



Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.

Permit #: 18-511

Date Approved: May 7, 2018

Expires: May 7, 2019

Issued to: Dominion Energy Transmission, Inc.

POC: Joshua Cook

Company Address: 925 White Oak Blvd. Bridgeport, WV 26330

Project Address: Tonkin Station Rd. West Union, WV 26456

Firm: 54017C0120C

Lat/Long: 39.311925 N, -80.781238 W

Purpose of development: Bridge Replacement

Issued by: George C. Eidel, Doddridge County FPM (or designee)

Date: May 7, 2018

For additional information regarding this permit, please contact
Doddridge County Floodplain Manager at 304.873.1343, or via email at
doddridgecountyfpm@gmail.com
105 Court Street Suite 3; West Union, WV 26456

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

**CNG Transmission Corp.
c/o Dominion Transmission
325 Liberty AV Mail Drop 18-01
Pittsburgh, PA 15221**



9590 9402 2228 6193 5131 49

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION ON DELIVERY

A. Signature X Scott Weber Agent Addressee

B. Received by (Printed Name) Maree C. Date of Delivery 5-7

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Insured Mail	
<input type="checkbox"/> Insured Mail Restricted Delivery (over \$500)	

PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt

**U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only**

For delivery information, visit our website at www.usps.com®

WEST UNION, WV 26456

OFFICIAL USE

Certified Mail Fee	\$3.45	0532
		12
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	Postmark Here
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$2.75	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	49\$0.50	05/04/2018
Total Postage and Fees	6.59\$0.70	

Sent To Nelson Bruffy
Street and Apt. No., or PO Box No. 309 Tonkin Station Rd.
City, State, ZIP+4® West Union, WV 26456 18-511

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7017 1450 0001 5669 5612

**U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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For delivery information, visit our website at www.usps.com®

PITTSBURGH, PA 15222

OFFICIAL USE

Certified Mail Fee	\$3.45	0532
		12
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	Postmark Here
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$2.75	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	49\$0.50	05/04/2018
Total Postage and Fees	6.59\$0.70	

Sent To CNG Transmission Corp. c/o Dominion
Street and Apt. No., or PO Box No. 325 Liberty Av Mail Drop 18-01
City, State, ZIP+4® Pittsburgh, PA 15222 18-511

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7017 1450 0001 5669 5605

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

Nelson Bruffy
309 Tonkin Station Road
West Union, WV 26456



9590 9402 2228 6193 5131 32

2. Article Number (Transfer from service label)

COMPLETE THIS SECTION: ON DELIVERY

A. Signature

X *Nelson Bruffy*

Agent

Addressee

B. Received by (Printed Name)

C. Date of Delivery

5-7-18

D. Is delivery address different from item 1? Yes

If YES, enter delivery address below: No

3. Service Type

- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

USPS TRACKING#



First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

9590 9402 2228 6193 5131 32

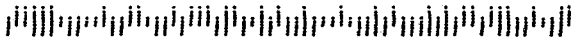
**United States
Postal Service**

• Sender: Please print your name, address, and ZIP+4® in this box•

**Doddridge County OEM/CFM
George Eidel
105 Court Street, Suite 3
West Union, WV 26456**

18-511

-201205



FLOODPLAIN PERMIT #18-511

Dominion Energy Bridge Replacement Tonkin Station Rd and Rt 18 N

TASK	COMPLETE (DATE)	NOTES
<i>CHECK RECEIVED</i>		
<i>US ARMY CORP. ENGINEERS (USACE)</i>		
<i>US FISH & WILDLIFE SERVICES (USFWS)</i>	5/4/2018	
<i>WV DEPT. NATURAL RESOURCES (WVDNR)</i>		
<i>WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)</i>		
<i>STATE HISTORIC & PRESERVATION OFFICE (SHPO)</i>		
<i>OFFICE of LAND & STREAM (OLS)</i>		
<i>DATE OF COMMISSION READING</i>	May 15, 2018	
<i>DATE AVAILABLE TO BE GRANTED</i>		
<i>PERMIT GRANTED</i>		
<i>COMPLETE</i>		

7017 1450 0001 5869 5605

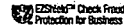
7017 1450 0001 5869 5612

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

PNC BANK, N.A.
Pittsburgh, PA

8-9/430



CHECK DATE 5/3/2018

COPY COPY

COPY COPY

PAY Seven Thousand Five Hundred and 00/100 Dollars

AMOUNT 7,500.00

TO Doddridge County Commission

AUTHORIZED SIGNATURE

COPY COPY

⑈ 139583⑈ ⑆043000096⑆ 0002272405⑈

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

139583

Check Date: 5/3/2018

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
05032018	5/3/2018	000000312533	7,500.00			7,500.00
Doddridge County Commission			TOTAL			7,500.00
- Operating Account	1	11261				

FP# 18-511

COPY

COPY

COPY

COPY

COPY

COPY



Check Date: 5/3/2018

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
05032018	5/3/2018	000000312533	7,500.00			7,500.00
Doddrige County Commission			TOTAL			7,500.00
- Operating Account	1	11261				

FP # 18-511

Doddrige County, West Virginia

RECEIPT NO: 849

DATE: 2018/05/07

FROM: CIVIL & ENVIRONMENTAL CONSULTANTS AMOUNT: \$ 7,500.00

~~SEVEN THOUSAND FIVE HUNDRED DOLLARS AND 00 CENTS~~

FOR: #18-511 FLOODPLAIN

00000139583 FP-BUILDING PERMITS

020-318 TOTAL: \$7,500.00

MICHAEL HEADLEY
SHERIFF & TREASURER

MEC
CLERK

Customer Copy





Doddridge County Floodplain Permits

(Week of May 7, 2018)

Please take notice that on the 4th day of **May, 2018**, **Dominion Energy** filed an application for a Floodplain Permit **(#18-511)** to develop land located at or about **Tonkin Station Rd and Rt 18 N** **Coordinates 39.311925 N, -80.781238 W**. The Application is on file with the Doddridge County Floodplain Manager's Office and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by **June 4, 2018** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. **This project is a bridge replacement**



May 1, 2018

Doddridge County Commission
Attn: George Eidel, Doddridge County Floodplain Manager
118 East Court Street, Room 102
West Union, WV 26456

Subject: Dominion Energy Transmission, Inc.
LL Tonkin Compressor Station Bridge
No-Rise Certificate
Doddridge County, West Virginia
CEC Project 171-658

Civil & Environmental Consultants, Inc. (CEC) is pleased to evaluate the potential floodplain impacts for the above referenced project on behalf of Dominion Energy Transmission, Inc., 925 White Oaks Blvd, Bridgeport, WV 26330. The proposed work includes replacing the superstructure on the existing permanent bridge over Middle Island Creek and removing the temporary bridge that is currently in place. The project is located in the Middle Island Creek Zone AE Flood Hazard area, according to the Flood Insurance Rate Map (FIRM) for Doddridge County, map panel 54017C0120C with a map revised date of October 4, 2011. Based on the previous hydraulic study for the project area, the 100-year water surface elevation at the bridge location is 768.86'. The low beam of the proposed superstructure will remain the same as the existing conditions, with a low beam elevation of 773.41'. The freeboard between the low beam elevation of the bridge and the 100-year water surface elevation is 4.55'. Therefore, the proposed work will not have an adverse impact on the existing base flood elevation of Middle Island Creek.

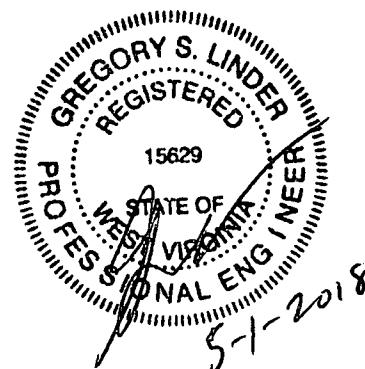
This no-rise certificate is provided in support of the floodplain development permit application. Your time and effort in reviewing this floodplain development permit application is appreciated. Please feel free to contact me at 304-933-3119 or via e-mail at glinder@cecinc.com or contact Mr. Joshua Cook at 681-842-3908 or via e-mail at joshua.d.cook@dom.com if you have questions or need additional information.

Respectfully submitted,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Andrew P. Darnell, E.I.T.
Assistant Project Manager

Greg S. Linder, P.E.
Principal



Doddridge County Floodplain Application Fee Calculation

Project Construction Cost = \$1,400,000

Base Floodplain Application Fee = \$1,000

Additional Application Fee = $(\$1,400,000 - \$100,000) * \left(\frac{\$5.00}{\$1,000}\right) = \$6,500$

Total Application Fee = \$7,500



Permit# 18-511
Project Name: Tonkin Station Bridge Replacement
Permittees Name: Dominion Energy

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA--designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE 

DATE 05-03-18

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Dominion Energy Transmission, Inc.		
Corporate Mailing Address: 925 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Corporate Point of Contact (POC): Joshua Cook		
Corporate POC Title: Engineer II – Clarksburg, WV		
Corporate POC Primary Phone: (681) 842-3800		
Corporate POC Primary Email: joshua.d.cook@dom.com		
Corporate FEIN:	Corporate DUNS:	
Corporate Website: https://www.dominionenergy.com/		
Local Mailing Address: 925 White Oaks Blvd		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM): Joshua Cook		
Local PM Primary Phone: (681) 842-3908		
Local PM Secondary Phone: (304) 203-0881		
Local PM Primary Email: joshua.d.cook@dom.com		
Person Filing Application: Gregory S. Linder		
Applicant Title: Principal		
Applicant Primary Phone: (304) 848-7104		
Applicant Secondary Phone: (304) 629-9074		
Applicant Primary Email: glinder@cecinc.com		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.

Project Narrative:
The LL Tonkin Compressor Station Bridge is located west of WV 18, 2.9 miles north of US 50 near West Union. The proposed work includes replacing the superstructure on the existing permanent bridge over Middle Island Creek and removing the temporary bridge that is currently in place.
The project is located in the Middle Island Creek Zone AE Flood Hazard area, according to the Flood Insurance Rate Map (FIRM) for Doddridge County, map panel 54017C0120C with a map revised date of October 4, 2011. Based on the previous hydraulic study for the project area, the 100-year water surface elevation at the bridge location is 768.86'. The low beam of the proposed superstructure will remain the same as the existing conditions, with a low beam elevation of 773.41'. The freeboard between the low beam elevation of the bridge and the 100-year water surface elevation is 4.55'. Therefore, the proposed work will not have an adverse impact on the existing base flood elevation of Middle Island Creek. Please see the attached plans and Hydrology and Hydraulics Report for Floodplain Impact.

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

<u>ACTIVITY</u>	<u>STRUCTURAL TYPE</u>
<input type="checkbox"/> New Structure	<input type="checkbox"/> Residential (1 – 4 Family)
<input type="checkbox"/> Addition	<input type="checkbox"/> Residential (more than 4 Family)
<input type="checkbox"/> Alteration	<input type="checkbox"/> Non-residential (floodproofing)
<input type="checkbox"/> Relocation	<input type="checkbox"/> Combined Use (res. & com.)
<input type="checkbox"/> Demolition	<input type="checkbox"/> Replacement
<input type="checkbox"/> Manufactured/Mobil Home	

B. OTHER DEVELOPMENT ACTIVITIES:

- | | | | |
|---|---------------------------------|-----------------------------------|-------------------------------------|
| <input type="checkbox"/> Fill | <input type="checkbox"/> Mining | <input type="checkbox"/> Drilling | <input type="checkbox"/> Pipelining |
| <input type="checkbox"/> Grading | | | |
| <input type="checkbox"/> Excavation (except for STRUCTURAL DEVELOPMENT checked above) | | | |
| <input type="checkbox"/> Watercourse Alteration (including dredging and channel modification) | | | |
| <input type="checkbox"/> Drainage Improvements (including culvert work) | | | |
| <input checked="" type="checkbox"/> Road, Street, or Bridge Construction | | | |
| <input type="checkbox"/> Subdivision (including new expansion) | | | |
| <input type="checkbox"/> Individual Water or Sewer System | | | |
| <input type="checkbox"/> Other (please specify) | | | |
-
-
-
-

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 1 of 1

Site/Property Information:		
Legal Description: MI CREEK 25.31 AC		
Physical Address/911 Address: MIDDLEBURG START RT 18 MIDD		
Decimal Latitude/Longitude: 39.311925, -80.781238		
DMS Latitude/Longitude: 39°18'42.93"N, 80°46'52.38"W		
District: 08	Map: 7	Parcel: 22
Land Book Description:		
Deed Book Reference: Deed Book 0065, Page 0440		
Tax Map Reference: 09 08 0007 0022 0000 0000		
Existing Buildings/Use of Property: Compressor Station, Access road		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)			
Community: <u>54017C0120C</u>	Number:	Panel:	Suffix:
Location (Lat/Long): <u>See Attached</u>		Approximate Elevation:	
		Estimated BFE:	
Is the development in the floodway? <input type="checkbox"/> Yes <input type="checkbox"/> No		Is the development in the floodplain? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Zone: _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1 of 1

Property Owner Data:		
Name of Primary Owner (PO): Hope Natural Gas Company c/o Dominion Transmission Inc.		
PO Address: 625 LIBERTY AV MAIL DROP 18-01		
City: PITTSBURGH	State: PA	Zip: 15221
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO):		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: ____ of ____

Contractor/Sub-Contractor (C/SC) Information:		
C/SC Company Name:		
C/SC WV License Number:		
C/SC FEIN:	C/SC DUNS:	
Local C/SC Point of Contact (POC):		
Local C/SC POC Title:		
C/SC Mailing Address:		
City:	State:	Zip-Code:
Local C/SC Office Phone:		
Local C/SC POC Phone:		
Local C/SC POC E-Mail:		

Engineer Firm Information:		
Engineer Firm Name:		
Engineer WV License Number:		
Engineer Firm FEIN:	Engineer Firm DUNS:	
Engineer Firm Primary Point of Contact (POC):		
Engineer Firm Primary POC Title:		
Engineer Firm Mailing Address:		
City:	State:	Zip-Code:
Engineer Firm Office Phone:		
Engineer Firm Primary POC Phone:		
Engineer Firm Primary POC E-Mail:		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): NELSON BRUFFY ET UX		
Physical Address: 309 TONKIN STATION ROAD		
City: WEST UNION	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): CNG TRANSMISSION CORP, C/O DOMINION TRANSMISSION		
Physical Address: 625 LIBERTY AV MAIL DROP 18-01		
City: PITTSBURGH	State: PA	Zip: 15221
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): NELSON BRUFFY ET UX		
Physical Address: 309 TONKIN STATION ROAD		
City: WEST UNION	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): CNG TRANSMISSION CORP, C/O DOMINION TRANSMISSION		
Physical Address: 625 LIBERTY AV MAIL DROP 18-01		
City: PITTSBURGH	State: PA	Zip: 15221
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development access roads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE:** All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

Applicant

Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have been properly attained, are current and valid, and must be presented with this application before a Doddridge County Floodplain Permit may be issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager or designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record at the next scheduled Doddridge County Commission meeting after the date of issuance. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed. A Certificate of Compliance is required upon substantial completion of the project.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above--described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site--plan submitted and approved by this permit that a "Stop Work" order may be issued by the County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature:  Date: 05-08-18

Applicant Printed Name: Brian C. Sheppard, VP Eastern Pipeline Operations



United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
90 Vance Drive
Elkins, West Virginia 26241



April 26, 2018

Mr. Karl Kratzer
Dominion Energy Environmental Services, Inc.
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Re: LL Tonkin Compressor Facility – Bridge Replacement, Doddridge County, WV
(FWS File Number 2018-I-0485)

Dear Mr. Kratzer:

This letter is in response to your request dated February 21, 2018, and supplemental information dated April 16, 2018, for information regarding the potential occurrence of federally listed endangered and threatened species and their designated critical habitats within the vicinity of the project mentioned above. Dominion Energy Transmission, Inc. (Dominion) proposes to replace an existing bridge that provides access to the LL Tonkin Compressor Facility in Doddridge County, West Virginia. These comments are provided pursuant to the Endangered Species Act (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This project has been assigned FWS File Number 2018-I-0485; please reference this number in all future correspondence.

The U.S. Fish and Wildlife Service (Service) has determined that four federally listed species may occur within the project area and may be affected by the construction of this project. These are the endangered Indiana bat (*Myotis sodalis*), snuffbox mussel (*Epioblasma triquetra*), and clubshell mussel (*Pleurobema clava*), and the threatened northern long-eared bat (*Myotis septentrionalis*) (NLEB).

Project History

Upgrades to the LL Tonkin Compressor Facility were included in the Monroe to Cornwell Project (FWS File Number 2014-TA-1030). These upgrades included the construction of a temporary bridge spanning Middle Island Creek. In correspondence dated January 7, 2015, the Service stated that the Monroe to Cornwell Project was not anticipated to adversely affect any federally listed species. Dominion is now proposing to replace the existing permanent bridge to the LL Tonkin Compressor Facility. For a complete project history, please reference Dominion's April 16, 2018, email.

Federally Listed Bats

The Indiana bat and NLEB may use the project area for foraging and roosting between April 1 and November 15. Indiana bat summer foraging habitats are generally defined as riparian, bottomland, upland forest, and old fields or pastures with scattered trees. Roosting/maternity habitat consists primarily of live or dead hardwood tree species which have exfoliating bark that provides space for bats to roost between the bark and the bole of the tree. Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites. In West Virginia, the U.S. Fish and Wildlife Service (Service) considers all forested habitat containing trees greater than or equal to 5 inches in diameter at breast height to be potentially suitable as summer roosting and foraging habitat for the Indiana bat.

Indiana bats feed on emerged aquatic and terrestrial flying insects. Moths, caddisflies, flies, mosquitoes, and midges are major prey items. Aquatic insects that have concentrated emergences or that form large mating aggregations above or near water appear to be preferred prey items. As a result, streams, wetlands, and associated riparian forests are often preferred foraging habitats for pregnant and lactating Indiana bats. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (e.g., old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. Increased erosion and sedimentation of streams reduces diversity and biomass of benthic invertebrates, i.e. insects. Some projects propose impacts to aquatic features such as streams or wetlands, which could result in a decrease in insects available to both bat species for foraging.

Similar to the Indiana bat, NLEB foraging habitat includes forested hillsides and ridges, and small ponds or streams. NLEB are typically associated with large tracts of mature, upland forests with more canopy cover than is preferred by Indiana bats. NLEB seem to be flexible in selecting roosts. They choose roost trees based on suitability to retain bark or provide cavities or crevices, and this species is known to use a wider variety of roost types than the Indiana bat. Males and non-reproductive females may also roost in cooler places like caves and mines. Although rare, this bat has also been found roosting in structures like barns and sheds.

Indiana bats and NLEB use caves or mine portals for winter hibernation between November 15 and March 31. These species also use the hibernacula and the areas around them for fall-swarming and spring-staging activity (August 15 to November 14 and April 1 to May 14, respectively). Some males have been known to stay close to the hibernacula during the summer and may use the hibernacula as summer roosts. There may be other landscape features being used as hibernacula by NLEB during the winter that have yet to be documented.

The Service does not anticipate that this project is likely to adversely affect the Indiana bat because your project: 1) will affect a minimal amount (0.05 acres) of potential Indiana bat foraging or roosting habitat; 2) is not within any of the Indiana bat hibernacula or summer use buffers described above; 3) will not affect any potential caves or mines that could be used as hibernacula for this species; and 4) effects to aquatic features used for foraging habitat will be insignificant.

The NLEB may occur within the range of the proposed project, and may be affected by the proposed construction and operation of this project. Any take of NLEB occurring in conjunction

with these activities that complies with the conservation measures (as outlined in the 4(d) rule), as necessary, is exempted from section 9 prohibitions by the 4(d) rule and does not require site specific incidental take authorization. Note that the 4(d) rule does not exempt take that may occur as a result of adverse effects to hibernacula and that no conservation measures are required as part of the 4(d) rule unless the proposed project: 1) involves tree removal within 0.25 miles of known NLEB hibernacula; or 2) cuts or destroys known, occupied maternity roost trees or any other trees within a 150-foot radius around known, occupied maternity tree during the pup season (June 1 to July 31). This proposed project is not located within any of these radii around known hibernacula or roost trees and will not affect any known NLEB hibernacula, therefore any take of NLEB associated with this project is exempted under the 4(d) rule and no conservation measures are required.

Federally Listed Mussels

The proposed project occurs within the vicinity of Middle Island Creek, which provides habitat for clubshell and snuffbox mussels. Freshwater mussels feed by filtering food particles from the water column. Juvenile and adult freshwater mussels have been documented to feed on detritus, diatoms, phytoplankton, and zooplankton. Freshwater mussels rely on fish to complete their lifecycles. When mussel larvae (glochidia) are released into the water by adult females, they must attach themselves within a few days to an appropriate fish host, which they then parasitize for a short time while developing into juvenile mussels. The loss of many historic populations and the continuing degradation of current populations are due to the impacts of impoundments, navigation projects, water quality degradation from agricultural and industrial wastes, and deforestation and other forms of habitat alteration, including gravel and sand dredging. Impacts that directly affect the species also include reduction or elimination of fish hosts.

Freshwater mussels play a key role in the health of aquatic environments by helping to maintain water quality, cycle nutrients, stabilize substrates, remove suspended sediments, and create habitat complexity (Anderson and Kreeger 2012). Mussels remove suspended particulates from water by filter-feeding, which involves straining water over gills to remove microscopic food particles. Filter-feeding makes mussels very sensitive to excessive sedimentation caused by runoff from streambank and upland activities. Excessive sedimentation into a stream reduces suitable habitat for mussels and can smother them, causing death. Excessive suspended sediments can also impair feeding processes of mussels, leading to acute short-term or chronic long-term stress. Both excessive sedimentation and excessive suspended sediments can lead to reduced populations of mussels and therefore reduced benefits to the ecosystem (Anderson and Kreeger 2010; Box and Mossa 1999; Ellis 1931; Ellis 1936; Houp 1993).

Due to the proximity of the project to Middle Island Creek, the project could cause increased sedimentation that could adversely affect mussels. Dominion proposes to replace the existing bridge on existing piers and no work will occur below the ordinary high water mark. In correspondence dated February 21, 2018, and April 16, 2018, Dominion stated their commitment to erosion and sedimentation best management practices to include triple stacked compost filter sock and routine inspection of best management practices. These best management practices will help minimize adverse effects of sedimentation and erosion to waterways that provide habitat to federally listed mussels near the action area. In addition, Dominion will comply with the requirements set forth in the 2012 Erosion and Sediment Control Field Oil and Gas Manual.

Mr. Karl Kratzer
April 26, 2018

4

Based on Dominion's commitment to avoid instream work and to implement erosion and sedimentation control best management practices, the Service does not anticipate that this project is likely to adversely affect any federally listed mussel species.

Summary

Based on the information provided to us, the Service has concluded that no federally listed species are expected to be adversely affected by the project and any that any take of NLEB associated with this project is exempt under the 4(d) rule.

This letter provides technical assistance only and does not serve as a completed section 7 consultation document. If there is a Federal nexus for the project (e.g., Federal funding provided, Federal permits required to construct), no tree clearing or any project construction activities on any portion of the parcel should occur until consultation under section 7 of the ESA, between the Service and the Federal action agency, is completed. Section 7 consultation is not complete until the federal action agency submits a determination of effects to this office, the Service concurs with the federal action agency's determination, and the federal action agency agrees to incorporate all the proposed conservation measures as mandatory conditions for any permit decision rendered for this project. All measures must be installed prior to the start of any construction, and all measures must be implemented as proposed and be maintained until construction is complete. If there is no Federal nexus associated with this project, then no further coordination with this office is required.

Should project plans change or amendments be proposed that we have not considered in your proposed action, or if additional information on listed and proposed species becomes available, or if new species become listed or critical habitat is designated, this determination may be reconsidered. This technical assistance letter regarding effects to any federally listed endangered and threatened species does not apply if erosion and sedimentation measures fail due to improper maintenance. If erosion and sedimentation measures fail, further consultation with the Service will be required.

If you have any questions regarding this letter, please contact Amanda Selnick of my staff at (304) 636-6586, Ext. 24, or amanda_selnick@fws.gov, or at the letterhead address.

Sincerely,



John Schmidt
Field Supervisor

Literature Cited

- Anderson, R. M. and D. A. Kreeger. 2010. Potential for impairment of freshwater mussel populations in DRBC special protection waters as a consequence of natural gas exploratory well development. Unpublished report prepared for U.S. Fish and Wildlife Service and the Partnership for the Delaware Estuary. State College, Pennsylvania.
- Box, J. M. and J. Mossa. 1999. Sediment, land use, and freshwater mussels: prospects and problems. *Journal of the North American Benthological Society*. 18:99-117.
- Ellis, M. M. 1931. Some factors affecting the replacement of the commercial fresh-water mussels. U.S. Department of Commerce Bureau of Fisheries. *Fishery Circular*. 7:1-10.
- Ellis, M. M. 1936. Erosion silt as a factor in aquatic environments. *Ecology*. 17:29-42.
- Houp, R. E. 1993. Observations on long-term effects of sedimentation on freshwater mussels (*Molusca: Unionidae*) in the North Fork of Red River, Kentucky. *Transactions of the Kentucky Academy of Science*. 54:93-97.

APPENDIX B

PHOTOS



PHOTO 1
Existing compressor station.



PHOTO 2
Typical stream section.



PHOTO 3
Existing bridge (downstream side).

APPENDIX C
HYDROLOGY CALCULATIONS

EXCERPT FROM DODDRIDGE COUNTY FIS

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

Discharge-frequency curves were developed on a regional basis that applies to West Virginia (References 3 and 4). For the streams studied by detailed methods, 1-percent-annual-chance flood elevations were determined through discharge-frequency relations and the Manning equation. Within the Town of West Union, flood elevations were determined through streamflow-station data relationships and the Manning's equation.

Peak discharge-drainage area relationships for each stream studied by detailed methods are presented in Table 2, "Summary of Discharges".

Table 2 – Summary of Discharges

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (SQ. MILES)</u>	<u>PEAK DISCHARGE (CFS) 1-PERCENT- ANNUAL- CHANCE</u>
MIDDLE ISLAND CREEK		
Upstream of Doddridge-Tyler County boundary	134.78	15,200
Approximately 0.1 mile downstream of confluence of Piggins Run	120.06	13,080
BUCKEYE CREEK		
At confluence with Middle Island Creek	38.62	7,350
Downstream of confluence of Long Run	22.62	5,150
Upstream of confluence of Greenbrier Creek	9.41	3,050
Downstream of confluence of Traugh Fork	1.52	1,310
MEATHOUSE FORK		
At confluence with Middle Island Creek	66.84	9,600
Downstream of confluence of Toms Fork	50.47	8,200
Downstream of confluence of Brushy Fork	29.87	6,050
Downstream of confluence of Laurel Run and Big Isaac Creek	3.76	2,230
MCELROY CREEK		
Upstream of confluence of Flint Run	61.95	9,250
Upstream of confluence of Rigging Run	51.23	8,300
Downstream of confluence of Talkington Fork	39.18	7,100
Downstream of confluence of Robinson Fork and Big Battle Run	20.75	4,900

APPENDIX D
HYDRAULIC CALCULATIONS

EXCERPT FROM DODDRIDGE COUNTY FIS

using the USACE HEC-2 step-backwater computer program, and the results were published in a special flood hazard information report (References 5 and 6). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field surveys of the stream and floodplain areas. For Middle Island Creek, channel "n" values range from 0.040 to 0.045 and overbank "n" values range from 0.050 to 0.070. For Buckeye Creek and Meathouse Fork, channel "n" values range from 0.055 to 0.080.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying benchmarks within a given jurisdiction that are catalogued by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Benchmarks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

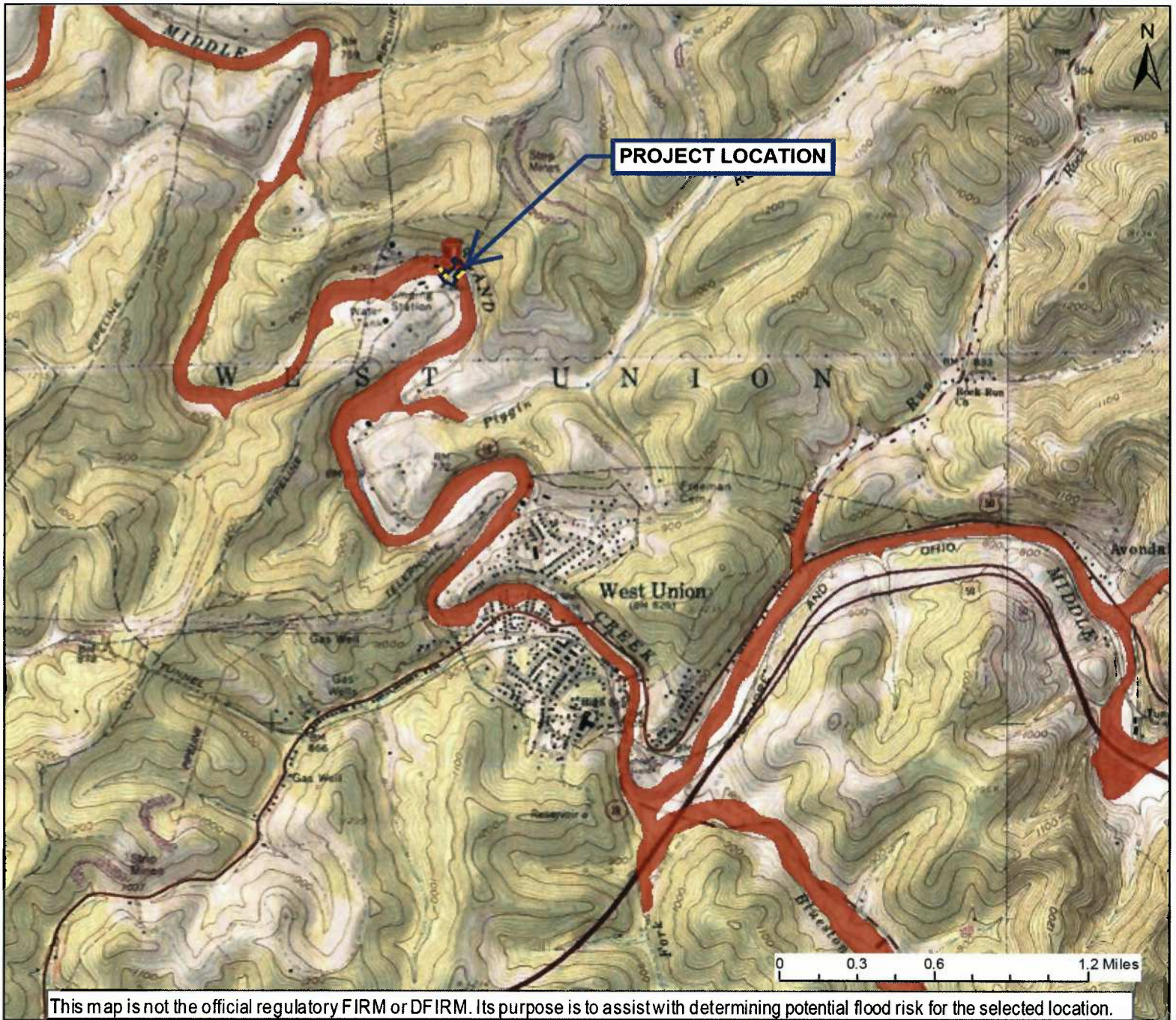
- Stability A: Monuments of the most reliable nature, expected to hold position/elevation (e.g. mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation (e.g. concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g. concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g. concrete monument above frost line, or steel witness post)

In addition to NSRS benchmarks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for benchmarks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

WV Flood Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

User Notes:
 Dominion Energy Transmission, Inc.
 LL Tonkin Permanent Bridge

Map created on December 12, 2017

- Flood Hazard Zone
- Flood Point of Interest

Disclaimer:
 The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. To obtain more detailed information in areas where Base Flood Elevations have been determined, users are encouraged to consult the latest Flood Profile data contained in the official flood insurance study. These studies are available online at www.msc.fema.gov.
 WV Flood Tool (<http://www.MapWV.gov/flood>) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Hazard Area:
 Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.

FEMA Issued Flood Map: 54017C0120C

Watershed (HUC8): Little Musringum-Middle Island

Elevation: About 753 ft

Location (long, lat): (80.781238 W, 39.311925 N)

Location (UTM17N): (518860, 4351414)

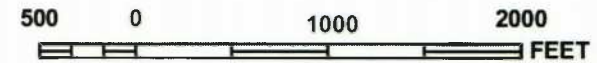
Contacts: Doddridge

CRS Information: N/A

Parcel Number: No Parcel



MAP SCALE 1" = 1000'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0120C

FIRM
 FLOOD INSURANCE RATE MAP
 DODDRIDGE COUNTY,
 WEST VIRGINIA
 AND INCORPORATED AREAS

PANEL 120 OF 325
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0120	C
WEST UNION, TOWN OF	540025	0120	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
 54017C0120C
MAP REVISED
 OCTOBER 4, 2011

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

HYDROLOGY AND HYDRAULICS REPORT FOR FLOODPLAIN IMPACT

FOR

Dominion Transmission, Inc.

**MONROE TO CORNWELL PROJECT
– LL TONKIN STATION**

**WEST UNION
DODDRIDGE COUNTY, WEST VIRGINIA**

July 2015

**Submitted for:
Dominion Transmission, Inc.
445 West Main St.
Clarksburg, West Virginia 26301**

Prepared By:

AECOM

**FOSTER PLAZA 6
681 ANDERSEN DRIVE, SUITE 400
PITTSBURGH, PA 15220**

Job # 60327471

HYDROLOGY & HYDRAULICS REPORT

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Figure 2 – FEMA Firmette

Figure 3 – Hydrology & Hydraulics Plan

Appendix B. Photos

Appendix C. Hydrology Calculations

Appendix D. Hydraulics Calculations

HYDROLOGY & HYDRAULICS REPORT FOR LL TONKIN STATION

1.0 PROJECT OVERVIEW

Dominion Transmission, Inc. has proposed expansion of an existing natural gas compressor station in West Union, Doddridge County. Upon completion of construction activities, proposed compressor station facilities and grading will remain.

The proposed project is located in the Middle Island Creek watershed. The proposed grading for the compressor station expansion is located within the FEMA Flood Zone AE (with no FEMA-determined floodways) along Middle Island Creek.

1.1 Existing Conditions

The stream and floodplain were surveyed by others during a site investigation. A site investigation of the project area identified the bottom width of the existing stream at the project location to be approximately seventy feet (70') and the overall depth of the channel to be approximately thirteen feet (13'). Channel side slopes range from approximately 1.5H:1V to steeper than 1H:1V and the channel top width is approximately ten feet (80'). The flow depth was observed to be five and a half feet (5.5'). There is an existing road crossing approximately 830 feet downstream of the proposed grading.

The existing road crossing consists of a steel bridge with concrete piers and abutments. The existing crossing is proposed to remain in place. The drainage area for this project is approximately 123 square miles. See **Appendix A** for figures.

1.2 Proposed Conditions

Proposed grading activities will take place to expand the existing Tonkin compressor station and will involve fill material being placed within the 100-year floodplain. See **Appendix A** for a figure of the site.

2.0 TECHNICAL APPROACH

The proposed facilities were analyzed for their impacts to the existing stream. A hydrology and hydraulics analysis was completed for the existing conditions and the proposed conditions. The effective FEMA Flood Insurance Study (FIS) for this project is "Doddridge County West Virginia and Incorporated Areas," effective October 4, 2011; this study was created as a digital conversion of the initial Countywide FIS. Since the project is located in a FEMA detailed study zone AE, data from the FIS was used in the hydraulic and hydrologic analyses.

2.1 Precipitation Data

The peak discharge calculated in the FEMA Flood Insurance Study (FIS) was used; therefore, no precipitation data was obtained.

2.2 Hydrology Analysis

The results of the hydrologic analyses in the FIS show a drainage area of 134.78 square miles, with a peak discharge 1-percent-annual-chance of 15,200 cfs on the nearest downstream cross section on Middle Island Creek. This discharge from the FIS was used as the 100-year design flow, providing a conservative design flow. A summary of the runoff results is contained in Table 1 below.

TABLE 1.

Summary of Design Flows (cfs)	
	100-Year Design Flow
Middle Island Creek	15, 200

The detailed input parameters and runoff results are contained in the hydrology calculations included in **Appendix C**.

