November 1, 2019

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATION
DEPARTMENT OF ADMINISTRATION

DIVISION OF PURCHASES BID NO. 7599789

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

RHODE ISLAND CONTRACT NO.2019-CB-027

FEDERAL-AID PROJECT NO. FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Bridge Group 51A - Rt 37 C-2

Route 37 from Pontiac Branch RR (Abandoned) to U.S. Route 1.
Pontiac Ave. from Rt. 37 EB Ramps to Sockanossett Cross Rd. Intersection.

CITY/TOWN OF Warwick, Cranston

COUNTY OF KENT, PROVIDENCE

NOTICE TO PROSPECTIVE BIDDERS

ADDENDUM NO. 4 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. Contract Documents

1. Specifications - Contract Specific

   a. Page CS-ii

      Delete Page CS-ii in its entirety and replace it with revised Page CS-ii (R-1) attached to this Addendum No. 4. The index page has been revised.

   b. Appendix G

      Add Appendix G in its entirety attached to this Addendum No. 4. The appendix is added to incorporate Amtrak specifications into the contract.

2. Specifications - Job Specific

   a. Job Specific Index

      Delete the Job Specific Index pages in their entirety and replace them with revised Job Specific Index (R-1) attached to this Addendum No. 4. The index has been revised.

   b. Page JS-8a and JS-8b

      Insert new Pages JS-8a and JS-8b attached to this Addendum No. 4. Two new specifications have been added.

   c. Page JS-31a, JS-31b and JS-31c

      Insert new Pages JS-31a, JS-31b and JS-31c attached to this Addendum No. 4. Two new specifications have been added.

   d. Page JS-107

      Delete Page JS-107 in its entirety and replace it with revised Page JS-107 (R-1) attached to this Addendum No. 4. The specification has been revised.

e. Page JS-150

Delete Page JS-150 in its entirety and replace it with revised Page JS-150 (R-1) attached to this Addendum No. 4. The specification has been revised.

f. Page JS-156

Delete Page JS-156 in its entirety and replace it with revised Page JS-156(R-1) attached to this Addendum No. 4. The specification has been revised.

B. Distribution of Quantities

1. Index Pages

Delete all index pages in their entirety and replace with revised pages Index 1 (R-1) through Index 9 (R-1) attached to this Addendum No. 4. Items highlighted in bold have been revised, added or deleted.

2. Pages 27 and 28

Delete Page 27 and Page 28 in their entirety and replace with revised Page 27 and Page 28 (R-1) attached to this Addendum No. 4. Item Code 401.9901 has been deleted.

3. Page 32

Delete Page 32 in its entirety and replace with revised Page 32 (R-1) attached to this Addendum No. 4. Item Code 601.0200 has been deleted.

4. Page 48

Delete Page 48 in its entirety and replace with revised Page 48 (R-1) attached to this Addendum No. 4. Item Code 703.0708 has been deleted.

5. Page 62

Delete Page 62 in its entirety and replace with revised Page 62 (R-1) attached to this Addendum No. 4. Item Code 805.9901 has been deleted.

6. Page 84

Delete Page 84 in its entirety and replace with revised Page 84 (R-1) and add Page 84a attached to this Addendum No. 4. Item Code 909.3020 has been deleted. Item Code 909.3021 quantity has been revised.

7. Page 104 and 105

Delete Page 104 and Page 105 in their entirety and replace with revised Page 104 (R-1) and Page 105 (R-1) attached to this Addendum No. 4. Item Code L02.0101 quantity has been revised.

8. Page 114

Delete Page 114 in its entirety and replace with revised Page 114 (R-1) attached to this Addendum No. 4. Item Code T09.9902 has been deleted.

9. Page 143

Delete Page 143 in its entirety and replace with revised Page 143 (R-1) attached to this Addendum No. 4. Items have been added.

10. Page 144

Insert Page 144 to this Addendum No. 4. Items have been added.

ATTACHMENTS

C. Drawings/Plans - Change/Addition

1. Volume 1

   a. Sheets 13 through 17

      Delete Sheets 13 through 17 in their entirety and replace them with revised Sheets 13 (R-1) through 17 (R-1) attached to this Addendum No. 4. Various details were revised on each sheet.

   b. Sheet 69

      Delete Sheet 69 in its entirety and replace with revised Sheet 69 (R-1) attached to this Addendum No. 4. The sheet was revised.

2. Volume 2

   a. Plan Sheet 45

      Delete plan sheet 45 in its entirety and replace it with Sheet 45(R-1) attached to this Addendum No. 4. The sheet has been revised.

3. Volume 3

   a. Plan Sheet 8

      Delete plan sheet 8 in its entirety and replace it with Sheet 8(R-1) attached to this Addendum No. 4. The sheet has been revised.

   b. Plan Sheet 10

      Delete plan sheet 10 in its entirety and replace it with Sheet 10(R-1) attached to this Addendum No. 4. The sheet has been revised.

   c. Plan Sheet 27

      Delete plan sheet 27 in its entirety and replace it with Sheet 27(R-1) attached to this Addendum No. 4. The sheet has been revised.

   d. Plan Sheet 28

      Delete plan sheet 28 in its entirety and replace it with Sheet 28(R-1) attached to this Addendum No. 4. The sheet has been revised.

4. Volume 5

   a. Multiple Plan Sheets

      Delete plan sheets 6, 7, 24, 35, 37, 41, 48, 49, 64, 74, 75 in their entirety and replace them with Sheets 6 (R-1), 7 (R-1), 24 (R-1), 35 (R-1), 37 (R-1), 41 (R-1), 48 (R-1), 49 (R-1), 64 (R-1), 74 (R-1), 75 (R-1) attached to this Addendum No. 4. Various notes and callouts have been added or revised to clarify pay items and address other questions raised by bidders. In addition, the HMA wearing surface on the bridge deck and approach slabs has been revised.

ATTACHMENTS

5. Volume 6

   a. Multiple Plan Sheets

      4. Delete plan sheets 4, 9, 12, 14, 19, 20, 22, 23, 25, 26, 28, 29, 32, 34, 36, 39, 40, 41, 42, 43 in their entirety and replace them with Sheets 4 (R-1), 9 (R-1), 12 (R-1), 14 (R-1), 19 (R-1), 20 (R-1), 22 (R-1), 23 (R-1), 25 (R-1), 26 (R-1), 28 (R-1), 29 (R-1), 32 (R-1), 34 (R-1), 36 (R-1), 39 (R-1), 40 (R-1), 41 (R-1), 42 (R-1), 43 (R-1) attached to this Addendum No. 4. Various notes and callouts have been added or revised to clarify pay items and address other questions raised by bidders. In addition, the HMA wearing surface on the bridge deck and approach slabs has been revised, bridge beam pedestal elevations were revised, approach slab plans were revised, sleeper slab elevations were revised, wingwall and cheekwall elevations were revised, a framing plan station callout was revised, and top of form elevations were revised.

6. Volume 7

   a. Plan Sheet 3A and 3B

      Add plan sheet nos. 3A and 3B attached to this Addendum No. 4. Amtrak notes for limitations of the contractor's operations have been incorporated.

RI Department of Transportation

Manager, Division of Project Management

INDEX
GENERAL PROVISIONS - CONTRACT SPECIFIC

APPENDIX G

Amtrak Specifications

Amtrak® ENGINEERING PRACTICES	ORIGINAL ISSUE DATE 01/25/01		NUMBER
	REVISED DATE 10/01/2012		EP3014
TITLE **MAINTENANCE AND PROTECTION OF RAILROAD TRAFFIC DURING CONTRACTOR OPERATIONS**	RECOMMENDED by *John Brun*	DATE *10/01/12*	PAGE 1 OF 2
	APPROVED by CHIEF ENGR, STRUCTURES *James Richter*	DATE *10/01/12*	

SCOPE AND NATURE

This practice provides procedures for Contractors to follow, when working on Amtrak Right-of-Way, adjacent to Amtrak tracks, to assure the protection of trains and maintenance of scheduled railroad operations.

SPECIAL REFERENCE

Note: This information was included under former Engineering Practice 1305.

Contractors shall comply with procedures detailed in the following specifications, when applicable:

Section	Title	Revision No.	Revision Date
01141A	Safety and Protection of Railroad Traffic and Property	4	10/01/12
01142A	Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition and Other Crane/ Hoisting Operations over Railroad Right-of-Way	1	12/15/05
01520A	Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures	1	08/07/01
02261A	Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks	3	06/20/08

SPECIAL MATERIALS

Not Applicable

PROCEDURE

1. The Contractor shall conform to the applicable specifications.

2. Amtrak I&C shall assure that agencies and other third parties proposing construction on or adjacent to Amtrak Right-of-Way conform to Amtrak requirements detailed herein.

3. Amtrak Design and Construction shall review the Contractor's proposed design and construction procedures for conformance with specifications, with sound engineering design practice and with the procedures detailed in the applicable Engineering Practice documents.

4. Amtrak Construction shall monitor the activities of the Contractor on-site to assure compliance/ adherence to approved procedures throughout the construction period.

REPORTING

As detailed in the specifications.

RESPONSIBILITY

Amtrak I&C Staff	Comply with Procedure
Director Project Initiation & Development	Assure Compliance
Amtrak Design Staff	Comply with Procedure
Director Structures Design	Assure Compliance
Amtrak Construction Staff	Comply with Procedure
Deputy Chief Engineer Construction	Assure compliance

SECTION 01141A – SAFETY AND PROTECTION OF RAILROAD TRAFFIC AND PROPERTY

PART 1 - GENERAL

1.1 SCOPE

A. This specification describes the safety procedures and protection provisions for Contractors and Permittees entering and working upon railroad property.

B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

A. CHIEF ENGINEER: Amtrak Chief Engineer

B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative

C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRE-ENTRY MEETING

A. Before entry of Permittee and/or Contractors onto Railroad's property, a pre-entry meeting shall be held at which time Permittee and/or Contractors shall submit for written approval of the Chief Engineer, plans, computations and a detailed description of proposed methods for accomplishing the work, including methods for protecting Railroad's traffic. Any such written approval shall not relieve Permittee and/or Contractor of their complete responsibility for the adequacy and safety of their operations.

3.2 RULES, REGULATIONS AND REQUIREMENTS

A. Railroad traffic shall be maintained at all times with safety and continuity, and Permittee and/or Contractors shall conduct their operations in compliance with all rules, regulations, and requirements of Railroad (including these Specifications) with respect to any work performed on, over, under, within or adjacent to Railroad's property. Permittee and/or Contractors shall be responsible for acquainting themselves with such rules, regulations and requirements. Any violation of Railroads safety rules, regulations, or requirements shall be grounds for the immediate suspension of the Permittee and/or Contractor work, and the re-training of all personnel, at the Permittee's expense.

3.3 MAINTENANCE OF SAFE CONDITIONS

A. If tracks or other property of Railroad are endangered during the work, Permittee and/or Contractor shall immediately take such steps as may be directed by Railroad to restore safe conditions, and upon failure of Permittee and/or Contractor to immediately carry out such direction, Railroad may take whatever steps are reasonably necessary to restore safe conditions. All costs and expenses of restoring safe conditions, and of repairing any damage to Railroad's trains, tracks, right-of-way or other property caused by the operations of Permittee and/or Contractors, shall be paid by Permittee.

3.4 PROTECTION IN GENERAL

A. Permittee and/or Contractors shall consult with the Chief Engineer to determine the type and extent of protection required to insure safety and continuity of railroad traffic. Any Inspectors, Track Foremen, Track Watchmen, Flagman, Signalmen, Electric Traction Linemen, or other employees deemed necessary by Railroad, at its sole discretion, for protective services shall be obtained from Railroad by Permittee and/or Contractors. The cost of same shall be paid directly to Railroad by Permittee. The provision of such employees by Railroad, and any other precautionary measures taken by Railroad, shall not relieve Permittee and/or Contractors from their complete responsibility for the adequacy and safety of their operations.

3.5 PROTECTION FOR WORK NEAR ELECTRIFIED TRACK OR WIRE

A. Whenever work is performed in the vicinity of electrified tracks and/or high voltage wires, particular care must be exercised, and Railroad's requirements regarding clearance to be maintained between equipment and tracks and/or energized wires, and otherwise regarding work in the vicinity of electrified tracks, must be strictly observed. No employees or equipment will be permitted to work near overhead wires, except when protected by a Class A employee of Railroad. **Permittee and/or Contractors must supply an adequate length of grounding cable (4/0 copper with approved clamps) for each piece of equipment working near or adjacent to any overhead wire.**

3.6 FOULING OF TRACK OR WIRE

A. No work will be permitted within twenty-five (25) feet of the centerline of track or the energized wire or have potential of getting within twenty-five (25) feet of track wire without the

approval of the Chief Engineer's representative. Permittee and/or Contractors shall conduct their work so that no part of any equipment or material shall foul an active track or overhead wire without the written permission of the Chief Engineer's representative. When Permittee and/or Contractors desire to foul an active track, they must provide the Chief Engineer's representative with their site-specific work plan a minimum of twenty-one (21) working days in advance, so that, if approved, arrangements may be made for proper protection of Railroad. Any equipment shall be considered to be fouling a track or overhead wire when located (a) within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire, or (b) in such a position that failure of same, with or without a load, would bring it within fifteen (15) feet from the centerline of the track or within fifteen (15) feet from the wire and requires the presence of the proper Railroad protection personnel.

B. If acceptable to the Chief Engineer's representative, a safety barrier (approved temporary fence or barricade) may be installed at fifteen (15) feet from centerline of track or overhead wire to afford the Permittee and/or Contractor with a work area that is not considered fouling. Nevertheless, protection personnel may be required at the discretion of the Chief Engineer's representative.

3.7 TRACK OUTAGES

A. Permittee and/or Contractors shall verify the time and schedule of track outages from Railroad before scheduling any of their work on, over, under, within, or adjacent to Railroad's right-of-way. Railroad does not guarantee the availability of any track outage at any particular time. Permittee and/or Contractors shall schedule all work to be performed in such a manner as not to interfere with Railroad operations. Permittee and/or Contractors shall use all necessary care and precaution to avoid accidents, delay or interference with Railroad's trains or other property.

3.8 DEMOLITION

A. During any demolition, the Contractor must provide horizontal and vertical shields, designed by a Professional Engineer registered in the state in which the work takes place. These shields shall be designed in accordance with the Railroad's specifications and approved by the Railroad, so as to prevent any debris from falling onto the Railroad's right-of-way or other property. A grounded temporary vertical protective barrier must be provided if an existing vertical protective barrier is removed during demolition. In addition, if any openings are left in an existing bridge deck, a protective fence must be erected at both ends of the bridge to prohibit unauthorized persons from entering onto the bridge.

B. Ballasted track structure shall be kept free of all construction and demolition debris. Geo-textiles or canvas shall be placed over the track ties and ballast to keep the ballast clean.

3.9 EQUIPMENT CONDITION

A. All equipment to be used in the vicinity of operating tracks shall be in "certified" first-class condition so as to prevent failures that might cause delay to trains or damage to Railroad's property. No equipment shall be placed or put into operation near or adjacent to operating tracks without first obtaining permission from the Chief Engineer's representative. **Under no**

circumstances shall any equipment or materials be placed or stored within twenty-five (25) feet from the centerline of an outside track, except as approved by the Site Specific Safety Work Plan. To insure compliance with this requirement, Permittee and/or Contractors **must establish a twenty-five (25) foot foul line prior to the start of work** by either driving stakes, taping off or erecting a temporary fence, or providing an alternate method as approved by the Chief Engineer's representative. Permittee and/or Contractors will be issued warning stickers which must be placed in the operating cabs of all equipment as a constant reminder of the twenty-five (25) foot clearance envelope.

3.10 STORAGE OF MATERIALS AND EQUIPMENT

A. No material or equipment shall be stored on Railroad's property without first having obtained permission from the Chief Engineer. Any such storage will be on the condition that Railroad will not be liable for loss of or damage to such materials or equipment from any cause.

B. If permission is granted for the storage of compressed gas cylinders on Railroad property, they shall be stored a minimum of 25 feet from the nearest track in an approved lockable enclosure. The enclosure shall be locked when the Permittee and/or Contractor is not on the project site.

3.11 CONDITION OF RAILROAD'S PROPERTY

A. Permittee and/or Contractors shall keep Railroad's property clear of all refuse and debris from its operations. Upon completion of the work, Permittee and/or Contractors shall remove from Railroad's property all machinery, equipment, surplus materials, falsework, rubbish, temporary structures, and other property of the Permittee and/or Contractors and shall leave Railroad's property in a condition satisfactory to the Chief Engineer.

3.12 SAFETY TRAINING

A. All individuals, including representatives and employees of Permittee and/or Contractor, before entering onto Railroad's property and before coming within twenty-five (25) feet of the centerline of the track or energized wire must first attend Railroad's Contractor Orientation Computer Based Training Class. The Contractor Orientation Class will be provided electronically at **www.amtrakcontractor.com**. Upon successful completion of the course and test, the individual taking the course will receive a temporary certificate without a photo that is valid for three weeks. The individual must upload a photo of himself/herself that will be embedded in the permanent ID card. The photo ID will be mailed to the individual's home address and must be worn/displayed while on Railroad property. Training is valid for one calendar year. All costs of complying with Railroad's safety training shall be at the sole expense of Permittee and/or Contractor. The Permittee and/or Contractor shall appoint a qualified person as its Safety Representative. The Safety Representative shall continuously ensure that all individuals comply with Railroad's safety requirements. All safety training records must be maintained with the Permittee's and/or Contractor's site specific work plan.

3.13 NO CHARGES TO RAILROAD

A. It is expressly understood that neither these Specifications, nor any document to which they are attached, include any work for which Railroad is to be billed by Permittee and/or Contractors, unless Railroad gives a written request that such work be performed at Railroad's expense.

END OF SECTION 01141A

SECTION 01142A – SUBMISSION DOCUMENTATION REQUIRED FOR AMTRAK REVIEW AND APPROVAL OF PLANS FOR BRIDGE ERECTION, DEMOLITION AND OTHER CRANE/ HOISTING OPERATIONS OVER RAILROAD RIGHT-OF-WAY

PART 1 - GENERAL

1.1 SCOPE

A. Amtrak requires that a site-specific work plan for accomplishing hoisting operations be prepared for every applicable project, and for each type of lift on a project.
   1. The plan shall demonstrate adherence to Amtrak safety rules.
   2. The plan shall demonstrate constructibility.
   3. The plan shall minimize impact to rail operations.
   4. The approved plan will provide the basis for field inspection/ verification of the actual work.

B. Preparation, review and approval of the Crane/ Hoisting site-specific work plan does not relieve the Contractor from meeting other Amtrak requirements for adequate planning and documentation of proposed work procedures within the Right-of-Way of the railroad..

C. Current Amtrak safety rules shall be adhered to in every respect.

D. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer

B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative

C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

1.4 SUBMISSION REQUIREMENTS

A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.

B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.

C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for crane/ hoisting operations has been approved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 THE CONTRACTOR SHALL PROVIDE, AT A MINIMUM, THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL BY AMTRAK ENGINEERING STRUCTURES:

A. Plan view showing location(s) of cranes, operating radii, with delivery and/or disposal locations shown. Provide all necessary dimensions for locating the elements of the plan.

B. Plans and computations showing the weight of the pick.

C. Crane rating sheets, demonstrating that cranes are adequate for 150% of the calculated pick weight. That is, the cranes shall be capable of picking 150% of the load, while maintaining normal, recommended factors of safety. The adequacy of the crane for the proposed pick shall be determined by using the manufacturer's published crane rating chart and not the maximum crane capacity. Crane and boom nomenclature is to be indicated.

D. Calculations demonstrating that slings, shackles, lifting beams, etc. are adequate for 150% of the calculated pick weight.

E. Location plan showing obstructions, indicating that the proposed swing is possible. "Walking" of load using two cranes will not be permitted. Rather, multiple picks and repositioning of the crane may be permitted to get the load to the needed location for the final pick, if necessary.

F. Data sheet listing types and sizes of slings and other connecting equipment. Include copies of catalog cuts for specialized equipment. Detail attachment methods on the plans.

G. A complete procedure, indicating the order of lifts and any repositioning or re-hitching of the crane or cranes.

H. Temporary support of any components or intermediate stages, as may be required.

I. A time schedule of the various stages, as well as a schedule for the entire lifting process.

END OF SECTION 01142A

SECTION 01520A – REQUIREMENTS FOR TEMPORARY PROTECTION SHIELDS FOR DEMOLITION AND CONSTRUCTION OF OVERHEAD BRIDGES AND OTHER STRUCTURES

PART 1 - GENERAL

1.1 SCOPE

A. This engineering practice describes items to be included in the design and construction of temporary protection shields for construction overhead and near to Amtrak tracks.

B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer

B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative

C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

1.4 SUBMISSION REQUIREMENTS

A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.

B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.

C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for crane/ hoisting operations has been approved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTORS WORKING ON OVERHEAD OR NEARBY DEMOLITION AND/OR CONSTRUCTION ADJACENT TO AMTRAK TRACKS, SHALL CONFORM TO THE FOLLOWING

DESIGN AND CONSTRUCTION REQUIREMENTS FOR TEMPORARY PROTECTION SHIELDING:

A. The Contractor shall maintain a specified level of protection to railroad facilities, during demolition and construction activities that occur overhead and nearby Amtrak tracks, as shown on the Contract Plans, as detailed in the Contract Specifications, and as described below.

B. Prior to the start of construction, the Contractor shall submit to Amtrak for review and approval, detailed, site specific plans for temporary protection shields. The plans will be reviewed as to the methods of erection, and as to whether or not the proposed installation will provide the required level of protection. No construction shall proceed until the Contractor has received written approval of the Contractor's complete, site specific plans, from Amtrak.

C. The Contractor shall design the protection shields to conform to all applicable and governing federal, state and local laws and regulations.

D. Drawings for the proposed temporary protection shields shall be signed and sealed by a Licensed Professional Engineer. Complete design calculations, clearly referenced to the drawings, and easy to review, shall be provided with submission of drawings.

E. Protection shields shall be designed for the following, minimum load and size criteria.
   1. The horizontal shield design liveload on horizontal surfaces shall be the greater of a minimum of 100 pounds per square foot (psf) [5000 Pascals] or the anticipated liveload to be produced by the Contractor's anticipated operations. When determining the appropriate design live load, the designer shall consider factors such as the physical capacity of proposed debris-catching platforms to retain materials, and the type of equipment the platforms might support. Positive means of demolition and construction controls shall be provided to assure that debris that may collect on the shield will not exceed the design live load. The horizontal protection shield, in plan view, shall cover no less than the area directly over the tracks plus ten feet minimum beyond the centerline of the outermost tracks.
   2. The vertical shield shall be designed to carry a minimum 30 psf [1500 Pascals] allowance for wind load. The vertical shield shall extend a minimum of 6'-6" [1950 millimeters] above the top of the adjacent surface, such as curb or sidewalk. Anti-climb wings shall be installed at each end, as necessary, to restrict access to the railroad property.

F. The vertical and horizontal clearance envelopes required for maintenance of railroad operations, shall be indicated on the site specific work plans. These clearances are subject to review and approval by Amtrak. If applicable, both temporary and permanent envelopes shall be indicated on the plans. The temporary protection shields shall be installed outside the limits of these minimum vertical and horizontal clearances shown on the site specific work plans.

G. In electrified territory, temporary protection shields shall be bonded and grounded.

H. Temporary protection shields shall be designed and constructed to prevent dust, debris, concrete, formwork, paint, tools, or anything else from falling onto the railroad property below.

I. The temporary protection shields shall be attached to the structure in accordance with site specific work plans submitted by the Contractor and approved by Amtrak. Drilling in structural members and welding will generally not be permitted in members that are scheduled to remain in place in the reconstructed structure. For existing members scheduled for demolition or for later reconstruction, any proposed attachment shall be designed with consideration of potential existing, deteriorated conditions.

J. The Contractor shall provide the Amtrak on-site representative, for review and approval prior to any construction activity in the effected area, a proposed construction schedule for the installation, maintenance and removal of the temporary protection shields.

K. The temporary protection shields shall be installed prior to the start of any other work over the railroad in the effected areas. No construction shall proceed until the Amtrak on-site representative reviews and approves the Contractor's installed protection. Before proceeding with the work, Amtrak must be satisfied, in its sole judgment, that sufficient protection has been provided to proceed with the work.

L. The Contractor shall install and remove temporary protection shields only when an Amtrak representative is on-site.

M. The Contractor shall not install or remove temporary protection shields during train operations.

N. Temporary protection shields shall remain in place for the duration of construction activities over and nearby the railroad in the effected areas. The Contractor may remove temporary construction only after approved by Amtrak on-site representatives.

O. Where site specific conditions impose insurmountable restrictions to the design of temporary construction conforming to the limitations listed above, the design of temporary construction shall be developed in close coordination with Amtrak design review personnel. The Chief Engineer, Structures shall provide final approval of temporary construction that does not conform to the above limitations.

END OF SECTION 01520A

SECTION 02261A – REQUIREMENTS FOR TEMPORARY SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS

PART 1 - GENERAL

1.1 SCOPE

A. This engineering practice describes items to be included in the design and construction of temporary sheeting and shoring construction adjacent and proximate to Amtrak tracks.

B. Use of this specification is as required by Amtrak, as described in Amtrak Engineering Practice EP3014.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 DEFINITIONS

A. CHIEF ENGINEER: Amtrak Vice President, Chief Engineer

B. RAILROAD: National Railroad Passenger Corporation (Amtrak), and/or the duly authorized representative

C. ENGINEERING PRACTICE: Amtrak Engineering Practices establish a system of uniform practices, notices and instructions for the Amtrak Engineering Department, providing current, permanent and temporary, departmental procedures and policies.

1.4 SUBMISSION REQUIREMENTS

A. Unless otherwise directed in the Contract, the Contractor shall submit five sets of plans and calculations to the authorized representative of the Chief Engineer, Structures, whose name and address will be provided at the project pre-construction meeting.

B. Submitted calculations and plans shall be signed and sealed by a Professional Engineer, registered in the State in which the work will be performed.

C. The Contractor shall revise and resubmit plans and calculations as many times as necessary, until a complete and correct site-specific work plan for crane/ hoisting operations has been approved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTORS INSTALLING TEMPORARY CONSTRUCTION SHEETING AND SHORING TO SUPPORT AMTRAK TRACKS SHALL CONFORM TO THE FOLLOWING:

A. Footings for all piers, columns, walls, or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction, will not be closer than toe of ballast slope. The dimension from gage of rail to toe of ballast, along tangent track, is 7'-5"; see dimensions on Track standard plans for curved track dimensions.

B. USE OF SHEETING: When support of track or tracks is necessary during construction of the above-mentioned facilities, interlocking steel sheeting, adequately braced and designed to carry Cooper E80 live-load plus 50 percent impact allowance is required. Soldier piles and lagging will be permitted for track support ONLY when required penetration of steel sheet piling cannot be obtained, due to site-specific conditions that make steel sheet piling placement impracticable, in the opinion of the authorized, Amtrak design review engineer.
   1. For usual soil conditions and limited excavations, sheeting is required when the near-track excavation extends beneath or nearer to the track than the Theoretical Railroad Embankment Line. The Theoretical Railroad Embankment Line is defined as a line that starts at grade, ten foot from the centerline of the outer track, and extends downward, away from the track, at a slope of 1-1/2 horizontal to one vertical.
   2. For special soil conditions, such as soft organic soils and rock conditions, and for unusual excavation conditions, temporary supports for excavations may be necessary even when the limits fall beyond the Theoretical Railroad Embankment Line, requiring site specific analysis by a professional, geotechnical engineer.
   3. See Sketch SK-1, "Normal Requirements for Sheet Piling Adjacent to Tracks".

C. Exploratory trenches, three feet deep and 15 inches wide in the form of an "H", with outside dimensions matching the proposed outside dimensions of sheeting, shall be hand dug, prior to placing and driving the sheeting, in any area where railroad or utility underground installations are known or suspected. These trenches are for exploratory purposes only, and shall be backfilled and immediately compacted, in layers. This work shall be performed only in the presence of a railroad inspector.

D. Absolute use of track is required while driving sheeting adjacent to running track. Track usage shall be prearranged per standard procedures, through the Amtrak project representative.

E. Cavities adjacent to sheet piling, created by pile driving, shall be filled with sand, and any disturbed ballast shall be restored and tamped immediately.

F. Sheet piling cutoffs
   1. During construction, sheeting shall be cut off at an elevation no higher than the top of tie.
   2. At the completion of construction activities involving the use of sheet piling, sheet piling may be pulled if there will be no adverse impact to the railroad track support bed, as determined by the Amtrak site engineer. This will generally be permitted when both of these conditions are met:
      a. the sheeting face is at least ten feet distant from the centerline of track, and
      b. the bottom of the excavation that the sheeting supported prior to backfilling, does not fall within an assumed influence zone under the tracks. The assumed influence

zone is defined as the area, as seen in cross-sectional view, falling beneath the Theoretical Underground Track Disturbance Line. This line is defined as a line that starts at the end and bottom of the ties, and extends from the track outward and downward at a one-to-one (45-degree) slope.

3. Sheet piling that is to be left in-place, shall be cut off below the ground line
   a. at least eighteen inches below final ground line at the sheeting, and
   b. no higher than 24 inches below the elevation of the bottom of the nearest ties
4. See Sketch SK-1, "Normal Requirements for Sheet Piling Adjacent to Tracks".

G. The excavation adjacent to the track shall be covered, ramped and protected by handrails, barricades and warning lights, as required by applicable safety regulations, and as directed by Amtrak.

H. Final backfilling of excavation shall conform to project specifications.

I. The Contractor shall provide Amtrak with a detailed schedule of proposed construction operations, detailing each step of the proposed temporary construction operations in proximity to Amtrak tracks, so that Amtrak may review and approve the proposed operations, and may properly inspect and monitor operations.

J. Drawings for the proposed temporary sheeting and shoring shall be signed and sealed by a Licensed Professional Engineer. Complete design calculations, clearly referenced to the drawings, and easy to review, shall be provided with submission of drawings.

K. Where site specific conditions impose insurmountable restrictions to the design of temporary construction conforming to the limitations listed above, the design of temporary construction shall be developed in close coordination with Amtrak design review personnel. The Chief Engineer, Structures shall provide final approval of temporary construction that does not conform to the above limitations.
   1. When Amtrak grants approval for sheeting closer than standard minimum clearances, the Contractor shall develop a survey plan, if not already required by the project, for the adjacent tracks, to be conducted prior to, during, and after the temporary sheeting construction operations. If settlement is detected, construction operations shall be suspended until the track has been returned to its initial condition, and stabilized, as determined by the Amtrak project site representative.
   2. The Contractor shall stockpile ten (10) tons of approved ballast at the project site, and maintain that amount in ready reserve, to allow for the possible need to restore track profile.

L. Particular care shall be taken in the planning, design and execution of temporary construction, as relates to railroad slope protection and drainage facilities. Erosion and sediment control best management practices shall be designed and employed, as approved by Amtrak. Any unintended disruption to railroad drainage facilities, caused by the temporary construction, shall be promptly remedied, as directed by the Engineer, solely at the Contractor's cost.

M. The following Information Sketch is attached:

   1. Figure No. SK-1: Normal Requirements for Sheet Piling Adjacent to Track

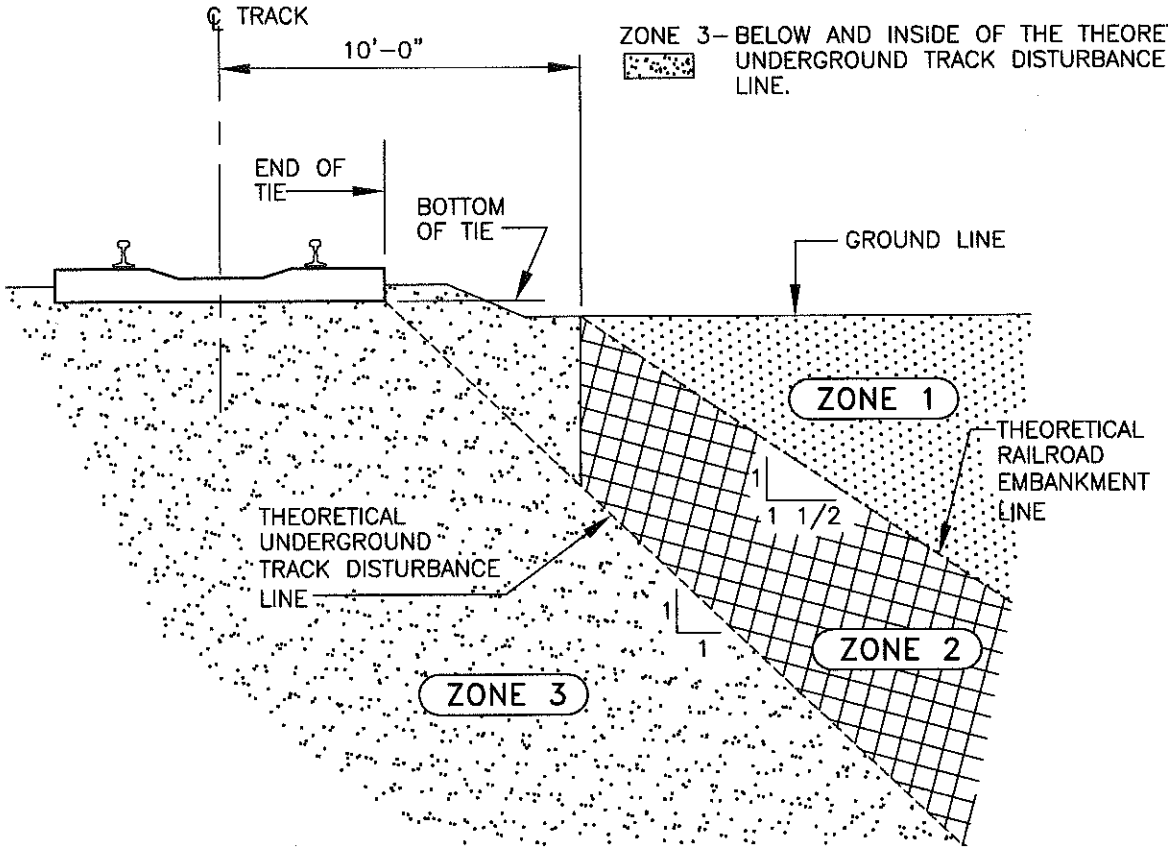
END OF SECTION 02261A

LEGEND

ZONE 1 – ABOVE AND OUTSIDE THE THEORETICAL RAILROAD EMBANKMENT LINE.

ZONE 2 – FARTHER THAN 10 FEET FROM THE CENTERLINE OF TRACK, BELOW THE THEORETICAL RAILROAD EMBANKMENT LINE AND ABOVE THE THEORETICAL UNDERGROUND TRACK DISTURBANCE LINE.

ZONE 3 – BELOW AND INSIDE OF THE THEORETICAL UNDERGROUND TRACK DISTURBANCE LINE.



NORMAL REQUIREMENTS FOR SHEET PILING ADJACENT TO TRACK

(1) EXCAVATIONS WITHIN ZONE 1 – ABOVE AND OUTSIDE OF THE THEORETICAL RAILROAD EMBANKMENT LINE – DO NOT NORMALLY REQUIRE SHEETING TO PROTECT RAILROAD ROAD BED. SHEETING MAY BE REQUIRED FOR OTHER REASONS.

(2) EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 2 REQUIRE SHEETING, BUT THE SHEETING MAY NORMALLY BE PULLED AFTER THE EXCAVATION HAS BEEN BACKFILLED.

(3) EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 3 WILL NORMALLY REQUIRE THE SHEETING TO BE LEFT IN PLACE AND CUT–OFF PER REQUIREMENTS.

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 1
SPEC. 02261A – REV. 1

Designed	Drawn	Date
CJR	JLM	6/06/01

File No:	
Design No:	3501
Sheet No.	1 of 1
Dwg. No.	SK–1

EP 3005- PIPELINE OCCUPANCY- SPECIFICATION 02081A

TABLE OF CONTENTS

PART 1 – GENERAL

1.1 SCOPE AND NATURE

These specifications apply to the design, construction and maintenance of pipelines and casings carrying flammable and non-flammable substances, or containing wires and cables, under, over, across and longitudinally along Amtrak property, right-of-way and facilities.

It is to be clearly understood that Amtrak owns its right-of-way for the primary purpose of operating a railroad. All occupancies shall therefore be designed and constructed so that operations and facilities are not interfered with, interrupted or endangered. In addition, the proposed facility shall be located to minimize encumbrance to the right-of-way so that the railroad will have unrestricted use of its property for current and future operations.

1.2 APPLICATION FOR OCCUPANCY

Individuals, Owners, Corporations and Municipalities (hereinafter known as the Applicant) desiring pipeline occupancy on Amtrak property must agree, upon approval of the construction plans by Amtrak, to execute an appropriate License Agreement and pay any required fees and/or rentals outlined therein.

Application for a License Agreement shall be made by letter addressed to Real Estate Department – National Railroad Passenger Corporation, 30th Street Station, Box 25, Philadelphia, PA 19104. The application must provide the following information:

1. Name of Applicant desiring the occupancy.
2. Complete mailing address of Applicant.
3. Name and title of person who will sign the License Agreement.
4. The State in which the Applicant is incorporated.
5. Complete description of the project, including installation, location and specific details of the occupancy.

No entry upon Amtrak property for the purpose of conducting surveys, field inspections, obtaining soil information, or for any other purpose required for the design and engineering of the proposed occupancy, will be allowed without a Right of Entry Permit executed by Amtrak. The Applicant must apply for the Right-of-Entry Permit and pay any associated fees.

It is to be clearly understood that the issuance of a Right of Entry Permit does not constitute authority to proceed with the actual construction. Actual construction cannot begin until a formal License Agreement has been fully executed by Amtrak and authorization to proceed has been granted.

All persons entering Amtrak property must first attend Railroad's Contractor Orientation Computer Based Training Class. The Contractor Orientation Class will be provided electronically at www.amtrakcontractor.com. Upon successful completion of the course andtest, the individual taking the course will receive a temporary certificate without a photo that isvalid for three weeks. The individual must upload a photo of himself/herself that will be embedded in the permanent ID card. The photo ID will be mailed to the individual's home address and must be worn or displayed while on Railroad property. Training is valid for one calendar year. All costs of complying with Railroad's safety training shall be at the sole expense of Permittee and/or Contractor. The Permittee and/or Contractor shall appoint a qualified person as its Safety Representative. The Safety Representative shall continuously ensure that all individuals comply with Railroad's safety requirements. All safety training records must be maintained with the Permittee's and/or Contractor's site specific work plan.

1.3 SUBMISSION OF PLANS AND DOCUMENTATION

All License Agreement applications shall be accompanied by ten complete sets of all project construction plans, specifications and computations covering the proposed occupancy. The construction plans, specifications and computations shall be signed and sealed by a Registered Professional Engineer licensed in the state in which the work is to be performed. If the plans, specifications and computations (including those submitted by contractors or suppliers) are not signed and sealed, they will be given no further consideration.

All proposed pipeline occupancy submissions to Amtrak shall be accompanied by two full size sets and eight half size sets (11" x 17") of plans. The half size plans are to be folded to an 8½" x 11" size, with a 1½"

margin on the left hand side and a 1" margin on the top, so that they can be secured at the upper left hand corner and still be unfolded to full size without being removed from the file. After folding, the title block or any other identification of the plans shall be visible at the lower right hand corner without the necessity of unfolding. Each plan shall bear an individual identifying number and an original issue date, together with subsequent revision dates. Revisions shall be clearly identified on the plans so that it is readily apparent as to what revisions were made and when. All plan sheets are to be folded individually and, where more than one plan is involved, the plan sheets shall be assembled into complete sets before submission to Amtrak. Upon completion of the project, as-built plans shall also be provided in an Adobe Acrobat CD ROM format.

Failure of the Applicant to comply with these requirements may be sufficient cause for rejection of the application.

Plans shall be drawn to scale, and a bar scale shall be provided. As a minimum, the following information shall be included:

1. Plan view of proposed pipeline in relation to all Amtrak facilities and facilities immediately adjacent to Amtrak, including, but not limited to, tracks, buildings, signals, pole lines, catenary pole foundations and guy anchors, other utilities and all other facilities that may affect or influence the pipeline design and construction. The right-of-way property line shall be clearly delineated (see Sketch 1).
2. Location of centerline of pipe (in feet) from the nearest railroad milepost or centerline of a railroad bridge (giving bridge milepost number). In all cases, the names of the municipality and the county in which the proposed facilities are located must be shown.
3. Profile of ground at centerline of pipe (from field survey) showing the relationship of the pipe and casing to ground level, tracks and other facilities (see Sketch 2). For longitudinal occupations, the profile of adjacent track or tracks must be shown (see Sketch 3). The location and description of benchmarks used in the field survey shall be given.
4. If the pipeline is in a public highway, the limits of the right-of-way for the highway shall be clearly indicated with dimensions from the centerline of the highway (see Sketches 1 & 4).
5. The angle of crossings in relation to the centerline of tracks.
6. Location and description of valves or control stations of the pipeline, or junction boxes and splice points for cable conduits, shall be clearly shown on the plans.
7. The Pipeline Crossing Data Sheet must be completed and shown on the plans submitted for approval (see Sketch 6).
8. Location and description of all appurtenances, manholes and other accesses shall be shown on the plans.

The plans must be specific as to:

1. Method of construction and installation.
2. Size and material of casing pipe, including any insulation or coatings proposed.
3. Size and material of carrier pipe, including any insulation or coatings proposed.

Location and dimensions of jacking, boring, or tunneling pits and of longitudinal pipeline trenches shall be shown, along with details of their sheeting and shoring. For usual soil conditions, if the bottom of the excavated pit nearest the adjacent track intersects a line drawn on a slope of 1½ horizontal to 1 vertical from a the bottom corner of a tie on the adjacent track, a temporary support of excavation system designed by a Registered Professional Engineer licensed in the State in which the work is to be performed shall be submitted for approval. For special soil conditions, a temporary support of excavation may be required for distances further from centerline of adjacent track. All temporary sheeting and shoring must comply with Amtrak Engineering Practice EP3014, Section 02261A, Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks. In any event, the face of the pit shall be no less than 25' from adjacent track, unless otherwise approved by Amtrak. During construction, jacking, boring or tunneling, pits shall be fenced, lighted, and otherwise protected as directed by Amtrak designated field representative.

If required, a dewatering plan shall be included in the submission. The dewatering plan shall include the location and dimensions of system components, structural capacity of pits, etc., and all pertinent collection and discharge data.

When computer calculations are included with design calculations, the following minimum documentation shall be furnished:

1. A synopsis of the computer program(s), stating briefly: required input, method of solution, approximations used, specifications or codes used, cases considered, output generated, extent of previous usage or certification of program(s) and the name of the author of the program(s).

2. Identification by number, indexing and cross referencing of all calculation sheets, including supplemental "long-hand" calculations sheets.

3. Fully identified, dimensioned and annotated diagram of each member of the structure being considered.

4. Clear identification and printing of all input and output values, including intermediate values, if such values are necessary for orderly review.

5. Identification of the processing unit, input/output devices, storage requirements, etc., if such supplemental information is significant and necessary for evaluation of the submittal.

Once Amtrak approves an application and the License Agreement issued, no variance from the plans, specifications, methods of construction, etc. will be considered or permitted without resubmission of plans to and receipt of approval from Amtrak.

1.4 PERMIT APPROVAL – NOTIFICATION TO PROCEED

Notification to Proceed with Construction: After approval of the engineering plans, computations and specifications, and the execution of the License Agreement, the Applicant's project can be undertaken. The Applicant will notify Amtrak a minimum of 21 working days prior to the desired start of construction (see Amtrak Engineering Practice EP3014, Section 01141A, Safety and Protection of Railroad Traffic and Property). The Applicant is responsible for notifying and coordinating the work with all utility owners.

1.5 MODIFICATION OF EXISTING FACILITIES

Any replacement or modification of an existing carrier pipe and/or casing shall be considered a new installation subject to the requirements of these specifications. The owner of all pipelines and other occupancies shall notify in writing, Amtrak of any intention to replace or modify existing facilities.

1.6 ABANDONED PIPELINES AND/OR FACILITIES

The owner of all pipelines and other occupancies shall notify in writing, Amtrak of the intention to abandon. The owner will be continually billed for the occupancy until such written notice is received.

Upon abandonment, the carrier pipe shall be removed and the casing shall be completely filled with cement grout, compacted sand or other materials approved by Amtrak, using methods approved by Amtrak. If it is impracticable to remove the carrier pipe, then the carrier must be filled along with the annular space between the casing and the carrier.

Facilities other than pipelines will be removed or altered at abandonment to the satisfaction of Amtrak.

1.7 CONFLICT OF SPECIFICATIONS

Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree so prescribed shall be deemed a part of these specifications. Any such requirements shall be clearly referenced in the application.

1.8 DEFINITIONS

AASHTO – American Association of State Highway and Transportation Officials

Amtrak – National Railroad Passenger Corporation, and/or the duly authorized representative.

ANSI – American National Standards Institute

API – American Petroleum Institute

Applicant – Individuals, Owners, Corporations, and Municipalities desiring occupancy of Amtrak property by a pipeline.

AREMA – American Railway Engineering and Maintenance-of-Way Association

ASTM – American Society for Testing and Materials

Boring – Pushing a pipe though fill material, with a boring auger rotating within the pipe to remove the soil.

Carrier Pipe – Pipe containing primary fluid or cable through occupancy area.

Casing Pipe – Protective encasement for a carrier pipe whose function is both structural and for containment of carrier fluids within the occupancy area, and/or dispersion of carrier fluids beyond the occupancy area.

Cooper E-80 – Live load for each track based on four 80 kips axle load with 5' axle spacing.

Horizontal Directional Drilling (Directional Boring) – method of controlled drilling beneath existing facilities using a pilot hole bore.

Jack Boring – method of jacking a pilot rod beneath existing facilities between a launching pit and a receiving pit.

Longitudinal Occupancy – The installation and maintenance of pipelines that do not cross tracks, along and adjacent to tracks and within Amtrak property, right-of-way and facilities.

CLSM – Controlled Low Strength Material

MSDS – Material Safety Data Sheet

NEC – National Electric Code

NESC – National Electric and Safety Code

License Agreement – Agreement between Amtrak and applicant to allow applicant to construct and maintain pipelines under, over, across or longitudinally along Amtrak property, right-of-way and facilities.

Open-Cut Trenching – Surface excavation methods to allow the installation of pipelines.

OSHA – Occupational Safety and Health Administration.

Pits (Launch/Receiving) – Excavations at each end of a work area to allow jacking, boring or tunneling operations beneath existing site conditions.

Right of Entry Permit – Permit allowing applicant to enter Amtrak property solely for the purpose of obtaining information required for the design and engineering of a proposed License Agreement.

Transverse Occupancy – The installation and maintenance of pipelines on Amtrak property, right-of-way and facilities, where such pipelines cross tracks.

Tremie Grouting – A method in which concrete placed underwater through a pipeline (tremie pipe) to form a seal between the subsurface and water levels.

Tunneling – Method of boring with or without the use of placing liner plates behind a tunneling shield of tunneling machine, thus forming a casing for the installation of a carrier pipe under existing conditions

1.9 PUBLICATION STANDARDS

AWS – American Welding Society, Inc., 550 NW 42nd Avenue, Miami, FL 33126-0567

ANSI – American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036

ASTM – American Society for Testing and Material, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959

AREMA – American Railway Engineering and Maintenance-of-Way Association, 8201 Corporate Drive, Suite 1125, Landover, MD 20785

AWWA – American Water Works Association, Inc., 1401 New York Avenue N.W., Suite 640, Washington, DC 20005

OSHA – Occupational, Safety and Health Administration, Superintendent of Documents, U.S. Printing Office, Washington, DC 20402

NACE – National Association of Corrosion Engineers, P.O. Box 201009, Houston, TX 77216-1009

If other than American Railway Engineering and Maintenance-of-Way Association (AREMA), American Society for Testing and Materials (ASTM), and American National Standards (ANSI)

specifications are referred to for design, materials or workmanship on the plans and specifications for the work, then copies of the applicable sections of such other specifications shall accompany the plans and specifications for the work.

PART 2 – TECHNICAL REQUIREMENTS

2.1 LOCATION OF PIPELINE ON THE RIGHT-OF-WAY

Pipelines laid longitudinally on Amtrak Right-of-Way shall be located as far as practicable from any tracks or other important structures and as close to the Amtrak property line as possible. Longitudinal pipelines must not be located within drainage ditches located on the right-of-way.

Pipelines shall be located, where practicable, to cross tracks at approximate right angles thereto, but generally no less than 45°.

Pipelines shall not be located within the limits of a turnout (switch) when crossing the track. The limits of the turnout extend from the second tie before the point of the switch to the first tie beyond the last long timber.

Pipelines shall not be located within the limits of a highway crossing at grade. If it is shown that no other location is possible, the Applicant will be responsible for reimbursing Amtrak for all costs associated with the removal and reconstruction of the grade crossing.

Pipelines and casings shall be suitably insulated from underground conduits or direct burial cables carrying electric wires on Amtrak property, in accordance with ANSI and NESC standards.

Pipelines shall not be placed within a culvert, under railroad bridges, nor closer than 45' to any portion of any railroad bridge, building or other important structure, except in special cases, and then by special design, as approved by Amtrak.

2.2 CARRIER PIPE

All proposed pipes, ditches and other structures carrying surface drainage on Amtrak property and/or crossing under Amtrak tracks shall be designed to carry the run-off from a 100 year storm. Computations indicating this design and suitable topographic plans, prepared by a Registered Professional Engineer licensed in the State in which the work is being performed shall be submitted to Amtrak for approval. If the drainage is to discharge into an existing drainage channel on Amtrak Right-of-Way and/or under Amtrak tracks, the computations should include the hydraulic analysis of any existing structures. Submitted with the computations should be formal approval of the proposed design by the appropriate governmental agency.

Carrier pipes within a casing shall be designed as if they are not encased.

All pipes shall be designed for the external and internal loads to which they will be subjected. The dead load of earth shall be considered 120 pounds per cubic foot. Railroad live loading shall be Cooper's E-80 with 50% added for impact. The following shall be the minimum requirements for carrier pipes:

1. Reinforced concrete pipe – ASTM C76, Class V. Wall C
2. Ductile Iron Pipe – ANSI A21.51, Class 56
3. Corrugated Metal Pipe – AREMA Manual, Chapter 1, Part 4.
4. Cast Iron Pipe – for culverts and gravity sewers – ASTM A-716 Extra Heavy.
5. Steel Pipe – ASTM A53, Type E or S, Grade A or B
6. Polyethylene – for cable, wire or fiber optic lines – Special approval required for pipe in excess of 6" OD. ASTM D 3350 – Standard Specification for Polyethylene Plastic Pipe and Fittings Materials, and ASTM D2513 – Standard Specification for Thermoplastic Gas Pressure Pipe, Tube and Fittings or AWWA C 901/C 906 – Standards for Polyethylene (PE) Pressure Pipe and Tubing for Water Service.
7. Others – as approved by Amtrak.

Pipelines carrying oil, liquefied petroleum gas, natural or manufactured gas and other flammable products shall conform to the requirements of the current ANSI B 31.4 with Addenda "*Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohol's*"; ANSI B 31.8 "*Gas Transmission and Distribution Piping Systems*"; and other applicable ANSI Codes except that the maximum allowable stresses for design of steel pipe shall not exceed the following percentages of the specified minimum yield strength (multiplied by the longitudinal joint factor) of the pipe as defined in the ANSI Codes:

8. Steel pipe within a casing under Amtrak tracks, across Amtrak right-of-way, and longitudinally on Amtrak right-of-way (the following percentages apply to hoop stress):
   a. Seventy-two percent for installation of oil pipelines.
   b. Fifty percent for pipelines carrying liquefied petroleum gas and other flammable liquids with low flash point.
   c. Sixty percent for installation of gas pipelines.

2.3 CASING PIPE

Pipelines under or along Amtrak tracks and across Amtrak right-of-way shall be encased in a larger pipe or conduit called the casing pipe.

Casing pipe will be required for all pipelines carrying oil, gas, petroleum products, or other flammable or highly volatile substances under pressure, and all non-flammable substances which, from their nature or pressure, as determined by Amtrak, might cause damage if escaping on, under, over, or near Amtrak property.

For non-pressure sewer or drainage crossings, where the installation is approved by Amtrak, the casing pipe may be omitted when the carrier pipe strength is capable of withstanding railroad loading hereinafter specified.

The casing pipe shall be designed in accordance with criteria on Section 2.4. Casing pipe shall be installed so as to provide an even bearing pressure throughout its length. Casing pipe laid transverse to the railroad shall slope to one end.

Protection at ends of casings:

1. Casings for carriers of flammable substances shall be suitably sealed to the outside of the carrier pipe. Details of seals shall be shown on the plans.
2. Casings for carriers of non-flammable substances shall have both ends of the casing blocked up in such a way as to prevent the entrance of foreign material, but allowing leakage to be safely detected in the event of a carrier break.
3. Where ends of casings are at or above ground surface and above high water level, they may be left open, provided drainage is afforded in such a manner that leakage will be conducted away from railroad tracks and structures.

Vents:

1. All sealed casings shall be adequately vented. Special attention shall be given to sealed casings for flammable substances in accordance with ANSI Standards. Vent pipes shall be of sufficient diameter, but in no case less than 2" in diameter, and shall be attached near each end of the casing and project through the ground surface at right-of-way lines or not less than 45' (measured at right angles) from centerline of nearest track.
2. Vent pipes shall extend not less than 4' above the ground surface. Top of vent pipe shall have a down-turned elbow, properly screened, or a relief valve. Vents in locations subject to high water shall be extended above the maximum elevation of high water and shall be supported and protected in a manner approved by Amtrak.
3. Vent pipes shall be at least 4' vertically from aerial electric wires or greater if required by NESC and ANSI Standards.
4. When the pipeline is in a public highway, street-type vents shall be installed.

If additional tracks are constructed in the future, the casing shall be extended correspondingly at the expense of the Applicant.

2.4 DESIGN CRITERIA

Pipes may be rigid or flexible, as permitted by their specific use. The design criteria follows, and shall be in accordance with the current AREMA Manual for Railway Engineering.

The inside diameter of the casing pipe shall be such as to allow the carrier pipe to be subsequently removed without disturbing the casing or the roadbed. For carrier pipe less than 6" in diameter, the inside diameter of a steel casing pipe shall be at least 2" greater than the largest outside diameter of the carrier pipe, joints, or couplings; for carrier pipe 6" and over in diameter, the inside diameter of a steel casing pipe shall be at least 4" greater than the largest outside diameter of the carrier pipe, joints, or couplings.

Casing pipe under Amtrak tracks and across Amtrak Right-of-Way shall extend the greater of the following distances measured at right angles to centerline of tracks:

1. Across the entire width of Amtrak Right-of-Way.
2. 3' beyond ditch line.
3. 2' beyond toe of slope.
4. A minimum distance of 25' each side from centerline of outside track when casing is sealed at both ends.
5. A minimum distance of 45' from centerline of outside track when casing is open at both ends.

Where installation of the casing pipe is proposed by means of open cut, the designer should determine the effects upon the casing due to change in weight of the new compacted fills and potential for lateral spreading of the embankment and account for these effects in the design. Where segmental casing pipe segments are used, temporary or permanent tension rods may be required by the Engineer.

The values shown in Table 1 shall be used for the live load vertical pressure on a buried structure for the various heights of cover.

TABLE 1 (MODIFIED)

(AREMA, CHAPTER 1, PART 4, TABLE 4-39)

PRESSURE FROM COOPER E-80 LIVE LOAD, INCLUDING IMPACT, FOR VARIOUS HEIGHTS OF COVER

Height of Cover (feet)	Live Load Pressure (lb/sq.ft.)
5.5	2400
8	1600
10	1100
12	800
15	600
20	300
30	100

Note: If height of cover, from bottom of cross tie to top of structure, is over 30', use dead load pressure only.

Steel casing pipe shall have a minimum wall thickness as shown in Table 2 (next page), unless computations indicate that a thicker wall is required. Computations showing the adequacy of casing pipe wall thickness shall be furnished as part of the submittal.

TABLE 2
(AREMA, CHAPTER 1, PART 5, TABLE 5-1)

Pipe Diameter	Coated or Cathodically Protected	Uncoated and Unprotected
Nominal Pipe Size (inches)	Nominal Wall Thickness (inches)	Nominal Wall Thickness (inches)
12¾ and under	0.188	0.188
14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 and 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 and 36	0.469	0.531
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 and 46	0.594	0.656
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 and 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 and 68	0.875	0.938
70	0.906	0.969
72	0.938	1.000

Steel pipe shall have minimum yield strength of 35,000 psi. The ASTM or API specification and grade for the pipe are to be shown on the Pipe Data Sheet.

Corrugated metal pipe or corrugated structural plate pipe may be used for casing, provided the pressure in the carrier pipe is less than 100 psi, and only when placed by the open cut method. Jacking or boring through railroad embankment for corrugated pipe is not permitted. Pipe shall be bituminous coated and shall conform to the current AREMA Manual for Railway Engineering, Chapter 1, Part 4.

Tunnel liner plates shall be galvanized and bituminous coated and shall conform to the current, at time Application is made, AREMA Manual for Railway Engineering, Chapter 1, Part 4. In no event shall the liner plate thickness by less than 0.105".

If the tunnel liner plates are used only to maintain a tunneled opening until the carrier pipe is installed, and the annular space between the carrier pipe and the tunnel liner is completely filled with cement grout within a

reasonably short time after completion of the tunnel, then the tunnel liner plates need not be galvanized and coated.

Reinforced concrete pipe may be used for a casing. For a cover depth of 14' or less, reinforced concrete pipe shall conform to the current ASTM C76, Class V, Wall C. It may be used in open cut methods of installation, or when suitably designed for jacking methods. For depth of cover greater than 14', the designer shall prepare an engineering analysis in accordance with the current, at time of Application, AREMA Manual for Railway Engineering, Chapter 8, Part 10. For elliptical or arch pipe, where reinforced concrete pipe with supporting strength of the pipe (D) equal to 3,000 pounds per linear foot is not available, a separate engineering analysis shall be submitted.

For flexible casing pipe, a minimum vertical deflection of the casing pipe of 3 percent of its diameter plus ½" shall be provided so that no loads from the roadbed, track, traffic or casing pipe itself are transmitted to the carrier pipe. When insulators are used on the carrier pipe, the inside diameter of flexible casing pipe shall be at least 2" greater than the outside diameter, including insulation, of the carrier pipe for pipe less than 8" in diameter; at least 3¼" greater for pipe 8" to 16" inclusive in diameter; and at least 4½" greater for pipe 18" and over in diameter.

When steel casing pipe is used, the joints shall be fully closed by welding or mechanical means to ensure tightness. The closure shall develop the full strength of the casing pipe. Closure details shall be shown on the plans.

2.5 SIGNS

All pipelines (except those in streets where it would not be practical to do so) shall be prominently marked at Right-of-Way lines (on both sides of track for under crossings) by durable, weatherproof signs located on the edge of Right-of-Way over the centerline of the pipe. Signs shall show the following:

1. Name and address of Owner
2. Contents of Pipe
3. Pressure in Pipe
4. Depth of pipe below grade at point of sign
5. Emergency telephone in event of pipe rupture

The material, size of lettering and the installation method of the sign shall be as approved by Amtrak. For pipelines running longitudinally on Amtrak property, signs shall be placed over the pipe (or offset and appropriately marked) at all changes in direction of the pipeline. Such signs should also be located so that when standing at one sign the next adjacent sign in either direction is visible. The owner shall maintain all signs on Amtrak Right-of-Way as long as the Occupancy Permit is in effect. Any entry on to Amtrak property shall be made in accordance with all provisions of the Right of Entry Permit.

2.6 EMERGENCY SHUT-OFF VALVES

Accessible emergency shut-off valves shall be installed on each side of the railroad at locations selected by Amtrak. Where pipelines are provided with automatic control stations and within distances approved by Amtrak, no additional valves will be required. Description of location of those facilities shall be part of the Application.

2.7 DEPTH OF PIPELINE INSTALLATION

Pipe under Amtrak tracks and across Amtrak Right-of-Way shall be not less than 5½' from bottom of tie to top of casing at its closest point. On other portions of Right-of-Way where casing is not directly beneath any track, the depth from ground surface or from bottom of ditches to top of casing shall be not less than 4', unless otherwise specified herein.

2.8 CATHODIC PROTECTION

Cathodic protection shall be applied to all pipelines and casings carrying flammable substances in accordance with ANSI Standards.

Where casing and/or carrier pipe is cathodically protected by other than anodes, Amtrak shall be notified and a suitable test shall be made and witnessed by Amtrak to insure that all structures and facilities are adequately protected from the cathodic current in accordance with the recommendation of Reports of Correlating Committee on Cathodic Protection, current issue by the National Association of Corrosion Engineers.

2.9 SOIL INVESTIGATIONS

For all pipe crossings, soil borings or other soil investigations approved by Amtrak shall be made to determine the nature of the underlying material (see Part 1, Section 1.2 for procedure to enter Amtrak property). Boring location plans need to be approved by Amtrak in advance of taking of the borings.

Borings shall be made on each side of the tracks, on the centerline of the pipe crossings, and as close to the tracks as practicable.

Soil borings shall be made in accordance with the current, at time of Application, AREMA Manual for Railway Engineering, Chapter 8, Part 22. Soils shall be investigated by the split-spoon and/or thin walled tube method, and rock shall be investigated by the coring method, as appropriate. The location of the carrying pipe and/or casing shall be superimposed on the Boring Location Plan before submission to Amtrak.

Soil boring logs shall clearly indicate all of the following:

1. Boring number as shown on Boring Location Plan.
2. Elevation of ground at boring, using the same NGVD (National Geodetic Vertical Datum) or NAVD (North American Vertical Datum) as the pipeline construction plans. The location of the carrier pipe and/or casing pipe shall be superimposed on the boring logs before submission to Amtrak.
3. Description or soil classification of each soil sample encountered shall be made in accordance with the Unified Soils Classification System. Classification and description of rock shall include type, local designation, joint or fracture frequency, foliation and, joint dip, surface degree of weathering and any other pertinent observations concerning the drilling and recovery.
4. Elevations or depth from surface for each change in strata.
5. Identification of depth where samples were taken or attempted and percentage of recovery.
6. Location of ground water at time of sampling and, if available, subsequent readings shall be reported. Observed conditions, such as depth of hole or casing, drill fluid, recent precipitation, surface elevation of nearby bodies of water and time permitted for the stabilized level to occur shall be noted.
7. Natural dry density in pounds per cubic foot for all strata.
8. Unconfined compressive strength in tons per square foot for all cohesive strata.
9. Natural water content (percent), liquid limit (percent) and plastic limit (percent) for all cohesive soils.
10. Standard Penetration Test N Value in blows per foot (or inches/blow), for each sample obtained or unsuccessful attempt.
11. Samples shall be retained for review by Amtrak.
12. Failed boring attempts shall be logged and reported.
13. All borings and attempts shall be tremie grouted with non-shrink grout or other approved material. The quantity of grout material used shall be measured and reported.

Soil boring logs shall be accompanied with a plan drawn to scale showing the location of borings in relation to the tracks and the proposed pipe location, the elevation of ground surface at each boring, and the elevation of the base of rail of the tracks. Elevations shall be shown to the nearest 0.1 foot.

PART 3 – CONSTRUCTION

3.1 CONSTRUCTION INSPECTION REQUIREMENTS

The Applicant shall provide full time on-site inspection by a Resident Engineer during the installation of temporary and permanent facilities approved by Amtrak. This inspection shall be under the supervision of a Registered Professional Engineer licensed in the State in which the work is being performed. The Professional Engineer shall certify that the facilities were installed in accordance with these specifications and the approved plans. The on-site Resident Engineer shall coordinate the activities of the contractor with the Amtrak Project Engineer. All work shall be performed in accordance with Amtrak Engineering Practice EP3014 Maintenance and Protection of Railroad Traffic during Contractor Operations.

3.2 INSTALLATION METHODS

Open Cut or Braced Trench

1. Installation by open cut or braced trench methods shall comply with the current, at time of Application, AREMA Manual for Railway Engineering, Chapter 1, Part 4. At least 60 days may be required for Amtrak review and approval of open cut or braced trench methods.
2. Where Amtrak has approved the open cut method, pipe shall be installed on a Class B bed of compacted graded aggregate. Sand backfill shall be used to fill around the sides and on top of the pipe. A colored warning tape shall be placed a minimum of 12" above the top of the pipe. Additional backfill shall be well-graded, clean granular soil having less than 20 percent by dry weight passing No. 200 US STD sieve. Maximum aggregate size shall be ½". Backfill shall be placed in loose 8" layers and compacted to at least 95 percent of its maximum density at within 2% of the optimum moisture content as determined in accordance with current ASTM D1557 (AASHTO T180).
3. Prior to the start of an open cut installation, the contractor shall have all materials on site, including emergency stand-by handling equipment.

Jacking

1. Jacking of casing pipe shall be in accordance with the current AREMA Manual for Railway Engineering, Chapter 1, Part 4. This operation shall be continuous once started, and shall be conducted without hand-mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment. Ordinarily 36-inch diameter pipe is the minimum size that should be used. Bracing and backstops shall be designed and jacks of sufficient rating shall be used so that the jacking can be progressed without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit or is at least 25' from the centerline of the last track.
2. When jacking reinforced concrete pipe, grout holes, tapped for no smaller than 1½" pipe, shall be cast into pipe at manufacture. Grout holes shall be spaced at approximately 3' around the circumference and 4' longitudinally with a minimum of three grout holes around the circumference. Immediately upon completion of jacking operations, the installation shall be pressure grouted.

Horizontal Directional Drilling / Directional Boring

1. Due to the unique circumstances and conditions encountered along the railroad Right-of-Way (ROW), each Horizontal Directional Drilling (HDD) request will be reviewed and approved at Amtrak's sole discretion on a case by case basis.
2. The applicant utilizing the HDD method of installation shall meet all the requirements found in EP 3005, Section 02082A, Horizontal Directional Drilling / Directional Boring. If HDD is deemed unacceptable by Amtrak, the applicant may consider other installation techniques contained within EP 3005, Section 02081A, Pipeline Occupancy, for the installation of the pipeline or utility crossing.

Tunneling with Liner Plate

1. Tunneling operations shall be conducted as approved by Amtrak. Care shall be exercised in trimming the surface of the excavated section in order that the steel liner plates fit snugly against undisturbed material.
2. Excavation shall not be advanced ahead of the previously installed liner plates any more than is necessary for the installation of the succeeding liner plate. The vertical face of the excavation shall be supported as necessary to prevent sloughing.
3. At any interruption of the tunneling operation, the heading shall be completely bulkheaded.
4. Unless otherwise approved by Amtrak the tunneling shall be conducted continuously on a 24-hour basis, until the tunnel liners extend at least equal to 25' beyond the centerline of the last track.
5. A uniform mixture of 1:6 cement grout shall be placed under pressure behind the liner plates to fill any voids existing between the liner plates and the undisturbed material. Grout holes tapped for no smaller than ½" pipe, spaced at approximately 3' around the circumference of the tunnel liner shall be provided in every third ring. Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the tunnel. A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.
6. Grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by Amtrak, but in no event shall more than six linear of tunnel be progressed beyond the grouting.

Tunneling Shields

1. All pipes 60" and larger in outside diameter shall be placed with the use of a tunneling shield unless otherwise approved by Amtrak. Pipes of smaller diameter may also require a shield when, at the sole discretion of Amtrak, soil or other conditions indicate its need.
2. The shield shall be of steel construction designed to support railroad track loading as specified herein, in addition to other loadings it must sustain. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. It shall conform to and not exceed the outside dimensions of the pipe being placed by more than one inch at any point on the periphery unless otherwise approved by Amtrak.
3. The shield shall be adequately braced and provided with necessary appurtenances for completely bulk heading the face with horizontal breast boards and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.
4. Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to Amtrak for approval.
5. The detail shield plans and design calculations prepared by a Registered Professional Engineer licensed in the state in which the work is being performed shall be submitted to Amtrak for approval. No work shall proceed until such approval is obtained.

Boring

1. This method consists of pushing the pipe into the fill with a boring auger rotating within the pipe to remove the soil. When augers or similar devices, are used for pipe emplacement, the front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe. The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than one half inch. The face of cutting head shall be arranged to prevent the free flow of soft or poor material. The use of water of other liquids to facilitate casing emplacement and spoil removal is prohibited. Plans

and descriptions of the arrangement to be used shall be submitted to Amtrak for approval and no work shall proceed until such approval is obtained.

2. Any method which employs simultaneous boring and jacking or drilling and jacking for pipes over 8" in diameter which does not have the above approved arrangement will not be permitted. For pipes 8" and less in diameter, auguring or boring without this arrangement may be considered for use only as approved by Amtrak.

3.3 CONSTRUCTION OPERATIONS

All construction operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains or damage, destroy, or endanger the integrity of railroad facilities. All work on and near Amtrak property shall be conducted in accordance with Amtrak safety rules and regulations. The contractor shall secure and comply with the Amtrak safety rules and shall give written acknowledgment to Amtrak that they have been received, read, and understood by the contractor and his employees. Construction operations will be subject to Amtrak inspection at any and all times.

If an obstruction is encountered during installation to stop the forward action of the pipe and it becomes evident that it is impossible to advance the pipe, operations will cease and the pipe shall be abandoned in place and filled completely with grout.

Bored or jacked installations shall have a bored hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch, grouting or other methods approved by Amtrak shall be employed to fill such voids.

Pressure grouting of the soils or freezing of the soils before or during jacking, boring, or tunneling may be required at the discretion of Amtrak to stabilize the soils, control ground water, prevent loss of material and prevent settlement or displacement of embankment and/or tracks. Grout shall be cement, chemical or other special injection material selected to accomplish the necessary stabilization.

The material to be used and the method of injection shall be prepared by a Registered Professional Engineer licensed in the state in which the work is being performed, or by an experienced and qualified company specializing in this work and submitted for approval to Amtrak before the start of work. Proof of experience and competency shall accompany the submission. Material Safety Data sheet shall be provided for all materials.

When the presence of surface, ground and/or artesian water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site by the contractor, and upon approval of Amtrak, the contractor shall operate them. Pumps in operation shall be constantly attended on a 24-hour basis, until, in the sole judgment of Amtrak, the operation can be safely halted. When dewatering, close observation by optical survey, or other instrumentation as required, to verify the adequacy of work, shall be maintained to detect any settlement or displacement of railroad embankment, tracks and facilities. A detailed plan of water control for work including instrumentation shall be submitted by the Applicant for approval by Amtrak.

All cranes, lifts, or other equipment that will be operated in the vicinity of the Railroad's electrification and power transmission facilities shall be operated and electrically grounded as required by EP3014 section 01141A and shall comply with OSHA Safety and Health Standards, Page 175, Subpart N1926.950. OSHA 2207, Revised 1983, or as provided by the High Voltage Proximity Act.

At all times when the work is being progressed, a field supervisor for the work with no less than 12 months experience in the operation of the equipment being used shall be present. If boring, drilling, or similar machines are being used, the machine operator also shall have no less than 12 months experience in the operation of the equipment being used.

Blasting will not usually be permitted under or on Amtrak Right-of-Way. If the use of blasting is proposed, technical justification of its necessity must be submitted by review and approval. If blasting is approved, it must be performed in accordance with EP3003.

Equipment or personnel working closer than 15 feet to the centerline of an adjacent track shall be considered as fouling that track. Insofar as possible, all operations shall be conducted no less than this distance. Operations closer than 15' to the centerline of a track shall be conducted only with the permission of, and as directed by, a duly qualified Amtrak employee present at the worksite. Special arrangements must be made at

least 21 working days in advance of the work, where fouling of track or structures is required for access. These operations require the prior approval of Amtrak.

Crossing of tracks at grade by equipment and personnel is prohibited, except by prior arrangement with, and as directed by Amtrak.

Support of Excavation Adjacent to Track.

1. **Launching and Receiving Pits**
   a. The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. The elevation of the bottom of the pit or excavation must be shown on the profile.
   b. The face of all pits shall be located at a minimum of 25' from the centerline of adjacent track, measured at right angles to track, unless otherwise approved by Amtrak.
   c. If the bottom of the pit excavation intersects the theoretical railroad embankment line (see EP3014, Section 02261A, Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks, Sketch 1), interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices is not acceptable in this area.
   d. Design plans and computations for the pits, signed and sealed by a Registered Professional Engineer licensed in the State in which the work is being performed, must be submitted by the Applicant at the time of application or by the contractor prior to the start of construction. If the pit design is to be submitted by the contractor, the project specification must require the contractor to obtain Amtrak's approval prior to beginning any work on or which may affect Amtrak's property.
   e. The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads.
   f. After construction and backfilling, all sheet piling that is not removed within 10' of centerline of adjacent track must be cut off per EP3014, Section 02261A, Requirements for Temporary Sheeting and Shoring to support Amtrak tracks, paragraph 3.1.F.
   g. All excavated areas are to be illuminated (flashing warning lights not permitted) fenced and otherwise protected as directed by Amtrak.

3.4 SUPPORT OF TRACKS

When the jacking, drilling, tunneling or boring method of installation is used, and depending upon the size and location of the crossings, temporary track supporting structures shall be installed. The requirement for these temporary structures may be deleted only with the approval of Amtrak.

Unless otherwise agreed, all work involving rail, ties and other track material will be performed by Amtrak. The Applicant shall reimburse Amtrak for all costs associated with the installation and removal of track supports.

When excavation for a pipeline or other structure will be within the theoretical railroad embankment line (see EP3014, Section 02261A, Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks, Sketch 1) of an adjacent track, interlocking steel sheet piling will be required to protect the track.

Prior to the start of construction, the applicant must deliver a stockpile (minimum 10 tons) of approved railroad ballast to an area designated by Amtrak at the project site.

3.5 PIPELINES IN ROADWAYS UNDER BRIDGES

Pipelines to be installed under bridges that carry Amtrak tracks above a roadway shall be designed and constructed in conformance with all applicable Sections of this specification. The casing pipe, when required, may be designed for the applicable highway loading(see Sketch 4).

3.6 PIPELINES ON BRIDGES

Pipelines carrying flammable substances or non-flammable substances that by their nature might cause damage if escaping on or near railroad facilities or personnel shall not be installed on bridges over railroad tracks or bridges carrying railroad tracks.

In special cases when it can be demonstrated to Amtrak's satisfaction that such an installation is necessary and that no practicable alternative is available, Amtrak may permit the installation and only by special design approved by Amtrak (see Sketch 5).

Pipelines on bridges shall be so located as to minimize the possibility of damage from vehicles, railroad equipment, vandalism and other external causes. They shall be encased in a casing pipe. Where appropriate, permanent barriers shall be constructed at each end of the bridge to prevent trespassers from crossing the bridge via the pipe casing.

3.7 BONDING AND GROUNDING OF PIPELINES ON BRIDGES IN ELECTRIFIED TERRITORY

Carrier pipe shall be enclosed in a metal casing that is isolated from carrier pipe by approved insulators having a dielectric value of not less than 25 kV that provide an air gap between carrier pipe and casing of not less than 2 inches, in accordance with ANSI or NESC Standards.

Carrier pipe supporting hangers, mountings or cradles shall provide an insulation value of not less than 25 kV and provide an air gap of not less than 2 inches between casing and any portion of mounting assembly.

Casing shall be bonded to Amtrak's return conductor at each end through bridge steel or direct when bridge members are of non-conductive material conforming to Amtrak Standards.

The casing and installation equipment shall be bonded and grounded to an earth ground of not more than 25 ohms resistance to ground for construction. The applicant shall monitor adequacy of the ground.

