

18.2 STANDARDS

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

18.2.1 Standards

NFPA:

- 1101 NTCIP Simple Transportation Management Framework
- 1102 NTCIP Octet Encoding Rules (OER)
- 1201 NTCIP Global Object (GO) Definitions
- 1203 NTCIP Object Definitions for Dynamic Message Signs
18.3 REQUIREMENTS

18.3.1 Variable Message Sign (VMS)

18.3.1.1 Removal of Existing VMS

Section Not Used

18.3.1.2 Installation of New VMS

Section Not Used

18.3.2 Fiber Optic Backbone

18.3.2.1 Fiber Optic Cable

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

- Special Specification 680.92124411 – single mode fiber optic trunk cable 144 fiber (in conduit)

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

- Special Specification 680.92127211 – single mode fiber optic trunk cable 72 fiber (in conduit)

The Fiber Optic cable drop cable installed from the ITS equipment to the fiber optic backbone shall meet or exceed the requirements of NYSDOT Specifications.

The Design-Builder shall also provide fiber optic cable connectors, splices, splice trays, splice cases, and breakout kits as necessary to perform the work.
18.3.2.2 Fiber Optic Pullboxes

All underground pull boxes for fiber or electrical are reinforced concrete pull boxes (Item 680.510501, 680.51960011). All Surface mounted pull boxes / Junction boxes should be Stainless Steel NEMA-4X (Item 680.53000111). All surface mounted Junction boxes for electric should be cast iron junction boxes (Item 670.40).

18.3.2.3 Two Channel Fiber Optic Innerduct

Section Not Used.

18.3.3 Traffic Signal Interconnection

Section Not Used.

18.3.4 Temporary Wireless Radio and Antenna

Section Not Used.

18.3.5 Central Computer System at TMC

Section Not Used.

18.3.6 Electrical Work

The Design-Builder shall provide all 120/240VAC power necessary for the construction and System installation and shall include the furnishing and installation of all labor and equipment. All power, video and data circuits entering or exiting the cabinets shall be furnished with surge lightning protection. The Design-Builder shall maintain the integrity of all circuits in service that may be affected by the work.

The Design-Builder shall furnish and install cabling and conduit between the controller cabinet and the ITS equipment cabinet, the ITS cabinet and the fiber optic pullbox, the fiber and communication manholes and the power source. It shall be the responsibility of the Design-Builder to verify that the cabling and its routing are sufficient for their needs.

18.3.6.1 Cabling Requirements

The minimum size cable used for power circuits and ground wires shall be #12 AWG. Alternate cable sizes that can be utilized for power and ground are #6AWG and #2AWG. Voltage Drop calculations for the electrical service drop to the ITS cabinet shall be provided.

Power cabling and wires installed outdoors and underground shall be rated for 600V, rated for wet locations and gasoline and oil resistant.

All cables provided shall be provided with terminations, connectors and splices as needed and shall be installed within the existing or proposed conduits. All termination cables provided shall be provided with terminations, connectors and splices as needed.

All cables shall be clearly labeled with identifying label or tags clearly indicating the circuit # and/or VMS #.
All electrical enclosures and boxes provided by the Design-Builder shall be stainless steel NEMA 4X.

18.3.6.2 Conduit Requirements

All conduits shall be hot-dipped Rigid Galvanized Steel (RGS) for underground connections (670.2005) or PVC-coated Galvanized Steel for exposed connections (670.2310). All fittings and conduit bodies shall be of same material as conduit.

18.4 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM

The existing CCTV camera which will be directly affected by Van Wyck Expressway Capacity and Access Improvement to JFK Airport Contract 1 is located as below:

- CCTV#4 at the east abutment of the 133rd Avenue Bridge.

This and existing cameras in the vicinity of the project limits shall remain operational during the Project until replaced. Existing cabinet, camera, and equipment to be delivered to:

NYSDOT ITS Warehouse/Pennyfield Office
518A Throgs Neck Expy
Bronx, NY 10465
Phone # (718) 239-0743
Contact: Kevin Ledlon
Engineer-in-Charge

Proposed new CCTV and Pole:

The CCTV deployment shall consist of furnishing and installing High Definition IP CCTV camera (Special Specification Item No. 683.10110008) assemblies at all the locations mentioned above and also at all any new VMS locations such that the message displayed on the VMS can be verified. The camera assembly location shall be designed and installed such that the line of sight of the camera is in the center line of the desired field of view when the camera is in the mid-point of the desired motion between the limit stops. The desired field of view is ½ mile in either direction of the roadway. The camera mounting shall be positioned towards the road and shall provide the desired views. The new pole shall follow NYSDOT Special Specification 680.17006011. The minimum mounting height for the camera assembly on a CCTV pole is 60 ft above the highway. The equipment shall deliver high definition full-motion video during day or night operation. The cameras shall be integrated with the Region 11 system so that it operates seamlessly at the Department’s Traffic Management Center. Field location of CCTV and Pole shall be submitted to NYSDOT to be verified by Regional Staff.

The proposed CCTV deployment shall include all equipment, camera assembly, Ethernet switch, hardware, mounting arm, pole and foundation, mountings, cabling, power, software modifications and labor necessary to install, and integrate a fully operational system per NYSDOT specifications. Connections between the equipment shall be through weatherproof connectors to provide easy replacement. CCTV video, fiber optic video and data transceivers shall be supplied. The camera assembly shall include but not be limited to the camera assembly, the mounting arm, cabling, mounting hardware and miscellaneous fittings. The Design-Builder shall furnish and install all equipment mounts for all aspects of the CCTV system including the CCTV assemblies, enclosure, cabinets, standalone equipment modules and rack mounted components. Shop
drawings and cut sheets of all portions of the camera system shall be submitted for review by the Department.

Proposed CCTV control cabinets shall be installed at such locations that accessibility for future maintenance can be performed without any lane closure.

The CCTV System shall meet or exceed the requirements of the Special Provision in Part 5, Section 15.1.

The Design-Builder shall provide the Department with one day class training for operations and maintenance by the CCTV manufacturer that shall consist of a half day training held in the field and a half day training held in a classroom format.

### 18.5 TEMPORARY 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. The operation of ITS field devices shall be maintained during construction. Temporary cameras to be installed as needed, may use solar power to support continuous, uninterrupted service. The transition time for relocating ITS equipment shall be approved by the Department. The Design-Builder shall maintain all communications services and, if necessary, install a temporary ITS Fiber Optic system. Downtime for existing fibers requiring cut-over shall not exceed 48 hours. After installing the temporary communication ITS services, the Design-Builder shall install new Fiber Optic Cable system without interrupting the operation of the ITS system. 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 before any disconnects to the existing system can be made. Section for Temporary System (if needed) should be included.

### 18.6 SYSTEM TEST PROCEDURES

#### 18.6.1 Operational Stand Alone Testing

The operational standalone testing demonstrates that the equipment has been installed correctly and is operational. These tests involve only single items of equipment or equipment assemblies. Portable laptop computers and test equipment supplied by the Design-Builder may be used to simulate control of the standalone equipment. Typical tests would include but are not limited to:

- Physical inspection of the installation;
- Continuity tests;
- Power-on tests;
- Voltage measurements;
- Cable performance tests (twisted-pair and fiber optic). For optical fibers, this would include OTDR and attenuation measurements. For twisted-pair cable, this would include checks for grounds, splits, crosses, and opens;

- Cabinet assembly-performance tests (e.g., cabinet to radar detector):
• Verification of radar detector measurements;
• Functional performance communications;
• Wireless radio measurements (output power, signal levels, etc.).

Operational standalone testing shall also include equipment setup. This includes configuring the equipment’s options and setting the equipment’s system identification, including its network address.

18.7 DOCUMENTATION REQUIREMENTS

The Design-Builder shall prepare all Documentation as required and submit to the Department for review. The Department’s review of system documentation does not waive the Design-Builder’s responsibility in furnishing and installing a fully operational and functional system meeting the specifications herein.

18.7.1 Shop Drawings and Test plans

Test plan submittals shall be furnished by the Design-Builder to the Department to demonstrate that the System and associated products, intended to be supplied for this Contract, have the capability to meet the functional objectives required by the Technical Parameters. System documentation submittals required shall consist of:

• Field Acceptance Test Plan and Report.
• Operational Acceptance Test Plan and Report.
• Operating Documentation.

The Design-Builder shall provide the Department with the following documentation at the conclusion of the project:

• A minimum of five copies of all manufacturers’ documentation for all equipment to be supplied as part of this project. This documentation shall include all operations, maintenance, software support, and protocol descriptions available from the manufacturer of each component.

• All documentation specifically requested in the individual item specifications.

• A minimum of three copies of written documentation which contains the correct hardware (dip switch settings) and software adjustable configurations for all equipment used in the project.

• A chart which details the pin-outs of all cable assemblies and actual interconnection of all system components.
SECTION 19 WORK ZONE TRAFFIC CONTROL AND ACCESS

19.1 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.

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).

The Design-Builder shall develop a Work Zone Traffic Control Plan per Contract requirements and shall furnish, erect, and maintain barricades, warning signs, flaggers, and pilot cars in accordance with: the National Manual on Uniform Traffic Control Devices for Streets and Highways and the New York State Supplement 17 NYCRR Chapter V (collectively, MUTCD); the traffic control plan(s), as subject to the consultation and written comment of the Department’s Project Manager; and the requirements of the Contract Documents. Flaggers shall be provided with equipment and training pursuant to requirements of the MUTCD. The equipment used by the flaggers shall be kept clean and in good repair by the Design-Builder at the Design-Builder’s expense. The Design-Builder shall take all steps necessary to either keep the existing roadway open with a minimum of inconvenience to the traveling public or provide an approved alternate route.

When requested by the Design-Builder and approved by the Department’s Project Manager, or when directed by the Department’s Project Manager, Sections of the Project may be opened to traffic prior to completion of the entire Contract. Such opening shall not constitute Final Acceptance of the Work or any part thereof, or a waiver of any provisions of the Contract.

When a Section is opened in accordance with the Design-Builder’s Work Zone Traffic Control Plan and/or as a result of the Design-Builder’s request, the Design-Builder shall remain liable until Project Completion of the entire Project, and damage to the highway occurring before that time shall be repaired by the Design-Builder at the Design-Builder’s expense, including the removal of earth or rock slides.

The Design-Builder’s equipment shall enter and leave the traveled way only in the direction of public traffic. All movements on or across the traveled way shall be performed in a manner that will not endanger the traveling public.

The Design-Builder shall maintain the pavement surface of the lanes open to traffic adjacent to the Work zone within the limits of the Project traffic control.

Refer to Part 2, § DB 105-22 for information regarding the respective responsibilities of the Department and the Design-Builder for maintenance of sections of roadway open to the traveling public.
If the Design-Builder fails to furnish warning devices, take protective measures as above provided, or complete shoulder work, drainage structures, or other features of the Work, the Department’s Project Manager, or Department’s Construction Quality Assurance Engineer, at his or her discretion, will notify the Design-Builder in writing of the defects along with a reasonable period of time in which the Work must be corrected or completed. If the Design-Builder fails to make a reasonable effort, in the sole opinion of the Department’s Project Manager, toward correction in this period of time, the Department’s Project Manager may then take such steps as the Department’s Project Manager deems necessary to correct the defects, or the Department’s Project Manager may terminate the Contract for default under Part 1, DB Agreement, Article 12.

The Design-Builder shall be liable and agrees to pay the Department for all costs and expenses incurred by the Department in correcting the defect(s).

19.2 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.

19.3 REQUIREMENTS

19.3.1 General Requirements

Work Zone Traffic Control shall be performed in accordance with this Part 3 Section 19, Work Zone Traffic Control Notes provided in Part 6 – Directive Plans, and the New York City Department of Transportation Bureau of Permit Management and Construction Control Work Permit (will be provided at a later date).

Traffic enforcement agents shall be provided associated with the anticipated detour route, other operations as directed by the Department’s Project Manager, and consistent with Special Specification 619.22970011.

19.3.2 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 and includes durations and traffic pattern changes that will exceed 10 hours in any 24-hour period. The Department’s Project Manager should be informed of any planned lane closures two weeks in advance.

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.

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.

The Design-Builder shall produce a clear graphical representation of the staging with each stage, with associated traffic clearly delineated, in linear chronological order. Each significant change in traffic patterns shall be presented separately.

The Design-Builder shall be responsible for updating the construction staging plan as necessary throughout the Contract, so that at all times the current version reflects the planned current and future construction staging activities.

The Design-Builder shall provide portable variable message signs for the posting of appropriate warnings and advisories at strategic locations where opportunities are available for directing traffic to alternative routes in response to prevailing circumstances. It is anticipated that portable variable message signs will be required at major highway interchanges, local streets and any detour routes. Other requirements are as stated in Section 19.3.7.

The Design-Builder shall be responsible for maintaining access to all businesses, residences, and properties within and abutting the Project, including essential services such as trash pickup and mail delivery. If the Design-Builder’s WZTC plan includes a single lane cattle-chute, the Design-Builder shall have a tow truck on each site each day the cattle chute carries traffic.

NYSDOT’s Construction Quality Assurance Engineer (CQAE) and the Design-Builder shall coordinate with any municipality or agency affected by any detours or road closures that are part of the WZTC. Comments from those municipalities or agencies shall be incorporated by the Design-Builder into the site’s WZTC plan as directed by the CQCE.

NYSDOT’s CQAE shall be contacted by the Design-Builder 2 weeks in advance of any proposed closure or staging.

19.3.3 General Restrictions

There shall be no temporary lane/shoulder closures on roadway facilities owned and/or maintained by NYSDOT on the major holidays listed below.

Construction activities that will result in temporary lane/shoulder closures shall be suspended to minimize travel delays associated with road work for major holidays as follows:

1. New Year’s Day
2. Memorial Day
3. Independence Day
4. Labor Day
5. Columbus Day
6. Thanksgiving Day
7. Christmas Day

There are no temporary lane/shoulder closures allowed on any major holiday listed.
Exceptions can only be made under the following conditions:

- Emergency work.
- Work within long-term stationary lane/shoulder closures.
- Safety work that does not adversely impact traffic mobility and has been authorized by the Regional Traffic Engineer.

**Note:** The Department reserves the right to cancel any work operations, including lane closures and/or total road closures, that would create traffic delays by unforeseen events. The Design-Builder would be notified at least seven (7) calendar days prior to the proposed work.

Where a conflict existing between these holiday restrictions and any restrictions in the NYCDOT OCMC Permit, the more restrictive requirement shall govern.

### 19.3.4 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.

### 19.3.5 Closure Restrictions

All lanes must remain open at all times except as specified below and in the draft NYCDOT Work Permit *(to be provided at a later date)*. Temporary lane closures shall be in accordance with the NYCDOT Work Permit Stipulations included in Part 7 – Engineering Data.

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<tr>
<th>Holiday</th>
<th>Falls on</th>
<th>Temporary lane closures are NOT allowed from</th>
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<tbody>
<tr>
<td>New Year’s Day</td>
<td>Sunday or Monday</td>
<td>6:00 AM Friday before to 6:00 AM Tuesday after</td>
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<tr>
<td>Independence Day</td>
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<tr>
<td>Christmas Day</td>
<td>Tuesday</td>
<td>6:00 AM Saturday before to 6:00 AM Wednesday after (starting at 6:00 AM Friday before to 6:00 AM Wednesday after for Christmas Day)</td>
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<td>Wednesday</td>
<td>6:00 AM Tuesday before to 6:00 AM Thursday after (starting at 6:00 AM Saturday before to 6:00 AM Thursday after for Christmas Day)</td>
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<td>Thursday</td>
<td>6:00 AM Thursday to 6:00 AM Monday after (starting at 6:00 AM Wednesday before to 6:00 AM Monday after for Christmas Day)</td>
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<td></td>
<td>Friday or Saturday</td>
<td>6:00 AM Thursday before to 6:00 AM Monday after</td>
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<tbody>
<tr>
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<tr>
<td>Labor Day</td>
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<tr>
<td>Thanksgiving Day</td>
<td>Thursday</td>
<td>6:00 AM Wednesday before to 6:00 AM Monday after</td>
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</table>
19.3.6 Minimum Lane Widths during Construction

The Design-Builder shall maintain a minimum travel lane width of 11 feet on the Van Wyck Expressway and Service Roads, and a minimum travel lane width of 10 feet on the structures crossing the Van Wyck Expressway during construction.

19.3.7 Portable Variable Message Signs

The Design-Builder shall provide, as a minimum, 10 Portable Variable Message Signs, but more should the Design-Builders design dictate, 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 NYSDOT 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.

19.3.8 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.

19.3.9 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.

19.3.10 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.

19.3.11 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 19.

19.3.12 Noise Control

The Design-Builder should be aware that Title 15 of the Rules of the City of New York was amended 07/01/07 by adding a new Chapter 28, CITYWIDE CONSTRUCTION NOISE MITIGATION. The details and exact text of this new rule can be found online at http://nyc.gov/html/dep/html/air_and_noise/index.shtml.

In addition to compliance with Procedures for Abatement of Highway Traffic Noise and Construction Noise (23CFR Part 772), the Design-Builder shall use and implement all reasonable efforts to accommodate the spirit and intent of Chapter 28 of the City Rules by planning and carrying out the work on this Project to ensure that the noise from construction equipment and activities is kept to a minimum. These efforts to accommodate the spirit and intent of Chapter 28 shall be submitted by the Design-Builder, in writing, in the form of a Construction Noise Mitigation Plan, to the Engineer for approval. No City permit pursuant to Chapter 28 is required.

The Design-Builder shall provide the Engineer with two noise meters meeting the requirements of an integrating sound level meter that is in compliance with the criteria for a Type 1 (Precision) or Type 2 (General Purpose) Sound Level Meter as defined in the current revision of ANSI Standard S1.4. Two acoustic calibrators of the type recommended by the meter manufacturer shall also be provided.

If additional noise mitigation is required due to complaints; or if adherence to the Construction Noise Mitigation Plan cannot be substantially complied with, an Alternative Construction Noise Mitigation Plan shall be prepared by the Design-Builder, in writing, and submitted to the Engineer for approval. An approved Alternative Construction Noise Mitigation Plan must be fully implemented by the Design-Builder within five (5) business days after the Engineer’s approval.

Should the Design-Builder fail to implement the noise abatement operations and conditions of the approved Construction Noise Mitigation Plan, or any approved Alternative Construction Noise Mitigation Plan within five (5) business days of approval thereof, the Engineer shall have the
authority to suspend all work until such time as the Engineer deems that the Design-Builder has complied with the requirements.

The cost of complying with this Mitigation Plan shall be incorporated into the prices bid for the appropriate pay items.

19.3.13 Work on or Adjacent to the NYCT Bus Route

Bus routes affected by the project will or may require bus diversions and/or temporary bus stop relocations. Existing bus lines within project limits include but are not limited to express routes QM21, X63, X64, and local routes Q7, Q8, Q9, Q24, Q41, Q54/Q56, and Q112. NYCT requires a 45 days’ notice prior to any long-term bus stop moves due to construction. These arrangements shall be made through:

Michael Nelson Jr
Director of Support Planning, Operations Planning
MTA Bus Company
Email: Michael.Nelson2@nyct.com
Telephone: 646-252-8676

19.3.14 Sequencing of Work

The following closures and sequencing of work shall be adhered to:

A) The Southbound VWE Exit Ramp to Atlantic Avenue (Exit 5, located north of the LIRR bridge) shall be converted into an On-Ramp. This condition shall remain in place at the end of the contract.

B) The Southbound VWE Entrance Ramp from Atlantic Avenue shall be closed. This condition shall remain in place at the end of the contract.

C) The Northbound VWE Exit Ramp to Atlantic Avenue shall be closed. This condition shall remain in place at the end of the contract.

D) The Northbound VWE entrance ramp form Atlantic Avenue shall be extended as an add-on lane to the NB VWE as depicted on Drawings GNP-09 to GNP-12 in Part 6 of the RFP. The NB VWE entrance ramp from Hillside Avenue shall be restriped as an acceleration lane with a merge condition at the downstream end of the ramp.

E) The intersection improvements and reconstructed ramp at the VWE Exit 1W at N Conduit Avenue and Belt Parkway shall be constructed prior to item F) below.

F) In order to facilitate the bridge pier construction at 133rd Avenue, the Northbound C-D road shall be reduced to two lanes, and the on-ramp to the Northbound C-D road from North Conduit Avenue shall be reduced to one lane as shown in the plans in Part 6.

Appropriate approach signage, striping, traffic control and channelizing devices shall be provided and or removed/covered to accommodate items A through F mentioned above.

Additionally, all bridge reconstruction and associated utility relocation construction shall be performed in two phases:

Phase 1 Bridges:

- Hillside Ave.
- Liberty Ave.
• 109th Ave.
• Rockaway Blvd.

Construction on Hillside and Liberty Aves. shall not begin until the ramp modifications described in items A and B above are operational.

**Phase 2 Bridges:**

• Jamaica Ave.
• 101st Ave.
• Linden Blvd.
• Foch Blvd.
• 133rd Ave.

Construction may begin on a Phase 2 Bridges when all lanes are in their final configuration at Phase 1 Bridges as follows:

• Jamaica Ave. - Hillside Ave.
• 101st Ave. – Liberty Ave.
• Linden Blvd. – 109th Ave. and Rockaway Blvd.
• Foch Blvd. – Rockaway Blvd.
• 133rd Ave – Rockaway Blvd.
SECTION 20  PAVEMENT DESIGN AND CONSTRUCTION

20.1  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.

20.2  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.

20.3  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.

20.3.1  Full Depth Reconstruction

The Design-Builder shall develop and construct pavement section(s) for full depth pavement construction and reconstruction, including subbase.

Full depth PCC pavement (curb to curb) shall be utilized for new ramp construction. The following design criteria shall be met for new pavement:

PCC Pavement
- 12”- PCC pavement, unreinforced, Load Transfer – Standard, Concrete Class – Performance Friction – Type 1
- 12”- Subbase course, Type 1
- Permeable base of any type is not to be used
  - Diamond Grinding – diamond grinding operations are to be complete by November 15 of each calendar year.
Design and test a performance engineered mix (PEM) in accordance with Item 504.00000011.

Composite pavement as noted below shall be used for intersection reconstruction, ramp construction adjacent to main-line and service road pavement, and intersection turning lane construction.

- Top Course – 1.5”; 9.5 F1 HMA, 50 Series Compaction
- Binder Course – 2.0”; 19 F9 HMA, 50 Series Compaction
- Base Course – 9.0”; PCC Foundation for pavement, Class C
- 12” – Subbase course, Type 1

Edge drain systems shall be provided for all proposed PCC and composite pavement. Edge drains shall include a 6-inch minimum pipe diameter and under drain systems. The edge drain shall be located beneath the outermost edge of installed pavement (shoulder or travel lane). Edge drains shall be installed on the low side of the pavement section for proposed ramps and widened pavement areas. Existing edge drains which need to be removed due to bridge pier reconstruction shall be replaced in kind and tie into the existing adjacent underdrains at locations receiving permanent pavement restoration.

**Temporary Pavement**

Temporary full depth HMA pavement shall be provided at the following locations:

- Interim portion of the Linden Blvd Exit Ramp
- Pavement widening along the NB CD road and ramp NCN1T
- SB VWE Exit 5 reconfiguration to an entrance ramp

Temporary pavement shall also be used as noted in the Directive Plans Miscellaneous Details, Pavement Restoration at Piers. Temporary pavement shall consist of the following materials/composition:

- Top Course – 1.5”; 9.5 F1 HMA, 80 Series Compaction (402.098103)
- Binder Course – 2.0”; 19 F9 HMA, 80 Series Compaction (402.198903)
- Base Course – 6.5”; (two lift) 37.5 F9 HMA, 80 Series Compaction (402.378903)
- 12” – Subbase course, Type 1

Note: For all Section 402 Asphalt (HMA and WMA) items see Attached Special note PG 64E-22

If any roadway is permanently widened for the purpose of providing additional travel and/or turning lanes, new full depth pavement need only be developed and constructed for the widened section, provided that no other portion of the pavement within the widened section requires full depth reconstruction for any other purpose. The existing pavement within the widened section shall be milled and resurfaced from curb to curb or edge of pavement to edge of pavement to provide a uniform pavement as specified in Section 16.3.2.
20.3.2 Milled and Resurfaced Roadways

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 feet 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.

20.3.3 Utility Trench Restoration

Outside areas of full depth reconstruction, pavements in trench restoration areas shall match the adjacent pavement section.
SECTION 21  DRAINAGE AND STORMWATER

21.1  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 design and construct a storm water drainage system in accordance with the NYCDEP & NYSDOT design specifications. The proposed storm drain systems shall be designed to accommodate the required design flood frequency based on the Highway Functional Class of each facility per Chapter 8 of the NYSDOT HDM. The drainage surface features at-grade (e.g. frame and grate, manhole covers) and pipe bedding construction shall be performed to conform with the NYCDEP standard details, design requirements and specifications (https://www1.nyc.gov/site/ddc/resources/publications.page). The Design-Builder shall use NYSDOT Specifications for reinforced concrete pipe; on bridge structures the drainage design and construction shall be performed to conform with the NYSDOT standard details, design requirements and specifications as specified under Section 1.6. Consistent with NYCDEP requirements, reinforced concrete pipe is to be placed on a concrete cradle unless site and soil conditions necessitate concrete encasement or piles. Stormwater management practices (SMPs) shall be designed and constructed to conform with the NYSDEC, NYSDOT and manufacturer requirements and outlined in the project SWPPP.

The Design-Builder shall clean and conduct a video inspection on existing underground drainage facility that is to remain within the limits of the project, and a post-construction video inspection of the functioning underground drainage facility after all drainage construction work is completed. The inspection shall include all drainage facilities up to the nearest downstream manhole beyond the project limits.

