



CASHLESS TOLLING

DESIGN-BUILD PROJECT

TA 19-1, Contract No. D800002

Request for Proposals

Addendum #4

April 8, 2019

Modification to the Request for Proposals

CASHLESS TOLLING

Design-Build Project

TA 19-1, Contract No. D800002

Note to Proposers

Differences between the deleted pages and the revised pages have been identified as follows:

- Brackets have been inserted on the left-hand margin of the pages to indicate where changes have been made to the documents; and
- Text additions have been shown in underlined red font and text deletions have been shown in crossed out red font.

General Instructions

Delete Page 7 of the Instructions to Proposers, General Instructions, and substitute the attached revised Page 7.

Delete Pages A-7 through A-10 of the Instructions to Proposers, Appendix A, Project Information, and substitute the attached revised Pages A-7 through A-10. Please note, there are no tracked changes on pages A-9 and A-10 but the pages are included due to the shift of text resulting from the additions to Pages A-7 and A-8.

Delete Form FP(A) of the Instructions to Proposers, Appendix E, Forms, and substitute the attached revised Form FP(A).

Delete Pages 10 through 18 of the DB Contract Documents, Part 1, DB Agreement, and substitute the attached revised Pages 10 through 18. Please note, there are no tracked changes on Page 15 but the page is included due to the shift of text resulting from the additions to Pages 10 through 14.

Delete Pages 159 and 160 of the DB Contract Documents, Part 2, DB Section 100 General Provisions, and substitute the attached revised Pages 159 and 160.

Delete Pages 62, 66, 74, 114, 116, 157 through 159, 164, and 167 of the DB Contract Documents, Part 3, Project Requirements and substitute the attached revised Pages 62, 66, 74, 114, 116, 157 through 159, 164, and 167. Please note, there are no tracked changes on Pages 158 and 159 but the pages are included due to the shift of text resulting from the additions to Page 157.

Delete all Drawings in the DB Contract Documents, Part 6 – RFP Plans – Indicative/Concept Plans and replace with the attached revised Drawings.

Note to Design Build Proposers, the following changes have been made to Final RFP Part 7 – Engineering Data since Amendment #3 was posted on April 1 2019:

Part 7, Section 5 – Terminus Concept Plans: Revised Concept Plan for Ripley Terminus Location Concept Plan – 4/8/19

Part 7, Section 24 – Interchange 23 Traffic Signal Plans: Created new directory for Traffic Signal Plans at Interchange 23- 4/8/19

Delete the specifications for Item 645.4530--25 Dynamic Message Sign (DMS) Full Matrix, Front Access Led and Item 683.9805XX--25 Toll Facility Security System in the DB Contract Documents,

New York State Thruway Authority

Part 8 – Special Specifications and replace with the attached specifications for Item 645.4530--25 and Item 683.9805XX--25.

No other provision of the solicitation is otherwise changed or modified.

1.13 INSURANCE

Refer to Contract Document, Part 1, Article 14 ~~and Part 2, DB §107-27.3~~ for information regarding insurance requirements. Insurance certificates shall be submitted to the Authority prior to Contract execution.

1.14 QUALITY ASSURANCE / QUALITY CONTROL

The Contract Documents place a significant responsibility on the Design-Builder for the quality of the Project. The Design-Builder will be performing quality control and quality management activities under a definition of QC that encompasses traditional quality control and certain activities traditionally performed as quality assurance by the Authority, and the Authority's QA role may therefore exclude such activities. The Design-Builder will have responsibility for the quality of the Work conducted and materials utilized under the Contract. Proposers are to be thoroughly knowledgeable with the quality requirements of the Contract and the role and responsibility of the Design-Builder prior to preparing their Technical Proposals and Price Proposals, and if selected, execution of their responsibilities within the Project's Quality Control Program.

The Design-Builder will be required to plan, implement, and provide a Quality Control Plan for both design and construction.

The Design-Builder's Quality Control Plan must follow the requirements of 23 CFR Part 637 and the Contract Documents. In addition, the Design-Builder's Quality Control Plan shall follow the Design and Construction Quality Control Plan Format provided in the RFP. The Authority will review and approve the Design-Builder's Quality Control Plan to assure that it meets the guidelines and minimum requirements established by the Authority. The Design-Builder shall maintain ownership of the Plan, shall be fully responsible for its execution, and shall maintain sole responsibility for the quality of the Work. As part of the acceptance procedure, the Authority will conduct verification sampling and testing of material testing as well as conduct audits, in-depth inspections, and reviews of Work to ensure workmanship, and that in-process and completed Work, meets contract requirements.

The Design-Builder will be required to have, as part of the Design-Build Team, a Quality Manager who will be responsible for the oversight of the preparation of the Quality Control Plan, and direct supervision of the implementation of the Quality Control Plan, and for ensuring its compliance for both design and construction. This individual shall be a direct report to senior management of the Design-Builder, and will not directly report to the Design-Builder's Project Manager.

For design, the Quality Manager shall ensure that the design firm on the Design-Build Team implements the quality control procedures specified in the Design-Builder's Quality Control Plan for design activities.

For construction, the Design-Builder will be required to have, as part of the Design-Build Team, a Professional Engineering Firm to perform Construction Inspection (CIPEF), and a Materials Testing Firm or Laboratory to sample and test materials as specified in the Quality Control Plan and/or as required by the Project specifications. The CIPEF performing Construction Inspection and the Materials Testing Firm or Laboratory may be the same company or separate companies, but in either case, the CIPEF performing Construction Inspection and the Materials Testing Firm or Laboratory must be independent of the Designer(s), Constructor(s) and any of the Principal Participants or any party with an equity interest, that are included in the Proposer's proposed team. In addition, the CIPEF performing Construction Inspection and the Materials Testing Firm or Laboratory shall not be an equity participant on the Design-Build Team.

A6.0 CONFLICT OF INTEREST

It is prohibited to hire any person or organization that has a “conflict of interest”. Because of their prior work, the following firms have been identified as having conflicts of interest that prevent their consideration for the pending Project. Due to a conflict of interest based on services currently being provided that are related to this Project, Proposers may not include the services of the following firm(s):

- C.V. Associates NY; PE, LS, P.C.
- SJH Engineering, PC
- Popli, Architecture & Engineering, L.S., DPC
- Shumaker Consulting, Engineering and Land Surveying, PC
- WSP USA Inc.
- Kapsch
- Adesta
- Kuritas

Proposers utilizing firm(s) identified above will be disqualified from participating in this Project.

A7.0 M/WBE AND SDVOB PARTICIPATION GOALS

The overall M/WBE participation goal for the Contract is established at 20% of the total Contract price. The overall SDVOB participation goal for the Contract is established at 0.5% of the total Contract price.

A7.1 EEO GOALS

GOALS FOR EQUAL EMPLOYMENT OPPORTUNITY (EEO) PARTICIPATION

The Design-Builder shall follow the requirements of §102-11 *Equal Employment Opportunity Requirements*. The goals for minority and female participation, expressed in percentage terms for the Design-Builder’s aggregate workforce in each trade on all construction work in the covered area, which is the county or counties in which the work is located, are as follows:

<u>GOALS FOR PARTICIPATION OF MINORITIES</u>	
<u>COUNTY</u>	<u>%</u>
<u>Albany</u>	<u>3.2</u>
<u>Cayuga</u>	<u>2.5</u>
<u>Chautauqua</u>	<u>6.3</u>
<u>Columbia</u>	<u>2.6</u>
<u>Erie</u>	<u>7.7</u>
<u>Genesee</u>	<u>5.9</u>
<u>Greene</u>	<u>2.6</u>
<u>Herkimer</u>	<u>2.1</u>
<u>Madison</u>	<u>3.8</u>
<u>Monroe</u>	<u>5.3</u>
<u>Montgomery</u>	<u>3.2</u>
<u>Oneida</u>	<u>2.1</u>
<u>Onondaga</u>	<u>3.8</u>
<u>Ontario</u>	<u>5.3</u>

New York State Thruway Authority

<u>Orange</u>	<u>17.0</u>
<u>Rensselaer</u>	<u>3.2</u>
<u>Schenectady</u>	<u>3.2</u>
<u>Seneca</u>	<u>5.9</u>
<u>Ulster</u>	<u>17.0</u>

The goal for the participation of women is 6.9%.

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted). If the Contractor performs construction work outside of New York State, it shall apply the goals established for the covered area where the work is actually performed.

Goals for Minority and Women Participation by County — Non-Federal Aid

<u>County</u>	<u>EEO Minority Goal</u>	<u>EEO Woman Goal</u>
Albany	6.56	4.67
Cayuga	1.38	4.47
Chautauqua	3.47	4.83
Columbia	3.81	3.16
Erie	9.66	3.32
Genesee	5.47	5.18
Greene	2.88	4.09
Herkimer	1.00	4.22
Madison	1.52	4.52
Monroe	14.20	5.81
Montgomery	2.39	3.74
Oneida	3.75	3.98
Onondaga	8.27	5.36
Ontario	1.62	3.79
Orange	10.00	3.46
Rensselaer	3.46	3.01
Schenectady	6.05	2.85
Seneca	2.22	5.45
Ulster	5.93	4.29

A8.0 AUTHORITY'S DESIGNATED REPRESENTATIVE

The Authority's Designated Representative for this Procurement is:

James Chicoine and Michael Doyle
Attention: Cashless Tolling Design-Build Project
Office of Capital and Contracts Management
New York State Thruway Authority
200 Southern Blvd., 2nd Floor
Albany, New York 12209, USA

E-mail: CTDB@thruway.ny.gov

The above named person(s), as the Authority's Designated Representative for this procurement, shall be the Authority's point of contact and source of information for this procurement.

A9.0 ONE-ON-ONE MEETINGS

Prior to and/or after submission of Proposals, the Authority may conduct One-on-One meetings with Proposers as described below. If One-on-One meetings are held, they will be offered to each Proposer. The Authority reserves the right to disclose to all Proposers any issues raised during One-on-One meetings. However, the Authority will not disclose to other Proposers any information pertaining to an individual

Proposer's technical concepts, Proposal or ATCs. The Authority will hold One-on-One meetings on matters it deems appropriate.

A9.1 MEETINGS DURING PROPOSAL PERIOD

If the Authority decides that One-on-One meetings should be held, they will be held between the Authority and each Proposer. The period indicated in this ITP Appendix A for these meetings is subject to change. Specific meeting dates will be confirmed in advance of each meeting by the Authority to each Proposer's Representative.

At least five (5) business days prior to the first scheduled meeting each Proposer may submit suggested agenda items for each One-on-One meeting to the Authority's Designated Representative. The Authority will advise the Proposer of the location, final agenda, and the protocol for the meeting at least two (2) business days before the meeting. ATCs may be discussed at One-on-One meetings.

Each Proposer may request One-on-One meeting(s) with the Authority to discuss general concepts for potential ATCs or obtain preliminary feedback from the Authority, to be held prior to the ATC submittal deadline (see ITP Appendix A). Should a One-on-One meeting be scheduled with a Proposer, the Authority will offer the opportunity for a One-on-One meeting with the other Proposers. The Authority may also schedule One-on-One meetings with any Proposer that has submitted ATC(s), to allow the Authority to fully understand the ATC(s) and to request clarifications. At any meeting, the Authority may seek clarifications regarding previously submitted ATCs.

If a Proposer requests additional meetings, or if the Authority considers it desirable or necessary to schedule additional meetings, the Authority may, in its discretion, schedule any such additional meetings.

The Authority may, in its sole discretion, issue one or more Addenda to address any issues raised in the One-on-One meetings.

A9.2 POST-PROPOSAL MEETINGS

The Authority does not currently anticipate the need for post-Proposal discussions, but reserves the right to enter into discussions and request revised Proposals. If interviews or presentations occur, Proposers shall not modify their Proposals or make additional commitments regarding Proposals at such meetings. The Authority anticipates engaging in limited negotiations with the selected Proposer prior to Contract award regarding such matters as are deemed advisable for negotiations by the Authority, as permitted by 23 CFR Section 636.513. The selected Proposer shall have no right to open negotiations on any matter that has not been raised by the Authority. See ITP Section 5.3. Negotiations can delay award of the Contract and subsequently affect end dates which both parties should avoid.

A9.3 STATEMENTS AT MEETINGS

Nothing stated at any meeting will modify the ITP or any other part of the RFP unless it is incorporated in an Addendum issued pursuant to ITP Section 2.3.1 or, in the case of an ATC, approved in writing in accordance with ITP Section A11.1.

A10.0 PROPOSAL STIPEND

Subject to the requirements and limitations set forth in the Stipend Agreement, the Authority shall pay to the Stipend-Eligible Proposer, and the Stipend-Eligible Proposer agrees to accept as full compensation for its Work Product, an amount (the "Stipend Amount") equal to 50% of the Proposer's total Qualified Costs, as substantiated in accordance with Article 4 (D) & (E) of the Stipend Agreement equals the stipend amount, not to exceed the amount listed in Article 4 (H) of the Stipend Agreement. Overhead costs are eligible. For qualified costs see Appendix G, Abbreviations and Definitions. Relative to overhead costs, the engineering firms established and current overhead rates with the Authority and NYSDOT will be used. However should the engineering firms overhead rates not be current or not accepted by the Authority and/or NYSDOT the overhead rate will default to 125%. The Proposer's costs can include a 110% overhead rate.

The Proposer shall maintain written records substantiating all Qualified Costs in sufficient detail to permit a proper audit thereof. Such records shall be made available for audit or verification of Qualified Costs upon request of NYSTA at the time of this Agreement and for three years after final payment of the Stipend Amount is made. "Qualified Costs" shall comprise the direct costs and overhead costs that are allowable and reasonable, and incurred by the Proposer, the Proposer's team, or third-parties acting at the direction of the Proposer in the production of the Work Product. Examples of qualified costs (subject to limitations of any other contract stipulations such as limits on hourly rates or not to exceed Government travel rates) can include the following:

- Compensation of employee's time charges related to preparation of the Proposal;
- Cost of materials acquired, consumed, or expended related to preparation of the Proposal;
- Cost of equipment utilized related to preparation of the Proposal; and
- Travel expenses incurred related to preparation of the Proposal.

The overhead rate applied to the Stipend calculation shall be equal to the Proposer's current audited rate on file with the NYSTA. An overhead rate of 115% will be applied for firms with no current rate on file. Unallowable Proposer costs are described in CFR-2011 - title 48 – volume 1 - part 31 – subpart 31.6. The Proposer shall submit to NYSTA copies of all substantiating documentation of Qualified Costs concurrently with the submission of its invoice for the Stipend Amount, and at any other time upon NYSTA's request. Failure of the Proposer, the Proposer's team, or third-parties acting at the direction of the Proposer to maintain and retain sufficient records to allow audit or verification of Qualified Costs, or failure to allow NYSTA or its agents access to the same, shall constitute a waiver of the right to any payment of a Stipend, and any Stipend Amount paid to the Proposer under this Agreement shall be immediately returned to the NYSTA.

The proposed stipend amount is being increased to \$350,000.

A11.0 ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

The Authority has chosen to use the confidential ATC process set forth in this ITP Appendix A, Section A11.0 to allow innovation and flexibility to be incorporated into the Proposals and considered in making the selection decision, to avoid delays and potential conflicts in the design associated with deferring of technical concept reviews to the post-award period and, ultimately, to obtain the best value for the public.

The ATC process allows a Proposer to submit for pre-approval, on a confidential basis, proposed alternatives to the requirements of Contract Documents, Part 3 – Project Requirements, and design solutions included in the Contract Documents. The Authority will not approve any ATC that entails a deviation from the requirements of the as-issued Contract Documents unless the Authority determines, in its sole discretion, that the proposed end product based on the deviation is equal to or better than the end product absent the deviation.

Any ATC that has been approved may be included in the Proposal. If an ATC is conditionally approved, the Proposer must respond, accept, and meet the conditions set forth by the Authority by the date indicated in the ITP Appendix A, if the Proposer intends to use the ATC in their Proposal.

