

July 6, 2016

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATION
DEPARTMENT OF ADMINISTRATION

DIVISION OF PURCHASES BID NO. 7550649

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

RHODE ISLAND CONTRACT NO.2016-CB-038

FEDERAL-AID PROJECT NO. FAP Nos: REV 1950(001)

I-195 Relocation – Contract 16 – Providence River Pedestrian Bridge

Providence River Pedestrian Bridge and East Side Park - South Water Street, Providence, RI

CITY/TOWN OF Providence

COUNTY OF PROVIDENCE

NOTICE TO PROSPECTIVE BIDDERS

ADDENDUM NO. 8 Prospective bidders and all concerned are hereby notified of the following changes in the Plans, Specifications, Proposal and Distribution of Quantities for this contract. These changes shall be incorporated in the Plans, Specifications, Proposal and Distribution of Quantities, and shall become an integral part of the Contract Documents.

A. Proposal Addition/Deletion

1. Proposal Page P-2(R-1)

Delete Proposal Page P-2(R-1) in its entirety and replace it with Proposal Page P-2(R-2) attached to this Addendum No. 8. An Only Acceptable bid price for new Code 944.9901 has been added.

2. Proposal Pages P-39(R-7) and P-40(R-7)

Delete Proposal pages P-39(R-7) and P-40(R-7) in their entirety and replace them with Proposal pages P-39(R-8) and P-40(R-8) attached to this Addendum No. 8. The Addendum Date has been added. All Proposal pages will be generated by the Quest Lite Program.

B. Contract Documents

1. Page CS-ii(R-1)

Delete page CS-ii(R-1) in its entirety and replace it with CS-ii(R-2) attached to this Addendum No. 8. Paragraphs 23 and 24 have been added to the index.

2. Page CS-20

Delete page CS-20 in its entirety and replace it with CS-20(R-1) attached to this Addendum No. 8. Paragraph 23 has been added.

C. Specification Change/Addition

1. Special Provisions Index Page iii(R-1)

Delete Special Provision Index page iii(R-1) in its entirety and replace it with Special Provision Index page iii(R-2) attached to this Addendum No. 8. Item Codes 824.9911 and 824.9912 have been added to the index.

2. Special Provisions Index Page iv(R-1)

Delete Special Provision Index page iv(R-1) in its entirety and replace it with Special Provision Index page iv(R-2) attached to this Addendum No. 8. The Item Code number for "Site Preparation and Landscaping – As Directed" has been corrected.

3. Special Provisions Index Page v(R-2)

Delete Special Provision Index page v(R-2) in its entirety and replace it with Special Provision Index page v(R-3) attached to this Addendum No. 8. A special provision for Items 835.9901, 835.9902 and 835.9903 has been added to the index.

4. Page JS-70

Delete page JS-70 in its entirety and replace it with page JS-70(R-1) attached to this Addendum No. 8. Paragraph 1 under Description has been revised. The factored axial design load in paragraph 2 has been revised to 75 Kips.

5. Page JS-79

Delete page JS-79 in its entirety and replace it with page JS-79(R-1) attached to this Addendum No. 8. The "Obstructions" paragraph has been revised.

6. Page JS-87

Delete page JS-87 in its entirety and replace it with page JS-87(R-1) attached to this Addendum No. 8. The Method of Measurement for "Drilled Micropile" and "Micropile Load Test" has been revised. The Basis of Payment for "Drilled Micropile" has been revised.

7. Page JS-94

Delete page JS-94 in its entirety and replace it with page JS-94(R-1) attached to this Addendum No. 8. The last paragraph under Construction Methods and the Method of Measurement have been revised.

8. Page JS-101(R-1)

Delete page JS-101(R-1) in its entirety and replace it with page JS-101(R-2) attached to this Addendum No. 8. "Moisture Content" has been added.

9. Page JS-113(R-1)

Delete page JS-113(R-1) in its entirety and replace it with page JS-113(R-2) attached to this Addendum No. 8. "Moisture Content" has been added.

10. Page JS-123(R-1)

Delete page JS-123(R-1) in its entirety and replace it with page JS-123(R-2) attached to this Addendum No. 8. The phrase "slightly above mean high water" has been revised to "slightly below mean high water" in the last paragraph under MODULAR CONCRETE BLOCK RETAINING WALL has been revised.

11. Pages JS-132 to JS-136

Delete pages JS-132 to JS-136 in their entirety and replace them with pages JS-132(R-1) to JS-136(R-1) and new page JS136A attached to this Addendum No. 8. Item Codes 824.9911 and 824.9912 have been added to the special provision.

12. Pages JS-160(R-2), JS161(R-2), JS-162(R-3), JS-163(R-2) through JS-175(R-2), JS-175A and JS-175B

Delete pages JS-160(R-2), JS161(R-2), JS-162(R-3), JS-163(R-2) through JS-175(R-2), JS-175A and JS-175B in their entirety and replace them with pages JS-160(R-3), JS161(R-3), JS-162(R-4), JS-163(R-3) through JS-175(R-3), JS-175A(R-1) and JS-175B(R-1) attached to this Addendum No. 8. "Moisture Content" has been added. The size of the IPE Guard for Architectural Railing Types A, D, and E have been revised throughout the special provision to match the size called for on the plans. The entire special provision is reissued due to repagination.

13. Pages JS-178 to JS-183

Delete pages JS-178 to JS-183 in their entirety and replace them with pages JS-178(R-1) to JS-183(R-1) attached to this Addendum No. 8. The Materials Section has been revised. The provisions have been revised to clarify that the Stainless Steel Angle and Stainless Steel Bent Plate are separate pay items.

14. Pages JS-190(R-1) and JS-191(R-1)

Delete pages JS-190(R-1) and JS-191(R-1) in their entirety and replace them with pages JS-190(R-2) and JS-191(R-2) attached to this Addendum No. 8. The size of the mesh has been added to the MATERIALS section.

15. Page JS-207(R-1)

Delete page JS-207(R-1) in its entirety and replace it with page JS-207(R-2) attached to this Addendum No. 8. The prices for Liquid Asphalt and Diesel Fuel have been revised.

16. Page JS-219

Delete page JS-219 in its entirety and replace it with page JS-219(R-1) attached to this Addendum No. 8. "Moisture Content" has been added.

17. Pages JS-286 through JS-288

Add Pages JS-286 through JS-288 attached to this Addendum No. 8. A specification for Codes 835.9901, 835.9902 and 835.9903 has been added to the Contract.

D. Distribution of Quantities

1. DOQ Index Pages 3(R-1) and 5(R-3)

Delete Index Pages 3(R-1) and 5(R-3) in their entirety and replace them with DOQ Index Pages 3(R-2) and 5(R-4) attached to this Addendum No. 8. Item Code 828.9901 has been deleted. The title for Item Code T06.9901 has been revised. Item Codes 807.9910, 824.9911, 824.9912 and 944.9901 have been added to the index.

2. DOQ Pages 25(R-1) and 26(R-1)

Delete DOQ pages 25(R-1) and 26(R-1) in their entirety and replace them with DOQ pages 25(R-2), 25a and 26(R-2) attached to this Addendum No. 8. Item Code 803.9902 has been revised. The revision required the addition of new DOQ page 25a.

3. DOQ page 43(R-1)

Delete DOQ page 43(R-1) in its entirety and replace it with DOQ page 43(R-2) attached to this Addendum No. 8. Item Code 828.9901 has been deleted.

4. DOQ Page 69(R-1)

Delete DOQ page 69(R-1) in its entirety and replace it with DOQ page 69(R-2) attached to this Addendum No. 8. The title for Item code T06.9901 has been revised.

5. DOQ Page 76

Delete DOQ page 76 in its entirety and replace it with DOQ page 76(R-1) attached to this Addendum No. 8. Item Codes 807.9910, 824.9911, 824.9912 and 944.9901 have been added.

E. Plans - Volume 1

1. Sheet V1_052(R-1)

Delete Sheet V1_052(R-1) in its entirety and replace it with sheet V1_052(R-2) attached to this Addendum No. 8. The Cross section detail has been revised.

2. Sheet V1_055(R-1)

Delete Sheet V1_055(R-1) in its entirety and replace it with sheet V1_055(R-2) attached to this Addendum No. 8. The Pier Section detail has been revised.

F. Plans - Volume 2

1. Sheet V2_064(R-1)

Delete Sheet V2_064(R-1) in its entirety and replace it with sheet V2_064(R-2) attached to this Addendum No. 8. Callouts for the railing details have been revised.

2. Sheet V2_065(R-1)

Delete Sheet V2_065(R-1) in its entirety and replace it with sheet V2_065(R-2) attached to this Addendum No. 8. Callouts for the Bluestone veneer and planter drain have been revised.

3. Sheet V2_072(R-1)

Delete Sheet V2_072(R-1) in its entirety and replace it with sheet V2_072(R-2) attached to this Addendum No. 8. Notes have been deleted. A note has been revised.

4. Sheet V2_095

Delete Sheet V2_095 in its entirety and replace it with sheet V2_095(R-1) attached to this Addendum No. 8. A callout for the subbase has been revised.

5. Sheet V2_096

Delete Sheet V2_096 in its entirety and replace it with sheet V2_096(R-1) attached to this Addendum No. 8. A callout for the subbase has been revised.

6. Sheet V2_116

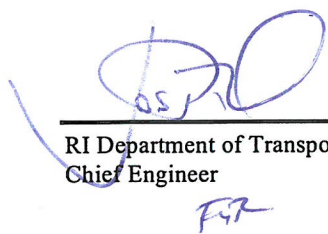
Delete Sheet V2_116 in its entirety and replace it with sheet V2_116(R-1) attached to this Addendum No. 8. A callout for the subbase has been revised.

7. Sheet V2_117

Delete Sheet V2_117 in its entirety and replace it with sheet V2_117(R-1) attached to this Addendum No. 8. A callout for the subbase has been revised.

8. Sheet V2_145

Delete Sheet V2_145 in its entirety and replace it with sheet V2_145(R-1) attached to this Addendum No. 8. The bearing table has been revised.



RI Department of Transportation
Chief Engineer

FJR

Code 944.9901, DIESEL EMISSION REDUCTION PROGRAM is One Dollar And No Cents (\$1.00) per EACH

Items preceded with the letter "S" in the proposal are Specialty Items.

Revised: 2/19/2002

Total or gross sum of bid for Rhode Island Contract Number: 2016-CB-038

Federal-Aid Project Number(s): REV 1950(001)

WRITTEN IN WORDS:

The undersigned bidder declares that this Proposal is made without connection with any other person or persons making proposals for the same work, and is in all respects fair and without collusion or fraud. The undersigned bidder submits herewith, a proposal guarantee in the form of a bid bond in favor of the State of Rhode Island in the amount of 5% of the total or gross sum of the bid and agrees and consents that the proposal guarantee shall be forfeited to the State as liquidated damages if the required contract agreement and contract bond are not executed within ten(10) days of the notice of award. All surety companies must be listed with The Department of the Treasury, Fiscal Services, Circular 570, (Latest Revision published by The Federal Register). The State reserves the right to retain the surety of all bidders until the successful bidder enters into the Contract or until such time as the award or cancellation of the Contract is announced at which point Sureties will be returned to all bidders by the State of Rhode Island, Office of Purchases. The undersigned bidder further agrees, if awarded the contract on this proposal, to begin work within ten (10) calendar days after the date of execution of the contract unless otherwise specified under special provisions or permitted by the Engineer, and further agrees to complete the work on or before the dates outlined in the Contract Documents.

COMPLETION DATE(S)

DESCRIPTION	DATE
Advertise Date	May 26, 2016
Pre-Bid Date	June 7, 2016
Bid-Opening Date	July 15, 2016
Substantial Completion Date	August 17, 2018

THE BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING:

ADDENDA	DATE POSTED	DOCUMENT(S)	PAGE
NO.1	June 1, 2016	1. Status Certification for: Debarment, Eligibility, Indictments, Convictions or Civil Judgements	1
NO.2	June 3, 2016	2. Anti-Collusion Certificate	2
NO.3	June 7, 2016	4. DBE Affirmative Action Certification	3 - 9
NO.4	June 15, 2016	3. Disclosure of Lobbying Activities	
NO.5	June 15, 2016		
NO.6	June 24, 2016		
NO.7	June 28, 2016		
NO.8	July 6, 2016		

Total or gross sum of bid for Rhode Island Contract Number: 2016-CB-038

Federal-Aid Project Number(s): REV 1950(001)

Whoever, being an officer, agent, or employee of the United States, or of any State, or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the costs thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction of any highway or related project submitted for approval to the Secretary of Transportation; or Whoever, knowingly makes any false statement, false representation, false report, or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or Whoever, knowingly makes any false statement or false representation as to a material fact in any statement, certificate, or report submitted pursuant to the provisions of the Federal-aid Road Act approved July 11, 1916 (39 Stat. 355), as amended and supplemented, Shall be fined not more than \$10,000 or imprisoned not more than five years, or both. By signing here the signee agrees that the disk submitted is the same as the paper submitted and that any discrepancies may result in disqualification of the bid.

BEING EITHER A (INDIVIDUAL, PARTNERSHIP,
(OR CORPORATION INCORPORATED)
(UNDER THE LAWS OF ANY STATE)
(IN THE UNITED STATES OF AMERICA)

Contractor

COMPOSED OF OFFICERS, PARTNERS
OR OWNER, AS FOLLOWS.

President

Vice-President

Secretary

Treasurer

Address

CERTIFICATION SUMMARY: I hereby certify that I have read all of the above requirements and understand that it affects the acceptability of my bid(s).

Name of Signatore - Title

Date

18.	PROJECT SOFTWARE	CS-17
19.	SHOP DRAWING SUBMITTALS	CS-17
20.	PERMITS, APPLICATIONS	CS-19
21.	DOCUMENT MANAGEMENT AND CONTROL	CS-19
22.	EROSION AND SEDIMENT CONTROLS	CS-20
23.	601.03.79(a) PORTLAND CEMENT CONCRETE – PROCESS CONTROL OF CONCRETE	CS-20
24.	944 DIESEL EMISSIONS REDUCTION PROGRAM	CS-20
	ELECTRIC DUCT LOCATION PLAN – Dollar and Transit Streets	CS-21

Appendix A - Transportation Management Plan

Appendix B - List of Contract Drawings

Appendix C - Environmental Data for Soil

Appendix D - List of Shop Drawings and Submittals

Appendix E - Permits, Applications

Appendix F – Geotechnical Data Report (Separate Document)

Appendix G - Utility Test Pit Logs (Separate Document)

Appendix H - Site Investigation Report and Soil Management Plan (Separate Document)

Appendix I – Related Plans from Existing Bridges (Separate Document)

Appendix J - Rhode Island Pollutant Discharge Elimination System (RIPDES)

Notice of Intent (NOI) (Separate Document)

S:\PROJECTS\I195FD\DESIGN\Contract 16\C16 Specs\CS Pages\CS PAGES16 TOC.docx

The Contractor and Engineer shall have a unique and sequential correspondence number assigned to every correspondence. In responding to a particular correspondence, the correspondence number will be cross-referenced in the subject of the letter or memorandum. All correspondence will also contain a reference to the Project / Contract. This contract shall utilize the Project / Contract reference as "I-195 C16-XXXX-MMDDYY" where the XXXX is a sequential four digit number and the MMDDYY is the date.

Submittals

All Submittals will be prepared by the Contractor utilizing a Transmittal Letter. Each submittal item on the Transmittal Letter will utilize the unique Submittal Number as provided by the Engineer. This number will be cross referenced in all subsequent correspondence by the Contractor and Engineer until such time the Submittal has been satisfactorily approved by the Engineer. The Contractor's CSL will be maintained with the current status by the Contractor. The CSL shall be statused biweekly and submitted to the Engineer at each Biweekly Schedule Update Meeting.

Requests for Information (RFI)

All RFIs will be prepared by the Contractor with a unique and sequential number using the numbering convention "RFI ####". This number will be cross-referenced in all subsequent correspondence by the Contractor and Engineer until such time the RFI has been satisfactorily closed. An RFI status log will be maintained by the Contractor. The RFI Status Log shall be statused biweekly and submitted to the Engineer 5 working days prior to the biweekly schedule update meeting. The Contractor shall come prepared to the biweekly meeting with a current RFI Status Log.

22. EROSION AND SEDIMENT CONTROLS

Erosion and sediment controls must be installed within 30 days prior to the start of on-site construction activities. During the first 90 days of on-site construction activity, if the Engineer calls for replacement of the erosion and sediment controls which were installed more than 30 days prior to the start of construction due to deterioration of the materials, this shall be the responsibility of the contractor and shall be accomplished at no cost or time to the state.

23. 601.03.79(a) PORTLAND CEMENT CONCRETE – PROCESS CONTROL OF CONCRETE

The requirements listed under Section 601.03.7(a) included in the compilation of Approved Specifications Supplement No. 17 will not be enforced until April 1, 2017.

24. 944 DIESEL EMISSIONS REDUCTION PROGRAM

The requirements listed under Section 944 included in the Compilation of Approved Specifications dated April 2016 will be enforced for this Contract.

INDEX
SPECIAL PROVISIONS
CONSTRUCTION SPECIFIC

<u>CODE</u>	<u>TITLE</u>	<u>PAGE</u>
808.9910	Rubber Control Joint	JS-125
819.0800	Drill and Epoxy Grout Reinforcing Dowels	JS-126
819.9901	Drill and Set Concrete Adhesive Anchors	JS-127
823.9901	Expansion Joint Cover Plate, Stainless Steel	JS-128
824.9901	Architectural Stainless Steel Decorative Plate, Type A	JS-132
824.9910	Architectural Stainless Steel Decorative Plate, Type B	
824.9911	Architectural Stainless Steel Angle	
824.9912	Architectural Stainless Steel Bent Closure Plate	
824.9902	ASTM A500 Grade B Tube Sections Furnish Fabricate & Erect	JS-137
824.9905	AASHTO M270 Grade 50 Steel Furnish Fabricate & Erect Built-Up Simple Spans	
824.9906	AASHTO M270 Grade 50 Steel Furnish Fabricate & Erect Built-Up Curved (Large Radius)	
824.9907	AASHTO M270 Grade 50s Rolled Steel Floor Beams Furnish Fabricate & Erect	
824.9903	Furnish Fabricate & Erect Architectural Exposed Structural Steel Construction (AESS)	JS-139
824.9920	Furnish, Fabricate, and Erect-Miscellaneous Galvanized Steel for Boardwalk Structure	JS-151
825.	Painting Structural Steel	JS-152
826.9907	Management of Bird Guano and Mixed Debris	JS-153
827	Thermal Sprayed Zinc Coating for New Structural Steel	JS-154
828.9902	Elastomeric Bridge Bearings	JS-157
830.9901	Architectural Railing, Type A, Upper Deck w/LED	JS-160
830.9902	Architectural Railing, Type B, Lower Deck w/LED	
830.9903	Architectural Railing, Type C, Handrail at Steps	
830.9904	Architectural Railing, Type D, West Abutment w/LED	
830.9905	Architectural Railing, Type E, East Abutment w/LED	
830.9906	Architectural Railing, Type F, Handrail w/LED	
830.9907	Architectural Railing, Type G, Handrail w/LED	
830.9910	Architectural Railing, Type BW, Boardwalk	
830.9911	Architectural Railing, Type W, Wall D & Boardwalk Wingwall	
830.9940	Remove, Restore & Reset 3 Bar Steel Rail – Wall J	JS-176
830.9941	Remove, Restore & Install from Stockpile 3 Bar Steel Rail – Wall J1	

INDEX
SPECIAL PROVISIONS
CONSTRUCTION SPECIFIC

R-2

<u>CODE</u>	<u>TITLE</u>	<u>PAGE</u>
834.9901	Masonry Veneer, Bluestone Tile	JS-178
834.9902	Masonry Veneer, Bluestone Tile, Sloped	
834.9903	Masonry Veneer, Bluestone Coping	
834.9904	Masonry Veneer, Bluestone Steps	
834.9905	Granite Capstone – Type A	JS-184
834.9907	Granite Capstone – Type C	
834.9908	Granite Capstone – Type D	
842.0100	Anti-Graffiti Coating	JS-189
899.9901	Architectural Stainless Steel Mesh	JS-190
903.9901	Concrete Filled Galvanized Steel Bollard	JS-194
903.9941	Temporary Chain Link Fence, 6 Ft. High	JS-195
903.9942	Temporary Chain Link Fence Gate, 6 Ft. High, 20 Ft Wide	
903.9990	Fence – As Directed	JS-197
L01.9990	Site Preparation and Landscaping – As Directed	
907.1000	Dust Control	JS-198
911.9901	Remove, Stockpile and Rebuild Rubble Wall	JS-199
920.9901	Reset Placed Riprap From Stockpile	JS-201
920.9903	Landscape Boulder	JS-202
929	Field Offices and Materials Laboratory	JS-203
937.1000	Maintenance and Movement of Traffic Protective Devices	JS-206
938.1000	Price Adjustments	JS-207
999.9902	Rodent Control Initial	JS-208
999.9903	Rodent Control Follow-Up	
L01.9902	Planter Growing Media-Bridge	JS-209
L05.9901	Coir Fiber Log	JS-211
L06.9901	Spartina Alternifolia, Plugs	JS-213
L06.9902	Distichlis Spicata, Plugs	

INDEX
SPECIAL PROVISIONS
CONSTRUCTION SPECIFIC

<u>CODE</u>	<u>TITLE</u>	<u>PAGE</u>
L15.9901	Planter Interior - Bridge	JS-215
L15.9921	Architectural Bench, Group A	JS-218
L15.9922	Architectural Bench, Group B	
L15.9923	Architectural Bench, Group C	
L15.9924	Architectural Bench, Group D	
L15.9925	Architectural Bench, Group E	
L15.9926	Architectural Bench, Group F	
T03.9901	Bridge Grounding System	JS-225
T04.9901	300 KCMIL Cable	JS-227
T04.9902	#10AWG 5-Conductor Cable	
T04.9903	Combination Power and Data Cable for DMX-Controlled Luminaires	
T05.9901	Flush Mounted Floor Box with Duplex GFCI Outlet and Double Gang Box with Weatherproof Covers	JS-229
T06.9901	¾" Fiberglass Conduit in Structure	JS-231
T06.9902	¾" Schedule 80 PVC Conduit Within Concrete Slab	
T06.9903	1½" Schedule 80 PVC Conduit Within Concrete Slab	
T06.9904	1" Fiberglass Conduit in Structure	
T06.9905	1½" Fiberglass Conduit in Structure	
T07.9901- T07.9920	Luminaires and Accessories	JS-233
T09.9901	Equipment Enclosure – 60" High	JS-253
T09.9902	Equipment Enclosure – 48" High	
T09.9903	Service Pedestal with Metering	JS-256
T09.9905	Electrical Service Panel – 120/240 V, 1-Phase, 200A MCB, Integral SPD	JS-258
T09.9906	Lighting Control Relay Panel with User Interface and Photocell	JS-264
937.9999	Pedestrian Way	JS-277
807.9901	6", 8" & 10" CMU Planter Walls	JS-278
807.9910	Remove, Stockpile, and Reset Granite Veneer on Bridge Piers	JS-282
835.9901	Deck Drain, Type A	JS-286
835.9902	Deck Drain, Type B	
835.9903	Planter Drain	

S:\PROJECTS\I195FD\DESIGN\Contract 16\C16 Specs\Highway\C16 SpecPovIndex.rtf

MICROPILES**CODE 804.9911****MOBILIZATION & DEMOBILIZATION OF MICROPILE EQUIPMENT****CODE 804.9912****DRILLED MICROPILE****CODE 804.9914****MICROPILE LOAD TEST**

DESCRIPTION. This work shall consist of constructing micropiles in accordance with the Plans, approved working drawings, applicable sections of the RI Standard Specifications, provisions of the FHWA “Micropile Design and Construction”, Report No. FHWA NHI-05-039, the AASHTO LRFD Bridge Design Specifications, and as specified herein. The micropile Contractor shall be responsible for furnishing all design, materials, products, accessories, tools, equipment, services, transportation, labor and supervision, and manufacturing techniques required for design, installation and testing of micropiles and pile top attachments for this project. The Contractor should note that the piles must be installed through granular fill containing debris at this site. Difficult drilling through obstructions is anticipated to be required within approximately the first 15 to 20 feet below the existing ground surface. This layer of soil consists of miscellaneous granular fill containing cobblestones, concrete, brick, and wood/wood piles.

The micropile Contractor shall select the micropile type, size, pile top attachment, installation means and methods, estimate the ground-grout bond value and determine the required bond length and final micropile diameter. The micropile Contractor shall design and install micropiles that are capable of resisting a factored axial design load of 75 kips. The micropile load resistance shall be verified by verification and proof load testing as required and must meet the test acceptance criteria specified herein.

MICROPILE CONTRACTOR’S EXPERIENCE REQUIREMENTS AND SUBMITTALS.

The micropile Contractor shall be experienced in the construction and load testing of micropiles and have successfully constructed at least five (5) projects in the last five (5) years involving construction of similar capacity to those required in these plans and specifications.

The Contractor shall have previous micropile drilling and grouting experience in soil/rock similar to project conditions. The Contractor shall submit construction details, structural details and load test results for at least three previous successful micropile load tests from different projects of similar scope to this project.

The Contractor shall assign an Engineer to supervise the work with experience on at least three (3) projects of similar scope to this project completed over the past five (5) years. The Contractor shall not use consultants or manufacturers’ representatives to satisfy the supervising Engineer requirements of this section.

provide positive control and discharge of all surface water that will affect construction of the micropile installation and maintain all pipes or conduits used to control surface water during construction. The Contractor shall repair damage caused by surface water at no additional cost. Upon substantial completion of the work, the Contractor shall remove surface water control pipes or conduits from the site. Alternatively, with the approval of the Engineer, pipes or conduits that are left in place may be fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.

Excavation. The Contractor shall coordinate the work and the excavation so the micropile structures are safely constructed. The micropile construction and related excavation shall be performed in accordance with the Plans and approved submittals. No excavations steeper than those specified herein or shown on the Plans will be made above or below the micropile structure locations without written approval of the Engineer.

Obstructions. When obstructions are encountered during the installation of micropiles, the Contractor shall remove the obstruction or drill through it. The Contractor shall excavate to remove the obstruction or shall resort to all usual methods to install piles including rotary drilling and down-the-hole hammer. Piles shall not be relocated unless directed by the Engineer.

Micropile Allowable Construction Tolerances and Acceptance Criteria.

1. The center of gravity of the entire group of micropiles at an individual structure shall not be more than 2 inches from the center of gravity location for the group as indicated on the plans.
2. Centerline of piling shall not be more than 3" from indicated plan location.
3. Pile shall be plumb within 2 percent of total-length plan alignment.
4. Top elevation of pile shall be plus 1" or minus 2" maximum from vertical elevation indicated.
5. Centerline of reinforcing steel shall not be more than 3/4" from indicated location.

Piles that are damaged or defective due to defective materials, improper installation procedure, or piles that have an installed volume of cement grout not exceeding a volume equal to 110% of the theoretical volume of the drill hole will not be accepted. Pile acceptance will be by the sole judgment of the Engineer.

Piles that are damaged or defective shall be cut off one foot below bottom of footing elevation and located on the Contractor's developed pile as-built drawing. These piles shall be replaced by additional pile(s) installed adjacent thereto, as directed by the Engineer, at no additional cost. The replacement pile(s) must be installed at a location which results in the center of gravity of

be responsible for implementing the Engineer's design modifications and supplemental pile load test due to test piles which are tested unsuccessfully at no additional cost.

METHOD OF MEASUREMENT.

Mobilization & Demobilization of Micropile Equipment. This item does not require measurement for payment.

Drilled Micropile. "Drilled Micropile" to be furnished and drilled shall be measured by the number of drilled micropiles with an allowable axial design resistance of 75 kips actually installed by the Contractor in accordance with the Plans, this Specification, and/or as directed by the Engineer.

Micropile Load Test (150 kips). "Micropile Load Test" (150 kips) shall be measured by the number of micropile load tests actually performed by the Contractor in accordance with the Plans, this Specification, and/or as directed by the Engineer.

Incidental Items. The following items of work shall not be measured separately for payment, but shall be considered incidental to the other items of work inherent to this Specification: Micropile Design; Shop Drawings; Construction Submittals; Construction Site Survey and Monitoring; Site Drainage Control; Layout, Elevation and Location Control; Measurement and Marking; Drilling through Obstructions; Pile Splices; Replacement of Damaged, Defective, or Misaligned Piles; Preparation of the Load Test Results Report; and Additional Load Tests required due to pile failure.

BASIS OF PAYMENT.

Mobilization & Demobilization of Micropile Equipment. "Mobilization & Demobilization of Micropile Equipment" will be paid for at the contract lump sum price as listed in the Proposal. The price so-stated constitutes full and complete compensation for all labor, materials, and equipment necessary for the handling, drilling, grouting and testing of the micropiles and for the removing of same upon completion of the work.

Drilled Micropile. The accepted quantity of "Drilled Micropile" will be paid for at the contract unit price per each as listed in the Proposal. The price so-stated constitutes full and complete compensation for all design, labor, materials, tools, equipment and all other incidental items of work necessary to finish the work, complete and accepted by the Engineer, including drilling, furnishing, and placing the reinforcing steel and casing, grouting, and pile top attachments. The micropile Contractor is also responsible for estimating the grout take. No extra payment will be made for grout overruns.

No extra payments will be made for drilling through or removal of obstructions.

Micropile Load Test. The accepted number of "Micropile Load Test" will be paid for at the contract unit price per each test as listed in the Proposal. The price so-stated constitutes full and complete compensation for all labor, materials, and equipment, including instrumentation and all other incidentals required to finish the work, complete and accepted by the Engineer.

S:\PROJECTS\I195FD\DESIGN\Contract 16\Addendum 7\804 99 Micropiles REVISED 6.23.16 add 7.doc

CONSTRUCTION METHODS:

All Manufacturers' instructions shall be followed by the Contractor.

Each gabion unit shall be assembled by tying or fastening all connecting seams. The binding wire shall be tightly looped around every other mesh opening along the seams in such a manner that single and double loops are alternated. An alternative wire fastener may be used in lieu of lacing wire. The alternative wire fasteners shall be applied at approximately 4"-6" intervals on all vertical and horizontal seams. No less than 3 fasteners per one foot on any given seam.

A line of empty gabions shall be placed into position according to the Plans. Binding wire or alternative wire fasteners shall be used to secure each unit to the adjoining one along the vertical reinforced edges and the top selvages. A manufacturer approved corner closure tool shall be used to adjoin adjacent gabions to ensure a tight, neat seam and minimize gabion wired or fastened to the latter at front and back.

The lid shall be secured with a manufacturer approved closure tool to ensure proper closure without excessive mesh deformation.

To achieve optimum alignment for retaining walls, a minimum amount of stretching may be required. Stretching shall be limited to that allowed by the manufacturer.

Gabions shall be filled with rock as specified in 'MATERIALS.' During the filling operation some manual stone placement is required to minimize voids. Care shall be taken when placing fill material to ensure that the sheathing on the PVC coated baskets is not damaged.

The cells shall be filled in stages so that local deformation may be avoided. At no time shall any cell be filled to a depth exceeding one foot higher than the adjoining cell. It is also recommended to slightly overfill the baskets by 1" to 2" to allow for settlement of the rock. Around gabion mattresses, provide the backfill material simultaneously to the same level as the filled gabion mattress.

Gabions shall be placed in a uniformly excavated trench, lined with geotextile fabric, to the line and grade shown on the plans. The Contractor shall note that the gabion mattresses are to be placed at elevations below mean high tide and shall be installed during periods of low tide. Methods to control water during installation, or work in the water during installation, shall be the responsibility of the Contractor in accordance with all permit requirements and specifications.

METHOD OF MEASUREMENT: Item code 805.9901 "Gabion Mattress" shall be measured by the square yard measured on the top horizontal face of the gabions, furnished, installed, complete, and accepted in accordance with the Rhode Island Standard Specifications and these Special Provisions.

Bending strength is 23,360 psi

Shrinkage: Radial: 5.9%, Tangential: 7.2%, Volumetric: 12.4%, T/R Ratio: 1.2

Class A fire rating

Moisture Content:

1x6, 5/4x6, 5/4x10, 5/4x12 & 2x8: to be kiln dried to 14% +/- 2%

3x6, 3x10 & 3x12: to be locally acclimated allowing the material to naturally achieve the local EMC (Equilibrium Moisture Content). The contractor shall allow wood to acclimate locally for a minimum period of 14 weeks prior to fabrication and/or installation. The Contractor shall adhere to the manufacturer's guidelines on Acclimation and provide Bills of lading and approved shipping invoices to document length in storage. The contractor shall refer to the United States Department of Agriculture (USDA) Forest Service Research Publication FPL-RN-0268 "Equilibrium Moisture Content of Wood in Outdoor Locations in the United States and Worldwide" for acceptable EMC values for Providence, RI.

Supplier shall pre-treat all surfaces of wood decking with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin prior to delivery to Contractor.

Manufacturer: Minimum 5 years' experience producing similar products.

Supplier to provide Contractor with Chain of Custody documentation for wood including required compliance with Lacey Act provisions.

Provide a manufacturer's standard 25 year warranty. The terms of the warranty shall state that the application of Ipe decking installed per supplier and fastener manufacturer recommendations is guaranteed to resist rot and insect damage for 25 years from the original installation date.

All Pressure-Treated Sleepers shall be treated Southern Pine #2 or better, with the following minimum tabulated values:

$F_{bo} = 1500$ psi
 $E = 1,600,000$ psi.

See the plans for lengths.

All Stainless Steel for drain clean-out plates shall be austenitic UNS S31603 (316L).

Stainless Steel shall be treated with a medium grade, anti-slip surface coating, UL slip-resistant certified, with the following minimum tabulated values:

Surface Hardness	HRB 90 (Rockwell 'B' Scale)
Bond Strength to steel	7,300 psi
Coefficient of Friction	0.6

Slip resistant material shall be applied to stainless steel as a thermal spray coating (metalizing). The Slip Resistant Material shall be a high purity nickel chrome wire (Ni 20Cr).

The Slip Resistant application must conform to the following;

Static Coefficient Of Friction (COF) using the ASTM C-1028 method and device, both wet and dry, are above 0.05.

Slip Resistance Factor using the ASTM F-1679 method and device, both wet and dry, are above 0.50.

Dynamic Coefficient Of Friction (COF) using the ASTM E-303 method and device, both wet and dry, are above 0.50.

Surface Preparation:

The steel surface shall be clean and free of oxides (rust), dirt, oils or grease before metalizing. The surface shall be grit blasted to SSPC Surface Preparation Specification 10. The grit blast medium shall be 24 mesh aluminum oxide. The piece shall be metalized within 6 hours of blasting. Oils and grease shall be removed by use of an aqueous alkaline solution and/or hand or power tool cleaning.