The existing roadway drainage on the VWE from south of Queens Boulevard to north of Federal Circle drains via small lateral pipes into a trunkline predominately located under the center of the southbound VWE lanes. This trunkline becomes a NYCDEP combined sewer overflow (CSO) approximately 100 feet south of Liberty Avenue.

Belt Parkway On-Ramp (BPW1 HCL)

The existing roadway drainage on the Belt Parkway west of the VWE connects to a 42-inch trunkline that drains westerly and connects at the median of the Belt Parkway immediately west of the VWE overpass to an existing 8-ft x 8-ft reinforced concrete box culvert in the existing NYCDEP CSO drainage network ultimately discharging into Bergen Basin which is tidally influenced and drains to Jamaica Bay. The Design-Builder shall design and construct a roadway drainage system on the relocated Belt Parkway on-ramp and acceleration lane (BPW1 HCL).

Entrance Ramp from Collector Road (NCN1T HCL)

The existing roadway drainage on the Entrance Ramp from Collector Road (NCN1T HCL) drains via small lateral pipes into the CSO trunkline in the center of the southbound VWE lanes. The Design-Builder shall design and construct a roadway drainage system associated with the Entrance Ramp from Collector Road (NCN1THCL).
Overpass Bridges

The Design-Builder shall design and construct a roadway drainage system associated with the nine structures within the project limits (bridge replacements and bridge retrofits). Within the pavement reconstruction limits defined in the Directive Plans, the existing roadway drainage on the crossing streets and North and South Service Roads currently connects to either a storm sewer or a combined sanitary and storm sewer trunkline. The existing drainage systems within the pavement reconstruction limits defined in the Directive Plans shall be replaced in their entirety (new drainage structures, frames, grates, storm drain pipe). The Design-Builder may connect the new drainage system at each location to the existing outlet trunkline. To ensure the integrity of the outlet trunkline, the Design-Builder shall conduct a video inspection of the existing trunkline at each intersection the nearest upstream and downstream manhole outside of the limits of construction and provide the results to the Engineer prior to the completion of the closed drainage system design. In the event the outlet trunkline requires repair or replacement, the Design-Builder will be compensated for the work ordered via the Force Account Item. Existing connections shall be utilized where feasible and all connections to combined sanitary and storm sewers shall not introduce an increase in flow rate for any design flood frequency.

VWE Exit Ramp to Linden Blvd (LINN2THCL)

The existing roadway drainage on the existing VWE exit ramp to Linden Blvd drains via catch basins and small lateral pipes into the CSO trunkline in the center of the southbound VWE lanes. The proposed roadway drainage system on the relocated exit ramp (LINN2THCL) shall be designed to meet the NYSDOT HDM Chapter 8 and NYSDEC SPDES stormwater management requirements as required. Standard Stormwater Management Practices (SMPs) shall be utilized where feasible and existing drainage patterns shall be maintained. The existing roadway drainage on the existing VWE exit ramp to Linden Blvd shall be removed or abandoned as required.

South Service Road under the LIRR

The existing drainage on the South Service Road from Jamaica Avenue to Liberty Avenue connects to a combined sanitary and storm sewer that drains to the Jamaica Wastewater Treatment Plant (WWTP) via a special sewer chamber with an internal weir wall located at the intersection of the South Service Road and Liberty Avenue. During wet weather events, the combined sanitary and storm runoff above the sewage treatment capacity (overflow weir structure) are diverted to a drop structure approximately 100 feet south of Liberty Avenue and into the NYCDEP CSO drainage network in the center of the southbound VWE and ultimately to Bergen Basin. The proposed roadway drainage system shall not introduce an increase in flow rate for any design flood frequency to this existing combined sanitary and storm sewer draining to the WWTP. The proposed roadway drainage system shall include relocating the existing combined sanitary and storm sewer trunkline in the South Service Road from Liberty Avenue to 150 feet south of 91st Avenue into the allowable utility relocation limits as shown in the Indicative Plans and identified in Part 4 Appendix A. This work shall be coordinated with the proposed utility work.

Jamaica Ave Southbound On-Ramp to VWE

The Design-Builder shall design and construct a roadway drainage system to accommodate proposed improvements.
VWE Northbound from south of Jamaica Ave to North of Hillside Ave (NBT HCL)

The Design-Builder shall design and construct a roadway drainage system to accommodate proposed improvements.

The Design-Builder shall be responsible for the review and approval of all shop drawings needed for the scope of work subject to NYCDEP approval. 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.

Prior to Project Completion, the Design-Builder shall be responsible for cleaning all new and existing drainage facilities on the nine bridges and associated intersections, and the on and off ramps.

21.2 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.

21.3 REQUIREMENTS

21.3.1 Drainage Report

The Design-Builder shall provide a Drainage Report to the Department, NYCDEP 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.

21.3.2 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. The Design-Builder shall clean and repair as needed, the existing at-grade drainage system within the project limits to clear any obstructions.
21.3.3 Spill Management

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

21.4 DELIVERABLES

Deliverables shall be as stated elsewhere in the RFP documents.
SECTION 22 HIGHWAY DESIGN

22.1 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.

22.2 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.

22.3 REQUIREMENTS

22.3.1 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.

22.3.2 Design Requirements

Design Criteria (Critical Design Elements), Non-Standard Feature Justifications, Other Design Parameters, and Primary Design Values for Paved Shared-Use Path are provided in Part 7, Engineering Data.

22.3.3 Guide Railing, Barrier Systems and Impact Attenuators

The Design-Builder shall remove and dispose of all existing guide railing, barrier systems and/or impact attenuators within the Project limits, and replace with new guide railing, 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 guide railing, barrier systems and/or impact attenuators that are removed shall become property of the Design-Builder.

The following guide railing and barrier systems shall be used:

- Heavy Post Blocked-Out (HPBO) Guide Rail, HPBO Median Barrier, Concrete Barrier

The following impact attenuators shall be used:
1. Expendable Impact Attenuators:
   a. QuadGuard M10 (TL2 & TL3)
   b. TAU-M (TL3)

2. Reusable Impact Attenuators:
   a. SCI – 70GM and 100GM (TL2 & TL3, respectively) (24” to 30” standard and 36” to 60” custom Backstop/Transitions)

3. Inertial Barrel Modules/ Sand Barrels:
   a. Traffix Devices Sand Barrels (Arrays based on Design Velocity and Hazard Width)

22.3.4 Clear zone

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

22.3.5 Sidewalks

The Design-Builder shall construct Portland Cement Concrete sidewalks in areas noted in the directive notes.

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 is more than 5%: running slope follows highway edge of pavement max

- **Cross Slope:** 1.5% max

22.3.6 Curb Ramps

The Design-Builder shall construct Portland Cement Concrete curb ramps as follows:

- All intersections adjacent to areas of resurfacing and reconstruction. These intersections are identified in the Indicative Plans.

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.
22.4 LANE MILEAGE REPORT

As part of the Final Project Deliverables, the Design-Builder shall prepare and submit a Lane Mile Report (Table and Drawings) for the contract. An example of what is to be provided is in Part 7. The excel file of a sample Lane Mileage Report Table is located in the reference documents.

22.5 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 23  STANDARDS

23.1  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 §102-02.

23.2  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 24 SECURITY

Section not used.
SECTION 25 PANYNJ – AIRTRAIN REQUIREMENTS

Refer to Part 5 SP-12 for provisions.
VAN WYCK EXPRESSWAY (VWE) CAPACITY AND ACCESS IMPROVEMENTS TO JOHN F. KENNEDY (JFK) AIRPORT PROJECT - CONTRACT 1
PIN X735.82, Contract D900048

DB CONTRACT DOCUMENTS
PART 3
APPENDIX A
CONSTRUCTION QUALITY CONTROL INSPECTION

Final August 30, 2019
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The Design-Builder shall use Table 1 as a guide for development of a Quality Control Plan, as a minimum level of Quality Control (QC) activities, as defined in Section 6. The Quality Control Plan shall provide for materials quality control and construction Inspection (CI) practices oversight. In general, the Design-Builder shall employ an independent Construction Inspection Professional Engineering Firm and a Materials and Testing Firm or Laboratory that will be responsible to assure compliance of materials and construction inspection activities to all Department standards.

The frequency of QC activities shall be at least equal to current Department practices as established in the Specifications, Materials Methods and Procedures, Granular Control Procedures, and other Department standards. The Quality Control Plan shall specifically and clearly define all QC activities to be performed by the Design-Builder, documentation and records to be managed, including forms that will be used, and frequencies of sampling and testing.

The Design-Builder shall provide in the Quality Control Plan all the various materials planned for use and the specific certifications and/or sampling and testing to be progressed for QC purposes to assure durability of the material. For development of the Quality Control Plan, the Design-Builder should be aware of the following materials considerations:

- All domestic off-site materials sampling and testing for QC/QA operations will be performed by the Department. This includes but is not limited to earthwork and gravel borrow sources, Hot Mix Asphalt materials and production, Concrete materials and concrete production, steel, precast products, masonry, structural steel paints – shop applied, bridge railing, guiderail, traffic control materials, sign structures, frames and grates, and any other materials deemed necessary to assure product quality. The Design-Builder shall perform QC of off-site manufactured/fabricated materials as deemed appropriate by the Design-Builder.

- Bearing production: The Design-Builder shall be responsible for hiring an independent testing firm or laboratory to perform all bearing testing. The Design-Builder shall receive from the independent lab a certification that all bearings are in conformance with specification requirements. The Department will perform sampling and testing for verification purposes.

Use of Approved List materials is expected for commonly available products. Use of materials that are not on the Approved List, but for which an Approved List category exists, shall require the Design-Builder to provide appropriate evaluation and test results, conforming to current NYSDOT procedures for product evaluation, to prove durability of the material for the planned use, to the satisfaction of the Department. Such product evaluation shall typically consist of lab testing per AASHTO, ASTM, or Department requirements, performed by an independent certified laboratory. Upon verification of product acceptability by the Department, the product(s) will be included on the Approved List of Materials. Products that have not been accepted by the Department will not be included on the Department’s Approved List of Materials. Products previously approved by the Department’s New Product Evaluation Committee may be used; however, the Design-Builder may be required to provide sampling and testing results.

Use of materials for which there is not an Approved List category shall require, in the Quality Control Plan, those tests and evaluations to be performed to prove the durability of those materials before use in the Project. In many cases, physical testing should be performed by an independent laboratory. The frequency of sampling and testing, commensurate with the level of
risk of the product proposed for use, shall be provided in the Quality Control Plan.

The forms listed in the column “Documentation Form(s)” are those that the Department presently uses. The Design-Builder may use their own forms, provided that their forms record the same information documented by the Department's forms.

The Department will use Random Independent materials sampling and testing for both acceptance and/or verification of QC sampling and test data. In addition, the Department will verify compliance to the policies and processes of the Construction Inspection Professional Engineering Firm, the Materials Testing Firm and Material Testing Laboratories, as defined in the Construction Quality Control Plan to ensure conformance with the Contract Documents.

Quality Assurance acceptance decisions that incorporate the use of the Design-Builder’s QC data and activities will be progressed as described in Appendix D – Attachment 1. The level of risk for various items will determine the frequency at which the Department will perform Quality Assurance / verification sampling and testing. Statistical methods may be considered for use by the Department to evaluate the effectiveness of sampling and testing results from QC for use as acceptance if sufficient volume and associated QC and QA material tests are available. The QA Actions and Testing column defines those actions and the frequency thereof that the Department expects to take to provide Quality Assurance of materials and construction inspection activities.

QA of Construction Inspection operations will typically consist of accepting materials and/or verifying that the Design-Builder, Construction Inspection Professional Engineering Firm, the Materials Testing Firm and Materials Testing Laboratories are meeting Contract Requirements. The Department shall have the authority to perform sufficient inspections and/or tests of the Design-Builder’s Work to verify that the inspections and/or tests performed by the independent Construction Inspection Professional Engineering Firm and the Materials Testing Firm or Laboratory are in compliance with the Contract, the design and specifications, the Design-Builder’s approved Quality Control Plan, as well as the Department's standards and practices.

The Department will have access to all activities and records of the Design-Builder, the Construction Inspection Professional Engineering Firm and the Materials Testing Firm or Laboratory retained by the Design-Builder for the purpose of assuring that the construction and inspection activities are being conducted in compliance with the Contract, the design and specifications, the Design-Builder's approved Quality Control Plan, as well as the Department's standards and practices.

All verified QC and QA verification and acceptance activities are used in the acceptance decision that will provide assurance that when Final Acceptance of the Project is requested, the Department is confident that all material incorporated into the Project and the associated workmanship conform to plans, specifications, standards and contract requirements. These acceptances and verifications of QC data will document the acceptance of the Work for payment purposes and assure all non-conformances have been satisfactorily addressed.

The Department shall have the authority to stop Work specific to Work Zone Traffic Control for all work sites and for the overall safety of the Work site to ensure that it is safe for the workers, the inspection staff and the public.

Nothing in the scope of the Department’s QA role shall be construed to relieve the Design-Builder, the Construction Inspection Professional Engineering Firm and the Materials Testing Firm or Laboratory of their responsibilities for full time construction inspection and compliance with the Contract, the design and specifications, the Design-Builder’s approved Quality Control Plan, as well as the Department’s standards and practices.
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<tr>
<th>Specification Section</th>
<th>QC Inspection Requirements</th>
<th>Documentation Form(s)</th>
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<tr>
<td>All - General</td>
<td>• Location and type of Work&lt;br&gt;• Personnel and Equipment&lt;br&gt;• Weather and Site conditions&lt;br&gt;• Checks for Compliance with Design Plans and Project Specifications&lt;br&gt;• Extent of Work&lt;br&gt;• Problems encountered</td>
<td>MURK 1d (DB CQC), MURK 2b (DB-CQC), Design-Builder’s Daily QC Project Diary</td>
</tr>
<tr>
<td>201 – Clearing and Grubbing</td>
<td>• Clearing and grubbing limits&lt;br&gt;• Disposal&lt;br&gt;• Salvage of marketable timber&lt;br&gt;• Protection and restoration</td>
<td>MURK 1d (DB CQC)</td>
</tr>
<tr>
<td>202 – Removal of Structures and Obstructions</td>
<td>• Safety&lt;br&gt;• Engineering survey&lt;br&gt;• Utilities (capping and protection)&lt;br&gt;• Unauthorized entry&lt;br&gt;• Hazardous Materials occurrence&lt;br&gt;• Exterminations&lt;br&gt;• Dust control&lt;br&gt;• WZTC&lt;br&gt;• Disposal of Materials&lt;br&gt;• Salvage</td>
<td>MURK 1d (DB CQC)</td>
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<tr>
<td>Select Materials</td>
<td></td>
<td>Forms are found in the appropriate GEB manual. Also refer to MURK-1 (DB CQC), Inspector’s Daily Report</td>
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<tr>
<td>Specification Section</td>
<td>QC Inspection Requirements</td>
<td>Documentation Form(s)</td>
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<td></td>
<td>Expanded Polystyrene Fill</td>
<td>Forms are found in the appropriate GEB manuals including GTP-7 and GEM-24. Also refer to MURK-1 (DB CQC), Inspector’s Daily Report</td>
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<tr>
<td></td>
<td>Drilling and blasting operations</td>
<td>Form GE-469 (DB), Blasting Report Geotechnical Engineering Manual GEM-22 Procedures for Blasting</td>
</tr>
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<td></td>
<td>Pore water pressures</td>
<td>Form GE-264, Pore Pressure Report/Vibrating Wire Piezometer</td>
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<td>Slope movements</td>
<td>Form GE-422, Slope Indicator Data Sheet</td>
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<td>204 - Controlled Low Strength Material (CLSM)</td>
<td>▪ Materials: Flow test, Cylinder breaks ▪ Placement MURK 1d (DB CQC)</td>
</tr>
<tr>
<td></td>
<td>206 - Trench, Culvert and Structure Excavation</td>
<td>▪ Safety ▪ Support and protective systems ▪ Test pits ▪ Trench and Culvert excavation ▪ Disposal of excavated Material MURK 1d (DB CQC)</td>
</tr>
<tr>
<td></td>
<td>207 - Geosynthetics</td>
<td>Brand name and type MURK-1 (DB CQC), Inspector’s Daily Report MURK 14</td>
</tr>
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<td></td>
<td>208 – Stormwater Management Facilities</td>
<td>Conformance to special specification and environmental permit requirements MURK-1 (DB CQC), Inspector’s Daily Report and forms required by regulations</td>
</tr>
<tr>
<td></td>
<td>209 - Soil Erosion and Sediment Control</td>
<td>Checks, tests, and activity relating to mulching, temporary seeding, check dams, strawbales, haybales, sediment traps, turbidity curtains, silt fences, and fence removal MURK-1 (DB CQC), Inspector’s Daily Report</td>
</tr>
<tr>
<td>Specification Section</td>
<td>QC Inspection Requirements</td>
<td>Documentation Form(s)</td>
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| 210 - Removal and Disposal of Asbestos-Containing Material (Buildings, Bridges, and Highways) | ▪ Compliance with regulatory standards  
▪ Air quality monitoring  
▪ Disposal | MURK 1d (DB CQC) and forms as required by regulations |
| 211 - Internally Stabilized Cut Structures | ▪ Materials  
▪ Certified Mill Test Results  
▪ Certified Mix Design for grout and shotcrete  
▪ Jack and Pressure Gauge Calibration  
▪ Geotextile Approved List  
▪ Grout Cube Tests  
▪ Nail Tests  
▪ Shotcrete | Soil Nail Tendon Installation: GEM-21  
Grouted Tieback Installation: GEM-17 |
| 212 - Rock Slope Reinforcement and Catchment Systems | ▪ Materials  
▪ Certified Mill Test Results  
▪ Test Results demonstrating capability  
▪ Approved List  
▪ Grout Cube Tests  
▪ Anchor Proof Tests  
▪ Rock Bolt Tensioning  
▪ Gradation Test for Cushion Sand | MURK 1d (DB CQC), Inspector’s Daily Report |
| 302 - Bituminous Stabilized Course | ▪ Results of stockpile sampling and testing  
▪ Bituminous materials and stabilized course  
▪ Pugmill calibration  
▪ Additional Inspection/documentation  
▪ Approved Material incorporated, including source and stockpile  
▪ Weather and time of year restrictions met  
▪ Placement and compaction | Form GE-454, Granular Material Documentation Form  
Form GEB-352b (DB), Project Inspection Report-Bituminous Stabilized Course  
Form BEB-423b (DB), Bituminous Pugmill Calibration Form  
MURK-1d (DB CQC), Inspector’s Daily Report |
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<tr>
<th>Specification Section</th>
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<th>Documentation Form(s)</th>
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</table>
| 303 – Optional Flexible Shoulder | Inspect and document the following dependent on material type:  
  - HMA items per 402  
  - PCC items per 502 | MURK 1d (DB CQC), Inspector’s Daily Report Per  
  - §402 and MP 402-2 for HMA  
  - MURK 3, Concrete Pavement Daily Field Inspection Report for PCC |
| 304 - Subbase Course |  
  - Information documented on MURK 1d  
  - Equipment used for compaction and number of passes  
  - Lift thickness prior to compaction  
  - Thickness of subbase Material placed  
  - Addition of water to subbase  
  - Construction of stockpiles  
  - Only Material from approved source or stockpile incorporated in Work  
  - Results of stockpile sampling and testing, in accordance with the requirements of GCP-17 | MURK 1d (DB CQC), Inspector’s Daily Report  
  - Form GE-454M, Granular Material Documentation Form SM-15B, Sieve Analysis Data |
| 307 - Hydrated Lime Stabilized Subgrade | Inspect and document the following:  
  - Equipment used  
  - Moisture added  
  - Preparation of foundation  
  - Scarifying  
  - Lime application  
  - Mixing (primary and secondary)  
  - Compaction, shaping, and finishing  
  - Curing  
  - Compliance with weather limitations  
  - Safety and protection | MURK 1d (DB CQC), Inspector’s Daily Report |
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<tr>
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<th>Documentation Form(s)</th>
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</thead>
</table>
| 308 - Soil Cement Course | Inspect and document the following:  
  - Material source and stockpile construction  
  - Preparation, application of cement, mixing, spreading, placement, compaction, and finishing in accordance with Project Specifications  
  - Curing and surface treatment  
  - Compliance with weather limitations  
  - Stockpile sampling and testing | MURK 1d (DB CQC), Inspector’s Daily Report  
GE-454M, Granular Material Documentation Form |
| 401 - Plant Production | Materials  
  - HMA design  
  - Aggregates  
  - Aggregate source  
  - Mineral filler  
  - PG binder  
  - Recycled asphalt pavement  
  - Construction  
  - Determination of lots and sublots  
  - Mixing and holding time  
  - Production control  
  - Production quantities  
  - Plant and Equipment, including Inspection facilities | MURK 1d (DB CQC)  
Form BR-162, Bituminous Materials Certified Shipment Notice  
Per §401 and MP 401 |
<table>
<thead>
<tr>
<th>Specification Section</th>
<th>QC Inspection Requirements</th>
<th>Documentation Form(s)</th>
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</thead>
</table>
| 402 – Hot Mix Asphalt (HMA) Pavements | Inspect and document the following:  
  - Composition of mixtures  
  - Weather and seasonal limitations  
  - Type and grade of bituminous Material  
  - Equipment, including hauling Equipment  
  - Paver and Equipment cleaning  
  - Condition of existing surface  
  - Spreading and finishing  
  - Compaction/pavement density  
  - Joints  
  - Surface and thickness tolerances | MURK 1d (DB CQC), Inspector’s Daily Report Per §402 and MP 402-2 |
| 407 - Tack Coat | Inspect and document:  
  - Bituminous material  
  - Randomly sample and test 1 sample per 5000 gal, minimum once per project.  
  - Preparation of tack coat  
  - Time to paving (curing/breaking)  
  - Maintenance of traffic  
  - Application | Form BR-162c 9DB), Bituminous Material Certified Shipment Notice Form BR-170 (DB), Bitumen or Mix Sample MURK 1d (DB CQC), Inspector’s Daily Report |
| 410 - Bituminous Surface Treatment - Single Course | Inspect and document:  
  - Bituminous material  
  - Aggregate compatibility with bitumen  
  - Compliance with weather and seasonal limitations  
  - Surface preparation  
  - Application  
  - Bitumen  
  - Cover aggregate  
  - Cleanup | Form BR-162c 9DB), Bituminous Material Certified Shipment Notice Form BR-170 (DB), Bitumen or Mix Sample MURK 1d (DB CQC), Inspector’s Daily Report |
### Specification Section