A11.1 SUBMITTAL AND REVIEW OF ATCS

A Proposer may submit ATCs for review to the Authority until the date identified in ITP Appendix A. All ATCs shall be submitted in writing, using Form ATC included in ITP Appendix E – Forms, to the Authority's Designated Representative at the e-mail address identified in ITP Appendix A, with a cover letter clearly identifying the submittal as a request for review of an ATC under this ITP. If the Proposer does not clearly designate its submittal as an ATC, the submission will not be treated as an ATC by the Authority.

FORM FP(A) - APPENDIX TO FORM OF PROPOSAL

1. Proposal Validity Period 120 days from the Price Proposal Due Date
2. Warranty Period: Per DB §104
3. Proposal Bond (Form PB) 5% of Proposal Amount
4. Performance Bond (Form PEB) 100% of Contract Amount
5. Payment Bond (Form PAB) 100% of Contract Amount
6. Design-Builder's minimum required insurance Per Contract Documents Part 1 DB Agreement Article 14 ~~and Part 2, DB § 107-27.3~~
7. Liquidated Damages Per Part 1 Design-Build Agreement Article 15 and Special Provision SP-6
8. The address of Authority's Designated Representative:

**James Chicoine and Michael Doyle
Attention: Cashless Tolling Design-Build Project
Office of Capital and Contracts Management
New York State Thruway Authority
200 Southern Blvd., 2nd Floor North
Albany New York 12209**

E-mail: CTDB@thruway.ny.gov

which are designated by the Authority or the Design-Builder from time to time during the course of the Contract pursuant to Paragraph 3 herein.

2. Any such notice shall be deemed to have been given either at the time of personal delivery or, in the case of expedited delivery service or certified or registered United States mail, as of the date of first attempted delivery at the address and in the manner provided herein, or in the case of facsimile transmission or email, upon receipt.

3. The parties may, from time to time, specify any new or different address in the United States as their address for purpose of receiving notice under this Agreement by giving fifteen (15) days written notice to the other party sent in accordance herewith. The parties agree to mutually designate individuals as their respective representatives for the purposes of receiving notices under this Agreement. Additional individuals may be designated in writing by the parties for purposes of implementation and administration/billing, resolving issues and problems and/or for dispute resolution.

ARTICLE 14. INSURANCE

ARTICLE 14.1 General Conditions

The Design-Builder shall procure and maintain insurance of the kinds and in the amounts specified herein, covering all Work under this Contract, whether performed by the Design-Builder or its Subcontractors, as specified in this Article 14. Except as otherwise expressly provided in Article 14.2, all such insurance shall be in place d prior to commencement of Work under this Contract, and maintained until this Contract is completed and the Authority has accepted all Work performed hereunder. Insurance covering the performance of any Work during the Warranty Period will be required pursuant to the terms of Article 14.4 until completed and the Authority has accepted such work governed by the Thruway Authority Standard Insurance Limits for Construction Contracts (TAP 525).

- 1) All insurance required by this Contract shall be obtained at the sole cost and expense of the Design-Builder.
- 2) All insurance required by this Contract shall be maintained with insurance carriers licensed, or authorized as excess or surplus lines, to do business in New York State, with an A.M. Best Company rating of "A-" or better, with a Financial Size Category of XII or higher and otherwise acceptable to the Authority. Notwithstanding the foregoing, nothing herein shall be construed to require the Authority to accept insurance places with a non-authorized carrier under any circumstances.
- 3) All insurance required by this Agreement shall be primary to any Authority insurance policy or Authority self-insurance program, which shall be excess and non-contributory.
- ~~3)4)~~ All insurance policies required by this Contract, with the exception of workers' compensation, disability benefits, railroad protective and professional liability, shall be endorsed to provide coverage to "the New York State Thruway Authority, State of New York, any municipality in which the work is being performed, any public benefit corporation, railroad, or public utility whose property or facilities are affected by the work, and any sub-contractors working for or on the project, and their agents or employees" with respect to any claim arising from the Design-Builder's Work under this agreement or as a result of the Design-Builder's activities. The endorsement shall be affected by endorsement of the applicable policy using ISO Additional Insured Endorsements CG 20 10 04 13 and CG20 37 04 13 or an equivalent.
- ~~4)5)~~ The Design-Builder shall require that all Subcontractors carry ~~Workers' Compensation, Disability Benefits and Commercial General Liability~~ insurances with the same limits and provisions set forth in accordance with Article 14.32 herein. ~~The limits under the Commercial~~

~~General Liability policy shall be commensurate with the work performed by the Subcontractor.~~ The Design-Builder ~~M~~may at their discretion impose additional insurance requirements on the Subcontractor as applicable. Certificates of insurance showing the Subcontractor's compliance with the insurance requirements shall be collected and maintained by the Design-Builder and will be furnished to the Authority upon request.

~~5)6)~~ The Design-Builder shall furnish the Authority with certificate(s) of insurance complying with the requirements set forth in Article 14.1(16) below. The Design-Builder shall furnish the Authority with a sample copy of each endorsement required herein within 10 days following execution of this Agreement and a copy of each such endorsement within 10 days of issuance thereof. For work to be performed within New York State, proof of Workers' Compensation and Disability Benefits Insurance shall be submitted on the appropriate forms as listed in Article 14.2 (H.) and (I.) below. At least seven days prior to the expiration of any policy required by this Contract, the Design-Builder shall promptly deliver to the Authority a certificate or certificates of insurance with respect to each renewal of such policy or policies.

~~6)7)~~ ~~With the exceptions of Workers' Compensation and Disability Benefits policies; a~~All policies, by specific endorsement, shall provide for written notice to the Authority no less than 30 days prior to the suspension, voiding, cancellation, material change or nonrenewal of any insurance policies referred to therein, except for non-payment of premium, in which case 10 days' notice shall be required. Any such notice shall be ~~delivered~~sent by e-mail to: Insurancecompliance@thruway.ny.gov, attention Insurance Compliance Supervisor. Only in the event that such written notice cannot be sent via e-mail, notice shall be sent to: Insurance Compliance Section~~Section~~New York State Thruway Authority, Office of Investments and Asset Management, Insurance Compliance Section, New York State Thruway Authority, P.O. Box 189, Albany, New York 12201-0189.

~~7)8)~~ If insurance policies utilized contain deductibles, they must be declared as such with applicable levels on the Certificate(s) of Insurance and the Authority Supplemental Insurance Certificate. Any such deductibles shall be commercially reasonable for companies similar to the Design-Builder with respect to net asset value and scope of business. Deductibles shall not be applied against the Authority. Insurance policies with deductibles in excess of \$1,000,000 will require review and approval by the Authority. Additional security or other requirements may be imposed at the sole discretion of the Authority. If, at any time during the term of the Contract, the Authority, in its sole discretion, determines that the Design-Builder is not paying any of its deductibles or self-insured retentions, the Authority may require the Design-Builder to provide collateral securing its obligation to pay all or any part of the deductible or self-insured retention on any or all policies of insurance or, if Design-Builder fails to provide such collateral, to withhold from payments due the Design-Builder such amount as the Authority deems appropriate to cover such deductibles or self-insured retentions.

~~8)9)~~ Insurance policies with Self-Insured Retentions (SIRs) of up to \$1,000,000 will generally be accepted when the SIR program is administered by a third party administrator and a complete description of the program is provided to the Authority. SIR programs in excess of \$1,000,000 must receive prior approval and may be required to meet additional security requirements. The Authority, at its sole discretion, reserves the right to require the Design-Builder to provide additional collateral or to reject the use of an SIR by the Design-Builder. The Design-Builder will be solely responsible for all claims expenses and loss payments within the retention limit.

~~9)10)~~ The Design-Builder shall provide certified copies of all declarations pages or of the insurance policies themselves, upon request by the Authority, within 20 days of such request.

- ~~10)11)~~ Failure of the Authority to demand such certificates, policies, endorsements, or other evidence of full compliance with the Authority's insurance requirements, or failure of the Authority to identify a deficiency from evidence that is provided, shall not constitute or be construed as a waiver of the Design-Builder's obligation to maintain such insurance.
- ~~11)12)~~ At least two weeks prior to the expiration of any policy required by this Contract, evidence of renewal or replacement policies of insurance with terms no less favorable to the Authority than the expiring policies shall be delivered to the Authority in the manner required for service of notice in Article 14.1(~~57~~) above.
- ~~12)13)~~ If, at any time during the term of this Contract, the coverage provisions and limits of the policies required herein do not meet the provisions and limits set forth in the Agreement or proof thereof is not provided to the Authority, the Design-Builder's right to proceed with the Work shall immediately cease. The Design-Builder shall not resume Work on the Project until authorized to do so by the Authority. Any delay, time lost, or additional cost incurred as a result of the Design-Builder not having insurance required by the Contract or not providing proof of same in a form acceptable to the Authority shall not give rise to a delay claim or any other claim against the Authority. Should the Design-Builder fail to provide or maintain any insurance required by this Contract, or fail to provide proof thereof to the Authority in accordance with this Contract, the Authority may, in its sole discretion: (a) withhold further Contract payments; (b) treat such failure as a breach or default of the Contract for which remedies include the right to terminate the Contract; and/or (c) after providing written notice to the Design-Builder, require the Surety, if any, to secure appropriate coverage; ~~and/or (d) purchase insurance complying with the Contract and reduce the Contract Price by the amount paid for such insurance plus any administrative costs incurred by the Authority in obtaining the insurance.~~
- ~~13)14)~~ By requiring insurance, the Authority does not represent that certain coverages and limits will necessarily be adequate to protect the Design-Builder, and such coverages and limits shall not be deemed a limitation on the Design-Builder's liability under the indemnities granted to the Authority under any provision of this Contract.
- ~~14)15)~~ The Design-Builder and its Subcontractors shall waive all rights against the Authority and its agents, officers, directors, and employees, for the recovery of damages to the extent these damages are covered by the CGL, Business Auto, Excess, ~~Marine Protection & Indemnity~~, and Environmental policies, as required.
- ~~15)16)~~ The Design-Builder shall provide a copy of these insurance requirements to its insurance producer(s) and insurance carrier(s).
- ~~16)17)~~ Each certificate of insurance shall state the identity of all carriers, the identity of the named insureds, the type of coverage, the description of policy limits, the deductibles, the other essential policy terms, and a statement of non-cancellation, and shall:
- Be on ACORD Form 25, accompanied by the Authority Supplemental Insurance Certificate (Form TA-W51343-9); for each insurance carrier involved.
 - Be signed by an authorized representative of the insurance carrier or producer.
 - Disclose any deductible, self-insured retention, aggregate limit or any exclusion to the policy that materially changes the coverage required by the Agreement.
 - Specify the Additional Insureds and Named Insureds as required herein.
 - Refer to this Contract by number on the face of the certificate, and
 - Expressly reference the inclusion of all required endorsements.
- ~~17)18)~~ The following requirements apply to policies required to be provided by the Design-Builder:

- a. Policies required under Articles 14.2(A), (B), (~~FG~~), (~~H~~) and (J) shall name the Authority, ~~the New York~~ State and their respective employees, agents, and consultants, any municipality in which the Work is being performed, and any public benefit corporation, railroad or public utility whose property or facilities are affected by the Work as additional insureds. The endorsement shall be effected by endorsement of the applicable policy using ISO Additional Insured Endorsements CG 20 10 04 13 and CG20 37 04 13 or an equivalent, under the CGL and Umbrella policies, as required form CG 20 10 11 85 or a form(s) that provides equivalent coverage.
- b. Policies required under Articles 14.2(A), (B), (F), (G), (~~H~~) and (J) shall include a waiver of any right of subrogation against the additional insureds and their respective members, directors, officers, employees, agents, and consultants. The Design-Builder waives any right of action it and/or its insurance carrier might have against the Authority (including its employees, Board members or agents) for any loss, whether or not such loss is insured.
- c. Policies required under Article 14.2, except Professional Liability/Errors & Omissions, shall provide coverage on an “occurrence” basis, not a “claims made” basis.

ARTICLE 14.2 Coverages and Limits – Design-Builder:

The specific types and amounts of insurance that the Design-Builder must provide pursuant to this Contract are as follows:

- A. Commercial General Liability Insurance --- The Design-Builder shall maintain through a combination of Commercial General Liability (CGL) and Commercial Umbrella Liability insurance, with no less than the following limits and coverages:

Each Occurrence Limit:	\$ 25 50,000,000
General Aggregate:	\$ 25 50,000,000
Products/Completed Operations Aggregate:	\$ 25 50,000,000
Personal/Advertising Injury Liability:	\$ 25 ,000,000
Fire Damage Legal Liability:	\$100,000
Medical Expense:	\$5,000

CGL Insurance shall cover liability arising from premises, operations, independent contractors, products/completed operations, personal injury, advertising injury, and contractual liability. Such coverage shall be written on ISO Form CG 00 01 01 96 or a policy form providing equivalent coverage.

Where Work will be performed by unregistered off-road equipment, the Design-Builder shall provide documentation of a blanket Pollution Liability policy, or an endorsement to cover short- term pollution events, using ISO form CG 04 33 10 01 or its equivalent.

Explosion, Collapse and Underground Hazards coverage (XCU) is required.

If the activity involves construction or demolition within 50 feet of railroad stations, yards, or tracks, the CGL policy must be endorsed to delete the exclusion of coverage for work done within 50 feet of railroad property.

The General Aggregate shall apply separately to the subject matter (Project) of the Contract, and the Design-Builder shall provide an appropriate Project Endorsement, using ~~ISO Form CG 25 03 11 85 or its equivalent~~ ISO Additional Insured Endorsements CG 20 10 04 13 and CG20 37 04 13 or an equivalent, to the Authority for this purpose.

- B. Commercial Umbrella and/or Excess Liability Insurance --- When the limits of the CGL and Auto policies procured are insufficient to meet the limits specified, the Design-Builder shall procure and maintain Commercial Umbrella and/or Excess Liability policies with limits in excess of the primary; provided, however, that the total amount of insurance coverage is at least equal to the requirements set forth above. Such policies shall follow the same form as the primary policies. Any insurance maintained by the Authority or any additional insured shall be considered excess of and shall not contribute to any other insurance procured and maintained by the Design-Builder including primary, umbrella and excess liability regardless of the “other insurance” clause contained in either parties policy.
- C. Owners/Contractors Protective Liability Insurance --- The Design-Builder shall obtain a separate Owners/Contractors Protective Liability (“OCP”) Policy written on Form CG 00 09 12 07, Owners and Contractors Protective Liability Coverage form – Coverage for Operations of the Designated Contractor.

The policy shall be written on a project basis for the benefit of the Authority, its officers, agents, and employees, and the People of the State of New York, with respect to all operations under this Agreement by the Design-Builder or its subcontractors, including in such coverage any omissions and supervisory acts of the Authority, its officers, agents, and employees.

The Authority shall be the named insured in the OCP Policy, which shall be promptly furnished to the Authority. OCP policy limits shall be no less than: **\$2,000,000** per occurrence/**\$2,000,000** aggregate.

- D. Builders’ Risk Insurance --- The Design-Builder shall provide a Builders’ Risk Insurance policy covering all risks in completed value form. Such policy shall cover the total value of the work performed, as well as the value of any equipment, supplies, and/or material for the Project that may be _____in storage (on or off the site) or in transit. The policy shall cover the cost of removing debris, including _____demolition as may be legally necessary by the operation of any law, ordinance or regulation, and for loss or damage to any owned, borrowed, leased or rented capital equipment, tools, including tools of their agents and employees, staging towers and forms, and property of ~~the New York~~ State held in their care, _____custody and/or control. Such policy shall name as insureds the Authority, and the Design-Builder. The Builders’ Risk policy shall contain endorsements that provide for the following:

- 1) The Authority and the Design-Builder shall be named as loss payee for the Work in order of precedence as their interest may appear;
- 2) In the event the loss occurs at an occupied facility, the policy shall permit occupancy without the consent of the Insurance Company; and
- 3) In the event that the insurance policy has been issued by a mutual insurance company, the following language shall be included: the “Authority is not liable for any premium or assessment under this policy of insurance. The First Named Insured is solely liable therefore.”

