

UPPER MERION TRANSPORTATION AUTHORITY
November 13, 2019
7:00 p.m.

REVISED AGENDA

1. PLEDGE OF ALLEGIANCE
2. ATTENDANCE
3. APPROVAL OF MEETING MINUTES: October 09, 2019
4. NEW BUSINESS
 - Resolution Re: Realen Development
5. EXECUTIVE SECRETARY'S REPORT
6. ENGINEER'S REPORT
7. SOLICITOR'S REPORT
8. DIRECTOR OF PUBLIC WORKS REPORT
9. FINANCIAL REPORT
10. REQUISITION APPROVALS: November 13, 2019 in the amount of \$88,528.44
11. ADJOURNMENT

**UPPER MERION TRANSPORTATION AUTHORITY
OCTOBER 9, 2019**

The members of the Upper Merion Transportation Authority met for their reorganization and regular meeting on Wednesday, October 9, 2019 in the Township Building, 175 West Valley Forge Road, King of Prussia, PA. The meeting was called to order at 7:01 p.m. and commenced with the pledge of allegiance.

ATTENDANCE

Tom Kohler, Chairman
Lou Zotti, Vice-Chairman
Carlton Stuart, Secretary
Marvin Meneeley, Treasurer
Andrew Bahmueller, Assistant Secretary/Treasurer
Anthony Hamaday, Executive Secretary
Nicholas Hiriak, Director of Finance
Greg Philips, BOS Liaison
Missy Morales, Staff Liaison
Geoff Hickman, Director of Public Works
Noah Marlier, Hamburg, Rubin, Mullin, Maxwell & Lupin, PC
Jack Smyth, Jr., P.E., Consulting Engineers, Boles Smyth Associates, Inc., (BSA)

MEETING MINUTES APPROVAL:

It was moved by Mr. Meneeley, seconded by Mr. Stuart, all voting "Aye" to approve the meeting minutes of September 11, 2019 as submitted. None opposed. Motion approved 5-0.

NEW BUSINESS

Mr. Bahmueller asked at what point does the Authority start looking beyond the current projects and Mr. Kohler and Mr. Smyth responded the 209 Study. First to identify the existing intersections that need to be studied, do a land use report area, evaluate those intersections as they stand now, forecast through planning the expected growth, and then to prioritize the projects. Mr. Kohler noted the 209 Study is recommended every so many years and stated it is a good idea to reassess the projects.

Mr. Kohler asked for the status of the RFP and Mr. Smyth responded the RFP can be ready for the next meeting.

EXECUTIVE SECRETARY'S REPORT-

Mr. Hamaday reported a meeting with PennDOT was held regarding a status update. PennDOT has a separate agreement with The Villages and they are looking for the Township's help and vice versa to make sure we secure any remaining funds that we believe The Villages or Realen, in this case, owes specifically for that left turn lane for the Turn Pike. Mr. Marlier stated PennDOT will be communicating with Realen ensuring the Township, the Authority receives as much funding as Realen is required to give.

ENGINEER'S REPORT

Relocated North Gulph Road, SR 0023 Section 2NG (Including Granite Block Restoration at Valley Forge Monument)

Mr. Smyth stated the next Status Meeting for this project is scheduled for October 17, 2019. BSA coordinated with the National Park Service (NPS) to advance concurrence letters for two PennDOT processes to obtain Bid Package approval. The NPS drafted a letter for signature by Northeast Regional (NER) Director to accept the changes in the project since the original environmental clearance approval (2007) to allow for the updated concurrence. A second Letter of Consent from the NPS to FHWA was prepared to initiate the process for the Federal Land Transfer required to obtain Right-of-Way (ROW) Certification for the project. In regards to the masonry culvert talked about in the last meeting, it turned out an emergency repair needed to be made to that culvert which is right at the Route 23 and County Line Road intersection. In the process of resubmitting to PennDOT a memorandum was submitted on October 3, 2019 stated that even though the culvert was designated as a minor contributing feature to the National Park, the work that is being done will not have an adverse effect. The landscape architects are revising their plans. It was noted since this project is with the National Park Service, the landscape architects were involved early on. BSA submitted the draft Categorical Exclusion Evaluation (CEE) and the team will receive updates on the review at the October 17th status meeting. Coordination with the NPS to determine the needs for the quantity of new granite curb and blocks for the Gulph Road Restoration Project. BSA is advancing the Traffic Control Plan for the Gulph Road Restoration Project in consultation with the NPS.

SR 0023, Section TCB – PA 23 Trout Creek Bridge

Mr. Smyth stated the Safety Review which is the preliminary engineering milestone touch point as well as coordinating with PennDOT to get them the information they need because they are in the process and have put out a planned project advertisement on their system. Once it is put out to PennDOT, they will take over the project completely, fees included. It was noted that one of the biggest things for this project is the utility relocations.

Church Road Bridge over SEPTA Route 100 Line

Mr. Smyth stated the ROW plan is ready for signature. The ROW plan is only for the two temporary construction easements that were obtained for the project from Mastercola and SEPTA. BSA has received the outstanding 4181-UC Forms from affected utility companies to complete the Utility Clearance (Form D-419). Mr. Hamaday signed the Utility Clearance (Form D-419). BSA submitted the Pre-Plans, Specifications & Estimate (Pre-PS&E) which is currently under review at PennDOT. The final items are the Traffic Control Plan is outstanding as an approval, the Categorical Exclusion Reevaluation is in environmental manager review and Gannett Fleming will respond directly to them and the Final Structure Plans. PennDOT will not grant Railroad Clearance without the executed agreement and SEPTA stated that the agreement requires SEPTA Board approval. The project team is pursuing a "Letter of Intent" to see if Railroad Clearance can be obtained while awaiting SEPTA Board Approval of the agreement. Solicitor will be following up.

Prince Frederick Extension (PFE)

Continued progression through the land development process on the Township side and on the Chester Valley Trail on the Montgomery County side. Both sides are moving forward. BSA has been continually received requests certain things as it relates to the signalized intersection, making sure they can maintain access during construction, and grading plans. Continued coordination with the Glasgow Tract development team.

Potential New PA Turnpike Interchange at Henderson Road

Continued coordination on the updated interchange design so as not to preclude the SEPTA Route 100 Line. DVRPC is finishing up their No Build projections for Henderson Road and starting to get into the Build projections for Potential Henderson Road Interchange.

SOLICITOR’S REPORT-

A meeting was held with Realen a few weeks ago regarding the Traffic Impact Fees for some of the specific properties they want to close out. These properties are very similar to the JBG Properties only, JBG paid Traffic Impact Fees and these properties have not. Mr. Marlier stated he would contact Mr. Rob Loeper and Mr. Smyth to possibly have a resolution ready for next month.

FINANCIAL REPORT

Mr. Hiriak reported interest earnings for the month. The PIB Loan is paid off on August 29, 2022 and the remaining balance is about \$1.15 million.

REQUISITIONS – October 9, 2019

Boles, Smyth Assoc., Inc.	\$ 6,468.06	Relocation of North Gulph Road (SR 3039) for Period 8-1-19 thru 8-31-19 INVOICE #69
Boles, Smyth Assoc., Inc.	\$ 1,286.11	Trout Creek Bridge Replacement Project for Period 8-1-19 thru 8-31-19 INVOICE #42
TOTAL:	\$7,754.17	

Authority Action:

It was moved by Mr. Zotti, seconded by Mr. Stuart, all voting “Aye” to approve the October 9, 2019 requisitions in the amount of \$7,754.17. None opposed. Motion approved 5-0.

ADDITIONAL BUSINESS - None.

ADJOURNMENT

There being no further business to come before the Authority, the meeting adjourned at 7:50 p.m.

THOMAS KOHLER
CHAIRMAN

mm
Minutes Approved:
Minutes Entered:

**UPPER MERION TRANSPORTATION AUTHORITY
REQUISITIONS FOR NOVEMBER 13, 2019**

PAYEE	AMOUNT	DESCRIPTION
Boles, Smyth Assoc.	\$ 5,614.26	Relocation of North Gulph Road (SR 3039) for Period 9-1-19 thru 9-30-2019 Invoice #70
Boles, Smyth Assoc.	\$ 903.27	Trout Creek Bridge Period 9-1-19 thru 9-30-2019 Invoice #43
Boles, Smyth Assoc.	\$ 30,811.65	Prince Frederick Extension Period 4-1-19 thru 6-30-2019 Invoice #8
Boles, Smyth Assoc.	\$ 29,016.76	Consulting Services Period 4-1-19 thru 9-30-2019 Invoice #103
Upper Merion Township	\$ 18,771.00	Reimbursement to Township for expenses incurred for 2018
Hamburg Rubin et al	\$ 476.00	General Representation Invoice 271236 Thru September 30, 2019
Hamburg Rubin et al	\$ 574.00	Realen Traffic Impact Fees Invoice 271237 Thru September 30, 2019
Hamburg Rubin et al	\$ 448.00	Church Road Bridge Invoice 271238 Thru September 30, 2019
Hamburg Rubin et al	\$ 476.00	General Representation Invoice 272289 Thru October 31, 2019
Hamburg Rubin et al	\$ 910.00	Realen Traffic Impact Fees Invoice 272290

Thru October 31, 2019

Hamburg Rubin et al \$ 406.00

Church Road Bridge
Invoice 272291
Thru October 31, 2019

Rudoplh Clarke LLC \$ 121.50

Church Road Bridge
Invoice 73649
Thru September 30, 2019

TOTAL: \$ 88,528.44



Boles, Smyth Associates, Inc.
Consulting Civil Engineers Since 1972

October 28, 2019

Upper Merion Transportation Authority
175 W. Valley Forge Road
King of Prussia, PA 19406

Attn: Mr. Nick Hiriak

Re: Local Agreement No. 164228
Montgomery County
Relocation of North Gulph Road (SR 3039)
Upper Merion Township

Sub: Transmittal of Invoice #70
Tracking No. 2019-10-196-61.03

Dear Nick:

We are herewith transmitting one (1) copy of Invoice #70 for the Relocation of North Gulph Road (SR 3039) in Upper Merion Township for work performed for the period September 1, 2019 through September 30, 2019.

If you have any questions about this submission, please contact me. Thank you.

Very truly yours,

A handwritten signature in cursive script that reads "Michael C. Boles".

Michael C. Boles

MCB:slg

Enclosures

ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No. 164228-A
 District 6-0 County Montgomery
 S. R. 0023 Section 2NG
 Estimate No. 70
 Estimate Period From 9/1/19 To 9/30/19
 MPMS NO. 66952 2019-10-196-61.03

5-00422-04-2NG-064-313
 State Project No.
0020201-LY40
 Federal Project No.
December 31, 2020
 EXPIRATION DATE - THIS PART

AGREEMENT AMOUNTS	AMOUNTS EARNED		AMOUNTS DUE
1. DIRECT/INDIRECT PAYROLL MAXIMUM \$780,815.87 75% OF MAXIMUM \$585,611.90	DIRECT/INDIRECT TO DATE	\$395,743.10	
	DIRECT/INDIRECT PREVIOUS	\$390,759.98	
	PAYROLL BILLED THIS ESTIMATE	\$2,258.76	
	OVERHEAD 120.613%	\$2,724.36	
	AMOUNT DUE		\$4,983.12
2. DIRECT COSTS OTHER THAN PAYROLL MAXIMUM \$9,430.00 75% OF MAXIMUM \$7,072.50	TO DATE	\$4,707.00	
	PREVIOUS	\$4,707.00	
	AMOUNT DUE		\$0.00
3. DIRECT COST BY OTHERS MAXIMUM \$358,012.36 75% OF MAXIMUM \$268,509.27	TO DATE	\$219,208.14	
	PREVIOUS	\$219,208.14	
	AMOUNT DUE		\$0.00
4. NET FEE \$78,891.61	NET FEE EARNED TO DATE 45.8% OF \$78,891.61	\$36,132.36	
	PREVIOUS	\$35,501.22	
	AMOUNT DUE		\$631.14
5.	TO DATE		
	PREVIOUS		
	AMOUNT DUE		
TOTAL (THIS PART) \$1,227,149.84	MAXIMUM AGREEMENT AMOUNT \$1,227,149.84		TOTAL THIS INVOICE \$5,614.26
	TOTAL INVOICES TO DATE (THIS PART) \$655,790.60		

Boles, Smyth Associates, Inc.
 2400 Chestnut Street
 Philadelphia, PA 19103
 SAP VENDOR NO. 120823

I certify that the above invoice represents services rendered on this Project and is true and correct, and all expenditures were incurred under a fully executed contract.

Michael C. Boles

Federal ID No: 23-1863016

10/28/19

Vice-President

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No: 164228-A

PART I

ITEM NO.	DESCRIPTION OF WORK	% OF TOTAL NET FEE	% ITEM COMPLETED LAST REPORT	% ITEM COMPLETED TO DATE	% OF TOTAL NET FEE TO DATE
1.1	Project Management / Administration	2.8%	60.0%	61.3%	1.7%
1.3	Public/Agency Involvement	3.5%	62.0%	62.0%	2.2%
4, 2.10.991A	Rightsizing Design	11.3%	96.3%	96.3%	10.9%
8.7/4.10	Safety Review/Design Field View	10.3%	78.4%	78.4%	8.0%
9	Pre-Final Utilities and Right-of-Way	4.6%	100.0%	100.0%	4.6%
10.1/10.2	CEE Reevaluation & Final Roadway Design	15.2%	56.3%	61.3%	9.3%
10.2.1/2, 4.2, 4	Final Drainage/Pavement Design, Specs. & X Sections	14.4%	19.9%	19.9%	2.9%
10.5	Final Right-of-Way Plan	4.6%	74.4%	74.4%	3.4%
10.8.4	Utility Clearance (D-419)	2.5%	79.4%	79.4%	2.0%
10.14/15	Traffic Control Plan & Traffic Signal Plans	8.3%	8.3%	8.3%	0.7%
10.25/26/27	E&S Plan/NPDES Permit & SWM Plan	12.3%	0.7%	0.7%	0.1%
10.28/29	Final Plans Check/FDOM & Assemble Bid Documents	8.6%	0.0%	0.0%	0.0%
11.1	Post Design Activities	1.6%	0.0%	0.0%	0.0%
		100.0%		N/A	45.8%

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No 164228-A

PART I

DESCRIPTION OF WORK	ESTIMATED COST	BILLED TO DATE	BILLED THIS ESTIMATE
DIRECT COSTS OTHER THAN PAYROLL			
Reproduction	\$4,430.00	\$4,707.00	\$0.00
Infiltration Testing (PDA)	\$5,000.00	\$0.00	\$0.00
TOTAL	\$9,430.00	\$4,707.00	\$0.00
DIRECT COST OF SERVICES BY OTHERS			
Subconsultants			
AECOM (Formerly URS CORP. [URS])	\$93,511.51	\$82,664.14	\$0.00
PAQ, Inc.	\$63,287.51	\$14,644.79	\$0.00
CHRS, Inc.	\$72,138.87	\$40,777.05	\$0.00
Ground Reconsidered, Inc.	\$60,359.83	\$23,183.52	\$0.00
Gannett Fleming	\$68,714.64	\$57,938.64	\$0.00
TOTAL	\$358,012.36	\$219,208.14	\$0.00

**PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT**

DIRECT PAYROLL TABULATION

Agreement No. 164238-A

PART 1

PERIOD: FROM 9/1/19 TO 9/30/19

EMPLOYEE	CLASSIFICATION	DESCRIPTION OF WORK ITEMS													TOTAL HOURS THIS PERIOD	ACTUAL HOURLY RATE	DATE APPROVED BY DEPARTMENT	PAYROLL THIS PERIOD	
		Project Management / Administration	Public/Agency Involvement	Rightsizing Design	Safety Review/Design Field View	Pre-Final Utilities and Right-of-Way	CEE Reevaluation & Final Roadway Design	Final Drainage/Pavement Design, Draft Special Provisions & Cross Sections	Final Right-of-Way Plan	Utility Clearance (D-419)	Traffic Control Plan & Traffic Signal Plans	E&S Plan/NPDES Permit & Stormwater Management Plan	Final Plans Check/FDOM & Assemble Bid Package Documents	Post Design Activities					
T. F. Boles	Sr. Proj. Engineer	1.1	1.3	4.2/10/99/1A	8/7/4.10	9	10.1/10/2	10.2/12.42	10.5	10.8.4	10.14/15	10.25/26/27	10.28/29	11.1	0.0	\$62.70	7/1/19	\$0.00	
M. C. Boles	Eng. Coordinator	3.5					10.0								13.5	\$60.95	7/1/19	\$822.83	
B. F. Hensyl	Eng. Technician						6.0								6.0	\$18.00	7/1/19	\$108.00	
J. Smyth, Jr.	Project Engineer														0.0	\$54.65	7/1/19	\$0.00	
D. Piet	Eng. Technician														0.0	\$38.05	7/1/19	\$0.00	
E. V. Jacinto	Str. Technician						1.0								1.0	\$37.05	7/1/19	\$37.05	
J. B. Singer	Eng. Technician						10.0								10.0	\$18.00	7/1/19	\$180.00	
V. R. Muthukpally	Eng. Technician						41.0								41.0	\$25.75	7/1/19	\$1,055.75	
C. J. Zebley V	Civil Engineer						1.5								1.5	\$36.75	2/16/19	\$55.13	
TOTAL HOURS THIS ESTIMATE		3.5	0.0	0.0	0.0	0.0	69.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.0				
TOTAL HOURS PREVIOUS ESTIMATE		156.0	204.5	1011.5	748.5	463.5	794.5	266.5	316.0	186.5	64.0	8.0	0.0	0.0	4219.5				
TOTAL HOURS TO DATE		159.5	204.5	1011.5	748.5	463.5	864.0	266.5	316.0	186.5	64.0	8.0	0.0	0.0	4292.5				
CONTRACT TOTAL HOURS		260.0	330.0	1050.0	955.0	430.0	1410.0	1340.0	425.0	235.0	770.0	1145.0	800.0	150.0	9300.0				
% HOURS USED TO DATE		61.3	62.0	96.3	78.4	100.0	61.3	19.9	74.4	79.4	8.3	0.7	0.0	0.0	46.2				



Boles, Smyth Associates, Inc.
Consulting Civil Engineers Since 1972

October 28, 2019

Upper Merion Transportation Authority
175 W. Valley Forge Road
King of Prussia, PA 19406

Attn: Mr. Nick Hiriak

Ref: SR 0023, Section TCB
Preliminary & Environmental Phase Services
Upper Merion Township, Montgomery County

Sub: Transmittal of Invoice #43
BSA# 2019-10-195-69.09

Dear Nick:

We are herewith transmitting one (1) copy of Invoice #43 for the SR 0023, Section TCB – Trout Creek Bridge Replacement Project for work performed for the period September 1, 2019 through September 30, 2019.

If you have any questions about this submission, please contact me.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Michael C. Boles".

Michael C. Boles

MCB:slg

Enclosures

69.09_SR0023-SectionTCBAdmin\NV#43Oct282019

ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No. _____
 District 6-0 County Montgomery
 S. R. 0023 Section TCB
 Estimate No. 43
 Estimate Period From 9/1/19 To 9/30/19

State Project No. _____

Federal Project No. _____

MPMS NO. 48172 Invoice # 2019-10-195-69.09

EXPIRATION DATE - THIS PART _____

AGREEMENT AMOUNTS	AMOUNTS EARNED		AMOUNTS DUE
1. DIRECT/INDIRECT PAYROLL MAXIMUM \$362,433.65 75% OF MAXIMUM \$271,825.24	DIRECT/INDIRECT TO DATE	\$343,323.77	
	DIRECT/INDIRECT PREVIOUS	\$342,449.75	
	PAYROLL BILLED THIS ESTIMATE	\$396.18	
	OVERHEAD 120.613%	\$477.84	
	AMOUNT DUE		\$874.02
2. DIRECT COSTS OTHER THAN PAYROLL MAXIMUM \$5,550.00 75% OF MAXIMUM \$4,162.50	TO DATE	\$4,081.50	
	PREVIOUS	\$4,081.50	
	AMOUNT DUE		
3. DIRECT COST BY OTHERS MAXIMUM \$165,710.58 75% OF MAXIMUM \$124,282.94	TO DATE	\$37,120.67	
	PREVIOUS	\$37,120.67	
	AMOUNT DUE		
4. NET FEE \$14,626.79	NET FEE EARNED TO DATE 85.0% OF \$14,626.79	\$12,432.77	
	PREVIOUS	\$12,403.52	
	AMOUNT DUE		
5.	TO DATE		
	PREVIOUS		
	AMOUNT DUE		
TOTAL (THIS PART) \$548,321.02	MAXIMUM AGREEMENT AMOUNT \$548,321.02		TOTAL THIS INVOICE \$903.27
	TOTAL INVOICES TO DATE (THIS PART) \$396,958.71		

Boles, Smyth Associates, Inc.
 2400 Chestnut Street
 Philadelphia, PA 19103

SAP VENDOR NO. 120823

I certify that the above invoice represents services rendered on this Project and is true and correct, and all expenditures were incurred under a fully executed contract.

Michael C. Boles

Federal ID No: 23-1863016

Project Manager

10/28/19

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No: _____

PART _____ I _____

ITEM NO.	DESCRIPTION OF WORK	% OF TOTAL NET FEE	% ITEM COMPLETED LAST REPORT	% ITEM COMPLETED TO DATE	% OF TOTAL NET FEE TO DATE
1	Project Management / Administration	3.0%	100.0%	100.0%	3.0%
2	Preliminary Engineering (Through Safety Review & DFV)	22.1%	100.0%	100.0%	22.1%
3	Environmental Clearance	8.6%	100.0%	100.0%	8.6%
4	Structural / Geotechnical Engineering Coordination	19.2%	100.0%	100.0%	19.2%
5	Preliminary Right-of-Way Plans	9.4%	76.8%	76.8%	7.2%
6	Preliminary Traffic Control Plans	12.8%	71.1%	72.4%	9.3%
7	Preliminary Traffic Signal, Pavement Marking and Signing Plans	8.8%	60.3%	60.3%	5.3%
8	Preliminary Utility Coordination / Plans	6.9%	100.0%	100.0%	6.9%
9	Public Involvement	4.7%	63.8%	63.8%	3.0%
10	Norfolk & Southern Railroad Coordination	4.4%	9.4%	9.4%	0.4%
		100.0%	N/A	N/A	85.0%

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT

Agreement No: _____

PART I

DESCRIPTION OF WORK	ESTIMATED COST	BILLED TO DATE	BILLED THIS ESTIMATE
DIRECT COSTS OTHER THAN PAYROLL			
Reproduction	\$2,175.00	\$2,316.50	\$0.00
Traffic Counts	\$3,375.00	\$1,765.00	\$0.00
TOTAL	\$5,550.00	\$4,081.50	\$0.00
DIRECT COST OF SERVICES BY OTHERS			
Subconsultants			
PAQ, Inc.	\$13,084.56	\$13,084.56	\$0.00
CHRS, Inc.	\$16,891.06	\$14,958.42	\$0.00
RK&K	\$67,500.00	\$9,077.69	\$0.00
PennDOT Subsurface Program *(Estimated)	\$68,234.96	\$0.00	\$0.00
TOTAL	\$165,710.58	\$37,120.67	\$0.00

Agreement No. _____

**PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ESTIMATED PROGRESS REPORT - COST PLUS FIXED FEE AGREEMENT
DIRECT PAYROLL TABULATION**

PART 1

PERIOD: FROM 9/1/19 TO 9/30/19

EMPLOYEE	CLASSIFICATION
J. Smyth, Jr.	Sr. Civil Engineer
M. C. Boles	Eng. Coord.
P. J. Boles	Eng. Technician
D. Piet	Eng. Technician
C. J. Zebley	Civil Engineer
V. R. Mochukpally	Trans. Engineer
R. G. Wagenmann	Trans. Specialist
W. Au	Structural Engineer
E. Jacinto	Structural Designer
B.F. Hensyl	Eng. Technician
TOTAL HOURS THIS ESTIMATE	
TOTAL HOURS PREVIOUS ESTIMATE	
TOTAL HOURS TO DATE	
CONTRACT TOTAL HOURS	
% HOURS USED TO DATE	

EMPLOYEE	DESCRIPTION OF WORK ITEMS													
	1	2	3	4	5	6	7	8	9	10				
	Project Management / Administration	Preliminary Engineering (Through Safety Review & Design Field View)	Environmental Clearance	Structural /Hydraulic & Hydrologic (H&H)/ Geotechnical Engineering Coordination	Preliminary Right-of-Way Plans	Preliminary Traffic Control Plan	Preliminary Traffic Signal, Pavement Marking and Signing Plan	Preliminary Utility Coordination / Plans	Public Involvement	Norfolk & Southern Railroad Coordination				
J. Smyth, Jr.						6.5								
M. C. Boles														
P. J. Boles														
D. Piet														
C. J. Zebley														
V. R. Mochukpally														
R. G. Wagenmann														
W. Au														
E. Jacinto														
B.F. Hensyl														
	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	0.0				
	123.5	988.0	356.0	1044.5	288.0	362.5	211.0	317.0	118.0	16.5				
	120.0	880.0	340.0	765.0	375.0	510.0	350.0	275.0	185.0	175.0				
	100.0	100.0	100.0	100.0	76.8	72.4	60.3	100.0	63.8	9.4				

EMPLOYEE	TOTAL HOURS THIS PERIOD	ACTUAL HOURLY RATE	DATE APPROVED BY DEPARTMENT	PAYROLL THIS PERIOD
J. Smyth, Jr.	0.0	\$54.65	7/1/19	\$0.00
M. C. Boles	6.5	\$60.95	7/1/19	\$396.18
P. J. Boles	0.0	\$40.90	7/1/19	\$0.00
D. Piet	0.0	\$38.05	7/1/19	\$0.00
C. J. Zebley	0.0	\$36.75	7/1/19	\$0.00
V. R. Mochukpally	0.0	\$25.75	7/1/19	\$0.00
R. G. Wagenmann	0.0	\$60.80	7/1/19	\$0.00
W. Au	0.0	\$55.60	7/1/19	\$0.00
E. Jacinto	0.0	\$37.05	7/1/19	\$0.00
B.F. Hensyl	0.0	\$18.00	4/1/19	\$0.00
	6.5		TOTAL THIS PERIOD	\$396.18
	3825.0			
	3831.5			
	3975.0			
	96.4			



Boles, Smyth Associates, Inc.
Consulting Civil Engineers Since 1972

October 31, 2019

Upper Merion Transportation Authority
175 West Valley Forge Road
King of Prussia, PA 19406

Attn: Mr. Anthony Hamaday
Executive Director

Sub: Prince Frederick Extension, Planning Study

Ref: Invoice #8 for April through June, 2019 Services

Dear Mr. Hamaday:

We are transmitting Invoice #8 with supporting documentation for the above referenced project in the total amount of **\$30,811.65**. Below is a summary of work activities for each firm.

Prime Consultant: Boles, Smyth Associates
Billing Period: April 1, 2019 through June 30, 2019
Billing Amount: \$30,811.65
Expenses: \$0

The following is a list of tasks performed by Boles, Smyth:

Task 1 - Project Management and Base Mapping

- a) Project Management/Administration to coordinate schedule and project deliverables.

Task 2 - Stakeholder Coordination and Agency Involvement Determination

- a) Continued coordinated with Montgomery County Planning Commission for review related to Chester Valley Trail Extension project design at the Saulin Boulevard intersection.
- b) Continued extensive coordination effort with development team for the Glasgow Tract which included multiple email and phone meetings to provide design related information.
- c) Met on May 23, 2019 with representatives from the development team and Montgomery County Planning Commission regarding the Prince Frederick Extension design, schedule and relationship to the Chester Valley Trail Extension project.
- d) Continued coordination with the Delaware Valley Regional Planning Commission to obtain Existing AM/PM peak hour traffic volumes for the three intersections associated with the Prince Frederick Extension.
- e) Reviewed the traffic projections that may be associated with construction of the Prince Frederick Extension and the new development for DVRPC's use in preparing No Build 2045 peak hour traffic volumes on the Phase 2 PA Turnpike at Henderson Road study.
- f) Prepared additional follow-up material for DVRPC to document intersection lane configuration assumptions associated with the Prince Frederick Extension for their use in preparing the traffic forecasting model.

Task 3 - Recommended Concept Engineering Roadway Plans

- a) Continued coordination with the developer and revised the Prince Frederick Boulevard design for development of Glasgow Tract. This includes the updated design for the 90 degree turn area, as well as the alignment of the boulevard as it approaches the US 202 & Saulin Boulevard intersection which will be re-aligned as part of the Chester Valley Trail Extension project.
- b) Revised alignment at the US 202 intersection to accommodate WB-62 truck.
- c) Coordinated with PennDOT Traffic Unit for design of Prince Frederick Boulevard at US 202. Revised design to provide a new left turn lane for the Saulin Boulevard approach.
- d) Began to update Prince Frederick Boulevard design to add a right turn lane at US 202 to reduce the distance between turning vehicles and the Chester Valley Trail.
- e) Continued to update the Rossi Tract design to reflect the revised concept through the Glasgow Tract.

Task 4 - Preliminary Drainage Design

- a) No activities this period.

Task 5 - Preliminary Traffic Control Stages, Traffic Signal and Pavement Marking & Signing

- a) Continued to revise the pavement markings to reflect the revised concept through the Glasgow Tract.
- b) Updated Synchro files for the traffic projections we had developed and transmitted to DVRPC for inclusion with our transmittal.
- c) Began to revise the Traffic Signal Plan and Signal Permit Plan for the US 202 & Saulin/Prince Frederick Boulevard intersection as a result of design revisions noted in Task 3.
- d) Coordinated with development team Engineer for the required Rapid Flashing Beacon to be installed at the Chester Valley Trail.

Task 6 - Utility Coordination, Verification and Relocation Requirements

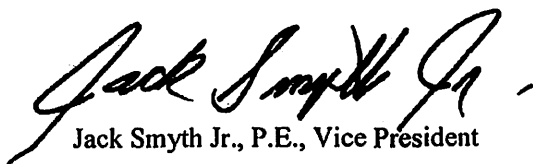
- a) No activities this period.

Task 7 - Right of Way Coordination & Requirements

- a) Began to coordinate with development team and Montgomery County to delineate the Prince Frederick Boulevard Legal Right-of-Way.
- b) Designated a Legal Right-of-way for the new boulevard based on the updated design.

If you have any questions, please do not hesitate to contact me.

Sincerely,


Jack Smyth Jr., P.E., Vice President

**ESTIMATED PROGRESS REPORT
PRICE PROPOSAL**

Agreement No Prince Frederick Ext Concept Study

District _____ County Montgomery

S. R. _____ Section _____

Estimate No. 8

Estimate Period From 4/01/19 To 6/30/19

Invoice # 2019-10-190-72.09

State Project No. _____

Federal Project No. _____

December, 2020

EXPIRATION DATE - THIS PART

AGREEMENT AMOUNTS	AMOUNTS EARNED		AMOUNTS DUE
1. SPECIFIC RATE OF COMPENSATION MAXIMUM \$141,125.00	TO DATE	\$115,335.82	
	PREVIOUS	\$84,524.17	
	AMOUNT DUE		
2. DIRECT COSTS OTHER THAN PAYROLL MAXIMUM \$0.00	TO DATE	\$0.00	
	PREVIOUS	\$0.00	
	AMOUNT DUE		
3. DIRECT COST BY OTHERS MAXIMUM \$0.00	TO DATE	\$0.00	
	PREVIOUS	\$0.00	
	AMOUNT DUE		
4. EXPENSES MAXIMUM \$0.00	TO DATE	\$40.00	
	PREVIOUS	\$40.00	
	AMOUNT DUE		
% OF WORK COMPLETED TO DATE <u>81.8%</u>			
TOTAL (THIS PART) \$141,125.00	MAXIMUM AGREEMENT AMOUNT \$141,125.00		TOTAL THIS INVOICE \$30,811.65
	TOTAL INVOICES TO DATE (THIS PART) \$115,375.82		

Boles, Smyth Associates, Inc.
2400 Chestnut Street
Philadelphia, PA 19103

SAP VENDOR NO. 120823

Federal ID No: 23-1863016

I certify that the above invoice represents services rendered on this Project and is true and correct, and all expenditures were incurred under a fully executed contract.


Project Manager

UPPER MERION TRANSPORTATION AUTHORITY
ESTIMATED PROGRESS REPORT - SPECIFIC RATE OF COMPENSATION

Agreement No. 0

SPECIFIC RATE TABULATION

PART I

PERIOD: FROM 4/01/19 TO 6/30/19

EMPLOYEE	CLASSIFICATION	DESCRIPTION OF WORK ITEMS										TOTAL HOURS THIS PERIOD	ACTUAL HOURLY RATE	DATE APPROVED BY DEPARTMENT	PAYROLL THIS PERIOD		
		Project Management and Base Mapping	Stakeholder Coordination and Agency Involvement Determination	Recommended Concept Engineering Roadway Plans	Preliminary Drainage Design	Preliminary Traffic Control Stages, Traffic Signal and Pavement Marking & Signing Plans	Utility Coordination, Verification and Relocation Requirements	Right of Way Coordination and Requirements									(A)
		1	2	3	4	5	6	7									
J. Smyth, Sr.	Principal Eng.													0.0	\$126.75	1/1/18	\$0.00
T. F. Boles	Principal Eng.													0.0	\$126.75	1/1/18	\$0.00
M. C. Boles	Eng. Coord.													0.0	\$126.75	1/1/18	\$0.00
P. J. Boles	Eng. Technician					15.0								15.0	\$83.75	1/1/18	\$1,256.25
J. Smyth, Jr.	Project Manager		15.5	5.0		30.5		33.5						84.5	\$126.75	1/1/18	\$10,710.38
D. Plett	Eng. Technician			46.5		23.0		32.0						101.5	\$83.75	1/1/18	\$8,500.63
C. J. Zebley	Eng. Technician			9.5		34.0								43.5	\$83.75	1/1/18	\$3,643.13
R. G. Wagenman	Trans. Specialist													0.0	\$126.75	1/1/18	\$0.00
V. Mothukpally	Eng. Technician			19.5		19.0								38.5	\$83.75	1/1/18	\$3,224.38
B. F. Hensyl	Eng. Intern			45.5										45.5	\$35.00	1/1/18	\$1,592.50
E. Jacinto	Eng. Technician							22.5						22.5	\$83.75	1/1/18	\$1,884.38
TOTAL HOURS THIS ESTIMATE		0.0	15.5	126.0	0.0	121.5	0.0	88.0						351.0			
TOTAL HOURS PREVIOUS ESTIMATE		45.0	106.0	398.5	37.5	137.0	10.0	121.5						855.5			
TOTAL HOURS TO DATE		45.0	121.5	524.5	37.5	258.5	10.0	209.5						1206.5			
CONTRACT TOTAL HOURS		55.0	70.0	540.0	225.0	250.0	90.0	170.0									
% HOURS USED TO DATE																	
															TOTAL THIS PERIOD	350,811.00	

ESTIMATED PROGRESS REPORT - SPECIFIC RATE OF COMPENSATION AGREEMENT

Agreement No. _____

PART _____ 1 _____

DESCRIPTION OF WORK	ESTIMATED COST	BILLED TO DATE	BILLED THIS ESTIMATE
DIRECT COSTS OTHER THAN PAYROLL			
Reproduction & Travel Expenses are included in overall cost. Expenses will only be for Deed Research at the Montgomery County Recorder of Deeds Office			
FINAL ENVIRONMENTAL SCREENING		\$40.00	\$0.00
TOTAL	\$0.00	\$40.00	\$0.00
DIRECT COST OF SERVICES BY OTHERS			
SUBCONSULTANTS			
TOTAL	\$0.00	\$0.00	\$0.00



Boles, Smyth Associates, Inc.
Consulting Civil Engineers Since 1972

October 31, 2019

Upper Merion Transportation Authority
 175 West Valley Forge Road
 King of Prussia, PA 19406-1802

Attn: Mr. Anthony Hamaday, Executive Secretary

Ref: Transportation Engineering, Consultant Services BSA No. 2019-10-201-25.09
 BSA Project 25.09

INVOICE #103

For professional services relative to transportation engineering consulting activity as performed from April 1, 2019 through September 30, 2019.

A. Advisory Professional Services Related to Authority Meetings

This work includes:

- Providing general assistance and advice to the Authority, including preparation and attendance at the 4/10/19, 6/12/19, 7/10/19 and 8/14/19.

Jack Smyth, Jr., P.E. Proj. Eng.	<u>16.0 hrs. @ \$126.25/hr.</u>	=	<u>\$ 2,020.00</u>
	16.0 hrs. Total	=	\$ 2,020.00

B. General Services

This work includes:

- Coordination with Township Planner to answer questions regarding potential development assessments
- Continued to evaluate available grants and/or reimbursement programs for each project which may be available from PennDOT, federal agencies, state agencies and private foundations.
- Continued coordination with Gannett Fleming to provide additional documentation and information related to the Church Road Construction Inspection Agreement.
- Continued coordination with SEPTA to provide Church Road construction scheduling for their use in preparing an Agreement for Transportation Authority review.
- Continued coordination with Transportation Authority Solicitor's office to provide background and response to questions related to required Church Road SEPTA agreements.
- Received SEPTA Temporary Construction Easement executed agreement. Transmitted the complete Right of Way Plan set for recordation. Received comments from Gannett Fleming and began to address.
- Completed coordination and preparation of revised Final Structure Plans for utility design of Church Road bridge based on newly provided Aqua standards for bridge attachment over SEPTA. Transmitted plans to Gannett Fleming for review on 3/6/19 and received comments on 3/25/19. Prepared Response to Comments package and re-transmitted to Gannett Fleming on 4/5/19. We await response. Received further comments that were addressed and re-transmitted. Plans were printed and submitted for PennDOT Bridge Engineer signature. Final comments were received on 9/24/19 and addressed. We await signature copies.
- Received direction that BSA would have to prepare Bridge Attachment Agreements for Aqua and Peco gas which will be the reimbursement agreement from the utility companies to the Transportation Authority. Coordinated with Gannett Fleming to receive a template agreement and have continued to prepare the agreements for Solicitor review in the upcoming period.
- Met with Authority Solicitor, Township and development team from Village at Valley Forge to determine method for return of escrow fund.

Mr. Anthony Hamaday
 October 31, 2019
 Invoice #103

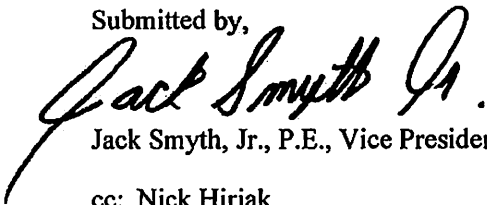
- Coordinated with development team and Engineer from Village at Valley Forge to receive Highway Occupancy Permit plans and attachments corresponding to transportation improvements listed in the Settlement Agreement.
- Reviewed plan information provided by Village at Valley Forge development team and continued coordination to receive Highway Occupancy Permit plans for construction projects listed in Settlement Agreement.
- Received Highway Occupancy Plans for six (6) separate projects listed in Settlement Agreement. Performed a Quantity Analysis on the plans.
- Prepared a Cost Estimate spreadsheet for the six (6) projects to confirm request for return of escrow funds.
- Reviewed DVRPC Progress Status Report for the Phase II Henderson Road PA Turnpike Interchange study to determine peak hour volumes for Existing, No Build and Build Scenarios.
- Prepared for and attended Stakeholder Meeting for Potential Henderson Road Interchange on 7/2/19.
- Prepared for and attended meeting with Montgomery County and SEPTA regarding coordination between the Potential Henderson Road Interchange project and the SEPTA Route 100 Extension project.
- Participate in monthly conference calls to coordinate activities related to the Potential Henderson Road Interchange project.
- Coordinated with SEPTA to receive their AutoCad design file mapping for the Route 100 Extension project.
- Began to revise design for the Henderson Road Interchange ramps to accommodate the proposed SEPTA Route 100 horizontal and vertical alignment.

Jack Smyth, Jr., P.E. Proj. Eng.	102.5 hrs. @ \$126.25/hr.	=	\$ 12,940.63
Michael Boles, Trans. Specialist	5.0 hrs. @ \$126.25/hr.	=	\$ 631.25
Ron Wagenmann, Trans. Specialist	10.0 hrs. @ \$126.25/hr.	=	\$ 1,262.50
Wing Au, P.E., Structural Eng.	20.0 hrs. @ \$126.25/hr.	=	\$ 2,525.00
Enrique Jacinto, Eng. Tech	13.5 hrs. @ \$ 85.25/hr.	=	\$ 1,150.88
Paul Boles, Eng. Tech	70.0 hrs. @ \$ 85.25/hr.	=	\$ 5,967.50
Charles Zebley, Engineer	8.5 hrs. @ \$ 96.50/hr.	=	\$ 820.25
Deana Plett, Eng. Tech	15.0 hrs. @ \$ 85.25/hr.	=	\$ 1,278.75
Brendan F. Hensyl, Intern	8.0 hrs. @ \$35.00/hr.	=	\$ 280.00
Jordan Singer, Intern	<u>4.0 hrs. @ \$ 35.00/hr.</u>	=	<u>\$ 140.00</u>
	173.0 hrs		\$ 26,996.76

Total Part A + B = **\$ 29,016.76**

Total Invoice #103 = \$ 29,016.76

Submitted by,


 Jack Smyth, Jr., P.E., Vice President

cc: Nick Hiriak



Memo

To: Upper Merion Transportation Authority
From: Nicholas F. Hiriak, Director of Finance & Administration *NFA*
CC:
Date: 2/25/2019
Re: Authority reimbursement to General Fund for 2018 expenses

Authority Members:

The following is a summary of expenses incurred and advanced by the Township General Fund for 2018 expenses for the Transportation Authority:

Salary/Wage Expense	\$17,437.00
Payroll Tax	
FICA	\$ 1,334.00

TOTAL DUE TO UPPER MERION TOWNSHIP GENERAL FUND \$18,771.00

Remit to: Upper Merion Township
 175 W. Valley Forge RD
 King of Prussia, PA 19406
 Attn.: Nicholas F. Hiriak

Entry @ 12/31/18
 Dr. 01130-0098
 Cr. 01395-0098
Entry @ 2019
 Dr. 01100-0000
 Cr. 01130-0098



**HAMBURG, RUBIN, MULLIN,
MAXWELL & LUPIN, PC**

ATTORNEYS AT LAW
375 MORRIS ROAD PO BOX 1479
LANSDALE, PA 19446-0773
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www.hrmmml.com

October 7, 2019
Bill Number 271236
File Number 31197-000

UPPER MERION TRANSPORTATION & GENERAL
AUTHORITIES
C/O ANTHONY HAMADAY
TOWNSHIP MANAGER
175 WEST VALLEY FORGE ROAD
KING OF PRUSSIA PA 19406-1802

Re: GENERAL REPRESENTATION - MUNICIPAL

FOR PROFESSIONAL SERVICES

Thru September 30,2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
09/11/19	NXM	PREPARATION FOR AND REPRESENTATION AT BOARD MEETINGS	3.40 Hrs	140/hr	\$476.00
TOTAL PROFESSIONAL FEES					\$476.00

RECEIVED

OCT 09 2019

TOWNSHIP MANAGER'S OFFICE
UPPER MERION TOWNSHIP

TOTAL THIS BILL \$476.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMMML.COM

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ATTORNEYS AT LAW

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October 7, 2019
Bill Number 271237
File Number 31197-001

UPPER MERION TRANSPORTATION & GENERAL
AUTHORITIES
C/O ANTHONY HAMADAY
TOWNSHIP MANAGER
175 WEST VALLEY FORGE ROAD
KING OF PRUSSIA PA 19406-1802

Re: REALEN TRAFFIC IMPACT FEES - MUNICIPAL

FOR PROFESSIONAL SERVICES

Thru September 30, 2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
09/23/19	NXM	REVIEW P. FRY EMAIL RE: MEETING TO DISCUSS TRAFFIC IMPACT FEES; CALL W/ J. WALKO AND EMAIL TO AND FROM J. MCGRORY RE: THE SAME	0.60 Hrs	140/hr	\$84.00
09/23/19	NXM	CALL WITH T. KOHLER RE: MEETING WITH REALEN AND TOWNSHIP RE: TRAFFIC IMPACT FEES; PREPARE FOR AND REPRESENT AT MEETING WITH TOWNSHIP PERSONNEL, M. KAPLIN AND P. FRY RE: THE SAME	3.40 Hrs	140/hr	\$476.00
09/25/19	NXM	REVIEW P. FRY EMAIL RE: STATUS OF TRAFFIC IMPACT FEES FOR INDIVIDUAL PARCELS	0.10 Hrs	140/hr	\$14.00
TOTAL PROFESSIONAL FEES					\$574.00

RECEIVED

OCT 09 2019

TOWNSHIP MANAGER'S OFFICE
UPPER MERION TOWNSHIP

TOTAL THIS BILL \$574.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMMML.COM

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ATTORNEYS AT LAW

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LANSDALE, PA 19446-0773

PHONE 215-661-0400 FAX 215-661-0315

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UPPER MERION TRANSPORTATION & GENERAL
AUTHORITIES
C/O ANTHONY HAMADAY
TOWNSHIP MANAGER
175 WEST VALLEY FORGE ROAD
KING OF PRUSSIA PA 19406-1802

October 7, 2019
Bill Number 271238
File Number 31197-002

RECEIVED

Re: CHURCH ROAD BRIDGE - MUNICIPAL

OCT 09 2019

FOR PROFESSIONAL SERVICES

TOWNSHIP MANAGER'S
UPPER MERION TRANSPORTATION & GENERAL

Thru September 30, 2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
09/13/19	NXM	REVIEW AND RESPOND TO J. SMYTH AND M. BOLES EMAILS RE: DRAFT REIMBURSEMENT AGREEMENT; REVIEW PENNDOT RECOMMENDED EDITS TO THE SAME; EMAIL J. NIXON RE: THE SAME.	0.60 Hrs	140/hr	\$84.00
09/13/19	NXM	REVIEW AND RESPOND TO J. NIXON EMAIL RE: REIMBURSEMENT AGREEMENT.	0.20 Hrs	140/hr	\$28.00
09/18/19	NXM	REVIEW K. CHIDO EMAIL RE: MEETING WITH TOWNSHIP RE: TRAFFIC IMPACT FEES.	0.20 Hrs	140/hr	\$28.00
09/20/19	NXM	REV. J. NIXON EMAIL RE: REIMBURSEMENT AGREEMENT; CALL WITH J. SMYTH RE: THE SAME	0.30 Hrs	140/hr	\$42.00
09/23/19	NXM	REVIEW J. SMYTH EMAIL AND EMAIL J. NIXON RE: REIMBURSEMENT AGREEMENT APPROVAL AND REVIEW RESPONSE; CALL WITH J. NIXON RE: THE SAME.	0.60 Hrs	140/hr	\$84.00
09/23/19	NXM	CALL WITH T. KOHLER RE: STATUS OF REIMBURSEMENT AGREEMENT; EMAIL TO R. LUND RE: THE SAME	0.30 Hrs	140/hr	\$42.00
09/25/19	NXM	REVIEW AND RESPOND TO J. FOX EMAILS RE: REIMBURSEMENT AGREEMENT STATUS	0.30 Hrs	140/hr	\$42.00
09/26/19	NXM	CALL AND EMAIL TO T. KOHLER RE: STATUS OF REIMBURSEMENT AGREEMENT; CALL W/ J. FOX RE: THE SAME	0.30 Hrs	140/hr	\$42.00
09/27/19	NXM	CALL WITH AND CORRESPONDENCE TO K. LAWRENCE RE: REIMBURSEMENT AGREEMENT; CALL WITH J. FOX AND J. NIXON RE: THE SAME	0.40 Hrs	140/hr	\$56.00


TOTAL PROFESSIONAL FEES \$448.00

Re: CHURCH ROAD BRIDGE - MUNICIPAL
File Number 31197-002

October 7, 2019
Bill Number 271238

TOTAL THIS BILL \$448.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMML.COM


10/10/19

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ATTORNEYS AT LAW

375 MORRIS ROAD PO BOX 1479
LANSDALE, PA 19446-0773
PHONE 215-661-0400 FAX 215-661-0315
www.hrmmml.com

EMAIL INVOICES TO
MMORALES@UMTOWNSHIP.ORG

November 7, 2019
Bill Number 272289
File Number 31197-000

Re: GENERAL REPRESENTATION - MUNICIPAL
FOR PROFESSIONAL SERVICES
Thru October 31,2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
10/04/19	NXM	REVIEW M. MORALES EMAIL RE: AGENDAS FOR OCTOBER BOARD MEETINGS	0.10 Hrs	140/hr	\$14.00
10/07/19	NXM	REVIEW BOARD MEETING AGENDAS	0.20 Hrs	140/hr	\$28.00
10/09/19	NXM	PREPARE FOR AND REPRESENT AT BOARD MEETINGS	3.10 Hrs	140/hr	\$434.00
TOTAL PROFESSIONAL FEES					\$476.00

TOTAL THIS BILL \$476.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMML.COM

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ATTORNEYS AT LAW

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LANSDALE, PA 19446-0773
PHONE 215-661-0400 FAX 215-661-0315
www.hrmmml.com

EMAIL INVOICES TO
MMORALES@UMTOWNSHIP.ORG

November 7, 2019
Bill Number 272290
File Number 31197-001

Re: REALEN TRAFFIC IMPACT FEES - MUNICIPAL
FOR PROFESSIONAL SERVICES
Thru October 31,2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
10/03/19	NXM	CALL WITH R. LOEPER RE: MEETING WITH PENN DOT; EMAIL T. KOHLER RE: THE SAME AND REVIEW RESPONSE	0.60 Hrs	140/hr	\$84.00
10/08/19	NXM	PREPARE FOR AND REPRESENT AT MEETING WITH TOWNSHIP PERSONNEL AND PENNDOT RE: TRAFFIC IMPACT FEES	2.60 Hrs	140/hr	\$364.00
10/09/19	NXM	CALL WITH T. KOHLER, REVIEW P. FRY EMAIL, AND REVIEW AND RESPOND TO R. LOEPER RE: TRAFFIC IMPACT FEE CALCULATIONS	0.60 Hrs	140/hr	\$84.00
10/10/19	NXM	REVIEW AND RESPOND TO P. FRY EMAIL RE: POTENTIAL RESOLUTION FOR TRAFFIC IMPACT FEES; EMAIL R. LOEPER AND J. SMYTH RE: THE SAME	0.40 Hrs	140/hr	\$56.00
10/17/19	NXM	EMAIL R. LOEPER RE: TRAFFIC IMPACT FEES FOR PROPERTIES	0.20 Hrs	140/hr	\$28.00
10/25/19	NXM	REVIEW P. FRY EMAIL RE: TRAFFIC IMPACT FEES AND REVIEW REALEN'S DRAFT RESOLUTION RE: THE SAME	0.30 Hrs	140/hr	\$42.00
10/28/19	NXM	EMAILS TO R. LOEPER AND J. MCGRORY RE: CALCULATION OF TRAFFIC IMPACT FEE AND RESPOND	0.60 Hrs	140/hr	\$84.00
10/30/19	NXM	REVIEW AND RESPOND TO R. LOEPER EMAIL RE: REALEN PARCELS AND OWNERSHIP STATUS; DRAFT RESOLUTION RE: THE SAME AND EMAIL T. KOHLER RE: THE SAME	1.20 Hrs	140/hr	\$168.00
TOTAL PROFESSIONAL FEES					\$910.00

Re: REALEN TRAFFIC IMPACT FEES - MUNICIPAL
File Number 31197-001

November 7, 2019
Bill Number 272290

TOTAL THIS BILL \$910.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMML.COM

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November 7, 2019
Bill Number 272291
File Number 31197-002

Re: CHURCH ROAD BRIDGE - MUNICIPAL
FOR PROFESSIONAL SERVICES
Thru October 31,2019

<u>Date</u>	<u>Atty</u>	<u>Description</u>	<u>Time</u>	<u>Rate</u>	<u>Value</u>
10/01/19	NXM	CALL WITH J. NIXON RE: REIMBURSEMENT AGREEMENT STATUS	0.30 Hrs	140/hr	\$42.00
10/03/19	NXM	CALL WITH J. NIXON, J. SMYTH AND K. LAWRENCE RE: STATUS OF REIMBURSEMENT AGREEMENT; REVIEW AND RESPOND TO JN EMAILS AND EMAIL J. SMYTH RE: THE SAME	0.70 Hrs	140/hr	\$98.00
10/04/19	NXM	REVIEW AND RESPOND TO J. SMYTH EMAIL AND EMAIL J. NIXON RE: LETTER OF INTENT STATUS	0.30 Hrs	140/hr	\$42.00
10/07/19	NXM	REVIEW AND RESPOND TO J. NIXON EMAIL RE: LETTER OF INTENT STATUS	0.20 Hrs	140/hr	\$28.00
10/09/19	NXM	CALL WITH T. KOHLER RE: STATUS OF REIMBURSEMENT AGREEMENT	0.10 Hrs	140/hr	\$14.00
10/14/19	NXM	EMAILS TO J. NIXON RE: STATUS OF BOARD'S APPROVAL OF REIMBURSEMENT AGREEMENT AND REVIEW RESPONSE; EMAIL T. KOHLER RE: THE SAME	0.40 Hrs	140/hr	\$56.00
10/22/19	NXM	EMAIL J. NIXON RE: LETTER OF INTENT AND REVIEW RESPONSE	0.40 Hrs	140/hr	\$56.00
10/28/19	NXM	EMAIL J. NIXON RE: STATUS OF APPROVAL OF REIMBURSEMENT AGREEMENT	0.20 Hrs	140/hr	\$28.00
10/30/19	NXM	CALLS WITH J. NIXON AND K. LAWRENCE RE: REIMBURSEMENT AGREEMENT STATUS	0.30 Hrs	140/hr	\$42.00
TOTAL PROFESSIONAL FEES					\$406.00

Re: CHURCH ROAD BRIDGE - MUNICIPAL
File Number 31197-002

November 7, 2019
Bill Number 272291

TOTAL THIS BILL \$406.00

WE APPRECIATE YOUR PROMPT PAYMENT. BALANCE DUE WITHIN 30 DAYS OF DATE OF INVOICE. VISA, MASTERCARD, DISCOVER AND AMERICAN EXPRESS ACCEPTED. CREDIT CARD PAYMENTS CAN BE MADE DIRECTLY ON OUR WEBSITE AT WWW.HRMML.COM

Rudolph Clarke, LLC
Suite 200
Seven Neshaminy Interplex
Trevose, PA 19053

October 26, 2019

Upper Merion Transportation Authority
Upper Merion Township
Finance Department
175 West Valley Forge Road
King of Prussia, PA 19406-1802

In Reference To: Church Road Bridge
File No. 7605-003

Invoice #73649

Professional Services

	<u>Hours</u>	<u>Amount</u>
9/5/2019 MPC Review e-mail from M. Morales; brief review of attached clean/blacklined version of Reimbursement Agreement for Upper Merion Transportation Authority's Reconstruction of the East Church Road Bridge	0.50	67.50
MPC Review e-mail from M. Morales; brief review of agenda/attachments for 9/11/19	0.20	27.00
9/9/2019 MPC Review e-mail from M. Morales; review updated agendas for 9/11/19	0.10	13.50
AEK Review E-mail from M. Morales and agenda re: upcoming meeting and retention	0.10	13.50
For professional services rendered	<u>0.90</u>	<u>\$121.50</u>
Previous balance		\$310.50
9/17/2019 Payment - Thank You. Check No. 307		<u>(\$310.50)</u>
Total payments and adjustments		<u>(\$310.50)</u>
Balance due		<u><u>\$121.50</u></u>

Rudolph Clarke, LLC
Suite 200
Seven Neshaminy Interplex
Trevose, PA 19053

October 26, 2019

Upper Merion Transportation Authority
Upper Merion Township
Finance Department
175 West Valley Forge Road
King of Prussia, PA 19406-1802

In Reference To: Upper Merion Transportation Authority
General Representation
File No. 7605-001

CLOSED - NM BOX #7 - 6.2019

Invoice #73650

Professional Services

	<u>Hours</u>	<u>Amount</u>
9/18/2019 MPC Review correspondence from A. Hamaday confirming N. Marlier was appointed as Solicitor on 9/11/19 for each of the Authorities; review Authorization for Permanent Transfer of & Future Access of Files signed by T. Kohler on 9/16/19	0.10	NO CHARGE
For professional services rendered	<u>0.10</u>	<u>\$0.00</u>
Previous balance		\$459.00
9/17/2019 Payment - Thank You. Check No. 307		<u>(\$459.00)</u>
Total payments and adjustments		(\$459.00)
Balance due		<u><u>\$0.00</u></u>

(215) 580-8280
JKnueppel@septa.org

October 7, 2019

Upper Merion Transportation Authority
Attn: Authority Executive Secretary
Township Building
175 West Valley Forge Road
King of Prussia, PA 19046

**RE: Letter of Intent
Reimbursement Agreement for Upper Merion Transportation Authority's
Reconstruction of the East Church Road Bridge**

Dear Upper Merion Transportation Authority:

This letter of intent (the "**Letter of Intent**") sets forth the understanding and results of discussions between the Southeastern Pennsylvania Transportation Authority ("**SEPTA**") and the Upper Merion Transportation Authority ("**Authority**") (together, the "**Parties**", or singularly, the "**Party**") regarding the Authority's Reconstruction of the East Church Road Bridge (the "**Project**").

The Parties' work under the Project shall be governed by an agreement between SEPTA and the Authority, which SEPTA intends to execute following SEPTA Board Approval on October 24, 2019. The latest (and anticipated final) draft of the Reimbursement Agreement is attached herein.

Sincerely,



Jeffrey Knueppel
General Manager, SEPTA

10/7/19
Date

Enclosure

EFFECTIVE DATE: _____
COUNTY: MONTGOMERY
MUNICIPALITY: UPPER MERION
SEPTA FILE NO. _____

AGREEMENT NO. _____
FID NO. _____
SAP VENDOR NO. _____
MPMS NO. _____

REIMBURSEMENT AGREEMENT
FOR THE UPPER MERION TRANSPORTATION AUTHORITY'S
RECONSTRUCTION OF THE EAST CHURCH ROAD BRIDGE

THIS AGREEMENT (the “Agreement”) is made and entered into on the ____ day of _____, 2019 (“Effective Date”) by and between the Upper Merion Transportation Authority (“Authority”) and Southeastern Pennsylvania Transportation Authority, a body corporate and politic that exercises the public powers of the Commonwealth of Pennsylvania as an agency and instrumentality thereof with its principal office located at 1234 Market Street, 10th floor, Philadelphia, PA 19107-37809 (“SEPTA”). Herein each is a “Party” and are collectively the “Parties.”

BACKGROUND

WHEREAS, the Authority plans to reconstruct the East Church Road Bridge (the “**Project**”), which is part of a local road known as East Church Road in Upper Merion Township (in Montgomery County, PA);

WHEREAS, the East Church Road Bridge (the “**Bridge**”) is comprised of a (1) bridge superstructure that is part of the roadway and aerially crosses a transit right-of-way (“**ROW**”; at approximately at milepost 11.47) that is owned by Norfolk Southern Railway (“**NS**”) and is used by SEPTA for its Norristown High Speed Line (“**NHSL**”) subject to a long-term trackage rights agreement; and (2) of bridge substructure portions, which support the superstructure, that straddle the ROW and sit upon real property that (i) is owned by Upper Merion Township and (ii) is adjacent to ROW property some of which is owned by SEPTA and some is owned by NS (the Bridge, the ROWs, and surrounding areas are depicted on the project plan diagram (the “**Plan**”) that is attached as Exhibit A and is hereby incorporated into and made a part of the Agreement);

WHEREAS, a Public Utility Commission (“**PUC**”) Order dated September 9, 1968 (Complaint Docket No. 18453) held that SEPTA is responsible for the maintenance of the Bridge substructure and that Upper Merion Township is responsible for the Bridge superstructure; however SEPTA has taken the position that the PUC does not have jurisdiction over aerial crossings of the NHSL; nevertheless, without admission, waiver, or

prejudice with regard to SEPTA's position, SEPTA will not formally dispute the holding of the PUC Order with respect to the arrangements established by and under this Agreement;

WHEREAS, the Authority's planned work for the Bridge involves, in general, removing and replacing the entire decking of the superstructure, removing the existing water and gas lines from the superstructure, constructing a temporary utility bridge and support structure (the "**Utility Bridge**") for the water line, demolishing and reconstructing the Bridge superstructure and substructure and installing a new water and gas line on the new superstructure (collectively and generally, herein the "**Authority Work**") as depicted on the Plan that is Exhibit A,

WHEREAS, because the Bridge aerially crosses the NHSL and some of the Authority Work will necessitate accessing and working on SEPTA property near portions of the substructure, the Authority has requested that SEPTA grant the Authority a temporary construction easement ("**TCE**") to access and use two parcels on the ground and a strip of airspace (collectively herein the "**SEPTA Premises**"). SEPTA executed a TCE on March 28, 2019, a copy of which is attached as Exhibit B.

WHEREAS, the Authority has also requested that SEPTA provide the support services necessary to perform engineering review of the Project Plan and schedule, coordinate the Authority's Work with SEPTA's operations on the NHSL, and provide proper protections (such as flagging) as deemed necessary by SEPTA for the Project work (generally and collectively, herein the "**Support Services**");

WHEREAS, the proper completion of the Project may also necessitate that some work be performed specifically on SEPTA transit facilities (i.e. moving power lines or work on other infrastructure or facilities of SEPTA), and work on transit facilities must be performed by SEPTA, therefore the Authority may need to request that SEPTA perform certain construction-type work for the project in addition to the Support Services (herein any construction type work performed by SEPTA shall be referred to as "Additional SEPTA Work"; and the term "SEPTA Services" shall refer to collectively the Support Services and the Additional SEPTA Work).

WHEREAS, the Authority's Project will be financed by funding from Pennsylvania Department of Transportation ("**PennDOT**") STU/A-183 Program, Federal Highway funds from the United States Department of Transportation ("**USDOT**"; Federal Project #X064-204), Montgomery County, and Upper Merion Transportation Authority; and

therefore the work under the Project must comply with the various applicable regulations and requirements, some of which are specifically referenced herein;

WHEREAS, once reconstruction of the Bridge has been completed, the Authority shall assume the maintenance responsibility for the substructure of the Bridge, thereby making the Authority responsible for the maintenance of the entirety of the Bridge including both the superstructure and the substructure;

WHEREAS, SEPTA has granted the TCE to the Authority without fee to the Authority, as consideration for the Authority's willingness to assume the ongoing maintenance of the Bridge substructure and agreeing to a permanent assumption of responsibility for all bridge maintenance and repair.

WHEREAS, SEPTA has agreed to perform the SEPTA Services for the Project and the Authority will reimburse SEPTA in accordance with the rates provided in Exhibit C, for the costs SEPTA incurs in performing the SEPTA Services; and a list of the anticipated and estimated Support Services and the associated estimated costs therefor, as well as the rates for other work that may be performed as Additional SEPTA Work, have been included in the attached Exhibit C, which is hereby incorporated into and made a part of the Agreement;

WHEREAS, the Authority and SEPTA desire to enter into this Agreement to memorialize and commit to the understanding between them regarding the Authority's performance of the Project and SEPTA performance of the SEPTA Services, and the project coordination and cooperation to be afforded by both the Authority and SEPTA for the successful performance of the Project, in accordance with and subject to the terms and conditions set forth herein.

WHEREAS, the Parties agree that 23 CFR Part 140, Subpart I and 23 CFR Part 646, Subpart B are incorporated herein by reference

NOW THEREFORE, in consideration of the mutual covenants and agreements herein, and other good and valuable consideration as described herein, the sufficiency of which is hereby acknowledged, the Parties intending to be legally bound, hereby agree and commit as follows:

AGREEMENT

1. Background. The above Background is incorporated into and made a part of this Agreement.

2. The Project. The Authority intends to demolish the existing Bridge, remove the existing water and gas line attached to the existing Bridge, install and remove a Temporary Utility Structure for installation of a temporary water line during construction, reconstruct a new Bridge over the SEPTA Route 100 line and re-attach a new water and gas line to the new Bridge as shown in Exhibit A and defined as the "Work Scope".
3. This Agreement. Support Services have been estimated and presented in Exhibit C and additional SEPTA Work is preliminarily expected to include relocation of existing utility wires along the track line, however the parties recognize that further additional SEPTA Work may be identified as detailed plans progress and as the Authority Work is undertaken. SEPTA will perform that work in accordance with the commitments included herein. The Authority will pay for additional SEPTA Work at the rate provided in Exhibit C.
4. The Authority's Performance of Authority Work.
 - A. The Authority shall require and ensure that all of its employees, agents, contractors, subcontractors, representatives, and other invitees that may come within the ROW shall have completed SEPTA's Roadway Workers Protection Safety Class within the 12 months preceding the Commencement Date.
 - B. The Authority is fully responsible for its employees and contractors, if any, and shall take all steps necessary to ensure that its employees and contractors comply with the terms and conditions of this Agreement and of any ROE Permit applicable to the work under this Project. The Authority agrees that its access to, entry upon and use of the SEPTA Premises is done at the Authority's own risk.
 - C. The Authority shall perform all Authority Work in a manner that is lawful, safe, and in full and precise compliance with all applicable law, statutes, regulations, ordinances and rules. The Authority shall ensure that proper emergency medical services are readily available or accessible during the performance of the Project. The Authority will take all appropriate safety measures to protect and ensure the safety of the Authority, its contractors and agents, SEPTA, and the public in general.
 - D. All activity and work conducted by the Authority on the ROW and on SEPTA Premises shall be performed strictly in accordance with the Work Scope, and in a manner that is in compliance with SEPTA's safety rules, regulations, bulletins and notices, which apply to or are relevant to SEPTA,

the ROW and the SEPTA Premises. The Designee of the Chief Engineer shall provide to the Authority the relevant SEPTA safety rules, and notices.

- E. The Authority shall not perform on the SEPTA Premises, or the ROW, any activities outside of the Work Scope, nor shall the Authority access SEPTA property outside of the Premises without SEPTA's permission, nor access the SEPTA Premises outside of the TCE Term. The Authority can only continue to perform Authority Work on the SEPTA Premises or the ROW after the completion of the Agreement Term upon receiving SEPTA's written approval of an extension of the Agreement Term.
 - F. The Authority shall not allow the Authority Work to disrupt or interfere with SEPTA's operations, property or facilities. The Authority and its invitees shall not enter or access the ROW unless done so in complete compliance with the Agreement. The Authority will not perform any Work within the 25 foot ROW area without the railway protections, as determined by SEPTA, in place. The Authority will not leave any material or equipment unattended within the 25-foot ROW area.
 - G. SEPTA is not and shall not be responsible for any costs that the Authority incurs in connection with the Authority Work, the Project or this Agreement.
5. Term. The term of this Agreement ("Agreement Term") shall begin on the Effective Date and shall end the earlier of (i) the date that Project is completed and all completion requirements under the Agreement have been satisfied; or (ii) two years after the Effective Date; provided that such two year period may be extended in the event completion of the Project is delayed for reasons beyond the Authority's reasonable control (in which case the extension shall be equal to the period of delay).
6. Authority Contractor - Right-of-Entry. The Authority hereby commits to have its contractor(s) apply for a Right-of-Entry ("**ROE**") permit and enter into a ROE agreement with SEPTA prior to entering on SEPTA Premises to commence any work for the Project. SEPTA hereby Agrees to waive the \$1,000 ROE application fee for the Authority's contractor(s) for this Project.
7. SEPTA Services.
- A. In support of the Authority's reconstruction of the Bridge, SEPTA shall perform the Support Services, which generally include engineering review, coordination, planning, flagging and on-site engineering oversight, which are described and in more detail in Exhibit C.
 - B. The Authority recognizes that it cannot, and commits that it shall not,

perform any construction or construction-related tasks or activities that need to be performed on or with SEPTA transit infrastructure or facilities that are other than actual components of the Bridge (generally and collectively, herein “Transit Facilities”). The Authority recognizes that only SEPTA can perform tasks, activities or work on or with Transit Facilities. In the event that work on or with Transit Facilities is or becomes a necessary part of the Project, the Authority will work with SEPTA to plan and schedule such work to be performed by SEPTA and, at the discretion of SEPTA, SEPTA contractors.

- C. SEPTA shall perform all SEPTA Services in a diligent and workmanlike manner, and so as to enable the Authority to complete the Project in accordance with the Project schedule and not unreasonably delay the Project schedule.
- D. SEPTA and the Authority agree that they and their respective contractors shall cooperate with each other at all relevant times so as to coordinate respective schedules and to enable the Authority Work and the SEPTA Services to be performed properly, efficiently, on schedule, and consistent with the established Project plans.

8. Reimbursable Costs, Invoicing and Payments.

- A. The Authority agrees to reimburse SEPTA for the SEPTA Services performed for the Project. The Authority’s reimbursement to SEPTA for service performed under this agreement at actual cost shall be in accordance with the provisions of the Federal Highway Administration (“FHWA”) Federal-Aid Policy Guide (23 CFR) and any supplements and amendments thereto.
- B. SEPTA shall bill the Authority no more frequently than once per month for all Reimbursable Costs associated with the SEPTA Services.
- C. The Authority is to pay SEPTA within 45 days of receipt of invoice.

9. Soil Disturbance.

- A. If at any time, the Authority realizes that Soil Disturbance beyond that shown in Exhibit A may become necessary, The Authority will notify SEPTA and provide a revised Work Scope that explains the details of the Soil Disturbance activities that may be needed. The Authority recognizes that SEPTA may need to amend this Agreement to address any such Soil Disturbance beyond that shown in Exhibit A, and the Authority commits that

it will not undertake any Soil Disturbance activity beyond that shown in Exhibit A until it receives written approval from SEPTA and formally accepts in writing the additional terms and conditions that SEPTA deems necessary regarding Soil Disturbance by the Authority beyond that shown in Exhibit A.

10. Limitations and Revocations.

- A. Under no circumstances shall this Agreement be construed as a grant of any right, title or interest of any kind in the Premises or in any other property of SEPTA.
- B. If the Authority violates any material term or condition of this Agreement, or breaches any commitment memorialized herein, SEPTA has the right to revoke the TCE and the Authority must cease its access and use of the SEPTA Premises until such time that the violation and/or breach is remedied.

11. Insurance. The Authority and its contractors shall secure, maintain and provide to SEPTA evidence of insurance coverages as specified in Exhibit D, which is attached hereto and incorporated herein. The Authority commits that it and its contractor shall maintain the required insurances for the duration of the Permit Term.

12. Liability. The Authority shall defend, save and hold harmless, and fully indemnify SEPTA and its officers, employees, and agents from any claims, suits or actions of whatsoever nature, loss, expenses or costs, including attorney fees, judgments, damages or liability arising from injury or death to persons or property, by reason of, and to the extent caused by, the negligent acts or omissions or willful misconduct of the Authority, its contractors, employees or agents under or in connection with or arising out of any activities pursuant to this Agreement. Nothing in this Section 8 requires the Authority or its insurer to indemnify SEPTA for claims of personal injury or property damage caused by the negligence or willful misconduct of SEPTA. This duty shall survive the expiration or termination of this Agreement.

13. Governing Law and Jurisdiction. This Agreement is governed by and is to be interpreted and enforced in accordance with the laws of the Commonwealth of Pennsylvania. All matters, disputes, claims, litigation, or any other proceedings, in connection with this Agreement, shall be brought and resolved, except for enforcement, in the state or federal courts located in the City of Philadelphia, Pennsylvania, irrespective of any procedural rules or laws related to venue and *forum non conveniens*. The Parties expressly consent to such jurisdiction and venue, and waive any objection to such jurisdiction or venue and all claims of inconvenience or lack of personal jurisdiction. The Parties represent and

acknowledge that their position on jurisdiction and venue described above is reasonable and has been freely and voluntarily made.

14. Pennsylvania Prevailing Wage Act: SEPTA is an agency and instrumentality of the Commonwealth of Pennsylvania, and as such SEPTA complies with the Pennsylvania Prevailing Wage Act (the “Wage Act”; Act of August 15, 1961, P.L. 987, as amended, 43 P.S. §§ 165-1-165-17; 34 Pa. Code §§ 9.101-9.112) with regard to paying its employees. SEPTA shall be responsible for obtaining correct guidance on whether or not prevailing wages are applicable to the work performed under this agreement. SEPTA can obtain prevailing wage rates and information about compliance through the following:

Bureau of Labor Law Compliance 1301 Labor & Industry Building Seventh & Forster Streets Harrisburg, PA 17120-0019; 717-787-4671; www.dli.state.pa.us.

SEPTA shall be responsible for complying with the applicable aspects of the Wage Act, such as maintaining documentation, certified payrolls, etc.

15. Record Keeping: SEPTA agrees that the Authority and/or its designees shall have the right to access and inspect SEPTA’s records relating to the construction phase of the Project at any time during reasonable business hours during the construction phase of the Project and for three (3) years after final billing.
16. Inspection and Approval of Work: That materials furnished and work performed under this Agreement will be subject at all times to the inspection and approval of the Authority, the PUC and the FHWA and/or their duly authorized representatives.
17. PUC Proceedings and Compliance:
 - A. Without admissions, waiver or prejudice as to SEPTA’s position regarding the PUC’s jurisdiction over SEPTA with regard to the Bridge, the Parties agree they will testify in any proceeding before the PUC in accordance with the terms of this Agreement and will submit this Agreement to the PUC with the request it be incorporated into any order issued by PUC.
 - B. Should there be any conflict between this Agreement and any order of the PUC, the Parties agree to be bound by the lawful orders of the PUC on matters within its jurisdiction or the final determination by any proper Court on an appeal from said order or orders. In the event the PUC’s order or final determination on appeal from said order as aforesaid directs SEPTA to bear its own costs for SEPTA’s Work for which Authority initially reimbursed SEPTA, SEPTA agrees to promptly return such reimbursement to the Authority. Further, if sums initially paid to SEPTA exceed the actual cost

for SEPTA's Work, SEPTA agrees to return within sixty (60) days all excess payments to the Authority

18. Federal Funding: The Project is subject to and contingent upon the approval for eligibility of Federal funds by the FHWA and failure to obtain such approval shall relieve the Parties of their obligations under this Agreement.
19. Cancellation, Abandonment, or Revision of the Project: It is further agreed that if, for any reason, the Project shall be canceled, abandoned, or revised, in such a manner that the work described in this Agreement should be no longer required, in the opinion of the Pennsylvania Secretary of Transportation, then in such event, the only amount which will be payable to SEPTA will be the actual and related indirect costs of the work actually completed at the time of notification by the Authority of the said cancellation, abandonment or revision, plus any additional expenses incurred by SEPTA in restoring its system to normal operation conditions.
20. Restrictions on Lobbying: Public Law 101-121, Section 319, 31 U.S. Code Section 1352, prohibits the recipient or any lower tier sub-recipients of a Federal contract, grant, loan or cooperative agreement from expending Federal funds to pay any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan or the entering into of any cooperative agreement. SEPTA agrees to execute and subsequently comply with the Certification of Restrictions on Lobbying attached hereto, incorporated herein, and marked as Exhibit E.
21. Amendments and Modifications: No alterations or variations to this Agreement shall be valid unless made in writing and signed by all Parties. Amendments to this Agreement shall be accomplished through a formal written document signed by all Parties with the same formality as this Agreement.
22. Titles Not Controlling: Titles of paragraphs are for reference only, and shall not be used to construe the language in this Agreement.
23. Severability: The provisions of this Agreement shall be severable. If any phrase, clause, sentence or provision of this Agreement is declared to be contrary to the Constitution of Pennsylvania or of the United States or of the laws of the Commonwealth the applicability thereof to any government, agency, person or circumstance is held invalid, the validity of the remainder of this Agreement and the applicability thereof to any government, agency, person or circumstance shall not be affected thereby.
24. No Waiver: Either Party may elect not to enforce its rights and remedies under this Agreement in the event of a breach by the other Party of any term or condition of

this Agreement. In any event, the failure by either Party to enforce its rights and remedies under this Agreement shall not be construed as a waiver of any subsequent breach of the same or any other term or condition of this Agreement.

25. Independence of the Parties: It is understood by and between the Parties that nothing contained herein is intended or shall be construed to, in any respect, create or establish the relationship of partners between SEPTA and the Authority, or as constituting the Authority as the representative or general agent of SEPTA for any purpose whatsoever.
26. Assignment: The instant Agreement may not be assigned by SEPTA, either in whole or in part, without the written consent of the Authority.
27. Third Party Beneficiary Rights: The Parties to this Agreement understand that this Agreement does not create or intend to confer any rights in or on persons or entities not a party to this Agreement.
28. Notices: All notices and reports arising out of, or from, the provisions of this Agreement shall be in writing and given to the Parties at the address provided under this Agreement, either by regular mail, facsimile, e-mail, or delivery in person.
29. Integration and Merger: This Agreement, when executed, approved and delivered, shall constitute the final, complete and exclusive Agreement between the Parties containing all the terms and conditions agreed on by the Parties. All representations, understandings, promises and agreements pertaining to the subject matter of this Agreement made prior to or at the time this Agreement is executed are superseded by this Agreement unless specifically accepted by any other term or provision of this Agreement. There are no conditions precedent to the performance of this Agreement except as expressly set forth herein.
30. Notices. All notices, demands or requests required or permitted under this Agreement shall be in writing and shall be personally delivered or sent by certified United States mail (postage prepaid, return receipt requested), overnight express mail or courier service providing for receipted delivery addressed as follows:

If to SEPTA to: Director of Civil Engineering
Southeastern Pennsylvania Transportation Authority
1234 Market Street, 13th Floor
Philadelphia Pennsylvania 19107

If to the Authority to: Upper Merion Transportation Authority
Attn: Authority Executive Secretary
Township Building
175 West Valley Forge Road

King of Prussia, PA 19406

or to such other person at such other address as a party shall designate by like notice to the other Party. Unless otherwise provided herein, all notices hereunder shall be deemed to be given when received or personally delivered.

- 31 Counterparts: The instant Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, and all of which together shall be deemed one and the same instrument.
- 32. Effective Date: Except as otherwise stated above, this Agreement is effective as of the date of the last signature below.

IN WITNESS WHEREOF, the Parties have caused the above terms to be executed and attested by their proper officials, pursuant to due and legal action authorizing the same to be done, the day and year first above written.

ATTEST:

SOUTHEASTERN PENNSYLVANIA
TRANSPORTATION AUTHORITY

_____		By: _____	_____	
Signature	Date	Signature	Date	Date

Carol R. Looby, Secretary

Jeffrey D. Knueppel, General Manager

Approved as to Form:

Office of General Counsel, SEPTA

ATTEST:

UPPER MERION TRANSPORTATION AUTHORITY

Signature Date By: _____
Signature Date

Title _____
Title

ATTEST:

MONTGOMERY COUNTY

_____		By: _____	
Signature	Date	Signature	Date
_____		_____	
Title		Title	

Exhibit A

Exhibit B

LPA - 27 (6/07)

FEDERAL PROJECT NO.	X064-204-H1110
PROJECT NAME/ROUTE	East Church Road
COUNTY	Montgomery
MUNICIPALITY	Upper Merion Township
PARCEL NO.	09
CLAIM NO.	NA
CLAIMANT	Southeastern Pennsylvania Transportation Authority

TEMPORARY EASEMENT FOR CONSTRUCTION PURPOSES

THIS INDENTURE, made this 28th day of March, 2019, by the Southeastern Transportation Authority, its directors, officers, successors and/or assigns (collectively SEPTA; herein OWNER), as the owner of certain real property (herein whether singular or plural, the PARCEL), as identified on Attachment A, that is affected by the construction work related to the above referenced transportation improvement project (PROJECT), and the Upper Merion Transportation Authority (UMTA; herein PURCHASER, (herein each is a Party and collectively are the Parties.)

WITNESSETH:

WHEREAS the PURCHASER intends to record a plan in the Recorder of Deeds Office of the aforesaid County indicating its intention to undertake the PROJECT, for which it will need to use the PARCEL of OWNER; and

WHEREAS the Parties hereto have agreed that the OWNER will grant to the PURCHASER a temporary easement for construction purposes for the use of the PARCEL;

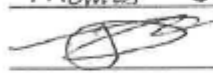
NOW, THEREFORE, in consideration of the sum of one (\$1.00) Dollar, the Owner hereby grants to the PURCHASER a temporary construction easement for the purpose of undertaking the PROJECT, with said PARCEL easement to extend to the area shown on the plot plan which is attached hereto as Attachment A and made a part hereof and to include authorization for the entry and re-entry of employees, agents and contractors of the PURCHASER upon the PARCEL to do any and all work necessary for the completion of the PROJECT, including the removal of any buildings and/or other structures located on the area covered by the easement; provided, however, that, upon completion of the PROJECT, the PURCHASER shall be obligated to restore the area covered by the easement to a condition commensurate with that of the balance of the property of the OWNER, such restoration to include removal of debris, filling of holes left by the removal of buildings or structures, draining, filling and/or capping of wells, cesspools and septic tanks; grading and sowing of grass. The estimated completion date of the PROJECT work on the PARCEL is December 31, 2022. The temporary easement for construction area is 0.017 Acres.

The OWNER does further remise, release, quitclaim and forever discharge the PURCHASER or any agency or political subdivision thereof or its or their employees or representatives of and from all suits, damages, claims and demands which the OWNER might otherwise have been entitled to assert under the provisions of the Eminent Domain Code, 26 Pa.C.S. § 101 et seq., for or on account of this conveyance.

The Parties have executed or caused to be executed this document, with the intention to be legally bound thereby.

PURCHASER

Upper Merion
Transportation Authority

Thomas J. Kohler

Chairman

OWNER

Southeastern Pennsylvania
Transportation Authority:

By: 
Jeffery D. Kneppel
Title : General Manager

Date: 3/28/19

Approved as to Form:


Office of General Counsel

D

FEDERAL PROJECT NO	X064-204-H110
PROJECT NAME/ROUTE	East Church Road
COUNTY	Montgomery
MUNICIPALITY	Upper Merion Township
PARCEL NO.	9
CLAIM NO.	NA
CLAIMANT	Southeastern Pennsylvania Transportation Authority (SEPTA)

SETTLEMENT STATEMENT

PROJECTED DISTRIBUTION DATE

Date:

ADDRESS OF CLAIMANT(S)	LOCATION (ADDRESS) OF PROPERTY	CLAIMANT'S ATTORNEY AND ADDRESS
1234 Market Street, 13th Floor, Philadelphia, PA 19107-3780	East Church Road approximately 400 feet east of Yerkes Road in Upper Merion Township, Montgomery County	Southeastern PA Trans. Authority (SEPTA) 1234 Market Street, Philadelphia, PA 19107-3780

Final Settlement	\$1.00
Pro-Rata Share of Current Realty Taxes	\$0.00
Mortgage Pre-Payment Penalty	\$0.00
Mortgage Satisfaction Fee	\$0.00
Less Monies Previously Paid	\$0.00
Less Monies Credited for Owner Retained Items	0
Withheld Pending Building Removal by Owner	\$0.00
Total Available for Distribution	\$1.00

CHARGES:	
Mortgage(s):	
Mortgagee:	0
Principal:	0.00
Interest (to date:)	0.00
Pre-Payment Penalty*:	0.00
Satisfaction Fee*:	0.00
Unpaid Current Taxes:	
Claimant(s) Pro-Rata Share	
Pro-Rata Share*	0.00
TOTAL	
Liens and/or Delinquent Taxes and Municipal Claims:	
Judgment(s):	
TOTAL CHARGES	
0	

*Paid by

Minus Total Charges \$1.00

Balance Due Claimant(s) 0

{00914083;v1}


The distribution of funds as shown on the reverse hereof is approved and the "Balance Due Claimant(s)" is acknowledged to be correct. I hereby acknowledge receipt of a copy of this settlement statement.

