



New York State Thruway Authority

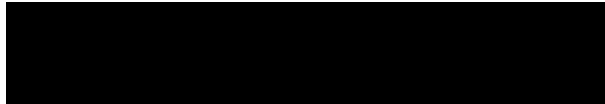
# **TAPPAN ZEE HUDSON RIVER CROSSING PROJECT**

## **DB CONTRACT DOCUMENTS PART 3**

### **PROJECT REQUIREMENTS**

**CONFORMED**  
**November 21, 2012**

**Contract D214134**



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## SECTION 1. GENERAL

### 1.1. Scope

The Design-Builder shall be responsible for complying with all terms of the Contract Documents, the EIS, the ROD and the Site and shall thoroughly examine, review and understand all terms prior to the commencement of the Project. The Design-Builder shall be responsible for determining the full Scope of the Project by undertaking a thorough examination of the Contract Documents, the EIS, the ROD and the Site. All elements of Work that such an examination determines to be necessary for the proper implementation of the Project shall be deemed to be included in the Scope of the Design-Builder's Work, whether or not specifically cited in *Part 1 – DB Agreement Appendix I*, or in other parts of the Contract. The Design-Builder shall not rely solely on the description contained in *Part 1 – DB Agreement Appendix I* or the *Part 3 – Project Requirements* in order to identify all Project components to be designed, furnished, constructed, and/or installed by the Design-Builder. It is the Design-Builder's responsibility to obtain clarification of any error, omission, conflict or ambiguity relating to the Scope of the Project or any Project Requirements in accordance with *DB §102-2*.

### 1.2. Standards and References

The Standards identified herein represent requirements that the Design-Builder must comply with in performing the Work. For rules of interpretation and additional guidance with respect to the use of Standards, see *Project Requirement 29 – Standards*.

Certain Project Requirements identify References, which the Design-Builder may use as the Design-Builder sees fit in addressing the requirements solely to the extent that they do not conflict with or detract from the requirements in the Contract Documents and Standards.

The Design-Builder may utilize the engineering data provided in *Part 7 – Engineering Data*. However, the Design-Builder has the responsibility to validate any information it uses and the Design-Builder has the ultimate responsibility for the performance of the Project.

### 1.3. Requirements

The "requirements" subsection of the individual sections of *Part 3 – Project Requirements* establishes the Authority's expectations with respect to the respective 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 Authority deems best suited to the subject. The Design-Builder shall develop its Definitive Design, Design Plans and Project Specifications in conformance with *Part 3 – Project Requirements*.

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

The specific requirements in *Part 3 – Project Requirements* may be more stringent and shall govern over the criteria given in the Standards. However, where a specific requirement in *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 approval are defined as those not meeting the criteria cited in the Standards listed in *Part 3 – Project Requirements*.

## **1.4. Deliverables**

The subsection entitled “deliverables” in each *Part 3 – Project Requirement* establishes the Authority’s expectations. These shall supplement the review plan and consultation and written comment cycles cited in *DB §111-7* through *DB §111-1 2*. The Design-Builder may submit deliverables for the Authority’s consideration or consultation and written comment in addition to those requested. 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 Authority.

Unless otherwise indicated in a *Part 3 – Project Requirement*, all deliverables shall be submitted in both electronic format and hardcopy format. Acceptable electronic formats include Microsoft Word®, Microsoft Excel®, ArcMAP, AutoCAD Architecture® or searchable portable document format (PDF) files, with no copy or password protection on the file content, unless otherwise indicated in a Project Requirement or a Standard cited in a Project Requirement.

## **1.5. Indicative Plans**

The Indicative Plans provided to the Design-Builder in *Part 6 – RFP Plans*, in conjunction with the EIS Appendix A-2 (Project Plans - Short Span Option) and EIS Appendix A-3 (Project Plans - Long Span Option), convey a potential solution to the Project’s needs that the Design-Builder may wish to consider in developing its design. The Indicative Plans are not mandatory.

## **1.6. Directive Plans**

The Directive Plans provided to the Design-Builder in *Part 6 – RFP Plans* are mandatory.

## **1.7. Environmental Re-evaluation**

Decisions to deviate from the Indicative Plans may require a review in relation to the final Environmental Impact Statement (FEIS) and other Environmental Approvals.

If it is determined that the FEIS must be re-evaluated or supplemented, the Design-Builder, in coordination with the Authority and the Federal Highway Administration, shall be responsible for undertaking the supplemental process and addressing its implications to the Baseline Project Schedule and the prosecution of Work.

## **1.8. Alternative Technical Concepts**

Where the provisions and requirements of an approved ATC differ from the requirements of the clause of *Part 3 - Project Requirements* that is cited under *Item (C) Deviations* of the approved ATC, the provisions and requirements of the approved ATC shall govern.

## SECTION 2. PROJECT MANAGEMENT

### 2.1. Design-Builder's Role

The Design-Builder shall have responsibility for controlling and managing the Work. This includes the Design-Builder's responsibility for quality management as defined in *Part 2 – DB §111, DB §112 and DB §113*. This Project Requirement summarizes the Management Plan and schedule to be produced by the Design-Builder in accordance with the Contract Documents. It also sets out the requirements for the Design-Builder's attendance at meetings; and the Design-Build office and facilities to be provided by the Design-Builder. It also provides a description of the Agencies' Oversight role on the Project.

### 2.2. Management Plan and Schedules

#### 2.2.1. Management Plan and Schedule Requirements

The Design-Builder shall provide the items listed in Table 2.2.1-1, which together shall comprise the Management Plan. Table 2.2.1-2 lists the schedule that the Design-Builder shall provide. Each document shall be a development of the corresponding initial plan or schedule submitted as part of the Design-Builder's Proposal. Unless otherwise stated herein, the submission to the Authority of each component item of the Management Plan shall be within 30 days of NTP.

**Table 2.2.1-1: Items comprising the Management Plan**

<b>Plan Title</b>	<b>Contract Document Reference</b>
DBE Plan	<i>DB §102-8.6</i>
Workforce Participation Plan	<i>DB §102-9.4B</i>
Safety Plan	<i>DB §107-7.5</i>
Site Security Plan	<i>DB §107-8.2 and Project Requirement 20 – Security</i>
Quality Plan	<i>DB §113</i>
Project Management Plan	<i>Project Requirement 2 – Project Management</i>
Risk Management Plan	<i>Project Requirement 2 – Project Management</i>
Information Technology Plan	<i>Project Requirement 2 – Project Management</i>
Public Involvement Plan (PIP) support plan	<i>Project Requirement 8 – Public Involvement</i>

**Table 2.2.1-2: Schedule**

<b>Schedule Title</b>	<b>Contract Document Reference (if applicable)</b>
Baseline Project Schedule	<i>DB §108-1.2</i>

#### 2.2.2. DBE Plan

The Design-Builder shall use the DBE Plan submitted with its Proposal and develop it, as necessary, to produce the DBE Plan and meet the requirements of *DB §102-8.6*. The Design-Builder shall submit the DBE Plan to the Authority's Project Manager for written approval.

### **2.2.3. Workforce Participation Plan**

The Design-Builder shall use the Initial Workforce Participation Plan submitted with its Proposal and develop it, as necessary, to produce the Workforce Participation Plan to meet the requirements of *DB §102-9.4B*. The Design-Builder shall submit the Workforce Participation Plan to the Authority's Project Manager for written approval.

### **2.2.4. Safety Plan**

The Design-Builder shall use the Initial Safety Plan submitted with its Proposal and develop it, as necessary, to produce the Safety Plan and meet the requirements of *DB §107-7.5 and DB § 107-7.6*. The Design-Builder shall submit the Safety Plan to the Authority's Project Manager for review and approval in accordance with *DB §107-7.5*.

### **2.2.5. Site Security Plan**

The Design-Builder shall use the Initial Site Security Plan submitted with its Proposal and develop it, as necessary, to produce the Site Security Plan and meet the requirements of *DB §107-8.1 and Project Requirement 20 – Security*. The Design-Builder shall submit the Site Security Plan to the Authority's Project Manager for written approval in accordance with *DB §107-8.2*.

### **2.2.6. Quality Plan**

The Design-Builder shall use the Initial Quality Plan it submitted with the Proposal and develop it, as necessary, including incorporation of content required by *DB §113*. The Design-Builder shall submit the Quality Plan to the Authority's Project Manager for written approval in accordance with *DB §113*.

### **2.2.7. Project Management Plan**

The Design-Builder shall use the Initial Project Management Plan submitted with its Proposal and develop it, as necessary, to produce the Project Management Plan and submit it to the Authority's Project Manager for written approval in accordance with the requirements of Section 2.2.7.1 through Section 2.2.7.5 herein. Submittal of the Project Management Plan shall take place no later than 30 days after the Notice to Proceed.

Consistent with the guidance in the Project Management Institute's *Project Management Body of Knowledge (PMBOK) Guide*, the Project Management Plan shall include but not be limited the following component plans, as a minimum:

- A. Scope Management Plan;
- B. Change Management Plan;
- C. Schedule Management Plan;
- D. Cost Management Plan;
- E. Process Improvement Plan;
- F. Human Resources Plan;
- G. Communication Management Plan;
- H. Procurement Management Plan; and
- I. Project Document Management Plan.

#### **2.2.7.1. Organization Charts**

The project management plan shall include two organization charts (each on 11 inch x 17 inch sheets of paper) illustrating: the structure around the Design-Builder's Key Personnel; staff in roles named in the *Part 3 – Project Requirements*; other individual staff or roles that the Design-Builder deems appropriate to detail in its organization chart; and any Subcontractors having a material role in the Project's design Work and

construction Work. The organization charts shall identify individuals assigned to provide peer reviews of the design and construction activities. The organization charts shall be titled “Design Organization” and “Construction Organization” respectively.

The Design Organization chart shall illustrate the proposed design organization, indicating the roles and reporting relationships of the design staff, down to and including discipline leads and the staff positions proposed in each discipline. The Design Organization chart shall identify individuals assigned to undertake independent checks of the design.

The Construction Organization chart shall illustrate the construction organization, indicating the roles and reporting relationships of the construction staff, down to and including field superintendents and the staff positions proposed under each field superintendent for all shifts.

The Design Organization and Construction Organization charts shall show clearly how the design and the construction arrangements are integrated with the quality management organizational arrangements as required by *DB §113*.

#### **2.2.7.2. Design Management Concept**

The project management plan shall describe the Design-Builder’s design management concept. The description shall, at a minimum, include:

- A. The structure of the Design-Builder’s design organization;
- B. The names of the individuals the Design-Builder commits to use for independent design checks and peer reviews of the design;
- C. The proposed design sequencing; and
- D. The resources and personnel needed to timely produce the required design.

The project management plan shall also include: the Design-Builder’s Form DUS Design Units; Design Review Plan; and a description of designer involvement during construction.

#### **2.2.7.3. Construction Management Concept**

The project management plan shall describe the Design-Builder’s construction management concept. The description shall, at a minimum, include:

- A. The structure of the Design-Builder’s construction organization;
- B. The resources and personnel needed to manage the Project effectively and efficiently during the construction phase, including those individuals undertaking QA/QC activities of construction activities; and
- C. The management and integration of Subcontractors and suppliers.

#### **2.2.7.4. Internal Coordination**

The project management plan shall describe interrelationships and interfaces between each discipline within the Design-Builder’s organization, including design, construction, safety and quality management.

#### **2.2.7.5. External Coordination**

The Project Management Plan shall describe interrelationship and interfaces between the Design-Builder’s organization and the Authority, other governmental agencies, utility owners, stakeholders, regulatory agencies, emergency services, businesses, the public, and other contractors working in the vicinity and impacted by the construction of the Project. This description shall, at a minimum, address the following activities:

- A. Plans and permits reviews;
- B. Progress, workshop, partnering and utility coordination meetings;
- C. Construction, engineering and inspection activities; and
- D. Community relations.

#### **2.2.8. Project Risk Management Plan**

The Design-BUILDER shall prepare a Risk Management Plan (RMP) and perform risk management for the Project consistent with the guidance in the Project Management Institute's Project Management Body of Knowledge (PMBOK) and the NYSDOT *Risk Management Guide for Project Development*.

The Design-BUILDER's RMP shall cover all phases of the Project including design, construction and demolition, and shall include but not 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. Approach to risk identification and assessment, for all phases including design, construction and demolition; and including regular reviews and updates at appropriate milestones and whenever risk levels change, and/or when new risks are identified that may impact risks already identified. The Authority may elect to observe risk identification workshops.
- D. Risk monitoring and control approach, including performance measurement strategy and reporting;
- E. Methodologies for risk identification, quantification, analysis, response planning, mitigations, monitoring and management, within each Project phase and as a continuum throughout the Project; and
- F. Risk registers that identify at a minimum risks to cost, schedule, operational performance, and the quality of the Work. The Design-BUILDER shall provide a copy of the Project risk register to the Authority at least quarterly, and at any substantive material change to the register. The Authority may review and provide written comment on any item in the risk register that, in the opinion of the Authority, is of relevance or concern to the Authority.

The Design-BUILDER shall update the RMP at any material change to the Project's risk profile or at least quarterly. The Design-BUILDER shall provide the updated RMPs to the Authority.

#### **2.2.9. Information Technology (IT) Plan**

Within 30 days of the NTP, the Design Builder shall submit its IT Plan identifying:

- A. All software, including names and versions to be used on the Project;
- B. Internet network provider(s) to be used on the Project, including call out information for providers;
- C. Third party vendors and call out information (including third party cloud providers);
- D. All IT hardware to be used on the Project;
- E. IT security protocol;
- F. Information back-up protocols; and
- G. Call out arrangements, including day/night and weekend coverage, of the Design-BUILDER's IT support staff.



#### **2.2.10. Public Involvement Plan (PIP) Support Plan**

The Design-Builder shall produce the Public Involvement Plan (PIP) support plan and submit it to the Authority's Project Manager for consultation and written approval in accordance with the requirements of *Project Requirement 8 – Public Involvement*.

#### **2.2.11. Baseline Project Schedule**

The Design-Builder shall develop the Initial Baseline Project Schedule submitted with its Proposal into the Baseline Project Schedule and submit it in accordance with *DB §108-1* and with reference to *Part 8 – Special Specifications, Section 8.4 – NYSDOT Special Specifications (Item 639.1022 01 – CPM Progress Schedule)*.

The Baseline Project Schedule shall include planned dates/deliverables for design output, including all design submissions and other documentation required to be submitted by the Design-Builder to the Authority.

### **2.3. Meetings**

In addition to meetings specified elsewhere in the Contract Documents, the Design-Builder shall convene or participate in meetings as indicated in *DB §105-17*.

It is the Authority'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 *DB §103-2*.

### **2.4. Design-Build Office**

The Design-Builder shall provide and maintain a co-located Design-Build office with sufficient space to accommodate the design and construction requirements of the Project. The Design-Build office shall accommodate and include co-location by the Authority's staff. The Design-Builder shall provide adequate parking spaces for the Design-Builder's and Authority's staff at the Design-Build office facility.

The Design-Builder shall coordinate with the Authority prior to securing any data or phone connections for a co-located office. The Authority's office space, data and phone connections shall be separate and secured from the Design-Builder's section of the Design-Build office.

#### **2.4.1. Facilities for the Authority**

Each interior office space shall be at least 100 square feet per individual, wired for one personal computer (unless otherwise specified) on the Authority's network, and wired for one telephone. The Design-Builder shall provide the following office and storage spaces for the Authority:

- A. Six full-time, reasonably sound-proofed, closed-door office spaces, two of which have a table with a minimum of four chairs;
- B. One full-time, reasonably sound-proofed, closed-door office space wired for two personal computers: one linked to the Authority's network, and the other linked to the Design-Builder's network;
- C. Twenty-two full-time office spaces;
- D. One network room that conforms to the requirements of Section 2.4.4 herein;
- E. Six hot-desk 'drop-in' office spaces (100 square feet each);
- F. Access to conference rooms;
- G. Forty-six parking spaces;

- H. Sufficient storage capacity for hard copy files, including at a minimum: eight 8.5 inch x 11 inch in plan, four-drawer locking file cabinets; one 11 inch by 17 inch in plan locking file cabinet; and eight vertical filing racks suitable for drawings.

The Design-Builder shall also provide the Authority's field laboratory in accordance with DB §106-11 and this Section 2.4.1. In addition to the requirements of DB §106-11, the Design-Builder shall provide: one storage container (8-foot tall, 20-foot long, 8-foot wide), and one parking space for the Authority's materials' testing van. The parking space for the van shall be parallel and adjacent to the field laboratory, on the same side as the access doors to the field laboratory. The storage container shall be adjacent to the Authority's materials' testing field laboratory. The Design-Builder shall provide: a water connection; a sewer or bladder system connection to the sink drain; and connection to 200 amp electrical service.

#### **2.4.2. Office Location**

The Design-Build office shall be located within two miles of either abutment of the existing Tappan Zee Bridge, preferably adjacent to the Right-of-Way.

#### **2.4.3. General Requirements**

The office facilities for the Authority shall be provided by the Design-Builder and shall include the following furniture and equipment, which shall be new and unused:

- A. One each of the following in each office space: desk, chair, two-drawer locking filing cabinet, bookcase, and telephone;
- B. Copying/scanning/fax equipment, printers (at least one, with multiple trays for letter-sized sheets and 11 inch x 17 inch sheets) and telephone lines to support each device;
- C. One touch-tone speaker telephone for each office space with a status indicator and access to all outside lines and conference call systems. Each telephone shall be connected to a phone service with voice mail for each extension. Note: the Authority will pay all long distance charges for the Authority's phones after installation;
- D. Meeting facilities suitable for all Project-related meetings, including video-conferencing equipment. In the event the requirements for any meeting exceed the space available, the Design-Builder shall provide meeting space at a suitable alternate location. The alternate location shall be located within two miles of the Project Limits;
- E. At least two exits from each building or trailer;
- F. A secure door lock plus a deadbolt lock on each entrance;
- G. Separate men's and women's restrooms;
- H. Trash and recycle containers for paper, clean glass containers, metal cans, and plastic containers;
- I. Daily janitorial service (except public holidays) including trash pickup and recycle pickup for paper, clean glass containers, metal cans, and plastic containers;
- J. Maintained exterior office space areas, including access to parking areas and snow removal;
- K. Overhead lighting that meets the requirements of the United States Occupational Safety and Health Administration, and building and electrical codes for office space, which shall include a minimum circuit capacity of 20 amperes, and at least two duplex receptacles for each office space;
- L. Heating, ventilation, air conditioning, and cooling systems capable of maintaining temperatures between 65°F and 75°F in all spaces, including the network room, throughout the year;
- M. One room with a lockable door for use by the Authority as a computer server and telephone network connection room. The room shall be at least 100 square feet. The computer network and



phone network connections for the Authority's office spaces shall terminate in this room. This room may be common with the Design-Builder's phone and computer network service room;

- N. Access requirements that meet the *Americans with Disabilities Act*;
- O. An office space that meets all local building code requirements;
- P. Kitchenette with standard size refrigerator, microwave, sink, table and chairs.

The Design-Builder shall maintain all office space for the Authority from 21 days after the Notice to Proceed until at least 90 days after Final Acceptance, unless otherwise agreed to by the Authority in writing. Except for the Design-Build office, the Design-Builder shall remove all facilities and perform any required site restoration Work related to facilities provided by the Design-Builder, prior to Final Acceptance. The Design-Builder shall remove all facilities and perform any required site restoration Work related to the Design-Build office within 100 days after Final Acceptance.

#### **2.4.4. Information Technology**

##### **2.4.4.1. Personal Computer Workstations**

The Design-Builder will furnish and install, for the exclusive use of the Authority, personal computer workstations and network printers in the office workspaces described in Section 2.4.1 herein. Ten of the computers shall be mobile and shall be enabled with virtual private network (VPN) software to allow secure remote access. Of these ten, five shall be furnished with desktop docking stations. All computers shall be loaded with all managerial and control software and the requisite technical software appropriate for compatibility with the Design-Builder's software. The Authority will connect these devices, with its own 12-foot patch cords, to wall plates furnished by the Design-Builder. Equipment and infrastructure provided by the Design-Builder shall not interfere with the Authority's network. Network devices provided by the Design-Builder shall be on a different sub-net from that of the Authority, and shall not connect to the Authority's hub or other devices.

##### **2.4.4.2. Network Communication**

The Design-Builder shall ensure that the office space for the Authority can be wired for a leased line or fiber connection designated for the exclusive use of the Authority. The Authority will arrange for installation of the connection and will pay for the connection charges.

The Design-Builder shall provide 1000-BASET (Category 6) Ethernet wiring from each of the Authority's closed-door office and office space to the wiring closet. The wall plates shall be located to permit the use of the 12-foot patch cords provided by the Authority. In addition to the 12-foot patch cords, the Authority will provide its own hub, router, and DSU/CSU to connect its computers to the internet. The Design-Builder may, at its own expense, provide additional infrastructure for its own use, provided that the additional infrastructure does not interfere with the Authority's use.

The Design-Builder shall provide space in the network room for one two-post phone network rack for the Authority's equipment. The Authority's equipment may be in the same network room as the Design-Builder's equipment. The Design-Builder shall submit a wiring and office floor plan to the Authority for its consultation and written comment within five calendar days of Notice to Proceed.

##### **2.4.4.3. Software**

The Design-Builder shall acquire, use and maintain all software for the Project. The following requirements shall be met for all software used by the Design-Builder for the Project:

- A. Version: the Design-Builder shall use the version of the software current on date of the NTP, unless otherwise specified;
- B. Updates: until Physical Completion the Design-Builder shall update software programs within six months of release of a software update, or earlier if mutually agreed upon with the Authority; and

- C. File server: the Design-Builder shall store all data files for the software programs on or have them accessible through the Design-Builder's central file server.

At the Pre-Work Conference (see DB §105-17.1) the Design-Builder shall submit a list of all software to be used by the Design-Builder for the Project and the file naming convention to be adopted for the Project. To the extent that the Design-Builder uses software and versions not currently used by the Authority or the Department, the Design-Builder shall provide all necessary licenses, software and training.

The Design-Builder shall develop and implement data security and a data backup and recovery plan. The Design-Builder shall back-up electronic files as follows: (i) back-up every day all files that have been revised since the previous daily back-up; (ii) back-up all files every week; and (iii) store all backup media in a secure off-site facility.

#### **2.4.4.4. Project Data Management**

Except as otherwise directed, the Design-Builder shall host and manage electronic Project data and files until Final Acceptance.

As directed by the Authority, the Design-Builder shall provide specified access for designated representatives of the Authority to access live and archived Project data and files.

All data and file-naming conventions shall be consistent with Chapter 14 of the NYSDOT *Project Development Manual*.

In addition, the Design-Builder shall coordinate during the Project with the Authority's data managers, designated by the Authority's Project Manager, to develop file management practices that provide for complete conversion and transfer ("transfer") of Project file and data management hosting capabilities to the Authority. Arrangements for transfer shall be established and a protocol for regular transfers shall commence within 12 months following NTP. The transfer process shall be completed by Final Acceptance. The transfer process shall include transfer of all information and files, in a manner that retains all data links and file associations, to the NYSTA Bentley ProjectWise® document management system. The transfer process for data and files to the NYSTA system shall be scripted to place automatically files and data within a live and archived Project folder structure defined by the Authority.

#### **2.4.5. Marine Inspection Boat**

The Design-Builder shall provide and maintain a suitable motor boat, with an operator or operators therefor, for the exclusive use by the Authority in connection with the Work. The boat shall be enclosed and shall have the size, motor power and seaworthiness suitable for its intended use on rough open waters during strong weather events. The boat and boat operator shall be ready for use by the Authority at all times that Work is in progress for the duration of the Contract. Each individual boat operator shall be contactable by the Authority whenever on shift.

The boat shall have the ability to carry the weight of the boat operator and eight passengers within its rated capacity. The boat shall be a minimum of 24 feet in length and with a beam of 8 feet. The motor shall have a minimum rating of 150 horsepower. A marine radio, life preservers, anchor, anchor and mooring lines, oars and oar locks, lights and other equipment as necessary to comply with marine regulations shall be provided and maintained in operating order by the Design-Builder.

The Design-Builder shall be responsible for arrangements for berthing the boat when not in use. The Design-Builder shall provide and maintain suitable landing docks and steps to permit safe and easy access to the boat.

Upon completion of the Work under this Contract, the boat and accessories shall remain the property of the Design-Builder.

## 2.5. Agencies' Oversight Role

The Agencies' Oversight activities include:

- A. Meeting with the Design-Builder;
- B. Reviewing progress reports and payment requests;
- C. Verifying progress;
- D. Auditing payroll records;
- E. Partnering;
- F. Auditing the subcontracting process;
- G. Verifying DBE, equal employment opportunity, and other affirmative action compliance;
- H. Conducting management reviews;
- I. Participating in progress meetings;
- J. Reviewing baseline schedules and updates;
- K. Reviewing management-related plans;
- L. Reviewing compliance and control;
- M. Providing approvals (see Section 2.5.1 herein);
- N. Reviewing Design-Builder's design (see Section 2.5.2 herein); and
- O. Performing audits of the implementation by the Design-Builder of the Design-Builder's Quality Plan including Independent Assurance, Verification Sampling and Testing, and Inspection.

### 2.5.1. Authority's Approvals

The Authority will only approve those submittals, activities, actions, and/or work that are specifically identified in the Contract Documents as being for approval (see *DB §105-16*). Any approvals by the Authority will be provided to the Design-Builder in writing only.

The Authority's approvals identified in *Part 1 – DB §100* are summarized below, provided that nothing in this sub-section shall limit any other approvals that may be required pursuant to or in connection with the requirements of *Part 1 – DB §100* and *Part 3 – Project Requirements*:

- A. Contract Periodic Payment Schedule (PPS-C) (*DB §109-1.2*)
- B. Requests for periodic payments (*DB §109-6*)
- C. Requests for payment for materials delivered to the Site (*DB §109-6.3*)
- D. Changes to Contract Price (by Order on Contract only) (*DB §109-4*)
  - 1. Revised Schedule of Prices (*DB §109-1.1*)
  - 2. Revised Contract Periodic Payment Schedule (*DB Section 109-1.2*)
- E. Subcontractors (*DB §108-7*)
- F. DBE Plan and updates (*DB §102-8.6*)
- G. Workforce Participation Plan and updates (*DB §102-9.4B*)
- H. Site Security Plan and updates (*DB § 107-8.2*)
- I. Quality Plan and updates (*DB §113*)
- J. Project Management Plan and updates (*Project Requirement 2 – Project Management*)

- K. Public Involvement Plan and updates (*Project Requirement 8 – Public Involvement Plan*)
- L. Visual quality management plan (*Project Requirement 13 – Visual Quality*)
- M. Work Zone Traffic Control Plan, work site access plan and traffic control staff certification (*Project Requirement 17 – Work Traffic Control and Access*);
- N. Value engineering change proposal (VECP) concepts and VECPs (*DB §104-13*)
- O. Use of overweight construction equipment or vehicles on the Project (*DB §105-10*)
- P. Use of ROW for storage (*DB §106-7*)
- Q. Assignment of payment to creditors (*DB §108-8(I)*)
- R. Project Specifications representing lower quality than that specified in the Contract Documents, including the Design-Builder's Proposal (*DB §111-17.3*)
- S. Project Specifications for Work not covered in the Standard Specifications (*DB §111-17.3*)
- T. As-Built Plans (*DB §111-11.5.2*)
- U. Design reviews (at time of approval of As-Built Plans) (*DB §111-11.5*)
- V. Deviations from sampling and testing methods and/or frequencies (*DB §112-4*)
- W. Final Supplemental Agreement (*DB §109-12*).

### **2.5.2. Authority's Consultation and Written Comments**

The Authority's review, Oversight, audit, and inspection activities are referred to as "consultation and written comment" (see *DB §105-16*). The Authority's consultation and written comment will be confirmed to the Design-Builder in writing only, by the Authority only. The Design-Builder shall be responsible for addressing the Authority's comments. Providing consultation and written comment, approvals, and Non-Conformance Reports pursuant to *DB §105-16*

The Design-Builder shall indicate in writing whether it concurs with the Authority's comment. If the Design-Builder does not concur with the Authority's comments, then the Authority and Design-Builder will work together to resolve the issue before proceeding with design.

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

### **2.5.3. Agencies' Oversight Role during Design**

The Agencies' Oversight role during design and Design Review consists of monitoring and auditing design progress including for payment, interpreting contract requirements, and verifying design compliance with contract requirements.

The Agencies' Oversight roles and activities relating to design will include, but are not limited to, the following:

- A. Assisting in providing interpretation and answers regarding contract requirements on a regular basis, often on a daily basis (such involvement is often termed over-the-shoulder review);
- B. Providing input and participation in the review process as agreed during the design workshop;
- C. Participation in Design Reviews, excluding detailed checks of plans and calculations except in unusual cases;
- D. Verifying through monitoring and auditing of QC and QA records that the Design-Builder's Design Quality Manager is fulfilling his/her responsibilities and that the Quality Systems contained in the Quality Plan are being followed. An audit may include detailed checks of plans and calculations in some cases;

#### **2.5.4. Agencies' Oversight Role during Construction**

The Agencies' Oversight role during construction consists of monitoring and auditing construction progress including for payment, interpreting contract requirements, and verifying construction compliance with contract requirements.

The Agencies' Oversight roles and activities relating to construction will include, but are not limited to, the following:

- A. Independent Assurance;
  - B. Verification Sampling and Testing;
  - C. Auditing and monitoring of QC and QA to verify that the Design-Builder's Quality Manager is fulfilling his/her responsibilities and that the Quality System contained in the Quality Plan is being followed;
  - D. Auditing safety and security records and checking of the qualifications of safety and security personnel;
  - E. Reviewing and spot-checking Design-Builder's work zone traffic control activities and installations;
  - F. Conducting the reviews of As-Built Plans; and
  - G. Assuming responsibility for coordinating with appropriate State or federal agencies should previously unknown, unidentified Hazardous Materials be encountered.
-

## **SECTION 3. ENVIRONMENTAL COMPLIANCE**

### **3.1. Scope**

An essential component of the Project is the comprehensive integration of environmental compliance into all design and construction activities by the Design-Builder. Except as otherwise detailed herein, the Design-Builder shall be responsible for preparing its design, carrying out its construction activities and undertaking other activities as needed to ensure compliance with the Project's Environmental Requirements, which include:

- A. Environmental Performance Commitments (EPC) as identified in Exhibit B herein;
- B. The terms and conditions of Environmental Approvals as listed within Section 3.3.4 herein required from various state and federal agencies;
- C. The requirements as set forth in Section 3.3 herein; and
- D. All applicable Environmental Laws.

This Project Requirement identifies certain required actions by the Design-Builder to ensure that the Environmental Requirements are complied with throughout the Project activities. The responsibilities of the Authority in these areas are summarized.

### **3.2. References**

- A. NYSDOT Project Development Manual
- B. NYSDOT Environmental Manual

### **3.3. Requirements**

#### **3.3.1. General**

- A. Unless otherwise indicated in the Contract Documents, the Authority will be responsible for obtaining all Environmental Approvals as identified in Table 3.3.4-1. For those Environmental Approvals not secured as of the date of this Contract, the Design-Builder shall cooperate with and assist the Authority in securing the approvals and monitoring during construction as identified in Exhibit B to this Project Requirement;
- B. The Design-Builder's Proposal (dated July 27, 2012) is inconsistent with existing permit applications (as at July 27, 2012) as noted in Table 3.3.4-1. It is therefore necessary to submit amendments to the existing applications. The Design-Builder may also request the Authority to seek additional modifications to permits that have already been obtained. The Design-Builder shall cooperate with the Authority and shall be responsible for the preparation of all information including materials, investigations, testing and documentation, as necessary to support said modifications. Based on the Design-Builder's provision of said information, the Authority will prepare and submit modifications to the existing applications (or existing permits, as applicable). The Authority will not be responsible for any delay in obtaining the permits (or modified permits) associated with such modifications or for any additional cost associated with permit requirements to the extent arising from such modifications. As part of the consideration of any such permit delay, the Design-Builder acknowledges that it agrees to provide to the Authority on specified dates (which dates may be prior to the effectiveness of the Contract) certain information necessary for the Authority to advance application modifications or permit amendments taking account of the Design-Builder's Proposal. The delay impact, if any,



resulting from the Design-Builder's not providing such information by the dates agreed (whether before or after the execution or effectiveness of the Contract) shall be the responsibility of the Design-Builder;

- C. 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 in the construction of the Project for its convenience;
- D. The Design-Builder shall be responsible for obtaining all new Environmental Approvals and any changes to Environmental Approvals required for any ATCs or other design elements or technical concepts proposed by the Design-Builder but not previously permitted. For any such approvals required to be obtained by the Design-Builder that must formally be issued in the Authority's name, the Authority will cooperate with the Design-Builder as reasonably requested by the Design-Builder, including execution and delivery of appropriate applications and other documentation prepared by Design-Builder in a form approved by the Authority;
- E. For the Design-Builder-located areas, the Design-Builder shall notify the Authority of scheduled meetings with regulatory agencies and provide to the Authority copies of any documentation regarding material matters of environmental compliance;
- F. The Design-Builder shall be solely responsible for violations of any Environmental Requirements;
- G. The Design-Builder shall indemnify the Authority and the State of New York for any fines, violations or damages incurred by reason of failure of the Design-Builder to comply with Environmental Approvals.
- H. The Design-Builder shall support the Authority's efforts to secure consensus from communities to ensure the proposed noise barriers are 'reasonable', as required by the NYSDOT Policy and 23 CFR Part 772. These outreach activities shall be specifically identified in the Design Builder's Public Involvement Plan Support Plan and consultation with the Agencies' public outreach staff is required.

### **3.3.2. Design-Builder's Environmental Team**

The Design-Builder's environmental team shall include the Environmental Compliance Manager and other environmental personnel and environmental roles indicated in the Design-Builder's Proposal. These shall oversee the production and implementation of the Design-Builder's Environmental Compliance Plan (see Section 3.3.3.1 herein).

### **3.3.3. Environmental Plans**

#### **3.3.3.1. Environmental Compliance Plan**

The Design-Builder shall prepare, implement, and update as necessary an environmental compliance plan that shall detail the Design-Builder's measures and procedures to ensure compliance with all EPCs noted in Exhibit B herein, as well as compliance with all other Environmental Requirements.

A fully developed version of the environmental compliance plan that was provided in the Design-Builder's Proposal, including adaptive management strategies, shall be submitted prior to the start of construction for consultation and written comment by the Authority.

At a minimum, the environmental compliance plan shall include the following elements:

- A. Environmental team

1. Environmental personnel: names, titles and Project responsibilities, training, years of relevant experience, licensing and applicable training; and
  2. Environmental team organization.
- B. Environmental compliance tracking and reporting procedures
1. Process meetings and reporting requirements, including purpose and frequency of reports;
  2. Environmental compliance schedule;
  3. Method of reporting to the Authority of emergencies and alleged violations of Environmental Requirements, Environmental Approvals and Environmental Laws; and
  4. QA/QC procedures for environmental compliance; and
- C. Environmental Approvals
1. Identify any environmental impacts that are greater than those disclosed in the EIS, and any additional impacts not identified in the Environmental Requirements, associated with approved or conditionally approved ATCs adopted in the Design-Builder's design and other technical concepts that are not ATCs;
  2. Identify all additional permits and Environmental Approvals, including supplements to the EIS, required for implementation of approved or conditionally approved ATCs adopted in the Design-Builder's design and other technical concepts that are not ATCs; and
  3. Describe the Design-Builder's plan to obtain all additional permits and Environmental Approvals identified and how they fit into the Design-Builder's schedule.

#### **3.3.3.2. Other Environmental Plans**

The Design-Builder shall be responsible for preparing the following documents in conformity with all Environmental Requirements. The minimum details regarding the EPCs to be addressed in each document are set forth in Exhibit B of this Project Requirement section and the Environmental Documentation. In each of the documents listed below, the Design-Builder shall identify the frequency of submission of compliance reports to the Authority.

- A. Spill prevention, control, and countermeasures (SPCC) plan;
- B. Contaminated materials management plan;
- C. Hazardous waste operations safety and health program for hazardous waste operations plan;
- D. Construction noise and vibration control plan;
- E. Air quality control plan;
- F. Dust control plan;
- G. Health and safety plan (HASP);
- H. Rodent control plan;
- I. Lead compliance plan;
- J. Stormwater pollution prevention plan (SWPPP; see *Project Requirement 23 – Drainage and Stormwater*);
- K. Project-generated waste management plan;



- L. Cultural resource protection plan;
- M. Construction Protection Plan for Historic Properties;
- N. Dredge materials management plan;
- O. Ecological management plan;
- P. Energy conservation plan; and
- Q. Educational and Interpretive Materials Plan.

### **3.3.3.3. Performance**

The Design-Builder shall undertake performance of all activities required under each of the foregoing plans until expiration of the Warranty period, except to the extent that the plans provide for activities to be undertaken by the Authority or third parties. Provisions in said plans for activities to be undertaken by the Authority or third parties are subject to prior written approval by the Authority.

### **3.3.4. Environmental Approvals**

The Environmental Approvals required for the Project, as at July 27, 2012, are listed in Table 3.3.4-1. Updates to the status of Environmental Approvals will be provided by the Authority.

**Table 3.3.4-1 List of Environmental Approvals required for the Project by the Authority  
(permit status as at November 21, 2012)**

<b>Issuing Agency</b>	<b>Permit/Process/Approval</b>
<b>US Coast Guard</b>	<i>General Bridge Act of 1946 33CFR 525: bridge permit.</i>
<b>USACE</b>	Permit authorization will meet the requirements of Section 404 of the <i>Clean Water Act (33 USC 1251-1387)</i> for discharge of dredged or fill materials into Waters of the United States and Section 10 requirements under the <i>Rivers and Harbors Appropriation Act of 1899 (33 USC 403)</i> for work within and over a navigable waterway.  Permit has not yet been obtained. Permit application requires amendment based upon Design-Builder's Proposal.
	Section 103 Joint Ocean Disposal Acceptability Determination Permit (HARS), pursuant to the <i>Marine Protection, Research and Sanctuaries Act</i> .  Permit has not yet been obtained. Design-Builder's proposed alternative dredge prism requires permit application amendment including new sampling of the sediments, as required for a HARS permit.
<b>USFWS</b>	<i>Endangered Species Act (ESA) (16 USC §§1531-1544; 50 CFR Part 402):</i> Section 7 of the ESA requires consultation for projects that may affect federally listed species. Species conserved by the USFWS that may have habitat within the Project area include Indiana bat, bog turtle, and New England cottontail.  Consultation with USFWS based on the Environmental Impact Statement design is complete. If re-initiation of consultation is required, the requirements of Section 3.3.1(B) shall apply.
	<i>Fish and Wildlife Coordination Act (FWCA):</i> The USFWS has responsibilities under the FWCA for the USACE to issue a permit. The USFWS submits a finding report to the USACE regarding impacts to fish and wildlife.

## New York State Thruway Authority

Issuing Agency	Permit/Process/Approval
NOAA - NMFS	<p><i>Endangered Species Act (16 USC §§1531-1544; 50 CFR Part 402):</i> Section 7 of the ESA requires consultation for projects that may affect federally listed species. The Atlantic sturgeon and the shortnose sturgeon are the endangered species for NOAA NMFS. Blueback herring and alewife are also considered to be conserved by NMFS.</p> <p>Consultation with NMFS based on the Environmental Impact Statement design is complete. If re-initiation of consultation is required, the requirements of Section 3.3.1(B) shall apply.</p>
	<p><i>Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1884):</i> The Project will potentially affect essential fish habitat (EFH), including impacts associated with dredging, the placement of the Crossing, and associated infrastructure within the Hudson River. Impacts are anticipated to be to benthic habitat and the several protected species of fish. Consultation is required for projects that may affect EFH.</p> <p>Consultation with USFWS based on the Environmental Impact Statement design is complete. If re-initiation of consultation is required the requirements of Section 3.3.1(B) shall apply.</p>
	<p><i>Marine Mammal Protection Act (16 USC §1362):</i> This Project may potentially affect marine mammals. Consultation is required for projects that may affect marine mammals. The movement of barges carrying construction equipment and dredge spoils may increase the risk of affecting marine mammals.</p> <p>Consultation with USFWS based on the Environmental Impact Statement design is complete. If re-initiation of consultation is required the requirements of Section 3.3.1(B) shall apply.</p>
ACHP	<p><i>National Historic Preservation Act (NHPA)(16 USC §470A; 36 CFR Part 800):</i> The ACHP will participate in the Section 106 consultation process for the NHPA.</p> <p>Consultation process is complete. Executed Section 106 Memorandum of Agreement (MOA) has been provided to Design-Builder as attachment to FEIS. The Design-Builder must comply with the provisions set forth in the MOA.</p>
NSYDEC	<p><i>Endangered/Threatened Species Incidental Take Permit (6 NYCRR Part 182.11):</i> An Article 11 Incidental Take Permit is required for potential impacts to State listed species.</p> <p>Permit has not yet been secured. Permit application requires amendment based upon Design Builder's proposal. Once secured, the permit cannot be modified or amended in the event the provisions of the permit are exceeded. The Design Builder shall be responsible for securing any new permits.</p>
	<p><i>The Protection of Water (ECL, Article 15).</i></p> <p>Permit has not yet been obtained. Permit application requires amendment based upon Design-Builder's Proposal.</p>
	<p><i>Tidal Wetlands Law (ECL, Article 25):</i> This permit is required for work within tidal wetlands and adjacent areas.</p> <p>Permit has not yet been obtained. Permit application requires amendment based upon Design-Builder's Proposal.</p>
NYSED / State Museum	<p><i>Education Law §233:</i> Permit required for collection or excavation of archaeological materials on State lands, including underwater. Application reviewed by State Museum in coordination with other State agencies that may have jurisdiction and require permits for this work (OGS, DEC, DOS).</p> <p>Permit has been obtained. No additional follow up actions required.</p>



**New York State Thruway Authority**

Issuing Agency	Permit/Process/Approval
<b>NYS OPRHP/ SHPO</b>	<p><i>National Historic Preservation Act (NHPA) (16 USC §470A; 36 CFR Part 800):</i> Section 106 of the NHPA (36 CFR Part 800) requires consultation with the State Historic Preservation Office. Under Section 106 procedures established among NYSDOT, FHWA, and SHPO, the NYSDOT makes findings of eligibility and effect; seeks the concurrence of the SHPO; and requests FHWA to issue a formal determination that requirements of 36 CFR 800 have been met.</p> <p>Consultation process is complete. Executed Section 106 MOA has been provided to Design-Builder as attachment to FEIS. The Design-Builder must comply with the provisions set forth in the MOA.</p>
<b>NYSDOL</b>	<p>Asbestos Containing Materials: Regulatory site specific variance approvals for abatement of asbestos-containing materials not covered under <i>12 NYCRR 56</i> or <i>NYSDOT Blanket Variance 14</i>.</p>
<b>FHWA / NYSDOT / NYSTA</b>	<p>National Environmental Policy Act (42 USC Section 4321 et seq.) and 23 CFR Part 771. Environmental Impact Statement discloses and evaluates all environmental impacts associated with the Project and develops mitigation, including Environmental Performance Commitments as detailed in this Project Requirement.</p> <p>Evaluation is complete. The Design-Builder shall be responsible for preparing any information to support FHWA re-evaluation if required.</p>
	<p>New York State Environmental Quality Review Act.</p> <p>Process has been completed. The Design-Builder shall be responsible for preparing any information to support the preparation of an amended SEQR findings statement if one is required.</p>
	<p>Section 4(f) evaluation.</p> <p>Evaluation has been completed</p>
	<p>23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise/NYSDOT Noise Analysis Policy and Procedures: Requires coordination with benefited residents to secure consensus for construction of noise abatement measures. The Agencies conducted initial outreach with benefited residents. Additional outreach is required based upon the Design-Builder's specific design. The Design-Builder shall support the Authority in securing consensus from communities to ensure the proposed barriers are 'reasonable', as required by the NYSDOT Policy. These outreach activities shall be specifically identified in the Design-Builder's Public Involvement Plan Support Plan and consultation with the Agencies' public outreach staff is required.</p>
	<p>EO 11990 Wetland Finding will be required for federal-aid construction project occurring in wetlands.</p> <p>Finding has been obtained.</p>
	<p>EO 11988 Floodplain Management.</p> <p>Process is completed.</p>
<b>NYSOGS</b>	<p>Public Lands Law Article 2, Section 3: Required lease, easement or permit for state owned underwater lands from the Commissioner of General Services.</p> <p>Approval has not yet been obtained. Design-Builder shall submit the drawings necessary to complete the application process for a jurisdictional transfer.</p>
<b>NYSDOS</b>	<p>Coastal Zone Consistency Determination.</p> <p>Determination has been obtained. Design-Builder shall be responsible to modify if required.</p>



### **3.4. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 3.4-1 for the Authority's consultation and written comment.

Each of the deliverables listed in Table 3.4-1 shall be provided to the Authority by the earlier of: (i) 120 days after NTP; and (ii) 30 days prior to the relevant on site activity, including start of construction, unless an alternative delivery time is identified in the Environmental Approvals.

**Table 3.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>	
Environmental compliance plan	10	1	3.3.3.1
Spill prevention, control, and countermeasures plan	5	1	3.3.3.2
Contaminated materials management plan	5	1	3.3.3.2
Hazardous waste operations safety & health program for hazardous waste operations plan	5	1	3.3.3.2
Construction noise and vibration control plan	5	1	3.3.3.2
Air quality control plan	5	1	3.3.3.2
Dust control plan	5	1	3.3.3.2
Health and safety plan	5	1	3.3.3.2
Rodent control plan	5	1	3.3.3.2
Lead compliance plan	5	1	3.3.3.2
Project-generated waste management plan	5	1	3.3.3.2
Cultural resource protection plan	5	1	3.3.3.2
Construction protection plan for historic properties	5	1	3.3.3.2
Dredge materials management plan	5	1	3.3.3.2
Ecological management plan	5	1	3.3.3.2
Energy conservation plan	5	1	3.3.3.2
Educational and interpretive materials plan	5	1	Exhibit B Item 3
Unanticipated discoveries plan	5	1	Exhibit B Item 3
Underwater noise monitoring plan	5	1	Exhibit B Item 5
Water quality monitoring plan	5	1	Exhibit B Item 6
Remedial Action Plans (RAPs)	5	1	Exhibit B Item 9
Construction Health and Safety Plan (CHASP)	5	1	Exhibit B Item 9

**PART 3, PROJECT REQUIREMENT 3 – ENVIRONMENTAL  
COMPLIANCE**

**EXHIBIT A**

(not used)

**PART 3, PROJECT REQUIREMENT 3 – ENVIRONMENTAL  
COMPLIANCE**

**EXHIBIT B**

**Environmental Performance Commitments**

The following is based on the Environmental Documentation current November 21, 2012. Subject to any applicable relief available under the Contract Documents, the Design-Builder is responsible for complying with any changes to the Environmental Performance Commitments based on final permits.

## **PART 3, PROJECT REQUIREMENT 3 – ENVIRONMENTAL COMPLIANCE**

### **EXHIBIT B**

### **Environmental Performance Commitments**

The following is based on the Environmental Documentation current November 21, 2012. Subject to any applicable relief available under the Contract Documents, the Design-Builder is responsible for complying with any changes to the Environmental Performance Commitments based on final permits.

#### **Exhibit B Item 1. AIR QUALITY CONTROL**

- A. Minimize, avoid, or mitigate potential air quality impacts using or implementing established measures and practices, during construction.
- B. Use of clean fuel such that all diesel fuel used for the Project shall contain 15 parts per million (ppm) or less sulfur by weight. This includes fuel for on-road, non-road and vessels operating on-site.
- C. The use of best available tailpipe reduction technologies for reducing particulate matter (PM) emissions from nonroad, non-marine diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract) including concrete mixing and pumping trucks. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest PM reduction capability. All diesel non-road engines rated at 50 hp or greater shall utilize DPFs, either installed on the engine by the original equipment manufacturer (OEM) or retrofitted with a DPF verified by the United States Environmental Protection Agency (USEPA) or the California Air Resources Board, and may include active DPFs, if necessary; or other technology proven to reduce PM emissions by at least 90 percent relative to the same operation of the same engine with no BAT installed.
- D. All nonroad construction equipment in the Project greater than 50 hp, excluding tug boats and other marine vessels, shall meet at least the USEPA Tier 3 emissions standard. All nonroad construction equipment less than 50 hp shall meet at least the Tier 2 emissions standard.
- E. The control of emissions from tug boats that are used continually during working hours on the Project site, such that the total combined rate of emissions of particulate matter defined as PM<sub>2.5</sub> from these vessels used for the Project shall be limited to 3,700 grams per hour at peak power, including auxiliary engine emissions. This limit may be achieved by installing retrofits, using new engines, repowering or engine replacement, or various combinations of these measures, along with limitations on the engine size and number of vessels on site.
- F. The use of concrete batch plant controls. The concrete batch plant shall vent the cement weigh hopper, gathering hopper, and mix loading operations to a baghouse or filter sock. Venting storage silo chutes to a baghouse shall have a control efficiency of at least 99.9 percent. Roadways at the concrete batch plant, and all unloading and loading material handling operations, shall have a dust control plan providing at least a 50 percent reduction in PM<sub>10</sub> and PM<sub>2.5</sub> emissions from fugitive dust through wet suppression.
- G. The Design-Builder shall prepare a strict fugitive dust control plan to control and minimize through a combination of wet suppression, vegetative cover, mulching, spray adhesive, wheel washing, windbreaks, or equivalent methods, fugitive dust emissions from roadways (paved and unpaved), excavations, all unloading and loading material-handling operations, and demolition.

- H. The Design-Builder shall provide, maintain and operate eight air quality monitoring stations and one background monitoring station. The background station shall be located and maintained away from the Project Site. Four of the eight monitoring stations shall be located near the Westchester shoreline (two to the north and two to the south of the Thruway) and the other four stations shall be located near the Rockland shoreline (two to the north and two to the south of the Thruway). All stations shall monitor for total suspended particulates (TSP) and PM<sub>2.5</sub>. Four stations shall monitor PM<sub>10</sub>. The background station and one station at each shoreline shall monitor meteorology. Station locations, design, technology, reporting and operating plan shall be coordinated with and approved by the Authority. The stations shall be relocated as directed by the Authority.
- I. Reduction of vehicle idling. The Design-Builder shall be responsible for making all reasonable efforts to minimize heavy duty vehicle idling at the project site in order to reduce fuel usage (and associated costs) and emissions. On-road diesel-fueled trucks are subject to New York's heavy duty vehicle idling prohibition. In addition to enforcing the on-road idling prohibition, the Design-Builder shall be responsible for ensuring that all reasonable efforts shall be made to reduce non-productive idling of nonroad diesel powered equipment. Measures to protect sensitive receptors (e.g. residences, businesses, schools) from the impacts of diesel exhaust fumes shall also be implemented. The Design-Builder shall ensure that building ventilation systems and fresh air intakes are not impacted.

**Exhibit B Item 2. CONSTRUCTION NOISE AND VIBRATION CONTROL**

- A. Implement appropriate noise abatement measures, including shrouds to reduce pile driver noise, quiet compressors and generators, and use of portable or other noise barriers and/or enclosures.
- B. Where practicable and feasible electric powered equipment rather than diesel powered equipment shall be used.
- C. Use of impact devices such as jackhammer, pavement breakers and pneumatic tools shall be limited where practicable and feasible.
- D. Shrouds shall be utilized to limit noise exposure to the levels stated in Table 3-B-2-1.
- E. Installation of appropriate noise attenuation around construction staging areas, including minimization of backup alarms and other noises.
- F. Proper maintenance and service of all equipment used on Site, including Subcontractors' equipment, including installation of mufflers to limit noise.
- G. Use of sound attenuating curtains or shrouds on the pile driving hammers to reduce noise exposure to the levels stated in Table 3-B-2-1 when in close proximity to residential areas. Document noise attenuation method and efficacy and provide report to the Authority.
- H. Use of movable noise attenuation measures around pumps, trucks, and other noisy equipment when operating in close proximity to residential areas. Prepare and maintain documents showing compliance with permit condition.
- I. The development and implementation of community outreach activities related to construction noise impacts as outlined in the Environmental Documentation (EIS Chapter 18) and discussed further in *Part 3, Project Requirement 8 – Public Involvement*
- J. In addition to the vibration monitoring requirements detailed in *Project Requirement 10 – Geotechnics*, six noise and vibration monitoring stations that shall continuously record noise and vibration shall be provided by the Design-Builder. These devices shall transmit real time data to a secure website to be maintained by the Design-Builder and access to the website shall be provided to the Authority or the Authority's designee. Three stations shall be located near the Westchester shoreline and three stations shall be near the Rockland shoreline. The locations of the stations shall



be subject to the approval of the Authority, and shall be relocated as directed by the Authority. Faulty stations shall be repaired by the Design-Builder within 48 hours of observing a fault.

- K. To the maximum extent possible, temporary noise walls shall be provided by the Design-Builder to shield residences from construction staging areas, platforms and construction works. A minimum 11 feet high, temporary noise wall shall be installed between the construction staging areas and platforms and the shorelines, and between the construction staging areas and platforms and the south side of the exit ramp (adjacent to Ferris Lane).
- L. Temporary noise barriers shall be installed along truck access routes and shoreline work platforms as appropriate.
- M. All construction equipment, including any at-source noise abatement systems, shall not exceed the maximum noise levels shown in Table 3-B-2-1. See *Part 2 DB§107-1 3* for nighttime noise restrictions. Properly maintain equipment and require subcontractors to properly maintain equipment. In addition, on Saturday mornings until midday and on Sundays all day, no equipment shall be used that emits noise above 70dBA  $L_{max}$  measured at an offset distance of 50 feet if the work is on land and at the nearest point of the shoreline if the work is in the water. Monitoring, internal reporting, and management of noise levels by the Design-Builder shall be configured to ensure that: (i) any exceedance of the maximum permitted noise levels shall be identified by the Design-Builder within 30 minutes of the occurrence; and (ii) the activity causing the exceedance is mitigated within 1 hour of the first occurrence such that the exceedance is not repeated. Provide the Authority information on what work will be performed at night and noise levels expected. Any exceedance of the maximum noise limits shall be reported to the Authority's Project Manager within 48 hours, with details of the mitigation adopted. Other than exceedance events, reporting of noise measurements shall be weekly.

<b>Table 3-B-2-1 Maximum permitted noise levels from construction equipment</b>	
<b>Equipment Description</b>	<b>Maximum noise levels <math>L_{max}</math> (dBA)<sup>(1)</sup></b>
Compressor (air)	58
Concrete mixer truck	71
Concrete pump truck	71
Crane	70
Drill rig truck	69
Dump truck	69
Excavator	71
Flat-bed truck	66
Front end loader	74
Generator	60
Impact pile driver	90
Man lift	63
Paver	67
Pumps	73

<b>Table 3-B-2-1 Maximum permitted noise levels from construction equipment</b>	
<b>Equipment Description</b>	<b>Maximum noise levels <math>L_{max}</math> (dBA)<sup>(1)</sup></b>
Roller	70
Vibratory pile driver	90
Other	70
<sup>(1)</sup> A-weighted maximum sound level, measured at a distance of 50 feet from the construction equipment, with the use of relevant at-source noise abatement system controls.	

**Exhibit B Item 3. CULTURAL RESOURCES PROTECTION**

The Design-BUILDER shall carry out, at a minimum, the following cultural resource protection activities, consistent with the requirements of the Section 106 Memorandum of Agreement (MOA) presented in the Environmental Documentation (Appendix C of the EIS):

A. A plan for archeological resources found during construction:

The Design-BUILDER shall prepare an Unanticipated Discoveries Plan for human and non-human archaeological resources, to be in the event that any unanticipated archaeological resources are encountered during construction of the Project. The Plan, to be submitted to the Authority for review and written comments, shall include a protocol and procedures to identify the cultural materials, evaluate their significance, and determine appropriate treatment based on consultation with the New York State Historic Preservation Office (SHPO) and Section 106 consulting parties, to be determined based on the nature of the discovery.

Staffing Requirements: The Unanticipated Discoveries Plan, and all archaeological investigations and reports resulting from any such discoveries, shall be prepared and carried out by or under the direct supervision of a person or persons meeting the Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61) for Archaeology.

Deliverables: If archaeological investigations result from unanticipated discoveries during construction - a report consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology (48 FR 44734-37), the New York State Education Department Cultural Resources Survey Program Work Scope Specifications for Cultural Resource Investigations on New York State Department of Transportation Projects (2004), and the New York Archaeological Council's Standards for Cultural Resource Investigations and Curation of Archaeological Collections (NYAC 1994).

B. Development of historic architectural/engineering record material for the existing bridge:

Historic American Engineering Record (HAER)-level recordation shall be prepared for the Governor Malcolm Wilson Tappan Zee Bridge by a professional who meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61), with experience in preparing such reports. This recordation shall include the following:

- i. Measured drawings of the existing Tappan Zee Bridge, including a plan, elevations, and details;

- ii. Three-dimensional computer model of the existing Tappan Zee Bridge;
- iii. Archival photography of the existing Tappan Zee Bridge. Photographs, prints, and duplicates shall meet appropriate HAER archival standards;
- iv. A narrative that describes in detail the physical and historic characteristics of the existing Tappan Zee Bridge.

Staffing Requirements: HAER-level recordation to be prepared by a qualified professional architectural historian meeting the Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61) for Architectural History or Historic Architecture and experienced in preparing HAER reports for bridges, consistent with The Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation.

Deliverables: Reports meeting standards of The Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation /Historic American Engineering Record Guidelines, including archival materials and archival processes. Archival copies of the HAER report shall be provided to the Authority for distribution to the FHWA, the NYSHPO and local repositories accessible to the public in Rockland and Westchester Counties.

C. Development of educational and interpretive materials:

Develop a plan to prepare educational and interpretive materials documenting the history and engineering significance of the Governor Malcolm Wilson Tappan Zee Bridge, and to make this information available to the public. The form and content of the educational materials and interpretive exhibits shall be identified by the Authority based on consultation with the NYSHPO, other signatories, and concurring parties to the Section 106 MOA. The plan shall identify the targeted audience for the educational materials and locations of the interpretive exhibits. The Educational and Interpretive Materials Plan shall be finalized and implemented once it has been approved by the NYSHPO.

Staffing Requirements: A qualified professional historian or architectural historian meeting the Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61) for Archeology and Historic Preservation.

Deliverables: Written, graphic, and / or electronic media for use by local libraries, historical societies, and educational institutions; and interpretive exhibit(s) that present the history and engineering of the Tappan Zee Bridge, to be located on the Project's shared-use path.

D. Development and implementation of a Construction Protection Plan for Historic Properties:

The Design-Builder shall develop construction protection measures to avoid inadvertent Project-related construction damage to historic properties identified in the Section 106 MOA. The Construction Protection Plan shall be developed in coordination with the Authority, distributed to concurring parties to the Section 106 MOA for a 30 day period of review and comment, and approved by the Authority, NYSDOT, NYSHPO and FHWA prior to initiation of any excavation and construction activities.

The Design-Builder shall follow all provisions of the plan, including the following construction management practices:

- i. Implement measures to protect historic properties from vibration, excavation, and damage from heavy equipment;
- ii. Implement measures to ensure the safe and efficient movement of traffic around work zones through a maintenance and protection of traffic plan, including access for emergency services (fire, medical, police);

- iii. Implement measures to ensure the maintenance of basic services (water, gas, electric);
- iv. Implement measures for the control and / or management of fugitive dust, erosion, noise, lighting and visual effects of construction activities to the extent practicable.

**Exhibit B Item 4. DREDGE MATERIALS MANAGEMENT**

- A. Dredging shall only be conducted during a three-month period from August 1 to November 1 in any given year. Dredging shall be conducted during at most three calendar years of the construction period. (These restrictions are in order to minimize the potential for impacts to anadromous fish migration, including shortnose and Atlantic sturgeon, as well as migration by other fish species.)
- B. Either use of an environmental dredge bucket with no barge overflow, or use of another equivalent method for treating the overflow water to ensure that any discharge does not result in a substantial visible contrast with the receiving water in the Hudson River.
- C. Post-construction survey to document sediment accumulation after in-water work. Survey to be done after completion of all in-water work, before Final Acceptance.
- D. Transport and disposal of dredge spoils by barge/scow, either to the Historic Area Remediation Site (HARS) in the New York Bight or elsewhere, from construction of the access channel. The transport of dredge material from the construction of the access channel by truck from the waterfront staging areas in Rockland and Westchester Counties is prohibited. The Design-Builder shall specify to the Authority the means of transport of dredge material such as barge, barge to rail or barge to truck for the upland disposal of dredge material.
- E. At least 60 days before dredging begins in any calendar year, notify the NYSDEC and the Authority of its intent to dredge, providing proposed starting and ending dates and dredging locations. Provide the Authority with notice prior to the start and at the completion of each dredge cycle. The Authority will notify NMFS of the start / end date information provided by the Design-Builder. Any request by the Design-Builder to extend dredging beyond the period August 1 – November 1 in any year shall be communicated by the Design-Builder to the Authority in advance, and the Authority shall coordinate the request with FHWA and NMFS.
- F. Submit to NYSDEC a dredging plan, according to time periods established in the permit conditions and before dredging begins, outlining how compliance with permit conditions shall be achieved, permit expiration date, jurisdictional agency, responsible party, construction contract(s) affected, key issues and status. Include this dredge plan in the Dredge Materials Management Plan (see Section 3.3.3.2 in this Project Requirement).
- G. Conduct dredging using a closed clamshell dredge or other equipment as provided in permit conditions. Provide drawings and specifications of the closed clamshell bucket and other dredging equipment, including specifications demonstrating that appropriate design considerations are incorporated in the equipment, to the NYSDEC and Authority according to time periods established in the permit conditions and before dredging related activities start.
- H. Use best management practices including lowering the bucket to the level of the barge gunwales prior to release of the load and placing the dredged material in the barge in a controlled manner. Investigate and repair excessive loss of material from the bucket. Control bucket retrieval rates to minimize turbidity.
- I. Stone used to armor the excavated channel shall be no more than two feet in thickness.
- J. Stone may be placed in the channel area only.

- K. Provide all necessary cooperation, advance notification of works activities, including dates and times, contact details of relevant liaison personnel, locations, and any changes to these arrangements, and access.
- L. Access to suitable vessels shall be provided to NMFS-approved protected species observer(s) to perform appropriate observation pursuant to the Environmental Approvals.

**Exhibit B Item 5. ECOLOGICAL MONITORING**

- A. Prepare an Ecological Standard Operating Procedures Manual outlining the ecological monitoring and reporting methods to be implemented during the program. Include this manual in the Ecological Monitoring Plan (see Section 3.3.3.2 in this Project Requirement).
- B. Ecological Monitoring of Dredging Operations
  - i. At all times provide all necessary cooperation, advance notification of works activities (including dates and times, contact details of relevant liaison personnel, locations, and any changes to these arrangements), access, including provision of suitable vessels, such that the Authority's NMFS-approved species observer(s) can be present to observe all dredging operations in river and disposal operations at HARS.
  - ii. The Authority's NMFS-approved species observer(s) shall monitor all dredging operations, including site dredging, transfer and disposal.
  - iii. If dredging occurs at night or in poor lighting conditions, the Design-Builder shall provide and operate floodlights to allow the Authority's NMFS-approved observer to safely observe and monitor dredge bucket operations and scow or hopper.
  - iv. The Design-Builder shall allocate sufficient time between each dredging cycle to enable the Authority's staff and NMFS-approved observer to inspect the dredge bucket and scow for shortnose sturgeon and/or sturgeon parts and to document the findings.
  - v. The Design-Builder shall be responsible for ensuring that all sturgeon observed to be captured within the mechanical dredging operations shall be removed with a net and, if alive, shall be returned to the river at a location away from the Project Site.
  - vi. Transport all dredged sediment in barges that have been inspected and found to be properly sealed. Loss of material during transport is prohibited.
  - vii. No dredged sediment shall be sidecast or stored or placed in any manner in the Hudson River.
  - viii. By December 31 of every calendar year in which dredging has occurred, submit to the NYSDEC and Authority a Dredging Report specifying the location and amount of sediments dredged and deposited at the HARS.
- C. Hydroacoustic Monitoring Program
  - i. The Design-Builder shall be responsible for monitoring underwater noise resulting from installation of piles in the Hudson River. Monitoring shall be undertaken on a minimum of 20% of the piles having diameter greater than or equal to 7 feet and on 10% of the piles having diameter less than 7 feet. If the Design-Builder is employing a variety of pile installation methods, then the monitoring shall be spread across all these types, but with particular focus on impactive driving if that is being used. Develop and provide to the Authority an underwater noise monitoring plan which demonstrates compliance with permit conditions.

- ii. For the piles identified in item (i) above, the Design-Builder shall for the period of pile driving continuously monitor hydroacoustic noise at a suitable range of offset distances and locations configured to enable the determination of the peak sound pressure level (SPL) and cumulative sound exposure levels, including sufficient monitoring points to allow determination of the offset distances at which the hydroacoustic sound exposure levels (SEL) are at 150 dB re 1μPa r.m.s. and 206 dB re 1μPa peak and a cumulative SEL of 187dB re 1μPa2s and must verify that the best available control technology sound attenuation methodology is deployed and operating in accordance with design specifications. Document compliance.
- iii. Hydroacoustic monitoring results shall be reported monthly to the Authority.

D. Sturgeon Monitoring Program

- i. The Design-Builder shall use telemetry equipment to monitor the presence, residence time and movement of tagged sturgeon that have been tagged by other tagging programs in the Project vicinity. (Details of the telemetric settings shall be provided to the Design-Builder in advance of relevant site works.)
- ii. All live shortnose or Atlantic sturgeon captured during the Project shall be inspected for the presence of passive integrated transponder (PIT) tags with a PIT tag reader. If no PIT tag is present, a PIT tag (of appropriate size) shall be inserted. Live or injured sturgeon shall be released away from the Project Site.
- iii. The Design-Builder shall design and implement a monitoring program for detection of any floating dead or injured sturgeon. Include this program in the Ecological Monitoring Plan (see Section 3.3.3.2 in this Project Requirement). A vessel, running transect lines through the Project area, shall be used during any impactive pile driving.
- iv. Observed live fish shall be held on a boat with a flow-through live well.
- v. All sturgeon captured shall have a fin clip taken for genetic analysis. The fin clip sample shall be transferred to NMFS personnel.
- vi. All dead sturgeon must be preserved for necropsy and possible contaminant evaluation, either by NMFS or at a NMFS-approved facility.
- vii. All sturgeon captures, injuries or mortalities associated with the Project and any sturgeon sightings in the Project area shall be reported to the Authority immediately.
- viii. All incidental fish take limits for the Project stated in the NMFS Biological Opinion shall apply.
- ix. Conduct a daily survey of the project area (River Mile 27) for the purpose of locating stunned or dead shortnose and Atlantic sturgeon. A procedure for this survey shall be submitted to Authority as soon as practicable, but no later than 15 days before in-river construction begins. Include this procedure in the Ecological Monitoring Plan (see Section 3.3.3.2 in this Project Requirement). The Authority shall be contacted by the Design-Builder within 6 hours following a take. (The Authority shall notify NMFS of the take.) Any dead sturgeon shall be held in cold storage until disposition can be discussed, via the Authority, with NMFS. Under no circumstances shall dead sturgeon be disposed of without confirmation, via the Authority, of disposition details by NMFS.



E. Additional monitoring during pile installation

The Design-Builder shall monitor predation levels by gulls and other piscivorous birds. Observation of such predation shall be used as an indicator of an increased number of dead or dying fish at the surface. Develop daily log of activities and submit to the Authority.

F. Post-construction Benthic Monitoring Study

The Design-Builder shall provide all necessary cooperation, site access (including provision of suitable vessels) and notification of any works in the area, to the Authority's team that will document recovery of benthic community in the areas where: (i) temporary platforms were constructed; (ii) where the existing bridge was removed; and (iii) where dredging and/or armoring occurred. This requirement shall apply from the completion of all in-water works through to Final Acceptance.

**Exhibit B Item 6. ECOLOGICAL MANAGEMENT**

- A. Use of cofferdams and turbidity control curtains (silt curtains), where feasible, to minimize discharge of sediment into the river. Backfill cofferdams using clean material, as needed. No excavated sediment may be placed into the River or the cofferdam.
- B. If decanting of barges is necessary, a detailed plan shall be submitted to the NYSDEC and Authority for review and approval before decanting may start.
- C. All side slopes of the dredged channel shall not be steeper than 1:3 slope.
- D. Armoring of the dredged channel to prevent re-suspension of sediment during the movement of construction vessels, installation and removal of cofferdams, and pile driving. If the Design-Builder does not intend to dredge, it shall use armoring or other methods to ensure that the re-suspension of sediment shall be in compliance with the water quality standards as specified in the NYSDEC section 401 water quality certification.
- E. During pumping of the decant water from the holding scow, care shall be taken to avoid re-suspending or pumping sediment which has previously settled in the scow
- F. The Design Builder shall be required to comply with all conditions of the water quality certification.
- G. Measures to minimize the re-suspension of newly exposed sediment during placement of the sand layer of the armoring. These measures may include both mechanical and hydraulic placement of the capping material.
- H. Implementation and development of a stormwater pollution prevention plan (SWPPP) for submittal to NYSDEC pursuant to a SPDES General Permit (GP-0-10-001) to address erosion and sediment control measures (including, silt fences and straw bale dikes) and stormwater management control measures to avoid adverse impacts to water quality. Activities within any floodplains and dredging and disposal of dredged material shall comply with all applicable federal and state legislation and regulatory programs.
- I. Implementation of water quality treatment measures to capture and treat the stormwater runoff in accordance with *Project Requirement 23 – Drainage and Stormwater*. The treatment measures to be implemented shall include those demonstrated to be equal to the performance criteria required by the State of New York (i.e. 80% TSS removal and 40% TP removal) in accordance with the SWPPP.
- J. In accordance with time periods established in the permit conditions and before starting any of the following activities, submit a Water Quality Monitoring Plan to NYSDEC for approval and implement the water quality monitoring plan as appropriate during these activities: dredging

- activities; removal of large debris fields; and removal of the existing bridge; and other activities that may cause resuspension of bottom sediments. Water quality sample parameters, locations and frequency to be defined in the permit conditions.
- K. Analytical results from the water quality monitoring shall be transmitted to the Authority by email within 48 hours of receipt of data results, immediately followed by a mailed hard copy for transmission to NYSDEC. Electronic submissions shall be followed by a hard copy.
- L. If water quality standards are exceeded, reevaluate the dredging operation with possible procedural changes required. If exceedances occur, develop and transmit a corrective action plan to the Authority within 24 hours of the occurrence.
- M. If there are no water quality exceedances during the first two weeks of dredging, water quality monitoring for contaminants may be reduced in accordance with permit conditions. Continue daily total suspended solids (TSS) monitoring through the duration of dredging. If during the reduced sampling there is an exceedance, the frequency of monitoring may revert to that established per permit conditions for all parameters of concern until such time as TSS concentrations no longer exceed permit criteria. Report to the Authority compliance with this permit condition.
- N. Submit three copies of a monitoring report, summarizing the results of the monitoring and analyses, to the Authority for review within 15 days of completion of the dredging operation in any calendar year, for forwarding by the Authority to NYSDEC within 30 days of completion of the dredging operation in any calendar year.
- O. All decant-water holding scows shall be water tight and of solid hull construction. Provide documentation to the Authority showing compliance with permit condition.
- P. Decant water shall be discharged within the confines of a silt curtain containment area surrounding any rock drilling operation. Provide documentation to the Authority showing compliance with permit condition.
- Q. All decant water shall be held in the decant-holding scow for a minimum of 24 hours. Provide documentation to the Authority showing compliance with permit condition.
- R. During discharge of the decant water into the silt curtain containment area, there shall be no turbidity observable outside the confines of the containment area. Visible turbidity observed outside the confines of the containment area shall necessitate require an evaluation of the adequacy of the holding time and/or the need to add a flocculent to aid in settling of solids in the scow. Addition of a flocculent requires NYSDEC approval and the completion of the form "Water Treatment Chemical (WTC) Usage Notification Requirements for SPDES Permittees." Provide documentation showing compliance with permit condition.
- S. Conduct existing bridge demolition in a manner that minimizes the re-suspension of sediment and so that there is no increase in turbidity causing a substantial visible contrast to natural conditions in the Hudson River. Submit a detailed plan for any proposed dredging, cofferdams, or turbidity curtains to the NYSDEC and Authority for review and approval as soon as practical, but no later than 60 days prior to dredging or pier/pile removal operations.
- T. Deploy a floating containment boom around all active demolition areas.
- U. Deploy and maintain a debris-containment net at all times during demolition of the bridge deck and superstructure.
- V. If blasting is proposed, coordinate with the Authority to ensure necessary amendments to the Environmental Approvals are obtained. If blasting is employed during demolition of the existing Tappan Zee bridge a best available control technology sound attenuation system must be approved



by the NYSDEC before blasting occurs. If requested by the Authority, provide plan prior to demolition for submission to NYSDEC

**Exhibit B Item 7. PILE DRIVING MANAGEMENT**

- A. Provide a best available control technology (BACT) regime for underwater sound minimization to the NYSDEC according to time periods established in the permit conditions and before pile driving begins. At least 15 days prior to submittal to NYSDEC, provide the proposed BACT regime to the Authority for review and comment. The BACT must be approved by the NYSDEC in writing before any pile driving may begin. The BACT shall be utilized so that underwater sound does not exceed levels harmful to fish, and shall take account of the results of the Agencies' Pile Installation Demonstration Program which was completed in May 2012
- B. Use of bubble curtains, cofferdams, isolation casings, double-layer constrained bubble curtains, or other technologies to achieve a reduction of at least 10 dB of noise attenuation. A floating containment boom shall be deployed around the pile and false work structures when work is being conducted.
- C. Use of pile tapping (i.e. a series of minimal energy strikes) for an initial period at the start of pile installation to encourage fish to move from the immediate area of pile driving activity.
- D. Use of vibratory pile installation methods to the extent feasible, particularly for the initial pile segment of any pile that shall be field-spliced from two or more sub-sections. Develop a system for reporting the actual times and durations that vibratory and impact hammering took place. Develop and submit to the Authority daily logs of pile driving activities including times and durations for vibratory and impact hammering (including number of impact blows). Prepare report during pile driving (vibratory and hammer) and provide report to the Authority on weekly basis or as otherwise requested by the Authority.
- E. Drive the largest-diameter piles within the first stages of in-river construction of foundations of the Crossing.
- F. Limiting the periods of pile driving to no more than 12-hours per day, and predominantly within daytime hours (for example 7am to 7pm). In rare circumstances, and after notifying the Authority, it is possible that piling may extend further than 12 hours depending on the practicality of driving. However, pile driving activities shall not be intentionally scheduled to exceed the 12-hour per day restriction. Document actual driving times on weekly basis and report to the Authority
- G. Impactive pile driving of piles 8' in diameter or larger in waters deeper than 5.5m (18ft) shall be restricted to 5 hours per day during the period April 1 to August 1 (which is the period of spawning migration for shortnose and Atlantic sturgeon). Identify for the Authority the piles that meet this criteria and demonstrate compliance with permit condition in pile driving log.
- H. At all times, maintaining an acoustic corridor having a total length of at least 5000 feet across the Hudson River (east-west) that is free from any active impact hammer pile driving. The sound level within the acoustic corridor shall be less than the 187 dB re 1 $\mu$ Pa<sup>2</sup>s cSEL criterion. The acoustic corridor shall be continuous to the maximum extent possible but at no point shall any section contributing to the total length of the corridor be smaller than 1500 feet. The location of the acoustic corridor can vary. Use hydro-acoustical monitoring to ensure compliance with permit condition as appropriate, and submit a weekly pile driving plan on scale map.

**Exhibit B Item 8. PEREGRINE FALCON PROTECTION**

- A. Implementation of protocols developed by NYSTA, NYSDEC and NYCDEP for minimizing disturbance to bridge-nesting peregrine falcons during construction Works and demolition Works for the Project to the greatest extent possible during the February through August nesting period. The peregrine falcon protection protocol is included in Exhibit C of this Project Requirement. These protocols include prohibition of construction activities, where practicable, at heights greater than 8 meters above the roadway of the existing bridge or within 30 meters of the piers over which the nest boxes are located, and marking the tops of high equipment (e.g., cranes) and any tall exhaust pipes of such equipment with flagging to deter peregrine falcons from landing on them. Report any impacts to the nest(s) to the Wildlife Manager at the NYSDEC Region 3 Headquarters in New Paltz, NY
- B. The Design-Builder shall be responsible for the relocation of the nest boxes to the new Crossing at least 10 days in advance of Crossing Substantial Completion. These activities shall take place in consultation with the Authority, which shall coordinate with the NYSDEC and NYCDEP wildlife biologists.
- C. Any monitoring of the peregrine falcons shall be undertaken by the Authority. The Design-Builder shall at all times provide all necessary cooperation and access to the Authority to facilitate the monitoring of the peregrine falcons, including provision of suitable vessels and provisions for working at height.
- D. Submit a plan for protection of the falcon nest(s) to NYSDEC no less than 60 days before starting work in the vicinity of the falcon nest(s) as provided in Part 3, Exhibit C.
- E. Obtain written approval of any blasting by NYSDEC and avoid impacts to nesting peregrine falcons.
- F. Refer to and comply with the protocol in Part 3, Exhibit C

**Exhibit B Item 9. CONTAMINATED MATERIALS MANAGEMENT**

- A. Based on the results of the Phase II investigations (provided in *Part 7 – Engineering Data* ), the Design-Builder shall prepare and implement site-specific Remedial Action Plans (RAPs) and Construction Health And Safety Plan (CHASP) during construction based on results of the Phase II investigation. These shall provide appropriate clean fill importation criteria and criteria for allowable reuse of excavated site soils, handling, stockpiling, testing, transportation, and disposal of excavated materials, including any unexpectedly encountered contaminated soil and petroleum storage tanks, in accordance with applicable regulatory requirements. The RAP shall include requirements that all excavated soil and/or fill be handled and disposed of in accordance with regulatory requirements and standard NYSDOT procedures. Where dewatering is required, it shall be conducted under a NYSDEC State Pollutant Discharge Elimination System (SPDES) permit and in accordance with standard NYSDOT procedures. The CHASP shall ensure that subsurface disturbance is performed in a manner protective of workers, the community, and the environment. If additional areas of subsurface disturbance are identified prior to the bridge replacement, perform Phase II subsurface investigations in these areas and update the RAP and CHASP accordingly. Soil intended for off-site disposal shall be tested in accordance with the requirements of the intended receiving facility. Transportation of material leaving the construction areas for off-site disposal shall be in accordance with regulatory requirements, including those covering licensing of haulers and trucks, placarding, truck routes, manifesting. The CHASP shall include measures for worker and community protection, including personal protective equipment, dust control and air monitoring as appropriate. If continued use of NYSTA maintenance facility and State Police barracks in Tarrytown will be made, perform a vapor intrusion investigation to evaluate potential effects of chlorinated volatile

organic compounds (VOCs) detected in groundwater in the indoor air quality of the existing buildings.

- B. Closure and removal of any petroleum storage tanks within the Project Limits that will not be used following the proposed action, along with any contaminated soil, in accordance with NYSDEC requirements and NYSDOT procedures. Any remaining tanks, as well as any new tanks, shall be maintained in accordance with regulatory and standard NYSDOT requirements.
- C. Proper disposal of any chemicals requiring disposal in accordance with regulatory requirements and standard NYSDOT procedures. Any chemicals used for maintenance following the proposed action, as well as any accident-related chemicals requiring clean-up, shall be handled and disposed of in accordance with regulatory requirements and NYSDOT procedures.

**Exhibit B Item 10. ENERGY CONSERVATION AND RENEWABLE ENERGY**

- A. The Design Plans shall include efficient and renewable energy design for the toll plaza facilities, where practicable and consistent with Environmental Approvals.
- B. Use of efficient and environmentally sensitive lighting such as daylight sensor switching systems or equivalent methods in order to reduce energy consumption by operating lights only at times when they are needed.
- C. In compliance with navigational and FAA requirements, consider the use of low-intensity lights.
- D. Efforts and measures to reduce concrete waste, such as pouring leftover concrete as blocks or sidewalk slabs for later use where practicable.
- E. Use of biodiesel for non-road engines during construction, for some or all construction engines and/or vessels tug boats if compatible and practicable.
- F. Use of recycled steel in construction where practicable and permissible.
- G. Reuse of excavated material as fill at land-based site areas, to the extent practicable. If any materials need to be removed, these shall be transported to the nearest reuse or disposal site practicable.
- H. Use of fixtures to minimize light pollution and glare on adjacent properties during construction performed at night.
- I. Use supplementary cementitious materials as practicable; reduce concrete waste; and optimize cement content. Provide to the Authority the list of suppliers and bills of lading for concurrence with these measures, as applicable

**Exhibit B Item 11. CONSTRUCTION OF TEMPORARY AND PERMANENT DOCKS**

- A. Submit plans of the temporary and permanent docks, bulkheads and other in-water structures and facilities to NYSDEC according to time periods established in the permit conditions.
- B. Pressure treat wood with CCA (chromated copper arsenate) or ACQ (alkaline copper quat) with a preservative and treatment process approved (stamped or otherwise marked as certified) by the American Wood Preservative Association for construction of in-water structures.
- C. Provide a best available control technology (BACT) regime for underwater sound minimization to NYSDEC and the Authority according to time periods established in the permit conditions and before pile driving begins, as specified in Exhibit B Item 7(A) herein.
- D. Obtain NYSDEC written approval of the BACT before commencing any in-river pile driving.

- E. Develop the BACT utilizing the results of the Agencies' Pile Installation Demonstration Program and utilize the BACT so that underwater sound does not exceed levels harmful to fish, as specified in Exhibit B Item 7(A) herein.
- F. Include monitoring of underwater sound during pile driving in the BACT, and verify that the BACT sound attenuation methodology is deployed and operating in accordance with design specifications, as specified in Exhibit B Item 5(C) herein..
- G. Submit the design plans and operational specifications to NYSDEC and the Authority for review and approval according to time periods established in the permit conditions and before pile driving begins.
- H. Comply with pile driving time restrictions in Exhibit B Item 7(F) and 7(H) herein.
- I. Use vibratory pile installation methods to extent feasible as provided in Exhibit B Item 7(D) herein.
- J. Deploy a floating containment boom around the pile and false work structures when work is being conducted as provided in Exhibit B Item 7(B).

**Exhibit B Item 12. CONCRETE**

- A. Submit to the Authority plans and descriptions of the means of concrete production, delivery and placement at least 60 days before concrete is to be used. These plans shall to the maximum extent practicable prevent the discharge of cement into the River.
- B. Water from piling and cofferdam dewatering operations shall be discharged into a silt curtain or similar containment. The discharge shall not cause a substantial visible contrast to natural conditions in the Hudson River outside the containment. Comply with Exhibit B Item 6 herein as appropriate.
- C. Ensure that no water containing fresh concrete or concrete leachate shall be discharged into the Hudson River.
- D. Water withdrawals from New York State waters for the purpose of manufacturing concrete are prohibited.
- E. Wastewater discharge into waters of New York State from the manufacturing of concrete is prohibited.

**Exhibit B Item 13. TRANSPORTATION**

- A. Implement measures to ensure the safe and efficient movement of traffic around work zones through a maintenance and protection of traffic plan, including access for emergency services (fire, medical, police).
- B. Coordinate with local agencies regarding the hauling of any construction materials to identify acceptable routes, roadways, and times, and comply with restrictions in Exhibit B Item 4(D) herein.
- C. Coordinate with potentially affected public services in planning traffic control measures. Access to all businesses and residences must be maintained.

**Exhibit B Item 14. COMMUNITY CHARACTER**

- A. Actively maintain a clean and orderly work site, with metrics included for determining compliance, provisions for enforcement, and penalties for non-compliance, to minimize potential impacts on community character during construction.

**PART 3, PROJECT REQUIREMENT 3 – ENVIRONMENTAL  
COMPLIANCE  
EXHIBIT C**

**Protocols for Protection of Peregrine  
Falcon Nests during Construction**

## **PART 3, PROJECT REQUIREMENT 3 – ENVIRONMENTAL COMPLIANCE**

### **EXHIBIT C**

#### **Protocols for Protection of Peregrine Falcon Nests during Construction**

##### **ENDANGERED PEREGRINE FALCON PROTOCOL**

The following protocol was developed in connection with the Tappan Zee Bridge Repair project and due to its success on that project has been implemented for use in connection with the proposed construction of the Tappan Zee Hudson River Crossing Project (the “Project”).

The Governor Malcolm Wilson Tappan Zee Bridge is home to the New York State Endangered Peregrine Falcons (*Falco peregrinus*) which reside year round on the existing bridge. The New York State Thruway Authority has worked in cooperation with the NYSDEC and NYCDEP since 1988 protecting the nesting falcons. Currently a nest box is located on the northbound side of both Pier 175 and 176 (main towers) of the existing bridge. The nest boxes are located on the third panel point approximately 23 meters above the roadway surface.