3.8 DRAINAGE

Occupancies shall be designed and their construction shall be accomplished so that adequate and uninterrupted drainage of Amtrak Right-of-Way is maintained. If, in the course of construction it may be necessary to block a ditch, pipe or other drainage facility, temporary pipes, ditches or other drainage facilities shall be installed to maintain adequate drainage as approved by Amtrak. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.

Where disturbance of the ground may result in contamination of the ballast or this contamination occurs as result of a wash out, the Applicant shall be responsible for costs to restore the track and structure. Temporary soil erosion measures for protecting the track shall be submitted as part of the construction plan and approved by Amtrak.

Under no circumstances should additional flow be routed onto Amtrak Right-of-Way, either during construction or upon completion.

3.9 INSPECTION AND TESTING REQUIREMENTS FOR HAZARDOUS MATERIALS

For pipelines carrying flammable or hazardous materials, ANSI Codes B31.8 and B31.4, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on Amtrak property except that proof-testing of strength of carrier pipe shall be in accordance with the requirements of ANSI Codes B31.8 for location Classes 2, 3, or 4 or ANSI Code B31.4, as applicable, for all pipelines carrying oil, liquefied petroleum gas, natural or manufactured gas and other flammable substances.

PART 4 – INFORMATION SKETCHES

4.1 The following Information Sketches are attached:

Sketch 1 – Information to be shown on Plan Section of drawing.

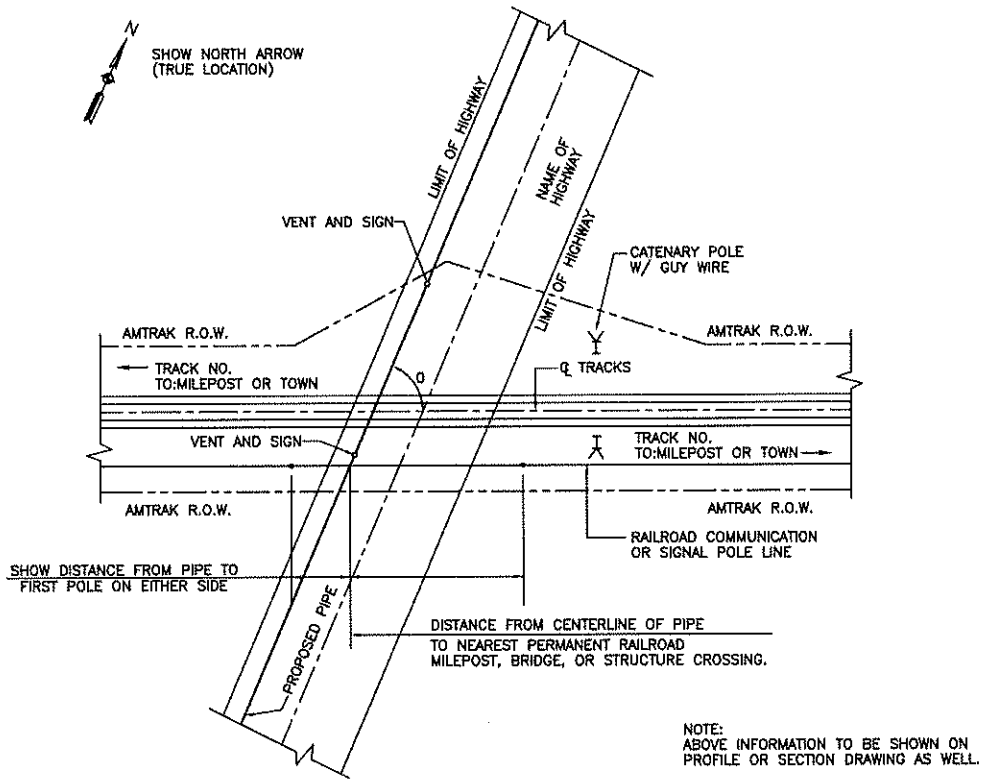
Sketch 2 – Information to be shown on Profile Section of drawing.

Sketch 3 – Longitudinal Occupancy.

Sketch 4 – Pipeline in Roadway Under Railroad Bridge

Sketch 5 – Details for Bonding and Grounding of Pipelines

Sketch 6 – Pipe Crossing Data Sheet



PLAN

SCALE:

NOTES:

1. IF MANHOLES ARE PLACED ON AMTRAK PROPERTY, DETAILS OF SAME, WITH CLEARANCES TO NEAR RAILS ARE TO BE SHOWN ON THE DRAWINGS.
2. IF THE PROPOSED PIPE IS TO SERVE A NEW DEVELOPMENT, A MAP SHOWING THE AREA IN RELATION TO ESTABLISHED AREAS AND ROADS IS TO BE SUBMITTED WITH THE REQUEST.
3. IF THE PROPOSED PIPE IS NOT WHOLLY WITHIN HIGHWAY LIMITS, A REASONABLE CONTINUATION OF THE PIPE SHOULD BE SHOWN.
4. SCALE OF DRAWING TO BE SHOWN.
5. BURIED COMMUNICATION AND SIGNAL LINES MAY BE PRESENT. OTHER UTILITIES MAY ALSO BE ENCOUNTERED. PERMITTEE MUST VERIFY PRESENCE AND LOCATION OF ANY SUB SURFACE LINE PRIOR TO STARTING CONSTRUCTION.
6. PROVIDE DIMENSIONS WHERE INDICATED. INCLUDING ANGLE OF CROSSING.

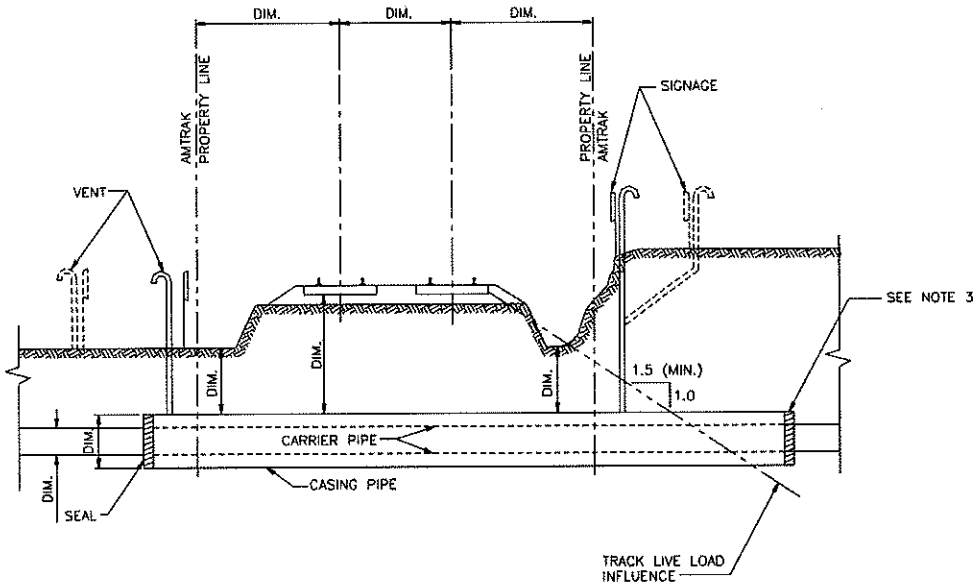
INFORMATION TO BE SHOWN ON PLAN SECTION OF DRAWING

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 1
EP3005 SPECIFICATION

Designed AEC | Drawn JLM | Date 3/01/02

File No:
Design No:
Sheet No. 1 of 6
Dwg. No. SK-1



SECTION

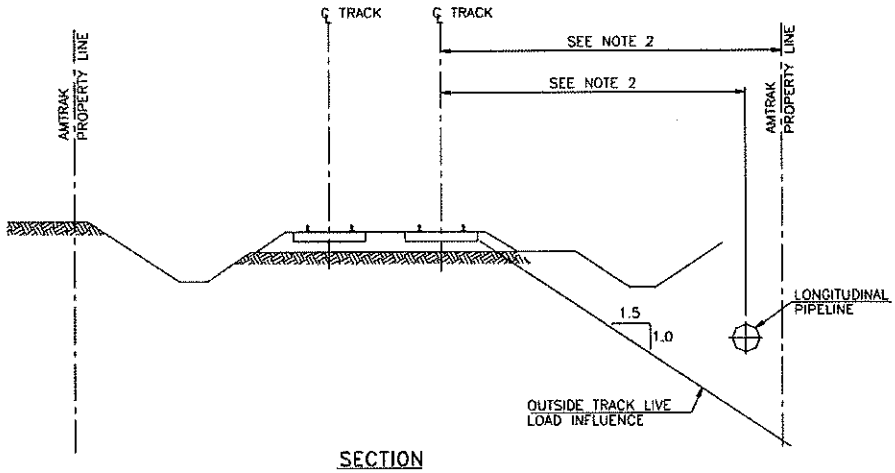
SCALE:

NOTES:

1. ABOVE INFORMATION AND DIMENSIONS TO BE SHOWN ON PROFILE SECTION DRAWING.
2. VENTS IF REQUIRED.
3. END OF CASING PIPE MUST BE OUTSIDE THE TRACK LIVE LOAD INFLUENCE

INFORMATION TO BE SHOWN ON PROFILE SECTION OF DRAWING

Amtrak®	Office of Chief Engineer STRUCTURES National Railroad Passenger Corporation 30th Street Station, Philadelphia, Pennsylvania 19104	SKETCH 2 EP3005 SPECIFICATION Designed AEC | Drawn JLM | Date 9/10/02	File No: Design No: Sheet No. 2 of 6 Dwg. No. SK-2 REV 1

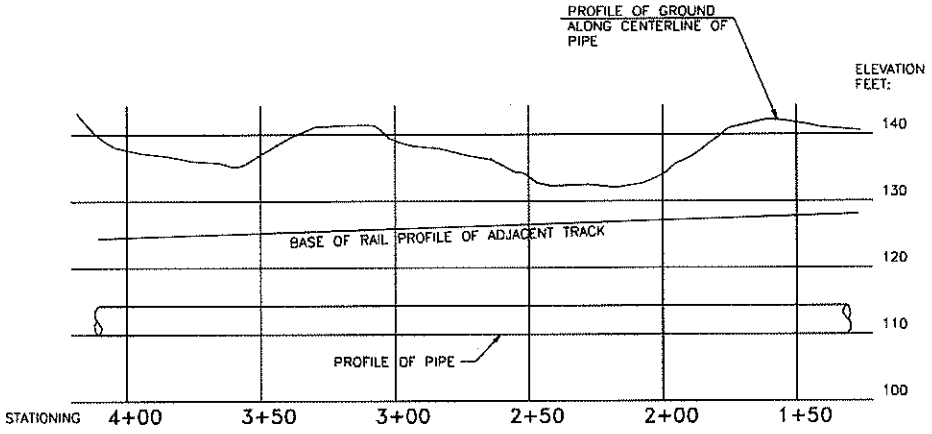


SECTION

SCALE:

NOTE:

1. ALL INFORMATION TO BE SHOWN TYPICALLY ON ALL CROSS SECTIONS AND PROFILE DRAWINGS.
2. SHOW THE DIMENSION ON PLAN VIEW.



PROFILE

SCALE: VERT.
HORIZ.

LONGITUDINAL OCCUPANCY

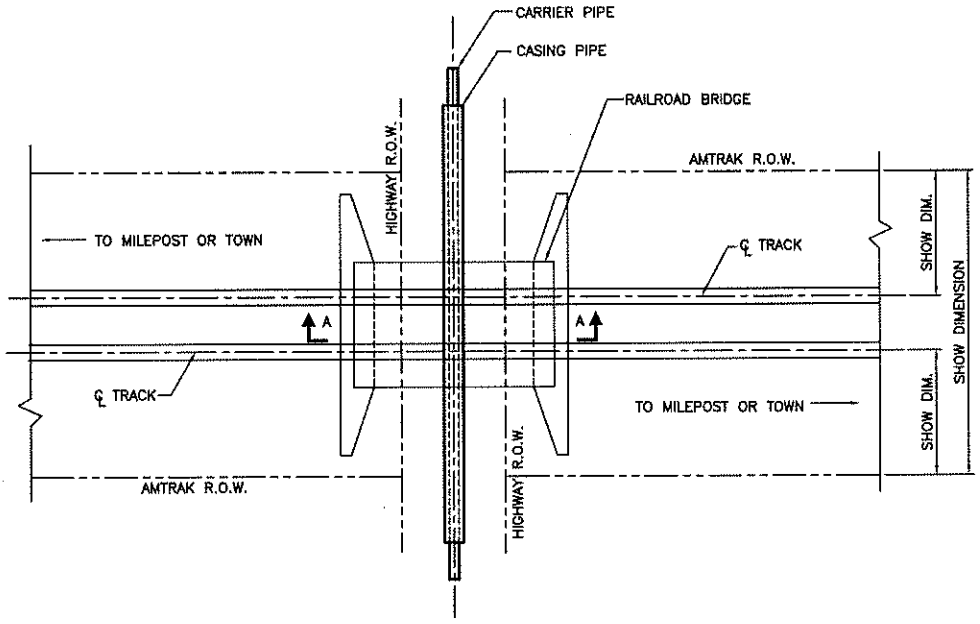
Amtrak®

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

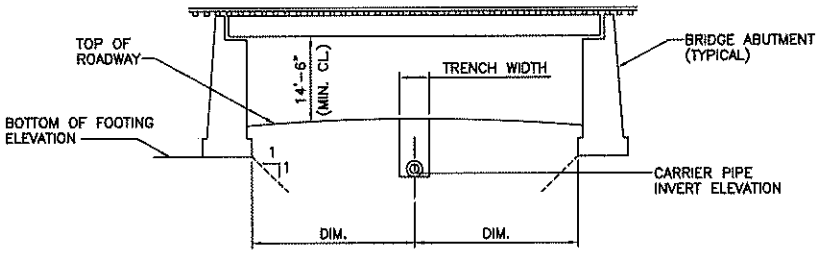
SKETCH 3
EP3005 SPECIFICATION

Designed	Drawn	Date
AEC	JLM	9/10/02

File No:	
Design No:	
Sheet No.	3 of 6
Dwg. No.	SK-3 REV 1



PLAN
SCALE:



SECTION A–A
SCALE:

NOTE:
PIPE OR EXCAVATION MUST NOT BE WITHIN THE 1 TO 1 SLOPE LINE THAT EXTENDS FROM BOTTOM OF FOOTING.

PIPELINE IN ROADWAY UNDER RAILROAD BRIDGE

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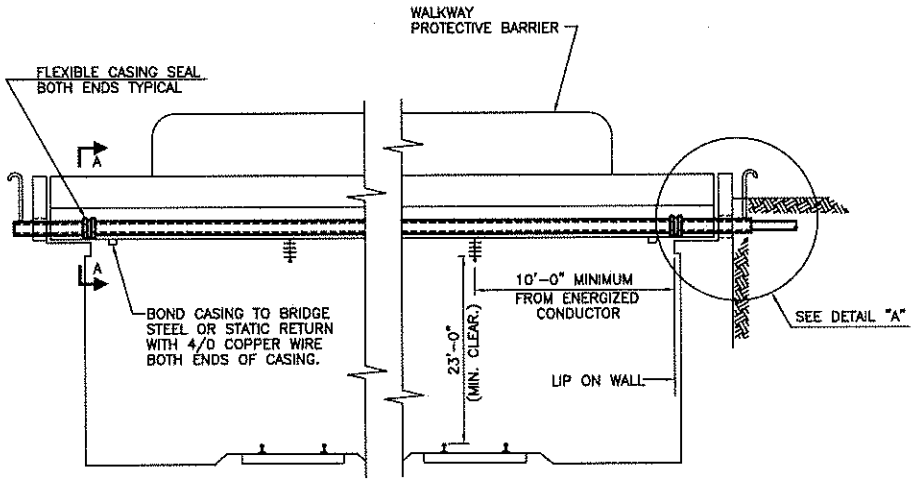
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 4
EP3005 SPECIFICATION

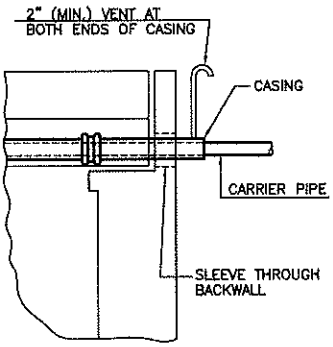
Designed	Drawn	Date
AEC	JLM	3/01/02

File No:	
Design No:	
Sheet No.	4 of 6
Dwg. No.	SK–4



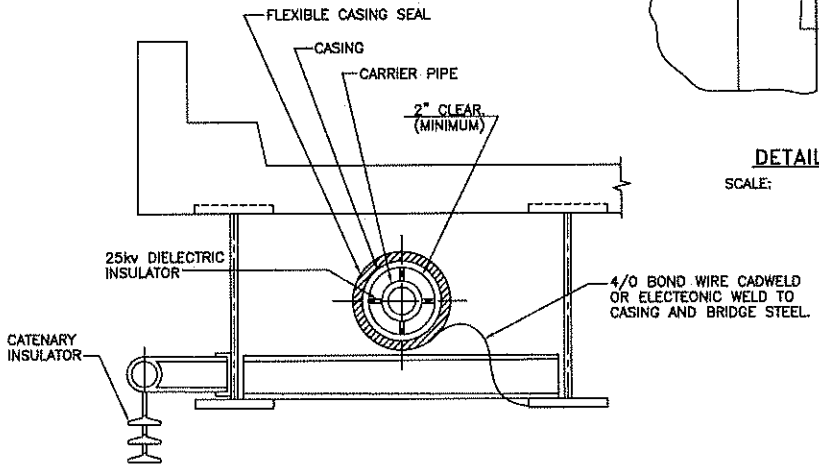
ELEVATION

SCALE:



DETAIL "A"

SCALE:



SECTION A-A

SCALE:

DETAILS FOR BONDING AND GROUNDING OF PIPELINE

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 5
EP3005 SPECIFICATION

Designed	Drawn	Date
AEC	JLM	3/01/02

File No:	
Design No:	
Sheet No.	5 of 6
Dwg. No.	SK-5

Amtrak® ENGINEERING PRACTICES	ORIGINAL ISSUE DATE 03/26/02		NUMBER EP3006
TITLE **DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES**	REVISED DATE N/A		
	RECOMMENDED by *K.L. Kulick*	DATE 3/26/02	PAGE 1
	APPROVED by CHIEF ENGR, STRUCTURES *James S. Richter*	DATE 3/26/02	OF 8

SCOPE AND NATURE

To establish uniform requirements for the design and construction of overhead bridges by outside agencies.

SPECIAL REFERENCE

Standard Track Plan AM70050

ET Standard Plan ET1446-D

ET Standard Plan ET 1447-D

Engineering Practice 3003

Engineering Practice 3014 Section 02261

Engineering Practice 3014 Section 01520

Engineering Practice 3014 Section 01142

Engineering Practice 1604

AED-1 Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation

AREMA Manual for Railway Engineering – Chapter 8, Article 2.1.5

SPECIAL MATERIALS

N/A

PROCEDURE

DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES

New or reconstructed bridges over Amtrak Railroad tracks shall meet the following requirements:

I. CLEARANCES

a. Horizontal and Vertical Clearances shall be in accordance with the current Standard Track Plan AM70050 – "Minimum Roadway Clearances". When replacing existing bridges that have substandard clearances, every effort shall be made to improve the clearances.

b. Temporary Construction clearances may be less if approved by Amtrak.

c. Amtrak shall be furnished as-built drawings showing actual clearances as constructed.

d. Horizontal clearances may need to be increased if a maintenance roadway is required by Amtrak.

e. Clearances shall be adjusted to provide for any planned changes in the trackage, including the change in track centers and raising of the tracks. Amtrak shall be contacted to obtain information on planned track changes. If the track is in a sag at the proposed overhead crossing location, it should be anticipated that the track may be raised to improve the condition. Clearances shall be increased to provide for this track raise.

II. CRASH WALLS

AREMA Manual for Railway Engineering, Chapter 8, Article 2.1.5 Pier Protection, describes the requirements for the crash walls. Crash walls are required when face of the pier is closer than 25'-0" from centerline of the nearest track, measured perpendicular to the track, unless the size of the pier satisfies the criteria for piers of heavy construction as listed in Article II (d).

Crash walls shall meet the following requirements:

a. Crash walls for piers from 12 feet to 25 feet clear from the centerline of the track shall have a minimum height of 6 feet above the top of rail. Piers less than 12 feet clear from the centerline of the track shall have a minimum crash wall height of 12 feet above the top of rail. Crash walls shall be at least 2'-6" thick and at least 12 feet long.

b. For multi-column piers, the crash wall shall connect the columns and extend at least 1 foot beyond the outermost columns parallel to the track.

c. Crash walls shall be anchored to the footings and columns as applicable and shall extend to at least four feet below the lowest surrounding grade.

d. A pier shall be considered of heavy construction if it has a cross-sectional area equal to or greater than that required for the crash wall and the larger of its dimensions is parallel to the track.

e. Consideration may be given to providing protection for bridge piers located more than 25 feet from the centerline of track as conditions warrant. In making this determination, account shall be taken of such factors as horizontal and vertical alignment of the track, embankment height, and an assessment of the consequences of serious damage in the case of a collision.

III. BARRIERS

a. In the territory where there is railroad electrification, barriers shall be designed and constructed on both faces of the bridge in conformance with the current ET Standard Plan ET-1446-D "Electrified Territory OH Bridge Typical Protection Barrier".

b. In non-electrified territory, chain-link fence with 1" mesh fabric may be substituted for the solid barrier.

IV. ELECTRIFICATION SYSTEMS.

a. In electrified territory the agency responsible for the project shall be required to comply with AED-1 "Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation".

V. DRAINAGE

It is essential to maintain good drainage of railroad right-of-way during construction and provide for good drainage after construction of the overhead crossing. The following guidelines shall be followed:

a. Piers and end slopes shall be located such that they do not interfere with railroad drainage system, including, but not limited to, ditches, pipes, catch basins and detention basins.

b. Drainage from the section of the bridge above railroad right-of-way shall be collected with drain pipes and drained away from the railroad right-of-way. No open scuppers are permitted on the portion of the bridge over the railroad right of way. Drainage from any scuppers shall be drained away from the railroad right-of-way.

c. After completion of construction, railroad drainage ditches shall be cleaned of all debris to the satisfaction of Amtrak representatives.

d. During construction, silt fences shall be provided to prevent silting of the ditches. All drainage from the construction site must be collected and directed away from railroad property.

e. If the project will alter drainage characteristics at the site of the crossing at any time during or after completion of the project, three sets of the drainage calculations and plans shall be submitted to Amtrak for approval. Approval of the drainage plans shall not relieve the submitting agency of responsibility for the drainage design.

f. All disturbed areas on the railroad right-of-way shall be properly seeded and mulched to the satisfaction of Amtrak.

VI. STRUCTURE EXCAVATION AND SHORING

Shoring or sheeting protection shall be provided in conformance with the current Engineering Practice 3014 Section 02261 – "Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks". Blasting is restricted and if required shall be in conformance with Engineering Practice 3003- "Blasting Procedures".

a. A construction procedure for temporary shoring shall be shown on the drawing.

b. Safety railing meeting OSHA requirements shall be installed when temporary shoring is within 12 feet of track. When shoring is further than 12 feet from centerline of track, railing shall be provided if necessary for safety of workers and railroad personnel.

VII. GENERAL REQUIREMENTS

a. The distance from the nearest milepost at intersection of centerline of the track and centerline of the bridge shall be shown on the General Plan.

b. Horizontal and vertical clearances shall be marked clearly on the General Plan and Elevation.

c. Soil parameters used in designing the shoring shall be based on soil and rock data obtained from test borings performed for the design of the proposed structure.

d. It is the designer's responsibility to ensure that a constructability analysis is performed to confirm that the structure, as designed, can be constructed in the applicable railroad environment.

e. Piers, abutments and columns located within the railroad right-of-way shall have an anti-graffiti coating consisting of a three-coat system. Each of the three coats shall be a clear, two component, polyester type, aliphatic urethane. Each coat shall be applied at a minimum 2 mils DFT.

VIII. DEMOLITION OF EXISTING STRUCTURES

Railroad tracks shall be protected from damage during demolition of existing structure or replacement of deck slab. Either of the following methods may be used:

a. During demolition of the decks, a protection shield shall be erected over the right-of-way to catch falling debris. The shield shall be designed and constructed in

conformance with the current Engineering Practice 3014 Section 01520 – "Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures".

b. On light traffic density lines or when overhead protection shield cannot be installed due to limited clearance or type of superstructure, track may be protected by timber mats placed over the track structure, subject to approval by Amtrak. Timber mats shall be made in sections such that they may be lifted in and out quickly. Mats shall not rest on ties or rails.

Geo-fabric or canvas shall be placed over the track structure to keep the ballast clean.

The contractor shall submit detailed plans of the protection shield or the timber mats to the Project Engineer for approval prior to the start of demolition. The plans shall be prepared by a Registered Professional Engineer and shall bear his seal and signature.

Blasting will not be permitted to demolish a structure over or within the railroad right-of-way.

IX. ERECTION PROCEDURE

The contractor shall submit a detailed procedure for erecting the spans over railroad right of way. The procedure shall be in conformance with the current Engineering Practice 3014 Section 01142 – "Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition, and Other Crane/Hoisting Operations over Railroad Right-Of-Way".

X. PIPELINES

All pipelines occupying the bridge shall be designed and constructed in accordance with Engineering Practice 1604 Pipeline Occupancy – Requirements and Specifications.

XI. CROSSING DATA

Plans submitted for review by Amtrak shall contain, at the minimum, the following information:

- Roadway name or route number
- Amtrak bridge number
- Skew angle to the railroad center line
- Proposed foundation type and elevation of bottom of footing
- Pile type and depth (if applicable)
- Top of rail elevation for all tracks
- Drainage modifications
- Elevation and cross sections of existing and proposed structure

- North arrow
- Railroad clearance information with dimensions in English units

The following "Overhead Bridge Crossing Data" sheet shall be completed and submitted, by the agency responsible for the project, with both the Preliminary and Final Plan submission to Amtrak.

OVERHEAD BRIDGE CROSSING DATA

1. LOCATION: _____ _____ _____
   CITY COUNTY STATE

2. Distance from nearest Mile Post to Centerline of Bridge: _____
3. DOT Crossing Number: _____
4. State Project Number: _____
5. Description of Project:
   _____
   _____
   _____
   _____
   _____
6. Minimum Horizontal Clearance from Centerline of nearest Track:
   A. Proposed: _____ B. Existing (if applicable): _____
7. Minimum Vertical Clearance above top of high rail:
   A. Proposed: _____ B. Existing (if applicable): _____
8. List piers where crashwalls are provided:

Pier:	Distance from centerline of track:
_____	_____
_____	_____

9. Describe how drainage from bridge is handled:
   _____
   _____
   _____
   _____
10. List piers where shoring is required to protect track:
    _____
    _____
11. Plan Submittal: Preliminary: _____ Final: _____

REPORTING

As detailed in procedure.

RESPONSIBILITY

Amtrak I&C Staff	Comply with Procedure
Director I&C	Assure Compliance
Amtrak Design Staff	Comply with Procedure
Amtrak Construction Staff	Comply with Procedure
Sr. Director Construction	Assure Compliance

PIPE CROSSING DATA SHEET

IN ADDITION TO PLAN AND PROFILE OF CROSSING, DRAWINGS SUBMITTED FOR AMTRAK APPROVAL SHALL CONTAIN THE FOLLOWING INFORMATION:

	CARRIER PIPE	CASING PIPE
CONTENTS TO BE HANDLED		
NORMAL OPERATING PRESSURE		
NOMINAL SIZE OF PIPE		
OUTSIDE DIAMETER		
INSIDE DIAMETER		
WALL THICKNESS		
WEIGHT PER FOOT		
MATERIAL		
PROCESS OF MANUFACTURE		
SPECIFICATION		
GRADE OR CLASS		
TEST PRESSURE		
TYPE OF JOINT		
TYPE OF COATING		
DETAILS OF CATHODIC PROTECTION		
DETAILS OF SEAL OR PROTECTION AT ENDS OF CASING		
METHOD OF INSTALLATION		

CHARACTER OF SUBSURFACE MATERIAL AT THE CROSSING LOCATION _____ (UNIFIED SOIL CLASS)

APPROXIMATE ELEVATION OF GROUND WATER LEVEL _____ FEET

SOURCE OF INFORMATION OF SUBSURFACE CONDITIONS (BORING, TEST PITS OR OTHER)

NOTE:

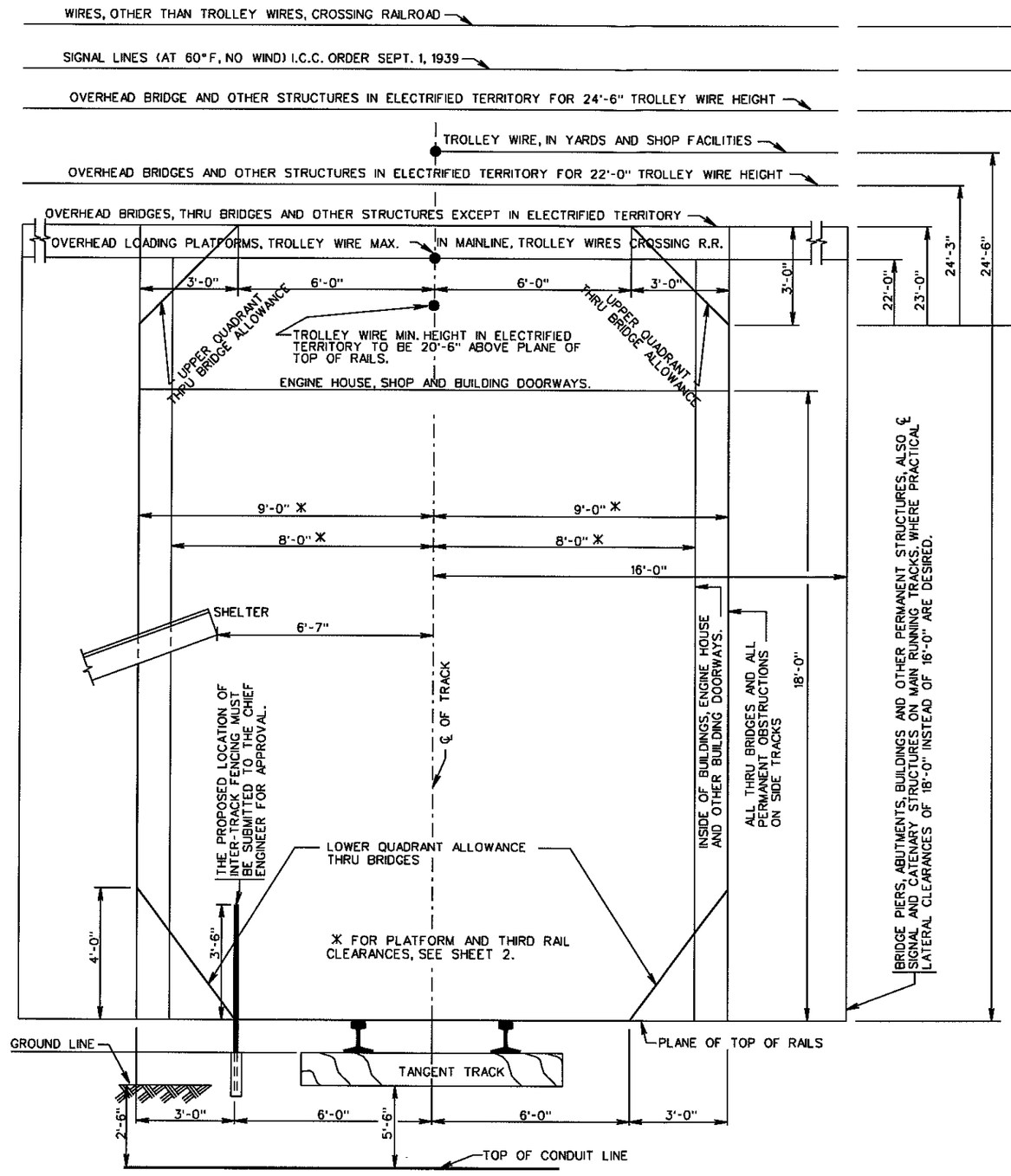
ANY SOIL INVESTIGATION MADE ON RAILROAD PROPERTY OR ADJACENT TO TRACKS SHALL BE CARRIED ON UNDER THE SUPERVISION OF AMTRAK.

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

SKETCH 6
EP3005 SPECIFICATION

Designed	Drawn	Date
AEC	JLM	3/01/02

File No:	
Design No:	
Sheet No.	6 of 6
Dwg. No.	SK-6



NOTES:

CLEARANCE REQUIREMENTS SHOWN ON THIS PLAN APPLY ONLY TO NEW CONSTRUCTION OR RECONSTRUCTION. EXISTING STRUCTURES AND TRACKS MAY BE MAINTAINED AND EXTENDED AT PRESENT CLEARANCES. UNLESS OTHERWISE REQUIRED BY LOCAL OR STATE AUTHORITIES.

STRUCTURES MUST NOT BE LOCATED NEARER TO THE TRACK THAN THE MINIMUM CLEARANCE LIMITS SHOWN ON THIS PLAN AND THESE DISTANCES SHOULD BE EXCEEDED WHERE POSSIBLE. CONSIDERATION SHOULD BE GIVEN TO THE PROBABILITY OF INCREASED DISTANCE BETWEEN TRACK CENTER LINES. WIDENING ROADBED SHOULDERS AND WIDENING AND DEEPENING DITCHES, AND THE STRUCTURES SHOULD BE LOCATED ACCORDINGLY.

FOR STANDARD DISTANCES BETWEEN TRACK CENTER LINES AND THE SPACING OF TRACKS WHERE INTERTRACK CLEARANCE - LIMITING OBJECTS ARE LOCATED, SEE MW-1000 SPECIFICATIONS FOR INSPECTION, CONSTRUCTION AND MAINTENANCE OF TRACK

WHERE PHYSICAL CONDITIONS IMPOSE INSURMOUNTABLE RESTRICTIONS, NECESSITATING CLEARANCES CLOSER THAN THOSE SPECIFIED. THE MATTER MUST BE SUBMITTED TO THE CHIEF ENGINEER FOR ANY MODIFICATIONSAND EXCEPTIONS TO THIS STANDARD.

MINIMUM CLEARANCES SHOWN ON THIS PLAN ARE FOR TANGENT LEVEL TRACK.

FOR CURVED TRACK THE FOLLOWING PROVISIONS APPLY:

VERTICAL - MEASURED VERTICALLY ABOVE HIGH RAIL EXCEPT FOR PASSENGER AND FREIGHT PLATFORMS WHICH ARE MEASURED PERPENDICULAR TO THE PLANE OF TOP OF RAIL.

LATERAL - OUTSIDE AND INSIDE CLEARANCES SHALL BE MEASURED RADIALLY AND HORIZONTALLY AND INCREASED BY 1 1/2 INCHES PER DEGREE OF CURVATURE OVER THAT SHOWN FOR TANGENT TRACK.

IN ADDITION, THE INSIDE CLEARANCE FOR SUPER ELEVATED TRACK SHALL BE FURTHER INCREASED BY 1 INCH FOR EACH 1 INCH OF SUPERELEVATION FOR EACH 5 FEET OF HEIGHT ABOVE TOP OF LOW RAIL.

* FOR STATE CLEARANCE REQUIREMENTS, SEE A.R.E.M.A. MANUAL, CHAPTER 28, SECTION 3.6, LEGAL CLEARANCE REQUIREMENTS BY STATES.

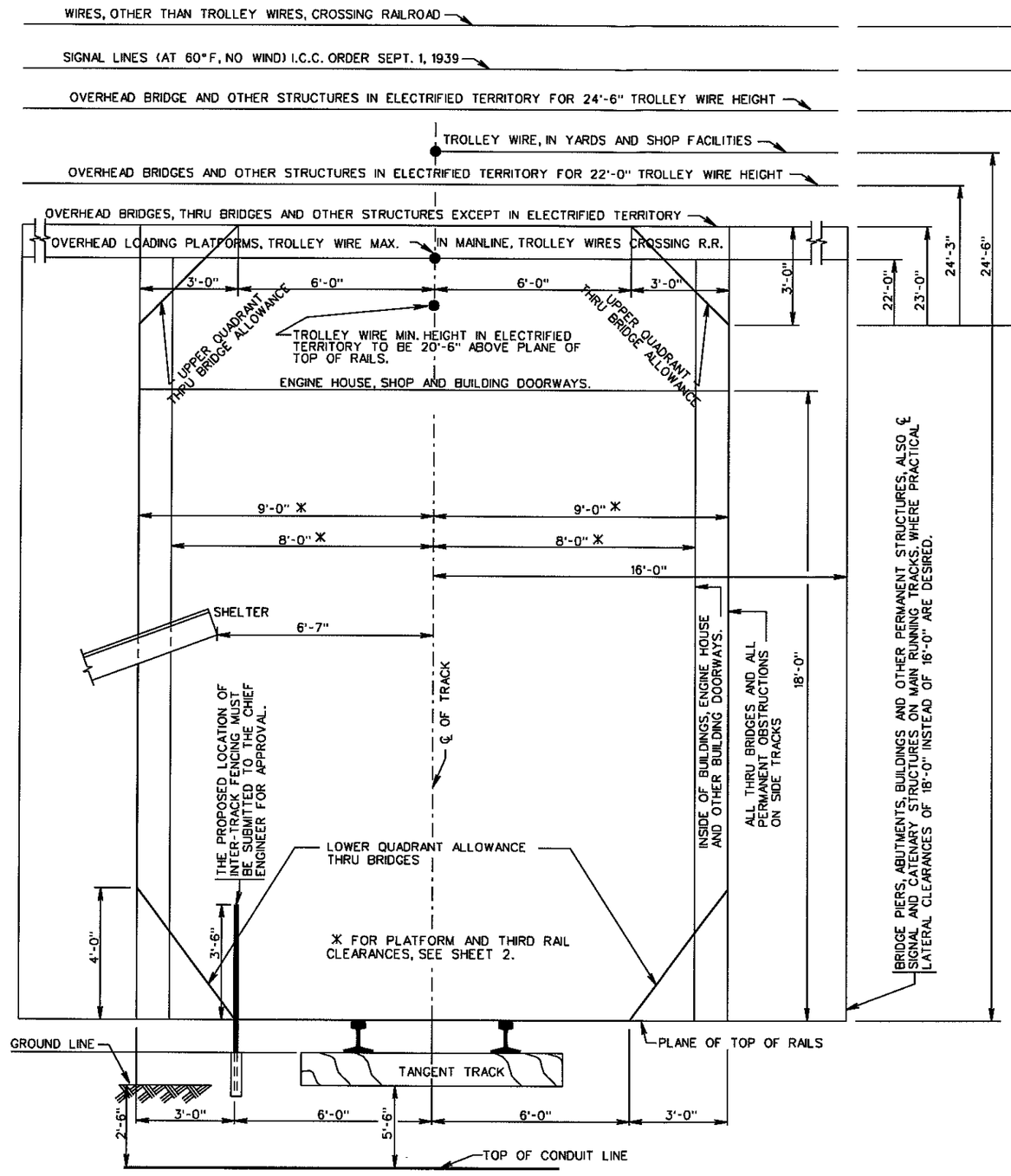
OFFICE OF THE
CHIEF ENGINEER OF TRACK

Phila., PA Date: August 1, 2016 Approved:

No.	Revisions	Date	By
08	ADDED SHEET 2	08-01-16	KJW

STANDARD TRACK PLAN
MINIMUM ROADWAY CLEARANCES

Designed: Amtrak	Drawn: TDI-SLC	Checked: MT	Date: 08-01-16	Dwg. No.: 70050.001.08



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IN ADDITION, THE INSIDE CLEARANCE FOR SUPER ELEVATED TRACK SHALL BE FURTHER INCREASED BY 1 INCH FOR EACH 1 INCH OF SUPERELEVATION FOR EACH 5 FEET OF HEIGHT ABOVE TOP OF LOW RAIL.

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OFFICE OF THE
CHIEF ENGINEER OF TRACK

Phila., PA Date: August 1, 2016 Approved:

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08	ADDED SHEET 2	08-01-16	KJW

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MINIMUM ROADWAY CLEARANCES

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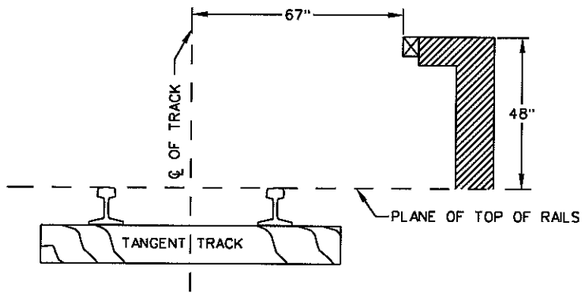
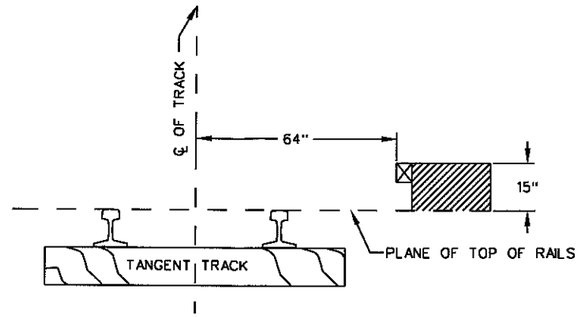


HIGH PASSENGER PLATFORM

DIMENSIONS LISTED ARE FOR TANGENT TRACK. PLATFORM DIMENSIONS MUST BE COMPENSATED FOR CURVATURE AND SUPER-ELEVATION IN ACCORDANCE WITH THE MW1000 REQUIREMENTS.

HIGH PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1°-40" OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1" WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.

HIGH PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ADJACENT TO TRACKS PROVIDING ACCESS FOR DIMENSIONAL LOAD SHIPMENTS OR STRACNET ROUTES WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.

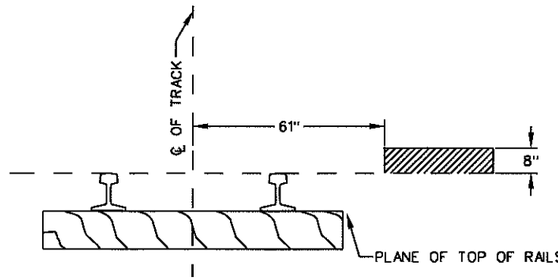


MID LOW PASSENGER PLATFORM

DIMENSIONS LISTED ARE FOR TANGENT TRACK. PLATFORM DIMENSIONS MUST BE COMPENSATED FOR CURVATURE AND SUPER-ELEVATION IN ACCORDANCE WITH THE MW1000 REQUIREMENTS.

64" DIMENSION TO BE USED ON PLATFORMS CONSTRUCTED ON TRACKS WHERE FREIGHT LOCOMOTIVES CAN AVOID PASSING THE PLATFORM.

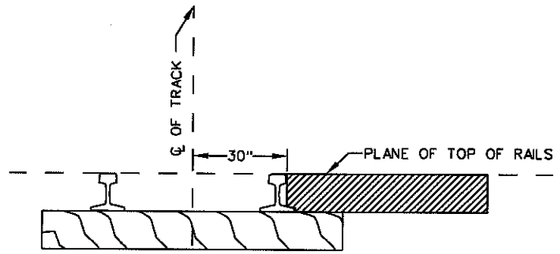
MID LOW PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1°-40" OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1" WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.



LOW PASSENGER PLATFORM

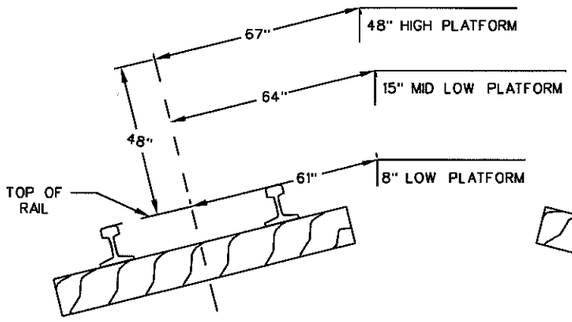
61" DIMENSION TO BE USED ON AMTRAK OWNED LINES. HOST RAILROAD MAY DETERMINE AN ALTERNATE STANDARD TO USE ON THEIR LINES

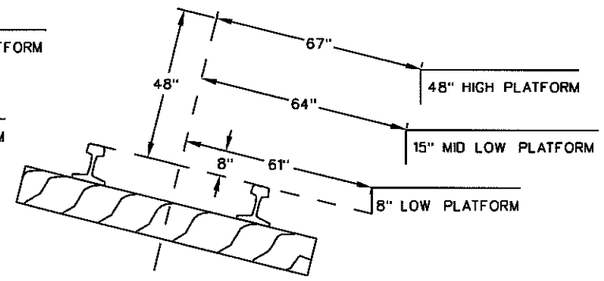
8" LOW PASSENGER PLATFORM WILL NOT BE COMPENSATED FOR CURVATURE UP TO 8°. FOR CURVATURE IN EXCESS OF 8°, LOW PLATFORM SHOULD BE DESIGNED AT TOP OF RAIL ELEVATION AND EXTENDED TO THE FIELD SIDE OF THE NEAR RAIL. CONSTRUCTION REQUIRES THE APPROVAL OF THE CHIEF ENGINEER.



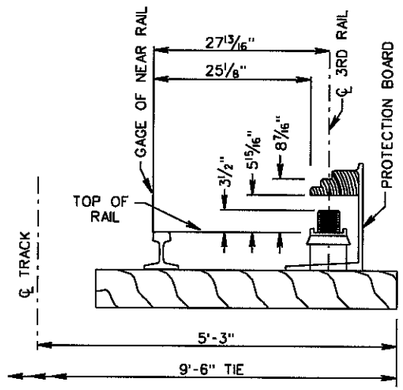
TOP OF RAIL PASSENGER PLATFORM

TOP OF RAIL PASSENGER PLATFORM MUST ONLY BE USED ON PLATFORM LOCATIONS WHERE THE CURVATURE EXCEEDS 8°, AND WITH THE APPROVAL OF THE CHIEF ENGINEER.

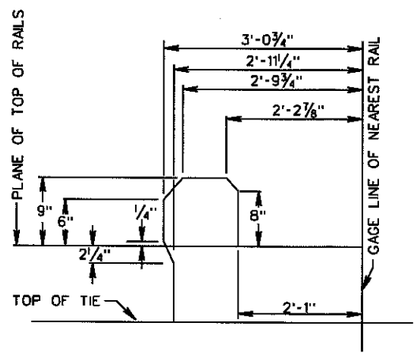




HORIZONTAL MEASUREMENTS FOR PLATFORM COMPENSATION FOR CROSSLEVEL



LOCATION OF OVER-RUNNING 3RD. RAIL, BRACKET AND PROTECTION BOARD.



CLEARANCE LIMITS OF THIRD RAIL STRUCTURE

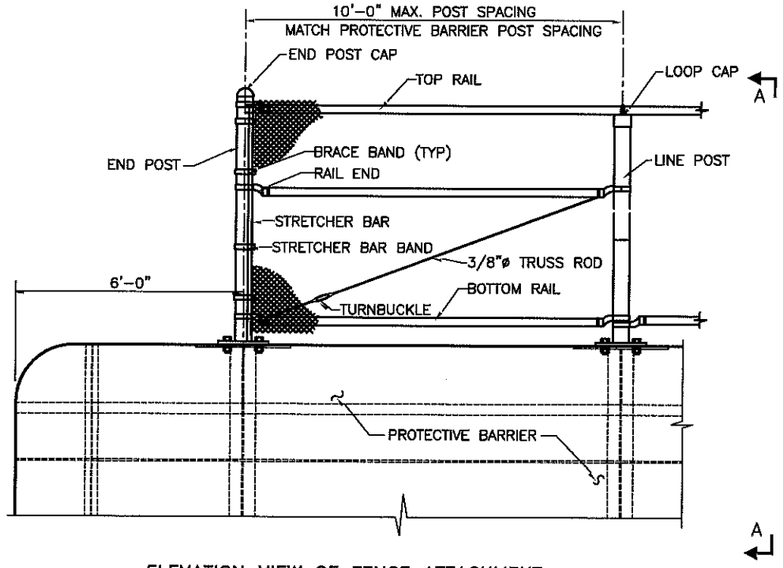
OFFICE OF THE
CHIEF ENGINEER OF TRACK

Phila., PA Date: August 1, 2016 Approved:

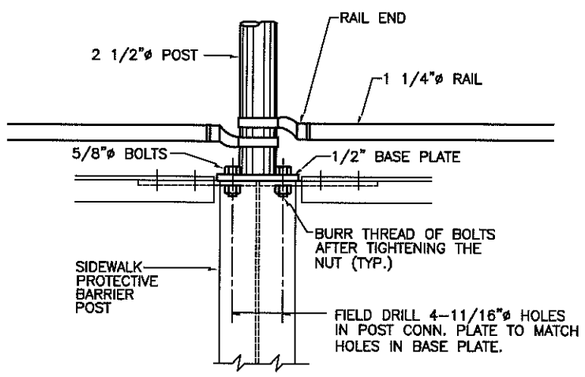
No.	Revisions	Date	By
08	ADDED SHEET 2	08-01-16	KJW

STANDARD TRACK PLAN
MINIMUM ROADWAY CLEARANCES

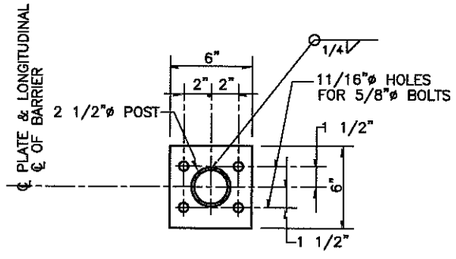
Designed: Amtrak | Drawn: TDI-SLC | Checked: MT | Date: 08-01-16 | Dwg. No.: 70050.002.08



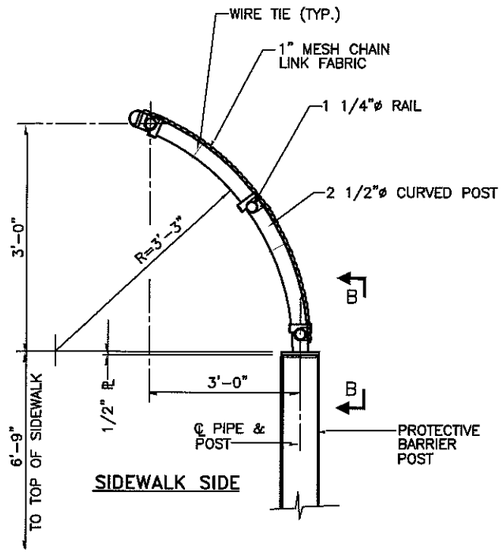
ELEVATION VIEW OF FENCE ATTACHMENT
NO SCALE



SECTION B-B
NO SCALE



BASE PLATE DETAIL
NO SCALE



SECTION A-A
NO SCALE

NOTE

- BASE PLATE MATERIAL SHALL CONFORM TO ASTM SPECIFICATION A709, GRADE 36, LATEST ISSUE. (GALVANIZED)
- POST SHALL BE 2 1/2"ø STANDARD WEIGHT PIPE. (GALVANIZED)
- RAIL SHALL BE 1 1/4"ø STANDARD WEIGHT PIPE. (GALVANIZED)
- CHAIN-LINK FENCE FABRIC SHALL BE NO. 9 GAGE, ALUMINUM COATED, 1" MESH SIZE, DIAMOND SHAPED.
- WIRE TIES SHALL BE STANDARD NO. 9 GAGE WIRE FOR RAILS & NO. 6 GAGE WIRE FOR POSTS. (ALUMINUM COATED)
- BOLTS SHALL BE 5/8"ø STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A325, LATEST ISSUE.
- MATERIAL BASED ON PADOT BC-701.
- ALL WELDING SHALL CONFORM TO STRUCTURAL WELDING CODE AWS D1.5, LATEST EDITION. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. ALL WELDERS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS STRUCTURAL WELDING CODE.
- ALL GALVANIZING SHALL CONFORM TO ASTM SPECIFICATION A123, LATEST ISSUE.

SP3002.DWG

Plot Scale: 1/4"

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Phila., PA | Date: 04/03/2000 | Approved: J. S. RICHTER

No.	Revisions	Date	By

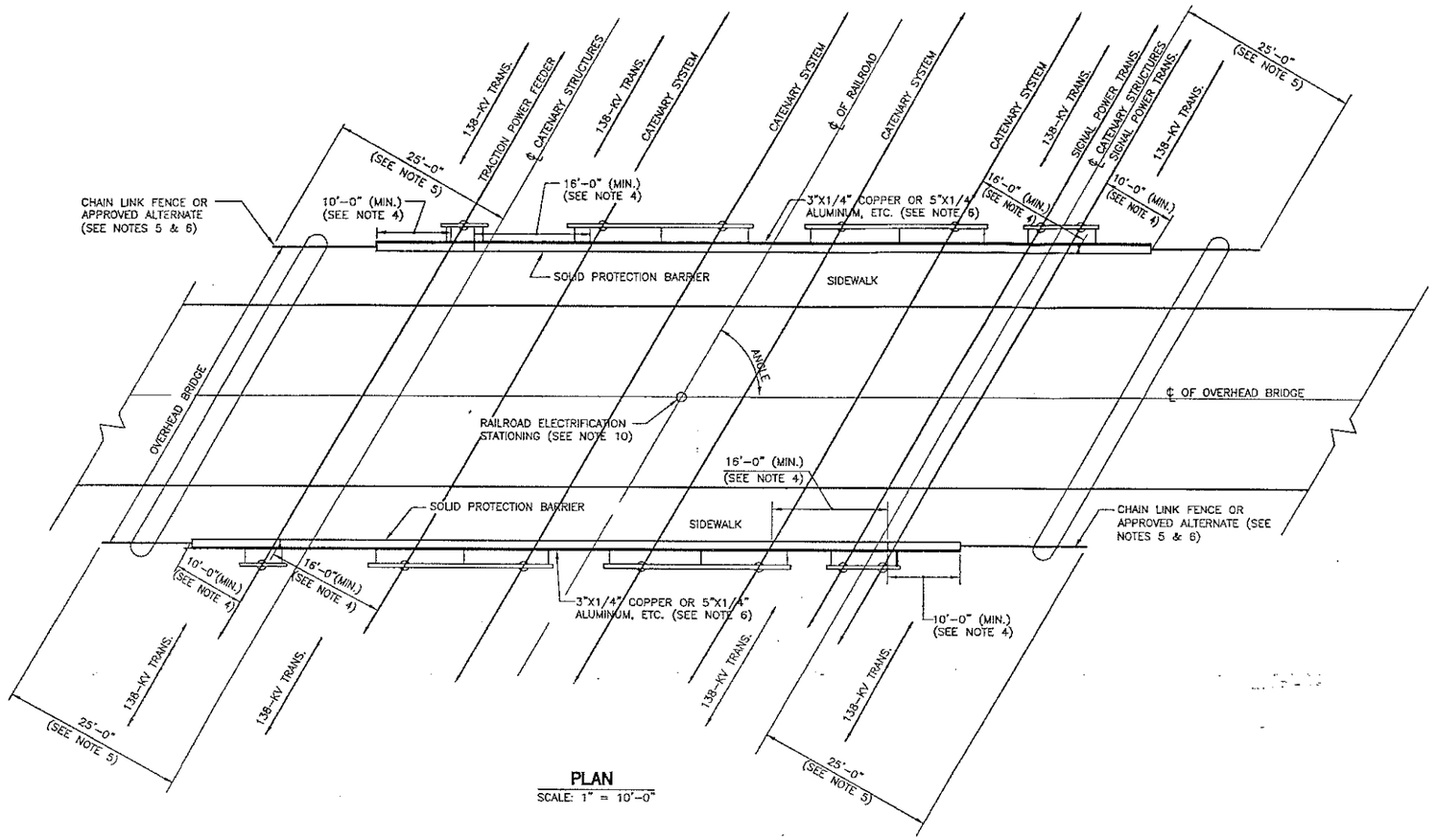
STANDARD STRUCTURES PLAN

CURVED PROTECTIVE FENCE

Designed: VMK | Drawn: JLM | Checked: VMK | Date: 04-27-98

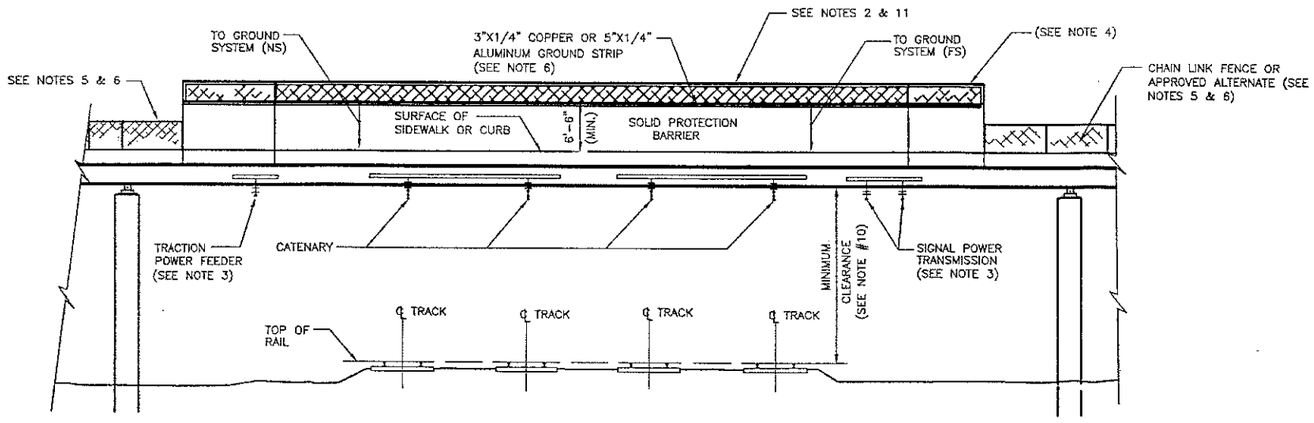
Dwg. No. SP3002

Sheet No. 1OF 1



PLAN

SCALE: 1" = 10'-0"



ELEVATION

SCALE: 1" = 10'-0"

GENERAL NOTES:

1. ANY MODIFICATION OF THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.
2. OVERHEAD BRIDGES SHALL BE PROVIDED WITH 6'-6" HIGH SOLID PROTECTION BARRIERS ABOVE THE SURFACE OF THE SIDEWALK OR CURB TO PROTECT PEDESTRIANS AGAINST CONTACT WITH RAILROAD WIRES PASSING UNDER THE BRIDGE AND TO PREVENT DAMAGE TO THE WIRES. WHERE A WALKWAY EXISTS ON THE BRIDGE A CURVED FENCE SHALL BE INSTALLED ON TOP OF THE SOLID BARRIER OVER IT'S ENTIRE LENGTH. WHERE NO WALKWAY EXISTS THE FENCE SHALL BE STRAIGHT, (SEE SHEET 2 OF 2).
3. NORMALLY THE SIGNAL POWER TRANSMISSION WIRES AND THE TRACTION POWER FEEDER WIRES ARE LOCATED ABOVE THE BRIDGE. FOR THE ALTERNATE POSITION OF THESE WIRES UNDER THE BRIDGE, THE PROTECTIVE BARRIER SHALL EXTEND AS SPECIFIED IN NOTE NO.4.
4. THE PROTECTION BARRIER SHALL EXTEND AT LEAST 16 FEET BEYOND THE POINT AT WHICH ANY CATENARY WIRE PASSES UNDER THE BRIDGE; HOWEVER, THE MINIMUM DISTANCE FROM THE END OF THE PROTECTION BARRIER MEASURED TO A POINT OUTSIDE THE BRIDGE AND NORMAL TO THE WIRE SHALL BE 15 FEET.
   THE PROTECTION BARRIER SHALL EXTEND AT LEAST TEN (10) FEET BEYOND THE POINT AT WHICH A SIGNAL POWER OR TRACTION POWER FEEDER WIRE PASSES UNDER THE BRIDGE; THE MINIMUM DISTANCE FROM THE END OF THE PROTECTION BARRIER MEASURED TO A POINT OUTSIDE THE BRIDGE AND NORMAL TO THE WIRE SHALL BE TEN (10) FEET.
5. WHERE HIGH VOLTAGE WIRES PASS OVER THE BRIDGE, A CHAIN LINK FENCE OR SUITABLE ALTERNATIVE, CAPABLE OF BEING ELECTRICALLY BONDED TO THE BARRIER AND RAIL RETURN SYSTEM, SHALL EXTEND FROM THE END OF THE SOLID BARRIER TO A POINT 25 FEET BEYOND AND NORMAL TO THE CENTERLINE OF THE STRUCTURES SUPPORTING THE WIRES ON EITHER SIDE OF THE BRIDGE.
6. NONMETALLIC BARRIERS SHALL BE PROVIDED WITH GROUND STRIPS, EITHER 3" X 1/4" COPPER OR 5" X 1/4" ALUMINUM. OTHER MATERIALS MAY BE USED SUBJECT TO THE APPROVAL OF THE ELECTRIC TRACTION DEPARTMENT. METALLIC BARRIERS SHALL BE BONDED AND GROUNDED BY A METHOD AND WITH MATERIALS APPROVED BY THE ELECTRIC TRACTION DEPARTMENT.
7. PROTECTION BARRIERS SHALL BE GROUNDED IN ACCORDANCE WITH DRAWING ET-1120-C, TYPICAL DETAILS FOR POWER BONDING OF STRUCTURES.
8. OVERHEAD BRIDGES WITH OPEN-FLOOR CONSTRUCTION REQUIRE SPECIAL PROTECTION. THE DESIGN OF THE PROPOSED PROTECTION SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.
9. WHERE LOCAL CONDITIONS WARRANT, THE DIMENSIONS SHOWN ON THIS DRAWING MAY BE MODIFIED WITH THE APPROVAL OF THE ELECTRIC TRACTION DEPARTMENT.
10. DESIGN DRAWINGS OF THE OVERHEAD BRIDGE SHALL SHOW MINIMUM CLEARANCE, ANGLE, AND RAILROAD ELECTRIFICATION STATIONING AS INDICATED ON THIS DRAWING.
11. (a) EXISTING PROTECTION BARRIERS ON BRIDGES OVER ELECTRIFIED TRACKS IN CLASS EIGHT (8) TERRITORY (GREATER THAN 125 MPH) WHERE THERE'S A DEMONSTRATED NEED SHALL BE RETROFITTED WITH THE CURVED OR STRAIGHT FENCE OVER THEIR ENTIRE LENGTH.

    (b) A 9'-6" HIGH CHAIN LINK FENCE SHALL EXTEND FROM THE END OF THE SOLID PROTECTION BARRIER TO A POINT 16 FEET BEYOND THE CENTERLINE OF THE OUTERMOST ELECTRIFIED TRACK AS SPECIFIED IN NOTE FOUR (4) ABOVE. THE FENCE SHALL BE CURVED OR STRAIGHT PER NOTE (2).

AMTRAK-ET-1446-D-51.dwg SH 1 OF 2 - BJT - Plot @ 1:120

No	Revisions	Date	By

Amtrak®

OFFICE OF
V.P., Chief Engineer
Engineering
National Railroad Passenger Corporation
30TH Street Station-Philadelphia, Pennsylvania 19104

Approved	Date
Chief Engineer Electric Traction - R. J. Verhelle /S/	6/7/99
Director Electric Traction Design - M. B. Insogna /S/	6/7/99

10" 0" 10" 20"
Scale: 1"= 10'-0"

THIS DRAWING SUPERSEDES P.R.R. DRAWING ET-1446-D-4

E.T. STANDARD
ELECTRIFIED TERRITORY O.H. BRIDGES
TYPICAL PROTECTION BARRIER

File No.:	3FF3B
Ref. No.:	ET-1446-D-4
Sheet No:	1 of 2

ET-1446-D

Designed: MDI | Drawn: BJT | Checked: MDI | Date: 05-07-99

CABLE DUCT, TROUGH AND INCLOSURE
TIERS & STATIC WHEEL LOAD RATINGS

If work shall be done on AMTRAK property that involves heavy trucks, equipment, or machinery along the right of way, duct lines and pull boxes shall be inspected to insure they can withhold the appropriate weight.

Application Tiers & Static Vertical Wheel Load Ratings per

ANSI/SCTE 77 2010 "Specification for Underground Enclosure Integrity"

TIER 5 - Loading Requirements - Design Load = 5,000 lbs. Test Load = 7,500 lbs. (Vertical)

Design Load = 600 lbs. /sq. ft. Test Load = 900 lbs./sq. ft. (Lateral)

Sidewalk applications with a safety factor for occasional non-deliberate vehicular traffic.

TIER 8 – Loading Requirements – Design Load = 8000 lbs. Test Load = 12,000 lbs. (Vertical)

Design Load = 600 lbs. /sq. ft. Test Load = 900 lbs./sq. ft. (Lateral)

Sidewalk applications with a safety factor for non-deliberate vehicular traffic.

TIER 15 – Loading Requirements - Design Load = 15,000 lbs. Test Load = 22,500 lbs. (Vertical)

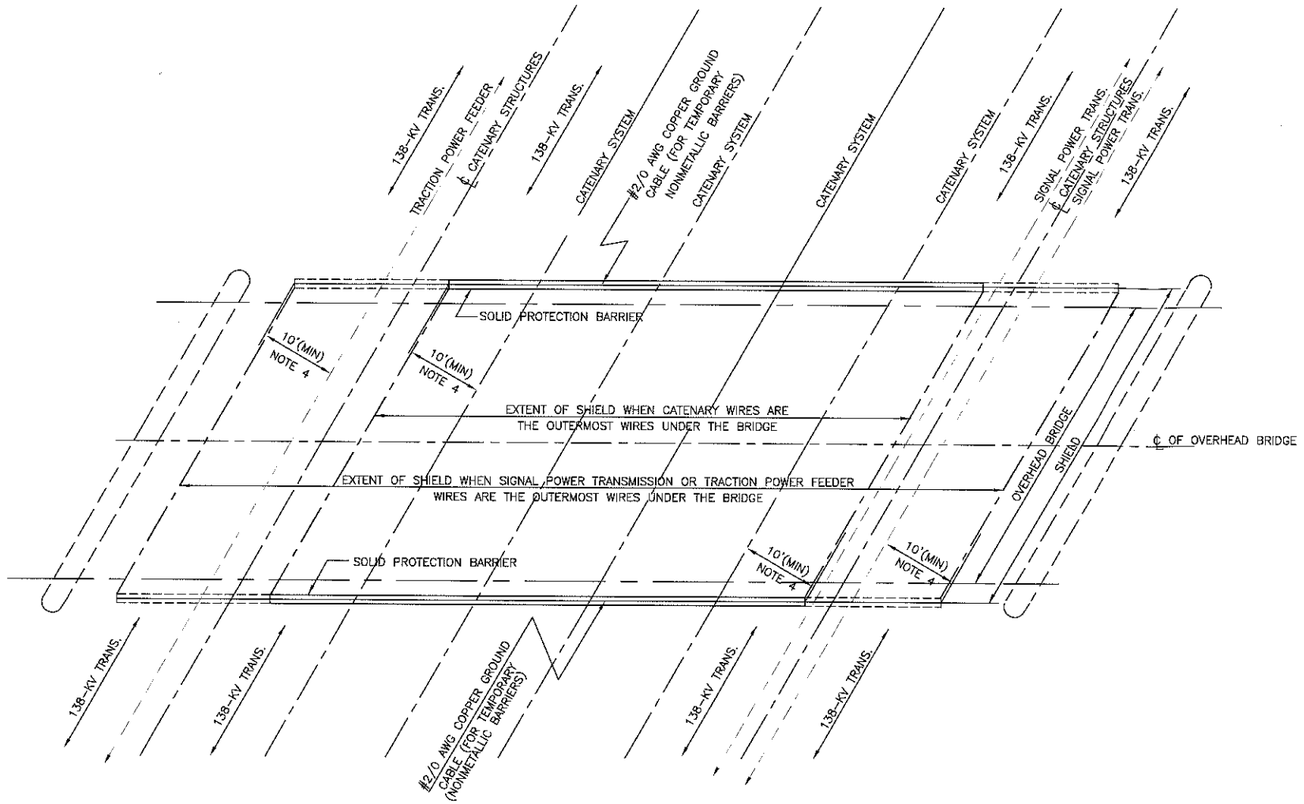
Design Load = 800 lbs./sq. ft. Test Load = 1,200 lbs./sq. ft. (Lateral)

Driveway, parking lot, and off-roadway applications subject to occasional non deliberate heavy vehicular traffic.

TIER 22 – Loading Requirements – Design Load -22,500 lbs. Test Load = 33,750 lbs. (Vertical)

Design Load = 800 lbs./sq. ft. Test Load = 1,200 lbs./sq. ft (Lateral)

Driveway, parking lot, and off-roadway applications subject to occasional non deliberate heavy vehicular traffic



PLAN
SCALE: 1"=10'-0"

GENERAL NOTES:

1 – TEMPORARY PROTECTION SHIELDS SHALL BE USED, WITH CERTAIN EXCEPTIONS, DURING DEMOLITION OF EXISTING BRIDGES OR ERECTION OF NEW BRIDGES IN ORDER THAT WORK ON THE BRIDGE STRUCTURE CAN PROCEED OVER THE ELECTRIFICATION FACILITIES WITHOUT REQUIRING DEENERGIZATION OF THE WIRES. ELECTRIFICATION FACILITIES SHALL BE DEENERGIZED DURING THE TIME THE STRUCTURAL FRAME AND THE TEMPORARY PROTECTION SHIELD ARE BEING ERECTED OVER OR NEAR THE WIRES. THE ABOVE WORK SHALL BE DONE UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.

IN CASES WHERE THERE IS INSUFFICIENT ELECTRICAL CLEARANCE BETWEEN THE WIRES AND THE BRIDGE STRUCTURE FOR ERECTION OF A SHIELD, ALL WORK OVER THE WIRES SHALL BE PERFORMED WITH THE WIRES DEENERGIZED AND UNDER THE PROTECTION OF A QUALIFIED RAILROAD EMPLOYEE.

IN CASES WHERE PRESTRESSED BEAMS ARE USED OR WHERE METALLIC FORMS BECOME A PART OF THE PERMANENT BRIDGE STRUCTURE, ERECTION MAY BE ABLE TO PROCEED WITHOUT A SHIELD, IN WHICH CASE ALL WORK OVER THE WIRES DURING ERECTION SHALL BE DONE WITH THE WIRES DEENERGIZED AND UNDER THE PROTECTION OF A QUALIFIED RAILROAD EMPLOYEE.

THE TEMPORARY BARRIER SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.

2 – DETAILS OF ANY PROPOSED SHIELD AND BARRIER SHALL BE SUBMITTED TO THE RAILROAD FOR APPROVAL, AND WORK ON ANY SHIELD OR BARRIER SHALL NOT BE STARTED BEFORE SUCH APPROVAL IS OBTAINED.

3 – THE TEMPORARY PROTECTION SHIELDS SHALL BE OF SOLID CONSTRUCTION (TONGUE AND GROOVE OR EQUAL) AND SHALL BE PROVIDED WITH A SOLID PROTECTION BARRIER HAVING A MINIMUM HEIGHT OF 6'-6" ABOVE THE SURFACE OF THE SIDEWALK OR CURB OF THE BRIDGE TO PROTECT WORKMEN AGAINST CONTACT WITH RAILROAD WIRES PASSING UNDER THE BRIDGE AND TO PREVENT DAMAGE TO THE WIRES.

4 – THE TEMPORARY PROTECTION SHIELD AND BARRIER SHALL EXTEND NOT LESS THAN 10 FEET BEYOND THE OUTERMOST RAILROAD WIRE PASSING UNDER THE BRIDGE MEASURED IN A HORIZONTAL PLANE AND NORMAL TO THE WIRE, AND SHALL PREVENT MATERIALS, AND DEBRIS, FROM FALLING ON OR CONTACTING THE WIRES.

5 – THE PROTECTION SHIELD SHALL BE DESIGNED FOR A MINIMUM LIVE LOAD OF 100 LBS. PER SQUARE FOOT. IF THE SHIELD IS TO SERVE AS A FORM OR IS TO CARRY ANY PART OF THE OVERHEAD STRUCTURE DURING ERECTION, IT SHALL BE DESIGNED FOR THE SUPERIMPOSED LOADS. IF THE SHIELD IS TO BE USED FOR PROTECTION DURING DEMOLITION OF AN OVERHEAD STRUCTURE, IT SHALL BE DESIGNED FOR A MINIMUM LIVE LOAD OF 100 LBS. PER SQUARE FOOT, OR A CONCENTRATED LIVE LOAD AT ANY POINT OF NOT LESS THAN 2,000 POUNDS.

6 – NONMETALLIC TEMPORARY PROTECTION BARRIERS SHALL BE PROVIDED WITH 2/0 AWG SIZE COPPER GROUND CABLE CONNECTED TO THE RAILROAD GROUND SYSTEM PER DETAIL "Y", THIS DRAWING. METALLIC BARRIERS SHALL BE BONDED AND GROUNDED BY A METHOD AND WITH MATERIALS APPROVED BY THE ELECTRIC TRACTION DEPARTMENT. THE RAILROAD SHALL INSTALL ALL GROUNDING MATERIALS.

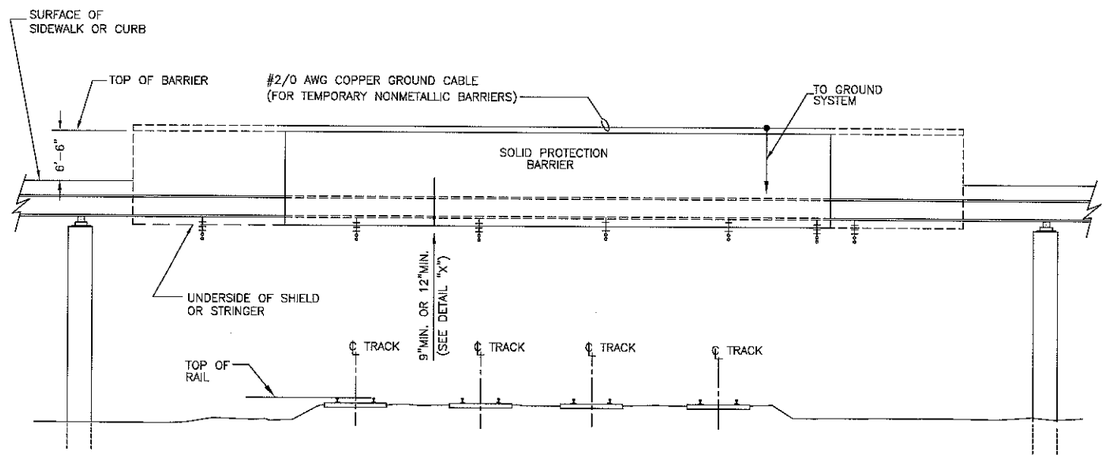
7 – TEMPORARY PROTECTION SHIELDS OF TIMBER CONSTRUCTION SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 12 INCHES TO THE RAILROAD WIRES. THE CORRESPONDING CLEARANCE TO STEEL CONSTRUCTION SHALL BE 9 INCHES.

8 – WHERE STRINGERS TRANSVERSE TO THE BRIDGE ARE USED, THE MINIMUM HORIZONTAL CLEARANCE BETWEEN STRINGERS AND RAILROAD WIRES SHALL BE 4 FEET AS SHOWN IN DETAIL "X".

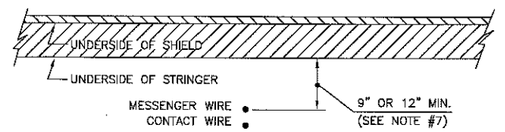
9 – TEMPORARY PROTECTION BARRIERS SHALL REMAIN IN PLACE AT LEAST UNTIL PERMANENT PROTECTION BARRIERS AND GROUNDING ARE COMPLETED.