2.3 Hydraulic Analysis

Hydraulic calculations were performed to analyze the anticipated impacts of constructing the proposed facilities. This analysis was completed to determine whether the proposed activity complied with Section 4.3 of the Doddridge County Floodplain Ordinance.

HEC-RAS Version 4.1.0 was used for the hydraulic calculations. Both an existing and proposed geometry were created. The data for the cross-sections and existing bridge came from surveyed points (vertical datum NAVD 88). Points were taken across the floodplain and surrounding area, and nine cross sections were taken along the stream. Three-dimensional surfaces were created in AutoCAD Civil 3D from this data and additional cross sections were cut from this surface. The proposed geometry uses blocked obstructions in the locations of proposed fill.

The Manning's "n" values used for Middle Island Creek in the FIS ranged from 0.040 to 0.045 in the channel and 0.050 to 0.070 in the overbank. Our analysis used a value of 0.040 in the channel, corresponding to a clean, winding channel with some pools and shoals. Values in the overbank ranged between 0.050 and 0.070, depending on the amount of vegetation and debris at a particular location.

Expansion and contraction coefficients of 0.3 and 0.1, respectively, were used at all cross sections, except the two bounding cross sections of the existing bridge (River Stations 826.02 and 769.3), where values of 0.5 and 0.3 were used.

The bridge modeling approach was Energy (Standard Step) for the Low Flow method and Energy Only (Standard Step) for the High Flow method, though the bridge is not submerged in the 100-year design storm.

Both the existing and proposed condition use the same steady flow data and are run using a subcritical flow regime. The boundary condition is a known downstream water surface elevation. The water surface elevation 767.8 feet, was obtained from the water surface profile in plate 22P of the FIS, which also uses the vertical datum NAVD 88. The discharge used in the model is described in Section 2.2 of this report, and shown in Table 1.

TABLE 2.

Summary of Water Surface Elevations			
River Station	Existing 100-year	Proposed 100-year	Difference in WSE
2304.58	771.16	771.20	0.04
1970.3	770.82	770.86	0.04
1900	770.72	770.78	0.06
1800	770.08	770.13	0.05
1700	769.80	769.80	0.00
1636.04	769.76	769.77	0.01
1600	769.78	769.79	0.01
1500	769.72	769.72	0.00
1422.55	769.68	769.68	0.00
916.96	768.89	768.89	0.00
868.08	768.86	768.86	0.00
826.02	768.86	768.86	0.00
769.3	768.60	768.60	0.00
721.29	768.60	768.60	0.00
289.25	767.80	767.80	0.00

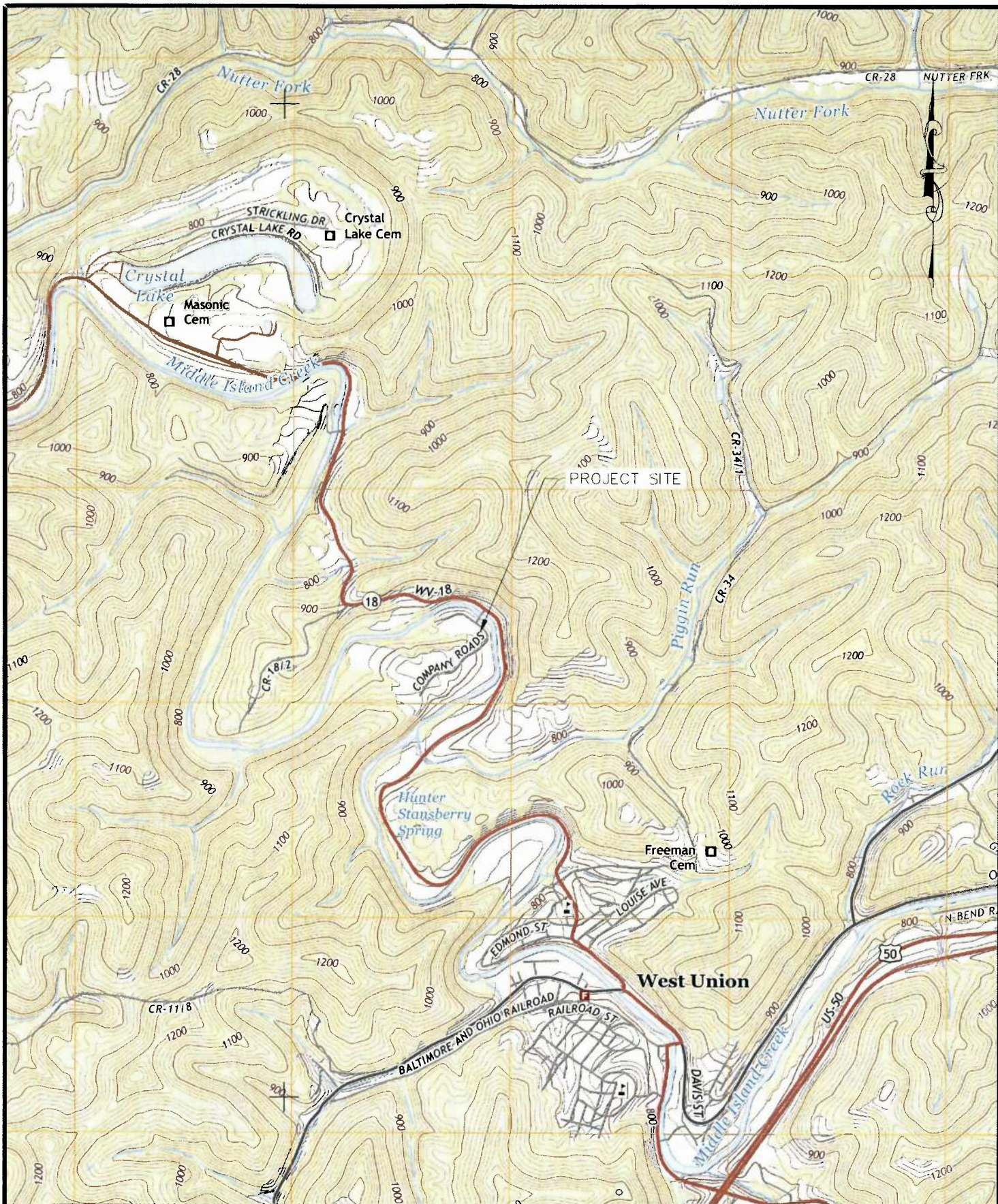
The design input parameters and analysis results are contained in the hydraulic calculations included in **Appendix D**.

3.0 ANALYSIS RESULTS

A comparison of the existing and proposed conditions shows that the proposed structure will have virtually no impact on the flow characteristics of the stream that were analyzed or on adjacent properties. These calculations also show that proposed construction does not increase tailwater velocity. Further analysis shows that the existing bridge structure is able to safely convey the 100-year design flow without overtopping the existing road crossing. Refer to **Appendix D** for detailed results of the analysis.

APPENDIX A

FIGURES



AECOM

FOSTER PLAZA 6
681 ANDERSEN DRIVE, SUITE 400
PITTSBURGH, PA 15220

DOMINION TRANSMISSION, INC.

445 WEST MAIN ST.
CLARKSBURG, WV 26301

PREPARED BY:
KRD

CHECKED BY:
BDN

APPROVED BY:
BDN

DATE:
07/22/2015

SCALE:
1"=2000'

DRAWING NO.

FIGURE 1

LL TONKIN STATION
SITE LOCATION MAP

REV. DATE:

PROJECT NO.
60327471

COMPANY ROAD,
WEST UNION, WV



May 3, 2018

BY CERTIFIED MAIL NO.:

Mr. Greg Eidel, Doddridge County Floodplain Manager
Doddridge County Commission
118 East Court Street, Room 102
West Union, West Virginia 26456

**RE: Dominion Energy Transmission, Inc.
LL Tonkin Compressor Station Bridge
No Rise Certificate
Doddridge County, West Virginia**

Dear Mr. Eidel:

Dominion Energy Transmission, Inc. (Dominion) is pleased to submit the attached No-Rise Certificate for the LL Tonkin Compressor Station Bridge. The proposed work includes replacing the superstructure on the existing permanent bridge over Middle Island Creek and removing the temporary bridge installed as part of the compressor station expansion project. The project is located in the Middle Island Creek Zone AE Flood Hazard area, according to the Flood Insurance Rate Map (FIRM) for Doddridge County, map panel 54017C0120C with a map revised date of October 4, 2011.

Included with this application is a letter from Dominion's consultant, Civil & Environmental Consultants, stamped by a professional engineer, attesting to the no adverse effects of the reconstructed superstructure.

Should you have any questions or require further information, please do not hesitate to contact Karl R. Kratzer at (804) 273-2914 or Karl.R.Kratzer@dominionenergy.com or Mr. Joshua Cook at (681) 842-3908 or Joshua.D.Cook@dominionenergy.com.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Gangle", written over a horizontal line.

Richard B. Gangle
Director Environmental Services

cc: Karl Kratzer

LL Tonkin Bridge Replacement
Doddridge County Floodplain
May 3, 2018

Bcc: Amanda Tornabene
Richard B. Gangle
Neil Robinson
Josh Cook
Greg Linder, CEC



George Eidel <doddridgecountyfpm@gmail.com>

Fwd: Authorization Activity - LL Tonkin Bridge (UNCLASSIFIED)

1 message

Robert C. Orndorff <robert.c.orndorff@dominionenergy.com>
To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Fri, May 4, 2018 at 9:27 AM

Bob Orndorff
Director of State and Local Government Affairs
Dominion Energy Services, Inc
304 641-3608

Begin forwarded message:

From: "Karl R Kratzer (Services - 6)" <Karl.R.Kratzer@dominionenergy.com>
Date: May 4, 2018 at 9:23:03 AM EDT
To: "Kester, Jacquelyn" <jkester@cecinc.com>
Cc: "Robert C. Orndorff (Services - 6)" <robert.c.orndorff@dominionenergy.com>, "Joshua D Cook (GasInfrastructure - 2)" <Joshua.D.Cook@dominionenergy.com>
Subject: **FW: Authorization Activity - LL Tonkin Bridge (UNCLASSIFIED)**

Jacquelyn:

Nicely done. Please forward this to George Eidel at your earliest convenience.

Thank you.

Karl R. Kratzer
Dominion Energy Environmental Services
5000 Dominion Boulevard
Glen Allen, Virginia 23060
(804) 273-2914 - Desk
(804) 356-9282 - Cell
karl.r.kratzer@dominionenergy.com

-----Original Message-----

From: Fannin, Adam E CIV USARMY CELRH (US) [mailto:Adam.E.Fannin@usace.army.mil]
Sent: Friday, May 04, 2018 9:20 AM
To: Kester, Jacquelyn
Cc: Karl R Kratzer (Services - 6); ROBINETTE, Lee A CIV USARMY CELRH (US)
Subject: [External] RE: Authorization Activity - LL Tonkin Bridge (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Good Morning Jacquelyn,

The Corps' authority to regulate waters of the United States is based on the definitions and limits of jurisdiction at 33 CFR 328 and 33 CFR 329. A Section 404 permit must be obtained prior to discharging dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act requires a permit be obtained in advance of any work in, on, over or under a navigable water of the United States.

Middle Island Creek is not a Section 10 waterway with the exception of the Section 10 slackwater extent

from the Ohio River which includes the lower 12.0 miles of Middle Island Creek. Your project is not located in the Section 10 portion of Middle Island Creek, therefore, no Section 10 permit would be required to conduct work in, over, or under the waterway.

Middle Island Creek would be subject to Section 404 of the Clean Water Act. However, based on the description of the proposed work and the plans provided, it does not appear that the proposal would involve the discharge of dredged and/or fill material into Middle Island Creek. Therefore, based on the information provided, no Section 404 permit would be required.

I hope that's helpful. If you need additional information feel free to contact me again.

Sincerely,

Adam Fannin
Regulatory Project Manager
Energy Resource Branch
USACE, Huntington District, CELRH-RD-E
502 8th Street
Huntington, WV 25701
304-399-6901
304-399-5085 (fax)
adam.e.fannin@usace.army.mil

-----Original Message-----

From: Kester, Jacquelyn [mailto:jkester@cecinc.com]
Sent: Thursday, May 3, 2018 4:15 PM
To: Fannin, Adam E CIV USARMY CELRH (US) <Adam.E.Fannin@usace.army.mil>
Cc: Karl R Kratzer (Karl.R.Kratzer@dominionenergy.com) <Karl.R.Kratzer@dominionenergy.com>
Subject: [Non-DoD Source] Authorization Activity - LL Tonkin Bridge

Adam,

Dominion Energy, Inc. (Dominion) is proposing to install a permanent bridge deck along CNG Road, which is located off State Route 18 in northwestern Doddridge County, West Virginia. The proposed project entails the replacement of the existing bridge deck with a new 145-foot long by 24-foot wide bridge deck with paved approaches capable of supporting heavy vehicle traffic to allow Dominion with permanent access to their existing LL Tonkin Compressor Station. The proposed activities are located outside of the limits of the compressor facility and the bridge is privately owned. Construction of the new bridge deck will utilize the existing piers located in Middle Island Creek and as such no instream work or activities below the plane of the OHWM will be required. The existing pier caps will be reworked to allow the proposed beams to be placed across them. Additionally, Middle Island Creek is not listed as a traditionally navigable water.

Under the above described scope or work, would this be an activity that would require authorization from your office? I have attached the plans for your reference

Thank you in advance for your time,

Jacquelyn D. Kester / Senior Project Manager

Civil & Environmental Consultants, Inc.

600 Marketplace Ave * Suite 200 * Bridgeport, WV 26330

Toll-Free: (855) 488-9539 * Direct: (304) 848-7121 * Fax: (304) 933-3327

Mobile: (304) 838-8600 * Blocked <http://www.cecinc.com>

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CLASSIFICATION: UNCLASSIFIED

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The Doddridge Independent



The Doddridge Independent PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Please take notice that on the 4th day of May, 2018, Dominion Energy filed an application for a Floodplain Permit (#18-511) to develop land located at or about Tonkin Station Rd and Rt 18 N Coordinates 39.311925 N, -80.781238 W. The Application is on file with the Doddridge County Floodplain Manager's Office and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by June 4, 2018 (20 calendar days after the announcement at the regularly scheduled Doddridge County

was published in The Doddridge Independent 2 times commencing on Friday, May 11, 2018 and Ending on Friday, May 18, 2018 at the request of:

**George Eidel, OEM Director
Doddridge County Flood Plain**

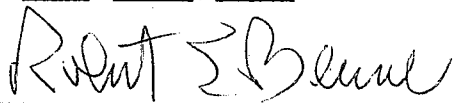
Given under my hand this Friday, May 18, 2018

The publisher's fee for said publication is:
\$ 24.84 1st Run/\$ 18.63 Subsequent Runs
This Legal Ad Total: \$ 43.47



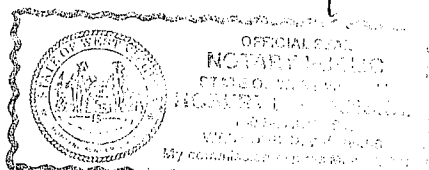
Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on
this date: 05, 18, 2018

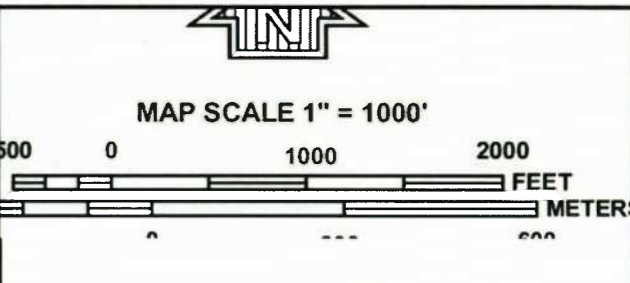
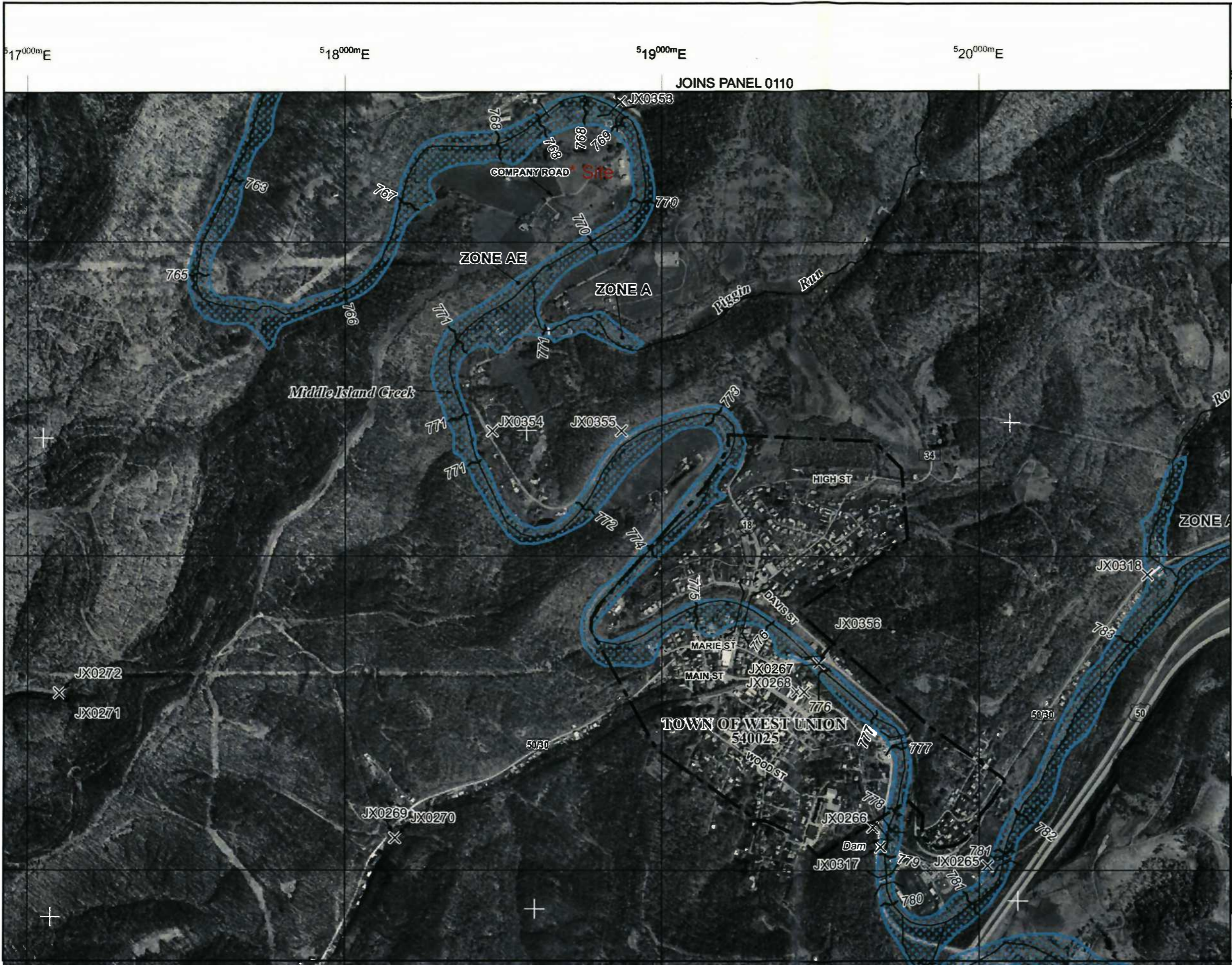


Notary Public in and for Doddridge County

My Commission expires on
The 10 day of MAY 20 19



Floodplain Public Notice - Legal Notice
Please take notice that on the 4th day of May, 2018, Dominion Energy filed an application for a Floodplain Permit (#18-511) to develop land located at or about Tonkin Station Rd and Rt 18 N Coordinates 39.311925 N, -80.781238 W. The Application is on file with the Doddridge County Floodplain Manager's Office and may be inspected or copied during regular business hours. Any interested persons who desire to comment shall present the same in writing by June 4, 2018 (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Clerk of the County Court at 108 Court Street Ste. 1, West Union, WV 26456. This project is a bridge replacement. C2 05/11 - 05/17



NFP
PANEL 0120C

FIRM
FLOOD INSURANCE RATE MAP
DODDRIDGE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 120 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0120	C
WEST UNION, TOWN OF	540025	0120	C

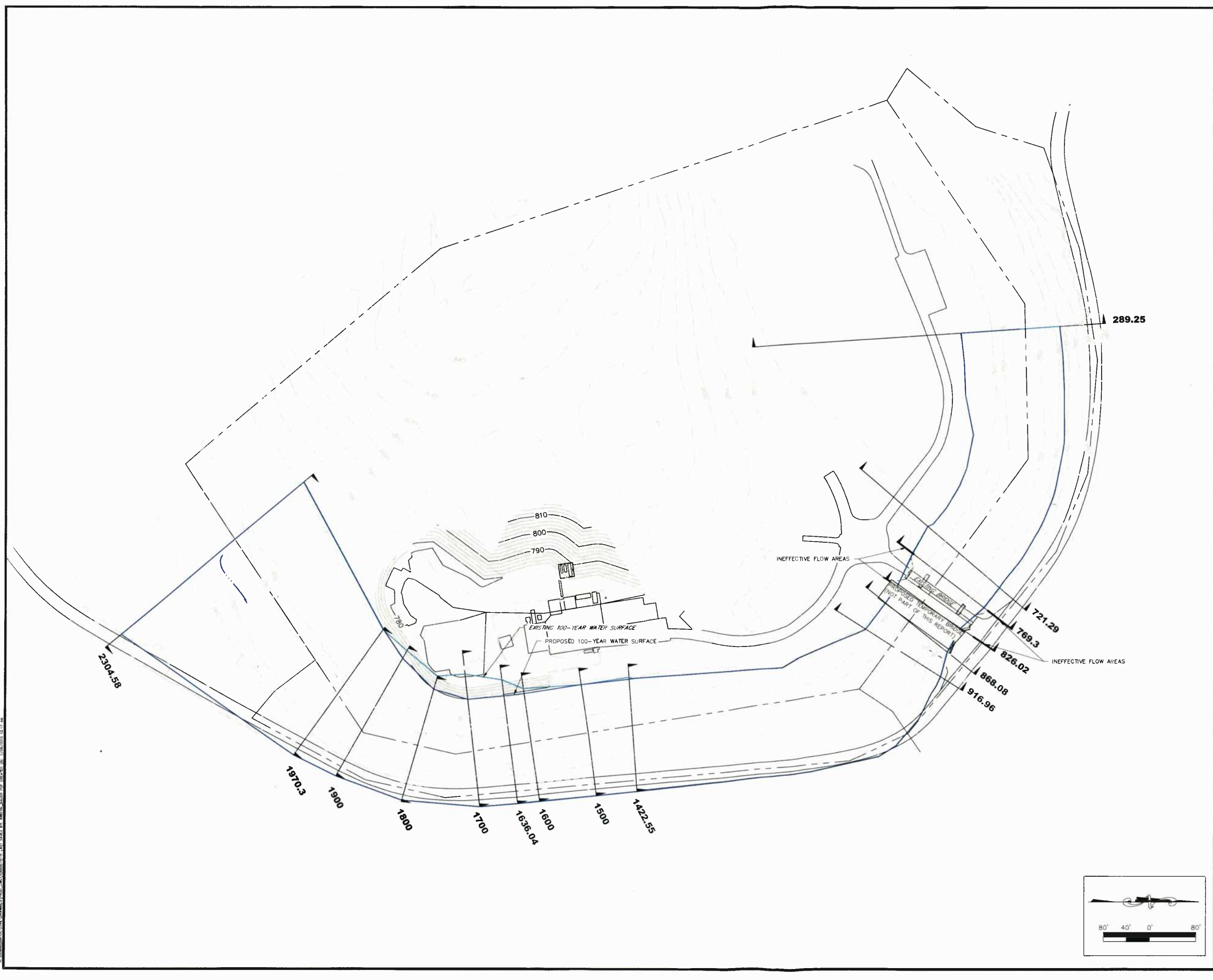
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
54017C0120C
MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency

FIGURE 2

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



LEGEND:

EXISTING FEATURES:

- MAJOR CONTOUR (10' INTERVAL)
- MINOR CONTOUR (2' INTERVAL)
- PROPERTY LINE
- EDGE OF ROADWAY
- EXISTING 100-YEAR WATER FLOODPLAIN
- MIDDLE ISLAND CREEK CENTERLINE
- STREAM FLOW DIRECTION

PROPOSED FEATURES:

- MAJOR CONTOUR (10' INTERVAL)
- MINOR CONTOUR (2' INTERVAL)
- PROPOSED 100-YEAR FLOODPLAIN
- HEC-RAS CROSS SECTION

DATE	REVISIONS DESCRIPTION	APPROVED

PREPARED FOR: **DOMINION TRANSMISSION, INC**
 445 WEST MAIN ST
 CLARKSBURG, WV 26301
 PHONE (304) 623-8000

PREPARED BY: **AECOM**
 FOSTER PLAZA 6
 681 ANDERSEN DRIVE, SUITE 400
 PITTSBURGH, PA 15220
 PHONE (412) 503-4700
 FAX (412) 503-4701

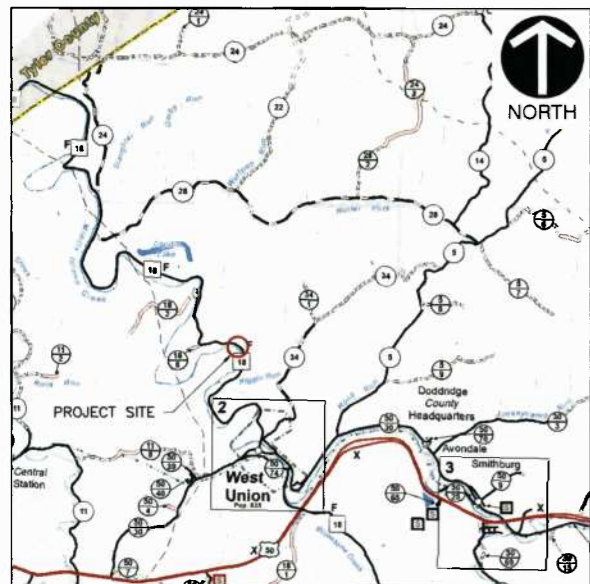
MONROE TO CORNWELL PROJECT
 LL TONKIN STATION
 WEST UNION
 DODDRIDGE COUNTY, WEST VIRGINIA

HORIZONTAL SCALE: AS SHOWN

DRAWN BY:	KRD	07-22-2015
DETAIL CK:	BDN	07-23-2015
ITR:	XXX	XX-XX-XXX
ENVIRONMENTAL CK:	XXX	XX-XX-XXX
CONSTRUCTION CK:	XXX	XX-XX-XXX

AECOM PROJECT NO.: 60327471

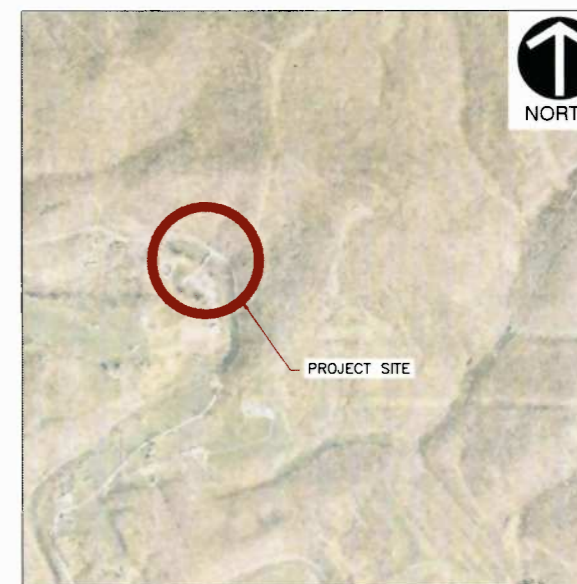
SHEET: **FIGURE 3** DRAWING DESC.: **HYDROLOGY & HYDRAULICS PLAN**



VICINITY MAP
SCALE: 1 INCH = 1 MILE



DOMINION ENERGY, INC. LL TONKIN COMPRESSOR STATION BRIDGE DODDRIDGE COUNTY, WEST VIRGINIA



LAYOUT
SCALE: 1 INCH = 1,000 FEET

APPROXIMATE CENTER OF PAD: N 039°18'43.32", W 080°46'52.35"

INDEX OF SHEETS	
Sheet Number	Sheet Title
1	TITLE SHEET
2	ROADWAY CONSTRUCTION PLAN
3	SITE PLAN
4	SUMMARY OF QUANTITIES
5	GENERAL NOTES
6	STAKE OUT PLAN
7	ABUTMENT 1 PLAN & ELEVATION
8	ABUTMENT 1 FOOTING DETAILS
9	ABUTMENT 1 DETAILS
10	ABUTMENT 2 PLAN & ELEVATION
11	ABUTMENT 2 FOOTING DETAILS
12	ABUTMENT 2 DETAILS
13	PIER 1 DETAILS
14	PIER 2 DETAILS
15	FRAMING PLAN
16	GIRDER ELEVATIONS
17	STEEL DETAILS
18	END DIAPHRAGM DETAILS
19	END DIAPHRAGM DETAILS
20	INTERMEDIATE DIAPHRAGM DETAILS
21	CAMBER ORDINATES
22	BEARING DETAILS
23	DECK PLAN
24	DECK DETAILS
25	DECK DETAILS
26	NEOPRENE STRIP SEAL DAM DETAILS
27	TOP OF DECK ELEVATIONS
28	REINFORCING STEEL LIST
29	REINFORCING STEEL LIST
30	EROSION AND SEDIMENT CONTROL PLAN

DISTURBED ACREAGE
0.95 ACRES
TREE CLEARING = 0.05 ACRES

FLOOD PANEL INFORMATION
BY GRAPHICAL PLOTTING ONLY, THE IMPROVEMENT IS LOCATED IN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA, ACCORDING TO THE FLOOD INSURANCE RATE MAPS FOR DODDRIDGE COUNTY, MAP # 54017C0120C WITH AN EFFECTIVE DATE OF 10/04/2011.

PERMITS
WEST VIRGINIA GENERAL WATER POLLUTION CONTROL PERMIT FOR STORMWATER ASSOCIATED WITH OIL AND GAS CONSTRUCTION ACTIVITY (NOT REQUIRED)

UNITED STATES ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14 (NOT REQUIRED)

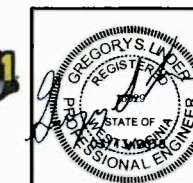
OFFICE OF LAND AND STREAMS STREAM ACTIVITY APPLICATION (NOT REQUIRED)

REFERENCES

1. TOPOGRAPHIC INFORMATION BASED ON UAS LIDAR SCANNING PERFORMED BY CEC INC. IN OCTOBER 2017.

ISSUED FOR CONSTRUCTION

CONTRACTOR SHALL CONTACT MISS UTILITY OF WEST VIRGINIA AT 800-245-4848 AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.



DATE: JANUARY 2018		PWC
DRAWN BY: AS SHOWN		DDE
PROJECT NO: 171-6686101		GSL
APPROVED BY:		
DRAWING NO: 1		
SHEET OF 30		

DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

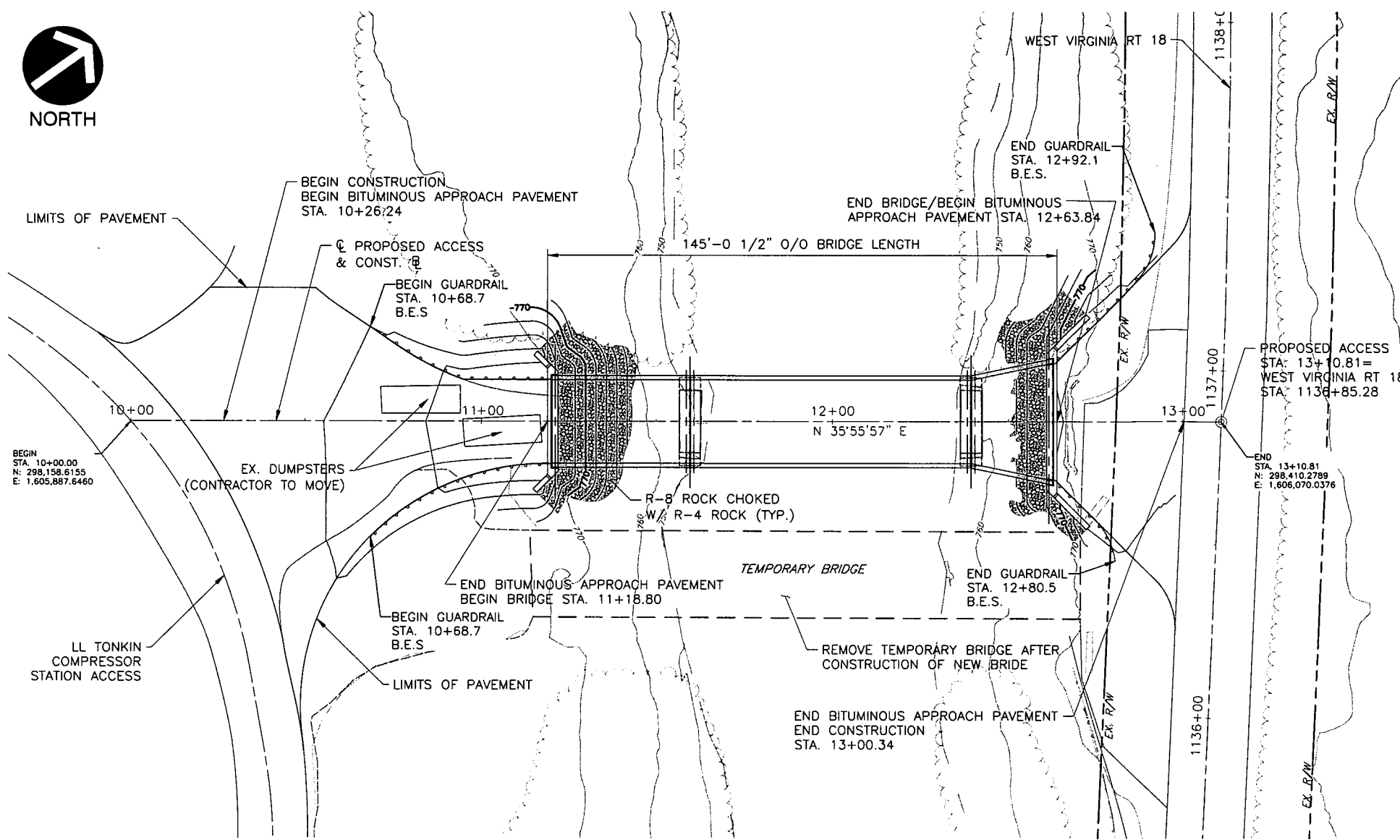
Civil & Environmental Consultants, Inc.
 600 Marketplace Ave - Suite 200 - Bridgeport, WV 26330
 Ph: 304.933.3119 · 855.488.9539 · Fax: 304.933.3327
 www.cecinc.com

SUBMITTAL & REVISION RECORD

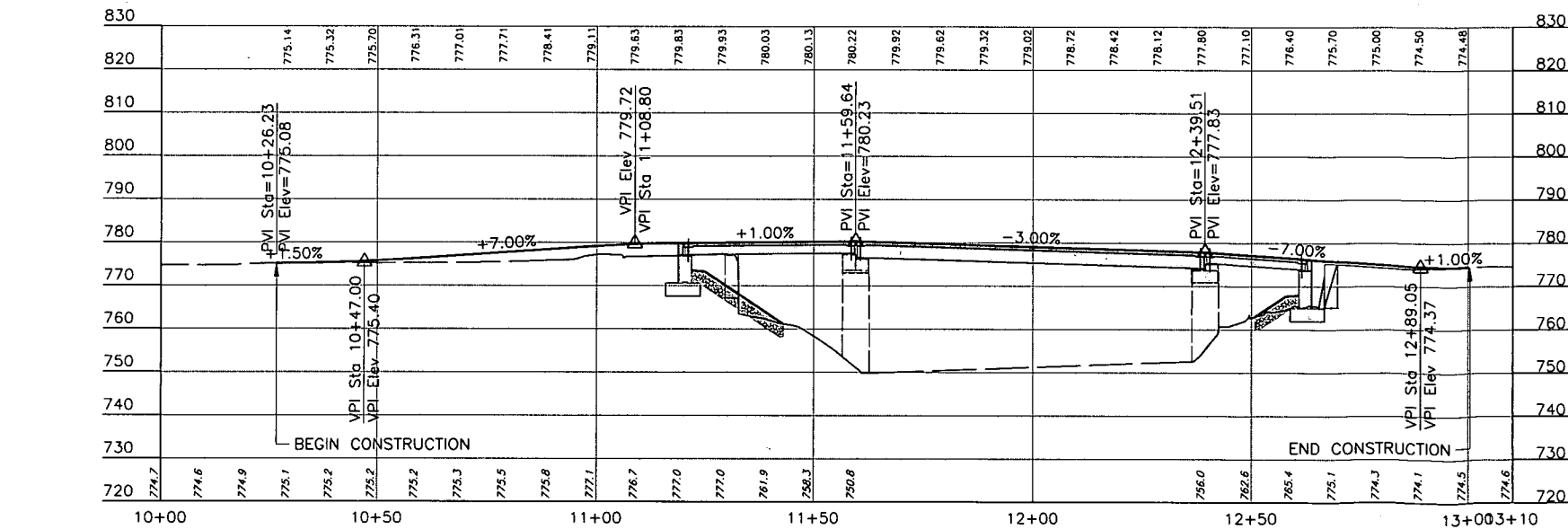
NO	DATE	DESCRIPTION
1	01/13/2018	LOD REVISION



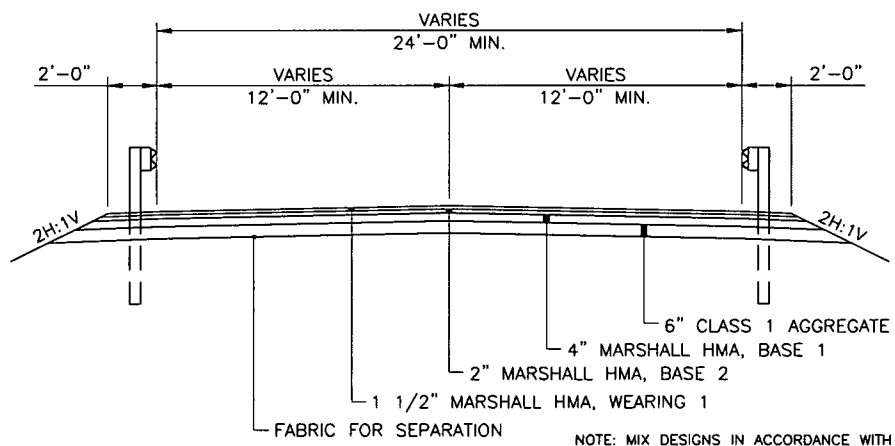
NORTH



PLAN
SCALE: 1"=20'



PROFILE
SCALE: H:1"=4'; V:1"=4'



ROADWAY TYPICAL
N.T.S.