INDIVIDUALS

ENTITIES*


GRANTOR:

SEPTA
(Name of Entity)

BY: 
BY: Jeffrey D. Kuwepp

* Use this block for a corporation, partnership, LLC, government entity, school district, church, trust, club, association, POA, attorney-in-fact, executor, administrator or any other entity.

I Hereby Certify That The Information On This Form Is True And Correct, According To The Records Of The Local Project Sponsor.


Signature

Charman
Title

Date - 3/27/2019

Exhibit C

*SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
DETAILED COST BREAKDOWN
FORCE ACCOUNT LABOR*

PROJECT NAME: Church Road Bridge over NHSL
TASK DESCRIPTION: Force Account Estimate for PennDOT Agreement
FY19-FY20 (2) Bussing Weekends for Outages

ESTIMATED START DATE: 9/1/2018 **ESTIMATED COMPLETION DATE:** 9/1/2020

Fiscal Year 2019	\$299,614.00
Fiscal Year 2020	\$299,614.00
Weekend Outage Bussing	<u>\$240,000.00</u>
TOTAL:	\$839,228.00

Department : EMC - Civil Engineering Dept.

Estimated By Qwyn Durrett Date: 6/26/2019

Title: CE Designer

Approved By: D. Stefanski Date: 6/26/2019 Project Manager Concurrence: _____ Date: _____

Title: Program Manger

S:\Track_Civil_Engineering\Civil\Projects\STD\NHSL\Project Coordination\Church Rd Bridge Reconstruction\CONSTRUCTION\FA-DCB-Church

**SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
DETAILED COST BREAKDOWN
FORCE ACCOUNT LABOR**

PROJECT NAME: Church Road Bridge over NHSL
TASK DESCRIPTION: Pre-Construction Activities - Bridge Demo

ESTIMATED START DATE: 1/1/2019 **ESTIMATED COMPLETION DATE:** 12/31/2019

POSITION DESCRIPTION (1)	JOB CLASS (2)	MGMT. CENTER (3)	NO. OF WORKERS (4)	ST. HOURS (5)	O.T. HOURS (6)	O.T. PREM. (1/2 O.T.HRS) (7)	TOTAL HOURS WORKED (4)*(5)+(6) (8)	HOURLY RATE (8)	COST OF HOURS WORKED (4)*(5+6)*(8) (9)	COST OF PREMIUM TIME (4)*(7)*(8) (10)
TRACK GENERAL HELPER	1274	19221	1	200	200	100	400.0	\$26.59	\$10,636.00	\$2,659.00
PROJECT ENGINEER	1015	19223	1	500	300	150	800.0	\$34.14	\$27,312.00	\$5,121.00
MANAGER ENGINEERING	8036	19223	1	100	80	40	180.0	\$51.02	\$9,183.60	\$2,040.80
DIRECTOR OF MAINTENANCE	2020	19240	1	50	25	12.5	75.0	\$50.03	\$3,752.25	\$625.38
SIGNAL FIELD SPECIALIST	762	19241	1	50	25	120	75.0	\$32.47	\$2,435.25	\$3,896.40
SIGN MAINTAINER - FIRST CLASS	781	19241	1	50	25	120	75.0	\$32.18	\$2,413.50	\$3,881.60
MAINTENANCE MANAGER	2010	19241	1	50	25	120	75.0	\$35.78	\$2,683.50	\$4,293.60
LINEPERSON - 1ST CLASS	0731	19253	3	200	200	360	1200.0	\$31.20	\$37,440.00	\$33,896.00
ASSISTANT DIRECTOR OF MAINTENANCE	2003	19253	1	200	200	100	400.0	\$39.60	\$15,840.00	\$3,960.00
SUB-TOTAL:							3280.0		\$111,696.10	\$60,153.78
FRINGES @ :							90		\$100,526.49	N/A
TOTAL:									\$212,222.59	\$60,153.78
								Support @ 10%	\$27,237.64	
GRAND TOTAL:									\$239,460.23	\$60,153.78

Department : EMC - Civil Engineering Dept.

Estimated By Qwyn Durrett Date: 6/26/2019

Title: CE Designer

Approved By: D. Stefanski Date: 6/26/2019 Project Manager Concurrence: _____ Date: _____

Title: Program Manager

S:\Track_Civil_Engineering\Civil\Projects\STDINHSL\Project Coordination\Church Rd Bridge Reconstruction\CONSTRUCTIONESTIMATES\IFA-DCB-Church

**SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY
DETAILED COST BREAKDOWN
FORCE ACCOUNT LABOR**

PROJECT NAME: Church Road Bridge over NHSL
 TASK DESCRIPTION: Pre-Construction Activities - Bridge Demo

ESTIMATED START DATE: 1/1/2020 ESTIMATED COMPLETION DATE: 12/30/2020

POSITION DESCRIPTION (1)	JOB CLASS (2)	MGMT. CENTER (3)	NO. OF WORKERS (4)	ST. HOURS (5)	O.T. HOURS (6)	O.T. PREM. (1/2 O.T.HRS) (7)	TOTAL HOURS WORKED (4)+(5)+(6) (8)	HOURLY RATE (9)	COST OF HOURS WORKED (4)*(5)+(6)*(9) (10)	COST OF PREMIUM TIME (4)*(7)*(9) (11)
TRACK GENERAL HELPER	1274	19221	1	200	200	100	400.0	\$26.59	\$10,636.00	\$2,659.00
PROJECT ENGINEER	1015	19223	1	500	300	150	800.0	\$34.14	\$27,312.00	\$5,121.00
MANAGER ENGINEERING	8038	19223	1	100	80	40	180.0	\$51.02	\$9,183.60	\$2,040.80
DIRECTOR OF MAINTENANCE	2020	19240	1	50	25	12.5	75.0	\$50.03	\$3,752.25	\$625.38
SIGNAL FIELD SPECIALIST	762	19241	1	50	25	120	75.0	\$32.47	\$2,435.25	\$3,896.40
SIGN MAINTAINER - FIRST CLASS	761	19241	1	50	25	120	75.0	\$32.18	\$2,413.50	\$3,881.80
MAINTENANCE MANAGER	2010	19241	1	50	25	120	75.0	\$35.78	\$2,683.50	\$4,293.60
LINEPERSON - 1ST CLASS	0731	19253	3	200	200	380	1200.0	\$31.20	\$37,440.00	\$33,696.00
ASSISTANT DIRECTOR OF MAINTENANCE	2003	19253	1	200	200	100	400.0	\$39.60	\$15,840.00	\$3,960.00
SUB-TOTAL:							3280.0		\$111,696.10	\$80,153.78
FRINGES @ 90									\$100,526.49	N/A
TOTAL:									\$212,222.59	\$80,153.78
Support @ 10%									\$27,237.64	
GRAND TOTAL:									\$239,460.23	

Department : EMC - Civil Engineering Dept.

Estimated By: Qwyn Durrett Date: 6/26/2019

Title: CE Designer

Approved By: D. Stefanski Date: 6/26/2019 Project Manager Concurrence: _____ Date: _____

Title: Program Manager

S:\Track_Civil_Engineering\Civil\Projects\STD\NHSL\Project Coordination\Church Rd Bridge Reconstruction\CONSTRUCTION\ESTIMATES\FA-DCB-Church

Exhibit D

RISK MANAGEMENT DEPARTMENT

1. **Worker's Compensation Insurance:** As required by the applicable laws and statutory requirements of the Commonwealth of Pennsylvania. Said insurance shall include Employer's Liability Coverage for \$500,000 per accident/disease.
2. **Commercial General Liability Insurance:** \$2,000,000 combined single limit (bodily injury and property damage) per occurrence.
3. **Commercial Automobile Liability Insurance:** \$1,000,000 combined single limit (bodily injury and property damage) per occurrence.
4. **Railroad Protective Liability Insurance:** \$2,000,000 combined single limit (bodily injury and property damage) per occurrence and \$6,000,000 annual aggregate.
5. **Pollution Liability Insurance:** \$5 million per occurrence with a \$10 million annual aggregate, written on coverage for CG 00-39.

The Upper Merion Transportation Authority ("Authority") will act to have SEPTA named as additional insured on all required commercial general liability insurance and automobile liability insurance and the named insured on the Railroad Protective Liability Insurance.

SEPTA reserves the right to change the insurance Requirements. SEPTA will give the Authority sixty (60) days' written notice of any change thereto.

Exhibit E

LOBBYING CERTIFICATION FORM

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- 1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.
- 2) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, Disclosure of Lobbying Activities, in accordance with its instructions.
- 3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed under *Section 1352, Title 31, U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than **\$100,000** for such failure.

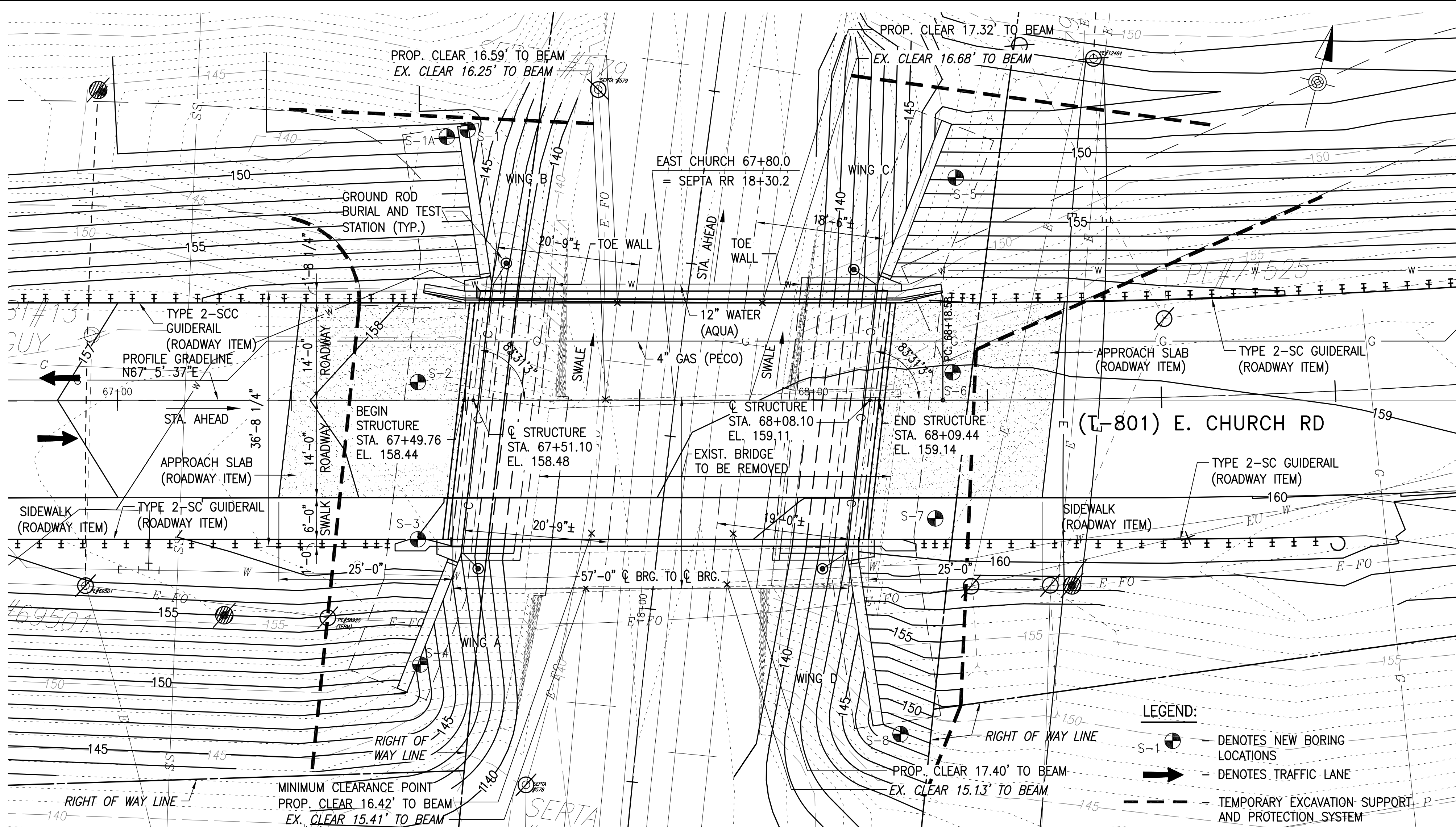
SIGNATURE: _____

TITLE: _____

DATE: _____

**Enclosure 1 to Management Directive 305.16 Amended
Page 1 of 1**

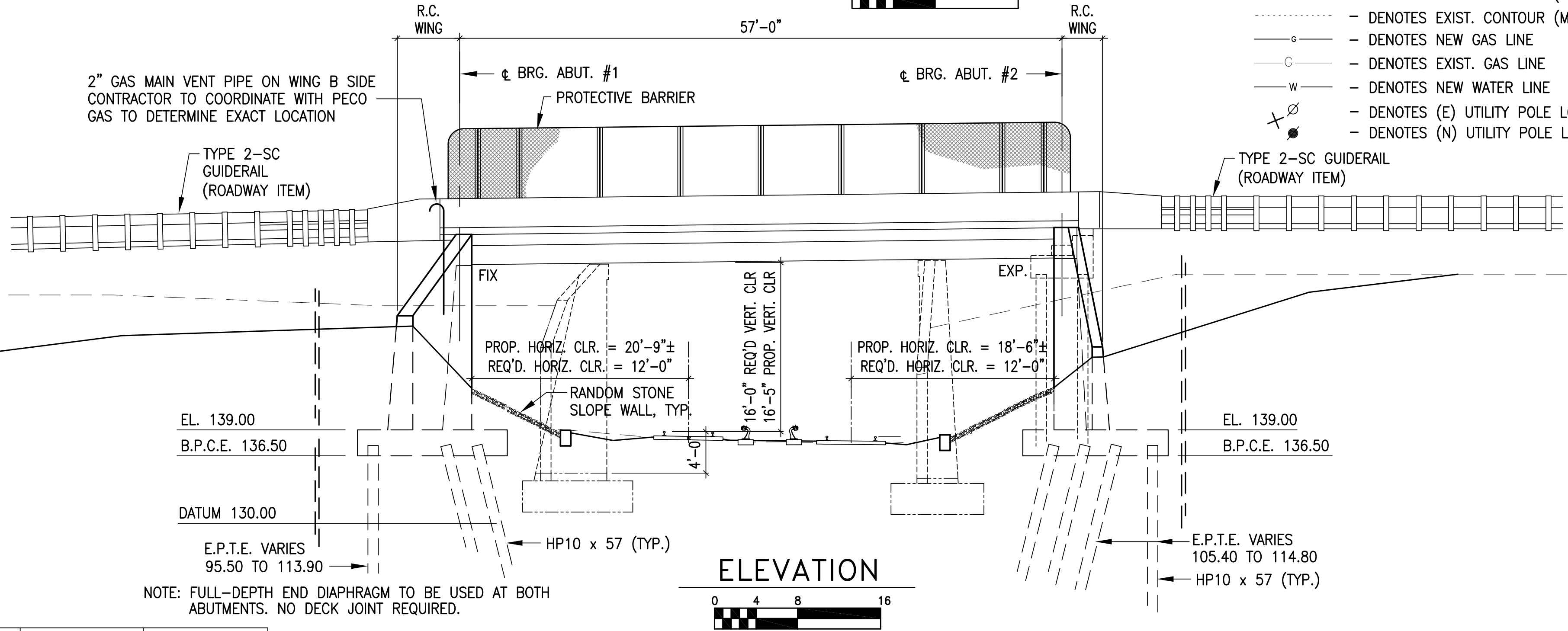
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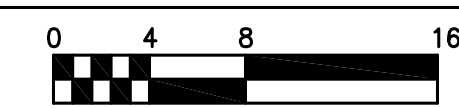
PLAN



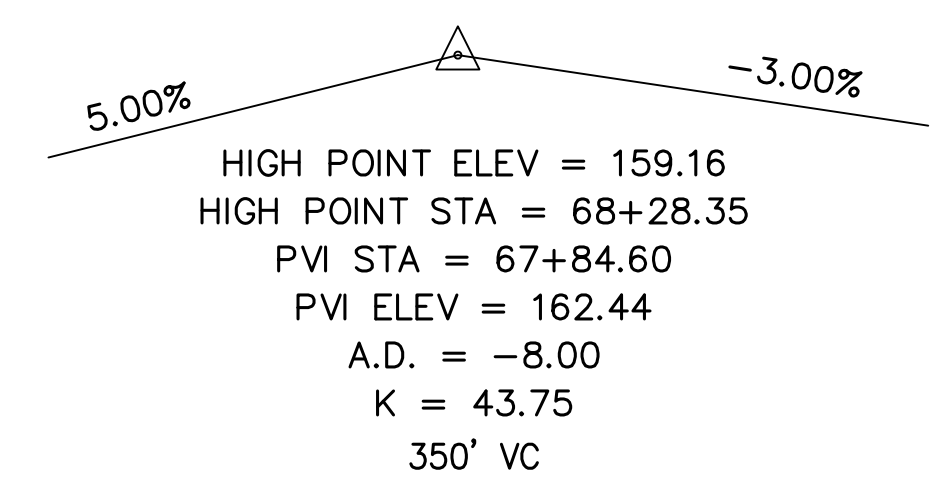
- LEGEND:**
- S-1 ● DENOTES NEW BORING LOCATIONS
 - ➔ DENOTES TRAFFIC LANE
 - DENOTES TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM
 - 145- DENOTES NEW CONTOUR
 - - - DENOTES EXIST. CONTOUR (MAJOR)
 - · - - DENOTES EXIST. CONTOUR (MINOR)
 - c - DENOTES NEW GAS LINE
 - G - DENOTES EXIST. GAS LINE
 - w - DENOTES NEW WATER LINE
 - ∅ - DENOTES (E) UTILITY POLE LOCATION
 - N - DENOTES (N) UTILITY POLE LOCATION



ELEVATION



VERTICAL CURVE: EAST CHURCH ROAD



CHURCH RD (T-801) HORIZONTAL CURVE DATA

P.I. STA. 69+07.37
 Δ = 08' 22' 00" LT
 D = 04' 43' 11"
 T = 88.79'
 L = 177.27'
 R = 1214.00'
 E = 3.24'
 e_{max} = 4.5%

SEPTA ROUTE 100 HORIZONTAL CURVE DATA

P.I. STA. 19+55.71
 Δ = 33' 50' 46" LT
 T = 871.65'
 L = 1692.31'
 R = 2864.80'
 E = 129.67'

SOIL BORING LOCATION		
BORING NO.	STATION	OFFSET
S-1	67 + 50.00	39.0' LT
S-1A	67 + 47.00	38.0' LT
S-2	67 + 43.00	3.0' LT
S-3	67 + 43.00	20.0' RT
S-4	67 + 43.50	38.0' RT
S-5	68 + 20.50	32.0' LT
S-6	68 + 20.00	4.0' LT
S-7	68 + 17.50	17.0' RT
S-8	68 + 12.50	48.0' RT

Design reviewed by: PE Seal

NTM Engineering, Inc.
130 W. Church St., Suite 200
Dillsburg, PA 17019

The design and review is for general conformance with the Department's design and construction criteria and standards and is not intended to relieve the designer of full responsibility for the accuracy and completeness of the plans.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
GENERAL PLAN AND ELEVATION

SHEET 1 OF 59
 BPAA-462653

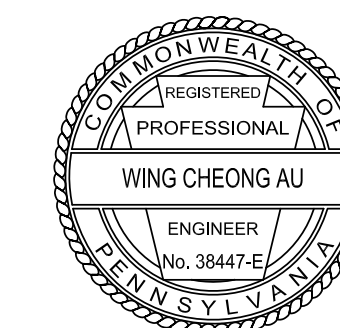
PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103

INDEX OF DRAWINGS

SHEET NO.	TITLE	SHEET NO.	TITLE
1	GENERAL PLAN AND ELEVATION	29	ABUT. 2 BARRIER TRANSITION DETAILS
2	INDEX OF DRAWINGS	30	ABUTMENT 2 WING C SECTION & ELEV.
3	QUANTITIES	31	ABUTMENT 2 WING D SECTION & ELEV.
4	GENERAL NOTES	32	ABUTMENT 2 REBAR SCHEDULE
5	TYP. SECTION AND ELEVATION CHART	33	FRAMING PLAN 1
6	STAKE-OUT PLAN AND EXISTING HORIZONTAL CLEARANCES	34	BEAM DETAIL
		35	BOX BEAM DETAILS
7	ABUTMENT 1 FOOTING LAYOUT	36	BEAM FABRICATION DETAILS 1
8	ABUTMENT 1 LOAD AND RESISTANCES	37	BEAM FABRICATION DETAILS 2
9	ABUTMENT 1 FOOTING PLAN	38	STRAND TABLES
10	ABUTMENT 1 PLAN AND ELEVATION	39	DIAPHRAGM DETAILS 1
11	ABUTMENT 1 SECTION	40	DIAPHRAGM DETAILS 2
12	ABUTMENT 1 DETAILS 1	41	DIAPHRAGM DETAILS 3
13	ABUTMENT 1 DETAILS 2	42	ELASTOMERIC BEARING DETAILS
14	ABUTMENT 1 BEARING SEAT ELEV.	43	SLAB REINFORCING PLAN
15	ABUTMENT 1 SAFETY WING DETAIL	44	SLAB SECTION
16	ABUT. 1 BARRIER TRANSITION DETAILS	45	MISC. DECK AND BARRIER DETAILS
17	ABUTMENT 1 WING A SECTION & ELEV.	46	BARRIER AND SIDEWALK DETAILS
18	ABUTMENT 1 WING B SECTION & ELEV.	47	SUPERSTRUCTURE REBAR SCHEDULE
19	ABUTMENT 1 REBAR SCHEDULE	48	UTILITY ATTACHMENT DETAILS
20	ABUTMENT 2 FOOTING LAYOUT	49	BONDING AND GROUNDING DETAILS
21	ABUTMENT 2 LOAD AND RESISTANCES	50	RATING TABLES WITH FWS
22	ABUTMENT 2 FOOTING PLAN	51	RATING TABLES WITHOUT FWS
23	ABUTMENT 2 PLAN AND ELEVATION	52	TEST BORING LOGS 1
24	ABUTMENT 2 SECTION	53	TEST BORING LOGS 2
25	ABUTMENT 2 DETAILS 1	54	TEST BORING LOGS 3
26	ABUTMENT 2 DETAILS 2	55	TEST BORING LOGS 4
27	ABUTMENT 2 BEARING SEAT ELEV.	56	TEST BORING LOGS 5
28	ABUTMENT 2 SAFETY WING DETAIL	57	EXIST. STRUCTURE - FOR INFO. ONLY
		58	EXIST. STRUCTURE - FOR INFO. ONLY
		59	EXIST. STRUCTURE - FOR INFO. ONLY

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

INDEX OF DRAWINGS

RECOMMENDED _____ SHEET 2 OF 59
BPAA-462653

File: S-2-RevISED.dwg Layout: 2 Plotted: 3/27/19 at 11:06am By: evjacinto

ALTERNATE STRUCTURE ITEMS			
ITEM NO.	ITEM	UNIT	TOTAL
8010-0001	BRIDGE STRUCTURE, AS DESIGNED, BPAA-462653	LS	LUMP SUM
8000-0001	PRESTRESSED CONCRETE BRIDGE STRUCTURE	LS	LUMP SUM
8100-0001	STEEL BRIDGE STRUCTURE	LS	LUMP SUM

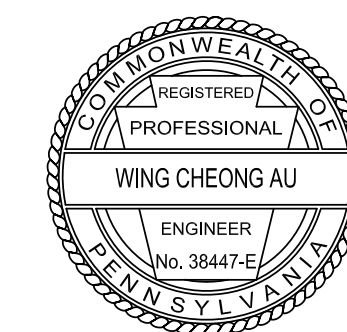
SUPPLEMENTAL DRAWINGS		
DESCRIPTION	DWG.NO.	REC'D DATE
THREE-BEAM TO VERTICAL WALL BRIDGE BARRIER TRANSITION CONNECTION	BC-703M	08-04-17
ALUMINUM PROTECTIVE BARRIER	BC-711M	09-30-16
PERMANENT METAL DECK FORMS	BC-732M	09-30-16
ANCHOR SYSTEMS	BC-734M	08-04-17
WALL CONSTRUCTION & EXPANSION JOINT DETAILS	BC-735M	09-30-16
REINFORCEMENT BAR FABRICATION DETAILS	BC-736M	09-30-16
BRIDGE BARRIER TO GUIDE RAIL TRANSITION	BC-739M	08-04-17
BRIDGE DRAINAGE	BC-751M	09-30-16
CONCRETE DECK SLAB DETAILS	BC-752M	09-30-16
BEARINGS	BC-755M	09-30-16
STEEL PILE TIP REINFORCEMENTS & SPLICES	BC-757M	09-30-16
MISCELLANEOUS PRESTRESS DETAILS	BC-775M	09-30-16
RANDOM STONE SLOPE WALL	BC-781M	09-30-16
TYPICAL WATERPROOFING AND EXPANSION DETAILS	BC-788M	09-30-16
UTILITY ATTACHMENT & SUPPORT DETAILS, PRESTRESSED BRIDGES	BC-794M	09-30-16
CLASSIFICATION OF EARTHWORK FOR STRUCTURES	RC-11M	06-01-10
BACKFILL AT STRUCTURES	RC-12M	09-15-16
BRIDGE APPROACH SLABS	RC-23M	06-01-10
TYPE 31 STRONG POST GUIDE RAIL	RC-51M	08-04-17
GUIDE RAIL TO BRIDGE BARRIER TRANSITIONS	RC-50M	08-04-17

APPROXIMATE QUANTITIES - BRIDGE STRUCTURE DESIGNED						
ITEM NO.	ITEM	UNIT	ABUT.1	ABUT.2	SUPER.	TOTAL
8010-0001	BRIDGE STRUCTURE, AS DESIGNED, BPAA-462653 *	LS				X
(1)	CLASS 3 EXCAVATION	CY	1228	1126	---	2354
(1)	MEMBRANE WATERPROOFING SYSTEM INSTALLED ON OTHER SURFACES	SY	50	51	---	101
(1)	NO.57 COARSE AGGREGATE (2)	CY	4	4	---	8
(1)	CLASS AAAP CEMENT CONCRETE	CY	---	---	82 (3)	82
(1)	CLASS AA CEMENT CONCRETE (4)	CY	21 (5)	22 (5)	27 (6)	70 (7)
(1)	CLASS A CEMENT CONCRETE (8)	CY	206	228	---	434
(1)	SELECTED BORROW EXCAVATION, STRUCTURE BACKFILL	CY	1263	1423	---	2686
(1)	STEEL BEAM TEST PILES HP10x57 (9)	LS	- (10)	- (10)	---	X
(1)	ALUMINUM PROTECTIVE BARRIER	LF	---	---	120	120
(1)	PRESTRESSED CONCRETE SPREAD BOX BEAMS, 48" X 21"	LF	---	---	293	293
AND						
1002-0001 (11)	REINFORCEMENT BARS	LB	7422	8102	---	15524
AND						
1002-0053 (11)	REINFORCEMENT BARS, EPOXY COATED	LB	12764 (12)	13199	16451	42414
AND						
1005-1102 (13)	STEEL BEAM BEARING PILES, HP10x57, GRADE 50	LF	1650	1566	---	3216
AND						
1005-1252 (13)	STEEL BEAM (HEAVY DUTY) PILE TIP REINFORCEMENT, HP10x57	EACH	50	53	---	103
0675-0001	RANDOM STONE SLOPE WALL (14)	CY	13	15	---	28
1019-0050	PROTECTIVE COATING FOR REINFORCED CONCRETE SURFACES (PENETRATING SEALERS, BRIDGE SUPERSTRUCTURE) (15) (16)	SY	---	---	353	353
1091-0335	EPOXY INJECTION CRACK SEAL	DOLLAR	---	---	2500	2500
9005-0613	PREDRILLING FOR UNFORESEEN OBSTRUCTIONS, OBSTRUCTION DRILLING, BPAA-462653*	LF	138	124	---	262
9005-0621	PILE EXTRACTION AND REDRIVING, BPAA-462653*	LS	---	---	---	X
9005-0703	MOBILIZATION FOR PREDRILLING FOR UNFORESEEN OBSTRUCTIONS, BPAA-462653*	DOLLAR	---	---	---	3000
9999-1010	INSTALLATION OF PECO ENERGY GAS FACILITIES	DOLLAR	---	---	---	28500
9999-1011	INSTALLATION OF AQUA PA WATER MAIN	DOLLAR	---	---	---	65000
9203-0104	TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM *	LS	---	---	---	X

- (1) ITEMS IN BRIDGE STRUCTURE LUMP SUM ITEM 8010-0001 - GIVEN FOR INFORMATION ONLY.
 - (2) GEOTEXTILE CLASS 1 IS INCIDENTAL TO NO. 57 COARSE AGGREGATE.
 - (3) INCLUDES CLASS AAAP CONCRETE IN DECK SLAB AND SIDEWALKS, AND APPROXIMATELY 3 CUBIC YARDS OF CLASS AAAP CONCRETE TO ACCOUNT FOR STAY-IN-PLACE FORM TROUGHS.
 - (4) TYPE B INSERT ASSEMBLY (2 EACH) AND TYPE C INSERT ASSEMBLY (2 EACH) ARE INCIDENTAL TO SAFETY WING AND TRANSITION BARRIER CLASS AA CONCRETE QUANTITIES.
 - (5) INCLUDES CLASS AA CONCRETE IN SHEAR BLOCKS, CHEEKWALLS, AND U-WINGS ABOVE THE HORIZONTAL CONSTRUCTION JOINT NEAR THE BRIDGE SEAT. INCLUDES ALL OF SAFETY WING AND BARRIER TRANSITION.
 - (6) INCLUDES CLASS AA CONCRETE IN CURBS, BARRIERS, AND CONCRETE DIAPHRAGMS.
 - (7) QUANTITY TO BE USED FOR CLASS AA CONCRETE UNDER THE DECK COLUMN HEADING ON THE STRUCTURE COST DATA FORM.
 - (8) WATERPROOFING MEMBRANE AT THE BASE OF THE ABUTMENT AND WINGS IS INCIDENTAL TO CLASS A CEMENT CONCRETE.
 - (9) INCLUDES 6 PILE TIP REINFORCEMENT.
 - (10) ABUT. 1 TEST PILES SHOWN ON SHEET 7 OF 59, ABUT 2 TEST PILES SHOWN ON SHEET 20 OF 59.
 - (11) FOR AS DESIGNED STRUCTURE, INCLUDED IN BRIDGE BID ITEMS.
FOR ALTERNATE DESIGNS, INCLUDED IN BRIDGE STRUCTURE LUMP SUM BID ITEM.
 - (12) INCLUDES 94 LBS OF EPOXY-COATED DOWELS.
 - (13) INCLUDED IN BRIDGE BID ITEMS.
 - (14) QUANTITIES FOR CLASS A CONCRETE IN TOE WALL AND CUTOFF WALLS AT APPROXIMATELY 3.50 CY FOR ABUTMENT 1 AND 3.50 CY FOR ABUTMENT 2, AND GEOTEXTILE FABRICS ARE INCIDENTAL TO RANDOM STONE.
 - (15) QUANTITIES INCLUDE COATING FOR BARRIERS (30 SY), SAFETY WINGS (31 SY) AND APPROACH SLAB (180 SY).
 - (16) ONLY APPLY PROTECTIVE COATING IF CONCRETE IS POURED BETWEEN SEPTEMBER 1 AND MARCH 1 PER PUBLICATION 408M, SECTION 1001.3(K)6.
- (*) SEE SPECIAL PROVISIONS.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

QUANTITIES

RECOMMENDED _____	SHEET <u>3</u> OF <u>59</u>
BPAA-462653	

File: S-3-RevISED.dwg Layout: 3 Plotted: 7/11/19 at 11:51am By: evjacinto

GENERAL NOTES:

PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH SPECIFICATIONS PUBLICATION 408/2016 AND THE CONTRACT SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS:

1. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2014, AND AS SUPPLEMENTED BY DESIGN MANUAL, PART 4 (DM-4), APRIL 2015.
2. LIVE LOAD DISTRIBUTION TO GIRDERS IS BASED UPON DM-4 DISTRIBUTION FACTOR METHOD.
3. DESIGN IS IN ACCORDANCE WITH THE LRFD METHOD.
4. ALL WORK SHALL COMPLY WITH SEPTA'S STRUCTURAL ENGINEERING RIGHT-OF-WAY DESIGN AND CONSTRUCTION STANDARDS.

DESIGN LIVE LOADS:

1. PHL-93, ML-80, TK527 OR P-82 (204 kip PERMIT LOAD)
2. FATIGUE DESIGN IS BASED ON THE FOLLOWING:
PRESTRESSED CONCRETE: ADT 315 (185)
(ONE-DIRECTIONAL)
MAXIMUM ALLOWABLE TENSILE STRESS IN PRECOMPRESSED TENSILE ZONE:
0.0948√f'c (ksi)

DEAD LOADS:

1. INCLUDES A SURFACE AREA DENSITY OF 30 LB/SF FOR FUTURE WEARING SURFACE ON THE DECK SLAB.
2. INCLUDES A SURFACE AREA DENSITY OF 15 LB/SF FOR PERMANENT METAL DECK FORMS WHICH TAKES INTO ACCOUNT THE WEIGHT OF THE FORM, PLUS THE WEIGHT OF THE CONCRETE IN THE VALLEYS OF THE FORMS.
3. INCLUDES WEIGHT OF UTILITIES OF 200 LB/LF FOR WATER AND 60 LB/LF FOR GAS.
4. INCLUDES WEIGHT OF PROTECTIVE BARRIER OF 50 LB/LF ON BOTH SIDES.

GENERAL:

1. STATIONS AND ELEVATIONS ARE GIVEN IN FEET UNLESS OTHERWISE NOTED.
2. PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
3. IF CONCRETE DIAPHRAGMS ARE POURED MONOLITHICALLY WITH THE DECK, USE CLASS AAAP CEMENT CONCRETE FOR THE DIAPHRAGMS AT NO ADDITIONAL COST.

USE CLASS AAAP CEMENT CONCRETE IN:
DECK SLAB
SIDEWALKS

USE CLASS AA CEMENT CONCRETE IN:
CURBS
CONCRETE DIAPHRAGMS
U-WINGS ABOVE BEARING SEAT CONSTRUCTION JOINT
SAFETY WINGS
CHEEK WALLS
SHEAR BLOCKS
FOOTINGS (WHEN SPECIFIED)
DECK BARRIERS

USE CLASS A CEMENT CONCRETE IN:
ABUTMENTS BELOW BEAM SEAT, WINGWALLS AND FOOTINGS

4. A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST.
5. PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615, A 996, OR A 706.
DO NOT WELD GRADE 60 REINFORCING STEEL BARS UNLESS SPECIFIED.
GRADE 40 REINFORCING STEEL BARS MAY BE SUBSTITUTED WITH A PROPORTIONAL INCREASE IN CROSS-SECTIONAL AREA, IF APPROVED BY THE CHIEF BRIDGE ENGINEER.
DO NOT USE RAIL STEEL A 996 REINFORCEMENT BARS IN BRIDGE ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, PILES, BARRIERS OR WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.
6. USE EPOXY-COATED REINFORCEMENT BARS IN:
DECK SLAB
SIDEWALKS
BARRIERS
STIRRUPS PROTRUDING FROM DIAPHRAGMS AND PRESTRESSED BEAMS INTO THE DECK SLAB
U-WINGS ABOVE THE CONSTRUCTION JOINT
J-BAR REINFORCEMENT IN SUBSTRUCTURE UNITS
SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED
7. WELDING OF REINFORCEMENT BARS DURING FABRICATION OR CONSTRUCTION IS NOT PERMITTED UNLESS SPECIFIED.
8. RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.
9. SEISMIC FORCES WERE CONSIDERED FOR AN ACCELERATION COEFFICIENT OF 0.15, AND A SITE COEFFICIENT OF 1.00.
10. CONSTRUCT DECK SLAB TRANSVERSE CONSTRUCTION JOINTS PARALLEL TO BRIDGE CENTERLINE OF BEARINGS.
11. PLACE CHEEKWALL AND CONCRETE SHEAR BLOCKS AFTER BEAMS ARE SET IN POSITION.
12. CHAMFER EXPOSED CONCRETE EDGES 1 IN BY 1 IN, EXCEPT AS NOTED.
13. ALL DIMENSIONS SHOWN ARE HORIZONTAL, EXCEPT AS NOTED.
14. USE EITHER PERMANENT METAL FORMS OR REMOVABLE FORMS TO CONSTRUCT THE DECK SLAB.
15. DECK SLAB THICKNESS INCLUDES A 0.5" INTEGRAL WEARING SURFACE.
16. SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR A NORMAL TEMPERATURE OF 68 DEGREES F.
17. GALVANIZED REINFORCEMENT STEEL BARS MAY BE SUBSTITUTED FOR EPOXY-COATED REINFORCEMENT STEEL BARS AT NO ADDITIONAL COST.

UTILITY NOTES:

1. COORDINATE, LOCATE, AND CONDUCT ALL WORK RELATED TO PUBLIC AND PRIVATE UTILITIES IN ACCORDANCE WITH PUBLICATION 408/2016, SECTIONS 105.06 AND 107.12.
2. VERIFY AND LOCATE ALL EXISTING UTILITIES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED, AND ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO UTILITIES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISION, OR LIABILITY FOR ACCURACY OF TYPE, SIZE AND LOCATION OF ANY UTILITY.

GENERAL CONSTRUCTION:

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFE ERECTION OF ALL STRUCTURES. PROVIDE ALL NECESSARY BRACING AND SUPPORTS. CONSTRUCTION ACTIVITY WILL NOT BE ALLOWED OUTSIDE THE RIGHT-OF-WAY.

EXISTING STRUCTURE PLANS:

1. DO NOT CONSIDER ANY OF THE DATA ON THE EXISTING STRUCTURE SUPPLIED IN THE ORIGINAL DESIGN DRAWINGS OR MADE AVAILABLE TO YOU BY THE DEPARTMENT OR ITS AUTHORIZED AGENT AS POSITIVE REPRESENTATIONS OF ANY OF THE CONDITIONS THAT YOU WILL ENCOUNTER IN THE FIELD.
2. THE INFORMATION SHOWN ON THE PLANS FOR THE EXISTING BRIDGE IS INCLUDED FOR INFORMATION ONLY AND IS NOT TO BE CONSIDERED A BASIS FOR COMPUTATION OF THE UNIT PRICES USED FOR BIDDING PURPOSES. THERE IS NO EXPRESSED OR IMPLIED AGREEMENT THAT INFORMATION CORRECTLY REFLECTS WHAT IS IN THE FIELD. THE BIDDER IS NOT TO RELY ON THIS INFORMATION, BUT IS TO ASSUME THE POSSIBILITY THAT CONDITIONS AFFECTING THE COST AND/OR QUANTITIES OF WORK TO BE PERFORMED MAY DIFFER FROM THOSE INDICATED.

FOUNDATION AND EXCAVATION NOTES:

1. GROUNDWATER CONTROL MUST BE PROVIDED BY THE CONTRACTOR DURING EXCAVATION IN ACCORDANCE WITH OSHA REGULATIONS.
2. PROVIDE ADEQUATE DEWATERING METHODS DURING EXCAVATION AND FOUNDATION CONSTRUCTION SUCH THAT THE EXCAVATION IS DRY ENOUGH FOR INSPECTION AND CONCRETE PLACEMENT. THE CONTRACTOR IS RESPONSIBLE FOR THE IMPLEMENTATION OF ADEQUATE DEWATERING MEASURES.
3. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES AND THE DESIGN OF ANY TEMPORARY SHORING AND BRACING THAT MAY BE USED. PERFORM ALL EXCAVATIONS IN ACCORDANCE WITH OSHA REQUIREMENTS.
4. PROVIDE TEMPORARY EXCAVATION SUPPORT OF EXCAVATED AREAS AS NECESSARY. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TEMPORARY EXCAVATION SUPPORT SYSTEMS. THE FOLLOWING SOIL PARAMETERS MAY BE USED FOR THE DESIGN OF THE TEMPORARY EXCAVATION SUPPORT SYSTEMS:

Ka = 0.36 Y = 120 pcf
Kp = 2.77 φ = 28°
Ko = 0.53 c = 0 psf

SOIL TYPE = SILTY SAND
DESIGN GROUNDWATER ELEVATION = 126.8'
5. USE PENNDOT APPROVED AGGREGATE MATERIALS AS SELECT FILL BEHIND THE ABUTMENTS AND WINGWALLS. ON-SITE SOILS MAY BE USED AS RANDOM BACKFILL AS DIRECTED BY THE ENGINEER. RANDOM BACKFILL SHOULD BE FREE OF ORGANICS, LOOSE DEBRIS AND ROCKS OVER 3 INCHES IN DIAMETER. THE PLACEMENT AND COMPACTION OF BACKFILL SHOULD CONFORM TO SECTION 206 OF PENNDOT PUBLICATION 408. PROVIDE ADEQUATE DRAINAGE BEHIND THE ABUTMENTS AND WINGWALLS TO PREVENT HYDROSTATIC PRESSURE BUILDUP.
6. DO NOT USE HEAVY STATIC OR VIBRATORY COMPACTORS FOR BACKFILL COMPACTION WITHIN A DISTANCE EQUAL TO HALF THE HEIGHT OF THE ABUTMENT TO PRECLUDE THE DEVELOPMENT OF HIGH LATERAL EARTH PRESSURE GENERATED FROM BACKFILL COMPACTION.
7. EXERCISE PRECAUTIONS DURING CONSTRUCTION IN THIS KARST AREA. BACKFILL AND GRADE ALL EXCAVATIONS AS SOON AS POSSIBLE TO PREVENT STORM WATER PONDING AND CONCENTRATION FLOW FROM ENTERING THE EXCAVATIONS. DIRECT WATER FLOW AWAY FROM THE EXCAVATIONS AND KEEP THE EXCAVATIONS DRY WITH PUMPS, AS REQUIRED. IF NECESSARY, CONSTRUCT SMALL DIKES ALONG THE TOP OF THE EXCAVATIONS TO DIRECT STORM WATER AWAY. COVER EXCAVATED AREAS WITH PLASTIC, IF REQUIRED, TO PREVENT INFILTRATION.

PILES:

1. EXTRACT ALL EXISTING 12" DIA. REINFORCED CONCRETE PILES AS SHOWN ON SHEET 20 TO AVOID ANY POSSIBLE INTERFERENCE WITH THE PILE DRIVING OPERATION.
2. BEFORE DRIVING PILES, PLACE AND COMPACT, TO FOOTING ELEVATION, SPECIALLY SELECTED MATERIAL WHICH CONTAINS NO ROCK TO INTERFERE WITH PILE DRIVING. AUGURING OR PRE-DRILLING WILL BE PERMITTED TO THE ORIGINAL GROUND.
3. PROVIDE HEAVY DUTY PILE TIP REINFORCEMENT FOR PILES IN ACCORDANCE WITH PUBLICATION 408/2016, SECTION 1005.3(b)11 AND BC-757M.
4. DO NOT CUT PILE WEB, FLANGES OR FOOTING REINFORCEMENT BARS TO ACCOMMODATE REINFORCEMENT BAR PLACEMENT, UNLESS DIRECTED BY THE ENGINEER.
5. USE HP10 x 57 STEEL BEARING PILES DRIVEN TO ABSOLUTE REFUSAL IN ACCORDANCE WITH PUB. 408/2016, SECTION 1005.3(b) 4.a, CASE 1. CONTROL PILE DRIVING IN ACCORDANCE WITH DM-4, PP 1.7.5.1(a), METHOD A - WAVE EQUATION ANALYSIS.

6. PRE-DRILLING MAY BE REQUIRED TO ADVANCE PILES IF REFUSAL OR OBSTRUCTIONS ARE ENCOUNTERED WITHIN THE OVERBURDEN. REFER TO THE SPECIAL PROVISION PREDRILLING FOR UNFORESEEN OBSTRUCTIONS.
7. DRIVE ONE TEST PILE AS INDICATED ON PLANS FOR EACH SUBSTRUCTURE TO DETERMINE THE EFFICIENCY OF THE DRIVING SYSTEM AND TO VERIFY THE DESIGN PILE CAPACITY. DRIVE TEST PILES TO ABSOLUTE REFUSAL ON BEDROCK.
8. METHOD ABUTMENTS 1 & 2:

METHOD A - USE WHEN BEARING PILES ARE DRIVEN TO ABSOLUTE REFUSAL.

DYNAMIC FORMULA ONLY - CONTROL PILE DRIVING BY THE DYNAMIC FORMULA IN PUBLICATION 408/2016, SECTION 1005.

WAVE EQUATION ONLY - CONTROL PILE DRIVING BY THE WAVE EQUATION ANALYSIS.

DYNAMIC FORMULA OR WAVE EQUATION - DRIVE TEST PILES TO ABSOLUTE REFUSAL. THE ENGINEER SHALL VERIFY, FROM THE TEST PILE DRIVING RESULTS, THE CAPABILITY OF THE PILE HAMMER SELECTED BY THE CONTRACTOR. DRIVE BEARING PILES TO ABSOLUTE REFUSAL INTO THE STRATUM DEFINED BY A TIP ELEVATION WHICH IS PREDETERMINED BY THE ENGINEER FROM TEST PILES. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE BEARING PILES WHICH ATTAIN ABSOLUTE REFUSAL ABOVE THE PREDETERMINED TIP ELEVATIONS.

PRESTRESS DESIGN DATA:

1. PRESTRESS CONCRETE f'c = 8 KSI, f'c = 6.8 KSI (AT TRANSFER)
2. PRESTRESS STRANDS = 0.6 IN DIAMETER, 270 KSI LOW RELAXATION STRANDS.

NOTES FOR PILE INSTALLATION INFORMATION						
SUBSTRUCTURE UNIT	PILE TYPE	PILE TIP (NONE, NORMAL, HEAVY DUTY)	PILE TIP ELEVATION	FACTORED DESIGN LOAD (KIP)	ULTIMATE PILE CAPACITY AT END OF DRIVING (KIP)	WEAP OR PDA

THIS TABLE IS TO BE COMPLETED FOR THE TEST PILES AFTER INSTALLATION ON THE "AS-BUILT" PLANS.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

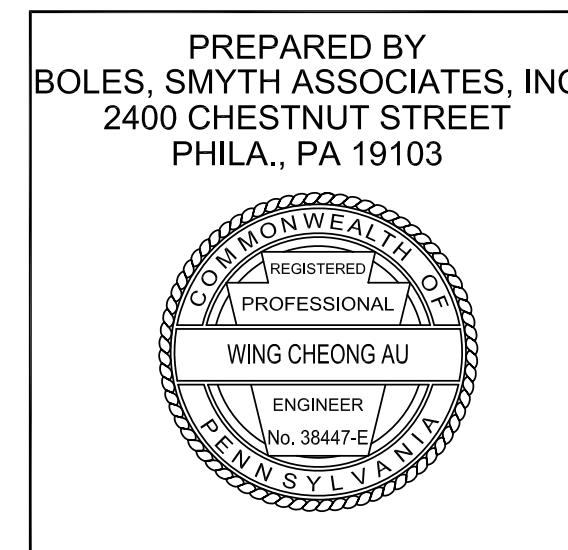
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

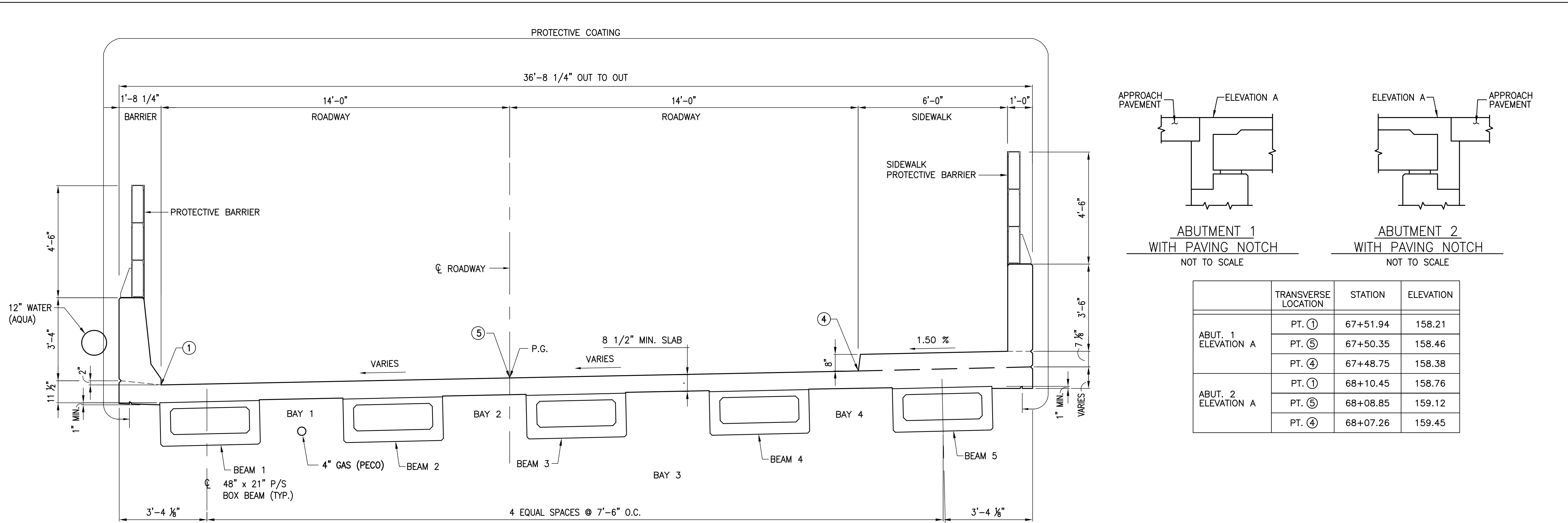
GENERAL NOTES

RECOMMENDED _____	SHEET 4 OF 59
BPAA-462653	

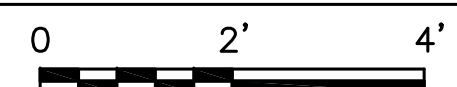


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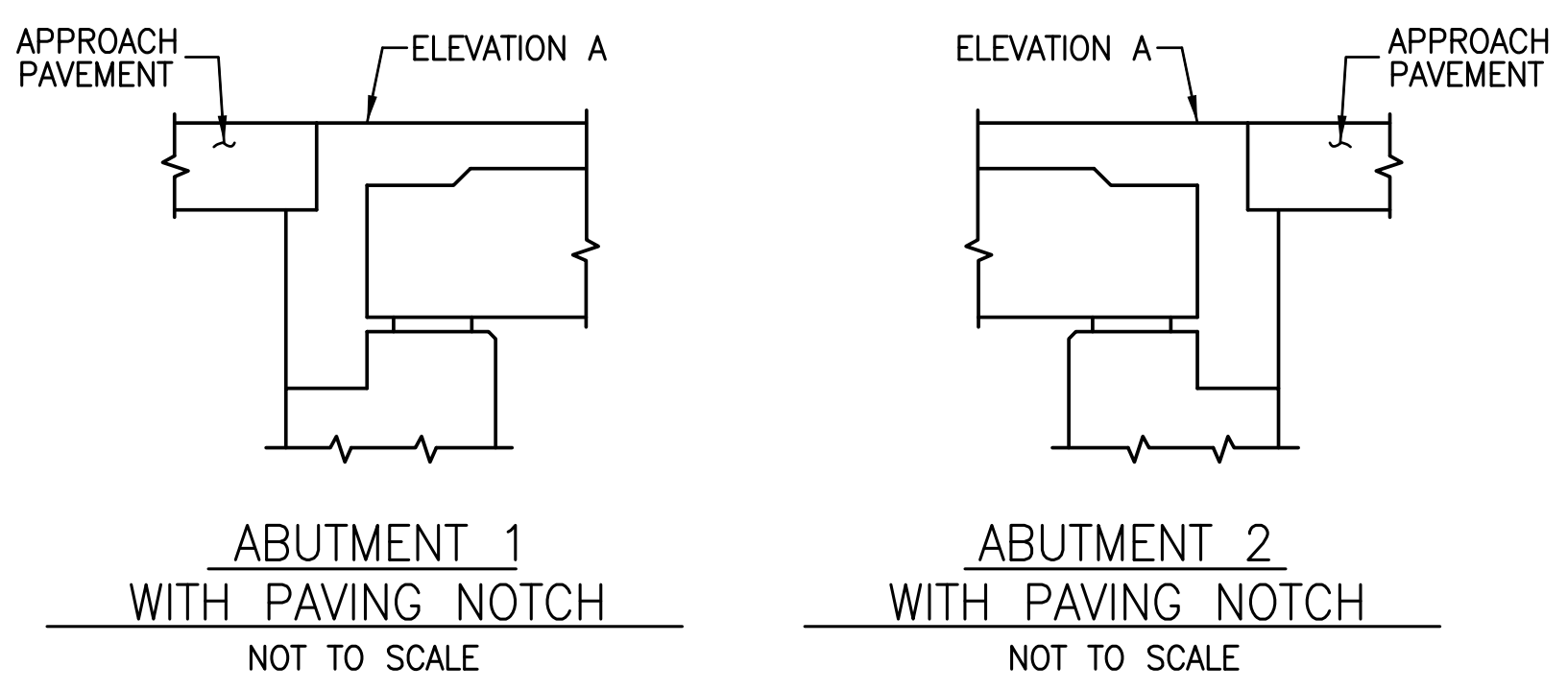
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TYPICAL SECTION



- NOTES:
 1. 1/2" MINIMUM HAUNCH ACROSS THE FULL WIDTH OF BEAM.
 2. BEAM SPACING GIVEN AT C.L. BEAM AT TOP OF BEAM



	TRANSVERSE LOCATION	STATION	ELEVATION
ABUT. 1 ELEVATION A	PT. ①	67+51.94	158.21
	PT. ⑤	67+50.35	158.46
	PT. ④	67+48.75	158.38
ABUT. 2 ELEVATION A	PT. ①	68+10.45	158.76
	PT. ⑤	68+08.85	159.12
	PT. ④	68+07.26	159.45

**ELEVATION TABLE
TOP OF SLAB ELEVATION**

STATION	PT. ①	PT. ⑤	PT. ④
67+49.51	—	—	158.40
67+50.00	—	—	158.41
67+51.10	—	158.48	158.44
67+52.69	158.22	158.50	158.48
67+60.00	158.34	158.62	158.65
67+70.00	158.49	158.77	158.86
67+80.00	158.61	158.89	159.05
67+90.00	158.71	158.99	159.22
68+00.00	158.77	159.07	159.36
68+06.51	158.76	159.10	159.44
68+08.10	158.76	159.11	—
68+09.69	158.76	—	—

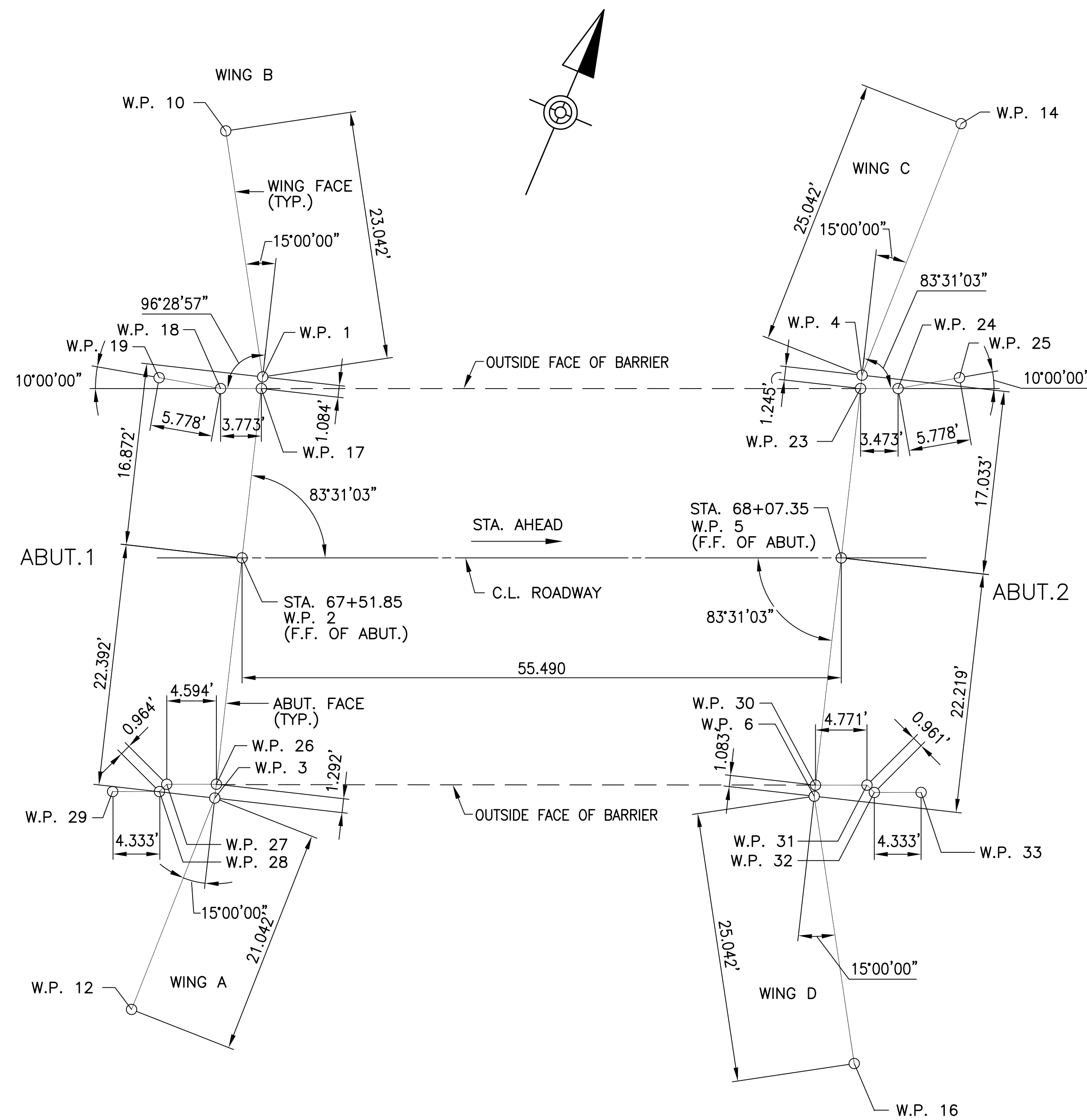
ELEVATIONS GIVEN AT THE FIRST AND LAST STATIONS LISTED FOR EACH POINT ARE LOCATED AT THE C.L. OF BEARING.

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REVISIONS					

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 DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
TYP. SECTION AND ELEVATION CHART

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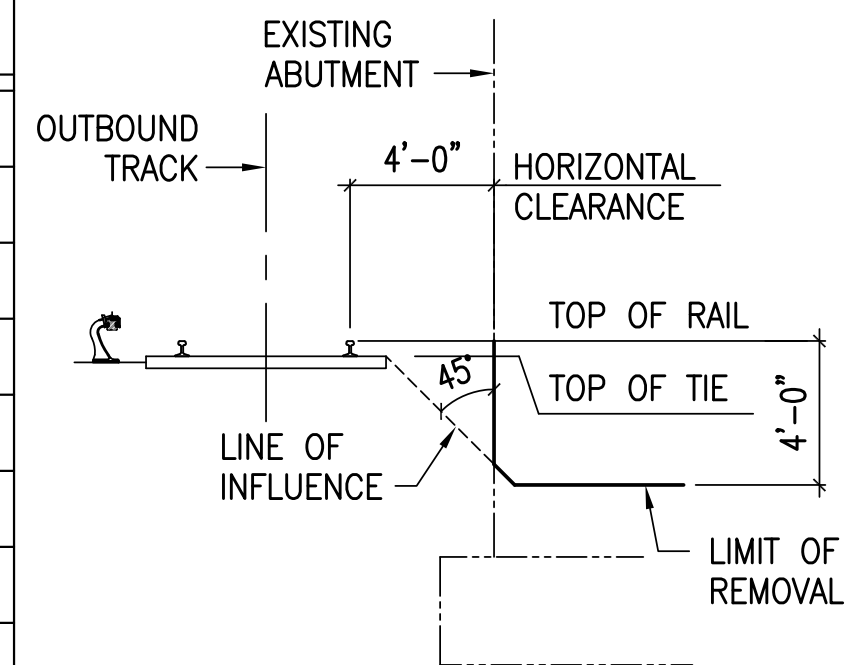


STAKE-OUT PLAN
 2 0 4 8 FEET

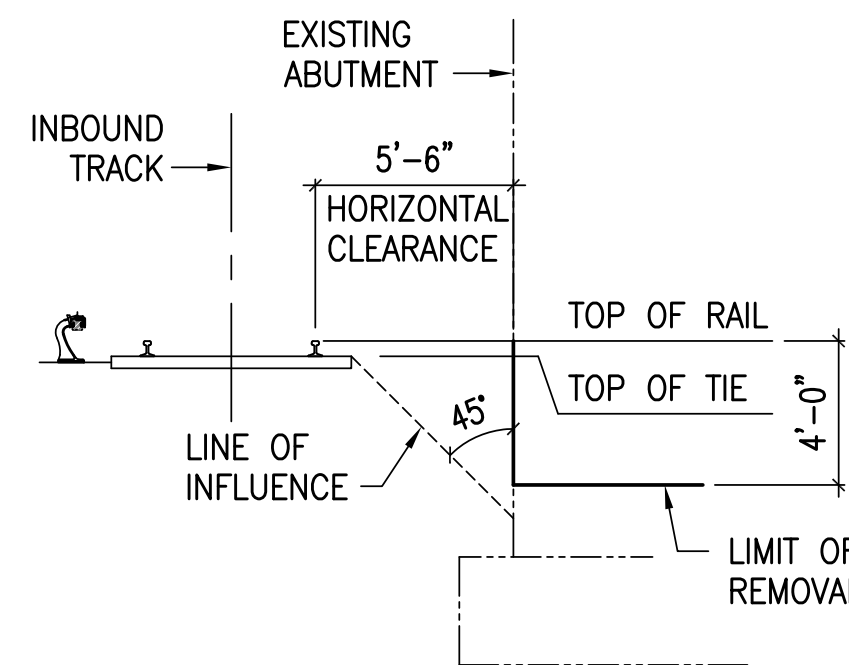
LEGEND
 W.P. = WORK POINT

NUMBER	COORDINATES		STATION	OFFSET
	Y (NORTHING) (FT)	X (EASTING) (FT)		
ORIGIN	283631.0300	2639155.6900		
1	283647.2157	2639150.9239	67+53.76	-16.76
2	283631.0319	2639155.6944	67+51.85	0.00
3	283609.5538	2639162.0255	67+49.33	22.25
10	283666.8780	2639138.9108	67+50.35	-39.55
12	283588.5186	2639162.5484	67+41.62	41.83
17	283646.1761	2639151.2304	67+53.64	-15.69
18	283644.7067	2639147.7529	67+49.86	-15.69
19	283643.4162	2639142.1213	67+44.17	-16.69
4	283668.9685	2639201.9929	68+09.27	-16.92
5	283652.6302	2639206.8089	68+07.35	0.00
6	283631.3178	2639213.0912	68+04.84	22.08
14	283694.0025	2639201.3706	68+18.44	-40.23
16	283609.9489	2639226.1470	68+08.55	46.84
23	283667.7744	2639202.3449	68+09.13	-15.69
24	283669.1263	2639205.5442	68+12.60	-15.69
25	283672.2650	2639210.3948	68+18.29	-16.69
26	283610.7602	2639161.6687	67+49.47	21.001
27	283608.9709	2639157.4374	67+44.92	21.001
28	283608.0973	2639157.0828	67+44.24	21.683
29	283606.4108	2639153.0911	67+39.90	21.683
30	283632.3585	2639212.7833	68+04.95	21.046
31	283634.2152	2639217.1781	68+09.72	21.046
32	283633.8604	2639218.0518	68+10.40	21.726
33	283635.5468	2639222.0435	68+14.73	21.726

NOTES:
 1. ORIGIN AT STA. 67+51.85
 2. OFFSET IS MEASURED ON THE C.L. ROADWAY PERPENDICULAR TO CL ROADWAY, LOOKING AHEAD STATIONS.
 3. FOUR PLACE COORDINATES ARE FOR COMPUTATIONAL PURPOSES ONLY AND DO NOT IMPLY A PRECISION BEYOND TWO DECIMAL POINTS.



OUTBOUND (NB) CLEARANCE
 OUTSIDE RAIL TO
 EXISTING ABUTMENT

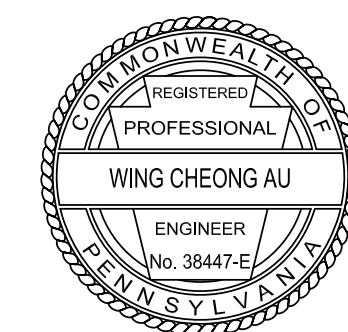


INBOUND (SB) CLEARANCE
 OUTSIDE RAIL TO
 EXISTING ABUTMENT

EXISTING ABUTMENT DEMOLITION
 EXISTING HORIZONTAL CLEARANCES

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MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
 STAKE-OUT PLAN AND
 EXISTING HORIZONTAL CLEARANCES

RECOMMENDED _____

SHEET 6 OF 59

BPAA-462653

PILE SPACING - LEFT WINGWALL PANEL 1				
ROW	NO. PILES	PILE SPACINGS *	DES. SPA.	NO. BAT. PILES
1	3	2 @ 4'-9"	4'-9"	3
2	3	2 @ 4'-9"	4'-9"	3
3	2	1 @ 4'-9"	9'-6"	0

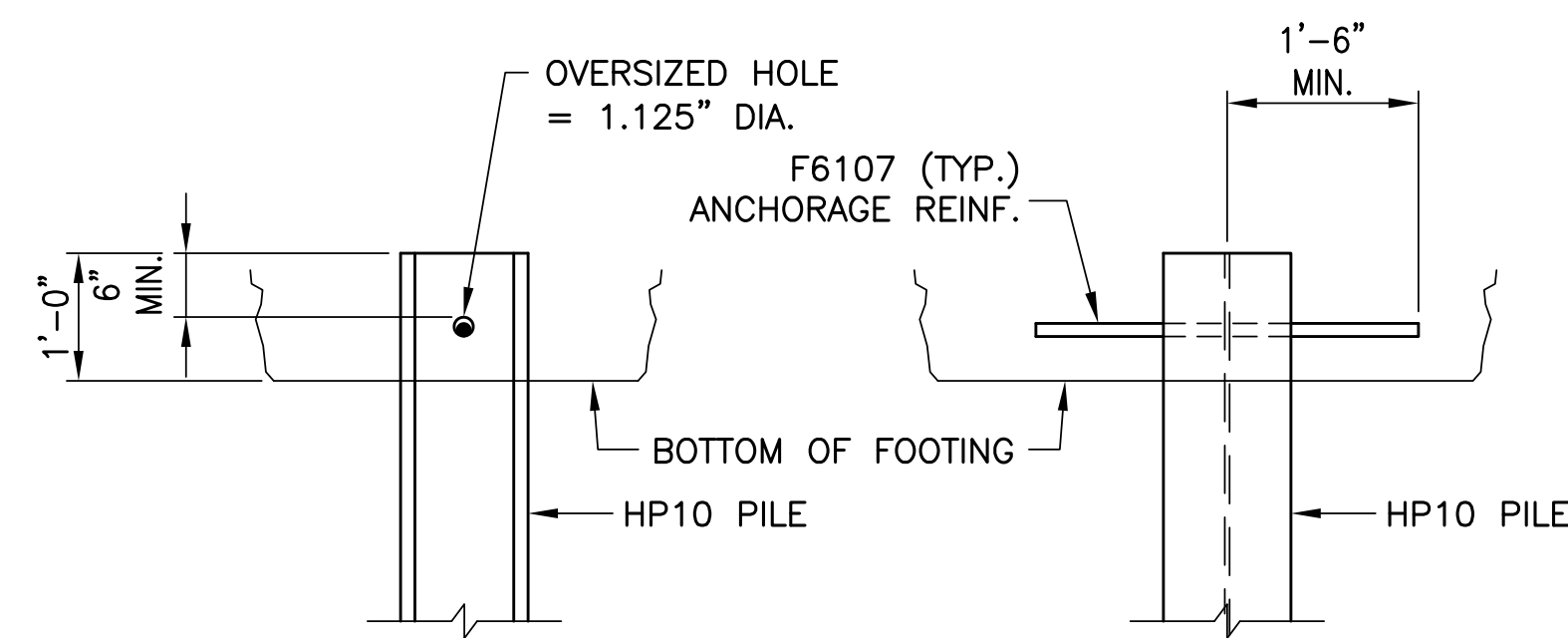
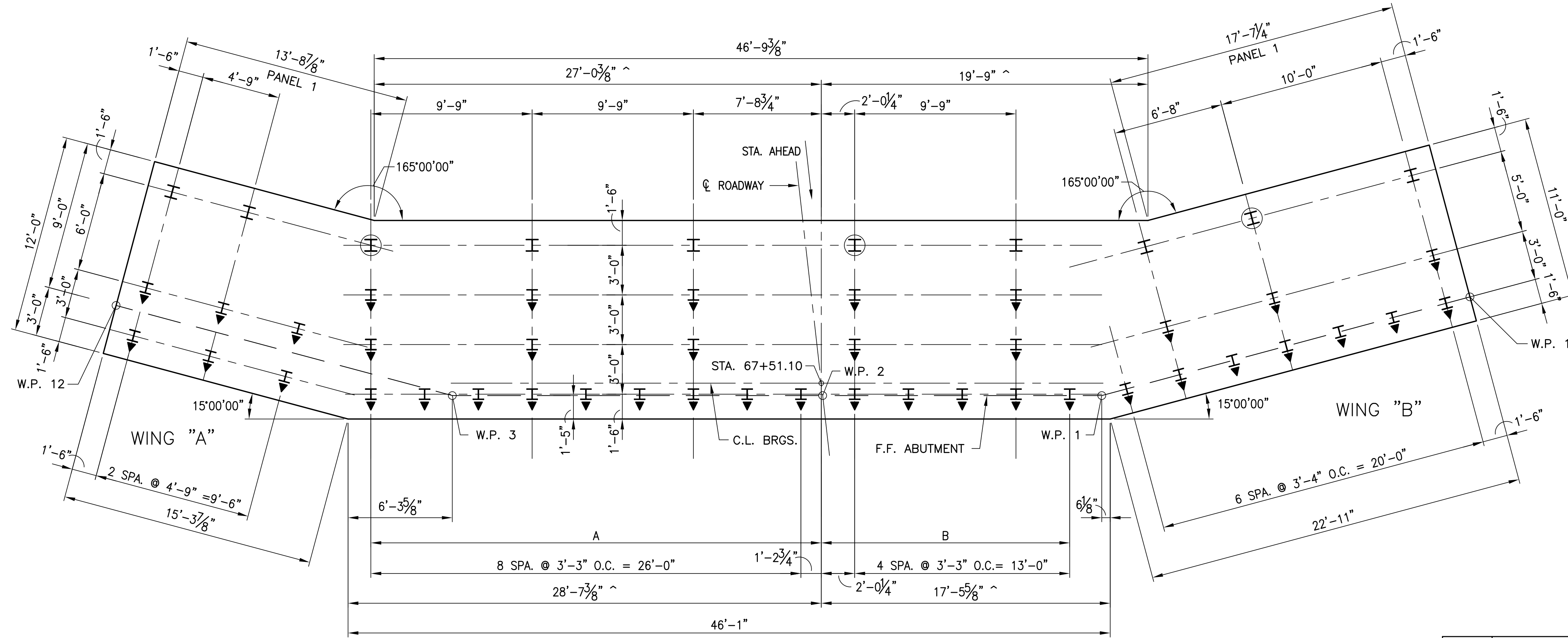
* PILE SPACINGS ARE GIVEN FROM OUTERMOST PILE TOWARDS THE ABUTMENT FOR EACH ROW.

PILE SPACING - ABUTMENT FOOTING						
ROW	A	NO. PILES	PILE SPACINGS IN ROW FROM LEFT TO RIGHT	DES. SPA.	B	NO. BAT. PILES
1	27'-2 3/4"	14	13 @ 3'-3"	3'-3"	15'-0 1/4"	14
2	27'-2 3/4"	5	4 @ 9'-9"	9'-9"	11'-9 1/4"	5
3	27'-2 3/4"	5	4 @ 9'-9"	9'-9"	11'-9 1/4"	5
4	27'-2 3/4"	5	4 @ 9'-9"	9'-9"	11'-9 1/4"	0

NOTES: ROWS NUMBERED FROM TOE TO HEEL

PILE SPACING - RIGHT WINGWALL PANEL 1				
ROW	NO. PILES	PILE SPACINGS *	DES. SPA.	NO. BAT. PILES
1	7	6 @ 3'-4"	3'-4"	7
2	3	1 @ 10'-0"	1 @ 6'-8"	3
3	3	1 @ 10'-0"	1 @ 6'-8"	0

* PILE SPACINGS ARE GIVEN FROM OUTERMOST PILE TOWARDS THE ABUTMENT FOR EACH ROW



SIDE VIEW OF PILE FRONT VIEW OF PILE

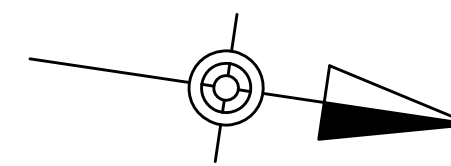
PILE ANCHORAGE DETAIL

NOT TO SCALE

NOTE:

- FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.

PLAN - PILE LAYOUT



NOTES:

- ^ - DIMENSIONS MEASURED TO C ROADWAY AT C BRGS.
- STEEL BEAM BEARING PILES, HP 10 X 57

LEGEND

- I DENOTES H-PILE
- I DENOTES H-PILE BATTERED
- IN DIRECTION OF ARROWHEAD
- ⊕ DENOTES TEST PILE (ESTIMATED LENGTH = 33 FT)

WP - DENOTES WORK POINT

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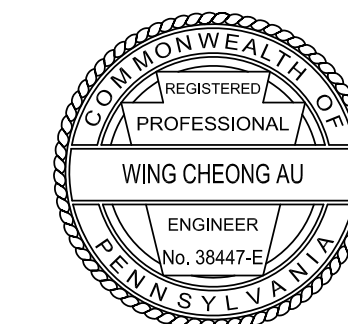
ABUTMENT 1 FOOTING LAYOUT

RECOMMENDED _____

SHEET 7 OF 59

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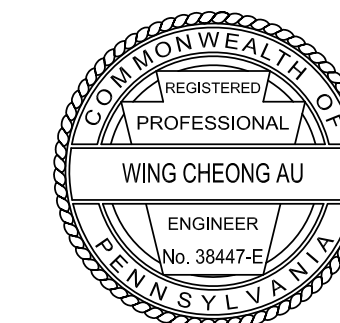
PILE AXIAL CAPACITY						
LOCATION	LIMIT STATE	LOAD CASE	STAGE	A FACTORED AXIAL LOAD (kip)	B FACTORED AXIAL RESISTANCE (kip)	B/A PERFORMANCE RATIO
ABUTMENT	STR-I	Max	Fin	147.32	150.00	1.02
LEFT WING	STR-III	Max	Tmp	102.13	150.00	1.47
RIGHT WING	STR-III	Max	Tmp	102.49	150.00	1.46

FOUNDATION DESIGN PARAMETER						
LOCATION	PILE TYPE	RECOVERY (%)	RQD (%)	ULTIMATE AXIAL CAPACITY (TONS)	STRENGTH RESISTANCE FACTOR	SERVICE RESISTANCE FACTOR
ABUTMENT	HP10 x 57	100 (AVG)	70 (AVG)	302.5	0.25	0.16
LEFT WING	HP10 x 57	100 (AVG)	70 (AVG)	302.5	0.25	0.16
RIGHT WING	HP10 x 57	100 (AVG)	70 (AVG)	302.5	0.25	0.16

PILE LATERAL CAPACITY						
LOCATION	LIMIT STATE	LOAD CASE	STAGE	A FACTORED LATERAL LOAD (kip)	B FACTORED LATERAL RESISTANCE (kip)	B/A PERFORMANCE RATIO
ABUTMENT	STR-I	Max	Fin	18.64	18.66	1.00
LEFT WING	STR-I	Min	Fin	15.26	15.32	1.00
RIGHT WING	STR-I	Min	Fin	13.68	14.55	1.06

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

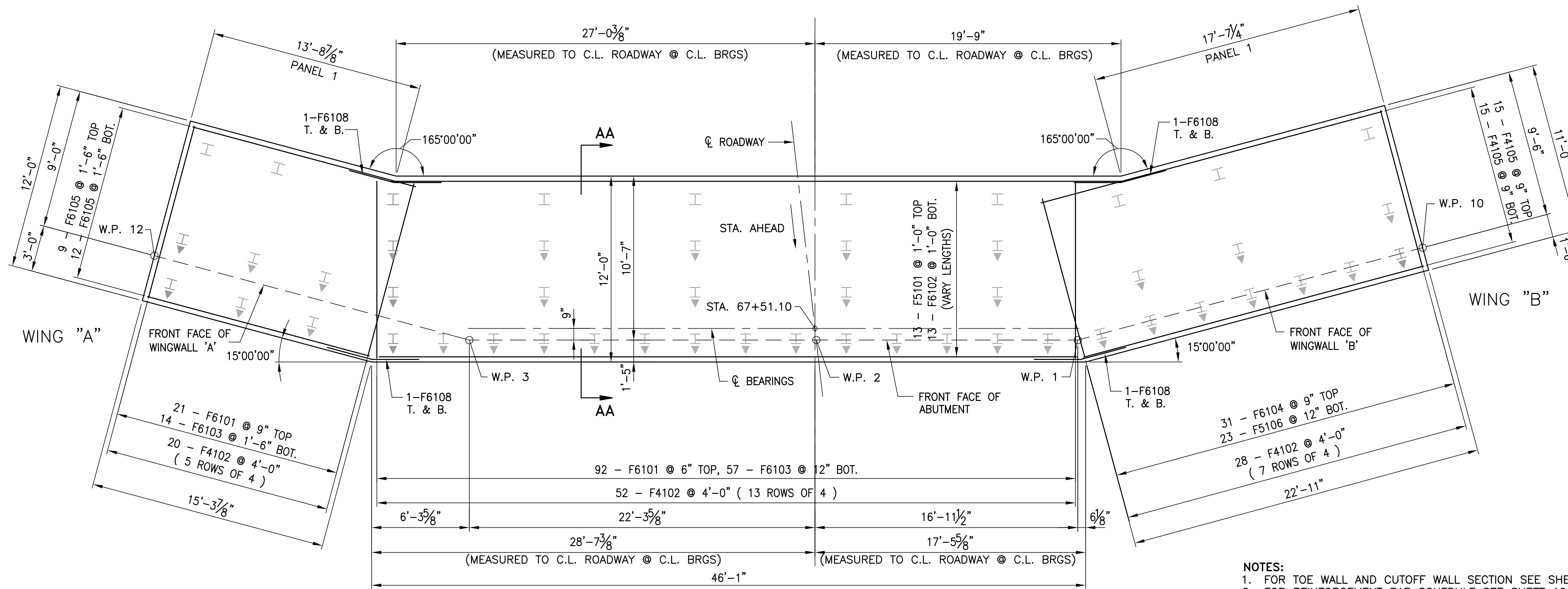
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 1 LOAD AND RESISTANCES

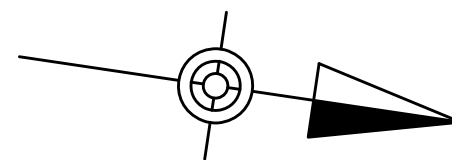
RECOMMENDED _____

SHEET 8 OF 59

BPAA-462653

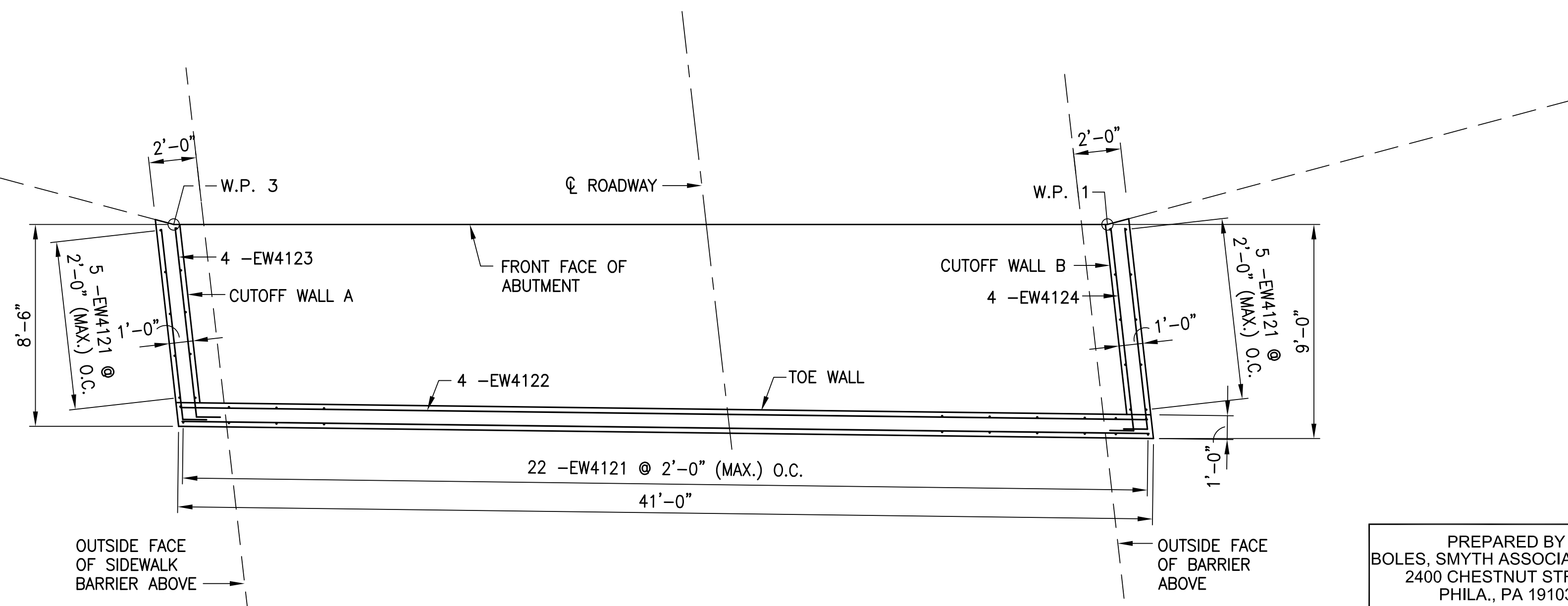


FOOTING PLAN

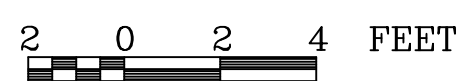


NOTES:

1. FOR TOE WALL AND CUTOFF WALL SECTION SEE SHEET 11.
2. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.
3. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4102 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
4. FOR SECTION AA-AA SEE SHEET 11.