- E. Professional Liability/Errors and Omissions --- The Design-Builder shall maintain Professional Liability or Errors and Omission Insurance with coverage limits of no less than **\$5,000,000**. *(Applicable to professional services requiring the signature, stamp, or certification of a licensed professional, including, without limitation, erection plans, demolition plans, containment plans, coffer dams, and temporary sheeting-).* The Professional and any professional sub-consultant retained by the Professional to work on the Project shall procure and maintain during and for a period of 3 years after completion of this Project, Professional Liability Insurance in the required amount issued to and

covering damage for liability imposed on the Professional by contract or law arising out of any negligent act, error, or omission in the rendering of or failure to render professional services required. The professional liability insurance may be issued on a claims-made policy form, in which case the Professional shall purchase at its sole expense, with extended Discovery Clause coverage of up to 3 years after work is completed if coverage is cancelled or not renewed.

If applicable, the Professional shall provide coverage of the Professional's negligent act, error or omission in rendering or failing to render professional services required arising out of specifications, installation, modification, abatement, replacement or approval of products, materials or processes containing pollutants, and the failure to advise of or detect the existence or the proportions of pollutants.

F. Railroad Protective Liability Insurance --- In the event that any work is to be performed on or within 50 ft. of railroad property or railroad right-of-way, the Design-Builder shall provide and maintain a Railroad Protective Liability ("RRP") Policy in the amounts required by the respective railroad.

- 1) The policy must name the railroad as the named insured. No additional insureds will be listed on the policy (see requirements for the deletion of the 50' Railroad Exclusion on the Commercial General Liability policy).
- 2) Evidence of Railroad Protective Liability Insurance must be provided on the ACORD 25 insurance certificate form, a detailed Binder pending issuance of the policy, or on an ISO-RIMA or equivalent form approved by the railroad and meet any other requirements as specified by the railroad and/or the Authority.
- 3) Definition of "physical damage to property" must be amended to mean direct and accidental loss of or damage to *"all property of any Named Insured and all property in any Named Insured's care, custody or control"*.

G. Business Auto Liability Insurance --- The Design-Builder shall maintain Business Automobile Liability coverage, with no less than a **\$5,000,000** Combined Single Limit, which shall cover liability arising out of the Design-Builder's use of any motor vehicle, whether owned, leased, hired, or non-owned.

If the Contract involves removing hazardous waste from the Project site, or the Project involves environmental exposures, pollution liability coverage equivalent to that provided under the ISO Broadened Pollution Liability Coverage for Covered Autos endorsement (ISO Form CA 99 48 03 06) shall be provided, and the Motor Carrier Act endorsement (MCS 90) shall be attached.

H. Workers' Compensation Insurance --- For work to be performed in New York State, the Design-Builder shall provide and maintain coverage during the life of this Agreement for the benefit of such employees as are required to be covered by the Workers' Compensation Law.

Evidence of Workers' Compensation coverage must be provided on one of the following forms specified by the Commissioner of the Workers' Compensation Board:

- 1) C-105.2 – Certificate of Workers' Compensation Insurance.
- 2) U-26.3 – Certificate of Workers' Compensation Insurance from the State Insurance Fund.
- 3) GSI-105/SI-12 – Certificate of Workers' Compensation Self Insurance.

All forms are valid for 1 year from the date the form is signed/stamped, or until policy expiration, whichever is earlier.

- I. NYS Disability Benefits Insurance --- For work to be performed in ~~the New York~~ State, the Design-Builder shall provide and maintain coverage during the life of this Agreement for the benefit of such employees as are required to be covered by the Disability Benefits Law.

Evidence of Disability Benefits coverage must be provided on one of the following forms specified by the Commissioner of the Workers' Compensation Board:

~~18)1)~~ -DB-120.1 – Certificate of Insurance Coverage under the NYS Disability Benefits Law.

~~19)2)~~ -DB-155 – Certificate of Disability Self Insurance.

~~20)3)~~ -CE-200 – Certificate of Attestation of Exemption. (Note: This form will only be accepted as evidence of an exemption from providing Disability Benefits.)

- J. Environmental Liability --- If the work involves abatement, repair, replacement, enclosure, encapsulation and/or disposal of any pollutants, which includes but are not limited to, petroleum, petroleum product, hazardous material or substance including asbestos, lead and those defined by applicable State and federal laws and regulations, the Design-Builder shall procure, or otherwise obtain and maintain in full force and effect throughout the term of a contract, and for 2 years after completion hereof, pollution legal liability insurance with limits of not less than **\$5,000,000**, providing coverage for bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. Such policy shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants or in the investigation, settlement or defense of any claim, suit, or proceedings against the Authority arising from the Design-Builder's work. The Authority shall be named as additional insured and coverage shall be primary.

ARTICLE 14.3 Coverages and Limits – Sub-Contractor~~Lack of Insurance~~

~~If in any instance the Design-Builder has not performed its obligations respecting insurance coverage set forth in this Agreement or is unable to enforce and collect any such insurance for failure to assert claims in accordance with the terms of the insurance policies or to prosecute claims diligently, then for purposes of determining the Design-Builder's liability and the limits thereon or determining reductions in compensation due from the Authority to the Design-Builder on account of available insurance, the Design-Builder shall be treated as though it elected to self-insure up to the full amount of insurance coverage which would have been available had the Design-Builder performed such obligations and such failure had not occurred. If the Design-Builder is deemed to self-insure a claim or loss under this Article 14.3, then the Design-Builder's waiver of subrogation under Article 14.1(17)(b) shall apply as though it carried the required insurance.~~ Sub-Contractor shall provide insurance containing the same provisions and format as required of the Design-Builder as specified in Articles 14.1 and 14.2. The specific types and amounts of insurance that the Design-Builder's sub-contractor(s) must provide pursuant to this Contract are as follows:

SUB-CONTRACTOR INSURANCE REQUIREMENTS						
<u>Insurance Type</u>	<u>Contract Value (Millions)</u>					
	<u>\$0-\$1</u>	<u>\$1-\$10</u>	<u>\$10-\$25</u>	<u>\$25-\$50</u>	<u>\$50-\$100</u>	<u>\$100-\$250</u>
<u>Commercial General Liability Insurance (CGLI)</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>	<u>\$2million per occurrence; \$2 million aggregate</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>

<u>Commercial Auto</u>	<u>\$1 million Combined Single limit</u>	<u>\$1 million Combined Single limit</u>	<u>\$2 million Combined Single limit</u>	<u>\$2 million Combined Single limit</u>	<u>\$5 million Combined Single limit</u>	<u>\$5 million Combined Single limit</u>
<u>Umbrella / Excess Liability</u>	<u>None required</u>	<u>At least \$5 million when combined with CGLI</u>	<u>At least \$10 million when combined with CGLI</u>	<u>At least \$10 million when combined with CGLI</u>	<u>At least \$10 million when combined with CGLI</u>	<u>At least \$25 million When combined with CGLI</u>
<u>Professional Liability / Errors & Omissions</u>	<u>\$2 Million</u>	<u>\$2 Million</u>	<u>\$2 million</u>	<u>\$5 million</u>	<u>\$5 million</u>	<u>\$5 million</u>
<u>Environmental Liability (1)</u>	<u>\$1 Million</u>	<u>\$1 Million</u>	<u>\$2 Million</u>	<u>\$3 Million</u>	<u>\$3 Million</u>	<u>\$5 Million</u>
<u>Workers Compensation and Disability Benefits</u>	<u>As required by Law</u>	<u>As required by Law</u>	<u>As required by Law</u>	<u>As required by Law</u>	<u>As required by Law</u>	<u>As required by Law</u>

Notes:

(1.) Additional coverage may be required at the Authority’s discretion.

ARTICLE 14.4 Coverages and Limits – Warranty Period Work

Design-Builder or their designee shall provide insurance containing the same provisions and format as required of the Design-Builder as specified in Articles 14.1 and 14.2. The specific types and amounts of insurance that the Design-Builder or their designee must provide on a per site basis are as follows:

<u>WARRANTY PERIOD INSURANCE REQUIREMENTS</u>	
<u>Insurance Type</u>	<u>Limits</u>
<u>Commercial General Liability Insurance (CGLI)</u>	<u>\$2 million per occurrence; \$2 million aggregate</u>
<u>Commercial Auto</u>	<u>\$2 million Combined Single limit</u>
<u>Umbrella / Excess Liability</u>	<u>At least \$5 million when combined with CGLI</u>
<u>Owners/Contractors Protective Liability (“OCP”)</u>	<u>\$1 million per occurrence; \$2 million aggregate</u>
<u>Professional Liability / Errors & Omissions</u>	<u>\$2 million</u>
<u>Environmental Liability (1)</u>	<u>\$1 million</u>
<u>Railroad Protective Liability (“RRP”)</u>	<u>As required by the respective Railroad</u>

Workers Compensation and
Disability Benefits

As required by Law

Notes:

(1.) Additional coverage may be required at the Authority's discretion.

ARTICLE 15 LIQUIDATED DAMAGES

TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT, AND IT IS IMPORTANT THAT THE WORK BE PURSUED VIGOROUSLY TO COMPLETION. THE PUBLIC IS SUBJECT TO DETRIMENT AND INCONVENIENCE WHEN FULL USE OF INFRASTRUCTURE CANNOT BE MADE BECAUSE OF DELAY IN COMPLETION OF THE PROJECT OR PORTION THEREOF, OR WHEN CLOSURES OCCUR. THE AUTHORITY IS SUBJECT TO LOSS OF TOLL REVENUES AND/OR ADDITIONAL ADMINISTRATIVE COSTS FOR MAINTENANCE, ENGINEERING, QUALITY ASSURANCE OVERSIGHT AND POSSIBLY INSPECTION WHEN (A) COMPLETION OF THE PROJECT OR PORTION THEREOF IS DELAYED, (B) CLOSURES OCCUR OR (C) THE WORK OTHERWISE INTERFERES WITH THE AUTHORITY'S ABILITY TO COLLECT CASH OR ELECTRONIC TOLLS.

Should the Design-Builder fail to complete the Work within the time frame set forth in Article 2 of the Agreement, or as described in a subsequent Order(s) on Contract, the Authority may assess liquidated damages for each calendar day, or any portion thereof, that any work remains uncompleted by the AETC Completion Date and/or Project Completion Date.

Subject to the limitations specified in this Article 15, liquidated damages for delay in completion of the Work and achievement of interim milestones shall be assessed at the following rates:

- 1) \$125,000 per day for failure to achieve AETC Completion by the AETC Completion Date.
- 2) \$20,000 per day for failure to achieve Project Completion by **August 4, 2021**.

Design-Builder acknowledges and agrees that the liquidated damages are intended to constitute compensation solely for Design-Builder's failure to meet the deadline and obligations described in Article 2 of this Agreement, and shall not excuse Design-Builder from liability for any other breach of Contract requirements, including any failure of the Work to conform to applicable requirements. Due account shall be taken of any adjustment of the Contract Time for completion of the Work as provided for elsewhere in the Contract Documents. It is understood and agreed by Design-Builder that liquidated damages payable in accordance with this Article 15 are in the nature of liquidated damages and not a penalty and that such sums are reasonable under the circumstances existing as of the date of execution and delivery of this Contract. Additional terms and conditions with respect to liquidated damages payable by Design-Builder are set forth in *Part 2, §108-5 - Liquidated Damages*.

The fact that the Authority has agreed to accept liquidated damages as compensation for its damages associated with any delay in meeting the Contract Deadlines shall not preclude Authority from exercising its other rights and remedies respecting the delay other than the right to collect damages due to the delay.

If the Design-Builder shall abandon performance of the Work before achieving AETC Completion and/or Project Completion, the Contractor agrees to pay to the Authority for loss of beneficial use of the Work of the Contract an amount specified in the Contract, not as a penalty, but as liquidated damages, for each and every calendar day after both the date of abandonment and the date specified for AETC Completion and/or Project Completion that the Work has not achieved AETC Completion and/or Project Completion. The obligation of the Design-Builder to pay liquidated damages as provided in this paragraph shall survive the termination of the Contract.

If the Authority does not terminate the Contract, the damages shall consist of liquidated damages, if any, until the AETC Completion Date and/or Project Completion Date.

New York State Thruway Authority

The Design-Builder has the obligation, at its own expense, for the defense of any action or proceeding which may be brought against the parties specified in this Section. This obligation shall include the cost of attorney fees, disbursements, costs, and other expenses incurred in connection with such action or proceeding. The provisions of this section shall survive the expiration or termination of the Contract.

Without limiting the generality of the foregoing, Design-Builder’s obligation to indemnify, save harmless and release the Persons identified in this DB §107-27.1 specifically includes any suits, claims, actions, damages, and costs of every name and description resulting from any spill or release or threatened spill or release of a Hazardous Material (i) attributable to the negligence, willful misconduct or breach of contract by Design-Builder, its Subcontractors or agents, or (ii) which was brought onto the Site by Design-Builder or any of its Subcontractors or agents.

Notwithstanding the foregoing, the Authority reserves the right to join such action, at its sole expense, when it determines there is an issue involving a significant public interest.

Such obligation does not extend to those suits, actions, damages, and costs of every name which arise out of the sole negligence of the Authority, the State of New York, any municipality in which the Work is being performed, any public benefit corporation, railroad, or public utility whose property or facilities are affected by the Work of the Project, or any Authority consultants or contractors working relative to the Project, their agents, or their employees.

DB 107-27.2 CERCLA Agreement

Without limiting their generality, the indemnities set forth in this DB §107-27 are intended to operate as agreements pursuant to Section 107(e) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U. S. C. Section 9607(e), to insure, protect, hold harmless and indemnify the indemnified parties identified herein.