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<tr>
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<td>490 - Cold Milling</td>
<td>Inspect and Document:</td>
<td>MURK 1d (DB CQC), Inspector's Daily Report</td>
</tr>
<tr>
<td></td>
<td>- Controls</td>
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<td>- Equipment</td>
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<td>- Cleaning</td>
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<td></td>
<td>- Milling</td>
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<tr>
<td>501 - Portland Cement Concrete - General</td>
<td>Inspect and document:</td>
<td>BR 316a, Daily Concrete Batch Plant Report (on- and off-site plants) with Materials Acceptance Records</td>
</tr>
<tr>
<td></td>
<td>- Plant</td>
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<td></td>
<td>- Plant Inspector’s Diary</td>
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<td></td>
<td>- BR 316a, Daily Concrete Batch Plant Report (on- and off-site plants) with Materials Acceptance Records</td>
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<tr>
<td></td>
<td>- Copy of mix design or Form BR-329, Concrete Mix Design Sheet</td>
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<td>- Cement shipment certifications or cement shipment authorization and cement sample logs</td>
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<td>- BR 342, Materials certification (certified batches only)</td>
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<td>- Delivery tickets</td>
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<td></td>
<td>- MURK 5d (DB CQC), Design-Builder’s Structural Concrete Inspector’s Daily Report</td>
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<tr>
<td></td>
<td>- MURK 5d (DB CQC), Design-Builder’s Structural Concrete Inspector’s Daily Report</td>
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<tr>
<td></td>
<td>- For Structural Concrete, information required on MURK 5d (DB CQC)</td>
<td></td>
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<tr>
<td>Specification Section</td>
<td>QC Inspection Requirements</td>
<td>Documentation Form(s)</td>
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</tbody>
</table>
| 502 - Portland Cement Concrete Pavement | Inspect and document information required on specified form, including:  
- High & low ambient temperature during placement  
- Mixer type  
- Slump  
- Air content  
- Concrete specifications  
- BR 316 Report number  
- Concrete Mixing, Transporting & Discharging checks five (5) times each production day:  
  - Central Mix – Time, End of discharge  
  - Truck mix – time, begin and end of mixing, end of discharge and mixing revolutions  
  - Transit Mix – Time, begin and end of discharge and mixing revolutions  
  - Thickness Tolerance  
  - Compliance with weather and seasonal limitations  
- Equipment  
- Forms  
- Preparation of subbase  
- Placing and spreading concrete  
- Finishing and texturing  
- Joints  
- Curing  
- Removing Forms (fixed form paving)  
- Protection of pavement  
- Surface test  
- Sealing joints | MURK 3, Concrete Pavement Daily Field Inspection Report |
| 503 - Portland Cement Concrete Foundation for Pavement | Inspect and Document:  
- Materials – See 501  
- Surface tolerance  
- Texturing  
- Curing | MURK 3, Concrete Pavement Daily Field Inspection Report |
<table>
<thead>
<tr>
<th>Specification Section</th>
<th>QC Inspection Requirements</th>
<th>Documentation Form(s)</th>
</tr>
</thead>
</table>
| 551 - Piles and Pile Driving Equipment | ▪ Inspect equipment and prepare Form BD 138M, Pile and Pile Driving Equipment Data  
▪ Pile material deliveries  
▪ Complete Pile Driving Record  
▪ Inspect and document:  
  ▪ Storage and handling of piles  
  ▪ Preparation of piles  
  ▪ Shoes  
  ▪ Splices  
  ▪ Driving method(s)  
  ▪ Length of piles  
  ▪ Variation in pile alignment  
  ▪ Cutting off piles and pile casings  
  ▪ Painting exposed piles  
  ▪ Reject defective piles and document reason and disposition | Form BD 138M, Pile and Pile Driving Equipment  
MURK 1d (DB CQC), Inspector’s Daily Report  
Form BD-25M, Pile Driving Record  
Form BD-26M, Pile Driving Record Daily Summary  
MURK 1d (DB CQC), Inspector’s Daily Report |
| Drilled Shafts | ▪ Drilling  
▪ Concreting  
▪ Integrity Testing  
▪ Shaft Plumbness  
▪ Shaft Soil Field Log  
▪ Rebar Cage (Centralizers, Access Tubes)  
▪ Load Testing | Drilled Shafts: GEM-18  
Static Pile Load Test: GCP-18 |
| Micropiles | ▪ Drilling  
▪ Grouting  
▪ Reinforcement  
▪ Load Testing | Micropiles: GEM-25  
Static Pile Load Test: GCP-18 |
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<th>Documentation Form(s)</th>
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</thead>
</table>
| 552 – Externally Stabilized Cut Structures | • Materials  
• Safety  
• Permanent Sheeting  
• Temporary sheeting  
• Interim sheeting  
• Excavation protective systems | MURK 1d (DB CQC), Inspector’s Daily Report |
| 553 – Cofferdams and Waterway Diversion Structures | • Materials  
• Cofferdams  
• Structure  
• Dewatering Equipment  
• Sediment removal areas  
• Temporary water diversion structure  
• Removal | MURK 1d (DB CQC), Inspector’s Daily Report |
| 554 – Fill Type Retaining Walls | • Materials  
• Construction  
• Placement area  
• Facing units  
• Structure erection  
• Methods & Equipment  
• Leveling pad  
• Backfill  
• Reinforcing  
Approved List  
Materials  
Methods  
Foundation Area  
Erection Tolerances  
Backfill Material  
Reinforcing Elements  
Equipment Movements  
Subsurface Drainage System  
Identification Markers  
Coping Units  
Aesthetic Treatment | Backfill sampling and testing is addressed under GCP-17. |
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<td>555 - Structural Concrete</td>
<td>Inspect and document:</td>
<td>MURK 1d (DB CQC), Inspector's Daily Report</td>
</tr>
<tr>
<td></td>
<td>- Reinforcing bars: (See also 556)</td>
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<td>- Handling and storage</td>
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<td>- Installation</td>
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<td>- Plan clearances</td>
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<td>- Forming operations</td>
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<td>- Form support</td>
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<td>- Joints</td>
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<td>- Wall layout for waterstops</td>
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<td>- Construction joints</td>
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<td>- Prior to placing</td>
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<td>- Adequacy of personnel and equipment</td>
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<td>- Concrete supply</td>
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<td>- Conveyance system</td>
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<td>- Curing materials</td>
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<td>- Cold weather concreting</td>
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<td>- Maintaining temperature</td>
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<td>Documentation Form(s)</td>
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</tbody>
</table>
| 556 - Reinforcing Steel for Concrete Structures | Inspect and document:  
  - Storing and handling  
  - Placing and fastening  
  - Field bending  
  - Field repair  
  - Splices  
  - Placement in structural slabs  
  - Stud shear connectors for bridges | MURK 1d (DB CQC), Inspector's Daily Report |
| 557 – Superstructure Slabs, Sidewalks on Bridges, and Structural Approach Slabs | Inspect and document:  
  - Compliance with specified restrictions  
  - Forming  
  - Forms  
  - Support Systems  
  - Haunch depths  
  - Permanent corrugated metal forms  
  - Joints  
  - Drainage  
  - Placing and fastening reinforcing steel  
  - Concreting Operations (see 555)  
  - Finishing Integral Wearing Surfaces | MURK 1d (DB CQC), Inspector’s Daily Report |
| 558 - Longitudinal Sawcut Grooving of Structural Slab Surface | Inspect and document:  
  - Grooving layout  
  - Grooving geometry  
  - Grooving operations | MURK 1d (DB CQC), Inspector’s Daily Report |
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<td><strong>560 - Masonry</strong></td>
<td>Inspect and document:</td>
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<tr>
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<td>- Materials</td>
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<td></td>
<td>- Dimension stone masonry</td>
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<td>- Split face concrete masonry</td>
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<td>- Stone masonry</td>
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<td>- Rubble stone masonry</td>
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<td>- Precast concrete coping</td>
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<td>- Compliance with weather limitations</td>
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<td>- Construction (See Section 560, Part IX)</td>
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<td>- Dimension stone masonry</td>
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<td>- Split face concrete masonry</td>
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<td>- Stone masonry</td>
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<td>- Rubble stone masonry</td>
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<td>- Rubble stone masonry laid dry</td>
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<td>- Precast concrete coping</td>
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<td><strong>563 – Prestressed Concrete Units (Structural)</strong></td>
<td>Inspect and document:</td>
<td>MURK 1d (DB CQC), Inspector’s Daily Report</td>
</tr>
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<td>- When receiving units:</td>
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<td>- Inspector’s stamp of approval</td>
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<td></td>
<td>- Units against Report of Acceptance of Structural Concrete</td>
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PIN X735.82, Contract D900048  
**Part 3 - Appendix A**  
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DB CONTRACT DOCUMENTS

PART 3
APPENDIX B

CONSTRUCTION QUALITY CONTROL MATERIAL TESTING

Final August 30, 2019
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The Design-Builder (DB) shall use this Part 3, Appendix B as a guide for development of a Quality Control Plan as defined in Part 3, Section 4. The Quality Control Plan shall provide for materials Quality Control (QC) and Construction Inspection (CI) practices oversight. In general, the DB shall employ an independent Construction Inspection Professional Engineering Firm and a Materials Testing Firm or Laboratory that will be responsible to assure compliance of materials and construction inspection activities to all Department standards.

The DB shall provide in the Quality Control Plan all the various materials planned for use and the specific certifications and/or sampling and testing to be progressed for QC purposes to assure durability of the material. For development of the Quality Control Plan, the DB should be aware that the fundamental principle behind the approach is to assign the appropriate level of resources to monitor and evaluate each analysis category based on NYSDOT’s residual risk after the DB has completed construction. In general, the higher the residual risk for the performance of the material the higher the level of monitoring and verification. The stronger the relationship between the material property being tested and the material’s performance, the higher the level of monitoring and verification required.

The Construction Inspection Professional Engineering Firm’s QC operations shall be in conformance with Department practices as established in Specifications, Materials Methods, Materials Procedures, Materials Test Methods, Granular Control Procedures, and other Department documents, which can be found at the following websites:

**Standard Specifications and Standard Sheets:**

**Materials Bureau Forms/Manuals:**

**Guidance, Manuals, & Computer Applications:**

**Steel Construction Manual:**
https://www.dot.ny.gov/divisions/engineering/structures/manuals/scm

**Prestressed Concrete Construction Manual:**
https://www.dot.ny.gov/divisions/engineering/structures/manuals/pccm

**Geotechnical Engineering Bureau Forms and Manuals:**
https://www.dot.ny.gov/divisions/engineering/technical-services/geotechnical-engineering-bureau/manuals

The Documents found at the above website in effect on the proposal due date (as shown in the RFP Instructions to Proposers, Appendix A, Section A5.1) shall be applicable to the Project.
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Design and Construction Quality Control Plan Template

NYSDOT Design-Build Program

This document provides an outline of the format, minimum expectations and content of the quality plan expected from the design-build contractor. Each contractor shall update and modify this manual on each project. The contractor shall update any standards, procedures, and processes within this template to reflect the most recent NYSDOT standards and provisions outlined in the RFP.
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QP 100: Quality Control Plan Overview

100.1 GENERAL
This section shall summarize the overall purpose of the Plan.

It is intended that this Plan is a supplement to the Quality System requirements in DB Section 100 of the Contract Documents.

The Quality Control Plan shall describe in detail the Design Builder’s approach to achieving high quality work, their specific Quality Control Plan for this project and how the Design-Builder will engage the Department’s Design Quality Assurance Engineer and the Construction Quality Assurance Engineer in all activities described in the Quality Control Plan.

100.2 RESPONSIBILITIES
This section shall describe what entities (firms) and individuals are responsible for performing the various specific Quality Control and Quality Assurance tasks.

(Note: The following sections are to be included in the Plan. Specific detailed requirements are listed in the respective chapters of this Template. The overview section (QP 100) shall only provide a brief summary).

100.3 DESIGN

100.3.1 Design and Development Inputs
This section shall describe in general terms how design data is obtained and is managed and controlled so that all disciplines have the necessary current and correct data. It shall also list and describe all software that is intended to be used.

100.3.2 Design and Development Outputs
This section shall describe in general terms how intermediate submittals are scheduled and processed. It shall also describe how Release for Construction documents are developed from the concept designs and how they are handled in the QC/QA process.

100.3.3 Design and Development Review
The design and review process shall be presented in this section in graphical form in the form of a flowchart. Time duration for reviews shall be included in the flowchart.

Detailed Checking
This section shall list all documents that will be checked in detail. This list shall include as a minimum:

- Checking of calculations
- Checking of computer program input
- Checking of plans
- Checking of specifications and/or special provisions
• Checking of structural design plans and calculations
• Review of studies, reports, other design documents

Design Reviews
This section shall describe in general terms the ongoing checking and review process and procedures as the design progresses. To the extent possible individuals or titles of those persons responsible for the reviews shall be identified.

This section shall also describe the following procedures:

Discipline Coordination Reviews (DCR):
This section shall list the anticipated disciplines involved and shall describe in general terms how the design is coordinated between disciplines.

Independent Technical Reviews (ITR):
This section shall describe in general terms when and how independent reviews are to be performed. The level of design completion when reviews are to be completed, the number of ITR's and the expected durations shall be described.

Constructability Reviews (CR):
This section shall describe in general terms how constructability reviews are to be performed. The level of design completion at the CR shall be described. The comment resolution process shall be described in detail as well as the documentation of the resolution of comments.

Department Reviews
This section shall describe in general terms how the DB team will obtain, manage and address Department review comments during the design process.

Quality Assurance Audits
This section shall describe in general terms the frequency and the method in which audits are performed by the Design Builder.

Other Stakeholder Reviews
This section shall describe in general terms how the DB team will manage and address stakeholder review comments during the design process and how the documentation of the review process will be maintained.

Comment Resolution Meetings
This section shall describe in general terms the nature and frequency of comment resolution meetings between the Department and designers. The documentation of the meetings and the comments shall be described.

100.3.4 Design and Development Verification
This section shall describe in general terms the procedures to ensure that the design packages have incorporated all applicable requirements and have satisfied all design standards.

100.3.5 Control of Design and Development Changes

This section shall describe in general terms how design changes over the course of the Project are coordinated, documented and processed in reference to QA/QC.

100.4 CONSTRUCTION

100.4.1 Introduction

The following topics shall be included and discussed in this section in sufficient detail to introduce Construction Quality aspects of the Plan.

a. Identification of work that will be subject to QC.
b. Description of the procedures and methods of performing construction quality activities
c. Description of the general role of the Quality Manager
d. Include a listing of what Construction and Inspection Quality activities are included in the Plan and what activities (if any) are not included.
e. The means and methods of communicating between the design group and the construction group to ensure a coordinated and consistent quality in the finished product.

All Testing, Quality Control, Inspection and approval procedures must meet current NYSDOT Standards.

100.5 DEFINITIONS

Include the definition of all key terms that are used in the Quality Control Plan.
QP 101: Key Project Roles and Disciplines

101.1 SCOPE
This section shall identify key staffing positions, their responsibilities and the major and minor disciplines and support services required to complete this project.

101.2 RESPONSIBILITIES – DESIGN AND CONSTRUCTION
Project specific and functional titles (with specific names of individuals and their affiliation) for key staff and their specific function on the project shall be presented in this section. Every discipline shall be represented in the staffing. An organizational chart that shows the relationships to each other and reporting responsibilities shall also be included.

101.3 RELATIONSHIP BETWEEN FIRMS
This section shall explain the relationship between the members of the DB team.

It shall include the following statements that explain the contractual arrangements of the firms involved:

- Include a statement that the construction QC personnel (Construction Inspectors) may be employed directly by the QC Professional Engineering firm, or be employees of firms acting as sub-consultants to the QC Professional Engineering firm.

- Include a statement that the QC Professional Engineering firm and any firm acting as a sub-consultant to the QC Professional Engineering firm shall not be owned by or be an Affiliate of the Design-Builder, any Principal Participant or construction subcontractor.

- Include a statement that the QC Professional Engineering firm is distinct and separate from the design and construction production organization(s).

All QC Professional Engineering firm personnel shall be knowledgeable of the Project Quality Control Plan including construction QC requirements applicable to their work.

This section shall include the protocol for reporting deviations from approved procedures to the Design-Builder and the Department. It shall also include the means that the DB team will ensure that all personnel are knowledgeable of the Plan.

101.4 KEY PERSONNEL – DESIGN AND CONSTRUCTION
It is expected that the number of key personnel performing QA and QC reviews shall be commensurate with the size and type of project.

101.4.1 Quality Manager
Include in this section the name of the individual assigned to be the Quality Manager.

Include a detailed description of the specific role of the Quality Manager in implementing and ensuring compliance with the Quality Control Plan (QCP) for both design and construction and for coordination with the Department’s QA staff.
Include a listing of what activities the Quality Manager is responsible for and what activities (if any) are not included. As a minimum, the list of activities performed by the Quality Manager shall include the following:

- Conducting internal quality checks to verify conformance and compliance
- Reviewing and approving internal quality control audit reports
- Ensuring that project quality control records and documentation are reviewed, approved and maintained appropriately
- Attending Review, Progress and Comment Resolution Meetings as appropriate
- Implementing corrective and preventive action procedures to reduce or eliminate non-conforming work
- Providing a monthly QM Report that will be delivered to the Department’s Project Manager which will include but not limited to the following Project Management, Design Management and Construction Management topics:
  - Status of all required project plans
  - Status of on-time project delivery
  - Status of on-budget project delivery
  - Status of NCR process and any recommended process improvements
  - Design related issues in general
  - Design Unit submission, review and approval status
  - Status of Utility Deliverables, as obtained from the Utility Coordination Manager
  - Recommended supplements and changes to the Design Quality Management Plan
  - Status log of all NCRs
  - Constructability Review section prior to RFCs issued
  - Status log of Shop Drawings
  - Status of environmental commitments
  - Summary of CI staffing needs & limitation as depicted in the P6 schedule
  - Special inspection requirements or concerns resulting in the need for specialty inspection or training
  - Status of detailed review of all project quality control records for compliance with RFP and MURK
  - Status, concerns or issues with fabrication, materials, concrete/HMA plant or on-site construction quality
  - Status of Site-Manager utilization, including Item quantities, materials received certs and payments

101.4.2 Design Quality Control Engineer

Include in this section the name of the individual assigned to be the Design Quality Control Engineer.

Include a detailed description of the specific role of the Design QC Engineer in implementing and ensuring compliance with the Quality Control Plan and NYSDOT Standards.
Include a listing of what QC activities the Design QC Engineer is responsible for and what activities (if any) are not included. As a minimum, the list of QC activities shall include the following:

- Coordination and management of the QC activities and direct implementation of the QC Plan for design;
- Determining the staffing requirements for performing the required management and administrative duties for the design QC Engineers;
- Identifying project activities that require QC procedures and work with the QC Engineer to define the scope and content of each QC Procedure;
- Overseeing QC document management activities to ensure quality records are appropriately maintained and conform to NYSDOT Standards;
- Ensuring QC quality records are reviewed and approved by authorized personnel;
- Promoting awareness of QC requirements to QC Engineer personnel;
- Assuring QC activities are performed by properly qualified personnel;
- Attending Review Meetings as appropriate;
- Reviewing, approving and distributing Implementing QC Procedures;
- Reviewing and approving internal quality audit reports;
- Conducting internal quality spot-checks to verify conformance;
- Coordinating QC activities with the Department’s QA activities;
- Addressing programmatic issues within the QC Engineer’s organization.

101.4.3 Construction Quality Control Engineer

Include in this section the name of the individual assigned to be the Construction QC Engineer.

Include a detailed description of the specific role of the Construction QC Engineer in implementing and ensuring compliance with the Quality Control Plan and NYSDOT Standards.

Include a listing of what QC activities the Construction QC Engineers are responsible for and what activities (if any) are not included. As a minimum, the list of QC activities shall include the following:

- Coordination and management of the QC activities and direct implementation of the Construction QC Plan for construction
- Determining the staffing requirements for performing the required management and administrative duties for the construction QC Engineers
- Identifying project activities that require QC procedures and work with the QC Engineer to define the scope and content of each QC Procedure
- Overseeing QC document management activities to ensure quality records are appropriately maintained and conform to NYSDOT Standards
- Ensuring QC quality records are reviewed and approved by authorized personnel
• Promoting awareness of QC requirements to QC Engineer personnel
• Assuring QC activities are performed by properly qualified personnel or testing firms
• Reviewing and approving Inspection and Testing Plans for specific construction work elements
• Attending Review Meetings as appropriate
• Reviewing, approving and distributing Implementing QC Procedures
• Reviewing and approving internal quality audit reports
• Conducting internal quality spot-checks to verify conformance
• Performing statistical analysis of construction QC test data to identify adverse trends
• Coordinating QC activities with the Department’s QA activities
• Ensuring that the CI firm is inspecting work to match RFC quality field reviews
• Issuing nonconformance reports (NCRs) and validating NCRs issued by other QC staff when work is found to be nonconforming
• Monitoring the resolution of project NCRs, and responding to NC's issued
• Developing, reviewing, approving and implementing corrective action plans to address NCR’s
• Addressing programmatic issues within the QC Engineer’s organization

101.4.4 QC Engineer’s Support Staff
Describe in this section the anticipated number and composition of the QC Engineer’s support staff that will perform QC activities.

101.4.5 CQC Inspectors/Technicians
This section shall include a listing of the required certifications for Inspectors and Technicians as well as listing of their respective responsibilities.

101.4.6 QC Administrative Personnel
The roles and responsibilities of administrative personnel shall be identified in this section.

101.4.7 Quality Control Staffing Levels
This section shall describe how the staff size and composition will be managed during the course of the design review and construction inspection. An estimate of the maximum and minimum staff required during the course of the project shall be indicated.

101.4.8 Construction QC Testing Laboratories
This section shall describe how testing laboratories will be contracted, how their certifications will be checked and how the labs’ QC procedures are verified and audited by the Design Builder.
QP 200: Communication Protocols

200.1 PURPOSE
This section shall define the formal communication protocol and responsibilities between the Contractor, the Designer, the Construction Inspector and the Department.

200.2 SCOPE
This section shall cover in detail the method for managing and documenting written, verbal, telephone, e-mail and all other formal communication between all parties in the project.

200.3 RESPONSIBILITIES
The roles and responsibilities of specific individuals for maintaining and ensuring that communications are documented and performed appropriately shall be described in this section.

200.4 PROCEDURE
The protocol for maintaining and tracking written or verbal communication and Document Distribution shall be explained in this section.
QP 300: Discipline Coordination Reviews

300.1 PURPOSE
This section shall define in specific terms how a Discipline Coordination Review (DCR) is completed to formally obtain input from each discipline into each deliverable and to take advantage of opportunities identified as well as avoid conflicts between disciplines. A list of disciplines shall be provided.

300.2 SCOPE
This section shall define the procedure to review the items that are specific to Discipline Coordination Reviews associated with deliverable packages.

A listing of the disciplines involved in the design that will be included in the review shall be presented.

300.3 RESPONSIBILITIES
The responsibilities of the key staff in distributing the review packages, recording receipt of review comments and distributing the comments to respective staff shall be described. Time durations for the reviews shall be indicated.

300.4 PROCEDURE
The detailed procedure for performing Discipline coordination reviews shall be presented in this section. The manner in which the Department's QA Engineer will be integrated into the process shall be described.
QP 301: Independent Technical Reviews

301.1 PURPOSE
This section is applicable only if Independent Technical Reviews (ITRs) are required in the RFP or are proposed by the Design-Builder.

This section shall define in specific terms how an Independent Technical Review is completed to formally obtain input from a senior level engineer or technical expert who has familiarized himself with the project requirements but is independent of the preparation of the deliverable and is not otherwise involved in the project itself.

301.2 SCOPE
This section shall define in detail the procedures that will be used to perform independent technical reviews.

301.3 RESPONSIBILITIES
The responsibilities of key staff in the performance of Independent Technical Reviews shall be described in this section.

301.4 PROCEDURE
The procedure shall include the frequency, organization and determination of the items that are candidates for independent technical reviews. A detailed description of how the reviews will be performed shall be included. The Department’s QA Engineer's involvement in the process shall be described.
QP 302: Constructability Reviews

302.1 PURPOSE
The section shall explain how, when and by whom Constructability Reviews (CR) are completed to formally obtain input from the construction team associated with the project into each deliverable.

302.2 SCOPE
This section shall define in detail the items that are subject to Constructability Reviews associated with deliverable packages.

302.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of Constructability Reviews shall be described in this section.

302.4 PROCEDURE
The procedure shall include the method, frequency, organization and determination of the items that are candidates for constructability reviews. A detailed description of how the reviews will be performed shall be included. The Department's QA Engineer's involvement in the process shall be described.
QP 303: Design Review Comment Procedure

303.1 PURPOSE
This section shall explain in detail the technical review processes that will be used to ensure that all comments are tracked until they are incorporated or otherwise resolved and to ensure that all comments, responses and verification of resolution are documented.

303.2 SCOPE
This section shall describe comment resolution and tracking processes implemented in the development of the design. It shall explain how Constructability Reviews (CR), Discipline Coordination Reviews (DCR), Independent Technical Reviews (ITR), Department reviews and other reviews are documented and how comments are addressed.

303.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of this task shall be described in this section.

303.4 PROCEDURE
The procedure that will be used to process review comments shall be described in detail in this section and shall include the method, frequency and organization that will be used to ensure that comments are tracked and addressed. It shall also include the procedure for control of design development and inclusion of comments.
QP 304: Material Acceptance Procedure

304.1 PURPOSE
This section shall explain the material acceptance protocol. Construction materials shall not be incorporated into the project unless they have been accepted by the Quality Manager prior to incorporation. Reference and use of the Department’s Material Acceptance Procedure and Documentation requirements shall be made.

304.2 RESPONSIBILITIES
The responsibilities of the key staff in the performance of this task shall be described in this section.

304.3 PROCEDURE

304.3.1 Material Acceptance

304.3.1.1 Source of Supply Approval
This section shall describe how the source of supply is reviewed and approved by the Construction Quality Control Engineer.

304.3.1.2 Material Certification
This section shall describe in detail the process by which materials are accepted for use and incorporation into the project. It shall also describe how the certification records are maintained and how information is relayed to the construction site.

304.3.1.3 Offsite Inspection, Sampling and Testing for Material Acceptance
This section shall describe how offsite testing is performed, at what frequency and how documentation is maintained.

304.3.1.4 Material Receiving Inspection
This section shall describe how inspection for material received at the jobsite is performed and the process for acceptance/rejection is done.

304.3.1.5 Material Acceptance Identification
This section will describe how materials found to be in non-conformance with project requirements are processed at the job site. It shall describe in detail tagging procedures and how the materials are tracked until the non-conformance is resolved.
QP 400: Detailed Checking of Calculations

400.1 PURPOSE

This section shall define the process for preparation and checking of engineering calculations generated as a part of the Released for Construction (RFC) drawings as well as final designs.

400.2 INTRODUCTION

The method that will be used to prepare, check, document and archive design calculations shall be described in detail.

400.3 SCOPE

The checking method shall be applicable to and shall cover all calculations that are the basis for all study, design, construction, maintenance and procurement documents.

400.4 RESPONSIBILITIES

The responsibilities of the key staff in the performance and checking of calculations and performing QA/QC shall be described in this section.

400.5 PROCEDURE

A detailed step-by-step procedure for performing, reviewing, checking, documenting calculations for the design of the project shall be defined in this section.
QP 401: Detailed Checking of Plans

401.1 PURPOSE
This section shall describe the process that will be used to provide a uniform, orderly, and efficient method for checking drawings.

401.2 SCOPE
This section shall discuss the timing and methodology that will be used in the performance of detailed checks of in each phase of design.

401.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of detailed checking of plans and performing QA/QC functions shall be described in this section.

401.4 PROCEDURE
A detailed step-by-step procedure for checking plans shall be defined in this section.

The descriptions shall include:

1. Initiating the Checking Process
2. Checking
3. Correcting the Drawings
4. Verifying the Corrected Check Set
5. Drawing Change Management

402.1 PURPOSE
This section shall define the requirements for the checking of Specifications and Special Provisions.

402.2 SCOPE
This procedure shall apply to all final specifications and special provisions prepared for construction or procurement.

402.3 BACKGROUND
Some individual Release for Construction packages may include specifications or special provisions unique to that particular package. These special provisions shall be checked as indicated in the Procedure presented in this section.

402.4 RESPONSIBILITIES
The responsibilities of the key staff in the performance of detailed checking of specifications and performing QA/QC functions shall be described in this section.

402.5 PROCEDURE
A detailed procedure for checking specifications shall be defined in this section.
QP 403: Review of Studies, Reports, Other Design Documents

403.1 PURPOSE
This section shall describe the guidelines for review of documents other than engineering drawings and calculations.