The following protocol is required as part of the Project’s construction to protect the peregrine falcons’ nest on the existing bridge:

- A) The annual nesting season for the falcons is from February through August. During this time the birds can be extremely aggressive. For the duration of the nesting season, no construction activity shall occur within 30 meters (approximately 98 feet) of each pier at a height of 8 meters (approximately 26 feet) or greater above the roadway surface. The nesting boxes shall not be relocated during the nesting season of the peregrine falcons.
- B) Additionally, considerations for construction activities in the vicinity of the nests and worker safety precautions shall be discussed at a pre-construction meeting. It is the Design-Builder’s responsibility to provide adequate protection for its site operatives without intentionally harming the falcons.
- C) A coordination meeting between the Design-Builder, the Authority, NYCDEP and NYSDEC shall be scheduled two months prior to any work on the existing main span to discuss issues related to the falcon nests.
- D) The Design-Builder shall notify the Authority three weeks prior to any access of the existing main towers (Pier 175 and 176). The Authority will notify NYCDEP and NYSDEC.
- E) Equipment brought to the site that can potentially be used by the falcons as a landing point (including the apex of cranes) or equipment that utilizes petroleum or chemical products at or near the apex of such equipment shall be equipped with a flag or some other non-harmful deterrent to discourage their use by falcon as a landing location.
- F) All communication and contact with NYCDEP and NYSDEC in relation to the peregrine falcons shall be undertaken by the Authority.



## SECTION 4. SITE WORK

### 4.1. Scope

The Design-Builder shall perform all Work necessary to prepare the Project site for construction, maintain the site in suitable condition during construction, and arrange the site for the permanent condition. The site work shall 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, standpipes, valves, meters, and other waste materials; and aggregate surfacing.

### 4.2. Standards and References

The Design-Builder shall perform site work in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### 4.2.1. Standards

- A. NYSDOT Highway Design Manual

#### 4.2.2. References

- A. AASHTO A Policy on Geometric Design of Highways and Streets

### 4.3. Requirements

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.

All Work shall be within the Project Limits.

The Design-Builder shall grade disturbed areas to match the existing surrounding ground elevation. 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.

For minor structures, including buildings and sheds not covered by *Project Requirement 25 – Demolition*, the Design-Builder shall remove and properly dispose of all objects encountered as part of or within the structures, buildings and/or sheds, including hazardous and regulated materials, foundations and underground tanks.

If borrow material is required for the Project, the Design-Builder shall prepare a borrow plan, including location, type of material to be borrowed, and the approximate volume of material to be borrowed.

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. All material to be removed shall become the property of the Design-Builder and shall be disposed of off-site.

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

#### **4.4. Deliverables**

At a minimum, the Design-Builder shall provide the items listed in Table 4.4-1 for the Authority's consultation and written comment.

**4.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Site works plans	5	1	At least 10 days before first Readiness for Construction Review	4.3
Borrow plan <i>(if required)</i>	5	1	At least 30 days before start of any excavation for borrow purposes	4.3

## SECTION 5. SURVEYING AND GIS

### 5.1. Scope

The Design-Builder shall perform all surveying necessary to undertake and complete the Project including but not limited to: terrain data (topography); mapping; roadways and appurtenances features, bridges, buildings and appurtenances, toll facilities, and utilities; locating boundaries; waterway and hydraulic surveys; bathymetric surveys; construction and stakeout surveys; As-Built surveys; surveys that arise from other Project Requirements; asset inventory; and all other surveying services necessary to complete the Project.

The Design-Builder shall review and coordinate *DB §105-8* with this Project Requirement. In instances where they differ, this Project Requirement shall govern.

### 5.2. Standards

The Design-Builder shall perform the surveying activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement:

- A. NYSDOT Highway Design Manual
- B. NYSDOT Land Surveying Standards and Procedures Manual and the standards cited therein
- C. NYSDOT CADD Standards and Procedure Manual
- D. Federal Geographic Data Committee – GIS Standards (<http://www.fgdc.gov/standards>)
- E. New York State GIS Standards (<http://gis.ny.gov/coordinationprogam>).

### 5.3. Requirements

#### 5.3.1. General

##### 5.3.1.1. Survey Manager

The Design-Builder shall designate a survey manager for the Project. The survey manager shall be currently registered to practice in New York State as a licensed Land Surveyor. The survey manager shall manage all survey activities and mapping associated with the Project, shall be responsible for directing and reviewing all Project survey and mapping work, and serve as the point of contact for all survey and mapping activities. The survey manager shall have thorough knowledge and understanding of all aspects of the Standards identified in Section 5.2 herein.

##### 5.3.1.2. Project Survey Control

The Design-Builder shall use available project survey control information from the Authority.

#### 5.3.2. Authority-supplied Data

The Authority will make available the data listed in Table 5.3-1. Refer to *Part 7 – Engineering Data*. The Design-Builder shall be responsible for verifying any data used for the Project.

5.3-1 Survey-Related Data Supplied by the Authority

Information Type	Source
Horizontal and Vertical Control Points	Established by NYSDOT Region 8
ROW Highway Boundary	Established by NYSDOT Region 8

## New York State Thruway Authority

Information Type	Source
Photogrammetric mapping at 1 inch to 40 foot scale	NYSDOT Main Office
Terrestrial and LiDAR Survey	NYSDOT Main Office
Acquisition Maps	NYSDOT Region 8
Bathymetric survey (January 2012)	Authority
Records Plans	Authority

### 5.3.3. Construction Requirements

All control points and monuments shall be verified prior to commencement of work on Site, and where necessary re-established through the duration of the Project in coordination with the Authority.

### 5.3.4. Inventory of Existing Assets

The Design-Builder shall complete a survey to itemize and form an inventory of all existing assets, including infrastructure and street furniture, within the ROW Limits.

### 5.3.5. Survey Reports, Records and Maps

The Design-Builder shall submit 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 licensed professional land surveyor and a certified hydrographer, as applicable for the survey type.

### 5.3.6. Geographical Information System (GIS) Protocol

All data collected by the Design-Builder and provided to Authority by the Design-Builder shall be:

- A. in a GIS-readable format, using a commercial proprietary GIS software package;
- B. have all relevant metadata stored with it, including but not limited to the surveying and engineering specifications and accuracies; and
- C. be referenced to a real-world coordinate system.

### 5.3.7. 3-D GIS spatial model

The Design-Builder shall provide a 3-D GIS spatial model of the Site that includes base mapping layers such as aerial photography, topography, infrastructure and buildings. The 3-D GIS spatial model shall include all the Proposer’s design elements, including the Crossing, buildings and staging areas. The 3-D GIS spatial model shall incorporate and host a geospatial digital photographic documentation record by the Design-Builder of the construction, including for all photographic images the date, time, location, orientation and descriptor. The 3-D GIS spatial model shall allow for interactive simulation in a virtual reality system, including visualization of the staging, sequence of the Works, the Crossing, approach roadways and the potential visual impacts. The 3-D GIS spatial model shall include interactivity to enable the Authority to review sequence of construction, and shall provide 3-D interactive viewing capability to a functional level typical of commercial proprietary software.



See also *Project Requirement 28 – Bridge Maintenance and Operations Requirements*.

## **5.4. Deliverables**

At a minimum, the Design-Builder shall submit the items listed in Table 5.4-1 for the Authority's consultation and written comment.

For all submissions listed in Table 5.4-1, a preliminary hard copy shall be submitted by the Design-Builder to the Authority for review prior to making any final submissions. Electronic measurement raw data shall be provided in electronic format only.

The requirement for an as-built survey (see Table 5.4-1 herein) is in addition to and distinct from the requirement for an as-built database of the Crossing, as detailed in *Project Requirement 28 – Bridge Maintenance and Operating Requirements* (see Section 28.7 therein).

Where applicable, electronic copies of deliverables listed in Table 5.4-1 shall be supplied as per the specifications given in Chapter 2 of NYSDOT CADD *Standards and Procedure Manual*. All relevant Bentley MicroStation® files (including .DGN files) and Bentley InRoads® files (including DTM, ALG files) shall be compatible with the MicroStation XM and InRoads XM software versions.

**Table 5.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule (for final submission)</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Inventory of existing assets	5	1	Not more than 60 days after NTP	5.3.4
All survey records	1	1	Not more than 60 days after Physical Completion	5.3.5
Survey reports, including hydrographic surveys	1, signed and sealed	1	Within 30 days of completion of each survey	5.3.5
3D digital terrain model (DTM) file of the Crossing	-	1	Not more than 60 days after Crossing Substantial Completion	-
Survey base map and As-Built surveys (including GIS-format data)	1, signed and sealed	1	Not less than 60 days after Physical Completion	-
3-D GIS spatial model, including geospatial photographic record of construction	-	1	First version not more than 60 days after NTP, and updated at least quarterly	5.3.7





**New York State Thruway Authority**

Type	Reference	Third Party	Agency	Location	Type	Reference

## SECTION 7. RIGHT-OF-WAY

### 7.1. Scope

This Project Requirement addresses availability of property for the Design-Builder's use within the Project Limits. It presents the process that the Design-Builder shall use for acquiring or gaining use of additional property, if any is required, and the respective roles and responsibilities of the Authority, the Department and the Design-Builder. This Project Requirement addresses Right-of-Way (ROW) provided by the Authority, any additional ROW requested by the Design-Builder, and any temporary property interests identified by the Design-Builder for its convenience.

The Design-Builder shall be responsible for coordinating the Project Requirements herein with *DB §107-1*, *DB §107-22* and *DB §107-30*.

### 7.2. Standards

The Design-Builder shall perform ROW activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

- A. NYSDOT Highway Design Manual
- B. NYSDOT ROW Mapping Procedures Manual

### 7.3. Requirements

#### 7.3.1. ROW Provided by the Authority

The ROW within the Project Limits shown on the ROW key maps in *Part 6 – RFP Plans* shows:

- A. The ROW immediately available to the Project;
- B. The ROW to be acquired by the Authority and made available to the Project.

The Department will acquire additional ROW it deems necessary for the Project in accordance with *DB §107-22*. The Design-Builder shall be provided access to each parcel identified in the ROW key maps as the parcel becomes available. The Design-Builder shall be responsible for securing each property within 72 hours of obtaining notice of availability.

The status of each parcel is indicated in the Acquisition Clearance and Status Report (see Table 7.3-1 herein), including the estimated scheduled availability date for each of the parcels identified by the Design-Builder in its Proposal as being required for the Project.

Table 7.3-1 shows information from the Acquisition Clearance and Status Report as at November 21, 2012. The Authority will provide the Design-Builder with updates to the Acquisition Clearance and Status Report within 10 working days of each change to the report.

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

**Table 7.3-1 Acquisition Clearance and Status  
(at November 21, 2012)**

<b>TRN<sup>†</sup></b>	<b>Relocation</b>	<b>Entity Name / Road Name</b>	<b>Available</b>

<sup>†</sup>TRN denotes temporary reference number.

### **7.3.2. Additional ROW Requested by the Design-Builder**

If it is proposed by the Design-Builder and agreed to by the Authority that incorporation of one or more additional parcels into the ROW and/or modifications to the ROW Limits (fee takings, easements or other property rights) is appropriate and required for the Project, in addition to those parcels listed in Table 7.3-1, the Authority will acquire the ROW in accordance with *DB §107-22.4*.

### **7.3.3. 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 staging, laydown, 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 Authority, prior to initiating use of the space, in accordance with *DB §107-1*.

### **7.3.4. ROW Coordination**

ROW coordination shall be in accordance with *DB §107-22*.

## **7.4. Deliverables**

### **7.4.1. For Requests by Design-Builder for Additional ROW**

If the Design-Builder seeks ROW additional to the parcels listed in Table 7.3-1, the Design-Builder shall be responsible for preparing and submitting a written request to the Authority that includes plans identifying the fee takings, temporary easement or permanent easement sought, the proposed construction limits and relevant cross-sections, and justification for its need.

If the Authority approves the request, the Design-Builder shall be responsible for preparing the documents necessary to complete the acquisition as provided in *DB §107-22.1*, and the Department will acquire the ROW and subsequently provide the Design-Builder with a notice of availability.

### **7.4.2. Hudson River Land Transfer (OGS)**

The Design-Builder shall be responsible for ensuring that upon finalizing the Design-Builder's design alignment for the Crossing (including footprint, geometry and dimensions in the Hudson River) and at least 30 days prior to commencing

## **New York State Thruway Authority**

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construction works in the Hudson River, the Design-Builder shall provide details of the Crossing alignment to the Authority for the use by the Authority in arranging for transfer of land under water within the Hudson River from the New York Office of General Services (OGS) to the Authority.

The Design-Builder shall be responsible for providing any additional items or information, including copies of the Design-Builder's insurance certification, that may be requested by the OGS from the Design-Builder, via the Authority, as necessary during the land transfer process.

## SECTION 8. PUBLIC INVOLVEMENT

### 8.1. Scope

The Authority has prepared a Tappan Zee Hudson River Crossing Project Public Involvement Plan (PIP). The PIP is presented in Exhibit A of this Project Requirement. The Design-Builder shall be responsible for producing and implementing a PIP support plan, which shall document the Design-Builder's support to the Authority's implementation of the PIP as detailed in this Project Requirement.

The goal of the public involvement activities is to engage a diverse group of public and agency participants, seeking and using their views, and providing timely information throughout the design and construction process. Such engagement will include:

- A. **Seek input** – provide timely opportunities for stakeholder engagement to allow for meaningful input for consideration in the design/build process.
- B. **Utilize input** – develop a methodology that allows for consideration and inclusion, where appropriate, of stakeholder input into the design-build process.
- C. **Provide status updates** – inform the public at regular intervals about key changes in the Project and the Project process, as well as the steps and schedule for moving the Project toward successful completion.

### 8.2. Standards

The Design-Builder shall perform the PIP support activities in accordance with the following Standard unless otherwise stipulated in the Project Requirement herein:

- A. NYSDOT Project Development Manual: Appendix 2, Public Involvement Manual

### 8.3. Requirements

The PIP (see Exhibit A herein) defines the major public involvement activities, the required role of the Design-Builder within those activities and the manner in which the Authority will administer the PIP. The Design-Builder's PIP support plan shall detail the Design-Builder's participation in the PIP activities detailed in Exhibit A herein. The Design-Builder shall submit the PIP support plan to the Authority's Project Manager for consultation and approval.

Under the PIP support plan, for any public involvement activities involving information provided to or received from the public, ranging from open-houses, workshops or other meetings through to comments submitted via the Project website, the Design-Builder shall provide the Authority with full documentation in the form of meeting minutes, copies of correspondence including emails, handouts or materials supplied by the Authority, the Design-Builder or members of the public during these meetings, attendance lists and similar materials. The PIP support plan shall include a public information response process that clearly indicates:

- a) The public involvement documentation procedures; and
- b) How the Design-Builder intends to consider and utilize the input gathered from the public involvement activities, including the process for recommending any proposed changes to the Design-Builder's design or construction activities or changes in the manner with which the Design-Builder and the Authority are handling the Project. The Authority shall determine whether any suggested changes will be adopted.

The Design-Builder's PIP support plan shall be fully coordinated and consistent with all activities, visualizations and other design-related products and any related public involvement type procedures included in the Design-Builder's visual quality management plan (see *Project Requirement 13 – Visual Quality*).

The Design-Builder's PIP support plan shall specify the provision of a public involvement manager who will be the primary point of contact with the Authority for all Design-Builder activities. The person designated by the Design-Builder shall have experience with public involvement activities for large-scale projects, and along with those working with him/her shall have a thorough understanding of the Project, past public involvement activities by the Authority and major issues raised at that time, and a familiarity with the Project's likely principal stakeholders, including elected officials, local groups/individuals, State and Federal agencies, national/regional major interest groups.

The Design-Builder's PIP support plan shall specify how the Design-Builder shall assist the Authority in the following public involvement activities, consistent with the PIP (*see* Exhibit A herein):

- A. **Project Website** – The Authority will host and maintain the Project's website. The Design-Builder shall, in liaison with the Authority, develop ideas regarding how the existing Tappan Zee website (<http://www.thenewnybridge.com>) can be updated and expanded to handle the Project's design and construction phase and the manner in which the Design-Builder shall support the Project website content and the role of the Project website in the public involvement process. The Design-Builder shall be responsible for providing Project-related information as needed for posting on the Project website, including but not limited to conversion of graphics, reports, and videos to web-compatible formats.
- B. **Media Relations** – Media outreach efforts, as outlined in the PIP, will be led by the Authority's Public Outreach Management Team and supported by the Design-Builder..
- C. **Project Newsletters** – The Project newsletters shall provide the public with updates on Project activities, schedule of key events, and related information, including locations on the Project website or elsewhere where further information can be obtained by the public. After consultation with the Authority regarding content, length and overall approach, the Design-Builder shall recommend a specific format, layout, name, design and typical length for the project newsletters. After review and comments from the Authority, the Design-Builder shall prepare the initial Project newsletter. After review and agreement with the Authority on its content, the Design-Builder shall provide the inaugural Project newsletter to the Authority in electronic format suitable for emailing and posting on the Project website, and shall provide the Authority with 500 color hard copies of the newsletter. All subsequent editions of the Project newsletter shall follow these same procedures. The frequency and timing of Project newsletters shall be consistent with the requirements stated in the PIP.
- D. **Project Phone Hotline** – The Design-Builder shall provide and maintain for the duration of the Project (until Final Acceptance) a toll-free phone hotline related to design and construction activities for individuals to call with concerns or questions. The Design-Builder shall be responsible for ensuring that the hotline is staffed 24 hours/7 days a week/365 days per year. The phone number of the hotline shall be posted by the Design-Builder on signs within the affected neighborhood(s), on the Project website, at the Outreach offices and in the Project newsletter. The Design-Builder's PIP support plan shall clearly define in its public information response process the method of informing the Authority in a timely manner regarding hotline activities, especially those dealing with emergency or safety issues, consistent with the PIP.
- E. **Technical Media** – The Design-Builder shall be responsible throughout the duration of the Project (until Final Acceptance) for preparing public information videos for use in various public involvement activities, including the Project website and public meetings. The Design-Builder's PIP support plan shall provide details of the proposed video and graphics methods, which shall befit a Project of the magnitude and importance of the Tappan Zee Hudson River Crossing, consistent with the PIP. The Design-Builder shall provide appropriate technical media and materials that: (1) provide the public with up-to-date information through the Project's website that demonstrates the progress on the Project's construction; (2) use text, graphics, live video and



video simulations to document relevant aspects of the Project's design and construction; (3) use strategically positioned videocam systems and time-lapse imagery of the construction of the Crossing; and (4) are comparable to methods and techniques used for similar major projects internationally, consistent with the PIP. All video and still-photographic materials that include images of any part of the Project Limits shall comply with *Project Requirement 20 – Security*. The Design-Builder shall be responsible for preparing and providing to the Authority all videos, videocam systems and any other technical visual tools. The Design-Builder's PIP support plan shall specify the specific video systems and products that the Design-Builder shall provide, consistent with the requirements of the PIP. The Design-Builder's PIP support plan shall detail the process it shall follow to propose to, review with, and gain acceptance from the Authority prior to the presentation or public release of any technical media materials. The Design-Builder shall be responsible for storing all the Project's video documentation in a database to which the Authority shall have access and which shall become the property of the Authority at Final Acceptance.

- F. **Public Involvement Meetings** – The Design-Builder's PIP support plan shall specify the number and type of public involvement meetings that the Design-Builder shall support and participate in, consistent with the PIP, and the activities that the Design-Builder will undertake at those meetings, the materials to be prepared and provided by the Design-Builder (including audio-visual systems, boards, handouts, PowerPoint presentations, and other materials) and the documentation of the meeting's results. The meetings shall include regularly scheduled public update meetings as well as larger, more comprehensive meetings at key project milestones, as consistent with the PIP. The Design-Builder shall be responsible for making all necessary arrangements for meetings, preparing and providing copies of all meeting materials, and fully documenting the results of these meetings. The Design-Builder shall present details of the public information response process in its PIP support plan, which shall document how materials from meetings shall be managed and responded to.
- G. **Work Zone Public Information** – The Design-Builder shall support communications strategies by the Authority that seek to inform affected road users, the general public, area residences and businesses, and appropriate public entities about the roadway closures, commuter alternatives, and any potential impacts on traffic.
- H. **Site Tours** – Project Site tours requested by the Authority shall be coordinated with and subject to the prior written approval of the Design-Builder's Project Manager or his or her designee and compliance with all safety, security and administrative procedures and restrictions established by Design-Builder. Such procedures may include prior orientation and safety briefings, appropriate security clearances and the execution of an individual liability release. Approval may be revoked at any time. Requests for Site tours shall be made in writing by the Authority not less than two work days in advance of the desired tour date. Site tours shall be limited to reasonable business and educational purposes, excluding the performance of any work, and to such areas, times and number as the Design-Builder may determine. Any special accommodations shall be at the expense of the Authority.

**8.4. Deliverables**

The Design-Builder shall submit the items listed in Table 8.4-1 for the Authority's consultation and written comment.

**Table 8.4-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
PIP support plan	5	1	Not more than 30 days after NTP	8.3

**PART 3, PROJECT REQUIREMENT 8 – PUBLIC INVOLVEMENT EXHIBIT A**

**Tappan Zee Hudson River Crossing Project**

**Public Involvement Plan**

**PIP SECTION 1. INTRODUCTION**

**A. General Project Description**

The purpose of the Tappan Zee Hudson River Crossing Project (“the Project”) is to maintain a vital link in the regional and national transportation network by providing a Hudson River crossing between Rockland and Westchester Counties. This Project will address the structural, operational, safety, security and mobility needs of the existing Governor Malcolm Wilson Tappan Zee Bridge.

**B. Changes in Scope and other Relevant Information.**

Since 2002, the Tappan Zee Bridge project was studied under a separate project called the Tappan Zee Bridge/I-287 Corridor project. That project was a 30 mile corridor project that was a highly complex endeavor, considering alternatives for highway, bridge, and transit improvements along the 30 mile Interstate 287 corridor. In October of 2011, a decision was made to rescind, or end that project study and focus entirely on the Tappan Zee Bridge itself. The same day the Tappan Zee Bridge/I-287 Corridor project was rescinded, the Notice of Intent to begin studying the Tappan Zee Hudson River Crossing Project was published.

In January, 2012, the Draft Environmental Impact Statement for the Project was published, opening the comment period which ended on March 30, 2012. Hearings on the DEIS were held on February 28 and March 1, 2012. The Final Environmental Impact Statement was published on August 1, 2012, and the Project’s Record of Decision was issued on September 25, 2012.

Given the overlaps in the scope of the environmental reviews for the Project and the previous Tappan Zee Bridge/I-287 Corridor project, and the extensive public outreach activities required to complete the FEIS for the Project, a major challenge of the Public Involvement Plan (PIP) for the Design-Build process is to clarify the public’s role and the Design-Builder’s obligation during the design and construction of the Project. Despite the narrowing of project scope, elements of the public discussion regarding the Project continue to focus on aspects included in the previous project, including mass transit.

**C. Design-Build Process Overview and Schedule**

The Project is being progressed as a Design-Build project. This project development approach, while used in various states, is a new process for New York. Public Involvement during the design and construction phases of the Project will seek to educate a broad range of stakeholders, from elected officials to the general public, on this process and to clarify the opportunities for input. It will also include avenues for public comment and inquiry during the construction process.

The Project has an accelerated schedule, with some construction-related activities beginning in early 2013. With the selection of a Design-Build team scheduled for December 2012, this accelerated schedule poses additional challenges to provide opportunities for public input. This updated PIP needs to consider key milestones where input can be gathered and relevant project information shared with the public. It is vital that due to the rapid schedule, the right opportunities are identified in order to obtain relevant information to progress the project in a timely fashion.

PIP Sections 2 through 7 herein lay out the purpose and goals of the public involvement activities during the Project’s NEPA phase and review the key aspects of those activities. These include the public and private sector stakeholders involved with the Project and the methods used to communicate and obtain input from them, as well as the major Project document releases and public meetings that have occurred

through the completion of the Project's NEPA process. PIP Section 8 herein establishes how these public involvement activities will continue and be applied during the Project's Design-Build process.

## **PIP SECTION 2. PURPOSE OF PUBLIC INVOLVEMENT PLAN**

### **A. Public Involvement Objective**

During the design and construction phases, the selected Design-Builder will implement the specific scope included in its Proposal and consistent with all requirements that the Project must meet as specified in the contract between the Design-Builder and the Authority. It is the intent of the Authority that the diverse group of public and agency participants (stakeholders) continues to provide input and have access to Project information beyond the recently concluded National Environmental Protection Act (NEPA) process. It is important to have mechanisms in place to ensure that commitments made to the public will be honored.

A primary goal of the PIP for the Design-Build process is to ensure that the public's concerns regarding issues that could cause a negative impact on safety, health and welfare are addressed in a timely fashion. To this end, effective avenues are required for public comments and questions to be received and addressed, particularly in regards to direct public interfaces with the Project in such areas as noise, air pollution, traffic, safety, protection of existing buildings, monitoring during construction, potential hazmat exposure, parking and construction period traffic conditions.

As part of the approved Environmental Impact Statement and related Environmental Approvals, a number of Environmental Performance Commitments (EPCs) were made; the public needs to be assured that these commitments will be adhered to by the Design-Builder and that the public has effective methods to raise concerns regarding the meeting of all requirements under these EPCs. In addition, the PIP should fully inform stakeholders about any changes in the Project, progress toward completion of the Project and steps being taken to finish the Project by the agreed upon completion date.

### **B. Public Involvement Activities**

Public Involvement activities for the Design-Build phase of the Project can be categorized as follows:

- i. Information gathering for use in design;
- ii. Information sharing for pre-Design-Build activities such as the pile implementation demonstration program; and
- iii. Information sharing for construction activities including: work zone traffic control, staging areas, detours, construction phasing, schedule and possible special conditions that may arise.

## **PIP SECTION 3. PROJECT AGENCIES AND EXTERNAL STAKEHOLDERS**

The following is a list of Project Agencies and stakeholders. These lists will be maintained and updated continuously as necessary through the Design-Build process.

### **A. Lead Agencies**

Federal Highways Administration (FHWA), New York State Department of Transportation (NYSDOT) and the New York State Thruway Authority (NYSTA) are Joint Lead Agencies for the Project's NEPA process. These agencies have staff dedicated to the progression of this Project and participate in the role of internal stakeholders.

### **B. Cooperating Agencies**

During the NEPA process, the following Cooperating Agencies have been identified:

- National Marine Fisheries Service (NMFS);
- U.S. Army Corps of Engineers (USACE);
- U.S. Coast Guard (USCG);
- U.S. Environmental Protection Agency (USEPA);
- U.S. Fish and Wildlife Service (USFWS);
- New York State Department of Environmental Conservation (NYSDEC);
- New York State Department of State (NYSDOS);
- New York State Office of General Services (NYSOGS); and
- State Historic Preservation Officer (SHPO) of the New York State Office of Parks, Recreation and Historic Preservation
- Advisory Council on Historic Preservation (ACHP).

**C. Participating Agencies**

Currently the list of Participating Agencies includes those identified as Participating Agencies during the Project NEPA process.

**D. Consulting Parties**

These groups are those who accepted Consulting Party status under Section 106 of the National Highway Preservation Act. A list of the Section 106 Consulting Parties is included in Appendix C of the Project's DEIS.

**E. Other Stakeholders**

These groups include elected officials, local communities, the travelling public, and those with an expressed interest in the Project.

**PIP SECTION 4. COMMUNICATION METHODS**

The following are a list of communication methods utilized during the Project's NEPA process. Additional methods will be identified if and as Project requirements deem necessary during the remainder of the NEPA process. The planned communication methods during the Design-Build process are presented below in PIP Section 8.

- A. Public Notices** - All public notices were posted conspicuously on the project website and included in project newsletters as necessary to provide timely and appropriate information for stakeholder and public use. The following are the public notices during the Project's NEPA process:

<b>Public Notice</b>	<b>Date</b>
Notice of Intent (NOI) to Prepare DEIS and Public Scoping Briefings	Oct. 12, 2011
Rescinded NOI for the Tappan Zee Bridge/I-287 Corridor Project	Oct. 12, 2011
Notice of Section 106 Consultation Process	October 2011
Notice of Availability of DEIS and DEIS Public Hearings	Jan. 27, 2012
Notice of Extension of Public Comment Period on DEIS	March 5, 2012
Notice of Availability of the FEIS	August 1, 2012
Publication of Record of Decision	September 25, 2012

- B. Mailing List** -- A comprehensive project mailing list of over 5,000 names was established during the Tappan Zee Bridge/I-287 Corridor Project and will continue to be utilized and expanded as warranted.
- C. Website** -- The Project's website ([www.thenewnybridge.com](http://www.thenewnybridge.com)) was the prime source for all Project information during the NEPA process, allowing visitors to join the mailing list, submit comments and obtain information about upcoming meetings, available documents to unload and other Project information.
- D. Phone Hotline** -- a toll-free project hot line (877-TZB-DOT5) exists to receive calls during normal business hours, with messages returned promptly.
- E. News Releases/Media Outreach** -- media outreach efforts were carried out as appropriate, including contacting the media regarding new project developments at major milestones. These efforts included media serving environmental justice communities.
- F. Informational Materials at Key Points during Project Development** -- written materials and visuals (photos, maps, charts) and contact information, as well as display boards, handouts and other materials were made available at public meetings and posted on the Project's website.

#### **PIP SECTION 5: AGENCY COORDINATION AND COMMUNICATION**

##### **A. Lead and Cooperating Agencies**

The Lead and Cooperating Agencies for the Project are listed above in PIP Section 3 of this exhibit.

##### **B. Communication Methods**

- a. **Coordination Meetings** -- An initial cooperating agency coordination meeting was held on October 24, 2011 to inform federal and state agencies of the Project and to outline the environmental review process. An additional meeting with cooperating agencies was held on January 5-6, 2012 which covered the Design-Build process and the important role that permits and approvals from these agencies would play in the Design-Build process.
- b. **Section 106 Consulting Parties Meetings** -- the following meetings have been held:
  - December 16, 2011-- The first Section 106 Consulting Parties meeting was held in Tarrytown to review the potential impacts of the Project on properties within the Area of Potential Effect (APE). Subsequent to that meeting a draft Memorandum of Agreement (MOA) was prepared (included as Appendix C of the DEIS).
  - February 16, 2012 -- The second Section 106 Consulting Parties meeting was held in Tarrytown to discuss the comments received from the first meeting, along with the resolution of those comments. The steps involved in the Section 106 process going forward were also discussed.

#### **PIP SECTION 6: PUBLIC MEETINGS**

##### **A. Public Scoping Meetings**

Public scoping meetings were held on October 25 and 27, 2011 in Westchester and Rockland Counties, with opportunities to comment in person and in writing on the proposed scope of the DEIS as presented in the *TZHRCP Scoping Information Packet*.



**B. DEIS Public Hearings**

Public hearings in the Project's DEIS were held on February 28 and March 1, 2012 in Rockland and Westchester Counties to provide information about the Project and the assessment of its impacts as presented in the DEIS.

**C. Other Public Information Meetings**

- a. **Additional Public Information Meetings** – the Authority will hold meetings as needed with local stakeholder groups, local communities and/or their elected officials and others as needed to clarify aspects of the Project and to provide additional opportunities for these groups to express these concerns and understand how the upcoming Design-Build process will address them.
- b. **Noise Barrier Information Meetings** – meetings were held on May 15 and 16, 2012 with local elected officials and individual property owners in areas where noise reduction barriers have been proposed in the FEIS. These meetings allowed those parties to better understand how these determinations were made and how the final configuration of these barriers (including length, height, materials) will be determined and when their design and construction will be finalized.

Further meetings between the Authority and selected Design-Builder and affected stakeholders will occur during the design and construction process.

**PIP SECTION 7: PUBLIC DOCUMENTS**

**1. Draft Environmental Impact Statement**

A Draft Environmental Impact Statement (DEIS) was developed based upon extensive studies in the Project area along with information gathered from the internal and external stakeholder meetings. The report examines the potential environmental effects of the proposed alternatives for the project and where adverse impacts are identified, it discusses potential measures for mitigation. The Notice of Availability of the DEIS was published on January 27, 2012 and the DEIS was made available for public/stakeholder review at repositories at offices of the Agencies and selected municipal offices and libraries in Rockland and Westchester Counties (see Section 3-5 of Chapter 3 of the DEIS). The Notice of Availability of the DEIS along with a link to the document was also emailed or mailed to a wide range of agencies, organizations and elected officials.

Interested individuals, organizations, and Federal, State and local agencies were invited to comment on the DEIS during the public comment period. Methods of providing input include

- Verbally or in writing at the public hearings discussed above.
- Via email: [t7bsite@dot.state.ny.us](mailto:t7bsite@dot.state.ny.us)
- Via fax: 845-454-7443
- [REDACTED]

## **2. Final Environmental Impact Statement**

Based on the findings of the DEIS and the written and oral comments received during the public hearings, as well as during the DEIS document public comment period (extended to March 30, 2012), FHWA, NYSDOT and NYSTA prepared a Final Environmental Impact Statement (FEIS), published on August 1, 2012. New or substantive comments following the publication of the FEIS, were addressed in the Record of Decision (ROD).

## **3. Record of Decision**

FHWA, NYSDOT, and NYSTA issued a Joint Record of Decision (ROD) and Findings Statement for the Project on September 25, 2012. The ROD described the preferred alternative for the Project, its environmental impacts, and any required mitigation measures. The ROD concluded the NEPA development process..

# **PIP SECTION 8: PUBLIC INVOLVEMENT DURING DESIGN-BUILD PHASE**

## **A. MAJOR PUBLIC INVOLVEMENT GOALS**

The primary goal of the Tappan Zee Hudson River Crossing Project PIP for the Design-Build phase of the Project is for the Authority and the Design-Builder to follow an open and flexible strategy that incorporates and practices appropriate opportunities for public input. The PIP will continue many of the activities implemented through the Project's NEPA phase, and will ensure that all possible opportunities are explored to engage a diverse group of public and agency participants, seeking and using their views, and providing timely information throughout the design and construction process. Such engagement will include:

- i. Timely opportunities for stakeholders to provide meaningful input for consideration in the Design-Build process;
- ii. Procedures that allow for that input to be considered and included where appropriate in the Design-Build process; and
- iii. A program of regularly scheduled meetings and/or other communications particularly at key milestones, to inform the public about the Project's progress, any changes or refinements in the Project's design, schedule and other factors of importance to the public.

The Authority will maintain overall control of the PIP's goals, overall content and major elements, with the Design-Builder handling the development of outreach materials, programs and events. The Authority will oversee these activities with final approval of all materials, imagery and announcements utilized as part of the public involvement plan. These roles are clarified in *Project Requirements 8 – Public Involvement*.

An important aspect of the PIP during the Design-Build phase, especially at its beginning, will be the clear message to the public, supported by changes from the design and content of the Project's previous outreach materials, that this is the start of the Project's final and historic Design-Build phase. However, the PIP activities will reinforce the Authority's continued commitment to involve and inform the public throughout this challenging and complex process.

## **B. Requirements For The Design-Builder**

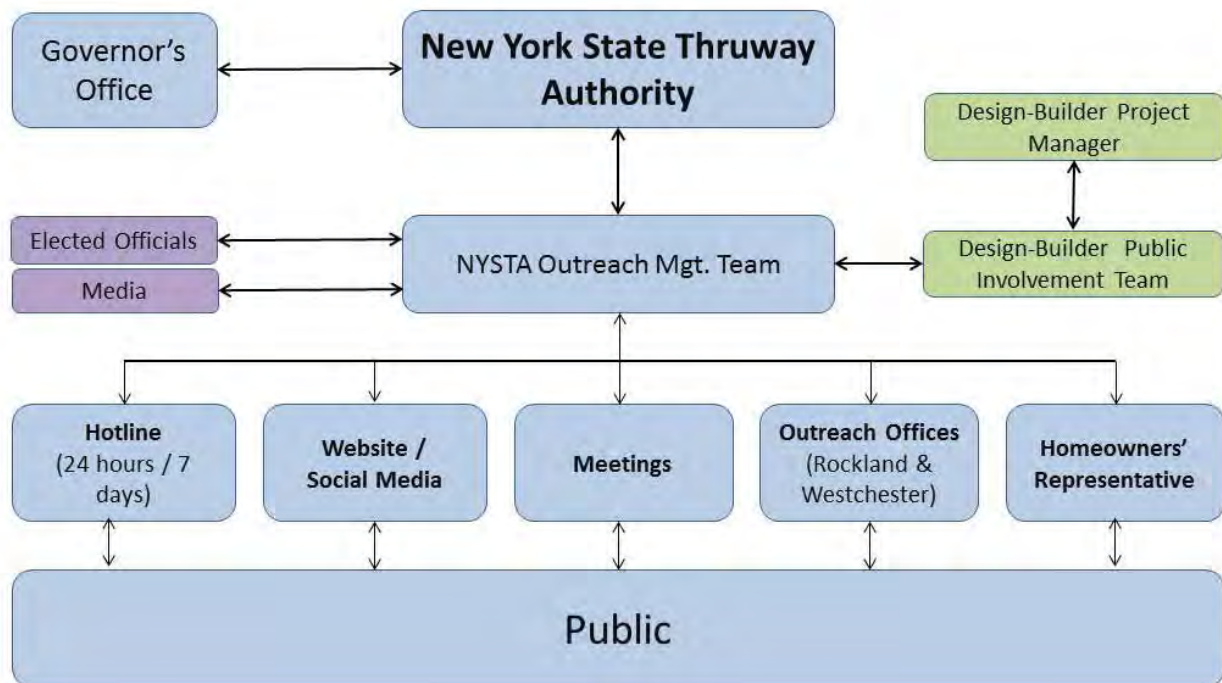
The Design-Builder will develop a PIP Support Plan that demonstrates how it will comply with the requirements of the PIP and work with the Agencies to ensure its successful implementation. A summary of all public involvement activities and major items from public feedback will be posted on the Project website. As part of its PIP support plan, the Design-Builder must include a Public Information Response Process that clearly indicates how it will consider and utilize all forms of stakeholder input, including potential actions in consultation with the Agencies to refine the Project's design or construction

activities. This PIP support plan will be consistent with all public information and involvement activities included in the Design-Builders' Visual Quality Management Plan as specified in *Project Requirements 13 – Visual Quality*, and with Communications Plan as specified in *Project Requirements 17 – Work Zone Traffic Control and Access*.

### C. Design-Build Process Public Involvement Plan Elements

The main elements of the Project's PIP will include:

- a. **Authority's Public Outreach Management Team** – The Authority's current Public Outreach Management Team will continue to lead all elements of the Project's PIP, with support provided by the Design-Builder (see chart below).



- b. **Design-Builder's Public Involvement Manager** – The Design-Builder will assign a Public Involvement Manager who will maintain a close working and reporting relationship with the Design-Builder's overall Project Manager and the Authority's Public Outreach Management Team.
- c. **Public Outreach Offices** –Public Outreach offices accessible to the general public will be established by the Authority in Rockland and Westchester counties. Each office will be staffed by a Community Liaison, who will be a representative of the Authority, and supported by the Design-Builder. Each office will:
  - a. be available for public visitation on a regular basis during the work week and on weekends, as needed;
  - b. allow for relevant public documents to be available for public review, both in hard copy and electronic format;
  - c. provide enough space to conduct both one-on-one discussions and small group meetings (i.e., up to 20 people); and

- d. be equipped with relevant communications, computer, and presentation technology.
- d. **Project Web site** – As was true during the Project’s NEPA phase, an active, up-to-date and informative Project website, [www.thenewnybridge.com](http://www.thenewnybridge.com), (“Website” will continue to be the primary medium for communicating with the public, both in terms of receiving comments, providing information and updates about the Project, including construction locations and activities, schedules of events and similar capabilities. The Authority shall maintain the website, which will be consistent with New York State policies for web site design and access. The website should allow interested parties to sign up to receive project related updates via email, including work zone traffic control advisory messages, public meeting dates and locations, major Project milestones, etc. The site’s functionality, ease of use, graphic quality and state-of-the-art design should reflect the Project’s national importance, consistent with sites for similar major projects around the world. The website should also allow for controlled and managed connections to social media tools such as Facebook, Twitter, flickr and YouTube as well as Real Simple Syndication (RSS) feeds, the content of which is to be reviewed, monitored and approved by the Authority. In addition, the website should include separate style sheets for proper formatting on hand-held devices.
- e. **Media Relations** – Media outreach efforts will be led by the Authority’s Public Outreach Management Team and supported by the Design-Builder, and may include the following strategies, among others:
  - a. Site tours;
  - b. Media kits;
  - c. Press releases announcing new project developments/major milestones; weekly releases providing the upcoming week’s daily work scope and schedule, highlighting any lane closures and related traffic impacts; and
  - d. Paid advertising (web, radio, daily, weekly and minority newspapers).
- f. **Project Newsletter** – The Newsletter will be a publication that provides the public with updates on project activities, schedules of key events, and related information, including locations on the website or elsewhere where further information can be obtained.
  - i. **TZHRC Newsletter** – A thorough document to be published up to four times a year, with a consistent design, structure and overall style to providing continuity that will ease readers’ understanding of the information being provided. Special editions issued at major Project milestones will expand content and details appropriately. Like most PIP activities, the Newsletter’s distribution will be in electronic format suitable for emailing and posting on the project website, with limited hard-copy distribution of up to 500 copies to elected officials, at public meetings, public repositories (similar to distribution of the EIS) and limited mailings to those without internet service.
  - ii. **Newsletter Update** – A smaller version of the newsletter may be published up to 12 times annually and only available on the Project website and other forms of electronic distribution.
- g. **Project Phone Hotline** – The Design-Builder shall provide and maintain for the duration of the Project (until Final Acceptance) a toll-free phone hotline related to design and construction activities for individuals to call with concerns or questions. The Design-Builder shall be responsible for ensuring that the hotline is staffed 24 hours/7 days a week/365 days per year. The phone number of the hotline shall be posted by the Design-Builder on signs within the affected neighborhood(s), on the Project website, at the Outreach offices and in the Project newsletter. The Design-Builder’s PIP support plan shall clearly define in its public information response

process the method of informing the Authority in a timely manner regarding hotline activities, especially those dealing with emergency or safety issues, consistent with the PIP.

- h. **Project Stakeholder Database** – This tool, which will incorporate the existing Project mailing list of over 5,000 names established during the NEPA process, will be used to identify and organize all comments received from the public and other agencies and organizations, through phone calls, emails, written correspondence, or summary comments received during public meetings. The database will allow all entered public input to be stratified by commenter (including, for example, elected representatives, town boards, civic organizations), topic area (including, for example, air quality, noise, traffic), forum or media (including, for example, phone hot line, annual meeting, website posting), geographic area and other variables. In addition, electronic copies of all written or posted comment and related submittal will be stored for each access, along with any responses by the Authority or the Design-Builder to those comments.
- i. **Technical Communications Media** – The PIP will require a broad array of state-of-the-art technical media to meet its goals, including high-quality video and graphic methods befitting a project of this magnitude and national importance. These will include videos using written and audio communications, simulation, renderings and other tools to document the Project's design and construction, consistent with methods and techniques used for similar major projects around the world. Many of these visual tools would be developed as part of the Project's Visual Quality activities as identified in *Project Requirements 13 – Visual Quality*.

The Project's PIP will also involve maintaining a video cam or similar visual documentation of the Project's construction activities for view by the public throughout the construction process, providing sufficient views from the river and the Rockland and Westchester shores (aided by brief written materials accompanying the videos) for the public to understand the nature of the work being done, the progress of construction and the complexities and scale of the Project. These shall be consistent with similar video/cam-type documentation efforts carried out for other major bridge projects (e.g., San Francisco-Oakland Bay Bridge).

Information provided to the public on the website, in newsletters and at public involvement meetings, will cover all major aspects of the Project's construction (e.g., dredging, pile driving, phasing and staging of traffic through the construction zone, etc.). Text, graphics, videos and other techniques will be developed to explain these often complex activities in layperson language to allow the public to better understand how these critical and occasionally disruptive activities are implemented.

- j. **Public Involvement Meetings** – An array of public involvement meetings, from regularly scheduled public update meetings to larger, more comprehensive meetings at key project milestones. At a minimum there shall be:
  - 1. **Kick-off Meeting** – Within 45 days of the executed contract between the designated DB firm and the Authority, there shall be a Public Meeting held in Rockland and Westchester counties to introduce the Public to the selected Design-Builder. The Design Builder will assist in coordination of said meeting.
  - 2. **Annual Meeting** – At or about the anniversary of the Project Kick-off meeting, there will be an annual meeting in Rockland and Westchester counties to discuss the year's progress and review the Project Schedule. The meetings will provide detailed information about major challenges and the Project's overall progress over the past year and the major activities and those scheduled for the coming year, with ample opportunity for the public to obtain further information and provide comments. The Design Builder will assist in coordination of said meeting.



3. **Educational Outreach** - a series of forums with school districts at each landing to foster understanding and interest among elementary and high school students and promote various career opportunities in engineering and trades associated with the Project. Provide opportunities for student input for various aspects of the Project such as landscaping, shared use path amenities and features, and enhancements for the Elizabeth Place Park.
  4. **Local Update Meetings** – As needed, the Authority may make presentations on the Project's status. These presentations, up to two of which may be made to each municipality and/or county in a given year, will be provided to local officials to more fully understand and to discuss current Project information directly with the Authority and Design-Builder's team representatives.
  5. **Key Stakeholder Meetings** – meetings with local civic or neighborhood associations may be required during the construction process.
  6. **Final Project Close-out Meeting and Opening Ceremony** – A final public meeting may be held when the new crossing is nearing completion, summarizing the overall construction process, the proposed schedule for full opening of the crossing, and other aspects of the Project's rollout. The Authority may then hold a Ribbon Cutting Ceremony with major local, state and national elected officials to celebrate the opening of the New Hudson River Crossing.
- k. **Work Zone Public Information** – The goal of these efforts is to keep the public informed, in advance whenever possible and in real-time, regarding Project actions that would affect road users, the general public, area residences and businesses, especially regarding roadway closures and possible travel alternatives. These activities, which would be consistent with the requirements of *Project Requirements 17 – Work Zone Traffic Control and Access*, will include Construction Bulletins on the Project website, especially focused on traffic changes, higher-noise construction periods or locations, or other construction activities of potential concern to the public.
- l. **Interim Information Updates for Local Officials** – the Authority, in consultation with the Design-Builder, may provide interested municipal and county elected officials and key agencies with a two-weekly update of (1) planned construction activities for the subsequent two-week period, highlighting any potential for noise, dust, safety or other impacts of possible concern to local residents or travelers; (2) any unusual traffic diversions or delays due to planned construction activities; and (3) nighttime or weekend construction activities (e.g. off-hour deliveries). A summary of any unusual or important public comments or concerns submitted in writing, posted on the website or received on the Project's phone hotline may also be provided, along with any planned or completed responses to those comments. The Authority may provide this information to involved municipalities and agencies that indicate an interest in receiving these "municipal e-alerts" on a two-weekly basis and at other times as deemed appropriate. Immediate contact shall also be made with local and county officials in potential affected areas connected with emergency-type events, such as accidents, spills or other events of possible public concern.
- m. **Public Information Response Process** –Based on the recommendation included in the selected Design-Builder's proposal and finalized in consultation with the Authority, this process will clearly indicate how it will consider and utilize all forms of stakeholder input, including potential actions in consultation with the Agencies to refine the Project's design or construction activities.



## SECTION 9. UTILITIES

### 9.1. Scope

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

### 9.2. Standards and References

#### 9.2.1. Standards

The Design-Builder shall perform electric utility activities in accordance with the following Standards, unless otherwise stipulated in the Project Requirements herein:

- A. NFPA 70 National Electrical Code (NEC);
- B. NFPA 110 Standard for Emergency and Standby Power Systems;
- C. IEEE and ANSI electric power engineering standards (as applicable);
- D. NYSTA Occupancy and Work Permit Accommodation Guidelines (TAP-401);
- E. NYSTA Utility Occupancy Supplement (TAP-401U);
- F. NYSTA General Design and Construction Requirements for Occupancies (TAP-421A-E).

#### 9.2.2. References

- A. NFPA 70E Standard for Electrical Safety in the Workplace;
- B. NFPA 780 Standard for the Installation of Lightning Protection Systems.

### 9.3. Requirements

#### 9.3.1. Electrical Power Supply and Distribution

##### 9.3.1.1. General requirements

The Design-Builder shall be responsible for the design and implementation of the necessary normal electricity supply commensurate with the Design-Builder's design, and for all planning and liaison necessary with relevant utility suppliers for the arrangements for provision of the necessary normal supply. The Design-Builder's design shall maximize the reliability of the normal power while minimizing the total installation cost and future electricity and maintenance costs. Wherever it is feasible and cost-effective, electricity shall be delivered to the Authority at the primary billing rate.

The Design-Builder shall purchase and install all necessary components required to deliver the normal electricity supply and distribution system including but not limited to the following: power substations, transformers and distribution equipment; electrical grounding and master metering; extension of the existing lightning protection system; excavation, paving, temporary construction barriers; structural elements for conduit systems; fire-rated electrical rooms; and fireproofing.

████████████████████ are currently present at the Project Site. One is on the Rockland side and the other is on the Westchester side. ██████████ feeds an Authority-owned substation where the voltage is ██████████ before supplying the existing bridge and some existing Authority buildings and facilities.

The Design-Builder shall be responsible for the design, provision and implementation of emergency power generation required for the Project, as defined in Section 9.3.1.3 herein and in *Project Requirements 11 – Structures, 15 – Lighting, 20 – Security, 26 – Toll Plaza, 30 – State Police Facilities, 31 – Buildings, 33 – SMEP & Fire Safety for Buildings*, and any other applicable Project Requirements.

The Design-Builder shall be responsible for commissioning both the normal and the emergency electrical power systems.

All electrical work shall be performed by or under the supervision of a Master Electrician licensed in a New York State municipality.

**9.3.1.2. (Not used)**

**9.3.1.3. Emergency Power Generation**

**9.3.1.3.1. Electrical Loads on the Crossing**

[REDACTED]

**9.3.1.3.2. Electrical Loads located beyond the Crossing**

[REDACTED]

**9.3.1.4. Power Supply and Distribution Staging**

The electricity supply to the existing bridge, including emergency power, shall remain fully operational throughout construction of the new power supply system for the Crossing. The Design-Builder's responsibilities for permanent and temporary electrical components on the existing bridge and the Crossing shall be in accordance with the maintenance jurisdiction period detailed in DB §105-12. When the electricity supply to the existing bridge is discontinued, and with prior approval of the Authority, the Design-Builder shall remove from the Project site any extraneous electrical supply components that are not needed for operation of the Crossing.

**9.3.1.5. Additional Requirements**

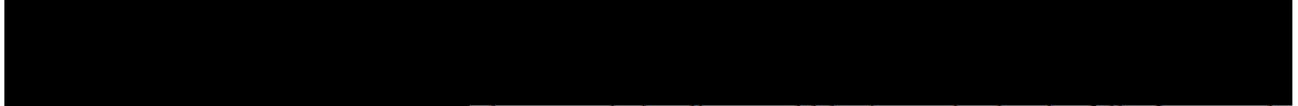
The following requirements shall be met:

- A. The voltage carried on the Crossing shall be no higher than [REDACTED];
- B. All exposed raceways or conduits shall be made of [REDACTED]
- C. All outdoor electrical enclosures and attached parts (for example, breather drains) shall be rated [REDACTED]; and

[REDACTED]

**9.3.2. Champlain Hudson Power Express**

In addition to the utility requirements set forth in *Part 4 – Utility Requirements*, the Design-Builder shall be aware of and, in its design and construction as applicable, take due account of a new proposed power transmission project called the Champlain Hudson Power Express (see [www.chpexpress.com](http://www.chpexpress.com)). This project is being developed by Transmission Developers, Inc. (TDI) and proposes the installation of a high voltage,



The transmission line would be in service by the fall of 2016. The Design-Builder shall be responsible for coordinating its Works, including design and construction, with TDI to avoid potential conflicts.

## SECTION 10. GEOTECHNICS

### 10.1. Scope

The Design-Builder shall be responsible for all Work necessary for the geotechnical 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.

The Authority has performed limited subsurface investigations in the vicinity of the Project Site. Boring logs and laboratory test data from these previous subsurface investigations are provided in *Part 7 – Engineering Data – 5 Geotechnics and Foundations*. In addition, samples of soil and rock cores obtained during these previous subsurface investigations are available for inspection by the Design-Builder at the NYSDOT Region 8 Office, Eleanor Roosevelt State Office Building, 4 Burnett Boulevard, Poughkeepsie, NY, 12603. The Design-Builder shall be responsible for making any arrangements to view the samples from the previous subsurface investigations, by first seeking the prior consent of the Authority's Project Manager and then making an appointment in advance [REDACTED]

[REDACTED] Information from these previous subsurface investigations shall be considered part of the Contract Documents only to the extent that they are used to represent soil conditions at the depths indicated within the respective borings drilled at the approximate locations shown. Presentation of this information in no way implies that subsurface conditions are the same at other locations and different times.

The Design-Builder shall be familiar with available geotechnical, geologic, seismic, hydrogeology, and soils literature, shall be familiar with the existing Site conditions, both native and man-made, 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 satisfy itself as to the nature and behavior of the ground and sub-soil, the form and nature of the Site, and nature of the Work that may affect its detailed design, construction method, and tools.

### 10.2. Standards and References

The Design-Builder shall perform geotechnical activities in accordance with the following Standards, unless otherwise stipulated in the Project Requirements herein.

#### 10.2.1. Standards

- A. AASHTO LRFD Bridge Design Specifications, with Interim Revisions and the NYSDOT "Blue Pages", which together constitute the NYSDOT LRFD Bridge Design Specifications
- B. AASHTO LRFD Bridge Construction Specifications
- C. NYSDOT Highway Design Manual
- D. ASTM Standards
- E. FHWA Geotechnical Engineering Publications
- F. AASHTO Standard Specifications for Highway Bridges
- G. PTI Post-Tensioning Institute Recommendations for Pre-stressed Rock and Soil Anchors
- H. AASHTO Guide Specification and Commentary for Vessel Collision Design of Highway Bridges
- I. NYSDOT Standard Specifications

J. NYSDOT Special Specifications

#### **10.2.2. References**

- A. NYSDOT Bridge Manual
- B. NYSDOT Geotechnical Bureau Manual
- C. NYSDOT Manual of Uniform Record Keeping (MURK)
- D. AASHTO Manual on Subsurface Investigations
- E. NYS Steel Construction Manual

### **10.3. Equipment Requirements**

#### **10.3.1. Calibration**

The Design-BUILDER shall be responsible for ensuring that all field and laboratory equipment used for the Project shall be calibrated within the 12 months prior to its use on the Project and as required by the manufacturer, unless the Project Specification or other Contract requirements state that a more recent calibration is required.

Laboratories used to analyze and test soil and rock specimens shall be AASHTO-certified for the tests performed and shall have documentation of calibration within the last year for all equipment used for testing.

##### **10.3.1.1. Instrumentation**

The instrumentation selected by the Design-BUILDER and utilized in carrying out the monitoring program shall include appropriate types and quantities of monitoring instruments capable of measuring horizontal and vertical movement, tilt of adjacent structures, soil pore pressure, vibration, and noise, as applicable. The types and numbers of instruments will depend on factors including the size, type and location of proposed Work.

### **10.4. Personnel Requirements**

#### **10.4.1. Foundations Lead Designer**

The Design-BUILDER shall provide a Foundations Lead Designer who shall be a Professional Engineer licensed in the State of New York and shall be the team leader for the Project geotechnical team. The Foundations Lead Designer shall be in charge of all geotechnical Work, and shall perform or directly oversee all geotechnical Work, and shall sign or co-sign and stamp all geotechnical related design, analysis, released for construction documents, As-Built Plans and other related documents. The Foundations Lead Designer shall have a minimum of 15 years of recent experience that include the exploration, analysis, design, and construction of the following:

- A. Current LRFD methodology and requirements;
- B. Bridge structures and foundations of the magnitude and type that will be used including cofferdam design;
- C. Planning and conducting subsurface exploration for highway structures and other facilities;
- D. Site characterization, including the development of design soil/rock profiles with relevant properties for the purpose of foundation type and size selection, analysis, design, and construction;
- E. Analysis and design of structure foundations for static as well as dynamic (seismic) loading;
- F. Soil-foundation-structure interaction analysis; and



- G. Derivation of parameters for, and design and construction of, temporary and permanent earth support structures.

#### **10.4.2. Seismic Specialist**

The Design-Builder shall provide a seismic specialist who shall be a qualified Professional Engineer licensed in the State of New York and shall be the team leader for the Project geoseismic team. The seismic specialist shall have a minimum of 15 years practicing earthquake engineering. The prior project experience of the seismic specialist shall include at a minimum: ground motion evaluation, spatial variability, and soil structure interaction effects, evaluation of pile demonstration programs and derivation of soil-pile parameters, finite element modeling of complete soil-pile-structure interaction including pile-to-pile interaction and kinematic effects.

#### **10.4.3. Geotechnical Instrumentation Engineer**

The Design-Builder shall provide a designated geotechnical instrumentation engineer at all times during the duration of the Project. The geotechnical instrumentation engineer shall be a licensed Professional Engineer in the State of New York. The geotechnical instrumentation engineer shall have at least 15 years of experience in instrumentation work similar to the scope of that in this Project.

### **10.5. Design Requirements**

The Design-Builder shall at a minimum provide the following:

- A. Geotechnical work plan (see Section 10.5.1);
- B. Geotechnical investigation plan (see Section 10.5.2);
- C. Geotechnical data report (see Section 10.5.3);
- D. Geotechnical interpretive report (see Section 10.5.4);
- E. Seismic assessment report (see Section 10.5.5);
- F. Construction monitoring plans (see Section 10.5.6);
- G. Foundation design reports (see Section 10.5.7).

#### **10.5.1. Geotechnical Work Plan**

The Design-Builder shall prepare a geotechnical work plan, which shall include:

- A. Design-Builder's knowledge and understanding of the geotechnical, geologic, hydrogeology and seismic settings of the Project Site and how the nature and behavior of the soil, rock, groundwater and subsurface conditions will affect the design and methods of construction;
- B. Anticipated methods of analysis and design for the Crossing foundations and a discussion of the foundation optimization process and rationale for selection of the foundation types;
- C. Identify key Project constraints and describe how the geotechnical activities will be designed and constructed to meet these constraints;
- D. Identification of all principal geotechnical deliverables and activities;
- E. A narrative describing the approach to quality control during design and construction of the geotechnical Works;
- F. A risk register identifying all major design and construction risks of the geotechnical activities, and describe how these risks are managed and mitigated;
- G. Resumes of the Foundations Lead Designer, geotechnical instrumentation engineer, and seismic specialist;

- H. Minimum numbers, depths, types of subsurface investigations to be carried out for the Crossing design, including a narrative of the in-situ tests and laboratory tests to be carried out;
- I. Minimum numbers, and types of axial load tests for each foundation type, size and subsurface condition;
- J. Minimum numbers, and types of lateral load tests for each foundation type and subsurface condition;
- K. Minimum percentage and/or numbers of driven piles as tested piles to be dynamically tested;
- L. Minimum percentage and/or numbers of drilled shafts for non destructive testing, including but not limited to crosshole sonic logging and thermal integrity profiling;
- M. Minimum percentage and/or numbers of drilled shafts to carry out shaft base/rock interface coring.

### **10.5.2. Geotechnical Investigation Plan**

The Design-Builder shall prepare a geotechnical investigation plan, including specifications for performing the Work. The geotechnical investigation plan shall include the criteria or rationale used in developing the plan, and shall identify the locations of all field investigation sites, in-situ testing sites, and borings, together with their depths, sampling intervals, and a description of both the field and laboratory testing programs utilized. The geotechnical investigation plan shall be prepared and signed and sealed by the Design-Builder's Foundations Lead Designer. The geotechnical investigation plan shall be integrated with the traffic control and site access plans (see *Project Requirement 17 – Work Zone Traffic Control and Access*) and shall include details of borehole abandonment procedures and a list of all permits required to perform the geotechnical investigation.

#### **10.5.2.1. Design-Builder's Subsurface Investigations**

The Design-Builder shall plan and conduct subsurface investigations in accordance with the Authority's and AASHTO Standards for subsurface exploration programs, and as deemed necessary by the Design-Builder's Foundations Lead Designer to establish the geotechnical conditions and to perform all geotechnical and foundation design and analysis. The subsurface investigation shall include standard penetration tests (SPT), cone penetration tests (CPT), and other in-situ test methods. The subsurface investigation shall also include laboratory testing of soil and rock samples retrieved in the investigation. The Design-Builder shall be responsible for ensuring that all soil and rock samples shall be shipped to a storage location provided by the Design-Builder and suitably stored for a period of five years after Final Acceptance.

The Design-Builder shall determine the coordinate location and ground surface elevation or mudline elevation for each boring and field investigation position, and shall show the coordinates, station and offset, and elevation for each individual boring log or investigation record. Coordinates and station and offset shall be referenced to the Project survey control. Elevations shall be referenced to the Project datum and horizontal control system. Boring horizontal coordinates shall be accurate to +/-1.0 foot; vertical coordinates shall be accurate to +/- 0.5 foot.

##### **10.5.2.1.1. Minimum Number of Borings**

Table 10.5-1 summarizes the minimum number of borings required for various structures.

Information from existing borings provided by the Authority in *Part 7 – Engineering Data* may be combined by the Design-Builder with the Design-Builder's subsurface investigation to comply with the requirements presented in Table 10.5-1. It is the sole responsibility of the Design-Builder's Foundations Lead Designer 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.

**Table 10.5-1 Minimum Requirements for Subsurface Investigations**

<b>Geotechnical Feature</b>	<b>Minimum Number of Borings</b>	<b>Minimum Investigation Depths</b>
At each Main Span foundation	5	In accordance with AASHTO LRFD Bridge Design Specifications, and as required by the Foundations Lead Designer
At each Approach Span pile cap having any side [REDACTED]	2	
All other Crossing pile caps	1	
Bridge abutment	[REDACTED]	In accordance with AASHTO LRFD Bridge Design Specifications, and as required by Foundations Lead Designer
Retaining walls	[REDACTED]	
Ancillary structures	As required by Foundations Lead Designer	As required by the Foundations Lead Designer
Roadways	In accordance with FHWA NHI-01-031 Subsurface Investigations – Geotechnical Site Characterization, and as required by Foundations Lead Designer	In accordance with FHWA NHI-01-031 Subsurface Investigations – Geotechnical Site Characterization and as required by the Foundations Lead Designer
Embankments and cutting		

#### **10.5.2.2. Subsurface Investigation Records**

The Design-Builder shall be responsible for keeping a continuous and accurate log of the materials encountered and a complete record of the operation of progressing the casing. Where driving is used, a record of the number of blows required to advance the sampling barrel, each 6 inches in the soil where each sample is taken, shall be kept. Records shall include at least the following data:

- A. Dates and times of beginning and completion of Work;
- B. Identifying number and location of test boring;
- C. Ground surface elevation at the boring;
- D. Diameter and description of casing;
- E. Total length of each size of casing;
- F. Length of casing extending below ground surface at the completion of the boring;
- G. Weight, number of blows, and drop of hammer used to drive casing each successive foot;
- H. Elevation of ground water table;
- I. Elevation of top of each different material penetrated;
- J. Elevation of the bottom of sampler at start of driving for each sample;
- K. Elevation to which sampler was driven;

- L. Weight and drop of hammer used to drive sampler, and number of blows required to drive it each 6 inches for each sample;
- M. Methods and forces used to push sampler tube when not driven;
- N. Length of sample obtained;
- O. Distance from the bottom of sampler to the lower of the sample when the sampler is not filled to the bottom, and any other circumstances of obtaining the sample;
- P. Stratum represented by the sample;
- Q. Loss or gain of drilling water or mud;
- R. For rock cores, record the core barrel type and diameter, the percent recovery, and the rock quality designation (RQD);
- S. Any sudden dropping of drill rods or other abnormal behavior.

#### **10.5.2.3. Software Requirements**

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 boring records.

Computer software used for analysis shall be produced by reputable software houses and shall have undergone extensive testing and validation. Unless otherwise specified in the Contract Documents, the Design-Builder shall ensure the most current version of the software is used. When in-house programs or spreadsheets are used, sample output shall be validated with hand calculations verifying the results for all possible calculation scenarios.

#### **10.5.3. Geotechnical Data Report**

The Design-Builder shall be responsible for preparing a geotechnical data report, signed and sealed by the Foundations Lead Designer. 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;
- D. 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;
- E. Plots of in-situ test results versus elevations for separate areas and soil types; and
- F. Plots of laboratory test results versus elevations for separate areas and soil types.

The Design-Builder shall provide the Authority with a copy of the final log for each subsurface investigation exploratory hole progressed. Exhibit A of this Project Requirement presents the minimum amount and type of information that shall be recorded by the Design-Builder in the log for a borehole-type exploratory hole.

#### **10.5.4. Geotechnical Interpretive Report**

The Design-Builder shall be responsible for preparing a geotechnical interpretive report. The geotechnical interpretive report shall be signed and sealed by the Foundations Lead Designer. The geotechnical interpretive report shall include a method statement describing the general philosophy and anticipated methods of analysis, design, construction, and construction monitoring. The geotechnical interpretive report shall include a discussion of the rationale for selection of the proposed construction methods for all geotechnical and foundation aspects of the Project. In the geotechnical interpretive report, the Design-Builder



shall provide details of equipment and methods proposed for foundation and earthwork construction and demonstrate how they are consistent with the design approach and assumptions. The details presented shall demonstrate compliance with the requirements of these Project Requirements and shall demonstrate an understanding of the ground conditions and Project constraints.

Via the geotechnical interpretive report, the Design-Builder shall define the engineering and design approach that will be followed by the Design-Builder in order to develop technically and environmentally acceptable and durable foundations, embankment, cut-and-fill slopes, retaining structures, and geotechnical designs for the Project. The geotechnical interpretive report shall discuss all aspects of the required geotechnical effort, design and analysis, including:

- A. Subsurface investigations;
- B. Description of geology and various ground types and hydrology to be encountered within the Project Site;
- C. Assessment of the engineering properties of all soil and rock types, including the expected average and range of soil and rock strengths and deformation properties;
- D. Recommended geotechnical design parameters for all soil and rock types for foundation design, including parameters of lateral loading response of soils, retaining wall design, embankment, slope stability and basal instability analyses, settlement analyses, and rock socket design (if any).
- E. Design approach and method of analysis for the design of the Crossing foundations and for design of other foundations;
- F. Design approach and method of analysis for retaining walls;
- G. Design approach and method of analysis for embankment and slope stability assessment;
- H. Design approach for erosion control measures including method of analysis;
- I. Design approach and discussion of settlements and associated lateral ground movements and their effect on existing and proposed structures and foundations. The discussion shall include specific recommendations for foundation analysis and design, including the type of soil-structure interaction analyses and numerical analyses that will need to be performed for evaluation of the effect of vertical compression and lateral deformation of soils on the proposed foundations;
- J. Discussion on embankment fill settlement, slope stability analysis, and retaining wall stability during pile driving, drilled shaft installation, or ground improvements;
- K. Effects of the proposed Crossing and retaining wall structures on the existing approach embankment;
- L. Planned field testing programs, including pile and drilled shaft integrity and load testing and ground improvement testing;
- M. Anticipated ground behavior and categorization of ground during excavation, filling, and foundation and retaining structure construction;
- N. Design approach and method of analysis to determine the site-specific seismic response spectra and liquefaction assessment for the design earthquakes;
- O. Ground improvement or treatment of in-situ soils;
- P. Selection of foundation systems;
- Q. Lateral and vertical earth pressures on structures;
- R. Support of excavation and groundwater control considerations;
- S. Anticipated use and/or protection of adjacent temporary/permanent retaining structures and/or embankment fills;



- T. Time-related settlement and lateral deformation and determination of the resulting effects on the Works and on adjacent facilities;
- U. Consideration for, discussion of, and rationale for protection of existing structures, embankments, bodies of water, and utilities;
- V. Expected serviceability and durability of proposed solutions; and
- W. Other items related to soil structure interaction or Site conditions that may affect design or construction.


The geotechnical interpretive report shall be prepared and signed and sealed by the Design-Builder's Foundations Lead Designer. Where the geotechnical design and geotechnical-related as-built construction differ from the information described in the geotechnical interpretive report, the Design-Builder shall revise the geotechnical interpretive report to reflect the as-built changes.

#### **10.5.5. Seismic Assessment Report**

The Design-Builder shall provide a seismic assessment report for the Project. The seismic assessment report shall include at a minimum:

- A. Analysis of liquefaction potential. Should this show that liquefaction is a potential hazard at the Site, the risk potential on the Crossing shall be evaluated by the Design Builder, and any remediation solutions proposed by the Design-Builder shall be demonstrated by analytical and field methods. The site response shall be evaluated in one- and two-dimensions and shall include any topography effects. The Design-Builder's adopted level of analysis (linear, equivalent-linear, or non-linear) shall be substantiated by the Design-Builder. Spatial variability effects shall be accounted for, as applicable;
- B. Seismic soil structure interaction evaluation of deep foundations shall include determination of the maximum imposed curvatures and bending from earthquake ground motions and structure response, including free-field soil strains modified for soil-foundation-structure interaction coupled with deep foundation deformations associated with earthquake loads imparted to the foundation by the structure (i.e. inertial response).

Prior to issue to the Authority, the Design-Builder shall ensure that the seismic assessment report shall be peer-reviewed by a suitably qualified specialist in this field.



#### **10.5.6. Construction Monitoring Plan**

The Design-Builder shall be responsible for preparing a construction monitoring plan to monitor vibration, accelerations, vertical settlement, and lateral movement of temporary support structures and adjacent ground, and existing structures and infrastructure during construction including the existing bridge, the Crossing, ancillary structures and infrastructure. The Design-Builder shall be responsible for the implementation of its construction monitoring plan.

The Design-Builder's construction monitoring plan shall include details of the proposed program of instrumentation and monitoring, monitoring frequency, assesses the impacts to existing structures and utilities, establishes threshold values of the monitored parameters, and describes the response plan that will be implemented when threshold parameters are exceeded. Construction monitoring of the Crossing shall include vertical, horizontal, and tilt movements and vibration of bridge piers in sufficient locations as to determine adequate performance and safety of the Crossing and its foundations during construction.

The construction monitoring system shall be sufficiently robust as to be in good working condition and if damaged, repairable to good working condition such that there is minimal disruption to monitoring capabilities.

The design and distribution of instrumentation within the Design-Builder's construction monitoring plan shall demonstrate its understanding of the need, purpose and application of each proposed instrumentation type. The Design-Builder shall provide, install and maintain the instrumentation and monitor the measurements during and after construction up to Final Acceptance.

The Design-Builder shall ensure that the instrumentation can be read remotely and that data shall be uploaded to a website provided by the Design-Builder, and which shall be accessible remotely by both the Design-Builder and the Authority. Remote-access functionality shall include the ability to extract data and to isolate an individual monitoring point or multiple points. The presentation system shall include the functionality to modify the extents and scale of data plotting such that arbitrary views are available.

The Design-Builder shall provide weekly construction instrumentation monitoring reports to the Authority. 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 exceedances of any pre-determined threshold values.

See *Project Requirement 28 – Bridge Maintenance and Operation Requirements* for details of the requirements for bridge monitoring in service.

#### **10.5.7. Foundation Design Reports**

The Design-Builder shall be responsible for preparing a foundation design report for all structures included in the Project. The foundation design report shall detail the analysis and design of each foundation element, including any foundation optimization process such as foundation element pile spacing, and shall detail the anticipated total and differential settlements over time. The foundation design report shall be signed and sealed by the Foundations Lead Designer.

##### **10.5.7.1. Bridge Foundation Design**

The Design-Builder shall design and construct permanent foundations based on the requirements of NYSDOT *LRFD Bridge Design Specifications*, AASHTO *LRFD Bridge Design Specifications* and AASHTO *LRFD Bridge Construction Specifications*.

The Design-Builder shall not use auger cast piles, screw piles, timber piles, buoyant foundations or re-use any existing foundations.

##### **10.5.7.2. Wave Equation Analyses**

The Design-Builder shall be responsible for performing wave equation analyses for driven pile foundations to obtain the relationship between blow counts and estimated nominal resistance of the driven piles with elevation. Wave equation analyses shall be performed using a wave equation analysis program (WEAP) in accordance with AASHTO *Standard Specifications for Highway Bridges*. The use of dynamic pile driving formulae will not be an acceptable method for developing driving criteria or performing drivability studies for the purposes of determining hammer energy requirements.

##### **10.5.7.3. Retaining Walls**

The Design-Builder shall design and construct retaining walls in accordance with *Project Requirement 11 – Structures*. The Design-Builder shall provide retaining wall designs to address internal, external, and global (overall) stability and settlements (total and differential) of the walls in accordance with the AASHTO *LRFD Bridge Design Specifications*.

All retaining walls supporting bridge approaches shall be designed for seismic events.

## **10.5.8. Fill/Embankments**

### **10.5.8.1. Excavation and Embankment**

Excavations and embankment construction shall be in accordance with the requirements of Section 203 of the NYSDOT *Standard Specifications* (see *Part 5 – Special Provisions*). Embankment cross-sections shall be in accordance with the requirements of the *Roadway Geometrics Performance Specification*. Embankment

### **10.5.8.2. Settlement**

The Design-Builder shall be responsible for predictions and estimations of settlement induced by fill placements, including immediate settlement in granular soils, and both immediate and consolidation (time-dependent) settlements in cohesive soils. The Design-Builder shall establish design criteria for settlement of embankments and structures.

The Design-Builder shall consider and account for the effects of down-drag forces on deep foundations throughout the Project Limits.

### **10.5.8.3. Reinforced Soil Slope Design**

The Design-Builder shall conduct analyses for reinforced soil slopes (RSS) in accordance with the design procedures and requirements contained in FHWA-NHI-00-043 *Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines*.

The Design-Builder shall be responsible for provision of all necessary surface and subsurface drainage, and slope protection and erosion control provisions, which shall be incorporated into the RSS designs in accordance with the requirements of FHWA-NHI-00-043 *Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines* and as required herein. Construction of reinforced soil slope shall be in accordance with the requirements of NYSDOT *Standard Specifications Section 554*.

## **10.5.9. Soil Improvement**

Any soil improvement systems adopted by the Design-Builder shall be designed using procedures as specified in FHWA *Ground Improvement Methods*. The Design-Builder shall be responsible for devising and implementing pre-production field testing program to demonstrate that the proposed methods and design will provide the ground improvement level required by the Design-Builder. The geotechnical interpretive report shall include details of any soil improvement methods being utilized, purpose of the application, test program and field monitoring and verification during construction.

## **10.5.10. Erosion Control and Drainage**

The Design-Builder shall be responsible for the design and implementation of erosion control and drainage measures for the Project.

## **10.5.11. Slope Stability**

The Design-Builder shall be responsible for assessing the stability of all existing slopes, new fill and cut slopes (permanent and temporary) within or effected by the Project, and ensuring for the stability of these slopes.

The Design-Builder shall design new fill and cut slopes, and check existing slopes for the static case in accordance with FHWA *Soil Slope and Embankment Designs* and for the seismic case in accordance with FHWA-NHI-11-032 GEC No.3 *LRFD Seismic Analysis and Design of Transportation Geotechnical*

*Features and Structural Foundations.* The Design-Builder shall be responsible for ensuring that the following minimum requirements are satisfied:

- A. The minimum factors of safety from [REDACTED]
- B. The minimum factor of safety for [REDACTED] and the Design-Builder shall be responsible for establishing the acceptable deformations the slopes can accommodate for the design seismic events;
- C. The minimum factor of safety [REDACTED]
- D. For non-permanent slopes, the minimum safety factor shall be [REDACTED].

The Design-Builder shall use resistance factors determined as the reciprocals of the minimum factors of safety values stated in this Section 10.5.11.

#### **10.5.12. Rock Slopes and Rock Excavation**

The Design-Builder shall be responsible for ensuring adequate safety and stability of rock slopes in the Project Limits, including but not limited to slope stability analysis, rock fall analysis, and stabilization.

All rock slope analyses and design recommendations shall be in accordance with NYSDOT Standard Specifications and Geotechnical Design Procedure (GDP-13) *Design Procedure for Preparing Rock Slope Recommendations* <https://www.dot.ny.gov/divisions/engineering/technical-services/technical-services-repository/GDP-13b.pdf>.

The Design-Builder shall ensure that the factor of safety for [REDACTED]

For any rock cuts that do not meet the above description and the Designer-Builder determines that the material will behave more like a soil, slope stability analyses shall be performed using soil mechanics methods, and the requirements of Section 10.5.11 herein.

The Design-Builder is not precluded from using blasting methods for the excavation of rock at the east and west landing areas, in rock located above the highest high water level. The Design-Builder shall be wholly responsible for obtaining all consents and approvals associated with the use of any explosives and blasting methods to excavate rock, if it elects to use such methods. The use of explosives and blasting method is not permitted within or on the waters of the Hudson River, nor on the existing Tappan Zee Bridge, nor for any Project purpose aside from excavating rock above highest high water level.

Rock fall modeling or rock fall simulation analyses shall be performed to predict rock fall behavior and to design rock fall catchment systems for each rock cut. For all existing rock cut slopes that do not meet the design criteria referenced above for stability, Design-Builder shall implement stabilization measures to produce a stable slope.

#### **10.5.13. Temporary Works**

All temporary excavations shall be designed and constructed such that Occupational Safety & Health Administration (OSHA) requirements are met or exceeded.

The Design-Builder shall be responsible for ensuring that all temporary excavation support systems shall be designed and constructed so as to maintain a safe system for the travelling public, and will provide support for existing facilities and utilities. The Design-Builder shall take full account of all relevant factors, including surcharge pressures due to structures, point, line and area loads in lateral earth pressure diagrams.

Appropriate construction materials and equipment loads shall be determined by the Design-Builder's Foundations Lead Designer and shall be consistent with the methods actually used.

The Design Builder shall ensure the design and drawings for temporary decking, sheeting, and bracing are signed and sealed by a Professional Engineer licensed to practice in the State of New York.

For cofferdams, the Design-Builder shall submit signed and sealed drawings including means and methods for construction of cofferdams. Cofferdams shall be constructed so that any pile cap reinforcing steel and pile cap concrete can be placed in the dry.

## **10.6. Construction Requirements**

### **10.6.1. Deep Foundations**

The Design-Builder is responsible for the design, construction and testing of all deep foundations used for the Project.

The Design-Builder shall carry out sufficient axial load tests to verify the design nominal resistance for each production pile type, diameter and subsurface condition type (specifically, either founded within soil only, or founded within or upon rock). For each type and diameter of pile/shaft per subsurface condition type, a minimum of 1% of the total number of piles/shafts but no less than one static load test shall be performed.

The Design-Builder shall carry out sufficient lateral load tests to verify the lateral resistance for each production pile type and subsurface condition type. For each type and diameter of pile/shaft per subsurface condition type, a minimum of two static lateral load tests shall be performed.

After completion of a pile load test, the Design-Builder shall be responsible for either fully removing the test pile from the ground or for cutting off the test pile at an elevation that shall be the deepest of either: (i) ten feet below the original pre-construction mudline level at the test pile location, as determined from the Design-Builder's pre-construction hydrographic survey; or (ii) at the level of the dredged surface at the test pile location. For any ancillary support piles / reaction piles used in pile tests, the same requirements for removal shall apply. The Design-Builder shall record the plan location, depth and type (including diameter and thickness) of any test piles and ancillary piles or fragments thereof left in situ, and shall report this information to the Authority in the final performance test result report.

For driven pile foundations, the Design-Builder shall be responsible for performing wave equation analyses to obtain the relationship between blow counts and estimated nominal resistances for each test pile in each pile group identified in the Design-Builder's drawings. Separate wave equation analyses shall be performed for each hammer, pile type and driving system to be used. Wave equation analyses shall be performed using a wave equation analysis program (WEAP) in accordance with *AASHTO Standard Specifications for Highway Bridges*.

For each substructure supported with driven piles, [REDACTED] be installed within that substructure unit or pile group shall be driven and dynamically tested during the entire initial drive and all restrikes. A pile driving analyzer (PDA) shall be used to measure the hammer energy and the case pile wave analysis program (CAPWAP) shall be used to analyze the data on these piles. Dynamic pile testing shall be performed in accordance with the FHWA *Design and Construction of Driven Pile Foundations Reference Manual*.

The Design-Builder shall provide integrity testing of all drilled shafts and test shafts. At a minimum, integrity testing requirements shall comprise crosshole sonic logging on all drilled shafts. In addition, the Design-Builder shall carry out thermal integrity profiling testing to investigate the integrity of the cover concrete and the shaft perimeter behavior, and shaft base/rock interface coring to prove the shaft base is bearing directly on rock on selected drilled shafts.

As part of the As-Built Plans, the Design-Builder shall provide installation records for all piles/shafts installed. For driven piles, the pile driving records shall include hammer stroke, fuel setting, final pile tip elevations, resistance achieved, pile lengths used, and details of the cap, cap block and cushion system.



Inspection records for drilled shafts shall be in accordance with NYSDOT Geotechnical Engineering Manual GEM-18 *Drilled Shaft Inspector's Guidelines*. Inspection records for micropiles shall be in accordance with NYSDOT Geotechnical Engineering Manual GEM-25 *Micropile Inspector Guidelines*. For all drilled shafts with rock sockets or bearing on rock, the rock socket and the base of the drilled shaft shall be inspected utilizing an underwater video recorder. The video recorder shall be capable of capturing the depth of the recording. A digital copy of the video recording shall be submitted to the Authority as part of the drilled shaft installation record.

#### **10.6.2. 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.

#### **10.6.3. Condition Surveys**

##### **10.6.3.1. Pre-Construction Condition Survey**

The Design-BUILDER shall conduct a pre-construction condition survey for the purposes of generating photographic and video documentation of existing damage, leaks and cracks. The pre-construction condition survey shall form the basis against which all new cracks, existing progressive cracks, or damage will be measured. The spatial extent of the pre-construction survey shall encompass the Project Limits plus certain areas beyond the Project Limits, as detailed herein.

The full spatial extent of the Design-BUILDER's pre-construction condition survey necessarily depends upon the Design-BUILDER's design and proposed means and methods of construction. In its preparation for the pre-construction survey, the Design-BUILDER shall be responsible for predicting anticipated vibration and settlement effects at various offset distances from the Project Limits, and for ensuring 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:

[REDACTED]

In addition, the spatial extent of the pre-construction condition survey shall be integrated with the Design-BUILDER's implementation of its strategy for conformance with the Environmental Performance Commitments related to the protection of cultural resources (see *Project Requirement 3 – Environmental Compliance, Exhibit B*). This strategy shall include properties within designated historic districts. It shall include but not be limited to the Wayside Chapel at 24 River Road in the village of Grand View-on-Hudson in the town of Orangetown in Rockland County.

For the pre-construction condition survey of the Governor Malcolm Wilson Tappan Zee Bridge, the Design-BUILDER can in place of undertaking its own survey elect to utilize the most recent biennial inspection report for the existing bridge, as undertaken by the Authority in 2010. If the Design-BUILDER elects to use the 2010 biennial inspection report as the pre-construction condition survey of the existing bridge, the Design-BUILDER shall thereby agree and affirm that the 2010 biennial survey report presents an accurate and comprehensive survey of the pre-construction condition of the existing bridge. The 2010 biennial inspection report of the existing bridge is a confidential document, and will be made available to the Design-BUILDER in response to a written request sent to the Authority.

The Design-BUILDER shall submit to the Authority the records and photographic and video documentation of the pre-construction condition survey, which shall be signed and stamped by a Professional Engineer registered in the State of New York.

##### **10.6.3.2. Post-Construction Condition Survey**

The Design-BUILDER shall conduct a post-construction condition survey of the zone and properties covered by the pre-construction conditions survey (see Section 10.6.3.1 herein). The post-construction condition survey shall be performed by the Design-BUILDER at Physical Completion, and it shall compare the post-construction

conditions with the conditions recorded in the pre-construction condition survey. 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 Authority.

#### **10.6.4. Stockpiled and Non-Stockpiled Earthwork Material**

The material shall be stockpiled in accordance with the NYSDOT Geotechnical Control Procedure (GCP-17) *Procedure for the Control and Quality Assurance of Granular Materials*. The Design-BUILDER shall be responsible for tests and quality control and assurance methods pertaining to the material requirements in conformance with the procedures contained in GCP-17.

### **10.7. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 10.7-1 for the Authority's consultation and written comment.

**Table 10.7-1: Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Geotechnical work plan	5	1	60 days after NTP	10.5.1
Geotechnical investigation plan	5	1	15 days before start of geotechnical investigation Works	10.5.2
Geotechnical data report	5	1 and 5 CDs	60 days after completion of subsurface investigation, including testing	10.5.3
Geotechnical interpretative report	5	1	5 days in advance of Readiness for Construction Review	10.5.4
Seismic assessment report	5	1		10.5.5
Construction monitoring plan	5	1		10.5.6
Foundation design reports	5	1		10.5.7
Pile performance testing protocol	5	1	Not less than 30 days prior to planned start of pile testing	10.6.1
Pre-construction condition survey report	5	1	Not less than 30 days prior to start of construction	10.6.3.1
Post-construction condition survey	5	1	Not less than 30 days before Final Acceptance	10.6.3.2
Pile performance test results	5	1	Not less than 15 days after completion of each pile test	10.6.1
Construction monitoring reports	5	1	Periodically during construction	10.5.6

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<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Foundation inspection reports	5	1	Periodically during construction	10.6.1

**PART 3, SECTION 10 – GEOTECHNICS**  
**CONFORMED November 21, 2012**



## SECTION 11. STRUCTURES

### 11.1. Scope

The Design-Builder shall be responsible for all Work necessary for the design and construction of all permanent and temporary structures, including permanent bridges, shared use path crossings, retaining walls, barriers, noise walls, sign structures and miscellaneous structures. The design and construction of all structural systems and components shall provide functionality, durability, ease of maintenance, safety, and pleasant aesthetics.