JOB SPECIFIC

CODE 806.9921
WANA WOOD, UPPER BRIDGE FASCIA - NORTH

CODE 806.9922
WANA WOOD, UPPER BRIDGE FASCIA - SOUTH

CODE 806.9923
WANA WOOD, LOWER BRIDGE FASCIA - SOUTH

CODE 806.9924
WANA WOOD, LOWER BRIDGE FASCIA - NORTH

DESCRIPTION:

Work under this item shall consist of, all work associated with the furnishing, fabricating, storing, handling, hauling and installing the **Wana Wood** in accordance with Section 806 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Engineer. The Contractor shall subcontract these items such that they are furnished, fabricated, and installed by or installation that is directly supervised on-site by, one of the three prequalified firms as specified in item code 105.9999.

MATERIALS:

Materials for Wana Wood shall conform to both the applicable provisions of SECTION M.11; TIMBER, of the Rhode Island Department of Transportation Standard Specifications and the following additional requirements;

The Contractor shall use the following wood species for all wood components associated with the Wana Wood Fascia identified as "**Wana Wood**" in this special provision. The selected wood species shall be used for all fascia conditions. The Contractor shall not interchange wood between different fascia locations.

Wana Wood

Botanical Name: *Ocotea Rubra*

Density 0.640739 g/cm³

Janka Hardness of 660

Bending strength is 10,833 psi

Shrinkage: Radial 3.7%; Tangential 7.6%; Volumetric 10.4%

Moisture Content: To be kiln dried to 14% +/- 2%

Supplier shall pre-treat all surfaces of wood decking with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin prior to delivery to Contractor.

General excavation/earthwork required for this item shall be performed in accordance with the applicable requirements set forth in Section 202 of the Standard Specifications and sections 203.99 and 203.9999 of the special provisions.

MODULAR CONCRETE BLOCK RETAINING WALL

Gabion Mattress Placement shall be in accordance with Code 805.9901. Excavation shall conform to Section 203 and Special Provision 203.9999 of the Rhode Island Standard Specifications, along the grades and dimensions shown on the Construction Drawings or as directed by the Engineer. Dewatering shall conform to Section 203 of the Rhode Island Standard Specifications and Special Provision 203.99.

Laying Blocks: The blocks shall be laid to line and in courses roughly leveled up. All blocks shall be laid with bearing beds parallel to the natural bed of the foundation material. Care must be taken to insure that each block takes a firm bearing at not less than three separate points upon the underlying course. Face joints shall not exceed one inch in width unless otherwise directed by the Engineer. The chinking of joints in the faces of the wall will not be permitted.

Ensure that each course of concrete blocks is offset according to the plans and details.

Pervious Fill: shall be placed behind the wall, to the dimensions shown on the drawings, in maximum lifts of 6 inches, compacted to a minimum density of 95% as determined by the Modified Proctor Density Test and separated from other soils using the approved non-woven geotextile. No heavy compaction equipment shall be allowed within 1 meter (3 feet) of the back of the wall fascia during construction.

The approved non-woven geotextile shall be set against the back of the lowest block wall unit, over the prepared foundation, and extend towards the back of the excavation, up the excavation face and back over the top of the drainage material to the retaining wall, or as directed by the Engineer.

Capstone to be placed on all top wall surfaces. (See item code 834.9905)

The Contractor shall note that the inverts of most of the modular walls are slightly below mean high water elevation. Partial construction of the walls to elevations above mean high water is required to be completed during times of low tide. The Contractor shall plan excavation and construction sequencing accordingly to conform to this requirement.

METHOD OF MEASUREMENT: Item code 808.9901 Modular Block Wall (Precast Concrete) will be measured by the 'Square Foot' of vertical wall face (not including capstones) as measured from the top of the Gabion Mattress and horizontally along the face of the wall furnished and installed in accordance with the plan and/or as directed by the Engineer.

JOB SPECIFIC

CODE 824.9901

ARCHITECTURAL STAINLESS STEEL DECORATIVE PLATE, TYPE A

CODE 824.9910

ARCHITECTURAL STAINLESS STEEL DECORATIVE PLATE, TYPE B

CODE 824.9911

ARCHITECTURAL STAINLESS STEEL ANGLE

CODE 824.9912

ARCHITECTURAL STAINLESS STEEL BENT CLOSURE PLATE

DESCRIPTION:

Work under this item shall consist of, all work associated with the furnishing, fabricating, storing, handling, hauling and installing the Architectural Stainless Steel Decorative Plate in accordance with Section 824 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Architect and Engineer.

MATERIALS:

Materials for Architectural Railing shall conform to both the applicable provisions of SECTION M.05; METALS, of the Rhode Island Department of Transportation Standard Specifications and the following additional requirements;

All Stainless Steel shall be austenitic UNS S31603 (316L).

Stainless Steel finish is to be Wet Polished Long Grain #4 or Hairline Polish.

Maximum installed Surface Roughness of Stainless Steel shall be 20 μ m (micro inches) or less and shall be certified by the fabricator using a profilometer.

All Stainless Steel Sheet, Strip and Plates shall conform to ASTM A240/A240M and ASTM A480/A480M with a Sulphur content not to exceed 0.005%. Stainless Steel Sheet and Plates shall be Stretcher Leveled Standard of Flatness in accordance with ASTM 480/480M Table A2.8. Contractor to provide copies of certification showing compliance.

All stainless steel bars and hot or cold rolled shapes shall conform to ASTM A276

All welding shall comply with AWS D1.6, "Structural Welding Code--Stainless Steel". All

welds to be pickled to comply with ASTM A380 and chemically passivated to comply with ASTM A967. Contractor shall certify that the finished installed surfaces are free of iron contamination using one of the tests prescribed in ASTM A967. Wet towel test is permissible.

Stainless Steel Fasteners shall conform to Group 2 ASTM F593G or F593H (condition CW1 or CW2) or A1082/A1082M UNS S32101, S32304 or S32205.

At locations identified on the plans, the Contractor shall use the following wood species for all components identified as “**Ipe Wood Blocking**” in this special provision. The selected wood species shall be used for all blocking conditions. The Contractor shall not interchange wood options between different blocking locations.

Ipe Wood

Botanical Name: *Tabebuia* spp. (Lapacho group)

Janka Hardness of 3,680 lb_f

Bending strength is 23,360 psi

Shrinkage: Radial: 5.9%, Tangential: 7.2%, Volumetric: 12.4%, T/R Ratio: 1.2

Class A fire rating

Supplier shall pre-treat all surfaces of wood guard with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin prior to delivery to Contractor.

Manufacturer: Minimum 5 years' experience producing similar products.

Supplier to provide Contractor with Chain of Custody documentation for wood including required compliance with Lacey Act provisions.

Provide a manufacturer's standard 25 year warranty. The terms of the warranty shall state that the application of Ipe decking installed per supplier and fastener manufacturer recommendations is guaranteed to resist rot and insect damage for 25 years from the original purchase date.

The Architectural Stainless Steel Decorative Plate is to be produced as described below;

A. Architectural Stainless Steel Decorative Plate, Type A – Item Code 824.9901

A typical Architectural Stainless Steel Decorative Plate, Type A shall consist of the following materials;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) ¼" thick Stainless Steel Plate, size and layout per plans and 3D Digital Model.

- (3) Stainless Steel Tamper-proof Countersunk Screws.
- (4) 5/8" x 8" diameter Stainless Steel Rod with tapped end to receive Tamper-Proof Countersunk Screw.
- (5) 1/2" thick Continuous Ipe Wood Blocking
- (6) Luminaire Type LR – with Drivers (Item Code T07.9906) per Electrical Plans.

B. Architectural Stainless Steel Decorative Plate, Type B – Item Code 824.9910

A typical Architectural Stainless Steel Decorative Plate, Type B shall consist of the following materials;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) 1/4" thick Stainless Steel Plate. Size and layout per plans and 3D Digital Model.
- (3) Stainless Steel Tamper-proof Countersunk Screws.
- (4) 1/2" thick Continuous Ipe Wood Blocking

C. Architectural Stainless Steel Angle – Item Code 824.9911

A typical Architectural Stainless Steel Angle shall consist of the following materials;

- (1) 3" x 1" x 3/16" Stainless Steel Angle. Size and shaped per plans. All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) 1/4" x 4" long Stainless Steel Countersunk Expansion Anchor Bolt.

D. Architectural Stainless Steel Bent Closure Plate – Item Code 824.9912

A typical Architectural Stainless Steel Angle shall consist of the following materials;

- (1) 1/4" thick Bent Stainless Steel Closure Plate. 2 1/2" long horizontal angle leg shall align with edge of Ipe Edge Board and create a 1/2" minimum drip edge extension over finished face of "Masonry Veneer, Bluestone Tile, Sloped" (Item Code 834.9902) . Vertical angle leg will vary based on CMU wall height. Contractor shall maintain minimum dimensional overlap of 4" with CMU wall. All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) 1/4" x 3" long Stainless Steel Concrete Screw.

Submittals

The Contractor shall provide samples and submit shop drawings as identified below;

A. Samples:

1. Stainless Steel Plate - minimum 8" x 8" x 1/4" thick with countersunk holes for fastener installation.
2. Stainless Steel Rod – 6" length of 5/8" diameter rod with tapped connection for specified fastener
3. Fasteners: Submit samples and manufacturer data sheets for tamper-proof fastener.
4. Stainless Steel Angle: Submit samples for type, color and finish required. Submit a 6" long sample of 3" x 1" x 3/16" Stainless Steel Angle.
5. Stainless Steel Bent Closure Plate: Submit samples for type, color and finish required. Submit a 6" long sample of 3" x 1" x 3/16" Stainless Steel Angle.

B. Shop Drawings

Submit shop drawings for Architectural Stainless Steel Decorative Plate identifying all components required. Shop drawings shall include plan drawings showing layout and detail drawings showing how the various components fit together. Include manufacturer's literature completely describing all components of this special provision and giving detailed installation recommendations and instructions. The Contractor may reference the 3D Digital Model released with the tender documents for this project.

CONSTRUCTION METHODS:

The Construction Methods of the Architectural Stainless Steel Decorative Plate shall be in accordance with Section 824 of the Rhode Island Standard Specifications for Road and Bridge Construction and as supplemented or modified herein.

A. Architectural Stainless Steel Decorative Plate, Type A

Installation methods for the **Architectural Stainless Steel Decorative Plate, Type A** as specified on plans shall comply with the following;

- (1) Architectural Stainless Steel Decorative Plate shall be assembled and installed as indicated on plans and in 3D Digital Model.
- (2) At vertical mounting point, drill hole into the cast-in-place concrete wall and epoxy grout stainless steel rod (minimum embedment of 6"). Provide a tapped end condition at all rod locations. Maintain a consistent 1 1/2" projection of stainless steel rod from finished surface of concrete wall.
- (3) Secure plate to face of stainless steel rod with countersunk stainless steel screws. All hardware, fasteners and bolts should be designated as 'tamper-proof'.
- (4) Secure Ipe Wood Blocking to top of cast-in-place concrete wall with countersunk expansion anchors.

- (5) Secure plate to Ipe Wood Blocking with Stainless Steel Tamper-proof Countersunk Screws as indicated on plans.

B. Architectural Stainless Steel Decorative Plate, Type B

Installation methods for the **Architectural Stainless Steel Decorative Plate, Type B** as specified on plans shall comply with the following;

- (1) Architectural Stainless Steel Decorative Plate shall be assembled and installed as indicated on plans and in 3D Digital Model.
- (2) Secure Ipe Wood Blocking to top of steel framing with self-tapping tamper-proof stainless steel screws or cast-in-place concrete wall with countersunk expansion anchors.
- (3) Secure plate to Ipe Wood Blocking with Stainless Steel Tamper-proof Countersunk Screws as indicated on plans.

C. Architectural Stainless Steel Angle

Installation methods for the **Architectural Stainless Steel Angle** as specified on plans shall comply with the following;

- (1) Architectural Stainless Steel Angle shall be shaped and installed, as indicated on plans and in 3D Digital Model, along top of fully grouted CMU Planter Walls with Stainless Steel Countersunk Expansion Anchor Bolts at 18" o.c. and abut to "Masonry Veneer, Bluestone Coping" (Item Code 834.9903).

D. Architectural Stainless Steel Bent Closure Plate

Installation methods for the **Architectural Stainless Steel Bent Closure Plate** as specified on plans shall comply with the following;

- (1) Architectural Stainless In areas identified on the plans, secure Architectural Stainless Steel Bent Closure Plate (Item Code 824.9912) to CMU Back-up Wall with Stainless Steel Concrete Screws at 16" o.c. Contractor shall ensure a minimum 4" overlap coverage between Bent Plate and CMU.

METHOD OF MEASUREMENT:

Architectural Stainless Steel Decorative Plate shall be measured as listed below and be placed in accordance with the Plans and/or as directed by the Engineer.

Contract Item	Measurement Unit
824.9901 Architectural Stainless Steel Decorative Plate, Type A	SF
824.9910 Architectural Stainless Steel Decorative Plate, Type B	SF
824.9911 Architectural Stainless Steel Angle	LF
824.9912 Architectural Stainless Steel Bent Closure Plate	LF

BASIS OF PAYMENT

Architectural Stainless Steel Decorative Plate shall be paid for at the contract unit price as listed below. The price so-stated constitutes complete compensation for all labor, materials and equipment, including all Stainless Steel Plate, Ipe Wood Blocking, Stainless Steel Fasteners, Luminaires and drivers as well as all other incidentals and ancillary electrical hardware required to finish the work, complete and accepted by the Architect.

Contract Item	Payment Unit
824.9901 Architectural Stainless Steel Decorative Plate, Type A	SF
824.9910 Architectural Stainless Steel Decorative Plate, Type B	SF
824.9911 Architectural Stainless Steel Angle	LF
824.9912 Architectural Stainless Steel Bent Closure Plate	LF

END OF SECTION

S:\PROJECTS\195FD\DESIGN\Contract 16\Addendum 8\Specs from INform\824.9901-ARCHITECTURAL STAINLESS STEEL DECORATIVE PLATE Add 8.docx

JOB SPECIFIC

ITEM CODE 830.9901
ARCHITECTURAL RAILING, TYPE A, UPPER DECK W/LED

ITEM CODE 830.9902
ARCHITECTURAL RAILING, TYPE B, LOWER DECK W/LED

ITEM CODE 830.9903
ARCHITECTURAL RAILING, TYPE C, HANDRAIL AT STEPS

ITEM CODE 830.9904
ARCHITECTURAL RAILING, TYPE D, WEST ABUTMENT W/LED

ITEM CODE 830.9905
ARCHITECTURAL RAILING, TYPE E, EAST ABUTMENT W/LED

ITEM CODE 830.9906
ARCHITECTURAL RAILING, TYPE F, HANDRAIL W/LED

ITEM CODE 830.9907
ARCHITECTURAL RAILING, TYPE G, HANDRAIL W/LED

ITEM CODE 830.9910
ARCHITECTURAL RAILING, TYPE BW, BOARDWALK

ITEM CODE 830.9911
ARCHITECTURAL RAILING, TYPE W, WALL D & BOARDWALK WINGWALL

DESCRIPTION:

Work under this item shall consist of, all work associated with the furnishing, fabricating, storing, handling, hauling and installing the Architectural Railing in accordance with Section 830 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Architect and Engineer. The Contractor shall subcontract these items such that they are furnished, fabricated, and installed by or installation that is directly supervised on-site by, one of the three prequalified firms as specified in item code 105.9999.

MATERIALS:

Materials for Architectural Railing shall conform to both the applicable provisions of SECTION M.11; TIMBER, and M.05; METALS, of the Rhode Island Department of Transportation Standard Specifications and the following additional requirements;

All Stainless Steel shall be austenitic UNS S31603 (316L).

Stainless Steel finish is to be Wet Polished Long Grain #4 or Hairline Polish.

Maximum installed Surface Roughness of Stainless Steel shall be 20 µin (micro inches) or less and shall be certified by the fabricator using a profilometer.

All Stainless Steel Sheet, Strip and Plates shall conform to ASTM A240/A240M and ASTM A480/A480M with a Sulphur content not to exceed 0.005%. Stainless Steel Sheet and Plates shall be Stretcher Leveled Standard of Flatness in accordance with ASTM 480/480M Table A2.8. Contractor to provide copies of certification showing compliance.

All stainless steel bars and hot or cold rolled shapes shall conform to ASTM A276

All welding shall comply with AWS D1.6, "Structural Welding Code--Stainless Steel". All welds to be pickled to comply with ASTM A380 and chemically passivated to comply with ASTM A967. Contractor shall certify that the finished installed surfaces are free of iron contamination using one of the tests prescribed in ASTM A967. Wet towel test is permissible.

Stainless Steel Fasteners shall conform to Group 2 ASTM F593G or F593H (condition CW1 or CW2) or A1082/A1082M UNS S32101, S32304 or S32205.

The Contractor shall use the following wood species for all wood components associated with the Architectural Railing Types identified as "**Ipe Guard**" in this special provision.

Ipe Wood

Botanical Name: *Tabebuia* spp. (Lapacho group)

Janka Hardness of 3,680 lb_f

Bending strength is 23,360 psi

Shrinkage: Radial: 5.9%, Tangential: 7.2%, Volumetric: 12.4%, T/R Ratio: 1.2

Class A fire rating

Moisture Content:

3x10 to be locally acclimated allowing the material to naturally achieve the local EMC (Equilibrium Moisture Content). The contractor shall allow wood to acclimate locally for a minimum period of 14 weeks prior to fabrication and/or installation. The Contractor shall adhere to the manufacturer's guidelines on Ipe Acclimation and provide Bills of lading and approved shipping invoices to document length in storage. The contractor shall refer to the United States Department of Agriculture (USDA) Forest Service Research Publication FPL-RN-0268 "Equilibrium Moisture Content of Wood in Outdoor Locations in the United States and Worldwide" for acceptable EMC values for Providence, RI.

Supplier shall pre-treat all surfaces of wood guard with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin prior to delivery to Contractor..

Manufacturer: Minimum 5 years' experience producing similar products.

Supplier to provide Contractor with Chain of Custody documentation for wood including required compliance with Lacey Act provisions.

Provide a manufacturer's standard 25 year warranty. The terms of the warranty shall state that the application of Ipe decking installed per supplier and fastener manufacturer recommendations is guaranteed to resist rot and insect damage for 25 years from the original purchase date.

Structural Requirements: Architectural Railing shall be capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated on the Plans:

1. Handrails:
 - a. Uniform load of 50 lbs/ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbs (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Top Rails of Guards:
 - a. 50 lbs/ft. (0.73 kN/m) applied horizontally and concurrently with 100 lbs/ft. (1.46 kN/m) applied vertically downward.
 - b. Concentrated load of 200 lbs (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
3. Wire Rope Infill:
 - a. Concentrated load of 200 lbs (0.89 kN) applied horizontally on an area of 1 SF (0.093 sm).
4. Railing shall comply with all requirements of the ADA and OSHA regulations.

Architectural Railing shall be designed, fabricated, and installed to comply with applicable codes and regulations.

1. Minimum guardrail height: 42 inches (1067 mm).
2. Maximum opening in guardrail: Shall restrict 4 inches (102 mm) diameter sphere.
3. Handrail diameter: 1-1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum.
4. Handrail clearance from wall: 1-1/2 inches (38 mm) minimum.

The Wire rope railing systems shall be designed, fabricated, and installed to

accommodate expansion and contraction of metal components without causing undue stress, buckling, opening of joints, and distortion.

Design supports and hardware to withstand loads encountered without excessive deflection or distortion when cables are tensioned to required amounts required to conform to applicable building codes.

Exposed fasteners shall be of same materials, color and finish as material to which applied. Exposed surfaces throughout project shall have same inherent texture and color for similar locations.

Wire Rope to be ASTM A492 UNS S31600 (316) stainless steel. Fabricate wire rope with integral colored filament designating specific manufacturer.

- A. Type 1: Stainless Steel Wire Rope Construction, 6 x 7 +WC INOX No. 10820-0600 with VISSLINE external thread ends RH on both ends as manufactured by Jakob, Inc. or approved equal.
 - 1. Diameter: 6 mm
 - 2. Breaking load including safety factor: 4,000 pounds (1,814 kg) minimum.
 - 3. Tension cables per manufacturer recommendation

The following Architectural Railing types are to be produced as described below;

A. Architectural Railing, Type A, Upper Deck w/LED – Item Code 830.9901

A typical Architectural Railing, Type A, Upper Deck w/LED shall consist of the following materials;

- (1) Guard Rail shall be 1 ¼" diameter stainless steel pipe.
- (2) Guard Rail Sleeve Insert shall be stainless steel pipe sized to fit interior diameter of between continuous Guard Rail end conditions.
- (3) Custom Profiled 3x10 Ipe Guard – shaped per plans and 3D Digital Model. Provide end sealer – AnchorSeal as manufactured by UC Coatings.
- (4) Two (2) 2 ½" wide - 4" x 15/16" x 3/16" bent stainless steel bent plate support.
- (5) Rail support arm shall be 5/8" thick stainless steel.
- (6) Two (2) vertical railing bars shall be ½" thick stainless steel plate.
- (7) One (1) Intermediate support bar shall be ¼" thick x 1 ½" wide stainless steel plate.
- (8) Four (4) flathead countersunk sex bolts shall be ½" diameter stainless steel.
- (9) Tensioned stainless steel wire rope shall be 6mm in diameter.
- (10) Electrical chase shall be 3/16" x 1 ¼" stainless steel square tube and continuous through base plate below.
- (11) One (1) translucent panel with flat polished edges and satin underside finish

- shall be 1" thick x 1" wide cast resin.
- (12) Two (2) threaded cap stainless steel fastener.
 - (13) Two (2) clips shall be 3/16" thick stainless steel angles.
 - (14) Foot Rail shall be 1" diameter stainless steel pipe.
 - (15) Stainless Steel Vertical support base Vertical support base shall be 5/8" thick stainless steel.
 - (16) Stainless Steel Base Plate and fasteners as specified in the Structural Drawings.
 - (17) Plate-to-plate fasteners shall be 1/2" diameter flathead countersunk stainless steel sex bolts.
 - (18) Luminaire Type H (Item Code T07.9902)
 - (19) Luminaire Type H2 (Item Code T07.9903)
 - (20) Luminaire Type V (Item Code T07.9913)
 - (21) Lighting DMX power integrator–for luminaire Type V (Item Code T07.9914)
 - (22) lighting power supplies/drivers – for Luminaire Types H, H2 (Item Code T07.9917)

B. Architectural Railing, Type B, Lower Deck w/LED – Item Code 830.9902

A typical Architectural Railing, Type B, Lower Deck w/LED shall consist of the following materials;

- (1) Guard rail shall be 1 1/4" diameter stainless steel pipe.
- (2) Guard rail support shall be 3/4" thick stainless steel plate.
- (3) Two (2) flathead countersunk sex bolts shall be 5/8" diameter stainless steel.
- (4) Continuous bar shall be 1/2" thick by 2 1/2" wide stainless steel plate
- (5) (2) Plate support angles shall be 3/16" x 4" x 2.5" stainless steel.
- (6) Vertical railing bar shall 3/8" thick x 2 1/2" wide stainless steel plate.
- (7) Intermediate support bar shall be 1/4" thick x 1 1/2" wide stainless steel plate.
- (8) Two (2) flathead countersunk sex bolts shall be 5/8" diameter stainless steel.
- (9) Tensioned stainless steel wire rope shall be 6mm.
- (10) Foot rail shall be 1" diameter stainless steel pipe.
- (11) Stainless Steel Vertical support base shall be 3/4" thick stainless steel.
- (12) Stainless Steel Base Plate and fasteners as specified in the Structural Drawings.
- (13) Plate-to-plate fasteners shall be 5/8" diameter flathead countersunk stainless steel sex bolts.
- (14) Handrail shall be 1 1/2" diameter stainless with integral Luminaire Type IHA (Item Code T07.9904)
- (15) Lighting Power Supplies/Drivers – For Luminaire Types IHA (Item Code T07.9905)

C. Architectural Railing, Type C, Handrail at Steps – Item Code 830.9903

A typical Architectural Railing, Type C, Handrail at Steps shall consist of the following materials;

- (1) Handrail shall be 1 ½" diameter stainless steel pipe.
- (2) Two (2) vertical bar supports shall be 3/8" thick x 2" wide stainless steel plates.
- (3) Guard rail support shall be ¾" thick x 2" wide stainless steel plate.
- (4) Vertical support shall be ¾" thick x 2" wide stainless steel plate with welded connection to Grade, Riser or Wall Base Plate.
- (5) Riser Base Plate shall be ½" thick stainless steel plate.
- (6) Grade Base Plate shall be 5/8" thick stainless steel plate
- (7) Wall Base Plate shall be ½" thick stainless steel plate
- (8) Countersunk, stainless steel expansion anchors at connections to cast-in-place concrete wall, slab and steps.
- (9) Plate-to-plate fasteners shall be 5/8" diameter flathead countersunk S.S. sex bolts.

D. Architectural Railing, Type D, West Abutment w/LED – Item Code 830.9904

A typical Architectural Railing, Type D, West Abutment w/LED shall consist of the following materials;

- (1) Custom Profiled 3x10 Ipe Guard – shaped per plans and 3D Digital Model. Provide end sealer – AnchorSeal as manufactured by UC Coatings.
- (2) Guard rail support arm shall be 5/8" thick stainless steel.
- (3) Continuous bar shall be 3/8" thick by 2 ½" wide stainless steel plate.
- (4) Continuous angle shall be 1" x 1" x 3/16" stainless steel.
- (5) Two (2) vertical railing bar shall ½" thick x 2 ½" wide stainless steel plate.
- (6) Intermediate support bar shall be ¼" thick x 1 ½" wide.
- (7) Intermediate support mounting plate shall be 1 ½" x 2 ½" x 3/8" stainless steel plate.
- (8) Two (2) flathead countersunk sex bolts shall be ½" diameter stainless steel.
- (9) Tensioned stainless steel wire rope shall be 6mm.
- (10) Wall plate shall be 4 ½" x 4 ½" x 3/8" stainless steel plate with a 2 7/8" x 4 ½" x 5/8" welded Vertical Support Plate with drilled holes for sex bolt connections.
- (11) Plate-to-plate fasteners shall be ½" diameter flathead countersunk stainless steel sex bolts.
- (12) Luminaire Type H (Item Code T07.9902)
- (13) Luminaire Type H2 (Item Code T07.9903)
- (14) Lighting power supplies/drivers – for Luminaire Types H, H2 (Item Code T07.9917)

E. Architectural Railing, Type E, East Abutment w/LED – Item Code 830.9905

A typical Architectural Railing, Type E, East Abutment w/LED shall consist of the following materials;

- (1) Custom Profiled 3x10 Ipe Guard – shaped per plans and 3D Digital Model. Provide end sealer – AnchorSeal as manufactured by UC Coatings.
- (2) Two (2) plate supports angles shall be 4" x 2 ½" x 3/16" stainless steel.
- (3) Continuous bar shall be ½" thick by 2 ½" wide stainless steel plate.
- (4) Continuous angle shall be 1" x 1" x 3/16" stainless steel.
- (5) Two (2) vertical railing bar shall ½" thick x 2 ½" wide stainless steel plate.
- (6) Guard rail support shall be 5/8" thick stainless steel plate.
- (7) Two (2) flathead countersunk sex bolts shall be ½" diameter stainless steel.
- (8) Tensioned stainless steel wire rope shall be 6mm.
- (9) Base shall be 5/8" thick stainless steel plate.
- (10) Plate-to-plate fasteners shall be ½" diameter flathead countersunk S.S. sex bolts.
- (11) Luminaire Type H (Item Code T07.9902)
- (12) Lighting power supplies/drivers – for Luminaire Types H (Item Code T07.9917)

F. Architectural Railing, Type F, Handrail w/LED – Item Code 830.9906

A typical Architectural Railing, Type F, Handrail w/LED shall consist of the following materials;

- (1) Handrail with integral LED lighting shall be 1 ½" diameter stainless steel pipe.
- (2) Wall mounting plate shall be ¼" thick stainless steel.
- (3) Three (3) flathead countersunk stainless steel tamper-proof expansion anchor per wall plate.
- (4) Rod support shall be ½" diameter stainless steel pipe.
- (5) Luminaire Type H (Item Code T07.9902)
- (6) Lighting power supplies/drivers – for Luminaire Types H (Item Code T07.9917)

G. Architectural Railing, Type G, Lower Deck w/LED – Item Code 830.9907

A typical Architectural Railing, Type G, Lower Deck w/LED shall consist of the following materials;

- (1) Guard rail shall be 1 ¼" diameter stainless steel pipe.
- (2) Guard rail support shall be ¾" thick stainless steel plate.
- (3) Two (2) flathead countersunk sex bolts shall be 5/8" diameter stainless steel.
- (4) Continuous bar shall be ½" thick by 2 ½" wide stainless steel plate
- (5) Vertical railing bar shall be 3/8" thick x 2 ½" wide stainless steel plate.
- (6) Intermediate support bar shall be ¼" thick x 1 ½" wide stainless steel plate.
- (7) Two (2) flathead countersunk sex bolts shall be 5/8" diameter stainless steel.
- (8) Tensioned stainless steel wire rope shall be 6mm.
- (9) Foot rail shall be 1" diameter stainless steel pipe.

- (10) Stainless Steel Vertical support base shall be $\frac{3}{4}$ " thick stainless steel.
- (11) Stainless Steel Base Plate and fasteners as specified in the Structural Drawings.
- (12) Plate-to-plate fasteners shall be $\frac{5}{8}$ " diameter flathead countersunk stainless steel sex bolts.
- (13) Handrail shall be 1 $\frac{1}{2}$ " diameter stainless with integral Luminaire Type IHA (Item Code T07.9904)
- (14) Lighting Power Supplies/Drivers – For Luminaire Types IHA (Item Code T07.9905)

H. Architectural Railing, Type BW, Boardwalk – Item Code 830.99010 & Type W, Wall D and Boardwalk Wingwall – Item Code 830.9911

A typical Architectural Railing, Type BW, Boardwalk & Type W, Wall D and Boardwalk Wingwall shall consist of the following materials;

- (1) Guard rail shall be 1 $\frac{1}{4}$ " diameter stainless steel pipe.
- (2) Guard rail support shall be $\frac{5}{8}$ " thick stainless steel plate.
- (3) Two (2) flathead countersunk sex bolts shall be $\frac{1}{2}$ " diameter stainless steel.
- (4) Continuous bar shall be $\frac{3}{8}$ " thick by 2 $\frac{1}{2}$ " wide stainless steel plate
- (5) (2) Plate support angles shall be $\frac{3}{16}$ " x 4" x 2.5" stainless steel.
- (6) Vertical railing bar shall $\frac{1}{2}$ " thick x 2 $\frac{1}{2}$ " wide stainless steel plate.
- (7) Intermediate support bar shall be $\frac{1}{4}$ " thick x 1 $\frac{1}{2}$ " wide stainless steel plate.
- (8) Two (2) flathead countersunk sex bolts shall be $\frac{3}{8}$ " diameter stainless steel.
- (9) Tensioned stainless steel wire rope shall be 6mm.
- (10) Foot rail shall be 1" diameter stainless steel pipe.
- (11) Vertical support base shall be $\frac{5}{8}$ " thick stainless steel.
- (12) Anchorage bolts and base plate shall be stainless steel
- (13) Plate-to-plate fasteners shall be $\frac{3}{8}$ " diameter flathead countersunk stainless steel sex bolts.
- (14) Handrail shall be 1 $\frac{1}{2}$ " diameter stainless
- (15) Special rail posts and plates at corners

Type BW and W railings do not have lighting.

Submittals

The Contractor shall provide samples and submit shop drawings as identified below. All shop drawings and samples should be submitted as a comprehensive package for each Architectural Railing type;

A. Samples:

1. Post and rail sections - minimum 4 inch (100 mm) long piece of each handrail type.
 2. Infill
 - a. Cable – minimum 12 inch long piece with end fittings.
 - b. Translucent Panel – minimum 8 inch long piece of cast resin.
 3. Fasteners: Submit samples and manufacturer data sheets for each fastener type required.
 4. Profiled Ipe Wood: Submit 1 sample (minimum of 48" long) of profiled Ipe Wood Guard with integral Luminaire Type H (Item Code T07.9902). Pre-treat all surfaces of wood guard with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin
 5. Submit 2 samples (minimum of 24" long) of stainless steel handrail with integral Luminaire Type IHAL.
 6. Stainless Steel Rod and Pipe: Submit 2 samples of each diameter specified with specified finish.
- B. Field Mock-up:
Provide a mock-up of each railing type identified within this special provision for evaluation of preparation techniques and installation workmanship.
1. Locate in areas designated by Engineer.
 2. Size: Minimum of 10 linear feet and including typical anchors and connections.
 3. Do not proceed with remaining work until workmanship is approved by the Engineer.
 4. Rework mock-up as required to produce acceptable work.
 5. Retain mock-up during construction as quality standard.
 6. If approved by Engineer the mock-up can be incorporated into the work.
- C. Shop Drawings
Submit shop drawings for Architectural Railings identifying all components required. Shop drawings shall include plan drawings showing layout and detail drawings showing how the various components fit together. Include manufacturer's literature completely describing all components of this special provision and giving detailed installation recommendations and instructions. The Contractor may reference the 3D digital model released with the tender documents for this project.

CONSTRUCTION METHODS:

The Construction Methods of the Architectural Railing shall be in accordance with Section 830 of the Rhode Island Standard Specifications for Road and Bridge Construction and as supplemented or modified herein.

Assemble and install Architectural Railing as indicated on plans. Secure to structural

steel perimeter framing at locations indicated on plans and approved by the Engineer. All hardware, fasteners and bolts should be designated as 'tamper-proof'.

A. Architectural Railing, Type A, Upper Deck w/LED

A typical Architectural Railing, Type A, Upper Deck w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Ipe Guard Rail shall be 3"x10" profiled Ipe wood board. All, corners, bends and turns of the profiled Ipe guard rail shall be mitered. Two 4"x2.5"x1" pockets shall be milled for 3/16" stainless steel plate supports at each end of Ipe wood guard rail.
- (3) Install Luminaire Type H/ H2 within Ipe Guard Rail as identified on the plans. Use manufacturer recommended fasteners for connections to Ipe wood guard rail. Provide connection to lighting power supplies/drivers per electrical plans.
- (4) Two (2) Plate Supports shall be welded to 1/4" thick stainless steel vertical railing bars. All corners, bends and turns in the plate shall be mitered.
- (5) Continuous angle shall be fastened at 16" intervals to Ipe wood guard rail. Holes shall be provided at fastener connections.
- (6) All corners, bends and turns in the pipe rail shall have radius as identified on the plans. Provide countersunk tapped connection to sleeve insert at pipe-to-pipe connections. All tapped connections to be outward facing from interior deck of the pedestrian bridge.
- (7) Guard Rail Sleeve Insert shall be sized to fit interior diameter of adjacent Guard Rail end condition. Provide tapped connections to stainless steel pipe Guard Rail.
- (8) Provide shop welded connection of stainless steel bent plate to rail support. Grind smooth all welds.
- (9) Stainless steel rail support arm plate shall be deburred with beveled edges. Provide Four (4) holes provided for flathead countersunk stainless steel sex bolt connection with vertical support plates. One (1) hole provided for tensioned stainless steel rope pass-through.
- (10) Stainless steel vertical railing shall be deburred with beveled edges. Provide two (2) holes for 1 1/4" diameter stainless steel guard rail and foot rail thru-connections. Provide eight (8) holes shall be provided for countersunk flathead stainless steel sex bolt connection to rail support arm and vertical support base plate. Provide eleven (11) holes for tensioned stainless steel wire rope.
- (11) Stainless steel intermediate support bar shall be secured with a continuous shop weld to stainless steel guard rail and stainless steel foot rail. Provide ten (10) holes for 6mm diameter tensioned stainless steel wire rope.
- (12) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
- (13) Electrical chase shall be clip mounted with flat head countersunk stainless steel

screws through base plate below. One (1) 18"x1 ¼" stainless steel section of front plate shall be removed for electrical access and conduit feed. Install luminaire Type V and provide connection to lighting DMX power integrator.