DB 107-27.3 Insurance Requirements

~~Insurance terms, conditions, and requirements are set forth in Article 17 of Part 1—DB Agreement, and apply to the project. The requirements set forth in Article 17 are based on Table 107-1, Insurance Requirements for Design-Build Contracts, below. In addition to the types of insurance shown in Table 107-1, the Design-Builder shall be required to maintain Workers Compensation and Disability Insurance, and Design-Builders Risks insurance, in accordance with Article 17.~~

TABLE 107-1 INSURANCE FOR DESIGN-BUILD CONTRACTS						
Insurance Type	Contract Value (Millions)					
	\$0-\$10	\$10-\$25	\$25-\$50	\$50-\$100	\$100-\$250	Over \$250
Commercial General Liability Insurance (CGLI)	\$1 million per occurrence; \$2 million aggregate	\$1.5 million per occurrence; \$3 million aggregate	\$2 million per occurrence; \$4 million aggregate	\$3 million per occurrence; \$6 million aggregate	\$5 million per occurrence; \$10 million aggregate	\$5 million per occurrence; \$10 million aggregate
Commercial Auto	\$1 million per accident	\$1 million per accident	\$1 million per accident	\$1 million per accident	\$1 million per accident	\$1 million per accident
Umbrella / Excess Liability	None required	None required	At least \$5 million when	At least \$10 million when	At least \$25 million when	At least \$50 million when

New York State Thruway Authority

			combined with the CGLI	combined with the CGLI	combined with the CGLI	combined with the CGLI
Special Protective & Highway Liability Policy	\$1 million per occurrence /aggregate	\$2 million per occurrence /aggregate	\$2 million per occurrence; \$4 million aggregate	\$3 million per occurrence; \$6 million aggregate	\$5 million per occurrence; \$10 million aggregate	\$5 million per occurrence; \$10 million aggregate
Professional Liability / Errors & Omissions¹	\$1 million per occurrence; \$1 million aggregate	\$2 million per occurrence; \$2 million aggregate	\$3 million per occurrence; \$3 million aggregate	\$4 million per occurrence; \$4 million aggregate	\$5 million per occurrence; \$5 million aggregate	\$10 million per occurrence; \$10 million aggregate
Railroad Protective²	\$1 million per occurrence /aggregate	\$1 million per occurrence; \$2 million aggregate	\$2 million per occurrence; \$4 million aggregate	\$2 million per occurrence; \$5 million aggregate	\$2 million per occurrence; \$6 million aggregate	\$2 million per occurrence; \$6 million aggregate
Builders' Risks (See Note 3)	Not Required	\$1 million (Deductible \$25,000)	\$2.5 million (Deductible \$50,000)	\$5 million (Deductible \$100,000)	\$10 million (Deductible \$200,000)	\$25 million (Deductible \$500,000)
Marine Protective	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3
Pollution Legal Liability	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3

Notes:

~~1) Professional Liability / Errors & Omissions: The amounts set forth in Table 107-1 are for projects where there is a notable design element, i.e. a difficult bridge, etc. The actual amounts required in Part 1, DB Agreement, Article 17, may be less.~~

~~2) Railroad Protective: RR Protective insurance should only apply when there is work around railroad facilities.~~

~~3) Builders' Risks; Marine Protective; Pollution Legal Liability:~~

~~None of these insurance types are required in standard contracts. One or more of these types may be included in Part 1, DB Agreement, Article 17, as deemed necessary by the Authority in accordance with the following guidelines.~~

- ~~• Builders' Risks insurance will be included if a notable structure, such as a bridge or a building, is included in the Project.~~
- ~~• Marine Protective Insurance will be included if there is to be construction from vessels, or there is a risk of damage to wharfs, bridges, vessels, etc.~~
- ~~• Pollution Legal Liability insurance will be included if there are considerable hazardous materials on site.~~

12.2 STANDARDS

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

12.3 REQUIREMENTS

12.3.1 Design Requirements

The Design-Builder shall develop a signing and pavement marking plan and a Traffic Signal Plan (if applicable) for the Project sites that shall:

- A) Provide for all components as called for in this Section 12;
- B) Encompass the placement of new signs, the removal of no longer applicable signs, and signage transition plans as AETC is activated to when the Toll Booths are removed. This applies to both the Interchange(s), Mainline Gantry locations, the Terminus location(s), and the ORT locations work areas, as well as the special exits of Exit 16, Exit 35 and Exit 17 (Newburgh)
- C) Locate signs in accordance with the MUTCD and the NYS supplement;
- D) Provide signs with high reflectivity with Type XI sheeting such as to not warrant sign lighting;
- E) Provide and Erect mainline mile marker posts consistent with Authority practice, spaced every 0.10 mile, and the Thruway shall supply the mile marker signs;
- F) Overhead Sign Structures on the Thruway Mainline shall not be 800 ft. behind/after the Mainline Gantry, as the Gantry will obstruct the sign panel visibility if within those limits. In addition, the Mainline Gantry following an Overhead Sign Structure shall not be within 100 ft. of the Overhead Structure.
- G) Permanent Overhead Sign Structures on any of ORT Exit Site locations shall not be 150 ft. before/after the Mini Gantry as the Mini Gantry will obstruct the sign panel visibility if within those limits.

The Design-Builder shall not attach signs to corridor overhead bridges 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 are 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:

- H) Accurate sign locations;
- I) Sign panel sizes and legends;
- J) Types of sign supports.

than Authority, and non-standard signs owned by private entities but placed within Authority right-of-way, with the acceptance of the Authority, shall be removed, stored and reinstalled as required.

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

12.3.3.2 Pavement Markings

Pavement markings shall be uniform in type, color, dimensions, location, and reflectivity and shall meet the Thruway Standards and Specifications.

The Design-Builder shall be responsible for the design of all temporary and permanent pavement markings for this Project. Permanent pavement markings for the 5 Terminus Locations and all Mainline Gantry Locations for the new asphalt placed shall use the Thruway's triple drop pavement marking system, specification Item Number 685.17XX-25. For all ORT Sites and Interchange locations, permanent pavement markings on new asphalt placements shall be epoxy pavement markings.

At the ORT Exit Sites, the Design-Builder shall provide solid continuous pavement markings (white and yellow) under the Mini-Gantries (64 feet), for the purposes of preventing vehicles crossing lanes while under the Mini-Gantries to better collect information to reinforce surety of proper toll collection.

All linear roadway and cross hatching pavement markings shall be installed in accordance with the Authority's Specifications.

12.3.3.3 ~~Overhead~~Ground Mounted Sign Structures

All ground mounted sign supports shall include breakaway devices, unless protected by concrete barrier.

12.3.3.4 Traffic Signals

Provisions listed below shall apply to the signalized intersection at Interchange 23 constructed as part of this project.

Infrastructure shall be provided to facilitate the addition of traffic signal heads for dedicated protected left turn phases (including red, yellow and green left turn arrow displays) for any signalized intersection approach with or without dedicated left turn lanes.

Infrastructure shall be provided to facilitate the addition of protected left turn phases (including future heads for green left turn arrow displays) for any signalized intersection approach without a dedicated left turn lane.

Loop detectors shall be installed beneath the top course of any dedicated left turn lane at the signalized intersection.

The Design-Builder will be responsible for maintaining the existing signal until the new signal is activated.

Traffic signal activation shall be done by NYS Traffic Signal Personnel only. The Design-Builder shall pay a liquidated damages charge of \$10,000 if the traffic signal is activated (including

SECTION 15 WORK ZONE TRAFFIC CONTROL

15.1 SCOPE

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

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

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

As a general rule, when work on the Thruway system is ongoing, the Design-Builder is allowed to reduce the posted speed limit by 10 mph for the safety of the workers and travelers as travelway surfaces or adjacent areas are under construction.

15.2 STANDARDS

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

15.3 REQUIREMENTS

15.3.1 Work Zone Traffic Control at Gantries

The Design-Builder is required to follow the Standard Sheets found on-line at the Thruway Authority website for each Division. These restrictions listed by time of day and locations on the Thruway Mainline are based on volumes of traffic and shall not be violated. Gantry erection (lifting operations) on the Mainline and at the ORT sites is the only exception for violations of traffic lane restrictions as shown on the Thruway Standard Sheets. For Gantry erection, the Design-Builder shall station portable Variable Message Sign (VMS) to provide advance notice to travelers one week prior to short term closure(s). The placement of the VMS boards shall remain in place (not necessarily activated) until 24 hours after Gantry erection. The number of VMS boards to be used at each Gantry location is two per direction for which the Gantry erection impacts. The placement of the VMS boards shall be coordinated and approved by the Authority, two (2) weeks prior to placement and shall be placed so traffic can opt to use an alternate route outside the Thruway System.

In addition, the Design-Builder shall work with the Authority on a press release to be issued by the Authority one week prior to the short-term closure. The Design-Builder shall submit a draft to the Authority 10 days prior to the intended closure. Any delay in implementing the short-term closure will delay the adjusted closure date by a minimum of three (3) days so follow-up notifications and public outreach can be modified.

For each Gantry erection (Mainline Gantry or ORT Mini-Gantry), the work shall take place and be completed within 20 minutes (the short term closure), and those short term closures shall occur between 1:00 A.M. and 3:00 A.M. If the Design-Builder exceeds that time period allowed, whether it is the 20 minutes or the work occurs outside the 1:00 A.M. to 3:00 P.M. required, liquidated

Equipment heights specified in this section are relative to the pavement in the lane over which the equipment is mounted.

A schematic of the ORT Gantry with various lane configurations is provided in the Part 7 – Engineering Data, Section 4.

22.3.2 ORT Toll Lane Requirements

Travel lanes shall be 12 feet wide. Lanes approaching the tolling area that are wider than 12 feet shall taper so that lanes passing under the mini-gantry shall be 12 feet exactly.

Exit lanes shall be constructed of concrete, as described below. Entry lanes shall be constructed of full depth asphalt.

For sites where there are two or more travel lanes in one direction, right shoulders shall be a minimum of 6 feet wide. For sites with only one travel lane in a given direction, right shoulders shall be a minimum of 10 feet wide. Shoulders with a width greater than 6 feet shall be fully instrumented with toll equipment for ORT.

Exit 49 is an exception to the minimum 6' wide right shoulder requirement due to limitations associated with the cross culvert approaching the intersection. The existing right shoulder widths can be maintained at this Exit location.

Concrete slabs containing the treadle, trench drain, and loops shall be 22 inch reinforced Portland cement concrete (PCC) utilizing fiber reinforced polymer (FRP) reinforcing bars so as to not interfere with the Authority's toll collection system for ORT.

In exit lanes, each loop must be contained in a single concrete slab.

If the treadle slab is constructed within pavement super elevation transitions, the maximum cross slope shall not exceed 3 percent (%).

Treadle approach pavement shall be a minimum of 18-feet long of new, full depth concrete pavement.

Treadle departure pavement shall be a minimum of 18-feet long of new, full depth concrete pavement.

Cross-slope through the plaza shall not exceed 3 percent (%) and shall be 1.5 percent (%) minimum and continuous through the shoulders.

22.3.3 Gantry Requirements

The Design-Builder shall provide an overhead structure functionally consistent with the ORT Gantry Schematic.

The Design-Builder shall procure and install equipment mounts as specified below. The ORT gantry shall support flexible placement of equipment mounts. All supports in the vicinity of the equipment shall not interfere with the placement or field of view of the equipment. Supports shall not be placed on the center lines or split lines of the lanes.

Conduit shall not impede access to equipment for installation or maintenance purposes.

The ORT Gantry shall be grounded.

The Design-Builder shall ensure that any extra fiber cable will be coiled inside the ORT Communication Building.

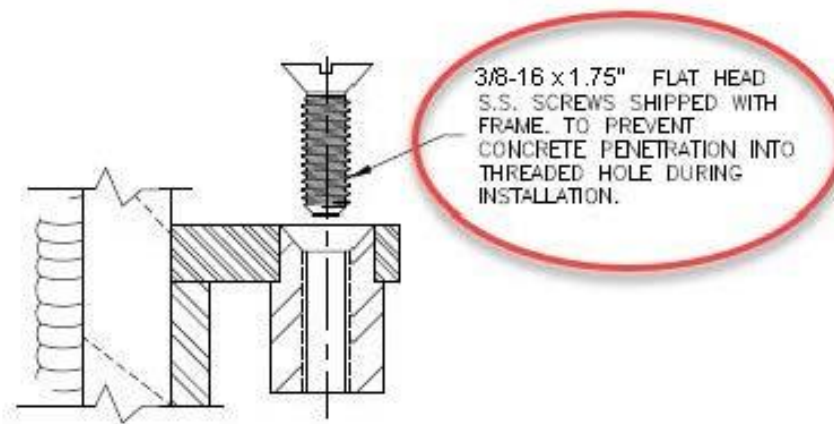
There shall be no splicing of fiber cables. They shall be ordered sufficiently long to reach from the lane to the ORT Communication Building, plus a minimum additional 30 foot length inside the building.

The Design-Builder shall install an appropriately sized individual conduit from the pullbox to the ORT Communication Building.

The Design-Builder shall ensure that the following steps are observed during installation of the fiber treadle:

- Use 3/8-16 by 1.75" full thread 316 stainless bolts to secure the treadle frames (McMaster P/N: 93190A630)
- Install a single Belleville washer, with the crown side up on each bolt. (McMaster P/N: 9713K423)
- Use Loctite #243 thread locker on the side of the mounting hole, not the bolts.
- Do not substitute any other mounting bolts
- Bolts are torqued to ~~438~~250 inch pounds, starting with the bolts closest to the leads and working outward to the opposite end.
- Bolt holes are filled with 100% silicone sealant after all of the bolts have been torqued
- Fibers are labelled 1, 2 and 3. Strip 1 is the strip that is contacted first when vehicles are travelling in the forward direction.

The Design-Builder shall ensure that flat head screws shipped with the treadle frame remain installed during treadle frame installation to prevent accidental plugging with concrete, as shown below:



The picture below depicts a typical fiber treadle installation in treadle frames embedded in concrete pavement:

Authority's Project Manager two (2) weeks prior indicating what Toll Booths require closure based on the Design-Builder's work. The details of work and Work Zone Traffic Control shall be complete and reviewed with Released for Construction stamped and dated at that 2 week notification lead time requirement.

Interchange 23 – This is a complicated short interchange area and has a short merge opportunity. Additional signing to enable motorists to properly align with the lanes leading from the Thruway system to 9W South, 9W North and I-787 is a requirement and responsibility of the Design-Builder. This additional signage shall be placed well enough in advance so travelers know they must move left or right to avoid last minute potential non-safe moves attempting to get into the correct lanes to either access 9W North, South or access I-787 North. In addition, the Thruway has accident issues (rear end accidents) at the slip ramp to 9W South after exiting the Thruway. The Thruway is requiring the slip ramp be extended utilizing NYSDOT property and Authority property on the right side of Route 9W South. The salt shed shall be removed so that the Design-Builder has almost a blank slate to design and construct. Lighting, drainage adjustments, curb, striping, stop bars and any other items that may interfere with the Design-Builder designing and constructing the improvements is the responsibility of the Design-Builder. A preliminary layout (see concept plans) revealed no conflict with utilities (exception light poles, and drainage infrastructure). None of Thruway buildings conflict once the Salt Shed is removed which should be completed no later than September 1, 2019, if not sooner. A preliminary investigation into underground utilities revealed utilities should be deep enough to not prevent the construction of this extended slip ramp. In addition, the Thruway is requiring that the ramp leading to 9W North become a two-lane left turn lane as opposed to the one lane that exists now. Tandem Lot is to be closed and the Tandem Lot shall be removed, then top soiled and seeded.

Interchange 23 also requires the installation of an emergency break in concrete barrier to facilitate the “U-turning” of vehicular traffic should the Thruway close and traffic is queued at the interchange site. Refer to Part 8 for the Special Specification Item 606.9575—25 Median Barrier Gate System (installed). The location of this item shall be (on entering the Thruway) as close as possible to the gore area where North and South ramps split, and the location allows enough area for vehicles to essentially U-turn.

At Interchange 23, where the off ramp from the Thruway system meets Route 9W, a new signal system was developed by the NYSDOT for work to be done in 2019. After discussing and the understanding of where this Design-Build project is going to attempt to rectify the potential congestion at this intersection after toll booths get removed, it was decided this work shall be included under this contract. The Design-Builder shall be responsible for the complete build out of the new signal system. The current drawings provided are no longer 100% accurate as they do not account for the double left (new movement) and the adjustment and modification of the slip ramp to the slip ramp to Route 9W South. The Design-Builder shall redesign the southern portion of the supplied design drawings taking into account the Design-Builder's design of the double left to Route 9W north and footprint modification of that area. The traffic signal mast areas shall be State supplied, the conduit for the bridge crossing shall be State supplied, and the generator transfer switch shall be State supplied. The mast arm base plate has been drilled and its orientation may change based on the Design-Builder's design of the intersection. The footing shall be designed and constructed to compensate for the potential reorientation of the mast arm. Design-Builder can locate the Controller cabinet beyond the Authority's chain link fence line, if necessary.

All existing mast arms, signal heads, and cabinets shall be salvaged and made available for NYSDOT, Region One Traffic, to pick up from the Albany Division storage area. The storage area for this equipment will be designated after work has begun at the Interchange 23 site. See Engineering Data, Part 7, Section 24 for the signal drawings that were originally designed based on the existing conditions and requires modification by the Design-Builder.

All costs associated with this work is to be included under the misc. item on WPS Form for Interchange 23. Interchange 23 requires a new signal configuration with the addition of the two (2) lane left turn from the Thruway exit to the 9W North. The Design-Builder is responsible for the design and construction of the complete new signal system with new supports, foundation, and new signals to align properly with all traffic movements, along with new traffic cabinet. See Section 12 for Traffic Signal details.