LEGEND

- - - - 850 - EXISTING INDEX CONTOUR
- - - - EXISTING CONTOUR (INTER)
- ~~~~~ EXISTING TREE LINE
- - - - EXISTING ROADS (PAVED)
- - - - EXISTING ROADS (UNPAVED)
- * * * * * EXISTING GUARDRAIL
- o-----o EXISTING UTILITY POLE
- - - - EXISTING OVERHEAD UTILITY
- 850 --- INDEX CONTOUR
- ===== CONTOUR (INTER)
- ===== EDGE OF PAVEMENT
- ===== GUARDRAIL

SUBMITTAL & REVISION RECORD

NO.	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
 600 Marketplace Ave - Suite 200 - Bridgeport, WV 26330
 PH: 304.933.3119 - 855.488.9539 - Fax: 304.933.3327
 www.cecinc.com

DOMINION TRANSMISSION, INC.
 LL TONKIN COMPRESSOR
 STATION BRIDGE
 DODDRIDGE COUNTY, WEST VIRGINIA

ROADWAY CONSTRUCTION PLAN

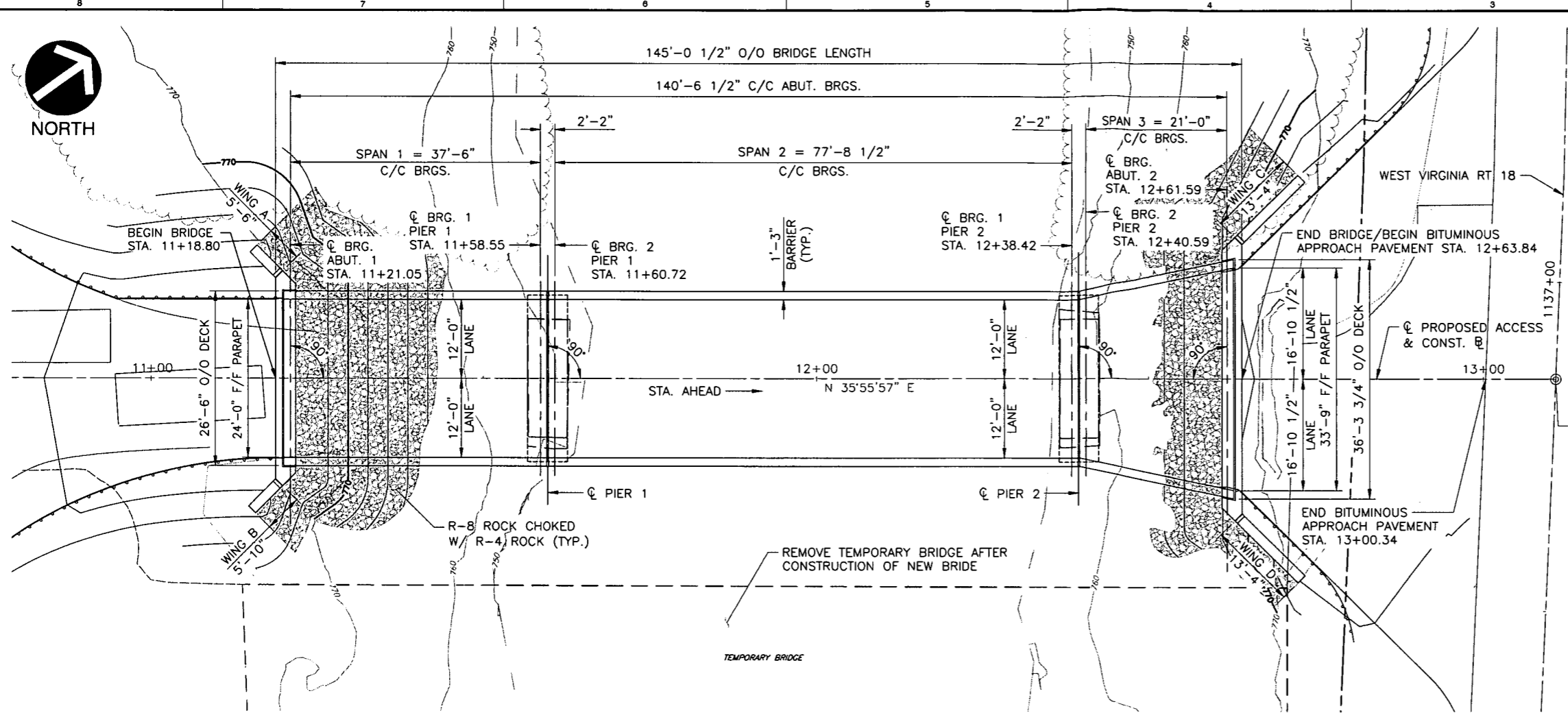
DATE: JANUARY 2018 (DRAWN BY: PWC)
 AS SHOWN (CHECKED BY: DDE)
 PROJECT NO: 171-698ST01
 APPROVED BY: G.S.L.

DRAWING NO.: 2
 SHEET 2 OF 30



REFERENCE
 1. TOPOGRAPHIC INFORMATION BASED ON UAS LIDAR SCANNING PERFORMED BY CEC, INC. IN OCTOBER 2017.

P:\2017\171-698\171-698-001\Drawings\171-698ST01-ROADWAYCONSTRUCTION\171-698ST01-ROADWAYCONSTRUCTION.dwg - User: G.S.L. - Date: 1/11/2018 10:28 AM

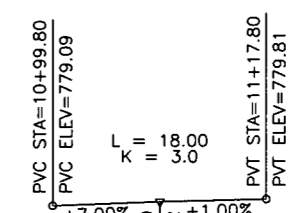
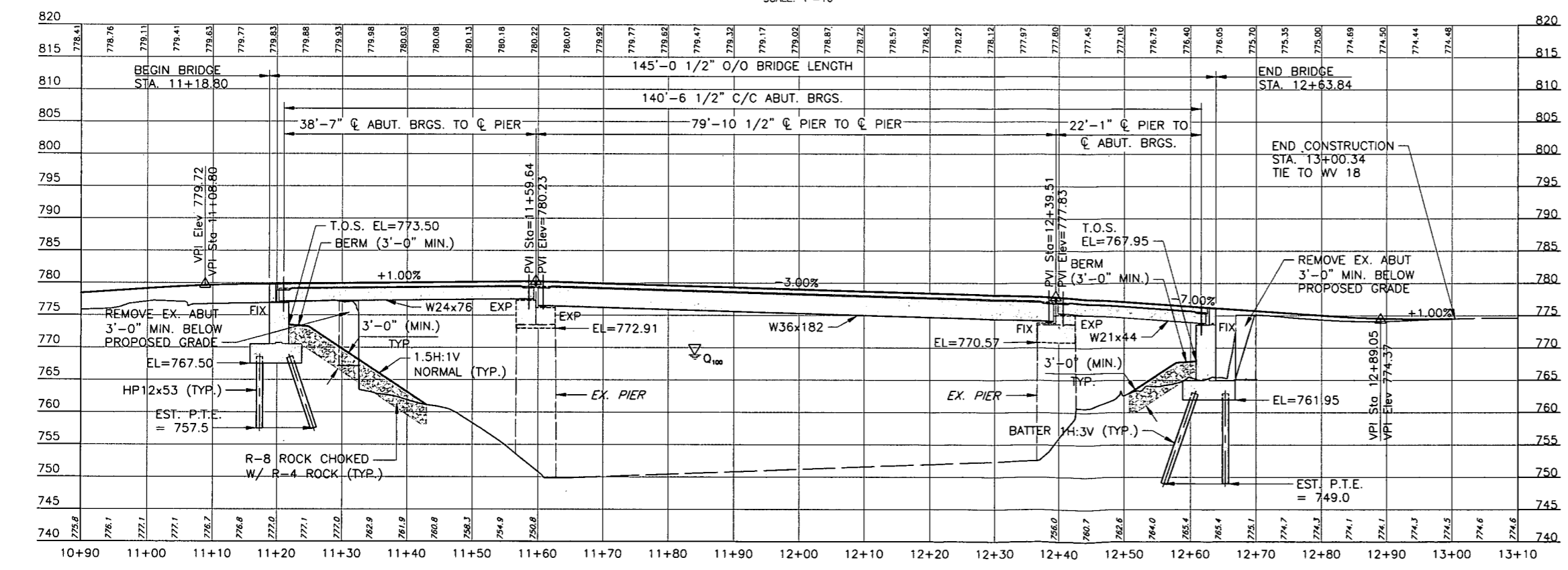


LEGEND

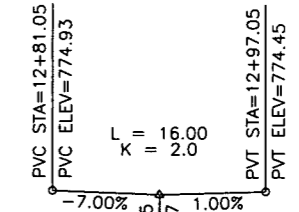
- ABUT. - ABUTMENT
- APPR. - APPROACH
- BRG. - BEARINGS
- EL. - ELEVATION
- EX. - EXISTING
- PVMT. - PAVEMENT
- STA. - STATION
- T.O.S. - TOP OF SLOPE
- TYP. - TYPICAL
- F/F - FACE TO FACE
- O/O - OUT TO OUT
- W.S.E. - WATER SURFACE ELEV.
- B.S. - LOW BEAM SEAT
- W.P. - WORK POINT
- P.T.E. - PILE TIP ELEVATION
- EXISTING INDEX CONTOUR
- EXISTING CONTOUR (INTER)
- EXISTING ROAD LINE
- EXISTING ROADS (PAVED)
- EXISTING ROADS (UNPAVED)
- EXISTING GUARDRAIL
- EXISTING UTILITY POLE
- EXISTING OVERHEAD UTILITY
- EXISTING GASLINE
- INDEX CONTOUR
- CONTOUR (INTER)
- EDGE OF PAVEMENT
- GUARDRAIL

HYDRAULIC INFORMATION
 DRAINAGE AREA = 134.78 SQ. MI.
 Q100 = 15,200 C.F.S.
 W.S.E. 100 = 768.86 FT.
 LOW BEAM ELEVATION = 773.41
 FREEBOARD Q100 = 4.55 FT.

PLAN
SCALE: 1"=10'



PROPOSED ACCESS
N.T.S.



PROPOSED ACCESS
N.T.S.

REFERENCE
 1. TOPOGRAPHIC INFORMATION BASED ON UAS LIDAR SCANNING PERFORMED BY CEC, INC. IN OCTOBER 2017.

ELEVATION
SCALE H:1"=10'; V:1"=10'

SUBMITTAL & REVISION RECORD

NO.	DATE	DESCRIPTION

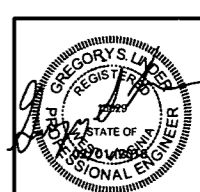
C&E
Civil & Environmental Consultants, Inc.
 600 Marketplace Ave - Suite 200 - Bridgeport, WV 26330
 Ph: 304.933.3119 - 855.488.9539 - Fax: 304.933.3327
 www.cecinc.com

DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

SITE PLAN

DATE: JANUARY 2018 (DRAWN BY: AS SHOWN) (CHECKED BY: 171-6558101)
 DWG SCALE: PROJECT NO: APPROVED BY: G.S.L.

DRAWING NO.: **3**
 SHEET 3 OF 30



SUMMARY OF ESTIMATED QUANTITIES	ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY	AS-BUILT QUANTITY
ROADWAY					
	204001-000	MOBILIZATION	LS	1	
	207001-001	UNCLASSIFIED EXCAVATION	CY	350	
	207034-000	FABRIC FOR SEPARATION	SY	880	
	401001-020	MARSHALL BASE CRSE, SG, TY I	TN	200	
	401001-023	MARSHALL BASE CRSE, SG, TY II	TN	100	
	401002-020	MARSHALL WEAR CRSE, SG, TY I	TN	75	
	307001-000	AGGREGATE BASE COURSE, CLASS I	TN	270	
	607001-001	TYPE 1 GUARDRAIL, CLASS I	LF	150	
	607006-001	THRIE BEAM GUARDRAIL BRIDGE TRANSITION	EA	4	
	607037-001	BUFFER END SECTION	EA	4	
	642	TRIPLE STACKED FILTER SOCK	LF	250	
BRIDGE					
	203001-000	DISMANTLING STRUCTURE	LS	1	
	615001-001	STEEL SUPERSTRUCTURE (GRADE 50W)	LS	1	
		NEOPRENE STRIP SEAL DAM	LF	63	
		TEMPORARY SHORING	LS	1	
	207032-000	FABRIC FOR SUBSURFACE DRAINAGE	SY	170	
	212001-000	STRUCTURE EXCAVATION	CY	825	
	212005-000	SELECT MATERIAL FOR BACKFILLING	CY	59	
	218006-000	FOUNDATION PROTECTION	CY	200	
	601002-001	CLASS B CONCRETE	CY	225	
	601003-001	CLASS K CONCRETE	CY	22	
	601009-001	CLASS H CONCRETE	CY	130	
	602001-001	REINFORCING STEEL BAR	LB	17500	
	602002-001	EPOXY COATED REINFORCING STEEL BAR	LB	24000	
	615029-001	NON-GUIDED BEARING, ELASTOMERIC	EA	13	
	615030-001	FIXED BEARING, ELASTOMERIC	EA	13	
	614001-006	HP12X53 STEEL PILE, DRILLED	LF	500	
	639001-001	CONSTRUCTION LAYOUT STAKE	LS	1	

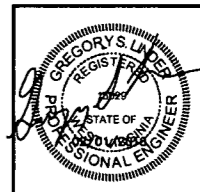
ITEM 615001-001 STEEL SUPERSTRUCTURE (FOR INFORMATION ONLY)			
DESCRIPTION	UNIT	QUANTITY	
STRUCTURAL STEEL, AASHTO M270, GRADE 50W	-	-	
GIRDERS	LB	74532	
DIAPHRAGMS	LB	12348	
STIFFENERS AND CONNECTION PLATES	LB	3244	
STUD SHEAR CONNECTORS (½ INCH DIA X 4½ INCH)	LB	1094	
HIGH STRENGTH BOLTS (½ INCH DIA), AASHTO M164	LB	605	

SUBMITTAL & REVISION RECORD	
NO	DATE

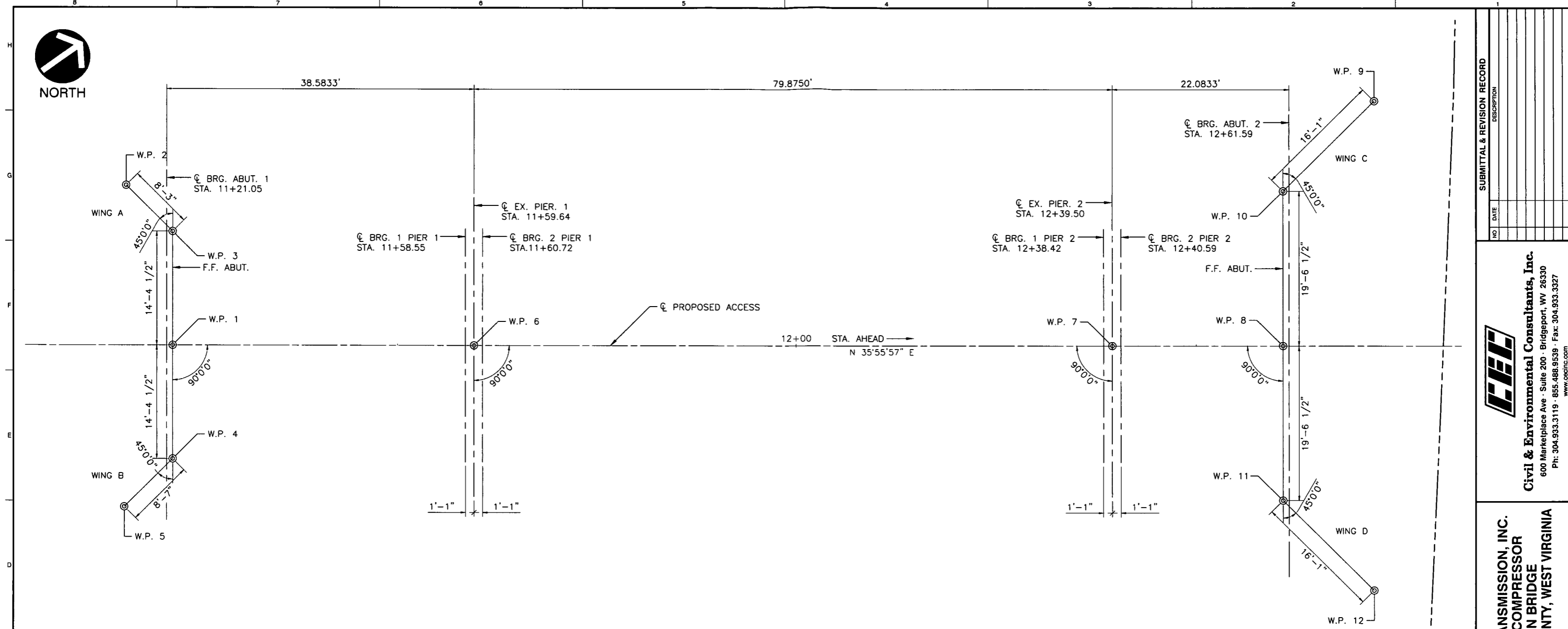
Civil & Environmental Consultants, Inc.
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DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

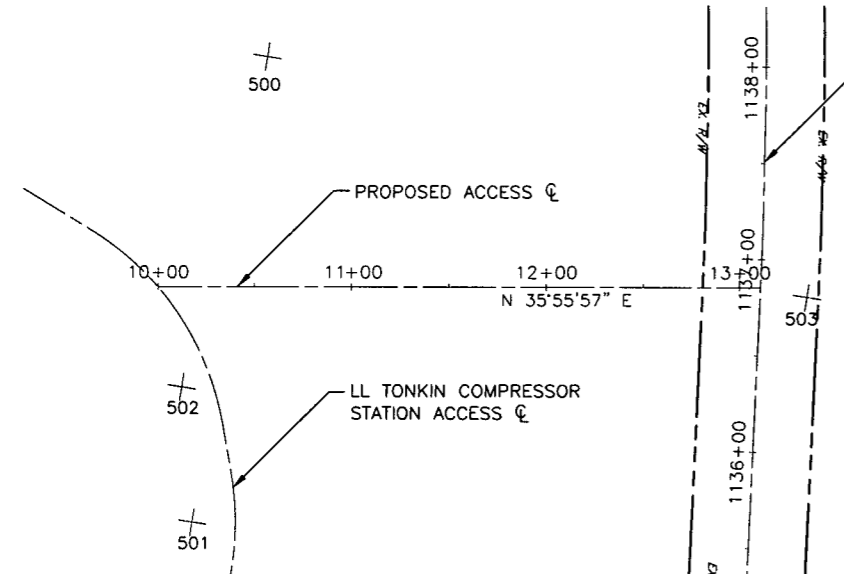
SUMMARY OF QUANTITIES AND SHEET INDEX	
DATE: JANUARY 2018	DRAWN BY: PWC
AS SHOWN	CHECKED BY: DDE
PROJECT NO: 171-658ST01	GSL



P:\2017\171-6581-0001\DWG\2017\658ST01\171-658ST01.dwg - 2/1/2018 1:29 PM



STAKE OUT PLAN
SCALE: 1"=6'



REFERENCE POINTS PLAN
SCALE: 1"=50'

REFERENCE POINTS			
POINT NO.	NORTHING	EASTING	DESCRIPTION
500	298,274.69	1,605,823.66	RBR/CAP
501	298,101.71	1,605,997.27	RBR/CAP
502	298,138.31	1,605,936.69	RBR/CAP
503	298,426.88	1,606,087.61	RBR/CAP

WORK POINTS				
W.P. NO.	NORTHING	EASTING	STATION	OFFSET
W.P. 1	298,257.2403	1,605,959.1238	11+21.80	0.00
W.P. 2	298,264.3749	1,605,939.3476	11+15.97	20.20 LT
W.P. 3	298,265.6739	1,605,947.4872	11+21.80	14.37 LT
W.P. 4	298,248.8068	1,605,970.7603	11+21.80	14.37 RT
W.P. 5	298,240.3380	1,605,972.1119	11+15.74	20.44 RT
W.P. 6	298,287.8742	1,605,981.3255	11+59.64	0.00
W.P. 7	298,352.5470	1,606,028.1968	12+39.50	0.00
W.P. 8	298,369.8208	1,606,040.7158	12+60.84	0.00
W.P. 9	298,397.1646	1,606,022.3577	12+72.21	30.91 LT
W.P. 10	298,381.2895	1,606,024.8913	12+60.84	19.54 LT
W.P. 11	298,358.3521	1,606,056.5403	12+60.84	19.54 RT
W.P. 12	298,360.8856	1,606,072.4154	12+72.21	30.91 RT

NOTE: FOUR PLACE COORDINATES ARE FOR COMPUTATIONAL PURPOSES ONLY AND DO NOT IMPLY PRECISION BEYOND TWO DECIMAL PLACES.

REFERENCE
1. TOPOGRAPHIC INFORMATION BASED ON UAS LIDAR SCANNING PERFORMED BY CEC, INC. IN OCTOBER 2017.

SUBMITTAL & REVISION RECORD	
NO.	DESCRIPTION

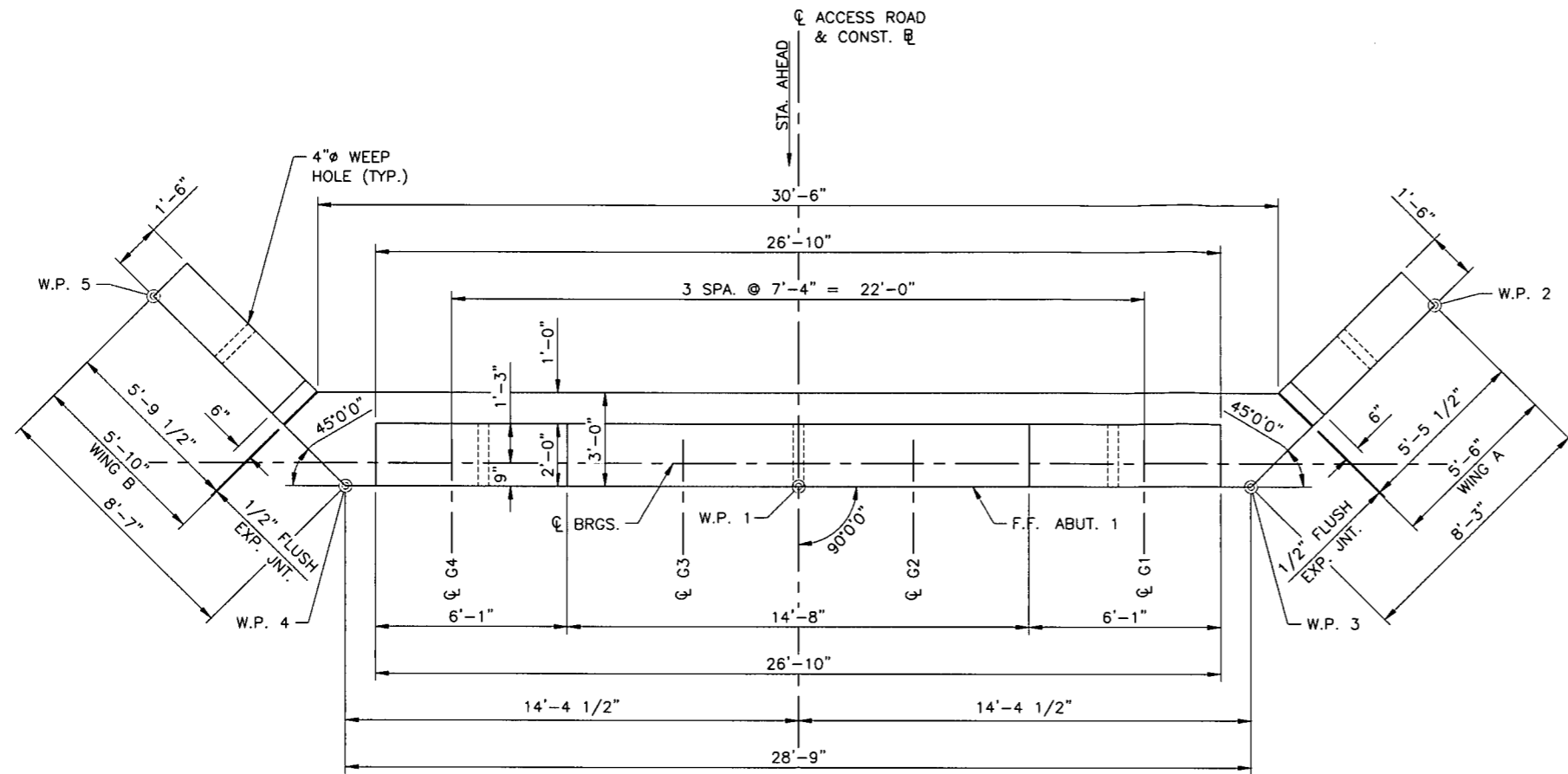
Civil & Environmental Consultants, Inc.
600 Marketplace Ave. Suite 200 - Bridgeport, WV 26330
Ph: 304.933.3119 · 855.488.9539 · Fax: 304.933.3327
www.cecinc.com

DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

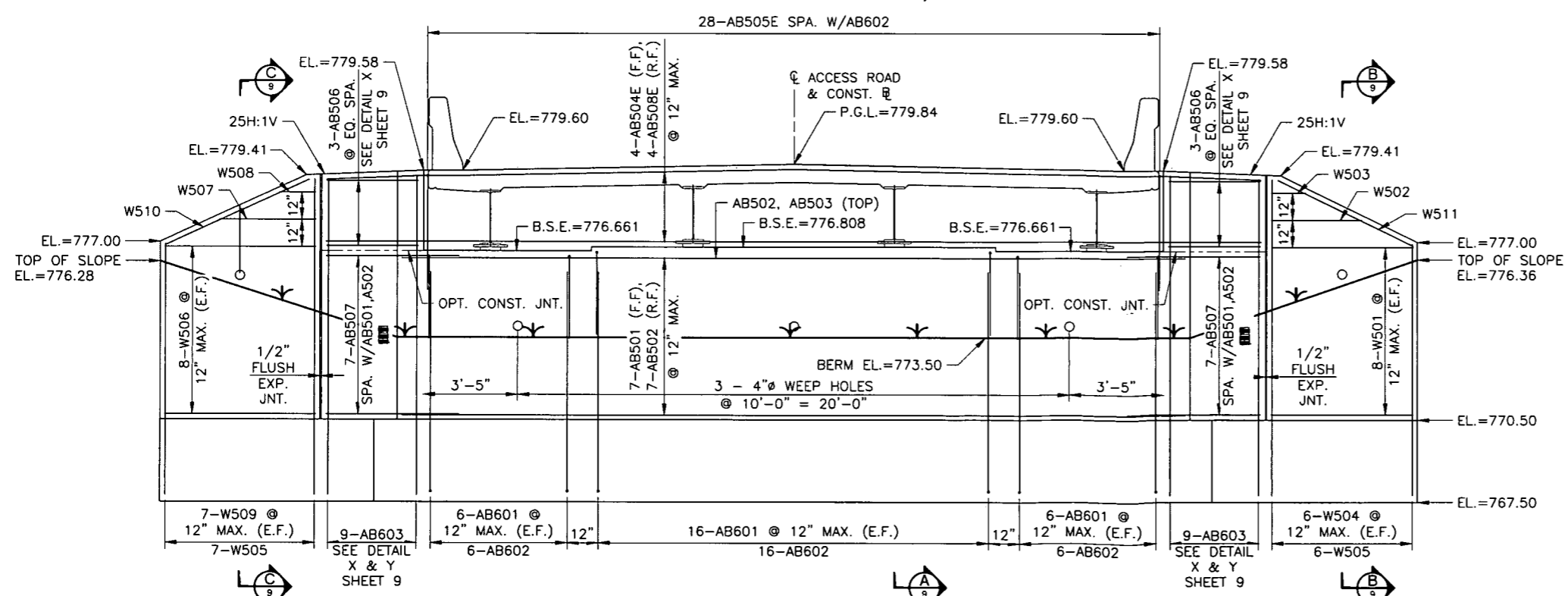
STAKE OUT PLAN

DATE: JANUARY 2018
DRAWN BY: PWC
DWG SCALE: 1"=6'