10 – WHERE REQUIRED BY LOCAL CONDITIONS, THE ELECTRICAL CLEARANCES SHOWN ON THIS DRAWING MAY BE INCREASED BY THE ELECTRIC TRACTION DEPARTMENT.

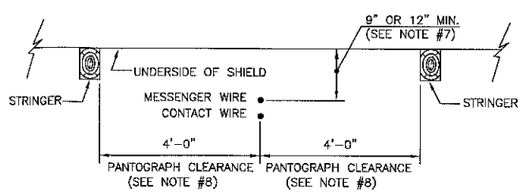
11 – ANY MODIFICATION OF THE ELECTRICAL REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.



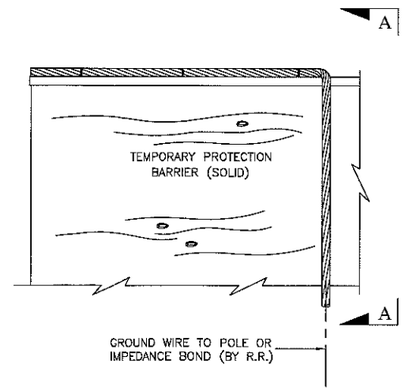
ELEVATION
SCALE: 1"=10'-0"



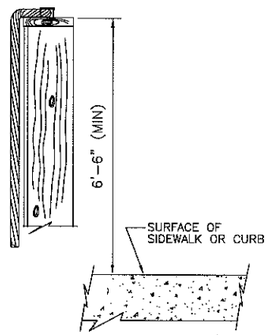
DETAIL "X"
STRINGERS LONGITUDINAL TO THE BRIDGE
NO SCALE



DETAIL "X"
STRINGERS TRANSVERSE TO THE BRIDGE
NO SCALE



DETAIL "Y"
APPLICATION OF GROUND CABLE TO TEMPORARY PROTECTION BARRIER
NO SCALE



SECTION "A-A"
NO SCALE

THIS DRAWING SUPERSEDES P.R.R. DRAWING ET-1447-D-2

No	Revisions	Date	By

AMTRAK

OFFICE OF
V.P., Chief Engineer
Engineering
National Railroad Passenger Corporation
30TH Street Station–Philadelphia, Pennsylvania 19104

Approved	Date
Chief Engineer Electric Traction – R. J. Verhelle	1/18/00
/S/	
Director Electric Traction Design – M. D. Insogna	1/18/00
/S/	

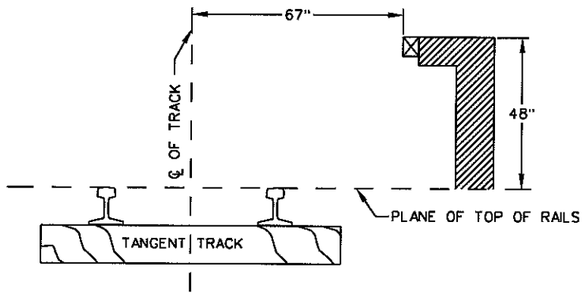
1" 0" 10" 20"
Scale: 1"= 10'-0"

E. T. STANDARD
ELECTRIFIED TERRITORY O.H. BRIDGES
TEMPORARY PROTECTION SHIELD & BARRIERS

Designed: DPT	Drawn: BJT	Checked: MDI	Date: 01-13-00

File No.:	3FF3B
Ref. No.:	ET-1447-D-2
Sheet No:	1 of 1

ET-1447-D

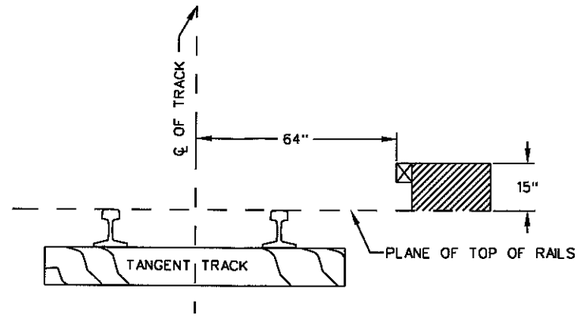


HIGH PASSENGER PLATFORM

DIMENSIONS LISTED ARE FOR TANGENT TRACK. PLATFORM DIMENSIONS MUST BE COMPENSATED FOR CURVATURE AND SUPER-ELEVATION IN ACCORDANCE WITH THE MW1000 REQUIREMENTS.

HIGH PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1°-40" OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1" WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.

HIGH PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ADJACENT TO TRACKS PROVIDING ACCESS FOR DIMENSIONAL LOAD SHIPMENTS OR STRACNET ROUTES WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.

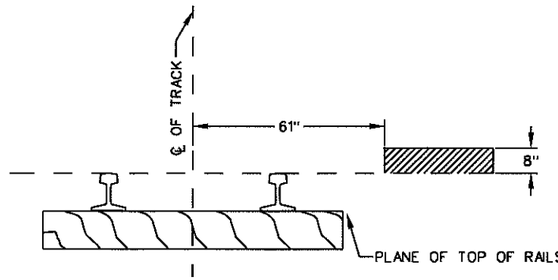


MID LOW PASSENGER PLATFORM

DIMENSIONS LISTED ARE FOR TANGENT TRACK. PLATFORM DIMENSIONS MUST BE COMPENSATED FOR CURVATURE AND SUPER-ELEVATION IN ACCORDANCE WITH THE MW1000 REQUIREMENTS.

64" DIMENSION TO BE USED ON PLATFORMS CONSTRUCTED ON TRACKS WHERE FREIGHT LOCOMOTIVES CAN AVOID PASSING THE PLATFORM.

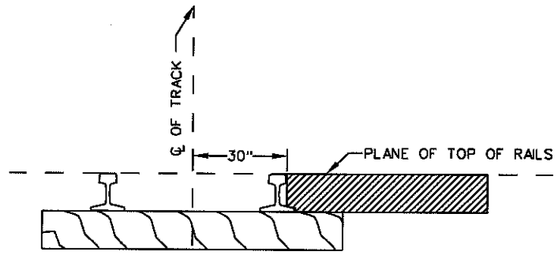
MID LOW PASSENGER PLATFORM MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1°-40" OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1" WITHOUT THE APPROVAL OF THE CHIEF ENGINEER.



LOW PASSENGER PLATFORM

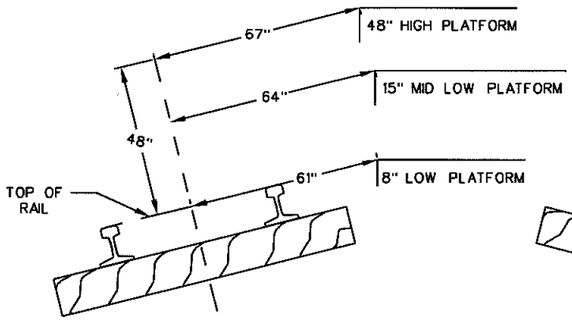
61" DIMENSION TO BE USED ON AMTRAK OWNED LINES. HOST RAILROAD MAY DETERMINE AN ALTERNATE STANDARD TO USE ON THEIR LINES

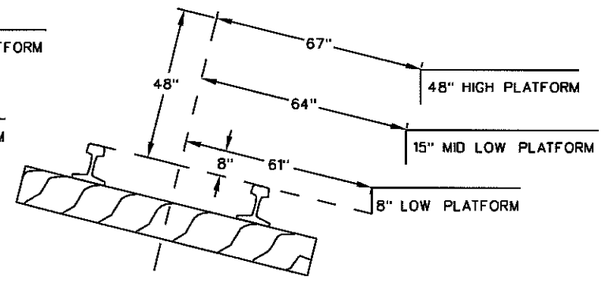
8" LOW PASSENGER PLATFORM WILL NOT BE COMPENSATED FOR CURVATURE UP TO 8°. FOR CURVATURE IN EXCESS OF 8°, LOW PLATFORM SHOULD BE DESIGNED AT TOP OF RAIL ELEVATION AND EXTENDED TO THE FIELD SIDE OF THE NEAR RAIL. CONSTRUCTION REQUIRES THE APPROVAL OF THE CHIEF ENGINEER.



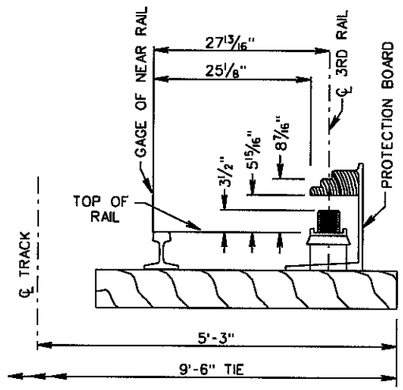
TOP OF RAIL PASSENGER PLATFORM

TOP OF RAIL PASSENGER PLATFORM MUST ONLY BE USED ON PLATFORM LOCATIONS WHERE THE CURVATURE EXCEEDS 8°, AND WITH THE APPROVAL OF THE CHIEF ENGINEER.

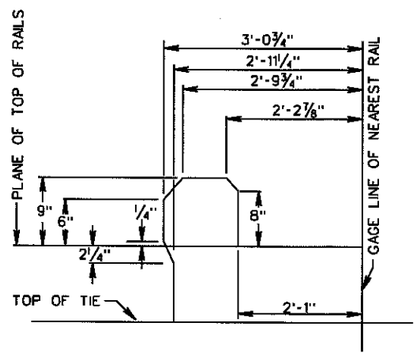




HORIZONTAL MEASUREMENTS FOR PLATFORM COMPENSATION FOR CROSSLEVEL



LOCATION OF OVER-RUNNING 3RD. RAIL, BRACKET AND PROTECTION BOARD.



CLEARANCE LIMITS OF THIRD RAIL STRUCTURE

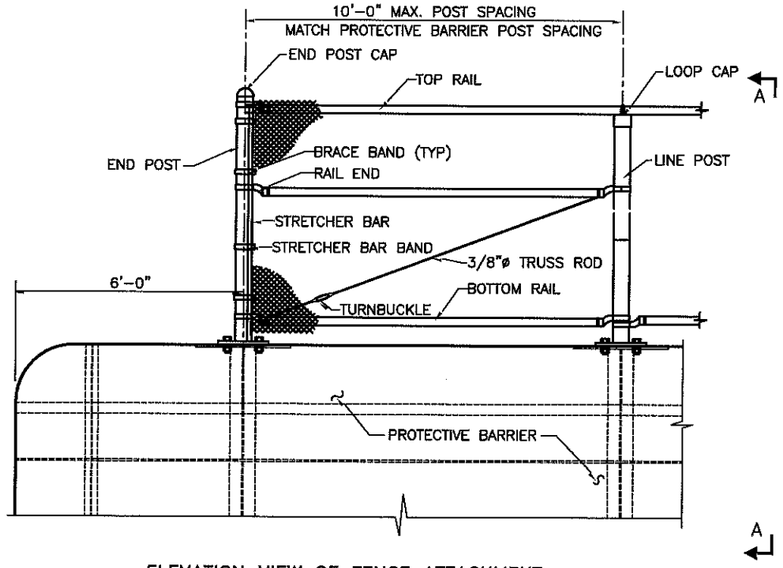
OFFICE OF THE
CHIEF ENGINEER OF TRACK

Phila., PA Date: August 1, 2016 Approved:

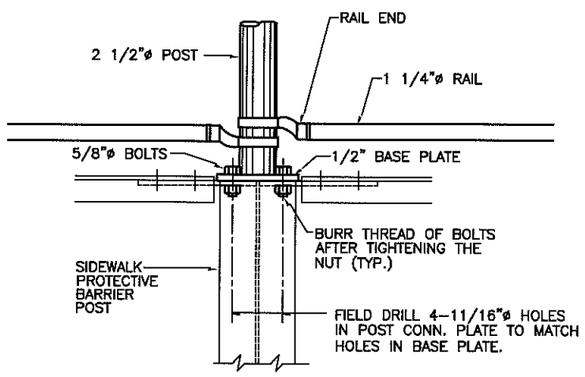
No.	Revisions	Date	By
08	ADDED SHEET 2	08-01-16	KJW

STANDARD TRACK PLAN
MINIMUM ROADWAY CLEARANCES

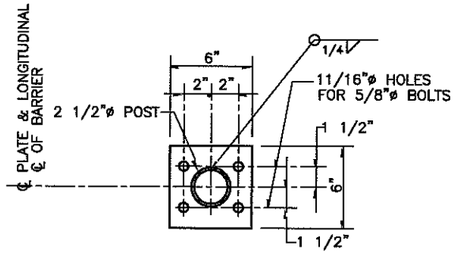
Designed: Amtrak | Drawn: TDI-SLC | Checked: MT | Date: 08-01-16 | Dwg. No.: 70050.002.08



ELEVATION VIEW OF FENCE ATTACHMENT
NO SCALE



SECTION B-B
NO SCALE



BASE PLATE DETAIL
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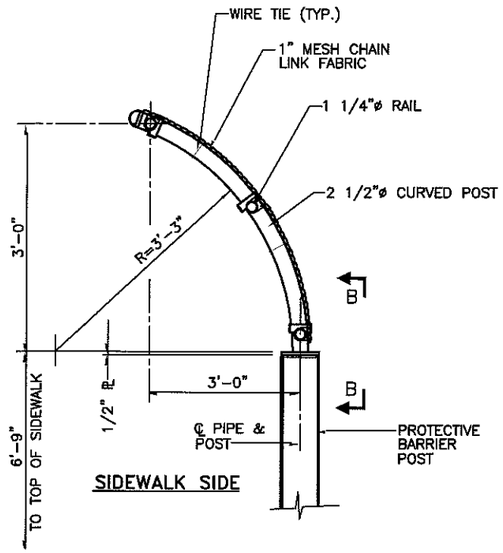


SECTION A-A
NO SCALE

NOTE

- BASE PLATE MATERIAL SHALL CONFORM TO ASTM SPECIFICATION A709, GRADE 36, LATEST ISSUE. (GALVANIZED)
- POST SHALL BE 2 1/2"ø STANDARD WEIGHT PIPE. (GALVANIZED)
- RAIL SHALL BE 1 1/4"ø STANDARD WEIGHT PIPE. (GALVANIZED)
- CHAIN-LINK FENCE FABRIC SHALL BE NO. 9 GAGE, ALUMINUM COATED, 1" MESH SIZE, DIAMOND SHAPED.
- WIRE TIES SHALL BE STANDARD NO. 9 GAGE WIRE FOR RAILS & NO. 6 GAGE WIRE FOR POSTS. (ALUMINUM COATED)
- BOLTS SHALL BE 5/8"ø STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A325, LATEST ISSUE.
- MATERIAL BASED ON PADOT BC-701.
- ALL WELDING SHALL CONFORM TO STRUCTURAL WELDING CODE AWS D1.5, LATEST EDITION. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. ALL WELDERS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS STRUCTURAL WELDING CODE.
- ALL GALVANIZING SHALL CONFORM TO ASTM SPECIFICATION A123, LATEST ISSUE.

SP3002.DWG

Plot Scale: 1/4"

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Phila., PA | Date: 04/03/2000 | Approved: J. S. RICHTER

No.	Revisions	Date	By

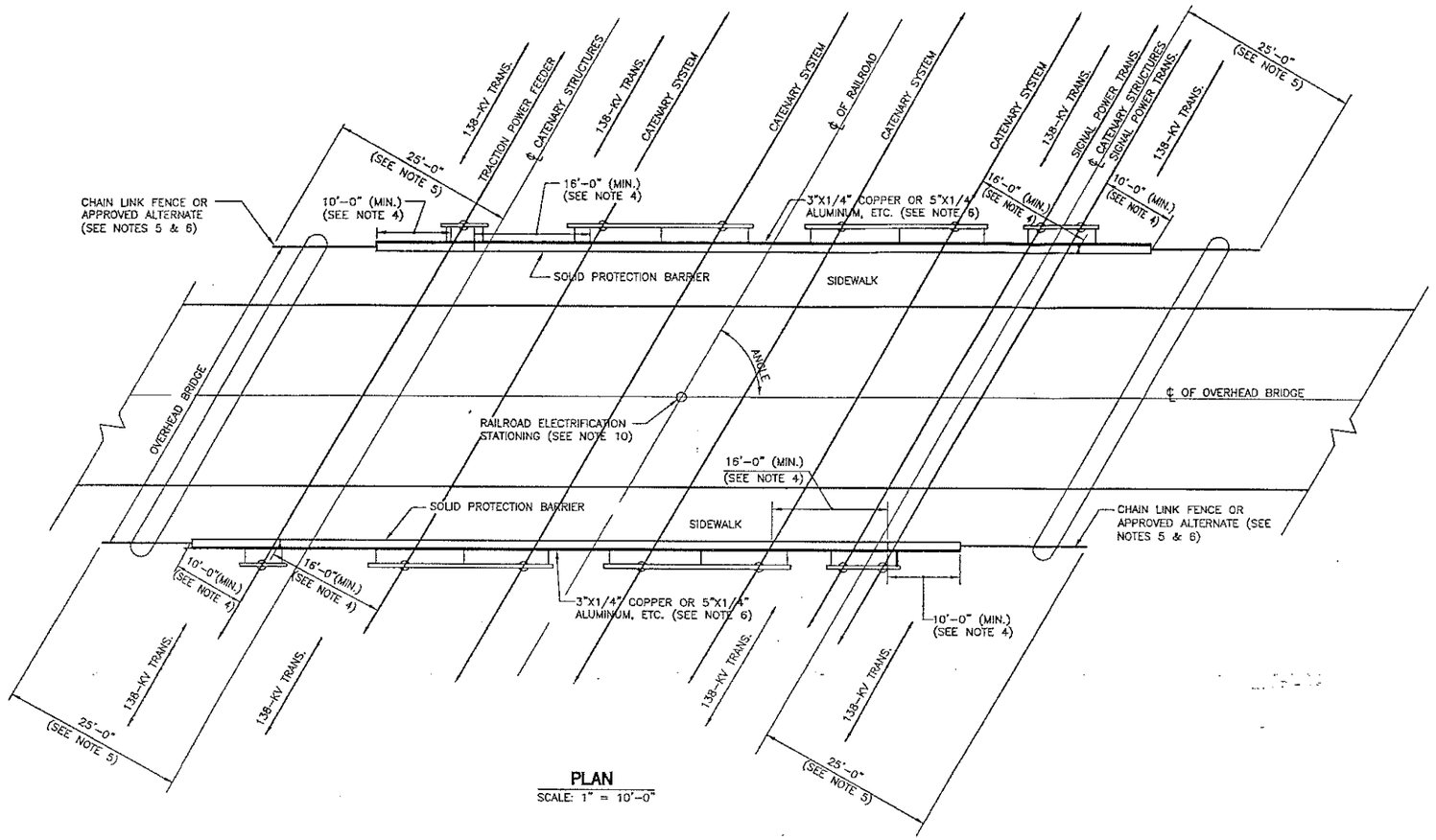
STANDARD STRUCTURES PLAN

CURVED PROTECTIVE FENCE

Designed: VMK | Drawn: JLM | Checked: VMK | Date: 04-27-98

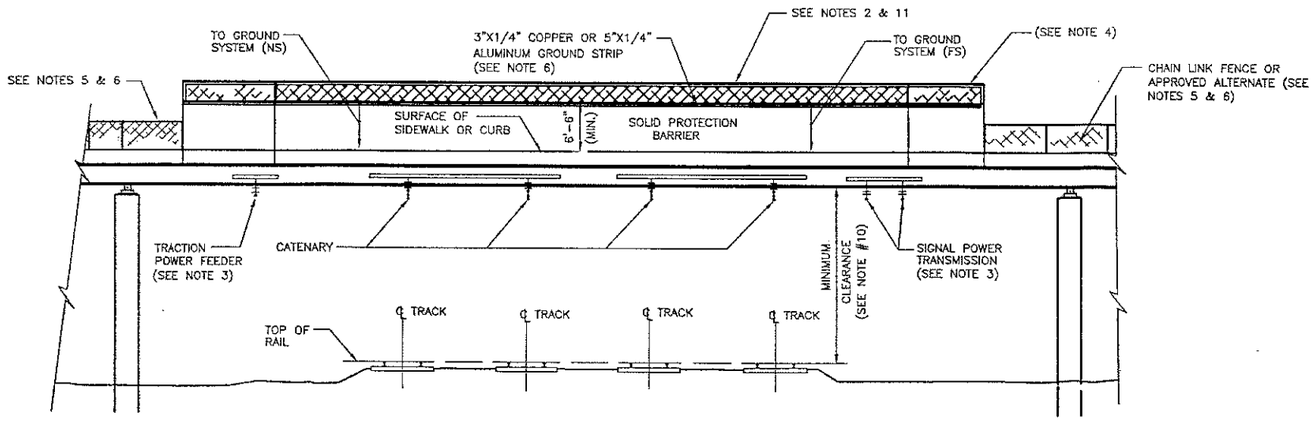
Dwg. No. SP3002

Sheet No. 1OF 1



PLAN

SCALE: 1" = 10'-0"



ELEVATION

SCALE: 1" = 10'-0"

GENERAL NOTES:

1. ANY MODIFICATION OF THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.
2. OVERHEAD BRIDGES SHALL BE PROVIDED WITH 6'-6" HIGH SOLID PROTECTION BARRIERS ABOVE THE SURFACE OF THE SIDEWALK OR CURB TO PROTECT PEDESTRIANS AGAINST CONTACT WITH RAILROAD WIRES PASSING UNDER THE BRIDGE AND TO PREVENT DAMAGE TO THE WIRES. WHERE A WALKWAY EXISTS ON THE BRIDGE A CURVED FENCE SHALL BE INSTALLED ON TOP OF THE SOLID BARRIER OVER IT'S ENTIRE LENGTH. WHERE NO WALKWAY EXISTS THE FENCE SHALL BE STRAIGHT, (SEE SHEET 2 OF 2).
3. NORMALLY THE SIGNAL POWER TRANSMISSION WIRES AND THE TRACTION POWER FEEDER WIRES ARE LOCATED ABOVE THE BRIDGE. FOR THE ALTERNATE POSITION OF THESE WIRES UNDER THE BRIDGE, THE PROTECTIVE BARRIER SHALL EXTEND AS SPECIFIED IN NOTE NO.4.
4. THE PROTECTION BARRIER SHALL EXTEND AT LEAST 16 FEET BEYOND THE POINT AT WHICH ANY CATENARY WIRE PASSES UNDER THE BRIDGE; HOWEVER, THE MINIMUM DISTANCE FROM THE END OF THE PROTECTION BARRIER MEASURED TO A POINT OUTSIDE THE BRIDGE AND NORMAL TO THE WIRE SHALL BE 15 FEET.
   THE PROTECTION BARRIER SHALL EXTEND AT LEAST TEN (10) FEET BEYOND THE POINT AT WHICH A SIGNAL POWER OR TRACTION POWER FEEDER WIRE PASSES UNDER THE BRIDGE; THE MINIMUM DISTANCE FROM THE END OF THE PROTECTION BARRIER MEASURED TO A POINT OUTSIDE THE BRIDGE AND NORMAL TO THE WIRE SHALL BE TEN (10) FEET.
5. WHERE HIGH VOLTAGE WIRES PASS OVER THE BRIDGE, A CHAIN LINK FENCE OR SUITABLE ALTERNATIVE, CAPABLE OF BEING ELECTRICALLY BONDED TO THE BARRIER AND RAIL RETURN SYSTEM, SHALL EXTEND FROM THE END OF THE SOLID BARRIER TO A POINT 25 FEET BEYOND AND NORMAL TO THE CENTERLINE OF THE STRUCTURES SUPPORTING THE WIRES ON EITHER SIDE OF THE BRIDGE.
6. NONMETALLIC BARRIERS SHALL BE PROVIDED WITH GROUND STRIPS, EITHER 3" X 1/4" COPPER OR 5" X 1/4" ALUMINUM. OTHER MATERIALS MAY BE USED SUBJECT TO THE APPROVAL OF THE ELECTRIC TRACTION DEPARTMENT. METALLIC BARRIERS SHALL BE BONDED AND GROUNDED BY A METHOD AND WITH MATERIALS APPROVED BY THE ELECTRIC TRACTION DEPARTMENT.
7. PROTECTION BARRIERS SHALL BE GROUNDED IN ACCORDANCE WITH DRAWING ET-1120-C, TYPICAL DETAILS FOR POWER BONDING OF STRUCTURES.
8. OVERHEAD BRIDGES WITH OPEN-FLOOR CONSTRUCTION REQUIRE SPECIAL PROTECTION. THE DESIGN OF THE PROPOSED PROTECTION SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.
9. WHERE LOCAL CONDITIONS WARRANT, THE DIMENSIONS SHOWN ON THIS DRAWING MAY BE MODIFIED WITH THE APPROVAL OF THE ELECTRIC TRACTION DEPARTMENT.
10. DESIGN DRAWINGS OF THE OVERHEAD BRIDGE SHALL SHOW MINIMUM CLEARANCE, ANGLE, AND RAILROAD ELECTRIFICATION STATIONING AS INDICATED ON THIS DRAWING.
11. (a) EXISTING PROTECTION BARRIERS ON BRIDGES OVER ELECTRIFIED TRACKS IN CLASS EIGHT (8) TERRITORY (GREATER THAN 125 MPH) WHERE THERE'S A DEMONSTRATED NEED SHALL BE RETROFITTED WITH THE CURVED OR STRAIGHT FENCE OVER THEIR ENTIRE LENGTH.

    (b) A 9'-6" HIGH CHAIN LINK FENCE SHALL EXTEND FROM THE END OF THE SOLID PROTECTION BARRIER TO A POINT 16 FEET BEYOND THE CENTERLINE OF THE OUTERMOST ELECTRIFIED TRACK AS SPECIFIED IN NOTE FOUR (4) ABOVE. THE FENCE SHALL BE CURVED OR STRAIGHT PER NOTE (2).

AMTRAK-ET-1446-D-51.dwg SH 1 OF 2 - BJT - Plot @ 1:120

No	Revisions	Date	By

Amtrak®

OFFICE OF
V.P., Chief Engineer
Engineering
National Railroad Passenger Corporation
30TH Street Station-Philadelphia, Pennsylvania 19104

Approved	Date
Chief Engineer Electric Traction - R. J. Verhelle /S/	6/7/99
Director Electric Traction Design - M. B. Insogna /S/	6/7/99

10" 0" 10" 20"
Scale: 1"= 10'-0"

THIS DRAWING SUPERSEDES P.R.R. DRAWING ET-1446-D-4

E.T. STANDARD
ELECTRIFIED TERRITORY O.H. BRIDGES
TYPICAL PROTECTION BARRIER

File No.:	3FF3B
Ref. No.:	ET-1446-D-4
Sheet No:	1 of 2

ET-1446-D

Designed: MDI | Drawn: BJT | Checked: MDI | Date: 05-07-99

CABLE DUCT, TROUGH AND INCLOSURE
TIERS & STATIC WHEEL LOAD RATINGS

If work shall be done on AMTRAK property that involves heavy trucks, equipment, or machinery along the right of way, duct lines and pull boxes shall be inspected to insure they can withhold the appropriate weight.

Application Tiers & Static Vertical Wheel Load Ratings per

ANSI/SCTE 77 2010 "Specification for Underground Enclosure Integrity"

TIER 5 - Loading Requirements - Design Load = 5,000 lbs. Test Load = 7,500 lbs. (Vertical)

Design Load = 600 lbs. /sq. ft. Test Load = 900 lbs./sq. ft. (Lateral)

Sidewalk applications with a safety factor for occasional non-deliberate vehicular traffic.

TIER 8 – Loading Requirements – Design Load = 8000 lbs. Test Load = 12,000 lbs. (Vertical)

Design Load = 600 lbs. /sq. ft. Test Load = 900 lbs./sq. ft. (Lateral)

Sidewalk applications with a safety factor for non-deliberate vehicular traffic.

TIER 15 – Loading Requirements - Design Load = 15,000 lbs. Test Load = 22,500 lbs. (Vertical)

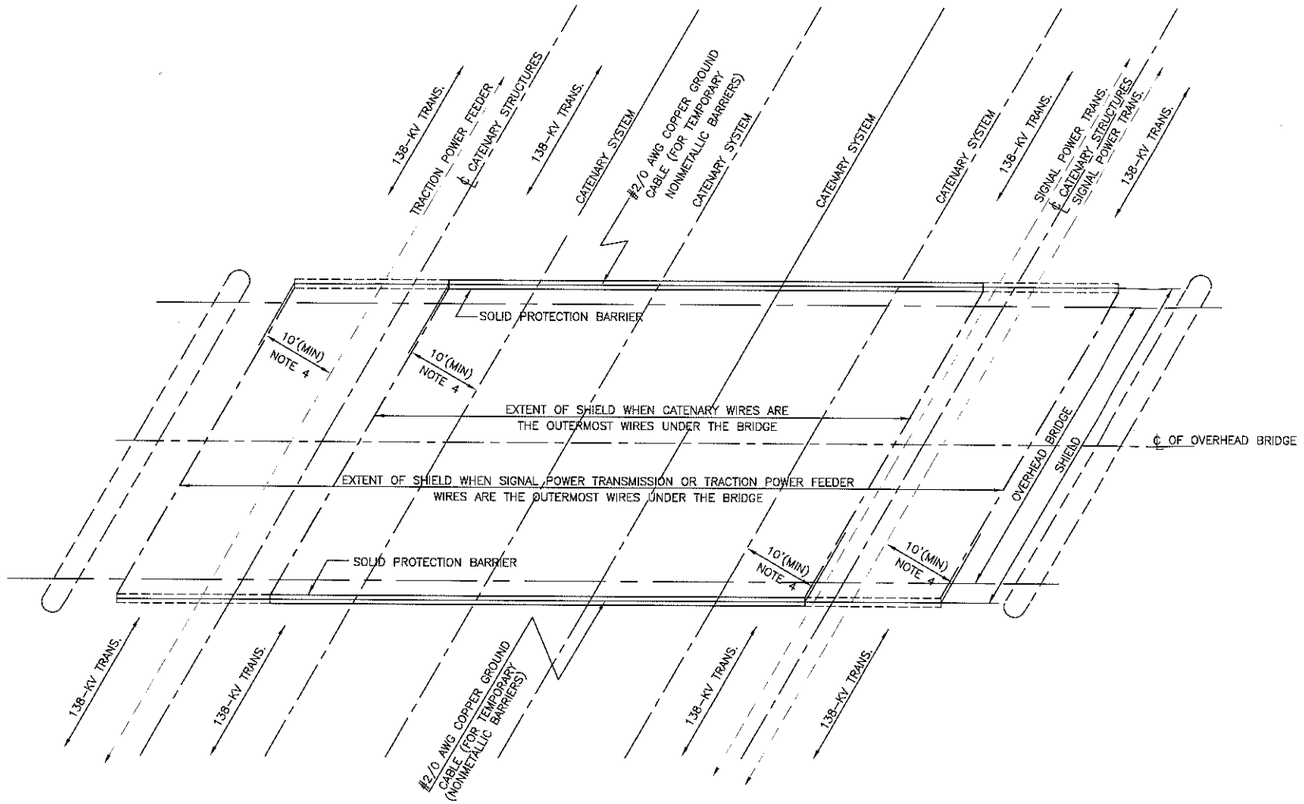
Design Load = 800 lbs./sq. ft. Test Load = 1,200 lbs./sq. ft. (Lateral)

Driveway, parking lot, and off-roadway applications subject to occasional non deliberate heavy vehicular traffic.

TIER 22 – Loading Requirements – Design Load -22,500 lbs. Test Load = 33,750 lbs. (Vertical)

Design Load = 800 lbs./sq. ft. Test Load = 1,200 lbs./sq. ft (Lateral)

Driveway, parking lot, and off-roadway applications subject to occasional non deliberate heavy vehicular traffic



PLAN
SCALE: 1"=10'-0"

GENERAL NOTES:

1 – TEMPORARY PROTECTION SHIELDS SHALL BE USED, WITH CERTAIN EXCEPTIONS, DURING DEMOLITION OF EXISTING BRIDGES OR ERECTION OF NEW BRIDGES IN ORDER THAT WORK ON THE BRIDGE STRUCTURE CAN PROCEED OVER THE ELECTRIFICATION FACILITIES WITHOUT REQUIRING DEENERGIZATION OF THE WIRES. ELECTRIFICATION FACILITIES SHALL BE DEENERGIZED DURING THE TIME THE STRUCTURAL FRAME AND THE TEMPORARY PROTECTION SHIELD ARE BEING ERECTED OVER OR NEAR THE WIRES. THE ABOVE WORK SHALL BE DONE UNDER THE DIRECTION OF A QUALIFIED RAILROAD EMPLOYEE.

IN CASES WHERE THERE IS INSUFFICIENT ELECTRICAL CLEARANCE BETWEEN THE WIRES AND THE BRIDGE STRUCTURE FOR ERECTION OF A SHIELD, ALL WORK OVER THE WIRES SHALL BE PERFORMED WITH THE WIRES DEENERGIZED AND UNDER THE PROTECTION OF A QUALIFIED RAILROAD EMPLOYEE.

IN CASES WHERE PRESTRESSED BEAMS ARE USED OR WHERE METALLIC FORMS BECOME A PART OF THE PERMANENT BRIDGE STRUCTURE, ERECTION MAY BE ABLE TO PROCEED WITHOUT A SHIELD, IN WHICH CASE ALL WORK OVER THE WIRES DURING ERECTION SHALL BE DONE WITH THE WIRES DEENERGIZED AND UNDER THE PROTECTION OF A QUALIFIED RAILROAD EMPLOYEE.

THE TEMPORARY BARRIER SHALL BE INSTALLED WHETHER OR NOT A TEMPORARY SHIELD IS USED.

2 – DETAILS OF ANY PROPOSED SHIELD AND BARRIER SHALL BE SUBMITTED TO THE RAILROAD FOR APPROVAL, AND WORK ON ANY SHIELD OR BARRIER SHALL NOT BE STARTED BEFORE SUCH APPROVAL IS OBTAINED.

3 – THE TEMPORARY PROTECTION SHIELDS SHALL BE OF SOLID CONSTRUCTION (TONGUE AND GROOVE OR EQUAL) AND SHALL BE PROVIDED WITH A SOLID PROTECTION BARRIER HAVING A MINIMUM HEIGHT OF 6'-6" ABOVE THE SURFACE OF THE SIDEWALK OR CURB OF THE BRIDGE TO PROTECT WORKMEN AGAINST CONTACT WITH RAILROAD WIRES PASSING UNDER THE BRIDGE AND TO PREVENT DAMAGE TO THE WIRES.

4 – THE TEMPORARY PROTECTION SHIELD AND BARRIER SHALL EXTEND NOT LESS THAN 10 FEET BEYOND THE OUTERMOST RAILROAD WIRE PASSING UNDER THE BRIDGE MEASURED IN A HORIZONTAL PLANE AND NORMAL TO THE WIRE, AND SHALL PREVENT MATERIALS, AND DEBRIS, FROM FALLING ON OR CONTACTING THE WIRES.

5 – THE PROTECTION SHIELD SHALL BE DESIGNED FOR A MINIMUM LIVE LOAD OF 100 LBS. PER SQUARE FOOT. IF THE SHIELD IS TO SERVE AS A FORM OR IS TO CARRY ANY PART OF THE OVERHEAD STRUCTURE DURING ERECTION, IT SHALL BE DESIGNED FOR THE SUPERIMPOSED LOADS. IF THE SHIELD IS TO BE USED FOR PROTECTION DURING DEMOLITION OF AN OVERHEAD STRUCTURE, IT SHALL BE DESIGNED FOR A MINIMUM LIVE LOAD OF 100 LBS. PER SQUARE FOOT, OR A CONCENTRATED LIVE LOAD AT ANY POINT OF NOT LESS THAN 2,000 POUNDS.

6 – NONMETALLIC TEMPORARY PROTECTION BARRIERS SHALL BE PROVIDED WITH 2/0 AWG SIZE COPPER GROUND CABLE CONNECTED TO THE RAILROAD GROUND SYSTEM PER DETAIL "Y", THIS DRAWING. METALLIC BARRIERS SHALL BE BONDED AND GROUNDED BY A METHOD AND WITH MATERIALS APPROVED BY THE ELECTRIC TRACTION DEPARTMENT. THE RAILROAD SHALL INSTALL ALL GROUNDING MATERIALS.

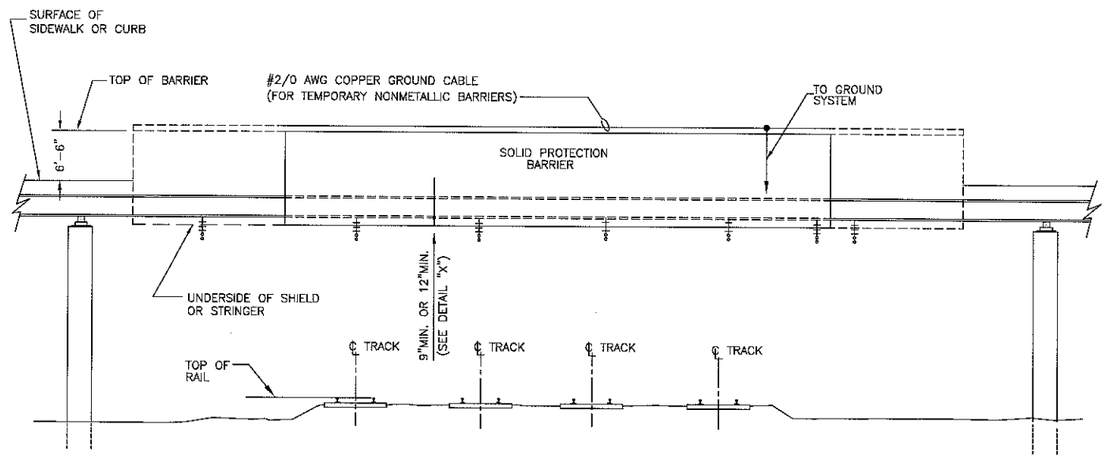
7 – TEMPORARY PROTECTION SHIELDS OF TIMBER CONSTRUCTION SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 12 INCHES TO THE RAILROAD WIRES. THE CORRESPONDING CLEARANCE TO STEEL CONSTRUCTION SHALL BE 9 INCHES.

8 – WHERE STRINGERS TRANSVERSE TO THE BRIDGE ARE USED, THE MINIMUM HORIZONTAL CLEARANCE BETWEEN STRINGERS AND RAILROAD WIRES SHALL BE 4 FEET AS SHOWN IN DETAIL "X".

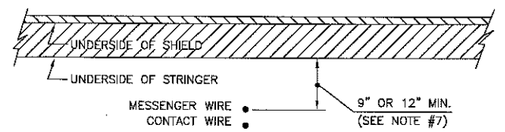
9 – TEMPORARY PROTECTION BARRIERS SHALL REMAIN IN PLACE AT LEAST UNTIL PERMANENT PROTECTION BARRIERS AND GROUNDING ARE COMPLETED.

10 – WHERE REQUIRED BY LOCAL CONDITIONS, THE ELECTRICAL CLEARANCES SHOWN ON THIS DRAWING MAY BE INCREASED BY THE ELECTRIC TRACTION DEPARTMENT.

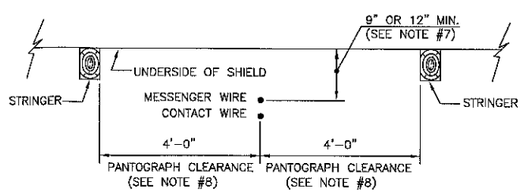
11 – ANY MODIFICATION OF THE ELECTRICAL REQUIREMENTS SHOWN ON THIS DRAWING SHALL BE SUBMITTED TO THE ELECTRIC TRACTION DEPARTMENT FOR APPROVAL.



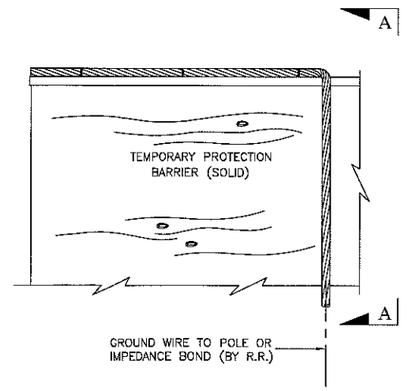
ELEVATION
SCALE: 1"=10'-0"



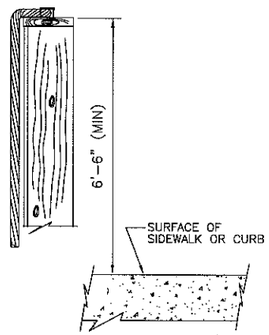
DETAIL "X"
STRINGERS LONGITUDINAL TO THE BRIDGE
NO SCALE



DETAIL "X"
STRINGERS TRANSVERSE TO THE BRIDGE
NO SCALE



DETAIL "Y"
APPLICATION OF GROUND CABLE TO TEMPORARY PROTECTION BARRIER
NO SCALE



SECTION "A-A"
NO SCALE

THIS DRAWING SUPERSEDES P.R.R. DRAWING ET-1447-D-2

No	Revisions	Date	By

AMTRAK

OFFICE OF
V.P., Chief Engineer
Engineering
National Railroad Passenger Corporation
30TH Street Station–Philadelphia, Pennsylvania 19104

Approved	Date
Chief Engineer Electric Traction – R. J. Verhelle	1/18/00
/S/	
Director Electric Traction Design – M. D. Insogna	1/18/00
/S/	

1" 0" 10" 20"
Scale: 1"= 10'-0"

E. T. STANDARD
ELECTRIFIED TERRITORY O.H. BRIDGES
TEMPORARY PROTECTION SHIELD & BARRIERS

Designed: DPT	Drawn: BJT	Checked: MDI	Date: 01-13-00

File No.:	3FF3B
Ref. No.:	ET-1447-D-2
Sheet No:	1 of 1

ET-1447-D

NATIONAL RAILROAD PASSENGER CORPORATION

ELECTRIFIED TERRITORY

Specification No. 16064

Issued December 28, 2012

Philadelphia, PA

SPECIFICATION FOR EQUIPMENT AND VEHICLE GROUNDING NEAR ENERGIZED OVERHEAD WIRES

CONTENTS

SECTION **PAGE NO.**

NATIONAL RAILROAD PASSENGER CORPORATION

SPECIFICATION FOR EQUIPMENT AND VEHICLE GROUNDING NEAR ENERGIZED OVERHEAD WIRES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including National Railroad Passenger Corporation (Amtrak) "General Provisions for Construction Contracts" (General Provisions) and Supplementary General Provisions and other Division 1 Specification Sections, apply to this Section.

B. Amtrak Electric Traction Standard Operating Instructions/Procedures/Drawings
   1. AMT-2, Electrical Operating Instructions
   2. Standard Operating Instruction 11 - Electrical Clearance Procedures
   3. Standard Operating Instruction 12 - Approved Temporary Ground Clamps for Use In Electrified Territory
   4. Amtrak employees will utilize two different documents:
      a. For Amtrak Electric Traction employees: Standard Operating Instruction 213 - Roadway Machinery and Construction Equipment Grounding in Electrified Territory.
      b. For all other Amtrak employees: Engineering Practice Specification for Roadway Machinery and Construction Equipment Grounding in Electrified Territory.
      c. Both of these documents shall be used interchangeably within this document.
   5. Amtrak Vehicle Grounding Drawings; AET-1001 through AET – 1010.

C. Appendices which are included for issue to contractors and vendors:
   1. Annual Vehicle and Equipment Safety Grounding Evaluation Form.
   2. Amtrak Vehicle Grounding Drawings; AET-1001 through AET – 1010.

1.2 SUMMARY

A. In general, Vehicle and Equipment Grounding and Bonding (G&B) systems are intended to ensure safety and to protect all personnel, overhead wires and the associated equipment in the event of accidental contact with energized overhead lines. The grounding and bonding system shall be comprised of bare or insulated (600V class) cables and associated grounding clamps and connectors that create a complete low-resistance path to ground, as required and specified on the related drawings. The resistance of the path between the potential contact area of the vehicle and return circuit shall not exceed 10 ohms.

NATIONAL RAILROAD PASSENGER CORPORATION

SPECIFICATION FOR EQUIPMENT AND VEHICLE GROUNDING NEAR ENERGIZED OVERHEAD WIRES

B. The purpose of this document is to specify the grounding and bonding requirements and related safety requirements for Construction Machines, Mobile Vehicles and Construction Equipment utilized for maintenance and construction work near overhead energized wires.
   1. This specification shall apply to any vehicle or equipment which can extend into close proximity to energized overhead electric lines.
   2. G&B components shall be permanently installed on vehicle components which can be contacted by operators and others while operating within the vicinity of energized overhead electric lines. Sections which are beyond the reach of operators and others (e.g. farthest boom sections of cranes) need not be bonded.

C. This specification is intended to serve three functions related to vehicle and equipment Grounding and Bonding (G&B) in the vicinity of energized overhead wires:
   1. Provide requirements and guidance to contractors working on Amtrak projects:
      a. Temporary G&B connections between the equipment and the return rail (system ground when working outside electrified territory) when working in the proximity of overhead energized lines.
      b. Permanently installed G&B measures on contractor equipment. All contractor equipment and vehicles shall be properly equipped with bonds, cables and connections as noted herein and within reference documents.
   2. Provide requirements and guidance to Amtrak employees related to:
      a. Maintenance and periodic testing requirements for G&B components that are permanently installed on vehicles and equipment.
      b. Temporary G&B connections between the equipment and the return rail (system ground when working outside electrified territory) when working in the proximity of overhead energized lines.
      c. Permanently installed G&B measures on contractor equipment. All contractor equipment and vehicles shall be properly equipped with bonds, cables and connections as noted herein and within reference documents.
   3. Provide requirements and guidance to vendors supplying equipment and vehicles to Amtrak:
      a. Vendors shall install and test G&B components, as specified herein, on all new and rental vehicles and equipment.

D. Contractor shall follow Amtrak safety rules and policies at all times.

E. All employees, Amtrak and contractor, shall participate in the daily safety briefing and the Contractor shall ensure the following:
   1. Contractor employees participate in Amtrak Contractor Safety Training Class and wear badge while onsite.
   2. Contractor employees participate in an Employee Job briefing in association with Amtrak's authorized personnel.

3. All worksite personnel are equipped with and wear Amtrak approved personal protective equipment (PPE).
4. Worksite personnel shall not foul any track unless they have permission from the Authorized Amtrak employee in charge at the job site.
5. Appropriate ET protection is in place for work in the vicinity of overhead conductors. High voltage conductors and equipment shall always be considered energized until protective grounds are installed by Amtrak authorized representative.
6. For work which is within the vicinity of overhead lines that are not owned by Amtrak, contractors or Amtrak employees (where applicable) shall contract the local utility (or owner) and comply with local "Proximity Act" rules and requirements.
7. Approved barriers shall be provided when the work requires the placement of material or equipment within the restricted zone.
8. All employees are informed of hazards and associated protective measures.

F. In the event a vehicle (equipment) comes into contact with an energized overhead wire, the equipment shall be taken out of service until a visual and resistance measurement tests are performed and performance requirements satisfied.

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings prepared by or under the supervision of a professional engineer for equipment and vehicle grounding systems.
1. The Contractor/Vendor shall submit details of all the grounding and bonding materials and associated components indicating their specific intent.
2. The submittals shall also include sketches on each equipment/machine grounding and bonding detail.
3. Written approval shall not relieve the Contractor of its complete responsibility for the adequacy and safety of the operations.
4. Equipment suppliers shall provide cut sheets for all installed G&B materials as well as test results.
5. Contractors, whose employees will be working in the vicinity of overhead energized lines, will provide test results for all equipment and vehicles.

PART 2 - PRODUCTS

2.1 AMTRAK OWNED AND RENTED EQUIPMENT AND VEHICLES

A. This section details requirements for vendors providing rental or purchased vehicles and equipment to Amtrak.

B. Suppliers shall provide equipment or vehicles with permanent bonds, connectors, clamps and all other materials (shown on typical drawings and related documents) sufficient to demonstrate a measured resistance path of 10 ohms or less from all components ten feet above the highest platform an operator can reach to the connection point for the grounding cable

C. Amtrak fleet maintenance personnel shall maintain equipment and vehicle bonds, connectors, clamps and all other materials sufficiently to maintain a maximum resistance of 10 ohms across all bonded components to the return (or ground connection).

D. Amtrak fleet maintenance personnel shall provide all labels and safety warnings for installation by vehicle and equipment suppliers.

E. Hardware
1. All materials and components shall be provided in accordance with Amtrak Standard Operating Instruction No.12, Approved Temporary Ground Clamps for use in electrified territory, and Standard Operating Instruction 213 - Roadway Machinery and Construction Equipment Grounding in Electrified Territory.
2. Grounding and bonding conductors shall be of 4/0 AWG, 600V flexible copper cable (welding cable), unless otherwise indicated on the drawings. Cable assemblies shall meet ASTM F-855 –"Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment." or an Amtrak Approved equal.
3. Grounding clamps, ferrules, threaded stud type terminals, nuts and washers shall be of copper or silicon bronze to suit the cable size and specific requirement of the equipment and ground connections. The grounding clamps shall comply with ASTM F-855.
4. Size and type of exothermic welds, where required, shall be per manufacturer's recommendations.

F. Warning Placards
1. Refer to Section 3.4 for all information regarding warning labels and placards.

2.2 CONTRACTOR OWNED EQUIPMENT AND VEHICLES

A. Contractor owned vehicles equipment shall comply with all hardware requirements of Articles 2.1.A & 2.1.B of this specification and related documents.

B. Contractor personnel shall maintain a maximum 10 ohm path across all bonded components to the return or ground connection.

C. Refer to Section 3.4 for all information regarding warning labels and placards.

PART 3 - EXECUTION

3.1 GENERAL

A. It shall be the responsibility of the equipment operator to ensure equipment is properly grounded and perform a visual inspection of all grounding equipment, bonds and connections prior to operating in the vicinity of overhead lines.

B. The Contractors and Sub-Contractors and their personnel, shall adhere to the same Amtrak Safety requirements as the Amtrak employees when working at site.

C. No employees or equipment shall be permitted to work within minimum approach distance of Amtrak owned overhead wires of electrified tracks except when protected by a Class "A" employee of the Railroad.

D. Employees shall not work within the vicinity of overhead lines which are not owned by Amtrak without contacting the Owner (typically a utility) and working in compliance with local "Proximity Act" requirements.

E. It is the intent of this specification section and the associated drawings to provide general guidelines to enable qualified workers a means to install appropriate bonding for most situations. In the event conditions are not clear and or uncertainty develops, employees must contact appropriate engineering or ET personnel for clarification.

3.2 INSTALLATION GUIDELINES

A. General Guidelines for permanently mounted grounding equipment

1. When mobile cranes, crawler cranes, power shovels, pile drivers, dump trucks, boom trucks, bucket trucks, articulated light standards, digger derricks and similar machines are used in proximity of the overhead electrification wires or equipment, the aerial devices and the support frame of the machine shall be properly grounded as follows: (Note that hot-line work is not permitted on Amtrak's overhead electrical equipment.)
    a. Boom sections (within reach of operator and others in the vicinity) and the supporting frame shall be bonded together with a 600V insulated 4/0 AWG copper cable with suitable grounding clamps or threaded stud type terminals. The surfaces used for clamping and connections shall be cleaned thoroughly of any dirt or paint. The bonding cable shall have sufficient slack to permit necessary movement of the boom as required. The wire shall be attached to the boom with suitable clips to avoid damaging the cables.
    b. Rail car frame and the car axle journal boxes shall also be bonded together with 600V insulated 4/0 AWG copper cables with suitable grounding

clamps or bolted connections at either ends. Alternatively 4/0 AWG equivalent size tinned copper flexible braids with compressed end ferrules may be used for axle journal bonding to the car frame.

2. Any vehicle or equipment which comes into contact with an energized overhead wire shall be removed from service until a visual inspection and resistance measurement test has confirmed that an appropriate low resistance path is still intact.
3. Perform daily visual inspections on all equipment or vehicles which will be utilized in the proximity of energized overhead lines.
4. Perform annual resistance measurements of the G&B path for all vehicles and equipment used in the vicinity of overhead lines.
5. For all permanent mechanical grounding connections, an oxide inhibiting joint compound, such as Penetrox or an approved equivalent, should be used to produce low initial surface contact resistance and prevent oxidation or corrosion due to air and moisture.

B. Guidelines for Field connections

1. Grounding cables shall be continuous and splicing shall not be permitted.
2. When applying grounds, attachment shall be made to the vehicle or equipment ground point first, then to the worksite ground to prevent arcing near the vehicle or equipment. Ground points shall be cleaned with a stiff wire brush before applying grounds.
3. In the event the construction equipment has to be carried on flat bed rail car, the equipment base shall be bonded to the flat car frame with a 600V insulated 4/0 AWG copper cable with suitable end plate at either end for connections.
4. Multiple vehicles situated in a manner that allows a worker to contact two of them simultaneously shall be bonded together with 600V insulated 4/0 AWG copper cable.
5. Rubber tired vehicles or construction vehicles not carried on flat bed rail car, used at construction sites in electrified territory shall be grounded to the nearest steel catenary pole, bridge structure or a non-signaled track rail in the same manner as described above.
6. Ground cables on reels or looped on the vehicles shall be completely unwound to allow thorough inspection of the cable and laid down on the ground before use to minimize or eliminate destructive forces resulting from induction in the event of a fault at the worksite. Under no circumstances shall an installed ground cable be coiled.
7. The rail car frame connection shall complete the return circuit through the wheels to running track connection. If rail car is to be stationary for an extended period a bonding conductor shall be bonded to the nearest steel catenary pole, bridge structure or a non- signaled track rail as applicable with a 600V insulated 4/0 AWG copper cable with suitable grounding clamps at either end. Provide sufficient slack and adjust length of the grounding cable to suit the site requirements to allow movement of the flat car within the construction area.

8. For work in switchyards and substations having ground mats, all mobile equipment and vehicles involved at worksite within the facility shall be grounded (bonded) to the (substation or switchyard) ground mat at a visible connection point. Amtrak or utility personnel should be contacted if contractor is uncertain of connection.
9. Cranes located inside the substation/switchyard (on top of the ground grid) shall not make picks outside the perimeter fence, (off the ground mat) without being properly connected to the ground grid. Likewise, Cranes off the ground perimeter (outside the substation/ switchyard) shall not make picks in the facility or deliver material into the facility without being connected to the ground grid. Hazardous transferred touch potentials may develop at the crane hook or frame during an accidental electrical fault for these situations.

3.3 TESTING

A. The continuity of the grounding between the equipment construction machines boom and the grounded rail structure (catenary pole, bridge or non- signaled rail or ground mat) shall be established by resistance measurements using an ohmmeter. **The measured resistance value shall be less than 10 ohms**. In the event the measured resistance is greater than 10 ohms, check bonding connections for contact and cleanliness and inspect cabling for continuity or breaks. Add additional bonds if necessary. The test form is shown on Attachment 1: Annual Vehicle and Equipment Safety Grounding Evaluation Form.

B. Resistance measurements shall be conducted on all vehicles at Amtrak discretion. Additionally, contractors shall perform annual tests to ensure appropriate resistance values are achieved.

C. In the event a vehicle (equipment) comes into contact with an energized overhead wire, the equipment shall be taken out of service until a visual and resistance measurement tests are performed.

3.4 WARNING LABELS AND PLACARDS

A. Equipment and vehicles shall have warning placards as defined on reference documents.

B. Amtrak vehicles and equipment
1. Amtrak will provide labels to suppliers for rental equipment and new vehicle and equipment purchases. Vendors will install according to Attachment 2: Drawing AET.1010.
2. Amtrak Employees will inspect warning labels annually and replace as needed.

C. Contractor vehicles and equipment

1. Contractor owned equipment and vehicles shall have adequate signage to warn operators and others of potential hazards due to energized overhead lines in accordance with OSHA requirements.
2. Contractor shall comply with article 3.4.B.1 above, but ANSI approved warning labels/placards may be installed.

3.5 GROUNDING AND BONDING DETAILS

A. Typical arrangements of the grounding and bonding details for construction equipment at site are shown in Attachment 2: Drawings AET-1001 through AET-1009 for guidance.

3.6 PROXIMITY

A. Minimum approach distance should be maintained to all energized lines at all times. When it becomes necessary to operate equipment within minimum approach distance of energized overhead conductors, whether on rail or roadway, grounding cable shall be attached to the rail and grounding pad of the equipment or machine before operating the boom.

B. Amtrak Employees shall refer to AMT-2 for minimum approach distance guidelines and related information and direction.

C. When contractors are operating equipment outside of minimum approach distance, grounding, in accordance with this specification, is required if the failure of a single component of the equipment or vehicle, could compromise the noted clearances. Typical components which could affect these clearances include bolts, booms, cables or footing(s). Amtrak shall have authority to require these grounds as they see fit.

NATIONAL RAILROAD PASSENGER CORPORATION

SPECIFICATION FOR EQUIPMENT AND VEHICLE GROUNDING NEAR ENERGIZED OVERHEAD WIRES

APPROVALS

PREPARED: _____
C. B. Suelau
Engineer OCS Design- Electric Traction

REVIEWED: _____
R. Verrelle, Jr.
Director- Design & Standards- Electric Traction

REVIEWED: _____
G. J. Nangle
Director of Operations, Maintenance, and Compliance- Electric Traction

APPROVED: _____
R. J. Verrelle
Deputy Chief Engineer- Electric Traction

ATTACHMENT #1

ANNUAL VEHICLE EQUIPMENT SAFETY GROUNDING
EVALUATION FORM DATE: _____

EQUIPMENT : _____	**AMTRAK ID:**		
	LOCATION:		
REFERENCE DRAWING:	**INSPECTOR:**		

INSTRUCTIONS:

1)VERIFY INSTALLATION OF ALL BONDS SHOWN ON REFERENCE DRAWING.
2) INSPECT AND INVENTORY ALL ON BOARD GROUNDING EQUIPMENT
3) VISUAL INSPECTION OF ALL BONDS AND DEVICES. RECORD ALL OBSERVATIONS BELOW.
4) ZERO RESISTANCE (CONTINUITY) METER AND RECORD ANY IMPEDANCE (LEAD LENGTH.)
5) MEASURE AND RECORD IMPEDANCE OF ALL BONDS
6) VERIFY METER ZERO.

ON-BOARD EQUIPMENT:		LOCATION	CONDITION
	GROUNDING CABLE		
	RUNNING RAIL CLAMP		
	STRUCTURE CLAMP		
	BALL SOCKET GROUND CLAMP		

BOND IMPEDANCE MEASUREMENTS:

INITIAL METER ZERO:		OHMS	

TEST POINT (TP)	to	TP	RESISTANCE (OHMS)		COMMENTS
			GROSS	NET *	
1		2			
1		3			
1		4			
1		5			
1		6			
1		7			

* NET VALUE EQUALS GROSS (MEASURED) VALUE MINUS INITIAL METER ZERO READING

APPROVED BY:	

VISUAL INSPECTION SHALL BE PERFORMED DAILY.
RESISTANCE NEASUREMENTS SHALL BE PERFORMED ANNUALLY.
IN THE EVENT OF CONTACT WITH AN ENERGIZED OVERHEAD LINE, REMOVE VEHICLE FROM SERVICE UNTIL A VISUAL INSPECTION AND RESISTANCE MEASUREMENT TESTS PROVIDE SATISFACTORY RESULTS.

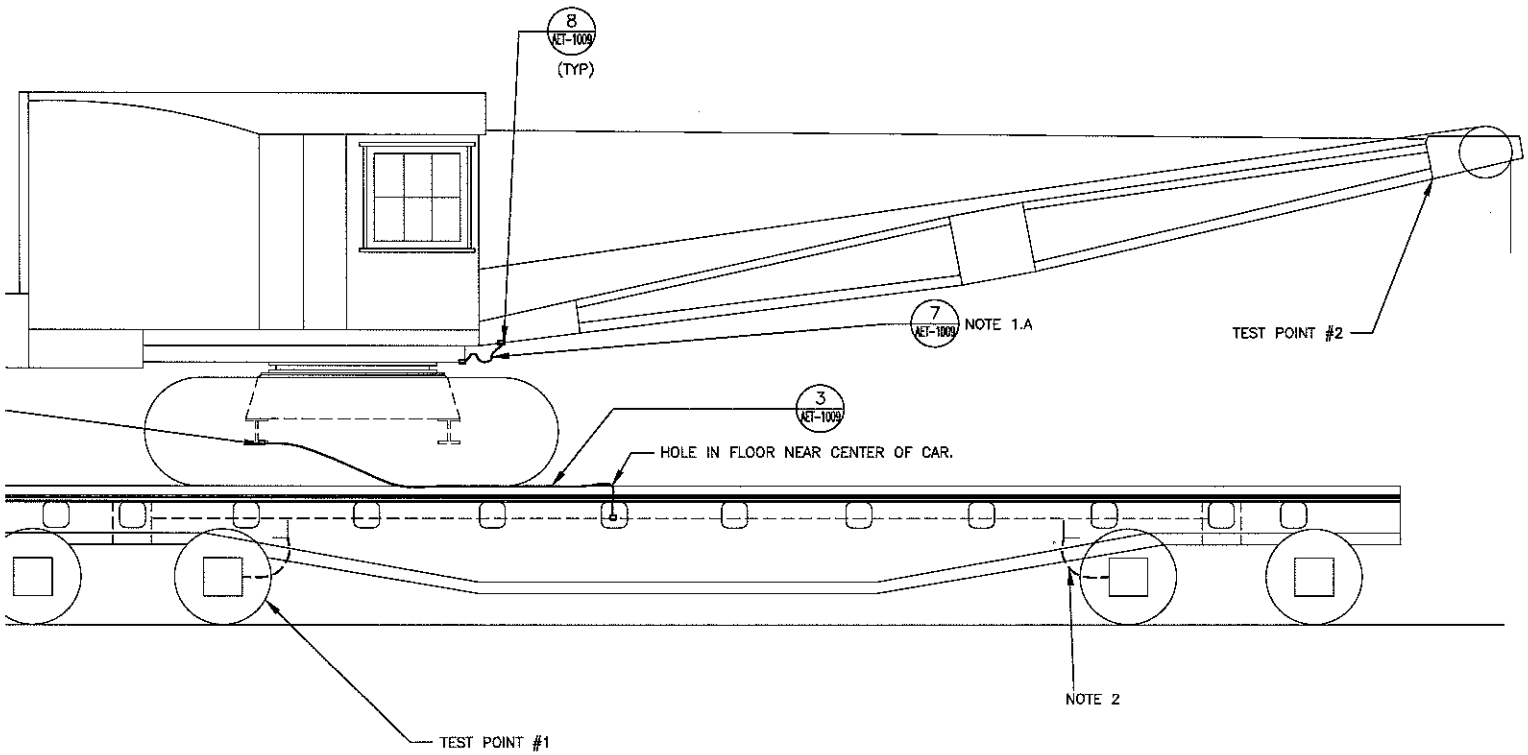
NRPC _____

ATTACHMENT #2

A. ATTACH BOND TO BOOM AND
TO PERMIT NECESSARY MOVE

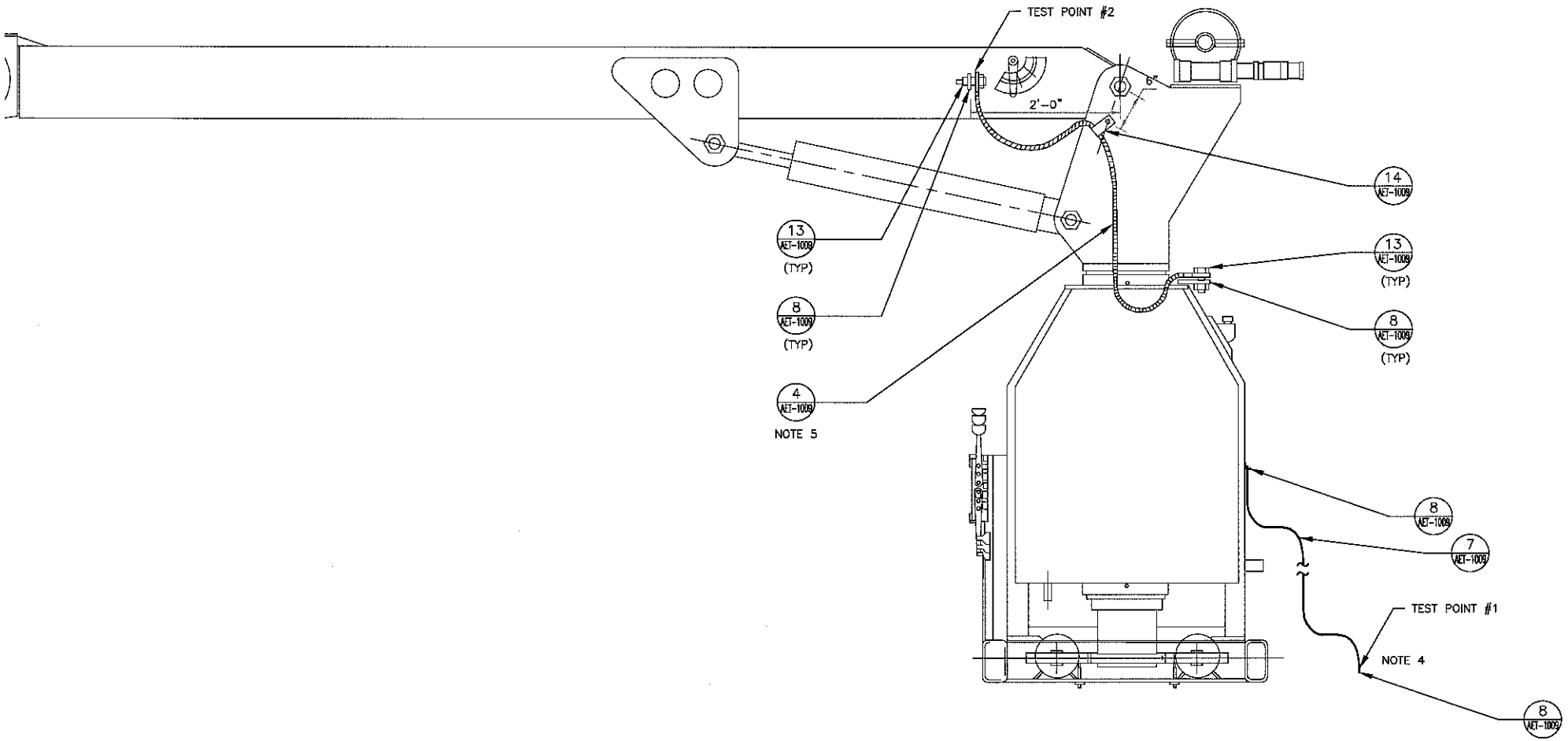
B. ATTACH ONE END OF BONDI

2. JOURNAL BEARING ENCLOSURES /



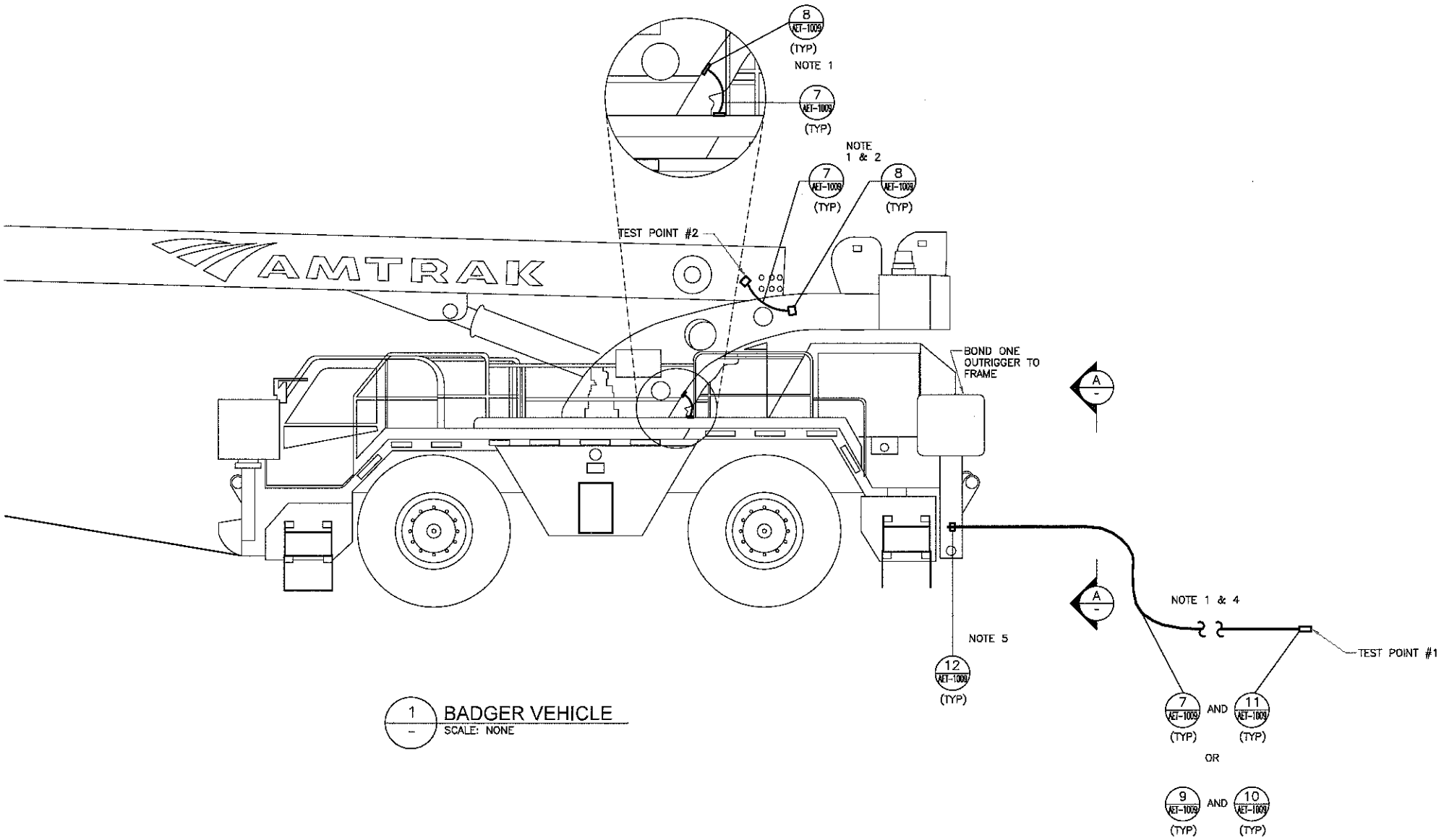
1 – ELECTRICAL TERRITORY, GROUNDING ARRANGEMENT FOR CRAWLER CRANE MOUNTED ON FLAT CAR