The two lane left turn shall be striped along with performed pavement symbols. These requirements apply only to the exit ramp intersecting with 9W leaving the Thruway system.

Striping on the slip ramp to 9W South and a new stop bar placement at Noonan Lane is also required. All work shall meet current standards.

The Design-Builder shall design the double left turn movement to accommodate current required standard vehicles. The right lane of the double left turn movement shall be designed for a WB-67 vehicle. The requirement to accommodate side by side operation of the design vehicle specified will be considered a non-conforming feature. This occasional vehicle will require some encroachment on the island between the double lefts and the slip ramp to Rte. 9W South. The Design-Builder shall allow such opportunity by providing 10' of additional pavement in the island. Although the striping shall be in accordance with current design standards the encroachment shall be via the provision of additional pavement area. The Authority does not expect vehicles of this size for the following two reasons. The first being the closure of the Exit 23 interchange Tandem lot and the second being the only routes available after proceeding further north on Rte. 9W are intersections with City Streets presenting problems for these types of vehicles.

Interchange 24 – One of the largest Interstate-to-Interstate connections in this project. The uniqueness of this site is the large usage of the Tandem Lot, the necessary legislation proposed to provide safe movement of Tandems to reenter the Thruway system. Due to the anticipated higher speeds through the interchange area the Design-Builder is required to design and construct an acceleration lane for the Tandems so that their entering speeds can be reasonable for entering and merging with I-90 Eastbound traffic. The Design-Builder should pay close attention to the overhead signage and the placement location of the current overhead sign structures. When the interchange is complete of all work the Design-Builder is responsible to ensure the signage is in compliance with the MUTCO. Other Part 3 requirements pertain to this particular Interchange work as well as other Parts of Engineering Data. A gated controlled access is required from the Washington Avenue driveway entrance to the Tandem Lot.

Interchange 24 also requires the installation of an emergency break in concrete barrier to facilitate the “U-turning” of vehicular traffic should the Thruway close and traffic is queued at the interchange site. Refer to Part 8 for the Special Specification Item 606.9575—25 Median Barrier Gate System (installed). The location of this item shall be (on entering the Thruway) as close as possible to the gore area where West and South ramps split, and the location allows enough area for vehicles to essentially U-turn.

Interchange 25 – The Authority expects a low level of service when All Electric Cashless Tolling “goes live” at this location. The Thruway entering the I-890 interstate narrows and the Curry Road ramp onto I-890 presents issues. Once again, the Design-Builder shall design additional signage to attempt to properly alert motorists in advance so that there may be a reduction in merge movements. No Tandem Lot here. Additional work such as crack sealing, pavement repairs, etc., as with all these interchange locations may be required as per of Engineering Data, Part 7 - Section 14.

Interchange 25A – Issues with Tandem Lot access and single trailer trucks accessing the local roads is problematic. As shown on the proposed legislative Tandem routes, this location is different. Due to limited ROW the proposed route shown in Part 7 – Engineering Data, Section 3 is the only avenue to provide access for Tandems to the Tandem Lot. The Design-Builder is responsible for this design and construction. An acceleration lane must be incorporated so that Tandems entering I-88 to enter the Thruway system can merge at reasonable speeds. Also, the Tandem Lot driveway entrance requires modification.

Interchange 34A - At this location there is concern with the Tandem Lot entrance to access the proposed legislative Tandem Route. An acceleration lane shall be designed and constructed so that Tandems do not present a safety concern and Tandems can reach a reasonable speed to merge into anticipated higher speeds of traffic. The Park and Ride at this location is scheduled to be closed and the access to and from the Park and Ride lot shall be removed. A minimum of 15' shall be removed between the shoulder and the closed Park and Ride Lot.

Interchange 36 – This location is similar to other interchanges. There is required legislation to accommodate Tandem movements. The Tandem Lot entrance to the traffic accessing I-81 is anticipated to be at higher speeds requiring an acceleration lane leading into traffic to allow Tandems to reach reasonable speeds to merge with free flowing traffic to utilize the proposed legislative route.

Interchange 39 - This location is somewhat unique in that the Exiting Tandem Lot is to be closed and a new Tandem Lot constructed in the location as shown on the concept plans in Part 6. This new Tandem Lot is a requirement, as well as a proper driveway to provide for access in and out, lighting, an area in the Tandem for a Park and Ride accommodations requiring 52 parking spaces properly striped. The Park and Ride Lot and the Tandem Lot shall be properly delineated with signing, striping and/or other means to minimize the mixing of cars and Tandems.

Interchange 44 – This location appears to be relatively straight forward. The Design-builder shall design and construct proper tapers, merge conditions, striping to provide clear and distinct signage so travelers can properly align with roadway alignments (lanes) to reduce merging movements in a confined (short) area. No Tandem Lot is at this location. With TUB removal, the pavement areas shall be reduced, if not eliminated.

Interchange 45 – This location has a Tandem Lot and requires an acceleration lane from the Tandem lot so Tandems can merge at reasonable speeds to access the proposed legislative route to reenter the Thruway System. A modified driveway into the Tandem Lot is also required.

Interchange 46 – This location has a Tandem Lot and requires an acceleration lane/transition so that the Tandems can reach reasonable speeds to safely merge with higher speeds in the interstate-to-interstate connection. Design-Builder shall do modifications within the Authority's Maintenance/ State Police areas such as closure of and removal of driveway entrance, and installation of gate-controlled access.

Interchange 47 – This location requires more work within the Authority Maintenance area than most other interchange(s) due to Tandem Lot access and Maintenance facilities access. Driveway access improvement for access to the Tandem Lot and Maintenance facilities is required. An acceleration lane/transition for Tandems to access and merge appropriately into anticipated higher speed traffic to utilize the proposed legislative routes is required. Backside gated control access is required at this location.

All interchanges listed above have concept plans, and other requirements in Part 3 – Project Requirements and it is the responsibility of the Design-Builder to assemble all information to provide for a complete solution, meeting all applicable current standards.

- D. One week prior to the beginning of the removal of the Toll Booths at each location, the Design-Builder shall notify the Authority's Project Manager so that Thruway personnel can remove tolling equipment. It shall take Thruway personnel a maximum of three (3) days to remove the equipment.
- E. If the first Toll Booth removals are not to occur until a time greater than 1 month after the AETC "go live" date than the previous paragraph does not apply as the equipment at all locations shall be removed within that one month period.
- F. Prior to Toll Booth removal, all electric and fiber connected to the Toll Booths shall be appropriately terminated at the existing TUB locations by the Design-Builder.
- F.G. One week prior to demolition of any TUBs, the Design-Builder shall notify the Authority's Project Manager so that Thruway personnel can remove existing equipment from the TUB. It shall take the Thruway personnel a maximum of two (2) days to remove the equipment.

25.2.2.1 Exit 17 (Newburgh) Partial Toll Booth Demolition

The only location in this Project that does not require complete Toll Booth removal is Exit 17 (Newburgh). At Newburgh (entry) and Newburgh (exit), one Toll Booth removal per location is required.

Paragraphs A, C, D and E in section 25.2.2 apply for Exit 17 (Newburgh).

25.2.2.2 Exit 16 (Harriman) Partial Toll Booth Demolition

Paragraphs A, C, D, E and F in Section 25.2.2 apply for Exit 16 (Harriman).

25.2.3 Hazardous Materials

The Design-Builder shall ensure the removal and disposal is done in accordance with all applicable laws and standards.

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

The Design-Builder shall perform all Work with care so that any materials that are to remain in place, or that are to remain the property of the Authority 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 Authority, the damaged materials shall be repaired or replaced in a manner satisfactory to the Authority at no cost to the Authority.

The Design-Builder shall ensure that no aspects of the Works have a detrimental effect on public safety or the environment.

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

protections. The guiderail protection system is a function of current standards and based on the placement of the Communication Buildings. Regardless, though, a method of protection is required even if the Communication Building were outside the clear zone.

Placement of the Communication Building in the median is acceptable, but in addition to the other requirements of this RFP relative to the Communication Buildings, a deceleration ramp is required for any median located Communication Building.

All mainline Communication Buildings and Terminus location Communication Buildings that are new shall require foundations where the footings extend below the frost line or 48 inches, whichever is greater. The foundations, as a minimum, shall resemble that of a "crawl space" and otherwise meet all building codes and standards.

The Design-Builder is responsible for supplying and installing fiber optic inner-duct from an Authority specified hand-hole/splice location to and through the Communication Building foundation and concrete floor to a junction box located 4 to 5 feet above finished grade and located on the interior side of the exterior wall (but not the front exterior wall). The Design-Builder is also responsible for transitioning the inner-duct to interior fire rated inner-duct at the interior wall junction box to the service rack supplied by the Design Builder via a ladder rack.

Adesta shall pull and install the fiber optic cable line within the Design-Builders installed inner-duct. The inner-duct installation shall be laid straight without multiple bends. Bends shall only be allowed for change in direction points. The inner-duct shall be laid straight within the trench (no small bends or ripples in the conduit). Adesta shall supply, install and test the fiber for full functioning and connectivity. Adesta shall connect/splice the fiber into the Thruway's fiber backbone. ~~The Design-Builder is responsible for back filling the trenches when Adesta completes the tests of fiber connection from the splice locations to the racks.~~

Refer to the document "Fiber Optic Communications for Mainline Gantries" provided separately to each Design-Builder for additional requirements.

Design-Builder shall be responsible for all the outlets, lighting, HVAC system (for climate control) and other misc. work as required by the building codes as stated in Section 1 of Part 3.

The Design-Builder is also responsible for the installation of the conduit from the Communication Building to the gantry foundation and up out of the foundation to the center of the Gantry vertical support. The conduit should end 12 inches above the top of the Gantry foundation.

Kapsch is responsible for all the cabling (supply and install) from the Communications Building to all pieces of equipment on the gantry. Each piece of equipment has a separate independent run of cabling (cameras/illuminators/nVDC unit/antenna/lasers). The independent cabling runs from Communication Building to Gantry equipment (total length) shall not exceed 250 feet including service loops.

Available hand-hole/splice locations within Gantry limits are provided in the document "Fiber Optic Communications for Mainline Gantries" provided separately to each Design Build team.

26.3.1 Mechanical Requirements

26.3.1.1 Indoor Air Quality

The Design-Builder shall minimize to the fullest extent possible the use of materials that emit VOCs and similar pollutants.



26.3.1.2 Mechanical Ventilation

As a means to monitor air quality, carbon monoxide monitoring systems shall be installed within the ventilation systems.

26.3.1.3 Mechanical Equipment and Systems

DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scdusers
 Design File: scd01e
 Plot Date: 3/22/19



 NEW YORK STATE OF OPPORTUNITY. Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
	LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
	TITLE OF DRAWING INTERCHANGE 23 CONCEPT	DRAWING NUMBER:

Plotted By: scdusers
 Design File: scdfiles
 Plot Date: 3/22/19
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY




NEW YORK
 STATE OF OPPORTUNITY.



Thruway Authority



TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
TITLE OF DRAWING INTERCHANGE 24 CONCEPT	DRAWING NUMBER:



Plotted By: scdusers
 Design File: scdfiles
 Plot Date: 8/21/19
 \$ times
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT	CONTRACT NUMBER:
		CASHLESS TOLLING ON THE NYS THRUWAY	
		LOCATION OF PROJECT	DATE:
		EXITS 16 TO 61	3/22/2019
		TITLE OF DRAWING	DRAWING NUMBER:
		INTERCHANGE 25 CONCEPT	



DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scdusers
 Design File: scd01e
 Plot Date: 3/22/19



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
		LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
		TITLE OF DRAWING INTERCHANGE 25A CONCEPT	DRAWING NUMBER:



DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 PLOTTED BY: scdusers
 DESIGN FILE: scd1165
 PLOT DATE: 3/22/2019



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
		LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
TITLE OF DRAWING INTERCHANGE 34A CONCEPT		DRAWING NUMBER:	



DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scdusers
 Design File: scdgnfile
 Plot Date: 3/22/19



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
		LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
		TITLE OF DRAWING INTERCHANGE 36 CONCEPT	DRAWING NUMBER:

Plotted By: scduzers
 Design File: scduz118
 Plotted: 8/21/19
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
		LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
		TITLE OF DRAWING INTERCHANGE 39 CONCEPT	DRAWING NUMBER:

Checked By: J. GLEN

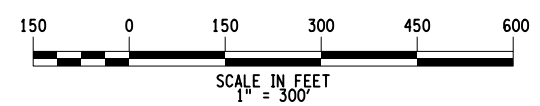
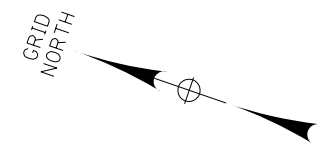
Drafted By: E. BAXTER


Plotted By: scdusers
Design File: scdgnfile
Plotted: scdprtg

Checked By: K. CZORA

Designed By: B. LAGRAVE



Design Supervisor: B. DOHERTY



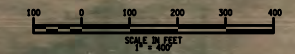
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	LOCATION OF PROJECT EXITS 16 TO 61	DATE: 12/21/2018
	TITLE OF DRAWING INTERCHANGE 44 - CANANDAIGUA, VICTOR	DRAWING NUMBER:



DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 Plotted By: scdusers
 Design File: scd1118
 Plot Date: 3/22/19



 Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
	LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
	TITLE OF DRAWING INTERCHANGE 45 CONCEPT	DRAWING NUMBER:



Plotted By: scdusers
 Design File: scdfiles
 Plotted: 8/31/18
 \$ times
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 CHECKED BY: K. CZORA
 DESIGN SUPERVISOR: B. DOHERTY



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT CASHLESS TOLLING ON THE NYS THRUWAY	CONTRACT NUMBER:
		LOCATION OF PROJECT EXITS 16 TO 61	DATE: 3/22/2019
		TITLE OF DRAWING INTERCHANGE 46 CONCEPT	DRAWING NUMBER:

Plotted By: scdusers
 Design File: scd01e8
 Plotted: 3/22/2019 10:01:08 AM
 CHECKED BY: K. CZORA
 DRAFTED BY: P. FITZGERALD
 CHECKED BY: K. CZORA
 DESIGNED BY: B. LAGRAVE
 DESIGN SUPERVISOR: B. DOHERTY



 NEW YORK STATE OF OPPORTUNITY.	Thruway Authority	TITLE OF PROJECT	CONTRACT NUMBER:
		CASHLESS TOLLING ON THE NYS THRUWAY	
		LOCATION OF PROJECT	DATE:
		EXITS 16 TO 61	
		TITLE OF DRAWING	DRAWING NUMBER:
		INTERCHANGE 47 CONCEPT	

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

1. DESCRIPTION:

- 1.01 This work item shall consist of furnishing and installing a complete front access, full matrix, LED Dynamic Message Sign (DMS) assembly at locations indicated in the contract documents. This item shall include all sign modules, sign housings, controllers, fittings and cabling to make the sign compatible with the control software defined in this document. All other components necessary to support this sign will be covered under separate items.