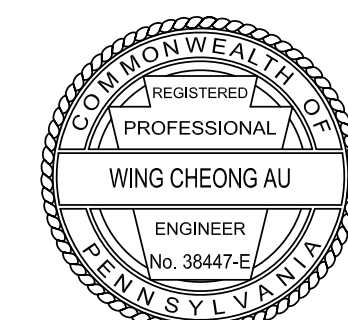
TOE WALL AND CUTOFF WALL PLAN



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 1 FOOTING PLAN

PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103

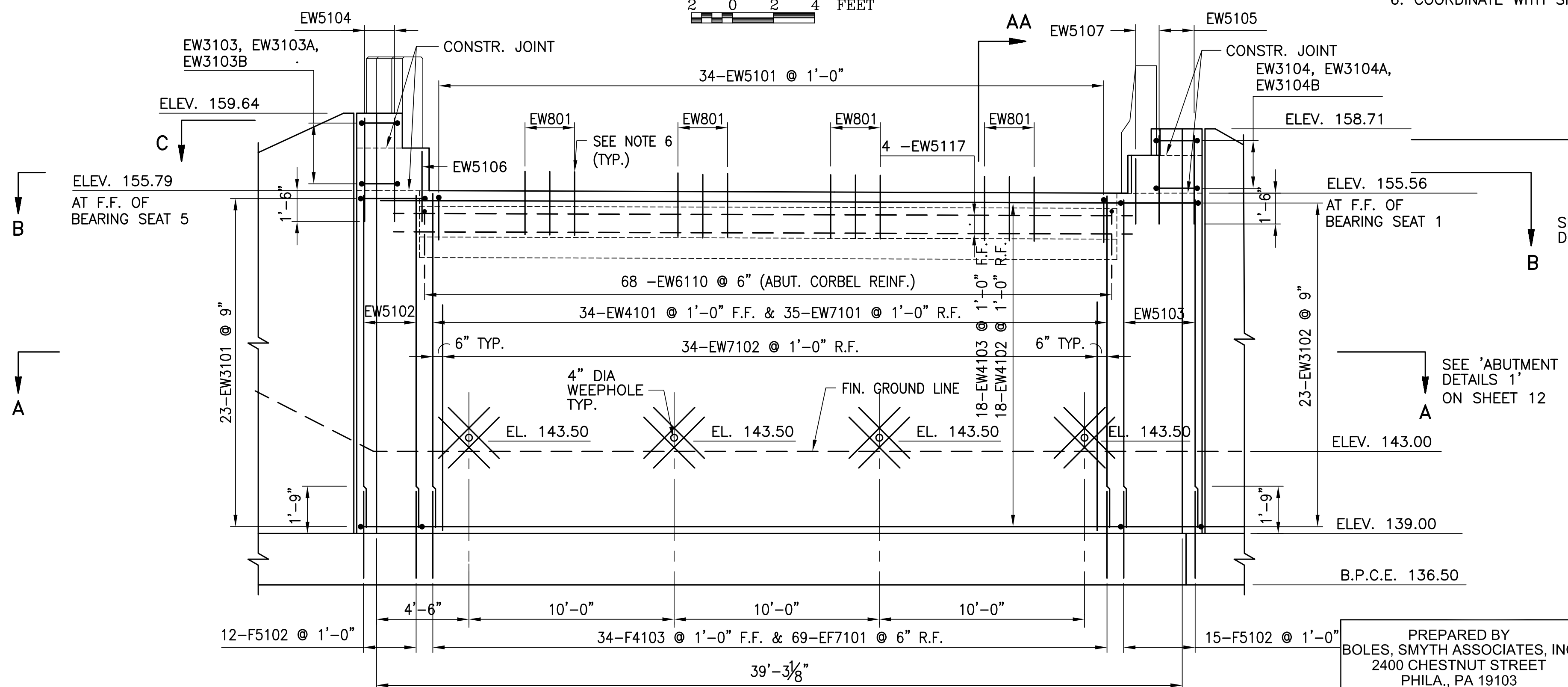
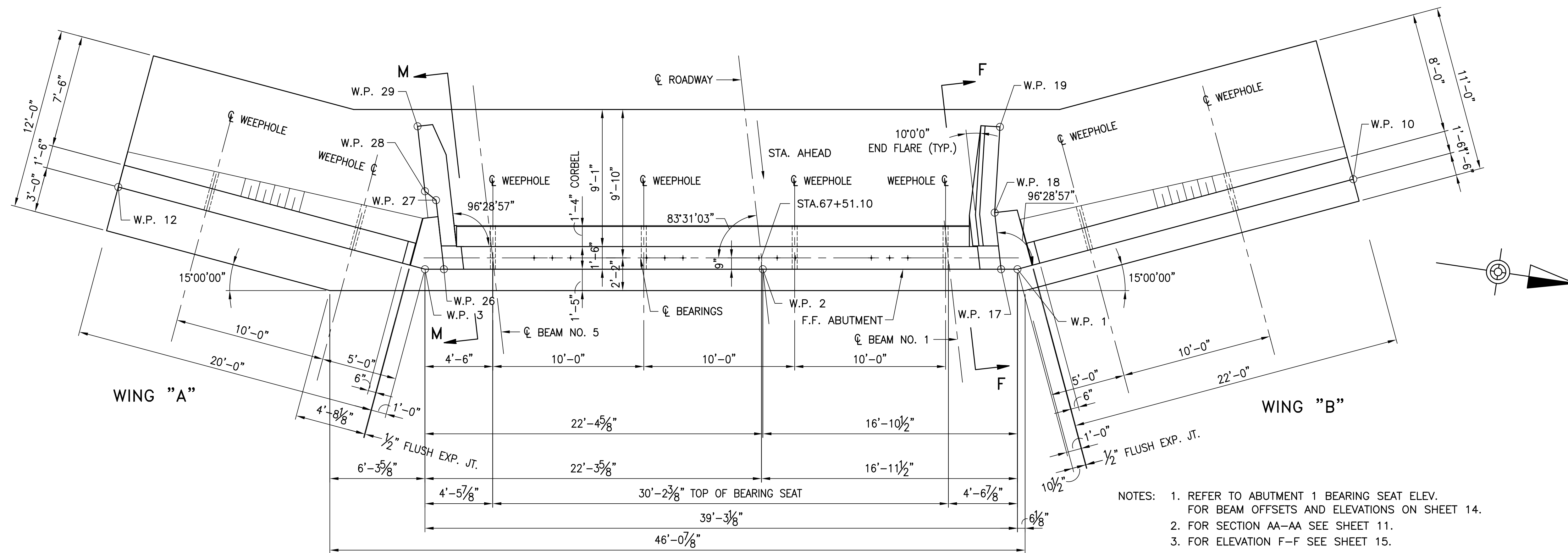


RECOMMENDED _____

SHEET 9 OF 59

BPA-462653

File: S-9-Revise.dwg Layout: 9 Plotted: 3/27/19 at 11:19am By: evjacinto



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

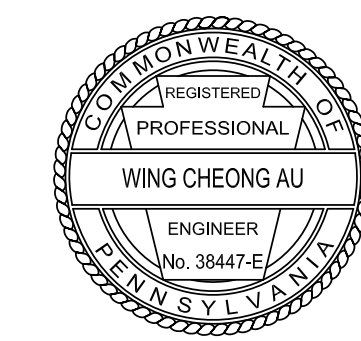
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 1 PLAN AND ELEVATION

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PHILA., PA 19103

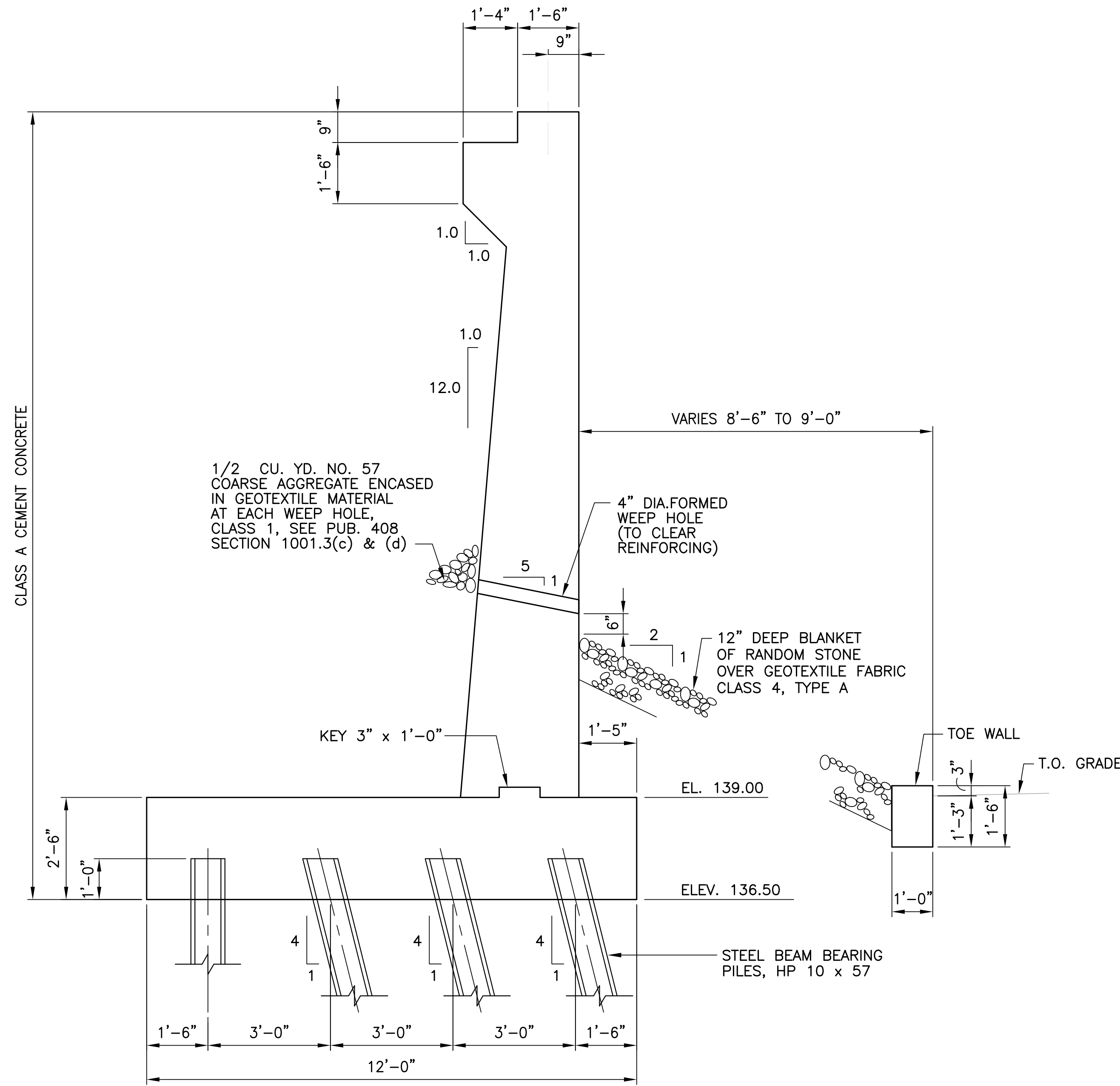


RECOMMENDED _____

SHEET 10 OF 59

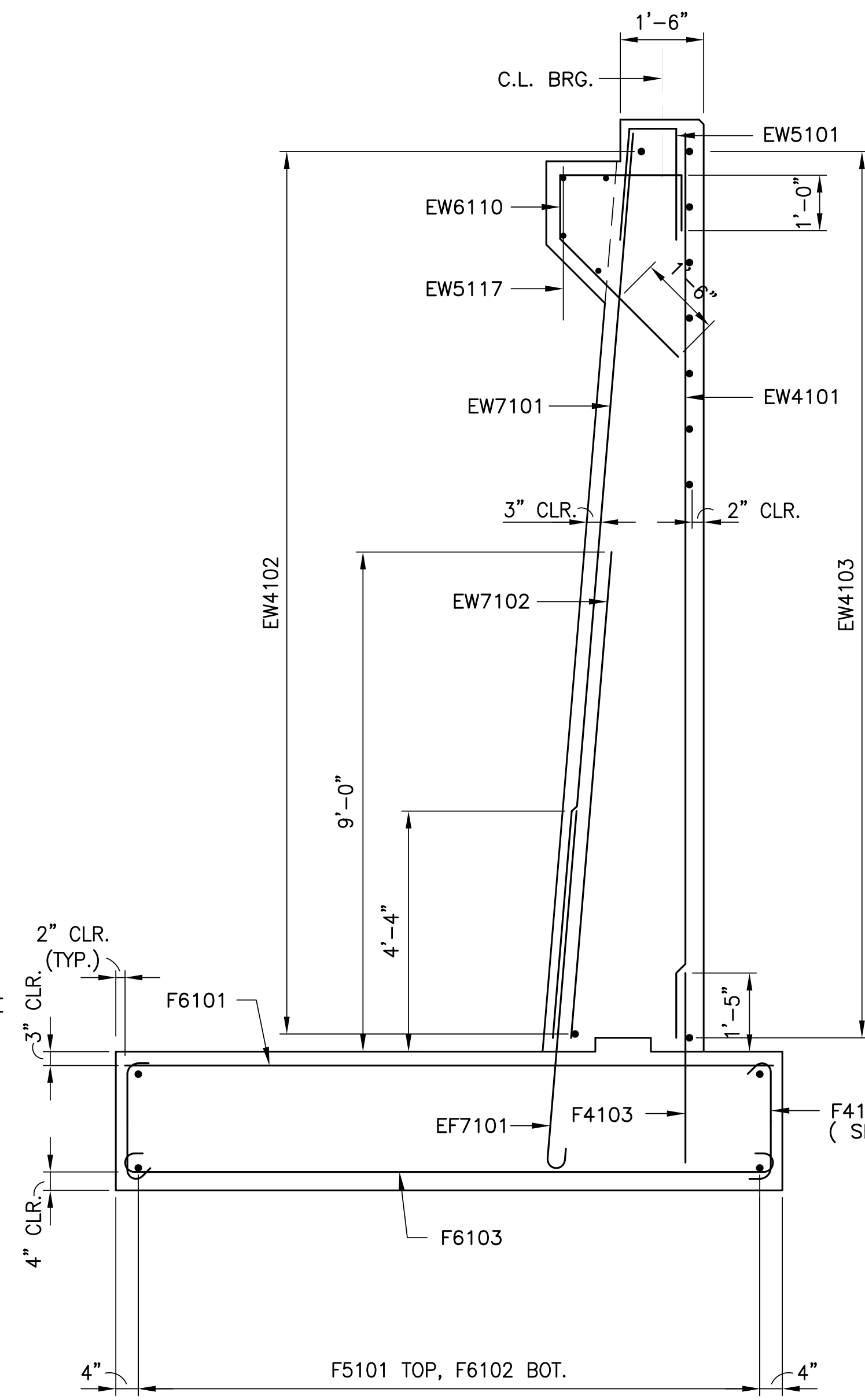
BPAA-462653

File: S-11-Revised.dwg Layout: 11 Plotted: 3/27/19 at 11:23am By: evjacio



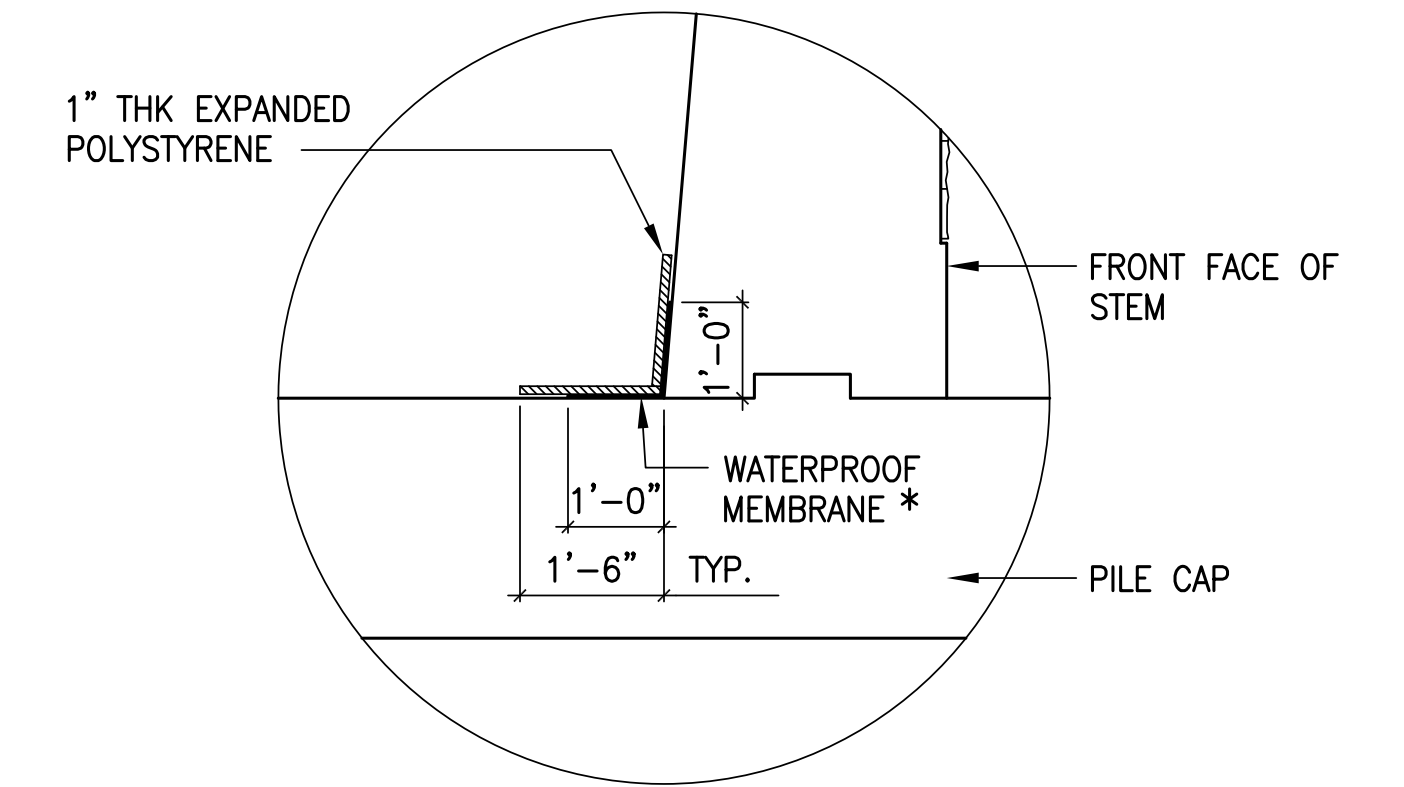
TYPICAL SECTION AA-AA

1 0 1 2 FEET



TYPICAL ABUTMENT SECTION

1 0 1 2 FEET



TYPICAL STEM TO PILE CAP CONNECTION DETAIL

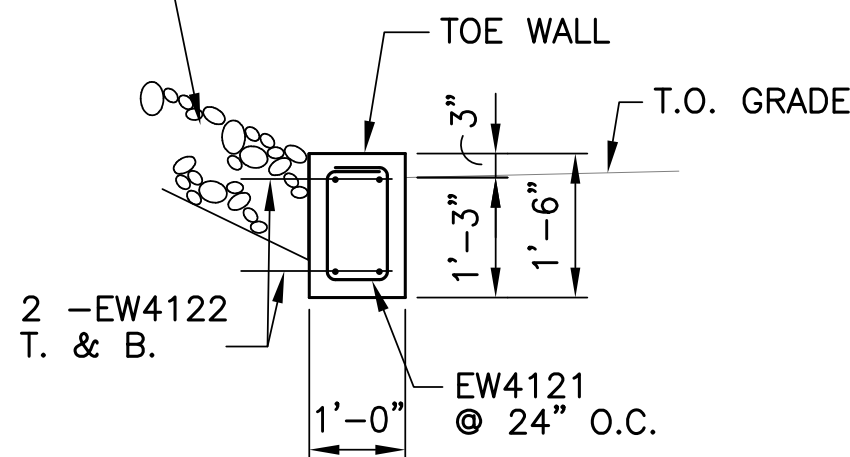
1 0 1 2 FEET

* 2'-0" WIDE PIECE BENT TO FIT STEM AND TOP OF PILE CAP AS SHOWN. USE AN ADHESIVE BACKED PREFORMED MEMBRANE WATERPROOFING SYSTEM PER PUB. 408 SECTION 680.2(b). MEMBRANE TO BE RUN CONTINUOUS FROM WINGWALL STEM TO ABUTMENT STEM.

NOTES:

1. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4102 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
2. FOR WEEPHOLE REINFORCEMENTS SEE SHEET 12.
3. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.

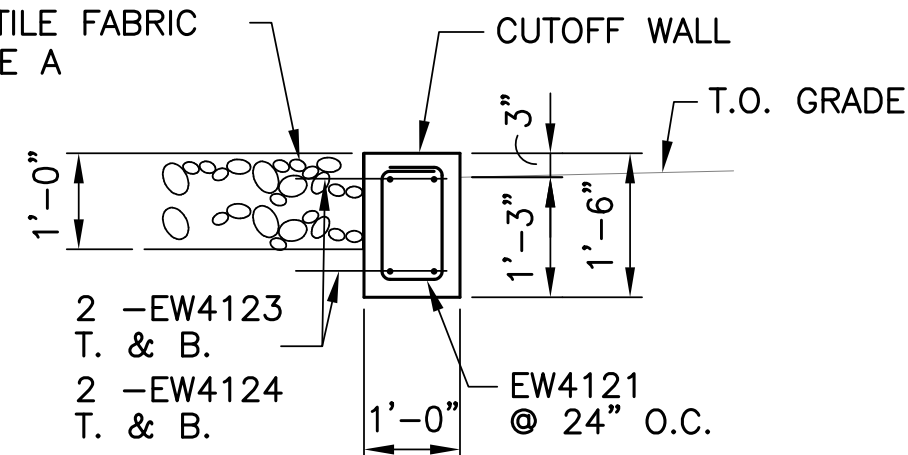
12" DEEP BLANKET OF RANDOM STONE OVER GEOTEXTILE FABRIC CLASS 4, TYPE A



TOE WALL SECTION

1 0 1 2 FEET

12" DEEP BLANKET OF RANDOM STONE OVER GEOTEXTILE FABRIC CLASS 4, TYPE A



CUTOFF WALL SECTION

1 0 1 2 FEET

Mark	Description	By	Chk'd.	Recm'd	Date
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

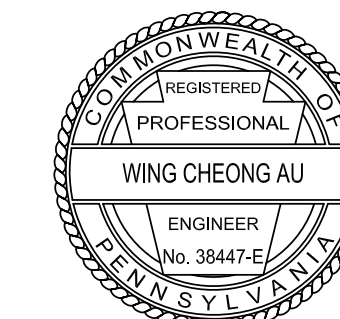
ABUTMENT 1 SECTION

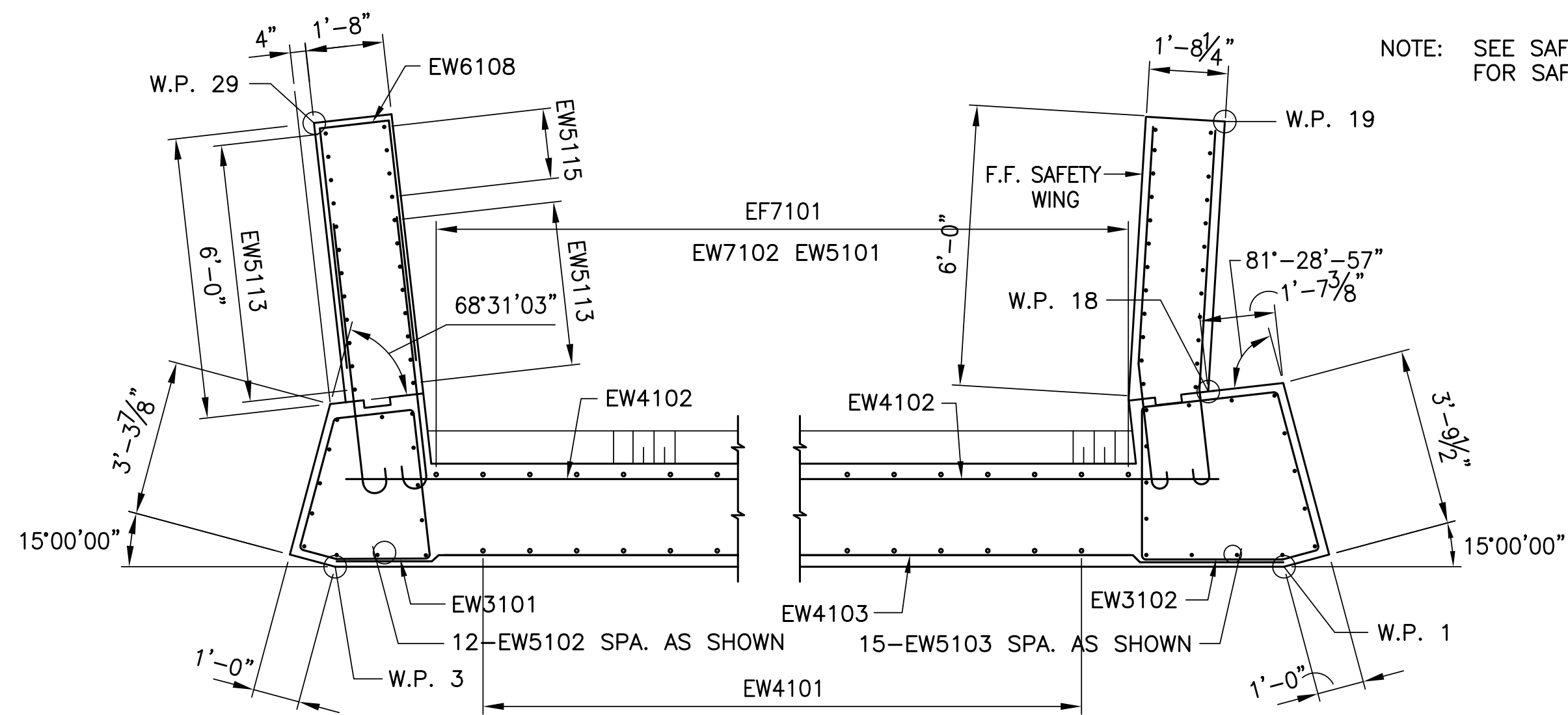
RECOMMENDED _____

SHEET 11 OF 59

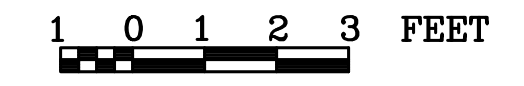
BPA-462653

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2400 CHESTNUT STREET
PHILA., PA 19103

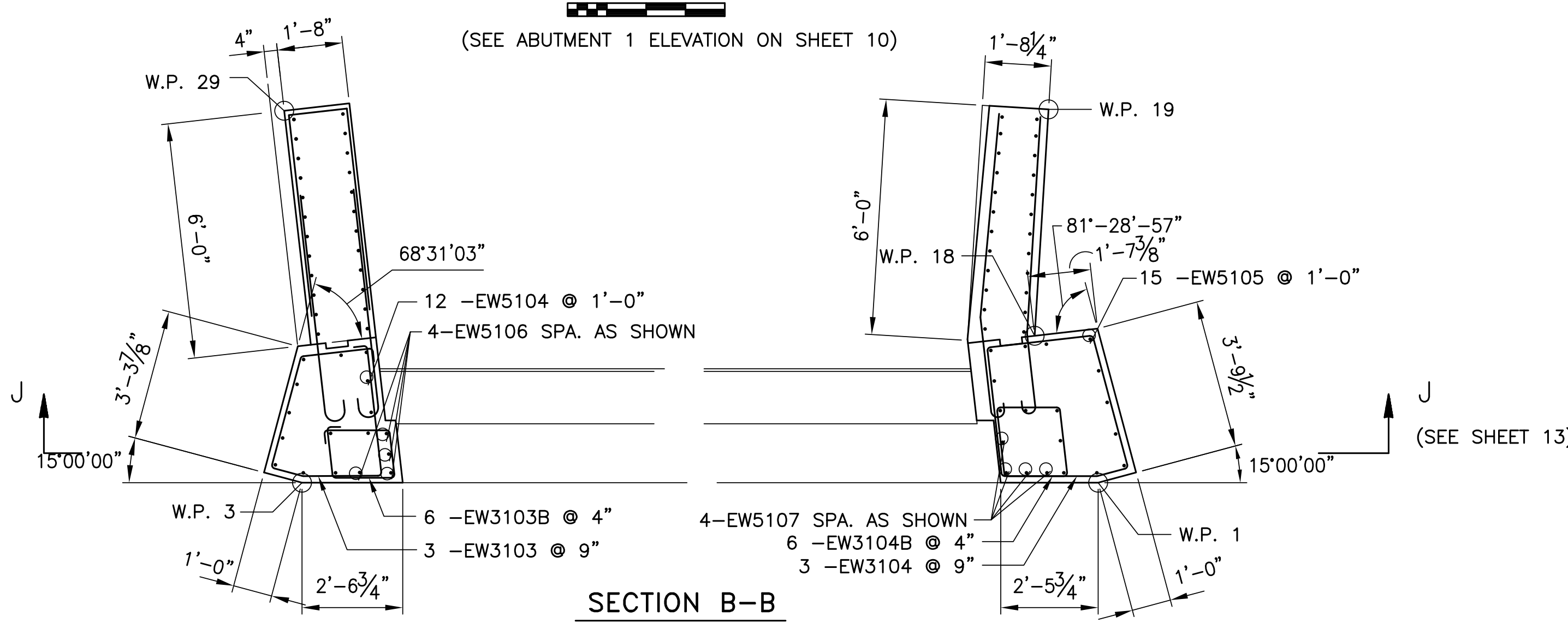




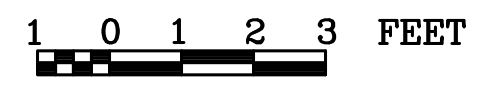
SECTION A-A



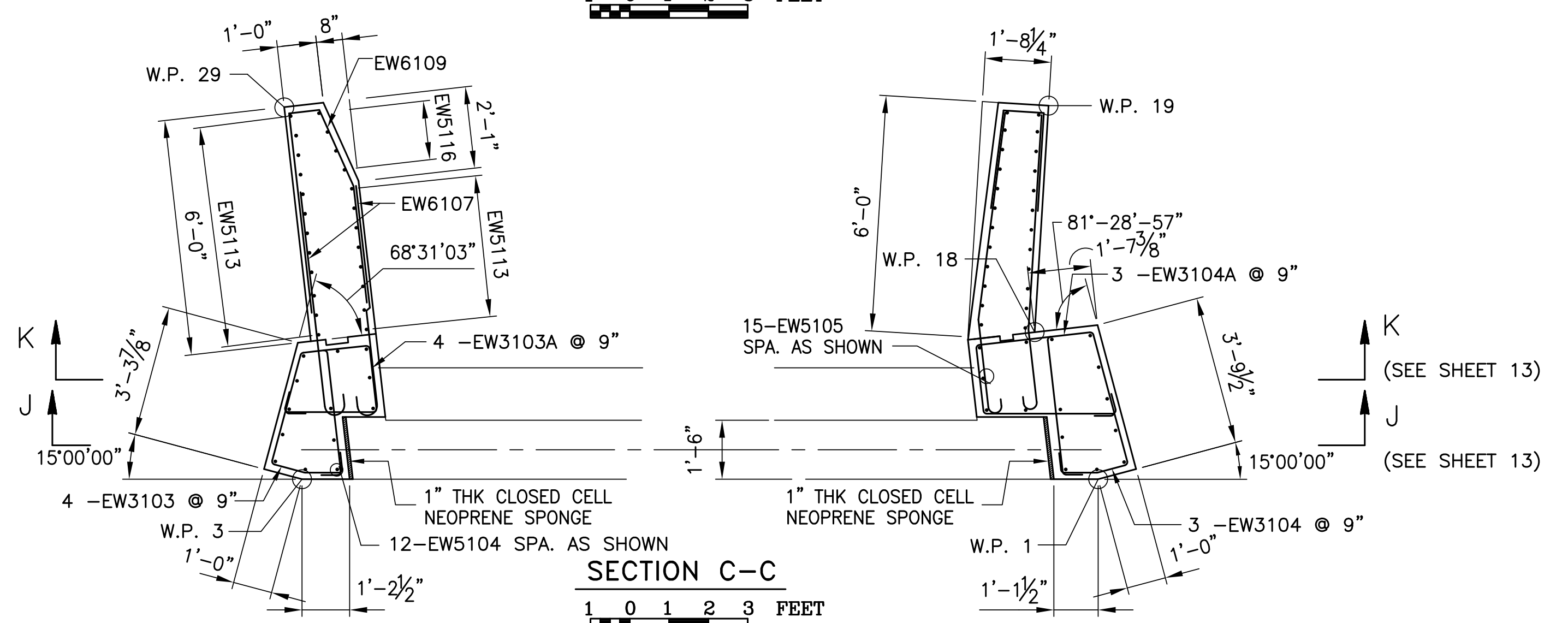
(SEE ABUTMENT 1 ELEVATION ON SHEET 10)



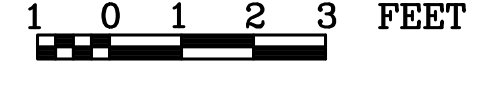
SECTION B-B



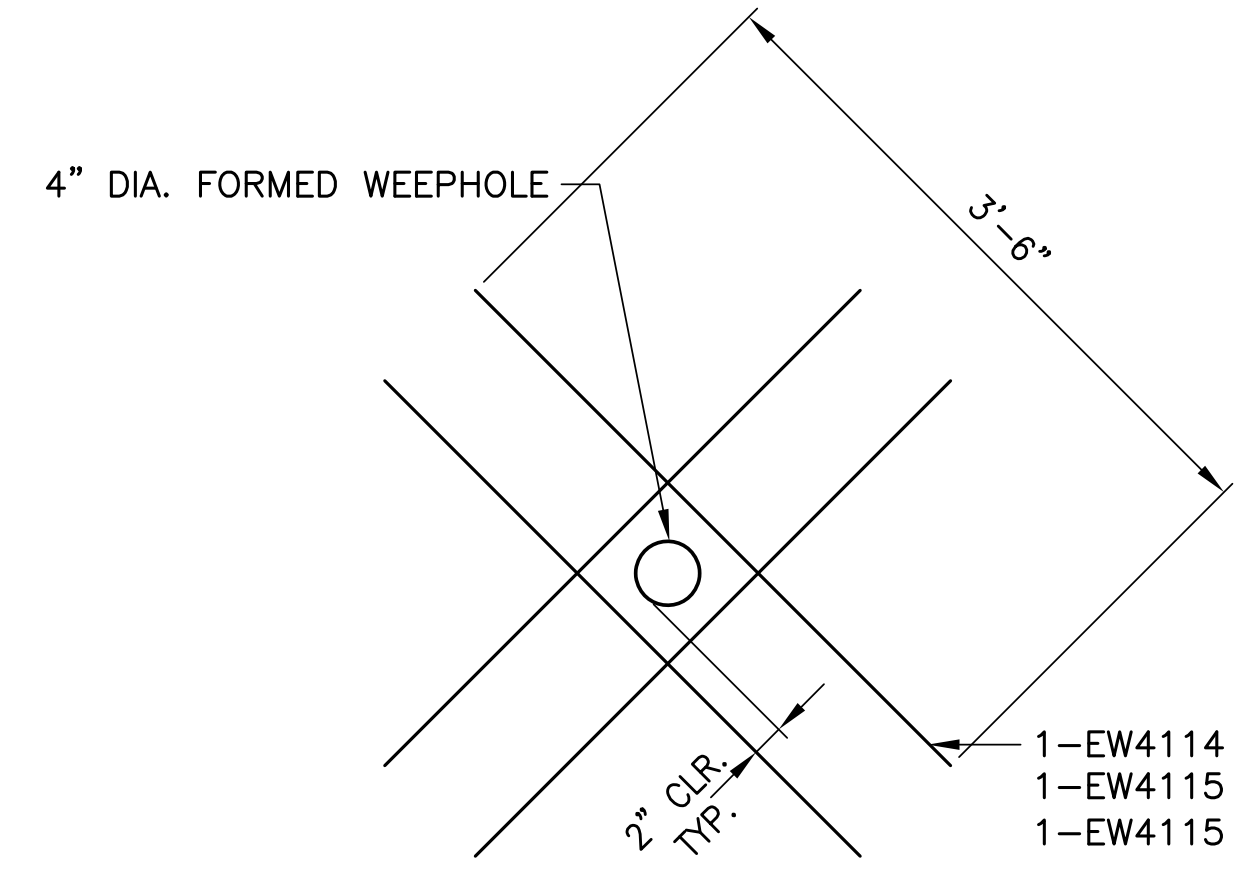
(SEE SHEET 13)



SECTION C-C



(SEE ABUTMENT 1 ELEVATION ON SHEET 10)



WEEP HOLE REINFORCEMENT

NOT TO SCALE

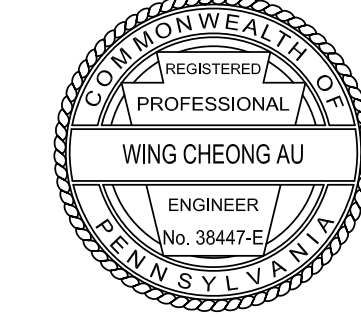
NOTES:

1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.
2. FOR LOCATIONS OF SECTIONS A-A, B-B AND C-C SEE SHEET 10.
3. FOR SECTIONS J-J AND K-K SEE SHEET 13.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 1 DETAILS 1

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PHILA., PA 19103



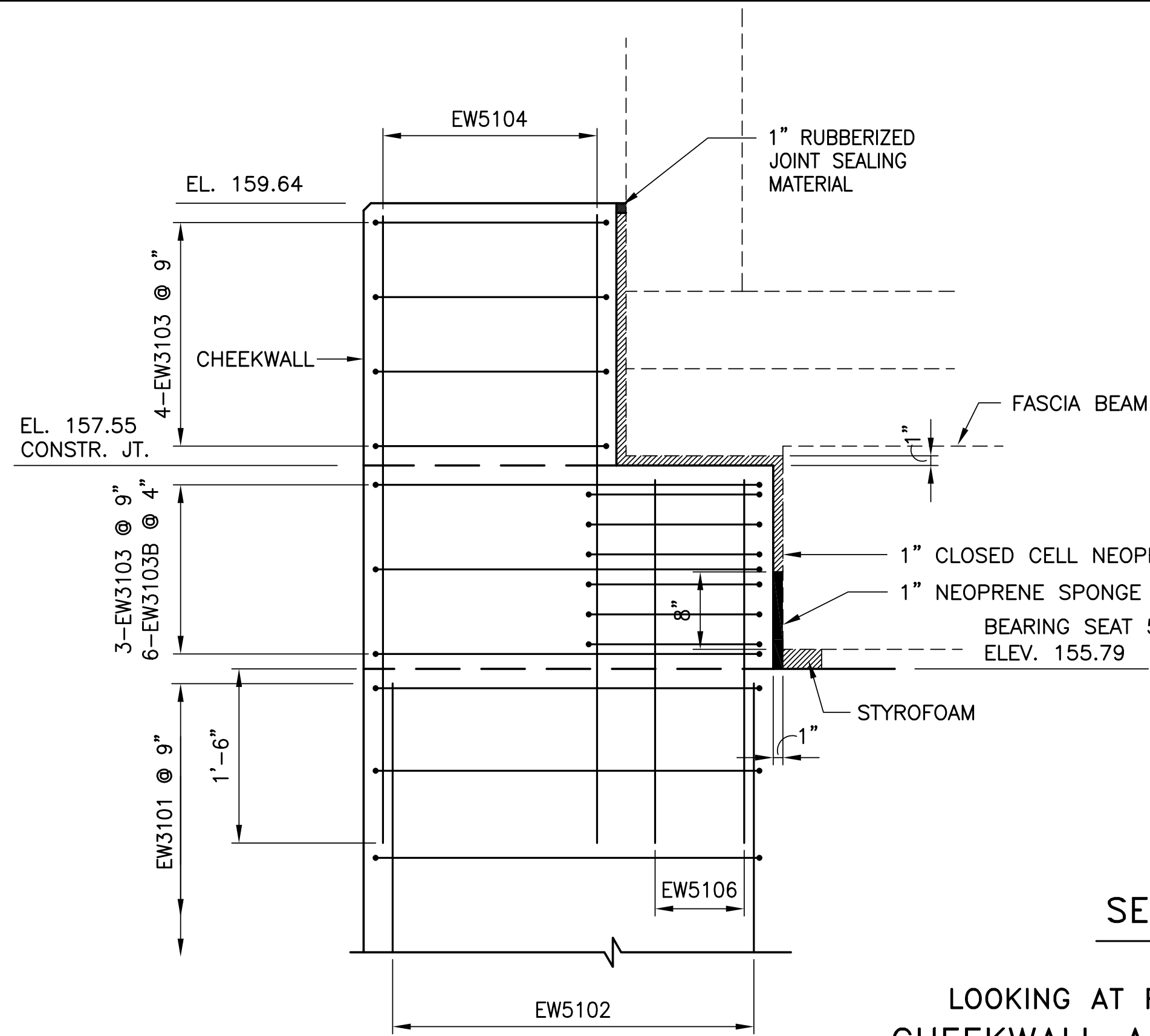
RECOMMENDED _____

SHEET 12 OF 59

BPA-462653

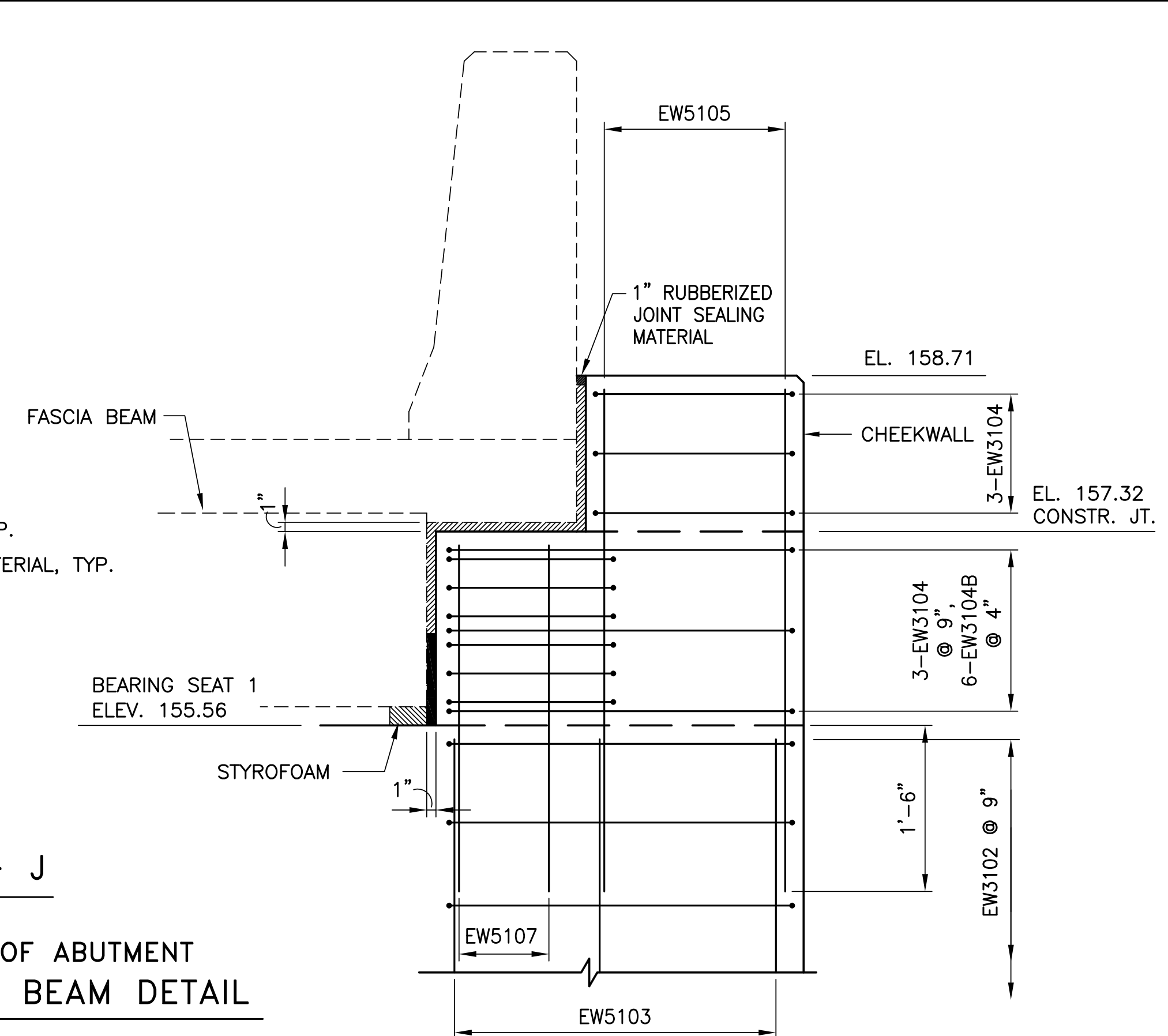
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File: S-13-13-Revised.dwg Layout: 13 Plotted: 3/27/19 at 11:27am By: evjacinto



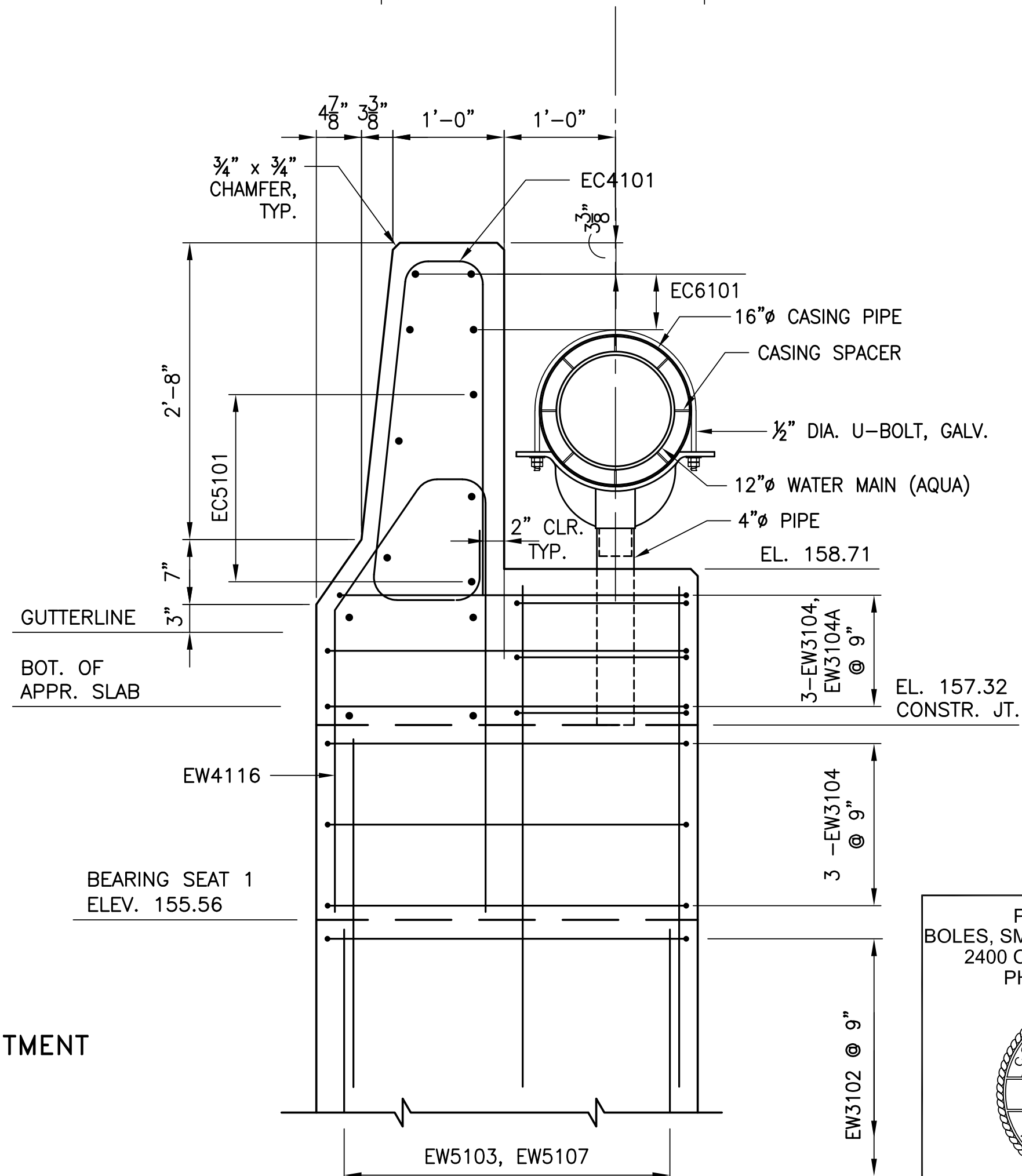
SECTION J - J

LOOKING AT FRONT FACE OF ABUTMENT
CHEEKWALL AND FASCIA BEAM DETAIL



SECTION K - K

LOOKING AT FRONT FACE OF ABUTMENT
CHEEKWALL BARRIER

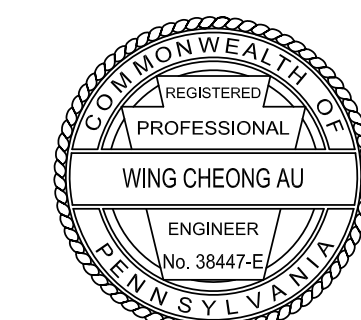


1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.
2. FOR LOCATION OF SECTIONS J-J AND K-K SEE SHEET 12.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 1 DETAILS 2

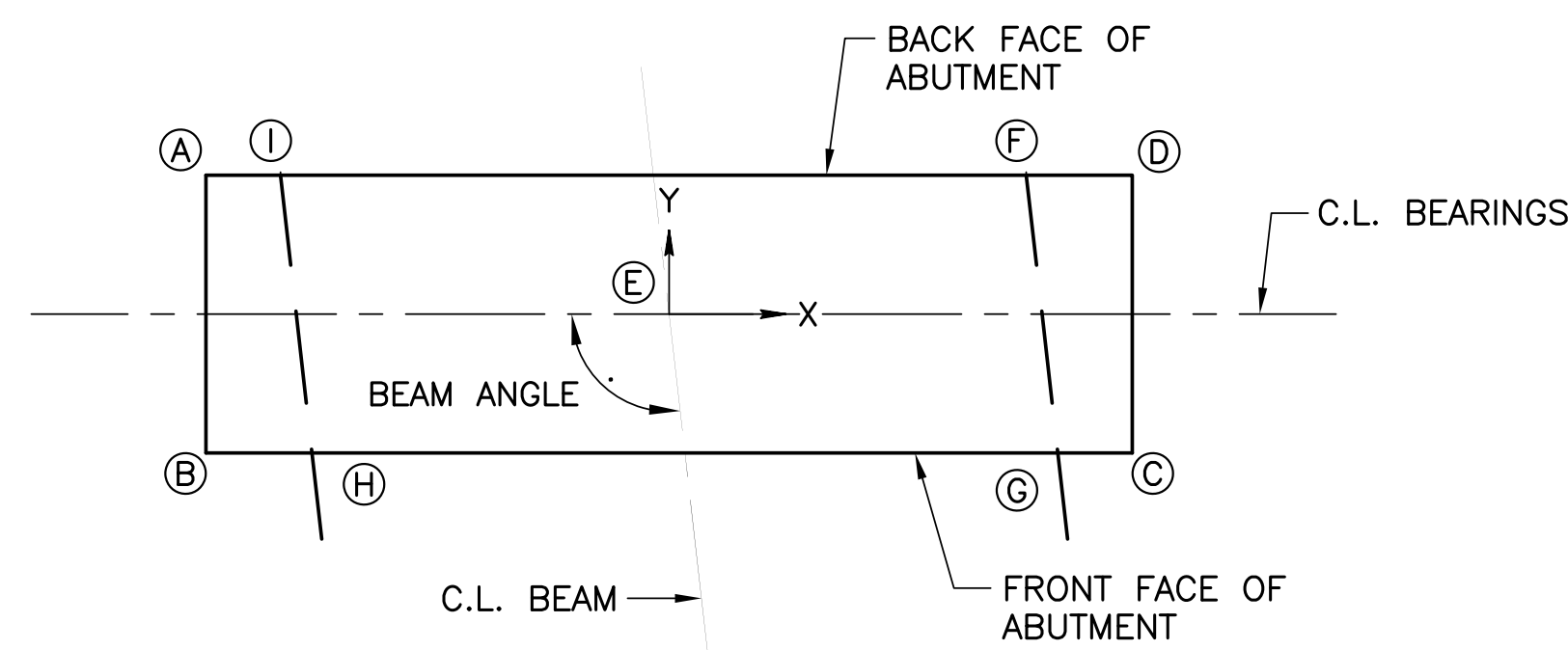
PREPARED BY
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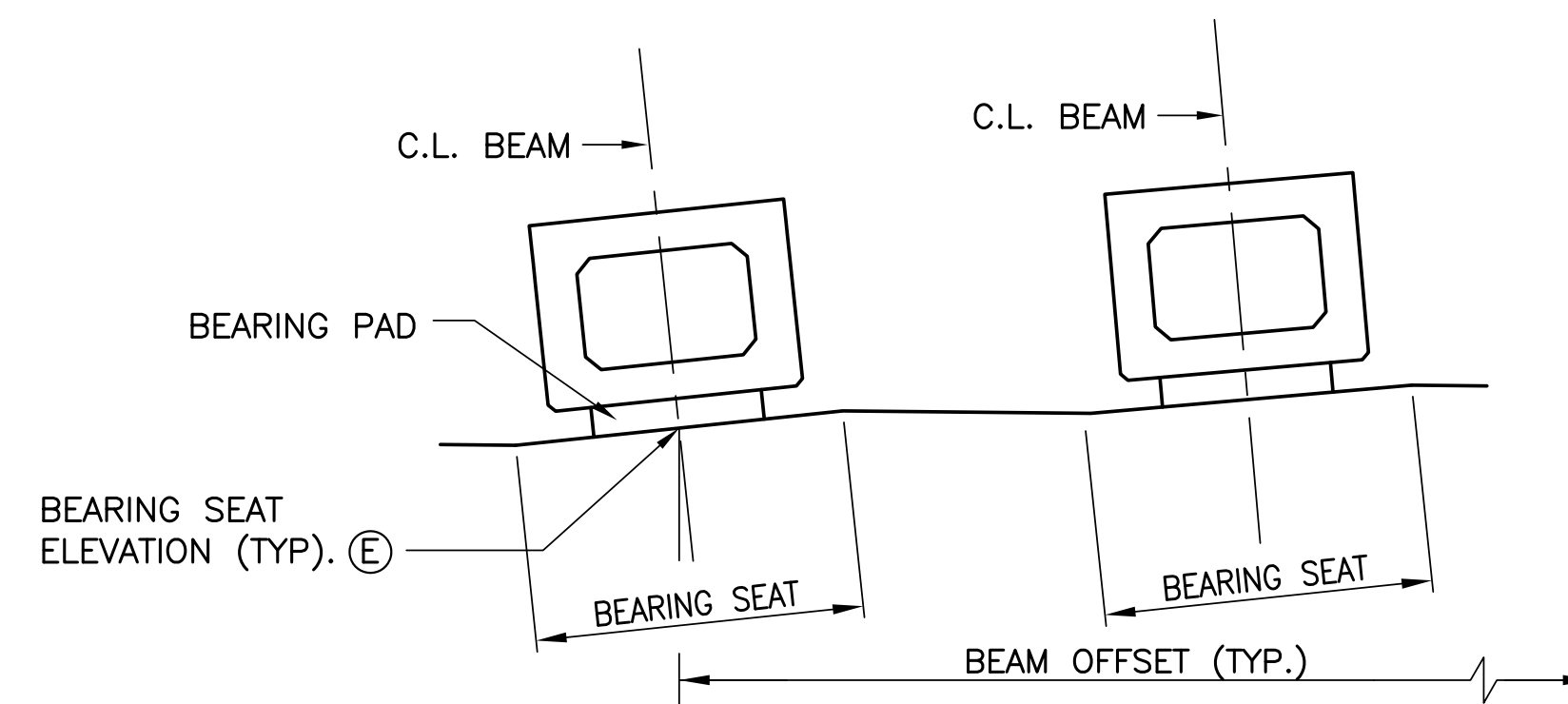
RECOMMENDED _____

SHEET 13 OF 59

BPAA-462653



BEARING SEAT PLAN VIEW
NOT TO SCALE



BEAM SEAT PLAN VIEW
NOT TO SCALE

NOTE: SEE BEARING SEAT PLAN VIEW FOR FURTHER DETAILS.

NOTES:
C.L. BEAM OFFSET IS MEASURED ALONG THE C.L. BEARING.

C.L. BEAM OFFSET IS MEASURED FROM THE C.L. OF ROADWAY TO THE C.L. OF BEAM AT THE BEARING SEAT POINT (E).

NEGATIVE OFFSETS ARE MEASURED TO THE LEFT OF THE C.L. OF ROADWAY, FACING THE ABUTMENT.

POSITIVE "BEARING SEAT SLOPE Y" REPRESENTS AN INCREASE IN ELEVATION FROM FRONT TO BACK FACE OF ABUTMENT, IN THE DIRECTION OF THE POSITIVE Y-AXIS SHOWN IN THE BEARING SEAT PLAN VIEW.

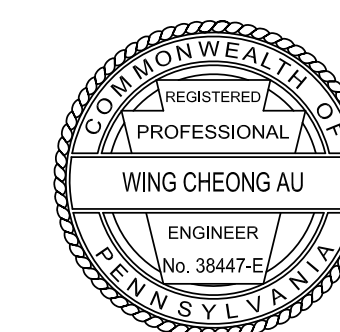
POSITIVE "BEARING SEAT SLOPE X" REPRESENTS AN INCREASE IN ELEVATION IN THE DIRECTION OF THE POSITIVE X-AXIS SHOWN IN THE BEARING SEAT PLAN VIEW.

ABUTMENT 1 BEARING SEAT LOCATION AND ELEVATION TABLE																			
BEAM NO.	C.L. BEAM OFFSET	BEAM ANGLE	BRG. SEAT SLOPE		Ⓐ			Ⓑ			Ⓒ			Ⓓ			Ⓔ		
			X	Y	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.
1	12'-4 5/8"	96°-28'-57"	-1.916%	-1.224%	-2'-7 1/4"	9"	155.64	-2'-7 1/4"	-9"	155.66	2'-7 1/4"	-9"	155.56	2'-7 1/4"	9"	155.54	0"	0"	155.60
2	4'-10"	96°-28'-57"	-2.068%	-1.241%	-2'-7 1/4"	9"	155.77	-2'-7 1/4"	-9"	155.79	2'-7 1/4"	-9"	155.68	2'-7 1/4"	9"	155.67	0"	0"	155.73
3	-2'-8 3/8"	96°-28'-57"	-0.873%	-1.106%	-2'-7 1/4"	9"	155.79	-2'-7 1/4"	-9"	155.81	2'-7 1/4"	-9"	155.77	2'-7 1/4"	9"	155.74	0"	0"	155.78
4	-10'-2 7/8"	96°-28'-57"	-0.804%	-1.098%	-2'-7 1/4"	9"	155.76	-2'-7 1/4"	-9"	155.78	2'-7 1/4"	-9"	155.74	2'-7 1/4"	9"	155.72	0"	0"	155.75
5	-17'-9 3/4"	96°-28'-57"	-2.093%	-1.244%	-2'-7 1/4"	9"	155.77	-2'-7 1/4"	-9"	155.79	2'-7 1/4"	-9"	155.68	2'-7 1/4"	9"	155.66	0"	0"	155.73

ABUTMENT 1 BEARING SEAT LOCATION AND ELEVATION TABLE																
BEAM NO.	C.L. BEAM OFFSET	BEAM ANGLE	BRG. SEAT SLOPE		Ⓕ			Ⓖ			Ⓗ			Ⓘ		
			X	Y	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.
1	12'-4 5/8"	96°-28'-57"	-1.916%	-1.224%	1'-11 1/8"	9"	155.56	2'-1 1/8"	-9"	155.57	-1'-11 1/8"	-9"	155.65	-2'-1 1/8"	9"	155.63
2	4'-10"	96°-28'-57"	-2.068%	-1.241%	1'-11 1/8"	9"	155.68	2'-1 1/8"	-9"	155.69	-1'-11 1/8"	-9"	155.78	-2'-1 1/8"	9"	155.76
3	-2'-8 3/8"	96°-28'-57"	-0.873%	-1.106%	1'-11 1/8"	9"	155.75	2'-1 1/8"	-9"	155.77	-1'-11 1/8"	-9"	155.80	-2'-1 1/8"	9"	155.79
4	-10'-2 7/8"	96°-28'-57"	-0.804%	-1.098%	1'-11 1/8"	9"	155.73	2'-1 1/8"	-9"	155.74	-1'-11 1/8"	-9"	155.77	-2'-1 1/8"	9"	155.76
5	-17'-9 3/4"	96°-28'-57"	-2.093%	-1.244%	1'-11 1/8"	9"	155.68	2'-1 1/8"	-9"	155.69	-1'-11 1/8"	-9"	155.78	-2'-1 1/8"	9"	155.76

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

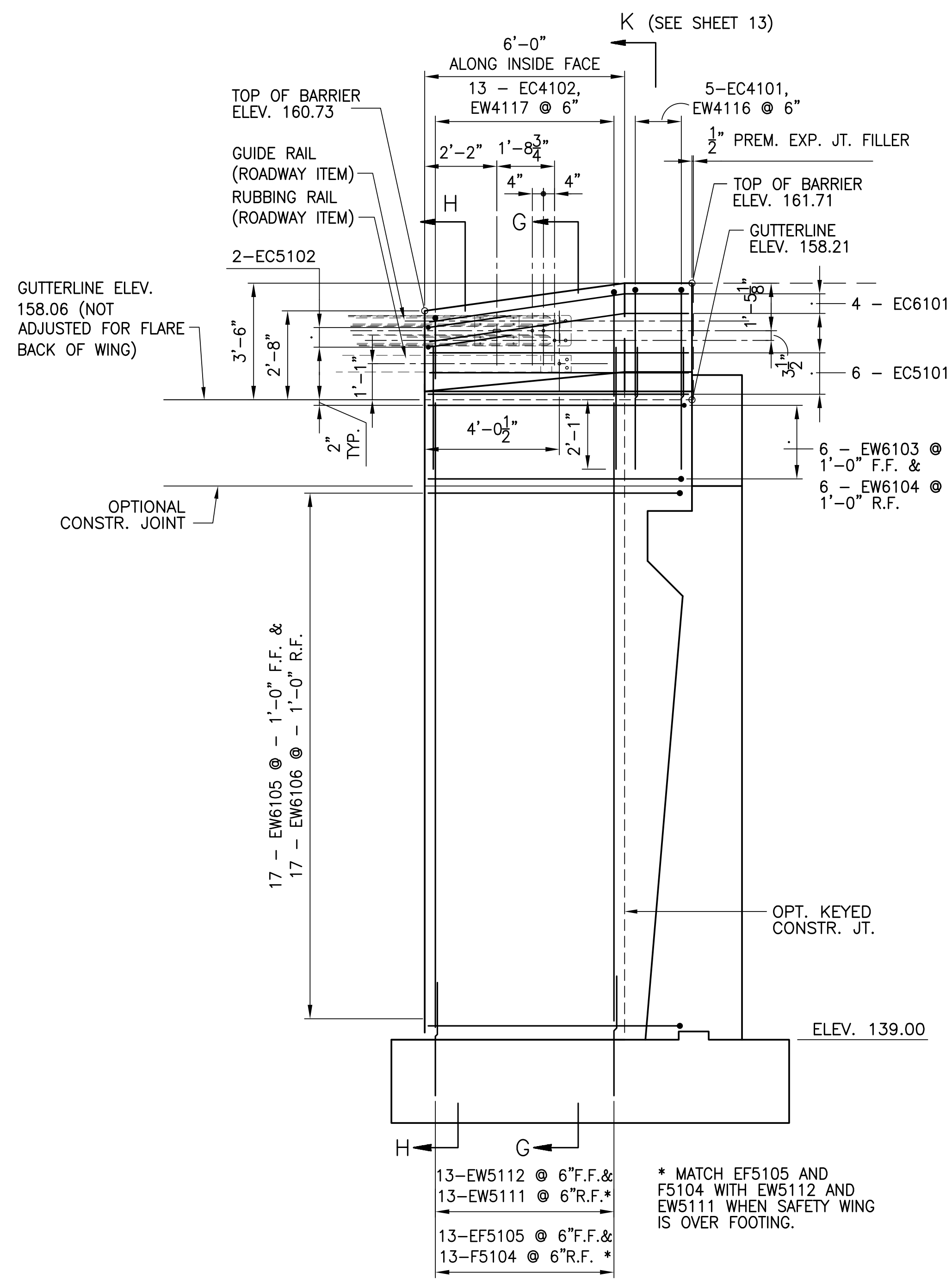
ABUTMENT 1 BEARING SEAT ELEV.

RECOMMENDED _____

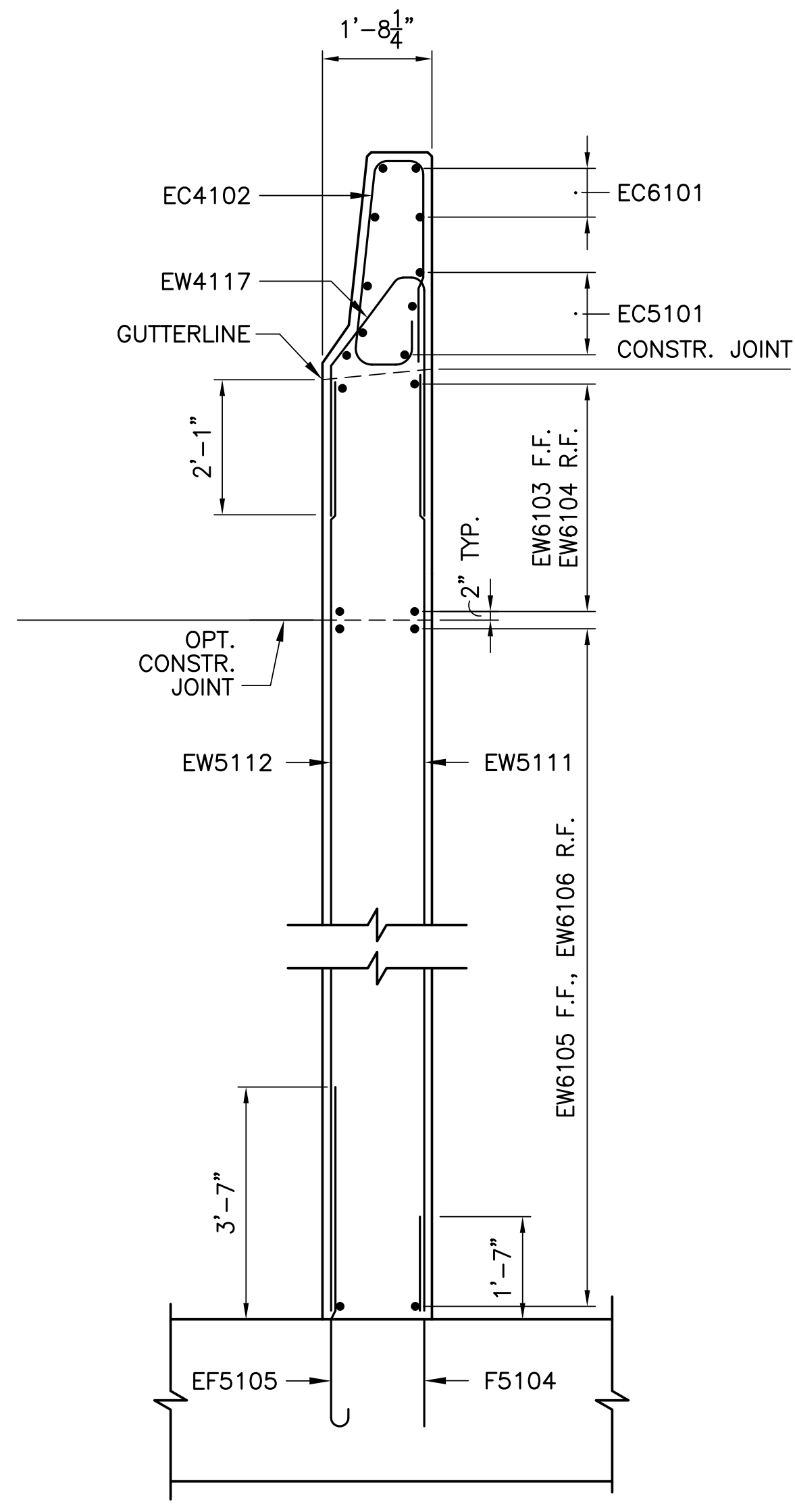
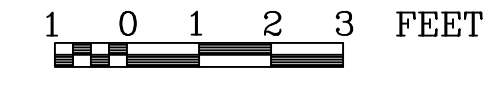
SHEET 14 OF 59

BPAA-462653

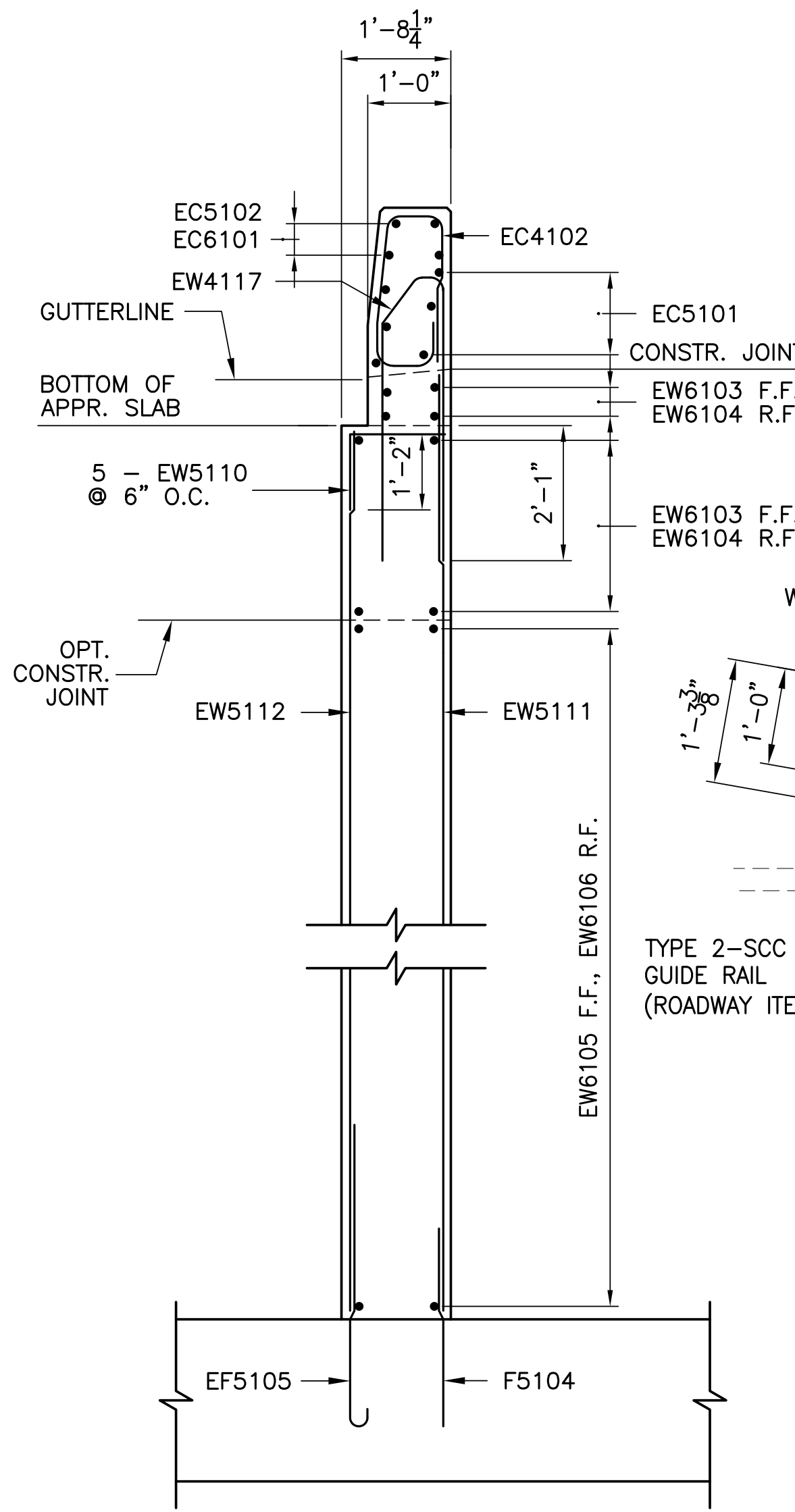
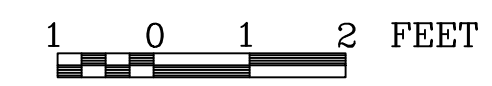
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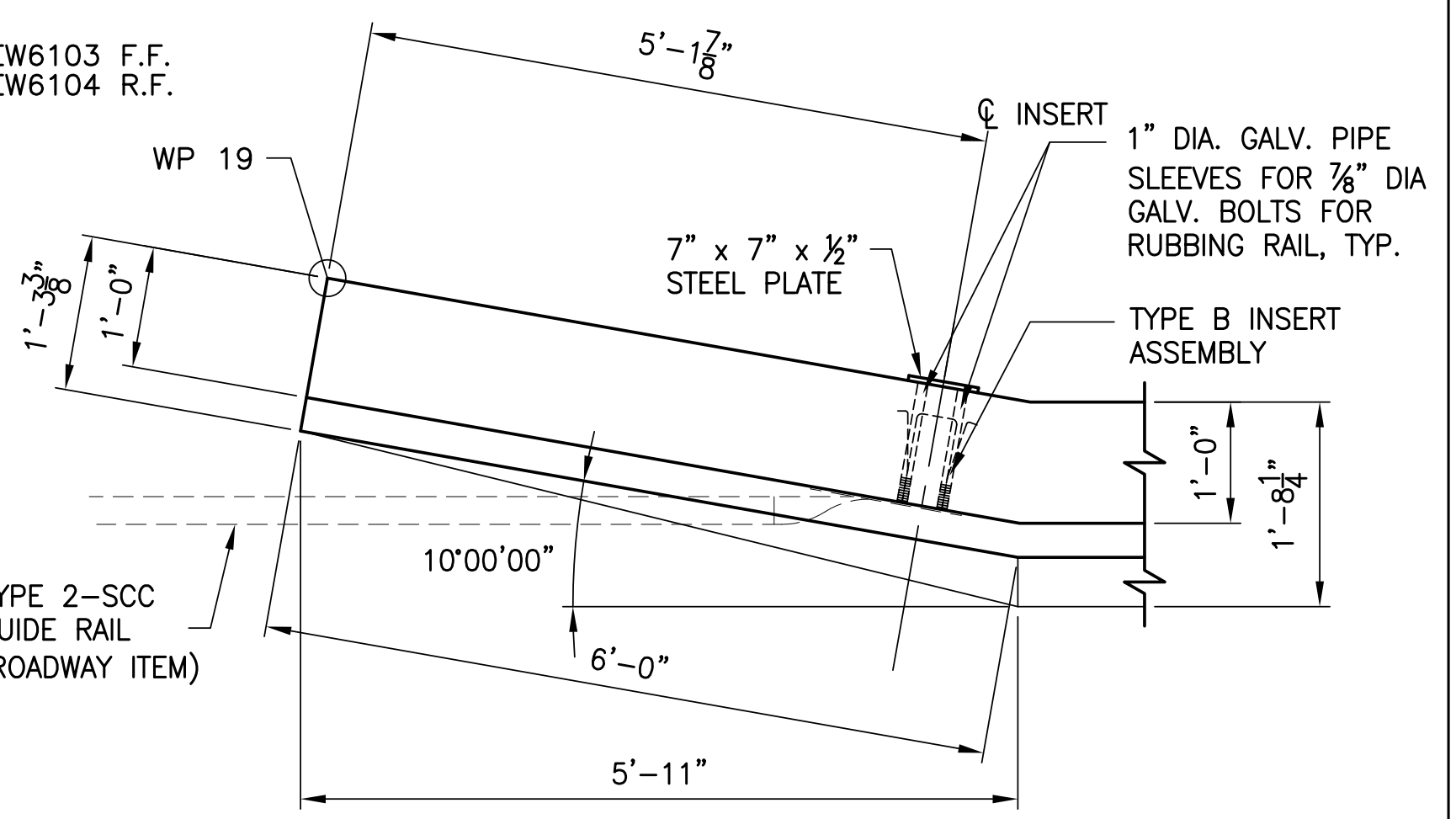
ELEVATION F-F
VIEW OF INSIDE FACE



LOOKING AT FRONT FACE OF ABUTMENT
SECTION G - G



LOOKING AT FRONT FACE OF ABUTMENT
SECTION H - H



WING "B"
END OF BARRIER PLAN VIEW



- NOTE:
- FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.
 - FOR SECTION K-K SEE SHEET 13.

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PHILA., PA 19103

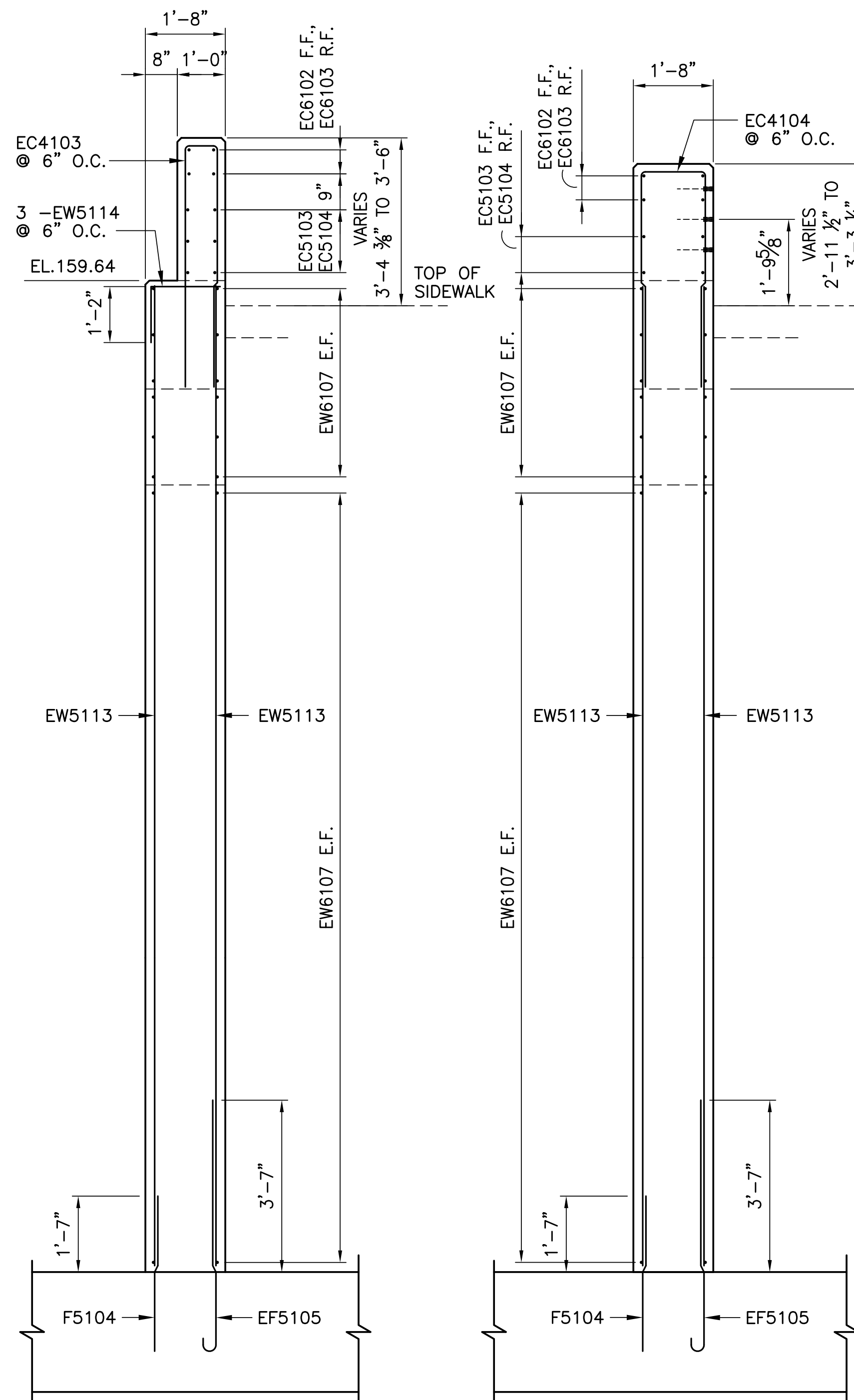
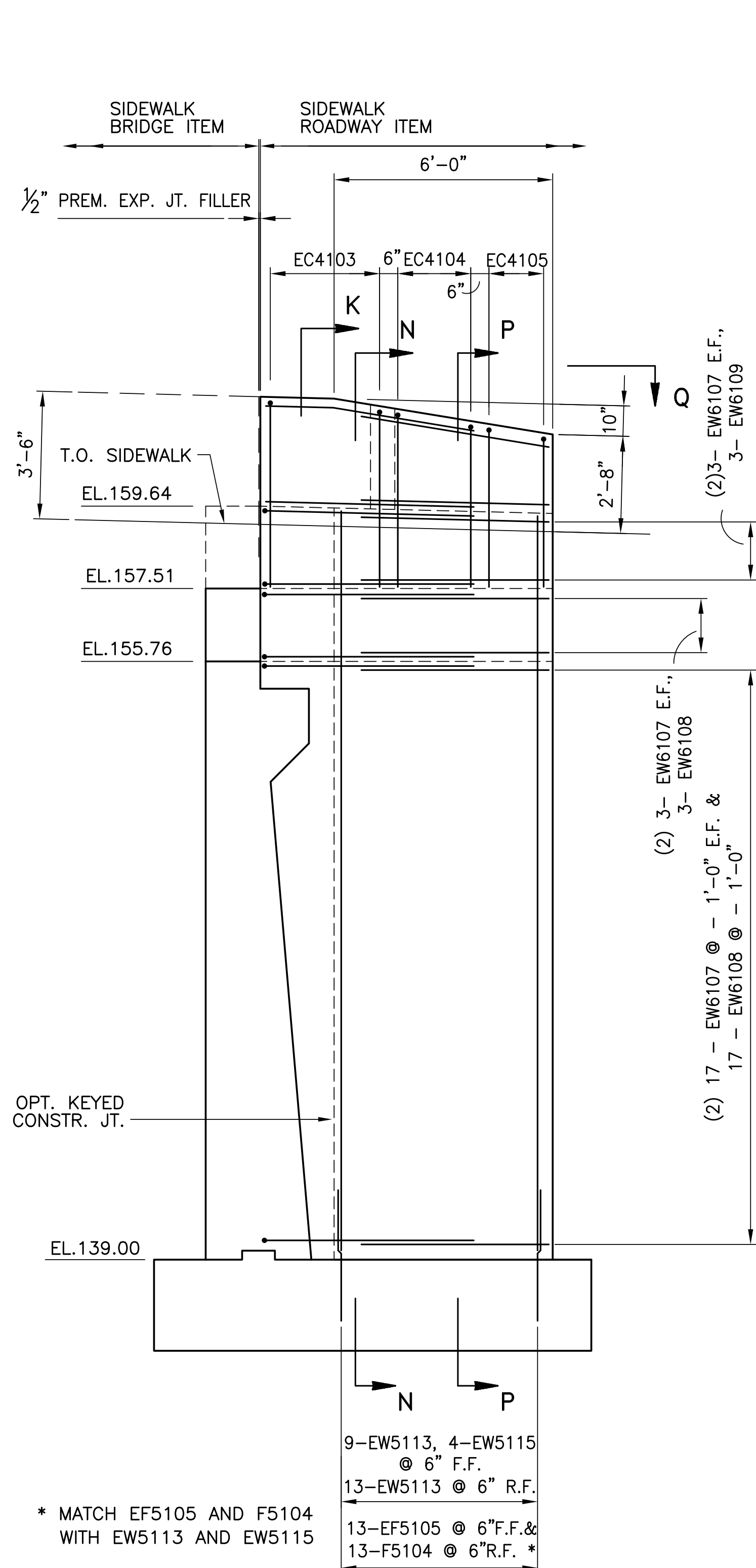


Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

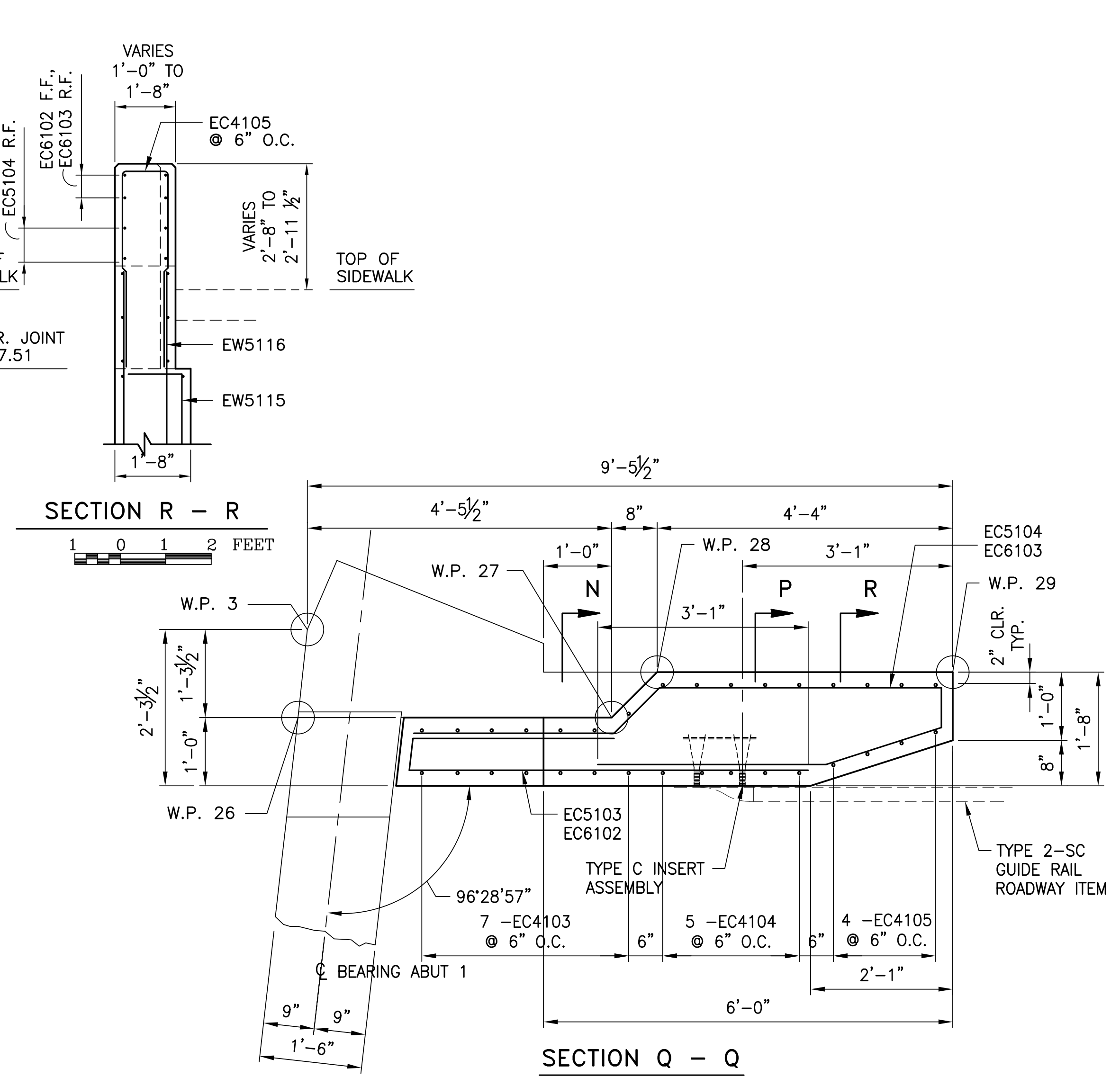
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 1 SAFETY WING DETAIL

RECOMMENDED _____ SHEET 15 OF 59
BPAA-462653

File: S-16-Revise.dwg Layout: 16 Plotted: 3/27/19 at 11:32am By: eyacinto



NOTES:
1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.
2. FOR ELEVATION K - K SEE SHEET 13.



