pennsylvania
DEPARTMENT OF TRANSPORTATION

February 25, 2020

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P. O. Box 3265
Harrisburg, PA 17105-3265

Re: Bucks County
Middletown Township
S.R. 0001, Section RC2
Route 1 Expressway over CSX
PUC Docket # A-2020-3017848
DOT No. 589 953 U
MPMS No. 93445

Secretary Chiavetta:

PADOT is requesting that the PUC add Conrail as a Party of Record to this docket. Specifically, it is anticipated that the maintenance responsibility of catenary towers that need to be relocated will be discussed, among other topics, at a field conference that is in the process of being scheduled by the PUC. A letter about this and a copy of the filed application has been sent by mail to Conrail and is attached to this e-filing for your records. A copy of this letter and the letter to Conrail will also be sent to all Parties of Record. In the interest of economy, a copy of the previously filed application will not be sent to the previously named Parties of Record as they were previously served this. A Certificate of Service in which Conrail has been added is included.

If you have any questions, please call me at 610-205-6532.

Sincerely,

Robert Magee
District Grade Crossing/Utility Engineer
Engineering District 6-0
Pennsylvania Department of Transportation

Attachments

CC: Parties of Record (Copy of this letter and Conrail letter)

File: 93445-PUC-PUC

pennsylvania
DEPARTMENT OF TRANSPORTATION

February 25, 2020

Ryan M. Hill, Director Design & Construction
Consolidated Rail Corporation
1000 Howard Blvd. – 4th floor
Mount Laurel, NJ 08054

Re: Bucks County
Middletown Township
S.R. 0001, Section RC2
Route 1 Expressway over CSX/SEPTA
PUC Docket # A-2020-3017848
DOT No. 589 953 U
MPMS No. 93445

Mr. Hill:

PADOT is sending you a copy of the PUC application for this project and is requesting the PUC to add Conrail as a Party of Record. Specifically, Conrail was identified as possibly having an interest in catenary towers that need to be relocated for the project. It is anticipated that, among other topics, the maintenance responsibility for catenary towers that need to relocated for this project will be discussed at the field conference that is being scheduled by the PUC.

If you have any questions, please call me at 610-205-6532.

Sincerely,

Robert Magee
District Grade Crossing/Utility Engineer
Engineering District 6-0
Pennsylvania Department of Transportation

Enclosures

File: 93445-PUC-Cnrl

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of the Department of Transportation of the Commonwealth of Pennsylvania for approval to alter the public above grade crossing by the reconstruction of the State Route 0001 Expressway bridge over the track(s) of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority, DOT Number 589 953 U in Middletown Township, Bucks County.	Application Docket No. A-2020-3017848 **Electronically Filed**

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing document upon the participants listed below, in accordance with the requirements of 52 Pa. Code § 1.54, by first class mail, postage prepaid:

Derek Mihaly, P.E., Project Manager
CSX Transportation, Inc.
4 Neshaminy Interplex, Suite 205
Trevose, PA 19053

Robert Lund, Jr., Assistant General Manger
Southeastern Pennsylvania Authority
Engineering Maintenance & Construction
1234 Market Street – 12th floor
Philadelphia, PA 19107

Ryan M. Hill, Director Design & Construction
Consolidated Rail Corporation
1000 Howard Blvd. – 4th floor
Mount Laurel, NJ 08054

Stephanie Teoli Kuhls, Manager
Middletown Township
3 Municipal Way
Langhorne, PA 19047

Brian Hessenthaler, Chief Operating Officer
Bucks County Commissioners
55 East Court Street
Doylestown, PA 18901

Joseph Steinheiser, Project Coordinator
Aqua Pennsylvania, Inc.
762 W. Lancaster Avenue
Bryn Mawr, PA 19010

Jim Napoleon, Manager
Bucks County Water & Sewer Authority
1275 Almshouse Road
Warrington, PA 18976

William Cmorey, Director of Administration
Bensalem Township
2400 Byberry Road
Bensalem, PA 19020

Renoy Thomas, Analyst
CenturyLink
1025 El Dorado Boulevard
Interlocken 4000
Broomfield, CO 80021

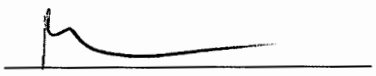
Mike Kimberly, Construction Coordinator
Comcast Cable Communications
190 Shoemaker Road
Pottstown, PA 19464

Mary Chiodo, Asset Specialist
Sunesys Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317

Bill Hensil, Program Manager
PECO Energy Co.
1050 West Swedesford Road
Berwyn, PA 19312

Carl Gross, Senior Manager Network Engineering & Operations
Verizon Pennsylvania, LLC
1050 Virginia Drive – Floor 4
Fort Washington, PA 19034

Dated this 26th Day of February 2020



Name

February 5, 2020

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Application of the Department of Transportation of the Commonwealth of Pennsylvania for approval to alter the public above grade crossing by the reconstruction of the State Route 0001 Expressway bridge over the track(s) of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority, DOT Number 589 953 U in Middletown Township, Bucks County.