SCALE: NONE

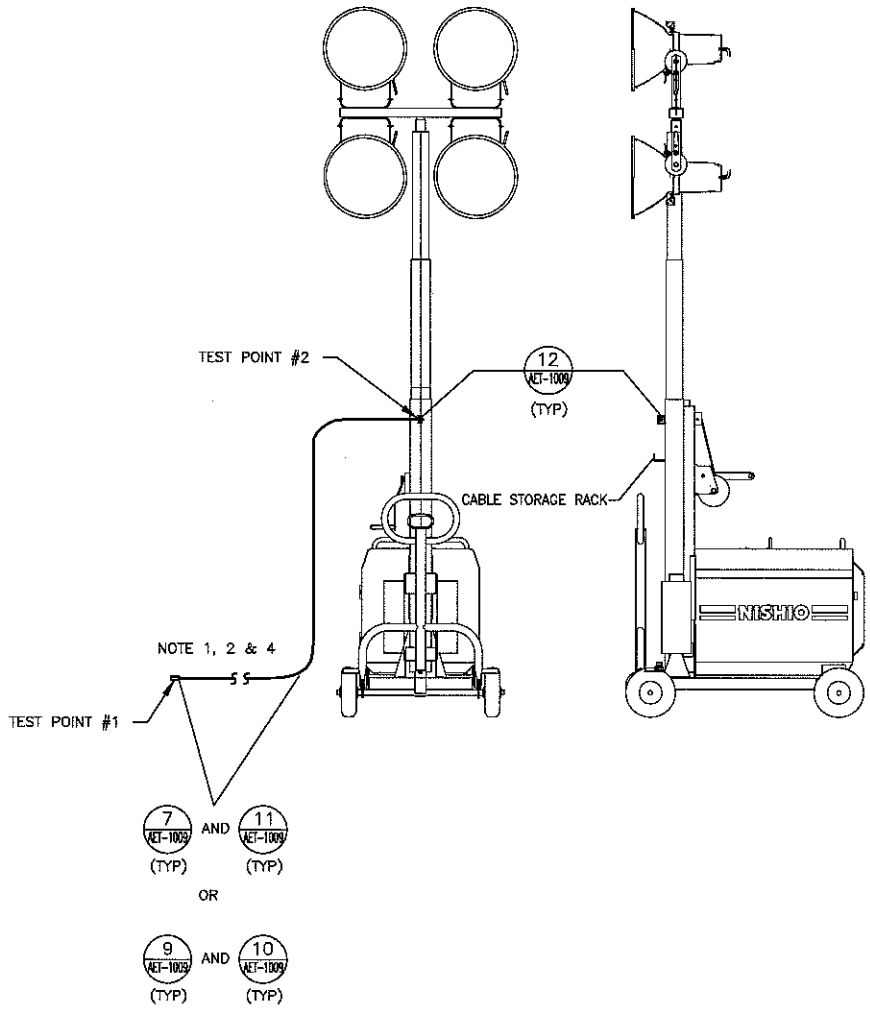


1 / - TYPICAL BOOM GROUNDING DETAIL

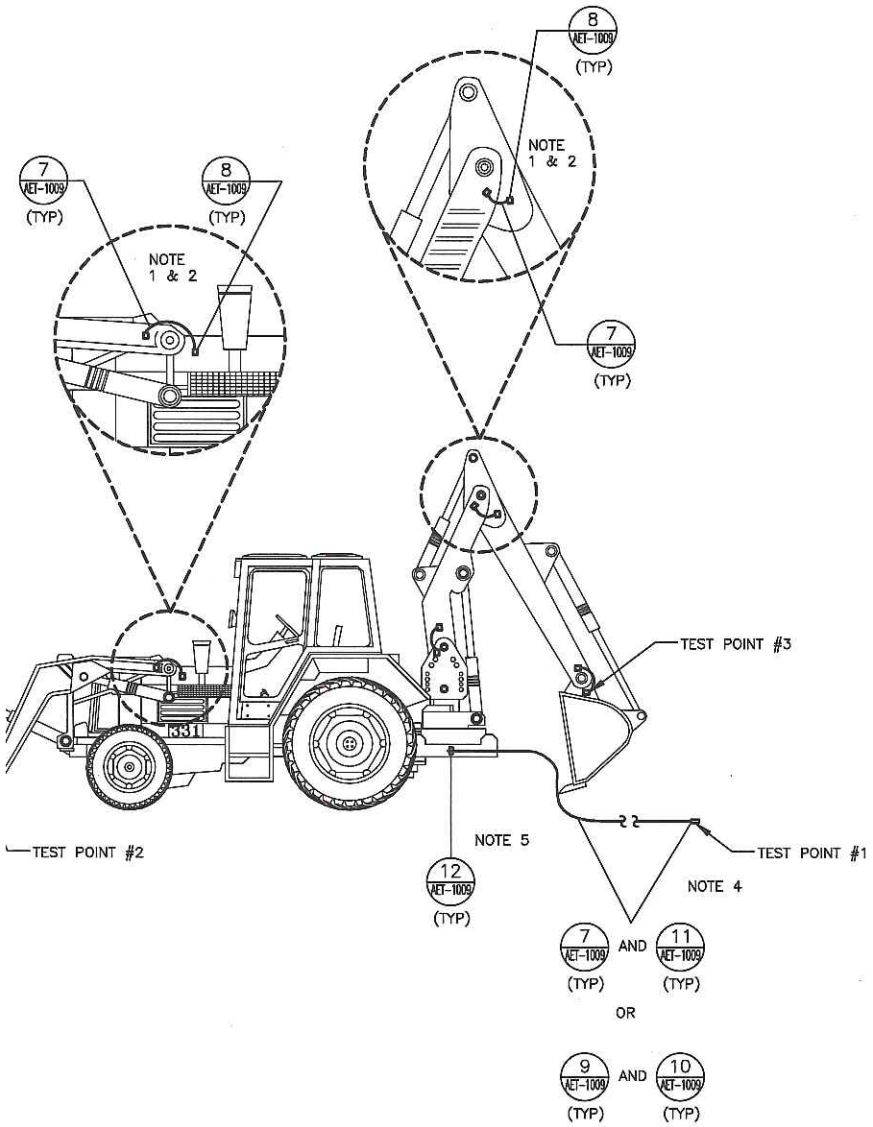
SCALE: NONE



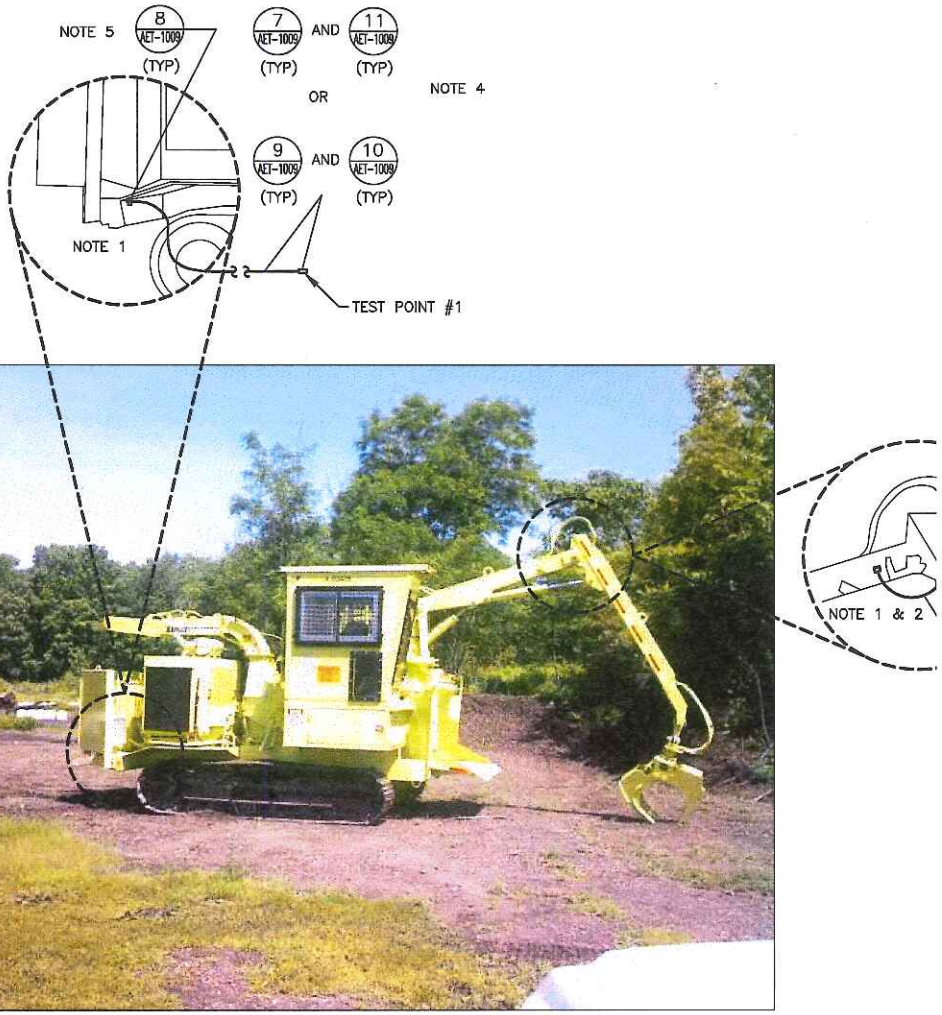
1 / - BADGER VEHICLE
SCALE: NONE



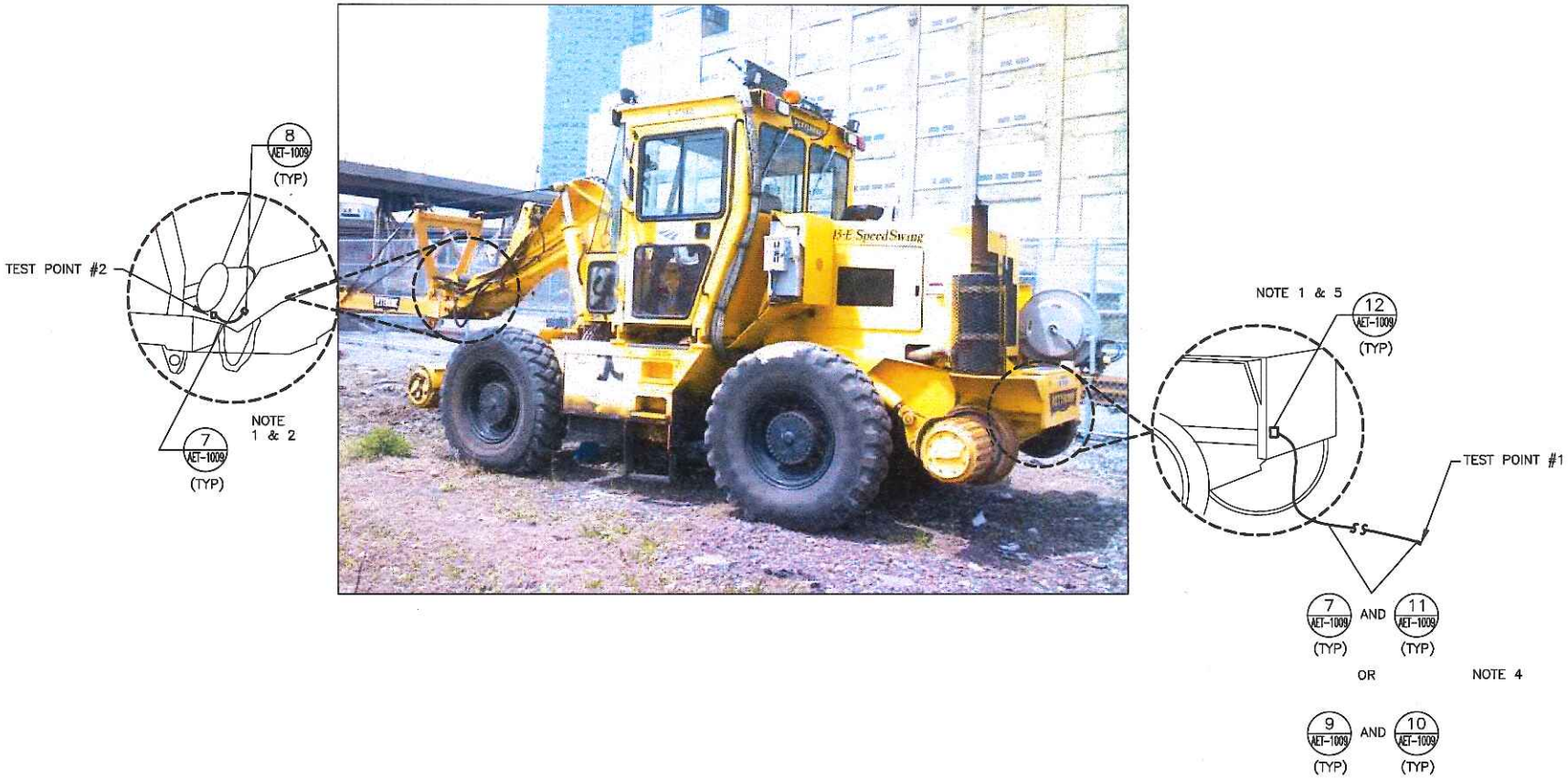
1 – TYPICAL PORTABLE LIGHT
SCALE: NONE



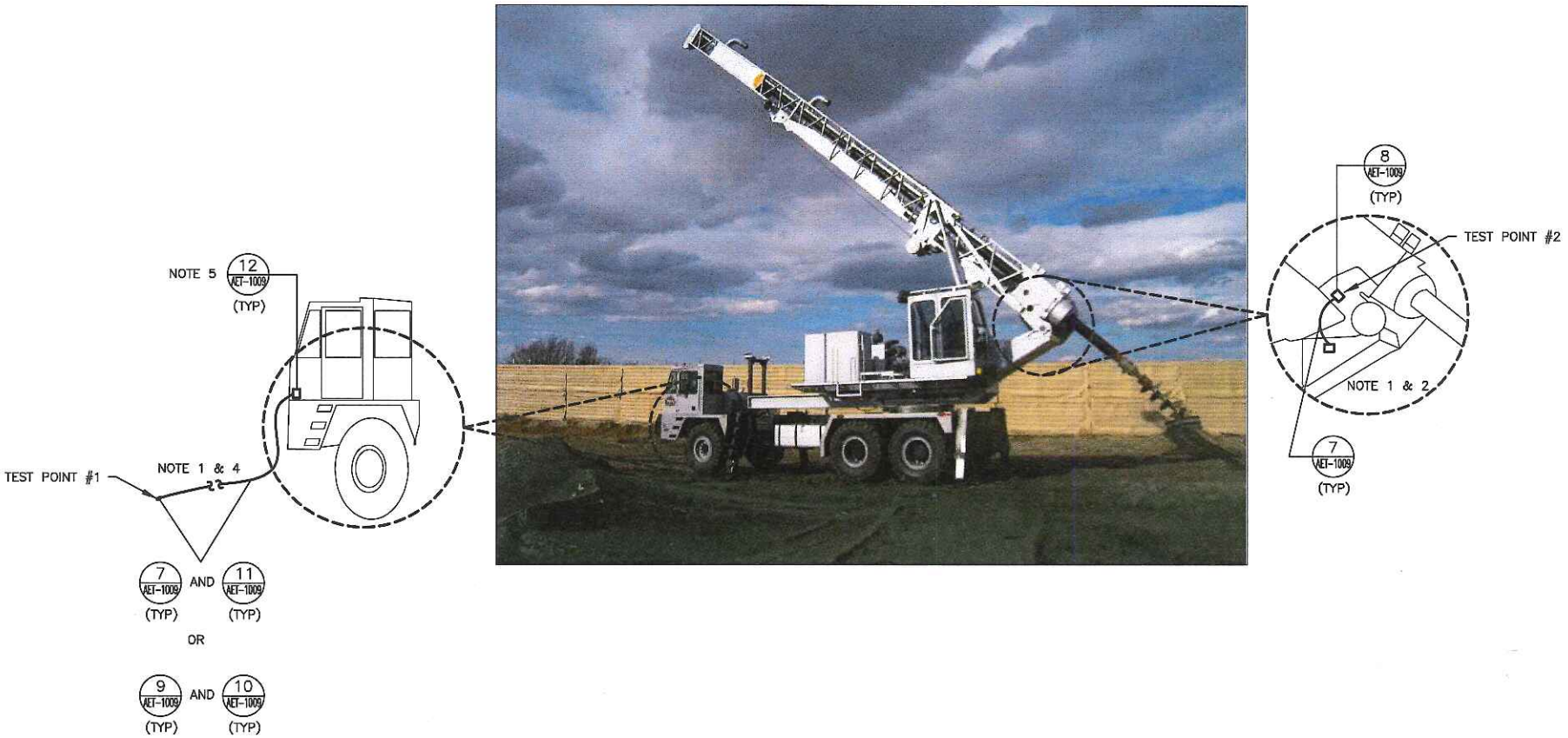
1 – TYPICAL BACKHOE GROUNDING
SCALE: NONE



2 – TYPICAL TREE GRINDER (BANDIT)
SCALE: NONE

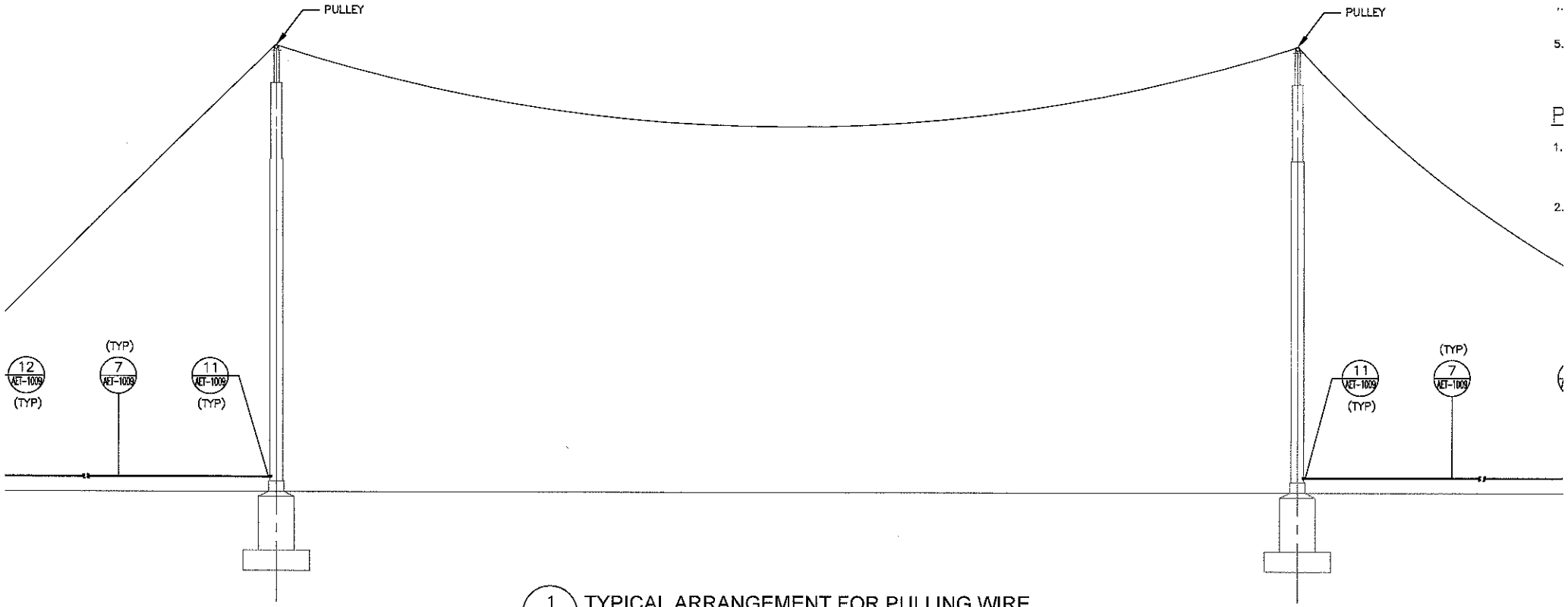


1 / - TYPICAL SPEED SWING
SCALE: NONE

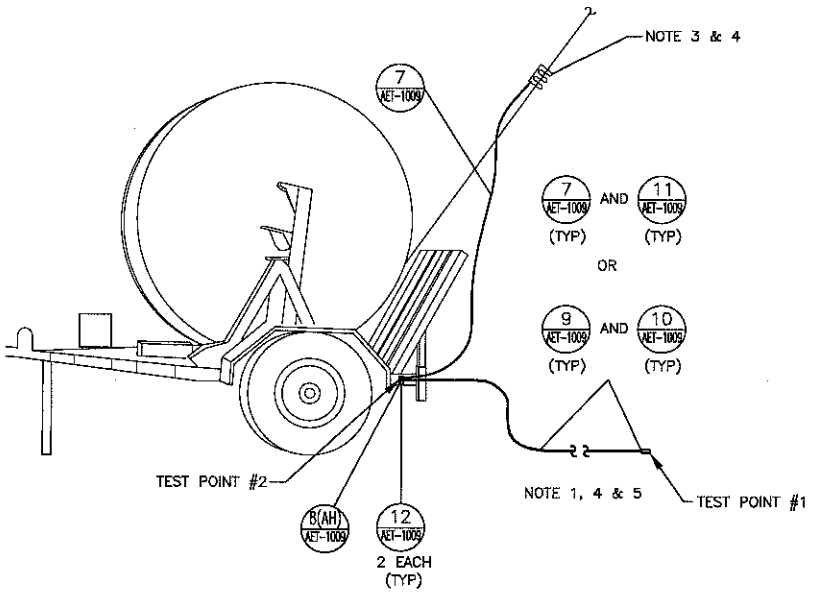


1 / - TYPICAL DRILL RIG/CANISTER INSTALLATION

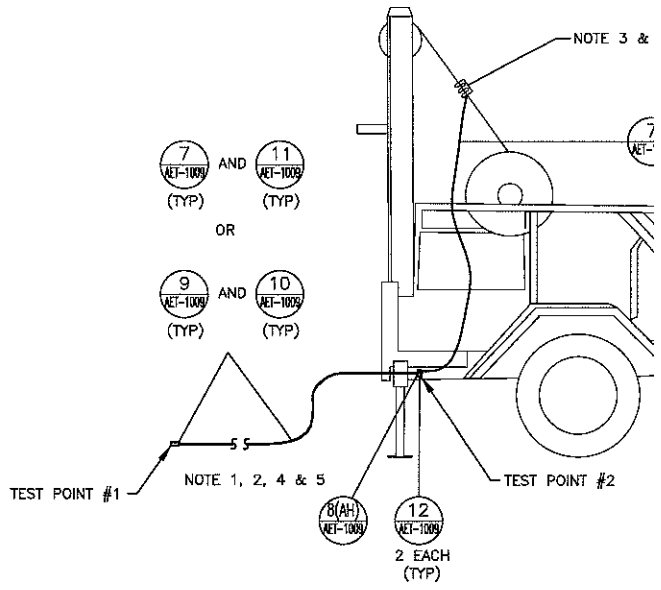
SCALE: NONE



1 / - TYPICAL ARRANGEMENT FOR PULLING WIRE
SCALE: NONE



2 / - TYPICAL WIRE TRAILER
SCALE: NONE



3 / - TYPICAL PULLI
SCALE: NONE

2 1/2"

19/32"

PLATE
– TINNED

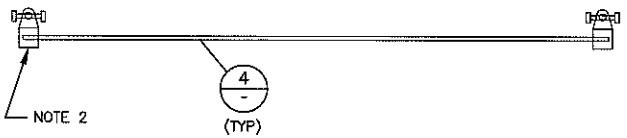
4
-
(TYP)

WHERE COPPER PLATE CP IS FASTENED TO CAR FRAME AND FRAME OF CRAWLER CRANE, CLEAN FRAME TO BARE METAL.

(TYP)

4 - CABLE FOR GROUNDING DETAIL

1 – ⅝ GROUNDING CABLE – HASTINGS CAT #9228, AMT #4401520003



	TEMPORARY	RETURN	VEHICLES
CRANE– FRAME TO FLAT CAR	P	#13	#13
CRANE – BOOM TO FRAME	P	#8	#8
ELECTRIFIED TERRITORY:			
VEHICLE TO OCS STRUCTURE	T	#11	#8 OR #12
VEHICLE TO RUNNING RAIL	T	#10	#8 OR #12
NON ELECTRIFIED TERRITORY:			
VEHICLE TO RUNNING RAIL	T	#10	#12

NOTES:

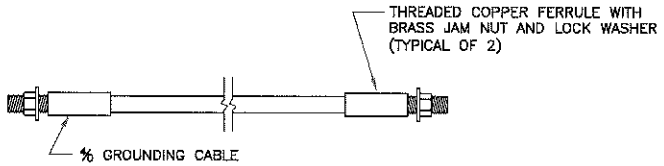
1) IN ELECTRIFIED TERRITORY, CABLE CANNOT EXCEED 175'. IN NON–ELECTRIF TYPICAL LENGTH IS 50'.

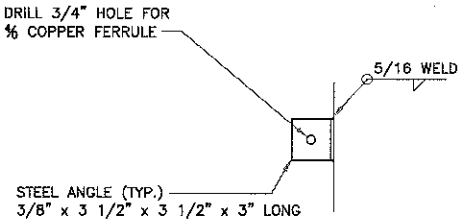
2) ALL CABLE LENGTHS SUBJECT TO SPECIFIC EQUIPMENT ADJUSTMENTS.

NG CRAWLER CRANE MOUNTED ON FLAT CAR

5 - CABLES FOR GROUNDING ROADWAY MACHINES

1 - TYPICAL GROUNDING EC





DRILL 3/4" HOLE FOR ⅝ COPPER FERRULE

STEEL ANGLE (TYP.) 3/8" x 3 1/2" x 5" LON

7 - GROUNDING CABLE DETAIL

2 – COPPER FERRULE (THREADED) – HASTINGS #13001, P50349 AMT #4444457053

1 – ⅝ GROUNDING CABLE (LENGTH AS NEEDED)

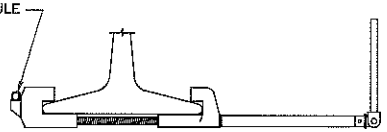
8 - TYPICAL WELDED CONNECTION DETAILS

8(AH) - TYPICAL WELDE

NC #75675475,
20013
NGS #13001, P50349
3

READED COPPER FERRULE WITH
ASS JAM NUT AND LOCK WASHER

UNTHREADED FERRULE



CONNECTION POINT STEEL STRUCTURE

LOCATION POINT FOR THREADED COPPER FERRULE

TAIL

HASTINGS #P30247, P50349
AMT #4444457054
- HASTINGS #13001, P50349
AMT #4444457053
ATION TABLE NOTE 1)

10 - RUNNING RAIL CLAMP DETAIL

1 – RAIL TYPE GROUND CLAMP – SAFETY LINE, INC #75675475 AMT #4401520013

1 – COPPER FERRULE (BOLTED) – HASTINGS #P30247, P50349 AMT #4444457054

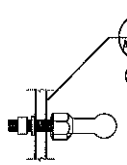
11 - STRUCTURE CLAMP WITH TEE HANDLE DI

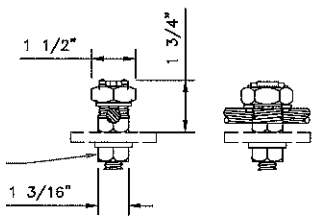
1 – FLAT FACE GROUND CLAMP – WHITE RUBBER #760CM3ET AMT #4401520024

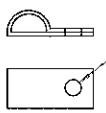
1 – COPPER FERRULE (THREADED) – HASTINGS #13001, P50349 AMT #4444457053

OPPER FERRULE WITH
UT AND LOCK WASHER
2)

8
AET-1009
(TYP)







9/16" HOLE FOR 1/2"x1 1/2" BOLT FOR TS14 CLIP CABLE SUPPORT CLIP.

W 21721

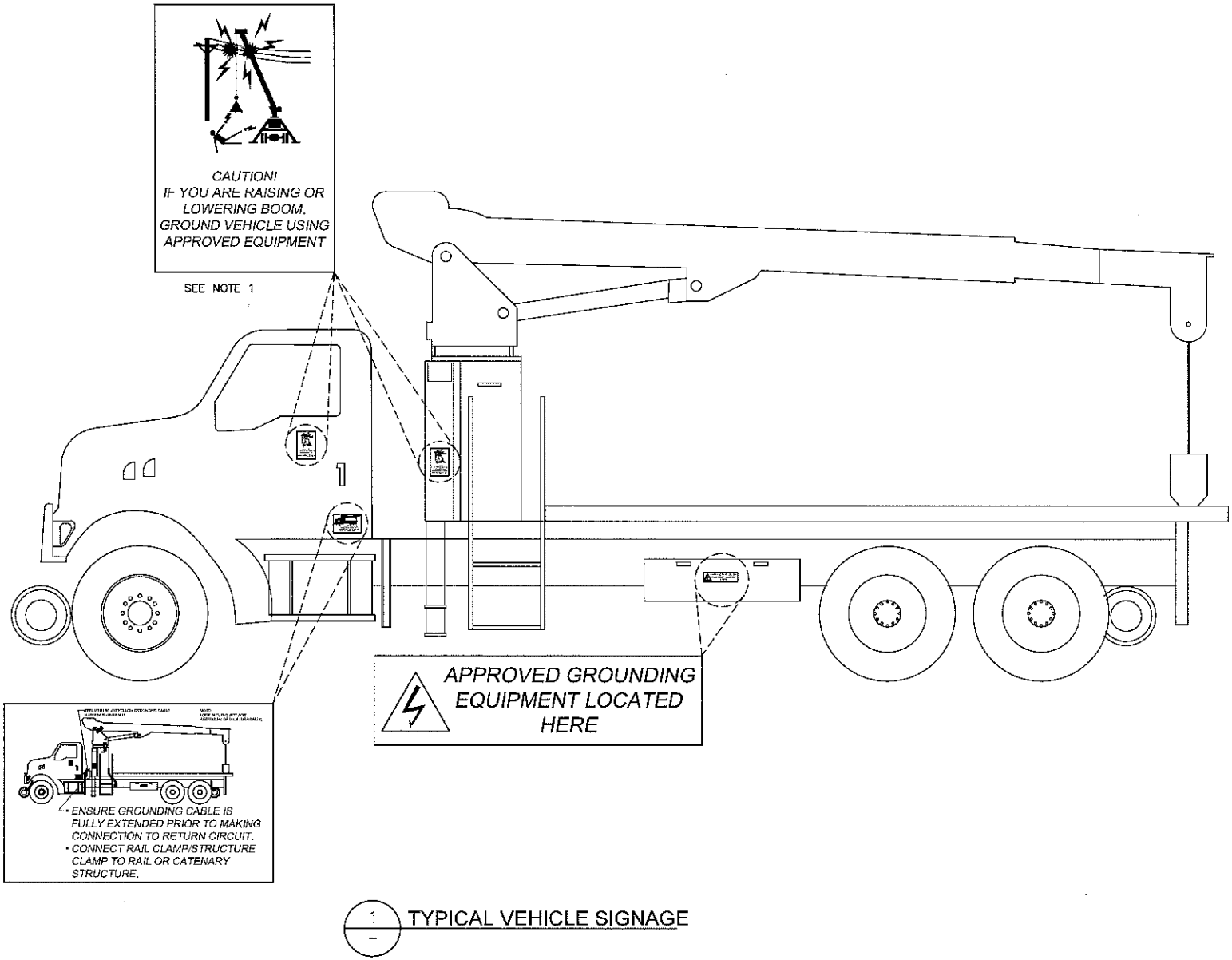
) CLAMP & BALL STUD DETAILS

– HASTINGS 21726
SAP#5000002736

13 - MECHANICAL GROUNDING CONNECTOR

1 – MECHANICAL GROUNDING CONNECTOR – BURNDY KC28

14 - TYPICAL GROUNDING CLIP



1 TYPICAL VEHICLE SIGNAGE

CODE	TITLE	PAGE

SPECIFICATIONS – JOB SPECIFIC INDEX

CODE 201.9902

REMOVE & DISPOSE OF LIGHT STD. LUMINAIRE

DESCRIPTION: This item of work shall consist of removing and disposing of the existing light standard luminaires as called for on the plans.

MATERIALS: Not Applicable.

CONSTRUCTION METHODS: Where luminaires are to be removed from a roadway that will remain open to traffic, the Contractor shall minimize the amount of time that a luminaire is not operational, and the Contractor shall plan for and schedule the work accordingly. Unless otherwise approved by the Engineer, the Contractor's schedule shall provide for the new or improved luminaire to be operational before the end of the same working day when the existing luminaire is removed.

The Contractor shall avoid damaging existing equipment and materials that are to remain in place while removing luminaire equipment. Damage that occurs due to the action or inaction of the Contractor shall be repaired by the Contractor at no additional cost to the State.

When a gap or opening remains on an existing-to-remain pole after the removal of luminaire equipment, the Contractor shall cover such openings using a knockout seal or other appropriate material in order to provide a secure closure of the opening to the satisfaction of the Engineer. There will be no separate payment for this work.

Unless otherwise indicated on the Plans, a Plan callout to remove and dispose the foundation of a luminaire pole shall require the removal of the foundation, including all reinforcement, ground rods, and conduit/wiring within, to a minimum depth of twenty-four (24) inches below the finished grade surrounding the foundation, with the remaining portion of the foundation to remain buried in place. The resulting excavated areas shall be backfilled with suitable material, compacted, and finished in accordance with the applicable Sections of these Specifications so that the patched areas will match existing conditions to the satisfaction of the Engineer.

METHOD OF MEASUREMENT: "Remove & Dispose Light Std. Luminaire" will be measured per each luminaire removed in accordance with the plans or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantities of "Remove & Dispose Light Std. Luminaire" will be paid for at the respective contract unit price per each as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, materials, and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.

CODE 201.9903

REMOVE & DISPOSE SERVICE LOAD CENTER & FOUNDATION

DESCRIPTION: This item of work shall consist of removing and disposing of the existing service load center and the foundation for the highway illumination as called for on the plans.

MATERIALS: Not Applicable.

CONSTRUCTION METHODS: The existing load center shall not be removed until the new load center has been installed and service is transferred to the new load center.

The Contractor shall avoid damaging existing equipment and materials that are to remain in place while removing the service load center equipment. Damage that occurs due to the action or inaction of the Contractor shall be repaired by the Contractor at no additional cost to the State.

When a gap or opening remains on an existing-to-remain conduit after the removal of load center equipment, the Contractor shall cover such openings using a knockout seal or other appropriate material in order to provide a secure closure of the opening to the satisfaction of the Engineer. There will be no separate payment for this work.

Unless otherwise indicated on the Plans, a Plan callout to remove and dispose the service load center and foundation shall require the removal of the foundation, including all reinforcement, ground rods, and conduit/wiring within, to a minimum depth of twenty-four (24) inches below the finished grade surrounding the foundation, with the remaining portion of the foundation to remain buried in place. The resulting excavated areas shall be backfilled with suitable material, compacted, and finished in accordance with the applicable Sections of these Specifications so that the patched areas will match existing conditions to the satisfaction of the Engineer.

METHOD OF MEASUREMENT: "Remove & Dispose Service Load Center & Foundation" will be measured per each service load center and foundation removed in accordance with the plans or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantities of "Remove & Dispose Service Load Center & Foundation" will be paid for at the respective contract unit price per each as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, materials, and equipment and for all incidentals required to finish the work, complete and accepted by the Engineer.

CODE 703.9903

8" PERFORATED POLYVINYL CHLORIDE PIPE M278 UNDERDRAIN WITH FILTER MATERIAL STANDARD 1.1.0

DESCRIPTION:

This item of work shall conform to Section 703 of the Rhode Island Standard Specification for Road and Bridge Construction, including latest revisions and amendments, except as modified herein.

MATERIALS:

M.04.01.12 Perforated and Unperforated Polyvinyl Chloride Pipe. The pipe shall conform to the requirements of AASHTO M278. Pipe Size is 8" Diameter.

No filter material is required.

CONSTRUCTION METHODS:

8" perforated polyvinyl chloride pipe shall be used as specified on the Contract Drawings. The pipe is required to monitor groundwater elevations prior to construction of stormwater treatment unit 3 (STU-3).

The contractor shall excavate a test pit in the vicinity of former TP-3 to a depth of 7 feet below ground surface (BGS) and install an 8" diameter perforated pipe in the test pit to function as a monitoring well. A Rhode Island registered Professional Engineer shall evaluate the estimated seasonal high groundwater table, based on groundwater depth measurements made in the monitoring well and previous test pit information. The contractor shall provide a memorandum to the Engineer with the estimated seasonal high groundwater table with associated exploration logs and calculations.

METHOD OF MEASUREMENT:

8" perforated polyvinyl chloride pipe M278 will be measured at the Contract unit price, per linear foot, meeting the minimum dimensions and requirements as specified on the Contract Drawings complete in place.

BASIS OF PAYMENT:

8" perforated polyvinyl chloride pipe M278 will be paid at the Contract unit price, per linear foot, of pipe installed which shall include all materials, labor, and incidentals necessary to complete the specified work. The test pit shall be paid for under Code 919.0101 Test Pits. The memorandum to the Engineer shall be incidental.

CODE 708.9901
CLEANING AND FLUSHING CULVERTS ALL SIZES

DESCRIPTION: This work consists of cleaning and drainage culverts of all types and sizes as designated on the Plans or as directed by the Engineer, all in accordance with these Specifications.

MATERIALS:
Equipment: Equipment for cleaning culvert includes hoses, rodding machines, balls, hydraulic cleaners, root cutters, small clam shell buckets, steel porcupines, pumps, or other suitable and approved means.

Water: Water used for cleaning and flushing drainage culverts shall be fresh and free of oil, acid, salt, alkali, organic matter, or any other deleterious substances. The Contractor shall provide all water required for the cleaning operation.

Geomembrane liner: Liner shall be low permeable high density polyethylene with a minimum nominal thickness of 30 mils.

CONSTRUCTION METHODS: Construction methods shall conform to the Subsection 703.03 Construction Methods of the Standard Specifications.

Operation of Drainage System During Cleaning: The Contractor shall be responsible for the proper operation of the culvert drainage system during the cleaning operations. The safe control of storm flows shall be accomplished by the Contractor such as to preclude any injury to persons or property due to flooding.

Cleaning Methods: The Contractor shall clean and flush all culverts as designated on the Plans by use of pressure hoses, suction pumps, and/or any other methods required to perform this work. A suitable weir or dam system shall be constructed, if necessary, to maintain culvert flows. All cleaning work shall be performed to the complete satisfaction of the Engineer.

Disposal of Debris Collected: Disposal of all material collected shall be done in accordance with all requirements of applicable State agencies as described below.

1. Sand and/or Gravel. This debris is sand that may be mixed with salt used on streets, roads or highways for winter storm operations or gravels which have entered the storm drainage system.

    a. Acceptable Uses. This material must be dry prior to placement.
        i. Landfill Cover (may require screening).

        ii. Road Base, or any base course applicable that will be covered with an asphalt or concrete layer.

        iii. Backfill for public works construction projects other than areas adjacent to concrete Pipes, culverts and structures.

        iv. Clean fill, only when analytical testing for Total Petroleum Hydrocarbons (TPH), Toxicity Characteristic Leaching Procedure (TCLP), and Total Lead (TL) have been performed and submitted to RIDEM, Division of Waste Management, for review of reuse application.

    b. Unacceptable Uses. As unrestricted clean fill in areas that will expose the debris to human contact such as:
        i. Fill on residential properties, public parks or playground.

ii. Fill near pristine waterways, drinking water watersheds, wellhead protection areas, areas with groundwater classified as GAA, and areas within 200 feet of a private drinking water well, or in any other manner that would be inconsistent with State and Federal laws or regulations.

2. Other Debris. All other debris collected from culverts shall be legally disposed of in accordance with all applicable State agencies laws and regulations.

METHOD OF MEASUREMENT: "CLEANING AND FLUSHING CULVERTS ALL SIZES" will be measured in linear feet from culvert inlet headwall to culvert outlet headwall which are actually cleaned, regardless of the sizes of said culvert, in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT: The accepted quantity of "CLEANING AND FLUSHING CULVERTS ALL SIZES" will be paid for at the contract unit price per linear foot as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, materials, and equipment required to conduct this operation, including all costs for loading, removal and disposal of debris, all costs for weirs, dam and water control, and for all incidentals required to finish the work, complete and accepted by the Engineer.

CODE 817.9904

EXPANSION JOINT HEADER REPAIRS WITH POLYMER MORTAR

DESCRIPTION:

This work is the repair of the existing expansion joint headers on bridge decks and top of backwall areas connected to expansion joints including surface preparation, furnishing and applying polymer mortar in accordance with the manufacturer's instructions.

MATERIALS:

Polymer Mortar. A two- component, rapid curing, flexible epoxy with aggregate, that cures to a dense, semi- flexible, weather, abrasion, and impact resistant epoxy concrete, have the following physical requirements:

1. General:
   a. Compressive strength at 2,500 PSI min. ASTM C 579 Method B 24 hours.
   b. Shear Strength 750 PSI minimum ASTM C 882 or until concrete failure.
   c. Abrasion Resistance 1.5 maximum ASTM C 501, TABER H22
   d. Resilience 70% minimum OKLA Test, OHD L6
   e. Thermal Compatibility PASS ASTM C 844
2. Accelerator: As recommended by the polymer mortar manufacturer.
3. Aggregate: Aggregate for material extension shall conform with Section M.02.03 and shall be furnished by the manufacturer or conform to the 3/8" gradation.
4. Certification: Material certification in accordance with Section 106.

CONSTRUCTION METHODS:

Furnish the services of a qualified technical representative from the manufacturer to be present at the beginning of operations and when required during operations. Submit the manufacturer's written installation instructions to the Engineer prior to the start of any work. Prepare joints and install polymer mortar material in accordance with the manufacturer's written recommendations and as follows:

1. Provide dry, structurally sound concrete free of grease, oils, coatings, dust, dusting compounds and other contaminants. Inspect joints for proper depth and width. Prepare the surface by abrasive blast cleaning method. Obtain written approval before installing the polymer mortar. When necessary, provide formwork.
2. Mix, place and cure the polymer mortar only when the deck surface temperature is at least 45 degrees F and rising. Apply accelerator, if required and heat to improve the curing time of the polymer mortar.
3. When the polymer mortar has completely cured remove the temporary joint form and abrasive blast the joint faces to remove all residual form material.

CODE 909.9901
PRECAST MEDIAN BARRIER SINGLE-FACED "F" SHAPE

DESCRIPTION. This work consists of furnishing and installing single-faced precast median barrier on previously prepared gravel borrow subbase courses at the locations indicated on the Plans or as directed by the Engineer in conformance with the applicable sections of the Standard Specifications.

MATERIALS. Materials shall conform to Section 909.02 of the Standard Specifications.

CONSTRUCTION METHODS. Construction Methods shall conform to Section 909.03 of the Standard Specifications. The shape, dimensions and details of the precast median barrier shall be in conformance with the Plans or as directed by the Engineer.

The units shall be cast by a precaster on the Department's list of approved precasters. Other precasting firms may be submitted for approval if they meet the requirements of Sections 601 and 930 of the Standard Specifications.

SUBMITTALS. The Contractor shall submit shop drawings in accordance with Section 105 of the Standard Specifications.

METHOD OF MEASUREMENT. "PRECAST MEDIAN BARRIER SINGLE-FACED "F" SHAPE" at the locations indicated on the Plans shall be measured per "LINEAR FOOT" of continuous runs of said units actually installed in accordance with the Plans and/or as directed by the Engineer.

BASIS OF PAYMENT. The accepted quantities of "PRECAST MEDIAN BARRIER SINGLE-FACED "F" SHAPE" shall be paid for at their respective contract unit prices per "LINEAR FOOT" as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, materials, and equipment for furnishing and placing units on previously prepared compacted subbase courses, including spacer timbers, and controlled low strength material where applicable, and for all incidentals required to finish the work, complete, in place and accepted by the Engineer.

Payment for compacted gravel borrow subbase course is not included in the contract unit prices for precast concrete median barrier units.

METHOD OF MEASUREMENT: This item will not be measured for payment.

BASIS OF PAYMENT: No separate payment will be made for this item. Costs for this item shall be included in the lump sum bid prices of the appropriate items as listed in the Proposal.

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Table of Contents - Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Table of Contents - Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

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FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
047	**401.2100 Cont.**	LT & RT				
		STA. 410+33 TO STA. 413+93		37.00	0021	03
		LT & RT				
		STA 182+50 TO BRIDGE 627				
		WB 182+50 TO 190+50		484.60	0011	02
		STA 196+00 TO BRIDGE 629				
		WB 196+00 TO 205+00		702.40	0011	02
		Item 401.2100 Total:		**5,591.50**		
048	**401.3003**	**CLASS 9.5 HMA FOR PATCHING**	**TON**			
		EXISTING BRIDGE NO. 626				
		EXISTING BRIDGE NO. 626		1.00	0011	02
		EXISTING BRIDGE NO. 630				
		EXISTING BRIDGE NO. 630		1.00	0011	02
		EXISTING BRIDGE NO. 631				
		EXISTING BRIDGE NO. 631		1.00	0011	02
		EXISTING BRIDGE NO. 632				
		EXISTING BRIDGE NO. 632		1.00	0011	02
		EXISTING BRIDGE NO. 633				
		EXISTING BRIDGE NO. 633		1.00	0011	02
		EXISTING BRIDGE NO. 634				
		EXISTING BRIDGE NO. 634		1.00	0011	02
		EXISTING BRIDGE NO. 636				
		EXISTING BRIDGE NO. 636		2.00	0011	02
		EXISTING BRIDGE NO. 637				
		EXISTING BRIDGE NO. 637		3.00	0011	02
		EXISTING BRIDGE NO. 638				
		EXISTING BRIDGE NO. 638		1.00	0011	02
		Item 401.3003 Total:		**12.00**		
049	**401.9901**	**MODIFIED CLASS 12.5 HMA FOR PATCHING**	**TON**			
		EXISTING BRIDGE NO. 626				

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
049	401.9901 Cont.	100+00			0011	02
		EXISTING BRIDGE NO. 630				
		100+00			0011	02
		EXISTING BRIDGE NO. 631				
		100+00			0011	02
		EXISTING BRIDGE NO. 632				
		100+00			0011	02
		EXISTING BRIDGE NO. 633				
		100+00			0011	02
		EXISTING BRIDGE NO. 634				
		100+00			0011	02
		EXISTING BRIDGE NO. 636				
		100+00			0011	02
		EXISTING BRIDGE NO. 637				
		100+00			0011	02
		EXISTING BRIDGE NO. 638				
		100+00			0011	02
		Item 401.9901 Total:		**DELETED**		
050	**402.9901**	**FRICTION COURSE**	**TON**			
		BRIDGE 627 EB				
		EB 190+00 TO 194+00		119.50	0011	02
		BRIDGE 627 TO STA 196+00				
		WB 192+50 TO 196+00		164.30	0011	02
		BRIDGE 627 WB				
		WB 190+50 TO 192+50		14.40	0011	02
		BRIDGE 628				
		EB 204+50 TO 209+00		63.10	0011	02
		Bridge 629 to STA 213+00				
		EB 207+25 TO 213+00		310.60	0011	02
		BRIDGE 635				
		234+50 TO 238+00		111.30	0011	02
		EXISTING BRIDGE NO. 626				

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
054	**501.0103**	**PORTLAND CEMENT CONCRETE BASE**	**SY**			
		BRIDGE 635				
		234+50 TO 238+00		290.00	0011	02
		ROUTE 37 WB OFF-RAMP TO PONTIAC AVENUE				
		STA. 200+22 TO STA. 205+58		1,142.00	0011	02
		LT & RT				
		Item 501.0103 Total:		**1,432.00**		
055	**505.0100**	**CLASS X PORTLAND CEMENT CONCRETE BASE COURSE WITH CRACK CONTROL**	**SY**			
		BRIDGE 627 EB				
		EB 190+00 TO 194+00		4.00	0011	02
		BRIDGE 628				
		EB 204+50 TO 209+00		28.00	0011	02
		Item 505.0100 Total:		**32.00**		
056	**601.0200**	**CLASS XX PORTLAND CEMENT CONCRETE**	**CY**			
		PONTIAC AVENUE				
		STA 27+34 TO 27+88 RT			0011	02
		ROUTE 37 WB OFF-RAMP TO PONTIAC AVENUE				
		STA. 200+09 TO STA. 200+85 LT			0011	02
		SOCKANOSSET CROSS ROAD				
		STA 410+26 TO 410+42 RT			0021	03
		STA 410+40 TO 410+53 RT			0021	03
		STA 410+70 TO 410+83 LT			0021	03
		Item 601.0200 Total:		****DELETED****		
057	**701.0412**	**REINFORCED CONCRETE PIPE M 170 CLASS III 12 INCH**	**LF**			
		ROUTE 37				
		DS-03		13.00	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
085	**702.9902 Cont.**	**STANDARD 4.2.0 WITH BAFFLE WALL**				
		RTE 37 EB				
		DS-67		1.00	0011	02
		Item 702.9902 Total:		**1.00**		
086	703.0708	8" PERFORATED POLYVINYL CHLORIDE PIPE M278 UNDERDRAIN WITH FILTER MATERIAL STANDARD 1.1.0	LF			
		ROUTE 37				
		STU 3			0011	02
		Item 703.0708 Total:		**DELETED**		
087	**703.9901**	**4" PERFORATED CORRUGATED POLYETHYLENE PIPE M252 UNDERDRAIN**	**LF**			
		ROUTE 37				
		STU 4		330.00	0011	02
		Item 703.9901 Total:		**330.00**		
088	**703.9902**	**6" PERFORATED POLYVINYL CHLORIDE PIPE M278 WITH LOCKABLE CAP**	**LF**			
		ROUTE 37				
		STU 1		10.00	0011	02
		STU 2		10.00	0011	02
		STU 3		10.00	0011	02
		STU 5		10.00	0011	02
		Item 703.9902 Total:		**40.00**		
089	**704.0300**	**RECONSTRUCT CATCH BASIN/VERTICAL WALLS**	**VLF**			
		FRONTAGE ROAD				
		DS-21		7.00	0003	04
		I-95 OFF-RAMP				
		DS-102		3.80	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
130	**803.9904 Cont.**	SUBSTRUCTURE				
		Item 803.9904 Total:		**1.00**		
131	805.9901	PRECAST CONCRETE PAVEMENT	SF			
		BRIDGE 627 EB				
		BRIDGE 627 EB			0011	02
		BRIDGE 627 WB				
		BRIDGE 627 WB			0011	02
		BRIDGE 628				
		BRIDGE 628			0011	02
		Item 805.9901 Total:		**DELETED**		
132	**805.9910**	**TEMPORARY EARTH RETAINING SYSTEMS**	**LS**			
		BRIDGE NO. 062701				
		100+00		1.00	0011	02
		Item 805.9910 Total:		**1.00**		
133	**807.9901**	**RECONSTRUCT RIPRAP ROCK FILL**	**LS**			
		PROPOSED BRIDGE NO. 062801				
		ABUTMENTS		1.00	0011	02
		Item 807.9901 Total:		**1.00**		
134	**808.9901**	**CAST-IN-PLACE CONCRETE MEDIAN CLOSURE BARRIER**	**LF**			
		BRIDGE NO. 062701				
		EAST APPROACH		5.00	0011	02
		WEST APPROACH		18.00	0011	02
		Item 808.9901 Total:		**23.00**		
135	**808.9902**	**CAST-IN-PLACE CONCRETE MEDIAN TRANSITION BARRIER**	**LF**			
		BRIDGE NO. 062701				
		EAST APPROACH		14.00	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
191	**907.0100**	**WATER FOR DUST CONTROL**	**MGAL**			
		IMPROVEMENTS TO PONTIAC AVENUE				
		AND ROUTE 37 WEST RAMPS				
		100+00		100.00	0011	02
		RT 37 PROJECTWIDE				
		100+00		10,000.00	0011	02
		Item 907.0100 Total:		**10,100.00**		
192	**907.0200**	**CALCIUM CHLORIDE FOR DUST CONTROL (PROJECT WIDE)**	**TON**			
		IMPROVEMENTS TO PONTIAC AVENUE				
		AND ROUTE37 WEST RAMPS				
		100+00		13.00	0011	02
		Item 907.0200 Total:		**13.00**		
193	**909.3020**	**PRECAST MEDIAN BARRIER SINGLE-FACED STANDARD 40.2.0**	**LF**			
		JEFFERSON BLVD				
		133+34 TO 134+40 RT			0021	03
		133+70 TO 134+70 LT			0021	03
		Item 909.3020 Total:		****DELETED****		
194	**909.3021**	**PRECAST MEDIAN BARRIER SINGLE-FACED STANDARD 40.2.1**	**LF**			
		JEFFERSON BLVD				
		133+34 TO 134+40 RT		110.00	0011	02
		133+70 TO 134+70 LT		100.00	0011	02
		RT 37 WB				
		195+50 TO 196+50		145.00	0011	02
		Item 909.3021 Total:		**355.00**		
195	**909.9901**	**PRECAST MEDIAN BARRIER SINGLE-FACED "F" SHAPE**	**LF**			

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
195	**909.9901 Cont.**	BRIDGE NO. 062701				
		BRIDGE NO. 062701		290.00	0021	03
		Item 909.9901 Total:		**290.00**		

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
242	**L01.9901**	**BIORETENTION SOIL**	**CY**			
		ROUTE 37				
		STU 4		123.00	0011	02
		Item L01.9901 Total:		**123.00**		
243	**L02.0101**	**GENERAL HIGHWAY SEEDING (TYPE 1)**	**SY**			
		FRONTAGE ROAD				
		STA. 99+85 TO STA. 108+95 RT		3,130.00	0003	04
		STA. 99+85 TO STA. 108+95 LT		2,585.00	0003	04
		PONTIAC AVENUE				
		STA. 16+20 TO STA. 20+45 LT		549.00	0011	02
		STA. 16+30 TO STA. 18+85 RT		426.00	0011	02
		STA. 19+65 TO STA. 21+07 RT		390.00	0011	02
		STA. 20+90 TO STA. 21+08 RT		6.00	0011	02
		STA. 22+02 TO STA. 22+61 RT		37.00	0011	02
		STA. 26+82 TO STA. 27+00 RT		5.00	0011	02
		STA. 27+55 TO STA. 27+88 RT		13.00	0011	02
		ROUTE 37 WB OFF-RAMP TO PONTIAC AVENUE				
		STA. 201+05 TO STA. 205+58 RT		555.00	0011	02
		ROUTE 37 WB ON-RAMP FROM PONTIAC AVENUE				
		STA. 299+95 TO STA. 308+15 RT		1,256.00	0003	04
		SEEDED WITH PARK MIX				
		STU 1: BASIN		803.00	0011	02
		STU 2: BASIN		871.00	0011	02
		STU 3: BASIN		313.00	0011	02
		STU 4: SWALE		669.00	0011	02
		STU 5: BASIN		131.00	0011	02
		SEEDED WITH SLOPE MIX				
		STU 1: BASIN		889.00	0011	02
		STU 2: BASIN		2,115.00	0011	02
		STU 3: BASIN		1,155.00	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
243	**L02.0101 Cont.**	STU 4: SWALE		1,614.00	0011	02
		STU 5: BASIN		434.00	0011	02
		STU 6: FOREBAY		44.00	0011	02
		SOCKANOSSET CROSS ROAD				
		STA. 410+30 TO STA. 411+05 RT		125.00	0021	03
		STA. 410+65 TO STA. 412+75 LT		78.00	0021	03
		STA. 411+85 TO STA. 412+78 RT		26.00	0021	03
		Item L02.0101 Total:		**18,219.00**		
244	**L05.0505**	**EROSION CONTROL BLANKET**	**SY**			
		BRIDGE 627				
		BRIDGE 627		1,116.00	0011	02
		BRIDGE 628				
		BRIDGE 628		3,408.00	0003	04
		BRIDGE 629				
		BRIDGE 629		4,162.00	0011	02
		FRONTAGE ROAD				
		STA. 101+92 TO STA. 104+25 LT		76.00	0003	04
		RT 37 WB OFF RAMP				
		RT 37 WB OFF RAMP		287.00	0003	04
		RT 37 WB OFF RAMP TO PONTIAC AVE				
		RT 37 WB OFF RAMP TO PONTIAC AVE		296.00	0003	04
		Item L05.0505 Total:		**9,345.00**		
245	**L05.0508**	**STRAW MULCH**	**ACRE**			
		FROM SLOPE SEED MIX				
		STU 1: BASIN		0.18	0011	02
		STU 2: BASIN		4.37	0011	02
		STU 3: BASIN		0.24	0011	02
		STU 4: SWALE		0.33	0011	02
		STU 5: BASIN		0.09	0011	02
		STU 6: FOREBAY		0.01	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
281	**T08.9901 Cont.**	ROUTE 37 AND PONTIAC AVE.		4.00	0011	02
		Item T08.9901 Total:		**4.00**		
282	**T08.9902**	**ALUMINUM LIGHTING STD 30 X 8**	**EACH**			
		RTE 37				
		RTE 37		7.00	0011	02
		Item T08.9902 Total:		**7.00**		
283	**T08.9903**	**RAISE LIGHT STANDARD TO GRADE**	**EACH**			
		RTE 37				
		RTE 37		4.00	0011	02
		Item T08.9903 Total:		**4.00**		
284	**T09.1000**	**SERVICE PEDESTAL STANDARD 18.4.0**	**EACH**			
		ROUTE 37 AND PONTIAC AVE.				
		ROUTE 37 AND PONTIAC AVE.		2.00	0011	02
		Item T09.1000 Total:		**2.00**		
285	**T09.9901**	**ELECTRIC METER PEDESTAL AND FOUNDATION**	**EACH**			
		PONTIAC AVENUE				
		STA. 18+75 LT		1.00	0011	02
		STA. 18+75 RT		1.00	0011	02
		Item T09.9901 Total:		**2.00**		
286	**T09.9902**	**SERVICE PEDESTAL GROUNDING 18.4.1**	**EACH**			
		ROUTE 37 AND PONTIAC AVE.				
		ROUTE 37 AND PONTIAC AVE.			0011	02
		Item T09.9902 Total:		****DELETED****		
287	**T09.9903**	**SERVICE FEED/RISER CONNECTION**	**EACH**			
		ROUTE 37 AND PONTIAC AVE.				
		ROUTE 37 AND PONTIAC AVE.		2.00	0011	02

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

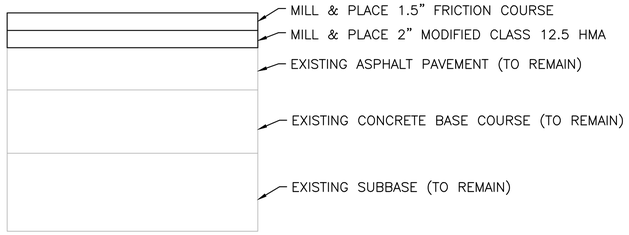
Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
354	**T07.9901 Cont.**	**COBRAHEAD CUTOFF LUMINAIRE**				
		PONTIAC AVE.				
		CORRIDOR WIDE		15.00	0011	02
		Item T07.9901 Total:		**15.00**		
355	**T07.9902**	**WIRELESS LIGHTING CONTROLLER**	**EACH**			
		RT 37 & RAMPS				
		CORRIDOR WIDE		19.00	0011	02
		Item T07.9902 Total:		**19.00**		
S356	**T12.9908**	**ACTUATED CONTROLLER TS-2, TYPE 1 W/8 PHASE ASSEMBLY GROUND MOUNTED INCLUDING CABINET STD. 19.1.0 ON EXISTING FOUNDATION**	**EACH**			
		TRAFFIC SIGNAL PLAN NO. 1				
		AS SHOWN ON PLANS		1.00	0003	04
		Item T12.9908 Total:		**1.00**		
357	**601.0300**	**CLASS A PORTLAND CEMENT CONCRETE**	**CY**			
		PONTIAC AVENUE				
		STA 27+34 TO 27+88 RT		1.50		
		ROUTE 37 WB OFF-RAMP TO PONTIAC AVENUE				
		STA. 200+09 TO STA. 200+85 LT		3.00		
		SOCKANOSSET CROSS ROAD				
		STA 410+26 TO 410+42 RT		2.50		
		STA 410+40 TO 410+53 RT		2.50		
		STA 410+70 TO 410+83 LT		9.50		
		Item 601.0300 Total:		**19.00**		
358	**703.9903**	**8" PERFORATED POLYVINYL CHLORIDE PIPE M278 UNDERDRAIN WITH FILTER MATERIAL STANDARD 1.1.0**	**LF**			

Distribution of Quantities

Project Name - Bridge Group 51A - Rt 37 C-2
Estimate Name - Addendum 4
R.I. Contract No. - 2019-CB-027
FAP Nos: 3RD-PRTY(258), NHP-0037(012), NHPG-0037(013), NHP-TIGR(003)

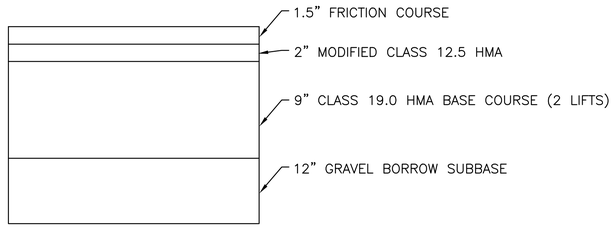
Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
358	**703.9903 Cont.**	ROUTE 37				
		STU 3		10.00	0011	02
		Item 703.9903 Total:		**10.00**		
359	**708.9901**	**CLEANING AND FLUSHING CULVERTS ALL SIZES**	**LF**			
		PONTIAC AVENUE				
		STA. 17+80 LT&RT		162.00		
		ROUTE 37 WB OFF RAMP TO PONTIAC AVENUE				
		STA. 203+35 LT&RT		309.00		
		Item 708.9901 Total:		**471.00**		
360	**813.0210**	**HEAT-APPLIED PREFABRICATED MEMBRANE**	**SY**			
		BRIDGES				
		BR 626		30.00	0011	02
		BR 630		5.00	0011	02
		BR 631		20.00	0011	02
		BR 632		25.00	0011	02
		BR 633		25.00	0011	02
		BR 634		10.00	0011	02
		BR 636		50.00	0011	02
		BR 637		50.00	0011	02
		BR 638		10.00	0011	02
		Item 813.0210 Total:		**225.00**		
361	**921.0100**	**SLOPE PAVING 16X8X4''**	**SY**			
		BRIDGE 628/629				
		BR 628 EAST ABUT		51.00	0011	02
		BR 628 WEST ABUT		77.00	0011	02
		BR 629 EAST ABUT		68.00	0011	02
		BR 629 WEST ABUT		128.00	0011	02
		Item 921.0100 Total:		**324.00**		

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTF(258)		13	197



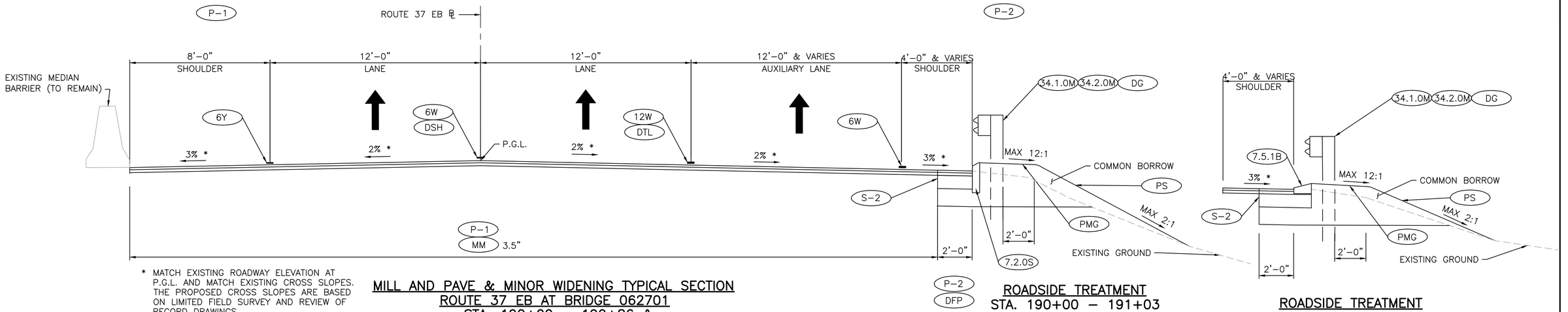
TYPICAL MILL & OVERLAY

SCALE: N.T.S.



TYPICAL FULL DEPTH RECONSTRUCTION

SCALE: N.T.S.



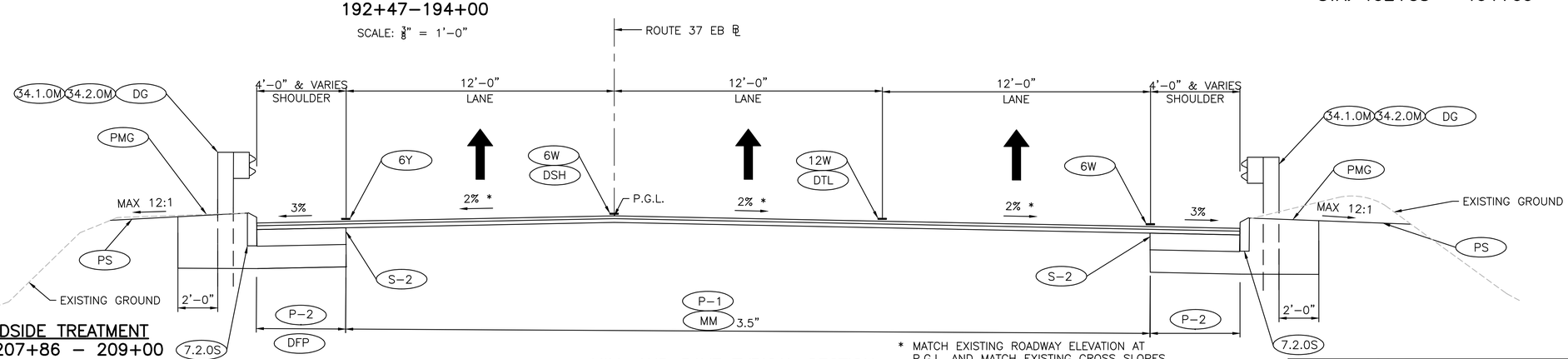
* MATCH EXISTING ROADWAY ELEVATION AT P.G.L. AND MATCH EXISTING CROSS SLOPES. THE PROPOSED CROSS SLOPES ARE BASED ON LIMITED FIELD SURVEY AND REVIEW OF RECORD DRAWINGS.

MILL AND PAVE & MINOR WIDENING TYPICAL SECTION ROUTE 37 EB AT BRIDGE 062701 STA. 190+00 – 190+86 & 192+47–194+00

SCALE: 3/8" = 1'-0"

ROADSIDE TREATMENT STA. 190+00 – 191+03

ROADSIDE TREATMENT STA. 192+38 – 194+00

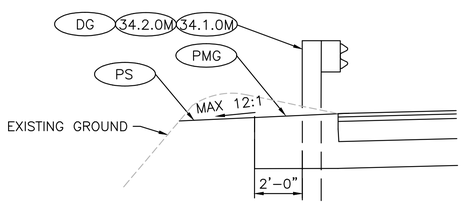


ROADSIDE TREATMENT STA. 207+86 – 209+00

* MATCH EXISTING ROADWAY ELEVATION AT P.G.L. AND MATCH EXISTING CROSS SLOPES. THE PROPOSED CROSS SLOPES ARE BASED ON LIMITED FIELD SURVEY AND REVIEW OF RECORD DRAWINGS.

MILL AND PAVE TYPICAL SECTION ROUTE 37 EB AT BRIDGE 062801 STA. 204+50 – 205+30 & 208+40 – 209+00

SCALE: 3/8" = 1'-0"



ROADSIDE TREATMENT STA. 204+50 – 205+24±

ADDENDUM No. 4

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

TYPICAL SECTIONS SHEET 1

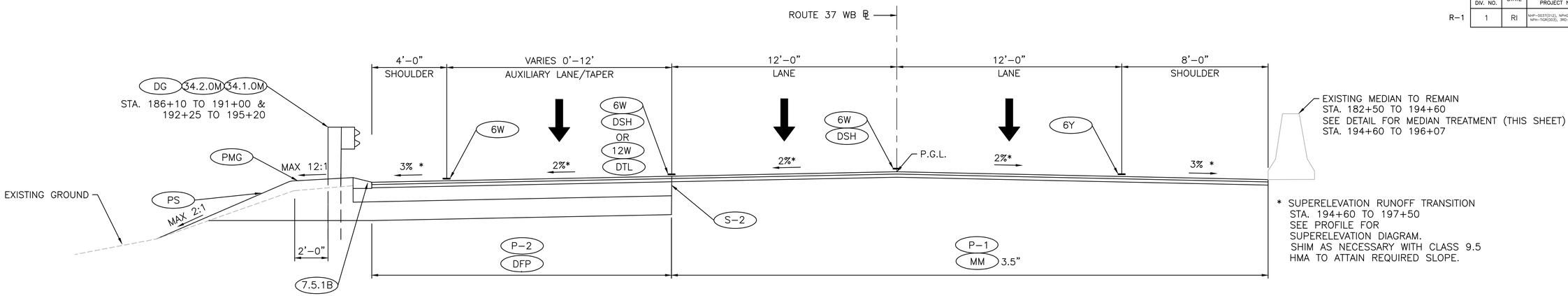
CHECKED BY _____ DATE _____ SCALE AS NOTED

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V1_013_HWY TYPICAL SECTIONS SHEET 1_R-1.dwg Plotted on Thursday, October 31, 2019 2:00:36 PM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38D-PRTF(258)		14	197

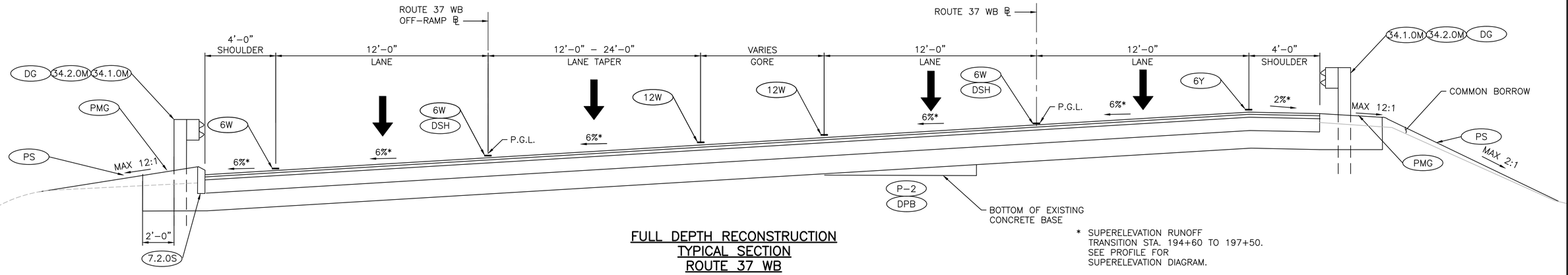
R-1



MILL AND PAVE & MINOR WIDENING TYPICAL SECTION
ROUTE 37 WB AT BRIDGE 062701

WB STA. 182+50 – 190+82 & 192+42 – 196+00

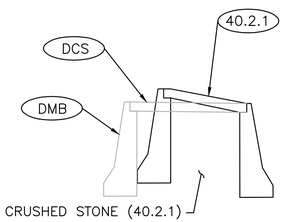
SCALE: $\frac{3}{8}$" = 1'-0"



FULL DEPTH RECONSTRUCTION
TYPICAL SECTION
ROUTE 37 WB

WB STA. 196+00 – 200+13

SCALE: $\frac{3}{8}$" = 1'-0"



NOTE:
CONTRACTOR SHALL INSTALL CRUSHED STONE AS DIRECTED BY THE ENGINEER INCIDENTAL TO THE WORK

MEDIAN TREATMENT DETAIL
WB STA. 194+60 – 196+07

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

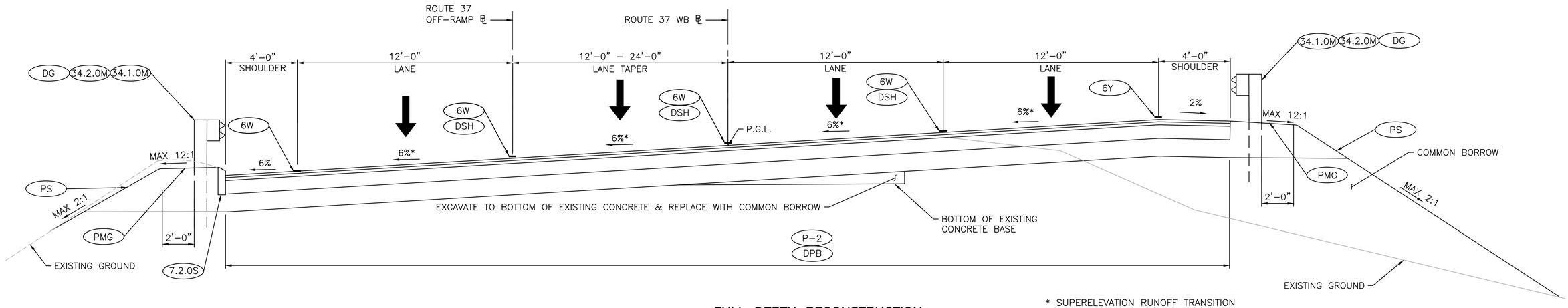
CRANSTON / WARWICK — RHODE ISLAND

TYPICAL SECTIONS SHEET 2

CHECKED BY _____ DATE _____ SCALE AS NOTED

0013C_V1_014_HWY TYPICAL SECTIONS SHEET 2_R-1

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)		15	197

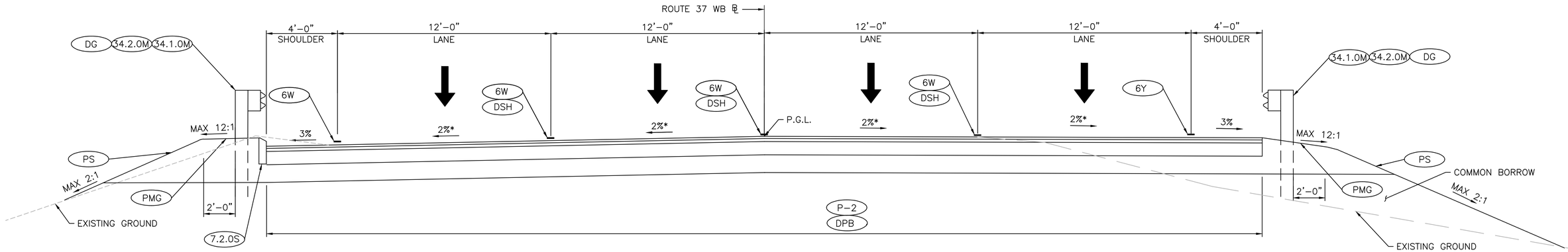


FULL DEPTH RECONSTRUCTION TYPICAL SECTION ROUTE 37 WB

WB STA. 200+13 – 204+09

SCALE: 3/8" = 1'–0"

* SUPERELEVATION RUNOFF TRANSITION
STA. 201+10 TO 204+00
SEE PROFILE FOR
SUPERELEVATION DIAGRAM.



FULL DEPTH RECONSTRUCTION TYPICAL SECTION ROUTE 37 WB

WB STA. 204+09 – 205+04

SCALE: 3/8" = 1'–0"

* SUPERELEVATION RUNOFF TRANSITION
STA. 207+25 TO 209+40
SEE PROFILE FOR
SUPERELEVATION DIAGRAM.

ADDENDUM No. 4

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

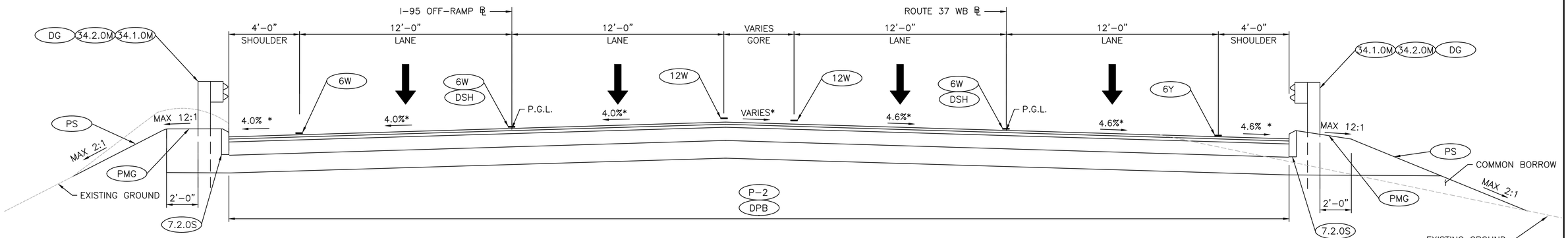
TYPICAL SECTIONS SHEET 3

CHECKED BY _____ DATE _____ SCALE AS NOTED

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V1_015_HWY TYPICAL SECTIONS SHEET 3_R-1.dwg Plotted on Thursday, October 31, 2019 2:03:52 PM

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)		16	197

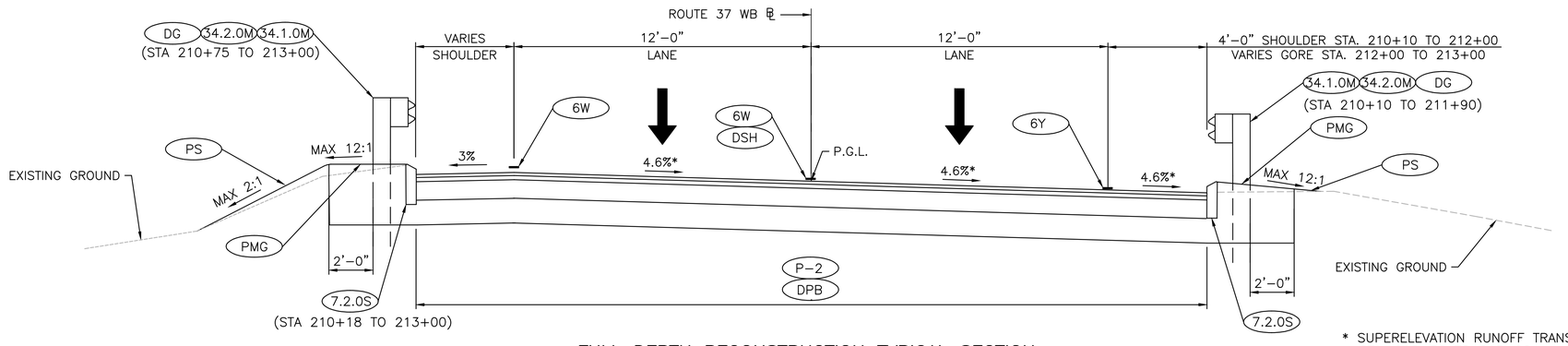


* SUPERELEVATION RUNOFF TRANSITION
STA. 207+25 TO 209+40
SEE PROFILE FOR
SUPERELEVATION DIAGRAM.

FULL DEPTH RECONSTRUCTION TYPICAL SECTION
ROUTE 37 WB

WB STA. 207+20 – 210+10

SCALE: $\frac{3}{8}$" = 1'–0"



* SUPERELEVATION RUNOFF TRANSITION
STA. 212+50 TO 213+00
SEE PROFILE FOR
SUPERELEVATION DIAGRAM.