403.2 SCOPE
This section shall cover the review procedure that will be applied for the review of all studies, technical reports, technical memoranda, or procedures contractually required to be provided to the Department.

403.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of detailed review of studies, reports, other design documents and performing QA/QC functions shall be described in this section.

403.4 PROCEDURE
A detailed procedure for checking of all studies, technical reports and technical memoranda shall be presented in this section.
QP 404: Detailed Checking – Structural Design Plans and Calculations

404.1 PURPOSE
This section shall describe the standards and procedures for an independent analysis (if required in the RFP or proposed by the DB) and for checking of bridge design calculations and for performing a design check of structural drawings.

404.2 SCOPE
This section shall explain in detail how the review of the structural design of major structures prepared by the Design Manager for Structures will be performed.

404.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of detailed review and checking of structural design plans and calculations shall be described in this section.

404.4 PROCEDURE
A detailed step-by-step procedure for checking structural design plans and calculations shall be defined in this section.
QP 405: Detailed Checking of Computer Program Input

405.1 PURPOSE
To provide for systematic checking of computerized design calculations to minimize the possibility of input errors.

405.2 SCOPE
This section shall explain the scope of the procedure to be used for checking input to software programs.

405.3 RESPONSIBILITIES
The responsibilities of the key staff in the performance of detailed checking of computer program input shall be described in this section.

405.4 PROCEDURE
A detailed step-by-step procedure for checking computer program input shall be defined in this section.
QP 406: Review of Shop Drawings

406.1 PURPOSE
This section shall describe the scope, responsibilities, and procedures for processing shop drawings, submittals for review and approval.

406.2 RESPONSIBILITIES
The responsibilities of the key staff in the performance of shop drawing review shall be described in this section.

406.3 PROCEDURES
A detailed step-by-step procedure for checking shop drawings shall be described in this section.
QP 407: Inspection and Testing

407.1 PURPOSE
This section will describe how inspection of the work and testing of materials is performed on site. It will also describe record keeping procedures and how document version control is managed.

407.2 PLANNING AND EXECUTION
This section shall describe the procedures for inspection and testing efforts. A flowchart indicating the various steps in this process shall be included. The process shall describe and include personnel certification requirements, specification and procedural references and indicate the standard forms associated with the anticipated construction QC inspection, sampling and testing activities for the project.

407.3 INSPECTION AND TESTING RECORDS
This section shall include a description of how documents are archived, disseminated and maintained by the DB Team. Department forms and procedures for Inspection and Testing shall be used.
QP 500: Requests for Information

500.1 PURPOSE
This section shall describe the process that will be used to address Requests for Information (RFIs) or clarifications to Released for Construction documents requested by the Contractor or the Department.

500.2 SCOPE
This section shall define the interaction between the Department, Contractor, and Designer when a request for information or clarification to RFC documents is required.

500.3 RESPONSIBILITIES
The responsibilities of the key staff in responding to RFI’s shall be described in this section.

500.4 PROCEDURE
A detailed procedure for responding to RFI’s shall be described in this section.
QP 501: Notice of Design Change

501.1 PURPOSE
This section shall describe the procedure for revising plan sheets which were previously issued as 'Released for Construction (RFC)'. This procedure applies to design changes that are identified by the Designer only.

501.2 SCOPE
During the course of construction, it may become necessary to revise RFC plans due to changes in design progress, a conflict between design elements, or discovery of a design error. This section shall describe how these changes are executed.

501.3 RESPONSIBILITIES
The responsibilities of the key staff in processing NDC’s shall be described in this section.

501.4 PROCEDURE
A detailed procedure for processing NDC’s shall be described in this section. This section shall also describe how RFC drawings are revised, how revisions are tracked and how the changes are relayed to the field.
QP 502: Quality Control Oversight

502.1 PURPOSE
This section shall indicate how the DB team will perform Quality Control oversight during design and construction. The Design-Builder shall explain in this section how the QC Oversight will ensure that the QC methods being used on the project are effectively providing a high standard of quality in the design and the construction.

This section will also describe how the Audits are documented, tracked, archived and sent to the Department. Measures to eliminate deficiencies are to be included in the documentation as well as follow-up to ensure that deficiencies have been corrected.

502.2 RESPONSIBILITIES
The responsibilities of the Quality Manager assigned to perform Oversight of the QC functions to ensure that the QC Plan is being adhered to shall be described in this section. This section shall describe the method, frequency and documentation of QC Audits. It shall also describe the process for tracking and resolving non-conformances of the QC Plan and process.

502.3 INDEPENDENT SAMPLING AND TESTING ASSURANCE
This section shall describe the method, frequency and documentation of Oversight sampling and testing. It shall also describe the process for tracking and resolving non-conformances of the QC Plan and process.

502.4 QUALITY CHECK POINTS
Quality check points shall be identified in this section. A description of documentation associated with QCPs shall be included.

502.5 SCHEDULING AND NOTICES TO THE DB TEAM
This section describes the manner and timing of notifications to the Quality Manager of upcoming construction work so that the QC work is properly coordinated.
QP 503: Non-Conformance Reports

503.1 PURPOSE
This section shall indicate how the DB team will ensure that Non-Conformance Reports (NCR’s) will be addressed properly, who is the responsible key staff for the disposition of NCR’s and how the QC Plan will be revised and updated as needed to prevent re-occurrences of non-conformances.

This section shall also describe how NCR’s are documented, tracked, archived and sent to the Department. Measures to eliminate non-conformances are to be included in the documentation as well as follow-up indicating the disposition of each occurrence.

503.2 RESPONSIBILITIES
The responsibilities of the Quality Manager assigned to addressing NCR’s shall be described in this section. It shall also describe the process for tracking and resolving non-conformances in the design and in construction.

503.3 CORRECTIVE AND PREVENTIVE ACTION
This section shall describe the procedure that the Design-Builder will implement to document, address and track corrective and preventive actions. A determination of the cause for the non-conformance shall be documented.

NCR’s may be the result on internal (design-builder) or external (Department) audits, inspections or reviews. Once the cause of the NCR has been determined, specific corrective and preventive actions shall be listed. This section shall explain how the DB team will determine the cause and the degree of corrective/preventive action to be used for every issue. It shall also explain the manner in which the proposed action is reviewed and approved by the Quality Manager.
VAN WYCK EXPRESSWAY (VWE)
CAPACITY AND ACCESS
IMPROVEMENTS TO JOHN F. KENNEDY
(JFK) AIRPORT PROJECT -
CONTRACT 1

PIN X735.82, Contract D900048

DB CONTRACT DOCUMENTS

PART 3
APPENDIX D

QUALITY ASSURANCE PLAN
PROGRAM GUIDE

Final August 30, 2019
Quality Assurance Plan Program Guide
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SECTION 1  OVERVIEW

The primary objectives of this guide are to:

- Provide consistency and practical guidance in the Design-Build Quality Assurance Program implementation processes on NYSDOT Design-Build projects;
- Outline the processes for reviewing and accepting the Design-Builder's Quality Control Plan for control of design and construction activities; and
- Define expected Department oversight staffing and resources needs as well as define the specific roles, responsibilities and procedures for design and construction oversight; inclusive of Design Reviews, Construction Inspection, Material Acceptance that incorporates Department QA actions, verification sampling and testing, dispute resolution, and Independent Assurance Sampling and Testing requirements progressed during construction to aid in the final acceptance process of the project.

This Quality Assurance Plan Program Guide is intended to outline the Departments roles and responsibilities to provide stewardship and Design/Construction oversight for all sizes and types of Design-Build Projects. This Guide, is meant to dovetail with the Design-Builder's Quality Control Plan (ref. Part 3, Section 4). Taken together, they form the Quality Control/Assurance Program for the Project. Once the Design-Builder's QC Plan is approved the Department may develop a more tailored Project Specific Quality Assurance Plan; thereby, clearly assigning appropriate levels of Department Oversight.

In conforming to these minimum requirements, the Design-Builder shall satisfy both State and Federal design and construction quality requirements (Ref. 23CFR637).

This Guide’s primary purpose is to define the Department’s Project level oversight for design and construction. The Guide should provide further insight into the Department’s Oversight and Verification activities that will aid the Design-Builder in the preparation of an acceptable QC Plan (reference: Part 3, Sections 4, 5, and 6). The Design Builder's Quality Control Plan should define a series of business processes that articulate the Design-Builder’s approach to design and construction quality management, quality procedures, records keeping and document management and control that the Design-Builder shall adhere to throughout the duration of the Project. The QC Plan should describe the reporting and documentation processes and should outline appropriate responsibilities of the Design-Builder’s organization that will implement the QC Plan. The QC Plan should integrate Design QC and Construction QC procedures and processes.

1.1  BACKGROUND

On traditional NYSDOT Design-Bid-Build (DBB) projects, the acceptance decision strictly utilizes the Departments (QA)sampling and testing results based upon various specification requirements, Material Methods, Material Procedures, the Material Inspection Manual (MIM), Control of Granular Materials Procedures, the Construction Inspection Manual (CIM), Manual of Uniform Record Keeping (MURK), and other Department requirements. This method of acceptance encompasses all of NYSDOT’s traditional DBB projects; whereby, the Department, or its agents, performs QA sampling and testing to form the final material acceptance. Since all the data that went into the acceptance decision was solely the Departments (QA) data, and did
not incorporate Contractor’s QC data, there was no need for verification sampling and testing of the QC data. On Design-Build Projects, however, where sufficient volumes of material and the frequency of both QC and QA testing allows, NYSDOT has chosen to incorporate the Design-Builders Quality Control (QC) sampling and testing data into the acceptance decision; thereby, transferring more responsibility onto the Design Builders QC program. Since the Design-Builder’s QC sampling and testing is used as part of the acceptance decision, the Code of Federal Regulations (CFR) requires verification of the Design-Builder’s sampling and testing results by the Department, or its agents. The use of Design-Builder test results as part of the acceptance decision should be carefully evaluated for each project because a significant Department owner verification program is instrumental to the project’s success. Should, due to the size and complexity of the project, volumes of material and respective frequencies of QC and QA testing prohibit the use of a verification program (i.e., the inability to run statistical validation for Risk Factor 1 materials), then material acceptance will be based upon NYSDOT’s QA test results under Risk Factor 1 – Low Volume, RF-1 (LV).

1.2 FHWA REQUIREMENTS

FHWA’s sampling and testing regulation titled “Quality Assurance Procedures for Construction” was published on June 29, 1995 as Title 23, Code of Federal Regulations, Part 637, (henceforth referred to as the CFR). This regulation permits the use of Design-Builder test results in the acceptance decision, “provided that adequate checks and balances are in place to protect the public investment.” The purpose of the CFR is, “to prescribe policies, procedures, and guidelines to ensure the quality of materials and construction in all federally-aided highway projects on the National Highway System.” FHWA provided guidance and recommendations for the use and validation of Design-Build test results in the acceptance decision, recommended quality measures, and identified Design-Builder / Department risks in FHWA Technical Advisory T 6120.3, issued on August 9, 2004. FHWA later issued a non-regulatory supplement, NS 23 CFR 637B, on July 19, 2006 to provide additional guidance. Lastly, FHWA issues Technical Advisory HRT-12-039, in April of 2012, to further explain QC and QA requirements.

The following key points from the CFR, technical advisory, and non-regulatory supplement as it pertains to the use of Design-Builder test results in the acceptance decision.

1. Quality Assurance Program. Each State Highway Agency (SHA) must develop a quality assurance program that will assure materials and workmanship incorporated into each federally-aided highway construction project on the national highway system is in conformity with the requirements of the approved plans and specifications, including approved changes. The program must meet the criteria in 23 CFR 637.207 and be approved by FHWA. Each SHA’s quality assurance program shall provide for an acceptance program and an independent assurance (IA) program.
2. Independent Assurance Program. The Design-Builder’s QC Material Testing Technicians and the owner verification sampling and testing Material Testing Inspectors are evaluated by an independent assurance (IA) program. The program is focused on evaluating Material Acceptance Technicians/Inspectors sampling and testing procedural techniques and proper use and calibration of testing equipment to insure that it complies with accepted test methods. The program is administered by the Department, with a goal of conducting one IA inspection per material acceptance inspection technician per year. The IA inspection may cover a variety of test methods used in the acceptance decision.

3. Acceptance Program. The Design Builders’ Quality Control sampling and testing results may be used as part of the acceptance decision provided that:

- The sampling and testing has been performed by qualified laboratories, using qualified sampling and testing personnel.
- The quality of the material has been validated by verification of the testing and sampling. The verification sampling will be performed on samples taken independently of the quality acceptance samples.
- An IA program will evaluate the quality control sampling and testing.

4. Verification Sampling and Testing. The verification sampling and testing are to be performed using random independent test samples taken by qualified testing personnel employed by the SHA or its designated agent, excluding the Design-Builder and vendor.

5. Dispute Resolution System. If the results from the quality control (QC) sampling and testing are used in the acceptance program, the SHA must establish a dispute resolution system. The dispute resolution system provides a process to resolve discrepancies occurring between the Departments QA verification sampling and testing and the Design Builders quality control acceptance sampling and testing. The dispute resolution system may be administered entirely within the SHA, or by a third party.

6. Random Samples. All results used for Acceptance (QA and QC when verification is required), sampling, and testing must be obtained from random sample points.

Information contained in FHWA Technical Advisory T 6120.3 (link shown above) supersedes earlier FHWA direction and stands as the most current guidance on this subject matter. The advisory discusses the use of Design-Builder tests results for acceptance purposes, the requirements for verification sampling and testing, and statistical validation procedures on random-independent samples. In the discussion on validation procedures performed on independent samples, the Technical Advisory recommends the use of the statistical tools such as the F-test and t-test because, “they have more power to detect actual differences.” More information on statistical procedures can be found in course material for National Highway Institute (NHI) Course No. 134042, other FHWA publications, or regular statistics textbooks or handbooks. A review of current state construction Design-Build QA programs can be found in NCHRP Synthesis 346.

1.3 GENERAL APPROACH TO QUALITY

In accordance with Part 3, Section 4, the Design-Builder must develop and submit a Quality Control Plan for Department approval within 30 days of Notice to Proceed. This Plan
encompasses QC activities and procedures for both design and construction operations. Included in the Quality Control Plan are all the personnel, management, organizational functions and responsibilities, documentation control, and records that will be used to control and ensure the appropriate project quality. This plan further addresses the specific design QC and construction QC oversight as required in Part 3, Section 5 and 6 respectively. Tied to the QC operations established by the Design-Builder and approved by the Department, are the design and construction oversight actions of this Guide that define the Department's roles, responsibilities and procedures.

Under Design-Build, the Contract places the responsibility and liability for the design and construction of the Project with the Design-Builder. The Design-Builder must follow the terms of the Contract documents and fulfill its responsibilities as outlined therein for the design and construction of the Project. The Department does not need – and is not obligated – to review all Project documents or construction operations to ensure that the Design-Builder is meeting its contractual obligations because the Design-Builder is responsible for following the terms of the Contract, conducting QC, monitoring and inspecting all the Work, and producing the agreed-upon deliverables according to the schedule and cost outlined in the executed Contract. The Design-Build approach is very different from traditional design-bid-build (DBB) method of project delivery, whereby a Department pays a contractor to build an asset, and the owner retains a significant role in controlling and approving the means, methods and materials used by the DBB contractor, approving design changes, inspecting the project during construction, performing QC and QA, and accepting the work at the end of construction. For a Design-Build Project, it is important that the Department's staff are aware of the Design-Builder's and the Department's respective roles and responsibilities. This Guide is intended to assist them in this regard.

The spirit of a Design-Build methodology is that the Department provides the Design-Builder flexibility to determine the best means and methods by which to comply with the requirements of the Contract Documents. The Department's responsibility in formulating acceptance decisions, is to conduct audits and inspections, as necessary, to determine whether the Design-Builder is following the processes defined, whether the Contract requirements have been met or not, and to communicate to the Design-Builder instances of non-compliance. The Department, however, is not obliged to suggest – and should refrain from suggesting – to the Design-Builder any approach to achieve compliance with the requirements of the Contract Documents.

It is important for the Department to follow the established Contract processes when providing oversight and to perform oversight without prescribing the means and methods by which the Design-Builder is to produce the deliverables. Department staff should refrain from directing the Design-Builders operations, unless it is a matter of safety, or providing an “acceptance or rejection” and simply audit the Work and offer comments. If necessary the Department should issue Non-conformance Reports.

The Quality Assurance Program (QAP) for Design-Build projects consists of the use of Qualified/Certified Inspection Technicians, Qualified Material Testing Laboratories, the Design-Builders Quality Control (QC) program, the Department's Acceptance (QA program) that is based upon either random independent sampling and testing and/or the incorporation of QC sampling and test data once verified, and the Independent Assurance Sampling and Testing Program (IA).

The purpose of this guide is to provide statewide consistency and a programmatic approach to Design and Construction Oversight for Design-Build projects. It addresses Design Review procedures as well as materials and construction procedures for QA oversight including when
and where the Design-Builder’s test results are used in the acceptance decision, regardless of how the project is funded. It clarifies federal requirements relating to QA and verification procedures related to owner verification. Any modification to the QAPPG requires review and approval by NYSDOT and FHWA.

For Construction Material Acceptance, when the Design Builder’s QC test data is used in the acceptance decision, as inspected per the recommended frequency established Part 3, Appendix D – Attachment 1, NYSDOT is required to perform verification testing to verify and sometimes statistically validate the test data used by the Design-Builder. When the Design Builder’s QC test data is not used in the acceptance decision, NYSDOT will follow the prescribed recommended minimum testing frequencies as defined for RF-1 (LV), RF-2, and RF-3 materials.

To avoid the appearance of a conflict of interest, any (non-State DOT) qualified laboratory will perform only one of the following types of testing on the same project:

- QC testing,
- QA testing,
- Verification testing for the owner,
- IA testing, or
- Referee testing.
SECTION 2  QUALITY SYSTEM / QUALITY CONTROL PLAN REQUIREMENTS

The Design-Builder is required to develop a Quality Control Plan for the Project and submit it to the Department for approval in accordance with Part 3, Section 4. The Design-Builder’s Quality Control Plan is required to describe in detail the Quality System to be implemented by the Design-Builder’s organisation at all levels, and describe all QC processes and procedures. Essentially, the Quality Control Plan will cover all aspects of all services rendered by the Design-Builder, materials supplied, design and construction activities, environmental compliance, health and safety, and all other works performed, including temporary works and materials which might influence the quality of the permanent works.

The Contract requirements stipulate that the Design-Builder is required to employ an independent Professional Engineering Firm to undertake QC Construction Inspection of the Design-Builder’s construction of the project (see Part 3, Section 5).

The Design-Builder is required, in accordance with Part 3, Section 4.1, to submit its Quality Control Plan to the Department for approval within 30 days of Notice-To-Proceed. The Design-Builder’s Quality Control Plan shall be developed in accordance with the requirements of Part 3, Section 4 and shall describe the Quality System to be implemented at all levels of the Design-Builder’s organization, (including design and construction Subcontractors), and shall describe all QC processes and procedures. The Department’s required format for the Quality Control Plan, describing various sections / heading and descriptions of details for each section will be provided to the Design-Builder so that every Quality Control Plan is consistent and easier for Department staff to review and understand.

As per the requirements of Part 3, Section 4.1, the Quality Control Plan is required to be developed to reflect a minimum level of inspection and documentation consistent with sampling and testing frequencies found in NYSDOT Manuals (Contract Administration Manual, Materials Inspection Manual and Construction Inspection Manual).

The Department will review, and approve the Design-Builder’s Quality Control Plan. Thereafter, the Department will audit the procedures outlined in the Quality Control Plan and conduct oversight activities to ensure the Design-Builder’s design and construction work and/ or other activities are in compliance with the defined Quality Control Plan procedures and the Contract Requirements.

The Department’s Project Manager will direct a member or members of the Department’s staff to be responsible for reviewing the Design-Builder’s Quality Control Plan and all revisions to same as the work progresses. The review may require consultation with multiple disciplines within the Department to insure that proper procedures and processes are being proposed. The responsible reviewer should make a recommendation to the Department’s Project Manager to approve the DB Quality Control Plan as is, or provide recommended improvements. The Department’s Project Manager will formally relay the approval/comments back to the Design-Builder in a timely fashion. Unless otherwise stated in the contract documents, the maximum turnaround time for this review is 28 calendar days from the date of receipt of the Quality Control Plan.

On receipt of the Design-Builder’s Quality Control Plan, the Department’s responsible person(s) appointed by the Department’s Project Manager shall review the Quality Control Plan to ensure that:
• It is developed from, and consistent with, the Initial Quality Control Plan that was submitted as part of the Design-Builder’s Technical Proposal at RFP stage.

• The Quality Control Plan follows a prescribed Department outline.

• The Quality Control Plan clearly articulates the processes and procedures the Design-Builder’s staff will follow in executing an activity.

• The Quality Control Plan for the Design and Construction Phase is consistent with the Initial Quality Control Plan and expanded accordingly in accordance with the Contract Requirements, and in particular the requirements as outlined in Part 3, Section 4.

• The Quality Control procedures for Design and Construction are coordinated and compatible with each other.

• It adheres to the requirements as outlined in Part 3, Section 4.

The Design-Builder is required to update the Quality Control Plan throughout the Project duration to reflect current or changed conditions as the Works progress. Each such revision is required to be submitted to the Department’s Project Manager for approval within 30 days of the identification of a need for a revision (Part 3, Section 4.2.3.2). Each revision of the Quality Control Plan may be similarly reviewed by the Department. The responsible people performing reviews will preferably include staff with Design and Construction experience.
SECTION 3 DESIGN MANAGEMENT AND DESIGN QUALITY ASSURANCE

The Department's representative, the Design Quality Assurance Engineer (DQAE), will provide continuous design oversight throughout the Project. See Sections 3.1 through 3.6 for a discussion of the Department’s design oversight activities.

Design will not be considered complete until all As-built Plans have been reviewed and approved by the Department.

The Department and the Design-Builder will meet and mutually agree on the schedule and duration of Design Reviews. The initial schedule will be verified and modified by mutual consent during the course of the Contract. The Design-Builder is required to give the DQAE at least one week’s notice prior to any Design Review.

3.1 GENERAL

The contractual requirements for design management and Design QC are the primary responsibility of the Design-Builder rather than the Department and are presented in Part 3, Section 5. The following sections, based on Part 3, Section 5, highlight the Department’s Design QA activities.

The Design-Builder is required to identify Design Units, those components of the Project that will be produced as an integral, but independent, component of the Project. A Design Unit will have a single “responsible engineer” who will direct and sign off on the final design of that component. Within 30 days of NTP, the Design Builder shall provide a written report identifying each Design Unit. The report shall include the Design Unit description and the planned review stages and dates, including specific information to be reviewed. (Ref. Part 3, Section 5.2 Design Units)

For example, a Design Unit may be any of the following:

- A bridge;
- A section of roadway;
- A retaining structure;
- Certain Utility Relocations; or
- Work Zone Traffic Control.

The identification of Design Units is intended to facilitate scheduling of Department participation in the design and Design Review processes.

The stages of design development are designated as follows:

- Definitive Design - The stage of design development where design concepts and parameters are established that will be followed through to completion of the Project;
- Release for Construction - The stage of design development after Final Design where
Design Plans and Project Specifications for a Design Unit or a component thereof are 100% complete and satisfy the requirements of Part 3, Section 5;

- Interim design - The stage of design development after Definitive Design where the Design Plans and Project Specifications for a Design Unit are at the 60% to 80% stage of completion;

- Final design - The stage of design development, after Interim Design, at which time the Design Plans and Project Specifications for a Design Unit are 100% complete;

- Working Plans, which includes working drawings, shop drawings, fabrication drawings, and similar documents that provide more specific construction detail; and

- As-built design, the plans and specifications that actually represent the as-constructed project.

Typically “Design Acceptance” by the Department will not take place until the As-built Plans have been reviewed and approved; however, the Department has a responsibility to review and comment on the proposed design.

During the course of the Department’s participation in design reviews, Department representatives will be careful about offering, suggesting, or ordering solutions to design problems. The Department may offer or suggest possible solutions to the Design-Builder with the express provision that the Design-Builder is not bound to accept the suggestion. Department comments during the review process should focus on whether or not the proposed solution or process meets the contract requirements as specified.

### 3.2 DESIGN WORKSHOP

As noted in Section Part 3, Section 5.11.1, within 10 days of NTP, the Design-Builder will arrange a design workshop to familiarize the Designer’s personnel and the Department (and Stakeholders, if invited by the Department) review personnel with the design concepts, issues, status, and review procedures.

The Department and Design-Builder will jointly develop the agenda of the workshop and how it will be organized (i.e., by Design Unit and engineering discipline). The intent of the workshop is to make the subsequent Design Reviews more effective and efficient for all parties. The workshop will focus on a review of the critical design elements and criteria and on how the Designer plans to organize its design and conduct the reviews.

The Design-Builder is responsible for scheduling and conducting Design Reviews with the Department to meet design and/or construction needs of the Baseline Project Schedule. The Design Review process and frequency, duration, and intensity of Design Reviews will vary with the complexity of the individual Design Units and the associated construction activities. The Design-Builder shall include the agreed Design Review schedule for all Design Units as part of the Baseline Project Schedule. The agenda will include developing agreements regarding time for design reviews (see Part 3, Section 5.9). The duration of Design Reviews will be discussed and mutually agreed between the Department and Design-Builder during the Design Workshop and verified and modified by mutual agreement during the course of the Project. The Design-Builder will give written notice of scheduled Design-Reviews to the DQAE at least one week
prior to any review.