- (14) Run conduit through stainless steel electrical chase below.
- (15) Two (2) holes shall be provided for stainless steel clip angle connections with stainless steel threaded cap by panel manufacturer to translucent cast resin panel.
- (16) Two (2) threaded cap stainless steel fasteners shall be provided by the manufacturer for stainless steel clip angle connections to top and bottom vertical supports.
- (17) Two (2) clips stainless steel angles shall be welded to vertical supports on each end of 1" cast resin translucent panel. One (1) hole shall be provided on each vertical leg for stainless steel threaded cap connection.
- (18) Pipe rail shall be secured with continuous welded connections to adjacent components. Grind smooth all welds. All corners, bends and turns in the pipe rail shall be mitered. Four holes for tapped connections shall be provided at each end of guard rail pipe.
- (19) Vertical support base shall be secured to bridge structure below as specified in the Structural Drawings. Four (4) holes shall be provided for flathead countersunk stainless steel sex bolt connections with vertical railing bars as specified in the Structural Drawings. One (1) 1 ¼" hole shall be provided for stainless steel foot rail and stainless steel rail sleeve connection. Vertical support base plate shall be secured with a continuous welded connection to stainless steel base plate. Two (2) stainless steel bushings each 5/16" thick shall be provided for fastening on either side of 5/8" plate at sex bolt locations.
- (20) Secure stainless steel base plate with a continuous welded connection to vertical support base. Fasteners shall be provided for connection to structure below as specified on the Structural Drawings.

B. Architectural Railing, Type B, Lower Deck w/LED

A typical Architectural Railing, Type B, Lower Deck w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Handrail Pipe with integral Luminaire Type IHA (Item Code T07.9904) shall be secured to the stainless steel guard rail support plates at each end per manufacturer recommendations. All corners, bends and turns in the pipe rail shall have radius as identified on the plans.
- (3) Guard Rail Sleeve Insert shall be sized to fit interior diameter of between continuous Guard Rail end conditions. Provide through openings for tapped connections to stainless steel pipe hand rail.
- (4) Continuous stainless steel horizontal bar shall be secured with continuous

- welded connections to 3/8" thick stainless steel vertical railing bar. All corners, bends and turns in the plate shall be mitered. Grind smooth all welds.
- (5) Vertical railing bar shall be fastened to stainless steel support plates with flathead countersunk stainless steel sex bolts. Provided nine (9) holes for 6mm diameter tensioned stainless steel wire rope. Four (4) holes shall be provided for flathead countersunk stainless steel sex bolt. One (1) hole shall be provided for 1 ¼" stainless steel foot rail. Vertical railing bar shall be secured to stainless steel foot rail through a continuous welded connection. Grind smooth all welds.
 - (6) Stainless steel intermediate support bar shall be secured in a continuous weld to stainless steel guard rail and stainless steel foot rail. Provide nine (9) holes for 6mm diameter tensioned stainless steel wire rope.
 - (7) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
 - (8) Foot rail shall be rim welded on each end to vertical railing bar. All corners, bends and turns in the pipe rail shall be mitered.
 - (9) Vertical support base shall be secured to bridge structure below as specified in the Structural Drawings. Two (2) holes shall be provided for flathead countersunk stainless steel sex bolt connections with vertical railing bars as specified in the Structural Drawings. One (1) hole shall be provided for stainless steel foot rail and stainless steel rail sleeve connection. Two (2) bushings each 5/16" thick shall be provided for fastening on either side of plate at sex bolt locations.
 - (10) Provide a continuous welded connection to vertical support base and base plate. Grind smooth all welds. Fasten to structure below with two (2) nut and bolt fastener connections.
 - (11) Run conduit through stainless steel electrical chase below.
 - (12) Stainless steel pipe shall be welded on each end to stainless steel handrail support rod. Holes shall be provided for attachment per light fixture manufacturer requirements
 - (13) Handrail support rod shall be secured with a continuous welded connection to stainless steel guard rail support and top electrical chase. Grind smooth all welds.

C. Architectural Railing, Type C, Handrail at Steps

A typical Architectural Railing, Type C, Handrail at Steps shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Handrail shall be shop welded to ½" diameter stainless steel rod support for electrical feed. Where pipe rail returns into concrete slab, drill a hole 3 inches deep and set with non-shrink hydraulic cement. All corners, bends and turns in the pipe rail shall be mitered. Grind smooth all welds.

- (3) Rod support shall be shop welded to handrail support plate and wall mounting plate. Grind smooth all welds.
- (4) Two (2) vertical bar supports shall be secured to handrail support plate with ½” diameter flathead countersunk S.S. sex bolts. Four (4) holes shall be provided for ½” diameter flathead countersunk S.S. sex bolts.
- (5) Guard rail support shall be secured to vertical supports through 3/8” diameter flathead countersunk S.S. sex bolts. Two (2) holes shall be provided for 3/8” diameter flathead countersunk S.S. sex bolts.
- (6) Vertical support and base plate shall be mounted top of “Masonry Veneer, Bluestone Steps” and secured to cast-in-place concrete steps. Pre-drill and provide 4” long countersunk, stainless steel expansion anchors at mounting location.
- (7) Riser Base Plate shall mounted to face of “Masonry Veneer, Bluestone Steps” riser. Pre-drill and provide 3” long countersunk, stainless steel expansion anchors at mounting location.
- (8) Wall Plate shall mounted to face of “Masonry Veneer, Bluestone Tile, Sloped”. Pre-drill and provide countersunk, stainless steel expansion anchor at mounting locations to fully-grouted CMU wall – minimum 3” depth penetration into CMU.

D. Architectural Railing, Type D, West Abutment w/LED

A typical Architectural Railing, Type D, West Abutment w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Ipe Guard Rail shall be 3”x10” profiled Ipe wood board. All, corners, bends and turns of the profiled Ipe guard rail shall be mitered. Two 4”x2.5”x1” pockets shall be milled for 3/16” stainless steel plate supports at each end of Ipe wood guard rail.
- (3) Install Luminaire Type H/ H2 within Ipe Guard Rail as identified on the plans. Use manufacturer recommended fasteners for connections to Ipe wood guard rail. Provide connection to lighting power supplies/drivers per electrical plans.
- (4) Two (2) plate supports angle shall be shop welded to ¼” thick stainless steel vertical railing bars at each end. All corners, bends and turns in the plate shall have radius as identified on the plans. Grind smooth all welds.
- (5) Continuous stainless steel horizontal bar shall be secured with continuous shop welded connections to ½” thick stainless steel vertical railing bar. All corners, bends and turns in the plate shall have radius as identified on the plans. Grind smooth all welds.
- (6) Continuous angle shall be fastened at 16” intervals to Ipe wood guard rail. Holes shall be provided at fastener connections.
- (7) Vertical railing bar shall be fastened to stainless steel support plates through ½” flathead countersunk stainless steel sex bolts. Provided nine holes for 6mm

diameter tensioned stainless steel wire rope as required to accommodate changing slope of top of abutment wall. Four (4) holes shall be provided for 3/8" flathead countersunk stainless steel sex bolt.

- (8) Stainless steel intermediate support bar shall be secured in a continuous shop weld to stainless steel guard rail and stainless steel foot rail. Provide nine (9) holes for 6mm diameter tensioned stainless steel wire rope.
- (9) Intermediate support mounting plate shall be secured to face of retaining wall with 3/8" flathead countersunk stainless steel sex bolts. Two (2) holes shall be provided for 3/8" flathead countersunk stainless steel sex bolts for connection to face of retaining wall.
- (10) Guard rail support shall be secured to vertical railing bars with 3/8" diameter flathead countersunk S.S. sex bolts. Two (2) holes shall be provided for 3/8" diameter flathead countersunk S.S. sex bolts. One (1) hole shall be provided for 6 mm stainless steel wire rope.
- (11) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
- (12) Horizontal stainless steel face plate shall be secured to face of retaining wall with 3/8" diameter flathead countersunk stainless steel sex bolt connections with vertical rail supports. One (1) hole shall be provided for 3/8" diameter flathead countersunk stainless steel sex bolt connections with vertical rail supports. Vertical support base plate shall be welded to 1/2" thick stainless steel base plate. Grind smooth all welds.
- (13) Vertical support base plate shall be welded to 1/2" thick stainless steel base plate. Grind smooth all welds.

E. Architectural Railing, Type E, East Abutment w/LED

A typical Architectural Railing, Type E, East Abutment w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Ipe Guard Rail shall be 3"x10" profiled Ipe wood board. All, corners, bends and turns of the profiled Ipe guard rail shall be mitered. Two 4"x2.5"x1" pockets shall be milled for 3/16" stainless steel plate supports at each end of Ipe wood guard rail.
- (3) Install Luminaire Type H within Ipe Guard Rail as identified on the plans. Use manufacturer recommended fasteners for connections to Ipe wood guard rail. Provide connection to lighting power supplies/drivers per electrical plans.
- (4) Two (2) plate supports angle shall be shop welded to 1/4" thick stainless steel vertical railing bars at each end. All corners, bends and turns in the plate shall have radius as identified on the plans. Grind smooth all welds.
- (5) Continuous stainless steel horizontal bar shall be secured with continuous shop welded connections to 1/2" thick stainless steel vertical railing bar. All corners,

- bends and turns in the plate shall be mitered. Grind smooth all welds.
- (6) Continuous angle shall be fastened at 16" intervals to Ipe wood guard rail. Holes shall be provided at fastener connections.
 - (7) Vertical railing bars shall be shop welded to handrail support plate. Four (4) holes shall be provided for ½" diameter flathead countersunk S.S. sex bolts. One (1) hole shall be provided for 6mm diameter tensioned stainless steel rope. Grind smooth all welds.
 - (8) Guard rail support shall be secured to vertical railing bars with ½" diameter flathead countersunk S.S. sex bolts. Two (2) holes shall be provided for ½" diameter flathead countersunk S.S. sex bolts. Holes shall be provided for 6 mm stainless steel wire rope were necessary.
 - (9) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
 - (10) At Cast-In-Place Concrete Wall - Base shall be secured with a continuous welded connection to vertical rail support. Four (4) holes shall be provided for flathead stainless steel countersunk expansion anchor connection to concrete retaining wall below.
 - (11) At Steel Framed Wall - Base shall be secured with a continuous welded connection to vertical rail support. Four (4) holes shall be provided for ½"-24 UNF x 3" socket countersunk screw with stainless steel nut and washer assembly connection through stainless steel plate, Ipe blocking and to steel wall framing below.

F. Architectural Railing, Type F, Handrail w/LED

A typical Architectural Railing, Type F, Handrail w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32 inch (1 mm) unless otherwise indicated.
- (2) Handrail Pipe with integral Luminaire Type IHAL (Item Code T07.9904) shall be secured to handrail support per manufacturer recommendations.
- (3) Three (3) holes shall be provided for ½" flathead countersunk stainless steel tamper-proof expansion anchors to accommodate connections of wall mounting plate to concrete wall.
- (4) Rod support shall be shop welded to handrail support plate and wall mounting plate. Grind smooth all welds.

G. Architectural Railing, Type G, Lower Deck w/LED

A typical Architectural Railing, Type G, Lower Deck w/LED shall be assembled and installed as follows;

- (1) All exposed steel edges and corner conditions to be eased to a radius of 1/32

- inch (1 mm) unless otherwise indicated.
- (2) Handrail Pipe with integral Luminaire Type IHA (Item Code T07.9904) shall be secured to the stainless steel guard rail support plates at each end per manufacturer recommendations. All corners, bends and turns in the pipe rail shall have radius as identified on the plans.
 - (3) Guard Rail Sleeve Insert shall be sized to fit interior diameter of between continuous Guard Rail end conditions. Provide through openings for tapped connections to stainless steel pipe hand rail.
 - (4) Continuous stainless steel horizontal bar shall be secured with continuous welded connections to 3/8" thick stainless steel vertical railing bar. All corners, bends and turns in the plate shall be mitered. Grind smooth all welds.
 - (5) Vertical railing bar shall be fastened to stainless steel support plates with flathead countersunk stainless steel sex bolts. Provided nine (9) holes for 6mm diameter tensioned stainless steel wire rope. Four (4) holes shall be provided for flathead countersunk stainless steel sex bolt. One (1) hole shall be provided for 1 1/4" stainless steel foot rail. Vertical railing bar shall be secured to stainless steel foot rail through a continuous welded connection. Grind smooth all welds.
 - (6) Stainless steel intermediate support bar shall be secured in a continuous weld to stainless steel guard rail and stainless steel foot rail. Provide nine (9) holes for 6mm diameter tensioned stainless steel wire rope.
 - (7) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
 - (8) Foot rail shall be rim welded on each end to vertical railing bar. All corners, bends and turns in the pipe rail shall be mitered.
 - (9) Vertical support base shall be secured to wall structure below as specified in the Structural Drawings. Two (2) holes shall be provided for flathead countersunk stainless steel sex bolt connections with vertical railing bars as specified in the Structural Drawings. One (1) hole shall be provided for stainless steel foot rail and stainless steel rail sleeve connection. Two (2) bushings each 5/16" thick shall be provided for fastening on either side of plate at sex bolt locations.
 - (10) Vertical support base shall be secured through bluestone coping and into cast-in-place concrete wall with a minimum embedment of 6". Two (2) holes shall be provided for flathead countersunk stainless steel expansion anchors into concrete wall. Pre-drill all Bluestone coping prior to installation.
 - (11) Run conduit through stainless steel electrical chase below.
 - (12) Stainless steel pipe shall be welded on each end to stainless steel handrail support rod. Holes shall be provided for attachment per light fixture manufacturer requirements
 - (13) Handrail support rod shall be secured with a continuous welded connection to stainless steel guard rail support and top electrical chase. Grind smooth all welds.

H. Architectural Railing, Type BW, Boardwalk & Type W, Wall D and

Boardwalk Wingwall

A typical Architectural Railing, Type BW, Boardwalk & Type W, Wall D and Boardwalk Wingwall shall be assembled and installed as follows;

- (1) Handrail Pipe shall be secured to the stainless steel guard rail support plates at each end per manufacturer recommendations. All corners, bends and turns in the pipe rail shall have radius as identified on the plans.
- (2) Guard Rail Sleeve Insert shall be sized to fit interior diameter of between continuous Guard Rail end conditions. Provide through openings for tapped connections to stainless steel pipe hand rail.
- (3) Continuous stainless steel horizontal bar shall be secured with continuous welded connections to ½" thick stainless steel vertical railing bar. All corners, bends and turns in the plate shall be mitered. Grind smooth all welds.
- (4) Vertical railing bar shall be fastened to stainless steel support plates through ½" flathead countersunk stainless steel sex bolts. Provided nine (9) holes for 6mm diameter tensioned stainless steel wire rope. Four (4) holes shall be provided for ½" flathead countersunk stainless steel sex bolt. One (1) hole shall be provided for 1 ¼" stainless steel foot rail. Vertical railing bar shall be secured to stainless steel foot rail through a continuous welded connection. Grind smooth all welds.
- (5) Stainless steel intermediate support bar shall be secured in a continuous weld to stainless steel guard rail and stainless steel foot rail. Provide nine (9) holes for 6mm diameter tensioned stainless steel wire rope.
- (6) Stainless steel wire rope shall be fastened on each end to wire threading tensioner assembly.
- (7) Foot rail shall be rim welded on each end to vertical railing bar. All corners, bends and turns in the pipe rail shall be mitered.
- (8) For type BW, Vertical support base shall be secured to boardwalk structure below with ¾" diameter flathead counter countersunk stainless steel sex bolts. For type W, the vertical support base shall be secured to the walls or granite capstone by drilling and grouting adhesive anchors per section 819.9901 with stainless steel anchors.
- (9) Provide a continuous welded connection to vertical support base and base plate. Grind smooth all welds. Fasten to structure below with two (2) nut and bolt fastener connections.
- (10) Stainless steel pipe shall be welded on each end to stainless steel handrail support rod. Holes shall be provided for attachment per light fixture manufacturer requirements
- (11) Handrail support rod shall be secured with a continuous welded connection to stainless steel guard rail support and top electrical chase. Grind smooth all welds.

METHOD OF MEASUREMENT:

Architectural Railing shall be measured as listed below and be placed in various parts of the completed structure in accordance with the Plans and/or as directed by the Architect. Measurement shall be taken along the Ipe wood guard rail centerline-to-centerline of vertical rail supports.

Contract Item	Measurement Unit
830.9901 Architectural Railing, Type A, Upper Deck w/LED	LF
830.9902 Architectural Railing, Type B, Lower Deck w/LED	LF
830.9903 Architectural Railing, Type C, Handrail at Steps	LF
830.9904 Architectural Railing, Type D, West Abutment w/LED	LF
830.9905 Architectural Railing, Type E, East Abutment w/LED	LF
830.9906 Architectural Railing, Type F, Handrail w/LED	LF
830.9907 Architectural Railing, Type G, Handrail w/LED	LF
830.9910 Architectural Railing, Type BW, Boardwalk	LF
830.9911 Architectural Railing, Type W, Wall D & Boardwalk Wingwall	LF

BASIS OF PAYMENT

Architectural Railing, Type A-F shall be paid for at the contract unit price as listed below. The price so-stated constitutes complete compensation for all labor, materials and equipment, including all including all Ipe Wood, Stainless Steel Shapes, Bars and Plates, Wire Rope, Stainless Steel Fasteners and hardware, welding, drilling and grouting, Luminaires, Lighting Transformers, DMX power integrator, power supplies and drivers as well as all other incidentals and ancillary electrical hardware required to finish the work, complete and accepted by the Engineer. Waste and trimmed material shall not be considered for payment.

Contract Item	Payment Unit
830.9901 Architectural Railing, Type A, Upper Deck w/LED	LF
830.9902 Architectural Railing, Type B, Lower Deck w/LED	LF
830.9903 Architectural Railing, Type C, Handrail at Steps	LF
830.9904 Architectural Railing, Type D, West Abutment w/LED	LF
830.9905 Architectural Railing, Type E, East Abutment w/LED	LF
830.9906 Architectural Railing, Type F, Handrail w/LED	LF
830.9907 Architectural Railing, Type G, Handrail w/LED	LF
830.9910 Architectural Railing, Type BW, Boardwalk	LF
830.9911 Architectural Railing, Type W, Wall D & Boardwalk Wingwall	LF

END OF SECTION

S:\PROJECTS\195FD\DESIGN\Contract 16\Addendum 6\MS WORD SPEC PAGES\inform\830.9901 -ARCHITECTURAL RAILING Add 6.docx

CODE 834.9901
MASONRY VENEER, BLUESTONE TILE

CODE 834.9902
MASONRY VENEER, BLUESTONE TILE, SLOPED

CODE 834.9903
MASONRY VENEER, BLUESTONE COPING

CODE 834.9904
MASONRY VENEER, BLUESTONE STEPS

DESCRIPTION

Work under this item shall consist of, all work associated with the furnishing, fabricating, storing, handling, hauling and installing **Masonry Veneer, Bluestone** in accordance with section 834 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Architect and Engineer.

MATERIALS

Materials for Masonry Veneer, Bluestone Tile shall conform to the applicable provisions of SECTION M.09; 834.9901 of the Rhode Island Department of Transportation Standard Specifications and the following additional requirements;

Bluestone shall comply with ASTM C 616: CLASSIFICATION OF SANDSTONE--TYPE II QUARTZITE SANDSTONE

Composition: Silicon Dioxide 72.8%
Iron Oxide (Ferrous) 2.50%
Aluminum Oxide 12.2%
Magnesium Oxide 1.20%
Iron Oxide (Ferric) 1.92%
Sodium Oxide .85%
Calcium Oxide (Lime) .70%
Titanium Oxide 1.16%

Acid Resistance: N/A

Edge Detail: As identified in this Special Provision

Texture: As identified in this Special Provision

Thickness Range: As identified in this Special Provision

Lippage/Warpage: Quality Controlled

Flaking: Quality Controlled

Sealer Recommendation: N/A

Availability: Only quarried in Northeast Pennsylvania and Southern New York

Bluestone shall conform to ASTM Qualifications of Sandstone ASTM C-97, ASTM C-99, ASTM C-170 ASTM C-170, and ASTM C-241.

A. Masonry Veneer, Bluestone Tile

A typical Masonry Veneer, Bluestone Tile, shall consist of the following materials;

- (1) Stone Tiles shall be Bluestone Thin Veneer, ½ inch thick. Bluestone finish shall be 'Sawn Thermal Finish' and shall be precisely cut with dimensional edges and range in height and vary in length as identified on the plans and in the 3D Digital Model. Provide only sound stone tile free of defects. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and acceptance of the Engineer. Excessive cracks and chips shall be cause for rejection. Bluestone Tile shall meet the following specifications;
 - A. Modulus of Rupture according to ASTM C880, perpendicular to the rift: 2563 psi minimum
 - B. Bulk Specific Gravity: 2.58
 - C. Bulk Specific Gravity (SSD): 2.63
 - D. Apparent Specific Gravity: 2.72
 - E. Absorption (%): 1.9
 - F. Compressive Strength over 19,000 psi
 - G. Show no change in appearance after twenty freeze-thaw cycles in accordance with test procedure ASTM C-1026.
 - H. Meet the requirements of Los Angeles Abrasion Test specification ASTM C 131 Grading in accordance with ASTM C127 specifications.
- (2) Premium grade dry-set thin-set mortar and polymer additive. flexible Polymer-modified Portland cement mortar, complying with ANSI A118.4 and ISO 13007 C2ES2P2;
- (3) Grout – Premium, fast-setting, polymer-modified, color consistent, non-shrinking, efflorescence-free grout that can be used in joint widths 1/8" to ½".

B. Masonry Veneer, Bluestone Tile, Sloped

A typical Masonry Veneer, Bluestone Tile, Sloped shall consist of the following materials;

- (1) Stone Tiles shall be Bluestone Thin Veneer, ½ inch thick. Bluestone finish shall be 'Sawn Thermal Finish' and shall be precisely cut with dimensional edges and range in height and vary in length as identified on the plans and in the 3D Digital Model. Provide only sound stone tile free of defects. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and acceptance of the Engineer. Excessive cracks and chips shall be cause for rejection. Submit a minimum of five 12" x 12" x 1/2" samples of stone. Include the range of colors and exposed surface finish proposed for the work. Stone Tile must meet the specifications identified in A. Masonry Veneer, Bluestone Tile above.
- (2) Premium grade dry-set thin-set mortar and polymer additive. Flexible Polymer-modified Portland cement mortar, complying with ANSI A118.4 and ISO 13007 C2ES2P2; similar or equal to two-part Kerabond / Keralastic System as manufactured by Mapei.
- (3) Premium latex based waterproofing and crack isolation membrane; fast setting, flexible, thin, load-bearing, waterproofing membrane system consisting of a premixed quick-drying liquid latex, for installation under Masonry Veneer, Bluestone Tile or stone

- (4) complying with ANSI A118.10 and ANSI A118.12;
Grout – Premium, fast-setting, sanded, polymer-modified, color consistent, non-shrinking, efflorescence-free grout that can be used in joint widths 1/8" to 1/2"; complying with ANSI A118.6, ANSI A118.7 and ISO 13007 CG2WAF.
- (5) Drainage plane.
- (6) Weep system shall be 2 1/4" (57 mm) wide weep legs at 9 1/2" (241 mm) on center; continuous belt 1" (25.4 mm) wide; and total width of 6" (152mm).
- (7) Concrete Masonry Unit build out for battered wall. Block size per plans.
- (8) Stainless steel diamond metal lath with expanded metal lath tie wire fasteners.
- (9) Fabric skirt.
- (10) Weep screed shall be stainless steel bent into 70° V shape, 8 ft long.
- (11) Architectural Stainless Steel Bent Closure Plate (Item Code 824.9912).

C. Masonry Veneer, Bluestone Coping

A typical Masonry Veneer, Bluestone Coping shall consist of the following materials;

- (1) Stone coping shall be Bluestone, 1 inch thick. Bluestone finish shall be 'Sawn Thermal Finish' with 'Sawn Edge' and shall be precisely cut with dimensional edges, ranging in size, shape and length as identified on the plans and in the 3D Digital Model. Provide only sound stone tile free of defects. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and acceptance of the Engineer. Excessive cracks and chips shall be cause for rejection.
- (2) Premium grade dry-set thin-set mortar and polymer additive. Flexible Polymer-modified Portland cement mortar, complying with ANSI A118.4 and ISO 13007 C2ES2P2; similar or equal to two-part Kerabond / Keralastic System as manufactured by Mapei.
- (3) Grout – Premium, fast-setting, sanded, polymer-modified, color consistent, non-shrinking, efflorescence-free grout used in joint widths 1/8" to 5/8"; complying with ANSI A118.6, ANSI A118.7 and ISO 13007 CG2WAF.
- (4) Anchor Bolt – 7" x 1/2" diameter
- (5) Architectural Stainless Steel Angle (Item Code 824.9911).

D. Masonry Veneer, Bluestone Steps

A typical Masonry Veneer, Bluestone Steps shall consist of the following materials;

- (1) Stone step treads shall be Bluestone, 2 inch thick. Bluestone shall have a 'Thermal Finish' on top surface of tread and face of nosing and shall range in size, shape and length as identified on the plans and in the 3D Digital Model. Provide only sound stone tile free of defects. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and acceptance of the Engineer. Excessive cracks and chips shall be cause for rejection.
- (2) Stone step risers shall be Bluestone Thin Veneer, 1/2 inch thick. Bluestone finish shall be "Sawn Thermal Finish' and shall range in height and vary in length as identified on the plans. Provide only sound stone tile free of defects. Minor cracks and minor chipping incidental to methods of manufacture or handling are subject to visual inspection and acceptance of the Engineer. Excessive cracks and chips shall be cause for rejection. Submit a minimum of five 6" x 6" x 1/2" samples of stone. Include the range of colors and exposed surface finish proposed for the work. Stone Tile must meet the specifications identified in A. Masonry Veneer, Bluestone Tile above.

- (3) Premium grade dry-set thin-set mortar and polymer additive. Flexible Polymer-modified Portland cement mortar, complying with ANSI A118.4 and ISO 13007 C2ES2P2; similar or equal to two-part Kerabond / Keralastic System as manufactured by Mapei.
- (4) Grout – Premium, fast-setting, sanded, polymer-modified, color consistent, non-shrinking, efflorescence-free grout used in joint widths 1/8” to 5/8”; complying with ANSI A118.6, ANSI A118.7 and ISO 13007 CG2WAF.

Submittals

The Contractor shall provide samples and submit shop drawings as identified below;

A. Samples:

1. Bluestone Tile: Submit samples for type, color and finish required. Submit three 12” x 12” x 1/2” samples of stone. Include the range of colors and exposed surface finish proposed for the work.
2. Bluestone Coping: Submit samples for type, color and finish required. Submit a minimum of three 12” x 6” x 1” samples of stone. Include the range of colors and exposed surface finish proposed for the work.
3. Bluestone Steps: Submit samples for type, color and finish required. Submit a minimum of five 6” x 6” x 2” samples of stone. Include the range of colors and exposed surface finish proposed for the work.
4. Grout: Submit samples and manufacturer data sheets for grout type required.
5. Stainless Steel Angle: Submit samples for type, color and finish required. Submit a 6” long sample of 3” x 1” x 3/16” Stainless Steel Angle.

B. Shop Drawings:

Submit shop drawing for Masonry Veneer Bluestone identifying all components required. Shop drawings shall include plan drawings showing layout of all bluestone areas and detail drawings showing how the various components fit together. Include manufacturer’s literature completely describing all components of this special provision and giving detailed installation recommendations and instructions. The Contractor may reference the 3D digital model released with the tender documents for this project.

CONSTRUCTION METHODS:

Masonry Veneer, Bluestone Tile shall be set per suppliers’ specification and recommendation. All mechanical connections to the substrate must be pre-drilled through the stone tile and epoxy grouted. Any damage to the tile during construction shall not be accepted and shall need to be repaired or replaced.

Ensure substrate has cured for a minimum of 28 days prior to installation. Do not use mortar at temperatures below 40 degrees F. In hot or dry conditions, ensure that mortar does not flash-set. Remove all excess water prior to installation. Wait 24 hours after installation of mortar to install grout.

Do not use grout at temperatures below 50 degrees F. Prior to grouting, ensure that all tile is firmly set and that the mortar is completely dry. Grout joints must be clean and free of standing water, dust, dirt and foreign matter.

Architectural Stainless Steel Angle (Item Code 824.9911) shall be secured to fully grouted CMU Planter Walls with Stainless Steel Countersunk Expansion Anchor Bolts at 18" o.c.

Secure anchor bolt stud to underside of Masonry Veneer, Bluestone Coping at 24" o.c. Set in mortar and CMU Planter Wall and grout solid.

Joints between ends of individual tiles shall be raked to dimensions shown on the Plans and sealed with the specified type of joint sealer. Joints shall be carefully filled with grout and neatly pointed on top and face. After pointing, Masonry Veneer shall be cleaned of all excess grout to the satisfaction of the Engineer.

Installation methods for the sloped rain screen drainage system over steel frame construction specified on plans for '**Masonry Veneer, Bluestone Tile, Sloped**' shall comply with the following;

- (1) Install 2 layers of #15 asphalt-impregnated construction paper on battered wall and onto vertical wall 6 inches to 8 inches (152 mm to 203 mm).
- (2) Install drainage plane on battered wall; back-wrap 4-inch (102-mm) fabric skirt on bottom of first course.
- (3) Install 1 layer of ice/water shield waterproofing on fabric surface of first course of drainage plane. Run waterproofing up and over top of drainage plane and 2 layers of #15 asphalt-impregnated construction paper.
- (4) Install second layer of drainage plane over waterproofing on battered wall. Back-wrap 4-inch (102-mm) fabric skirt on bottom of second course.
- (5) Install metal termination on top of bottom of second course of drainage plane about 3/8 inch (10 mm) down from bottom of drainage plane.
- (6) Install expanded metal lath onto battered wall surface and terminate into metal termination at bottom of wall. Terminate top of metal lath at top of drainage plane.
- (7) Install 5/8-inch to 3/4-inch (16-mm to 19-mm) scratch coat and thin veneer.

Installation methods for the sloped rain screen drainage system over masonry back-up construction specified on plans for '**Masonry Veneer, Bluestone Tile, Sloped**' shall comply with the following;

- (1) In areas identified on the plans, secure Architectural Stainless Steel Bent Closure Plate (Item Code 824.9912) to CMU Back-up Wall with Stainless Steel Concrete Screws at 16" o.c. Contractor shall ensure a minimum 4" overlap coverage between Bent Plate and CMU.
- (2) Apply heavy waterproofing material to vertical surface of wall behind battered wall, build out, and a minimum of 6 inches to 8 inches (152 mm to 203 mm) up pasted top of battered wall.
- (3) Apply heavy waterproofing material to horizontal surface of extended brick ledge that supports battered wall build out.
- (4) Install drainage plane to heavy waterproofing on vertical wall behind battered wall, build out, and a minimum of 6 inches to 8 inches (152 mm to 203 mm) up pasted top of battered wall.
- (5) Install weep system 10 inches (254 mm) on center on horizontal surface of extended

brick ledge that supports battered wall build out. Run weeps from back of brick ledge to 2-inch (51-mm) pasted face of brick ledge and overlap on back end at vertical wall with 4-inch (102-mm) fabric skirt of drainage plane.

- (6) Install masonry build out for battered wall.
- (7) Install galvanized or stainless steel expanded metal lath tie wire fastener in every course of block 6 inches (152 mm) on center and extend them out pasted mortar fill a minimum of 6 inches to 8 inches (152 mm to 203 mm).
- (8) Apply heavy waterproofing on surface of battered wall and onto and over top of vertical waterproofing and drainage plane a minimum of 6 inches to 8 inches (152 mm to 203 mm).
- (9) Install drainage plane on battered wall, back-wrap 4-inch (102-mm) fabric skirt on bottom of battered wall.
- (10) Install metal termination at bottom of battered wall.
- (11) Install expanded metal lath on battered wall and terminate in metal termination on bottom of battered wall.
- (12) Apply 5/8-inch to 3/4-inch (16-mm to 19-mm) scratch coat and thin veneer.

METHOD OF MEASUREMENT:

Masonry Veneer, Bluestone Tile, Coping and Steps shall be measured as listed below and be placed in areas of the completed structure in accordance with the Plans and installed to the satisfaction of the Engineer. Computation of quantity shall be based on the nominal commercial widths and thicknesses, and area measured in square feet (including joints) actually installed of the respective materials.

Contract Item	Measurement Unit
834.9901 Masonry Veneer, Bluestone Tile	SF
834.9902 Masonry Veneer, Bluestone Tile, Sloped	SF
834.9903 Masonry Veneer, Bluestone Coping	SF
834.9904 Masonry Veneer, Bluestone Steps.....	SF

BASIS OF PAYMENT

The accepted quantities of Masonry Veneer, Bluestone Tile, Coping and Steps shall be paid for at their respective contract unit prices per square foot as listed in the proposal. The prices so-stated constitute full and complete compensation for all labor, materials and equipment including Water Proofing, Drainage Plane, Weep System, Stainless Steel Fasteners, Metal Lath, Grout, Thin-Set Mortar, Blue Stone Tiles and Bluestone Treads as well as all other incidentals required to finish the work, complete and accepted by the Engineer. Waste and cut material shall not be considered for payment.

Contract Item	Pay Unit
834.9901 Masonry Veneer, Bluestone Tile	SF
834.9902 Masonry Veneer, Bluestone Tile, Sloped	SF
834.9903 Masonry Veneer, Bluestone Coping	SF
834.9904 Masonry Veneer, Bluestone Steps.....	SF

END OF SECTION

S:\PROJECTS\I195FD\DESIGN\Contract 16\Addendum 8\Specs from INform\834.9901-9904-MASONRY VENEER Add 8.docx

JOB SPECIFIC
CODE 899.9901
ARCHITECTURAL STAINLESS STEEL MESH

DESCRIPTION:

Work under this item shall consist of, all work associated with the furnishing, fabricating, storing, handling, hauling and installing the Architectural Stainless Steel Mesh in accordance with Section 899 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Engineer. The mesh shall be installed under the bridge at the locations shown on the plans and as directed by the Engineer.