### 11.2. Standards

The Design-Builder shall perform the structural activities in accordance with the following Standards, unless otherwise stipulated in the Project Requirements herein.

- A. NYSTA Thruway Structures Design Manual
- B. AASHTO LRFD Bridge Design Specifications, together with Subsection A3.10 of the NYSDOT "Blue Pages"
- C. NYSTA Standard Plan Sheets
- D. NYSTA Standard Details
- E. NYSDOT Standard Sheets
- F. AREMA Manual for Railway Engineering
- G. NYSDOT Overhead Sign Structure Design Manual, with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
- H. AASHTO LRFD Bridge Construction Specifications
- I. AASHTO Manual for Bridge Evaluation, with Interim Revisions; and NYSDOT Policies' (Design Standard)
- J. HEC 18 "Evaluating Scour at Bridges"
- K. HEC 23 "Bridge Scour and Stream Instability Countermeasures"
- L. HEC 25 "Highways in the Coastal Environment"
- M. NYSDOT Steel Construction Manual
- N. NYSDOT Bridge Manual
- O. AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges
- P. AASHTO Guide Specifications for Thermal Effects on Concrete Bridge Superstructures
- Q. ANSI/AASHTO/AWS D1.5-95 Bridge Welding Code
- R. AASHTO Guide Specifications for Structural Design of Sound Barriers
- S. AASHTO Guide Design Specifications for Bridge Temporary Works
- T. AASHTO Construction Handbook for Bridge Temporary Works
- U. AASHTO Guide Specifications for Seismic Isolation Design
- V. AASHTO Guide Specifications for LRFD Seismic Bridge Design
- W. AASHTO Bridge Security Guidelines



- X. AASHTO Guide Specifications and Commentary for Vessel Collision Design of Highway Bridges
- Y. AASHTO Guide Specifications for Bridges Vulnerable to Coastal Storms
- Z. AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges
- AA. AASHTO Guide for the Development of Bicycle Facilities
- BB. AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges
- CC. AASHTO Guide Specification for Highway Bridge Fabrication with HPS70W (HPS 485W) Steel
- DD. ACI Building Code Requirements for Structural Concrete (ACI 318-11) and Commentary
- EE. ASTM American Society of Testing Materials
- FF. NYSDOT Prestressed Concrete Construction Manual
- GG. NYSDOT Bridge Detail Sheets US Customary
- HH. NYSDOT Hydraulic Design Manual
- II. ASCE Guidelines for the Design of Cable-Stayed Bridges
- JJ. PTI Recommendations for Stay Cable Design, Testing and Installation
- KK. AISC Steel Construction Manual
- LL. ACI Mass Concrete 207
- MM. SSPC Society of Protective Coatings
- NN. HEC-RAS
- OO. USGS Streamstats
- PP. Metro-North Railroad Recommended Practice for the Inspection Maintenance and Construction of Track
- QQ. UFC UFC 4-145-01 Unified Facilities Criteria, Design: Piers and Wharves
- RR. NYSDOT *Environmental Procedures Manual*
- SS. NYSDOT *Project Development Manual*

### 11.3. Design Requirements

#### 11.3.1. Tappan Zee Hudson River Crossing

The Crossing shall comply with the Directive Plans in *Part 6 – RFP Plans* and the requirements of *Part 1 – DB Agreement – Append ix I*. The Crossing shall comply with the design criteria in *Part 3 – Project Requirements*.

The Crossing shall provide operational, service and structural redundancies in order to comply with the Project goals and objectives.

The Crossing is a critical bridge. The value of the operational importance factor  $\eta_I$  in *AASHTO LRFD Bridge Design Specifications* Section 1.3.2.1 shall be taken as 1.05 for the strength limit state and 1.0 for all other limit states.

#### **11.3.1.1. Bridge Structural Type**

Bridge types used by the Design-Builder will not be restricted to those traditionally used by the Authority. Other types and components may be used, but will only be allowed if they have been proven successful by other transportation authorities, and the Design-Builder can demonstrate that the bridge type and components will perform well under the Project's durability requirements and environmental conditions including frequent freeze-thaw cycles and heavy road salt use. Experimental untested bridge types, timber bridges, masonry bridges and structural plate arches are not permitted. Welded trusses shall not be used.

The Authority uses large quantities of salt and deicing chemicals in the winter, which causes accelerated corrosion of bridge structures. Bridge design and construction shall address this concern. Bridges shall incorporate as few joints and bearings as possible and be continuous over supports where possible.

#### **11.3.1.2. Geometrics**

The alignment of the deck shall comply with the requirements specified in *Project Requirement 27 – Highway Design*, the Environmental Documentation and land acquisition plans.

The profile of the Crossing from the landings to the Main Span shall have a constant grade in accordance with the alignment requirements.

No structural member, including potential future loading components, shall penetrate the horizontal and vertical clearance envelopes specified for the navigation channel, roadways and existing railways at any time during the service life of the Crossing. For grade requirements, clearances and roadway design criteria refer to *Project Requirement 18 – Maintenance of Shipping* and *Project Requirement 27 – Highway Design*.

For additional requirements refer to *Project Requirement 11 – Visual Quality* and *Project Requirement 28 – Bridge Maintenance and Operation Requirements*.

#### **11.3.1.3. Structural Monitoring System**

The Design-Builder shall design and install a structural monitoring system to permit operation, inspection and maintenance throughout the service life of the Crossing.

The specification for monitoring systems is provided in *Project Requirement 28 – Bridge Maintenance and Operations Requirements* and *Project Requirement 10 – Geotechnics*.

#### **11.3.1.4. Anti-Graffiti Coating**

The Design-Builder shall utilize methods to minimize graffiti, or provide a coating system to deter graffiti on all surfaces accessible by pedestrians, except sidewalk surfaces and SUP pavements.

NYSDOT Special Specification Item 559.91100006 – Anti-Graffiti Protective Coating and NYSDOT Special Specification Item 559.91100010 – Anti-Graffiti Protective Coating detail the requirements for anti-graffiti coating requirements. See *Part 8 - Special Specifications* for an internet link to the NYSDOT Special Specifications.

#### **11.3.1.5 (Reserved)**

#### **11.3.1.5. Bridge Design Security**

Refer to *Project Requirement 20 – Site Security* with regard to design criteria for security, and process and procedure for safeguarding secure information.

#### **11.3.1.6. Bridge Site Security**

Refer to *Project Requirement 20 – Site Security* with regard to bridge site security.

All hazard design incorporating security elements shall be included throughout bridge construction.

### 11.3.1.7. Components

#### 11.3.1.7.1. Parapets, Barriers and Pedestrian Fencing

Temporary traffic barriers shall meet [REDACTED] and permanent traffic barriers shall meet [REDACTED]. The development of any new railing and barrier systems must meet the requirements established in the AASHTO *Manual for Assessing Safety Hardware* (MASH).

Protection shall be provided to all superstructure elements above the deck. Rigid barriers shall be used to separate roadway shoulders from the towers and the stay cables. The level of protection shall be in accordance with Security Requirements given in *Project Requirement 20 – Site Security*.

Pedestrian fencing shall be provided where the Crossing and other bridges cross over a railway or roadway.

Pedestrian fences shall be provided at each fascia along the length of the Crossing, integral with or independent of the barriers. Gates capable of being locked mechanically shall be provided at one half mile intervals.

Manual gates with locking systems shall be installed at entrances and exits to each of the turnarounds on the structure (see *Project Requirement 27 - Highway Design*).

Barriers, railings and/or fencing, which will be designed and constructed to contain users and materials, shall be detailed to prevent people from climbing, provide for maximum safety and security, minimize weather (wind, rain, snow) impacts and maximize viewing opportunities.

Barriers, parapets, railings and fencing shall meet the aesthetics and visual requirements specified in *Project Requirement 13 – Visual Quality* and the requirements specified in *Project Requirement 21 – Shared Use Path*.

#### 11.3.1.7.2. Decks

Decks shall be concrete. Precast panel and/or cast-in-place types are allowed. Filled, overfilled or unfilled steel grating decks and orthotropic steel decks are not permitted. Steel stay-in-place forms are not permitted. Concrete decks designed to the simplified “Ontario” method are not permitted.

A [REDACTED] minimum thickness specialized polyester polymer concrete wearing surface bonded to the deck, but not integrally placed, is required. It shall be low permeability and meet surface friction requirements. Longitudinal saw-cut grooves shall be cut parallel to the roadway centerline. The wearing surface shall not be placed less than 90 days after pouring/casting of the concrete deck. Provision for additional future wearing surface [REDACTED]. The supplier and installer of the wearing surface shall have a documented history of successful applications acceptable to the Authority.

Drilling into the bridge deck is not permitted.

Miscellaneous metals for construction shall be galvanized and protected against stray current.

#### 11.3.1.7.3. Deck Joints

All joints shall be sealed.

#### 11.3.1.7.4. Superstructures

If main longitudinal members are [REDACTED]

Field splices in [REDACTED]

Effects of ice shall be considered in the design of all structural elements including the cables.

All structural steelwork shall be painted, metalized or galvanized. The inside of steel box girders, if utilized, [REDACTED]

#### 11.3.1.7.5. Bearings

Design and location of bearings shall provide for maintenance, accessibility and future replacement.

Bearings shall be designed and detailed to be replaceable by jacking the superstructure off the permanent bearings. The longitudinal and transverse analysis of superstructure shall consider the redistribution of reactions and forces when jacks are engaged to replace the bearings. The plans shall indicate the intended position of the jacks and the minimum dead load jacking forces.

Bearing replacement shall be considered with a reduced live load.

#### 11.3.1.7.6. Piers and Caps Beams

The type of pier cap shall be consistent with the bridge system and visual quality requirements proposed for bridges in *Project Requirement 13 – Visual Quality*.

Piers and towers [REDACTED].

#### 11.3.1.7.7. Abutments

Mechanically stabilized earth (MSE) walls shall not serve as, or support, abutments. Spill-through abutments are not permitted.

#### 11.3.1.7.8. Foundations and Piles

The Design-Builder shall calculate settlements for the different founding conditions along the Crossing. Settlements likely to occur during construction shall be calculated separately from long term settlements. Particular attention shall be given to the differential settlements likely to occur between piers with piled foundations to rock and piers with piles supported by soil. The effects of settlements, differential settlements, and down-drag shall be fully accounted for in the design and construction.

The Design-Builder shall take into account the calculated settlements during construction and the calculated long term settlements in establishing the target alignment to be achieved at the end of construction.

[REDACTED]

Notwithstanding the requirements of the NYSDOT *Bridge Manual*, the use of battered (raking) piles is not required and the use of concrete infilling of pipe piles is not required, unless these are aspects of the Design-Builder's design.

#### 11.3.1.7.9. Pile Caps

Tops of pile caps shall be a [REDACTED] and bottoms of pile caps shall be [REDACTED].

Tops of pile caps [REDACTED]

#### 11.3.1.7.10. Lightning Protection

A lightning protection system shall be provided. All exposed metallic objects on the Crossing, including structural steel, stay cable anchorages, poles, luminaires, handrails, fencing, handhole covers, pedestals, conduits and supports [REDACTED]. All terminations and splices shall be [REDACTED]

#### 11.3.1.7.11. Lighting

The Design-Builder shall provide U.S. Coast Guard and FAA approved navigation lighting systems on temporary and permanent structures per the applicable Standard. The systems shall be suitable for a marine environment.

Architectural lighting requirements outlined in *Project Requirement 13 – Visual Quality* and functional lighting requirements specified in *Project Requirement 15 – Lighting* shall be incorporated in the design and construction of the Crossing.

**11.3.1.7.12. Drainage**

Deck drainage system shall be designed and constructed to minimize exposure of the superstructure and substructure to surface run-off. Drainage discharges shall be made at low level [REDACTED].

The Design-Builder shall provide a bridge deck drainage system to meet design spread requirements. Deck drain inlets [REDACTED].

The drainage system shall be compatible with the aesthetics of the bridge.

Storm water flowing toward the bridge shall be intercepted [REDACTED]. Storm water leaving a bridge shall be [REDACTED].

Positive drainage shall be provided at all deck joints and the layout shall minimize water intrusion and ponding.

No drainage systems shall be placed inside the box girders. Drain holes shall be provided at all low points in box girder cells to ensure no ponding occurs in the event of water leakage into the box.

**11.3.1.7.13. Compressed Air Lines**

[REDACTED] Standard maintainable pressure shall be provided for running pneumatic equipment.

[REDACTED] aterials and equipment shall comply with ANSI and ASTM Standards.

**11.3.1.7.14. Fire Protection**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



[REDACTED]

**11.3.1.7.15. Ducts**

[REDACTED]

**11.3.1.7.16. Dampers**

If viscous dampers are used, the Design-Builder shall design the dampers for operating loads and seismic loads according to the AASHTO *LRFD Bridge Design Specifications*, with NYSDOT Amendments and as follows, at a minimum:

[REDACTED]

**11.3.1.7.17. Stay Cable System (if used)**

The stays shall be adjustable for length throughout the service life of the Crossing to allow both extension and shortening. Cable anchorages and cables must not penetrate the vertical clearance envelope for vehicles, pedestrians, or bikes at any point in the service life of the Crossing.

[REDACTED]



**11.3.1.8.3. Structural Steel**

**11.3.1.9. Design Parameters**

**11.3.1.9.1. Service Life**

As stated in the Environmental Documentation, one of the project goals and objectives of the Project is to ensure the long-term vitality of the Hudson River Crossing at Tappan Zee Design. Therefore, the Project must achieve a design service life of 100 years before Major Maintenance is required.

**11.3.1.9.2. Vehicular Loading**

Vehicular live loads for the Crossing, both axle and lane loads, [REDACTED] to accommodate the extended design service life. The design shall include the NYSDOT design permit vehicle which shall [REDACTED] shall not apply to temporary roadway configurations.

Vehicular loading requirements for the Crossing and other structures shall comply with the design criteria specified in *Project Requirement 27 – Highway Design*.

The Crossing shall be designed for [REDACTED]. The design shall then be checked using NYSDOT design permit vehicle, in accordance with [REDACTED] specified in the Authority's *Structures Design Manual*. The resultant deck slab, cross beams and diaphragms shall not have less capacity than if they had been designed for NYSDOT design permit vehicle.

Pedestrian live load shall be [REDACTED] applied to the full width of the SUP, and in accordance with LRFD. The pedestrian live load shall be applied in combination with vehicular live load on other lanes, in accordance with LRFD.

If integral with the Crossing superstructure, the SUP shall also be designed for [REDACTED] and NYSDOT design permit vehicle. These vehicle and truck loads shall not be combined with pedestrian live load on the SUP, but shall be combined with vehicular live load as per LRFD.

If not integral with the Crossing superstructure the SUP shall also be designed for [REDACTED]

All SUP crossings shall be checked for: [REDACTED]

For the Main Span, the Design-Builder shall verify that the Standards used in the design [REDACTED]

**11.3.1.9.3. Potential Future Loading**

Potential future loads shall be considered in the design of the Crossing. It is assumed that the loading associated with commuter rail is the largest potential future loading that the Crossing may need to accommodate. Therefore, the loading presented in Table 11.3-1 shall be applied, in accordance with the requirements of *AREMA Manual for Railway Engineering*.

For all structural elements that support both highway loading and potential future loading, [REDACTED]

The Design-Builder shall indicate how the potential future loading approaching the Crossing in a tunnel below the toll plaza can be accommodated structurally and geometrically.

In evaluating longitudinal forces from braking and traction, trains shall be considered to be travelling in either the same or opposite directions on both tracks, whichever produces the greatest effects. Consideration shall be given to increased locomotive wheel/rail adhesion achieved with sanders and/or electronically-controlled pneumatic brakes.

**Table 11.3-1 Design Criteria for Potential Future Loading**

	Design Element	Design Criteria	Reference
1	Structure Live Load 1		
2	Structure Live Load 1 Operating Speed		
3	Structure Live Load 2		
4	Structure Live Load 2 Operating Speed		
5	Structure Live Load Combination		
6	Track Enclosure		
7	Bi-Level Cars Maximum Height		
8	Height of Genesis Locomotives		
9	Wind Shielding		

#### 11.3.1.9.4. Vehicular Dynamic Allowance

Vehicular dynamic allowance shall be considered in the design as required by AASHTO.

[REDACTED]

#### 11.3.1.9.5. Seismic Loading

The Design-Builder shall perform seismic analyses of all bridge components in order to establish the seismic design and bridge performance criteria, definition of the relevant bridge site characteristics, determination of the site response, as well as analytical modeling and seismic evaluation of the bridge performance. The analyses shall incorporate interaction effects between adjacent structural components, including impact between each other during a seismic event.

The seismic analysis of the Crossing shall include non-linear time history modeling of the Main Spans plus a minimum of one approach frame, [REDACTED]

The remainder of the approach spans may be investigated using non-linear time history modeling, or multi-modal response spectrum analysis combined with static inelastic (pushover) analysis.

All analyses shall be based on the following requirements:

- A. The Crossing, including Main Spans and approaches, is categorized as a critical structure. The return periods stated herein are consistent with other bridges with 100-year service life;
- B. The Crossing shall be designed as a critical bridge using the analysis and design rules of AASHTO LRFD for site specific seismic demands;
- C. The Crossing shall be analyzed for two earthquake hazard design levels: a lower level event for [REDACTED] years return period and an upper level event for [REDACTED] year return period. A site specific analysis shall be carried out by the Design-Builder. The requirements of *NYSDOT LRFD Bridge Design Specifications* section 3.10.2.2 shall apply, except that the site-specific spectra shall not exceed the AASHTO (USGS) general procedure spectra in the period range specified. The NYSDOT general procedure spectra will not apply. For the long Main Span, the effects of spatial variation on the seismic ground motions shall also be considered;
- D. The Crossing shall survive the upper level event ([REDACTED] years return period) with repairable damage. The definition of repairable damage is as per Article 3.10.5 of the *NYSDOT LRFD Blue Pages* dated September, 2011. Traffic access following this event may be limited: specifically, access shall be within 48 hours for emergency/defense vehicles and within 2 months for general public traffic;
- E. After the lower level event ([REDACTED] years return period) the Crossing shall suffer only minimal damage. The definition of minimal damage is as per Article 3.10.5 of *NYSDOT LRFD Blue Pages* dated September, 2011. Access after this event shall be immediate for all traffic, with an allowance of a few hours for inspection;
- F. Article 6 of *AASHTO Guide Specifications for Seismic Isolation Design* shall be modified so [REDACTED] and [REDACTED];
- G. In the seismic analysis of the Crossing, the Design-Builder shall take into account the effects of potential future loading and incorporate both dead loads and live loads in the seismic design.



The Design-Builder shall also review the [REDACTED] on the bridge such as [REDACTED], applicable, and ensure these systems are designed consistently with the corresponding seismic requirements.

#### 11.3.1.9.6. Water Loads

Water loads shall be determined by the Design-Builder who shall be responsible for designing the structure to account for the effects of scour, ice and tidal effects in accordance with AASHTO *LRFD Bridge Design Specifications*. Design criteria shall be provided by the Design-Builder for producing the more conservative result from climate analysis and bridge hydraulic and scour studies:

- A. **Scour:** The Design-Builder shall analyze Crossing supports for scour in accordance with FHWA HEC 18 entitled *Evaluating Scour at Bridges*. Pile foundations shall be used at all substructures for bridges over water, and pile lengths designed for stability under maximum estimated scour conditions. Bridge scour estimates for [REDACTED] will be documented in the Conceptual Design Report and shall include the full hydraulic analysis and scour depth calculations;
- B. **Ice Loads:** The provisions of AASHTO *LRFD Section 3.9* shall apply.

#### 11.3.1.9.7. Bridge Hydraulics

The Design-Builder shall confirm by study that the hydraulic freeboard is not a concern for the Crossing. Scour analysis and protection, where required, shall be provided for all substructures.

Crossings located in FEMA floodplains shall be designed for the [REDACTED] flood [REDACTED]. Any encroachment to the floodway must be compensated for by removal of an equal amount of area within the floodway, and the Design-Builder shall provide studies and analysis that demonstrate that no water surface rise at the base flood ( $Q_{100}$ ) will occur due to the encroachment.

For backwater and water surface computation, use of the HEC-RAS program is preferred.

For larger drainage areas (that is, drainage areas greater than approximately 1 square mile), the U.S. Geological Survey tool StreamStats shall be used to determine the design flow.

#### 11.3.1.9.8. Ship Impact

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

#### 11.3.1.9.9. Wind Load and Design

Wind on potential future loading and on track enclosures as required in Table 11.3-1 shall be considered in the appropriate load combinations.

The Design-Builder shall carry out a wind study and generate site specific wind climate data obtained from an analysis of long-term wind data available from the Westchester County Airport and other reliable data sources in the area. The study shall include the impacts of climate change in determining the required wind speeds for stability and structural design of the main span bridge. The site-specific climate properties should be compared with wind speed information in codified sources. The Design-Builder shall be responsible for assessing and verifying the return period and wind loads to be used for construction stage analysis. As a minimum, the following shall apply:

#### 11.3.1.9.10. Wind Study Testing

The Design-Builder shall perform sectional and full aeroelastic model testing of the Main Span, including at least one Approach Span frame, [REDACTED]

[REDACTED] he tests shall be carried out prior to completion of final design and shall be used by the Design-Builder to verify the satisfactory aeroelastic performance of the Crossing's Main Span.

All wind tunnel studies shall fully represent the aerodynamic and aeroelastic interactions of the north and south bridge structures, both in their final completed state as well as critical construction stages. For sectional wind tunnel tests, this may entail dynamically representing both superstructure models (i.e. spring supporting both superstructures) in the wind tunnel to capture the in-phase and out-of-phase vibrations and the resulting aerodynamic effects.

Tests shall be carried out to verify the aerodynamic performance of the Crossing with the presence of potential future loading in between the two roadway structures, or below the north structure, whichever is proposed.

All wind tunnel models shall have an appropriate representation of wind shields and potential future loading enclosure as required in Table 11.3-1, if these are included in the design. Wind shield and enclosure shall be modelled either using a geometrically scaled model (if wind shield or enclosure elements are large sharp-edged members insensitive to Reynold's number effects) or an aerodynamically scaled model (if porous mesh or small members are proposed for the wind shield or enclosure).

Static aerodynamic coefficients (lift, drag, and moment), aeroelastic flutter coefficients, and vortex-induced aerodynamic motions shall be obtained from wind tunnel tests using a detailed sectional model of the bridge using an appropriate scale determined by an aerodynamicist. [REDACTED]

The Design-Builder shall submit a wind tunnel test report which shall include, at a minimum:

- A. Introduction;

- B. Wind climate and site analysis, including introduction, data sources, methodology, results, conclusions, and recommendations;
- C. Section model test information, including objectives and criteria, model description, wind tunnel test procedures, aerodynamic stability results, and static force and moment coefficients; and
- D. Results of wind buffeting analyses, including background information, mean and background fluctuating wind loads, inertial loads due to wind-induced bridge motions, and wind load distributions for structural design.

Critical construction stages shall be determined by the Design-Builder, and at a minimum, shall include two construction stage conditions consisting of a stand-alone tower, if any, and fully extended cantilever conditions just prior to mid-span and bent closures.

The Design-Builder shall prepare a separate wind engineering study report with the results of the full aeroelastic model testing of the bridge to determine wind design forces based on the wind tunnel tests findings. The wind engineering study report shall include, at a minimum:

- E. Description of the aeroelastic model and its design;
- F. Description of the wind tunnel simulation;
- G. Description of the wind tunnel test and instrumentation;
- H. Aerodynamic stability from wind tunnel test results;
- I. Response to turbulent winds from wind tunnel test results;
- J. Response comparisons between the sectional and aeroelastic test results;
- K. Comparison of simultaneous peak moments at the base of the tower, if any, or main span supports, predicted by the buffeting analysis and measured during the aeroelastic tests;
- L. Conclusions and recommendations.

Wind buffeting analysis shall be performed by the Design-Builder in accordance with AASHTO *LRFD Bridge Design Specifications*, current edition, with NYSDOT Amendments and ASCE/SEI 7-10. Both static and dynamic wind effects shall be considered, utilizing computer models of the bridge that incorporate the results of wind tunnel tests of sectional models of the deck. Wind tunnel tests shall be carried out for both smooth and turbulent flow, and a range of inherent structural damping values.

The Design-Builder shall provide [REDACTED]

#### 11.3.1.9.11. Wind Events

The Design-Builder shall complete wind analysis and design considering both a high-probability serviceability event and a lower-probability aerodynamic stability event. The wind analysis and design shall consider both the completed bridge and critical construction stages.

The serviceability wind event shall have a probability consistent with a [REDACTED]

Vertical deck accelerations [REDACTED]

[REDACTED] The completed bridge shall show no signs of flutter instability up to a [REDACTED] wind event and during all phases of construction for the [REDACTED] wind event. If the bridge shows any sign of aerodynamic instability during the serviceability wind event or does not meet deck acceleration limits, the cross-section or other bridge design features shall be revised and all wind tunnel tests repeated. All revisions are subject to the Authority's approval. During construction,

temporary remedial measures to counteract any distress shall be implemented as required without obstructing river navigation.

**11.3.1.9.12. Bridge Load Rating**

The Design-Builder shall load rate the bridges according to the NYSDOT EI 05-034 Level 1 rating, and the AASHTO *Manual for Bridge Evaluation*.

**11.3.1.10. Design For Durability**

The Design-Builder shall provide a Crossing that meets the required design service life either by selecting materials with reduced corrosion potential, by selecting materials and details, which resist degradation or by other mean acceptable to the Authority. Due to the extensive use of de-icing salts during the future operation of the Crossing, the Crossing shall be considered to be subjected to severe corrosive conditions.

The service life of the structure shall be 100 years as outlined in Table 11.3-2, except as outlined in Table 11.3-3 for replaceable components.

The maintenance regime included with the Operations and Maintenance Manual specified in *Project Requirement 28 – Bridge Maintenance and Operation Requirements* shall match the selected service life.

**Table 11.3-2 Minimum Service Life for Non-Replaceable Components**

<b>Non-Replaceable Components</b>	<b>Minimum Service Life (years)</b>
Towers, piles, pile caps, piers, pier caps, deck and superstructure	100

**Table 11.3-3 Minimum Service Life for Replaceable Components**

<b>Replaceable Components</b>	<b>Minimum Service Life (years)</b>
Stay cables and tie-down cables	60
External post-tensioning cables	60
Bridge bearings	50
Expansion joints	30
Concrete bridge and approach barrier	60
Bridge rail / approach guide rail	30
Dampers (cylinder)	50
Dampers (other movable parts)	30
Separate bridge deck wearing surface	30
Overhead sign structures	40
Drainage system	75
[REDACTED]	60
[REDACTED]	40

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Replaceable Components	Minimum Service Life (years)
Inspection: stay-cable and arch hanger gantry	60
Inspection: under-deck and arch travelers	60
Stay cable dampers	40
Dehumidification system	30
Coating system for structural steel	20
[REDACTED]	30
Other proposed components	As negotiated

### 11.3.1.11. Conceptual Design Report

The Design-Builder shall submit a conceptual design report for the Authority's Project Manager to consult and provide written comment:

- A. Overview plan, including tasks;
- B. General plan and elevation;
- C. Typical cross sections for the Crossing at the Main Span and Approach Spans of the Crossing;
- D. Design criteria including methodology for design and verification (independent check). This shall include details of materials, design rules and standards and clearance checks;
- E. Submission of models and calculation;
- F. Elevation and cross sections for the retaining walls and other highway structures at the landings at Westchester and Rockland counties;
- G. Concepts to support the potential future loading which shall include: potential Crossing horizontal and vertical geometry from abutment to abutment; cross-sections; articulation arrangements; proposed rail track type; pier, tower, arch or crossbeam configuration; required strengthening or addition of substructure and superstructure elements; and indicative construction sequence identifying implications for traffic operations. Plans shall be developed only to concept level;
- H. For potential future loading, design criteria including specific loading allowances, analysis methodology and load combinations;
- I. Design analysis including results for all load combinations, including settlements, seismic effects, noise, vibrations;
- J. The intent of the potential future loading expansion, to be used as a guide for future designers, including full details of future allowances, limitations on loads at each foundation at the top and bottom of pile cap, all present and future reactions.
- K. Aesthetic features.

For designs of the Crossing that require seismic nonlinear time-history design, the Design-Builder shall provide the Authority a structural model used in the analysis for each bridge. The Design-Builder has the option of using Authority-approved software for the design or the independent check. If changes to the



bridge occur during construction that requires an update to the model the design model that is submitted to the Authority shall include these changes.

#### **11.3.1.12. Corrosion Protection Plan**

The Design-Builder shall prepare a detailed corrosion protection plan for the Crossing. If the Design-Builder adopts different structural material or configuration along the Crossing separate corrosion plans shall be prepared for the each segment.

The Design-Builder shall submit the corrosion protection plan(s) for the Authority's Project Manager to consult and provide written comment. Along the length of the Crossing, if there are differences in material or configuration, then the Design-Builder shall separate the segments into similar groupings and provide a corrosion protection plan for each group. Each corrosion protection plan shall include:

- A. A conceptual approach to achieving the required 100 year service life for non-replaceable members;
- B. Identification of each Crossing component with the corresponding environmental exposure conditions for each component (e.g., buried, submerged, exposed to atmosphere, exposed to corrosive chemicals);
- C. Identification of relevant degradation and protective mechanisms for each Crossing component. Quantify degradation processes and resistances to these processes with respect to time. Models shall use a probabilistic approach to evaluate the time-related changes in performance depending on the component, environmental conditions, and any proposed protective measures. Models shall be listed in the plan;
- D. Confirmation of the expected service life of each Crossing component (refer to Tables 11.3-2 and 11.3-3), based on the proposed material, exposure condition, relevant degradation mechanism, and any proposed protective measures, taking into account the proposed inspection/maintenance schedule. List any corrosion allowances and thresholds used. Coordinate with *Project Requirement 28 – Bridge Maintenance and Operation Requirements*. Include the level of reliability or probability of the predicted Service Life of each element as well as the expected interval of replacement or renewal of the protective measures within the service life duration (e.g., thickness of coats, number of times to recoat paint that protects steel members);
- E. Explanation of what will be done during construction to ensure that a suitably high quality products are achieved (including ensure uniform compaction of the concrete, adequate concrete cover, proper curing for the element);
- F. Summary, in a tabular format, for each component listed Tables 11.3-2 and 11.3-3 and other relevant elements, and of an estimate of life-cycle costs for the service life of the Crossing. The life-cycle cost analysis for the Crossing components shall use a discount rate of 2.9% per year to convert future costs to present worth in 2012.

Additional specific requirements for the corrosion protection plan shall include:

- G. List of the manufacturers of all proposed coatings, inhibitors, sealers, and membranes
- H. Schedule for corrosion inspection of the Crossing components
- I. Proposed maintenance schedule for items/materials that could be affected by corrosion
- J. Active electric current cathodic protection and passive sacrificial anodes shall not be used to mitigate expected corrosion effects in structures, including piles.

As part of the As-Built requirements outlined in *Part I – DB §100* the Design-Builder shall prepare an As-Built corrosion protection report. This shall become part and parcel of the Operations and Maintenance Manual specified in *Project Requirement 28 – Bridge Maintenance and Operation Requirements*.

### **11.3.2. (Not used)**

### **11.3.3. Software**

The Design-Builder shall use commercially-available computer bridge analysis programs to complete the bridge analysis and design, including seismic modeling. Programs shall be generally accepted in the industry, with a proven track record of use on projects of this nature.

Unless otherwise specified, the Design-Builder shall ensure the most current version of the relevant software is used.

### **11.3.4. Permanent Retaining Walls and Abutments**

The Design-Builder shall determine the location(s) and types of retaining walls.

Wall type selection and design by the Design-Builder shall meet all applicable Project Requirements.

Bridge wingwalls shall be considered as part of the retaining walls. All walls including abutments shall have the same architectural treatment facing harmonized with noise wall finishes. Gabion and crib walls are not permitted.

For all retaining walls accessible to pedestrians, pedestrian fencing shall be provided within 6 inches of the back face at the top of the wall.

### **11.3.5. Noise Walls**

The existing and conceptual location proposed required noise walls on the Crossing and landings are shown in the Request for Proposal *Part 6 RFP Plans* – Indicative Drawings IND-007 and IND-008.

The existing Tappan Zee bridge landings have existing noise walls in Rockland County at the northern edge of the Thruway adjacent to the Bradford Mews apartments, and in Westchester County at the southern edge of the Thruway near the Van Wart Avenue residences. If these existing noise walls are impacted due to the Design-Builder's Works, including construction operations and design, these existing noise walls shall be relocated and replaced by the Design-Builder within the existing ROW or acquired ROW and improved for noise abatement if necessary in accordance with the procedures for installation of new noise abatement measures.

The Design-Builder shall provide new permanent noise abatement measures utilizing the FEIS design analysis methodology in comparison with NYSDOT and FHWA noise impact criteria. Impacted receptors of the Proposers design shall be determined relative to the validated EIS traffic noise model for the existing alignment. Noise modeling for proposed systems shall be completed using FHWA Traffic Noise Model version 2.5 software.

The Design-Builder shall provide to the Authority details of the noise walls proposed by the Design-Builder, including the design noise analysis and proposed location, height, materials and the appearance (including visualizations), for the Authority's approval before implementation. (Note: The Design-Builder is advised that, for the purposes of the EIS, noise modeling was undertaken on behalf of the Agencies for the bridge configurations addressed in the EIS. The resulting EIS noise wall locations are shown in the Request for Proposal *Part 6 – RFP Plans* Indicative Drawings IND-007 and IND-008, denoted "proposed noise wall" therein.)

The use of noise insulation and application of buffer zones shall not be incorporated within this design. Noise walls shall be designed and constructed in accordance with AASHTO *Guide Specifications for Structural Design of Sound Walls*.

The design of noise walls shall provide for adequate surface drainage.

Wall types shall have successfully been used in geotechnically similar locations and environmental conditions.

When placed behind barriers, noise walls shall be offset a minimum of 10 feet from the barrier; except across bridges or transitioning from bridges.

Noise wall design and construction shall consider durable materials, and ease of replacement and/or repair. Wood components are not permitted.

The design of noise walls shall integrate with *Project Requirements 8 – Public Involvement* and *13 – Visual Quality*.

#### **11.3.6. Sign Structures**

The Design-Builder shall design and construct all sign structures on the Crossing and in the landings. The Design-Builder shall replace the existing sign structures on the landings and beyond to suit temporary and permanent roadway layout.

The design of all sign structures shall integrate with *Project Requirement 13 – Visual Quality* and *Project Requirement 16 – ITS*.

### **11.4. Construction Requirements**

#### **11.4.1. Erection Procedures**

The Design-Builder shall develop erection procedures for all segments of the Crossing that include complete detailed erection sequence drawings; erection stresses in permanent and temporary members; bent and falsework reactions determined for each construction stage; and moments, shears, axial loads and other forces computed and tabulated for the towers of cable stayed bridge only and the superstructure of the Crossing main span at a sufficient number of points to demonstrate that the load demand will not exceed the capacity and allowable stresses for erection and service conditions.

The Design-Builder shall include step-by-step erection procedures with complete details of fabrication, erection, and stressing operations. Details of contemplated elevations, cable lengths, adjustments, and shims required shall be shown for each erection stage.

Geometry control specification shall be developed by the Design-Builder.

Prior to construction, the Design-Builder shall issue an erection procedure report which shall include details of camber, stay-cable forces at each stage, anticipated stage deflections and rotations of all bridges to be construction. The method of monitoring shall also be included within the report.

#### **11.4.2. Permanent Retaining Wall Structures**

Overall tolerances shall be within [REDACTED]. The total settlement of the foundation shall not [REDACTED].

The Design-Builder shall provide cut, backfill, and compaction in accordance with the foundation recommendations given in *Project Requirement 10 – Geotechnical*.

The Design-Builder shall not use salvaged bituminous material or crushed concrete in the backfill.

For all retaining walls total settlement and overall tolerances shall be based on site-specific requirements.

### **11.4.3. Equipment Use**

Any operation that involves using X-rays or radiation-emitting equipment shall be reviewed and approved by the Authority and the U.S. Department of Homeland Security. The equipment usage schedule shall be coordinated with the Authority and the U.S. Department of Homeland Security.

### **11.5. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 11.5-1 for the Authority's consultation and written comment.

**Table 11.5-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Erection procedure report	5	1	At Readiness for Construction Review	11.4.1
Conceptual design report	5	1	At Definitive Design Review	11.3.1.12
As-Built requirements	5	1	At Final Design Review	11.3.1.13
Corrosion protection plan	5	1	At Definitive Design Review	11.3.1.13
Bridge load rating	5	1	At Final Design Review	11.3.1.10.12
Submittals	5	1	At Definitive Design Review	-
Wind tunnel test report	5	1	At Final Design Review	11.3.1.10.10

## SECTION 12. LANDSCAPE ARCHITECTURE

### 12.1. Scope

The Design-Builder shall complete all landscaping for the Project. The Work includes preparation and implementation of a landscape development plan (LDP), which the Design-Builder shall develop in collaboration with the Design-Builder's visual quality management plan (see *Project Requirement 13 – Visual Quality*). The LDP shall include aesthetic guidelines for landscape elements within the Project Limits that integrates with the surrounding environment.

The Design-Builder shall be responsible for care of planting in accordance with NYSDOT standard specification §611-3.05 *Care of Planting*. The Design-Builder shall remain responsible for the maintenance and monitoring of all areas landscaped and planted by the Design-Builder until expiration of the Warranty Period consistent with *DB §104-1 5.2.* . This obligation shall include replacement of any trees and other plantings that fail to establish or thrive prior to Final Acceptance.

### 12.2. Standards, References and Legislation

The Design-Builder shall perform the landscape architectural activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### 12.2.1. Standards

- A. NYSDOT Highway Design Manual - Chapter 5 (Section 5.5.8) and Chapters 10, 18 and 25.

#### 12.2.2. References

- A. AASHTO A Guide for Transportation and Environmental Design
- B. NYSDOS Coastal Management Program
  - 1. Nyack Local Waterfront Revitalization Program 1992
  - 2. Sleepy Hollow/ Tarrytown Local Waterfront Program 1997
  - 3. Haverstraw/Tappan Zee Scenic Area of Statewide Significance
- C. Hudson River Estuary Action Agenda – NYS Department of Environmental Conservation
  - 1. NYSDOS Hudson River Valley National Heritage Area 1996
- D. Hudson River Valley Greenway Program
- E. American Heritage River Alliance (1998) Administered by U.S. Environmental Protection Agency. U.S. Executive Order 13061.
- F. NYSTA Environmental enhancement guidelines
- G. Town of Nyack Planning Department- Zoning Landscape Ordinances
- H. Town of Tarrytown Planning Department- Zoning Landscape Ordinances

#### 12.2.3. Legislation

- A. U.S. Code, Title 23 – Highways (23 U.S.C) Section 109, 138, 217, 319
- B. Code of Federal Regulations (CFR), 23CFR:
  - 1. Part 635 Subpart E, 645 Subpart B, 713.204 (O), (U); 772.13



2. Part 752 Landscape and Roadside Development, Part 752.4 Landscape Development
3. Part 777 Mitigation of Impacts to Wetland and Natural Habitat.

## **12.3. Requirements**

### **12.3.1. Vegetation Inventory and First Arborist Report**

The Design-Builder shall develop and provide a comprehensive vegetation inventory including survey of trees at least 6 inches DBH (diameter at breast height) within the Project Limits and any projected areas of impact on neighboring properties. All surveyed trees shall be identified by GPS location and species and labeled on site by an arborist or urban forester (referred to as the arborist herein). Trees proposed for removal and potentially subject to impact shall be documented. Plans shall be submitted to the Authority's landscape architect for review prior to field review (see Section 12.3.2 herein).

The Design-Builder's Arborist shall be responsible for identifying which trees are proposed for removal and which trees are potentially subject to impact (including categorizations of likelihood of impact) within the Project Limits and on neighboring properties, and shall assess whether preservation is feasible for trees potentially subject to impact. The identification, assessments, categorizations, and all relevant survival enhancement recommendations shall comprise the Design-Builder's first arborist report.

### **12.3.2. Pre-Construction Conference & Field Review and Arborist Report Updates**

The Design-Builder shall be responsible for setting up a pre-construction conference with field review. This shall involve, at minimum, the Design-Builder's arborist and landscape architect, the Authority's landscape architect, and also community representatives where this involvement is warranted under the procedures outlined in *Project Requirement 13 – Visual Quality*. The purpose of the conference shall be to review the arborist's determination of which mature trees and other vegetation are to be removed and which are not to be removed.

Following the pre-construction conference and field review, the Design-Builder shall be responsible for providing subsequent arborist report update(s) which shall identify areas to be avoided during construction and identify any special provisions to be followed as part of the Project's design and construction. The arborist report updates shall be issued at least quarterly or more frequently as needed.

### **12.3.3. On-site Protection Zones and Monitoring**

The Design-Builder shall be responsible for limiting the removal of existing vegetation including trees within the Project Limits and for minimizing removal in adjacent areas, such as may be needed for the operation of construction vehicles or similar.

The Design-Builder shall be responsible for ensuring that all tree and vegetation protection zones shall be clearly marked in the field for ease of identification by the Design-Builder's construction personnel.

For trees that are not to be removed, the Design-Builder shall be responsible for the preservation and protection of sufficient root zone protection to achieve a high likelihood of survival of the tree.

The Design-Builder shall be responsible for establishing and implementing sufficiently frequent monitoring of construction activities to ensure that all requirements for tree and vegetation protection are met. All staff involved with construction management and oversight shall be required to certify that they have read and understood the requirements of: the findings of the pre-construction conference and field review; the first arborist report and all updates of it; and the procedure and format of marking protection zones in the field.

The Design-Builder shall be responsible for actively monitoring the condition of trees and vegetation in protected zones, and for taking active steps to remediate and improve any aspects of the Design-Builder's protection system that do not provide adequate protection.

#### **12.3.4. Landscape Development Plan**

The Design-Builder shall develop and implement a LDP under the direction of landscape architect(s) licensed in the State of New York with demonstrated qualification in suburban highway design, stormwater management, integration of utility service areas, grading of steep terrain, greenway trails, coastal waterfront development, community design reviews, and preparation of formalized project-specific aesthetic design guidelines. The Design-Builder's landscape team shall also include a qualified arborist, who shall be suitably certified by the International Society of Arboriculture (ISA).

The LDP shall address landscape elements both during and post-construction. The LDP shall be compatible with the Project's overall visual quality management plan (see *Project Requirement 13 – Visual Quality*). In the LDP, the Design-Builder is encouraged to pursue creative design solutions for implementation in the Project that enhance the Project's visual quality while minimizing long-term maintenance and providing for long-term durable service and survival. The LDP shall include:

- A. Landscape plans for the landings;
- B. Landscape plans for areas beneath the Crossing at the landings;
- C. An inventory of all built elements (including, bridge abutments and piers, vehicular use areas, utility service areas, amongst others);
- D. Coordination with the Project's drainage and stormwater plans, demonstrating the integration of those elements (as developed under *Project Requirement 23 – Drainage and Stormwater*) with the Design-Builder's landscape plans;
- E. Landscape plans for all connections and tie-ins to the SUP in consultation with local officials;
- F. Landscape plans for the area of the Raymond Esposito Trail abutting Interchange 10, extending from the Route 9W bridge to approximately 0.5 miles past the tie-in to the trail at the South Nyack Village Hall. This shall include a solid aesthetically pleasing low-maintenance 6 to 8 foot high fence to screen highway and interchange traffic. The Design-Builder shall liaise with Village officials for all landscaping within this area;
- G. Landscape plans for all ROW abutting private property including the area within the ROW adjacent to Van Wart Avenue including replacement of ROW fencing, plantings and vegetation in consultation with property owners. In areas where noise walls will be installed, suitable plantings on the private property side of the noise barrier;
- H. Grading plans including plans describing paved slope treatments, subsurface and surface utilities, retaining walls, and stormwater appurtenances in the ROW. For the Westchester landing from the Hudson River east to the toll plazas, the LDP in this area shall show restoration of the existing forested, wetland stream corridor;
- I. Details of cut and fill slopes that shall be vegetated (where the soil conditions, slope grade and overhead structures make vegetation feasible, using commercially available methods) and techniques to facilitate root development where grades steeper than 2:1 are unavoidable;
- J. A South Nyack shoreline plan, representing the site planning and landscape development within the context of the Project's permanent ancillary structures along the South Nyack shoreline. This shall include: visual conditions for pedestrians and cyclists along South Nyack's River Road frontage; views to the Hudson River; details of any canopy tree plantings and landscaping

features and plantings appropriate to the coastal waterfront conditions and the Hudson River scenic surroundings.

- K. Landscape plans for the infield areas within Interchange 10. These plans may include the installation of a solid, aesthetically-pleasing, low-maintenance fence prior to any use of the area for staging, in order to screen the site from the highway, interchange traffic and the local community to the extent feasible. Landscape plans for the subsequent restoration of this area shall account for and incorporate required clear zones and highway sight distances, and shall only include low-maintenance plantings and materials.

#### **12.3.5. Invasive Species Management Plan**

The Design-Builder shall be responsible for developing and providing the invasive species management plan. This shall document measures to prevent the introduction and spread of invasive species and noxious weeds.

The Design-Builder shall be responsible for a survey that shall be undertaken prior to start of construction within the Project Limits to determine the extent and prevalence of existing invasive species and noxious weed populations. If the timing of the NTP means that the pre-construction survey must take place during winter months (when certain relevant plant species may be difficult to identify reliably), the Design-Builder shall be responsible for also undertaking an additional phase of survey during periods of growth of the relevant plant species. The results of the additional phase of the survey shall be issued as an addendum to the invasive species management plan.

The invasive species management plan shall include: the results of the pre-construction survey and, if required, the results of any additional phase of survey (via addendum); measures to control the spread of and, if feasible, eradicate existing invasive species and noxious weed populations; and measures to be implemented during construction to control the introduction and spread of invasive species and noxious weed populations.

#### **12.3.6. Planting Plan**

The Design-Builder shall produce a planting plan, which shall include planting schemes for areas where existing buildings and other (onshore) structures are to be demolished and for which the cleared areas are to be replanted, including descriptions of how the areas involved shall be prepared for the proposed landscape Work. The planting plan shall include:

- A. Details of planting schemes;
- B. Discussion of specific needs for long-term maintenance and care of the planting scheme;
- C. A key map, which shall reference erosion and stormwater pollution protection elements as appropriate;
- D. Details of tree replacements, including locations where replacement trees shall be planted according to tree size and type and the replacement ratio per local zoning codes (where extant). The Design-Builder shall put emphasis on sound landscape restoration, and shall not base its plan for tree replacement just on replacement ratios;
- E. Details of revegetation that specifies the areas to be revegetated, species of plants to be used for revegetation, the techniques used to revegetate disturbed areas, and surface preparation. Revegetated areas shall be developed in consultation with wildlife and land management agencies.

For tree removal, the approximate number and type of trees to be removed shall have been identified in the Design-Builder's arborist report. Proposals for trees located on private property that are to be replaced or

installed by the Design-Builder, whether for shielding or other purposes, shall be developed by the Design-Builder with input from the affected property owner.

The Design-Builder shall assume that the species of trees to be considered should include, but are not limited to, species that are native to the beech-maple-oak hardwood forest ecology of the northeastern U.S., and other similar tree species native or adaptable to the area.

## **12.4. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 12.4-1 for the Authority's consultation and written comment.

**Table 12.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Vegetation inventory	5	1	90 days after NTP	12.3.1
Arborist reports (first report and subsequent updates)	5	1	First: 90 days after NTP Then: at least quarterly	12.3.2
Landscape development plan (LDP)	5	1	5 days in advance of relevant Readiness for Construction review	12.3.4
Invasive species management plan	5	1	5 days in advance of relevant Readiness for Construction review (excluding addendum in growing season, if required)	12.3.5
Planting plan	5	1	5 days in advance of relevant Readiness for Construction review	12.3.6

## SECTION 13. VISUAL QUALITY

### 13.1. Scope

The Design-Builder shall be responsible for ensuring the Tappan Zee Hudson River Crossing Project is a valued visual and aesthetic component compatible with the environmental, social, and physical characteristics of the region and the river corridor in which it is located.

The Design-Builder shall utilize a fully collaborative and interdisciplinary strategy involving the stakeholders and the public, reflecting the requirements of the Public Involvement Plan (see *Project Requirement 8 – Public Involvement*), to allow for an aesthetic understanding of the Project area context.

Supporting infrastructure shall be designed to the same high aesthetic standards as the Crossing. The Crossing, and in particular the Main Spans, shall have a strong visual identity that will positively reflect the local community context and distinguish the Project internationally.

The Authority will establish a visual quality panel, which is anticipated to include the following:

- A. Authority's visual quality representative;
- B. Authority's communications and community relations personnel representing stakeholder groups including local communities and bridge users;
- C. The Design-Builder's bridge architect;
- D. The Design-Builder's landscape architect;
- E. The Design-Builder's bridge engineer;
- F. Other Authority staff, as appropriate; and
- G. Other stakeholders as may be deemed necessary.

The Design-Builder shall be responsible for liaison with the Authority's visual quality panel, as outlined herein.

### 13.2. References

- A. ASCE Practical Highway Aesthetics
- B. AASHTO A Guide for Achieving Flexibility in Highway Design
- C. NYSDOT Bridge Manual 4<sup>th</sup> Edition
- D. FHWA Impact Assessment for Highway Projects
- E. FHWA Visual Prioritization Process.
- F. AASHTO Visualization in Transportation Guide: A Guide for Transportation Agencies, Glossary of Commonly Used Terms
- G. MNDOT Aesthetic Guidelines for Bridge Design

### 13.3. Requirements

#### 13.3.1. General

The Design-Builder shall ensure a fully collaborative and interdisciplinary strategy involving all stakeholders through its visual quality/aesthetics management Work. All aesthetic decisions shall comply with the requirements laid out in the Environmental Documentation.



The Design-Builder shall ensure that the Project fits within the unique environmental, social, aesthetic and physical character of the region and the river corridor within which the Project is located. The design solution shall fit the contextual character and all corridor and site conditions. The Design-Builder shall be responsible for ensuring that all aesthetic aspects shall comply with the requirements laid out in the Environmental Documentation. The Design-Builder shall be responsible for ensuring that suitable communication between visual design staff and construction staff is established during build-out, to ensure that visual aspects of the design intent are implemented as appropriate.

### **13.3.2. Staffing**

#### **13.3.2.1. Project Visual Quality Manager**

The Design-Builder's team shall include in the role of visual quality manager an individual who possesses the following qualifications:

- A. Professional license in the State of New York as an architect or landscape architect;
- B. Not less than 10 years of recent relevant experience on major infrastructure or transportation projects; and
- C. Experience of leading visual quality aspects on at least three projects similar in scope and complexity to this Project.

The Design-Builder's visual quality manager shall:

- D. Ensure that the design components comply with the requirements set forth in this Project Requirement;
- E. Attend and participate in community, public and stakeholder meetings to understand the community context;
- F. Work collaboratively with the Project designers to achieve a visually high quality Project; and
- G. Coordinate visual communication methods, as needed, including public involvement activities and meetings.

#### **13.3.2.2. Project Bridge Architectural Design**

The Design-Builder's team shall include an individual with the following qualifications:

- A. A minimum of 10 years of experience as a bridge architectural designer; and
- B. Experience as lead architectural designer for bridges, having collaborated with bridge engineers on at least three major bridge projects of comparable scale, prominence, and complexity.

#### **13.3.2.3. Project Architectural Lighting Designer**

The Design-Builder's team shall include an architectural lighting designer with the following qualifications:

- A. Professional member of the International Association of Lighting Designers; and
- B. Completion of architectural lighting on at least two major built bridge projects.

#### **13.3.2.4. Project Landscape Architect**

The Design-Builder's team shall include an individual with the following qualifications:

- A. A minimum of 10 years of experience as a NYS registered landscape architect; and
- B. Completion of landscape architecture for at least three built highway projects.

#### **13.3.2.5. Graphic Support Team**

The Design-Builder's team shall include staff with experience in relevant graphic communication methods and software programs, including the facility to provide two and three-dimensional CADD drawings, manually-drawn renderings, computer-generated visualizations, computer-generated animations and physical scale models to depict conceptual designs and detailed design solutions.

#### **13.3.3. Visual Quality Management Process**

##### **13.3.3.1. Context Sensitive Solutions**

The Design-Builder shall conduct its visual quality management work consistent with the principles of context-sensitive solutions using inclusive design approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals. Context-sensitive solutions shall be reached through a collaborative, interdisciplinary approach involving all stakeholders.

The Design-Builder shall ensure that the Crossing fits within the unique environmental, social, aesthetic and physical character of the region and the river corridor within which it is located. All environmental, social and physical contextual features, including any unique site specific elements, shall be identified, mapped, analyzed, recorded and incorporated into the design solution and throughout the construction process. The design shall fit the contextual character and unique corridor and site conditions in order that:

- A. The Project satisfies both transportation and community needs, as discussed with all stakeholders;
- B. The Project incorporates safe and innovative technical solutions that add value for both the user and the community; and
- C. The Project shows measurable success in improving the community's environmental, scenic, historic and natural resources, above and beyond mitigation requirements.

#### **13.3.4. Visual Quality Management Plan (VQMP)**

The Design-Builder shall present to the Authority a draft of the Design-Builder's visual quality management plan (VQMP) for discussion, for review and written comment by the Authority. The Design-Builder shall prepare and issue the final VQMP for the Authority's approval. Any subsequent change to the approved VQMP shall be via addendum to the VQMP, for which the Design-Builder shall obtain the Authority's prior written agreement.

The VQMP shall, as a minimum, include:

- A. Process and methods for coordinating and interacting with the Authorities' visual quality panel;
- B. Strategies for identifying, maintaining and enhancing the visual quality of existing conditions;
- C. Identification of schedules for visual quality meetings, project benchmarks and deliverables;
- D. Definition of the responsibilities of the Design-Builder's visual quality manager in overseeing and reviewing overall bridge designs, design details, mock-ups, samples, and submittals; and
- E. Definition of the process of producing and disseminating a record of recommendations and decisions associated with visual quality, throughout the Project.

The Design-Builder shall provide to the Authority 10 hard copies (in ring binders) of the approved VQMP and any approved addenda to the VQMP. One non-copy protected compact disk (CD) shall be provided to the Authority containing a searchable PDF copy (without copy protection or password protection) of the approved VQMP and for each of any approved addenda to the VQMP.

### **13.3.5. Record of Recommendations and Decisions**

The Design-Builder shall compile and maintain a record of visual quality recommendations and decisions of the Authority's visual quality panel and the Design-Builder's visual quality manager. The Design-Builder shall be responsible for ensuring that the record shall:

- A. Be updated throughout the Project as revisions or additions occur, such that it serves as a guide to the Design-Builder throughout the design and construction of the Project with regard to visual quality;
- B. At a minimum, record visual quality recommendations, decisions made, dates of decisions, participating parties, and supporting information for the decisions;
- C. Be revised after each meeting that results in changes in visual quality design elements, including materials, appearance, extent, and installation; and
- D. Be distributed to the Authority's visual quality panel, the Authority-stated representatives, and other relevant members of the Design-Builder's design and construction team.

### **13.3.6. Meetings**

#### **13.3.6.1. General**

The Authority and the Design-Builder shall meet at the request of either party to discuss and resolve matters relating to visual quality. The requesting party shall provide the other with no less than five calendar days prior notice of such meetings. The Design-Builder shall prepare and distribute meeting minutes within five working days after meeting.

#### **13.3.6.2. Visual Quality Kick-off Meeting**

The Design-Builder shall schedule and facilitate a visual quality kick-off meeting to present to the Authority and Authority's visual quality panel the Design-Builder's visual quality proposals including conceptual drawings and visualizations of all visual elements.

#### **13.3.6.3. Visual Quality Progress Meeting**

The Design-Builder shall arrange and attend monthly progress meetings to update, present, and discuss design progress with the Authority's visual quality panel.

#### **13.3.6.4. Other Meetings**

The Design-Builder shall attend meetings at the request of the Authority with community groups and stakeholders to discuss visual quality issues. At such meetings, the Design-Builder shall present visual material and displays to the meeting attendees.

### **13.3.7. General Design Requirements**

#### **13.3.7.1. Principal and Secondary Aesthetic Design Factors**

No single design parameter controls the general physical characteristics of a bridge: an aesthetically attractive bridge is the orchestration of design parameters employed simultaneously to complement each other. The principal or primary aesthetic design factors that shall be considered in the Design-Builder's design shall include:

- A. Superstructure type and shape;
- B. Vertical and horizontal geometry and their relationship to the surrounding environment;
- C. Pier placement and shape;
- D. Abutment placement and shape; and

- E. Interaction between the bridge and its surroundings/environment.

The Design-Builder shall interpret these bridge design parameters as constituting principal aesthetic design factors. In developing its design, the Designer-Builder shall consider visual quality and aesthetic objectives when making its design decisions in relation to the primary aesthetic design parameters, prior to considering other visual treatments.

Secondary aesthetic design factors can be used to accentuate positive qualities established through successful implementation of the principal aesthetic design factors. Texture, color and detailing can be engaged to draw positive attention to the role of structural elements and form. The secondary aesthetic design factors that shall be considered in the Design-Builder's design shall include:

- F. Railing details;
- G. Surface colors and textures;
- H. Architectural embellishments; and
- I. Lighting.

#### **13.3.7.2. General Design Qualities**

The Design-Builder shall be responsible for ensuring that the following general design qualities shall be inherent in the design of the Project:

- A. The Crossing shall be a world-class architectural and engineering design and it shall have a strong visual identity that will positively distinguish the structure as the Tappan Zee Crossing;
- B. All design elements shall complement the appearance of the Main Span structure;
- C. The primary characteristics of form, scale, line and proportion shall be harmonious and inform an elegant and simple design solution;
- D. All structures shall be designed and constructed using the principles of context-sensitive design solutions such that the design minimizes adverse impacts to existing conditions and provides opportunities for enhancing visual quality in the Project corridor;
- E. The design shall account for all vantage points from which the Crossing can be viewed;
- F. Transitions shall be fully resolved to translate smoothly between structures of differing types, dimensions, and designs;
- G. Approach Spans shall be fully resolved to smoothly blend into the adjacent landscape at landings and the design features shall be contextually sensitive to the towns on each side of the Hudson River. All supports shall be similar in dimension and geometry, allowing for differential in height but without steps in profile to accommodate differing element widths and depths; and
- H. Visual elements shall contribute to the actual and perceived safety and security of motorists, bicyclists, and pedestrians using the Crossing.

#### **13.3.7.3. Shared Use Path Facilities**

Bicycle and pedestrian facilities shall be visually integrated into the Crossing Main Span and Approach Span structures. The visual quality aspects of the Design-Builder's design shall be configured to enhance the safety and utility of users including pedestrian and bicyclist rest and viewing position intermittently integrated along the route. See also *Project Requirement 11 - Structures* and *Project Requirement 15 - Lighting*.

#### **13.3.7.4. Traffic Barriers**

Traffic barriers shall be an integral part of the comprehensive architectural vision.

#### **13.3.7.5. Color and Surface Palettes**

The Design-Builder shall use color as an essential Project design element that is integral to other visual quality elements. The Design-Builder shall submit color and surface finish palettes and actual color and surface samples to the Authority and the Visual Quality Panel for approval at least 60 calendar days before beginning the construction of the specific features to which they apply.

#### **13.3.7.6. Signage and Fencing**

Sign structures, barriers, railings and fencing on the Crossing shall be fully integrated into the overall architectural vision of the Crossing. See also *Project Requirement 11 – Structures* and *Project Requirement 27 – Highway Design*.

#### **13.3.7.7. Historic Properties**

The Design-Builder shall be responsible for addressing any visual effects of construction activities, as detailed in *Project Requirement 3 – Environmental Compliance*.

#### **13.3.7.8. Visible Utilities**

For the purposes of this Project Requirement, visible utilities include the following:

- A. All above-ground utilities which, regardless of ownership, are visible to neighbors or travelers, including utility poles, overhead wires and cabinets;
- B. Components of underground utilities that are visible above ground, such as access covers, stormwater grates, and pump houses; and
- C. Underground utilities that may affect the visual quality of the Project by adversely affecting existing vegetation, or by prohibiting or compromising the installation of new vegetation.

The Design-Builder shall design visible utilities and drainage systems to avoid adverse visual impacts. All utilities including drainage systems to the Crossing shall be integrated into the Crossing architecture. See also *Part 4 – Utility Requirements*.

The Design-Builder shall:

- D. Coordinate the location of utility cabinets with other design elements;
- E. Ensure that the color of utility cabinets shall complement other structures within the Project area or to blend with the natural surroundings; and
- F. Place utilities so as to not preclude the placement of trees, shrubs, groundcover vegetation, or other visual quality elements.

### **13.3.8. Landscape Design Requirements**

#### **13.3.8.1. Grading**

The Design-Builder shall design and construct grading so as to establish visual continuity between the topography of the highway corridor and the topography of the adjacent landscape. See also *Project Requirement 12 – Landscape Architecture*.

#### **13.3.8.2. Retaining Structures**

The Design-Builder shall design and construct retaining structures so as to be part of a coherent and cohesive architectural vision that shall be complementary to the Crossing architecture. Retaining walls at landings shall be designed so as to blend into the existing landscape.

The Design-Builder shall ensure that if mechanically stabilized earth (MSE) retaining wall systems are included, the shape, pattern, orientation and texture of the wall face shall relate to the overall architectural vision for the Project.



### 13.3.8.3. Slope Protection

On non-vegetated slopes, the Design-Builder shall be responsible for use of materials, textures, patterns, and colors that will complement adjacent elements and contribute to the overall aesthetic effect of the Project. See also in *Project Requirement 12 – Landscape Architecture*.

### 13.3.9. Lighting Design Requirements

The Design-Builder shall be responsible for the architectural lighting of the Crossing and its approaches and for the general visual quality for all lighting. See *Project Requirement 15 – Lighting* for technical lighting requirements. Any administrative separation within the Project Requirements between architectural lighting and technical lighting shall not imply that these aspects of lighting design and provision shall be considered separately. The Design-Builder shall be responsible for producing an integrated and holistic design for all lighting of the Project. The Design-Builder shall utilize light sources to aesthetic effect in addition to functional tasks.

The Design-Builder shall develop the Project lighting design with reference to the following principles:

- A. The visual effects of daylight and sunlight as well as powered illumination shall be considered in the design;
- B. The structure of the Main Span shall be illuminated such that it shall display a strong visual identity for the Crossing after dark;
- C. Key characteristics of the structural form of the Crossing shall be evident through the architectural lighting, including the deck configuration, bridge soffit and edges, primary structural components and cable planes;
- D. The design may take on differing characteristics and emphasis under illumination and in daylight;
- E. The Design-Builder shall take full account of the surrounding context and viewpoints in determining the architectural lighting strategy;
- F. The relationship between color of structures and lighting shall be fully understood;
- G. Where possible, technical light sources shall be configured and utilized to provide architectural lighting characteristics;
- H. Architectural and technical light sources shall be harmonious;
- I. Technical lighting including roadway and pathway lighting, channel navigation and aircraft lights shall be integrated with the architectural vision of the bridge design;
- J. Illumination of the shared-use path (SUP) shall be designed to enhance security and safety;
- K. Enhanced lighting provision shall be provided at rest and viewing positions for pedestrians and bicyclists, and at pivotal locations, such as on and off ramps, crossovers and stops;
- L. Architectural lighting shall not interfere with the safety and utility of users of the Crossing;
- M. Light pollution shall be minimized and controlled; and
- N. The lighting of the Crossing shall limit the consumption of power to practical minimum levels and optimize maintainability.

### 13.3.10. Architectural Lighting Plan

The Design-Builder shall prepare and submit a comprehensive architectural lighting plan to the Authority and the visual quality panel for approval prior to the commencement of final design of these features. The

architectural lighting plan submission shall also include drawings, visualizations, animations and shall reference physical mock-ups.

### 13.3.11. Visual Quality Design Plans

The Design-Builder shall provide the following visual quality Design Plans, which shall include elevation views, plan views, reflected soffit plans, cross sections and details for each Crossing and bridge structure, wall structure, and other visual quality elements listed below. Drawings shall be appropriately labeled and dimensioned and shall include supporting narrative descriptions. Exhibits or drawings developed for other disciplines (e.g. structures) can be used to meet requirements.

- A. **Substructure:** For each substructure type, provide drawings showing the footing footprint, number of columns, column shape and orientation, details of architectural shapes, tapers and finishes, approximate dimensions, approximate minimum wall thickness, and any unique details.
- B. **Superstructure:** Provide visual simulations and drawings from schematic through conceptual to final design that show overall aesthetic character and visual quality of the bridge design. Provide accompanying drawings showing the cross section of each superstructure type or sub-type including locations and dimensions of lanes, barriers, shoulders, path(s), railings, fences, primary structural elements, light fixtures, deck joints, and utilities. Provide drawings showing the elevation and cross-section of primary structural elements for each superstructure type or sub-type or condition including the deck, longitudinal and transverse continuous and intermittent structural components, stay cables and bearings. These can be included in other views, such as the overall bridge cross-section or elevation, as long as the scale allows configuration of elements to be understood.
- C. **Crossing Main Span:** Provide drawings showing the configuration and details of the primary structural members, including height, shape, tapers, approximate dimensions, cross sections, orientation, and architectural details.
- D. **Cables:** Provide drawings showing anchor locations, details of anchorages, guide pipes, and cable arrangement, including number and spacing.
- E. **Transitions:** Provide drawings showing the configuration and details of the transition between structures of differing types, dimensions and designs including the transition between Main Span and typical Approach Span superstructures.
- F. **Retaining Walls:** Provide drawings for earth retaining, support, and special-purpose walls. Include elevation and plan views showing the extent of the Work, conceptual details for connections, transitions, and architectural surface treatments.
- G. **Noise Barriers:** Provide drawings for each noise wall including elevation and plan views showing the extent of the work including architectural surface treatments with multiple views from various vantage points on the private property side of the barriers.
- H. **Embankment Grading:** Provide plan, elevations, and section drawings for embankments and their relationship to retaining walls. Include elevation and plan views showing the extent of the Work.
- I. **SUP:** Provide drawings showing the bikeway and pedestrian sidewalk facilities. Include plan and profile drawings, various cross-sections proposed, ornamental railing/barrier/fencing details, transition area layouts, road crossing layout plan, terminations, notification/informational signing concepts, and preliminary surface and structural section designs.
- J. **Raymond Esposito Trail:** Provide drawings showing fencing for approximately 0.5 miles each side of the tie-in to the trail at the South Nyack Village Hall (see *Project Requirement 12 – Landscape Architecture*).
- K. **Grading:** Provide plans or renderings as needed to convey the visual quality design approach related to grading within the construction limits.

- L. **Slope Protection:** Provide plans, sections, and/or renderings as needed to convey the visual quality design approach for slope protection. The aesthetic design of these elements shall also comply with *Project Requirement 12 – Landscape Architecture*.
- M. **Lighting:** Provide plans, sections, elevations, details, and renderings of architectural lighting for the bridge, inclusive of Main Span structure, cables, deck, under-structure, and piers.

### **13.3.12. Visualizations and Animations**

The Design-Builder shall be responsible for producing and providing all visual simulations, animated simulations and technical media as determined necessary by Authority for the public involvement process in order to facilitate public understanding, and to communicate design solutions and associated construction. See also *Project Requirement 8 – Public Involvement*.

#### **13.3.12.1. Visual Simulations**

The Design-Builder shall be responsible for producing and providing computer-generated geographically and photographically accurate visual simulations from a minimum of 30 significant point-of-view locations. These locations shall be identified by the Design-Builder during the course of design development, visual impact assessment, aesthetics analysis and construction build-out. All visual simulations shall be prepared by the Design-Builder from accurate three-dimensional models and shall be high resolution TIFF format reproducible to poster size (30 inch x 40 inch minimum) print medium as necessary. Visual simulations shall accurately depict design features such as overall and detailed form, scale, proportion, perspective, lighting, reflectivity, shape, dimensioning, color, materials and textures. The Design-Builder shall be responsible for producing day, evening and nighttime visual simulations, which shall include Project design features necessary for stakeholder and public involvement review and, where appropriate, for decision making requirements. The visual simulations may include but not be limited to bird's eye perspectives from various locations, drivers' perspectives from each travel direction and water body perspectives from key upstream and downstream viewer locations.

Photo-simulations shall include the following formats, consistent with all specifications and terminology identified in the AASHTO *Visualization in Transportation Guide*:

- A. Uncompressed TIFF file format;
- B. JPEG files will not be acceptable other than for use in PowerPoint® presentations;
- C. Searchable PDF files;
- D. Hard copy prints in sizes between 11 inch x 17 inch to 30 inch x 40 inch as appropriate; and
- E. Mounted foam-boards (22 inch x 34 inch) with one printed and mounted copy per board of each identified view, on photo-quality paper.

Visual simulations may include any of the following;

- F. Aerial photographs;
- G. Artist's renderings;
- H. Composite image simulation;
- I. Computer generated images from three dimensional modeling of synthetic or virtual environments; and
- J. Photo simulations or photo composites.

#### **13.3.12.2. Computer-generated Animated Simulations and Scripts**

The Design-Builder shall provide computer-generated animated simulations to accurately depict both overall and detailed form, scale, proportion, perspective, lighting, reflectivity, shape, dimensioning, color, materials

and textures of all design features as well as the motion and operation of transportation modes and traffic volumes at peak hour usage at design speeds. Day, evening and nighttime animated simulations shall include Project design features necessary for stakeholder and public involvement review and, where appropriate, decision making requirements. The simulations shall include but not be limited to bird's eye perspectives from various identified locations, driver perspectives from each travel direction and water body perspectives from key upstream and downstream viewer locations. Animated simulations shall include: pedestrian walk-throughs; drive-throughs from drivers' perspectives in each travel direction; fly-throughs from various bird's-eye perspectives; and sail-throughs from the perspective of vessels on the Hudson River, as necessary to address design, construction phasing, transportation operation, public involvement or stakeholder issues. The Design-Builder shall provide to the Authority sample animated simulations to illustrate the quality and visual fidelity of the deliverables for review and written comment, prior to developing finalized simulations.

The Design-Builder shall be responsible for close liaison with Authority in the development of any scripts to accompany computer-generated animated simulations.

#### **13.3.12.3. Computer-generated Animated Simulations Deliverables**

The Design-Builder shall provide computer-generated animated simulations for various digital medium formats such as DVD, video and webcast video streaming over the internet. All versions shall be formatted appropriately to operate most effectively and efficiently while maintaining best image fidelity to accurately depict overall and detailed form, scale, proportion, perspective, lighting, reflectivity, shape dimensioning, color, materials and textures, of all design features as well as the motion and operation of transportation modes and traffic volumes at peak hour usage at design speeds. See also *Project Requirement 8 – Public Involvement*.

### **13.3.13. Models, Visual Mock-ups and Samples**

#### **13.3.13.1. Models**

The Design-Builder shall be responsible for providing a portable physical model of the Crossing, as needed, for updating these models as design refinements are made. The model(s) shall be constructed of durable materials that are sufficiently lightweight and modular to transport easily. The model of the Crossing shall depict the Main Span, Approach Span, transitions and landings within the Project Limits. Models shall be at a scale between 1:360 and 1:480.

#### **13.3.13.2. Visual Quality Mock-ups and Samples**

The Design-Builder shall be responsible for developing and forming mock-ups and for providing samples of relevant visual quality features, as listed in this Section 13.3.13.2. All mock-ups and/or samples that have been approved in writing by the Authority shall become the reference standard(s). The Design-Builder shall be responsible for ensuring that reference standard(s) shall be maintained undisturbed until Final Acceptance.

The Design-Builder shall provide mock-ups and/or samples for the following items:

- A. **Barriers:** The Design-Builder shall construct a full size 8-foot-long mock-up for each type of custom barrier.
- B. **Retaining structures:** The Design-Builder shall construct an 8-foot by 8-foot mock-up for each type of retaining wall surface depicting surface relief, texture, finish, and color.
- C. **Bicycle fencing / acoustic barriers:** The Design-Builder shall provide full-size mockups of the bicycle fencing at least two fence panels long.
- D. **Lighting:** The Design-Builder shall supply a sample of each light fixture that is not a NYSDOT standard fixture. For architectural lighting of the Crossing, after installation the Design-Builder shall provide scheduled test events for the Authority's visual quality panel to review fixture aiming and shall revise the aiming as necessary.

### **13.4. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 13.4-1.

**Table 13.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>	<b>Status of response to be sought from Authority</b>
	<b>Hardcopy</b>	<b>Electronic</b>			
Visual quality management plan	10	1	At Design Review	13.3.4	For Approval
Record of recommendations and decisions	10	1	Within 10 days after each visual quality progress meeting	13.3.6.3 / 13.3.5	For review and written comment
Architectural lighting plan	5	1	At Design Review	13.3.10	For Approval
Visual quality Design Plans	5	1	At Design Review	13.3.11	For review and written comment
Visualizations and animations	see Section 13.3.12		As necessary	13.3.12	For review and written comment
Models and mock-ups	N/A		At Design Review	13.3.13	For review and written comment



## **SECTION 14. SIGNAGE, PAVEMENT MARKING AND SIGNALS**

### **14.1. Scope**

The Design-Builder shall be responsible for all Work necessary to provide the permanent fixed signing and permanent pavement marking required for the Project. The Design-Builder shall be responsible for identifying detailing, designing and installing all permanent sign panels. The Authority will fabricate permanent sign panels as designed, detailed and ordered by the Design-Builder. The Design-Builder shall be responsible for the scheduling and delivery of all permanent sign panel orders. The Design-Builder shall provide all other signing and pavement marking materials and shall install all components necessary for a complete and functional system meeting 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 to the east and west of the Project Limits;
- D. Is integrated into the intelligent transportation system (ITS) and tolling system retained or incorporated into the Project;
- E. Meets the operational needs of the ITS and toll plaza;
- F. Sign support systems satisfy the aesthetic goals and principles for the Project, to the extent permitted by the governing standards.

The Design-Builder shall be responsible for preparing and implementing the necessary engineering studies and applicable design reports to justify all signing and pavement marking components to be incorporated into the Project.

The Design-Builder shall coordinate with the Authority and affected local agencies to ensure the appropriate design methods, procedures, submittals, plan preparation, analysis methodology, review and comment processes, approval procedures, specifications and construction requirements are met.

### **14.2. Standards and References**

The Design-Builder shall perform the signage, pavement marking and signals activities in accordance with the Standards listed in Section 14.2.1 herein, unless otherwise stipulated in this Project Requirement.

#### **14.2.1. Standards**

- A. NYSDOT New York State Supplement to the Manual of Uniform Traffic Control Devices for Streets and Highways
- B. FHWA Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
- C. FHWA Standard Highway Signs and Markings (SHSM) Book
- D. NYSTA US Customary Standard Sheets
- E. NYSTA Thruway Structures Design Manual
- F. NYSTA Design Reference Manual
- G. NYSDOT Reference Marker Manual
- H. NYSDOT CADD Standards and Procedures Manual

- I. NYSDOT Approved Materials List
- J. NYSDOT Materials Details Sheets
- K. NYSDOT Overhead Sign Structures Design Manual
- L. AASHTO Guide for the Design of Park and Ride Facilities

#### **14.2.2. References**

- A. AASHTO A Policy on Geometric Design of Highways and Streets
- B. AASHTO Guide for the Development of Bicycle Facilities
- C. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
- D. AASHTO Roadside Design Guide
- E. NYSDOT Highway Design Manual
- F. TRB Transportation Research Board - Highway Capacity Manual

### **14.3. Requirements**

#### **14.3.1. Design Requirements**

The Design-Builder shall be responsible for the production on an inventory of all existing signs and pavement markings within the Project Limits and also any existing signs and pavement markings located beyond the Project Limits that may be impacted by the Project.

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

- A. Provide for all components as called for in Section 14.3.1 herein;
- B. Encompass the replacement of all existing signs with new signs on the Authority's system and those impacted on the state/local system within the Project Limits;
- C. Provide for modification of any signs outside the Project Limits that are rendered inaccurate, ineffective, confusing, or unnecessary by the Project. Such modifications shall include the addition, alteration, removal, and/or replacement of signs and appurtenances within existing Right-of-Way controlled by other agencies. The Design-Builder shall coordinate with the affected agency for signing work outside the Project Limits, and shall conform to the individual standards of each agency in designing and implementing new signs;
- D. Include all necessary traffic control devices for all highways affected by the Project;
- E. Provide signing for bicycle and pedestrian facilities within the Project Limits;
- F. Locate signs in accordance with the MUTCD and any specific NYS supplement;
- G. Provide new overhead sign structures, with walkways, designed for fully loaded conditions that meet the minimum vertical clearance requirements over the entire width of the roadway lanes and shoulders;
- H. Provide signs with high reflectivity characters such as to not warrant sign lighting;
- I. Provide mainline mile markers consistent with Authority practice, spaced every 0.10 mile;
- J. Provide signage and striping related to all other facilities and buildings included within the Project or impacted by construction; and
- K. Utilize Authority standards, which exceed minimum guidance in the MUTCD, to provide system conformity when installing tolling and bridge related signage and striping.

The Design-BUILDER shall not place overhead sign structures on the Main Span or in the vicinity of cable stays (if used).

The Design-BUILDER shall not attach signs to corridor overhead bridges unless no other viable alternative exists, nor without the written prior consent of the Authority.

The Design-BUILDER may present the respective signing and pavement marking elements on separate drawings, but shall demonstrate that the proposed signs and pavement markings work in unison in the manner called for in this Project Requirements and the governing standards.

The Design-BUILDER shall prepare Design Plans that shall at a minimum cover the following signing aspects:

- L. Positionally accurate sign locations;
- M. Panel sizes and legends;
- N. ITS devices, including variable message sign locations, lane-use signals and cameras, as called for by *Project Requirement 16 – Intelligent Transportation System*;
- O. Types of sign supports; and
- P. Sign structure elevations depicting panel placement and horizontal and vertical clearances.

At minimum, the Design Plans shall cover the following pavement marking aspects:

- Q. A plan view showing the proposed pavement markings;
- R. Existing pavement markings for a minimum of 500 feet past the Project Limits, with the transitions and tapers appropriate for the design speed. Existing markings shall be graphically distinguished from proposed markings, for example by using a lighter-weight drawing line than for the proposed markings;
- S. Existing pavement markings to be removed and existing pavement markings to remain, identified by material type, color, and width, dimensioned across the roadway;
- T. New pavement markings identified by material type, color, line width, dimensioned across the roadway; and
- U. Location by station or dimension lines of all proposed pavement arrows, symbols, legends, crosswalks, and other pertinent features.

#### **14.3.2. Software**

The Design-BUILDER shall obtain the Authority's consent on the use of software programs and techniques. The use of proven and commonly available software familiar to the Authority and to the Authority's sign fabrication shop is required.

#### **14.3.3. Meetings and Records**

The Authority and the Design-BUILDER shall meet at the request of any of the parties, as necessary, to discuss and resolve matters relating to the signing and pavement marking Work during the design and construction stages.

The Design-BUILDER shall schedule one or more concept meeting(s) to present to the Authority the inventory of existing signing and pavement markings for the Project and the proposed permanent signing and pavement markings.

The Design-BUILDER shall document the resolutions of issues in a correspondence file, including meeting minutes and memoranda for the record. The Design-BUILDER shall document liaison with other agencies, including any permit requirements and contacts with the permitting agencies.

### 14.3.4. Construction Requirements

#### 14.3.4.1. Signs

The Design-Builder shall not reuse any existing sign materials as part of the permanent signing installation and shall be responsible for the disposal of all removed signing materials and structures from the Project.

The Design-Builder shall be responsible for submitting to the Authority the finalized signage design data sheets for required sign panels. The finalized sign pane design data sheets shall be used by the Authority to place the order for fabrication of the sign panels at the Authority's sign shop (located in Albany, NY). The sign panel fabrication costs shall not be charged to the Design-Builder by the Authority. The Design-Builder shall submit the finalized sign panel design data sheets to the Authority at least 90 days in advance of the shipping date for the sign panels required by the Design-Builder. The format and content of the finalized sign panel data sheets shall be in accordance with standards in NYSDOT *Highway Design Manual, Chapter 21*. The Design-Builder shall be responsible for all costs and arrangements related to shipping of completed sign panels from the Authority's sign shop. Shipping shall occur during normal business hours within 15 business days from notification of completion of order. The Design-Builder shall be responsible for storage and care of sign panels until final placement, and in accordance with other Contract provisions for the remaining duration of the Contract.

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

#### 14.3.4.2. Pavement Markings

Pavement markings shall be uniform in type, color, dimensions, location, and reflectivity.

All linear roadway and SUP permanent pavement markings shall be installed in accordance with the Authority's specification for highly reflectorized triple drop epoxy pavement stripes.

#### 14.3.4.3. Overhead Sign Structures

If the placement of the support post for signage requires non-standard roadway design features, the Design-Builder shall obtain a design exception from the Authority.

All sign supports shall include breakaway devices, unless protected by concrete barrier.

The Design-Builder shall not attach signs to any overhead bridge unless no other viable alternative exists, nor without the written consent of the Authority.

### 14.4. Deliverables

At a minimum, the deliverables shall include the items listed in Table 14.4-1 for the Authority's consultation and written comment, except that the finalized signage design sheets shall be for action by the Authority.

**Table 14.4-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Inventory of existing signs and markings	5	1	90 days after NTP	14.3.1
Meeting minutes and records	5	1	Not more than 5 days after each meeting	14.3.3
Finalized sign panel design data sheets	3	1	At least 90 days before required shipping date	14.3.4.1
Design Plans	5	1	At Design Review	14.3.1

## SECTION 15. LIGHTING

### 15.1. Scope

The Design-Builder shall conduct all Work necessary to provide all lighting located inside the Project Limits. This includes the transportation related permanent lighting of both the Crossing and its approaches. The Design-Builder shall provide all functional and aesthetic lighting components required for the Project. This also includes providing permanent exterior lighting in all areas and facilities that are located within the Project Limits, and beyond or under the roadway, Crossing and approaches. Components include the exterior lighting of buildings, parking lots, driveways, the shared use path (SUP), storage areas, docks, toll plaza, landscaping, navigational support, emergency lighting and all associated signage. The Design-Builder shall also provide lighting associated with temporary works for the usage and construction of the Project.

The Design-Builder shall provide all required interior lighting of all replaced or renovated buildings within the Project. These lighting systems shall conform to the New York State Building Code and the New York State Energy Conservation Construction Code.

### 15.2. Standards and References

The Design-Builder shall perform the lighting activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### 15.2.1. Standards

- A. ANSI/IES ANSI Approved Recommended Practice for Roadway Lighting, RP-8-00
- B. ANSI/IES ANSI Approved Recommended Practice for Roadway Sign Lighting, RP-19-01
- C. ANSI/IES American National Standard Practice for Office Lighting, RP-1-04
- D. ANSI/IES Tunnel Lighting RP-22-11
- E. ASHRAE ANSI/ASHRAE/IESNA Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- F. CIE Division 4 Visibility Design for Roadway Lighting, International Commission on Illumination
- G. FAA Advisory Circular 70/7460-1K, Obstruction Marking and Lighting,
- H. FHWA Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
- I. FHWA Standard Highway Signs and Markings (SHSM) Book
- J. IES Guideline on Security Lighting for People, Property, and Public Spaces, G-1-03
- K. IES Recommended Lighting for Walkways and Class 1 Bikeways, DG-5-94
- L. IES Lighting for Parking Facilities RP-20-98
- M. NFPA NFPA 70 – National Electrical Code (NEC)
- N. NYSDOT Applicable Engineering Bulletins and Instructions
- O. NYSDOT Approved Materials List
- P. NYSDOT CADD Standards and Procedures Manual
- Q. NYSDOT Materials Details Sheets



- R. NYSDOT New York State Highway Design Manual (HDM), including but not limited to Chapter 12 Highway Lighting
- S. NYSDOT Overhead Sign Structures Design Manual
- T. NYSDOT Policy on Highway Lighting
- U. NYSDOT US Customary Standard Sheets
- V. NYSTA Thruway Structures Design Manual
- W. NYSTA US Customary Standard Sheets
- X. USCG 33 CFR 118- Bridge Lighting and Other Signals
- Y. USDOT ADA Standards for Transportation Facilities
- Z. U.S. Department of Justice ADA Standards for Accessible Design
- AA. Underwriters' Laboratories Emergency Lighting and Power Equipment UL 924.