REVISIONS

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

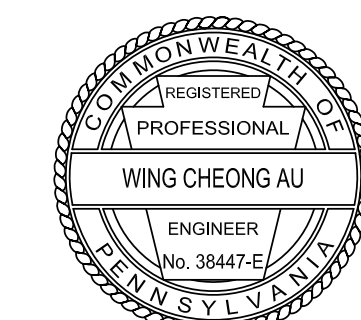
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUT. 1 - BARRIER TRANSITION DETAILS

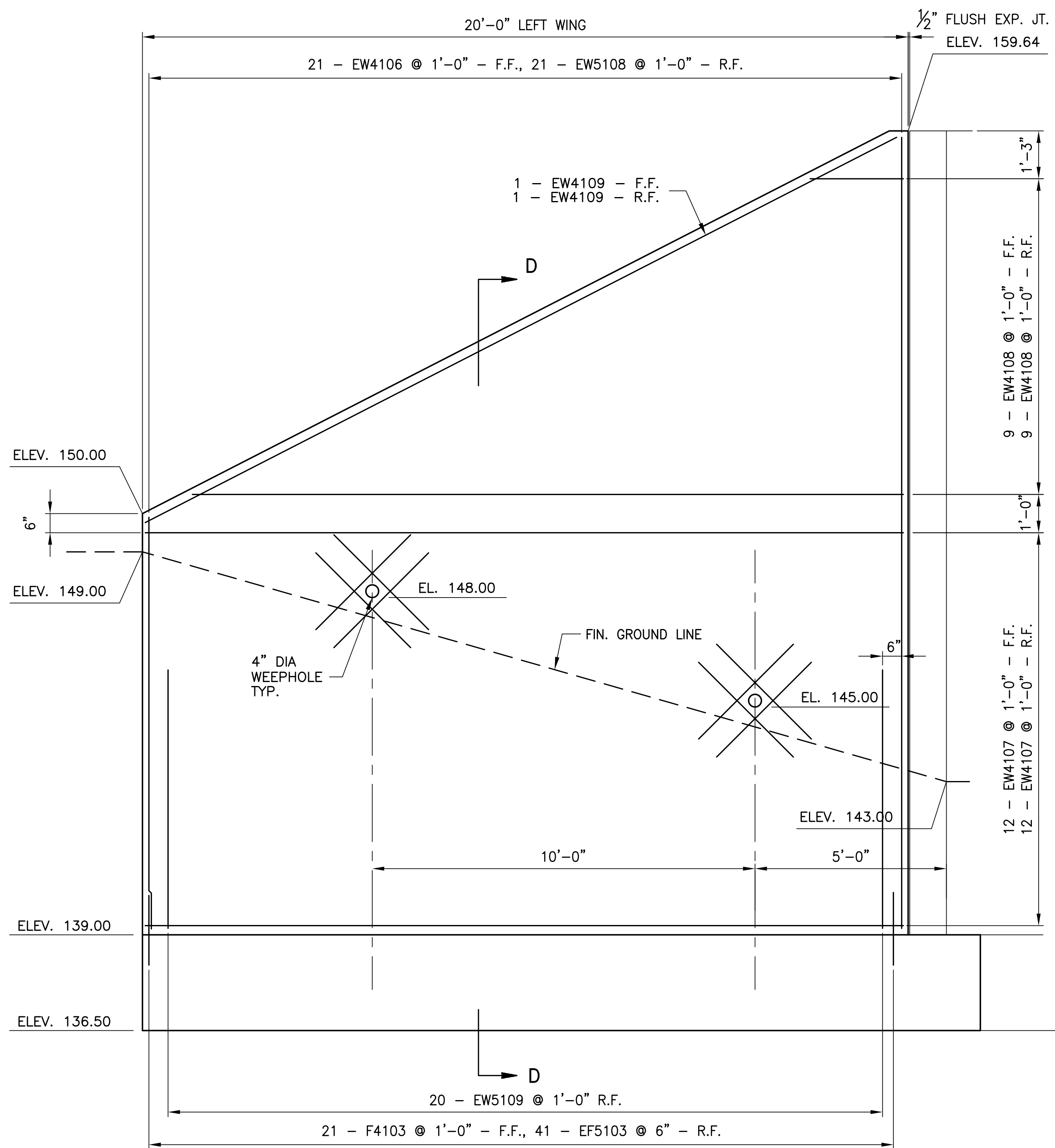
RECOMMENDED _____ SHEET 16 OF 59

BPA-462653

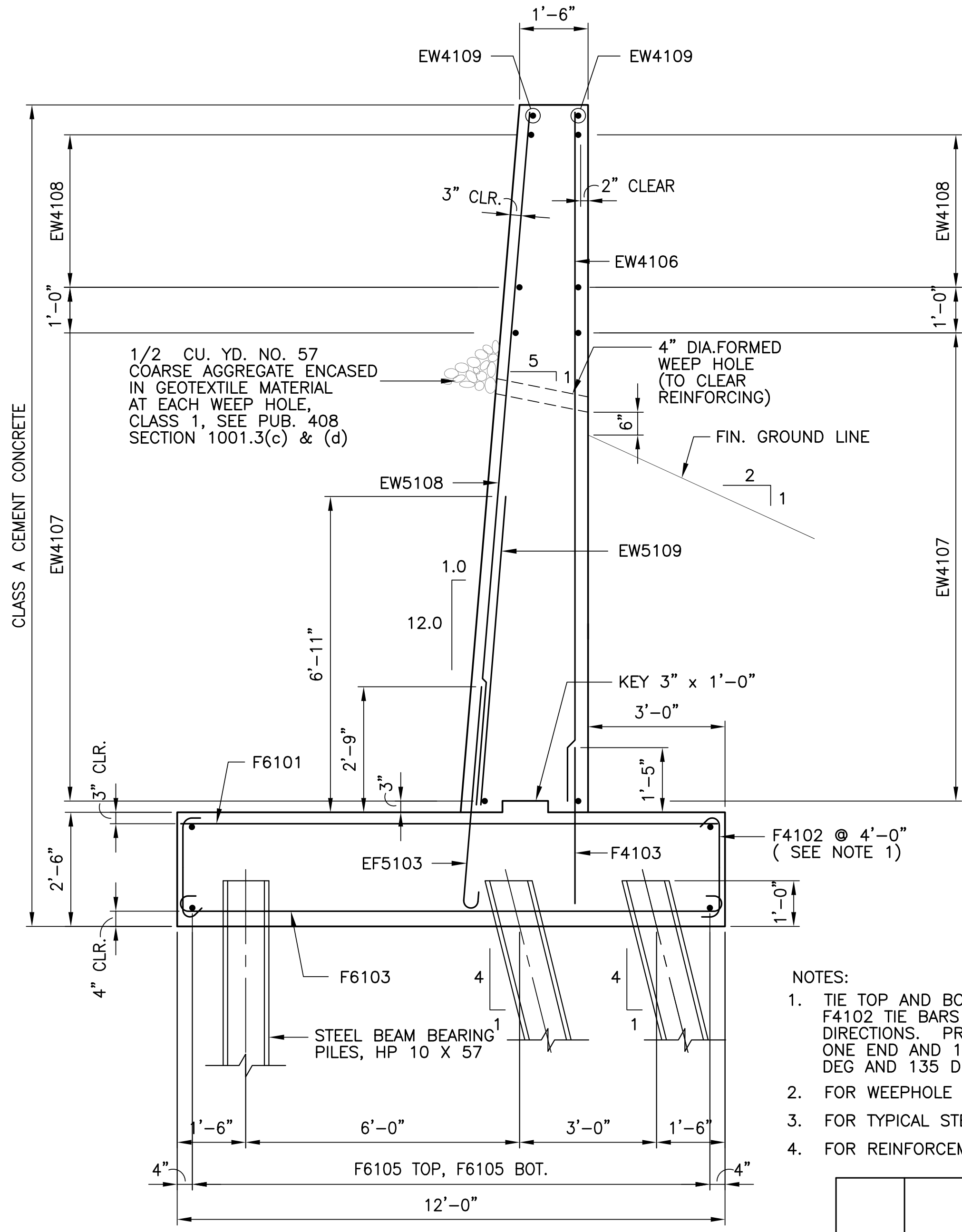
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BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



File: S-17-Revise.dwg Layout: 17 Plotted: 3/27/19 at 11:33am By: eyacinto



WINGWALL A ELEVATION



SECTION D-D



NOTES:

1. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4102 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
2. FOR WEEPHOLE REINFORCEMENTS SEE SHEET 12.
3. FOR TYPICAL STEM TO PILE CAP CONNECTION DETAIL SEE SHEET 11.
4. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

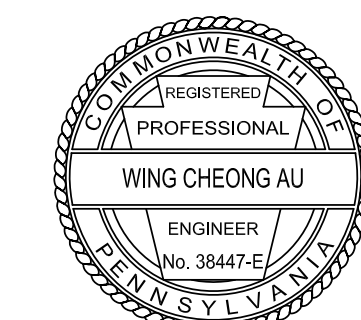
ABUTMENT 1 WING A SECTION & ELEV.

RECOMMENDED _____

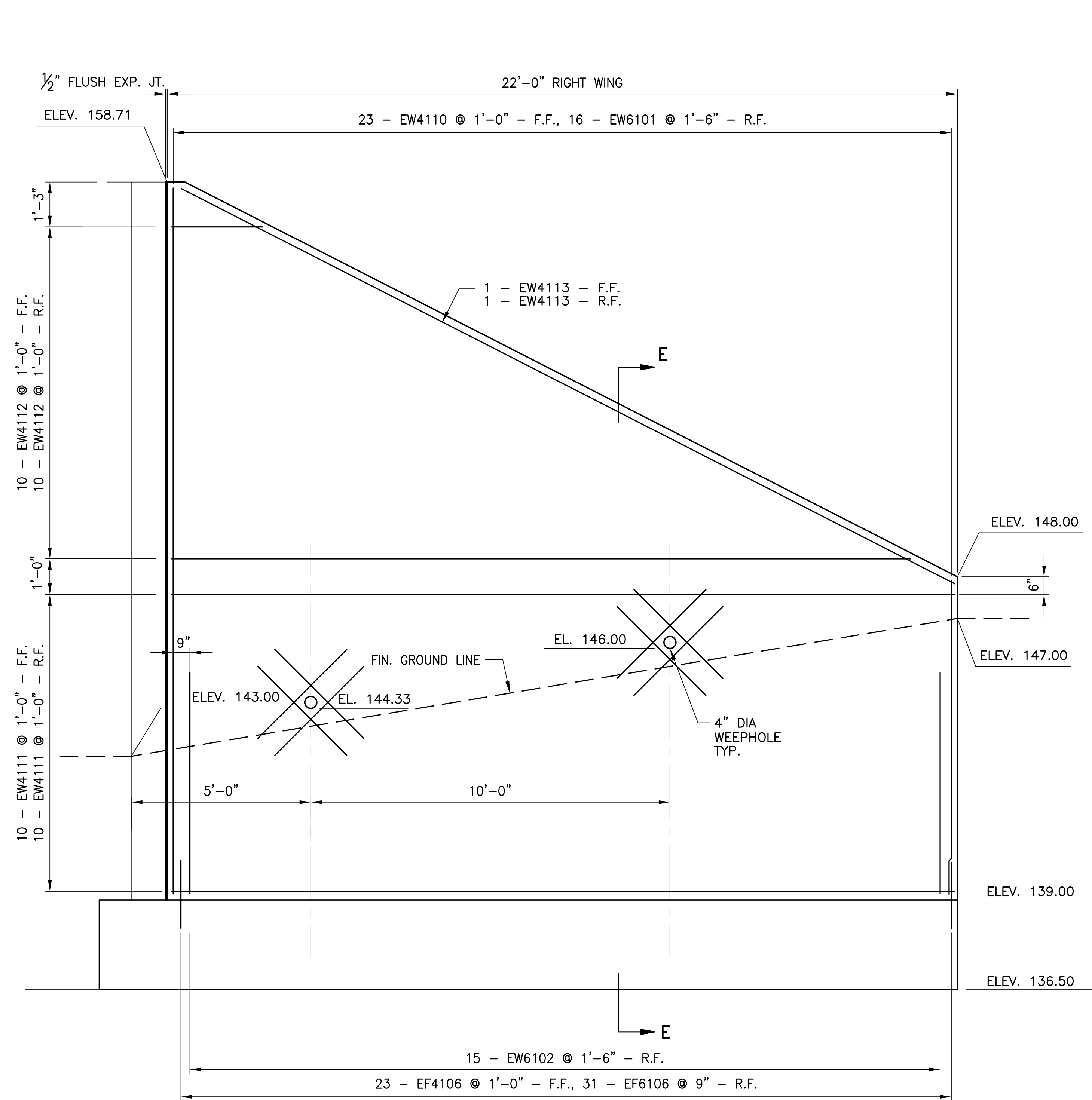
SHEET 17 OF 59

BPA-462653

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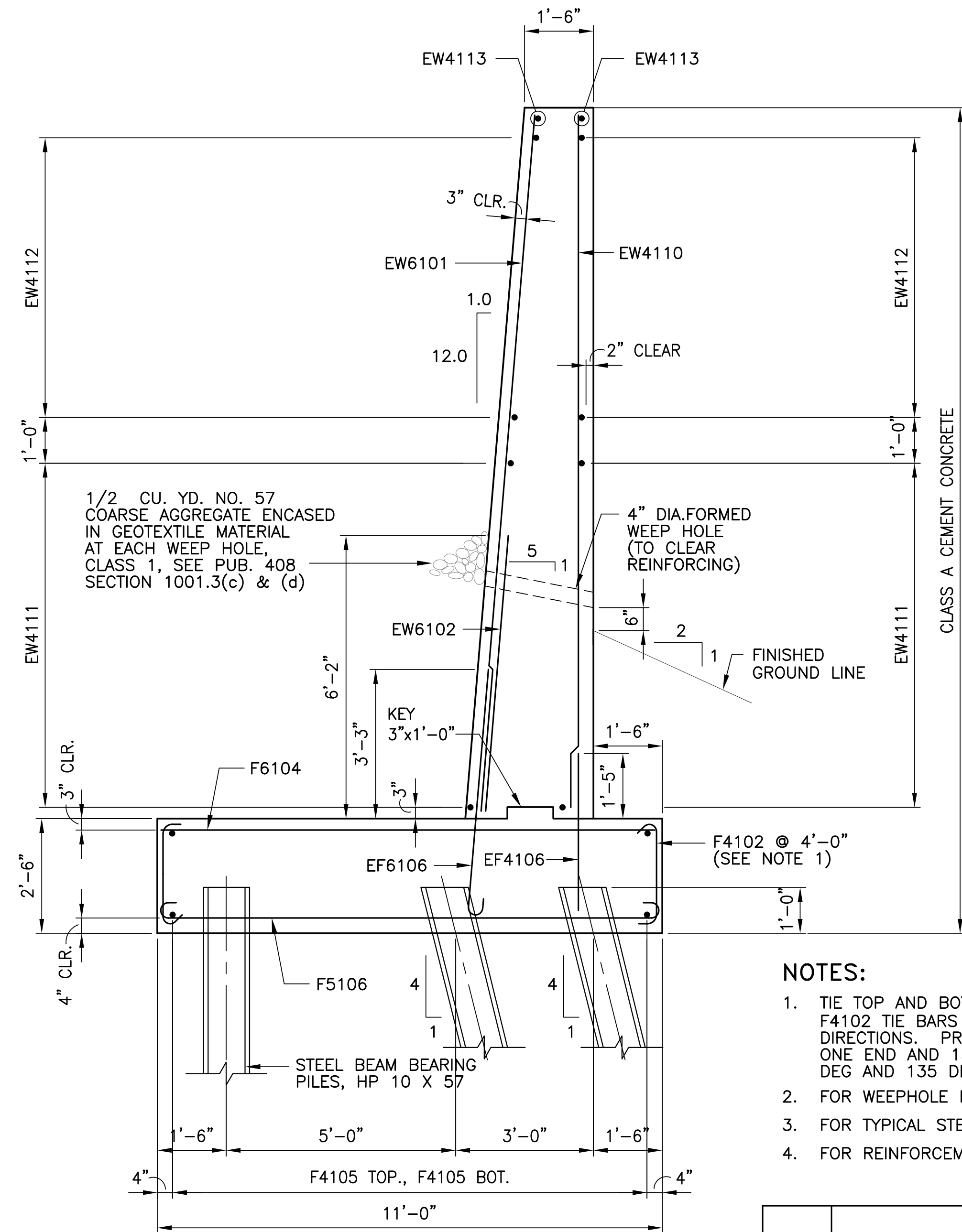


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WINGWALL B ELEVATION

1 0 1 2 FEET



NOTES:

1. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4102 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
2. FOR WEEPHOLE REINFORCEMENTS SEE SHEET 12.
3. FOR TYPICAL STEM TO PILE CAP CONNECTION DETAIL SEE SHEET 11.
4. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 19.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

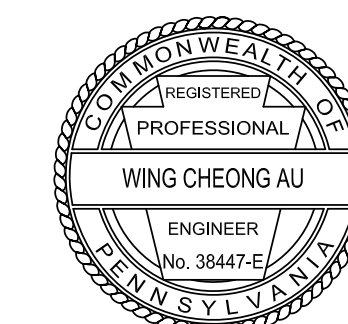
ABUTMENT 1 WING B SECTION & ELEV.

RECOMMENDED _____

SHEET 18 OF 59

BPA-462653

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PHILA., PA 19103



File: S-19-Revise.dwg Layout: 19 Plotted: 3/27/19 at 11:35am By: evjacinto

MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
ABUTMENT STEM											
EW3101	3	23	12'-4"	STR							BEND IN FIELD
EW3102	3	23	15'-0"	STR							BEND IN FIELD
EW3103	3	7	12'-2"	STR							BEND IN FIELD
EW3103A	3	4	9'-0"	STR							BEND IN FIELD
EW3103B	3	6	6'-3"	STR							BEND IN FIELD
EW3104	3	5	14'-10"	STR							BEND IN FIELD
EW3104A	3	3	10'-6"	STR							BEND IN FIELD
EW3104B	3	6	7'-0"	STR							BEND IN FIELD
EW4101	4	34	16'-3"	STR							
EW4102	4	18	36'-7"	STR							
EW4103	4	18	36'-3"	STR							
EW4114	4	24	3'-6"	STR							WEEP HOLE REINFORCEMENT
EW4116	4	5	7'-8"	40	3'-3"	4"	4"	2 3/4"	1'-4 1/4"	2"	F=2'-1 1/4" ; G=0" ; H=9 1/4"
EW4117	4	13	7'-11" TO 8'-0"	40	3'-4 3/4"	4"	4"	2 3/4"	VARIES	2"	E VARIES 1'-4 7/8" TO 5 3/4" VARIES 1 EA. BY 7/8" F VARIES 2'-3 5/8" TO 3'-1 5/8" VARIES 1 EA. BY 7/8" H VARIES 7 3/8" TO 2 1/2" VARIES 1 EA. BY 3/8", G=0"
EW5101	5	34	6'-7"	7	2'-9 1/8"	1'-0"	2'-9 1/4"	2 3/4"			
EW5102	5	12	16'-6"	STR							
EW5103	5	15	16'-4"	STR							
EW5104	5	12	5'-2"	STR							
EW5105	5	15	4'-5"	STR							
EW5106	5	4	3'-10"	STR							
EW5107	5	4	4'-2"	STR							
EW5110	5	5	2'-4" TO 2'-10"	10	VARIES	1'-2"					A VARIES 1'-8" TO 1'-2", VARIES 1 EA. BY 1 1/2"
EW5111	5	13	18'-9"	STR							
EW5112	5	13	17'-6"	STR							
EW5113	5	22	20'-4"	STR							
EW5114	5	3	2'-6"	10	1'-4"	1'-2"					
EW5115	5	4	19'-5"	10	18'-3"	1'-2"					
EW5116	5	4	4'-2"	STR							
EW5117	5	4	36'-0"	STR							
EW5118	5	4	3'-0"	11	1'-0"	2'-0"	1'-5"				CORBEL REINF. FOR PIPE SLEEVE REINF.
EW6103	6	6	8'-1"	46	1'-7"	5'-10"	1'-0"		8"		
EW6104	6	6	8'-1"	47	1'-7"	5'-10"	1'-0"		8"		
EW6105	6	17	8'-2"	46	1'-8"	5'-10"	1'-0"		8"		
EW6106	6	17	8'-2"	47	1'-8"	5'-10"	1'-0"		8"		
EW6107	6	46	6'-9"	46	3'-6 1/2"	2'-1 1/2"	7 3/4"	4 1/2"	8"		
EW6108	6	20	11'-8"	4	5'-2"	1'-4"	5'-2"				G = 6 1/2"
EW6109	6	3	10'-7"	48	3'-1"	1'-10"	7"	5'-1"			
EW6110	6	68	7'-3"	8	3'-0"	1'-1"	2'-2"	1'-0"			CORBEL REINF.
EW7101	7	35	16'-3"	STR							
EW7102	7	34	9'-0"	STR							
EW8101	8	12	2'-11"	STR							8 = 1" DIA. DOWEL BAR
WINGWALL STEM											
EW4106	4	21	10'-8" TO 20'-3"	STR							VARIES 1 EA. BY 5 3/4"
EW4107	4	24	19'-8"	STR							
EW4108	4	18	2'-8" TO 18'-7"	STR							2 SETS OF 9, VARY EA. BAR IN SET BY 1'-11 7/8"
EW4109	4	2	21'-9"	STR							
EW4110	4	23	8'-8" TO 19'-4"	STR							VARIES 1 EA. BY 5 7/8"
EW4111	4	20	21'-8"	STR							
EW4112	4	20	2'-8" TO 20'-7"	STR							2 SETS OF 10, VARY EA. BAR IN SET BY 1'-11 7/8"
EW4113	4	2	24'-1"	STR							
EW4115	4	32	3'-6"	STR							WEEP HOLE REINFORCEMENT
EW5108	5	21	10'-8" TO 20'-4"	STR							VARIES 1 EA. BY 5 3/4"
EW5109	5	20	6'-9"	STR							
EW6101	6	16	8'-8" TO 19'-5"	STR							VARIES 1 EA. BY 8 5/8"
EW6102	6	15	6'-0"	STR							

MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
FOOTING											
F4102	4	100	2'-8"	26	4 1/2"	1'-11"	4 1/2"				
F4103	4	55	3'-7"	STR							1"
F4105	4	30	22'-7"	STR							
EF4106	4	23	3'-7"	STR							
F5101	5	13	45'-8" TO 46'-11"	STR							VARIES 1 EA. BY 1 1/8"
F5102	5	27	3'-11"	STR							
EF5103	5	41	5'-7"	14	7"	4'-11 1/4"					
F5104	5	26	3'-4"	STR							
EF5105	5	26	5'-9"	14	7"	5'-2"					
F5106	5	23	11'-10"	15	7"	10'-8"					
F6101	6	113	11'-8"	STR							
F6102	6	13	45'-8" TO 46'-11"	STR							VARIES 1 EA. BY 1 1/8"
F6103	6	71	13'-0"	15	8"	11'-8"					
F6104	6	31	10'-8"	STR							
F6105	6	21	15'-0"	STR							
EF6106	6	31	6'-1"	14	8"	5'-5"					
F6107	6	50	3'-0"	STR							PILE ANCHORAGE
F6108	6	8	7'-0"	11	3'-6"	3'-6"	9 3/8"				
EF7101	7	69	7'-4"	14	10"	6'-6"					
TOE WALL AND CUTOFF WALL											
EW4121	4	32	4'-0"	3	1'-2"	8"	1'-2"	6"			
EW4122	4	4	40'-8"	STR							TOE WALL
EW4123	4	4	9'-0"	10	8'-0"	1'-0"					CUTOFF WALL A
EW4124	4	4	9'-6"	10	8'-6"	1'-0"					CUTOFF WALL B
BARRIER											
EC4101	4	5	8'-1"	37	2'-9 1/2"	4"	3 3/8"	3 5/8"	2'-7 3/4"	2"	F=4 1/8" ; G=6 3/4" ; H=5" I=3 3/8"
EC4102	4	13	6'-5" TO 8'-1"	37	VARIES	4"	3 3/8"	3 5/8"	VARIES	2"	A VARIES 2'-9 1/2" TO 1'-11 1/2" VARIES 1 EA. BY 7/8" E VARIES 2'-7 3/4" TO 1'-9 3/4" VARIES 1 EA. BY 7/8" I VARIES 3 3/8" TO 2 1/4" VARIES 1 EA. BY 1/8" F=4 1/8" ; G=6 3/4" ; H=5"
EC4103	4	7	10'-8"	4	5'-0"	8"	5'-0"				
EC4104	4	5	10'-0" TO 10'-8"	4	VARIES	1'-4"	VARIES				VARY A & C 4'-4" TO 4'-8"
EC4105	4	4	8'-8" TO 9'-10"	4	VARIES	8" TO 1'-4"	VARIES				VARY A & C 4'-0" TO 4'-3"
EC5101	5	6	7'-8"	11	1'-10 3/8"	5'-9"	11 7/8"				
EC5102	5	2	5'-8"	4	2'-6"	8"	2'-6"				
EC5103	5	3	9'-4 1/2"	49	5'-10"	6 1/2"	3'-0"				G = 5/8", H = 8"
EC5104	5	3	13'-6"	48	3'-1"	1'-10"	7"	4'-1 1/2"	11 1/2"		F = 2'-11", G = 6 1/2", H = 8"
EC6101	6	4	7'-8"	11	1'-10 3/8"	5'-9 5/8"	1'-3 1/2"				
EC6102	6	2	9'-4 1/2"	49	5'-10"	6 1/2"	3'-0"				G = 5/8", H = 8"
EC6103	6	2	13'-6"	48	3'-1"	1'-10"	7"	4'-1 1/2"	11 1/2"		F = 2'-11", G = 6 1/2", H = 8"

- "*" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- FOR REINFORCEMENT BAR FABRICATION DETAILS, REFER TO STANDARD DRAWING BC-736M.
- FIGURES IN CIRCLES SHOW TYPES.
- "E" - INDICATES EPOXY COATED REBARS.
- FOR ALL BAR TYPES SHOWN, DIMENSIONS A-H AND LENGTH ARE MEASURED ALONG OUTSIDE OF BAR. R IS MEASURED ALONG INSIDE OF BAR.
- BARS WITH BREAKS IN THE EPOXY COATING DUE TO FIELD BENDING SHALL BE FIELD REPAIRED WITH A TWO PART EPOXY COATING. BARS WITH MORE THAN 5 PERCENT AREA PATCHED SHALL BE REJECTED.

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PHILA., PA 19103

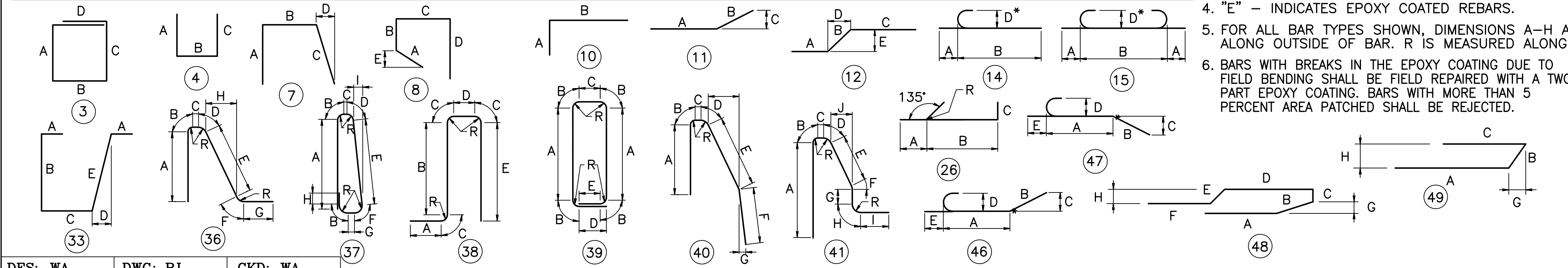
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DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 1 REBAR SCHEDULE

RECOMMENDED _____	SHEET 19 OF 59
BPAA-462653	



DES: WA DWG: RJ CKD: WA

PILE SPACING - LEFT WINGWALL PANEL 1					
ROW	NO. PILES	PILE SPACINGS *	DES. SPA.	NO. BAT. PILES	
1	4	3 @ 5'-0"	5'-0"	4	
2	4	3 @ 5'-0"	5'-0"	4	
3	2	1 @ 10'-0"	10'-0"	0	

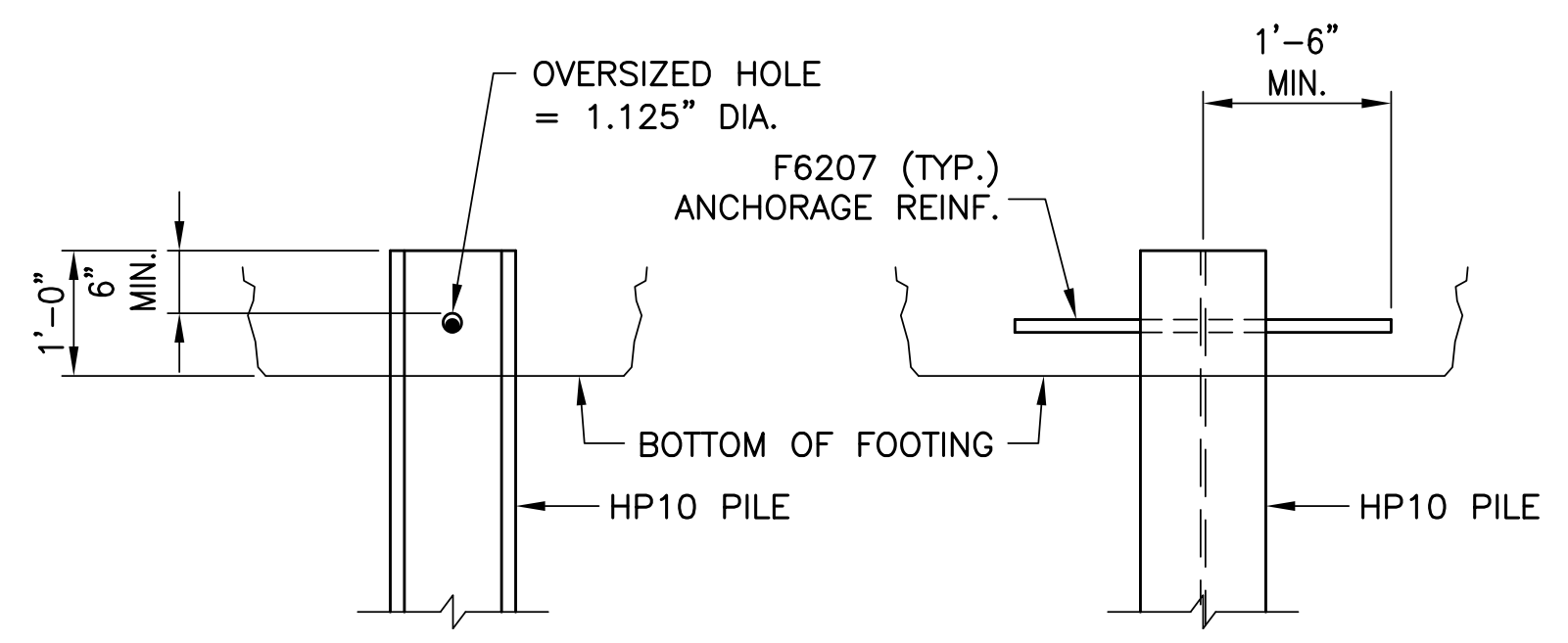
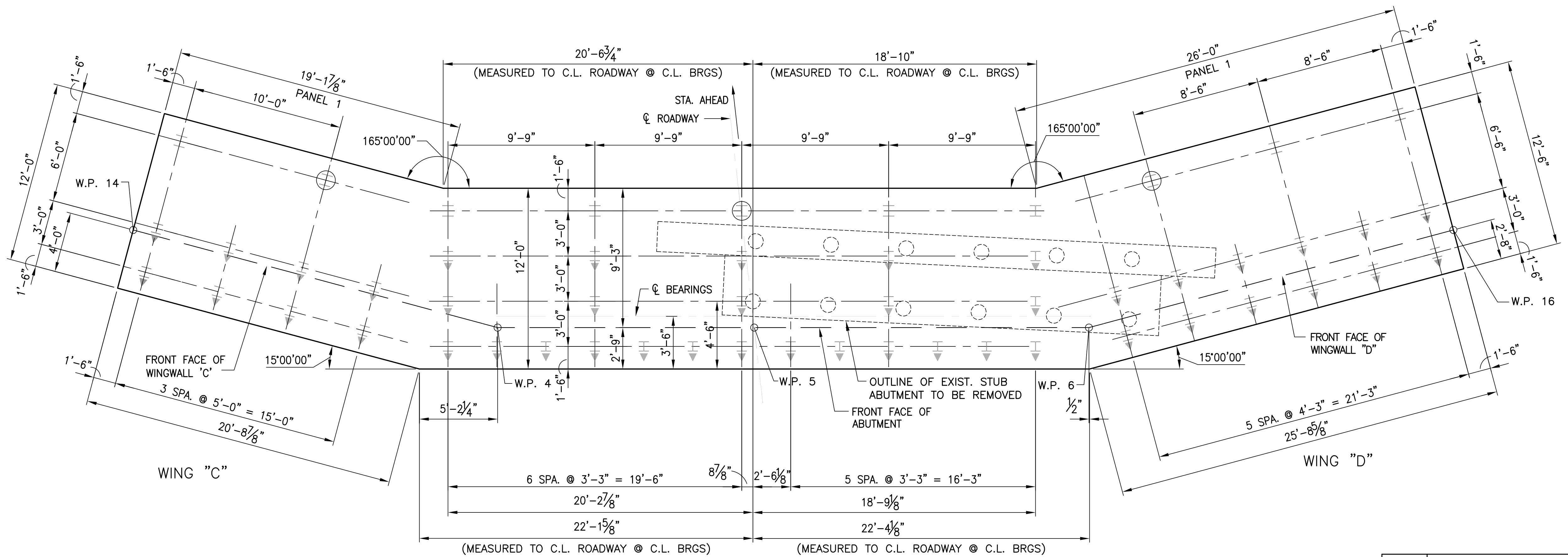
* PILE SPACINGS ARE GIVEN FROM OUTERMOST PILE TOWARDS THE ABUTMENT FOR EACH ROW

PILE SPACING - ABUTMENT FOOTING				
ROW	NO. PILES	PILE SPACINGS IN ROW FROM LEFT TO RIGHT	DES. SPA.	NO. BAT. PILES
1	13	12 @ 3'-3"	3'-3"	13
2	5	4 @ 9'-9"	9'-9"	5
3	5	4 @ 9'-9"	9'-9"	5
4	5	4 @ 9'-9"	9'-9"	0

NOTES: ROWS NUMBERED FROM TOE TO HEEL

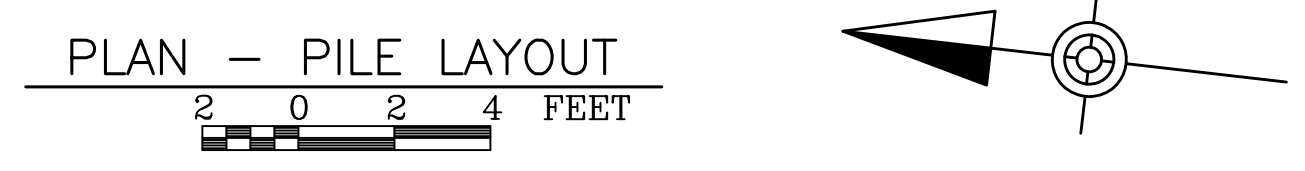
PILE SPACING - RIGHT WINGWALL PANEL 1				
ROW	NO. PILES	PILE SPACINGS *	DES. SPA.	NO. BAT. PILES
1	6	5 @ 4'-3"	4'-3"	6
2	6	5 @ 4'-3"	4'-3"	6
3	3	2 @ 8'-6"	8'-6"	0

* PILE SPACINGS ARE GIVEN FROM OUTERMOST PILE TOWARDS THE ABUTMENT FOR EACH ROW



SIDE VIEW OF PILE FRONT VIEW OF PILE
PILE ANCHORAGE DETAIL
 NOT TO SCALE

NOTE:
 1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.



- STEEL BEAM BEARING PILES, HP 10 X 57
- LEGEND**
- I DENOTES H-PILE
 - I DENOTES H-PILE BATTERED
 - ▼ IN DIRECTION OF ARROWHEAD
 - ⊕ DENOTES TEST PILE (ESTIMATED LENGTH = 28 FT)
 - DENOTES EXIST. 12" DIA. CONCRETE PILES TO BE EXTRACTED

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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 2400 CHESTNUT STREET
 PHILA., PA 19103

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 2 FOOTING LAYOUT

RECOMMENDED _____	SHEET 20 OF 59
BPAA-462653	

File: S-20-Revised.dwg Layout: 20 Plotted: 3/27/19 at 11:35am By: evjacinto

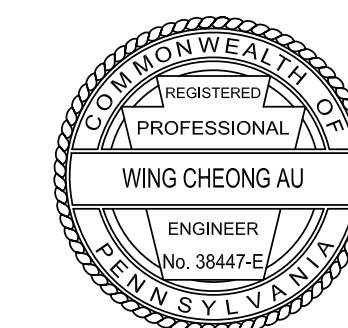
PILE AXIAL CAPACITY						
LOCATION	LIMIT STATE	LOAD CASE	STAGE	A FACTORED AXIAL LOAD (kip)	B FACTORED AXIAL RESISTANCE (kip)	B/A PERFORMANCE RATIO
ABUTMENT	STR-I	Max	Fin	118.49	150.00	1.27
LEFT WING	STR-III	Max	Tmp	107.45	150.00	1.40
RIGHT WING	STR-III	Max	Tmp	101.02	150.00	1.49

FOUNDATION DESIGN PARAMETER						
LOCATION	PILE TYPE	RECOVERY (%)	RQD (%)	ULTIMATE AXIAL CAPACITY (TONS)	STRENGTH RESISTANCE FACTOR	SERVICE RESISTANCE FACTOR
ABUTMENT	HP10 x 57	96 (AVG)	86 (AVG)	302.5	0.25	0.16
LEFT WING	HP10 x 57	96 (AVG)	86 (AVG)	302.5	0.25	0.16
RIGHT WING	HP10 x 57	96 (AVG)	86 (AVG)	302.5	0.25	0.16

PILE LATERAL CAPACITY						
LOCATION	LIMIT STATE	LOAD CASE	STAGE	A FACTORED LATERAL LOAD (kip)	B FACTORED LATERAL RESISTANCE (kip)	B/A PERFORMANCE RATIO
ABUTMENT	STR-I	Max	Fin	18.26	18.66	1.02
LEFT WING	STR-I	Min	Fin	14.54	14.55	1.00
RIGHT WING	STR-I	Min	Fin	16.85	17.12	1.02

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

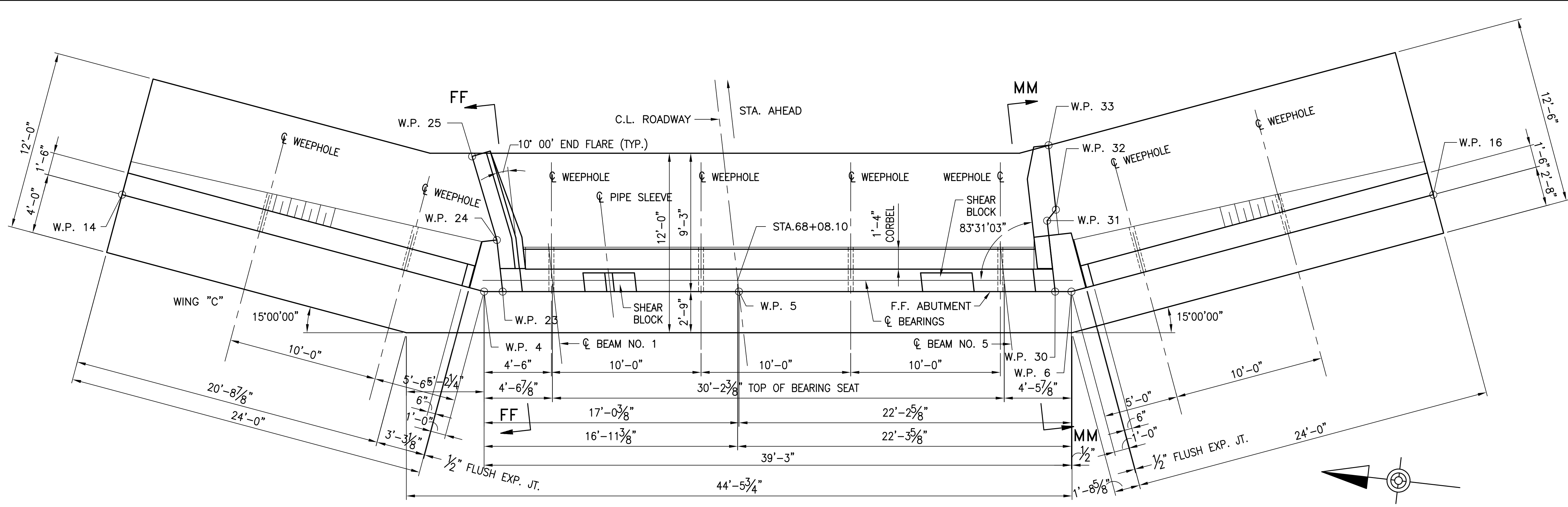
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 2 LOAD AND RESISTANCES

RECOMMENDED _____

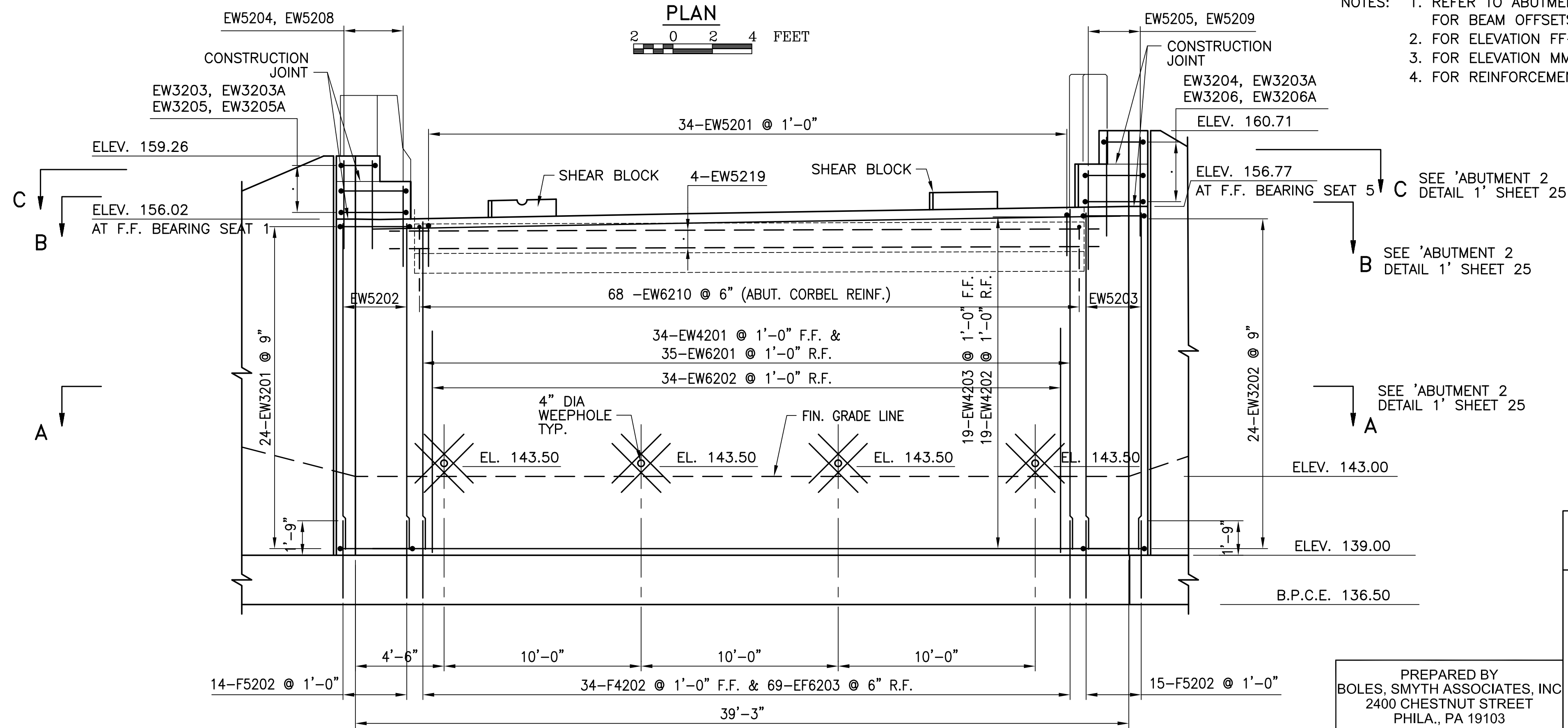
SHEET 21 OF 59

BPAA-462653



PLAN
2 0 2 4 FEET

- NOTES: 1. REFER TO ABUTMENT 2 BEARING SEAT ELEV. FOR BEAM OFFSETS AND ELEVATIONS
 2. FOR ELEVATION FF-FF SEE SHEET 28.
 3. FOR ELEVATION MM-MM SEE SHEET 29.
 4. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.



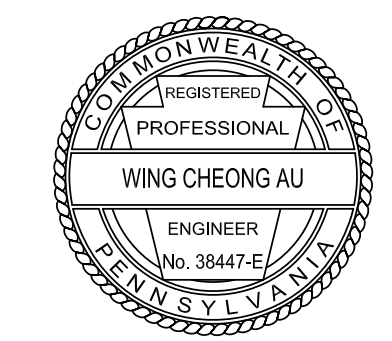
ELEVATION
2 0 2 4 FEET

- NOTES:
 1. CORNER REINFORCEMENT NOT SHOWN FOR CLARITY. SEE SECTIONS ON THE ABUTMENT 2 DETAIL 1 SHEET 25.
 2. USE EW6201 BARS FOR ENDS OF EACH PANEL. ALTERNATE EW6202 AND REMAINING EW6201 BARS TO ACHIEVE DESIGN SPACING MAXIMUM OF 6".
 3. BEND EW4203 EW4202 REBAR IN FIELD WHEN REQUIRED AT THE TOP OF THE ABUTMENT WHILE MAINTAINING THE CLEARANCE AND SPACING.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

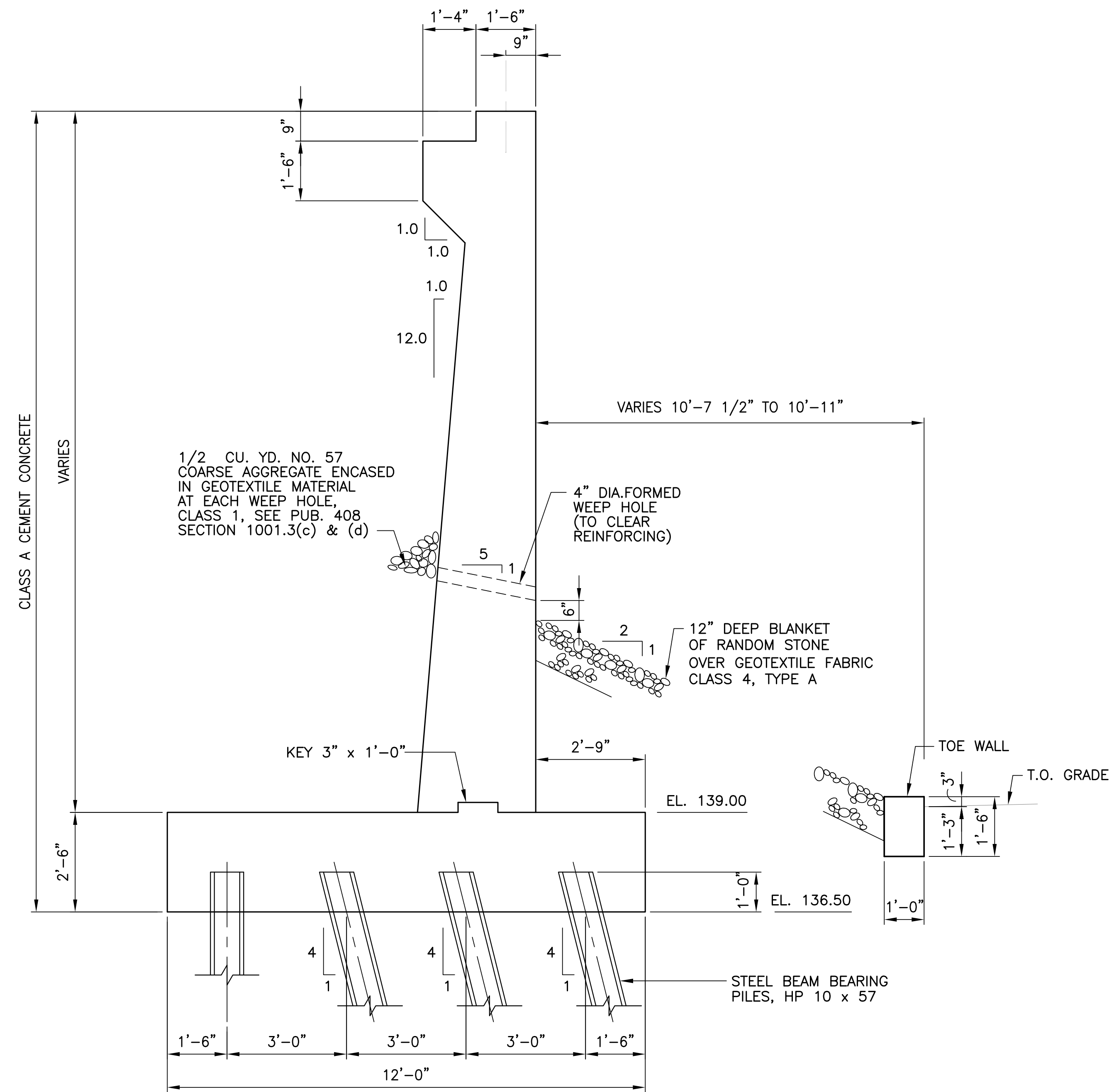
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 MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 2 PLAN AND ELEVATION

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 PHILA., PA 19103



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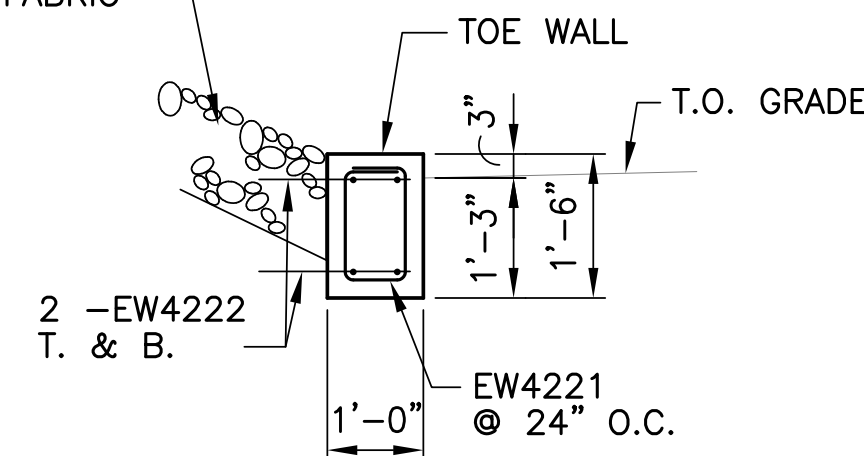
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TYPICAL SECTION BB-BB

1 0 1 2 FEET

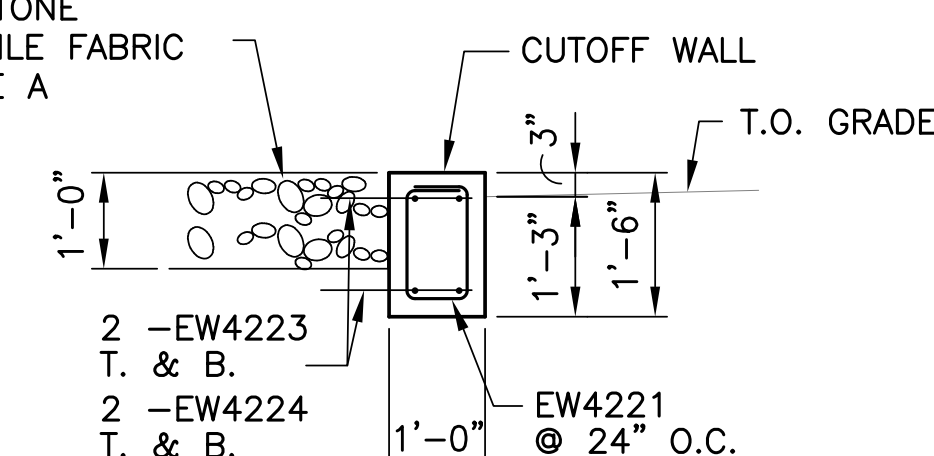
12" DEEP BLANKET OF RANDOM STONE OVER GEOTEXTILE FABRIC CLASS 4, TYPE A



TOE WALL SECTION

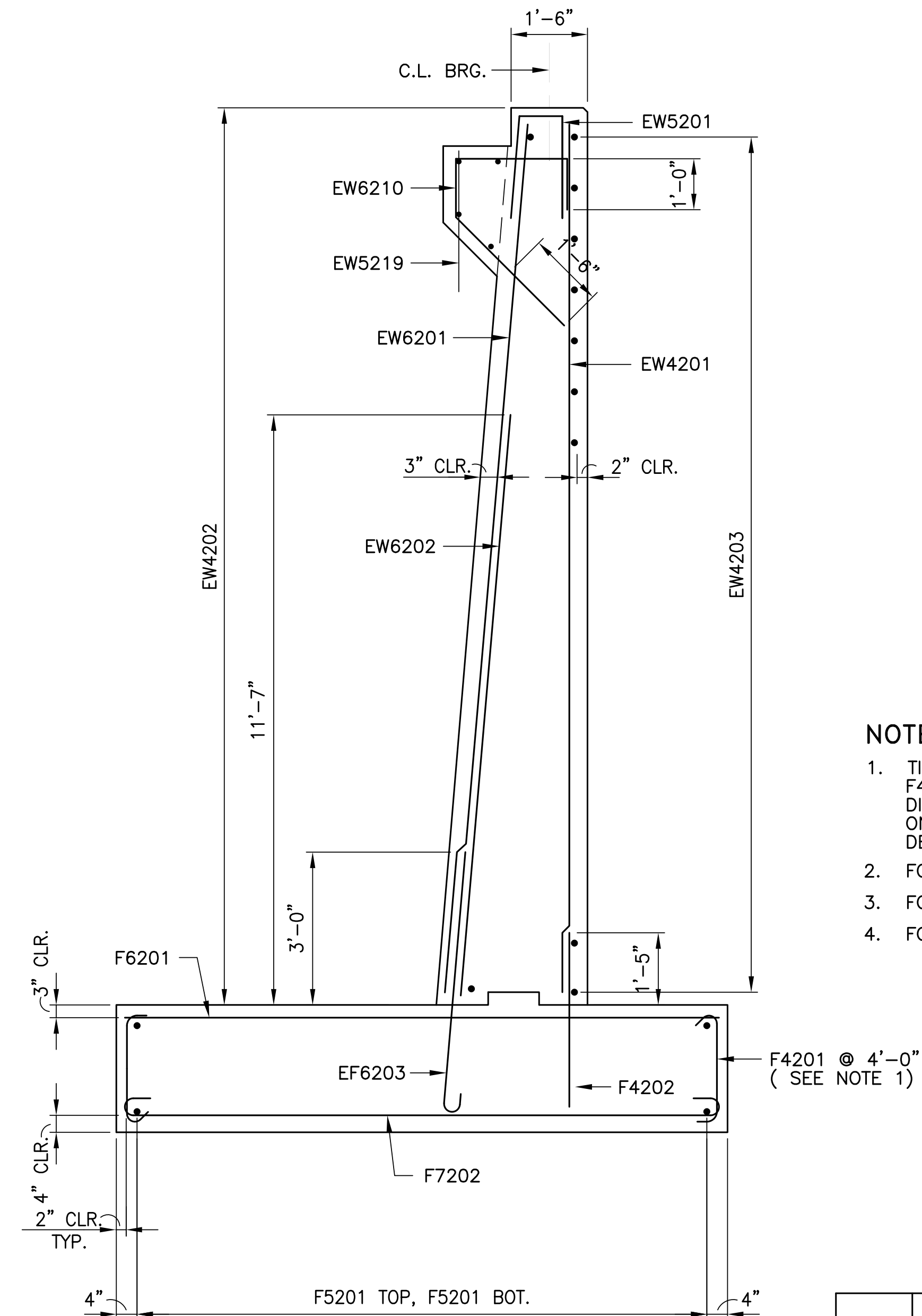
1 0 1 2 FEET

12" DEEP BLANKET OF RANDOM STONE OVER GEOTEXTILE FABRIC CLASS 4, TYPE A



CUTOFF WALL SECTION

1 0 1 2 FEET



TYPICAL ABUTMENT SECTION

1 0 1 2 FEET

NOTES:

1. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4201 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
2. FOR WEEPHOLE REINFORCEMENTS SEE SHEET 25.
3. FOR TYPICAL STEM TO PILE CAP CONNECTION DETAIL SEE SHEET 11.
4. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

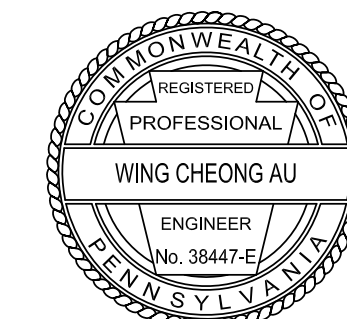
ABUTMENT 2 SECTION

RECOMMENDED _____

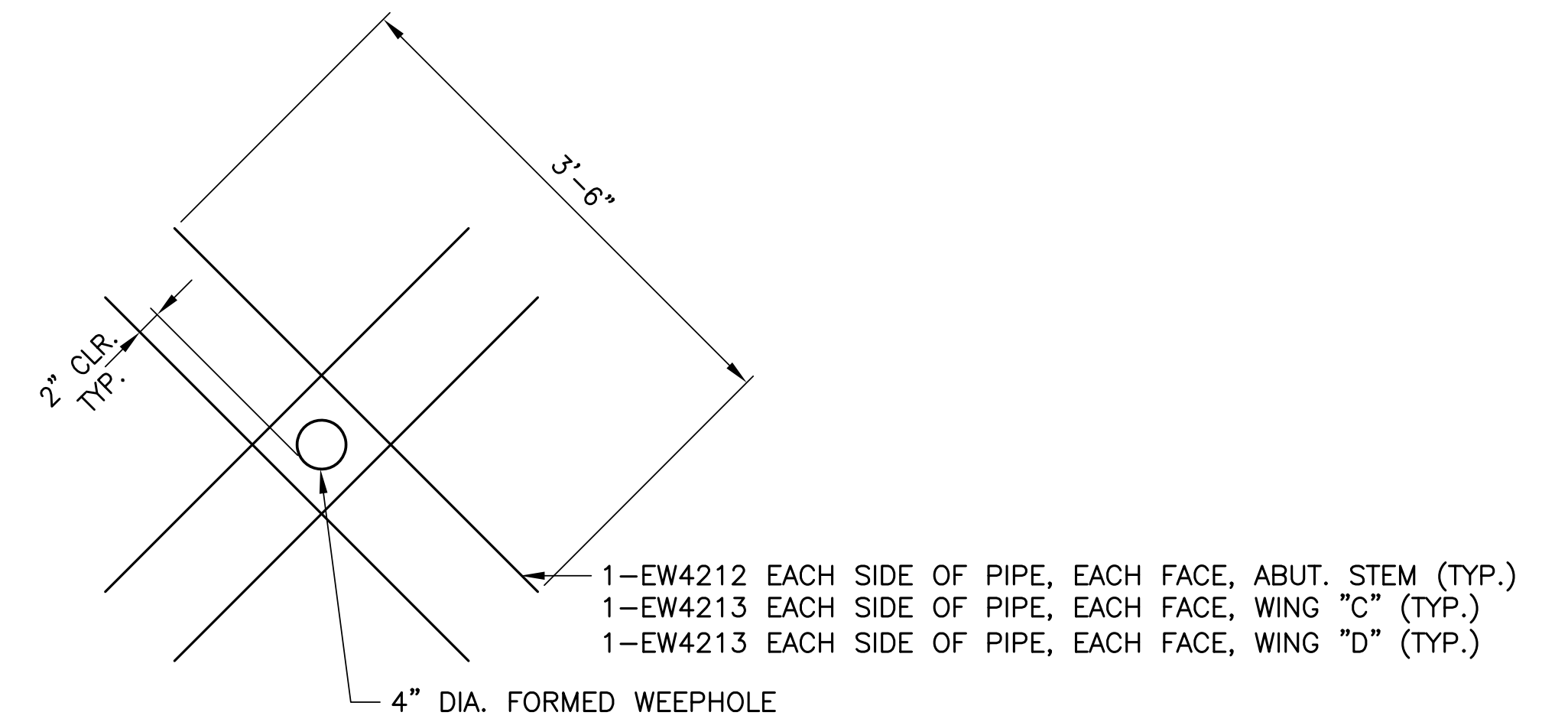
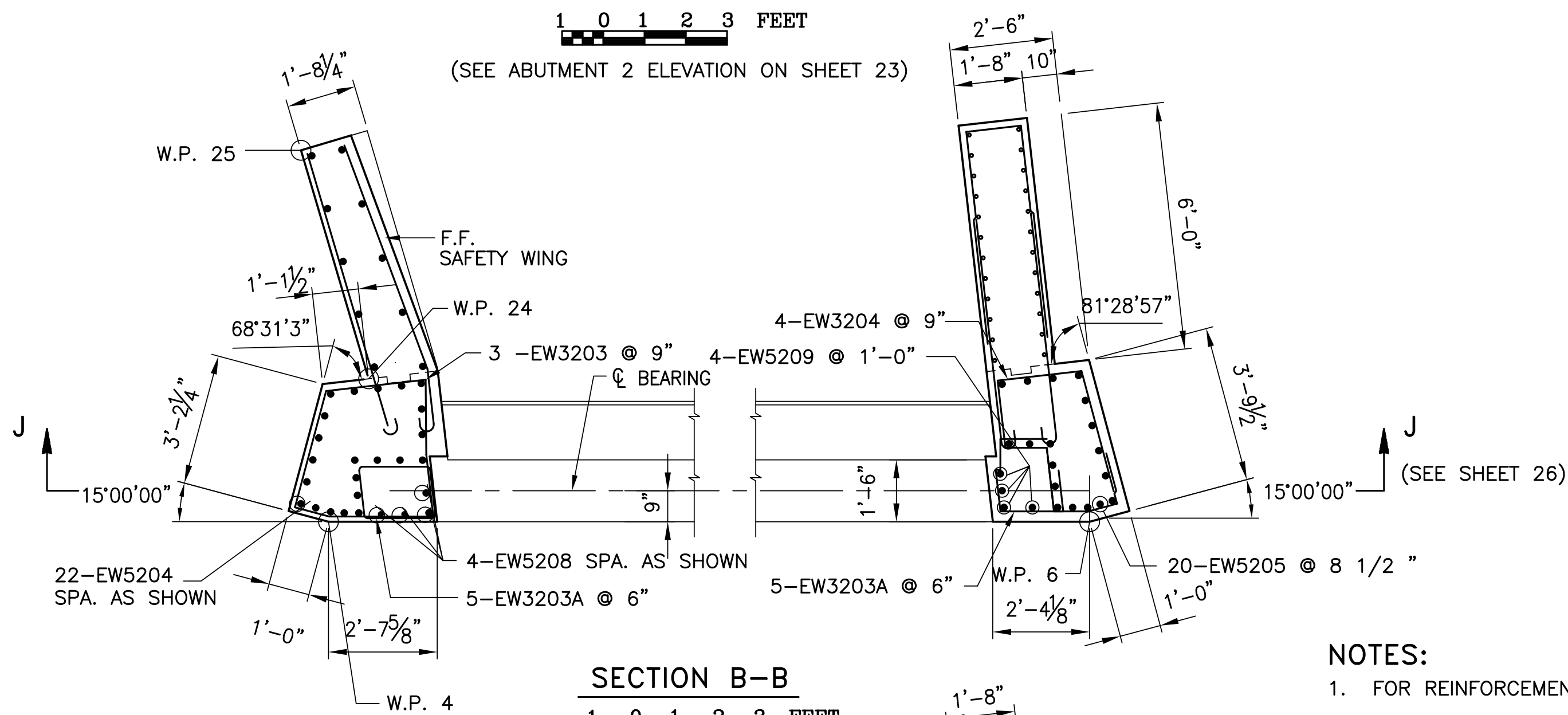
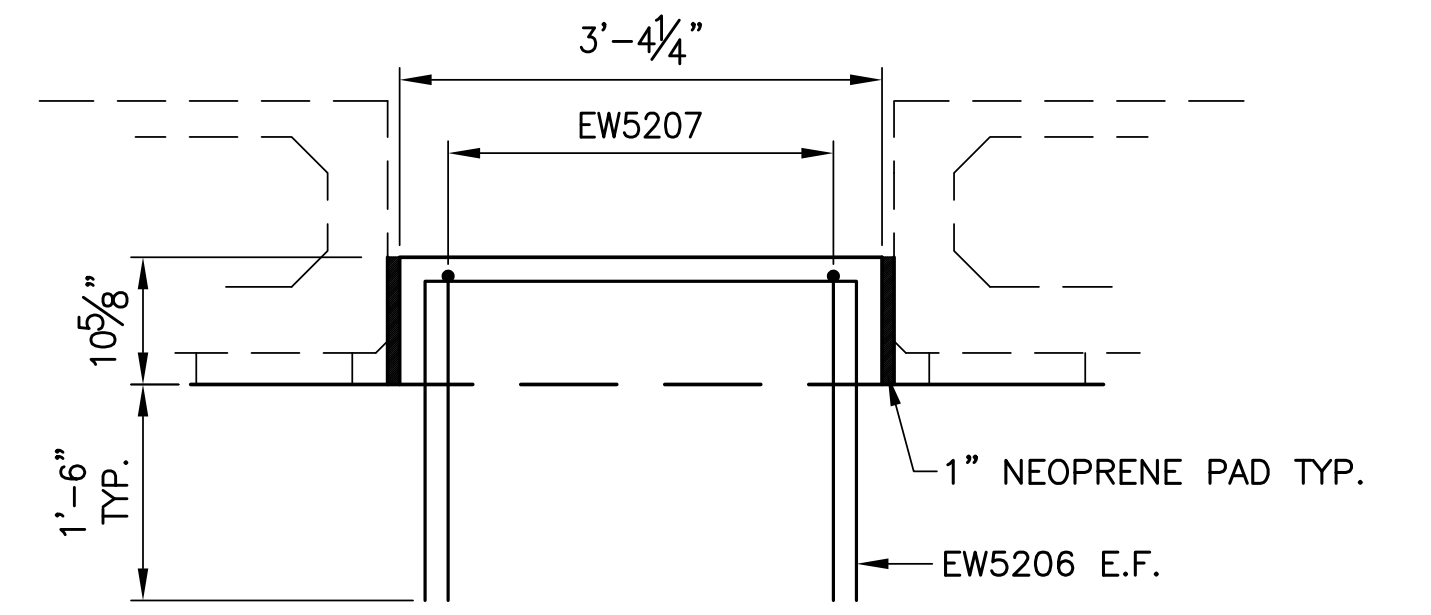
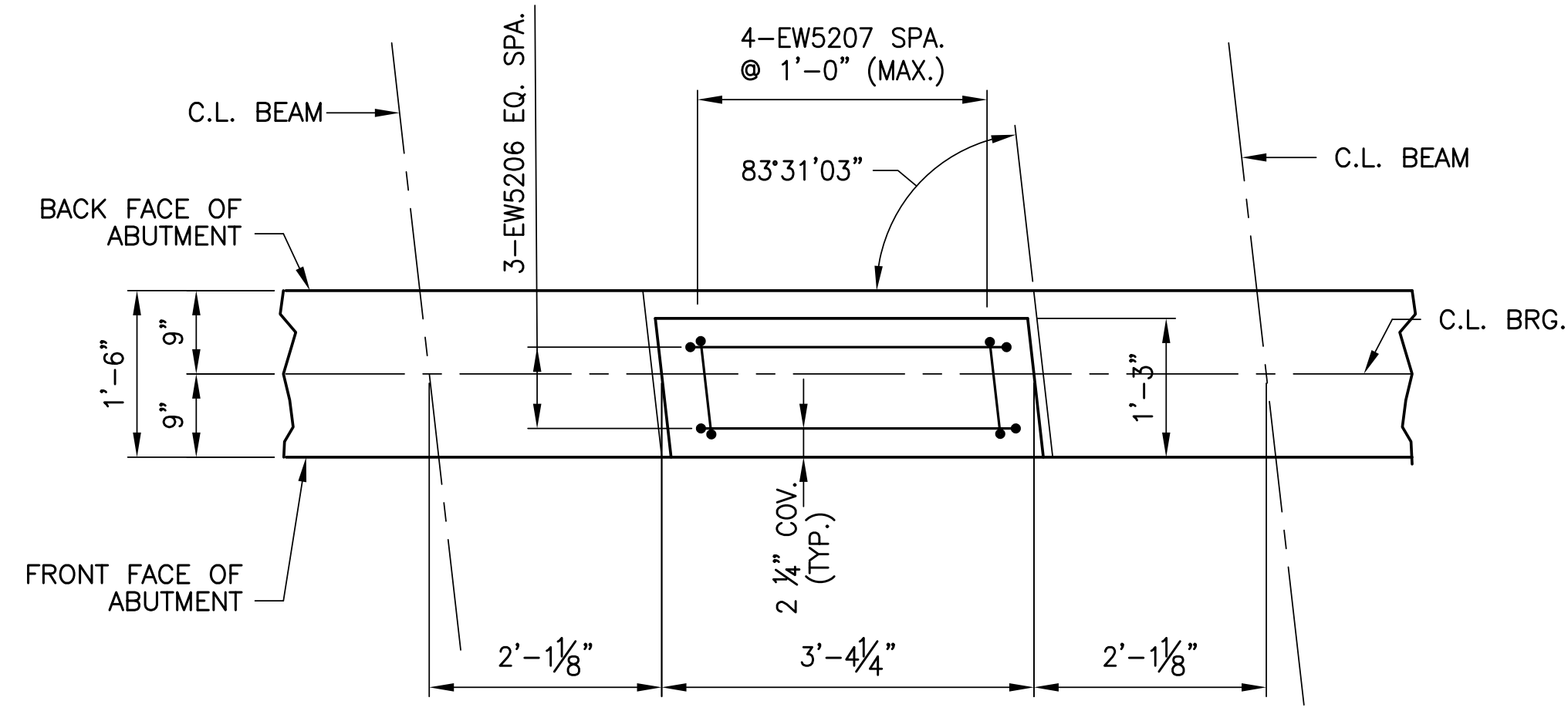
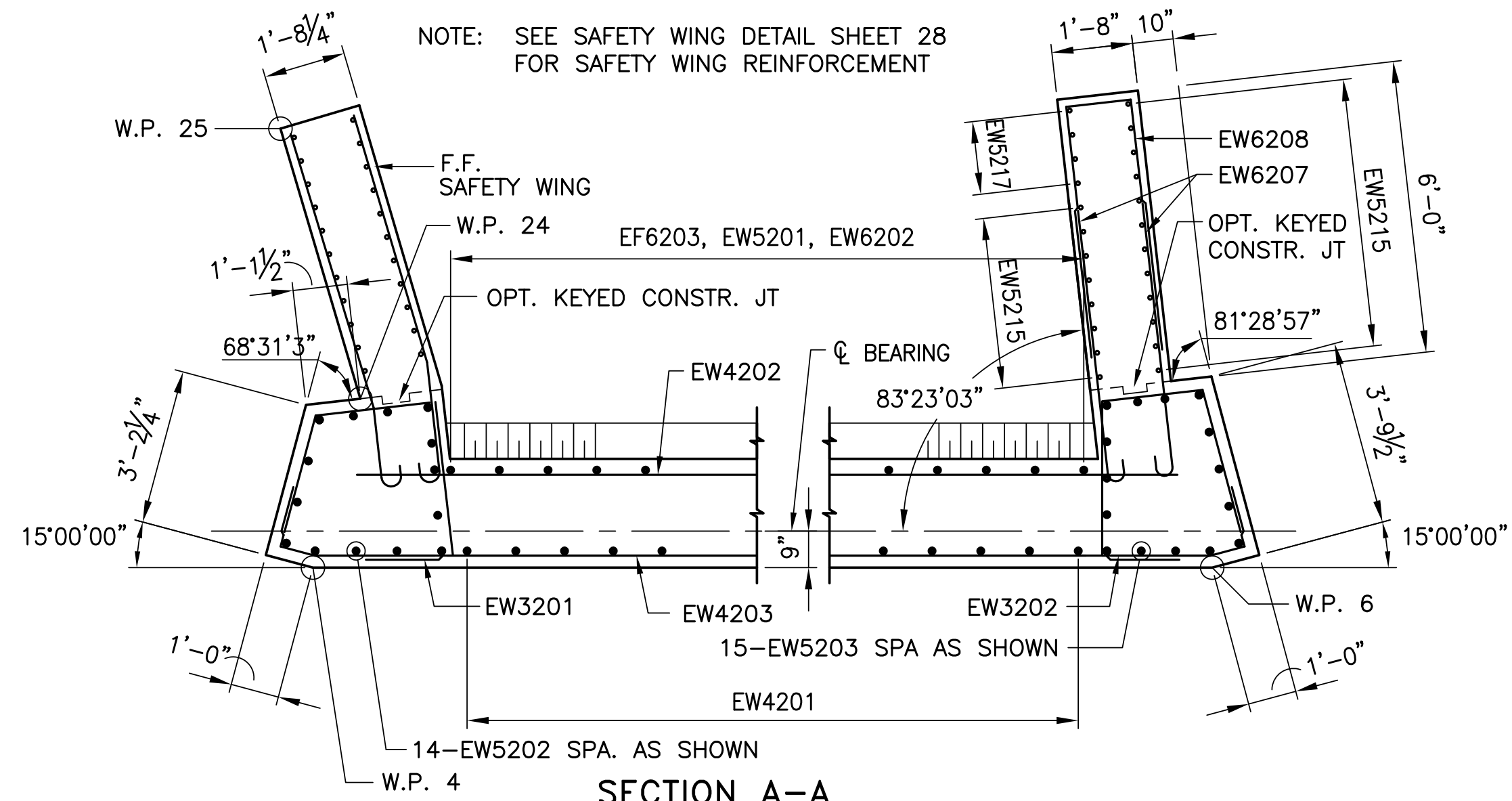
SHEET 24 OF 59

BPA-462653

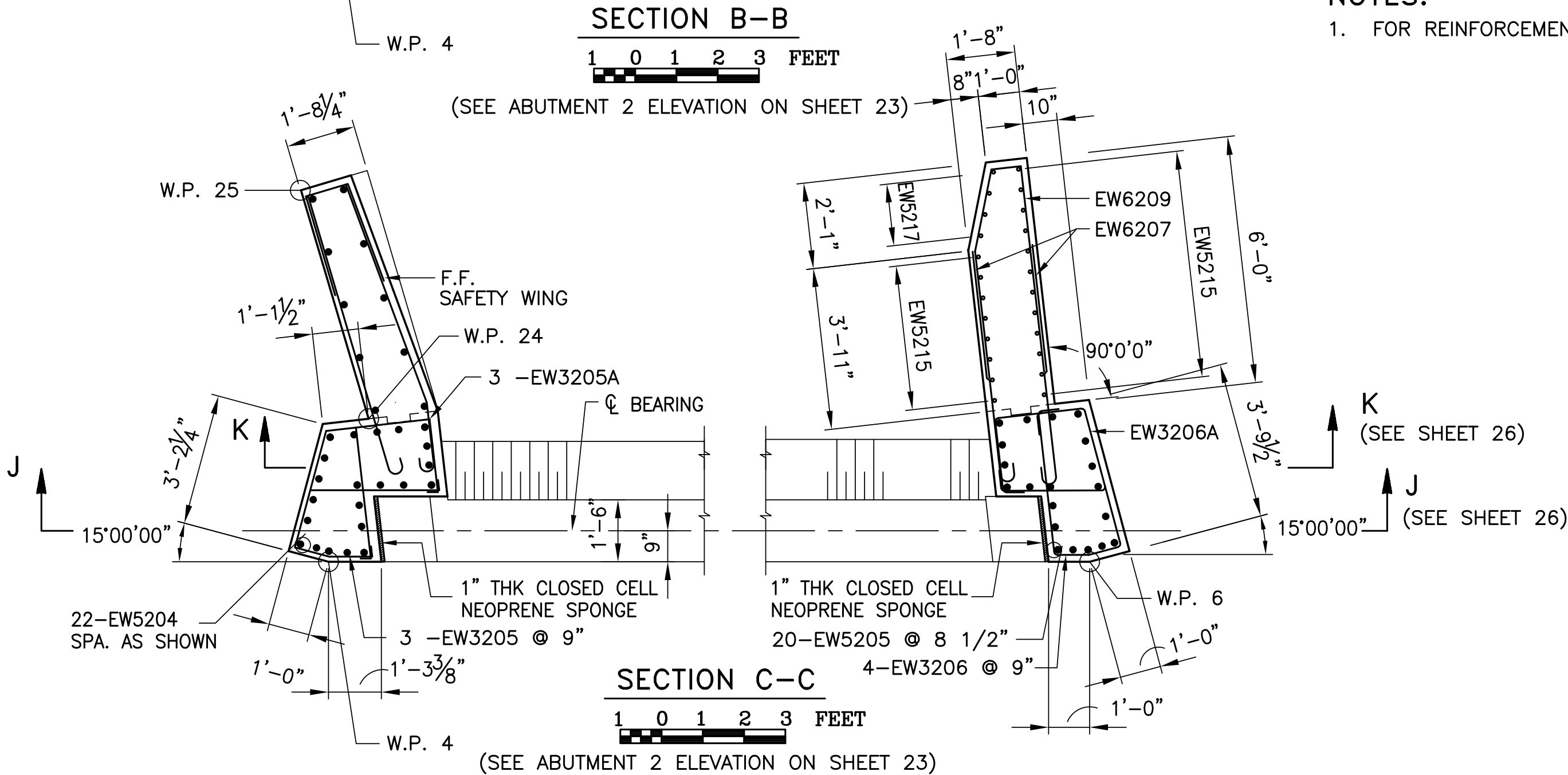
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File: S-25-Revised.dwg Layout: S-25 Plotted: 3/27/19 at 11:47am By: evjocinto