MATERIALS:

Materials for Architectural Stainless Steel Mesh shall conform to the following requirements;

Architectural Stainless Steel Mesh assemblies shall be designed, fabricated, and installed to accommodate expansion and contraction of metal components without causing undue stress, buckling, opening of joints, and distortion. Design for the following minimum temperature ranges.

1. Ambient Temperature Range: 120 degrees F (67 degrees C).
2. Material Surface Temperature Range: 180 degrees F (100 degrees C).

Design supports and hardware to withstand loads encountered without excessive deflection or distortion when cables are tensioned to required amounts required to conform to applicable building codes.

Components shall be free from defects impairing strength, durability and appearance. Exposed surfaces throughout system shall have same inherent texture and color for similar locations.

Design system to prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

Exposed fasteners shall be of same materials, color and finish as material to which applied. Exposed surfaces throughout project shall have same inherent texture and color for similar locations.

Architectural Stainless Steel Mesh

Architectural Stainless Steel Mesh, shall consist of the following materials;

- (1) Stainless Steel Net – 6 x 7 + WC 1mm diameter, AISI 316. Width of opening

- shall be 40mm. Minimum breaking strength 0.5kN.
- (2) Wire rope - 5/16" (8mm) with 6 x 7 + WC construction and 23 kg weight, ASTM A 492 and ASTM A 555, Type 316 stainless steel.
 - (3) Parallel ropes shall be 1/16"(1.5 mm) diameter stainless steel. Wire rope shall be fabricated from cold-drawn, AISI Type 316 stainless steel wire complying with ASTM A 492 and ASTM A 555. Lengths will be as indicated on the drawings.
 - (4) Rod spindles - solid stainless steel rods, AISI Type 316 complying with ASTM A276.
 - (5) Stainless steel clip - fabricated from AISI Type 316 and 316L stainless steel complying with ASTM F 1145.
 - (6) Stainless steel ring nut 2 1/8" O.D. (actual 54 mm) x 15/32" diameter (actual 12 mm) and support.
 - (7) Thread sleeve 13/32" diameter (actual 10 mm) x 1 1/2" Length (actual 38 mm)
 - (8) Turnbuckle with clevis 14" assembly length (actual 355 mm). Various span range length in open/closed positions. Type 316 stainless steel.
 - (9) Swaged clevis 1 3/4" mm assembly length (actual 143 mm) x 41/64" diameter (actual 16 mm) fabricated from AISI Type 316 and 316L stainless steel complying with ASTM F 1145.
 - (10) Stainless steel hooks.

Submittals

The Contractor shall provide two samples representing actual products and finishes as follows;

A. Samples:

1. Wire Rope and Fitting – Minimum size 12" x 12".
2. Rods, minimum size 12" long.
3. Typical Fittings.

B. Field Samples:

Provide a mock-up for evaluation of preparation techniques and installation workmanship.

1. Locate in areas designated by Engineer.
2. Size: Minimum of 10 square feet and including typical anchors and connections.
3. Do not proceed with remaining work until workmanship is approved by the Engineer.
4. Rework mock-up as required to produce acceptable work.
5. Retain mock-up during construction as quality standard.
6. Upon approval mock-up work may be incorporated into final work.

CODE 938.1000

PRICE ADJUSTMENTS

DESCRIPTION.

a. Liquid Asphalt Cement. The Base Price of Liquid Asphalt Cement as required to implement **Subsection 938.03.1** of the Standard Specifications is \$ 340.00 per ton.

In the case of modified asphalt binder, this price adjustment provision shall only apply to the neat liquid asphalt component. This provision shall not apply to the modifier component, manufacture, storage, transportation or other associated costs.

b. Diesel Fuel. The Base Price of Diesel Fuel as required to implement **Subsection 938.03.2** of the Standard Specifications is \$1.6524 per gallon.

S:\PROJECTS\I195FD\DESIGN\Contract 16\C16 Specs\Highway\938.1000.doc

Moisture Content: 2x4: to be kiln dried to 14% +/- 2%

Supplier shall pre-treat all surfaces of wood decking with VOC compliant Penetrating UV Protection Oil Finish as manufactured by Penofin prior to delivery to Contractor.

Manufacturer: Minimum 5 years' experience producing similar products.

Provide a manufacturer's standard 25 year warranty. The terms of the warranty shall state that the application of Ipe decking installed per supplier and fastener manufacturer recommendations is guaranteed to resist rot and insect damage for 25 years from the original installation date.

All Stainless Steel shall be type 316L.

Stainless Steel finish is to be Wet Polished Long Grain #4 or Hairline Polish.

Maximum Surface Roughness of Stainless Steel shall be 20 µin (micro inches) or less.

All Stainless Steel Shapes, Bars and Plates shall conform to ASTM A240/A240M and ASTM A480/A480M with a Sulphur content not to exceed 0.005%. Stainless Steel Bars and Plates shall be Stretcher Leveled Standard of Flatness in accordance with ASTM 480/480M Table A2.8. Contractor to provide copies of certification showing compliance.

All Stainless Steel welds to conform to ASTM A554 for Welded Stainless Steel Mechanical Tubing and comply with shall comply with AWS D1.6, "Structural Welding Code--Stainless Steel". All welds to be chemically passivated and comply with ASTM A380 and ASTM A967.

Stainless Steel Fasteners shall conform to ASTM F593C or F593D (AISI 30CW1 or CW2)

Engineered Acrylic Resin

1. Thickness: Minimum 1"

Basis of Design Product: The design of Engineered Acrylic Resin is based on Chroma XT as provided by 3form, Inc. Products from other manufacturers must be approved by the Architect prior to bidding.

Engineered Acrylic Resin minimum performance attributes:

1. Rate of Burning (ASTM D 635). Material must attain CC2 Rating for a nominal thickness of 1.5 mm (0.060 in.) and greater.
2. Self-Ignition Temperature (ASTM D 1929). Material must have a Self-ignition temperature greater than 850°F.
3. Density of Smoke (ASTM D 2843). Material must have a smoke density less than 10%.
4. Color infusion must use water soluble dyes and penetrate at least 150 microns into material.

JOB SPECIFIC

CODE 835.9901
DECK DRAIN, TYPE A

CODE 835.9902
DECK DRAIN, TYPE B

CODE 835.9903
PLANTER DRAIN

DESCRIPTION:

Work under this item shall consist of, all work associated with the furnishing and installing the Deck Drains and Planter Drain in accordance with Section 811, and Section 835 of the Rhode Island Department of Transportation Standard Specifications, the Contract Plans and this special provision, or as directed by the Engineer.

MATERIALS:

Materials for Deck Drains and Planter Drain shall conform to both the applicable provisions of SECTION M.04; DRAINAGE, of the Rhode Island Department of Transportation Standard Specifications and the following requirements;

The Deck Drains and Planter Drain will consist of the following materials;

A. Deck Drain, Type A – Item Code 835.9901

A Deck Drain, Type A shall consist of a Trench Gutter Drain as identified on the plans and meet the following criteria;

Drain

- (1) Basis-of-Design – Tuf-Tite TPAN-12 Trench Pan or approved equal;
- (2) Outlet: Bottom, 4" PVC, Schedule 40 pipe
- (3) Body Material: Non-corrosive High Density Polyethylene
- (4) Top Shape: Rectangular
- (5) Dimensions of Strainer: 6" x 12"

B. Deck Drain, Type B – Item Code 835.9902

A Deck Drain, Type B shall consist of a general purpose PVC area drain as identified on the plans and meet the following criteria;

- (1) Basis-of-Design – Oatey Series 43583 PVC General Purpose Floor Drain with 5" stainless steel Screw-Tite Strainer or approved equal;
- (2) Outlet: Bottom, 4" PVC, Schedule 40 pipe
- (3) Strainer Material: Stainless Steel
- (4) Top Shape: Round

C. Planter Drain – Item Code 835.9903

A Planter Drain shall consist of a Geo Outlet Connection as identified on the plans and meet the following criteria;

- (1) Basis-of-Design – American Wick Drain AWD-324 or approved equal.
- (2) Outlet: Bottom, 3” PVC, Schedule 40 pipe

Pipes and fittings

- (1) Solid-Wall PVC Pipe, Schedule 40: ASTM D 26650. Pipe shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784. PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785 and ASTM D 2665. Injection molded PVC DWV fittings shall conform to ASTM D 2665. Fabricated PVC DWV fittings shall conform to ASTM F 1866. Pipe and fittings shall conform to NSF International Standard 14.

CONSTRUCTION METHODS:

The Construction Methods of the Deck Drains and Planter Drain shall be in accordance with Section 811, and Section 835 of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction and as supplemented or modified herein.

- (1) Install deck drains at low points of surface areas to be drained as noted on the plans. Set deck drain flush with finished concrete deck or bottom of trench, unless otherwise indicated. Do not install grate, the deck drain shall remain open.
- (2) Set deck drain below elevation of surrounding finished slab to allow deck drainage. Set location of the deck drain according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
 - b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
- (3) Install deck drain flashing collar or flange so no leakage occurs between drain and adjoining surface. Maintain integrity of waterproof membranes where penetrated.
- (4) Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents

not compatible with PVC compounds. The system shall be hydrostatically tested after installation.

- (5) When the drainage pipe continues through the bridge superstructure and/or concrete deck, the drainage system shall have allowance for the expected differential expansion and contraction movements as recommended by the manufacturer.
- (6) At Geo Outlet for Planter Drain form a 4-inch diameter round hole in the prefabricated drain (through core and fabric) at the fitting connection location using the Geo Outlet Punch accessory or a standard utility knife. Insert drainage collector through back of prefabricated drain. Place All-Purpose Cement (compatible with both ABS and PVC plastic) on the portion of drainage collector that extends through prefabricated drain and attach retainer ring. Hand squeeze retainer ring to drainage collector to form a seal with prefabricated drain until cement sets (~10 seconds). Place All-Purpose Cement on inside portion of drainage collector and attach 3-inch diameter SCH 40 PVC pipe.

METHOD OF MEASUREMENT:

Deck Drains and Planter Drain shall be measured as listed below and be placed in accordance with the Plans and/or as directed by the Engineer.

Contract Item	Measurement Unit
835.9901 Deck Drain, Type A	EA
835.9902 Deck Drain, Type B	EA
835.9903 Planter Drain	EA

BASIS OF PAYMENT

Deck Drains and Planter Drain shall be paid for at the contract unit price as listed below. The price so-stated constitutes complete compensation for all labor, materials and equipment, including all Fittings, Hangers, Adhesives, Transitional Couplings, Anchors and Sleeves as well as all other incidentals and ancillary hardware required to finish the work, complete and accepted by the Engineer.

Contract Item	Payment Unit
835.9901 Deck Drain, Type A	EA
835.9902 Deck Drain, Type B	EA
835.9903 Planter Drain	EA

END OF SECTION

Table of Contents - Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge
 R.I. Contract No. - 2016-CB-038
 FAP Nos: REV 1950(001)

ItemCode	Description	Page
819.0800	DRILL AND GROUT REINFORCING DOWELS	38
823.9901	EXPANSION JOINT COVER PLATE, STAINLESS STEEL	39
824.0620	WELDED STUD SHEAR CONNECTORS 3/4 INCH DIAMETER	39
824.9901	ARCHITECTURAL STAINLESS STEEL DECORATIVE PLATE, TYPE A	39
824.9902	ASTM A500 GRADE B TUBE SECTIONS FURNISH, FABRICATE & ERECT	40
824.9903	FURNISH, FABRICATE & ERECT ARCHITECTURAL EXPOSED STRUCTURAL STEEL (AESS)	40
824.9905	AASHTO M270 GRADE 50 STEEL FURNISH, FABRICATE & ERECT BUILT-UP SIMPLE SPANS	40
824.9906	AASHTO M270 GRADE 50 STEEL FURNISH, FABRICATE & ERECT BUILT-UP CURVED (LARGE RADIUS)	40
824.9907	AASHTO M270 GRADE 50S ROLLED STEEL FLOOR BEAMS FURNISH, FABRICATE & ERECT	40
824.9910	ARCHITECTURAL STAINLESS STEEL DECORATIVE PLATE, TYPE B	41
824.9920	FURNISH, FABRICATE AND ERECT-MISCELLANEOUS GALVANIZED STEEL FOR BOARDWALK STRUCTURE	41
826.9907	MANAGEMENT OF BIRD GUANO AND MIXED DEBRIS	41
828.0400	PEDESTRIAN BRIDGE BEARINGS	42
828.9901	** ITEM DELETED **	43
830.9901	ARCHITECTURAL RAILING, TYPE A, UPPER DECK W/LED	43
830.9902	ARCHITECTURAL RAILING, TYPE B, LOWER DECK W/LED	44
830.9903	ARCHITECTURAL RAILING, TYPE C, HANDRAIL AT STEPS	44
830.9904	ARCHITECTURAL RAILING, TYPE D, WEST ABUTMENT W/LED	44
830.9905	ARCHITECTURAL RAILING, TYPE E, EAST ABUTMENT W/LED	44
830.9906	ARCHITECTURAL RAILING, TYPE F, HANDRAIL W/LED	45
830.9910	ARCHITECTURAL RAILING TYPE BW, BOARDWALK	45
830.9911	ARCHITECTURAL RAILING, TYPE W, WALL D & BOARDWALK WINGWALL	45
830.9940	REMOVE, RESTORE, & RESET 3 BAR STEEL RAIL - WALL J	45
830.9941	REMOVE, RESTORE & INSTALL FROM STOCKPILE 3 BAR STEEL RAIL- WALL J1	45
834.9901	MASONRY VENEER, BLUESTONE TILE	46
834.9902	MASONRY VENEER, BLUESTONE TILE, SLOPED	46
834.9903	MASONRY VENEER, BLUESTONE COPING	47
834.9904	MASONRY VENEER, BLUESTONE STEPS	47
834.9905	GRANITE CAPSTONE - TYPE A	47
834.9907	GRANITE CAPSTONE - TYPE C	48
834.9908	GRANITE CAPSTONE - TYPE D	48
842.0100	ANTI-GRAFFITI COATING	48
899.9901	ARCHITECTURAL STAINLESS STEEL MESH	48
903.0206	CHAIN LINK FENCE 6' STD 31.2.0	49
903.0231	DOUBLE GATE, CHAIN LINK 6' STANDARD 31.2.0	49
903.9901	CONCRETE FILLED GALVANIZED STEEL BOLLARD	49
903.9941	TEMPORARY CHAIN LINK FENCE, 6 FT. HIGH	50
903.9942	TEMPORARY CHAIN LINK FENCE GATE, 6 FT. HIGH, 20 FT. WIDE	50
903.9990	FENCE - AS DIRECTED	50
905.0140	BITUMINOUS SIDEWALK STANDARD 43.2.0	50
906.0720	RESET STOCKPILE CURB STRAIGHT CIRCULAR CORNER RETURNS	51
907.0100	WATER FOR DUST CONTROL	51
907.0200	CALCIUM CHLORIDE FOR DUST CONTROL (PROJECT WIDE)	51
911.9901	REMOVE, STOCKPILE AND REBUILD RUBBLE WALL	51
914.5010	FLAGPERSONS	52
914.5020	FLAGPERSONS - OVERTIME	52
919.0101	TEST PITS	52
920.0040	DUMPED STONE RIPRAP R-3, R-4, R-5 STANDARD 8.3.0	52
920.0060	PLACED STONE RIPRAP R-6, R-7, R-8	53

Table of Contents - Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge
 R.I. Contract No. - 2016-CB-038
 FAP Nos: REV 1950(001)

ItemCode	Description	Page
T05.0320	PULL BOX ON STRUCTURE TYPE V STANDARD 18.6.3	67
T05.9901	FLUSH MOUNTED FLOOR BOX WITH DUPLEX GFCI OUTLET AND DOUBLE GANG BOX WITH WEATHERPROOF COVERS	68
T06.4010	** ITEM DELETED **	68
T06.4015	** ITEM DELETED **	68
T06.4020	** ITEM DELETED **	68
T06.4040	** ITEM DELETED **	69
T06.5220	2 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	69
T06.5230	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	69
T06.5240	4 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	69
T06.9901	3/4" FIBERGLASS CONDUIT IN STRUCTURE	69
T06.9902	3/4" SCHEDULE 80 PVC CONDUIT WITHIN CONCRETE SLAB (LOWER DECK)	70
T06.9903	1 1/2" SCHEDULE 80 PVC CONDUIT WITHIN CONCRETE SLAB (LOWER DECK)	71
T07.9901	LUMINAIRE TYPE B	71
T07.9909	LUMINAIRE TYPE SL	71
T07.9912	LUMINAIRE TYPE UP3	71
T09.9901	EQUIPMENT ENCLOSURE - 60" HIGH	71
T09.9902	EQUIPMENT ENCLOSURE - 48" HIGH	71
T09.9905	ELECTRICAL SERVICE PANEL - 120/240V, 1-PHASE, 200A MCB, INTEGRAL SPD	72
T09.9906	LIGHTING CONTROL RELAY PANEL WITH USER INTERFACE AND PHOTOCELL	72
T15.0100	DIRECTIONAL REGULATORY AND WARNING SIGNS	72
937.9999	PEDESTRIAN WAY	72
706.9000	PLUG AND CAP PIPE ALL SIZES	72
806.9914	IPE WOOD DECK. LOWER DECK, TYPE B	73
830.9907	ARCHITECTURAL RAILING, TYPE G, HANDRAIL W/ LED	73
835.9901	DECK DRAIN, TYPE A	73
835.9902	DECK DRAIN, TYPE B	73
835.9903	PLANTER DRAIN	73
T04.6912	'12' STRANDED COPPER CONDUCTOR 600V INSULATION	73
T06.8020	2 INCH FIBERGLASS CONDUIT ON STRUCTURE	74
T06.8040	4 INCH FIBERGLASS CONDUIT ON STRUCTURE	74
T06.9904	1 IN. FIBERGLASS CONDUIT IN STRUCTURE	74
T06.9905	1-1/2 IN. FIBERGLASS CONDUIT IN STRUCTURE	74
T07.9905	LUMINAIRE TYPE PLNS	74
T07.9907	LUMINAIRE TYPE PLVN	75
T07.9908	LUMINAIRE TYPE UP2A	75
T07.9918	LUMINAIRE TYPE UP4	75
T07.9919	LUMINAIRE TYPE CCG	75
T07.9920	LUMINAIRE TYPE CMR	75
T09.9903	SERVICE PEDESTAL WITH METERING	75
807.9910	REMOVE, STOCKPILE AND RESET GRANITE VENEER ON BRIDGE PIERS	76
824.9911	ARCHITECTURAL STAINLESS STEEL ANGLE	76
824.9912	ARCHITECTURAL STAINLESS STEEL BENT CLOSURE PLATE	76
944.9901	DIESEL EMISSION REDUCTION PROGRAM	76

Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge

R.I. Contract No. - 2016-CB-038

FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
060	708.9041 Cont.	29+50, 22' RT		1.00	0031	01
		30+75, 22' RT		1.00	0031	01
		SERVICE ROAD 8				
		6+92, 14' LT		1.00	0031	01
		9+03, 15' LT		1.00	0031	01
		9+07, 15' LT		1.00	0031	01
		9+13, 15' LT		1.00	0031	01
		SOUTH WATER STREET				
		28+41, 22' RT		1.00	0031	01
		29+50, 22' RT		1.00	0031	01
		30+75, 22' RT		1.00	0031	01
Item 708.9041 Total:				14.00		
061	803.9901	PARTIAL REMOVAL AND DISPOSAL OF MASONRY WALLS AND ABUTMENTS	CY			
		WALL D AND NORTH ABUTMENT				
		1 NW END POST TO SW CORNER		35.00	0008	03
		2 SW CORNER TO- N. ABUTMENT		15.00	0008	03
		3 NORTH ABUTMENT		25.00	0008	03
		4 N. ABUTMENT TO WALL J		23.00	0008	03
		WALL J		7.00	0008	03
Item 803.9901 Total:				105.00		
062	803.9902	PARTIAL REMOVAL AND DISPOSAL OF MASONRY BRIDGE PIERS AND PILE CAPS	CY			
		CONTRACT 16				
		ADD 5% AS DIRECTED		4.00	0028	02
		PEDESTRIAN BRIDGE PIERS				
		ABUTMENT B2		27.00	0028	02
		ABUTMENT B8		15.00	0028	02
		PIER B3		12.00	0028	02
		PIER B4		14.00	0028	02
		PIER B5		27.00	0028	02

Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge

R.I. Contract No. - 2016-CB-038

FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
062	803.9902 Cont.	PIER B6		14.00	0028	02
		PIER B7		18.00	0028	02

Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge

R.I. Contract No. - 2016-CB-038

FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
062	803.9902 Cont.	Item 803.9902 Total:		127.00		
063	804.2000	MOBILIZATION & DEMOBILIZATION OF PILE DRIVING EQUIPMENT	LS			
		BOARDWALK				
		BOARDWALK, ABUTMENT AND PIERS		1.00	0008	03
		Item 804.2000 Total:		1.00		
064	804.2300	PILE SHOES FOR TIMBER PILES	EACH			
		BOARDWALK				
		PIER 1		3.00	0008	03
		PIER 2		3.00	0008	03
		PIER 3		3.00	0008	03
		PIER 4		3.00	0008	03
		SOUTH ABUTMENT		10.00	0008	03
		SW WINGWALL		6.00	0008	03
		Item 804.2300 Total:		28.00		
065	804.9901	TROPICAL HARDWOOD TIMBER PILES, FURNISH AND DRIVE OVER 40 FEET	LF			
		BOARDWALK				
		PEIR 3 (3@46')		138.00	0008	03
		PIER 1 (3@46')		138.00	0008	03
		PIER 2 (3@46')		138.00	0008	03
		PIER 4 (3@46')		138.00	0008	03
		SOUTH ABUTMENT				
		BATTERED PILES (4@50')		200.00	0008	03
		VERTICAL PILES (6@46')		276.00	0008	03
		SW WINGWALL				
		BATTERED PILES (3@50')		150.00	0008	03
		VERTICAL PILES (3@46')		138.00	0008	03
		Item 804.9901 Total:		1,316.00		

Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge
 R.I. Contract No. - 2016-CB-038
 FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
118	828.0400	Cont.				
				Item 828.0400 Total:	32.00	
119	828.9901	PEDESTRIAN BRIDGE BEARINGS - BOARDWALK BOARDWALK	EACH			
Item No. 119, 828.9901 has been deleted.						
		PIER 1			0008	03
		PIER 2			0008	03
		PIER 3			0008	03
		PIER 4			0008	03
				Item 828.9901 Total:	**DELETED**	
S120	830.9901	ARCHITECTURAL RAILING, TYPE A, UPPER DECK W/LED	LF			
		SPAN 1 EAST ABUTMENT				
		SOUTH		30.00	0028	02
		SPAN 1 UPPER DECK				
		NORTH		38.90	0028	02
		SOUTH		60.40	0028	02
		SPAN 2 UPPER DECK				
		NORTH		78.10	0028	02
		SOUTH		73.50	0028	02
		SPAN 3 UPPER DECK				
		NORTH		73.80	0028	02
		SOUTH		17.90	0028	02
		SPAN 4 UPPER DECK				
		NORTH		70.60	0028	02
		SOUTH		69.50	0028	02
		SPAN 5 UPPER DECK				
		NORTH		68.60	0028	02
		SOUTH		67.70	0028	02
		SPAN 6 UPPER DECK				
		NORTH		78.90	0028	02
		SOUTH		66.80	0028	02

Distribution of Quantities

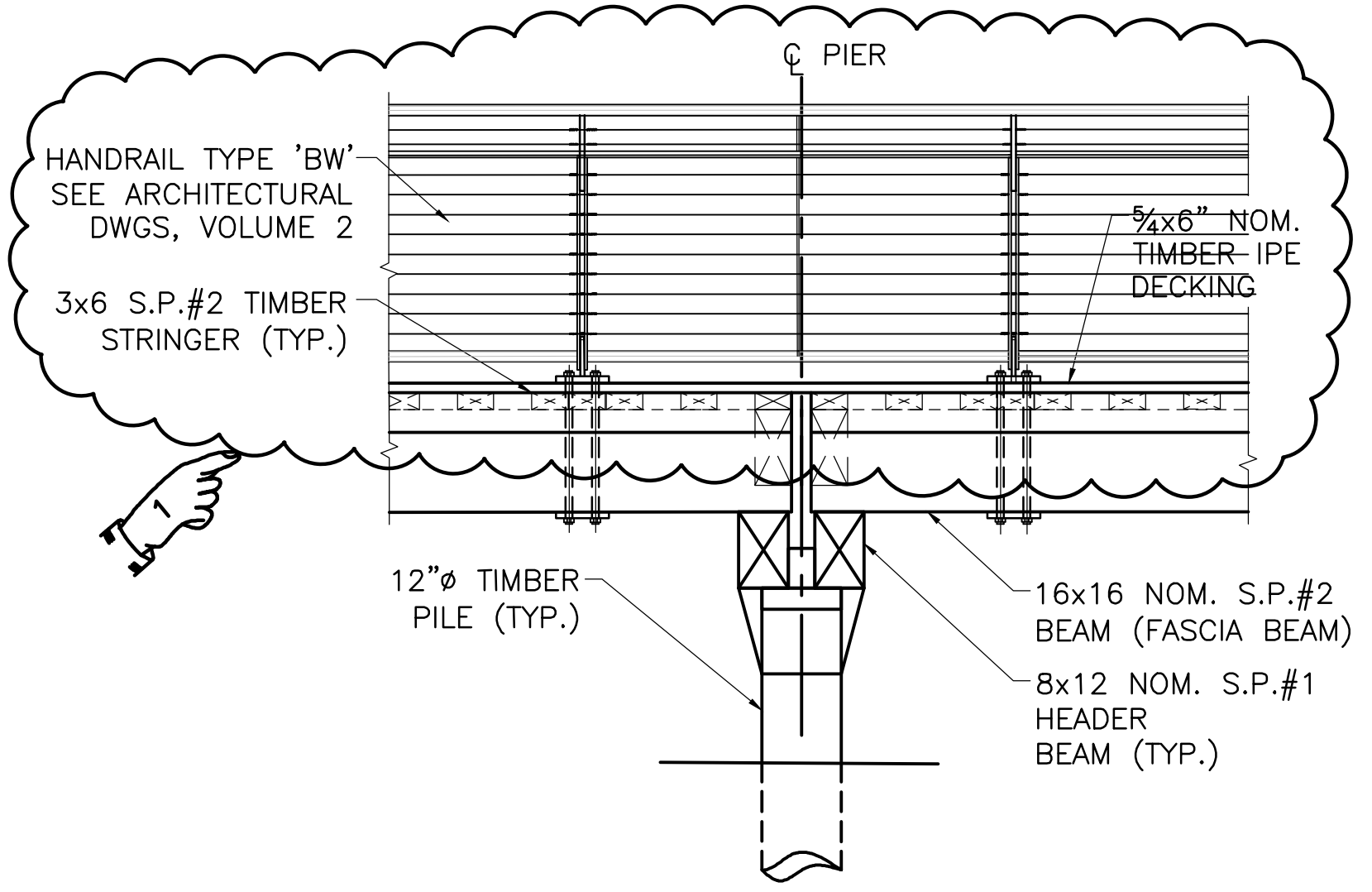
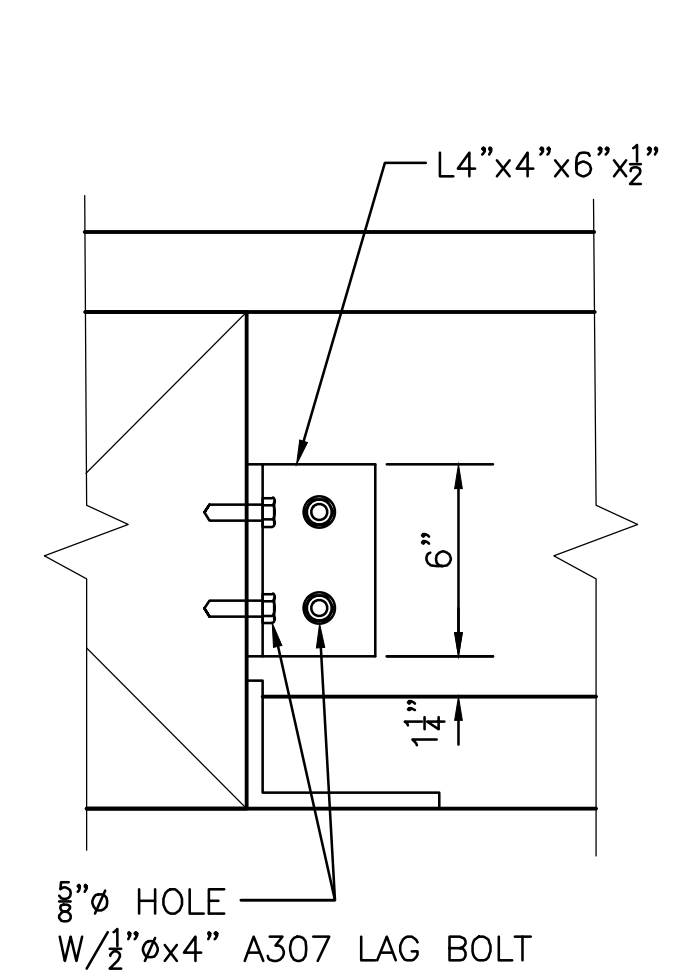
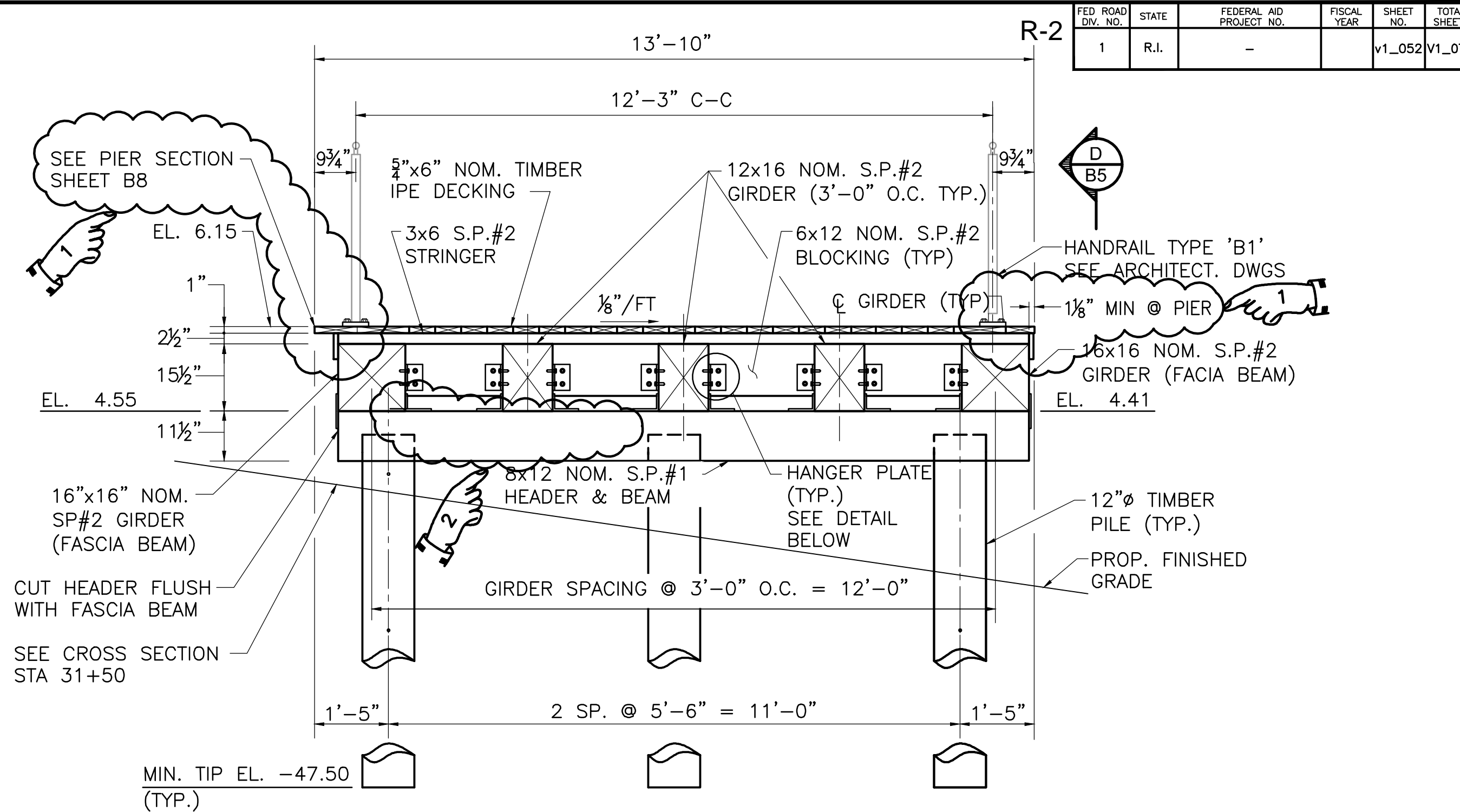
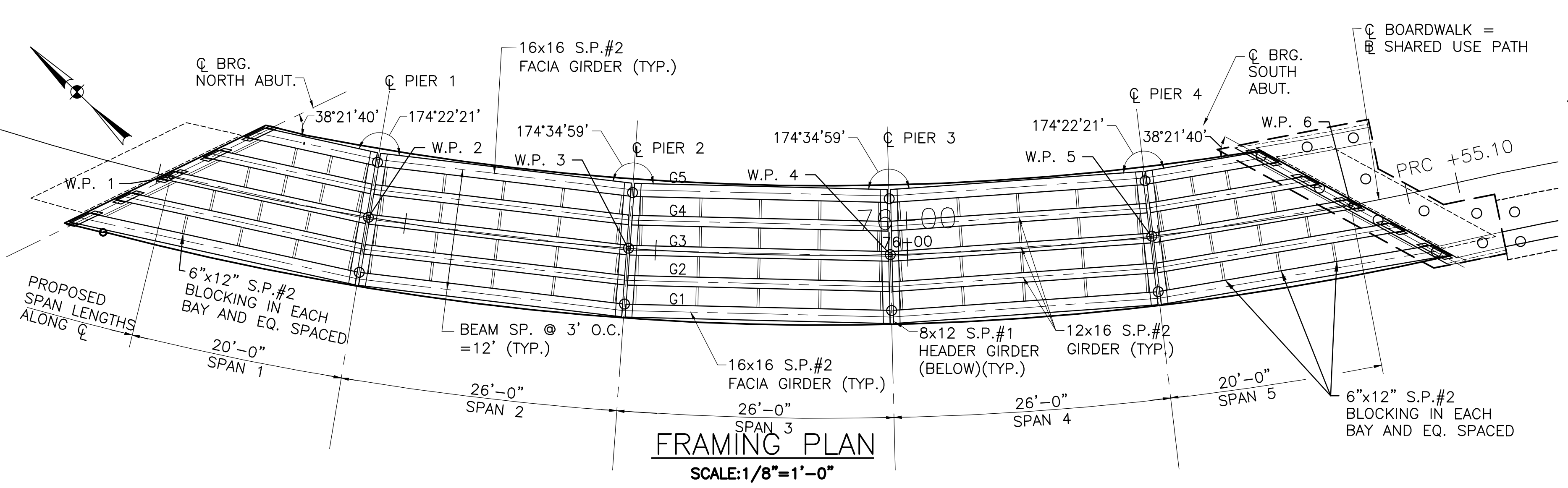
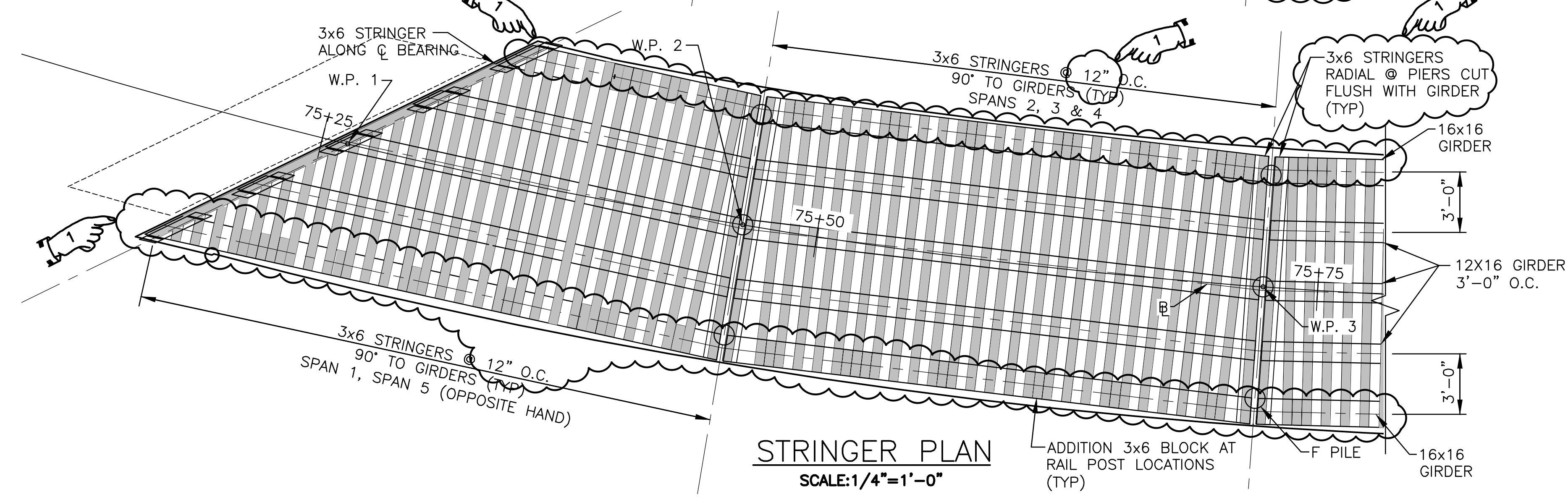
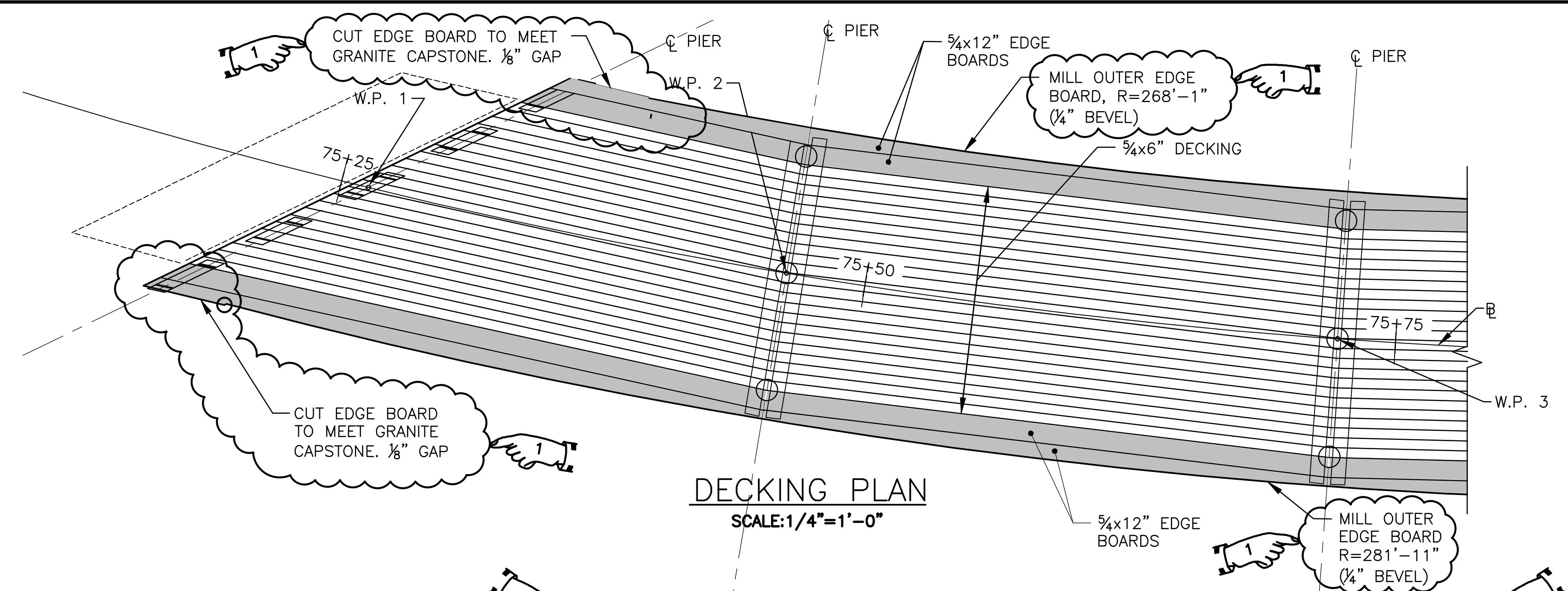
Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge
 R.I. Contract No. - 2016-CB-038
 FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
213	T06.4040	4 INCH RIGID STEEL CONDUIT IN STRUCTURE Item No. 213, T06.4040 has been deleted.	LF			
		SPANS 1-6 UPPER DECK		475.00	0028	02
		Item T06.4040 Total:		**DELETED**		
214	T06.5220	2 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND PEDESTRIAN BRIDGE EAST PARK EXISTING SERVICE PEDESTAL	LF			
				10.00	0028	02
		Item T06.5220 Total:		10.00		
215	T06.5230	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND PEDESTRIAN BRIDGE EAST PARK EXISITNG SERVICE PEDESTAL - BRG	LF			
				400.00	0028	02
		Item T06.5230 Total:		400.00		
216	T06.5240	4 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND PEDESTRIAN BRIDGE ABUTMENT B2 AND B8	LF			
				530.00	0028	02
		Item T06.5240 Total:		530.00		
217	T06.9901	3/4" FIBERGLASS CONDUIT IN STRUCTURE PEDESTRIAN BRIDGE PIERS B3 AND B4, TYPE IHAL	LF			
				8.00	0028	02