### **15.2.2. References**

- A. AASHTO A Policy on Geometric Design of Highways and Streets
- B. AASHTO Guide for the Development of Bicycle Facilities
- C. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals
- D. AASHTO Roadside Design Guide
- E. IES Advanced Energy Design Guide Small Warehouses and Self-Storage Buildings AEDG-4-08
- F. IES Guideline for the Application of General Illumination ("White") Light-Emitting Diode (LED) Technologies G-2-10
- G. IES Interior Lighting for Designers PB-27-03
- H. IES Light + Design - A Guide to Designing Quality Lighting for People and Buildings DG-18-08
- I. IES Lighting for Exterior Environments RP-33-99
- J. IES Lighting Handbook
- K. IES The Commissioning Process Applied to Lighting and Control Systems DG-29-11
- L. NFPA NFPA 70E Standard for Electrical Safety in the Workplace
- M. NFPA NFPA 780 Standard for the Installation of Lightning Protection Systems
- N. NCHRP National Cooperative Highway Research Program, Toll Plaza Design NCHRP 240
- O. TRB Transportation Research Board - Highway Capacity Manual

## **15.3. Requirements**

### **15.3.1. Design-Build Team Requirements**

The Design-Builder shall employ a professional lighting designer(s) who is a professional member (minimum) of the International Association of Lighting Designers at the professional member level, with a minimum of two successful bridge lighting experiences, and a minimum of 10 years of experience in design.

Said individual or firm shall also employ a lighting designer / lighting engineer who is lighting certified (LC) by the National Council on Qualifications for the Lighting Profession, with a minimum of five years of site and roadway lighting design experience. These skills shall be integrated to provide a unified visual concept combining the aesthetics and technical requirements, along with electrical and structural engineering.

### **15.3.2. General Requirements**

#### **15.3.2.1. General**

The Design-Builder shall be responsible for design and implementation of lighting for the Project new, functioning luminaires, controls, poles, mounting, wiring, conduits, containment, procurement, installation, programming, focusing, programming of scenes and effects, commissioning, and as-built information necessary for delivering a complete and functional system. The Design-Builder shall be responsible for ensuring that the system meets the following requirements:

- A. Provides for sufficient quality illumination for orderly and predictable movement of all traffic;
- B. Provides sufficient illumination for appropriate visibility levels (VL) through small target visibility (STV) measurement criteria, or further advanced method applicable by ANSI/IESNA;
- C. Provides such illumination during inclement weather and darkness for glare-free and ease of viewing to users of the Crossing;
- D. Provides illumination such that the road surface illumination meets or exceeds the uniformity and the illuminance and/or luminance criteria during darkness;
- E. Utilizes energy efficient and long-life, low maintenance lighting technologies that have been reviewed and accepted by the Authority;
- F. Is fully and seamlessly integrated into the existing lighting elements to east and west of the Project;
- G. Is fully and seamlessly integrated into the electrical system to be incorporated into the Project, including the emergency power system (see *Project Requirement 9 – Utilities*);
- H. Meets the aesthetic needs of creating an internationally recognizable and iconically-lit structure during darkness. This includes lighting multiple elements of the Crossing for a complete composition that spans the river, including piers, cables, necklace, towers and horizontal span elements;
- I. Provides a modern and iconic lighting scheme during darkness;
- J. Integrates other components that require lighting, including signage, interchanges, toll plaza and associated structures;
- K. Meets U.S. Coast Guard navigational requirements for the river including the shipping channel;
- L. Provides aviation warning to meet Federal Aviation Administration (FAA) requirements during daylight and darkness;
- M. Provides betterment to or minimizes adverse impact on wildlife through lighting during darkness;
- N. Utilizes a photo-control switch system that automatically activates lighting before dusk and deactivates the system past dawn. In addition, the use of independent light switching shall be considered, in order to reduce power consumption and control wiring;
- O. Provides lighting of all emergency routes and exits, which shall also be connected to the emergency power system and local batteries;

- P. Provides lighting of all maintenance access routes and chambers, which shall also be connected to the emergency power system and local batteries;
- Q. Provides lighting for all interior spaces to meet Illuminating Engineering Society (IES) recommended luminance levels and design metrics for quality visual environment unless otherwise specified in this Project Requirement;
- R. Except for lamps solely to be used for aesthetic purposes, all lighting circuits shall automatically switch to emergency power in the event of a utility power outage;
- S. Provides for protection against damage by lightning strikes; and
- T. Complies with all applicable regulations of the U.S. Army Corps of Engineers.

The Design-Builder shall prepare the necessary aesthetic, design and engineering studies and applicable design reports to describe and justify all lighting components to be incorporated into the Project. This includes all bridge, exterior and interior spaces.

The Design-Builder shall coordinate with the Authority and affected local agencies to ensure the appropriate design methods, procedures, submittals, plan preparation, analysis methodology, review and comment processes, approval procedures, specifications and construction requirements are met.

#### **15.3.2.2. Power Supply Requirements**

Electrical power supply requirements, including emergency power generation required for the lighting installation is further defined in *Project Requirements 9 – Utilities* . For reference, the lighting installation shall:

- A. Meet all requirements of NFPA 70 – National Electrical Code (NEC);
- B. Meet all requirements of NFPA 110 – Standard for Emergency and Standby Power Systems;
- C. All outdoor electrical enclosures shall be rated NEMA 4X or a higher degree of protection; and
- D. Meet all requirements of applicable IEEE and ANSI power engineering standards.

#### **15.3.2.3. Roadway Signage**

The requirements for roadway signage are further defined in *Project Requirement 14 – Signage, Pavement Marking and Signals*. The lighting installation for roadway signage shall:

- A. Meet all requirements of ANSI *Approved Recommended Practice for Roadway Sign Lighting* - IES RP-19-01; and
- B. All signage lighting shall be powered by both the normal and emergency electrical systems.

#### **15.3.2.4. Removal of Existing Equipment**

Removal of existing equipment is further addressed by *Project Requirement 25 – Demolition* . The Design-Builder shall be responsible for ensuring that:

- A. All disconnected luminaires, light poles, necklace lamps, and associated equipment in working condition shall be turned over to the Authority for storage and re-use at other locations;
- B. All wiring, conduits, switches, electrical junction boxes, panels, cabinets, enclosures, and other electrical equipment in working condition shall be turned over to the Authority for storage and re-use at other locations.

#### **15.3.2.5. SUP Lighting**

The requirements for the SUP both on and off the Crossing are further defined in *Project Requirement 21 – Shared Use Path*. The Design-Builder shall ensure that the lighting installation at the SUP shall:

- A. Include temporary and permanent lighting on the entire length of the SUP, both on and off the Crossing;
- B. SUP portion on the Crossing : the permanent lighting shall be installed on the roadway light poles; do not install dedicated SUP light poles until the SUP leaves the Crossing;
- C. SUP portion off the Crossing : the permanent lighting shall be designed according to the IES *DG-5-94 Recommended Lighting for Walkways and Class I Bikeways* . All permanent luminaires shall be LED and shall be fully shielded from off-site properties. Such shielding shall obstruct a line of sight to the lamp with an opaque material when viewed from the property line. In addition, all permanent outdoor lighting shall use full-cutoff luminaires approved by the International Dark-Sky Association (IDA) to eliminate night sky light pollution; and
- D. All SUP lighting shall be powered by both the normal and emergency electrical systems.

#### **15.3.2.6. Other Facilities and Buildings**

The requirements for all other facilities in the Crossing complex (including buildings, parking lots, driveways, toll plaza, storage areas) are further defined elsewhere in *Part 3 – Project Requirements* . For reference, the lighting installation relating to these elements shall:

- A. Provide both temporary and permanent outdoor lighting at all facilities. All exterior permanent luminaires shall be LED;
- B. Light fixtures for area lighting shall be fully shielded from off-site properties. Such shielding shall obstruct a line of sight to the lamp with an opaque material when viewed from the ROW Limits. In addition, all permanent outdoor lighting at facilities shall use full-cutoff luminaires approved by the IDA to eliminate night sky light pollution. This does not pertain to the aesthetic lighting of the Crossing;
- C. Facility lighting shall include means of egress illumination and associated emergency power, in accordance with the New York State Building Code;
- D. Facility lighting shall include illuminated exit signs inside buildings, in accordance with the New York State Building Code; and
- E. Both indoor and outdoor facility lighting shall include emergency lighting that is powered by an emergency electrical system or other approved means.

#### **15.3.3. Design Requirements**

##### **15.3.3.1. General**

The Design-Builder shall be responsible for the production of an inventory including a map and list, of as-built locations of all existing lighting, illuminated signals and related cabling and controls within the Project Limits and such features located beyond the Project Limits that may be impacted by the Project.

The Designer-Builder shall coordinate all aspects of lighting (functional and aesthetics) for all Project Requirements and for the Standards.

The Design-Builder shall develop an integrated visual concept describing the lighting, including roadway elements as well as the aesthetic components of the Crossing. This shall include a dramatic night-time image that develops an iconic lighting scheme and incorporates the functional needs of the Crossing while accentuating the Crossing architecture. The concept shall include bridge masts, cables, deck sides, edges, pedestrian zone, aviation, navigation, and related traffic signals. The night-time lighting composition of the Crossing shall extend past the Main Span and Approach Spans and shall be inclusive of landings on the east and west sides to the adjacent ramps.

The Design-Builder shall be responsible for ensuring that the lighting system shall be designed for maximum durability for the temperate climate and harsh marine environment existing at the Project Site.

**15.3.3.2. Lighting Visual Concept & Lighting Plan and Design Plans**

The Design-Builder shall develop a lighting visual concept and lighting plan for the Project that shall:

- A. Provide for all components as called for in this Project Requirement;
- B. Provide a complete visual representation and knowledge of the lighting design;
- C. Develop the design components on the micro-level for non-vehicular users of the Crossing, and on a macro-level scale from the east and west approaches, as well as further afield views for describing the interplay of the lighting of the Project. There shall be a minimum of four night-time vantage points represented with presentation quality graphics;
- D. Present photometric diagrams rendering the predicted maintained lighting levels of the proposed lighting fixtures, both on the roadway and on the SUP;
- E. Provide a minimum of three computer animations to describe the dynamic lighting features as a part of the aesthetic lighting components of the Project; and
- F. Present calculations to verify that the proposed lighting satisfies the design criteria.

The Design-Builder shall prepare Design Plans that shall at a minimum include the following:

- G. Location plan showing the locations of proposed features and of existing elements, such as:
  - 1. Edges of pavement, shoulder and curb;
  - 2. Luminaire supports and spacing; and
  - 3. All other lighting facilities (including conduit, wiring, jacking, pole numbering, controller, power supply, pullboxes).
- H. Table of luminaire installation: either on a plan sheet or on a separate sheet specifying at the minimum the details associated with each luminaire installation:
  - 1. Luminaire number (corresponding to number on plan);
  - 2. Location by station;
  - 3. Lateral offset of luminaire support (pole or other), indicating what control line is used to measure offset;
  - 4. Base or foundation elevation;
  - 5. Base or foundation type (include reference to details);
  - 6. Pole type (include reference to pole details); and
  - 7. Luminaire mounting height.
- I. Luminaire specifications and technical data including:
  - 1. Photorealistic image of the luminaire;
  - 2. Photometric data conforming to IES standards;
  - 3. Interpenetration protection (IP) rating;
  - 4. Material used for luminaire construction;
  - 5. Mounting details and options;
  - 6. Ballast / driver / transformers information;
  - 7. Voltages;
  - 8. Wattage;
  - 9. Methods of control; and



- 10. Any modifications and installation details not covered elsewhere.
- J. Light pole details;
- K. Luminaire aiming and focus charts / plans;
- L. Luminaire lighting control operation narrative, along with detailed control schedule identifying loads, voltages, groupings and channels numbers;
- M. Wiring and conduits, mounting, seismic design criteria and suitability of proposed equipment;
- N. Lighting controls information including schedule, narrative, sequence of operation, channel hookup; and
- O. If applicable, show limits of clearing and grubbing existing trees in the path of light and in the vicinity of the corresponding luminaire(s).

#### **15.3.3.3. Interior Lighting**

The Design-Builder shall present to the Authority proposed lighting technology utilizing fluorescent and LED fixtures for interior lighting. For interior lighting, the Design-Builder shall:

- A. Give appropriate consideration to the use of direct lighting and indirect light, up lighting, down lighting and wall- and floor-mounted lighting;
- B. Design and provide an energy-efficient lighting system;
- C. Provide manual, automatic or programmable lighting controls. Control of lighting for enclosed spaces can include switches, occupancy sensors and light-level sensors;
- D. Provide a system that utilizes lighting fixtures and fittings of regular commercial design, and which minimizes the number of fixture types and lamp types used;
- E. Design a lighting system that is readily accessible for servicing;
- F. Provide offices with fluorescent lighting and take due account of best practice in relation to glare, contrast and visual comfort;
- G. Provide conference/training/meeting rooms with dimmable lighting control;
- H. Provide fluorescent lighting in equipment rooms, interior storage spaces and closets;
- I. Provide lighting in workshops, supply rooms and warehouse-type storage areas with ceilings higher than 16 feet using fluorescent high-bay luminaires; and
- J. Provide LED type "Exit" signs that meet the requirements of the National Fire Protection Association (NFPA) 1: Fire Code.

#### **15.3.3.4. Exterior Lighting**

##### **15.3.3.4.1. General**

The Design-Builder shall present to the Authority proposed lighting technology utilizing LED fixtures for all exterior lighting, including:

- A. Luminaire technology with a minimum 50,000 hours of maintenance-free operation attaining 70% of the initial lumen output (denoted L70), in the range -40 °C to +40°C ambient temperature;
- B. LED luminaires shall meet IES-LM-79 and IES-LM-80;
- C. The LED luminaire design shall include a voltage surge protection module;
- D. LED lifespan data analysis, specific to the die temperature during the lifespan test period;

- E. Lighting control for dynamic lighting, dimming, photo-responsive and computerized mesh networks; and
- F. Load-shedding and energy monitoring.

The Design-Builder shall:

- G. Provide luminaires that are compatible and relate to the architectural character of the Project including new and existing buildings;
- H. Design poles and luminaires to be of an architecturally compatible style with structures and lighting on adjacent properties. The Authority's preferred material for permanent light poles is aluminum;
- I. Provide poles and fixtures that are visually compatible with all other fixtures on site, for a cohesive visual appearance;
- J. Where needed, illuminate all intersections with perimeter public roads with similar poles and fixtures used internal to the Project Limits; and
- K. Unless otherwise required (for example for aviation lighting), all permanent luminaires shall have full cut-off optics.

The Design-Builder shall be responsible for ensuring that the following specified illumination levels are provided:

- L. At the toll plaza under the canopy: 5 foot-candles;
- M. On the SUP: 2 foot-candles horizontal and 1 foot-candle vertical.

The Design-Builder shall review the luminaire attachments and performance of all lighting with the Authority. This review shall include access, maintenance, and suitability of placement of the luminaires and related support and wiring.

#### **15.3.3.4.2. Parking lots**

For parking lot areas, the Design-Builder shall, at a minimum, provide:

- A. Lighting that is unobtrusive and provides safe light for orderly function;
- B. Parking lot lighting fixtures that are similar in design for all surface parking areas;
- C. Provide LED lighting with a concealed light source of the 'full cutoff' IES type to prevent glare and light trespass onto adjacent buildings and sites;
- D. Motion sensor control for lighting not warranted after regular business hours;
- E. Separate, pedestrian-scale lighting for all pedestrian ways through parking lots;
- F. Poles in medians wherever possible with a maximum base height of 2 feet;
- G. Maximum 400-watt fixtures on light poles; and
- H. Luminaire mounting heights shall accommodate clear passage of the tallest Authority maintenance truck (typically this is a bucket truck).

#### **15.3.3.4.3. Security Lighting**

In relation to security lighting, the Design-Builder shall, at a minimum, conform to the following requirements:

- A. The Design-Builder shall design and provide exterior security lighting in accordance with the *IES Guideline on Security Lighting for People, Property, and Public Spaces*, IES G-1-03;

- B. The Design-BUILDER shall specify lighting levels that are adequate for visibility, but not overly bright. All building entrances shall be well lit;
- C. Security lighting may be necessary, but it shall not negatively impact the site and building architecture or adjacent parcels;
- D. No light source (lamp) shall be directly visible from adjacent parcels; and
- E. Provide only as much illumination as necessary to provide safety and security of the area.

#### **15.3.3.4.4. Landscape and Decorative Lighting**

In relation to landscape and decorative lighting, the Design-BUILDER shall, at a minimum, conform to the following requirements:

- A. Landscape lighting shall enhance and complement, but not overpower landscape materials;
- B. Landscape lighting shall be appropriate for all seasons of the year and seasonal changes of the landscape;
- C. Fixtures shall be concealed where possible (i.e., in trees, by landscape, behind rocks); glare shall be controlled; and extreme bright spots on the landscape shall be avoided;
- D. Use of decorative light fixtures, which shall be appropriately shielded, to provide visual interest is permitted; and special lighting that accents building features and creates visual interest is permitted, provided that design continuity is maintained among buildings;
- E. Mounting of light fixtures directly on structures is permitted when utilized to enhance specific architectural elements or to help establish scale or provide visual interest, subject to any other restrictions in *Part 3 – Project Requirements*;
- F. Integrate illuminators or fixtures used to light building mounted signage, building facades, or pedestrian arcades into a building's architectural design;
- G. Appropriately highlights entrances, art, terraces, and special landscape features.

#### **15.3.3.4.5. Exterior Signage**

The Design-BUILDER shall be responsible for provision of dedicated exterior signage lighting only where necessary for legibility. At a minimum the following requirements shall be met:

- A. Signs shall be consistent with overall Project design and shall serve to identify, inform, direct, regulate and interpret;
- B. Each building or group of buildings shall have a consistent and comprehensive sign program;
- C. Placement, scale, and readability shall be addressed in designing sign lighting;
- D. Sign illumination shall identify individual signs only;
- E. Each sign may be illuminated with a maximum of one, ground-mounted LED fixture per face;
- F. All exterior signage lighting shall be powered by both the normal and emergency power systems;
- G. Luminaire shields shall prevent light from shining into the eyes of traffic flowing toward the sign as well as in the opposite direction;
- H. When external light sources are directed at the surface of a sign, the light source shall be concealed from the lines of sight of pedestrians and motorists;
- I. Window signage shall not be illuminated; and
- J. If applicable, overhead signs shall be lit as follows:

1. Each luminaire shall be positioned externally 12 inches below and 47 inches in front of the sign panel. Minimum vertical clearance requirements shall be determined from the NYSDOT *Geometric Design Policy for Bridges*. An additional vertical clearance of 6 inches shall be provided to avoid damage to the luminaire; and
2. Illumination gradient shall be 2:1 maximum.

#### **15.3.4. Software**

The Design-Builder shall obtain the Authority's consent prior to utilizing its selected software programs and techniques. The use of proven and commonly available software familiar to the Authority is encouraged. For lighting calculations the Design-Builder is required to utilize AGI32 or radiance lighting analysis and simulation software for full detailed reports to demonstrate compliance with Standards.

Compliance calculations and checks are required. The Design-Builder shall detail every different design condition for roadway and aesthetic lighting, along with design criteria used. These different analysis components shall demonstrate compliance with relevant Standards. Compliance shall be demonstrated through graphical output and numerical summaries for the analysis grid areas. Aesthetic lighting shall be demonstrated with photo-representational quality software and rendering packages utilizing IES format files, along with realized texture mappings.

AutoCAD Architecture is an acceptable format for electrical wiring diagrams or lighting equipment details (e.g., luminaire housing).

#### **15.3.5. Construction Requirements**

##### **15.3.5.1. General**

The Design-Builder shall use materials listed on the NYSDOT approved list of materials or suitable LED luminaire models if none is included in the NYSDOT list. For aesthetic lighting of the Crossing, the Design-Builder shall coordinate with the Authority for approvals in specialist lighting products not named on the NYSDOT approved list of materials.

The Design-Builder shall provide lighting materials that:

- A. Are new at the time of installation;
- B. Meet the visual and aesthetics goals for the Project;
- C. Are long life, with a minimum rating of 50,000 hours L70, and are energy efficient;
- D. Are compatible with the electrical characteristics (including voltage, number of phases, number of wires) of the power supply available at the Project site;
- E. Minimize future maintenance and can be readily and inexpensively serviced and replaced by the Authority's in-house personnel; and
- F. All permanent LED luminaires shall have a minimum manufacturer's warranty of five years from Final Acceptance.

The Design-Builder shall:

- G. Provide all permanent and temporary lighting and related supports, lamping, controls for operational systems throughout the duration of the Project;
- H. Ensure that all temporary lighting used during construction and demolition works shall conform to the glare control requirements of NYSDOT Standard Specification Construction and Materials §619-3.19.

- I. Provide all new luminaires, poles, mounting, controls, wiring, grounding and bonding, electrical raceways/conduits, pull boxes, switches, junction boxes, panels, cabinets, enclosures, and related electrical equipment as needed;
- J. Ensure that all electrical work is performed by or under the supervision of a licensed electrician;
- K. Ensure that all exposed raceways/conduits shall be made of PVC coated rigid galvanized steel (RGS). Short runs of liquid-tight flexible metal conduit may only be used to make a final connection between the main power feeder and a light pole or fixture;
- L. Ensure that all outdoor electrical enclosures and attached parts (e.g breather drain) shall be rated NEMA 4X or a higher degree of protection;
- M. Provide all luminaires required for safety markings;
- N. Provide As-Built Plans with narratives fully describing the lighting installation.
- O. Ensure that all electrical enclosures shall have a key lock;
- P. Ensure all lighting shall include breakaway devices, unless protected by concrete barrier. Light poles shall feature a breakaway base, except where located behind bridge rails;
- Q. Review luminaire attachments and performance of all lighting with the Authority, and related governing entities, such as the US Coast Guard and FAA;
- R. Ensure that all lighting installed by the Design-Builder shall be maintained in an operational condition until Final Acceptance.

#### **15.3.5.2. Roadway Lighting**

The Design-Builder shall provide lighting materials that meet or exceed the following requirements:

- A. Meet Standards for roadway lighting including but not limited to roadway, interchange, high-mast, plaza and ramp conditions;
- B. Are appropriate and coordinated with various mounting conditions;
- C. Roadway luminaires shall have full cut-off optics to minimize night sky light pollution;
- D. Roadway lighting shall have a color temperature between 3,000K and 5,000K correlated color temperature (CCT), plus or minus 250K;
- E. Roadway luminaires shall withstand minimum vibrations of three times the acceleration due to gravity; and
- F. Roadway luminaires shall be pole-mounted via a pole-top tenon to reduce fixture vibration and shall be located in accordance with requirements of Chapter 12 of the HDM.

The Design-Builder shall provide and install spare conduit (comprising a minimum of one duct per bridge structure) on the Crossing to accommodate future needs.

The Design-Builder shall provide an average-to-minimum uniformity ratio of 3:1 with a minimum illumination of 0.2 foot-candle and an average illumination of 0.6 to 0.8 foot-candle on all traveled roadways to be illuminated, where traveled roadways include: general purpose lanes, HOV lanes, auxiliary lanes, ramps, collector/distributor roads and ramp terminal intersections with cross streets.

The Design-Builder shall provide an average-to-minimum uniformity ratio of 3:1 for all understructure roadway illumination. This includes all structures located within the Project Limits. The target level of understructure roadway illumination shall be minimum 1.5 times the level of illumination on the adjacent roadway. Understructure light fixtures shall be positioned to allow for post-construction servicing and maintenance without need for any lane closures.



The Design-Builder shall not reuse any existing lighting materials as part of the permanent lighting installation. See *Project Requirement 25 – Demolition* and *Project Requirement 4 – Site Work*.

The Design-Builder shall provide two mockups of lighting to demonstrate any luminaire technology in the proposed design of the lighting for the roadway scheme other than items listed in the NYSDOT list of approved materials.

#### **15.3.5.3. Aesthetic Lighting**

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

- A. Aesthetic lighting design shall be completed in concert with the Crossing design;
- B. The system shall provide for specialty lighting products, such as dynamic and color changing luminaires, as well as dynamic lighting control;
- C. Control software shall be internet web-based and functional via an off-the shelf computer laptop;
- D. The iconic lighting of the Project shall be implemented by the Design-Builder subject to prior acceptance by the Authority of the Design-Builder's design. The acceptance process shall be progressed through at least two iterations of full-scale mockups;
- E. Dynamic lighting control programming shall be provided, along with a lighting review session followed by related modifications based on review and comment from the Authority;
- F. The Design-Builder shall provide formal training to the Authority's staff members (which will comprise a group of at least five Authority staff members) on the operation and maintenance of all lighting software and hardware-software interfaces, including dynamic lighting control;
- G. Prior to Final Acceptance, the Design-Builder shall ensure that all software and hardware is current with the lighting manufacturer's standards and technology;
- H. The Design-Builder shall continue to provide support staff for the maintenance and operation of all lighting software and hardware for a minimum of 90 days to the Authority after Physical Completion.

#### **15.3.5.4. Peregrine Falcons**

The Design-Builder shall coordinate the location of light fixtures at a high elevation on the Crossing, including aviation and navigational lighting, with the Tappan Zee Bridge Falcon program and associated nesting boxes.

#### **15.3.5.5. Construction Works**

The Design-Builder shall provide all lighting and related systems for the Project to remain operational during construction. This shall include detailed designs and approvals for temporary schemes. Highway lighting on the Crossing and Approach Spans shall be operational prior to traffic being placed on the structures, and maintained during all phases of construction thereafter.

#### **15.3.6. O&M Manual for Lighting**

The Design-Builder shall supply to the Authority documentation denoted an O&M manual in accordance with *Project Requirement 28 – Bridge Maintenance and Operation Requirements*. For lighting, the O&M manual shall include:

- A. Operational instructions;
- B. Trouble shooting instructions and emergency maintenance procedures;
- C. Details of inspection intervals and extent of inspection for all components
- D. Detailed procedure of inspection, maintenance and replacement operations;

- E. Detailed instructions for operation and maintenance of aesthetic lighting applications;
- F. Manufacturer's proprietary literature;
- G. Relevant data sheets and electrical diagrams including location, make, type, dimension;
- H. Equipment list;
- I. Access procedures;
- J. Spare parts list;
- K. List of suppliers with address, email and telephone numbers;
- L. As-Built Plans and records;
- M. Procedures shall include details of how the components can be replaced;
- N. Test certificates; and
- O. Any relevant reference documentation.

#### **15.3.7. Meetings**

The Design-Builder shall schedule two or more concept meeting(s) to present to the Authority the aesthetic and technical lighting for the Project.

The Authority and the Design-Builder shall meet at the request of any of the parties, as necessary, to discuss and resolve matters relating to temporary and permanent lighting during the design and construction stages.

The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the record. The Design-Builder shall document liaison with other agencies in relation to lighting.

#### **15.4. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 15.4-1 for the Authority's consultation and written comment.

**Table 15.4-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Inventory of existing lighting and associated systems	5	1	90 days after NTP	15.3.3.1
Lighting visual concept and lighting plan	5	1	At Design Review	15.3.3.2
Design Plans	5	1	Current version 5 days before each meeting with Authority	15.3.3.2
Manufacturer's warranties for all new equipment, associated parts and software	5	1	At Final Acceptance	15.3.5.1
O&M manual for lighting	5	1	At Crossing Substantial Completion (for Crossing lighting); and At Physical Completion (for all lighting).	15.3.6

## SECTION 16. INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

### 16.1. Scope

The Design-BUILDER shall be responsible for the design, construction, installation and integration of Intelligent Transportation Systems (ITS) elements, services and facilities. The Design-BUILDER shall design and build ITS features related to systems communications, traveler information, traffic and environmental monitoring and detection systems as required for the project. All proposed elements shall be compatible with temporary, existing and proposed equipment retained for use during construction as specified by the Authority. The design, construction and installation of all the devices and facilities and appurtenances shall adequately address functionality, redundancy, reliability, durability, ease of maintenance, maintenance access, safety, pleasant aesthetics, and protection against vandalism.

### 16.2. Standards

The Design-BUILDER shall perform the ITS activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

- A. NFPA National Electric Code (NEC) Standards
- B. FCC Highway Design Manual
- C. NYSTA Title 47 Code of Federal Regulations CFR 90.242 Travelers' Information Stations
- D. NYSTA Design and Construction Requirements for Installations/ Crossings on or Attached to Bridge Structures, Bridge Culverts or Structural Retaining Walls
- E. NYSTA Design and Construction Requirements for Aerial Communication and Power Line Installation
- F. NYSDOT Design and Construction Requirements for Underground Crossing of Mainline Pavement and Shoulders
- G. SAE Overhead Sign Structures, Dedicated Short Range Communications Message Set Dictionary
- H. AASHTO Roadside Design Guide
- I. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
- J. AASHTO A Guide for Accommodating Utilities within Highway Right-of-Way
- K. ASCE 10-97: Design of Latticed Steel Transmission Structures
- L. NYSDOT Design-Build Procedures Manual
- M. USDOT/ FHWA Design Guide for Fiber Optic Installation on Freeway Right-of-Way
- N. ASTM E2259-03/E2468-05/E2665-08: Architecture Type: Archived Data Management
- O. IEEE 1609-2006 Standards for Wireless Access in Vehicular Environments (WAVE) – Multi-Channel Operations
- P. IEEE 1455-1999 Standards for Message Sets for Vehicle/Roadside Communications

- |    |                 |  |
|----|-----------------|--|
| Q. | IEEE            | 802.11p Standards for Wireless LANs Providing Wireless Communications in a Vehicular Environment   |
| R. | ASTM            | E2213-03 Standard Specifications for Telecommunications and Information Exchange   |
| S. | ITE             | TMDD v3 Traffic Management Data Dictionary (TMDD)  |
| T. | FAA             | Code of Federal Regulations (CFR), Title 47(Telecommunications), Part 17. (Note: provides Standards relevant to cellular communications towers; see Section 16.3.4.2 herein)             |
| U. | ANSI/TIA        | 222-G, with amendments (cell tower)  |
| V. | NYSDOS/<br>DCEA | Title 19 (NYCRR) New York State Uniform Fire Prevention and Building Code and its referenced standards. (Note: relevant to cellular tower shelter building; see Section 16.3.4.2 herein) |

For Work elements covered by multiple Standards, those Standards normally applied by the Authority and the Department (in that order) for such Work shall apply.

## **16.3. Requirements**

### **16.3.1. General**

The Design-Builder shall be responsible for obtaining from the Authority all available existing as-built plans of existing ITS elements and systems that will be affected by the Project that are in the possession of the Authority. The Design-Builder shall investigate and survey all relevant areas, including areas outside the Project Limits, to ensure that all existing ITS-related features are identified and accounted for in the design.

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

- A. All existing ITS features shall remain operational during the Project. Exhibit A herein outlines these requirements in more detail;
- B. The Design-Builder shall identify the location, size, function and condition of all ITS features within the Project Limits from pre-construction as-built plans and field investigations and prepare an ITS master plan describing how the ITS features shall remain operational throughout construction, up to the Final Acceptance;
- C. The Design-Builder shall identify, in coordination with the Authority, anticipated future needs, requirements, upgrades and enhancements in progress or planned for the ITS elements and shall take due account of these in the design;
- D. All ITS features shall be clustered when possible and shall be designed to incorporate maintenance access features inclusive of access steps/ladders, walkways, as required for access per Authority practice. The Design-Builder shall locate ITS features so that the need for lane closures will be minimized. For safety purposes, no ITS equipment shall be positioned such that the Authority's maintenance personnel would have to climb over barriers to reach equipment being maintained;
- E. Existing ITS elements not disturbed by construction will continue to be maintained by the Authority. Access to these features shall be retained for Authority 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;



- F. 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;
- G. The Design-Builder shall coordinate with the Authority to ensure the availability and use by the Design-Builder of the latest version of the Authority's existing ITS system specifications; and
- H. The Design-Builder shall provide the Authority access to the construction site for maintenance by the Authority of existing ITS facilities.

Prior to beginning construction the Design-Builder shall submit the Design Plans and Project Specifications of ITS elements and associated supporting documents to the Authority for consultation and written comments. This shall include any temporary relocations and all necessary relocations of ITS elements and service lines affected by construction activities, regardless of the ownership of such service lines or of the property served by such service lines. All subsequent changes to the ITS designs shall require similar Authority consultation and written comment

### **16.3.2. Pre-Construction, Construction and Post-Construction**

A preliminary list of ITS elements and services that currently operate under pre-construction conditions and which may be affected during construction is provided in Exhibit A herein.

The Design-Builder shall provide maintenance, protection or mitigation measures for existing pre-construction ITS elements and services in order to keep the systems operational during all phases of construction. Post-construction conditions (abandonment, no change in service, relocation, replacement) of these individual elements are indicated in Exhibit A. New and proposed systems elements are described in Sections 16.3.4, 16.3.5 and Exhibit A herein.

### **16.3.3. ITS Master Plan**

The Design-Builder shall develop an ITS master plan that shall describe the management program and tasks for the Project. The ITS master plan shall provide a framework by which the Design-Builder shall carry out all works to design, monitor, commission and test all ITS elements throughout the Project. The ITS master plan shall include:

- A. ITS inventory of all existing ITS elements, including a map and listing;
- B. An integration plan with existing Thruway operations, indicating how all systems will remain operational during construction;
- C. ITS protocol(s) used for the elements to be designed, constructed and installed;
- D. Testing of ITS elements as specified by the Design-Builder, the Authority, and as per manufacturer's specifications, as required;
- E. Manufacturer's special specifications, manufacturer's plans and catalog cut sheets, as applicable;
- F. Any maintenance and protection measures for the Authority's ITS facilities and operations with regards to the Design-Builder's responsibilities to maintain and keep operational the ITS systems during all phases of construction;
- G. Acceptance procedures for the ITS work;
- H. The ITS master plan shall include, where applicable, the following:
  - 1. Existing and proposed ROW;
  - 2. Existing topography;



3. Existing ITS elements (referenced by milepost/ location offset, size, and type) and adjacent facilities and utilities;
4. Proposed ITS work elements; and
5. Proposed relocations in case of conflict.

The Design-Builder shall coordinate with the Authority in the preparation of the ITS master plan. The ITS master plan shall be submitted to the Authority for consultation and written comments, and shall be updated by the Design-Builder as needed.

#### **16.3.4. Communications Systems**

##### **16.3.4.1. Tarrytown Administrative Building**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

##### **16.3.4.2. Wireless Communications – Tower**

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**16.3.4.5.2. Dynamic Message Signs**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**16.3.4.5.3. Variable Speed Limit Signs**

[REDACTED]

**16.3.5. Traffic and Environmental Detection and Monitoring Systems**

**16.3.5.1. TRANSMIT**

TRANSMIT is the system developed by the Transportation Operations Coordinating Committee (TRANSCOM; which comprises various transportation and public safety agencies in the New York, New Jersey and Connecticut) for managing incidents and traffic using electronic toll tags, including the E-ZPass® system, and traffic management toll tags as anonymous probes for traffic surveillance and incident detection purposes.

The Design-BUILDER shall submit to the Authority, for consultation and written comments, Design Plans and supporting documents for the installation of a sufficient number of traffic monitoring TRANSMIT sites per the Authority's standards, in order to provide for travel times and speeds across the Crossing in both directions. Spacing of traffic monitoring sites or TRANSMIT locations must be at a maximum [REDACTED] apart. Design Plans shall provide the traffic monitoring reference mileposts/ location offsets and shall be submitted to the Authority for consultation and written comments. The Design-BUILDER shall be responsible for integrating the Project TRANSMIT sites into the existing TRANSMIT system and shall comply with Authority specifications.

#### 16.3.5.2. Closed Circuit Television

The Design-Builder shall be responsible for ensuring that the Project closed circuit television (CCTV) shall meet the following requirements:

- A. The CCTV cameras and systems shall provide complete coverage of the entire Crossing, as demonstrated by the Design-Builder based on manufacturer's specifications, documentation and catalog cut sheets submitted. The proposed coverage shall provide CCTV with overlapping views to provide redundancy should one of the cameras become inoperable, and meet the Authority needs with the Crossing. In addition, CCTV must be able to view all DMS, active traffic management signs, VSLS installed on the Crossing;
- B. CCTV camera control shall meet Authority requirements with data elements for controlling closed circuit television cameras and the movement of pan/tilt/zoom (PTZ) units with labeling capabilities and control of auxiliary camera and enclosure devices;
- C. The CCTV camera system shall be capable of acquiring traffic video, digitizing and transmitting the results into the Authority's existing network infrastructure, and receiving and reacting to commands with feedback to the controlling system via the existing Authority system. The camera encoders for the digitization of video for audit overview purposes and traffic cameras shall be [REDACTED];
- D. Each camera site shall contain a full camera system strategically located to best acquire traffic video;
- E. The design of the CCTV systems shall be per the Authority specifications and provide access steps or ladders or walkway access for maintenance. Note that camera locations that are not accessible for maintenance via steps shall have a camera lowering device for maintenance use per Authority specifications.

#### 16.3.5.3. Weigh-in-motion System

The Design-Builder shall submit to the Authority, for consultation and written comments, Design Plans as well as supporting documents for the installation of a weigh-in-motion (WIM) system on both landings. The weigh-in motion systems shall be located between the Crossing and adjacent interchanges and constructed on full depth concrete pavement as provided in *Project Requirement 22 – Subgrade Support Pavements*. Permeable subbase will not be required within the pavement section if the WIM is located outside of pavement reconstruction. Design plans shall show the WIM reference mileposts. The WIM system is intended to collect data for each direction of travel and is not intended to be redundant. The axle sensors shall be a minimum of 100 ft from the bridge deck.

#### 16.3.5.4. Active Traffic Management System

The Design-Builder shall design an active traffic management system (ATMS) for the Crossing to enable the dynamic management of traffic in each direction on the Crossing and its approaches within the Project Limits. The principles of the system include dynamic lane management, queue warning, speed harmonization, dynamic signing. This system shall include gantries spaced on the Crossing with lane control signs and DMS over each lane/shoulder to provide information to travelers. The system shall be able to provide for items including dynamic shoulder use, variable speed limits, dynamic lane control, future multi-use lanes, queue warning, an indication of the state of each lane and shoulder including: open, closed, merge left, merge right.

Signs for the ATMS shall be full matrix color LED technology to produce a minimum [REDACTED] display over each lane and shoulders. The signs shall be manufactured by [REDACTED] or another manufacturer as per approved Authority specification.

The Design-Builder shall submit to the Authority, for consultation and written comment, reviews of two system design alternatives as follows:

- A. Operating the active traffic management system independently of the Authority's existing ATMS; and
- B. Integrating the active traffic management system into the Authority's existing ATMS.

The ATMS may be web-based [REDACTED]. The active traffic management architecture must be consistent with the Authority information technology standards. The Design-Builder shall submit to the Authority, for consultation and written comments, Design Plans and supporting documents for the design, installation and operation of the selected ATMS option. The Design-Builder shall be responsible for designing and implementing the selected system.

#### **16.3.5.5. Weather and Visibility Sensor Sites**

The Design-Builder shall submit to the Authority for consultation and written comments, Design Plans and supporting documents for weather and visibility sensor sites. Design Plans shall show relevant reference mileposts/ location offsets. The sensor sites shall include sensors for parameters including wind speed, fog, pavement temperature, air temperature, relative humidity and visibility.

#### **16.3.5.6. Lifeline Phone System**

The Design-Builder shall design and install a new 'Lifeline' suicide prevention hotline phone system that is a Betterment of the existing pre-construction configuration and that shall include coverage on the approaches to the Crossing and the Crossing.

The 'Lifeline' phones [REDACTED], and can be hardwired or wireless phone connections, which function with a modem and an auto-dialer, such that the handset is picked up, the phone automatically dials a pre-determined number that connects to a counseling center.

### **16.4. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 16.4-1 for the Authority's consultation and written comment.

**Table 16.4-1**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
ITS Design Plans and Project Specifications	5	1	At Design Review	16.3.1 16.3.4.2 16.3.4.3 16.3.5.1 16.3.5.3 16.3.5.5
ITS master plan	5	1	At Design Review	16.3.3

**PART 3, PROJECT REQUIREMENT 16 – INTELLIGENT  
TRANSPORTATION SYSTEMS EXHIBIT A**

**Existing and Future Requirements For Intelligent Transportation  
System Elements**

This Exhibit A presents a preliminary and not necessarily comprehensive list of existing (pre-construction) ITS elements and services that may be affected during construction and for which maintenance, protection or mitigation measures shall be provided by the Design-Builder in order to keep the systems operational during all phases of construction.

A. Existing ITS elements and systems to be discarded after the Project:

[REDACTED]

B. Existing ITS elements and systems that the Design-Builder shall ensure remain in service throughout all phases of the Project; while these elements and systems may be replaced or relocated, they shall remain operational after the Project:

[REDACTED]



## SECTION 17. WORK ZONE TRAFFIC CONTROL AND ACCESS

### 17.1. Scope

The Design-Builder shall be responsible for the planning and provision of work zone traffic control (WZTC) until Physical Completion. The Design-Builder shall provide WZTC for the safe and efficient movement of people, goods, and services through the Project while maintaining access and minimizing negative impacts to residents, commuters, businesses, toll operations, and NYSTA maintenance operations. This Project Requirement applies to all roads, including the mainline, ramps, cross roads, local streets, maintenance roads, driveways, and active paths within and/or affected by the Project.

The Design-Builder shall be responsible for ensuring that the management and monitoring of WZTC and work site access (WSA) activities, including any period(s) of suspension of Work, are undertaken in accordance with the Design-Builder's WZTC and WSA plans and meet the requirements of 23 CFR 630 J.

### 17.2. Standards and References

The Design-Builder shall perform the work zone traffic control activities in accordance with the following Standards, unless otherwise stipulated in Project Requirements herein.

#### 17.2.1. Standards

- A. NYSTA Standard Drawings and Details (*see Part 5 – Special Provisions*)
- B. NYSDOT NYS Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways
- C. FHWA Manual on Uniform Traffic Control Devices
- D. NYSDOT Work Zone Traffic Control Manual
- E. AASHTO A Policy on Geometric Design of Highways and Streets
- F. NYSDOT Applicable Engineering instructions
- G. NYSDOT US Customary Standard Sheets
- H. NYSDOT General Design and Construction Requirements for Occupancies, NYSTA (2010)
- I. NYSDOT Access Management Requirements
- J. AASHTO Roadside Design Guide
- K. NYSTA Guidelines for Use of Variable Message Signs (TAP-633)
- L. NYSTA Addendum to Standard Specifications Section 619 - WZTC
- M. NYSTA 2011 English Master Proposal

#### 17.2.2. References

- A. NYSTA Tappan Zee Hudson River Crossing Project Traffic Report
- B. NYSDOT Highway Design Manual
- C. NYSTA New York State Thruway Authority Tappan Zee Bridge Diversion Plan.

## **17.3. Requirements**

### **17.3.1. Work Zone Traffic Control Plan and Work Site Access Plan**

The Design-Builder shall prepare and submit a WZTC plan and a WSA plan for managing traffic operations and controlling access until Physical Completion. The plans shall identify stages and phases of construction and provide appropriate operating procedures. The plans shall be signed and stamped by a New York-registered professional engineer and submitted to the Authority's Project Manager prior to initiation of any work in proximity to traffic or the implementation of any change in traffic patterns.

The Authority will retain responsibility for maintenance of the existing bridge (including snow removal) for as long as it remains in service for general public use. The Design-Builder shall be responsible for maintenance of all new construction in accordance with *DB §105-12*. Where the existing bridge and the new Crossing are both in operation, the Design-Builder shall be responsible for the new Crossing structure, until Final Acceptance, and shall be responsible for liaising with the Authority in relation to specific operational arrangements.

The Authority will retain responsibility for toll operations throughout the Project's duration (see *Project Requirement 26 – Toll Plaza*).

The Design-Builder shall be responsible for preparing and implementing the WZTC plan and the WSA plan and for meeting the associated requirements set out in Section 17.3.1.1 through 17.3.1.9 herein.

The WZTC plan shall be organized into the following sections:

- A. Section 1 – construction staging plan (see Section 17.3.1.1);
- B. Section 2 – traffic impact plan (see Section 17.3.1.2);
- C. Section 3 – traffic mitigation plan (see Section 17.3.1.3);
- D. Section 4 – emergency vehicle access plan (see Section 17.3.1.4);
- E. Section 5 – maintenance of property access plan (see Section 17.3.1.5);
- F. Section 6 – emergency response/incident management plan (see Section 17.3.1.6);
- G. Section 7 – WZTC communications plan (see Section 17.3.1.7).

The WSA Plan shall be organized into the following sections:

- H. Section 1 – WSA plan (see Section 17.3.1.8);
- I. Section 2 – remote staging areas access plan (see Section 17.3.1.9).

#### **17.3.1.1. Construction Staging Plan and Requirements**

The Design-Builder shall be responsible for preparing and implementing the construction staging plan, which shall identify the general sequencing for construction and detouring for each stage of construction. The plan shall include contingency plans for weather, utility issues, and other unforeseen interruptions. The plan shall address the existing bridge and the Crossing as primary evacuation routes, and consider their role during major special events occurring in the vicinity of the Project.

The construction staging plan shall include details of:

- A. Duration of construction, sequencing of construction and detouring/alternate routing required for each construction stage;
- B. Identification of lane(s) to be closed and duration of closure(s), if any;
- C. Location and scheduled dates of use for all traffic control and safety devices, including but not limited to traffic channelization devices, barriers, impact attenuators, signs, pavement markings and variable message signs; and
- D. Location and schedule of flaggers (where such use is permitted).

The construction staging plan shall indicate the location and treatment of all traffic streams (motorized vehicles, bicycles, pedestrians), the location and type of regulatory, guidance and warning devices, the anticipated impact on local businesses, the means of delivery and deployment of construction equipment, trailers, supplies, materials and other items for the Project, the safety and movement of bicycles and pedestrians, time of construction and public information considerations. No detouring mainline and ramp traffic off the Thruway Right-of-Way will be permitted.

The construction staging plan shall be coordinated with affected police jurisdictions to facilitate safe and effective enforcement. The plan shall recognize the need for local approval of the use of public roads and indicate how such approval shall be obtained by the Design-Builder.

The Design-Builder's construction, traffic control, and access operations shall not impede or interfere with the Authority's movable barrier operations on the existing bridge and its approaches for as long as such barrier operations remain necessary. The relocation of the barrier termini and equipment housings is not precluded; however, the Design-Builder shall demonstrate that such relocation will not degrade movable barrier operations and/or safety before undertaking any barrier system modifications.

The use of flaggers is not permitted on the Thruway mainline and ramps.

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.

#### **17.3.1.2. Traffic Impact Plan and Requirements**

The Design-Builder shall prepare a traffic impact plan for the Project area to document anticipated impacts and establish the means by which traffic flow will be assessed during construction. The plan shall be based on the most recent traffic data available.

The traffic impact plan shall include measures to minimize traffic disruption and provide for safe traffic movement during construction. The plan shall include a traffic engineering analysis demonstrating how all forms of traffic will be accommodated in all directions. The plan shall take into account other construction projects and anticipated maintenance activities that may affect traffic in and near the Project.

Any stoppage of traffic on the Thruway must be approved in advance by the Authority. The State Police (Troop T) is the only entity with the authority to implement the stoppage of traffic on the Thruway. The Design-Builder's WZTC and WSA plans shall take due account of these requirements.

The traffic impact plan shall detail all instances where monitoring of traffic during construction is required. The Design-Builder's requested lane closures and periods of active use of the roadways shall be detailed in the WZTC plan and the mitigating the impacts shall be identified in the traffic impact plan. The Design-Builder shall be responsible for establishing all measures necessary to remedy conditions that would result in excessive negative impact on the traveling public. The Design-Builder shall reopen closed lanes and cease active use of roadways quickly and safely whenever backups reach the east termini of Exit 11 in Rockland County or the west termini of Exit 8 in Westchester County.

The contents of the traffic impact plan shall include:

- A. Base set of traffic volumes for all area routes;
- B. Level of service;
- C. Vehicular delays and queue lengths;
- D. Traffic detour/alternate route plans;
- E. Construction traffic volume: volume/capacity analysis for the Project Limits;
- F. Remedies for conditions resulting in excessive impacts.

The Design-Builder shall be responsible for updating the traffic impact plan as necessary throughout the Contract, so that at all times the current version reflects the traffic impact plan requirements.

### **17.3.1.3. Traffic Mitigation Plan and Requirements**

The Design-Builder shall be responsible for analyzing and providing detailed mitigation and traffic demand management measures that include methods of reducing traffic, detouring traffic and minimizing the degradation of flow on existing roads within the Project and its vicinity, and fostering effective regional traffic communications. The traffic mitigation plan shall detail how the Design-Builder shall coordinate its activities with the Authority's Traffic Management Center and the Hudson Valley Traffic Management Center and assist in facilitating updates to the 511 Traveler Information System.

The Design-Builder shall provide spot speed radar detectors and display units or radar equipped variable message signs that display actual speeds to approaching motorists to assist in controlling speeds where geometric and physical conditions result in design speed reductions of 10 mph or more, and in other areas where speed control is essential to maintaining safe operations. The units shall be moved by the Design-Builder as conditions require. The traffic mitigation plan shall present details of these traffic mitigation provisions.

The Design-Builder shall provide portable variable message signs for the posting of appropriate warnings and advisories where geometric and physical conditions result in design speed reductions of 10 mph or more, and in other areas as needed to maintain safe operations. The variable message signs should be moved as job and traffic conditions change.

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 interchanging directions at major highways: I-84, Route 17, Interchange 15, Garden State Parkway, Palisades Interstate Parkway, Interchange 8, Saw Mill River Parkway, Sprain Brook Parkway, Bronx River Parkway, I-684/Hutchinson River Parkway and I-95/New England Thruway. The Design-Builder shall coordinate the content and timing of variable message sign messages with the Authority in accordance with Section 17.3.1.7 herein.

The speed and message displays shall be legible at prevailing highway speeds.

The Design-Builder shall be responsible for updating the traffic mitigation plan as necessary throughout the Contract, so that at all times the current version reflects the traffic mitigation plan requirements.

### **17.3.1.4. Emergency Vehicle Access Plan and Requirements**

The Design-Builder shall be responsible for preparing the emergency vehicle access plan, which shall address access for emergency vehicles to all businesses and residences in all areas of the Project from the time that construction starts until construction is completed. The plan shall be developed, coordinated and implemented by the Design-Builder in cooperation with local emergency responders. The emergency vehicle access plan shall comply and be compatible with the *New York State Joint State Agency Memorandum of Understanding for Emergency Thruway Incidents*.

Emergency responders shall include:

- A. Fire protection services;
- B. Medical assistance;
- C. Police;
- D. Utilities emergency offices;
- E. School safety offices;
- F. Tappan Zee Bridge Patrol;
- G. Thruway authorized towing services (large vehicles).

The emergency vehicle access plan shall consider special needs in proximity to facilities such as police stations, fire houses, businesses, schools, crossing areas and other high risk areas. The plan shall define access routes to, through and around the Project Site.

The emergency vehicle access plan shall address provisions for emergency responders to enter the Design-Builder's work zone for incidents within the Project site, including river access to incidents at marine locations.

The Design-Builder shall consult with emergency service providers and submit an updated emergency vehicle access plan to the Authority's Project Manager for written acceptance at least 15 days prior to starting construction or initiating a construction phase or stage that requires a modification to the then current emergency vehicle access plan. The Design-Builder shall consult with emergency service providers regarding emergency access at least seven days prior to implementing the plan.

[REDACTED]

shall be provided to the Authority's Project Manager at the same time that emergency service providers are notified.

The Design-Builder shall develop and maintain a comprehensive contact list of emergency service providers.

#### **17.3.1.5. Maintenance of Property Access Plan and Requirements**

The Design-Builder shall be responsible for preparing the maintenance of property access plan, which shall address the means by which access is maintained at all times to all businesses, residences, institutions, and properties within and abutting the Project, including essential services such as trash pickup and mail delivery.

The maintenance of property access plan shall identify access provisions for the various stages and phases of construction. Prior to the implementation of a stage or phase affecting or altering access, the maintenance of property access plan shall be updated by the Design-Builder to address access provisions for that specific stage or phase, and coordinated with the affected property owners. The maintenance of property access plan shall be submitted 15 days prior to implementation for the Authority's Project Manager's written acceptance.

The maintenance of property access plan (and updates thereof), shall be access maps that detail the access requirements for affected individual properties. The maps shall show existing and planned access during the respective construction stages. The access maps shall identify times of business operation and deliveries.

Adjacent driveways may be used if written permission is obtained from the Authority and the owner having jurisdiction over such driveways.

Access to properties if curtailed shall be in accordance with the schedule agreed to by Design-Builder and the affected owner, occupant, resident, and/or business having the authorization to commit to such curtailment. The Design-Builder shall maintain a record of all negotiations with affected authorized parties.

Written documentation that demonstrates residents' or business owners' approval to permanently curtail access, and any shared driveway use agreements shall be retained by the Design-Builder and submitted to the Authority as part of Final Acceptance.

The Design-Builder shall provide and implement a signage plan identifying significant access changes during construction and "Open for Business" signing. Signs shall be rectangular, colored white on blue background, with lettering size consistent with MUTCD guidelines for the highway type.

#### **17.3.1.6. Emergency Response/Incident Management Plan and Requirements**

The Design-Builder shall be responsible for preparing the emergency response / incident management plan (the "Design-Builder's emergency response plan"), which shall detail the means for responding to incidents (caused by Design-Builder or others) along the Project, such as inadvertent traffic stoppages or delays, traffic accidents, on-site emergencies and/or conditions requiring urgent police or emergency vehicle responses.

The Design-Builder's emergency response plan shall include plans for incidents unrelated to the Project Works, such as an incident on the roadway. For such incidents, the Authority's *Emergency Response Plan* shall be followed. The Design-Builder shall ensure that it is familiar with the Authority's *Emergency Response Plan*, and that its operations do not hinder response implemented under the Authority's *Emergency Response Plan*.

The Design-Builder's emergency response plan shall identify the means to determine when an incident has occurred, where it is, how to respond, how to manage traffic until the incident is cleared, and how to facilitate movement of traffic once the incident has been cleared. The plan shall call for the evaluation of the incident's cause and consequences, and for the urgent remediation of causes determined to pose a high risk of recurrence resulting in detrimental consequences.



The Design-Builder's emergency response plan shall facilitate implementation of the *New York State Thruway Authority Tappan Zee Bridge Diversion Plan* (as determined by the Authority) and comply with all applicable federal, state and local codes.

The Design-Builder's emergency response plan shall be consistent with the emergency vehicle access plan (see Section 17.3.1.4 herein) and coordinated with the Hudson Valley Traffic Management Center for efficient use of ITS assets and updating of the 511 Traveler Information System.

The Design-Builder shall be responsible for ensuring that the list of emergency service providers shall be posted in locations accessible to all workers.

The Design-Builder shall designate point(s) of contact who shall be accessible to the emergency service providers 24 hours per day. An updated emergency response plan, including the 24 hour per day points of contacts with accurate contact phone numbers shall be submitted to the Authority's Project Manager at least 15 days prior to the start of construction and updated as necessary throughout construction.

A revised emergency response plan shall be submitted by the Design-Builder to the Authority for each construction stage that calls for a change in mainline traffic patterns.

#### **17.3.1.7. WZTC Communications Plan and Requirements**

The Design-Builder shall be responsible for preparing a WZTC communications plan that will address on-going, seasonal, holiday, special event, and emergency rapid notification and coordination between the Design-Builder, NYSTA operational, tolling and maintenance units, the State police, other affected agencies, and the public.

The Design-Builder's WZTC communications plan shall include details of the pre-established messages to be posted at each permanent and portable variable message sign influenced by differing conditions affecting or affected by the Project.

An example of the communications plan for a previous project (the Tappan Zee Bridge deck replacement project (Phase II), TANY 10-09B) is included in *Part 7 – Engineering Data*.

#### **17.3.1.8. Work Site Access Plan and Requirements**

The Design-Builder shall be responsible for preparing the WSA plan for the Project area, which shall identify the means by which workers, equipment and material will enter, move through, and depart active parts of the Work zone. The WSA plan shall reflect the sequencing of the Work and the geographical distribution of active Work zones over the course of construction. The WSA plan shall include an overall conceptual plan covering the Project for its entire duration and a series of supplements to deal with specific stages of construction and specific Work zone locations.

The Design-Builder's access to and from the Work site shall be restricted to means described in Tables 17.3.1-1 and 17.3.1-2. The Design-Builder shall be responsible for ensuring that appropriate regulatory, guidance and safety provisions shall be incorporated at all interfaces with other traffic in order to protect the public and workers. Other points of access will be considered by the Authority, provided the Design-Builder demonstrates in advance and in writing that the alternatives are beneficial to the Project and will not compromise the WZTC.

Peak periods and holiday periods are as defined in Section 17.3.3 herein.

**Table 17.3.1-1 Rockland Landing Work Site Access**

<b>Destination</b>	<b>Permitted Access</b>	<b>Permitted Times of Access</b>
Mainline ( I-287/Thruway)	From mainline	Off-peak
South Broadway Bridge	From mainline	Off-peak
Interchange 10 staging area (if used)	From mainline	Off-peak
River Road maintenance ramps	From mainline and River Road	Mainline: off-peak River Road: daytime off-peak
Local streets	Not allowed, but exceptions may be considered	As stipulated in exemption

**Table 17.3.1-2 Westchester Landing Work Site Access**

<b>Destination</b>	<b>Permitted Access</b>	<b>Permitted Times of Access</b>
Mainline ( I-287/Thruway)	From mainline	Off-peak
West side of Hudson Line	Via NYSTA maintenance underpass and temporary bridge over Hudson line. From north via Green Street for emergency services	All times for traffic originating within the NYSTA maintenance area. Off-peak for vehicles using the mainline. As necessary for emergencies
Interchange 9 ramps	From mainline	Off-peak
NYSTA maintenance facility area	From mainline and Interchange 9 ramps	Off-peak
Local streets	Not allowed, but exceptions may be considered	As stipulated in exemption

### **17.3.1.9. Remote Staging Areas Access Plan and Requirements**

The Design-Builder shall be responsible for preparing a remote staging area access plan, which shall cover all remote staging areas that the Design-Builder intends to utilize. The plan shall address the means by which workers, equipment and material shall reach each remote staging area site, and move between the staging area and the Work Site. The plan shall include of an overall conceptual plan covering the Project for its entire duration and a series of supplements to deal with specific stages of construction and specific Work zone locations.

The Design-Builder shall be responsible for securing local approval, satisfying all federal and State and local regulations, and identifying, analyzing and documenting the environmental impacts associated with use of and access to staging areas.

### **17.3.2. Requirements for Specific Road Types**

#### **17.3.2.1. Requirements for I-287/Thruway Mainline and Ramps**

The Design-Builder shall be responsible for meeting the requirements for the I-287/Thruway mainline and ramps summarized in Table 17.3.2-1.

# New York State Thruway Authority

**Table 17.3.2-1 Requirements for I-287/Thruway Mainline and Ramps**

Ref.	Item	I-287/Thruway Mainline and Ramps Requirement/Limitation
A	Existing Bridge Crossing Minimum Number of Active Lanes	Maintain no less than seven active mainline lanes, with no less than four lanes in the peak direction, during peak travel periods and holiday periods. Maintain no less than the minimum number of lanes indicated in Attachment 2 – Table A-2. Lane closures may be revoked under such circumstances as accidents or incidents on the bridge or its approaches, unexpected unusually heavy traffic, and adverse weather. Maintain at least one active lane at the Interchange 9 ramps.
	Proposed Bridge Crossing Number of Lanes	Maintain no less than eight active mainline lanes, with no less than four lanes in the each direction, during peak travel periods and holiday periods. . Maintain no less than the minimum number of lanes indicated in Attachment 2 – Table A-2. Lane closures may be revoked under such circumstances as accidents or incidents on the bridge or its approaches, unexpected unusually heavy traffic, and adverse weather. Maintain at least one active lane at the Interchange 9 ramps.
B	Surface	Travel lanes shall be installed and maintained in accordance with the requirements of <i>Part 3 Project Requirements</i> .
C	Striping/markings	Travel lanes shall be fully striped/marked prior to opening to traffic and have all conflicting markings removed.
D	Speed	The mainline speed limit is to be maintained at 55 mph, except as exempted by the Authority for specific stages and locations. Under exempted circumstances, the speed limit may be reduced, to no less than 45mph, provided the need for the speed reduction is demonstrated. Ramp speed reductions shall not exceed 5mph.
E	Detours	Existing roads that are within the Project ROW limits may be used as parts of detours provided other technical requirements are met.
F	Seasonal/special event limitations	The Design-Builder shall become aware of and adhere to NYSTA's standard holiday embargoes and weekend restrictions and be prepared to accommodate anticipated high volume periods.
G	Business signing	Provide "Open for Business" signs for businesses impacted by on-going construction.
H	Existing Bridge Crossing Traveled lane widths	Not less than [REDACTED] feet, except as exempted by the Authority for specific stages, lanes and locations. Under exempted circumstances, lane widths between [REDACTED] will be considered, provided the need for the reduction is demonstrated. Ramp width shall be as necessary to accommodate the design vehicle along the ramp's path.
	Proposed Bridge Crossing Traveled lane widths	Not less than [REDACTED] feet, except as exempted by the Authority for specific stages, lanes and locations. Under exempted circumstances, lane widths between [REDACTED] will be considered, provided the need for the reduction is demonstrated. Ramp width shall be as necessary to accommodate the design vehicle along the ramp's path.
I	Bridge Crossing Shoulder widths	[REDACTED] feet (as can be attained).



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Ref.	Item	I-287/Thruway Mainline and Ramps Requirement/Limitation
	Approach Roadway Shoulder widths	Not less than 10 feet.
J	Drainage	Arrange cross slopes and longitudinal grade to dispose of runoff efficiently and keep its spread from compromising the travel way.
K	Public notices of traffic shifts	Ten days notification for NYSTA, seven days advance public notice by publication in local media.
L	Closures	No mainline closures will be permitted for the convenience of the Design-Builder's operations. Mainline closures shall be considered for the purpose of safeguarding the public and workers, safeguarding major infrastructure elements, and in response to severe incidents. The ramp connecting South Broadway to the Bridge may be closed for construction purposes. No other ramp closures will be permitted for construction purposes.
M	Design vehicle	The WZTC shall accommodate the WB-62 design vehicle.
N	Other considerations	The transition areas at the Rockland and Westchester landings are expected to require the most extensive attention within the WZTC.
O	Tapers, sight distance	As stipulated in the standards for the adopted design speed and traffic volumes.
P	Warning sign and channelization device spacing	As stipulated in the standards for the adopted design speed and traffic volumes.
Q	Access control	Ramps established for the Design-Builder's operations must be gated and monitored per FHWA and Interstate Highway requirements.

### 17.3.2.2. Local Streets

The Design-Builder shall be responsible for meeting the requirements for local streets summarized in Table 17.3.2-2.

**Table 17.3.2-2 Requirements for Local Streets**

Ref.	Item	Local Streets Requirement/Limitation
A	Number of lanes	Maintain the full complement of existing lanes during peak travel periods. Maintain no less than one active lane in each direction at other times, provided the need to close supplementary lanes is demonstrated.
B	Surface	Travel lanes shall be paved and smooth at all times.
C	Striping/markings	Travel lanes shall be striped/marked prior to opening to traffic.
D	Speed	Speed reductions shall not exceed 10mph.
E	Detours	Local streets shall not be used as detour routes.
F	Seasonal/special event limitations	The Design-Builder shall be prepared to accommodate anticipated high volume periods, including summer and holiday weekends.
G	Business signing	Provide "Open for Business" signs for businesses impacted by on-going construction.
H	Traveled lane widths	Not less than 10 feet. As necessary to accommodate the design vehicle along the street's path.
I	Shoulder widths	Not less than 10 feet.
J	Drainage	Arrange cross slopes and longitudinal grade to dispose of runoff efficiently and



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Ref.	Item	Local Streets Requirement/Limitation
		keep its spread from compromising the travel way.
K	Public notices of traffic shifts	Five (5) days advance notice by publication in local media. See <i>Project Requirement 8 – Public Involvement</i> .
L	Closures	No local street closures will be permitted for construction purposes, except as specifically approved by the local authorities.
M	Design vehicle	The WZTC shall accommodate the WB-62 design vehicle.
O	Tapers, sight distance	As stipulated in the standards for the adopted design speed and traffic volumes.
P	Warning sign and channelization device spacing	As stipulated in the standards for the adopted design speed and traffic volumes.
Q	Protection of public	Provide measures to protect pedestrians and bicyclists on River Road.

### 17.3.2.3. Driveways and Access Roads

The Design-Builders shall be responsible for meeting the requirements for driveways and access roads summarized in Table 17.3.2-3.

**Table 17.3.2-3 Requirements for Driveways and Access Roads**

Ref	Item	Driveways and Access Roads Requirement/Limitation
A	Surface	Match existing or as agreed to by owner for driveways. Suitable temporary pavement for access roads.
B	Grade	Within [REDACTED] or existing, but not to exceed existing if steeper [REDACTED]
C	Alignment	Not to be more restricted than existing.
D	Temporary combined access	Acceptable with concurrence of affected landowners, business operators and residents.
E	Gates and fences	Maintain existing features or provide replacement in kind.
F	Width	As necessary to accommodate the selected design vehicle, but not less than 15 feet unless agreed by affected landowners, business operators and residents.
G	Drainage	Maintain/restore existing drainage.
H	Notice of change in access	At least 48 hours by personal contact with affected landowners, business operators and residents.
I	Maintenance of access/road surface	As required.
J	Design vehicle	The most stringent among emergency and essential services vehicles, and the largest vehicle in use or being acquired by the individual businesses, residents and/or landowners.
K	Closure	Only upon written consent by all businesses, residents and/or landowners served by the access.

### 17.3.3. Periods and Shifts

#### 17.3.3.1. Peak Periods

Peak travel periods are defined to be from 6:00 a.m. to 9:00 a.m. and from 3:00 p.m. to 7:00 p.m. Monday through Thursday, and from 6:00 a.m. to 9:00 a.m. and from 2:00 p.m. and 8:00 p.m. Friday.



#### **17.3.3.2. Movable Barrier Shifts**

The movable barrier shall remain in operation as long as all seven existing lanes remain in bi-directional service, and shall continue to be shifted daily by NYSTA. The movable barrier will normally be shifted twice daily:



#### **17.3.3.3. Holiday Periods**

Holiday periods for the years 2012 through 2018 are as listed in Attachment 1 of this Project Requirement

#### **17.3.3.4. Minimum Number of Lanes**

The number of lanes that shall be maintained for traffic control are as listed in Attachment 2 of this Project Requirement.

*Note:* per the Interstate highway numbering system, I87 is a north/south facility but the I287 is signed east/west. The existing bridge and the Crossing are predominantly aligned east-west. With reference to the highway, the terms 'northbound' and 'westbound' shall be taken as equivalent; and the terms 'southbound' and 'eastbound' shall be taken as equivalent.

#### **17.3.3.5. Waiver of Lane Availability Requirements**

The procedures whereby the Design-Builder may receive a waiver of the minimum available lane requirements detailed in Section 17.3.3.4 are presented in Attachment 3 of this Project Requirement.

### **17.3.4. Temporary Structures**

#### **17.3.4.1. Temporary Bridges**

Temporary bridges, if utilized, shall be in accordance with *Project Requirement 11 – Structures*.

#### **17.3.4.2. Temporary Retaining Structures**

Temporary retaining walls and shoring shall be provided, in accordance with *Project Requirement 11 – Structures*, where cut or fill slopes require support.

#### **17.3.4.3. Temporary Roadway Structural Section**

Temporary roadway structural sections shall include pavement as determined by the NYSDOT *Comprehensive Pavement Design Manual*. The roadway structural section shall be designed, constructed, and maintained to perform as intended for as long as it remains in service.

### **17.3.5. Parking of Vehicles and Equipment**

The following restrictions apply to the parking of personal vehicles of Design-Builder's personnel, the Design-Builder's vehicles and equipment, and the Design-Builders' suppliers' vehicles and equipment:

- A. Vehicles and equipment shall not be parked within the 'Clear Zone' as defined in the AASHTO Roadside Design Guide;
- B. Vehicles and equipment shall not be parked on accesses to businesses, residences or public or private land where such parking blocks access;
- C. Personal vehicles shall not be parked along the Thruway or within lane closures on the Thruway at any time;
- D. Vehicles and equipment shall not be parked on public land;

- E. Vehicles and equipment shall not be parked on private property or in businesses' parking lots without the written consent of the respective owners or their authorized representatives; and
- F. No vehicles or equipment shall utilize on-street parking.

#### **17.3.6. Courtesy Public Assistance**

The Authority provides public assistance services such as the TZ Bridge Patrol, Authorized Service Providers, and Commercial Roadside Service Program in order to assist motorists and to expeditiously clear the road way of disabled vehicles. These services will continue to be provided by the Authority along all travel lanes that are open to the public, throughout the duration of the Project. The Design-Builder shall remain aware of these services, and perform all construction activities in a manner that will not interfere with, or prevent the various response teams from performing these services.

If Design-Builder personnel offer assistance to motorists in disabled vehicles, they shall do so in vehicles bearing the Design-Builder's logo and identify themselves to members of the public as personnel of the Design-Builder.

#### **17.3.7. Design-Builder's Staffing Roles and Responsibilities**

##### **17.3.7.1. Traffic Control Supervisor**

The Design-Builder shall assign a traffic control supervisor to provide full time WZTC management for the Project. The traffic control supervisor shall be responsible for providing daily management of the WZTC and for updates of the WZTC and WSA plans, or sections thereof, through until Final Acceptance. The traffic control supervisor shall have readily available at all times the most current copies of the current, accepted WZTC plan and MUTCD and supplement.

##### **17.3.7.1.1. Qualifications and Certification**

Each traffic control supervisor shall meet the following minimum qualifications:

- A. Has eight years' experience in traffic and highway engineering with Design-Builder, consultant, city, county or state transportation agencies, of which three years were dedicated to supervising traffic operations on construction projects;
- B. Possesses certification as a work zone safety supervisor, or possesses a Professional Traffic Operations Engineer (PTOE) certificate received through the Institute of Traffic Engineers.

Prior to commencing work requiring traffic control management, including field survey and geotechnical investigations, the Design-Builder shall submit to the Authority's Project Manager a copy of the traffic control supervisor's work zone safety supervisor resume including qualifications, experience and training. The Design-Builder shall certify that the traffic control supervisor is qualified only if all of the following minimum requirements are met:

- A. Successful completion of an industry-wide recognized work zone traffic control course;
- B. Passing a written examination on the work zone traffic control course; and
- C. A minimum of one year full-time field experience, verified by the Authority or firm, in work zone traffic control. The experience may be verified by the Authority at their discretion where Item B takes precedence over Item C.

##### **17.3.7.1.2. Duties**

The sole responsibility of the traffic control supervisor shall be management of the WZTC program. The duties of the traffic control supervisor shall include:

- A. Managing and supervising WZTC at the Project Site;
- B. Serving as the Design-Builder's point of contact for all WZTC coordination with the Authority;
- C. Managing on-going revisions and updates to the WZTC plan and WSA plan, including coordinating between the construction schedule and the WZTC plan;
- D. Coordinating WZTC requirements and details with on-going design;

- E. Supervising the implementation, maintenance and inspection of WZTC, either directly or through certified and accepted traffic control technicians, in accordance with the schedule in Section 17.3.9 herein;
- F. Correcting all deficiencies in WZTC plan and WSA plan and their implementation;
- G. Coordinating with NYSTA maintenance operations, utility owners and suppliers to ensure their operations are accounted for in the WZTC plan and adhered to by the Design-Builder;
- H. Maintaining a Project WZTC diary per MURK Part 1A (see Section 17.3.8 herein);
- I. Notifying Authority's Project Manager or designee of all traffic accidents at the earliest opportunity, but no more than 24 hours later. Recording traffic accident time and date of notification in the WZTC diary and submitting same to the Authority's Project Manager;
- J. Obtaining vehicle accident reports from local law enforcement agencies for traffic accidents reported with the Project Limits. Providing copies to the Authority's Project Manager;
- K. Investigating or assisting responsible agencies in the investigation of accidents resulting in fatalities or serious injury.

The Authority reserves the right to direct the removal of a traffic control supervisor determined to be performing inadequately.

#### **17.3.7.1.3. Availability**

An accepted traffic control supervisor or previously accepted alternate(s) shall be available 24 hours per day, seven days per week, throughout the duration of the Project, including times of Project suspension.

If the Design-Builder assigns more than one traffic control supervisor to WZTC management, the Design-Builder shall submit to the Authority's Project Manager or designee a weekly schedule identifying which individual will be providing WZTC management on each day of the coming week.

At any time when a traffic control supervisor is not present on the Project Site, a traffic control supervisor shall be on call and be able to respond to and be present at the Site within 45 minutes. The Design-Builder shall provide the Authority's Project Manager and his/her designee(s) with an accurate phone number for contacting the on-call traffic control supervisor.

#### **17.3.7.2. Traffic Control Technician**

All the Design-Builder's WZTC implementation, inspection and maintenance activities not performed under the direct supervision of the traffic control supervisor shall be directly supervised by a traffic control technician. The Design-Builder may assign one or more traffic control technicians to work under the direction of the traffic control supervisor and to act for the traffic control supervisor in emergencies. At least one traffic control technician shall be on duty at all times, including times of Project suspension.

Each traffic control technician shall meet the following minimum qualifications:

- A. Possess certification as a work zone safety supervisor;
- B. Have at least three years work zone experience.

The Design-Builder shall certify that the traffic control technician(s) are qualified only if all of the following minimum requirements are met:

- A. Successful completion of an industry-wide recognized work zone traffic control course;
- B. Passing a written examination on the work zone traffic control course; and
- C. A minimum of one year full-time field experience, verified by the Authority or firm, in work zone traffic control. The experience may be verified by the Authority at their discretion where Item B takes precedence over Item C.

### **17.3.8. WZTC Diary**

The Design-Builder shall maintain a Project WZTC diary in a format acceptable to the Authority's Project Manager. The Design-Builder's traffic control supervisor shall keep the WZTC diary current on a daily basis and shall sign each daily diary entry. Photographs shall be used to supplement the written text.

The WZTC diary shall at all times be available for inspection by the Authority's Project Manager. A copy of the WZTC diary shall be submitted to the Authority's Project Manager monthly.

The WZTC diaries shall become the property of the Authority at completion of the Project. The Design-Builder shall issue the complete and signed-off WZTC diary to the Authority at least 10 days prior to Final Acceptance.

### **17.3.9. WZTC Inspection**

As a minimum, the Design-Builder shall inspect traffic control devices according to the schedule specified in Table 17.3.9-1. The Design-Builder shall be responsible for providing immediate repair or replacement of traffic control devices that are not functioning as required to ensure the safety of public traffic and construction personnel.

**Table 17.3.9-1 Traffic Control Device Inspection Frequency**

<b>Traffic Control Device</b>	<b>Inspection Frequency</b>
Pavement markings (lasting more than 6 months in service)	
Temporary pavement markings	
Fixed signage	
Temporary signage	
Drums, cones, TCB delineation and portable delineators	
Barricades	
Temporary traffic signals	
Temporary flashing beacons	
Temporary roadway lighting	
Permanent variable message signs	
Portable dynamic message signs and flashing arrow-boards	



## 17.4. Deliverables

At a minimum, the Design-Builder's deliverables to the Authority shall include the items in Table 17.4-1.

**Table 17.4-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section	Status of response to be sought from Authority
	Hardcopy	Electronic			
WZTC plan	5	1	At first Readiness for Construction Review, and updated every 3 months or for every major traffic shift if within 3 months	17.3.1	For Approval
WSA plan	2	2	At first Readiness for Construction Review, and updated every 3 months or for every major traffic shift if within 3 months	17.3.1	For Approval
Traffic control supervisor & traffic control technician resumes and certifications	2	1	At NTP and at any change in staff	17.3.1.8	For Approval
Copy of WZTC diary	2	1	Monthly	17.3.8	For review and written comment
Final WZTC diary	1	1	At least 10 days before Final Acceptance	17.3.8	For review and written comment



## Attachment 1 – Holiday Periods

**Table A-1 Holiday Periods (2012 to 2018)**

Yr	Event	Holiday Period
2012	Labor Day	12:00 Noon Thursday 08/30/2012 to 10:00 a.m. Tuesday 09/04/2012
	Rosh Hashanah	12:00 Noon Sunday 09/16/2012 to 9 p.m. Sunday 09/16/2012 12:00 Noon Monday 09/17/2012 to 9 p.m. Monday 09/17/2012
	Yom Kippur	12:00 Noon Tuesday 9/25/2012 to 9 p.m. Tuesday 9/25/2012 12:00 Noon Wednesday 9/26/2012 to 9 p.m. Wednesday 9/26/2012
	Columbus Day	6:00 a.m. Friday 10/05/2012 to 10:00 a.m. Tuesday 10/09/2012
	Veteran's Day	12:00 Noon Friday 11/09/2012 to 10:00 a.m. Tuesday 11/13/2012
	Thanksgiving	6:00 a.m. Wednesday 11/21/2012 to 10:00 a.m. Monday 11/26/2012
	Christmas/ New Year	6:00 a.m. Friday 12/21/2012 to 10:00 a.m. Wednesday 01/02/2013
2013	M.L. King's Birthday	6:00 a.m. Friday 01/18/2013 to 10:00 a.m. Tuesday 01/22/2013
	Presidents Day	6:00 a.m. Friday 02/15/2013 to 10:00 a.m. Tuesday 02/19/2013
	Passover	12:00 Noon Monday 03/25/2013 to 9:00 p.m. Monday 03/25/2013 12:00 Noon Tuesday 03/26/2013 to 9:00 p.m. Tuesday 03/26/2013
	Good Friday	12:00 Noon Thursday 03/28/2013 to 10:00 a.m. Monday 04/01/2013
	Mother's Day	6:00 a.m. Sunday 05/12/2013 to 12 Midnight Sunday 05/12/2013
	Memorial Day	12:00 Noon Thursday 05/23/2013 to 10:00 a.m. Tuesday 05/28/2013
	July 4th	12:00 Noon Wednesday 07/03/2013 to 10:00 a.m. Monday 07/08/2013
	Labor Day	12:00 Noon Friday 08/30/2013 to 10:00 a.m. Tuesday 09/03/2013
	Rosh Hashanah	12:00 Noon Wednesday 09/04/2013 to 9:00 p.m. Wednesday 09/04/2013 12:00 Noon Thursday 09/05/2013 to 9:00 p.m. Thursday 09/05/2013
	Yom Kippur	12:00 Noon Friday 09/13/2013 to 9:00 p.m. Friday 09/13/2013 12:00 Noon Saturday 09/14/2013 to 9:00 p.m. Saturday 09/14/2013
	Columbus Day	6:00 a.m. Friday 10/11/2013 to 10:00 a.m. Tuesday 10/15/2013
	Veteran's Day	12:00 Noon Friday 11/08/2013 to 10:00 a.m. Tuesday 11/12/2013

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<b>Yr</b>	<b>Event</b>	<b>Holiday Period</b>
	Thanksgiving	6:00 a.m. Wednesday 11/27/2013 to 10:00 a.m. Monday 12/02/2013
	Christmas/New Year	6:00 a.m. Tuesday 12/24/2013 to 10:00 a.m. Thursday 01/02/2014
2014	M.L.King's Birthday	6:00 a.m. Friday 01/17/2014 to 10:00 a.m. Tuesday 01/21/2014
	Presidents Day	6:00 a.m. Friday 02/14/2014 to 10:00 a.m. Tuesday 02/18/2014
	Passover	12:00 Noon Monday 04/14/2014 to 9:00 p.m. Monday 04/14/2014 12:00 Noon Tuesday 04/15/2014 to 9:00 p.m. Tuesday 04/15/2014
	Good Friday	12:00 Noon Thursday 04/17/2014 to 10:00 a.m. Monday 04/21/2014
	Mother's Day	6:00 a.m. Sunday 05/11/2014 to 12:00 Midnight Sunday 05/11/2014
	Memorial Day	12:00 Noon Thursday 05/22/2014 to 10:00 a.m. Tuesday 05/27/2014
	July 4th	12:00 Noon Thursday 07/03/2014 to 10:00 a.m. Monday 07/07/2014
	Labor Day	12:00 Noon Thursday 08/28/2014 to 10:00 a.m. Tuesday 09/02/2014
	Rosh Hashanah	12:00 Noon Wednesday 09/24/2014 to 9:00 p.m. Wednesday 09/24/2014 12:00 Noon Thursday 09/25/2014 to 9:00 p.m. Thursday 09/25/2014
	Yom Kippur	12:00 Noon Friday 10/03/2014 to 9:00 p.m. Friday 10/03/2014 12:00 Noon Saturday 10/04/2014 to 9 00 p.m. Saturday 10/04/2014
	Columbus Day	6:00 a.m. Friday 10/10/2014 to 10:00 a.m. Tuesday 10/14/2014
	Veteran's Day	12:00 Noon Friday 11/07/2014 to 10:00 a.m. Wednesday 11/12/2014
	Thanksgiving	6:00 a.m. Wednesday 11/26/2014 to 10:00 a.m. Monday 12/01/2014
	Christmas/ New Year	6:00 a.m. Wednesday-12/24/2014 to 10:00 a.m. Monday 01/05/2015
2015	M.L. King's Birthday	6:00 a.m. Friday 01/16/2015 to 10:00 a.m. Tuesday 01/20/2015
	Presidents Day	6:00 a.m. Friday 02/13/2015 to 10:00 a.m. Tuesday 02/17/2015
	Good Friday/ Passover	12:00 Noon Thursday 04/02/2015 to 10:00 a.m. Monday 04/06/2015
	Mother's Day	6:00 a.m. Sunday 05/10/2015 to 12:00 Midnight Sunday 05/10/2015
	Memorial Day	12:00 Noon Thursday 05/21/2015 to 10:00 a.m. Tuesday 05/26/2015
	July 4th	12:00 Noon Thursday 07/02/2015 to 10:00 a.m. Monday 07/06/2015
	Labor Day	12:00 Noon Thursday 09/03/2015 to 10:00 a.m. Tuesday 09/08/2015



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<b>Yr</b>	<b>Event</b>	<b>Holiday Period</b>
	Rosh Hashanah	12:00 Noon Sunday 09/13/2015 to 9:00 p.m. Sunday 09/13/2015 12:00 Noon Monday 09/14/2015 to 9:00 p.m. Monday 09/14/2015
	Yom Kippur	12:00 Noon Tuesday 09/22/2015 to 9:00 p.m. Tuesday 10/22/2015 12:00 Noon Wednesday 10/23/2015 to 9:00 p.m. Wednesday 10/23/2015
	Columbus Day	6:00 a.m. Friday 10/09/2015 to 10:00 a.m. Tuesday 10/13/2015
	Veteran's Day	12:00 Noon Tuesday 11/10/2015 to 10:00 a.m. Thursday 11/12/2015
	Thanksgiving	6:00 a.m. Wednesday 11/25/2015 to 10:00 a.m. Monday 11/30/2015
	Christmas/ New Year	6:00 a.m. Thursday 12/24/2015 to 10:00 a.m. Monday 01/04/2016
2016	M.L. King's Birthday	6:00 a.m. Friday 01/15/2016 to 10:00 a.m. Tuesday 01/19/2016
	Presidents Day	6:00 a.m. Friday 02/12/2016 to 10:00 a.m. Tuesday 02/16/2016
	Good Friday	12:00 Noon Thursday 03/24/2016 to 10:00 a.m. Monday 03/28/2016
	Passover	12:00 Noon Friday 04/22/2016 to 9:00 p.m. Friday 04/22/2016 12:00 Noon Saturday 04/23/2016 to 9:00 p.m. Saturday 04/23/2016
	Mother's Day	6:00 a.m. Sunday 05/08/2016 to 12:00 Midnight Sunday 05/08/2016
	Memorial Day	12:00 Noon Thursday 05/26/2016 to 10:00 a.m. Tuesday 05/31/2016
	July 4th	6:00 a.m. Friday 07/01/2016 to 10:00 a.m. Tuesday 07/05/2016
	Labor Day	12:00 Noon Thursday 09/01/2016 to 10:00 a.m. Tuesday 09/06/2016
	Rosh Hashanah	12:00 Noon Sunday 10/02/2016 to 9:00 p.m. Sunday 10/02/2016 12:00 Noon Monday 10/03/2016 to 9:00 p.m. Monday 10/03/2016
	Columbus Day	6:00 a.m. Friday 10/07/2016 to 10:00 a.m. Tuesday 10/11/2016
	Yom Kippur	12:00 Noon Tuesday 10/11/2016 to 9:00 p.m. Tuesday 10/11/2016 12:00 Noon Wednesday 10/12/2016 to 9:00 p.m. Wednesday 10/12/2016
	Veteran's Day	12:00 Noon Thursday 11/10/2016 to 10:00 a.m. Monday 11/14/2016
	Thanksgiving	6:00 a.m. Wednesday 11/23/2016 to 10:00 a.m. Monday 12/28/2016
	Christmas/ New Year	12:00 Noon Thursday 12/22/2016 to 10:00 a.m. Tuesday 01/03/2017
2017	M.L. King's Birthday	6:00 a.m. Friday 01/13/2017 to 10:00 a.m. Tuesday 01/17/2017

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<b>Yr</b>	<b>Event</b>	<b>Holiday Period</b>
	Presidents Day	6:00 a.m. Friday 02/17/2017 to 10:00 a.m. Tuesday 02/21/2017
	Passover	12:00 Noon Monday 04/10/2017 to 9 p.m. Monday 04/10/2017 12:00 Noon Tuesday 04/11/2017 to 9 p.m. Tuesday 04/11/2017
	Good Friday	12:00 Noon, Thursday 04/13/2017 to 10:00 a.m. Monday 04/17/2017
	Mother's Day	6:00 a.m. Sunday 05/14/2017 to 12:00 Midnight Sunday 05/14/2017
	Memorial Day	12:00 Noon Thursday 05/25/2017 to 10:00 a.m. Tuesday 05/30/2017
	July 4 <sup>th</sup>	12:00 Noon Friday 06/30/2017 to 10:00 a.m. Wednesday 07/05/2017
	Labor Day	12:00 Noon Thursday 08/31/2017 to 10:00 a.m. Tuesday 09/05/2017
	Rosh Hashanah	12:00 Noon Wednesday 09/20/2017 to 9 p.m. Wednesday 09/20/2017 12:00 Noon Thursday 09/21/2017 to 9 p.m. Thursday 09/21/2017
	Yom Kippur	12:00 Noon Friday 09/29/2017 to 9 p.m. Friday 09/29/2017 12:00 Noon Saturday 09/30/2017 to 9 p.m. Saturday 09/30/2017
	Columbus Day	6:00 a.m. Friday 10/06/2017 to 10:00 a.m. Tuesday 10/10/2017
	Veteran's Day	12:00 Noon Thursday 11/9/2017 to 10:00 a.m. Monday 11/13/2017
	Thanksgiving	6:00 a.m. Wednesday 11/22/2017 to 10:00 a.m. Monday 11/27/2017
	Christmas/ New Year	12:00 Noon Thursday 12/21/2017 to 10:00 a.m. Tuesday 01/02/2018
2018	M.L. King's Birthday	6:00 a.m. Friday 01/12/2018 to 10:00 a.m. Tuesday 01/16/2018
	Presidents Day	6:00 a.m. Friday 02/16/2018 to 10:00 a.m. Tuesday 02/20/2018
	Good Friday	12:00 Noon Thursday 03/29/2018 to 10:00 a.m. Monday, 04/02/2018
	Passover	12:00 Noon Friday 03/30/18 to 9 p.m. Monday Friday 03/30/18 12:00 Noon Saturday 03/31/18 to 9 p.m. Saturday 03/31/18 (1st and 2nd Nights also contained in Good Friday Restrictions)
	Mother's Day	6:00 a.m. Sunday 05/13/2018 to 12:00 Midnight Sunday 05/13/2018
	Memorial Day	12:00 Noon Thursday 05/24/2018 to 10:00 a.m. Tuesday 05/29/2018
	July 4th	12:00 Noon Tuesday 07/03/2018 to 10:00 a.m. Thursday 07/05/2018
	Labor Day	12:00 Noon Thursday 08/30/2018 to 10:00 a.m. Tuesday 09/04/2018



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<b>Yr</b>	<b>Event</b>	<b>Holiday Period</b>
	Rosh Hashanah	12:00 Noon Sunday 09/09/2018 to 9 p.m. Sunday 09/09/2018 12:00 Noon Monday 09/10/2018 to 9 p.m. Monday 09/10/2018
	Yom Kippur	12:00 Noon Tuesday 09/18/2018 to 9 p.m. Tuesday 09/18/2018 12:00 Noon Wednesday 09/19/2018 to 9 p.m. Wednesday 09/19/2018
	Columbus Day	6:00 a.m. Friday 10/05/2018 to 10:00 a.m. Tuesday 10/09/2018
	Veteran's Day	12:00 Noon Friday 11/9/2018 to 10:00 a.m. Tuesday 11/13/2018
	Thanksgiving	6:00 a.m. Wednesday 11/21/2018 to 10:00 a.m. Monday 11/26/2018
	Christmas/ New Year	12:00 Noon Friday 12/21/2018 to 10:00 a.m. Wednesday 01/02/2019



## Attachment 2 – Minimum Number of Lanes

Notwithstanding the charts in Table A-2, no more than seven lanes of total capacity will be required while all traffic is on the existing bridge. Where 4 lanes northbound plus 4 lanes southbound are shown at any time, this indicates that there shall be no lane closures, and that the position of the median barrier will be determined by the Authority such that the barrier position will reduce one direction of travel to only 3 lanes.

