



Initial Review: \_\_\_\_\_  
Updated On: \_\_\_\_\_  
Complete: \_\_\_\_\_  
Official Use Only

## Coastal Zone Management Act Federal Consistency Form

This document provides the Delaware Coastal Management Program (DCMP) with a Federal Consistency Determination or Certification for activities regulated under the Coastal Zone Management Act of 1972, as amended, and NOAA's Federal Consistency Regulations, 15 C.F.R. Part 930. Federal agencies and other applicants for federal consistency are not required to use this form; it is provided to applicants to facilitate the submission of a Consistency Determination or Consistency Certification. In addition, federal agencies and applicants are only required to provide the information required by NOAA's Federal Consistency Regulations.

**Project/Activity Name:** Broad Creek Gas Main Replacement

### I. Federal Agency or Non-Federal Applicant Contact Information:

Contact Name/Title: Kieran Burns, EECl Environmental Project Manager (On Behalf of Chesapeake Utilities)

Federal Agency Contractor Name (if applicable): \_\_\_\_\_

Federal Agency: US Army Corps of Engineers  
(either the federal agency proposing an action or the federal agency issuing a federal license/permit or financial assistance to a non-federal applicant)

Mailing Address: 17605 Nassau Commons Blvd, Unit D,

City: Lewes State: DE Zip Code: 19958

E-mail: Kieran@envirotechecinc.com Telephone #: 302-684-5201

### II. Federal Consistency Category:

- Federal Activity or Development Project (15 C.F.R. Part 930, Subpart C)
- Outer Continental Shelf Activity (15 C.F.R. Part 930, Subpart E)
- Federal Financial Assistance (15 C.F.R. Part 930, Subpart F)
- Federal License or Permit Activity (15 C.F.R. Part 930, Subpart D)
- Federal License or Permit Activity which occurs wholly in another state (interstate consistency activities identified in DCMP's Policy document)

### III. Detailed Project Description (attach additional sheets if necessary):

The purpose of this project is to replace/retire an existing 4-inch steel gas main with a new 4-inch high density poly ethylene (HDPE) main using horizontal directional drilling (HDD). Please refer to the 'Supplemental Information Package' Attachment C for the 'Sequence of Construction' and 'Frac Out Plan'. In addition, Attachment A 'Site Maps of the Subject Property' will show overall site locations. Attachment B 'Chesapeake Utilities - Profile and Plan View' will show details of the project. Further information is included within the package. Permit applications for 'US Army Corps of Engineers - NWP 12' and 'DNRECs Wetlands and Subaqueous Lands Section' have been submitted.

**IV. General Analysis of Coastal Effects** (attach additional sheets if necessary):

This project is anticipated to have a low coastal effect. This is due to the project abiding by the time of year restrictions suggested within the DNREC Environmental review, Attachment F 'State and Federal Agency Letters'. In addition, the area utilized by HDD is 8-inches in diameter, going +/-95 ft MHW to MHW, and to be at a minimum 5 ft below the creek bed. Meaning the direct area of impact is minimal and not directly through 'Navigable Waters of the US' but below them. The highest effect will be sediment displacement caused by the HDD, however, because of the high percentage of sand within the sediment analysis (see Attachment D 'AgroLab-Soil Results'), turbidity should remain relatively low.

**V. Detailed Analysis of Consistency with DCMP Enforceable Policies** (attach additional sheets if necessary):

**Policy 5.1: Wetlands Management**

Time of year restrictions set forth by the DNREC Environmental Review will be follow to reduce impact to any listed species (see Attachment F for the 'State and Federal agency Letters'). In addition, HDD will begin from upland at the drillpit location, go atleast 5 feet under the Broad Creek Bed, and end at uplands at the other drillpit location. No activity will occur until all necessary State and Federal permits are received.

**Policy 5.2: Beach Management**

Not Applicable

**Policy 5.3: Coastal Waters Management** (includes wells, water supply, and stormwater management. Attach additional sheets if necessary)

Time of year restrictions set forth by the DNREC Environmental Review will be follow to reduce impact to any listed species (see Attachment F for the 'State and Federal agency Letters'). In addition, HDD will begin from upland at the drillpit location, go atleast 5 feet under the Broad Creek Bed, and end at uplands at the other drillpit location. No activity will occur until all necessary State and Federal permits are received.

**Policy 5.4: Subaqueous Land and Coastal Strip Management**

Not Applicable

**Policy 5.5: Public Lands Management**

Time of year restrictions set forth by the DNREC Environmental Review will be follow to reduce impact to any listed species (see Attachment F for the 'State and Federal Agency Letters'). In addition, also within Attachment F is the DE State Historic Properties office 'No Adverse Letter' and the US FWS 'Online Certification Letter' and 'endangered species list. No activity will occur until all necessary State and Federal permits are received.

**Policy 5.6: Natural Lands Management**

Not Applicable

**Policy 5.7: Flood Hazard Areas Management**

Not Applicable

**Policy 5.8: Port of Wilmington**

Not Applicable

**Policy 5.9: Woodlands and Agricultural Lands Management**

Not Applicable

**Policy 5.10: Historic and Cultural Areas Management**

Please see within the Supplemental Information Package - Attachment F, is the DE State Historic Properties office 'No Adverse Letter'.

**Policy 5.11: Living Resources**

Please see within the Supplemental Information Package - Attachment F for the DNREC Environmental review, DE SHPO Letter, and FWS Endangered Species Review. All time of year restrictions will be followed to minimize any impact to living species.

**Policy 5.12 Mineral Resources Management**

Not Applicable

**Policy 5.13: State Owned Coastal Recreation and Conservation**

Not Applicable

**Policy 5.14: Public Trust Doctrine**

Not Applicable

**Policy 5.15: Energy Facilities**

Not Applicable

**Policy 5.16: Public Investment**

Not Applicable

**Policy 5.17: Recreation and Tourism**

Not Applicable

**Policy 5.18: National Defense and Aerospace Facilities**

Not Applicable

**Policy 5.19: Transportation Facilities**

Not Applicable

**Policy 5.20: Air Quality Management**

Not Applicable

**Policy 5.21: Water Supply Management**

Not Applicable

**Policy 5.22: Waste Disposal Management**

Not Applicable

**Policy 5.23: Development**

Not Applicable

**Policy 5.24: Pollution Prevention**

Please refer to the 'Supplemental Information Package' Attachment C for the 'Sequence of Construction' and 'Frac Out Plan'.

**Policy 5.25: Coastal Management Coordination**

Applications to DE DNREC - Wetlands and Subaqueous Lands section and US Army Corps of Engineers have been submitted. In addition, the DNREC Environmental Review office, DE SHPO, US FWS have also been contacted in regards to this project.

**VI. JPP and RAS Review** (Check all that apply):

Has the project been reviewed in a monthly Joint Permit Processing and/or Regulatory Advisory Service meeting?

- JPP
- RAS
- None

\*If yes, provide the date of the meeting(s): \_\_\_\_\_

**VII. Statement of Certification/Determination and Signature** (Check one and sign below):

**FEDERAL AGENCY CONSISTENCY DETERMINATION.** Based upon the information, data, and analysis included herein, the federal agency, or its contracted agent, listed in (I) above, finds that this proposed activity is consistent to the maximum extent practicable with the enforceable policies of the Delaware Coastal Management Program.

OR

**FEDERAL AGENCY NEGATIVE DETERMINATION.** Based upon the information, data, and analysis included herein, the federal agency, or its contracted agent, listed in (I) above, finds that this proposed activity will not have any reasonably foreseeable effects on Delaware's coastal uses or resources (Negative Determination) and is therefore consistent with the enforceable policies of the Delaware Coastal Management Program.

OR

**NON-FEDERAL APPLICANT'S CONSISTENCY CERTIFICATION.** Based upon the information, data, and analysis included herein, the non-federal applicant for a federal license or permit, or state or local government agency applying for federal funding, listed in (I) above, finds that this proposed activity complies with the enforceable policies of the Delaware Coastal Management Program and will be conducted in a manner consistent with such program.

Signature:	<i>Kieran Burns</i>	
Printed Name:	Kieran Burns	Date: 8/30/2022

Pursuant to 15 C.F.R. Part 930, the Delaware Coastal Management Program must provide its concurrence with or objection to this consistency determination or consistency certification in accordance with the deadlines listed below. Concurrence will be presumed if the state's response is not received within the allowable timeframe.

**Federal Consistency Review Deadlines:**

Federal Activity or Development Project (15 C.F.R. Part 930, Subpart C)	60 days with option to extend an additional 15 days or stay review (15 C.F.R. § 930.41)
Federal License or Permit (15 C.F.R. Part 930, Subpart D)	Six months, with a status letter at three months. The six month review period can be stayed by mutual agreement. (15 C.F.R. § 930.63)
Outer Continental Shelf Activity (15 C.F.R. Part 930, Subpart E)	Six months, with a status letter at three months. If three month status letter not issued, then concurrence presumed. The six month review period can be stayed by mutual agreement. (15 C.F.R. § 930.78)
Federal Financial Assistance to State or Local Governments (15 C.F.R. Part 930, Subpart F)	State Clearinghouse schedule

**OFFICIAL USE ONLY:**

Reviewed By:	Fed Con ID:	Date Received:
Public notice dates: _____ to _____	Comments Received: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES <i>[attach comments]</i>	
Decision type: <small>(objections or conditions attach details)</small>	Decision Date: _____	

U.S. Army Corps of Engineers (USACE)  
**NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)**

33 CFR 330. The proponent agency is CECW-CO-R.

**Form Approved -**  
**OMB No. 0710-0003**  
**Expires: 02-28-2022**

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Program of the Corps of Engineers (Corps); Final Rule 33 CFR 320-332.

**Principal Purpose** Information provided on this form will be used in evaluating the nationwide permit pre-construction notification.

**Routine Uses** This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process.

**Disclosure** Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at [whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil](mailto:whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.**

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see *sample drawings and/or instructions*) and be submitted to the district engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

**(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)**


1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

5. APPLICANT'S NAME First - Garth                      Middle -                      Last - Jones Company - Chesapeake Utilities Company Title - Engineering Manager E-mail Address - gjones@chpk.com				8. AUTHORIZED AGENT'S NAME AND TITLE ( <i>agent is not required</i> ) First - Todd                      Middle -                      Last - Fritchman Company - Envirotech Environmental Consulting Inc. (EECI) E-mail Address - Todd@envirotechecinc.com			
6. APPLICANT'S ADDRESS Address- 500 Energy Lane, Suite 100, City - Dover                      State - DE                      Zip - 19901                      Country - USA				9. AGENT'S ADDRESS Address- 17605 Nassau Commons Blvd, Unit D City - Lewes                      State - DE                      Zip - 19958                      Country - USA			
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence                      b. Business                      c. Fax                      d. Mobile NA                      NA                      NA                      302-213-7455				10. AGENT'S PHONE NOs. with AREA CODE a. Residence                      b. Business                      c. Fax                      d. Mobile NA                      302-684-5201                      302-684-5204                      302-462-5613			

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, \_\_\_\_\_ EECI \_\_\_\_\_ to act in my behalf as my agent in the processing of this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

 Digitally signed by Garth E. Jones  
 Date: 2022.08.18 10:35:20 -04'00'                      2022-08-18  
 \_\_\_\_\_  
 SIGNATURE OF APPLICANT                      DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME or TITLE (*see instructions*)  
 Broad Creek Main Replacement

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

13. NAME OF WATERBODY, IF KNOWN ( <i>if applicable</i> ) Broad Creek	14. PROPOSED ACTIVITY STREET ADDRESS ( <i>if applicable</i> ) Front Street & Delaware Ave  City: Laurel State: DE Zip: 19956
15. LOCATION OF PROPOSED ACTIVITY ( <i>see instructions</i> ) Latitude                      °N                      Longitude                      °W 38.558205                      -75.569656	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN ( <i>see instructions</i> ) State Tax Parcel ID                      Municipality 232-12.19-30.00 & 332-1.07-154.00                      Sussex County  Section                      Township                      Range NA                      Town of Laurel                      NA	
17. DIRECTIONS TO THE SITE From the USACE Philadelphia office, Get on I-95S, take DE-1S, follow US-13S, turn right onto Delaware Ave, Subject Property is at the bridge over Broad Creek.	
18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE NWP 12	
19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY ( <i>see instructions</i> ) The proposed activity is to use HDD in order to retire the current 4-inch steel gas main and replace it with a 4-inch High Density Poly Ethylene (HDPE) main.	
20. DESCRIPTION OF PROPOSED MITIGATION MEASURES ( <i>see instructions</i> ) No mitigation proposed.	
21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY ( <i>Describe the reason or purpose of the project, see instructions</i> ) The purpose of the nationwide activity permit is to retire the old 4-inch steel gas main before failure with a new 4-inch HDPE main.	
22. QUANTITY OF WETLANDS, STREAMS, OR OTHER TYPES OF WATERS DIRECTLY AFFECTED BY PROPOSED NATIONWIDE PERMIT ACTIVITY ( <i>see instructions</i> ) Acres                      Linear Feet                      Cubic Yards Dredged or Discharged 0.0016                      95                      53.44	
<b>Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.</b>	
23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. ( <i>see instructions</i> ) DNREC - Wetlands and Subaqueous Lands Section permit - appendix E & S	
24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity. NA	



25. Is any portion of the nationwide permit activity already complete?  Yes  No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (see instructions)  
See attached FWS Endangered Species Review and DNREC Environmental Review.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (see instructions)  
See attached the Delaware State Historic Properties Office "No Adverse Effect" Letter.

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":  
NA

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project?  Yes  No  
If "yes", please provide the date your request was submitted to the Corps district:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)  
the following will be included: DNREC Wetlands Permit app & appendixes, 1000-ft radius property search mailing address, Directions with Vicinity Map, Plan View, Profile View, DelDOT ROW Plans, Wetland Delineation Report with pictures of the area, Frac-Out plan, Sequence of Construction, DNREC Environmental Review, FWS Species Review, and DE SHPO Review.

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

**Garth E. Jones** Digitally signed by Garth E. Jones Date: 2022.08.18 10:35:44 -04'00'      2022-08-18      **Todd Fritchman** Digitally signed by Todd Fritchman Date: 2022.08.19 07:58:29 -04'00'      2022-08-19  
SIGNATURE OF APPLICANT      DATE      SIGNATURE OF AGENT      DATE

The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a  
Department of the Army  
Nationwide Permit (NWP) Pre-Construction Notification (PCN)**

**Blocks 1 through 4.** To be completed by the Corps of Engineers.

**Block 5. Applicant's Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the preconstruction notification, please attach a sheet of paper with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant's Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by the applicant, if an agent is to be employed.

**Block 12. Proposed Nationwide Permit Activity Name or Title.** Please provide a name identifying the proposed NWP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the NWP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Activity Street Address.** If the proposed NWP activity is located at a site having a street address (not a box number), please enter it in Block 14.

**Block 15. Location of Proposed Activity.** Enter the latitude and longitude of where the proposed NWP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed NWP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed NWP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed NWP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

**Block 18. Identify the Specific Nationwide Permit(s) You Propose to Use.** List the number(s) of the Nationwide Permit(s) you want to use to authorize the proposed activity (e.g., NWP 29).

**Block 19. Description of the Proposed Nationwide Permit Activity.** Describe the proposed NWP activity, including the direct and indirect adverse environmental effects the activity would cause. The description of the proposed activity should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide sketches when necessary to show that the proposed NWP activity complies with the terms of the applicable NWP(s). Sketches usually clarify the activity and result in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed NWP activity (e.g., a conceptual plan), but do not need to be detailed engineering plans.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

**Block 20. Description of Proposed Mitigation Measures.** Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed NWP activity. The description of any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or additional mitigation measures.

**Block 21. Purpose of Nationwide Permit Activity.** Describe the purpose and need for the proposed NWP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

**Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed Nationwide Permit Activity.** For discharges of dredged or fill material into waters of the United States, provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed NWP activity. For structures or work in navigable waters of the United States subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, or occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed NWP activity.

For multiple NWPs, or for separate and distant crossings of waters of the United States authorized by NWPs 12 or 14, attach an extra sheet of paper marked Block 21 to provide the quantities of wetlands, streams, or other types of waters filled, flooded, excavated, or drained (or dredged or occupied by structures, if in waters subject to Section 10 of the Rivers and Harbors Act of 1899) for each NWP. For NWPs 12 and 14, include the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained for each separate and distant crossing of waters or wetlands. If more space is needed, attach an extra sheet of paper marked Block 22.

**Block 23. Identify Any Other Nationwide Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity.** List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by NWPs 12 or 14 that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

**Block 24. Compensatory Mitigation Statement for Losses of Greater Than 1/10-Acre of Wetlands When Pre-Construction Notification is Required.** Paragraph (c) of NWP general condition 23 requires compensatory mitigation at a minimum one-for-one replacement ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed NWP activity are no more than minimal without compensatory mitigation, and provides an activity-specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than 1/10 acre, or provide an explanation of why the district engineer should not require wetland compensatory mitigation for the proposed NWP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

**Block 25. Is Any Portion of the Nationwide Permit Activity Already Complete?** Describe any work that has already been completed for the NWP activity.

**Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the Nationwide Permit Activity.** If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

**Block 27. List Any Historic Properties that Have the Potential to be Affected by the Nationwide Permit Activity.** If you are not a Federal agency, and if any historic properties have the potential to be affected by the proposed NWP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

**Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the Nationwide Permit Activity Would Occur in such a River.** If the proposed NWP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit <http://www.rivers.gov/>.

**Block 29. Nationwide Permit Activities that also Require Permission from the Corps Under 33 U.S.C. 408.** If the proposed NWP activity also requires permission from the Corps under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a Corps federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the Corps district having jurisdiction over that project.

**Block 30. Other Information Required For Nationwide Permit Pre-Construction Notifications.** The terms of some of the Nationwide Permits include additional information requirements for preconstruction notifications:

- \* NWP 3, Maintenance –information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
- \* NWP 31, Maintenance of Existing Flood Control Facilities –a description of the maintenance baseline and the dredged material disposal site.
- \* NWP 33, Temporary Construction, Access, and Dewatering –a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
- \* NWP 44, Mining Activities –if reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre-construction notification.
- \* NWP 45, Repair of Uplands Damaged by Discrete Events –documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
- \* NWP 48, Commercial Shellfish Aquaculture Activities –(1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).
- \* NWP 49, Coal Remining Activities –a document describing how the overall mining plan will result in a net increase in aquatic resource functions must be submitted to the district engineer and receive written authorization prior to commencing the activity.
- \* NWP 50, Underground Coal Mining Activities –if reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre-construction notification.

If more space is needed, attach an extra sheet of paper marked Block 30.

**Block 31. Signature of Applicant or Agent.** The PCN must be signed by the person proposing to undertake the NWP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the NWP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the NWP activity (including compliance with special conditions, mitigation, etc.).

#### **DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS**

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 45 day PCN review period will not start until the delineation is submitted or has been completed by the Corps.

#### **DRAWINGS AND ILLUSTRATIONS**

##### **General Information.**

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one original, or good quality copy, of all drawings on 8½x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

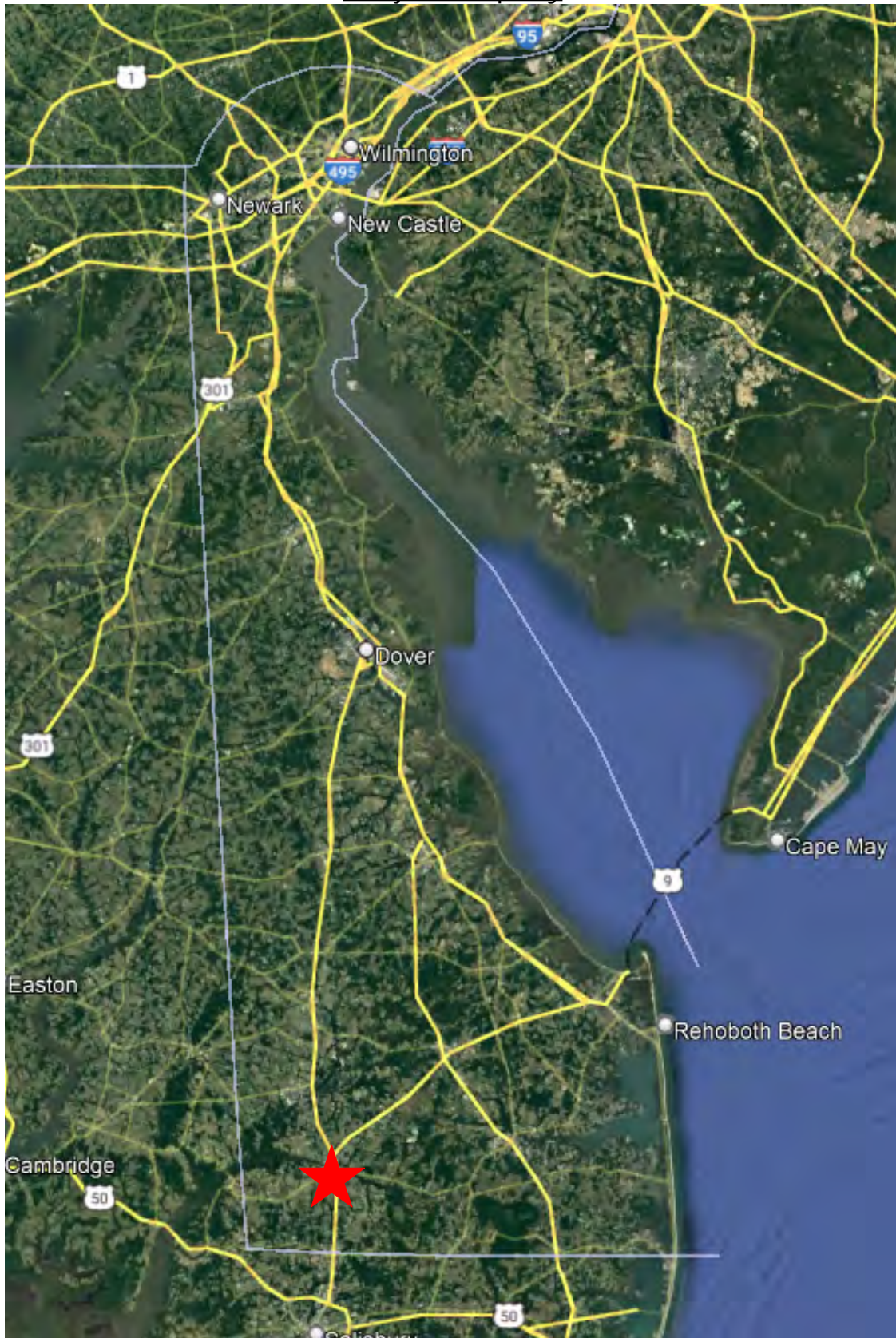
#### **ADDITIONAL INFORMATION AND REQUIREMENTS**

For proposed NWP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived (see NWP general condition 25). Some States, Tribes, or EPA have issued water quality certification for one or more NWPs. Please check the appropriate Corps district web site to see if water quality certification has already been issued for the NWP(s) you wish to use. For proposed NWP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur (see NWP general condition 26). Some States have issued Coastal Zone Management Act consistency concurrences for one or more NWPs. Please check the appropriate Corps district web site to see if Coastal Zone Management Act consistency concurrence has already been issued for the NWP(s) you wish to use.


# **ATTACHMENT A**

*Site Maps of the Subject Property*

**Chesapeake Utilities - Gas Main Replacement**  
East Front Street and Delaware Avenue,  
Laurel, Delaware 19956  
Subject Property

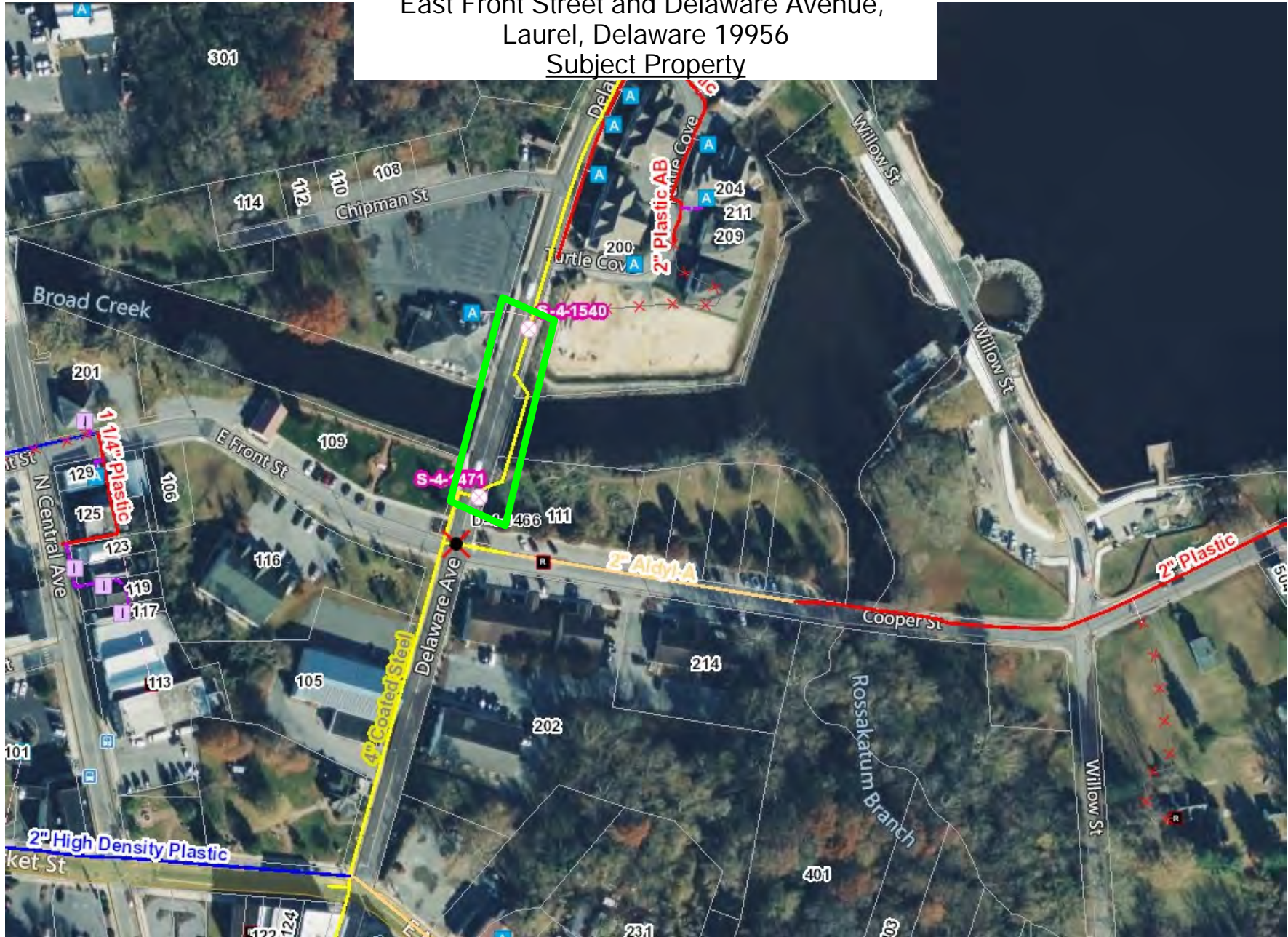


**LEGEND:**

-  = Subject Property (Broad Creek) -  
Tax Map Parcels #232-12.19-30.00 & 332-1.07-154.00

NOTE\* Imagery Taken From Google Earth Pro\*

**Chesapeake Utilities - Gas Main Replacement**  
 East Front Street and Delaware Avenue,  
 Laurel, Delaware 19956  
Subject Property



**LEGEND:**

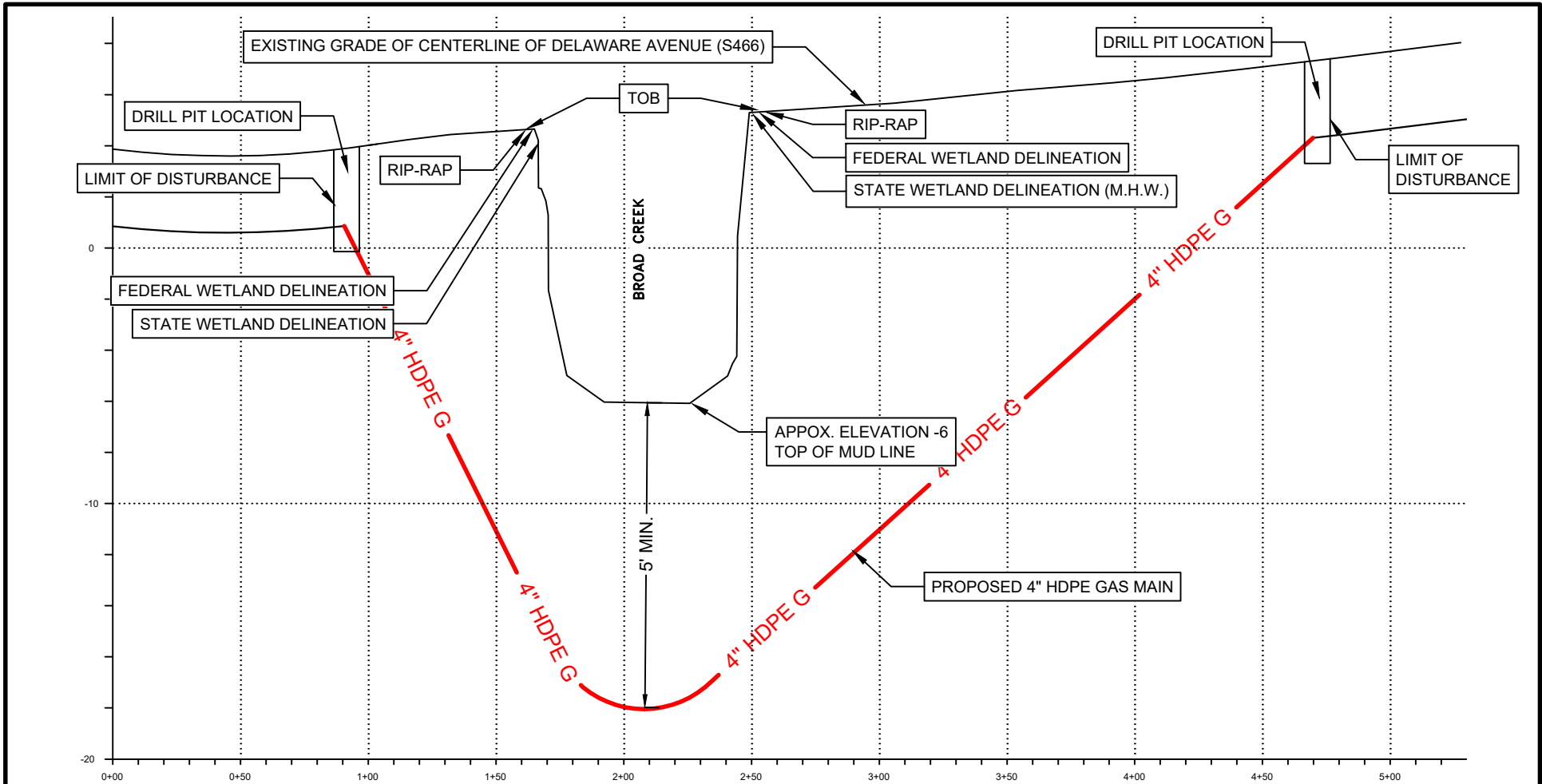
- █ = Subject Property (Broad Creek) -  
 Tax Map Parcels #232-12.19-30.00 & 332-1.07-154.00

NOTE\*Imagery Taken From Chesapeake Utilities GIS\*

# **ATTACHMENT B**

*Chesapeake Utilities – Profile and Plan View*



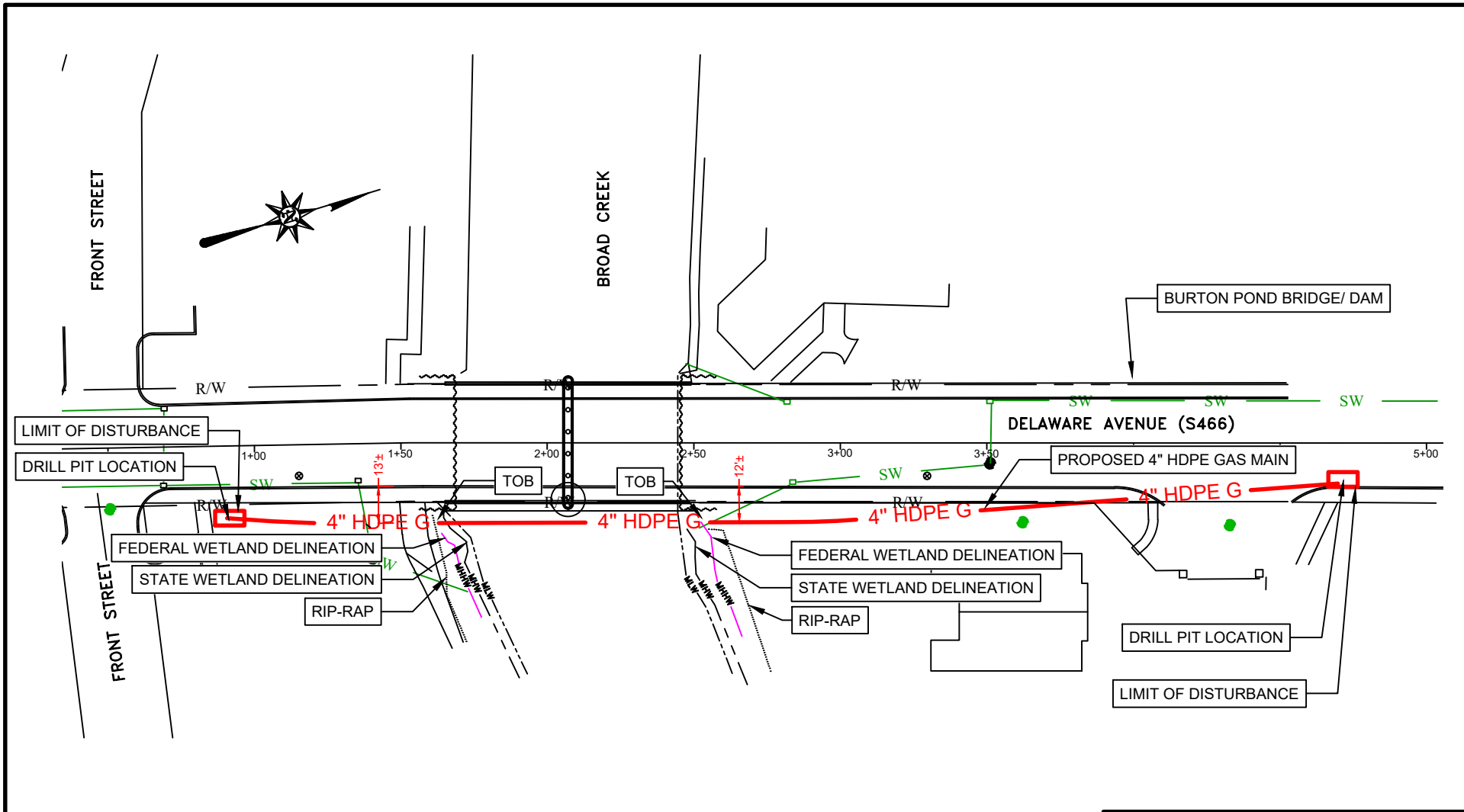


HORIZONTAL SCALE: 1"=60'  
 VERTICAL SCALE: 1"=6'

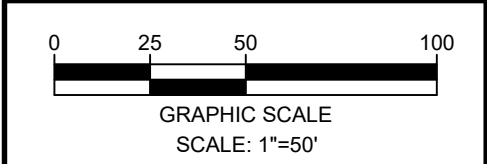
NOTE:  
 PROPOSED 4" HDPE GAS MAIN TO BE INSTALL VIA HDD



PROPOSED 4" HDPE GAS MAIN  
 DELAWARE AVENUE (S466) AND BROAD CREEK  
 DRAWN: 2022.07.12  
 SUSSEX COUNTY, DELAWARE



NOTE:  
 PROPOSED 4" HDPE GAS MAIN TO BE INSTALL VIA HDD



PROPOSED 4" HDPE GAS MAIN  
 DELAWARE AVENUE (S466) AND BROAD CREEK  
 DRAWN: 2022.07.12  
 SUSSEX COUNTY, DELAWARE

# ATTACHMENT C

*Chesapeake Utilities – Sequence of Construction and  
Frac-out Contingency Plan*

### Sequence of Construction:

- Schedule pre-construction meeting with DeIDOT and the Town of Laurel five (5) days prior to commencing any site work.
- Notify Miss Utility (811) a minimum of two (2) full business days prior to any construction activity. Construction activities shall not commence until all utilities have responded to the miss utility ticket.
- Install maintenance of traffic as approved by DeIDOT.
- Install erosion and sedimentation control structures, as needed.
- Test pit existing utilities to confirm location and depth.
- Excavate the sending and receiving pits as shown on the construction documents.
- Setup HDD machine at the sending pit.
- Bore under Broad Creek to receiving pit.
- Pull back 4-inch HDPE pipe.
- Tie the 4-inch HDPE gas main into the existing gas main at both ends.
- Backfill sending and receiving pits with suitable fill.
- Remove erosion and sedimentation control structures, as needed.
- Clean up all excavations and complete restoration.
- Complete final inspection by DeIDOT and the Town of Laurel.

**CHESAPEAKE UTILITIES  
BROAD CREEK CROSSING  
HORIZONTAL DIRECTIONAL DRILLING  
FRAC-OUT CONTINGENCY PLAN**

**Purpose and Objective**

The purpose of this document is to identify procedures to be followed in the event of a frac-out during horizontal directional drilling operations for the Broad Creek gas main replacement project in Laurel, Delaware. A frac-out is a condition in which drilling mud is released through fractures in the soil and migrates toward the surface. Drilling mud consists mainly of a bentonite clay-water mixture, which is not considered to be hazardous or toxic. However, the objective is to minimize the potential of a frac-out and identify response measures in the event that a frac-out occurs, in order to mitigate any potential adverse impact to water bodies and associated habitats. Escape of drilling mud from a frac-out is most common near the directional drill entry and exit locations. However, frac-outs can occur at any location along a directional drill.

This Frac-Out Contingency Plan provides operational procedures and responsibilities for the prevention, containment and clean-up of frac-outs associated with horizontal directional drilling operations.

The objectives of this plan are as follows:

- Minimize the potential for a frac-out due to horizontal directional drilling operations.
- Identify timely detection of frac-outs.
- Provide for environmental protection of the water bodies and associated habitats.
- Establish response procedures in the event of a frac-out.
- Provide for notifications to the applicable parties and regulatory agencies.

**Scope of Work for Horizontal Directionally Drilled Crossings**

The pipeline alignment drawings show the targeted entry and exit locations and staging areas. These layouts are designed to minimize the potential for impact to the water bodies. The significant clearance between the bottom of the water bodies and the top of the proposed pipeline provides additional protection for the water bodies.

**Inspection**

A Project Superintendent will be on-site at all times during horizontal directional drilling operations. The Project Superintendent will be experienced in directional drilling and the associated environmental protection measures. The Project Superintendent will ensure that the proper equipment and materials are available on-site at all times, and that the necessary procedures are followed on a daily basis.

## Mitigation Measures

- The Project Superintendent will contact Chesapeake Utilities District Operations in the event of a frac-out. Chesapeake Utilities will contact DNREC. Prior to construction, a complete list of applicable regulatory agencies will be prepared and available at the job site.
- All equipment will be checked and maintained daily to prevent hazardous material leaks.
- Sufficient supplies of spill containment materials and hay bales will be available on-site at all times. A vacuum truck will also be available at all times.
- Frac-out barrels will be located on-site at all times.
- Entry and exit drill pits will be contained using berms, silt fence and/or hay bales.
- Visual observation (on-land and water bodies) will occur on a regular basis throughout directional drilling operations so that a potential surface frac-out can be identified.
- Directional drilling operations will be suspended immediately upon evidence of a drop in drilling pressure, lack of drilling mud returns at the entrance pit or other evidence of a frac-out.
- In the event of a frac-out, the on-site Project Superintendent will evaluate the situation and provide direction for mitigation actions.
- All drilling bentonite will be recycled through a reclaimer system.
- Clean up of all frac-outs/spills shall begin immediately.
- In the event of a frac-out that reaches the surface but not the water body, bentonite shall be contained, removed and disposed of at an approved facility.
- In the unlikely event that a frac-out reaches the water body, corrective action will be taken immediately. Clean-up work will be performed by hand to the maximum extent practicable. A vacuum truck would be used to vacuum up the associated bentonite and soils as necessary. The materials will be properly disposed of at an approved facility. Clean sand would be replaced in the riverbed if necessary.
- All cleanup materials will be disposed on a daily basis as applicable, and at the completion of the project.
- In the event that a drill hole must be abandoned, the bore will be sealed by the injection of a high-viscosity bentonite slurry.
- Construction operations will not be allowed to re-start until approved by the on-site Project Superintendent.
- Documentation will be prepared for any frac-outs that occur during directional drilling operations.

# **ATTACHMENT D**

*AgroLab – Soil Lab Results*



Account No. : 3570

Soil Analysis Report

ENVIROTECH ENVIRONMENTAL CONSULT  
 17605 NASSAU COMMONS BLVD  
 LEWES DE 19958

Invoice No. : 1136409  
 Date Received : 08/15/2022  
 Date Analyzed: 08/16/2022  
 Lab Number : 15012

Results For : ENVIROTECH  
 Location : BROAD CREEK  
 Sample ID : MAIN REPLACEMENT

Extraction Method: Mehlich 3

Sufficiency Levels

Analysis	Value	Deficient	Low	Sufficient	High
pH	7.3	[Bar spanning from Deficient to High]			
Buffer pH	7.0	[Bar spanning from Deficient to High]			
Soluble Salts, EC mmho/cm	0.09	[Bar spanning from Deficient to Sufficient]			
Nitrate-N, ppm N	3.6	[Bar spanning from Deficient to Low]			
Nitrate-N, Lbs N/A	9.00	[Bar spanning from Deficient to Low]			
Depth	0 - 8 in	[Bar spanning from Deficient to High]			
Ammonium-N ppm	44.3	[Bar spanning from Deficient to Low]			
Phosphorus, ppm P	41	[Bar spanning from Deficient to Low]			
P Saturation	36	[Bar spanning from Deficient to Sufficient]			
UMD P FIV	47	[Bar spanning from Deficient to Low]			
Potassium, ppm K	38	[Bar spanning from Deficient to Low]			
Calcium, ppm Ca	421	[Bar spanning from Deficient to Low]			
Magnesium, ppm Mg	51	[Bar spanning from Deficient to Low]			
Sulfur, ppm S	9	[Bar spanning from Deficient to Low]			
Boron, ppm B	0.60	[Bar spanning from Deficient to Low]			
Zinc, ppm Zn	13.70	[Bar spanning from Deficient to High]			
Manganese, ppm Mn <small>pH sensitive</small>	26.0	[Bar spanning from Deficient to Sufficient]			
Copper, ppm Cu	2.06	[Bar spanning from Deficient to Sufficient]			
Sodium, ppm Na	21	[Bar spanning from Deficient to Sufficient]			
CEC Sum of Cations, meq/100g	2.8	[Bar spanning from Deficient to Low]			
H % Saturation	3	[Bar spanning from Deficient to Low]			
K % Saturation	4	[Bar spanning from Deficient to Sufficient]			
Ca % Saturation	75	[Bar spanning from Deficient to High]			
Mg % Saturation	15	[Bar spanning from Deficient to Sufficient]			
Na % Saturation	3	[Bar spanning from Deficient to Low]			
Organic Matter, %	0.8	[Bar spanning from Deficient to Low]			
Organic Matter (LOI @ 455 C), %	1.44	[Bar spanning from Deficient to Low]			
Est. Organic Carbon, %	0.45	[Bar spanning from Deficient to Low]			
Aluminum, ppm Al	180.0	[Bar spanning from Deficient to Low]			
Iron, ppm Fe	190.0	[Bar spanning from Deficient to Low]			

Reviewed By : L.D. Severson - AgroLab Inc

8/16/2022

Copy : 1

Page 1 of 4

Bus: 302/566-6094  
 Email: admin@agrolab.us

web site  
 www.agrolab.us

101 Clukey Dr.  
 Harrington, DE 19952





Account No. : 3570

**Soil Analysis Report**

**ENVIROTECH ENVIRONMENTAL CONSULT  
17605 NASSAU COMMONS BLVD  
LEWES DE 19958**

**Invoice No. : 1136409  
Date Received : 08/15/2022  
Date Analyzed: 08/16/2022  
Lab Number : 15012**

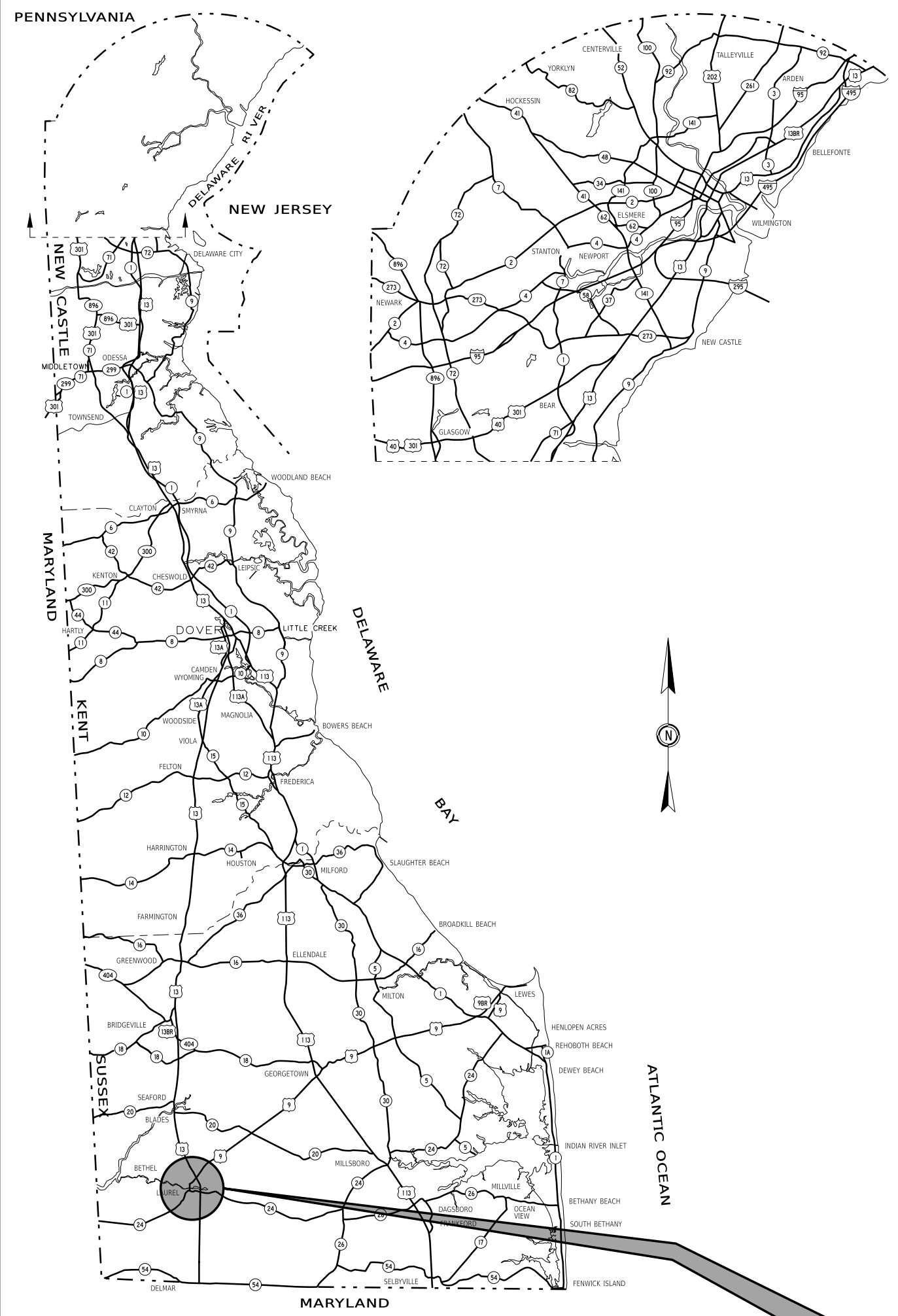
**Results For : ENVIROTECH  
Location : BROAD CREEK  
Sample ID : MAIN REPLACEMENT**

**Extraction Method: Mehlich 3**

USDA Soil Texture	Sand
Sand, %	88
Silt, %	7
Clay, %	5

# **ATTACHMENT E**

*DelDOT Right-of-Way Plans*



GENERAL LOCATION OF CONTRACT

# THE STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY  
UNITS



## CONSTRUCTION AND RIGHT-OF-WAY PLANS FOR: **BR 3-162 ON S466 DELAWARE AVE OVER BROAD CREEK**

CONTRACT NUMBER: **T201607602**  
FEDERAL AID PROJECT NUMBER: **EBHOS-S466(02)**

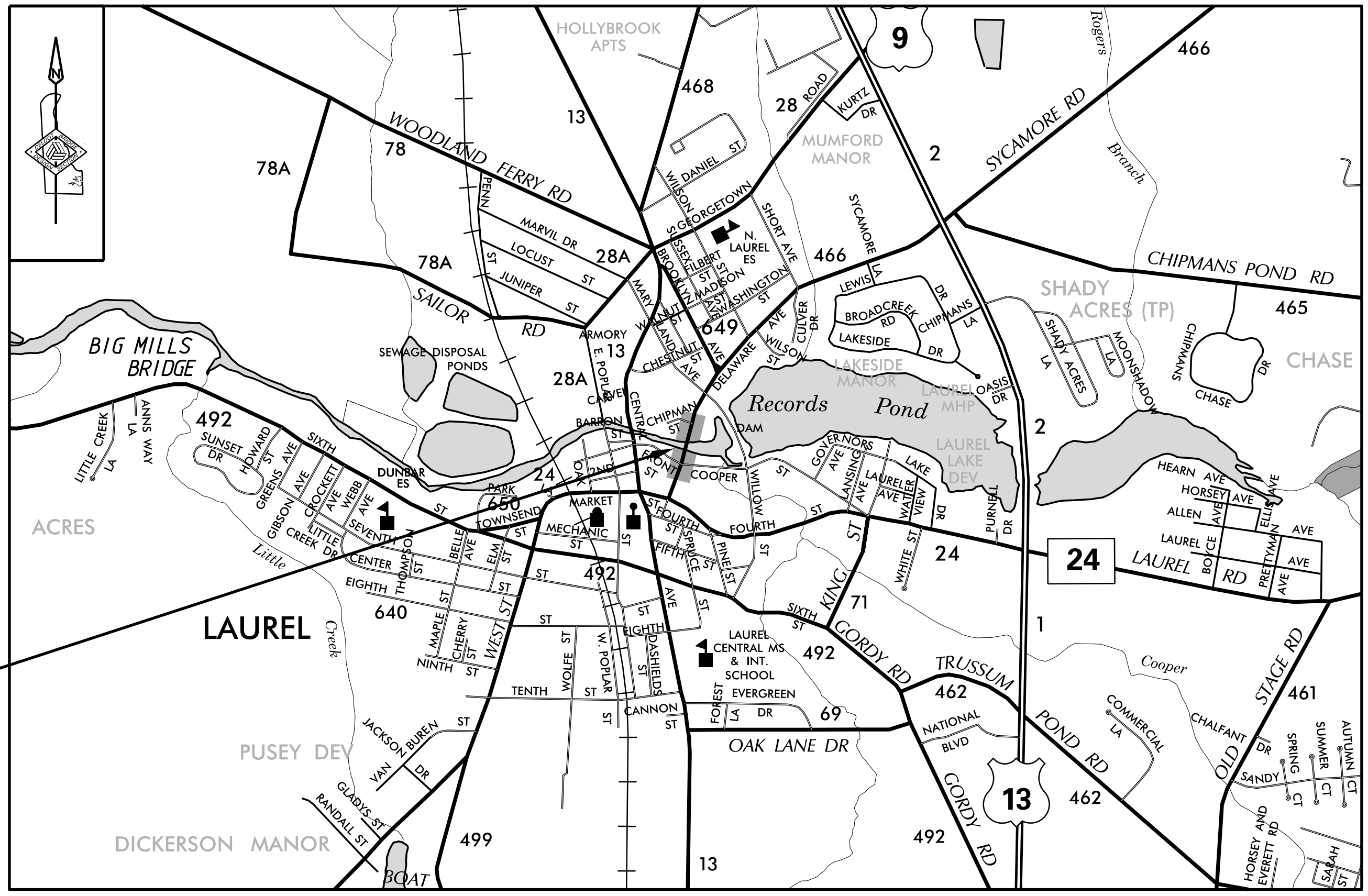
COUNTY: **SUSSEX** M.R. #: **S466**

DESIGN DESIGNATION			
MRD #: S466	ROAD NAME: DELAWARE AVENUE		
FUNCTIONAL CLASS: URBAN LOCAL ROAD	D.H.V. PROJECTED: 120	YEAR: 2040	
TYPE OF CONSTRUCTION: BRIDGE REHABILITATION	DESIGN SPEED: 30 M.P.H.		
A.A.D.T. CURRENT: 1380	YEAR: 2014	TRUCKS: 12%	
A.A.D.T. PROJECTED: 1800	YEAR: 2040	DIRECTION OF DISTRIBUTION: 60%	
APPROVED DESIGN EXCEPTIONS			
DESIGN PARAMETER	REQUIRED	PROVIDED	DATE
ADDENDA/ REVISIONS			
ASSOCIATED CONTRACTS			
CONTRACT NO.	CONTRACT NAME		
64-01-015	BRIDGE 162 ON DELAWARE AVENUE LAUREL OVER BROAD CREEK		
613	DELAWARE AVENUE LAUREL, BROOKLYN AVENUE TO MARKET STREET		

PREPARED BY  
DELDOT - TRANSPORTATION SOLUTIONS  
BRIDGE DESIGN

*Scott M. Walls*  
08/04/2020 DATE

THIS SEAL APPLIES TO ALL SHEETS BEARING THE "BR" SECTION DESIGNATION.