Dear Secretary Chiavetta:

Enclosed for filing, please find the Application of the Department of Transportation.

A copy of this Application and Exhibits has been served upon the parties in the Certificate of Service to the Application.

Sincerely,

Robert Magee
District Grade Crossing / Utility Engineer
Engineering District 6-0
Department of Transportation

Attachments

cc: Parties of Record
Mark J. Chappell, P.E., Right-of-Way and Utilities Section, 7th Floor, CKB
Gina M. D'Alfonso, Office of Chief Counsel, 9th Floor, CKB
Ronald J. Hull, P.E., Rail Safety Engineering Section PUC, 3rd Floor, CKB

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of the Department of Transportation of the Commonwealth of Pennsylvania for approval to alter the public above grade crossing by the reconstruction of the State Route 0001 Expressway bridge over the track(s) of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority, DOT Number 589 953 U in Middletown Township, Bucks County.	Application Docket No._____ **Electronically Filed**

To the Pennsylvania Public Utility Commission:

1. The name and address of Applicant are Commonwealth of Pennsylvania, Department of Transportation, Charles H. Davies, P.E., Assistant District Executive, Engineering District 6-0, 7000 Geerdes Boulevard, King of Prussia, PA 19406.

2. The name and address of attorney for the Applicant are Jason D. Sharp, Chief Counsel, Commonwealth of Pennsylvania, Department of Transportation, Office of Chief Counsel, PO Box 8212, Harrisburg, PA 17105-8212.

3. The Applicant is an agency of Commonwealth of Pennsylvania, organized and existing under the Administrative Code of 1929, 71 P.S. § 511, et seq. and generally 36 P.S. § 670 - 401 et seq.

4. The names and addresses of the persons, parties and entities concerned in, or affected by the proposed construction, to the best of the Applicant's knowledge, are shown in the certificate of service. In addition to those served, the Applicant requests that the following also receive service of all documents in this matter:

Mark J. Chappell, P.E., Chief
Utilities and Right of Way Section
Pennsylvania Department of Transportation
PO Box 3362
Harrisburg, PA 17105-3362

Gina M. D'Alfonso,
Senior Counsel in Charge
Office of Chief Counsel
Pennsylvania Department of Transportation
PO Box 8212
Harrisburg, PA 17105-8212

5. It is desirable to replace the current bridge with two bridges carrying the northbound and southbound lanes of State Route 0001 over the tracks of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority. The existing bridge superstructure over the railroads is composed of steel plate girders and reinforced concrete. This is to be replaced with continuous curved composite steel plate girder and reinforced concrete. The existing minimum horizonal clearance is with the most southern track at 9'-9 1/8". The existing minimum vertical clearance is with the southernmost track at 23'-6". The proposed minimum horizontal clearance is 17'-5½" on the northbound structure and 17-0 7/16" on the southbound structure over the

southernmost track. The proposed minimum vertical clearance is 26'- 0 7/8" on the northbound structure and 23'-7¼" on the southbound structure over the southernmost track. Relocation of catenary towers will also be incidental to this project. A Location Map is attached hereto and marked as Exhibit "A"; a copy of the Type, Size, and Location Plans is attached hereto and marked as Exhibit "B".

6. The average daily traffic for State Route 0001 is 88,782 vehicles with 8% trucks.

7. The estimated total cost for the bridge replacement is $32,000,000. The funding for the project will be 80% federal funds and 20% state funds.

8. This project is necessary and proper for the safety and convenience of the public.

9. A conference of all parties of interest should be held to discuss the proposed alteration.

Wherefore, Applicant respectfully requests that the Public Utility Commission approve this application:

Respectfully Submitted:

Charles H. Davies, P.E.
Assistant District Executive
Engineering District 6-0
Department of Transportation
7000 Geerdes Boulevard
King of Prussia, PA 19406
Phone (610) 205-6671
Fax (610) 205-6903

Dated: FEB - 5 2020

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of the Department of Transportation of the Commonwealth of Pennsylvania for approval to alter the public above grade crossing by the reconstruction of the State Route 0001 Expressway bridge over the track(s) of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority, DOT Number 589 953 U in Middletown Township, Bucks County.	Application Docket No._____ **Electronically Filed**

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing document upon the participants listed below, in accordance with the requirements of 52 Pa. Code § 1.54, by first class mail, postage prepaid:

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CSX Transportation, Inc.
4 Neshaminy Interplex, Suite 205
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Robert Lund, Jr., Assistant General Manger
Southeastern Pennsylvania Authority
Engineering Maintenance & Construction
1234 Market Street – 12th floor
Philadelphia, PA 19107