Department participation in design task force or discipline meetings should be discussed to facilitate the “over-the-shoulder” (Oversight) Design Review process. The roles and relationships of the Designer and Department staffs should be discussed and documented, including desired lines of communication (Reference Part 3, Section 5).

The interaction between Designer and Department staff will be continuous throughout the design process through the “over-the-shoulder” reviews that typically would consist of activities, such as:

- Participating in design meetings;
- Responding to design requests for information or clarification; and/or
- Auditing the design QC process and records.

Designer/Department contact will not be limited to Design Review periods as success of the DB project may be jeopardized.

Design Plan and Project Specification reviews and reviews of other Design documents will take place as scheduled by the Design-Builder to meet its design and construction schedule.

All agreements and understandings reached during the design workshop will be documented in writing and agreed to by the Design-Builder's Project Manager and the Department's Project Manager.

3.3 DEPARTMENT’S ROLE AND DESIGN QUALITY ASSURANCE

The Department’s project staff oversight role during design and Design Review will consist of monitoring and auditing design progress, interpreting contract requirements, and verifying design compliance with Contract requirements.

The Department’s oversight roles and activities relating to design will include, but not be limited to, the following:

- Assisting in providing interpretation and answers regarding Contract requirements on a “real time” basis, often on a daily basis (such involvement is often referred to as “over-the-shoulder” review). By having continuous contact during the design process, the Department staff should face no “surprises” during the Design Reviews. Department staff should know how the design is progressing and be fully informed of the issues;
- Providing input and participation in the review process as agreed during the design workshop;
- Verifying that the design meets the overall Contract requirements, inclusive of any environmental mitigation commitments as defined during the NEPA process and included in the overall Contract requirements. The Department’s participation in Design Reviews will not usually involve detailed checks of plans and calculations, except in special cases;
- Verifying through audits of design QC process and associated records that the Design-
Builder’s Design Quality Control Engineer (DQCE) is fulfilling his/her responsibilities and that the design quality procedures contained in the Quality Control Plan are being followed. An audit may include detailed checks of plans and calculations in some cases;

- Verifying Design-Builder’s progress for payment purposes; and
- Providing consultation and written comment at the successful completion of each Design Review.

The DQAE and other participants in design reviews will record their comments on Form DR (Design Review Comments).

The DQAE should record daily activities and observations on Form MURK 2b (DB-DQAE) (Exhibit V – Forms for Department Use).

During the design process, the Departments’ Oversight consists of two distinct elements:

- Auditing the Design-Builder’s Quality Control Plan Processes and Procedures; and
- Participation in the Design Review Process.

**Categorization of Levels of Review**

The level of review undertaken by the Department personnel will be tailored to the complexity, importance and level of risk of the Design Unit in question and will therefore be based on the Design Builder’s Design Unit Schedule as submitted with his proposal and finalized within 30 days of NTP.

Appropriate levels of review will be determined by the DQAE after a review of the Design-Builder’s Design Unit Listing.

In addition to the design “over the shoulder” review the following oversight approach will be followed:

**Level 1 Review.** Design packages of particular importance/complexity and risk – (Work Zone Traffic Control, Bridge Foundations, etc) shall be subject to a Level 1 Review. Initially, a minimum of 10% sample rate frequency of important and/or complex design packages submitted shall be applied potentially reducing to a 5% sample rate when satisfactory compliance has been demonstrated. Conversely, should compliance not be demonstrated satisfactorily, the sample rate will be increased. A 20% sample rate is proposed for a number of design elements.

For Level 1 Reviews:

- Check all items as required under a Level 3 review; and
- Also conduct a full detailed review (inclusive of independent calculations, assumptions, etc) of the design to be carried out to examine full compliance with the Contract.

**Level 2 Review.** These reviews involve design submissions that involve aspects that could involve public safety or public perception significance (e.g. bridge main span, rail interface,
general road alignment, junction layouts, etc.) will be subject to a Level 2 review.

For Level 2 Reviews:

- Check all items as required under Level 3 review, and:

- Provide a focused review on just those identified limited number of critical public safety/public perception design elements

**Level 3 Review.** All design submission shall be subject to Level 3 Review.

For Level 3 Reviews:

- Check that all documents are provided;
- Check all certificates have been signed;
- Check the concepts appear correct and is consistent with the Definitive Design
- On a page/drawing turn basis, check if the design appears to comply with the Contract Requirements; and
- Check for obvious deficiencies.

On completing a review of Design documents, the Department may respond using one of two forms: Form DR (for comments) or Form NC-D (for non-conformances). The Design Builder is obligated to address these comments in consultation with the Department (Part 3, Section 5.8.5). The resolution of all comments and NC-D is tracked through the Design Builder’s Quality System.

### 3.4 DESIGN REVIEWS

Design Reviews will be conducted at each of the following stages of design development:

- Working Plans
- Definitive Design
- Interim Design
- Final Design
- Release for Construction
- Design Changes
- As-built Plans

The Design-Builder’s DQCE is responsible for conducting the Design Reviews with Department and Stakeholder participation, except for the As-built reviews. The review of As-built Plans will be performed by the Department with Design-Builder participation. FHWA participation can be
expected in all Federal Aid funded projects “as-built” design reviews. Design Reviews are also required for all design changes that occur during design and/or construction.

Design Reviews are normally conducted in the offices of the Designer or Design-Builder. Design Reviews do not consist of packaging formal submittal documents and sending them off to Department offices for formal written reviews. If assistance from other Regions, the Department’s main office, or Stakeholder staff is required for a review, the Department project staff will invite them to participate in the review.

The Department may wish to participate in the review of Working Plans, but will not actually review and approve them.

The Department’s DQAE may provide Consultation and Written Comment on the design product before the design is released for construction. This Consultation and Written Comment does not constitute approval of the design. Design acceptance will not be given until the end of the Project after all As-built Plans have been reviewed and accepted.

3.5 NEGOTIATION OF ORDERS-ON-CONTRACT THAT INCLUDE DESIGN

The Department’s DQAE will be involved in the negotiation of Orders-on-Contract that include design work. Design costs must be negotiated separately.

3.6 DESIGN FORCE ACCOUNT WORK

The DQAE will be responsible for verifying the work involved in design Force Account Work and for signing-off on the Design-Builder’s design Force Account records on a daily basis. The actual mechanics of how this will be done will be covered in the initial design workshop or as part of the negotiation for extra work. Force Account records for design will be kept separate from construction Force Account records because different criteria apply.
SECTION 4 CONSTRUCTION MANAGEMENT AND CONSTRUCTION QUALITY ASSURANCE

4.1 GENERAL

As described above, Quality Assurance consists of those actions performed by the Department to verify the Design-Builder’s Quality Control Plan is being adhered to, that the Contract requirements are met and that all Department standards are met. On Design-Build projects the Department representatives are conducting two functions; one is to ensure that the Design-Builder is following the QC Plan procedures, and the second is to verify workmanship and when applicable the Design Builder’s QC material testing data.

The Design-Builder is responsible through the Construction Quality Control Engineer to determine acceptability of materials for use and that proper construction practices are employed. Typically, adherence to Department approved materials requirements with appropriate sampling and testing methods and frequencies following Department procedures is expected. The Construction QC Engineer should also perform inspection of construction operations and progress documentation following MURK procedures, unless defined otherwise in the Quality Control Plan.

The Department’s QA process confirms both the Design-Builders adherence to the Quality Control Plan and bases material acceptance through either verification of QC data or QA acceptance, so that when the project is complete, final acceptance can be made with reasonable assurance that materials are acceptable and that construction procedures were progressed in a manner to assure the long-term durability and performance of the project.

The following listing of activities is an overview of the Department’s Construction Quality Assurance Engineer oversight roles and activities relating to construction Quality Assurance of the Project. Refer to Part 3 Sections 5 and 6 and Part 3 Appendix D – Attachment 1 for more details regarding the Department’s role in Construction Quality Assurance.

- Verifying that current stamped and signed Design Plans and Project Specifications are on-site;
- Confirming that the Design-Builder’s Construction QC staff:
  1) have the specified qualifications, licenses, and/or certifications;
  2) are present to observe and control the work;
  3) are performing their duties in accordance with contract requirements, specifically those specified in Part 3, Section 6; and
  4) are conducting sampling and testing of materials at the proper frequencies.
- Confirming if differing site conditions and/or significant changes in the character of the work occur;
- Verifying progress, reviewing and approving payment requests. At a minimum a report comparing all QC and QA material tests to acceptable contract tolerances, with sign-off from CQAE will be attached to each payment DWR. Test results and certifications (Status B
Auditing the Design-Builder’s construction QC records to verify that the Design-Builder is maintaining quality and is performing its QC responsibilities, and, if necessary, issuing Non-Conformance Reports for the Design-Builder to conform to the Quality Control Plan and to make corrections and preventive actions;

Verifying records of Force Account Work. The Design-Builder will be responsible for maintaining the Force Account records, but the Department’s staff will spot-check the labor, equipment, and materials being used;

Spot-checking measurements of any work paid on the basis of quantities and Unit Prices;

Auditing safety and security records and checking of the qualifications of safety and security personnel;

Spot-checking for compliance with Design Plans and Project Specifications, conducting either verification (QA) sampling and testing and comparing Department’s CQAE records with the Design-Builder’s construction QC Inspection results, or QA acceptance sampling and testing;

Reviewing and spot-checking Design-Builder’s Work Zone Traffic Control activities and installations;

Participating in release for construction Design Reviews and reviews of Work Plans;

Participating in the reviews of As-built Plans;

Ensuring the Design-Builder is complying with the QC plan processes and procedures;

Assisting the Design-Builder in coordinating with appropriate State or federal agencies should unknown, unidentified Hazardous Materials be encountered;

Spot-checking the Design-Builder’s QC Inspectors’ records for the remediation of Hazardous Materials;

Performing Construction QA and testing of materials to either verify the Design-Builder’s QC materials test data or accept materials based on QA test data. All QA tests will be assigned to work items in the SiteManager Q contract;

Coordinate with NYSDOT Regional IAST Staff to ensure that appropriate project staff get IA inspected;

Monitoring Design-Builder’s Utility Relocations and installations; and

Verifying qualifications of Design-Builder’s environmental staff, spot-checking of Design-Builder’s compliance with environmental requirements; and, auditing of Design-Builder’s environmental monitoring records.

The level of effort of verification by the Department both for materials and construction practices...
is dependent on risk. Risk is informally evaluated for impacts to long-term performance, impacts to operational and maintenance cost over the service life of the project, and public safety and perception regarding premature distresses and/or failures of the construction materials in question. The Design-Builder assumes the risk and progresses work accordingly. This risk can be managed by utilizing Department Approved materials and sources lists, and appropriate QC testing methods. It is the Department’s role to verify materials acceptability and test results when applicable, assure compliance with construction procedure requirements and resultant workmanship, and perform IAST to assure testing is performed correctly.

On Design-Build projects the Department is still responsible for the acceptance; however, when material volumes and test frequencies warrant, the risk is shifted towards the Design-Builder as the Department incorporates verified QC data and processes into the acceptance decision. Verification is the process of assuring specific products incorporated into this Project and procedures used are acceptable. Material acceptance that incorporates the Design-Builder’s QC data requires a higher frequency of QC testing and an abbreviated frequency of QA verification testing than traditional Design-Bid-Build Projects. The frequency of Verification (QA) testing is categorized by the Department into one of three risk factors that is dependent upon the long-term performance risk associated with the material and its use.

The fundamental principle behind using a three-tiered approach is to assign the appropriate level of resources to monitor and evaluate each item of work based on the Department’s risk. In general, the higher the risk associated with the long-term performance of the material and the higher usage on a project the greater frequency level of inspection and verification used in the acceptance decision.

Detailed descriptions of each risk factor level are defined in Part 3, Appendix D and specific details for each item’s QA practices are provided.

4.2 MATERIAL SAMPLING, VERIFICATION TESTING & INSPECTION:

The recommended risk factor verification levels, specific test criteria, and frequency of testing are defined in Part 3, Appendix D – Attachment 1. These are default values for Standard Specification items. For other materials, or where quantities may be significant, the CQAE should assign or revise the appropriate risk factor verification level during the development of the Project Specific Quality Assurance Plan to provide an accurate level of verification.

4.3 VERIFICATION SAMPLING & TESTING

When there is sufficient quantity of QC and QA test data for a given RF-1 material, the Department shall use a statistically sound process to compare the Design-Builder’s QC test results with those obtained by the Department, and then decide whether the results are statistically valid. The specific verification procedures will vary by material but the following is an abbreviated step by step procedure to familiarize the reader with the process:

1. The Design Builder shall submit a list of RF-1 items and estimated quantities to the Departments PM, with its Quality Control Plan within 30 Days of NTP to facilitate the decision making regarding the items of work that provide an opportunity for statistical verification & testing of materials by the CQAE engineer and its QA team.

2. The objective of the verification testing process is to validate and confirm if the Design Builder’s QC data came from the same population as the Departments Verification test
data. The statistical process can help to identify discrepancies in the overall material, process, sampling, and testing processes. Verification testing should be conducted using random independent samples.

3. Verification testing will be undertaken using sampling and testing equipment that was not used for QC testing.

4. It is anticipated that the results of the verification testing will be made available to the Design Builder.

5. The results of the Design Builder’s QC test results and the Departments QA verification tests are compared. A statistical hypothesis test is carried out to analyze whether the Design Builder’s test and the Department’s tests are from the same population; i.e. the means of the two data sets are equal and the variances are also equal. The F-test provides a method for comparing the variances (standard deviation squared) of two sets of data. The calculated F-value is then compared to the critical value (Fcrit) obtained from a table of F-values at a chosen level of significance (α).

6. The t-test provides a method for comparing the means of two independent data sets and is used to assess the degree of differences in the means. If it is determined that the variances are assumed equal (F=Fcrit), then the t-test is conducted based on the two sample sets using a pooled estimate for the variance and pooled degrees of freedom. If the sample variances are determined to be different (either F≠Fcrit), then the t-test is conducted using the individual sample variances, the individual sample sizes, and the effective degrees of freedom. The calculated t-value is compared to the critical value (tcrit) obtained from a table of t-values at a specified level of significance.

7. If the t-test does not indicate similarity, a continuous analysis is relied upon. The p-values (from F- and t-tests) are reported for each analysis and tracked over time. This approach enables the efficient monitoring of the validation status on a daily basis and allows for more timely action to address non-validation. When using F and t-test for validation, the objective is to maximize verification sample size so as to have a sufficiently powerful analysis, while capping the maximum verification sample size so as to limit the detection of materially insignificant statistical differences. In the continuous analysis approach, the verification sample population increases as additional QC and QA verification test results are reported, up to a recommended maximum of 25 QA verification test or a maximum time period of 90 days. This approach allows the trending of whether F and test p-values verify the quality control test results at the specified level of significance. Thus the verification team can identify whether there is a positive validation trend (increasing confidence in validation) or a negative validation trend (decreasing confidence in validation).

8. It is highly encouraged, prior to starting production, that material testing laboratory test method specific correlation be conducted, as well as technician sampling and testing procedures be compared and correlated. Statistical Validation will identify, through investigations, subtle and allowable within the limits of the recognize test methods. For example, sulfur capping of concrete cylinders versus the use of neoprene rubber capping, both acceptable test method procedures used to prepare concrete cylinders for determining concrete compressive strength, yet if one method is employed by the QC laboratory and another is employed by the QA laboratory, assuming all data is within specification limits, the statistical analysis will probably not validate due to the subtle
differences in test procedures.

4.4 MATERIALS OVERSIGHT

Materials shall conform to the Contract requirements. The Department will perform sampling and testing of materials to assure that the Design-Builder’s QC actions are effective. Use of Approved List materials is expected for commonly available products. The Design-Builder will provide the required evidence of acceptability / manufacturers certifications as required by specifications. Other items will require QC evaluation prior to use as defined in Part 3, Appendix A.

Products and materials will have appropriate identification provided by the Design-Builder, from receipt and storage through installation. When materials arrive at the project site, receiving personnel will document receipt of the material in accordance with the appropriate procedure. The CQCE will check material for conformance to Project requirements. Any damage or deficiency will be noted. The materials will be used or stored as appropriate for the material.

The CQAE will verify and document products and materials conformance to specifications of the project. Packing slips, mill certificates, or other documents from the Design-Builder showing conformance to requirements should be randomly reviewed by the CQAE and retained in project files by the Design-Builder.

Products or materials not immediately used will be stored in accordance with manufacturer's directions and verified as such by the CQAE. Some products and materials will require special measures to protect them from degradation. The manufacturers or supplier's requirements will be followed in providing the proper environment for the products and materials. The CQAE will provide QA of the Design-Builder's management of stored materials under proper conditions.

In general, the role of the Department’s CQAE is to monitor, in a timely manner, the performance of materials sampling and testing commitments of the Design-Builder’s CQCE. The CQAE will perform sampling and testing of materials at frequencies defined in Part 3, Appendix D – Attachment 1, consistent with the levels of risk and respective levels of verification testing for each specific item. All sampling and testing practices will conform to Department procedures and verification will be to show compliance with Department specifications or specific project requirements. The CQAE will document all sampling and testing performed, results, and retain samples as necessary.

Examples of materials sampling and testing might consist of:

- Sampling and testing of concrete for RF-1 conformance to specifications. Analysis of contractor test data using F- and T-statistical analysis as compared to Department test results would be performed

- Independent sample testing of tack coat for RF-2 conformance to specifications to verify that the tack coat properties are within specification limits.

- Review of project records for materials certifications for soil and erosion control materials under RF-3, for products appearing on the Department’s Approved List of Materials. Cross check certifications to materials on site.

When sampling and testing are in compliance with Contract requirements, results should be
reported in a timely manner to the Design-Builder. No further action is typically required.

If materials sampling or testing results do not meet the Contract requirements, the CQA will prepare a non-conformance report in a timely manner. It is the Design-Builder's responsibility to review the findings of the QA sampling and testing, and take appropriate actions. Non-conformance findings will be reported and corrective action taken as appropriate for the work at hand. Actions could consist of but are not limited to remove and replace, remediate in place, remain in place without remediation, and/or consideration of price adjustments.

Unless stated differently in the Contract or the RFP the Department will perform quality assurance tests and inspections during the production of the materials produced off-site such as at PCC Plants, Asphalt Plants, Precast Concrete Plants, etc. On-site QA tests and inspections will be performed by the Department after QC sampling and testing has confirmed acceptability of materials, and the frequency of any such testing will be as defined in Part 3, Appendix D – Attachment 1.

4.4.1 Standard off-site manufactured materials / Approved List items

Because certain material production and/or locations are not conducive to QC by the Design-Builder, the Department will perform sampling and testing of various items for inclusion into the Department’s Approved List of Materials, adhering to standard evaluation requirements for materials. The requirements and procedures for Approved List testing can be found at https://www.dot.ny.gov/divisions/engineering/technical-services/materials-bureau.

4.4.2 Off-site manufactured / fabricated materials

All domestic off-site materials sampling and testing for QC/QA operations will be performed by the Department in a manner similar to what is done for traditional Design-Bid-Build projects, and in accordance with NYSDOT Specifications. Depending on sampling and testing procedures and the applicable risk factor, statistical evaluations may be performed. The Design-Builder shall perform QC of off-site manufactured/fabricated materials as deemed appropriate by the Design-Builder and shall hold the Department harmless for liabilities associated with schedule delays and/or impacts to contracted supplier-subcontractor business relationships.

Off-site manufactured items subject to Department QA materials acceptance procedures include:

- Prestressed Concrete Structural Elements (beams, girders (AASHTO and bulb-T), and piles
- Metal Traffic Signal and Light Poles and Arms
- Structural Steel Elements (beams and girders)
- Precast Concrete Materials Elements
- Pipe (concrete, steel, aluminum and high density polyethylene) for culverts, storm drains and underdrains
- Hot Mix Asphalt Concrete production – QC/QA program
- Portland Cement Concrete production
- Aggregate CMA QA program District Materials Section
• Masonry
• Structural Steel Paints
• Bridge Railing and Guide Rail
• Traffic Control Materials
• Sign Structures
• Frames and Grates

Note: Where shop drawings are required for material production, the Department’s QA responsibility is to verify production in conformance with specific shop drawings. Shop drawing reviews, when appropriate, should be addressed following Design QA requirements.

Refer to Part 5 – Special Provisions for Design-Builder Quality Assurance Requirements related to Bridge Bearings. The Department will perform QA of bearings at a frequency established in Part 3, section D – Attachment 1.

4.4.3 On-site fabricated materials / project produced materials

The Department will perform sampling and testing of on-site fabricated materials for use of proper raw materials, handling, placement, and/or storage until time of use. Various materials tests will be used dependent upon the material under evaluation. The type and amount of testing will be defined in Part 3, Appendix D – Attachment 1. Critical items will require sampling and testing at greater frequencies, typically considered RF-1 as described earlier. Other items will be evaluated as RF-2 or RF-3 as appropriate. All sampling and testing performed by the Department will be after the Design-Builder’s QC has progressed.

4.5 CONSTRUCTION QA - GENERAL

Construction practices used by the Design-Builder shall be as defined in the Contract documents. During construction operations, the CQAE will check various operations and compared them to the requirements set forth in Project documents and standard specifications. These checks will be performed following the appropriate procedure and documented by the CQAE. The Department shall have the right to audit, monitor, inspect and test the work as it progresses and the Design-Builder shall accommodate this process. Routine review of the records produced by the Design-Builder’s QC staff should be performed to verify accurate recording of work activities, testing results, etc… are being progressed by the Design-Builder. Part 3, Appendix D – Attachment 1 defines the construction QA oversight of items used in the Work. Department Construction Quality Assurance Engineers will document audits of construction operations on a daily work report or similar type record. The CQAE will maintain a daily Diary of the construction operations.

When construction operations are in compliance with Contract requirements, results should be reported in a timely manner to the Design-Builder. No further action is typically required.

If construction operations are not performed to the Contract requirements, the CQAE will prepare a non-conformance report in a timely manner. It is the Design-Builder’s responsibility to review the findings of the QA observations, and take appropriate actions to maintain quality. Non-conformance findings will be reported and corrective action taken as appropriate for the work at hand. Actions could consist of but are not limited to remove and replace, remediate in
place, remain in place without remediation, and/or consideration of price adjustments.

Depending on the size of the project, there may be multiple categories of Department Inspectors, or a Department Inspector may be required to fulfill more than one role. The intent is not to duplicate inspection of the work provided by QC team but to verify QC data and documentation of the QC inspections.

Additionally, the Department will perform Independent Assurance Sampling and Testing (IAST), observations and oversight to assure adherence to the QC Plan developed for the project. All Design-Builder staff performing QC and the CQCE’s staff whose test data is used in the acceptance decision will be subject to IAST inspections by the Department.

4.6 WITNESS AND HOLD POINTS

Witness and Hold Points shall be established where notification of the Department and/or the Design-Builder’s design team (for elements of a project that require design team members certification prior to continuation of Work), where applicable, is required for observing or visually examining a specific work operation or test. Witness Points are points identified within the Construction QC Plan and CPM schedule which require notification of the Department and/or design team, where applicable. Work may proceed beyond a Witness Point with or without participation by the Department provided proper notification has been given. However, Work shall not proceed until certification from the required design team member is obtained.

Hold Points are mandatory verification points identified within the Construction QC Plan and CPM schedule beyond which work cannot proceed until mandatory verification is performed. Witness and Hold Points shall be identified in the Construction QC Plan, and/or the CPM schedule where critical characteristics are to be measured and maintained, and at points where it is nearly impossible to determine the adequacy of either materials or workmanship once work proceeds past this point.

For Witness and Hold points where the Department’s involvement is required, the Department’s CQAE will handle responses to the Design-Builder with written reports or releases. The time necessary to respond to the notification for inspection at Witness and Hold Points shall be stated in the Construction QC Plan, mutually agreed to by the Design-Builder and the Department and incorporated in the Design-Builder's CPM schedule.

The Department shall have the right to stop work if the Design-Builder does not adhere to witness or hold points.

4.7 LABORATORIES FOR QUALITY ASSURANCE

All sampling and testing shall be performed by a laboratory that is accredited in the applicable AASHTO procedures by the AASHTO Accreditation Program (AAP). For test methods not accredited by AAP, the laboratory must comply with AASHTO R18 (most current Edition) and must be approved by the Department at its sole discretion. NYSDOT test methods will be provided when deemed appropriate.

All equipment used, whether at an established laboratory or satellite (field) laboratory, has to be calibrated/verified. The labs have uniform policies and procedures per AASHTO R-18 to ensure that they are providing testing services in compliance with applicable test methods. The policies and procedures address inspection and calibration of testing equipment, as well as a
correlation-testing program between the laboratory and portable or satellite facilities.

The Department QA laboratories (Regional Laboratories or Central Office Laboratory) will not under any circumstances perform QC testing whatsoever.

4.8 VERIFICATION

Verification sampling, testing, observations, or other procedures will be performed by qualified sampling and testing personnel employed by the Department or its designated agent, reporting to the CQAE.

The Department shall hold final authority for determining the acceptable quality of materials and workmanship incorporated into the Project. QA decisions will consider:

- Results of Design-Builder QC sampling and testing at specified frequencies and locations;
- The Department’s QA and Verification sampling and testing results;
- The Department's Independent Assurance Sampling and Testing (IAST) at specified frequencies and locations;
- Inspection by the Department of the attributes and processes that may affect the quality of the finished product; and
- Any dispute resolution procedures to resolve non-validation discrepancies between the Department’s Verification Sampling and Testing and the Design-Builder's Sampling and Testing.