2. MATERIALS:

2.01 General Requirements

Unless otherwise specified on the contract plans the DMS equipment shall include, but not limited to, the following components:

- DMS display modules and associated attachment hardware, capable of full matrix alphanumeric and special character messages including displaying message with three (3) lines of characters 18” high and 9.6” average width. Each line shall be able to display 15 characters and spaces.
- DMS controller(s).
- DMS software (where required).
- All required surge suppression, power and data cabling, and miscellaneous ancillaries.
- Sign mounting hardware (size and type to be as approved by the manufacturer).
- Power Supplies

2.02 Sign Requirements

- A. The complete LED DMS assembly shall conform to the requirements of the current National Electrical Manufacturers Association (NEMA) Standard No. TS-4 - Section 2, Environmental Standards and Test Procedures. The manufacturer shall provide certification for equipment compliance with NEMA environmental standards in accordance with NEMA testing procedures.
- B. Materials not specifically covered in these specifications shall be in accordance with the accepted standards of the NEMA, the Underwriters Laboratories (UL) Inc., the National Electrical Code (NEC), and the American Society for Testing and Materials (ASTM).
- C. Operating range shall be from - 30° F to + 165° F; relative humidity 0% to 95% non-condensing.
- D. For all message boards the use of heaters, fans, and filters shall not be permitted in order to reduce the maintenance requirements for servicing the signs.
- E. All electronic setup and adjustments for the display shall be enabled from the adjacent equipment cabinet.
- F. All materials to be furnished, assembled, fabricated or installed shall be new, corrosion resistant and in accordance with the details as shown on the Plans or as specified in the Contract documents.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

2. MATERIALS: (cont'd)

2.02 **Sign Requirements** (cont'd)

- G. The DMS front face borders shall be constructed with vertically and horizontal channeled trim to provide a high-contrast background. The trim pieces shall be fabricated using aluminum sheeting. The trim shall border the entire DMS display.
- H. All DMS front face trim pieces that are visible shall be powder coated with a textured black Rohm and Haas 31-7091TGIC polyester finish, or approved equal.
- I. Unless otherwise specified by the manufacturer the DMS shall use standard extruded aluminum clamps and bolts which will secure the DMS to the specified support members. In all installed applications the support clips and hardware shall be in accordance with the manufactures standard installation guidelines and shall be supplied by the manufacturer.
- J. For ground-mounted installation, the DMS shall be constructed of such a size, depth and weight to allow installation on breakaway posts.
- K. The sign assembly and mounting hardware shall be designed to meet the loading and fatigue requirements specified in the following documents:

“NYSDOT Design Specification for Overhead Sign Structures Carrying Variable Message Signs” dated October, 1998; and the revisions to this document contained in Engineering Bulletin EB 01-049, “Overhead Sign Structure Interim Design Criteria”, dated 10/01/01; Engineering Instruction EI 99-038 “Design Loads for Permanent Variable Message Signs”, dated 12/31/99; and any other subsequent revisions.
- L. The control cabinet containing the sign controller, communications, and power supplies shall be paid under separate item(s) in this contract. Unless otherwise noted all internal components and mounting hardware shall be paid for under this contract item.

Cabinet foundation, work pads, or buried conduit shall be paid for under various contract items as noted on the plans.

Whenever possible the cabinets shall come pre-wired from the manufacturer to expedite installation and ensure quality control of communications and power component installation.

Internal component hardware (nuts, bolts, screws, standoffs, rivets, fasteners, etc.) shall be fabricated from hot dipped galvanized steel, stainless steel, aluminum, nylon or other durable corrosion-resistant materials suitable for roadway signage applications.

2. MATERIALS: (cont'd)

2.03 LED Requirements

- A. LED's shall be Amber in color with a minimum of 5 LED's per pixel, traceable to the manufacturer, with a typical luminous intensity of 3500 millicandela per LED when driven at 20 mA. The LED's used in the display shall be obtained from batches sorted for luminous output, where the highest luminosity LED shall not be more than fifty percent more luminous than the lowest luminosity LED. The brightness and color of each pixel shall be uniform over the entire face of the sign, within the required cone of vision, at a distance of 100 to 1100 feet, in all lighting conditions. The LEDs shall be protected from degradation due to sunlight and shall be untinted, non- diffused, an aluminum indium gallium phosphide (AlInGaP) amber LED with a peak wavelength 590 +/-5 nanometers.
- B. Unless otherwise shown on the contract plans the LED pixel and module construction technique shall result in a viewing cone of 30 degrees horizontal and 15 degrees vertical.
- C. Each display module shall be completely environmentally sealed. The protective face of the LED module shall be a solar grade polycarbonate material. All masks that are used to enhance the LED contrast or readability shall be UV inhibited.
- D. Each display module shall be based on a single printed circuit board. Designs using multiple levels of control electronics including daughter boards shall not be allowed.
- E. Each module shall be configured via the communication wiring harness and connector without individually addressing each module.
- F. The module shall have IP64 certification for dust and water protection under the International Standard IEC 60529 Edition 2.1.
- G. Each module shall be identical and interchangeable; to be removed and replaced easily using simple hand tools without affecting the operation of the remaining modules. The mounting design shall use mechanical fasteners that are resistant to vibration and vandalism.

2.04 Circuit Board Electronics

- A. All printed circuit boards shall be FR-4 0.06 in. material, minimum 28 gram copper, double sided with plated holes meeting environmental requirements with moisture proofing conformal coating.
- B. The DMS back plate shall include a NEMA rated distribution cabinet where all sign power and communication is to be terminated onto separate terminal blocks. One terminal block shall be for incoming DC power and the other shall be for incoming DMS signal cabling or a communications line. The distribution cabinet shall be located on the sign panel such that it is closest to the controller cabinet.

2. MATERIALS: (cont'd)

2.05 **Power Requirements**

A. AC Option: The DMS system power supply shall operate from a 120/240 VAC, 60Hz, single-phase power source, including neutral and earth ground. All cabinet and sign components including display modules shall operate from a 12 VDC power supply. The power supplies shall be rated to supply the required amperage for all DC powered installed equipment and with all LED modules set at full brightness plus twenty-five percent.

B. SOLAR/DC Option: The DMS system power supply shall operate from a 12VDC system. The system shall consist of photovoltaic solar panels, battery storage, and a multipoint power tracking charger to regulate solar-to-battery charging. All cabinet and sign components including display modules shall operate from this 12 VDC power supply. Batteries shall be housed in a separate 3R cabinet. The battery cabinet shall be paid under a separate item.

1. **Solar Charging Regulator:**

The solar charging regulator shall be of the maximum power point tracking (MPPT) type and shall meet the following requirements:

- Rated Solar Current: 30A (MIN)
- Rated Load Current: 30A (MIN)
- System Voltage: 12V/24V/48V
- Ambient Temperature: -40°F to +113°F
- Storage Temperature: -67°F to +2°F
- Humidity 100% non-condensing
- Peak Efficiency: 99%
- Nominal System DC Voltage: 12, 24, 36 or 48
- Max. Solar Open Circuit DC Voltage 150
- Battery Operating DC Voltage Range: 8-72
- Maximum Self-consumption: 2.7 Watts
- Transient Surge Protection: 4500 Watts/port

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

2. MATERIALS: (cont'd)

2.05 Power Requirements (cont'd)

2. **Batteries:** All supplied batteries shall be a valve regulated lead Acid AGM (Absorption Glass Mat) type. To ensure adequate capacity a minimum of eight (8) deep cycle batteries shall be used and capable of being wired as a 12 volt system. Each battery must have nominal dimensions equal to or less than 10.25”L x 7”W x 11.25”H and be rated for a minimum of 225 Amp-Hr.

The batteries and solar panels shall be rated to supply the required amperage. The sign shall run continuously with 40% of the pixels on for 144 hours on battery only. The solar panels must supply a minimum total of 720W.

3. **Surge Suppression:** The DMS distribution box shall contain surge suppression for both the DC power and sign communications. The sign power surge suppression shall consist of thermal resettable fuses conforming to SAE specification J53 Type 1. The sign communication shall consist of a surge suppression device capable of withstanding a 10kA peak surge in < 1 nanosecond.

2.06 DMS Controller

- A. The controller shall capable of providing all the necessary functions to control and monitor the DMS locally and from the Traffic Management Center (TMC). Local control shall be made possible in the field by either an alphanumeric keypad or optional QWERTY keyboard connected to the controller with and LCD display.
- B. The controller shall be mounted in the cabinet as shown in the contract plans or as provided by the manufacturer. The communication signals from sign controller to the DMS shall be RS-232 for distances up to 50 feet and RS-485 for distances up to 4,000 feet. Optional TCP/IP communications will also be an acceptable communications technology.

2.07 Photocell

Each sign assembly shall include photo cells for automatic pixel brightness adjustment to suit ambient lighting conditions. Brightness shall also be manually settable from the front panel of the controller and remotely from the DMS Central Control System in about 5% increments. Control shall be returnable to automatic from both the sign controller and the central computer.

2.08 Fonts and Messaging

Message text shall be configurable for variable character height, width, character spacing, and line spacing. The DMS font messaging requirements for this specification shall be capable of displaying the specified number of characters based on a maximum character height of 18 inches. The font style, height, and messages displayed shall conform to all applicable standards as described in the Manual on Uniform Traffic Control Devices, 2009 Edition, Chapter 2L, and all applicable NYSDOT supplements:

- Spacing between characters in a word should be between 25 to 40 percent of the letter height.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

2. MATERIALS: (cont'd)

2.08 **Fonts and Messaging** (cont'd)

- Spacing between words in a message should be between 75 and 100 percent of the letter height.
- Spacing between the message lines should be between 50 and 75 percent of the letter height.
- The minimum letter height should be 18 inches for changeable message signs on roadways with speed limits of 45 mph or higher.
- The minimum letter height should be 12 inches for changeable message signs on roadways with speed limits of less than 45 mph.
- The character display width shall be capable of at least 9.6 inches.

Users shall configure the fonts supported by the sign on an alphanumeric keyboard.

Message text shall be configurable for variable character height, width, character spacing, and line spacing.

2.09 **National Transportation Communications for ITS Protocol (NTCIP)**

The controller shall communicate using the NTCIP standards listed here and all current revisions released at the time of bidding. The manufacturer shall be required to provide the NTCIP test results to verify conformance with the minimum standards as outlined here. Any published amendments to these standards at the time of contract advertisement shall be also be effective on this contract.

The following requirements defines those MIB objects which are expected to be used for the communications to the DMS:

- NTCIP 1103 V03– Transportation Management Protocols NTCIP 2104:2003 v01.11 - Ethernet Subnetwork Profile
- NTCIP 2202: 2001 - Internet (TCP/IP and UDP/IP) Transport Profile

The following table defines those MIB objects which are expected to be used by the DMS:

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
1201: GLOBAL OBJECT (GO) DEFINITIONS			
2.2 - Configuration			
globalSetIDParameter	NTCIP 1201	optional	Yes
globalMaxModules	NTCIP 1201	mandatory	Yes
globalModuleTable	NTCIP 1201	mandatory	Yes
moduleNumber	NTCIP 1201	mandatory	Yes
moduleDeviceNode	NTCIP 1201	mandatory	Yes
moduleMake	NTCIP 1201	mandatory	Yes
moduleModel	NTCIP 1201	mandatory	Yes
moduleVersion	NTCIP 1201	mandatory	Yes
moduleType	NTCIP 1201	mandatory	Yes

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
2.3 Database Management			
Database Management (ALL)	NTCIP 1201	Optional Group	No
2.4 Time Management			
globalTime	NTCIP 1201	mandatory	Yes
globalDaylightSaving	NTCIP 1201	mandatory	Yes
globalLocalTimeDifferential	NTCIP 1201	mandatory	Yes
maxTimeBaseScheduleEntries	NTCIP 1201	mandatory	Yes
timeBaseScheduleTable	NTCIP 1201	mandatory	Yes
timeBaseScheduleNumber	NTCIP 1201	mandatory	Yes
timeBaseScheduleMonth	NTCIP 1201	mandatory	Yes
timeBaseScheduleDay	NTCIP 1201	mandatory	Yes
timeBaseScheduleDate	NTCIP 1201	mandatory	Yes
timeBaseScheduleDayPlan	NTCIP 1201	mandatory	Yes
maxDayPlans	NTCIP 1201	mandatory	Yes
maxDayPlanEvents	NTCIP 1201	mandatory	Yes
timeBaseDayPlanTable	NTCIP 1201	mandatory	Yes
dayPlanNumber	NTCIP 1201	mandatory	Yes
dayPlanEventNumber	NTCIP 1201	mandatory	Yes
dayPlanHour	NTCIP 1201	mandatory	Yes
dayPlanMinute	NTCIP 1201	mandatory	Yes
dayPlanActionNumberOID	NTCIP 1201	mandatory	Yes
dayPlanStatus	NTCIP 1201	mandatory	Yes
2.7 - PMPP			
maxGroupAddresses	NTCIP 1201	mandatory	Yes
hdlcGroupAddressTable	NTCIP 1201	mandatory	Yes
hdlcGroupAddressIndex	NTCIP 1201	mandatory	Yes
hdlcGroupAddress	NTCIP 1201	mandatory	Yes
1203: OBJECT DEFINITIONS FOR DYNAMIC MESSAGE SIGNS (DMS) MIB			
5.2 - SIGN CONFIGURATION AND CAPABILITY			
dmsSignAccess	NTCIP 1203	mandatory	Yes
dmsSignType	NTCIP 1203	mandatory	Yes
dmsSignHeight	NTCIP 1203	mandatory	Yes
dmsSignWidth	NTCIP 1203	mandatory	Yes
dmsHorizontalBorder	NTCIP 1203	mandatory	Yes
dmsVerticalBorder	NTCIP 1203	mandatory	Yes
dmsLegend	NTCIP 1203	mandatory	Yes
dmsBeaconType	NTCIP 1203	mandatory	Yes
dmsSignTechnology	NTCIP 1203	mandatory	Yes
5.3 - VMS Configuration			
vmsCharacterHeightPixels	NTCIP 1203	mandatory	Yes
vmsCharacterWidthPixels	NTCIP 1203	mandatory	Yes
vmsSignHeightPixels	NTCIP 1203	mandatory	Yes
vmsSignWidthPixels	NTCIP 1203	mandatory	Yes
vmsHorizontalPitch	NTCIP 1203	mandatory	Yes
vmsVerticalPitch	NTCIP 1203	mandatory	Yes
monochromeColor	NTCIP 1203	mandatory	Yes
5.4 - Font Definition			
numFonts	NTCIP 1203	mandatory	Yes
fontTable	NTCIP 1203	mandatory	Yes

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
5.4 - Font Definition (cont'd)			
fontEntry	NTCIP 1203	mandatory	Yes
fontIndex	NTCIP 1203	mandatory	Yes
fontNumber	NTCIP 1203	mandatory	Yes
fontName	NTCIP 1203	mandatory	Yes
fontHeight	NTCIP 1203	mandatory	Yes
fontCharSpacing	NTCIP 1203	mandatory	Yes
fontLineSpacing	NTCIP 1203	mandatory	Yes
fontVersionID	NTCIP 1203	mandatory	Yes
fontStatusID	NTCIP 1203	mandatory	Yes
maxFontCharacters	NTCIP 1203	mandatory	Yes
characterTable	NTCIP 1203	mandatory	Yes
characterNumber	NTCIP 1203	mandatory	Yes
characterWidth	NTCIP 1203	mandatory	Yes
characterBitmap	NTCIP 1203	mandatory	Yes
fontMaxCharacterSize	NTCIP 1203	mandatory	Yes
5.5 - MULTI Configuration			
defaultBackgroundColor	NTCIP 1203	mandatory	Yes
defaultForegroundColor	NTCIP 1203	mandatory	Yes
defaultFlashOn	NTCIP 1203	optional	No
defaultFlashOnActivate	NTCIP 1203	optional	No
defaultFlashOff	NTCIP 1203	optional	No
defaultFlashOffActivate	NTCIP 1203	optional	No
defaultFont	NTCIP 1203	mandatory	Yes
defaultFontActivate	NTCIP 1203	optional	No
defaultJustificationLine	NTCIP 1203	mandatory	Yes
defaultJustificationLineActivate	NTCIP 1203	optional	No
defaultJustificationPage	NTCIP 1203	mandatory	Yes
defaultJustificationPageActivate	NTCIP 1203	optional	No
defaultPageOnTime	NTCIP 1203	mandatory	Yes
defaultPageOnTimeActivate	NTCIP 1203	optional	No
defaultPageOffTime	NTCIP 1203	mandatory	Yes
defaultPageOffTime	NTCIP 1203	optional	No
defaultCharacterSet	NTCIP 1203	mandatory	Yes
defaultBackgroundRGB	NTCIP 1203	optional	No
defaultBackgroundRGBActivate	NTCIP 1203	optional	No
defaultForegroundRGB	NTCIP 1203	optional	No
defaultForegroundRGBActivate	NTCIP 1203	optional	No
defaultCharacterSet	NTCIP 1203	optional	No
dmsColorScheme	NTCIP 1203	optional	No
dmsSupportedMultiTags	NTCIP 1203	mandatory	Yes
dmsMaxNumberPages	NTCIP 1203	mandatory	Yes
dmsMaxMultiStringLength	NTCIP 1203	mandatory	Yes
5.6 Message Objects			
dmsNumPermanentMsg	NTCIP 1203	mandatory	Yes
dmsNumChangeableMsg	NTCIP 1203	mandatory	Yes
dmsMaxChangeableMsg	NTCIP 1203	mandatory	Yes
dmsFreeChangeableMemory	NTCIP 1203	mandatory	Yes
dmsNumVolatileMsg	NTCIP 1203	mandatory	Yes
dmsMaxVolatileMsg	NTCIP 1203	mandatory	Yes