NOTES:
1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

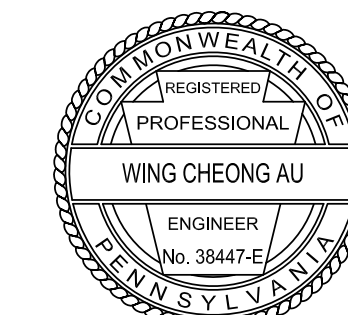
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 2 DETAILS 1

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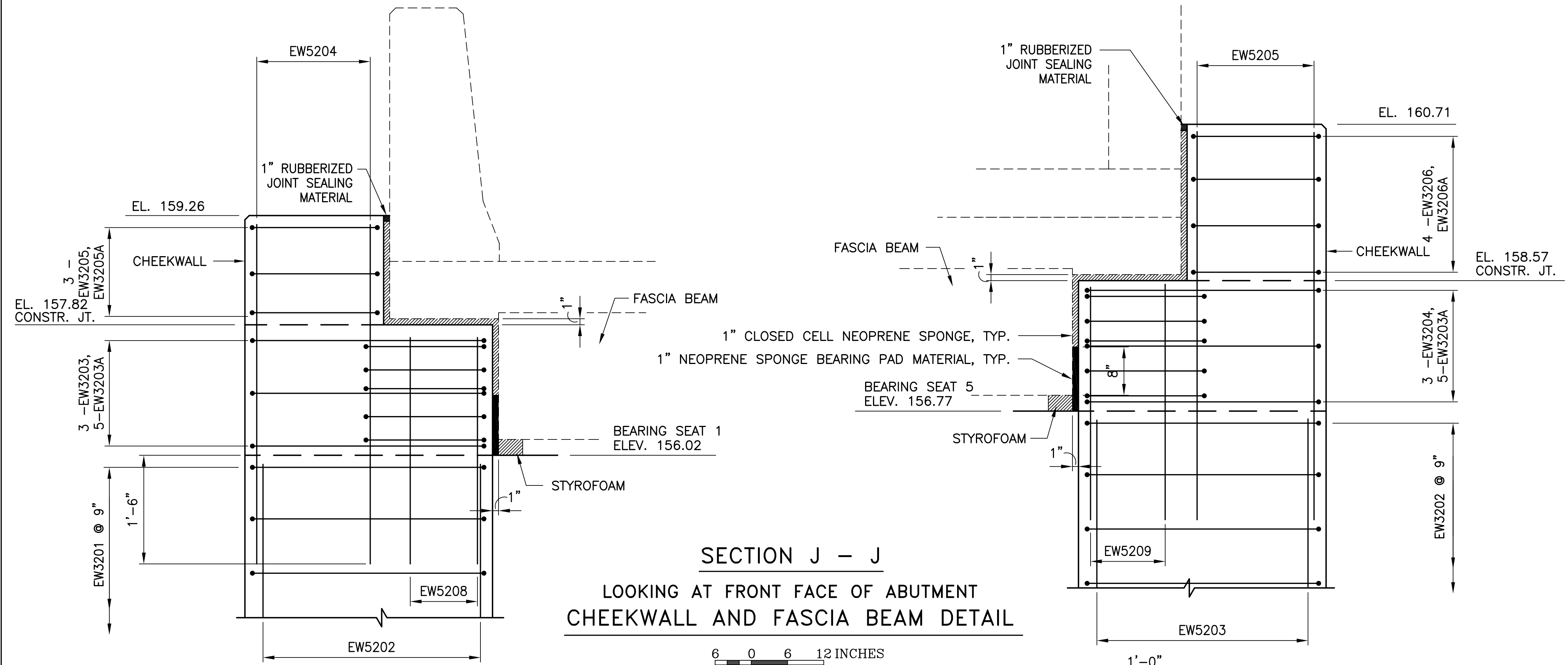


RECOMMENDED _____

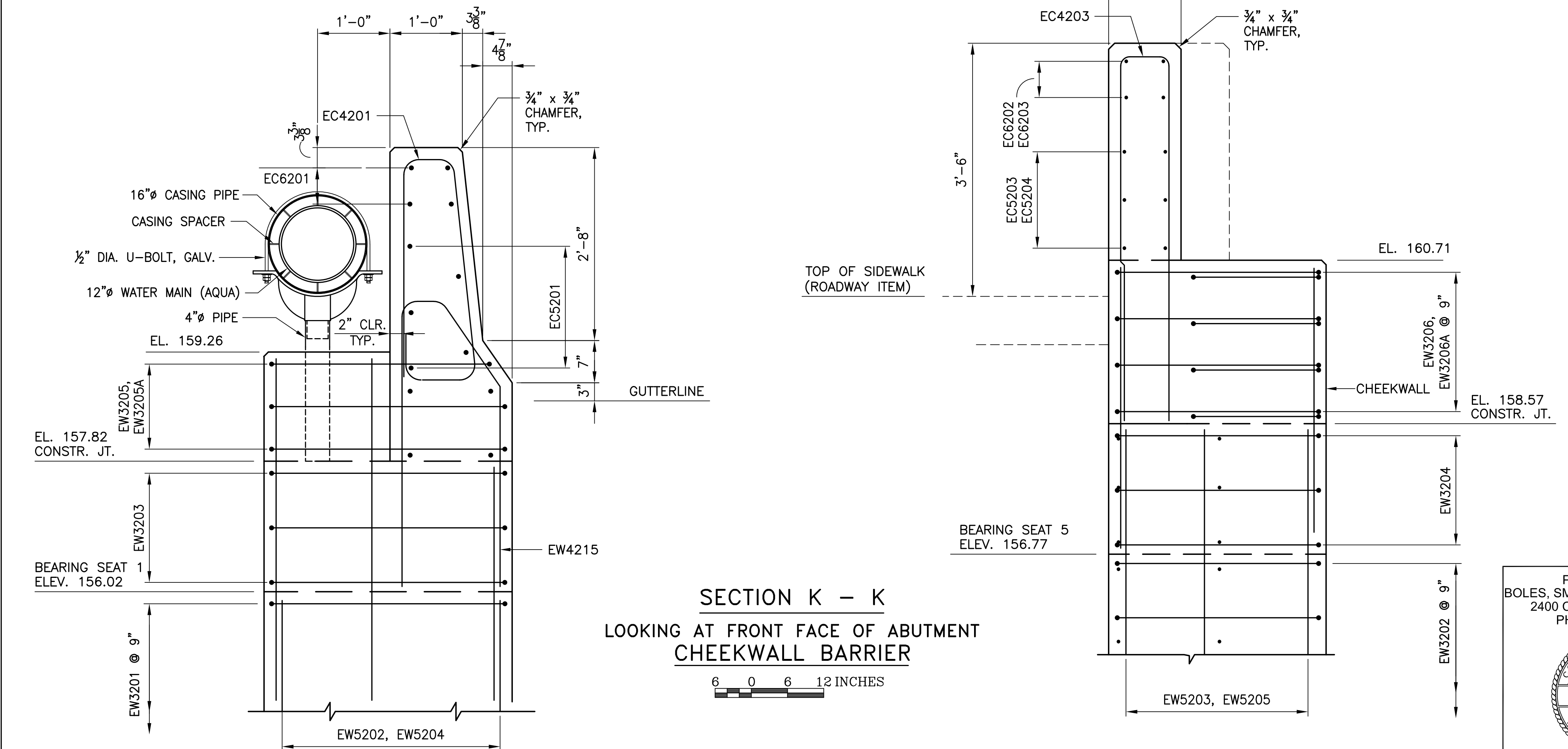
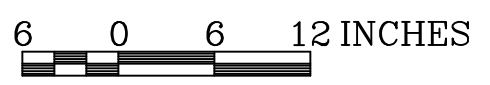
SHEET 25 OF 59

BPA-462653

File: S-26-Revised.dwg Layout: 26 Plotted: 3/27/19 at 11:50am By: evjacinto



SECTION J - J
 LOOKING AT FRONT FACE OF ABUTMENT
 CHEEKWALL AND FASCIA BEAM DETAIL



SECTION K - K
 LOOKING AT FRONT FACE OF ABUTMENT
 CHEEKWALL BARRIER



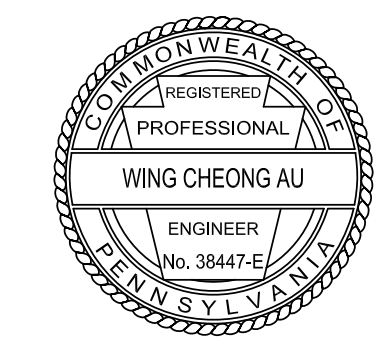
NOTES:

1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.
2. FOR LOCATION OF SECTIONS J-J AND K-K SEE SHEET 25.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 2 DETAILS 2

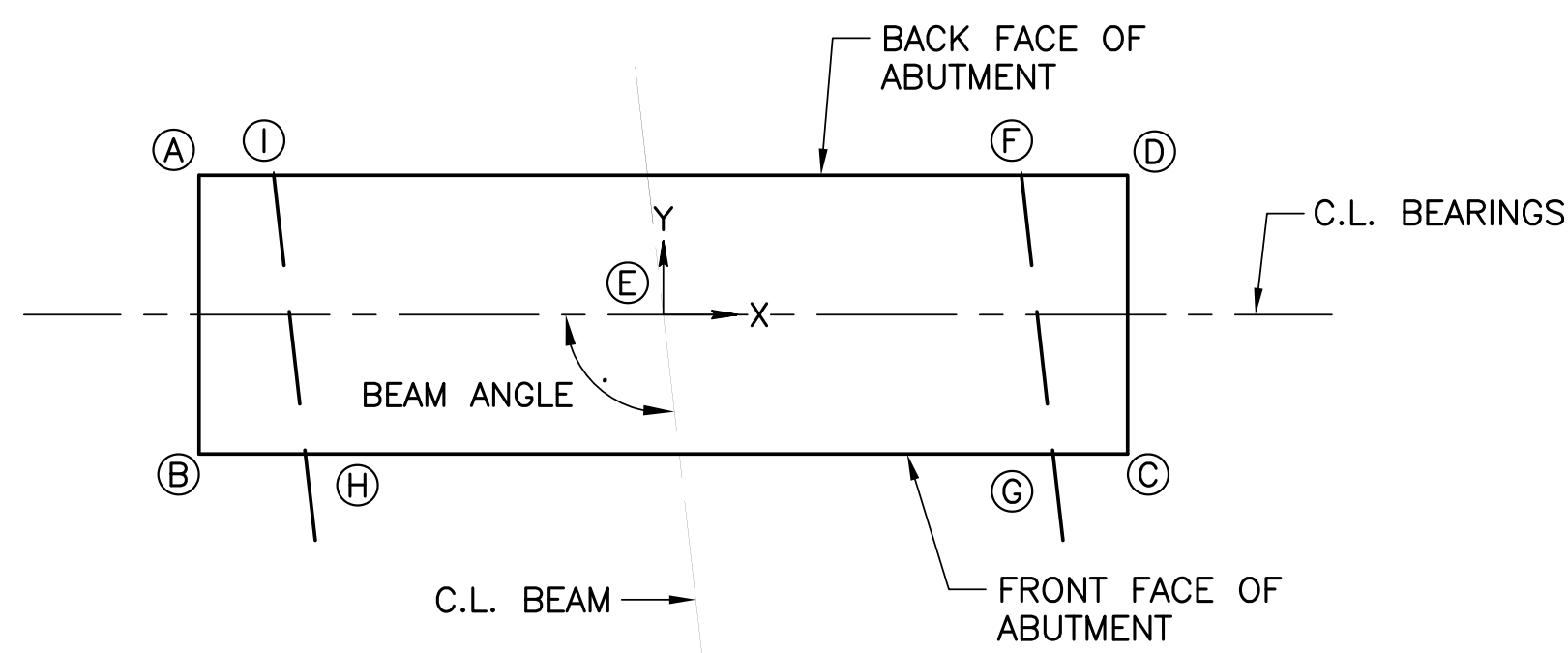
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RECOMMENDED _____

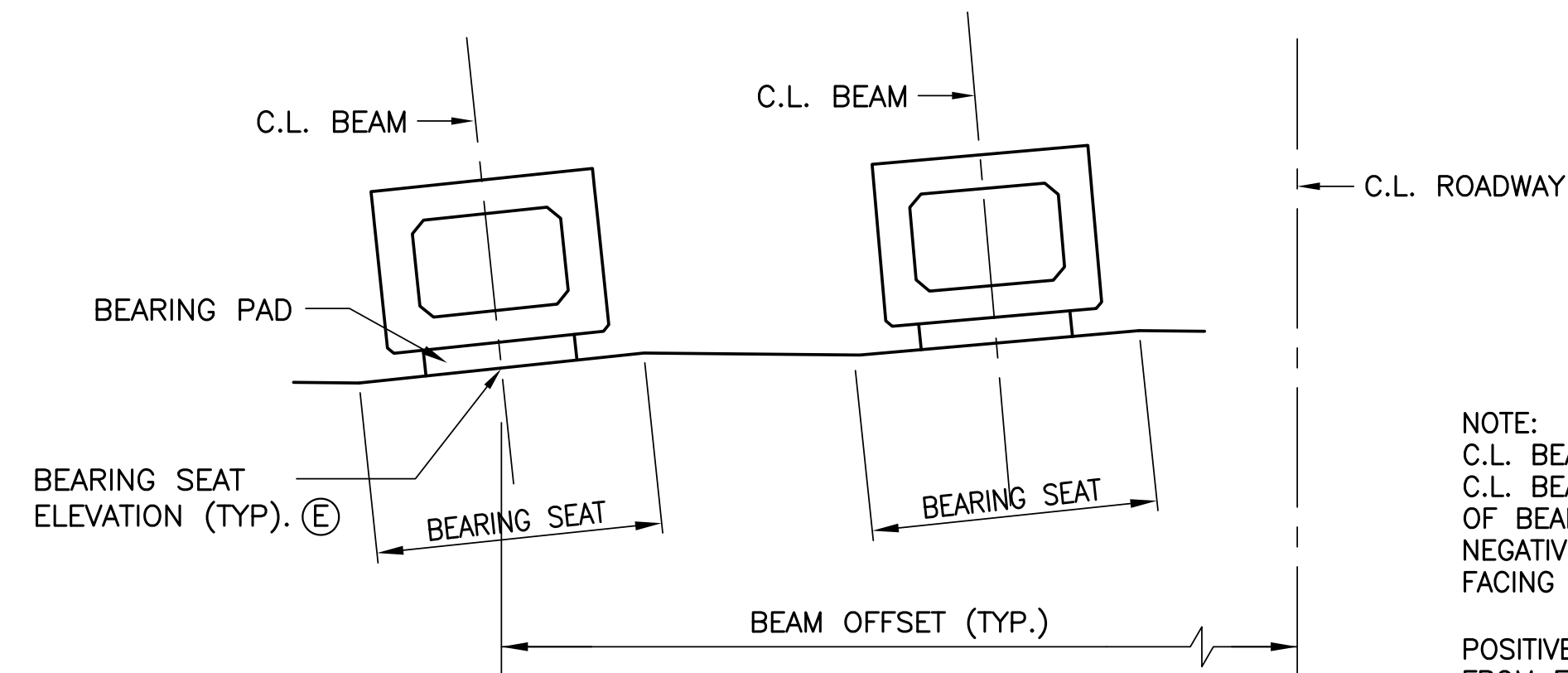
SHEET 26 OF 59

BPAA-462653



BEARING SEAT PLAN VIEW

NOT TO SCALE



BEARING SEAT ELEVATION VIEW

NOT TO SCALE

NOTE: SEE BEARING SEAT PLAN VIEW FOR FURTHER DETAILS.

NOTE:

C.L. BEAM OFFSET IS MEASURED ALONG THE C.L. BEARING.
C.L. BEAM OFFSET IS MEASURED FROM THE C.L. OF ROADWAY TO THE C.L. OF BEAM AT THE BEARING SEAT POINT (E).
NEGATIVE OFFSETS ARE MEASURED TO THE LEFT OF THE C.L. OF ROADWAY, FACING THE ABUTMENT.

POSITIVE "BEARING SEAT SLOPE Y" REPRESENTS AN INCREASE IN ELEVATION FROM FRONT TO BACK FACE OF ABUTMENT, IN THE DIRECTION OF THE POSITIVE Y-AXIS SHOWN IN THE BEARING SEAT PLAN VIEW.

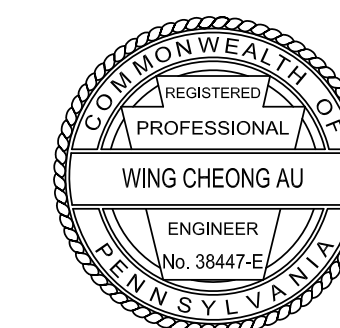
POSITIVE "BEARING SEAT SLOPE X" REPRESENTS AN INCREASE IN ELEVATION IN THE DIRECTION OF THE POSITIVE X-AXIS SHOWN IN THE BEARING SEAT PLAN VIEW.

ABUTMENT 2 BEARING SEAT LOCATION AND ELEVATION TABLE																			
BEAM NO.	C.L. BEAM OFFSET	BEAM ANGLE	BRG. SEAT SLOPE		A			B			C			D			E		
			X	Y	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.
1	-12'-4 5/8"	96°-28'-57"	2.059%	0.560%	-2'-7 1/4"	9"	156.03	-2'-7 1/4"	-9"	156.02	2'-7 1/4"	-9"	156.13	2'-7 1/4"	9"	156.14	0"	0"	156.08
2	-4'-10"	96°-28'-57"	2.213%	0.668%	-2'-7 1/4"	9"	156.21	-2'-7 1/4"	-9"	156.20	2'-7 1/4"	-9"	156.31	2'-7 1/4"	9"	156.32	0"	0"	156.26
3	2'-8 3/8"	96°-28'-57"	1.040%	0.633%	-2'-7 1/4"	9"	156.40	-2'-7 1/4"	-9"	156.39	2'-7 1/4"	-9"	156.44	2'-7 1/4"	9"	156.45	0"	0"	156.42
4	10'-2 7/8"	96°-28'-57"	0.941%	1.113%	-2'-7 1/4"	9"	156.62	-2'-7 1/4"	-9"	156.60	2'-7 1/4"	-9"	156.65	2'-7 1/4"	9"	156.67	0"	0"	156.63
5	17'-9 3/4"	96°-28'-57"	2.223%	1.259%	-2'-7 1/4"	9"	156.68	-2'-7 1/4"	-9"	156.66	2'-7 1/4"	-9"	156.77	2'-7 1/4"	9"	156.79	0"	0"	156.73

ABUTMENT 2 BEARING SEAT LOCATION AND ELEVATION TABLE																
BEAM NO.	C.L. BEAM OFFSET	BEAM ANGLE	BRG. SEAT SLOPE		F			G			H			I		
			X	Y	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.	X	Y	ELEV.
1	-12'-4 5/8"	96°-28'-57"	2.059%	0.560%	1'-11 1/8"	9"	156.12	2'-1 1/8"	-9"	156.13	-1'-11 1/8"	-9"	156.04	-2'-1 1/8"	9"	156.04
2	-4'-10"	96°-28'-57"	2.213%	0.668%	1'-11 1/8"	9"	156.31	2'-1 1/8"	-9"	156.30	-1'-11 1/8"	-9"	156.21	-2'-1 1/8"	9"	156.22
3	2'-8 3/8"	96°-28'-57"	1.040%	0.633%	1'-11 1/8"	9"	156.44	2'-1 1/8"	-9"	156.44	-1'-11 1/8"	-9"	156.39	-2'-1 1/8"	9"	156.40
4	10'-2 7/8"	96°-28'-57"	0.941%	1.113%	1'-11 1/8"	9"	156.66	2'-1 1/8"	-9"	156.64	-1'-11 1/8"	-9"	156.61	-2'-1 1/8"	9"	156.62
5	17'-9 3/4"	96°-28'-57"	2.223%	1.259%	1'-11 1/8"	9"	156.78	2'-1 1/8"	-9"	156.76	-1'-11 1/8"	-9"	156.67	-2'-1 1/8"	9"	156.69

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

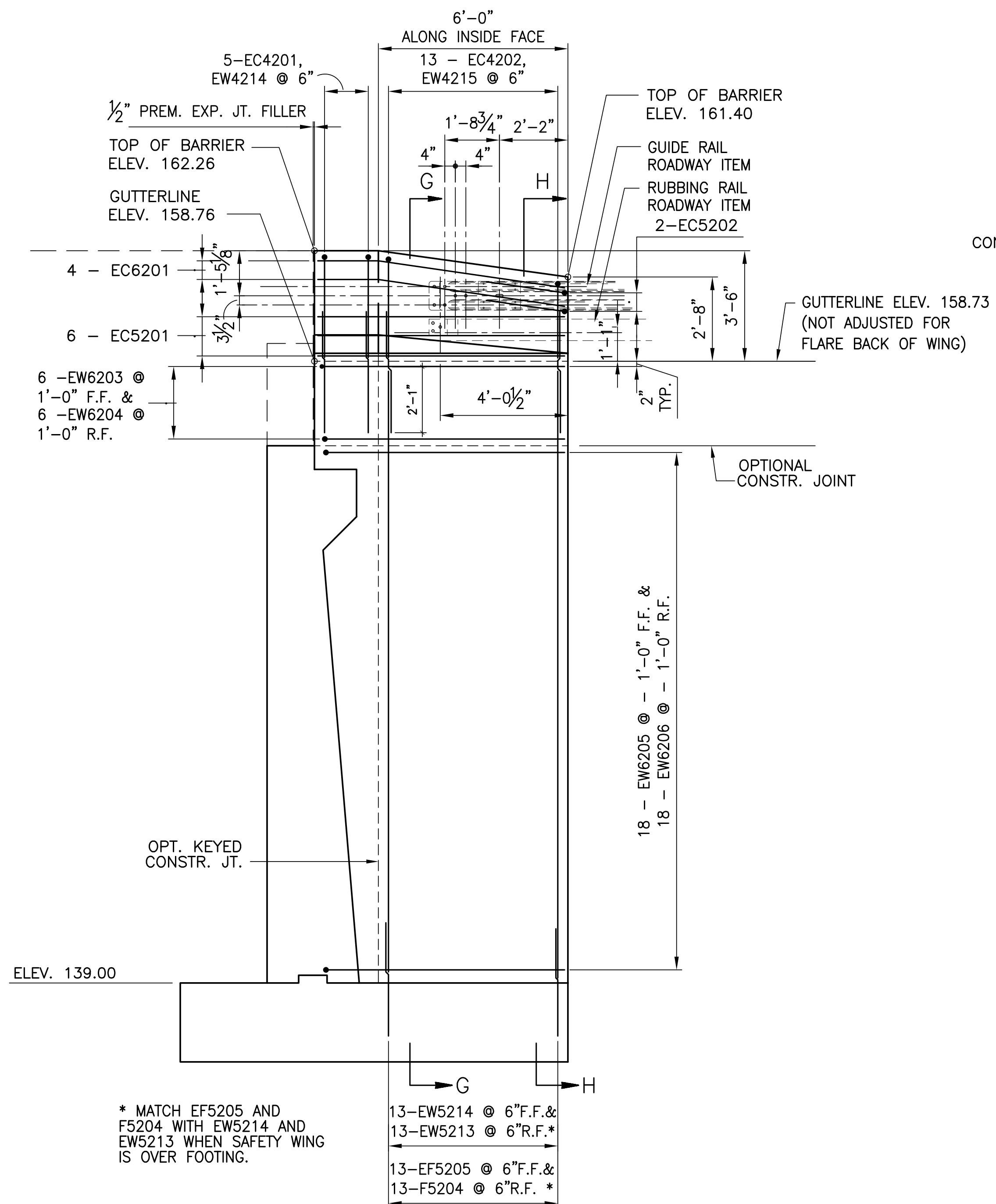
ABUTMENT 2 BEARING SEAT ELEV.

RECOMMENDED _____

SHEET 27 OF 59

BPAA-462653

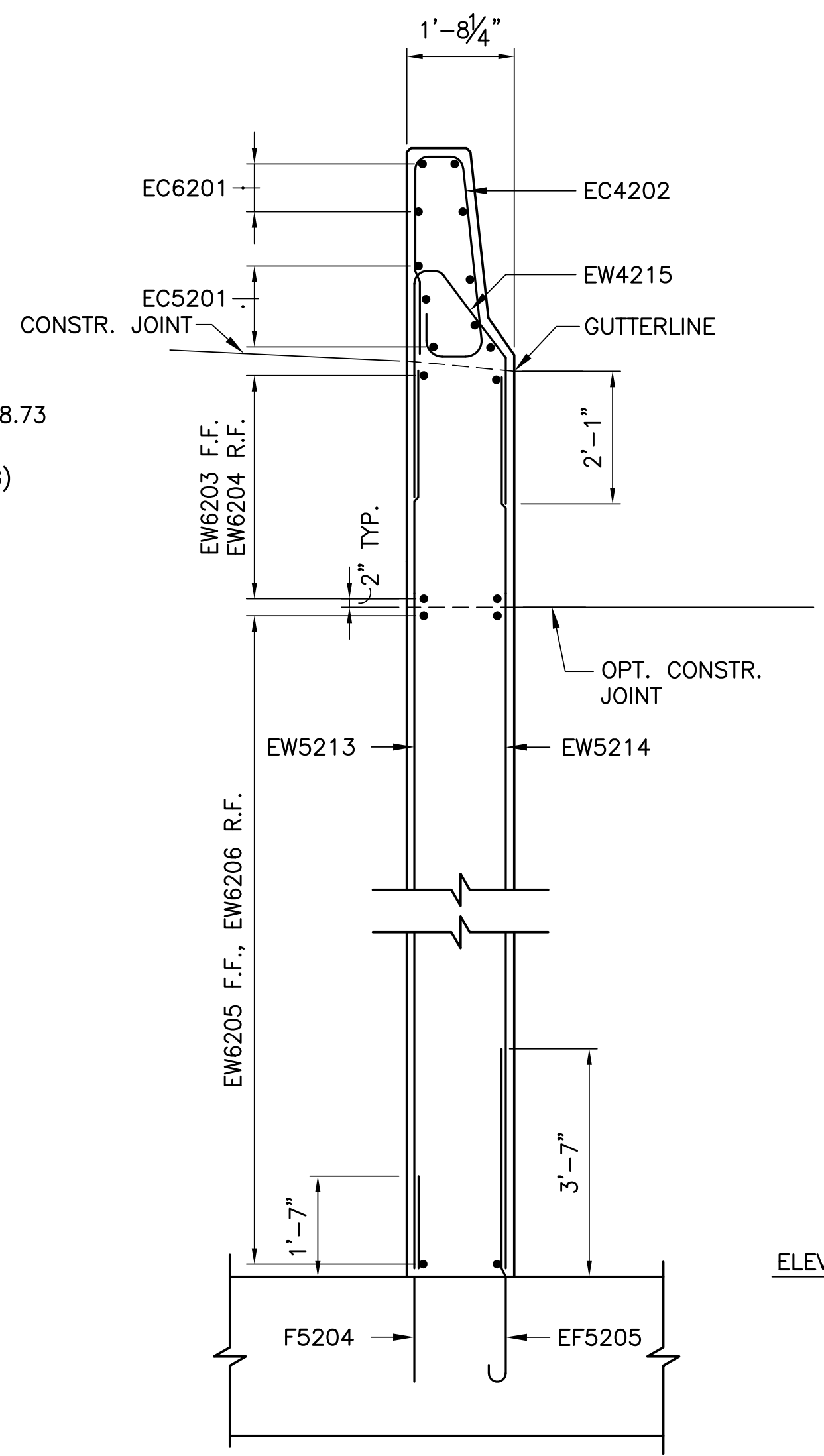
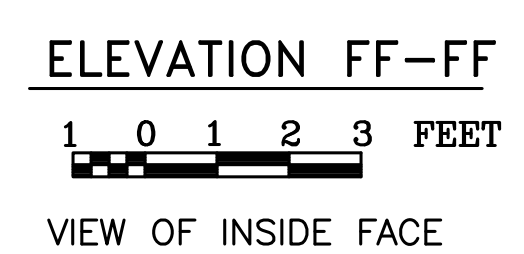
File: S-28-Revised.dwg Layout: 28 Plotted: 3/27/19 at 11:54am By: evjacinto



* MATCH EF5205 AND F5204 WITH EW5214 AND EW5213 WHEN SAFETY WING IS OVER FOOTING.

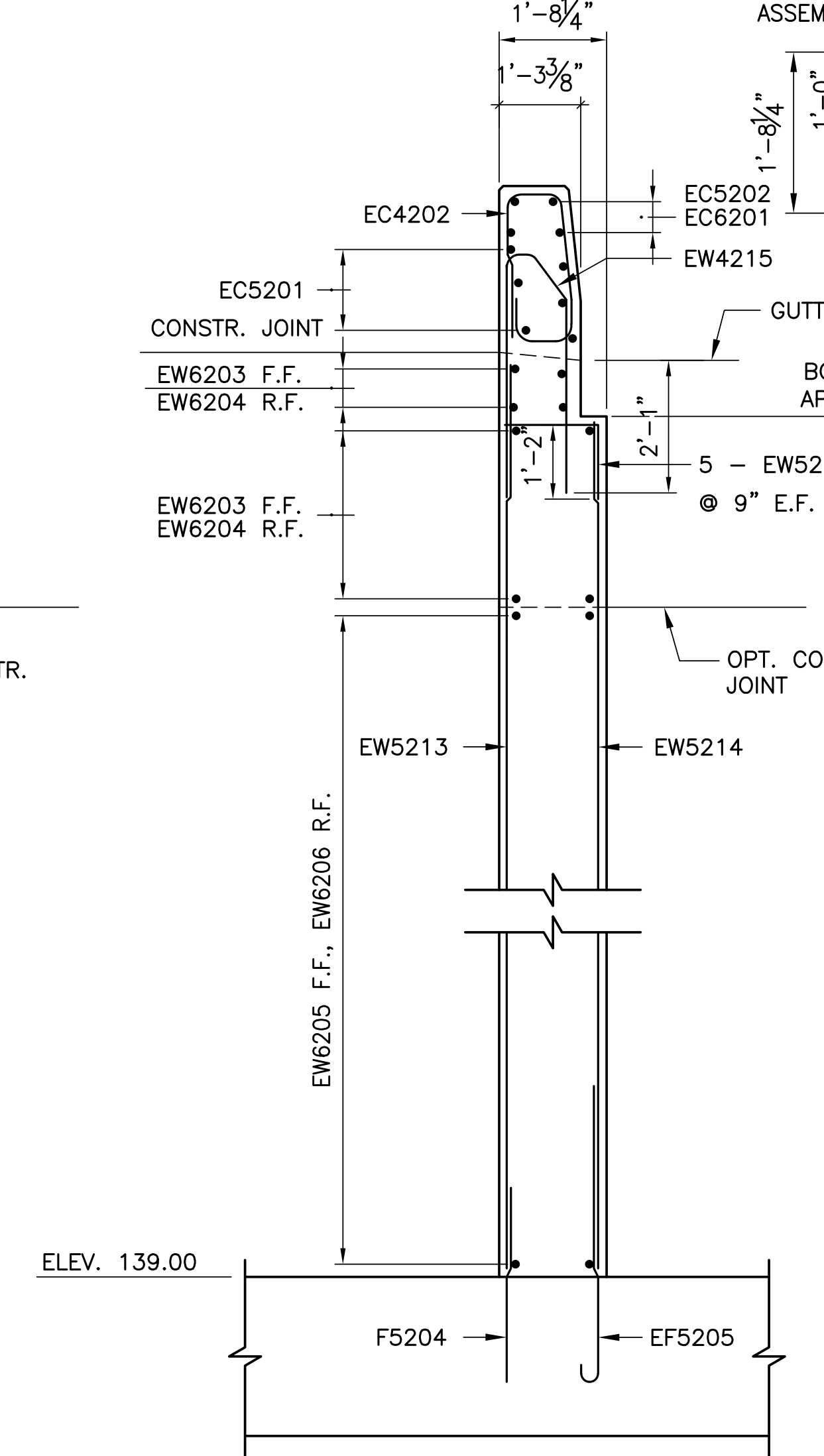
13-EW5214 @ 6" F.F. & 13-EW5213 @ 6" R.F.*

13-EF5205 @ 6" F.F. & 13-F5204 @ 6" R.F. *



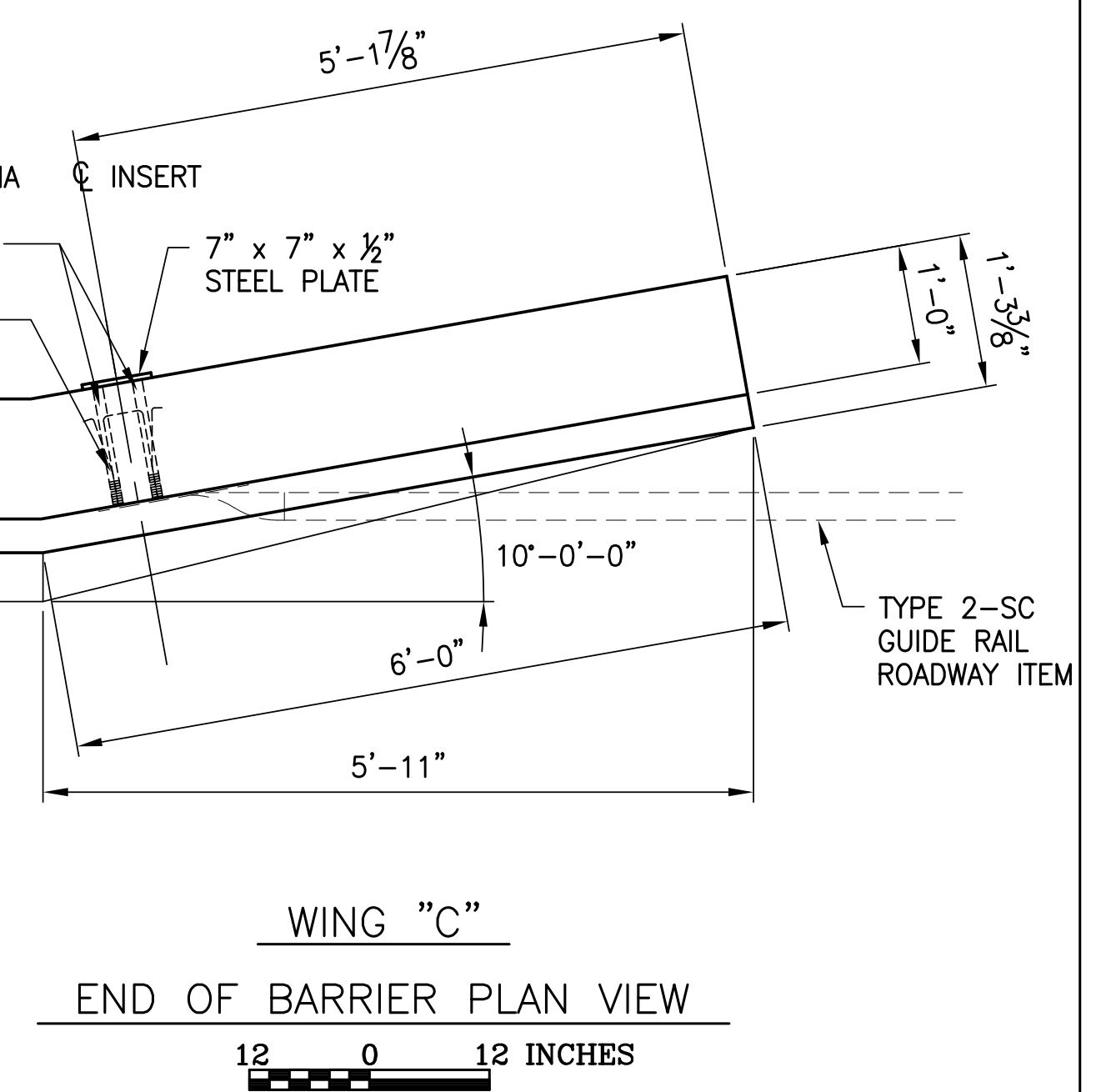
LOOKING AT FRONT FACE OF ABUTMENT SECTION G - G

1 0 1 2 FEET



LOOKING AT FRONT FACE OF ABUTMENT SECTION H - H

1 0 1 2 FEET



WING "C"

END OF BARRIER PLAN VIEW

12 0 12 INCHES

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

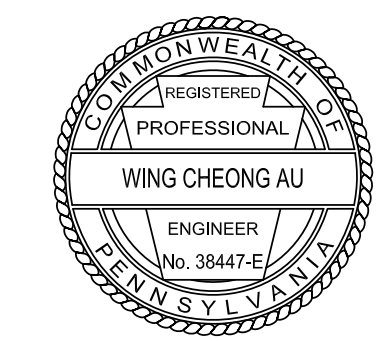
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

ABUTMENT 2 SAFETY WING DETAIL

- NOTES:
- FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.
 - FOR LOCATION OF ELEVATION F-F SEE SHEET 23.

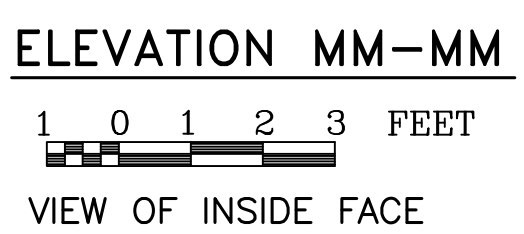
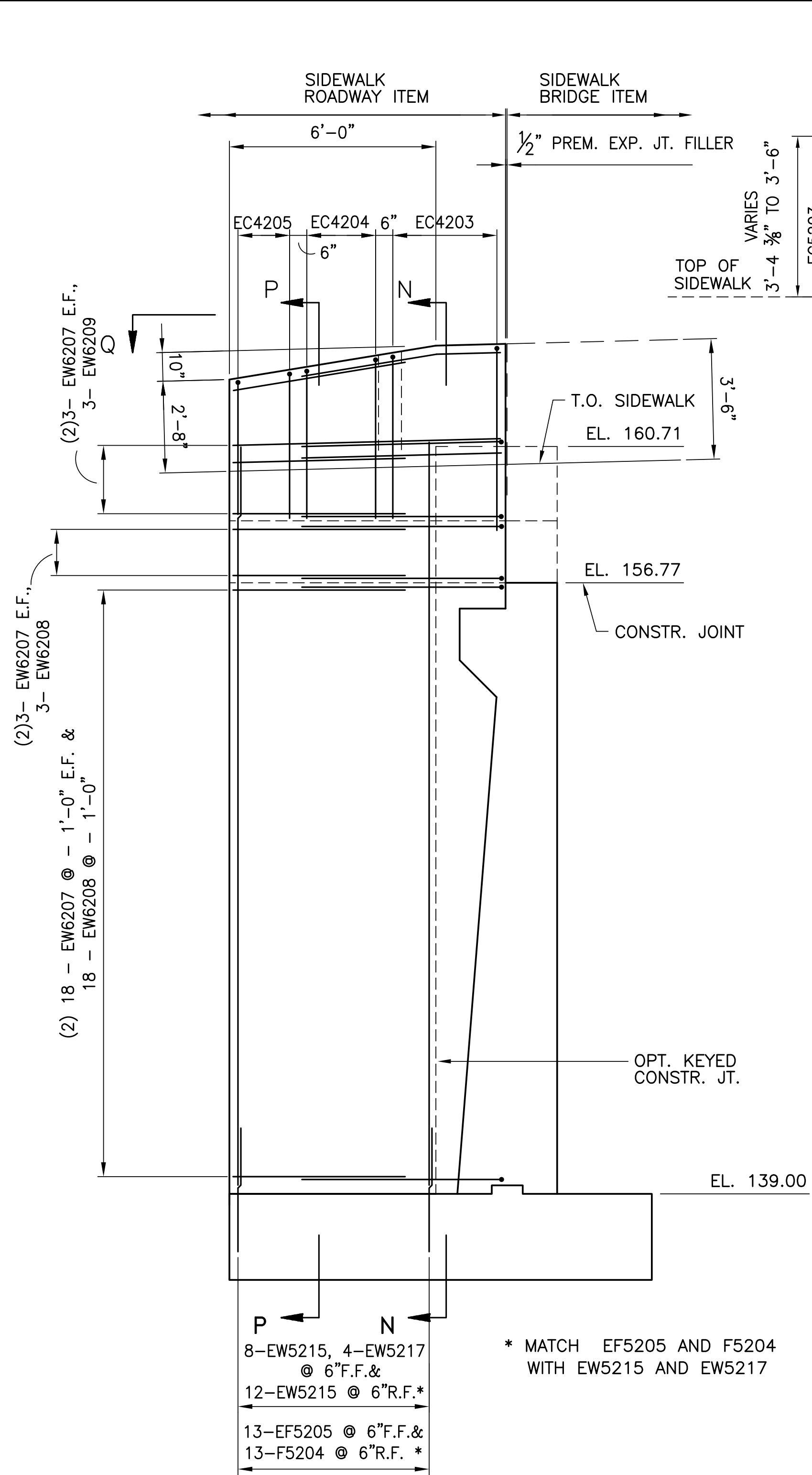
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RECOMMENDED _____
BRIDGE ENGINEER

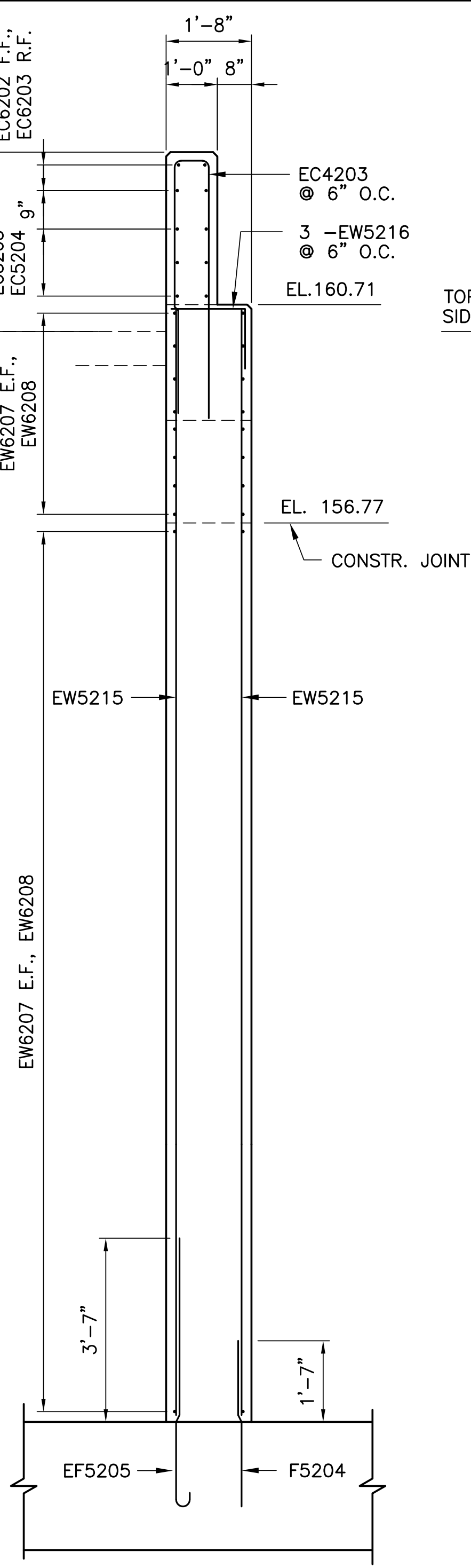
SHEET 28 OF 59
BPAA-462653

File: S-29-Revise.dwg Layout: 29 Plotted: 3/27/19 at 11:56am By: evjacinto

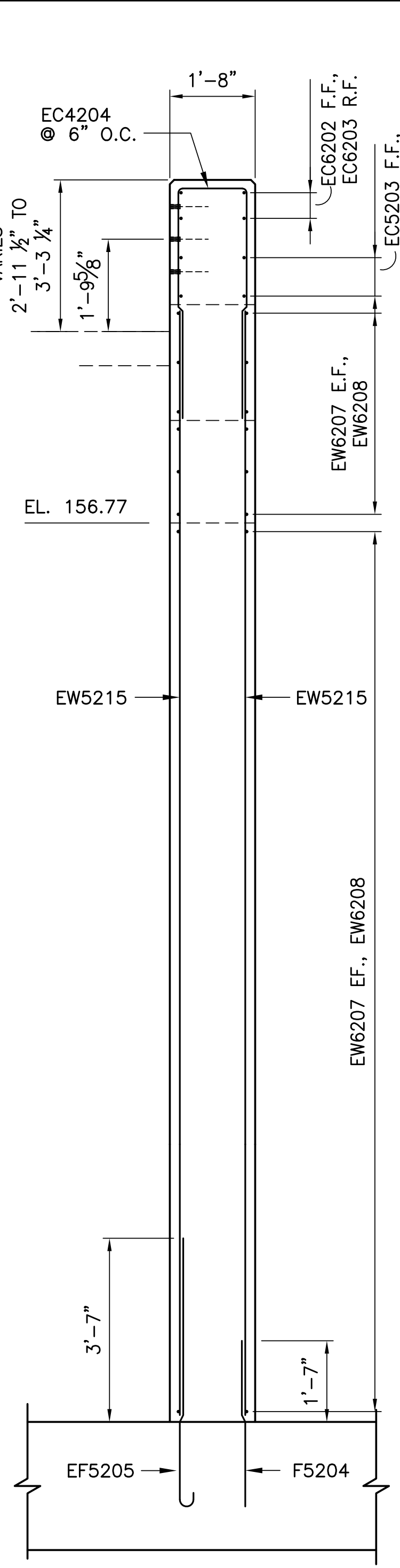


8-EW5215, 4-EW5217 @ 6" F.F. &
 12-EW5215 @ 6" R.F. *
 13-EF5205 @ 6" F.F. &
 13-F5204 @ 6" R.F. *

* MATCH EF5205 AND F5204 WITH EW5215 AND EW5217

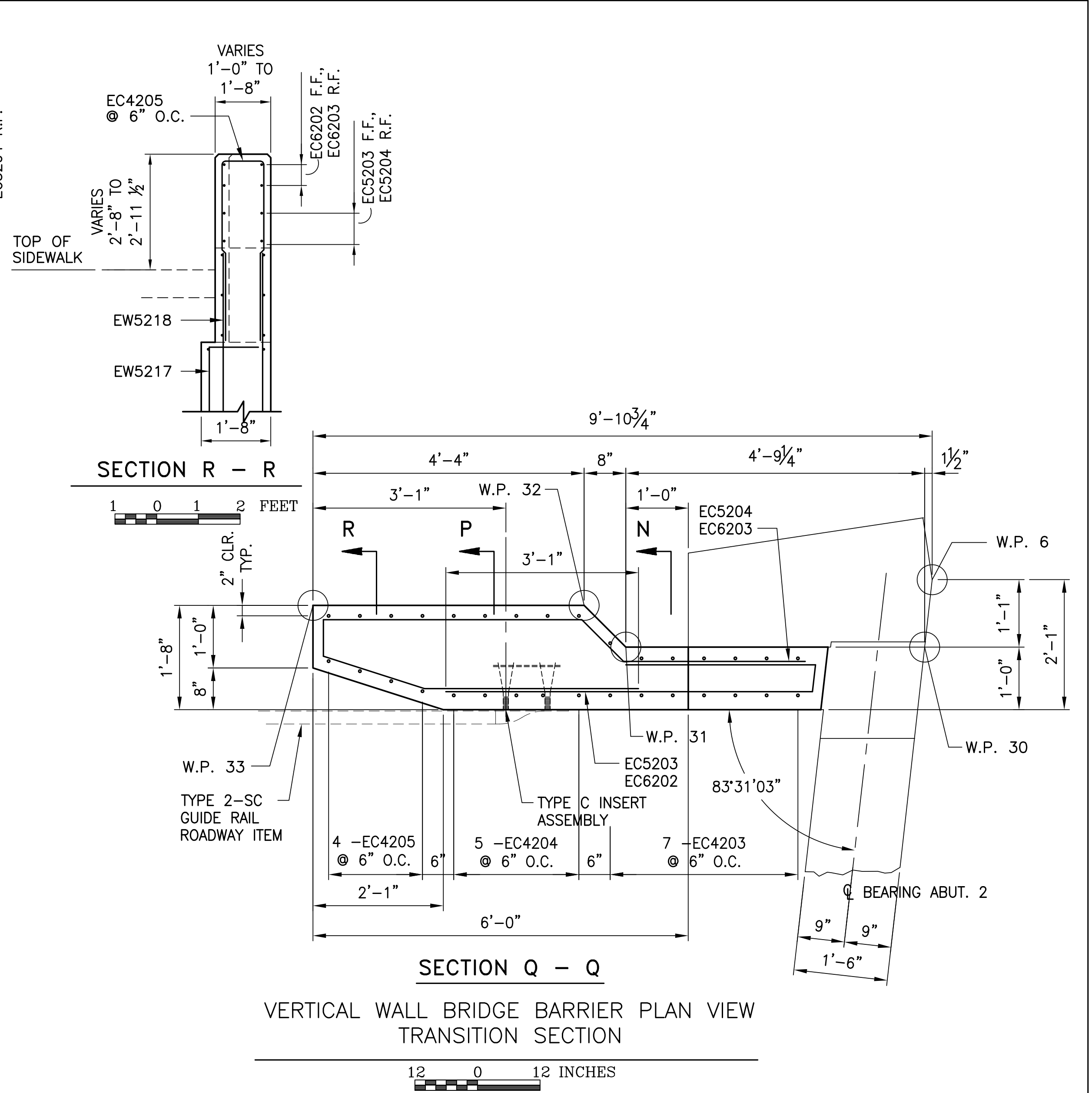


LOOKING AT FRONT FACE OF ABUTMENT
 SECTION N - N
 1 0 1 2 FEET



LOOKING AT FRONT FACE OF ABUTMENT
 SECTION P - P
 1 0 1 2 FEET

NOTES:
 1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.
 2. FOR LOCATION OF ELEVATION M-M SEE SHEET 23.



SECTION Q - Q
 VERTICAL WALL BRIDGE BARRIER PLAN VIEW
 TRANSITION SECTION
 12 0 12 INCHES

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

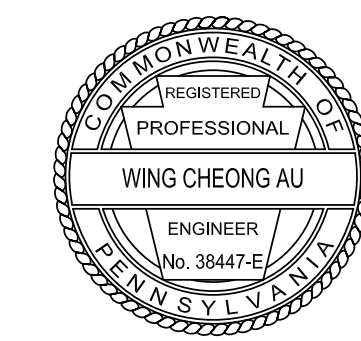
ABUT. 2 - BARRIER TRANSITION DETAILS

RECOMMENDED _____

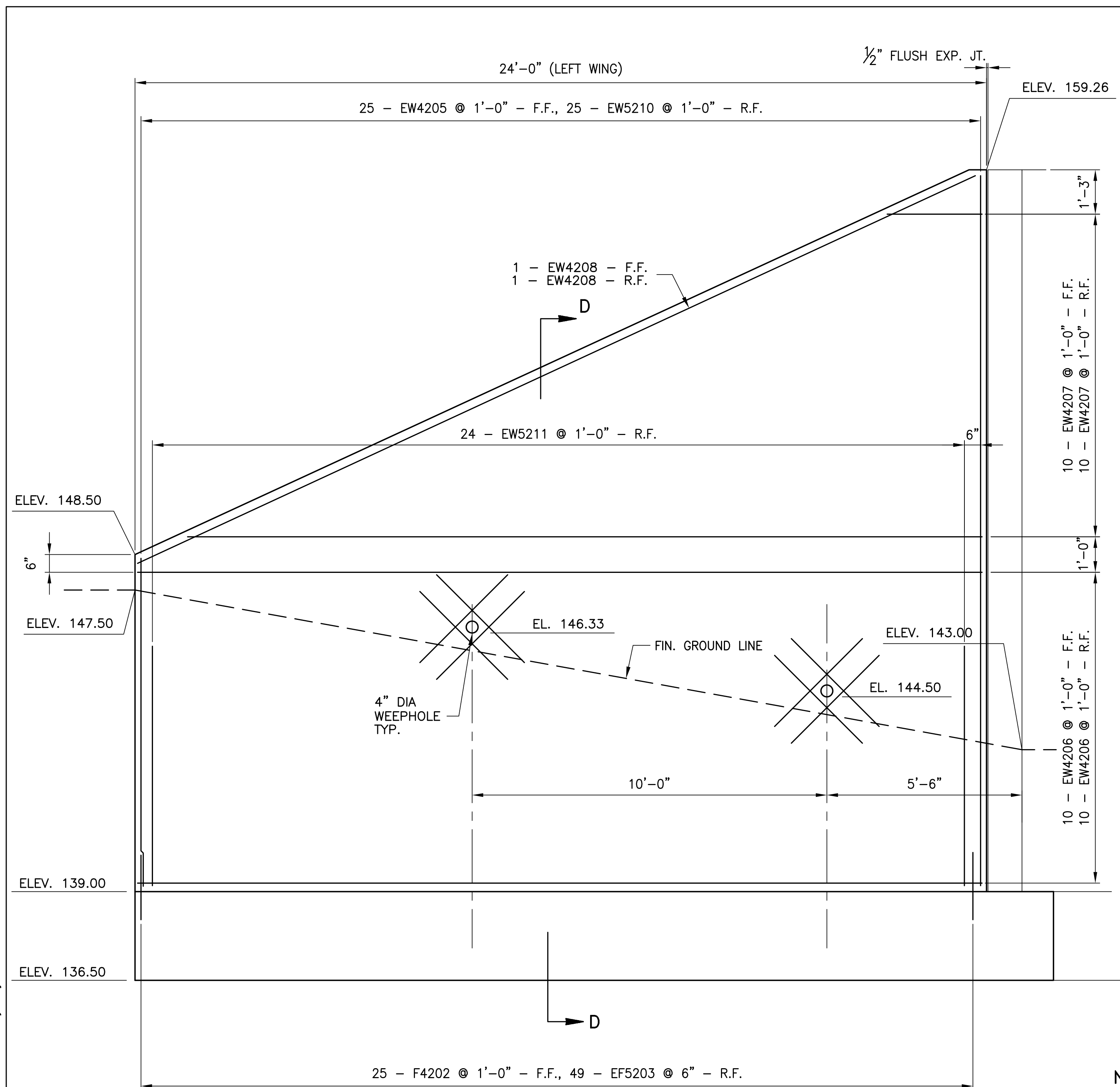
SHEET 29 OF 59

BPA-462653

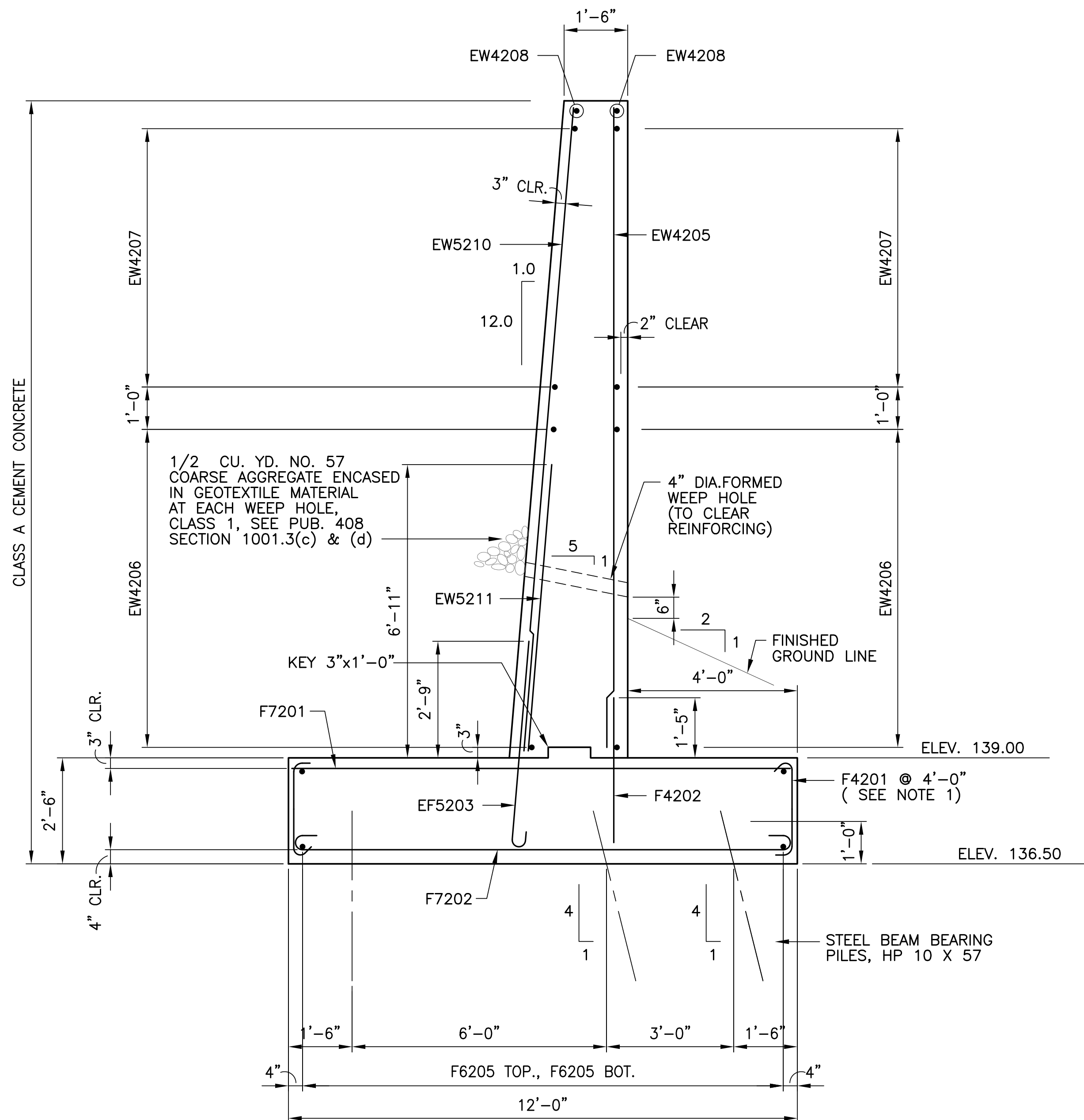
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 PHILA., PA 19103



File: S-30-Revised.dwg Layout: 30 Plotted: 3/27/19 at 11:56am By: evjacio



WINGWALL C ELEVATION



SECTION D-D

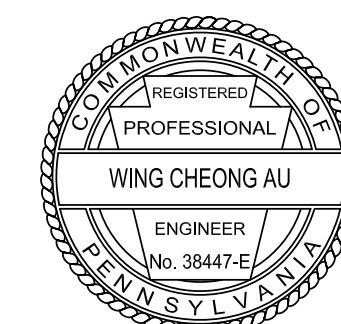


NOTES:

1. TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4201 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
2. FOR WEEPHOLE REINFORCEMENTS SEE SHEET 24.
3. FOR TYPICAL STEM TO PILE CAP CONNECTION DETAIL SEE SHEET 11.
4. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 32.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

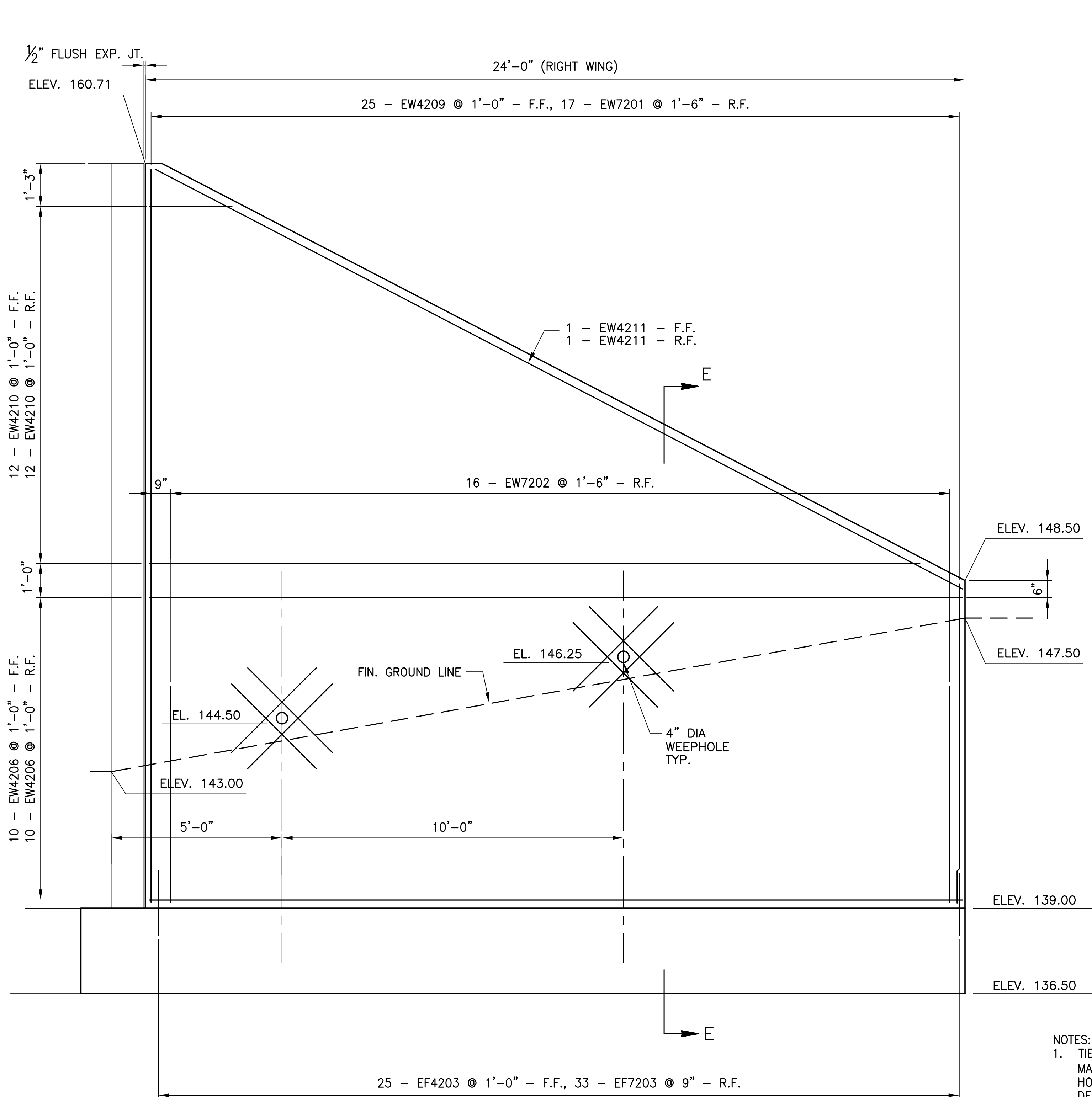
ABUTMENT 2 WING C SECTION & ELEV.

RECOMMENDED _____

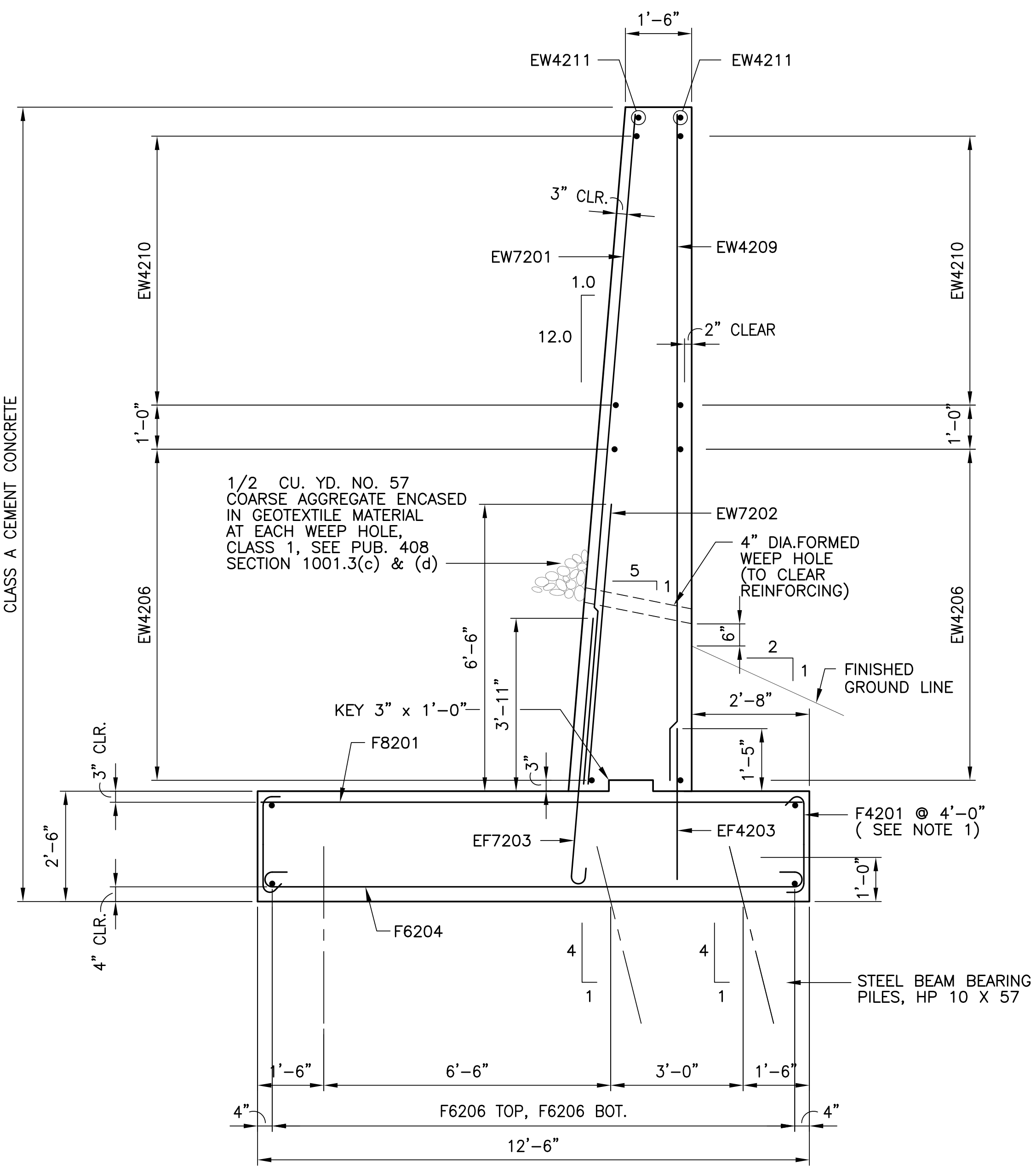
SHEET 30 OF 59

BPA-462653

File: S-31-1-Revised.dwg Layout: 31 Plotted: 3/27/19 at 12:00pm By: eyjacinto



WINGWALL D ELEVATION
1 0 1 2 FEET

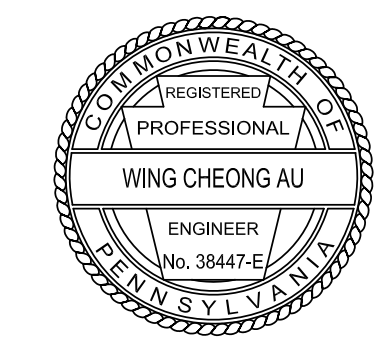


SECTION E-E
1 0 1 2 FEET

- NOTES:
- TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH F4201 TIE BARS AT A MAXIMUM SPACING 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90 DEG HOOK AT ONE END AND 135 DEG AT THE OTHER END. ALTERNATE 90 DEG AND 135 DEG HOOKS AT TOP IN ALTERNATE TIES.
 - FOR WEEPHOLE REINFORCEMENTS SEE SHEET 25.
 - FOR TYPICAL STEM TO PILE CAP CONNECTION DETAIL SEE SHEET 11.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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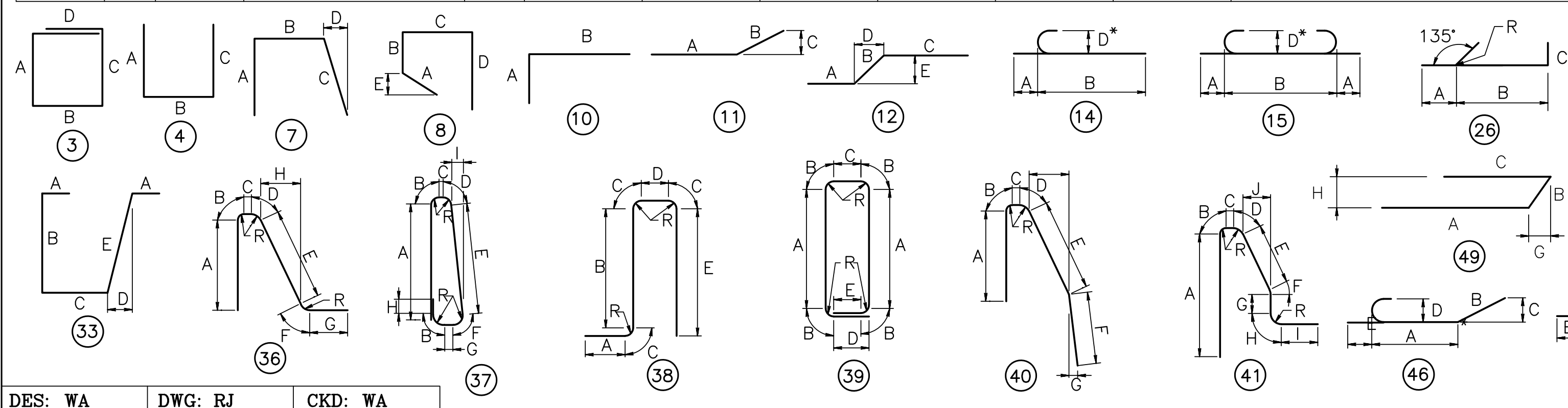
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
ABUTMENT 2 WING D SECTION & ELEV.

RECOMMENDED _____	SHEET 31 OF 59
	BPA-462653

File: S-32-Revise.dwg Layout: 32 Plotted: 3/27/19 at 12:00pm By: evjacio

MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
ABUTMENT STEM											
EW3201	3	24	13'-9"	STR							BEND IN FIELD
EW3202	3	24	13'-8"	STR							BEND IN FIELD
EW3203	3	3	13'-6"	STR							BEND IN FIELD
EW3203A	3	10	6'-6"	STR							BEND IN FIELD
EW3204	3	3	13'-5"	STR							BEND IN FIELD
EW3205	3	3	10'-6"	STR							BEND IN FIELD
EW3205A	3	3	11'-6"	STR							BEND IN FIELD
EW3206	3	4	10'-8"	STR							BEND IN FIELD
EW3206A	3	4	10'-0"	STR							BEND IN FIELD
EW4201	4	34	16'-9"	STR							
EW4202	4	19	36'-7"	STR							
EW4203	4	19	36'-3"	STR							
EW4212	4	24	3'-6"	STR							WEEP HOLE REINF.
EW4214	4	5	7'-8"	40	3'-3"	4"	4"	2 3/4"	1'-4 1/4"	2"	F=2'-1 1/4"; G=0"; H=9 1/4"
EW4215	4	13	7'-11" TO 8'-0"	40	3'-3 1/4"	4"	0"	0"	VARIES	2"	E VARIES 1'-4 7/8" TO 5 3/4" VARIES 1 EA. BY 7/8" F VARIES 2'-2 1/4" TO 3'-0 1/8" VARIES 1 EA. BY 7/8" H VARIES 7 3/8" TO 2 1/2" VARIES 1 EA. BY 3/8", G=0"
EW5201	5	34	7'-6"	7	3'-2 3/4"	1'-0"	3'-2 7/8"	3 1/8"			
EW5202	5	14	16'-8"	STR							
EW5203	5	15	17'-4"	STR							
EW5204	5	22	4'-6"	STR							
EW5205	5	20	5'-3"	STR							
EW5206	5	3	7'-5"	4	2'-2 1/4"	2'-11 5/8"	2'-2 1/4"				
EW5206A	5	6	4'-10"	7	2'-2"	1'-0"	1'-8"	1'-1 1/2"			
EW5206B	5	2	2'-0"	STR							
EW5207	5	8	5'-3"	4	2'-2 1/4"	11 1/2"	2'-2 1/4"				
EW5208	5	4	4'-3"	STR							
EW5209	5	4	3'-11"	STR							
EW5212	5	5	2'-4" TO 2'-10"	10	VARIES	1'-1 3/4"					A VARIES 1'-8" TO 1'-1 3/4", VARIES 1 EA. BY 1 1/2"
EW5213	5	13	19'-4"	STR							
EW5214	5	13	18'-3"	STR							
EW5215	5	20	21'-6"	STR							
EW5216	5	3	2'-6"	10	1'-4"	1'-2"					
EW5217	5	4	20'-6"	10	19'-4"	1'-2"					
EW5218	5	4	4'-2"	STR							
EW5219	5	4	36'-0"	STR							CORBEL REINF.
EW5220	5	4	3'-0"	11	1'-0"	2'-0"	1'-5"				
EW6201	6	35	16'-9"	STR							
EW6202	6	34	11'-7"	STR							
EW6203	6	4	8'-1"	46	1'-7"	5'-10"	1'-0"		8"		
EW6204	6	4	8'-1"	47	1'-7"	5'-10"	1'-0"		8"		
EW6205	6	18	8'-2"	46	1'-8"	5'-10"	1'-0"		8"		
EW6206	6	18	8'-2"	47	1'-8"	5'-10"	1'-0"		8"		
EW6207	6	48	6'-9"	46	3'-6 1/2"	2'-1 1/2"	7 3/4"	4 1/2"	8"		
EW6208	6	21	11'-8"	4	5'-2"	1'-4"	5'-2"				
EW6209	6	3	10'-7"	48	3'-1"	1'-10"	7"	5'-1"			G = 6 1/2"
EW6210	6	68	7'-3"	8	3'-0"	1'-1"	2'-2"	1'-0"			CORBEL REINF.
WINGWALL STEM											
EW4205	4	25	9'-2" TO 19'-11"	STR							VARIES 1 EA. BY 5 3/8"
EW4206	4	40	23'-8"	STR							
EW4207	4	20	2'-10" TO 22'-6"	STR							2 SETS OF 10, VARY EA. BAR IN SET BY 2'-2 1/4"
EW4208	4	2	25'-11"	STR							
EW4209	4	25	9'-2" TO 21'-4"	STR							VARIES 1 EA. BY 6 1/8"
EW4210	4	24	2'-6" TO 22'-8"	STR							2 SETS OF 12, VARY EA. BAR IN SET BY 1'-10"

MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
WINGWALL STEM (CONT.)											
EW4211	4	2	26'-6"	STR							
EW4213	4	32	3'-6"	STR							WEEP HOLE REINF.
EW5210	5	25	9'-2" TO 19'-11"	STR							VARIES 1 EA. BY 5 3/8"
EW5211	5	24	6'-9"	STR							
EW7201	7	17	9'-2" TO 21'-5"	STR							VARIES 1 EA. BY 9 1/8"
EW7202	7	16	6'-4"	STR							
FOOTING											
F4201	4	120	2'-8"	26	4 1/2"	1'-11"	4 1/2"			1"	
F4202	4	59	3'-7"	STR							
EF4203	4	25	3'-7"	STR							
F5201	5	26	44'-1"	STR							
F5202	5	29	3'-11"	STR							
EF5203	5	49	5'-7"	14	7"	4'-11 1/4"					
F5204	5	13	3'-4"	STR							
EF5205	5	13	5'-9"	14	7"	5'-2"					
F6201	6	60	11'-8"	STR							
EF6203	6	69	5'-10"	14	8"	5'-2"					
F6204	6	20	13'-6"	15	8"	12'-2"					
F6205	6	21	20'-4"	STR							
F6206	6	21	25'-4"	STR							
F6207	6	53	3'-0"	STR							PILE ANCHORAGE
F7201	7	18	11'-8"	STR							
F7202	7	75	13'-4"	15	10"	11'-8"					
EF7203	7	33	6'-11"	14	10"	6'-1"					
F8201	8	27	12'-2"	STR							
TOE WALL AND CUTOFF WALL											
EW4221	4	34	4'-0"	3	1'-2"	8"	1'-2"	6"			
EW4222	4	4	40'-7"	STR							TOE WALL
EW4223	4	4	11'-7"	10	10'-7"	1'-0"					CUTOFF WALL C
EW4224	4	4	11'-3"	10	10'-3"	1'-0"					CUTOFF WALL D
BARRIER											
EC4201	4	5	8'-1"	37	2'-9 1/2"	4"	3 3/8"	3 5/8"	2'-7 3/4"	2"	F=4 1/8"; G=6 3/4"; H=5" I=3 3/8"
EC4202	4	13	6'-5" TO 8'-1"	37	VARIES	4"	3 3/8"	0"	VARIES	2"	A VARIES 2'-9 1/2" TO 1'-11 1/2"; VARIES 1 EA. BY 7/8" E VARIES 2'-7 3/4" TO 1'-9 3/4"; VARIES 1 EA. BY 7/8" I VARIES 3 3/8" TO 2 1/4"; VARIES 1 EA. BY 1/8" F=0"; G=0"; H=0"
EC4203	4	7	10'-8"	4	5'-0"	8"	5'-0"				
EC4204	4	5	10'-1" TO 10'-9"	4	VARIES	1'-4"	VARIES				VARY A & C 4'-5" TO 4'-9"
EC4205	4	4	8'-9" TO 9'-11"	4	VARIES	8" TO 1'-4"	VARIES				VARY A & C 4'-1" TO 4'-4"
EC5201	5	6	7'-9"	11	1'-11 1/4"	5'-9"	11 7/8"				
EC5202	5	2	5'-8"	4	2'-6"	8"	2'-6"				
EC5203	5	3	9'-4 1/2"	49	5'-10	6 1/2"	3'-0"				G = 5/8", H = 8"
EC5204	5	3	13'-6"	48	3'-1"	1'-10"	7"	4'-1 1/2"	11 1/2"		F = 2'-11", G = 6 1/2", H = 8"
EC6201	6	4	7'-9"	11	1'-11 3/8"	5'-9 5/8"	1'-3 1/2"				
EC6202	6	2	9'-4 1/2"	49	5'-10	6 1/2"	3'-0"				G = 5/8", H = 8"
EC6203	6	2	13'-6"	48	3'-1"	1'-10"	7"	4'-1 1/2"	11 1/2"		F = 2'-11", G = 6 1/2", H = 8"



- "*" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- FOR REINFORCEMENT BAR FABRICATION DETAILS, REFER TO STANDARD DRAWING BC-736M.
- FIGURES IN CIRCLES SHOW TYPES.
- "E" - INDICATES EPOXY COATED REBARS.
- FOR ALL BAR TYPES SHOWN, DIMENSIONS A-H AND LENGTH ARE MEASURED ALONG OUTSIDE OF BAR. R IS MEASURED ALONG INSIDE OF BAR.
- BAR WITH BREAKS IN THE EPOXY COATING DUE TO FIELD BENDING SHALL BE FIELD REPAIRED WITH A TWO PART EPOXY COATING. BARS WITH MORE THAN 5 PERCENT AREA PATCHED SHALL BE REJECTED.

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

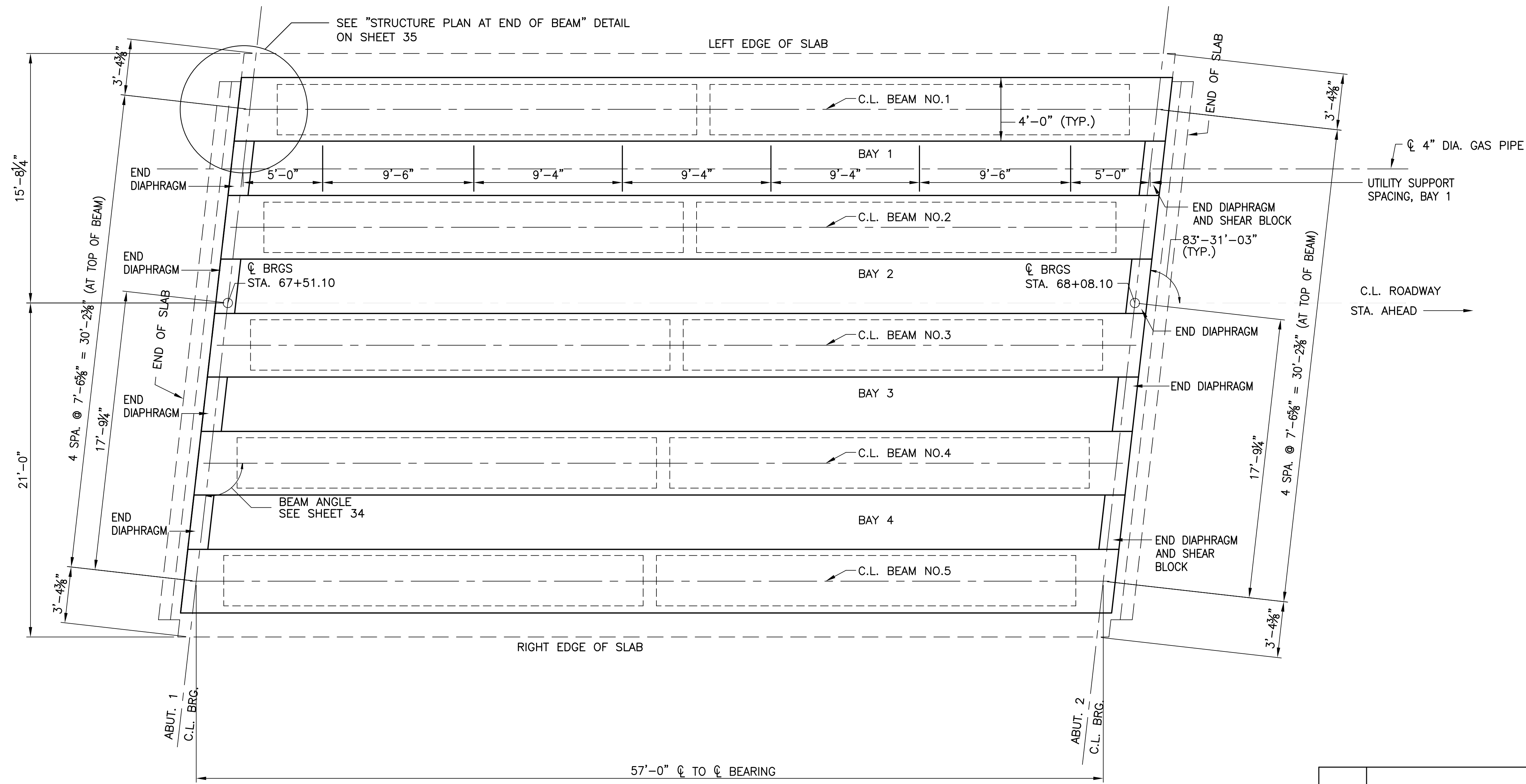
ABUTMENT 2 REBAR SCHEDULE

RECOMMENDED _____

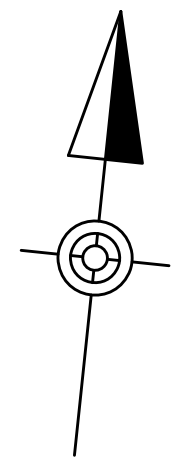
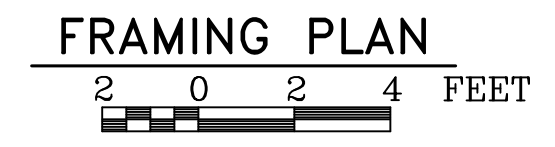
SHEET 32 OF 59

BPAA-462653

File: S-33-Revised.dwg Layout: 33 Plotted: 3/27/19 at 12:23pm By: evjacinto



* FOR BEAM DIMENSIONS AND DIAPHRAGM DIMENSIONS, SEE FRAMING PLAN 2 ON SHEET 34.