Distribution of Quantities

Project Name - I-195 Relocation - Contract 16 - Providence River Pedestrian Bridge
 Estimate Name - Addendum No. 8: I-195 Relocation - Contract 16 - Providence River
 Pedestrian Bridge
 R.I. Contract No. - 2016-CB-038
 FAP Nos: REV 1950(001)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S246	T09.9903	Cont.				
				Item T09.9903 Total:	1.00	
247	807.9910	REMOVE, STOCKPILE AND RESET	SF			
GRANITE VENEER ON BRIDGE PIERS						
PEDESTRIAN BRIDGE						
		PIER B3		220.00	0028	02
		PIER B4		235.00	0028	02
		PIER B5		440.00	0028	02
		PIER B6		250.00	0028	02
		PIER B7		410.00	0028	02
				Item 807.9910 Total:	1,555.00	
248	824.9911	ARCHITECTURAL STAINLESS STEEL ANGLE LF				
PEDESTRIAN BRIDGE						
		PLANTER WALLS		200.00	0028	02
				Item 824.9911 Total:	200.00	
249	824.9912	ARCHITECTURAL STAINLESS STEEL BENT LF	LF			
CLOSURE PLATE						
PEDESTRIAN BRIDGE						
		PLANTER WALLS		173.00	0028	02
				Item 824.9912 Total:	173.00	
250	944.9901	DIESEL EMISSION REDUCTION PROGRAM	EACH			
I-195 CONTRACT 16						
		I-195 CONTRACT 16		113,000.00	0028	02
				Item 944.9901 Total:	113,000.00	



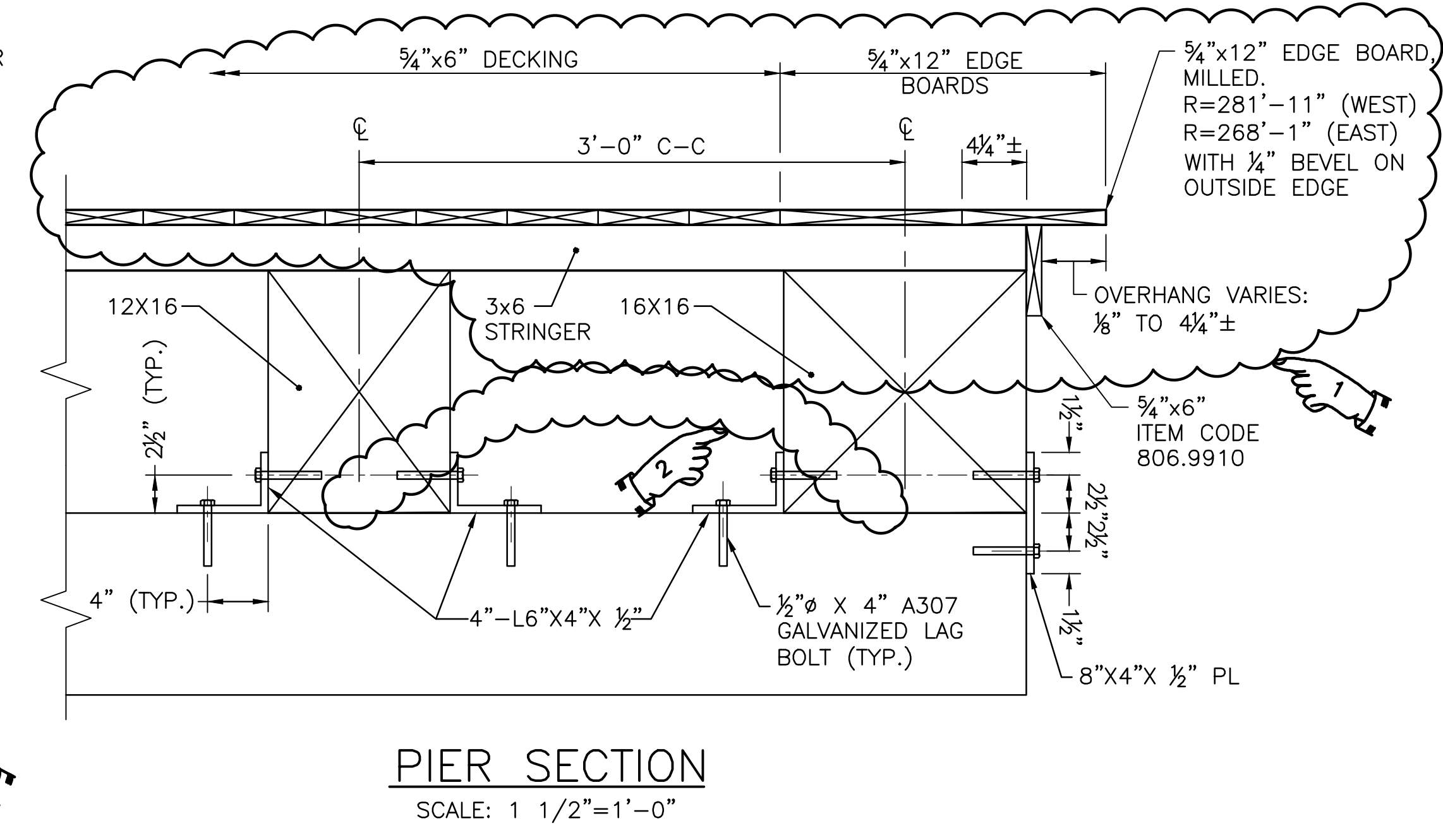
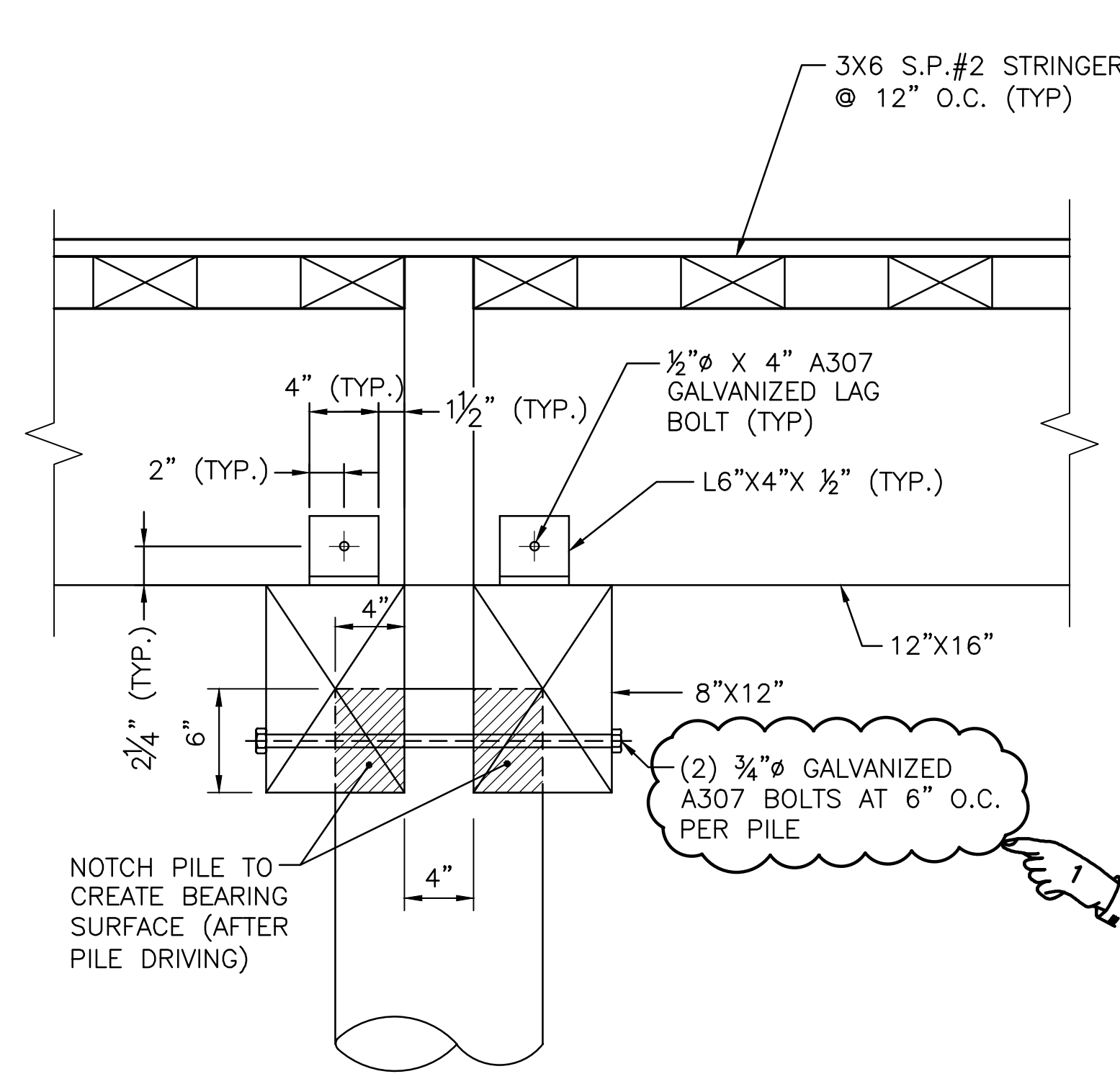
GIRDER LENGTH (FT)	GIRDER LENGTH (FT)				
	SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5
GIRDER 5 (16"x16")	12.22	25.12	25.12	25.12	12.22
GIRDER 4 (12"x16")	16.34	25.4	25.4	25.4	16.34
GIRDER 3 (12"x16")	20.28	25.68	25.68	25.68	20.28
GIRDER 2 (12"x16")	24.22	25.97	25.97	25.97	24.22
GIRDER 1 (16"x16")	28.17	26.25	26.25	26.25	28.17

GIRDER LENGTHS SHALL BE FIELD VERIFIED AFTER PIER CONSTRUCTION.

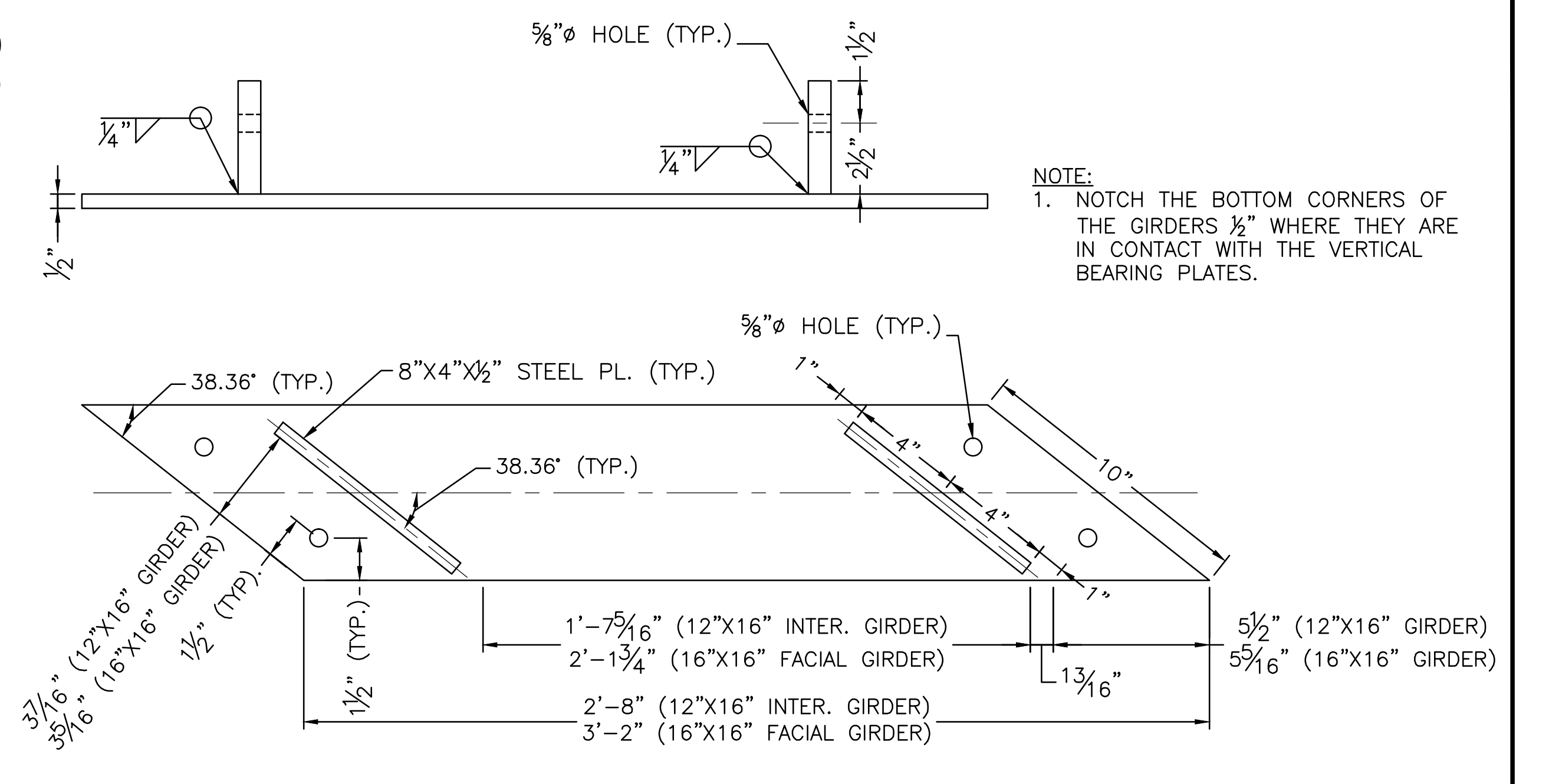
NOTE: SEE SHEETS 6,7,8 FOR CONNECTION DETAILS.

ADDENDUM NO. 8

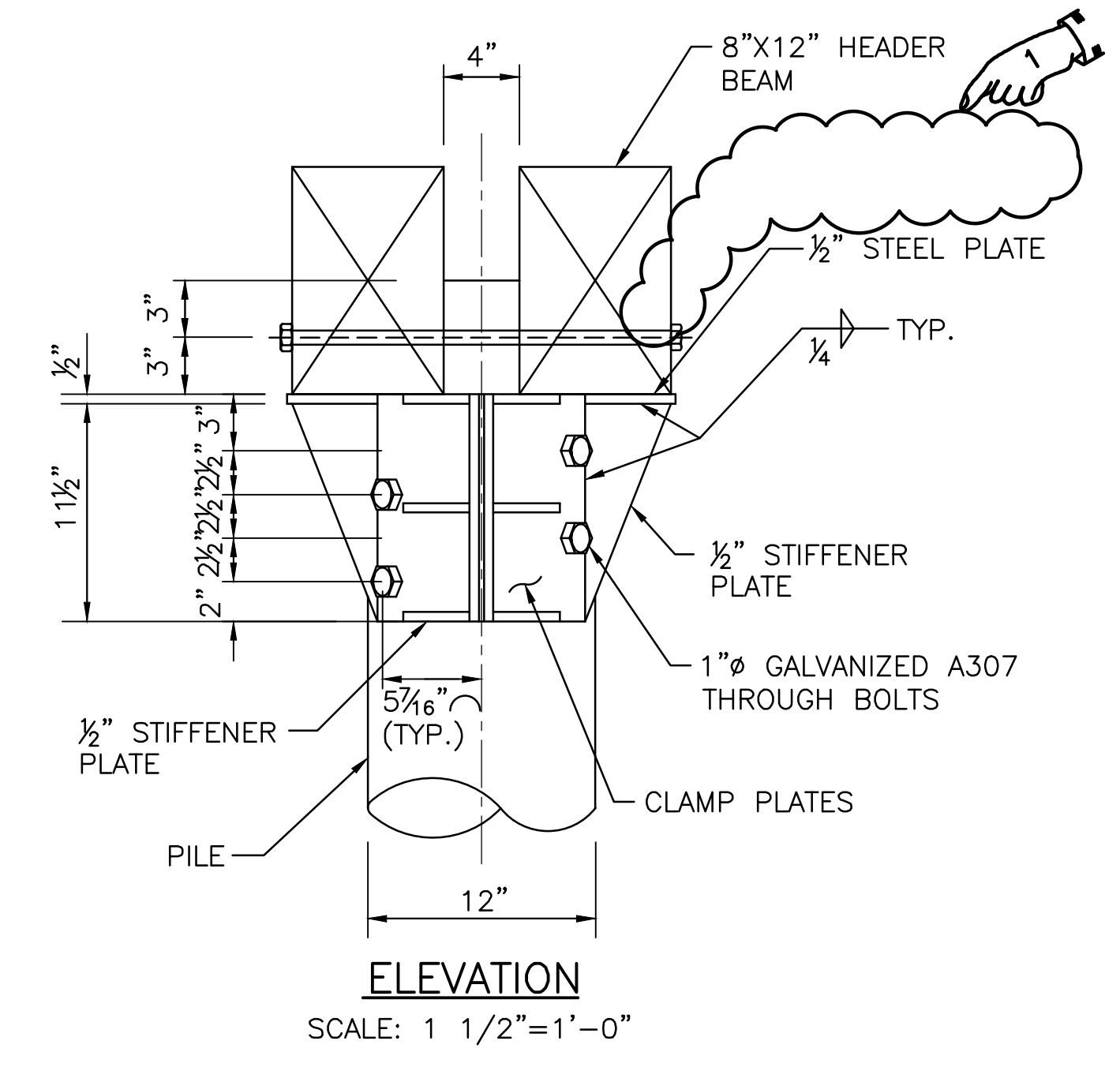
					DESIGNED BY:	SCALE: AS SHOWN	IMPROVEMENTS TO INTERSTATE ROUTE 195 CONTRACT 16 VOLUME 1 BOARDWALK FRAMING PLAN AND SECTION	PROVIDENCE RHODE ISLAND																		
					CHECKED: DATE: SHEET: v1_052 OF: v1_078	<table border="1"> <tr> <th colspan="3">REVISIONS</th> <th colspan="3">REVISIONS</th> </tr> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td>6/10/16</td> <td>JC III</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>6/28/16</td> <td>JC III</td> <td></td> <td></td> <td></td> </tr> </table>			REVISIONS			REVISIONS			NO.	DATE	BY	NO.	DATE	BY	1	6/10/16	JC III			
REVISIONS			REVISIONS																							
NO.	DATE	BY	NO.	DATE	BY																					
1	6/10/16	JC III																								
2	6/28/16	JC III																								



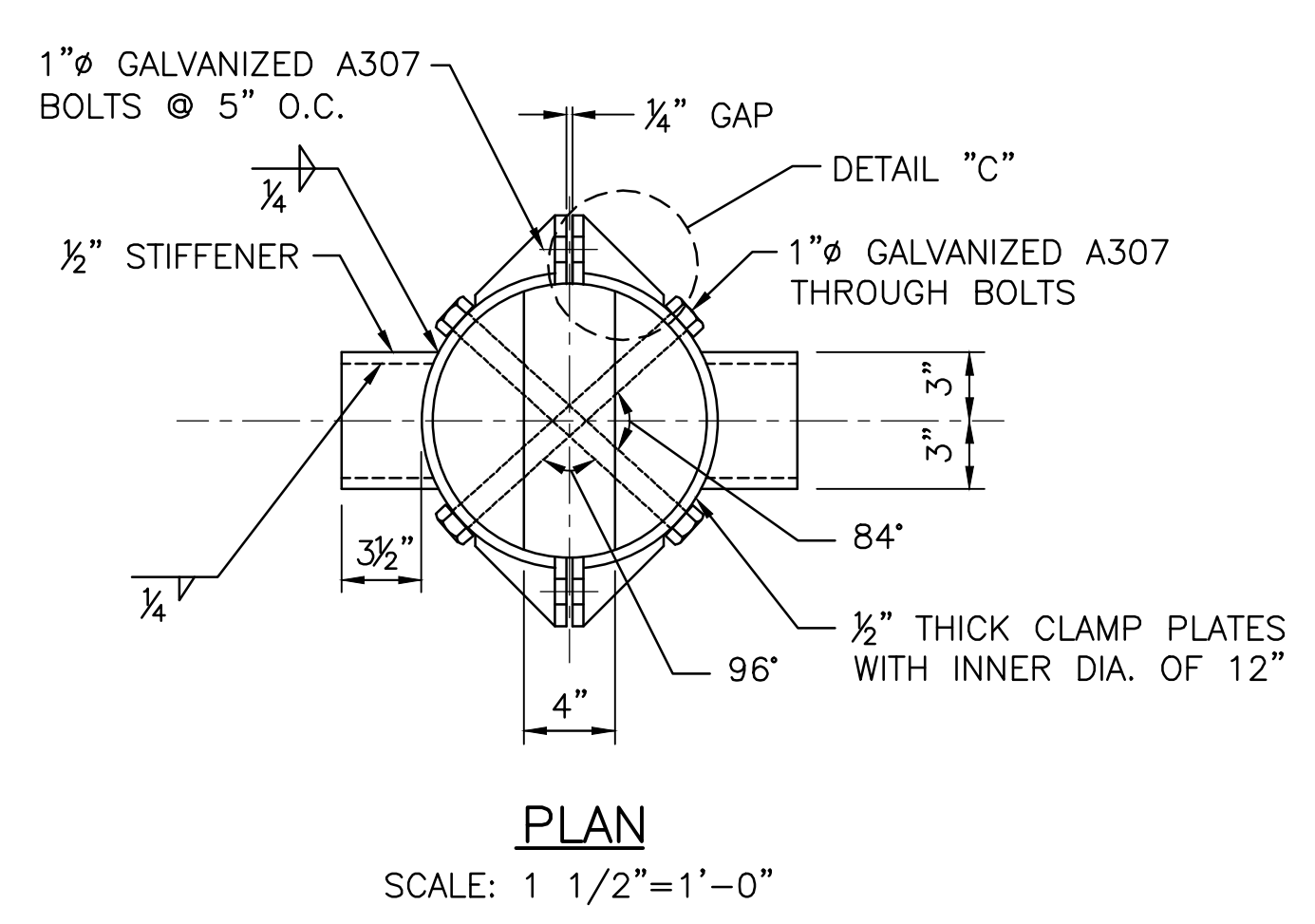
PIER SECTION
SCALE: 1 1/2"=1'-0"



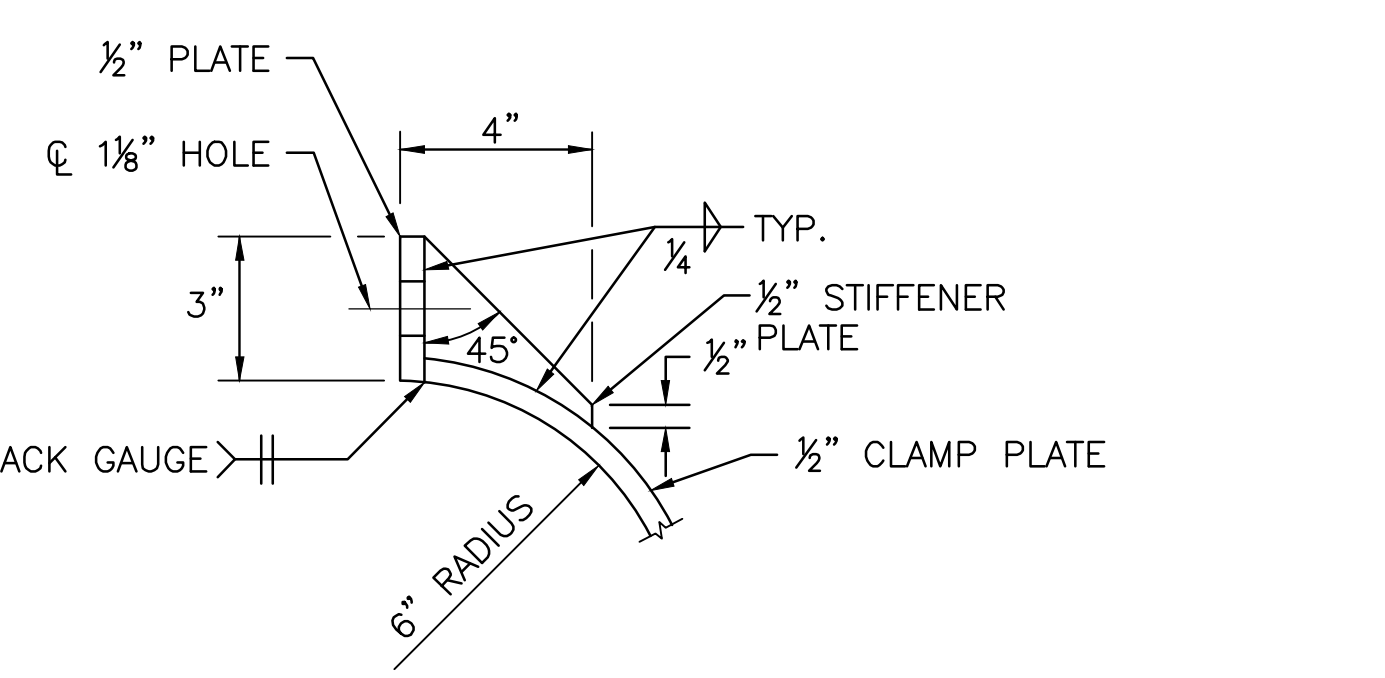
GIRDER BEARING PLATE AT ABUTMENTS FOR 12"x16" INTER. GIRDER OR 16"x16" FACIAL GIRDER
SCALE: 3"=1'-0"



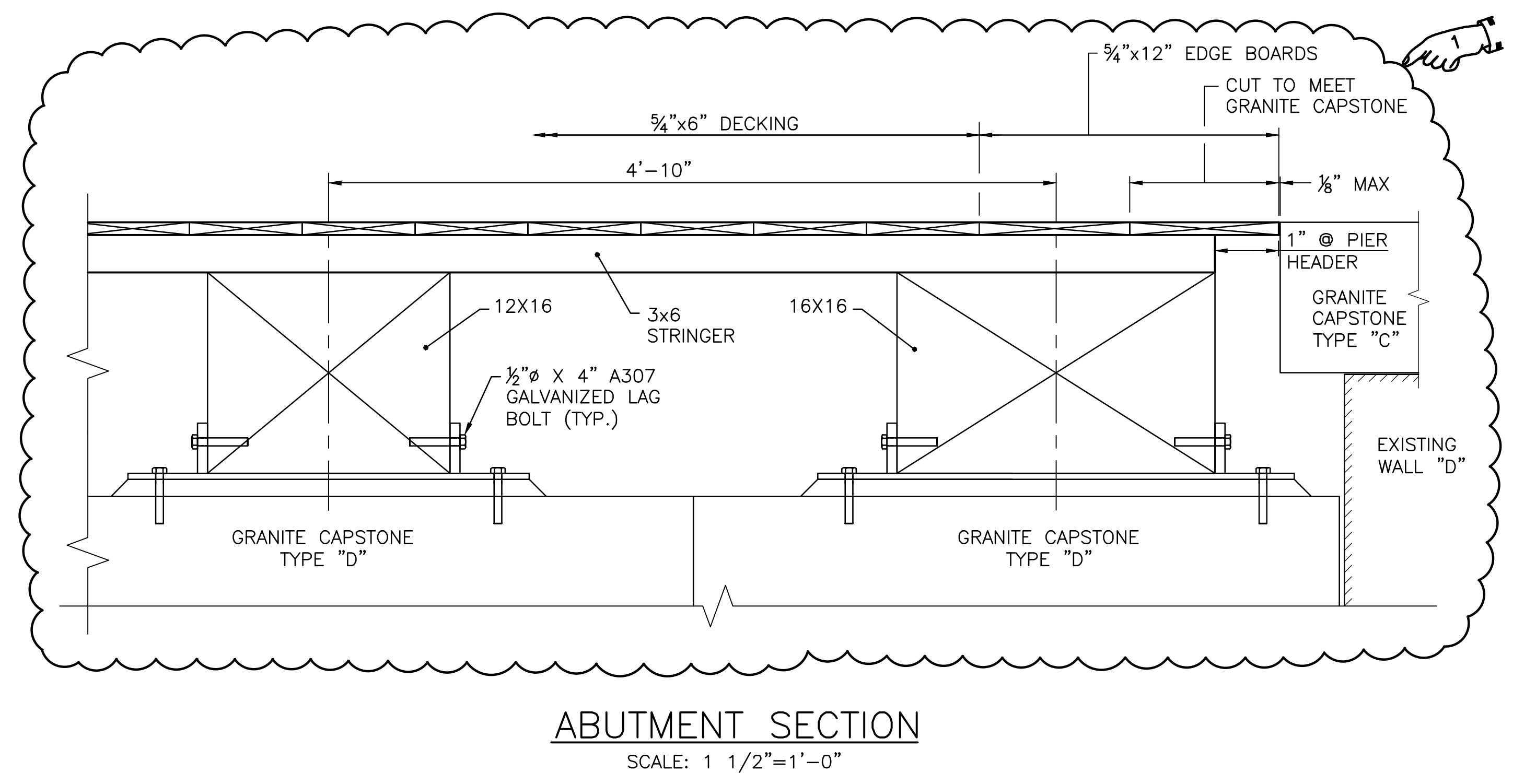
PILE CONNECTION COLLAR
SCALE: 1 1/2"=1'-0"