**Table A-2 Minimum Number of Lanes to be Maintained**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) <b>SPRING SEASON Mar. 1 Thru May 31</b>														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	1	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	1	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
10am-11am	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	3	4	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	3	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	3	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
10pm-11pm	2*	2*	2*	2*	2	2	2	2	2	2	2	3	2	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 3 – 2012 – 2016

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) <b>SPRING SEASON Mar. 1 Thru May 31</b>														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	3	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	3	4	3	4
7pm-8pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	4	3	3	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	3

NYSTA Internal Reference Code Chart 3 – 2017 – 2018

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) SUMMER SEASON June 1 Thru Aug 31														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	3	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	3	4	3	4
7pm-8pm	4	3	4	3	4	3	4	3	4	4	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	4	3	3	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	3

NYSTA Internal Reference Code Chart 3 – 2012 – 2016

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) SUMMER SEASON June 1 Thru Aug 31														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	4	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
12pm-1pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	4	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	3	4	3	4
7pm-8pm	4	3	4	3	4	3	4	3	4	4	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	4	3	3	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	3

NYSTA Internal Reference Code Chart 3 – 2017 – 2018

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) <b>FALL SEASON Sept. 1 Thru Nov. 30</b>														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	4	4	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	4	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	4	3	3	3	4
8pm-9pm	2	2	2	2	2	2	3	2	4	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	2

NYSTA Internal Reference Code Chart 3 – 2012 – 2016

Note: All Ramps at Exits 8, 8A, and 9 follow this table.



**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) <b>FALL SEASON Sept. 1 Thru Nov. 30</b>														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	2	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	4	4	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	4	4	4	4	4	4	4	4	4	4	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	4	3	3	3	4
8pm-9pm	2	2	2	2	2	2	3	2	4	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	2

NYSTA Internal Reference Code Chart 3 – 2017 – 2018

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) WINTER SEASON Dec. 1 Thru Feb. 29														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	3
10am-11am	3	3	2	3	2	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	2	3	2	3	3	3	3	3	4	3	4	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	3
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	3	4	3	4	3	4	3	4	4	3	4	3	4
7pm-8pm	3	2	3	2	3	2	3	2	4	3	3	3	3	3
8pm-9pm	2	2	2	2	2	2	3	2	3	2	3	3	2	3
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	2	2	3
10pm-11pm	2*	2*	2*	2	2*	2	2	2	2	2	2	2	1	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 3 – 2012 – 2016

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.8/CWE (MP 11.3-13.0) WINTER SEASON Dec. 1 Thru Feb. 29														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	3
10am-11am	3	3	2	3	2	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	2	3	2	3	3	3	3	3	4	3	4	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	4	4	3
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	4	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	4	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	4	4	4	4	4	4	4
4pm-5pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5pm-6pm	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6pm-7pm	4	3	4	3	4	3	4	3	4	4	3	4	3	4
7pm-8pm	3	2	3	2	3	2	4	2	4	3	3	3	3	3
8pm-9pm	2	2	2	2	2	2	3	2	3	2	3	3	2	3
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	2	2	3
10pm-11pm	2*	2*	2*	2*	2	2*	2	2	2	2	2	2	1	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 3 – 2017 – 2018

Note: All Ramps at Exits 8, 8A, and 9 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11/(MP 13.0-17.6N/17.8S) <b>SPRING SEASON Mar. 1 Thru May 31</b>														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	1	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	1	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
10am-11am	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	3	3	3	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	3	3	3	4
2pm-3pm	3	3	3	3	3	3	3	3	4	3	3	3	3	
3pm-4pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	3	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	3	2	3
10pm-11pm	2*	2*	2*	2*	2	2*	2	2	2	2	2	3	2	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 4 – 2012 – 2016

Note: All Ramps at Exits 10 and 11 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

# New York State Thruway Authority

I-87:TAPPAN ZEE BRIDGE – INT.11/(MP 13.0-17.6N/17.8S) SPRING SEASON Mar. 1 Thru May 31														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	1	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	1	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
10am-11am	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	3	3	4
1pm-2pm	3	3	3	3	3	3	4	3	4	3	4	3	4	4
2pm-3pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3pm-4pm	4	3	4	3	4	3	4	3	4	3	4	3	3	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	4	4	3	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	3	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	3	2	3
10pm-11pm	2*	2*	2*	2*	2	2*	2	2	2	2	2	3	2	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 4 – 2017 – 2018

Note: All Ramps at Exits 10 and 11 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.



**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11/(MP 13.0-17.6N/17.8S) SUMMER SEASON Jun. 1 Thru Aug. 31														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	2	1	2	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	3	4	4
12pm-1pm	3	3	3	3	3	3	3	3	3	3	4	3	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	3	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	3	4	3	4	4
3pm-4pm	4	3	4	3	4	3	4	3	4	3	4	4	4	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	4	4	4	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	4	3	3	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	1	2	2	2	3

NYSTA Internal Reference Code Chart 4 – 2012 – 2016

Note: All Ramps at Exits 10 and 11 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11/(MP 13.0-17.6N/17.8S) SUMMER SEASON Jun.1 Thru Aug. 31														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	2	1	2	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	1	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	4	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	4	3	4	4
12pm-1pm	3	3	3	3	3	3	4	3	4	3	4	3	4	4
1pm-2pm	3	3	3	3	3	3	3	3	4	3	4	3	4	4
2pm-3pm	3	3	3	3	3	3	4	3	4	3	4	4	4	4
3pm-4pm	4	3	4	3	4	3	4	3	4	3	4	4	4	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	4	4	4	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
8pm-9pm	3	2	3	2	3	2	3	2	4	3	3	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	3

NYSTA Internal Reference Code Chart 4 – 2017 – 2018

Note: All Ramps at Exits 10 and 11 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11(MP 13.0-17.6N/17.8S) FALL SEASON Sept. 1 Thru Nov. 30														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1pm-2pm	3	3	3	3	3	3	3	3	4	3	3	3	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	3	3	3	4	4
3pm-4pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	3	3	3	3	4
8pm-9pm	2	2	2	2	2	2	3	2	4	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	3	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	2

NYSTA Internal Reference Code Chart 4 – 2012 – 2016

Note: All Ramps at Exits 10 and 11 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11(MP 13.0-17.6N/17.8S) FALL SEASON Sept. 1 Thru Nov. 30														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	2
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	3	3	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	3	2
10am-11am	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1pm-2pm	3	3	3	3	3	3	3	3	4	3	3	3	4	4
2pm-3pm	3	3	3	3	3	3	3	3	4	3	3	3	4	4
3pm-4pm	4	3	4	3	4	3	4	3	4	3	3	3	4	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	3	4	4	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	3	3	3	3	3	4	3	4	3	3	3	3	4
8pm-9pm	2	2	2	2	2	2	3	2	4	3	2	3	3	4
9pm-10pm	2	2	2	2	2	2	3	2	3	2	2	3	2	3
10pm-11pm	2	2	2	2	2	2	2	2	2	2	2	2	2	3
11pm-12am	1	1	1	1	1	1	2	1	2	2	2	2	2	2

NYSTA Internal Reference Code Chart 4 – 2017 – 2018

Note: All Ramps at Exits 10 and 11 follow this table.

**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11(MP 13.0-17.6N/17.8S) WINTER SEASON Dec. 1 Thru Feb. 29														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	3
10am-11am	3	3	2	3	2	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	2	3	2	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1pm-2pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2pm-3pm	3	3	3	3	3	3	3	3	4	3	3	3	3	3
3pm-4pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	2	3	2	3	2	3	2	4	3	3	3	3	3
8pm-9pm	2	2	2	2	2	2	3	2	3	2	3	3	2	3
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	2	2	3
10pm-11pm	2*	2*	2*	2*	2	2*	2	2	2	2	2	2	1	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 4 – 2012 – 2016

Note: All Ramps at Exits 10 and 11 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.



**New York State Thruway Authority**

I-87:TAPPAN ZEE BRIDGE – INT.11(MP 13.0-17.6N/17.8S) WINTER SEASON Dec. 1 Thru Feb. 28														
LANES REQUIRED TO BE MAINTAINED FOR TRAFFIC MANAGEMENT BY DAY OF WEEK & TIME OF DAY														
Time of Day	Mon		Tue		Wed		Thur		Fri		Sat		Sun	
	N	S	N	S	N	S	N	S	N	S	N	S	N	S
12am-1am	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1am-2am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2am-3am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3am-4am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4am-5am	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5am-6am	1	2	1	2	1	2	1	2	1	2	1	1	1	1
6am-7am	2	4	2	4	2	4	2	4	2	4	2	2	1	1
7am-8am	3	4	3	4	3	4	3	4	3	4	2	2	2	1
8am-9am	3	4	3	4	3	4	3	4	3	4	2	2	2	2
9am-10am	3	4	3	4	3	4	3	4	3	4	3	3	2	3
10am-11am	3	3	2	3	2	3	3	3	3	3	3	3	3	3
11am-12pm	3	3	2	3	2	3	3	3	3	3	3	3	3	3
12pm-1pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1pm-2pm	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2pm-3pm	3	3	3	3	3	3	3	3	4	3	3	3	3	3
3pm-4pm	4	3	4	3	4	3	4	3	4	3	3	3	3	4
4pm-5pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
5pm-6pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
6pm-7pm	4	3	4	3	4	3	4	3	4	3	3	4	3	4
7pm-8pm	3	2	3	2	3	2	4	2	4	3	3	3	3	3
8pm-9pm	2	2	2	2	2	2	3	2	3	2	3	3	2	3
9pm-10pm	2	2	2	2	2	2	2	2	3	2	2	2	2	3
10pm-11pm	2*	2*	2*	2*	2	2*	2	2	2	2	2	2	1	2
11pm-12am	1	1	1	1	1	1	2**	1	2	2	2	2	1	1

NYSTA Internal Reference Code Chart 4 – 2017 – 2018

Note: All Ramps at Exits 10 and 11 follow this table.

\*One Lane Required To Be Maintained Beginning at 10:30 p.m.

\*\*One Lane Required To Be Maintained Beginning at 11:30 p.m.

### Attachment 3 - Waiver of minimum lane requirements

Work restrictions regarding the minimum number of available lanes, as presented in Section 17.3.3.4 of this Project Requirement may be modified if:

1. The Design-Builder has received permission from the Authority to progress work operations contained entirely behind temporary concrete barriers. There shall be no hauling of materials in or out of the work site during restricted periods, and open lane availability requirements shall not be violated or compromised.
2. The Design-Builder has received permission from the Authority for temporary modification of the lane availability restrictions, for performance of specific construction operations, for a specific time period.
  - a. Such requests shall be based on current traffic volumes, and the requested temporary modification to lane requirements shall have little probability of causing disruption or delay to the public.
  - b. In applying for such waivers, the Design-Builder shall include a full explanation of the benefits to the public and to the Authority that would result from the granting of the temporary waiver for performance of the specific operations.
  - c. A specific contingency plan for actions to be taken in the event that an unexpected traffic backup occurs shall accompany the waiver request, and will be a key consideration in evaluating the request.
3. The Design-Builder has received written authorization from the Authority to perform specific work operations violating the lane availability restrictions or other work restrictions during a specifically prohibited time period.
  - a. The Design-Builder shall submit a written request to the Authority for permission to perform specific work operations at specific locations and times, including a detailed explanation of why the work cannot be performed in conformance with the Contract.
  - b. Such requests must be received at Authority Headquarters at least one full week before the date of the requested variance, and at least two full weeks should granting the waiver require making notice to the public regarding potential disruption and delays.
  - c. If written authorization to work is granted by the Authority, the Design-Builder shall be strictly limited to those operations approved in the authorization. In making application for a waiver, the Design-Builder agrees that any waiver of restrictions granted by the Authority is exclusively for the Authority's benefit and purposes, and as such is subject to revocation without requirement for advance notice. Also, the disapproval of requests for waiver of contract requirements is not subject to administrative review or appeal under the contract.

The Design-Builder shall not be allowed to establish any lane closures during periods of inclement weather, wet or icy pavement, reduced visibility, traffic accident, or other emergency. Under such conditions the Authority reserves the right to alter any lane closure and/or direct the Design-Builder to immediately remove a lane closure. The Authority shall be the sole judge of when conditions warrant these lane closure restrictions.

## SECTION 18. MAINTENANCE OF SHIPPING

### 18.1. Scope

The Hudson River is an active shipping route. The Crossing Works will require construction above and alongside the federal navigation channel and the movement of construction vessels within the Hudson River.

Work activities in, over, or adjacent to navigable waters are subject to regulation by:

- A. The U.S. Coast Guard;
- B. The U.S. Army Corps of Engineers;
- C. The NYS Department of Environmental Conservation;
- D. The N.Y.S. Department of State – Division of Coastal Resources and Waterfront Revitalization (within the tidal reaches of the Hudson River).

The Design-Builder shall abide by the requirements of the aforementioned regulatory agencies.

The Design-Builder shall be subject to a U.S. Coast Guard bridge permit which will specify the required clearances and the requirements for all work affecting shipping. Details of the clearances can be found in *Part 6 – RF P Plans*. The Authority shall obtain the permit from the U.S. Coast Guard that defines the required clearances for the Crossing.

### 18.2. Standards

The Design-Builder shall perform the maintenance of shipping activities in accordance with the following Standards, unless otherwise stipulated in Project Requirements herein.

- A. CFR Title 33 Part 115
- B. U.S. Coast Guard Bridge Permit (permit reference number to be confirmed).

### 18.3. Requirements

#### 18.3.1. Design

The Design-Builder shall clearly identify the clearances required by the U.S. Coast Guard permit in the scope of design work within each relevant Design Unit in the Design Report required in *DB §111-3*.

The Design-Builder shall be responsible for complying with all required clearances and other requirements that impact the Crossing set forth in the U.S. Coast Guard permit.

#### 18.3.2. Authority-obtained Permits

The Authority shall obtain a permit from the U.S. Coast Guard (see Section 18.2 Item (B), herein) for the anticipated construction activities that cross a waterway and/or within the water channel under the jurisdiction of the U.S. Coast Guard, based on the requirements in the Directive Plans.

The Design-Builder shall conform to the following requirements:

- A. It shall be the sole responsibility of the Design-Builder to conduct all operations so as to comply with all regulations and requirements of the Authority's aforementioned permits and approvals in connection with, but not limited to, the maintenance of navigation, water pollution and flood control for the duration of the Design-Builder's Contract with the Authority;
- B. The cost of all work required of the Design-Builder to comply with the aforementioned permits and approvals for the work detailed in the Contract Proposal and plans is to be included by the Design-Builder in various associated items of the Contract;

- C. If the Design-Builder proposes to perform Work in conflict with the permits and approvals obtained by the Authority, the Design-Builder shall bear the cost of all permit re-filing fees and the man-hours spent by the Authority to obtain revised permits;
- D. Costs created by the Design-Builder by not complying with the Authority-obtained permits and approvals shall be paid solely by the Design-Builder;
- E. Any additional costs created by the Design-Builder by its choice of construction methods, differing from those shown on the permit drawings for the Authority-obtained permits, shall be paid for by the Design-Builder.

### **18.3.3. Additional Permits, Licenses and Approvals to be Obtained by the Design-Builder**

Additional permits, licenses and approvals, other than those supplied by the aforementioned agencies to the Authority, that are required by the Design-Builder for its labor, equipment or Work operations to be legally used or executed shall be obtained by, and all relevant fees paid for by, the Design-Builder.

The Design-Builder shall be responsible for ensuring that all affected public and private bodies receive all notices necessary and incident to the due and lawful execution of the Work, and shall comply with all laws, ordinances, rules, and regulations of the Federal Government, the State, the local governments and other bodies having jurisdiction over the Work and work area encompassed by its Contract.

### **18.3.4. U.S. Coast Guard Approval and Requirements**

Even if the type of Work to be performed by the Design-Builder does not require permits or licenses from the other agencies listed in Section 18.1 herein, the Design-Builder is advised that any Work performed within or adjacent to a navigable waterway will require prior U.S. Coast Guard approval.

Over and above any U.S. Coast Guard approval obtained by the Authority, the Design-Builder is hereby notified that the U.S. Coast Guard must also approve the Design-Builder's items including the specific plan and schedule of operation, prior to the Design-Builder commencing any Work in or over navigable waterways. The U.S. Coast Guard Approval request is to be submitted to the Authority by the Design-Builder at least 100 days before the Design-Builder's proposed start date for Work on or in the river that is subject to U.S. Coast Guard approval. The Design-Builder shall be responsible for the submission to the U.S. Coast Guard, via the Authority's Project Manager, of three copies of the Design-Builder's Design Plan(s), schedule and sequence of operation. The submission documents shall outline planned work tasks that shall involve equipment in the navigable waterway; the sequence of the planned work tasks; a preliminary schedule of the duration of each task giving daily hours of operation and indicating when waterborne equipment will remain in the waterway at night; and the duration of the Project construction Work. When the 3 copies have either received the U.S. Coast Guard's approval stamp and/or its comments as appropriate, one copy shall be kept by the U.S. Coast Guard, one copy shall be kept by the Authority, and one copy shall be returned to the Design-Builder.

No deviation from the U.S. Coast Guard approved plan and schedule of operations may be made unless the modification has previously been submitted and approved by the U.S. Coast Guard and the Authority.

The Design-Builder is hereby notified that the Authority does not have control over the U.S. Coast Guard approval procedures and is not responsible for delays associated with the Authority's procedures. The Design-Builder shall make timely submissions of information to minimize the potential for delays.

All formal correspondence with and submissions to the U.S. Coast Guard shall be made through the Authority. However, if the Design-Builder wishes to make an informational inquiry to the U.S. Coast Guard, it should be directed to:

Commander, OBR  
First Coast Guard District  
Battery Park Bldg., 3rd Floor  
New York, NY 10004  
(212) 668-7021/7069

### **18.3.5. Maintenance and Protection of Navigation**

#### **18.3.5.1. General**

The Design-Builder shall conform to the following requirements:

- A. The operations of the Design-Builder shall be carried on in accordance with the *General Rules and Regulations* of the U.S. Coast Guard. At no time during construction shall restrictions be placed upon navigation without first receiving advance written consent of the Authority and the U.S. Coast Guard. The Design-Builder shall contact the U.S. Coast Guard through the Authority at least thirty (30) days prior to each proposed restriction period and shall be responsible for confirming that the proposed restrictions shall be published in the U.S. Coast Guard's Notice to Mariners;
- B. All Work shall be so conducted that the free navigation of the waterway is not interfered with and the pre-construction navigable depths are not impaired. At no time during the construction Work shall the waterway be closed to navigation without prior notification and approval by the U.S. Coast Guard and the Authority;
- C. The Design-Builder shall exercise care so that materials used in its operations do not affect, interfere with, or endanger the traffic in the waterway;
- D. If at any time the free navigation or present navigation depths are impaired, immediate notice shall be given by the Design-Builder the Authority and U.S. Coast Guard. The Design-Builder shall be responsible for ensuring that appropriate corrective action shall be immediately performed.

#### **18.3.5.2. Navigational Signs**

The Design-Builder shall be responsible for conforming to all navigation sign requirements summarized in this Section 18.3.5.2.

When the Work zone perimeter is within 197 feet of a limit of the navigable channel and that navigable channel limit is within 151 feet of the waterway's shoreline, shore-mounted construction signs for waterway users will be required including:

- A. A sign "Construction Ahead" shall be displayed at each end of the Work zone, facing the traffic as it approaches the Work zone;
- B. A sign "End Construction" shall be displayed facing traffic as it leaves the Work zone.

When a Work zone lies within a navigable channel and is further than 351 feet from a shoreline, the U.S. Coast Guard shall be contacted to review what appropriate locations may exist to mount construction signs to the bridge's superstructure or substructure.

At any locations where the U.S. Coast Guard determines construction signs would be ineffective, the protection of passing vessels/barges shall require that the Design-Builder shall execute "navigation watch", in conjunction will proper notification of Work periods in the U.S. Coast Guard's Notice to Mariners. For a navigation watch, the Design-Builder shall be responsible for ensuring that items including weld metal, metal sparks or other debris are prevented from falling onto vessels passing under the bridge. At all times, when Work is in progress, one of the Design-Builder's personnel shall be designated as the navigation watch. When a vessel approaches an overhead or adjacent worksite, all work crew members shall be notified to immediately cease Work operations including welding, grinding, and cleaning or painting until the vessel has



passed. The Design-Builder's shall be responsible for establishing an effective and robust system of communication between the navigation watch and the work crew members.

#### 18.3.5.3. Navigational Aids

The Design-Builder shall be responsible for ensuring that:

- A. Temporary and permanent navigational aids fulfilling the requirements of the U.S. Coast Guard permits for structures within the Project Limits shall remain functional and unobstructed visually for the duration of the Contract;
- B. Temporary navigational aids placed by the Design-Builder and not specifically shown on the Plans are to be approved by the U.S. Coast Guard and paid for at the Design-Builder's expense;
- C. Within the Project Limits, existing, temporary and new navigational aids shall be serviced and maintained by the Design-Builder at the Design-Builder's expense for the duration of the Contract in the same condition that they existed in at the start of the Contract, or when installed by the Design-Builder;
- D. Prior to Final Acceptance, all temporary navigational aids shall be properly removed, returned to an original existing condition or replaced by a new permanent navigational aid.
- E. The Design-Builder shall maintain power, or provide temporary power, to all existing navigational aids within the Project Limits at the Design-Builder's expense when specific Work does not require or force the termination of power to those navigational aids;
- F. Damage to navigational aids by the Design-Builder within the Project Limits shall be repaired by the Design-Builder at the Design-Builder's expense;
- G. Specific approval of proposed new permanent or temporary lights shall be obtained in writing from the US Coast Guard by the Design-Builder. The Design-Builder shall submit for approval, drawings, and catalogue cuts of items including lights, relays, power systems it proposes to furnish, including details for mounting and securing same;
- H. RACON (radar responder or radar transponder beacons) is the receiver/transmitter transponder navigational device mounted to the center of the existing Main Span of the existing bridge, with the function of delineating the federal navigation channel. The Design-Builder shall be responsible for providing a functioning RACON system on the Crossing, in accordance with any USCG requirements.

#### 18.3.5.4. Obstruction of Channel and Waterway

- A. **Vertical Clearance.** Picks, rigging and other devices used by the Design-Builder shall not protrude into the navigational channel to lessen the vertical clearance to less than that required by the U.S. Coast Guard. When not in use, such apparatus shall be moved, removed or tied-up so as not to be lower than the bridge girders to which they are attached, except as approved in advance by the Authority and the U.S. Coast Guard.
- B. **Horizontal Clearances .** In the event the Design-Builder must restrict navigable clearances to perform the Work, or must use floating equipment that restricts navigable clearances, or otherwise obstructs the channel and waterway so as to endanger the passage of vessels, as defined in the *River and Harbor Act*, the obstruction shall be so positioned as to afford a practicable passage. The Design-Builder shall display signal lights at the site; and shall utilize any other aids to navigation, whether permanent or temporary, as required in the permits and in accordance with the General Regulations of the U.S. Coast Guard's Navigation Rules International-Inland. Upon completion of the relevant element of Work, the Design-Builder shall immediately restore free navigation of the waterway by removing the restriction and any navigational aids used.

- C. **Floating Plants.** Floating plants and their operation by the Design-Builder shall be subject to the approval of the U.S. Coast Guard. During working hours, floating plants shall be so positioned that there will be no interference with navigation if practicable and, if necessary, the Design-Builder shall promptly move floating plant to avoid such interference. During non-working hours, floating plants shall be positioned or located as approved by the U.S. Coast Guard so that it does not interfere with navigation.

### **18.3.6. Protection of Channel and Environment**

#### **18.3.6.1. Preservation of the Existing Waterway - Site Inspections**

The Design-Builder shall be responsible for planning, implementing and reporting the following:

- A. For the purposes of this Project, the navigation channel shall be defined as the zone extending laterally between the inner faces of the back span piers of the existing bridge (Piers 173 and 178) or between the inner faces of the new Crossing back span piers, if greater.
- B. Before commencement of any Work in or near the navigation channel, a bathymetric survey of the river bottom, referenced to the North American Vertical Datum (NAVD 88), shall be taken for the zone extending (east-west) 150 feet beyond the navigation channel on each side of the channel and extending (north-south) 150 feet south of the south fascia of the existing bridge and 150 feet north of the proposed northernmost fascia of the Crossing. . These soundings shall be taken on a 10 foot grid. A copy of the soundings shall be submitted to the U.S. Coast Guard and the Authority;
- C. In conformance with the time periods stated in *Project Requirement 5 – Surveying and GIS*, the Design-Builder shall perform an end-of-Works inspection of the navigation channel waterway bottom and shall demonstrate and ensure that all debris created by demolition or construction activities at the Site has been completely removed from the navigation channel waterway. This post-construction inspection shall consist of both bathymetric surveying (soundings) and a wire drag. The bathymetric survey shall be taken on a 10 foot grid and cover the area surveyed under Item B above. The wire drag shall be performed after a review and comparison of the soundings have been made by the U.S. Coast Guard. All cost associated with performing the bathymetric survey shall be included in the Proposal Price. This inspection of the navigation channel and its environs shall be in addition to the end-of-Works inspection required under *Project Requirement 25 – Demolition* (Section 25.4.6).
- D. The wire drag shall be conducted in the presence of a U.S. Coast Guard representative. The Design-Builder shall be responsible for arrangements for this, which shall be coordinated with the U.S. Coast Guard by calling (212-668-6380) at least one week in advance of the desired start date of the wire drag inspection. A preliminary sweep by the Design-Builder prior to the official survey has in a number of instances proven beneficial. Black and white 8.5 inch x 11 inch glossy photographs of the completed piers, including fender and ice breaker structures as appropriate, shall be taken from the mariners' view point, both upstream and downstream of the Crossing. Three copies of each photograph shall be forwarded to the U.S. Coast Guard for record purposes, along with a key map showing the location and reference name/number of each image.
- E. It shall be the responsibility of the Design-Builder to ensure that navigation channel depths are not affected by the Work. Should it be suspected that the navigation channel depths may have been impaired or that an obstruction may exist from the Work, the Design-Builder shall upon request of the U.S. Coast Guard or U.S. Army Corps of Engineers, provide the necessary equipment and personnel to undertake a survey to determine the presence of any obstruction, objects, or silting that may have occurred during the Works. The costs for such activities shall be borne by the Design-Builder. Such *ad hoc* surveys shall be in addition the scheduled, regular side-scan sonar surveys required under *Project Requirement 25 – Demolition* (Section 25.4.6).

- F. Prior to Final Acceptance, certification that the waterway depths have not been impaired shall be sent by the Design-Builder to the U.S. Coast Guard and the Authority.

**18.3.6.2. Preservation of the Existing Waterway - Misplaced Material**

- A. If the Design-Builder, during the progress of the Work whether by accident or design, should lose, dump, throw overboard, sink or misplace any material, plant, machinery or appliance, which may be dangerous or obstruct navigation, the Design-Builder shall promptly recover and remove the same. The Design-Builder shall give immediate notice of such obstruction to the U.S. Coast Guard and the Authority. The Design-Builder's notice to the U.S. Coast Guard shall give a description and location of any such object and the action(s) taken or being taken to protect navigation.
- B. Until removal can be effected, all such misplaced object(s) shall be properly marked to protect navigation.
- C. If the Design-Builder neglects to remove, or refuses to promptly remove such obstruction, the Authority shall have the same removed and charge the costs against monies due to the Design-Builder or recover under the Design-Builder's Bond.
- D. The liability of the Design-Builder for removal of a vessel wrecked or sunk without fault or negligence shall be limited to that provided in Section 15, 19 and 20 of the *River and Harbor Act* of March 3, 1899 or subsequent Acts in effect at the time the work is being performed.

**18.3.6.3. Temporary Removal of Navigation Aids**

In the case that temporary removal or changes in location of channel markers may be required to facilitate navigation, the Design-Builder shall be responsible for notifying the Authority at least 30 days prior to the desired date of removal of any channel marker in order that U.S. Coast Guard permission may be obtained and navigation interests fully informed in advance of the proposed change in location.

**18.3.6.4. Spillage of Oil and Hazardous Substances**

Spillage of oil and hazardous substances is prohibited by, *inter alia*, Section 311 of the *Clean Water Act* as amended. The Design-Builder shall be responsible for measures including proper maintenance of construction equipment, designating fuel and hazardous substances handling areas to allow spills to be contained before reaching waterways, instructing personnel not to dispose of oil and other such materials into drains or into the waterway directly, and other necessary procedures appropriate in the prevention of spillage.

If, despite such planning, oil or hazardous substances are spilled into a watercourse, the Design-Builder shall be responsible for providing immediate notification to the NYS Department of Environmental Conservation at (518) 457-7362, the National Response Center at (800) 424-8802 and the Authority's Project Manager.

The Design-Builder shall be responsible for ensuring that suitable spill containment equipment and absorbent materials are located on the Project Site and all staging areas so that these may be rapidly deployed to soak-up possible spillage, pending DEC and/or U.S. Coast Guard arrival on the scene. The use of chemical dispersing agents and emulsifiers is not permitted without prior, specific written Federal or State approval.

**18.3.7. Completion of Construction Work**

**18.3.7.1. Notice to Mariners**

The Design-Builder shall notify the Authority and the U.S. Coast Guard 30 days in advance of completion of physical Work at or over the Hudson River, including demolition, so that the appropriate notice can be given to mariners.

#### 18.3.7.2. Final Clearance

All items including lights, buoys, signs, scaffolding, anchors, bulkheads and cables shall be removed from the area on shore or off shore as the case may be upon Crossing Substantial Completion or at such time when the items are no longer needed for the Work.

### 18.4. Deliverables

At a minimum, the Design-Builders deliverables to the Authority shall include the items in Table 18.4-1.

**Table 18.4-1 Deliverables**

Deliverable	Number of Copies		Reference Section
	Hardcopy	Electronic	
Details of the Design-Builder's Work in the river	3	1	18.3.4
Post-construction certification of the waterway	5	1	18.3.6.1

## SECTION 19. MAINTENANCE FACILITIES

### 19.1. Scope

The Design-Builder shall be responsible for ensuring that its activities do not hinder the operation of NYSTA maintenance facilities. The requirements for the temporary and permanent relocation and replacement of NYSTA maintenance facilities are outlined in this Project Requirement, should the Design-Builder choose to utilize the areas occupied by existing maintenance facilities at Rockland and Westchester landings. The Design-Builder shall provide and maintain access to NYSTA maintenance facilities during construction.

### 19.2. Standards

The Design-Builder shall perform the maintenance facility activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

- A. NYSDOS/ DECA New York State Uniform Fire Prevention & Building Code (the Uniform Code) and its Reference Standards including the Codes of New York State
- B. ADA The Americans with Disabilities Act of 1990
- C. OSHA Standards (29 CFR, Part 1926)
- D. Green and Clean State Buildings and Vehicles Guidelines (Executive Order No. 111)
- E. State Green Procurement and Agency Sustainability Program (Executive Order No. 4)

#### 19.2.1. Abbreviations used herein

- A. [REDACTED] Bridge patrol and movable barrier crew (NYSTA work unit)
- B. [REDACTED] Bridge riggers, welders and painters (NYSTA work unit)
- C. [REDACTED] Dockside (NYSTA work unit)
- D. EM Equipment Maintenance (NYSTA work unit)
- E. RBSA Rockland Bridge staging area (potential staging area)
- F. RISA Rockland inland staging area (potential staging area)
- G. TPTUB Toll plaza and toll utility building crew (NYSTA work unit)
- H. WBSA Westchester Bridge staging area (potential staging area)
- I. [REDACTED] Westchester inland staging area (potential staging area)

### 19.3. Design Requirements

#### 19.3.1. NYSTA Maintenance Facilities

The requirements detailed in Sections 19.3.1.1 through 19.3.1.5 herein describe the existing NYSTA maintenance facilities and the associated requirements that shall be met by the Design-Builder in the temporary case (during construction) and permanent case, by area and NYSTA work unit.

Existing facilities and associated functions are defined in Exhibit A herein and in *Part 6 – RFP Plans*. Temporary and permanent requirements are included in Exhibit A herein. Temporary and permanent facility



layout plans are included in *Part 6 – RFP Plans*. Temporary and permanent building requirements for relocated and replacement facilities are outlined in *Project Requirement 31 – Buildings*.

#### **19.3.1.1. Westchester Inland Staging Area - North**

Existing work units and their associated buildings and facilities within WISA North include the [REDACTED] and [REDACTED] crews.

If the Design-Builder decides to utilize some or all of WISA North for construction staging purposes, the following requirements shall be met:

- A. NYSTA operations shall not be hindered in any way that limits existing use and function;
- B. NYSTA facilities at WISA North shall be separated and fenced off from Design-Builder activities. Separated access shall be provided;
- C. NYSTA shall have direct vehicular access to/from the mainline Thruway from WISA North at all times;
- D. NYSTA shall have vehicular access travel between WISA North and WISA South under the existing bridge and/or the replacement Crossing via Fisher Drive at all times during construction; and
- E. Access to/from South Broadway (Route 9) shall be prohibited for the Design-Builder.

If the Design-Builder temporarily relocates part or all of the existing NYSTA work units from WISA North, it shall meet the following requirements:

- F. Temporary facilities shall be provided on a suitable site located between Exits 8 and 10, no more than 0.5 miles from a mainline Thruway interchange; and
- G. If relocated to Interchange 10, access shall be provided in both directions from the mainline Thruway and local roads.

If the Design-Builder demolishes (in full or part) existing NYSTA buildings during construction, the Design-Builder shall be responsible for the provision of replacement facilities in accordance with *Project Requirement 31 – Buildings*.

Regardless of whether WISA is used for construction staging purposes by the Design-Builder, the Design-Builder shall relocate the [REDACTED] and [REDACTED] building W7A/W7B (see *Part 6 – RFP Plans* for referenced building locations) because it sits within the alignment of the proposed shared use path.

The Design-Builder shall be responsible for providing a permanent facility for the relocation of work units [REDACTED] [REDACTED] [REDACTED] and [REDACTED] at WISA North. (Note: [REDACTED] is not currently located at WISA North.)

#### **19.3.1.2. Westchester Inland Staging Area - South**

The existing NYSTA work units and their associated buildings and facilities within WISA South include the TPTUB and [REDACTED]

If the Design-Builder elects to replace the toll plaza and toll utility building, the requirements outlined within *Project Requirement 26 – Toll Plaza* shall be met.

#### **19.3.1.3. Westchester Inland Staging Area - Under Bridge**

The existing NYSTA work unit located at WISA under bridge is [REDACTED]

The Design-Builder shall temporarily and permanently relocate all [REDACTED] facilities as they are within the alignment of the Crossing as per the following requirements:

- A. Temporary facilities shall be provided on a suitable site located between Exits 8 and 10, and not more than 0.5 miles from a mainline Thruway interchange;
- B. If relocated to Interchange 10, access shall be provided in both directions from the mainline Thruway and local roads; and
- C. The facilities for [REDACTED] shall be permanently located at WISA North.

#### **19.3.1.4. Westchester and Rockland Movable Barrier**

The movable barrier facility at Westchester and Rockland shall remain fully functional until the Crossing can accommodate four lanes in each direction.

The Design-Builder shall be responsible for the temporary relocation of the movable barrier facility as needed to facilitate construction as per the following requirements:

- A. Temporary relocation shall be as close to the existing location as possible; and
- B. The movable barrier facility shall be housed in the median to have uninterrupted access to the median wall.

#### **19.3.1.5. Rockland Bridge Staging Area**

The existing work unit located at RBSA is [REDACTED]

If the Design-Builder chooses to utilize RBSA for construction staging purposes, the following requirements shall be met by the Design-Builder:

- A. Access by [REDACTED] to its dock facilities located under the existing bridge shall be maintained at all times during construction;
- B. [REDACTED] dock facilities operations shall not be hindered in any way that limits existing use and function;
- C. [REDACTED] facilities shall be separated and fenced off from the Design-Builder's activities. Separated access shall be provided;
- D. For [REDACTED] facilities not required by NYSTA to remain functional at RBSA during construction, temporary facilities shall be provided on a suitable site located between Exits 8 and 10, not more than 0.5 miles from a mainline Thruway interchange; and
- E. If [REDACTED] is temporarily relocated to Interchange 10, access shall be provided in both directions from the mainline Thruway and local roads.

[REDACTED] facilities shall be permanently located at RBSA and WISA as follows:

- F. Slips, moorings, dry dock facilities, maintenance vehicle parking and large equipment storage shall be permanently located at RBSA;
- G. [REDACTED] maintenance building (including staff amenities), general storage and employee parking shall be located at WISA; and
- H. The permanent building requirements for [REDACTED] facilities are outlined in *Project Requirement 31 - Buildings*.

### **19.3.2. Design-Builder Staging Options at NYSTA Facilities**

All staging areas are the responsibility of the Design-Builder. Potential staging areas discussed herein are put forward as potential options only. The Design-Builder shall be responsible for the selection of any staging areas required for the construction of the Project, and shall be required to obtain all of the necessary permits and approvals for each and any staging area.

Indicative Plans showing potential temporary facility layouts associated with parts of the NYSTA facilities as potential staging are included in *Part 6 – RFP Plans*, and summarized below:

- A. If the Design-Builder chooses to utilize part or all of the WISA for construction staging purposes, it shall meet the requirements outlined in Section 19.3.1.1 to 19.3.1.3 herein;
- A. The Design-Builder may choose to utilize an in-river staging area at the WBSA extended over the Hudson River by temporary work platforms;
- B. The Design-Builder may choose to utilize an in-river staging area at the RBSA extended over the Hudson River by temporary work platforms at the Rockland shoreline; and
- C. The Design-Builder may utilize an inland staging area at the RISA.

### **19.3.3. Maintenance Facility Staging Master Plan**

The Design-Builder shall be responsible for preparing a master plan that describes the Design-Builder's maintenance staging facilities, including details of staging facilities at NYSTA facilities and elsewhere. The maintenance facility staging master plan shall be compatible with the Design-Builder's work site access plan (see *Project Requirement 17 – Work Zone Traffic Control and Access*) but shall not unnecessarily repeat material covered therein.

The maintenance facility staging master plan shall include provisions for restoration of temporary staging areas used. The Design-Builder shall conform to *Project Requirements 12 – Landscape Architecture* and *13 – Visual Quality*. For any staging area within Authority ROW, this shall include the removal of unused/abandoned utilities and existing/installed pavement.

## **19.4. Deliverables**

At a minimum, the Design-Builder shall provide the item listed in Table 19.4-1 for the Authority's consultation and written comment.

**Table 19.4-1 Deliverables**

Deliverable	Number of Copies		Submittal Schedule
	Hardcopy	Electronic	
Maintenance facility staging master plan	5	1	At Design Review and again at Readiness for Construction Review

## SECTION 21. SHARED USE PATH

### 21.1. Scope

The Design-Builder shall be responsible for the design and construction of a shared use path (SUP) that will link with existing routes on each side of the proposed Crossing, including the landings. The SUP shall be designed and constructed by the Design-Builder to support the Project's goal to provide for trans-Hudson access for cyclists and pedestrians.

The SUP shall be integrated into the proposed Crossing in a safe, user-friendly and structurally acceptable manner that complies with applicable regulations and Standards. The SUP shall be designed to maximize public recreational opportunities at the Crossing.

### 21.2. Standards

The Design-Builder shall perform the SUP activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

- A. AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities
- B. Americans with Disabilities Act Accessibility Guidelines (ADAAG) as supplemented by the 2005 Revised Draft Guidelines for Accessible Public Rights of Way, to determine
  - 1. Pavement cross slope
  - 2. Detectable warnings at roadway crossings
  - 3. Other pedestrian accessibility requirements not met by AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities
- C. Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas (ABAAG), to determine slope for trail connections
- D. AASHTO LRFD Bridge Design Specifications, Customary U.S. units, with interim revisions
- E. NYSDOT Bridge Manual with all addenda thereto
- F. NYSDOT Highway Design Manual, Chapters 17 and 18
- G. FHWA Manual on Uniform Traffic Control Devices (MUTCD) and NYS supplement to the MUTCD

### 21.3. Design Requirements

The Design-Builder shall comply with the following requirements specified for the SUP. Directive Plans for the SUP are included in *Part 6 – RFP Plans* and shall be read in conjunction with the requirements specified herein. Where road crossings of the SUP are required, these shall be grade separated; see *Part 6 - RFP Plans* (Directive Plans) DIR-002.

#### 21.3.1. General Design

The geometrical design criteria for the SUP are specified in *Project Requirement 27 – Highway Design*.

The Design-Builder shall be responsible for the design and implementation of the SUP in accordance with the following requirements:

- A. Design and construct the SUP between the following points:
  - 1. At the Rockland landing the SUP shall connect and terminate, at grade, to Smith Avenue such that users can access the public bikeway on Piermont Avenue. Provide a permanent location map (kiosk), at a strategic location, indicating bicycle and pedestrian routes in the vicinity to provide guidance for users. Provide appropriate pedestrian and bicycling

pavement and/or sidewalk, pavement markings and signing on Smith Avenues and ¼ miles in each direction on Piermont Avenue;

2. At the Westchester landing the SUP shall connect and terminate, at grade, with South Broadway (US Route 9). Provide a permanent location map (kiosk), at a strategic location, indicating bicycle and pedestrian routes in the vicinity to provide guidance for users. Provide a [REDACTED] sidewalk on the west side of South Broadway (US Route 9), from the north end of the Project Limits to the intersection of White Plains Road (NY Route 119). Provide appropriate pedestrian and bicycling signage on South Broadway (US Route 9) and White Plains Road (NY Route 119) ¼ mile in each direction;
- B. The SUP shall be located on the north side of the Crossing;
- C. The SUP shall have a minimum clear width of [REDACTED] along its full length on the Crossing;
- D. The SUP shall have a minimum vertical clearance of [REDACTED] inches;
- E. Design of the SUP shall accommodate all users including high-speed bicyclists, low-speed bicyclists, runners, in-line skaters, pedestrians, and persons with disabilities;
- F. Separation of users, such as bicyclists and pedestrians, shall be provided either by using different pavement types, paint, markings or other clearly defined attributes.

### 21.3.2. Crossing Amenities

The Design-Builder shall provide the following amenities within the design:

- A. A minimum of four belvederes, which shall be sized to allow for amenities include seating, wayfinding, public art and interpretative signage, and shall be located along the Crossing to provide optimized overlook opportunities for the users;
- B. Good visibility with clear sightlines and pedestrian scale lighting shall be provided to ensure safety and security of SUP users in accordance with *Project Requirements 13 – Visual Quality* and *15 – Lighting*;
- C. Amenities shall provide a sense of place, including wayfinding, public art, interpretative signage and pavement materials. Their design and construction shall be coordinated to comply with *Project Requirements 8 – Public Information* and *13 – Visual Quality*;
- D. Life line phones and surveillance cameras shall be installed along the SUP compliant with *Project Requirement 20 – Security*. The phones shall be installed at each end of the SUP, at each belvedere, and also at the center of Main Span if there is no belvedere located there.

### 21.3.3. Access and Security

The Design-Builder shall provide the following access and security elements within the design:

- A. Barriers, railings and/or fencing shall be incorporated to contain users and materials within the SUP along the full length of the Crossing. Fences or railings shall be anti-climbing, either integrated with or independent of traffic barriers. These structures shall comply with structural requirements specified in *Project Requirement 11 – Structures*, *Project Requirement 13 – Visual Quality* and *Project Requirement 20 – Site Security*, and provide for maximum safety and security, minimize wind impacts and maximize viewing opportunities;
- B. The SUP shall provide for maintenance vehicle and emergency response access. Loading requirements are detailed in *Project Requirement 27 – Highway Design*;
- C. Provisions shall be made for restricting access by vehicles other than authorized maintenance and emergency response vehicles at SUP entrances, and for informing users about restrictions to vehicular access. The Design-Builder shall provide gates at each end to control the usage of SUP;



- D. [REDACTED] barriers between the traffic lanes and the SUP shall be provided to ensure safety for path users. Emergency, gated, non-vehicular access from the traffic lanes to the SUP shall be provided at half-mile intervals. This access shall not break the [REDACTED] barrier, but be provided over the barrier through fencing or railing;
- E. The Design-Builder shall integrate and provide easy access to the SUP [REDACTED] for the Authority's maintenance vehicles and State Police;
- F. Message boards on the SUP shall be integrated with other variable message signs (VMS) boards installed by the Design-Builder, and shall be capable of being programmed with various messages;
- G. The SUP lighting system shall be in compliance with *Project Requirement 15 – Lighting* and shall have backup power available. Except on the Crossing, light posts for the SUP shall be independent of light posts used for vehicular lanes. On the Crossing, shared light posts shall be used for the SUP and adjacent vehicular lane. See Section 15.3.2.5 in *Project Requirement 15 – Lighting*;
- H. Fencing, lighting, Lifeline phones, VMS and video surveillance subsystems at the SUP shall be functioning prior to opening the SUP for use by the public.

#### **21.3.4. SUP Pavement Design**

The Design-Builder shall be responsible for ensuring that SUP pavement on subgrade shall be founded on properly prepared subgrade and subbase materials. The SUP wearing surface shall utilize materials and be installed in accordance with the Standards of this Requirement and *Project Requirement 13 – Visual Quality*. Minimum design parameters are:

- A. 50 year minimum structural pavement system service life;
- B. 15 year minimum. initial wearing surface service life; and
- C. Single unit truck as design loading maintenance vehicle.

#### **21.3.5. SUP Design Report and SUP Design Plans**

The Design-Builder shall provide an SUP design report and SUP Design Plans explaining and presenting the Design-Builder's implementation of the requirements presented in this Project Requirement, together with structural and aesthetic design concepts. The SUP Design Plans shall clearly show the plan, profile and cross sections of the SUP at regular intervals with sufficient details to specifically address:

- A. Incorporation of the SUP and its amenities into the Crossing and landings design;
- B. Drainage design and concepts for SUP during different phases of construction of the Crossing.

### **21.4. Construction Requirements**

The SUP may be used to accommodate temporary traffic while the Crossing is being constructed. As such, the SUP shall be designed and constructed to be used for such temporary purposes. Once construction is complete and the SUP is no longer required for traffic, the SUP shall be completed with its amenities. A polyester polymer concrete wearing surface in accordance with *Project Requirement 11-Structures* with suitable surface texture, friction and cross slope shall be required on the SUP in the final condition.

### **21.5. Deliverables**

At a minimum, the deliverables shall include the items listed in Table 21.5-1 for Authority consultation and written comment.

**New York State Thruway Authority**

**Table 21.5-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
SUP design report	5	1	At Definitive Design Review submission for the Crossing and/or landings, with the first DU submission	21.3.5
SUP Design Plans	5	1	At Definitive Design Review submission for the Crossing and/or landings, with the first DU submission	21.3.5

## **SECTION 22. SUBGRADE SUPPORTED PAVEMENT**

### **22.1. Scope**

The Design-Builder shall design, furnish all materials, construct and undertake all Work necessary to provide all pavements needed for the following elements:

- A. Thruway mainline on subgrade, from the Crossing approach slabs to the points where pavement Work limits are met in Rockland and Westchester Counties;
- B. Thruway ramps on subgrade, to the extent they need to be reconstructed or resurfaced;
- C. Toll plaza approaches, to the extent they need to be reconstructed or resurfaced;
- D. Local roads on subgrade, to the extent they need to be reconstructed or resurfaced;
- E. Shared use path on subgrade, from the Crossing approach slabs to termini;
- F. Maintenance ramps and maintenance access roads;
- G. Temporary pavements;
- H. Isolated resurfaced/repaired or damaged pavement locations.

### **22.2. Standards and References**

The Design-Builder shall perform the pavement activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### **22.2.1. Standards**

- A. NYSTA Design Reference Manual
- B. NYSDOT Comprehensive Pavement Design Manual (CPDM)
- C. NYSDOT Highway Design Manual (HDM)
- D. NYSDOT Materials Bureau: Sampling and Testing Manuals, Inspection Manuals, applicable Materials Methods
- E. NYSDOT Approved Materials List
- F. NYSDOT US Customary Standard Sheets
- G. NYSDOT GCP-17 Procedure for the Control of Granular Materials

#### **22.2.2 References**

- A. AASHTO Mechanistic-Empirical Pavement Design Guide (MEPDG)
- B. AASHTO AASHTO, Guide for Design of Pavement Structures
- C. AASHTO Supplement to the AASHTO for Design of Pavement Structures; Part II – Rigid Pavement Design & Rigid Pavement Joint Design
- D. NYSDOT SPR\_C-06-20 (Performance of Gravel Aggregates in Superpave Mixes with 100/95 Angularity)
- E. NYSDOT SPR\_C-06-18 (Best Practices for Architectural Pavement Treatments Final Report)

- F. NYSDOT SPR\_C-08-02 (Quantify the Energy and Environmental Effects of Using Recycled Asphalt and Recycled Concrete for Pavement Construction: Phase I Final Report)
- G. NYSDOT SPR\_C-04-04 (Applications of Ground Penetrating Radar for Highway Pavements Final Report)
- H. NYSTA TANY 00-47
- I. FHWA Integrated materials and Construction Practices for Concrete Pavement: A State of the Practice Manual
- J. FHWA Pavement Subsurface Drainage Design, Reference Manual
- K. FHWA Pavement Publications (see [http://www.fhwa.dot.gov/pavement/pub\\_listing.cfm](http://www.fhwa.dot.gov/pavement/pub_listing.cfm))
- L. FHWA Traffic Monitoring Guide
- M. TRB Maintenance of Roadway Pavement and Structures
- N. Asphalt Institute Drainage of Asphalt Pavement Structures
- O. AEMA Recommended Performance Guidelines (Asphalt Emulsion Manufacturers' Association).

### **22.3. Requirements**

All pavement materials and construction methods shall be performed in accordance with the Authority's materials and pavement installation methods.

Where installed, the Design-Builder shall provide a pavement system that meets the Type 1 friction aggregate specifications, with the exception that limestone and/ or dolomite, regardless of the acid insoluble residue content, shall not be allowed.

#### **22.3.1. Mainline and Ramp Pavement on Subgrade**

The Design-Builder shall provide the mainline and ramp pavement on subgrade in accordance with the following requirements.

New/reconstructed mainline and ramp permanent pavement on subgrade shall consist of a plain jointed Portland cement concrete pavement structure with lateral dowel bars and longitudinal joint ties, applied across the entire width of all lanes and shoulders, placed on a properly prepared subgrade, that meets or exceeds the following characteristics:

- A. 50 year minimum service life for structural pavement elements and materials performance;
- B. Pavement structure;
  - 1. [REDACTED] Portland cement concrete pavement course (PCCP);
  - 2. Cast-in-place or precast, meeting or exceeding the materials and placement requirements in NYSDOT standard specifications for unreinforced, [REDACTED]  
[REDACTED] Suitability of substitute high early strength concrete pavement shall be demonstrated to the Authority prior to installation;
  - 3. Pavement in tolling areas outside of the open road tolling (ORT) may be installed to meet the requirements of [REDACTED]
  - 4. [REDACTED] Portland cement treated permeable base course (PCTPB) [REDACTED]  
[REDACTED] PCCP and PCTPB;

5. [REDACTED] minimum granular subbase course meeting or exceeding the materials and placement requirements in NYSDOT *Standard Specification* Section 304;
- C. Suitable and properly prepared subgrade;
1. Unsuitable material as defined in the NYSDOT *Standard Specification* shall be removed and replaced;
  2. Replaced and added material shall meet or exceed the material and placement requirements in NYSDOT *Standard Specification* for embankment in place;
  3. Geotextile soil fabrics for subgrade improvement shall be installed as needed where undercut with select granular subgrade depth becomes impractical;
  4. The subgrade shall be proof rolled in accordance with section 203 of the NYSDOT *Standard Specification* prior to placement of subbase. Any areas that are determined to be unstable shall be excavated and backfilled with select granular subgrade material;
- D. Edgedrain system consistent with the PCTPB system on both sides of directional roadways (6 inch minimum pipe diameter) and under drain systems. The edge drain shall be located beneath the outermost edge of installed concrete pavement (shoulder or travel lane).

### 22.3.2. Mainline and Ramp Resurfacing

The entire roadway width, including travel lanes and shoulders, of retained mainline and ramp structural pavement shall be minimally resurfaced at the conclusion of final reconstruction WZTC stages to the extent necessary to overlap previous WZTC lane shifts, crossovers, and pavement used in staging areas.

Resurfaced composite (i.e. hotmix asphalt [HMA] over concrete) or full depth HMA mainline, ramp, and shoulder pavements in locations outside of new construction/reconstruction limits shall be treated, at a minimum, with:

- A. A minimal 2 inch mill and inlay treatment with full depth repair of pavement faulting areas in Westchester County areas reconstructed under contract TANY 00-47;
- B. A minimal 4 inch mill and inlay treatment with full depth repair of pavement faulting areas in Rockland County and Westchester County areas not reconstructed under contract TANY 00-47. Pavement courses shall minimally be [REDACTED] of HMA binder with a maximum of [REDACTED]s of HMA top.

Retained mainline, ramp, and shoulder pavements with existing concrete wearing surfaces in locations outside of new construction and reconstruction limits shall be rehabilitated through concrete pavement restoration (CPR) techniques, as outlined in the NYSDOT *Comprehensive Pavement Design Manual* (CPDM).

Existing profiles and cross slopes shall be maintained, unless a transition to match the new construction profiles and cross slopes is necessary. The inlaid pavement shall be [REDACTED] aggregate top course HMA that, at minimum, shall meet the Authority's New York Division Superpave [REDACTED]'s minimum pavement requirements. Asphalt binder courses in resurfacing areas shall meet or exceed the Authority's requirements for Superpave [REDACTED] HMA pavement.

If a portion of a ramp is reconstructed, all remaining limits of the ramp pavement shall be resurfaced in accordance with the mainline guidance above.



### 22.3.3. Toll Plaza Approach Pavement

Non-metallic reinforced concrete pavement installed at the toll plaza shall be placed at locations and in accordance with *Project Requirement 26 – Toll Plaza*. Other new or reconstructed pavement in the ORT or tolling areas not required to be non-metallic reinforced (per *Project Requirement 26 - Toll Plaza*) shall be designed and installed as mainline pavement in accordance with Section 22.3.1 herein.

All remaining existing areas of toll plaza pavement not reconstructed under the Project shall be resurfaced as in accordance with Section 22.3.2 herein if the existing condition is composite (HMA over concrete) and rehabilitated through concrete pavement restoration techniques, as outlined in the NYSDOT *Comprehensive Pavement Design Manual* (CPDM) if existing wearing surface is retained as concrete.

### 22.3.4. Local Roadways and Streets

#### 22.3.4.1. Reconstructed/Resurfaced Local Roadways

Reconstructed permanent local roads and streets shall be constructed in accordance with the NYSDOT CPDM. The same pavement treatment shall be applied across the entire width of the roadway and shoulders and shall be placed on properly prepared subgrade. Asphalt and concrete pavement materials and construction methods shall meet the requirements of NYSDOT *Standard Specification* Sections 402 and 502 respectively.

In the absence of local Standards, the reconstructed local roadways (other than on bridges) shall consist of a pavement structure, applied across the entire width of the roadway and shoulders, and placed on a properly prepared subgrade, that meets or exceeds the following characteristics:

- A. Pavement structure: Thicker of existing or Table 4-1 of NYSDOT CPDM conventional pavement thickness guide;
- B. Suitable and properly prepared subgrade, per Section 22.3.1 herein;
- C. Suitable edge drain and under drain systems shall be applied at minimum in accordance to minimum length requirements of the NYSDOT CPDM.

Disturbed and damaged curbs, sidewalks, and driveways shall be replaced with corresponding elements having equal to or better characteristics.

The Design-Builder shall provide all tie-in work to avoid differential problems, accounting for such factors as total surfacing thickness, minimum structural requirements, and unbound base/subbase thickness.

#### 22.3.4.2. Resurfaced Local Roadways

In the absence of local Standards, resurfaced local roadways shall consist of a pavement course, comprising [REDACTED] of [REDACTED] aggregate top course HMA, shall be placed on a properly-prepared surface, across the entire width of all lanes and shoulders.

### 22.3.5. Maintenance Ramps

Pavement for new or reconstructed maintenance ramps shall consist of a pavement structure, placed on a properly prepared subgrade that meets or exceeds the following characteristics: NYSDOT CPDM conventional design HMA or concrete pavement thickness equal or greater in thickness than for pavements with greater than [REDACTED]

The finish quality of the pavement shall meet the requirements of NYSDOT standards as supplemented by the Authority requirements prior to opening the facility to traffic.

#### 22.3.6. Ride Quality and Noise Mitigation

The Design-Builder shall evaluate ride quality in all lanes and shoulders using a profilograph as indicated in NYSDOT Standards as supplemented by the Authority's requirements, and shall prepare profilograph data accordingly.

At least 10 days before the proposed opening of any lane or shoulder to public traffic, the Design-Builder shall supply the profilograph and the certified qualified operator's (CQO) certified results to the Authority, in order to demonstrate that the ride quality in the relevant lane or shoulder is satisfactory. The Authority shall use the CQO certified results to assess the pavement Work prior to placing the permanent pavement into service for use by the public. A verification of the ride quality may be conducted.

The Design-Builder shall be responsible for rectifying any ride quality and skid resistance deficiencies prior to the opening of new pavements to traffic, and prior to placing existing pavement into either permanent use or temporary use.

The Design-Builder shall ensure that the design and implementation of the running surface of all pavements shall mitigate tire pavement noise through use of appropriate pavement surface materials, ensuring that the mitigation is commensurate with the climatic conditions at the Project Site plus all relevant Project Requirements, including those related to service life and deck cross section.

#### 22.3.7. Temporary Pavement

The Design-Builder shall design, construct, and maintain all temporary pavements within the Project Limits in compliance with the following requirements:

- A. Provide documentation describing the assumptions used to design the temporary pavement. At a minimum the documentation shall include design life and anticipated equivalent single axle loads (ESALs) for each temporary pavement location within the Project;
- B. Provide a pavement system that meets the same [REDACTED] friction aggregate specifications as the permanent pavement, including the exception that limestone and/ or dolomite, regardless of the acid insoluble residue content, will not be allowed;
- C. Provide a durable, maintainable pavement system that meets the following requirements during its service life;
  1. International roughness index (IRI) of less than [REDACTED]
  2. Free of potholes;
  3. Rutting to not exceed [REDACTED] h depth;
- D. Include pavement-to-structure transition areas as a part of ride quality;
- E. Minimize pavement-to-structure transition deviations;
- F. Minimize pavement type-to-pavement type transition deviations;
- G. Provide bridge pavement approach slabs;
- H. Provide adequate cross slope to drain water from pavement surface, consistent with maximum grade breaks between lanes and between lanes and shoulders;
- I. Provide a free-draining subgrade section beneath the pavement section for pavement constructed on this Project. Identify subgrade issues and do not exacerbate subgrade moisture below existing pavement left in place.

#### 22.3.8. Approach Pavement

Approach pavement shall be designed and placed in accordance with *Project Requirement 11 - Structures* and placed over a subgrade course equaling or exceeding the properties outlined in Section 22.3.1 herein.

#### 22.3.9. Repaired or Damaged Pavement

**Concrete or Composite Pavement:** Locations of concrete or composite pavement systems shall be repaired by the Design-Builder in accordance with the Authority's methodologies and repair details. Slab replacements at locations with existing precast pavement shall utilize precast pavement slabs with in-kind or greater thickness.

**Asphalt Pavement:** Wearing course repairs and/or full depth asphalt sections shall be repaired by the Design-Builder in accordance with the Authority's methodologies and repair details.

Pavement to remain that is damaged by the Design-Builder's operations, whether within or outside the Project Limits, shall be repaired such as to maintain safe and reliable operation during construction, and restored to its original or better condition, at the end of construction.

#### 22.3.10. Subsurface Drainage System

The Design-Builder shall design and construct edge drains, where stipulated within this Project Requirement, in accordance with the applicable Standards. Subsurface drainage outlets shall not cross roadways. Left- and right-side subsurface drainage systems shall not use a common outlet pipe.

Additionally, the Design-Builder shall evaluate and provide an underdrain system as follows:

- A. Underdrain shall be installed where an existing ground water condition needs to be addressed;
- B. The proposed pavement traverses an area with high ground water;
- C. Where identified as needed by the pavement engineer or Foundations Lead Designer of record.

#### 22.3.11. Pavement Removal

Obsolete and unnecessary pavement shall be removed and disposed of by the Design-Builder. Pavement removal shall be such as to permit the unimpeded use of the space for the immediate and/or permanent purposes of the affected space. At a minimum, obsolete and unnecessary pavement shall be removed to the top of the free draining subgrade. Any pavement to remain that is damaged during pavement removal operations shall be replaced by the Design-Builder. In the absence of the need for treatments associated with specific subsequent uses, disturbed material underlying removed pavement shall be re-compacted to not less than 95 % standard proctor maximum density.

#### 22.3.12. Materials Report

The Design-Builder shall prepare a materials report.

In addition to the data listed in the NYSDOT CPDM, the materials report shall contain, at a minimum, the following for each of the pavements covered in this Project Requirement:

- A. Geotechnical investigation report identifying areas with subgrade issues and subsurface drainage problems. Include recommendations on how to provide for subgrade improvement (e.g., undercut and backfill with select subgrade material) and draining the subgrade. Adopt subgrade improvement and subsurface drainage means that do not exacerbate subgrade moisture below existing pavements left in place;

- B. Unified soil classification of the subgrade soil and resilient modulus (Mr) values;
- C. Strength properties for the materials selected for the subbase and/or base layers;
- D. The average daily traffic and percentage trucks for each pavement that the Design-Builder is providing;
- E. Depth and type of pavement;
- F. Depth and type of subbase and/or base layers.

The Design-Builder shall prepare pavement core data in accordance with NYSDOT requirements. The Design-Builder may supplement the pavement coring requirements by incorporating magnetic imaging technology (such as MIT Scan-2 or similar).

#### 22.3.13. Coordination

The Design-Builder and the Authority shall meet at the request of either of the parties, as necessary, to discuss and resolve matters relating to the pavements covered herein. The Design-Builder shall prepare and distribute draft meeting minutes within five days and address comments and provide final meeting minutes within ten days of the meeting. The Design-Builder shall document the resolutions of issues, as well as contacts with permitting entities and permit requirements, in meeting minutes and memoranda for the record.

### 22.4. Deliverables

At a minimum, the deliverables in Table 22.4-1 shall be submitted to the Authority for consultation and written comments.

The Design Plans for pavements shall include:

- A. Plans depicting existing pavement and the limits and means of pavement removal;
- B. The limits of proposed permanent pavements, by composition, in plan and cross section;
- C. Details for matching into exiting pavements;
- D. Maintenance and protection of traffic plans showing limits and composition of temporary pavements to be adopted during the various phases of construction (consistent with plans developed under *Project Requirement 17 – Work Zone Traffic Control and Access*);
- E. The proposed means of providing appropriate surface and subsurface drainage; and
- F. Reference to the relevant sections of the Materials Report.

Table 22.4-1 Deliverables

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Materials report	5	1	At least 20 days before start of construction of relevant pavement	22.3.12
Design Plans for pavements	5	1	Not more than 90 days after NTP	22.4
Ride quality report	5	1	see Section 22.3.6	22.3.6



## **SECTION 23. DRAINAGE AND STORMWATER**

### **23.1. Scope**

The Design-Builder shall be responsible for the provision of a well-drained and safe environment for those that will use and maintain the Project. The design and construction of all drainage structures and appurtenances shall provide functionality, durability, ease of maintenance, maintenance access, safety, pleasant aesthetics, and protection against vandalism. The design and implementation of the drainage system shall not preclude potential future addition of transit to the Project.

Drainage facilities shall be compatible with existing and/or proposed drainage systems in adjacent properties and shall preserve existing drainage patterns. Where drainage patterns will or must be changed from existing patterns, the Design-Builder shall be responsible for securing all necessary permits, drainage easements, local entity and Authority's approval/compliance prior to construction of any drainage facilities.

Prior to Physical Completion, the Design-Builder shall be responsible for cleaning all new and existing drainage facilities within the Project Limits.

### **23.2. Standards and References**

The Design-Builder shall perform the drainage and stormwater activities, including highway, bridge and site systems, in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### **23.2.1. Standards**

- A. NYSDOT Highway Design Manual (HDM) Chapter 8
- B. NYSDOT Bridge Design Manual (BDM)
- C. NYSDOT US Customary Standard Sheets
- D. NYSDOT US Customary Standard Specifications
- E. NYSDOT Environmental Manual
- F. NYSDOT Project Development Manual
- G. NYSDEC Stormwater Management Design Manual (SMDM)
- H. NYSDEC Standards and Specifications for Erosion and Sediment Control (SESC)
- I. NYSTA Design Criteria, Tappan Zee Bridge/I-287 Corridor Project
- J. NYSTA Thruway Structures Design Manual (TSDM)
- K. USEPA Total Maximum Daily Load (TMDL) for Hudson River

#### **23.2.2. References**

References for this Project Requirement are as identified in NYSDOT *HDM* Chapter 8, Section 8.12.

### **23.3. Requirements**

#### **23.3.1. General**

The Design-Builder shall design and construct the drainage and stormwater systems to meet the following requirements:

- A. Provide a 75-year minimum service life on all drainage and stormwater management facilities for NYSTA stormwater within the Limits of Construction ;

- B. Provide all new drainage and stormwater management elements for the Thruway mainline within the Limits of Construction;
- C. Rehabilitate the existing Rockland County Mainline [REDACTED] trunk pipe and outlet as necessary to provide a 20 year service life. Alterations shall not hinder the capability to reline the pipe at a future date. The stormwater system shall be replaced in accordance with mainline drainage requirements if determined to be incapable of conveying peak discharges with a future pipe lining;
- D. Install new drainage infrastructure or rehabilitate existing stormwater systems outside the mainline as necessary to maintain effective control of stormwater drainage for temporary and permanent conditions; and
- E. Comply with EIS commitments and mitigation strategies.

#### **23.3.2. Software**

The Design-Builder shall use software for highway drainage design and analysis that is in accordance with *HDM* Chapter 8, Section 8.11.

#### **23.3.3. Staff Qualifications and Certifications**

The Design-Builder shall provide staff with qualifications and certifications related to development of plans, specifications, reports, and construction-related stormwater requirements in local, State, and federal provisions. Those qualifications include but are not limited to the following:

- A. New York State licensed Professional Engineer, in accordance with Article 145 of the Education Law, for all engineering calculations; and
- B. New York State licensed Professional Engineer, in accordance with Article 145 of the Education Law, stamp and signature on final Drainage Report.

#### **23.3.4. Data Collection**

To establish a drainage system that complies with the requirements and accommodates the historical hydrologic flows in the Project Limits, the Design-Builder is responsible for collecting all necessary data in accordance with *HDM* Chapter 8, Section 8.3.2. The Design-Builder can use relevant information contained in *Part 7 – Engineering Data*.

#### **23.3.5. Coordination with Other Entities**

The Design-Builder shall coordinate all water resource issues with local entities, affected interests, and regulatory agencies in accordance with the legal aspects cited in *HDM* Chapter 8, Section 8.2. The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the record.

The Design-Builder shall comply with and document the permit requirements, modifications, and contacts with the permitting agencies.

#### **23.3.6. Design Deliverables**

##### **23.3.6.1. Drainage Concept Plan**

The Design-Builder shall develop a drainage concept plan which shall serve as the base plan for the final drainage design. The drainage concept plan shall show the existing drainage features and proposed Project drainage master plan, including but not limited to the following:

- A. Drainage areas and contributing flows of existing and proposed drainage;
- B. Summary table with time of concentration and curve numbers and/or runoff coefficients;

- C. Impacts from the Project and proposed mitigation within the Project Limits;
- D. Waters of the State of New York, outstanding resource value waters and impaired waters within 2,000 feet of the Project; and
- E. Ultimate discharge locations and waters receiving Project runoff.

#### **23.3.6.2. Construction Documents**

The Design-Builder shall develop and maintain Construction Documents, which shall include the following items:

- A. Drainage plans and specifications in accordance with *HDM* Chapter 8, Section 8.10 and *HDM* Chapter 21;
- B. Temporary and permanent erosion control plans in accordance with *HDM* Chapter 8, Section 8.8 and *HDM* Chapter 21.

#### **23.3.6.3. Drainage Report**

The Design-Builder shall provide a drainage report to the Authority and any other entities whose facilities will be impacted by the Project in accordance with *HDM* Chapter 8, Section 8.9. The Design-Builder shall be responsible for liaising in advance with any third party to determine the necessary document submission period required by the third party. At least 15 days prior to providing documents to any third party, the Design-Builder shall submit a draft drainage report to the Authority's for consultation and written comment.

The drainage report shall document the design criteria used, alternatives considered, design decisions made, final design basis, and all supporting calculations and computer model output.

#### **23.3.6.4. Hydraulic Infrastructure Inventory**

The Design-Builder shall deliver to the Authority an inventory of the hydraulic infrastructure of the as-built Project by providing an InRoads® Storm and Sanitary “swf” format file (or equivalent) of all installed pipes and drainage structures.

#### **23.3.7. Hydrology**

The Design-Builder shall perform all hydrologic analysis and design in accordance with *HDM* Chapter 8, Section 8.3. All storm drain items and appurtenances shall be designed to the design storm frequencies of the *HDM* and the *SMDM*, but in no instance shall the design be made for [REDACTED] r recurrence interval storm, unless otherwise stated herein.

To ensure that drainage and stormwater infrastructure performs as required throughout the service life of the Crossing, a Project-specific hydrology adjustment factor of [REDACTED] shall be added to all design rainfall intensity values and unit hydrographs. The intent is to provide capacity for possible future alterations in drainage design and for potential changes in local precipitation trends.

In addition to this, the Design-Builder shall propose adaptive management approaches and phased structural modifications/retrofits that can incrementally accommodate an increase in the hydrology adjustment factor over time (i.e. to values greater than 1.1). For the purposes of this Work, adaptive management means a rigorous methodology applied at the design phase of the Project to ensure continual compliance with Project Requirements associated with factors that have inherent uncertainty in magnitude and timing of future variation (such as changes in precipitation trends from historic values). Adaptive management shall be used by the Design-Builder to establish mechanisms that will trigger identified, future actions (to be implemented by others, in phases) when the initial design factor thresholds are surpassed during the service life of the Project.

Use of HEC-HMS or equivalent computer modeling is required for all systems that must be routed. Hydrograph plots are required for all applicable nodes in the hydrologic model and for the inlet and outlet of

all water quality practices and devices. Procedures used to develop input elements for computer modeling shall be documented by the Design-Builder in the drainage report.

The 'rational method' shall not be used to determine peak storm flows where routing is required. The rainfall intensity for the design events shown shall be based on the values summarized in Table 23.3.4-1, per the TSDM Table 3.6 Rainfall Intensity Data for Bridges within the Thruway Corridor (for New York City, Thruway Limits of MP 0 to MP 16).

**Table 23.3.4-1 Design Storm Rainfall Intensity**

Design storm	Rainfall intensity (in/hr)	Rainfall intensity, including +10% CCF (in/hr)
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### **23.3.8. Storm Drain Systems**

Runoff within the Project Limits, stormwater presently draining onto the Project Site, and any additional drainage identified in the Contract Documents shall be collected and conveyed to a storm drain system for the [REDACTED] storm. Except for specifically identified detention basins, ponding shall not be permitted within the Project Limits. Storm sewer design shall be performed according to the *HDM* Chapter 8. Design velocity for longitudinal pipes shall not be [REDACTED]. To minimize pipe freezing potential, minimum pipe cover shall be [REDACTED] feet. Underground drainage pipes for the mainline and ramps shall be [REDACTED] pipe per *NYSDOT Standard Specifications* and standard sheets.

### **23.3.9. Highway Drainage**

Pavement and inlet design shall be in accordance with HEC-12 and *HDM* Chapter 8, Section 8.7. Optimize roadway geometric component configurations, as outlined in NCHRP Project 1-29 *Improved Surface Drainage of Pavements*, to minimize hydroplaning and to provide acceptable stopping sight distances. Shoulders shall drain away from traffic lanes. Design the low point of sag vertical curve inlets for a 50-year storm. Combination curb and grate inlets are required for all sags in cross streets that are receiving new storm drains. Locate flanking inlets on sag vertical curves with barrier section per HEC-12.

Table 23.3.9-1 shows Project-specific criteria for design storm frequency and spread for all roadways on land or over water; in no case shall the design spread [REDACTED]. For all bridges, an evaluation shall be performed for a check storm of a higher design frequency to ensure that a minimum of one lane of traffic for each direction can still cross the bridge with no spread encroachment into the lane. Refer to *Project Requirement 27 – Highway Design* for additional details on items including road classifications, design speeds, average daily traffic (ADT), and shoulder widths.

**Table 23.3.9-1 Design Storm Frequency and Spread**

Road Classification	Road Design Criteria	Design Frequency	Design Spread
Mainline	≤45 mph	10 year	shoulder
	>45 mph	10 year	shoulder
	sag point	50 year	shoulder
Urban Collector	≤45 mph	10 year	½ driving lane
	>45 mph	10 year	shoulder

Road Classification	Road Design Criteria	Design Frequency	Design Spread
	sag point	10 year	½ driving lane
Maintenance Ramps and Maintenance Roads	low ADT	5 year	½ driving lane
	high ADT	10 year	½ driving lane
	sag point	10 year	½ driving lane

#### 23.3.9.1. Shared Use Path Drainage

The Design-Builder shall provide a stormwater drainage system for the SUP and all associated amenities that shall ensure accessibility for pedestrians, cyclists and other SUP users in accordance with *HDM* Chapters 17 and 18, *AASHTO Guide for the Development of Bicycle Facilities*, and ADAAG requirements. The system shall also be designed to withstand [REDACTED] or interstate alternate live loading to accommodate temporary traffic. The Design-Builder shall be responsible for ensuring that drainage design shall prevent build-up of water or debris on or at the bottom of curb ramps. See *Project Requirement 21 – Shared Use Path*.

#### 23.3.9.2. Inlets

The Design-Builder shall be responsible for providing stormwater inlets designed per *HDM* Chapter 8, Section 8.7.4. Use HEC-12 procedures to determine inlet efficiency and [REDACTED] 1 procedures to determine bridge scupper efficiency. Include bypass flows into the storm drain calculations. Inlets intercepting cross-street flows shall be sized to accommodate runoff flowing curb full where cross-street has been designed for [REDACTED]. Design inlets for [REDACTED] or interstate alternate live loading. Bicycle-safe grates are required. Provide a method of embedding steel frame into concrete catch basin, gutter or bridge deck. Grates shall be [REDACTED]

#### 23.3.9.3. Linear Drains

Trench drains and/or slot drains shall be heavy duty iron or steel, designed for [REDACTED] live loadings.

#### 23.3.9.4. Catch Basins and Manholes

Catch basins and manholes shall be designed per *HDM* Chapter 8, Section 8.7.6 and shall be designed for [REDACTED] live loadings. Catch basins shall be reinforced concrete. Provide manhole steps when inside depth of box [REDACTED]. Precast catch basins shall not be used if any inside dimension [REDACTED]. Maximum catch basin spacing shall be governed by the lesser of that required by drainage flow spread design or that specified in Table 23.3.9-2.

**Table 23.3.9-2 Drain Spacing**

Storm drain size	Spacing between catch basins/manholes	
	Preferred	Maximum
[REDACTED]		

#### 23.3.9.5. Pump Stations

Pumping stations shall only be permitted where stormwater removal by other means is not feasible. The Design-Builder shall use FHWA *Manual for Highway Storm Water Pumping Stations* Vols. 1 and 2 and *AASHTO Model Drainage Manual* Chapter 14 for pump station design. Design the pump stations for the 50-year event. Determine the extent of and provide safeguards against flooding for the [REDACTED] storm.



### **23.3.9.6. Pipes/Culverts**

Design pipes according to *HDM* Chapter 8, section 8.7 and design culverts according to *HDM* Chapter 8, section 8.6. The minimum service life of new pipes and culverts shall be 75 years. Except for the Rockland County Mainline stormwater trunk line, existing pipe under the proposed mainline, collector/distributors, and ramps shall be replaced or relined to provide a 75-year minimum service life. If existing pipe is to be relined, the resulting facility shall maintain at least the same hydraulic capacity as the existing structure. The Design-Builder shall not reuse or allow any existing pipe or culvert to remain that does not meet this criteria. The Design-Builder shall determine the class of new pipe in accordance with sections 706 and 707 of the current version of the NYSDOT *Standard Specifications*. Pipe choice shall be shown on the plans. Pipe expansion joints shall be provided as required to allow for pipe expansion and contraction. Provide material, thickness, bedding details, end sections, color of exterior finish or protective coating, and details in accordance with NYSDOT standard sheets. Minimum allowable pipe sizes are listed in Table 23.3.9-3.

The existing Rockland County Mainline stormwater trunk line and outlet may be retained if it is at minimum: (i) inspected from the outlet to the next inlet structure west of the Limits of Construction; and (ii) rehabilitated to repair pipe joints, concrete spalling, and other localized repairs as needed. Catch basins, manholes, and outlet/channel protection improvements shall be improved as necessary to meet the requirements of Sections 23.3.9.4 and 23.3.9.10 herein.

**Table 23.3.9-3 Minimum Pipe Sizes**

<b>Road Type</b>	<b>Minimum Pipe Diameter</b>
Interstate Highways	
Primary Highways	
Secondary Highways	
Bridges	

### **23.3.9.7. Connections to Existing Systems**

The Design-Builder shall develop Design Plans and Project Specifications for any connections with 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. These details shall be provided by the Design-Builder for review by the Authority and by any affected local entities at least 30 days prior to the proposed date for making the relevant connections. This paragraph shall not be construed to relieve the Design-Builder of the obligation to treat runoff water that requires treatment.

### **23.3.9.8. Drainage Channels**

Roadside drainage channels, if used, shall be designed to capture and convey the 50-year design storm and shall meet the criteria of *HDM* Chapter 8, section 8.5. Geometric layout shall be in accordance with the *AASHTO Roadside Design Guide* and consider safety, maintenance, landscaping and aesthetics. Determine channel capacity using Manning's Equation. Design channel linings in accordance with HEC-15 when required by analysis. Provide . Coordinate channel design and vegetation with *Project Requirement 12 – Landscape Architecture*.

### **23.3.9.9. Cross Drains**

All crossings located in FEMA regulated floodplains shall be coordinated with the Authority. Provide end sections with safety grates for cross drains. Hydraulic calculations for cross drains shall be in accordance

with FHWA publication HDS No. 5 *Hydraulic Design of Highway Culverts*. Tailwater and headwater elevations shall be shown on the computation sheets.

Provide chamfer for all cross drains operating under inlet control for the design flow per HEC-13 *Hydraulic Design of Improved Inlets for Culverts*. Allowable headwater will be limited by the minimum of the following:

- A. Non-damaging to upstream property;
- B. [REDACTED] outside edge of shoulder;
- C. Ratio of hydraulic head at culvert inlet to diameter of culvert [REDACTED]
- D. Low point in the road grade; and
- E. Elevation where flow diverts around the culvert.

Crossings located in FEMA floodplains shall be designed for the [REDACTED] flood with [REDACTED] and shall meet all requirements of *HDM* Chapter 8, Section 8.2.2.4. Any encroachment to the floodway must be compensated by removal of an equal amount of area within the floodway and the Design-Builder shall provide all necessary calculations and model outputs to prove that no water surface rise at the base flood [REDACTED] will occur due to the encroachment. All other cross drains shall be designed for the [REDACTED] storm event.

Analyze cross drains for outlet protection in accordance with HEC-11.

If necessary, the Design-Builder shall prepare the necessary documents required to alter or modify stream alteration permit(s) so that the permit is consistent with the final bridge design and final stream crossing configuration.

#### **23.3.9.10. Abutment, Pier, Culvert and Outlet Protection**

Analyze bridge supports for scour according to HEC-18. Use pile foundations on all substructures for bridges over water, and design pile lengths for stability under maximum estimated scour condition. Protect abutments with [REDACTED] according to HEC-18. Where pier footings cannot be located below scour depth, [REDACTED]

[REDACTED] Outlet and channel protection for the stormwater drainage system shall be installed in accordance with *HDM* Chapter 8.

#### **23.3.9.11. Retained Earth and Lightweight Fill Drainage**

The Design-Builder shall provide effective drainage conveyance within retained or mechanically stabilized earth areas and lightweight fill areas to avoid hydrostatic pressure buildup. In addition to toe drains, the Design-Builder shall provide intermediate drains if required. Refer to *Project Requirement 10 – Geotechnics*.

#### **23.3.9.12. Outfalls**

Avoid riparian habitat disturbances during the design and construction of all new outfalls. Situate new outfalls so that the outlet elevation is as close to the receiving water body invert as possible. Avoid high outlet elevations that will necessitate the use of excessive amounts of rip-rap. Use energy dissipaters/treatment forebays as applicable per the SMDM.