BR 3-162

**APPROVED FOR ADVERTISEMENT**

*Shy* 08/05/2020  
DIRECTOR OF TRANSPORTATION SOLUTIONS DATE

SECTION	SHEET DESCRIPTION	SHEET NO(S)
BR	TITLE	1
BR	INDEX OF SHEETS	2
BR	ADDENDA AND REVISIONS	3
BR	LEGEND	4
BR	NOTES	5
BR	TYPICAL SECTION	6
BR	CONSTRUCTION PLAN	7
BR	PROFILE	8
BR	BRIDGE PLAN AND ELEVATION	9
BR	BRIDGE EXISTING AND PROPOSED SECTION	10
BR	ABUTMENT DETAILS	11
BR	PILE BENT DETAILS	12
BR	EXTERIOR BEAM DETAILS	13
BR	INTERIOR BEAM DETAILS	14
BR	SHEAR KEY DETAILS	15
BR	FRAMING PLAN	16
BR	INTEGRATED APPROACH DETAILS	17
BR	BRIDGE PARAPET DETAILS	18
BR	BRIDGE RAIL DETAILS	19
BR	CONSTRUCTION SEQUENCE AND EROSION AND SEDIMENT CONTROL NOTES	20
BR	EROSION AND SEDIMENT CONTROL PLAN	21
BR	ENVIRONMENTAL COMPLIANCE NOTES	22
BR	ENVIRONMENTAL COMPLIANCE PLAN	23
TS	VEHICULAR DETOUR PLAN	24
TS	PEDESTRIAN DETOUR PLAN	25
BR	UTILITY RELOCATION PLAN	26
BR	SIGNING AND STRIPING PLAN	27
WRA	RRFB SIGNAL PLAN	28
BR	RIGHT-OF-WAY PLAN	29
BR	RIGHT-OF-WAY DATA AND TABULATION SHEET	30

13-OCT-2020 08:24 Y:\SUSSEX\466\bridge\T201607602\500\_CADD\530\_PLANS\_DGN\I501.dgn

ADDENDA / REVISIONS

**NOT TO SCALE**

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

<b>INDEX OF SHEETS</b>	SECTION
	BR
	SHEET NO.
	2

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08:24  
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ADDENDA / REVISIONS

**NOT TO SCALE**

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**ADDENDA AND  
REVISIONS**

SECTION
BR
SHEET NO.
3

## EXISTING SYMBOLS

DRAINAGE	
	DITCH OR STREAM CENTERLINE
	DIRECTIONAL STREAM FLOW ARROW
	DRAINAGE INLET
	DRAINAGE JUNCTION BOX
	DRAINAGE MANHOLE
	DRAINAGE PIPE AND FLOW ARROW
	DRAINAGE PIPE HEADWALL
	RIPRAP - AREA FEATURE
	RIPRAP - LINEAR FEATURE

MANMADE ROADSIDE FEATURES	
	BOLLARD - STEEL POLE
	BOLLARD - WOOD POST
	CURB
	CURB AND GUTTER
	FENCE - CHAINLINK OR STRANDED
	FENCE - STOCKADE OR SPLIT RAIL
	FLAG POLE
	GUARDRAIL - STEEL BEAM
	GUARDRAIL - WIRE ROPE
	LAMP AND POST - RESIDENTIAL
	MAILBOX
	PARKING METER AND POST
	PAVEMENT - FLEXIBLE
	PAVEMENT - RIGID
	PILE - BRIDGE
	PILLAR OR MISCELLANEOUS POST
	TRAFFIC SIGN AND POST
	WALL - BRICK OR BLOCK
	WALL - STONE

NATURAL ROADSIDE FEATURES	
	GRASS LAWN
	HEDGEROW OR THICKET
	MARSH BOUNDARY LINE
	TREE - CONIFEROUS
	TREE - DECIDUOUS
	TREE STUMP
	SHRUBBERY
	DELINEATED WETLAND BOUNDARY LINE
	WOODS LINE BOUNDARY

RIGHT-OF-WAY SYMBOLS	
	PROPERTY MARKER - CONCRETE MON.
	PROPERTY MARKER - IRON PIPE
	HISTORIC RIGHT-OF-WAY BASELINE
	EXISTING RIGHT-OF-WAY
	EXISTING PROPERTY LINE
	EXISTING EASEMENT
	EXISTING DENIAL OF ACCESS
	EXISTING R/W & DENIAL OF ACCESS

SURVEY CONTROL & MONUMENTATION	
	SURVEY BENCHMARK LOCATION
	SURVEY TIE POINT LOCATION
	SURVEY TRAVERSE POINT
	POINT OF CURVATURE OR TANGENCY
	POINT OF INTERSECTING TANGENTS

UTILITY	
	SOIL BORING LOCATION
	UTILITY TEST HOLE LOCATION
	CABLE TV DISTRIBUTION BOX
	ELECTRIC MANHOLE
	ELECTRIC METER
	ELECTRIC TRANSFORMER
	POLE MOUNTED LUMINAIRE
	GAS MANHOLE
	GAS METER
	GAS VALVE
	GAS PUMP - SERVICE STATION
	RAILROAD TRACKS
	SANITARY SEWER MANHOLE
	SANITARY SEWER VALVE
	SANITARY SEWER CLEANOUT OR VENT
	SEPTIC DRAIN FIELD
	TELEPHONE BOOTH
	TELEPHONE MANHOLE
	TELEPHONE TEST POINT
	TRAFFIC - CONDUIT JUNCTION WELL
	TRAFFIC - LIGHT POLE AND BASE
	TRAFFIC - PEDESTRIAN POLE & BASE
	TRAFFIC - SIGNAL CABINET & BASE
	TRAFFIC - SIGNAL POLE AND BASE
	UTILITY BOX
	UTILITY POLE GUY WIRE ANCHOR
	UTILITY POLE
	WATER - FIRE HYDRANT
	WATER METER
	WATER VALVE
	WELL HEAD
	MANHOLE - UNDETERMINED OWNER

UTILITY COMPANY FACILITIES	
	CHESAPEAKE UTILITIES - GAS
	COMCAST CABLE / OVERHEAD
	DELMARVA POWER-ELECTRIC/OVERHEAD
	TOWN OF LAUREL - SEWER
	TOWN OF LAUREL - WATER
	VERIZON
	VERIZON - FIBER OPTIC

(X) REPRESENTS ASCE DEFINED SUE QUALITY LEVEL

## PROPOSED SYMBOLS

CONSTRUCTION	
	CONCRETE SAFETY BARRIER - PERMANENT
	BIOFILTRATION SWALE
	BRICK PATTERNED SURFACE
	BUTT JOINT
	CLEAR ZONE
	CONSTRUCTION BASELINE
	CONSTRUCTION SAFETY FENCE
	CURB, TYPE 1 & TYPE 3
	CURB, TYPE 2
	CURB & GUTTER, TYPE 1
	CURB & GUTTER, TYPE 2
	CURB & GUTTER, TYPE 3
	CURB & GUTTER, TYPE 4
	CURB OPENING - SUMP / ON GRADE
	CURB OPENING WITH SIDEWALK
	DRAINAGE INLET
	DITCH
	FENCE - METAL / FENCE - WOOD
	FLARED END / SAFETY END SECTION
	GUARDRAIL, TYPE 1
	GUARDRAIL, TYPE 2
	GUARDRAIL, TYPE 3
	GUARDRAIL END ANCHORAGE
	GUARDRAIL END TREATMENT, TYPE 1
	GUARDRAIL END TREATMENT, TYPE 2
	GUARDRAIL END TREATMENT, TYPE 3
	IMPACT ATTENUATOR
	JUNCTION BOX - DRAINAGE
	LATERAL OFFSET
	LIMIT OF CONSTRUCTION
	MAILBOX
	MANHOLE
	PAVEMENT PATCH
	PAVEMENT REMOVAL - TOPSOIL, SEED AND MULCH
	PIPE & DIRECTIONAL FLOW ARROW
	RIPRAP
	P.C.C. SIDEWALK - 4"
	P.C.C. SIDEWALK - 6" (USE 8" DEPTH FOR CHANNELIZATION ISLANDS.)
	UNDERDRAIN
	UNDERDRAIN OUTLET

RIGHT-OF-WAY SYMBOLS	
	PROPOSED RIGHT-OF-WAY MONUMENT
	PROPOSED DENIAL OF ACCESS
	PROPOSED PERMANENT EASEMENT
	PROPOSED RIGHT-OF-WAY
	PROPOSED R/W & DENIAL OF ACCESS
	RIGHT-TO-ENTER
	TEMPORARY CONSTRUCTION EASEMENT
	PROPOSED RIGHT-OF-WAY BASELINE

IDENTIFIERS	
	ADJUST BY CONTRACTOR
	ADJUST BY OTHERS
	CONCRETE SAFETY BARRIER
	CURB OR CURB & GUTTER
	CONVERT TO JUNCTION BOX
	CONVERT TO DRAINAGE MANHOLE
	CURB OPENING - SUMP / ON GRADE
	CURB OPENING WITH SIDEWALK
	PEDESTRIAN CONNECTION / TYPE
	PEDESTRIAN CONNECTION / TYPE WITHOUT SIDEWALK SURFACE DETECTABLE WARNING SYSTEM
	CONSTRUCTION SAFETY FENCE
	DRAINAGE INLET
	DO NOT DISTURB
	ENERGY DISSIPATOR
	FENCE
	FLARED END SECTION
	FILL WITH FLOWABLE FILL
	FILTRATION STRUCTURE
	GUARDRAIL
	JUNCTION BOX
	MANHOLE
	MONUMENT - RIGHT-OF-WAY
	PIPE
	RELOCATE BY CONTRACTOR
	RELOCATE BY OTHERS
	RELOCATE BY PROPERTY OWNER
	REMOVE BY CONTRACTOR
	REMOVE BY TRAFFIC CONTRACTOR
	REMOVE BY OTHERS
	SAFETY END SECTION
	UNDERDRAIN / LENGTH
	UNDERDRAIN OUTLET PIPE

LANDSCAPING	
	LANDSCAPE PLANTINGS
	SHRUBBERY
	CONIFEROUS TREE
	DECIDUOUS TREE

TRAFFIC	
	ITMS CONDUIT
	SIGNAL CONDUIT
	CONDUIT JUNCTION WELL
	LUMINAIRE
	PAVEMENT MARKINGS
	PAVEMENT STRIPING
	TRAFFIC SIGN

PAVEMENT SECTION(S)	
	DEPTH VARIES, SUPERPAVE, TYPE C
	2" SUPERPAVE, TYPE C 8" PORTLAND CEMENT CONCRETE PAVEMENT
	MILL HOT-MIX TO EXISTING CONCRETE BASE OVERLAY WITH MINIMUM OF 2" CONCRETE, SUPERPAVE, TYPE C

EROSION & SEDIMENT CONTROL	
	COMPOST FILTER LOG
	COMPOST FILTER LOG / LENGTH
	DEWATERING BAG
	DEWATERING BASIN
	EARTH DIKE
	INLET SEDIMENT CONTROL
	PERIMETER DIKE/SWALE
	PORTABLE SEDIMENT TANK
	SANDBAG DIKE
	SANDBAG DIVERSION
	STONE CHECK DAM
	STABILIZED CONSTRUCTION ENTRANCE
	SILT FENCE / LENGTH
	SILT FENCE
	REINFORCED SILT FENCE / LENGTH
	REINFORCED SILT FENCE
	SUPER SILT FENCE / LENGTH
	SUPER SILT FENCE
	SUMP PIT
	SEDIMENT TRAP / NUMBER
	SEDIMENT TRAP
	SEDIMENT TRAP WITH INLET AS OUTLET
	SEDIMENT TRAP PIPE OUTLET
	STILLING WELL
	TEMPORARY SWALE
	TEMPORARY SLOPE DRAIN
	TURBIDITY CURTAIN / LENGTH
	TURBIDITY CURTAIN

UTILITY COMPANY FACILITIES	
	COMCAST CABLE
	DELMARVA POWER-ELECTRIC
	VERIZON - FIBER OPTIC

ADDENDA / REVISIONS

NOT TO SCALE

BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK

CONTRACT  
T201607602  
COUNTY  
SUSSEX

BRIDGE NO.  
**3-162**  
DESIGNED BY: S. WEAVER  
CHECKED BY: S. WALLS

LEGEND

SECTION  
BR  
SHEET NO.  
4

## GENERAL NOTES

1. THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS", DATED AUGUST 2016 AND THE DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD CONSTRUCTION DETAILS", DATED 2018, INCLUDING ALL REVISIONS UP TO THE DATE OF ADVERTISEMENT.

2. ELECTRONIC PROJECT FILES THAT WILL BE MADE AVAILABLE TO THE AWARDED CONTRACTOR, INCLUDE:

( )	NONE
( )	ASCII DATA FILES WITH COORDINATES AND ELEVATIONS FOR PROPOSED POINTS AS SELECTED BY THE ENGINEER.
( X )	ALL PLAN SHEETS, IN PDF FORMAT.
( )	EXISTING DIGITAL TERRAIN MODEL, IN .DTM FILE FORMAT, COMPATIBLE WITH SOFTWARE CURRENTLY USED BY DELDOT.
( )	PROPOSED DIGITAL TERRAIN MODEL, IN .DTM FILE FORMAT, COMPATIBLE WITH SOFTWARE CURRENTLY USED BY DELDOT.
( )	DESIGN FILE, IN .DGN FILE FORMAT, CONTAINING ONLY THE PROPOSED 3D TRIANGLES OF THE PROPOSED DIGITAL TERRAIN MODEL (DTM).

NOTE: THE DOCUMENT ENTITLED "RELEASE FOR DELIVERY OF DOCUMENTS IN ELECTRONIC FORM TO A CONTRACTOR" MUST BE SIGNED BY ALL PARTIES PRIOR TO THE DELIVERY OF ANY ELECTRONIC PROJECT FILES.

3. PROJECT FILES THAT WILL BE MADE AVAILABLE TO THE CONTRACTOR, INCLUDE:

( X )	CROSS SECTIONS (WILL BE MADE AVAILABLE TO THE AWARDED CONTRACTOR)
( X )	RIGHT-OF-WAY PLANS (INCLUDED IN PLAN SET)

## PROJECT NOTES

### SECTION 100

1. ANY DAMAGE TO ITEMS NOTED TO BE RELOCATED OR RESET BY THE CONTRACTOR, SHALL BE REPAIRED OR REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE, AT THE DISCRETION OF THE ENGINEER.
2. THE CONTRACTOR WILL CONTACT THE DELAWARE TMC AT 302-659-4600 PRIOR TO ANY UNMANNED AERIAL VEHICLE (UAV) FLIGHTS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE THE FOLLOWING INFORMATION: THE REGISTRATION NUMBER OF THE UAV, THE FLIGHT TIME, LOCATION OF THE FLIGHT, THE PILOT'S NAME AND THE PILOT'S CONTACT NUMBER DURING THE FLIGHT.

### SECTION 200

3. ITEMS TO BE REMOVED UNDER ITEM #211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
- EXISTING BARRIER INCLUDING BOTH CONCRETE AND METAL RAIL SECTIONS
  - EXISTING SIDEWALK ACROSS BRIDGE
  - EXISTING PRESTRESSED BEAMS
  - EXISTING BEARING PADS
  - EXISTING APPROACH SLABS
  - REMOVE AND RE-SET FENCE ON PARCEL 2-R WHERE IT INTERFERES WITH PROPOSED CONSTRUCTION. IF DAMAGED DURING REMOVAL AND STORAGE, REPLACE FENCE IN-KIND.
  - EXISTING WATER LINE BETWEEN VALVES AT APPROXIMATELY STA. 2+52 AND STA. 3+68

### SECTION 600

4. PORTLAND CEMENT CONCRETE:  
USE PORTLAND CEMENT CONCRETE FOR CAST-IN-PLACE ELEMENTS AS FOLLOWS:  
(f'c = 28-DAY COMPRESSIVE STRENGTH)  
CLASS A - ITEM #610008 - P.C.C. MASONRY, PARAPET, CLASS A, (f'c = 4.5 ksi) (BARRIER)  
CLASS D - ITEM #610016 - P.C.C. MASONRY, CLASS D, (f'c = 4.5 ksi) (SIDEWALK & BACKWALL)  
- CHAMFER ALL EXPOSED EDGES 3/4" X 3/4" UNLESS OTHERWISE NOTED.  
- DO NOT SLIP-FORM BARRIERS, UNLESS OTHERWISE APPROVED BY THE DEPARTMENT.

SUPPLY THE CONCRETE FOR THE INTEGRATED APPROACH AND PARAPETS THAT INCLUDES A SHRINKAGE-REDUCING/COMPENSATING ADMIXTURE. THE ADMIXTURE MAY BE SUPPLIED BY ONE PRODUCT THAT PROVIDES BOTH EXPANSION AND PORE WATER SURFACE TENSION OR TWO SEPARATE PRODUCTS EACH ADDED AT DOSAGE RECOMMENDED BY MANUFACTURER'S TECHNICAL DATA SHEETS AND HAVING THE FOLLOWING CHARACTERISTICS:

- (a.) DESIGNED TO PROVIDE BOTH OF THE FOLLOWING CHARACTERISTICS:  
(i.) EXPANDS AT A RATE THAT CLOSELY COMPENSATES FOR THE SHRINKAGE OF THE CONCRETE MIX.  
(ii.) REDUCES THE CAPILLARY SURFACE TENSION OF THE CONCRETE PORE WATER.  
(b.) PROVIDES AT LEAST 80% SHRINKAGE REDUCTION AS MEASURED AND DOCUMENTED BY FIELD PERFORMANCE.  
(c.) FORMULATED FOR USE IN FREEZING AND THAWING WEATHER.

ALL ADMIXTURES MUST BE COMPATIBLE WITH ALL OTHER CONCRETE-MIX DESIGN CONSTITUENTS. CALCIUM CHLORIDE IS NOT PERMITTED; NO CHEMICAL ADMIXTURES WHICH CONTAIN MORE THAN 0.1% CHLORIDE BY WEIGHT, WILL BE PERMITTED FOR USE. DOSAGE RATE AND MIXING SEQUENCE WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

USE PORTLAND CEMENT CONCRETE FOR PRECAST ELEMENTS AS FOLLOWS:  
(f'c = 28-DAY COMPRESSIVE STRENGTH)  
(f'ci = COMPRESSIVE STRENGTH AT INITIAL PRESTRESS)

- PRESTRESSED:  
ITEM #612021 - PRESTRESSED ERINFORCED CONCRETE MEMBERS, VOIDED SLABS f'c = 8 ksi; f'ci = 6 ksi  
- DESIGN ASSUMPTIONS: THE PRESTRESSED CONCRETE BEAMS WERE DESIGNED FOR SEVERE CORROSIVE CONDITIONS.  
- CHAMFER ALL EXPOSED EDGES 3/4" X 3/4" UNLESS OTHERWISE NOTED.

5. BAR REINFORCEMENT:  
- REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615), GRADE 60.  
- REINFORCING STEEL SHALL HAVE A 3" CLEAR COVER IF CAST AGAINST EARTH OR A 2" CLEAR COVER ELSEWHERE, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
- ALL REINFORCING STEEL SHALL BE PROTECTED WITH FUSION BONDED EPOXY. EPOXY COATED REINFORCING STEEL SHALL CONFORM TO ASTM A775.  
- ANY FIELD CUTTING OR FIELD BENDING MUST BE APPROVED BY THE ENGINEER. PAYMENT SHALL BE INCIDENTAL TO THE BAR REINFORCEMENT ITEM.  
- GALVANIZED REINFORCING STEEL MAY BE SUBSTITUTED FOR EPOXY-COATED REINFORCING STEEL AT NO ADDITIONAL COST TO DELDOT WITH APPROVAL OF THE BRIDGE DESIGN ENGINEER.  
- WELDING OF REINFORCEMENT DURING FABRICATION OR CONSTRUCTION IS NOT PERMITTED UNLESS SPECIFIED.

6. CONCRETE SEALER:  
- REFER TO ABUTMENT, WINGWALL, AND CHEEKWALL DETAILS FOR CONCRETE SEALER LIMITS ON SHEET 11 - ABUTMENT DETAILS. PAYMENT UNDER ITEM #613000 - EPOXY CONCRTE SEALER.  
- REFER TO PILE BENT DETAILS DETAILS FOR CONCRETE SEALER LIMITS ON SHEET 12 - PILE BENT DETAILS. PAYMENT UNDER ITEM #613000 - EPOXY CONCRTE SEALER.  
- REFER TO PARAPET SECTION DETAILS FOR CONCRETE SEALER LIMITS ON SHEET 18 - BRIDGE PARAPET DETAILS. PAYMENT UNDER ITEM #613001 - SILICONE BASED CONCRETE SEALER.

### SECTION 700

7. SIDEWALK SAWCUTTING:  
WHERE PROPOSED CONCRETE SIDEWALK IS CONSTRUCTED TO MEET EXISTING SIDEWALK, THE EXISTING SIDEWALK SHALL BE SAWCUT AT THE TIE-IN POINT OR MEET THE NEAREST EXISTING SIDEWALK JOINT. ALL SAW CUTTING SHALL BE FULL DEPTH, UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM #762001 - SAWCUTTING, CONCRETE, FULL DEPTH.

8. PAVEMENT SAWCUTTING:  
ALL PAVED AREAS TO BE RECONSTRUCTED OR WIDENED SHALL BE SAW CUT AT THE POINT WHERE THE NEW PAVEMENT IS TO TIE INTO THE EXISTING PAVEMENT. SEE CONSTRUCTION PLAN SHEET FOR FURTHER DETAIL AND LOCATIONS OF SAW CUTTING. TO BE PAID FOR UNDER ITEM #762000 - SAW CUTTING, BITUMINOUS CONCRETE AND ITEM #762001 - SAW CUTTING, CONCRETE FULL DEPTH.

### SECTION 800

9. MAINTENANCE OF VEHICULAR AND PEDESTRIAN TRAFFIC:  
MAINTENANCE OF VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE AS PER THE VEHICULAR AND PEDESTRIAN DETOUR PLANS. THE DETOURS SHALL REMAIN IN EFFECT UNTIL THE FINAL WARM MIX PAVEMENT IS PLACED. ALL MOT ITEMS WITH THE EXCEPTION OF CHANGEABLE MESSAGE BOARDS (ITEM #803001) AND FLAGGERS (ITEM #811009 AND #811018) WILL BE INCLUDED IN ITEM #801500 - MAINTENANCE OF TRAFFIC, ALL INCLUSIVE.

### SECTION 900

10. THIS PROJECT IS COVERED UNDER AN NPDES GENERAL PERMIT FOR CONSTRUCTION. UNDER THE GENERAL PERMIT, COMPLIANCE WITH DELDOT'S APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLANS WILL CONSTITUTE COMPLIANCE WITH THE NPDES INDUSTRIAL PERMITTING REQUIREMENTS FOR THIS CONSTRUCTION PROJECT. A COPY OF THE NPDES GENERAL PERMIT AND NOI IS KEPT ON FILE IN EACH OF THE CONSTRUCTION OFFICES AND THE DEPARTMENT'S STORMWATER SECTION. A COPY OF THE GENERAL PERMIT OR THE NOI CAN BE OBTAINED UPON REQUEST FROM EITHER THE DEPARTMENT'S STORMWATER ENGINEER OR THE APPROPRIATE CONSTRUCTION ENGINEER.

## MISCELLANEOUS

11. DESIGN SPECIFICATIONS:  
2017 DELDOT BRIDGE DESIGN MANUAL.  
2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH 2015 & 2016 INTERIM REVISIONS. U.S. CUSTOMARY UNITS.

12. LOADING:  
LIVE LOAD: AASHTO HL-93  
DEAD LOAD: INCLUDES 25 PSF FOR FUTURE WEARING SURFACE.

13. EXISTING CONDITIONS:  
- ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, GEOMETRY, AND ELEVATIONS AS NECESSARY PRIOR TO ORDERING ANY MATERIALS AND COMMENCING CONSTRUCTION TO ENSURE PROPER FIT OF THE PROPOSED CONSTRUCTION. PAYMENT SHALL BE INCIDENTAL TO ITEM #763501 - CONSTRUCTION ENGINEERING.  
- THE CONTRACTOR SHALL NOT CONSIDER ANY OF THE DATA ON THE EXISTING STRUCTURE SUPPLIED IN THE ORIGINAL DESIGN DRAWINGS OR MADE AVAILABLE BY THE DEPARTMENT OR ITS AUTHORIZED AGENTS AS POSITIVE REPRESENTATIONS OF ANY OF THE CONDITIONS THAT WILL BE ENCOUNTERED IN THE FIELD.  
- AS-BUILT PLANS OF THE EXISTING STRUCTURE ARE AVAILABLE AND MAY BE OBTAINED THROUGH THE DEPARTMENT AT NO ADDITIONAL COST. THE FOLLOWING LIST REPRESENTS CONTRACTS RELATED TO EXISTING BR 3-162. THE LIST INCLUDES CONTRACT NUMBER, APPROXIMATE DATE OF CONSTRUCTION, AND A DESCRIPTION OF THE PRIMARY SCOPE OF WORK.  
- CONTRACT NO.: 64-01-015, 1966, ORIGINAL BRIDGE CONSTRUCTION

14. THE CONTRACTOR SHALL NOTIFY DART FIRST STATE AT DOT\_DETOURS@DELAWARE.GOV AT LEAST 14 DAYS PRIOR TO THE START OF ANY DETOURS OR CONSTRUCTION, AND DOT\_DTC\_PROJECTDEVELOPMENT@DELAWARE.GOV AT SUCH TIME THE FACILITY IS COMPLETED AND OPERABLE FOR TRANSIT OPERATIONS. FOR EMERGENCY DETOUR INFORMATION ONLY, PLEASE CONTACT DTC'S CHIEF SCHEDULER AT 302-576-6019.

15. THE CONTRACTOR WILL MAINTAIN ACCESS TO DRIVEWAYS THROUGHOUT THE DURATION OF THE PROJECT. APPROXIMATE LOCATIONS OF DRIVEWAYS ARE LEFT STA. 5+00 AND RIGHT STA. 5+25. THE CONTRACTOR WILL NOTIFY THE PROPERTY OWNERS OF WORK TEMPORARILY LIMITING ACCESS AT LEAST A WEEK PRIOR TO THE WORK BEGINNING. PEDESTRIAN ACCESS TO PROPERTIES WILL BE MAINTAINED UNIMPEDED THROUGHOUT THE DURATION OF THE PROJECT.

16. THE CONTRACTOR WILL VERIFY LOCATION OF UNDERGROUND ELECTRIC AND SPRINKLER SYSTEM ASSOCIATED WITH PARCEL 1-L. ANY DAMAGE TO UNDERGROUND UTILITIES AS A RESULT OF CONTRACTOR ACTIVITIES WILL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.

17. BRIDGE SAFETY FENCE:  
ALL POSTS, BRACES, FITTINGS, CHAIN LINK FENCING, AND HARDWARE SHALL BE PVC COATED. NUTS, BOLTS, AND WASHERS SHALL ALSO BE PVC COATED AND TOUCHED UP AFTER INSTALLATION. PRECOATED LONGITUDINAL RAILS, IF CUT, SHALL HAVE THE CUT END COATED WITH PVC TOUCH UP MATERIAL SUPPLIED BY THE MANUFACTURER PRIOR TO ERECTION. PVC COLOR FOR ALL ELEMENTS OF FENCE SHALL BE BLACK UNLESS OTHERWISE NOTED. PAYMENT FOR PVC COATING SHALL BE INCIDENTAL TO ITEM #727007 - BRIDGE SAFETY FENCE, TYPE I.

18. OVERNIGHT WORK HOURS ARE PROHIBITED FROM 8:00PM - 6:00AM UNLESS A NIGHT WORK WAIVER IS APPROVED BY THE DEPARTMENT.

## LOAD RATING SUMMARY

DESIGN VEHICLE	RATING FACTOR	RATING WEIGHT (TON)	CONTROLLING MEMBER	CONTROLLING POINT	LOAD EFFECT
HL-93 TRUCK (INVENTORY)	1.93	69.59	INTERNAL GIRDER G2	106	STR. I - L. REINF.
HL-93 TANDEM (INVENTORY)	1.93	48.33	INTERNAL GIRDER G2	105	STR. I - L. REINF.
HL-93 TRUCK TRAIN (INVENTORY)	N/A	N/A	N/A	N/A	N/A
HS-20 (INVENTORY)	2.29	82.50	INTERNAL GIRDER G2	106	STR. I - L. REINF.
HL-93 TRUCK (OPERATING)	2.49	89.58	INTERNAL GIRDER G2	106	STR. I - L. REINF.
HL-93 TANDEM (OPERATING)	2.49	62.21	INTERNAL GIRDER G2	105	STR. I - L. REINF.
HL-93 TRUCK TRAIN (OPERATING)	N/A	N/A	N/A	N/A	XXXXXX
HS-20 (OPERATING)	2.96	106.39	INTERNAL GIRDER G2	106	STR. I - L. REINF.
DE S220 & LEGAL-LANE (LEGAL)	3.72	74.45	INTERNAL GIRDER G2	105	SER. III - STRESS
DE S335 & LEGAL-LANE (LEGAL)	2.00	70.11	INTERNAL GIRDER G2	105	SER. III - STRESS
DE S437 & LEGAL-LANE (LEGAL)	1.90	69.48	INTERNAL GIRDER G2	105	SER. III - STRESS
DE T330 & LEGAL-LANE (LEGAL)	3.60	107.86	INTERNAL GIRDER G2	105	SER. III - STRESS
DE T435 & LEGAL-LANE (LEGAL)	2.92	102.07	INTERNAL GIRDER G2	105	SER. III - STRESS
DE T540 & LEGAL-LANE (LEGAL)	2.65	106.09	INTERNAL GIRDER G2	105	SER. III - STRESS

NOTE: LOAD RATING INCLUDES FUTURE WEARING SURFACE AS NOTED IN THE PLANS.

ADDENDA / REVISIONS

NOT TO SCALE

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT  
T201607602

COUNTY  
SUSSEX

BRIDGE NO.

**3-162**

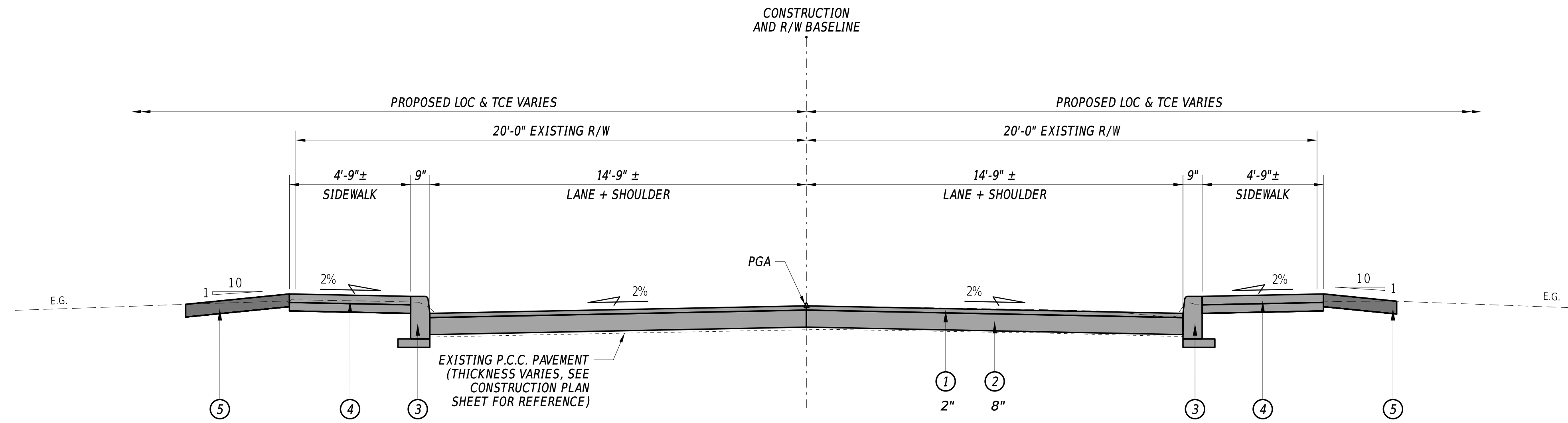
DESIGNED BY: S. WEAVER

CHECKED BY: S. WALLS

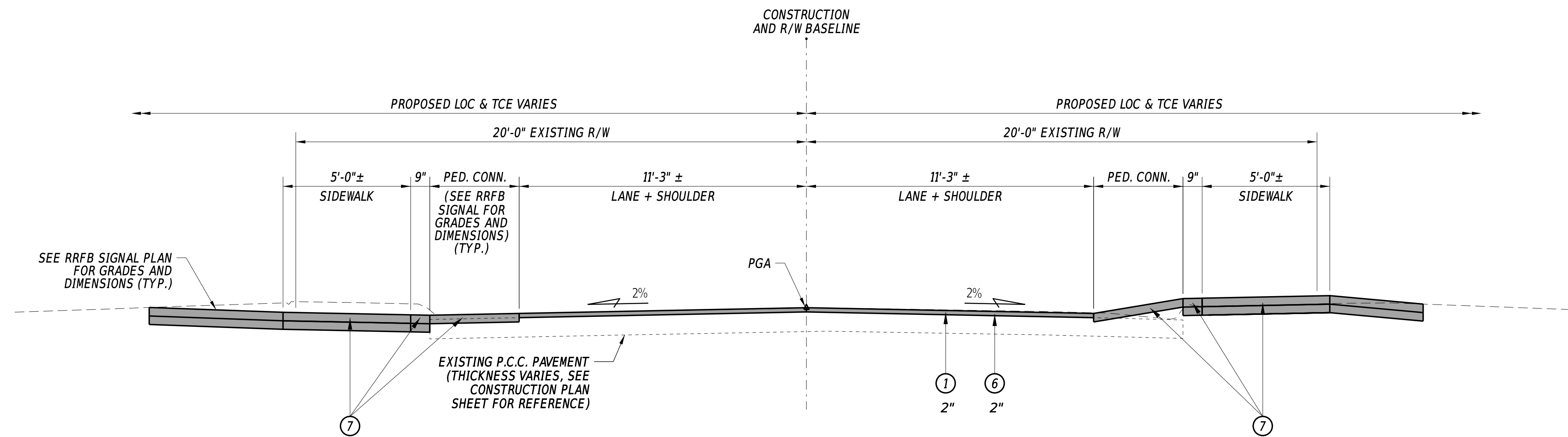
NOTES

SECTION  
BR

SHEET NO.  
5



TYPICAL ROADWAY SECTION



TYPICAL PEDESTRIAN CROSSING AND MILL AND OVERLAY SECTION

**LEGEND**

- ① ITEM #401005 - SUPERPAVE, TYPE C, PG 64-22 (CARBONATE STONE)
- ② ITEM #501001 - PORTLAND CEMENT CONCRETE PAVEMENT, 8"
- ③ ITEM #701013 - P.C.C. CURB, TYPE 1-8 AND  
4" GRADED AGGREGATE BASE COURSE, TYPE B
- ④ ITEM #705001 - P.C.C. SIDEWALK, 4" AND  
4" GRADED AGGREGATE BASE COURSE, TYPE B
- ⑤ ITEM #908004 - TOPSOIL, 6" DEPTH  
ITEM #908019 - PERMANENT GRASS SEEDING, STREAMBANK  
ITEM #908020 - EROSION CONTROL BLANKET MULCH
- ⑥ ITEM #760010 - PAVEMENT MILLING, BITUMINOUS CONCRETE PAVEMENT
- ⑦ ITEM #705009 - PEDESTRIAN CONNECTION, TYPE 2, 3, AND/OR 4

MATERIAL	LIFT THICKNESS	
	MINIMUM	MAXIMUM
SUPERPAVE, TYPE 'C'	1.25"	2"
SUPERPAVE, TYPE 'B'	2.25"	4"
SUPERPAVE BCBC	3"	6"
GRADED AGGREGATE BASE COURSE	-	8"

ADDENDA / REVISIONS

NOT TO SCALE

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT  
T201607602  
COUNTY  
SUSSEX

BRIDGE NO. **3-162**  
DESIGNED BY: S. WEAVER  
CHECKED BY: S. WALLS

TYPICAL SECTION

SECTION  
BR  
SHEET NO.  
6



HORIZONTAL / VERTICAL CONTROL DATA					
POINT NO.	STATION	OFFSET	NORTHING	EASTING	ELEV.
TP #5	2+39.06	-25.75	203285.9716	612373.9081	4.50
TP #6	0+05.20	-19.69	203059.4962	612315.2772	6.44
TP #7	2+79.40	111.52	203284.9061	612516.8723	3.81
TP #8	5+73.40	23.05	203591.9322	612518.2330	7.45

ROADWAY CORE SCHEDULE				
NO.	STATION	OFFSET	DESCRIPTION	
C-1	4+55.44	6.00	11" HMA, 8.5" PCC	
C-2	2+43.30	6.50	3" HMA, 8" PCC	
C-3	2+55.97	-5.50	5" HMA, 12" PCC	
C-4	3+73.59	-5.50	2" HMA, 6.5" PCC	

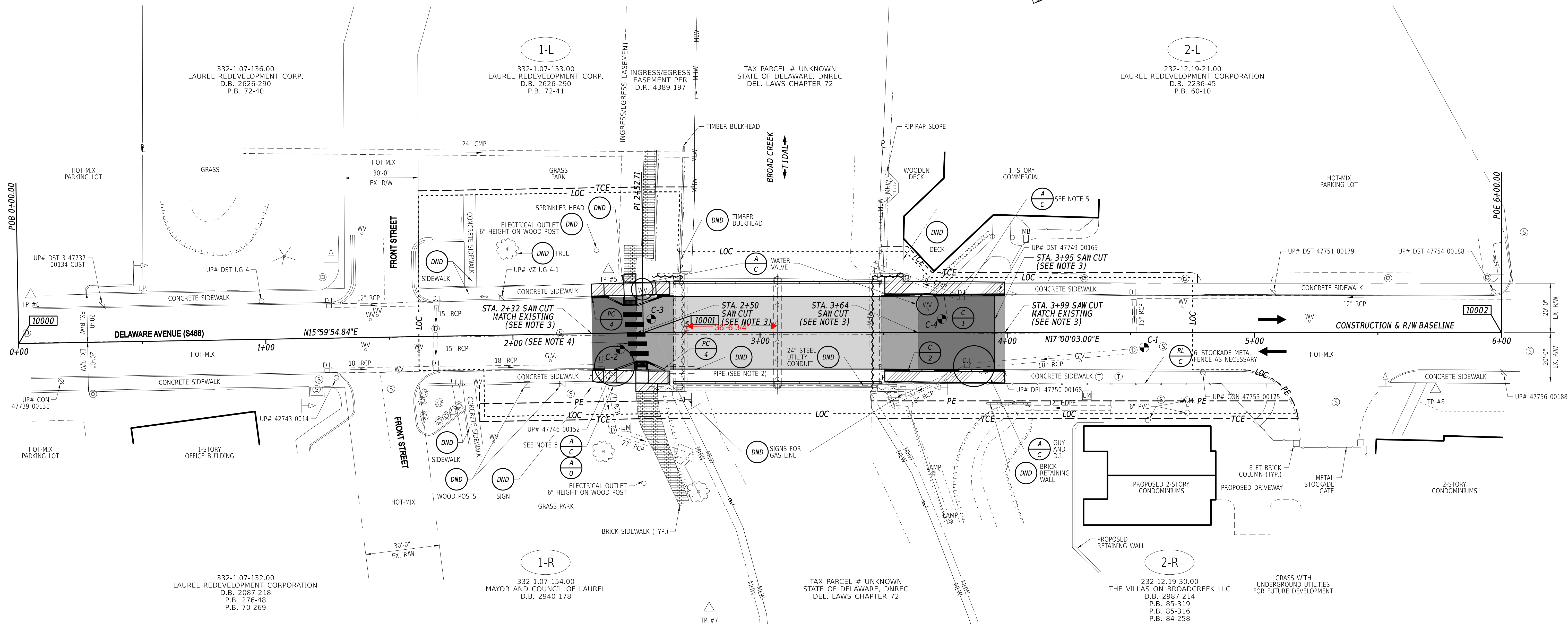
CONSTRUCTION ALIGNMENT CONTROL				
POINT NO.	STATION	OFFSET	NORTHING	EASTING
10000	0+00.00	0.00	203049.07	612332.77
10001	2+52.71	0.00	203291.99	612402.42
10002	6+00.00	0.00	203624.11	612503.96

**DATUM REFERENCE:**

HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83 / 2011 / EPOCH 2010.00).

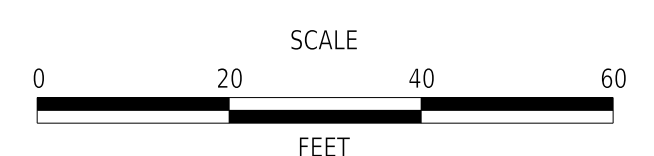
VERTICAL - THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88 BASED ON MODELED GEOID 12A).

CURB SCHEDULE		
NO.	ITEM DESCRIPTION / TYPE	LENGTH
C-1	P.C.C. CURB, TYPE 1-8	50.00
C-2	P.C.C. CURB, TYPE 1-8	50.00



- CONSTRUCTION NOTES:**
- TRANSITION PROPOSED CURB FROM TYPE 1-8 ON BRIDGE TO EXISTING CURB HEIGHT OVER 10 FT LENGTH.
  - SIZE AND LOCATION OF PIPE THROUGH SOUTH ABUTMENT IS APPROXIMATELY 24" WITH LID PROTRUDING THROUGH SHEET PILE BELOW ABUTMENT AND IS SHOWN FOR REFERENCE ONLY. TO BE VERIFIED BY CONTRACTOR.
  - SAW CUT FULL DEPTH OF HOT-MIX PAVEMENT AT STA. 2+32, 2+50, 3+64, 3+95, AND 3+99 PAID UNDER ITEM #762000 - SAW CUTTING, BITUMINOUS CONCRETE. CONCRETE ROAD BOX SHALL REMAIN IN PLACE AND WILL NOT BE CUT AT STA. 2+32. CONCRETE ROAD BOX WILL BE SAW CUT FULL DEPTH AT STA. 2+50, 3+64, 3+95, AND 3+99 PAID UNDER ITEM #762001 - SAW CUTTING, CONCRETE FULL DEPTH. CONCRETE PAVEMENT BETWEEN STA. 3+95 AND 3+99 TO BE REMOVED TO ACCOMMODATE UTILITY RELOCATION. SEE CONSTRUCTION SEQUENCE SHEET AND UTILITY RELOCATION PLAN SHEET FOR FURTHER INFORMATION. APPROACH SLAB SHALL BE REMOVED INCIDENTAL TO ITEM #211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS. REMOVAL OF CONCRETE PAVEMENT BETWEEN STA. 3+95 AND 3+99 SHALL BE PAID UNDER ITEM #211001 - REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK.
  - PERMANENT PAVEMENT STRIPING NOT SHOWN CONTINUOUSLY IN CROSS WALK FOR CLARITY. REFER TO THE RECTANGULAR RAPID FLASHING BEACON (RRFB) SIGNAL PLAN DELAWARE AVENUE (ROAD 466) @ EAST FRONT STREET SHEET FOR FURTHER INFORMATION REGARDING THE PERMANENT PAVEMENT STRIPING, RRFB INSTALLATION, PEDESTRIAN CONNECTIONS AND ASSOCIATED CROSSWALK DETAILS. CONDUIT AND ELECTRICAL WORK REQUIRED FOR THE RRFB WILL NOT BE INSTALLED UNDER THE INTEGRATED APPROACH.
  - DRAINAGE INLET TO BE ADJUST BY CONTRACTOR AS NEEDED TO CONSTRUCT SIDEWALK, CURB, PEDESTRIAN CONNECTION, AND PAVEMENT, TO BE VERIFIED BY FIELD ENGINEER, PAID UNDER ITEM #602130 - ADJUSTING AND REPAIRING EXISTING DRAINAGE INLET. DRAINAGE INLET GRATES TO BE REPLACED WITH TYPE 1 DRAINAGE INLET GRATES PAID UNDER ITEM #602100 - REPLACE DRAINAGE INLET GRATE(S). GUY TO BE ADJUSTED BY OTHERS AS NEEDED TO COMPLETE WORK ASSOCIATED WITH UTILITY RELOCATION.

ADDENDA / REVISIONS



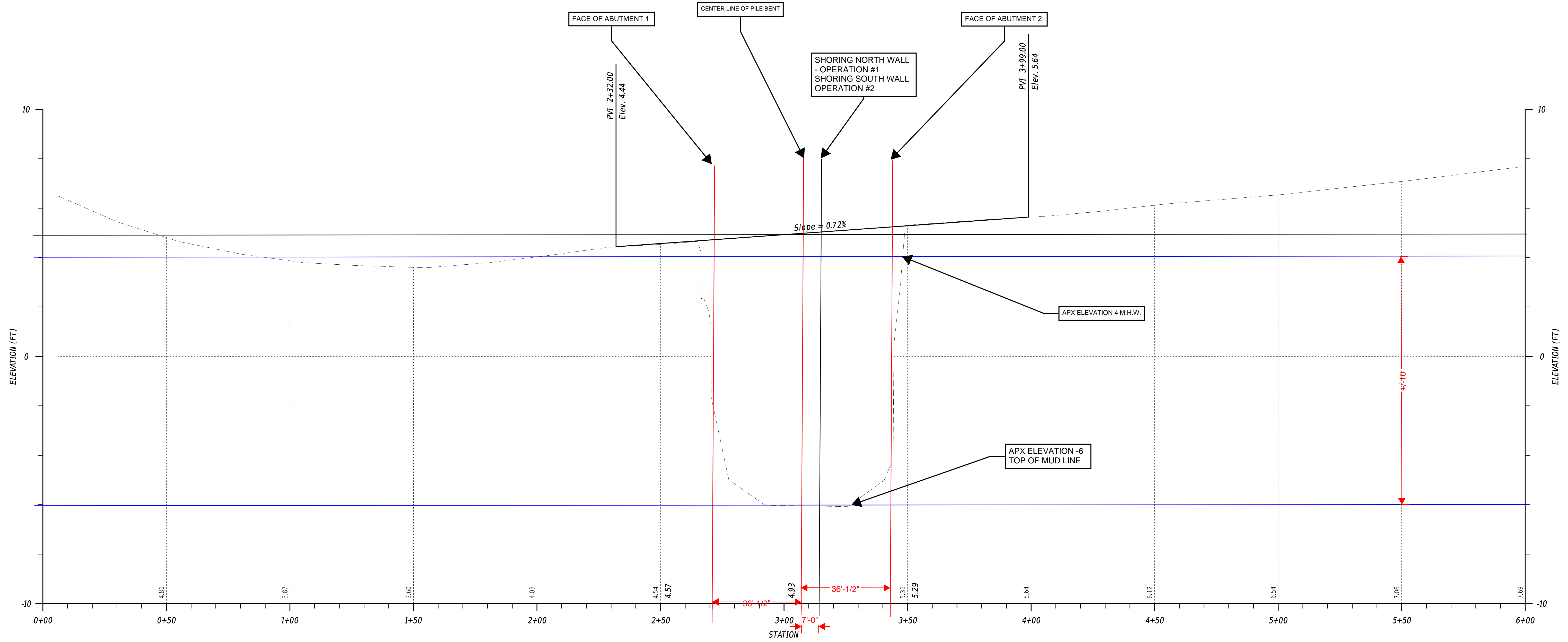
**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**CONSTRUCTION PLAN**

SECTION	BR
SHEET NO.	7

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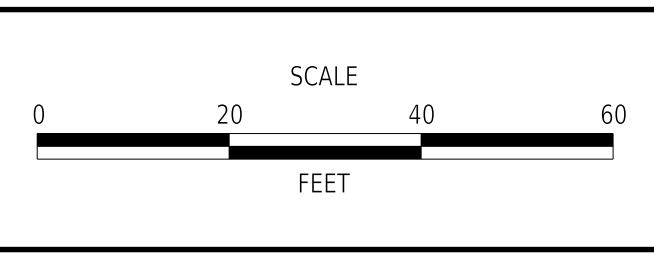


**DELAWARE AVE - S466**

NOTE: DRAINAGE PIPES NOT SHOWN FOR CLARITY.

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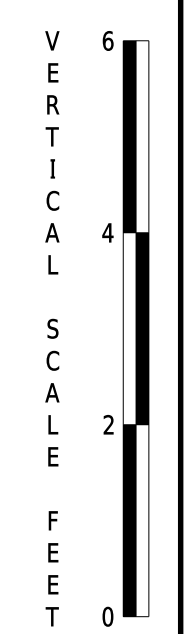
ADDENDA / REVISIONS	

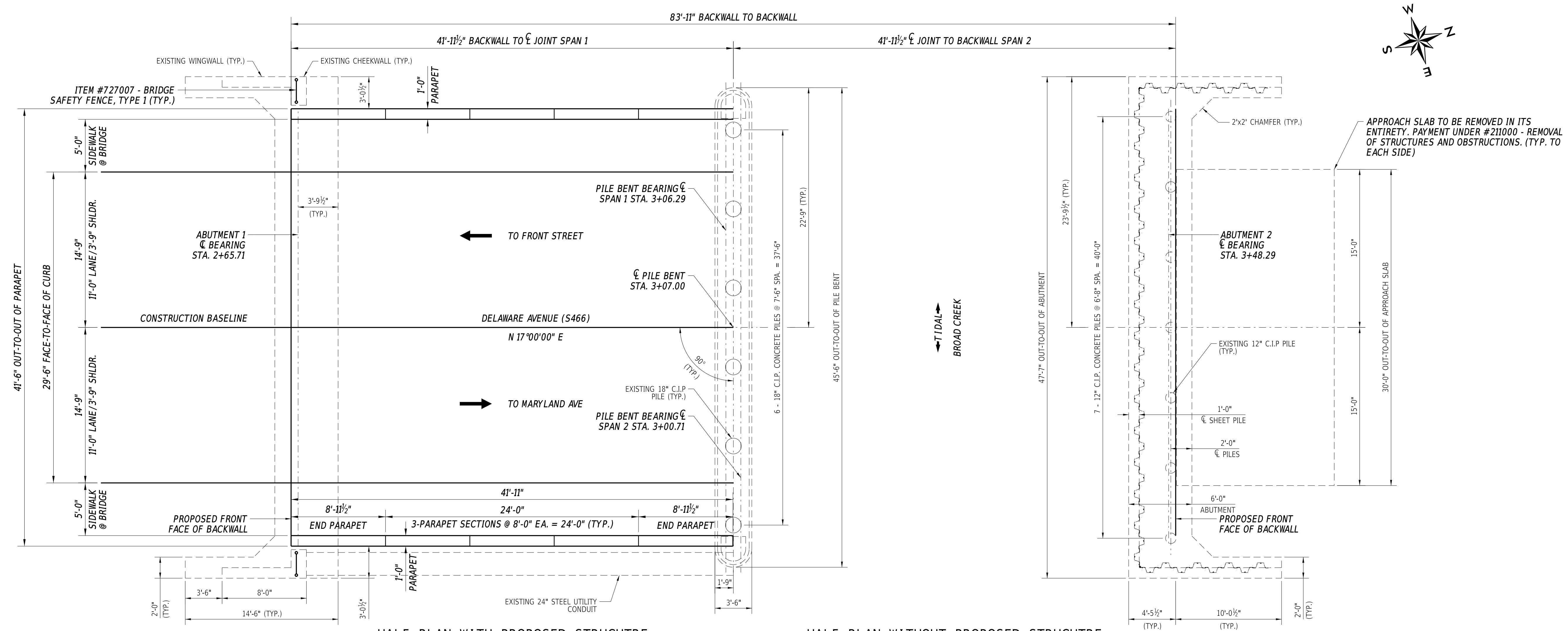
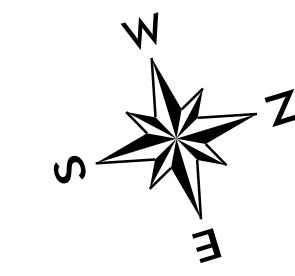


**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

<b>PROFILE</b>	SECTION
	BR
	SHEET NO.
	8



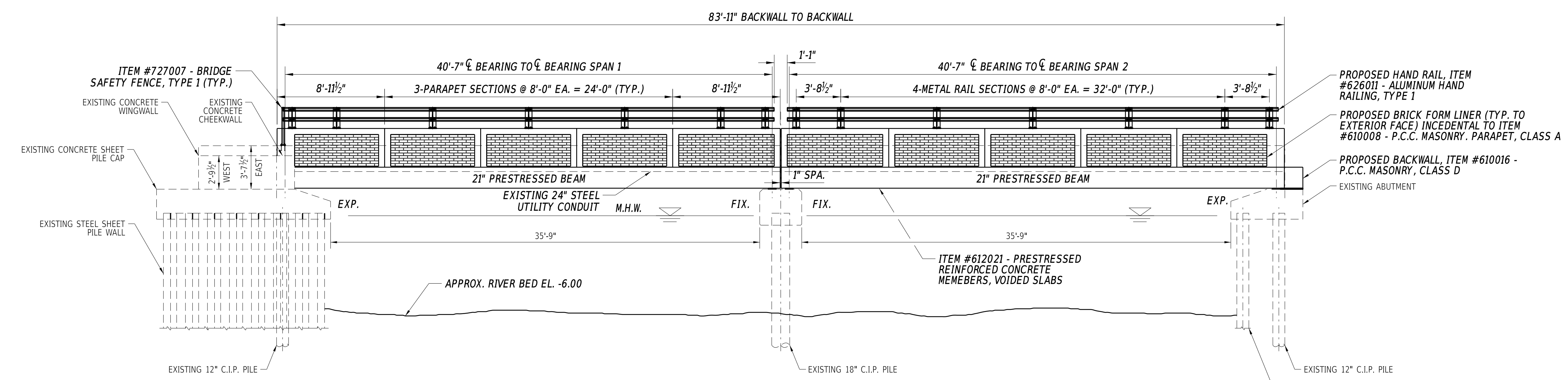


HALF PLAN WITH PROPOSED STRUCTURE

HALF PLAN WITHOUT PROPOSED STRUCTURE

PLAN

3/16" = 1' - 0"



ELEVATION

3/16" = 1' - 0"

UTILITY PIPES NOT SHOWN FOR CLARITY.