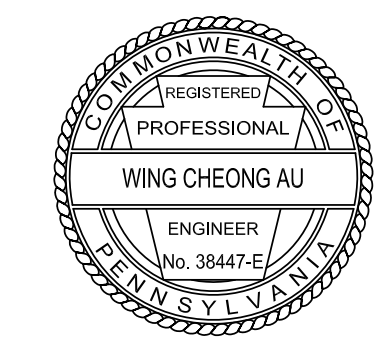


NOTES:

1. FOR BOX BEAM REINFORCEMENT AND DETAILS SEE SHEET 35.
2. FOR CONCRETE DIAPHRAGM DETAILS SEE SHEETS 39, 40 AND 41.
3. FOR UTILITY SUPPORT DETAILS SEE SHEET 39 AND 40
4. FOR SLAB SECTION SEE SHEET 44.

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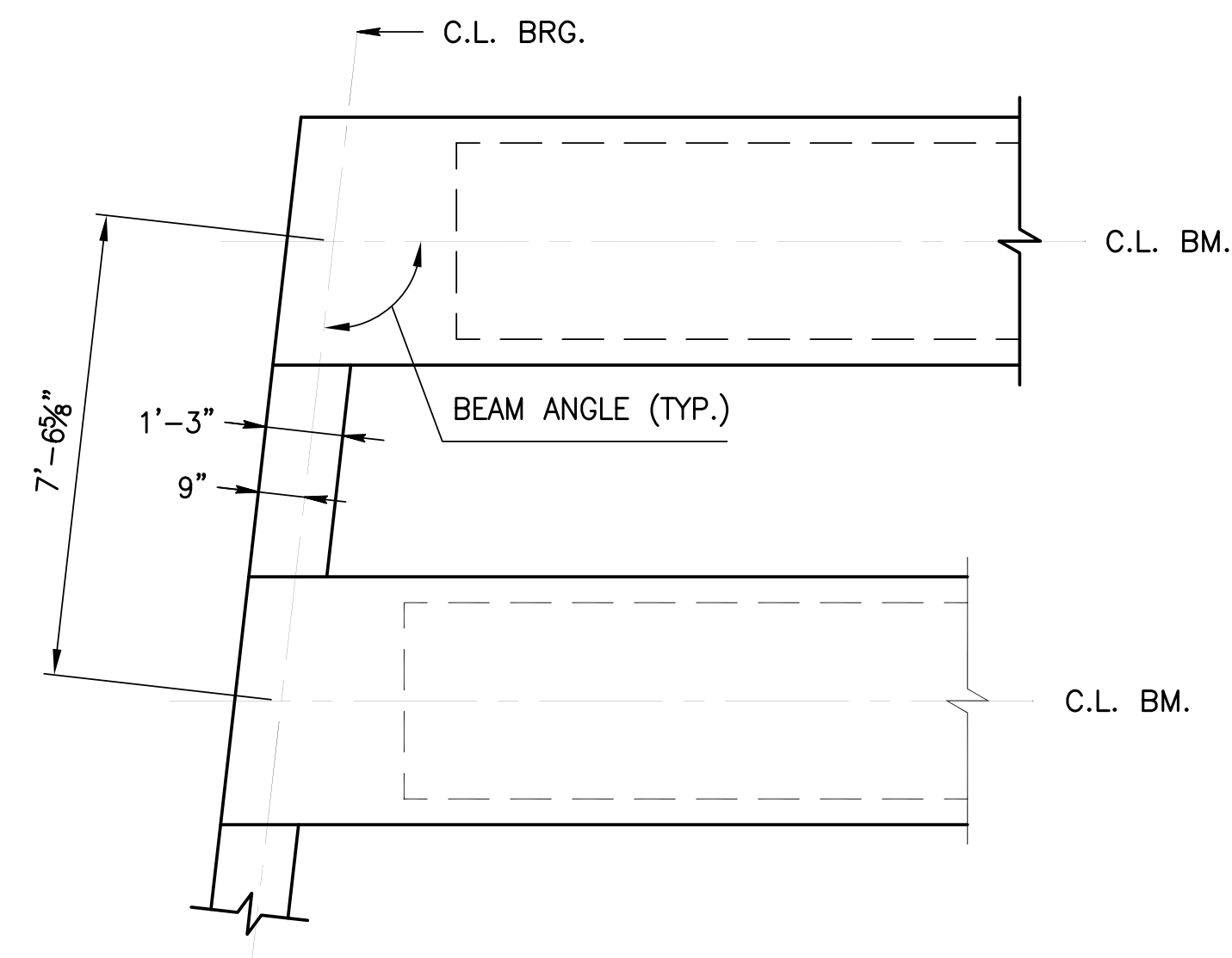
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

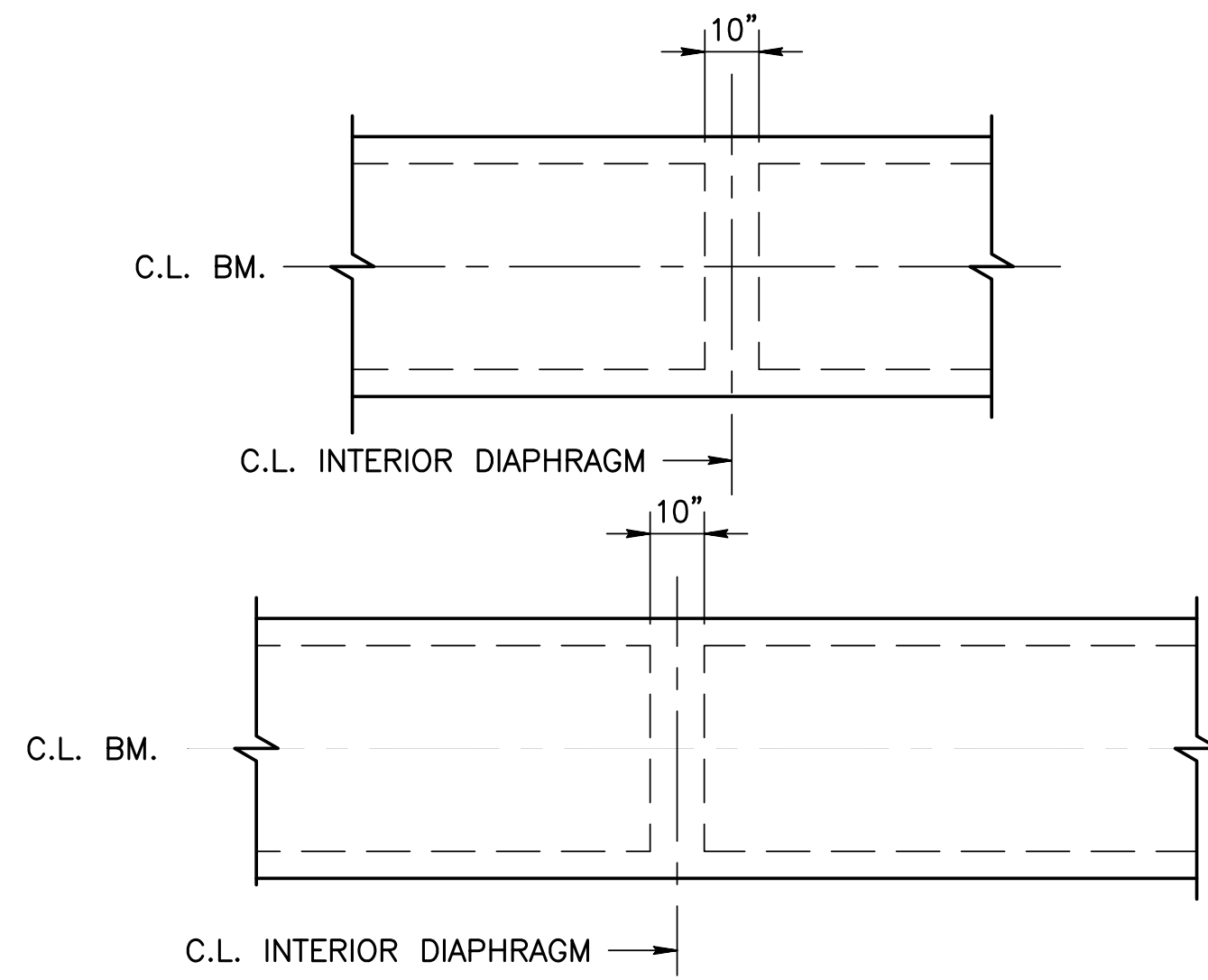
FRAMING PLAN 1

RECOMMENDED _____	SHEET 33 OF 59
BPAA-462653	

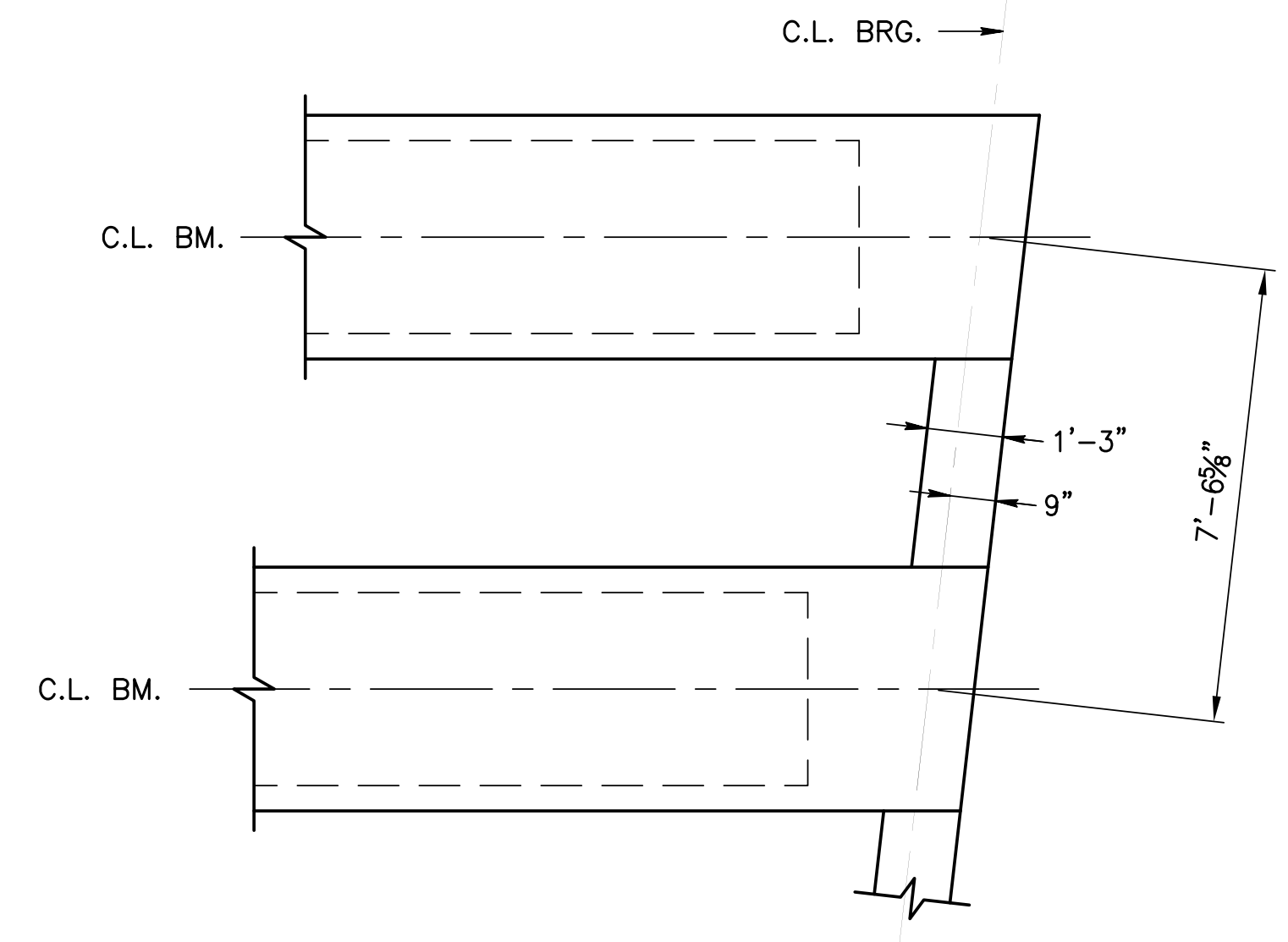
File: S-34-Revised.dwg Layout: 34 Plotted: 3/27/19 at 12:26pm By: eyacinto



END DIAPHRAGM LAYOUT
AT ABUTMENT 1



INTERIOR DIAPHRAGM



END DIAPHRAGM LAYOUT
AT ABUTMENT 2

BEAM NO.	BEAM ANGLE	BEAM LENGTH C - C BRG. *	BEAM LENGTH TOTAL *
1	96°-28'-57"	57'-0"	58'-6 1/8 "
2	96°-28'-57"	57'-0"	58'-6 1/8 "
3	96°-28'-57"	57'-0"	58'-6 1/8 "
4	96°-28'-57"	57'-0"	58'-6 1/8 "
5	96°-28'-57"	57'-0"	58'-6 1/8 "

* HORIZONTAL DIMENSION ALONG C.L. BEAM

BEAM SCHEDULE

NOTE: BEAM ANGLE MEASURED FROM C.L. BEAM TO C.L. BRG. IN CLOCKWISE DIRECTION.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

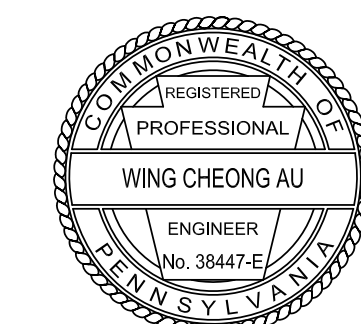
BEAM DETAIL

RECOMMENDED _____

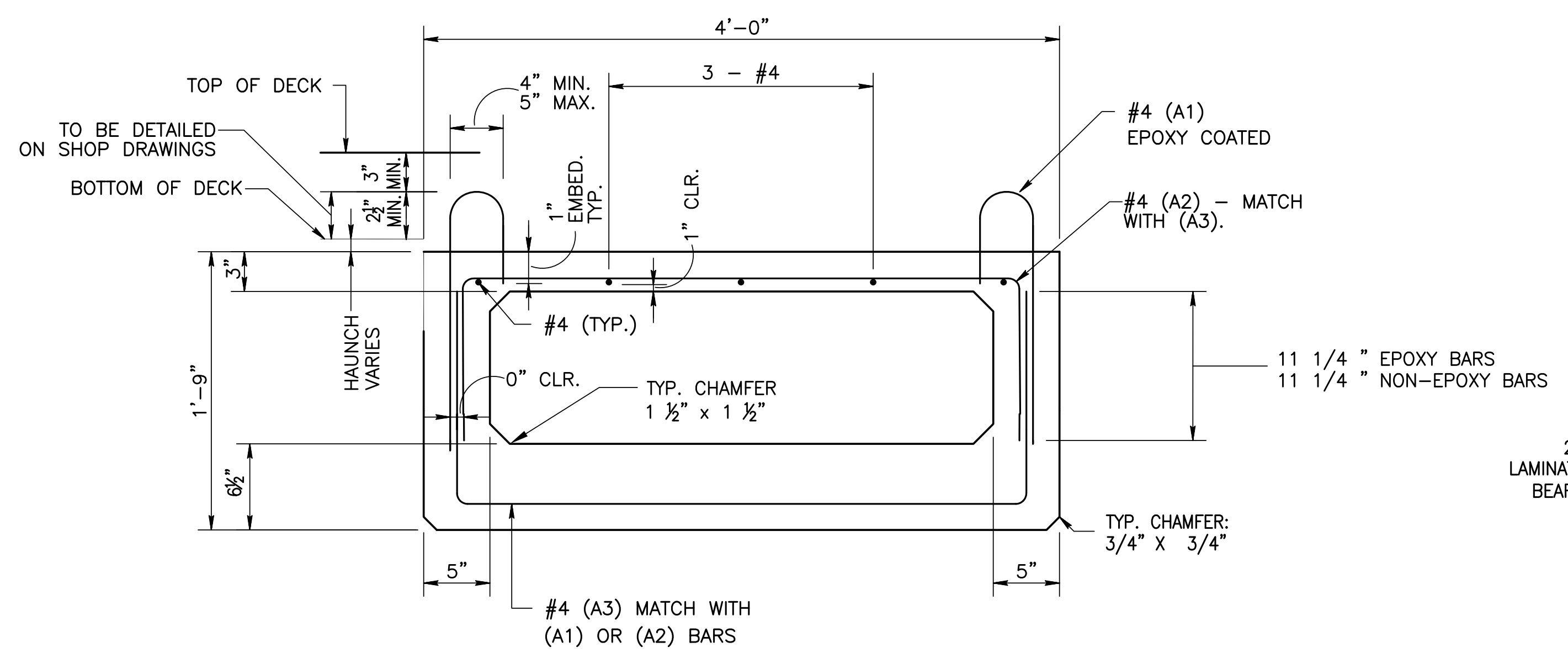
SHEET 34 OF 59

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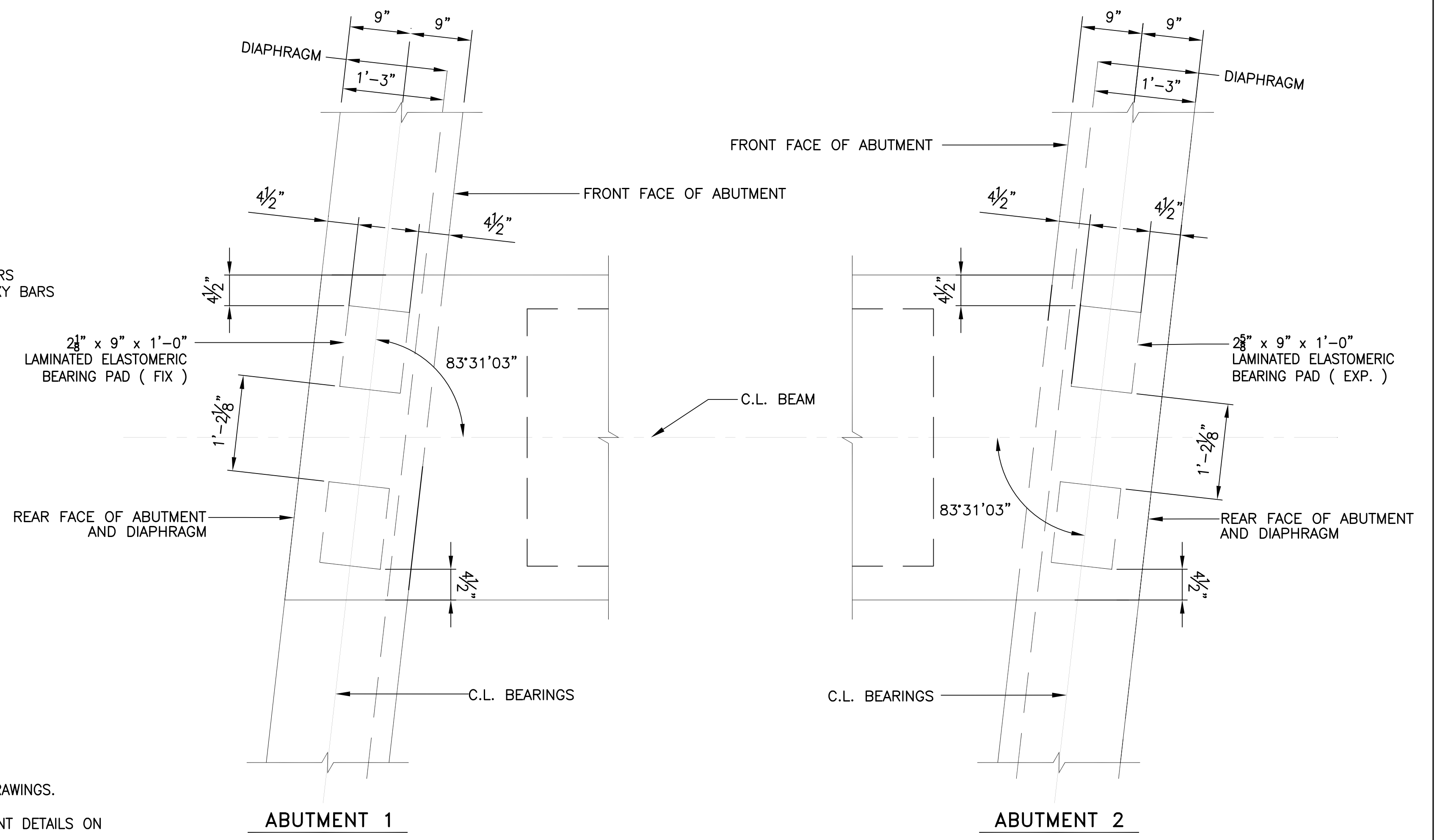


File: S-35-Revised.dwg Layout: 35 Plotted: 3/27/19 at 12:27pm By: evjacinto



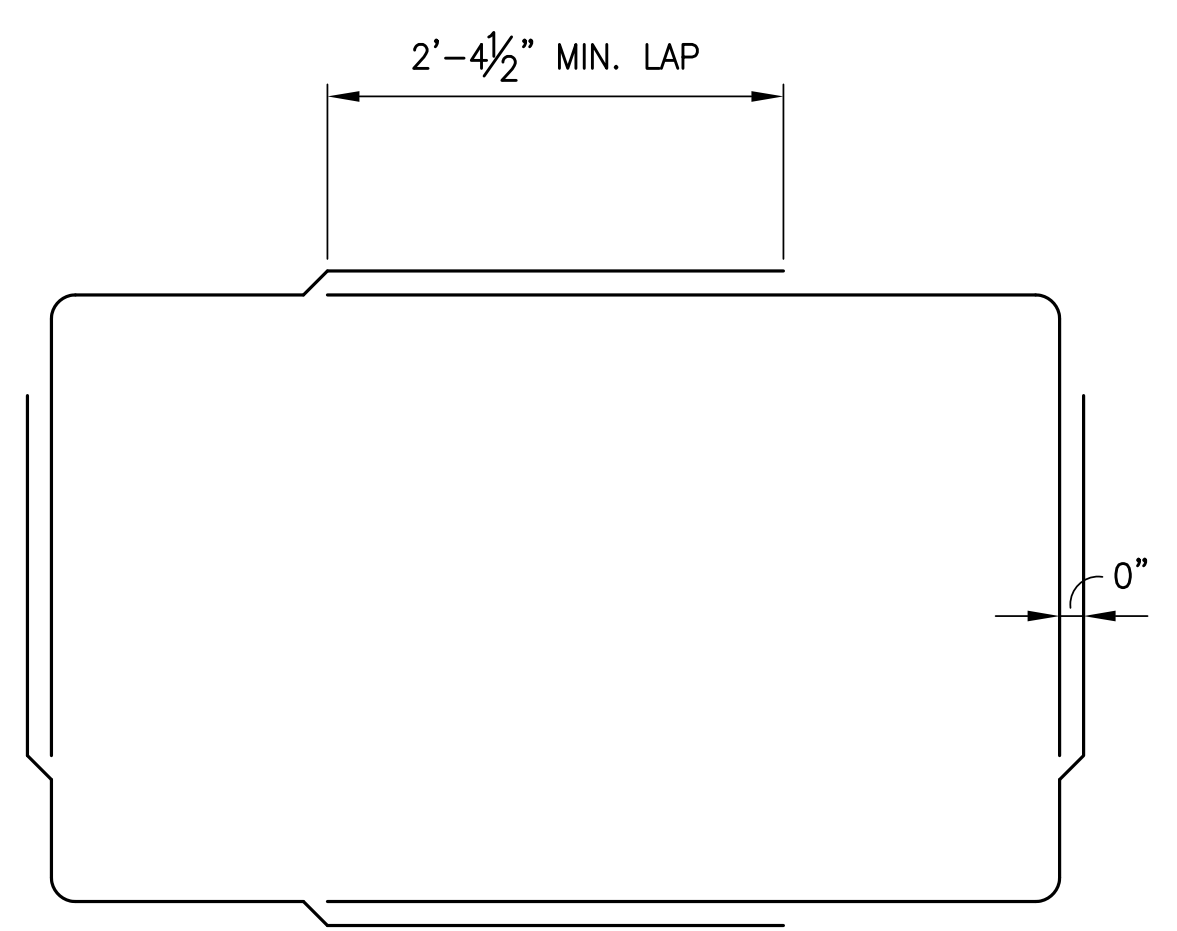
TYPICAL BEAM SECTION
6 0 6 INCHES

NOTE: SEE TYPICAL STRAND CONFINEMENT DETAIL ON THE BEAM FABRICATION DETAILS 1 ON SHEET 36 FOR CLEARANCES NOT SHOWN.



STRUCTURE PLAN AT END OF BEAM

6 0 6 12 INCHES

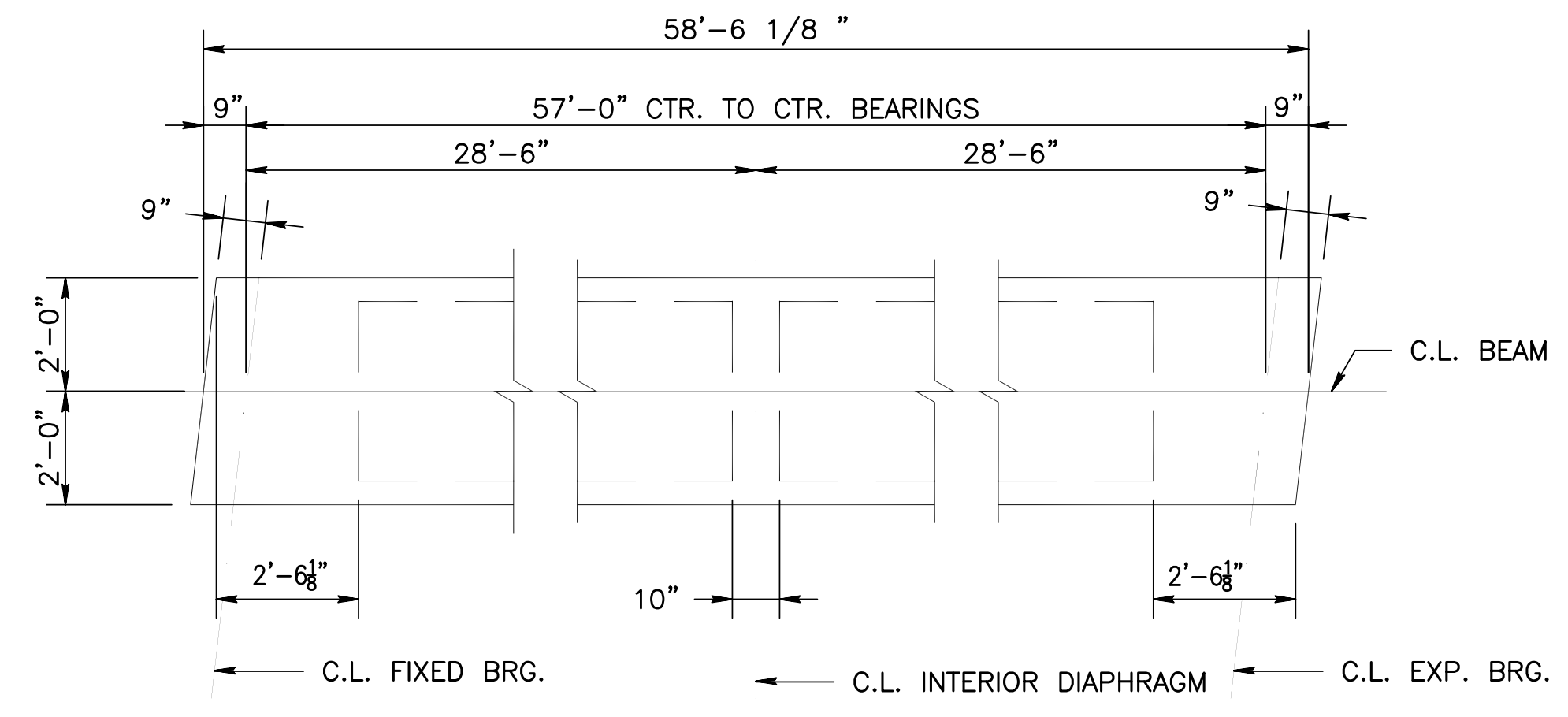


ALTERNATE END BLOCK REINFORCEMENT SPlicing DETAIL

NOT TO SCALE

GENERAL NOTES:

1. SHOW DESIGN LENGTH AND CASTING LENGTH ON SHOP DRAWINGS.
2. SHOW PLAN, ELEVATION, SECTIONS AND ALL REINFORCEMENT DETAILS ON SHOP DRAWINGS.
3. SHOW ANY MODIFICATIONS TO REINFORCEMENTS SPLICE AND BENDING DETAILS ON SHOP DRAWINGS.
4. SHOW THE FOLLOWING DATA ON THE SHOP DRAWINGS:
 - a) THE SIZE AND LOCATION OF TEMPORARY STORAGE SUPPORTS.
 - b) THE TYPE AND LOCATION OF THE BRACING AND TEMPORARY SUPPORTS USED FOR THE TRANSPORTATION AND ERECTION OF THE BEAMS.
5. GROUTED RECESS FOR STRANDS AT BEAM ENDS IS REQUIRED, FOR DETAILS REFER TO STANDARD DRAWING BC-775M.

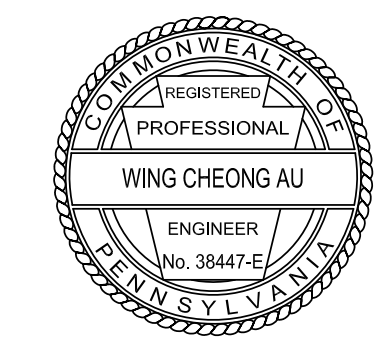


INTERIOR DIAPHRAGMS

1 0 1 2 3 FEET

Mark	Description	By	Chk'd.	Recm'd	Date
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UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

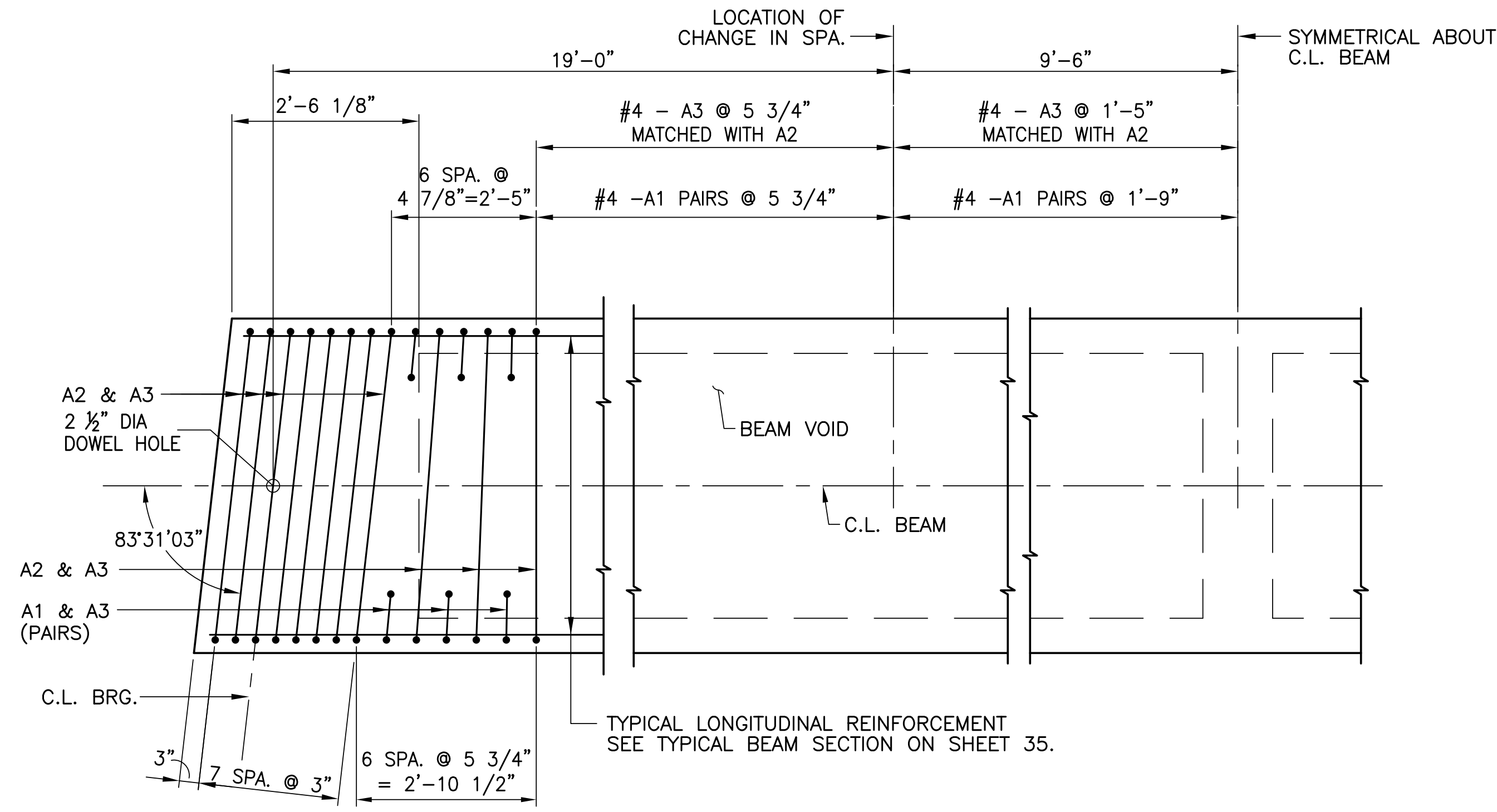
BOX BEAM DETAILS

RECOMMENDED _____

SHEET 35 OF 59

BPAA-462653

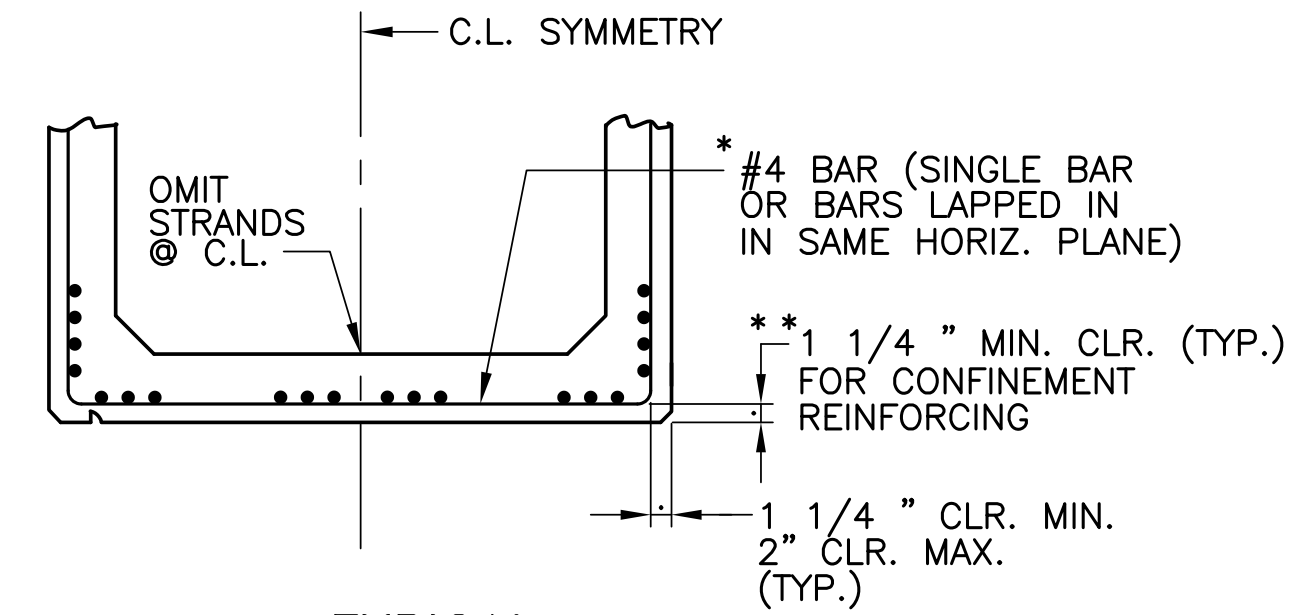
File: S-36-Revise.dwg Layout: 36 Plotted: 3/27/19 at 12:29pm By: evjacio



**BEAM END
TRANSVERSE REINFORCEMENT**
NOT TO SCALE

NOTE:
SEE TYPICAL BEAM SECTION FOR
REINFORCEMENT NOT SHOWN
ON SHEET 35.

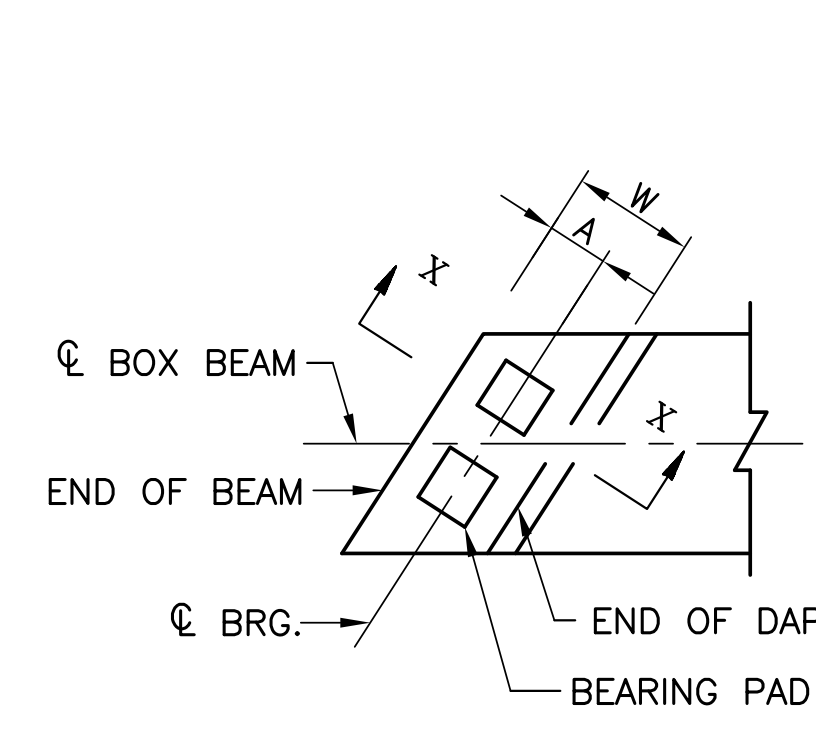
- NOTES:
1. EPOXY COAT ALL REBARS FOR A DISTANCE OF 9'-0" FROM BEAM ENDS ADJACENT TO DECK JOINTS.
 2. EPOXY COAT ALL REINFORCEMENT WHICH PROTRUDES INTO BRIDGE DECK FROM TOP OF BEAMS.
 3. CALCULATE BEARING SEAT ELEVATION, DAPPING DIMENSIONS, SLOPE AND HAUNCH DEPTH USING THE FINAL NET CAMBER - "C".
 4. END ZONE REINFORCEMENT MAY BE INCREASED BY FABRICATOR TO REFLECT FABRICATOR'S EXPERIENCE AND/OR TO CONTROL CRACKING. WIRE MESH OF EQUIVALENT AREA IS PERMISSIBLE FOR CRACK CONTROL REINFORCEMENT.
 5. FABRICATOR TO CHECK STABILITY FOR HANDLING AND TRANSPORTING OF THE MEMBERS.
 6. MINIMUM COVER ON REINFORCEMENT BARS:
TOP SLAB - 1" MIN.
INSIDE VOID - 1" MIN.
ELSEWHERE - 2" MIN. UNLESS OTHERWISE NOTED
 7. FOR TYPICAL CORNER BLOCKOUT DETAIL, SEE BC-775M.



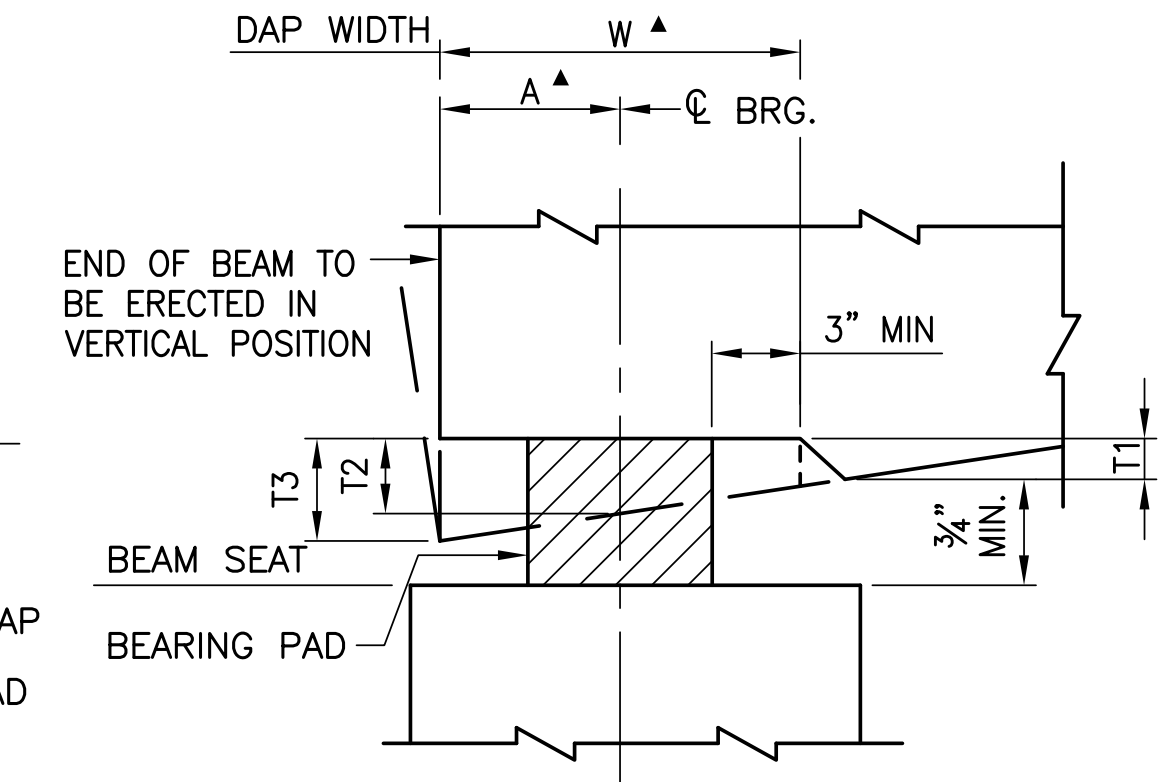
**TYPICAL
STRAND CONFINEMENT
ALL BEAMS**
NOT TO SCALE

- * FOR LIMITS OF STRAND CONFINEMENT REINFORCEMENT, REFER TO DESIGN MANUAL, PART 4, D5.10.10.2.
- ** IF THE BEAM IS DAPPED, SEE THE BEAM DAP DETAIL AND MAINTAIN 1 1/4" MINIMUM CLEARANCE IN THE DAP AREA.
- NOTE: AVOID LOCATION OF STRANDS AT CORNERS DUE TO INTERFERENCE WITH CONFINEMENT REINFORCEMENT. UTILIZE CORNER STRANDS ONLY WHEN HIGHER PRESTRESS FORCE IS REQUIRED.

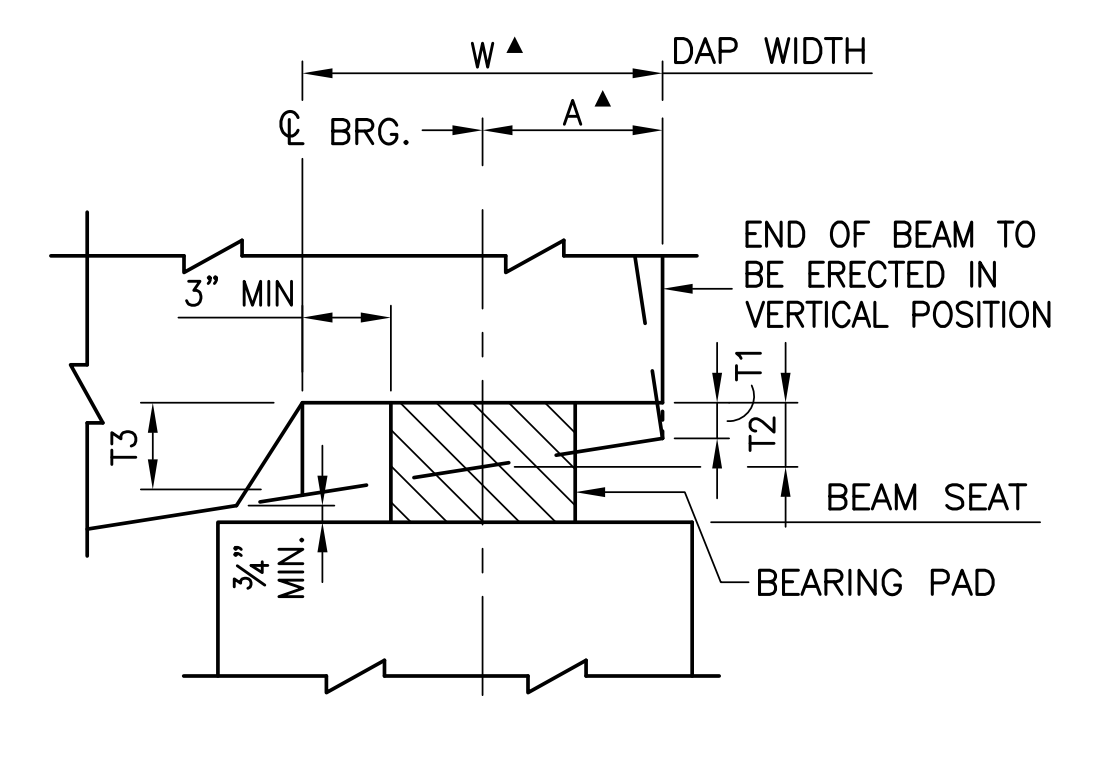
BEAM NO.	DAP INFORMATION									
	ABUTMENT 1					ABUTMENT 2				
	W	A	T1	T2	T3	W	A	T1	T2	T3
1	1'-6"	9"	1/4"	5/16"	3/8"	1'-6"	9"	0"	0"	0"
2	1'-6"	9"	1/4"	11/32"	7/16"	1'-6"	9"	0"	0"	0"
3	1'-6"	9"	1/4"	11/32"	7/16"	1'-6"	9"	0"	0"	0"
4	1'-6"	9"	1/4"	3/8"	1/2"	1'-6"	9"	1/4"	9/32"	5/16"
5	1'-6"	9"	1/4"	13/32"	9/16"	1'-6"	9"	1/4"	9/32"	5/16"



PLAN



**SECTION X-X AT
LOW END OF BEAM**
ABUTMENT 1



**SECTION X-X AT
HIGH END OF BEAM**
ABUTMENT 2

▲ DENOTES MEASURED NORMAL TO C BEARING

BEAM DAP DETAILS
NOT TO SCALE

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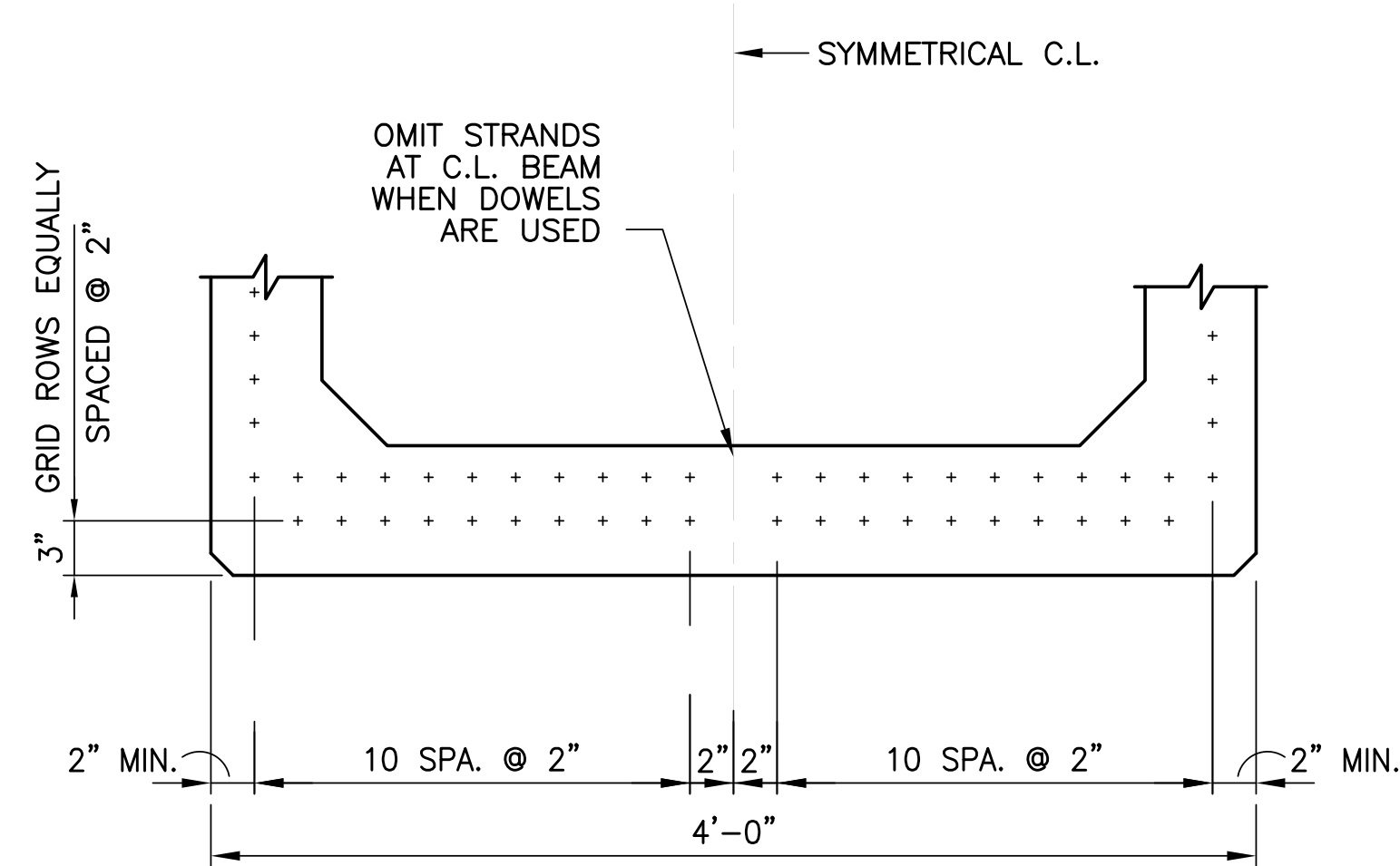
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**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

BEAM FABRICATION DETAILS 1

RECOMMENDED _____	SHEET 36 OF 59
BPAA-462653	

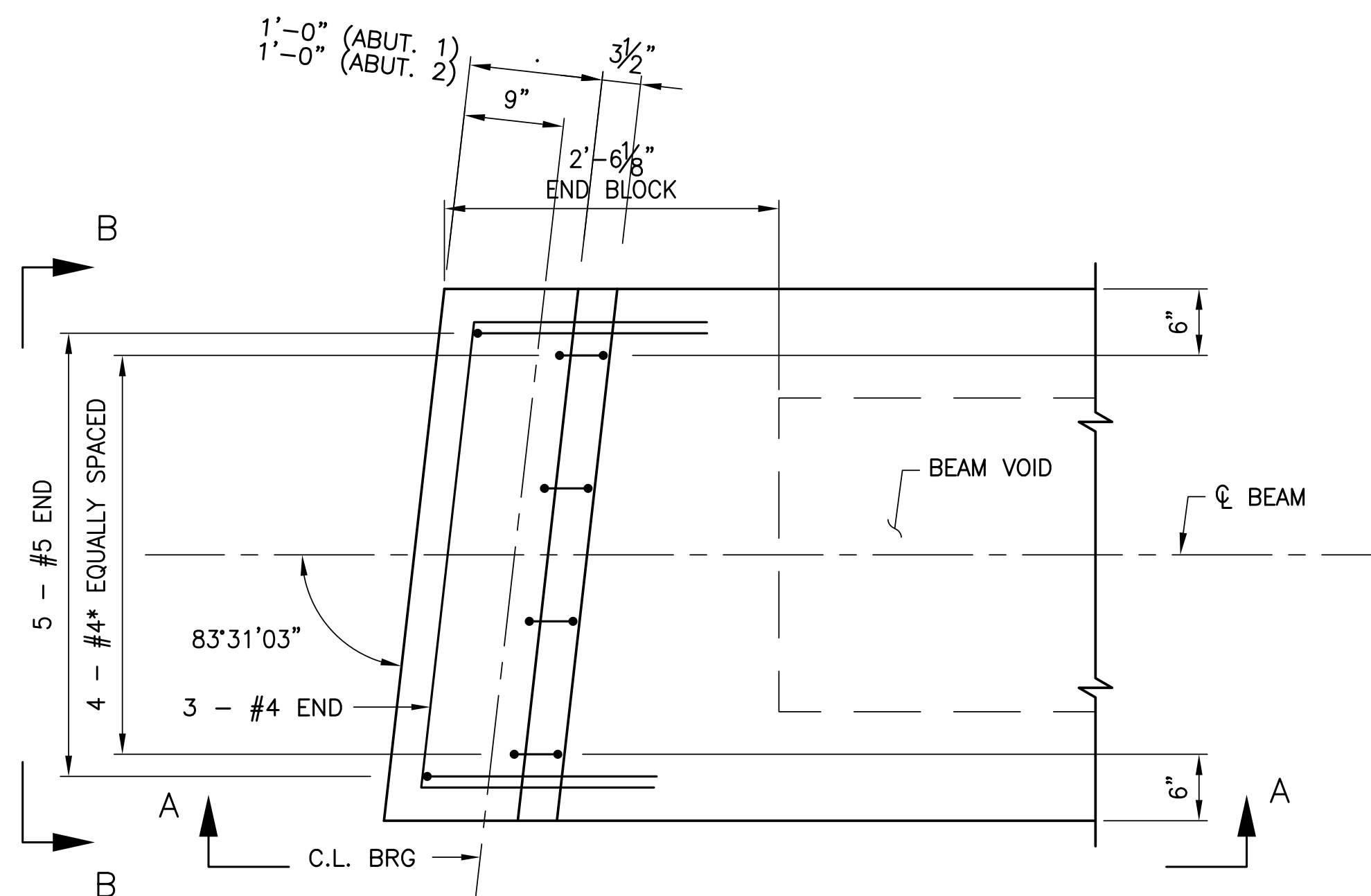


TYPICAL STRAND PATTERN

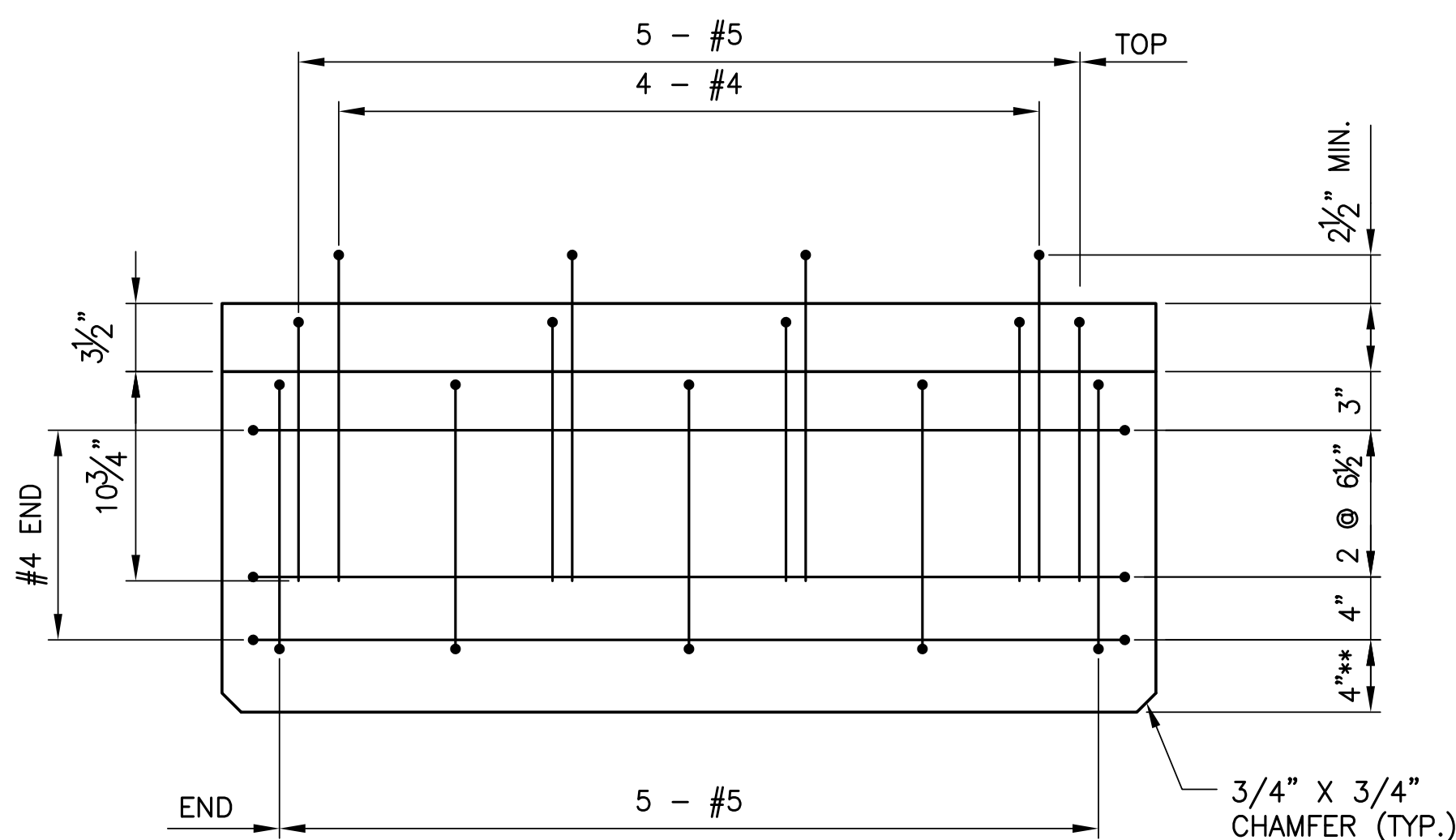
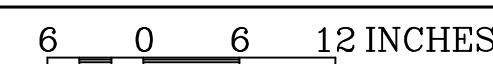


NOTES:

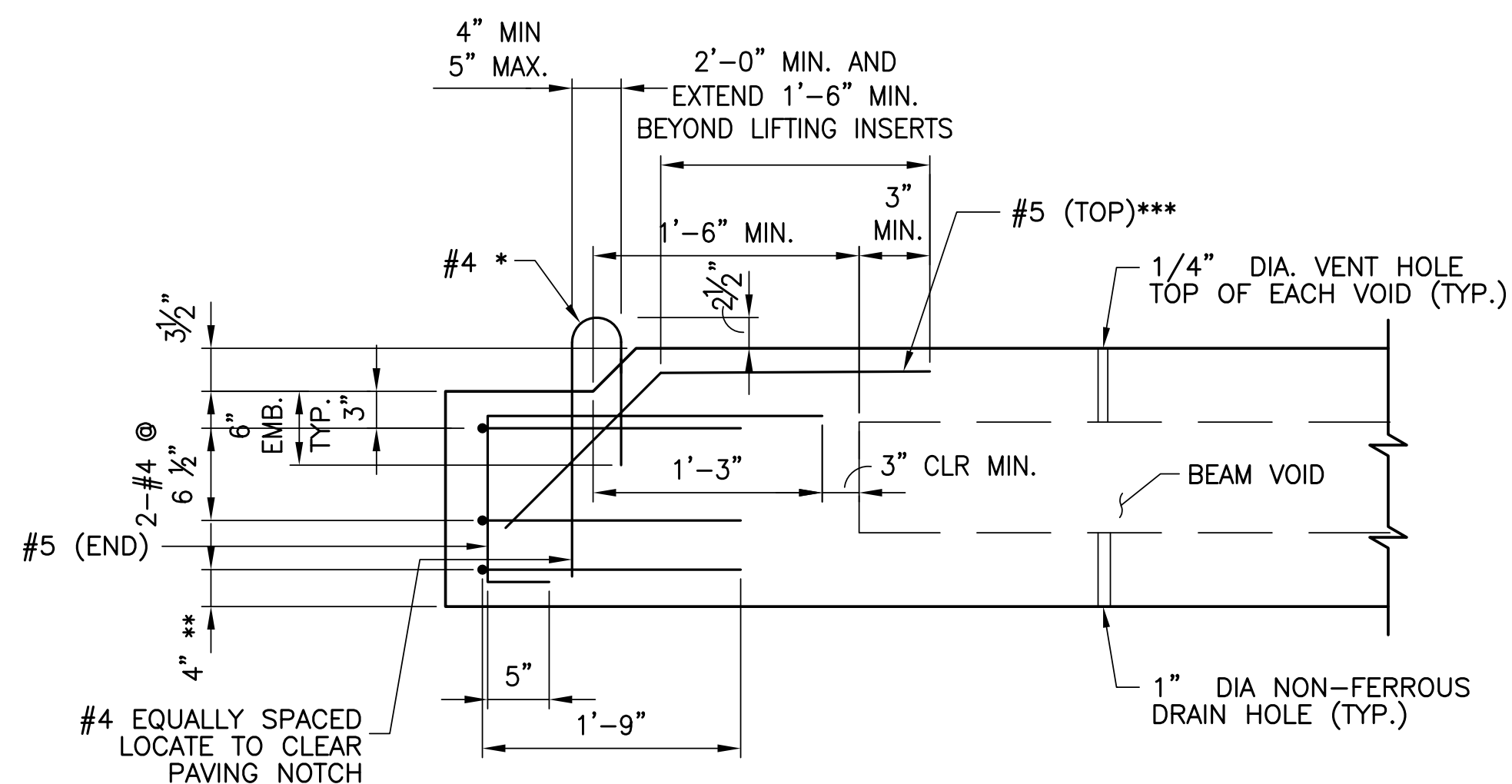
- DO NOT PLACE MORE THAN ONE COLUMN OF PRESTRESSING STRANDS IN THE WEBS.
- DO NOT PLACE PRESTRESSING STRANDS AT CORNER LOCATION IN BOTTOM ROW.



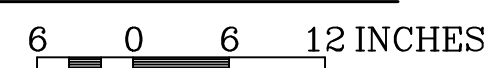
PLAN - BEAM END LONGITUDINAL REINF.



VIEW B - B



SECTION A-A



Mark	Description	By	Chk'd.	Recm'd	Date
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UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

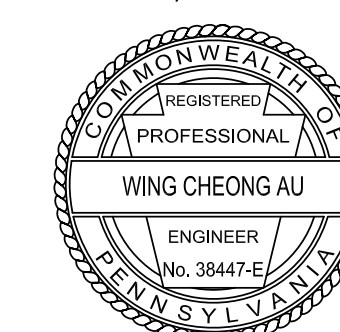
BEAM FABRICATION DETAILS 2

RECOMMENDED _____

SHEET 37 OF 59

BPA-462653

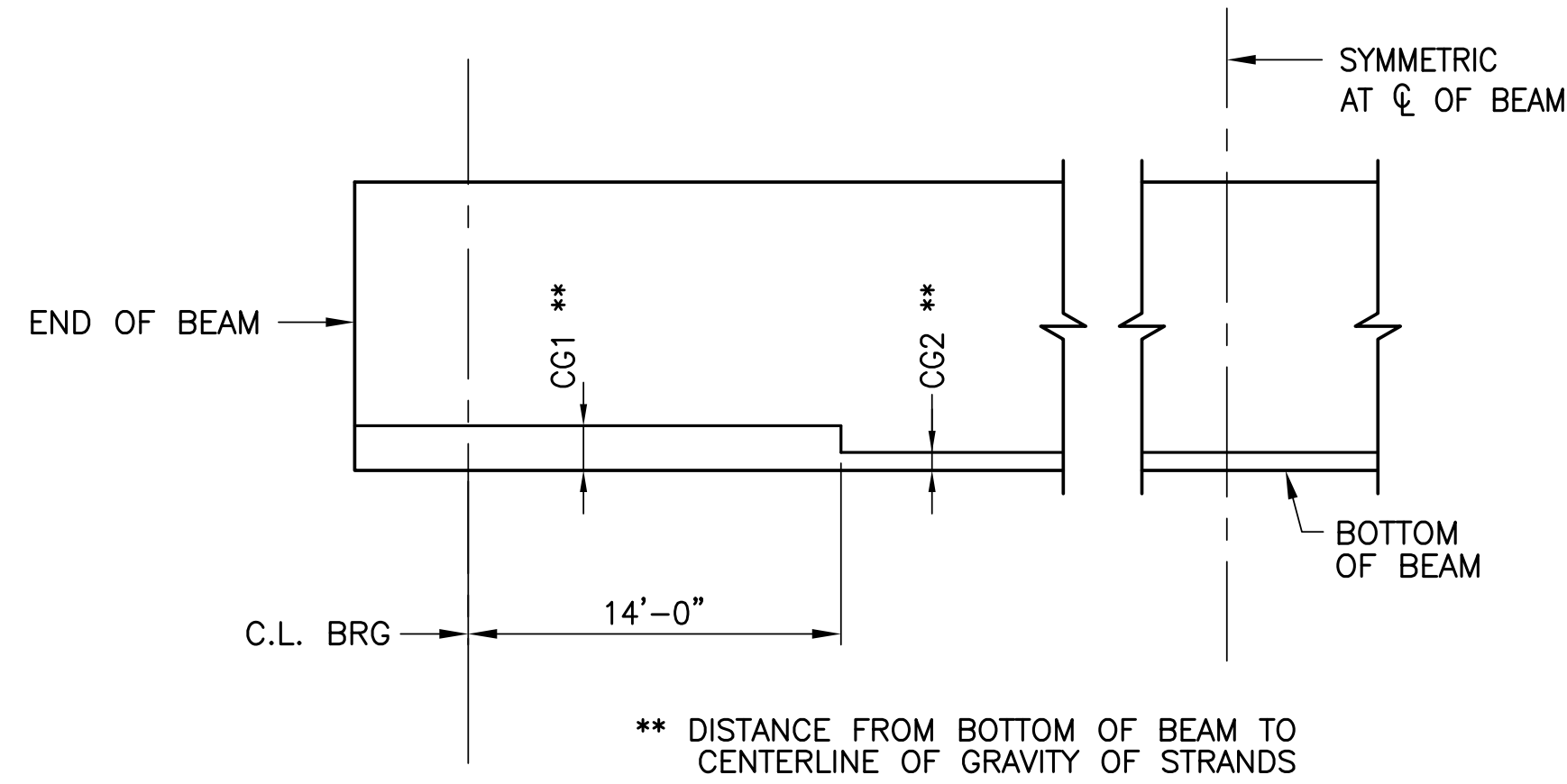
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CAMBER AND PRESTRESS TABLE					
BEAM NO.	TOTAL NO. OF STRANDS	JACKING PRESTRESS FORCE	A	B	C
1	40	1757.70 K	2.957"	1.600"	1.356"
2	40	1757.70 K	2.957"	1.584"	1.373"
3	40	1757.70 K	2.957"	1.377"	1.579"
4	40	1757.70 K	2.957"	1.662"	1.295"
5	40	1757.70 K	2.957"	1.721"	1.235"

	CG	NO. STRANDS BONDED
CG1	5.000"	34
CG2	4.700"	40

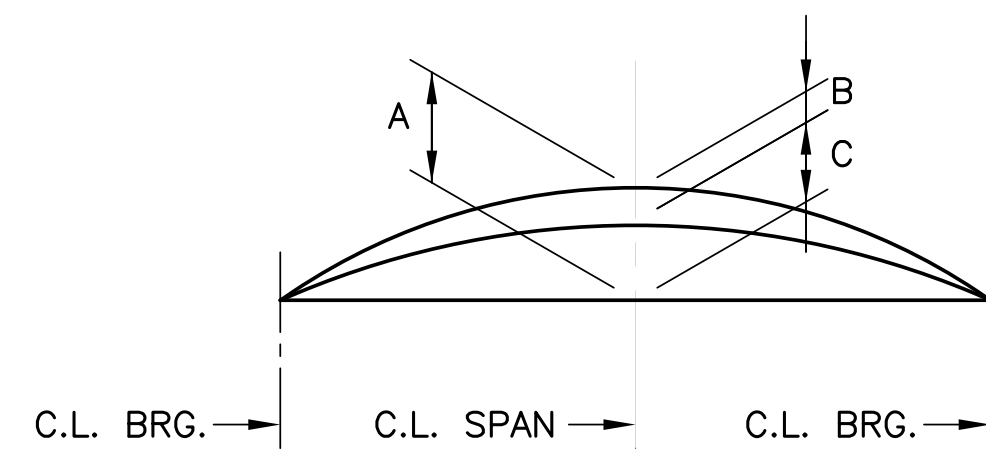
NOTE: NUMBER OF DEBONDED STRANDS DOES NOT INCLUDE CRACK CONTROL DEBONDING



DEBONDING DETAIL

NOT TO SCALE

(NOTE: DIAGRAM SHOWN ALONG C.L. BEAM)



BEAM CAMBER DIAGRAM

A= ESTIMATED PRESTRESS CAMBER LESS DEFLECTION DUE TO DEAD LOAD OF BEAM TIMES CREEP FACTOR (CHECK IN FIELD).

B= DEFLECTION DUE TO ALL DEAD LOAD EXCEPT BEAM WEIGHT AND FUTURE WEARING SURFACE.

C= A-B = NET FINAL CAMBER
THE THICKNESS OF THE CONCRETE HAUNCH SHALL BE VARIED TO ACHIEVE THE REQUIRED VERTICAL GEOMETRY AND CROSS SLOPE AND TO COMPENSATE FOR ANY INACCURACIES IN BEAM CAMBER.

A, B AND C ARE THEORETICAL VALUES AND MAY VARY WITH ACTUAL CONCRETE STRENGTH (AGE), VARIOUS PRESTRESSING CONDITIONS, CREEP FACTOR AND PRESTRESS LOSSES.

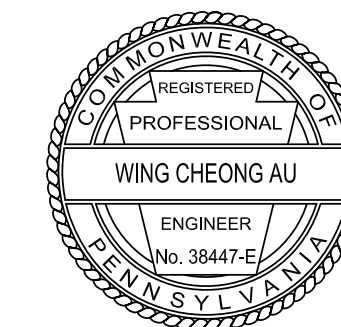
USE A CREEP FACTOR EQUAL TO 1.60 AND P/S LOSS EQUAL TO 10%.

PRESTRESSING DATA

CONCRETE STRENGTH AT STRAND RELEASE 6800 psi
CONCRETE STRENGTH AT 28 DAYS (F'C) 8000 psi
JACKING PRESTRESS STRESS 202500 psi
270 ksi LOW RELAXATION STRANDS,
5/8" DIA., 0.217 in² STRAND AREA

6800 psi
8000 psi
202500 psi

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PHILA., PA 19103



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

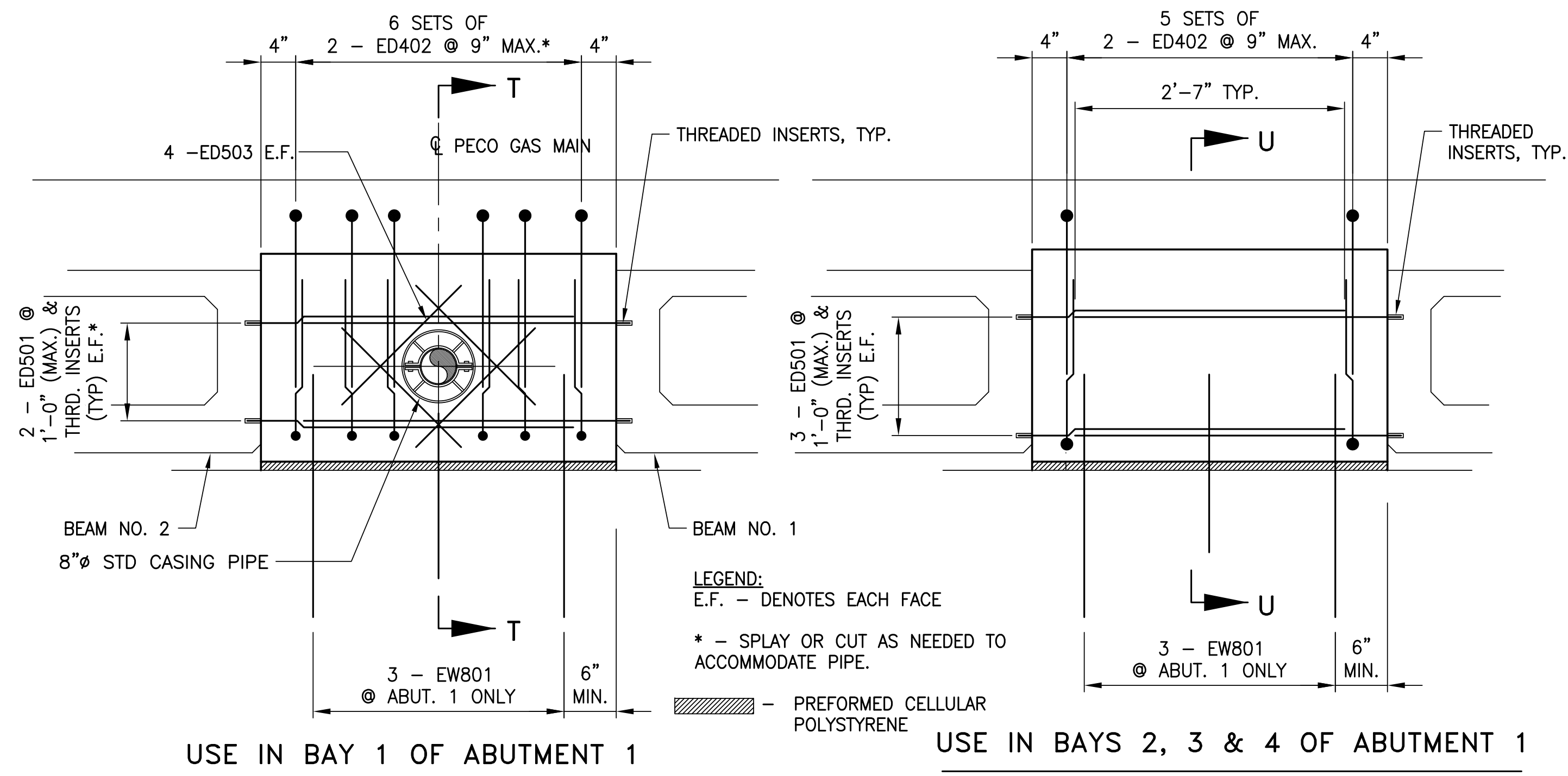
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

STRAND TABLES

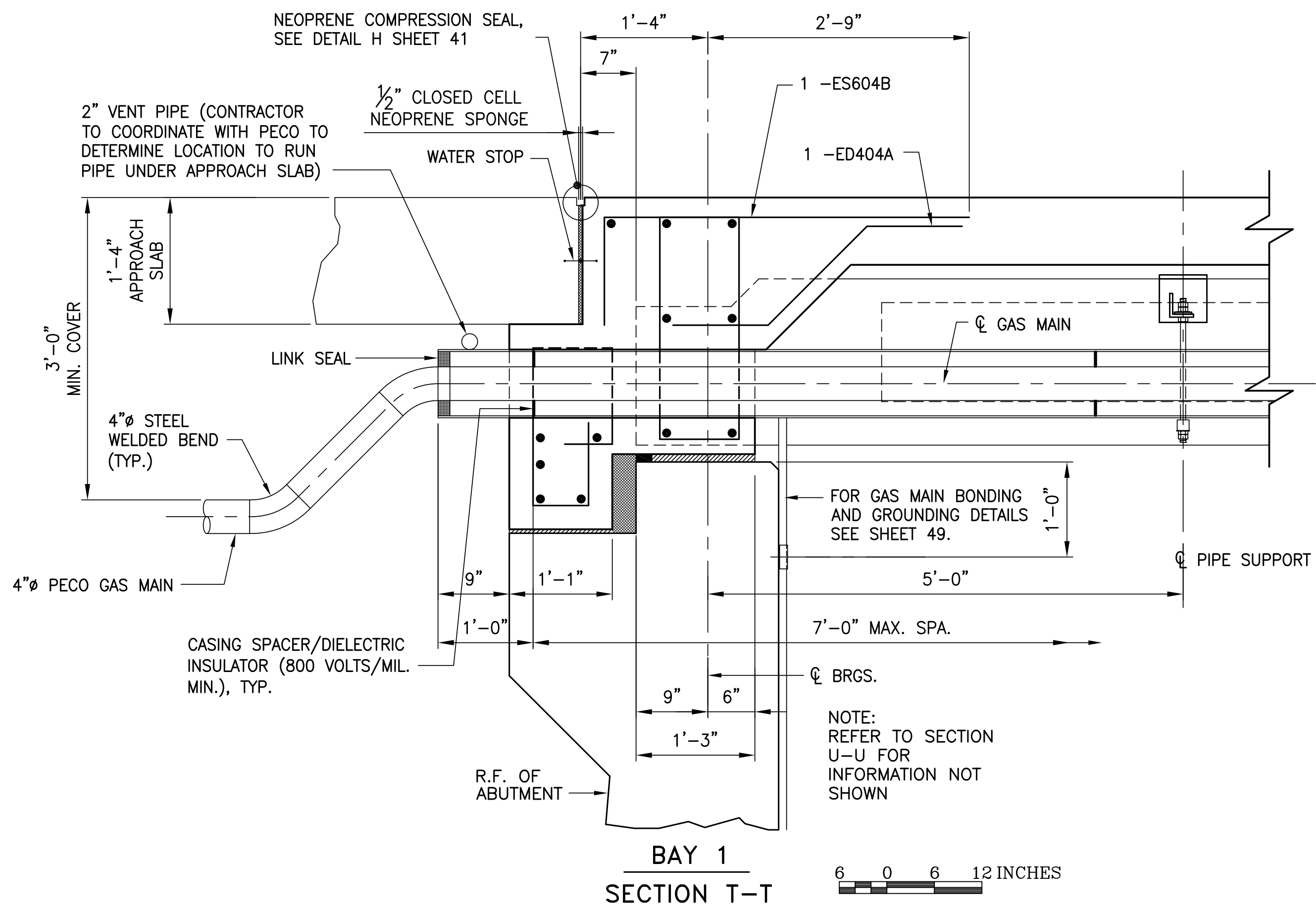
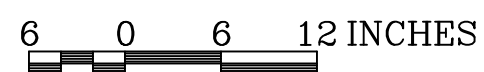
RECOMMENDED _____

SHEET 38 OF 59

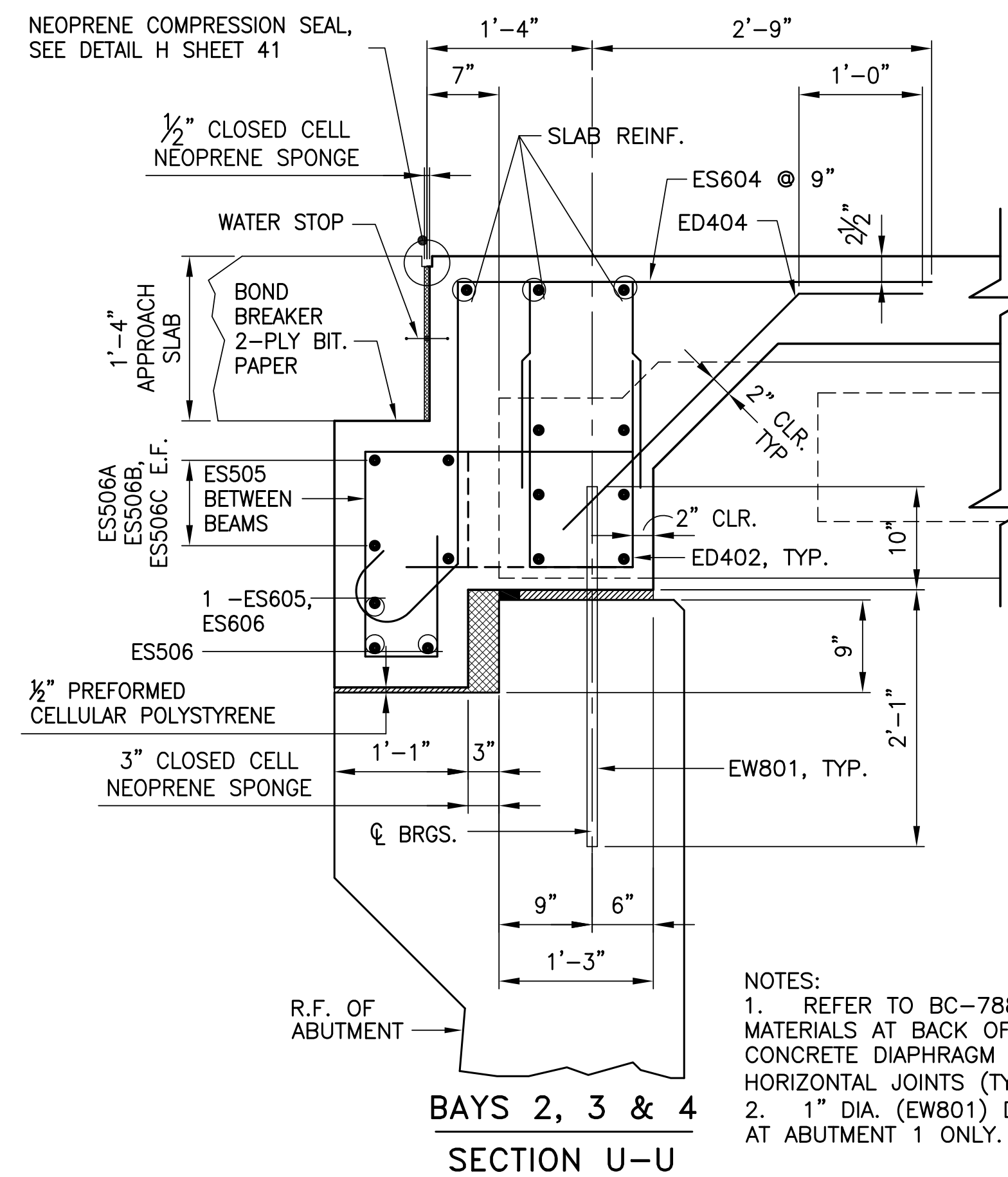
BPAA-462653



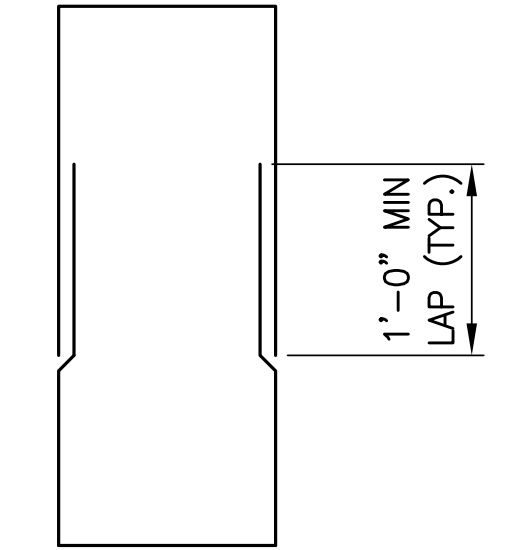
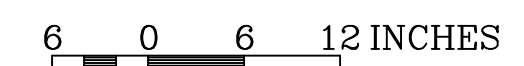
FULL DEPTH END DIAPHRAGM @ FIXED END ABUTMENT 1



BAY 1 SECTION T-T



SECTION THRU FULL DEPTH END DIAPHRAGM @ FIXED END ABUTMENT 1 EXP. END ABUTMENT 2 (BAYS 2 & 3)



NOTE: LAP TYPICAL FOR ALL DIAPHRAGMS (END AND INTERMEDIATE)

TYPICAL DIAPHRAGM BAR

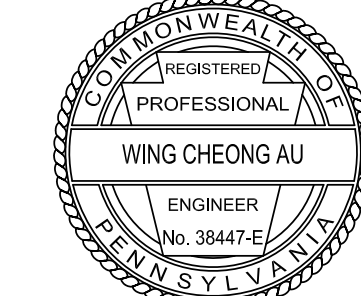
NOT TO SCALE

NOTE: 1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
DIAPHRAGM DETAILS 1

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103

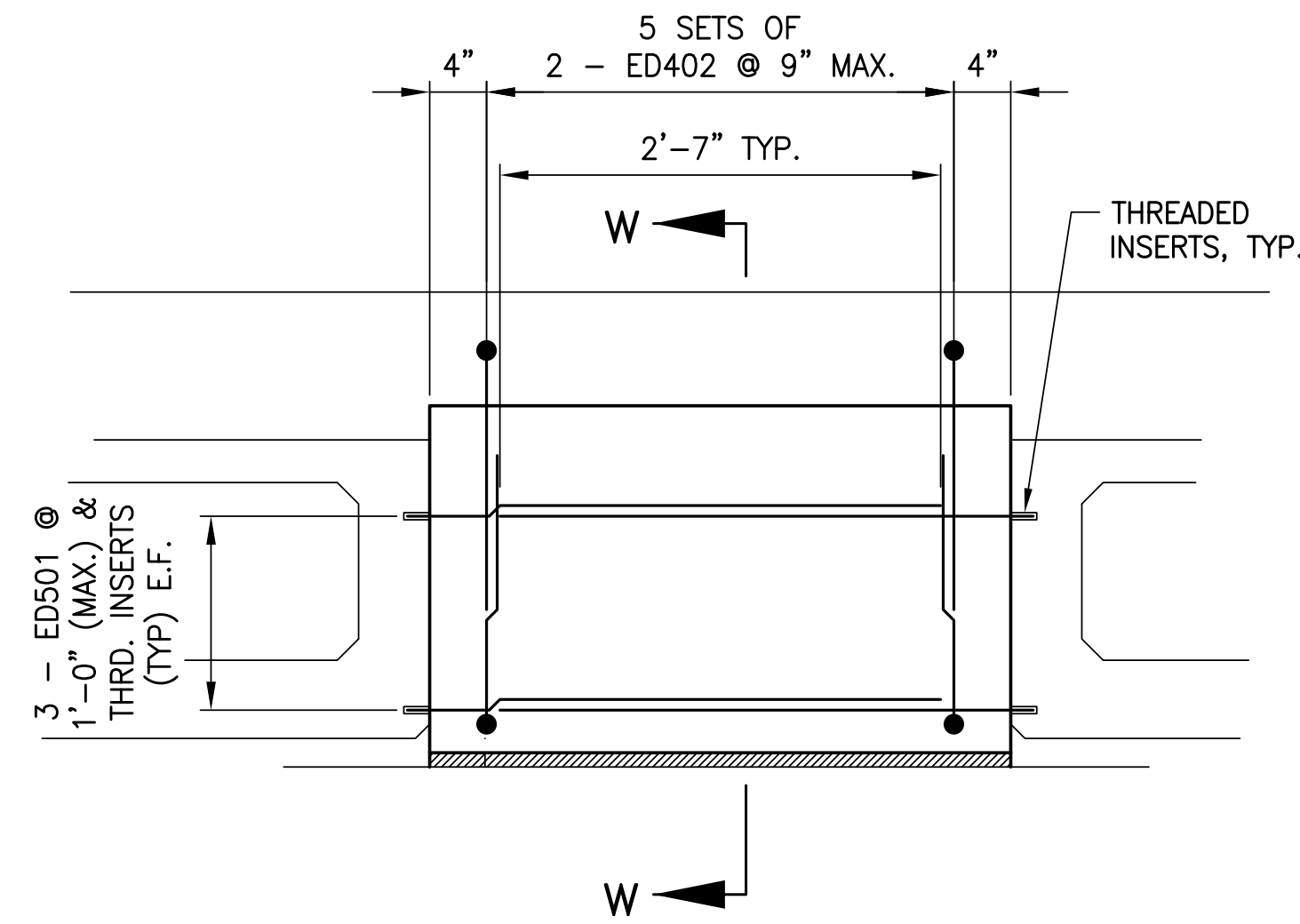


RECOMMENDED _____

SHEET 39 OF 59

BPAA-462653

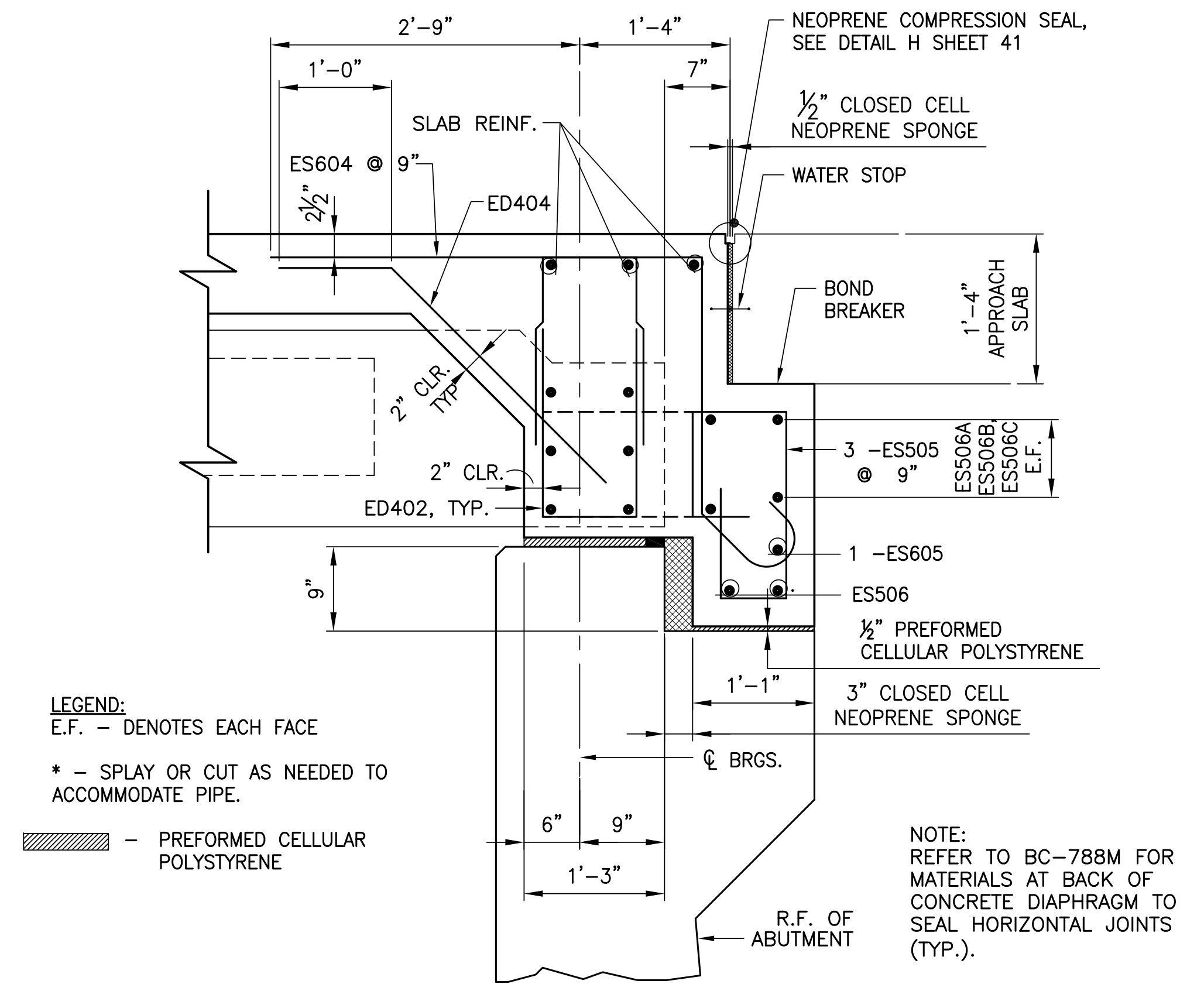
File: S-39-Revise.dwg Layout: 39 Plotted: 3/27/19 at 12:55pm By: evjacinto



USE IN BAYS 2 AND 3 OF ABUTMENT 2

FULL DEPTH END DIAPHRAGM @ EXPANSION
END WITHOUT SHEAR BLOCK ABUTMENT 2

6 0 6 12 INCHES



LEGEND:
E.F. - DENOTES EACH FACE
* - SPLAY OR CUT AS NEEDED TO ACCOMMODATE PIPE.
- PREFORMED CELLULAR POLYSTYRENE

NOTE:
REFER TO BC-788M FOR MATERIALS AT BACK OF CONCRETE DIAPHRAGM TO SEAL HORIZONTAL JOINTS (TYP.).