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Middletown Township
3 Municipal Way
Langhorne, PA 19047

Brian Hessenthaler, Chief Operating Officer
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762 W. Lancaster Avenue
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William Cmorey, Director of Administration
Bensalem Township
2400 Byberry Road
Bensalem, PA 19020

Renoy Thomas, Analyst
CenturyLink
1025 El Dorado Boulevard
Interlocken 4000
Broomfield, CO 80021

Mike Kimberly, Construction Coordinator
Comcast Cable Communications
190 Shoemaker Road
Pottstown, PA 19464

Mary Chiodo, Asset Specialist
Sunesys Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317

Bill Hensil, Program Manager
PECO Energy Co.
1050 West Swedesford Road
Berwyn, PA 19312

Carl Gross, Senior Manager Network Engineering & Operations
Verizon Pennsylvania, LLC
1050 Virginia Drive – Floor 4
Fort Washington, PA 19034

Dated this 5th Day of February 2020

Name

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of the Department of Transportation of the Commonwealth of Pennsylvania for approval to alter the public above grade crossing by the reconstruction of the State Route 0001 Expressway bridge over the track(s) of CSX Transportation, Inc. and Southeastern Pennsylvania Transportation Authority, DOT Number 589 953 U in Middletown Township, Bucks County.	Application Docket No._____ **Electronically Filed**

VERIFICATION

I, Robert Magee, District Grade Crossing / Utility Engineer, PennDOT Engineering 6-0, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. §4904 (relating to unsworn falsification to authorities).

Date: February 5, 2020

Robert Magee
District Grade Crossing / Utility Engineer

DOT #589953U
SR 0001, Segment 0060
BMS ID: 09/0001/0060/1082
Lincoln Highway
Middletown Township
Bucks County