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ADDENDA / REVISIONS

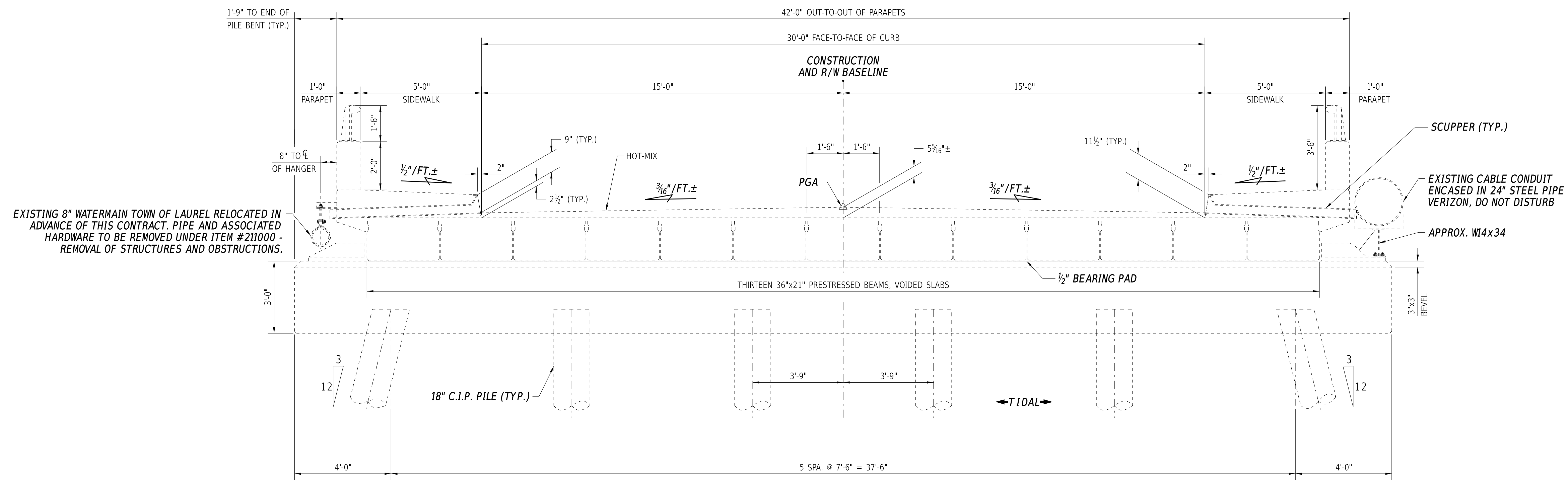
SCALE AS NOTED

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	T201607602	BRIDGE NO.	<b>3-162</b>
COUNTY	SUSSEX	DESIGNED BY:	S. WEAVER
		CHECKED BY:	S. WALLS

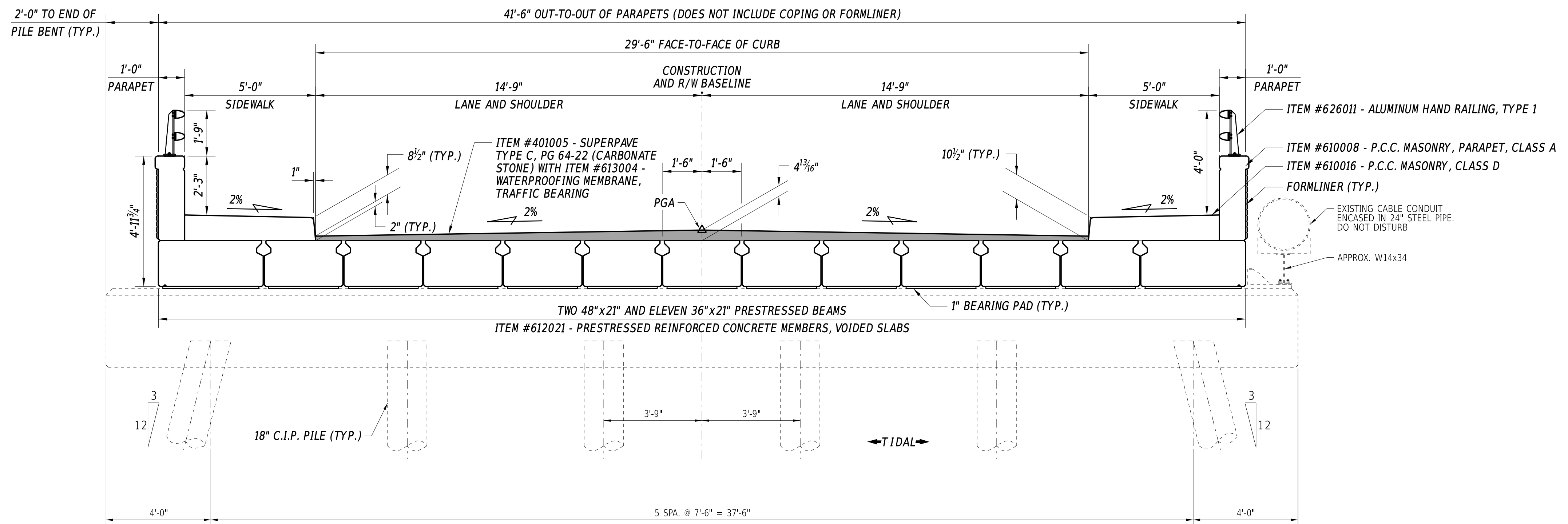
**BRIDGE PLAN  
AND ELEVATION**

SECTION	BR
SHEET NO.	9



**EXISTING TYPICAL SECTION AT PILE BENT**

3/8" = 1' - 0"



**PROPOSED TYPICAL SECTION AT PILE BENT**

3/8" = 1' - 0"

ADDENDA / REVISIONS

SCALE AS NOTED

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

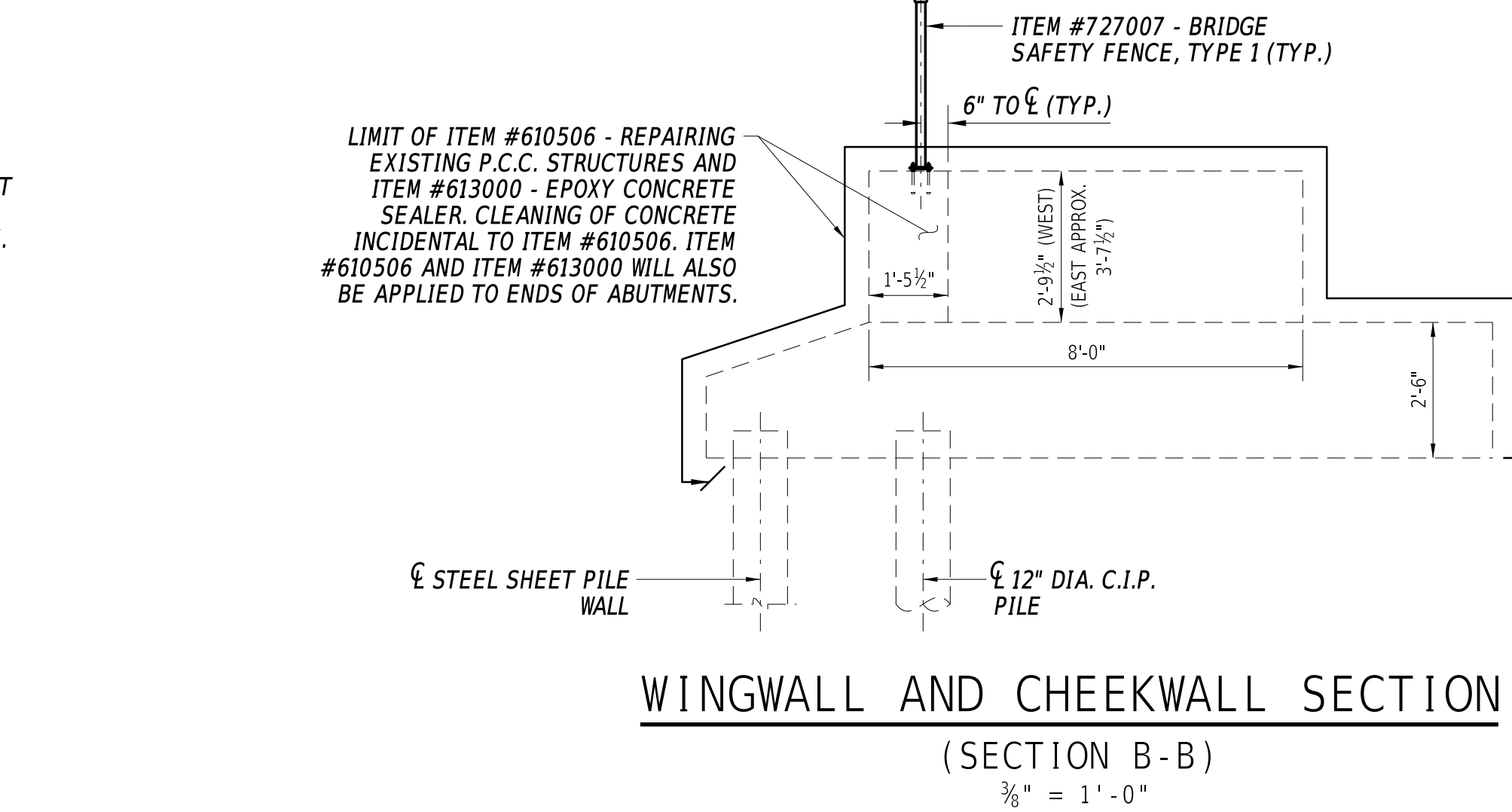
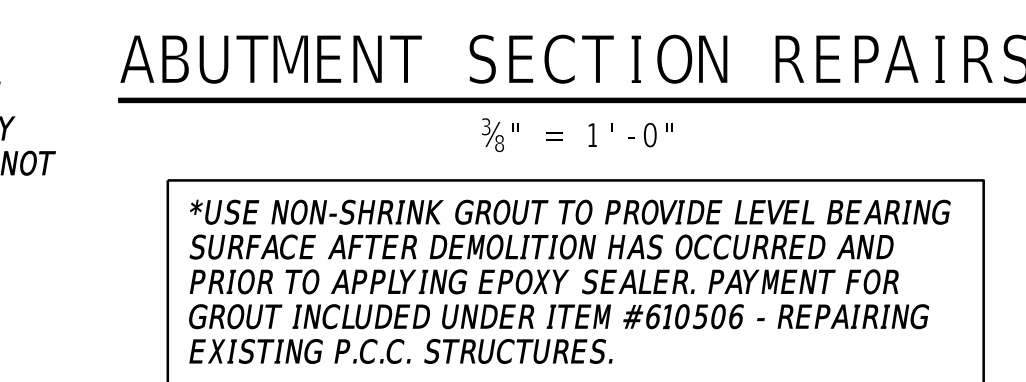
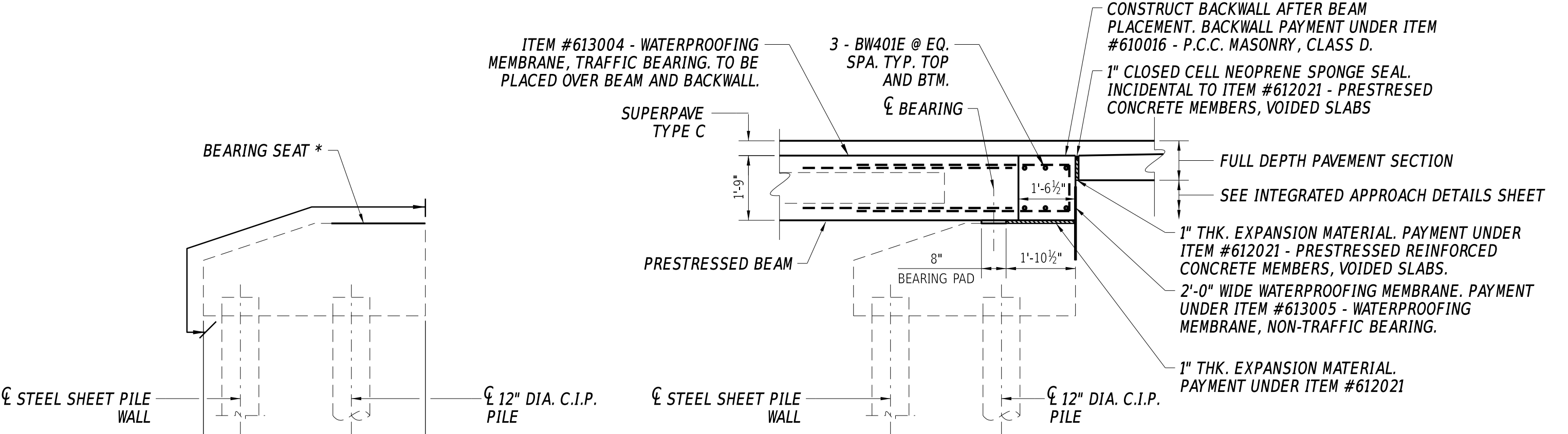
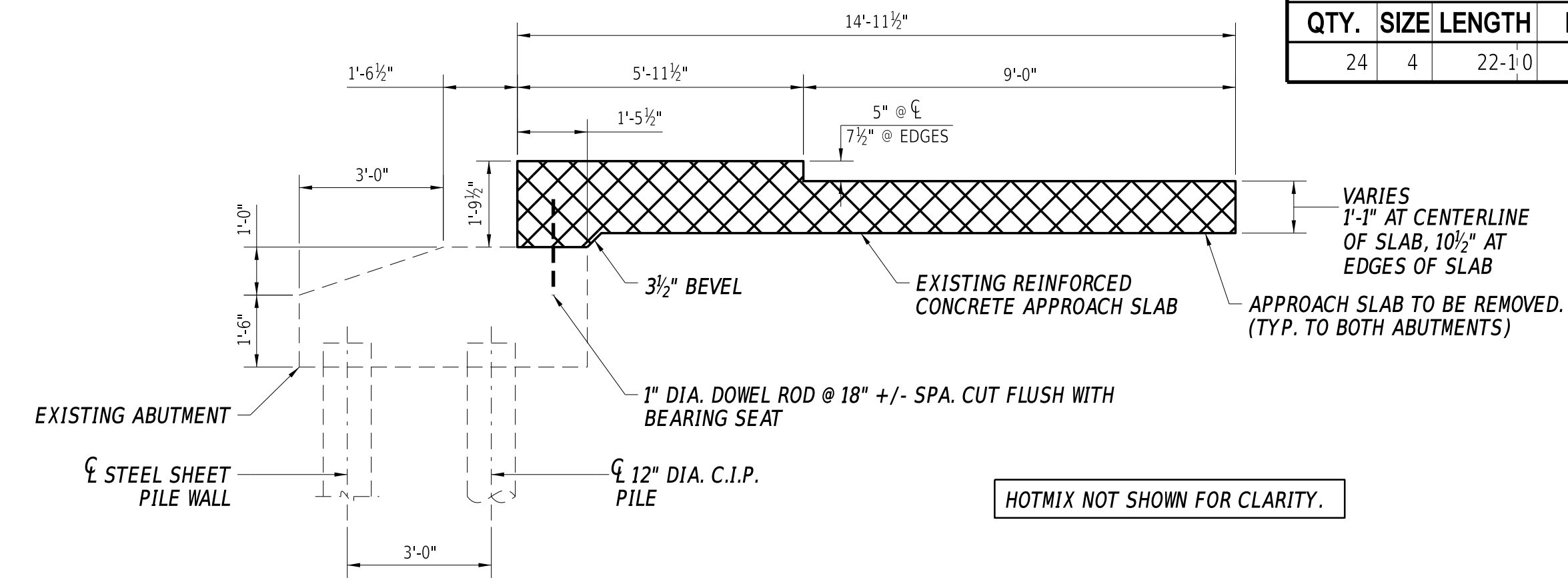
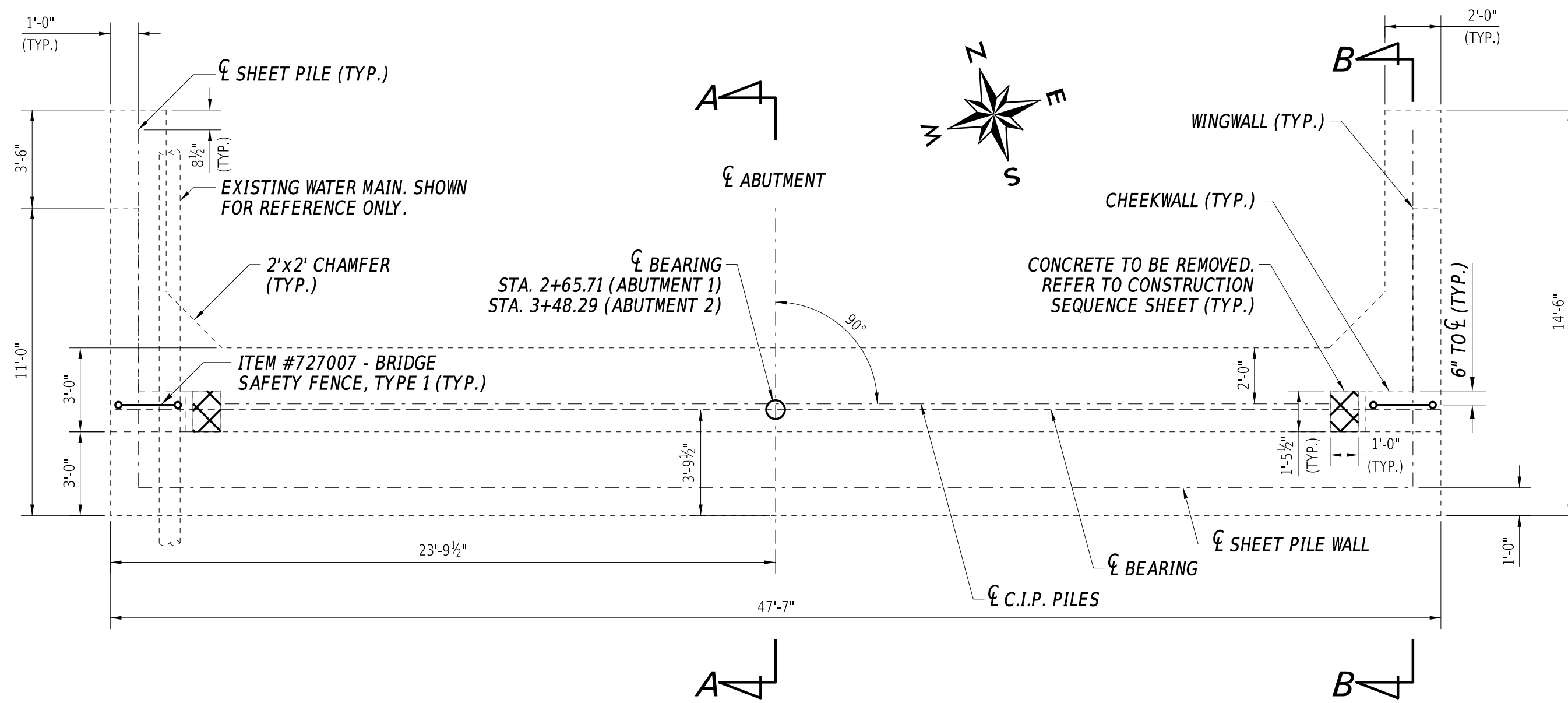
CONTRACT  
T201607602  
COUNTY  
SUSSEX

BRIDGE NO. **3-162**  
DESIGNED BY: S. WEAVER  
CHECKED BY: S. WALLS

**BRIDGE EXISTING  
AND PROPOSED SECTION**

SECTION  
BR  
SHEET NO.  
10

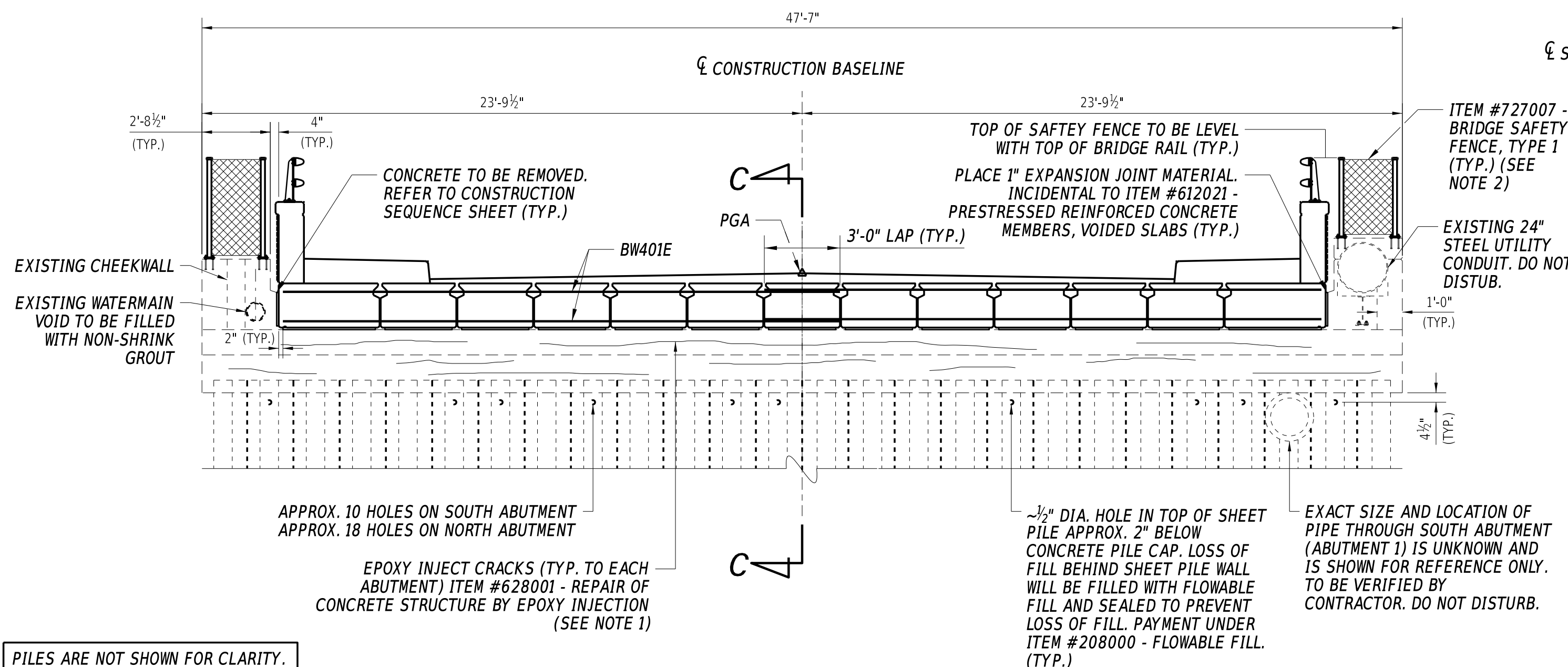
CONCRETE BACKWALL REINFORCING BAR LIST							
QTY.	SIZE	LENGTH	MARK	TYPE	B	C	D
24	4	22-1'0"	BW401E	STR.	22-1'0"		



SHEET PILE AND PILES ARE NOT SHOWN FOR CLARITY.

**LEGEND**  
 [Cross-hatched box] DENOTES AREA TO REMOVED UNDER ITEM #211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

ABUTMENT 2 SHOWN, ABUTMENT 1 ROTATED 180 DEGREES.



PILES ARE NOT SHOWN FOR CLARITY.

**ABUTMENT NOTE:**  
 1. CRACKS, SPALLS, AND DELAMINATED AREAS WERE DELINEATED ON 9/25/15 BY DELDOT BRIDGE DESIGN. THEY ARE FOR APPROXIMATE LOCATIONS AND ESTIMATE PURPOSES ONLY. ALL AREAS ALONG EACH ABUTMENT AND WINGWALL SHALL BE SOUNDED AND DELINEATED AT THE TIME OF CONSTRUCTION WITH THE APPROVAL OF THE ENGINEER TO DETERMINE REPAIR LIMITS.  
 2. FOR BRIDGE SAFETY FENCE REFER TO STANDARD DETAIL M-10.

ADDENDA / REVISIONS

SCALE AS NOTED

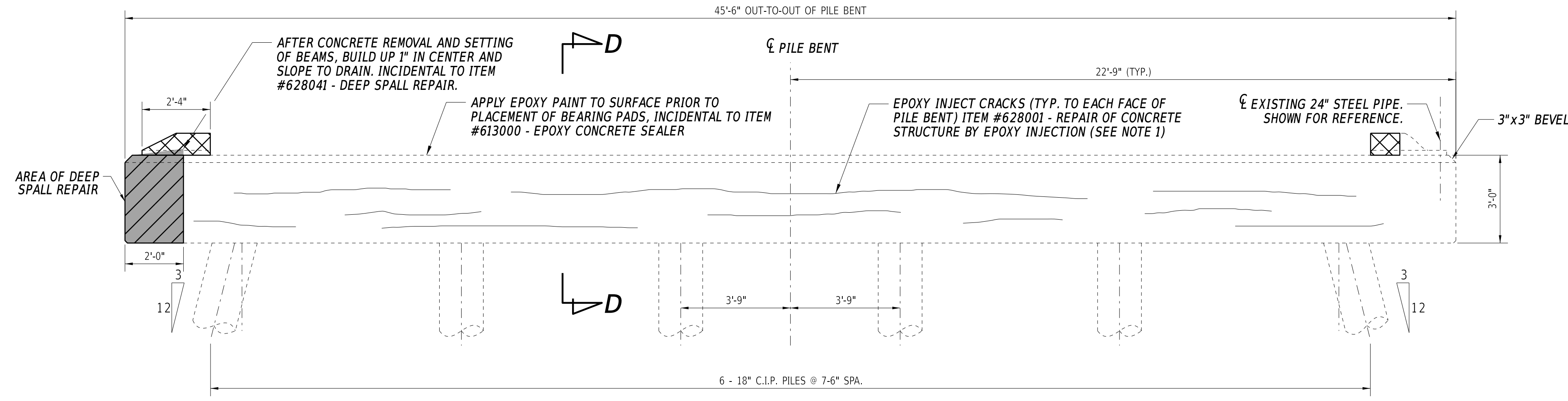
BR 3-162 ON  
 S466 DELAWARE AVE  
 OVER BROAD CREEK

CONTRACT	BRIDGE NO.	3-162
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

ABUTMENT DETAILS

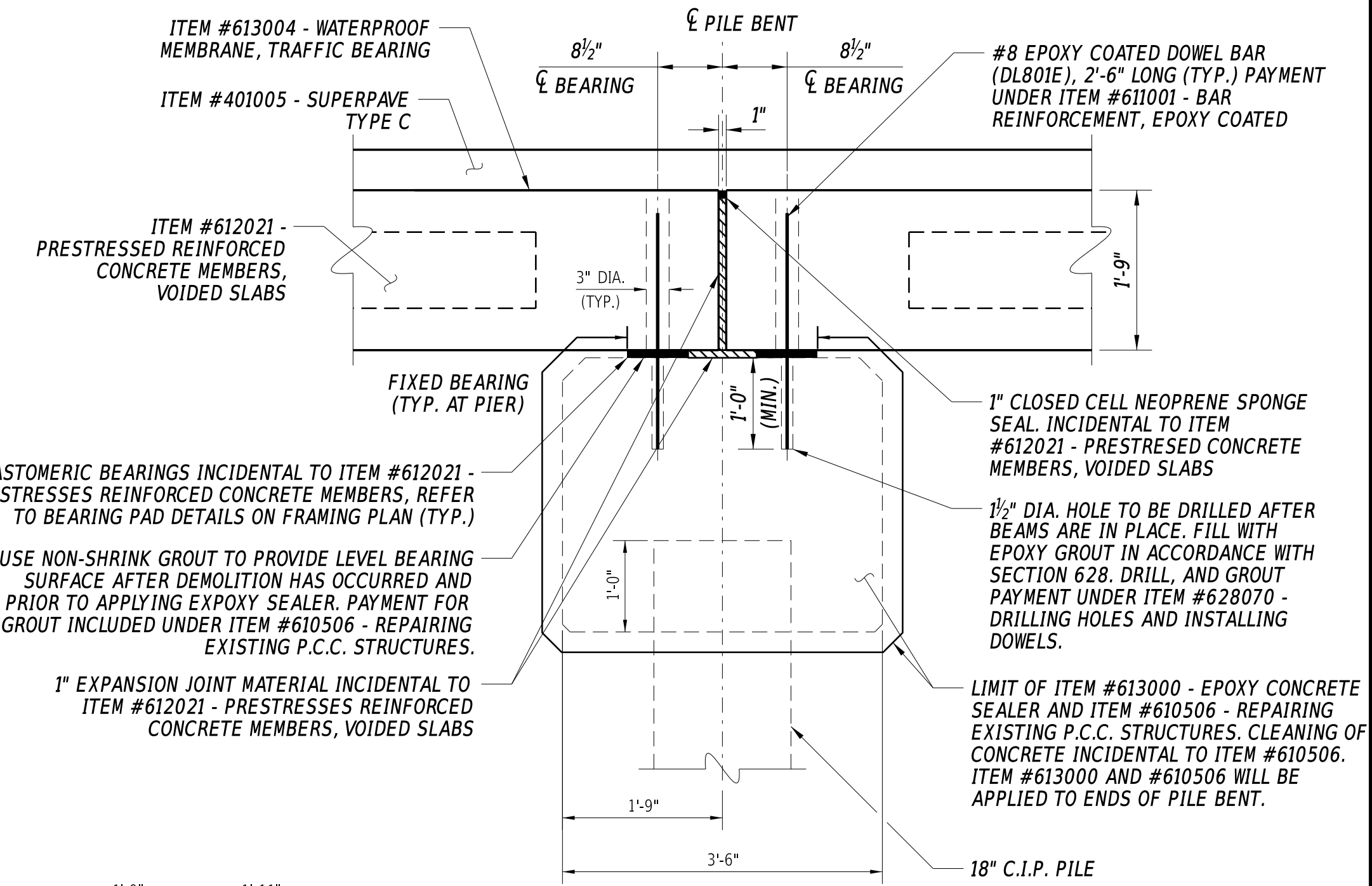
SECTION	BR
SHEET NO.	11

13-OCT-2020 08:28 Y:\SUSSEX\466\bridge\T201607602\300\_CADD\530\_PLANS\_DGN\AB.dgn



PILE BENT SOUTH ELEVATION

3/8" = 1' - 0"



PILE BENT SECTION

(SECTION D-D)

3/4" = 1' - 0"

**PILE BENT NOTE:**

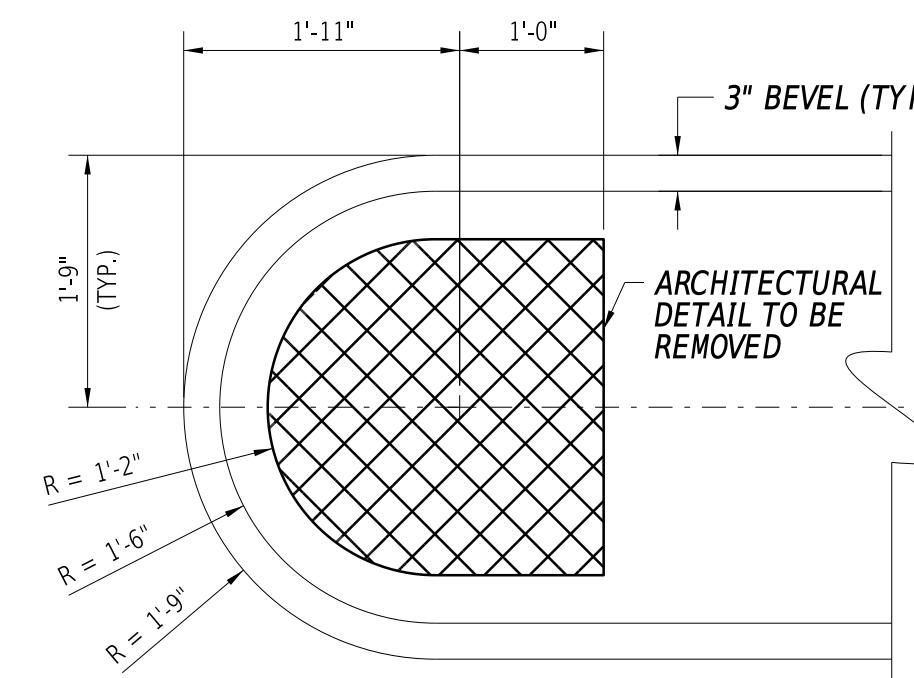
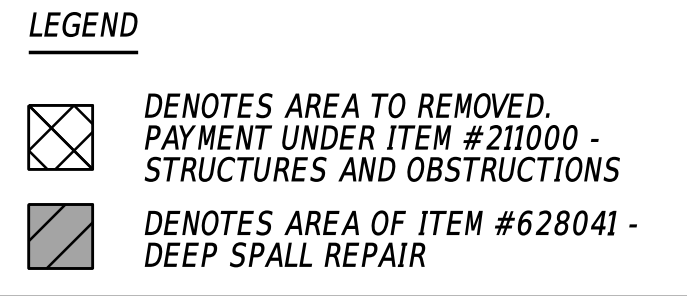
1. CRACKS, SPALLS, AND DELAMINATED AREAS WERE DELINEATED ON 9/25/15 BY DELDOT BRIDGE DESIGN. THEY ARE APPROXIMATE LOCATIONS FOR ESTIMATE PURPOSES ONLY AND REPRESENTATIVE OF BOTH THE SOUTH AND NORTH FACE OF THE PILE BENT. ALL AREAS ALONG EACH FACE OF PILE BENT SHALL BE SOUND ED AND DELINEATED AT THE TIME OF CONSTRUCTION WITH THE APPROVAL OF THE ENGINEER TO DETERMINE REPAIR LIMITS.

**SHALLOW SPALL REPAIR NOTES:**

2. SHALLOW SPALLS ARE DEFINED AS PATCHES THAT DO NOT EXTEND BELOW THE TOP MAT OF REBAR.  
 3. ALL WORK INVOLVING METHODS OF CONCRETE REMOVAL; CLEANING OF CONCRETE SURFACE; SURFACE PREPARATION; AND CONCRETE PLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 628.03(E) OF THE STANDARD SPECIFICATIONS. PAYMENT INCIDENTAL TO ITEM #628040 - SHALLOW SPALL REPAIR.  
 4. FOR ANY SHALLOW SPALL REPAIR TO TAKE PLACE WITHIN THE SPLASH ZONE OR UNDERWATER, THE CONTRACTOR SHALL SUBMIT A WORKING DRAWING FOR APPROVAL IN ACCORDANCE WITH SUBSECTION 628.03(E)(2).

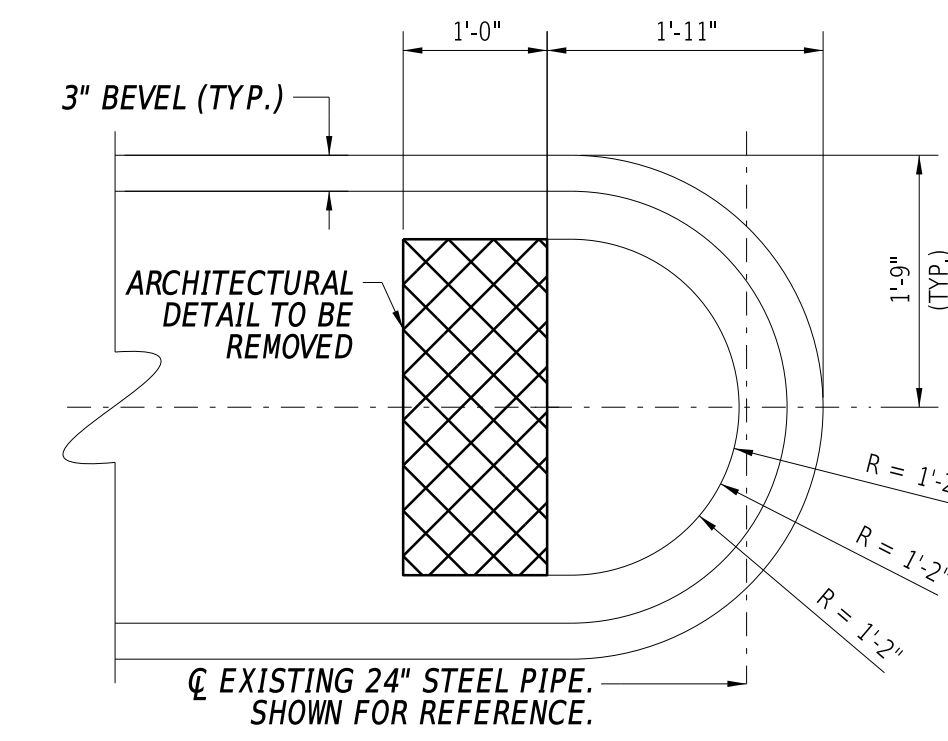
**DEEP SPALL REPAIR NOTES:**

5. DEEP SPALLS ARE DEFINED AS PATCHES THAT EXTEND BELOW THE TOP MAT OF REINFORCEMENT.  
 6. ALL WORK INVOLVING METHODS OF CONCRETE REMOVAL; CLEANING OF CONCRETE SURFACE AND EXISTING REINFORCEMENT; REPAIRING OR REPLACING DAMAGED REINFORCEMENT AS RESULT OF CONSTRUCTION ACTIVITIES OR SECTION LOSS; PRESENCE OF CONTRACTION OR EXPANSION JOINTS; SURFACE PREPARATION; AND CONCRETE PLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 628.03(E) OF THE STANDARD SPECIFICATIONS. PAYMENT INCIDENTAL TO ITEM #628041 - DEEP SPALL REPAIR.  
 7. FOR ANY DEEP SPALL REPAIR TO TAKE PLACE WITHIN THE SPLASH ZONE OR UNDERWATER, THE CONTRACTOR SHALL SUBMIT A WORKING DRAWING IN ACCORDANCE WITH SUBSECTION 628.03(E)(2).



PILE BENT WEST END PLAN

3/4" = 1' - 0"

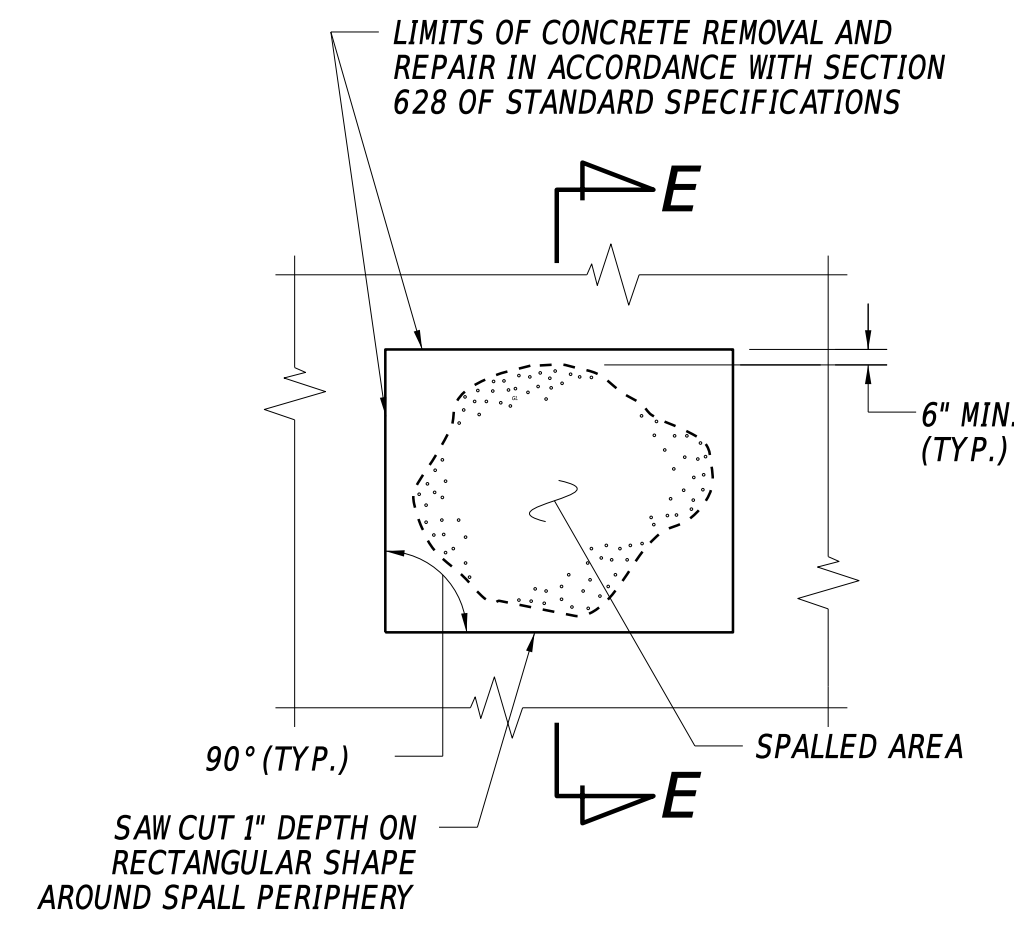


PILE BENT EAST END PLAN

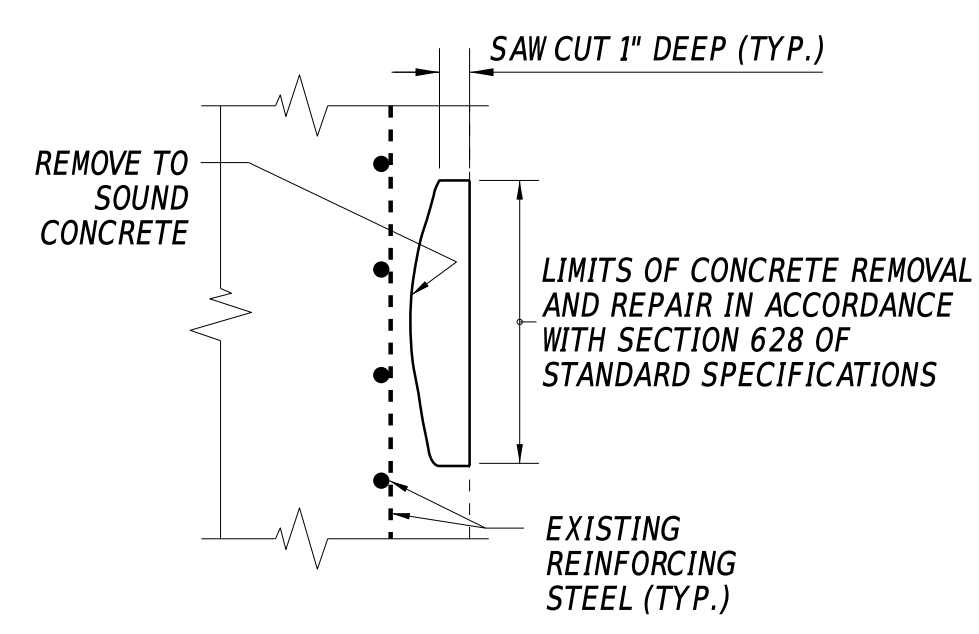
3/4" = 1' - 0"

**CONCRETE PARAPET REINFORCING BAR LIST**

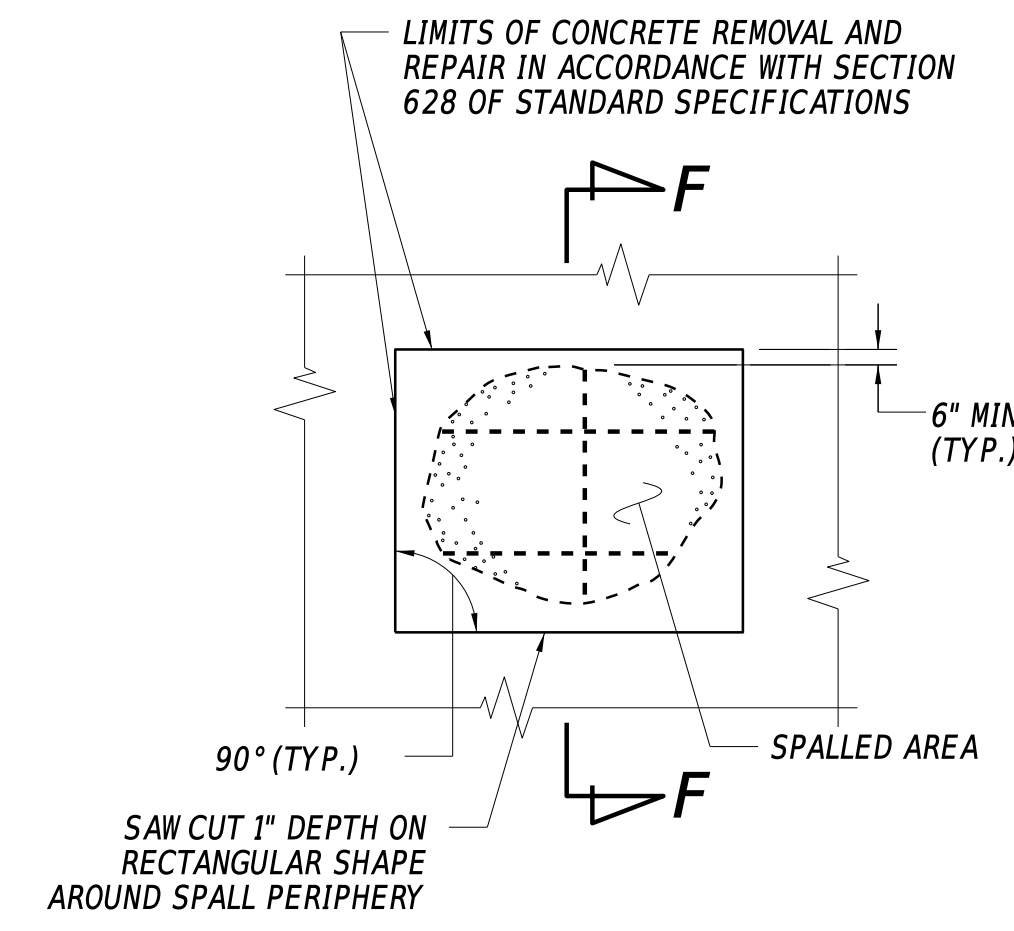
QTY.	SIZE	LENGTH	MARK	TYPE	B	C	D
26	8	2-6'0"	DL801E	STR.	2-6'0"		



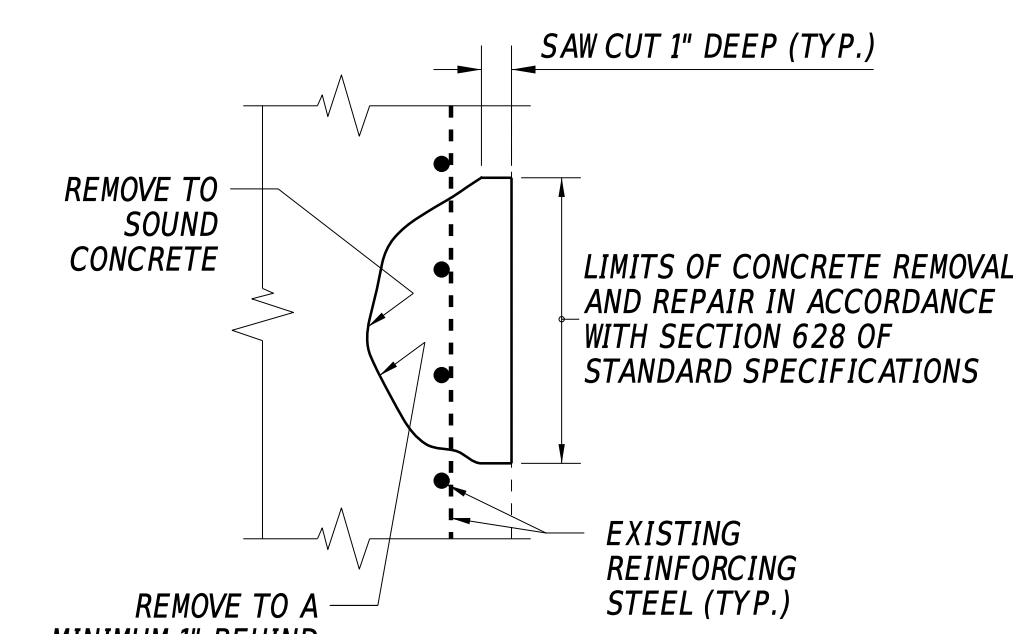
PLAN



SECTION E-E



PLAN



SECTION F-F

SHALLOW SPALL REPAIR

N.T.S.

DEEP SPALL REPAIR

N.T.S.