BAY 2

SECTION W-W

SECTION THRU FULL DEPTH END DIAPHRAGM @
EXPANSION END WITHOUT SHEAR BLOCK ABUTMENT 2

6 0 6 12 INCHES

NOTE:
1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

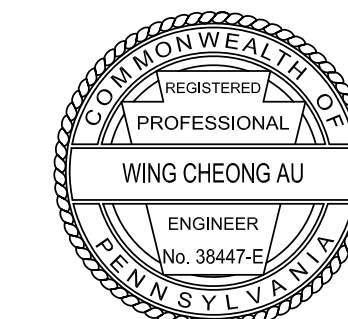
DIAPHRAGM DETAILS 2

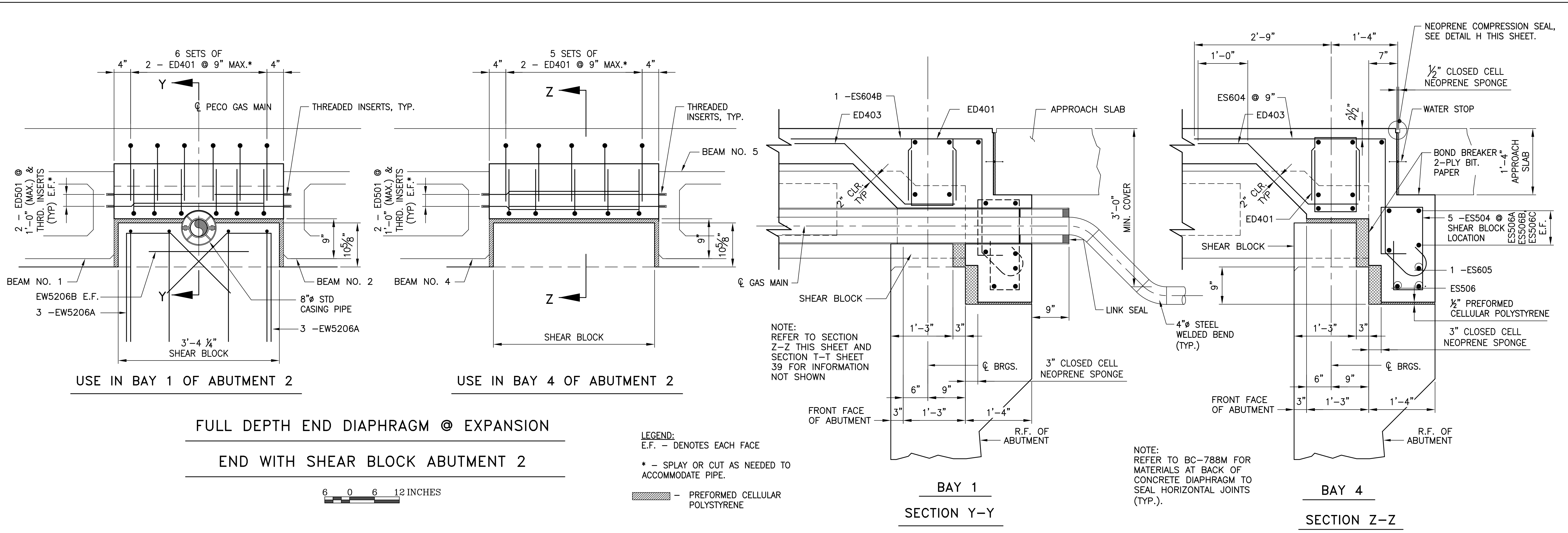
RECOMMENDED _____

SHEET 40 OF 59

BPA-462653

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2400 CHESTNUT STREET
PHILA., PA 19103

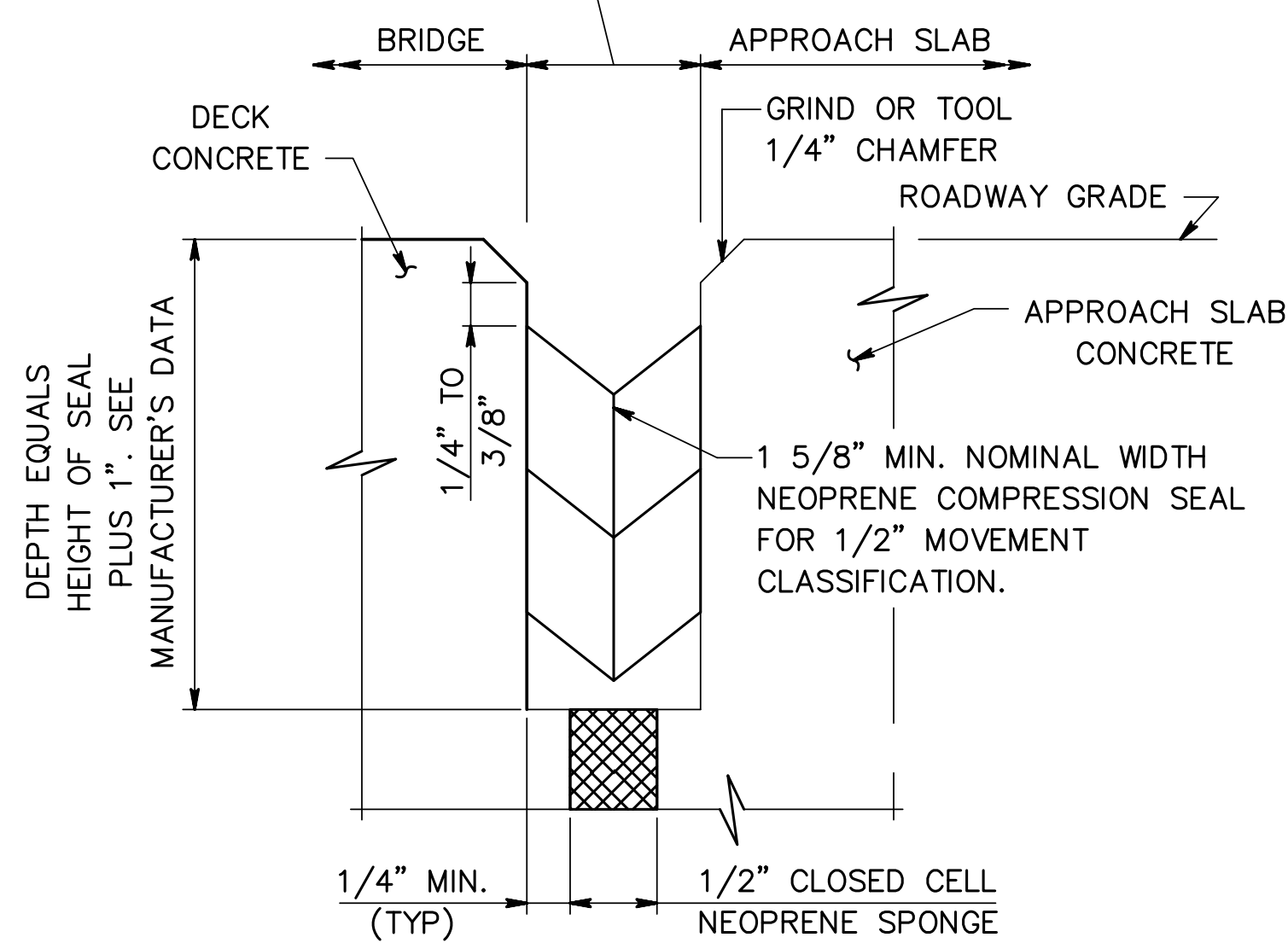




JOINT OPENING FOR JOINT SEAL, SEE JOINT PREPARATION NOTES ON THIS SHEET. WIDTH OF OPENING SHOULD BE ADJUSTED TO ACCOUNT FOR THE CONCRETE SURFACE TEMPERATURE AT THE TIME OF SAWING. SEE MANUFACTURER'S DATA.

JOINT PREPARATION NOTES:

1. THE JOINT OPENING IS TO BE FORMED BY A TWO-STAGE SAWING OPERATION WHERE ACCESSIBLE. WHERE ACCESSIBILITY IS LIMITED, THE JOINT OPENING SHALL BE FORMED. THE FIRST SAW CUT IS DESIGNED TO CONTROL CRACKING. THE SECOND SAW CUT IS MADE USING A DOUBLE-BLADED WATER-COOLED SAW CAPABLE OF HOLDING A TOLERANCE OF $\pm 1/16"$ TO CREATE THE PROPER OPENING FOR THE PREFORMED NEOPRENE COMPRESSION SEAL OR INVERTED V JOINT SEAL.
2. WATER BLAST OPENING IMMEDIATELY FOLLOWING SAW CUTTING OPERATION TO REMOVE ANY RESIDUAL SLURRY BEFORE IT DRIES.
3. THE DEPTH OF THE JOINT OPENING EQUALS THE HEIGHT OF THE SEAL PLUS 1". THE WIDTH OF THE SECOND SAW CUT SHOULD BE ADJUSTED TO ACCOUNT FOR THE CONCRETE SURFACE TEMPERATURE AT THE TIME OF SAWING, SEE MANUFACTURER'S PRODUCT INFORMATION.
4. BEFORE INSTALLING THE SEAL, ABRASIVE BLAST THE BONDING SURFACES TO THOROUGHLY CLEAN THE JOINT OPENING AND REMOVE FOREIGN MATERIAL, INCLUDING BROKEN CONCRETE. USE WATER AND OIL FREE COMPRESSED AIR TO BLOW OUT RESIDUE FROM THE SEAL GROOVE OPENING.
5. PREPARE BONDING SURFACES AND INSTALL JOINT SEAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. DO NOT EXCEED 3% ELONGATION OF THE SEAL, IF STRETCHING OCCURS.



DETAIL H
(NEOPRENE COMPRESSION SEAL)

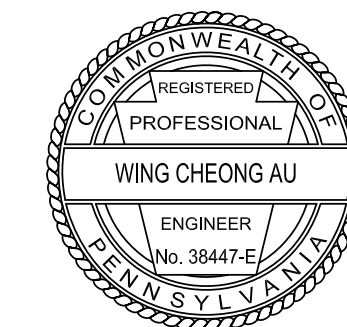
SECTION THRU FULL DEPTH END DIAPHRAGM @ EXPANSION END WITH SHEAR BLOCK ABUTMENT 2



NOTE:
1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.

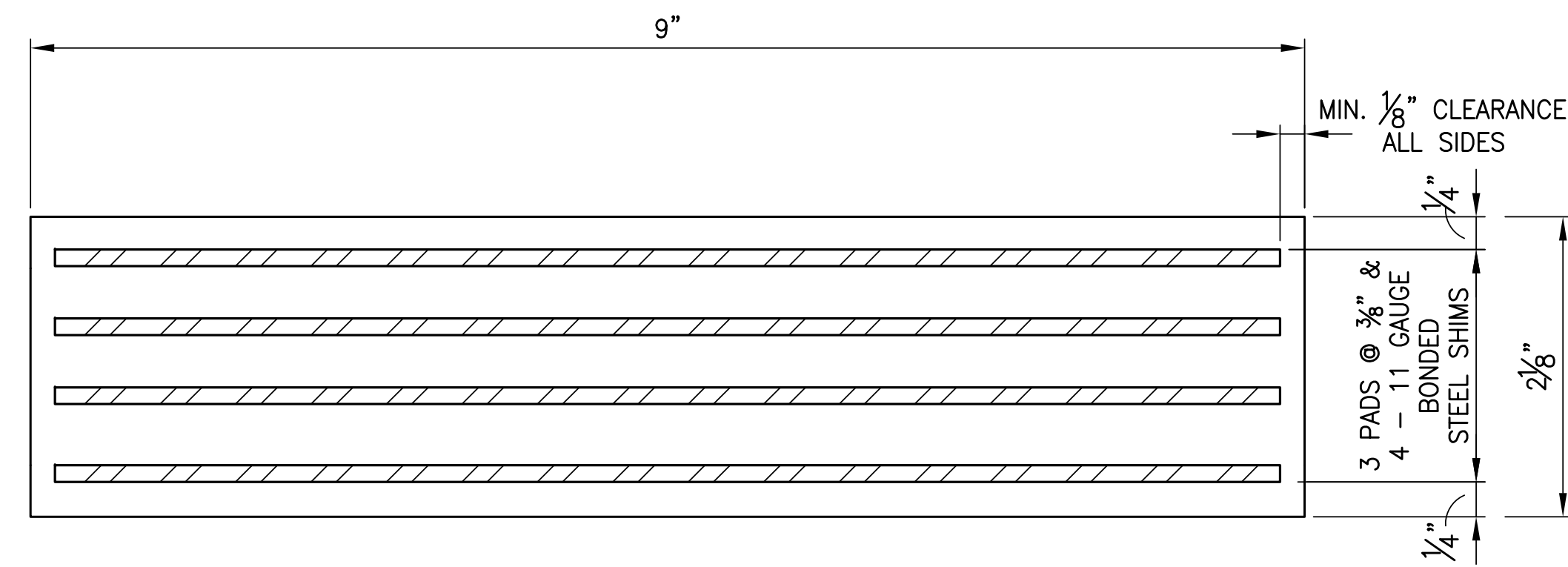
Mark	Description	By	Chk'd.	Recm'd	Date
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PHILA., PA 19103

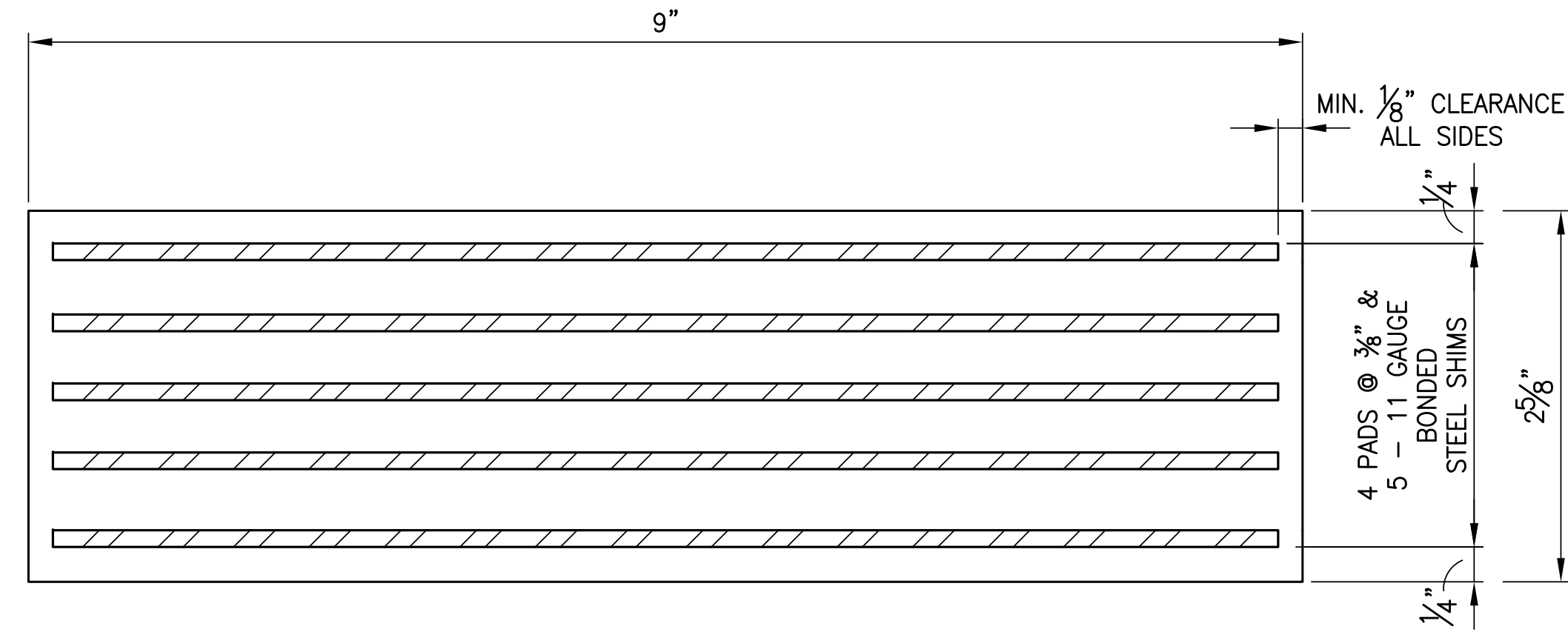


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
DIAPHRAGM DETAILS 3

RECOMMENDED _____ SHEET 41 OF 59
BPAA-462653



ELASTOMERIC BEARING PAD SECTION
ABUTMENT 1
 NOT TO SCALE



ELASTOMERIC BEARING PAD SECTION
ABUTMENT 2
 NOT TO SCALE

ELASTOMERIC BEARING PADS				
LOCATION	BEARING TYPE	ITEM DESCRIPTION	SIZE (T x L x W)	NUMBER REQUIRED
ABUT. 1	FIXED	LAMINATED PADS	2 1/8 " x 9" x 1'-0"	10
ABUT. 2	EXPANSION	LAMINATED PADS	2 5/8 " x 9" x 1'-0"	10

NOTES:

- * SMOOTH CUT AND DEBURR METAL SHIMS.
- * GRIT BLAST AND DEGREASE METAL SHIMS.
- * MANUFACTURE ALL BEARINGS IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PLANS AND SPECIFICATIONS (PUB. 408) SECTION 1113.02 AND DESIGN MANUAL - PART 4.
- * ALL BEARING PADS ARE TO BE MOLDED TO DESIGN DIMENSIONS. CUTTING TO SIZE AFTER FABRICATION IS PROHIBITED.
- * PROVIDE NEOPRENE 50 +/-5 DUROMETER.
- * PROVIDE MINIMUM LOW-TEMPERATURE NEOPRENE GRADE 3.
- * PROVIDE INTERNAL SHIMS AS PER ASTM A36/ A36M GRADE 36.
- * VULCANIZE PATCH PIN GROOVES.
- * BEARING PADS WILL BE SAMPLED FOR TESTING ACCORDING TO PTM #312.
- * FABRICATOR MAY USE CONTRACT DRAWINGS TO FABRICATE BEARING PADS.

DESIGN CRITERIA:

- * EXPANSION LENGTH = 57'-0"
- * TEMPERATURE RANGE FOR BEARING DESIGN = 80 F degrees
- * TEMPERATURE RANGE FOR SUBSTRUCTURE DESIGN = 58 F degrees
- * LL ROTATION ABOUT TRANSVERSE AXIS OF PAD = 0.00364 RADIANS
- * LL ROTATION ABOUT LONGITUDINAL AXIS OF PAD = 0.00041 RADIANS
- * CONSTRUCTION TOLERANCE ABOUT TRANSVERSE AXIS OF PAD = 0.00300 RADIANS
- * CONSTRUCTION TOLERANCE ABOUT LONGITUDINAL AXIS OF PAD = 0.00000 RADIANS
- * DL1 ROTATION MOVEMENT = 0.209"
- * DL2 ROTATION MOVEMENT = 0.056"
- * LL ROTATION MOVEMENT = 0.120"
- * MAXIMUM DL REACTION = 69 kip
- * MINIMUM DL REACTION = 46 kip
- * MAXIMUM LL REACTION (W/O IMPACT) = 62 kip
- * MINIMUM LL REACTION (W/O IMPACT) = 31 kip

INFORMATION ONLY:

- * DL1 ROTATION = 0.01137 RADIANS
- * DL2 ROTATION = 0.00169 RADIANS

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

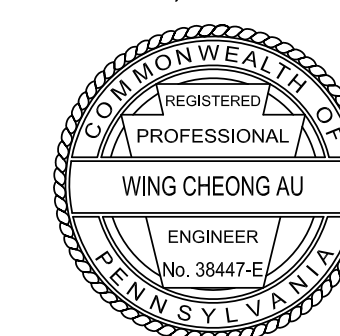
ELASTOMERIC BEARING DETAILS

RECOMMENDED _____

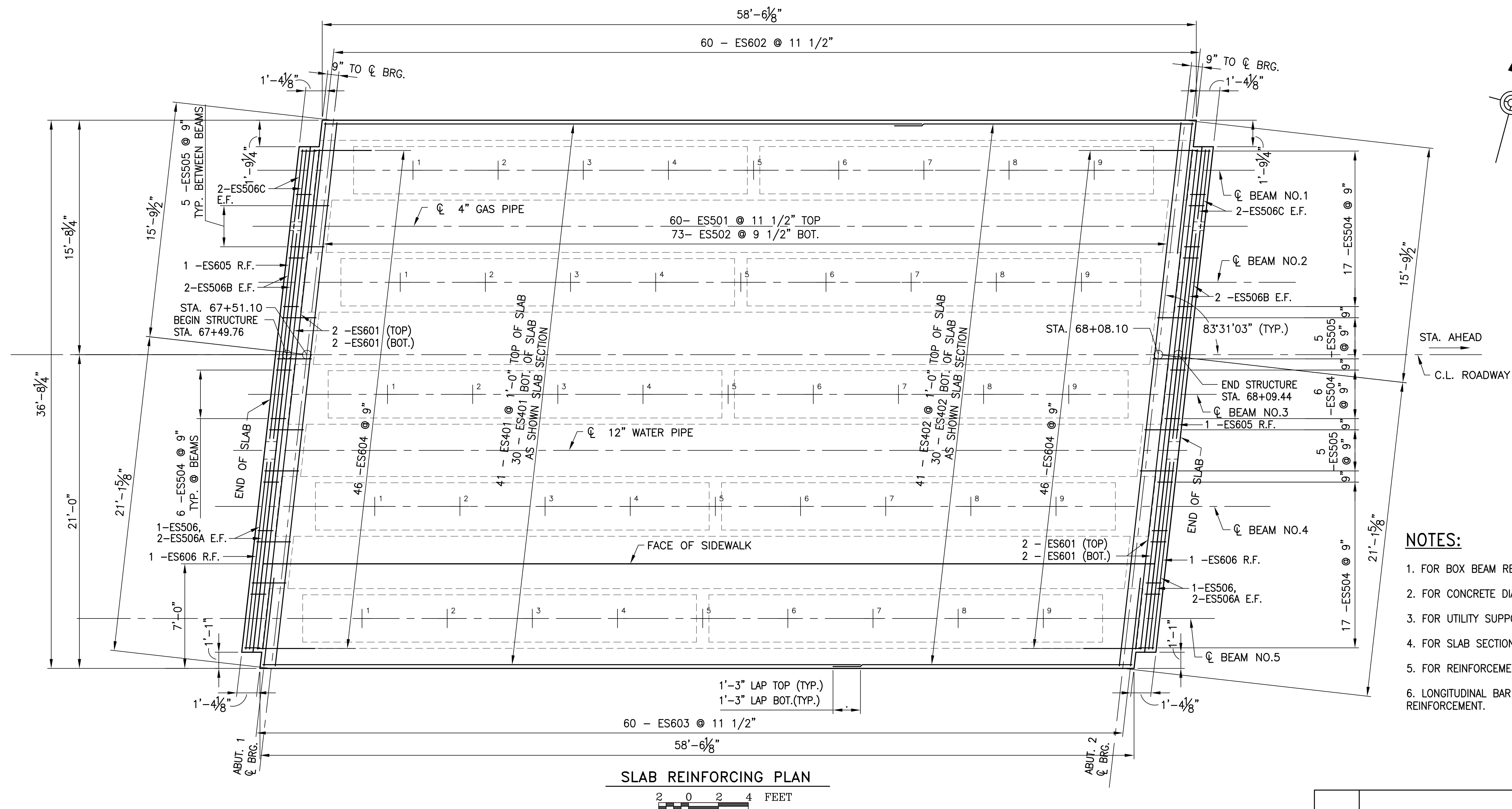
SHEET 42 OF 59

BPAA-462653

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 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103



File: S-43-Revised.dwg Layout: 43 Plotted: 3/27/19 at 1:04pm By: evjacio



- NOTES:**
1. FOR BOX BEAM REINFORCEMENT AND DETAILS SEE SHEET 35.
 2. FOR CONCRETE DIAPHRAGM DETAILS SEE SHEETS 39, 40 AND 41.
 3. FOR UTILITY SUPPORT DETAILS SEE SHEET 39 AND 40.
 4. FOR SLAB SECTION SEE SHEET 44.
 5. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.
 6. LONGITUDINAL BAR SPACING IS MEASURED PERPENDICULAR TO THE REINFORCEMENT.

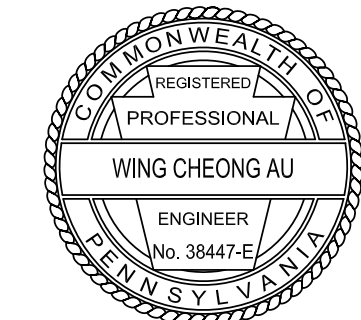
TOP OF DECK ELEVATIONS ALONG ϵ BEAMS																			
BEAM NUMBER 1				BEAM NUMBER 2				BEAM NUMBER 3				BEAM NUMBER 4				BEAM NUMBER 5			
POINT	STATION	OFFSET	ELEVATION	POINT	STATION	OFFSET	ELEVATION	POINT	STATION	OFFSET	ELEVATION	POINT	STATION	OFFSET	ELEVATION	POINT	STATION	OFFSET	ELEVATION
L	67+52.48	-12.344	158.25	L	67+51.64	-4.844	158.39	L	67+50.80	2.656	158.46	L	67+49.96	10.156	158.42	L	67+49.12	17.643	158.48
1	67+58.18	-12.344	158.35	1	67+57.34	-4.844	158.49	1	67+56.50	2.656	158.57	1	67+55.66	10.156	158.55	1	67+54.82	17.643	158.62
2	67+63.88	-12.344	158.44	2	67+63.04	-4.844	158.57	2	67+62.20	2.656	158.67	2	67+61.36	10.156	158.67	2	67+60.52	17.643	158.75
3	67+69.58	-12.344	158.52	3	67+68.74	-4.844	158.66	3	67+67.90	2.656	158.76	3	67+67.06	10.156	158.78	3	67+66.22	17.643	158.87
4	67+75.28	-12.344	158.59	4	67+74.44	-4.844	158.73	4	67+73.60	2.656	158.84	4	67+72.76	10.156	158.89	4	67+71.92	17.643	158.99
5	67+80.98	-12.344	158.66	5	67+80.14	-4.844	158.80	5	67+79.30	2.656	158.91	5	67+78.46	10.156	158.98	5	67+77.62	17.643	159.09
6	67+86.68	-12.344	158.71	6	67+85.84	-4.844	158.86	6	67+85.00	2.656	158.98	6	67+84.16	10.156	159.07	6	67+83.32	17.643	159.20
7	67+92.38	-12.344	158.76	7	67+91.54	-4.844	158.91	7	67+90.70	2.656	159.04	7	67+89.86	10.156	159.15	7	67+89.02	17.643	159.29
8	67+98.08	-12.344	158.80	8	67+97.24	-4.844	158.95	8	67+96.40	2.656	159.09	8	67+95.56	10.156	159.23	8	67+94.72	17.643	159.38
9	68+03.78	-12.344	158.81	9	68+02.94	-4.844	158.98	9	68+02.10	2.656	159.14	9	68+01.26	10.156	159.30	9	68+00.42	17.643	159.46
R	68+09.48	-12.344	158.80	R	68+08.64	-4.844	158.99	R	68+07.80	2.656	159.18	R	68+06.96	10.156	159.36	R	68+06.12	17.643	159.53

NOTE: L = ϵ BEARING ABUTMENT 1,
R = ϵ BEARING ABUTMENT 2

DES: WA DWG: RJ CKD: WA

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

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BOLES, SMYTH ASSOCIATES, INC.
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

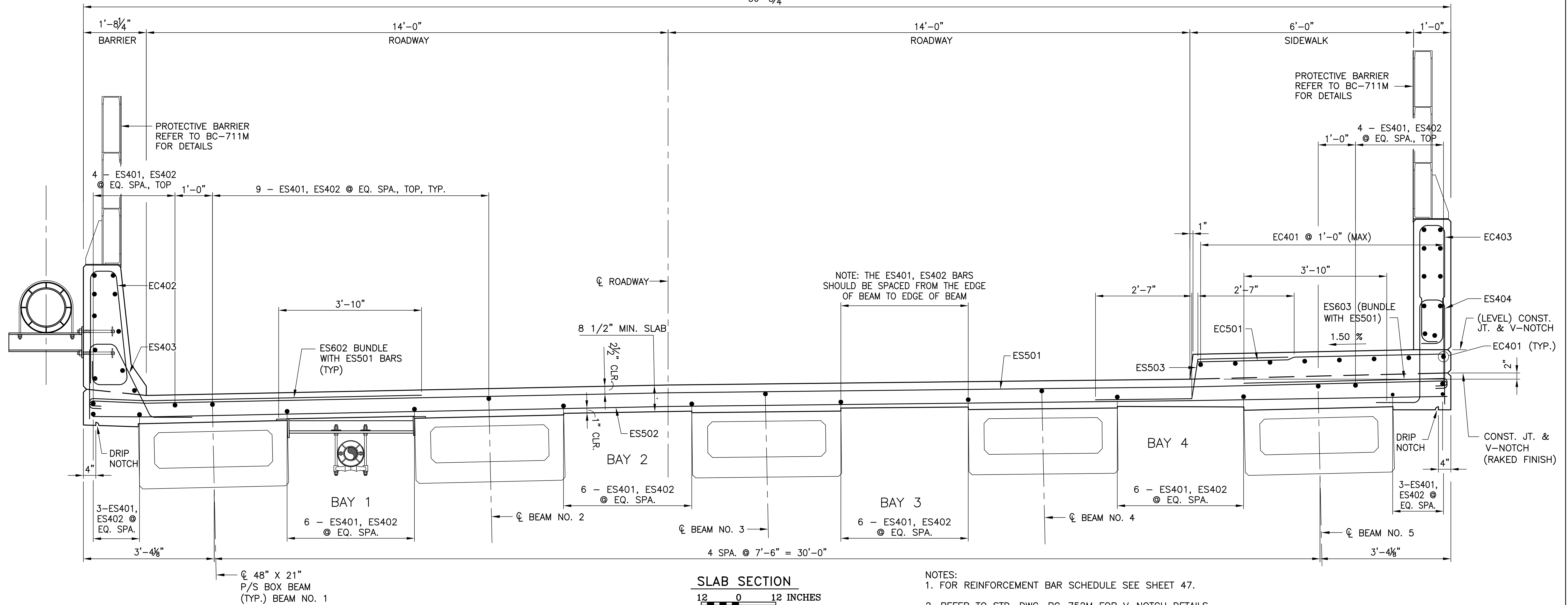
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

SLAB REINFORCING PLAN

RECOMMENDED _____ SHEET 43 OF 59

BPAA-462653

36'-8 1/4"



SLAB SECTION

12 0 12 INCHES

- NOTES:
- FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.
 - REFER TO STD. DWG. BC-752M FOR V-NOTCH DETAILS AND STD. DWG. BC-775M FOR DRIP NOTCH DETAILS.

TABLE OF TOP OF BEAM ELEVATIONS AT 10TH POINTS ALONG CENTERLINE OF BEAM

LOCATION	BEAM NUMBER				
	1	2	3	4	5
C.L. BRG. ABUT.1	157.50	157.62	157.67	157.64	157.62
5.700	157.59	157.72	157.78	157.77	157.75
11.400	157.68	157.81	157.89	157.89	157.89
17.100	157.76	157.90	157.99	158.01	158.02
22.800	157.83	157.97	158.08	158.12	158.14
28.500	157.89	158.04	158.16	158.22	158.25
34.200	157.94	158.09	158.22	158.31	158.35
39.900	157.97	158.14	158.28	158.38	158.44
45.600	158.00	158.17	158.32	158.45	158.52
51.300	158.03	158.20	158.35	158.52	158.59
C.L. BRG. ABUT.2	158.05	158.23	158.38	158.58	158.67

NOTE: THE TOP OF BEAM ELEVATIONS SHOWN IN THE TABLE ARE THE DESIGN VALUES COMPUTED INCLUDING THE EFFECT OF THE DESIGN BEAM CAMBER.

TABLE OF BOTTOM OF BEAM ELEVATIONS AT 10TH POINTS ALONG CENTERLINE OF BEAM

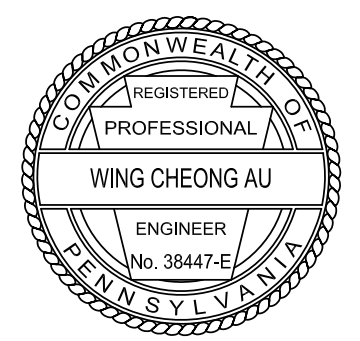
LOCATION	BEAM NUMBER				
	1	2	3	4	5
C.L. BRG. ABUT.1	155.75	155.87	155.92	155.89	155.87
5.700	155.84	155.97	156.03	156.02	156.01
11.400	155.93	156.06	156.14	156.14	156.14
17.100	156.01	156.15	156.24	156.26	156.27
22.800	156.08	156.22	156.33	156.37	156.39
28.500	156.14	156.29	156.41	156.47	156.50
34.200	156.19	156.34	156.47	156.56	156.60
39.900	156.22	156.39	156.53	156.63	156.69
45.600	156.25	156.42	156.57	156.70	156.77
51.300	156.28	156.45	156.60	156.77	156.85
C.L. BRG. ABUT.2	156.30	156.48	156.63	156.83	156.92

NOTE: THE BOTTOM OF BEAM ELEVATIONS SHOWN IN THE TABLE ARE THE DESIGN VALUES COMPUTED INCLUDING THE EFFECT OF THE DESIGN BEAM CAMBER AND IS BASED SOLELY ON THE NOMINAL BEAM DEPTH (DOES NOT INCLUDE ANY EFFECTS FROM DAPPING OR SOLE PLATES).

FOR PRESTRESSED CONCRETE BEAMS, AS PER DM-4, THESE VALUES SHOULD NOT BE USED FOR CALCULATING THE VERTICAL CLEARANCE TO THE BOTTOM OF THE BEAM. IN THAT CASE, A STRAIGHT LINE VARIATION BETWEEN THE BOTTOM OF THE BEAM ELEVATION AT EACH BEARING SHOULD BE USED.

Mark	Description	By	Chk'd.	Recm'd	Date
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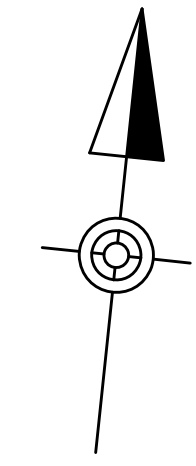
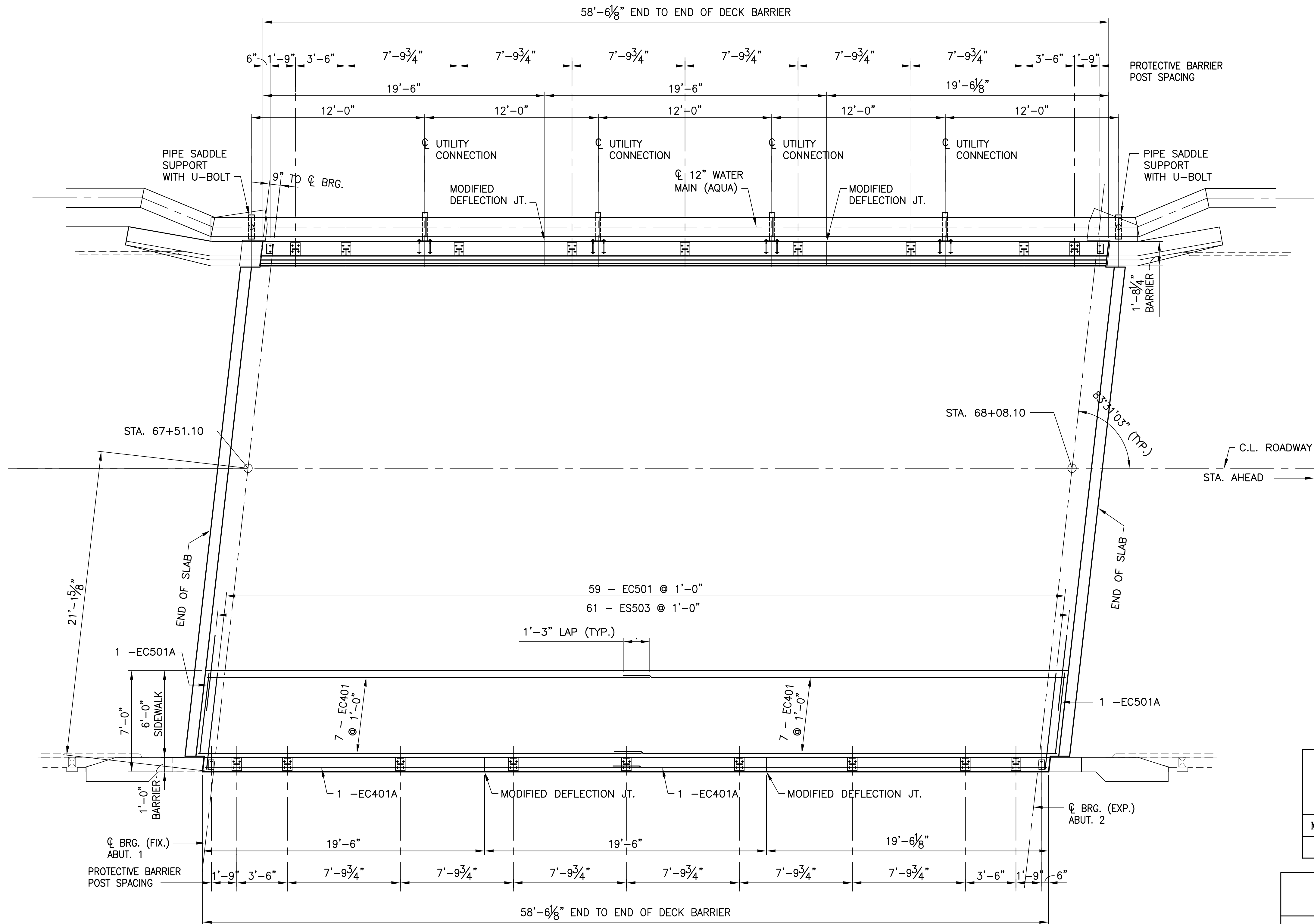


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
SLAB SECTION

RECOMMENDED _____ SHEET 44 OF 59
BPAA-462653

File: S-44-Revise.dwg Layout: 44 Plotted: 3/27/19 at 1:13pm By: evjccinto

File: S-45-Revised.dwg Layout: 45 Plotted: 3/27/19 at 1:16pm By: evjcinto

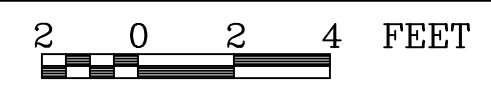


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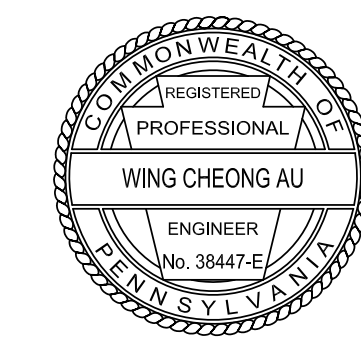
1. FOR CONCRETE DIAPHRAGM DETAILS SEE SHEETS 39, 40 AND 41.
2. FOR UTILITY SUPPORT DETAILS SEE SHEET 39.
3. FOR SLAB SECTION SEE SHEET 44.
4. FOR BARRIER AND SIDEWALK DETAILS SEE SHEET 46.
5. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.
6. REFER TO BC-711M FOR ALUMINUM PROTECTIVE BARRIER DETAILS.
7. REFER TO BC-752M FOR MODIFIED DEFLECTION JOINT DETAILS.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PLAN - BARRIER & SLAB DETAIL



PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



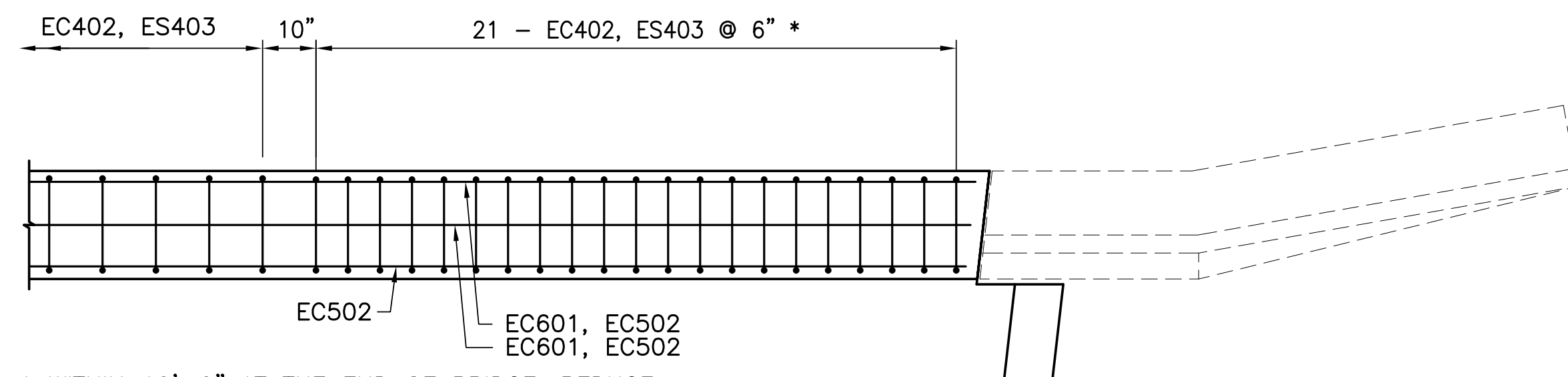
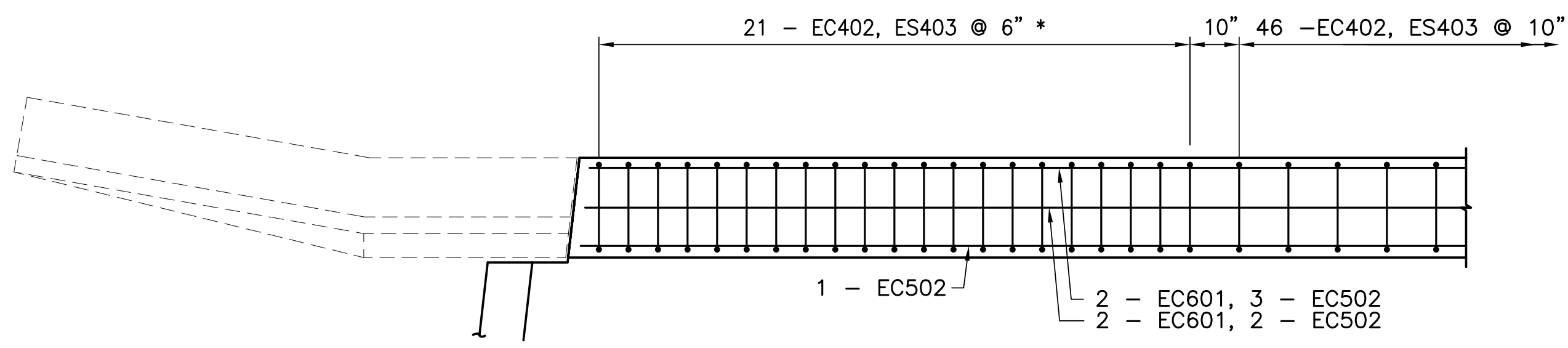
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

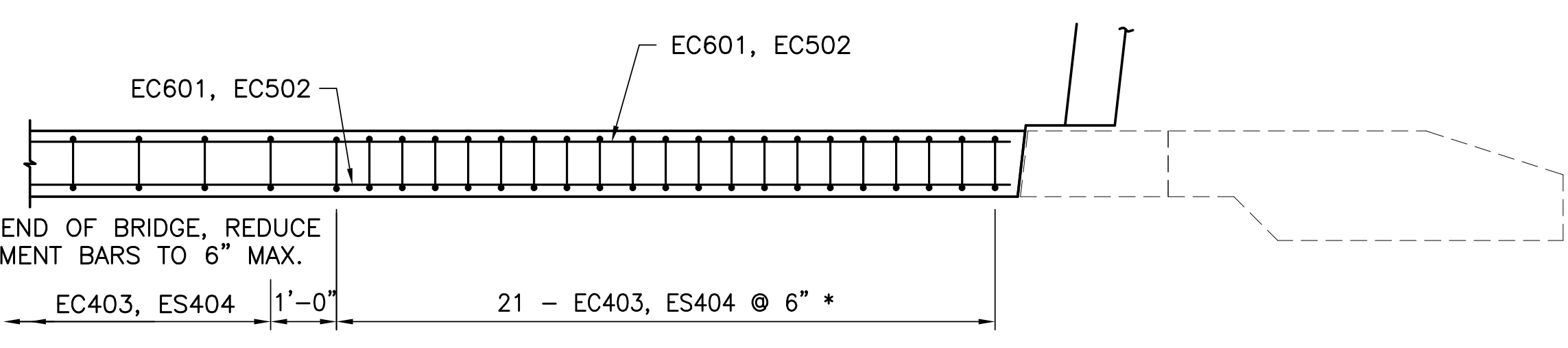
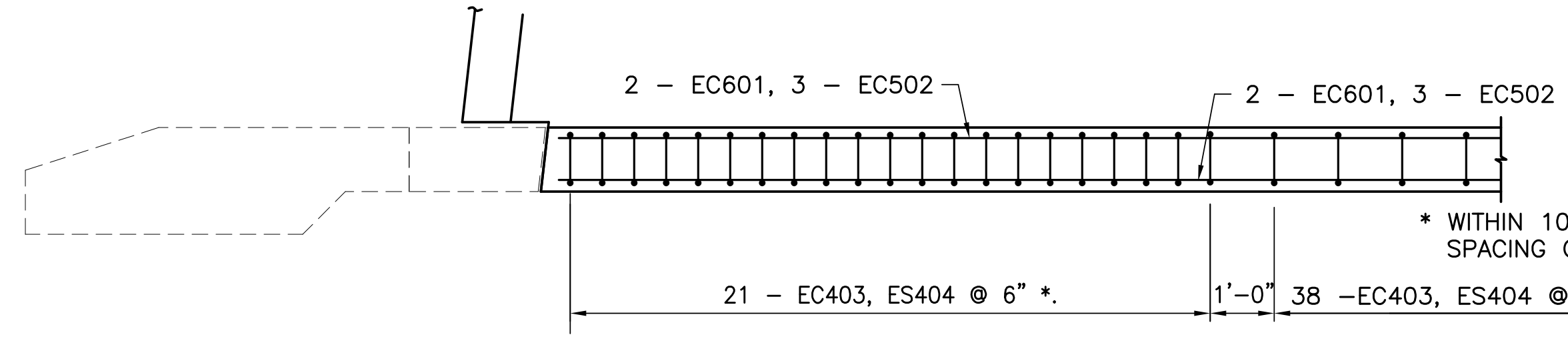
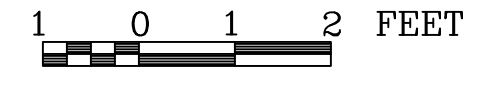
MISC. DECK AND BARRIER DETAILS

RECOMMENDED _____	SHEET 45 OF 59
BPAA-462653	

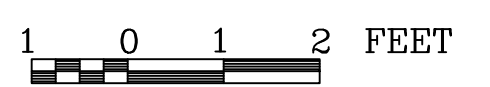


* WITHIN 10'-0" AT THE END OF BRIDGE, REDUCE SPACING OF REINFORCEMENT BARS TO 6" MAX.

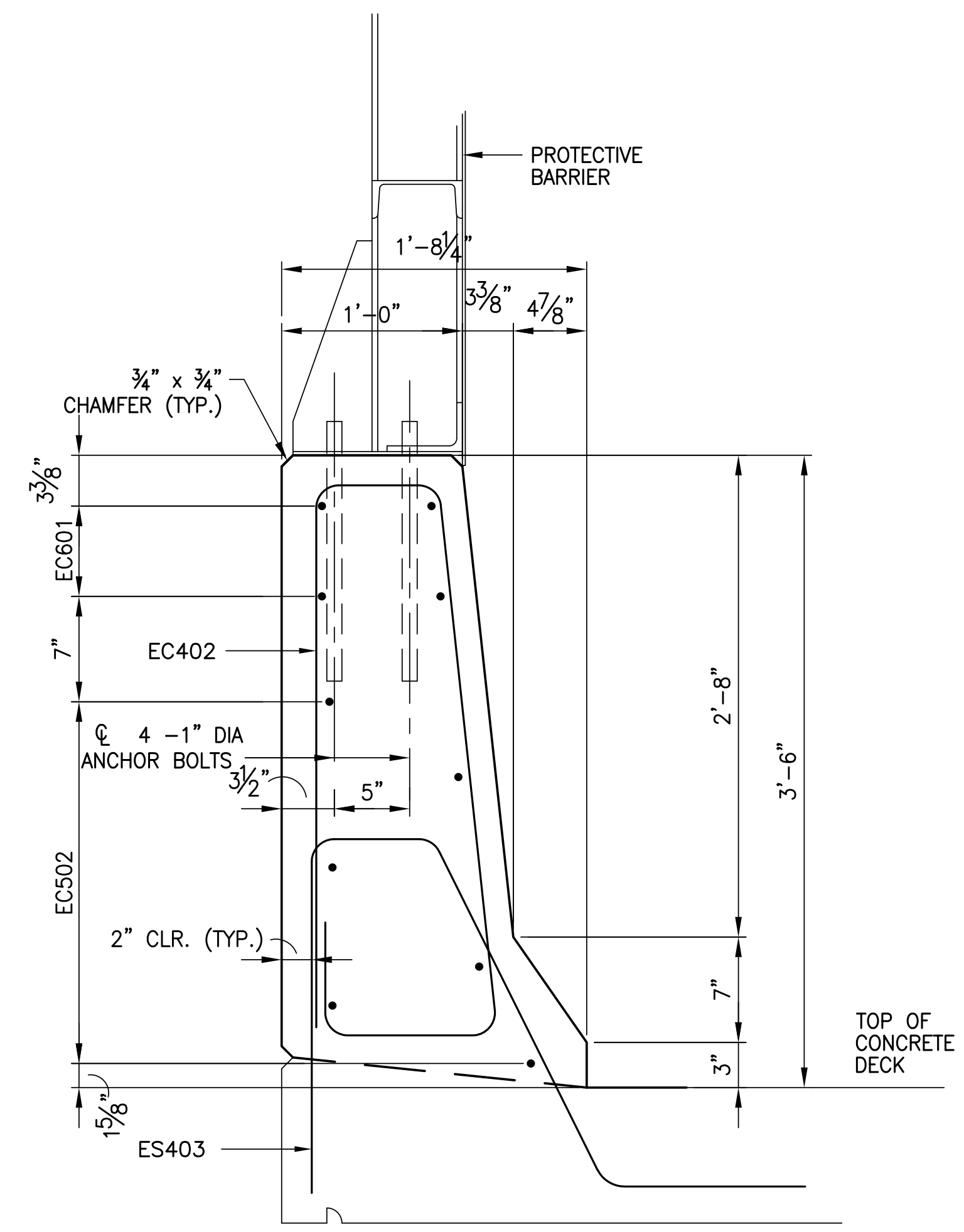
LEFT BARRIER DETAIL



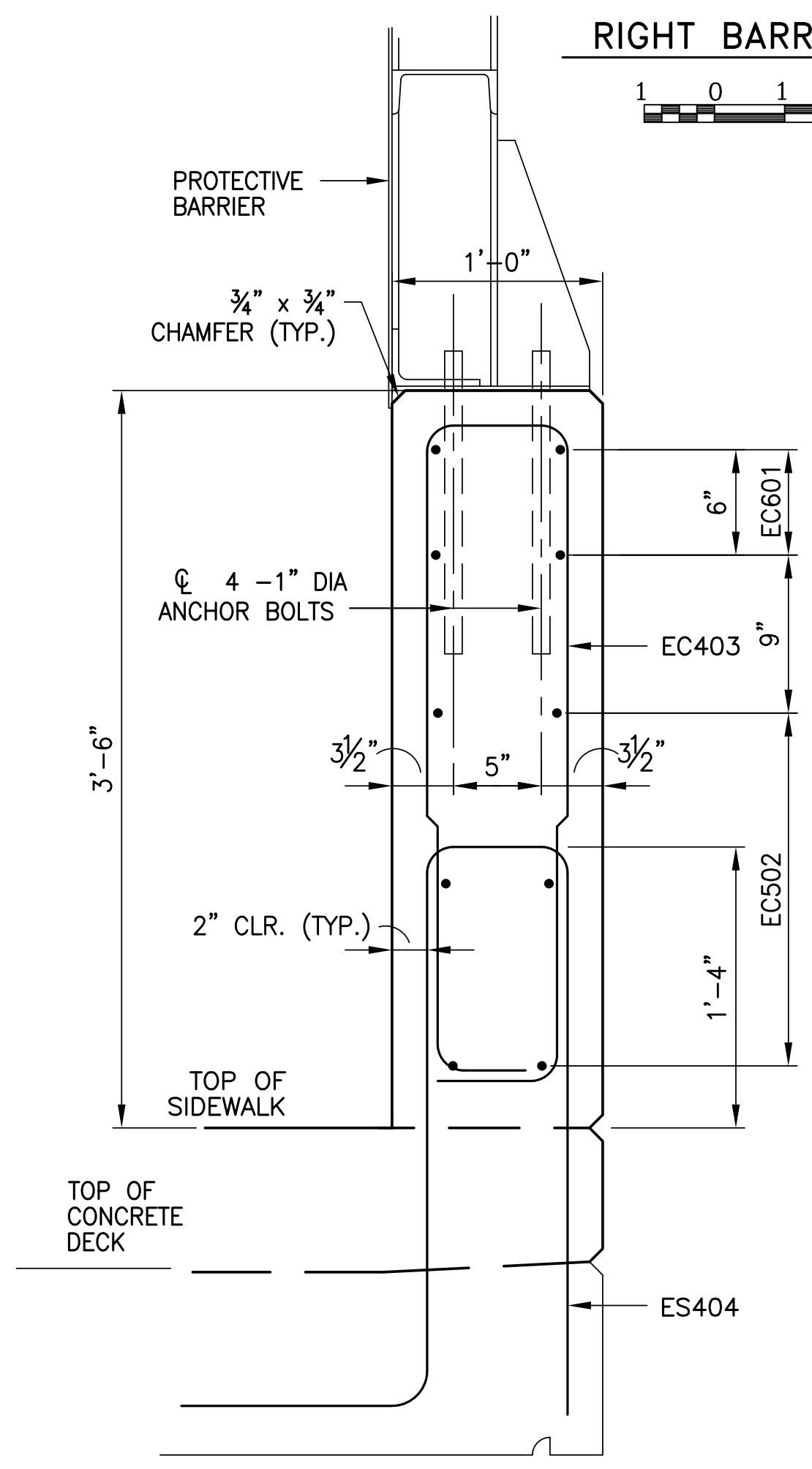
RIGHT BARRIER DETAIL



* WITHIN 10'-0" AT THE END OF BRIDGE, REDUCE SPACING OF REINFORCEMENT BARS TO 6" MAX.



DECK BARRIER REINFORCING



DECK BARRIER REINFORCING

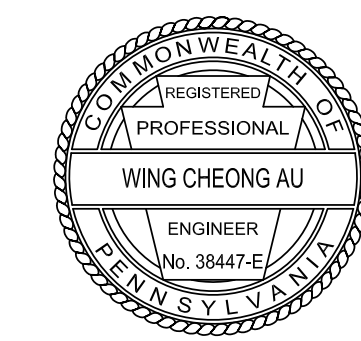


NOTE:
1. FOR REINFORCEMENT BAR SCHEDULE SEE SHEET 47.

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
BARRIER AND SIDEWALK DETAILS

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103

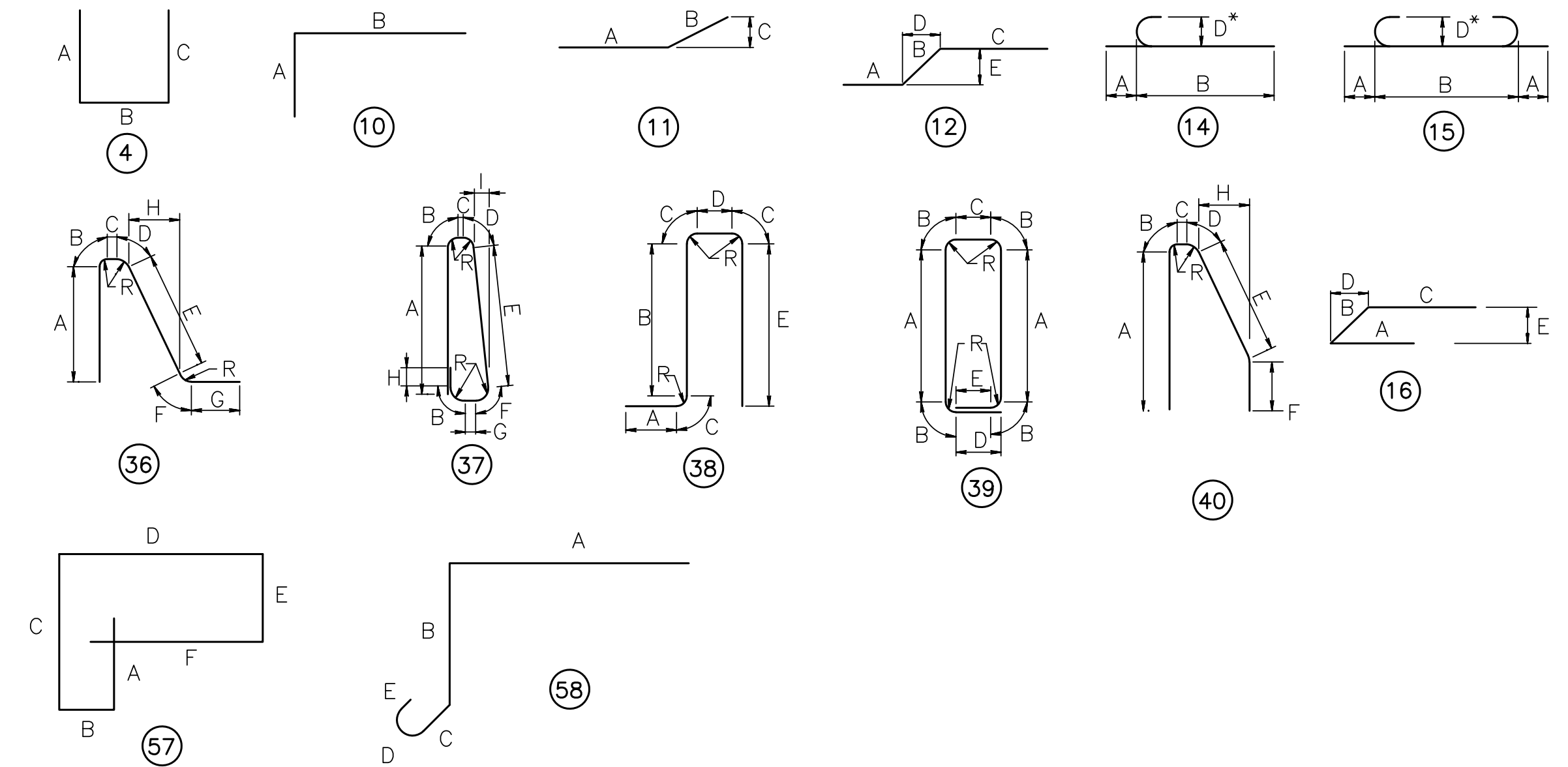


RECOMMENDED _____ SHEET 46 OF 59
BPAA-462653

File: S-46-Revised.dwg Layout: 46 Plotted: 4/4/19 at 9:49am By: evjacinto

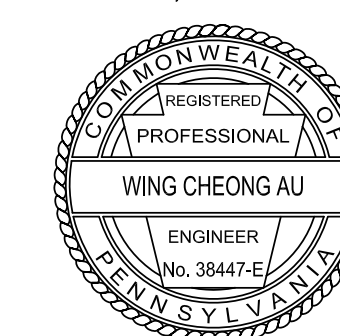
MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
SLAB											
ES401	4	71	40'-0"	STR							
ES402	4	71	19'-5"	STR							
ES403	4	88	5'-11"	36	1'-9 1/2"	4"	4"	2 3/4"	1'-11 1/2"	2"	F=2 3/4" ; G=1'-0" ; H=10 1/4"
ES404	4	80	7'-3"	38	1'-0"	2'-4 1/2"	4"	3"	2'-7"	2"	
ES501	5	60	37'-9"	15	7"	36'-7"					
ES502	5	73	36'-7"	STR							
ES503	5	61	6'-3"	12	2'-7"	1'-1"	2'-7"	1"	1'-1"		
ES504	5	70	5'-6"	57	1'-0"	7"	1'-8"	10"	11"		F = 6"
ES505	5	30	8'-2"	57	1'-0"	7"	1'-8"	2'-2"	11"		F = 1'-10"
ES505A	5	4	3'-2"	4	6"	2'-2"	6"				
ES506	5	4	33'-7"	STR							
ES506A	5	8	12'-7"	STR							
ES506B	5	8	13'-9"	STR							
ES506C	5	8	4'-7"	STR							
ES601	6	8	33'-7"	STR							
ES602	6	60	9'-6"	14	8"	8'-9 5/8"					
ES603	6	60	5'-11"	14	8"	5'-2 5/8"					
ES604	6	92	7'-8"	58	3'-10"	2'-3"	7"	9 1/2"	2 1/2"		
ES604A	6	2	5'-7"	10	3'-10"	1'-9"					
ES604B	6	2	5'-0"	10	3'-10"	1'-2"					
ES605	6	2	19'-6"	STR							
ES606	6	2	12'-7"	STR							
SIDEWALK/BARRIER											
EC401	4	14	30'-3"	STR							
EC401A	4	2	29'-9"	STR							
EC402	4	88	8'-1"	37	2'-9 1/2"	4"	3 3/8"	3 5/8"	2'-7 3/4"	2"	F=4 1/8" ; G=6 3/4" ; H=5" I=3 3/8"
EC403	4	80	7'-10"	39	2'-9"	4"	3"	5 1/2"	3"	2"	
EC501	5	59	6'-8"	STR							
EC501A	5	2	5'-8"	STR							
EC502	5	12	58'-2"	STR							
EC601	6	8	58'-2"	STR							
DIAPHRAGM											
ED401	4	20	3'-3"	4	1'-3"	9"	1'-3"				
ED402	4	60	4'-2"	4	1'-8"	10"	1'-8"				
ED402A	4	4	3'-8"	4	1'-5"	10"	1'-5"				
ED403	4	10	4'-1"	12	11"	2'-1 1/4"	1'-0"	1'-5 7/8"	1'-5 7/8"		
ED404	4	30	3'-10"	11	1'-0"	2'-9 1/2"	1'-11 5/8"				
ED404A	4	2	3'-8"	12	1'-0"	1'-8"	1'-0"	1'-0 1/2"	1'-0 1/2"		
ED405	4	4	4'-3"	12	11'	2'-4"	1'-0"	1'-8"	1'-7"		
ED501	5	88	3'-4"	STR							THREADED 3" ON ONE END
ED502	5	4	2'-3 1/2"	11	7 1/2"	1'-8"	1'-2"				
ED503	5	8	1'-8"	STR							

- ** DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- FOR REINFORCEMENT BAR FABRICATION DETAILS, REFER TO STANDARD DRAWING BC-736M.
- FIGURES IN CIRCLES SHOW TYPES.
- "E" - INDICATES EPOXY COATED REBARS.
- FOR ALL BAR TYPES SHOWN, DIMENSIONS A-I AND LENGTH ARE MEASURED ALONG OUTSIDE OF BAR. R IS MEASURED ALONG INSIDE OF BAR.



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

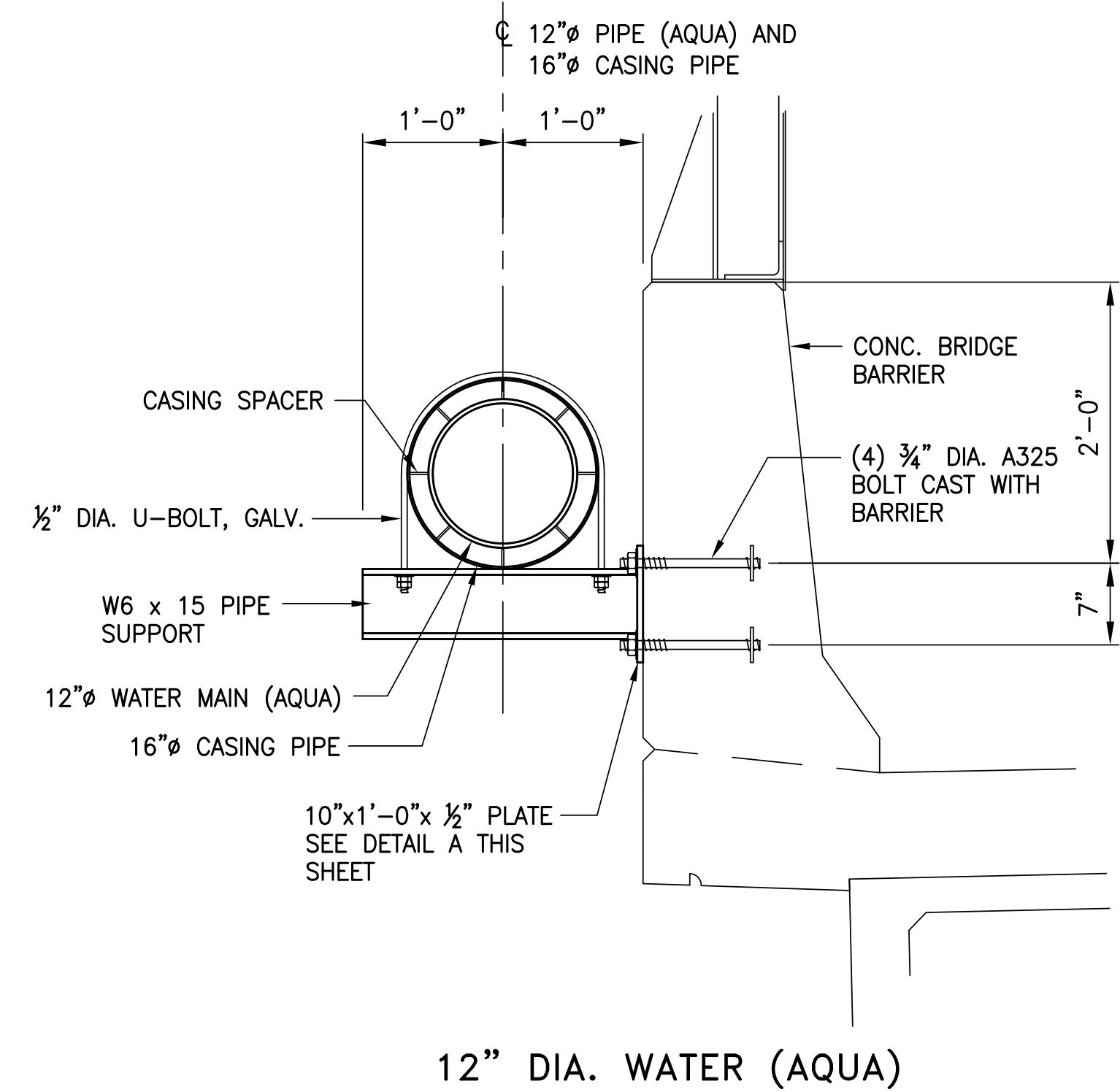
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

SUPERSTRUCTURE REBAR SCHEDULE

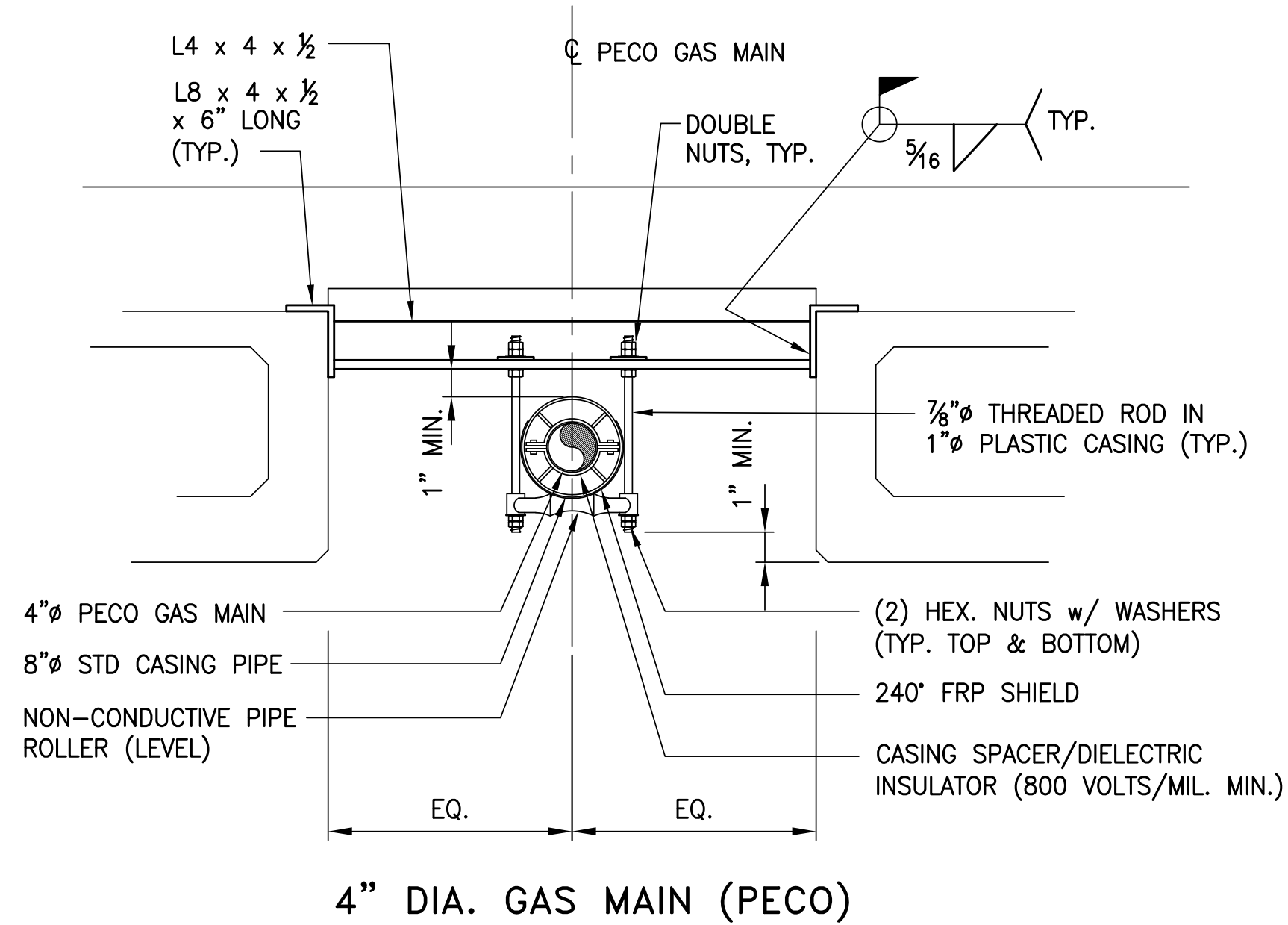
RECOMMENDED _____

SHEET 47 OF 59

BPA-462653

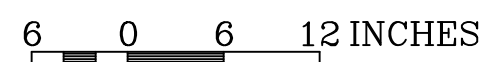


12" DIA. WATER (AQUA)

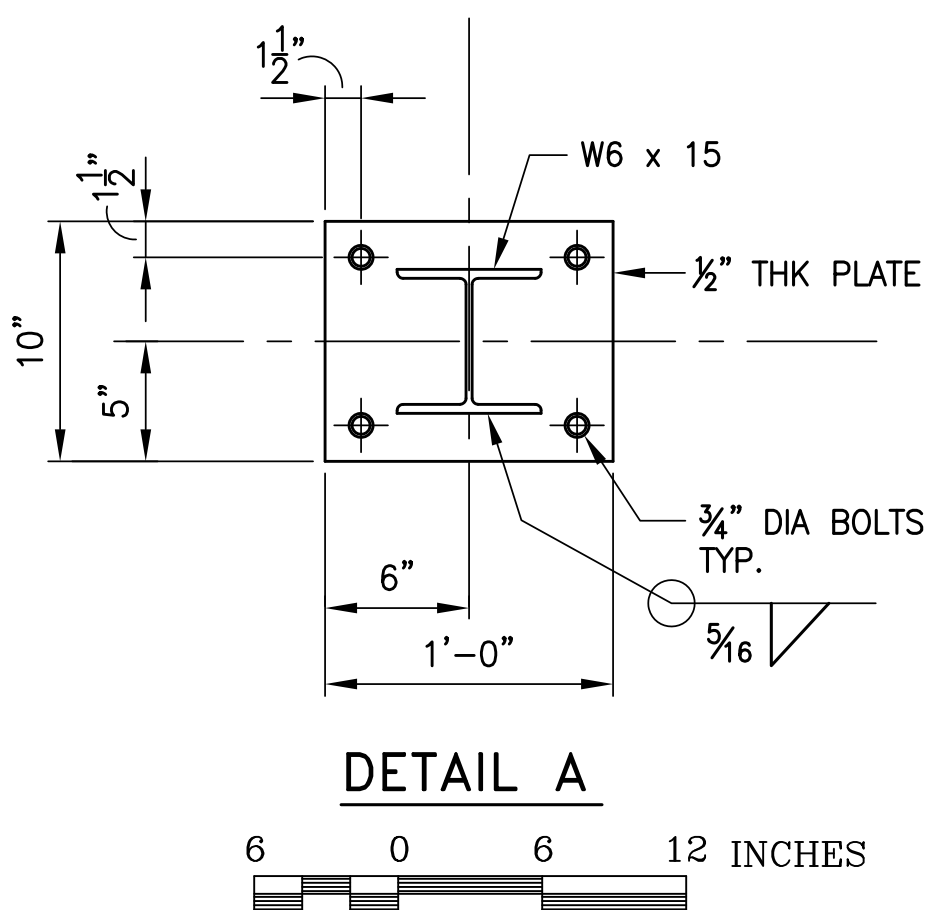


4" DIA. GAS MAIN (PECO)

UTILITY SUPPORT DETAIL



- NOTES:
1. ALL HANGERS, SUPPORTS AND THEIR ASSOCIATED HARDWARE TO BE EITHER GALVANIZED OR ZINC RICH PRIMER AND APPLY FINISH COAT TO MATCH BEAM COLOR.
 2. FOR UTILITY SUPPORT SPACING SEE SHEET 33.