CHECKED BY: DDE
PROJECT NO.: 171-689ST01
APPROVED BY: GSI





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



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

NOTE: DECK ELEVATIONS SHOWN ARE AT ϕ BRGS.

NOTES:
FOR GENERAL NOTES, SEE SHEET 5.
FOR PILE AND FOOTING DETAILS, SEE SHEET 8.
FOR SECTIONS A-A, B-B & C-C, SEE SHEET 9.
FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28
PILES NOT SHOWN FOR CLARITY.
FOOTING NOT SHOWN FOR CLARITY.

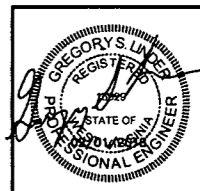
LEGEND
F.F. - DENOTES FRONT FACE
R.F. - DENOTES REAR FACE
E.F. - DENOTES EACH FACE
W.P. - DENOTES WORK POINT
EL. - DENOTES ELEVATION
BRGS. - DENOTES BEARINGS

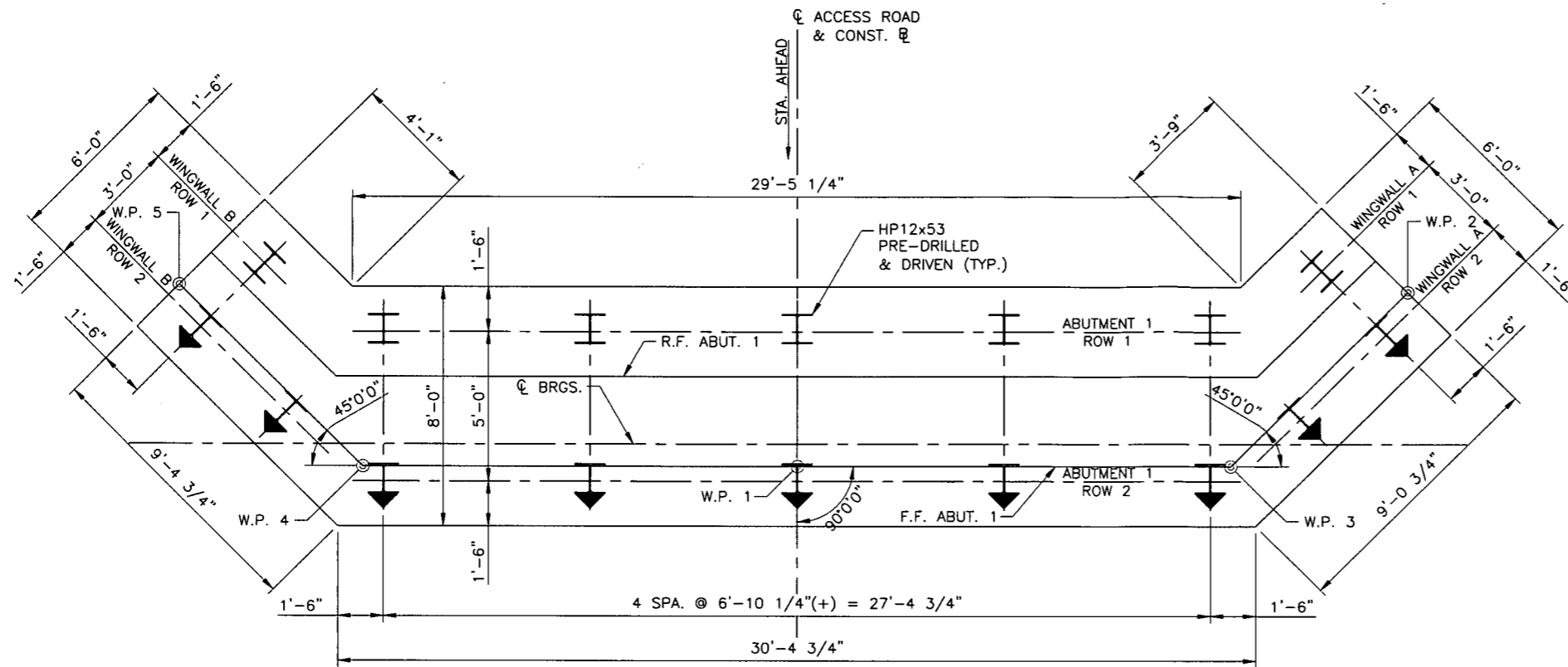
SUBMITTAL & REVISION RECORD	
NO.	DESCRIPTION

Civil & Environmental Consultants, Inc.
600 Marketplace Ave. Suite 200 Bridgeport, WV 26330
Ph: 304.933.3119 · 855.486.9539 · Fax: 304.933.3327
www.cechinc.com

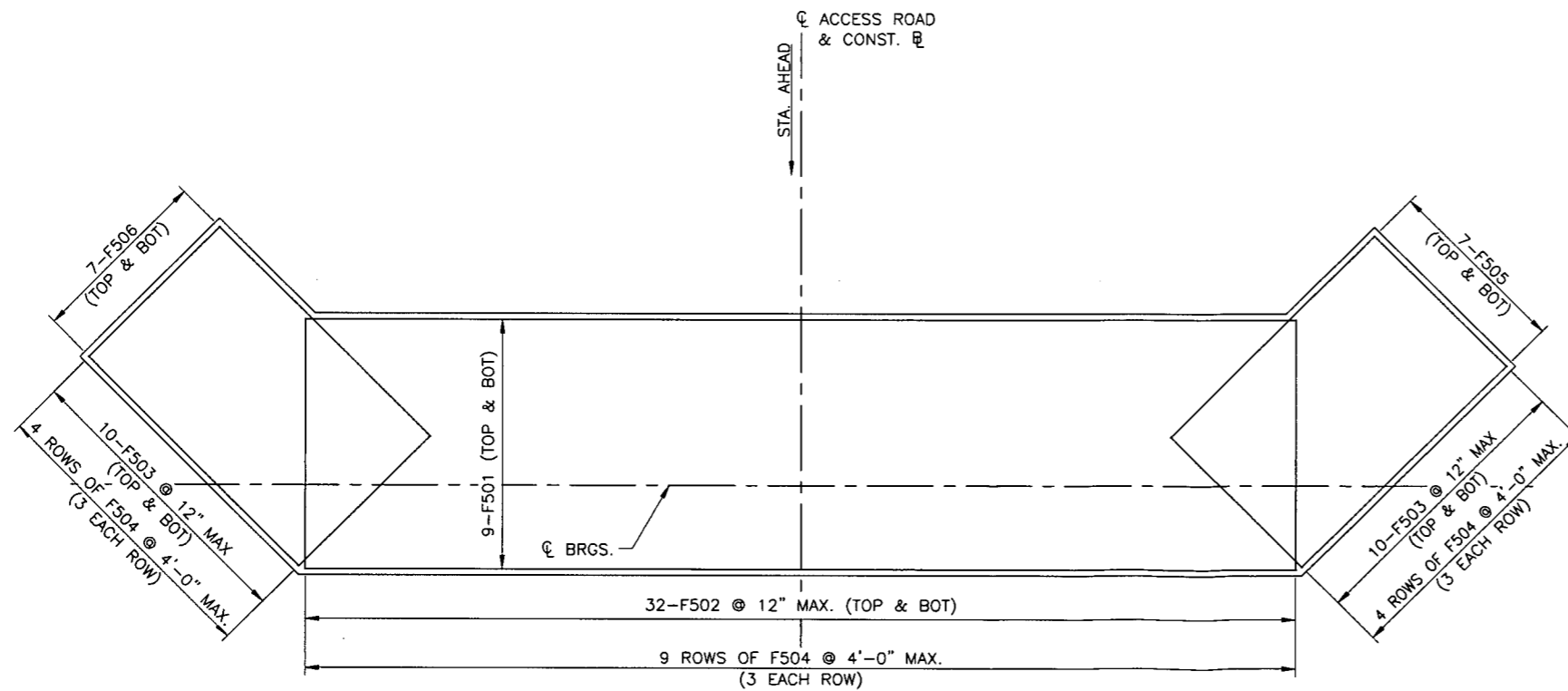
DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

ABUTMENT 1 PLAN & ELEVATION	
DATE:	JANUARY 2018
DWG SCALE:	3/8" = 1'-0"
PROJECT NO.:	171-668ST01
APPROVED BY:	GSL





ABUTMENT 1 FOOTING AND PILE LAYOUT
SCALE: 3/8"=1'-0"



ABUTMENT 1 FOOTING REINFORCEMENT PLAN
SCALE: 3/8"=1'-0"

NOTE: SPACE FOOTING BARS TO CLEAR PILES.

NOTES:

- FOR GENERAL NOTES, SEE SHEET 5.
- FOR ABUTMENT PLAN & ELEVATION, SEE SHEET 7.
- FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28
- ALL PILES AT ABUTMENT 1 SHALL BE PREDRILLED AND DRIVEN.

LEGEND

- F.F. - DENOTES FRONT FACE
- R.F. - DENOTES REAR FACE
- E.F. - DENOTES EACH FACE
- W.P. - DENOTES WORK POINT
- EL. - DENOTES ELEVATION
- BRGS. - DENOTES BEARINGS
- HP12x53
- HP12x53 BATTER 1H:3V IN DIRECTION OF ARROW

PILE SCHEDULE			
LOCATION	ROW	NO. PILES	SPACING
ABUTMENT 1	1	5	6'-10 1/4" (+)
	2	5	6'-10 1/4" (+)
WINGWALL A	1	1	N/A
	2	2	4'-0"
WINGWALL B	1	1	N/A
	2	2	4'-0"

SUBMITTAL & REVISION RECORD

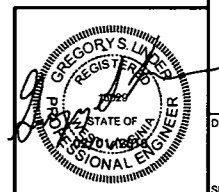
NO.	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
 600 Marketplace Ave - Suite 200 - Bridgeport, WV 26330
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STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

ABUTMENT 1 FOOTING DETAILS

DATE: JANUARY 2018
 PWC
 DDE
 GSL
 DRAWING NO.: 88
 SHEET 8 OF 30



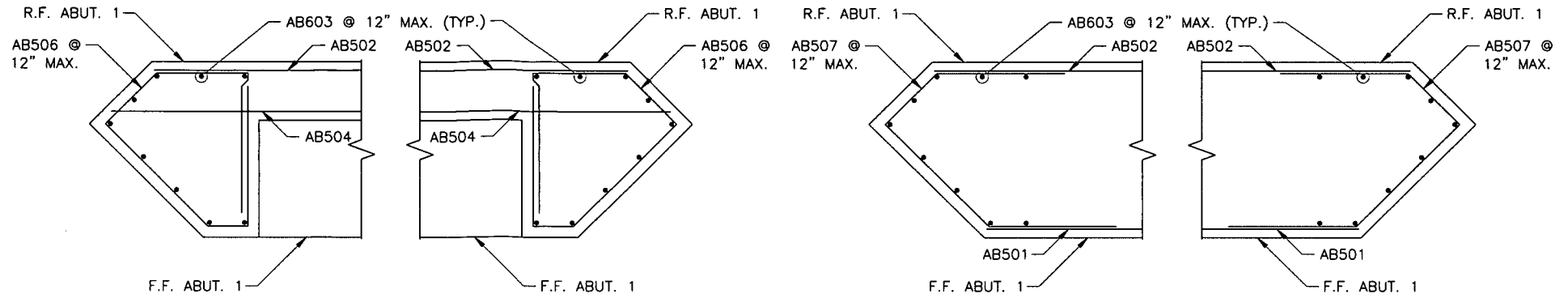
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LEGEND

- F.F. - DENOTES FRONT FACE
- R.F. - DENOTES REAR FACE
- E.F. - DENOTES EACH FACE
- W.P. - DENOTES WORK POINT
- EL. - DENOTES ELEVATION
- BRGS. - DENOTES BEARINGS

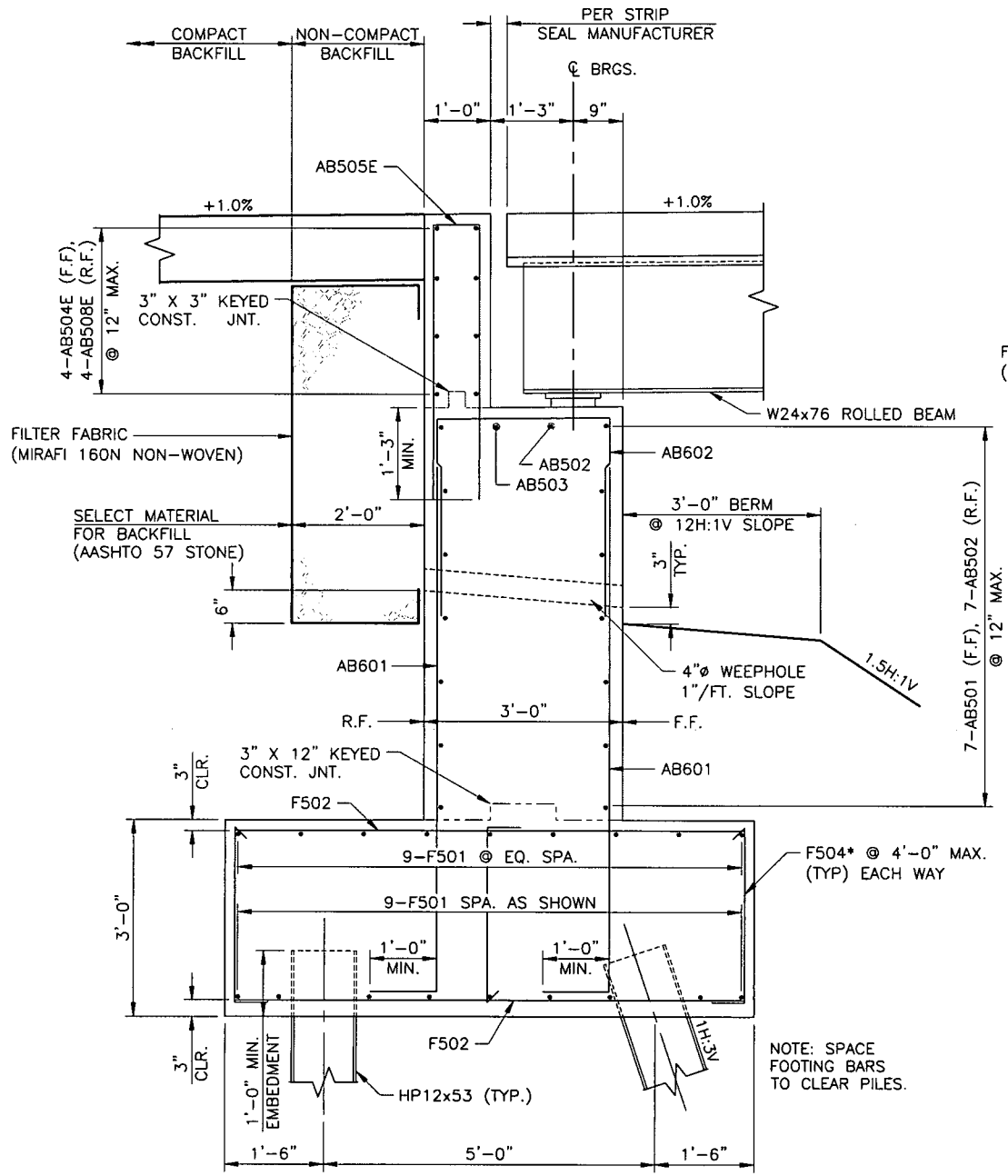
NOTES:

- FOR GENERAL NOTES, SEE SHEET 5.
- FOR PILE AND FOOTING DETAILS, SEE SHEET 8.
- FOR ABUTMENT PLAN & ELEVATION, SEE SHEET 7.
- FOR SECTIONS A-A, B-B & C-C LOCATIONS, SEE SHEET 7.
- FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28

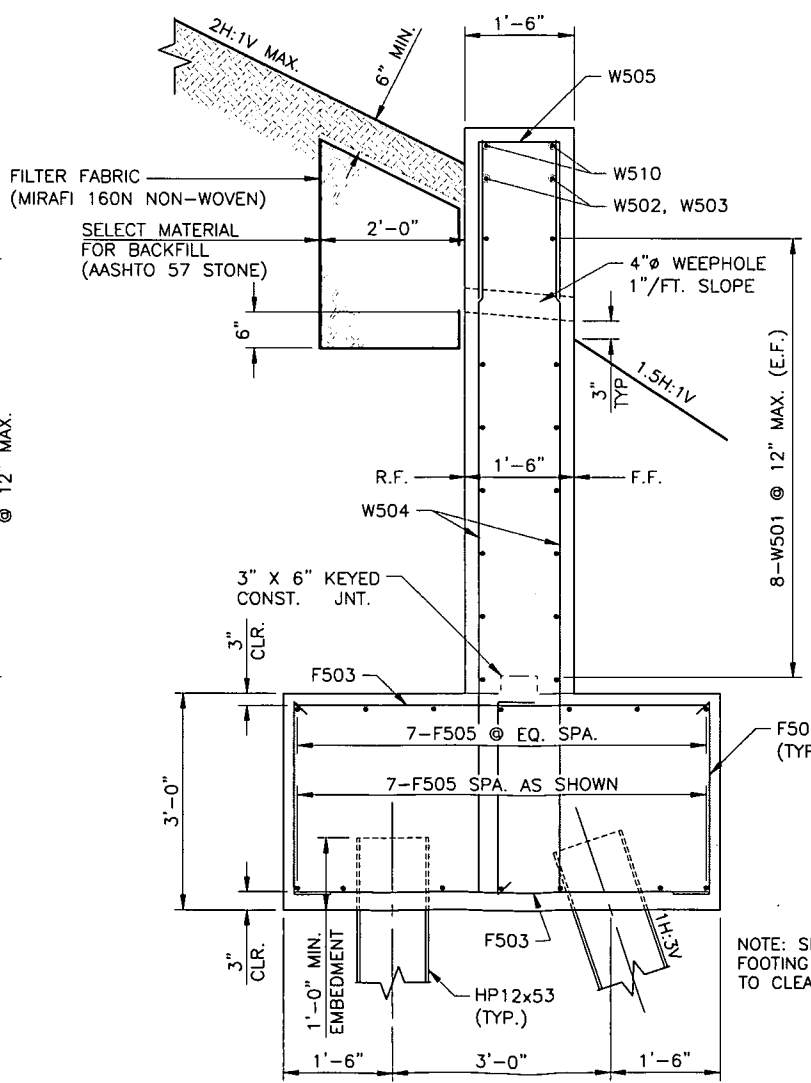


**DETAIL X
CORNER REINFORCEMENT**
SCALE: 3/4" = 1'-0"

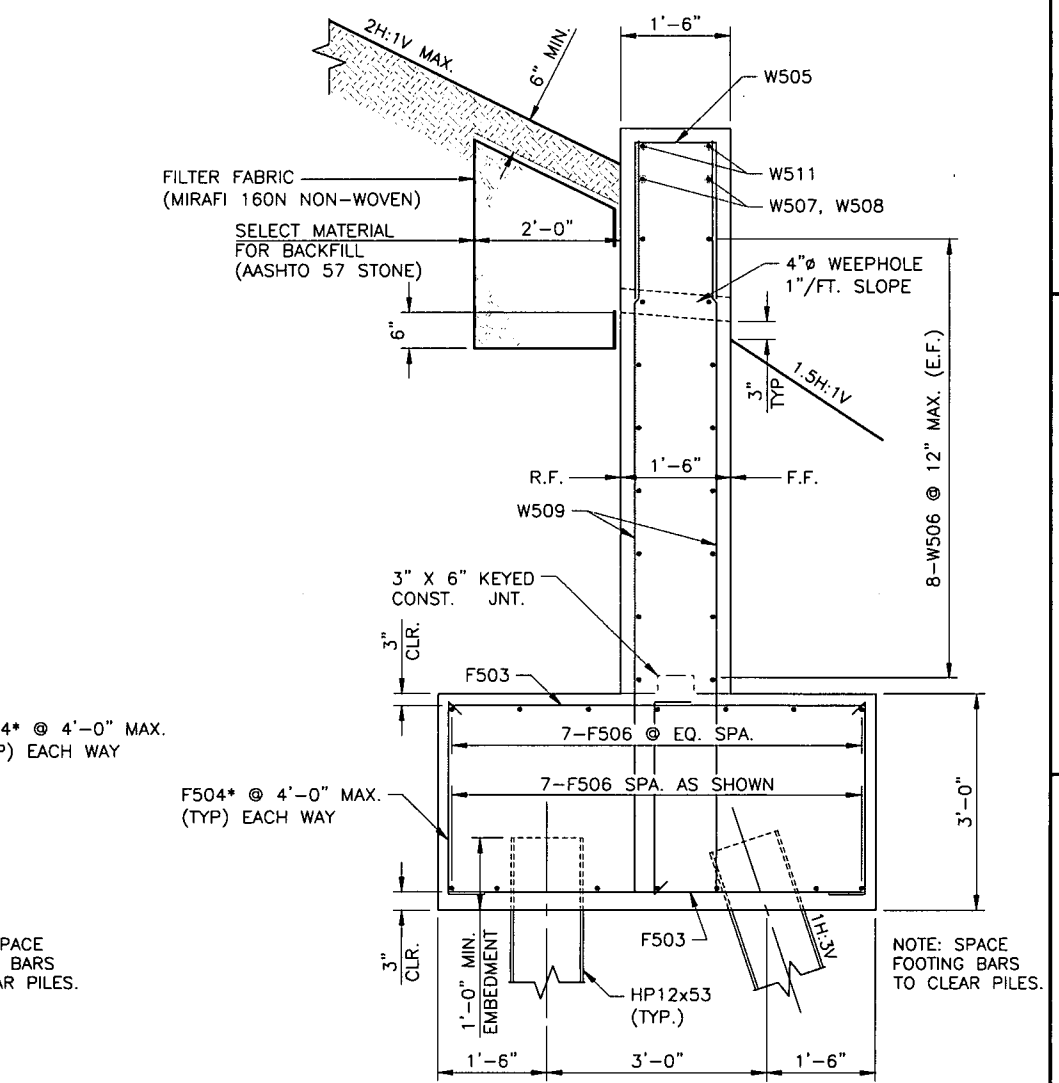
**DETAIL Y
CORNER REINFORCEMENT**
SCALE: 3/4" = 1'-0"



**SECTION A-A
ABUTMENT 1 TYPICAL**
SCALE: 3/4" = 1'-0"



**SECTION B-B
WINGWALL A TYPICAL**
SCALE: 3/4" = 1'-0"



**SECTION C-C
WINGWALL B TYPICAL**
SCALE: 3/4" = 1'-0"

* ALTERNATE HOOK UP AND DOWN AT ADJACENT LOCATIONS

SUBMITTAL & REVISION RECORD	
NO.	DATE

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LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA**

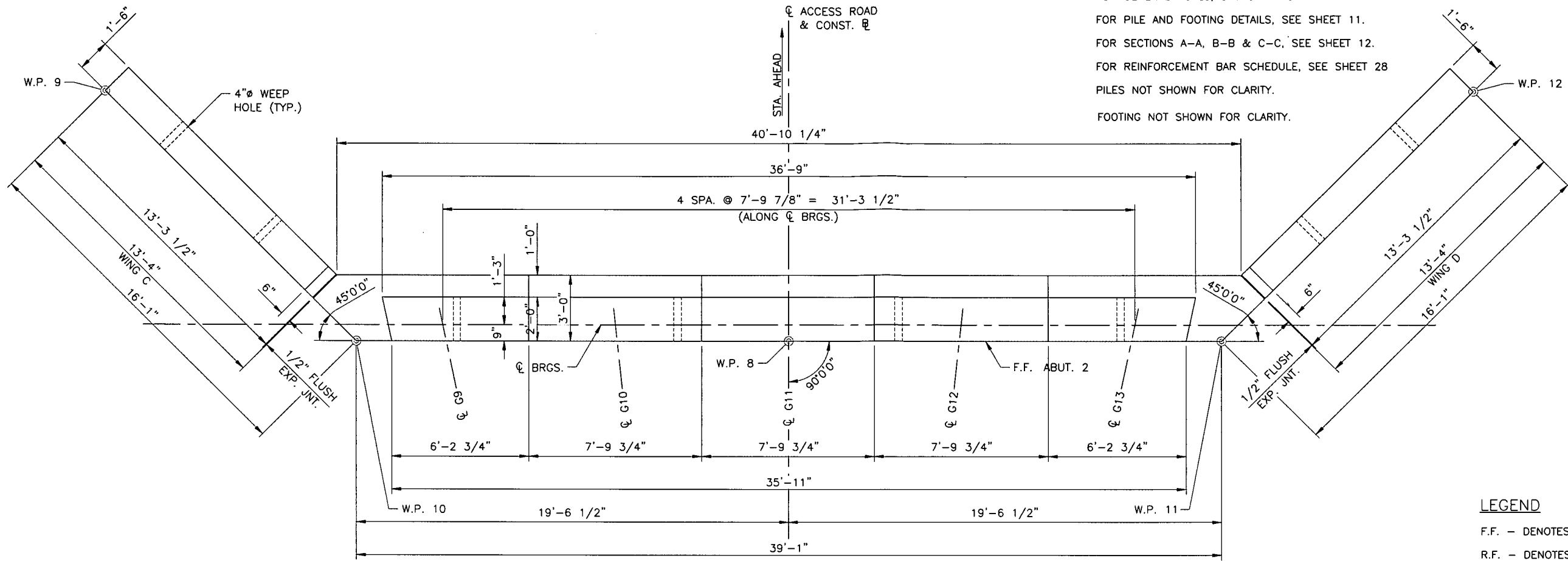
ABUTMENT 1 DETAILS			
DATE	DWG. SCALE	PROJECT NO.	APPROVED BY:
JANUARY 2018	3/4" = 1'-0"	171-6685T01	GSL
DRAWN BY: PWC	CHECKED BY: DDE		





NOTES:

- FOR GENERAL NOTES, SEE SHEET 5.
- FOR PILE AND FOOTING DETAILS, SEE SHEET 11.
- FOR SECTIONS A-A, B-B & C-C, SEE SHEET 12.
- FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28
- PILES NOT SHOWN FOR CLARITY.
- FOOTING NOT SHOWN FOR CLARITY.



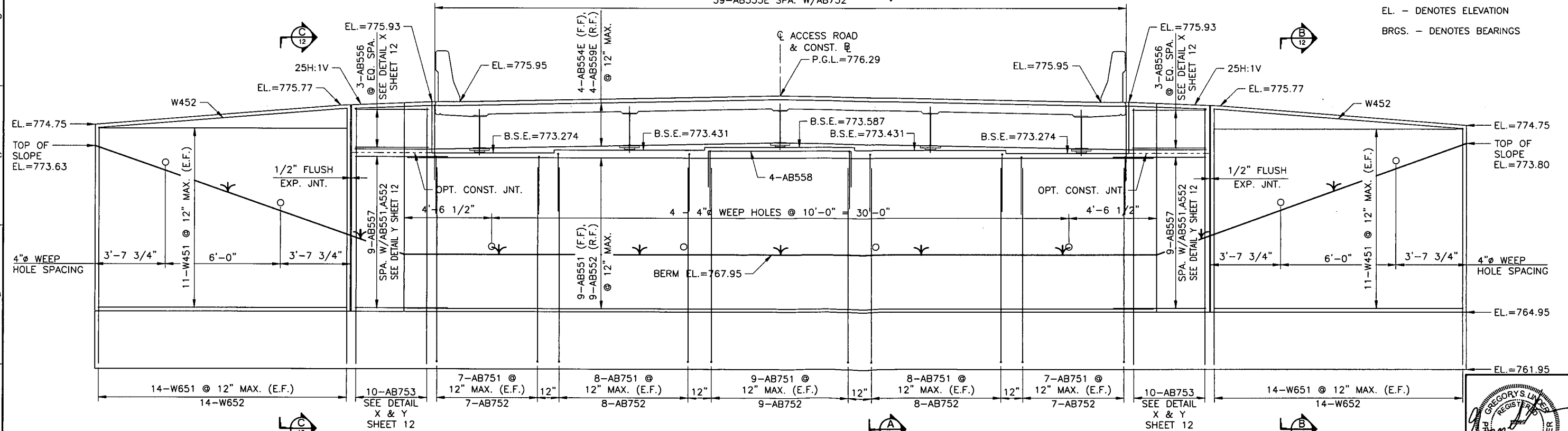
PLAN - ABUTMENT 2

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

39-AB555E SPA. W/AB752

LEGEND

- F.F. - DENOTES FRONT FACE
- R.F. - DENOTES REAR FACE
- E.F. - DENOTES EACH FACE
- W.P. - DENOTES WORK POINT
- EL. - DENOTES ELEVATION
- BRGS. - DENOTES BEARINGS



ELEVATION - ABUTMENT 2

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

NOTE: DECK ELEVATIONS SHOWN ARE AT \bar{C} BRGS.

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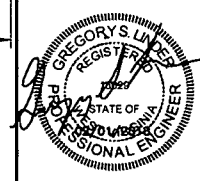
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STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

ABUTMENT 2 PLAN & ELEVATION

DATE: JANUARY 2018	DRAWN BY: PWC
DWG SCALE: 3/8"=1'-0"	CHECKED BY: DDE
PROJECT NO: 171-688T01	APPROVED BY: GSL

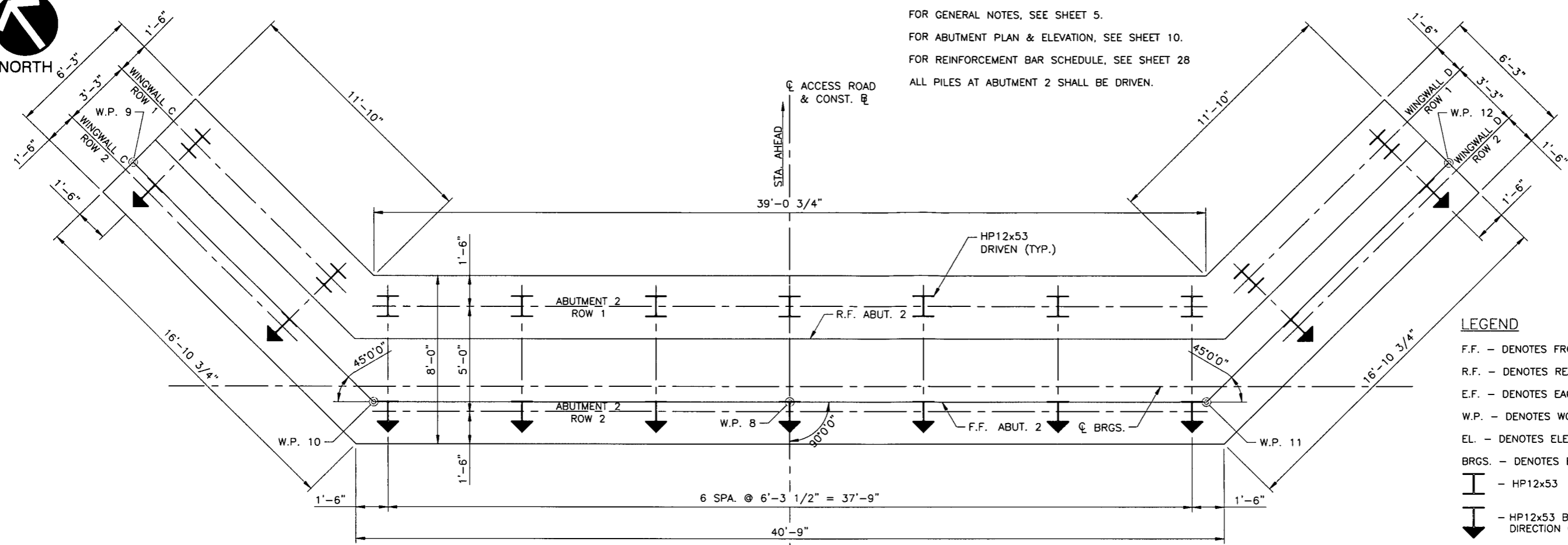
DRAWING NO: **10**

SHEET 10 OF 30





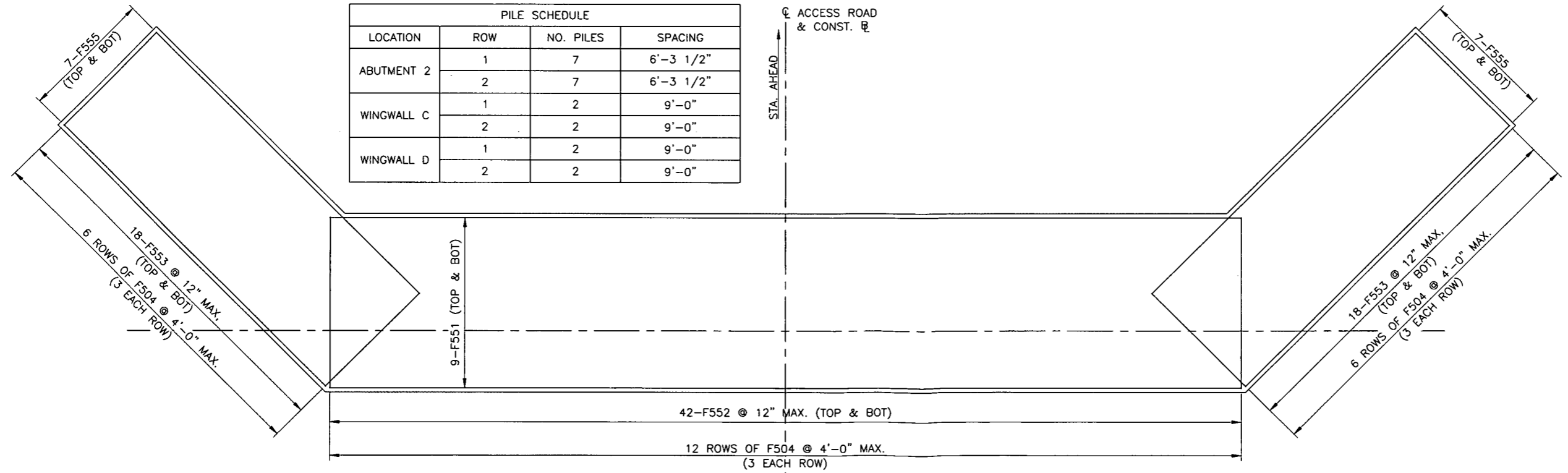
NOTES:
 FOR GENERAL NOTES, SEE SHEET 5.
 FOR ABUTMENT PLAN & ELEVATION, SEE SHEET 10.
 FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28
 ALL PILES AT ABUTMENT 2 SHALL BE DRIVEN.



- LEGEND**
- F.F. - DENOTES FRONT FACE
 - R.F. - DENOTES REAR FACE
 - E.F. - DENOTES EACH FACE
 - W.P. - DENOTES WORK POINT
 - EL. - DENOTES ELEVATION
 - BRGS. - DENOTES BEARINGS
 - HP12x53
 - HP12x53 BATTER 1H:3V IN DIRECTION OF ARROW

ABUTMENT 2 FOOTING AND PILE LAYOUT
 SCALE: 3/8"=1'-0"

PILE SCHEDULE			
LOCATION	ROW	NO. PILES	SPACING
ABUTMENT 2	1	7	6'-3 1/2"
	2	7	6'-3 1/2"
WINGWALL C	1	2	9'-0"
	2	2	9'-0"
WINGWALL D	1	2	9'-0"
	2	2	9'-0"



ABUTMENT 2 FOOTING REINFORCEMENT PLAN
 SCALE: 3/8"=1'-0"

NOTE: SPACE FOOTING BARS TO CLEAR PILES.

SUBMITTAL & REVISION RECORD

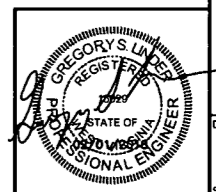
NO.	DATE	DESCRIPTION

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 600 Marketplace Ave - Suite 200 - Bridgeport, WV 26330
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ABUTMENT 2 FOOTING DETAILS

DATE:	JANUARY 2018	DRAWN BY:	PWC
DWG SCALE:	3/8"=1'-0"	CHECKED BY:	DDE
PROJECT NO.:	171-6585T01	APPROVED BY:	GSL



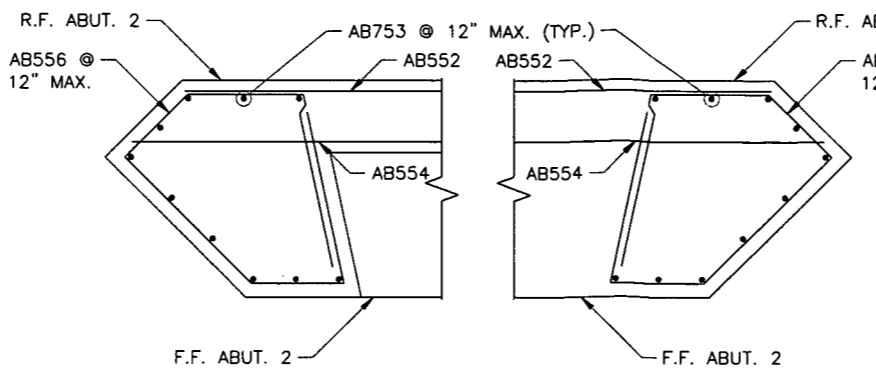
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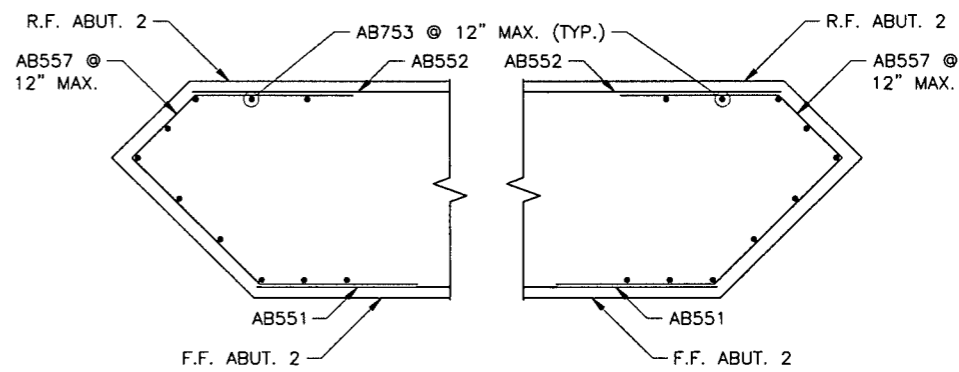
F.F. - DENOTES FRONT FACE
 R.F. - DENOTES REAR FACE
 E.F. - DENOTES EACH FACE
 W.P. - DENOTES WORK POINT
 EL. - DENOTES ELEVATION
 BRGS. - DENOTES BEARINGS

NOTES:

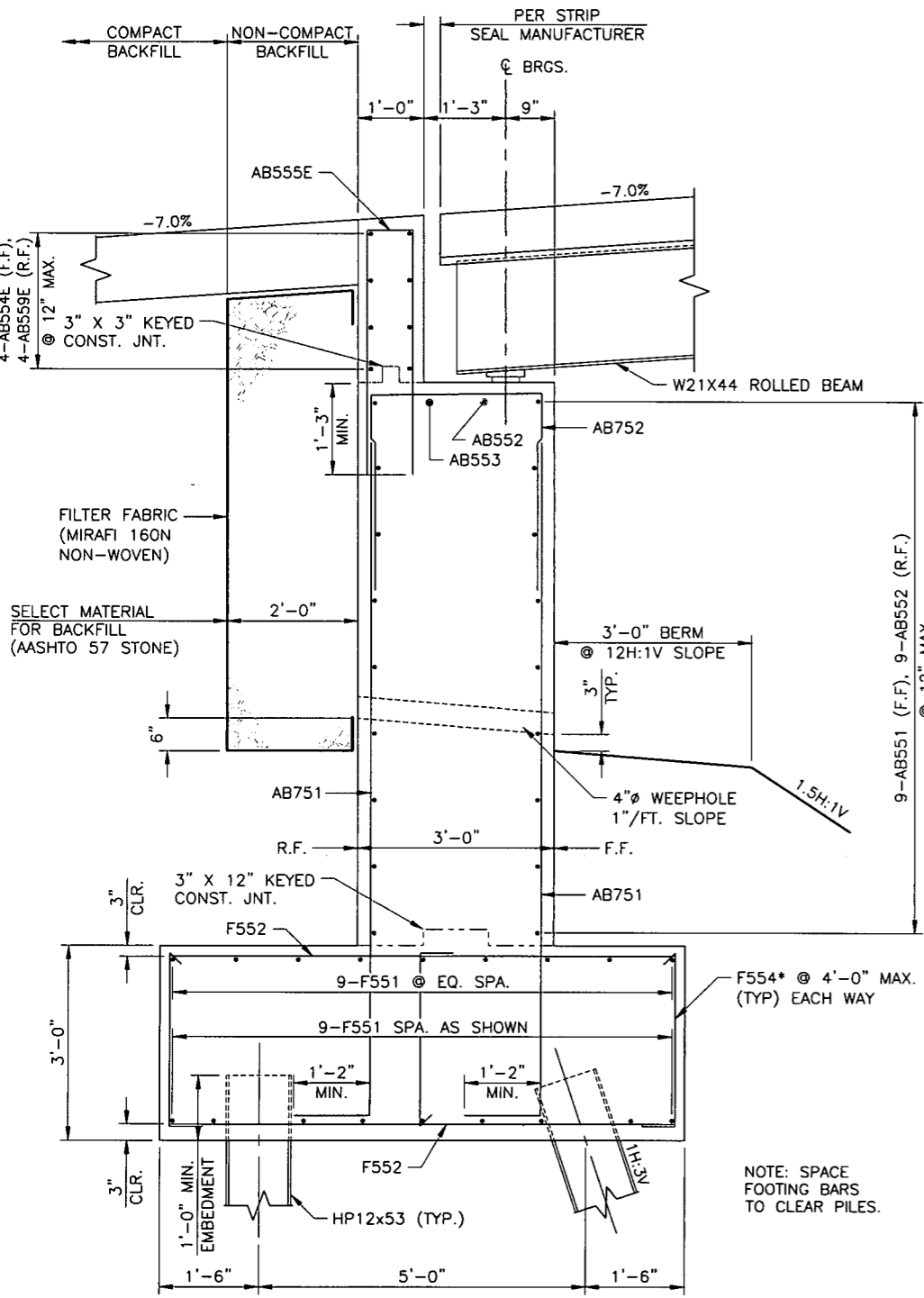
FOR GENERAL NOTES, SEE SHEET 5.
 FOR PILE AND FOOTING DETAILS, SEE SHEET 11.
 FOR ABUTMENT PLAN & ELEVATION, SEE SHEET 10.
 FOR SECTIONS A-A, B-B & C-C LOCATIONS, SEE SHEET 10.
 FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 28



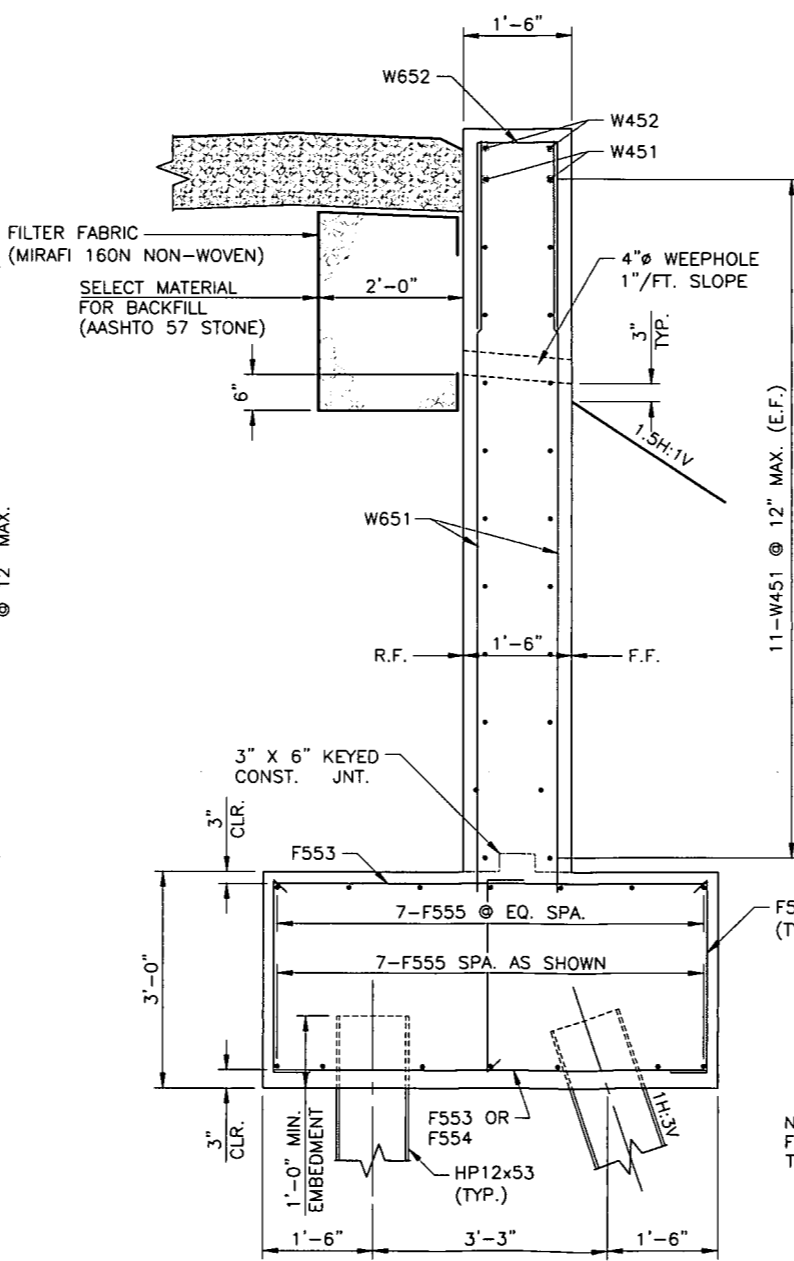