ADDENDA / REVISIONS

SCALE AS NOTED

BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK

CONTRACT T201607602	BRIDGE NO. <b>3-162</b>
COUNTY SUSSEX	DESIGNED BY: S. WEAVER
	CHECKED BY: S. WALLS

PILE BENT DETAILS

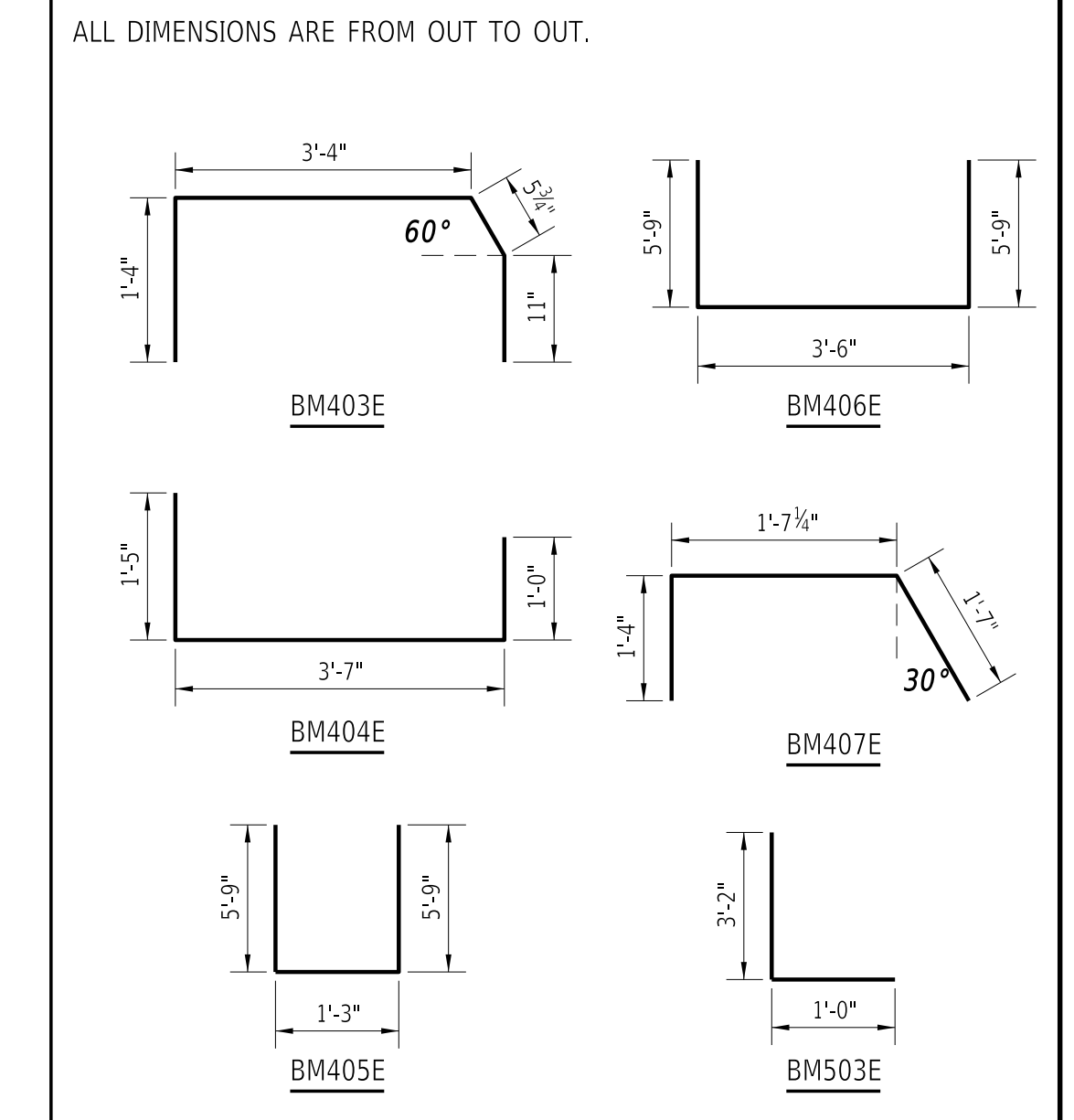
SECTION BR
SHEET NO. 12

13-OCT-2020  
08:28  
Y:\SUSSEX\466\bridge\T201607602\1900\_CADD\530\_PLANS\_DGN\DT.dgn

### REINFORCING BAR LIST

STRAIGHT BARS				BENT BARS			
MARK	SIZE	QTY.	LENGTH	MARK	SIZE	QTY.	LENGTH
BM401E	4	64	1'-6"	BM403E	4	53	6'- $\frac{3}{4}$ "
BM402E	4	64	5'- $\frac{1}{2}$ "	BM404E	4	53	6'-0"
BM501E	5	5	41'-7"	BM405E	4	8	12'-9"
BM502E	5	47	4'-6"	BM406E	4	6	15'-0"
				BM407E	4	43	4'-6 $\frac{1}{4}$ "
				BM503E	5	47	4'-2"

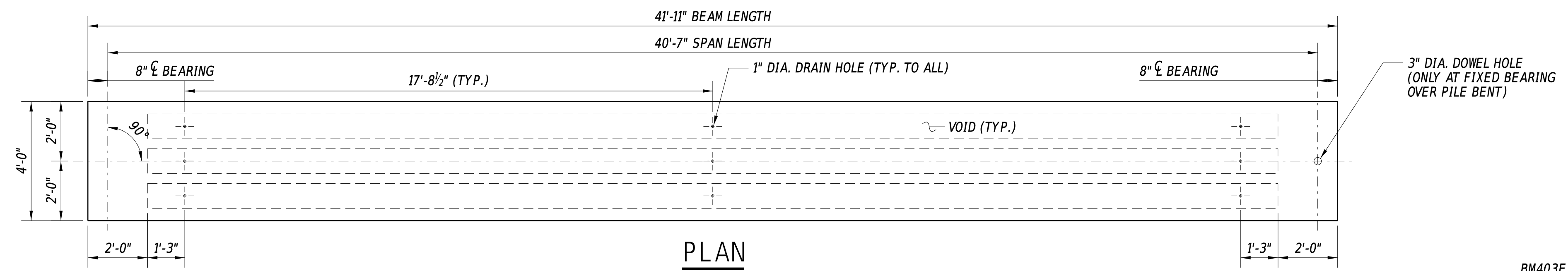
### BENDING DIAGRAMS



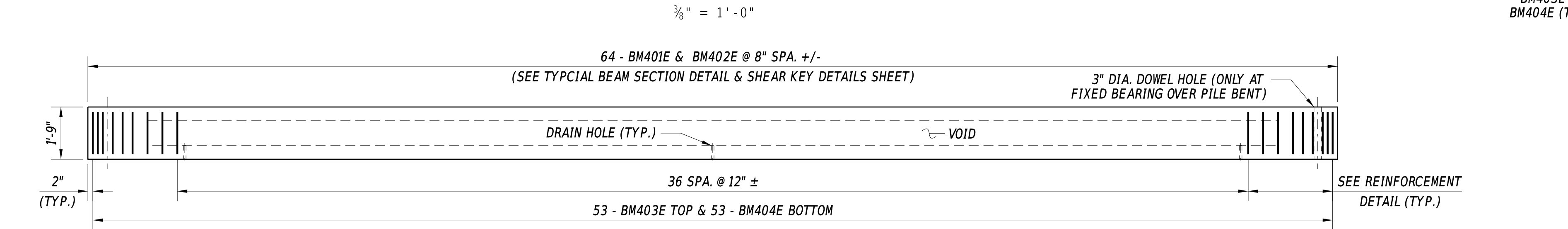
### PRESTRESSED BEAM NOTES (48" x 21")

- 4 TOTAL EXTERIOR BEAMS REQUIRED: S1-G1, S1-G13, S2-G1, S2-G13
- REINFORCING BAR LIST INFORMATION ABOVE IS PER BEAM.
- APPROXIMATE DEAD LOAD OF EACH BEAM IS 17.0 TONS.
- INSTALLATION OF BARS BM407E, BM502E, AND BM503E SHALL BE WITH FABRICATION OF BEAM PRIOR TO POURING OF CONCRETE AND PRESTRESSING OPERATION. BARS ARE NOT ALLOWED TO BE DOWELED AFTER BEAM IS CAST. SEE BRIDGE PARAPET DETAILS SHEET FOR SPACING OF BM502E AND BM503E. PLACEMENT OF BM407E WILL REFLECT BM411E IN ADJACENT BEAMS. SEE INTERIOR BEAM DETAILS FOR REFERENCE. PA401E WILL BE TIED TO BM407E AND BM411E IN THE FIELD. SEE BRIDGE PARAPET DETAILS FOR REFERENCE.
- CONCRETE PARAPET TO BE INSTALLED PRIOR TO DELIVERY, SEE BRIDGE PARAPET DETAILS SHEET FOR REFERENCE.
- LIFTING STRANDS AND BARS IN REINFORCING BAR LIST INCIDENTAL TO ITEM #612021 - PRESTRESSED REINFORCED CONCRETE MEMBERS, VOIDED SLABS.
- BM405E WILL BE PLACED AS SPACED ON TYPICAL BEAM END PLAN AND TYPICAL BEAM END ELEVATION. BM405E WILL PROTRUDE FROM THE BEAM OVER OF THE ABUTMENTS AND BE CAST INTO THE BACKWALL WITH BW401E. BM405E AND BM406E WILL BE PLACED WITH 3" OF COVER AT THE BEAM END OVER THE FIXED BEARING OF THE PILE BENT.
- USE PORTLAND CEMENT CONCRETE FOR PRECAST ELEMENTS AS FOLLOWS:  
 (f'c = 28-DAY COMPRESSIVE STRENGTH)  
 (f'ci = COMPRESSIVE STRENGTH AT INITIAL PRESTRESS)  
 PRESTRESSED:  
 ITEM #612021 - PRESTRESSED REINFORCED CONCRETE MEMBERS, VOIDED SLABS f'c = 8 ksi; f'ci = 6 ksi  
 - DESIGN ASSUMPTIONS: THE PRESTRESSED CONCRETE BEAMS WERE DESIGNED FOR SEVERE CORROSIVE CONDITIONS.  
 - CHAMFER ALL EXPOSED EDGES  $\frac{3}{4}$ " X  $\frac{3}{4}$ " UNLESS OTHERWISE NOTED.

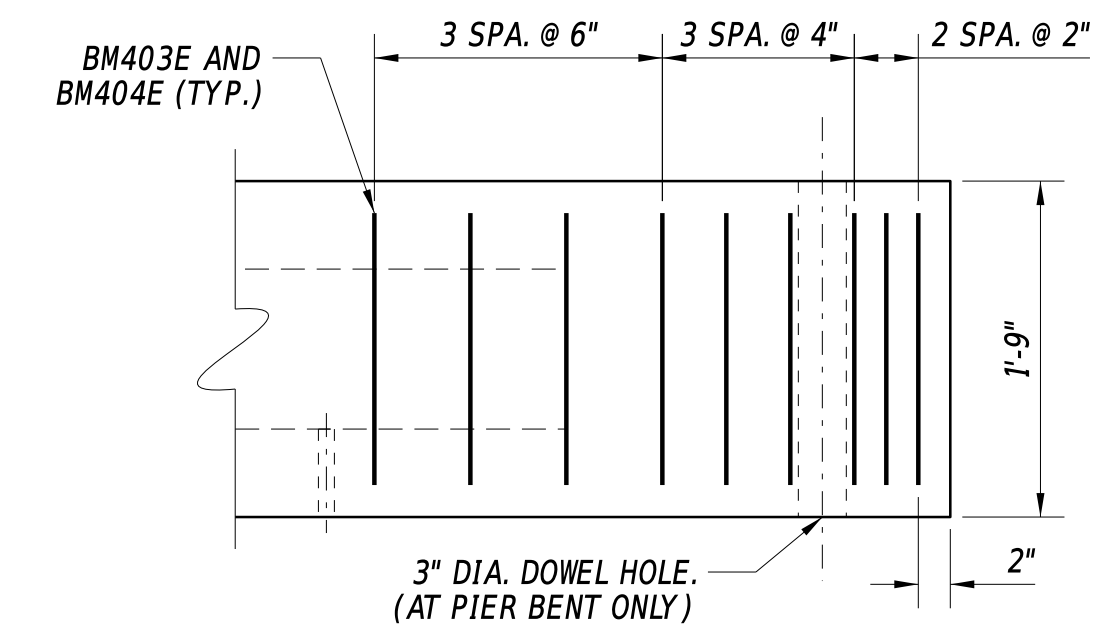
○ 0.6" DIA., 270 KSI LOW RELAXATION PRESTRESSING STRAND (16 STRANDS TOTAL)



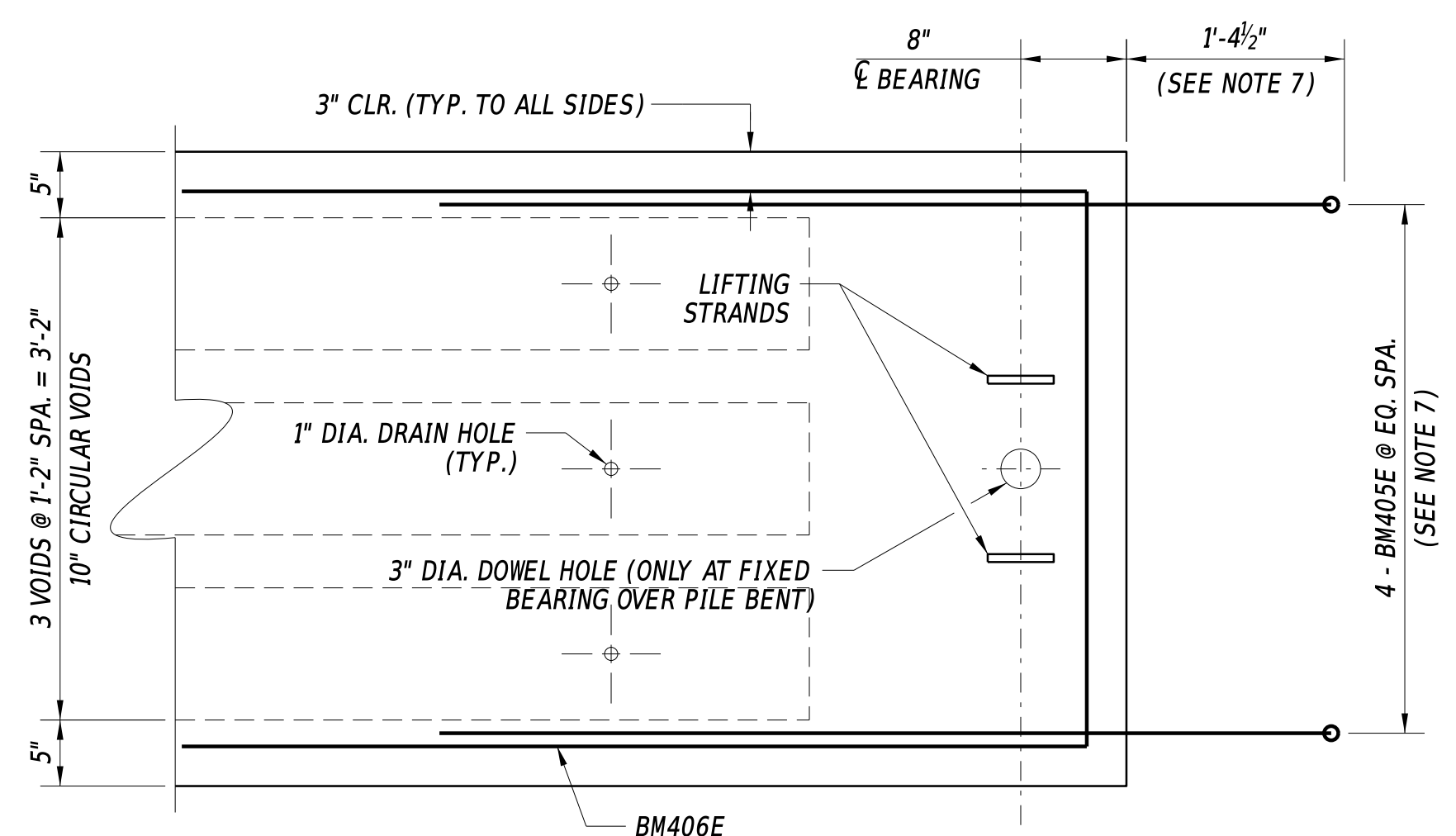
**PLAN**  
3/8" = 1'-0"



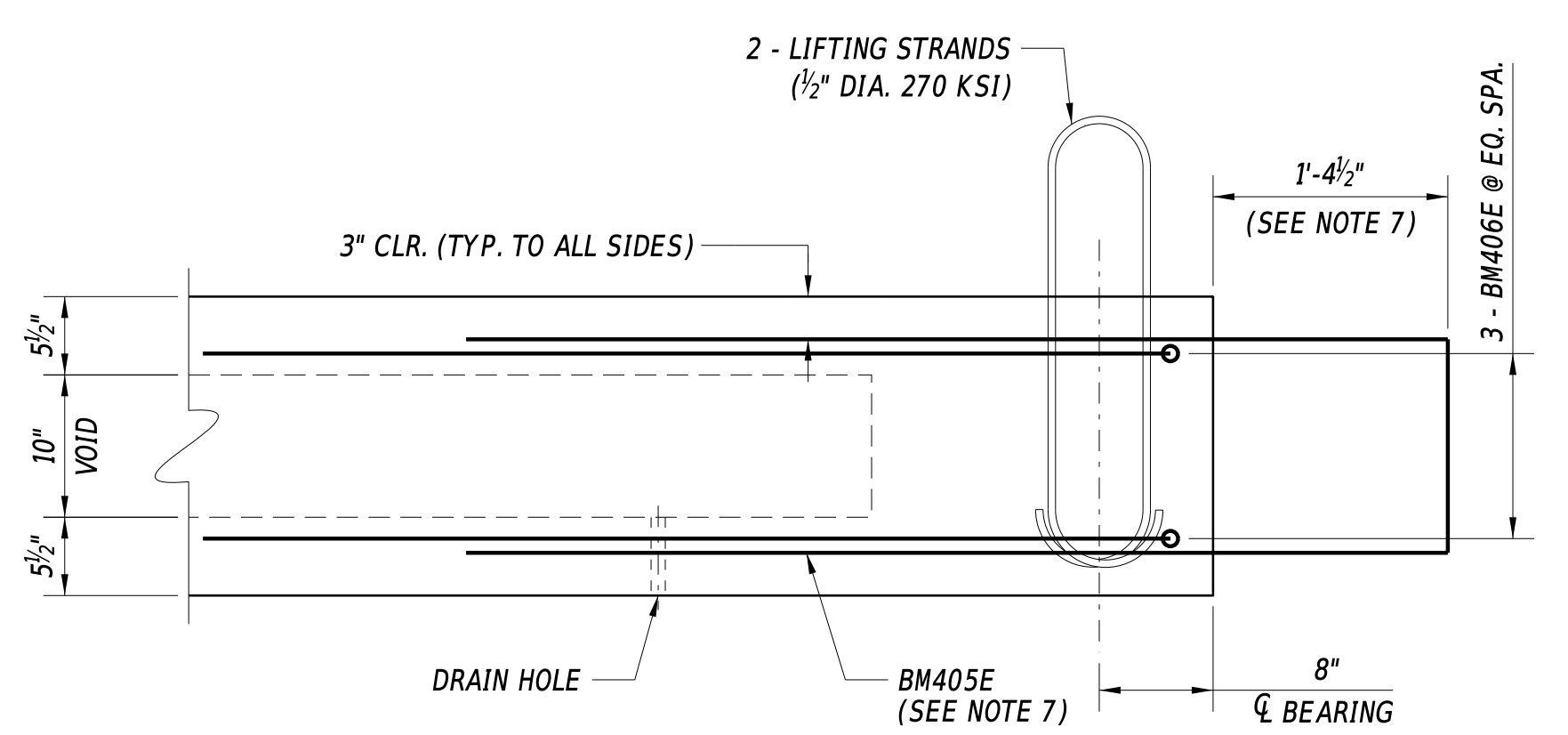
**ELEVATION**  
3/8" = 1'-0"



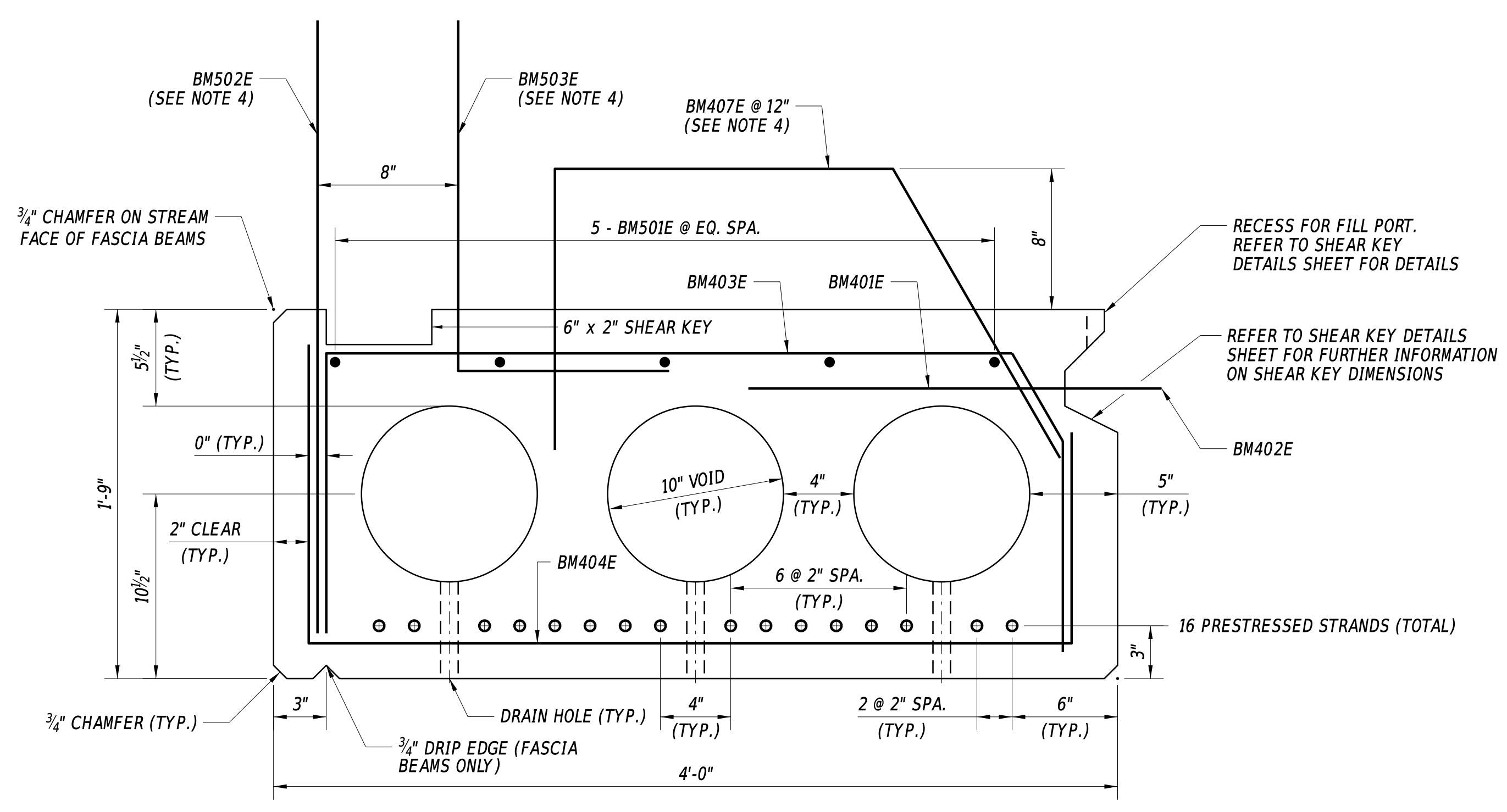
**REINFORCEMENT DETAIL**  
1" = 1'-0"



**TYPICAL BEAM END PLAN**  
1" = 1'-0"



**TYPICAL BEAM END ELEVATION**  
1" = 1'-0"



**TYPICAL BEAM SECTION**  
2" = 1'-0"

ADDENDA / REVISIONS

SCALE AS NOTED

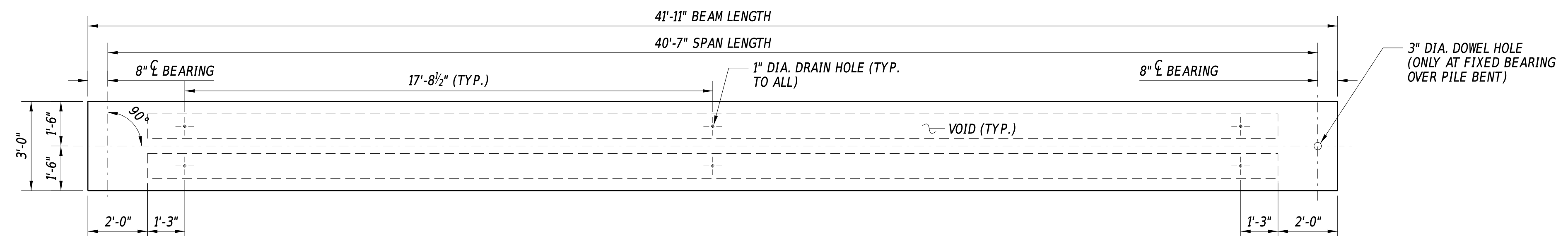
BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

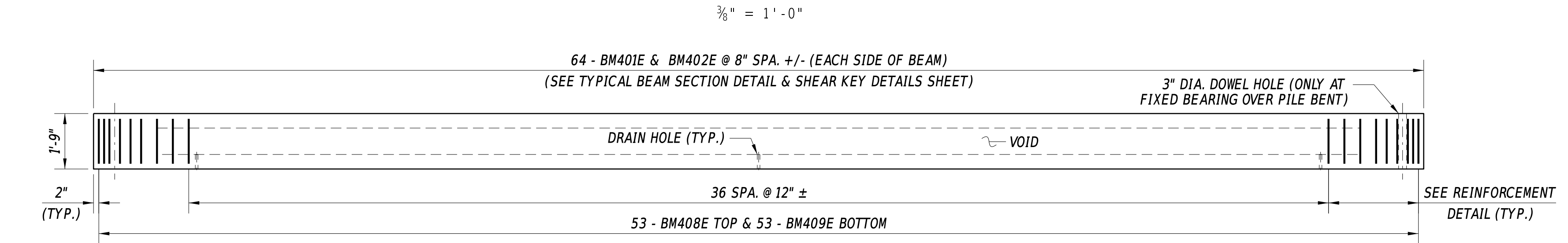
EXTERIOR  
BEAM DETAILS

SECTION
BR
SHEET NO.
13

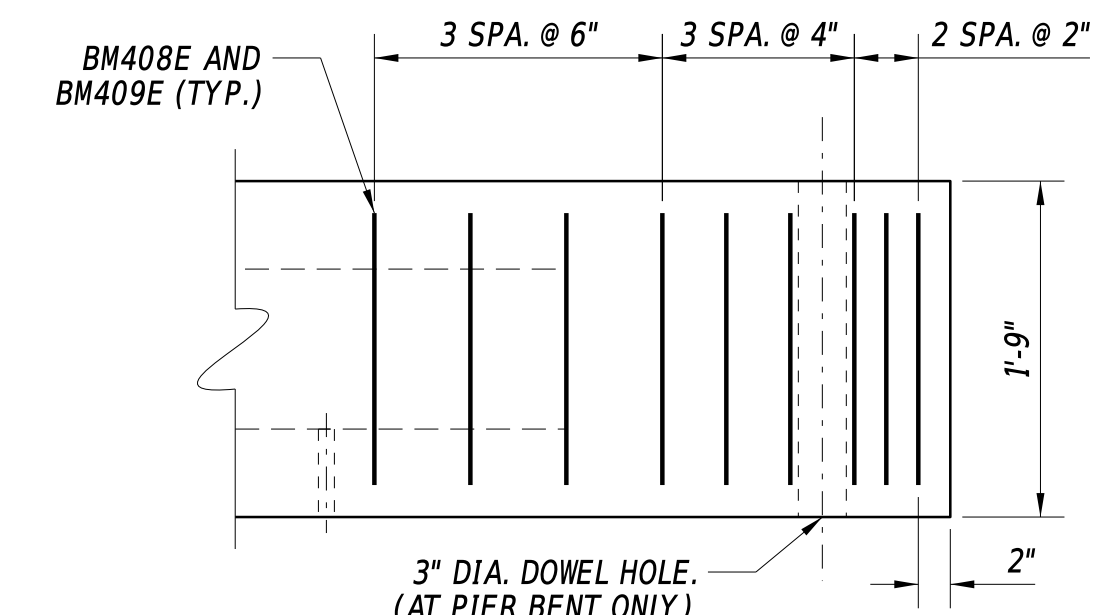
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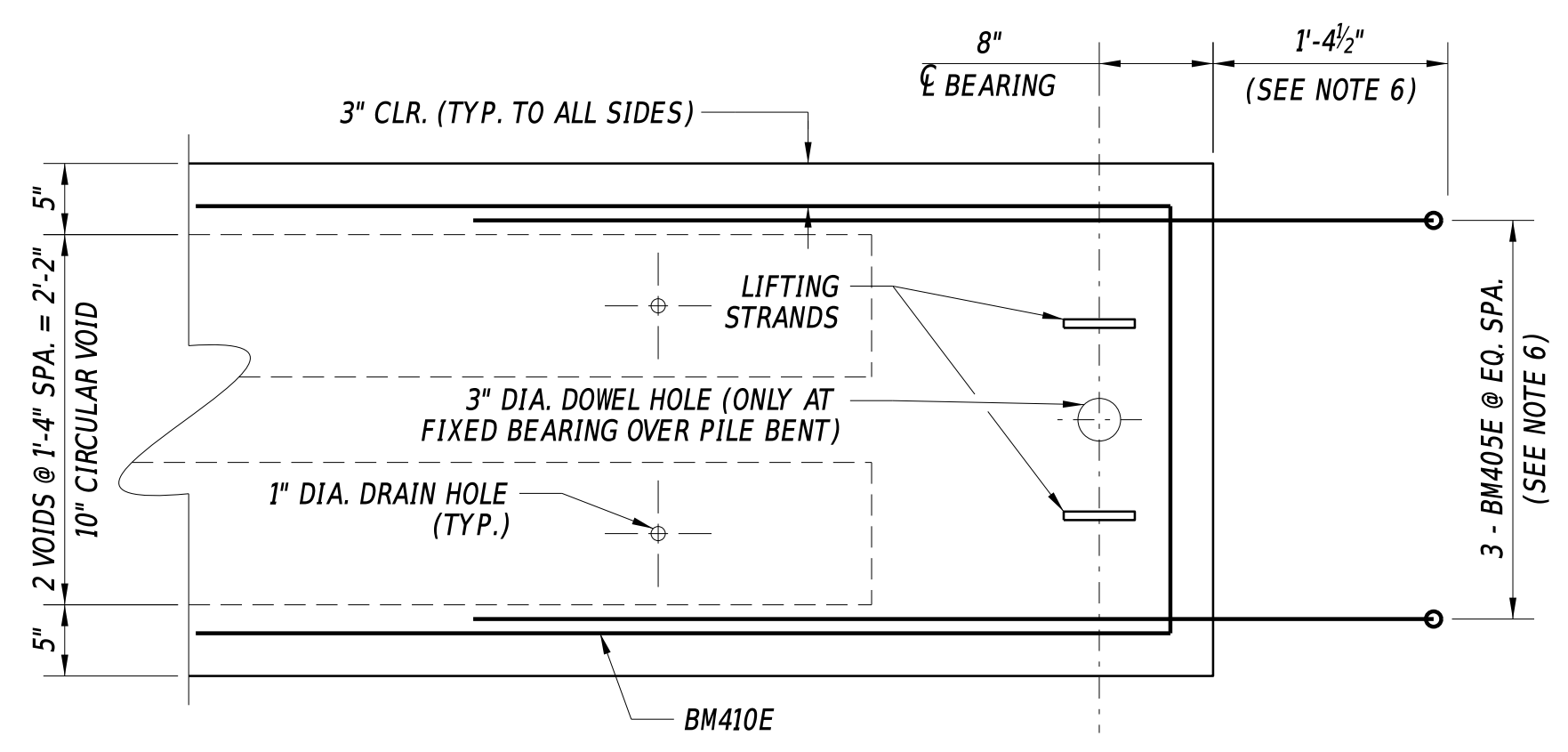
**PLAN**  
3/8" = 1'-0"



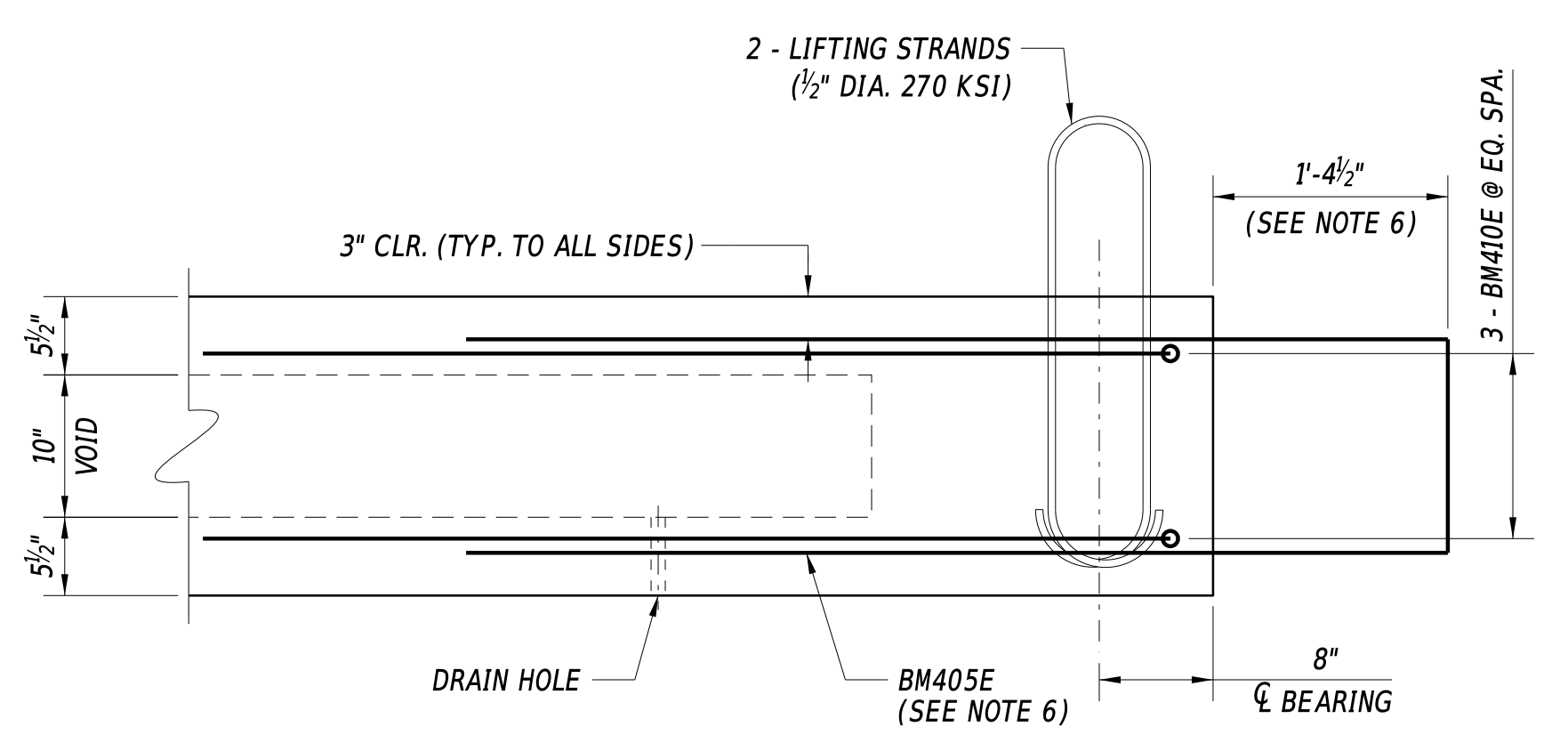
**ELEVATION**  
3/8" = 1'-0"



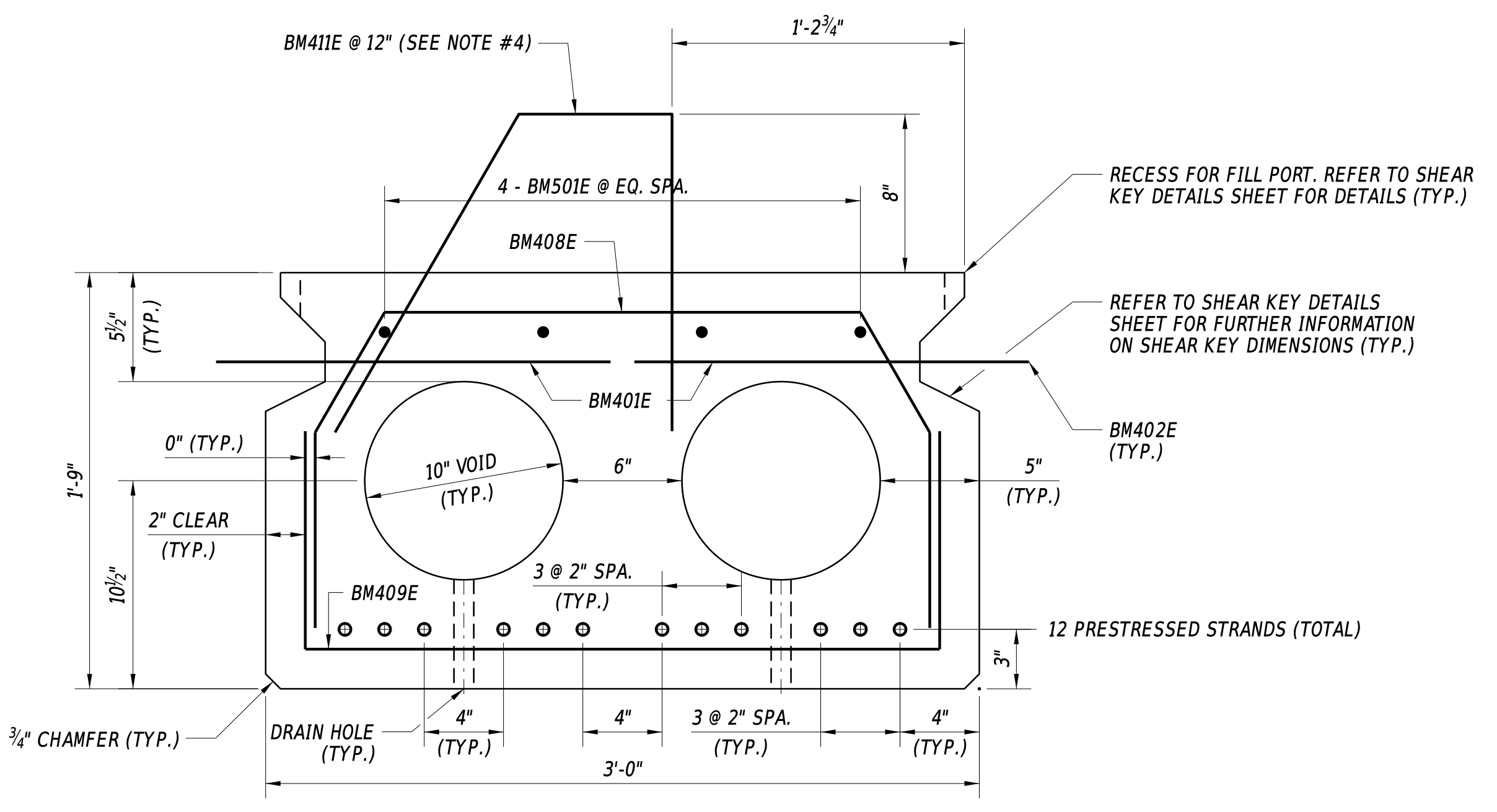
**REINFORCEMENT DETAIL**  
1" = 1'-0"



**TYPICAL BEAM END PLAN**  
1" = 1'-0"

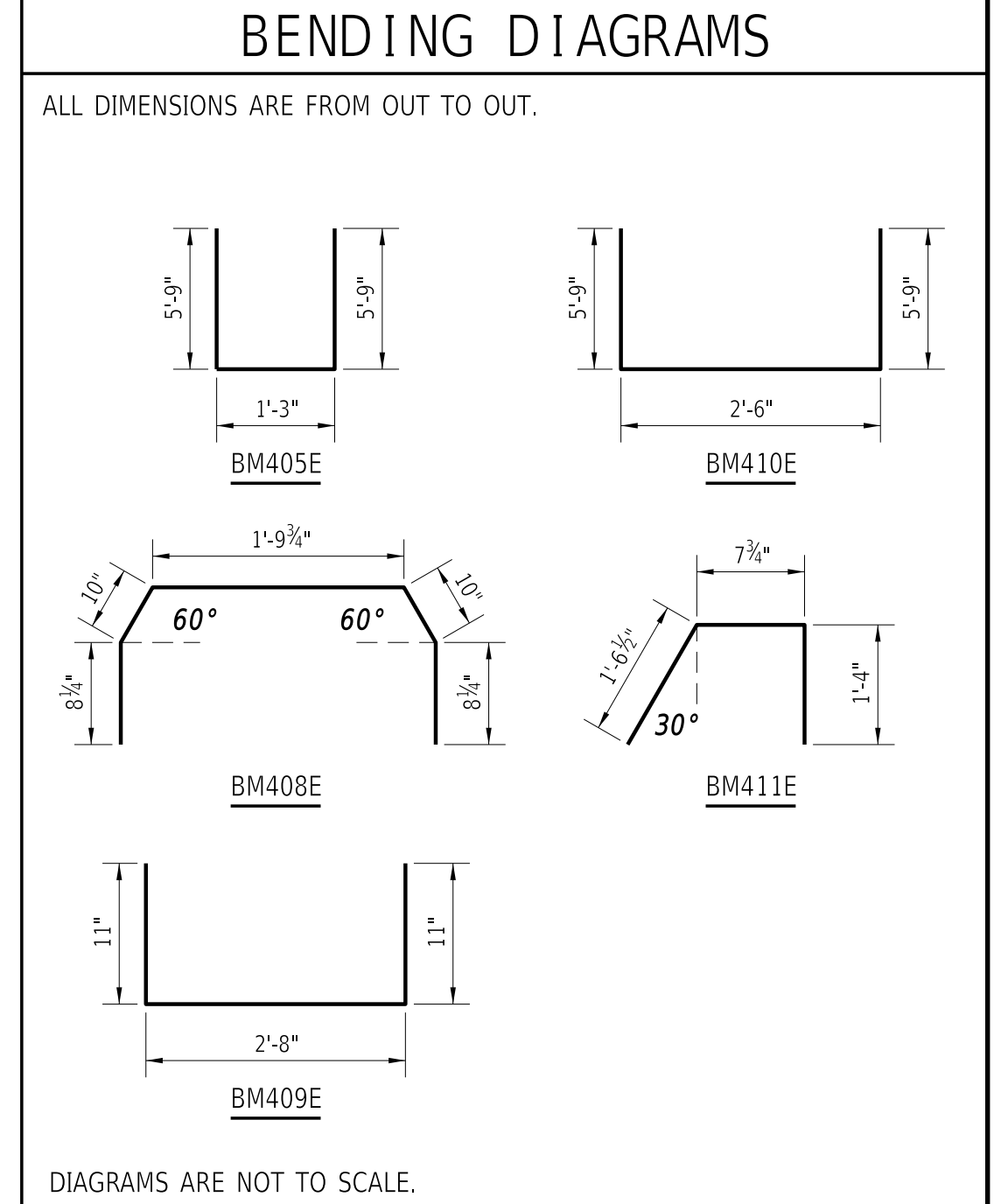


**TYPICAL END BLOCK ELEVATION**  
1" = 1'-0"



**TYPICAL BEAM SECTION**  
2" = 1'-0"

REINFORCING BAR LIST							
STRAIGHT BARS				BENT BARS			
MARK	SIZE	QTY.	LENGTH	MARK	SIZE	QTY.	LENGTH
BM401E	4	128	1'-6"	BM405E	4	6	12'-9"
BM402E	4	128	5 1/2"	BM408E	4	53	4'-10 1/4"
BM501E	5	4	41'-7"	BM409E	4	53	4'-6"
				BM410E	4	6	14'-0"
				BM411E	4	43	3'-6 1/4"



**PRESTRESSED BEAM NOTES (36" x 21")**

- TOTAL INTERIOR BEAMS REQUIRED ARE AS FOLLOWS: (SEE FRAMING PLAN SHEET FOR REFERENCE)
  - 4 BEAMS WITH BM411E: S1-G2, S1-G12, S2-G2, S2-G12
  - 18 BEAMS WITHOUT BM411E: REMAINING INTERIOR BEAMS
- REINFORCING BAR LIST INFORMATION ABOVE IS PER BEAM.
- APPROXIMATE DEAD LOAD OF EACH BEAM IS 13.2 TONS.
- INSTALLATION OF BM411E BARS SHALL BE WITH FABRICATION OF BEAM PRIOR TO POURING OF CONCRETE AND PRESTRESSING OPERATIONS. SEE FRAMING PLAN FOR REFERENCE. PLACEMENT OF BM411E WILL REFLECT BM407E IN ADJACENT BEAM. SEE EXTERIOR BEAM DETAILS FOR REFERENCE. PA401E WILL BE TIED TO BM407E AND BM411E IN THE FIELD. SEE BRIDGE PARAPET DETAILS FOR REFERENCE.
- LIFTING STRANDS AND BARS IN REINFORCING BAR LIST INCIDENTAL TO ITEM #612021 - PRESTRESSED REINFORCED CONCRETE MEMBERS, VOIDED SLABS.
- BM405E WILL BE PLACED AS SPACED ON TYPICAL BEAM END PLAN AND TYPICAL BEAM END ELEVATION. BM405E WILL PROTRUDE FROM THE BEAM OVER OF THE ABUTMENTS AND BE CAST INTO THE BACKWALL WITH BW401E. BM405E AND BM410E WILL BE PLACED WITH 3" OF COVER AT THE BEAM END OVER THE FIXED BEARING OF THE PILE BENT.
- USE PORTLAND CEMENT CONCRETE FOR PRECAST ELEMENTS AS FOLLOWS:
  - (f'c = 28-DAY COMPRESSIVE STRENGTH)
  - (Pci = COMPRESSIVE STRENGTH AT INITIAL PRESTRESS)
 PRESTRESSED:  
 ITEM #612021 - PRESTRESSED REINFORCED CONCRETE MEMBERS, VOIDED SLABS f'c = 8 ksi; Pci = 6 ksi  
 - DESIGN ASSUMPTIONS: THE PRESTRESSED CONCRETE BEAMS WERE DESIGNED FOR SEVERE CORROSIVE CONDITIONS.  
 - CHAMFER ALL EXPOSED EDGES 3/4" X 3/4" UNLESS OTHERWISE NOTED.

○ 0.6" DIA., 270 KSI LOW RELAXATION PRESTRESSING STRAND (12 STRANDS TOTAL)

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ADDENDA / REVISIONS

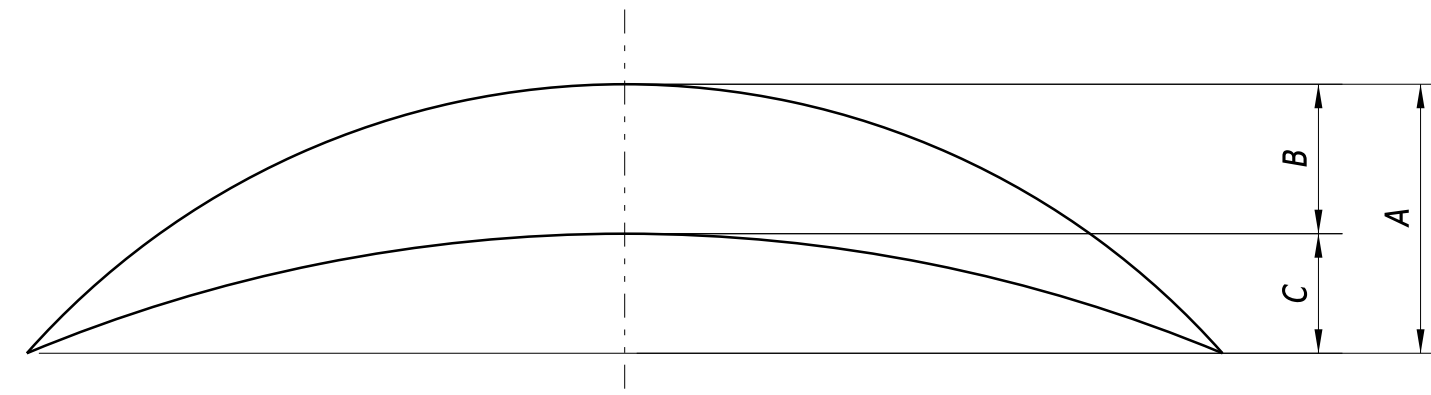
**SCALE AS NOTED**

**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

<b>INTERIOR BEAM DETAILS</b>	SECTION
	BR
	SHEET NO.
	14





A = ESTIMATED PRESTRESS CAMBER LESS DEFLECTION DUE TO DEAD LOAD OF BEAM TIMES CREEP.  
 B = DEFLECTION DUE TO DEAD LOAD OF OVERLAY AND PARAPET.  
 C = A - B = NET CAMBER.

**CAMBER DIAGRAM**

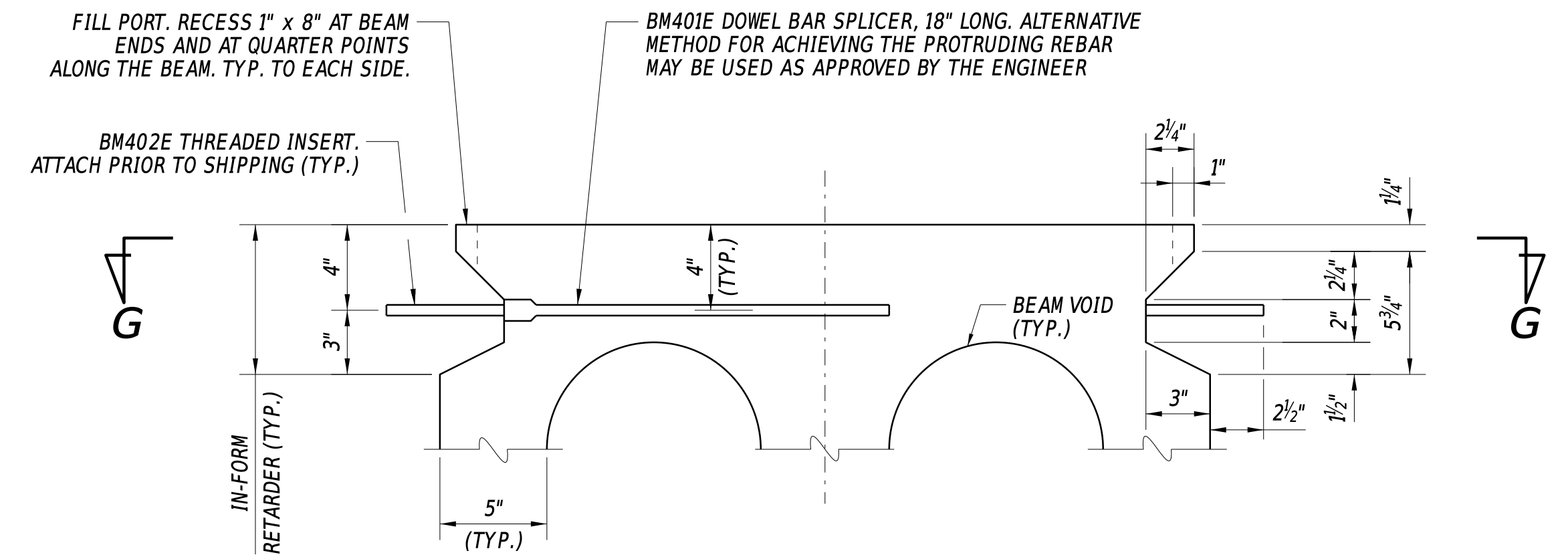
CAMBER (INCHES)							
SPAN	A	B	C	SPAN	A	B	C
S1-G1	1.367	0.915	0.452	S2-G1	1.367	0.915	0.452
S1-G2	1.335	0.694	0.641	S2-G2	1.335	0.694	0.641
S1-G3	1.335	0.153	1.182	S2-G3	1.335	0.153	1.182
S1-G4	1.335	0.153	1.182	S2-G4	1.335	0.153	1.182
S1-G5	1.335	0.153	1.182	S2-G5	1.335	0.153	1.182
S1-G6	1.335	0.153	1.182	S2-G6	1.335	0.153	1.182
S1-G7	1.335	0.153	1.182	S2-G7	1.335	0.153	1.182
S1-G8	1.335	0.153	1.182	S2-G8	1.335	0.153	1.182
S1-G9	1.335	0.153	1.182	S2-G9	1.335	0.153	1.182
S1-G10	1.335	0.153	1.182	S2-G10	1.335	0.153	1.182
S1-G11	1.335	0.153	1.182	S2-G11	1.335	0.153	1.182
S1-G12	1.335	0.694	0.641	S2-G12	1.335	0.694	0.641
S1-G13	1.367	0.915	0.452	S2-G13	1.367	0.915	0.452

DEFLECTIONS ARE GIVEN AT MIDSPAN

NOTE:  
 'S' DENOTES SPAN  
 'G' DENOTES GIRDER

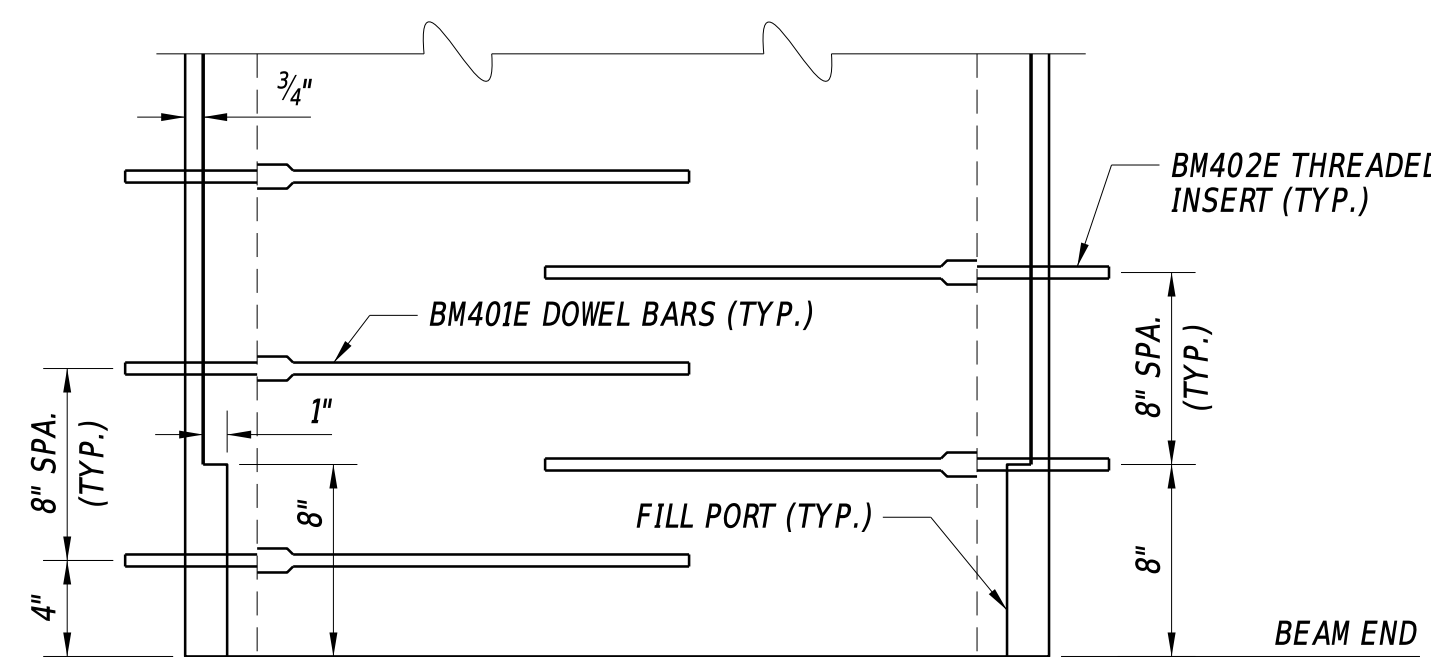
**SHEAR KEY NOTES:**

1. TO CREATE AN EXPOSED COARSE AGGREGATE SURFACE, AN IN-FORM RETARDER SHALL BE APPLIED FROM THE TOP OF BEAM TO BOTTOM OF THE SHEAR KEY ALONG THE FULL LENGTH OF BEAM ON BOTH SIDES. NO STAINS FROM OIL, GREASE OR OTHER CONTAMINATES SHALL BE PRESENT WITHIN THE SHEAR KEY. OMIT THE SHEAR KEY DETAIL AND BM401E AND BM402E BARS ON THE STREAM FACE OF THE FASCIA BEAMS.
2. BM402E BARS SHALL BE INSTALLED PRIOR TO DELIVERING BEAMS TO THE CONSTRUCTION SITE. AN ALTERNATIVE METHOD TO THREADED BM402E BARS PROTRUDING INTO THE SHEAR KEY SPACE MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
3. BARS SHALL BE STAGGERED ACCORDING TO THE DETAILS PROVIDED ON THIS SHEET TO FORM A NON CONTACT LAP SPLICE.
4. RECESS TOP OF SHEAR KEY 1" x 8" FOR A FILL PORT, AT BEAM ENDS AND AT QUARTER POINTS ALONG THE BEAM.
5. VALUE ENGINEERING PROPOSALS ELIMINATING THE USE OF UHPC WILL NOT BE CONSIDERED.