FULL DEPTH RECONSTRUCTION TYPICAL SECTION
ROUTE 37 WB

WB STA. 210+10 – 213+00

SCALE: $\frac{3}{8}$" = 1'–0"

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

TYPICAL SECTIONS SHEET 4

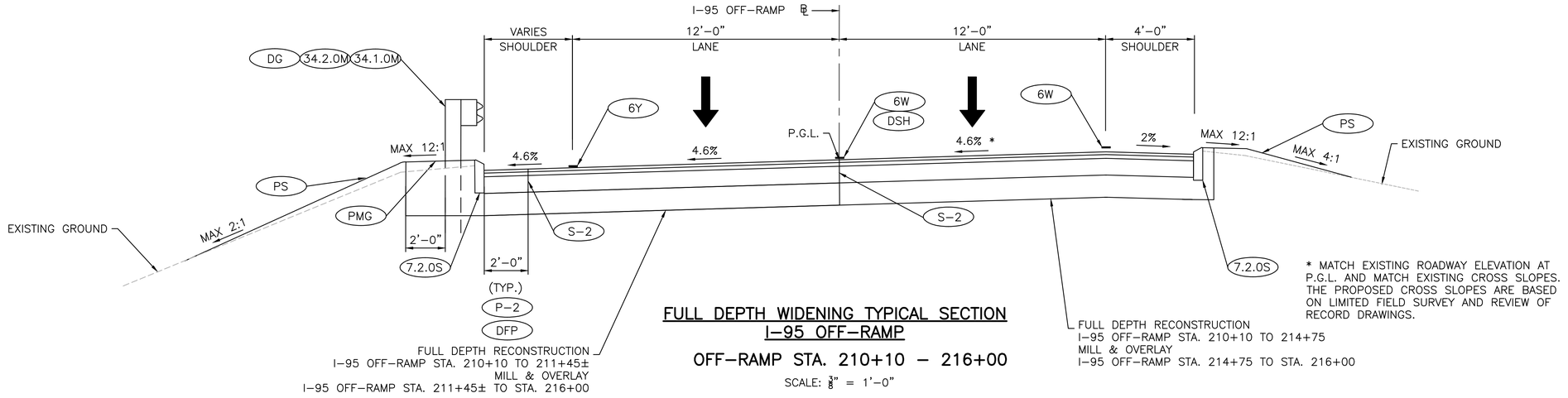
CHECKED BY _____ DATE _____ SCALE AS NOTED

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V1_016_HWY TYPICAL SECTIONS SHEET 4_R-1.dwg Plotted on Thursday, October 31, 2019 2:04:54 PM

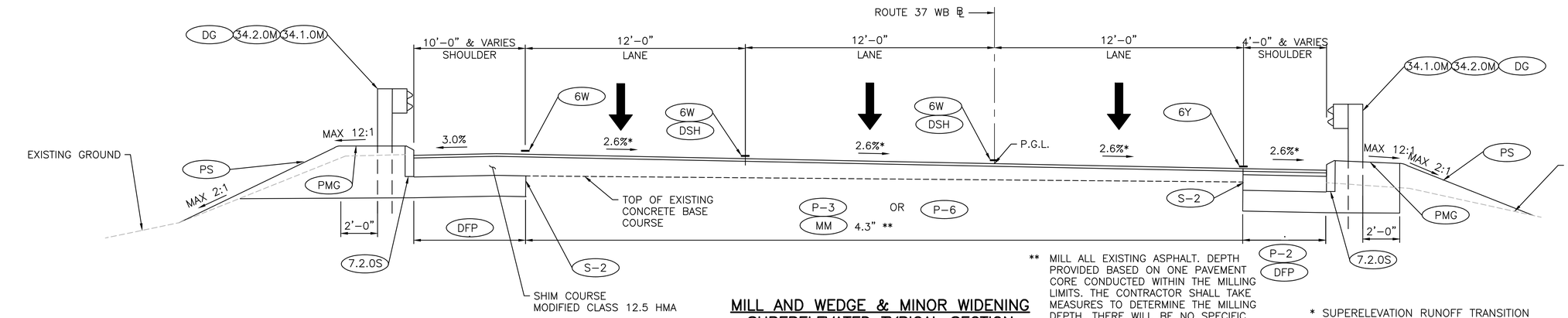
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1 1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)		17	197



FULL DEPTH WIDENING TYPICAL SECTION
I-95 OFF-RAMP
OFF-RAMP STA. 210+10 – 216+00

SCALE: 3/8" = 1'-0"

* MATCH EXISTING ROADWAY ELEVATION AT P.G.L. AND MATCH EXISTING CROSS SLOPES. THE PROPOSED CROSS SLOPES ARE BASED ON LIMITED FIELD SURVEY AND REVIEW OF RECORD DRAWINGS.

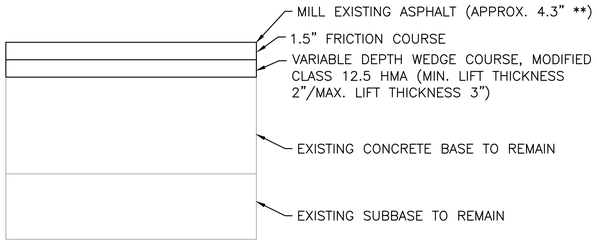


MILL AND WEDGE & MINOR WIDENING SUPERELEVATED TYPICAL SECTION
ROUTE 37 WB AT BRIDGE 063501
WB STA. 234+50 – 235+41 & 237+29 – 238+00

SCALE: 3/8" = 1'-0"

** MILL ALL EXISTING ASPHALT. DEPTH PROVIDED BASED ON ONE PAVEMENT CORE CONDUCTED WITHIN THE MILLING LIMITS. THE CONTRACTOR SHALL TAKE MEASURES TO DETERMINE THE MILLING DEPTH. THERE WILL BE NO SPECIFIC PAYMENT FOR THIS WORK. IT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

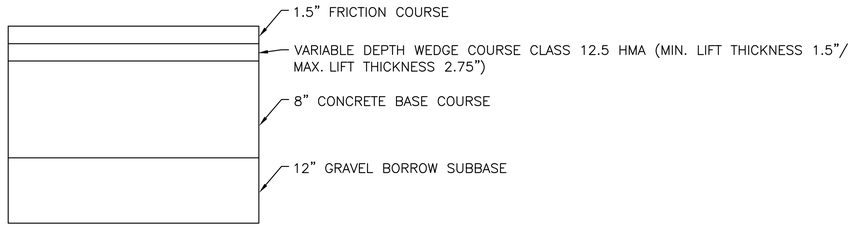
* SUPERELEVATION RUNOFF TRANSITION STA. 234+50 TO 235+62 & STA. 237+16 TO STA 238+00 SEE PROFILE FOR SUPERELEVATION DIAGRAM.



TYPICAL MILL AND WEDGE

SCALE: N.T.S.

P-3



TYPICAL FULL DEPTH RIGID BASE CONSTRUCTION
WB STA. 235+41 TO SLEEPER SLAB & SLEEPER SLAB TO WB STA. 237+29

SCALE: N.T.S.

P-6

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

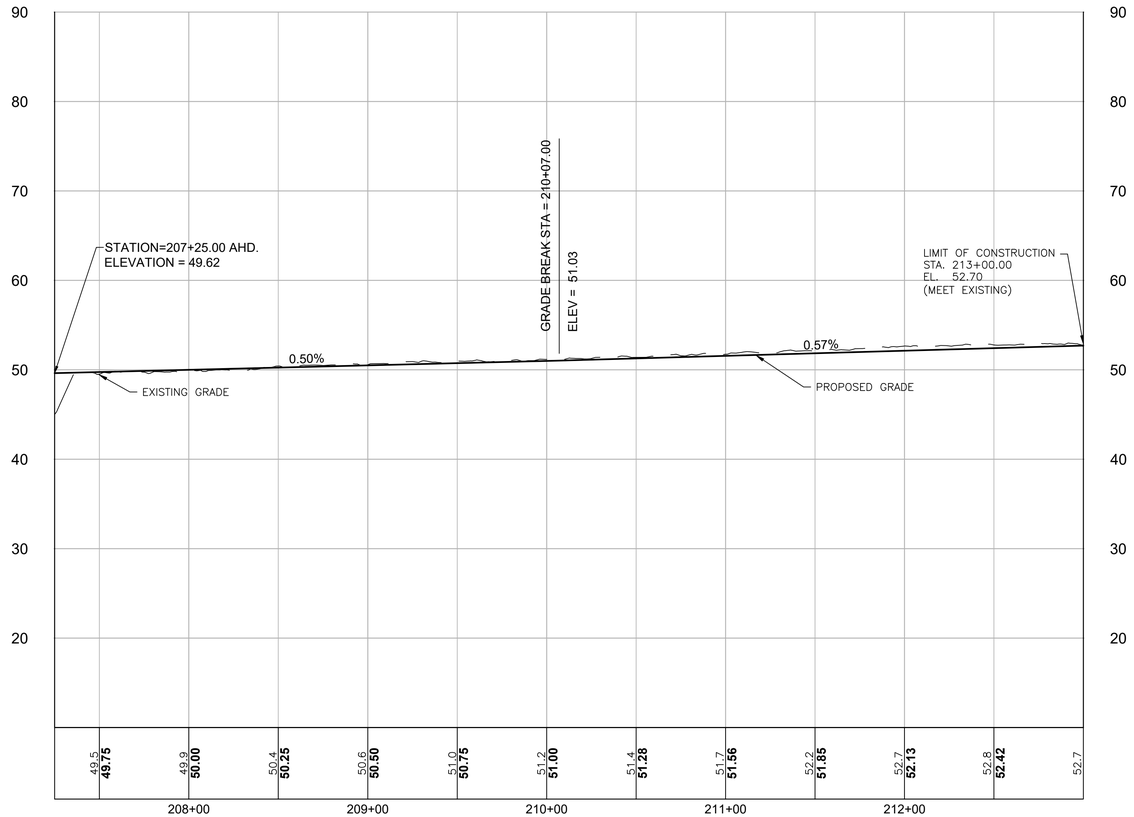
CRANSTON / WARWICK — RHODE ISLAND

TYPICAL SECTIONS SHEET 5

CHECKED BY _____ DATE _____ SCALE AS NOTED

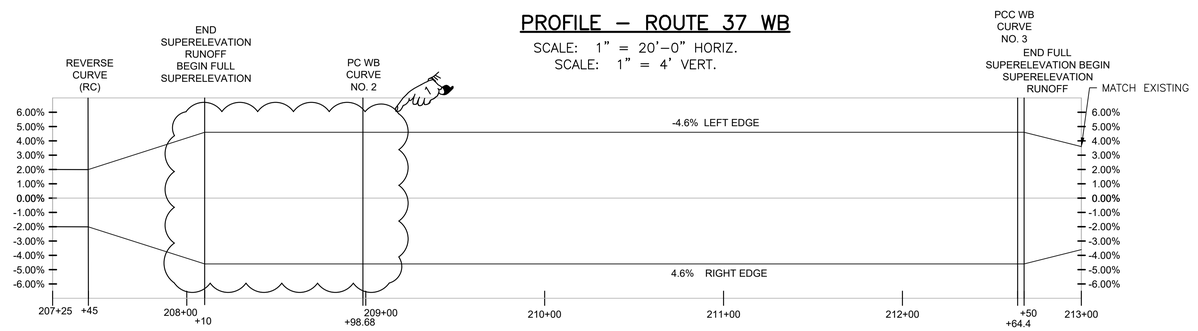
0013C_V1_017_HWY TYPICAL SECTIONS SHEET 5_R-1.dwg Plotted on Thursday, October 31, 2019 2:05:45 PM

	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 38G-PRTY(258)		69	197



PROFILE – ROUTE 37 WB

SCALE: 1" = 20'-0" HORIZ.
SCALE: 1" = 4' VERT.



SUPERELEVATION GRAPH – ROUTE 37 WB

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY
1	10/31/19	EKM

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK RHODE ISLAND

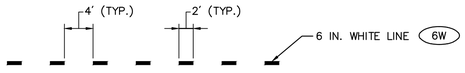
HIGHWAY PROFILE
SHEET 7

CHECKED BY _____ DATE _____ SCALE AS NOTED

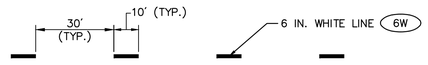
0013C_V1_042_HIGHWAY PROFILE SHEET 7 ADD 3

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI		2019	45	80

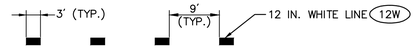
R-1



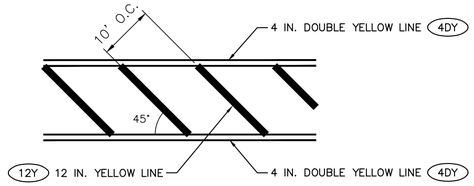
INTERSECTION WHITE GUIDE LINE MARKING DETAIL (6DSW)
NOT TO SCALE



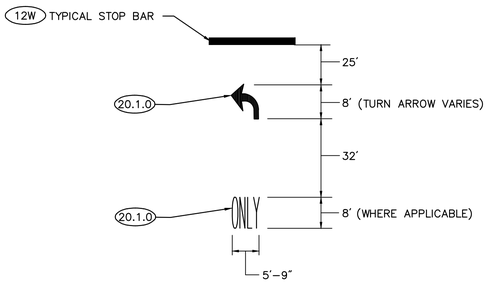
BROKEN WHITE LANE LINE MARKING DETAIL (6BW)
NOT TO SCALE



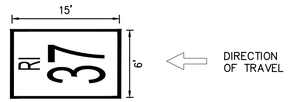
DASHED WHITE LANE DROP MARKING DETAIL (12DWL)
NOT TO SCALE



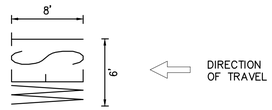
MEDIAN STRIPING DETAIL (MED)
NOT TO SCALE



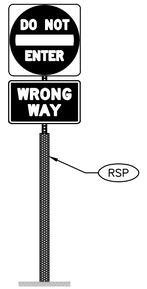
TURN LANE MARKING LAYOUT
NOT TO SCALE



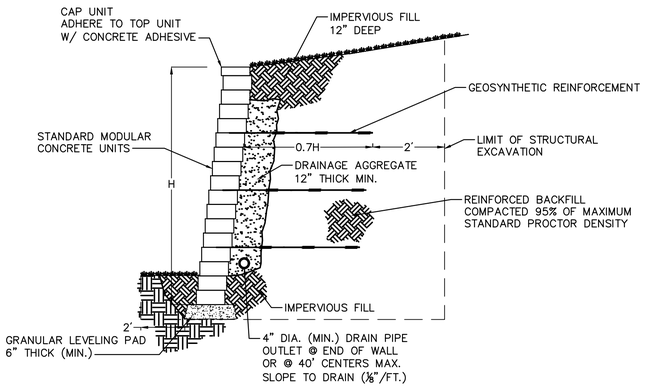
STATE ROUTE PAVEMENT MARKING DETAIL (RTPM)
NOT TO SCALE



WORD PAVEMENT MARKING "WEST" DETAIL (WPM)
NOT TO SCALE

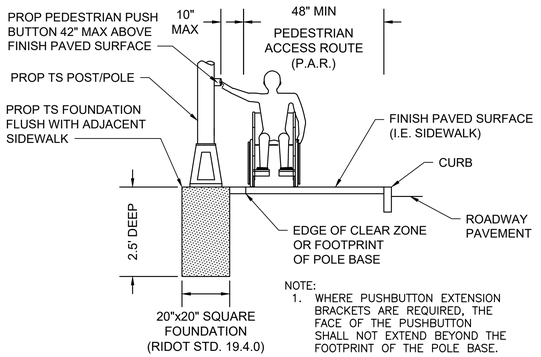


REFLECTIVE SIGN POST DETAIL (RSP)
NOT TO SCALE



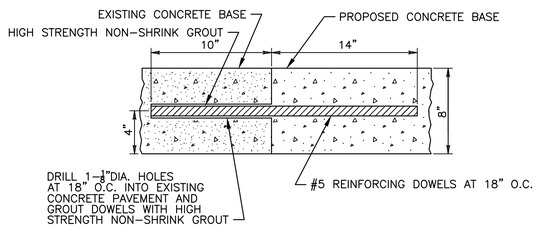
NOTES:
1. THIS DRAWING IS FOR REFERENCE ONLY. FINAL PRODUCT DESIGNS, INCLUDING ALL CONSTRUCTION DETAILS, SHALL BE PREPARED BY A RHODE ISLAND LICENSED PROFESSIONAL ENGINEER USING THE ACTUAL CONDITIONS OF THE PROPOSED SITE.

MODULAR RETAINING WALL (MRW)
NOT TO SCALE



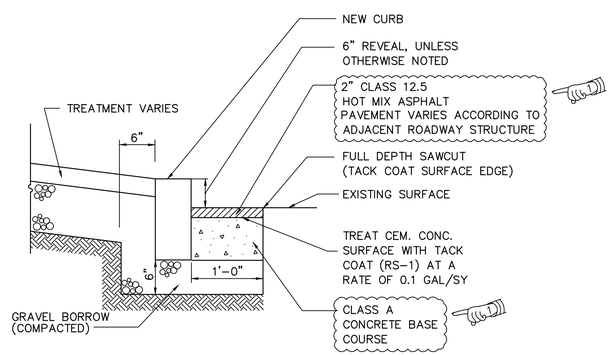
NOTE:
1. WHERE PUSHBUTTON EXTENSION BRACKETS ARE REQUIRED, THE FACE OF THE PUSHBUTTON SHALL NOT EXTEND BEYOND THE FOOTPRINT OF THE POLE BASE.

PEDESTRIAN PUSHBUTTON REACH REQUIREMENTS (8' TS POST)
NOT TO SCALE



NOTE:
1. GROUT SHALL BE PER THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION APPROVED PRODUCTS LIST.

RIGID BASE REINFORCING DOWEL DETAIL
NOT TO SCALE



CURB INSTALLATION IN EXISTING PAVEMENT

REVISIONS		
NO.	DATE	BY
1	10/25/19	VHB

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2
IMPROVEMENTS TO PONTIAC AVENUE AND ROUTE 37 WEST RAMPS
CRANSTON, RHODE ISLAND

TYPICAL DETAILS PLAN NO. 1

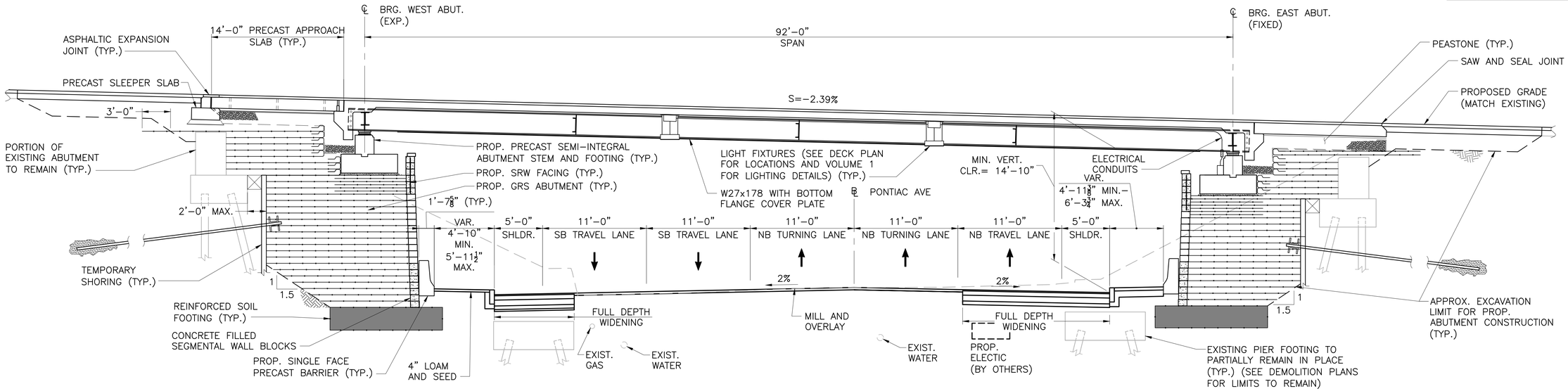
CHECKED BY _____ DATE _____ SCALE _____

vhb
1 Cedar Street
Suite 400
Providence, RI 02903
401.272.8100

ADDENDUM NO. 4

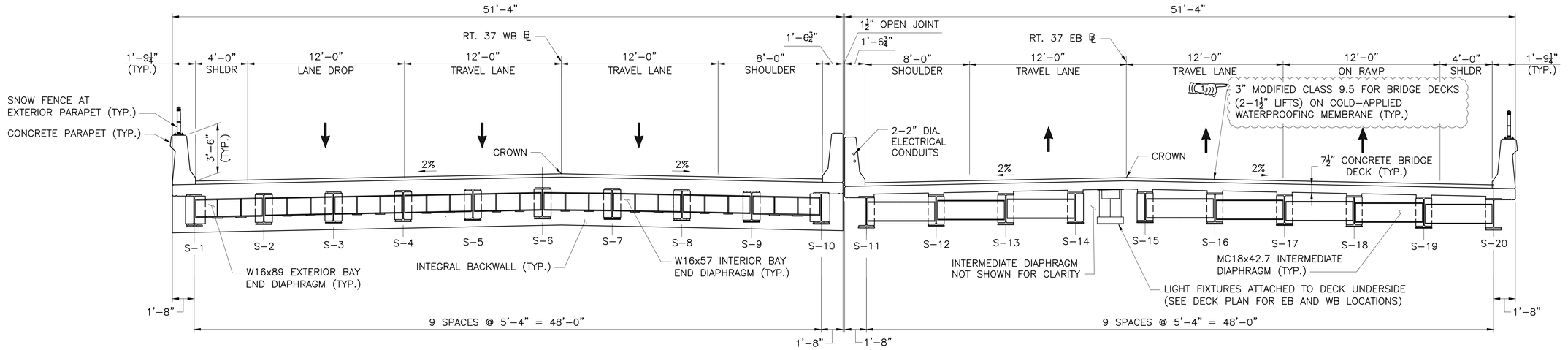
R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			8	56



LONGITUDINAL SECTION

(LOOKING UPSTATION ON PONTIAC AVENUE)
3/16"=1'-0"



TYPICAL SECTION AT END DIAPHRAGMS

TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

(LOOKING UPSTATION ON ROUTE 37)
SCALE: 1/4"=1'-0"

ADDENDUM NO. 4

REVISIONS		
NO.	DATE	BY
1	10/30/19	VHB

vhb
1 Cedar Street
Suite 400
Providence, RI 02903
401.272.8100

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

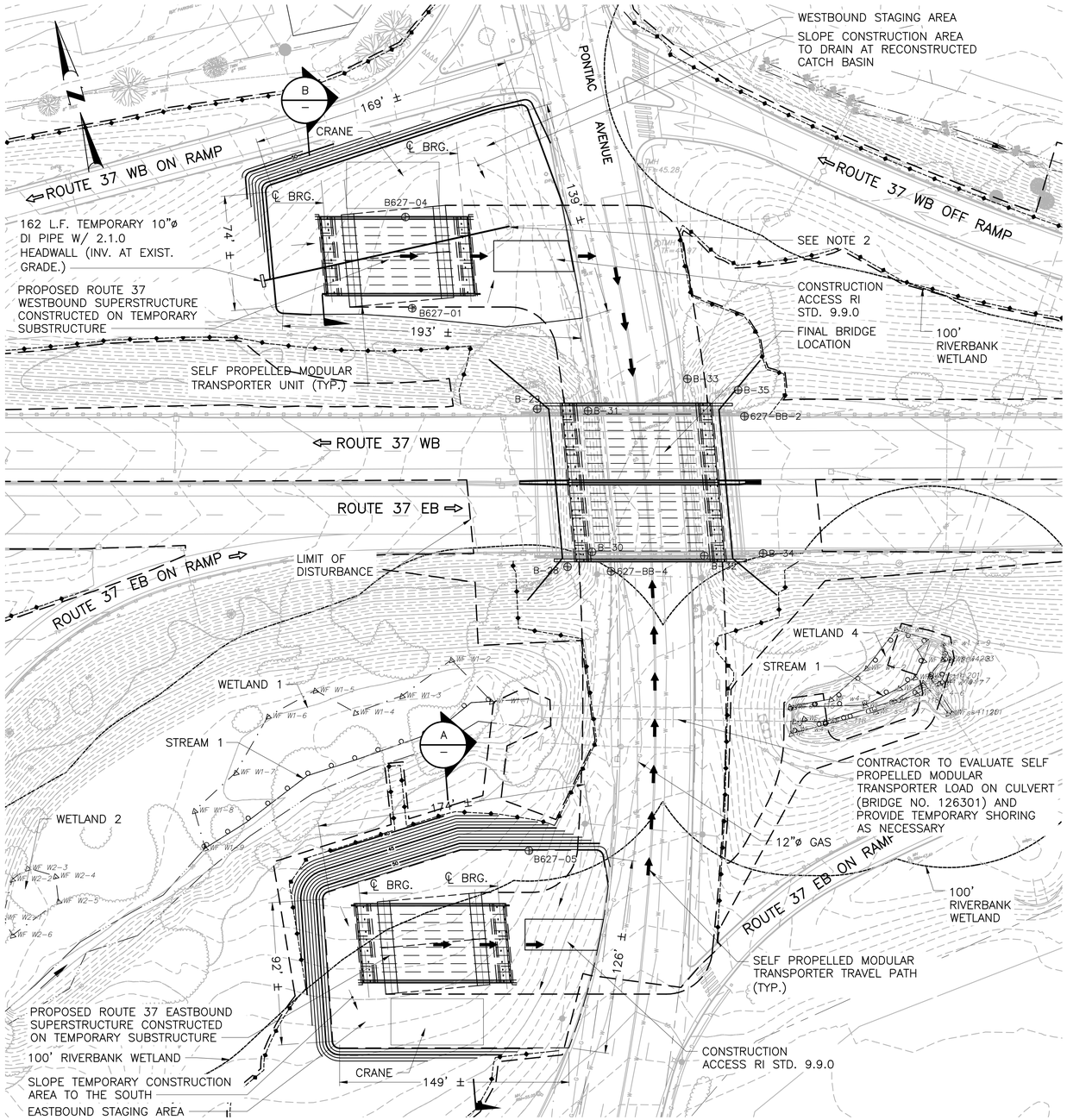
BRIDGE GROUP 51A - RT. 37 C-2
REPLACEMENT OF PONTIAC AVENUE
BRIDGE NO. 062701 AND PRESERVATION
OF BRIDGE NOS. 126301 AND 126401
CRANSTON, RHODE ISLAND

LONGITUDINAL AND TYPICAL SECTION

CHECKED BY _____ DATE _____ SCALE _____

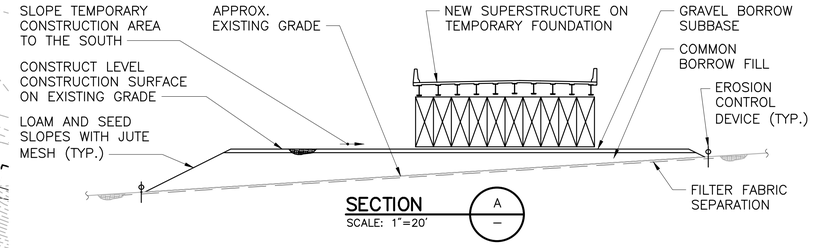
2601E_V3_008_BTYPICAL_ADD04

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			10	56

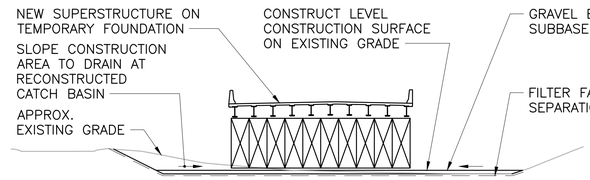


BRIDGE STAGING AREA AND SELF PROPELLED MODULAR TRANSPORTER (SPMT) TRAVEL PATH

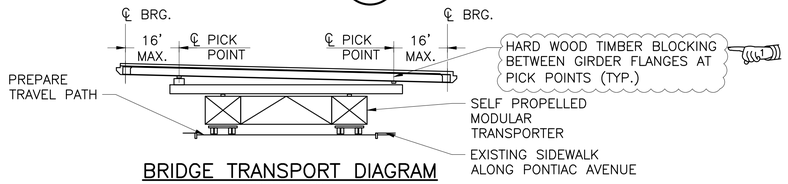
SCALE: 1"=40'



SECTION A
SCALE: 1"=20'



SECTION B
SCALE: 1"=20'



BRIDGE TRANSPORT DIAGRAM

SCALE: NTS

SUGGESTED WORK PRIOR TO AND DURING BRIDGE TRANSPORT:

WORK PRIOR TO BRIDGE TRANSPORT

1. PREPARE AND SUBMIT ALL SHOP DRAWINGS.
2. RELOCATE UTILITIES.
3. MOBILIZE ALL MATERIALS AND EQUIPMENT.
4. PREPARE BRIDGE STAGING AREA.
5. CONSTRUCT TEMPORARY SUBSTRUCTURE.
6. CONSTRUCT PROPOSED BRIDGE SUPERSTRUCTURE (COMPLETE EXCEPT PAVEMENT)
7. CONSTRUCT GEOSYNTHETIC REINFORCED SOIL WALL UNDER EXISTING BRIDGE TO LIMITS INDICATED AND/OR AS PERMITTED BY CONTRACTOR'S MEANS AND METHODS.
8. BEGIN APPROACH WORK WHERE APPROPRIATE PER TMP.
9. SET UP PONTIAC AVE DETOUR AND PREPARE TRAVEL PATH.
10. SETUP AND TEST SELF PROPELLED MODULAR TRANSPORTER, BLOCKING, AND LIFT SYSTEM. VERIFY EVEN LIFT OFF AT EACH BEARING. DEFLECTION AT CENTERLINE OF BEARING SHALL NOT EXCEED $\frac{1}{2}$" MAXIMUM.

WORK DURING BRIDGE TRANSPORT

1. CLOSE ROUTE 37 (EASTBOUND OR WESTBOUND) PER TMP.
2. DEMOLISH EXISTING BRIDGE TO PHASE LIMITS. COMPLETE GEOSYNTHETIC REINFORCED SOIL WALL CONSTRUCTION.
3. INSTALL PRECAST SUBSTRUCTURE ELEMENTS
4. TRANSPORT PROPOSED BRIDGE SUPERSTRUCTURE FROM BRIDGE STAGING AREA ALONG THE TRAVEL PATH TO FINAL LOCATION.
5. PLACE PROPOSED BRIDGE SUPERSTRUCTURE ON BEAM PEDESTALS.
6. COMPLETE APPROACH WORK. (INCLUDING BUT NOT LIMITED TO WALLS, SLEEPER SLABS, BARRIERS, ENDPOSTS, APPROACH SLABS.
7. COMPLETE FIRST 1$\frac{1}{2}$" LAYER OF BRIDGE PAVEMENT; COMPLETE APPROACH PAVEMENT TO MATCH AT BRIDGE.
8. UPON RIDOT APPROVAL, OPEN ROUTE 37 EASTBOUND OR WESTBOUND AND PONTIAC AVENUE.

NOTE: THIS SUGGESTED WORK IS INTENDED ONLY FOR THE PURPOSE OF AIDING THE CONTRACTOR IN DEVELOPING HIS/HER PROJECT SCHEDULE. NO SPECIFIC SEQUENCE IS IMPLIED OR MANDATED.

NOTES:

1. THE CONTRACTOR SHALL NOT DISTURB THE 12"ø HIGH PRESSURE GAS LINE RUNNING ALONG PONTIAC AVENUE THROUGHOUT THE DURATION OF THE BRIDGE TRANSPORT TO FINAL LOCATION. COST FOR PROTECTING THIS AND ALL EXISTING UTILITIES BELOW AND ABOVE GROUND SHALL BE PAID FOR UNDER ITEM CODES 800.9903 & 800.9904.
2. RECONSTRUCT CATCH BASIN TO ACCEPT TEMPORARY 10" DIA. DI PIPE. PROTECT CATCH BASIN WITH APPROPRIATE EROSION CONTROL DEVICE. SEE VOLUME 1 FOR DETAILS OF THIS STRUCTURE AFTER BRIDGE STAGING AREAS HAS BEEN REMOVED.
3. STAGING AREAS TO BE REMOVED AND RESTORED UPON COMPLETION OF THE BRIDGE SUPERSTRUCTURE INSTALLATIONS.

ADDENDUM NO. 4

REVISIONS		
NO.	DATE	BY
1	10/31/19	VHB

vhb
1 Cedar Street
Suite 400
Providence, RI 02903
401.272.8100

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

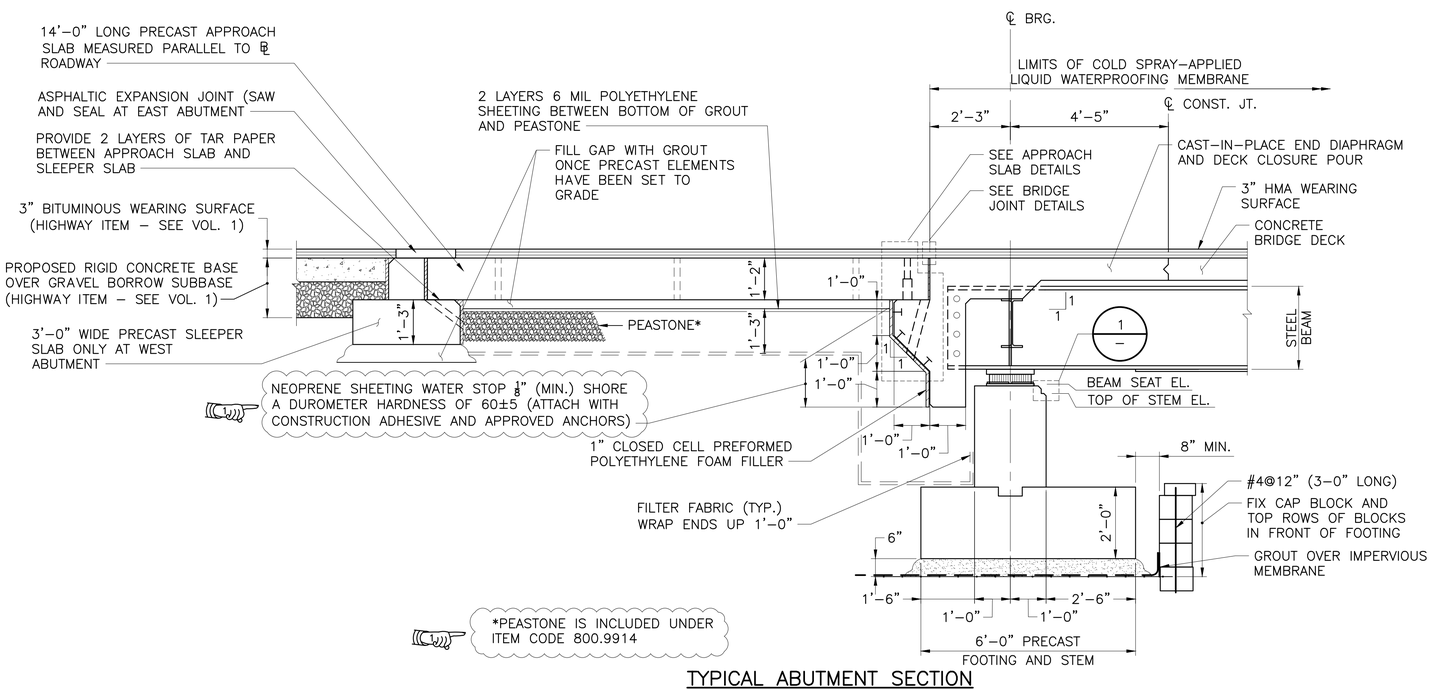
BRIDGE GROUP 51A - RT. 37 C-2
REPLACEMENT OF PONTIAC AVENUE
BRIDGE NO. 062701 AND PRESERVATION
OF BRIDGE NOS. 126301 AND 126401
CRANSTON, RHODE ISLAND

BRIDGE STAGING AREA AND SPMT TRAVEL PATH

CHECKED BY _____ DATE _____ SCALE _____

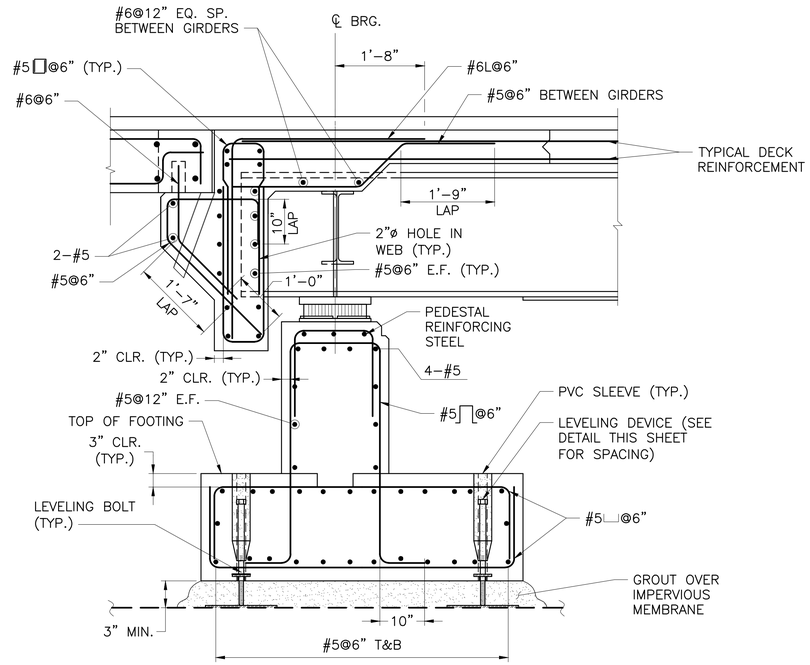
R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			27	56



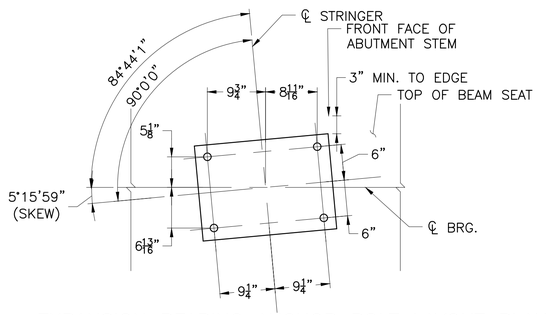
TYPICAL ABUTMENT SECTION

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



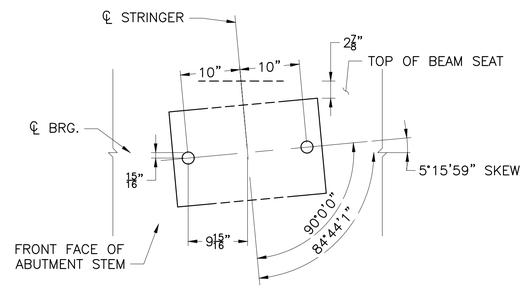
TYPICAL ABUTMENT REINFORCEMENT

SCALE: 3/4"=1'-0"



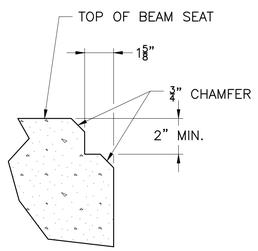
EXPANSION BEARING ANCHOR BOLT LAYOUT PLAN

SCALE: 1"=1'-0"



FIXED BEARING ANCHOR BOLT LAYOUT PLAN

SCALE: 1"=1'-0"



DETAIL 1/1 – 1/28

SCALE: 3"=1'-0"

ADDENDUM NO. 4

REVISIONS		
NO.	DATE	BY
1	10/30/19	VHB

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2
REPLACEMENT OF PONTIAC AVENUE
BRIDGE NO. 062701 AND PRESERVATION
OF BRIDGE NOS. 126301 AND 126401
CRANSTON, RHODE ISLAND

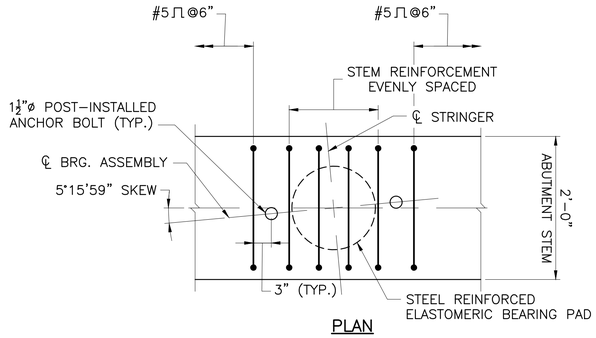
ABUTMENT DETAILS 1

CHECKED BY _____ DATE _____ SCALE _____

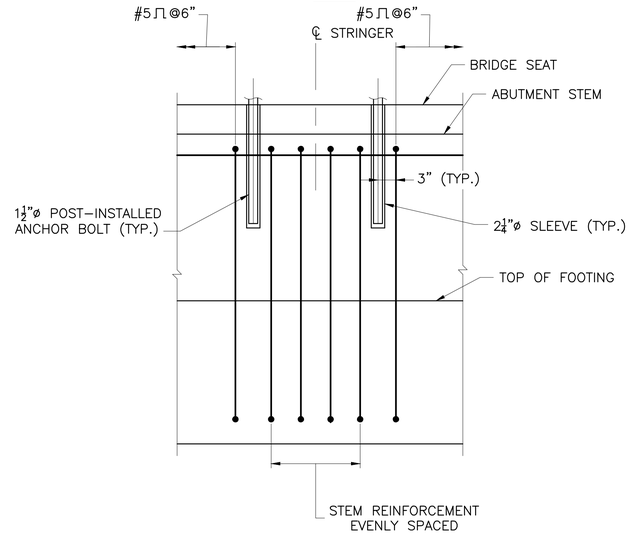
vhb
1 Cedar Street
Suite 400
Providence, RI 02903
401.272.8100

2601E_V3_027_ABUTDETL001_ADD04

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	RI			28	56



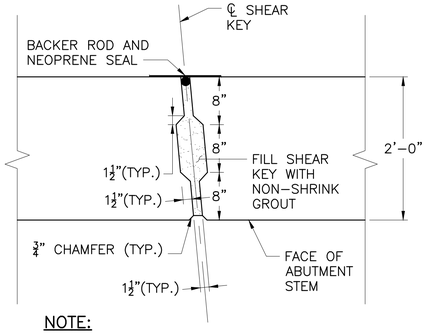
PLAN



ELEVATION

ANCHOR BOLT REINFORCEMENT LAYOUT

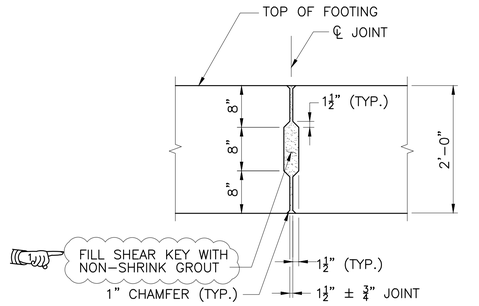
SCALE: 1"=1'-0"



NOTE:
FOOTING REINFORCEMENT IS NOT SHOWN FOR CLARITY.

ABUTMENT JOINT DETAIL

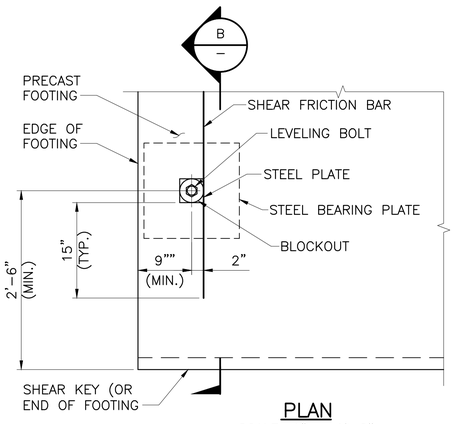
SCALE: 1"=1'-0"



NOTE:
FOOTING REINFORCEMENT IS NOT SHOWN FOR CLARITY.

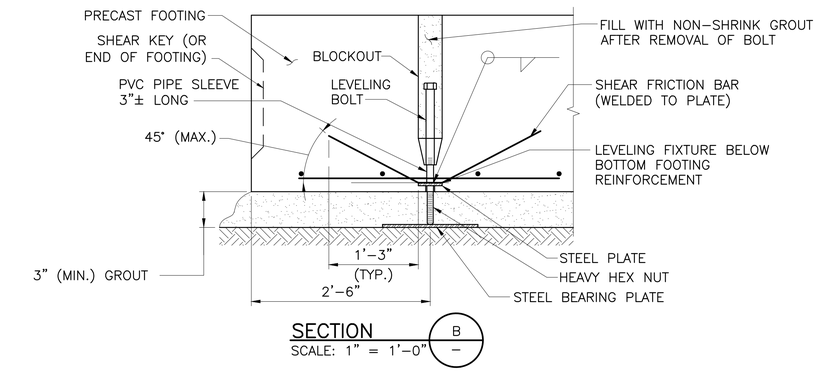
FOOTING JOINT DETAIL

NOT TO SCALE



PLAN

SCALE: 1" = 1'-0"

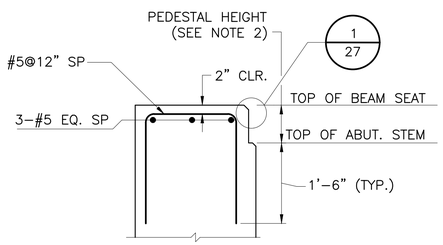


SECTION B – SCALE: 1" = 1'-0"

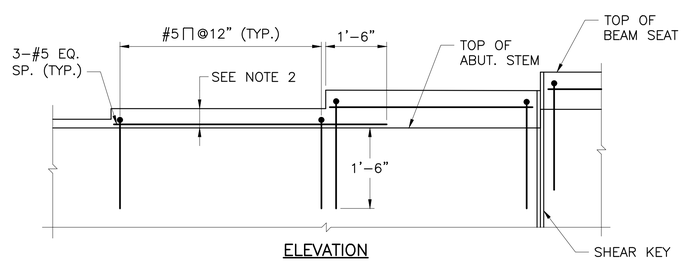
LEVELING BOLT ASSEMBLY

LEVELING BOLT ASSEMBLY NOTES:

1. THE LEVELING BOLT ASSEMBLY SHOWN IS SCHEMATIC. DESIGN OF THE LEVELING BOLT ASSEMBLY SHALL BE PERFORMED BY THE CONTRACTOR AND SUBMITTED WITH THE ASSEMBLY PLAN TO ENGINEER FOR APPROVAL.
2. BOLT SHALL BE REMOVED AFTER THE GROUT HAS SET.
3. STEEL PLATES SHALL BE AASHTO M 270 GRADE 36 UNCOATED STEEL.
4. BOLTS SHALL BE HS AASHTO M 164 AND UNCOATED.
5. REINFORCEMENT SHALL BE WELDABLE LOW-ALLOY ASTM A 706 BARS.
6. GREASE OR OIL NUT AND BOLT THREADS TO FACILITATE LEVELING AND REMOVAL.



SECTION



ELEVATION

NOTES

1. TYPICAL STEM REINFORCEMENT NOT SHOWN FOR CLARITY.
2. REINFORCING IS REQUIRED WHEN PEDESTAL IS 4" OR GREATER ABOVE TOP OF ABUTMENT STEM.

PEDESTAL REINFORCING DETAIL

SCALE: N.T.S.

ADDENDUM NO. 4

REVISIONS		
NO.	DATE	BY
1	10/30/19	VHB

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2
REPLACEMENT OF PONTIAC AVENUE
BRIDGE NO. 062701 AND PRESERVATION
OF BRIDGE NOS. 126301 AND 126401
CRANSTON, RHODE ISLAND

ABUTMENT DETAILS 2

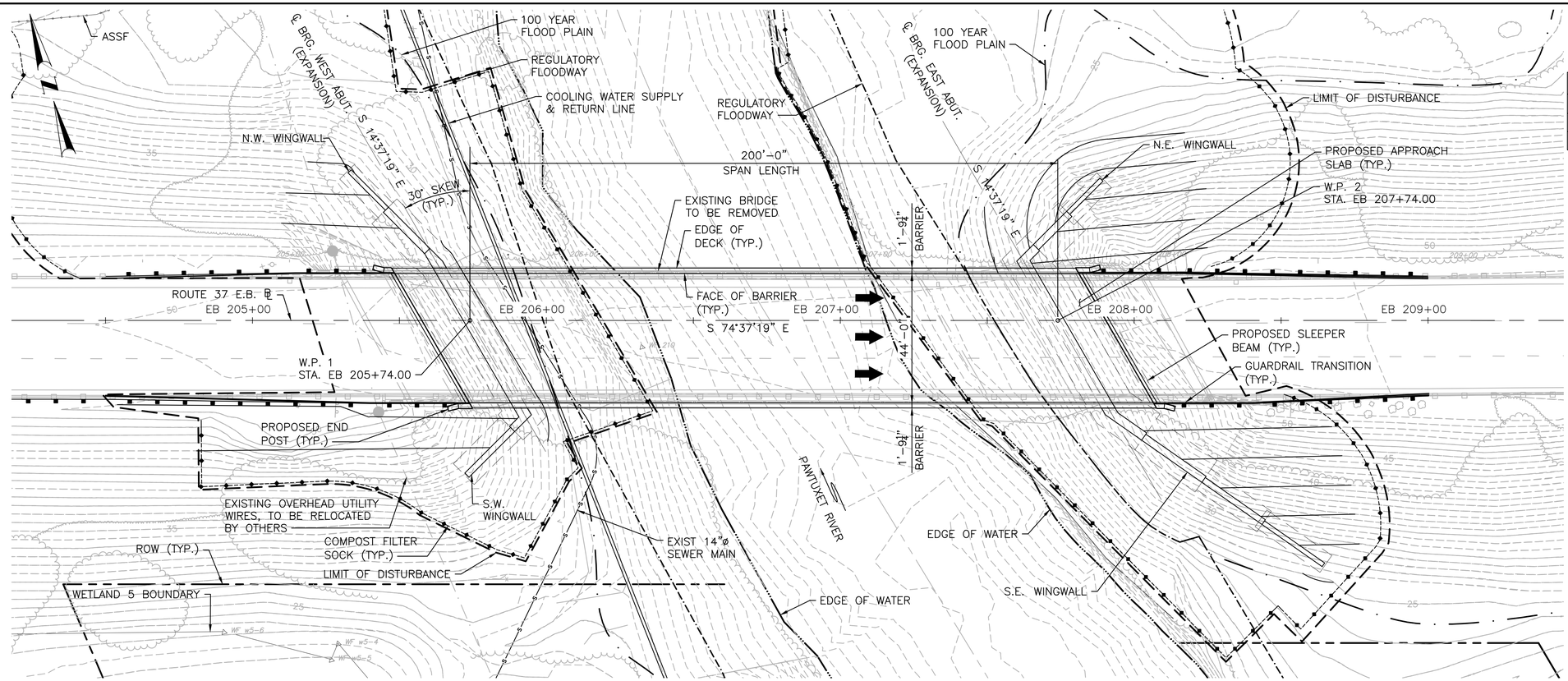
CHECKED BY _____ DATE _____ SCALE _____

vhb
1 Cedar Street
Suite 400
Providence, RI 02903
401.272.8100

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3KG-PRTY(258)	2019	6	85

CONSTRUCTION WORKING POINT

WORKING POINT	STATION	NORTHING	EASTING
W.P. 1	EB 205+74.00	242551.003	342567.308
W.P. 2	EB 207+74.00	242497.965	342760.147

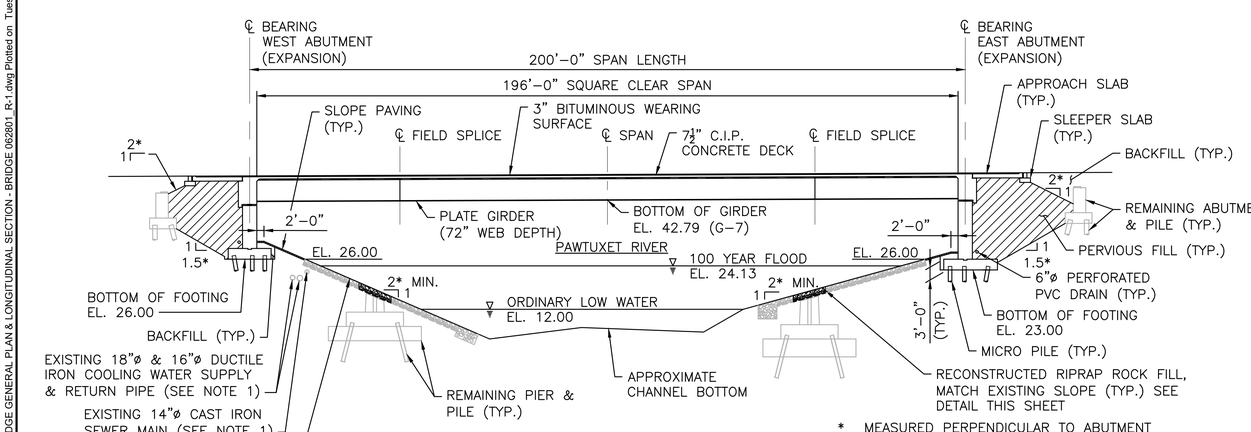


NOTE:

PROJECT AREA SHOWN IS WITHIN THE 200 FOOT RIVERBANK WETLAND.

PLAN

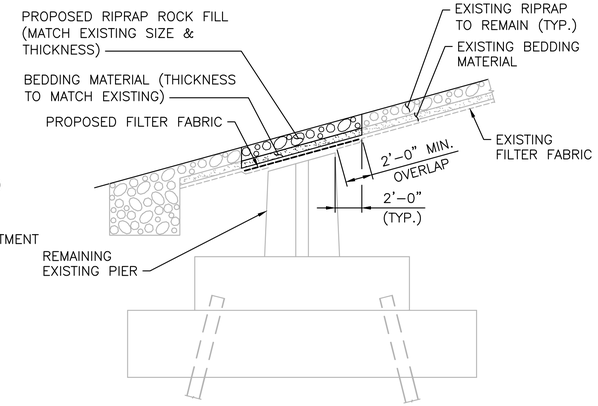
SCALE: 1" = 20'



* MEASURED PERPENDICULAR TO ABUTMENT

LONGITUDINAL SECTION

SCALE: 1" = 20'



RECONSTRUCTED RIPRAP ROCK FILL DETAIL

NOT TO SCALE

NOTE:

1. ALL EXISTING UTILITIES SHALL BE FIELD LOCATED BY MEANS OF A RADAR, LINE AND/OR EXPLORATORY EXCAVATION LOCATION. EACH UTILITY SHALL BE FIELD VERIFIED AND ANY CONFLICT WITH THE DESIGN SHALL BE IMMEDIATELY REPORTED TO THE DESIGN ENGINEER AND UTILITY HOLDER PRIOR TO CONSTRUCTION. ALL UTILITIES SHALL BE PROPERLY PROTECTED DURING AND THROUGHOUT THE CONSTRUCTION PERIOD. ANY DAMAGES TO THE UTILITY SHALL BE IMMEDIATELY REPORTED TO THE UTILITY OWNER. COST TO BE INCLUDED UNDER ITEM CODE 800.9930.

ADDENDUM No. 4

BRIDGE 062801

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

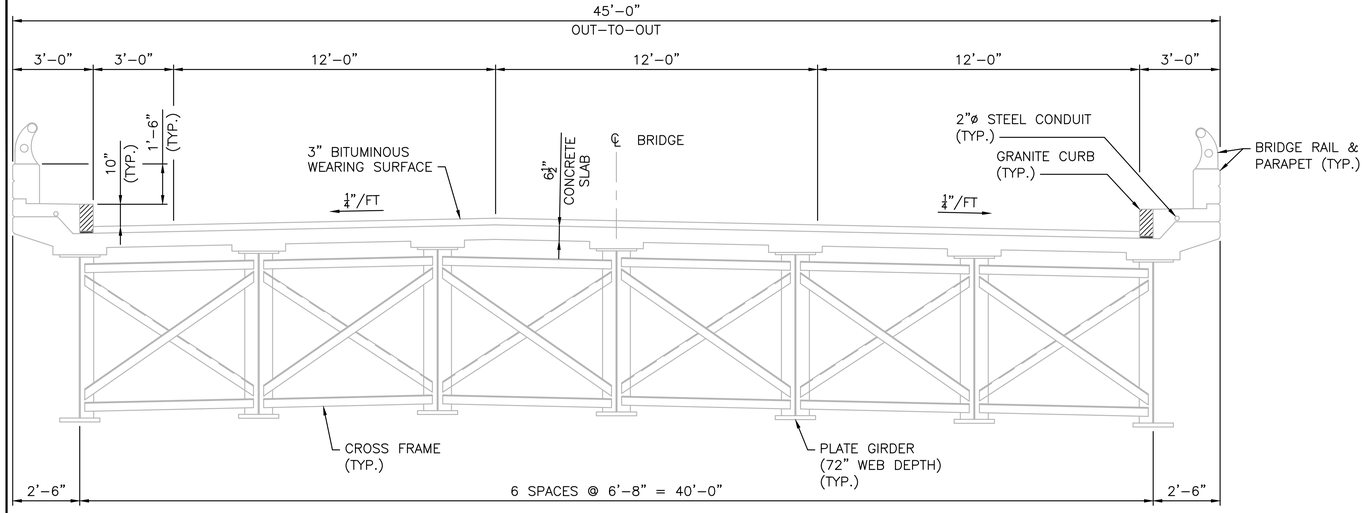
CRANSTON / WARWICK — RHODE ISLAND

BRIDGE GENERAL PLAN & LONGITUDINAL SECTION

CHECKED BY _____ DATE _____ SCALE AS NOTED

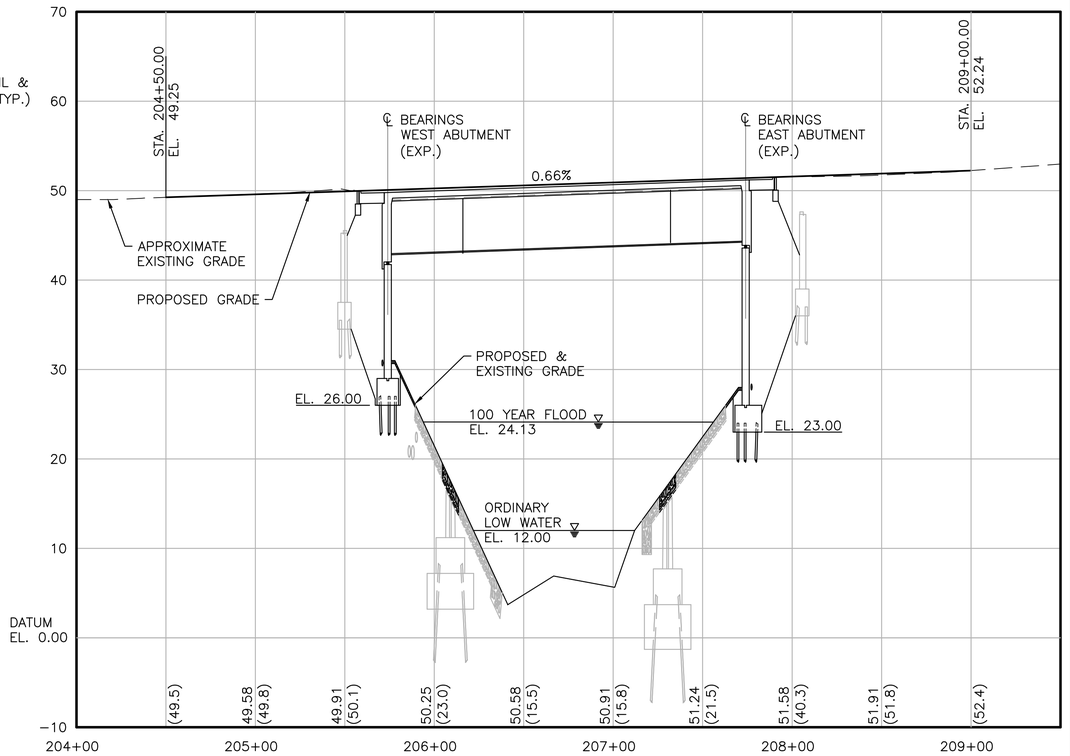
TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RS-PRTY(258)	2019	7	85



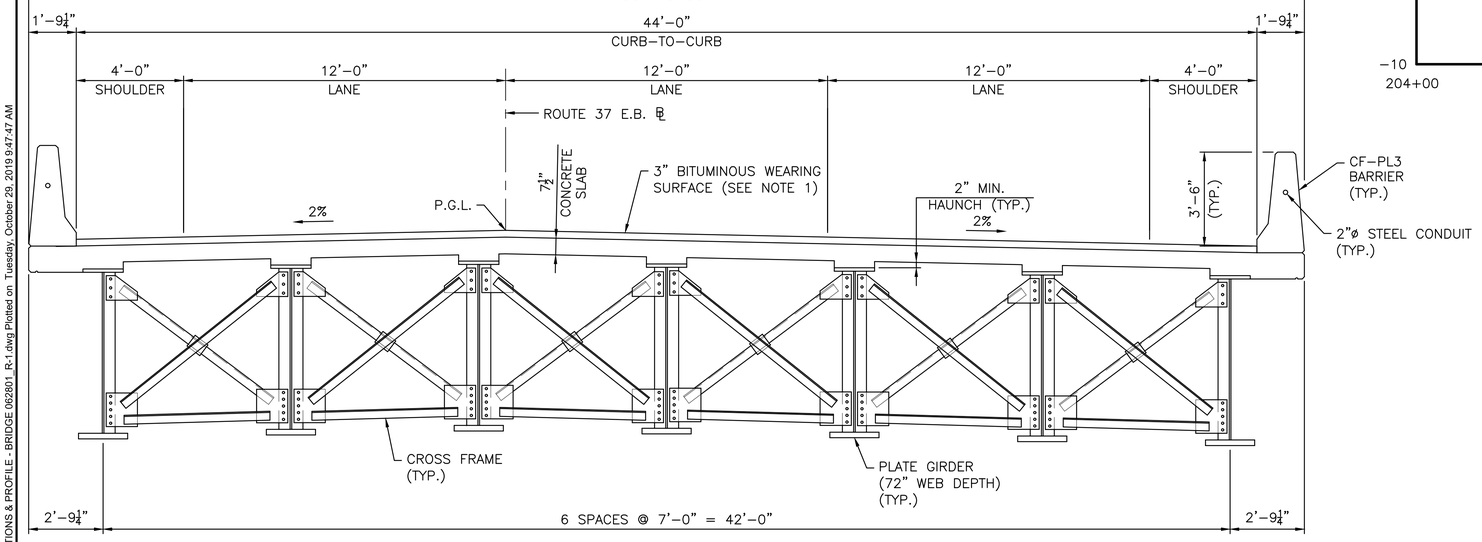
EXISTING TRANSVERSE SECTION

(SPAN 2 SHOWN)
SCALE: 3/8" = 1'-0"



BRIDGE 062801 PROFILE

SCALE: 1" = 40' HORIZ.
SCALE: 1" = 8' VERT.



PROPOSED TRANSVERSE SECTION

SCALE: 3/8" = 1'-0"

NOTE:

1. BITUMINOUS WEARING SURFACE SHALL CONSIST OF (2) – 1 1/2" LAYERS OF MODIFIED CLASS 9.5 HMA FOR BRIDGE DECKS OVER COLD SPRAY-APPLIED LIQUID MEMBRANE. THE COST OF THE FIRST HMA LAYER AND MEMBRANE SHALL BE INCLUDED UNDER ITEM CODE 800.9906. THE COST OF THE FINAL HMA LAYER SHALL BE INCLUDED UNDER HIGHWAY ITEMS.

BRIDGE 062801

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

TYPICAL TRANSVERSE SECTIONS & PROFILE

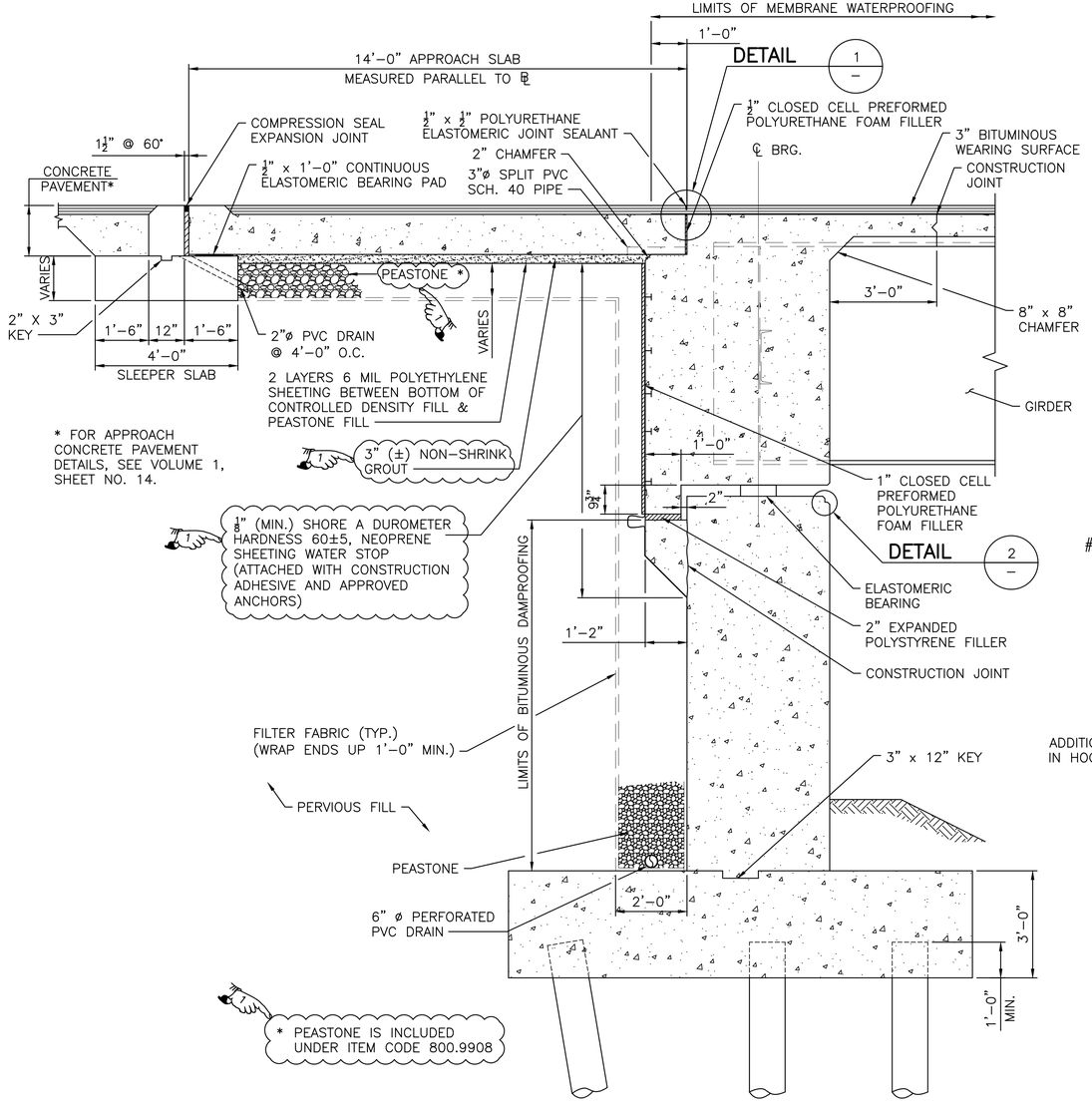
CHECKED BY _____ DATE _____ SCALE AS NOTED

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

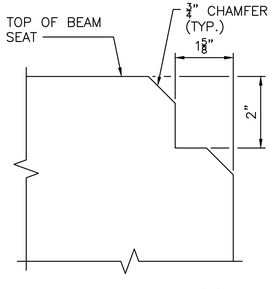
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	24	85

R-1

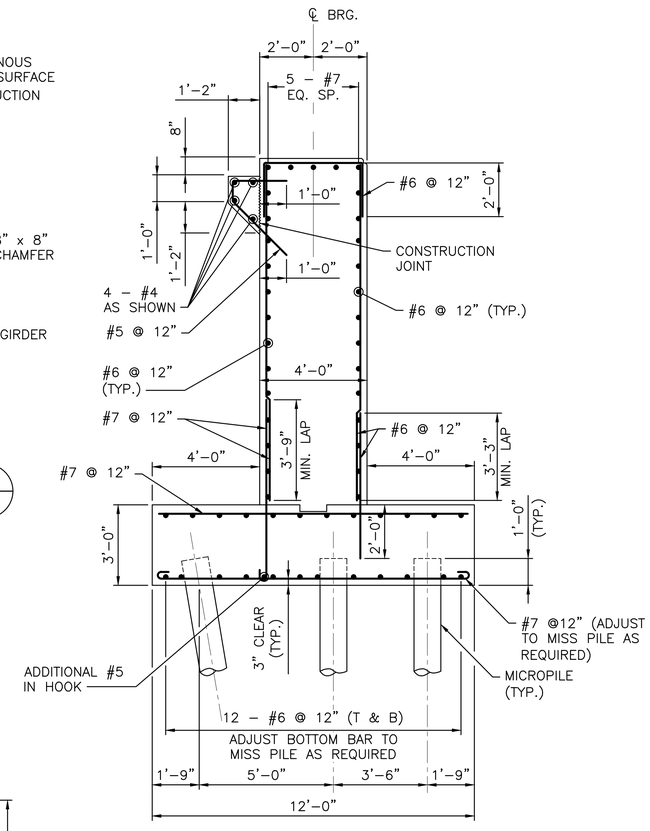


TYPICAL SECTION THRU ABUTMENT

SCALE: ½" = 1'-0"

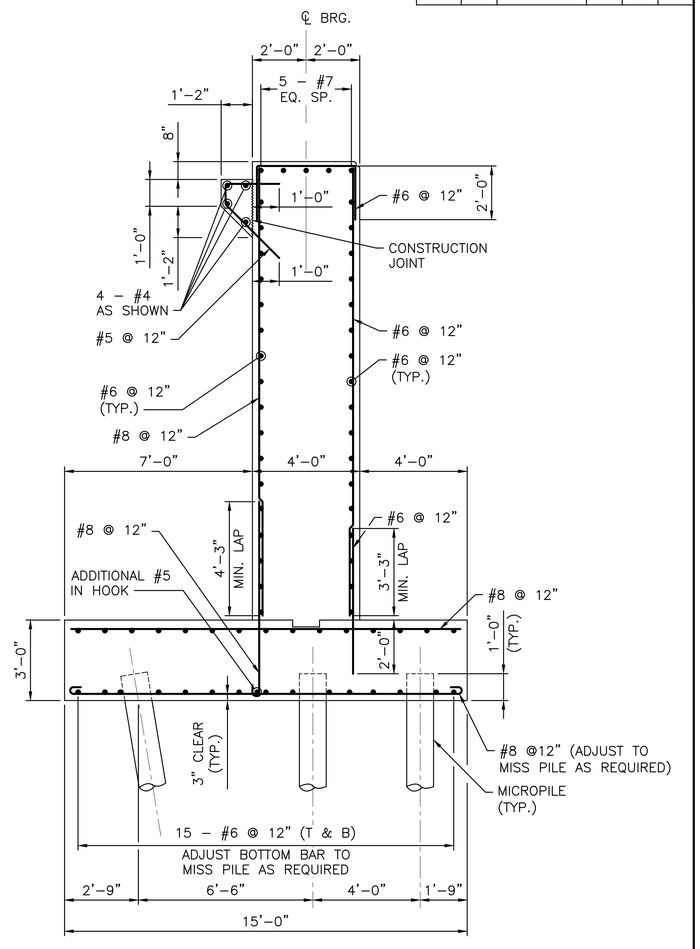


DETAIL 2
NOT TO SCALE



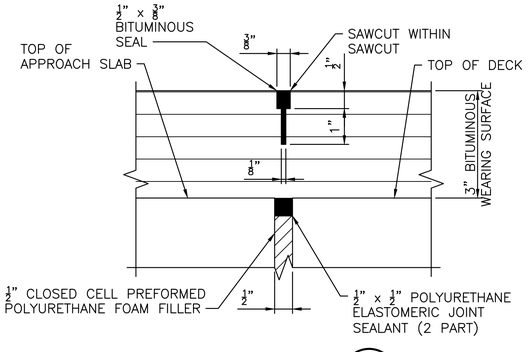
TYPICAL WEST ABUTMENT REINFORCING DETAIL

SCALE: ⅜" = 1'-0"



TYPICAL EAST ABUTMENT REINFORCING DETAIL

SCALE: ⅜" = 1'-0"



DETAIL 1
NOT TO SCALE

NOTES:

1. FOR PRECAST APPROACH SLAB & SLEEPER SLAB DETAILS, SEE SHEET NOS. 35 & 37.
2. FOR END DIAPHRAGM REINFORCEMENT DETAILS, SEE SHEET NO. 31.

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

BRIDGE 062801

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

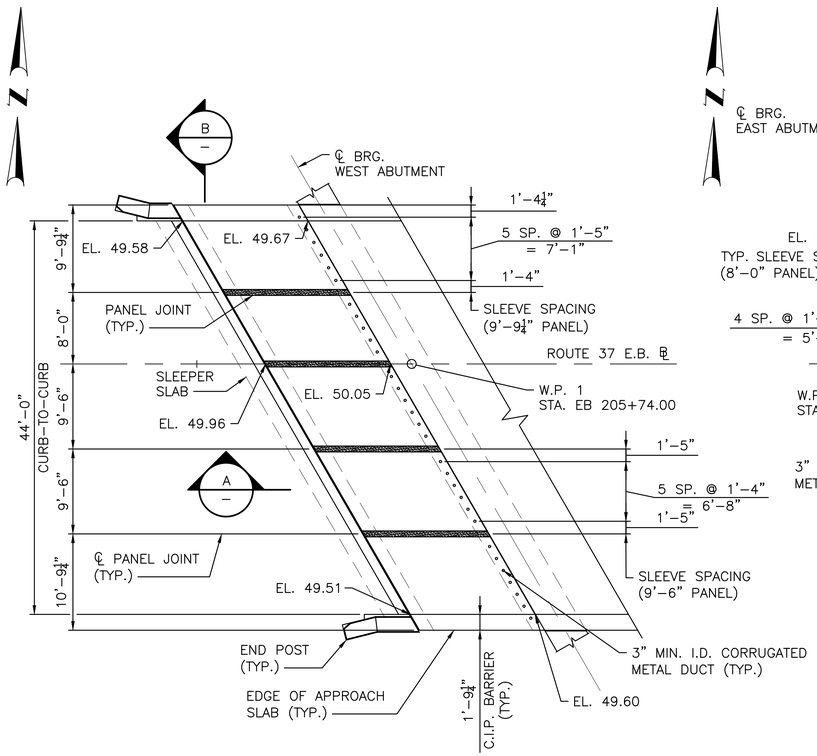
CRANSTON / WARWICK — RHODE ISLAND

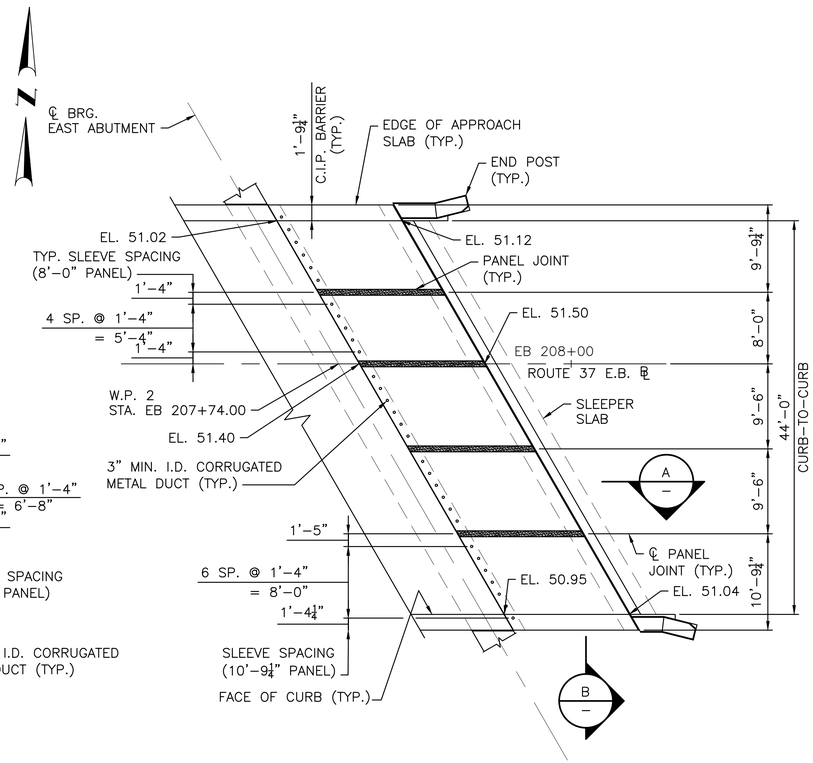
ABUTMENT & WINGWALL SECTIONS SHEET 1

CHECKED BY _____ DATE _____ SCALE AS NOTED

0013C_V5_024_ABUTMENT & WINGWALL SECTIONS SHEET 1 - BRIDGE 062801_R-1.dwg Plotted on Tuesday, October 29, 2019 9:47:59 AM

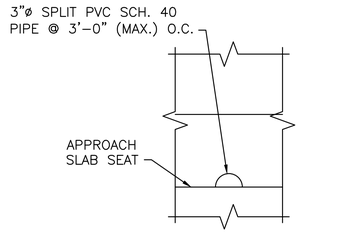
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3KG-PRTY(258)	2019	35	85





APPROACH SLAB NOTES:

1. TOP OF APPROACH SLAB ELEVATIONS APPLY TO TOP OF ROADWAY SURFACE.
2. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST APPROACH SLAB IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH NON-SHRINK GROUT.
3. PVC SLEEVES TO BE INCLUDED IN THE PRECAST APPROACH SLABS TO FACILITATE PLACEMENT OF NON-SHRINK GROUT. THE SIZE AND SPACING OF THE PVC PORTS SHOWN ON THE PLAN ARE SCHEMATIC. THE CONTRACTOR SHALL DETERMINE THE SIZE AND SPACING OF PVC PORTS, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.
4. PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO BASELINE. PLACE TRANSVERSE REINFORCEMENT PARALLEL TO CENTERLINE BEARING.
5. FOR PRECAST PANEL JOINT DETAIL, SEE SHEET NO. 36.