**DETAIL X
 CORNER REINFORCEMENT**
 SCALE: 3/4" = 1'-0"



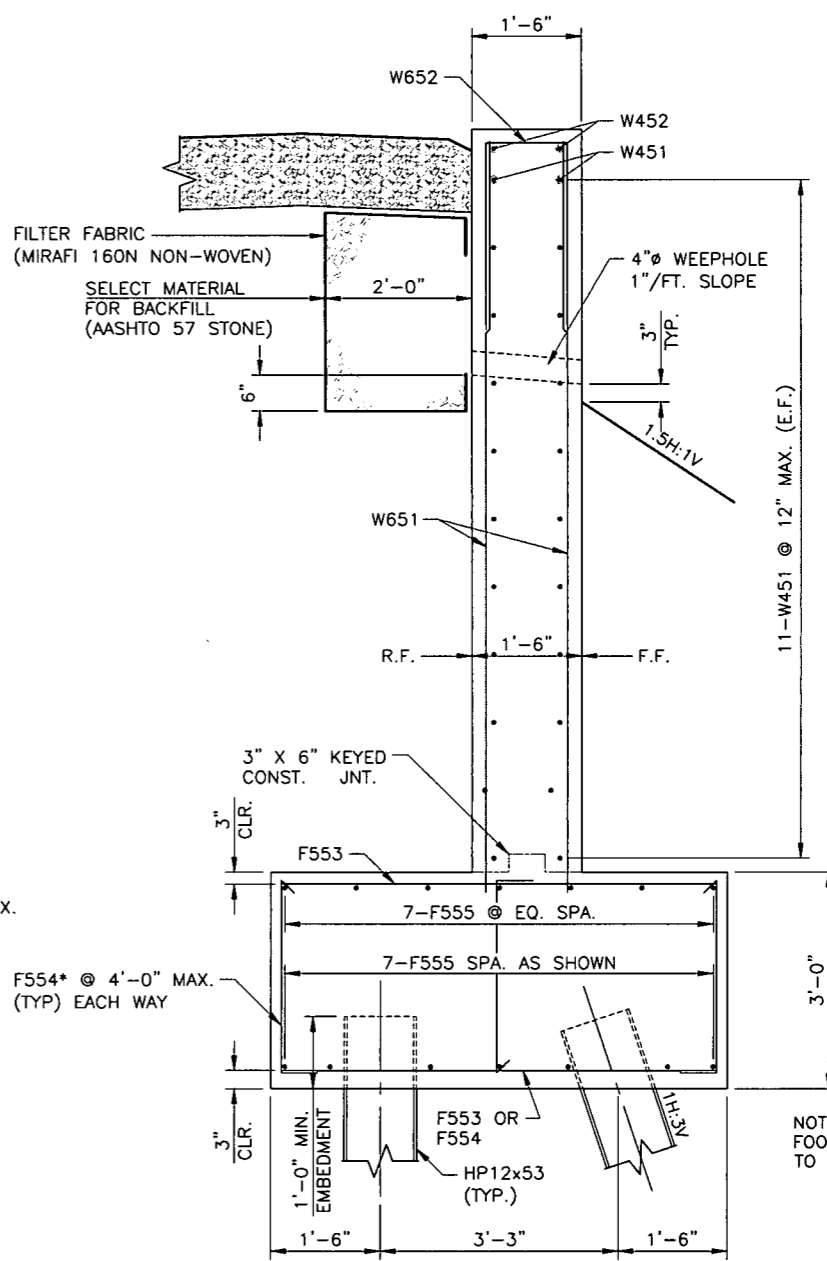
**DETAIL Y
 CORNER REINFORCEMENT**
 SCALE: 3/4" = 1'-0"



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



TYPICAL SECTION - WINGWALL C
 SCALE: 3/4" = 1'-0"



TYPICAL SECTION - WINGWALL D
 SCALE: 3/4" = 1'-0"

NO.	DATE	DESCRIPTION

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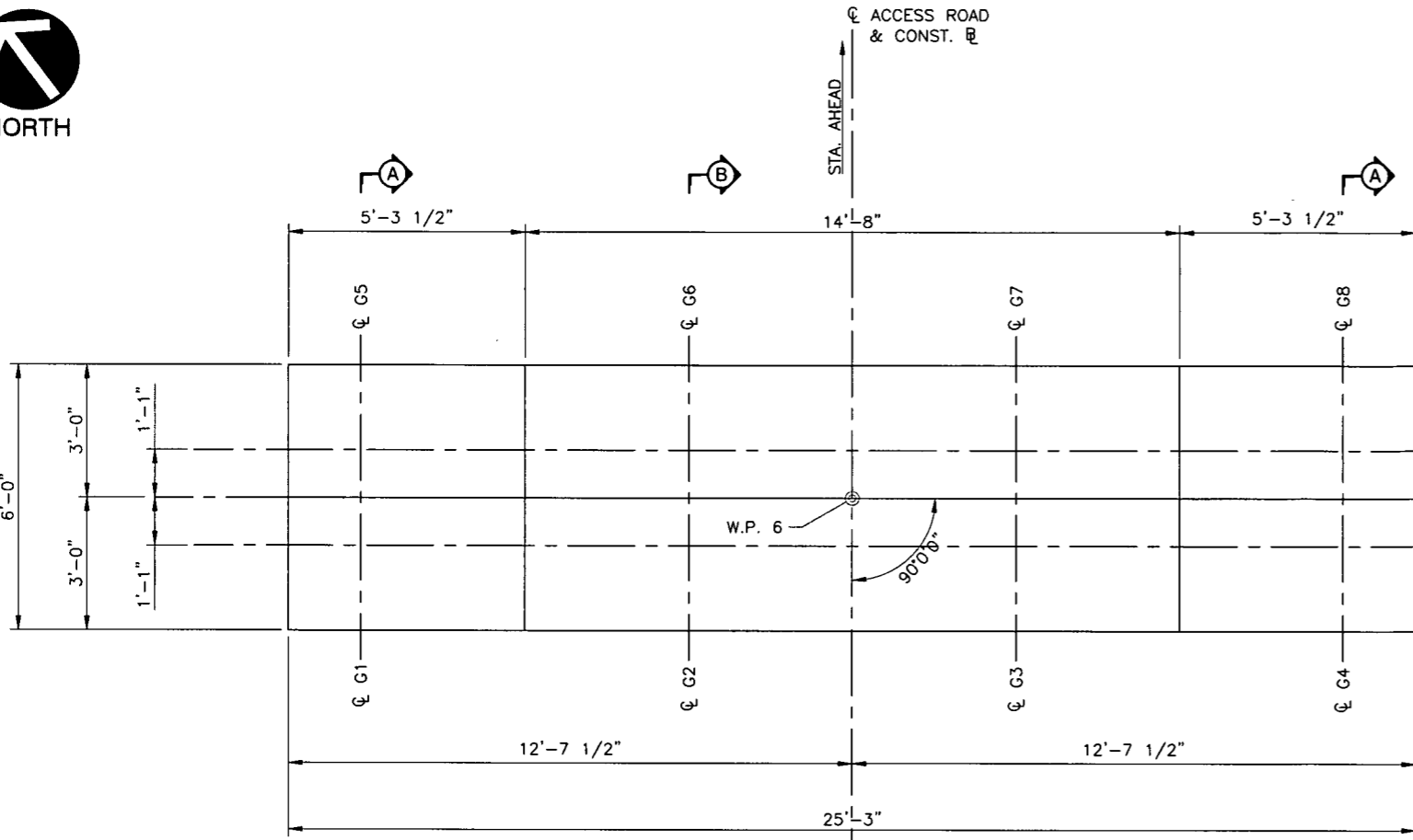
DOMINION TRANSMISSION, INC.
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 STATION BRIDGE
 DODDRIDGE COUNTY, WEST VIRGINIA

ABUTMENT 2 DETAILS

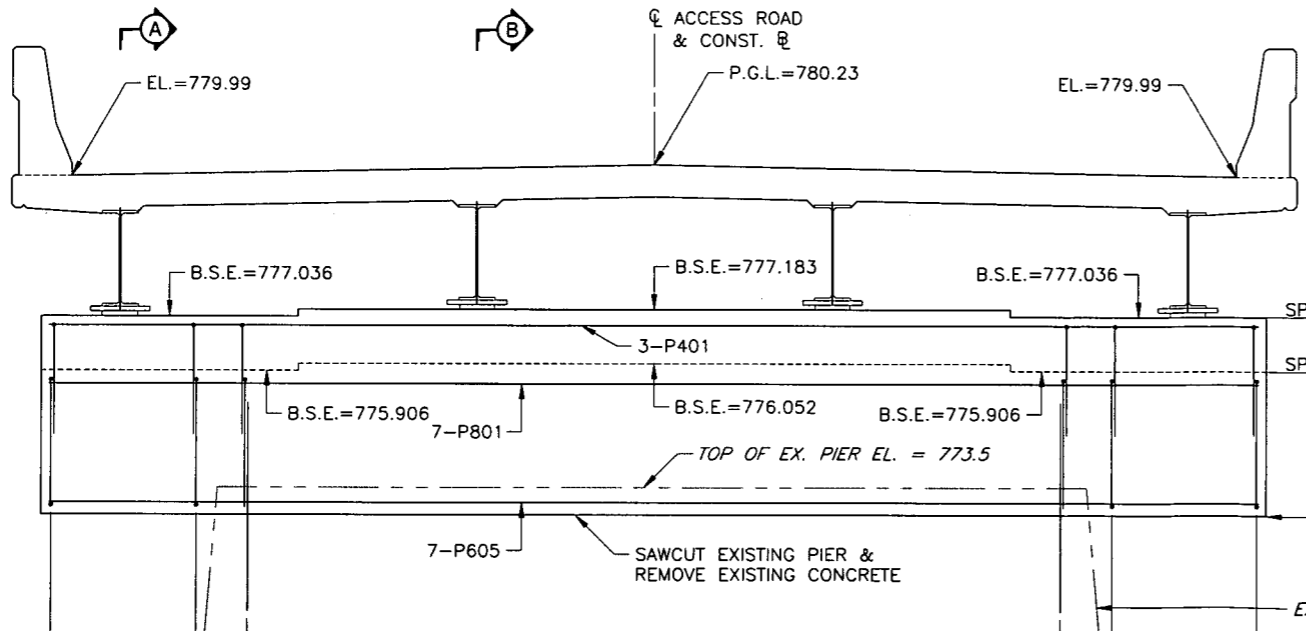
DATE:	JANUARY 2018	DRAWN BY:	PWC
DWG SCALE:	3/4" = 1'-0"	CHECKED BY:	DDE
PROJECT NO.:	171-688ST01	APPROVED BY:	GSL



* ALTERNATE HOOK UP AND
 DOWN AT ADJACENT LOCATIONS



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



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

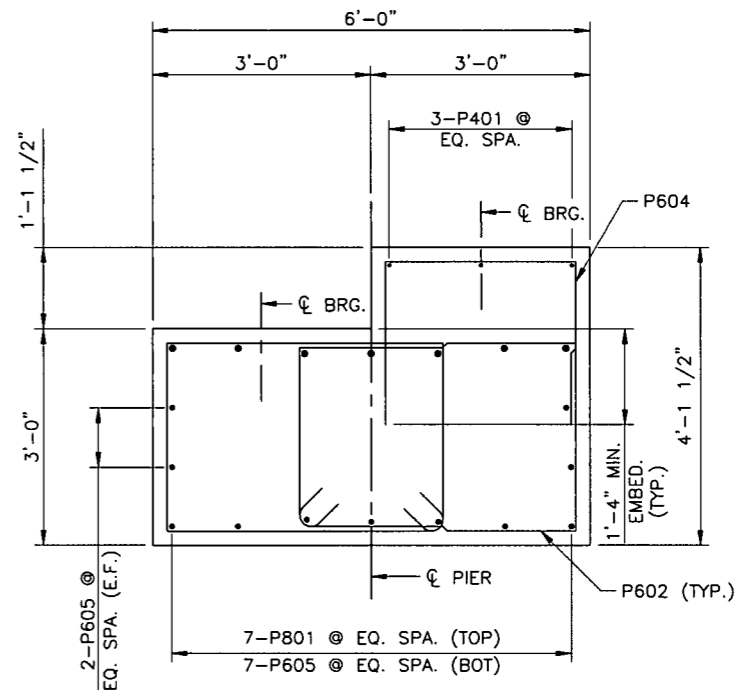
NOTE: DECK ELEVATIONS SHOWN ARE AT ϕ OF PIER

LEGEND

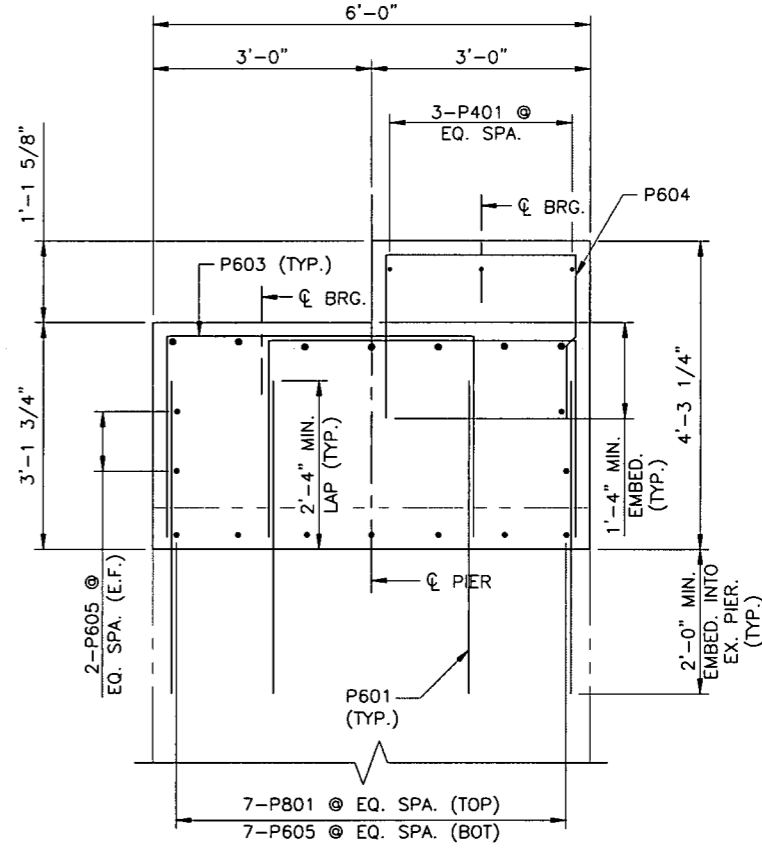
- F.F. - DENOTES FRONT FACE
- R.F. - DENOTES REAR FACE
- E.F. - DENOTES EACH FACE
- W.P. - DENOTES WORK POINT
- EL. - DENOTES ELEVATION
- BRGS. - DENOTES BEARINGS

NOTES:

- FOR GENERAL NOTES, SEE SHEET 5.
- FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 29

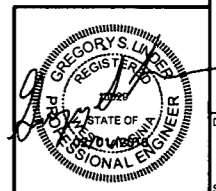


SECTION A-A
SCALE: 3/4"=1'-0"



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

NOTE: EPOXY BONDING COMPOUND SHALL BE APPLIED TO THE EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE.

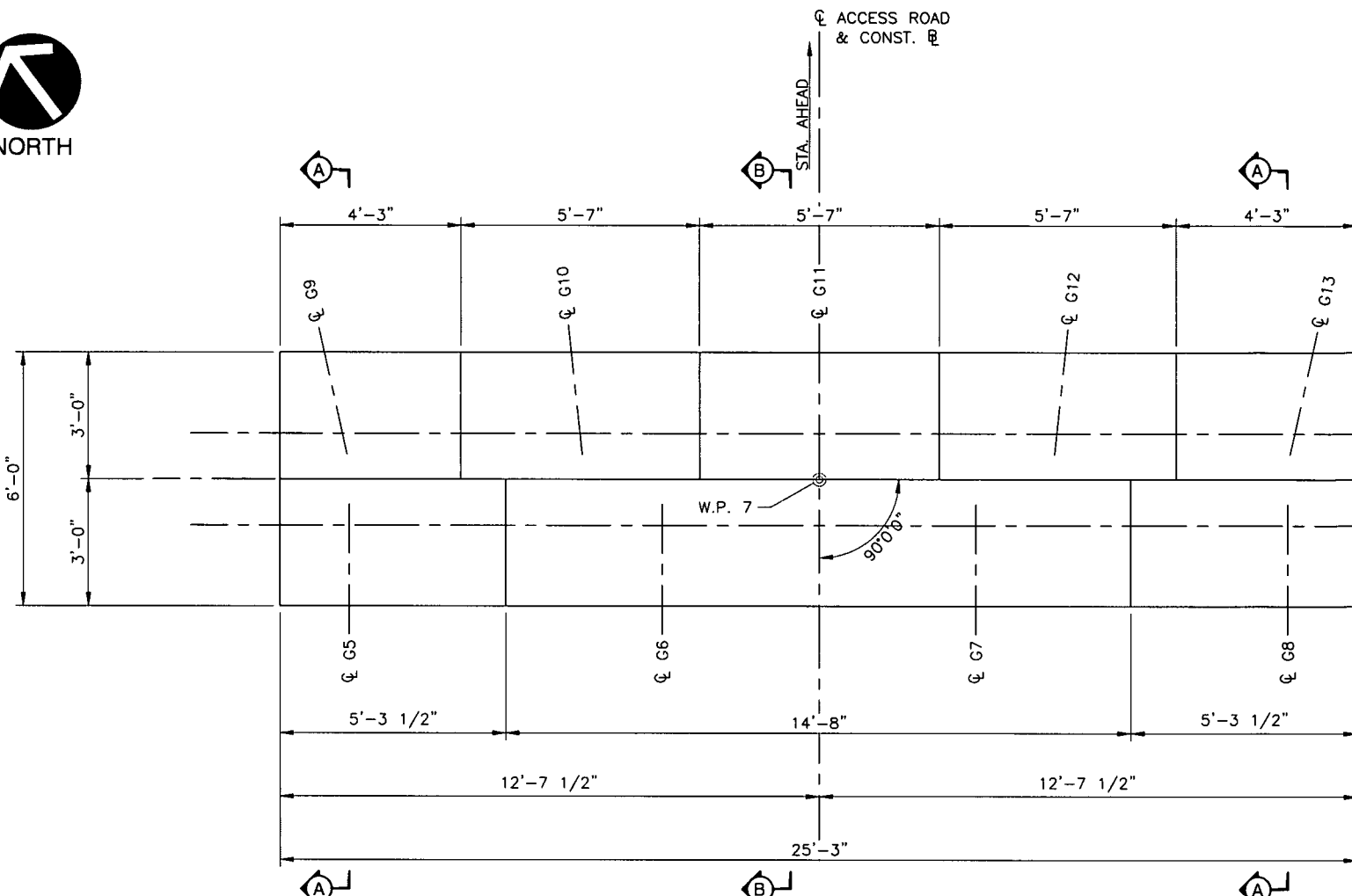


SUBMITTAL & REVISION RECORD	
NO.	DESCRIPTION

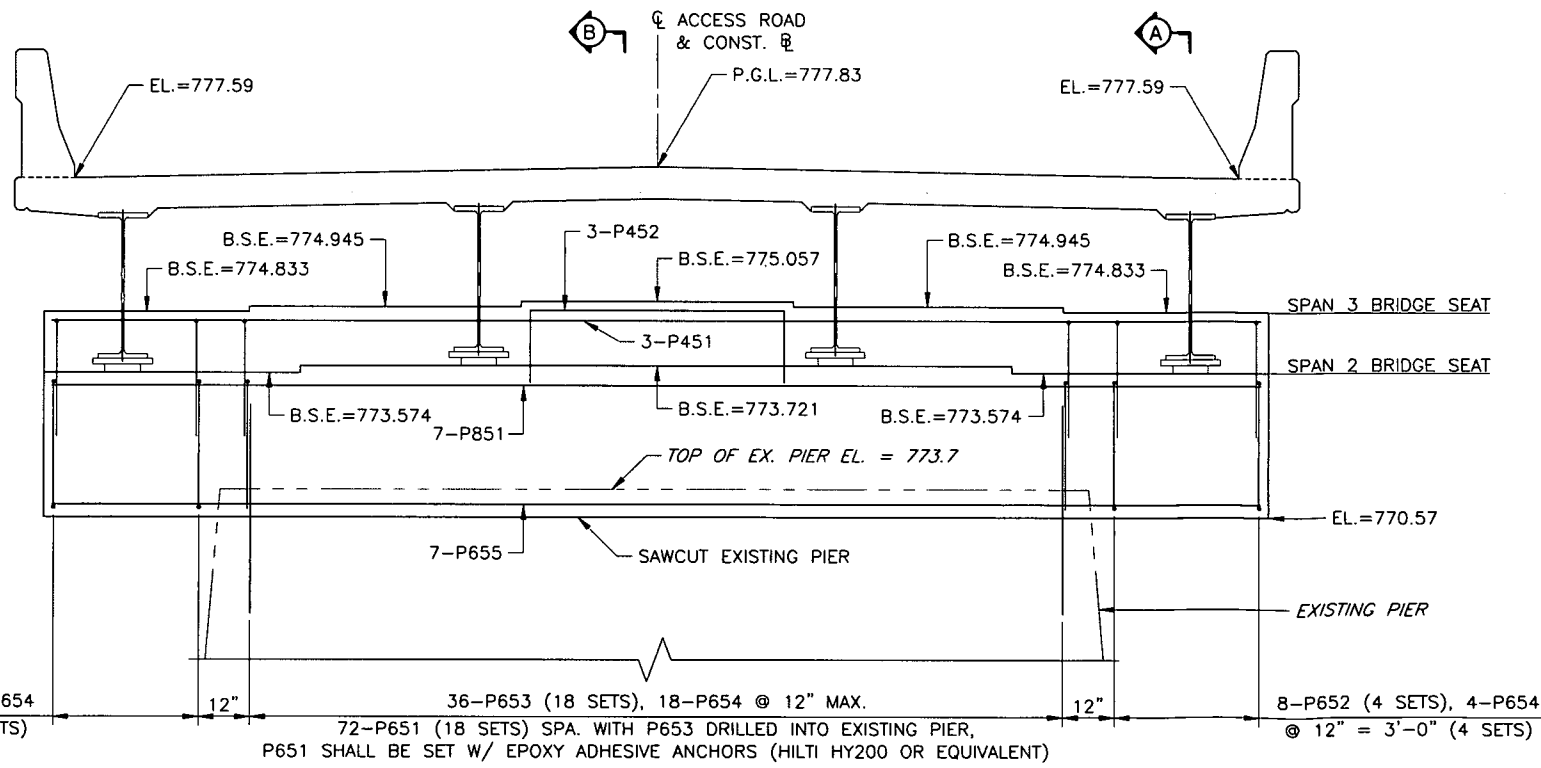
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STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

PIER 1 DETAILS	
DATE:	JANUARY 2018
DRAWN BY:	PWC
CHECKED BY:	DDE
PROJECT NO.:	171-6855T01
APPROVED BY:	GSL



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



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

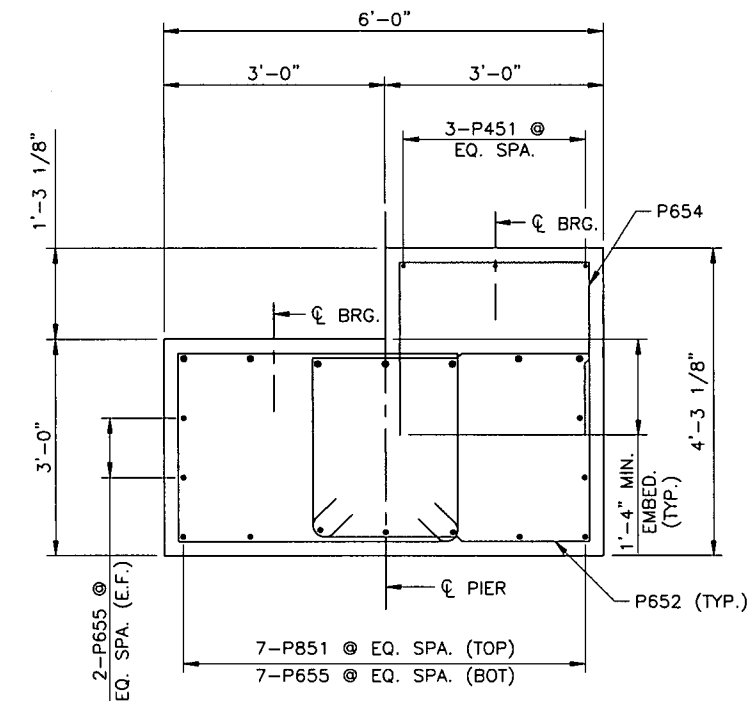
NOTE: DECK ELEVATIONS SHOWN ARE AT ϕ OF PIER

LEGEND

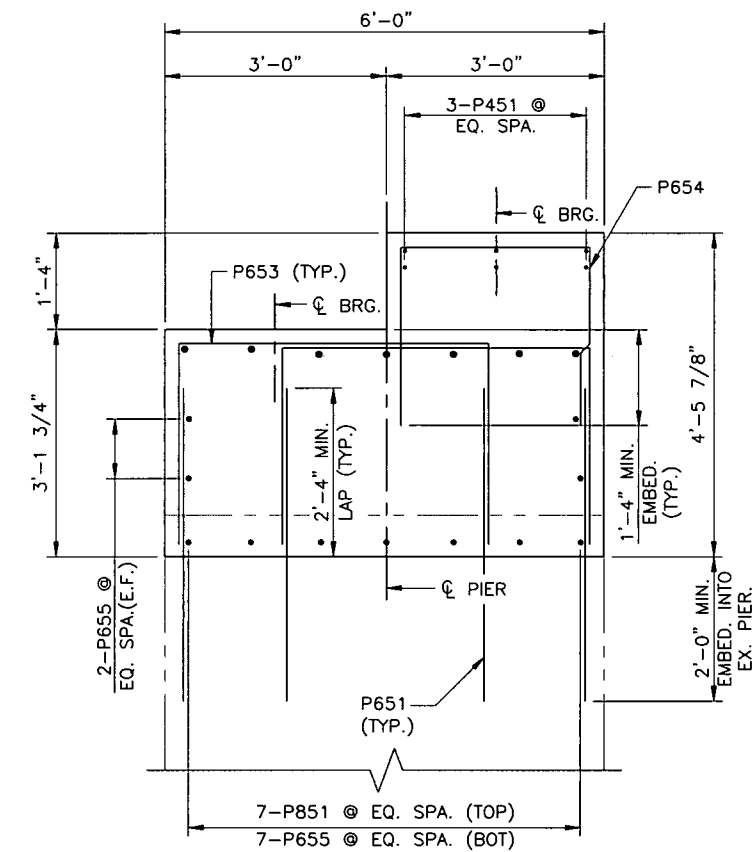
- F.F. - DENOTES FRONT FACE
- R.F. - DENOTES REAR FACE
- E.F. - DENOTES EACH FACE
- W.P. - DENOTES WORK POINT
- EL. - DENOTES ELEVATION
- BRGS. - DENOTES BEARINGS

NOTES:

- FOR GENERAL NOTES, SEE SHEET 5.
- FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 29

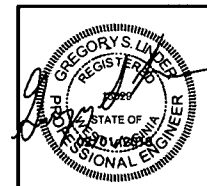


SECTION A-A
SCALE: 3/4"=1'-0"



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

NOTE: EPOXY BONDING COMPOUND SHALL BE APPLIED TO THE EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE.

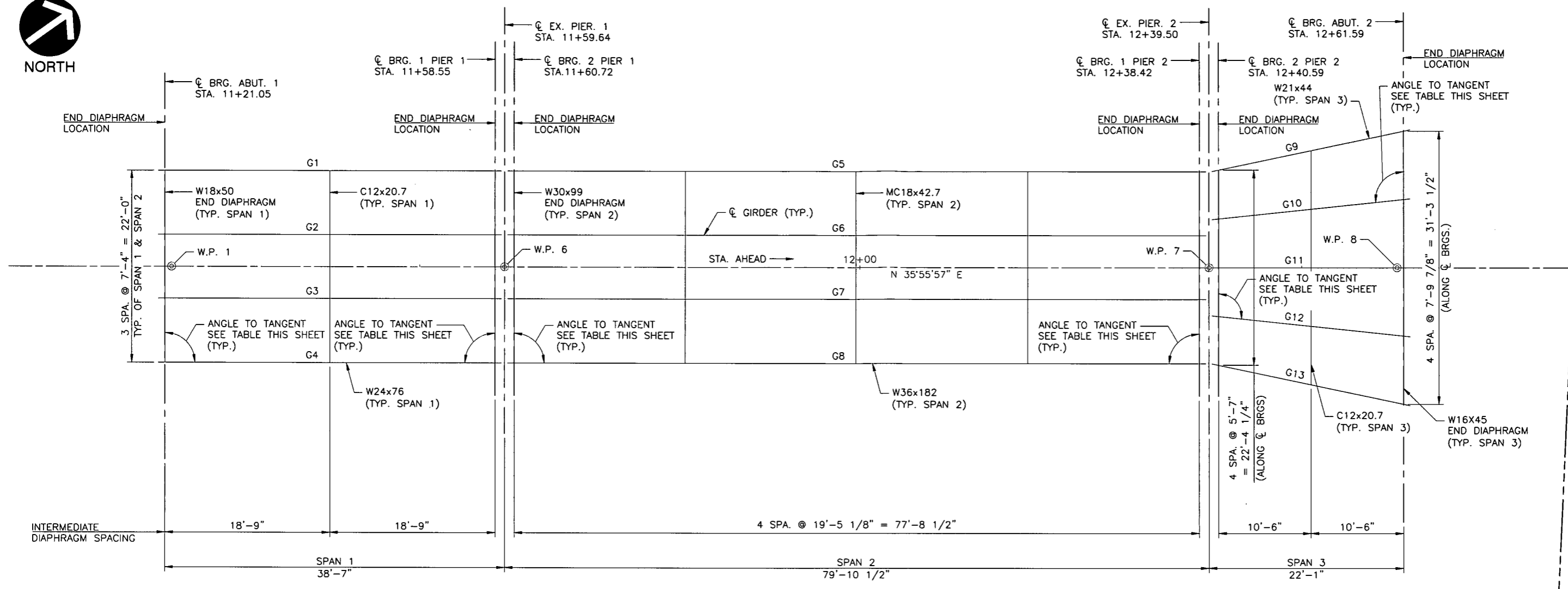


SUBMITTAL & REVISION RECORD	
NO.	DATE

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STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

PIER 2 DETAILS	
DATE:	JANUARY 2018 (DRAWN BY: PWC)
DESIGN SCALE:	AS SHOWN (CHECKED BY: DDE)
PROJECT NO.:	171-658101
APPROVED BY:	GSL

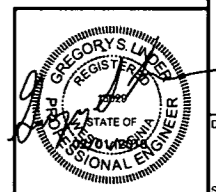


FRAMING PLAN
SCALE: 1"=6'

GIRDER SCHEDULE																	
SPAN 1	GIRDER NO.	GIRDER LENGTH C-C BRG.	GIRDER LENGTH O-O GIRDER	BEAM PROJECTION		SPAN 2	GIRDER NO.	GIRDER LENGTH C-C BRG.	GIRDER LENGTH O-O GIRDER	BEAM PROJECTION		SPAN 3	GIRDER NO.	GIRDER LENGTH C-C BRG.	GIRDER LENGTH O-O GIRDER	BEAM PROJECTION	
				ABUT. 1	PIER 1					PIER 1	PIER 2					PIER 2	ABUT. 2
SPAN 1	G1	37'-6"	39'-0"	9"	9"	SPAN 2	G5	77'-8 1/2"	79'-2 1/2"	9"	9"	SPAN 3	G9	21'-5 3/4"	23'-0"	9 1/4"	9 1/4"
	G2	37'-6"	39'-0"	9"	9"		G6	77'-8 1/2"	79'-2 1/2"	9"	9"		G10	21'-1 1/2"	22'-7 1/2"	9"	9"
	G3	37'-6"	39'-0"	9"	9"		G7	77'-8 1/2"	79'-2 1/2"	9"	9"		G11	21'-0"	22'-6"	9"	9"
	G4	37'-6"	39'-0"	9"	9"		G8	77'-8 1/2"	79'-2 1/2"	9"	9"		G12	21'-1 1/2"	22'-7 1/2"	9"	9"
													G13	21'-5 3/4"	23'-0"	9 1/4"	9 1/4"

CENTERLINE GIRDER ANGLES AT C BRG.								
GIRDER NO.	ABUT. 1	PIER 1	GIRDER NO.	PIER 1	PIER 2	GIRDER NO.	PIER 2	ABUT. 2
G1	90°00'00"	90°00'00"	G5	90°00'00"	90°00'00"	G9	78°00'00"	102°00'00"
G2	90°00'00"	90°00'00"	G6	90°00'00"	90°00'00"	G10	83°56'00"	96°04'00"
G3	90°00'00"	90°00'00"	G7	90°00'00"	90°00'00"	G11	90°00'00"	90°00'00"
G4	90°00'00"	90°00'00"	G8	90°00'00"	90°00'00"	G12	96°04'00"	83°56'00"
						G13	102°00'00"	78°00'00"

NOTES:
FOR GENERAL NOTES, SEE SHEET 5.
FOR GIRDER DETAILS, SEE SHEET 17



DATE: JANUARY 2018
DRAWN BY: PWC
DDE
DWG SCALE: 1"=6'
CHECKED BY: 171-6685T01
PROJECT NO.:
APPROVED BY: GSL

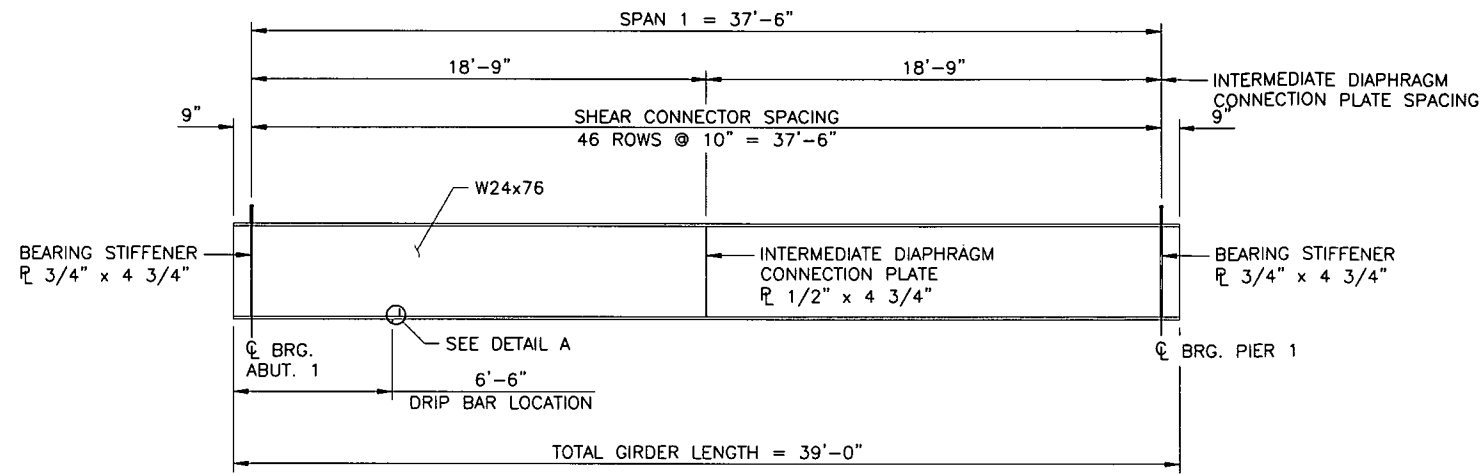
DRAWING NO.:
15
SHEET 15 OF 30

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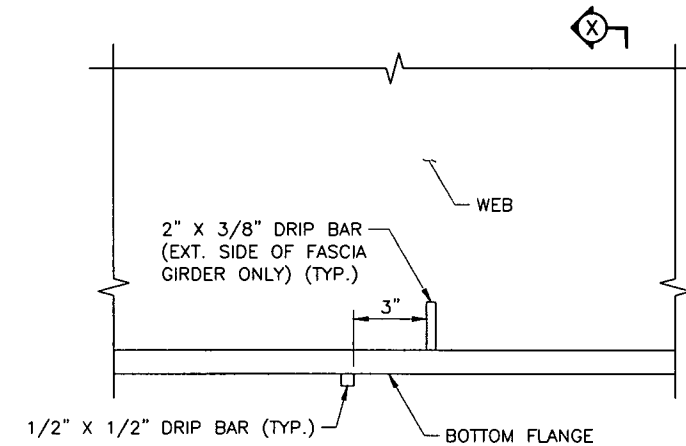
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NO.	DATE	DESCRIPTION

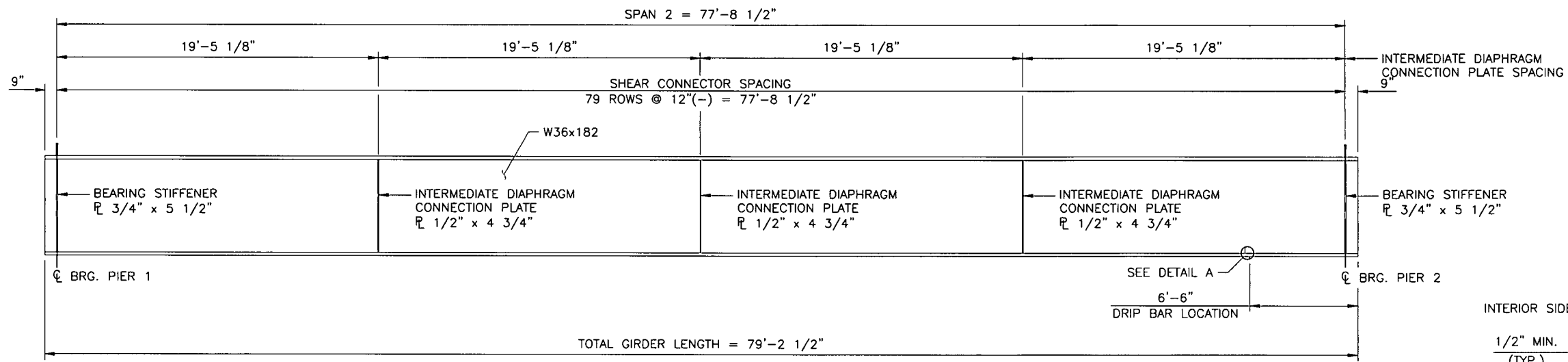
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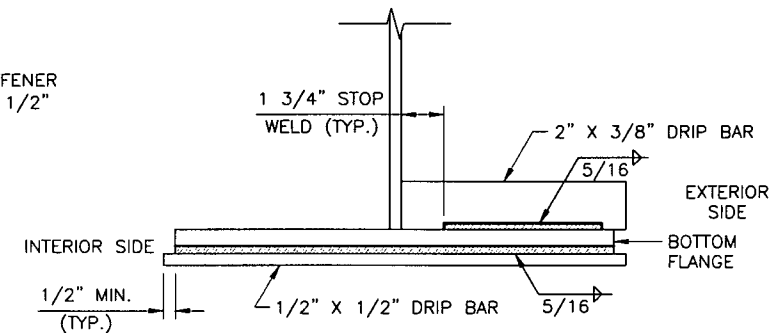
TYPICAL GIRDER ELEVATION - GIRDER 1 THRU GIRDER 4
N.T.S.



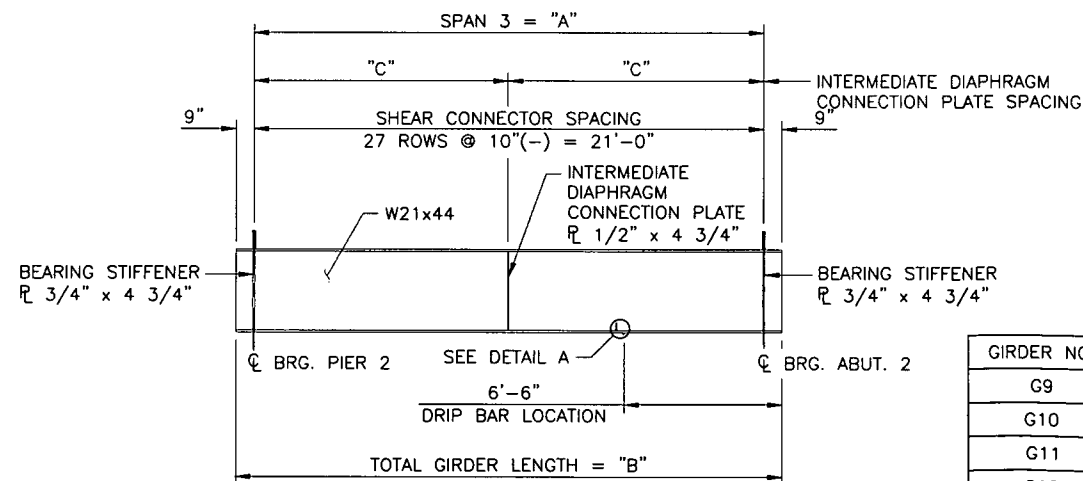
DETAIL A
N.T.S.



TYPICAL GIRDER ELEVATION - GIRDER 5 THRU GIRDER 8
N.T.S.



SECTION X-X
N.T.S.

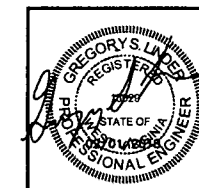


TYPICAL GIRDER ELEVATION - GIRDER 9 THRU GIRDER 13
N.T.S.

GIRDER NO.	A	B	C
G9	21'-5 3/4"	23'-0"	10'-8 3/4"
G10	21'-1 1/2"	22'-7 1/2"	10'-6 3/4"
G11	21'-0"	22'-6"	10'-6"
G12	21'-1 1/2"	22'-7 1/2"	10'-6 3/4"
G13	21'-5 3/4"	23'-0"	10'-8 3/4"

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 5.
2. FOR FRAMING PLAN, SEE SHEET 15.
3. REFER TO SHEET 17 FOR STIFFENER, CROSSFRAME CONNECTION, AND SHEAR CONNECTOR DETAILS.
4. DRIP BAR ON TOP OF BOTTOM FLANGE SHALL BE CAULKED WITH DARK BROWN CAULKING AGAINST FLANGE, WEB AND FILLET WELD SUBJECT TO THE APPROVAL OF THE ENGINEER. INCLUDE COST IN ITEM "STEEL SUPERSTRUCTURE".
5. ALL STEEL FOR GIRDERS, CONNECTION PLATES AND STIFFENERS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 50W, UNLESS NOTED OTHERWISE.



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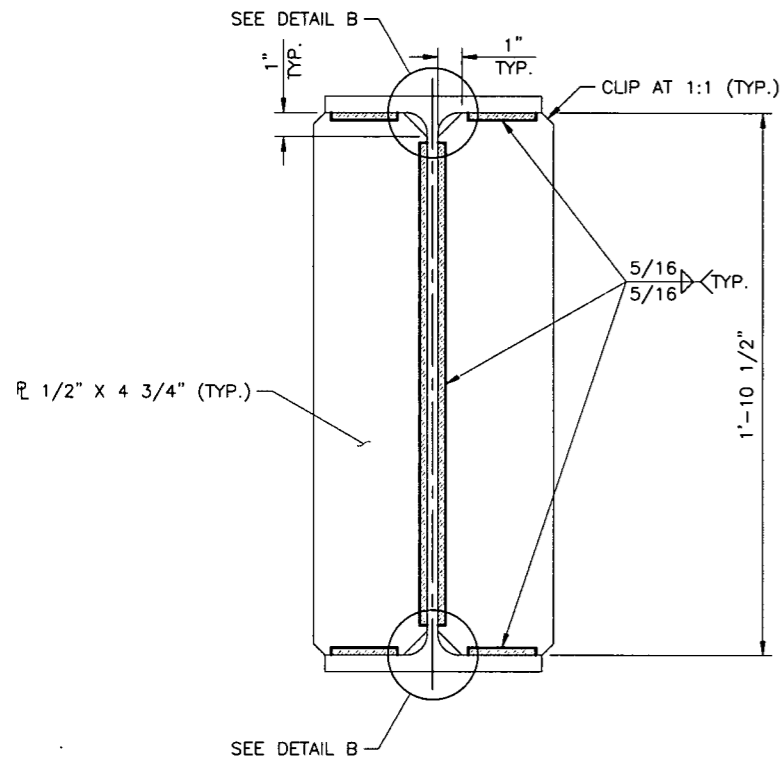
DIVISION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

GIRDER ELEVATIONS

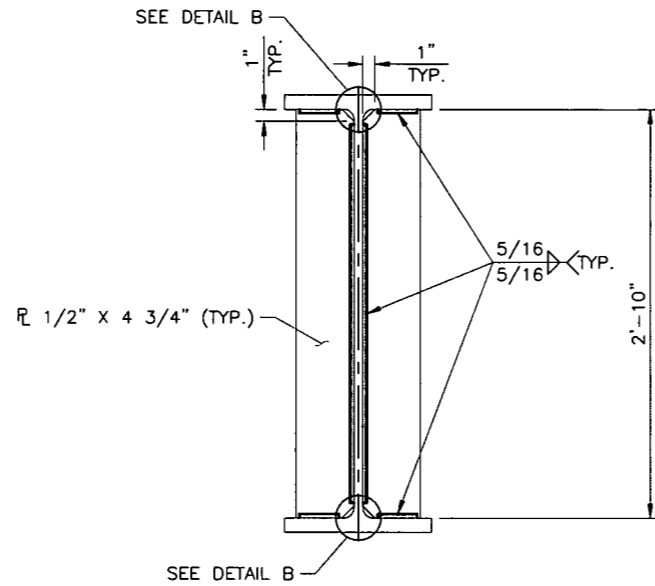
DATE: JANUARY 2018 DRAWN BY: PWC
DWG SCALE: N.T.S. CHECKED BY: DDE
PROJECT NO.: 171-6685T01
APPROVED BY: G.S.L.

DRAWING NO.: **16**
SHEET 16 OF 30

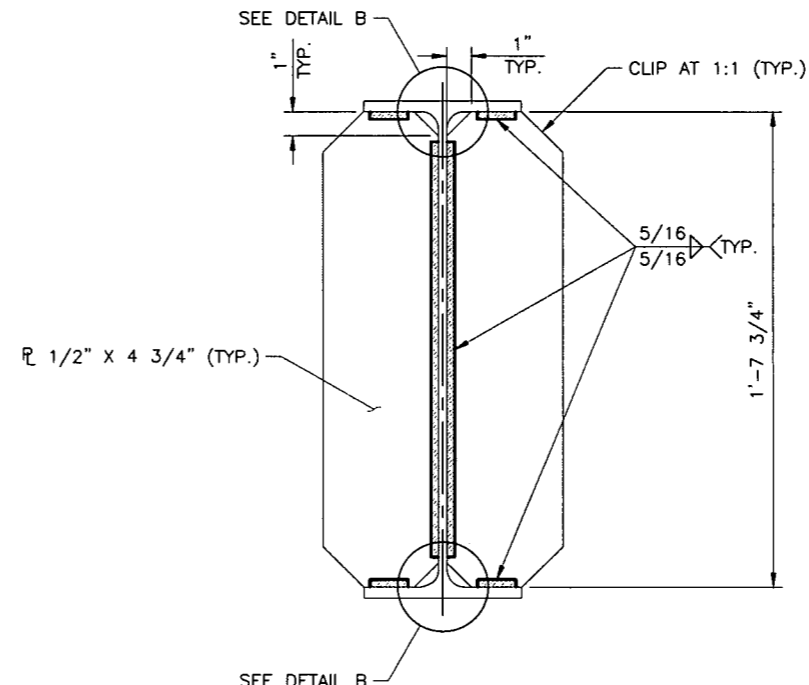
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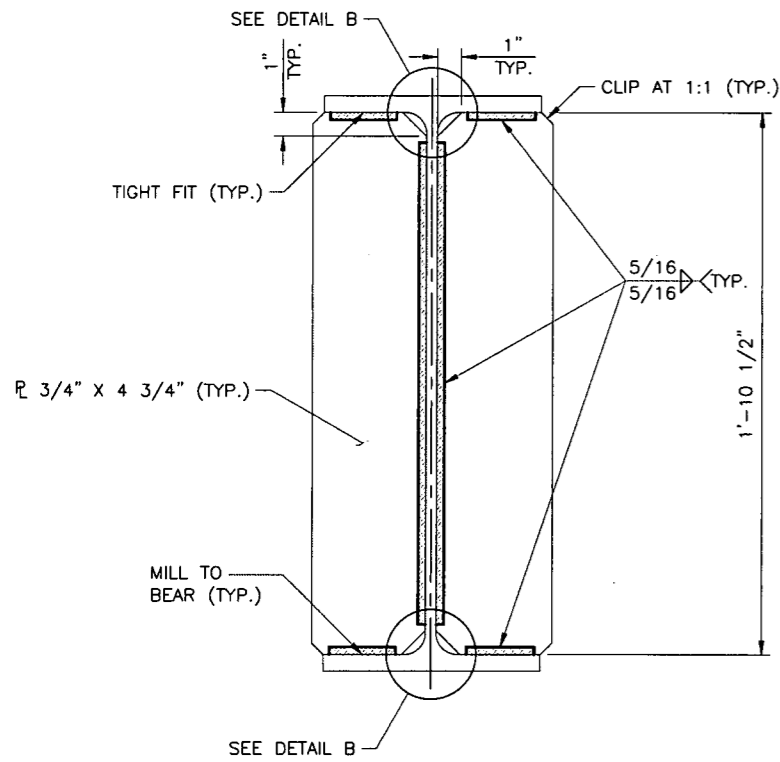
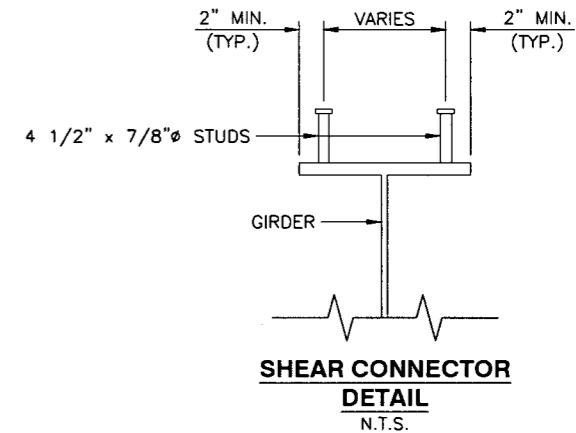
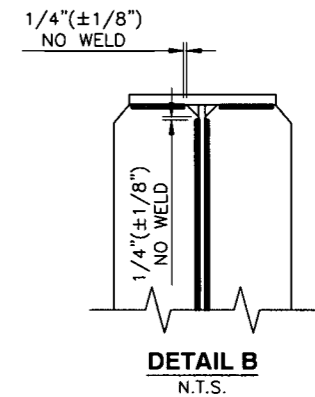
**SPAN 1 INTERMEDIATE
DIAPHRAGM CONNECTION PLATES**
SCALE: 3" = 1'-0"



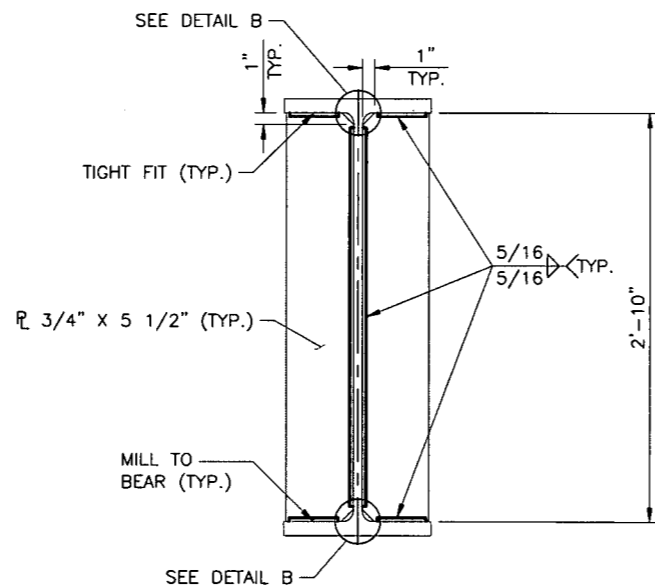