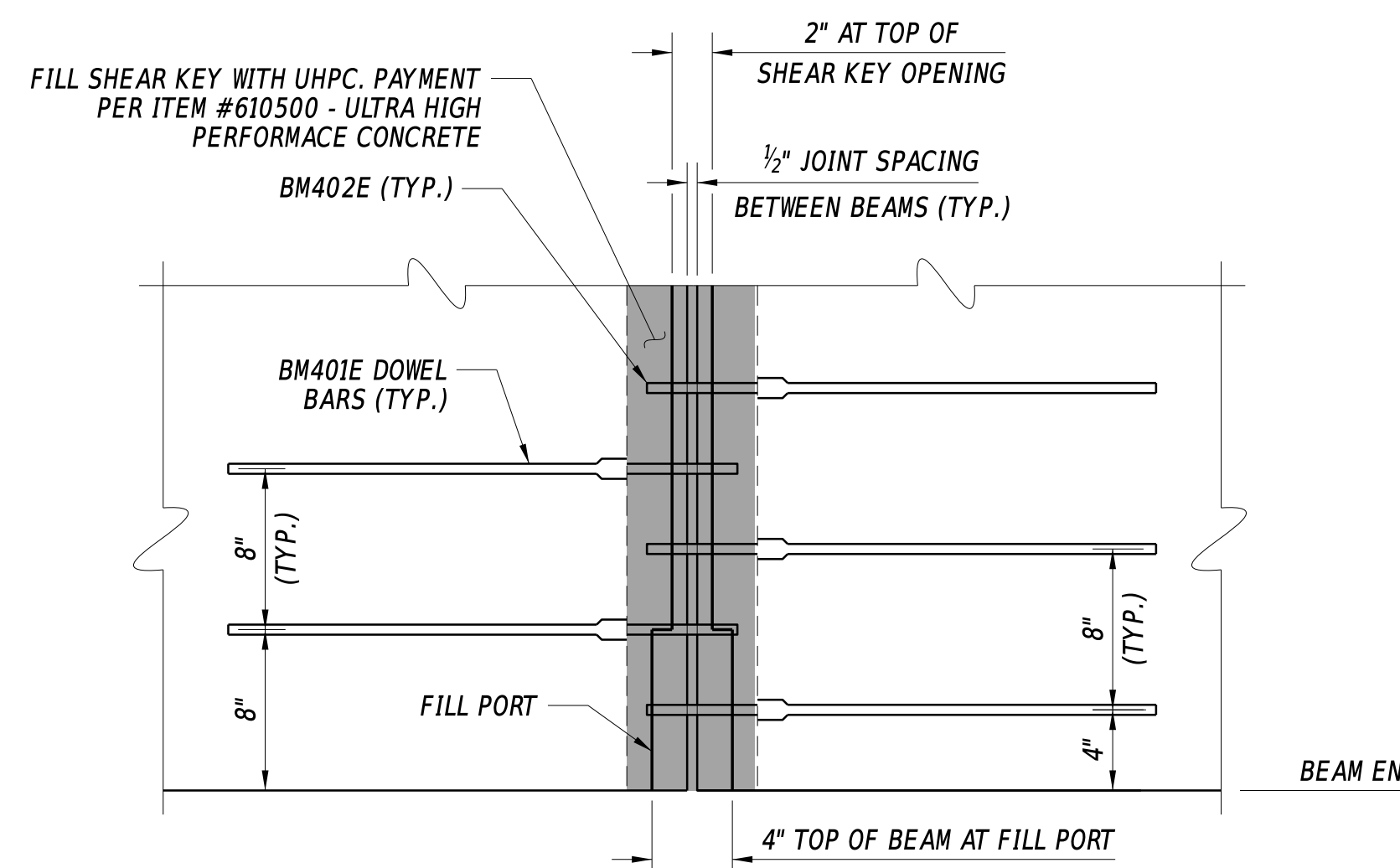
**SHEAR KEY SECTION**

2" = 1'-0"



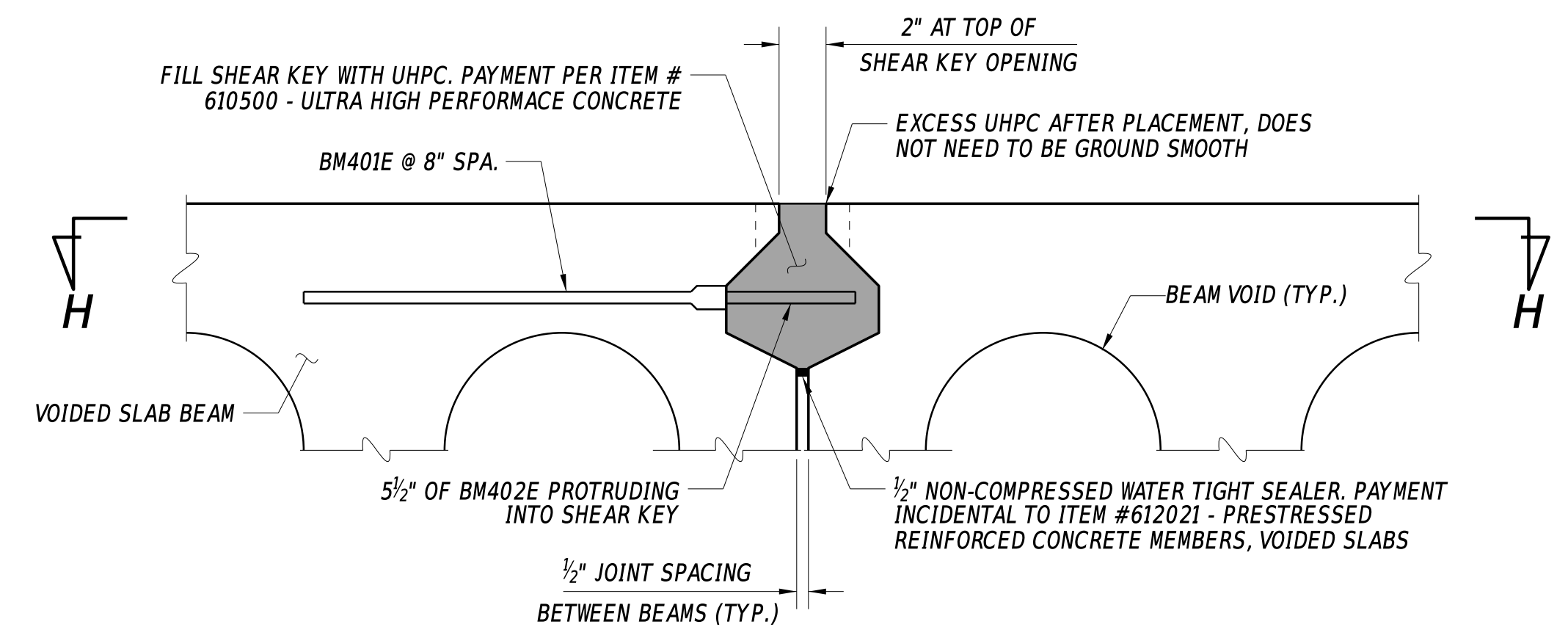
**BEAM PLAN**

(SECTION G-G)  
 1 1/2" = 1'-0"



**NON CONTACT LAP SPLICE**

(SECTION H-H)  
 1 1/2" = 1'-0"



**SHEAR KEY DETAIL**

2" = 1'-0"

ADDENDA / REVISIONS

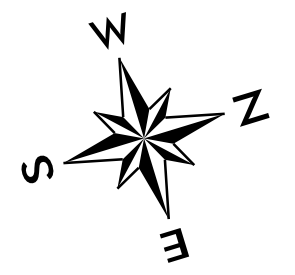
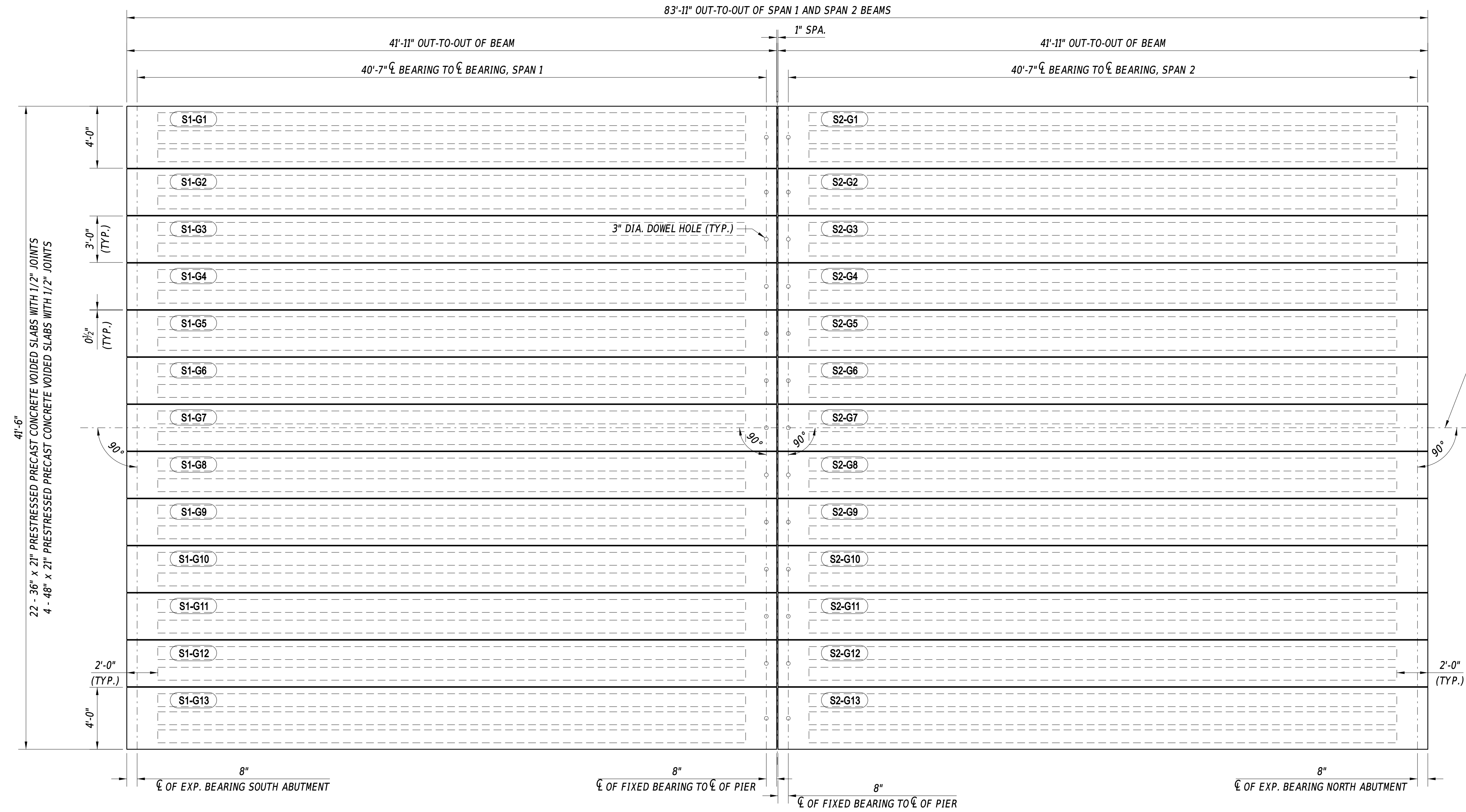
SCALE AS NOTED

BR 3-162 ON  
 S466 DELAWARE AVE  
 OVER BROAD CREEK

CONTRACT	BRIDGE NO.	3-162
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

SHEAR KEY DETAILS

SECTION	BR
SHEET NO.	15



**FRAMING PLAN**

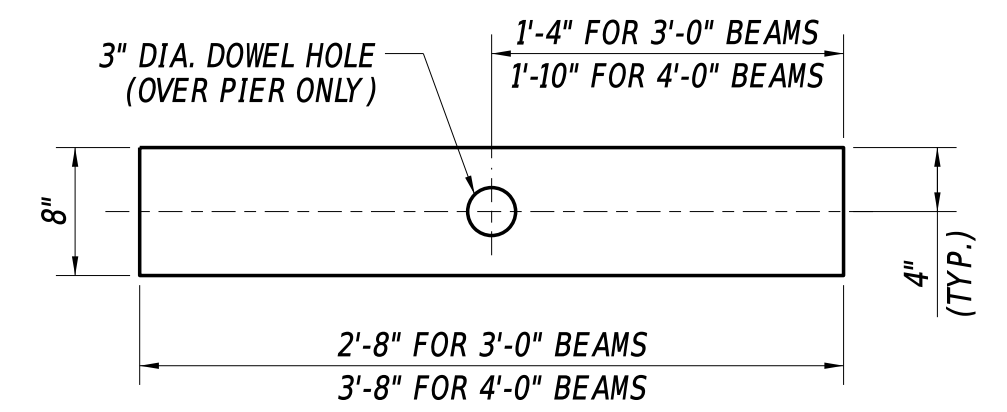
1/4" = 1'-0"

**FRAMING PLAN NOTES:**

1. FILL BEARING DOWEL HOLES WITH APPROVED HIGH STRENGTH, NON-SHRINK, NON-EXPANDING, NON-STAIN GROUT. PAYMENT INCLUDED UNDER ITEM #628070 - DRILLING HOLES AND INSTALLING DOWELS.
2. FILL ALL SHEAR KEYWAYS AND CAVITIES WITH APPROVED ULTRA HIGH PERFORMANCE CONCRETE (UHPC). PAYMENT UNDER ITEM #610500 - ULTRA HIGH PERFORMANCE CONCRETE.
3. DO NOT MIX OR POUR UHPC WITHOUT A MANUFACTURING REPRESENTATIVE ONSITE.
4. PRE-WET THE SHEAR KEY VOID TO A SATURATED-SURFACE-DRY (SSD) CONDITION IMMEDIATELY BEFORE THE PLACEMENT OF UHPC.
5. PLACING UHPC BETWEEN BEAM SECTIONS SHALL BE DONE WHEN THE AIR TEMPERATURE IS ABOVE 40°F OR AS PER THE MANUFACTURER'S RECOMMENDATION, WHICHEVER IS HIGHER. NO TRAFFIC OR EQUIPMENT SHALL BE PERMITTED ON THE BRIDGE UNTIL THE UHPC HAS A MINIMUM COMPRESSIVE STRENGTH OF 15 KSI OR UNLESS OTHERWISE APPROVED BY THE ENGINEER.
6. WATERPROOFING MEMBRANE SHALL BE INSTALLED ACROSS THE TOP OF BEAMS AND BACKWALLS. PAYMENT UNDER ITEM #613004 - WATERPROOFING MEMBRANE, TRAFFIC BEARING. WATERPROOFING MEMBRANE WILL NOT BE APPLIED UNTIL UHPC COMPRESSIVE STRENGTH HAS REACHED 10KSI.

**BEARING PAD NOTES:**

1. 52 TOTAL ELASTOMERIC BEARINGS REQUIRED. 44 2'-8" BEARING PADS AND 8 3'-8" BEARING PADS ARE REQUIRED. (22 2'-8" PADS AND 4 3'-8" PADS SHALL INCLUDE 3" DIA. DOWEL HOLE TO BE USED AT FIXED BEARING OVER PIER)
2. ALL ELASTOMERIC BEARINGS SHALL BE 50 MIN. DUROMETER IN ACCORDANCE WITH REQUIREMENTS SPECIFIED IN SECTION 623 OF THE STANDARD SPECIFICATIONS.
3. ELASTOMERIC BEARINGS SHALL BE ATTACHED TO THE TOP OF ABUTMENT SEAT AND TOP OF PILE BENT WITH AN APPROVED EPOXY ADHESIVE IN ACCORDANCE WITH SECTION 623.03(C) OF THE STANDARD SPECIFICATIONS IN SUCH A WAY THAT VISIBLE CONCRETE SURFACES WILL NOT BE STAINED. ENSURE THE EPOXY ADHESIVE HAS SET PRIOR TO PLACEMENT OF BEAMS.
4. PAYMENT FOR FABRICATION AND INSTALLATION OF ELASTOMERIC BEARINGS SHALL BE INCIDENTAL TO ITEM #612021 - PRESTRESSED REINFORCED CONCRETE MEMBERS, VOIDED SLAB.
5. ALL EXISTING BEARING PADS AND EXISTING BONDING AGENTS SHALL BE REMOVED IN THEIR ENTIRETY. PAYMENT INCLUDED UNDER #211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS.



**1" THICK ELASTOMERIC BEARING DETAIL**

1" = 1'-0"

ADDENDA / REVISIONS

SCALE AS NOTED

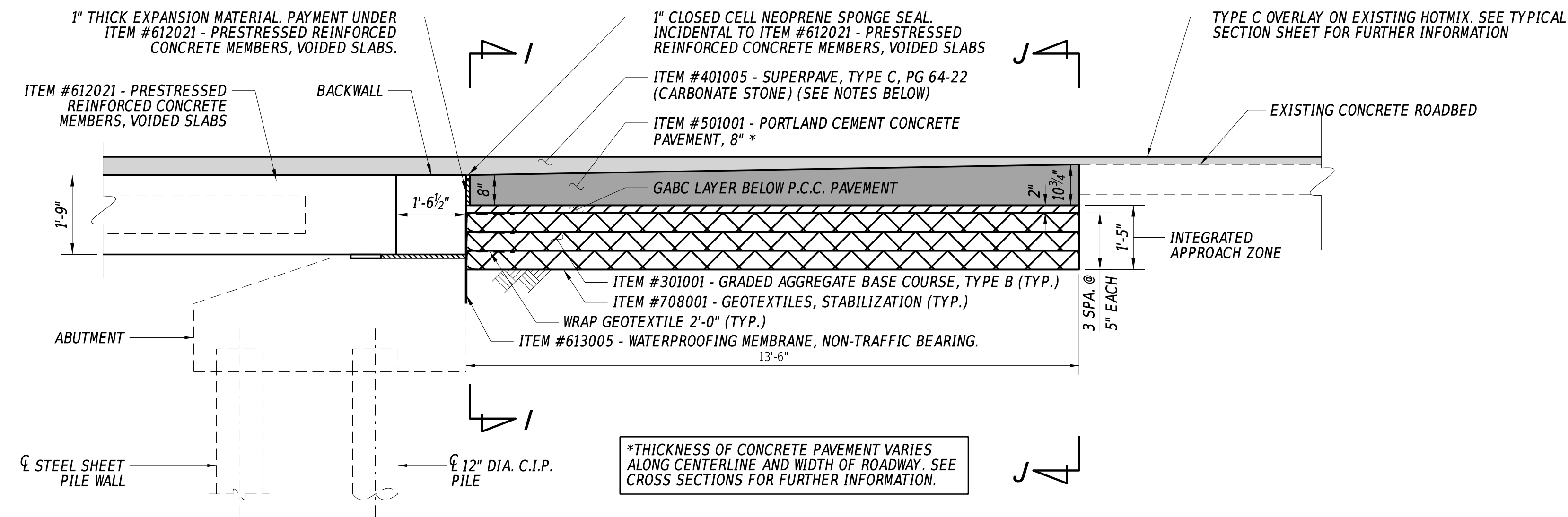
**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT  
T201607602  
COUNTY  
SUSSEX

BRIDGE NO. **3-162**  
DESIGNED BY: S. WEAVER  
CHECKED BY: S. WALLS

**FRAMING PLAN**

SECTION  
BR  
SHEET NO.  
16



**INTEGRATED APPROACH SECTION**

1/2" = 1'-0"

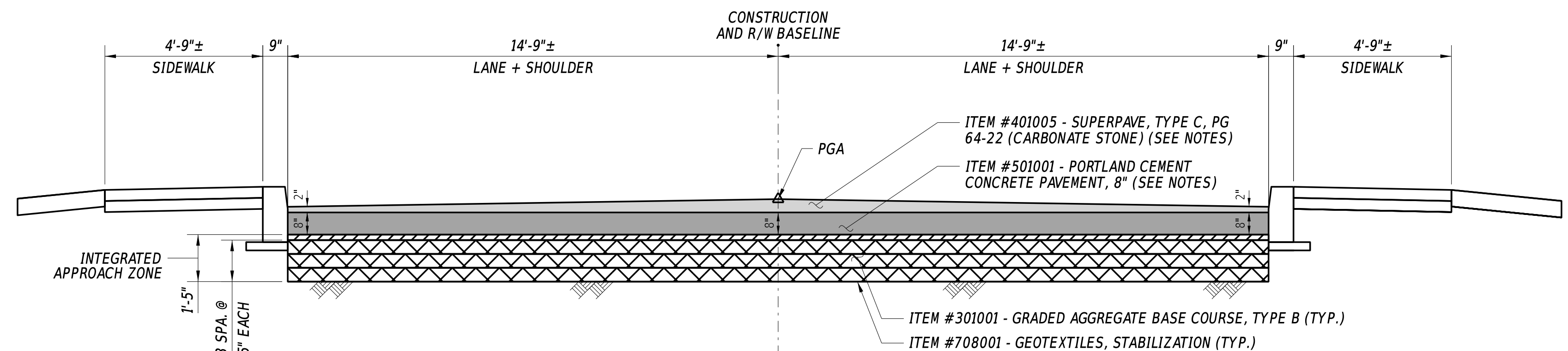
NORTH AND SOUTH APPROACHES ARE SYMMETRICAL. FOR FURTHER INFORMATION REGARDING THE ABUTMENT SEE ABUTMENT DETAILS SHEET.

**LEGEND**

	DENOTES AREA OF SUPERPAVE, TYPE C
	DENOTES AREA OF P.C.C. PAVEMENT
	DENOTES AREA OF GABC LAYER BELOW P.C.C. PAVEMENT
	DENOTES AREA OF GRADED AGGREGATE BASE COURSE, TYPE B (TYP.)

**INTEGRATED APPROACH NOTES:**

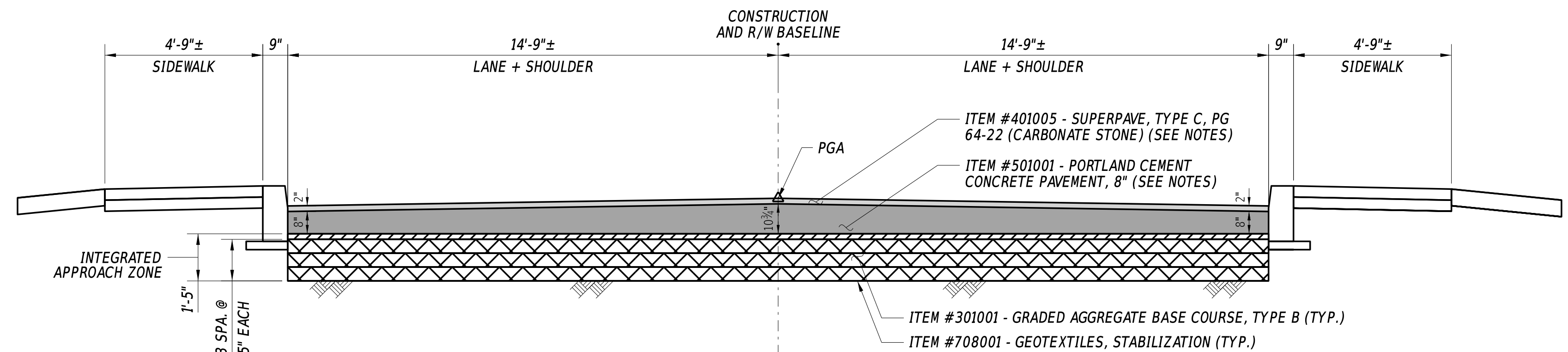
- ITEM #708001 - GEOTEXTILES, STABILIZATION:**  
PLACE GEOSYNTHETIC REINFORCEMENT AS SHOWN ON THIS SHEET. AT MINIMUM, THE REQUIRED ULTIMATE TENSILE STRENGTH MUST BE 4800 LB/FT. AT MINIMUM, THE TENSILE STRENGTH AT 2 PERCENT STRAIN MUST EQUAL 1370 LB/FT IN THE STRONG DIRECTION. GEOTEXTILE SHALL BE BIAXIAL REINFORCEMENT. SUBMIT SHOP DRAWINGS SHOWING ALL GEOSYNTHETIC REINFORCEMENT AND THEIR RESPECTIVE LENGTHS FOR APPROVAL.
- INTEGRATED APPROACH ZONE:**  
FOLLOWING THE PLACEMENT OF THE SUPERSTRUCTURE, BACKWALL, AND WATERPROOFING MEMBRANE, PLACE WRAPPED FACE GEOTEXTILE REINFORCEMENT LAYERS ALONG THE BACK FACE OF THE EXISTING ABUTMENT, BUILT IN MAXIMUM WRAPPED LIFT HEIGHTS OF 5 INCHES. THE TOP OF THE FINAL WRAP SHOULD ALLOW AT LEAST 2-INCHES OF GRADED AGGREGATE BASE COURSE(GABC) BASE COVER OVER THE GEOSYNTHETIC TO PROTECT IT FROM CONCRETE PAVEMENT. PAYMENT UNDER THEIR RESPECTIVE ITEMS.
- COMPACTION:**  
COMPACT BACKFILL TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY ACCORDING TO AASHTO-T-99 AND +/- 2% OPTIMUM MOISTURE CONTENT. BACKFILL SHALL COMPACT TO NON-MOVEMENT OR NO APPRECIABLE DISPLACEMENT AND ASSESS WITH VISUAL INSPECTION. ALL COMPACTED LIFTS SHALL BE APPROVED BY THE ENGINEER FOR COMPACTNESS BEFORE THE NEXT LIFT WILL BE PERMITTED TO START.
- EQUIPMENT PLACEMENT:**  
EQUIPMENT CAN BE POSITIONED ON THE INTEGRATION APPROACH ZONE PROVIDED THE OUTRIGGER PADS ARE SIZED FOR LESS THAN 4000 PSF NEAR THE FACE OF THE ABUTMENT WALL.
- PLACE PORTLAND CEMENT CONCRETE PAVEMENT. NOTE THAT THE P.C.C. PAVEMENT IS A UNIFORM THICKNESS AT THE EXPANSION MATERIAL FOR THE BACKWALL. THE THICKNESS ALONG THE CENTERLINE OF THE PAVEMENT SHALL INCREASE UNIFORMLY TO MATCH THE CROWN AND SLOPES OF THE EXISTING P.C.C. PAVEMENT.
- CONTRACTOR WILL INSTALL ITEM #401005 - SUPERPAVE, TYPE C IN WEDGE LIFTS OVER THE PROPOSED CONCRETE PAVEMENT AND PROPOSED BEAMS TO ACCOMMODATE THE PROPOSED CROSS SLOPE AND GRADE OF THE ROADWAY. WORK WILL BE COMPLETED IN ACCORDANCE WITH LIFT THICKNESS CHART ON TYPICAL SECTION. WEDGES WILL BE PLACED AND ALLOWED TO CURE. CONTRACTOR WILL ENSURE THAT THE FINAL INSTALLED LAYER OF TYPE C WILL BE 2" THICK, PLACED OVER THE PREVIOUSLY INSTALLED WEDGES AND P.C.C. PAVEMENT, AND BE ONE CONTINUOUS LAYER OVER THE LIMITS OF THE PROJECT.



**INTEGRATED APPROACH**

(SECTION I-I)

3/8" = 1'-0"



**INTEGRATED APPROACH**

(SECTION J-J)

3/8" = 1'-0"

ADDENDA / REVISIONS

SCALE AS NOTED

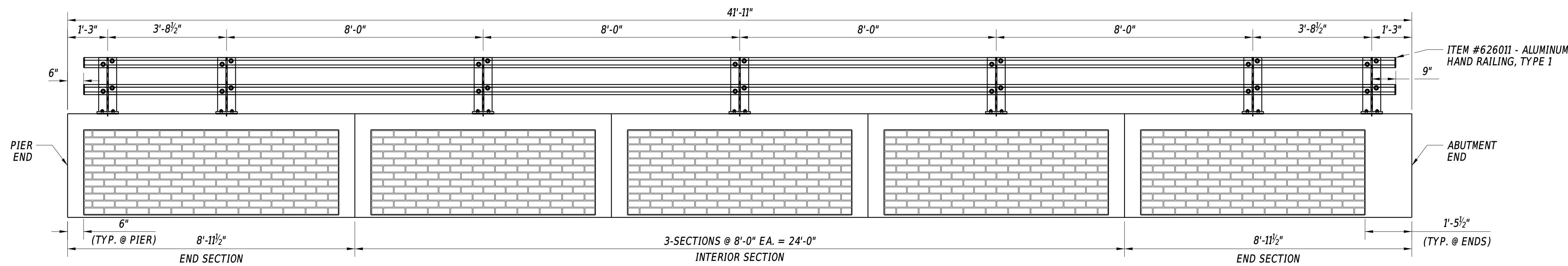
**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT  
T201607602  
COUNTY  
SUSSEX

BRIDGE NO. **3-162**  
DESIGNED BY: S. WEAVER  
CHECKED BY: S. WALLS

**INTEGRATED APPROACH  
DETAILS**

SECTION  
BR  
SHEET NO.  
17

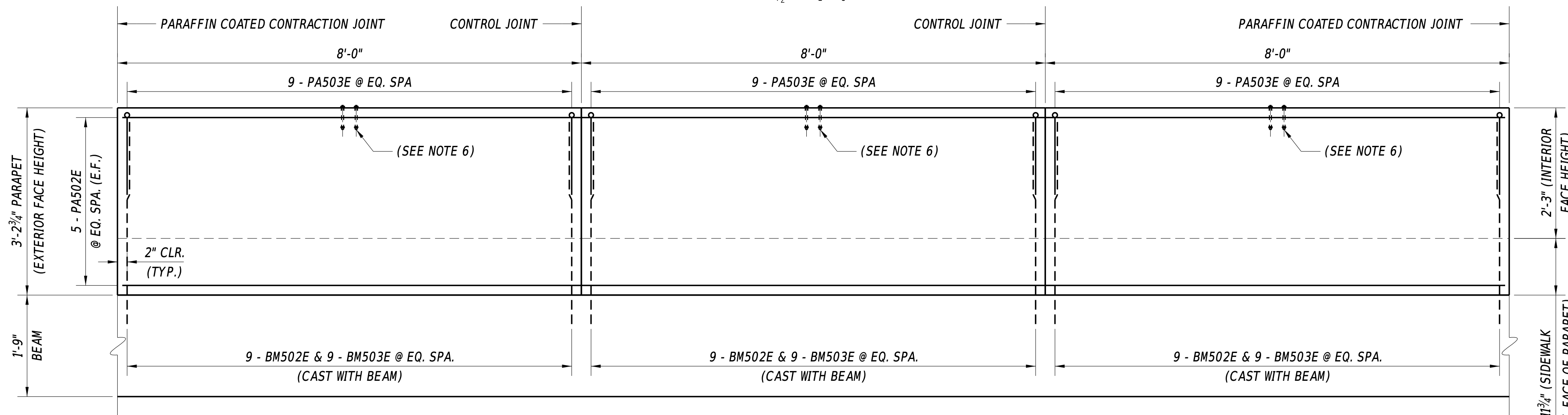
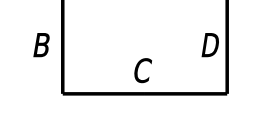


**PARAPET ELEVATION**

1/2" = 1' - 0"

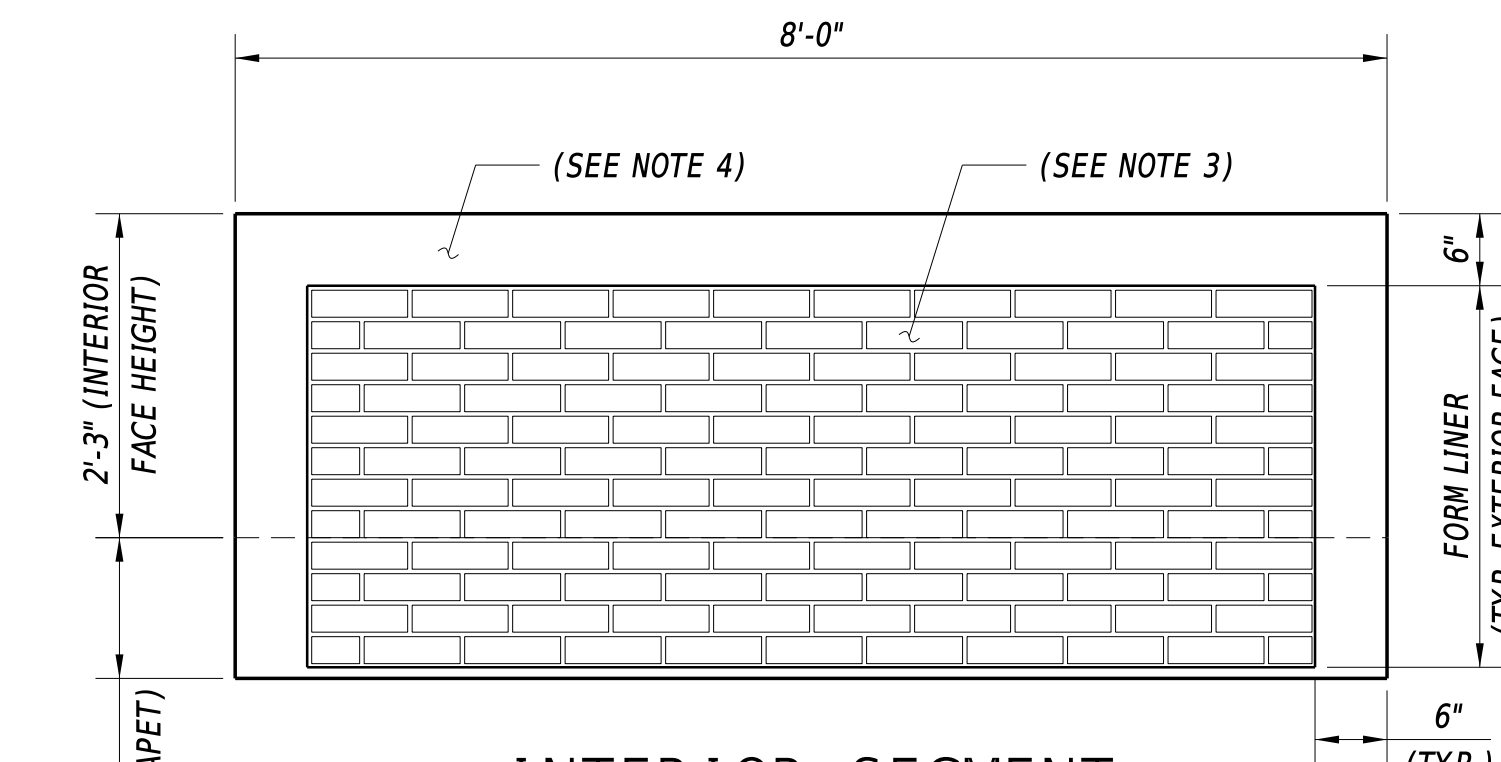
CONCRETE PARAPET REINFORCING BAR LIST							
QTY.	SIZE	LENGTH	MARK	TYPE	B	C	D
172	4	4-0.0	PA401E	STR.	4-0.0		
80	5	8-7.2	PA501E	STR.	8-7.2		
40	5	23-8.0	PA502E	STR.	23-8.0		
188	5	3-4.0	PA503E	17	1-4.0	0-8.0	1-4.0

(17)



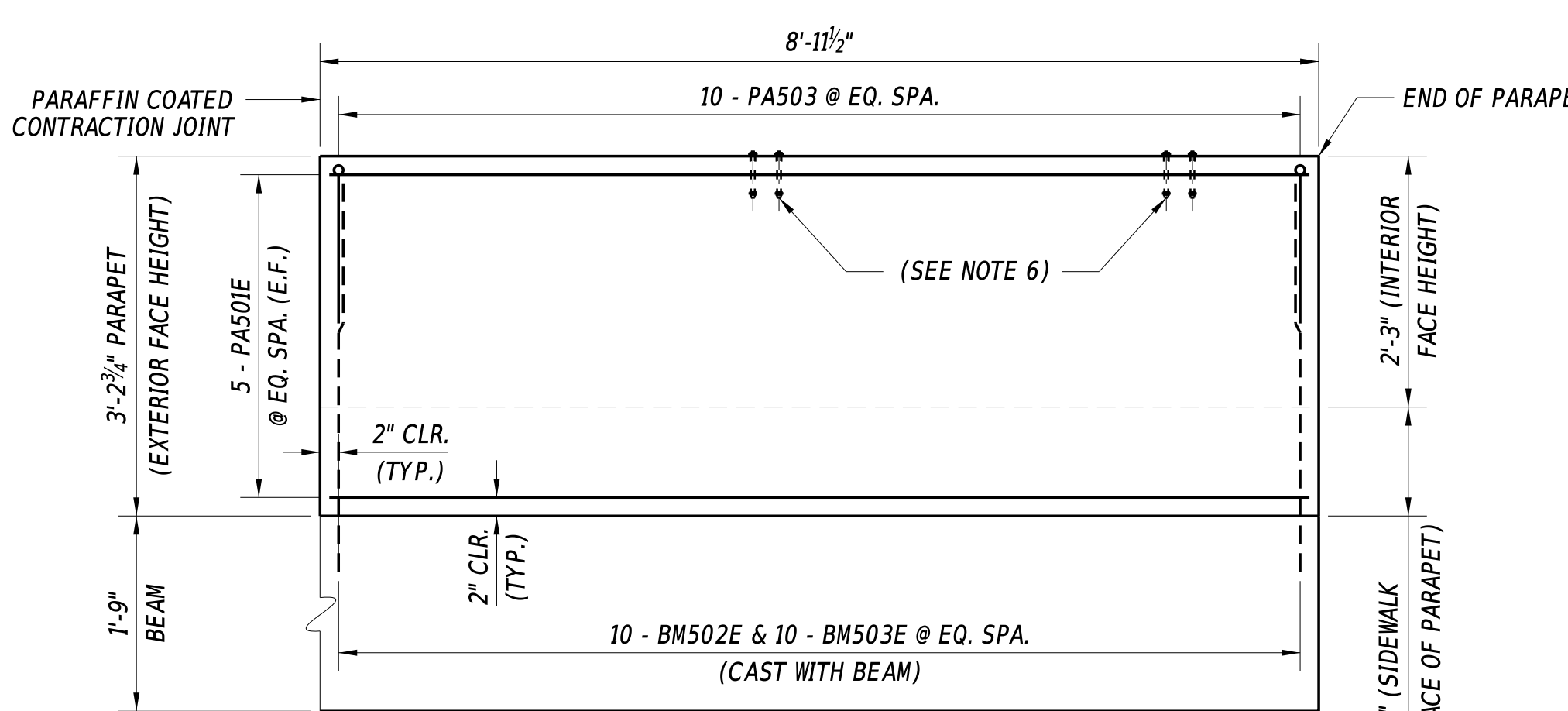
**INTERIOR PARAPET SEGMENT REINFORCEMENT**

3/4" = 1' - 0"



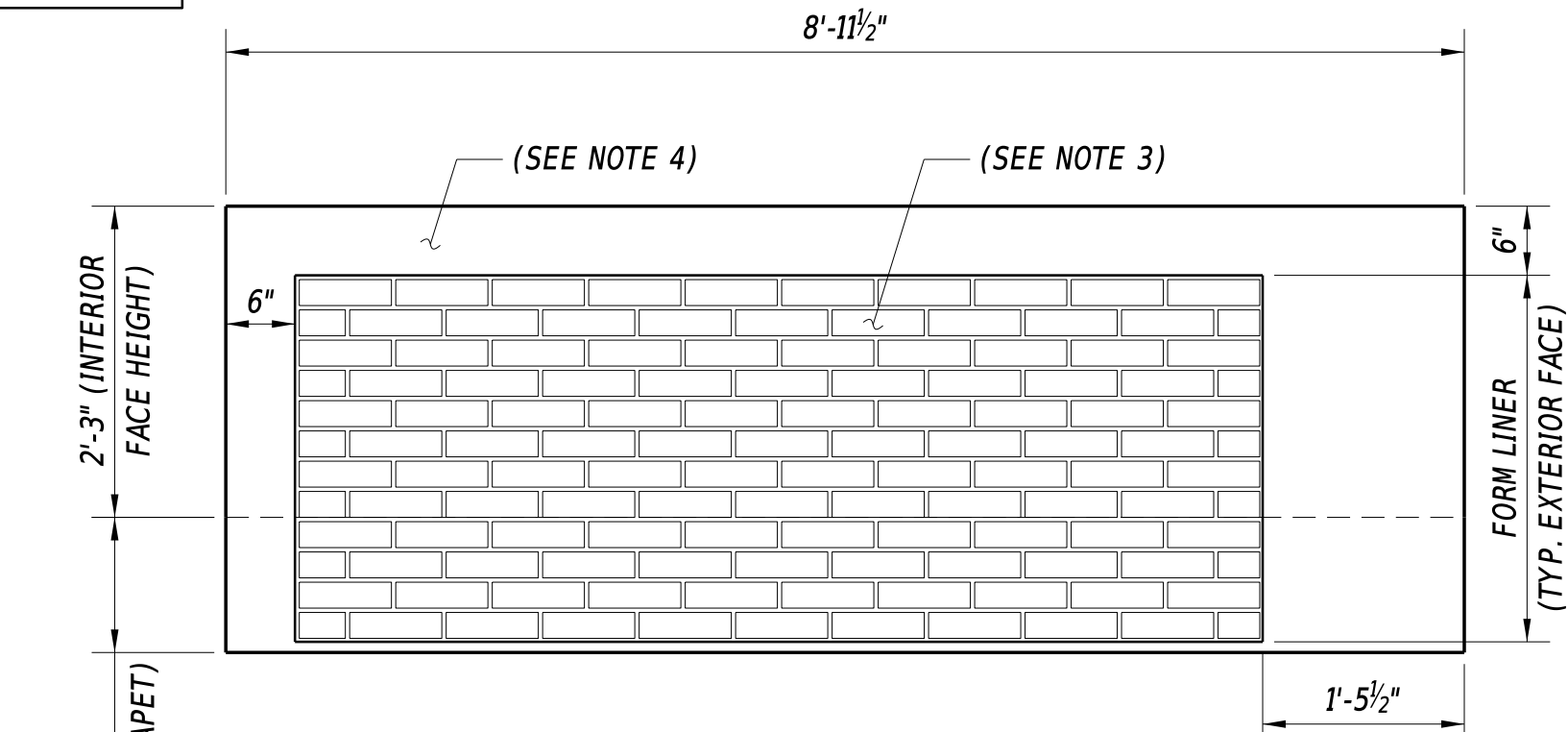
**INTERIOR SEGMENT**

3/4" = 1' - 0"



**END PARAPET SEGMENT REINFORCEMENT**

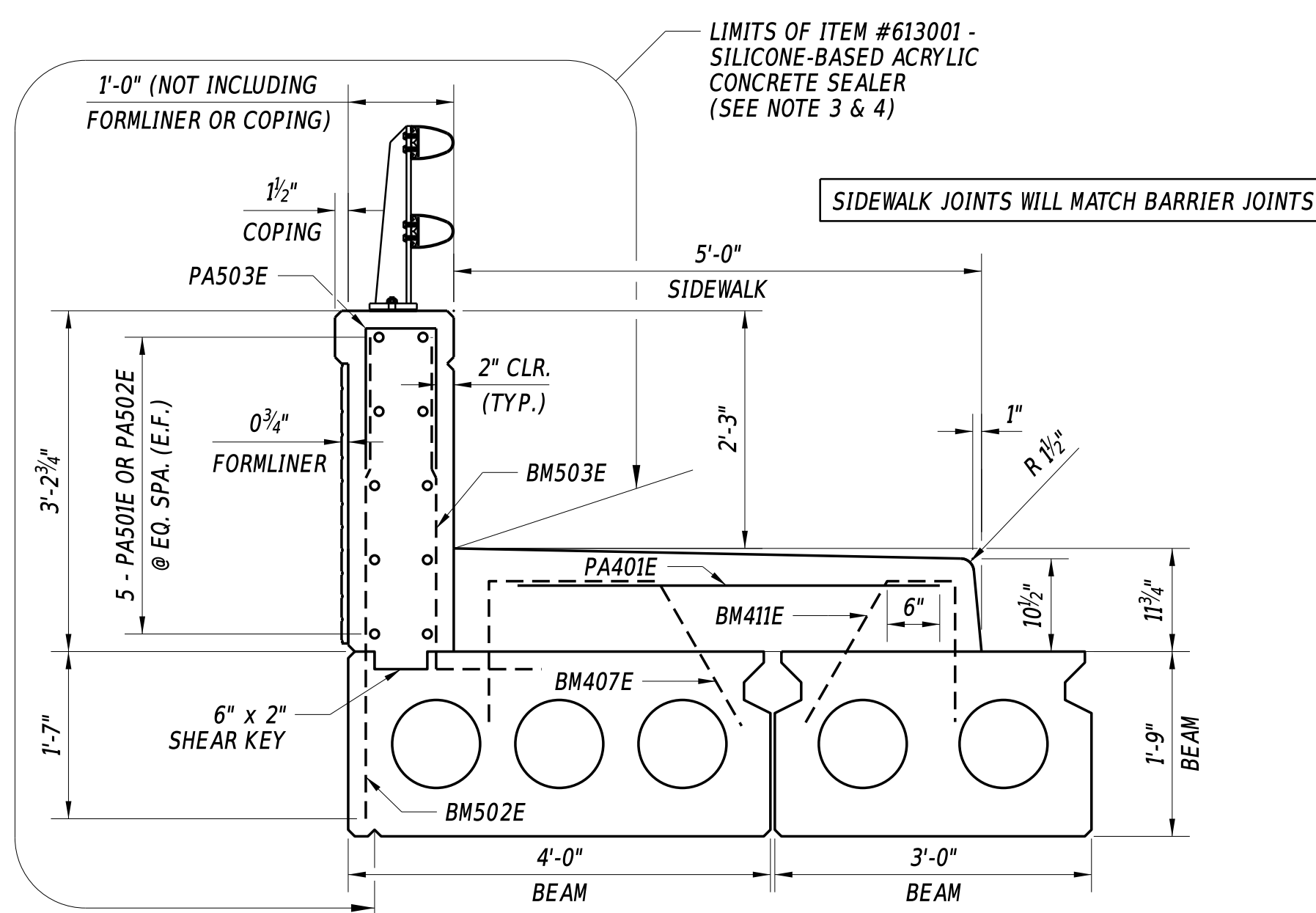
3/4" = 1' - 0"



**END SEGMENT**

3/4" = 1' - 0"

**PARAPET ELEVATIONS**



**PARAPET SECTION**

3/4" = 1' - 0"

**BRIDGE PARAPET NOTES:**

1. WORK AND MATERIAL (EXCLUDING REINFORCEMENT AND PAINT COATING) TO CONSTRUCT THE PARAPETS WILL BE PAID UNDER ITEM #610008 - P.C.C. MASONRY, PARAPET, CLASS A. PARAPET FORM LINER IS INCIDENTAL TO ITEM #610008 - P.C.C. MASONRY, PARAPET, CLASS A. REINFORCEMENT FOR PARAPETS WILL BE PAID UNDER ITEM #611001- BAR REINFORCEMENT, EPOXY COATED. CONCRETE PORTION OF PARAPET TO BE CAST AT THE FABRICATION PLANT, PRIOR TO SHIPPING TO BRIDGE SITE.
2. CONTROL AND CONTRACTION JOINTS SHALL BE LOCATED AS SHOWN ON ELEVATION VIEWS. PARAPET REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONTROL JOINTS. AT CONTROL JOINTS SAW CUT SHALL PENETRATE 1/2" BEYOND THE DEPTH OF THE FORM LINER.
3. PARAPET FORM LINER PATTERN WILL BE BRICK OR SIMILAR AND THE FINISH WILL BE RED, AMS-STD-595A COLOR NO. 31136. A SAMPLE OF THE FORM LINER PATTERN AND PAINT COLOR WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. PRIOR TO PAINTING THE FORMLINED BARRIER, PROVIDE A MOCKUP OF THE PAINT COLOR ON A SIMILAR CONCRETE SURFACE TO BE APPROVED BY THE ENGINEER. PAYMENT FOR THE MOCKUP IS INCIDENTAL TO ITEM #610008 - P.C.C. MASONRY, PARAPET, CLASS A. PAINTING OF THE FORM LINERS WILL BE PAID UNDER ITEM #613001 - SILICONE-BASED ACRYLIC CONCRETE SEALER.
4. ITEM #613001 - SILICONE-BASED ACRYLIC CONCRETE SEALER WITHIN THE PAYMENT LIMITS DEFINED ON THIS SHEET, BUT OUTSIDE OF THE FORM LINER AREA, FINISH WILL BE INSIGNIA WHITE, AMS-STD-595A COLOR NO. 37925. A SAMPLE OF THE PAINT COLOR WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. BRIDGE RAIL FINISH WILL BE BLACK, AMS-STD-595A COLOR NO. 17038. A SAMPLE OF THE PAINT COLOR WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. PAINTING OF THE HANDRAILS WILL BE INCIDENTAL TO ITEM #626011 - ALUMINUM HAND RAIL, TYPE 1.
6. PLACE ANCHORS ACCORDING TO THE METAL BRIDGE RAILING DETAIL. REFER TO BRIDGE RAIL DETAILS SHEET FOR FURTHER INFORMATION. AVOID CONFLICT BETWEEN ANCHOR BOLTS AND PARAPET REINFORCEMENT.