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
5.6 Message Objects (cont'd)			
dmsFreeVolatileMemory	NTCIP 1203	mandatory	Yes
dmsMessageTable	NTCIP 1203	mandatory	Yes
dmsMessageEntry	NTCIP 1203	mandatory	Yes
dmsMessageMemoryType	NTCIP 1203	mandatory	Yes
dmsMessageNumber	NTCIP 1203	mandatory	Yes
dmsMessageMultiString	NTCIP 1203	mandatory	Yes
dmsMessageOwner	NTCIP 1203	mandatory	Yes
dmsMessageCRC	NTCIP 1203	mandatory	Yes
dmsMessageBeacon	NTCIP 1203	optional	No
dmsMessagePixelService	NTCIP 1203	optional	No
dmsMessageRunTimePriority	NTCIP 1203	mandatory	Yes
dmsMessageMsgStatus	NTCIP 1203	mandatory	Yes
dmsValidateMessageError	NTCIP 1203	mandatory	Yes
5.7 Sign Control			
dmsControlMode	NTCIP 1203	mandatory	Yes
dmsSWReset	NTCIP 1203	optional	Yes
dmsActivateMessage	NTCIP 1203	mandatory	Yes
dmsMessageTimeRemaining	NTCIP 1203	optional	Yes
dmsMsgTableSource	NTCIP 1203	mandatory	Yes
dmsMsgRequesterID	NTCIP 1203	mandatory	Yes
dmsMsgSourceMode	NTCIP 1203	mandatory	Yes
dmsShortPowerRecoveryMessage	NTCIP 1203	optional	Yes
dmsLongPowerRecoveryMessage	NTCIP 1203	optional	Yes
dmsShortPowerLossTime	NTCIP 1203	optional	Yes
dmsResetMessage	NTCIP 1203	optional	Yes
dmsCommunicationsLossMessage	NTCIP 1203	optional	Yes
dmsTimeCommLoss	NTCIP 1203	optional	Yes
dmsPowerLossMessage	NTCIP 1203	optional	Yes
dmsEndDurationMessage	NTCIP 1203	optional	Yes
dmsMemoryMgmt	NTCIP 1203	mandatory	Yes
dmsActivateMsgError	NTCIP 1203	mandatory	Yes
dmsMultiSyntaxError	NTCIP 1203	mandatory	Yes
dmsMultiSyntaxErrorPosition	NTCIP 1203	mandatory	Yes
dmsMultiOtherErrorDescription	NTCIP 1203	optional	Yes
vmsPixelServiceDuration	NTCIP 1203	optional	No
vmsPixelServiceFrequency	NTCIP 1203	optional	No
vmsPixelServiceTime	NTCIP 1203	optional	No
dmsActivateErrorMsgCode	NTCIP 1203	optional	No
dmsActivateMessageState	NTCIP 1203	optional	No
5.8 – ILLUMINATION BRIGHTNESS			
dmsIllumControl	NTCIP 1203	mandatory	Yes
dmsIllumMaxPhotocellLevel	NTCIP 1203	mandatory	Yes
dmsIllumPhotocellLevelStatus	NTCIP 1203	mandatory	Yes
dmsIllumNumBrightLevels	NTCIP 1203	mandatory	Yes
dmsIllumBrightLevelStatus	NTCIP 1203	mandatory	Yes
dmsIllumManLevel	NTCIP 1203	mandatory	Yes
dmsIllumBrightnessValues	NTCIP 1203	mandatory	Yes
dmsIllumBrightnessValulesError	NTCIP 1203	mandatory	Yes
dmsIllumLightOutputStatus	NTCIP 1203	optional	Yes

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
5.9 - SCHEDULING ACTION			
numActionTableEntries	NTCIP 1203	mandatory	Yes
dmsActionTable	NTCIP 1203	mandatory	Yes
dmsActionEntry	NTCIP 1203	mandatory	Yes
dmsActionIndex	NTCIP 1203	mandatory	Yes
dmsActionMsgCode	NTCIP 1203	mandatory	Yes
5.11 - SIGN STATUS			
Core Status			
statMultiFieldRows	NTCIP 1203	mandatory	Yes
statMultiFieldTable	NTCIP 1203	mandatory	Yes
statMultiFieldIndex	NTCIP 1203	mandatory	Yes
statMultiFieldCode	NTCIP 1203	mandatory	Yes
statMultiCurrentFieldValue	NTCIP 1203	mandatory	Yes
dmsCurrentSpeed	NTCIP 1203	optional	No
dmsCurrentSpeedLimit	NTCIP 1203	optional	No
watchdogFailureCount	NTCIP 1203	mandatory	Yes
dmsStatDoorOpen	NTCIP 1203	mandatory	Yes
Controller Status			
shortErrorStatus	NTCIP 1203	mandatory	Yes
controllerErrorStatus	NTCIP 1203	mandatory	Yes
Power Status			
dmsPowerFailureStatusMap	NTCIP 1203	mandatory	Yes
dmsPowerNumRows	NTCIP 1203	mandatory	Yes
dmsPowerStatusTable	NTCIP 1203	mandatory	Yes
dmsPowerIndex	NTCIP 1203	mandatory	Yes
dmsPowerDescription	NTCIP 1203	mandatory	Yes
dmsPowerMfrStatus	NTCIP 1203	mandatory	Yes
dmsPowerStatus	NTCIP 1203	mandatory	Yes
dmsPowerVoltage	NTCIP 1203	mandatory	Yes
dmsPowerType	NTCIP 1203	mandatory	Yes
Climate Controlled Status Data			
dmsClimateCtrlNumRows	NTCIP 1203	optional	No
dmsClimateCtrlStatusMap	NTCIP 1203	optional	No
dmsClimateCtrlStatusTable	NTCIP 1203	optional	No
dmsClimateCtrlIndex	NTCIP 1203	optional	No
dmsClimateCtrlDescription	NTCIP 1203	optional	No
dmsClimateCtrlMfrStatus	NTCIP 1203	optional	No
dmsClimateCtrlErrorStatus	NTCIP 1203	optional	No
dmsClimateCtrlOnStatus	NTCIP 1203	optional	No
dmsClimateCtrlTestActivation	NTCIP 1203	optional	No
dmsClimateCtrlAbortReason	NTCIP 1203	optional	No
dmsClimateCtrlType	NTCIP 1203	optional	No
Pixel Failure Data			
pixelFailureTableNumRows	NTCIP 1203	mandatory	Yes
PixelFailureTable	NTCIP 1203	mandatory	Yes
pixelFailureDetectionType	NTCIP 1203	mandatory	Yes
pixelFailureIndex	NTCIP 1203	mandatory	Yes
pixelFailureXLocation	NTCIP 1203	mandatory	Yes
pixelFailureYLocation	NTCIP 1203	mandatory	Yes
pixelFailureStatus	NTCIP 1203	mandatory	Yes

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

CONFORMANCE GROUP OBJECTS	REFERENCE	CONFORMANCE REQUIREMENT	PROJECT REQUIREMENT
5.11 - SIGN STATUS			
Pixel Failure Data (cont'd)			
pixelTestActivation	NTCIP 1203	mandatory	Yes
pixelStatusTable	NTCIP 1203	mandatory	Yes
dmsPixelStatusIndex	NTCIP 1203	mandatory	Yes
dmsPixelStatus	NTCIP 1203	mandatory	Yes
dmsPixelFailureTestRows	NTCIP 1203	mandatory	Yes
dmsPixelFailureMessageRows	NTCIP 1203	mandatory	Yes
Lamp Error Status (ALL)	NTCIP 1203	Optional Group	No
Drum Status Data (ALL)	NTCIP 1203	Optional Group	No
Light Sensor Status Data			
dmsLightSensorStatusMap	NTCIP 1203	mandatory	Yes
dmsLightSensorNumRows	NTCIP 1203	mandatory	Yes
dmsLightSensorStatusTable	NTCIP 1203	mandatory	Yes
CONFORMANCE GROUP OBJECTS			
REFERENCE			
CONFORMANCE REQUIREMENT			
PROJECT REQUIREMENT			
5.11 - SIGN STATUS			
Light Sensor Status Data (cont'd)			
dmsLightSensorIndex	NTCIP 1203	mandatory	Yes
dmsLightSensorDescription	NTCIP 1203	mandatory	Yes
dmsLightSensorCurrentReading	NTCIP 1203	mandatory	Yes
dmsLightSensorStatus	NTCIP 1203	mandatory	Yes
Humidity Data (ALL)	NTCIP 1203	Optional Group	No
Temperature Sensor Data			
dmsTempSensorStatusMap	NTCIP 1203	mandatory	Yes
dmsTempSensorNumRows	NTCIP 1203	mandatory	Yes
dmsTempSensorStatusTable	NTCIP 1203	mandatory	Yes
dmsTempSensorIndex	NTCIP 1203	mandatory	Yes
dmsTempSensorDescription	NTCIP 1203	mandatory	Yes
dmsTempSensorCurrentReading	NTCIP 1203	mandatory	Yes
dmsTempSensorHighWarningTemperature	NTCIP 1203	mandatory	Yes
dmsTempSensorHighCriticalTemperature	NTCIP 1203	mandatory	Yes
dmsTempSensorLowCriticalTemperature	NTCIP 1203	mandatory	Yes
dmsTempSensorStatus	NTCIP 1203	mandatory	Yes
dmsTempSensorHighestCriticalTempThreshold	NTCIP 1203	mandatory	Yes
dmsTempSensorLowestCriticalTempThreshold	NTCIP 1203	mandatory	Yes
Power Status Objects			
signVolts	NTCIP 1203	mandatory	Yes
lineVolts	NTCIP 1203	mandatory	Yes
powerSource	NTCIP 1203	mandatory	Yes
Temperature Status	NTCIP 1203	Optional Group	Yes
5.12 – GRAPHIC DEFINITION			
Graphic Definition Objects (ALL)	NTCIP 1203	Optional Group	No

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

2. MATERIALS: (cont'd)

2.10 **Documentation**

Full documentation of proposed sign equipment, specifications and assembly details, including posts and equipment cabinet, shall be provided to the Engineer for approval.

Software shall be supplied with full documentation, including a CD-ROM containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format:

- The relevant version of each official standard MIB Module referenced by the device functionality.
- If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer-specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro shall be provided. The filename of this file shall be identical to the standard MIB Module, except that it shall have the extension “.man”.
- A MIB Module in ASN.1 format containing any and all manufacturer-specific (or agency-specific) objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros.
- A MIB containing any other objects supported by the device.

2.11 **Intellectual Property Rights**

The manufacturer shall allow the use of any and all of this documentation by any party authorized by the Procuring Agency for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

2.12 **Central Software**

Unless otherwise specified in the contract plans, the Contractor shall supply DMS central control software necessary to interface sign functions remotely from the TMC. All control software shall be delivered on CD-ROM and installed on the DMS computer and workstations as directed by the TMC manager. The TMC should be contacted for specifics of the communications protocols and software in place.

The software shall be of a client-server design, in which users can connect to, configure, monitor, and control signs from workstations in the TMC and also from workstations connected to the DMS computer by a TCP/IP 100-BaseT network. Some workstations may use dial-up telephone lines or other low-speed connections to reach the network via the LAN server. The DMS computer shall communicate with the signs via either multipoint EIA-232 communication channels or over TCP/IP Ethernet protocol. The DMS central software shall support at least 30 users and workstations, and 100 signs.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

2. MATERIALS: (cont'd)

2.12 **Central Software** (cont'd)

The software shall provide the following capabilities to users at the workstations and DMS computer:

1. See a list of messages stored in the sign or on the sign controller with an indication of which is currently being displayed on the monitor screen exactly as it appears to motorist.
2. Cause a different message to be displayed.
3. Upload and download new message files between the sign controllers and the DMS computer.
4. Automatically detect malfunctions, including loss of communication or power, and errors.
5. Create and edit fonts and messages and storing them on the DMS computer's disk drive for subsequent downloading to one or more signs.
6. Create an activity log for all signs.
7. Allow existing, or future, NTCIP based signs to be incorporated, configured, controlled, and monitored.
8. On screen notification/alarm of cabinet door open, malfunctions, errors, and out of range environmental conditions.

3. CONSTRUCTION DETAILS:

3.01 The DMS will be installed on either new or existing sign posts or overhead structures as shown in the contract documents. Posts, post foundations, and other supporting structures shall be paid for under other contract items as shown in the plans.

3.02 **Installation Certification**

All controller(s), LED display modules, and mounting hardware shall be installed in accordance with manufacturer's instructions and recommendations. To ensure the sign was installed properly the Contractor shall submit to the Engineer documentation which that states either a) the manufacturer, or the manufacturer's authorized supplier, verifies that the Contractor has been trained on the installation, operation, testing and maintenance of the equipment or b) provides documentation from the manufacturer that the installation has been inspected and approved by the manufacturer or authorized representative.

3.03 **Testing**

Requirements Test Plan:

The manufacturer shall provide a test plan, 30-days prior to each test, for review and approval by the Engineer, for each of the three types of acceptance testing required: Factory Acceptance Testing, Stand-alone Acceptance Testing, and System Acceptance Testing.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

3. CONSTRUCTION DETAILS:

3.03 **Testing** (cont'd)

Requirements Test Plan: (cont'd)

The test plans shall clearly identify each function and element being tested, the setup conditions, the steps to be followed during the test, and the anticipated test results. The test plan shall exercise all required functions and capabilities under this item.

The following is a typical, but non-exhaustive list of the type of requirements that the test plan shall verify:

- Downloading, uploading, displaying, entering, editing, and deleting sign messages and fonts.
- Displaying of all characters, all messages, and all symbols on the sign.
- Switching between several different messages and flashing a part of a message.
- Recovery from simulated communications errors, simulated watchdog timer errors, and simulated sign controller errors.
- Demonstration of the operation of the thermostatically controlled fans, automatic LED temperature shutdown and dimming, and environmental warnings.
- Demonstration of automatic restart after a simulated short-term and simulated long-term power failure.
- Demonstration of the operation of the variation of the LED intensity based on various levels of ambient light.

Test Equipment:

The test plan shall identify all equipment required to perform the tests. This equipment shall be provided by the Contractor for the duration of the testing program. As a minimum, functional testing equipment shall include the latest version of the Device Tester for NTCIP, software by Intelligent Devices Inc, or approved equal.

Test Performance:

The test shall be coordinated with NYSTA at least three (3) weeks prior to the actual date. The Contractor shall conduct all tests, in the presence of the Engineer and/or up to two (2) other representatives. The Engineer may waive the right to witness certain tests. The utilized software shall be in recording/capturing mode while performing the test procedures.