**SPAN 2 INTERMEDIATE
DIAPHRAGM CONNECTION PLATES**
SCALE: 1 1/2" = 1'-0"



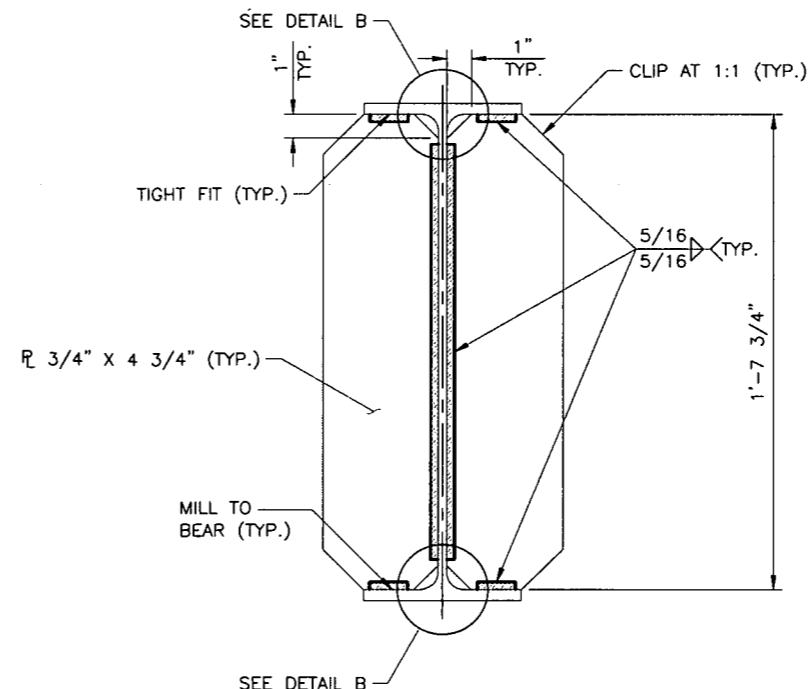
**SPAN 3 INTERMEDIATE
DIAPHRAGM CONNECTION PLATES**
SCALE: 3" = 1'-0"



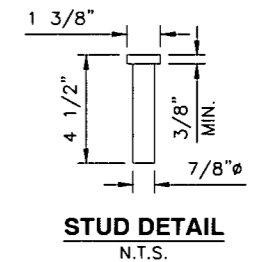
**SPAN 1
BEARING STIFFENER**
SCALE: 3" = 1'-0"



**SPAN 2
BEARING STIFFENER**
SCALE: 1 1/2" = 1'-0"



**SPAN 3
BEARING STIFFENER**
SCALE: 3" = 1'-0"



NOTES:

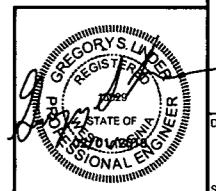
1. REFER TO SHEET 16 FOR STIFFENER, CONNECTION PLATE AND SHEAR CONNECTOR LOCATIONS.
2. ALL STEEL FOR GIRDERS, CONNECTION PLATES AND STIFFENERS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 50W, UNLESS NOTED OTHERWISE.

SUBMITTAL & REVISION RECORD	
NO.	DESCRIPTION

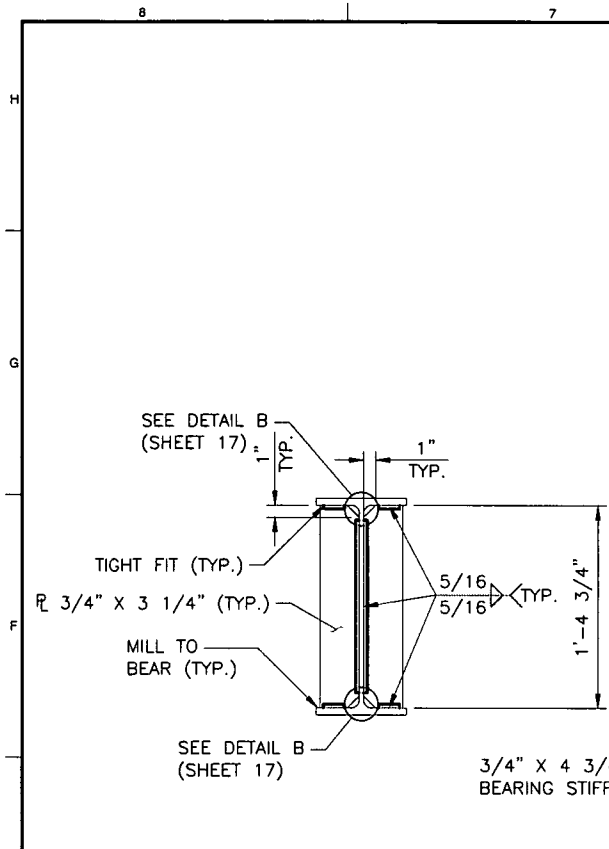
Civil & Environmental Consultants, Inc.
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DODDRIDGE COUNTY, WEST VIRGINIA

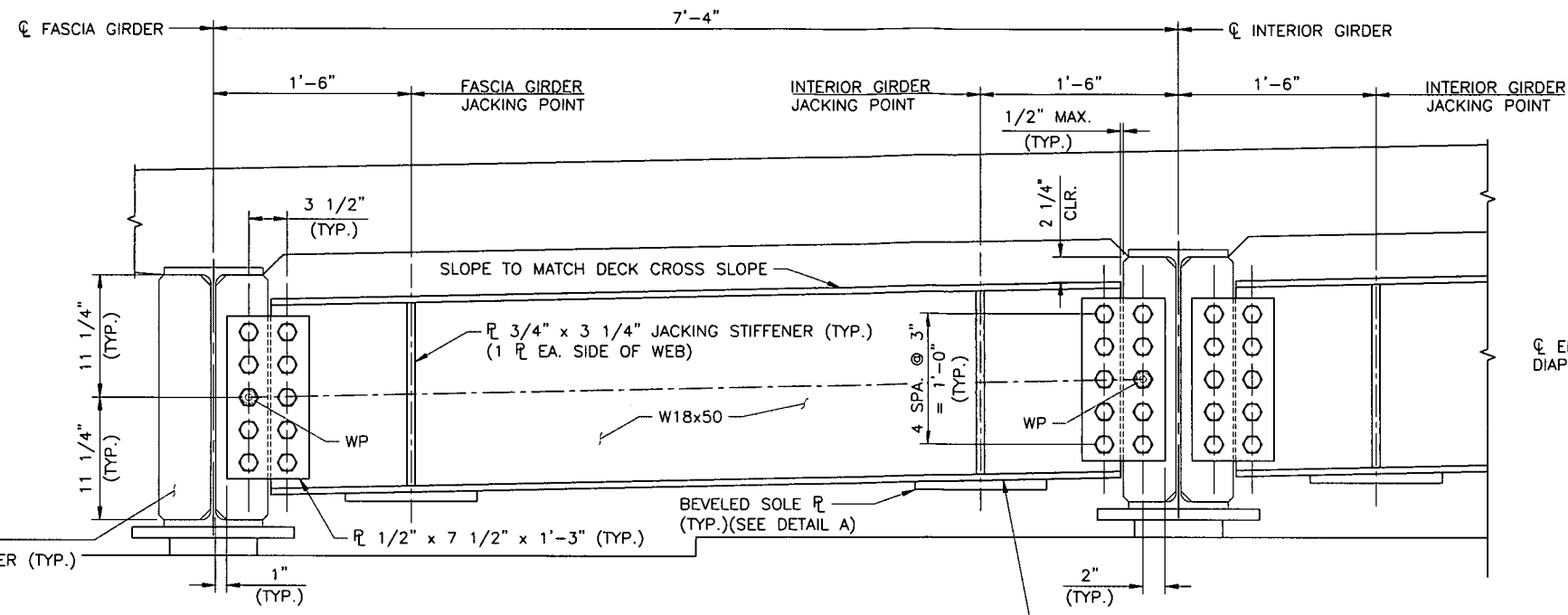
STEEL DETAILS	
DATE:	JANUARY 2018
DWG SCALE:	AS SHOWN
PROJECT NO.:	171-6585T01
APPROVED BY:	GSS



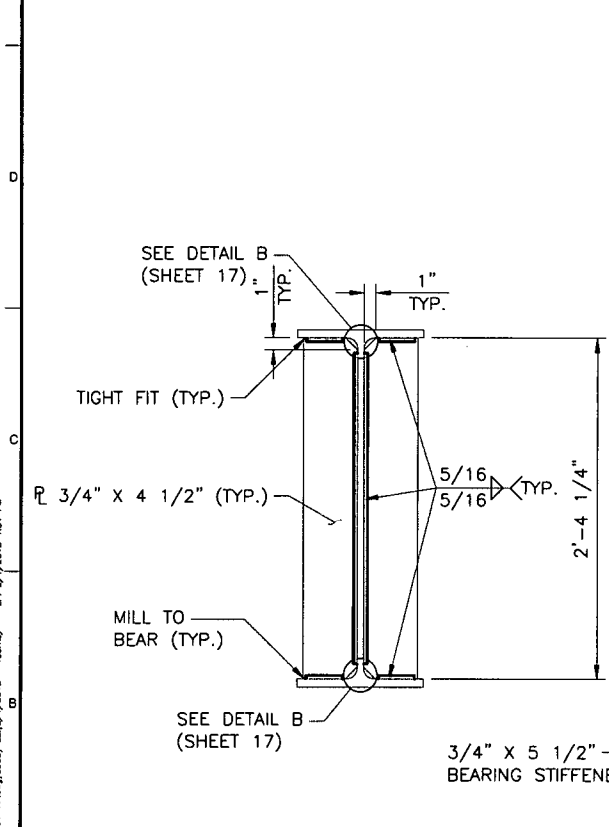
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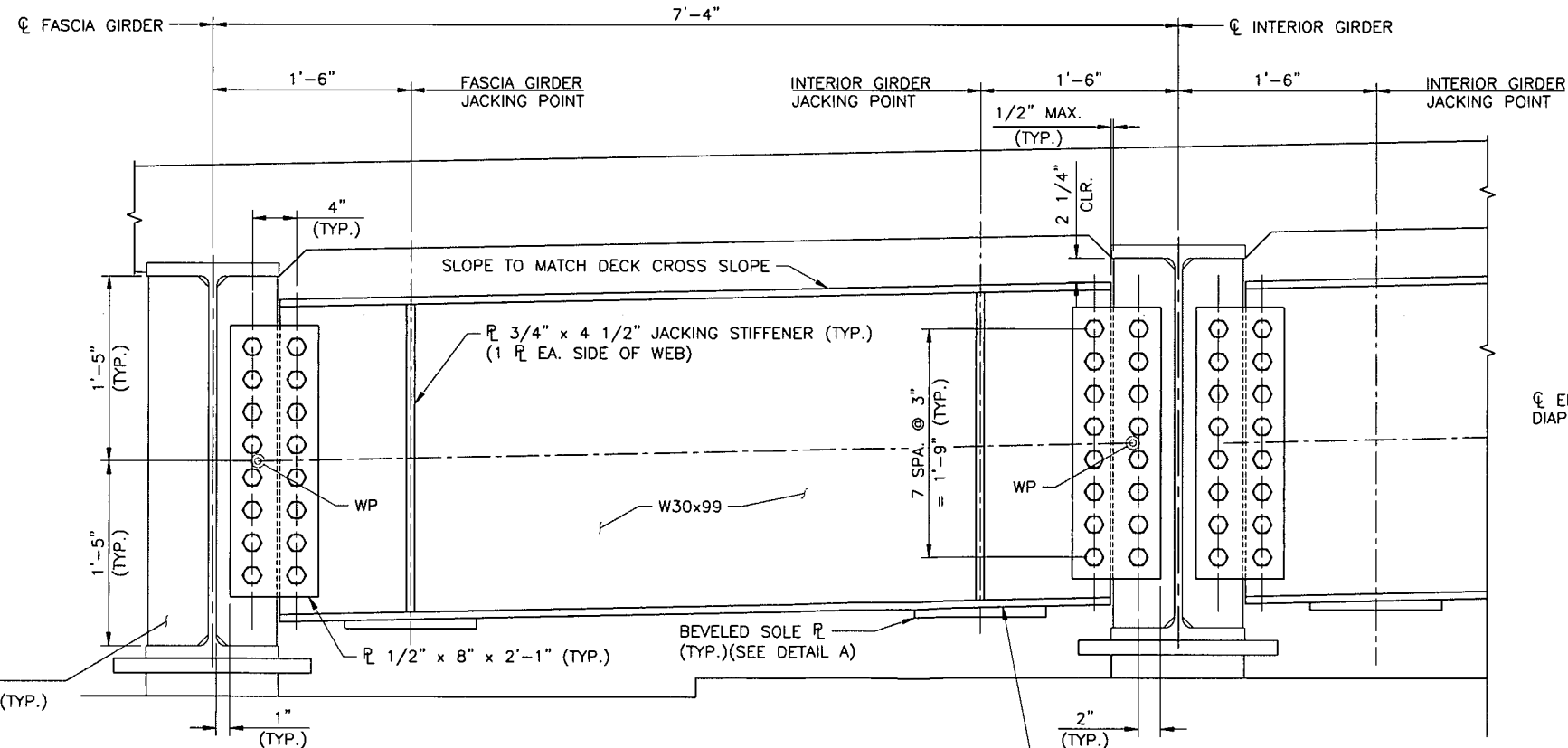
**SPAN 1
JACKING STIFFENER**
SCALE: 1 1/2" = 1'-0"



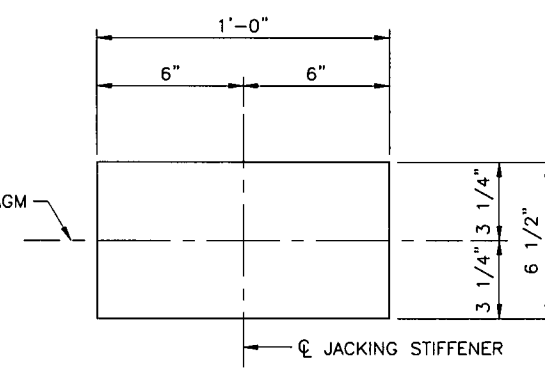
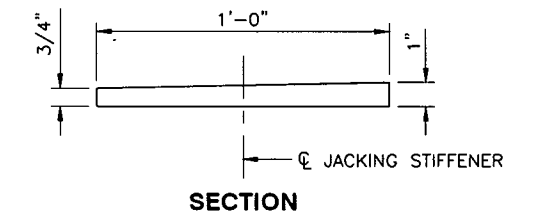
**SPAN 1 END
DIAPHRAGM DETAILS**
SCALE: 1 1/2" = 1'-0"



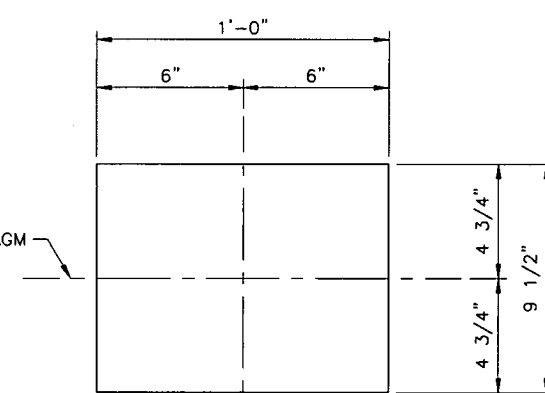
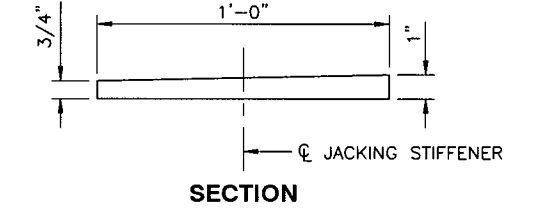
**SPAN 2
JACKING STIFFENER**
SCALE: 1 1/2" = 1'-0"



**SPAN 2 END
DIAPHRAGM DETAILS**
SCALE: 1 1/2" = 1'-0"

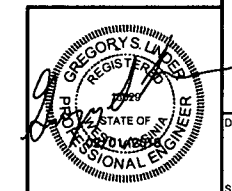


SECTION
PLAN
DETAIL A
SCALE: 3" = 1'-0"



SECTION
PLAN
DETAIL B
SCALE: 3" = 1'-0"

- NOTES:**
- REFER TO SHEET 16 FOR END DIAPHRAGM LOCATIONS.
 - ALL STEEL FOR GIRDERS, CONNECTION PLATES AND STIFFENERS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 50W, UNLESS NOTED OTHERWISE.

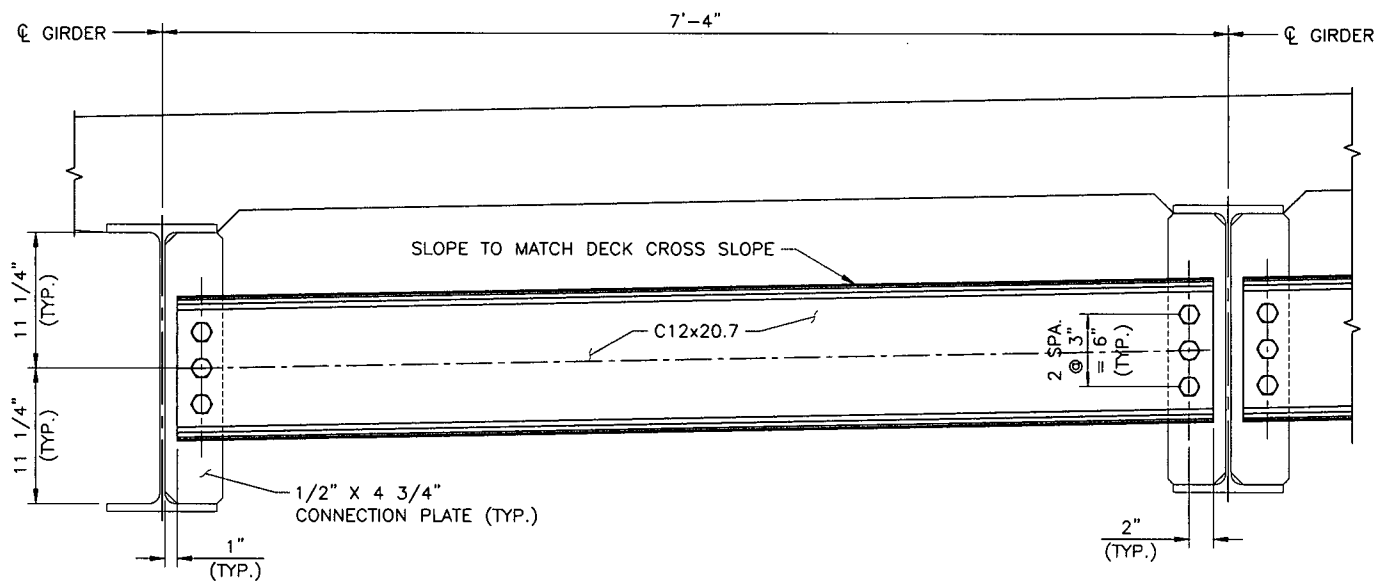


SUBMITTAL & REVISION RECORD	
NO.	DATE

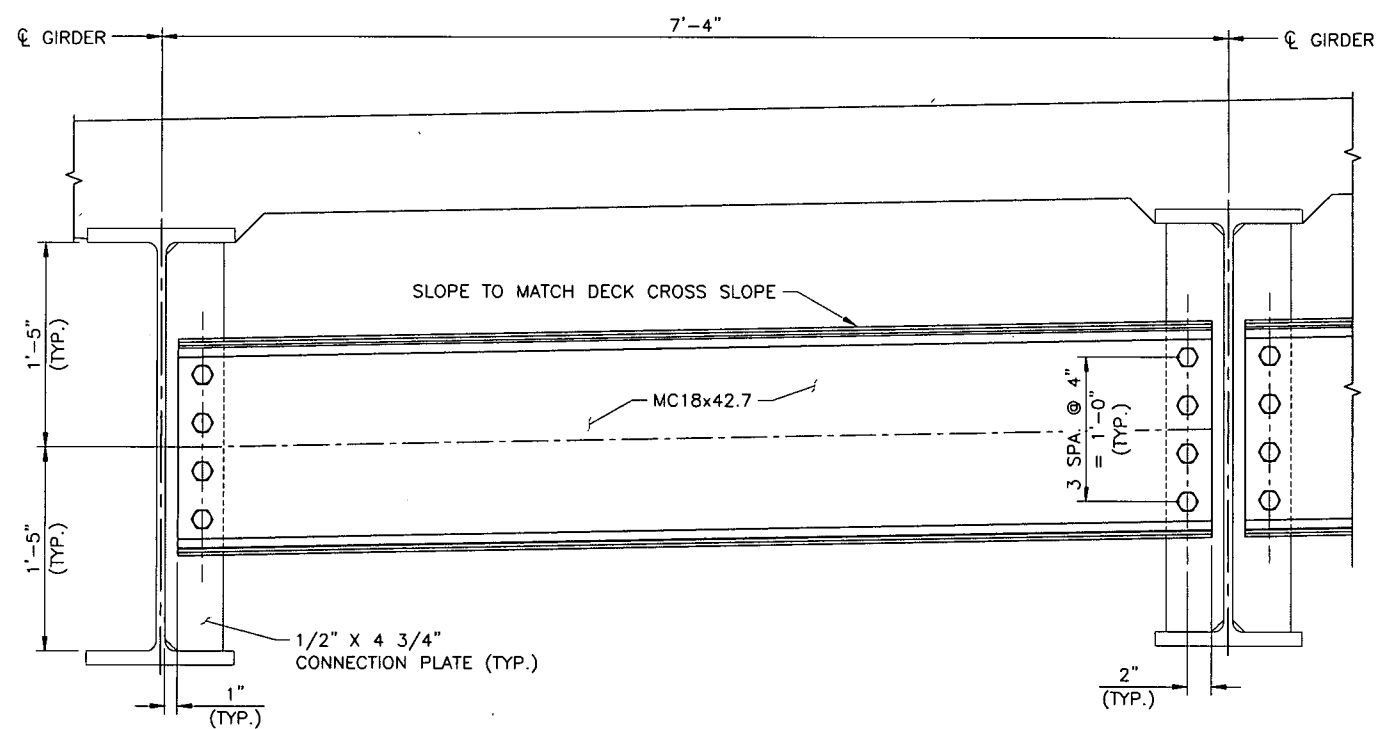
Civil & Environmental Consultants, Inc.
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Ph: 304.933.3119 - 855.486.9599 - Fax: 304.933.3327
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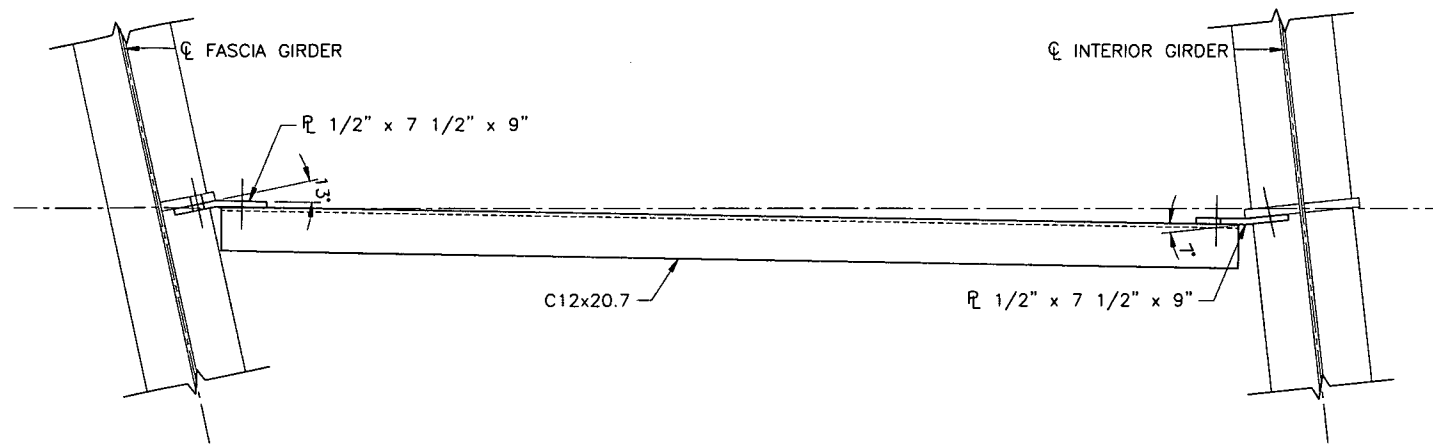
END DIAPHRAGM DETAILS	
DATE	DRAWN BY
JANUARY 2018	PWC
AS SHOWN	DDE
CHECKED BY:	171-6685T01
PROJECT NO.:	GSL
APPROVED BY:	



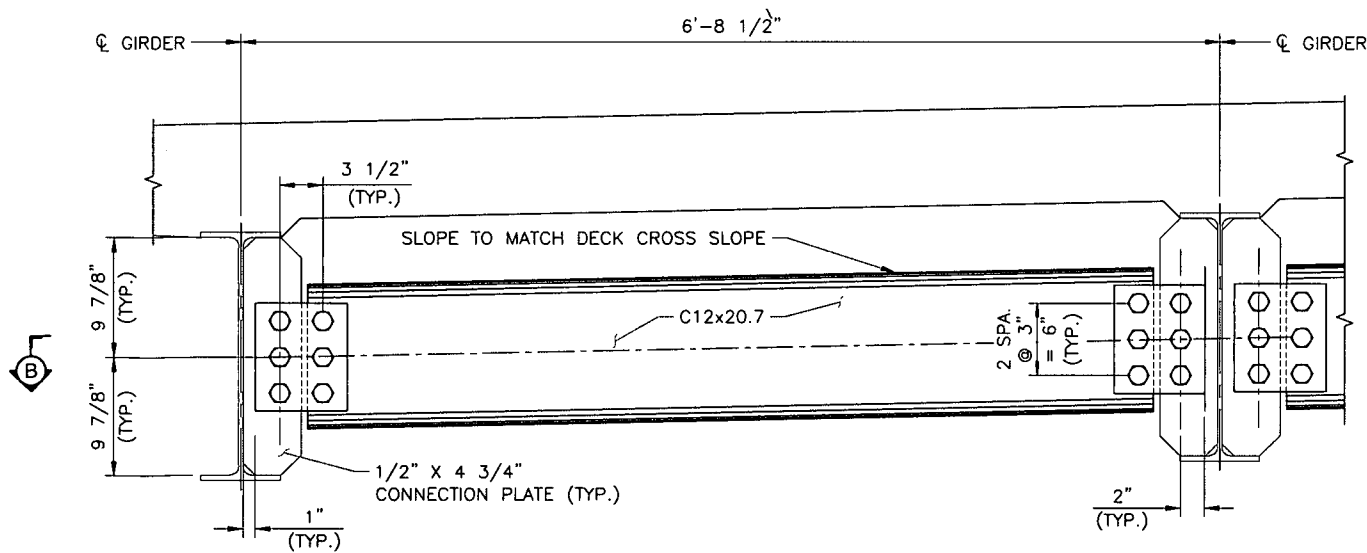
**SPAN 1 INTERMEDIATE
DIAPHRAGM DETAILS**
SCALE: 1 1/2" = 1'-0"



**SPAN 2 INTERMEDIATE
DIAPHRAGM DETAILS**
SCALE: 1 1/2" = 1'-0"



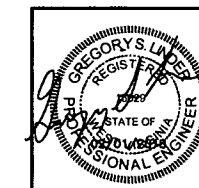
SECTION B-B
SCALE: 1 1/2" = 1'-0"



**SPAN 3 INTERMEDIATE
DIAPHRAGM DETAILS**
SCALE: 1 1/2" = 1'-0"

NOTES:

- REFER TO SHEET 16 FOR INTERMEDIATE DIAPHRAGM LOCATIONS.
- ALL STEEL FOR GIRDERS, CONNECTION PLATES AND STIFFENERS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GRADE 50W, UNLESS NOTED OTHERWISE.



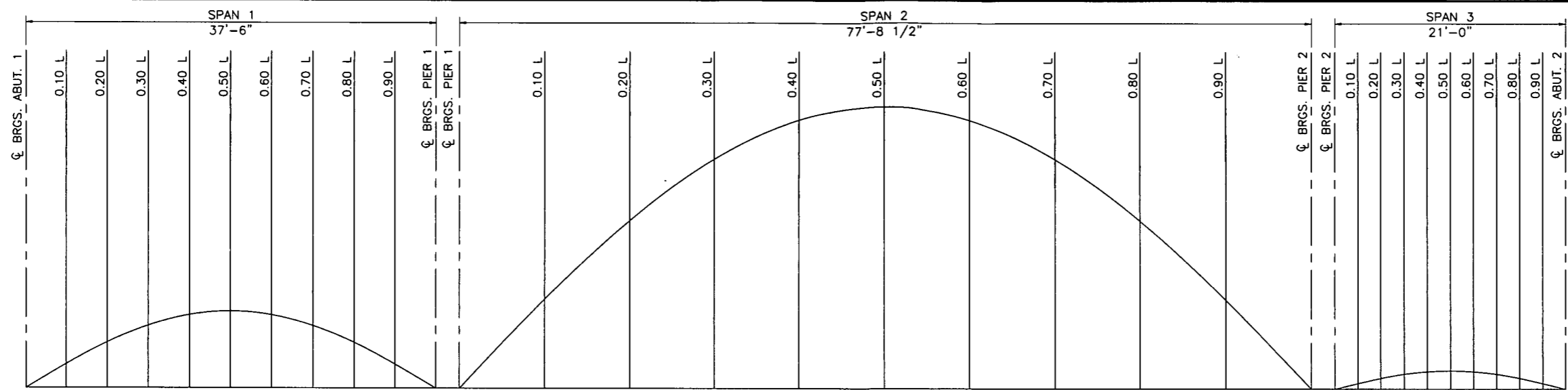
NO.	DATE	DESCRIPTION

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DODDRIDGE COUNTY, WEST VIRGINIA

INTERMEDIATE DIAPHRAGM DETAILS
DRAWING NO.: **20**
DATE: JANUARY 2018
DRAWN BY: PWC
DWG SCALE: AS SHOWN
CHECKED BY: DDE
PROJECT NO.: 171-6685101
APPROVED BY: GSL

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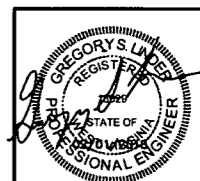


SPAN 1												SPAN 2													
DESCRIPTION		0.00 L	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	1.00 L	DESCRIPTION		0.00 L	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	1.00 L
G1	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.036	0.049	0.057	0.060	0.057	0.049	0.036	0.019	0.000	G5	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.157	0.297	0.406	0.476	0.500	0.476	0.406	0.297	0.157	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.165	0.312	0.428	0.501	0.526	0.501	0.428	0.312	0.165	0.000		DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.580	1.091	1.492	1.747	1.835	1.748	1.492	1.092	0.581	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.013	0.025	0.034	0.040	0.042	0.040	0.034	0.025	0.013	0.000		DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.065	0.122	0.168	0.196	0.206	0.196	0.168	0.123	0.065	0.000
	TOTAL CAMBER	0.000	0.197	0.373	0.511	0.598	0.628	0.598	0.511	0.373	0.197	0.000		TOTAL CAMBER	0.000	0.802	1.510	2.066	2.419	2.541	2.420	2.066	1.512	0.803	0.000
G2	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.050	0.059	0.062	0.059	0.050	0.037	0.019	0.000	G6	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.158	0.299	0.409	0.479	0.503	0.479	0.409	0.299	0.158	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.191	0.361	0.494	0.578	0.607	0.578	0.494	0.361	0.191	0.000		DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.599	1.125	1.536	1.799	1.888	1.799	1.537	1.125	0.600	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.012	0.024	0.032	0.038	0.040	0.038	0.032	0.024	0.012	0.000		DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.064	0.121	0.165	0.193	0.203	0.193	0.165	0.121	0.064	0.000
	TOTAL CAMBER	0.000	0.222	0.422	0.576	0.675	0.709	0.675	0.576	0.422	0.222	0.000		TOTAL CAMBER	0.000	0.821	1.545	2.110	2.471	2.594	2.471	2.111	1.545	0.822	0.000
G3	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.050	0.059	0.062	0.059	0.050	0.037	0.019	0.000	G7	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.158	0.299	0.409	0.479	0.503	0.479	0.409	0.299	0.158	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.191	0.361	0.494	0.578	0.607	0.578	0.494	0.361	0.191	0.000		DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.599	1.125	1.536	1.799	1.888	1.799	1.537	1.125	0.600	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.012	0.024	0.032	0.038	0.040	0.038	0.032	0.024	0.012	0.000		DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.064	0.121	0.165	0.193	0.203	0.193	0.165	0.121	0.064	0.000
	TOTAL CAMBER	0.000	0.222	0.422	0.576	0.675	0.709	0.675	0.576	0.422	0.222	0.000		TOTAL CAMBER	0.000	0.821	1.545	2.110	2.471	2.594	2.471	2.111	1.545	0.822	0.000
G4	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.036	0.049	0.057	0.060	0.057	0.049	0.036	0.019	0.000	G8	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.157	0.297	0.406	0.476	0.500	0.476	0.406	0.297	0.157	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.165	0.312	0.428	0.501	0.526	0.501	0.428	0.312	0.165	0.000		DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.580	1.091	1.492	1.747	1.835	1.748	1.492	1.092	0.581	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.013	0.025	0.034	0.040	0.042	0.040	0.034	0.025	0.013	0.000		DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.065	0.122	0.168	0.196	0.206	0.196	0.168	0.123	0.065	0.000