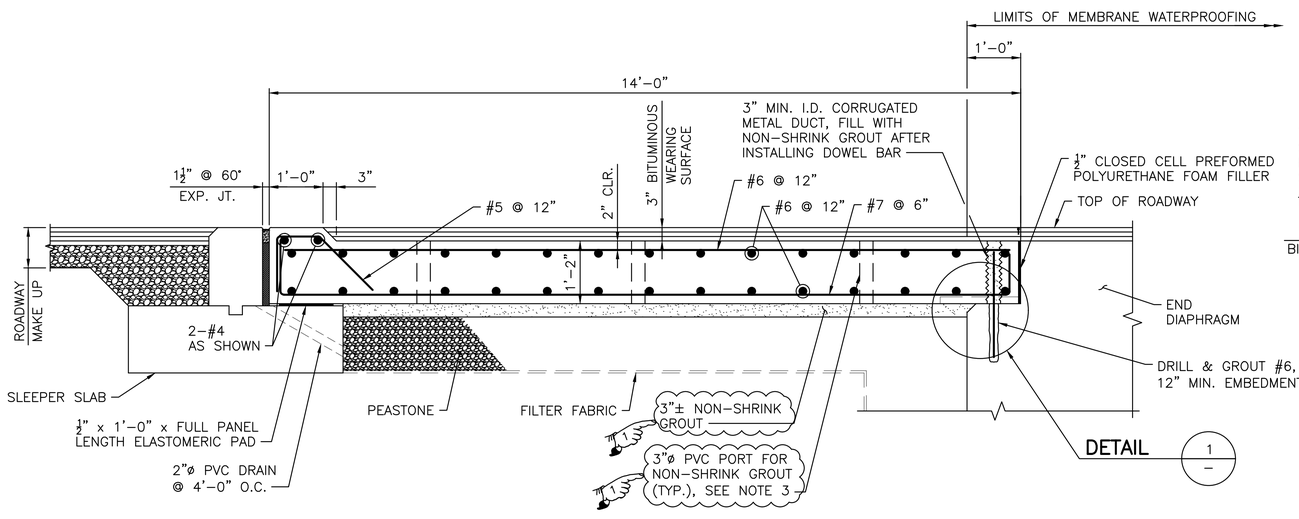
SECTION (C)
SCALE: 1½" = 1'-0"

WEST APPROACH SLAB PLAN

SCALE: ⅛" = 1'-0"

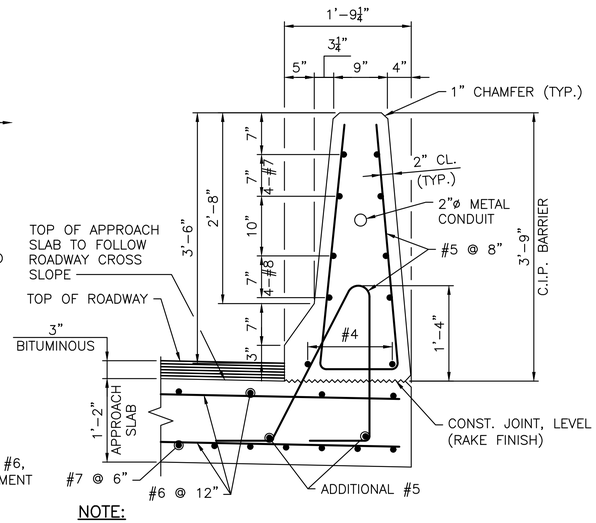
EAST APPROACH SLAB PLAN

SCALE: ⅛" = 1'-0"



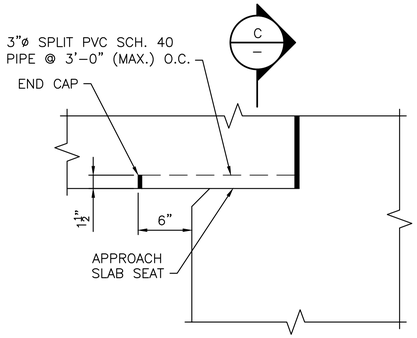
TYPICAL LONGITUDINAL SECTION

SECTION (A)
SCALE: ¾" = 1'-0"



NOTE:
FOR BARRIER TRANSITION SECTIONS, SEE "END POST DETAILS" SHEETS.

SECTION (B)
SCALE: 1" = 1'-0"



DETAIL (1)
SCALE: 1½" = 1'-0"

BRIDGE 062801

ADDENDUM No. 4

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

APPROACH SLAB DETAILS

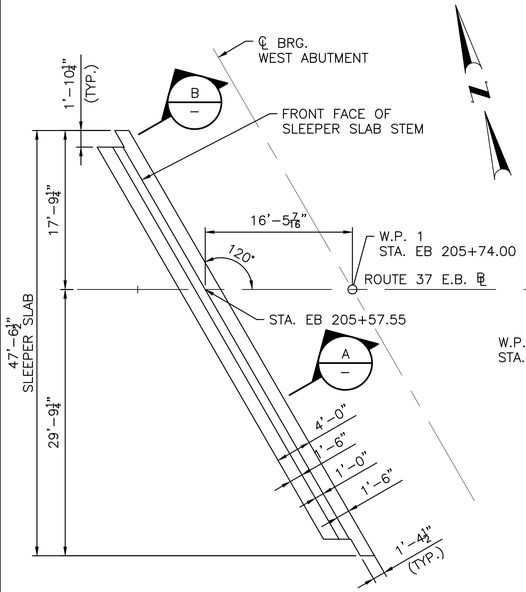
CHECKED BY _____ DATE _____ SCALE AS NOTED

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V5_035_APPROACH SLAB DETAILS - BRIDGE 062801_R-1.dwg Plotted on Tuesday, October 29, 2019 9:48:08 AM

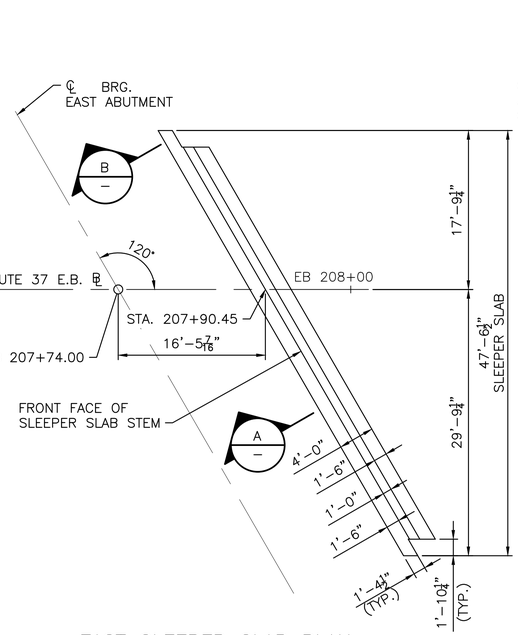
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RS-PRTY(258)	2019	37	85

R-1



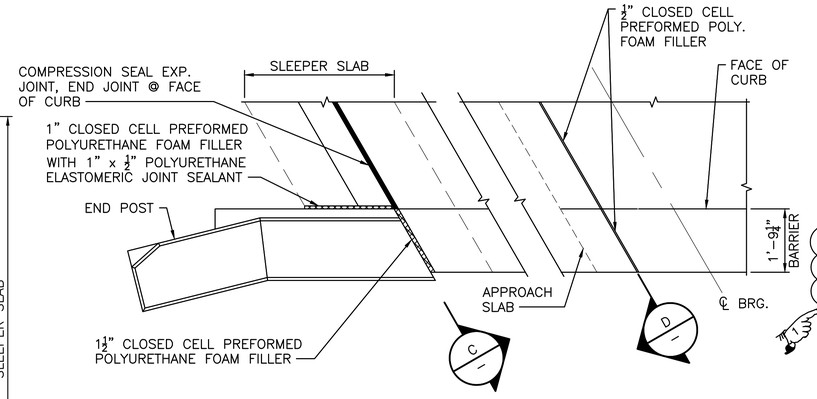
WEST SLEEPER SLAB PLAN

SCALE: ⅛" = 1'-0"



EAST SLEEPER SLAB PLAN

SCALE: ⅛" = 1'-0"

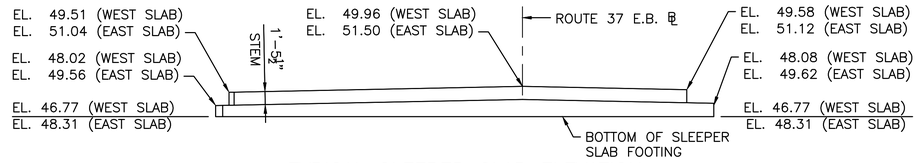


JOINT TREATMENT @ BARRIER

NOT TO SCALE

NOTES:

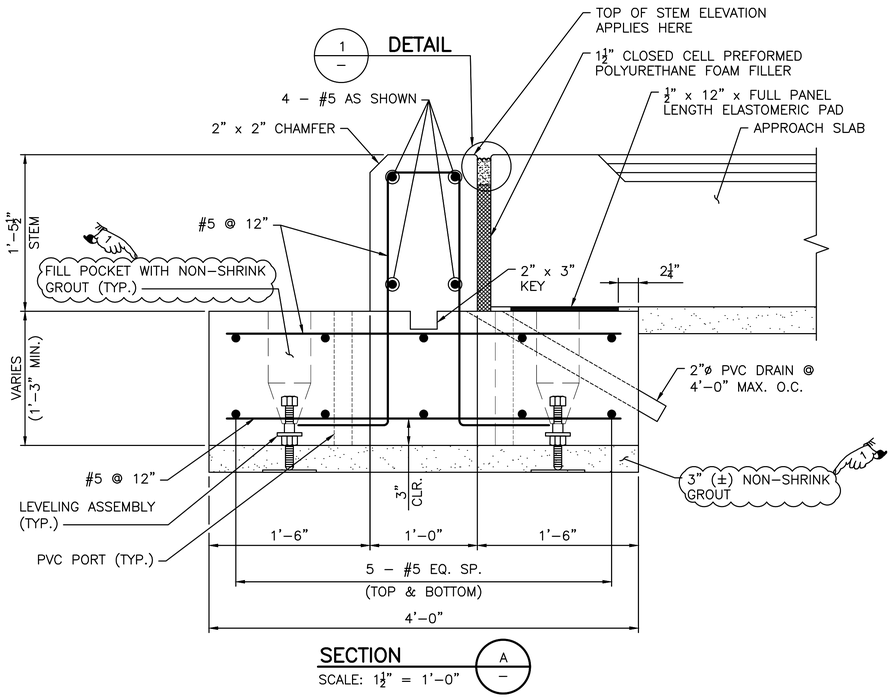
1. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST SLEEPER SLAB IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH NON-SHRINK GROUT.
2. PVC PORTS TO BE INCLUDED IN THE PRECAST SLEEPER SLABS TO FACILITATE PLACEMENT OF NON-SHRINK GROUT. THE SIZE AND SPACING OF THE PVC PORTS SHOWN ON THE PLAN ARE SCHEMATIC. THE CONTRACTOR SHALL DETERMINE THE SIZE AND SPACING OF PVC PORTS, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.
3. LEVELING ASSEMBLY, INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. LEVELING ASSEMBLY SHALL BE GALVANIZED. THESE ASSEMBLIES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS.
4. THE CONTRACTOR SHALL PROVIDE ADDITIONAL BLOCKING AS REQUIRED IN ORDER TO LIMIT THE SELF WEIGHT DEFLECTION TO A MAXIMUM OF 1/16".
5. COMPRESSION SEAL EXPANSION JOINT SHALL BE INSTALL WHEN THE AMBIENT TEMPERATURE IS BETWEEN 40 °F AND 80 °F.



TYPICAL SLEEPER SLAB ELEVATION

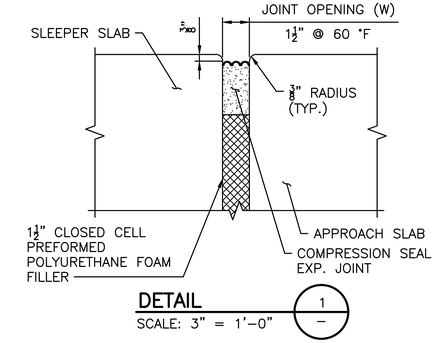
(WEST SLEEPER SLAB SHOWN, EAST SLEEPER SLAB OPPOSITE HAND)

SCALE: ⅛" = 1'-0"

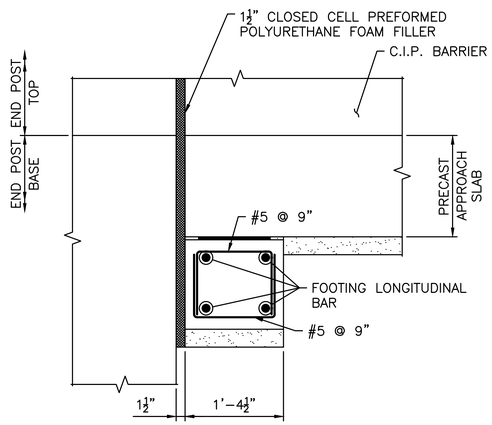


SECTION

SCALE: 1½" = 1'-0"

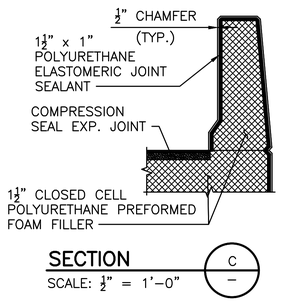


SCALE: 3" = 1'-0"



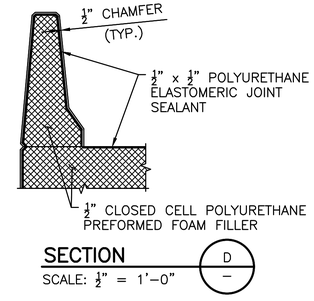
SECTION

SCALE: 1½" = 1'-0"



SECTION

SCALE: ½" = 1'-0"



SECTION

SCALE: ½" = 1'-0"

JOINT OPENING TABLE	
TEMPERATURE	W
40 °F	1.68"
50 °F	1.59"
60 °F	1.50"
70 °F	1.41"
80 °F	1.32"

ADDENDUM No. 4

BRIDGE 062801

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

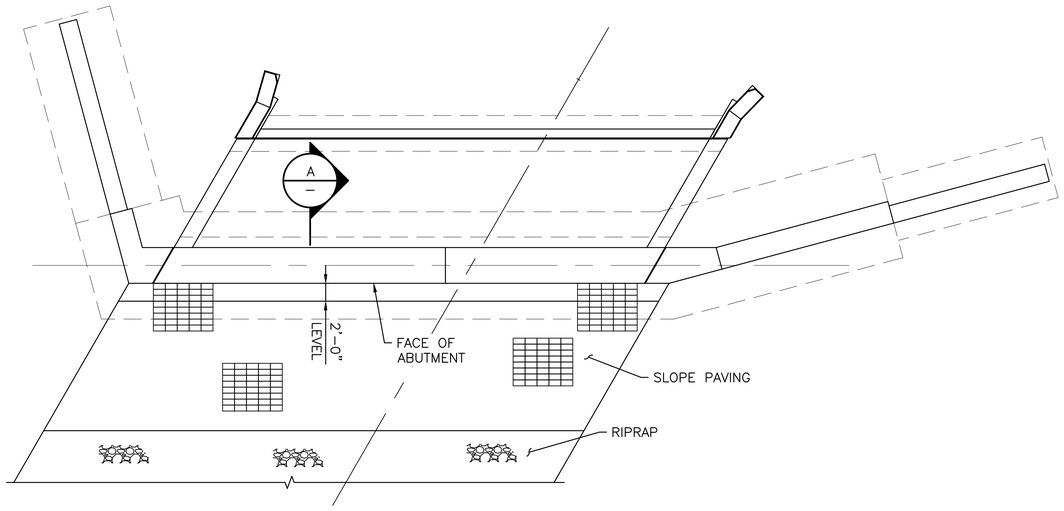
SLEEPER SLAB & EXPANSION JOINT DETAILS

CHECKED BY _____ DATE _____ SCALE AS NOTED

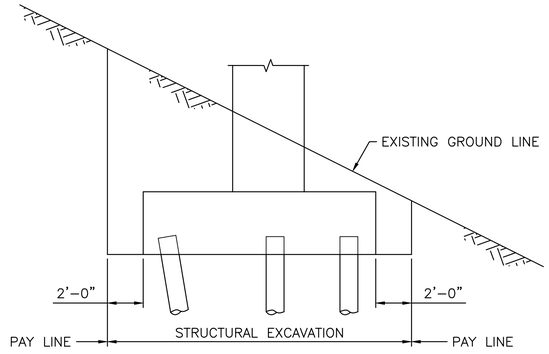
TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V5_037_SLEEPER SLAB & EXPANSION JOINT DETAILS - BRIDGE 062801_R-1.dwg Plotted on Tuesday, October 29, 2019 9:48:16 AM

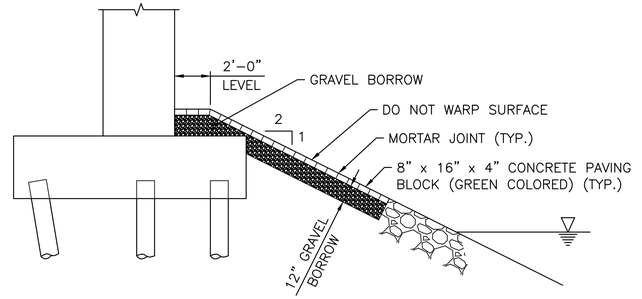
	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3AG-PRTY(258)	2019	41	85



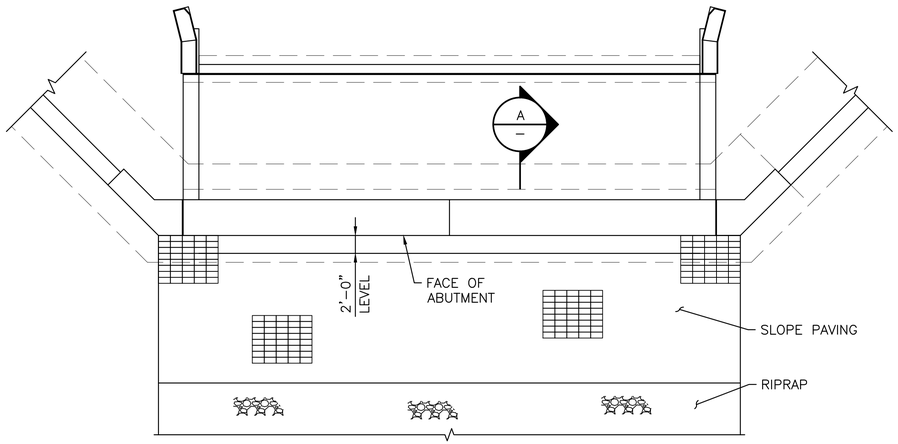
BRIDGE 062801
SLOPE PAVING PLAN
NOT TO SCALE



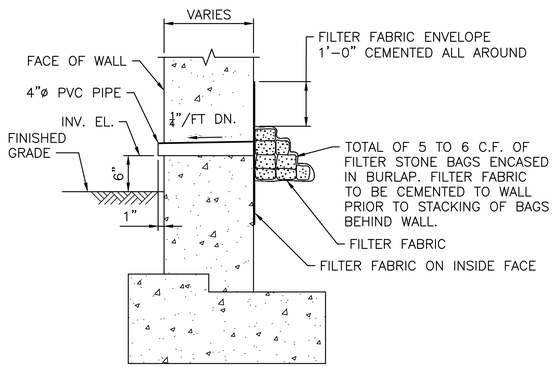
ABUTMENT & WINGWALL PAY LIMITS
SCALE: $\frac{1}{4}$" = 1'-0"



SECTION A
NOT TO SCALE



BRIDGE 062901
SLOPE PAVING PLAN
NOT TO SCALE



WEEP DRAIN
NOT TO SCALE

NOTE:
1. GRAVEL BORROW, MORTAR JOINT AND CONCRETE PAVING BLOCKS ARE INCLUDED UNDER ITEM CODE 921.0100.

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT 06450

BRIDGE 062801 & 062901

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

MISCELLANEOUS DETAILS

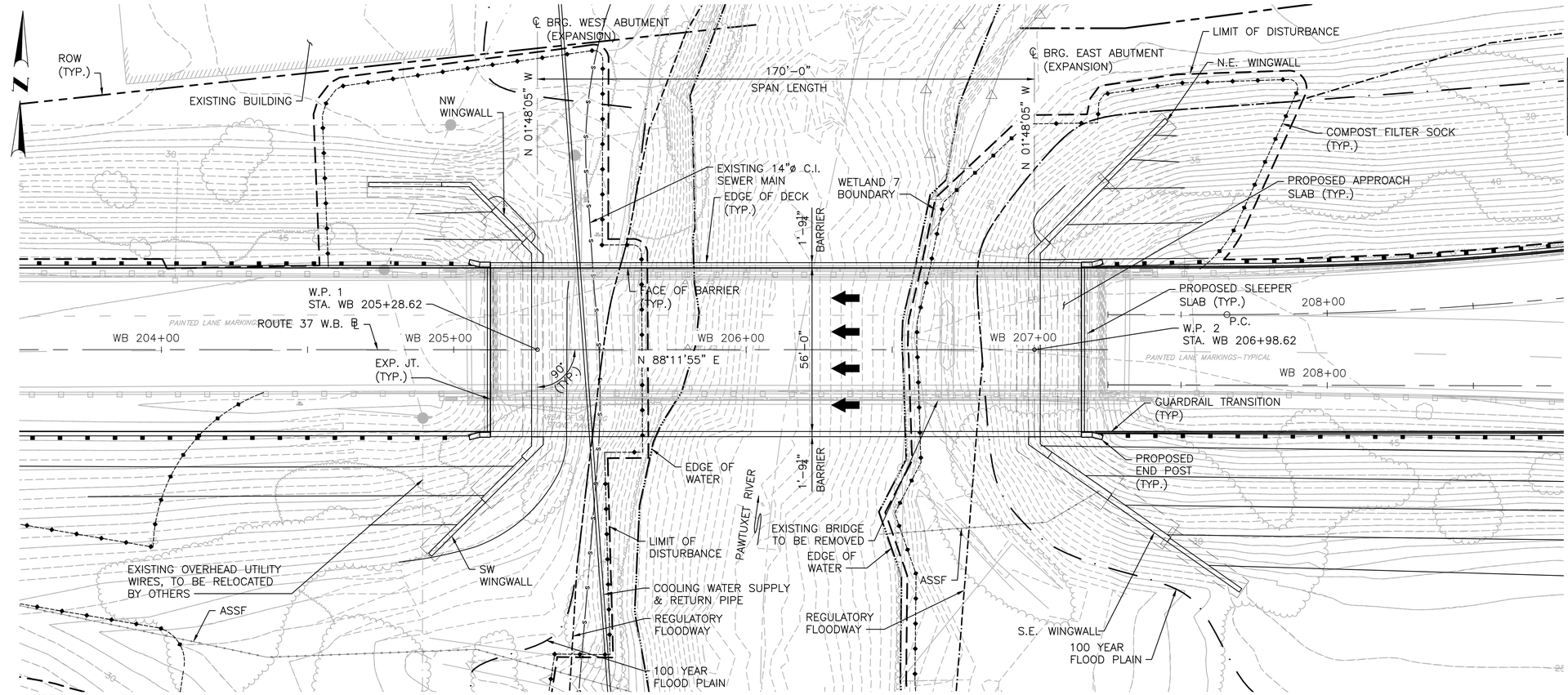
CHECKED BY _____ DATE _____ SCALE AS NOTED

0013C_V5_041_MISCELLANEOUS DETAILS - BRIDGE 062801_062901_R-1.dwg Plotted on Tuesday, October 29, 2019 9:48:28 AM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3AG-PRTY(258)	2019	48	85

CONSTRUCTION WORKING POINT

WORKING POINT	STATION	NORTHING	EASTING
W.P. 1	WB 205+28.62	242793.202	342561.462
W.P. 2	WB 206+98.62	242798.546	342731.378

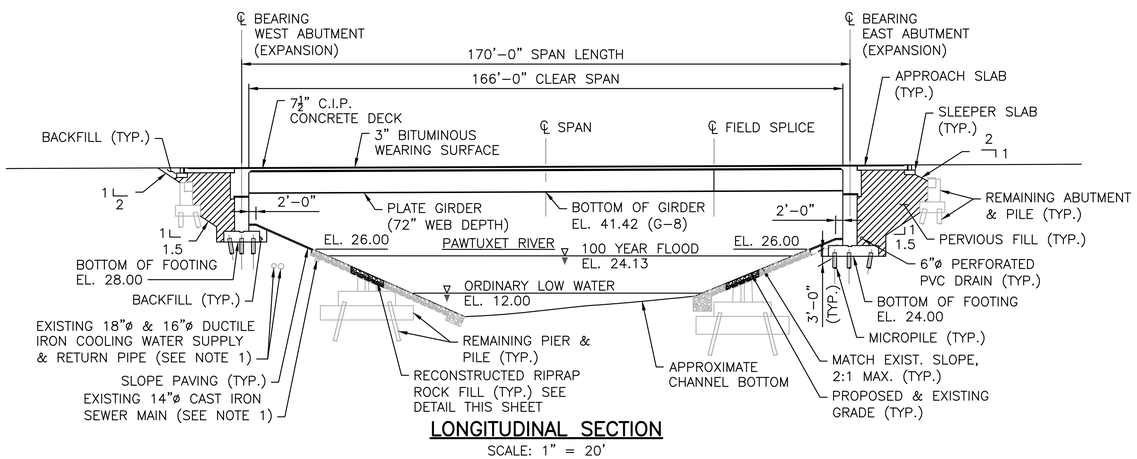


NOTE:

PROJECT AREA SHOWN IS WITHIN THE 200 FOOT RIVERBANK WETLAND.

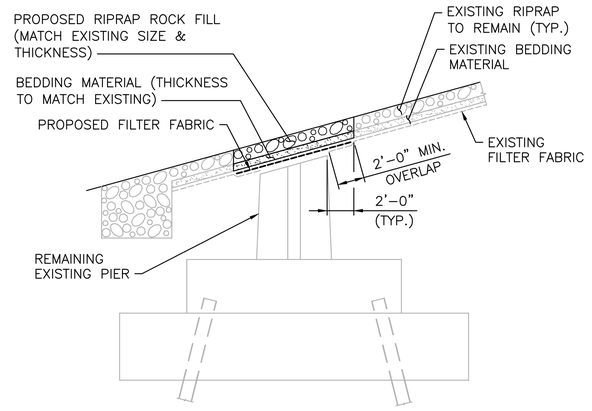
PLAN

SCALE: 1" = 20'



LONGITUDINAL SECTION

SCALE: 1" = 20'



RECONSTRUCTED RIPRAP ROCK FILL DETAIL

NOT TO SCALE

NOTE:

1. ALL EXISTING UTILITIES SHALL BE FIELD LOCATED BY MEANS OF A RADAR, LINE AND/OR EXPLORATORY EXCAVATION LOCATION. EACH UTILITY SHALL BE FIELD VERIFIED AND ANY CONFLICT WITH THE DESIGN SHALL BE IMMEDIATELY REPORTED TO THE DESIGN ENGINEER AND UTILITY HOLDER PRIOR TO CONSTRUCTION. ALL UTILITIES SHALL BE PROPERLY PROTECTED DURING AND THROUGHOUT THE CONSTRUCTION PERIOD. ANY DAMAGES TO THE UTILITY SHALL BE IMMEDIATELY REPORTED TO THE UTILITY OWNER. (COST TO BE INCLUDED UNDER ITEM CODE 800.9930.

BRIDGE 062901

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

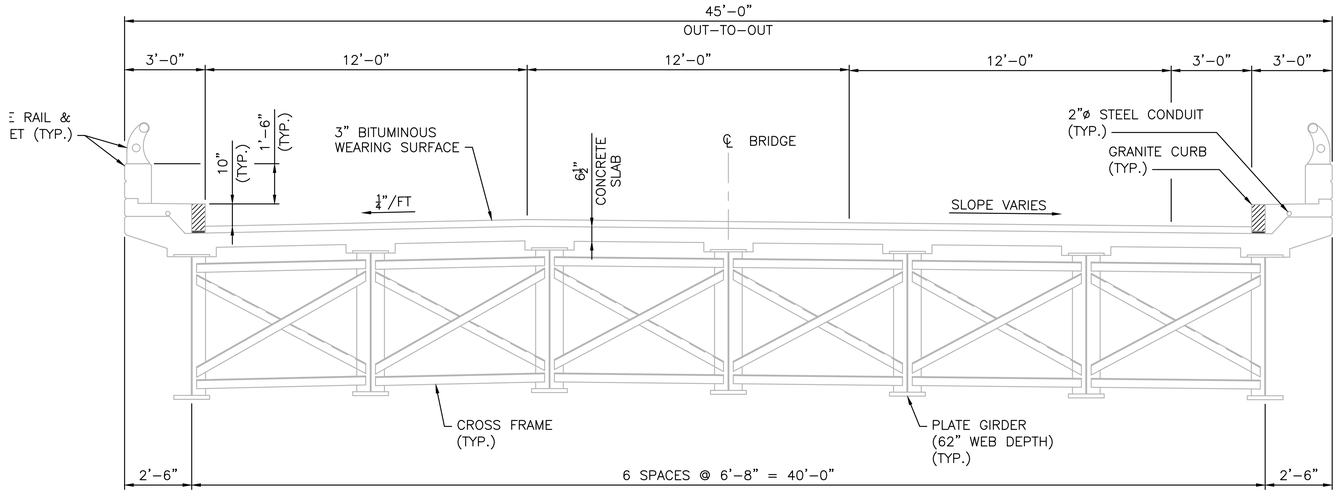
CRANSTON / WARWICK — RHODE ISLAND

BRIDGE GENERAL PLAN & LONGITUDINAL SECTION

CHECKED BY _____ DATE _____ SCALE AS NOTED

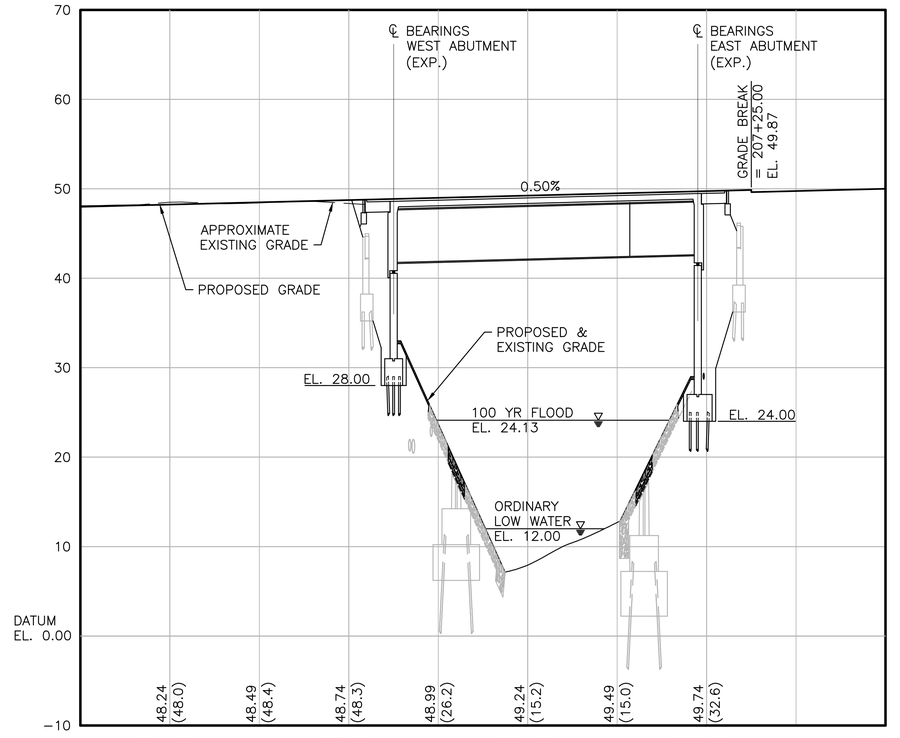
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RS-PRTY(258)	2019	49	85

R-1



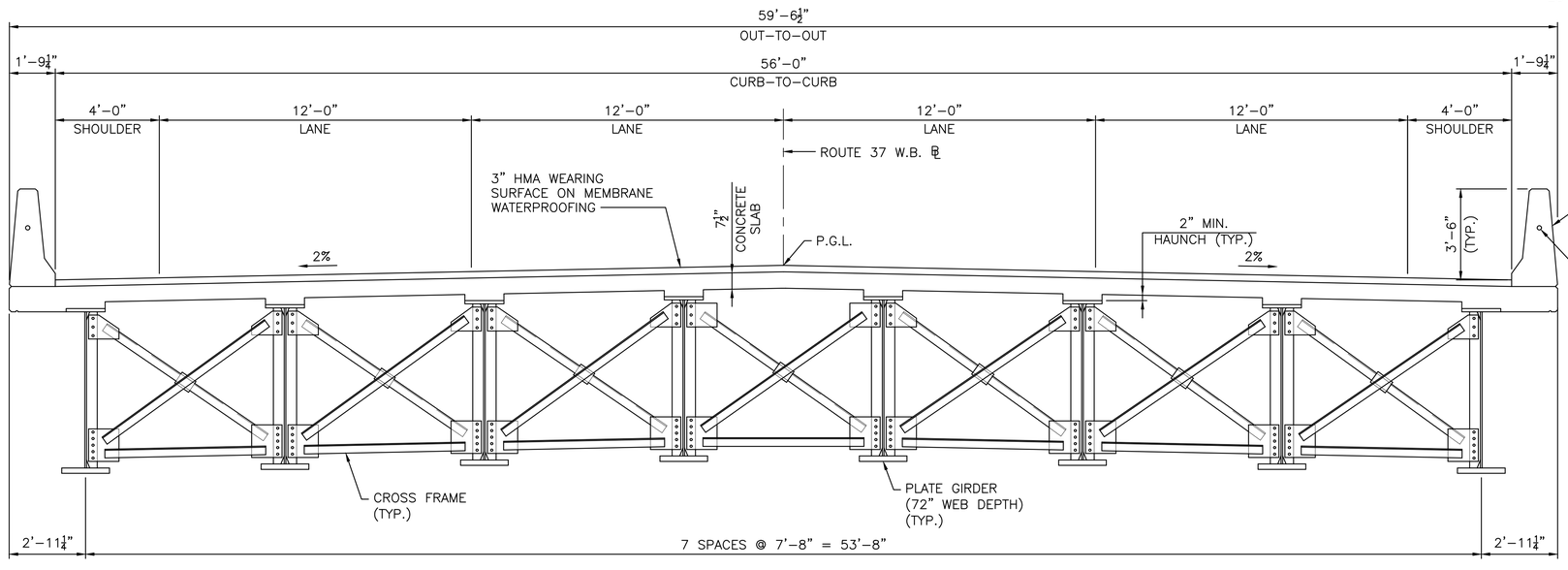
EXISTING TRANSVERSE SECTION

(SPAN 2 SHOWN)
SCALE: 3/8" = 1'-0"



BRIDGE 062901 PROFILE

SCALE: 1" = 40' HORIZ.
SCALE: 1" = 8' VERT.



PROPOSED TRANSVERSE SECTION

SCALE: 3/8" = 1'-0"

NOTE:

1. BITUMINOUS WEARING SURFACE SHALL CONSIST OF (2) – 1 1/2" LAYERS OF MODIFIED CLASS 9.5 HMA FOR BRIDGE DECKS OVER COLD SPRAY–APPLIED LIQUID MEMBRANE. THE COST OF THE FIRST HMA LAYER AND MEMBRANE SHALL BE INCLUDED UNDER ITEM CODE 800.9907. THE COST OF THE FINAL HMA LAYER SHALL BE INCLUDED UNDER HIGHWAY ITEMS.

BRIDGE 062901

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

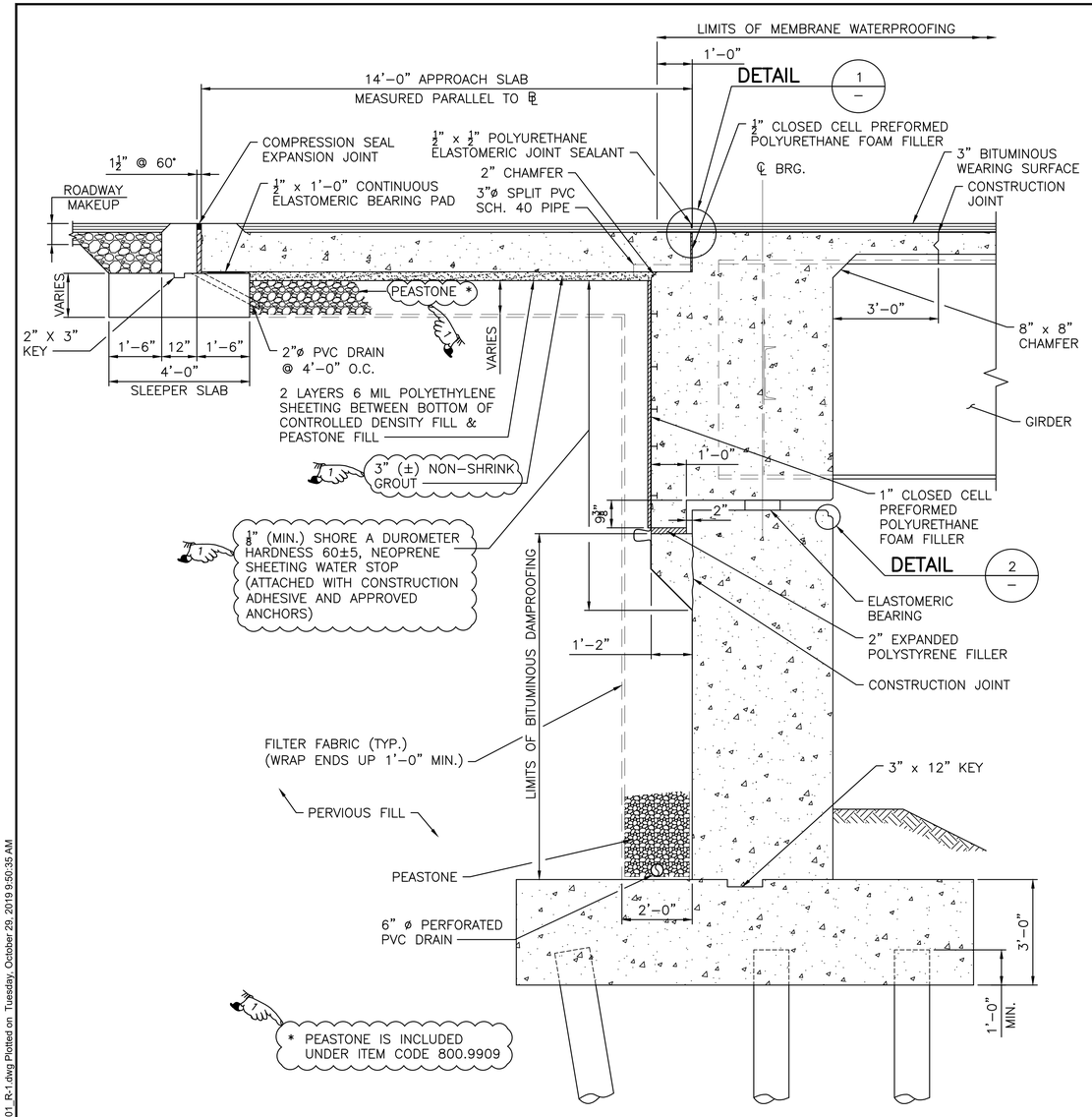
TYPICAL TRANSVERSE SECTIONS & PROFILE

CHECKED BY _____ DATE _____ SCALE AS NOTED

0013C_V5_049_TYPICAL TRANSVERSE SECTIONS & PROFILE - BRIDGE 062901_R-1.dwg Plotted on Tuesday, October 29, 2019 9:50:23 AM

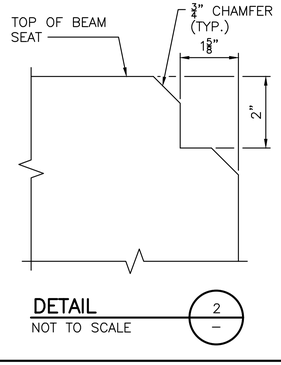
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	64	85

R-1



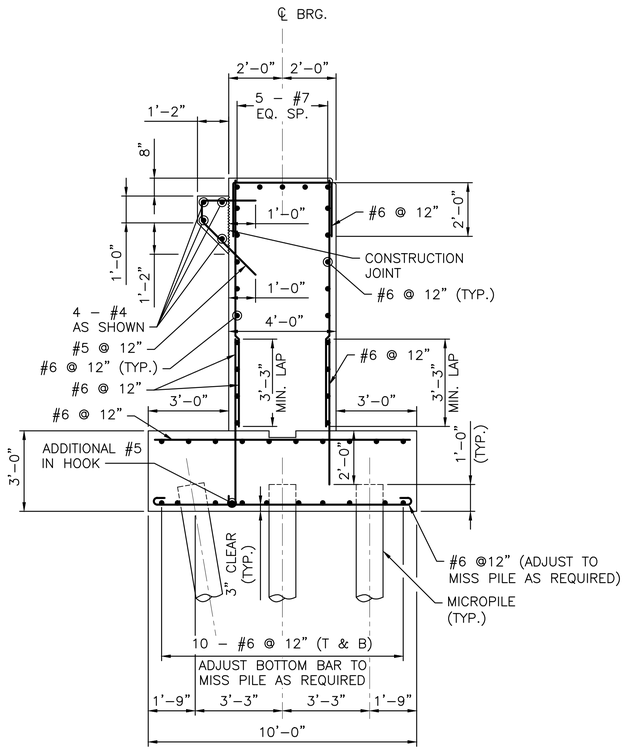
TYPICAL SECTION THRU ABUTMENT

SCALE: ½" = 1'-0"



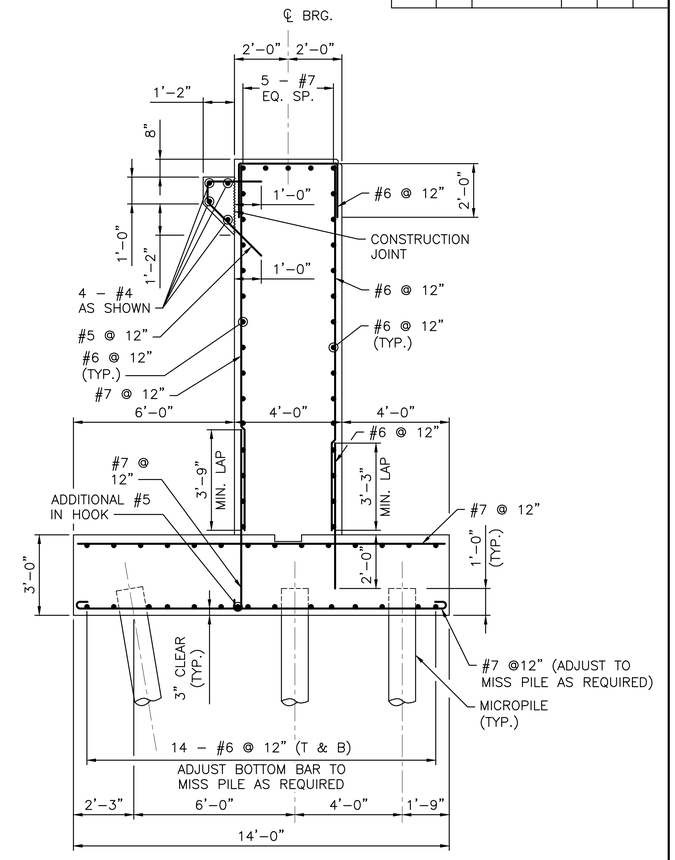
NOTES:

1. FOR PRECAST APPROACH SLAB & SLEEPER SLAB DETAILS, SEE SHEET NOS. 74 & 75.
2. FOR END DIAPHRAGM REINFORCEMENT DETAILS, SEE SHEET NO. 70.



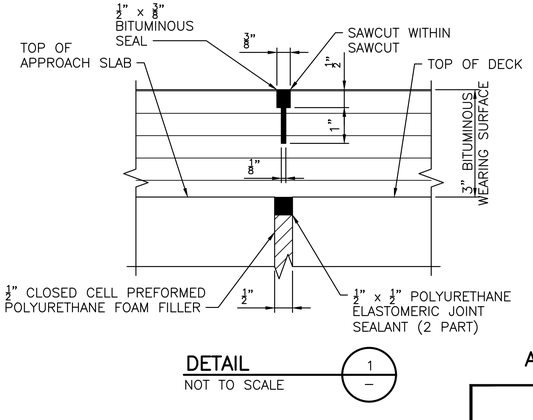
TYPICAL WEST ABUTMENT REINFORCING DETAIL

SCALE: ⅜" = 1'-0"



TYPICAL EAST ABUTMENT REINFORCING DETAIL

SCALE: ⅜" = 1'-0"



ADDENDUM No. 4

BRIDGE 062901

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

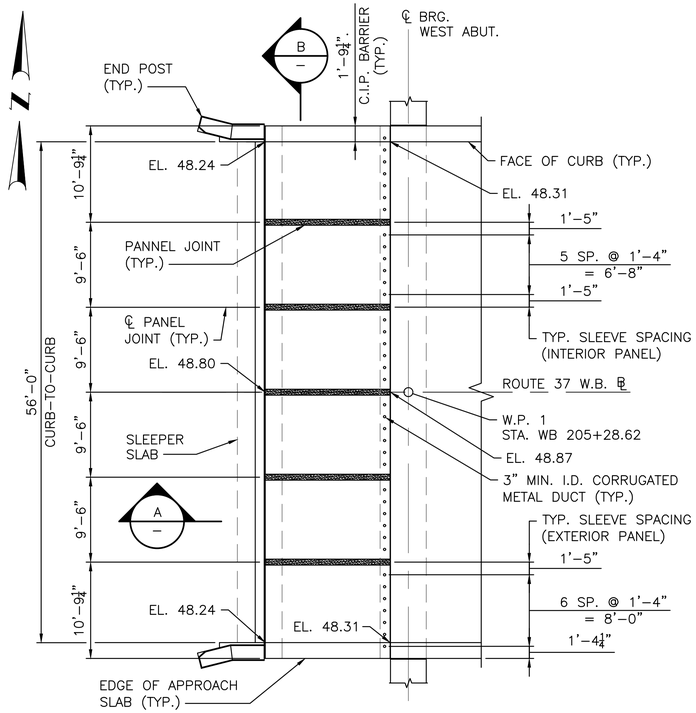
ABUTMENT & WINGWALL SECTIONS SHEET 1

CHECKED BY _____ DATE _____ SCALE AS NOTED

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

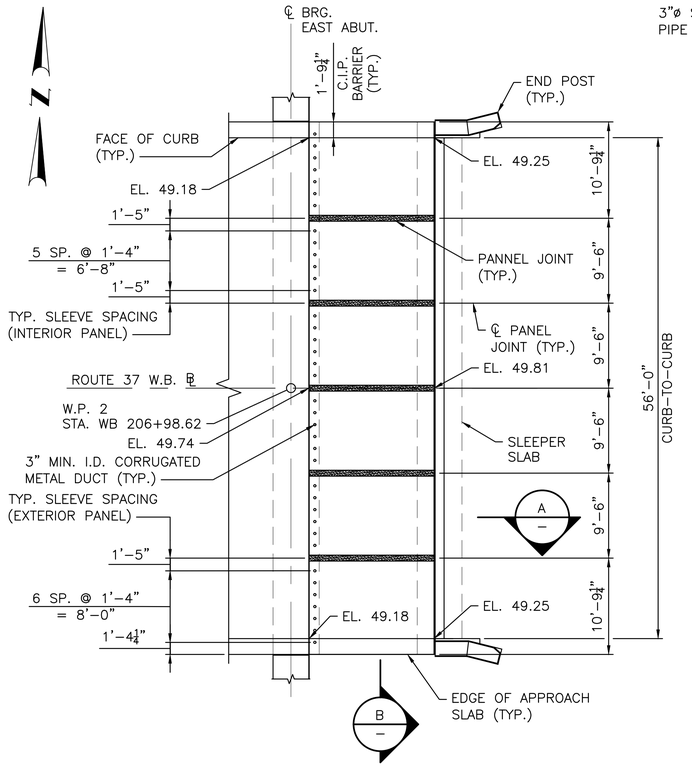
0013C_V5_064_ABUTMENT & WINGWALL SECTIONS SHEET 1 - BRIDGE 062901_R-1.dwg Plotted on Tuesday, October 29, 2019 9:50:35 AM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RG-PRTY(258)	2019	74	85



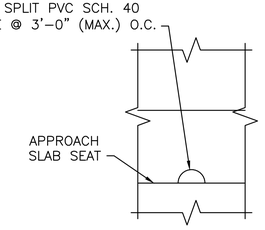
WEST APPROACH SLAB PLAN

SCALE: ⅛" = 1'–0"



EAST APPROACH SLAB PLAN

SCALE: ⅛" = 1'–0"



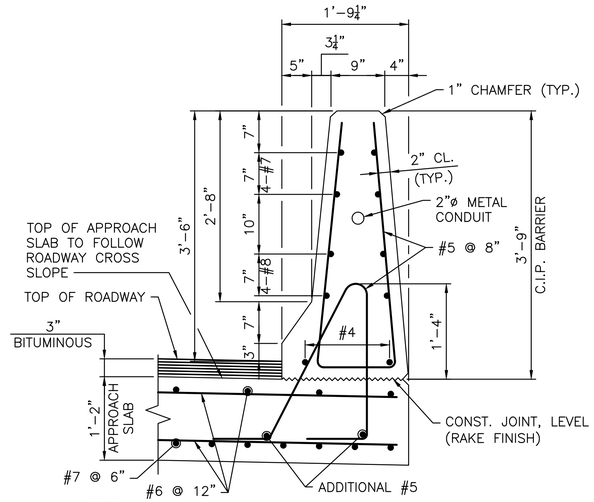
SECTION

SCALE: 1½" = 1'–0"

C
—

APPROACH SLAB NOTES:

1. TOP OF APPROACH SLAB ELEVATIONS APPLY TO TOP OF ROADWAY SURFACE.
2. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST APPROACH SLAB IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH NON–SHRINK GROUT.
3. PVC SLEEVES TO BE INCLUDED IN THE PRECAST APPROACH SLABS TO FACILITATE PLACEMENT OF NON–SHRINK GROUT. THE SIZE AND SPACING OF THE PVC PORTS SHOWN ON THE PLAN ARE SCHEMATIC. THE CONTRACTOR SHALL DETERMINE THE SIZE AND SPACING OF PVC PORTS, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.
4. FOR PRECAST PANEL JOINT DETAIL, SEE SHEET NO. 36.

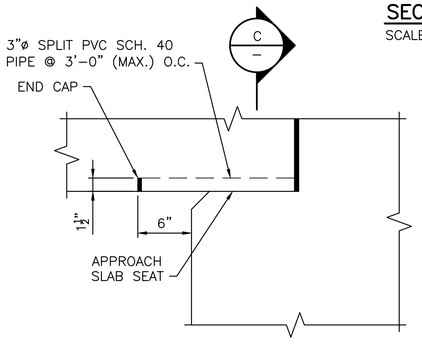


NOTE:
FOR BARRIER TRANSITION SECTIONS, SEE "END POST DETAILS" SHEETS.

SECTION

SCALE: 1" = 1'–0"

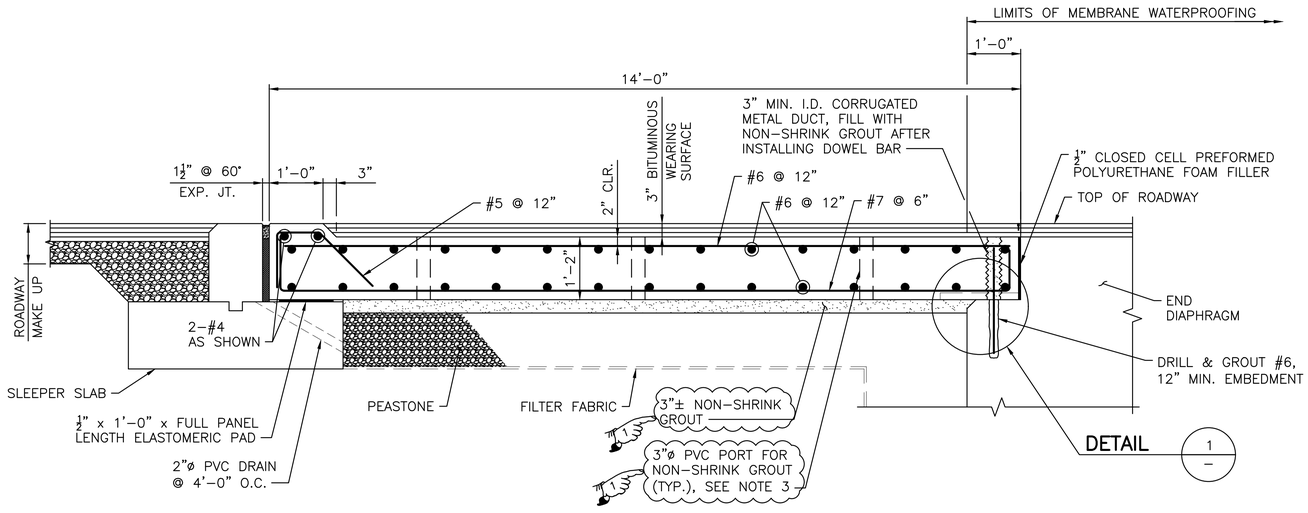
B
—



DETAIL

SCALE: 1½" = 1'–0"

1
—



TYPICAL LONGITUDINAL SECTION

SECTION
SCALE: ¾" = 1'–0"
A
—

BRIDGE 062901

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

APPROACH SLAB DETAILS

CHECKED BY _____ DATE _____ SCALE AS NOTED

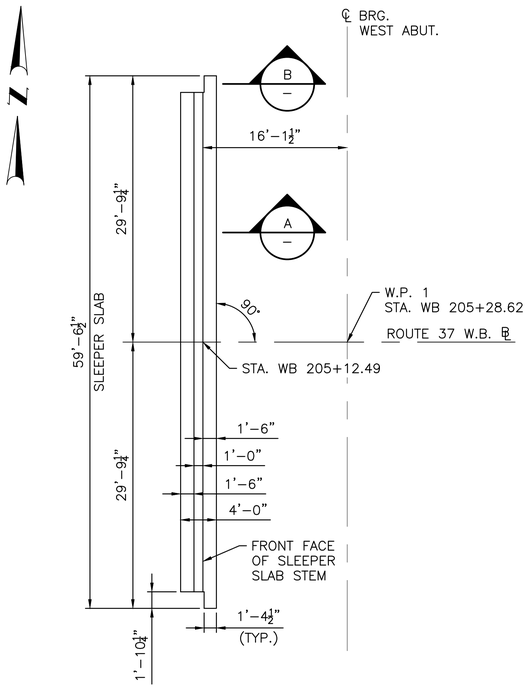
ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

0013C_V5_074_APPROACH SLAB DETAILS - BRIDGE 062901_R-1.dwg Plotted on Tuesday, October 29, 2019 9:50:43 AM

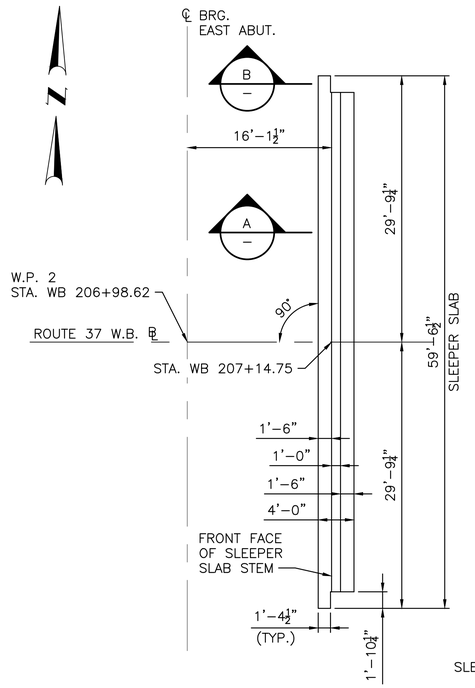
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHF-0037(012), NPHG-0037(013) NPH-TGR(003), 3AG-PRTY(258)	2019	75	85

R-1



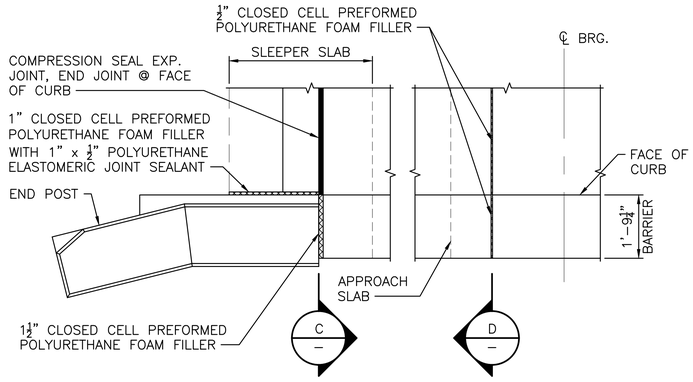
WEST SLEEPER SLAB PLAN

SCALE: ⅛" = 1'-0"



EAST SLEEPER SLAB PLAN

SCALE: ⅛" = 1'-0"

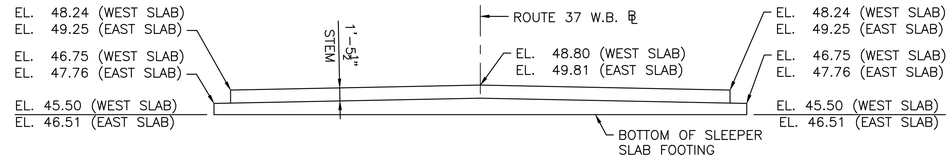


JOINT TREATMENT @ BARRIER

NOT TO SCALE

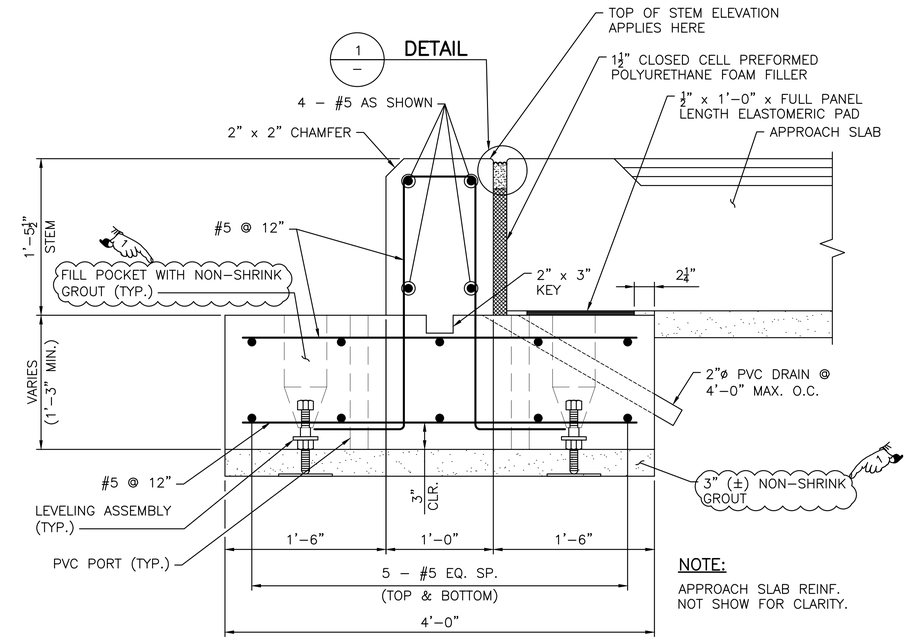
NOTES:

1. LIFTING DEVICES (NOT SHOWN), INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. THEY SHALL BE GALVANIZED AND SHALL BE PLACED AND RECESSED IN POCKETS TO PROVIDE 1½" CLEAR COVER TO THE FACE OF THE CONCRETE. THESE DEVICES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS ALONG WITH ALL SUPPORTING CALCULATIONS AND/OR CATALOG CUTS. ONCE THE PRECAST SLEEPER SLAB IS SET IN PLACE, THE LIFTING DEVICE POCKETS SHALL BE FILLED WITH NON-SHRINK GROUT.
2. PVC PORTS TO BE INCLUDED IN THE PRECAST SLEEPER SLABS TO FACILITATE PLACEMENT OF NON-SHRINK GROUT. THE SIZE AND SPACING OF THE PVC PORTS SHOWN ON THE PLAN ARE SCHEMATIC. THE CONTRACTOR SHALL DETERMINE THE SIZE AND SPACING OF PVC PORTS, AND SHALL BE SHOWN ON THE SHOP DRAWINGS.
3. LEVELING ASSEMBLY, INCLUDING THEIR NUMBER AND LOCATION, SHALL BE DESIGNED AND DETAILED BY THE PRECASTER. LEVELING ASSEMBLY SHALL BE GALVANIZED. THESE ASSEMBLIES SHALL BE CLEARLY SHOWN ON THE SHOP DRAWINGS.
4. THE CONTRACTOR SHALL PROVIDE ADDITIONAL BLOCKING AS REQUIRED IN ORDER TO LIMIT THE SELF WEIGHT DEFLECTION TO A MAXIMUM OF 1/16".
5. COMPRESSION SEAL EXPANSION JOINT SHALL BE INSTALL WHEN THE AMBIENT TEMPERATURE IS BETWEEN 40 °F AND 80 °F.



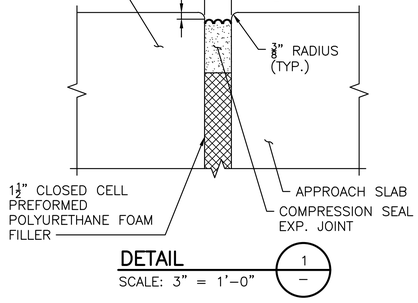
TYPICAL SLEEPER SLAB ELEVATION

SCALE: ⅛" = 1'-0"



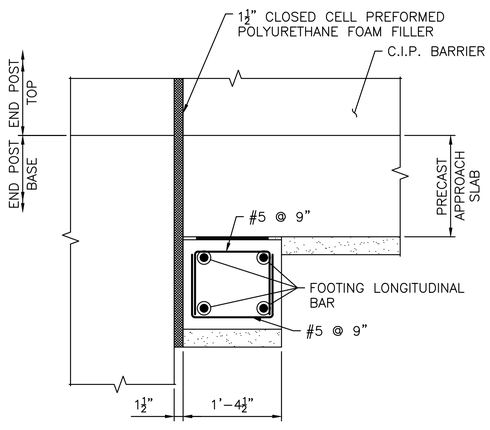
SECTION

SCALE: 1½" = 1'-0" (A)



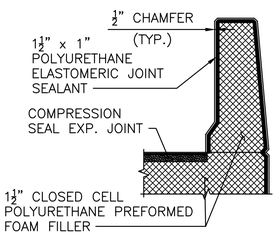
DETAIL

SCALE: 3" = 1'-0" (1)



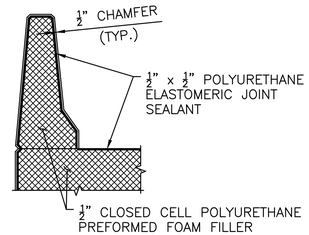
SECTION

SCALE: 1½" = 1'-0" (B)



SECTION

SCALE: ½" = 1'-0" (C)



SECTION

SCALE: ½" = 1'-0" (D)

JOINT OPENING TABLE	
TEMPERATURE	W
40 °F	1.66"
50 °F	1.58"
60 °F	1.50"
70 °F	1.42"
80 °F	1.34"

ADDENDUM No. 4

BRIDGE 062901

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

CRANSTON / WARWICK — RHODE ISLAND

SLEEPER SLAB & EXPANSION JOINT DETAILS

CHECKED BY _____ DATE _____ SCALE AS NOTED

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(230)	2019	4	45

MATERIALS:

STRUCTURAL STEEL:

- AASHTO DESIGNATION M 270, GRADE 50

REINFORCING STEEL:

- AASHTO DESIGNATION M31, GRADE 60

CONCRETE STRENGTHS:

- CLASS HP ¾" f'c=5,000 PSI

  BEARING SEAT PEDESTALS, ABUTMENTS STEMS, WALL STEMS, CHEEKWALL, BARRIER, END POSTS, BRIDGE DECK AND PARAPETS.

- CLASS XX ¾" f'c=4,000 PSI

  ABUTMENT AND WALL FOOTINGS, FOOTING EXTENSION AND APPROACH SLAB.

FOUNDATIONS:

THE GEOTECHNICAL DATA REPORT (GDR) USED FOR THE DESIGN OF THIS PROJECT IS INCLUDED IN THE CONTRACT DOCUMENTS FOR INFORMATION. THE GEOTECHNICAL INTERPRETIVE REPORTS (GIR) USED FOR THE DESIGN OF THE PROJECT ARE NOT PART OF THE CONTRACT DOCUMENTS, BUT ARE AVAILABLE TO BIDDING CONTRACTORS UPON REQUEST FROM THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.

THE INTERPRETIVE INFORMATION IN THE GIR REPRESENTS THE OPINIONS, BASED ON FACTUAL DATA, BY QUALIFIED GEOTECHNICAL ENGINEERS AND/OR ENGINEER GEOLOGISTS. THE PURPOSE OF MAKING THE GIR AVAILABLE TO BIDDING CONTRACTORS IS TO CLARIFY GEOTECHNICAL ASPECTS OF THE PROJECT AND TO PROVIDE A UNIFORM BASIS FOR BIDDING. THE INTERPRETATIVE PROVIDED SHALL NOT BE CONSTRUED AS A SUBSTITUTE FOR PERSONAL INTERPRETATIONS OF THE CONTRACTOR, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR DRAWING HIS/HER OWN CONCLUSIONS, BASED ON THE FACTUAL DATA OF THE GEOTECHNICAL DATA.

CONCRETE NOTES:

1. CLASSES OF CONCRETE SHALL BE HIGH PERFORMANCE CLASS HP AND CLASS XX AS DESCRIBED IN THE RI STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS OF THE SPECIFICATIONS. REFER TO THE "MATERIAL" NOTES FOR CLASSES OF CONCRETE SPECIFIED FOR VARIOUS COMPONENTS.

2. THE CONTRACTOR MAY, AT THE APPROVAL OF THE ENGINEER, PROPOSE THE USE OF SELF-CONSOLIDATING CONCRETE FOR ANY CLASS OF CONCRETE ON THIS PROJECT. SECTION 606 "SELF CONSOLIDATING CONCRETE (SCC)", CONTAINS THE REQUIREMENTS FOR MODIFYING ALL CLASSES OF CONCRETE MIX DESIGN FOR SELF-CONSOLIDATING APPLICATIONS.

3. ALL PORTLAND CEMENT CONCRETE SHALL BE AIR-ENTRAINED.

4. ALL REINFORCING STEEL SHALL BE GALVANIZED. ALL WIRE TIES AND MISCELLANEOUS HARDWARE USED FOR PLACEMENT OF GALVANIZED REINFORCING SHALL ALSO BE GALVANIZED. GALVANIZED COATING FOR REINFORCING STEEL SHALL CONFORM TO ASTM A767 CLASS 1.

5. ALL CRITICAL LAP SPLICES SHALL BE AS SHOWN ON THE PLANS. ALL SPLICES NOT SHOWN ON THE PLANS SHALL BE LAPPED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR CLASS B LAP SPLICES.

6. THE TOP BARS IN THE DECK SLAB SHALL BE SPLICED AT THE CENTER OF THE SPANS BETWEEN GIRDERS. THE BOTTOM BARS SHALL BE SPLICED OVER THE GIRDERS.

7. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL MAIN REINFORCING BARS SHALL HAVE THE FOLLOWING MINIMUM COVER:

CONCRETE CAST AGAINST OR PERMANENTLY EXPOSED TO EARTH (FOOTINGS, END DIAPHRAGMS)		3"
DECK SLABS (WITH WEARING SURFACE)	TOP	2" (+1/4", -0")
	BOTTOM	1" (+1/8", -0")
ALL OTHER BARS		2"

   COVER TO TIES AND STIRRUPS MAY BE 0.5 INCH LESS THAN THE ABOVE VALUES SPECIFIED FOR MAIN REINFORCING, BUT IN NO CASE LESS THAN 1.5 INCHES.

8. HORIZONTAL CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON PLANS WILL NOT BE PERMITTED WITHOUT A WRITTEN REQUEST BY THE CONTRACTOR AND PRIOR AUTHORIZATION BY THE ENGINEER.

9. UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CONCRETE SURFACES VISIBLE IN ELEVATION TO ONE FOOT BELOW FINAL GROUND LINE (AND THE UNDERSIDE OF ALL CONCRETE DECK SLABS OUTSIDE OF THE FASCIA BEAMS), SHALL RECEIVE A CONCRETE SURFACE RUBBED FINISH IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS.

10. THE ENTIRE TOPSIDE SURFACES OF ABUTMENT BEAM SEATS, AS WELL AS VERTICAL FACES OF BARRIERS SHALL BE PROVIDED WITH A FILM-FORMING SEALER (M12.03.1) CONCRETE SURFACE TREATMENT-PROTECTIVE COATING IN ACCORDANCE WITH SECTION 820 OF THE RI STANDARD SPECIFICATIONS.

11. ALL EXPOSED EDGES AND REENTRANT CORNERS NOT OTHERWISE DETAILED ON THE PLANS SHALL HAVE A MINIMUM ¾" CHAMFER.

12. ALL JOINT SEALANT SHALL BE POLYURETHANE, POLYURETHANE ELASTOMERIC, OR SILICONE SEALANT AS DESIGNATED ON THE PLANS. THE COLOR OF THE JOINT SEALANT, WHERE EXPOSED, SHALL BE NEUTRAL (LIGHT GRAY OR TAN). THE COLOR OF THE SEALANT, WHERE NOT EXPOSED, WILL BE AT THE DISCRETION OF THE CONTRACTOR.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING CONCRETE STAINS OR DISCOLORATIONS DURING CONSTRUCTION UNTIL SUCH TIME WHEN THE SURFACES ARE APPROVED AND ACCEPTED. ANY CONCRETE STAINS OR DISCOLORATIONS OCCURRING PRIOR TO ACCEPTANCE OF THE SURFACES SHALL BE REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.

14. UNLESS OTHERWISE NOTED ON THE PLANS, JOINT FILLER IS TO BE A PREFORMED, NON-EXPANSIVE, NON-EXTRUDING TYPE IN ACCORDANCE WITH SECTION M.02.11.1 OF THE RI STANDARD SPECIFICATIONS.

15. PLACEMENT, FINISHING AND CURING OF BRIDGE DECK CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 814 OF THE RI STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH THE SEQUENCE AND DIRECTION OF POURS AS SHOWN ON THE PLANS.

    SUPPORT RAILS FOR THE FINISHING MACHINE(S) SHALL BE LOCATED BEYOND THE CURB LINE SUCH THAT THE ENTIRE BRIDGE DECK SHALL RECEIVE A MACHINE FINISH. THE CONTRACTOR SHALL INCLUDE THE LOADING OF THE FINISHING MACHINE(S) AND THE SUPPORT RAIL SYSTEM IN THE DESIGN OF THE CANTILEVER DECK SUPPORT SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST AND DESIGN OF THIS SUPPORT SYSTEM WHICH MAY REQUIRE THE ADDITION OF TEMPORARY DIAPHRAGMS OR BRACES TO PREVENT FASCIA STRINGER ROTATION.

16. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL DECK FORMS SHALL BE OF THE REMOVABLE TYPE THAT WILL PRODUCE THE DIMENSIONS SHOWN ON THE PLANS.

17. EMBEDMENT LENGTHS FOR DRILLED AND GROUTED DOWELS SHALL BE IN ACCORDANCE WITH SECTION 819 OF THE RI STANDARD SPECIFICATIONS.

18. IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS, ALL METAL TIES, NON-METALLIC TIES OR ANCHORAGES WHICH ARE REQUIRED FOR CONCRETE FORMWORK SHALL BE SO CONSTRUCTED THAT THEY CAN BE REMOVED TO AT LEAST ONE INCH BELOW THE EXPOSED SURFACE OF THE CONCRETE WITHOUT CAUSING DAMAGE TO THE CONCRETE SURFACE. SNAP TIES MAY BE USED ONLY IF APPROVED BY THE ENGINEER. IF THE CONTRACTOR PROPOSES TO USE THEM, A CATALOG CUT AND OTHER NECESSARY INFORMATION MUST BE SUBMITTED TO THE ENGINEER TO DEMONSTRATE THAT THE TIES WILL SNAP-OFF FAR ENOUGH INTO THE CONCRETE TO ALLOW FOR PROPER PATCHING. SNAP TIES MUST PROVIDE ADEQUATE STRENGTH TO SUPPORT THE FORMS. ALL CAVITIES SHALL BE FILLED WITH AN APPROVED CEMENT MORTAR MEETING THE REQUIREMENTS OF ASTM C 928.

19. WATER STOPS ARE REQUIRED FOR HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS IN ABUTMENTS AND WALLS WHEN EXPOSED TO BACKFILL EARTH MATERIAL. WATER STOPS SHALL BE INSTALLED AT THE LOCATIONS DETAILED ON THE PLANS, AT THE LOCATIONS AS SPECIFIED ABOVE AND AT ALL LOCATIONS AS DIRECTED BY THE ENGINEER, ALL IN ACCORDANCE WITH SECTION 812 OF THE RI STANDARD SPECIFICATIONS.

20. UNLESS OTHERWISE DIMENSIONED ON THE PLANS, ALL REINFORCEMENT BENDS SHOWN ARE STANDARD HOOKS.

~~21. ALL EXPOSED FACES OF PIERS AND ABUTMENTS FROM THE BRIDGE SEATS TO THE GROUND SURFACE AND EXPOSED WALL SURFACES SHALL RECEIVE AN ANTI-GRAFFITI COATING.~~

22. A COLD SPRAY-APPLIED LIQUID MEMBRANE SHALL BE APPLIED TO THE DECK SURFACE OF THE PROPOSED BRIDGE IN ACCORDANCE WITH SECTION 813 OF THE RI STANDARD SPECIFICATIONS.