#### **23.3.9.13. Building Drainage**

For new building structures, provide roof drains and foundation drains connected to the local storm sewer network, following all applicable local codes and permitting requirements. Refer to *Project Requirement 31-Buildings*.

#### **23.3.9.14. State Pollutant Discharge Elimination System (SPDES) Requirements**

The Design-Builder shall develop a stormwater pollution prevention plan (SWPPP) following the guidelines and information provided in *HDM* Chapter 8 Appendix B '*NYS DOT Design Requirements and Guidance for State Pollutant Discharge Elimination System (SPDES)*' General Permit GP-02-01 and General Permit GP-0-10-001. The SWPPP shall include temporary erosion and sediment control plans and permanent measures as required.

The SWPPP shall be based on use of the most appropriate software for developing the stormwater modeling, such as HydroCAD or similar. The SWPPP shall be an integral part of the design process and its development shall begin with the first alignments and cut-and-fill studies. The Design-Builder shall lead the preparation of a preliminary SWPPP, which will be used to determine whether the final SWPPP will meet all NYSDEC requirements or whether if a 60 day review by NYSDEC will be required. The Design-Builder shall lead the submission of a final SWPPP for the SPDES permit when final Design Plans are prepared.

All documents submitted for SPDES permitting shall be prepared according to current permit conditions. The Design-Builder shall detail in the SPDES permitting documents relevant project-specific attributes of the Project (including its design-build approach, service life, Crossing span).

Refer to *Project Requirement 3 – Environmental Compliance* for additional requirements.

#### **23.3.9.15. Spill Management**

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

#### **23.3.9.16. Detention Basins**

Design detention basins per *HDM* Chapter 8, Section 8.7.7 and SMDM. [REDACTED]

Outlet structures shall be designed and constructed to prevent discharge of floatables. Slotted riser pipe shall not be used as an outlet structure. [REDACTED] detention basins located outside limits of the highway boundary without access. The design shall include provisions for maintenance access.

In any areas with contaminated soils, detention basins shall not be constructed.

#### **23.3.9.17. Water Quality Devices**

Develop a method to efficiently remove pollutants from stormwater runoff from land areas and Crossing landings to meet requirements of the SMDM, HDM and Environmental Requirements. Size water quality devices to accommodate the [REDACTED] storm flow. Water quality devices include hydrodynamic systems, wet vaults, media filters, and underground infiltration systems. Specific manufactured systems may be selected from the NYSDOT pay item catalog (available online at <https://www.dot.ny.gov/pic>).

#### **23.3.9.18. Performance of Stormwater Management System**

Stormwater performance strategies shall provide an acceptable longevity in the field and shall avoid onerous cost and maintenance requirements. These strategies shall be coordinated with *Project Requirement 3 – Environmental Compliance* and with the Environmental Impact Statement and Record of Decision.

#### **23.3.9.19. Stormwater Quality**

The target water quality volume (WQv) shall be calculated according to *HDM* Chapter 8 Appendix B, including the Crossing landings in the determination of new and redeveloped impervious areas. Permanent stormwater management practices (SMPs) and manufactured water quality devices shall be sized to meet the water quality standards required by the SMDM, HDM and Environmental Requirements.



For critical environmental areas (listing available online at <http://www.dec.ny.gov/permits/6184.html>), all attempts should be made to comply with the more stringent SMDM stormwater quality standards rather than alternative redevelopment project standards. A pretreatment mechanism shall be included in the stormwater management design. Discharges to Sheldon Brook in Westchester County shall not result in failure to meet Class SC/C water quality standards.

Although the portions of the Crossing over the Hudson River do not require stormwater quality controls, the Design-Builder shall verify that the Project pollutant loading does not result in an adverse impact to water quality to the Hudson River, a violation of the USEPA TMDL, or failure to meet Class SB water quality standards.

#### **23.3.9.20. Stormwater Quantity**

During construction, extended detention shall be provided for the [REDACTED] storm event (Channel Protection Volume) per the SMDM, HDM and Environmental Requirements. In the post-construction condition, attenuation shall be provided for the [REDACTED] and the [REDACTED] [REDACTED] storm events to the pre-construction site conditions. Stormwater outlets shall be designed to accommodate the 1.1 hydrology adjustment factor; see Section 23.8.7 herein.

#### **23.3.9.21. Structural Requirements**

The drainage systems shall meet all structural design requirements for dead load, live load, wind load, seismic load and snow load.

#### **23.3.10. Construction Requirements**

Drainage facilities and stormwater management practices shall be designed to accommodate construction staging and shall be provided during all stages of construction, in conformance with Section 203 of the NYSDOT *Standard Specifications*. The Design-Builder shall provide drainage design details for each stage of construction. At a minimum, temporary drainage systems shall be designed for a 2-year event. The design shall include temporary water pollution control and other best management practices needed to satisfy the SPDES and other regulatory requirements.

Construction of drainage systems connecting to the County of Rockland, County of Westchester, or any other local drainage facilities shall not commence until issuance of a permit, which shall be obtained by the Design-Builder, from the applicable entity for the Works.

### **23.4. Deliverables**

At a minimum, the deliverables in Table 23.5-1 shall be provided to the Authority for consultation and written comment.

**Table 23.5-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Drainage concept plan	5	1	At Design Review	23.3.6.1
Drainage report ( <i>and draft</i> )	5	1	See Section 23.3.3.3	23.3.6.3
Details of connections to existing systems	5	1	See Section 23.3.6.7	23.3.9.7
Hydraulic infrastructure inventory	5	1	At least 30 days prior to Final Acceptance	23.3.6.4

**New York State Thruway Authority**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Stormwater pollution prevention plan (including drafts as needed)	5	1	At Readiness for Construction review or least 90 days prior to construction, whichever is soonest	23.3.9.14



## SECTION 24. RAILROADS

### 24.1. Scope

The eastern Approach Span of the Crossing crosses over the Metro-North Railroad's Hudson Line. The railroad is on an embankment on the east bank of the Hudson River, approximately [REDACTED] river elevation. The tracks have an electrified third rail. The Hudson Line is used by Metro-North, Amtrak and freight operators (CSX Freight Rail). At this location the railroad consists of four operational tracks: two express tracks in the center, and two local tracks on the outsides; plus a storage track local to Tarrytown Station.

This Project Requirement provides requirements for Works affecting the railroad, in addition to requirements in *Part 2 – DB § 102.6*. The Design-Builder shall be responsible for the design and implementation of any and all works affecting the railroad. Anticipated work affecting the railroad includes but is not limited to:

- A. Temporary access across the railroad, whether at grade or using a temporary bridge;
- B. Construction of staging areas in the river adjacent to the railroad;
- C. Demolition of existing bridge deck above the railroad;
- D. Demolition of bridge piers adjacent to the railroad;
- E. Piling for new bridge foundations adjacent to the railroad;
- F. Construction on new bridge piers adjacent to the railroad; and
- G. Construction of new bridge deck above the railroad.

### 24.2. Specifications and Protocols

The Design-Builder shall perform the railroad activities in accordance with the specifications and protocols presented in *Part 7 – Engineering Data – Section 8 – Metro North Insurance & Certification Specifications*, unless otherwise stipulated in this Project Requirement.

There is no requirement for specific consent from either Amtrak or CSX Freight Rail in order to access the Hudson Line right-of-way, unless planned works may affect the schedules of and/or access by Amtrak or CSX Freight Rail. In such cases, initial contact for the consent process shall be via Metro-North.

### 24.3. Requirements

The Design-Builder shall be responsible for coordinating design and construction activities in relation to Metro-North facilities that may be affected by the Works. This shall include but not be limited to addressing the follow issues where applicable:

- A. Design criteria and requirements relating to construction on railroad property and for facilities affecting railroad operations;
- B. Investigations to be conducted on railroad property;
- C. Treatment of railroad-related or owned utilities;
- D. Railroad procedures and schedule for design and construction approval;
- E. Conditions under which construction on railroad property may start prior to completion of design;

- F. Railroad design reviews and construction inspections;
- G. Time periods during which field and construction activities can occur, including designated construction windows;
- H. Operational constraints and requirements for field and construction activities, including flagging responsibility and costs; and
- I. Payments to railroad.

#### **24.3.1. Design**

The Design-Builder shall design all permanent and temporary works to be outside the kinetic envelopes of the Hudson Line Tracks with a minimum vertical clearance of [REDACTED] track level. The Design-Builder shall be responsible for obtaining railroad-specific design information, along with schedule information, through liaison and discussion with Metro-North as necessary.

#### **24.3.2. Construction**

All permanent and temporary works shall be constructed outside the kinetic envelopes of the Hudson Line tracks with a minimum vertical clearance of [REDACTED] track level.

## SECTION 25. DEMOLITION

### 25.1. Scope

The Design-Builder shall demolish and remove all bridges, buildings, wall structures, docks, ancillary structures, and temporary structures and facilities within the Project Limits and established ROW that are not to be incorporated into the completed permanent Project or designated to be retained by the Authority in a safe and environmentally acceptable manner.

The Broadway Bridge in Westchester County is not to be removed.

Demolition elements include, but are not limited to the following:

- A. Existing Tappan Zee Bridge, [REDACTED]
- B. Existing NYSTA maintenance buildings and acquisitions, as required;
- C. Existing toll plaza, as required;
- D. Ancillary structures culverts, retaining walls, noise walls, as required.

### 25.2. Contingent Removals

Contingent removals are the removal of toll plaza, buildings, walls, barrier, docks, and other structures not required under the Basic Project Configuration, but may be permissible if the Design-Builder obtains all necessary rights and privileges to utilize the space occupied by these elements for staging, work zone traffic control, work site access, or to accommodate permanent Project elements or changes to the Basic Project Configuration that have been approved by the Authority.

The Design-Builder shall reconstruct all elements removed as part of contingent removals in accordance with the criteria presented in *Project Requirement 19 – Maintenance Facilities* and *Project Requirement 30 – State Police Facilities*, as well as other applicable Project Requirements, except as specifically modified in writing by the Authority. The location of reconstructed facilities may differ from existing, at the discretion of the Authority.

### 25.3. Standards and References

The Design-Builder shall perform the demolition activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### 25.3.1. Standards

- A. NYSDOT Bridge Manual, Appendix 17A, Bridge Removal
- B. AASHTO Guide to Design Specifications for Bridge Temporary Works, with Interim Revision.
- C. NYSDOS/DECA New York State Uniform Fire Prevention & Building Code (the Uniform Code) and its Reference Standards including the Codes of New York State

#### 25.3.2. References

- A. Metro-North Railroad, Track Department MW-4, Metro-North Railroad Recommended Practice for the Inspection, Maintenance and Construction of Track

## 25.4. Demolition Requirements

All requirements specified under this section and *Project Requirement 4 – Site Work*, shall apply to all necessary demolition, removal, and reconstruction required for the Project including elements not explicitly cited.

### 25.4.1. Extent of Demolition

The demolition of any part of the existing Tappan Zee Bridge shall include existing elements down to river bottom, or as follows:

- A. Remove timber piles [REDACTED]
- B. Remove caisson-supported piers [REDACTED] whichever is the deeper;
- C. Mechanical and electrical systems in all pneumatic caissons shall be removed fully;
- D. Remove steel [REDACTED];
- E. Remove foundations [REDACTED];
- F. Abutments on spread footings, entire footing shall be removed;
- G. Piers on spread footings [REDACTED] finished grade; and
- H. Remove fenders [REDACTED] river bottom.

Not more than 90 days prior to demolition of the existing bridge substructure in the river, the Design-Builder shall perform a bathymetric survey of the riverbed, referenced to the North American Vertical Datum (NAVD88), on a 10 ft grid from shore to shore and between 150 feet north and south of the existing bridge centerline. The Design-Builder shall submit to the Authority a substructure demolition plan showing the measured lowest or interpolated elevation of the riverbed at the location of each existing foundation and stating the elevation to which each individual foundation (including all timber piles, caissons, piers, steel piles, fenders, and other in-river foundations) shall be removed by the Design-Builder.

Demolition of existing buildings shall include removal of foundations, walls, roof, and all contents within.

Demolition of ancillary structures and retaining walls may include the following:

- I. Noise walls;
- J. Movable barrier;
- K. Movable barrier terminal housing and stairway; and
- L. NYSTA dock at west shore.

Where a structure has been demolished or removed, the vacant lot shall be filled and maintained to the existing grade or in accordance with the requirements of the Authority.

### 25.4.2. Demolition of Buildings

Design-Builder shall obtain the appropriate demolition permit and consent in advance of all demolition Work. Demolition and removal of buildings, equipment and materials may include by not be limited to the following:

- A. The abatement of asbestos containing materials (ACM) which may exist in roofing, siding and flashing materials as well as in various flooring and on heating piping, ductwork and other heating, ventilation and air conditioning (HVAC) equipment;

- B. The abatement and removal of lead based metals/lead containing products which may exist in water systems and paints and may also be associated with other piping systems, flashing and similar items;
- C. The removal of polychlorinated biphenyl (PCB) caulks and sealants that may exist around doors and windows and other locations and PCB containing electrical equipment;
- D. Any other potential Hazardous Materials not included above, including but not limited to fuel/fuel oil related items, chemicals, cleaners, pesticides, and water conditioning materials.

Suspect, questionable or potentially Hazardous Materials shall be evaluated, sampled and tested, as part of the Contract. The following information and documentation shall be submitted as part of any Hazardous Materials evaluation and removal processes.

- E. Licenses and certifications of abatement contractors;
- F. Testing and sampling reports;
- G. Chains of custody of abated materials;
- H. Written logs and manifests for transportation of materials and related; and
- I. Landfill documentation and receipts.

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.

#### **25.4.3. Demolition of Existing Toll Plaza**

Should the Design-Builder decide to demolish the existing toll plaza, all relevant requirements specified under this Project Requirement and *Project Requirement 26 – Toll Plaza*, shall apply to all necessary demolition, removal, and reconstruction required for the Project including elements not explicitly cited.

#### **25.4.4. Hazardous Materials**

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

- A. The existing Tappan Zee Bridge was originally painted with a lead based paint. Since construction, some of this paint has been removed as part of the NYSTA repainting schedule but lead paint is still present on the existing bridge. Expected locations of the lead paint on the existing bridge include but are not limited to:
  - 1. West Trestle [REDACTED] - all steel has been or will be replaced prior to Contract award;
  - 2. West Deck Truss [REDACTED] - the stringers have been or will be replaced, but deck truss and floorbeam truss members potentially still have lead paint;
  - 3. Main Span [REDACTED] - the stringers have been or will be replaced, but all floorbeams, truss members and wind bracing potentially still have lead paint;
  - 4. East Deck Truss [REDACTED] - all steel in [REDACTED] has lead based paint. Steel in [REDACTED] has been blast cleaned and painted recently;
  - 5. East Trestle [REDACTED] - all steel has lead based paint;
- B. The Phase I environmental site assessment (ESA) found evidence of recognized environmental conditions (REC) as well as non-REC issues, such as ACM and lead-based paint. Refer to the DEIS;



- C. The Design-Builder shall formulate and submit a method of remediating/mitigating the potential for loose and/or peeling paint on steel surfaces to become dislodged during removal operations or during transportation from the Site. Worker lead protection requirements in accordance with OSHA 1926.62 shall be satisfied. Environmental ground and/or waterway protection items shall be used as appropriate;
- D. Locations on the existing bridge that may contain ACM include but are not limited to: abutment bridge seats, Main Span bearings and east trestle bearings;
- E. Locations in the existing NYSTA buildings that are known to contain Hazardous Materials, include: asbestos floor tiles; floor tile glue; boiler smoke-pipe wrap; and pipe wrap including wrapping of heating pipes, water supply pipes, water drain pipe and roof drains, which are located variously in the floors, ceilings and walls. There is a potential for Hazardous Materials in the window glazing, roof cement, roofing materials including roof caulking, wall spackle, wall plaster, gypsum panels and roof coating on metal roofing. It is possible that lead paint is encapsulated within the layers of fresh paint on walls, and that lead-based joints are present at copper pipes and copper drains in the NYSTA buildings.

#### **25.4.5. Protection of Materials and Structures**

The Design-Builder shall perform all Work with care so that any materials which are to remain in place, or which are to remain the property of the State 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 State, the damaged materials shall be repaired or replaced in a manner satisfactory to the Authority at no cost to the Authority.

#### **25.4.6. Environmental Protection**

For dredging requirements, see *Project Requirement 3 – Environmental Compliance*. Turbidity curtains shall be used as required during removal of columns, footings, pile caps and piles, including timber piles.

The Design-Builder shall prevent any debris from falling into or otherwise being deposited into the river during construction and demolition. Regularly scheduled side-scan sonar surveys shall be performed for verification. The frequency of these side-scan sonar surveys shall depend on the Design-Builder's activities, and shall be detailed in advance by the Design-Builder in its demolition and removal plan (see Section 25.4 herein). The scheduled, regular side-scan sonar surveys shall be in addition to any *ad hoc* surveys required in accordance with *Project Requirement 18 – Maintenance of Shipping* (Section 18.3.6.1(D) therein). Any discovered materials will be removed in accordance with all applicable laws. Any charges or fines associated with contravention of applicable laws and/or permits shall be the sole responsibility of the Design-Builder.

In conformance with the time periods stated in *Project Requirement 5 – Surveying and GIS*, the Design-Builder shall perform an end-of-Works inspection of the river bottom and shall demonstrate and ensure that all debris created by demolition or construction activities at the Site within the Hudson River has been fully removed. This post-construction inspection shall consist of both bathymetric surveying (soundings) and a wire drag. The bathymetric survey, referenced to the North American Vertical Datum (NAVD 88), shall be taken on a 10 foot grid and shall extend from each shore to the edge of the navigation channel (see *Project Requirement 18 – Maintenance of Shipping*), and from 150 feet south of the centerline of the existing bridge to 150 feet north of the northernmost fascia of the Crossing. The wire drag shall be performed after a review of the soundings has been made by the U.S. Coast Guard. The wire drag shall be conducted in the presence of a U.S. Coast Guard representative. The Design-Builder shall be responsible for arrangements for this site presence, which shall be coordinated with the U.S. Coast Guard by calling [REDACTED] at least 7 days in advance of the desired start date of the U.S. Coast Guard-observed wire drag inspection. (Note: A preliminary sweep by the Design-Builder prior to the U.S. Coast Guard-observed survey can be undertaken,

and may be beneficial.) This inspection shall be in addition to the end-of-Works inspection of the navigation channel required under *Project Requirement 18 – Maintenance of Shipping* (Section 18.3.6.1).

Underwater blasting and blasting within the river is prohibited.

The Design-Builder shall maintain the shipping channel, as well as all navigational aids. Refer to *Project Requirement 18 – Maintenance of Shipping*.

#### **25.4.7. Public Safety**

The Design-Builder shall ensure that no aspects of the Works have a detrimental effect on public safety. Refer to *Project Requirement 8 - Public Involvement*.

#### **25.4.8. Demolition Staging**

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

- A. NYSTA will continue to move, operate, and maintain the movable barrier system as long as public traffic is on the existing bridge. The existing Tappan Zee Bridge, including the movable barrier system, housing and stairway shall become the responsibility of the Design-Builder at the time that all traffic is removed from the existing Tappan Zee Bridge;
- B. Any buildings superseded by the Project shall become the responsibility of the Design-Builder at the time that all rights and privileges are obtained or upon approval of the Authority.

#### **25.4.9. Utilities**

Utility connections: service utility connections shall be discontinued and capped in accordance with the requirements of the utilities companies or Authority.

#### **25.4.10. Salvage, Recycle and Re-use**

With the exception of items listed in this sub-section, removed materials shall become the property of the Design-Builder and shall be removed and disposed of by the Design-Builder.

The Design-Builder shall be responsible for ensuring that elements designated herein to be retained by the Authority shall be removed without damage and delivered to a designated location. The Design-Builder shall be responsible for repair/replacement of any damage caused during the removal, transportation, delivery and unloading of the retained items. The delivery location will be within 10 miles of the Project Site except where otherwise indicated; the address of the delivery location shall be confirmed by the Authority to the Design-Builder in advance of the start of the relevant Work elements. The Design-Builder shall obtain instruction from the Authority regarding the extent of the listed components to be salvaged and also for the delivery and storage details. Elements designated to be retained by the Authority include:

- A. Precast concrete deck panel substructure units: A total of 150 units shall be salvaged. The units shall be from the 2005 and 2010 contracts (by others) undertaken at the existing bridge and shall be located on the tangent section of the existing causeway [REDACTED] Units that have bump-outs for light standards shall not be included. Twenty units shall be from existing lanes [REDACTED] being taken from each lane, and these units shall be retained with the existing steel traffic barrier remaining attached. One hundred and thirty units shall be from existing lanes [REDACTED] The Authority's Project Manager shall provide to the Design-Builder a list of the available units after existing traffic has been removed from relevant lanes. Ten units with the barrier and 60 units without barrier shall be removed and delivered by the Design-Builder to a designated location in Syracuse, NY. Ten units with the barrier and 70

units without barrier shall be removed and delivered by the Design-Builder to a designated location in Albany, NY. All 150 units shall be removed, transported, delivered and unloaded by the Design-Builder without introduction of further defects (cracks, chips, spalls) that would reduce the service life or adversely affect the immediate in-service use of the precast concrete deck panel units, unless such further defects are repaired such that the service life or immediate in-service use is not adversely affected. Any damaged units that are not repaired by the Design-Builder shall be replaced by other units that conform to the requirements herein;

- B. In addition to the barrier for salvage with deck panels (see item (A) above), a total of 15,000 feet of steel barrier and associated hardware and appurtenances installed on precast deck panels shall be removed from the panels and salvaged. The Authority's Project Manager shall provide to the Design-Builder a list of the available steel barrier sections for salvage after existing traffic has been removed from relevant lanes. Following removal by the Design-Builder of the steel barrier system, the Design-Builder shall deliver it as follows: 10,000 feet shall be delivered to a designated location in Albany, NY area; 2,500 feet shall be delivered to a designated location in the Syracuse, NY area; and 2,500 feet shall be delivered to a designated location in the Buffalo, NY area. All lengths of barrier and associated hardware and appurtenances shall be removed, transported, delivered and unloaded by the Design-Builder without introduction of further defects (bending, denting, cracking, chipping) that would reduce the service life or adversely affect the immediate in-service use of the barrier systems, unless such further defects are repaired such that the service life or immediate in-service use is not adversely affected. Any damaged barrier and barrier appurtenances that are not repaired by the Design-Builder shall be replaced by barrier and barrier appurtenances that conform to the requirements herein;
- C. Any remaining steel barrier installed on precast desk panels other than the barrier detailed in items (A) and (B) above can be salvaged by the Design-Builder;
- D. TZB welder shop;
- E. TZB movable barrier machines;
- F. TZB movable barrier;
- G. TZB light stanchions;
- H. Generators;
- I. Trailers;
- J. [REDACTED]
- K. Necklace lighting;
- L. LED speed signs;

- M. VMS boards and sign structures;
- N. Conduits, boxes and fiber;
- O. [REDACTED] lines and transformers;
- P. All electrical components inside the [REDACTED] electrical distribution rooms; and
- Q. Any other element designated in writing by the Authority.

## **25.5. Deliverables**

A demolition and removal plan, signed by a Professional Engineer registered in the State of New York, shall be submitted to the Authority for review and written comment.

The demolition and removal plan shall include design documents and shall show the location(s) of equipment used for demolition, sequence of removal, loading limits, allowable location of loads, equipment specifications including their weight, and any other material, which will be placed on the structure during or prior to demolition for all structures.

Details of the submission requirement are summarized in Table 25.5-1.

**Table 25.5-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Demolition and removal plan	5	1	At Readiness for Construction Review or 60 days prior to start of first demolition, whichever is sooner	25.5

## SECTION 26. TOLL PLAZA

### 26.1. Scope

The Design-Builder shall provide the Authority with a toll plaza and toll utility building (TUB) to support toll collection. The Design-Builder can achieve this through two options:

**Option 1 – Replacement:** complete replacement of the existing toll plaza and TUB; or

**Option 2 – Rehabilitation/Replacement:** build three open road tolling (ORT) lanes, modify and rehabilitate the existing toll plaza, and rehabilitate or replace the existing TUB.

In either option, the Design-Builder shall provide as part of the Project:

- A. Three highway-speed ORT lanes;
- B. Seven mixed mode lanes; and
- C. A toll utility building.

The Authority will maintain and operate the toll system equipment during and after construction. The Design-Builder shall be responsible for working and liaising closely with Authority staff in the design and construction phases to ensure compatibility with the Authority's toll system and to ensure that operations are continuously maintained at all times throughout the duration of the Project without any interruptions.

### 26.2. Standards and References

The Design-Builder shall perform the toll plaza activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

#### 26.2.1. Standards

- A. NYSTA Engineering Instructions, Engineering Bulletins, Special Specifications and Standard Drawings
- B. NYSDOT Engineering Instructions, Engineering Bulletins, Standard Specifications, Special Specifications, and Standard Drawings
- C. Manual on Uniform Traffic Control Devices, USDOT, FHWA with NYS supplement
- D. AASHTO A Policy on Geometric Design of Highways and Streets
- E. NYSTA Design Reference Manual (DRM)
- F. NYSDOT Highway Design Manual (HDM)
- G. NYS Uniform Fire Prevention and Building Code (Uniform code) and its referenced standards including the Codes of New York State
- H. National Fire Protection Association NFPA 70
- I. National Fire Protection Association NFPA 101
- J. OSHA 29 CFR 1910
- K. OSHA 29 CFR 1926

#### 26.2.2. References

- A. National Cooperative Highway Research Program (NCHRP) Synthesis Report #240, Toll Plaza Design, Transportation Research Board



- B. Strategies for Improving Safety at Toll Collection Facilities, FHWA,
- C. State of the Practice and Recommendations on Traffic Control Strategies at Toll Plazas, FHWA

### 26.2.3. Software and Hardware Requirements

Software to operate the toll subsystems will be provided by the Authority. Hardware to operate the toll

## 26.3. Requirements

### 26.3.1. Design Requirements (Option 1 – Replacement)

#### 26.3.1.1. General Requirements

If the Design-Builder decides to replace the toll plaza and TUB the Design-Builder shall meet the following requirements:

- A. Design and construct the new facilities to have a minimum 50-year service life;
- B. Design and construct three ORT lanes and seven mixed mode lanes as shown in *Part 7 – Engineering Data – 13 Toll Plaza Data, Folder 7-13-5, TCSR Toll Plaza Lanes Top View*;
- C. Toll lanes two through seven shall be signed as dedicatable lanes. Lanes one and two shall be wide load lanes. Lane one shall be mixed mode only;
- D. The ORT design configuration shall include provisions to accommodate expansion, into the mixed mode lane(s), of a future fourth ORT lane including a [REDACTED] shoulder. The future configuration shall retain the overwidened eastbound median shoulder widths;
- E. The toll plaza shall be designed to accommodate expanding the ORT lanes from three to four with the minimal disruption and effort;
- F. The entering and exiting lane configuration and associated shoulder design for the toll plaza shall be consistent with the Part 6 (RFP Plans) *Directive Drawing DIR-009*;
- G. The Design-Builder shall install all conduit, cabling, cabinets and mounting apparatus for the toll sub-systems. Depending on the location of the recorder room(s), the Design-Builder shall reference *Part 7 – Engineering Data – 13 Toll Plaza Data, Folder 7-13-7, TCSR Woodbury Drawings* and *Folder 7-13-3, Newburgh Toll Plaza Drawings*;
- H. Design-Builder shall include within its schedule sufficient time for Authority personnel to install, connect and test the toll systems before they become operational as defined in [REDACTED]
- I. The Design-Builder shall provide a redundant E-ZPass® reader/antenna site as specified in *Part 7 – Engineering Data – 13 Toll Plaza Data, Folder 7-13-6, Toll Collection System Requirements*.

#### 26.3.1.2. Toll Lanes

The Design-Builder shall design the toll lanes as follows:

- A. Lane one and two shall be [REDACTED] feet wide (wide load);
- B. Lanes three to seven inclusive shall be [REDACTED] feet wide;
- C. ORT lanes shall be [REDACTED] feet wide, with over-widened left shoulder of [REDACTED] feet minimum; right shoulder width of [REDACTED] feet;

- D. The center-to-center spacing between the closest ORT antenna and the closest mixed mode antenna shall be [REDACTED] [REDACTED] [REDACTED] apart for final toll plaza installation as well as throughout all phases of construction;
- E. The ORT overhead equipment platform shall extend over the over-widened median shoulder, three ORT lanes and the future fourth ORT lane and future right shoulder. Reconfiguring the toll plaza to the future fourth lane shall not:
  - a. require the relocation of the recorder room(s);
  - b. require the relocation of toll equipment already installed;
  - c. require the relocation of the current 3 ORT lanes;
  - d. require additional overhead equipment platform or supports to be built; or
  - e. reduce the over-widened median or right side required shoulder widths.
- F. Unless stated otherwise, toll lane layout, drainage and typical section shall be consistent with the Newburgh Toll Plaza, as illustrated in [REDACTED]
- G. Slab containing the treadle and trench drain [REDACTED]
- H. Toll island lanes: approach and departure slabs within the toll island lanes [REDACTED];
- I. Profile through and/or in the plaza shall [REDACTED] Cross-slope through and/or in the plaza shall [REDACTED] This shall also apply to the shoulders;
- J. Toll plaza approach pavement shall be designed as mainline pavement in accordance with *Project Requirement 22 – Subgrade Supported Pavement*.

#### 26.3.1.3. Toll Booth

The Design-Builder shall design a toll booth functionally consistent with the design of the Newburgh Toll Plaza toll booths as illustrated in [REDACTED]. The Design-Builder shall also provide the following functionality:

- A. Positive pressure in the toll booth so that vehicle exhaust or any other harmful gases does not infiltrate into the toll booth;
- B. Stainless steel rear door;
- C. NEMA four lockable enclosure (toll equipment cabinet) in the toll booth to interconnect toll equipment including but not limited to: traffic control signal lights, loop detectors, treadles, driver feedback sign (DFS), traffic light control unit, and cameras. The enclosure shall be a minimum of [REDACTED] inches in height by [REDACTED] inches wide by [REDACTED] inches deep. This replaces the smaller toll equipment cabinet detailed in [REDACTED]

#### 26.3.1.4. Islands

The Design-Builder shall provide toll islands that will support the toll booth, canopy structure, DFS, cameras and impact attenuators. The Design-Builder shall design the toll islands with the following requirements:

- A. Island length: [REDACTED] feet;

- B. Island width shall be the [REDACTED] and a minimum of [REDACTED] feet and a maximum of [REDACTED] feet from the face of the booth to the face of the curb;
- C. Barriers shall be single slope, half section, [REDACTED] inches in height, concrete filled in gaps, with impact attenuators at approach end of islands. At the DFS location it shall [REDACTED] at the top of the barrier;
- D. Impact attenuators at the toll islands shall be reusable and at a minimum meet [REDACTED] standards as defined in Chapter 10 of the HDM;
- E. Curb shall be granite, [REDACTED] minimum and [REDACTED] maximum reveal;
- F. Ground access shall be provided to each mixed mode lane;
- G. Handicap access per *Americans with Disabilities Act* (ADA) guidelines shall be provided to the booth closest to the TUB.

#### 26.3.1.5. Canopy

The Design-Builder shall ensure that all canopy structures spanning the wide load, mixed mode, and ORT lanes are architecturally integrated with one another, as well as with the design of the Toll Utility Building and Crossing. See *Project Requirements 13 – Visual Quality* and *32 – Architectural Quality of Buildings*.

##### 26.3.1.5.1. Mixed Mode Lanes

The Design-Builder shall provide a canopy over the toll lanes and toll booths to provide weather protection to the toll collection operations and to provide a structure to mount elements of the toll collection system. The Design-Builder shall design a canopy meeting the following functional requirements:

- A. See [REDACTED] for specific toll subsystem requirements;
- B. The canopy shall at a minimum cover the toll booths and any access to the toll booths for employees;
- C. Electronic toll lane control signs to be provided over each lane. The purpose of these signs is to provide lane operation messages (for example, 'closed', 'E-ZPass'®) and other traffic messages that may be required. The Design-Builder shall provide a sign that meets the following requirements:
  - 1. The signs shall be visible by drivers approaching the toll plaza;
  - 2. The signs shall be full matrix color LED technology;
  - 3. The form and installation of LED signs shall be configured to facilitate repair of the signs in-place or facilitate removal and replacement of the signs;
  - 4. The signs shall be manufactured by [REDACTED];
  - 5. Electronic toll lane control signs and lane control signs used in the active traffic management system (see *Project Requirement 16 – ITS*) shall have the same manufacturer and where feasible have the same components;
- D. Provide a mechanical over-height detection system.

##### 26.3.1.5.2. ORT Lanes

The Design-Builder shall provide an overhead structure functionally consistent with the ORT installation at the Woodbury Toll Plaza (see [REDACTED] and as specified in [REDACTED]). Additionally, the Design-Builder shall ensure that the ORT Lane overhead structure is architecturally integrated with the canopy spanning the mixed mode and wide load

lanes. The Design-BUILDER shall provide an overhead structure designed such that maintenance employees have access via stairs, can work overhead without a harness or tools and can maintain the equipment in an ergonomic environment. The Design-BUILDER shall provide this functionality in the toll plaza and also meet the following requirements:

- A. The overhead structure shall, to the extent practicable, have a continuous platform with longitudinal supports and shall allow for flexible placement of equipment. All equipment shall be easily and safely accessible from the platform with ergonomic consideration to installation and removal of equipment. All supports in the vicinity of the equipment shall not interfere with the placement or view of the equipment. Supports shall not be placed on the center line or split lines of the lanes;
- B. The mounts for the ORT equipment shall be identical to those used at the Woodbury Toll Plaza (see [REDACTED]). Alternates can be proposed that meet the same functional benefits, provided that any deviation shall be subject to the Authority's prior written approval;
- C. At a minimum the Design-BUILDER shall provide a [REDACTED] foot ORT recorder room at a location that will not conflict with tolling equipment installation or maintenance access. The ORT recorder room shall be constructed on the cash lane side of the plaza adjacent to or above the ORT;
- D. A hoist that will lift or lower equipment to the ORT platform;
- E. Maintenance access shall be provided through/over the concrete barrier separating the ORT lane(s) and the toll island containing the ORT recorder room to facilitate maintenance of the ORT lanes when they are closed.

#### 26.3.1.6. Tunnel/Overhead Access

The Design-BUILDER shall provide either overhead or tunnel access [REDACTED] to provide the following functional requirements:

- A. Accommodate power, telecommunications, and toll system communications;
- B. If a tunnel is proposed, then the Design-BUILDER shall provide [REDACTED]  
[REDACTED]  
[REDACTED]  
If overhead access is provided, the Design-BUILDER shall refer to [REDACTED]  
[REDACTED]
- C. Accommodate HVAC supporting the toll booths; and
- D. Provide positive pressure air intake.

#### 26.3.1.7. Toll Utility Building (TUB)

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]





- A. Upgrade the existing drainage system to prevent standing water in the mixed mode lanes.

The Design-Builder shall build three ORT lanes as per the following:

- B. Profile through and/or in the plaza shall [REDACTED]. Cross-slope through and/or in the plaza shall [REDACTED]. This shall also apply to the shoulders;
- C. ORT lanes shall be [REDACTED] feet wide; with over-widened left shoulder of [REDACTED] feet minimum; right shoulder width of [REDACTED] feet;
- D. The right shoulder along the Crossing, other than at the ORT lanes, shall be [REDACTED] feet wide as detailed in Table 27.3.2-1 of *Project Requirement 27 – Highway Design*;
- E. The center-to-center spacing between the closest ORT antenna and the closest mixed mode antenna shall be [REDACTED] [REDACTED] for final toll plaza installation as well as throughout all phases of construction;
- F. The ORT overhead equipment platform shall extend over the over-widened median shoulder, three ORT lanes and the future fourth ORT lane and future right shoulder. Reconfiguring the toll plaza to the future fourth lane shall not:
- require the relocation of the recorder room (s);
  - require the relocation of toll equipment already installed
  - require the relocation of the current 3 ORT lanes;
  - require additional overhead equipment platform or supports to be built; or
  - reduce the over-widened median or right side required shoulder widths.
- G. Slab containing the treadle and trench drain shall be [REDACTED] so as not to interfere with the Authority's toll collection system.

#### 26.3.2.3. Toll Booth

The existing toll booths [REDACTED] shall remain.

#### 26.3.2.4. Islands

Design-Builder shall rehabilitate the toll islands and toll island pavement (if necessary) to provide a 25 year post-construction service life.

#### 26.3.2.5. Canopy

- A. Mixed mode lanes;
- Design-Builder shall replace the canopy roof;
  - The current roof extension shall be removed by the Design-Builder and not replaced;
  - Design-Builder shall replace the overhead mechanical drum signs with toll lane control signs as specified in the replacement option above;
- B. ORT lanes;
- The Design-Builder shall design the ORT overhead structure as per Section 26.3.1.5 herein.

#### 26.3.2.6. Tunnel Access

The Design-Builder shall rehabilitate the tunnel(s) as per the following:

- A. Provide a [REDACTED]
- B. Remove the sewer line running through tunnel from moveable barrier building;
- C. Replace the utility conduits and electrical wiring [REDACTED];

- D. Replace the electrical system within the tunnel;
- E. Provide a door [REDACTED] to control access to maintenance personnel only;
- F. Refurbish and rehabilitate the walk-in tunnel and [REDACTED] tunnels to eliminate water infiltration, including structural improvements to achieve the required service life in accordance with Section 26.3.2.1(A) herein.

#### **26.3.2.7. Toll Utility Building (TUB)**

The Design-Builder shall modify and rehabilitate or replace the existing TUB consistent with the functional requirements of Section 26.3.1.7 herein.

#### **26.3.2.8. Demolition of Existing Toll Plaza**

The Design-Builder shall modify and rehabilitate or replace the existing TUB consistent with the functional requirements of Section 26.3.1.9 herein.

### **26.4. Construction Requirements**

#### **26.4.1. Permits and Approvals**

Requirements for demolition permits for toll plaza Option 1 or Option 2 included herein are outlined in *Project Requirement 25 – Demolition*.

Requirements for permitting, construction and inspection for toll plaza Option 1 or Option 2 included herein are outlined in *Project Requirement 31 – Buildings*.

#### **26.4.2. Toll Lane Operation (During Construction)**

During the construction period, the Design-Builder shall elect that it shall either: (i) maintain toll operation with the existing toll collection method (E-ZPass® and toll collectors); or (ii) implement an all-electronic toll collection (AETC) scheme subject to the requirements herein. All temporary facilities, including toll lanes, shall meet the requirements of the Option 1 - Replacement (see Section 26.1 herein) unless approved by the Authority.

##### **26.4.2.1. Existing Toll Collection Method Option - Requirements**

During the construction period, the Design-Builder shall be responsible for meeting the following requirements under the existing toll collection method option:

- A. Provide a safe and effective operation that allows for the necessary construction and minimizes delays to customers using the bridge crossing caused by construction activities;
- B. Accommodate the safe and effective operation of the toll plaza by Authority staff;
- C. Make available a mix of toll lanes throughout construction that shall maintain the existing functionality of the toll plaza. Tables 26.4.2-1 through 26.4.2-4 present the Authority's existing hourly utilization of the 12 existing Tappan Zee Bridge toll lanes throughout the day on Monday through Thursday, Friday, Saturday and Sunday, respectively. The footnotes on the tables indicate what increase in the number of toll plaza E-ZPass® lanes would be required to compensate for the loss of one or more of the higher-speed (35 mph) E-ZPass® lanes. The Design-Builder shall ensure that the number and mix of toll lanes indicated Tables 26.4.2-1 through 26.4.2-4 are provided throughout construction of the Project. Procedures whereby the Design-Builder may request a temporary waiver of these toll lane requirements from the Authority are included in Exhibit 2 (Waiver of Toll Lane Requirements) in this Project Requirement;
- D. Coordinate with Authority personnel to remove and install any toll collection system (see *Part 7* [REDACTED])

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- E. Provide the Authority 14 days prior notice in writing for any removal or installation of the toll collection system;
- F. Ensure that the Authority can maintain the operation of treadles for any mixed mode lane;
- G. Provide safe access for toll collection and maintenance personnel operating the toll plaza during the construction period;
- H. Ensure that on-site / construction radio frequency device(s) shall not interfere with the Authority's toll collection system;
- I. Provide adequate conduit for all power and communication lines [REDACTED] at all times during construction;
- J. Stage the replacement or rehabilitation of the toll recorder room and toll lanes [REDACTED]  
[REDACTED]
- K. Work closely with the Authority staff to ensure that the toll recorder room and toll collection systems are operational at all times.

**Table 26.4.2-1**  
**Required Available Toll Lanes by Type and Time of Day**  
**Monday - Thursday**

Starting Hour	Staffed Lanes	5mph E-ZPass (Rt 9)	5mph E-ZPass	35 mph E-ZPass*	Lanes Required
00	2	1	2	2	7
01	2	1	2	2	7
02	2	1	2	2	7
03	2	1	2	2	7
04	2	1	2	2	7
05	4	1	4	2	11
06	4	2	4	2	12
07	4	2	4	2	12
08	4	2	4	2	12
09	5	1	3	2	11
10	5	1	3	2	11
11	5	1	2	2	10
12	5	1	2	2	10
13	5	1	2	2	10
14	5	1	2	2	10
15	5	1	2	2	10
16	5	1	2	2	10
17	5	1	2	2	10
18	5	1	2	2	10
19	5	1	2	2	10
20	5	1	2	2	10
21	3	1	2	2	8
22	2	1	2	2	7
23	2	1	2	2	7

\*If one 35 mph lane is closed, a minimum of two additional supplemental E-ZPass Only lanes are required.  
 If two 35 mph lanes are closed, a minimum of three additional supplemental E-ZPass Only lanes are required.

NOTE: The Authority requires a two week notice for a closure of the wide load lane (Currently Lane #1).

**Table 26.4.2-2**  
**Required Available Toll Lanes by Type and Time of Day**  
**Friday**

Starting Hour	Staffed Lanes	5mph E-ZPass (Rt 9)	5mph E-ZPass	35 mph E-ZPass*	Lanes Required
00	2	1	2	2	7
01	2	1	2	2	7
02	2	1	2	2	7
03	2	1	2	2	7
04	2	1	2	2	7
05	4	1	4	2	11
06	4	2	4	2	12
07	4	2	4	2	12
08	4	2	4	2	12
09	5	1	3	2	11
10	5	1	3	2	11
11	5	1	3	2	11
12	5	1	3	2	11
13	5	1	3	2	11
14	5	1	3	2	11
15	6	1	2	2	11
16	6	1	2	2	11
17	6	1	2	2	11
18	6	1	2	2	11
19	5	1	2	2	10
20	5	1	2	2	10
21	5	1	2	2	10
22	4	1	2	2	9
23	3	1	2	2	8

\*If one 35 mph lane is closed, a minimum of two additional supplemental E-ZPass Only lanes are required.  
If two 35 mph lanes are closed, a minimum of three additional supplemental E-ZPass Only lanes are required.

NOTE: The Authority requires a two week notice for a closure of the wide load lane (Currently Lane #1).



**Table 26.4.2-3**  
**Required Available Toll Lanes by Type and Time of Day**  
**Saturday**

Starting Hour	Staffed Lanes	5mph E-ZPass (Rt 9)	5mph E-ZPass	35 mph E-ZPass*	Lanes Required
00	2	1	2	2	7
01	2	1	2	2	7
02	2	1	2	2	7
03	2	1	2	2	7
04	2	1	2	2	7
05	2	1	2	2	7
06	2	1	2	2	7
07	3	1	2	2	8
08	4	1	2	2	9
09	4	1	2	2	9
10	4	1	2	2	9
11	5	1	2	2	10
12	5	1	2	2	10
13	6	1	2	2	11
14	6	1	2	2	11
15	7	1	2	2	12
16	7	1	2	2	12
17	7	1	2	2	12
18	7	1	2	2	12
19	7	1	2	2	12
20	6	1	2	2	11
21	6	1	2	2	11
22	4	1	2	2	9
23	3	1	2	2	8

\*If one 35 mph lane is closed, a minimum of two additional supplemental E-ZPass Only lanes are required.  
If two 35 mph lanes are closed, a minimum of three additional supplemental E-ZPass Only lanes are required.

NOTE: The Authority requires a two week notice for a closure of the wide load lane (Currently Lane #1).

**Table 26.4.2-4**  
**Required Available Toll Lanes by Type and Time of Day**  
**Sunday**

<b>Starting Hour</b>	<b>Staffed Lanes</b>	<b>5mph E-ZPass (Rt 9)</b>	<b>5mph E-ZPass</b>	<b>35 mph E-ZPass*</b>	<b>Lanes Required</b>
00	2	1	2	2	7
01	2	1	2	2	7
02	2	1	2	2	7
03	2	1	2	2	7
04	2	1	2	2	7
05	2	1	2	2	7
06	2	1	2	2	7
07	2	1	2	2	7
08	3	1	2	2	8
09	4	1	2	2	9
10	4	1	2	2	9
11	4	1	2	2	9
12	5	1	2	2	10
13	6	1	2	2	11
14	7	1	2	2	12
15	7	1	2	2	12
16	7	1	2	2	12
17	7	1	2	2	12
18	7	1	2	2	12
19	7	1	2	2	12
20	7	1	2	2	12
21	7	1	2	2	12
22	5	1	2	2	10
23	3	1	2	2	8

\*If one 35 mph lane is closed, a minimum of two additional supplemental E-ZPass Only lanes are required.  
If two 35 mph lanes are closed, a minimum of three additional supplemental E-ZPass Only lanes are required.

NOTE: The Authority requires a two week notice for a closure of the wide load lane (Currently Lane #1).

**26.4.2.2. AETC Option - Requirements**

The Design-Builder shall be responsible for meeting the following requirements under the AETC option. Install an AETC toll zone within the Limits of Construction defined in *Part 6 – RFP Plans*. The AETC shall capture all eastbound traffic traversing the Crossing and be constructed to cover fully the maximum number of approach lanes and shoulders entering the AETC toll zone with an overhead structure and AETC recorder room building in compliance with Sections 26.3.1.5.2. and 26.3.1.1 (A) herein, and as required below. The Design-Builder shall:

- A. Provide Network Communications room consistent with Section 26.3.1.8 herein;
- B. Provide a minimum of 3 parking spaces and access for light maintenance service vehicles;
- C. Obtain manufacturer/vendor assistance to install, test, and tune the IDRIS system;
- D. Ensure the AETC toll system is in place no less than 365 days for testing the system with live traffic, with the existing toll system operational and collecting tolls, before the AETC toll system is used exclusively for revenue toll collection. Following the minimum period of testing, the Design-Builder shall request the Authority to activate the AETC toll system for revenue collection 14 calendar days in advance of the desired date as determined by the Design-Builder;
- E. Provide [REDACTED] backup with [REDACTED] redundancy for a minimum of [REDACTED] hours of continuous operation of AETC facilities. [REDACTED] may be utilized for this purpose;
- F. Coordinate with Authority personnel to remove and install any toll collection system [REDACTED]  
[REDACTED]
- G. Provide the Authority 14 days prior notice in writing for any removal or installation of the toll collection system;
- H. Ensure that on-site / construction radio frequency device(s) shall not interfere with the Authority's toll collection system;
- I. Provide all conduit for all power and communication lines between [REDACTED]  
[REDACTED] at all times during construction and use;
- J. Provide all [REDACTED];
- K. Install all conduit, cabling, cabinets and mounting apparatus for the toll sub-systems. Depending on the location of the recorder room(s), the Design-Builder shall reference [REDACTED]  
[REDACTED]
- L. Work closely with the Authority staff to ensure that the existing toll collection system and the AETC system remain operational as detailed within these requirements;
- M. AETC lanes and shoulders shall as a minimum match the maximum number of approach lanes and shoulders entering the AETC toll zone. Preferably, AETC lanes shall be [REDACTED] feet wide, left shoulder width of [REDACTED] feet minimum; right shoulder width of [REDACTED] feet minimum. AETC lane and shoulder widths may be reduced, subject to the approval of the Authority, where AETC overhead and pavement infrastructure will exist within Project-related work zone lane shift and crossover areas;

- N. Ensure the slab containing the treadle and trench drain shall be [REDACTED] Portland cement concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars so as not to interfere with the Authority's toll collection system;
- O. Ensure the pavement cross slope is compliant with treadle specifications. The treadle slab shall not be constructed within pavement superelevation transitions;
- P. Treadle approach pavement within Limits of Construction shall be new, full depth concrete pavement in accordance with *Project Requirement 22 – Subgrade Supported Pavement*;
- Q. If the AETC treadle systems are installed outside of full depth pavement reconstruction limits, ensure that a [REDACTED] [REDACTED] approach pavement section and [REDACTED] departure are present or are provided in accordance with *Project Requirement 22 – Subgrade Supported Pavement*. Permeable subbase shall not be required if this pavement does not abut the reconstructed pavement;
- R. Replace, at minimum, the portions of pavement slabs containing AETC equipment at the conclusion of AETC operations;
- S. Ensure the AETC toll zone shall not be in exclusive use for revenue operation longer than provided in Part 1 Article 4.2;
- T. Ensure the location and operation of the AETC shall provide safe access and sufficient capacity for EB traffic exiting at interchange 9 and for traffic continuing east on the highway, during all construction stages;
- U. Ensure that the proposed AETC design and operations shall accommodate the safe and effective operation of the toll zone by Authority staff; and
- V. Provide a Toll Plaza/All Electronic Toll Collection (AETC) Building in accordance with the requirements contained in Table 26.4.2.2-1 and Exhibit 3 herein.

**Table 26.4.2.2-1 Toll Plaza/All Electronic Toll Collection (AETC) Building Program of Requirements**

Space Code	Space Name + Description	Total Net Area (square feet)
[REDACTED]		

**26.4.3. TUB (during construction)**

[REDACTED]

## **26.5. Deliverables**

The Design-BUILDER shall provide to the Authority a toll plaza/TUB replacement or rehabilitation plan that addresses all requirements herein within 40 days of Notice to Proceed. The plan shall include at a minimum the following:

- A. Description of the general approach to replacing or rehabilitating the toll plaza and TUB;
- B. Description of how toll collection operations will be maintained throughout construction, as per the requirements of Section 26.4.2 herein;
- C. A staging plan including anticipated duration of construction;
- D. Conduit layout for toll equipment;
- E. Toll equipment mounting details;
- F. Cabinet and cabling cut sheets;
- G. Description of how the ORT lanes will expanded to a fourth lane;
- H. Artist renderings of toll plaza and TUB (see *Project Requirement 13 – Visual Quality*).

At a minimum, the deliverables shall include the items listed in Table 26.5-1 for the Authority's consultation and written comment.

**26.5-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Toll plaza/TUB replacement or rehabilitation plan	5	1	At Design Review, and again at Readiness for Construction Review	26.5



## Project Requirement 26 Exhibit 1

### Toll Plaza Facility – Permanent Facility Space Descriptions

#### ITEM 26-1-A:

#### Toll Plaza: Toll Canopy Wide Load Lanes; Toll Canopy ORT Lanes; Toll Canopy Mixed Mode Lanes

Shelter provided for the toll collection staff and equipment. The canopy shall be composed of a metal / steel material to function as a ground plane for the Highway Advisory Radio antenna.

##### Where Required

Toll Plaza

##### Size

Size as required to fully shelter access to and from the toll booths and lanes.

##### Occupancy

N/A

##### Fixed Equipment

##### Number Required

##### Location

##### Communications

##### Security

##### Refer to

Requirements for further information regarding canopy fixed equipment.

##### Mechanical/Plumbing

HVAC: N/A

Plumbing: N/A

##### Fire

Per applicable NYS and NFPA references

##### Furniture

N/A

##### Electrical

##### Doors

##### Construction and Finishes

Acoustic Separation (sound transmission class; STC):

N/A

Floor: N/A

Base: N/A

Walls: N/A

Ceiling: N/A

Ceiling Heights: N/A

##### Other

Refer to Section 26.3.1.5 herein.

##### Windows

N/A

##### User

N/A

**ITEM 26-1-B:**

**[REDACTED]: Toll Plaza - Toll Booths**

Shelter provided for the toll collection staff and equipment.

**Where Required**

Toll Plaza

**Size**

[REDACTED] feet each

**Occupancy**

1-2

**Fixed Equipment**

Shelves

Forced Air Hand Warmer

Electric Foot Warmer

Toll Systems Cabinet – see Section 26.3.1.3-C herein

Permit and Info Storage

Electrical Panel

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE standards. Provide positive pressure in the booth. [REDACTED]

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Acoustic Separation (STC):** STC 45

**Floor:** Rubber Floor Tile

**Base:** Stainless Steel

**Walls:** Stainless Steel

**Ceiling:** Acoustic Ceiling Tile

**Ceiling Heights:** [REDACTED]

**Other**

Refer to this Project Requirement for specifications of toll booth equipment

Design-Builder shall to provide solution for no interruptions in toll operations throughout construction period.

Provisions for toll booth equipment required during construction period.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Chair/Stool

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Laminated Glass in fixed aluminum frame at vision windows. Laminated Glass in sliding aluminum frame at transaction window.

**Window Treatment:** Booths shall have sun control.

**User Provided Equipment\***

**ITEM 26-1-C:**

**Toll Utility Building - Toll Plaza Manager (TPM) III Office**

Toll Plaza Manager (TPM) III is responsible for day to day operations at the Tappan Zee Toll Plaza. [REDACTED]

[REDACTED] It provides space and utilities for typical office furniture and equipment. Direct access to natural light and ventilation is required. The office is acoustically separated from distracting noise sources generated by the ongoing toll operations and traffic.

**Where Required**

Toll Utility Building

**Size**

[REDACTED] net square feet

**Occupancy**

[REDACTED]

**Fixed Equipment**

None

**Mechanical**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic. [REDACTED]

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Number**

[REDACTED]

**Location**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

Provisions shall include the following: desk, chair, file cabinet, computer, printer/scanner, guest chair. Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

[REDACTED]

New York State Thruway Authority

Other

N/A

Windows

**Interior Window Material:** [REDACTED] glass in aluminum frame, if applied

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows when possible

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



**ITEM 26-1-D:**

**Toll Utility Building: Toll Plaza Manager (TPM) I**

The Toll Plaza Manager (TPM) I oversees all the operations of the specific toll plaza where he/she is stationed. [REDACTED]

[REDACTED]. Direct access to natural light and ventilation is required. The office is acoustically separated from distracting noise sources generated by the ongoing toll operations and traffic.

**Where Required**

Toll Utility Building

**Size**

[REDACTED]

**Occupancy**

[REDACTED]

**Fixed Equipment**

3 built in full height lockers

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic. [REDACTED]

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

[REDACTED]

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

Furniture required: desk, chair, file cabinet, computer, printer/scanner, 2 guest chairs. Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

**Electrical**

[REDACTED]

**Doors**

[REDACTED]



New York State Thruway Authority

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Other

N/A

Windows

**Interior Window Material:** [REDACTED] Tempered glass in aluminum frame, if applied

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows when possible

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

**ITEM 26-1-E:**

**Toll Utility Building: Toll Plaza Operations Desk**

The Toll Plaza Operations desk is staffed [REDACTED] for observation of toll plaza activity and plaza information dissemination. It is comprised of a large observation window with a clear view of the toll plaza and bridge activity, a built in operations desk, a telephone and a 2-way radio. Direct access to natural light and ventilation is required. The office is acoustically separated from distracting noise sources generated by the ongoing toll operations and traffic. [REDACTED]

**Where Required**

Toll Utility Building

**Size**

[REDACTED] net square feet

**Occupancy**

**Fixed Equipment**

Built in Observation/Control Desk

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic. [REDACTED].

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Provisions shall include the following: chair, file cabinet, computer, printer/scanner, 2 guest chairs. Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

**Electrical**

**Doors**

## New York State Thruway Authority

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### Other

Direct adjacency to a [REDACTED]  
[REDACTED]

### Windows

**Interior Window Material:** [REDACTED] Tempered glass in aluminum frame, if applied

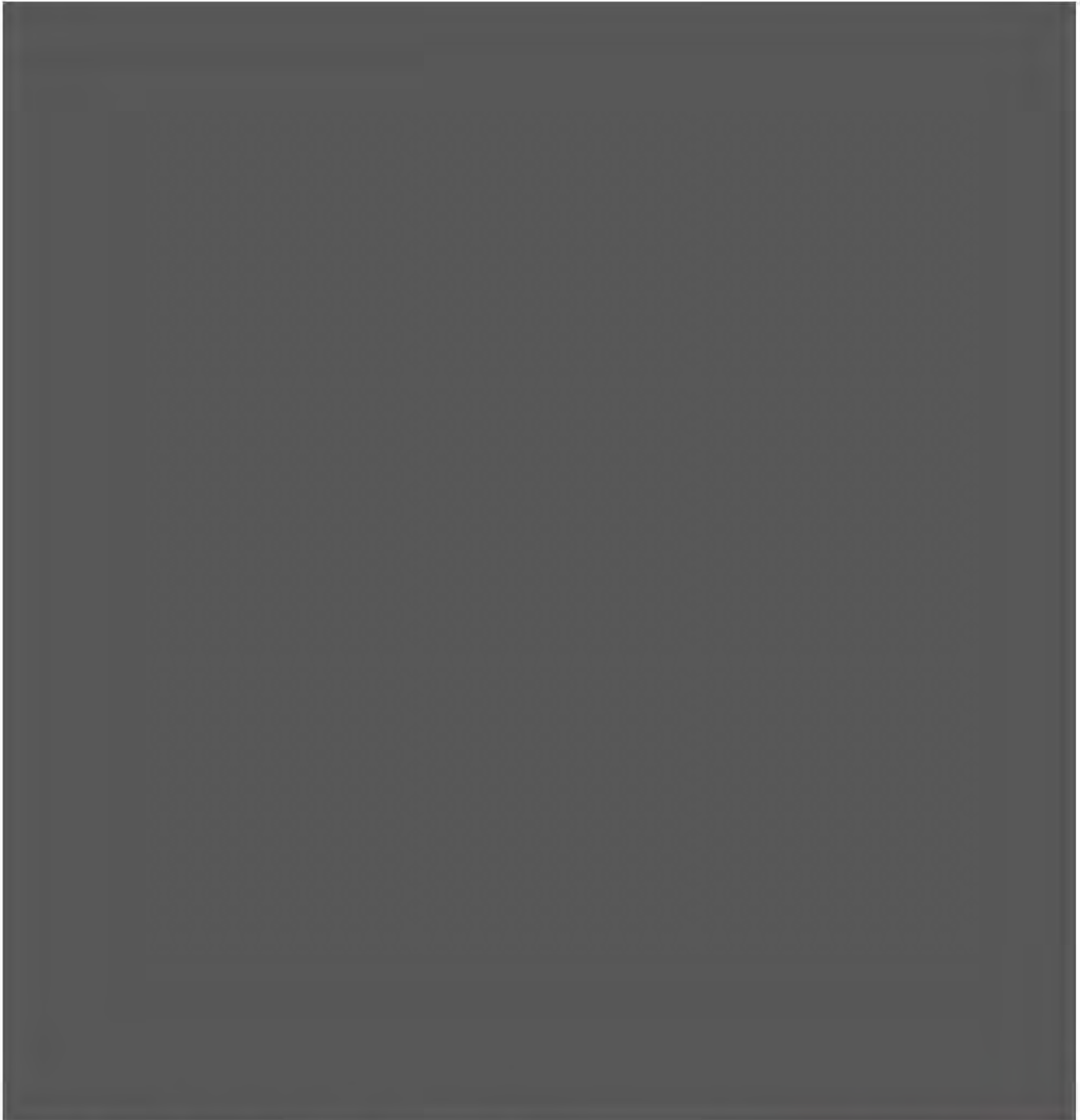
**Exterior Window Material:** Fixed, double glazed, insulated observation window in aluminum frame.

**Window Treatment:** Provide sun control.

### User Provided Equipment

Computer

Amber Alert Printer



**ITEM 26-1-F:**

**Toll Utility Building:**

**Where Required**

Toll Utility Building

**Size**

square feet

**Occupancy**

**Fixed Equipment**

Shelving

Safe

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

**Interior Window Material:** N/A

**Exterior Window Material:** N/A

**Window Treatment:** N/A

**User Provided Equipment**

N/A



**ITEM 26-1-G:**

**Toll Utility Building:**

This office is [REDACTED] [REDACTED] Direct access to natural light and ventilation is required. The office is acoustically separated from distracting noise sources generated by the ongoing toll operations and traffic.

**Where Required**

Toll Utility Building

**Size**

[REDACTED] net square feet

**Occupancy**

[REDACTED]

**Fixed Equipment**

None

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic. [REDACTED]

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

Provisions shall include the following: desk, chair, file cabinet. Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows when possible

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Computer, printer/scanner, large screen monitor



**ITEM 26-1-H:**

**Toll Utility Building -**



**Where Required**

Toll Utility Building

**Size**

\_\_\_\_\_ t square feet

**Occupancy**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Stools

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Electrical**

**Doors**

**Construction and Finishes**

**ITEM 26-1-K**

**TP-13: Toll Utility Building - Break Room**

Break Room is used for employees working in the TUB as a break area. It houses tables and seating suitable for communal gathering, a kitchenette with appliances to accommodate a full staff, and a vending area. It has direct access to natural light and the option for natural ventilation.

**Where Required**

Toll Utility Building

**Size**

square feet

**Occupancy**

**Fixed Equipment**

Refrigerator

Oven/Range

Microwave

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic.

**Plumbing:** Sink

**Fire Protection**

Per applicable NYS and NFPA references

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Tables and seating for 8

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, insulated glass unit in aluminum frame, provide external shading devices on south facing windows when possible

**Window Treatment:** Provide sun control.

**User Provided Equipment**

2 vending (not in contract)

**ITEM 26-1-L:**

**Toll Utility Building - Women's Locker Room**

The Women's Locker Room houses the lockers for the female Toll Plaza staff. The space has direct access to natural light and ventilation via skylights and/or clerestory windows [REDACTED]. The locker room is to be positively pressurized relative the shower room such that no particulates from the Women's Changing Area and Shower enter the locker room.

**Where Required**

Toll Utility Building

**Size**

[REDACTED] square feet

**Occupancy**

None on a regular basis.

**Fixed Equipment**

Lockers/Benches

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic; [REDACTED]

**Plumbing:** Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Provide twelve (12) 18"x18" lockers; 6 full height and 6 half height.

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable metal frame and/or skylights, minimum sill height at 7'-0"

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

**ITEM 26-1-M:**

**Toll Utility Building: Women's Restroom**

**Where Required**

Toll Utility Building

**Size**

square feet

**Occupancy**

None on a regular basis.

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required. All restroom accessories to be recessed.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, Exhaust Only.

**Plumbing:** Two (2) Stalls (one ADA compliant), two (2) sinks (one ADA compliant), Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A



**ITEM 26-1-N:**

**Toll Utility Building - Men's Locker Room**

The Men's Locker Room houses the lockers for the male Toll Plaza staff. The space has direct access to natural light and ventilation via skylights and/or clerestory windows [REDACTED]

**Where Required**

Toll Utility Building

**Size**

[REDACTED] square feet

**Occupancy**

None on a regular basis

**Fixed Equipment**

Lockers/benches

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards, any additional ventilation systems required for areas of high vehicular traffic. [REDACTED].

**Plumbing:** Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Provide twenty (20) 18"x18" lockers - 12 full height and 8 half height.

**Electrical**

**Doors**

**Windows**

**Interior Window Material:** N/A

**Exterior Window Material:** Insulated glass units in operable metal frame and/or skylights. [REDACTED]

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



**ITEM 26-1-O:**

**Toll Utility Building: Men's Restroom**

**Where Required**

Toll Utility Building

**Size**

130 net square feet

**Occupancy**

None on a regular basis.

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required. All restroom accessories to be recessed.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards. Exhaust Only.

**Plumbing:** One (1) Stall (ADA compliant); one (1) urinal; two (2) sinks (1 ADA Compliant); Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 26-1-P:**

**Toll Utility Building - Division Toll Storage**

Storage for NYSTA division-wide operations with small workspace for one employee to use intermittently. Storage of large items and equipment as well as records and documents for multiple toll interchanges throughout the division. Must have exterior and interior access, as well as direct access to natural light and ventilation.

**Where Required**

Toll Utility Building

**Size**

feet

**Occupancy**

**Fixed Equipment**

Shelving

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Acoustic Separation (STC):**

**Floor:** Vinyl Composition or Recycled Rubber Tile

**Base:** Vinyl or Rubber

**Walls:** 5/8" GWB, painted

**Ceiling:** Acoustic Tile

**Ceiling Heights:** 9'-0"

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Desk, chair

**Electrical**

**Doors**

**Windows**

**Interior Window Material:** N/A

**Exterior Window Material:** N/A

**Window Treatment:** N/A

**User Provided Equipment**

Computer and filing cabinet

**ITEM 26-1-Q:**

**Toll Utility Building - Plaza Toll Storage**

Storage specifically for toll operations at Tappan Zee bridge facility.

**Where Required**

Toll Utility Building

**Size**

feet

**Occupancy**

None

**Fixed Equipment**

Shelving

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 26-1-R:**

**TP-20: Toll Utility Building - Facilities Storage**

Storage specifically for Tappan Zee Bridge Toll Plaza office equipment and supplies.

Where Required

Toll Utility Building

Size

square feet

Occupancy

None

Fixed Equipment

Shelving

Mechanical/Plumbing

HVAC: Normal ASHRAE HVAC standards

Plumbing: None

Fire Protection

Per applicable NYS and NFPA references

Number Required

Location / Relationships

Communications

Security

Furniture

None

Electrical

Doors

Windows

None.

User Provided Equipment

N/A

Other

N/A



**ITEM 26-1-S:**

**: Toll Utility Building -**

**Where Required**

Toll Utility Building

**Size**

The size of this room will depend upon Design-Builder's proposed staging and final design. See Section 26.3.1.8 herein.

**Occupancy**

None

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Mechanical/Plumbing**

**HVAC:** Provide HVAC equipment sized and designed for proper conditioning and ventilation of data/communication equipment as required.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Electrical**

**Doors**

**Construction and Finishes**

**Other**

N/A

**Windows**

**User Provided Equipment**

Refer to



**ITEM 26-1-T:**

**Toll Utility Building -**

**Where Required**

Toll Utility Building

**Size**

The size of this room will depend upon Design-Builder's proposed staging and final design. See Section 26.3.1.8.

**Occupancy**

None

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Provide HVAC equipment sized and designed for proper conditioning and ventilation of data/communication equipment as required.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

See Section 26.3.1.7.1 herein

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None.

**User Provided Equipment**

N/A

**ITEM 26-1-U:**

**Toll Utility Building - Janitor's Closet**

Provided for the storage of cleaning equipment and supplies used by the janitorial staff. Located adjacent to the facility support spaces.

**Where Required**

Toll Utility Building

**Size**

square feet

**Occupancy**

None

**Fixed Equipment**

Shelving

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards. Exhaust Only.

**Plumbing:** Provide mop sink, service sink and floor drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**Other**

N/A

**ITEM 26-1-V:**

**Toll Utility Building -**

**Where Required**

Toll Utility Building

**Size**

Size as required for total building Gross Square Footage

**Occupancy**

None

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.  
Mechanical ventilation.

**Plumbing:** Provide floor drain, as required

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 26-1-W:**

**Toll Utility Building – Generator**

**Where Required**

Toll Utility Building

**Size**

Size as required to power Toll Plaza and Toll Utility Building

**Occupancy**

None

**Fixed Equipment**

N/A

**Mechanical/Plumbing**

**HVAC:** N/A

**Plumbing:** N/A

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

N/A

**Other**

**Number Required**

1

**Location / Relationships**

**Communications**

**Security**

**Furniture**

N/A

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A



**ITEM 26-1-X:**

**ORT Building -**

**Where Required**

ORT Building

**Size**

NSF

**Occupancy**

None

**Fixed Equipment**

**HVAC:** Provide HVAC equipment sized and designed for proper conditioning and ventilation of data/communication equipment as required.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Acoustic Separation (STC):** STC 45

**Floor:** Anti Static Resilient Flooring

**Base:** Rubber Base

**Walls:** 5/8" GWB, painted

**Ceiling:** Acoustic Tile

**Ceiling Heights:** 9'-0" minimum

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Work bench

**Electrical**

**Doors**

**Windows**

Provide one-way window with view of ORT Structure

**User Provided Equipment**

Refer to



**PROJECT REQUIREMENT 26**

**EXHIBIT 2**

**WAIVER OF TOLL LANE REQUIREMENTS**

Mandated toll lane requirements during construction, as specified in 26.4.2-B of this Project Requirement, may be modified if:

1. The Design-Builder has received permission from the Authority for temporary modification of the toll collection lane requirements in a given time period, for performance of specific construction operations, for the specified time period.

**NOTE:**

- a. Such requests must be based on construction year traffic volumes that would permit the requested temporary modification with little probability of causing disruption in toll collection operations or delay to the public.
- b. The Design-Builder shall include in its request for any modification of toll lane requirements
  - i. A full explanation of the benefits to the public and to the Authority that would accrue in granting a temporary waiver for performance of the specific operations including calculations for any credit that may be offered.
  - ii. A contingency plan for action to be taken, should an unexpected traffic backup occur. This contingency plan will be a key consideration in evaluating the Design-Builder's request.

2. The Design-Builder has received written authorization from the Authority to perform specific work operations that would otherwise violate the toll lane availability requirements or other work restrictions during a specifically prohibited time period.

**NOTE:**

- a. The Design-Builder shall submit a written request to the Authority, for permission to perform specific work operations at specific locations and times, including a detailed explanation of why the work cannot be performed in conformance with the Contract. Such requests must be received at Authority Headquarters either (i) at least one full week before the date of the requested variance in general; or (ii) at least two full weeks before the date of the requested variance should granting the waiver require notice to the public regarding potential disruption and delays.

The Authority reserves the right to alter any waiver of toll lane requirements and/or direct the Design-Builder to immediately reverse the toll lane closure during periods of inclement weather, wet or icy pavement, reduced visibility, traffic accident, or other emergency. The Authority shall be the sole judge of when conditions warrant these lane closure restrictions.

If written authorization to work is granted by the Authority, the Design-Builder shall be strictly limited to those operations approved in the authorization. In making application for a waiver, the Design-Builder agrees that any waiver of toll lane requirements granted by the Authority is exclusively for the Authority's benefit and purposes, and as such is subject to revocation without requirement for advance notice. Also, the disapproval of requests for waiver of contract requirements is not subject to administrative review or appeal under the contract.

**Project Requirement 26 Exhibit 3**

**Toll Plaza – Temporary Facility Space Descriptions**

**AETC Building Space Descriptions (if used)**

**ITEM 26-3-A:**

**AETC Building -**

**Where Required**

AETC Building

**Size**

**Occupancy**

None

**Number Required**

**Location / Relationships**

**Communications**

**Fixed Equipment**

Provide plywood on all walls

Refer to Section 26.3.1.8 and

**Security**

**Plumbing**

**HVAC:** Provide HVAC equipment sized and designed for proper conditioning and ventilation of data/communication equipment as required.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Furniture**

Work bench

**Electrical**

**Doors**

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Other  
N/A

Windows

User Provided Equipment

Refer to

## SECTION 27. HIGHWAY DESIGN

### 27.1. Scope

The Design-Builder shall be responsible for the design of the permanent roadways to be constructed or reconstructed within the Project Limits, including the I-87/I-287/Thruway mainline, realigned or rehabilitated portions of the Interchange 9 ramps, realigned or rehabilitated portions River Road in Rockland County, maintenance ramps between River Road and the eastbound and westbound mainline Thruway, and other roads displaced or damaged by construction operations, or necessary for permanent operations, all in accordance with the design requirements stated herein. In addition to the design requirements, highway design 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.

### 27.2. Standards

The Design-Builder shall perform the highway design activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement:

- A. NYSTA Design Reference Manual (DRM)
- B. NYSDOT Project Development Manual (PDM)
- C. NYSDOT Highway Design Manual (HDM)
- D. NYSTA Structures Design Manual (TSDM)
- E. NYSDOT Bridge Design Manual (BM)
- F. NYSDOT NYS Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways
- G. FHWA Manual of Uniform Traffic Control Devices (MUTCD)
- H. AASHTO Roadside Design Guide
- I. NYSDOT Access Management Requirements
- J. AASHTO A Policy on Geometric Design of Highways and Streets
- K. NYSDOT US Customary Standard Sheets
- L. AASHTO Guide for the design of Park and Ride Facilities
- M. AASHTO Guide for the development of Bicycle Facilities (*AASHTO Bicycle Facilities Guide*)
- N. NYSDOT CADD Standards and Procedure Manual
- O. Metro-North Rail MW4. Part III – Recommended Practice for the Construction of Track, Special Trackwork and Miter Rails (MW4)

### 27.3. Requirements

#### 27.3.1. General

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

### 27.3.2. Design Requirements

Design requirements for the reconstruction of the I-287 mainline, and other highway/bridge Work within the Project Limits is contained in Tables 27.3.2-1 to 27.3.2-6 inclusive.

**Table 27.3.2-1 I-287 Mainline Design Requirements**

Critical Design Elements for I-287					
PIN:			NHS (Y/N):	Yes	
Route No. & Name:	I-287		Functional Class:	Urban Principal Arterial Interstate	
Project Type:	Reconstruction		Design Class:	Interstate	
% Trucks:	12.4%		Terrain:	Rolling	
ADT (2047):	218,551		Truck Access/Qualifying Highway:	Qualifying highway	

	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
1	Design Speed (mph)	70	DRM Appendix D Urban		
2	Minimum Lane Width (feet)	12	HDM §2.7.1.1B		with suitable transition to existing
3a	Minimum Shoulder Width (feet) Left and Right (on landings)	10 12 desirable	DRM §3.4.1 BM §2.3.1		on landings, with suitable transition to existing. Westchester-side ORT right shoulder shall be constructed for use as future 4 <sup>th</sup> ORT travel lane
3b	Minimum Shoulder Width (feet) Left (on Crossing)	desirable			over-widened left shoulder on westbound; over-widened left shoulder eastbound
3c	Minimum Shoulder Width (feet) Right (on Crossing)	desirable			



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	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
4	Minimum Roadway Width on Crossing (feet)	Match approach highway	DRM §Appendix D	3 lanes each way with one reversible lane: totaling 7 lanes	<div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> westbound; <div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> eastbound; <div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> on approach to Toll Plaza, to then enter Toll Plaza <div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div>
5a	Maximum Grade – Crossing [Rolling]	3.0%	DRM §Appendix D	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 100px;"></div>
5b	Maximum Grade - Landing [Rolling]			<div style="background-color: black; width: 100px; height: 15px;"></div>	
6	Horizontal Curvature (feet), Minimum Radius at <div style="background-color: black; width: 100px; height: 15px;"></div>	2040	HDM §2.7.1.1F, Exhibit 2-2	-	<div style="background-color: black; width: 100px; height: 100px;"></div>
7	Maximum Superelevation (e) Rate (%)	6%	HDM §2.7.1.1G	-	
8	Minimum Stopping Sight Distance (feet)	730	HDM §2.7.1.1H, Exhibit 2-2	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>
9a	Minimum Horizontal Clearance (feet) Without Barrier/Rail	15	HDM §2.7.1.1I	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>
9b	Minimum Horizontal Clearance (feet)with Barrier/Rail	Shoulder width (not less than 4)		<div style="background-color: black; width: 100px; height: 15px;"></div>	Shoulder width <div style="background-color: black; width: 100px; height: 15px;"></div>
10a	Minimum Vertical Clearance (feet) Mainline under State/local road	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>
10b	Minimum Vertical Clearance (feet) Crossing over local roads	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>
10c	Minimum Vertical Clearance (feet)	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>	<div style="background-color: black; width: 100px; height: 15px;"></div>

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	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
	Mainline over State/ local roads				
10d	Minimum Vertical Clearance (feet) Overhead signs/pedestrian bridges	■	TSDM; §1.8.2	■	■
10e	Minimum Vertical Clearance (feet) Over railroad	■	TSDM; §1.9.1	■	■
11	Pavement Cross Slope	1.5% minimum 2% maximum	HDM §2.7.1.1K	■	■
12a	Maximum Rollover Between Lanes	4%	HDM §2.7.1.1L	-	■ minimum ■ maximum
12b	Maximum Rollover Edge of Traveled Way	8%			
13	Minimum Level of Service	C, D with supporting documentation	HDM §2.6.14, §2.7.1.1N, Heavily Developed Urban Area	Not determined	Estimated time of completion+30years C D with supporting documentation
14	Control of Access	Full	HDM §2.7.1.1O	Full	Full
15	Pedestrian Accommodation	Prohibited on Thruway (Note (3))	21 NYCRR Chap 3A §102.1; HDM Chapters 17 & 18, ADAAG	Prohibited on interstate	Prohibited on Thruway (Note (3))
16	Minimum Median Width (feet)	10 minimum 22 desirable 40 exclusive of shoulders at U-turns	DRM §Appendix D	Varies between ■ existing shoulder widths with barrier on landings	Minimum median width shall be the width of the central barrier plus the adjacent shoulder widths.
17a	Minimum Structural Capacity of Crossing	■	■	Original construction design standards	■
<b>Additional River Requirements</b>					
18	Minimum Clearance Over Shipping Channel (feet)	139 at existing piers	U. S. Coast Guard Requirement	■	U. S. Coast Guard Requirement: ■

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	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
19	Minimum Federal Navigation Channel Clearance (feet)	600	U. S. Coast Guard Requirement	■	U. S. Coast Guard Requirement: ■
20	Minimum Back Span Clearance Over Navigation Channel Back Span (feet)	N/A	U. S. Coast Guard Requirement	N/A	U. S. Coast Guard Requirement: ■ (applied within horizontal clearance envelope)
21	Minimum Back Span Federal Navigation Channel Clearance (feet)	N/A	U. S. Coast Guard Requirement	N/A	U. S. Coast Guard Requirement: ■ (applied within horizontal clearance envelope)
22	Turnarounds between Bridge Roadways – Design Vehicle for turning maneuvers	N/A	N/A	None Existing	■

Notes to Table 27.3.2-1:

Note 1: Changes in vertical grades shall be applied at a point appropriate relative to the horizontal geometry.

Note 2: Horizontal transition curves shall be used in the highway geometry as required so as to accommodate geometry for potential future loading. The use of large radii circular transition curves as transition curves is not permitted where such use would preclude compatibility with the potential future loading geometry.

Note 3: The Authority's Executive Director or designee is required to authorize any waiver to provide pedestrians and bicycle accommodations along the Thruway.



**Table 27.3.2-1A Potential Future Loading Geometric Design Criteria**

	Design Element	Reference	Project Requirement
1	Design Speed (mph)		for Passenger Rolling Stock
2a	Superelevation – Actual	MW4 Part 3 §57.1(C)	$E_a =$ inches
2b	Superelevation – Underbalance	MW4 Part 3 §57.1(C)	$E_u =$ inches
3	Rate of Change of Superelevation	MW4 Part 3 §57.3(C)	As determined by using Table (a) in MW4 Part 3 §57.3(C)
4	Length of Spiral (Superelevation Runoffs (feet)	MW4 Part 3 §57.4(C) – (j)	As determined by using the greatest length obtained from the formulas in subsection
5	Minimum Vertical Curve Length (L) (feet)	MW4 Part 3 §62.4(C) AREMA 5.3.6 Passenger Lines;	$L = (D \times V^2 \times 2.15) / 0.6$ 
6	Maximum Grade	MW4 Part 3 §62.1(C)	maximum. for short distances must have enclosure. Project Requirement 11)
7	Compensated Gradient Adjustment	MW4 Part 3 §62.1(C)	Degree of Curve
8	Minimum Horizontal Clearance (feet)	AREMA figure	from track center AREMA
9	Minimum Vertical Clearance (feet)	MNR requirement	above rail
10	Minimum Track Centers Separation (feet)	MW4 Part 3 §61.1(C)	tangent
11	Minimum Structural Capacity of Crossing	-	See Part 3 Project Requirement 11

Note 1 to Table 27.3.2-1A: The minimum navigation clearances identified in Table 27.3.2-1 Item 18 and 19 shall be met as part of the potential future loading geometric requirements.

Note 2 to Table 27.3.2-1A: The tabulated requirements are applicable from abutment to abutment on the Crossing.

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**Table 27.3.2-1B I-287 Toll Plaza Diversion Lanes Design Requirements**

Critical Design Elements for I-287 Diversion through Toll Plaza			
PIN:		NHS (Y/N):	Yes
Route No. & Name:	I-287	Functional Class:	Urban Principal Arterial Interstate
Project Type:	Reconstruction	Design Class:	Interstate
% Trucks:	12.4%	Terrain:	Rolling
ADT (2047):	218,551	Truck Access/Qualifying Highway	Qualifying highway

	Design Element	Standard Criteria	Standard Source	Existing Condition	Project Requirement
1	Design Speed (mph)		HDM §2.7.1.1A;	N/A	
2	Minimum Lane Width (feet)		HDM §2.7.1.1B	N/A	
3	Minimum Shoulder Width (feet)	minimum both sides	DRM §3.4.1	N/A	minimum right; minimum left preferred left With suitable transition to existing
4	Minimum Bridge Roadway Width (feet)	Match approach highway	DRM §Appendix D	N/A	Match approach highway
5	Maximum Grade [Rolling]	5% maximum. 1% maximum. 0% desirable in tolling booth area	HDM §2.7.1.1E, Exhibit 2-2 DRM Appendix D	N/A	Match ORT Lanes section in tolling booth area
6	Horizontal Curvature, Minimum Radius (feet)	833 minimum @ e=6%	HDM §2.7.1.1F, Exhibit 2-2	N/A	
7	Maximum Superelevation (e) Rate	6% (urban/ suburban)	HDM §2.7.1.1G	N/A	
8	Minimum Stopping Sight Distance (feet)	425 minimum	HDM §2.7.1.1H, Exhibit 2-10	N/A	
9	Minimum Horizontal Clearance (feet)	Shoulder width (not less than 4)	HDM §2.7.1.1I	N/A	Shoulder width
10a	Minimum Vertical Clearance (feet) Mainline under State/local road		TSDM ; §1.8.3	N/A	
10b	Minimum Vertical Clearance (feet) Mainline over State/local Road		TSDM ; §1.8.3		



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	Design Element	Standard Criteria	Standard Source	Existing Condition	Project Requirement
10c	Minimum Vertical Clearance (feet) Overhead signs/pedestrian bridges	■	TSDM ; §1.8.2		■
10d	Minimum Vertical Clearance (feet) Over railroad structures	■	TSDM ; §1.9.1		■
11	Pavement Cross Slope (normal crown)	1.5% to 2%	HDM §2.7.1.1K	N/A	■
12	Maximum Rollover Between Lanes Edge of Travel Way	4% 8%	HDM §2.7.1.1L	4% 8%	■ ■
13a	Structural Capacity Replacement	HL-93 & L/1000 plus DOT Permit Vehicle.	HDM §2.7.1.1M; TSDM §2.1; BM §2.6	Original construction design standards	■■■■■ ■■■■■ ■■■■■
13b	Structural Capacity Rehabilitation	HL-93 & L/800 if L/1000 not possible. DOT Permit Vehicle not required	HDM §2.7.1.1M; TSDM §2.1; BM §2.6	Original construction design standards	■■■■■ ■■■■■ ■■■■■ ■■■■■ ■■■■■
14	Minimum Level of Service	C, D acceptable with documentation	HDM §2.7.1.1N	N/A	C, D acceptable with documentation
15					
16	Pedestrian Accommodation	Prohibited on Thruway <sup>(1)</sup>	21 NYCRR Chap 3A §102.1; HDM Chapters 17 & 18, ADAAG	N/A	Prohibited on Thruway <sup>(1)</sup>
Note (1) No public pedestrian/bicycle SUP accommodations shall be provided in the tolling ramp and plaza area.					