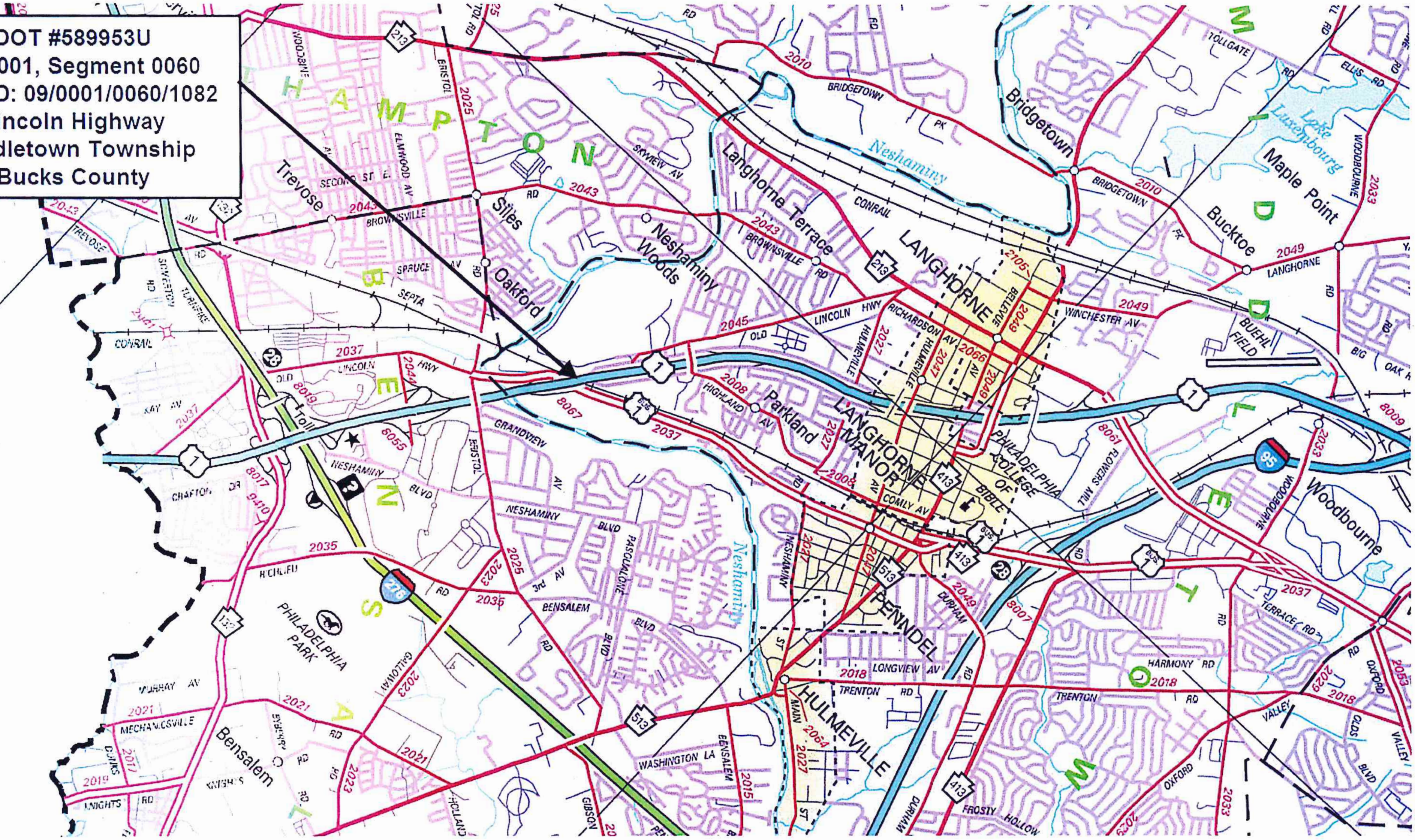


Exhibit "A"

PLAN PREPARATION

DESIGNER JOHNSON, MIRMIRAN & THOMPSON, INC.

S.R. 0001 ESTABLISHED AS A LIMITED ACCESS HIGHWAY FROM STATION 68+07 TO STATION 383+07 BY PLAN OF LEGISLATIVE ROUTE 281 PARALLEL, SECTION 12-A R/W APPROVED MAY 14, 1963.

S.R. 0001 RE-ESTABLISHED AS A LIMITED ACCESS HIGHWAY FROM STATION 68+08 TO STATION 82+47, STATION 100+66 TO STATION 108+25 AND NB STATION 109+01 TO NB STATION 114+00 BY PLAN OF STATE ROUTE 0001, SECTION RC1 R/W APPROVED MAY 8, 2017.

S.R. 0001 RE-ESTABLISHED AS A LIMITED ACCESS HIGHWAY FROM STATION 78+30 TO STATION 80+25, STATION 81+20 TO STATION 81+35, STATION 81+97 TO NB STATION 109+15, SB STATION 111+50 TO SB STATION 142+66 AND SB STATION 144+43 TO STATION 153+01 BY PLAN OF STATE ROUTE 0001, SECTION RC2 R/W APPROVED NOVEMBER 12, 2019.

THE PUBLIC UTILITY COMMISSION SHALL APPROPRIATE PROPERTY IN APPLICATION DOCKET NO. _____ BETWEEN STATION _____ AND STATION _____ PURSUANT TO THE PROVISIONS OF SECTION 2702(b) OF THE ACT OF JULY 1, 1978, P.L. 598, NO. 116 (66 P.S. SECTION 2702).

NHS	DISTRICT	COUNTY	TOWNSHIP	BOROUGH	ROUTE	SECTION	TOTAL SHEETS
	6-0	BUCKS	BENSALEM		0001	RC2	$CPTOTAL
			MIDDLETOWN				

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281
S.R. 2037 PREVIOUSLY KNOWN AS L.R. 281
S.R. 2044 PREVIOUSLY KNOWN AS RAMP E

ECMS NO. 93445

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF TRANSPORTATION

DRAWINGS FOR CONSTRUCTION OF

STATE ROUTE 0001 SECTION RC2

IN BUCKS COUNTY

FROM STA. 60+75.00 TO STA. 168+00.00 LENGTH 10,500.00 FT. 1.989 MI.

FROM SEG. 0030 OFFSET 0689 TO SEG. 0070 OFFSET 1548

FROM SEG. 0031 OFFSET 0662 TO SEG. 0071 OFFSET 1741

ALSO

STATE ROUTE 2037

FROM STA. 856+25.00 TO STA. 860+00.00

FROM SEG. 0071 OFFSET 0727 TO SEG. 0051 OFFSET 1289

FROM STA. 848+98.00 TO STA. 856+25.00

FROM SEG. 0070 OFFSET 0000 TO SEG. 0070 OFFSET 0727

ALSO

STATE ROUTE 2044

FROM STA. 706+50.00 TO STA. 729+75.00

FROM SEG. 0010 OFFSET 0650 TO SEG. 0010 OFFSET 2975

FROM SEG. 0011 OFFSET 0650 TO SEG. 0011 OFFSET 2975

ALSO

STATE ROUTE 8019

ALSO

STATE ROUTE 8055

ALSO

STATE ROUTE 8067

ALSO INCLUDED:

TRAFFIC CONTROL PLAN		$TCP999$SHEETS
SIGNING AND SIGN LIGHTING PLAN		$SSLP999$SHEETS
PAVEMENT MARKING PLAN		$PMP999$SHEETS
EROSION AND SEDIMENT POLLUTION CONTROL PLAN		$ES999$SHEETS
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN		$PCSM999$SHEETS
TRAFFIC SIGNAL PLAN		$TS999$SHEETS
ITS PLAN		$ITS999$SHEETS
ELECTRIC TRACTION PLAN		$ET999$SHEETS
STRUCTURE PLANS	(S-33468)	$SP1999$SHEETS
	(S-33185)	$SP2999$SHEETS
	(S-33180)	$SP3999$SHEETS
	(S-33181)	$SP4999$SHEETS
	(S-33182)	$SP5999$SHEETS
	(S-XXXXX)	$SP6999$SHEETS
	(S-XXXXX)	$SP7999$SHEETS
	(S-XXXXX)	$SP8999$SHEETS
	(S-XXXXX)	$SP9999$SHEETS
	(S-XXXXX)	$SP10999$SHEETS
CROSS SECTIONS		$XS999$SHEETS
EXISTING STRUCTURE PLANS	(S-8112)	$ESP1999$SHEETS
	(S-759)	$ESP2999$SHEETS
	(S-6628)	$ESP3999$SHEETS
	(S-870)	$ESP4999$SHEETS
	(S-6625)	$ESP5999$SHEETS

LIMIT OF SIGNING

STATE ROUTE 0001 SECTION RC2

FROM SEG. 0024 OFFSET 1415 TO SEG. 0070 OFFSET 1548

FROM SEG. 0025 OFFSET 1394 TO SEG. 0071 OFFSET 1741

SCALE

HORIZONTAL 0 50 100 FEET

VERTICAL 0 10 20 FEET

DESIGN DESIGNATION

HIGHWAY CLASSIFICATION – OTHER FREEWAYS AND EXPRESSWAYS (URBAN)
DESIGN SPEED – 60 MPH
PAVEMENT WIDTH – 6-12' LANES - DIVIDED HIGHWAY
SHOULDER WIDTH – 12' RT., 13' LT.
MEDIAN WIDTH, MAXIMUM – 89'-4 1/2"
MINIMUM – 12'-0"

TRAFFIC DATA

CURRENT A.D.T. – 88,782 (2025)
DESIGN YEAR A.D.T. – 99,672 (2045)
D.H.V. – 7,974
D – 53%
T – 8%

PUC APPLICATION DOCKET NUMBER _____

PREPARED BY:
JOHNSON, MIRMIRAN and THOMPSON, INC.
220 ST. CHARLES WAY
SUITE 200
YORK, PA 17402

REG. PROF. ENGINEER

DATE

RECOMMENDED DATE _____

DISTRICT EXECUTIVE

RECOMMENDED DATE _____

DEPUTY SECRETARY

APPROVED DATE _____

ACTING SECRETARY OF TRANSPORTATION
(ON BEHALF OF THE GOVERNOR AS WELL AS THE SECRETARY)

O:\PPA\000285-000_SR 0001Section 035\CADD\S.R. 0001Sec. RC2\11-Highways\Front\hwttl_RC2.dgn
1/16/2020 2:06:19 PM

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	BUCKS	0001	RC2	7 OF 98
BENSALEM AND MIDDLETOWN TOWNSHIPS				
REVISION NUMBER	REVISIONS		DATE	BY

TABULATION OF OVERALL AND CONSTRUCTION LENGTHS

S.R. 0001 NB OVERALL LENGTH: STA. 60+75.00 TO STA. 168+00.00 = 10,725.00 FEET = 2.031 MILES

S.R. 0001 NB CONSTRUCTION LENGTH: STA. 61+80.00 TO STA. 166+80.00 = 10,500 FEET = 1.989 MILES

S.R. 0001 SB OVERALL LENGTH: STA. 60+75.00 TO STA. 168+00.00 = 10,725.00 FEET = 2.031 MILES

S.R. 0001 SB CONSTRUCTION LENGTH: STA. 61+80.00 TO STA. 166+80.00 = 10,500 FEET = 1.989 MILES

LIST OF STATIONING EQUALITIES

N/A

PA ONE CALL SYSTEM

PA ONE CALL PHONE: 1-800-242-1776

BENSALEM TOWNSHIP SERIAL NO.: 20182332374, 20182332534, 20182332919, 20182333114, 20182333211

MIDDLETOWN TOWNSHIP SERIAL NO.: 20182332469, 20182332918, 20182342913, 20182343046, 20191303088

TABULATION OF STRUCTURE DATA

EXISTING

S.R. 0001 OVER S.R. 2044
STA. 90+39.32 S.R. 0001
SEG. 0040 OFF. 1603 NB
SEG. 0041 OFF. 1574 SB
TYPE: P/S CONC. I-BEAM
SPAN: 1 @ 32'-3", 1 @ 79'-6", 1 @ 27'-6"
UNDERCLEARANCE: 13'-9"
CLEAR ROADWAY: 46'-0" SB, 33'-0" NB
SKEW: 90°00'00"
STRUCTURE NO.: S-8112