ADDENDA / REVISIONS

SCALE AS NOTED

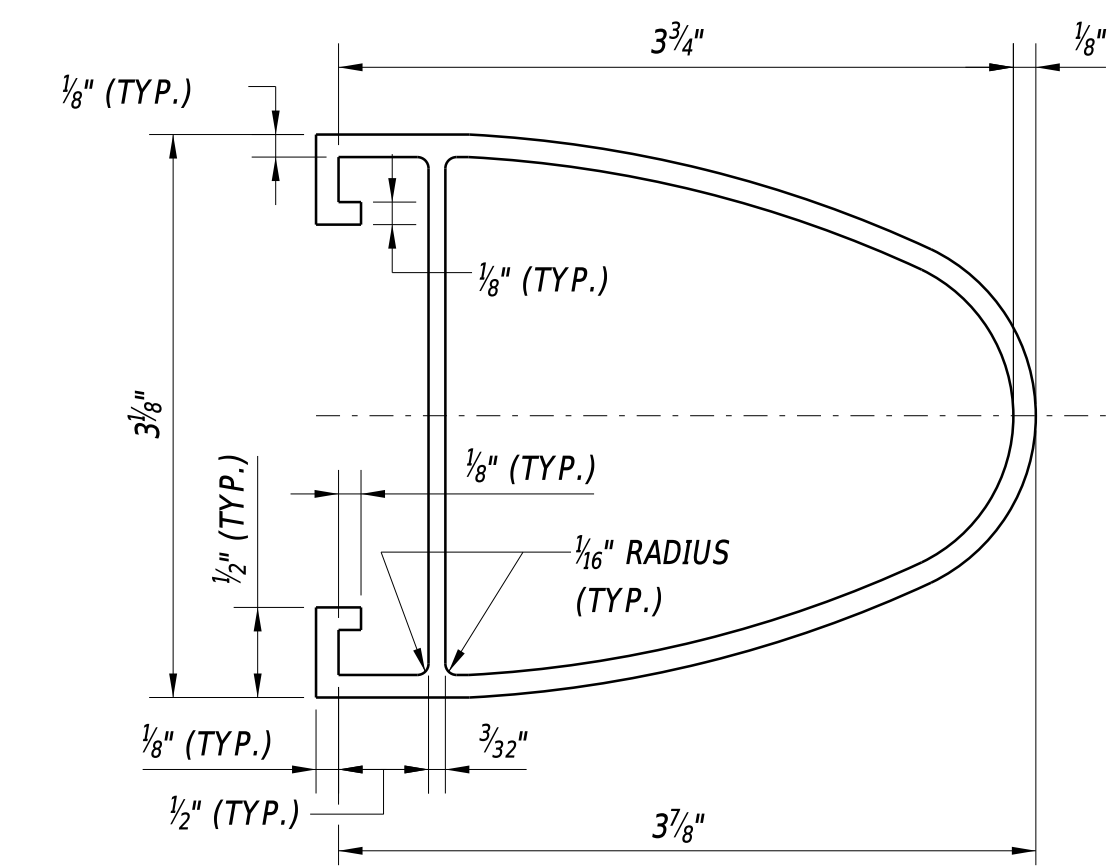
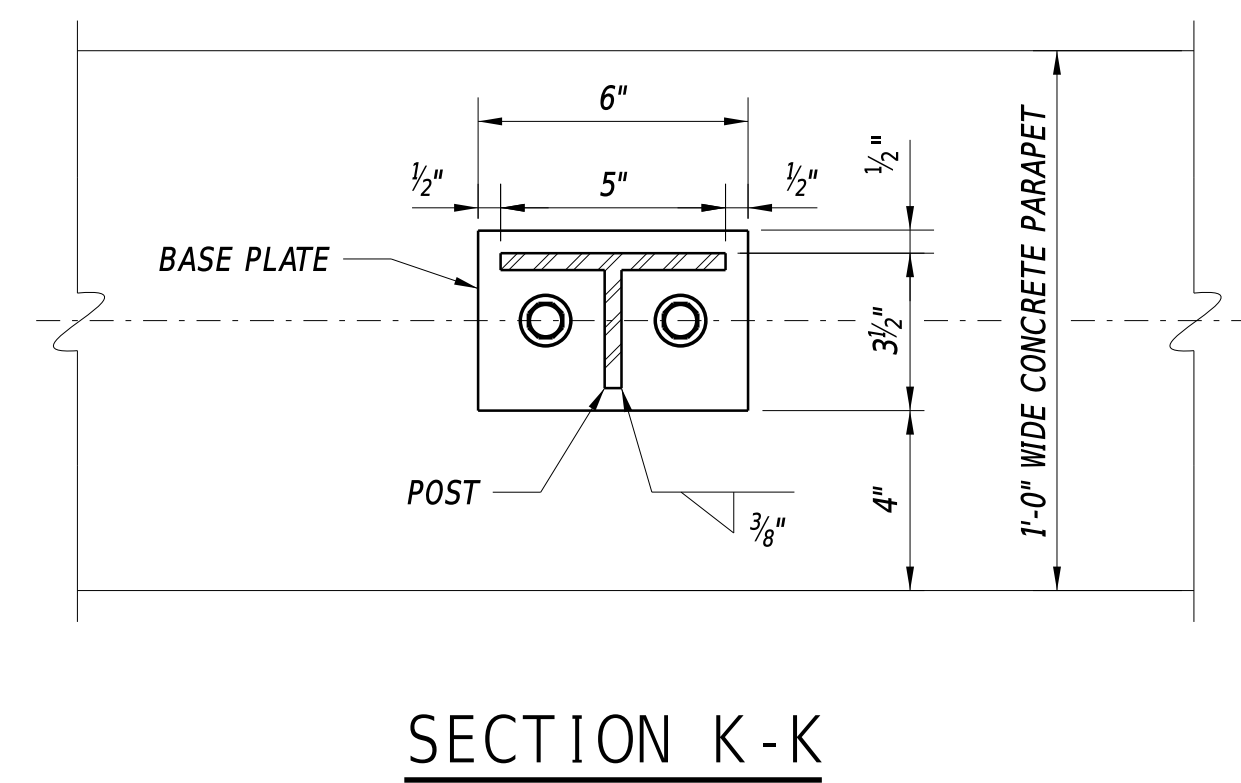
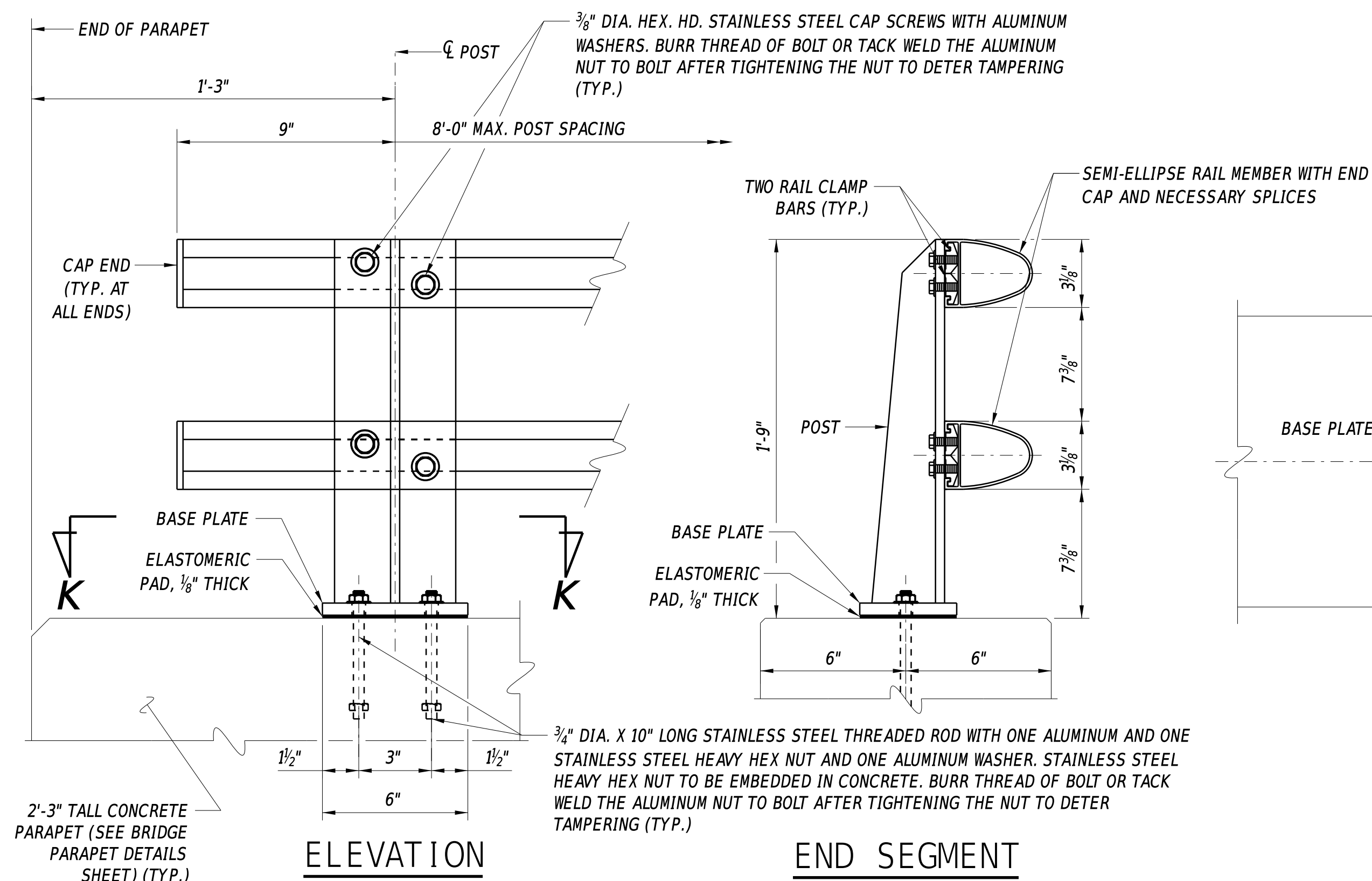
**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**BRIDGE PARAPET DETAILS**

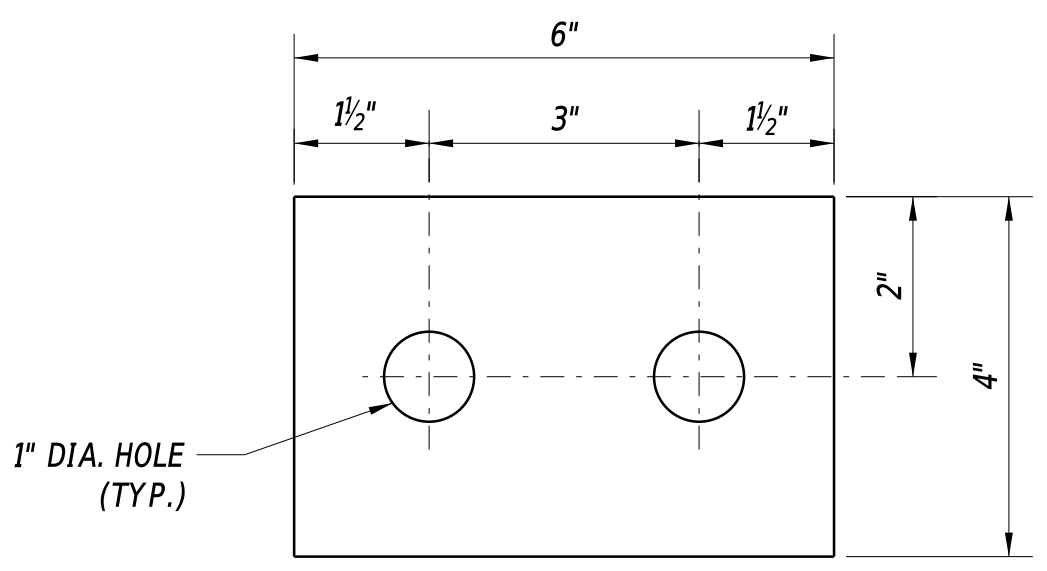
SECTION
BR
SHEET NO.
18

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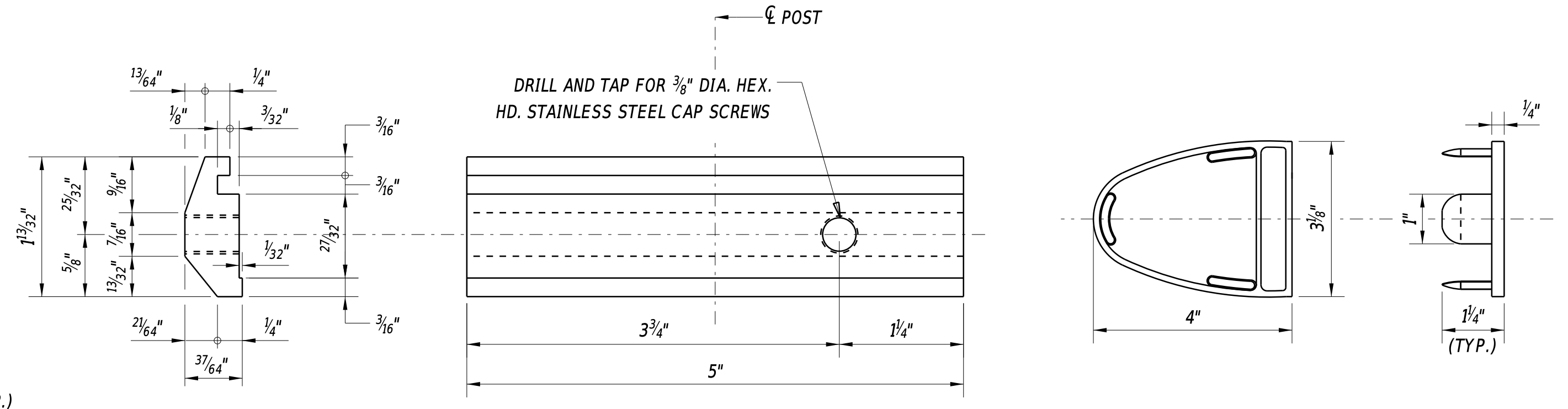
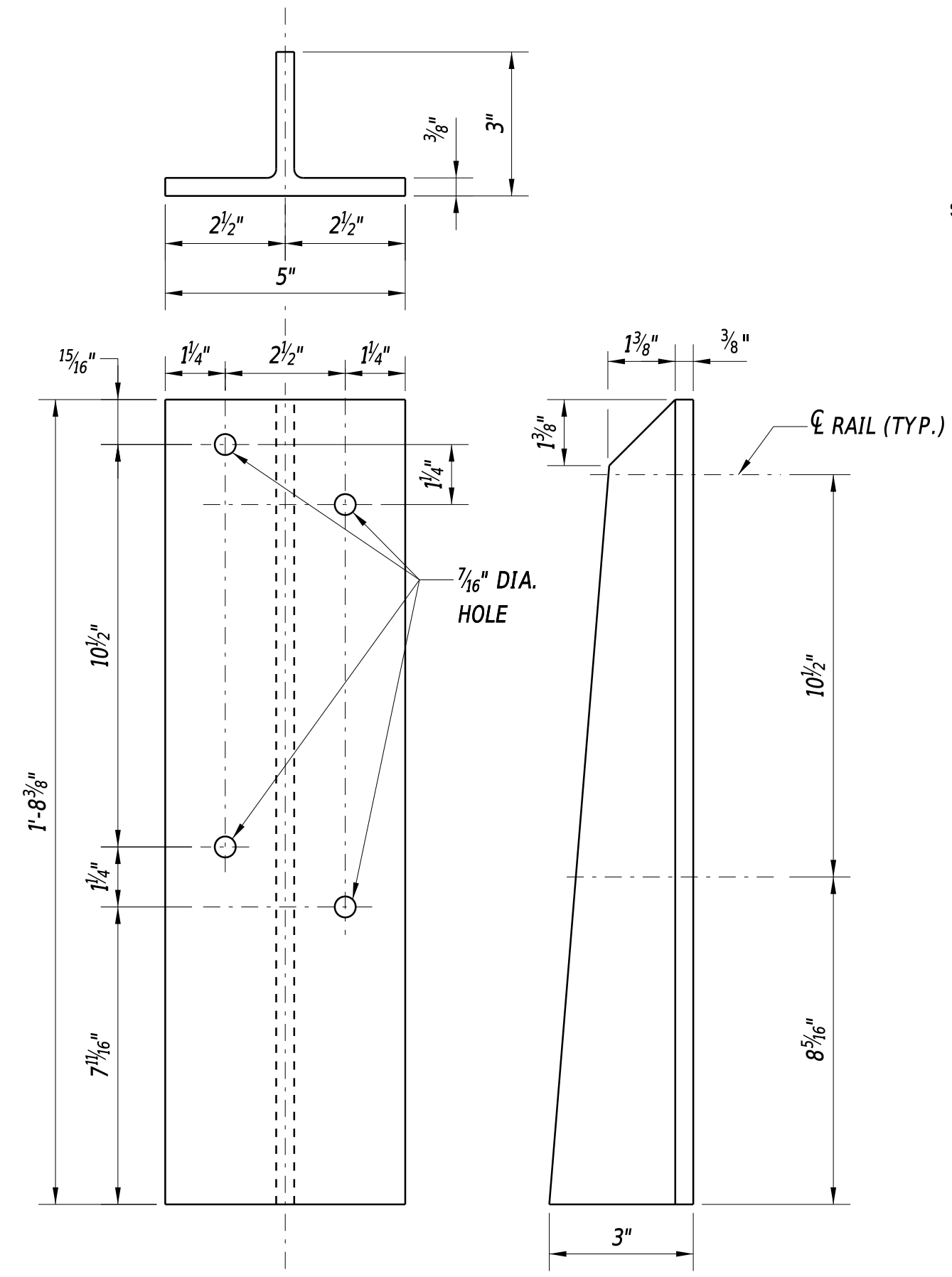
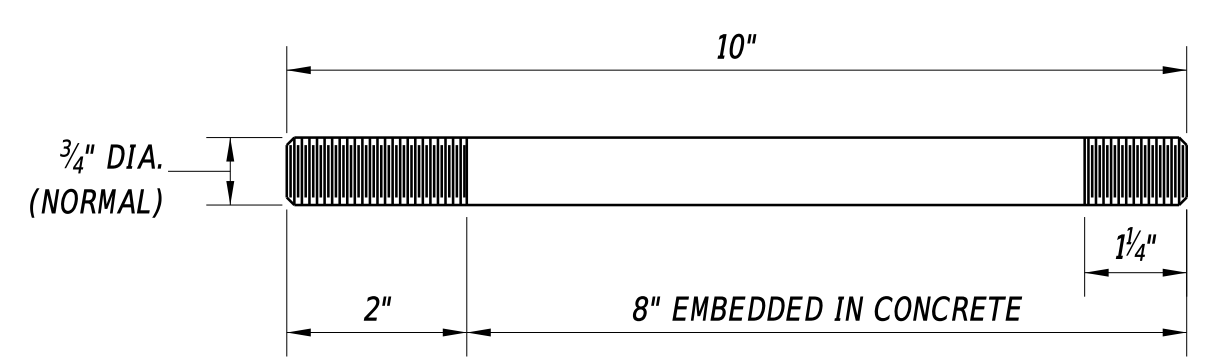


- GENERAL METAL RAILING NOTES:**
1. POSTS SHALL BE SET PERPENDICULAR TO GRADE.
  2.  $\phi$  POST MUST BE LOCATED A MINIMUM OF 6" FROM CONTROL JOINTS AND A MINIMUM OF 12" FROM EXPANSION OR CONTRACTION JOINTS.
  3. RAILS SHALL BE CONTINUOUS WITH SPLICES WHERE RAIL SECTIONS CROSS EXPANSION JOINTS.
  4. THE CENTERLINE OF ANY SPLICE SHALL BE LOCATED AT LEAST 2'-0" AWAY FROM CENTERLINE OF A POST.
  5. SET NUTS 1/4" CLEAR MINIMUM OF PLATES AND BURR THREADS ABOVE NUTS.
  6. THE METAL RAILING DETAILS SHALL BE PLACED ALONG ENTIRE LENGTH OF 2'-3" TALL CONCRETE PARAPET.
  7. WORK AND MATERIAL (INCLUDING ANCHOR BOLTS TO BE CAST IN PARAPET) TO FABRICATE AND INSTALL THE ALUMINUM RAILING SYSTEM WILL BE INCIDENTAL TO ITEM #626011 - ALUMINUM RAILING, TYPE 1.
  8. BRIDGE RAIL FINISH WILL BE BLACK, AMS-STD-595A COLOR NO. 17038. A SAMPLE OF THE PAINT COLOR WILL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. PAINTING OF THE HANDRAILS WILL BE INCIDENTAL TO ITEM #626011 - ALUMINUM HAND RAIL, TYPE 1.
- MATERIAL NOTES:**
1. POSTS, RAILS, SPLICE SLEEVES, CLAMP BARS, AND ALUMINUM HEX NUTS MUST MEET REQUIREMENTS OF ASTM B-221 ALLOY 6061-T6.
  2. BASE PLATES MUST MEET REQUIREMENTS OF ASTM B209 ALLOY 6061-T6.
  3. END CAPS MUST MEET REQUIREMENTS OF ASTM B26 ALLOY 356-F.
  4. ELASTOMERIC PADS MUST MEET REQUIREMENTS OF 60 +/- SHORE A DUROMETER.
  5. STAINLESS STEEL HEX NUTS MUST MEET REQUIREMENTS OF ASTM A-307, GRADE A.
  6. ANCHOR BOLTS MUST MEET REQUIREMENTS OF ASTM A-276, TYPE 304 OR TYPE 430 (THREADS TO BE ROLLED NOT CUT).
  7. STAINLESS STEEL HEX HEAD CAP SCREWS (CLAMPS) MUST MEET REQUIREMENTS OF ASTM A-193, GRADE B-8.
  8. ALUMINUM WASHERS MUST MEET REQUIREMENTS OF ASTM B-209 ALLOY ALCLAD 2024-T4.

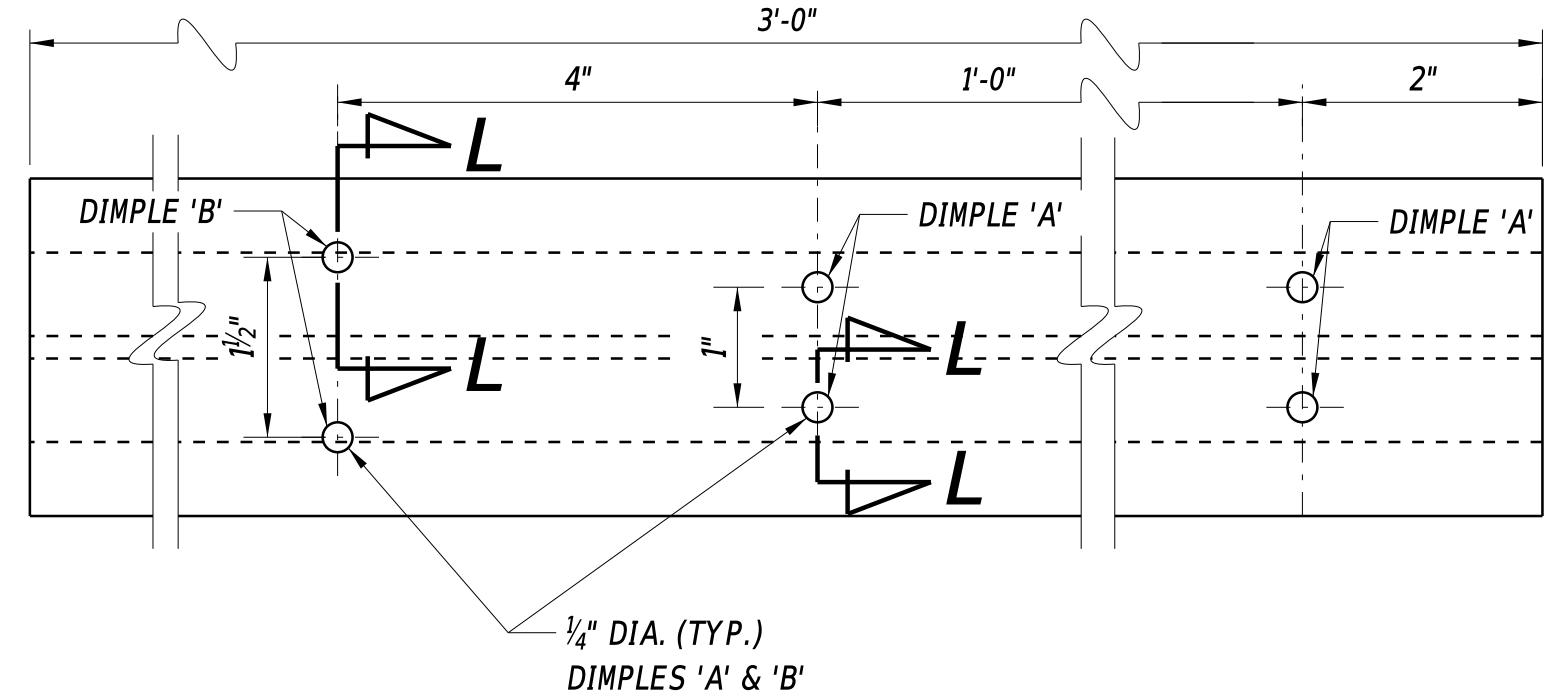
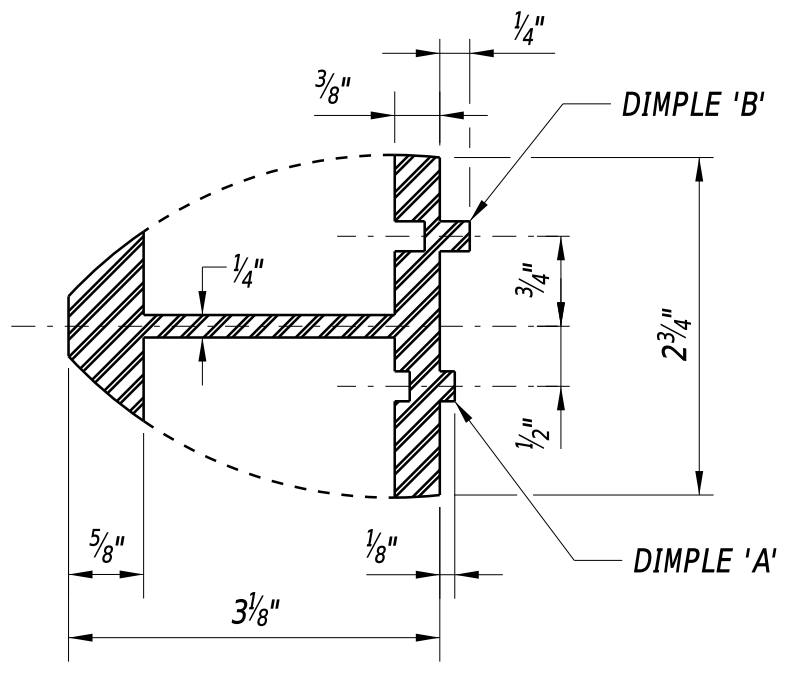
**METAL BRIDGE RAILING**



NOTE: BASE PLATE 1/2" THICK. THE 1/8" THICK ELASTOMERIC PAD WILL HAVE IDENTICAL DIMENSIONS AS BASE PLATE WITH 1" DIA x 1 1/2" SLOTS.

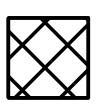


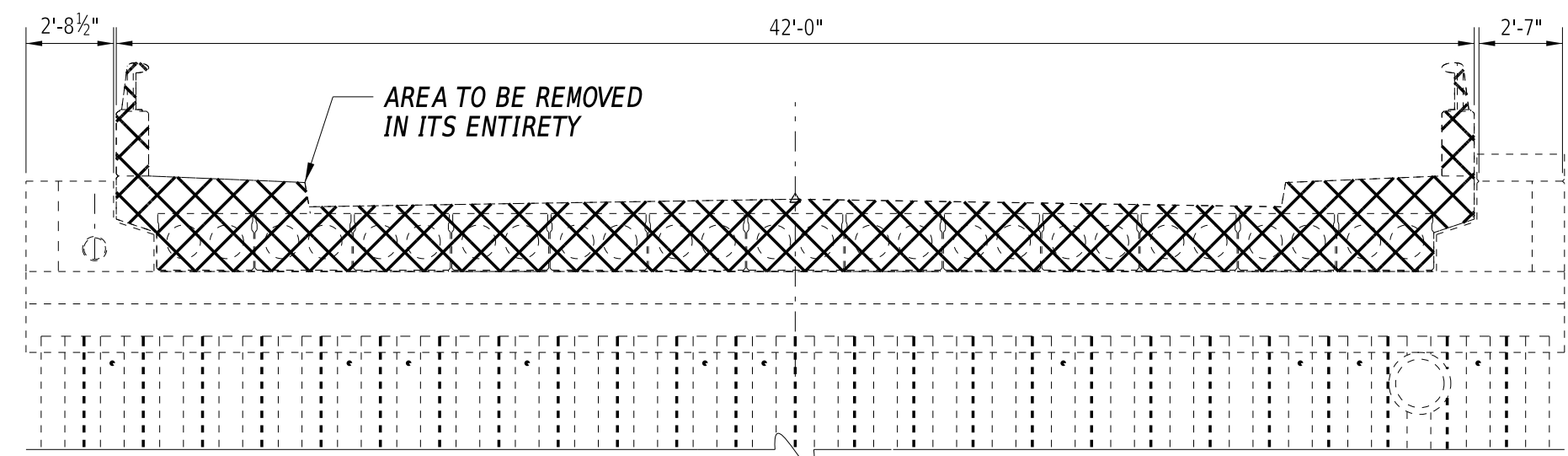
NOTE: CAPS SHALL BE SPOT WELDED TO RAILS WITH WELDS GROUND SMOOTH (3 WELDS REQUIRED FOR EACH CAP)



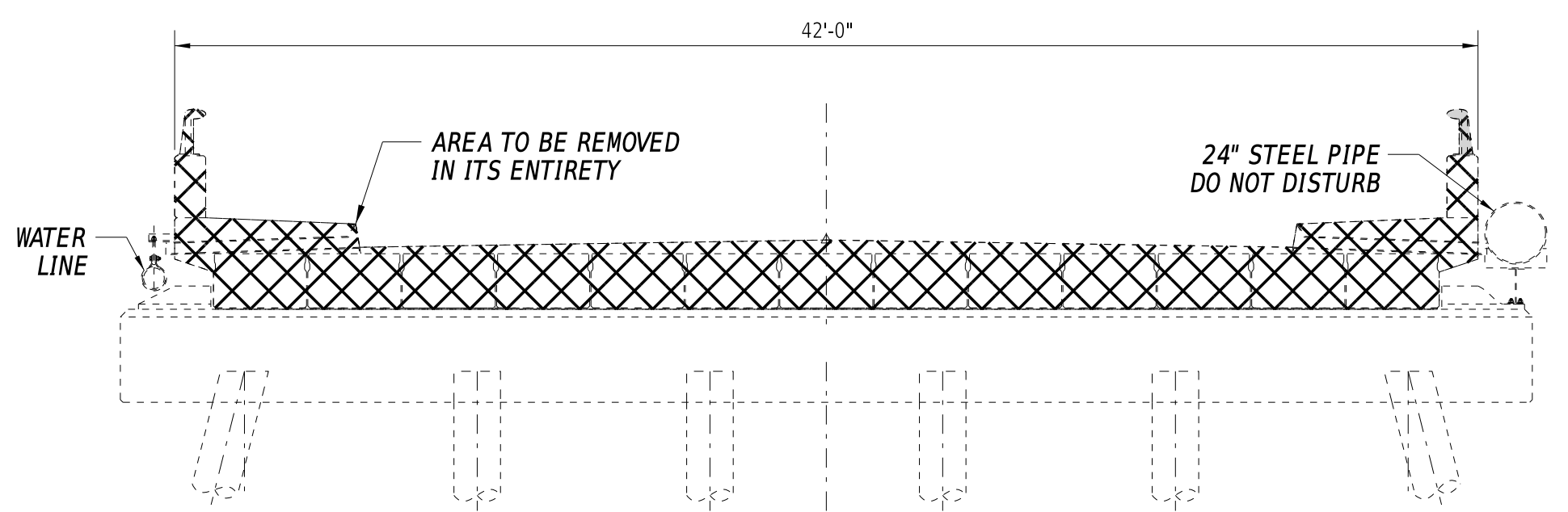
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ADDENDA / REVISIONS		NOT TO SCALE	BR 3-162 ON S466 DELAWARE AVE OVER BROAD CREEK	CONTRACT	BRIDGE NO.	3-162	SECTION
				T201607602	DESIGNED BY:	S. WEAVER	
			COUNTY	SUSSEX	CHECKED BY:	S. WALLS	SHEET NO.
							19

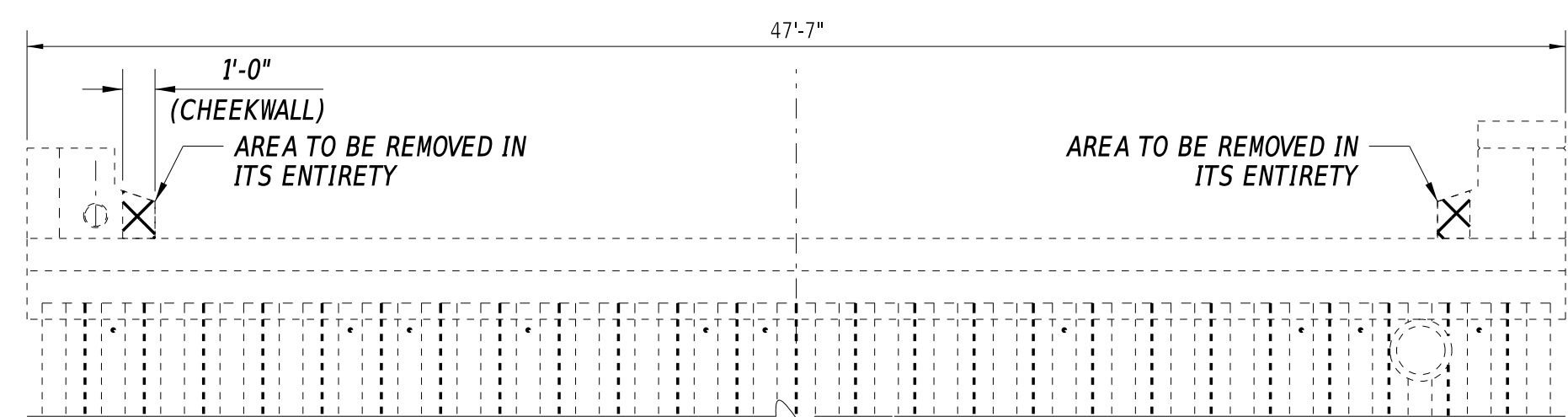
**LEGEND**  
 DENOTES AREA TO BE REMOVED UNDER ITEM #211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS



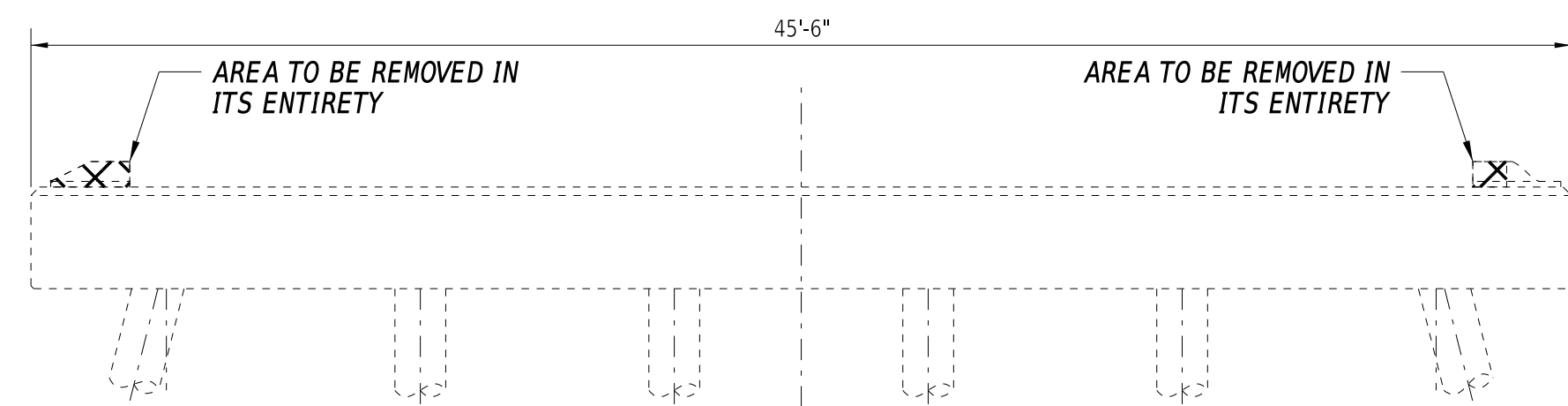
**TYPICAL DEMOLITION OVER ABUTMENT PHASE 1**



**TYPICAL DEMOLITION OVER PILE BENT PHASE 1**



**TYPICAL DEMOLITION OF ABUTMENT PHASE 2**



**TYPICAL DEMOLITION OF PILE BENT PHASE 2**

**EROSION NOTES:**

1. THE DISTURBED AREA FOR THIS PROJECT IS 0.0213 ACRES.
2. THE ADDITIONAL IMPERVIOUS AREA FOR THIS PROJECT IS 0.00 SQUARE FEET.
3. THE SEDIMENT AND STORMWATER MANAGEMENT PLANS HAVE BEEN APPROVED BY DELDOT'S STORMWATER ENGINEER UNDER DELDOT'S DELEGATED AUTHORITY. THE SEDIMENT AND STORMWATER MANAGEMENT PLANS ARE VALID FOR A FIVE YEAR PERIOD, BEGINNING ON THE DATE THE STORMWATER ENGINEER SIGNED THE CONSTRUCTION SEQUENCE SHEET. IF THE FINAL ACCEPTANCE OF THE PROJECT IS ANTICIPATED TO EXTEND BEYOND THE FIVE YEARS, THE CONTRACTOR WILL INFORM THE ENGINEER THREE MONTHS PRIOR TO THE EXPIRATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLANS. THE STORMWATER ENGINEER WILL REVIEW THE CURRENT SEDIMENT AND STORMWATER MANAGEMENT PLAN AND ISSUE AN EXTENSION WITH ANY APPROPRIATE MODIFICATIONS.

EROSION POTENTIAL FOR THIS PROJECT	CONTRACTOR EROSION AND SEDIMENT CONTROL SUPERVISOR REQUIREMENT
( ) INSIGNIFICANT	NONE
( ) MINOR	CONTRACTOR TRAINING PROGRAM, AS DEFINED IN SECTION 6.2 OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.
( X ) MAJOR	CERTIFIED CONSTRUCTION REVIEWER (CCR), AS DEFINED IN SECTION 6.3 OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.

**ATSSA REQUIREMENTS:**

1. AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA) CERTIFIED TRAFFIC CONTROL SUPERVISOR REQUIREMENT FOR THIS PROJECT.
- |       |  |
|-------|--|
| ( X ) | THE CONTRACTOR SHALL NOT BE REQUIRED TO HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT.   |
| ( )   | THE CONTRACTOR SHALL HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT. THE CONTRACTOR'S GENERAL SUPERINTENDENT FOR THIS PROJECT OR ANOTHER ATSSA CERTIFIED MEMBER OF THE CONTRACTOR'S PROJECT STAFF MAY BE THE ATSSA SUPERVISOR. PAYMENT FOR ATSSA SUPERVISOR IS INCIDENTAL TO ITEM 801000. |

**SEQUENCE OF CONSTRUCTION:**

**PHASE 1:**

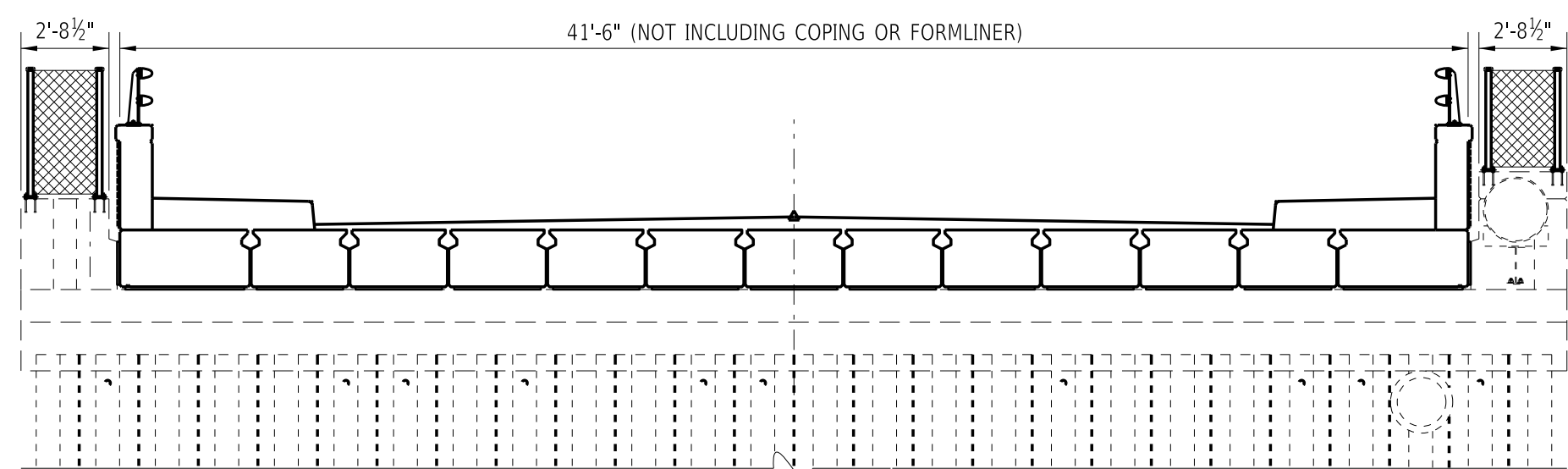
1. CLOSE DELAWARE AVE IN ACCORDANCE WITH THE APPROVED VEHICULAR AND PEDESTRIAN DETOUR PLANS.
2. INSTALL E&S DEVICES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE EROSION AND SEDIMENT CONTROL PLAN.
3. SAW CUT AND EXCAVATE BETWEEN STA. 3+95 AND 3+99 AS INDICATED ON THE CONSTRUCTION PLAN SHEET. INSTALL TWO (2) 2" PVC CONDUIT AND TWO (2) 4" PVC CONDUITS, PAID UNDER ITEM #831513 - FURNISH AND INSTALL 2" SCHEDULE 80 PVC CONDUIT (TRENCH) AND ITEM #831516 - FURNISH AND INSTALL 4" SCHEDULE 80 PVC CONDUIT (TRENCH) RESPECTIVELY. CONDUIT SHALL BE INSTALLED FROM UP# 47750 00168 TO UP# 47749 00169. INCIDENTAL TO THE PAY ITEMS #831513 AND #831516 ARE A 90° ELBOW AT EACH POLE FOR EACH RUN, AN ADDITIONAL 8' OF CONDUIT EXTENDING UP THE UTILITY HARDWARE TO SECURE THE PIPE TO THE POLES, AND BACKFILL REQUIRED UP TO THE BOTTOM ELEVATION OF PROPOSED ROADWAY. REFER TO TYPICAL SECTIONS SHEET FOR FURTHER GUIDANCE REGARDING PROPOSED ROADWAY. CONTRACTOR WILL SUPPLY AND INSTALL 1500LB TEST PULL ROPE THROUGH CONDUITS FOR OVERHEAD ELECTRICAL UTILITY RELOCATION. ONCE CONDUIT AND WIRES ARE IN PLACE UTILITY OWNER WILL CONNECT TO EXISTING SERVICES.
4. REMOVE ABANDONED WATER LINE ON WEST SIDE OF STRUCTURE AND CAP EXISTING PIPE ENDS.
5. REMOVE EXISTING SUPERSTRUCTURE TO INCLUDE HOT-MIX SURFACE, SIDEWALK, METAL RAIL, BARRIERS, VOIDED SLAB BEAMS, BEARING PADS AND APPROACH SLABS.

**PHASE 2:**

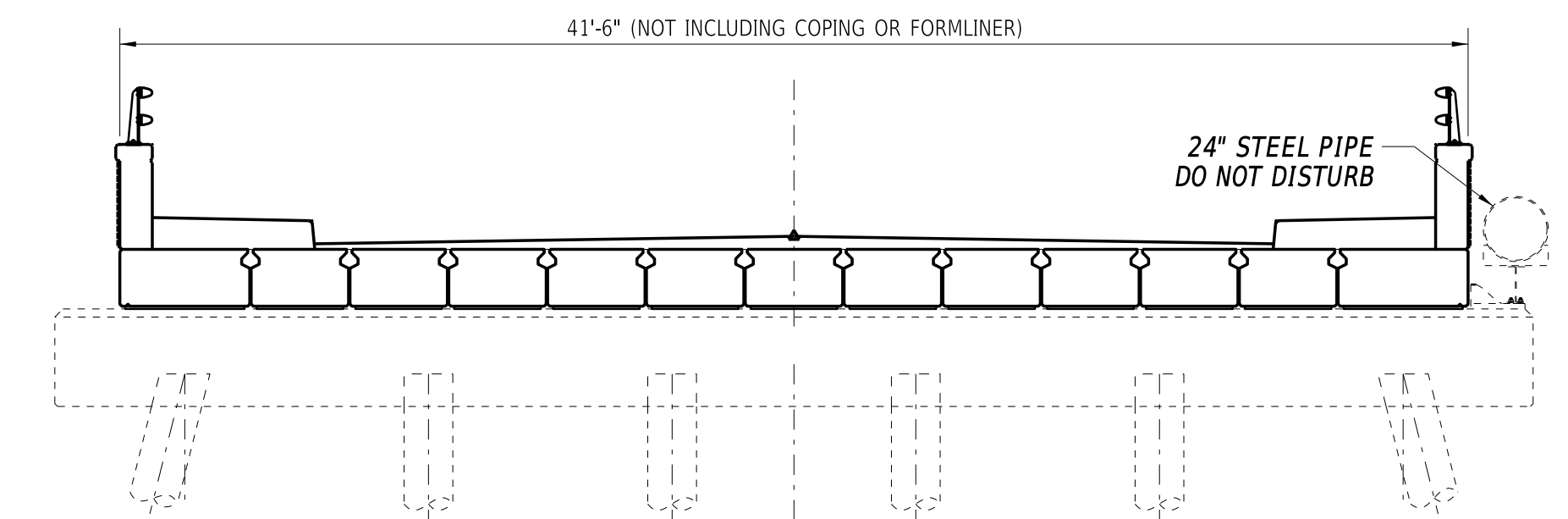
6. IN WATER WORK TO INCLUDE INSTALLATION AND REMOVAL OF COFFERDAMS, CONCRETE REPAIRS TO THE PIERS AND/OR ABUTMENTS, ANY RIPRAP PLACEMENT, MUST OCCUR FROM 7/2 TO 8/14. INSTALLATION OF SHEETPILES WITH VIBRATORY HAMMER WILL NOT BE ALLOWED AT ANY TIME OF YEAR. REFER TO ENVIRONMENTAL COMPLIANCE NOTES SHEET FOR FURTHER INFORMATION REGARDING TIME OF YEAR RESTRICTIONS ASSOCIATED WITH FISHERIES AND MIGRATORY BIRDS.
7. FILL HOLE IN CHEEKWALL WHERE EXISTING WATER LINE PROTRUDED WITH HIGH-STRENGTH NON-SHRINK GROUT, INCIDENTAL TO ITEM #610506 - REPAIRING EXISTING PORTLAND CEMENT CONCRETE STRUCTURES.
8. SAW CUT AND REMOVE PART OF CHEEKWALL ON BOTH ABUTMENTS TO ACCOMMODATE PROPOSED STRUCTURE.
9. INSTALL COFFERDAMS AS NEEDED. VERIFY AND DO NOT DISTURB LOCATION OF UNDERGROUND UTILITIES.
10. SAW CUT AND REMOVE ARCHITECTURAL DETAIL ON TOP OF PILE BENT AS INDICATED ON EAST AND WEST ENDS.
11. CLEAN PILE BENT WITH PRESSURE WASH, SEAL CRACKS, MATCH MORTAR, REPAIR DEEP AND SHALLOW SPALLS ON PILE BENT, AND APPLY EPOXY CONCRETE SEALER. REFER TO PILE BENT DETAILS FOR FURTHER GUIDANCE.
12. CLEAN ABUTMENTS WITH PRESSURE WASH, SEAL CRACKS, MATCH MORTAR, REPAIR DEEP AND SHALLOW SPALLS ON ABUTMENTS, AND APPLY EPOXY CONCRETE SEALER. REFER TO ABUTMENT DETAILS FOR FURTHER GUIDANCE.
13. REMOVE COFFERDAMS WHEN SUBSTRUCTURE REPAIRS ARE COMPLETE.

**SUPERSTRUCTURE REPLACEMENT:**

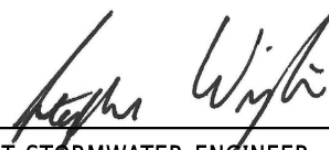
14. INSTALL NEW BEARING PADS AND ERECT PROPOSED PRESTRESSED CONCRETE BEAMS WITH CONCRETE PORTION OF THE PARAPET ATTACHED TO EXTERIOR BEAMS. REFER TO EXTERIOR BEAM DETAILS, INTERIOR BEAM DETAILS, AND FRAMING PLAN FOR FURTHER GUIDANCE.
15. CONSTRUCT PROPOSED BACKWALL ON EACH ABUTMENT AND FILL SHEAR KEY VOIDS WITH UHPC.
16. APPLY WATERPROOFING MEMBRANE OVER PRESTRESSED BOX BEAMS AND BACKWALL AND ALONG INTERFACE OF BACKWALL AND EXISTING ABUTMENT.
17. CONSTRUCT CONCRETE SIDEWALKS OVER BRIDGE AND CONCRETE CURB AND SIDEWALKS APPROACHING THE BRIDGE. INSTALL METAL RAIL ON PARAPETS.
18. INSTALL RECTANGULAR RAPID FLASHING BEACON SIGNAL.
19. PLACE FILL BEHIND ABUTMENTS, CONSTRUCT INTEGRATED BRIDGE APPROACHES, INSTALL PROPOSED P.C.C. PAVEMENT, PLACE SUPERPAVE.
20. COORDINATE WITH DP&L TO REINSTALL AND REENERGIZE AERIAL PRIMARY ELECTRIC OVER THE BRIDGE.
21. REPAIR FENCE ON PARCEL 2-R IF DISTURBED.
22. INSTALL BRIDGE SAFETY FENCE ON CHEEKWALLS.
23. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER VEGETATION HAS STABILIZED ON ALL DISTURBED AREAS IN ACCORDANCE WITH THESE PLANS AND AS DIRECTED BY THE ENGINEER.
24. REMOVE ALL MOT DEVICES AND REOPEN THE ROADWAY. REMOVAL OF MOT DEVICES MAY OCCUR PRIOR TO REMOVAL OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES.



**PROPOSED SECTION OVER ABUTMENT**



**PROPOSED SECTION OVER PILE BENT**

  
 DELDOT STORMWATER ENGINEER  
 DATE 7/16/2020  
 "I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THESE PLANS MEET THE REQUIREMENTS OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS AND THAT ALL CLEARING, GRADING, AND CONSTRUCTION WILL BE ACCOMPLISHED PURSUANT TO THE PLAN."

ADDENDA / REVISIONS

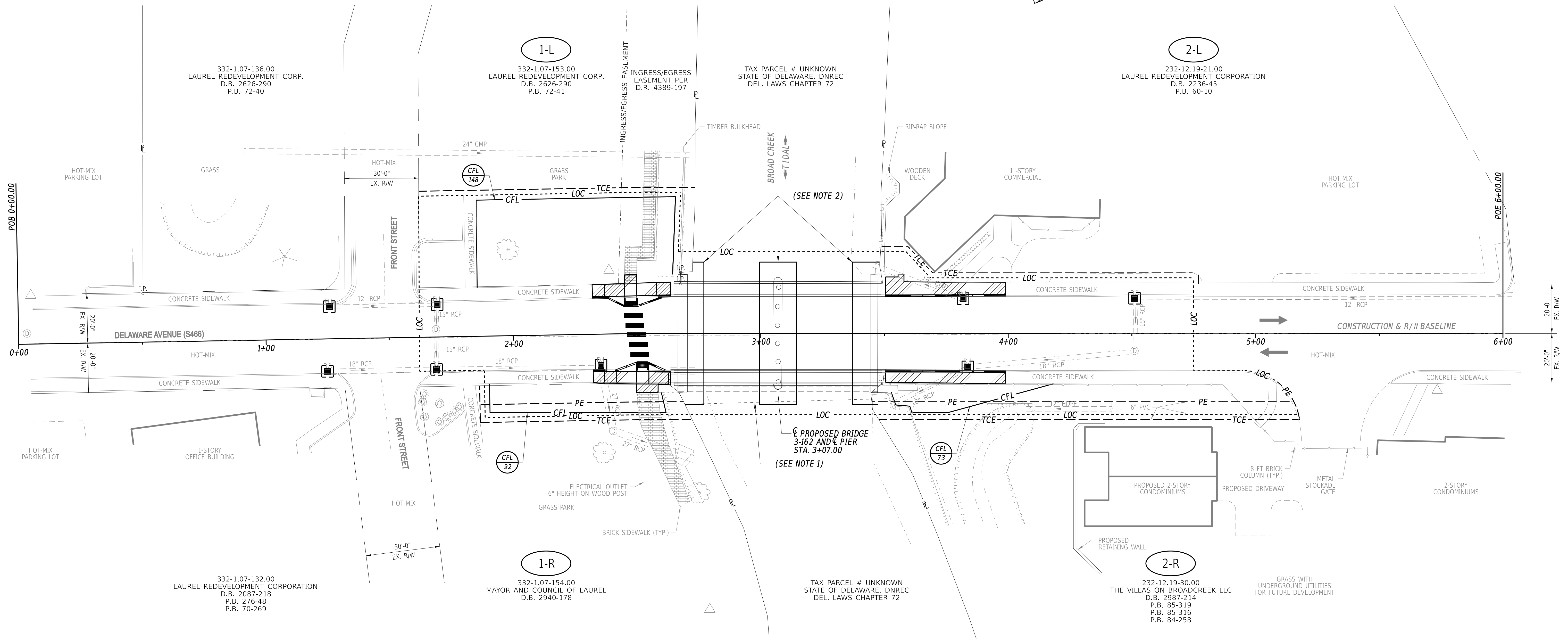
NOT TO SCALE

**BR 3-162 ON  
 S466 DELAWARE AVE  
 OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**CONSTRUCTION SEQUENCE  
 AND EROSION AND  
 SEDIMENT CONTROL NOTES**

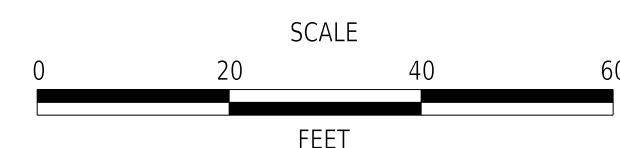
SECTION
BR
SHEET NO.
20



**EROSION AND SEDIMENT CONTROL PLAN NOTES:**

1. APPROXIMATE LOCATION OF UNDERGROUND GAS LINE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL VERIFY EXACT LOCATION. DO NOT DISTURB UNDERGROUND UTILITIES.
2. COFFERDAM TO BE DESIGNED BY CONTRACTOR IN ORDER TO MAKE REPAIRS TO SUBSTRUCTURE UNITS. LOWERING OF WATER LEVEL REQUIRED TO COMPLETE WORK INCIDENTAL TO ITEM #604002 - COFFERDAMS. CONTRACTOR TO PROVIDE STAMPED PLANS FOR COFFERDAM AND DEWATERING PROCEDURE TO BE APPROVED BY ENGINEER.