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**Table 27.3.2-2 I-287 Interchange Ramp Design Requirements**

Critical Design Elements for I-287 Ramps			
PIN:		NHS (Y/N):	Yes
Route No. & Name:	I-287	Functional Class:	Urban Principal Arterial Interstate
Project Type:	Reconstruction	Design Class:	Interstate Ramp
% Trucks:	12.4%	Terrain:	Rolling
ADT (2047):	218,551	Truck Access/Qualifying Highway	Qualifying highway

	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
1	Design Speed (mph)	25 min	HDM §2.7.5.2A;		: match existing
2	Range of Minimum Lane Widths - Case II D Ramps (feet)	Exhibit 2-9 (Case IID with shoulders) (Case III if opposing traffic)	DRM §Appendix D		depending on radius. With suitable transition to existing
3	Minimum Shoulder Width (feet)	10 minimum both sides; 4 on left if shared median	DRM §3.4.1		minimum both sides; on left if shared median. With suitable transition to existing
4	Minimum Bridge Roadway Width (feet)	Match approach highway	DRM §Appendix D	-	Match ramp width
5	Maximum Grade [Rolling]	5% @ 45mph 6% @ 35 mph 7% @ 25mph	HDM §2.7.5.2E, Exhibit 2-10		dependent upon ramp design speed
6	Horizontal Curvature, Minimum Radius (feet)	144 minimum at 25mph and e=6%	HDM §2.7.5.2F, Exhibit 2-10		
7	Maximum Superelevation (e) Rate	6% (urban / suburban)	HDM §2.7.5.2G		
8	Minimum Stopping Sight Distance (feet)	155 at 25 mph	HDM §2.7.5.2H, Exhibit 2-10		

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	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
9	Minimum Horizontal Clearance (feet)	Shoulder width but never less than [REDACTED] Shoulder width [REDACTED] bridge	DRM §Appendix D	-	Shoulder width but not less than [REDACTED] Shoulder width [REDACTED] With suitable transition to existing
10a	Minimum Vertical Clearance (feet) Mainline under State/local road	[REDACTED]	TSDM; §1.8.3	[REDACTED]	[REDACTED]
10b	Minimum Vertical Clearance (feet) Mainline over State/local Road	[REDACTED]	TSDM; §1.8.3		[REDACTED]
10c	Minimum Vertical Clearance (feet) Overhead signs/pedestrian bridges	[REDACTED]	TSDM; §1.8.2		[REDACTED]
10d	Minimum Vertical Clearance (feet) Over railroad structures	[REDACTED]	TSDM; §1.9.1		[REDACTED]
11	Pavement Cross Slope (normal crown)	[REDACTED]	HDM §2.7.5.2K	Varies	[REDACTED] minimum [REDACTED] maximum
12	Maximum Rollover Between Lanes Edge of Travel Way	4% 8%	HDM §2.7.5.2L	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]
13a	Structural Capacity	HL-93 & L/1000 plus DOT Permit Vehicle	HDM §2.7.5.2M; TSDM §2.1; BM §2.6	Original construction design standards	[REDACTED]
13b	Structural Capacity Rehabilitation	HL-93 & L/800 if L/1000 not possible. DOT Permit Vehicle not required	HDM §2.7.5.2M; TSDM §2.1; BM §2.6	Original construction design standards	
14	Minimum Level of Service	C, D acceptable with documentation	HDM §2.7.5.2N	-	C, D acceptable with documentation



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	Design Element	Standard criteria (for information)	Standard Source	Existing Condition	Project Requirement
16	Pedestrian Accommodation	Prohibited on Thruway (Note (1)) In accordance with Chapters 17 & 18, ADAAG at ramp terminal	21 NYCRR Chap 3A §102.1; HDM Chapters 17 & 18, ADAAG	Prohibited on Interstate In accordance with HDM Chapters 17 & 18, ADAAG at ramp terminal	Prohibited on Thruway (Note (1)) In accordance with Chapters 17 & 18, ADAAG at ramp terminal

Note (1) Excepting ramp terminals, no provisions for pedestrians or bicyclists are permitted for interchange ramps.

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**Table 27.3.2-3 I-287 Maintenance Ramps / Westchester Maintenance Roadway Design Requirements**

<b>Critical Design Elements for I-287 Maintenance Ramps / Westchester Maintenance Roadway</b>					
			NHS (Y/N):	Yes	
Route No. & Name:	I-287		Functional Class:	Urban Principal Arterial Interstate	
Project Type:	Reconstruction		Design Class:	Interstate Maintenance Ramp	
% Trucks:	N/A		Terrain:	Rolling	
ADT (2047):	N/A		Truck Access/Qualifying Highway	Qualifying highway	
	Design Element	Standard Thruway Criteria	Existing Condition	Maintenance Roads	Maintenance Ramps
1	Design Vehicle	N/A (project specific)	Single Unit Truck	Single Unit Truck [REDACTED]	Single Unit Truck [REDACTED]
2	Minimum Width (feet)	N/A (project specific)	[REDACTED]	[REDACTED]	[REDACTED]
3	Maximum Grade	N/A (project specific)	[REDACTED]	[REDACTED]	[REDACTED]
5	Minimum radius at mainline junction	N/A (project specific)	Not known	NA	Such that design vehicle path does not intrude beyond the right-most mainline lane
6	Sight distance (feet)	N/A (project specific)	Not known	[REDACTED] Match connecting roadway standard at intersection	[REDACTED] along River Road. Match connecting roadway standard at intersection
7	Traffic control	MUTCD	Stops at termini No left turn at mainline	Stops at intersections	Stops at termini No left turn at mainline
8	Minimum Vertical Clearance (feet)	N/A (project specific)	[REDACTED] Fisher Drive	[REDACTED]	[REDACTED]



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**Table 27.3.2-4 South Broadway in Rockland County\* and Piermont Avenue & River Road in Rockland County**

Critical Design Elements for Piermont Avenue and River Road in Rockland County					
			NHS (Y/N):	Yes	
Route No. & Name:	South Broadway and River Road		Functional Class:	Urban Collector	
Project Type:	Reconstruction		Design Class:	Collector	
% Trucks:	4.8% South Broadway		Terrain:	Rolling	
ADT (2008):	3075 South Broadway		Truck Access/Qualifying Highway	Neither	
	Design Element	Standard criteria (for information)	Standard Source	Existing Conditions	Project Requirements
1	Design Speed (mph)	30 (designated by NYSDOT Region 8 traffic engineer)	HDM §2.7.3.2A	30	30
2a	Minimum Lane Width (feet) Travel Lane Curbed	10 12 desirable	HDM §2.7.3.2B Exhibits 2-6, 2-5 (ADT > 2000) (Truck Volume > 2%)	River Road South Broadway	
2b	Minimum Lane Width (feet) Curbed Industrial	12			
2c	Minimum Lane Width (feet) Uncurbed	12			
2d	Minimum Lane Width (feet) Turning Lane	11 12 desirable			
2e	Minimum Lane Width (feet) Continuous Median Turning Lane	11 16 desirable			
2f	Minimum Lane Width (feet) Parking Lane (if included)	7 8 desirable			
2g	Minimum Lane Width (feet) Residential Parking Lane (if included)	8 11 desirable			
2h	Minimum Lane Width (feet) Commercial, Industrial Parking Lane (if included)	N/A			
3a	Minimum Shoulder Width (feet) Left - Curbed Divided	0 2 desirable	HDM §2.7.3.2C, Exhibits 2-6, 2-5 (ADT > 2000)	River Road South Broadway	
3b	Minimum Shoulder Width (feet) Right Curbed, for Bicycle Use	5			
3c	Minimum Shoulder Width (feet) Uncurbed	8			

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	Design Element	Standard criteria (for information)	Standard Source	Existing Conditions	Project Requirements
4	Minimum Bridge Roadway Width (feet)	Match approach roadway	HDM §2.7.3.2D; BM §2.3.1 Table 2-1	■ South Broadway	N/A River Road  Match existing at South Broadway
5	Maximum Grade [Rolling]	11%	HDM §2.7.3.2E, Exhibit 2-6	N/A River Road	N/A River Road
6	Horizontal Curvature, Minimum Radius at superelevation e=4% (feet)	250	HDM §2.7.3.2F, Exhibit 2-6	N/A River Road	N/A River Road
7	Maximum Superelevation (e) Rate	4%	HDM §2.7.3.2G	N/A River Road	N/A River Road
8	Minimum Stopping Sight Distance (feet)	200	HDM §2.7.3.2H, Exhibit 2-6	■	■
9a	Minimum Horizontal Clearance (feet) Without Barrier/Rail	1.5, 3 at intersections	HDM §2.7.3.2I	Unknown	■ at intersections
9b	Minimum Horizontal Clearance (feet) With Barrier/Rail	0	HDM §2.7.3.2I	Unknown	0
10	Minimum Vertical Clearance (feet)	14 14.5 desirable	HDM §2.7.3.2J; BM §2.4.1, Table 2-2	■ River Road	■ River Road
11	Pavement Cross Slope	1.5% minimum 2% maximum 1.5% to 5% for parking lane	HDM §2.7.3.2K	■	■
12a	Maximum Rollover Between Lanes	4%	HDM §2.7.3.2L	■	■
12b	Maximum Rollover at edge of Traveled Way	8%	HDM §2.7.3.2L	■	■
16	Pedestrian accommodation, width (feet)	5 highway 5' 7" bridge	HDM §2.7.3.2N; HDM Ch 18, ADAAG	■	

Note: \*There are no Works anticipated on Route 9 South Broadway in Rockland County in *Part 6 – RFP Plans (Directive Plans)*.



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**Table 27.3.2-5 Route 9 South Broadway in Westchester County\***

Critical Design Elements for South Broadway in Westchester County			
		NHS (Y/N):	Yes
Route No. & Name:	South Broadway	Functional Class:	Urban Principal Arterial – Other
Project Type:	Reconstruction	Design Class:	Urban Arterial
% Trucks:	5.8%	Terrain:	Rolling
ADT (2047):	13650	Truck Access/Qualifying Highway	Neither

	Design Element	Standard criteria (for information)	Standard Source	Existing Conditions	Project Requirements
1	Design Speed (mph)	40 (designated by NYSDOT Region 8 traffic engineer)	HDM §2.7.2.2A	■	■
2b	Minimum Lane Width (feet) Low Speed (<50mph)	11	HDM §2.7.2.2C, Exhibits 2-4  (ADT > 2000) (Truck Volume > 2%)	-	■
2c	Minimum Lane Width (feet) Turning Lane	11 12 desirable			■
2d	Minimum Lane Width (feet) Continuous Median Turning Lane	11 16 desirable			■
3	Minimum Shoulder Width (feet) Curbed, for Bicycle Use	5			■
4	Minimum Bridge Roadway Width (feet)	Match approach roadway	HDM §2.7.2.2D; BM §2.3.1 Table 2-1	■	Match approach roadway
5	Maximum Grade [Rolling]	8%	HDM §2.7.2.2E, Exhibit 2-4	-	■
6	Horizontal Curvature, Minimum Radius at superelevation e=4% (feet)	533	HDM §2.7.2.2F, Exhibit 2-4	■	■
7	Maximum Superelevation (e) Rate	4%	HDM §2.7.2.2G	■	■
8	Minimum Stopping Sight Distance (feet)	305	HDM §2.7.2.2H, Exhibit 2-4	■	■

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	Design Element	Standard criteria (for information)	Standard Source	Existing Conditions	Project Requirements
9a	Minimum Horizontal Clearance (feet)  Without Barrier/Rail	1.5  3 at intersections	HDM §2.7.2.2I		
9b	Minimum Horizontal Clearance (feet)  With Barrier/Rail	0			0
10a	Minimum Vertical Clearance (feet)	14  14.5 desirable	HDM §2.7.2.2J; BM §2.4.1, Table 2-2		
11	Pavement Cross Slope	1.5% minimum 2% maximum	HDM §2.7.2.2K		
12a	Maximum Rollover Between Lanes	4%	HDM §2.7.2.2L		
12b	Maximum Rollover At edge of Traveled Way	8%	HDM §2.7.2.2L		
13a	Structural Capacity Replacement		HDM §2.7.2.2M; BM §2.6		
13b	Structural Capacity Rehabilitation		HDM §2.7.2.2M; BM §2.6		
16	Pedestrian Accommodation (feet)	5 Highway 5'7" Bridge	HDM §2.7.2.2N; HDM Ch 18, ADAAG		

NOTE: \*Other than Works associated with the SUP (see *Project Requirement 21 – Shared Use Path*), there are no Works anticipated on Route 9 South Broadway in Westchester in *Part 6 – RFP Plans (Directive Plans)*.

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**Table 27.3.2-6 Shared Use Path Geometric Standards**

	<b>Design Element</b>	<b>Standard criteria (for information)</b>	<b>Standard Source</b>	<b>Project Requirement</b>
1	Design Speed (mph)	20	HDM Chapter 17; AASHTO Bicycle Facilities Guide	■
2	Minimum Lane Width (feet)	10	HDM Chapter 17; AASHTO Bicycle Facilities Guide	■
3	Minimum Shoulder Width (feet)	2 (unpaved), 3 Desirable	AASHTO Bicycle Facilities Guide	■
4	Minimum Clear Bridge Width (feet)	Paved path width + 2 each side; 16	AASHTO Bicycle Facilities Guide	■
5	Maximum Grade	5% (continuous)	HDM Chapter 17; AASHTO Bicycle Facilities Guide	■
6	Horizontal Curvature, Minimum Radius for e=2%, 20° lean angle (feet)	90	HDM Chapter 17; AASHTO Bicycle Facilities Guide, Tables 1 & 2	■
7	Maximum Superelevation (e) Rate	2%	AASHTO Bicycle Facilities Guide	■
8	Minimum Stopping Sight Distance (feet)	140 Longer for downhills > 5%	AASHTO Bicycle Facilities Guide, Fig. 19	■
9	Minimum Horizontal Clearance (feet)	3 5 at hazards and side slopes >33%	HDM Chapter 17; AASHTO Bicycle Facilities Guide	■
10a	Minimum Vertical Clearance (feet)	10 For maintenance vehicles, as needed > 10	HDM Chapter 17; AASHTO Bicycle Facilities Guide	■
10b	Minimum Vertical Clearance over Railroad (feet)	23.0	TSDM ; §1.9.1	■
11	Pavement Cross Slope	2%	HDM Chapter 18; ADAAG	■
12	Maximum Rollover	4%	-	■
13	Structural Capacity	H10	NYSDOT BM §2.6.4	■
14	Minimum Level of Service (Pedestrian)	B	HDM §18.5.4, Exhibit 18-2	■
15	Control of Access	Maintain separation from parallel roads	AASHTO Bicycle Facilities Guide	Maintain separation from
16	Pedestrian Accommodation	Per ADAAG	ADAAG; HDM Chapter 18	Per ADAAG



Note 1 to Table 27.3.2-6: Grades between [REDACTED] are permissible for short lengths [REDACTED], as prescribed in the AASHTO Bicycle Facilities Guide.

Note 2 to Table 27.3.2-6: Where applicable, a determination shall be made as to whether the pertinent roadway is in an urban or rural location, and the proper design requirements applied accordingly.

### 27.3.3 Works other than Reconstruction

Should the Design-Builder need to carry out works other than reconstruction due to specific features in the design, the 1R/2R/3R tables from the NYSTA design criteria will be applied in locations that are not reconstructed.

The NYSTA 2R and 3R tables do not apply in areas that receive 2 inches or less of overlay. For areas outside NYSTA maintenance responsibility, such as local roads, the Design-Builder shall use NYSDOT HDM Chapter 7.

### 27.3.4 Roadway Appurtenances

Permanent road appurtenances, protections, and safety devices shall be provided in accordance with the Standards in Section 27.2.1.

Excepting for the Crossing structure, all mainline median barrier systems shall be concrete barrier. Ramp and right side guide rail systems shall be heavy post blocked out corrugated beam rail, unless roadside conditions preclude its use.

Attenuators on the concrete barrier shall be reusable type with concrete anchor, and at a minimum meet TL - 3 standards as defined in Chapter 10 of the *HDM*. Other rail systems shall have appropriate attenuating end terminals meeting TL-3 standards. Attenuators at the toll plaza are detailed in *Project Requirement 26 – Toll Plaza*.

### 27.3.5 Design Exceptions and Non-Standard Features

A non-standard feature is created when the established design requirements for a critical design element are not met. All design elements listed within Section 27.3.2 (Design Requirements) herein are critical design elements. All non-standard existing features to be retained must be listed, justified and approved in accordance with NYSDOT HDM Chapter 2 and NYSDOT's *Project Development Manual*.

Appendix A5 of the Environmental Impact Statement lists existing highway design elements that do not meet the standard design requirements. FHWA approval is being sought by the Authority for design exceptions (DE) for those elements as part of the EIS process. Where the Design-Builder's design varies from that assessed in the EIS, revised DEs shall need to be agreed in advance with the Authority and also approved by the FHWA where necessary, relative to the design and the DEs assessed in the EIS.

### 27.3.6 Access Modifications

Should the Design-Builder's proposed highway design result in a new access point or revised access point to the Thruway mainline or ramps, the Design-Builder shall obtain approval from the FHWA prior to implementing such a design, in accordance with NYSDOT's *Project Development Manual*, Appendix 8.

### 27.3.7 Potential Future Riverside Walk

At Substantial Completion of the Crossing, the Design-Builder's design shall provide an unobstructed corridor space for an at-grade riverside walk for use in a potential future development (by others) that continues the existing riverwalk to the south of the Crossing. All Crossing piers, columns, pile caps, facilities and infrastructure shall be located to allow the potential future riverside walk to meet the following criteria:

- A. Riverside walk shall be as close as possible to the Hudson River within the Authority's ROW;

- B. [REDACTED] at-grade with added width where necessary to allow for retaining walls if necessary;
- C. Minimum vertical clearance to [REDACTED]';
- D. Maximum transverse slope [REDACTED];
- E. Maximum profile along the corridor alignment [REDACTED]

The Design-BUILDER is not permitted to place any below-ground structure required for the Crossing (for example, pile caps) beneath the riverside walk corridor. Refer to *Part 6 – RFP Plans* for the required start and end points and the general alignment of the unobstructed corridor space. Location of the riverside walk corridor shall be identified on all Contract drawings.

## 27.4 Deliverables

The Design-BUILDER shall provide to the Authority documentation including that listed in Table 27.4-1 for submittal to and approval by the FHWA relating to the Project's Final Design in the areas of non-standard and non-conforming features and changes to interstate highway access/egress design or location:

- A. Tabulations comparing the highway design parameters of the Basic Project Configuration with the Project Requirements listed herein;
- B. Tabulations comparing the highway design parameters of the Definitive Design with the Project Requirements listed herein;
- C. Itemization and location of appurtenances, protections, and safety devices to be included in the Project;
- D. Itemization of non-standard features and tabulation comparing them with those identified in the Environmental Documentation;
- E. Documentation demonstrating the necessary approvals of additional non-standard features, if any; and
- F. Documentation demonstrating the necessary approvals of interstate highway access/egress modifications, if any

Where applicable, electronic copies of deliverables listed in Table 27.4-1 shall be supplied as per the specifications given in chapter 2 of NYSDOT *CADD Standards and Procedure Manual*. All relevant Bentley MicroStation® files (including .DGN files) and Bentley InRoads® files (including DTM, ALG files) shall be compatible with the MicroStation XM and InRoads XM software versions.

**Table 27.4-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Section
	Hardcopy	Electronic		
Tabulated comparison of Basic Project Configuration and Project Requirements for all elements	5	1	At Design Review	27.4
Tabulated comparison of Final Design and Project Requirements for all elements	5	1	At Design Review	27.4
Itemization and locations of appurtenances, protections and safety devices	5	1	At Design Review	27.4

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<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Itemization of non-standard features and comparison with Environmental Documentation	5	1	At Design Review	27.4
Approvals for non-standard features, if any	5	1	At Design Review	27.4
Approvals of interstate highway access/egress modifications, if any	5	1	At Design Review	27.4

## **SECTION 28. BRIDGE MAINTENANCE AND OPERATION REQUIREMENTS**

### **28.1. Scope**

The Design-Builder shall be responsible for the design and implementation of the Project to permit operation, inspection and maintenance throughout the service life of the Crossing. Refer to *Project Requirement 11 – Structures* for bridge service life and component protection requirements.

Any reference within this Project Requirement to specific structural features in the Crossing design (such as towers, arches, stay cables, and so forth) which may or may not be present in the Design-Builder's design of the Crossing shall apply only as far as the Design-Builder's design includes a feature of that type.

### **28.2. Standards**

The Design-Builder shall provide for accessibility for inspection, maintenance and operation in accordance with the following Standards, unless otherwise stipulated in this Project Requirement.

- |           |  |
|-----------|--|
| A. NYSTA  | Bridge Design Manual   |
| B. AASHTO | LRFD Bridge Design Specifications, together with Subsection A3.10 of the NYSDOT "Blue Pages"     |
| C. NYSDOT | Bridge Manual  |
| D. AASHTO | Manual for Bridge Evaluation   |
| E. NYSDOT | Bridge Inspection Manual   |
| F. NYSDOT | Engineering Instruction EI 05-034 Load Rating/Posting Guidelines for State-Owned Highway Bridges |
| G. AASHTO | Manual for Bridge Evaluation with 2011 Interim Revisions, or as superseded by NYSTA policies     |
| H. ASME   | A17-12010 Safety Code for Elevators and Escalators   |
| I. NFPA   | 70 National Electric Code  |
| J. NFPA   | 780 Standard for the Installation of Lightning Protection Systems                                |
| K. OSHA   | Occupational Health and Safety Administration. Standard Numbers 1910 and 1926                    |

### **28.3. Requirements for Design for Accessibility**

#### **28.3.1. Reports**

The Design-Builder shall prepare and issue a bridge access strategy report for the Crossing within six months of NTP. This report shall describe the proposed manner of access and equipment to be used.

At least 60 days before start of fabrication of any part of the maintenance and inspection related equipment, the Design-Builder shall issue to the Authority a bridge access and inspection manual. The contents of the manual shall include but not be limited to orientation maps (see Section 28.3.5.6 herein), locking scheme and rope access strategy plan, inspection details, maintenance and inspection equipment.

### 28.3.2. Provision of Access

The Design-Builder shall make suitable provision in the design of the Work for access for future operation, inspection and maintenance of all elements of the Work throughout its service life. The Design-Builder shall make provision for access for purposes including but not limited to:

- A. Maintenance and inspection of the interior and exterior of the bridges;
- B. Cleaning and painting;
- C. Jacking, removal / replacement of bearings and buffers;
- D. Removal / replacement of stay cables, hangers and dampers;
- E. Removal / replacement of expansion joints; and
- F. Removal / replacement of any other elements with a service life less than 100 years (see *Project Requirement 11 – Structures*).

The access arrangements shall be in accordance with the following requirements:

- G. Access points shall be placed in practical locations so as to avoid interference with traffic;
- H. All access points and access ways within voids shall be suitably sized and designed to allow for the evacuation of an injured worker, on a stretcher if necessary;
- I. Specific emergency routes and exits shall be identified clearly by signs and shall be provided with lighting;
- J. All maintenance access points shall be carefully located and detailed so as to minimize their visibility to passing traffic;
- K. All access equipment shall be capable of withstanding the prevailing environmental conditions including ingress of dust and water;
- L. Permanent access ladders or stairways shall be provided at changes in level along access routes;
- M. All walking surfaces shall be provided with a non-slip surface coating and shall avoid details which create a risk of tripping and shall be self-draining;
- N. Permanent lighting with permanent power supply shall be provided for access routes and access chambers. Additionally, emergency lighting shall be provided along emergency routes;
- O. Warning notices and signs shall be provided to all electrical power boards and valves where the operation may affect the safety of persons using voids in the Crossing;
- P. All access points shall be capable of being secured from unauthorized access by means of lockable steel doors;
- Q. All access points shall be in compliance with *Project Requirement 20 – Security*;
- R. Public access to any facilities provided for Crossing operation, inspection and maintenance shall be prevented by means of suitable barriers;
- S. Pile caps located in water shall be provided with a mooring ring on each side of each pile cap, structurally connected to the pile cap structure;
- T. Where voided elements (including but not limited to box girder decks, towers, voided piers, enclosures) requiring inspection and the like are provided, these shall be of sufficient size to allow internal inspection by personnel;



U. [REDACTED]

V. The design of the Work shall ensure that replacement of all replaceable components shall be possible while full maintaining traffic flows over the Crossing except that partial traffic closure will be permitted the following, only:

1. Removal of any or all of the surfacing;
2. Replacement of stay cables (if used); and
3. Replacement of expansion joints.

#### **28.3.3. Design Requirements for Access Facilities**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

#### **28.3.4. General Requirements for Access Equipment**

The access equipment shall be robust and durable, taking due consideration of exposure to the elements. The access equipment shall be fully powered for all motions. The access equipment shall be controllable by a single operator for all routine functions. The controls shall be ergonomically positioned. The access equipment shall include all necessary safety devices that control and monitor all necessary functions to ensure safety of operators.

Steel shall be hot-dip galvanized. Galvanizing to steel shall be applied after welding, drilling and cutting are complete.

#### **28.3.5. Inspection and Maintenance: Access Routes**

[REDACTED]

##### **28.3.5.1. Access Along the Superstructure**

[REDACTED]

[REDACTED]

##### **28.3.5.2. Access to Piers and Towers**

[REDACTED]

**Table 28.4-2 Crossing Approach Spans – Requirements for Monitoring in Service**

[illegible]

## 28.5. Requirements for O&M Manual

### 28.5.1. Manual for Operation, Inspection and Maintenance

The Design-Builder shall supply to the Authority operation, inspection and maintenance manuals, and any other manuals identified in addition to As-Built plans and documentation as being required in respect of that section of Work, prior to the issue of any commissioning certificate in respect of a section of the Work and in sufficient detail for the Authority to operate, maintain, dismantle, reassemble, adjust and repair the Permanent Work. Such documentation is collectively denoted as the O&M manual in this Project Requirement.

A section of the Work shall not be considered to be completed until the Authority has received the applicable O&M manual, and any other manuals identified in *Part 3 – Project Requirements*, in sufficient detail to allow the Authority to operate and maintain the Work in a safe and effective manner and the Authority has confirmed such in writing to the Design-Builder.

### 28.5.2. Contents of the O&M Manual

The O&M manuals shall cover all elements of the Work and all components and equipment associated supplied under the Contract. The contents of the O&M manual shall include, but not be limited to:

- A. List of contents;
- B. Operational instructions;
- C. Permissible load instructions;
- D. Trouble shooting instructions and emergency maintenance procedures;
- E. Details of inspection intervals and extent of inspection for all components
- F. Maintenance requirements with routines including details of cleaning, lubrication and fault-finding;
- G. Manufacturer's proprietary literature
- H. Relevant data sheets and electrical diagrams including location, make, type, dimension;
- I. Approved corrosion protection plan
- J. Design and workshop drawings up-dated to as-built status;
- K. Equipment list;
- L. Instrument list;
- M. Test certificates;
- N. Permits and access procedures;
- O. Spare parts list;
- P. List of suppliers with address, email and telephone numbers;
- Q. As-Built Plans and records;
- R. A detailed inspection sequence that includes defining critical components of the bridge and a breakdown of all primary structural elements to allow suitable planning of inspection activities and prioritization of maintenance. The presence and location of fracture critical and fatigue prone details or any other details unique to the structure shall be made fully accessible and identified in the as-built plans and O&M manual to aid in future inspection of the structures;
- S. Procedures shall include details of how the components can be replaced, including any traffic management requirements and specialist equipment required for the replacement operation for all components with a design life less than that of the Work; and
- T. The testing and commissioning report for each item of access equipment shall include sufficient records to demonstrate that such inspection and maintenance has been undertaken.

### **28.5.3. Inspection, Maintenance and Replacement Procedures**

The Design-Builder shall develop inspection, maintenance and replacement procedures for inclusion within the O&M manual. These shall give detailed procedures for the inspection and maintenance staff to follow when undertaking their work. As a minimum, the O&M manual shall include:

- A. Health and safety considerations;
- B. A schedule of the inspection, maintenance and replacement for each component;
- C. Detailed procedure of inspection, maintenance and replacement operations;
- D. Equipment requirements;
- E. Access considerations;

- F. Recording and reporting procedures; and
- G. Any relevant reference documentation.

## **28.6. Requirements for Training**

### **28.6.1. Training on Use, Operation and Maintenance of the Work**

The Design-Builder shall provide training to the Authority's operation and maintenance personnel regarding the function, operation and maintenance of the bridge equipment.

A complete program for training shall be prepared based on the operating instructions and technical documentation. The training program shall consist of two parts:

- A. Theoretical education:
  - 1. Prior to start-up, the operation and maintenance personnel shall be given a theoretical training in the function and operation of the bridge equipment; and
  - 2. The personnel shall also be trained in maintenance of the equipment according to the maintenance procedures included in the O&M manual;
- B. Instruction and Training: During the installation period, the Agencies' personnel shall be allowed to actively participate in the commissioning of the equipment.

## **28.7. Requirements for spatial information**

### **28.7.1. Requirements for 3-D GIS spatial model for maintenance planning**

In addition to the requirements of *Project Requirement 5 – Surveying and GIS*, the Design-Builder shall provide a 3-D GIS spatial model for future maintenance planning purposes. This shall encompass the Project and Project Site, including base mapping layers such as aerial photography, topography, infrastructure and buildings, the as-built Crossing, its appurtenances, and all associated as-built construction and Project-related development. The 3-D GIS spatial model for maintenance planning shall be configured by the Design-Builder to be usable by the Authority in its future maintenance planning and operations after Project completion. The 3-D GIS spatial model for maintenance shall incorporate and host a geospatial digital photographic documentation record by the Design-Builder of the as-built Work, including the date, time, location, orientation and descriptor for all photographic images. The 3-D GIS spatial model for maintenance planning shall allow for interactive simulation in a virtual reality system. It shall include interactive viewing capability to a functional level typical of commercial proprietary software.

### **28.7.2. Requirements for as-built Crossing database**

The Design-Builder shall deliver, for review and written comment, to the Authority a detailed georeferenced line-item, table-based, as-built database which shall be spatially-linked, based on common attribute(s), to a design model illustrating all elements used to construct the Crossing. The Authority intends to utilize the database and model as part of its future maintenance, inspection and operating systems, including the tracking of manufacturing history, installation details and part specifications.

The completed database shall consist of details including but not limited to:

- A. Table-based line items for all parts as listed in but not limited to the AASHTO Guide Manual for Bridge Element Inspection; 1<sup>st</sup> edition; 2011;
- B. A unique reference identifier to identify all Crossing parts. The identifier system shall be linked to the design model;
- C. Relevant groupings, sub-groupings or part-sets to which a part belongs;

- D. A general description of the part;
- E. Specifications, ratings, and/or maintenance records associated with the part;
- F. Location of part by east, west, north, south, beginning/end, span number, barrier number, eastbound/westbound, and NYSDOT standard inspection orientation;
- G. Manufacturer, facility and batch number of part;
- H. Date and time of installation of part;
- I. Coatings and finishes (where relevant);
- J. Mill certificates (where relevant); and
- K. Records of remedial actions carried out during construction.

The Design-Builder shall implement a suitable, phased approach to data collection to develop and acquire the necessary data consistent with a thorough and detailed element database from all stages of the Project. At Physical Completion, the Design-Builder shall provide to the Authority the completed database containing all parts used in the construction of the Crossing with appropriate detail collated for each element, and the linked design model with identifiers.

## **28.8. Deliverables**

At a minimum, the deliverables to the Authority shall include the items listed in Table 28.8-1 for review and written comment unless otherwise specified herein.

**28.8-1 Deliverables**

<b>Deliverable</b>	<b>Number of Copies</b>		<b>Delivery Schedule</b>	<b>Reference Section</b>
	<b>Hardcopy</b>	<b>Electronic</b>		
Bridge access strategy report	5	1	At Design Review	28.3.1
Bridge access and inspection manual	5	1	At Readiness for Construction Review, and at least 60 days before fabrication of first relevant component	28.3.1
Format and structure of as-built georeferenced database	0	1	At Readiness for Construction Review	28.7
O & M manual	10	1	See Section 28.5.1	28.5
Structural health monitoring system manual	5	1	Prior to Physical Completion	28.4
Training report	5	1	Prior to Physical Completion	28.6
Completed as-built georeferenced database for Crossing, and design model with identifiers including 3-D spatial model for maintenance planning	0	1	At Physical Completion	28.7



## SECTION 29. STANDARDS

### 29.1. General Requirements

The Design-Builder shall use the version of Standards in force on the date of issue of the RFP. The Design-Builder shall identify the specific version of each Standard it uses. If the Standard is a NYSDOT or Authority manual, the Design-Builder shall use the design-build modified version, to the extent available.

The order of precedence among the Standards is indicated by the sequence of the listing of Standards (if any) given within each section of the *Project Requirements*, unless otherwise stated in a *Project Requirement*. Should the requirements in any Standard conflict with those in another, the Standard highest on the list shall govern. It is the Design-Builder's responsibility to obtain clarification of any apparent error, omission, ambiguity or conflict regarding any Standard in accordance with *DB §102-2*.

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 NYSTA and NYSDOT (in that order) 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.

Access to and document ordering information for most NYSDOT and the Authority Standards are available from the NYSDOT and the Authority websites:

1. <http://www.thruway.ny.gov/consultants/design-manual/>
2. <https://www.dot.ny.gov/main/business-center/contractors/plan-sales>

These website addresses have been supplied to the Design-Builder for convenience only, in an effort to help the Design-Builder locate the required Standard. The websites are not guaranteed to be correct. It is the Design-Builder's responsibility to locate the required Standard and to determine if the Standard has been modified pursuant to the Contract Documents.

### 29.2. Specific Requirements

- A. 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 Authority. It shall be in the Authority's sole discretion to determine when the context does not require a provision to be mandatory;
- B. Except as expressly otherwise provided in the Contract Documents, as between the Design-Builder and the Authority, any reference to NYSDOT under a Standard shall mean the Authority;
- C. 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 Authority;
- D. Except with respect to any Work for which Design Builder is to be paid on a unit price or force account basis, any references in the Standards related to payment, pay items or quantities, measurement for payment, method of measurement, basis of payment, extra work, adjustment of unit prices, or similar phrases, shall be disregarded by the Design-Builder, since the Contract Price is full compensation for the Work;

- E. 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;
- F. References in the Standards to approved products or materials shall mean approved by the Authority;
- G. 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 Authority;
- H. When a Standard uses the term "engineer" relating to activation or de-activation of railroad or highway signals, or the approval of any activities involving the use of explosives, such term shall mean the Authority;
- I. When approval or authorization by the "engineer", "NYSDOT" or "the Department" is required in a Standard for the use of alternative or substituted processes or components, this shall mean the Authority;
- J. When a Standard requires actions, dimensions, spacing, design information, materials as designed, means, or methods that are "either as indicated in the Plans or as designated by the engineer," the Design-Builder shall disregard the phrase "or as designated by the engineer";
- K. When a Standard refers to the "engineer" ordering work beyond the scope of work in the Contract, "engineer" shall mean the Authority;
- L. Wherever references to "engineer" result in testing or acceptance procedures being assigned to the engineer, acceptance will be on behalf of the Authority. The Authority reserves the right to perform additional tests and inspections as necessary to confirm that the work is in conformance with Contract requirements and will be the only party authorized to accept or approve the Work on behalf of the Authority;
- M. When a Standard refers to unauthorized work or to acceptance of non-conforming work by the "engineer," the "engineer" shall mean the Authority;
- N. When a Standard refers to "Department," "departments" or "divisions" within NYSDOT or NYSTA, or to specific job titles within NYSDOT or NYSTA, such reference shall mean the Authority;
- O. Any acceptances on behalf of NYSDOT, NYSTA, the Department or the State shall be performed by the Authority;
- P. When any references occur in a Standard to the "engineer" that refers to the time period after Final Acceptance, the term "engineer" shall mean the Authority;
- Q. When a Standard requires notifications to the "engineer", the "engineer" shall mean the Authority;
- R. When a Standard refers to an approval of any correction or repair that deviates from the Contract requirements, the Approval must be by the Authority;
- S. When a Standard refers to items that will be performed or provided by NYSDOT or NYSTA or by a division or employee of NYSDOT or NYSTA, 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 Authority's sole discretion to determine when the context requires otherwise;

- T. When a Standard refers to the "project manager" as it relates to plan processes, sending information or requesting information from NYSDOT and NYSTA entities, the term "project manager" shall mean the Authority. The Design-Builder shall submit all requests directly to the Authority's Project Manager.
- U. The Design-Builder shall perform Work relevant to each Project Requirement in *Part 3 – Project Requirements* in accordance with the Standard(s), if any, that are listed in that Project Requirement, unless otherwise stipulated in the Project Requirement.
- V. The Design-Builder shall follow all standards, laws and rules necessary to perform its Work regardless of whether an applicable standard, regulation, law or rule is specified in *Part 3 – Project Requirements*.

## SECTION 30. STATE POLICE FACILITIES

### 30.1. Scope

The Design-Builder shall be responsible for providing the New York State Police with a building in accordance with this Project Requirement and through one of two options:

**Option 1 – Replacement:** complete replacement of the State Police [REDACTED] building; or

**Option 2 – Rehabilitation/Renovation:** rehabilitation/renovation of the State Police [REDACTED] building.

Under Option 1 (replacement), the Design-Builder shall be responsible for all Work associated with design and construction of both a temporary and a permanent New York State Police building for State Police Troop T, [REDACTED]

Under Option 2 (rehabilitation/renovation), the Design-Builder shall be responsible for all Work associated with design and rehabilitation/renovation of the New York State Police building for Troop T, [REDACTED]

The option chosen by the Design-Builder in its Proposal shall govern hereunder and shall be incorporated as *Part 9* of the Contract Documents.

For architectural requirements for the State Police facilities, see *Project Requirement 32 – Architectural Quality for Buildings*. For structural, mechanical, electrical, plumbing and fire and life safety requirements for the State Police facilities, see *Project Requirement 33 – SMEP and Life Safety for Buildings*.

### 30.2. Standards

The Design-Builder shall perform the State Police facility activities in accordance with the following Standards unless otherwise stipulated in this Project Requirement.

- A. NYSDOS/DCEA New York State Uniform Fire Prevention & Building Code (the Uniform Code) and its referenced standards including the Codes of New York State
- B. ABA Architectural Barriers Act
- C. ADA The Americans with Disabilities Act
- D. ICR 56 Industrial Code Rule 56 – Hazardous Material Removal
- E. NYSDEC Executive Order No. 111 “Green and Clean” State Buildings and Vehicles Guidelines
- F. NYSDEC Executive Order No.4 Establishing a Green State Procurement and Agency Sustainability Program
- G. MasterFormat™ (Construction Specifications Institute, CSI, and Construction Specifications Canada, CSC) and MasterSpec® (published by ARCOM for The American Institute of Architects, AIA)

The Design-Builder shall use MasterSpec® as its specification writing system for architectural Works. If use of a different system is proposed by the Design-Builder, then a sample section shall be provided by the Design-Builder in advance to the Authority for review and approval.

### 30.3. Requirements: Option 1 – Replacement

If the Design-Builder elected Option 1 (replacement) in its Proposal, the following requirements of this Section 30.3 shall apply.

#### 30.3.1. Design Requirements for Temporary Facilities

The Design-Builder shall be responsible for ensuring that the design and implementation of the temporary State Police facility shall comply with the following:

- A. The facility shall be located within the mainline Thruway [REDACTED]
- B. The facility shall have public access;
- C. Provision of an asphalt parking lot large enough to accommodate [REDACTED] parking spaces, to include trooper vehicles, personal vehicles, visitors and disabled accessible spaces;
- D. Provision of a secure fenced paved area for storing impounded vehicles, at least 10 vehicles;
- E. Provision of concrete sidewalk to building entrances and access rooms;
- F. Provision of flagpoles and other site amenities to appropriate areas;
- G. Provision of a fenced dog pen area approximately 8 feet x 12 feet in plan, with a concrete base slab;
- H. Provision of landscaping in accordance with *Project Requirement 12 – Landscape Architecture*;
- I. [REDACTED]
- J. Provision of a facility that will operate 24 hours a day, accommodating three shifts.

##### 30.3.1.1. Building Requirements for Temporary Facilities

The Design-Builder shall be responsible for the design and implementation of the temporary facility which shall be suitable for a population of [REDACTED] and shall include the space requirements summarized in Table 30.3-1.

**Table 30.3-1 Temporary Building Requirements**

Room	Minimum Size (square feet)	Requirements
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]



[illegible]

**PART 3, SECTION 30 – STATE POLICE FACILITIES**  
**CONFORMED November 21, 2012**

## New York State Thruway Authority

For Option 2 (rehabilitation/renovation), the applicable requirements for the permitting, construction and inspection of the rehabilitation/renovation of the State Police building are outlined in *Project Requirement 31 – Buildings*.

### 30.6. Deliverables

At a minimum, the deliverables shall include the item listed in Table 30.6-1 for Authority and State Police consultation and written comment.

**Table 30.6-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule
	Hardcopy	Electronic	
Design Plans and Project Specifications for the State Police facility works	5	1	At Design Review, and again at Readiness for Construction Review

**ITEM 30-1-R:**

**Semi-Private Area - Men's Accessible Restroom**

Accessible restroom for non-defendant visitors to the station on police-related business.

**Where Required**

State Police Facility

**Size**

net square feet

**Occupancy**

None on a regular basis.

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** Provide two (2) Stalls, and two (2) sinks, and two (2) urinals. Provide adequate floor drains in toilet areas. Comply with ADA standards.

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

N/A

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 30-1-S:**

**[REDACTED]: Semi-Private Area - Women's Accessible restrooms**

Accessible restroom for non-defendant visitors to the station on police related business.

**Where Required**

State Police Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None on a regular basis.

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** Provide two (2) Stalls, and two (2) sinks. Provide adequate floor drains in toilet areas. Comply with ADA standards.

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

N/A

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A



**ITEM 30-1-T:**

**Semi-Private Area - Break/Training Room with Kitchenette**

The Break/Training Room is a flexible space used as a communal space for the troopers as well as a space for training sessions. It holds seating that can be arranged with tables for meals as well as in lecture format rows. Direct access to natural light and ventilation is required.

**Where Required**

State Police Facility

**Size**

net square feet

**Occupancy**

**Fixed Equipment**

Kitchenette shall include a range.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards. Local DX Unit.

**Plumbing:** Provide kitchen sink and plumbing.

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



**ITEM 30-1-U:**

**: Semi-Private Area - File Storage**

Storage for various files, documents and records produced by the police operations. This space is comprised of floor area for file cabinets and adjustable shelving.

**Where Required**

State Police Facility

**Size**

net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 30-1-V:**

**SP-22: Semi-Private Area - Office Supply Storage Closet**

Storage for office supplies for the entire facility.

**Where Required**

State Police Facility

**Size**

net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 30-1-W:**

**[REDACTED]: Semi-Private Area - Storage Room, Patrol Related Supplies**

**Where Required**

State Police Facility

**Size**

[REDACTED] net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

# New York State Thruway Authority

## ITEM 30-1-X:

### **: Semi-Private Area: Uniform Closet with Laundry room**

Closet space comprised of shelving and a hanger rod for trooper uniforms and laundry.

#### Where Required

State Police Facility

#### Size

net square feet

#### Occupancy

#### Fixed Equipment

#### Mechanical/Plumbing

HVAC: Normal ASHRAE HVAC standards.

Plumbing: None

#### Fire Protection

Per applicable NYS and NFPA references

#### Construction and Finishes

#### Other

N/A

#### Number Required

#### Location / Relationships

#### Communications

#### Security

#### Furniture

#### Electrical

#### Doors

#### Windows

None

#### User Provided Equipment

N/A



**ITEM 30-1-Y:**

**: Private Area - Women's Locker Room**

The Women's Locker Room houses the lockers for the officers, has direct access to natural light via skylights and/or clerestory windows [REDACTED], and is located amongst the support spaces in the building. Direct access to natural light and natural ventilation.

**Where Required**

State Police Facility

**Size**

**Occupancy**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Furniture**

With 2' x 2' x 2' lockers for each trooper. With shoe shine area and flashlight charging shelf.

**Electrical**

**Construction and Finishes**

**Doors**

**Other**

With shoe shine area and flashlight charging shelf.

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



New York State Thruway Authority

**ITEM 30-1-Z:**

**[REDACTED]: Private Area: Women's Shower**

**Where Required**

State Police Facility

**Size**

[REDACTED] net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards

Exhaust only.

**Plumbing:** Shower supply. Floor drain.

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

New York State Thruway Authority

ITEM 30-1-AA:

[REDACTED]: Private Area - Women's Accessible Restroom

Must comply with ADA standards

Where Required

State Police Facility

Size

[REDACTED] net square feet

Occupancy

Fixed Equipment

Detention grade mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

Mechanical/Plumbing

HVAC: Normal ASHRAE HVAC standards.

[REDACTED]

Plumbing: Two (2) Stalls, two (2) sinks

Fire Protection

Per applicable NYS and NFPA references

Construction and Finishes

Other

N/A

Number Required

Location / Relationships

Communications

Security

Furniture

Electrical

Doors

Windows

None

User Provided Equipment

N/A

**ITEM 30-1-BB:**

**[REDACTED]: Private Area - Men's Locker Room**

The Men's Locker Room houses the lockers for the officers, has direct access to natural light via skylights and/or clerestory windows [REDACTED] and is located amongst the support spaces in the building. Direct access to natural light and natural ventilation.

**Where Required**

State Police Facility

**Size**

[REDACTED]

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

[REDACTED]

**Plumbing:** Floor Drain

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Number Required**

**Location / Relationships**

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

## New York State Thruway Authority

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### Other

With shoe shine area and flashlight charging shelf.

### Windows

#### **Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

#### **User Provided Equipment**

N/A

New York State Thruway Authority

ITEM 30-1-CC:

: Private Area - Men's Shower

Where Required

State Police Facility

Size

net square feet

Occupancy

Fixed Equipment

Mechanical/Plumbing

HVAC: Normal ASHRAE HVAC standards

Plumbing: Shower supply. Floor drain.

Fire Protection

Per applicable NYS and NFPA references

Construction and Finishes

Other

N/A

Number Required

Location / Relationships

Communications

Security

Furniture

Electrical

Doors

Windows

None

User Provided Equipment

N/A



**ITEM 30-1-DD**

**[REDACTED]: Private Area - Men's Accessible Restroom**

Must comply with ADA standards

**Where Required**

State Police Facility

**Size**

[REDACTED] net square feet

**Occupancy**

**Number Required**

**Location / Relationships**

**Communications**

**Fixed Equipment**

Detention grade mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** Two (2) urinals, two (2) stalls, two (2) sinks.

**Fire Protection**

Per applicable NYS and NFPA references

**Security**

**Furniture**

**Construction and Finishes**

**Electrical**

**Doors**

**Other**

N/A

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 30-1-EE:**

**§ [REDACTED] Private Area - Women's Bedroom and Closet**

A bedroom with closet is provided for the officers to rest. Direct access to natural light and ventilation is required.

**Where Required**

State Police Facility

**Size**

Bedroom: [REDACTED] square feet

Closet: [REDACTED] square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

1 bed (not in contract); 1 TV (not in contract)

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

**ITEM 30-1-FF:**

**[REDACTED]: Private Area - Men's Bedroom and Closet**

A bedroom with closet is provided for the officers to rest. Direct access to natural light and ventilation is required.

**Where Required**

State Police Facility

**Size**

Bedroom: [REDACTED] net square feet

Closet: [REDACTED] net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

1 bed (not in contract); 1 TV (not in contract)

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

## New York State Thruway Authority

### ITEM 30-1-GG:

#### **[REDACTED]: Private Area - Multipurpose Room**

Direct access to natural light and natural ventilation.

#### **Where Required**

State Police Facility

#### **Size**

[REDACTED] net square feet

#### **Occupancy**

#### **Fixed Equipment**

#### **Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** None

#### **Fire Protection**

Per applicable NYS and NFPA references

#### **Construction and Finishes**

#### **Other**

N/A

#### **Number Required**

#### **Location / Relationships**

#### **Communications**

#### **Security**

#### **Furniture**

Provision by Design-Builder to ensure no interruptions in State Police operations throughout construction period.

#### **Electrical**

#### **Doors**

#### **Windows**

**Interior Window Material:**

**Exterior Window Material:** Operable, Insulated Glass Unit in aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

#### **User Provided Equipment**

N/A



## New York State Thruway Authority

### ITEM 30-1-HH:

#### **: Private Area - Janitor's Closet**

Provided for the storage of cleaning equipment and supplies used by the janitorial staff. Located adjacent to the facility support spaces.

#### Where Required

State Police Facility

#### Size

net square feet

#### Occupancy

#### Number Required

#### Location / Relationships

#### Communications

#### Fixed Equipment

#### Security

#### Mechanical/Plumbing

**HVAC:** Normal ASHRAE HVAC standards.

**Plumbing:** Provide Utility Sink. Provide mop sink.  
Provide floor drain

#### Fire Protection

Per applicable NYS and NFPA references

#### Furniture

#### Construction and Finishes

#### Electrical

#### Doors

#### Other

N/A

#### Windows

#### User Provided Equipment

N/A



**ITEM 30-1-II:**

**Private Area - Mechanical Room**

Provides space for HVAC, domestic hot water equipment, water treatment system and heater. Located adjacent to the building support spaces. Can be located as an exterior mechanical unit. Roof units not allowed.

**Where Required**

State Police Facility

**Size**

net square feet minimum. Size as required for equipment to fully power the facility.

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

HVAC: Normal ASHRAE HVAC standards.

**Fire Protection**

Per applicable NYS and NFPA references

**Construction and Finishes**

**Other**

Architecturally integrate all exterior mechanical equipment screens into architecture of the facility.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

## SECTION 31. BUILDINGS

### 31.1. Scope

The Design-Builder shall provide the Authority with maintenance and administrative buildings within Westchester and Rockland Counties. The Design-Builder can achieve this through two options:

**Option 1 – Replacement:** the complete replacement of all existing maintenance and administrative buildings identified in the existing facility layout drawings contained in *Part 6 – RFP Plans* (the “buildings”); or

**Option 2 – Rehabilitation/Replacement:** rehabilitation of the Tarrytown [REDACTED] building and the Bridge/Wrecker Crew Building, and the complete replacement of all other existing buildings.

Under Option 1 (replacement), the Design-Builder shall be responsible for temporarily and permanently relocating certain existing buildings (detailed herein) as a result of the Project implementation. In addition, other buildings may require temporary and permanent relocation and/or replacement, should the Design-Builder choose to use Westchester and Rockland landings for construction staging areas.

Requirements for the temporary and permanent relocation and replacement of the buildings are detailed in *Project Requirement 19 – Maintenance Facilities*.

Under Option 2 (rehabilitation/replacement), the Tarrytown [REDACTED] building and bridge/wrecker crew building shall be rehabilitated per the applicable Standards. For all other buildings, the requirements of Option 1 shall apply and these buildings shall be replaced.

The option chosen by the Design-Builder in its Proposal shall govern hereunder and shall be incorporated as *Part 9* of the Contract Documents.

For architectural requirements for the maintenance and administrative buildings, see *Project Requirement 32 – Architectural Quality for Buildings*. For structural, mechanical, electrical, plumbing and fire and life safety requirements for the maintenance and administrative buildings, see *Project Requirement 33 – SMEP and Life Safety for Buildings*.

### 31.2. Standards

The Design-Builder shall perform the buildings activities in accordance with the following Standards, unless otherwise stipulated in this Project Requirement

#### 31.2.1. Standards

- A. NYSDOS/DCEA New York State Uniform Fire Prevention & Building Code (the Uniform Code) and its Reference Standards including the Codes of New York State
- B. ABA Architectural Barriers Act
- C. ADA The Americans with Disabilities Act
- D. ICR 56 Industrial Code Rule 56 – Hazardous Material Removal
- E. NYSDEC Executive Order No. 111 “Green and Clean” State Buildings and Vehicles Guidelines
- F. NYSDEC Executive Order No. 4 Establishing a Green State Procurement and Agency Sustainability Program

- G. MasterFormat™ (Construction Specifications Institute, CSI, and Construction Specifications Canada, CSC) and MasterSpec® (published by ARCOM for The American Institute of Architects, AIA)

The Design-Builder shall use MasterSpec® as its specification writing system for architectural Works. If use of a different system is proposed by the Design-Builder, then a sample section shall be provided by the Design-Builder in advance to the Authority for review and approval.

### **31.2.2. Abbreviations used for NYSTA work units herein**

■	Bridge patrol and movable barrier work unit
■	Bridge riggers, welders and painters work unit
■	Dockside work team
■	Equipment maintenance.

## **31.3. Requirements: Option 1 - Replacement**

### **31.3.1. General Requirements**

The Design-Builder shall take all actions necessary to verify that its proposed Plans for the relocation and replacement of the buildings are consistent and compatible with the Contract Document requirements (including applicable performance specifications). To the extent that buildings are relocated or replaced, the Design-Builder shall provide temporary facilities in place of such buildings in accordance with Section 31.3.2 herein and permanent facilities in accordance with Section 31.3.3 herein.

### **31.3.2. Design Requirements – Temporary Facilities**

The following sub-sections provide temporary building requirements for each of the Authority's work units. These work units may be co-located into one facility. Directive and indicative location requirements are outlined in *Project Requirement 19 – Maintenance Facilities*.

In addition to the requirements outlined in Sections 31.3.2.1 through 31.3.2.5 herein, the design of the temporary maintenance and administrative buildings shall adhere to the following requirements:

- A. The facility shall have access from local roads to accommodate employees and/or visitors;
- B. Provide an asphalt parking lot large enough to accommodate adequate onsite parking, to include maintenance vehicles, personal vehicles, visitors and disabled accessible spaces as outlined in *Project Requirement 19 – Maintenance Facilities*;
- C. Provide flagpoles and other site amenities to appropriate areas;
- D. Landscaping as outlined in *Project Requirement 12 – Landscape Architecture*;
- E. A new generator to power the entire facility.

#### **31.3.2.1. Building Requirements – ■ and ■ Temporary Facilities**

The Design-Builder shall replace buildings W7A/B, ■ and ■ (as identified in *Part 6 – RFP Plans*) if these are being relocated by the Design-Builder during the construction stage. Existing facility and temporary layout Indicative Plans are included in Request for Proposals *Part 6 – RFP Plans*. Table 31.3.2-1 details the requirements for the temporary facilities for the ■ and ■ crews within the temporary replacement for buildings W7A/B, ■ and ■

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**Table 31.3.2-1 [REDACTED] and [REDACTED] Temporary Building Requirements**

<b>Room</b>	<b>Minimum Size (square feet)</b>	<b>[REDACTED] and [REDACTED] Temporary Building Requirements / Comments</b>
<b>Office Area</b>		
Supervisor II [Bridge/Wrecker]	[REDACTED]	Adjacent to Supervisor I office
Supervisor I [Bridge/Wrecker]	[REDACTED]	Adjacent to Supervisor II office Space is for three persons
Wrecker Crew Chief [Bridge/Wrecker]	[REDACTED]	Office space similar to a Supervisor I office
Mechanics Office [Equipment Maintenance]	[REDACTED]	Adjacent to Parts Storage
Parts Storage [Equipment Maintenance]	[REDACTED]	Adjacent to mechanics office Provide warehouse shelving
Records Storage	[REDACTED]	Provide shelving units and floor space for filing cabinets
Facility Storage	[REDACTED]	-
<b>Garage Area</b>		
Wash Bay [Bridge/Wrecker]	[REDACTED]	Provide a 40' x 50' bay. Within the bay provide a 10' wide by 32' long room for the wash bay equipment, heated by unit heater Provide an automated under carriage high pressure wash Provide a fire hose connection to manually wash a vehicle Provide platforms and stairs on both sides of the bay to assist with the washing of the vehicle Provide an oil/water separator [REDACTED]
Garage Bays [Bridge/Wrecker]	[REDACTED]	Provide two 25' x 50' bays [REDACTED] Existing equipment & tools to be relocated by Authority personnel
Lockable Storage [Bridge/Wrecker]	[REDACTED]	Secure storage room or fenced area adjacent to repair bays
Impress Room [Equipment Maintenance]	[REDACTED]	-
Repair Bays [Equipment Maintenance]	[REDACTED]	Provide three 25' x 50' bays Provide a 15,000 lb vehicle lift in 1 of the 3 bays [REDACTED] Existing equipment & tools to be relocated by Authority personnel



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Room	Minimum Size (square feet)	and Temporary Building Requirements / Comments
<b>Support Area</b>		
Lunch / Training Room		Seating for 28 with kitchenette & vending
Women's Locker Room		Sized for four women Provide one 18" x 18" locker for each person
Women's Rest Room / Shower		Adjacent to the women's locker room
Men's Locker Room		Sized for 24 men Provide one 2' x 2' locker for each person
Men's Rest Room / Shower		Adjacent to the men's locker room
Janitor's Closet		-
<b>General Information</b>		
<b>Outside Areas</b>		
Air Terminal	-	Provide an exterior air terminal on the exterior of the building for after hour emergencies
Tire Storage Shed	-	Relocate the existing tire storage shed from the Authority's Tarrytown maintenance area

### 31.3.2.2. Building Requirements – Temporary Facilities

The Design-Builder shall replace buildings and W3 (as identified in *Part 6 – RFP Plans*) if it is being relocated by the Design-Builder during construction stage. The Design-Builder shall provide temporary facilities to replace the work unit facilities within building in accordance with the requirements listed in Table 31.3.2-2 and the temporary layout Indicative Plans included in Request for Proposals *Part 6 – RFP Plans*.



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**Table 31.3.2-2 [REDACTED] Temporary Building Requirements**

<b>Room</b>	<b>Minimum Size (square feet)</b>	<b>[REDACTED] Temporary Building Requirements / Comments</b>
<b>Office Area</b>		
Supervisor II	[REDACTED]	Adjacent to supervisor I office
Supervisor I	[REDACTED] 0	Adjacent to supervisor II office Space is for two persons
<b>Painters Support Area</b>		
Dirty Locker Room	[REDACTED]	Design to be similar to the dirty locker room facility that currently exists
Decontamination Facility	[REDACTED]	Design to be similar to the decontamination facility that currently exists Must provide separate male and female shower areas
Paint Storage/Tool Cleaning	[REDACTED]	Design to be similar to the tool cleaning building that currently exists
<b>Welders Support Area</b>		
Welder's Shop	[REDACTED]	Provide overhead door to the exterior [REDACTED]
<b>Riggers Support Area</b>		
Rigger's Shop	[REDACTED]	Provide overhead door to the exterior [REDACTED]
Tool Repair	[REDACTED]	[REDACTED]
<b>Support Area</b>		
Lunch / Training Room	[REDACTED]	Seating for 28 with kitchenette & vending
Women's Locker Room	[REDACTED]	Sized for four women Provide one 18" x 18" locker for each person
Women's Rest Room	[REDACTED]	Adjacent to the Women's Locker Room
Men's Locker Room	[REDACTED]	Sized for 28 men Provide one 18" x 18" locker for each person
Men's Rest Room	[REDACTED]	Adjacent to the men's locker room
Janitor's Closet	[REDACTED]	-

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Room	Minimum Size (square feet)	Temporary Building Requirements / Comments
<b>Outside Areas</b>		
Rigger's General Storage		

**31.3.2.3. Building Requirements – Temporary Facilities**

The Design-Builder shall replace building (as identified in *Part 6 – RFP Plans*) if it is being relocated by the Design-Builder during construction stage. The Design-Builder shall provide temporary facilities to replace the work unit facilities within building in accordance with the requirements listed in Table 31.3.2-3 and the temporary layout Indicative Plans included in Request for Proposals *Part 6 – RFP Plans*.

**Table 31.3.2-3 Temporary Building Requirements**

Room	Minimum Size (square feet)	Temporary Building Requirements / Comments
<b>Office Area</b>		
Supervisor III		Adjacent to Supervisor II & I office
Supervisor II		Adjacent to Supervisor I office
Supervisor I		Adjacent to Supervisor II office Space is for two persons
Office Clerk / Office Equipment		Adjacent to Supervisor II or Supervisor III
<b>Shop Area</b>		
Carpenter's Shop		Provide dust collection system, eye wash station & air compressor. Provide infrared heating All existing equipment & tools will be relocated into this space by Authority personnel
Electrician's Shop		All equipment and tools will be relocated into this space by Authority personnel
Facility Storage		-
<b>Support Area</b>		
Lunch / Training Room		Seating for 25 with kitchenette & vending
Women's Locker Room		Sized for five women Existing lockers will be relocated into this space by Authority personnel
Women's Rest Room / Shower		Adjacent to the women's locker room
Men's Locker Room		Sized for 25 men Existing lockers will be relocated into this space by Authority personnel



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Room	Minimum Size (square feet)	Temporary Building Requirements / Comments
Men's Rest Room / Shower		Adjacent to the men's locker room
Janitor's Closet		-
		-
General Information		

#### 31.3.2.4. Building Requirements – Movable Barrier Temporary Facilities

The Design-BUILDER shall provide temporary facilities for the moveable barrier in accordance with the requirements detailed in Table 31.3.2-4.

**Table 31.3.2-4 Moveable Barrier Temporary Building Requirements**

Room	Minimum Size (square feet)	Moveable Barrier Temporary Building Requirements / Comments
Garage Area		
Barrier Vehicle		Provide an overhead door wide and tall enough for the movable barrier vehicle Provide infrared heat
		Support Area
Rest Room		-
General Information		

### 31.3.3. Design Requirements – Permanent Facility

The following section details the consolidation of each of the Authority work units into one consolidated and permanent facility. These work units are required to be co-located into one consolidated facility.

In addition to the requirements outlined in the following sections, the design of the permanent Authority buildings shall adhere to the following requirements:

- A. The facility shall have access from local roads to accommodate employees and/or visitors;

- B. Provide an asphalt parking lot large enough to accommodate 140 parking spaces, to include personal vehicles, visitors and disabled accessible spaces. A minimum of 35 maintenance vehicle spaces shall be provided;
- C. Provide flagpoles and other site amenities to appropriate areas;
- D. Landscaping as outlined in *Project Requirement 12 – Landscape Architecture*;
- E. A new generator to power the entire facility and [REDACTED] shall be required; and
- F. Quality of architecture to meet or exceed those described in *Project Requirement 32– Architectural Quality*.

**31.3.3.1. Consolidated Building Requirements**

The Design-Builder shall permanently replace and consolidate the following buildings into one facility (as identified in *Part 6 – RFP Plans*): W7A – [REDACTED] Building, [REDACTED] – [REDACTED] Building, [REDACTED] – [REDACTED] Building, [REDACTED] – [REDACTED] Building, [REDACTED] – [REDACTED] Building, [REDACTED] – [REDACTED] Building and [REDACTED] Dockside Building. Layout drawings are included in the Indicative Plans in Request for Proposals *Part 6 – RFP Plans*. Table 31.3.3-1 details the requirements for the permanent and consolidated Bridge Maintenance Facility. For detailed information of the spaces listed Table 31.3.3-1 see *Exhibit 1-Bridge Maintenance Permanent Facility Space Descriptions* herein.

**Table 31.3.3-1 Bridge Maintenance Facility Program of Requirements**

Space Code	Space Name + Description	Work Unit	Total Net Area (square feet)
	<b>Office Area</b>		
	Supervisor III - Bridge Maintenance		
	Supervisor II - Bridge Patrol/Equipment Maintenance		
	Supervisor II - Riggers, Welders and Painters Unit		
	Supervisor II - Dockside Work Team		
	Supervisor I - Bridge Patrol/Equipment Maintenance		
	Supervisor I - Riggers, Welders and Painters Unit		
	Supervisor I - Dockside Work Team		
	Wrecker Crew Chief [Bridge/Wrecker]		
	Office Clerk/Office Equipment Area		
	Records Storage		
	Facility Storage		
	<b>Office Area Subtotal:</b>		
	<b>Garage Area</b>		
	Wash Bay [Bridge/Wrecker]		
	Garage Bays [Bridge/Wrecker]		
	Lockable Storage [Bridge/Wrecker]		
	Impress Room [Equipment Maintenance]		



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Space Code	Space Name + Description	Work Unit	Total Net Area (square feet)
	Mechanics Office [Equipment Maintenance]		
	Parts Storage [Equipment Maintenance]		
	Repair Bays [Equipment Maintenance]		
	Drum Storage [Equipment Maintenance]		
	Lockable Storage [Equipment Maintenance]		
	<b>Garage Area Subtotal</b>		
	<b>Riggers' Support Area</b>		
	Riggers' Shop		
	Tool Repair		
	<b>Riggers Support Area Subtotal</b>		
	<b>Welders Support Area</b>		
	Welders' Shop		
	<b>Welders' Support Area Subtotal</b>		
	<b>Painters Support Area</b>		
	Paint Storage		
	Tool cleaning		
	<b>Painters' Support Area Subtotal</b>		
	<b>Decontamination Facility</b>		
	Dirty Locker Room		
	Dirty Restroom		
	Dirty Laundry Storage		
	Men's Changing Area and Shower		
	Women's Changing Area and Shower		
	Men's Locker Room		
	Women's Locker Room		
	Clean Men's Restroom		
	Clean Women's Restroom		
	Clean Laundry Storage		
	Eyewash station		
	<b>Decontamination Facility Subtotal</b>		
	<b>Shop Area</b>		
	Carpenter's Shop		



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Space Code	Space Name + Description	Work Unit	Total Net Area (square feet)
	Electricician’s Shop		
	Electricician's Storage		
	Facility Storage		
	Shop Area Subtotal		
	Outside Areas		
	General Exterior Storage Yard		
	Air Terminal		
	Tire Storage Shed		
	Outside Area Subtotal		
	Staff Support		
	Lunch / Training Room		
	Women’s Locker Room		
	Women's Shower		
	Women’s Restroom		
	Men’s Locker Room		
	Men's Shower		
	Men’s Restroom		
	Janitor’s Closet		
	Men's Accessible Restroom		
	Women's Accessible Restroom		
	Staff Support Area Subtotal		
	Facility Support		
	Facility Support Area Subtotal		
CONSOLIDATED BRIDGE MAINTENANCE FACILITY			20,780
TOTAL NET SQUARE FOOTAGE			

**31.3.3.2. (Reserved)**

**31.3.3.3. (Reserved)**

**31.3.4. Interior Materials and Finishes**

The Design-Builder shall be responsible for the provision of the interior materials and finishes for both the temporary and permanent facilities, which shall include the requirements detailed in *Exhibit I - Bridge Maintenance Permanent Facility Space Descriptions* herein.

**31.3.5. Design By Design-Builder**

The Design-Builder shall furnish, for the Authority's review and approval, the design of the maintenance and administrative buildings, both temporary and permanent, before beginning construction, for review and approval by the Authority. All subsequent changes to the design of the maintenance and administrative buildings shall require the prior written approval of the Authority.

Designs shall be furnished in full accordance with the requirements of the Contract Documents applicable to the design requirements. In the event of a conflict between Authority design standards and the standards or requirements of the Contract Documents, the most stringent standards or requirements shall govern.

The Design-Builder shall document the Authority's approval by obtaining a design approval letter from the Authority. Any subsequent changes to designs shall require written Authority approval and shall be shown on the As-Built Plans upon completion of the Work.

**31.4. Requirements: Option 2 - Rehabilitation/Replacement**

**31.4.1. General Requirements**

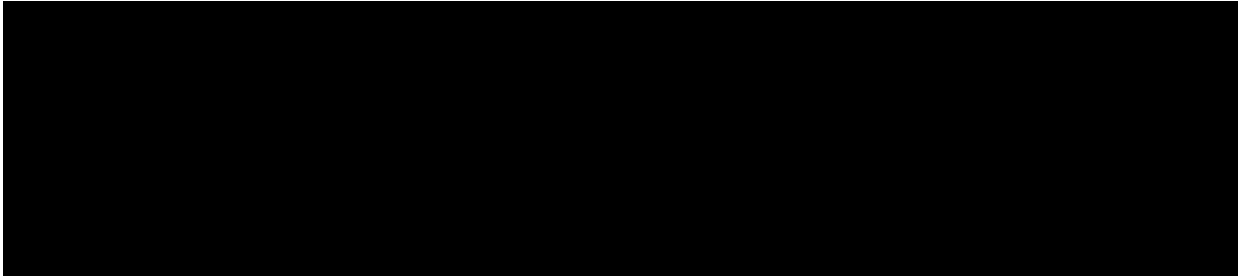
The Design-Builder shall take all actions necessary to verify that the proposed Plans are consistent and compatible with the Contract Document requirements (including applicable performance specifications) and with the Design-Builder's construction of the Work for the maintenance and administration buildings that are within the Work area of the Project.

**31.4.2. Design Requirements – Rehabilitation of Tarrytown [REDACTED] Building**

The Design-Build shall be responsible for the rehabilitation of the Tarrytown [REDACTED] building (buildings [REDACTED] and [REDACTED] see *Part 6 – RFP Plans*) in accordance with the following requirements:

- A. Removal of all hazardous materials including asbestos, lead base paint and PCBs;
- B. Replacement of the existing heating, ventilating and air conditioning systems, piping and controls;
- C. Replacement of the existing roofing system;
- D. Rehabilitation of the exterior building envelope, including but not limited to windows, doors and walls, shall conform to the Standards listed in Section 31.2.1 herein;

- E. Rehabilitation/replacement of all exterior sidewalks and stairs to conform to the disabled accessibility Standards listed in Section 31.2.1 herein;
- F. Rehabilitation of all interior spaces including but not limited to locker rooms and rest rooms to conform to the disabled accessibility Standards listed in Section 31.2.1 herein;
- G. Rehabilitation / replacement of all life safety systems;
- H. Rehabilitation of exterior grades to eliminate drainage / flooding issues;
- I. Rehabilitation of the State Police portion of the building as follows:



#### **31.4.3. Design Requirements – Rehabilitation of Bridge/Wrecker Crew Building**

The following details the requirements for the rehabilitation of the bridge/wrecker crew building (building W7; see *Part 6 – RFP Plans*):

- A. The removal of all hazardous materials including but not limited to asbestos, lead-based paint and PCBs;
- B. The replacement of the existing heating, ventilating and air conditioning systems, piping and controls;
- C. The rehabilitation of the exterior building envelope to conform to the standards listed in Section 31.2.1 herein;
- D. The rehabilitation of all interior spaces, including but not limited to locker rooms and rest rooms, to conform to the disabled accessibility standards listed in Section 31.2.1 herein;
- E. The rehabilitation of interior spaces to conform to the requirements listed (for [REDACTED] in Section 31.3.3.1 herein.

#### **31.4.4. Design Requirements – Replacement of buildings**

Under Option 2, all buildings other than those detailed in Sections 31.4.2 and 31.4.3 herein shall follow the requirements of Option 1 (Replacement) as detailed in Section 31.3 herein.

### **31.5. Construction Requirements**

The Authority is a self-permitting agency as outlined by the laws of New York State. As such, the Authority is the Authority Having Jurisdiction for all building related demolition, construction and/or rehabilitation of the buildings and related structures.

The Design-Builder shall prepare and submit to the Authority a plan for complying with the laws of the State with regards to the demolition, construction, rehabilitation, permitting and inspection of all buildings affected within the Project Limits.

### 31.5.1. Permits and Approvals

Permit(s) are required for buildings and related structures under the care, custody and control of the Authority at the time of Contract award. All permitting shall be coordinated and obtained by the Design-Builder through the Authority's New York Division Office of Facilities and Code Compliance at (845) 918-2627 when available, or at the Albany Headquarters Office of Facilities and Code Compliance at (518) 471-4217, when the New York office is not available for phasing / scheduling purposes.

The Design-Builder shall be responsible for obtaining the following:

- A. A demolition permit from the Authority's New York Division Code Compliance Manager to raze the buildings;
- B. A construction permit for the construction of the replacement Authority maintenance and administrative buildings, both temporary and permanent, new and/or rehabilitated from the Authority's New York Division Code Compliance Manager. The Design-Builder shall also be aware of the provisions outlined in Chapter 33 of the *New York State Building Code*. These requirements shall also be met during the course of any construction and/or rehabilitation work. At a minimum the following items are required for the issuance of a permit:
  - 1. Code compliance checklist;
  - 2. Energy code compliance statement (using the U.S. Department of Energy COMcheck™ method);
  - 3. Construction documents of sufficient detail to demonstrate compliance with the laws of the State; and
  - 4. Specifications of sufficient detail in support of the construction documents.

### 31.5.2. Third Party Reviews/Permits

The Design-Builder shall be responsible for identifying, coordinating and implementing any review and permitting required from local utility companies, including but not limited to water, sewer, gas and electric for connecting all buildings, temporary and permanent, to surrounding utility networks and systems.

### 31.5.3. Inspections

The Design-Builder shall allow the Authority, through its representatives, the right to inspect the demolition, construction and/or rehabilitation performed on any building or replacement building (temporary or permanent). These inspections may include, but not limited be to, the following:

- A. Footings, including drainage;
- B. Structural reinforcement;
- C. Foundations and waterproofing / damp proofing before backfilling;
- D. Walls: framing / masonry;
- E. Roof trusses;
- F. Energy compliance / insulation;
- G. Mechanical;
- H. Electrical;
- I. Plumbing;
- J. Fire protection;

- K. Final inspection;
- L. Code compliance certificate / certificate of occupancy.

The list of required inspections will be issued with the construction permit.

The Design-Builder shall provide for all required third party inspections for materials and systems that require them, including but not limited to inspections of concrete, backfill, electrical and fire protection.

The Design-Builder shall also meet the requirements of the *New York State Building Code, Chapter 17, Structural Tests and Special Inspections* for related construction and rehabilitation work.

#### **31.5.4. Testing**

The Design-Builder shall provide all field tests of materials, equipment and systems as directed in the Contract and approved manufacturers' specifications. The testing certificates from the manufacturers and/or independent third party testing agents, where applicable, shall be submitted to the Authority as proof of compliance with the requirements of the construction permit used.

#### **31.5.5. Warranties**

The Design-Builder shall submit to the Authority all material and system warranties for materials and systems used in the construction of the permanent maintenance facility. All warranties must list the Authority as the owner.

#### **31.5.6. Close Out Documentation**

The Design-Builder shall submit to the Authority all close out documentation including but not limited to record drawings, record specifications, record product data, maintenance and operations manuals, and warranties (see Section 31.5.5 herein) each of which shall be in a format acceptable to the Authority.

#### **31.5.7. Approval**

The Design-Builder shall request a written approval of all Work performed, inspected and accepted, and performed to the satisfaction of the Authority.

#### **31.5.8. Interaction with Authority Personnel**

The Authority shall be provided 14 days notice prior written notice for any Work required by the Design-Builder in relation to the buildings.

### **31.6. Deliverables**

At a minimum, the Design-Builder shall submit to the Authority the deliverables listed in Table 31.6-1.

**Table 31.6-1 Deliverables**

Deliverable	Number of Copies		Submittal Schedule	Reference Section
	Hardcopy	Electronic		
Design Plans and Project Specifications for temporary Authority maintenance and administrative buildings	5	1	At Design Review and again at Readiness for Construction Review	31.3.5
Design Plans and Project Specifications for permanent Authority maintenance and administrative buildings	5	1	At Design Review and again at Readiness for Construction Review	31.3.5
Self-permitting compliance plan	5	1	At Design Review and again at Readiness for Construction Review	31.5



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Deliverable	Number of Copies		Submittal Schedule	Reference Section
	Hardcopy	Electronic		
Manufacturer testing certificates	5	1	At least 25 days prior to handover for occupancy for each building/facility	31.5.4
Warranties	5	1	At least 25 days prior to handover for occupancy for each building/facility	31.5.5

## Project Requirement 31 Exhibit 1

### Bridge Maintenance Permanent Facility Space Descriptions

#### ITEM 31-1—1: [REDACTED]: Office Area - Supervisor III:

The Supervisor III oversees all operations for Bridge Maintenance including the Bridge Patrol Unit, Equipment Maintenance Unit, Riggers, Welders and Painters Unit, and the Dockside Work Team. The office is used for private, managerial functions as well as small meetings with other supervisors and staff. clear visibility to the Bridge and the Toll Operations is imperative for this office. This space has access to natural light with operable windows for natural ventilation, and is acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

#### Where Required

Bridge Maintenance Facility

#### Size

[REDACTED] net square feet

#### Occupancy

#### Fixed Equipment

Thruway Radio (CB radio)  
Telephone

#### Mechanical/Plumbing

HVAC: Typical ASHRAE HVAC Standards.

Plumbing: None

#### Fire Protection

Per NYS Building Code

#### Construction and Finishes

#### Number Required

#### Location / Relationships

#### Communications

#### Security

#### Furniture

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

#### Electrical

#### Doors

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Other

N/A

Windows

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner

**ITEM 31-1-2: [REDACTED]: Office Area - Supervisor II Offices:**

There is one Supervisor II for each of the bridge maintenance units/teams. The Supervisor II's duties are to oversee and manage their respective teams and communicate directly with the Supervisor III. The Supervisor II Offices are used for private, managerial activities and small meetings. Clear visibility to the Bridge and the Toll Operations is imperative for this office. These spaces shall have access to natural light with operable windows. They shall be acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

[REDACTED]

**Fixed Equipment**

Thruway Radio (CB radio)

Telephone

**Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

[REDACTED]

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner



**ITEM 31-1-3: BM-5: Office Area - Supervisor I: Bridge Patrol/Equipment Maintenance Team:**

Bridge Patrol/Equipment Maintenance Supervisor I duties are to communicate between the staff and the upper management positions, and schedule/manage staff hours and activities. This shall be an open office space with shared technology sized for three (3) persons. Clear visibility to the Bridge and the Toll Operations is imperative for this office. This space shall have access to natural light with operable windows, and shall be acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

**Where Required**

Bridge Maintenance Facility

**Size**

net square feet

**Occupancy**

**Fixed Equipment**

Thruway Radio (CB radio)

Telephone

**Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner



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### **ITEM 31-1-4: [REDACTED]: Office Area - Supervisor I - Riggers, Welders, and Painters Unit:**

Riggers, Welders, and Painters Unit Supervisor I duties are to communicate between the staff and the upper management positions, and schedule/manage staff hours and activities. This shall be an open office space with shared technology sized for three (3) persons. Clear visibility to the Bridge and the Toll Operations is imperative for this office. This space shall have access to natural light with operable windows, and shall be acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

#### **Where Required**

Bridge Maintenance Facility

#### **Size**

[REDACTED] net square feet

#### **Occupancy**

#### **Fixed Equipment**

Thruway Radio (CB radio)

Telephone

#### **Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

**Plumbing:** None

#### **Fire Protection**

Per NYS Building Code

#### **Construction and Finishes**

#### **Other**

N/A

#### **Number Required**

#### **Location / Relationships**

#### **Communications**

#### **Security**

#### **Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

#### **Electrical**

#### **Doors**

#### **Windows**

##### **Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

##### **User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner

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### **ITEM 31-1-5: [REDACTED]: Office Area - Supervisor I: Dockside Work Team:**

Dockside Work Team Supervisor I duties are to communicate between the staff and the upper management positions, and schedule/manage staff hours and activities. This shall be within an open office space with shared technology sized for three (3) persons. Clear visibility to the Bridge and the Toll Operations is imperative for this space. This space shall have access to natural light with operable windows, and shall be acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

#### **Where Required**

Bridge Maintenance Facility

#### **Size**

[REDACTED] net square feet

#### **Occupancy**

#### **Fixed Equipment**

Thruway Radio (CB radio)

Telephone

#### **Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

**Plumbing:** None

#### **Fire Protection**

Per NYS Building Code

#### **Construction and Finishes**

#### **Other**

N/A

#### **Number Required**

#### **Location / Relationships**

#### **Communications**

#### **Security**

#### **Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

#### **Electrical**

#### **Doors**

#### **Windows**

##### **Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

#### **User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner

**ITEM 31-1-6: [REDACTED]: Office Area – Wrecker Crew Chief:**

The Wrecker Crew Chief is the most senior wrecker crew staff member per shift. The wrecker crew chiefs for each shift share the same office space. This is where the crew chiefs enter wrecker crew activities into logs and document the further activities of the wrecker crew. Clear visibility to the Bridge and the Toll Operations is imperative for this space. This space shall be adjacent to the wrecker storage area. It has direct access to natural light with operable windows, and is acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

[REDACTED] Staff per shift

**Fixed Equipment**

Thruway Radio (CB radio)

Telephone

**Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner



## New York State Thruway Authority

### **ITEM 31-1-7: BM-9: Office Area – Office Clerk/ Office Equipment Area:**

The Office Clerk/Office Equipment Area provides support staff and support space for the managerial and administrative functions of the Bridge Maintenance Facility. This space will accommodate two (2) Office Clerks whose duties are to assist the Supervisors III, II(s), and I(s) in general administrative tasks. The Office Equipment Area is an open work area with shared office technology (i.e., printer/copier, scanner, computer) used to perform general administrative tasks shared by all administrative staff. Clear visibility to the Bridge and the Toll Operations is imperative for this space. This space shall have access to natural light with operable windows, and shall be acoustically separated from distracting noise sources generated by equipment repair and industrial activities on the site.

#### **Where Required**

Bridge Maintenance Facility

#### **Size**

net square feet

#### **Occupancy**

Staff

#### **Fixed Equipment**

Thruway Radio (CB radio)

Telephone

#### **Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

Provide Overhead VAV.

**Plumbing:** None

#### **Fire Protection**

Per NYS Building Code

#### **Construction and Finishes**

#### **Other**

#### **Number Required**

#### **Location / Relationships**

#### **Communications**

#### **Security**

#### **Furniture**

Design Build Team to provide solution for no interruptions in Bridge Maintenance Staff operations throughout construction period.

#### **Electrical**

#### **Doors**

#### **Windows**

##### **Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

#### **User Provided Equipment**

Desk/chair, Table plus 4 chairs, Shelving, File Cabinet, Computer, Printer, Scanner

New York State Thruway Authority

**ITEM 31-1-8: [REDACTED]: Office Area - Records Storage:**

The Records Storage Space is used for the storage of records, files, and other related documents and supplies for Bridge Maintenance operations. It is located within the Office Area of the Bridge Maintenance Facility.

**Where Required**

Bridge Maintenance Facility – Office Area

**Size**

[REDACTED] net square feet

**Occupancy**

None.

**Fixed Equipment**

Provide adjustable shelving system

**Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A



**ITEM 31-1-9: [REDACTED] Office Area - Facility Storage:**

The Facility Storage Space is used for the storage of supplies and other necessary items required for Bridge Maintenance operations. It is located within the Office Area of the Bridge Maintenance Facility.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None.

**Fixed Equipment**

Provide adjustable shelving

**Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards.

[REDACTED]

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

[REDACTED]

**Doors**

[REDACTED]

**Windows**

None

**User Provided Equipment**

N/A

New York State Thruway Authority

**ITEM 31-1-10: [REDACTED]: Garage Area: Wash Bay [Bridge/Wrecker]:**

The Wash Bay is used to clean the various Bridge Patrol vehicles and is comprised of one [REDACTED] bay and a storage room for the Wash Bay equipment. This room is unoccupied and will be used by various staff members.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet total including a [REDACTED] storage room for wash bay equipment

**Number Required**

**Location / Relationships**

**Occupancy**

None.

**Communications**

**Fixed Equipment**

Automated under carriage high pressure wash  
Fire hose connection to manually wash a vehicle  
Platforms and stairs on both sides of the bay to assist with the washing of the vehicle  
Oil/water separator  
Water storage tank  
Dedicated water heaters  
Booster pumps  
Hand held pressure wash system  
Thruway Radio Speakers

**Security**

**Mechanical/Plumbing**

**HVAC:**

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Furniture**

**Electrical**

**Construction and Finishes**

**Doors**

Other

Windows

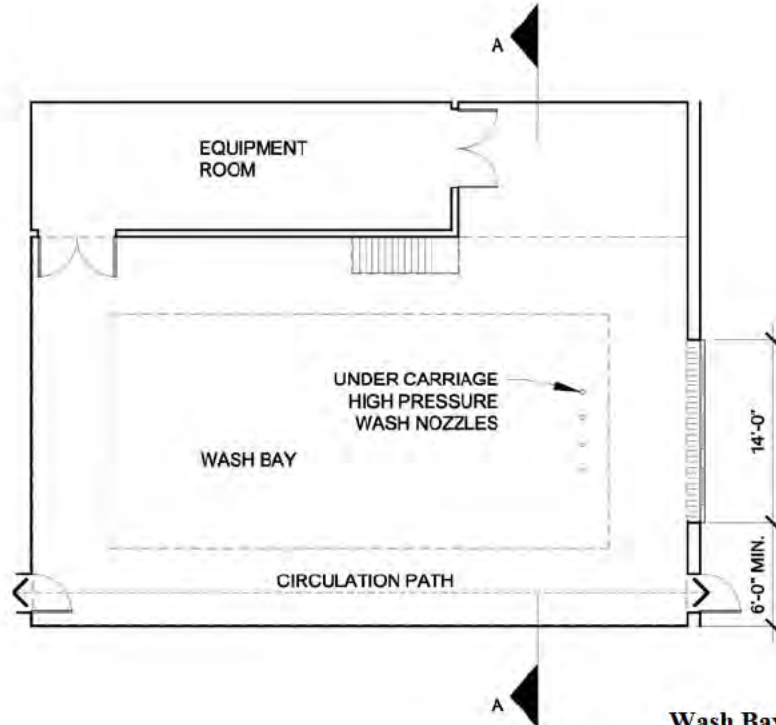
**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

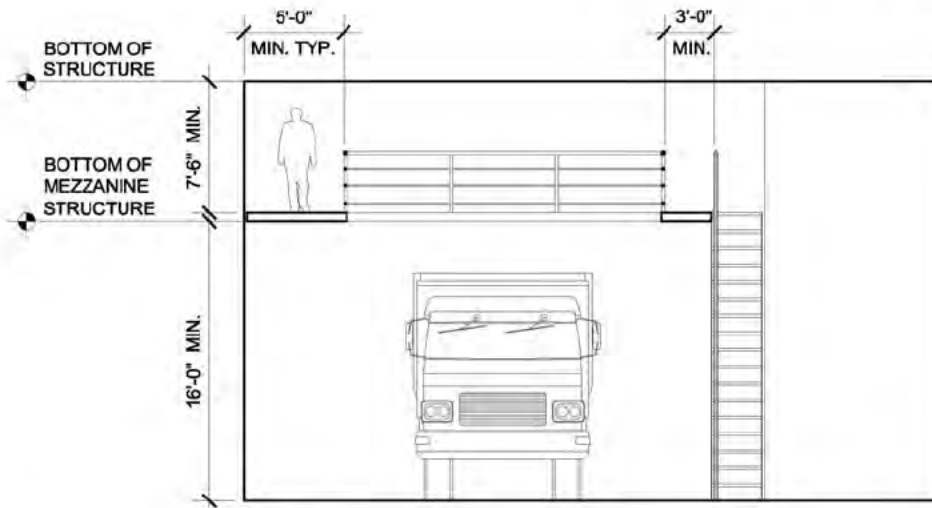
**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



Wash Bay configuration (indicative only)



SECTION A-A

**ITEM 31-1-11: BM-13: Garage Area - Garage Bays:**

The Garage Bay is used for storage of various vehicles and equipment.