DETAIL A

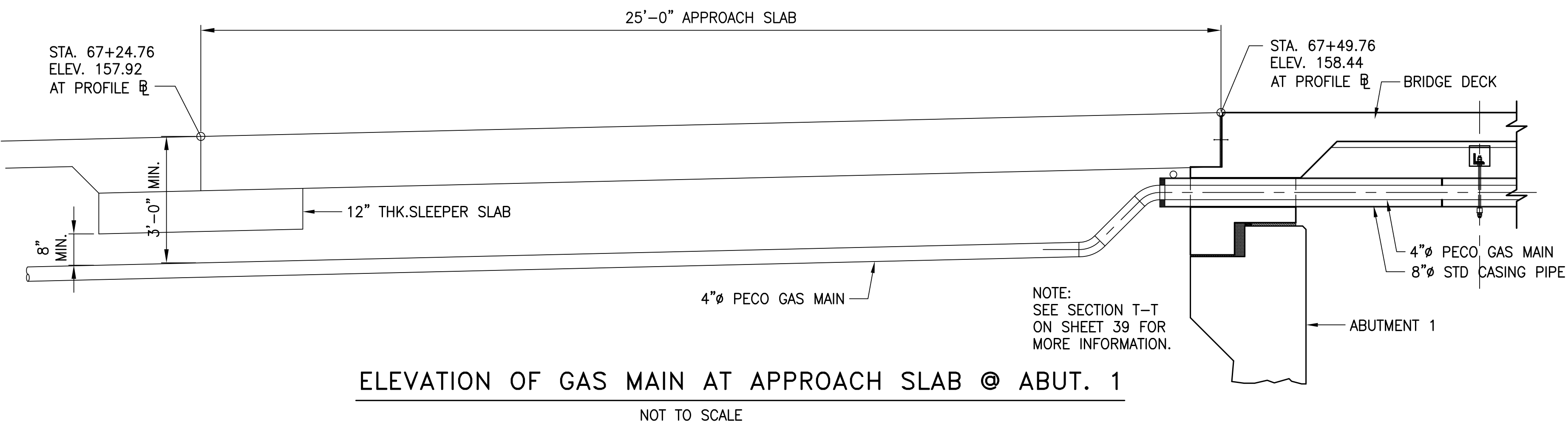


AQUA PA WATER MAIN ITEM #9999-1011 INSTALLATION OF AQUA PA WATER FACILITIES				
MATERIAL	FURNISHED BY	INSTALLED BY	UNIT	AMOUNT
CASING SPACERS	CONTRACTOR	CONTRACTOR	EACH	12
OPENING IN END DIAPHRAGMS	CONTRACTOR	CONTRACTOR	EACH	2
FABRICATED STRUCTURAL STEEL, GALVANIZED (A709, GRADE 50)	CONTRACTOR	CONTRACTOR	LB	900
PIPE SADDLE SUPPORT	CONTRACTOR	CONTRACTOR		
U-BOLTS (1/2" Ø, GALV.)	CONTRACTOR	CONTRACTOR		
LINK SEALS	CONTRACTOR	CONTRACTOR	SET	2
12" DIA. STEEL WATER PIPE, ASTM A53 GR. B 0.5" WALL THK, EXTRA HEAVY STEEL PIPE	CONTRACTOR	CONTRACTOR	LF	TBD
16" DIA. STEEL CASING SLEEVE, ASTM A53 GR. B 0.375" WALL THK, STANDARD WEIGHT	CONTRACTOR	CONTRACTOR	LF	55

PECO ENERGY COMPANY – GAS DIVISION ITEM #9999-1010 INSTALLATION OF PECO ENERGY GAS FACILITIES				
MATERIAL	FURNISHED BY	INSTALLED BY	UNIT	AMOUNT
CASING SPACERS/DIELECTRIC INSULATOR	CONTRACTOR	CONTRACTOR	EACH	12
OPENING IN END DIAPHRAGMS	CONTRACTOR	CONTRACTOR	EACH	2
FABRICATED STRUCTURAL STEEL, GALVANIZED (A709, GRADE 50)	CONTRACTOR	CONTRACTOR	LB	400
8" DIA. NON-CONDUCTIVE ROLL	PECO	CONTRACTOR	EACH	6
HANGER ASSEMBLY (1) (2)	PECO	CONTRACTOR	EACH	6
LINK SEALS	PECO	CONTRACTOR	SET	2
4" DIA. E.H. STEEL GAS PIPE	PECO	CONTRACTOR	LF	130
8" DIA. STD STEEL CASING SLEEVE	PECO	CONTRACTOR	LF	70
BONDING AND GROUNDING OF PECO ENERGY GAS MAIN (3)	CONTRACTOR	CONTRACTOR	LS	-
4" DIA. CAP	PECO	CONTRACTOR	EACH	2
4" DIA. COUPLINGS	PECO	CONTRACTOR	EACH	4
4" DIA. E.H. STEEL WELDED ELBOWS	PECO	CONTRACTOR	EACH	4
2" DIA. STD STEEL PIPE (4)	PECO	CONTRACTOR	LF	40
2" DIA. STD STEEL ELBOWS (4)	PECO	CONTRACTOR	EACH	4
8" DIA. 240' FRP SHIELD	CONTRACTOR	CONTRACTOR	EACH	6
8" DIA. SHRINK SLEEVES UV	PECO	CONTRACTOR	EACH	4
2" DIA. SHRINK TAPE UV (4)	PECO	CONTRACTOR	ROLLS	6
4" DIA. SHRINK SLEEVES	PECO	CONTRACTOR	EACH	4
CARRIER PIPE WELD X-RAY TESTING	CONTRACTOR	CONTRACTOR	LS	-

- NOTES:
1. HANGER ASSEMBLY INCLUDES 7/8" DIA. THREADED ROD, NUTS, WASHERS, PLASTIC PIPE AND ADJUSTABLE SOCKETS.
 2. 9'-6" MAXIMUM SPACE BETWEEN HANGERS.
 3. FOR DETAILS, SEE SHEET 49.
 4. FOR DETAILS, SEE SHEET 1.

- NOTES:
1. GALVANIZE ALL HANGERS, SUPPORTS, AND ASSOCIATED HARDWARE IN ACCORDANCE WITH PUBLICATION 408/2016.
 2. NO PIPE JOINTS ARE PERMITTED ABOVE THE TRACKS.
 3. FOR UTILITY SUPPORT SPACING, SEE SHEET 33.
 4. PROVIDE PIPE CONFORMING TO ASTM A53 GRADE B.
 5. SUBMIT SHOP DRAWINGS FOR UTILITY SUPPORT FOR APPROVAL PRIOR TO CONSTRUCTION.



ELEVATION OF GAS MAIN AT APPROACH SLAB @ ABUT. 1

NOT TO SCALE

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

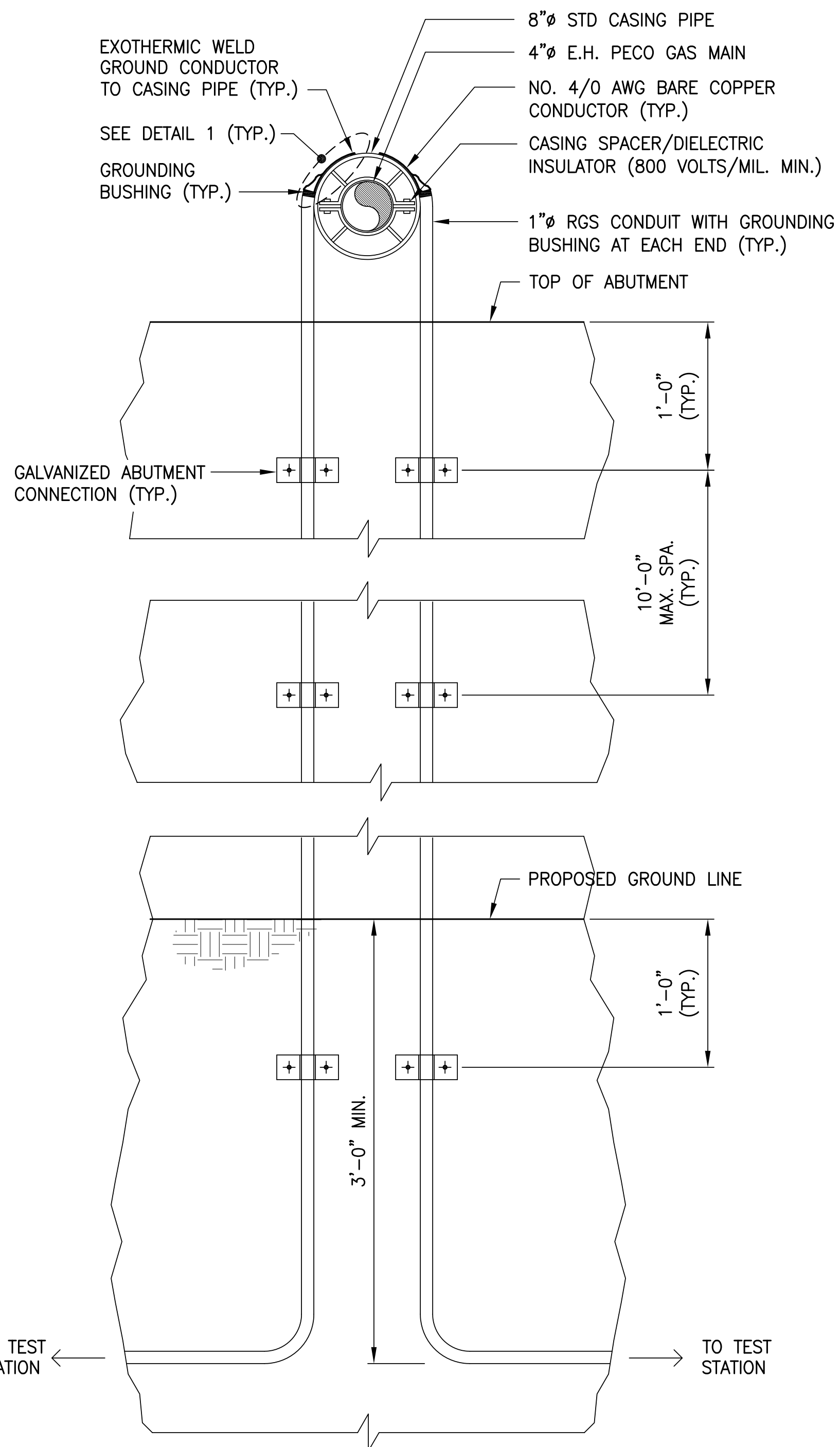
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
UTILITY ATTACHMENT DETAILS

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103

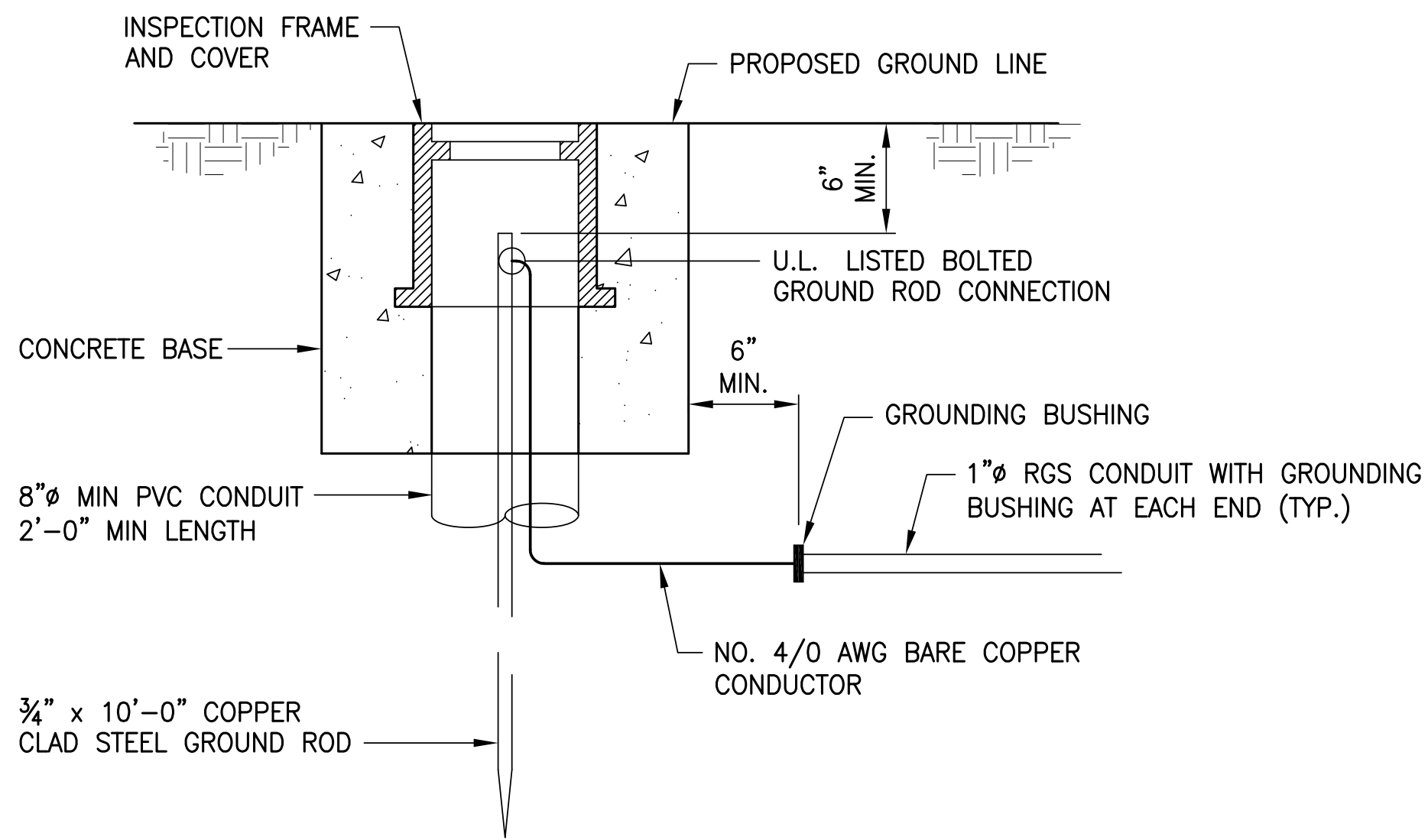
RECOMMENDED _____	SHEET 48 OF 59
BPAA-462653	

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File: S-49.dwg Layout: 49 Plotted: 3/27/19 at 1:22pm By: evjicinto

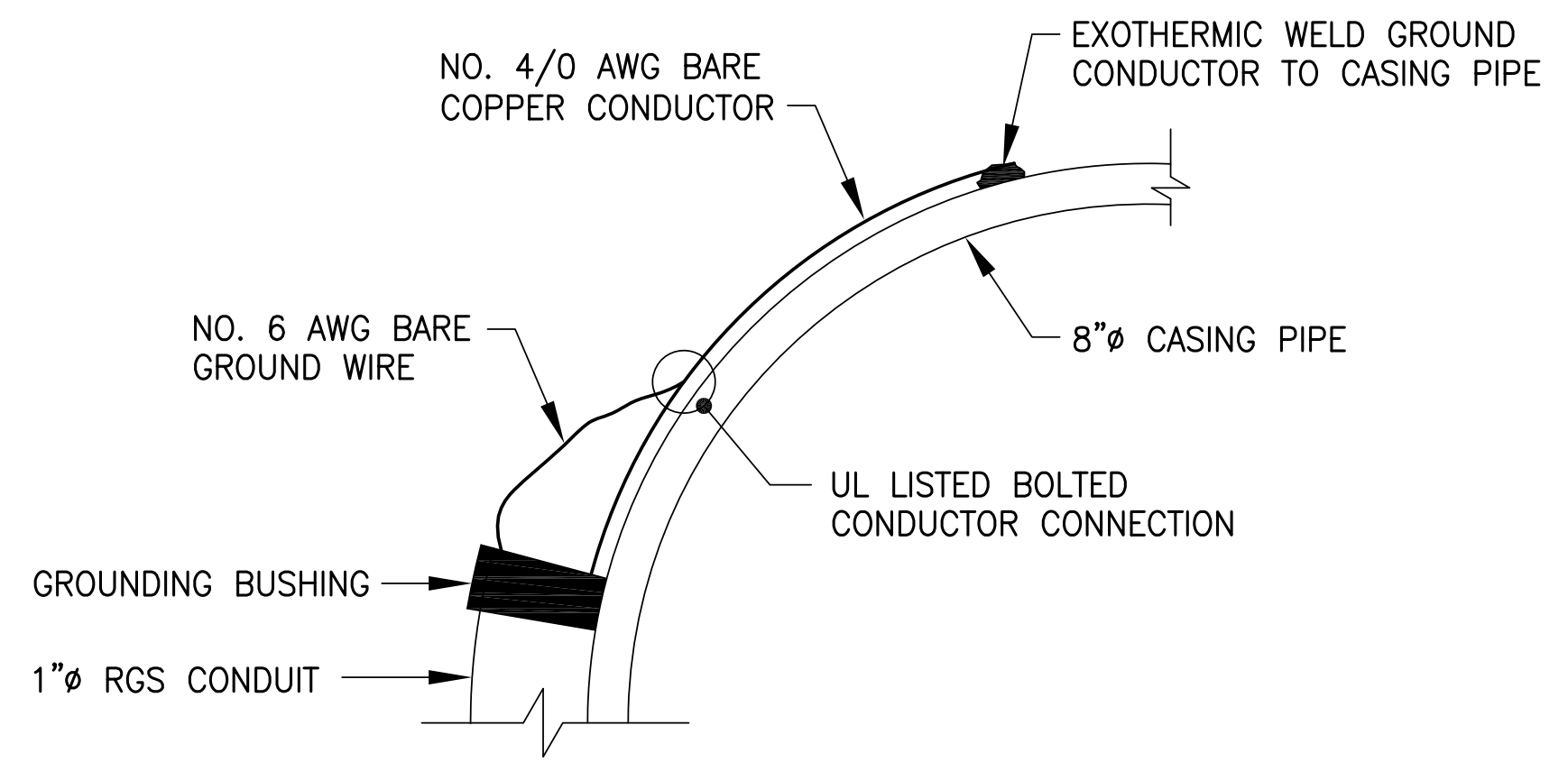


GROUNDING DETAIL



TEST STATION DETAIL

NOT TO SCALE



DETAIL 1

NOT TO SCALE

- NOTES:
1. THE POINTS OF BONDING JUMPER TO BE ACCESSIBLE FOR INSPECTION.
 2. UNLESS OTHERWISE SPECIFIED, ALL BOLTS, NUTS, AND WASHERS TO BE GALVANIZED OR STAINLESS STEEL.
 3. PROVIDE GROUND RODS IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE. BURY GROUND RODS VERTICALLY WITH ROD TOP A MINIMUM OF 6 INCHES BELOW GRADE AS INDICATED. USE GROUND ROD AS INDICATED FOR MAIN GROUNDING SYSTEM.
 4. GROUNDING RESISTANCE TO BE BELOW 10 OHMS. INSTALL ADDITIONAL RODS IF NECESSARY TO COMPLY WITH NEC GROUNDING SYSTEM RESISTANCE REQUIREMENT. IF 10 OHMS IS NOT MET, DRIVE RODS DEEPER WITH ADDITIONAL GROUND RODS & COUPLINGS.
 5. GROUNDING AND BONDING SYSTEM TO BE INDEPENDENT FROM SEPTA SYSTEM.
 6. SUBMIT AN INSTALLATION PLAN AND MATERIAL LIST TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
 7. PROVIDE MATERIALS FOR GROUNDING AND BONDING IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
 8. SUBMIT FOR APPROVAL DETAILS OF GROUND ROD BURIAL AND TEST STATION LOCATION AND CONDUITS.
 9. BONDING AND GROUNDING WORK IS INCIDENTAL TO ITEM "9000-0006", INSTALLATION OF PECO ENERGY GAS FACILITIES.
 10. PROVIDE A TEST STATION AT EACH CORNER OF THE BRIDGE AS INDICATED ON SHEET 1.

BONDING & GROUNDING OF PECO ENERGY GAS MAIN				
MATERIAL	FURNISHED BY	INSTALLED BY	UNIT	AMOUNT
COPPER-CLAD STEEL GROUND ROD	CONTRACTOR	CONTRACTOR	EACH	4
4/0 AWG BARE COPPER GROUND WIRE	CONTRACTOR	CONTRACTOR	FT	200
EXOTHERMIC WELD	CONTRACTOR	CONTRACTOR	EACH	4
1" DIA. RGS CONDUIT (1)	CONTRACTOR	CONTRACTOR	LF	200
TEST STATION (2)	CONTRACTOR	CONTRACTOR	EACH	4
GROUNDING BUSHING (3)	CONTRACTOR	CONTRACTOR	EACH	8
UL LISTED BOLTED CONDUCTOR CONNECTION	CONTRACTOR	CONTRACTOR	EACH	8
UL LISTED BOLTED GROUND ROD CONNECTION	CONTRACTOR	CONTRACTOR	EACH	4

- (1) INCLUDES ABUTMENT CONNECTIONS
 (2) INCLUDES INSPECTION FRAME, INSPECTION COVER, PVC CONDUIT & CONCRETE BASE
 (3) INCLUDES NO. 6 AWG BARE GROUND WIRE

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

BONDING AND GROUNDING DETAILS

RECOMMENDED _____	SHEET 49 OF 59
BPAA-462653	

LEFT FASCIA BEAM WITH FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.665	0.665	0.665	0.665	N/A	0.665
RATING	LOCATION (ft)	28.50	28.50	28.50	28.50	N/A	28.50
(IR)	LIMIT STATE	SERV-III	SERV-III	SERV-III	SERV-III	N/A	SERV-III
	RATING FACTOR	1.93 M	1.33 M	1.11 M	1.22 M	N/A	1.17 M
OPERATING	DISTRIBUTION FACTOR	0.682	0.682	0.682	0.682	0.682	0.682
RATING	LOCATION (ft)	19.00	19.00	19.00	19.00	2.46	19.00
(OR)	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.33 V	2.31 V	1.98 V	1.77 V	1.38 V	2.03 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3452.64		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		294.63					
LOCATION (ft)		17.10					

FIRST RIGHT INTERIOR BEAM WITH FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.557	0.557	0.557	0.713	N/A	0.557
RATING	LOCATION (ft)	28.50	28.50	28.50	19.00	N/A	28.50
(IR)	LIMIT STATE	SERV-IIIP	SERV-IIIP	SERV-IIIP	STR-I	N/A	SERV-IIIP
	RATING FACTOR	2.49 M	1.72 M	1.43 M	1.45 V	N/A	1.51 M
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING	LOCATION (ft)	2.47	19.00	19.00	19.00	2.47	19.00
(OR)	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.40 V	2.39 V	2.07 V	1.88 V	1.39 V	2.12 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		305.29					
LOCATION (ft)		17.10					

FIRST LEFT INTERIOR BEAM WITH FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.557	0.557	0.557	0.713	N/A	0.557
RATING	LOCATION (ft)	28.50	28.50	28.50	19.00	N/A	28.50
(IR)	LIMIT STATE	SERV-III	SERV-III	SERV-III	STR-I	N/A	SERV-III
	RATING FACTOR	2.44 M	1.69 M	1.40 M	1.43 V	N/A	1.48 M
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING	LOCATION (ft)	2.45	19.00	19.00	19.00	2.45	19.00
(OR)	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.34 V	2.36 V	2.04 V	1.86 V	1.37 V	2.10 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		305.01					
LOCATION (ft)		17.10					

RIGHT FASCIA BEAM WITH FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.775	0.775	0.775	0.775	N/A	0.775
RATING	LOCATION (ft)	28.50	28.50	28.50	28.50	N/A	28.50
(IR)	LIMIT STATE	SERV-III	SERV-III	SERV-III	SERV-III	N/A	SERV-III
	RATING FACTOR	1.77 M	1.23 M	1.02 M	1.12 M	N/A	1.08 M
OPERATING	DISTRIBUTION FACTOR	0.795	0.795	0.795	0.795	0.795	0.795
RATING	LOCATION (ft)	19.00	19.00	19.00	19.95	2.37	19.00
(OR)	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	2.94 V	2.06 V	1.77 V	1.57 V	1.23 V	1.80 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3452.64		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		287.08					
LOCATION (ft)		17.10					

INTERIOR BEAM WITH FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	N/A	0.713
RATING	LOCATION (ft)	19.00	19.00	19.00	19.00	N/A	19.00
(IR)	LIMIT STATE	STR-I	STR-I	STR-I	STR-I	N/A	STR-I
	RATING FACTOR	2.74 V	1.90 V	1.66 V	1.51 V	N/A	1.70 V
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING	LOCATION (ft)	19.00	19.00	19.00	19.00	2.53	19.00
(OR)	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.54 V	2.48 V	2.15 V	1.95 V	1.47 V	2.21 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		306.28					
LOCATION (ft)		17.10					

NOTES:
 GIVEN DISTRIBUTION FACTOR IS THE VEHICULAR LIVE LOAD DISTRIBUTION FACTOR USED TO PRODUCE THE GIVEN RATING. FOR THE STR-IP LIMIT STATE, THE VEHICULAR LIVE LOAD DISTRIBUTION FACTOR ACCOUNTS FOR THE PRESENCE OF PEDESTRIAN LOADS, IF APPLICABLE.

SYMBOL DESIGNATION FOR RATING FACTORS:
 M - MOMENT RATING FACTOR CONTROLS
 V - SHEAR RATING FACTOR CONTROLS

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION

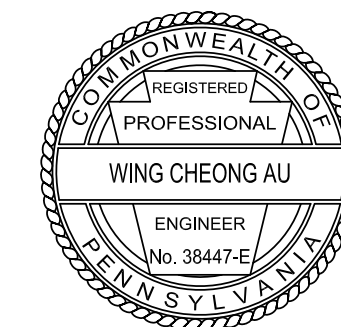
**MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

RATING TABLES WITH FWS

RECOMMENDED _____	SHEET 50 OF 59
BPAA-462653	

PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103



File: S-50-Revised.dwg Layout: 50 Plotted: 3/27/19 at 1:31pm By: evjccinto

LEFT FASCIA BEAM WITHOUT FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.665	0.665	0.665	0.665	N/A	0.665
RATING (IR)	LOCATION (ft)	28.50	28.50	28.50	28.50	N/A	28.50
	LIMIT STATE	SERV-III	SERV-III	SERV-III	SERV-III	N/A	SERV-III
	RATING FACTOR	2.11 M	1.46 M	1.22 M	1.33 M	N/A	1.28 M
OPERATING	DISTRIBUTION FACTOR	0.682	0.682	0.682	0.682	0.682	0.682
RATING (OR)	LOCATION (ft)	19.00	19.00	19.00	19.00	2.51	19.00
	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.44 V	2.41 V	2.08 V	1.85 V	1.45 V	2.11 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3452.64		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		299.52					
LOCATION (ft)		17.10					

FIRST RIGHT INTERIOR BEAM WITHOUT FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.713	0.713	0.557	0.713	N/A	0.557
RATING (IR)	LOCATION (ft)	19.00	19.00	28.50	19.00	N/A	28.50
	LIMIT STATE	STR-I	STR-I	SERV-IIIP	STR-I	N/A	SERV-IIIP
	RATING FACTOR	2.72 V	1.90 V	1.59 M	1.50 V	N/A	1.68 M
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING (OR)	LOCATION (ft)	19.00	19.00	19.00	19.00	2.52	19.00
	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.52 V	2.47 V	2.14 V	1.94 V	1.46 V	2.19 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		306.12					
LOCATION (ft)		17.10					

FIRST LEFT INTERIOR BEAM WITHOUT FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.557	0.557	0.557	0.713	N/A	0.557
RATING (IR)	LOCATION (ft)	28.50	28.50	28.50	19.00	N/A	28.50
	LIMIT STATE	SERV-III	SERV-III	SERV-III	STR-I	N/A	SERV-III
	RATING FACTOR	2.66 M	1.84 M	1.53 M	1.48 V	N/A	1.61 M
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING (OR)	LOCATION (ft)	2.50	19.00	19.00	19.00	2.50	19.00
	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.48 V	2.44 V	2.11 V	1.92 V	1.43 V	2.17 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		305.81					
LOCATION (ft)		17.10					

RIGHT FASCIA BEAM WITHOUT FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.775	0.775	0.775	0.775	N/A	0.775
RATING (IR)	LOCATION (ft)	28.50	28.50	28.50	28.50	N/A	28.50
	LIMIT STATE	SERV-III	SERV-III	SERV-III	SERV-III	N/A	SERV-III
	RATING FACTOR	1.93 M	1.34 M	1.11 M	1.22 M	N/A	1.17 M
OPERATING	DISTRIBUTION FACTOR	0.795	0.795	0.795	0.795	0.795	0.795
RATING (OR)	LOCATION (ft)	19.00	19.00	19.00	19.95	2.42	19.00
	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.04 V	2.12 V	1.84 V	1.64 V	1.28 V	1.88 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3452.64		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		292.54					
LOCATION (ft)		17.10					

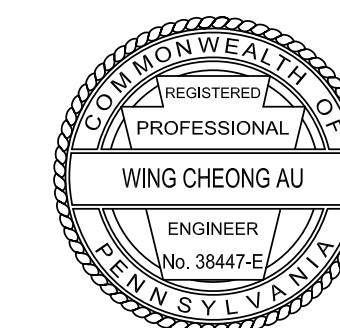
INTERIOR BEAM WITHOUT FWS		P/S SPREAD BOX BEAM 48/21					
SIMPLE SPAN		H20	HS20	ML-80	PHL-93	P-82	TK527
INVENTORY	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	N/A	0.713
RATING (IR)	LOCATION (ft)	19.00	19.00	19.00	19.00	N/A	19.00
	LIMIT STATE	STR-I	STR-I	STR-I	STR-I	N/A	STR-I
	RATING FACTOR	2.82 V	1.97 V	1.71 V	1.55 V	N/A	1.76 V
OPERATING	DISTRIBUTION FACTOR	0.713	0.713	0.713	0.713	0.713	0.713
RATING (OR)	LOCATION (ft)	19.00	19.00	19.00	19.00	2.58	19.00
	LIMIT STATE	STR-II	STR-II	STR-II	STR-IA	STR-II	STR-II
	RATING FACTOR	3.66 V	2.56 V	2.22 V	2.01 V	1.53 V	2.28 V
MAXIMUM FACTORED MOMENT RESISTANCE (kip-ft)		3501.32		SPAN LENGTH (ft) = 57.00			
LOCATION (ft)		28.50					
MAXIMUM FACTORED SHEAR RESISTANCE (kips)		307.18					
LOCATION (ft)		17.10					

NOTES:
 GIVEN DISTRIBUTION FACTOR IS THE VEHICULAR LIVE LOAD DISTRIBUTION FACTOR USED TO PRODUCE THE GIVEN RATING. FOR THE STR-IP LIMIT STATE, THE VEHICULAR LIVE LOAD DISTRIBUTION FACTOR ACCOUNTS FOR THE PRESENCE OF PEDESTRIAN LOADS, IF APPLICABLE.

SYMBOL DESIGNATION FOR RATING FACTORS:
 M - MOMENT RATING FACTOR CONTROLS
 V - SHEAR RATING FACTOR CONTROLS

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103



COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
RATING TABLES WITHOUT FWS

RECOMMENDED _____ SHEET 51 OF 59
 BPAA-462653

Abutment 1, Wingwall B

STA. 67+50.00, 39.0' LT
EAST OF CHURCH RD B.L.

BORING NO. **S-1**

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) ROD (%)	DESCRIPTION
					GRADE SURFACE ELEV.: 142.3
1.5	S-1	WOH-1-WOH	1.1	73	SILTY SAND (sm/A-1-b), BLACK TO GRAY, DRY, VERY LOOSE. S-1 & S-2 WITH ORGANICS S-3 WITH GRAVEL
3.0	S-2	1-1-2	0.2	13	
4.5	S-3	2-2-2	0.5	33	
6.0	S-4	2-3-4	1.0	66	SILT WITH SAND (ml/A-5), BROWN TO GRAY, DRY, LOOSE TO MEDIUM DENSE.
7.5	S-5	6-6-7	0.9	60	
9.0	S-6	5-6-7	1.4	93	
10.5	S-7	7-8-10	0.6	40	SILTY SAND WITH GRAVEL(sm/A-1-b) BROWN, DRY, DENSE TO VERY DENSE.
12.0	S-8	6-8-13	1.5	100	
13.5	S-9	6-9-10	1.0	66	
15.0	S-10	12-25-37	1.3	87	SILTY GRAVEL WITH SAND (gm/A-2-4) WHITISH BROWN TO BROWN, DRY TO MOIST, DENSE TO VERY DENSE.
16.5	S-11	9-15-17	1.5	100	
18.0	S-12	10-4-5	1.5	100	
19.5	S-13	7-7-8	1.5	100	SILT WITH SAND (ml/A-4) REDDISH BROWN TO BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE.
21.0	S-14	3-4-5	1.5	100	
22.5	S-15	8-9-8	1.3	87	
24.0	S-16	7-7-7	0.5	33	SILTY SAND WITH GRAVEL(sm/A-2-4) BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE
25.5	S-17	3-4-2	0.6	40	
27.0	S-18	2-3-4	0.7	47	
28.5	S-19	2-1-1	0.2	14	SANDY SILTY CLAY (CL-ML/A-4) BROWN, MOIST TO WET, VERY SOFT TO MEDIUM
30.0	S-20	1-1-1	0.9	60	
31.5	S-21	WOH-WOH-WOH	0.9	60	
33.0	S-22	WOH-WOH-WOH	1.2	80	CLAYEY SAND (sc/A-2-4), GRAY WET, VERY LOOSE TO MEDIUM DENSE
34.5	S-23	WOH-WOH-WOH	1.5	100	
36.0	S-24	3-5-6	1.0	67	
37.5	S-25	6-3-4	1.0	67	S-26 WITH GRAVEL
39.0	S-26	2-3-4	0.8	53	

END OF BORING AT 39.0'

DRILL ROD BENDED ABANDONED HOLE AT 39.0'
0-HOUR WATER READING

GENERAL NOTES

- W.O.H - WEIGHT OF HAMMER
- B.P.C.E. - BOTTOM OF PILE CAP ELEVATION IN FOOT
- E.P.T.E. - ESTIMATED PILE TIP ELEVATION IN FOOT
- ↓ - GROUNDWATER ELEVATION AT TIME SHOWN

Abutment 1, Wingwall B

STA. 67+47.00, 38.0' LT
EAST OF CHURCH RD B.L.

BORING NO. **S-1A** (REPLACEMENT FOR S-1)

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) ROD (%)	DESCRIPTION
					GRADE SURFACE ELEV.: 142.8
					AUGERED TO TOP OF BEDROCK
36.0					TOP OF BEDROCK AT 36.0'
38.0	R-1		2.0	100/100	LIMESTONE, LIGHT GRAY TO GRAY HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, MEDIUM TO THINLY BEDDED, RD 50'-65' JOINTING INDETERMINATE
43.0	R-2		4.9	98/98	R-1 THRU R-5 NO EVIDENCE OF SOLUTIONING ON JOINT SURFACE.
48.0	R-3		5.0	100/100	
51.0	R-4		2.9	97/97	
56.0	R-5		4.9	98/98	R-5 WITH QUARTZ FROM 54.3' TO 54.4'

END OF BORING AT 56.0'

DRILLING DATE: 1-16-08 TO 1-17-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK CORING
CASING SIZE: 3 1/4" I.D., DEPTH: 36.0'
WATER DEPTH: 37.5', 140 HRS

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



THE CLASSIFICATIONS OF THE MATERIALS ENCOUNTERED HAVE BEEN VERIFIED
W. AU W. AU WETTSTEIN
GEOTECHNICAL ENGINEER / GEOLOGIST

TRC COMPANIES INC.
DRILLING CONTRACTOR

THIS SHEET IS INCLUDED FOR THE CONVENIENCE OF THE DEPARTMENT, AND IS NOT PART OF THE CONTRACT DOCUMENTS (SEE PENNDOT PUBLICATION NO. 408, SECTION 102.05)

THE SUBSURFACE EXPLORATION DATA WHICH ARE PRESENTED ON THESE DRAWINGS (INCLUDING BORING LOGS, EARTH SAMPLES, ROCK SAMPLES, ROCK CORES, CLASSIFICATION OF MATERIALS AND DEPTH OF BORINGS) ACCURATELY REPRESENT THE CONDITIONS ENCOUNTERED BY THE TEST BORING PROGRAM AT EACH BORING LOCATION.

W. AU *Wing Cheong Au* 7/11/19
GEOTECHNICAL ENGINEER DATE

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

TEST BORING LOGS 1

SHEET 52 OF 59

DISTRICT GEOTECHNICAL ENGINEER DATE

BPAA-462653

Abutment 1
BORING NO. **S-2**

STA. 67+43.00, 3.0' LT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%)	RQD (%)	DESCRIPTION
						GRADE SURFACE ELEV.: 158.0
1.5						BITUMINOUS CONCRETE PAVEMENT AND SUBBASE.
3.0						
4.5	S-1	9-8-8	0.9	60		POORLY GRADED GRAVEL WITH SAND (gp/A-1-a) LIGHT BROWNISH GRAY TO GRAY, DRY, LOOSE TO MEDIUM DENSE
6.0	S-2	6-5-4	1.0	67		
7.5	S-3	4-4-3	0	0		SILTY SAND (sm/A-2-4) REDDISH BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE
9.0	S-4	4-4-4	0	0		
10.5	S-5	16-6-6	0.1	6		
12.0	S-6	6-5-7	0.1	6		
13.5	S-7	5-4-5	0.3	20		
15.0	S-8	5-4-5	1.5	100		
16.5	S-9	9-3-5	1.4	93		
18.0	S-10	5-5-7	1.2	80		
19.5	S-11	6-5-6	1.3	87		
21.0	S-12	9-4-8	1.5	100		S-12 SAND WITH GRAVEL
22.5	S-13	6-4-7	1.4	93		CLAYEY SAND (sc/A-2-4), BROWN, MOIST, MEDIUM DENSE
24.0	S-14	6-6-10	1.5	100		
25.5	S-15	5-6-8	1.3	87		
27.0	S-16	15-24-24	1.5	100		SILTY SAND WITH GRAVEL(SM/A-1-a) BROWN, MOIST, DENSE TO VERY DENSE
28.5	S-17	28-32-30	1.3	87		
30.0	S-18	17-24-34	1.2	80		
31.5	S-19	34-17-18	1.4	93		
33.0	S-20	12-9-12	1.5	100		SILT WITH SAND (ml/A-4), GRAYISH BROWN, MOIST, MEDIUM DENSE
34.5	S-21	12-15-11	1.2	80		
36.0	S-22	6-8-8	1.5	100		
37.5	S-23	6-6-7	1.5	100		
39.0	S-24	12-11-8	1.5	100		SANDY SILT (ml/A-4), BROWN, MOIST VERY LOOSE TO MEDIUM DENSE
40.5	S-25	7-10-15	1.5	100		
42.0	S-26	11-12-14	1.5	100		
43.5	S-27	6-6-6	1.2	80		
45.0	S-28	1-1-1	1.1	73		S-29 BOTTOM 1/4" ROCK FRAGMENTS.
46.3	S-29	1-6-50/0.3	1.0	67		TOP OF BEDROCK AT 46.3'
48.8	R-1		2.5	100/80		LIMESTONE, GRAY, HARD TO VERY HARD, SLIGHTLY WEATHERED TO FRESH, THINLY TO THICKLY BEDDED, RD 45'-55', CLOSELY TO WIDELY JOINTED RD 100'-120'
51.3	R-2		2.8	100/100		
56.6	R-3		5.0	100/94		R-2 & R-3 HIGHLY WEATHERED JOINTS AT 48.8'-49.5' AND 52.2'-52.7'
61.6	R-4		5.0	100/100		R-1 THRU R-5 NO EVIDENCE OF SOLUTIONING ON JOINT.
66.4	R-5		4.8	100/100		

AUGERED: 0.0' TO 3.0' END OF BORING AT 66.4'
 DRILLING DATE: 1-17-08 TO 1-18-08
 EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
 DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK CORING
 CASING SIZE: 3 1/4" I.D., DEPTH: 46.3'
 WATER DEPTH: 54.1', 130 HRS

Abutment 1
BORING NO. **S-3**

STA. 67+43.00, 20.0' RT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%)	RQD (%)	DESCRIPTION
						GRADE SURFACE ELEV.: 158.2'
1.5						BITUMINOUS CONC. PAVT & SUBBASE
3.0	S-1	7-9-3	0.5	33		POORLY GRADED GRAVEL WITH SAND (gp/A-1-a) WHITISH GRAY DRY, MEDIUM DENSE
4.5	S-2	2-3-10	0.4	27		
6.0	S-3	1-2-1	1.0	67		SILTY SAND WITH GRAVEL(sm/A-1-b) REDDISH BROWN, DRY TO MOIST, VERY LOOSE TO LOOSE
7.5	S-4	2-2-2	1.1	73		
9.0	S-5	3-3-2	1.3	87		
10.5	S-6	2-2-2	1.5	100		
12.0	S-7	2-1-2	1.2	80		
13.5	S-8	2-2-3	1.0	67		
15.0	S-9	2-3-2	0.8	53		SILT WITH SAND (ml/A-4), REDDISH BROWN, MOIST, LOOSE
16.5	S-10	3-3-2	1.5	100		
18.0	S-11	3-2-4	0.4	27		
19.5	S-12	4-3-4	1.5	100		
21.0	S-13	1-3-2	1.3	87		
22.5	S-14	3-4-6	1.5	100		SILT (ml/A-4), BROWN, MOIST, LOOSE TO MEDIUM DENSE
24.0	S-15	10-13-13	1.2	80		S-15 WITH ROCK FRAGMENTS
25.5	S-16	13-10-7	1.5	100		S-16 WITH GRAVEL
27.0	S-17	4-7-9	1.5	100		POORLY GRADED GRAVEL WITH SAND (gp/A-1-a) BROWN, MOIST MEDIUM DENSE
28.5	S-18	10-9-8	1.1	73		
30.0	S-19	10-13-12	1.5	100		
31.5	S-20	16-5-6	0.6	40		SANDY SILT (ml/A-4), BROWN, MOIST LOOSE TO MEDIUM DENSE
33.0	S-21	6-6-7	0.1	7		
34.5	S-22	7-7-8	1.5	100		
36.0	S-23	5-5-10	1.5	100		
37.5	S-24	9-8-7	1.5	100		
39.0	S-25	5-5-7	1.3	87		
40.5	S-26	7-5-6	1.1	73		
42.0	S-27	3-6-5	1.5	100		
43.5	S-28	3-5-5	1.1	73		
44.3	S-29	5-50/0.3	0.8	100		TOP OF BEDROCK AT 44.3'
47.9	R-1		3.5	100/100		LIMESTONE, LIGHT GRAY TO GRAY, HARD TO VERY HARD, MODERATELY WEATHERED TO FRESH, MEDIUM TO THICKLY BEDDED, RD 20'-50', JOINTING INDETERMINATE.
52.9	R-2		5.0	100/100		NO WATER RETURN AFTER R-2
57.9	R-3		5.0	100/100		R-4 QUARTZ WITHIN JOINT AT 59.2'
62.9	R-4		5.0	100/100		
65.9	R-5		3.0	100/100		

AUGERED: 0.0' TO 3.0' END OF BORING AT 65.9'
 DRILLING DATE: 1-22-08 TO 1-22-08
 EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
 DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING & NX ROCK CORING
 CASING SIZE: 3 1/4" I.D., DEPTH: 44.3'
 WATER DEPTH: 31.4', 48 HRS

GENERAL NOTES

- W.O.H - WEIGHT OF HAMMER
- B.P.C.E. - BOTTOM OF PILE CAP ELEVATION IN FOOT
- E.P.T.E. - ESTIMATED PILE TIP ELEVATION IN FOOT
- ↓ - GROUNDWATER ELEVATION AT TIME SHOWN

THE CLASSIFICATIONS OF THE MATERIALS ENCOUNTERED HAVE BEEN VERIFIED
 W. AU *Wing Cheong Au* W. WETTSTEIN
 GEOTECHNICAL ENGINEER / GEOLOGIST

TRC COMPANIES INC.
 DRILLING CONTRACTOR

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THE SUBSURFACE EXPLORATION DATA WHICH ARE PRESENTED ON THESE DRAWINGS (INCLUDING BORING LOGS, EARTH SAMPLES, ROCK SAMPLES, ROCK CORES, CLASSIFICATION OF MATERIALS AND DEPTH OF BORINGS) ACCURATELY REPRESENT THE CONDITIONS ENCOUNTERED BY THE TEST BORING PROGRAM AT EACH BORING LOCATION.

W. AU *Wing Cheong Au* 7/11/19
 GEOTECHNICAL ENGINEER DATE

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

TEST BORING LOGS 2

PREPARED BY
 BOLES, SMYTH ASSOCIATES, INC
 2400 CHESTNUT STREET
 PHILA., PA 19103



SHEET 53 OF 59

DATE BPAA-462653

File: S-53.dwg Layout: 53 Plotted: 7/11/19 at 11:54am By: enjainio

Abutment 1, Wingwall A

BORING NO. S-4

STA. 67+43.50, 38.0' RT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) RQD (%)	DESCRIPTION
					GRADE SURFACE ELEV.: 150.5'
1.5	S-1	2-2-2	0.9	60	SILTY SAND WITH GRAVEL(sm/A-2-4) BROWN, MOIST, VERY LOOSE TO LOOSE
3.0	S-2	3-3-3	0.4	27	
4.5	S-3	2-3-3	0.3	20	
6.0	S-4	2-5-6	0.5	33	WELL GRADED GRAVEL WITH SAND AND SILT (gw-gm/A-2-4) GRAY TO BROWN, DRY, LOOSE TO VERY LOOSE
6.7	S-5	10-50/0.2	0.7	100	
12.0	R-1		1.8	36/0	7.0'-12.0' COBBLES AND BOULDERS
13.5	S-6	3-6-15	0.6	40	SILTY SAND (sm/A-4) BROWN TO REDDISH TO GRAY, DRY TO WET, LOOSE TO DENSE
15.0	S-7	8-9-12	0.8	53	
16.5	S-8	3-8-16	1.2	80	
18.0	S-9	13-25-12	1.4	93	
19.5	S-10	8-8-8	0.6	40	
21.0	S-11	2-3-2	1.5	100	SILTY SAND (SM/A-4) BROWN TO REDDISH TO GRAY, DRY TO WET, LOOSE TO DENSE
22.5	S-12	3-5-5	1.3	87	
24.0	S-13	7-6-6	1.2	80	
25.5	S-14	3-4-5	1.5	100	S-16 ROCK PIECES
27.0	S-15	4-4-4	1.0	67	
28.5	S-16	4-4-5	0.1	6	S-18 WITH ROCK FRAGMENTS.
30.0	S-17	5-6-6	0.9	60	
31.5	S-18	4-4-4	1.5	100	SANDY SILT WITH GRAVEL (ml/A-4) BROWN TO GRAY, MOIST, LOOSE TO MEDIUM DENSE
33.0	S-19	5-5-5	1.5	100	
34.5	S-20	5-3-4	1.2	80	
36.0	S-21	3-3-3	1.5	100	SILTY SAND WITH GRAVEL (sm/A-4) BROWN TO GRAY, MOIST, LOOSE TO MEDIUM DENSE
37.5	S-22	4-5-6	1.3	87	
39.0	S-23	5-4-5	1.5	100	TOP OF BEDROCK AT 55.0'
40.5	S-24	3-2-4	1.5	100	
42.0	S-25	2-3-3	1.5	100	TOP OF BEDROCK AT 55.0'
43.5	S-26	5-5-5	1.1	73	
45.0	S-27	3-4-5	1.3	87	TOP OF BEDROCK AT 55.0'
46.5	S-28	1-2-4	0.8	53	
48.0	S-29	3-3-4	1.5	100	TOP OF BEDROCK AT 55.0'
49.5	S-30	4-3-4	0.7	47	
51.0	S-31	2-7-8	1.1	73	TOP OF BEDROCK AT 55.0'
52.5	S-32	4-5-7	0.9	60	
54.0	S-33	7-6-4	1.4	93	TOP OF BEDROCK AT 55.0'
55.0	S-34	1-3-50/0.0	0.7	70	

B.P.C.E
136.5

E.P.T.E
95.5

GENERAL NOTES

- W.O.H - WEIGHT OF HAMMER
- B.P.C.E. - BOTTOM OF PILE CAP ELEVATION IN FOOT
- E.P.T.E. - ESTIMATED PILE TIP ELEVATION IN FOOT
- ▼ - GROUNDWATER ELEVATION AT TIME SHOWN

BORING NO. S-4 CONT'D.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) RQD (%)	DESCRIPTION
55.0	S-34	1-3-50/0.0	0.7	70	TOP OF BEDROCK AT 55.0'
56.5	R-2		1.5	100/0	LIMESTONE, GRAY, HARD TO VERY HARD, SLIGHTLY WEATHERED TO FRESH, MEDIUM TO THINLY BEDDED, RD 35'-50', WIDELY TO VERY WIDELY JOINTED RD 90'-100'
61.5	R-3		5.0	100/90	
66.5	R-4		5.0	100/100	R-5 HIGHLY WEATHERED JOINT AT 66.7' 68.7'-71.5' SOIL SEAM (SOLUTION CAVITY FILLED WITH SOIL)
71.5	R-5		2.2	44/30	LIMESTONE, GRAY, HARD TO VERY HARD, FRESH TO SLIGHTLY WEATHERED, MEDIUM TO THINLY BEDDED, RD 35'-25', JOINTING INDETERMINATE.
76.5	R-6		5.0	100/100	R-6 VERTICAL FRACTURE FROM 76.0' TO 76.5'

▼ 68.7'
0 HR

END OF BORING AT 76.5'

AUGERED: 6.7' TO 7.0'
7.0'-12.0' CORED THROUGH COBBLES AND BOULDERS

DRILLING DATE: 1-17-08 TO 1-18-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON
SAMPLING AND NX ROCK CORING
CASING SIZE: 3 1/4" I.D., DEPTH: 55.0'
WATER DEPTH: 68.7', 0 HRS

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



THE CLASSIFICATIONS OF THE MATERIALS ENCOUNTERED HAVE BEEN VERIFIED
W. AU *Wing Cheong Au* W. WETTSTEIN
GEO TECHNICAL ENGINEER / GEOLOGIST

TRC COMPANIES INC.
DRILLING CONTRACTOR

THIS SHEET IS INCLUDED FOR THE CONVENIENCE OF THE DEPARTMENT, AND IS NOT PART OF THE CONTRACT DOCUMENTS (SEE PENNDOT PUBLICATION NO. 408, SECTION 102.05)

THE SUBSURFACE EXPLORATION DATA WHICH ARE PRESENTED ON THESE DRAWINGS (INCLUDING BORING LOGS, EARTH SAMPLES, ROCK SAMPLES, ROCK CORES, CLASSIFICATION OF MATERIALS AND DEPTH OF BORINGS) ACCURATELY REPRESENT THE CONDITIONS ENCOUNTERED BY THE TEST BORING PROGRAM AT EACH BORING LOCATION.

W. AU *Wing Cheong Au* 7/11/19
GEO TECHNICAL ENGINEER DATE

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

**MONTGOMERY COUNTY
UPPER MERION TOWNSHIP**

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

TEST BORING LOGS 3

SHEET 54 OF 59

BPAA-462653

File: S-54.dwg Layout: 54 Plotted: 7/11/19 at 11:54am By: evjacinto

Abutment 2, Wingwall C

BORING NO. **S-5**

STA. 68+20.50, 32.0' LT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%)	RQD (%)	DESCRIPTION
						GRADE SURFACE ELEV.: 148.5'
1.5	S-1	2-3-40	1.4	93		POORLY GRADED SAND (sp/A-1-b), WHITE, DRY DENSE TO VERY DENSE (FILL) S-2 SAMPLE FROM 1.5' TO 1.9'.
3.0	S-2	50/0.4	0.4	100		
4.5	S-3	2-3-2	0.9	60		POORLY GRADED GRAVEL WITH SILT AND SAND (gp-gm/A-2-4), WHITISH BROWN, DRY TO MOIST, LOOSE
6.0	S-4	3-3-3	0.9	60		
7.5	S-5	3-3-2	0.4	27		
9.0	S-6	4-3-2	0.3	20		SILTY SAND WITH GRAVEL (sm/A-2-4), BROWN TO GRAY, DRY TO MOIST, LOOSE
10.5	S-7	3-3-3	1.3	87		
12.0	S-8	3-2-1	1.0	67		SILTY CLAY WITH SAND (cl-mL/A-6), GRAYISH BROWN TO BROWN, MOIST, SOFT TO MEDIUM
13.5	S-9	3-2-3	1.4	93		
15.0	S-10	2-3-3	1.5	100		
16.5	S-11	16-14-16	1.3	87		SILTY GRAVEL WITH SAND (gm/A-2-4), WHITISH BROWN, DRY TO MOIST, MEDIUM DENSE TO DENSE
18.0	S-12	18-18-15	1.5	100		
19.5	S-13	11-10-10	1.5	100		SANDY SILT WITH GRAVEL (ml/A-4), BROWN, MOIST, LOOSE TO MEDIUM DENSE.
21.0	S-14	8-7-6	1.5	100		
22.5	S-15	5-5-6	1.4	93		
24.0	S-16	6-6-6	1.5	100		
25.5	S-17	4-4-6	1.3	87		
27.0	S-18	6-7-7	1.5	100		
28.5	S-19	7-10-7	1.5	100		
30.0	S-20	9-9-7	1.3	87		
31.5	S-21	7-7-8	1.5	100		
33.0	S-22	7-9-16	1.5	100		SILTY CLAYEY SAND (sc-sm/A-2-4) GRAY, MOIST, LOOSE TO MEDIUM DENSE
34.5	S-23	7-5-5	1.5	100		
36.0	S-24	7-4-4	1.5	100		
37.5	S-25	4-3-3	0.1	7		SILTY CLAY WITH SAND (cl-m/A-4) GRAY, MOIST TO WET, MEDIUM S-27: ROCK FRAGMENTS.
39.0	S-26	1-1-4	1.5	100		TOP OF BEDROCK AT 39.1'
39.1	S-27	50/0.1	0.1	100		
41.5	R-1		2.1	88/83		LIMESTONE, GRAY, HARD FRESH TO HIGHLY WEATHERED, THINLY TO THICKLY BEDDED, RD 30'-50', WIDELY TO VERY WIDELY JOINTED RD 90'-110'
46.5	R-2		5.0	100/96		R-1: LOW RECOVERY DUE TO POSSIBLE LEDGE
51.5	R-3		4.5	90/70		R-3 SOIL SEAM FROM 49.2' TO 49.7' R-3 1/8" THICK QUARTZ SEAM AT 50.8'
56.5	R-4		5.0	100/96		
61.5	R-5		5.0	100/88		

AUGERED FROM 1.9' TO 3.0'
PUSHED SHELBY TUBE FROM 10.5' TO 12.5' IN COMPANION BORING.

DRILLING DATE: 3-13-08 TO 3-13-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK CORING
CASING SIZE: 3 1/4" I.D., DEPTH: 39.1'
WATER DEPTH: 53.8', 24 HRS

Abutment 2

BORING NO. **S-6**

STA. 68+20.00, 4.0' LT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%)	RQD (%)	DESCRIPTION
						GRADE SURFACE ELEV.: 158.0
1.5						BITUMINOUS CONCRETE PAVEMENT AND SUBBASE.
3.0						
4.5	S-1	20-15-22	0.5	33		POORLY GRADED GRAVEL WITH SAND (gp/A-1-a) BROWNISH GRAY DRY, DENSE TO VERY DENSE
6.0	S-2	20-48-16	0.9	60		
7.5	S-3	14-15-18	1.2	80		SILTY SAND WITH GRAVEL (sm/A-1-a) REDDISH BROWN, DRY TO MOIST, VERY LOOSE TO DENSE
9.0	S-4	10-5-5	1.2	80		
10.5	S-5	3-3-4	1.0	67		
12.0	S-6	4-3-4	1.3	87		
13.5	S-7	4-2-2	0.7	47		
15.0	S-8	3-3-4	0	0		
16.5	S-9	6-8-5	1.1	73		
18.0	S-10	5-5-3	1.1	73		SANDY SILT (ml/A-4), BROWN, MOIST, LOOSE TO VERY LOOSE
19.5	S-11	3-3-2	1.2	80		
21.0	S-12	2-2-2	1.4	93		
22.5	S-13	2-3-4	1.5	100		
24.0	S-14	3-5-5	1.2	80		CLAYEY SAND (sc/A-4), BROWNISH GRAY, MOIST, LOOSE
25.5	S-15	3-3-2	1.2	80		
27.0	S-16	3-5-5	1.3	87		SANDY SILT (ml/A-4), BROWN, WET, LOOSE TO VERY DENSE
28.5	S-17	5-6-8	1.4	93		
30.0	S-18	5-12-19	1.5	100		
31.5	S-19	29-30-30	1.0	67		S-19 & S-20: WITH ROCK FRAGMENTS
33.0	S-20	24-12-16	1.5	100		
34.5	S-21	15-10-7	1.2	80		
36.0	S-22	4-5-6	1.1	73		
37.5	S-23	7-7-7	1.5	100		SILT WITH SAND (ML/A-4), YELLOWISH BROWN, WET, LOOSE TO DENSE
39.0	S-24	12-14-11	1.5	100		
40.5	S-25	4-5-5	1.2	80		
42.0	S-26	6-6-8	1.5	100		
43.5	S-27	8-8-8	1.5	100		
45.0	S-28	7-4-5	1.5	100		
46.5	S-29	4-5-5	1.5	100		S-31 SILT WITH SAND (ml/A-4), YELLOWISH BROWN, WET, LOOSE TO DENSE
48.0	S-30	5-5-5	1.5	100		
49.5	S-31	4-5-6	1.5	100		S-32 ROCK FRAGMENTS AT 50.8'-51.0'.
51.0	S-32	1-14-28	1.4	93		TOP OF BEDROCK AT 51.0'

THIS SHEET IS INCLUDED FOR THE CONVENIENCE OF THE DEPARTMENT, AND IS NOT PART OF THE CONTRACT DOCUMENTS (SEE PENNDOT PUBLICATION NO. 408, SECTION 102.05)

THE SUBSURFACE EXPLORATION DATA WHICH ARE PRESENTED ON THESE DRAWINGS (INCLUDING BORING LOGS, EARTH SAMPLES, ROCK SAMPLES, ROCK CORES, CLASSIFICATION OF MATERIALS AND DEPTH OF BORINGS) ACCURATELY REPRESENT THE CONDITIONS ENCOUNTERED BY THE TEST BORING PROGRAM AT EACH BORING LOCATION.

W. AU *Wing Cheong Au* 7/11/19
GEOTECHNICAL ENGINEER DATE

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



THE CLASSIFICATIONS OF THE MATERIALS ENCOUNTERED HAVE BEEN VERIFIED
W. AU *Wing Cheong Au* W. WETTSTEIN
GEOTECHNICAL ENGINEER / GEOLOGIST

TRC COMPANIES INC.
DRILLING CONTRACTOR

GENERAL NOTES
W.O.H - WEIGHT OF HAMMER
B.P.C.E. - BOTTOM OF PILE CAP ELEVATION IN FOOT
E.P.T.E. - ESTIMATED PILE TIP ELEVATION IN FOOT
▽ - GROUNDWATER ELEVATION AT TIME SHOWN

BORING NO. **S-6** CONT'D.

E.P.T.E.	DEPTH (FT)	SAMPLE NO.	RECOVERY (ft.)	Recovery (%)	RQD (%)	DESCRIPTION
107.0	51.0	S-32	1-14-28	1.4	93	TOP OF BEDROCK AT 51.0'
	53.0	R-1		2.0	100/60	LIMESTONE, GRAY, HARD TO VERY HARD, SLIGHTLY TO MODERATELY WEATHERED, MEDIUM TO VERY THINLY BEDDED, RD 40'-60', MEDIUM TO VERY WIDELY JOINTED RD 100'-140'
	56.0	R-2		3.0	100/93	
	61.0	R-3		5.0	100/90	R-3: EVIDENCE OF SOLUTIONING ON JOINT AT 57.2'
	66.0	R-4		4.7	94/94	R-4: VOID FROM 65.0' TO 65.3'
66.7' 156 HRS.	71.0	R-5		4.4	88/68	R-4 & R-5: EVIDENCE OF SOIL INTRUSION WITHIN R-5: SOIL SEAM FROM 66.3' TO 66.4' R-5: VOID FROM 69.7' TO 70.3'
	76.0	R-6		5.0	100/94	

AUGERED: 0.0' TO 3.0'
DRILLING DATE: 1-16-08 TO 1-17-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK CORING
CASING SIZE: 3 1/4" I.D., DEPTH: 51.0'
WATER DEPTH: 66.7', 156 HRS

Mark	Description	By	Chk'd	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
TEST BORING LOGS 4

SHEET 55 OF 59
DATE
BPAA-462653

File: S-56.dwg Layout: 56 Plotted: 7/11/19 at 1:12pm By: evjcinco

Abutment 2
BORING NO. **S-7**

STA. 68+17.50, 17.0' RT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) ROD (%)	DESCRIPTION
1.5					GRADE SURFACE ELEV.: 159.2
3.0					BITUMINOUS CONCRETE PAVEMENT AND SUBBASE.
4.5					
6.0	S-1	6-9-19	0.8	53	POORLY GRADED GRAVEL WITH SAND (gp/A-1-a) GRAY TO WHITISH GRAY TO BROWN, DRY, MEDIUM DENSE
7.5	S-2	13-9-8	1.0	67	
9.0	S-3	8-5-5	1.2	80	SILTY SAND WITH GRAVEL(SM/A-2-4) GRAY TO REDDISH GRAY TO WHITISH GRAY TO BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
10.5	S-4	3-3-3	1.1	73	
12.0	S-5	3-3-3	1.0	67	
13.5	S-6	3-2-3	1.1	73	
15.0	S-7	3-2-2	1.4	93	
16.5	S-8	3-4-4	1.4	93	
18.0	S-9	8-11-5	1.2	80	
19.5	S-10	10-7-12	1.0	67	
21.0	S-11	12-4-4	1.2	80	S-11: BLACK LOWER PORTION
22.5	S-12	4-5-5	0.9	60	
24.0	S-13	3-3-6	1.2	80	
25.5	S-14	4-4-6	0.6	40	
27.0	S-15	4-5-9	1.5	100	
28.5	S-16	8-8-8	1.1	73	
30.0	S-17	11-9-12	1.3	87	
31.5	S-18	6-8-10	1.5	100	
33.0	S-19	10-8-7	1.3	87	
34.5	S-20	10-10-11	1.3	87	
36.0	S-21	5-5-6	1.5	100	
37.5	S-22	11-10-13	1.5	100	SILTY GRAVEL WITH SAND (gm/A-2-4), WHITISH BROWN, DRY, MEDIUM DENSE
39.0	S-23	12-12-11	1.3	87	
40.5	S-24	9-6-10	1.5	100	SILTY SAND WITH GRAVEL (sm/A-2-4), BROWN TO GRAY, DRY TO MOIST, MEDIUM DENSE
42.0	S-25	8-8-13	1.5	100	
43.5	S-26	9-11-13	1.1	73	
44.4	S-27	5-50/0.4	0.9	100	TOP OF BEDROCK AT 44.4'
47.0	R-1		2.6	100/100	LIMESTONE, GRAY, HARD TO VERY HARD, SLIGHTLY WEATHERED TO FRESH, MEDIUM TO THINLY BEDDED, RD 40'-50', WIDELY TO VERY WIDELY JOINTED RD 90'-150'
50.5	R-2		3.3	94/94	
55.5	R-3		5.0	100/84	R-3: VERY BROKEN FROM 51.3' TO 51.6'
60.0	R-4		4.4	98/84	R-4: MODERATELY WEATHERED FROM 55.5' TO 56.3'
64.5	R-54		4.5	100/97	R-5: SIGN OF INCREASE WEATHERING AT 60.8' R-1 TO R-5: NO EVIDENCE OF SOLUTION ACTIVITY ON SEPARATIONS.

DRILLING DATE: 1-21-08 TO 1-22-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK
CASING SIZE: 3 1/4" I.D., DEPTH: 44.0'
WATER DEPTH: 50.1', 24 HRS

END OF BORING AT 64.5'

Abutment 2, Wingwall D
BORING NO. **S-8**

STA. 68+12.50, 48.0' RT
EAST OF CHURCH RD B.L.

DEPTH (FT)	SAMPLE NO. AND TYPE/CORE RUN	BLOWS/0.5 FT ON SAMPLER	RECOVERY (ft.)	Recovery (%) ROD (%)	DESCRIPTION
1.5	S-1	2-3-8	0.5	33	GRADE SURFACE ELEV.: 145.0'
3.0	S-2	3-3-5	0.9	60	SANDY SILT WITH GRAVEL (ml/A-4), BROWN TO GRAY, MOIST, LOOSE TO MEDIUM DENSE.
4.5	S-3	6-3-2	0.7	47	
6.0	S-4	4-4-4	1.1	73	
7.5	S-5	4-3-4	0	0	
9.0	S-6	3-3-3	1.0	67	SILTY SAND (sm/A-4), GRAY TO BLACK, MOIST, SOFT TO VERY STIFF
10.5	S-7	2-1-3	1.5	100	
12.0	S-8	6-5-6	0.9	60	SC-SM/A-4, 12.0' - 12.5'
13.5	S-9	9-11-11	0.3	20	
15.0	S-10	18-31-33	1.4	93	POORLY GRADED GRAVEL WITH SILT AND SAND (gp-gm/A-1-a), BROWN, DRY, MEDIUM DENSE TO VERY DENSE
16.5	S-11	31-18-18	0.7	47	S-11: SILTY SAND WITH GRAVEL
18.0	S-12	18-12-12	0.8	53	
19.5	S-13	7-5-5	1.3	87	SANDY SILT WITH GRAVEL (ml/A-4), BROWN, DRY, LOOSE TO MEDIUM DENSE.
21.0	S-14	5-8-9	1.5	100	
22.5	S-15	9-9-12	1.3	87	
24.0	S-16	6-5-5	1.5	100	SILTY SAND WITH GRAVEL (sm/A-4), BROWN TO REDDISH BROWN, DRY TO MOIST, LOOSE
25.5	S-17	5-4-4	1.5	100	
27.0	S-18	4-4-3	1.5	100	
28.5	S-19	3-6-3	0.5	33	S-19: WITH ROCK FRAGMENTS.
30.0	S-20	3-2-3	0.9	60	
31.5	S-21	2-3-5	1.3	87	SILTY CLAY (cl-ml/A-4) GRAY, MOIST TO WET, VERY SOFT TO MEDIUM CONSISTENCY
33.0	S-22	2-2-2	1.3	87	
34.5	S-23	4-4-4	0.6	40	
36.0	S-24	1-1-1	1.5	100	
37.5	S-25	1-1-1	1.1	73	
39.0	S-26	1-1-1	0.8	53	S-27: WITH ROCK FRAGMENTS. TOP OF BEDROCK AT 39.6'
39.6	S-27	48-50/0.1	0.6	100	
41.0	R-1		1.4	100/100	LIMESTONE, GRAY, HARD, FRESH TO MODERATELY WEATHERED, THINLY TO THICKLY BEDDED, RD 30'-50', WIDELY FRACTURED RD 110'-130'
46.0	R-2		5.0	100/100	
51.0	R-3		5.0	100/90	
56.0	R-4		5.0	100/100	R-4: QUARTZ FROM 52.3' TO 52.4'
61.0	R-5		5.0	100/92	R-1 TO R-5: NO EVIDENCE OF SOLUTIONING ON SEPARATIONS.

PUSHED SHELBY TUBE FROM 7.5' TO 9.5' IN COMPANION BORING.
PUSHED SHELBY TUBE FROM 10.5' TO 12.5' IN COMPANION BORING.

DRILLING DATE: 3-12-08 TO 3-12-08
EQUIPMENT USED: ACKER AXCEL TRACK MOUNTED RIG
DRILLING METHODS: HOLLOW STEM AUGERING, SPLIT SPOON SAMPLING AND NX ROCK CORING
CASING SIZE: 3 1/4" I.D., DEPTH: 36.9'
WATER DEPTH: 48.7', 48 HRS

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103



GENERAL NOTES

- W.O.H - WEIGHT OF HAMMER
- B.P.C.E. - BOTTOM OF PILE CAP ELEVATION IN FOOT
- E.P.T.E. - ESTIMATED PILE TIP ELEVATION IN FOOT
- ↓ - GROUNDWATER ELEVATION AT TIME SHOWN

THE CLASSIFICATIONS OF THE MATERIALS ENCOUNTERED HAVE BEEN VERIFIED
W. AU Wing Cheong Au W. WETTSTEIN
GEOTECHNICAL ENGINEER / GEOLOGIST

TRC COMPANIES INC.
DRILLING CONTRACTOR

THIS SHEET IS INCLUDED FOR THE CONVENIENCE OF THE DEPARTMENT, AND IS NOT PART OF THE CONTRACT DOCUMENTS (SEE PENNDOT PUBLICATION NO. 408, SECTION 102.05)

THE SUBSURFACE EXPLORATION DATA WHICH ARE PRESENTED ON THESE DRAWINGS (INCLUDING BORING LOGS, EARTH SAMPLES, ROCK SAMPLES, ROCK CORES, CLASSIFICATION OF MATERIALS AND DEPTH OF BORINGS) ACCURATELY REPRESENT THE CONDITIONS ENCOUNTERED BY THE TEST BORING PROGRAM AT EACH BORING LOCATION.

W. AU Wing Cheong Au 7/11/19
GEOTECHNICAL ENGINEER DATE

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP
T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

TEST BORING LOGS 5

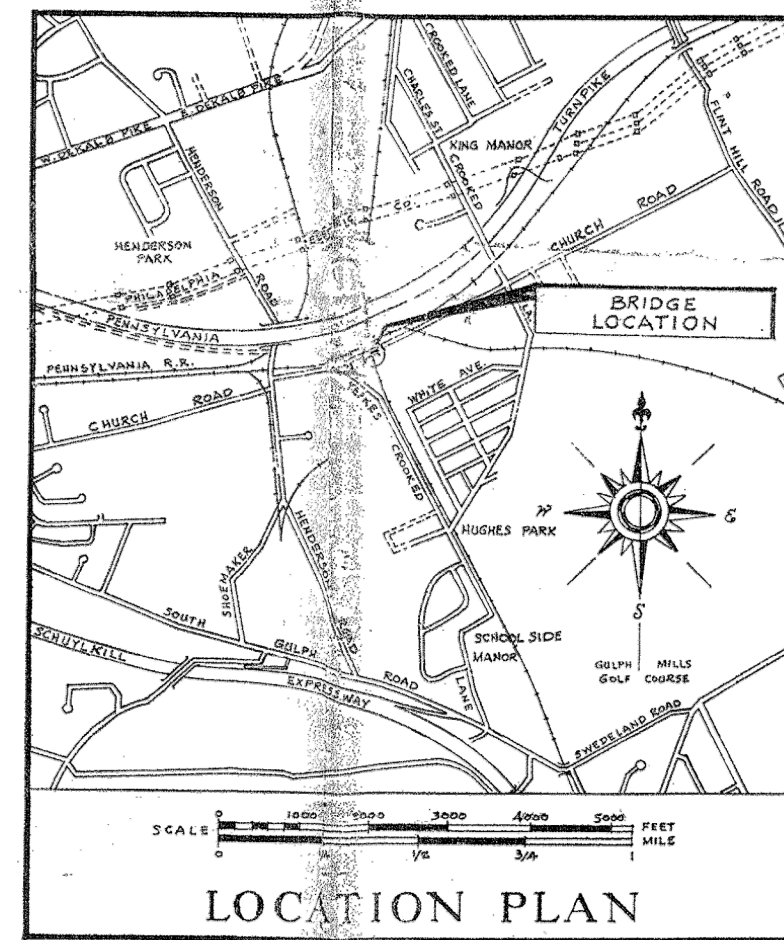
SHEET 56 OF 59

DATE

BPAA-462653

UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA.

CHURCH ROAD BRIDGE
OVER TRACKS OF PHILA. SUBURBAN TRANSPORTATION CO.



UTILITY	ADDRESS
PHILADELPHIA SUBURBAN TRANSPORTATION Co.	69 TH STREET TERMINAL, UPPER DARBY, PA, 19082. ATTN: G. E. CORNELIUS.
PHILADELPHIA ELECTRIC Co.	P.O. BOX 711 NORRISTOWN, PA, 19404 ATTN: C. L. GATTEY
PHILADELPHIA SUBURBAN WATER Co.	762 LANCASTER AVENUE BRYN MAWR, PA, 19010 ATTN: JOHN MCKAY
SUN PIPE LINE COMPANY.	1608 WALNUT ST. - 10 TH FLOOR PHILADELPHIA PA, 19103 ATTN: G. J. FOX, JR.
BELL TELEPHONE COMPANY OF PENNSYLVANIA.	400 CHERRY STREET NORRISTOWN, PA. ATTN: RICHARD OTT

CHURCH ROAD BRIDGE
Over Tracks Of
PHILA. SUBURBAN TRANSPORTATION Co.
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PA.

TITLE SHEET

C. RAYMOND WEIR ASSOCIATES, INC.
CIVIL ENGINEERS & SURVEYORS
AMBLER, PA.
William T. Weir P.E.

DWG. NO 1235-B/4

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC
2400 CHESTNUT STREET
PHILA., PA 19103

Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

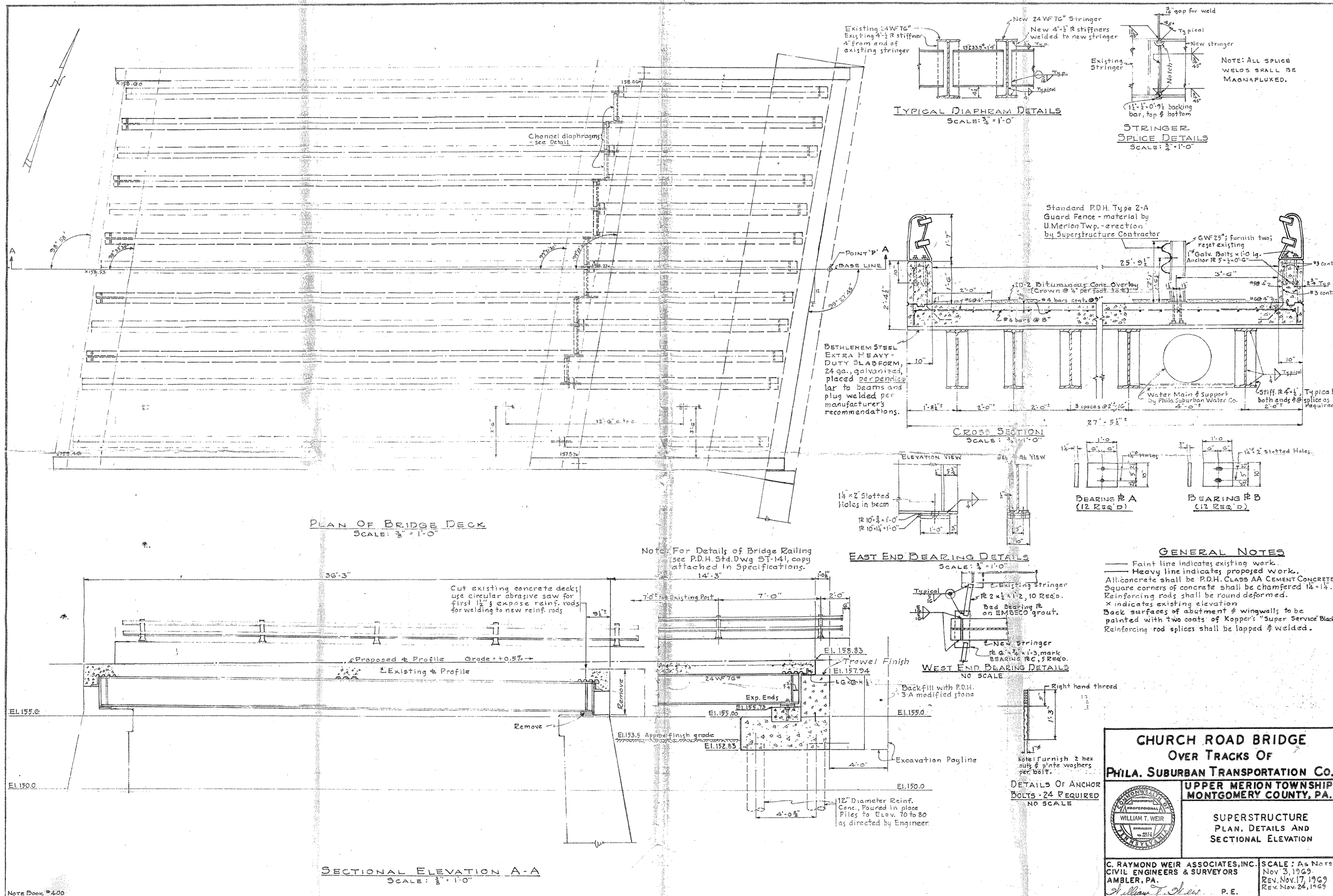
EXIST. STRUCTURE - FOR INFO. ONLY

SHEET 57 OF 59

BPAA-462653

File: S-57.dwg Layout: 57 Plotted: 3/27/19 at 1:50pm By: evjacio

File: S-58.dwg Layout: 58 Plotted: 3/27/19 at 1:52pm By: evjcinto



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
UPPER MERION TOWNSHIP

T-801 (EAST CHURCH ROAD) BRIDGE
OVER ELECTRIFIED SEPTA ROUTE 100
SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE

EXIST. STRUCTURE - FOR INFO. ONLY

SHEET 58 OF 59

BPAA-462653

**CHURCH ROAD BRIDGE
OVER TRACKS OF
PHILA. SUBURBAN TRANSPORTATION CO.
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PA.**

**SUPERSTRUCTURE
PLAN, DETAILS AND
SECTIONAL ELEVATION**

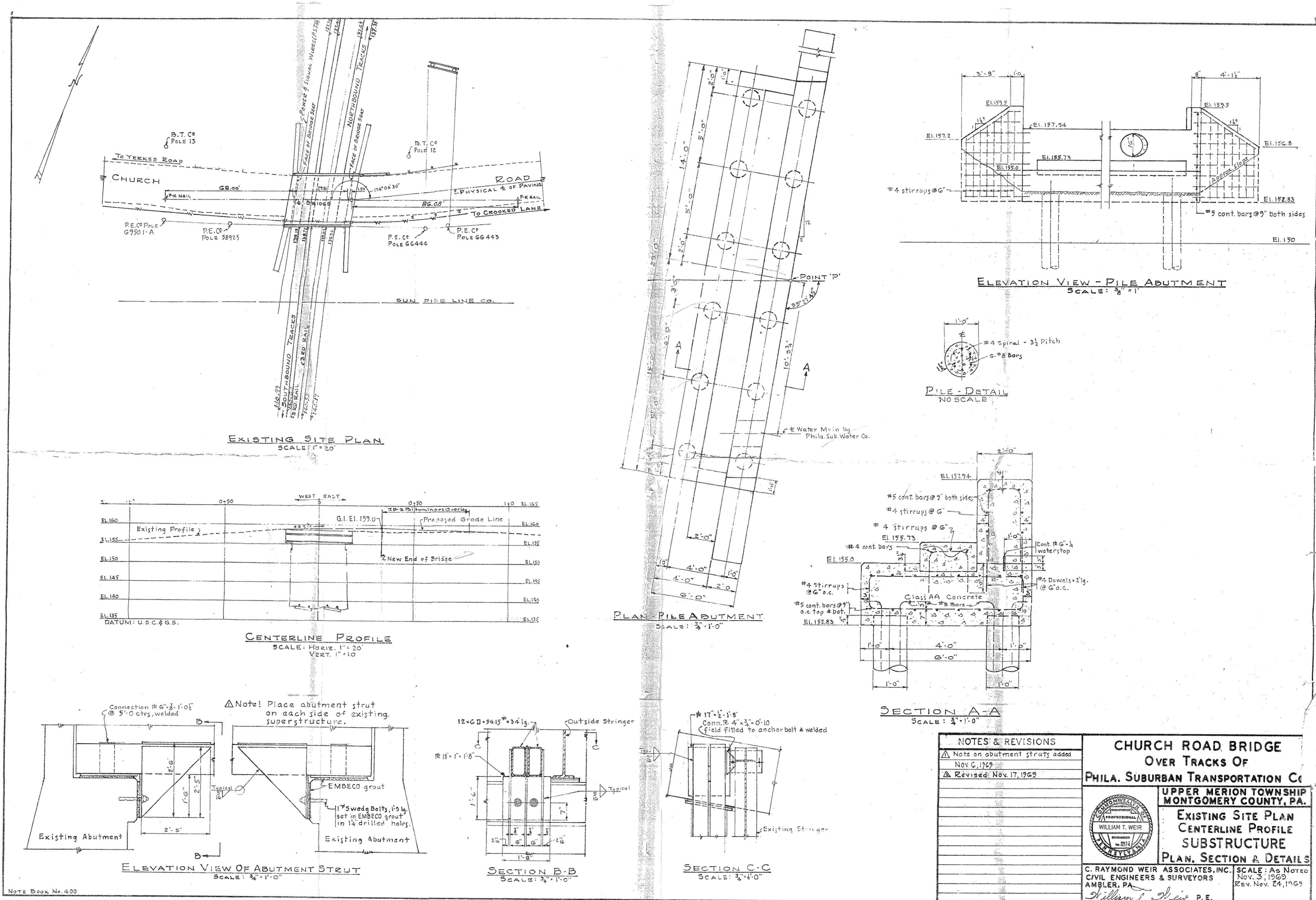
C. RAYMOND WEIR ASSOCIATES, INC.
WILLIAM T. WEIR
P.E.
AMBLER, PA.

SCALE: A-3 No. 20
Nov. 3, 1969
REV. NOV. 17, 1969
REV. NOV. 24, 1969

DWG. NO. 11-35-22

PREPARED BY
BOLES, SMYTH ASSOCIATES, INC.
2400 CHESTNUT STREET
PHILA., PA 19103

File: S-59.dwg Layout: 59 Plotted: 3/27/19 at 1:54pm By: evjcinto



Mark	Description	By	Chk'd.	Recm'd	Date
REVISIONS					

NOTES & REVISIONS

- Notes on abutment struts added Nov. 6, 1969
- Revised: Nov. 17, 1969

CHURCH ROAD BRIDGE OVER TRACKS OF PHILA. SUBURBAN TRANSPORTATION CO. UPPER MERION TOWNSHIP MONTGOMERY COUNTY, PA.

EXISTING SITE PLAN CENTERLINE PROFILE SUBSTRUCTURE PLAN, SECTION A & DETAILS

C. RAYMOND WEIR ASSOCIATES, INC. CIVIL ENGINEERS & SURVEYORS AMBLER, PA. *William T. Weir P.E.*

SCALE: As Noted Nov. 3, 1969 Rev. Nov. 24, 1969

DWG NO 1235-B, 1/69

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 MONTGOMERY COUNTY
 UPPER MERION TOWNSHIP
 T-801 (EAST CHURCH ROAD) BRIDGE
 OVER ELECTRIFIED SEPTA ROUTE 100
 SIMPLE SPAN COMP. P/S CONCRETE SPREAD BOX BEAM BRIDGE
EXIST. STRUCTURE - FOR INFO. ONLY

DES: WA DWG: RJ CKD: WA