ADDENDA / REVISIONS



**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**EROSION AND SEDIMENT  
CONTROL PLAN**

SECTION	BR
SHEET NO.	21

# ENVIRONMENTAL COMPLIANCE NOTES

1. GENERAL NOTES:

- A. THE PURPOSE OF THIS SHEET IS TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS ARE FOR THE AGENCY PERMIT REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.
- B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH WOULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES) IS NECESSARY, CONTACT THE ENVIRONMENTAL STUDIES SECTION AT (302-760-2259 OR DOT\_ENVIRONMENTALSTUDIES@DELAWARE.GOV) TO ALLOW FOR COORDINATION WITH THE APPROPRIATE RESOURCE AGENCIES AND APPROVAL.
- C. USE OF THIS SHEET DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.

2. NATURAL RESOURCE ISSUES:

- A. PERMIT REQUIREMENTS/APPROVALS \*:
  - U.S. ARMY CORPS OF ENGINEERS (COE): NWP 23 W/PCN
  - DNREC - WETLANDS & SUBAQUEOUS LANDS (WLSL): SUBAQUEOUS LANDS PERMIT
  - DNREC - WATER QUALITY (WQC) & COASTAL ZONE CONSISTENCY (CZM): ISSUED (PROJECT IS NOT LOCATED IN CRW)
  - US COAST GUARD (USCG): PERMIT
- \* THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS RESPONSIBLE FOR COORDINATING AND/OR OBTAINING THESE APPROVALS.
- \*\* THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO BEGINNING CONSTRUCTION IN THE PERMITTED AREA(S) AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
- B. CONSTRUCTION RESTRICTIONS:
  - FISHERIES - NO INSTREAM WORK TO BE PERFORMED FROM MARCH 1ST TO JULY 1ST AND FROM AUGUST 15TH TO NOVEMBER 1ST DUE TO THE PRESENCE OF ATLANTIC STURGEON AND ANADROMOUS FISH SPECIES IN BROAD CREEK. DURING THESE RESTRICTED PERIODS, WORK ABOVE THE WATERLINE MAY INCLUDE THE USE OF A BARGE OR BOAT FOR LABORERS AND SMALL EQUIPMENT (HAND TOOLS). LARGE EQUIPMENT INCLUDING CRANES MAY NOT BE STAGED FROM IN-WATER PLATFORMS DURING THE RESTRICTED PERIODS. ANY BARGES OR BOATS SHOULD NOT BE LEFT IN THE RIVER AFTER THE END OF A SHIFT, BUT REDEPLOYED DAILY TO ALLOW FOR PERIODS OF UNRESTRICTED MOVEMENT BY THE SPAWNING FISH SPECIES.
  - ENDANGERED SPECIES - NORTHERN LANCE MUSSELS HAVE BEEN DOCUMENTED IN BROAD CREEK IN THE VICINITY OF THE PROPOSED PROJECT. ALL EFFORTS TO DECREASE DOWNSTREAM SEDIMENTATION SHALL BE TAKEN. IN ADDITION, ANY PRESERVATIVES OR EPOXIES INJECTED IN TO THE BRIDGE STRUCTURES SHALL BE MARINE STABLE AND SHALL BE CONTAINED SO THEY DO NOT FLOW IN TO THE CREEK.
  - MIGRATORY BIRDS - APRIL 15TH - AUGUST 1ST (INCLUSIVE). EITHER BEGIN CONSTRUCTION ON THE ABUTMENTS AND PILE BENT PRIOR TO APRIL 15TH (TO PREVENT BIRDS FROM NESTING) OR WAIT UNTIL AFTER AUGUST 1ST (AFTER HATCHLINGS HAVE LEFT) TO BEGIN WORK ON THE ABUTMENTS AND PILE BENT. IF EITHER OF THESE OPTIONS IS NOT PRACTICABLE, THEN PRIOR TO APRIL 15TH, DETERRENT NETTING (OR SIMILAR DEVICE) SHALL BE INSTALLED. NETTING SHALL BE PAID FOR UNDER ITEM #763623 - NETTING MIGRATORY BIRD EXCLUSION.

3. CULTURAL RESOURCE ISSUES:

- A. BASED ON CURRENT COORDINATION, THE PROJECT IS CLEAR FOR CULTURAL RESOURCES AND EXEMPT FROM SHPO REVIEW UNDER STIPULATION III OF DELDOT'S PROGRAMMATIC AGREEMENT WITH FEDERAL HIGHWAY ADMINISTRATION (FHWA) AND DELAWARE STATE HISTORIC PRESERVATION OFFICE (SHPO). WORK WILL OCCUR WITHIN THE BOUNDARY OF THE LAUREL HISTORIC DISTRICT, BUT NO CONTRIBUTING FEATURES WILL BE AFFECTED. THERE ARE NO CULTURAL RESOURCE CONCERNS AS LONG AS THE PROJECT SCOPE IS NOT MODIFIED AND ALL STAGING AND STOCKPILING REMAIN WITHIN THE EXISTING ROADWAY FOOTPRINT. SHOULD IT BE NECESSARY TO ADD ADDITIONAL ACCESS LOCATIONS, OTHER STOCKPILING/STAGING AREAS, OR OTHERWISE ALTER THE SCOPE OF THE PROJECT, DELDOT ENVIRONMENTAL STUDIES STAFF WILL NEED TO REVIEW THESE CHANGES FOR POTENTIAL CULTURAL RESOURCES CONCERNS.

4. STREAM RESTORATION:

- A. RESTORE OTHER AREAS OF THE CHANNEL BOTTOM AFFECTED BY CONSTRUCTION (INCLUDING, BUT NOT LIMITED TO, THE LOCATION OF SUMP PITS, STABILIZED OUTFALLS, TEMPORARY PIPES AND/OR SANDBAG DIKES AND DIVERSIONS) TO EXISTING CONDITIONS. FILL ANY CAVITIES OR SCOUR HOLES RESULTING FROM CONSTRUCTION ACTIVITIES WITH CHANNEL BED FILL. PAYMENT INCIDENTAL TO ITEM #604002 - COFFERDAMS.

5. PROTECTION OF RESOURCES:

- A. TO PROTECT AQUATIC SPECIES (INCLUDING EGGS) FROM IMPINGEMENT AND/OR ENTRAINMENT, TEMPORARY INTAKES RELATED TO CONSTRUCTION OCCURRING FROM MARCH 1ST TO OCTOBER 31ST MUST BE EQUIPPED WITH 2 MILLIMETER (MM) WEDGE WIRE SCREENS WITH A MAXIMUM INTAKE VELOCITY OF 0.5 FEET PER SECOND (FT/SEC). PAYMENT FOR THE SCREENS WILL BE INCIDENTAL TO ITEM #604002 - COFFERDAMS. CONTRACTOR MAY CHOOSE FROM ANY OF THE FOLLOWING APPROVED PRODUCTS, AND ALTERNATIVE PRODUCTS WILL NOT BE CONSIDERED:

- LAKOS FILTRATION SOLUTIONS: PC-SELF CLEANING INTAKE SCREEN ([HTTPS://WWW.LAKOS.COM/PRODUCT/PC-SERIES-SELF-CLEANING-INTAKE-SCREEN/](https://www.lakos.com/product/pc-series-self-cleaning-intake-screen/))
- FEDERAL SCREEN PRODUCTS INC. INTAKE SCREEN ([HTTPS://WWW.FEDERALSCREEN.COM/INTAKE-SCREENS/](https://www.federalscreen.com/intake-screens/))
- HENDRICK SCREEN COMPANY: PASSIVE WATER INTAKE WEDGE WIRE SCREENS ([HTTPS://WWW.HENDRICKCORP.COM/SCREEN/MARKETS/WATER-INTAKE-WATER-TREATMENT/](https://www.hendrickcorp.com/screen/markets/water-intake-water-treatment/))
- BIG BRAND WATER FILTER, INC: SELF-CLEANING PUMP INTAKE SCREENS PC-915 ([HTTPS://WWW.BIGBRANDWATER.COM/SELF-CLEANING-PUMP-INTAKE-SCREENS-PC-915\\_P\\_17721.HTML](https://www.bigbrandwater.com/self-cleaning-pump-intake-screens-pc-915_p_17721.html))

6. U.S. COAST GUARD ADVANCED COORDINATION/APPROVAL:

THE WATERWAYS ARE USED FOR RECREATIONAL PURPOSES. THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE THROUGH THE WORK AREAS FOR THE WATERWAY USERS AND SHALL HAVE THE PASSAGEWAY CLEARLY MARKED. PAYMENT IS INCLUDED UNDER PAY ITEM #763522 - COAST GUARD SPECIFIC CONDITIONS. ANY CONTRACTOR ACTIVITY, WHICH WILL RESULT IN THE SHORT-TERM RESTRICTION OF THE WATERWAYS TO THOSE INDIVIDUALS, IS TO BE COORDINATED WITH THE ENGINEER AND THE U.S. COAST GUARD 5TH COAST GUARD DISTRICT 30 DAYS IN ADVANCE, AND WITH U.S. COAST GUARD SECTOR DELAWARE BAY 60 DAYS IN ADVANCE. THE WORK WITHIN THE WATER SHALL BE LIMITED TO WHAT APPEARS ON THESE PLANS AND BARGE PLACEMENT. IF ANY ADDITIONAL IN-WATER/WETLANDS WORK IS NEEDED, IT MUST BE COORDINATED WITH U.S. COAST GUARD PRIOR TO BEGINNING WORK AND BE IN CONFORMANCE WITH ITEM #763522 - COAST GUARD SPECIFIC CONDITIONS. CONTACT MIKE THOROUGHGOOD (MICHAEL.R.THOROUGHGOOD@USCH.MIL, (757)-398-6557), AS WELL AS SUBMIT A WRITTEN NOTICE (WHICH INCLUDES A SKETCH DEPICTING THE LOCATION AND DURATION OF ALL RESTRICTIONS) TO THE COMMANDING OFFICER (AOWB), 5TH COAST GUARD DISTRICT, FEDERAL BUILDING 431 CRAWFORD ST., PORTSMOUTH, VA 23704 FOR APPROVAL 30 DAYS IN ADVANCE. CONTACT MIKE THOROUGHGOOD (MICHAEL.R.THOROUGHGOOD@USCH.MIL, (757)-398-6557), AS WELL AS SUBMIT A WRITTEN NOTICE (WHICH INCLUDES THE LOCATION OF THE PROJECT, THE TYPE OF WORK AND MEANS AND METHODS USED, AND DATES, TIMES, AND DURATION OF WATERWAYS CLOSURE) TO THE SECTOR DELAWARE BAY USCG WWM DEPARTMENT, 1 WASHINGTON AVE, PHILADELPHIA, PA 19147 FOR COORDINATION AND APPROVAL 60 DAYS IN ADVANCE.

- 7. A PORTION OF THE LOC EXTENDS INTO JANOSIK PARK (PARCEL 332-1.07-154.00), A PROPERTY PROTECTED UNDER SECTION 4(F) OF THE USDOT ACT OF 1966. IF THERE ARE ANY ALTERATIONS TO THE RIGHT-OF-WAY IMPACTS ON THIS PROPERTY DETAILED IN THESE PLANS, ALEX TARANTINO OF DELDOT ENVIRONMENTAL STUDIES MUST BE NOTIFIED AT (302) 760-4887.

ADDENDA / REVISIONS

NOT TO SCALE

BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK

CONTRACT	BRIDGE NO.	3-162
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

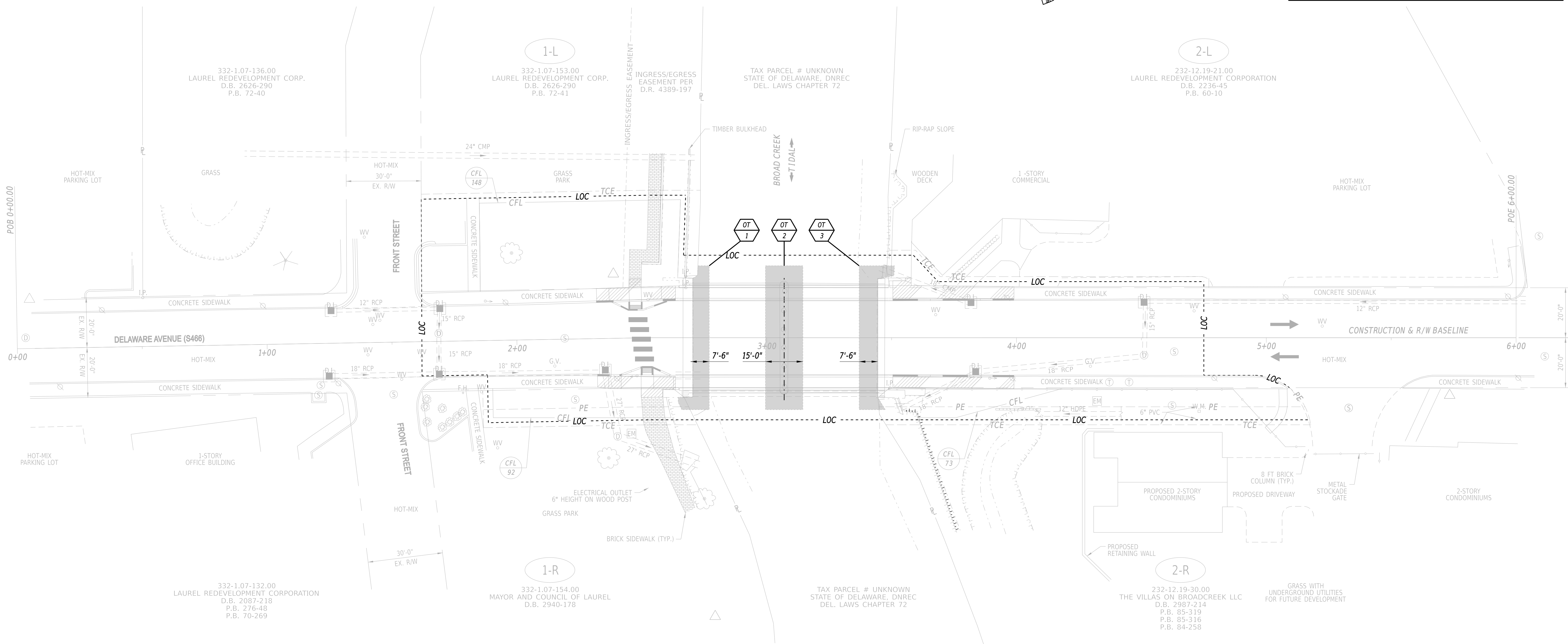
ENVIRONMENTAL  
COMPLIANCE NOTES

SECTION
BR
SHEET NO.
22



TEMPORARY OPEN WATER IMPACT AREA SCHEDULE					
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION
OT-1	COFFERDAM FOR ABUTMENT 1 REPAIR	398.86	0.0091	110.79	COE/DNREC
OT-2	COFFERDAM FOR PILE BENT REPAIR	863.75	0.0198	239.93	COE/DNREC
OT-3	COFFERDAM FOR ABUTMENT REPAIR	467.91	0.0107	129.98	COE/DNREC
TOTAL TEMPORARY OPEN WATER IMPACTS		1730.52	0.0396	480.70	COE/DNREC

LEGEND	
	TEMPORARY IMPACT AREA
	MHW MEAN HIGH WATER
	MLW MEAN LOW WATER
	IMPACT AREA TYPE ID. (SEE BELOW)
	IMPACT AREA ID. AND/OR NUMBER
	O = OPEN WATER IMPACT
	T = TEMPORARY IMPACT



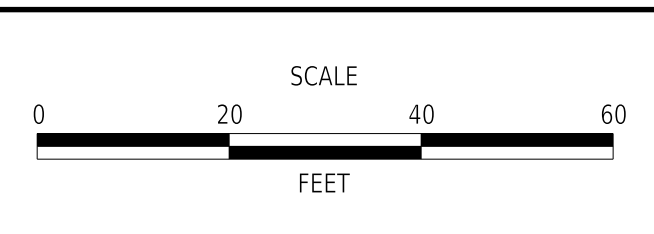
WETLANDS DELINEATED BY CHRISTIE BONNIWELL (DELDOT) ON 10-30-2015 IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS "CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987)".

NO WETLANDS EXIST WITHIN THE PROJECT LIMITS.

ORIGINAL SHEET PREPARED BY SCOTT WALLS (DELDOT) ON 11-24-2015. SHEET LAST UPDATED ON 12-12-2018.

12-OCT-2020 08:35 Y:\SUSSEX\466\Bridges\T201607602\530\_CADD\530\_PLANS\_DGN\CP.dgn

ADDENDA / REVISIONS



**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

<b>ENVIRONMENTAL COMPLIANCE PLAN</b>	SECTION
	BR
	SHEET NO. 23

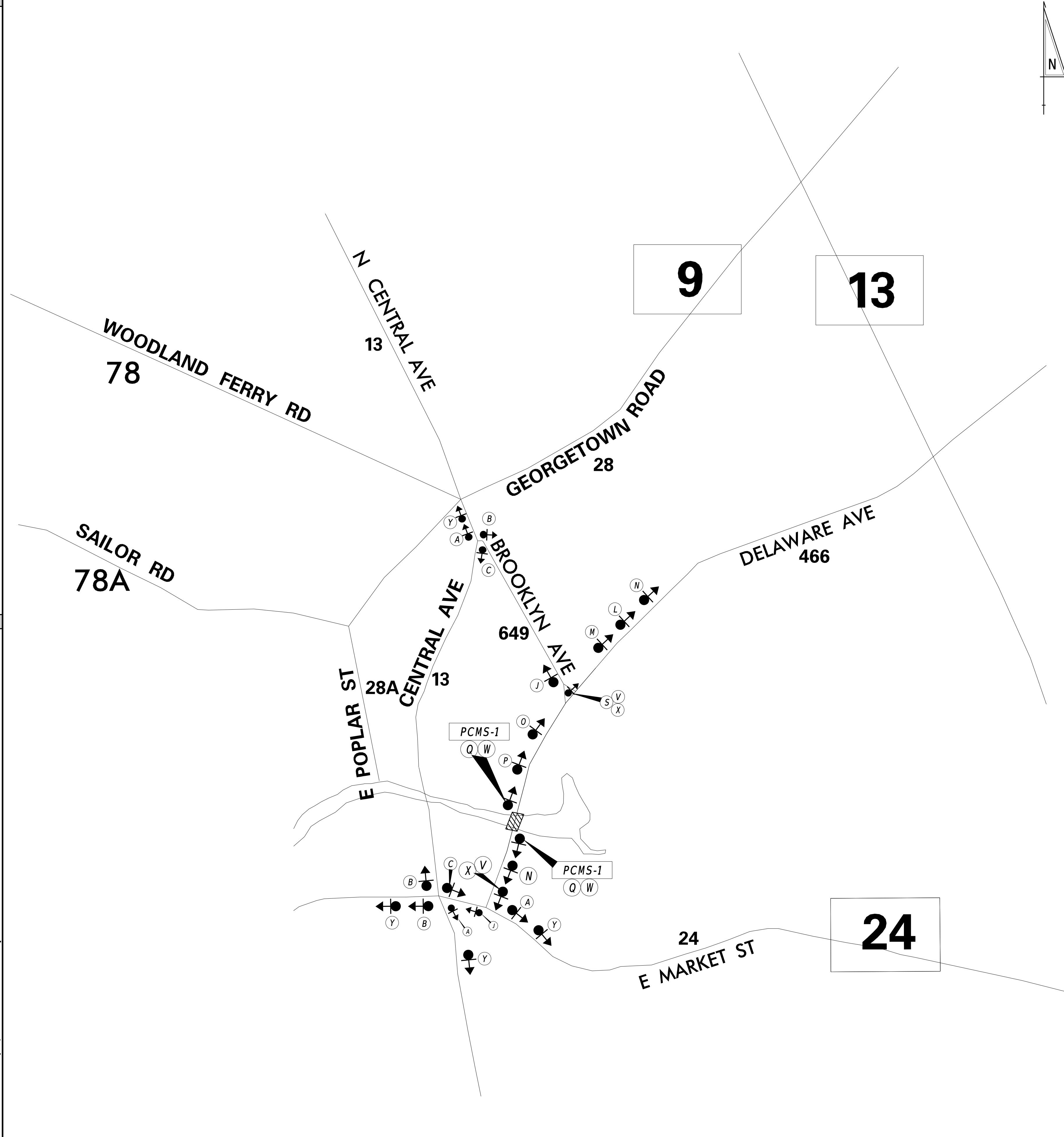
**PORTABLE CHANGEABLE MESSAGE SIGNS**

**PRIOR TO DETOUR**  
(10 DAYS PRIOR TO BEGINNING OF DETOUR)

PCMS-1

**DELAWARE AVENUE TO CLOSE**

**STARTING XX/XX/XX**



LEGEND				
(A) DETOUR M4-9-DE	(B) DETOUR M4-9	(C) DETOUR M4-9	(D) DETOUR M4-9	(E) DETOUR M4-9
(F) DETOUR M4-9	(G) DETOUR M4-9	(H) DETOUR M4-9	(I) DETOUR M4-9	(J) END DETOUR M4-8a
(K) DETOUR AHEAD W20-2	(L) DETOUR 1000 FT W20-2	(M) DETOUR 500 FT W20-2		
(N) ROAD CLOSED AHEAD W20-3	(O) ROAD CLOSED 1000 FT W20-3	(P) ROAD CLOSED 500 FT W20-3		
(Q) ROAD CLOSED R11-2	(R) DETOUR M4-10(L)	(S) DETOUR M4-10(R)		
(T) ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY R11-3a	(U) BRIDGE OUT XX MILES AHEAD LOCAL TRAFFIC ONLY R11-3b	(V) ROAD CLOSED TO THRU TRAFFIC R11-4		
(W) BARRICADE	(X) BARRICADE			

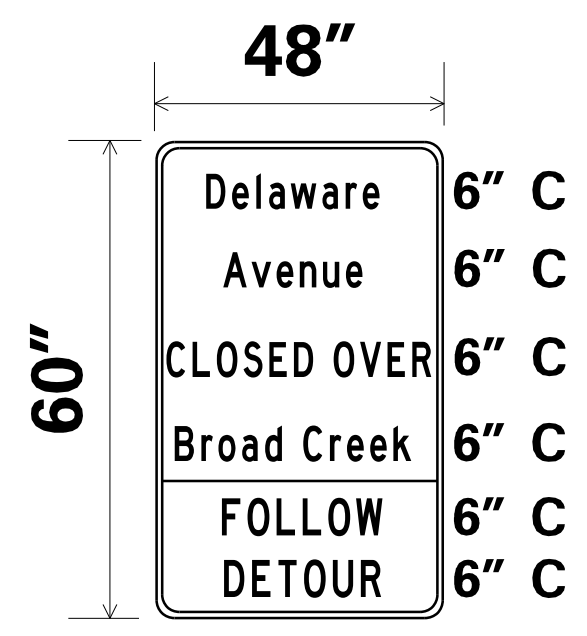
**GENERAL NOTES**

- ALL TEMPORARY TRAFFIC CONTROL DEVICES ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR AND SHALL BE IN COMPLIANCE WITH THIS PLAN AND THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (DE MUTCD) LATEST EDITION.
- SIGNS "N" THROUGH "Q" AND "T" AND "V", THE WORD "ROAD" SHALL BE CHANGED TO "RAMP", "RR XING" OR "BRIDGE" WHERE APPLICABLE.
- "W" TYPE 3 BARRICADES AT A ROAD CLOSURE SHALL BE PLACED COMPLETELY ACROSS THE ROADWAY, FROM CURB TO CURB, OR FROM EDGE OF ROAD TO EDGE OF ROAD, WITH THE STRIPES POSITIONED DOWNWARD TOWARD THE CENTER OF THE ROADWAY.
- BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.

**CONCURRENCE FOR IMPLEMENTATION**

TRAFFIC SAFETY *David A. Wynn* DATE 4/9/20

**SPECIAL SIGNS**



**\*D/G RETROREFLECTIVE ORANGE BACKGROUND; BLACK LEGEND**

PREPARED BY  
DELDOT - TRANSPORTATION SOLUTIONS  
TRAFFIC SAFETY

*[Signature]* 04/09/2020 DATE

THIS SEAL ONLY APPLIES TO THIS DETOUR SHEET



QA/QC REVIEWER *David Wynn* DATE 4/9/2020

"I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS DETOUR PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

ADDENDA / REVISIONS

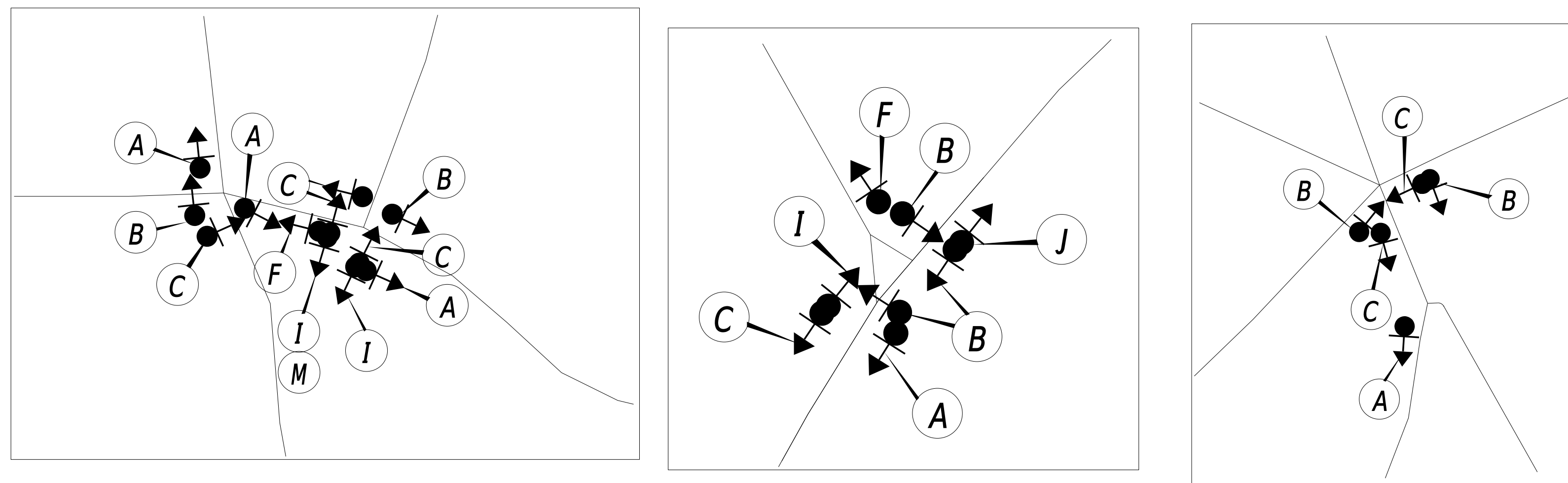
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**BR 3-162 ON S466 DELAWARE AVE OVER BROAD CREEK**

CONTRACT	PERMIT NO.	<b>X</b>
T201607602	DESIGNED BY:	DBW
COUNTY	CHECKED BY:	GAN
SUSSEX		

<b>VEHICULAR DETOUR PLAN</b>	SECTION	TS
	SHEET NO.	24
	DATE	4/9/20

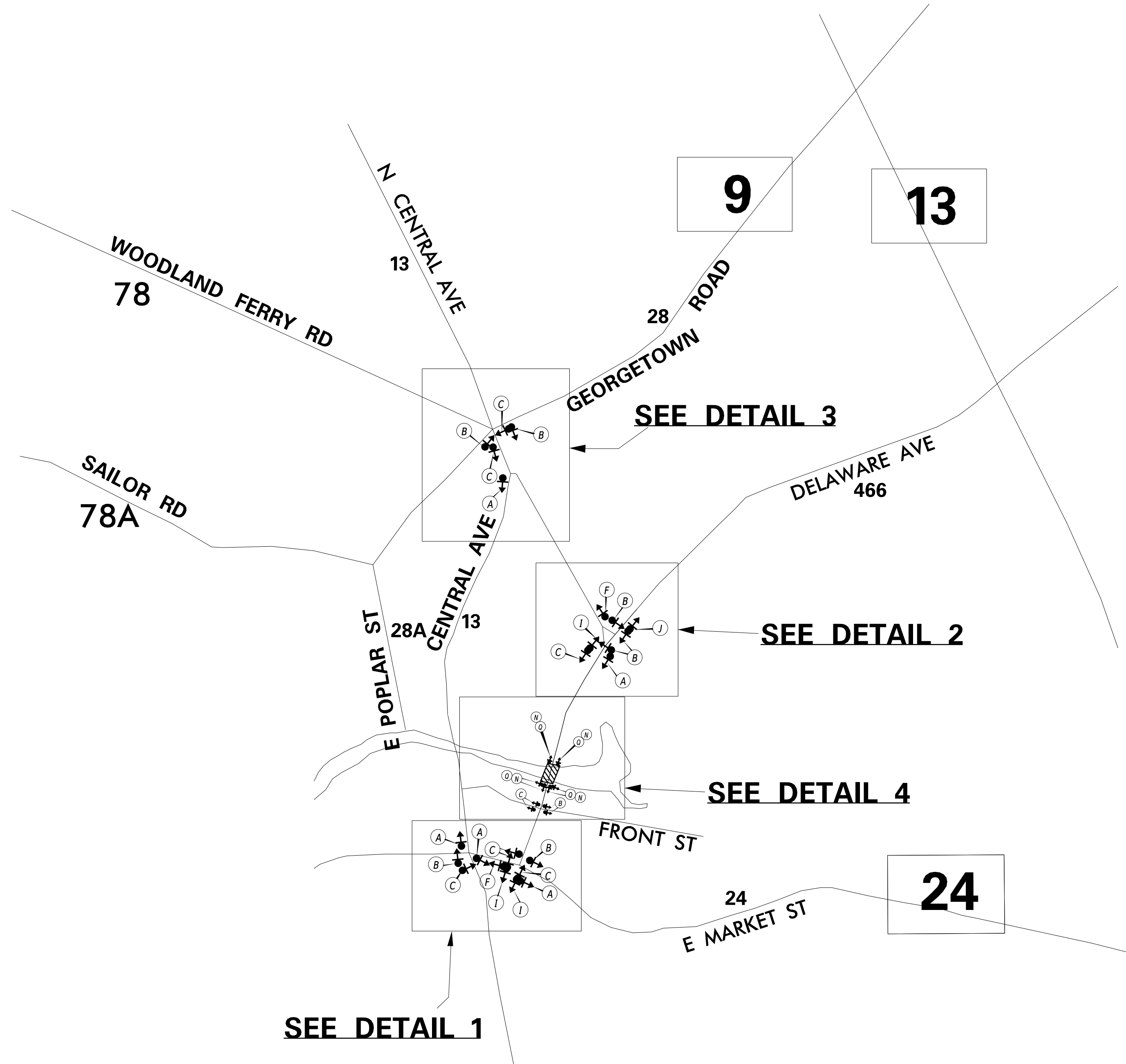
**SPECIAL SIGNS**



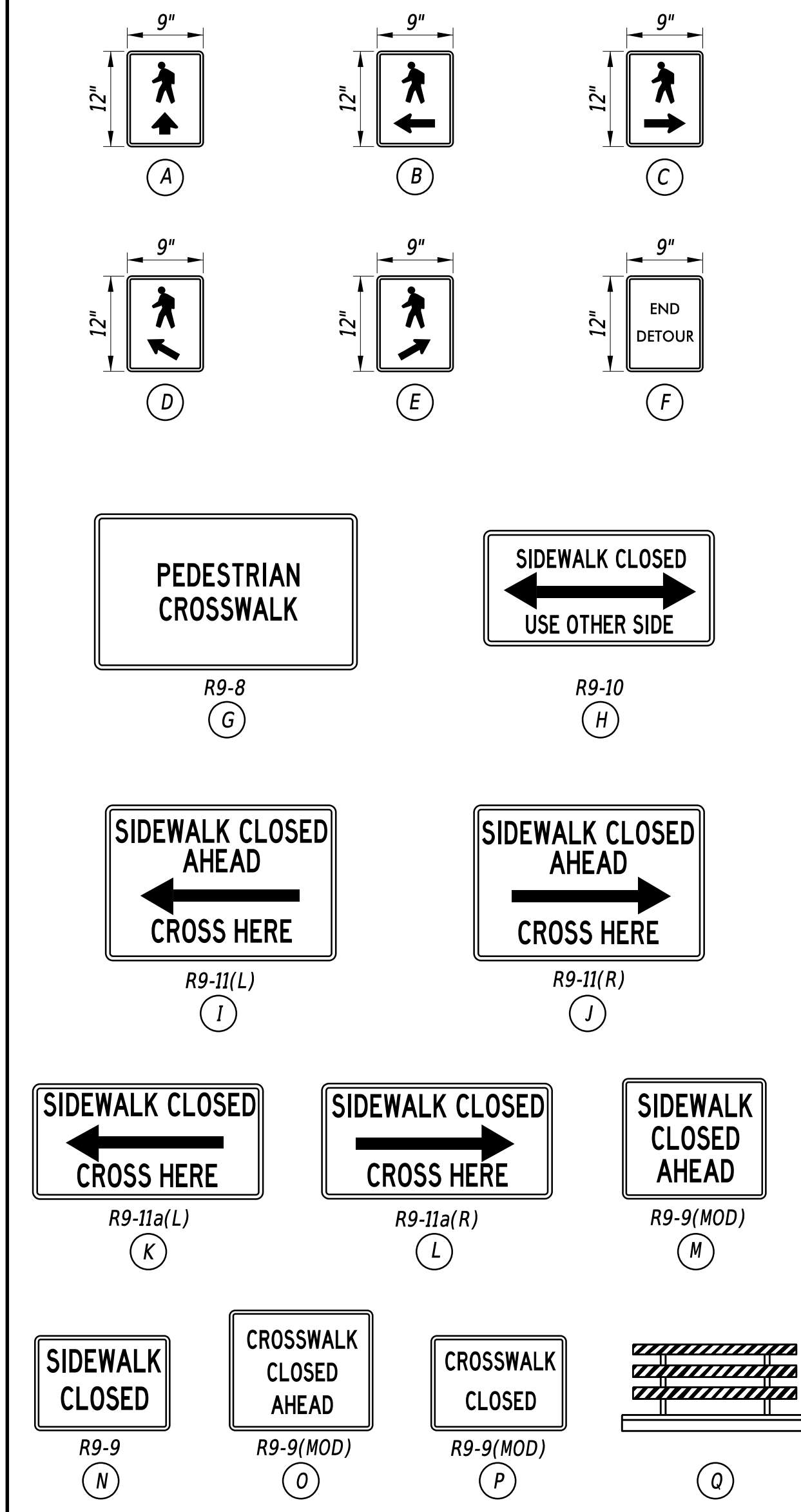
**DETAIL 1**

**DETAIL 2**

**DETAIL 3**



**LEGEND**

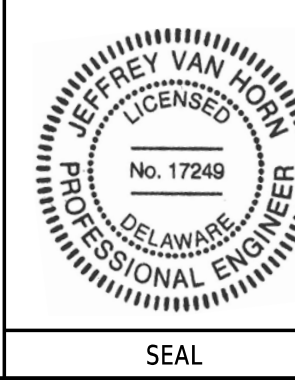


**SPECIAL NOTES**

**GENERAL NOTES**

1. ALL TEMPORARY TRAFFIC CONTROL DEVICES ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR AND SHALL BE IN COMPLIANCE WITH THIS PLAN AND THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (DE MUTCD) LATEST EDITION.
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3. "W" TYPE 3 BARRICADES AT A ROAD CLOSURE SHALL BE PLACED COMPLETELY ACROSS THE ROADWAY, FROM CURB TO CURB, OR FROM EDGE OF ROAD TO EDGE OF ROAD, WITH THE STRIPES POSITIONED DOWNWARD TOWARD THE CENTER OF THE ROADWAY.
4. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.

PREPARED BY  
DELDOT - TRANSPORTATION SOLUTIONS  
TRAFFIC SAFETY



THIS SEAL ONLY APPLIES TO THIS DETOUR SHEET  
DATE 08/13/2020

QA/QC REVIEWER *Donald A. Haggerty* DATE 8/13/20

"I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS DETOUR PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

**CONCURRENCE FOR IMPLEMENTATION**

TRAFFIC SAFETY *James Wynn* DATE 8/13/2020

ADDENDA / REVISIONS

NOT TO SCALE

BR 3-162 ON DELAWARE AVE  
OVER BROAD CREEK  
EAST OF US 13

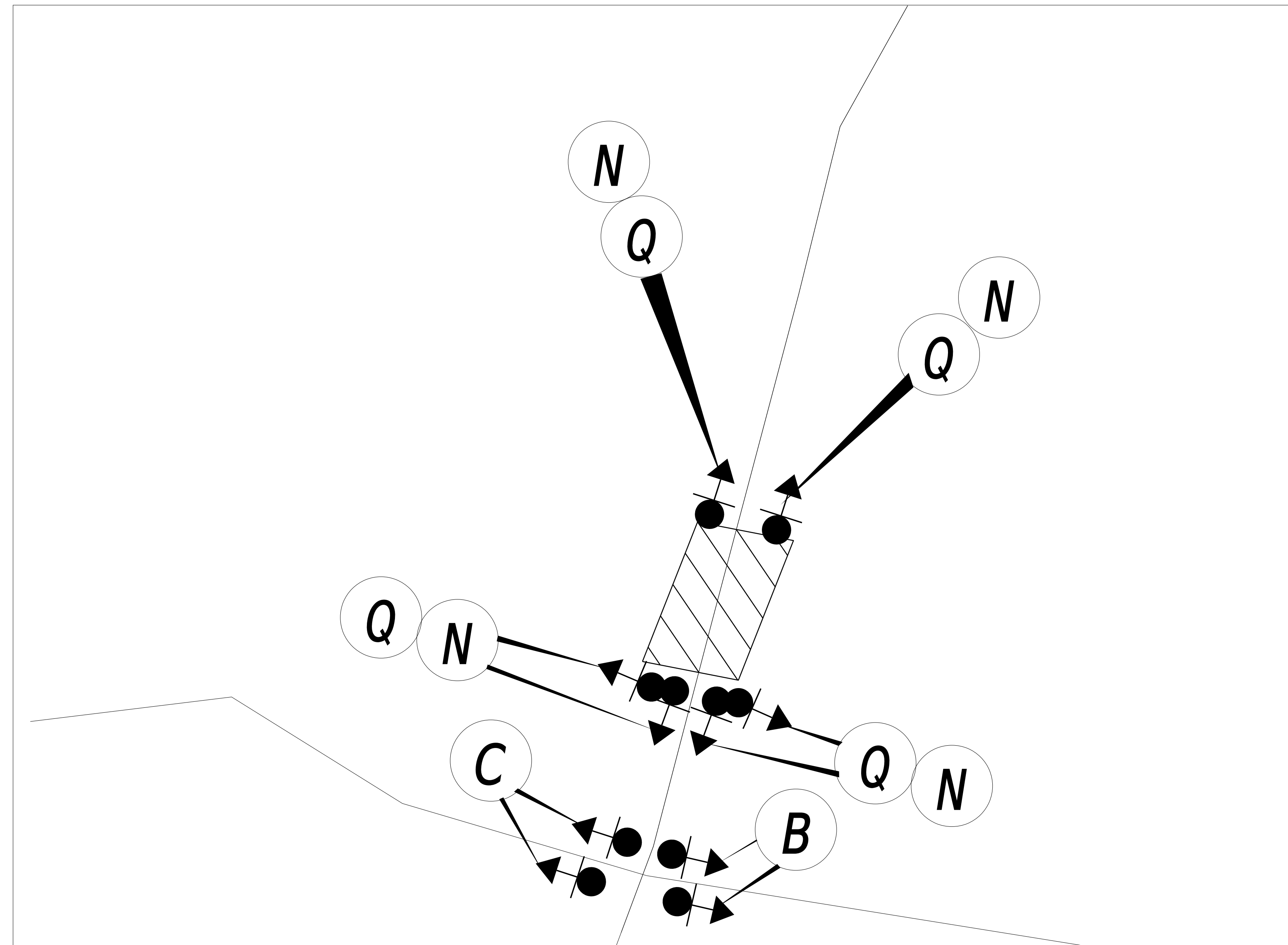
CONTRACT T201607602	PERMIT NO. X
COUNTY SUSSEX	DESIGNED BY: DBW CHECKED BY: GAN

SECTION TS
SHEET NO. 1/2

DETOUR PLAN -  
PEDESTRIAN  
DELAWARE AVE @ BR 3-162

SPECIAL SIGNS

LEGEND



# DETAIL 4


SPECIAL NOTES

GENERAL NOTES

- ALL TEMPORARY TRAFFIC CONTROL DEVICES ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR AND SHALL BE IN COMPLIANCE WITH THIS PLAN AND THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (DE MUTCD) LATEST EDITION.
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PREPARED BY  
DELDOT - TRANSPORTATION SOLUTIONS  
TRAFFIC SAFETY

*[Signature]* 08/13/2020  
DATE

THIS SEAL ONLY APPLIES TO THIS DETOUR SHEET



*[Signature]* 8/13/20  
DATE

QA/QC REVIEWER

\*I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS DETOUR PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.\*

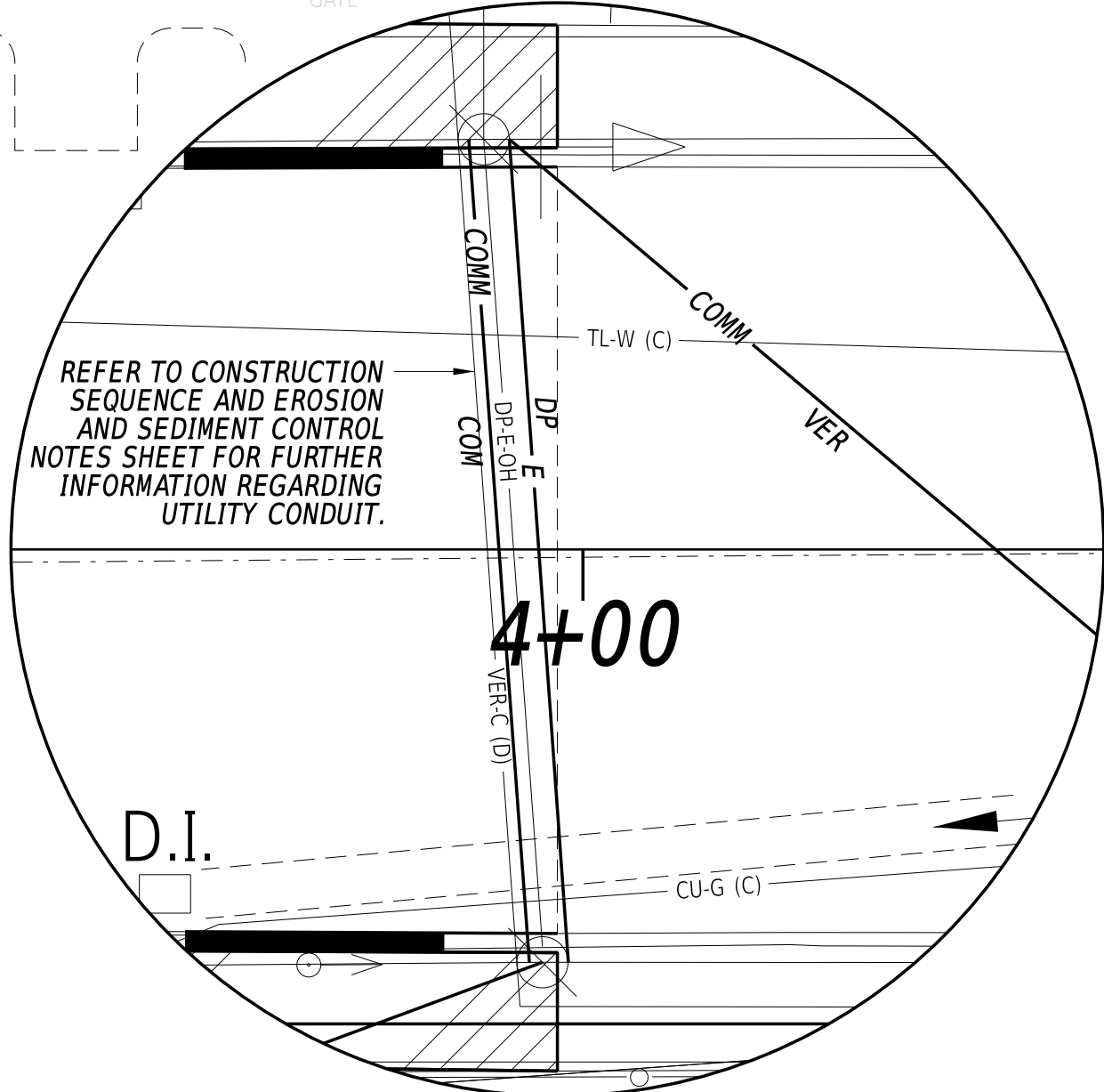
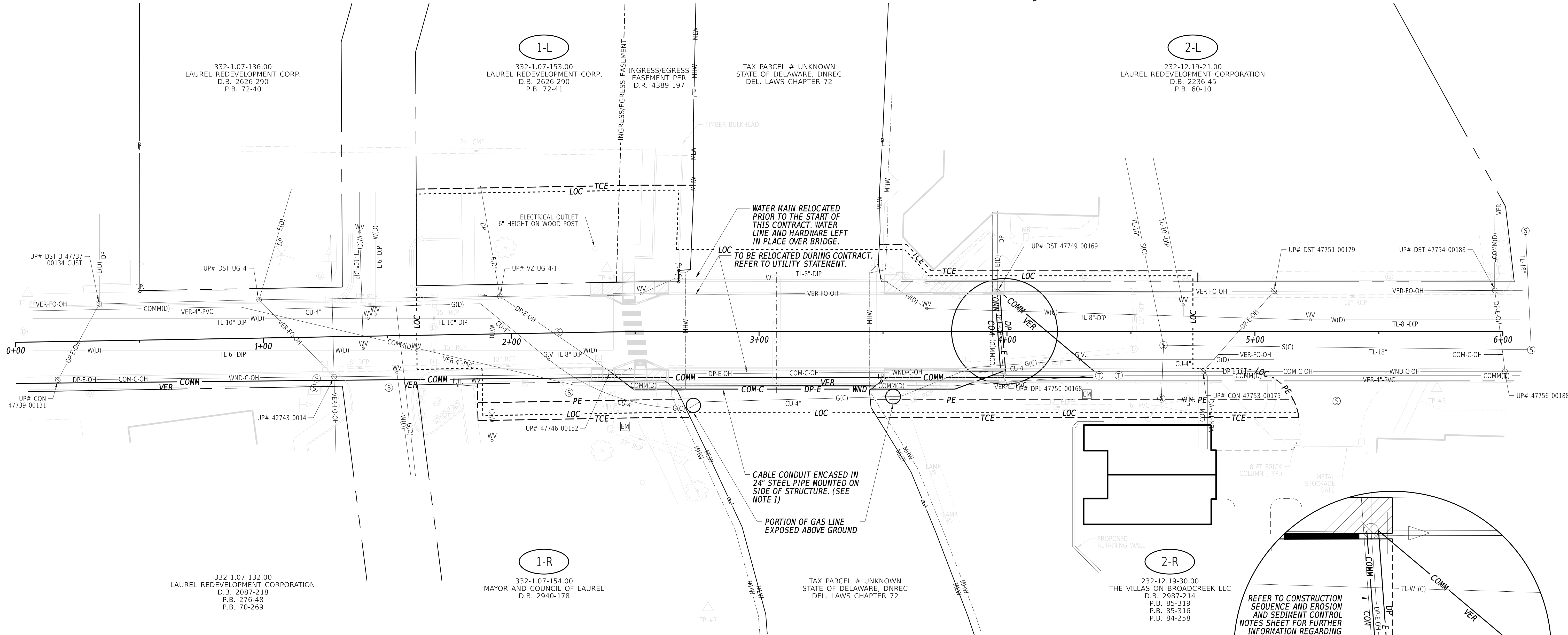
CONCURRENCE FOR IMPLEMENTATION

*[Signature]* 8/13/2020  
DATE

TRAFFIC SAFETY

ADDENDA / REVISIONS

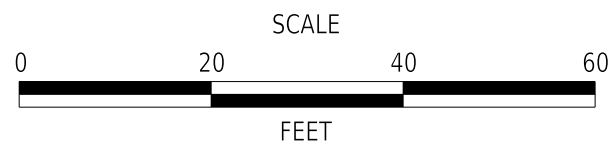
NOT TO SCALE	BR 3-162 ON DELAWARE AVE OVER BROAD CREEK EAST OF US 13	CONTRACT	PERMIT NO.	X	SECTION TS	
		T201607602	DESIGNED BY: DBW			DETOUR PLAN - PEDESTRIAN DELAWARE AVE @ BR 3-162
		COUNTY	CHECKED BY: GAN			
SUSSEX						



**UTILITY NOTE:**

1. TEMPORARY UTILITY RELOCATION WILL BE ATTACHED TO THE OUTSIDE OF 24" STEEL PIPE. PLEASE REFER TO THE UTILITY STATEMENT FOR FURTHER INFORMATION REGARDING THE TEMPORARY AND PERMANENT UTILITY RELOCATIONS.

ADDENDA / REVISIONS



**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**UTILITY RELOCATION PLAN**

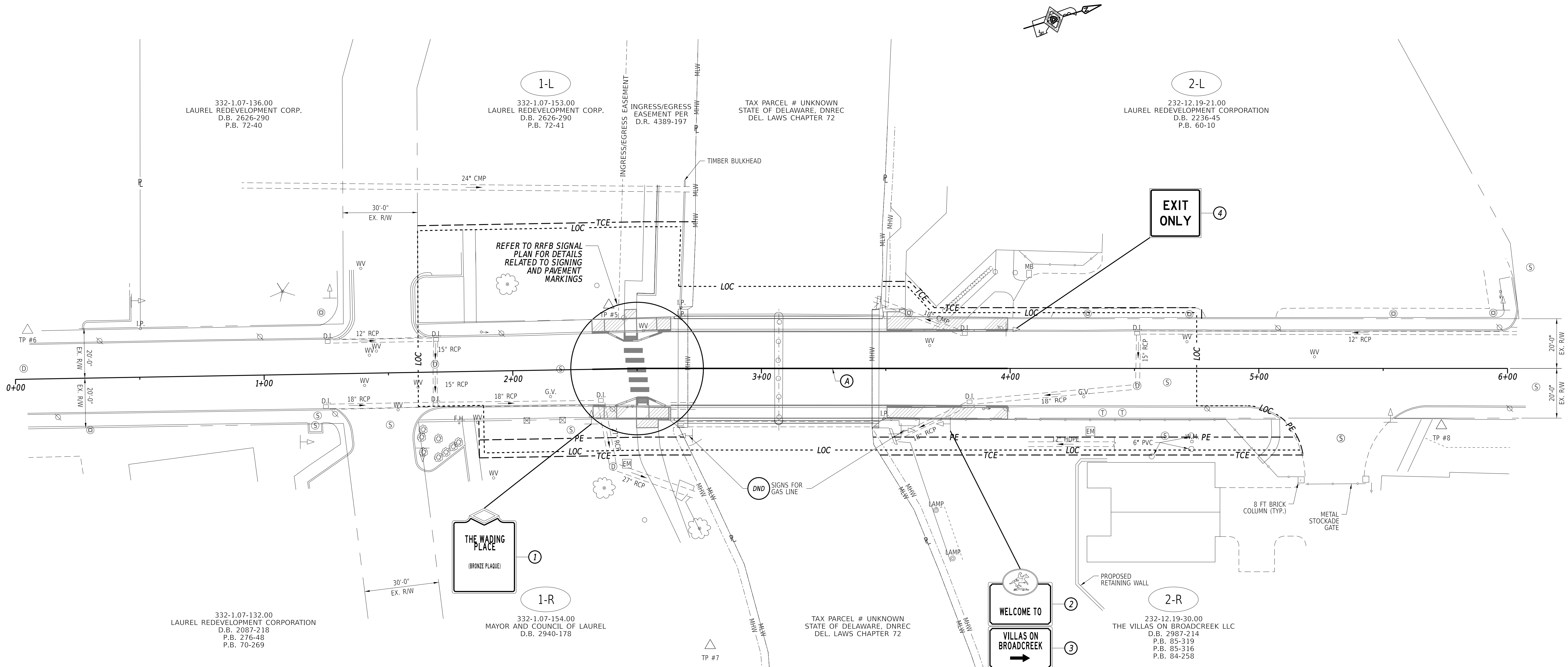
SECTION
BR
SHEET NO.
26

13-OCT-2020 08:39 Y:\SUSSEX\466\bridge\T201607602\300\_CADD\530\_PLANS\_DGN\CP.dgn

**PAVEMENT MARKINGS LEGEND**

SYM	ITEM	QUANTITY
(A)	EPOXY RESIN PAINT PAVEMENT STRIPING, YELLOW 5" SOLID (ITEM #817013) (DOUBLE LINE - 167 LF EA.)	334 LF

NOTE:  
ANY SIGNS TO REMAIN OR REPOSITIONED THAT ARE DAMAGED WILL BE REPLACED  
AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER.