	TOTAL CAMBER	0.000	0.197	0.373	0.511	0.598	0.628	0.598	0.511	0.373	0.197	0.000		TOTAL CAMBER	0.000	0.802	1.510	2.066	2.419	2.541	2.420	2.066	1.512	0.803	0.000

SPAN 3												
DESCRIPTION		0.00 L	0.10 L	0.20 L	0.30 L	0.40 L	0.50 L	0.60 L	0.70 L	0.80 L	0.90 L	1.00 L
G9	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.008	0.009	0.009	0.009	0.008	0.006	0.003	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.039	0.075	0.102	0.120	0.126	0.120	0.102	0.075	0.039	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.002	0.004	0.005	0.006	0.006	0.006	0.005	0.004	0.002	0.000
	TOTAL CAMBER	0.000	0.044	0.085	0.115	0.135	0.141	0.135	0.115	0.085	0.044	0.000
G10	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.008	0.010	0.010	0.010	0.008	0.006	0.003	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.046	0.088	0.120	0.141	0.148	0.141	0.120	0.088	0.046	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.002	0.004	0.005	0.006	0.006	0.006	0.005	0.004	0.002	0.000
	TOTAL CAMBER	0.000	0.051	0.098	0.133	0.157	0.164	0.157	0.133	0.098	0.051	0.000
G11	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.048	0.091	0.125	0.146	0.153	0.146	0.125	0.091	0.048	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.002	0.004	0.005	0.006	0.006	0.006	0.005	0.004	0.002	0.000
	TOTAL CAMBER	0.000	0.053	0.101	0.139	0.162	0.170	0.162	0.139	0.101	0.053	0.000
G12	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.008	0.010	0.010	0.010	0.008	0.006	0.003	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.046	0.088	0.120	0.141	0.148	0.141	0.120	0.088	0.046	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.002	0.004	0.005	0.006	0.006	0.006	0.005	0.004	0.002	0.000
	TOTAL CAMBER	0.000	0.051	0.098	0.133	0.157	0.164	0.157	0.133	0.098	0.051	0.000
G13	DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.003	0.006	0.008	0.009	0.009	0.009	0.008	0.006	0.003	0.000
	DEFLECTION DUE TO SLAB DEAD LOAD	0.000	0.039	0.075	0.102	0.120	0.126	0.120	0.102	0.075	0.039	0.000
	DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	0.000	0.002	0.004	0.005	0.006	0.006	0.006	0.005	0.004	0.002	0.000
	TOTAL CAMBER	0.000	0.044	0.085	0.115	0.135	0.141	0.135	0.115	0.085	0.044	0.000

NOTES:

1. L = SPAN LENGTH.
2. CAMBER ORDINATES ARE GIVEN IN INCHES.
3. DECK SLAB DEAD LOAD INCLUDES SLAB AND STAY-IN-PLACE FORMS.
4. SUPERIMPOSED DEAD LOAD INCLUDES PARAPETS BUT DOES NOT INCLUDE FUTURE WEARING SURFACE.



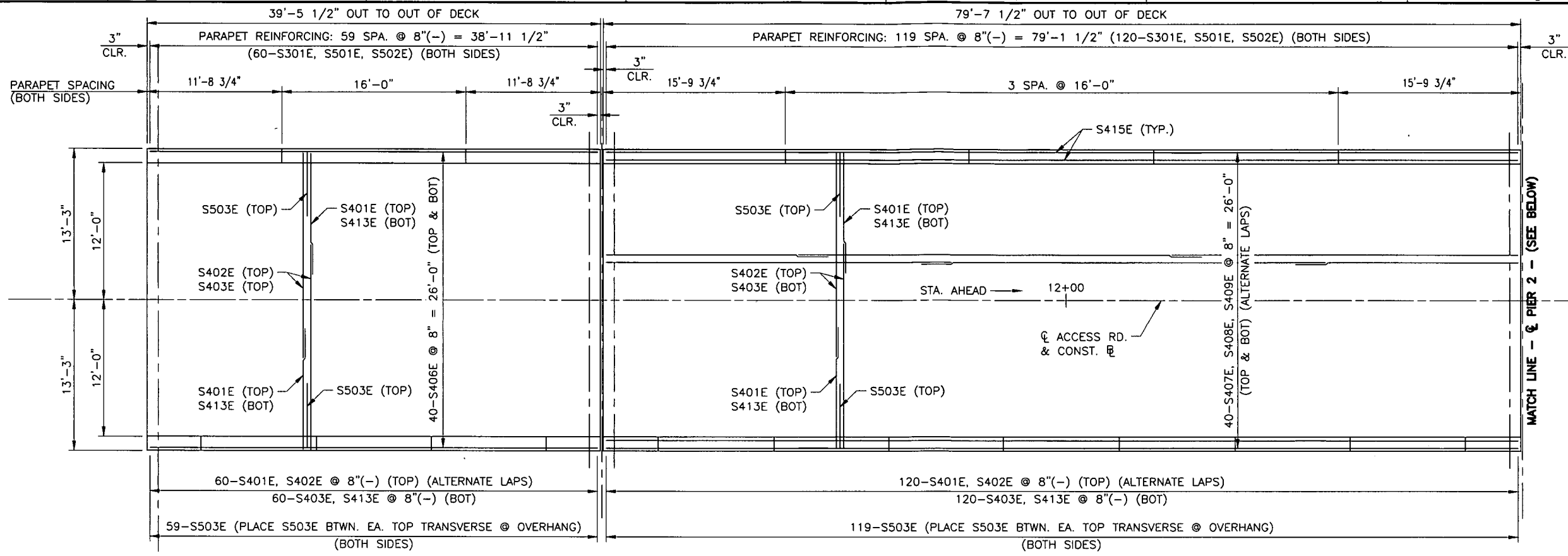
CAMBER ORDINATES
 JANUARY 2018 DRAWN BY: PWC
 N.T.S. CHECKED BY: DDE
 PROJECT NO: 171-668701
 APPROVED BY: GSL

DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

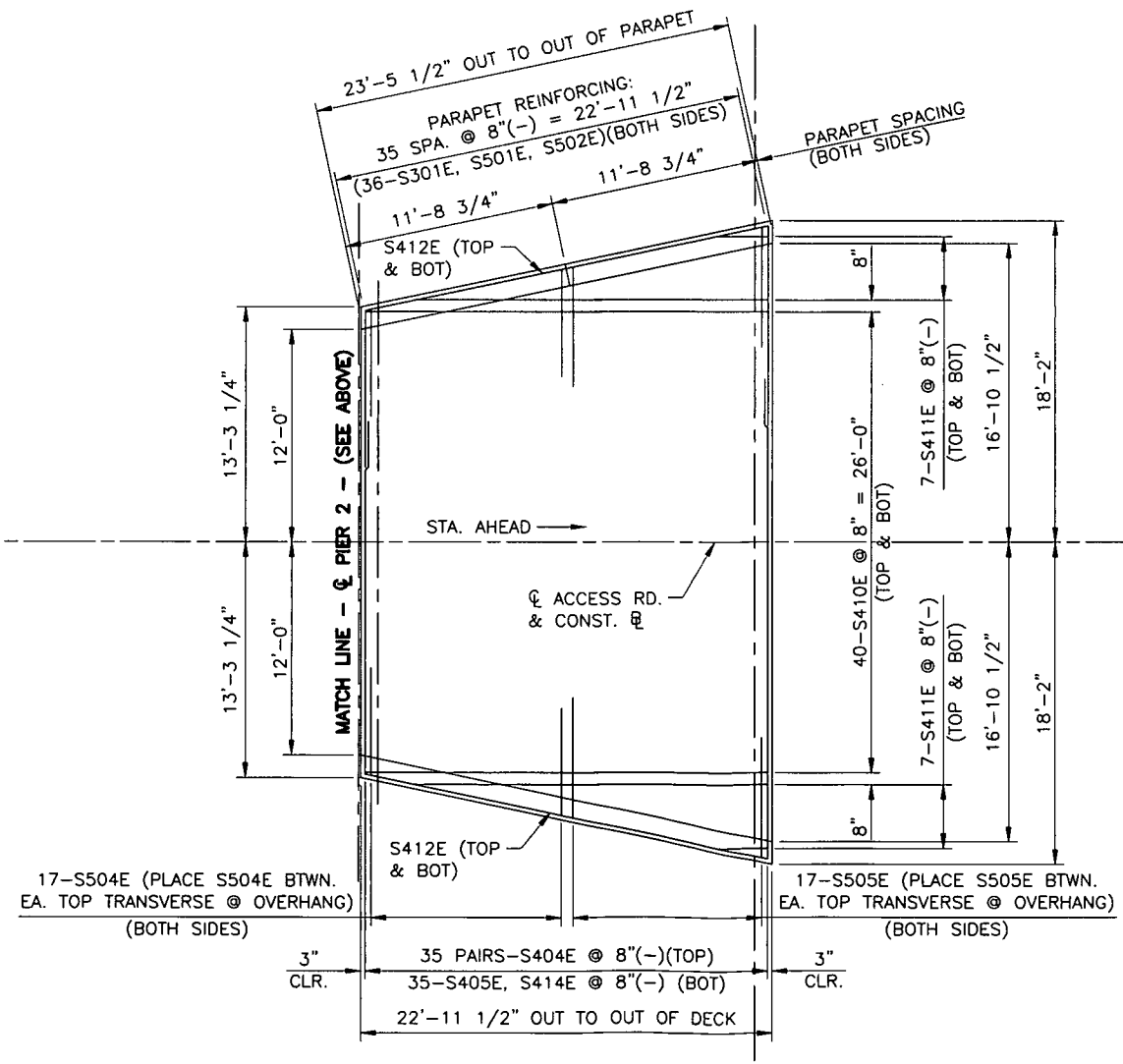
Civil & Environmental Consultants, Inc.
 600 Marketplace Ave. Suite 200 - Bridgeport, WV 26330
 Ph: 304.933.3119 - 855.488.9539 - Fax: 304.933.3327
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SUBMITTAL & REVISION RECORD	
NO.	DESCRIPTION

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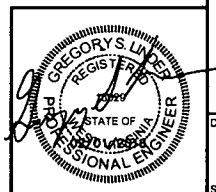


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LAP TABLE	
#3	1'-11"
#4	2'-7"
#5	3'-3"

- NOTES:**
- ALL LAP LENGTHS ARE MINIMUM.
 - SEE SHEET 25 FOR PARAPET DETAILS.
 - SEE SHEETS 29 FOR REINFORCING SCHEDULE.
- SEE NEOPRENE STRIP SEAL DAM DETAILS (SHEET 26) FOR ADDITIONAL REINFORCEMENT DETAILS AND CONSTRUCTION JOINTS.



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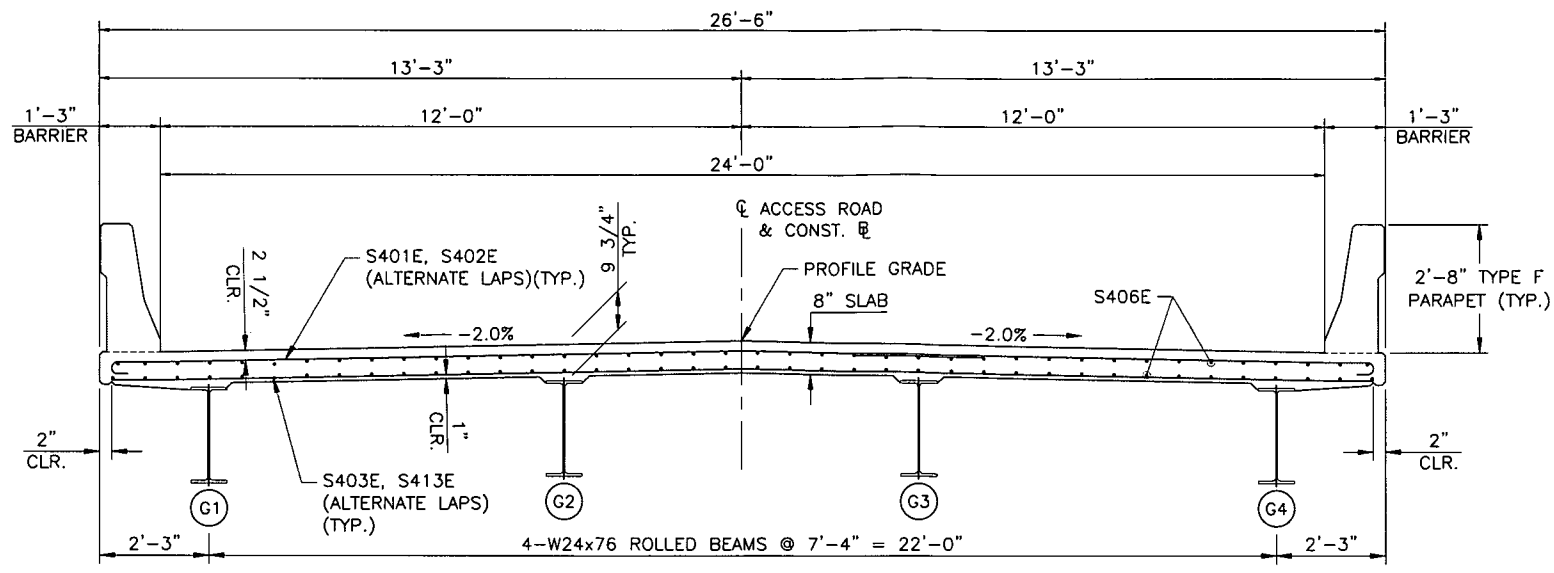
DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

DECK PLAN

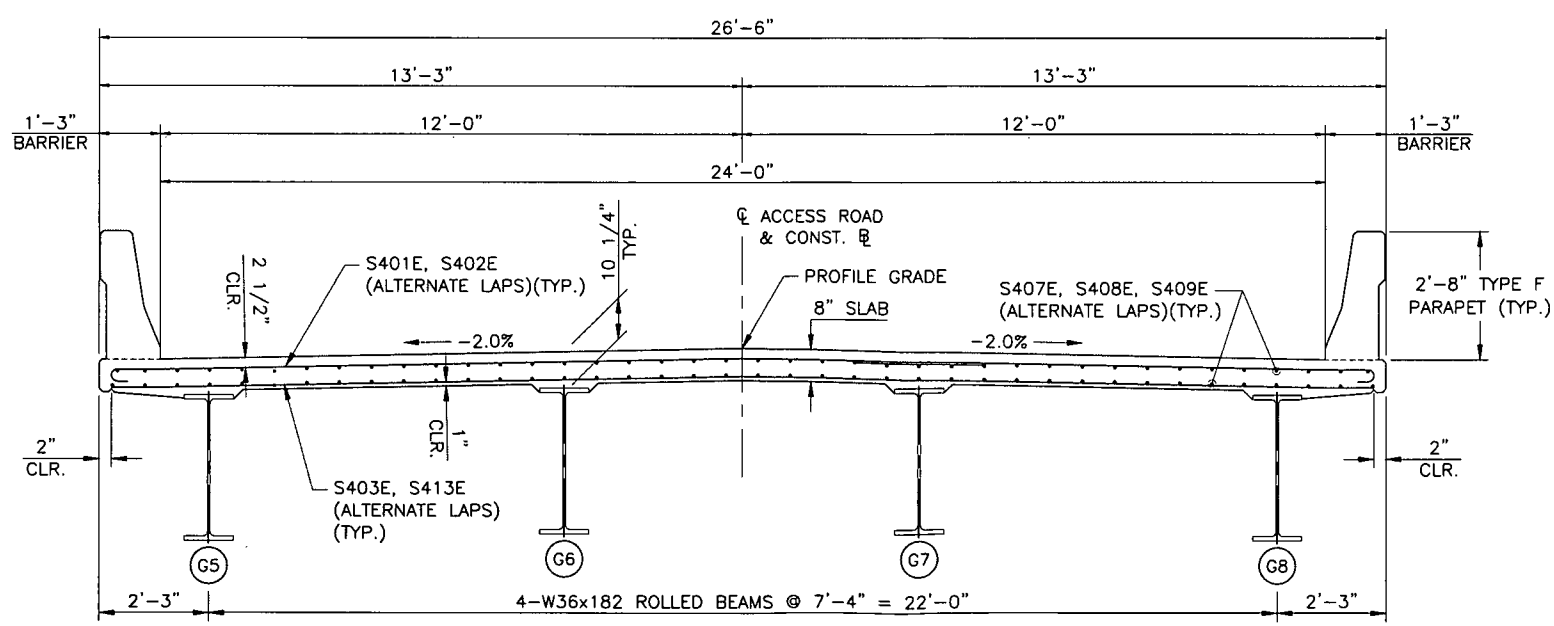
DRAWING NO.: **23**

SHEET 23 OF 30

DATE: JANUARY 2018
 DRAWN BY: PWC
 CHECKED BY: DDE
 PROJECT NO.: 171-658101
 APPROVED BY: G.S.L.



TYPICAL SECTION - SPAN 1
SCALE: 1/2" = 1'-0"

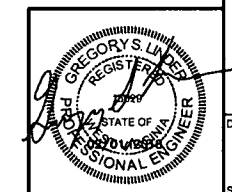


TYPICAL SECTION - SPAN 2
SCALE: 1/2" = 1'-0"

LAP TABLE	
#3	1'-11"
#4	2'-7"
#5	3'-3"

NOTES:

1. THE TYPE F PARAPETS ARE PLACED WITHOUT VERTICAL JOINTS, BUT ARE VERTICALLY SCORED ALL AROUND WITH 1/4" EDGING TOOL. SEE DECK PLAN ON SHEET 23 FOR SPACING.
2. BRACING THE DECK OVERHANG FORMS AGAINST THE EXTERIOR GIRDER MAY PERMIT THE FORMS TO SETTLE AS THE GIRDER DEFLECTS LATERALLY DURING THE CONCRETE PLACEMENT. THE CONTRACTOR SHALL PROVIDE SUFFICIENT BLOCKING TO PREVENT THE DEFLECTION.
3. THE PARAPETS SHALL BE TRULY VERTICAL.
4. FOR PARAPET DETAILS, SEE SHEET 25.
5. FOR REINFORCING SCHEDULE, SEE SHEET 29.



SUBMITTAL & REVISION RECORD		
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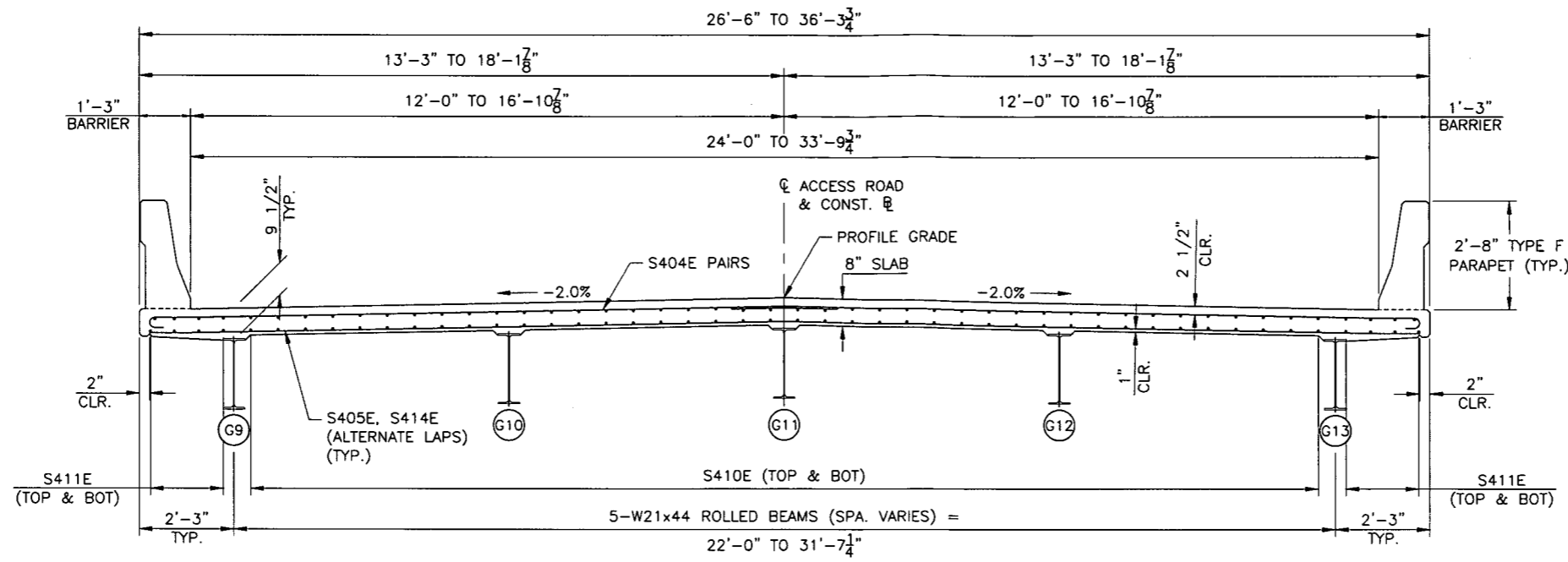
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STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

DECK DETAILS

JANUARY 2018 DRAWN BY: PWC
1/2" = 1'-0" CHECKED BY: DDE
PROJECT NO: 171-6585T01
APPROVED BY: GSL

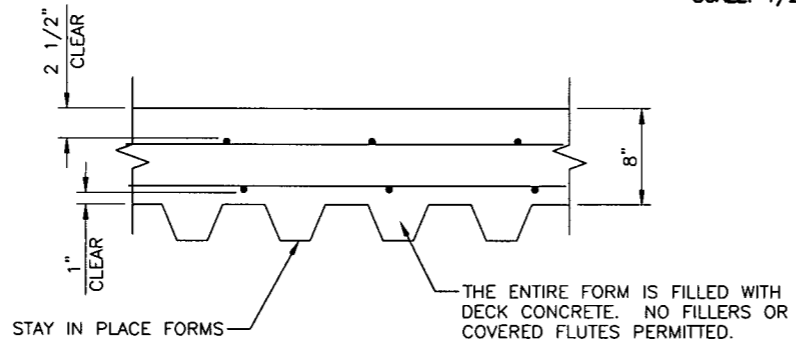
DRAWING NO: **24**
SHEET 24 OF 30

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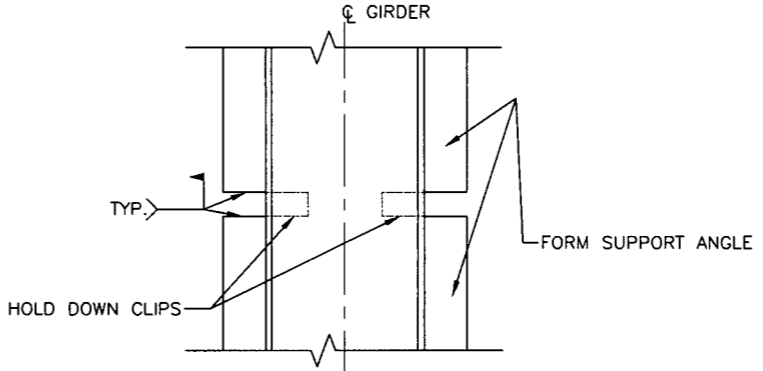


TYPICAL SECTION - SPAN 3
 SCALE: 1/2" = 1'-0"

- NOTES:**
1. THE TYPE F PARAPETS ARE PLACED WITHOUT VERTICAL JOINTS, BUT ARE VERTICALLY SCORED ALL AROUND WITH 1/4" EDGING TOOL. SEE DECK PLAN ON SHEET 23 FOR SPACING.
 2. BRACING THE DECK OVERHANG FORMS AGAINST THE EXTERIOR GIRDER MAY PERMIT THE FORMS TO SETTLE AS THE GIRDER DEFLECTS LATERALLY DURING THE CONCRETE PLACEMENT. THE CONTRACTOR SHALL PROVIDE SUFFICIENT BLOCKING TO PREVENT THE DEFLECTION.
 3. THE PARAPETS SHALL BE TRULY VERTICAL.
 4. FOR REINFORCING SCHEDULE, SEE SHEET 29.

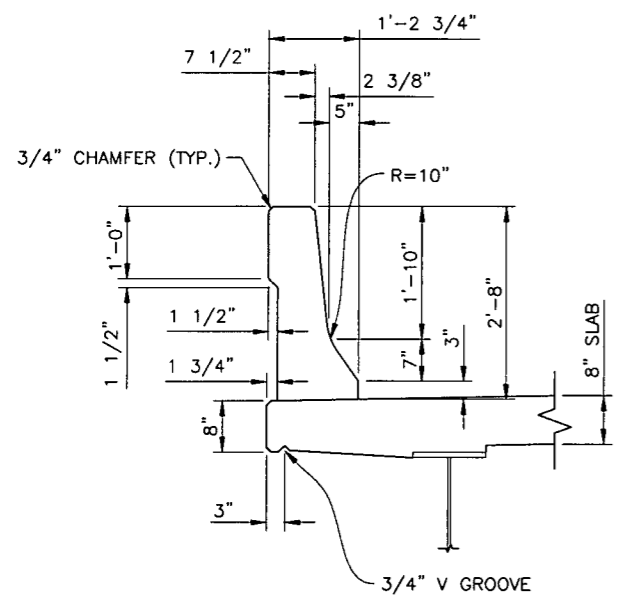


STAY IN PLACE FORM DETAIL
 SCALE: 1 1/2" = 1'-0"

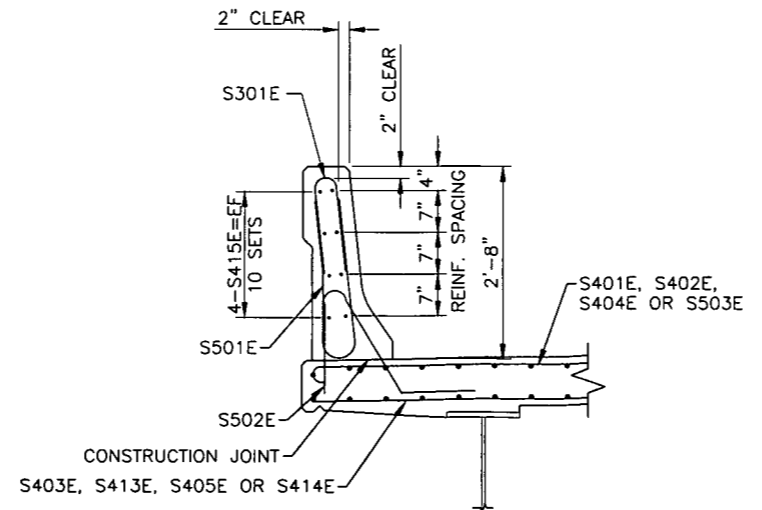


STAY IN PLACE FORM - PLAN VIEW
 SCALE: 3/4" = 1'-0"

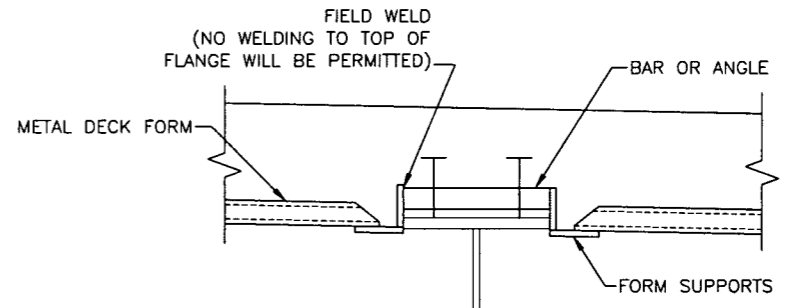
LAP TABLE	
#3	1'-11"
#4	2'-7"
#5	3'-3"



32" TYPE F PARAPET
 SCALE: 3/4" = 1'-0"



32" TYPE F PARAPET REINFORCING
 SCALE: 3/4" = 1'-0"



NOTE: NO WELDING TO TOP OF FLANGE WILL BE PERMITTED
STAY IN PLACE FORM - ELEVATION
 SCALE: 3/4" = 1'-0"



SUBMITTAL & REVISION RECORD

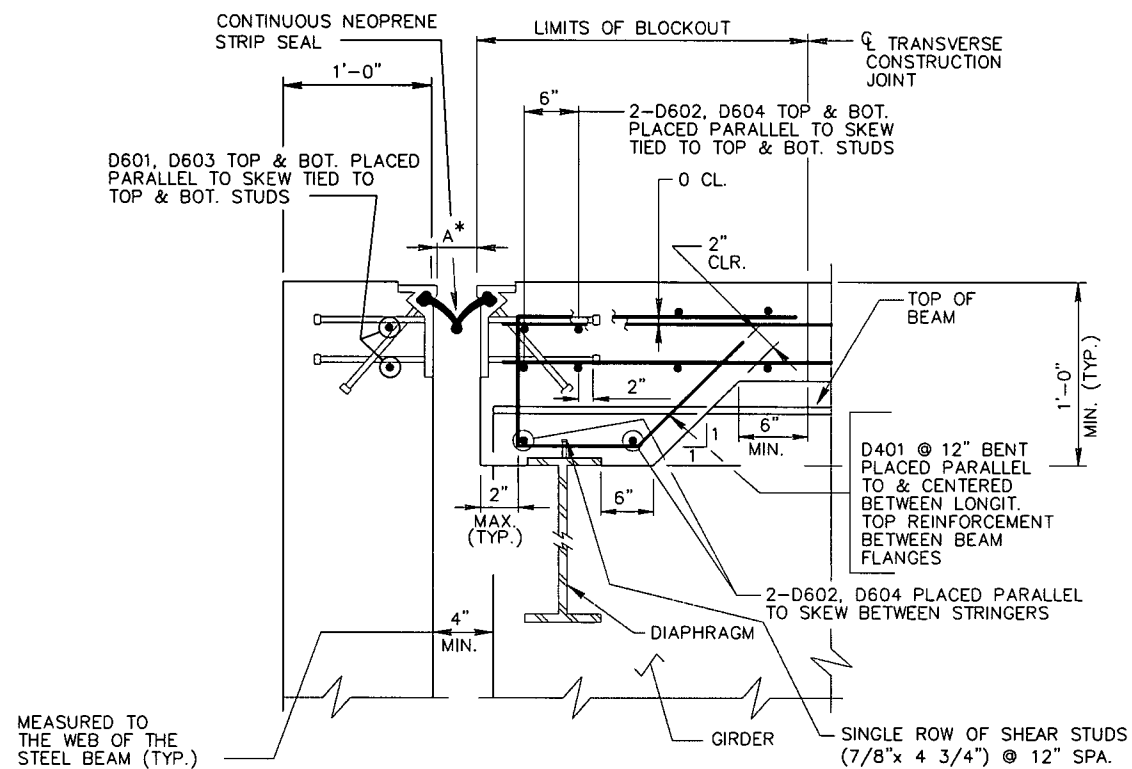
NO.	DATE	DESCRIPTION

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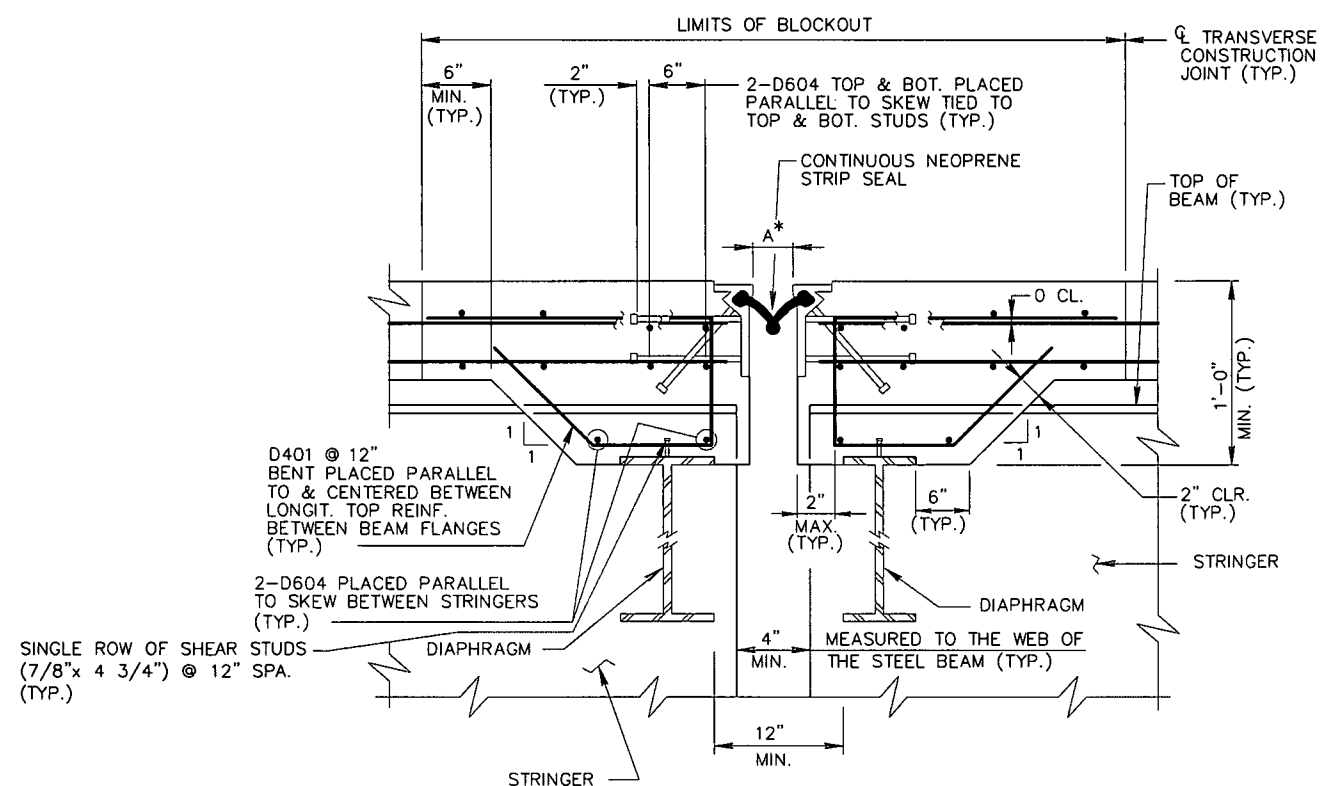
DOMINION TRANSMISSION, INC.
LL TONKIN COMPRESSOR
STATION BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA

DECK DETAILS

PWG
 DATE: JANUARY 2018
 DWE SCALE: AS SHOWN
 DRAWN BY: AS SHOWN
 CHECKED BY: AS SHOWN
 PROJECT NO: 171-6585T01
 APPROVED BY: GSJ



**TYPICAL SECTION AT ABUTMENT
FIXED & EXPANSION**