23. ANY METALLIC ELEMENTS THAT ARE TO BE LEFT IN PLACE AND NOT STATED HERE SHALL BE GALVANIZED. THIS INCLUDES BUT IS NOT LIMITED TO REINFORCING STEEL, WIRE MESH, SNAP TIES, METAL TIES, ANCHORAGES FOR FORM WORK, SUPPORTS FOR MASS CONCRETE COOLING PIPES.

REINFORCEMENT NOTE

THE CONTRACTOR'S BAR FABRICATOR SHALL VERIFY THE CORRECTNESS IN PREPARING HIS ORDER LISTS AND BENDING DIAGRAMS. ANY EXPENSE INCIDENTAL TO REVISION OF MATERIAL AS SHOWN ON THE ORDER LISTS AND BENDING DIAGRAMS IN ORDER TO MAKE IT COMPLY WITH THE DESIGN DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. SHOP DRAWINGS FOR ALL REINFORCEMENT DETAILS AND SCHEDULE SHALL BE SUBMITTED TO THE ENGINEER IN SUFFICIENT TIME TO PERMIT CAREFUL CHECKING.

BRIDGE 063501

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

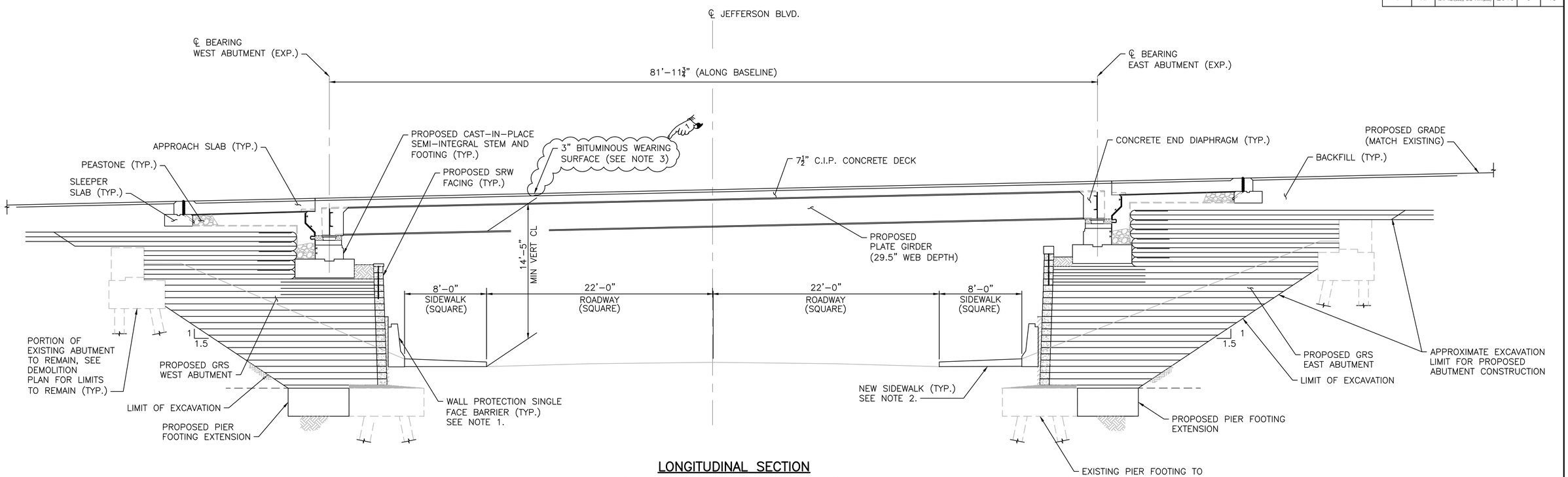
BRIDGE GENERAL
NOTES SHEET 2

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

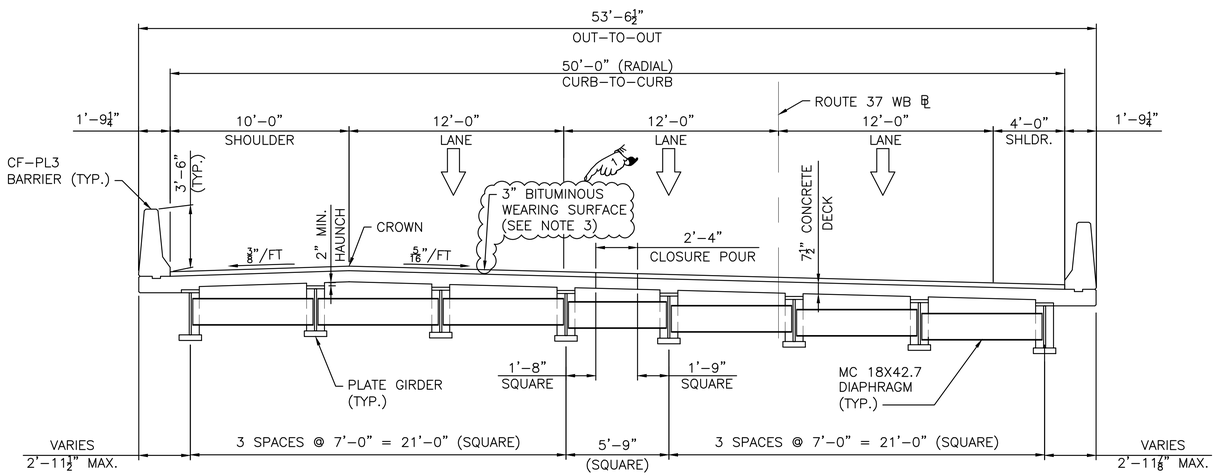
TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	9	45



LONGITUDINAL SECTION

(LOOKING NORTH BOUND ON JEFFERSON BLVD.)
SCALE: 1" = 5'



TRANSVERSE CROSS SECTION

(LOOKING UPSTATION)
SCALE: ¼" = 1'–0"

NOTES:

1. FOR WALL PROTECTION DETAILS REFER TO VOLUME 1.
2. FOR SIDEWALK RECONSTRUCTION DETAILS REFER TO VOLUME 1.
3. BITUMINOUS WEARING SURFACE SHALL CONSIST OF (2) – 1½" LAYERS OF MODIFIED CLASS 9.5 HMA FOR BRIDGE DECKS OVER COLD SPRAY–APPLIED LIQUID MEMBRANE. THE COST OF THE FIRST HMA LAYER AND MEMBRANE SHALL BE INCLUDED UNDER ITEM CODE 800.9910. THE COST OF THE FINAL HMA LAYER SHALL BE INCLUDED UNDER HIGHWAY ITEMS.

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DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

LONGITUDINAL AND TRANSVERSE SECTIONS

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

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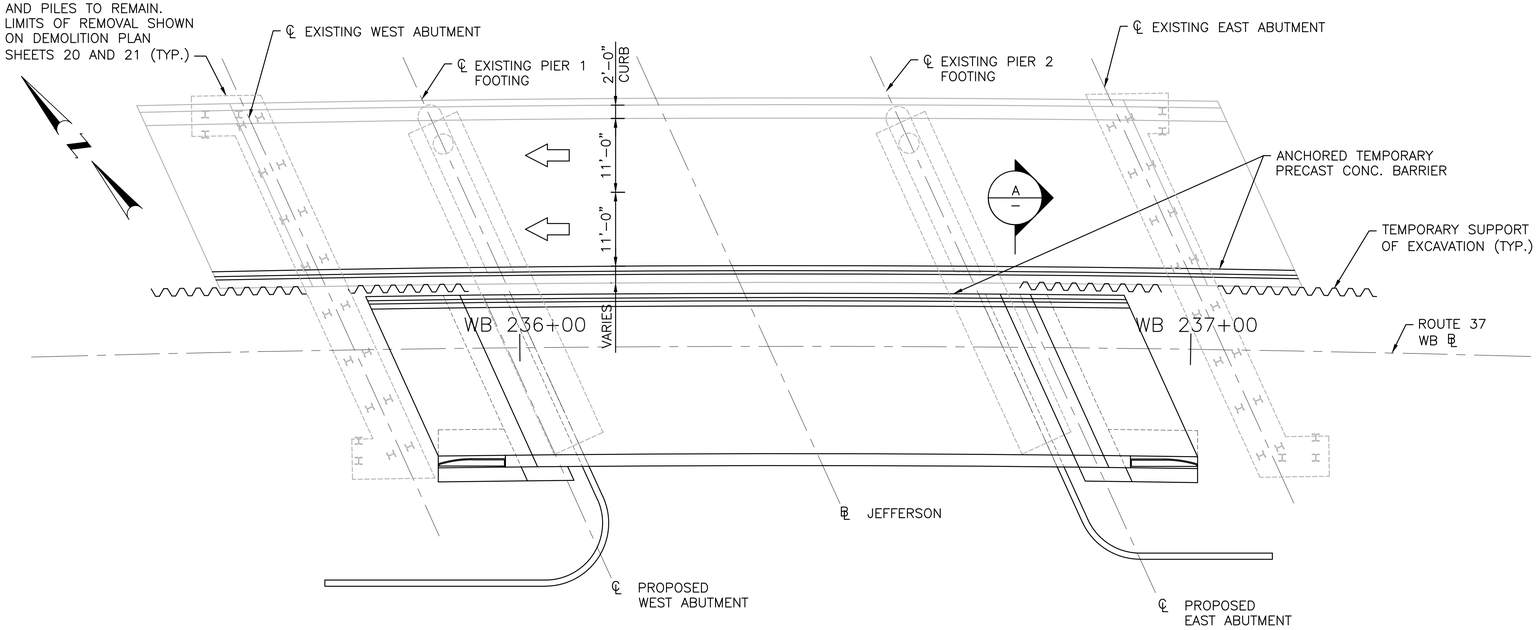
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38D-PRTF(258)	2019	12	45

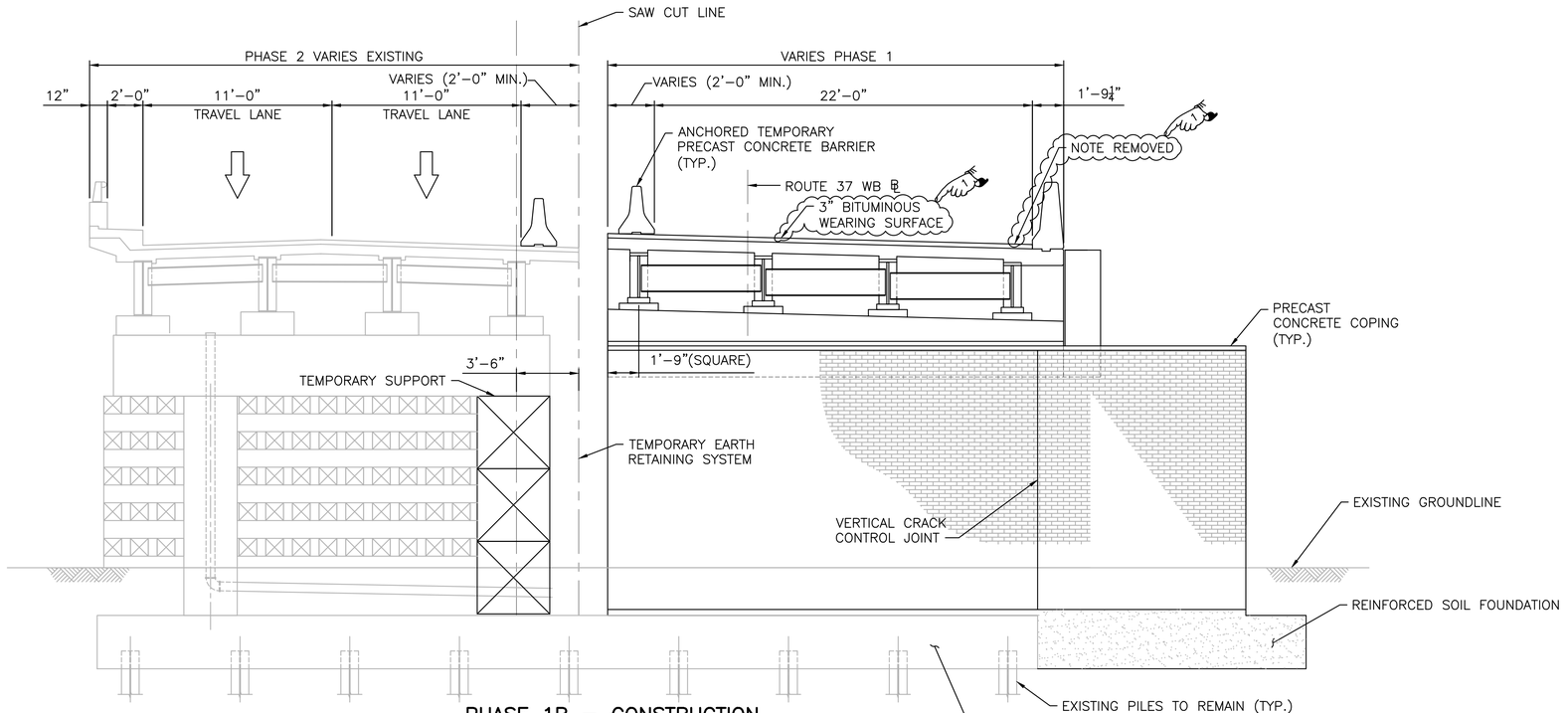
R-1

AND PILES TO REMAIN.
LIMITS OF REMOVAL SHOWN
ON DEMOLITION PLAN
SHEETS 20 AND 21 (TYP.)



PHASE 1B – CONSTRUCTION PLAN

SCALE: $\frac{3}{32}$" = 1'–0"



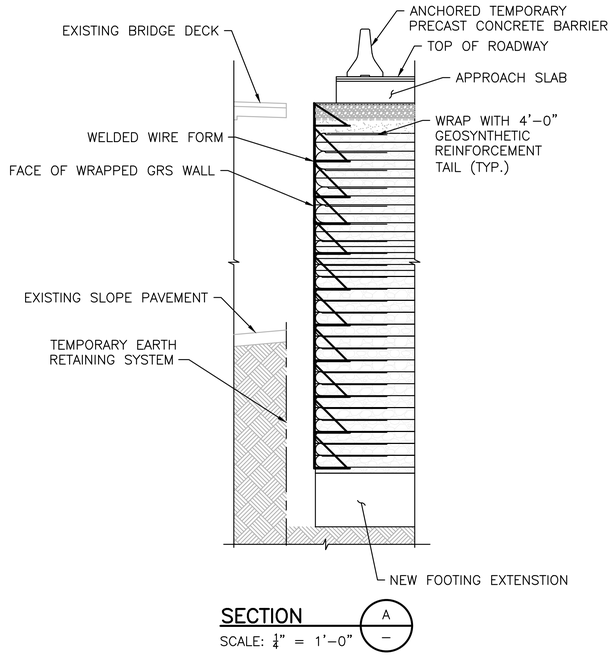
PHASE 1B – CONSTRUCTION TYPICAL SECTION

(EAST ABUTMENT SHOWN)

SCALE: $\frac{1}{4}$" = 1'–0"

PHASE 1B – CONSTRUCTION NOTES:

1. CONSTRUCT PORTION OF PROPOSED BRIDGE AS SHOWN.
2. INSTALL ANCHORED TEMPORARY BARRIER CURB ON CONSTRUCTED PORTION OF PROPOSED BRIDGE.



SECTION A – A

SCALE: $\frac{1}{4}$" = 1'–0"

NOTES:

1. FOR GRS REINFORCEMENT DETAILS REFER TO WEST AND EAST ABUTMENT GRS DETAIL SHEETS.

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RHODE ISLAND
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WARWICK RHODE ISLAND

PHASE CONSTRUCTION SHEET 2

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

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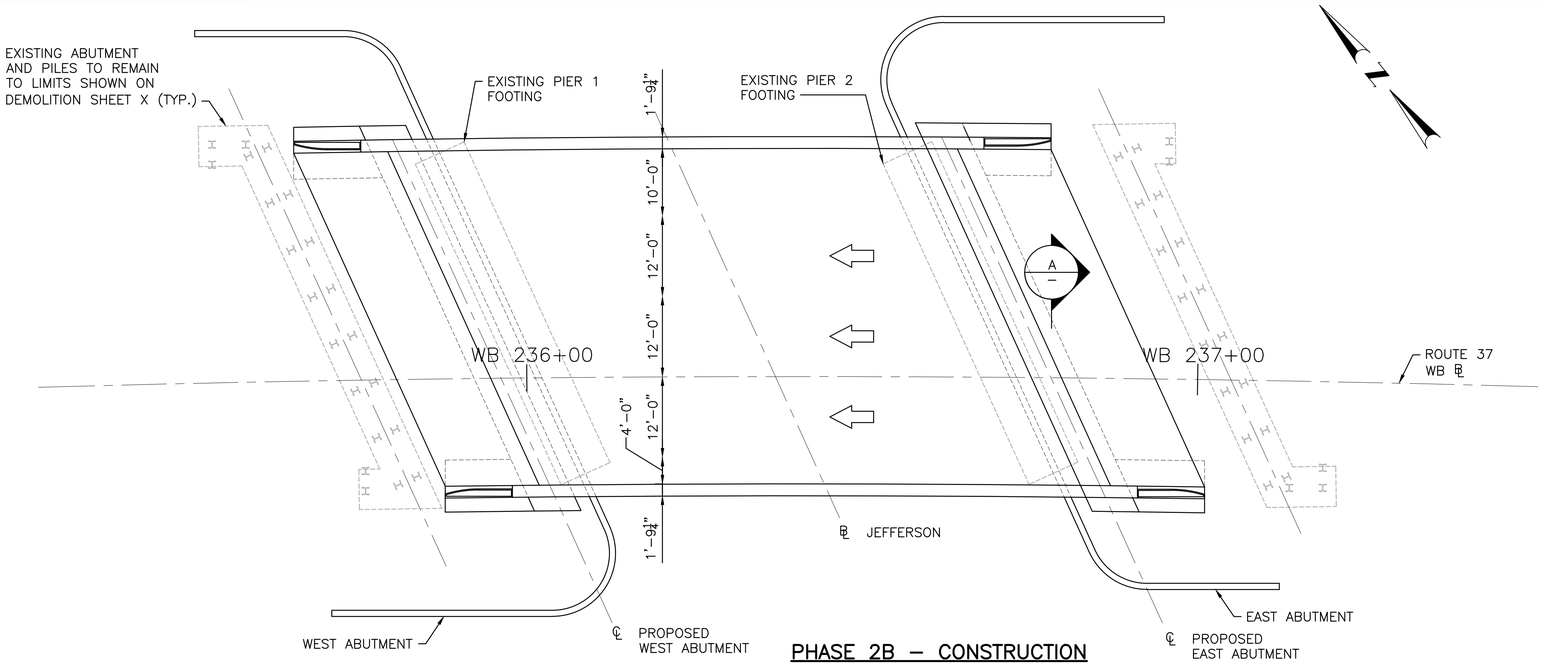
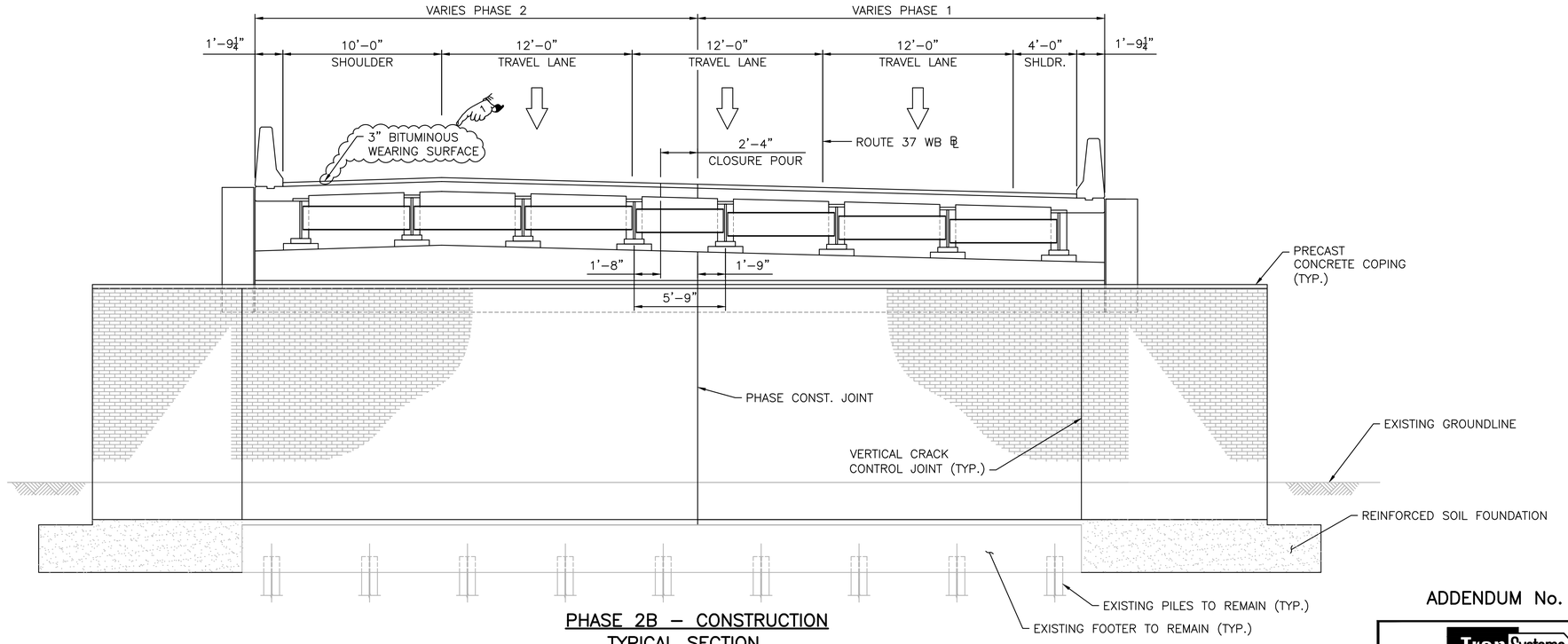
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	14	45



PHASE 2B – CONSTRUCTION PLAN

SCALE: $\frac{3}{32}$" = 1'-0"



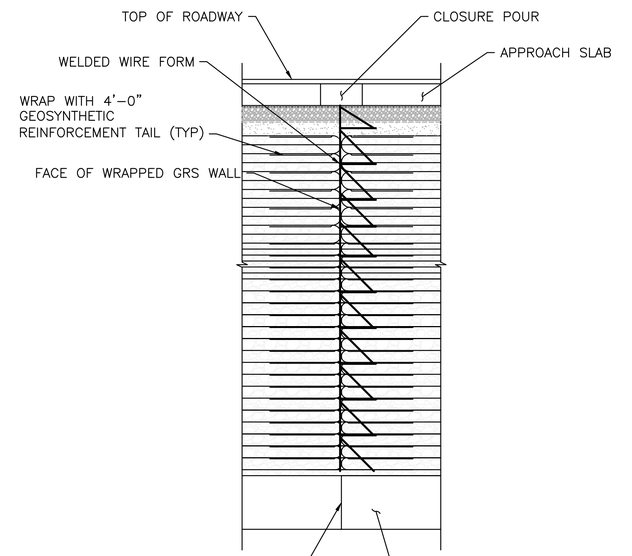
PHASE 2B – CONSTRUCTION TYPICAL SECTION

(EAST ABUTMENT SHOWN)

SCALE: $\frac{1}{4}$" = 1'-0"

PHASE 2B CONSTRUCTION NOTES:

1. CONSTRUCT REMAINING PORTION OF PROPOSED BRIDGE.
2. REMOVE ANCHORED TEMPORARY BARRIER CURB.
3. PAVE ROADWAY APPROACHES AND BRIDGE.



SECTION A–A

SCALE: $\frac{1}{4}$" = 1'-0"

NOTES:

1. FOR GRS REINFORCEMENT DETAILS REFER TO WEST AND EAST ABUTMENT GRS DETAIL SHEETS.

BRIDGE 063501

ADDENDUM No. 4

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NO.	DATE	BY
1	10/31/19	DRC

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DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

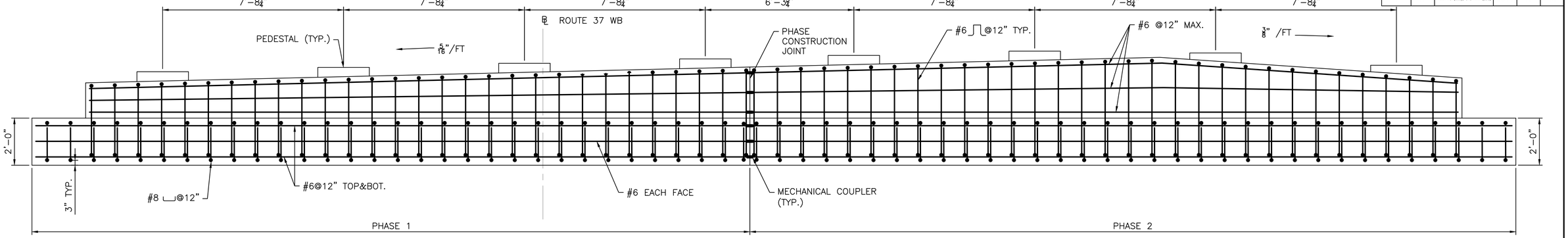
PHASE CONSTRUCTION SHEET 4

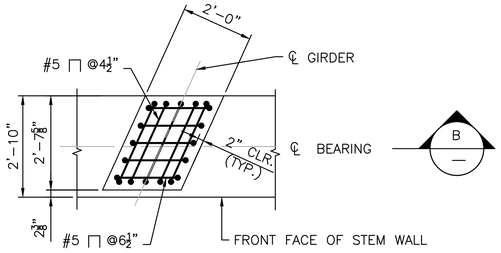
CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_014_PHASE CONSTRUCTION SHEET 4_R-1.dwg Plotted on Tuesday, October 29, 2019 10:58:20 AM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	19	45

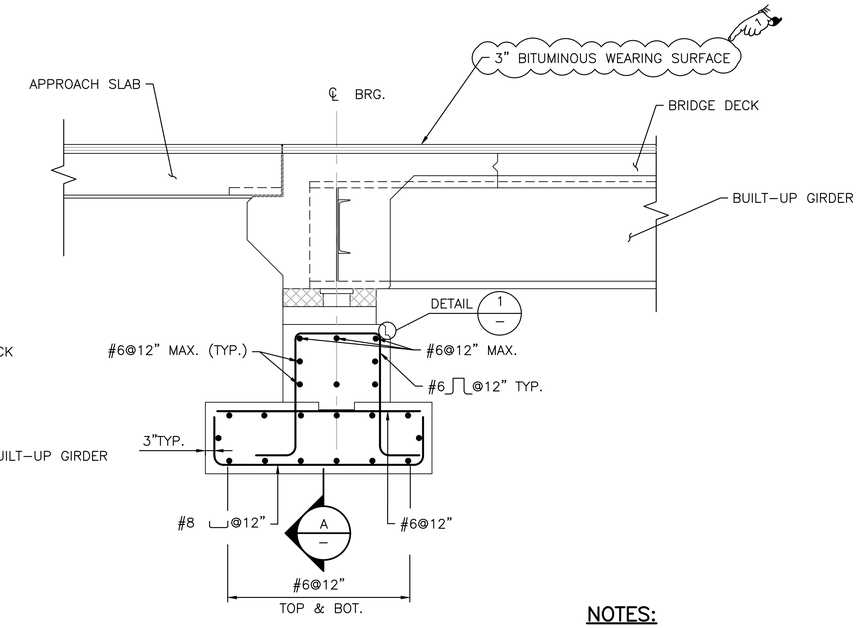
R-1





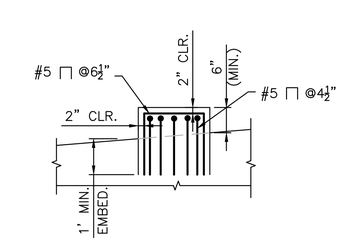
ABUTMENT REINFORCING SECTION (A)

SCALE: ½" = 1'-0"
(REINFORCING STEEL IN PEDESTALS NOT SHOWN FOR CLARITY)



TYPICAL ABUTMENT REINFORCING

SCALE: ½" = 1'-0"

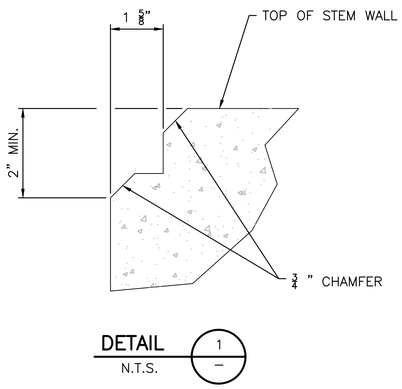


SECTION (B)

N.T.S.

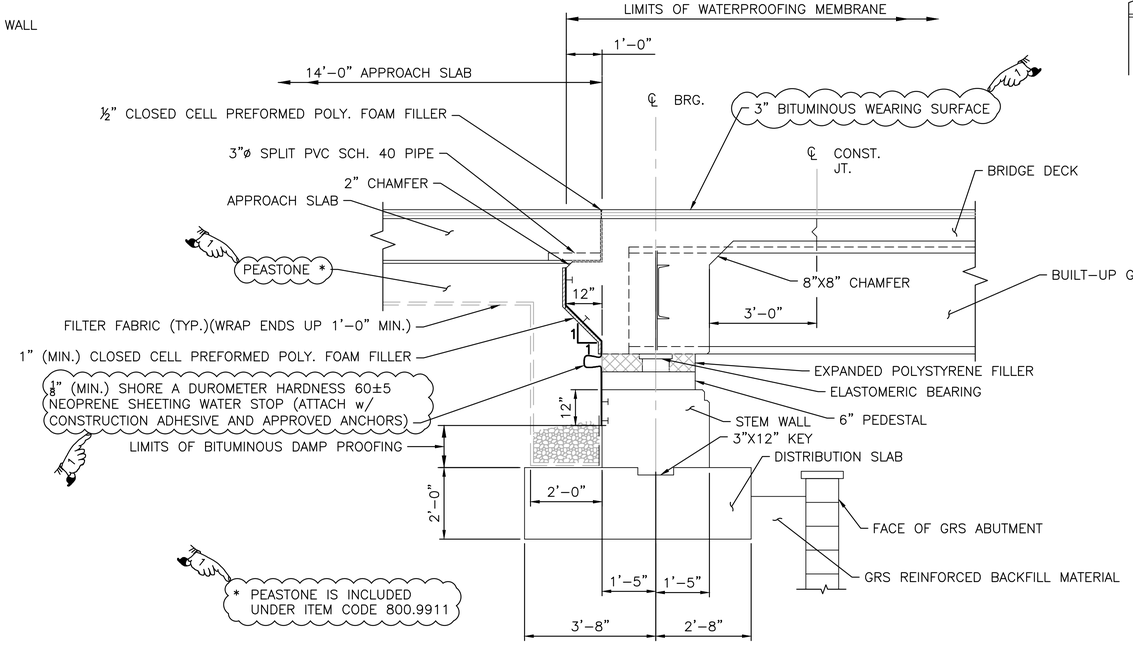
PLAN OF PEDESTAL

N.T.S.



DETAIL (1)

N.T.S.



TYPICAL ABUTMENT SECTION

SCALE: ½" = 1'-0"

NOTES:

1. FOR APPROACH SLAB AND SLEEPER SLAB DETAILS, SEE SHEET NOS. 32 THRU 34.
2. FOR END DIAPHRAGM DETAILS, SEE SHEET 41.

BRIDGE 063501

ADDENDUM No. 4

REVISIONS		
NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK — RHODE ISLAND

ABUTMENT DETAILS

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

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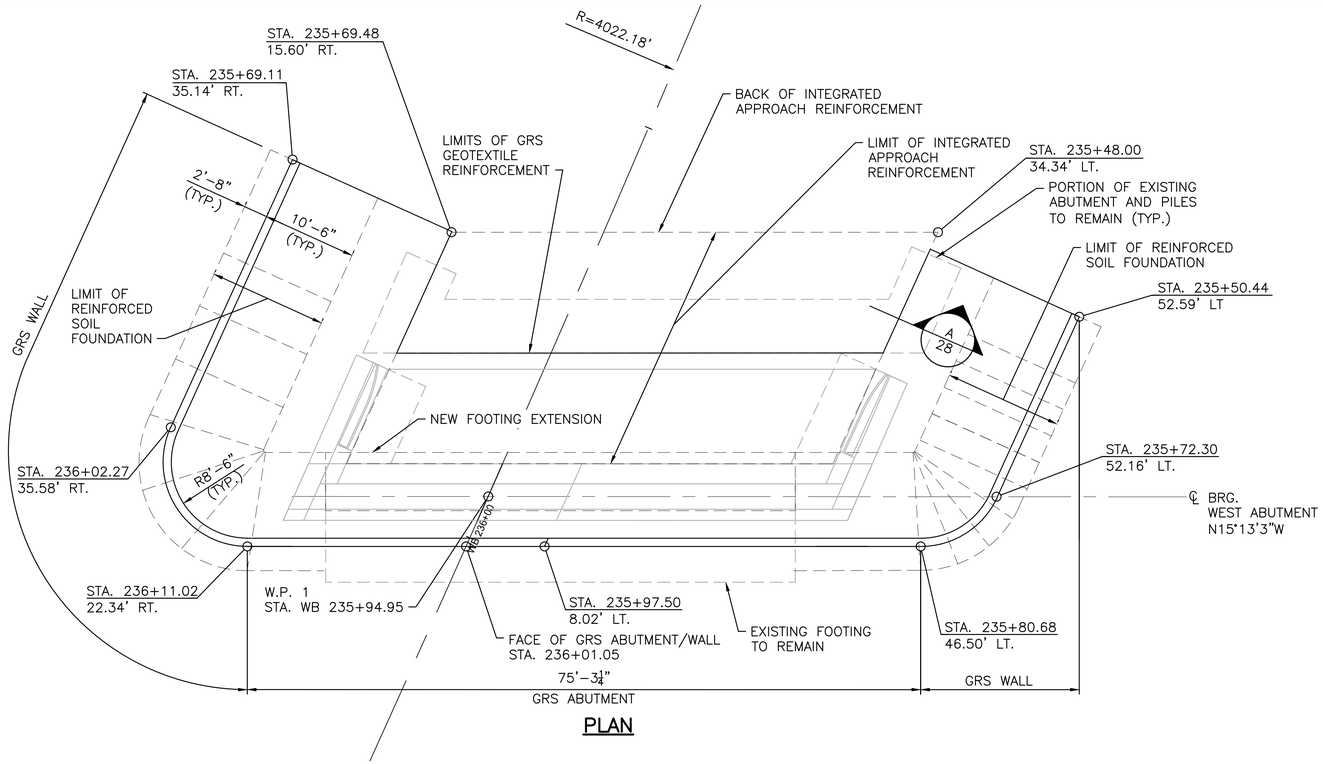
0013C_V6_019_FOOTING DETAILS_R-1.dwg Plotted on Tuesday, October 29, 2019 10:58:30 AM

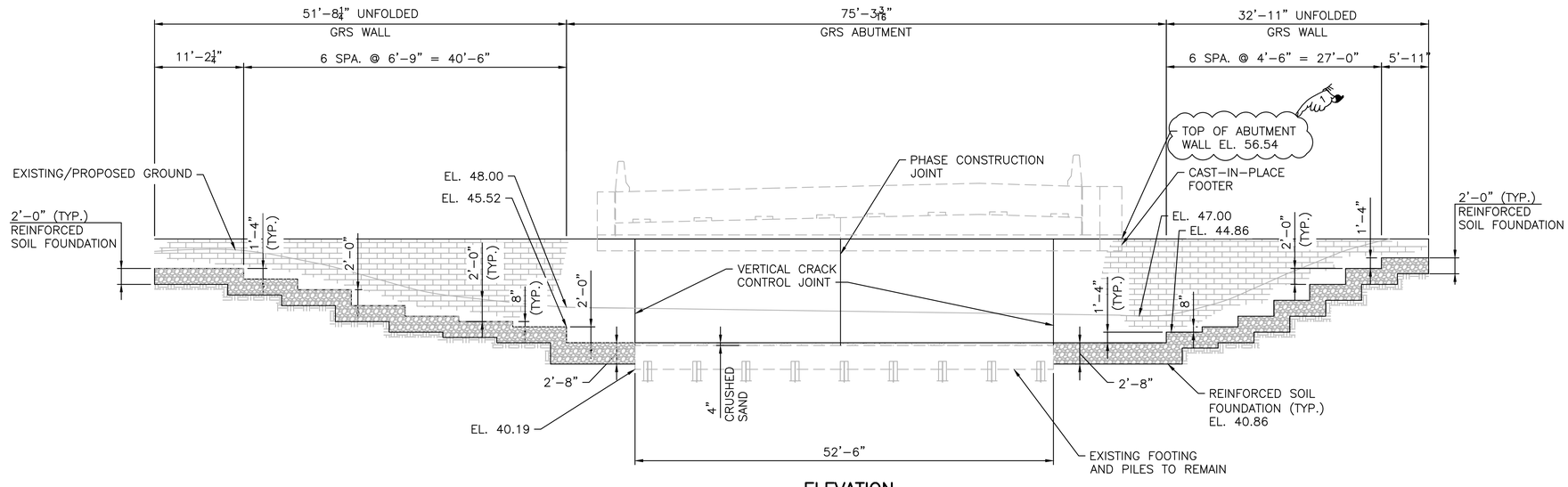
0013C_V6_019_FOOTING DETAILS_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	20	45

R-1



PLAN



ELEVATION

GRS WALL AT WEST ABUTMENT

SCALE: ⅛" = 1'-0"
(WALL PROTECTION BARRIER NOT SHOWN FOR CLARITY)

NOTES:

1. TOP OF GRS ABUTMENT/WALL ELEVATIONS ARE GIVEN TO TOP OF FINAL COURSE OF SEGMENTAL RETAINING WALL FACING UNITS (WITHOUT WALL CAP).
2. STATION AND OFFSET DIMENSIONS LOCATING THE FACE OF GRS WALL/ABUTMENT ARE GIVEN AT THE TOP OF THE REINFORCED SOIL FOUNDATION/PIER CAP EXTENSIONS.
3. SEGMENTAL RETAINING WALL UNITS ARE RUNNING BOND, THERE ARE NO VERTICAL JOINTS GREATER THAN ONE COURSE HEIGHT OTHER THAN THE PHASE LINE AND THE TWO CRACK CONTROL JOINTS.
4. STRIKE CONCRETE FILL FLUSH WITH TOP OF SEGMENTAL RETAINING WALL FACING UNIT FOR PROPER FIT OF PRECAST CONCRETE WALL CAP. ATTACH CAP UNITS WITH AN ADHESIVE RECOMMENDED BY THE MANUFACTURER.
5. CONSTRUCT WALLS NEAR VERTICAL WITH $\frac{8}{32}$" MAX. SET BACK PER COURSE.
6. FOR WALL PROTECTION BARRIER DETAILS, REFER TO VOLUME 1.

ADDENDUM No. 4

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BRIDGE 063501

REVISIONS		
NO.	DATE	BY
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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

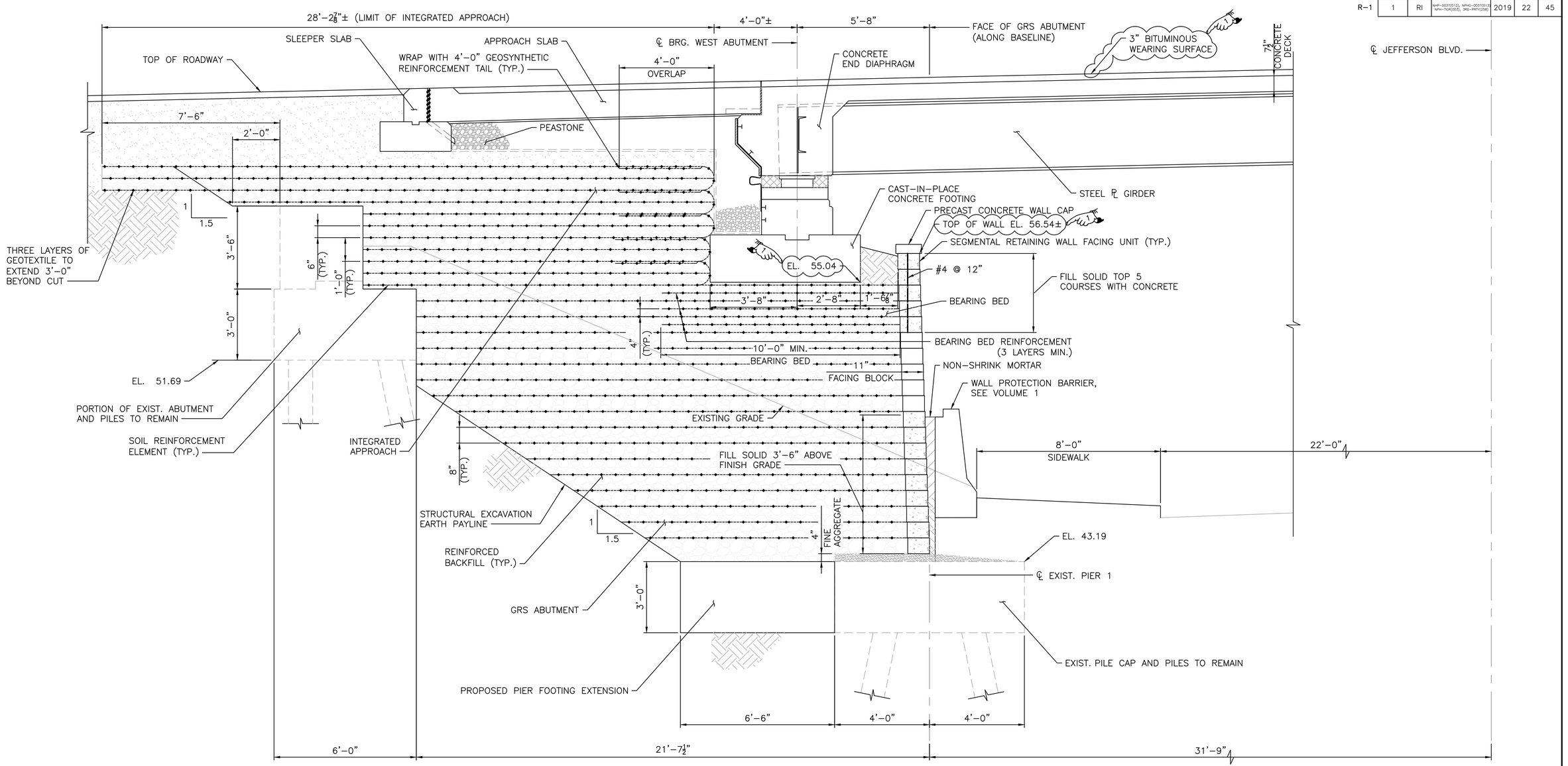
WARWICK RHODE ISLAND

GRS WEST ABUTMENT WALL PLAN AND ELEVATION

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_020_GRS WALL WEST_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	22	45



WEST GRS ABUTMENT SECTION

SCALE: ½" = 1'-0"

BRIDGE 063501

NOTES:

1. DIMENSIONS SHOWN ARE SQUARE TO FACE OF GRS ABUTMENT/WALLS, UNLESS OTHERWISE NOTED.
2. MAX. ALLOWABLE ABUTMENT FOOTING BEARING PRESSURE UNDER SERVICE I LIMIT STATE = 4,000 PSF.
3. MAX. FACTORED ABUTMENT FOOTING BEARING PRESSURE UNDER STRENGTH I LIMIT STATE = 7,000 PSF.
4. FOR GRS WALL ELEVATIONS, LENGTH OF TOP REINFORCEMENT LAYERS, AND APPLICABLE NOTES, REFER TO WEST ABUTMENT GRS WALL AND EAST ABUTMENT GRS WALL SHEETS.

LEGEND:

GRS REINFORCED BACKFILL MATERIAL

ADDENDUM No. 4

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

WEST ABUTMENT
GRS DETAIL

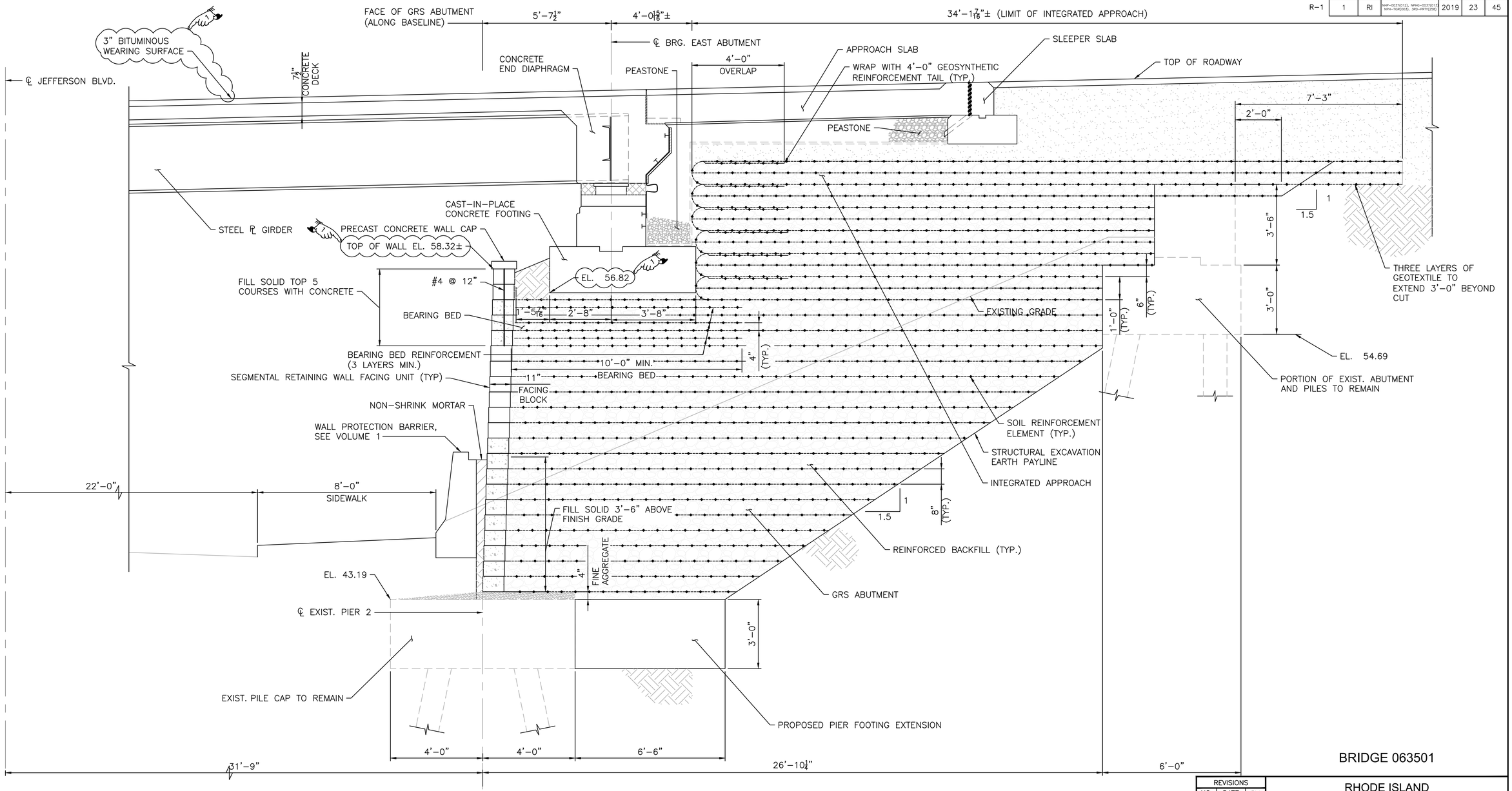
CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_022_WEST ABUTMENT GRS DETAIL_R-1.dwg Plotted on Tuesday, October 29, 2019 10:59:11 AM

0013C_V6_022_WEST ABUTMENT GRS DETAIL_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	23	45

R-1



NOTES:

1. DIMENSIONS SHOWN ARE SQUARE TO FACE OF GRS ABUTMENT/WALLS, UNLESS OTHERWISE NOTED.
2. MAX. ALLOWABLE ABUTMENT FOOTING BEARING PRESSURE UNDER SERVICE I LIMIT STATE = 4,000 PSF.
3. MAX. FACTORED ABUTMENT FOOTING BEARING PRESSURE UNDER STRENGTH I LIMIT STATE = 7,000 PSF.
4. FOR GRS WALL ELEVATIONS, LENGTH OF TOP REINFORCEMENT LAYERS, AND APPLICABLE NOTES, REFER TO WEST ABUTMENT GRS WALL AND EAST ABUTMENT GRS WALL SHEETS.

LEGEND:

GRS REINFORCED BACKFILL MATERIAL

EAST GRS ABUTMENT SECTION

SCALE: ½" = 1'–0"

ADDENDUM No. 4

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DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK — RHODE ISLAND

BRIDGE 063501

EAST ABUTMENT GRS DETAIL

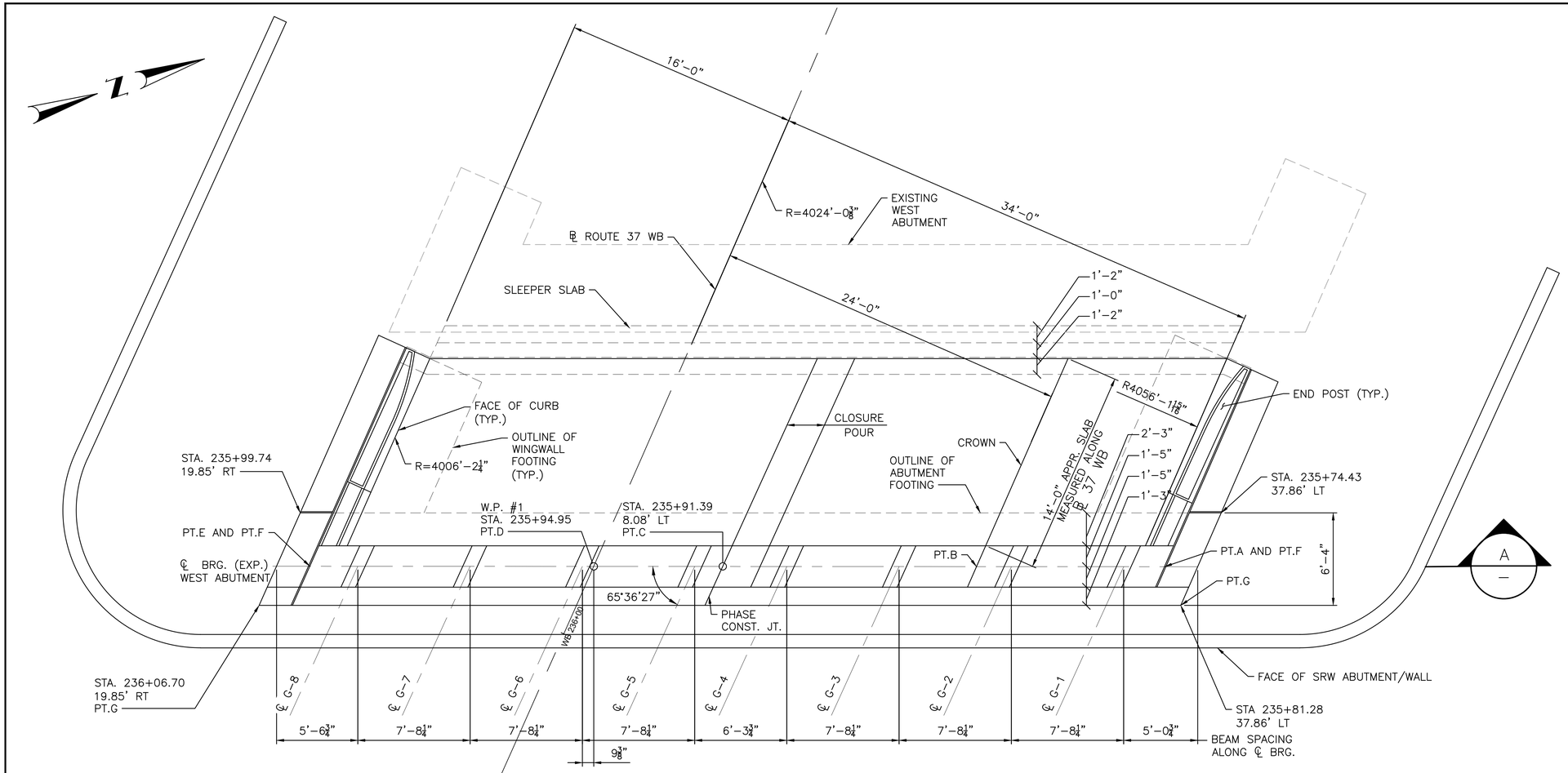
CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_023_EAST ABUTMENT GRS DETAIL_R-1

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	25	45

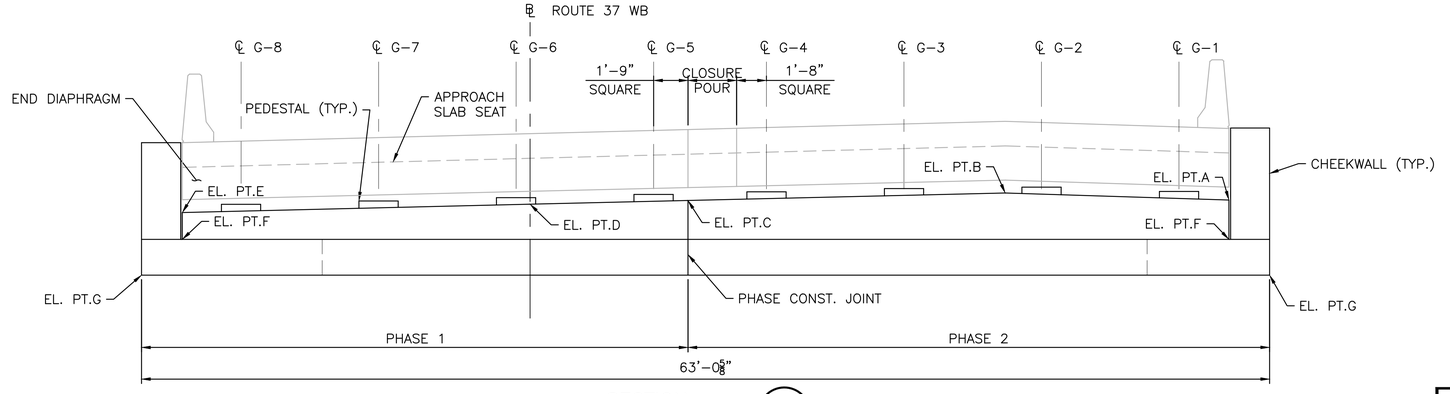
WEST ABUTMENT ELEVATIONS	
LOCATION	ELEVATION
PT. A	58.75
PT. B	59.23
PT. C	58.97
PT. D	58.83
PT. E	58.54
PT. F	57.04
PT. G	55.04

BEAM PEDESTAL ELEVATIONS	
GIRDER	ELEVATION
G-1	59.35
G-2	59.64
G-3	59.65
G-4	59.54
G-5	59.44
G-6	59.32
G-7	59.21
G-8	59.09



PLAN

SCALE: 1/4" = 1'-0"
(WALL PROTECTION BARRIER NOT SHOWN FOR CLARITY, SEE VOLUME 1 FOR BARRIER DETAILS)



SECTION A — A

SCALE: 1/4" = 1'-0"

ADDENDUM No. 4

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

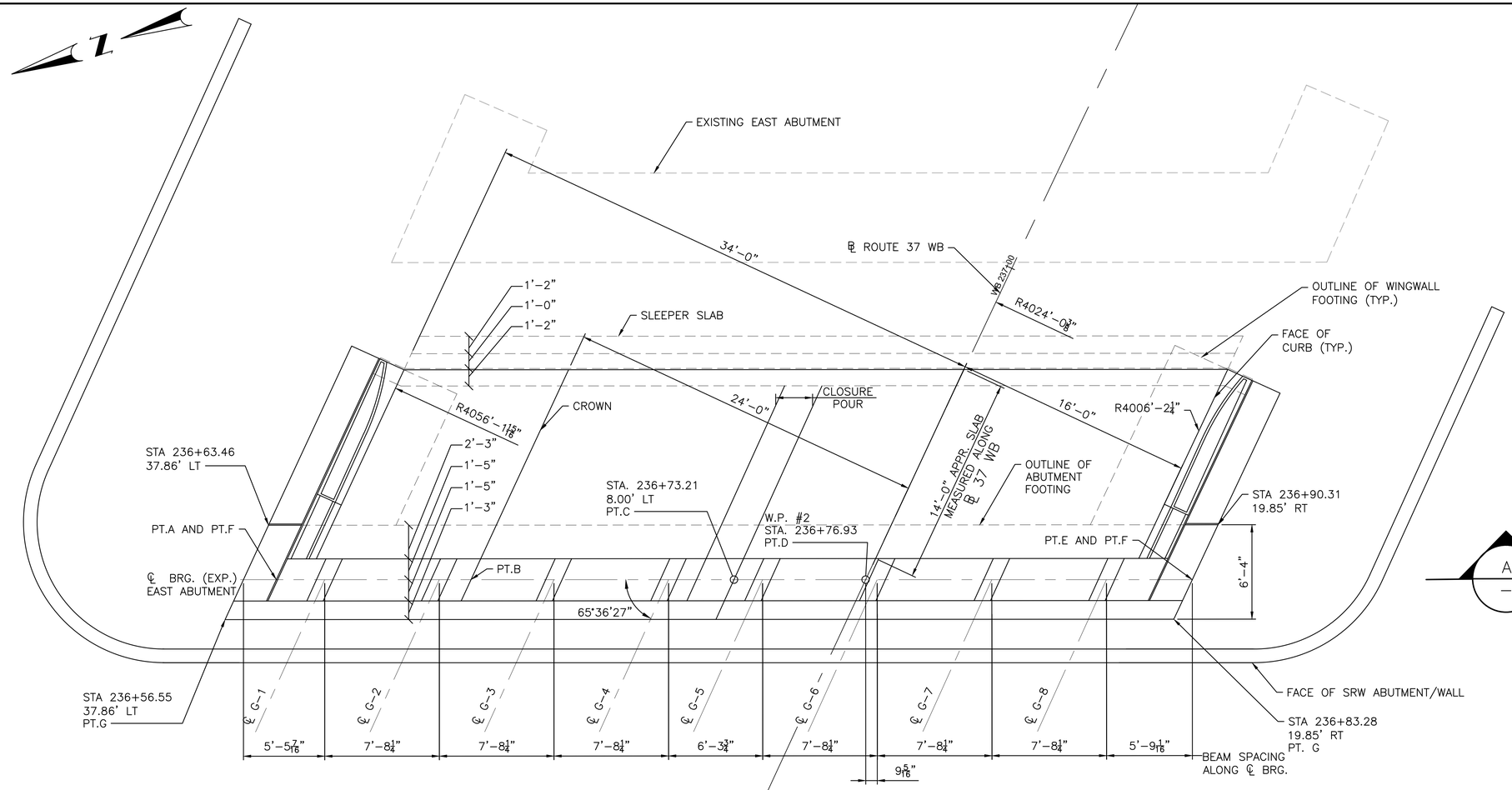
WARWICK RHODE ISLAND

WEST ABUTMENT PLAN

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

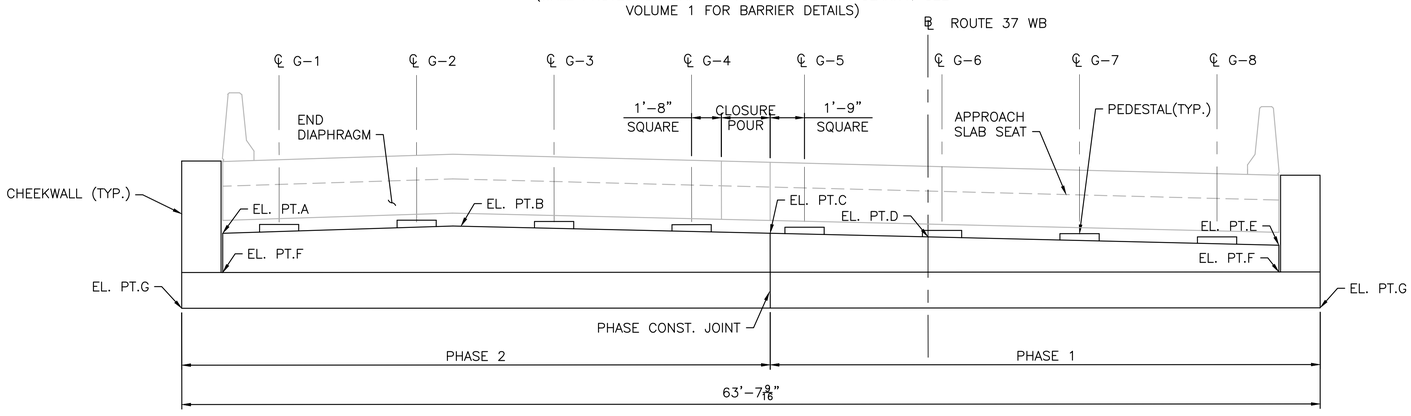
0013C_V6_025_WEST ABUTMENT PLAN AND ELEVATION_R-1.dwg Plotted on Tuesday, October 29, 2019 10:59:52 AM

	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	26	45



PLAN

SCALE: ¼" = 1'-0"
(WALL PROTECTION BARRIER NOT SHOWN FOR CLARITY, SEE VOLUME 1 FOR BARRIER DETAILS)



SECTION

SCALE: ¼" = 1'-0"

EAST ABUTMENT ELEVATIONS	
LOCATION	ELEVATION
PT. A	60.50
PT. B	60.99
PT. C	58.97
PT. D	60.61
PT. E	60.32
PT. F	58.82
PT. G	56.82

BEAM PEDESTAL ELEVATIONS	
GIRDER	ELEVATION
G-1	61.12
G-2	61.41
G-3	61.41
G-4	61.30
G-5	61.21
G-6	61.09
G-7	60.98
G-8	60.87

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BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

EAST ABUTMENT PLAN

ADDENDUM No. 4

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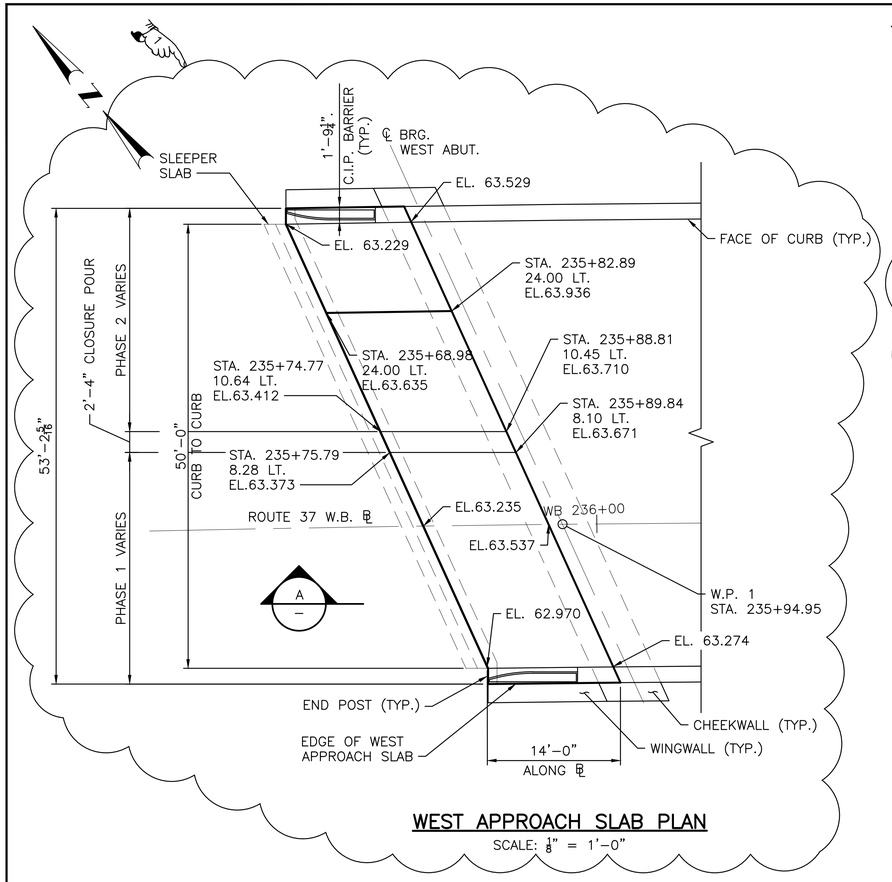
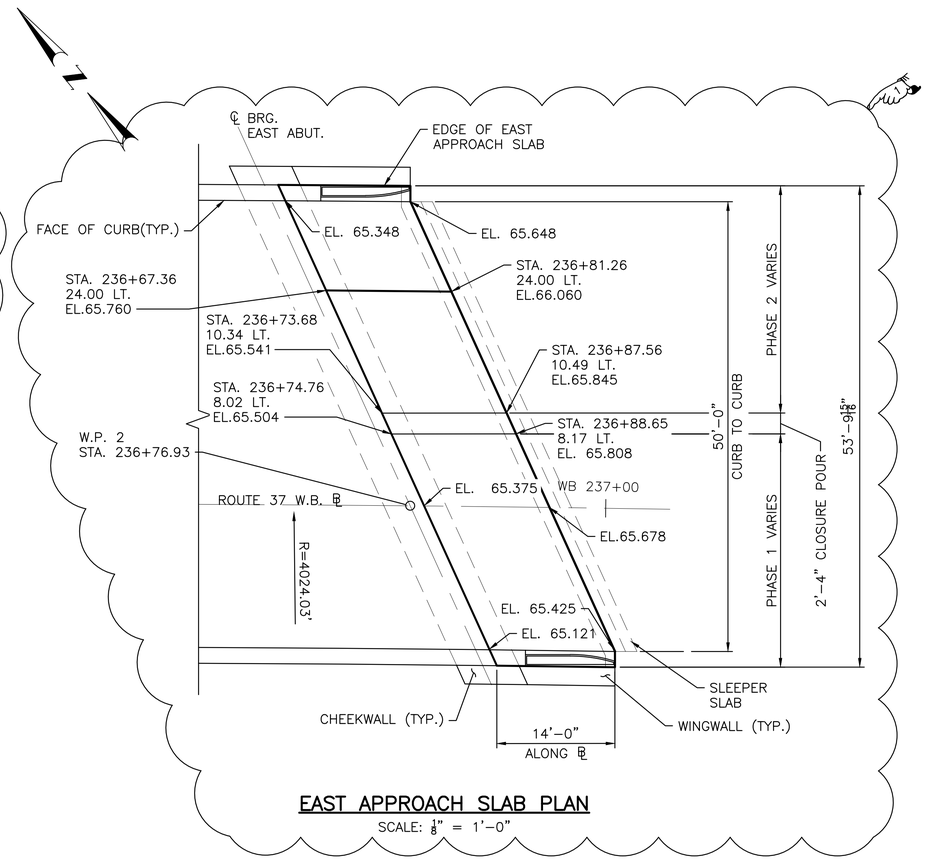
0013C_V6_026_EAST ABUTMENT PLAN AND ELEVATION_R-1

	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	28	45



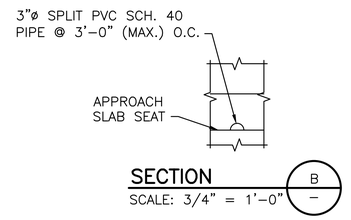
WEST APPROACH SLAB PLAN

SCALE: ⅛" = 1'-0"



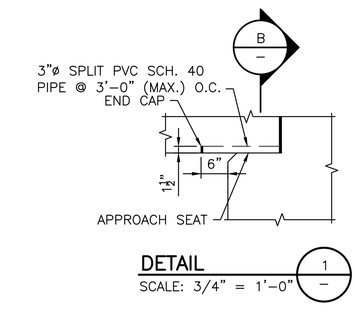
EAST APPROACH SLAB PLAN

SCALE: ⅛" = 1'-0"



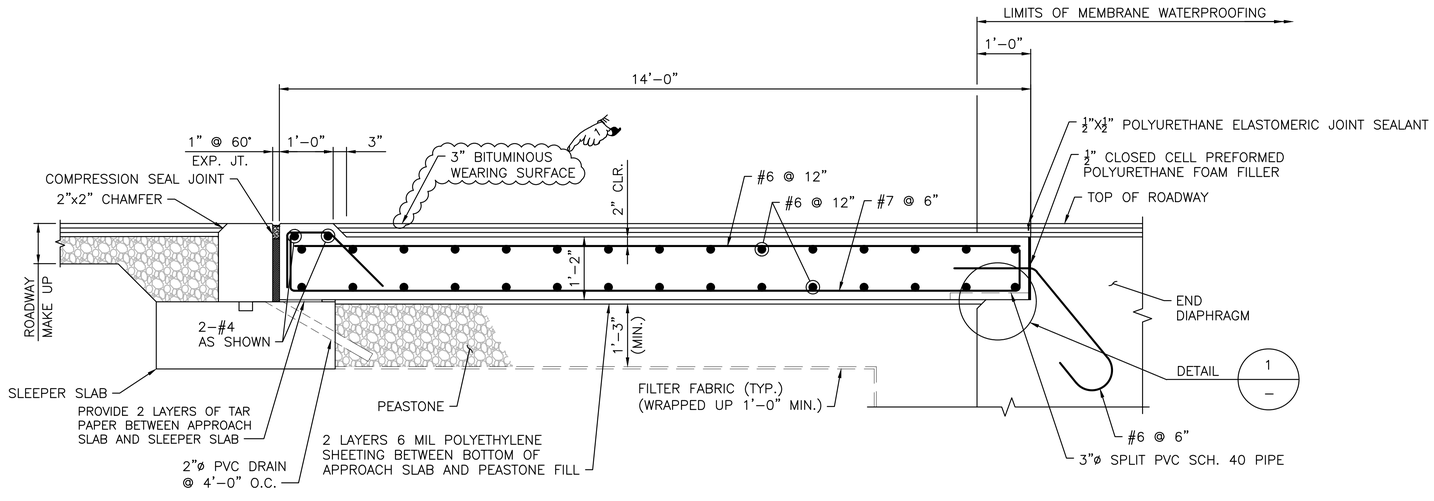
SECTION

SCALE: 3/4" = 1'-0" (B)



DETAIL

SCALE: 3/4" = 1'-0" (1)



TYPICAL LONGITUDINAL SECTION

SECTION

SCALE: ¾" = 1'-0" (A)

APPROACH SLAB NOTES:

1. TOP OF APPROACH SLAB ELEVATIONS APPLY TO TOP OF ROADWAY SURFACE.
2. PLACE LONGITUDINAL REINFORCING PARALLEL TO CONTSTRUCTION BASELINE. PLACE TRANSVERSE REINFORCING PARALLEL TO ABUTMENT.

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

APPROACH SLAB DETAILS

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

TranSystems
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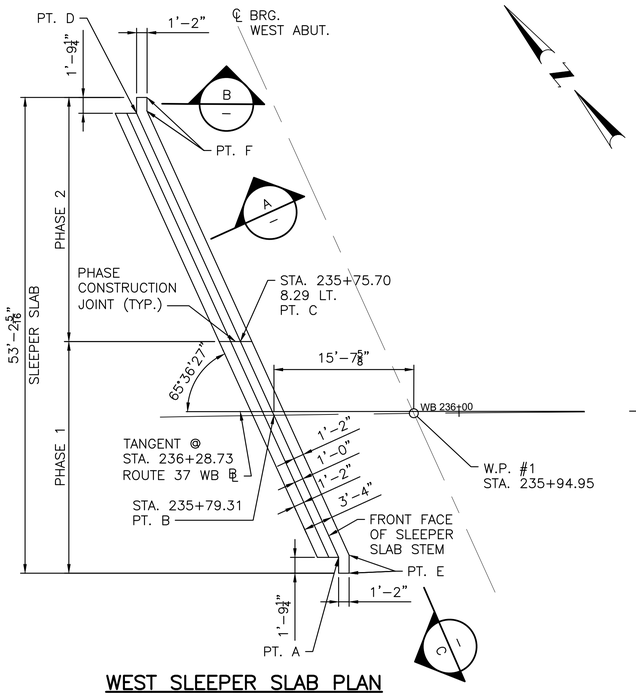
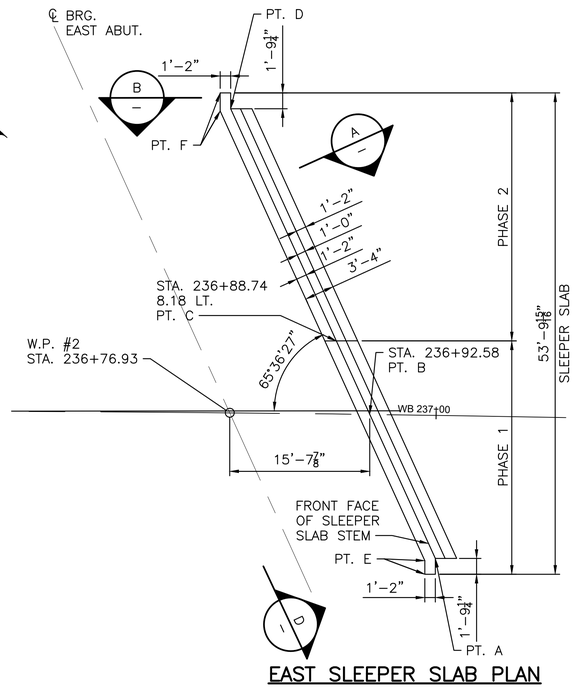
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	29	45

R-1



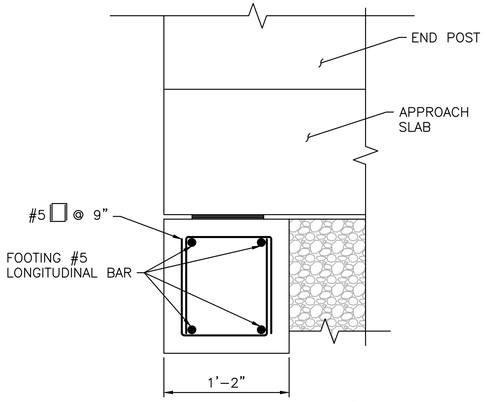
WEST SLEEPER SLAB PLAN

SCALE: ⅛" = 1'-0"



EAST SLEEPER SLAB PLAN

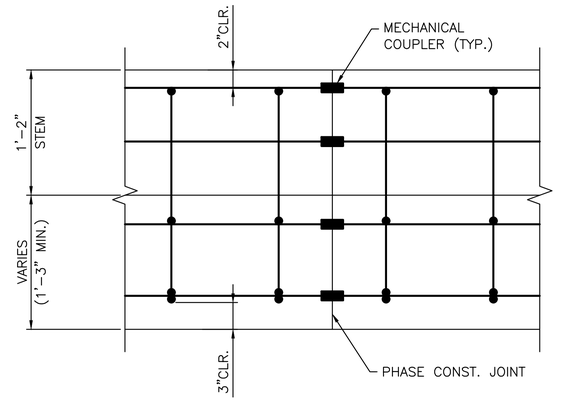
SCALE: ⅛" = 1'-0"



SECTION

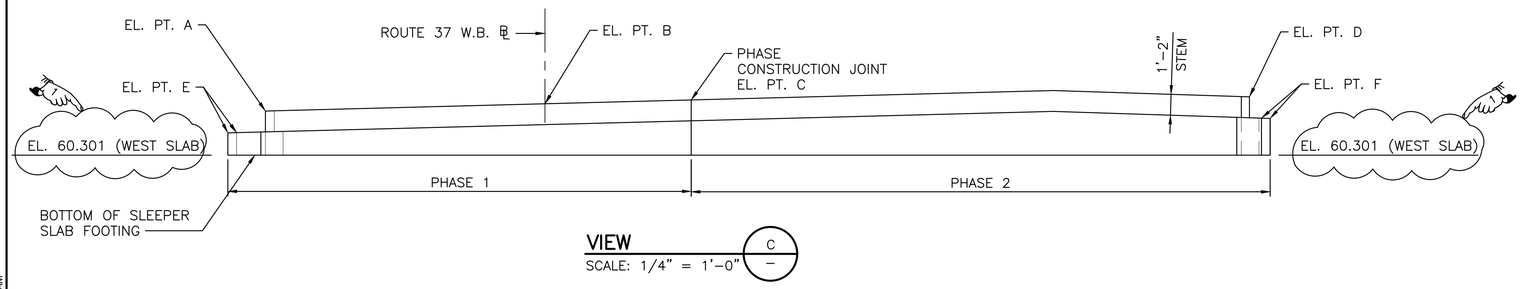
SCALE: 1½" = 1'-0"

B



CONSTRUCTION JOINT ELEVATION IN SLEEPER SLAB

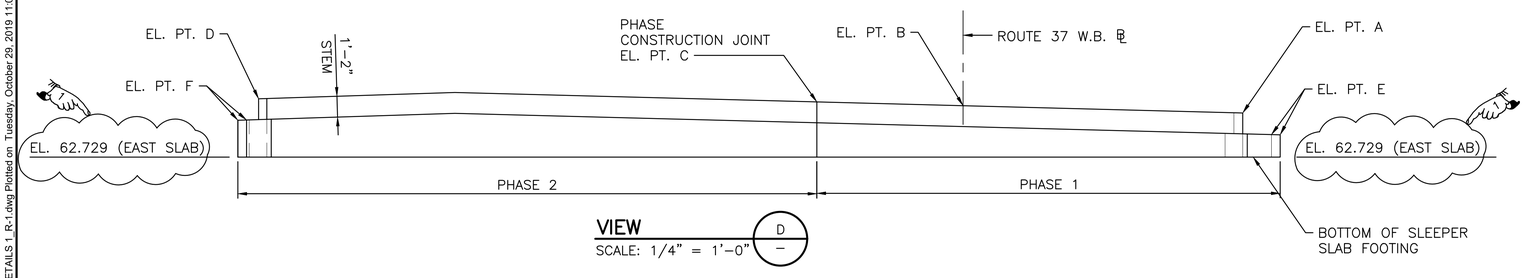
SCALE: N.T.S.