Individual materials and/or construction operations will not be accepted or rejected specifically except as noted for off-site locations. Materials and procedures that are in conformance with project requirements will be noted as such and reported to the Design-Builder. Materials, testing, or construction operations that are not in conformance to project requirements will be noted as non-conformances, reported to the Design-Builder, and actions taken as necessary by the Design-Builder to address the NCR's.

Verification frequencies shall follow the requirements of Part 3, Appendix D – Attachment 1 for standard materials and methods adhering to Department specifications. The verification methods and frequencies for unique products shall be as determined by the Department on a project by project basis.

4.9 NON-CONFORMANCE

The Design-Builder's QC staff and QC Engineer are responsible for identifying non-conforming Work. The Department may also identify non-conforming Work to the Design-Builder for corrective action. Any completed work not meeting the plans, specifications and Contract requirements is to be deemed non-conforming. A Non-Conformance Report (NCR) must detail the area of problem and cite from plans or specifications, how or why the work does not conform. The NCR will be submitted to the CQCE in writing within 24 hours of identification. Outstanding reports will be discussed in a review of the NCR log at weekly meetings. The Department will verify that all NCR’s are addressed in a timely manner per the QC Plan. The
resolution of a NCR may potentially include removal and replacement, reworking, or repair.

The Department’s CQAE can raise a NCR when he/she identifies material, or a finished product in which the material is used, is not in conformity with the Contract Requirements. With respect to Verification Sampling and Testing NCR’s, in accordance with Part 3, Section 6.3, the Design-Builder’s QC Engineer, is required to evaluate and assess the material in question and provide the Department with a written explanation why the non-conformance occurred, what corrective action is being put in place to avoid future non-conformances, and information regarding a clearly defendable plan for disposition (using good engineering judgment) of the existing non-conforming material which may potentially include removal and replacement, reworking or repair. Where reasonably acceptable work has been produced, the Department’s Project Manager can make a determination if the work may remain in place, and in such an event is required to document the basis of his/her determination. As such any determination should only be made where the Design-Builder’s written explanation documents sufficient engineering judgment to support the case for the work to remain in place.

It is important that both the Design-Builder and the Department’s staff fully appreciate the reasons for raising a NCR. Often there is reluctance on the Design-Builder’s part, perhaps as a result of normal human reluctance to admit error, or previous experience on other contracts where a misinformed or negative managerial attitude was taken towards NCRs. The Department’s Project Manager should actively encourage the issue of NCRs and point out, to the Design-Builder’s team the benefits, from a cost and time point of view, of reacting openly to non-conformance reporting in accordance with the process outlined above, in order to minimize the need to remove and replace works.

4.9.1 Non-Conformance Log

The Design Builder shall maintain a log for reported non-conformance materials or procedures according to the requirements of Part 3, Section 5.4.2 and Section 6.2.1.

4.9.2 Engineering Judgment

Material test results or workmanship that are in reasonable conformance with specifications and project requirements, but do not meet the specification requirements specifically, may be adequate for their intended use. As such, where, based on sound engineering judgment, reasonably acceptable work has been produced, the Design-Builder may choose to leave the work in place as is. Such determination must provide for the material or work to perform as originally intended. The Department’s Project Manager can make a determination if the work may remain in place, and in such an event is required to document the basis of his/her determination. Each such occurrence must be properly documented and a project log of engineering judgments maintained by the Project Manager. Documentation shall include the location, specification requirement, recorded test results or observed procedures non-conformance, and the engineering judgment applied to deem the situation suitable for incorporation into the project.

4.10 INDEPENDENT ASSURANCE SAMPLING AND TESTING

The Independent Assurance Sampling and Testing (IAST) program as implemented by NYSDOT, or its designee, to evaluate all sampling and testing procedures, personnel, equipment, and laboratories that will be used as part of the acceptance decision. This program provides uniform procedures to verify that tests are performed by qualified personnel and that
laboratory facilities and equipment are adequate to perform the required sampling and testing methods.

With most Design-Build projects, the pace of construction is extremely quick. Manpower curves are normally established to bring construction inspectors and testing technicians to the project at optimal periods based on the volume of anticipated work. Careful administration of the IAST program is essential to the success of the overall project so that unnecessary delays are not encountered and testing technicians and laboratories are evaluated in a timely manner.

Implementation of the IAST Program is performed by Regional NYSDOT personnel; however, NYSDOT has the option of designating an independent laboratory to administer the IAST program on its behalf. When this option is utilized, personnel from the independent laboratory must be qualified to meet NYSDOT requirements.
SECTION 5 DISPUTE RESOLUTION

Non-conformance of observed practices are usually easily discernible, such as the size and spacing of reinforcing steel. Through the life of a project, there may be differences in material test results or statistical sample populations between the Design-Builder’s QC and the Department.

In an effort to be as efficient and timely as possible, it is recommended that the Design-Builder, QC Engineer, Department’s Project Manager and CQAE develop a plan to resolve disputes as near to the operational level as possible. Time limits can be established for how long an agreement can be worked out at a particular level before it should be addressed at the next level. Time critical disputes may, however, ascend to the highest level within a day.

If a discrepancy in the test results occurs, a cooperative effort by the Department and the Design-Builder to identify the cause of the non-specification material or the discrepancy in the test results will include the following actions:

• Check of test data, calculations and results;
• Observation of the Design-Builder’s sampling and testing by the Department’s Project Manager; and
• Check of test equipment by the CQAE.

Since most QA sampling and testing will be progressed using Regional laboratories, the first level of sample testing for dispute resolution will be performed at the Department’s Central Laboratory, or utilizing an independent laboratory when specific test capabilities do not exist within the Department. If resolution cannot be made at this level then a referee laboratory will be used as specified in Part 3, Section 6.4.

5.1 NON-VALIDATION AND STATUS OF MATERIALS

It is important for the reader to understand that for RF-1 verification process to have a positive outcome, the material test results must first be within specification limits, and secondly the statistical comparison of QC and QA test results must validate. For discrepancies where evaluation uses RF-1 with statistical verification methods, dispute resolution needs to consider if the material actually fails to meet contract specification limits or if the statistical comparison does not validate. When QA verification test do not statistically validate the Design Builder’s QC test results, the Department and the Design-Builder’s CQCE shall jointly investigate the source of non-validation (i.e., adjust sampling and testing processes to correct any sampling and testing deficiencies, align testing procedures using split sampling methods, calibrate equipment, and reduce testing bias as identified during the joint investigation). The Department may increase the QA sampling frequency to provide additional QA data for potential continuing non-validation analyses. If the non-validation persists over five consecutive RF-1 F- and t-test analyses, a Non-Conformance Report shall be issued to formally document and seek resolution to the non-validation. In addition to the need to investigate the non-validation, the material in question has to be immediately evaluated to determine if it can be left in place or has to be removed, reworked, or repaired. If material is to remain incorporated into the Project, the material in question will be evaluated using the process described in this section. The appropriate party (CQAE or CQCE) may exercise Engineering Judgment to determine that the
material will perform its intended purpose.

For RF-1 defined materials requiring statistical verification, the Department will perform continuous F- and t-test analysis with the testing frequency as defined in Part 3, Appendix D – Attachment 1. The continuous analysis will be run daily with new verification test results being added to the sample population as older verification test results are removed (up to 25 day maximum limit). The analysis will be performed against the corresponding QC sample population.

The level of significance (α) used for statistical analysis will be as provided below unless otherwise approved by the Department.

<table>
<thead>
<tr>
<th>Material</th>
<th>Level Of Significance (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork: compaction</td>
<td>0.01</td>
</tr>
<tr>
<td>Concrete, structural: air content, 28 day compressive strength</td>
<td>0.025</td>
</tr>
<tr>
<td>Concrete, non structural 28 day compressive strength</td>
<td>0.01</td>
</tr>
<tr>
<td>Hot Mix Asphalt items</td>
<td>Per existing QC/QA program</td>
</tr>
<tr>
<td>Other materials (TBD)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

There are four possible combinations of passing and failing results between the QC and QA (verification) test results.

1. Both the QC and QA test results pass specification limits: Although statistical validation has not occurred, both the QC and QA test results are passing the established specification limits; thus, material quality in question is considered acceptable.

2. QC test results fail and QA test results pass specification limits: Material may be left in place if the Engineer of Record and QC Engineer determines that engineering judgment may be used to accept the material or if the material is accepted through the non-conformance resolution process.

3. Both the QC and QA test results fail the specification limits: Material may be left in place if the Engineer of Record and QC Engineer determines that engineering judgment may be used to accept the material or if the material is accepted through the non-conformance resolution process. The acceptance of material is subject to one of the two scenarios below.
   a. QA test result indicates reasonable conformance with specification requirements, and NYSDOT exercises engineering judgment to concur with acceptance of material based on the Engineer of Record and QC Engineer's judgment or through the non-conformance resolution process.
   b. QA test result does not indicate reasonable conformance with specification requirement, and the QC Engineer must perform an additional fixed test at the QA failed test location. Based on the results of QC Engineer test result and subsequent investigation discussions between the Department and the Design-Builder's Engineer of Record, a determination is made and documented on whether the material may be left in place.

4. QC test results pass but QA test results fail specification limits: Material may be left in
place if the Engineer of Record and QC Engineer determines that engineering judgment may be used to accept the material or if the material is accepted through the non-conformance resolution process. This is subject to the Department’s response in the two scenarios below.

a. QA test result indicates reasonable conformance with specification requirements, and the Department exercises engineering judgment to concur with acceptance of material based on the Engineer of Record and QC Engineer’s judgment or through the non-conformance resolution process.

b. QA test result does not indicate reasonable conformance with specification requirement, and the QC Engineer must perform an additional fixed test at the QA failed test location. Based on the results of QC Engineer test result and subsequent investigation discussions between the Department and the Design-Builder’s Engineer of Record, a determination is made and documented on whether the material may be left in place.

5.2 SPLIT SAMPLE DISCREPANCIES

For dispute resolution where non-statistical methods are being used, a split sample shall be obtained and tested. Since most QA sampling and testing will be facilitated at the Regional level, sample testing for dispute resolution will be performed at the Department’s Central Laboratory or utilizing an independent laboratory. A comparison of tolerances which will trigger the referee and disputes processes is summarized in the table below. Comparison tolerance for testing shall be:

Split Samples may be used outside of the statistical analysis for owner verification of contractor-performed QC testing under the Departments Owner Verification Program. A comparison process for performing and analyzing split samples between QC and QA is necessary during initial implementation of this statistical verification program. The Department will analyze these samples and discuss the results with the QC testing firm to assure laboratory and technician test results compare favorably. When the acceptable tolerance limit in the table below are exceeded, corrective action for either or both parties will be identified, and corrective actions will be incorporated as appropriate. The process will help provide initial alignment of the Departments QA and the QC Material Testing Firm laboratories and testing procedures. Split samples may also be performed throughout the life of the project as necessary to investigate non-validating material categories and to verify or realign testing equipment and personnel.

QA and QC will determine random sample locations using ASTM D3665 or similar auditable methods. The Department’s Project Manager will determine allowable actions to address discrepancies or failures as determined below, following the non-conformance resolution process. Actions could consist of but are not limited to remove and replace, remediate in place, remain in place without remediation, and/or consideration of price adjustments.

<table>
<thead>
<tr>
<th>Test</th>
<th>Comparison Tolerance</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil/ Aggregate Wet Density using Nuclear gauge in Direct Transmission¹</td>
<td>Soil – 2.1 pcf</td>
<td>Values adjusted from AASHTO T-310</td>
</tr>
<tr>
<td>Aggregate Base – 3.0 pcf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Value</td>
<td>Reference/Method</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Soil/Aggregate Density using Sand Cone&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2.0 pcf</td>
<td>Values adjusted from ASTM D1556</td>
</tr>
<tr>
<td>Soil/Aggregate Moisture using Nuclear gauge (backscatter)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Soil – 2.1 pcf</td>
<td>Values adjusted from AASHTO T-310</td>
</tr>
<tr>
<td>Soil/Aggregate Moisture determined by oven dry</td>
<td>14% difference&lt;sup&gt;2&lt;/sup&gt;</td>
<td>ASTM D2216</td>
</tr>
<tr>
<td>One Point Proctor – density Lab Proctor – density</td>
<td>5.0 pcf</td>
<td>AASHTO T-99</td>
</tr>
<tr>
<td>One Point Proctor – moisture</td>
<td>15% difference&lt;sup&gt;2&lt;/sup&gt;</td>
<td>AASHTO T-99</td>
</tr>
<tr>
<td>Gradation</td>
<td>&gt; No. 4 sieve: ± 5%</td>
<td>AASHTO T27 / T11</td>
</tr>
<tr>
<td></td>
<td>≤ No. 4 sieve: ± 3%</td>
<td></td>
</tr>
<tr>
<td>Concrete Air</td>
<td>± 1%</td>
<td>ASTM C231</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASTM C173</td>
</tr>
<tr>
<td>Concrete Strength</td>
<td>15 % difference on the average of 2 cylinders</td>
<td>Values adjusted from ASTM C39</td>
</tr>
<tr>
<td>Asphalt Bulk Specific Gravity</td>
<td>Less than 0.015</td>
<td>Values adjusted from AASHTO T-166</td>
</tr>
<tr>
<td>Identical plug/core Split sample (close proximity)</td>
<td>Less than 0.030</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> Referee testing in the field using a third party
<sup>2</sup> Percent difference calculation shall be % diff \(\leq\) \(\frac{\text{absolute value}[W1-W2]}{(1/2) * (W1+W2)}\) * 100
SECTION 6  PROJECT SPECIFIC QUALITY ASSURANCE PLAN

As mentioned in the introduction of this Guide, the contents of this Program Guide are generic in nature and should be applicable to all types and sizes of Design-Build Projects. It is the Project Manager and the CQAE and DQAE responsibility to apply this program guidance at the Project Level.
VAN WYCK EXPRESSWAY (VWE) CAPACITY AND ACCESS IMPROVEMENTS TO JOHN F. KENNEDY (JFK) AIRPORT PROJECT - CONTRACT 1

PIN X735.82, CONTRACT D900048

DB CONTRACT DOCUMENTS

PART 3
APPENDIX D

APPENDIX D - ATTACHMENT 1
SCHEDULE OF CONSTRUCTION QUALITY ASSURANCE AND VERIFICATION INSPECTION

FINAL AUGUST 30, 2019
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The Design Builder (DB) shall use this Appendix D – Attachment 1 to aid in development of a Quality Control (QC) Plan as defined in Part 3, Section 4. The Department will perform Quality Assurance (QA) for materials acceptance to verify that the Design and Construction QC Plan is controlling DB operations in conformance with Department standards. This Appendix D – Attachment 1 describes the expected testing procedures and frequencies to assure product and process quality, and verification of the DB QC Plan.

Quality Assurance on the Design Builder’s QC process may be progressed according to values defined in the “QA Actions and Testing” column of the following table. The Risk Factor for various items will determine the frequency at which the Department will conduct quality assurance / verification sampling and testing. Statistical methods may be considered for use by the Department to evaluate the effectiveness of sampling and testing results from QC for use as acceptance. The QA Actions and Testing column defines those actions and the frequency thereof that the Department expects to minimally take to provide quality assurance of materials and construction inspection activities. Final determination of these actions and frequencies will be developed specific to the QC plan provided by the DB.

The level of effort of verification by the Department both for materials and construction practices is dependent on risk. The Design-Builder assumes most of the risk and progresses work accordingly. This risk is managed by providing appropriate QC to limit failures of materials or non-conformance to acceptable construction procedures. Therefore, the Department’s role when applicable, is to verify materials acceptability and testing results, assure compliance with construction procedure requirements, and perform IAST to assure testing is performed correctly.

The Department’s QA considers the material application and construction procedures to determine the overall risk associated with using a particular material or process. The risk is then defined as one of three Risk Factor levels, each addressing the expected QA needs. Detailed description of each Risk Factor level is defined in the table below and specific details for each item’s QA practices are provided. The three Risk Factor levels are described in general below.

**Risk Factor 1 (RF-1)**

RF-1 provides continuous analysis using statistically based (F & t-testing) for those categories of materials and associated test methods that are strong indicators of long-term performance. These are typically considered high-risk, high-volume type materials incorporated into a Design-Build project. Examples include compressive strength for hydraulic or Portland Cement Concrete, percent soil compaction for embankment, and percent asphalt content for Hot Mix Asphalt Concrete.

Subsequent to the Design Builder’s submission of its Quality Control Plan, which includes a tabulation of all anticipated RF-1 items and estimated quantities, the Department may then make a determination as to when sufficient quantities are used on a project such that the Design-Builders data can be used for acceptance purposes. The Design-Builder’s QC testing frequency shall be in compliance with various Department documents. The Design Builder, in coordination with the Department shall develop and implement the statistical methodology for data collection, analysis and determination to conclude when sufficient data has been collected to conclude that a F & T approach is acceptable. Upon such conclusion, the Department’s Verification sampling and testing frequencies should be a minimum of 25% of the QC testing.
frequency. Acceptance is based upon both validation of statistical analysis of complimentary QC test data population and QA verification test data populations and both test results meeting acceptable material acceptance limits as defined in the contract documents.

Repeat failing test results should trigger a higher frequency of Verification testing and for those materials/test methods that have demonstrated high levels of repeated successful validation/specification compliance should be considered for reduced frequency of inspection not to go below 10% of QC testing frequency.

Risk Factor 1 – Low Volume (RF-1(LV))

RF-1(LV) provides for acceptance when smaller quantities of high risk type materials are used and statistical comparison and/or validation methods are not appropriate. The Design-Builder shall continue to perform QC and when materials are deemed ready for Department inspection, random sampling and testing will be performed by the Department. The Department’s QA frequency of sampling and testing will be in compliance with all materials testing requirements and standards. That is, QA testing frequency will be the same as DBB. In these cases, QA testing will form the acceptance decision.

The Design-Builder’s data for RF-1 may be used for acceptance only after sufficient tests have been performed to provide for a statistically valid analysis, at which time QA will revert to the requirements of Risk Factor 1.

Risk Factor 2 (RF-2)

In addition to checking that all QC test results are within specification limits, RF-2 verification provides independent verification of those materials and associated test methods that are secondary indicators of material performance. Verification testing, in the form of independent verification sampling or split sampling with the QC test, that the test results fall within specification limits is typically appropriate. These materials/material tests are considered a reduced risk from RF-1. An example is the slump test for concrete. Approved list products that require more than manufacturer’s certification of compliance to assure quality are covered under this level of verification. Acceptance is based upon Standard Specifications and other contract requirements and the frequency of sampling and testing required. That is, QA testing frequency will be the same as DBB. QA testing will form the acceptance decision. No statistical validation is required.

Risk Factor 3 (RF-3)

RF-3 provides observation verification for those materials that only require very few QA tests for compliance with various Department documents or where materials are accepted based on the inclusion in the Departments Approved List of materials. For these materials, risk of failure does not affect the long-term performance of the facility produced approved products are used. The Design-Builder should still perform QC testing as required. Under RF-3 approach, the Department oversight does not perform any tests but observes any QC test performance for equipment and procedural compliance for a product, and/or perform an audit of project procurement records to verify compliance with Departments Approved List, Certification of Compliance on record, Buy America, etc. The frequency of this testing is a minimum of once per calendar year per test method and/or product, or random frequency as determined by the Department’s Project Manager.
Some domestic off-site materials sampling and testing for QA operations may be performed by the Department as indicated elsewhere in the RFP. When Department QA is used for acceptance/rejection of materials, the Risk Factors are not applicable since no Design-Builder data is used for acceptance. The Design-Builder may perform QC as deemed appropriate or desired at off site locations and should include any such oversight in the QC Plan. If Design-Builder sampling and testing is desired for acceptance, this should be outlined in the QC Plan and Risk Factors will apply.

Use of materials for which there is not an Approved List category will require, in the Design-Build Quality Control Plan, those tests and evaluations to prove the durability of unique materials before use in the project. In many cases, physical testing should be performed by an independent laboratory. A planned frequency of sampling and testing, commensurate with the level of risk of the product proposed for use, must be provided in the DB Quality Control Plan for acceptance by the Department’s Project Manager.

Department QA of Construction Inspection operations will typically consist of verifying the CQCE is performing and assuring all construction operations adhere to Department Specifications and Standards and/or the DB Quality Control Plan. The Department shall have the authority to perform sufficient inspections and/or tests of the DBs work to verify that the inspections and/or tests performed by the CQCE are in compliance with the contract, the design and specifications, the Design-Builder’s approved Quality Control Plan, as well as the Department’s standards and practices. The frequency of construction inspection will depend on the critical nature of the construction operation.

Certain critical items of work will require witness or hold points to assure acceptability and/or verification testing prior to progression of work. The DB should include in the QC Plan specific hold points as desired by the DB or as required by the Department.

Witness and Hold Points shall be established where notification of the Department and/or Design-Builder’s design team (for elements of a project that require design team members certification prior to continuation of Work), where applicable, is required for observing or visually examining a specific work operation or test. Witness Points are points identified within the Construction QC Plan which require notification of the Department and/or design team, where applicable. Work may proceed beyond a Witness Point with or without participation by the Department provided proper notification has been given. However, work shall not proceed until certification from the required design team member is obtained. Hold Points are mandatory verification points identified within the Construction QC Plan beyond which work cannot proceed until mandatory verification is performed. Witness and Hold Points shall be identified in the Construction QC Plan where critical characteristics are to be measured and maintained, and at points where it is nearly impossible to determine the adequacy of either materials or workmanship once work proceeds past this point.

The CQAE shall designate a primary point of contact for notifications for inspection at Hold Points and Witness Points. An alternate individual may be designated to function in this capacity in his/her absence. For Witness and Hold points where the Department’s involvement is required, the Department’s CQAE will be designated to handle responses to the Concessionaire/Design-Builder with written reports or releases. The time necessary to respond to the notification for inspection at Witness and Hold Points shall be stated in the Construction QC Plan, mutually agreed to by both the Design-Builder and the Department.
The Department will have access to all activities and records of the DB, CQCM, and materials testing firm/laboratory retained by the DB for the purpose of assuring that the construction and inspection activities are being conducted in compliance with the contract, the design and specifications, the DB’s approved Quality Control Plan, as well as the Department’s standards and practices.

All QA activities of the Department will provide assurance that materials and methods are such that, when final acceptance of the project is requested, the Department is confident that all materials and work conforms to plans, specifications, and standards. These verifications will document the acceptance of the work for payment purposes and assure all non-conformances have been satisfactorily addressed.

The Department shall have the authority to stop work specific to Work Zone Traffic Control non-conformance issues that impact safety of the traveling public. The DB shall ensure the overall safety for the workers, the inspection staff and the public at all times.

Nothing in the scope of the Department’s QA role shall be construed to relieve the DB and their CI and QC firms of their responsibilities for full time construction inspection and compliance with the contract, the design and specifications, the Design-Builder’s approved Quality Control Plan, as well as the Department’s standards and practices.

Tolerances for Statistical and Comparison evaluations shall be per the below tables to be deemed valid or acceptable. Any discrepancies shall be handled according to the Appendix D, Quality Assurance Plan Program Guide, Section 5.

The level of significance (α) used for statistical analysis will be as provided below unless otherwise approved by the Department.