**Where Required**

Bridge Maintenance Facility

**Size**

net square feet

**Occupancy**

None.

**Fixed Equipment**

Provision to relocate vehicle lifts from repair bay to Garage Bay, provide electrical hookups in garage bay for lift.

Thruway Radio (CB radio) speakers

**Mechanical/Plumbing**

**HVAC:**

**Plumbing:** Oil/Water Separator, Provide Trench Drain at door opening to accommodate HS-20 loading

**Fire Protection**

Per NYS Building Code

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None.

**Electrical**

**Doors**

**Construction and Finishes**

## New York State Thruway Authority

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Other

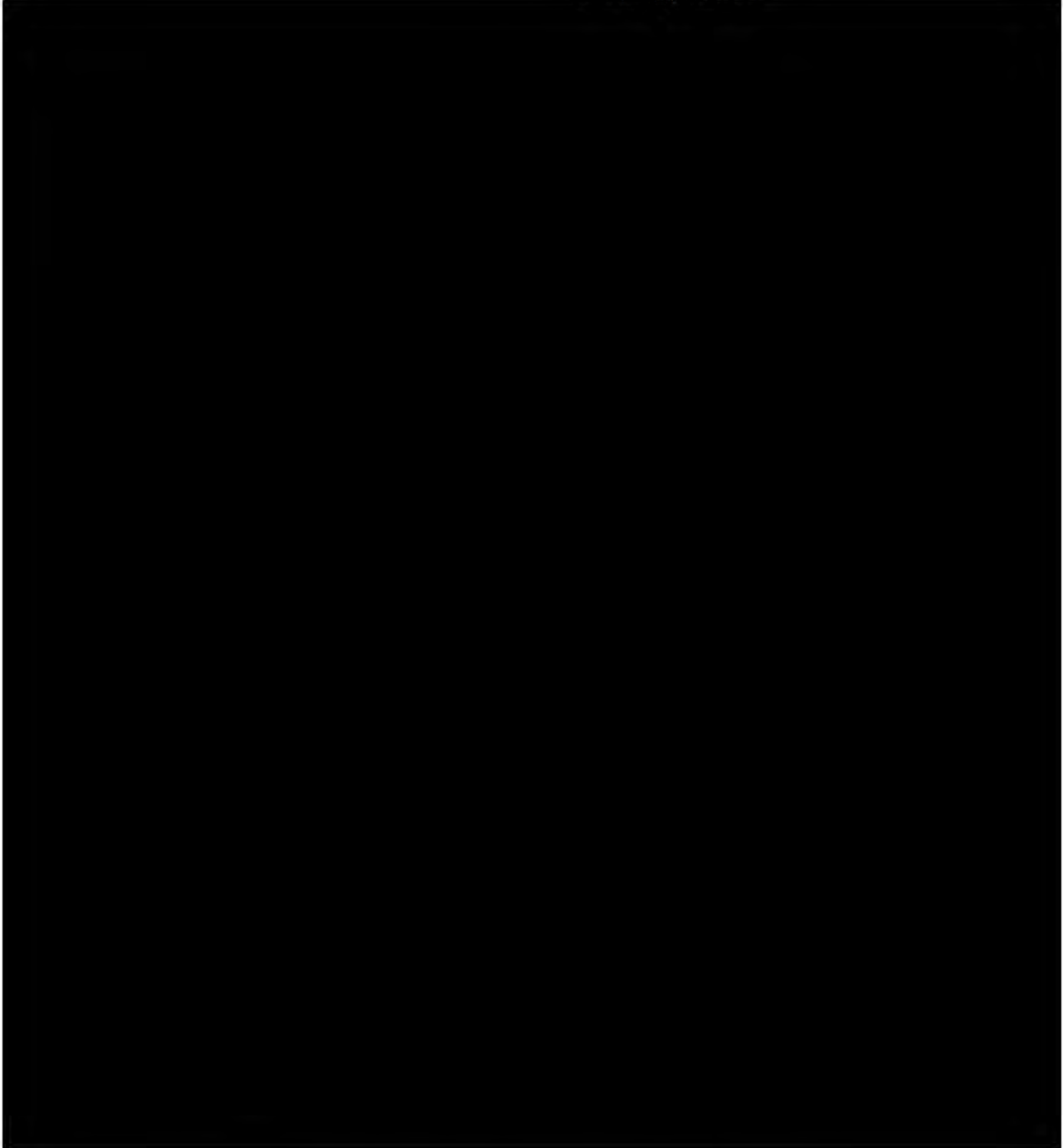
N/A

Windows

Provide access to natural light with IGUs in fixed aluminum frames and/ or skylights.

User Provided Equipment

Existing equipment & tools to be relocated by Authority personnel.



**Garage Bay: critical dimensions and indicative layout**



**ITEM 31-1-12: [REDACTED] Garage Area - Lockable Storage [Bridge/Wrecker]:**

The Lockable Storage is a secure storage room or fenced area located in or adjacent to the Garage Bay. It is comprised of warehouse shelving within a lockable chain link or steel mesh fenced structure within the Garage Bay.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None.

**Fixed Equipment**

Provide fixed adjustable shelving

**Mechanical/Plumbing**

**HVAC:**

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A

**New York State Thruway Authority**

**ITEM 31-1-13: [REDACTED]: Garage Area - Impress Room:**

The Impress Room is secured storage of inventoried automotive parts located adjacent to the Mechanics Office.

**Where Required**

Bridge Maintenance Facility – Repair Bays

**Size**

[REDACTED] net square feet

**Occupancy**

None.

**Fixed Equipment**

Provide fixed adjustable shelving.  
Thruway Radio Speaker.

**Mechanical/Plumbing**

**HVAC:**

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Workbench, shelving

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-14: [REDACTED] Garage Area - Mechanics Office:**

The Mechanics Office is used by the mechanics interchangeably for parts research, inventory, vendors, and any Repair Bay administrative tasks.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] square feet

**Occupancy**

Staff

**Fixed Equipment**

Thruway Radio (CB radio)

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Desk/chair, Shelving, File Cabinet, computer

**ITEM 31-1-15: [REDACTED]: Garage Area – Parts Storage:**

The Parts Storage is for storage of additional automotive parts. It is located adjacent to the Mechanics Office and within the Repair Bay Area.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] square feet

**Occupancy**

None

**Fixed Equipment**

Provide warehouse shelving

**Mechanical/Plumbing**

**HVAC:**

[REDACTED]

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

[REDACTED]

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Construction and Finishes**

[REDACTED]

N/A

**Windows**

N/A

**User Provided Equipment**

N/A



**ITEM 31-1-16 [REDACTED]: Garage Area - Repair Bays:**

The Repair Bay is used for any repairs and maintenance needed on the vehicles. It is typically occupied by three (3) mechanics during the day shift. It should accommodate all applicable sizes of vehicles in use by the Bridge Maintenance operations.

**Where Required**

Bridge Maintenance Facility

**Size**

3 bays at [REDACTED] net square feet each

**Occupancy**

[REDACTED] Mechanics

**Fixed Equipment**

One (1) 15,000 lb vehicle lift in one of the bays.  
For the other two bays, provide a portable vehicle lift/jack stands with a total capacity of 60,000lbs (comprising four posts each of 15,000 lbs capacity).

Thruway Radio Speakers

Fluid Delivery System

Compressed Air

**Mechanical/Plumbing**

**HVAC:**

[REDACTED]

**Plumbing:**

[REDACTED]

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

[REDACTED]



**Other**

Provide [REDACTED] high [REDACTED] at all vehicular access doors. Locate at interior and exterior of jambs, [REDACTED].

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

Existing equipment & tools to be relocated by Authority personnel

**ITEM 31-1-17: [REDACTED] Garage Area - Drum Storage [Equipment Maintenance]:**

[REDACTED] space within the repair bays sized for 8 drums with spill containment. Drums contain fluids used in vehicle maintenance (oil, wiper fluid, transmission/brake fluid, etc.). Provide connection to Fluid Delivery System.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None.

**Fixed Equipment**

Connection to Fluid Delivery System

**Mechanical/Plumbing**

**HVAC:** N/A

**Plumbing:** Spill Containment system

**Fire Protection**

Per NYS Building Code

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

N/A

**Construction and Finishes**

N/A

**Windows**

N/A

**User Provided Equipment**

N/A

**ITEM 31-1-18: [REDACTED]: Garage Area - Lockable Storage [Equipment Maintenance]:**

The Lockable Storage [Equipment Maintenance] is a securable fenced area located in or adjacent to the Repair Bays. It is comprised of warehouse shelving [REDACTED]

**Where Required**

Bridge Maintenance Facility – Repair Bays

**Size**

[REDACTED] net square feet

**Occupancy**

None

**Fixed Equipment**

Warehouse shelving

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A

**ITEM 31-1-19: [REDACTED] Riggers Support Area - Rigger's Shop:**

This space houses and stores all the equipment required for the rigging operations necessary for bridge maintenance including but not limited to ropes, harnesses, metal rigging hardware, etc, as well as a small work table for tool repair. The shop has access to natural light and natural ventilation. Clearances are provided for the fabrication of spider-baskets and platforms necessary for bridge maintenance.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

[REDACTED] Staff

**Fixed Equipment**

Shelving, Workbenches, compressed air

Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:**

[REDACTED]

**Plumbing:** Provide connections required for eyewash station

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



**ITEM 31-1-20: [REDACTED]: Riggers Support Area - Tool Repair:**

This space is used for the repairing of tools used in bridge maintenance operations. It is comprised of a work bench, tool storage and adequate lighting. It is a separate and securable area that has access to natural light and natural ventilation.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

Staff

**Fixed Equipment**

Workbench, Bench grinder, compressed air

Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:** HVAC: [REDACTED]

Natural ventilation

**Plumbing:** None

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

**Other**

N/A



## New York State Thruway Authority

### ITEM 31-1-21: [REDACTED]: Welders Support Area - Welder's Shop:

The Welder's Shop is used for the fabrication of any necessary components for bridge maintenance composed of steel. It houses all necessary metal working tools and machinery including but not limited to air compressor, welders, metal saw, drill press, work bench, bench grinder, etc. The shop provides a separate and securable storage space. Adequate space is to be allotted for the proper clearances needed around the fixed equipment. The shop has access to natural light and adequate exhaust systems for ventilation.

#### Where Required

Bridge Maintenance Facility

#### Size

[REDACTED] net square feet

#### Occupancy

[REDACTED] taff

#### Fixed Equipment

Workbench

Provide 4-directional, 5 ton gantry crane.

Thruway Radio (CB radio) speaker.

#### Mechanical/Plumbing

##### HVAC:

**Plumbing:** Provide connections required for eyewash station

#### Fire Protection

Per NYS Building Code

#### Construction and Finishes

#### Other

Provide adequate floor space for tool cabinets, shelving and material storage and fabrication.  
Provide space for oxygen/acetylene tanks in use.

#### Number Required

#### Location / Relationships

#### Communications

#### Security

#### Furniture

#### Electrical

#### Doors

#### Windows

##### Interior Window Material:

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

#### User Provided Equipment

N/A

**ITEM 31-1-22: [REDACTED] Painters Support Area - Paint Storage:**

The Paint Storage space is used for storage of paint and supplies utilized by the Painters Unit. It is located as a separate structure apart from the main Bridge Maintenance Facility. It consists of a CMU structure with proper ventilation and signage communicating the volatility of the structure. It is located down-wind from other structures to avoid noxious fumes in public areas. The facility is to be constructed in compliance with all applicable codes regarding the storage of flammable materials.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None

**Fixed Equipment**

Provide adjustable metal shelving

**Mechanical/Plumbing**

**HVAC:**

[REDACTED] with adequate ventilation per all applicable codes and regulations regarding paint/hazardous material storage.

**Plumbing:** Provide floor drain with spill containment

**Fire Protection**

Space to be fire-resistive as Per NYS Building Code for flammable liquid storage.

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-23: [REDACTED]: Painters Support Area - Tool Cleaning:**

The Tool Cleaning space is used by the Painters Unit for tool cleaning and storage. It is located adjacent to the Dirty Locker Room. It is comprised of a CMU structure with proper ventilation for the extraction of harmful fumes. It has utility sinks capable of handling the proper cleaning of painting tools and all necessary drainage requirements regarding the handling of hazardous liquids.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

Varies

**Fixed Equipment**

Ability to control hazardous material.

**Mechanical/Plumbing**

**HVAC:** Provide ventilation equipment for fumes.

**Plumbing:** Provide 2 utility sinks. Provide floor drain with equipment and components required for proper disposal of hazardous materials. Provide spill containment equipment.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

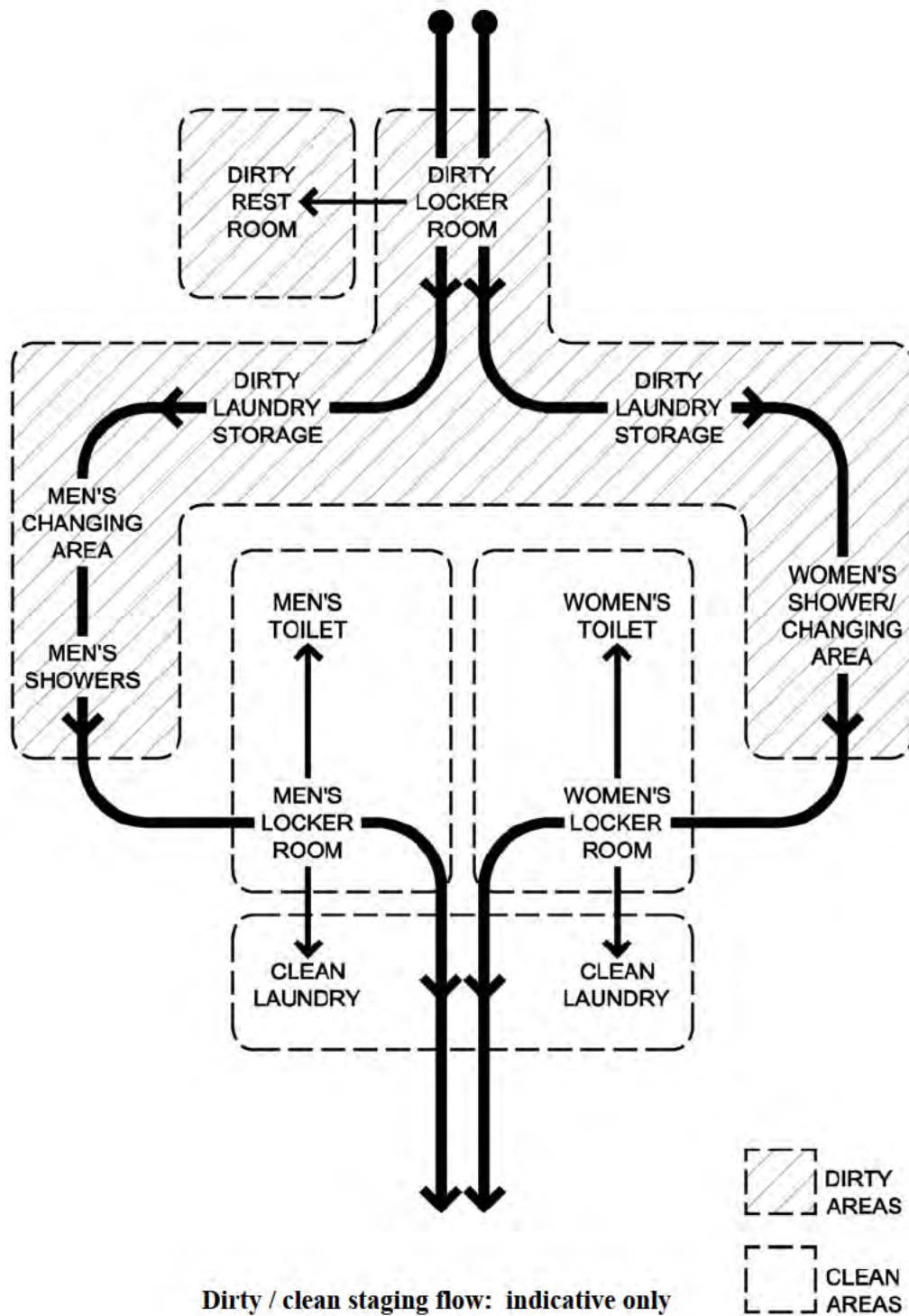
**Windows**

[REDACTED]

**User Provided Equipment**

N/A





**ITEM 31-1-24: [REDACTED] Decontamination Facility - Dirty Locker Room:**

The Dirty Locker Room is the first stage in the decontamination process where the Painters Unit staff shed and store their contaminated clothes and gear after their shift. It is comprised of access from the exterior, benches, and lockers for gear storage. It has direct adjacency to the second step in the decontamination process, the shower facilities. It has direct access to natural light either in the form of skylights, clerestory windows, or windows and natural ventilation.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] 0 net square feet

**Occupancy**

Staff

**Fixed Equipment**

Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Provide connections for Emergency Eyewash Station. Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

Windows to be located in such way not to interfere with locker storage. Coordinate sill height with top of locker assembly.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Benches, Lockers

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A



**ITEM 31-1-25: [REDACTED] Decontamination Facility - Dirty Restroom:**

The Dirty Restroom is a unisex facility for staff use without proceeding through the decontamination process. It is located within the Dirty Locker Room. It is ADA compliant.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None on a regular basis

**Fixed Equipment**

Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

[REDACTED]

**Plumbing:** One (1) Stall, one (1) sink.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

[REDACTED]

**Window Treatment:** Provide sun control.

**User Provided Equipment**

N/A

**New York State Thruway Authority**

**ITEM 31-1-26: [REDACTED]: Decontamination Facility - Dirty Laundry Storage:**

The Dirty Laundry Storage is the second step in the decontamination process for the Painters Unit staff. This is where the contaminated gear is deposited after the staff finishes their shift. It is comprised of shelving and floor space for laundry bins on casters (not in contract). Access to the Dirty Laundry Storage shall be large enough to fit the laundry bins through. It is located between the Dirty Locker Room and the Men's and Women's Changing Areas/Shower Facilities.

**Where Required**

Bridge Maintenance Facility

**Number Required**

[REDACTED]

**Size**

[REDACTED] net square feet

**Location / Relationships**

[REDACTED]

**Occupancy**

None

**Communications**

[REDACTED]

**Fixed Equipment**

Shelving

**Security**

[REDACTED]

**Mechanical/Plumbing**

HVAC: Normal ASHRAE HVAC Standards, [REDACTED]

[REDACTED]

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Furniture**

Provide shelving and hanger rod.

**Electrical**

[REDACTED]

**Construction and Finishes**

**Doors**

[REDACTED]

**Other**

N/A

**Windows**

N/A

**User Provided Equipment**

Laundry Bins

**ITEM 31-1-27: [REDACTED]: Decontamination Facility - Men's Changing Area/Shower:**

The Men's Changing Area/Shower in the Decontamination Facility is the third step in the decontamination process. It is comprised of a changing area with benches and hooks for clothing, cabinetry/shelving for storage of clean linens, as well as the shower stall area. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED]. Keep shower spaces at negative pressure relative to the adjoining locker rooms.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

Staff

**Fixed Equipment**

Cabinetry and shelving for clean linens

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** 10 Stalls, with floor drains

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

**User Provided Equipment**

N/A



**ITEM 31-1-28: [REDACTED] Decontamination Facility - Women's Changing Area/Shower:**

The Women's Changing Area/Shower in the Decontamination Facility is the third step in the decontamination process. It is comprised of a changing area with benches and hooks for clothing, cabinetry/shelving for storage of clean linens, as well as the shower stall area. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED]. Keep shower spaces at negative pressure relative to the adjoining locker rooms.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

4 Staff

**Fixed Equipment**

-

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

[REDACTED]

**Plumbing:** 2 Stalls, with floor drains

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

[REDACTED]

**Electrical**

[REDACTED]

**Doors**

N/A

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED] [REDACTED]

[REDACTED]

**Window Treatment:**

**User Provided Equipment**

N/A

**ITEM 31-1-29: [REDACTED]: Decontamination Facility: Men's Locker Room:**

The Men's Locker Room in the Decontamination Facility is the final step in the decontamination process. The Locker Room houses the lockers for the Painter's Unit Staff. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED]. The locker room is to be [REDACTED] the shower room such that no particulates from the Men's Changing Area and Shower enter the locker room.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

16 Staff

**Fixed Equipment**

Benches,

Lockers, two (2) 18"x18" lockers per staff member  
Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

Windows to be located in such way not to interfere with locker storage. Coordinate sill height with top of locker assembly.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

User Provided Equipment

N/A



**ITEM 31-1-30: [REDACTED] Decontamination Facility - Women's Locker Room**

The Women's Locker Room in the Decontamination Facility is the final step in the decontamination process (See Decontamination Facility - Men's Locker Room). The Locker Room houses the lockers for the Painter's Unit Staff. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED]. The locker room is to be positively pressurized relative to the shower room such that no particulates from the Women's Changing Area and Shower enter the locker room.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

4 Staff

**Fixed Equipment**

Benches,  
Lockers, two (2) 18"x18" lockers per staff member  
Thruway Radio Speakers

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,  
[REDACTED]

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

Windows to be located in such way not to interfere with locker storage. Coordinate sill height with top of locker assembly.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

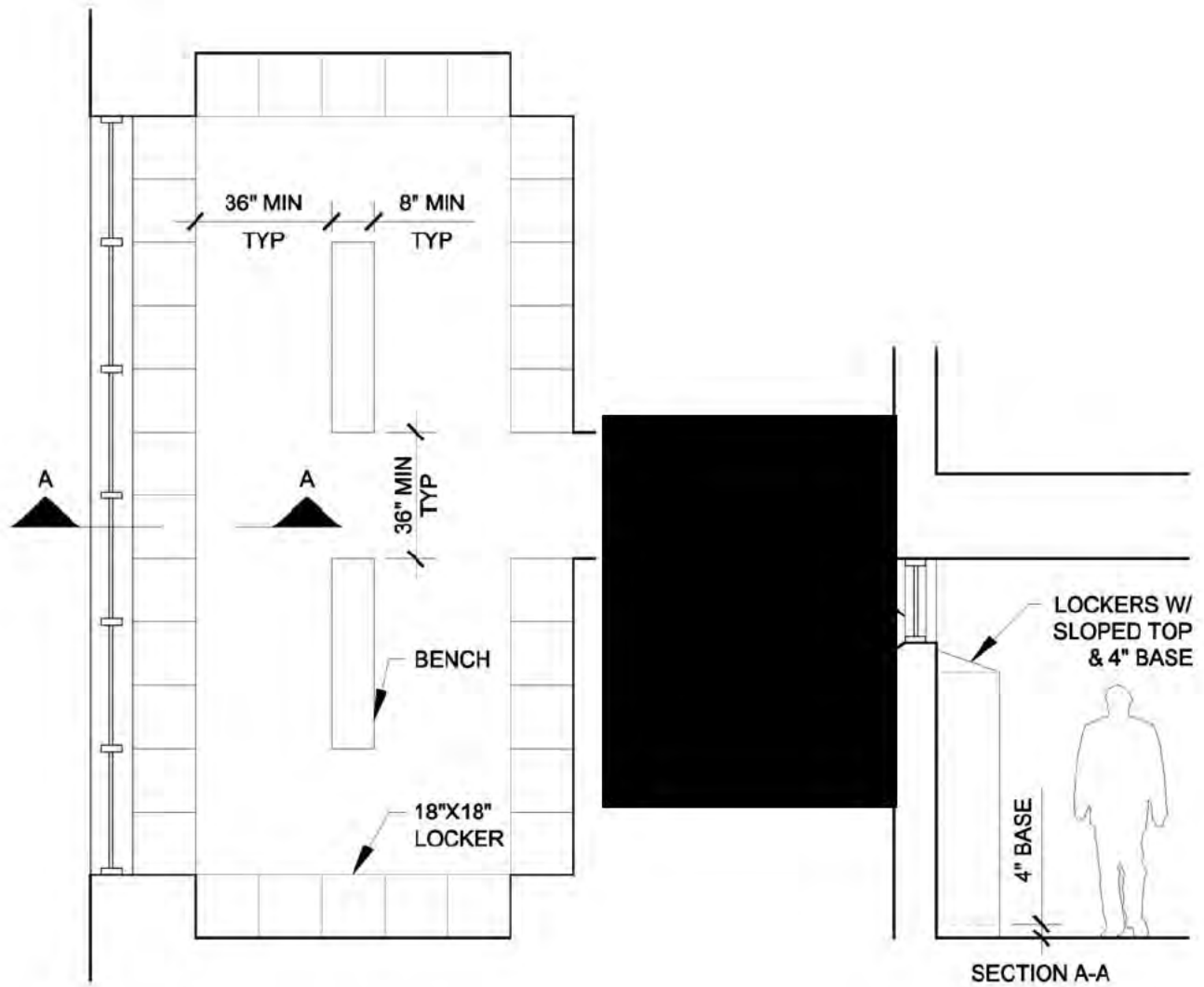
**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED].

**Window Treatment:**

**User Provided Equipment**

N/A



Typical Locker Room Critical Dimensions (indicative layout only)

**ITEM 31-1-31: BM-33: Decontamination Facility – Clean Men’s Restroom:**

The Clean Men’s Restroom is located after the decontamination process and is accessible from the Men’s Locker Room.

**Where Required**

Bridge Maintenance Facility

**Number Required**

1

**Size**

net square feet

**Location / Relationships**

**Occupancy**

-

**Communications**

**Fixed Equipment**

**Security**

**Mechanical/Plumbing**

HVAC: Normal ASHRAE HVAC Standards,

**Plumbing:** Two (2) sink, two (2) urinals, two (2) stalls

**Fire Protection**

Per NYS Building Code

**Furniture**

-

**Construction and Finishes**

**Electrical**

**Doors**

**Other**

N/A

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-32: [REDACTED]: Decontamination Facility – Clean Women's Restroom:**

The Clean Women's Restroom is located after the decontamination process and is accessible from the Women's Locker Room.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None on a regular basis

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,

[REDACTED]  
**Plumbing:** One (1) sink, one (1) stall.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

[REDACTED]

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

None

**User Provided Equipment**

N/A



**ITEM 31-1-33: BM-35: Decontamination Facility - Clean Laundry Storage:**

Space for the storage of clean laundry open to the corridor. It is comprised of shelves and a hanger rod.

**Where Required**

Bridge Maintenance Facility

**Size**

net square feet

**Occupancy**

-

**Fixed Equipment**

**Mechanical/Plumbing**

HVAC: Normal ASHRAE HVAC Standards.

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

Provide shelving and hanger rod.

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A



**ITEM 31-1-34: [REDACTED] Decontamination Facility - Eyewash Station:**

Where Required

Bridge Maintenance Facility

Size

[REDACTED] net square feet

Occupancy

-

Fixed Equipment

Mechanical/Plumbing

HVAC: Normal ASHRAE HVAC Standards.

[REDACTED]

Plumbing: Provide connections for eyewash station

Fire Protection

Per NYS Building Code

Construction and Finishes

[REDACTED]

Other

N/A

Number Required

[REDACTED]

Location / Relationships

[REDACTED]

Communications

[REDACTED]

Security

[REDACTED]

Furniture

Electrical

[REDACTED]

[REDACTED]

Doors

[REDACTED]

Windows

N/A

User Provided Equipment

N/A

**ITEM 31-1-35: [REDACTED]: Shop Area: Carpenter's Shop:**

The Carpenter Shop is used to fabricate any items necessary for bridge maintenance composed of wood. It houses all tools, machinery and equipment necessary for its operations, and it provides all clearances necessary. It has access to natural light and the option for adequate ventilation by both natural and mechanical means.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

4 Staff

**Fixed Equipment**

Thruway Radio Speaker

Provide dust collection system

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,

**Plumbing:** Provide connections for Eye Wash Station

**Fire Protection**

Per NYS Building Code

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Construction and Finishes**

## New York State Thruway Authority

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### Other

All existing equipment and tools will be relocated into this space by Authority personnel

### Windows

#### Interior Window Material

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

#### Window Treatment

#### User Provided Equipment

N/A

**ITEM 31-1-36: [REDACTED]: Shop Area - Electrician's Shop:**

The Electrician's Shop is used to repair any electrical components necessary for the bridge maintenance operations. It has direct access to natural light and natural ventilation.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

3 Staff

**Fixed Equipment**

Thruway Radio Speaker

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

All equipment and tools will be relocated into this space by Authority personnel.

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

User Provided Equipment

N/A

**ITEM 31-1-37: [REDACTED] Shop Area: Electrician's Storage**

**Where Required**

Bridge Maintenance Facility

[REDACTED] net square feet

**Occupancy**

**Fixed Equipment**

**Mechanical/Plumbing**

HVAC: Normal ASHRAE HVAC Standards

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Communications**

**Security**

**Furniture**

Provide warehouse shelving

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A



**ITEM 31-1-38: [REDACTED] Shop Area - Facility Storage:**

The Facility Storage Space is used for the storage of supplies and other necessary items required for Bridge Maintenance operations in the Shop Area.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

ITEM 31-1-39: [REDACTED] Outside Areas - [REDACTED]

Where Required

Bridge Maintenance Facility

Size

[REDACTED] net square feet

Occupancy

None

Fixed Equipment

Mechanical/Plumbing

HVAC: N/A

Plumbing: N/A

Fire Protection

Per NYS Building Code

Construction and Finishes

Other

N/A

Number Required

Location / Relationships

Communications

Security

Furniture

Electrical

Doors

Windows

N/A

User Provided Equipment

N/A

**ITEM 31-1-40: [REDACTED] Outside Areas – General Exterior Storage Yard:**

The General Exterior Storage Yard provides space for storage of materials used in the Carpenters', Welders', and Riggers' Shops such as lumber, steel/metal and rigging components. It is partially covered to provide dry, covered shelter for materials sensitive to the elements, [REDACTED]

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** N/A

**Plumbing:** N/A

**Fire Protection**

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Construction and Finishes**

**Acoustic Separation (STC):**

**Floor:**

**Base:**

**Walls:** [REDACTED]

**Ceiling:**

**Ceiling Heights:**

**Doors**

**Other**

N/A

**Windows**

N/A

**User Provided Equipment**

N/A

ITEM 31-1-41: [REDACTED] Outside Areas - [REDACTED]

Where Required

Bridge Maintenance Facility

Size

[REDACTED] net square feet

Occupancy

None

Fixed Equipment

Mechanical/Plumbing

HVAC: N/A

Plumbing: N/A

Fire Protection

Construction and Finishes

Acoustic Separation (STC):

Floor:

Base:

Walls:

Ceiling:

Ceiling Heights:

Other

N/A

Number Required

Location / Relationships

Communications

Security

Furniture

Electrical

Doors

Windows

N/A

User Provided Equipment

N/A

**ITEM 31-1-42: [REDACTED] Outside Areas - Air Terminal:**

The Outside Air Terminal is one [REDACTED] parking area for emergency after hours tire inflation. It is located adjacent to the Repair Bays.

**Where Required**

Bridge Maintenance Facility

**Size**

Provide one [REDACTED] parking spot.

**Occupancy**

None

**Fixed Equipment**

**Mechanical/Plumbing**

HVAC: N/A

Plumbing: N/A

Fire Protection

**Construction and Finishes**

Acoustic Separation (STC):

Floor:

Base:

Walls:

Ceiling:

Ceiling Heights:

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A



**ITEM 31-1-43: [REDACTED] Outside Areas - Tire Storage Shed**

The Tire Storage is a space for the storage of used and new tires. It is to be located adjacent to the repair bays. It is a securable, sheltered chain link fence structure with close proximity to vehicle access.

**Where Required**

Bridge Maintenance Facility

**Size**

Minimum net [REDACTED] t in plan and shall accommodate passenger and commercial vehicle tires.

**Occupancy**

None.

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** N/A

**Plumbing:** N/A

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Acoustic Separation (STC):**

**Floor:**

**Base:**

**Walls:**

**Ceiling:**

**Ceiling Heights:**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

N/A

**User Provided Equipment**

N/A

ITEM 31-1-44: : Outside Areas - :

Bridge Maintenance Facility

Size

net square feet

Occupancy

None

Fixed Equipment

Mechanical/Plumbing

HVAC: N/A

Plumbing: N/A

Fire Protection

Per NYS Building Code

Construction and Finishes

Acoustic Separation (STC):

Floor:

Base:

Walls:

Ceiling:

Ceiling Heights:

Other

N/A

Location / Relationships

Communications

Security

Furniture

Electrical

Doors

Windows

N/A

User Provided Equipment

## New York State Thruway Authority

### **ITEM 31-1-45:** [REDACTED] **Staff Support / Lunch / Training Room:**

The Lunch/Training Room is used as a gathering space for lunch and training sessions. It houses tables and seating suitable for communal gathering, a kitchenette with appliances to accommodate a full staff, and a vending area. Additionally, it accommodates training sessions with proper A/V equipment and a flexible seating arrangement suitable for lecture style seating. It has direct access to natural light and the option for natural ventilation.

#### **Where Required**

Bridge Maintenance Facility

#### **Size**

[REDACTED] net square feet

#### **Occupancy**

Sized for forty-eight (48) staff.

#### **Fixed Equipment**

Projector

Projection Screen

Mounted Flat Screen TV

Thruway Speakers and handset

Range/Oven

Microwave

#### **Mechanical/Plumbing**

**HVAC:** Typical ASHRAE HVAC Standards. Provide [REDACTED]

**Plumbing:** Sink, Refrigerator

#### **Fire Protection**

Per NYS Building Code

#### **Construction and Finishes**

#### **Other**

N/A

#### **Number Required**

#### **Location / Relationships**

#### **Communications**

#### **Security**

#### **Furniture**

Seating and tables for 48

#### **Electrical**

#### **Doors**

#### **Windows**

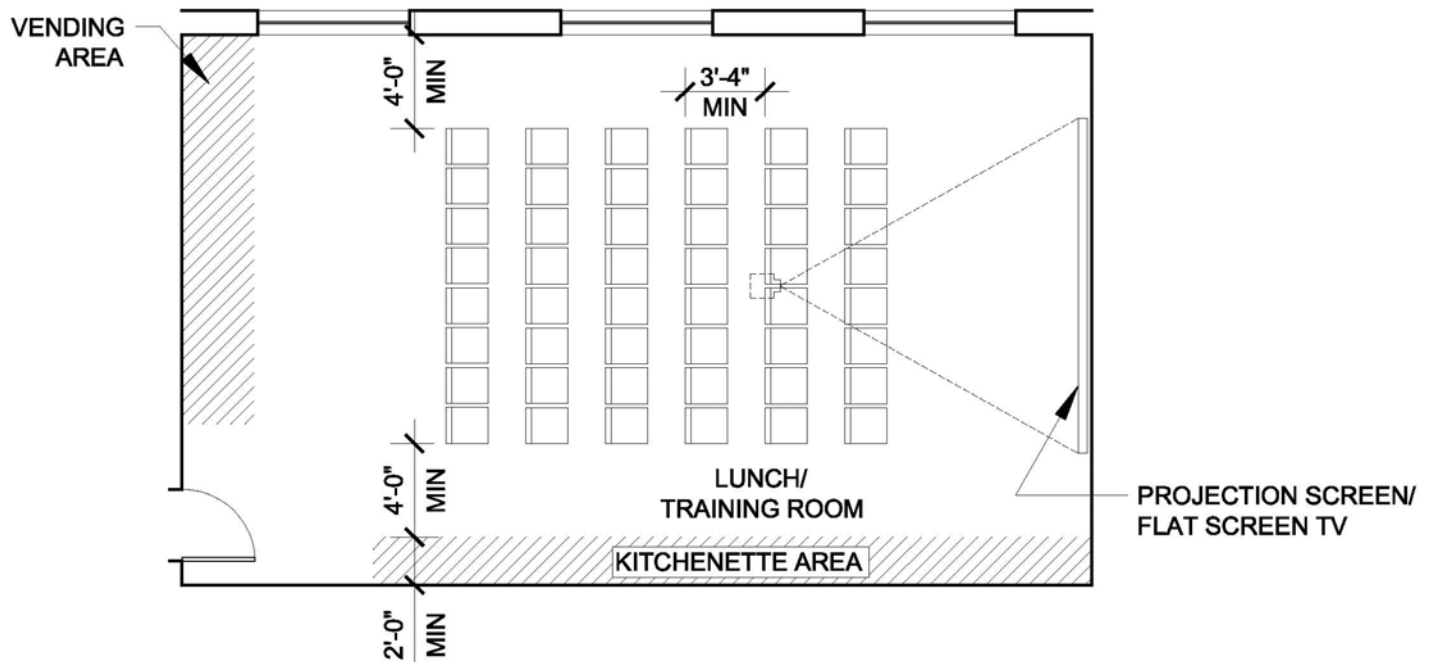
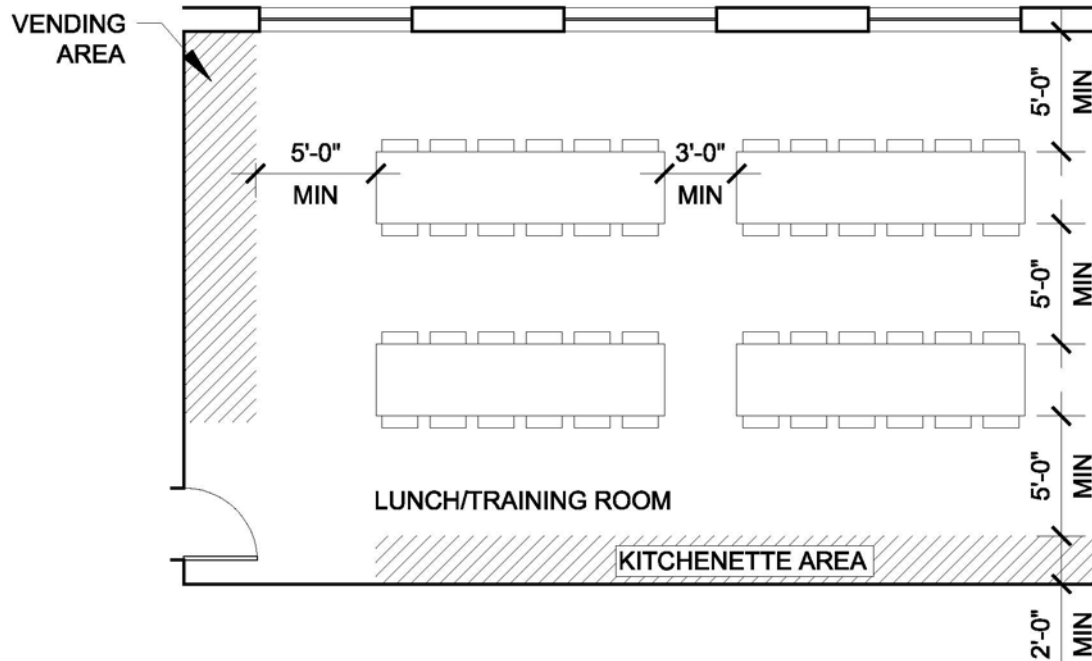
**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows.

**Window Treatment:** Provide sun control.

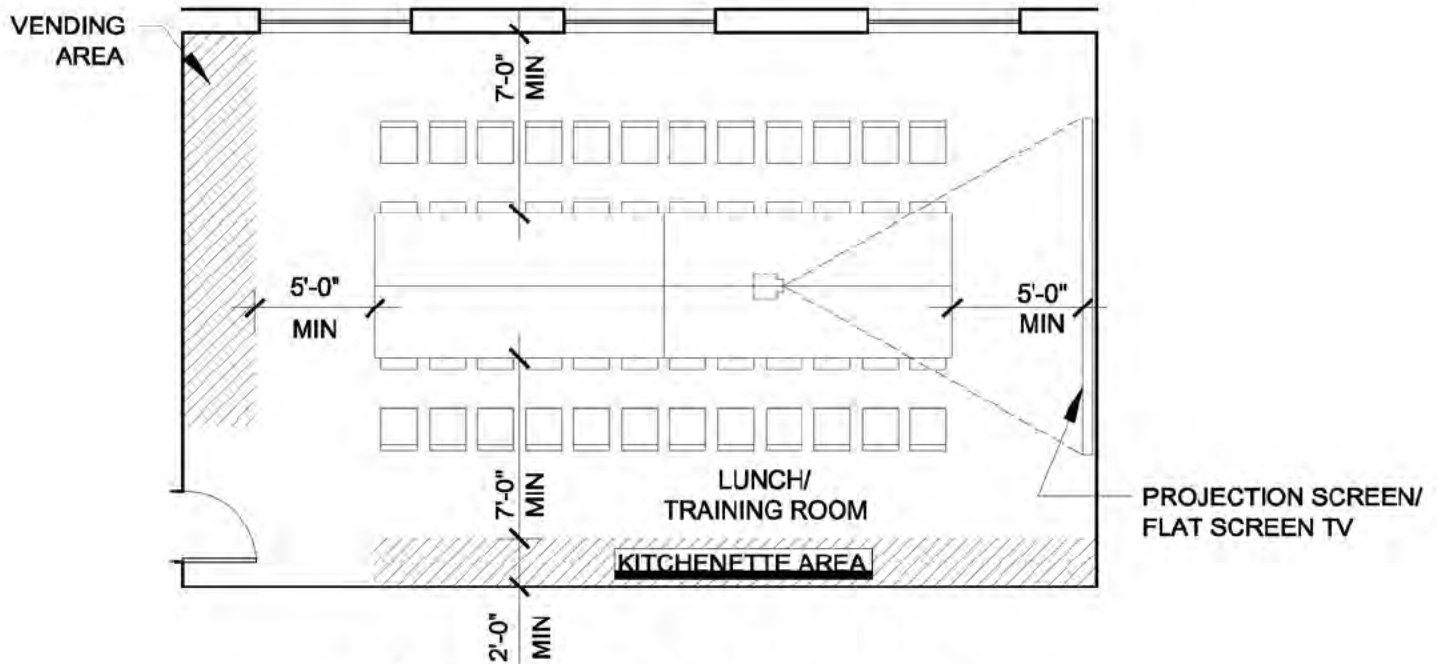
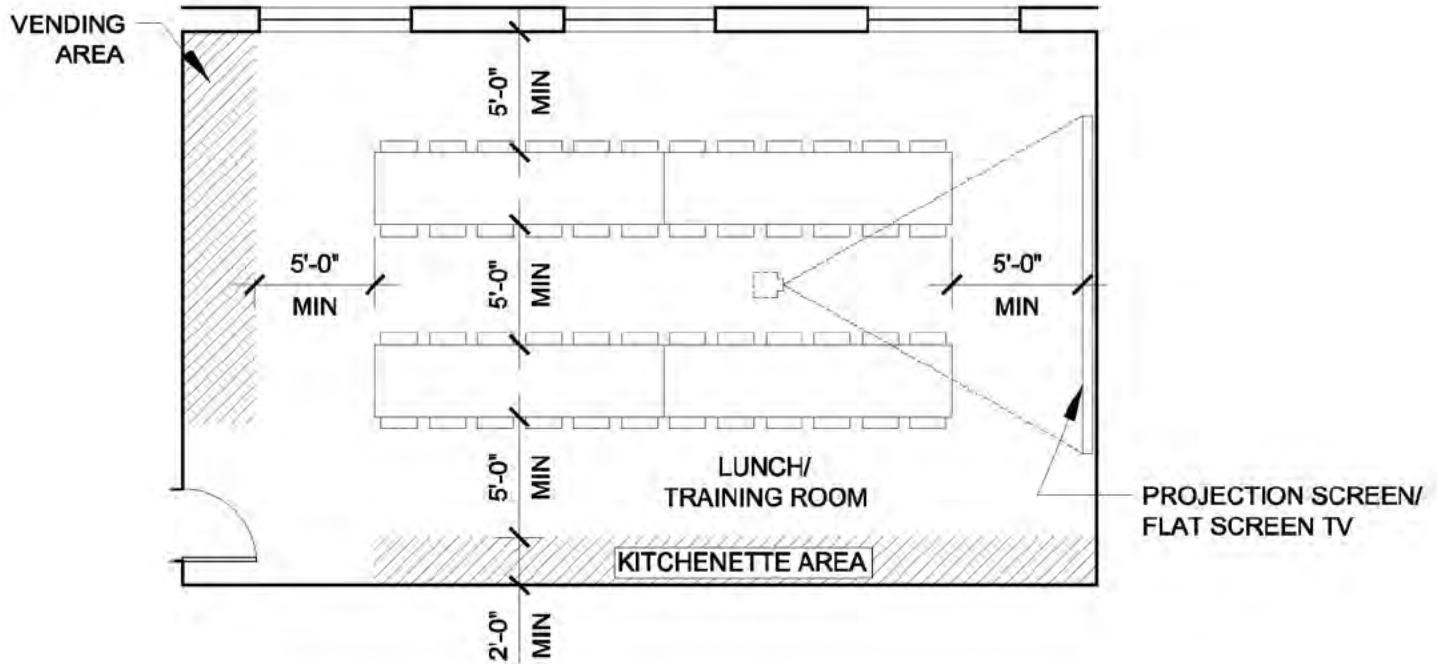
#### **User Provided Equipment**

N/A



Lunch/Training Room: Indicative only (1)





Lunch/Training Room: Indicative only (2)



**ITEM 31-1-46: [REDACTED]: Staff Support - Women's Locker Room:**

The Women's Locker Room houses the lockers for the Bridge Maintenance Staff. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED] [REDACTED]

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

Sized for 14 Staff

**Fixed Equipment**

Thruway Radio Speakers

Provide 18"x18" lockers, 1 per staff member

Benches

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

User Provided Equipment

N/A

**Construction and Finishes**

N/A

**ITEM 31-1-47: [REDACTED] Staff Support - Women's Shower:**

The Women's Changing Area/Shower is comprised of a changing area with benches and hooks for clothing and clean linens as well as the shower stall area. The space has direct access to natural light via skylights and/or clerestory windows [REDACTED]. Keep shower spaces at negative pressure relative to the adjoining locker rooms.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

8 Staff

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** 2 Stalls, Floor Drains

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

**User Provided Equipment**

N/A

**ITEM 31-1-48: [REDACTED]: Staff Support - Women's Restroom**

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

-

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,

**Plumbing:** One (1) sink, one (1) stall.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-49: [REDACTED]: Staff Support - Men's Locker Room:**

The Men's Locker Room houses the lockers for the Bridge Maintenance Staff. The space has direct access to natural light via skylights and/or clerestory windows with a [REDACTED]. The locker room is to be positively pressurized relative the shower room such that no particulates from the Women's Changing Area and Shower enter the locker room.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

Sized for 72 Male Staff

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Floor Drain

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

1 locker per staff member, Benches

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, [REDACTED]

**Window Treatment:**

User Provided Equipment

N/A



**ITEM 31-1- 50: [REDACTED]: Staff Support - Men's Shower:**

Shower facilities are provided for the staff to allow for proper hygiene after physical exertion in the field and other activities.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet, comprising eight (8) stalls at 30 square feet per stall

**Occupancy**

Up to 8

**Fixed Equipment**

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

[REDACTED]

**Plumbing:** 12 Stalls, Floor Drains

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

**Interior Window Material:**

**Exterior Window Material:** IGU in operable aluminum frame, provide external shading devices on south facing windows, minimum sill height [REDACTED]

**Window Treatment:**

User Provided Equipment

N/A



**ITEM 31-1-51: [REDACTED]: Staff Support - Men's Restroom**

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

-

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards,  
[REDACTED]

**Plumbing:** Two (2) sinks, two (2) stalls, two (2) urinals.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

[REDACTED]

**Location / Relationships**

[REDACTED]

**Communications**

[REDACTED]

**Security**

[REDACTED]

**Furniture**

**Electrical**

[REDACTED]

**Doors**

[REDACTED]

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-52: [REDACTED]: Staff Support – Janitor’s Closet:**

Provided for the storage of cleaning equipment and supplies used by the janitorial staff. Located adjacent to the facility support spaces.

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None

**Fixed Equipment**

Provide shelving for supplies

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Provide mop sink. Provide floor drain.  
Provide utility sink. Hot and Cold water.

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-53: [REDACTED]: Staff Support - Men's Accessible Restroom:**

Must comply with ADA standards

**Where Required**

Bridge Maintenance Facility

**Size**

[REDACTED] net square feet

**Occupancy**

None on a regular basis

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

**Plumbing:** Provide one(1) stall, one (1) sink

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**ITEM 31-1-54: [REDACTED] Staff Support - Women's Accessible Restroom:**

Must comply with ADA standards

**Where Required**

Bridge Maintenance Facility

**Size**

150

**Occupancy**

None on a regular basis

**Fixed Equipment**

Mirror, toilet paper holder, paper towel dispenser, soap dispenser, and all necessary accessories as required.

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Standards.

S.

**Plumbing:** Provide one (1) stall, one (1) sink

**Fire Protection**

Per NYS Building Code

**Construction and Finishes**

**Other**

N/A

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A



**ITEM 31-1-55:** [REDACTED] : Facility Support - [REDACTED]

**Where Required**

Bridge Maintenance Facility

**Size**

As required for gross square footage of facility, [REDACTED]  
net square feet minimum.

**Occupancy**

None

**Fixed Equipment**

Mechanical/Electrical equipment

**Mechanical/Plumbing**

**HVAC:** Normal ASHRAE HVAC Requirements.  
Mechanical ventilation.

**Plumbing:** As required

**Fire Protection**

Per NYS Building Code

**Number Required**

**Location / Relationships**

**Communications**

**Security**

**Furniture**

None

**Electrical**

**Doors**

**Windows**

None

**User Provided Equipment**

N/A

**Construction and Finishes**

N/A



**ITEM 31-1-56:** [REDACTED] **Facility Support -** [REDACTED]

**Where Required**

Bridge Maintenance Facility

**Size**

Size as required for all necessary equipment; net square feet minimum.

**Occupancy**

None on a regular basis

**Number Required**

**Location / Relationships**

**Communications**

**Fixed Equipment**

All existing equipment to be relocated or upgraded and replaced.

**Mechanical/Plumbing**

**HVAC:** Provide HVAC equipment sized and designed for proper conditioning and ventilation of data/communication equipment required.

**Plumbing:**

**Fire Protection**

Per NYS Building Code

**Security**

**Furniture**

**Electrical**

New York State Thruway Authority

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Construction and Finishes



Other

N/A

Doors



Windows

None

User Provided Equipment

N/A

<END>

## SECTION 32. ARCHITECTURAL QUALITY OF BUILDINGS

### 32.1. Scope

For the purposes of this Project Requirement, “Support Facilities” are the following:

- A. the bridge maintenance facility;
- B. the State Police station;
- C. all maintenance and administrative buildings under *Project Requirement 31 – Buildings*;
- D. the toll plaza and TUB; and
- E. all associated landscape, lighting and infrastructure.

The Design-Builder shall be responsible for ensuring the Support Facilities meet or exceed the standards of quality as described in the Project Requirements.

The Design-Builder shall utilize a fully collaborative and interdisciplinary strategy involving the stakeholders and the public, reflecting the requirements of the Public Involvement Plan (see *Project Requirement 8 – Public Involvement*), to allow for an aesthetic, cultural, and functional understanding of the Support Facility area context.

### 32.2. Requirements

#### 32.2.1. General

Refer to *Project Requirement 13 – Visual Quality* for complete scope, requirements and deliverables for the Project. In addition to all relevant directives and procedures outlined in *Project Requirement 13 – Visual Quality*, the objectives detailed herein shall be applied to the Support Facilities.

#### 32.2.2. Design Objectives

##### 32.2.2.1. Local Context

The Design-Builder shall ensure that the Support Facilities operate functionally within any guidelines set forth by the state and municipality in which the facilities are located, which include, but are not limited to, the following:

- A. The NYS Building Code; and
- B. The Municipal Code for the Village of Tarrytown, NY

##### 32.2.2.2. Landscape Integration

See *Project Requirement 12 – Landscape Architecture*. The Design-Builder shall ensure that the landscape architect is deployed as an integral part of the A/E team tasked for the design and documentation of the Support Facilities. The Design-Builder shall ensure that the following landscape components are addressed and solutions are provided that promote safe, sustainable, and aesthetically appropriate results:

- A. Roadways and parking lots;
- B. Pedestrian pathways;
- C. Planted lawns and hard-surface plazas;
- D. Plant material;
- E. Furnishings;
- F. Lighting; and
- G. Storm water management.

### **32.2.2.3. Scale**

The Design-Builder shall ensure that the following issues are addressed and resolved in terms of the scale of the Support Facilities:

- A. Overall massing and placement of the support facilities shall adhere to the scale of the surrounding context; and
- B. Consideration shall be given to the mediation of the disparate scales between the Crossing and the surrounding context.

### **32.2.2.4. Style**

The Design-Builder shall adhere to the aesthetic design characteristics developed for the Crossing in order to develop a cohesive language between the bridge and the Support Facilities.

[REDACTED]

### **32.2.2.5. Materiality**

The Design-Builder shall utilize materials in both the landscape and architectural components of the Project, which are to be selected in regards to:

- A. Integration into a single aesthetic consistent with the Crossing design;
- B. Conformance with the local characteristics of the site;
- C. Durability and permanence;
- D. Relation to building form, mass, scale, context, and function;
- E. Ease of maintenance, access, and replacement;
- F. Availability of warranties, service personnel, and manufacturer's support;
- G. Cost-effectiveness; and
- H. Local availability.

## **32.2.3. Performance Objectives**

### **32.2.3.1. Integrated Building Design**

The Design-Builder shall use an integrated approach for the design and construction of the Support Facilities. Integrated building design is a process of design in which multiple disciplines are integrated into the design process with the intent to produce environmental, operational, and economic benefits. The Design-Builder shall ensure that the following objectives are addressed in the design of the Support Facilities:

- A. Passive Solar Design;
- B. Daylighting Design; and
- C. Natural Ventilation.

### **32.2.3.2. Building Envelope**

The Design-Builder shall ensure that the building envelope functions in such a way to efficiently and economically control the flow of energy between the interior and exterior of the facilities, recognizing that the building envelope has the potential to provide significant reductions in heating and cooling loads necessary for thermal comfort with in building thereby reducing the size of the mechanical equipment.

The Design-Builder shall ensure that the design of the building envelope addresses the following:

- A. Solar heat gain mitigation;
- B. Air infiltration;
- C. Waterproofing;

- D. Roofing material and insulation;
- E. Reflectivity of surface materials; and
- F. Shading methods.

#### **32.2.4. Functional Objectives**

##### **32.2.4.1. Satisfaction of Program Requirements**

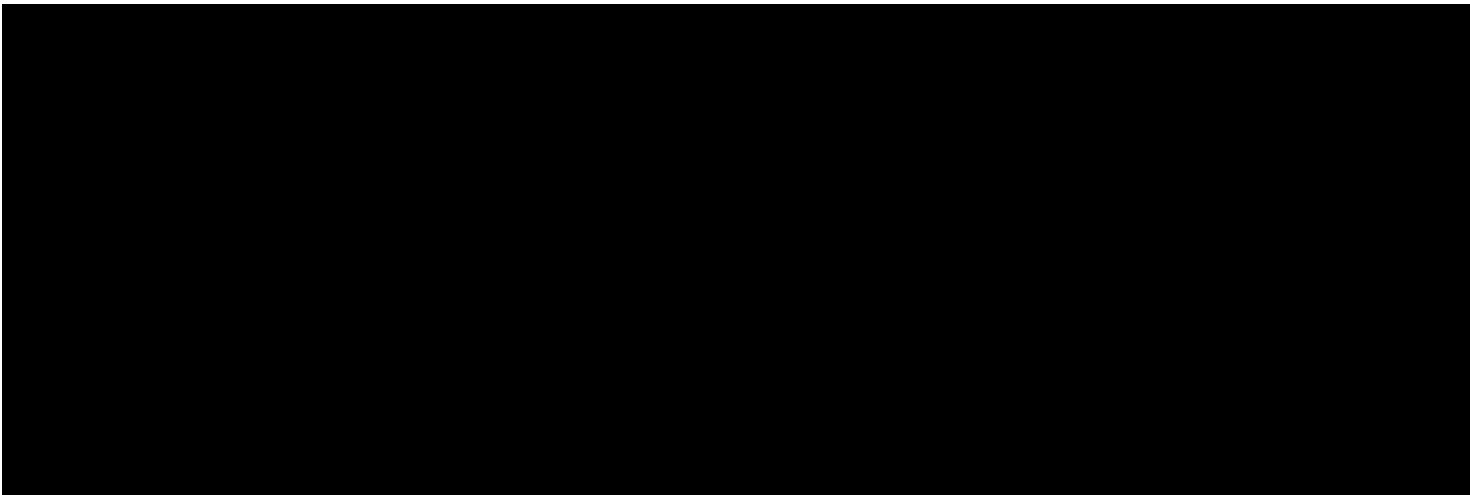
The Design-Builder shall ensure that all functional objectives of the Support Facilities are met according to the contents of this document. Refer to *Project Requirements 26 – Toll Plaza, 30 – State Police Facilities* and *31 – Buildings* for descriptions of the functional objectives to be satisfied.

The Design-Builder shall ensure that all net square footage requirements indicated in *Project Requirements 26 – Toll Plaza, 30 – State Police Facilities* and *31 – Buildings* are met with gross-up factors (to be defined by the Design-Builder) based on dimensional criteria as indicated in *Project Requirements 26 – Toll Plaza, 30 – State Police Facilities* and *31 – Buildings* as well as the following:

- A. All corridors, vestibules, and lobbies shall be [REDACTED] and comply with all NYS Building Code and ADA accessibility requirements; and
- B. All ADA accessible bathrooms shall comply with ADA requirements.

##### **32.2.4.2. Security**

The Design-Builder shall ensure that all required security provisions are met according to the standards and guidelines set forth by all relevant agencies, including, [REDACTED]  
The Design-Builder shall provide the following security measures per facility:



##### **32.2.4.3. Establishment of additional features to support functional objectives**

*Project Requirements 26 – Toll Plaza, 30 – State Police Facilities* and *31 – Buildings* present an outline of the space requirements for the Support Facilities. The Design-Builder shall be responsible for working closely with stakeholders at the Authority and NYSP in order to further define the details of the requirements of the facilities throughout the course of the Project in order to meet operational objectives.

#### **32.2.5. Spatial Quality**

##### **32.2.5.1. Lighting**

The Design-Builder shall ensure that lighting is designed in such a way that it enhances the appearance of the space, saves energy with the integration of natural light and artificial light, and provides sufficient illumination levels to support occupant productivity. Brightness and glare shall be balanced from both artificial and natural light sources to reduce high contrast and eye strain. The Design-Builder shall provide lighting controls that have the ability to balance daylighting, occupant needs, and energy efficiency.



The Design-Builder shall ensure that all occupied spaces have direct access to natural light through the use of fixed, operable and clerestory windows, and/or skylights.

The Design-Builder shall ensure that all lighting systems are designed to support all performance objectives defined for each facility in *Project Requirements 26 – Toll Plaza, 30 – State Police Facilities and 31 – Buildings*.

#### **32.2.5.2. Air Quality**

The Design-Builder shall provide ventilation technologies and equipment suitable for safe occupation of each space dependent on the nature of its function. Any space with exposure to pollutants from vehicles shall be outfitted with proper ventilations systems.

The Design-Builder shall provide ventilation equipment for the removal and necessary filtration of any hazardous fumes emitted by stored materials and any particulate bi-products of fabrication activities such as sawdust from carpentry.

The Design-Builder shall provide access to natural ventilation through the use of operable windows in any regularly occupied space in addition to sufficient HVAC.

#### **32.2.5.3. Acoustic Qualities**

The Design-Builder shall ensure that the following criteria are addressed in regards to acoustic qualities within the facilities:

- A. Speech privacy from adjacent spaces;
- B. Masking of background sound;
- C. Noise levels of equipment vibration and reverberation; and
- D. Noise generated from the exterior.

#### **32.2.5.4. Thermal Qualities**

The Design-Builder shall ensure that the combination of efficient building enclosures, natural ventilation, and mechanical HVAC technologies promotes thermal comfort and proper humidity levels. The Design-Builder shall provide mechanical ventilation as required by ASHRAE Standards for acceptable indoor air quality.

The Design-Builder shall ensure that all mechanical systems are designed to support all performance objectives defined for each facility in *Project Requirements 26 – Toll Plaza, 30 – State Police Facilities and 31 – Buildings*.

### **32.2.6. Environmental Responsibility**

#### **32.2.6.1. Sustainability**

The Design-Builder shall ensure that the facilities address site sustainability, water/energy efficiency, indoor air quality, and material consumption in accordance with the general tenets of sustainable design as set forth in Executive Order 111 of New York State.

The Design-Builder shall ensure that sustainability goals are defined during the early stages of the Project and adhered to throughout the integrated design process. The Design-Builder shall ensure that the Support Facilities and their associated components are designed and constructed with the following sustainable objectives:

- A. Reduced dependence on non-renewable resources through the use of products with recycled content;
- B. On-site separation and recycling of construction and demolition debris;
- C. Selection of locally manufactured products to reduce transportation costs and environmental impacts;
- D. Mindful orientation of new structures in regards to shading, solar radiation, and the effect on adjacent structures and spaces,
- E. Minimization of storm water runoff through the use of permeable paving where permissible,
- F. Minimization of maintenance and operating costs by integrating innovative building systems and engineering approaches at the beginning of the project;
- G. Selection of products such as adhesives, paintings, coatings, and materials such as carpet, with a low content of volatile organic compounds (VOCs) for the improvement of indoor environmental quality; and

- H. Reduction of energy consumption through the use of appropriate technology (natural cooling, daylighting, passive solar design).

### **32.2.6.2. Building Commissioning**

The Design-Builder shall ensure that the allowance for building commissioning is included in its Proposal. Commissioning is the process of ensuring that the building systems are designed, installed functionally tested, and capable of being operated and maintained as designed to meet the needs of each Support Facility. The Design-Builder shall ensure that the following intents of building commissioning are met:

- A. Precise adjustment of HVAC systems and controls;
- B. Accurate building documentation;
- C. Comprehensive training of building operators, including written, digital and video training tools;
- D. Lowered operation and maintenance costs;
- E. Lowered utility bills; and
- F. A healthier and more comfortable work environment.

### **32.3. Deliverables**

The Design-Builder shall ensure that the design of the Support Facilities shall adhere to the following concept design development and sequential review process:

1. **Informal Concept Review:** provide to the Visual Quality Manager and all relevant stakeholders, for review and comment, graphic and written research and analysis demonstrating that all viable requirements are identified and quantified;
2. **First Concept Review:** internally present concept options to the Visual Quality Manager and all relevant stakeholders, for review and comment. Determine major issues to be further studied and developed for subsequent review;
3. **Second Concept Review:** internally present concept options to the Visual Quality Manager and all relevant stakeholders, for review and comment. Determine preferred concept for further development;
4. **Preferred Concept Preliminary Review:** present developed preferred concept to Visual Quality Manager and all relevant stakeholders, for review and comment; and
5. **Final Concept Design Review:** present final concept design to Visual Quality Manager and all relevant stakeholders for approval. This shall include architectural and mechanical/electrical/plumbing drawings at a minimum scale of 1/8"=1'-0" as well as professional renderings and physical model(s), coordinated with the Crossing model, that fully describe the exterior and interior design of the Support Facilities.

At a minimum, the deliverables shall include the items listed in Table 32.3-1 for the Authority's and the Visual Quality Manager's consultation and written comment.

**Table 32.3-1 Deliverables**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Informal Concept	5	1	At least 21 days between each sequential stage.	32.3 (1)
First Concept	5	1		32.3 (2)
Second Concept	5	1	Timing of submission for each sequential stage to be determined by Design-Builder in consultation with Visual Quality Manager.	32.3 (3)

**New York State Thruway Authority**

Deliverable	Number of Copies		Delivery Schedule	Reference Section
	Hardcopy	Electronic		
Preferred Concept	5	1	At least 30 days before submission of Final Concept Design	32.3 (4)
Final Concept Design	5	1	At Definitive Design Review, and again at Readiness for Construction Review	32.3 (5)
Building Documentation	5	1	At Physical Completion	32.2.6.2
Training materials for building operators	5	1	At Physical Completion	32.2.6.2

## **SECTION 33. SMEP AND FIRE SAFETY FOR BUILDINGS**

### **33.1. Scope**

For all new buildings required for the Project, the Design-Builder shall be responsible for designing and implementing the structural, mechanical, electrical and plumbing (the “SMEP”) and the fire and life safety aspects of the design in accordance with this Project Requirement.

Where there is a discrepancy between this Project Requirement and *Project Requirements 15 – Lighting, 26 – Toll Plaza, 30 – State Police Facilities* and *31 – Buildings*, then the requirements of this Project Requirement shall not govern.

### **33.2. Standards**

The Design-Builder shall design all buildings required for the Project in accordance with the following Standards, unless otherwise stipulated in the Project Requirements.

#### **33.2.1. Standards**

##### **33.2.1.1. Structural**

- A. Building Code of New York State (BCNYS)
- B. Existing Building Code of New York State (EBCNYS) .

##### **33.2.1.2. Mechanical**

- A. Building Code of New York State (BCNYS)
- B. Existing Building Code of New York State (EBCNYS)
- C. Mechanical Code of New York State (MCNYS)
- D. New York State Executive Order 111: Green and Clean State Buildings and Vehicles Guidelines
- E. ASHRAE Standard 52.2 Method of Testing General Ventilation Air Cleaner Devices for Removal efficiency by Particle size
- F. ASHRAE Standard 55 Thermal Environmental Conditions for Human Occupancy
- G. ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality
- H. ASHRAE Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings.
- I. Sheet Metal and Air conditioning Contractors National Association, Inc. (SMACNA)
- J. ASHRAE Guideline 1 – The HVAC Commissioning Process
- K. Occupational Safety and Health Administration (OSHA) Regulations.
- L. Public Employees Safety and Health (PESH) Regulations

##### **33.2.1.3. Electrical**

- A. Building Code of New York State (BCNYS)
- B. Existing Building Code of New York State (EBCNYS)
- C. New York State Executive Order 111: Green and Clean State Buildings and Vehicles Guidelines
- D. NFPA 70, National Electrical Code (NEC)
- E. NFPA 72, National Fire Alarm Code
- F. NFPA 110, Standard for Emergency and Standby Power Systems



**33.2.1.4. Plumbing**

- A. Plumbing Code of New York State (PCNYS)
- B. American Society of Plumbing Engineers: ASPE Data Books
- C. Fuel Gas Code of New York State (FGCNYS).

**33.2.1.5. Fire & Life Safety**

- A. Building Code of New York State (BCNYS).
- B. Existing Building Code of New York State (EBCNYS)
- C. Fire Code of New York State (FCNYS)
- D. Mechanical Code of New York State (MCNYS)
- E. Plumbing Code of New York State (PCNYS)
- F. Fuel Gas Code of New York State (FGCNYS).

**33.3. Requirements**

The Design-Builder shall be responsible for coordinating with the Authority via the Authority's Project Manager to ensure that the relevant design requirements of the Authority [REDACTED] are met in relation to permanent and temporary buildings.

**33.3.1. Structural Design Requirements**

**33.3.1.1. Wind Design Values**

- A. Reference ASCE 7-05;
- B. Basic Wind Speed: [REDACTED]
- C. Exposure [REDACTED]

**33.3.1.2. Seismic Design Criteria for Buildings**

- A. Reference <http://www.usgs.gov/>
- B. Latitude +41.065205
- C. Longitude -73.863738
- D. Mapped short period spectral acceleration per Chapter 16 of the BCNYS ( $S_s=0.353$  minimum)
- E. Mapped one-second period spectral acceleration per Chapter 16 of the BCNYS ( $S_1=0.071$  minimum)

**33.3.1.3. General Structural Requirements**

Design of new structures and refurbishment of existing structures shall be in accordance with the New York State Building Code and all other relevant state and federal laws.

The following are specific requirements for the design:

- A. Buildings shall be designed per Table 1604.5 of the BCNYS;
- B. Minimum design life of 100 years;
- C. Minimum floor live loads [REDACTED], to facilitate future flexibility of use. Some areas may require heavier floor loads dependent on intended initial use;
- D. No reduction in live loading allowed;
- E. Additional [REDACTED] load to be added to all canopy roof loads to allow for the addition [REDACTED];



- F. Design to avoid disproportionate collapse;
- G. Design floors to minimize vibrations to at least 'slightly perceptible' per the modified Reiher-Meister scale; and
- H. Design all structures to allow ease of future adaptability.

### **33.3.2. Mechanical Requirements**

#### **33.3.2.1. Energy Efficiency**

Mechanical systems shall meet the requirements of New York State Executive Order 111.

#### **33.3.2.2. Indoor Air Quality**

The Design-Builder shall minimize to the fullest extent possible the use of materials that emit VOCs and similar pollutants.

#### **33.3.2.3. Mechanical Ventilation**

ASHRAE Standard 62.1 shall be met for the mechanical ventilation equipment and components of the Project. Outside air rates shall be maintained with [REDACTED] of required levels through the use of instrumentation and controls during occupied hours. As a means to monitor air quality, carbon monoxide monitoring systems shall be installed within the ventilation systems.

#### **33.3.2.4. Commissioning**

Provide a complete and comprehensive whole-building commissioning system for each facility.

#### **33.3.2.5. Mechanical Equipment and Systems**

HVAC systems and components shall be selected on the basis of long-term operations and maintenance costs. The design of these systems shall ensure efficiency and ease of operation and allow for easy and cost effective repair during the service life of the facility.

For main HVAC systems and HVAC components requiring servicing and maintenance, there shall be knowledgeable local presence of both vendors and mechanical contractors for the particular brand and model of equipment installed. Equipment installed shall have a demonstrable track record for requiring low maintenance along with energy efficient performance.

Mechanical room layouts shall take account of servicing clearances and maintenance requirements.

#### **33.3.2.6. Below-Grade Mechanical and Electrical Spaces**

For any rooms below grade that house mechanical and electrical equipment, adequate space shall be incorporated into the design to allow maintenance and removal of equipment. Provisions shall be made for capture and conveyance of liquid spills and air conditioning condensate drips.

#### **33.3.2.7. Mechanical Equipment Vibration Isolation and Seismic Restraint**

Vibrating mechanical equipment shall be housed either below-grade or on-slab wherever possible. Provide adequate isolation for vibrating equipment (including fans, pumps, compressors) in order to minimize transmission of through-floor vibration and noise, as well as to maximize equipment life.

Follow local and state codes for providing seismic restraints on mechanical pieces of equipment and mechanical systems.

#### **33.3.2.8. HVAC System Design**

The productivity, sustainability, and operation and maintenance of the HVAC heating and cooling plant along with the air distribution systems in each building are critical system goals. The air distribution systems shall also be designed and implemented based on fire safety requirements.

Compliance with ASHRAE Standard 90.1 is required. Winter outdoor design conditions shall be based on the 99.6% column dry-bulb temperature. Summer outdoor design conditions shall be based on the 0.4% column dry-bulb temperature with its corresponding mean coincident wet-bulb temperature listed in the ASHRAE Fundamentals Handbook.

#### **33.3.2.9. Space Design Conditions**

Exhibits A, B and C in this Project Requirement present the details of the summer and winter temperature requirements and the air-handling system types required for rooms in the Toll Plaza (see Exhibit A), [REDACTED] and the maintenance buildings (see Exhibit C).

#### **33.3.2.10. Sound Attenuation**

Where HVAC equipment will be located in or adjacent to occupied spaces, adequate sound attenuation either by mechanical means, or by acoustical means shall be required.

Maintain the latest ASHRAE Fundamentals design guidelines for room criteria (RC) sound levels generated by HVAC equipment, in occupied as well as unoccupied spaces.

#### **33.3.2.11. Interface to Building Automation System (BAS)**

The HVAC system, including direct digital controls, will require a computer-based building automation system (BAS). Building systems that will be interfaced with the BAS shall include the HVAC systems and maintenance scheduling functions.

[REDACTED]

#### **33.3.2.12. Special HVAC Systems**

Specialty HVAC systems requirements shall include:

- A. Critical spaces including security server rooms, electrical rooms, IT rooms, LAN rooms shall be [REDACTED];
- B. The maximum allowable carbon monoxide, mono-nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) concentration levels shall not be exceeded under toll booth canopies;
- C. Provide positive pressure inside toll booths by supplying fresh air from an appropriate source located suitably distant from the roadway;
- D. Provide spark-resistant exhaust fans for uninterruptable power supply (UPS) battery rooms;
- E. Provide [REDACTED].

#### **33.3.3. Electrical Requirements**

##### **33.3.3.1. Energy Efficiency**

The facility electrical and lighting systems shall meet the requirements of New York State Executive Order 111.

##### **33.3.3.2. Electrical Service**

Provide computer-based, fault-current and overcurrent protective device coordination studies. The fault-current study shall include the electrical distribution system from normal and alternate power sources.

##### **33.3.3.3. Switchboard**

Secondary service shall extend from the utility company transformer. The main service switchboard to each building shall be sized and provided based on the facility's demand load and shall include [REDACTED] spare expansion capacity:

- A. System details: [REDACTED]

B. Main disconnecting and overcurrent protective devices: [REDACTED]

C. Branch disconnecting and overcurrent protective devices: [REDACTED]

#### 33.3.3.4. Panelboards

A. Panel-boards shall have copper phase, neutral and ground buses.

B. General requirements for panel-boards:

- i. Indoor dry and clean locations: [REDACTED]
- ii. Outdoor locations: [REDACTED]
- iii. Wet or wash-down areas: [REDACTED]
- iv. Indoor locations subject to dust, falling dirt and dripping non-corrosive liquids: [REDACTED]

#### 33.3.3.5. Low Voltage Conductors and Cables

Feeder and branch circuit conductors and cables shall be copper with insulation types [REDACTED]

[REDACTED]. Multi-conductor cable shall be metal-clad cable, [REDACTED]

Conductor and insulation applications:

A. Service entrance: [REDACTED] or as approved by power utility;

B. Exposed feeders: [REDACTED];

C. Feeders concealed in ceilings, walls, partitions, and crawlspaces: [REDACTED]

[REDACTED] including in crawlspaces: [REDACTED]

E. Branch circuits concealed in ceilings, walls, and partitions: [REDACTED]

#### 33.3.3.6. Raceways

A. Metal conduits, tubing, and fittings [REDACTED]

B. Nonmetallic conduits, tubing, and fittings: [REDACTED]

C. Raceway application:

- i. Outdoors exposed: [REDACTED]
- ii. Outdoors concealed, above ground: [REDACTED]
- iii. Outdoors underground: [REDACTED]
- iv. Indoors exposed, not subject to physical damage: [REDACTED]
- v. Indoors exposed and subject to severe damage: [REDACTED]
- vi. Indoors concealed: [REDACTED]
- vii. Indoors connection to vibrating equipment: [REDACTED]
- viii. Indoors damp or wet locations: [REDACTED]

**33.3.3.7. Enclosed Switches and Controllers**

- A. Fusible switches shall be: [REDACTED]
- B. Non-fusible switches: [REDACTED]
- C. Full-voltage controllers: [REDACTED]
- D. Fractional horsepower manual controllers: [REDACTED]

**33.3.3.8. Variable Frequency Motor Controllers**

[REDACTED]

**33.3.3.9. Emergency Power Engine Generator**

Generator shall be suitable for loads involving sensitive electronic equipment, adjustable frequency drives, or uninterruptible power supply systems. Size generator for all critical loads, emergency loads and [REDACTED] spare expansion capacity. The generator shall be [REDACTED]:

[REDACTED]

**33.3.3.10. Transfer Switches**

- A. Automatic transfer switches: [REDACTED]
- B. Bypass/isolation switches: [REDACTED]

**33.3.3.11. Wiring Devices**

- A. Receptacles: [REDACTED]



B. Toggle switches: [REDACTED]  
[REDACTED]

C. Indoor occupancy sensors: [REDACTED]

D. Lighting control shall be [REDACTED]  
[REDACTED]

#### 33.3.3.12. Interior Lighting

See *Project Requirement 15 – Lighting*.

Electronic ballasts shall have [REDACTED]

[REDACTED] Multiple lamp ballasts shall be connected to maintain full light output on surviving lamps if one or more lamps fail.

Emergency fluorescent power units shall be [REDACTED]

[REDACTED]. Emergency connector [REDACTED]  
[REDACTED]

#### 33.3.3.13. Exterior Lighting

See *Project Requirement 15 – Lighting*.

- A. Photoelectric relays: single throw, factory-mounted to luminaire, with directional lens in front of photocell.
- B. Exterior lighting performance requirements:
  - i. Pole live load: single load of 500 lbf.
  - ii. Pole ice load: 3 lbf/sq ft.
  - iii. Pole wind load: wind speed for poles exceeding 49.2 feet (15 m) in height is 90 mph (40 m/s).

#### 33.3.3.14. Data Communications

[REDACTED]

The Design-Builder shall provide equipment racks, telephone and network equipment in each Data Communications Room. The Authority's Network Services Team will determine the equipment required based on the specific functionality for the building and the building configuration [REDACTED] [REDACTED]). [REDACTED] equipment will be used for all network installations and [REDACTED] equipment for all telephone services. The Authority's Network Services Team will configure and install the telephone and network equipment.

#### 33.3.4. Plumbing Requirements

##### 33.3.4.1. Water Conservation

Water conservation design shall include the design and specification of low flow plumbing fixtures.

Waterless no-flush urinals may be appropriate as providing increased savings in water consumption. The use of a graywater system that will collect all discharges from the lavatories/sinks/showers for toilet flushing needs, after appropriate treatment, may be appropriate to achieve water savings without incurring a significant cost increase.



#### **33.3.4.2. Plumbing Equipment and Systems**

Plumbing systems and components shall be selected on the basis of long-term operations and maintenance costs. The design of these systems shall ensure efficiency and ease of operation and allow for easy and cost effective repair during the service life of the facility.

For main plumbing systems and components requiring servicing and maintenance, there shall be knowledgeable local presence of both vendors and mechanical contractors for the particular brand and model of equipment installed. Equipment installed shall have a demonstrable track record for requiring low maintenance along with energy efficient performance.

Room layouts shall take account of servicing clearances and maintenance requirements for plumbing.

#### **33.3.4.3. Restroom Accessibility**

Restrooms, including toilet fixtures, urinals and lavatories shall be fully compliant with the Americans with Disabilities Act Architectural Guidelines (ADAAG).

#### **33.3.4.4. Water Conservation Measures**

The design shall include water conservation fixtures and devices. Fixture water consumption should meet the requirements of the applicable plumbing codes.

#### **33.3.4.5. Domestic Water Systems**

Water service meters shall be located inside the buildings, typically utilizing meters furnished by the water utility purveyor. Water meters shall be equipped with remote readers.

Backflow prevention devices shall be provided at each service as required by local Department of Health. Internal water distribution shall provide adequate water quality and pressure for all plumbing fixtures and equipment.

Hot water shall be generated by water heaters utilizing natural gas or electricity. Hot water shall be generated and stored at 140°F and tempered to deliver 109°F for the bathroom facilities and 120°F for the showers.

#### **33.3.4.6. Sanitary and Vent Systems**

A complete fully-vented sanitary building system shall be provided for all plumbing fixtures, sanitary floor drains and kitchen equipment. Sanitary floor drains shall be provided for all multi-toilet fixture restrooms, mechanical equipment rooms and kitchen areas.

#### **33.3.4.7. Rainwater Drainage Systems**

A complete rainwater building drainage system shall be provided for all rainwater drainage for roofs, canopies, plazas, area wells and parking structures.

#### **33.3.4.8. Special Plumbing System**

Specialty plumbing systems required for this facility include compressed air and oil interceptor(s) at the garage, repair and wash bays.

### **33.4. Deliverables**

See *Project Requirements* 15 – Lighting; 26 – Toll Plaza; 30 – State Police Facilities and 31 – Buildings.

**PROJECT REQUIREMENT 33 - EXHIBIT A**  
**Space Design Conditions for Toll Plaza Facilities**

Space Code	Space Name + Description	Classification	System Type	Summer temperature °F	Winter Temperature °F
	Toll Booths	Office		75	72
	Toll Plaza Manager (TPM) III	Office		75	72
	Toll Plaza Manager (TPM) I	Office		75	72
	Toll Plaza Operations Desk	Office		75	72
				75	72
				75	72
				75	72
	Break Room	Office		75	72
	Women's Locker Room	Locker Room		78	70
	Women's Restroom	Restroom			
	Men's Locker Room	Locker Room		78	70
	Men's Restroom	Restroom			
	Janitor's Closet	Restroom			
	Mechanical Electrical Room	Mechanical/Electrical Room		95	55
<p>Note 1: * denotes relative humidity 30% to 45%</p> <p>Note 2: Space heating and cooling requirements shall be coordinated with New York State Executive Order 111: Green and Clean State Buildings and Vehicles Guidelines, set back temperatures when a space is unoccupied</p> <p>Abbreviations: VAV: variable air volume; DX: direct expansion</p>					



Note 1: \* denotes relative humidity 30% to 45%

Note 2: Space heating and cooling requirements shall be coordinated with New York State Executive Order 111: Green and Clean State Buildings and Vehicles Guidelines, set back temperatures when a space is unoccupied.

Abbreviations: VAV: variable air volume; DX: direct expansion

**PROJECT REQUIREMENT 33 - EXHIBIT C**  
**Space Design Conditions for Maintenance Buildings**

Space Code	Space Name + Description	Classification	System Type	Summer temperature °F	Winter Temperature °F
	Supervisor III - Bridge Maintenance	Office		75	72
	Supervisor II - Bridge Patrol/Equipment Maintenance	Office		75	72
	Supervisor II - Riggers, Welders and Painters	Office		75	72
	Supervisor II - Dockside Work Team	Office		75	72
	Supervisor I - Bridge Patrol/Equipment Maintenance	Office		75	72
	Supervisor I - Riggers, Welders, and Painters	Office		75	72
	Supervisor I - Dockside Work Team	Office		75	72
	Wrecker Crew Chief (Bridge/Wrecker)	Office		75	72
	Office Clerk/Office Equipment Area	Office		75	72
	Records Storage	Storage		85	65
	Facility Storage	Storage		85	65
	Wash Bay (Bridge/Wrecker)	Maintenance		NA	65
	Garage Bays (Bridge/Wrecker)	Maintenance		NA	65
	Lockable Storage (Bridge/Wrecker)	Storage		NA	65
	Impress Room (Equipment Maintenance)	Storage		NA	65
	Mechanics Office (Equipment Maintenance)	Office		75	72
	Parts Storage (Equipment Maintenance)	Storage		NA	65



**New York State Thruway Authority**

Space Code	Space Name + Description	Classification	System Type	Summer temperature °F	Winter Temperature °F
	Repair Bays (Equipment Maintenance)	Maintenance		NA	65
	Drum Storage (Equipment Maintenance)	Storage		NA	65
	Lockable Storage (Equipment Maintenance)	Storage		NA	65
	Rigger's Shop	Shop		NA	65
	Tool Repair	Shop		NA	65
	Welder's Shop	Shop/ Hazardous		NA	65
	Paint Storage	Storage/ Hazardous		NA	65
	Tool cleaning	Shop/ Hazardous			
	Dirty Locker Room	Locker Room		78	70
	Dirty Restroom	Restroom			
	Dirty Laundry Storage	Locker Room			
	Men's Changing Area and Shower	Locker Room		78	70
	Women's Changing Area and Shower	Locker Room		78	70
	Men's Locker Room	Locker Room		78	70
	Women's Locker Room	Locker Room		78	70
	Clean Men's Restroom	Restroom			
	Clean Women's Restroom	Restroom			
	Clean Laundry Storage	Locker Room		78	70
	Eyewash station	Locker Room		78	70
	Carpenter's Shop	Shop		95	55
	Electrician's Shop	Shop		95	55
	Electrician's Storage	Storage		95	55
	Facility Storage	Storage		95	55



# New York State Thruway Authority

Space Code	Space Name + Description	Classification	System Type	Summer temperature °F	Winter Temperature °F
	Women's Restroom	Restroom			
	Men's Locker Room	Locker Room		78	70
	Men's Shower	Locker Room			
	Men's Restroom	Restroom			
	Janitor's Closet	Restroom			
	Men's Accessible Restroom	Restroom			
	Women's Accessible Restroom	Restroom			
				95	55
				75	72

Note 1: \* denotes relative humidity 30% to 45%

Note 2: Space heating and cooling requirements shall be coordinated with New York State Executive Order 111: Green and Clean State Buildings and Vehicles Guidelines, set back temperatures when a space is unoccupied.

Abbreviations: VAV: variable air volume; DX: direct expansion