S.R. 0001 OVER NESHAMINY CREEK
STA. 119+98.50 S.R. 0001 NB
SEG. 0050 OFF. 2184 NB
SEG. 0051 OFF. 1924 SB
TYPE: C.I.P. CONC. ARCH (100. CLR. SPAN)
SPAN: 1 @ 107'-6", 1 @ 107'-6", 1 @ 107'-6"
(CL PIER TO CL PIER)
UNDERCLEARANCE: 28'-0"
CLEAR ROADWAY: 41'-0" SB, 29'-1" NB
SKEW: 55°00'00"
STRUCTURE NO.: S-759 & S-6628

S.R. 0001 OVER S.R. 2037
STA. 141+27.23 S.R. 0001 SB
SEG. 0060 OFF. 1122 NB
SEG. 0061 OFF. 1392 SB
TYPE: ROLLED STEEL I-BEAM & PL GIRDER
SPAN: 1 @ 51'-10 15/16", 1 @ 53'-11 5/8", 1 @ 121'-11 5/8", 1 @ 121'-11 5/8", 1 @ 53'-11 5/8", 1 @ 51-10 15/16"
UNDERCLEARANCE: 23'-6"
CLEAR ROADWAY: 29'-0" SB, 29'-0" NB
SKEW: 32°58'30"
STRUCTURE NO.: S-870 & S-6625

PROPOSED

S.R. 0001 OVER S.R. 2044
STA. 90+29.51 S.R. 0001
SEG. 0040 OFF. 1593 NB
SEG. 0041 OFF. 1564 SB
TYPE: DUAL 2-SPAN CONT. COMP. P/S CONC. SPREAD BOX BEAM BRIDGE
SPAN: 1 @ 79'-9", 1 @ 93'-9"
UNDERCLEARANCE: 16'-7 7/16"
CLEAR ROADWAY: VARIES 72'-3 1/4" TO 74'-0 11/16" SB
VARIES 72'-3 1/4" TO 75'-7 3/8" NB
SKEW: 90°00'00"
STRUCTURE NO.: S-33468
RECOMMENDED JUNE XX, 2020

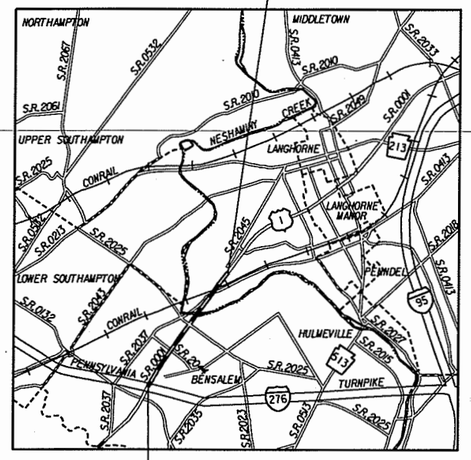
S.R. 0001 NB OVER NESHAMINY CREEK
STA. 119+96.77 S.R. 0001
SEG. 0050 OFF. 2141
TYPE: 3-SPAN CONT. COMP. P/S CONC. BULB-TEE BEAM BRIDGE
SPAN: 1 @ 150'-0", 1 @ 150'-0", 1 @ 103'-0"
UNDERCLEARANCE: 20'-0 5/8"
CLEAR ROADWAY: VARIES 60'-0" TO 63'-5 1/2"
SKEW: 55°00'00"
STRUCTURE NO.: S-33185
RECOMMENDED JUNE XX, 2020

S.R. 0001 SB OVER NESHAMINY CREEK
STA. 119+40 S.R. 0001
SEG. 0051 OFF. 1825
TYPE: 3-SPAN CONT. COMP. P/S CONC. BULB-TEE BEAM BRIDGE
SPAN: 1 @ 146'-1", 1 @ 149'-11 1/8", 1 @ 105'- 5 11/16"
UNDERCLEARANCE: 24'-3 3/4"
CLEAR ROADWAY: VARIES 60'-0" TO 64'-7 3/8"
SKEW: VARIES 52°20'15" TO 58°21'34"
STRUCTURE NO.: S-33180
RECOMMENDED JUNE XX, 2020

S.R. 0001 NB OVER S.R. 2037
STA. 142+46.04 S.R. 0001
SEG. 0060 OFF. 1173
TYPE: 4-SPAN CONT. COMP. CURVED STEEL PLATE GIRDER BRIDGE
SPAN: 1 @ 110'-0", 1 @ 145'-0", 1 @ 203'-7", 1 @ 139'-0"
UNDERCLEARANCE: 20'-10 1/2" (S.R. 2037), 26'-0 7/8" (CSX), 27'-3 3/16" (SEPTA)
CLEAR ROADWAY: 48'-0"
SKEW: 80°00'00" TO LOCAL TANGENT
STRUCTURE NO.: S-33181
RECOMMENDED JUNE XX, 2020