<table>
<thead>
<tr>
<th>Material</th>
<th>Level- Of Significance (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork: compaction</td>
<td>0.01</td>
</tr>
<tr>
<td>Concrete, structural: air content, 28 day compressive strength</td>
<td>0.025</td>
</tr>
<tr>
<td>Concrete, non structural: 28 day compressive strength</td>
<td>0.01</td>
</tr>
<tr>
<td>Hot Mix Asphalt items</td>
<td>Per existing QC/QA program</td>
</tr>
<tr>
<td>Other materials (TBD)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Comparison tolerance for testing shall be:

<table>
<thead>
<tr>
<th>Test</th>
<th>Comparison Tolerance</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil/ Aggregate Wet Density using Nuclear gauge in Direct Transmission</td>
<td>Soil – 2.1 pcf Subbase – 3.0 pcf Aggregate Base – 3.0 pcf</td>
<td>Values adjusted from AASHTO T-310</td>
</tr>
<tr>
<td>Soil/Aggregate Density using</td>
<td>2.0 pcf</td>
<td>Values adjusted from ASTM D1556</td>
</tr>
<tr>
<td>Test Type</td>
<td>Methodology/Standard</td>
<td>Result</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Sand Cone</td>
<td>Soil – 2.1 pcf Subbase – 3.0 pcf</td>
<td>Values adjusted from AASHTO T-310</td>
</tr>
<tr>
<td>Soil/Aggregate Moisture using Nuclear gauge (backscatter)</td>
<td>14% difference*</td>
<td>ASTM D2216</td>
</tr>
<tr>
<td>Soil/Aggregate Moisture determined by oven dry</td>
<td>4.5 pcf</td>
<td>AASHTO T-99</td>
</tr>
<tr>
<td>One Point Proctor – density Lab Proctor – density</td>
<td>4.5 pcf</td>
<td>AASHTO T-99</td>
</tr>
<tr>
<td>Concrete Air</td>
<td>+/- 1%</td>
<td>ASTM C231 ASTM C173</td>
</tr>
<tr>
<td>Concrete Strength</td>
<td>15% difference on the average of 2 cylinders</td>
<td>Values adjusted from ASTM C39</td>
</tr>
<tr>
<td>Asphalt Bulk Specific Gravity</td>
<td>Less than 0.015 Less than 0.030</td>
<td>Values adjusted from AASHTO T-166</td>
</tr>
</tbody>
</table>

Percent difference calculation shall be % diff ≤ ((absolute value[W1-W2]) / ((1/2) * (W1+W2)))*100
<table>
<thead>
<tr>
<th>Specification Section</th>
<th>Risk Factor, applications, and hold points</th>
<th>Quality Assurance Actions and Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>All - General</td>
<td>RF as described per item. RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site locations.</td>
<td>Materials QA: as described per item. CI QA: as described per item.</td>
</tr>
<tr>
<td>201 – Clearing and Grubbing</td>
<td>RF-3 – all work</td>
<td>Materials QA: N/A CI QA: random verification of QC records for work documented as progressed, verify adherence to work limits, and compliance with planned / required protection / restoration.</td>
</tr>
<tr>
<td>202 – Removal of Structures and Obstructions</td>
<td>RF-3 – all work</td>
<td>Materials QA: N/A CI QA: random verification of QC records for work progressed, adherence to safety requirements, and adherence to WZTC per 619 requirements as appropriate.</td>
</tr>
</tbody>
</table>
### Specification Section

<table>
<thead>
<tr>
<th>Specification Section</th>
<th>Risk Factor, applications, and hold points</th>
<th>Quality Assurance Actions and Testing</th>
</tr>
</thead>
</table>
| 203 – Excavation and Embankment | ▪ Select Material- RF-2  
▪ Embankment Material where structural elements will be constructed- RF-2  
▪ Embankment Material all other areas- RF-3  
▪ Unclassified excavation- RF-3  
▪ Hold point for stockpile evaluation where required | ▪ Materials QA: Verify initial source of proposed material and that GEB Manual requirements are being met. Random verification of subsequent sources. Observe sampling of initial stockpile and 100% of subsequent stockpiles. Sample and test material as defined in specifications and GCP-17 at a frequency of 100% of that required by QC plan.  
▪ Statistical analysis not required for gradation testing.  
CI QA: Perform side by side compaction testing at 100% of tests required by QC plan. Random visual observation of construction operations for compliance with specifications. |
| ▪ Expanded Polystyrene Fill: RF-2 | ▪ Material QA: Random review of material certification and third party test results for specification compliance.  
▪ CI QA: Sample and test for specification compliance 100% of the blocks required for testing by the QC plan per GTP-7. Random visual observation of construction for compliance with specifications. |
<table>
<thead>
<tr>
<th>Specification Section</th>
<th>Risk Factor, applications, and hold points</th>
<th>Quality Assurance Actions and Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Drilling and blasting operations- RF-3</td>
<td>• Materials QA: N/A</td>
</tr>
<tr>
<td></td>
<td>Hold point to review blasting plan prior to start of any work.</td>
<td>• CI QA: Participate in the pre-blast meeting. Verify that the QC consultant completed all the steps needed for blasting, including reviewing the blast plan, and conducting the pre-blast meeting. Refer to GEM-22 for guidance.</td>
</tr>
<tr>
<td></td>
<td>Settlement measurement- RF-3</td>
<td>• Materials QA: Check the documentation required by specification and the QC plan to verify that the proposed equipment has been calibrated as required.</td>
</tr>
<tr>
<td></td>
<td>Measurements taken of actively moving landslides or structures. Hold point for implementation of solution. Measurements taken for fills/structures undergoing waiting periods. Witness point for removal of surcharge/termination of waiting period.</td>
<td>• CI QA: Observe the first installation of each type of monitoring device, and 25% of any subsequent installations. Take side by side readings at 10% of those taken by DB. See GCP-15</td>
</tr>
</tbody>
</table>
### Specification Section

<table>
<thead>
<tr>
<th>Risk Factor, applications, and hold points</th>
<th>Quality Assurance Actions and Testing</th>
</tr>
</thead>
</table>
| **Pore water pressures- RF-3**<br>Measurements taken of actively moving landslides or structures**| Materials QA: Check the documentation required by specification and the QC plan to verify that the proposed equipment has been calibrated as required.  
CI QA: Observe the first installation of each type of monitoring device, and 25% of any subsequent installations. Take side by side readings at 10% of those taken by DB. See GEB Manual requirements. |
| **Slope movements- RF-3**<br>Measurements taken of actively moving landslides or structures. Hold point for implementation of solution. | Materials QA: Check the documentation required by specification and the QC plan to verify that the proposed equipment has been calibrated as required.  
CI QA: Observe the first installation of each type of monitoring device, and 25% of any subsequent installations. Take side by side readings at 10% of those taken by DB. See GEB Manual requirements. |
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<tr>
<td>204, Controlled Low Strength Material (CLSM)</td>
<td></td>
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<tr>
<td></td>
<td>RF-2 – all load bearing applications</td>
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<td></td>
<td>RF-3 – non-load bearing applications (i.e. filling an empty vault).</td>
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<tr>
<td></td>
<td>Materials QA: Review each mix design to verify compliance with the specification and use of approved materials.</td>
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<tr>
<td></td>
<td>CI QA: Observe flow tests for 100% of the flow tests required by QC plan following ASTM D6103. Observe placement operations for 100% of the volume placed.</td>
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<td>Perform cylinder breaks on 100% of the number required in the QC plan for load bearing applications only, using cylinders cast per MM9.2 and meeting requirements of 733-01.</td>
<td></td>
</tr>
<tr>
<td>206 - Trench, Culvert and Structure Excavation</td>
<td>RF-3</td>
<td>Materials QA: N/A</td>
</tr>
<tr>
<td></td>
<td>Witness point to verify sheeting or lag wall design.</td>
<td>CI QA: Check the design completed for temporary sheeting or lag wall to verify that the method and parameters are appropriate. Backfill to meet QA requirements for Section 203.</td>
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<tr>
<td>207, Geotextile</td>
<td>RF-3</td>
<td>Materials QA: Verify that material is on Approved List, for each material to be used.</td>
</tr>
<tr>
<td></td>
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<td>CI QA: Verify that the QC inspector check that the material used on the project is the same as that shown to be used on the plans. Random observation for specification compliance.</td>
</tr>
<tr>
<td>208 – Stormwater Management Facilities</td>
<td>RF-2</td>
<td>Materials QA: Check documentation required by specifications and environmental permits to verify compliance. Certified copies of laboratory test results supplied by DB</td>
</tr>
<tr>
<td></td>
<td>Witness point for laboratory testing when required.</td>
<td>CI QA: Verification of materials acceptability. Observe the first installation of each type of facility, and 20% of any subsequent installations. For precast verify that QC review of drawings performed properly and certifications provided. Assure field testing performed per specification.</td>
</tr>
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</table>
| 209, Soil Erosion and Sediment Control | § RF-3  
  • Hold point for compliance with environmental permit requirements | § Materials QA: Verify products on Approved List or materials meet the appropriate 700 requirements and that certifications are provided when required. Verify compliance with environmental permit requirements.  
 § CI QA: Perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the specifications |
| 210 - Removal and Disposal of Asbestos-Containing Material (Buildings, Bridges, and Highways) | § RF-3  
  • Witness point for safety of operation, verify license | § Materials QA: N/A  
 § CI QA: Verify asbestos handling license. Review daily logs provided per 210-3. Review certification for disposal. |
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<tr>
<td>211 - Internally Stabilized Cut Structures</td>
<td>RF-1 for permanent walls, RF-2 for temporary walls</td>
<td>Materials QA: Review material documentation. Verify strength of grout and shotcrete for various designs.</td>
</tr>
<tr>
<td></td>
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<td>CI QA: Observe 25% (100% for RF-2) of the soil nail/grouted tieback testing required in the QC plan. See GEM-21 and GEM-17.</td>
</tr>
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<td></td>
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<td>Perform grout cube testing on 25% (100% for RF-2) of testing required in QC plan per 701-19E.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform shotcrete testing on 25% (100% for RF-2) of testing required in QC plan per 583.</td>
</tr>
<tr>
<td></td>
<td>Witness point of proof load testing</td>
<td>CI QA: Observe 100% of the anchor proof tests/rock bolt tensioning required in the QC plan per GEB Manual requirements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perform grout cube testing on 100% of testing required in QC plan per 701-19E.</td>
</tr>
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</table>
| 302 - Bituminous Stabilized Course | ▪ RF-3                                      | ▪ Materials QA: Verify proposed materials meet specification requirements.  
▪ CI QA: Random observation for specification compliance. |
| 303 – Optional Flexible Shoulder | ▪ RF-3                                      | ▪ Materials QA: Verify proposed materials meet specification requirements.  
▪ CI QA: Random observation for specification compliance. |
| 304 - Subbase Course | ▪ RF-2 – all subbase for permanent roadway facilities  
▪ RF-2 – subbase for permanent parking lots, sidewalks, bike and pedestrian trails | ▪ Materials QA: Verify initial source of proposed material and that GCP-17 requirements are met. Random verification of subsequent sources.  
▪ CI QA: Observe stockpile sampling procedures for the first stockpile, and for 25% (100% for RF-2) of the subsequent stockpiles.  
▪ Perform stockpile sampling and testing per the specification on the first and on 25% (100% for RF-2) of the subsequent stockpiles. Statistical Analysis not required for gradation testing.  
▪ Visually inspect 25% (100% for RF-2) of the stockpiles.  
▪ Random observation for specification compliance. |
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| 307 - Hydrated Lime Stabilized Subgrade | RF-3                                       | • Materials QA: Verify materials are on the Approved List and manufacturer certifications received / on file as appropriate.  
• CI QA: Random observation for specification compliance of proper depth of mixing, mixing operations, and compaction. |
| 308 - Soil Cement Course               | RF-3                                       | • Materials QA: Verify materials are on the Approved List and manufacturer certifications received / on file as appropriate.  
• CI QA: Random observation for specification compliance of proper depth of mixing, mixing operations, and compaction. |
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| 401, Plant Production | ▪ RF-2 when DB is responsible for plant operations  
▪ DOT anticipates having staff in HMA plants and providing materials inspection during production. If the DB will provide plant responsibility equal to or greater than DOT QC/QA procedures, it shall be defined in the QC plan and QA will be modified accordingly. | ▪ Materials QA: Maintain current QC/QA practices per 401 and MP 401 except for incentive payments.  
▪ CI QA: See appropriate specification item |
▪ CI QA: Observation and document review per 402 and MP 402. For each days placement cores are taken, one core and the plant QA mixture maximum theoretical density will be used for verification. 50 Series placements accepted per MP 98-01. |
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| 407 - Tack Coat        | RF-2                                      | - Materials QA: Verify suppliers for emulsions on Approved List and certification received / on file. Sample and lab testing per 702.  
- CI QA: observation, documentation review and random checks to verify quantity and ensure requirements are being followed and met. Observe calibration of bituminous spray equipment. |
| 410 - Bituminous Surface Treatment - Single Course | RF-2                                      | - Materials QA: Verify suppliers for aggregate and emulsions on Approved List and certification received / on file. Sample and lab testing per 702 of emulsion, aggregate sampling and testing per 410.  
- CI QA: observation, documentation review and random checks to verify quantity and ensure requirements are being followed and met. Observe calibration of bituminous distributor and aggregate spreader equipment. |
| 490 - Cold Milling     | RF-3                                      | - Materials QA: Not applicable  
- CI QA: Verify removal limits are being properly met. |
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</table>
| 501 - Portland Cement Concrete - General  | ▪ RF-2 when DB is responsible for plant operations  
▪ RF does not apply when DOT performs materials sampling and testing for acceptance purposes.       | ▪ Materials QA: Inspection per MM9.1.  
▪ For quantities less than 50 cy, materials acceptance may be via certification.  
▪ For projects producing large quantities for a given placement or where there is a project specific batch plant, the DB may be required to perform plant sampling and testing. Such sampling and testing may be used for acceptance purposes following RF-2, per MM 9.1, verified quarterly by IAST testing. DOT to perform testing per MM 9.1 at 25% frequency to verify fine aggregate gradation of minus 200 material and moisture content for production.  
▪ Additional testing may be required dependent upon Design-Builders QC plan requirements and any special testing outlined to assure durability (i.e. corrosion protection, permeability, f/t, scaling, etc…)
▪ CI QA: NA |
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</table>
| 502 - Portland Cement Concrete Pavement | ▪ For cumulative project quantities over 1000 CY.  
▪ RF-1 for entrained air content  
▪ RF-2 for temperature and unit weight  
▪ For cumulative project quantities 1000 CY or less.  
▪ RF-1(LV) for entrained air content, slump, temperature and unit weight | ▪ Materials QA: Plant inspection per requirements of 501 for concrete production.  
▪ CI QA: Observe DB concrete sampling and testing of concrete for entrained air content, temperature and unit weight at frequencies per MM9.2. Department to perform air content and unit weight testing, frequency dependent on volume used on the project. |
| 503 - Portland Cement Concrete Foundation for Pavement | ▪ For cumulative project quantities over 1000 CY.  
▪ RF-1 for entrained air content  
▪ RF-2 for temperature and unit weight  
▪ For cumulative project quantities 1000 CY or less.  
▪ RF-1(LV) for entrained air content, slump, temperature and unit weight | ▪ Materials QA: Plant inspection per requirements of 501 for concrete production.  
▪ CI QA: Observe DB concrete sampling and testing of concrete for entrained air content, temperature and unit weight at frequencies per MM9.2. Department to perform air content and unit weight testing, frequency dependent on volume used on the project. |
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<td>551 - Piles and Pile Driving Equipment</td>
<td>RF-1/ RF-1(LV) for concrete RF-2 for all other materials / operations</td>
<td></td>
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</table>

- **Materials QA:** Review material documentation, verify compliance per 551 requirements. Plant inspection per requirements of 501 for concrete production. Perform 28 day compressive strength per MM9.2, per concrete mixture for 25% of QC frequency when larger volumes permit RF-1.
- **CI QA:** Review construction practices per GEM-26 or as defined in Design-Builders QC plan. Review pile plumbness on 25% of the number required in the QC plan. Review 25% of the pile driving logs.
- **Observe 25% of the load testing required in the QC plan per GCP-18.**
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<td>Drilled Shafts</td>
<td>• RF-1 RF-1(LV) for concrete&lt;br&gt;• RF-2 for all other materials / operations</td>
<td>• Materials QA: Review material documentation. Plant inspection per requirements of 501 for concrete production. Verification for 28 day compressive strength per MM9.2, per concrete mixture when larger volumes permit RF-1.&lt;br&gt;• CI QA: Review construction practices per GEM-18 or as defined in Design-Builders QC plan. Review pile plumbness on 25% of the number required in the QC plan. Review 25% of the pile driving logs.&lt;br&gt;• Observe 25% of the load testing required in the QC plan per GCP-18.</td>
</tr>
<tr>
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</tr>
<tr>
<td>Micropiles</td>
<td>RF-1 for concrete and grout RF-2 for all other materials / operations</td>
<td>Materials QA: Review material documentation. Plant inspection per requirements of 501 for concrete or grout production. Grout testing per 701-19E for 100% of placements, testing for grout setting time, expansion/contraction, compressive strength, bleed water, fluidity, chloride and sulfate content and permeability. CI QA: Verify construction practices and Design-Builder QC per GEM-25 or as defined in Design-Builders QC plan. Review grouting pressure on 25% of the number required in the QA plan. Observe 25% of the load testing required in the QA plan per GCP-18.</td>
</tr>
<tr>
<td>552 – Externally Stabilized Cut Structures</td>
<td>RF-2 Hold point for design review</td>
<td>Materials QA: Review material documentation prior to use. Plant inspection per requirements of 501 for concrete production. Perform 28 day compressive strength per MM9.2, per concrete mixture at 100% of QC frequency. CI QA: Review structural and geotechnical design. See GDP-11</td>
</tr>
<tr>
<td>Specification Section</td>
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<tr>
<td>553 – Cofferdams and Waterway Diversion Structures</td>
<td>RF-3</td>
<td>Materials QA: Verify material requirements of 553-2 CI QA: Verify review of submittal documents by QC.</td>
</tr>
<tr>
<td></td>
<td>Hold point for design review</td>
<td></td>
</tr>
<tr>
<td>554 – Fill Type Retaining Walls</td>
<td>RF-2</td>
<td>Materials QA: Verify that wall units are from the Approved List. Perform materials testing per the specification on the first stockpile and on 100% of the subsequent stockpiles. Statistical analysis not required for gradation testing. Backfill sampling per GCP-20. CI QA: Observe random sampling on backfill from behind the wall, on 100% of the random samples taken. Perform random sampling and testing on material from behind the wall on 100% of the required samples. Statistical analysis not required for gradation testing. Perform compaction testing at 100% of frequency required by QC plan. See inspection requirements of GEM-16.</td>
</tr>
<tr>
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</table>
| 555, Structural Concrete | • For cumulative project quantities over 1000 CY  
  o RF-1 for air content and strength  
  o RF-2 for slump, unit weight and temperature  
  • For cumulative project quantities 1000 CY or less.  
  o RF-1(LV) for strength, air content, slump, unit weight and temperature  
  o RF-3 for various appurtenances and raw materials. Witness points for all structural applications prior to concrete placement, to verify cover, rebar quantity and spacing, and verify proper placement of appurtenances as necessary.  
  • Hold point for concrete placement until materials certifications received. | • Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength, slump, unit weight, and temperature per MM9.2, per concrete mixture at frequency dependent on volume used on the project as follows:  
  • For cumulative project quantities over 1000 CY:  
    • RF-1: 25% of QC testing frequency  
    • RF-2: 100% of QC testing frequency  
  • For cumulative project quantities 1000 CY or less:  
    • RF-1(LV)  
  • CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement.  
  • Additional testing may be required dependent upon Design-Builders QC plan requirements and any special testing outlined to assure durability (i.e. corrosion protection, permeability, f/t, scaling, etc.…). |
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</table>
| 556, Reinforcing Steel for Concrete Structures | • RF-2 for Stainless Steel products  
• RF-3 for all other reinforcing materials | • Materials QA: Verify all manufacturers on Approved List and/or material certification received/on file per the following:  
  • Black bar: mill must appear on Approved List.  
  • Epoxy Bar: mill, fabricator, and powder must all appear on Approved Lists.  
  • Galvanized Bar: Approved list for mill, certification for the galvanizing.  
  • Stainless Steel Bar reinforcement per 709-13 and Stainless Clad bar Reinforcement per Special Specification: Acceptance testing per each bar size and heat for tensile strength, chemistry, nominal weight, and deformation height.  
  • CI QA: Verify proper handling of reinforcing per specification 556 |
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<td>557 – Superstructure Slabs, Sidewalks on Bridges, and Structural Approach Slabs</td>
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| - For cumulative project quantities over 1000 CY  
  - RF-1 for air content and strength  
  - RF-2 for slump, unit weight and temperature  
- For cumulative project quantities 1000 CY or less.  
  - RF-1(LV) for strength, air content, slump, unit weight and temperature  
  - RF-3 for various appurtenances and raw materials. Witness points for all structural applications prior to concrete placement, to verify cover, rebar quantity and spacing, and verify proper placement of appurtenances as necessary.  
- Hold point for concrete placement until materials certifications received. |
| - Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength, slump, unit weight, and temperature per MM9.2, per concrete mixture at frequency dependent on volume used on the project as follows:  
  - For cumulative project quantities over 1000 CY:  
    - RF-1: 25% of QC testing frequency  
    - RF-2: 100% of QC testing frequency  
  - For cumulative project quantities 1000 CY or less:  
    - RF-1(LV)  
- CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement.  
- Additional testing may be required dependent upon Design-Builders QC plan requirements and any special testing outlined to assure durability (i.e. corrosion protection, permeability, f/t, scaling, etc.). |
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<td><strong>558 - Longitudinal Sawcut Grooving of Structural Slab Surface</strong></td>
<td>RF-3</td>
<td>• Materials QA: N/A</td>
</tr>
<tr>
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<td>• CI QA: Verify grooving dimensions per specification for each day of work. Measure groove spacing.</td>
</tr>
<tr>
<td><strong>560 - Masonry</strong></td>
<td>RF-3</td>
<td>• Materials QA: plant QC/QA program per Materials Procedure 09-03 for block items. Verify masonry cement type is correct, and approved</td>
</tr>
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<td>• CI QA: Random verification of adherence to all specification construction requirements. Verify dovetail anchor locations / spacing for every 1000 sf wall placed.</td>
</tr>
<tr>
<td><strong>563 – Prestressed Concrete Units (Structural)</strong></td>
<td>RF-2 when DB is responsible for plant operations. RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>• Materials QA: Precast production off-site per the PCCM. The Design Builder will progress any necessary shop drawings and perform QC and QA as defined in the PCCM. The Department will perform the requirements of the PCCM at 25% of the defined QA requirements to verify conformance with specifications.</td>
</tr>
<tr>
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<td>• CI QA: Verify erection per PCCM.</td>
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<td>564, Structural Steel</td>
<td>RF-2 when DB is responsible for plant operations. RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>Materials QA: Steel fabrication off-site per the SCM. The Design-Builder will progress any necessary shop drawings and perform QC as defined in the SCM. The Department will perform the requirements of the SCM at 25% of the defined QC requirements to verify conformance with specifications. Other materials conformance per various 700 section requirements. CI QA: Verify erection per SCM. Observe field repairs to paint damaged during erection performed according to Section 572.</td>
</tr>
<tr>
<td>565, Bridge Bearings</td>
<td>RF-2 Hold point: Installation shall only progress after receipt of BR-195.</td>
<td>Materials QA: Verify Bearing manufacturer on Approved List. Department review of manufacturers sampling and testing data. 10% of the produced lots will be sampled and tested by the Department for verification per sections 716-06, 716-07, 716-11, 716-12 or Special Specification requirements. CI QA: Verify BR-195 and inspection stamps inspected at jobsite.</td>
</tr>
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<tr>
<td>566 – Modular Expansion Joint Systems</td>
<td>RF-3</td>
<td>Materials QA: Verify use of systems on the Department’s Approved List and receipt of manufacturers certifications received / on file.</td>
</tr>
<tr>
<td></td>
<td>Hold point: Installation shall only progress after receipt of manufacturer’s certification.</td>
<td>CI QA: Assure shop drawing reviewed by DB and receipt of manufacturer’s certification report prior to installation. Verify adherence to manufacturer’s installation requirements. Observe watertight integrity test.</td>
</tr>
<tr>
<td>567 – Bridge Joint Systems</td>
<td>RF-3</td>
<td>Materials QA: Verify use of systems on the Department’s Approved List and receipt of manufacturers certifications received / on file.</td>
</tr>
<tr>
<td></td>
<td>Hold point: Installation shall only progress after receipt of manufacturer’s certification.</td>
<td>CI QA: Assure any shop drawing reviewed by DB and receipt of manufacturer’s certification report prior to installation. Verify adherence to manufacturer's installation requirements. Observe watertight integrity test.</td>
</tr>
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<tr>
<td>568 – Bridge Railing</td>
<td>RF-3 for projects where Design Builder performs oversight of production&lt;br&gt;RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>Materials QA: Verify manufacturer’s certification with test results received / on file. Drop Weight Tear Test each heat of bridge rail as outlined in NYSDOT specification 710-23.&lt;br&gt;CI QA: Verify installation progressed per 568-3. Random testing of connections requiring tightening to specified torque.</td>
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</table>
| 569 – Permanent Concrete Traffic Barrier for Structures | RF-1(LV) / RF-2 | • Materials QA: Plant inspection per requirements of 501 for concrete production for cast-in-place (CIP) construction. Verify precast products provided from approved Precaster listed on the Dept Approved List and produced under QC/QA program. Perform all sampling and testing of concrete per MM9.2. Samples taken at a frequency once for every 200 cy of concrete placed. Acceptance based on compressive strength and air content. For precast verify that QC review of drawings performed properly and certifications provided.  
• CI QA: for CIP verify all field items per QC Inspection requirements prior to concrete placement. Review materials certifications for reinforcing. Observe QC checks performed such that design is met for items such as thickness, reinforcing spacing, and grade and cross slope as determined by dry run. Verify acceptable curing materials on hand prior to placement. |

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**Specifications:**

- **Risk Factor, applications, and hold points**

- **Quality Assurance Actions and Testing**

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<tr>
<td>570 – Paint Removal Operations</td>
<td>RF-3</td>
<td>Materials QA: Verify HEPA filters meet specification requirements. <strong>CI QA:</strong> Performance of the containment system during paint removal operations shall be in accordance with the relevant parts of 570.</td>
</tr>
<tr>
<td>571 - Treatment and Disposal of Paint Removal Waste</td>
<td>RF-3</td>
<td>Materials QA: NA <strong>CI QA:</strong> Verify waste disposal progressed in accordance with 571.</td>
</tr>
<tr>
<td>572 – Structural Steel Painting: Shop Applied</td>
<td>RF-3</td>
<td>Materials QA: Paints must appear on Approved List for Class 1 Paints. Abrasive must meet requirements set forth by 572, inspected in the field. Paint systems on A.L. sampled annually at random sites for chemical relevance to NTPEP tests on same system according to Materials Method 6. <strong>CI QA:</strong> Verify paint has been applied in accordance with 572.</td>
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<tr>
<td>576, Bridge Drainage System</td>
<td>RF-3</td>
<td>- Materials QA: Verify materials conform to 576-2 through review of certifications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CI QA: Verify DB receipt of appropriate certifications. Installation per plans or shop drawings.</td>
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<td></td>
<td>Adherence to Steel Construction Manual for any metallic product installation. Assure field testing</td>
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<td>performed per specification.</td>
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</tr>
<tr>
<td>578 - Bonded Concrete Overlay for Structural Slabs</td>
<td>RF-1(LV) / RF-2</td>
<td>Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 10% of QC frequency when larger volumes of concrete allow RF-2. CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement.</td>
</tr>
<tr>
<td></td>
<td>Witness point prior to placement of bonded overlay for surface preparation, reinforcing condition, and formwork.</td>
<td></td>
</tr>
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</table>