Test Reports:

The Contractor shall maintain a complete record of each test performed including the results of the test and a record of who witnessed the test. At the completion of each test, the test documentation shall be completed and provided to the Engineer for review. This documentation shall be the basis for acceptance or rejection by the Engineer. All test reports shall be signed by the Contractor's authorized testing representative.

3. CONSTRUCTION DETAILS:

3.03 **Testing** (cont'd)

Test Failure:

The unit shall be corrected or another unit substituted in its place and the test successfully repeated. The substitute unit shall have passed all other tests successfully. If any DMS equipment or software/firmware modifications are necessary as a result of any test or demonstration failure, full retesting for compliance with these specifications may be required and a test report shall be prepared and delivered to the Engineer prior to retesting of the equipment. The report shall describe the nature of the failure and corrective action taken. If a failure pattern, as defined by the Engineer, develops, the Engineer may direct that design and construction modifications be made to all units without additional cost to the State, other involved agencies, or extension of the contract period.

Test Specifics:

1. **On-Site Stand-Alone and System Performance Test:**

The Contractor shall conduct approved stand-alone tests of the equipment installed in the field and at the TMC. The tests shall, as a minimum, exercise all stand-alone (non- network) functional operations of the field equipment, including NTCIP compliance, and TMC equipment and software with all the equipment installed per the plans as directed by the Engineer. Approved data forms shall be completed and turned over to the Engineer as the basis for review and rejection or acceptance.

Each unit of equipment shall be operated long enough to permit equipment temperature stabilization, and to check and record an adequate number of performance characteristics to ensure compliance with the requirements of this specification. The test shall, as a minimum, exercise all the input and output functions of the unit and demonstrate all operational features.

Following successful completion of the On-Site Stand-Alone tests the entire complement of subsystems and equipment shall be integrated into one system. Interface tests shall then be performed to verify the transfer of information between field equipment elements and the TMC.

System performance testing shall exercise all functional operations of each unit of field equipment from the TMC, and demonstrate compliance with all contract requirements. The tests shall include multiple combinations of functions including infrequent combinations, input validation, and stress testing. Compliance with all performance requirements shall be demonstrated. Where there are multiple units of the same item of equipment used, compliance with performance parameter requirements may be demonstrated on sample units with approval of the Engineer.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

3. CONSTRUCTION DETAILS:

3.03 **Testing** (cont'd)

Test Specifics: (cont'd)

2. **90-Day Operational Test:**

Following successful completion of the system performance tests, a 90-calendar day test shall be performed. The test shall start at the same time for all system elements unless a waiver is received from the Engineer.

The purpose of the Operational Tests is to demonstrate the reliability of system equipment for a 90 day period. In the event of a failure of any contractor supplied components, or of any existing system elements that may be affected, that portion of the system shall be subjected to an additional 30 day test period. Failure shall be defined as any interruption of operation that can be contributed to the DMS components. If a failure occurs, the test shall be stopped until the failure has been resolved. If the same failure occurs three (3) times, the failure shall be resolved and the 90-day test shall begin anew.

In the event that greater than 20% of similar equipment items malfunction during the test period, the Engineer may declare a system defect and require replacement of all items of that equipment. When a system defect is declared, the 90 day test period shall be restarted for the affected equipment after replacement.

During the Operational Test period the Contractor shall provide support for all installed equipment including problem troubleshooting and replacement of items not operating as specified. The Contractor shall maintain detailed daily records in the form of a maintenance and activity log. The log shall include the identity of equipment on which work is performed, the cost of equipment malfunction, if any, a description of the work performed, materials or special equipment used and the time required to complete the activity. The log shall contain the current test status of all equipment items. The maintenance and activity log shall be available to the Engineer upon request.

The final acceptance shall be based on the satisfactory completion of all 90-Day tests.

3.04 **Training Requirements**

Contractor Training:

Prior to the installation of any specified equipment, the Contractor's personnel shall have received training from the supplier on installation, operations, testing and maintenance of all equipment. No equipment will be accepted without detailed documentation from the equipment supplier certifying that the training has taken place.

ITEM 645.4530--25 – DYNAMIC MESSAGE SIGN (DMS) FULL MATRIX, FRONT ACCESS LED

3. CONSTRUCTION DETAILS:

3.04 **Training Requirements** (cont'd)

NYSTA Training:

Unless otherwise specified on the contract plans, the contractor and/or DMS manufacture shall be responsible for providing a one (1) day training seminar in the operations and maintenance of the DMS for NYSTA management, engineering, operations, and maintenance personnel. The contractor shall contact the Engineer to verify the requirements and number of personnel scheduled for training. Training sessions shall be conducted at the TMC and in the field, consisting of both classroom and “hands-on” training using installed system equipment. Training shall not exceed 8 hours with a maximum of twelve students. The Contractor shall submit two copies of the course outline, training materials, and instructors’ qualifications to the Engineer for approval 30 calendar days prior to the anticipated start of training. Following approval of the material the Contractor shall submit enough copies of the course material for use by the NYSTA during the training program.

The costs for instructors, course materials, handouts, etc. shall be included in the costs of this item. No separate payment for training will be made to the Contractor.

4. METHOD OF MEASUREMENT:

4.01 The DMS will be measured for payment as each unit installed, tested, and made fully operational.

5. BASIS OF PAYMENT:

5.01 The unit price bid for each DMS shall include the cost of furnishing all labor, materials, tools, software, equipment and incidentals as necessary to complete the work. This includes hardware necessary for mounting the DMS to the support structure.

Progress payment will be made as follows:

Fifty percent (50%) of the bid price of each item will be paid when it is installed.

Forty percent (40%) of the bid price will be paid upon satisfactory completion of the On-Site Stand-Alone and System Performance Test.

Ten percent (10%) of the bid price will be paid upon satisfactory completion of the 90 Day Operational Test.

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM

1. DESCRIPTION:

- 1.01 Work under this item consists of furnishing, installing, and testing of security equipment as shown on the drawings and as specified herein. Equipment is to be installed in toll facilities and at remote monitoring locations as indicated.
- 1.02 This equipment shall be fully compatible with the NYSTA presently installed Access Control, Security Monitoring Subsystem and Alarm Monitoring Subsystem and with the equipment to be furnished and shall be installed in an access control cabinet at the site.
- 1.03 The Contractor shall either be Lenel certified, or shall have a subcontract with a Lenel certified installer or Access Control Integrator (ACI) to make connections to and install Lenel equipment.
- 1.04 Furnish, install, integrate, and test Access Control Devices at the locations shown on the Contract Documents and as specified herein. Connect all devices with manufacturer recommended cables.
- 1.05 The models of Access Control Devices submitted shall be thoroughly tested and proven in actual use in service conditions consistent with the locations shown on the Contract Drawings.

2. MATERIALS:

- 2.01 Associated components, which have their own item numbers (e.g., wire and cables) shall be installed under their respective items.
- 2.02 **PTZ CAMERAS**
The contractor shall procure, configure, install and test Bosch AutoDome 7000 HD 20x PTZ cameras, or the latest replacement model offered by the vendor, each with a corner mount as shown on the Contract Drawings. No substitutions will be accepted. The cameras shall be placed as shown on the Contract Drawings, with the final placement determined and verified in the field. Appropriate mounting and junction / back box materials shall be included, as shown on the Contract Drawings.

Cat 5E cable with appropriate connectors, from each camera shall be installed to the Security equipment location within the building interior and protected with surge suppressor as described in Section 2.04 before its connection to the network rack. Cost of cable to be paid under separate item.
- 2.03 **FIXED CAMERAS**
The contractor shall procure, configure, install and test Bosch FlexiDome 7000 HD fixed cameras, or the latest replacement model offered by the vendor. No substitutions will be accepted. The cameras shall be placed as shown on the Contract Drawings, with the final placement determined and verified in the field. Appropriate mounting and junction / back box materials shall be included, as shown on the Contract Drawings.

Cat 5E cable with appropriate connectors, from each camera shall be installed to the Security equipment location within the building interior and the exterior cameras shall be protected with surge suppressor as described in Section 2.04 before its connection to the network rack. Cost of cable to be paid under separate item.
- 2.04 **SURGE SUPPRESSOR**
The Contractor shall furnish and install a Ditek, Cat 5E POE, model DTK110RJC6APOE (or approved equivalent) surge suppressor on each outdoor camera cable that is connected to the equipment rack.

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM

2. MATERIALS: (cont'd)

2.05 CARD READER WITH PIN PAD

- A. Equipment manufactured for non-Lenel access control applications shall not be acceptable.
- B. The card readers shall be compatible with the software and access control cards in current use by NYSTA.
- C. The card reader shall be designed to securely read, interpret, and authenticate access control data from 13.56 MHz contactless smart card credentials and 125 kHz proximity cards.
- D. The card reader shall be optimally designed for use in access control applications to provision of:
 - 1. Customized security protection through support of the device-independent Secure Identity Object™ (SIO) portable credential methodology to provide enhanced security and performance features.
 - 2. Unique read selection that enables reading of the Secure Identity Object™ (SIO), standard iCLASS, 125 kHz proximity, and other technologies at the same time.
 - 3. Utilizes the Trusted Identity Platform™ (TIP) architecture.
 - 4. A migration platform to upgrade from the most popular 125 kHz proximity technologies to SIO on iCLASS SE by reading both 125 kHz proximity technology and 13.56 MHz contactless smart card technology.
 - 5. Guaranteed compatibility to read all HID data formats and ensuring card-to-reader interoperability in multi-location installations and multi-card and reader populations when used with Genuine HID products.
 - 6. Backwards compatibility with legacy 13.56 MHz contactless smart card and 125 kHz proximity access control formats (E.g. 26-bit, 32, 35-bit, 37-bit, 56-bit, and HID Corporate 1000 formats). Compatibility across the product line shall be assured without the need of special programming.
 - 7. The door card readers shall be HID multiclass SE Readers model 921PTNNEK0000. No substitutions will be accepted.
- E. The Contractor shall connect the card reader to interface modules in the access control equipment cabinet with Lenel recommended 10-conductor minimum #24-gauge stranded and continuously shielded cable that is within the cable length limitation defined by the manufacturer.

2.06 MAGNETIC CONTACTS

- A. Install at the doors as described in this Section, and as shown on the Contract Drawings, in accordance with manufacturer's instructions.
 - 1. For hollow metal and storefront doors use biased, recessed type contacts wherever possible.
 - 2. Use surface mounted, biased contacts on doors that are constructed in a way that prevents the use of recessed contacts.
 - 3. For rolling grilles, sliding doors, gates and shutters use surface mounted biased contact with stainless steel jacketed lead. Contact must be rated for 3-inch gap.
 - 4. For access doors use surface mounted contact with stainless steel jacketed lead. Contact must be rated for 3-inch gap.
 - 5. Doors shall have an audible alarm triggered for forced door and door ajar states.

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM

2. MATERIALS: (cont'd)

2.07 CYLINDERS

- A. Cylinders shall meet the requirements of UL437 including those for pick and drill resistance. Pick resistance shall incorporate two or more independent locking mechanisms including a pin tumbler device with seven top pin chambers with driver pins and a coded sidebar locking mechanism operated independently from the pin tumbler device. Drill resistance shall incorporate cylinder housing with fixed in-place case-hardened inserts to protect the pin tumbler shear line, cylinder plugs with case-hardened inserts to protect the pin tumbler shear line and the side bar, stainless steel driver pins and stainless-steel side pins. All cylinders shall be factory master keyed.
1. Specified Manufacturer: BEST High Security.

2.08 KEYING

- A. All locks and cylinders shall be construction master-keyed. All locks and cylinders to be master-keyed or grandmaster-keyed as directed by the owner. The factory shall key all locks and cylinders. Furnish the following key amounts:
1. Two (2) change keys per lock
 2. Three (3) grand master keys
 3. Six (6) master keys per master level
 4. Fifteen (15) construction/temporary keys
- B. Master keys and all high-security or restricted keyway blanks shall be sealed in tamper-proof packaged boxes when shipped from the factory. The boxes shall be shrink wrapped and imprinted to ensure the integrity of the packaging.

2.09 MORTISE LOCKSETS

- A. Locksets shall meet the requirements of ANSI/BHMA A156.13-1994, Operational Grade 1, and Security Grade 1 certified, SFIC Security Grade 2. All functions shall be manufactured in a single sized case formed from 12-gauge steel minimum. The lockset shall have a field-adjustable, beveled armored front, with a 0.125" minimum thickness and shall be reversible without opening the lock body. The lockset shall 2 3/4" backset with a one-piece 3/4" anti-friction stainless steel latchbolt. The deadbolt shall be a full 1" throw made of stainless steel and have 2 hardened roller inserts. All strikes shall be non-handed with a curved lip. All locks shall be provided with strike boxes. To insure proper alignment, all trim shall be thru-bolted and fully interchangeable between rose and escutcheon designs.
1. Approved Manufacturers: BEST High Security, Schlage L Series.

2.10 ELECTRIFIED LOCKSETS

- A. Mechanical features of locksets shall conform to standards as specified above. Locksets shall be designed for both intermittent and continuous duty. All mortise locksets shall be available with switch (Request to Exit feature) to monitor inside or outside lever handle or signal remote location. All locks shall be provided with strike boxes.
1. Approved Manufacturers: Lenel ILS Locks, Von Duprin EL Series, SDC Electrified Mortise

2.11 INTEGRATION

- A. All of the newly installed security elements shall be integrated into the existing systems at the Authority.

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM

2. MATERIALS: (cont'd)

2.12 SECURITY COMPONENTS

- A. All materials shall be new, unless otherwise indicated on the Contract Drawings or in these Special Specifications.
- B. Unless otherwise noted, at a minimum, the security components to be furnished, installed, tested and commissioned include the following major components:
 - Door security devices for secured doors, each with electronic lock, motion detector, access card reader and pin pad.
 - Lenel site controllers
 - Bosch Fixed cameras
 - Bosch PTZ cameras

Number of units as per Contract Drawings or as stated in the Proposal.

- C. Any incidental parts which are necessary to complete the installation but are not specified herein or on the design plans, shall be suitable for the outdoor service conditions, compatible with the camera model furnished, and shall be provided as necessary to complete a properly operating system. This includes but is not limited to mounting brackets and hardware, power supplies, low voltage power cabling, grounding and bonding jumper cables, data communications interface hardware, connectors and terminations, cable management devices, and labels.

3. CONSTRUCTION DETAILS:

- 3.01 Install the Access Control Devices as referenced in this Specification, in accordance with the manufacturer's instructions and as shown on the Contract Documents.
- 3.02 Connect the Access Control Devices with cables that are recommended by the manufacturer to the locking devices Specified herein along with appropriate modules installed by the Access Control Integrator.
- 3.03 All incidental services which are necessary to complete the installation but are not specified herein or on the design plans, shall be provided as necessary to complete a properly operating security system.
- 3.04 Tests for the security system shall be submitted by the Contractor for approval by the Engineer. Testing shall not begin until tests are approved for all Contractor installed Devices.
- 3.05 Each Security Device that does not pass testing shall be replaced at no additional cost to the Authority. Replacement devices shall be tested according to the tests for the original devices.

4. METHOD OF MEASUREMENT:

- 4.01 The Scope of Work of this Contract is depicted on the accompanying Contract Drawings and in the Specifications.
- 4.02 Lump Sum Items: No separate measurement will be made for work of this Section which is to be included in Lump Sum Payment Items.

ITEM 683.9805XX--25 – TOLL FACILITY SECURITY SYSTEM

5. BASIS OF PAYMENT:

5.01 The Work of this Contract includes the following lump sum payment items:

Toll Facility Security System.

5.02 This Item includes payment for all conduits, cables, materials, equipment, testing and services specified herein unless separate pay items have been established for specific materials or portions of work. In this case, costs related to materials or work (such as fiber optic drop cable, patch panel or related testing) shall not be included in the Lump Sum price, but will be paid under their separate Pay Items.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
683.9805XX--25	Toll Facility Security System	Lump Sum

Note: XX denotes serialized pay item per Toll Facility site