S.R. 0001 SB OVER S.R. 2037
STA. 141-09.40 S.R. 0001
SEG. 0061 OFF. 1305
TYPE: 4-SPAN CONT. COMP. STEEL PLATE GIRDER BRIDGE
SPAN: 1 @ 106'-0", 1 @ 140'-0", 1 @ 211'-4", 1 @ 139'-0"
UNDERCLEARANCE: 16'-6 1/2" (S.R. 2037), 23'-7 1/4" (CSX), 24'-11 15/116" (SEPTA)
CLEAR ROADWAY: 54'-0"
SKEW: 70°00'00"
STRUCTURE NO.: S-33182
RECOMMENDED JUNE XX, 2020

LIMIT OF WORK
STA. 168+00.00
SEG. 0070 OFF. 1548
SEG. 0071 OFF. 1741
S.R. 0001 SEC. RC2
MIDDLETOWN TOWNSHIP
BUCKS COUNTY



LOCATION MAP
SCALE IN MILES
1 0 1 2

LEGEND
PROJECT LOCATION
STATE HIGHWAY
TOWNSHIP ROAD
TOWNSHIP LINE
BOROUGH LINE

LIMIT OF WORK
STA. 60+75.00
SEG. 0030 OFF. 0689
SEG. 0031 OFF. 0662
S.R. 0001 SEC. RC2
BENSALEM TOWNSHIP
BUCKS COUNTY

LIST OF PUBLIC UTILITIES

SYMBOL	UTILITY	ADDRESS	REPRESENTATIVE	TELEPHONE	E-MAIL ADDRESS
—W—	AQUA PENNSYLVANIA, INC.	762 W. LANCASTER AVENUE BRYN MAWR, PA 19010	WILLIAM A. ZAHN (HIGHWAY LIASON)	(610) 645-4203	WAZahn@aquaamerica.com
—S—	BUCKS COUNTY WATER AND SEWER AUTHORITY	1275 ALMSHOUSE ROAD WARRINGTON, PA 18976	JIM NAPOLEAN (MANAGER)	(215) 343-2538	n.jim@bcwsa.net
—E—	BENSALEM TOWNSHIP	2400 BYBERRY ROAD BENSALEM, PA 19020	WILLIAM CMOREY (DIRECTOR OF ADMIN.)	(215) 633-3602	wcmorey@bensalem-township.org
—FO—	CENTURYLINK	1025 EL DORADO BOULEVARD BROOMFIELD, CO 80021	PATRICK PROVOST ( )	(720) 888-4686	patrick.provost@centurylink.com
—CTV—	COMCAST CABLE COMMUNICATIONS, INC.	341 EAST LANCASTER AVE, 2ND FLOOR DOWNINGTOWN, PA 19335	KEITH ALLRIDGE (CONSTRUCTION COORDINATOR)	(717) 713-7586	keith@americomm-llc.com
—FO—	CROWN CASTLE (SUNESYS)	3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406	LAUREN LEVITT ( ) DAVE ANTOL ( ) MATT RITTERSON ( )	(610) 635-3234 (724) 416-2180 (610) 567-7987	lauren.levitt@crowncastle.com fiber.dig@crowncastle.com matt.ritterson@crowncastle.com
—E— —G—	PECO ENERGY COMPANY C/O USIC	1050 WEST SWEDESFORD ROAD BERWYN, PA 19312	BILL HENSIL (PROGRAM MANAGER) MICHAEL KURTZ ( ) NATHAN RINEER ( )	(610) 725-7129	bhensil@peco-energy.com michael.kurtz2@exeloncorp.com nathan.rineer@exeloncorp.com
—T—	SOUTHEASTERN PA TRANSPORTATION AUTHORITY	1234 MARKET STREET, 13TH FLOOR PHILADELPHIA, PA 19107	QWYN DURRETT ( )	(215) 580-8384	qdurrett@septa.org
—T—	VERIZON PENNSYLVANIA LLC	1050 VIRGINIA DRIVE FORT WASHINGTON, PA 19034	CHRIS ATKINSON ( )	(215) 789-7774	chris.j.atkinson@verizon.com

EARTHWORK SUMMARY - ENTIRE PROJECT

THE INFORMATION ON ESTIMATED AMOUNTS OF EARTHWORK HAS BEEN USED IN THE PRELIMINARY ESTIMATE. DO NOT USE AS A WAIVER OF ANY PROVISIONS OF THE SPECIFICATIONS AND CONTRACTS. (ALL QUANTITIES ARE APPROXIMATE.)

CUBIC YARDS OF EXCAVATION					* INCLUDES ALL BORROW ITEMS					
CLASS 1	CLASS 1A	CLASS 2	CLASS 3	CLASS 4	SELECTED BORROW (R-3 ROCK)	SELECTED BORROW (R-4 ROCK)	CUBIC YDS. * COMPLETED EMBANKMENT	CUBIC YDS. BORROW EXCAVATION	CUBIC YDS. OF WASTE	CUBIC YDS. SEL. BORROW STR. B'FILL
---	---	---	---	---	---	---	---	---	---	---

NOTE:

THE DEPTHS OF MATERIAL SHOWN ARE FOR DESIGN PURPOSES ONLY. ANY RISK OF UNANTICIPATED COSTS ASSOCIATED WITH DIFFERENCES BETWEEN THE LISTED DEPTHS AND THE ACTUAL DEPTHS SHALL BE ACCEPTED BY THE CONTRACTOR.