VIEW

SCALE: 1/4" = 1'-0"

C

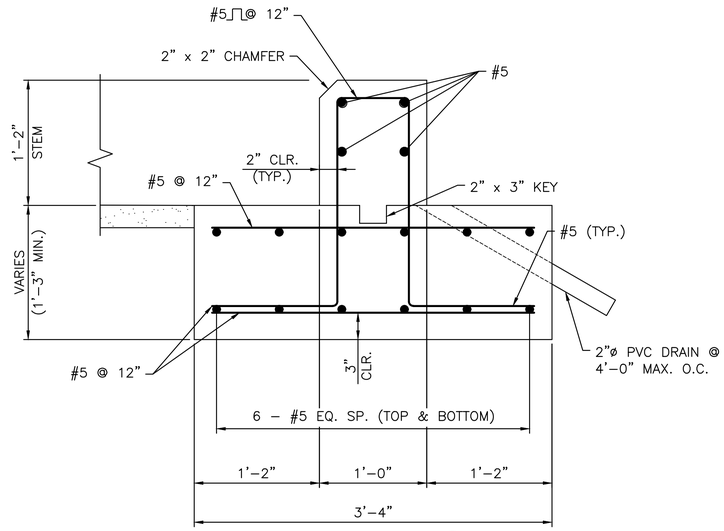


VIEW

SCALE: 1/4" = 1'-0"

D

Location	Sleeper Slab Elevations					
	PT. A	PT. B	PT. C	PT. D	PT. E	PT. F
West Sleeper Slab	62.718	62.983	63.121	62.977	61.583	61.829
East Sleeper Slab	65.177	65.430	65.560	65.400	63.979	64.216



SECTION

SCALE: 1½" = 1'-0"

A

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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

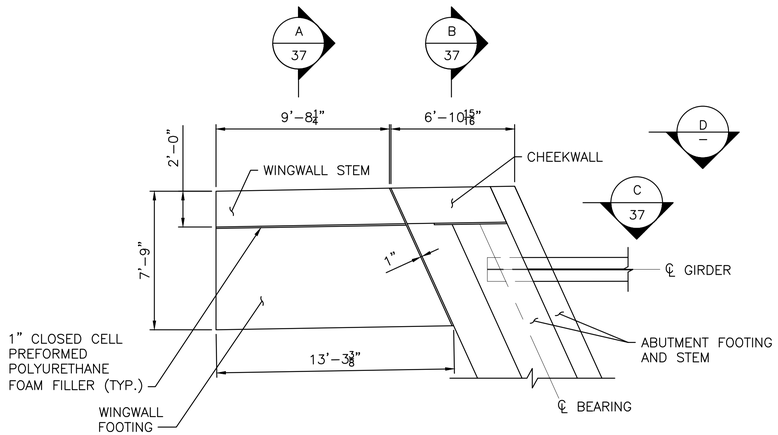
WARWICK RHODE ISLAND

SLEEPER SLAB DETAILS
SHEET 1

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

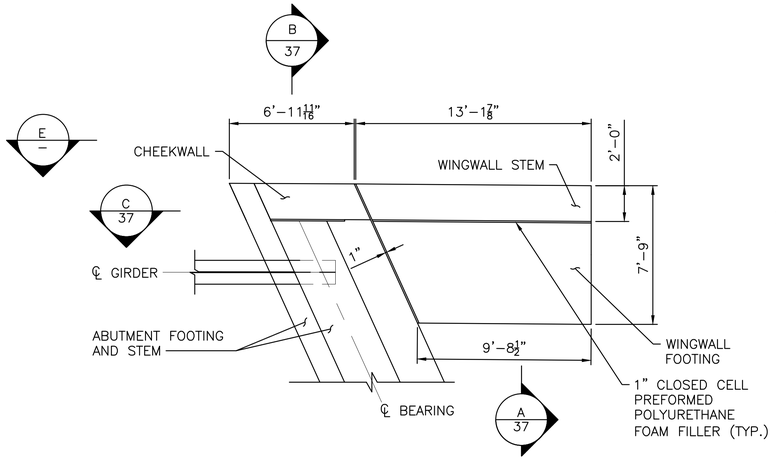
0013C_V6_029_SLEEPER SLAB DETAILS 1_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	32	45



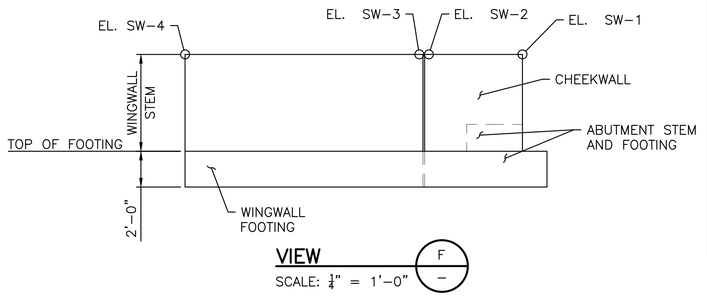
NORTHWEST WINGWALL PLAN

SCALE: ¼" = 1'–0"



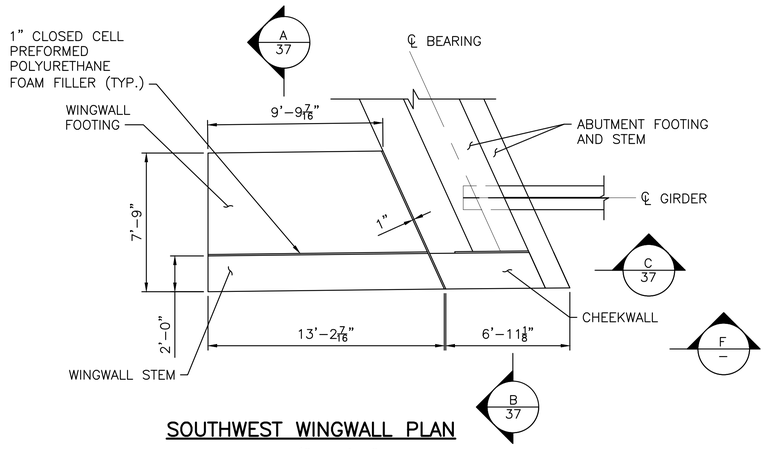
NORTHEAST WINGWALL PLAN

SCALE: ¼" = 1'–0"



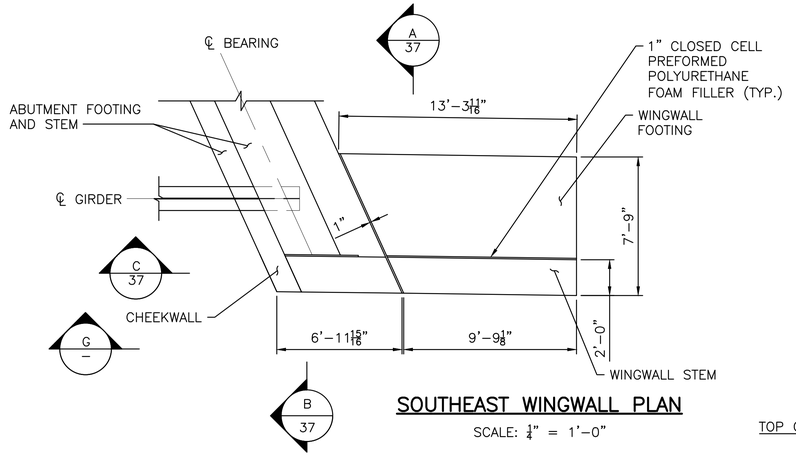
VIEW (F / –)

SCALE: ¼" = 1'–0"



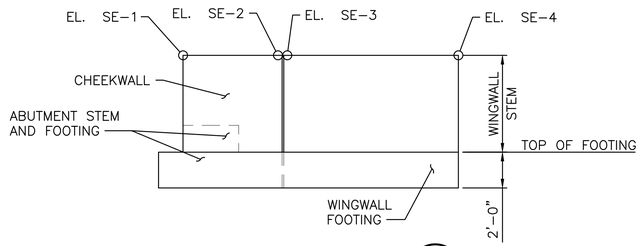
SOUTHWEST WINGWALL PLAN

SCALE: ¼" = 1'–0"



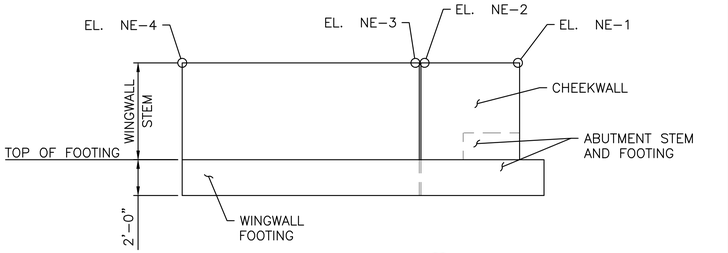
SOUTHEAST WINGWALL PLAN

SCALE: ¼" = 1'–0"



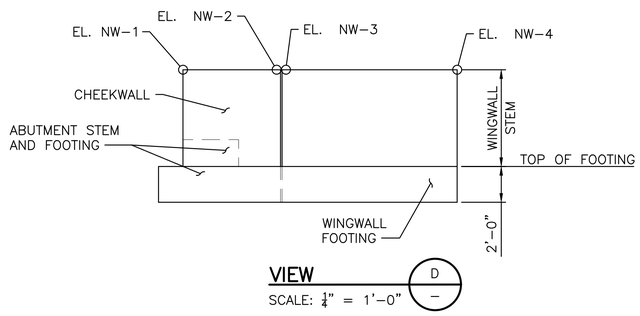
VIEW (G / –)

SCALE: ¼" = 1'–0"



VIEW (E / –)

SCALE: ¼" = 1'–0"



VIEW (D / –)

SCALE: ¼" = 1'–0"

NOTES:

1. FOR ABUTMENT ELEVATIONS SEE WEST ABUTMENT AND EAST ABUTMENT PLAN SHEETS.

WEST ABUTMENT WINGWALL AND CHEEKWALL ELEVATIONS	
LOCATION	ELEVATION
NW-1	63.27
NW-2	63.15
NW-3	63.15
NW-4	62.92
SW-1	63.06
SW-2	62.94
SW-3	62.94
SW-4	62.67

EAST ABUTMENT WINGWALL AND CHEEKWALL ELEVATIONS	
LOCATION	ELEVATION
NE-1	64.96
NE-2	65.08
NE-3	65.08
NE-4	65.34
SE-1	64.74
SE-2	64.86
SE-3	64.87
SE-4	65.08

ADDENDUM No. 4

TranSystems
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MERIDEN, CT. 06450

BRIDGE 063501

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NO.	DATE	BY
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RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK — RHODE ISLAND

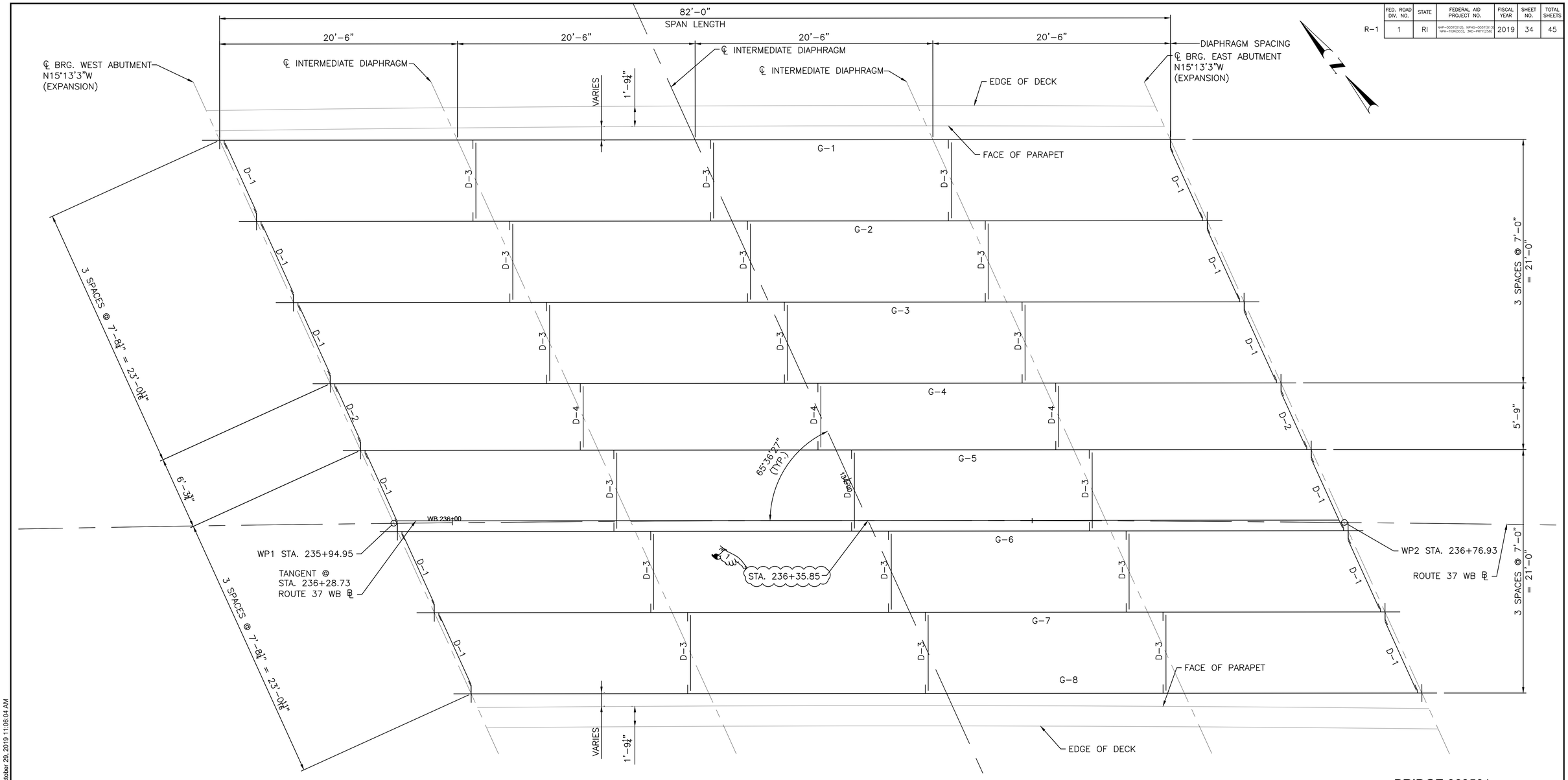
WINGWALL ELEVATIONS

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_032_WINGWALL ELEVATIONS_R-1.dwg Plotted on Tuesday, October 29, 2019 11:05:11 AM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	34	45

R-1



NOTES:

1. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO INSURE STABILITY, AND THEREBY SAFETY, DURING ALL STAGES OF STEEL ERECTION. NO GIRDER SHALL BE LEFT UNBRACED FOR ENTIRE SPAN LENGTH.
2. SEE GENERAL NOTES FOR RESTRICTIONS ON CONSTRUCTION EQUIPMENT LOADS.
3. GIRDER DESIGNATIONS:
   EXT.: EXTERIOR GIRDER
   (GIRDERS G-1 AND G-8)
   INT.: INTERIOR GIRDERS
   (ALL OTHER GIRDERS)
4. ALL STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 50 UNLESS OTHERWISE NOTED.
5. BEARING STIFFENER TO BE VERTICAL AFTER APPLICATION OF ALL DEAD LOAD.
6. ALL STRUCTURAL STEEL SHALL BE METALIZED AND PAINTED.
7. S.I.P. FORMS NOT SHOWN FOR CLARITY. SEE DECK DETAILS.
8. ALL BOLTS SHALL BE HIGH STRENGTH BOLTS, ASTM A325, TYPE I AND SHALL BE MACHANICALLY GALVANIZED IN ACCORDANCE WITH AASHTO M298 (ASTM B695) CLASS 50. BOLTS THREADS SHALL BE OMITTED FROM SHEAR PLANE.

FRAMING PLAN

SCALE: ¼" = 1'-0"

LEGEND

D-1, D2 = TYPICAL END DIAPHRAGM

D-3, D4 = TYPICAL INTERMEDIATE DIAPHRAGM

G-1 = GIRDER NUMBER DESIGNATION

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

BRIDGE 063501

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NO.	DATE	BY
1	10/31/19	DRC

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

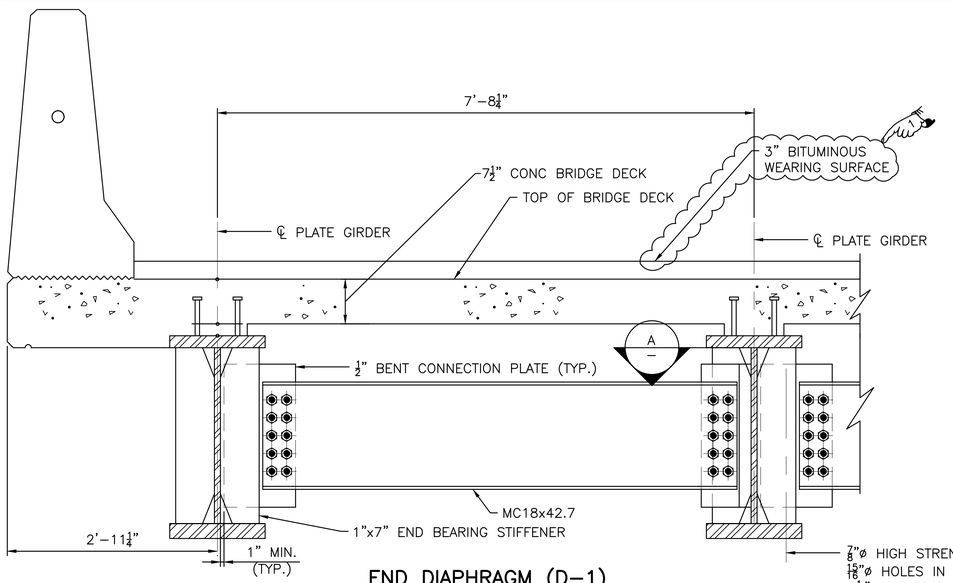
WARWICK RHODE ISLAND

FRAMING PLAN

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

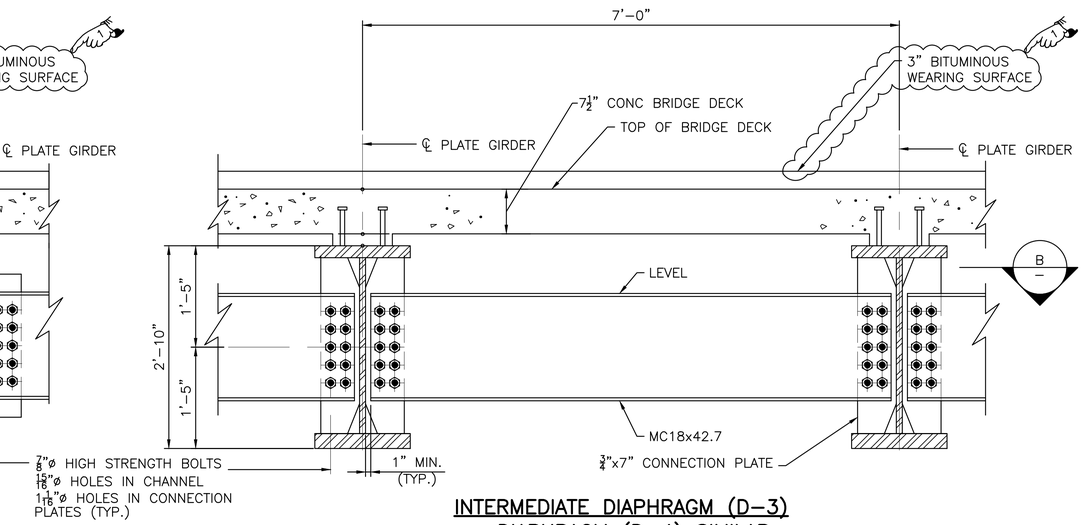
0013C_V6_034_FRAMING PLAN_R-1

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	36	45



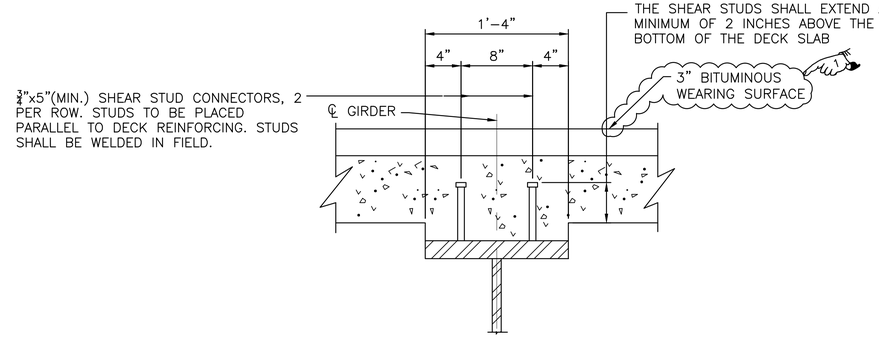
END DIAPHRAGM (D-1)
DIAPHRAGM (D-2) SIMILAR

(CONCRETE END DIAPHRAGM NOT SHOWN)
SCALE: 1"=1'-0"



INTERMEDIATE DIAPHRAGM (D-3)
DIAPHRAGM (D-4) SIMILAR

SCALE: 1"=1'-0"

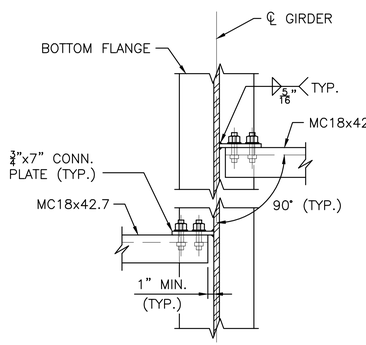


TYPICAL SHEAR CONNECTOR DETAIL

SCALE: 1½" = 1'-0"

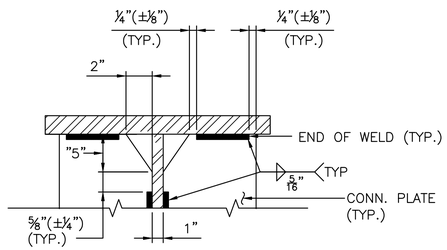
SECTION A

SCALE: 1" = 1'-0"



SECTION B

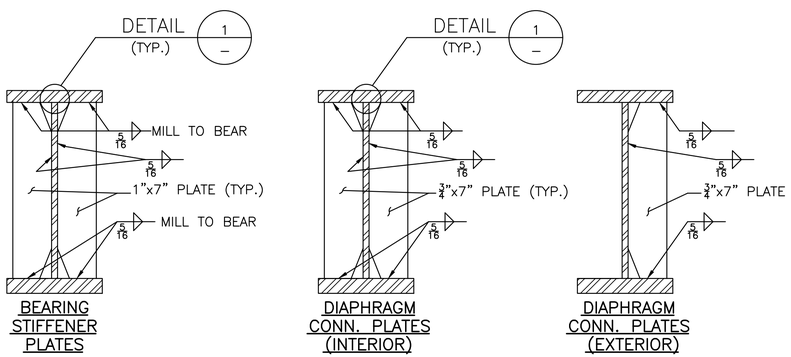
SCALE:1"=1'-0"



DETAIL 1

SCALE:1"=1'-0"

(TYP AT TOP AND BOT)



STIFFENER AND CONNECTION PLATE DETAILS

NOTES:

1. THE END DIAPHRAGMS ARE TO FOLLOW THE CROSS PITCH OF THE ROADWAY.
2. LOCATIONS OF HOLES IN CONNECTION PLATES SHALL BE DETERMINED BY THE FABRICATOR.

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DIAPHRAGM DETAILS

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

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0013C_V6_036_DIAPHRAGM DETAILS_R-1.dwg Plotted on Tuesday, October 29, 2019 11:06:15 AM

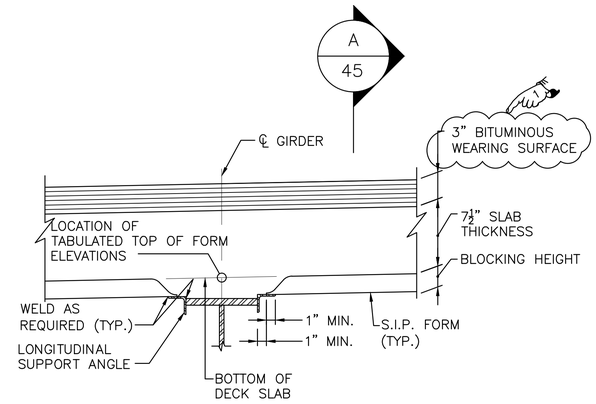
0013C_V6_036_DIAPHRAGM DETAILS_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	39	45

R-1

TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE

GIRDER NO.	CL-BRG	0.0 SPAN	0.1 SPAN	0.2 SPAN	0.3 SPAN	0.4 SPAN	0.5 SPAN	0.6 SPAN	0.7 SPAN	0.8 SPAN	0.9 SPAN	1.0 SPAN	CL-BRG
G-1	WEST ABUTMENT	62.719	62.953	63.175	63.385	63.583	63.770	63.939	64.093	64.233	64.365	64.485	EAST ABUTMENT
G-2		63.005	63.232	63.450	63.660	63.857	64.042	64.211	64.367	64.510	64.645	64.772	
G-3		63.013	63.231	63.442	63.646	63.840	64.022	64.192	64.349	64.496	64.637	64.771	
G-4		62.896	63.111	63.321	63.523	63.716	63.899	64.070	64.229	64.378	64.521	64.659	
G-5		62.800	63.016	63.226	63.429	63.622	63.805	63.976	64.136	64.285	64.429	64.567	
G-6		62.684	62.903	63.116	63.321	63.516	63.700	63.871	64.030	64.179	64.320	64.455	
G-7		62.568	62.791	63.007	63.215	63.412	63.597	63.768	63.926	64.073	64.212	64.344	
G-8		62.453	62.683	62.902	63.112	63.311	63.499	63.670	63.826	63.972	64.108	64.233	

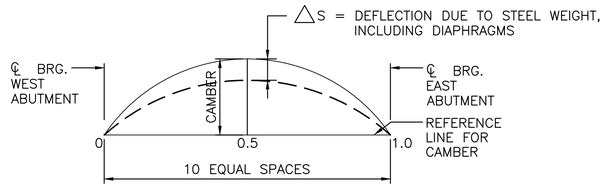


HAUNCH DETAIL – STEEL BEAM

SCALE: 1½" = 1'–0"

CAMBER TABLE

GIRDER NO.	DEFLECTION (IN)			VERTICAL CURVE ORDINATE (IN)	TOTAL CAMBER (IN)
	STEEL DEAD LOAD	CONCRETE DEAD LOAD	SUPERIMPOSED DEAD LOAD		
G-1	0.625	1.283	0.560	0.000	2.468
G-2	0.635	1.242	0.403	0.000	2.280
G-3	0.639	1.177	0.325	0.000	2.141
G-4	0.639	1.118	0.304	0.000	2.061
G-5	0.639	1.119	0.304	0.000	2.062
G-6	0.639	1.176	0.325	0.000	2.140
G-7	0.635	1.225	0.404	0.000	2.264
G-8	0.628	1.288	0.564	0.000	2.480



CAMBER DIAGRAM

NOTE:

1. AFTER THE STRUCTURAL STEEL IS ERECTED BUT BEFORE THE FORMS ARE PLACED, ELEVATIONS ON THE TOP OF THE FLANGES OF THE GIRDERS ARE TO BE OBTAINED AT THE POINTS INDICATED IN THE TABLE. THE DIFFERENCE BETWEEN THE ELEVATIONS OBTAINED AND THE TABULATED TOP OF FORM ELEVATIONS GIVES THE ACTUAL BLOCKING DISTANCE FROM THE TOP OF GIRDER TO BOTTOM OF DECK SLAB AT THE CENTERLINE OF GIRDER WEB. BLOCKING DISTANCES MUST BE ESTABLISHED PRIOR TO PLACING CONCRETE DECK ON THE STRUCTURE.

BRIDGE 063501

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DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

CAMBER AND TOP OF FORM ELEVATION TABLES

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

TranSystems
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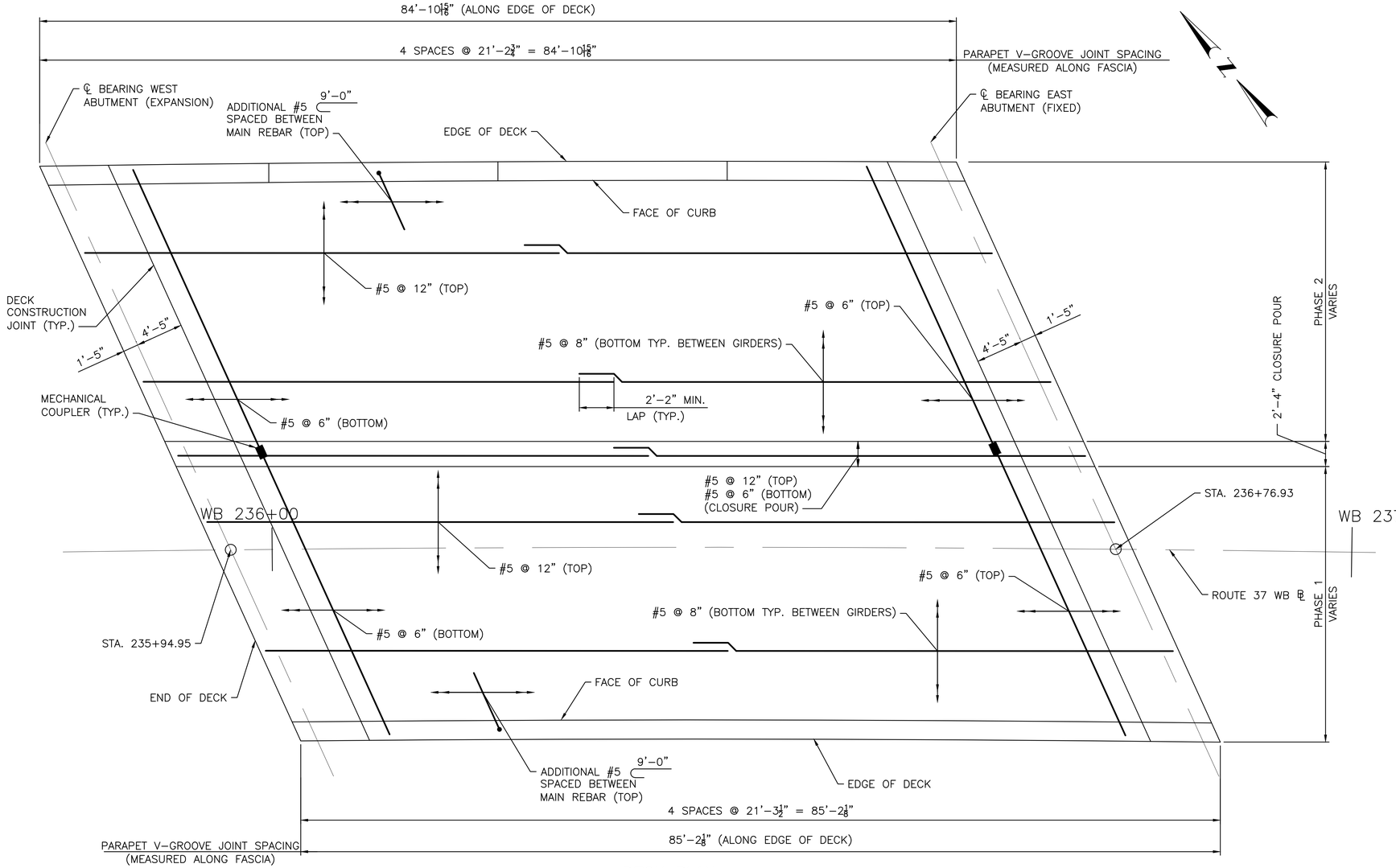
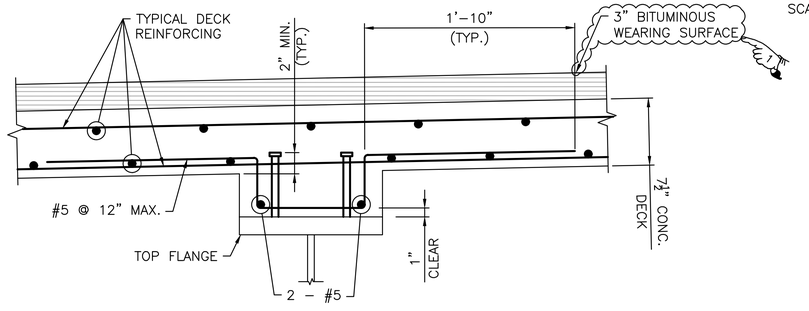
0013C_V6_039_ELEVATION TABLES_R-1.dwg Plotted on Tuesday, October 29, 2019 11:06:26 AM

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	40	45



DECK PLAN
SCALE: 1/8"-1'-0"



SPECIAL HAUNCH REINFORCING & SHEAR STUD DETAIL
(FOR HAUNCHES 4" & HIGHER)
NOT TO SCALE

DECK SLAB NOTES:

1. TRANSVERSE REINFORCEMENT LISTED AS STRAIGHT SHALL BE SHOP OR FIELD BENT AS REQUIRED TO PROVIDE MINIMUM COVER.
2. DECK SLAB REINFORCING COVER SHALL HAVE TOLERANCE OF (+)1/4", (−)0" FOR TOP BARS AND (+)1/8", (−)0" FOR BOTTOM BARS.
3. CHAIRS SHALL BE SPACED TO PROVIDE THE REQUIRED CONCRETE COVER WITH THE SPECIFIED TOLERANCES. MAXIMUM SPACING OF CHAIRS SHALL BE 5'−0" ON CENTER, PREFERABLY LOCATED AT THE INTERSECTION OF REINFORCEMENT. CHAIRS SHALL HAVE APPROVED CORROSION PROTECTION (i.e. EPOXY COATED, PLASTIC COATED, ETC.)
4. DECK CONCRETE PLACEMENT SHALL BE IN ACCORDANCE WITH THE RI STANDARD SPECIFICATIONS.
5. SHOULD ADDITIONAL HAUNCH REINFORCING OR ADJUSTMENTS TO THE SHEAR STUD LENGTHS BE NECESSARY DUE TO DEVIATIONS IN THE AS BUILT CAMBER OF THE SUPERSTRUCTURE STEEL IT SHALL BE CONSIDERED AS INCIDENTAL TO THE APPROPRIATE BID ITEMS FOR REINFORCING STEEL AND/OR SHEAR STUDS SHALL BE DETERMINED BY THE ENGINEER. THE ADJUSTED LENGTHS OF SHEAR STUDS SHALL BE DETERMINED BY THE ENGINEER. THE REQUIREMENTS FOR REINFORCING HAUNCHES GREATER THAN 4" HIGH SHALL BE AS SHOWN ON THIS SHEET.
6. ALL TRANSVERSE REINFORCEMENT SHALL BE PLACED PARALLEL WITH ABUTMENTS.

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BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

DECK PLAN

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

TranSystems
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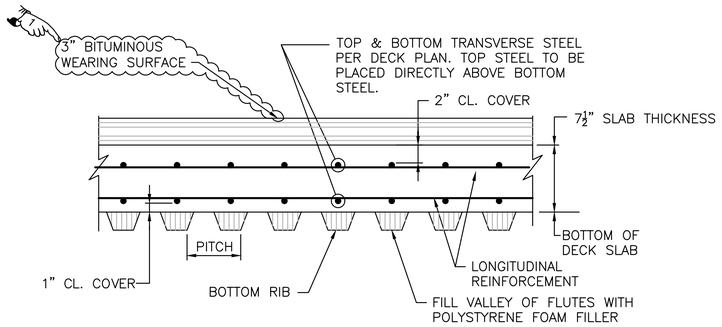
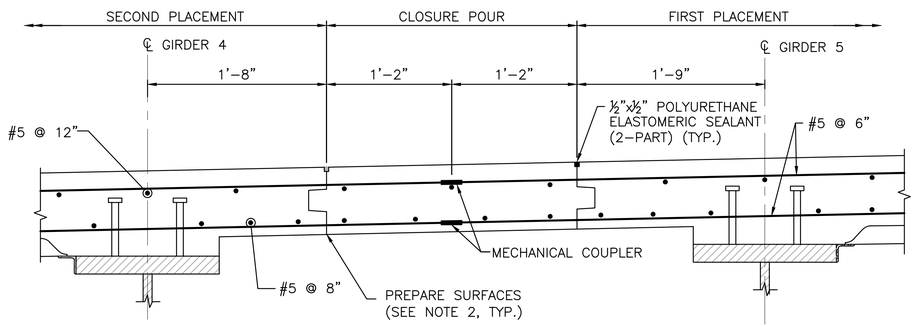
0013C_V6_040_DECK SLAB DETAILS SHEET 1_R-1.dwg Plotted on Tuesday, October 29, 2019 11:06:34 AM

R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPHG-0037(013) NPH-TGR(003), 38G-PRTY(258)	2019	41	45



SECTION A/43
SCALE: 1½" = 1'-0"



LONGITUDINAL CONSTRUCTION JOINT DETAIL IN DECK SLAB WITH CLOSURE POUR

SCALE: 1½" = 1'-0"

(WEARING SURFACE NOT SHOWN FOR CLARITY)

STAY IN PLACE STEEL FORM NOTES:

1. FORM ENDS SHALL BE CRIMPED CLOSED IN A TAPERED MANNER. SEPARATE END CLOSURE PIECES WILL NOT BE ALLOWED.
2. SUPPORT ANGLES SHALL BE PLACED IN THE "LEG DOWN" POSITION WHERE POSSIBLE. HOWEVER, WHERE THE "LEG UP" POSITION IS NECESSARY, THE UPPER MOST PORTION OF THE ANGLE SHALL NOT PROJECT MORE THAN 1 INCH ABOVE THE TOP OF THE BEAM. THE CONTRACTOR SHALL HAVE AN ASSORTMENT OF ANGLES OF VARIOUS SIZES AVAILABLE ON THE SITE TO CONFORM TO THIS REQUIREMENT.
3. S.I.P. FORMS SHALL BE DESIGNED FOR THE DEAD LOAD OF THE FORM AND THE CONCRETE PLUS A MINIMUM 50 POUNDS PER SQUARE FOOT FOR CONSTRUCTION LOADS.
4. MAXIMUM DEFLECTION UNDER THE WEIGHT OF FORMS, REINFORCEMENT AND CONCRETE, OR A MINIMUM OF 120 POUNDS PER SQUARE FOOT SHALL NOT EXCEED THE LESSER OF 1/180 OF THE FORM SPAN OR 1/2 INCH. THE DESIGN SPAN FOR FORMS SHALL BE THE CLEAR DISTANCE BETWEEN BEAM FLANGES MEASURED PARALLEL TO THE FORM FLUTES MINUS 2 INCHES.

LONGITUDINAL CONSTRUCTION JOINT NOTES:

1. BRIDE DECK SHALL BE PLACED IN ACCORDANCE WITH THE PLACEMENT SEQUENCE SHOWN ON THE PLANS.
2. THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, WETTED WITH CLEAN WATER, AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED ADJACENT THERETO. NEW CONCRETE SHALL BE PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
3. THE CONTRACTOR MAY SUBMIT A PROPOSAL DETAILING THE ELIMINATION OF THE CLOSURE POUR FOR THE APPROVAL OF THE ENGINEER. THE PROPOSAL SHALL DETAIL THE CONTRACTOR'S MEANS AND METHODS FOR ACCURATELY CONSTRUCTING THE DECK SLAB TO THE LINES, GRADES, AND THICKNESS SHOWN ON THE PLANS WITHOUT LEAKAGE OF CONCRETE.

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ADDENDUM No. 4

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BRIDGE GROUP 51A - RT. 37 C-2

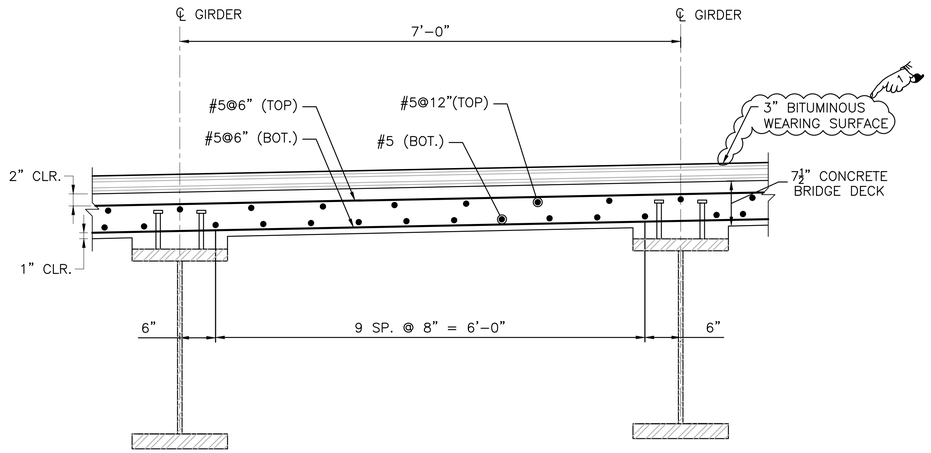
WARWICK RHODE ISLAND

DECK DETAILS SHEET 1

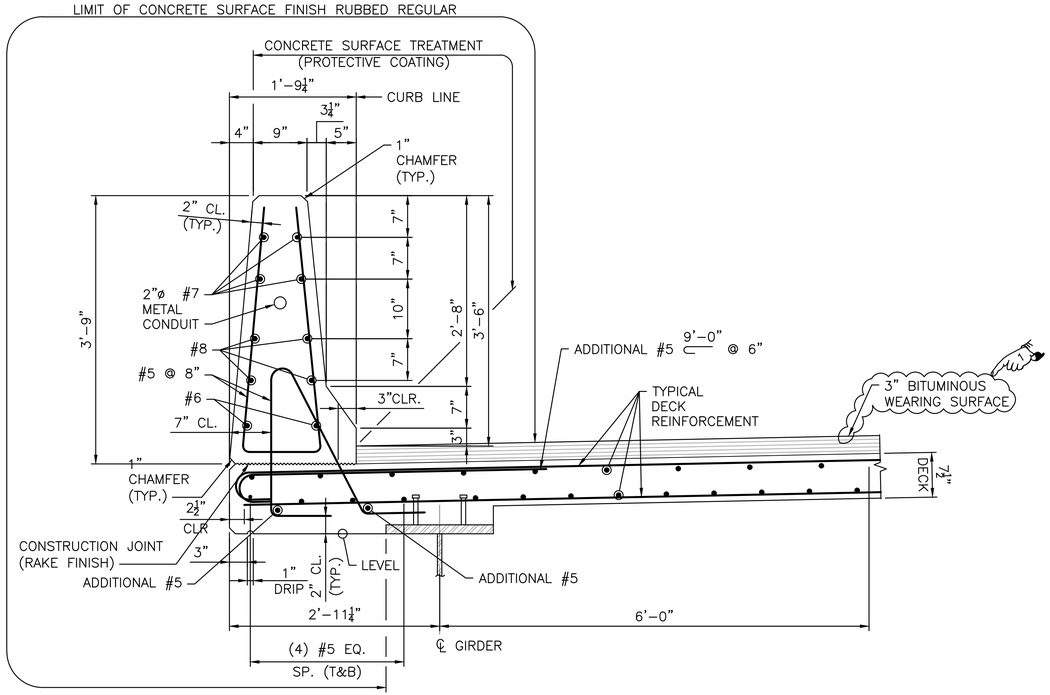
CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_041_DECK SLAB DETAILS SHEET 2_R-1

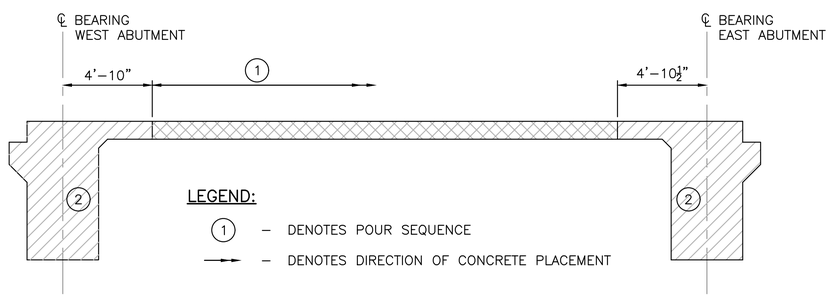
R-1	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	42	45



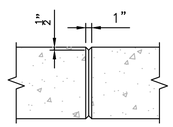
TYPICAL DECK REINFORCING
SCALE: 1"=1'-0"



TYPICAL SECTION THRU PARAPET AND OVERHANG
SCALE: 1" = 1'-0"



LONGITUDINAL DECK POURING SEQUENCE ALONG BASELINE
NOT TO SCALE



V-GROOVE IN BARRIER
NOT TO SCALE

NOTES:

1. BRIDE DECK SHALL BE PLACED IN ACCORDANCE WITH THE PLACEMENT SEQUENCE SHOWN ON THE PLANS.
2. THE SURFACE OF THE PREVIOUSLY CAST CONCRETE SHALL BE BLAST CLEANED, ROUGHENED, WETTED WITH CLEAN WATER, AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONCRETE, BEFORE NEW CONCRETE IS PLACED ADJACENT THERETO. NEW CONCRETE SHALL BE PLACED BEFORE MORTAR HAS TAKEN INITIAL SET.
3. DOWEL BAR SPLICERS SHALL BE USED WHERE USE OF LAP SPLICES IS NOT FEASIBLE.

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RHODE ISLAND
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BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

DECK DETAILS SHEET 2

CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

ADDENDUM No. 4

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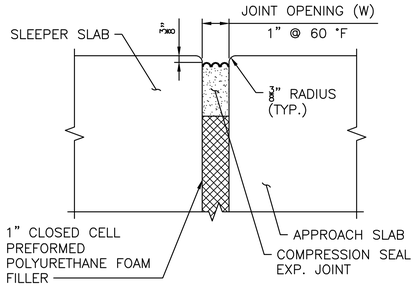
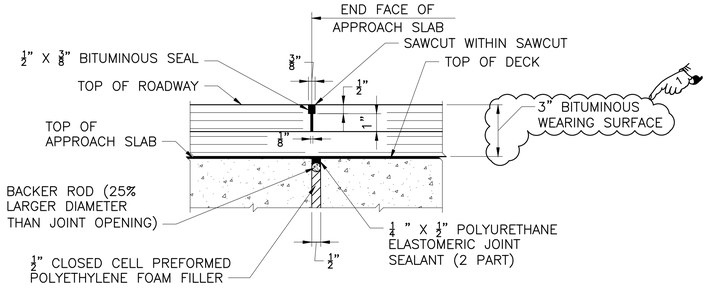
0013C_V6_042_DECK SLAB DETAILS SHEET 3_R-1.dwg Plotted on Tuesday, October 29, 2019 11:06:55 AM

	FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
R-1	1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3RD-PRTY(258)	2019	43	45



COMPRESSION SEAL EXPANSION JOINT

SCALE: 3" = 1'-0"



SAW AND SEAL JOINT AT END OF DECK

SCALE: 3"=1'-0"

JOINT OPENING TABLE	
TEMPERATURE	W
15 °F	1 1/2"
30 °F	1 5/16"
45 °F	1 3/16"
60 °F	1"
75 °F	13/16"
90 °F	11/16"

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ADDENDUM No. 4

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RHODE ISLAND
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BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

EXPANSION JOINT DETAILS

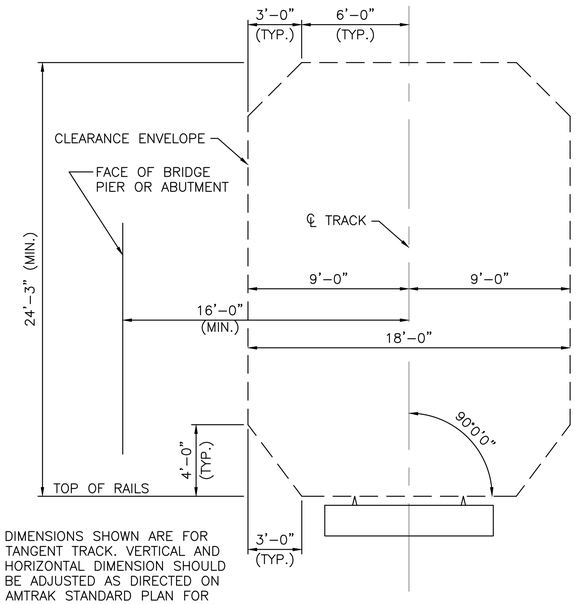
CHECKED BY NMR DATE 02/01/19 SCALE AS NOTED

0013C_V6_043_EXPANSION JOINT DETAILS_R-1

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHF-0037(012), NPHG-0037(013) NPH-TGR(003), 3RS-PRTY(258)	2019	3A	41

RAILROAD NOTES (MUST COMPLY WITH AMTRAK STANDARDS):

1. THE CONTRACTOR SHALL BE AWARE THAT EXISTING TRACKS 1 & 2 ARE PART OF AMTRAK'S NORTHEAST CORRIDOR, ARE ENERGIZED AND RUNNING BOTH ELECTRIC AND DIESEL TRAIN SETS.
2. ANY ACTIVITY WITHIN THE NORTHEAST CORRIDOR REQUIRES PRIOR COORDINATION AND APPROVAL OF AMTRAK. ALL WORK ON, OVER, WITHIN AND ADJACENT TO RAILROAD PROPERTY SHALL BE CONDUCTED IN ACCORDANCE WITH EP3014, "MAINTENANCE AND PROTECTION OF RAILROAD TRAFFIC DURING CONTRACTOR OPERATIONS".
3. ALL INDIVIDUALS, INCLUDING REPRESENTATIVES AND EMPLOYEES OF PERMITTEE AND/OR CONTRACTORS, BEFORE ENTERING ONTO RAILROAD'S PROPERTY OR COMING WITHIN TWENTY–FIVE (25) FEET OF THE CENTERLINE OF TRACK OR ENERGIZED WIRE SHALL FIRST COMPLETE AMTRAK'S SAFETY ORIENTATION CLASS.
4. THE CONTRACTOR SHALL SUBMIT TO AMTRAK FOR REVIEW A TRACK MONITORING PLAN TO BE IMPLEMENTED DURING ALL PROPOSED EXCAVATION ACTIVITIES NEAR/WITHIN THE AMTRAK ROW. THE TRACK MONITORING PLAN MUST BE REVIEWED AND APPROVED BY AMTRAK PRIOR TO START OF ANY WORK WITHIN OR ADJACENT TO THE AMTRAK ROW. ALL CATENARY STRUCTURES MUST ALSO BE MONITORED FOR MOVEMENT DURING ALL CONSTRUCTION ACTIVITIES NEAR/WITHIN AMTRAK RIGHT OF WAY.
5. CONTRACTOR SHALL SUBMIT A REQUEST TO AMTRAK TO ACCESS RAILROAD PROPERTY AT LEAST TEN (10) CALENDAR DAYS PRIOR TO THE INTENDED DAY OF BEGINNING WORK. THE RAILROAD WILL RESPOND TO THE REQUEST WITHIN FIVE (5) CALENDAR DAYS OF THE RECEIPT OF THE REQUEST. THE REQUEST TO ACCESS RAILROAD PROPERTY SHALL INCLUDE PREPARATION AND SUBMITTAL OF A SITE–SPECIFIC WORK PLAN FOR AMTRAK TO REVIEW AS FOLLOWS:
   a. THE GENERAL CONTRACTOR SHALL SUBMIT SITE–SPECIFIC WORK PLANS INCLUDING COMPUTATIONS AND A DETAILED DESCRIPTION OF PROPOSED METHODS FOR ACCOMPLISHING THE WORK, INCLUDING METHODS FOR PROTECTING RAILROAD TRAFFIC.
   b. WORK WILL NOT PROCEED UNTIL AMTRAK APPROVAL OF THE SITE SPECIFIC WORK PLAN HAS BEEN ISSUED.
   c. THE APPROVAL OF SITE SPECIFIC WORK PLAN SHALL NOT RELIEVE THE CONTRACTOR OF COMPLETE RESPONSIBILITY FOR THE ADEQUACY AND SAFETY OF OPERATIONS.
6. DURING ANY DEMOLITION, CONTRACTOR MUST PROVIDE HORIZONTAL AND VERTICAL SHIELDS, DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND. THESE SHIELDS SHALL BE DESIGNED IN ACCORDANCE WITH AMTRAK EP3014 SECTION 01520A, AND BE APPROVED BY AMTRAK, SO AS TO PREVENT ANY DEBRIS FROM FALLING ONTO THE RAILROAD'S RIGHT–OF–WAY OR OTHER PROPERTY. A GROUNDED TEMPORARY VERTICAL PROTECTIVE BARRIER MUST BE PROVIDED IF AN EXISTING VERTICAL PROTECTIVE BARRIER IS REMOVED DURING DEMOLITION. IN ADDITION, IF ANY OPENINGS ARE LEFT IN AN EXISTING BRIDGE DECK, A PROTECTIVE FENCE MUST BE ERECTED AT BOTH ENDS OF THE BRIDGE TO PROHIBIT UNAUTHORIZED PERSONS FROM ENTERING ONTO THE BRIDGE.
7. NO WORK WILL BE PERMITTED WITHIN TWENTY–FIVE (25) FEET OF THE CENTERLINE OF TRACK OR ENERGIZED WIRE OR HAVE POTENTIAL OF GETTING WITHIN TWENTY–FIVE (25) FEET OF TRACK WIRE WITHOUT THE APPROVAL OF AMTRAK'S CHIEF ENGINEER'S REPRESENTATIVE. PERMITTEE AND/OR CONTRACTOR SHALL CONDUCT THEIR WORK SO THAT NO PART OF ANY EQUIPMENT OR MATERIAL SHALL FOUL AN ACTIVE TRACK OR OVERHEAD WIRE WITHOUT THE WRITTEN PERMISSION OF AMTRAK'S CHIEF ENGINEER'S REPRESENTATIVE. WHEN PERMITTEE AND/OR CONTRACTORS DESIRE TO FOUL AN ACTIVE TRACK, THEY MUST PROVIDE AMTRAK'S CHIEF ENGINEER'S REPRESENTATIVE WITH THEIR SITE–SPECIFIC WORK PLAN A MINIMUM OF TWENTY–ONE (21) WORKING DAYS IN ADVANCE, SO THAT, IF APPROVED, ARRANGEMENTS MAY BE MADE FOR PROPER PROTECTION OF THE RAILROAD.
8. WHEN WORK IS PERFORMED IN THE VICINITY OF ELECTRIFIED TRACKS AND/OR HIGH VOLTAGE WIRES, PARTICULAR CARE MUST BE EXERCISED, AND THE RAILROAD'S EQUIPMENT REGARDING CLEARANCE TO BE MAINTAINED BETWEEN EQUIPMENT AND TRACKS AND/OR ENERGIZED WIRES, AND OTHERWISE REGARDING WORK IN THE VICINITY OF ELECTRIFIED TRACKS, MUST BE STRICTLY OBSERVED. NO EMPLOYEES OR EQUIPMENT WILL BE PERMITTED TO WORK WITHIN FIFTEEN (15) FEET OF OVERHEAD WIRES, EXCEPT WHEN PROTECTED BY A CLASS "A" AMTRAK EMPLOYEE.
9. EXISTING GROUNDING AND BONDING PROTECTION SHALL BE MAINTAINED AT ALL TIMES, AND COMPLY WITH AMTRAK AED–1 AND AED–2.
10. ALL EXPOSED METAL WITHIN 15 FEET OF THE LIVE OVERHEAD CATENARY SYSTEM (OCS) WILL BE REQUIRED TO BE TEMPORARILY BONDED TO THE AMTRAK OCS RETURN SYSTEM (REBAR, STEEL, FORMWORK, SCAFFOLDING, ETC.)
11. AMTRAK FACILITIES, INCLUDING UNDERGROUND COMMUNICATION, SIGNAL LINES AND OVERHEAD CONTACT SYSTEM, ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION.
12. COORDINATE ALL CONSTRUCTION AND DEMOLITION ACTIVITIES WITH THE AMTRAK CHIEF ENGINEER'S REPRESENTATIVE IN AND AROUND AMTRAK'S FACILITIES REGARDING PROTECTION OF CATENARY STRUCTURES AND WIRES, PASSENGER, COMMUTER AND FREIGHT RAIL SERVICE/SCHEDULE.
13. ALL UNDERGROUND UTILITIES, CABLES, AND FACILITIES MUST BE LOCATED AND PROTECTED BEFORE ANY EXCAVATING, DRILLING, BORING/DIRECTIONAL DRILLING, GROUND PENETRATING ACTIVITIES, OR CONSTRUCTION TAKE PLACE. THIS INCLUDES RAILROAD AND COMMERCIAL UTILITIES, CABLES, DUCT LINES, AND FACILITIES. THESE ACTIVITIES WILL NOT BE PERFORMED IN CLOSE PROXIMITY TO THE AMTRAK DUCT LINES UNLESS MONITORED BY ON–SITE AMTRAK COMMUNICATION AND SIGNAL (C&S) DEPARTMENT PERSONNEL. HAND DIGGING MAY BE REQUIRED, AS DIRECTED BY AMTRAK THROUGH THE ON–SITE AMTRAK C&S PERSONNEL. AMTRAK MAINTAINS THE RIGHT TO ACCESS ALL EXISTING CABLES AND CONDUITS THROUGHOUT CONSTRUCTION. AMTRAK ALSO RESERVES THE RIGHT TO UPGRADE AND INSTALL NEW CABLES AND CONDUITS IN THE AFFECTED AREA. THE "ONE–CALL" PROCESS MUST BE FOLLOWED. PLEASE NOTE THAT AMTRAK IS NOT A PART OF THE ONE–CALL PROCESS; CONTRACTOR SHALL CONTACT AMTRAK ENGINEERING TO HAVE ALL AMTRAK UNDERGROUND UTILITIES AND ASSETS LOCATED. PRECAUTIONS MUST BE TAKEN TO AVOID ANY INTERRUPTIONS TO AMTRAK RAILROAD OPERATIONS.
14. ALL WORK INVOLVING HEAVY TRUCKS, EQUIPMENT, OR MACHINERY WITHIN THE AMTRAK ROW, DUCT LINES AND PULL BOXES SHALL BE INSPECTED TO INSURE THEY CAN WITHHOLD THE APPROPRIATE WEIGHT IN ACCORDANCE WITH THE APPROVED SITE SPECIFIC WORK PLAN. CONTRACTOR SHALL COMPLY WITH AMTRAK EP3014 FOR ALL WORK WITHIN AMTRAK ROW. THE CONTRACTOR SHALL SUBMIT CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF RHODE ISLAND THAT DEMONSTRATES THE EQUIPMENT TO BE UTILIZED WILL NOT DAMAGE EXISTING UNDERGROUND UTILITIES AND APPURTENANCES.
15. A MINIMUM SIGNAL PREVIEW DISTANCE SHALL NOT BE LESS THAN 1500 FEET. SIGNAL PREVIEW IS MEASURED FROM A POINT 13 FEET ABOVE THE TOP OF RAIL, AT A MINIMUM OF 1500 FEET FROM THE TOP SIGNAL HEAD ("A" HEAD) OF THE SIGNAL THE TRAIN IS APPROACHING. ALL TEMPORARY STRUCTURES, FORMWORK, EQUIPMENT, ETC., MUST NOT OBSTRUCT SIGNAL PREVIEW DURING CONSTRUCTION.
16. THE CONTRACTOR SHALL PROTECT THE TRACK AND BALLAST FROM DIRT AND DEBRIS DURING ALL CONSTRUCTION ACTIVITIES. NO DEBRIS FROM DEMOLITION OPERATIONS SHALL BE STORED ON AMTRAK PROPERTY. CONSTRUCTION RELATED DEBRIS THAT FALLS ONTO AMTRAK PROPERTY, FOULS TRACK BALLAST OR DAMAGES AMTRAK'S TRACK OR INFRASTRUCTURE SHALL BE IMMEDIATELY REPORTED TO AMTRAK. ROW CLEANUP, BALLAST CLEANING, TRACK REPAIR OR OTHER REPAIR WILL BE PERFORMED BY AMTRAK FORCES AT THE PROJECT'S EXPENSE. RAILS MUST BE PROTECTED AGAINST DEBRIS. RUST, SAND, METAL SHAVINGS OR OTHER MATERIAL CAN INTERFERE WITH PROPER SHUNTING SENSITIVITY OF THE TRACK CIRCUIT.
17. NO TEMPORARY OR PERMANENT STORMWATER DRAINAGE IS PERMITTED TO DISCHARGE DIRECTLY OR INDIRECTLY ONTO THE AMTRAK ROW.
18. AMTRAK IS EXEMPT FROM STATE AND LOCAL PERMITS IN CONNECTION WITH THE CONSTRUCTION, USE OR OPERATION OF ANY IMPROVEMENT UNDERTAKEN BY OR FOR THE BENEFIT OF AMTRAK ON THIS PROJECT.
19. AMTRAK SHALL BE REPRESENTED AT ALL PROJECT CONSTRUCTION MEETINGS AND BE ALLOWED TO REVIEW SHOP DRAWINGS, REQUESTS FOR INFORMATION (RFI) AND OTHER CONSTRUCTION DOCUMENTS RELATED TO WORK ON, OVER, WITHIN AND ADJACENT TO RAILROAD PROPERTY.
20. TRACK FOULING IS DEFINED AS THE TEMPORARY PLACEMENT OF ANY MATERIAL OR EQUIPMENT CLOSER THAN FIFTEEN (15) FEET HORIZONTALLY FROM THE CENTERLINE OF THE NEAREST TRACK. THE CONTRACTOR SHALL SCHEDULE ALL WORK TO BE PERFORMED IN SUCH A MANNER AS NOT TO INTERFERE WITH OR DELAY RAILROAD OPERATIONS. TRACK FOULING WILL BE PERMITTED WITH THE SPECIFIC CASE–BY–CASE PERMISSION OF AMTRAK WHEN IT WILL NOT CAUSE INTERFERENCE WITH TRAIN OPERATIONS.
21. TRACK OCCUPANCY IS DEFINED AS THE EXCLUSIVE USE, BY THE CONTRACTOR, OF A TRACK WITHIN SPECIFIED DISTANCE AND TIME LIMITS. WHEN OCCUPYING A TRACK, THE CONTRACTOR'S EQUIPMENT MUST ALWAYS REMAIN WITHIN THE CLEARANCE ENVELOPE OF THE OCCUPIED TRACK AS SHOWN ON THE DETAIL ENTITLED "RAILROAD CLEARANCE ENVELOPE" LOCATED ON THIS PLAN SHEET. WORK THAT REQUIRES A CATENARY POWER OUTAGE SHALL BE CONSIDERED A TRACK OCCUPANCY.
22. CONTRACTOR SHALL SUBMIT TO AMTRAK CONTACT INFORMATION FOR KEY PERSONNEL AND THEIR STANDBY CONTACTS. CONTACT INFORMATION FOR EACH OF THE KEY PERSONNEL AND STANDBYS WILL INCLUDE NAME, DUTIES AND RESPONSIBILITIES, OFFICE TELEPHONE AND CELL PHONE NUMBERS, AND EMAIL ADDRESS. CHANGES IN KEY PERSONNEL SHALL BE COMMUNICATED PROMPTLY TO AMTRAK.
23. AMTRAK WILL FURNISH SUCH QUALIFIED FLAG PROTECTION PERSONNEL AS MAY BE REQUIRED TO ENSURE COMPLETE PROTECTION OF TRAIN OPERATIONS AND RAILROAD FACILITIES. THE PROVISION OF THIS TYPE OF SERVICE WILL BE DETERMINED BY AMTRAK ON THE BASIS OF OPERATIONAL NEEDS, RAILROAD REGULATIONS AND THE CONTRACTORS REQUIREMENTS. NO WORK SHALL PROCEED WITHOUT PROPER PROTECTION ON THE SITE. ALL EXPENSES INCURRED IN CONNECTION WITH SUCH PROTECTION OF RAILROAD FACILITIES BY RAILROAD EMPLOYEES WILL BE AT THE EXPENSE OF THE PROJECT.
24. PRIOR TO BRIDGE ERECTION, DEMOLITION AND OTHER CRANE OPERATIONS OVER RAILROAD RIGHT OF WAY, A CRANE/HOISTING WORK PLAN SHALL BE SUBMITTED TO AMTRAK FOR REVIEW AND APPROVAL. THIS WORK PLAN SHALL INCLUDE:
    a. PLAN VIEW SHOWING LOCATION(S) OF CRANES, OPERATING RADII, WITH DELIVERY AND/OR DISPOSAL LOCATIONS SHOWN. PROVIDE ALL NECESSARY DIMENSIONS FOR LOCATING THE ELEMENTS OF THE PLAN.
    b. PLANS AND COMPUTATIONS SHOWING THE WEIGHT OF THE PICK.
    c. CRANE RATING SHEETS, DEMONSTRATING THAT CRANES ARE ADEQUATE FOR 150% OF THE CALCULATED PICK WEIGHT. CRANES SHALL BE CAPABLE OF PICKING 150% OF THE LOAD, WHILE MAINTAINING NORMAL RECOMMENDED FACTORS OF SAFETY. THE ADEQUACY OF THE CRANE FOR THE PROPOSED PICK SHALL BE DETERMINED BY USING THE MANUFACTURER'S PUBLISHED CRANE RATING CHART AND NOT THE MAXIMUM CRANE CAPACITY. CRANE AND BOOM NOMENCLATURE IS TO BE INDICATED.
    d. CALCULATIONS DEMONSTRATING THAT SLINGS, SHACKLES, LIFTING BEAMS, ETC. ARE ADEQUATE FOR 150% OF THE CALCULATED PICK WEIGHT.
    e. LOCATION PLAN SHOWING OBSTRUCTIONS, INDICATING THAT THE PROPOSED SWING IS POSSIBLE. "WALKING" OF LOAD USING TWO CRANES WILL NOT BE PERMITTED. RATHER, MULTIPLE PICKS AND REPOSITIONING OF THE CRANE MAY BE PERMITTED TO GET THE LOAD TO THE NEEDED LOCATION FOR THE FINAL PICK, IF NECESSARY.
    f. DATA SHEET LISTING TYPES AND SIZES OF SLINGS AND OTHER CONNECTING EQUIPMENT. INCLUDE COPIES OF CATALOG CUTS FOR SPECIALIZED EQUIPMENT. DETAIL ATTACHMENT METHODS ON THE PLANS.
    g. A COMPLETE PROCEDURE, INDICATING THE ORDER OF LIFTS AND ANY REPOSITIONING OR RE–HITCHING OF THE CRANE OR CRANES.
    h. TEMPORARY SUPPORT OF ANY COMPONENTS OR INTERMEDIATE STAGES, AS MAY BE REQUIRED.
    i. A TIME SCHEDULE OF THE VARIOUS STAGES, AS WELL AS A SCHEDULE FOR THE ENTIRE LIFTING PROCESS.
    j. GROUND PREPARATION/GROUND BEARING CAPACITY CALCULATIONS.
25. CONTRACTOR SHALL AT ALL TIMES SAFELY SECURE CONSTRUCTION AREAS WITHIN AND ADJACENT TO AMTRAK PROPERTY THROUGH INSTALLATION OF CHAIN LINK FENCING AND/OR MAINTAINING INTEGRITY OF EXISTING CHAIN LINK FENCE DISTURBED DURING CONSTRUCTION OPERATIONS. SITE SECURITY SHALL COMPLY WITH AMTRAK DIVISION 1 GENERAL REQUIREMENT – SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS.



DIMENSIONS SHOWN ARE FOR TANGENT TRACK. VERTICAL AND HORIZONTAL DIMENSION SHOULD BE ADJUSTED AS DIRECTED ON AMTRAK STANDARD PLAN FOR MINIMUM ROADWAY CLEARANCES.

RAILROAD CLEARANCE ENVELOPE
NOT TO SCALE

ADDENDUM No. 4

TranSystems
530 PRESTON AVENUE
MERIDEN, CT. 06450

REVISIONS		
NO.	DATE	BY

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

AMTRAK STANDARD GENERAL NOTES

CHECKED BY _____ DATE _____ SCALE AS NOTED

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	RI	NHP-0037(012), NPNG-0037(013) NPH-TGR(003), 3AS-PRTY(258)	2019	3B	41

BRIDGE NO. 063601 AND BRIDGE NO. 063701 AMTRAK NOTES:

1. THE CONTRACTOR SHALL COORDINATE WITH AMTRAK STORAGE OF ANY EQUIPMENT NEAR THE RIGHT–OF–WAY.
2. IF WORK SHALL BE DONE ON AMTRAK PROPERTY THAT INVOLVES HEAVY TRUCKS, EQUIPMENT, OR MACHINERY ALONG THE RIGHT OF WAY, DUCT LINES AND PULL BOXES SHALL BE INSPECTED TO INSURE THEY CAN WITHHOLD THE APPROPRIATE WEIGHT.
3. SIGNAL PREVIEW MUST NOT BE OBSTRUCTED. CONTRACTORS PERFORMING WORK FOR AMTRAK OR ON AMTRAK PROPERTY MUST SHOW THAT THERE IS ADEQUATE SIGNAL PREVIEW. IN ADDITION, ALL TEMPORARY STRUCTURES, FORMWORK, EQUIPMENT, ETC. MUST COMPLY DURING CONSTRUCTION.
4. RAILS MUST BE PROTECTED AGAINST DEBRIS. RUST, SAND, METAL SHAVINGS OR OTHER MATERIAL CAN INTERFERE WITH THE PROPER SHUNTING SENSITIVITY OF THE TRACK CIRCUIT.
5. AN AMTRAK C&S PERSON AT THAT LOCATION SHOULD VERIFY THAT THERE IS NO SIGNAL EQUIPMENT IN THE WAY OF THE PROJECT AND THAT SIGNAL PREVIEW IS NOT BEING OBSTRUCTED.
6. ANY DAMAGE TO PULL BOXES, HAND HOLES, JUNCTION BOXES, CABLES OR OTHER APPURTENANCES DURING THIS WORK SHALL BE REPAIRED BY AMTRAK COMMUNICATIONS.
7. ALL EXISTING BONDING AND GROUNDING ON THE BRIDGE MUST REMAIN INTACT DURING CONSTRUCTION. REFER TO CS PAGES, APPENDIX G–AMTRAK SPECIFICATIONS FOR REFERENCE DRAWING.
8. REFER TO AMTRAK'S EP3014 SECTION 01141A – "SAFETY AND PROTECTION OF RAILROAD TRAFFIC AND PROPERTY" IN CONTRACT SPECIFICATIONS (CS) PAGES, APPENDIX G–AMTRAK SPECIFICATIONS.
9. REFER TO AMTRAK'S EP3014 ENGINEERING PRACTICE, SECTION 01142A–"SUBMISSION DOCUMENTATION REQUIRED FOR AMTRAK REVIEW AND APPROVAL OF PLANS FOR BRIDGE ERECTION, DEMOLITION AND OTHER CRANE/HOISTING OPERATIONS OVER RAILROAD RIGHT–OF–WAY" IN THE CONTRACT SPECIFICATIONS (CS) PAGES, APPENDIX G–AMTRAK SPECIFICATIONS.
10. A PROTECTION SHIELD MUST BE DESIGNED AND CONSTRUCTED IN CONFORMANCE WITH AMTRAK'S EP 3014 SECTION 01520–"REQUIREMENTS FOR TEMPORARY PROTECTION SHIELDS FOR DEMOLITION AND CONSTRUCTION OF OVERHEAD BRIDGES AND OTHER STRUCTURES" (APPENDIX D). SCHEMATICALLY SHOW ON THE WORKING DRAWINGS WHERE ANTICIPATED SHORING OR SHIELDING IS TO BE PROVIDED (PROTECTION FOR STEEL PAINTING, BRIDGE SEAT CLEANING, BEARING REPAIRS, ETC.) TO BE USED BY THE CONTRACTOR IN COORDINATION WITH THE EP FOR DETERMINING FUTURE SUBMITTALS FOR AMTRAK'S APPROVAL. ERECTION OF SAME WILL BE SUBJECT TO THE EP SECTION ON HOISTING.
11. CONSTRUCTION–RELATED DEBRIS THAT FALLS ONTO AMTRAK PROPERTY, FOULS TRACK BALLAST OR DAMAGES AMTRAK'S TRACK OR INFRASTRUCTURE SHALL BE IMMEDIATELY REPORTED TO AMTRAK. RIGHT–OF–WAY CLEAN–UP, BALLAST CLEANING, TRACK REPAIR, OR OTHER REPAIR WILL BE PERFORMED BY AMTRAK FORCES AT THE PROJECT'S EXPENSE.
12. THE PAINT CONTAINMENT SYSTEM MUST BE APPROVED BY AMTRAK BEFORE ANY WORK IS TO BE PERFORMED WITHIN IT.
13. ALL COSTS ASSOCIATED WITH CONFORMING TO THE AMTRAK REQUIREMENTS SHALL BE INCLUDED UNDER ITEM CODE 800.9931, "CONSTRUCTION SITE ACCESS – BRIDGE 063601 AND BRIDGE 063701"

ADDENDUM No. 4

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BRIDGE GROUP 51A - RT. 37 C-2

WARWICK RHODE ISLAND

AMTRAK
JOB SPECIFIC NOTES

CHECKED BY _____ DATE _____ SCALE AS NOTED