PLAN
SCALE: 1 1/2"=1'-0"

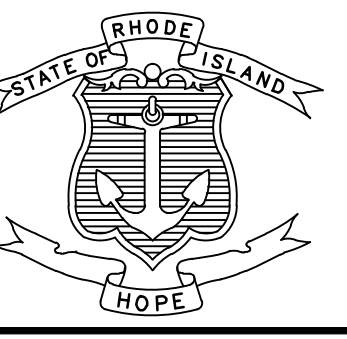
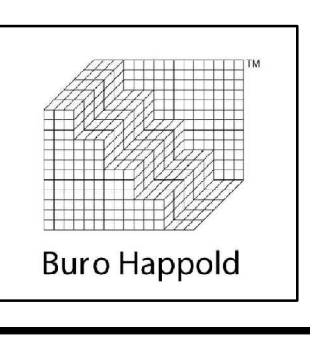


DETAIL C
SCALE: 3"=1'-0"



ABUTMENT SECTION
SCALE: 1 1/2"=1'-0"

ADDENDUM NO. 8



RHODE ISLAND
DEPARTMENT OF TRANSPORTATION



DESIGNED BY: SCALE: AS NOTED

CHECKED BY:

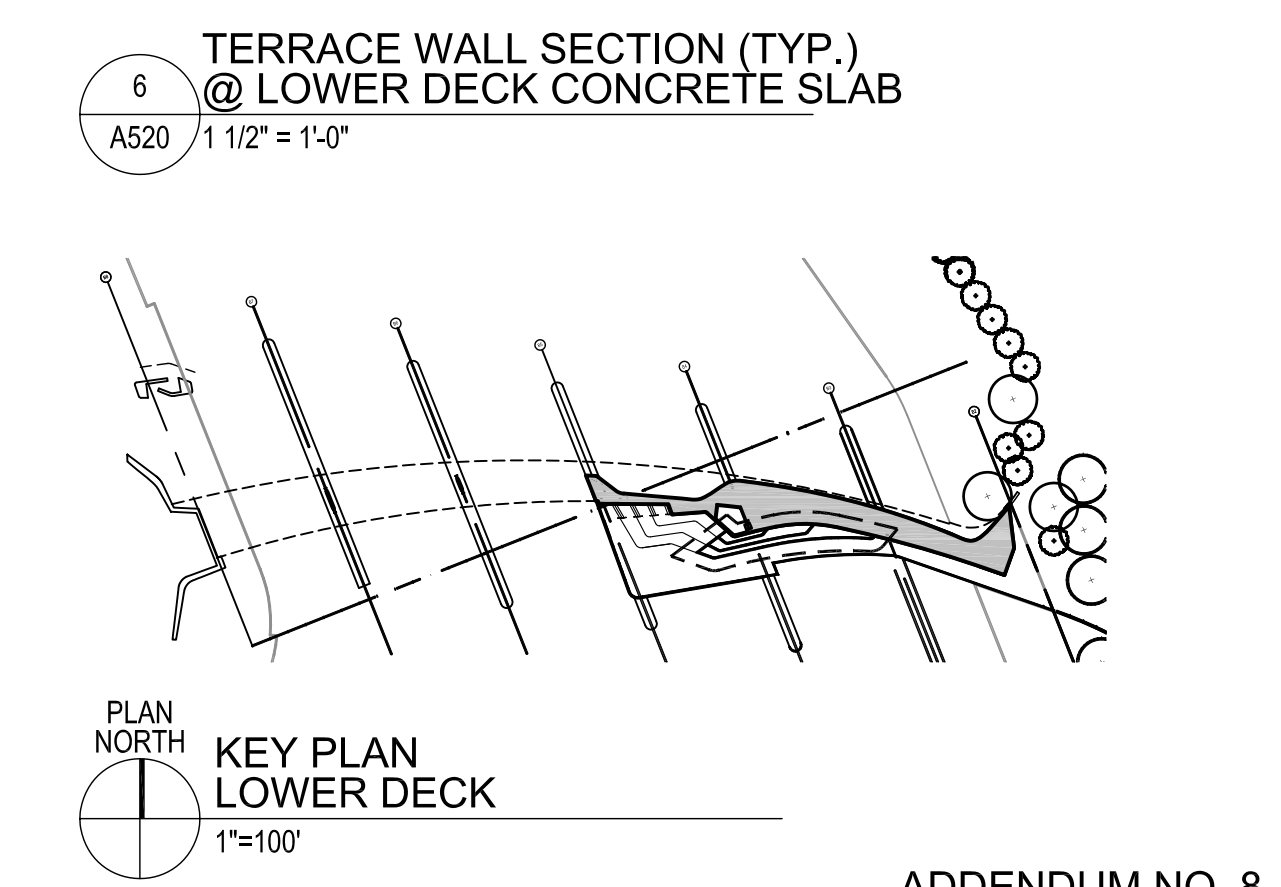
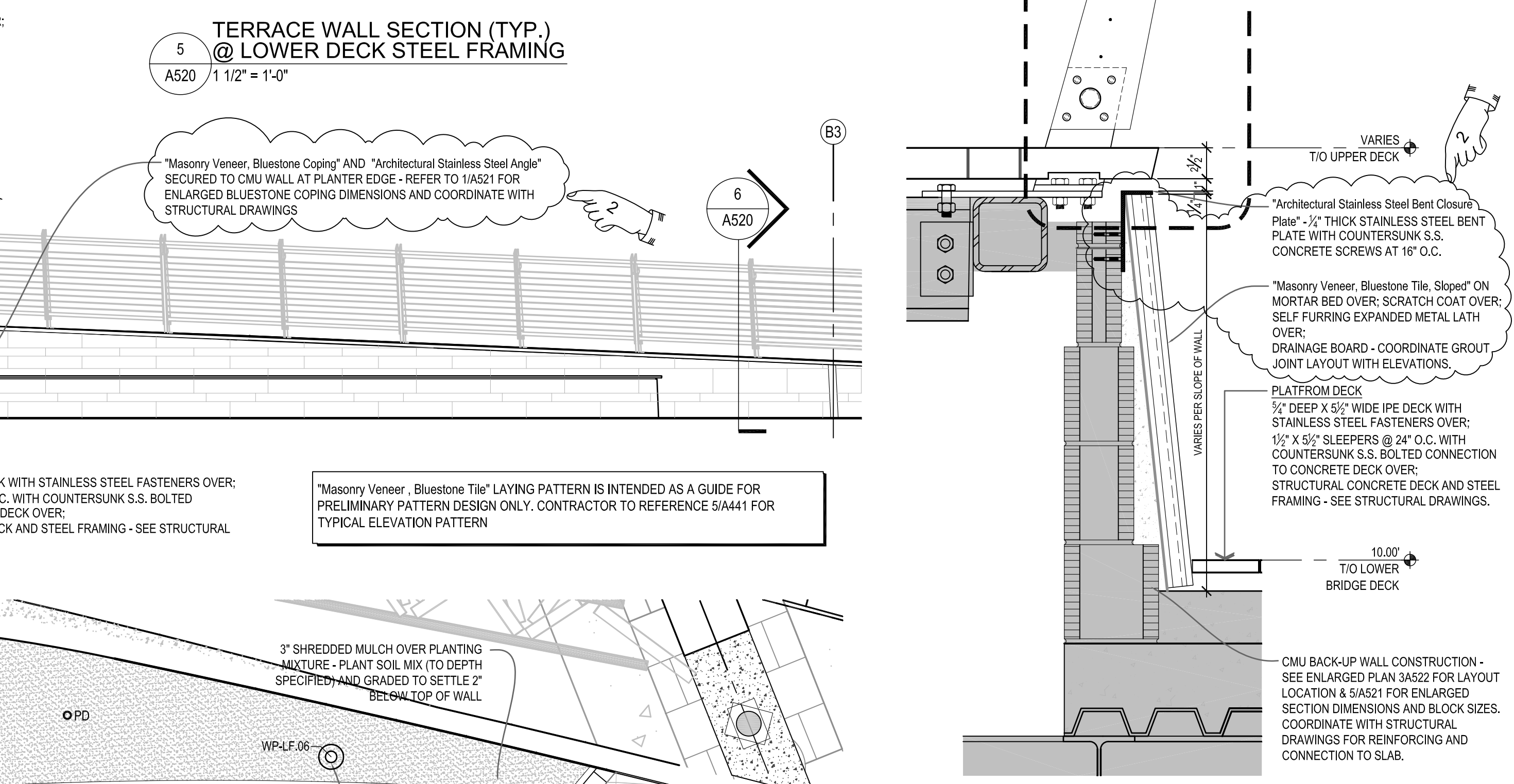
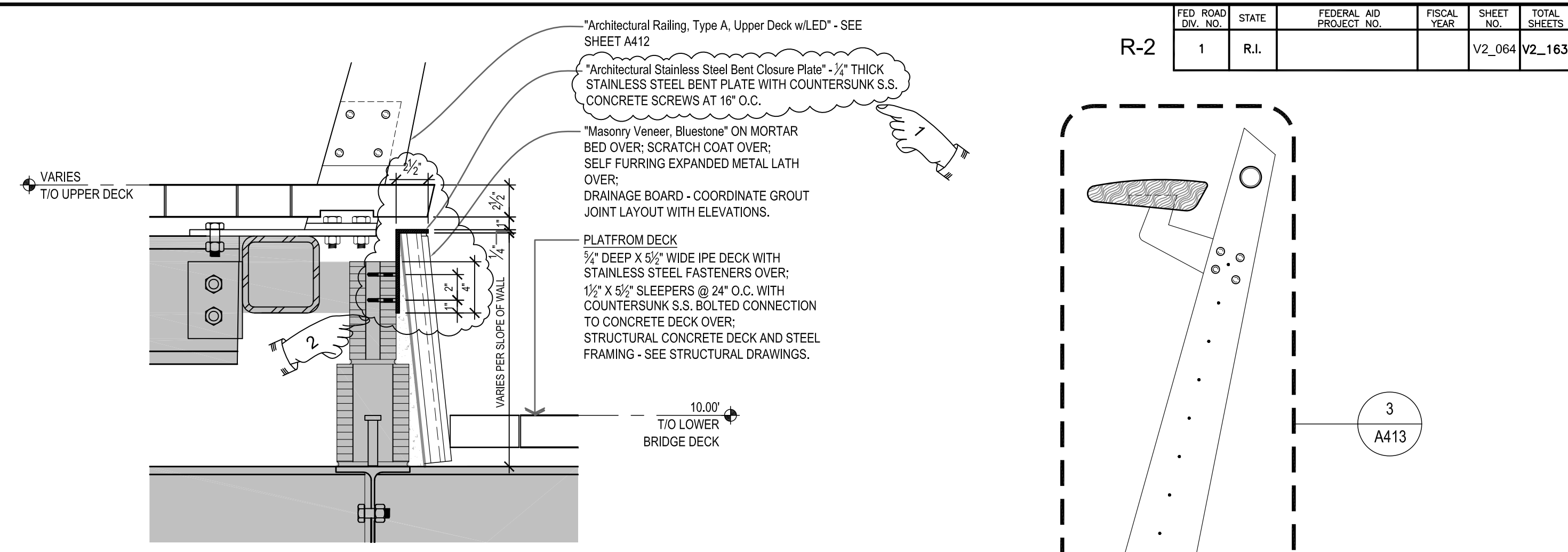
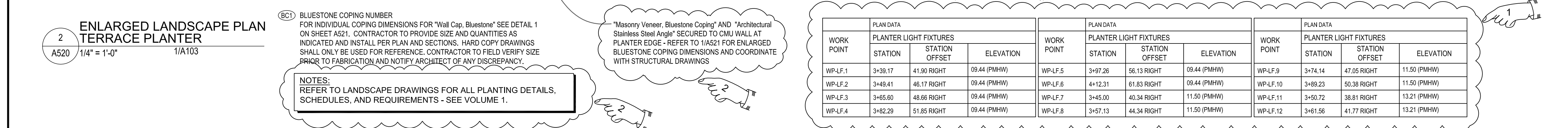
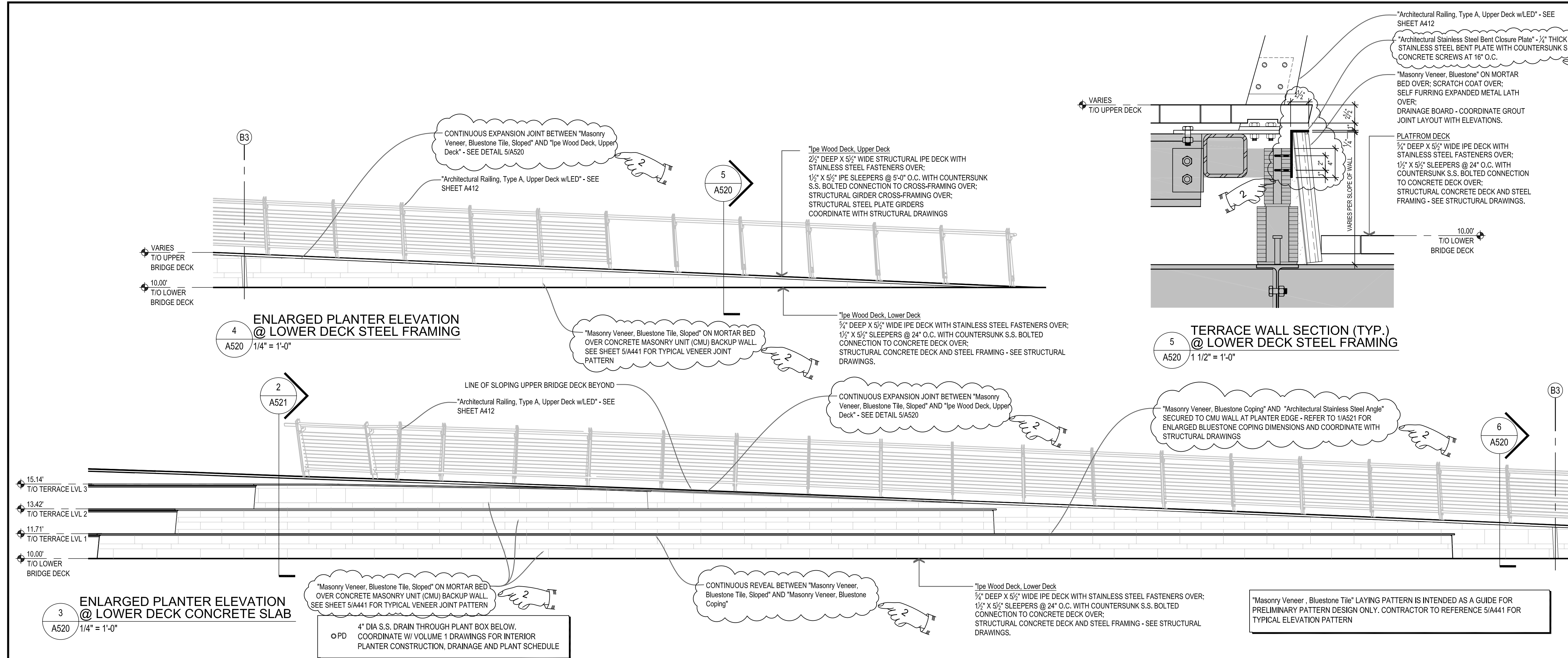
DATE: OF: v1_078

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/10/16	JC III			
2	6/28/16	JC III			

IMPROVEMENTS TO INTERSTATE ROUTE 195 CONTRACT 16 VOLUME 1

PROVIDENCE RHODE ISLAND

PIER PLAN AND DETAIL SHEET 1 B8



PLAN DATA			PLAN DATA			PLAN DATA					
WORK POINT	PLANTER LIGHT FIXTURES	ELEVATION	WORK POINT	PLANTER LIGHT FIXTURES	ELEVATION	WORK POINT	PLANTER LIGHT FIXTURES	ELEVATION			
	STATION	STATION OFFSET		STATION	STATION OFFSET		STATION	STATION OFFSET			
WP-LF.1	3+39.17	41.90 RIGHT	09.44 (PMHW)	WP-LF.5	3+97.26	56.13 RIGHT	09.44 (PMHW)	WP-LF.9	3+74.14	47.05 RIGHT	11.50 (PMHW)
WP-LF.2	3+49.41	46.17 RIGHT	09.44 (PMHW)	WP-LF.6	4+12.31	61.83 RIGHT	09.44 (PMHW)	WP-LF.10	3+89.23	50.38 RIGHT	11.50 (PMHW)
WP-LF.3	3+65.60	48.66 RIGHT	09.44 (PMHW)	WP-LF.7	3+45.00	40.34 RIGHT	11.50 (PMHW)	WP-LF.11	3+50.72	38.81 RIGHT	13.21 (PMHW)
WP-LF.4	3+82.29	51.85 RIGHT	09.44 (PMHW)	WP-LF.8	3+57.13	44.34 RIGHT	11.50 (PMHW)	WP-LF.12	3+61.56	41.77 RIGHT	13.21 (PMHW)

REF DWG #	REFERENCE DRAWING NAME

inFORM studio

235 east main street, suite 102b
northville, mi 48167
(p) 248.449.3564
(f) 248.449.6984
www.in-formstudio.com

BETA Group, Inc.

Engineers • Planners • Landscape Architects

Lincoln, RI • Norwood, MA • Hartford, CT

DESIGNED BY:

CHECKED:

DATE:

SHEET: V2_064

OF: V2_163

SCALE:

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/14/2016	CL			
2	7/6/2016	CL			

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

IMPROVEMENTS TO INTERSTATE ROUTE 195

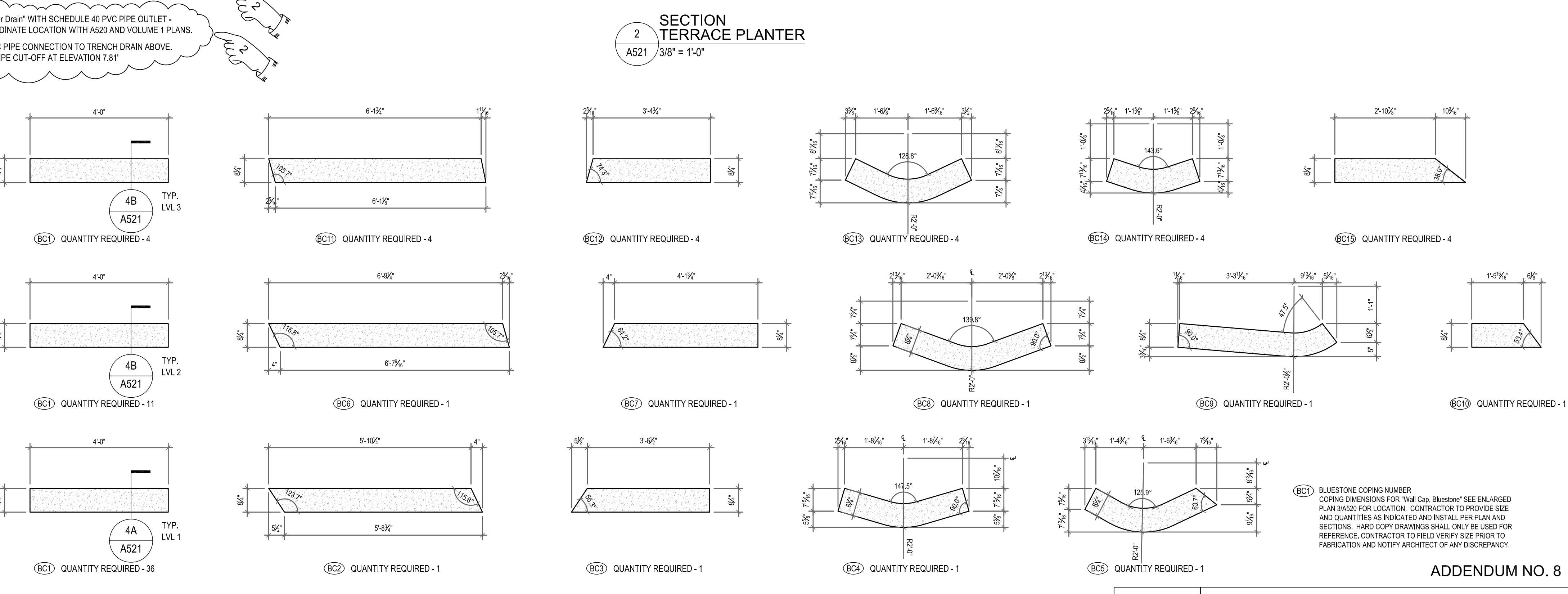
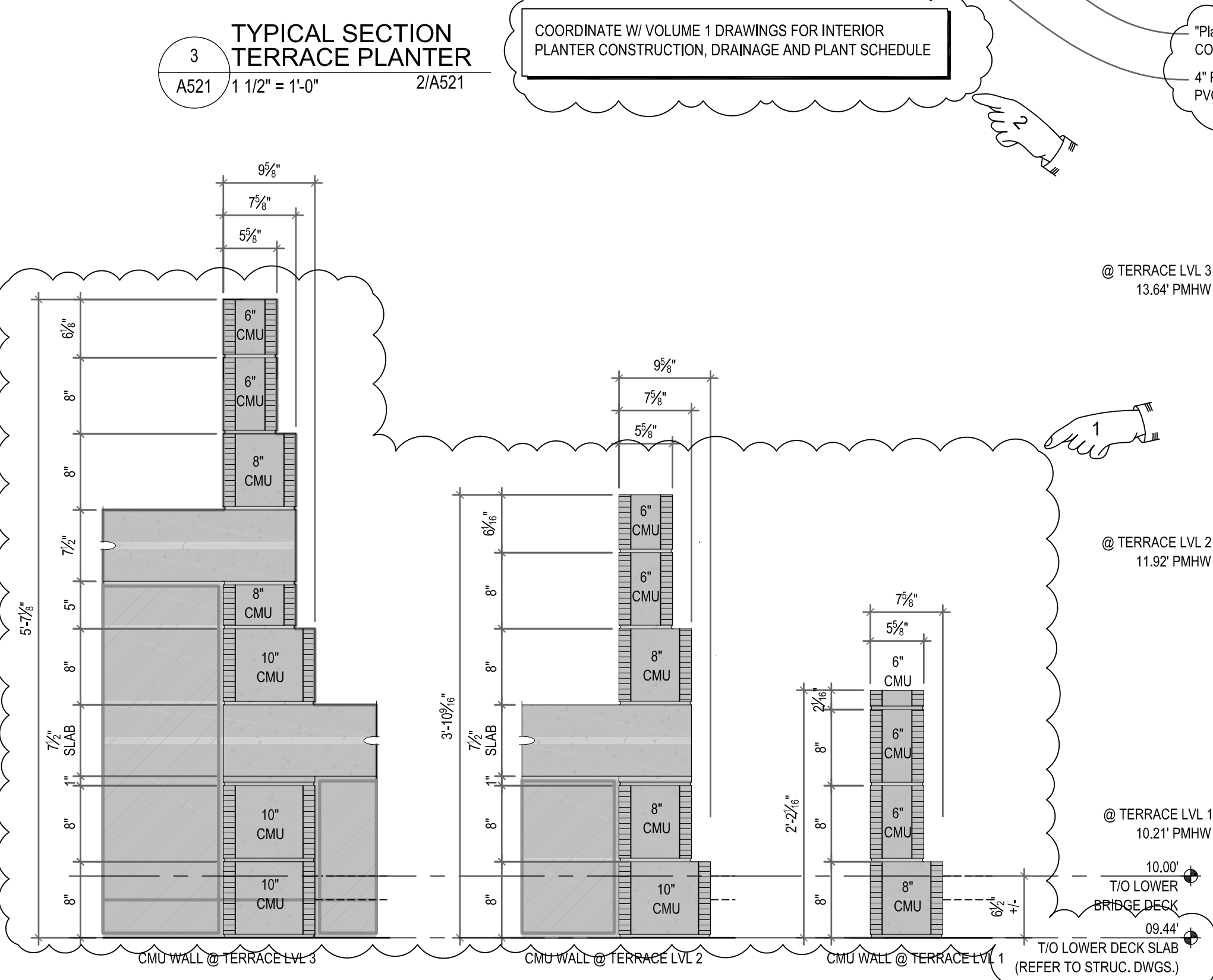
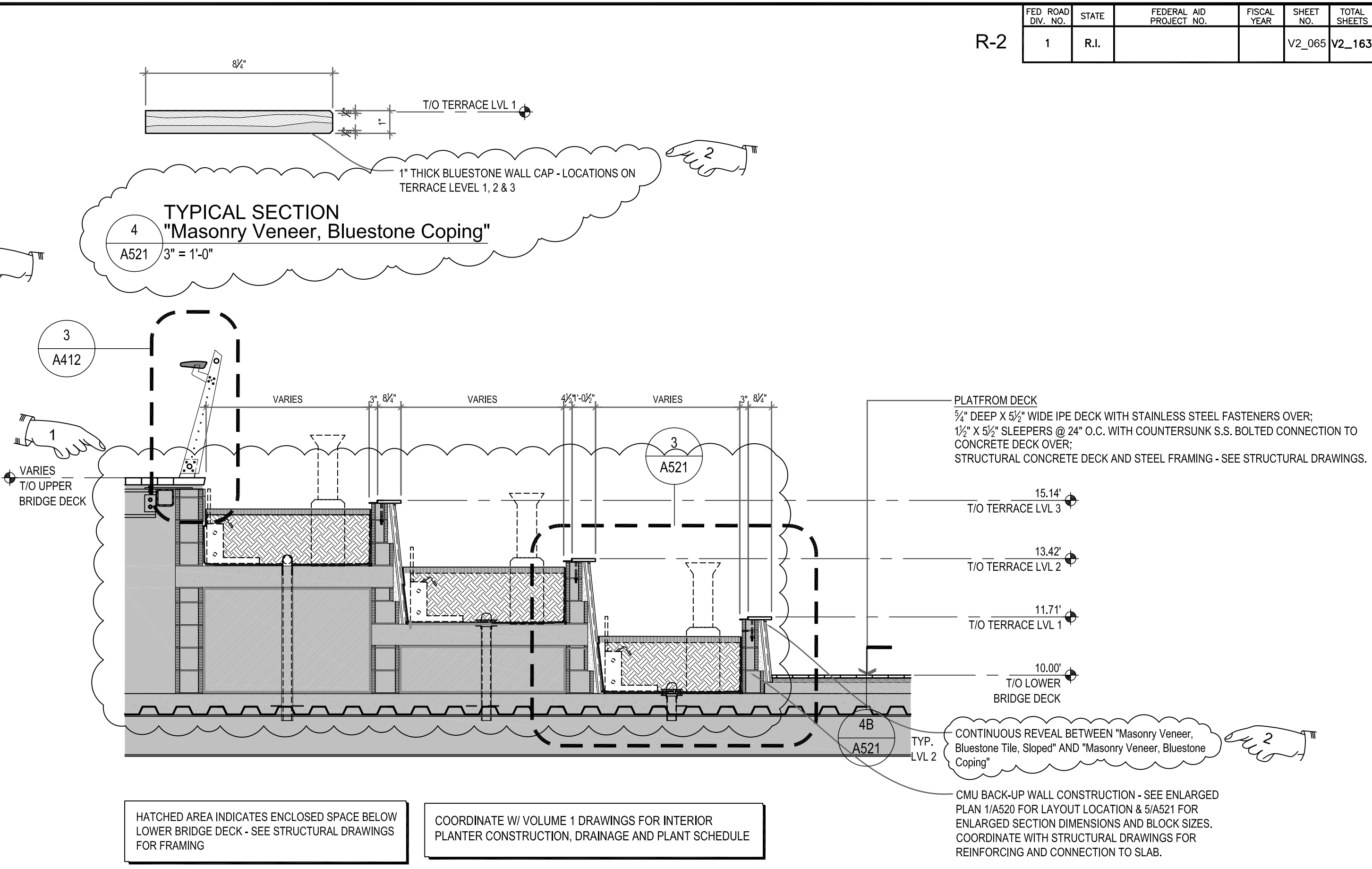
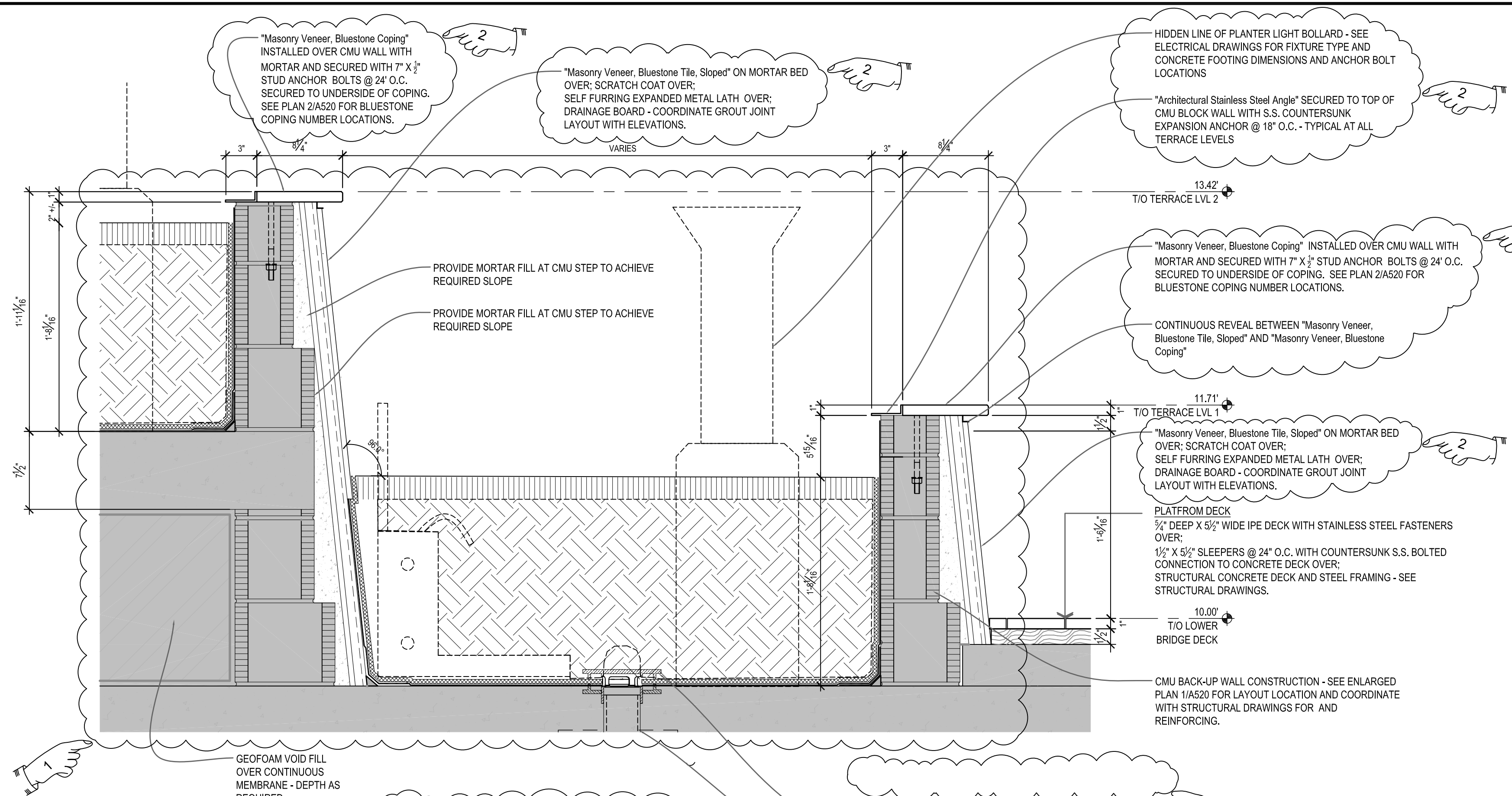
CONTRACT 16 VOLUME 2

PROVIDENCE

ENLARGED PLANTER CMU PLAN, ELEVATION AND LANDSCAPE PLAN

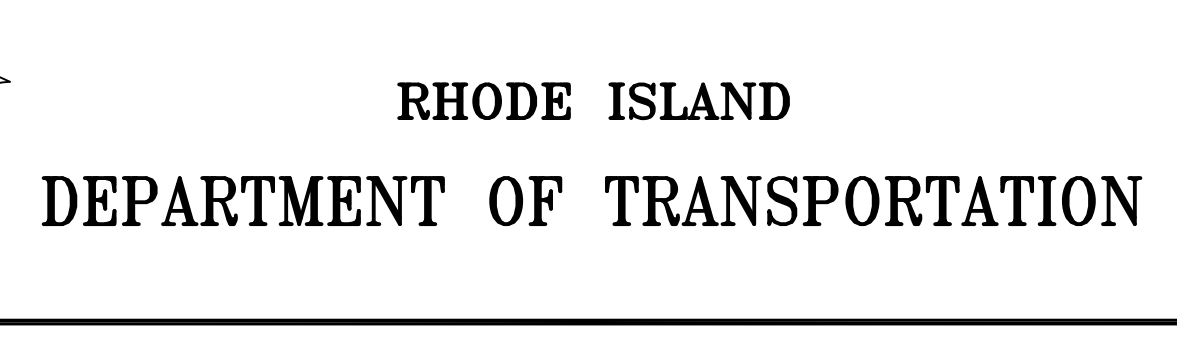
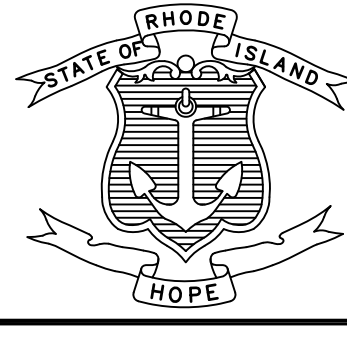
RHODE ISLAND

A520



ADDENDUM NO. 8

REF DWG #	REFERENCE DRAWING NAME



DESIGNED BY:
 CHECKED:
 DATE:
 SHEET: V2_065
 OF: V2_163

SCALE:

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/14/2016	CL			
2	7/6/2016	CL			

IMPROVEMENTS TO INTERSTATE ROUTE 195 CONTRACT 16 VOLUME 2 RHODE ISLAND

ENLARGED PLANTER SECTIONS AND DETAILS A521

STRUCTURAL STEEL NOTES

- FRAMING DIMENSIONS ARE GIVEN ALONG CENTERLINES OF GIRDERS AND ALONG CENTERLINES OF BEARINGS ON ABUTMENTS AND PIERS. THE FABRICATOR IS RESPONSIBLE FOR INCORPORATING THE CAMBER, CROSS SLOPE, AND OTHER EFFECTS THAT MAY IMPACT THE OVERALL GIRDER ENNGTHS, DIMENSIONS AND/OR THE DETAILING.
- INSTABILITY DURING CONSTRUCTION OF THE HORIZONTALLY CURVED GIRDERS (INCLUDING LIFTING, LIFTING AND ERECTION) MAY PRESENT A HAZARDOUS SITUATION. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MEASURES TO ENSURE STABILITY AND THEREBY SAFETY DURING THE STEEL ERECTION AND CONSTRUCTION.
- THE SHOPS FABRICATING THE STRUCTURAL STEEL (EXCEPT FOR EXPANSION JOINTS, RAILINGS AND BEARINGS) MUST BE CERTIFIED FOR "ADVANCED" (ABRY) IN ACCORDANCE WITH THE AISC QUALITY CERTIFICATION PROGRAM OR EQUIVALENT. SHOPS FABRICATING THE EXPANSION JOINTS, RAILINGS AND BEARINGS SHALL, AT A MINIMUM, BE CERTIFIED FOR "SIMPLE STEEL BRIDGE TRUCTURES (SBR)".
THE SHOPS SHALL ALSO BE CERTIFIED UNDER THE AISC "SOPHISTICATED PAINT ENDORSEMENT (SPE)" QUALITY PROGRAM OR THE SSPC-QP3 PAINT CERTIFICATION PROGRAM.
THE FABRICATOR MUST SUBMIT PROOF OF CURRENT CERTIFICATION AS SPECIFIED.
- THE STEEL ERECTOR/CONTRACTOR FOR THIS PROJECT SHALL BE CERTIFIED FOR "ADVANCED CERTIFIED STEEL ERECTOR (ACE)" IN ACCORDANCE WITH THE AISC QUALITY CERTIFICATION PROGRAM. THE ERECTOR/CONTRACTOR OF THE STRUCTURAL STEEL SHALL BE REQUIRED TO SUBMIT PROOF OF CURRENT CERTIFICATION AS SPECIFIED.
- SHOP DRAWINGS FOR ALL FABRICATED STEEL INCLUDING BEARINGS, EXPANSION JOINTS, RAILINGS AND FALSEWORK SHALL BE SUBMITTED TO THE ENGINEER IN SUFFICIENT TIME TO PERMIT CAREFUL CHECKING PRIOR TO FABRICATION.
- INSPECTION OF WELDS INCLUDING RADIOGRAPHIC TESTING (RT) AND MAGNETIC PARTICLE TESTING (MT) SHALL BE IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS AND THE AASHTO/AWS BRIDGE WELDING CODE. EXCEPT THAT THE REMAINING PERCENTAGE OF ALL GROOVE WELDS NOT RT TESTED SHALL BE MT OR DYE-PENETRANT TESTED.
- STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE LATEST PROVISIONS OF AASHTO DESIGNATION M 270 GRADE 50, AND 50S AS DESIGNATED ON THE PLANS.
- ALL AASHTO M 270 STRUCTURAL STEEL USED IN GIRDERS (INCLUDING CONNECTION PLATES AND STIFFENERS), SHALL MEET THE ZONE 2 CHARPY V-NOTCH FRACTURE TOUGHNESS TEST REQUIREMENTS AS SPECIFIED IN TABLE 6.6.2.2 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR "NONFRACTURE-CRITICAL" AND "FRACTURE-CRITICAL" COMPONENTS. THE ZONE 2 FRACTURE TOUGHNESS REQUIREMENTS ARE AS FOLLOWS:

NONFRACTURE-CRITICAL
GRADE 50 15 FT-LBS @ 40°F (UP TO 4 INCHES THICK)
GRADE 50S 15 FT-LBS @ 40°F (UP TO AND INCLUDING 2 INCHES THICK)
GRADE 50S 20 FT-LBS @ 40°F (FROM 2 INCH THICK UP TO AND INCLUDING 4 INCHES THICK)

SAMPLING AND TESTING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO T 243. THE FREQUENCY OF TESTING SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE CHARPY V-NOTCH FRACTURE TOUGHNESS TEST REQUIREMENT IS NOT MANDATORY FOR THE FOLLOWING STEEL COMPONENTS:
- BEARINGS, MASONRY PLATES AND SOLE PLATES
- EXPANSION JOINTS AND MODULAR BRIDGE JOINT SYSTEMS
- DRAINAGE MATERIAL
- RAILINGS
- FOUNDATION H-PILES AND PIPE PILES
- SUPPORT OF EXCAVATION COMPONENTS
- WELDING SHALL BE IN ACCORDANCE WITH THE LATEST STRUCTURAL WELDING CODE AASHTO/AWS D1.5 (INCLUDING ALL INTERIMS TO DATE) AND APPLICABLE SUPPLEMENTAL AWS PUBLICATIONS AND THE CONTRACT DOCUMENTS.
- ALL HIGH STRENGTH BOLTS SHALL CONFORM TO AASHTO DESIGNATION M 164, AND THEY SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 824 OF THE RI STANDARD SPECIFICATIONS.
- NUTS TO BE HOT DIPPED OR MECHANICALLY GALVANIZED SHALL BE AASHTO M291 GRADE DH (PROPERTY CLASS 10S).
- ALL M164 BOLTS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C OR MECHANICALLY GALVANIZED IN ACCORDANCE WITH AASHTO M298 CLASS 50. BOLTS SHALL BE FIELD PAINTED AFTER INSTALLATION TO MATCH BRIDGE GIRDERS AND SUPPORT STEEL.
- WASHERS MEETING AASHTO DESIGNATION M 293 ARE TO BE USED OVER ALL HOLES THAT ARE MORE THAN 1/16" IN DIAMETER GREATER THAN THE BOLT DIAMETER AND UNDER ALL PARTS TURNED DURING ASSEMBLY.
- STRUCTURAL STEEL SHALL BE PREPARED AND PAINTED IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS.
- ALL GIRDERS SHALL BE PAINTED ON ALL SIDES UNLESS THE GIRDERS ARE TO SUPPORT A STEEL DECK AND CONCRETE SLAB. IN THESE CASES THE UPPER SURFACES OF THE GIRDER TOP FLANGES SHALL BE FREE OF PAINT, OIL OR OTHER IMPURITIES THAT WOULD IN ANY REDUCE THE BOND OF CONCRETE TO STEEL.
- PRIOR TO FABRICATION, ALL MATERIALS SHALL BE BLAST-CLEANED TO AT LEAST SSPC-SP6 TO REMOVE ALL OIL, DIRT, GREASE, MILL SCALE AND OTHER DELETERIOUS MATERIALS FROM THE SURFACES OF THE STEEL TO BE FABRICATED.
- PRIOR TO SHOP COATING AS SPECIFIED IN SECTION 825 OF THE RI STANDARD SPECIFICATIONS, ALL CORNERS AND EDGES OF STEEL WHICH HAVE BEEN FLAME CUT OR OTHERWISE HARDENED SHALL BE SOFTENED BY GRINDING OR BLAST-CLEANING TO PROVIDE A SURFACE SUITABLE FOR APPLICATION OF THE SPECIFIED PAINT SYSTEM.
- WELDING OF ATTACHMENTS TO GIRDER FLANGES OR WEBS FOR CONSTRUCTION PURPOSES IS NOT PERMITTED EXCEPT WHEN APPROVED BY THE ENGINEER.
- THE ENDS OF ALL GIRDERS SHALL BE VERTICAL AFTER ALL DEAD LOADS HAVE BEEN PLACED.
- INTERMEDIATE STIFFENERS SHALL BE PLACED ON THE INTERIOR SIDE OF THE FASCIA PLATE GIRDER WEBS AND ON BOTH SIDES OF ALL INTERIOR PLATE GIRDER WEBS.
- BEARING STIFFENERS SHALL BE FABRICATED AS SHOWN ON THE PLANS AND SHALL BE PLACED ON BOTH SIDES OF ALL PLATE GIRDER WEBS.
- INTERMEDIATE STIFFENERS AND CONNECTION PLATES SHALL BE SET PERPENDICULAR TO THE FLANGES OF THE GIRDERS.

- END BEARING STIFFENERS AT GIRDER ENDS SHALL BE PLUMB.
- BOLTED CONNECTIONS SHALL BE DESIGNED AS SLIP-CRITICAL CONNECTIONS. THE FAYING SURFACES SHALL SATISFY CLASS B SURFACE CONDITION AS DEFINED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- ALL SHOP CONNECTIONS AND SPICES SHALL BE WELDED. WELDING PROCEDURES AND TECHNIQUES TO BE USED IN FABRICATION AND ERECTION OF THE GIRDERS SHALL BE AS SHOWN ON THE SHOP DRAWINGS AND SHALL INCORPORATE THE FOLLOWING:
a. BOTH FLANGES AND THE WEB SHALL BE COMPLETELY FABRICATED FOR THEIR ENTIRE LENGTHS BEFORE THE WELDING OF THE FLANGES TO THE WEB IS PERFORMED.
b. ALL WEB AND FLANGE SPICES OTHER THAN THOSE SHOWN ON THE PLANS MUST BE APPROVED BY THE ENGINEER. ALTERNATE OR ADDITIONAL SPICES ARE TO BE LOCATED AND DESIGNED BY THE FABRICATOR AND SHOWN ON THE SHOP DRAWINGS. THESE SPICES ARE TO FULLY DEVELOP THE STRENGTH OF THE WEB AND FLANGE PLATES. WEB SPICES, IF USED, SHALL BE LOCATED 2'-0" MINIMUM FROM ANY STIFFENER.
c. NO MORE THAN TWO SHOP WEB SPICES WILL BE PERMITTED BETWEEN FIELD SPICES. SPICING OF GIRDERS BY FIELD WELDING WILL NOT BE PERMITTED.
- WHEN STEEL DIE STAMPS ARE USED TO IDENTIFY PIECES AND MEMBERS, FABRICATORS SHALL UTILIZE LOW STRESS STAMPS.
- FOR SIZE AND LOCATION OF ANCHOR BOLTS, SEE PIER, ABUTMENT, AND BEARING DRAWINGS.
- HEAT STRAIGHTENING IS NOT PERMITTED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.
- ALL BOLTS FOR PRIMARY STEEL (PLATE GIRDERS, FLOOR BEAMS, ETC) SHALL BE 1" DIA.
- ALL BOLTS FOR SECONDARY STEEL SHALL BE 3/4" DIA (U.O.N.)

POST INSTALLED ANCHORS AND REINFORCEMENT

- ALL ADHESIVE ANCHORS TO USE HILTI HIT HY200 W/ SAFE SET TECHNOLOGY OR OTHER EQUIVALENT PRODUCT OR RIOT APPROVE PRODUCTS LIST.
- THREADED ROD TO BE USED WITH ADHESIVE ANCHORS ARE TO BE ASTM A193 GRADE B7 STEEL OR AASHTO M31 GRADE 60 REINFORCEMENT
- ASTM A563 GRADE DH NUTS TO BE USED WITH ALL ASTM A193 GRADE B7 ANCHOR RODS

BEARINGS

- LOADS, DISPLACEMENTS AND ROTATIONS OF BRIDGE BEARINGS CAN BE FOUND ON S-901
- ALL BEARINGS SHALL CONFORM TO THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATION AND AASHTO M251 "STANDARD SPECIFICATION FOR PLATE AND LAMINATED ELASTOMERIC BRIDGE BEARINGS".
- THE BEARINGS ARE DESIGNED SUCH THAT THE SUPERSTRUCTURE MAY BE ERECTED WHEN THE AMBIENT AIR TEMPERATURE IS BETWEEN 40 DEGREES AND 90 DEGREES FAHRENHEIT.
- THE CONTINUOUS WELD CONNECTING THE BEARING SOLE PLATE AND MASONRY PLATE TO THE SUPER- AND SUB-STRUCTURES RESPECTIVELY SHALL BE ALLOWED TO COOL AFTER EACH PASS. HOWEVER THE TEMPERATURE ADJACENT TO THE ELASTOMER SHALL NOT EXCEED 200 DEGREES FAHRENHEIT. TEMPERATURE SHALL BE CONTROLLED BY WELDING PROCEDURE. TEMPERATURE INDICATOR CRAYONS AND OR OTHER DEVICES APPROVED BY THE ENGINEER.
- THE RAW ELEMENTS SHALL BE VIRGIN NEOPRENE (POLYCHLOROPRENE) AND SHALL HAVE A LOW-TEMPERATURE GRADE 3 OR HIGHER.
- STEEL PLATES USED IN MASONRY, SOLE AND SHIM PLATES, UNLESS OTHERWISE NOTED, SHALL BE AASHTO M 270 GRADE 50.

GENERAL NOTES REGARDING TEMPORARY CONSTRUCTION CONDITIONS:

- DESIGN WIND PRESSURES FOR CONSTRUCTION:

MINIMUM WIND PRESSURES TO BE USED BY THE CONTRACTOR FOR DESIGN DURING THE CONSTRUCTION CONTRACT (WITH THE EXCEPTION OF SIGNS) SHALL BE FROM THE FOLLOWING TABLE:

HEIGHT ABOVE GROUND UP TO 17'	WIND PRESSURE (PSF)
17	33

TABLE NOTES:

- A. APPLICATION OF THE TABULAR PRESSURE:**
- BRIDGE COMPONENTS DURING CONSTRUCTION, PRIOR TO THE INSTALLATION OF THE PERMANENT BRACING SYSTEMS, NOT INCLUDING CRANE LIFTING.
 - FALSE WORK, SHORING, AND SCAFFOLDING AS DEFINED IN FHWA "GUIDE DESIGN SPECIFICATION FOR BRIDGE TEMPORARY WORKS", EXCLUDING 3-DIMENSIONAL LATTICED OR TRUSSED FRAMES OR TOWERS.
 - TEMPORARY SHIELDING.

WIND PRESSURES FOR ALL OTHER STRUCTURES SHALL BE CALCULATED BASED ON ASCE "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION", SEI/ASCE 37-02 (ALL REFERENCES TO THE ASCE 7 IN THE SEI/ASCE 37-02 PUBLICATION, SHALL BE THE LATEST REVISION OF ASCE 7). THE EXPOSURE CATEGORY SHALL BE C.

2. WATERTIGHT FORMS

ALL PIER CONSTRUCTION SHALL BE DONE IN DRY CONDITIONS. CONTRACTOR SHALL PROVIDE WATERTIGHT FORMS TO KEEP REBAR, CONCRETE AND VENEER CONSTRUCTION DRY AT ALL TIMES DURING ALL TIDE CONDITIONS. CONTRACTOR SHALL NOTE THAT PIER CONSTRUCTION SHALL OCCUR AT ELEVATIONS BELOW HIGH TIDE.

ANY MASONRY CRACKS BELOW THE EXTENT OF DEMOLITION THAT CAUSE LEAKS INSIDE THE FORMWORK SHALL BE SEALED TO ENSURE WATERTIGHTNESS.

THE COSTS FOR PROVIDING WATERTIGHT FORMS AND KEEPING THE WORK DRY SHALL BE INCIDENTAL TO THE VARIOUS PIER CONSTRUCTION ITEMS.

2. ERECTION OF BRIDGE COMPONENTS:

FOR THE ERECTION OF STRUCTURES, THE FOLLOWING SHALL APPLY:

THE CONTRACTOR SHALL SUBMIT AN ERECTION PLAN THAT PROVIDES COMPLETE DETAILS OF THE PROCESS INCLUDING, BUT NOT LIMITED TO, TEMPORARY SUPPORTS, SCHEDULING AND OPERATION SEQUENCING, CRANE PLACEMENT, AND ASSUMED LOADS AND CALCULATED STRESSES DURING VARYING STAGES OF LIFTING. THIS APPLIES TO STRUCTURES OF ANY KIND, THE CAPACITY OF THE CRANE AND ALL LIFTING AND CONNECTING DEVICES SHALL BE ADEQUATE FOR 125 PERCENT OF THE TOTAL PICK LOAD INCLUDING SPREADERS AND OTHER MATERIALS. THIS FACTOR OF SAFETY SHALL BE IN ADDITION TO ALL MANUFACTURERS' PUBLISHED FACTORS OF SAFETY.

A REGISTERED PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF RHODE ISLAND, WILL BE REQUIRED TO STAMP THE CONTRACTOR'S ERECTION PLAN.

THE CONTRACTOR'S PROFESSIONAL ENGINEER WILL BE REQUIRED TO INSPECT AND PROVIDE WRITTEN APPROVAL OF EACH PHASE OF A GIRDER INSTALLATION, PRIOR TO ALLOWING VEHICLES OR PEDESTRIANS ON OR BELOW THE STRUCTURE. THE PROFESSIONAL ENGINEER MUST ALSO STAMP ALL CHANGES TO THE CONTRACTOR'S ERECTION PLAN. ADDITIONALLY, ALL PROPOSED CHANGES MUST BE SUBMITTED TO RIOT FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION.

A MANDATORY PRE-ERECTION CONFERENCE WILL BE HELD AT LEAST TWO WEEKS PRIOR TO THE START OF THE GIRDER INSTALLATION TO DISCUSS THE PLAN AND PROCEDURES, WORK SCHEDULES, CONTINGENCY PLANS, SAFETY REQUIREMENTS AND TRAFFIC CONTROL. THE CONTRACTOR'S PROFESSIONAL ENGINEER AND ERECTION SUBCONTRACTOR WILL BE REQUIRED TO ATTEND THIS MEETING, AS WILL THE RIOT RESIDENT ENGINEER, THE DESIGN PROJECT ENGINEER AND THE DESIGN CONSULTANT. BASED UPON DISCUSSIONS AT THIS MEETING AND A REVIEW OF THE CONTRACTOR'S ERECTION PLAN, RIOT MAY ORDER THE CONTRACTOR TO MODIFY AND RESUBMIT THE ERECTION PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.

THE CONTRACTOR WILL BE REQUIRED TO PERFORM DAILY INSPECTIONS OF THE ERECTED GIRDERS UNTIL THE BRIDGE DECK IS COMPLETELY INSTALLED ON THE LOWER DECK AND THE FLOOR BEAMS AND HORZ TRUSS MEMBERS ARE INSTALLED ON THE UPPER BRIDGE.

THE COST OF PREPARING AND STAMPING THE ERECTION PLAN, COMPUTATIONS, AND REPORTS, RESPONDING TO RIOT'S COMMENTS AND MAKING THE NECESSARY REVISIONS, AND ATTENDANCE AT MEETINGS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE SUPERSTRUCTURE PAY ITEM, BE IT CONCRETE, STEEL OR TIMBER.

TIMBER

- ALL TIMBER INCLUDING DECKING AND CLADDING SHALL BE TROPICAL HARDWOOD OF THE FOLLOWING TYPES:
- IPE
- BETHBARA
- LAPACHO (TABEBUIA SPP. - LAPACHO GROUP)
- WANA WOOD

WOOD BLOCKING MAY BE STRUCTURAL GRADE PLASTIC LUMBER CONFORMING TO ASTM D7568. WOOD SHIMS MAY BE THE SAME TROPICAL HARDWOOD AT THE WOOD DECK/CLADDING OR STRUCTURAL GRADE PLASTIC LUMBER CONFORMING TO ASTM D7568. SLEEPERS SHALL BE TROPICAL HARDWOOD AS SPECIFIED BY ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

- DECK SHALL BE FASTENED WITH STAINLESS STEEL SCREWS OR BOLTS. ALL FASTENERS SCREWS SHALL BE PREDRILLED AND COUNTERSUNK WITH PILOT HOLES IN ACCORDANCE WITH THE SPECIAL PROVISIONS. FASTENING SHALL CONFORM TO THE SPECIAL PROVISIONS, FASTENERS DO NOT NEED TO BE PREDRILLED WHEN USING INJECTOR SCREW TECHNOLOGY.
- ALL OTHER CONNECTIONS SHALL BE MADE WITH GALVANIZED HARDWARE IN ACCORDANCE WITH RI STANDARD SPECIFICATIONS SECTION D.05.04.13.

- ALL CONNECTIONS INCLUDING NAILING SHALL BE MADE WITH PRE-DRILLED HOLES.
- TIMBER SHALL BE CUT AND MACHINED WITH CARBIDE TIPPED TOOLS. AFTER CROSS-CUTTING, EXPOSED ENDS SHALL BE SEALED WITH A CLEAR PARAFIN WAX SEALER.
- TIMBER SHALL BE KEPT OUT OF DIRECT SUNLIGHT UNTIL READY TO BE INSTALLED AND FINISHED.
- DECK WOOD SHALL BE FINISHED WITH A WOOD STABILIZING AGENT APPLIED TO SURFACES EXPOSED TO DIRECT SUNLIGHT. APPLY DURING OR IMMEDIATELY AFTER EACH SECTION IS INSTALLED.

- BLOCKING SHALL BE PROVIDED AT THE ENDS OF EACH STRINGER AND AT ALL RAIL POST AND LIGHT POST ATTACHMENTS. BLOCKING SHALL BE CONNECTED TO STRINGERS USING WOOD SCREWS OR NAILS WITH PREDRILLED HOLES 1/8" SMALLER IN DIAMETER THAN THE SCREWS OR NAILS.
- TIMBER WHICH, AT THE DISCRETION OF THE ENGINEER, IS WARPED, BOWED, SPLIT, OR SPLINTERED, SHALL NOT BE INCORPORATED IN THE WORK AT NO EXPENSE TO THE STATE.
- TIMBER SIZES ARE ASSUMED TO BE DRESSED SIZES WITH DIMENSIONS 1/2" LESS THAN THE NOMINAL DIMENSIONS. 2X10S AND 2X12S ARE ASSUMED TO HAVE DRESSED DEPTHS 3/4" LESS THAN THE NOMINAL DEPTH.
- ROUGH SAWN LUMBER IS PERMITTED FOR MEMBERS OTHER THAN THE DECK. IF ROUGH SAWN MEMBERS ARE USED, OR IF THE DRESSED SIZE VARIES FROM THAT ASSUMED, THE BEAM SEAT ELEVATION AND CONNECTION DETAILS SHALL BE ADJUSTED ACCORDINGLY.

DESIGN TIDAL INFORMATION

PROVIDENCE MEAN HIGH WATER ELEVATION = 0.00' (NGVD 1929 EL = 2.35')

THE CONTRACTOR SHALL NOTE THAT HIGHER AND LOWER TIDES ARE POSSIBLE. ALL ELEVATIONS SHOWN IN PROJECT ARE WITH REFERENCE TO PROVIDENCE MEAN HIGH WATER ELEVATION.

SURFACE FINISHES

- PRIMARY STRUCTURAL STEEL MEMBERS, INCLUDING STEEL PIERS, PLATE GIRDERS AND DECK BEAMS SHALL BE METALIZED AND PAINTED.
- SECONDARY STEEL MEMBERS SHALL BE METALIZED AND PAINTED.
- HOT DIPPED GALVANIZING MAY NOT REPLACE METALIZING

WELDING

- WELDING ELECTRODES SHALL HAVE THE SAME CORROSION RESISTANCE AS THE BASE METAL AND SHALL BE LOW HYDROGEN TYPE.
- ALL REASONABLE AND PRUDENT PRECAUTIONS SHOULD BE TAKEN TO MINIMIZE THE INTRODUCTION OF WATER AND OTHER HYDROGEN SOURCES INTO THE WELDED ZONE.
- PRIOR TO WELDING, IF STRUCTURE IS EXPOSED TO RAIN, SNOW/ICE, ETC OR WHEN WELDING IS TO BE DONE WHEN THE RELATIVE HUMIDITY EXCEEDS 90% A PREHEAT TEMPERATURE OF 250°F IS REQUIRED.
- PRIOR TO WELDING, IF STANDING WATER OR DEW IS PRESENT ON THE SURFACE ABOUT TO BE WELDED, THE WATER MUST BE REMOVED BY HEATING UNTIL NO WATER IS VISIBLY PRESENT AND THE SURFACE TEMPERATURE OF THE STEEL IS A MINIMUM OF 300°F.
- ALL FIELD WELDING SHALL USE A MINIMUM PREHEAT AND INTERPASS TEMPERATURE OF 250°F UNLESS A HIGHER TEMPERATURE IS REQUIRED.
- SMAW FILLER METAL SHALL BE STORED IN A HERMETICALLY SEALED CONTAINER UNTIL OPENING WHEN THEY WILL BE IMMEDIATELY PLACED IN A 250°F OVEN UNTIL USED IN THE WORK. IF THE WELD METAL IS NOT USED WITHIN 2 HOURS AFTER REMOVAL FROM THE HERMETICALLY SEALED CONTAINER OR THE STORAGE OVEN, THE METAL MUST BE REDRIED FOR A MINIMUM OF 2 HOURS AT 450°F TO 550°F.

THE FOLLOWING TYPE OF WELDS ARE PROHIBITED:

- ALL PIP GROOVE WELDS IN BUTT JOINTS EXCEPT THOSE CONFORMING TO AWS ARTICLE 2.17.3
- CJP GROOVE WELDS, IN ALL MEMBERS CARTING CALCULATED STRESS OR IN SECONDARY MEMBERS SUBJECT TO TENSION OR THE REVERSAL OF STRESS, MADE FROM ONE SIDE ONLY WITHOUT ANY BACKING OR WITH BACKING OTHER THAN STEEL, THAT HAS NOT BEEN QUALIFIED TO CONFORMANCE WITH AWS ARTICLE 5.7.5 AND 5.12.4
- INTERMITTENT GROOVE WELDS
- INTERMITTENT FILLER WELDS, EXCEPT AS APPROVED BY THE ENGINEER
- FLAT POSITION BEVEL-GROOVE AND J-GROOVE WELDS IN BUTT JOINTS WHERE THE V-GROOVE AND U-GROOVE WELDS ARE PRACTICABLE
- PLUG AND SLOT WELDS IN MEMBERS SUBJECT TO TENSION AND REVERSAL OF STRESS

- CONNECTIONS OR SPICE IN BEAMS OR GIRDERS WHEN MADE BY GROOVE WELDS SHALL HAVE CJP GROOVE WELDS. CONNECTIONS OR SPICES MADE WITH FILLET OR PLUG WELDS SHALL BE DESIGNED FOR THE AVERAGE OF THE CALCULATED STRESS AND THE STRENGTH OF THE MEMBER, BUT NOT LESS THAN 75 PERCENT OF THE STRENGTH OF THE MEMBER. WHEN THERE IS REPEATED APPLICATION OF LOAD, THE MAXIMUM STRESS OR STRESS RANGE IN SUCH CONNECTIONS OR SPICES SHALL NOT EXCEED THE FATIGUE STRESS ALLOWED BY AASHTO SPECIFICATIONS. (AWS ARTICLE 2.17.6.1)

- SPLICES BETWEEN SECTIONS OF ROLLED BEAMS OR BUILT-UP GIRDERS SHALL PREFERABLY BE MADE IN A SINGLE TRANSVERSE PLANE. SHOP SPICES OF WEBS AND FLANGES IN BUILT-UP GIRDERS, MADE BEFORE THE WEBS AND FLANGES ARE JOINED TO EACH OTHER MAY BE LOCATED IN A SINGLE TRANSVERSE PLANE OR MULTIPLE TRANSVERSE PLANES, BUT THE FATIGUE STRESS PROVISIONS OF THE AASHTO SPECIFICATIONS SHALL APPLY. (AWS ARTICLE 2.17.6.2)

- THE CONNECTION AT THE ENDS OF NON-CONTINUOUS BEAMS SHALL BE DESIGNED WITH FLEXIBILITY SO AS TO AVOID EXCESSIVE SECONDARY STRESSES DUE TO BENDING. SEATED CONNECTIONS WITH FLEXIBLE OR GUIDING DEVICE TO PREVENT END TWISTING ARE RECOMMENDED. (AWS ARTICLE 2.17.6.3)

- WELDING SYMBOLS SHALL BE THOSE SHOWN IN THE LATEST EDITION OF AWS A2.4. STANDARD SYMBOLS FOR WELDING, BRAZING AND NONDESTRUCTIVE EXAMINATION. SPECIAL CONDITIONS SHALL BE FULLY EXPLAINED BY NOTES OR DETAILS.

- FOR ALL COMPLETE PENETRATION WELDS (CJP) BACKING BARS SHALL BE REMOVED AND THE WEBS BACKGROUDED. NON FUSEABLE BACKING BARS SHALL BE USED.

- NO SHOP FILLET WELD SHALL BE LESS THAN 1/4".

- ALL SHEAR STUD CONNECTORS SHALL BE WELDED BY THE AUTOMATIC TIMED ELECTRIC ARC PROCESS. SHEAR STUDS SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH SECTION 824 OF THE RI STANDARD SPECIFICATIONS.

- WELD FILLER MATERIAL SHALL MEET THE CHARPY V-NOTCH (CVN) TESTING REQUIREMENT OF 20 FT-LBS AT -20 DEGREES F.

STAINLESS STEEL

- GENERAL REQUIREMENTS
- WHEN MEMBERS ARE SPECIFIED AS STAINLESS STEEL THE FOLLOWING REQUIREMENTS SHALL BE FOLLOWED WHEN POSSIBLE.
- THE FABRICATOR IS SOLELY RESPONSIBLE FOR DETERMINING THE FINAL FABRICATION METHODS.
- STAINLESS STEEL FABRICATION SHALL FOLLOW THE RECOMMENDATIONS OF AISC DESIGN GUIDE 27- STRUCTURAL STAINLESS STEEL AND BEST INDUSTRY PRACTICE.
- STORAGE AND HANDLING
- FABRICATOR SHOULD MAKE EVERY EFFORT TO MINIMIZE CARBON STEEL CONTAMINATION OF STAINLESS STEEL DURING FABRICATION, SHIPPING AND ERECTION.
- THE STEEL SHOULD BE INSPECTED IMMEDIATELY AFTER DELIVERY FOR ANY SURFACE DAMAGE.
- THE STEEL MAY HAVE PROTECTIVE PLASTIC OR OTHER COATING. THIS SHOULD BE LEFT ON AS LONG AS POSSIBLE, REMOVING IT JUST BEFORE FINAL FABRICATION. THE PROTECTIVE COVERING IS REQUIRED FOR FINISHES WHICH COULD BE DAMAGED DURING SHIPMENT AND ERECTION (E.G FOR BRIGHT ANNEALED FINISHES) OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
- STORAGE IN SALT-LADEN HUMID ATMOSPHERES SHOULD BE AVOIDED.
- STAINLESS STEEL SHALL NOT BE STORED DIRECTLY ON RACKS WITH CARBON STEEL RUBBING SURFACES. RUBBING SURFACES SHALL BE PROTECTED BY WOODEN, RUBBER OR PLASTIC BATTENS OR SHEATHS. SHEETS AND PLATES SHOULD BE STACKED VERTICALLY WHEN EVER POSSIBLE. HORIZONTALLY STACKED SHEETS MAY GET WALKED ON WITH A RISK OF IRON CONTAMINATION AND SURFACE DAMAGE.
- CARBON STEEL LIFTING TACKLE, E.G. CHAINS, HOOKS, AND CLEATS SHOULD BE AVOIDED. THE USE OF ISOLATING MATERIALS, OR THE USE OF SUCTION CUPS WHICH PREVENT IRON PICK SHOULD BE USED WHEN EVER POSSIBLE. THE FORKS OF FORK LIFT TRUCKS MUST ALSO BE PROTECTED.
- CONTACT WITH CHEMICALS INCLUDING UNDUCE AMOUNTS OF OILS AND GREASES WHICH MAY STAIN SOME FINISHES SHOULD BE AVOIDED.
- THE FABRICATOR SHALL MAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE FINISHED FABRICATION DURING TRANSPORTATION.
- FABRICATION
- SEGREGATED FABRICATION AREAS FOR CARBON STEEL AND STAINLESS STEEL SHOULD BE USED WHEN EVER POSSIBLE. ONLY TOOLS DEDICATED TO STAINLESS STEEL SHOULD BE USED, MOST NOTABLY THIS APPLIES TO GRINDING WHEELS AND WIRE BRUSHES. WIRE BRUSHES AND WIRE WOOL SHALL BE OF STAINLESS STEEL AND IDEALLY A GRADE THAT IS EQUIVALENT IN TERMS OF CORROSION RESISTANCE (E.G. DO NOT USE FERRITIC STAINLESS STEEL BRUSHES ON AUSTENITIC STAINLESS STEEL.
- CARE SHOULD BE TAKEN IN MARKING FINISHED SURFACES WITH MARKING PENS/CRAYONS. WHEN EVER POSSIBLE MARKING SHOULD BE MADE ON A PROTECTIVE FILM, RATHER THEN THE FINISHED SURFACE. IF MARKINGS MUST BE MADE ON THE FINISHED SURFACE, A CHECK SHOULD MADE IN AREA OF LIMITED VISIBILITY TO ENSURE THAT THE MARKS CAN BE REMOVED WITHOUT HARMING THE SURFACE.
- UNLESS SPECIFIED OTHERWISE ON THE CONTRACT DRAWINGS THE FOLLOWING MINIMUM INTERNAL RADIUS SHALL BE USED FOR FABRICATIONS:
 - 2" FOR AUSTENITIC GRADES
 - 2.5" FOR DUPLEX GRADES
 - WHERE T IS THE THICKNESS OF THE MATERIAL
- UNLESS SPECIFIED OTHERWISE ON THE CONTRACT DRAWINGS, FOR TUBULAR SECTIONS:
 - THE OUTER TUBE DIAMETER TO WALL THICKNESS RATIO SHALL NOT EXCEED
 - THE BENDING RADIUS (AS MEASURED ALONG THE CENTERLINE OF THE TUBE) SHALL NOT BE LESS THEN 2.5'D, WHERE D IS THE OUTER DIAMETER.
 - ANY WELDS SHOULD BE LOCATED AS CLOSE TO THE NEUTRAL AXIS AS POSSIBLE TO REDUCE BENDING STRESS AT THE WELD.
- HOLES MAY BE DRILLED, PUNCHED OR LASER CUT. PUNCHED HOLES IN AUSTENITIC STAINLESS STEEL SHALL TYPICALLY BE LIMITED MEMBERS OF APPROXIMATELY 3/4" THICKNESS. THE MINIMUM SIZED HOLE TO BE PUNCHED SHALL BE 0.08" GREATER THAN THE MATERIAL THICKNESS. PUNCHED HOLES SHALL BE AVOIDED IN CORROSIVE ENVIRONMENTS.
- SURFACES TO BE WELDED SHALL BE FREE OF OILS AND OTHER HYDROCARBONS, AND WAX CRAYON MARKS AS TO AVOID ANY UNNECESSARY CARBON PICK-UP.
- WELDING
- ALL STAINLESS STEEL WELDING SHALL CONFORM TO THE LATEST EDITION OF THE AWS STRUCTURAL WELDING CODE - STAINLESS AND AWS D10.18/D10.18M GUIDE FOR THE FERRIC AND AUSTENITIC DUPLEX STAINLESS STEEL PIPING AND TUBING (IF APPROPRIATE).
- WELDING SHALL BE DONE WITH AN ELECTRODE WHICH HAS IS MATCHING OR COMPATIBLE ALLOY TO THE STAINLESS STEEL GRADE BEING WELDED.
- WELDING DETAILS SHALL BE PREPARED BY THE STEEL DETAILER TO MINIMIZE AND LIMIT CREVICE CORROSIONS. WELDING DEFICIENCIES SUCH AS UNDERCUT, LACK OF PENETRATION, WELD SPLATTER, SLAG, AND ARC STRIKES SHOULD BE CONTROLLED TO MINIMIZE SITES OF POTENTIAL CORROSION.
- ANY POTENTIAL SOURCES OF CARBON CONTAMINATION SUCH AS OILS AND OTHER HYDROCARBONS, DIRT AND OTHER DEBRIS, STRIPPABLE PLASTIC FILM AND WAX CRAYONS MARKS SHOULD BE REMOVED PRIOR TO ANY WELDING.
- WELDED AREAS SHOULD BE CLEANED AND FREE OF ANY POTENTIALS SOURCES OF ZINC(SUCH AS FROM METALIZED/GALVANIZED PARTS) AND COPPER (SUCH AS FROM COPPER BACKING BARS) CONTAMINATION.
- THE LOWEST POSSIBLE HEAT INPUT SHOULD BE USED FOR ALL WELDING TO AVOID EXCESSIVE DISTORTION AND THE FORMATION OF CHROMIUM CARBIDE PRECIPITATES.
- IF STAINLESS STEEL IS TO BE WELDED TO CARBON/NSLA STEEL, STAINLESS STEEL WELDING ELECTRODE SHOULD BE USED.