N.T.S.



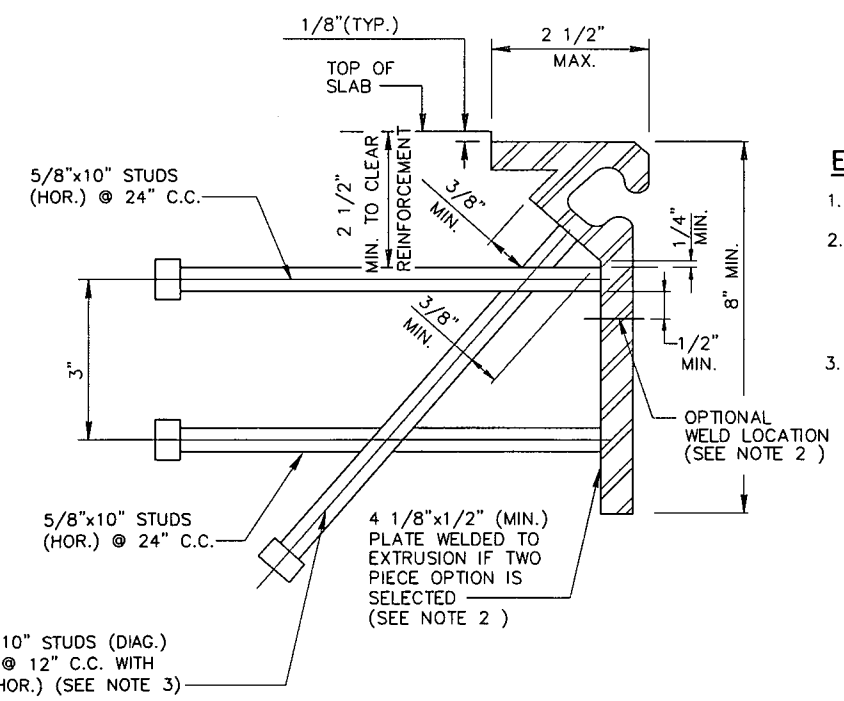
**TYPICAL SECTION AT PIER
FIXED & EXPANSION**
N.T.S.

TABLE
(INSTALLATION DIMENSION "A" @ VARIOUS TEMPERATURES)

LOCATION	TEMPERATURE															
	(°C)	-23	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	43
	(°F)	-10	-5	5	15	25	32	40	50	60	68	80	85	95	105	110

NOTE: TABLE TO BE SHOWN AND COMPLETED ON FABRICATORS SHOP DRAWINGS.

* - A, IS INSTALLATION WIDTH AS PER TABLE



EXTRUSION SCHEMATIC
N.T.S.

EXTRUSION NOTES:

1. EXTRUSION THICKNESS 1/2".
2. TWO PIECE MEMBER (EXTRUSION AND PLATE COMBINATION) IN LIEU OF ONE PIECE EXTRUSION IS PERMITTED. WELD IN ACCORDANCE WITH AASHTO/AWS SPECIFICATIONS. (FULL PENETRATION WELD AND N.D.T. REQUIRED)
3. STUD SPACING IS 12" MAX. UNLESS SPECIFIED ON AN APPROVED DETAIL.



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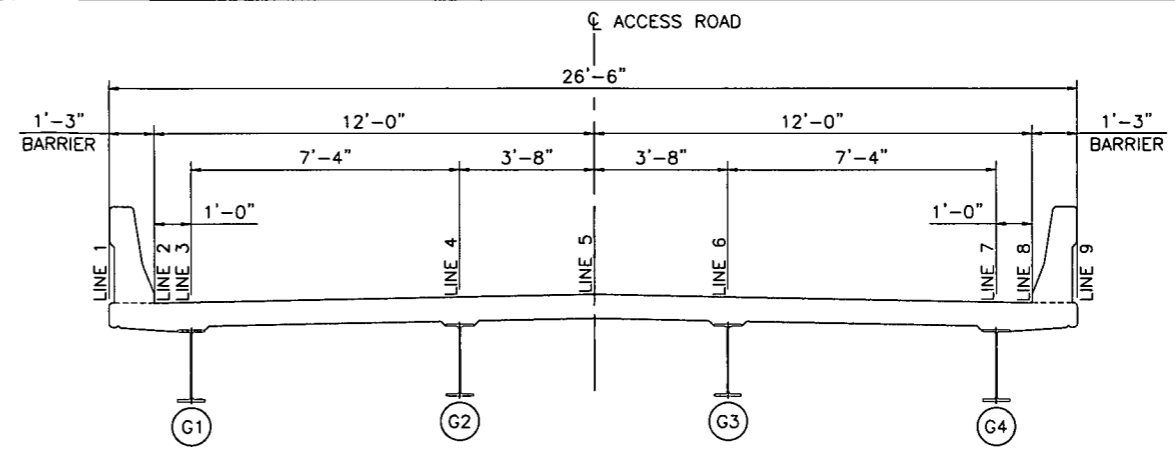
NEOPRENE STRIP SEAL DAM DETAILS

DATE: JANUARY 2018 DRAWN BY: PWC
N.T.S. CHECKED BY: DDE
PROJECT NO: 171-6685T01
APPROVED BY: GSL

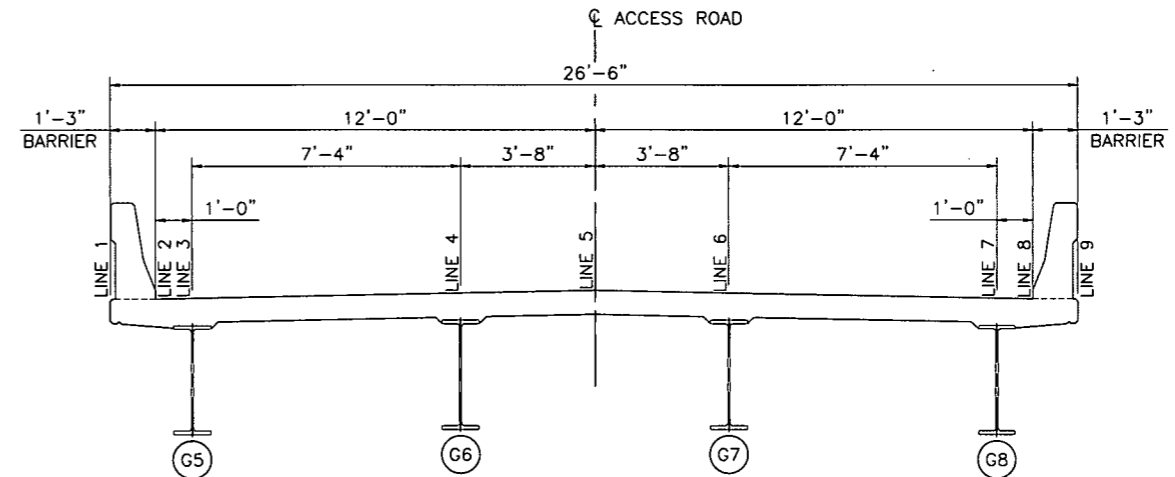
TABLE OF FINISHED DECK ELEVATIONS										
SPAN NO.	TENTH POINT	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9
SPAN 1	CL BRG ABUT. 1	779.58	779.60	779.62	779.77	779.84	779.77	779.62	779.60	779.58
	0.1	779.62	779.64	779.66	779.81	779.88	779.81	779.66	779.64	779.62
	0.2	779.65	779.68	779.70	779.85	779.92	779.85	779.70	779.68	779.65
	0.3	779.69	779.72	779.74	779.88	779.96	779.88	779.74	779.72	779.69
	0.4	779.73	779.75	779.77	779.92	779.99	779.92	779.77	779.75	779.73
	0.5	779.77	779.79	779.81	779.96	780.03	779.96	779.81	779.79	779.77
	0.6	779.80	779.83	779.85	780.00	780.07	780.00	779.85	779.83	779.80
	0.7	779.84	779.87	779.89	780.03	780.11	780.03	779.89	779.87	779.84
	0.8	779.88	779.90	779.92	780.07	780.14	780.07	779.92	779.90	779.88
	0.9	779.92	779.94	779.96	780.11	780.18	780.11	779.96	779.94	779.92
	CL BRG PIER 1	779.95	779.98	780.00	780.15	780.22	780.15	780.00	779.98	779.95

TABLE OF FINISHED DECK ELEVATIONS										
SPAN NO.	TENTH POINT	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9
SPAN 2	CL BRG PIER 1	779.93	779.96	779.98	780.12	780.20	780.12	779.98	779.96	779.93
	0.1	779.70	779.72	779.74	779.89	779.96	779.89	779.74	779.72	779.70
	0.2	779.47	779.49	779.51	779.66	779.73	779.66	779.51	779.49	779.47
	0.3	779.23	779.26	779.28	779.42	779.50	779.42	779.28	779.26	779.23
	0.4	779.00	779.02	779.04	779.19	779.26	779.19	779.04	779.02	779.00
	0.5	778.77	778.79	778.81	778.96	779.03	778.96	778.81	778.79	778.77
	0.6	778.53	778.56	778.58	778.73	778.80	778.73	778.58	778.56	778.53
	0.7	778.30	778.33	778.35	778.49	778.57	778.49	778.35	778.33	778.30
	0.8	778.07	778.09	778.11	778.26	778.33	778.26	778.11	778.09	778.07
	0.9	777.83	777.86	777.88	778.03	778.10	778.03	777.88	777.86	777.83
	CL BRG PIER 2	777.60	777.63	777.65	777.79	777.87	777.79	777.65	777.63	777.60

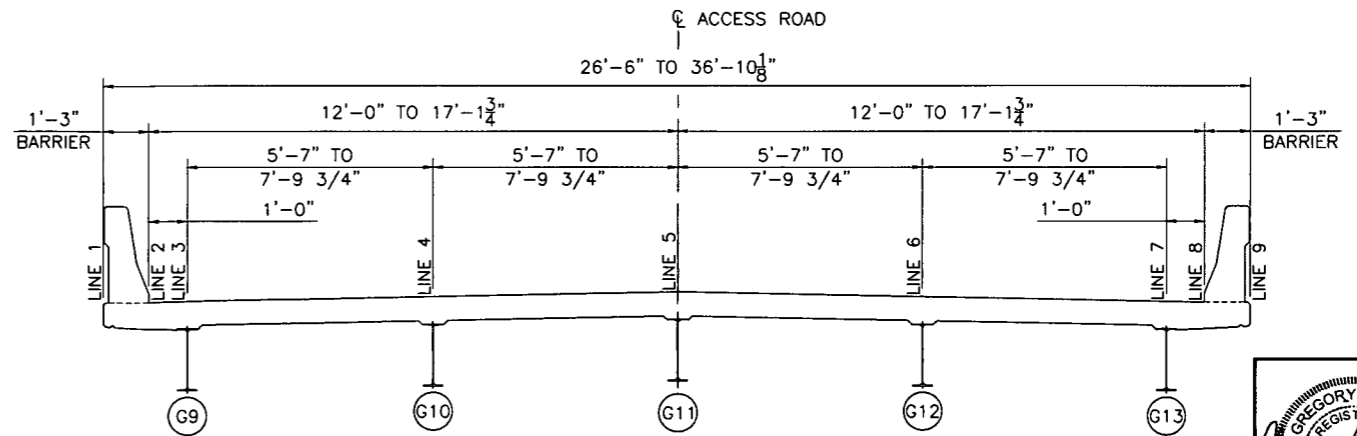
TABLE OF FINISHED DECK ELEVATIONS										
SPAN NO.	TENTH POINT	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9
SPAN 3	CL BRG PIER 2	777.49	777.52	777.53	777.65	777.76	777.65	777.53	777.52	777.49
	0.1	777.33	777.37	777.38	777.49	777.61	777.49	777.38	777.37	777.33
	0.2	777.18	777.21	777.22	777.34	777.46	777.34	777.22	777.21	777.18
	0.3	777.02	777.05	777.07	777.19	777.32	777.19	777.07	777.05	777.02
	0.4	776.86	776.90	776.91	777.04	777.17	777.04	776.91	776.90	776.86
	0.5	776.71	776.74	776.75	776.89	777.02	776.89	776.75	776.74	776.71
	0.6	776.55	776.58	776.60	776.74	776.88	776.74	776.60	776.58	776.55
	0.7	776.40	776.43	776.44	776.59	776.73	776.59	776.44	776.43	776.40
	0.8	776.24	776.27	776.29	776.43	776.58	776.43	776.29	776.27	776.24
	0.9	776.08	776.11	776.13	776.28	776.43	776.28	776.13	776.11	776.08
	CL BRG ABUT. 2	775.93	775.95	775.98	776.13	776.29	776.13	775.98	775.95	775.93



SPAN 1 - LINE LOCATIONS
SCALE: 3/8" = 1'-0"



SPAN 2 - LINE LOCATIONS
SCALE: 3/8" = 1'-0"



SPAN 3 - LINE LOCATIONS
SCALE: 3/8" = 1'-0"

- NOTES:**
- ELEVATIONS SHOWN IN THE TABLE ARE FINISHED DECK ELEVATIONS.
 - FINISHED DECK ELEVATIONS ARE GIVEN AT TENTH POINTS OF THE CONSTRUCTION CENTERLINE.
 - AFTER ALL GIRDEES HAVE BEEN ERECTED AND FALSEWORK REMOVED, THE CONTRACTOR SHALL TAKE ELEVATIONS ALONG THE TOPS OF GIRDEES AT POINTS WHERE THE ELEVATIONS ARE SHOWN IN THE TABLE. THE DIFFERENCE BETWEEN THESE ELEVATIONS AND THE GIVEN TOP OF SLAB ELEVATIONS PLUS THE AMOUNT OF DEFLECTION DUE TO DEAD LOAD OF CONCRETE WILL BE THE THICKNESS OF SLAB OVER THE GIRDEES AT THESE POINTS. THE MINIMUM THICKNESS MEASURED FROM THE TOP OF THE DECK SLAB TO THE TOP OF THE GIRDER WEB AT THE CENTERLINE OF THE GIRDER SHALL NOT BE LESS THAN AS FOLLOWS: 9 3/4" WITHIN SPAN 1, 10 1/4" WITHIN SPAN 2, AND 9 1/2" WITHIN SPAN 3. IF THE GIRDEES HAVE EXCESS CAMBER AND THIS MINIMUM CANNOT BE OBTAINED, THE GRADE LINE SHALL BE ADJUSTED TO OBTAIN THE MINIMUM SLAB THICKNESS.



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DODDRIDGE COUNTY, WEST VIRGINIA

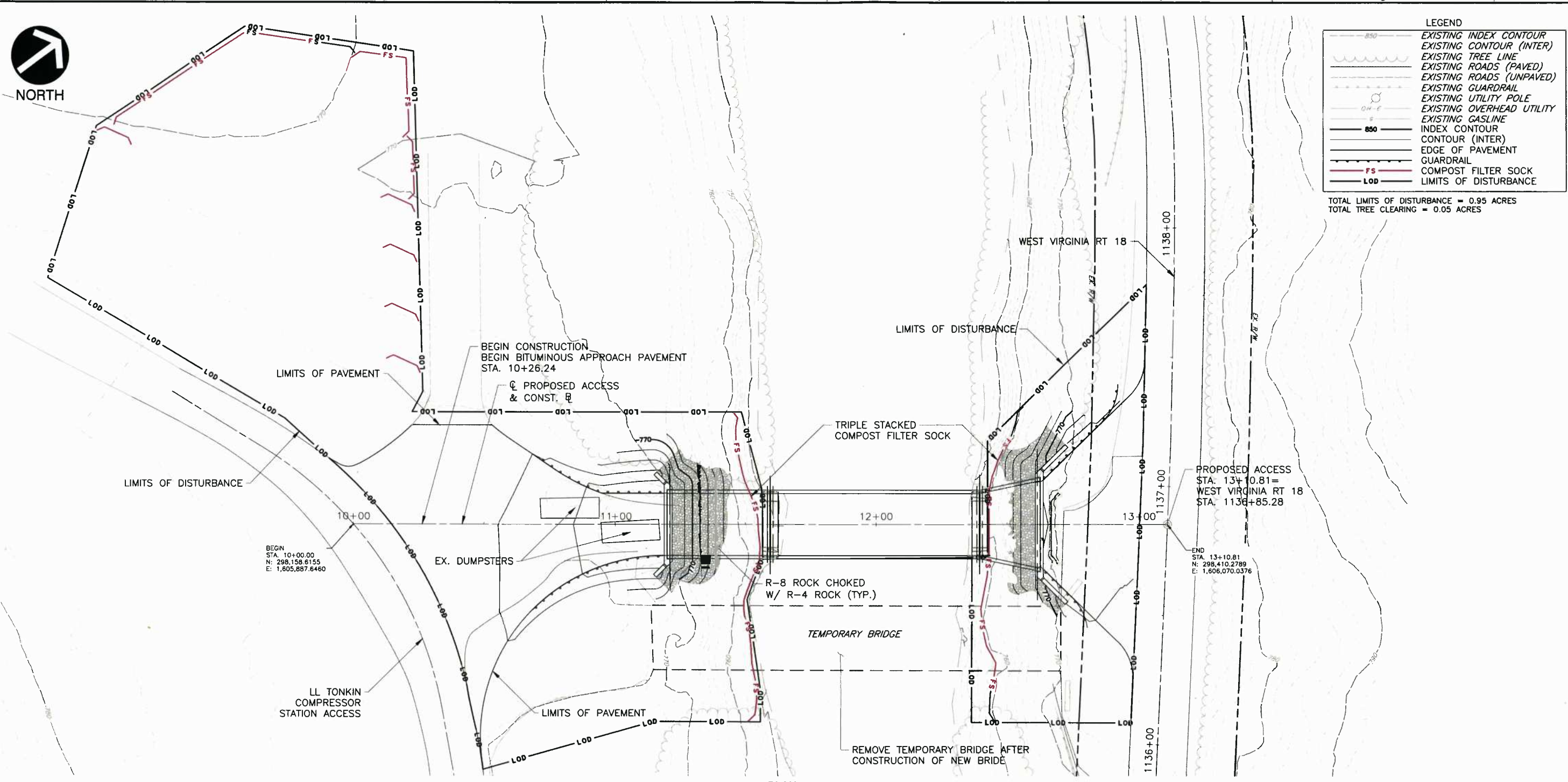
TOP OF DECK ELEVATIONS	
DATE:	JANUARY 2018
DWG SCALE:	AS SHOWN
PROJECT NO.:	171-6585701
APPROVED BY:	GSL



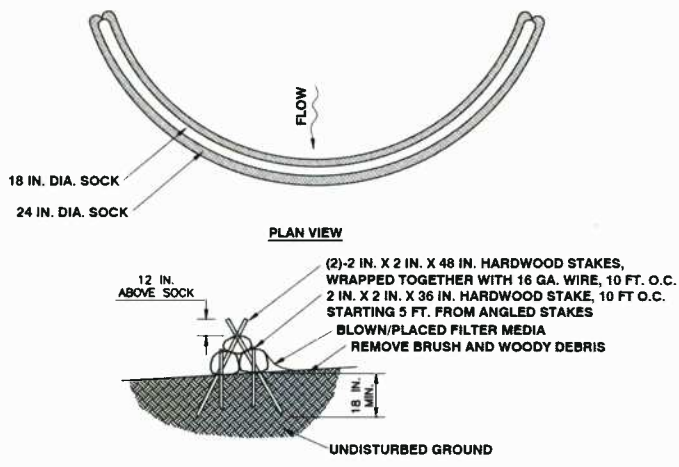
LEGEND

	EXISTING INDEX CONTOUR
	EXISTING CONTOUR (INTER)
	EXISTING TREE LINE
	EXISTING ROADS (PAVED)
	EXISTING ROADS (UNPAVED)
	EXISTING GUARDRAIL
	EXISTING UTILITY POLE
	EXISTING OVERHEAD UTILITY
	EXISTING GASLINE
	INDEX CONTOUR
	CONTOUR (INTER)
	EDGE OF PAVEMENT
	GUARDRAIL
	COMPOST FILTER SOCK
	LIMITS OF DISTURBANCE

TOTAL LIMITS OF DISTURBANCE = 0.95 ACRES
 TOTAL TREE CLEARING = 0.05 ACRES



PLAN
SCALE: 1"=20'



TRIPLE STACKED COMPOST SOCK SEDIMENT TRAP
NOT TO SCALE

DESIGN NOTES:

1. MINIMUM BASE WIDTH IS EQUAL TO THE HEIGHT.
2. SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
3. SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS SHOWN ON THE PLAN VIEW.
4. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

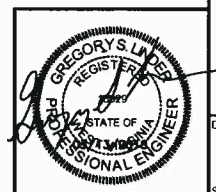
NOTES:

1. COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
2. COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SOCKS.
3. PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.
4. EACH 24" COMPOST FILTER SOCK AND THE 18" COMPOST FILTER SOCK SHALL BE BID AS ONE UNIT PER LINEAR FOOT.

REFERENCE
1. TOPOGRAPHIC INFORMATION BASED ON UAS LIDAR SCANNING PERFORMED BY CEC, INC. IN OCTOBER 2017.

EROSION AND SEDIMENT CONTROL PLAN

DATE	JANUARY 2018	DRAWN BY	PWC
DWG SCALE	AS SHOWN	CHECKED BY	DDE
PROJECT NO.	171-6585T01		
APPROVED BY:	GSL		



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1	01/20/18	ISSUED FOR PERMIT