**SIGN SCHEDULE - ITEM #819018 SINGLE POST (EACH)**

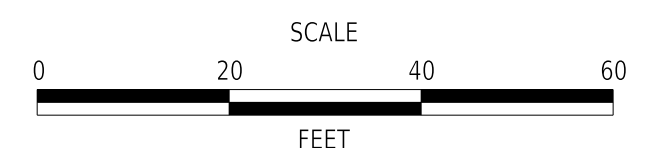
NO.	SHEET NO.	PLAN INDICATOR	CODE	QTY.	DESCRIPTION	ASSEMBLY NO.	SIGN WIDTH (IN.)	SIGN HEIGHT (IN.)	SIGN AREA (SF)	SIGN DISPOSITION	REMOVE	INSTALL	POST INSTALLATION TYPE	REMARKS
X	27	1	XXX	1	HISTORICAL PLAQUE	-	36"	36"	9.0	REMAIN	-	-	SOIL	-
1685	27	2	D3-2-DE-1	1	WELCOME TO	1	36"	32"	8.0	REPOSITION	1	1	SOIL	-
1686	27	3	D3-2-DE-2	1	DEVELOPMENT NAME	1	36"	32"	8.0	REPOSITION	1	1	SOIL	-
X	27	4	XXX	1	EXIT ONLY	-	6"	12"	0.5	REPOSITION	1	1	SOIL	-
1170	28	5	W11-2(36)	4	PEDESTRIAN (SYMBOL)	-	36"	36"	36.0	ADD TO ASSEMBLY	-	-	-	*
1357	28	6	W16-7P_R(24)	2	RIGHT DOWNWARD DIA. ARROW	-	24"	12"	4.0	ADD TO ASSEMBLY	-	-	-	*
1359	28	7	W16-7P_L(24)	2	LEFT DOWNWARD DIA. ARROW	-	24"	12"	4.0	ADD TO ASSEMBLY	-	-	-	*

\*MOUNTED TO RRFB ASSEMBLY VIA TRAFFIC

**SIGN SCHEDULE - ITEM #819018 SINGLE POST (EACH) (CONTINUED)**

NO.	SHEET NO.	PLAN INDICATOR	CODE	QTY.	DESCRIPTION	ASSEMBLY NO.	SIGN WIDTH (IN.)	SIGN HEIGHT (IN.)	SIGN AREA (SF)	SIGN DISPOSITION	REMOVE	INSTALL	POST INSTALLATION TYPE	REMARKS
1169	28	8	W11-2(30)	1	PEDESTRIAN (SYMBOL)	-	30"	30"	6.3	NEW	-	1	SOIL	-
1169	28	9	W11-2(30)	1	PEDESTRIAN (SYMBOL)	-	30"	30"	6.3	NEW	-	1	EX. CONCRETE	-
1369	28	10	W16-9P(24)	2	AHEAD (PLAQUE) 24x12	-	24"	12"	4.0	ADD TO ASSEMBLY	-	2	-	-
21	28	11	R1-5_L	1	YIELD HERE TO PED.	-	36"	36"	9.0	NEW	-	1	SOIL	-
21	28	12	R1-5_L	1	YIELD HERE TO PED.	-	36"	36"	9.0	NEW	-	1	NEW CONCRETE	-
1169	28	13	W11-2(30)	1	PEDESTRIAN (SYMBOL)	-	30"	30"	6.25	REMOVAL	1	-	-	-
21	28	14	W11-1-DE(30)	2	BICYCLE (SYMBOL) - 30x30	-	30"	30"	12.5	NEW	-	2	SOIL	-

ADDENDA / REVISIONS



**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

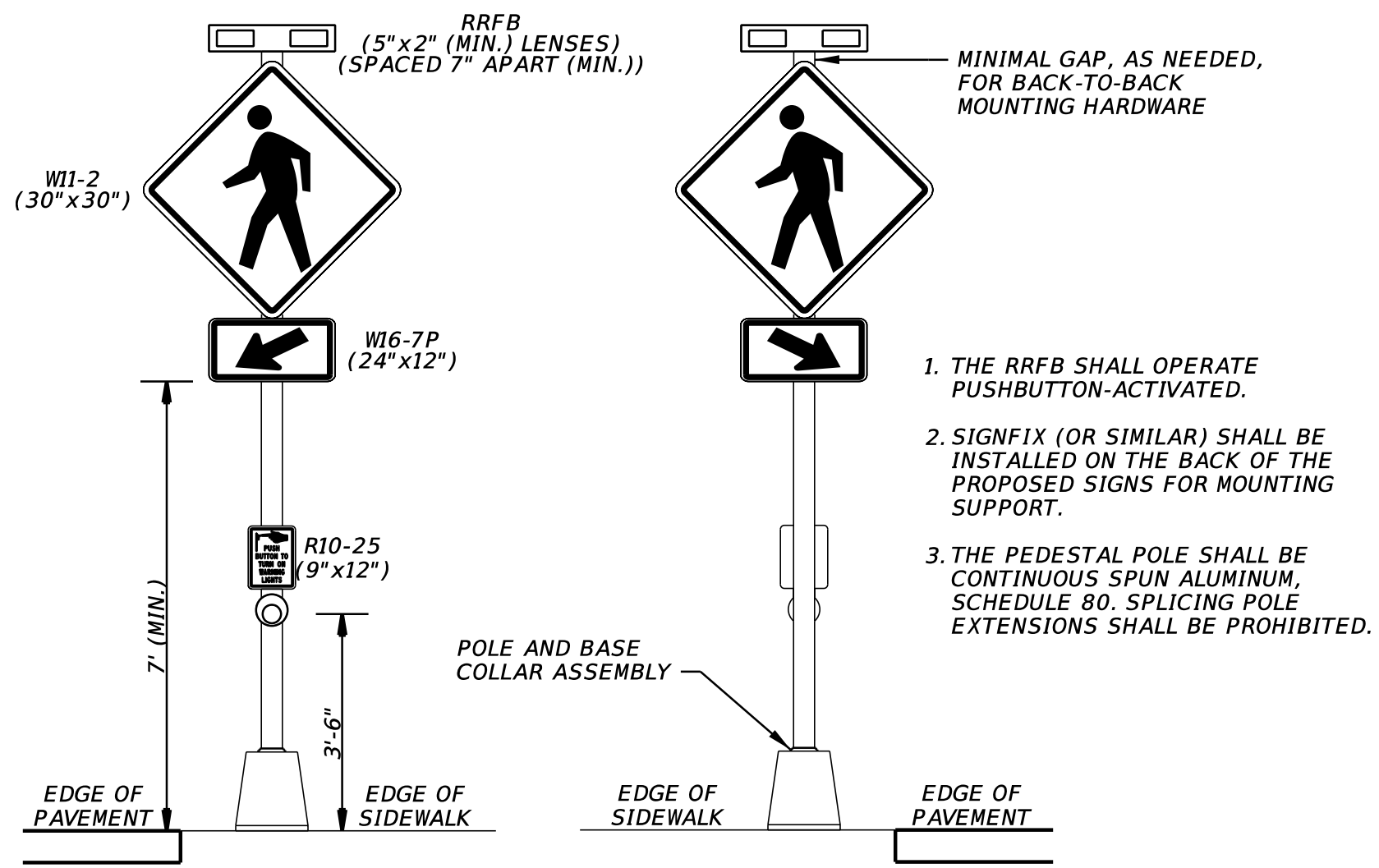
CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

**SIGNING AND  
STRIPING PLAN**

SECTION
BR
SHEET NO.
27

13-OCT-2020 08:42 Y:\SUSSEX\466\bridge\T201607602\300\_CADD\530\_PLANS\_DGN\CP.dgn

**RRFB ASSEMBLY**



**NOTES:**

- ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY, AND/OR THE APPROPRIATE UTILITY PRIOR TO THE BEGINNING OF CONSTRUCTION FOR THE UTILITY MARKOUTS. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY DELDOT TRAFFIC IMMEDIATELY BEFORE CONSTRUCTION.
- ALL WORK PERFORMED UNDER THIS PROJECT IS INTENDED TO OCCUR WITHIN DELDOT'S RIGHT-OF-WAY AND PERMANENT EASEMENT BASED ON THE PLANS FOR THIS CONTRACT.
- ALL CONDUIT SHALL BE SCHEDULE 80 PVC WHEN INSTALLED BY TRENCHING/OPEN CUT AND HDPE SDR-13.5 WHEN INSTALLED BY BORING, UNLESS OTHERWISE NOTED.
- THE PEDESTRIAN PUSHBUTTON SHOULD BE INSTALLED AT A HEIGHT OF 42 TO 48 INCHES ABOVE THE LANDING AREA AND SHOULD BE LOCATED SUCH THAT THE MAXIMUM REACH DISTANCE DOES NOT EXCEED 10 INCHES FROM THE LANDING AREA TO THE FACE OF THE PUSHBUTTON.
- THE PROPOSED FLASHER CABINET SHALL BE INSTALLED ON THE PROPOSED METERED SERVICE PEDESTAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL UNDERGROUND RRFB SIGNAL EQUIPMENT - E.G., JUNCTION WELLS, POLE BASES AND CONDUIT. DELDOT TRAFFIC'S CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL ELECTRICAL CABLES, OVERHEAD RRFB SIGNS, AND ABOVE-GROUND RRFB SIGNAL EQUIPMENT - E.G., SERVICE PEDESTAL, RRFB HEADS, UPRIGHT POLES AND PEDESTRIAN PUSHBUTTONS.
- THE CONTRACTOR SHALL INSTALL A TUBULAR MARKER (FLEXI-POST) ON THE LEADING EDGE OF THE CHANNELIZING ISLANDS, AS SHOWN. EACH TUBULAR MARKER SHALL BE RETROREFLECTORIZED IN ACCORDANCE WITH SECTION 31.05 AND 6F.63 OF THE 2011 DE MUTCD.
- THE CONTRACTOR SHALL PAINT THE PROPOSED P.C.C. CURB, TYPE 1-8, YELLOW ON THE PROPOSED BUMPOUT ALONG THE ROADWAY.

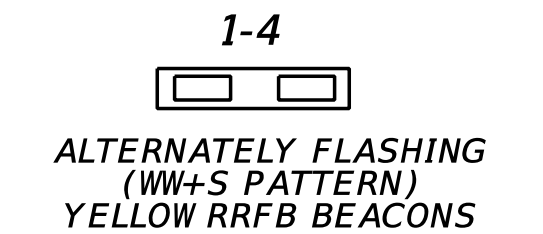
**PAVEMENT MARKINGS LEGEND**

SYMBOL	ITEM	QUANTITY
(A)	PERMANENT PAVEMENT STRIPING, SYMBOL, ALKYD-THERMOPLASTIC, WHITE, 10'x2' (ITEM 817002)	100 SF
(B)	PERMANENT PAVEMENT STRIPING, SYMBOL, ALKYD-THERMOPLASTIC, 12"x18" TRIANGLES (ITEM 817002)	24 SF
(C)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (ITEM 817013)	93 LF

**SIGNAL PHASING**

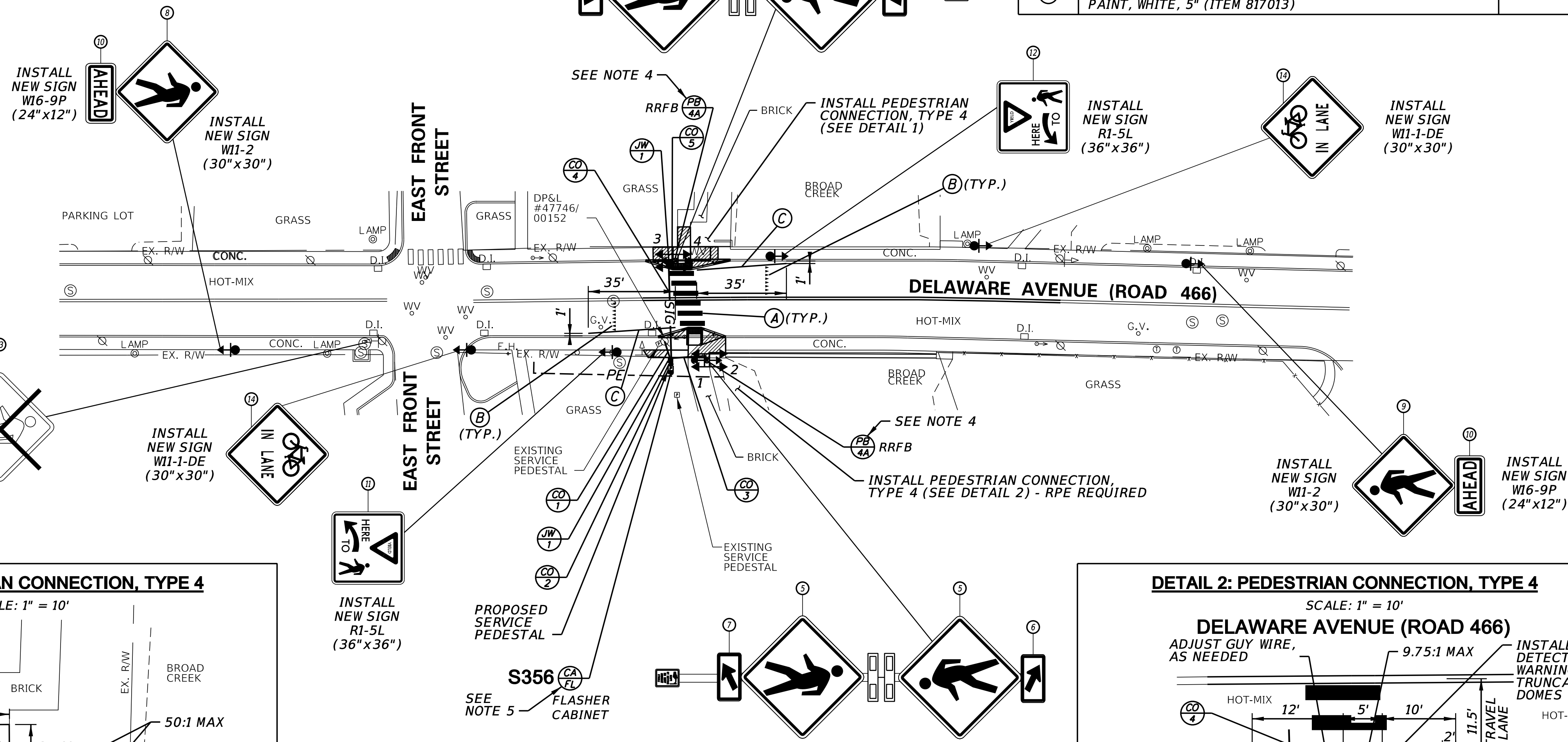
**23-FOOT PEDESTRIAN CLEARANCE**  
**14-SECOND WARNING/FLASH TIME**

**SIGNAL HEAD DIAGRAM**

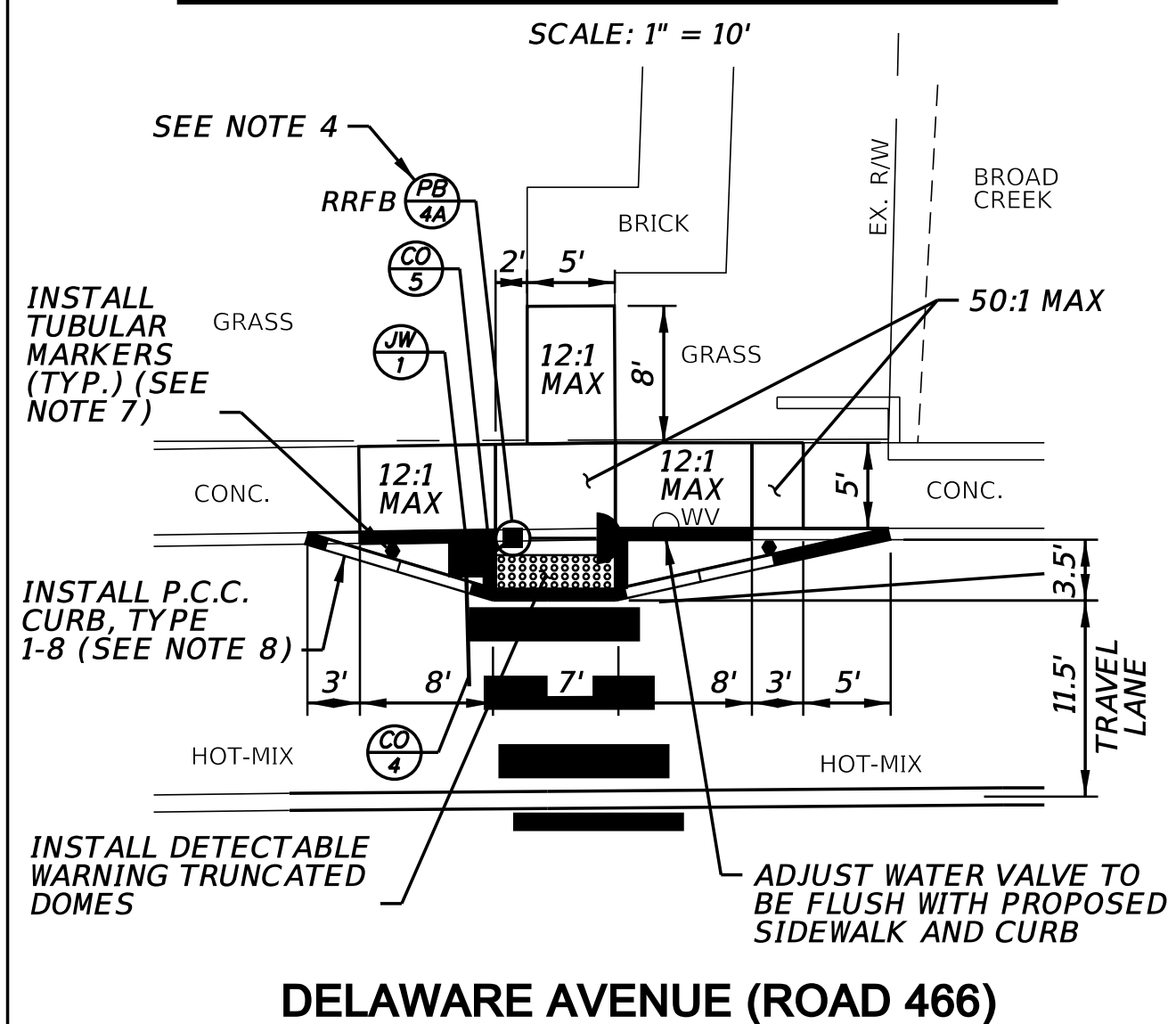


**LEGEND**

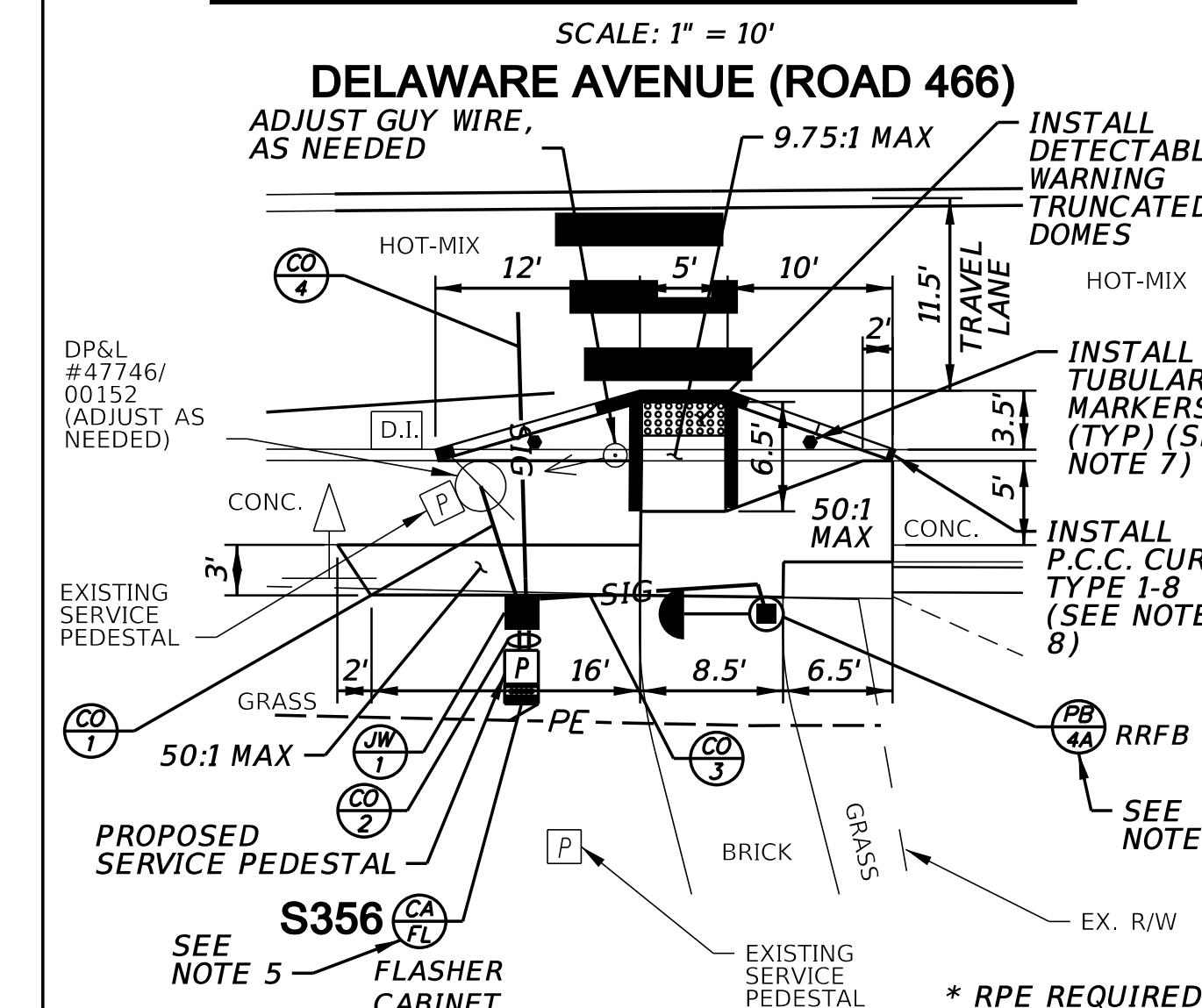
(AB)	ABANDON	(OH #)	EXISTING OVERHEAD RUN IDENTIFIER (# OF OVERHEAD RUN)
(CA)	EXISTING CABINET IDENTIFIER (TYPE OF CABINET)	(OH #)	PROPOSED OVERHEAD RUN IDENTIFIER (# OF OVERHEAD RUN)
(CB)	PROPOSED CABINET IDENTIFIER (TYPE OF CABINET)	(PB #)	EXISTING POLE BASE IDENTIFIER (TYPE OF POLE BASE)
(CD #)	EXISTING CONDUIT RUN IDENTIFIER (# OF CONDUIT RUN)	(PB #)	PROPOSED POLE BASE IDENTIFIER (TYPE OF POLE BASE)
(CD #)	PROPOSED CONDUIT RUN IDENTIFIER (# OF CONDUIT RUN)	(PL #)	EXISTING POLE IDENTIFIER (# OF POLE)
(JW #)	EXISTING JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	(PL #)	PROPOSED POLE IDENTIFIER (# OF POLE)
(JW #)	PROPOSED JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	(RM)	REMOVE BY CONTRACTOR
(MA #)	EXISTING MAST ARM IDENTIFIER (LENGTH OF ARM)	(RM)	REMOVE BY OTHERS
(MA #)	PROPOSED MAST ARM IDENTIFIER (LENGTH OF ARM)	(RM)	REMOVE BY TRAFFIC CONTRACTOR



**DETAIL 1: PEDESTRIAN CONNECTION, TYPE 4**



**DETAIL 2: PEDESTRIAN CONNECTION, TYPE 4**

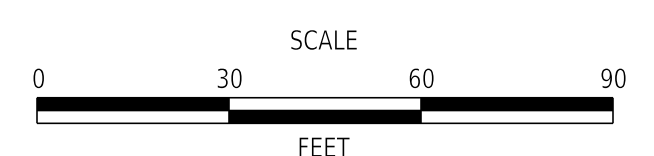


**CONDUIT RUN SCHEDULE**

CO#	# OF CONDUITS	SIZE	LENGTH	B/T/O	AMOUNT AND TYPE OF CABLE/ WIRE
1*	1	2.0 IN	7 FT	T/O	[NEW (1) 2/#8 U.F. W/GROUND - LINE SIDE]
2*	2	2.0 IN	2 FT	T	[NEW (1) 2/#8 U.F. W/GROUND - LOAD SIDE] [NEW (2) 9/#14, (1) #6 GROUND]
3	1	2.5 IN	15 FT	T	[NEW (1) 9/#14, (1) #6 GROUND]
4	1	4.0 IN	37 FT	B	[NEW (1) 9/#14, (1) #6 GROUND]
5	1	2.5 IN	3 FT	T	[NEW (1) 9/#14, (1) #6 GROUND]

\* RIGID GALVANIZED STEEL CONDUIT      B = BORE, T = TRENCH, O = OPEN CUT

**ADDENDA / REVISIONS**



**BR 3-162 ON  
S466 DELAWARE AVE  
OVER BROAD CREEK**

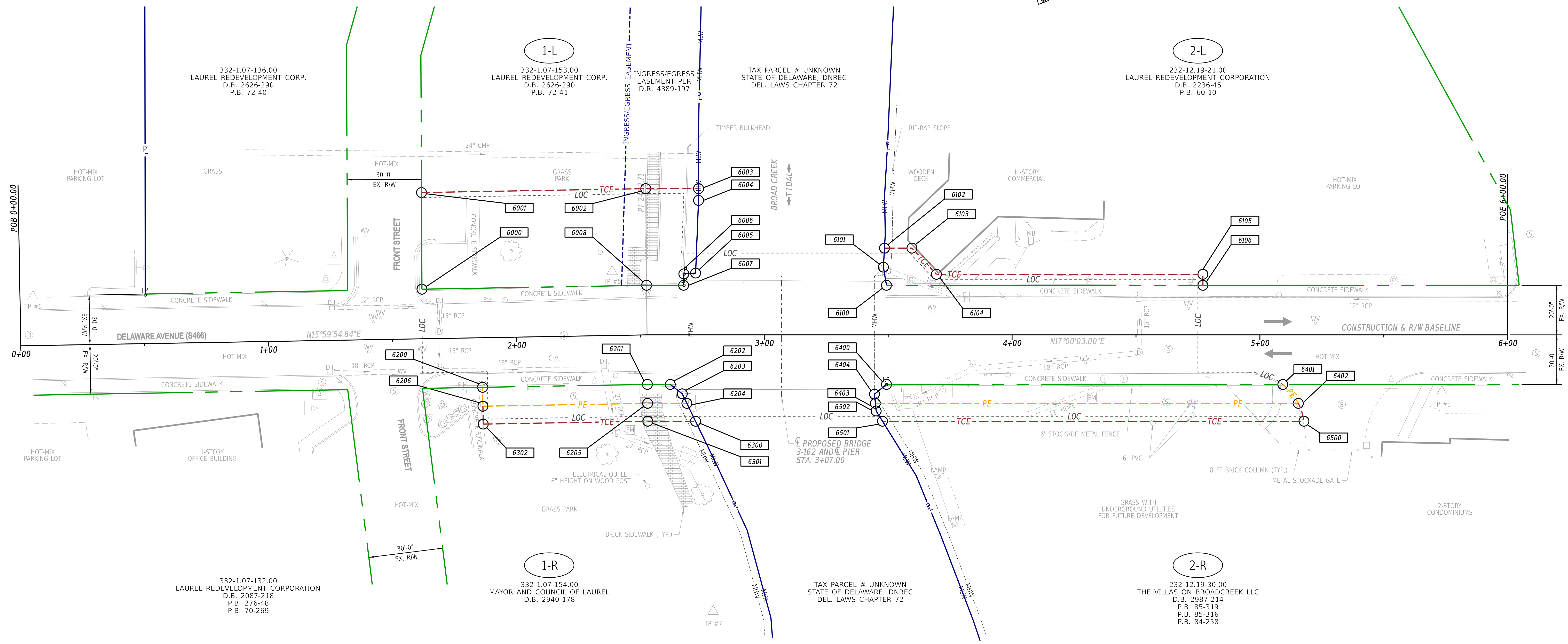
CONTRACT	T201607602	PERMIT NO.	<b>S356</b>
COUNTY	SUSSEX	DESIGNED BY:	K. KONZELMAN
		CHECKED BY:	M. BUCKLEY

**RRFB SIGNAL PLAN  
DELAWARE AVENUE  
@ FRONT STREET**

**PREPARED BY**  
**WRA** Whitman, Reardon and Associates, LLP  
Engineers - Architects - Environmental Planners Est. 1915  
7/1/2020 DATE  
THIS SEAL APPLIES TO ALL SHEETS BEARING THE "WRA" SECTION DESIGNATION.  
**CONCURRENCE FOR INSTALLATION**  
7/1/2020 DATE  
CHIEF TRAFFIC ENGINEER



7/1/2020 AM 11:02:46 AM P:\32025-C08-CADD\SG01-Delaware & Front.dgn



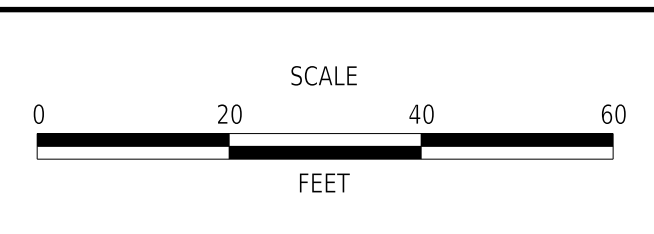
**RECOMMENDED AS TO ENGINEERING NEED**

*Mona C. Fite III* 6/24/19  
 MANAGER, ROW ENGINEERING DATE

*Sheh Chaudhry* 6/24/19  
 PROGRAM MANAGER, TEAM SUPPORT DATE

*David M. ...* 6/24/19  
 TECHNICAL REVIEWER, TEAM SUPPORT DATE  
 CENTURY ENGINEERING, INC.

ADDENDA / REVISIONS



**BR 3-162 ON  
 S466 DELAWARE AVE  
 OVER BROAD CREEK**

CONTRACT	BRIDGE NO.	<b>3-162</b>
T201607602	DESIGNED BY:	S. WEAVER
COUNTY	CHECKED BY:	S. WALLS
SUSSEX		

<b>RIGHT-OF-WAY SHEET 1 OF 2</b>	
<b>RIGHT-OF-WAY PLAN</b>	SECTION BR
	SHEET NO. 29

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ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
332-1.07-153.00	(1-L) LAUREL REDEVELOPMENT CORP.					TCE	2626-290	1.148			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6000	10000	1+62.22	-20.00	203210.5225	612358.2559	N 73°15'32.73" W	39.00				
6001	10000	1+62.73	-59.00	203221.7572	612320.9057	N 15°59'54.84" E	90.50				
6002	10000	2+52.71	-59.00	203308.7473	612345.8474	N 17°00'03.00" E	21.30				
6003	10000	2+73.49	-59.00	203329.1169	612352.0753	S 72°58'18.26" E	4.75				
6004	10000	2+73.49	-54.25	203327.7251	612356.6197	S 70°42'57.61" E	29.34				
6005	10000	2+72.32	-24.93	203318.0368	612384.3100	S 13°07'25.98" W	4.77				
6006	10000	2+67.56	-24.61	203313.3941	612383.2275	S 71°43'49.80" E	4.61				
6007	10000	2+67.46	-20.00	203311.9479	612387.6081	S 17°00'03.00" W	14.93				
6008	10000	2+52.71	-20.00	203297.6704	612383.2428	S 15°59'54.84" W	90.66				
6000	10000	1+62.22	-20.00	203210.5225	612358.2559						
FIGURE P_TCE_1L AREA = 4310.6588 SQ. FT. (0.0990 ACRES)											
ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
232-12.19-21.00	(2-L) LAUREL REDEVELOPMENT CORPORATION					TCE	2236-45	1.183			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6100	10000	3+49.32	-20.00	203390.2325	612411.5416	N 82°33'40.21" W	7.44				
6101	10000	3+48.09	-27.33	203391.1952	612404.1686	N 69°45'12.84" W	7.68				
6102	10000	3+48.52	-35.00	203393.8522	612396.9649	N 17°00'03.00" E	11.07				
6103	10000	3+59.59	-35.00	203404.4360	612400.2007	N 63°51'22.87" E	14.47				
6104	10000	3+69.48	-24.44	203410.8107	612413.1881	N 17°00'03.00" E	107.52				
6105	10000	4+77.00	-24.44	203513.6287	612444.6243	S 73°00'00.00" E	4.44				
6106	10000	4+77.00	-20.00	203512.3299	612448.8724	S 17°00'03.00" W	127.68				
6100	10000	3+49.32	-20.00	203390.2325	612411.5416						
FIGURE P_TCE_2L AREA = 740.0953 SQ. FT. (0.0170 ACRES)											
ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
332-1.07-154.00	(1-R) MAYOR AND COUNCIL OF LAUREL					P/E	2940-178	0.127			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6200	10000	1+86.00	20.00	203222.3570	612403.2608	N 15°59'54.84" E	66.53				
6201	10000	2+52.88	20.00	203286.3096	612421.5972	N 17°00'03.00" E	9.21				
6202	10000	2+62.09	20.00	203295.1175	612424.2901	N 55°04'07.70" E	6.14				
6203	10000	2+66.92	23.78	203298.6322	612429.3226	N 81°10'20.08" E	4.27				
6204	10000	2+68.79	27.63	203299.2881	612433.5457	S 17°00'03.00" W	15.84				
6205	10000	2+52.95	27.63	203284.1420	612428.9149	S 15°59'54.84" W	66.46				
6206	10000	1+86.00	27.63	203220.2534	612410.5968	N 74°00'00.00" W	7.63				
6200	10000	1+86.00	20.00	203222.3570	612403.2608						
FIGURE P_PE_1R AREA = 608.8308 SQ. FT. (0.0140 ACRES)											

ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
332-1.07-154.00	(1-R) MAYOR AND COUNCIL OF LAUREL					TCE	2940-178	0.127			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6300	10000	2+72.28	34.84	203300.5173	612441.4604	S 17°00'03.00" W	19.26				
6301	10000	2+53.01	34.84	203282.0944	612435.8277	S 15°59'54.84" W	66.40				
6302	10000	1+86.00	34.84	203218.2662	612417.5270	N 74°00'00.00" W	7.21				
6206	10000	1+86.00	27.63	203220.2534	612410.5968	N 15°59'54.84" E	66.46				
6205	10000	2+52.95	27.63	203284.1420	612428.9149	N 17°00'03.00" E	15.84				
6204	10000	2+68.79	27.63	203299.2881	612433.5457	N 81°10'20.08" E	8.01				
6301	10000	2+72.28	34.84	203300.5173	612441.4604						
FIGURE P_TCE_1R AREA = 605.4687 SQ. FT. (0.0139 ACRES)											
ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
232-12.19-30.00	(2-R) THE VILLAS ON BROADCREEK LLC					P/E	2987-214	2.821			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6400	10000	3+49.32	20.00	203378.5371	612449.7954	N 17°00'03.00" E	159.93				
6401	10000	5+09.25	20.00	203531.4777	612496.5565			N 67°40'37.43" E	9.87	9.94	23.00
6402	10000	5+15.50	27.63	203535.2249	612505.6826	S 17°00'03.00" W	170.65				
6403	10000	3+44.86	27.63	203372.0337	612455.7874	N 78°38'42.34" W	3.72				
6404	10000	3+44.49	23.93	203372.7659	612452.1412	N 22°07'13.25" W	6.23				
6400	10000	3+49.32	20.00	203378.5371	612449.7954						
FIGURE P_PE_2R AREA = 1274.6254 SQ. FT. (0.0293 ACRES)											
ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
232-12.19-30.00	(2-R) THE VILLAS ON BROADCREEK LLC					TCE	2987-214	2.821			
ALIGNMENT NUMBER & DESCRIPTION: 10000 - DELAWARE AVE.											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
6500	10000	5+17.78	34.84	203535.2885	612513.2398	S 17°00'03.00" W	170.06				
6501	10000	3+47.72	34.84	203372.6615	612463.5171	S 75°14'08.74" W	4.86				
6502	10000	3+45.16	30.71	203371.4242	612458.8223	N 78°38'42.34" W	3.10				
6403	10000	3+44.86	27.63	203372.0337	612455.7874	N 17°00'03.00" E	170.65				
6402	10000	5+15.50	27.63	203535.2249	612505.6826			N 89°31'02.69" E	7.56	7.59	23.00
6500	10000	5+17.78	34.84	203535.2885	612513.2398						
FIGURE P_TCE_2R AREA = 1232.8482 SQ. FT. (0.0283 ACRES)											

COUNTY ASSESSMENT PARCEL NUMBER	PLAN SHEET NUMBER	OWNERSHIP OF RECORD	TITLE SOURCE	PROPERTY AREA BEFORE ACQUISITION (ACRE) D=DEED C=CALCULATED A=ASSESSMENT	ACQUISITION CODE FEE, RW, P/E, TCE	AREA TO BE ACQUIRED		PROPERTY AREA REMAINING (SQ. FEET/ACRES)	DEED RECORD OF ACQUISITION	REMARKS
						ACQUISITION (SQ. FEET/ACRES)	AREA OCCUPIED BY EXISTING RIGHT OF WAY (SQ. FEET/ACRES)			
322-1.07-153.00	7	(1-L) LAUREL REDEVELOPMENT CORP.	2626-290	D - 1.15	TCE			4310.6588 / 0.10		TCE - 1146.63 SF INGRESS/EGRESS EASEMENT PER D.R. 4389-197
232-12.19-21.00	7	(2-L) LAUREL REDEVELOPMENT CORPORATION	2236-45	D - 1.18	TCE			740.0953 / 0.02		
332-1.07-154.00	7	(1-R) MAYOR AND COUNCIL OF LAUREL	2940-178	D - 0.13	P/E			608.8308 / 0.01		
					TCE			605.4687 / 0.01		5530.00 / 0.13
232-12.19-30.00	7	(2-R) THE VILLAS ON BROADCREEK LLC	2987-214	D - 2.82	P/E			1274.6254 / 0.03		
					TCE			1232.8482 / 0.03		122882.76 / 2.82

LEGEND	
FEE	AREA OF ACQUISITION
RW	AREA OCCUPIED BY EXISTING RW
P/E	PERMANENT EASEMENT
TCE	TEMPORARY CONSTRUCTION EASEMENT
*	OFFSET IS LEFT OF BASELINE
**	CURVE TURNS TO THE LEFT

ACQUISITION CODES	
FEE - ACQUISITION	P/E - PERMANENT EASEMENT
RW - AREA OCCUPIED BY EXISTING RW	TCE - TEMPORARY EASEMENT

13-OCT-2020 08:42 Y:\SUSSEX\466\bridge\17201607602\300\_CADD\530\_PLANS\_DGN\BR01.dgn

ADDENDA / REVISIONS		<b>NOT TO SCALE</b>	<b>BR 3-162 ON S466 DELAWARE AVE OVER BROAD CREEK</b>	CONTRACT	BRIDGE NO.	<b>3-162</b>	<b>RIGHT-OF-WAY DATA AND TABULATION SHEET</b>	SECTION
				T201607602	DESIGNED BY:	S. WEAVER		BR
				COUNTY	CHECKED BY:	S. WALLS		SHEET NO.
		SUSSEX				30		

**RIGHT-OF-WAY SHEET 2 OF 2**

# **ATTACHMENT F**

*State and Federal Agency Letters*



STATE OF DELAWARE  
**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**

DIVISION OF FISH & WILDLIFE  
 RICHARDSON & ROBBINS BUILDING  
 89 KINGS HIGHWAY  
 DOVER, DELAWARE 19901

DIRECTOR'S  
 OFFICE

PHONE  
 (302) 739-9910

May 5, 2022

Kieran Burns  
 Envirotech Environmental Consulting, Inc.  
 17605 Nassau Commons Boulevard  
 Unit D  
 Lewes, DE 19958

*Re: ETECH 2022 Chesapeake Utilities Gas Main Replacement*

Dear Kieran:

Thank you for contacting the Species Conservation and Research Program (SCRCP) about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project.

*State Natural Heritage Site*

A review of our database indicates that the following state rare or federally listed plants, animals or natural communities occur at or adjacent to the project site:

Scientific Name	Common Name	Taxon	State Rank	State Status	SGCN Tier	Federal Status
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	Fish	S2	E	Tier 1	E
<i>Elliptio fisheriana</i>	Northern Lance	Invertebrate	S2	NL	Tier 2	NL

**State Rank:** S1 – Extremely rare within the state (typically 5 or fewer occurrences); S2 – Very rare within the state (6 to 20 occurrences); S3 – Rare to uncommon in Delaware; S4 – Apparently secure, at fairly low risk of extinction or extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors; S5 – Demonstrably secure, at very low risk of extinction or extirpation due to a very extensive range, abundant populations or occurrences, or little to no concern from declines or threats; SX – Extirpated or presumed extirpated from the state. All historical locations and/or potential habitat have been surveyed; SH – Historically known, but not verified for an extended period (usually 15+ years); there are expectations that the species may be rediscovered; SE – Non-native in the state (introduced through human influence); not a part of the native flora or fauna; SNR – Not yet ranked in Delaware; SN – Occurrences in DE of limited conservation value, \*\*of concern due to a restricted range; SU – Status uncertain within the state. Usually, an uncommon species which is believed to be of conservation concern, but there is inadequate data to determine the degree of rarity; B – Breeding; M – Migratory; N – Nonbreeding.

**State Status:** E – Endangered, i.e., designated by the Delaware Division of Fish and Wildlife as seriously threatened with extinction in the state pursuant to State of Delaware Code (7 Del. §601 *et seq.*) and implementing regulation (Title 7, 3900, 16.0 Endangered Species); NA – Plants are not included in Title 7; NL – Not listed.

**SGCN Tiers:** Tier 1 – Species of Greatest Conservation Need (SGCN) that are most in need of conservation action in order to sustain or restore their populations. They are the focus of the Delaware Wildlife Action Plan (DEWAP), which is based on analyzing threats to their populations and habitats, and on developing conservation actions to eliminate, minimize, or compensate for these threats; Tier 2 – SGCN that are also in need of conservation action, although not with the urgency of Tier 1 species. Their distribution across the landscape will help determine where

DEWAP conservation actions will be implemented on the ground; **Tier 3** – These species are for the most part still relatively common in Delaware, but are listed as SGCN for various reasons, including documented population declines, high responsibility of the Northeast region for the global population, or continued need for monitoring and/or management. This tier also includes non-breeding species that are uncommon in Delaware. **NA** – Plants are not addressed in DEWAP.

**Federal Status:** **E** – Endangered, i.e., designated by the U.S. Fish and Wildlife Service as being in danger of extinction throughout its range; **T** – Threatened, i.e., designated by USFWS as being likely to become endangered in the foreseeable future throughout all or a significant portion of its range; **C** – Candidate, i.e., taxa for which the U.S. Fish and Wildlife Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. NOAA Managed Candidate: **SC** – Species of Concern, i.e., species about which NOAA's National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the ESA; **NL** – Not listed.

While one or more state-rare species were identified near the project location, at present, this project does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve, which are two criteria used to identify “Designated Critical Resource Waters” in the Army Corps of Engineers (ACOE) Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property.

### *Freshwater Mussels*

Northern lance is a freshwater mussel that is a species of conservation concern in Delaware. The Nanticoke River watershed has the most diverse population of freshwater mussels in the state. Because freshwater mussels are filter feeders, and have a long lifespan and complex life cycle, they often serve as excellent indicators of water quality. Impacts to this population of freshwater mussels can be minimized by taking measures to decrease downstream sedimentation during construction activities.

### *Fisheries*

#### Atlantic Sturgeon

The occurrence of Atlantic Sturgeon (*Acipenser oxyrinchus*) in the Nanticoke River watershed has been confirmed. More specifically, Atlantic sturgeon have been detected just 1.6 miles downstream from the project site using telemetry equipment and captured just 3 miles downstream. This species is listed as endangered under the U.S. Endangered Species Act. Data collected through sampling efforts and acoustic telemetry suggest this species is likely inhabiting the river system from approximately **August 15<sup>th</sup> through October 15<sup>th</sup>**. A time of year restriction on all project activities during this time is recommended to avoid impacts to this species. Note that these data are based on a project in the first few years of study and recommendations may change in the future. Also note that a Section 7 consultation may be required.

#### Other Anadromous Species

Broad Creek is utilized during upstream migration by several fish species of concern. American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), and alewife (*Alosa pseudoharengus*), collectively known as alosines, utilize the river during spawning between late March and mid-May and then as a nursery habitat for young-of-the-year. Alewife and blueback herring are listed by the National Marine Fisheries Service as a Species of Concern. In addition, these species are important to both commercial and recreational fisheries and form an important forage base for other fish and animal species.

Records Pond, just upstream of the project site, forms an impediment to upstream migration, and as a result there is great potential for these species to be concentrated in the study area during the

spring spawning run. No in-water work or work that produces noise in the water column should take place from **March 15<sup>th</sup> to June 1<sup>st</sup>** to avoid affecting these species.

Also, alosines are very sensitive to changes in their natural environment and if in-water or shoreline work is proposed, efforts should be made to: 1) minimize noise transmitted into the water column (i.e. driving piles) as not to interrupt their migration upstream, 2) minimize sedimentation, 3) maintain adequate shoreline buffers to protect water quality and 4) minimize the replacement of natural shoreline with hard materials (i.e. rip-rap, bulkheads, etc.) when feasible.

### Largemouth Bass

In addition, there is a viable resident Largemouth Bass population in Broad Creek that supports the state's most popular freshwater fishery. Bass are a nest building species, and in tidal rivers they spawn in shallow areas out of the current in coves, marina basins, and backwaters found near spillpools, such as that by Records Pond. An acoustically tagged bass was detected on a receiver installed near the Records spillway in the spring of 2019, which coincides with the spawning season. The movement of bass through the project area to the spillway for spawning likely overlaps with anadromous fish species, so the time of year restriction requested above should also minimize impacts to Largemouth Bass.

### *Delaware Ecological Network*

Habitat at this project site has been identified as ecologically important by the Delaware Ecological Network (DEN). The DEN, although non-regulatory, is a statewide conservation network developed using GIS and field collected datasets that help to identify and prioritize ecologically important areas for natural resource protection. The DEN includes ecologically important areas such as forests, wetlands, streams, habitat that supports rare species and areas of especially high quality. The DEN includes the following key elements: 1) core areas- contain relatively intact natural ecosystems, and provide high-quality habitat for native plants and animals, 2) hubs-slightly fragmented aggregations of core areas, plus contiguous natural cover and 3) corridors-link core areas together, allowing wildlife movement and seed and pollen transfer between them.

### *Drilling*

Although the use of a directional drill has less of an impact than other methods, such as trenching, there is still a potential for frac-outs to occur which could impact wetlands and water bodies within the project area. Therefore, we highly recommend that a frac-out contingency plan be in place prior to the start of project activities. The contingency plan should include the following:

1. A provision to contain materials released,
2. A clean-up protocol, and
3. Arrangements for an experienced representative (drilling crew or consultant) to watch the site at all times so that the operation can be shut down immediately in the event a frac-out occurs.

In addition, on-site staff should have access to the DNREC 24-hour hotline phone number (1-800-662-8802) to report any environmental release or fish kill. Immediate notification of any

environmental release is imperative. Please also contact Bruce Cole, Fisheries Biologist, at Bruce.Cole@delaware.gov or 302-735-2961.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,

A handwritten signature in cursive script that reads "Danielle Ellis". The signature is written in black ink and is positioned below the word "Sincerely,".

Danielle Ellis  
*Environmental Review Coordinator*  
Phone: (302) 223-2446  
6180 Hay Point Landing Road  
Smyrna, DE 19977

(See invoice on next page)

**INVOICE - PAYMENT DUE**

It is our policy to charge a fee for this environmental review service. This letter constitutes an invoice for \$70.00 (\$35.00/hour for a minimum of one hour). Please make your check payable to “Delaware Division of Fish and Wildlife” and submit to:

DE Division of Fish and Wildlife  
97 Commerce Way  
Suite 106  
Dover, DE 19901  
ATTN: DFW Fiscal

**In order for us to properly process your payment, you must reference  
“ETECH 2022 Chesapeake Utilities Gas Main Replace” on your check.**

cc: Division of Fish and Wildlife Fiscal (dnrec\_dfw\_payroll@delaware.gov); Code to 72900



## United States Department of the Interior

U.S. Fish & Wildlife Service  
Chesapeake Bay Field Office  
177 Admiral Cochrane Drive  
Annapolis, MD 21401  
410/573 4575



Online Certification Letter

Today's date:

Project:

Dear Applicant for online certification:

Thank you for using the U.S. Fish and Wildlife Service (Service) Chesapeake Bay Field Office online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8573. For information in Delaware you should contact the Delaware Division of Fish and Wildlife, Wildlife Species Conservation and Research Program at (302) 735-8658. For information in the District of Columbia, you should contact the National Park Service at (202) 339-8309.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website ([www.fws.gov/chesapeakebay](http://www.fws.gov/chesapeakebay))

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

Sincerely,

Genevieve LaRouche  
Field Supervisor





## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Chesapeake Bay Ecological Services Field Office  
177 Admiral Cochrane Drive  
Annapolis, MD 21401-7307

Phone: (410) 573-4599 Fax: (410) 266-9127

<http://www.fws.gov/chesapeakebay/>

<http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html>

In Reply Refer To:

April 12, 2022

Project Code: 2022-0030936

Project Name: Chesapeake Utilities - Garth Jones

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of

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this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

## **Official Species List**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Chesapeake Bay Ecological Services Field Office**

177 Admiral Cochrane Drive

Annapolis, MD 21401-7307

(410) 573-4599

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## Project Summary

Project Code: 2022-0030936  
Event Code: None  
Project Name: Chesapeake Utilities - Garth Jones  
Project Type: Pipeline - Offshore - Maintenance / Modification  
Project Description: 4 inch - Pipe Replacement  
Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.558243149999996,-75.56961606593225,14z>



Counties: Sussex County, Delaware

## Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>▪ The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: <a href="https://www.fws.gov/savethemonarch/FAQ-Section7.html">https://www.fws.gov/savethemonarch/FAQ-Section7.html</a>).</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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# **USFWS National Wildlife Refuge Lands And Fish Hatcheries**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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## Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- [R1UBV](#)
-



## **IPaC User Contact Information**

Agency: Envirotech Environmental Consulting, Inc.  
Name: Kieran Burns  
Address: 17605 Nassau Commons Blvd  
Address Line 2: Unit D  
City: Lewes  
State: DE  
Zip: 19958  
Email: kieran@envirotechecinc.com  
Phone: 3026845201

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May 17, 2022

Kieran Burns  
Envirotech Environmental Consulting, Inc.  
17605 Nassau Commons Boulevard, Unit D  
Lewes, DE 19958

**Subject: Chesapeake Utilities Gas Main Replacement  
SHPO Project No. 2022.04.14.04**

Dear Mr. Burns:

We understand from your letter that the applicant is seeking a permit from the US Army Corps of Engineers (USACOE) for the replacement of a 4-inch steel gas main located on Broad Creek, E Front Street, and Delaware Avenue in Laurel. The 4-inch steel gas main is entirely within DelDOT Right-of-Way (ROW) and will be replaced with a 4-inch high-density polyethylene (HDPE) pipe. Because of the need for authorization from the USACOE, the project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended).

The Area of Potential Effect (APE) is within the Laurel Historic District (S07656), which is listed on the National Register of Historic Places (NRHP). However, there are no contributing buildings within or abutting the APE. State Bridge 162 (S13262) is within the APE but has previously been determined not eligible for listing in the NRHP. The APE is within DelDOT ROW and will be following previous utility disturbance. As such, there is low potential for any intact archaeological resources. We find the proposed undertaking to have No Adverse Effect on the Laurel Historic District provided that construction plans caution contractors to avoid historic buildings. Should plans change, additional consultation may be necessary. If damage occurs to historic structures during replacement, please contact this Office immediately so appropriate mitigation can take place.

Please feel free to contact me if you have any questions at (302) 736-7431 or [sarah.carr@delaware.gov](mailto:sarah.carr@delaware.gov).

Sincerely,



Sarah Carr  
Cultural Preservation Specialist

cc: Gwen Davis, Deputy SHPO  
John Martin, DelDOT