ADDENDUM NO. 8

REF DWG #	REFERENCE DRAWING NAME

100 BROADWAY, 23rd FLOOR NEW YORK, NY 10005
Tel: 212 334 2025
Fax: 212 334 5528
web: www.burhappold.com

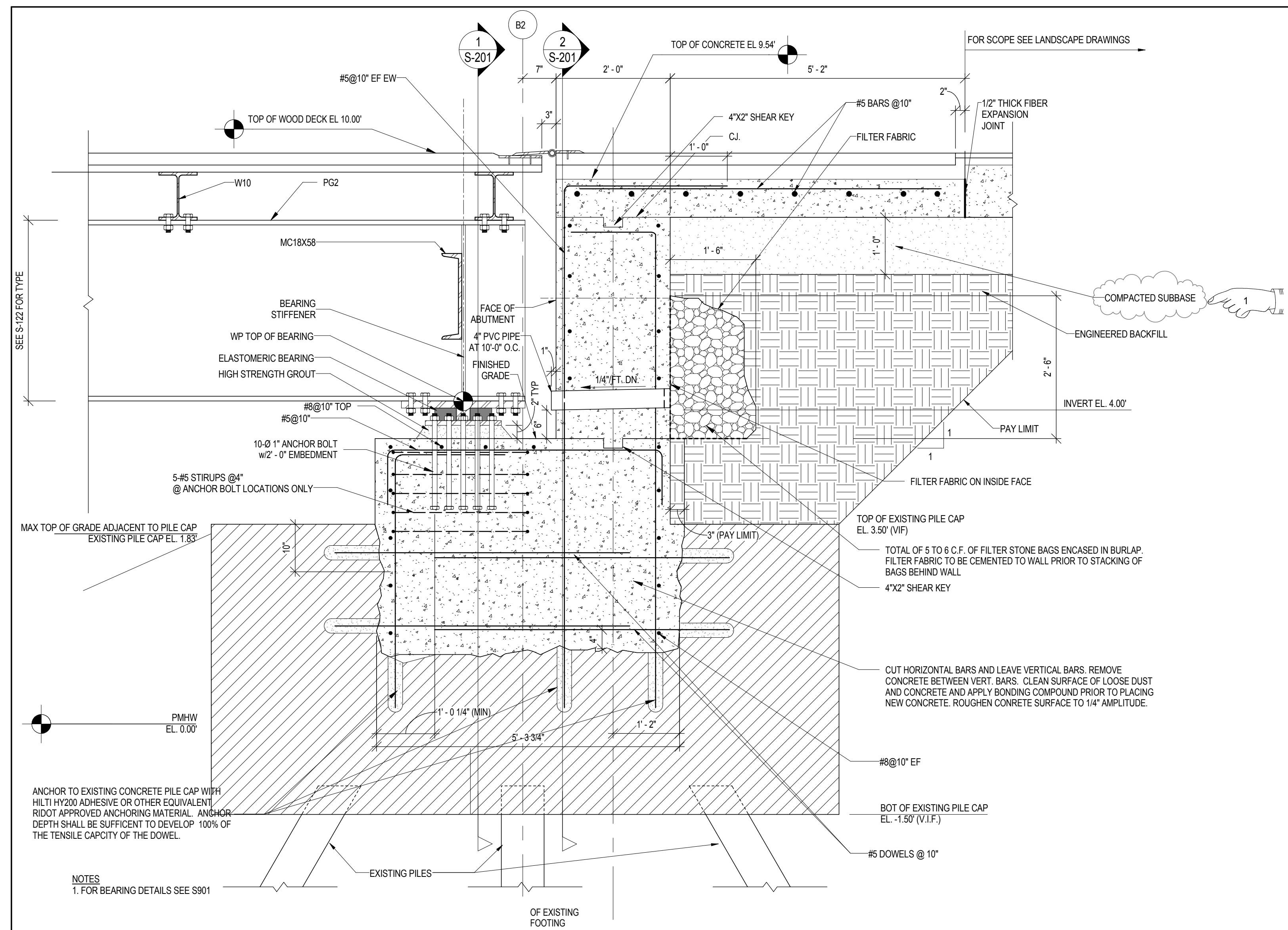
Engineers • Planners • Landscape Architects
Lincoln, RI - Norwood, MA - Hartford, CT

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

INTERSTATE
195

DESIGNED BY: AN	SCALE: NTS
CHECKED: CDL	
DATE: 04/21/14	
SHEET: V2_072	
OF: V2_163	

IMPROVEMENTS TO INTERSTATE ROUTE 195 CONTRACT 16 VOLUME 2
PROVIDENCE RHODE ISLAND
GENERAL NOTES SHEET 3
S-003



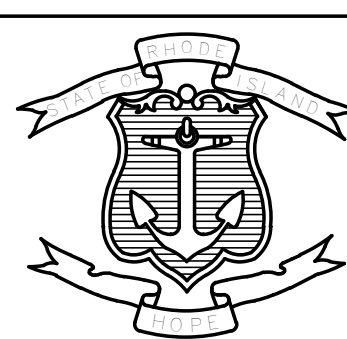
1 B2 ABUTMENT SECTION - 1
SCALE 3/4" = 1'-0"

ADDENDUM NO. 8

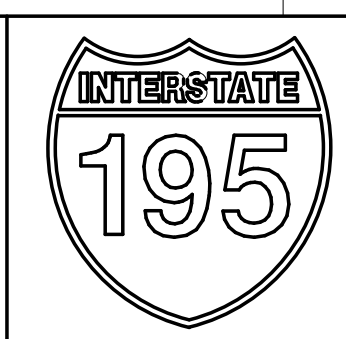
REF DWG #	REFERENCE DRAWING NAME



100 BROADWAY,
23rd FLOOR NEW YORK,
NY 10005
Tel: 212 334 2025
Fax: 212 334 5528
web: www.burohappold.com



RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

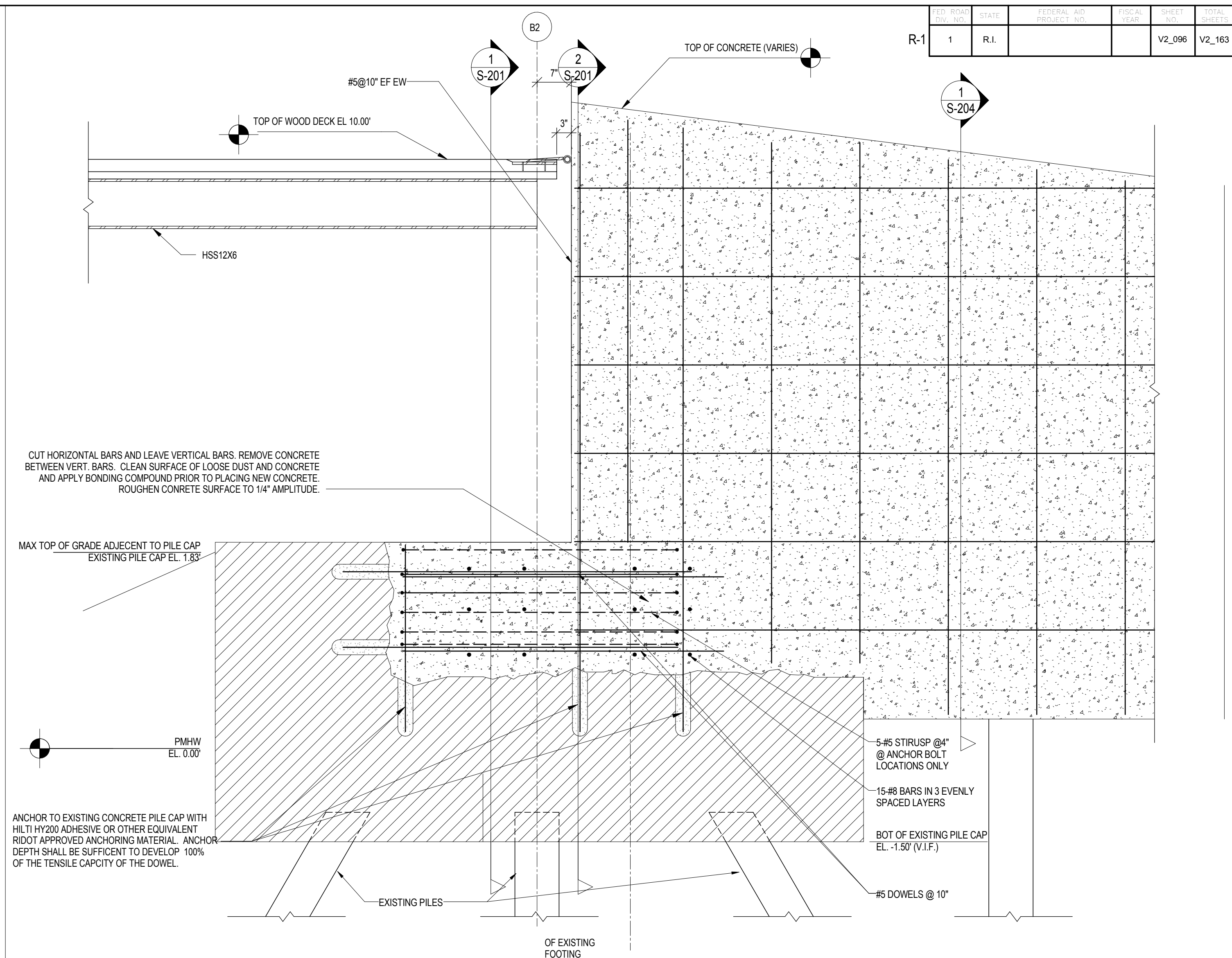
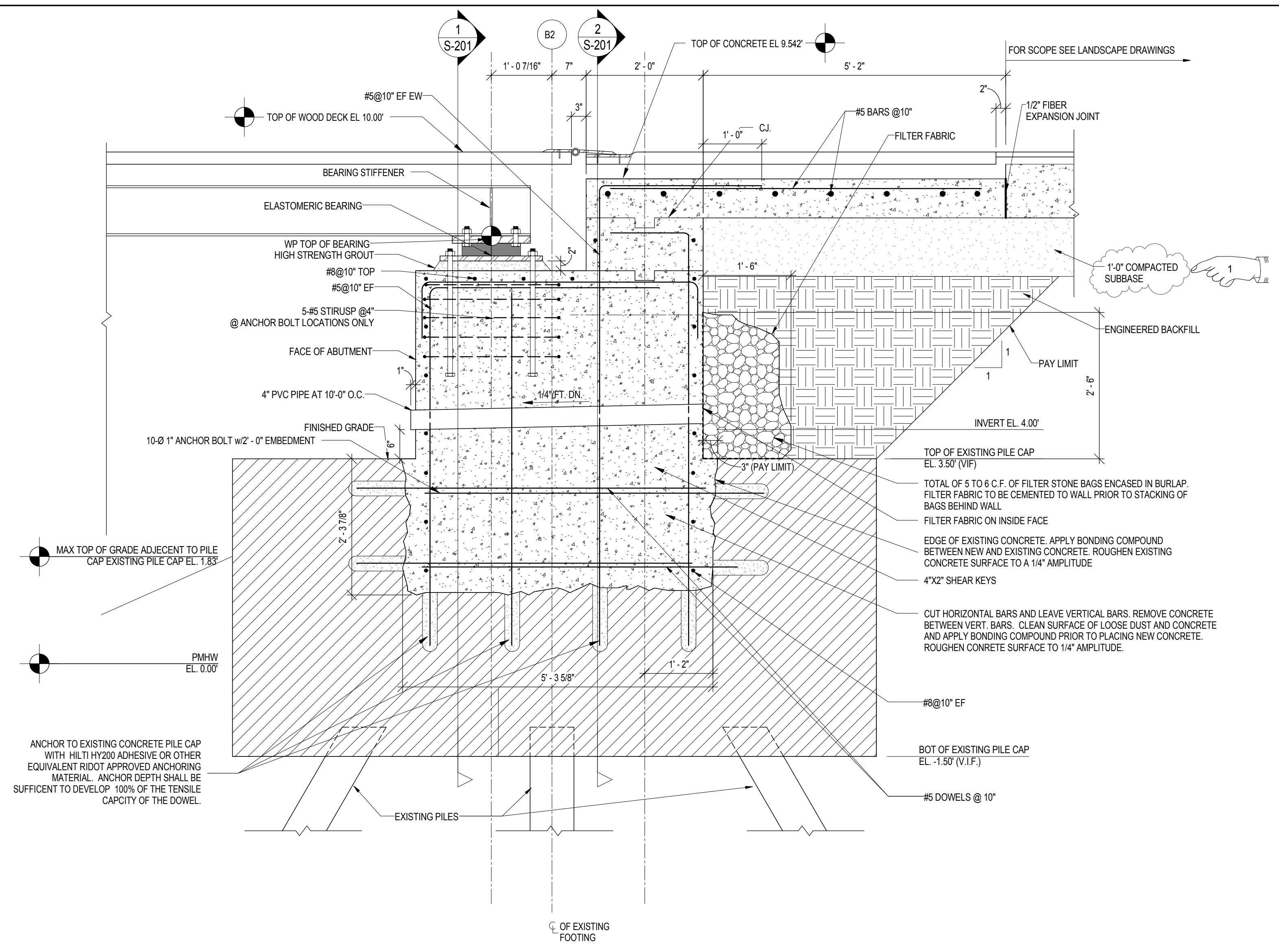


DESIGNED BY: SB
CHECKED: AN
DATE: 04/21/14
SHEET: V2_095
OF: V2_163

SCALE: As indicated

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/29/2016	DF			

IMPROVEMENTS TO
INTERSTATE ROUTE 195
CONTRACT 16 VOLUME 2
PROVIDENCE RHODE ISLAND
B2 ABUTMENT DETAILS - 1 S-202



1 B2 ABUTMENT SECTION - 2
SCALE 3/4" = 1'-0"

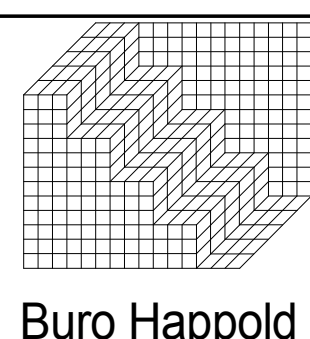
2 B2 ABUTMENT WALL SECTION
SCALE 3/4" = 1'-0"

ADDENDUM NO. 8

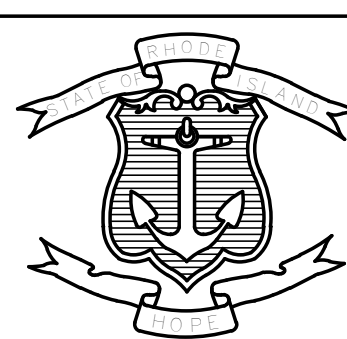
REF DWG #	REFERENCE DRAWING NAME



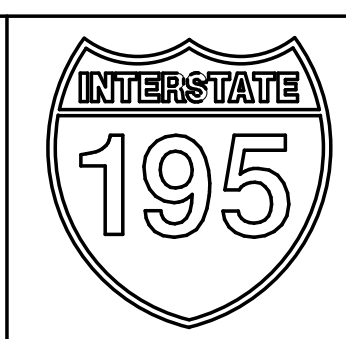
100 BROADWAY,
23rd FLOOR NEW YORK,
NY 10005
Tel: 212 334 2025
Fax: 212 334 5528
web: www.burohappold.com



BETA Group, Inc.
Engineers • Planners • Landscape Architects
Lincoln, RI - Norwood, MA - Hartford, CT



RHODE ISLAND
DEPARTMENT OF TRANSPORTATION



DESIGNED BY: SB
CHECKED: AN
DATE: 04/21/14
SHEET: V2_096
OF: V2_163

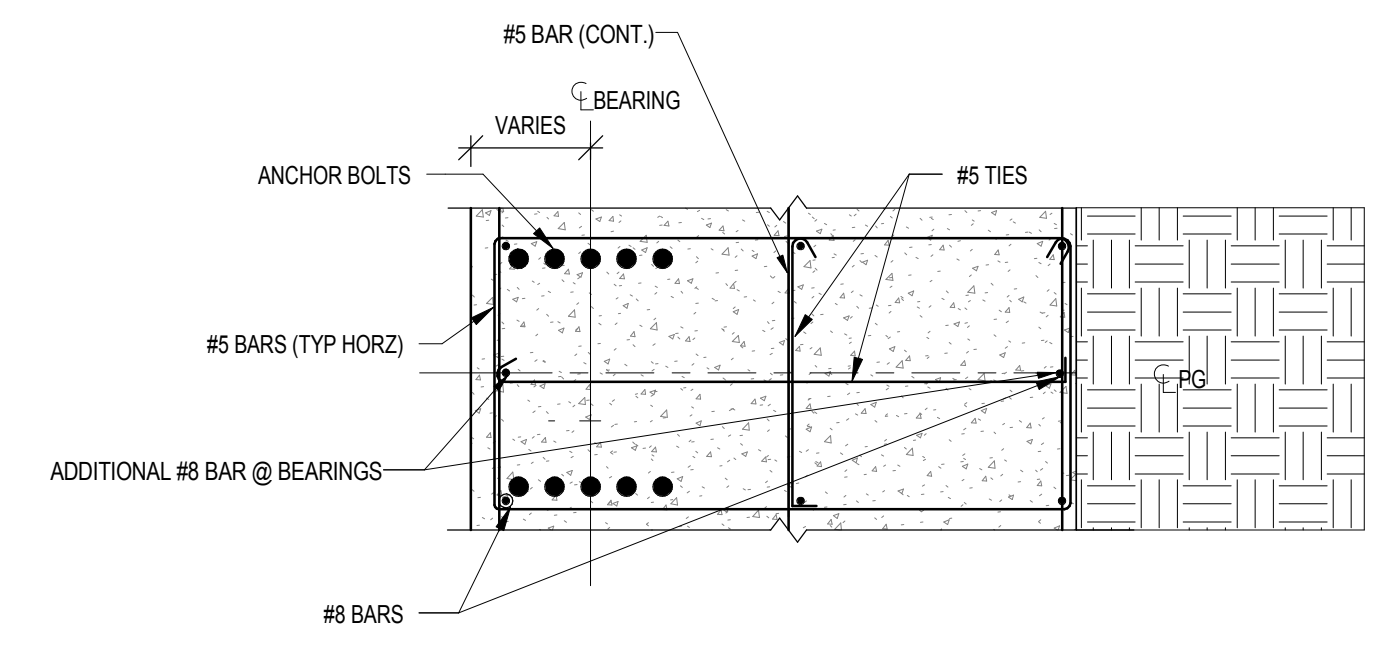
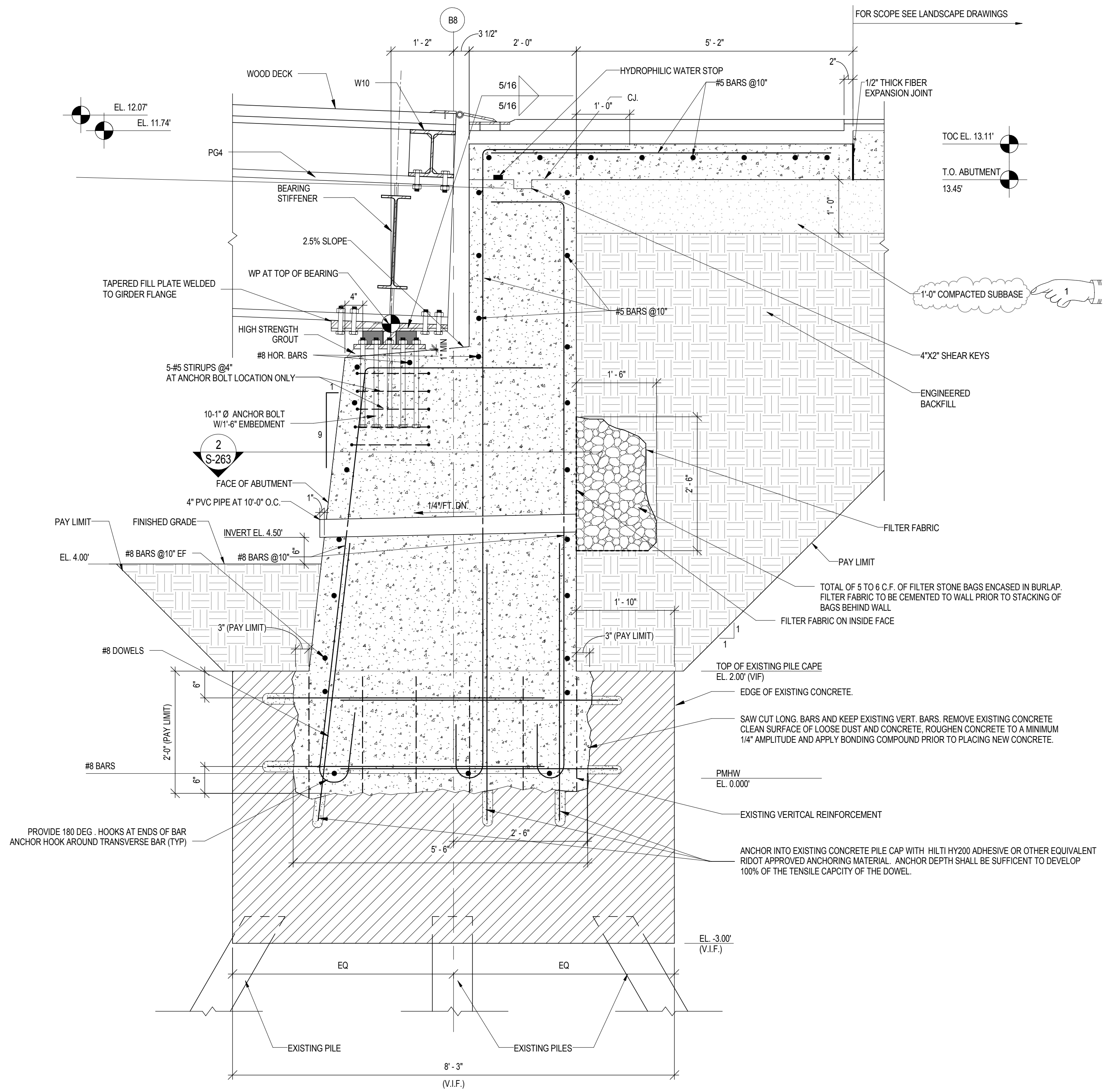
SCALE: As indicated

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/29/2016	DF			

IMPROVEMENTS TO
INTERSTATE ROUTE 195
CONTRACT 16 VOLUME 2
PROVIDENCE RHODE ISLAND

B2 ABUTMENT DETAILS - 2

S-203



2 ABUTMENT SECTION PG SUPPORT
SCALE 3/4" = 1'-0"

NOTE:
1. FOR ADDITIONAL INFORMATION SEE 5/A-400

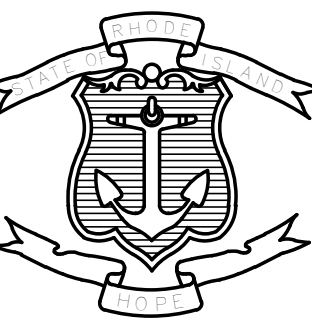
1 B8 ABUTMENT SECTION
SCALE 3/4" = 1'-0"

ADDENDUM NO. 8

REF DWG #	REFERENCE DRAWING NAME
A-440	WEST ABUTMENT WALLS PLAN & ELEVATIONS



100 BROADWAY,
23rd FLOOR NEW YORK,
NY 10005
Tel: 212 334 2025
Fax: 212 334 5528
web: www.burohappold.com



RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

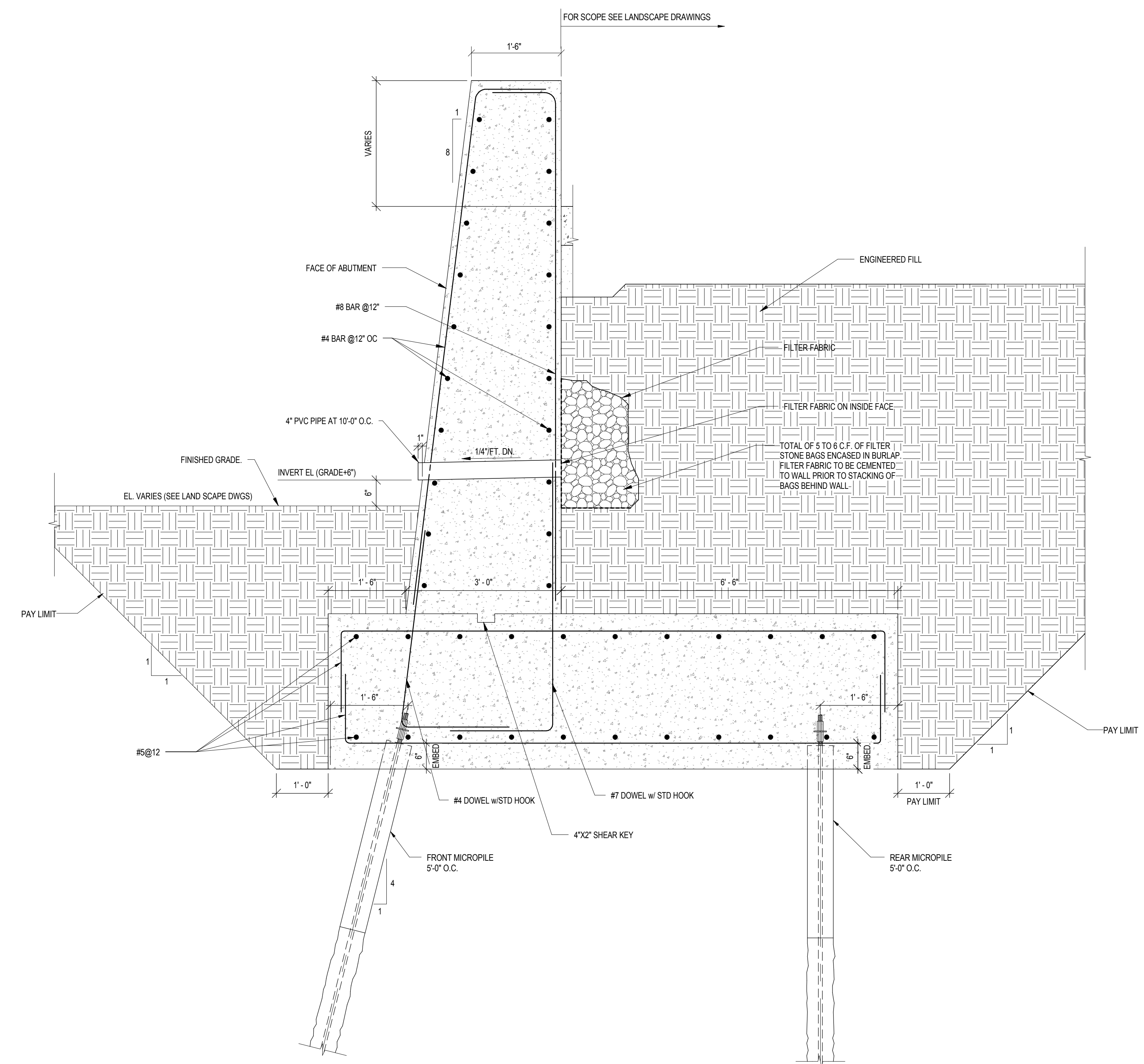


DESIGNED BY: AN
CHECKED BY: AN
DATE: 04/21/14
SHEET: V2_116
OF: V2_163

SCALE: As indicated

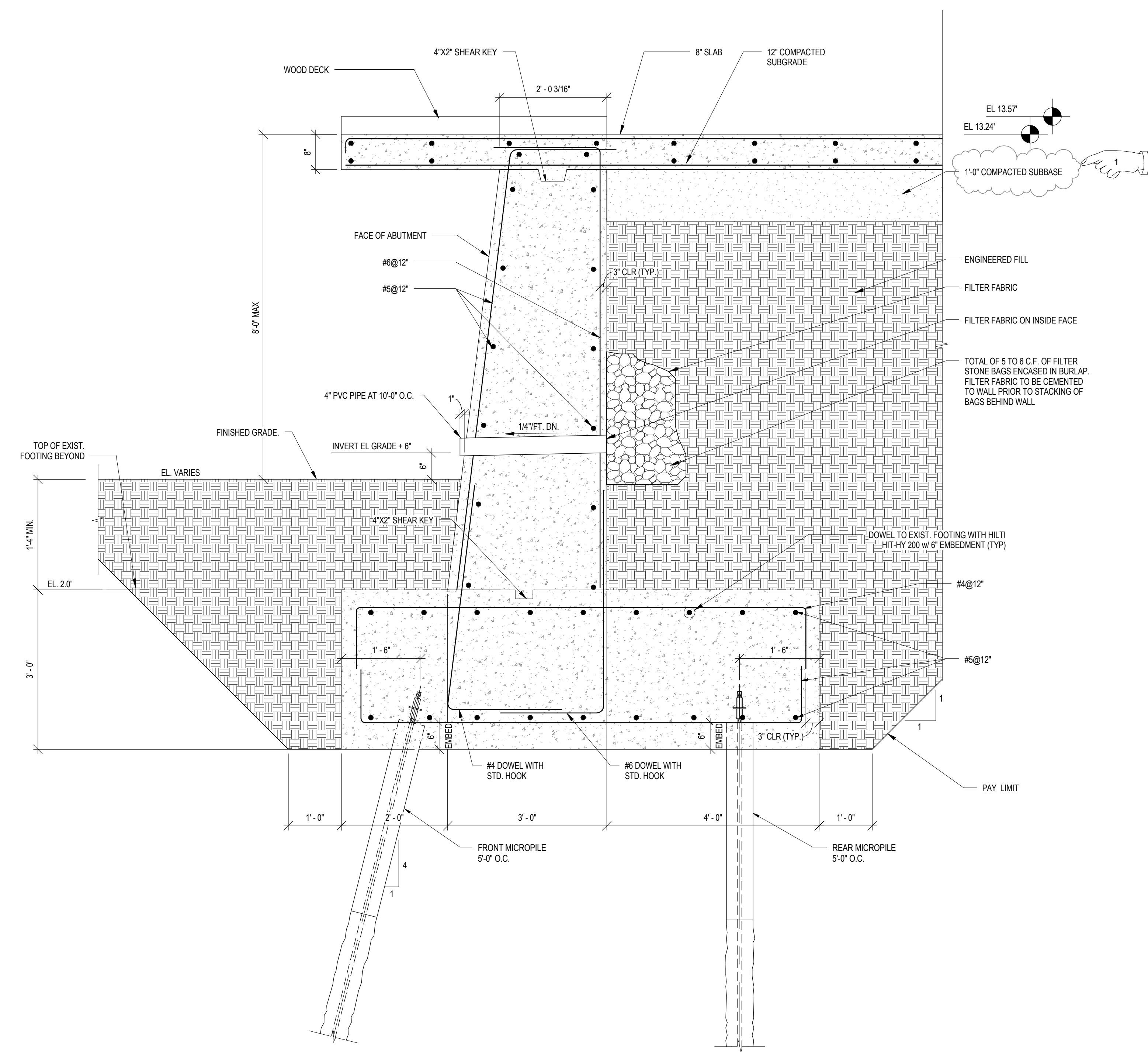
REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/29/2016	DF			

IMPROVEMENTS TO
INTERSTATE ROUTE 195
CONTRACT 16 VOLUME 2
PROVIDENCE RHODE ISLAND
B8 ABUTMENT DETAILS - 1
S-263



NOTE:
1. REFER TO SPECIAL PROVISION 804.99 AND GEOTECHNICAL REPORT AND DRAWING S650 FOR MORE INFORMATION

1 B8 RETAINING WALL
SCALE 3/4" = 1'-0"



NOTE:
1. REFER TO SPECIAL PROVISION 804.99 AND GEOTECHNICAL REPORT AND DRAWING S650 FOR MORE INFORMATION

2 WEST ABUTMENT WALL SECTION
SCALE 3/4" = 1'-0"

ADDENDUM NO. 8

REF DWG #	REFERENCE DRAWING NAME
A-440	WEST ABUTMENT WALLS PLAN & ELEVATIONS
A-441	WEST ABUTMENT WALLS PLAN, ELEVATIONS & DETAILS
S-650	DEEP FOUNDATIONS

100 BROADWAY,
23rd FLOOR NEW YORK,
NY 10005
Tel: 212 334 2025
Fax: 212 334 5528
web: www.burnshappold.com

BETA Group, Inc.
Engineers • Planners • Landscape Architects
Lincoln, RI • Norwood, MA • Hartford, CT

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

DESIGNED BY: ME
CHECKED: AN
DATE: 10/09/14
SHEET: V2_117
OF: V2_163

SCALE: As indicated

REVISIONS			REVISIONS		
NO.	DATE	BY	NO.	DATE	BY
1	6/29/2016	DF			

IMPROVEMENTS TO
INTERSTATE ROUTE 195
CONTRACT 16 VOLUME 2
PROVIDENCE RHODE ISLAND

B8 ABUTMENT DETAILS - 2

S-264