Specifications Section

• Risk Factor, applications, and hold points

• Quality Assurance Actions and Testing

Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 10% of QC frequency when larger volumes of concrete allow RF-2. CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement.
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</table>
| 579 - Structural Slab Reconstruction Preparation | • RF-3 | • Materials QA: Concrete, if required, per 501. Verify acceptability of QC tests for plastic air content and 28 day compressive strength per MM9.2, per concrete mixture.  
• CI QA: Verify removal limits and surfaces prepared properly per specification requirements. Verify concrete repairs progressed per 555. |
### Risk Factor, applications, and hold points

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</table>
| 582 - Removal and Replacement of Structural Concrete | RF-1(LV) / RF-2  
Witness point for all structural applications prior to concrete placement, to verify cover, rebar quantity and spacing, and verify proper placement of appurtenances as necessary. | Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 100% of QC frequency when larger volumes of concrete allow RF-2.  
CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement. |
## Specification Section

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<td>583 - Shotcrete</td>
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</table>
  ▪ RF-2  
  ▪ Witness point for qualification panel  
  ▪ Witness point for all structural applications prior to concrete placement, to verify cover, rebar quantity and spacing, and verify proper placement of appurtenances as necessary. |  
  ▪ Materials QA: Qualification panels should be observed by Department staff, verification using test panels taken every 1000 sf for compressive strength.  
  ▪ CI QA: OV review documentation of all materials components from AL. All cores for reinforcement encasement be retained for OV evaluation |
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<tr>
<td>584 - Specialized Overlays for Structural Slabs</td>
<td>▪ RF-1(LV) / RF-2 ▪ Witness point for all structural applications prior to concrete placement, to verify cover, rebar quantity and spacing, and verify proper placement of appurtenances as necessary</td>
<td>▪ Materials QA: Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 100% of QC frequency when larger volumes of concrete allow RF-2. ▪ CI QA: Observe QC Inspection progressing per standard specifications or QC Plan. Observe DB concrete sampling and testing of concrete for air and slump at frequencies per MM9.2. Review materials certifications for various supplied items. Observe QC checks performed such that design is met for characteristics such as thickness, reinforcing spacing, cover, and grade. Verify acceptable curing materials on hand prior to placement.</td>
</tr>
<tr>
<td>585 - Structural Lifting Operations</td>
<td>▪ RF-3 ▪ Witness point for DCES review of working drawings</td>
<td>▪ Materials QA: N/A ▪ CI QA: Verify lifting progressed via working drawings developed by DB.</td>
</tr>
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</table>
| 587 - Bridge Railing Reconstruction                       | RF-3                                      | Materials QA: Verify manufacturer’s certification with test results received / on file. Drop Weight Tear Test each heat of bridge rail as outlined in NYSDOT specification 710-23 for any new materials.  
CI QA: verify construction progressed per specifications |
| 589 - Removal of Existing Steel                           | RF-3                                      | Materials QA: N/A  
CI QA: Verify work progressed per SCM and QC plan |
| 590 - Adjustment of Bridge Appurtenances                  | RF-3                                      | Materials QA: Verify materials meet specification requirements, approved list as appropriate, and certifications received / on file.  
CI QA: verify construction progressed per specifications |
| 594 - Timber and Lumber                                   | RF-3                                      | Materials QA: Verify materials meet specification requirements, Approved List as appropriate, and certifications received / on file.  
CI QA: perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the contract documents. |
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<td>596 - Open Steel Floor</td>
<td>- RF-2 when DB is responsible for plant operations. &lt;br&gt; - RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>- Materials QA: Steel fabrication off-site per the SCM. The Design-Builder will progress any necessary shop drawings and perform QC and QA as defined in the SCM. The Department will perform the requirements of the SCM at 100% of the defined QA requirements to verify conformance with specifications. &lt;br&gt;&lt;br&gt;- CI QA: Verify erection per SCM. Observe field repairs to paint damaged during erection performed according to Section 572.</td>
</tr>
<tr>
<td>597 - Timber Bridge Railing and Transitions</td>
<td>- RF-3</td>
<td>- Materials QA: Verify materials meet specification requirements, Approved List as appropriate, and certifications received / on file. The Design-Builder will progress any necessary shop drawings and perform QC and QA as defined in the SCM. &lt;br&gt;&lt;br&gt;- CI QA: perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the contract documents. Assure any shop drawing reviewed by DB.</td>
</tr>
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</table>
| 602, Rehabilitation of Culvert and Storm Drain Pipe | RF-3 | • Materials QA: Materials acceptance based on appearing on the NYSDOT Approved List as per 602 requirements and manufacturer’s cert that the material conforms to requirements of the 602 spec.  
• CI QA: Verification of materials acceptability. Observe conformance with manufacturers QC / Installation Plan on file with Director, Materials Bureau. |
| 603, Culverts and Storm Drains | RF-3 | • Materials QA: Verify manufacturer on Approved List and certifications received / on file. Verify earthwork materials per 203.  
• CI QA: Observe materials installation per 603. Observe earthwork compaction testing per 203. |
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<td>RF-1(LV) / RF-2 - cast-in-place products</td>
<td>RF-3 - precast products produced per Materials QC/QA program requirements from approved list manufacturer.</td>
<td>Materials QA: Plant inspection per requirements of 501 for concrete production for cast-in-place (CIP) construction. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 100% frequency of QC when larger volumes of concrete allow RF-2. Verify precast products provided from approved Precaster listed on the Dept Approved List. Verify earthwork materials per 203.</td>
</tr>
<tr>
<td></td>
<td>CI QA: for CIP, verify all field items per QC Inspection requirements prior to concrete placement. Review materials certifications for reinforcing. Observe QC checks performed such that design is met for items such as thickness, reinforcing spacing, cover, etc… Verify acceptable curing materials on hand prior to placement. Perform all sampling and testing of concrete per MM9.2. For precast verify that QC review of drawings performed properly and certifications provided. Observe earthwork compaction testing per 203</td>
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</tbody>
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**VAN Wyck Expressway (VWE) Capacity and Access Improvements to John F. Kennedy (JFK) Airport Project - Contract 1**

PIN X735.82, CONTRACT D900048

Part 3 – Appendix D - Attachment 1

FINAL August 30, 2019
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<td>605, Underdrains</td>
<td>• RF-3</td>
<td>• Materials QA: Verify Approved List materials and certifications received / on file per appropriate 700 sections</td>
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<tr>
<td></td>
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<td>• CI QA: Observe installation to proper depth and use of acceptable filter material.</td>
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<tr>
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<tr>
<td>606, Guide Railing</td>
<td>• RF-1(LV) / RF-2 for concrete</td>
<td>• Materials QA: Verify Box Beam Guide Rail producers on Approved List. Verify manufacturer’s certification with test results received / on file. NYSDOT to perform Drop Weight Tear Test each heat of box beam guide rail as outlined in 710-21 and Materials Method 14.</td>
</tr>
<tr>
<td></td>
<td>• RF-3 for all other materials</td>
<td>• CIP concrete barrier and end assemblies – Verify plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 100% frequency of QC when larger volumes of concrete allow RF-2.</td>
</tr>
<tr>
<td></td>
<td>• RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>• Precast concrete barrier – Verify material production per 704-03 and precast manufacturers certification received / on file.</td>
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<td></td>
<td>• Corrugated Guide Rail and Cable Guide Rail – Verify material certification received / on file.</td>
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<td>• CI QA: Verify specific guiderail type installation per appropriate 606. Observe QC concrete inspection per MM9.2</td>
</tr>
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<tr>
<td>607, Fences</td>
<td>▪ RF-3</td>
<td>▪ Materials QA: Verify materials certifications received / on file.</td>
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<tr>
<td></td>
<td></td>
<td>▪ CI QA: Assure any shop drawing reviewed by DB. Perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the contract documents.</td>
</tr>
<tr>
<td>608 – Sidewalks, Driveways, Bicycle Paths, and Vegetation Control Strips</td>
<td>▪ RF-2 for concrete ▪ RF-3 for other materials</td>
<td>▪ Materials QA: Sample WWF, Brick and Pavers as per Materials Procedure 05-02. See 401, Plant Production for HMA. Plant inspection per requirements of 501 for concrete production. Perform plastic air content per MM9.2, per concrete mixture at 100% of QC. Miscellaneous materials conformance per various 700 section requirements.</td>
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<td>▪ CI QA: observation, documentation review random checks to verify quantity and ensure requirements are being followed and met. Observe QC concrete inspection per MM 9.2.</td>
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<tr>
<td>609, Curb and Curb &amp; Gutter</td>
<td>RF-3</td>
<td>- Materials QA: Approved List for 714-01 Stone and Granite curb. For HMA, review documentation with random observation of HMA production. MP 401 allows producer to certify HMA used for 609 items with allowable QA testing, if desired. Plant inspection per requirements of 501 for concrete production. Observe plastic air content per MM9.2, per concrete mixture. Verify miscellaneous materials conformance per various 700 section requirements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CI QA: observation, documentation review and random checks to verify quantity and ensure requirements are being followed and met. Observe QC concrete inspection per MM 9.2.</td>
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</table>
| 610 - Ground Vegetation – Preparation, Establishment and Management | • RF-3  
  • Hold point for topsoil placement until material testing results are received.  
  • Hold point for compost with biosolids until material certification received. | • Materials QA: Check documentation required by specifications to verify compliance  
• CI QA: perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the specifications. Verify appropriately licensed applicator for chemical weed control methods. |
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<td>611 – Planting, Transplanting and Post-Planting Care</td>
<td>RF-3</td>
<td>Materials QA: Observe the inspection of the first delivery of each plant material type (e.g.: deciduous tree, coniferous shrub). Verify certifications required by specification. Verify that the material used on the project is the same as that specified in the contract documents, at a rate of 10% of the QA frequency.</td>
</tr>
<tr>
<td></td>
<td>Hold point on installation of Specimen plants until material approval.</td>
<td>CI QA: perform random check of areas that have been inspected, to determine they meet the criteria, including placement locations, called for in the contract documents as follows:</td>
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<tr>
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<td>Witness point on first instance of transplanting operation.</td>
<td>• 10% of roadside,</td>
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<td></td>
<td>Witness point on inspection of first delivery of each plant type.</td>
<td>• 15% of streetscape and</td>
</tr>
<tr>
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<td></td>
<td>• 20% of planting for environmental permit requirements</td>
</tr>
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| 613 – Wildlife and Ecology                                | • RF-2 for any materials or performance testing required by environmental permit  
• RF-3 for all other non-environmental permit work  
• Witness point the start of any permit-related ecological treatment (e.g.: stream restoration). | • Materials QA: Review documentation required by specifications and environmental permits to verify material or testing compliance. Perform any required testing at 100% of QC requirements or per direct environmental requirements  
• CI QA: perform random check of 100% of the areas that have been inspected to determine they meet the criteria called for in the specifications. Assure any field testing is performed per specification. |
| 614 – Pruning, Improving and Removing Existing Vegetation | • RF-3  
• Witness point for verification of trees to be pruned or removed prior to work start in streetscape or areas subject to permit | • Materials QA: Check documentation required by specifications to verify compliance.  
• CI QA: perform random check of the areas that have been inspected to determine they meet the criteria called for in the contract documents as follows:  
• 10% of roadside  
• 15% of streetscape  
• 20% of areas subject to permit (e.g.: NYC parks, forest preserves) |
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| 615 – Landscape Appurtenances | • RF-3  
  • Witness point for verification that approved equal meets the  
  • Hold point for field layout of one-of-a-kind site design (e.g. play equipment, art installation) | • Materials QA: Check documentation required by specifications to verify compliance  
• CI QA: Assure any shop drawing reviewed by DB. Observe the first installation of each type of appurtenance, and 20% of any subsequent installation, including placement location. |
| 616 – Soil Bioengineering | • RF-3  
  • Witness point on inspection of first delivery of each plant type.  
  • Witness point for location of any material in streambed. | • Materials QA: Check documentation required by specifications and environmental permits to verify compliance. Certified copies of laboratory test results supplied by DB.  
• CI QA: Verification of materials acceptability. Observe the first installation of each type of facility, and 20% of any subsequent installations. Secure placement of materials to provide protection from erosion. |
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</table>
| **617 - Invasive Species Management** | ▪ RF-3  
▪ Witness point on layout of proposed treatment area.  
▪ Witness point for location and operation of equipment washing station. | ▪ Materials QA: Check documentation required by specifications and environmental permits to verify compliance.  
▪ CI QA: perform random check of 10% of the areas that have been inspected to determine they meet the criteria called for in the specifications. Verify appropriately licensed applicator for chemical weed control methods. |
| **619, Work Zone Traffic Control (WZTC)** | ▪ RF-3 for materials. No physical testing expected but requires verification of adherence to specifications and standards of application on daily basis.  
▪ Witness point of all traffic control / safety operations. | ▪ Materials QA: verify products on Approved List or conforms to requirements of 619-2 references as appropriate.  
▪ CI QA: Assure DB personnel competency for safety oversight of WZTC and that all operations are compliant with 619, safety plan, and MUTCD requirements. |
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<td><strong>620, Bank and Channel Protection</strong></td>
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<tr>
<td>• RF-2 only if soundness testing deemed necessary and performed by Design Builder.</td>
<td>• Materials QA: Stockpile material, soundness testing if necessary, based on geologic source report data. Visual examination of materials for size and gradation. Block pavers per certification and Approved List of 704-04. Gabions per 712-15</td>
</tr>
<tr>
<td>• RF-3 for any Department accepted stockpiles / materials</td>
<td>• CI QA: random visual inspection of materials used and practices followed for installation. Secure placement of stone materials to provide protection from erosion. See GCP 14.</td>
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<tr>
<td>622 – Buildings and Miscellaneous Structures</td>
<td>• RF-1 for new building erections and structural alterations where materials testing can be performed by Design-Builder and verification testing possible (i.e. concrete, earthwork items, etc…).&lt;br&gt;• RF-2 for non structural alterations&lt;br&gt;• RF-3 for non-testable products or materials accepted on Approved List.&lt;br&gt;• Hold point for OGS Construction permit&lt;br&gt;• Hold point for foundation strength&lt;br&gt;• Additional Witness and Hold point per applicable Material Sections referenced in contract documents.</td>
<td>• Materials QA: Check documentation required by specifications to verify compliance. Certified copies of laboratory test results supplied by DB. Review “Commissioning” and any testing of systems (i.e. ITS, fire suppression, elevators, etc…) for compliance with building design.&lt;br&gt;• CI QA: Review of CPM schedule by DB. DB informs Department of achievement/adjustment of project milestones. Assure any shop drawing reviewed by DB. Verify building trade inspections completed. Perform random check of 20% of the areas that have been inspected to determine they meet the criteria called for in the specifications.</td>
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</table>
| 623 - Screened Gravel, Crushed Gravel, Crushed Stone, Crushed Slag | RF-3 | Materials QA: verify materials meet 703-02  
CI QA: Review calculations for quantities used if in-place measure. Verify quantities if measured by weight. |
CI QA: observation, documentation review and random checks to verify quantity and ensure placement requirements are being followed. |
| 630 - Barricades | RF-3 | Materials QA: Corrugated Guide Rail – Verify material certifications received / on file. Verify materials on Approved List as appropriate  
CI QA: Verify completed installation per plans. |
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| 633 – Conditioning Existing Pavement Prior to Hot Mix Asphalt (HMA) Overlay | RF-3 | • Materials QA: See 401 for HMA production requirements. Small quantities accepted based on certification per 401  
• CI QA: Observation, documentation review and random checks to verify quantity to ensure placement requirements are being followed and met. |
| 635 - Cleaning and Preparation of Pavement Surfaces for Pavement Markings | RF-3 | • Materials QA: N/A  
• CI QA: Verify cleaning operations do not damage pavements to remain in place and are progressed in a safe manner to protect traffic. Timely replacement of pavement markings per Dept requirements for safety. |
| 638 - White Synthetic Resin Binder Concrete | RF-2 | • Materials QA: See 401 for HMA production requirements. Small quantities accepted based on certification per 401  
• CI QA: Observation, documentation review and random checks to verify quantity and ensure requirements are being followed and met. |
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<tr>
<td>640, Reflective Pavement Marking Paints</td>
<td>• RF-3</td>
<td>• Materials QA: Verify product appears on the Approved List.</td>
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<tr>
<td></td>
<td>• RF-3</td>
<td>• CI QA: Random verification of placement in conformance with the MUTCD.</td>
</tr>
<tr>
<td>643 – Noise Barriers</td>
<td>• RF-3</td>
<td>• Materials QA: Verify materials used meet requirements for the type of barrier installed. Certifications for testing as appropriate. See 501 for concrete production. Quantities less than 50 CY accepted on certification. Verify DB test results for foundation concrete compressive strength meets barrier design requirements. Observe concrete air content testing per MM9.2.</td>
</tr>
<tr>
<td></td>
<td>• Hold point for foundation strength</td>
<td>• CI QA: Verify completed installation per plans.</td>
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| 644 – Overhead Sign Structures | - RF-1(LV) / RF-2 for CIP concrete sampling and testing  
- RF-3 for other components and precast concrete  
- RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.  
- Hold point for foundation strength prior to setting any overhead structures or poles.  
- Witness point for pole installation and any bolt tightening. | - Materials QA: Item 644 may require the use of stainless steel hardware. SS hardware stock lot sampled, tested and approved according to 715-16 prior to use. Exception is grade B8 bolts less than 3/8” in diameter, which are accepted based on chemistry only. Plant inspection per requirements of 501 for concrete production. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture under RF-1(LV) or at 100% of QC frequency when larger volumes of concrete allow RF-2. Verify materials on Approved List as appropriate. Refer to Special Specification Item# 645.03XXXX11 for sheeting.  
- CI QA: Verify excavation per 206, select structural fill per 203. Verify concrete installation per 555. |
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<td>645, Signs</td>
<td>• RF-3</td>
<td>• Materials QA: Verify SS hardware stock lot sampled, tested and approved according to 715-16 prior to use (exception is grade B8 bolts less than 3/8” in diameter, which are approved based on chemistry only). See 501 for concrete production. Quantities less than 50 CY accepted on certification. Observe concrete air content testing per MM9.2. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements. Verify materials on Approved List as appropriate. Verify sign panel compliance with 730. Refer to Special Specification Item# 645.03XXXX11 for sheeting.</td>
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<td></td>
<td>• RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
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<tr>
<td></td>
<td>• Hold point for foundation strength prior to setting structures or poles.</td>
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<tr>
<td></td>
<td>• Witness point for pole installation and any bolt tightening.</td>
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<tr>
<td></td>
<td>• CI QA: Verify conformance with plans, Standard sheets, Materials Detail sheets and Approved Lists. Verify placement locations, erection conforming to standard sheets, and visual applicability for safety.</td>
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<tr>
<td>646 - Delineators, Reference Markers and Snowplowing Markers</td>
<td>RF-3</td>
<td>Materials QA: Verify conformance with Standard Sheets and product appearing on the Approved List. CI QA: verify placement locations, erection conforming to standard sheets, and visual applicability for safety.</td>
</tr>
<tr>
<td>647 - Removing, Storing and Relocating Signs</td>
<td>RF-3</td>
<td>Materials QA: Verify new / replacement materials conform to 645. CI QA: Verify conformance with plans, Standard sheets, Materials Detail sheets, and Approved Lists. Verify placement locations, erection conforming to standard sheets, and visual applicability for safety.</td>
</tr>
<tr>
<td>650 – Trenchless Installation of Casing</td>
<td>RF-2</td>
<td>Materials QA: Review material documentation. Perform grout cube breaks on 100% of the number required in the QA plan. CI QA: Observe steering and tracking procedures for the first installation, and 100% of the subsequent installations. Observe monitoring plan for the first installation, and for 100% of the subsequent installations.</td>
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</table>
| 652 - Furnishing and Applying Salts | RF-3                                      | Materials QA: verify materials meet 712-02 or 712-03  
                                |                                            | CI QA: review documents that application rates are adhered to and that treatments are effective |
| 654 – Impact Attenuators - Permanent | RF-1(LV) / RF-2 for concrete or grout compressive strength  
                                | RF-3 for other components  
                                | Hold point for foundation strength prior to setting attenuators | Materials QA: See 501 for concrete production. Quantities less than 50 CY accepted on certification. Perform plastic air content and 28 day compressive strength per MM9.2, per concrete mixture RF-1(LV) or at 100% of QC frequency when larger volumes of concrete allow RF-2. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements and certifications as appropriate. Verify materials on Approved List as appropriate.  
<pre><code>                            |                                            | CI QA: Verify conformance with manufacturer’s drawings, plans, Standard sheets, Materials Detail sheets, and Approved Lists. |
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<td>RF does not apply when DOT performs materials sampling and testing for acceptance purposes at off-site fabrication sites.</td>
<td>CI QA: verify placement true to line and grade and proper bearing on underlying surface.</td>
</tr>
<tr>
<td>656, Miscellaneous Metals</td>
<td>RF-3</td>
<td>Materials QA: verify materials requirements of 715 and 725 as appropriate. Galvanizing performed per 719-01. Review certifications as appropriate. Random sampling when deemed necessary.</td>
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<td>CI QA: Verify work progresses per the Steel Construction Manual.</td>
</tr>
<tr>
<td>659 - Telecommunication Utilities</td>
<td>RF-3</td>
<td>Materials QA: Verify compliance with special provisions of local municipality and/or respective utility company.</td>
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<td>CI QA: Verify earthwork progressed per section 206 requirements as appropriate. Verify DB coordination with local utility.</td>
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<td>RF-3</td>
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| 660, Utilities        | RF-3                                       | Materials QA: Verify compliance with special provisions of local municipality and/or respective utility company  
|                       |                                            | CI QA: Verify earthwork progressed per section 206 requirements. |
| 661, Electric Utilities | RF-3                                       | Materials QA: Verify compliance with special provisions of local municipality and/or respective utility company  
|                       |                                            | CI QA: Verify earthwork progressed per section 206 requirements as appropriate. Verify DB coordination with local utility |
| 662, Gas, Oil and Steam Utilities | RF-3                                       | Materials QA: Verify compliance with special provisions of local municipality and/or respective utility company  
<p>|                       |                                            | CI QA: Verify earthwork progressed per section 206 requirements as appropriate. Verify DB coordination with local utility |</p>
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| 663, Water Supply Utilities | RF-3 | • Materials QA: Verify compliance with special provisions of local municipality and/or respective utility company. Materials compliance per 663-2. Concrete production per 501, with exceptions as noted in 663. Review / verify DB test results for concrete compressive strength meets design requirements. Observe concrete air content testing per MM9.2. at 10% of QC frequency  
• CI QA: Verify earthwork progressed per section 206 requirements as appropriate. Verify DB coordination with local utility. |
| 664, Sanitary Sewer Utilities | RF-3 | • Materials QA: Compliance with special provisions of local municipality and/or respective utility company  
• CI QA: Verify earthwork progressed per section 206 requirements as appropriate. Verify DB coordination with local utility |
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<tr>
<td>670 - Highway Lighting System</td>
<td>RF-3</td>
<td>Materials QA: See 501 for concrete mixture requirements. Concrete production accepted on certification. Observe plastic air content performed per MM9.2 procedures and frequency. Rebar acceptance per 556. Miscellaneous materials conformance per various 700 section requirements and certifications as appropriate. Verify materials on Approved List as appropriate. CI QA: Verify shop drawing reviews completed by DB prior to material delivery. Random review of installation per standard specifications. Test of system prior to service</td>
</tr>
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- Hold point for foundation strength prior to setting structures or poles.
- Witness point for pole installation and any bolt tightening.
- Hold point for all testing of systems prior to placing into service.
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<td>680, Traffic Signals</td>
<td>• RF-1(LV) / RF-2 for concrete&lt;br&gt;• RF-3 for all other materials&lt;br&gt;  • Hold point for achieving concrete strength prior to loading / installing poles.&lt;br&gt;• Hold point for all testing of systems prior to placing into service.</td>
<td>• Materials QA: See 501 for concrete mixture requirements. Concrete production accepted on certification. Perform plastic air content and 28 day compressive strength per specification following MM9.2, under RF-1(LV) or at 100% of QC frequency when larger volumes of concrete allow RF-2. Rebar acceptance per 556. Verify precast components conform to 723-45. Miscellaneous materials conformance per various 700 section requirements and certifications as appropriate. Verify materials on Approved List as appropriate. Verify certification from manufacturer for compliance with 724 requirements.&lt;br&gt;• CI QA: Verify excavation per 206, select structural fill per 203. Verify concrete strengths achieved prior to any loading. Pole erection per standard sheets and compliance with any MUTCD requirements. Verify appropriate testing of signal systems are completed prior to placement into service. Verify coordination with utilities and agency maintaining the signals as appropriate.</td>
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<tr>
<td>685, Epoxy Reflectorized Pavement Markings</td>
<td>RF-3</td>
<td>Materials QA: Verify product appears on the Approved List</td>
</tr>
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<td></td>
<td></td>
<td>CI QA: Verify placement per plans, Standard sheets and MUTCD on clean / prepared surfaces, under acceptable atmospheric conditions, and using proper WZTC. Verify retro-reflectivity</td>
</tr>
<tr>
<td>687, Thermoplastic Reflectorized Pavement Markings</td>
<td>RF-3</td>
<td>Materials QA: Verify product appears on the Approved List</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CI QA: Verify placement per plans, Standard sheets and MUTCD on clean / prepared surfaces, under acceptable atmospheric conditions, and using proper WZTC. Verify retro-reflectivity</td>
</tr>
<tr>
<td>688, Preformed Reflectorized Pavement Markings</td>
<td>RF-3</td>
<td>Materials QA: Verify product appears on the Approved List</td>
</tr>
<tr>
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<td></td>
<td>CI QA: Verify placement per plans and MUTCD on clean / prepared surfaces, under acceptable atmospheric conditions, and using proper WZTC.</td>
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