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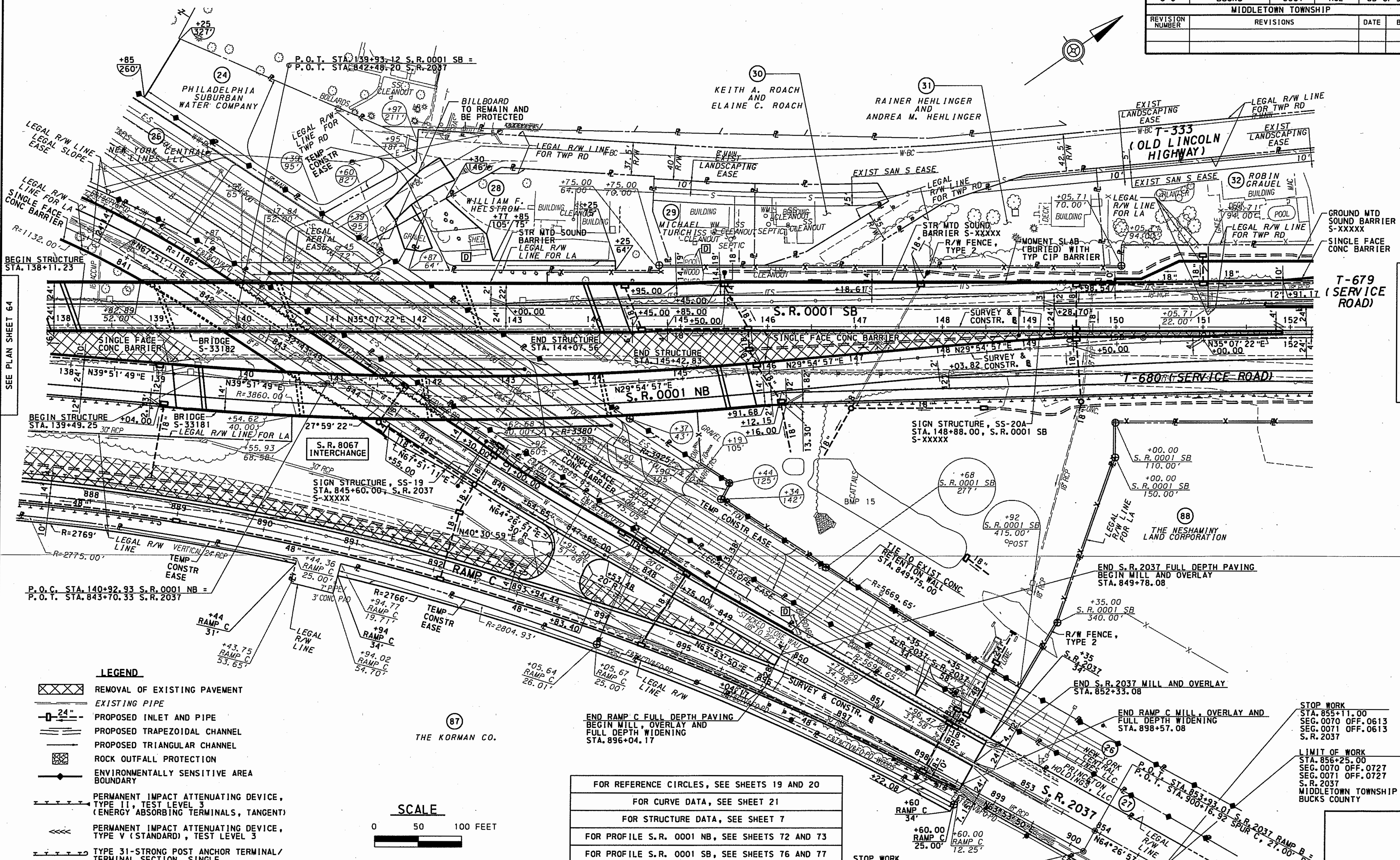
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	BUCKS	0001	RC2	65 OF 98
MIDDLETOWN TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY



P.O.T. STA. 139+93.12 S.R. 0001 SB = P.O.T. STA. 842+48.20 S.R. 2037
PHILADELPHIA SUBURBAN WATER COMPANY
NEW YORK CENTRAL LINES LLC
BILLBOARD TO REMAIN AND BE PROTECTED
WILLIAM F. HELSTROM
MICHAEL TURCHISS
KEITH A. ROACH AND ELAINE C. ROACH
RAINER HEHLINGER AND ANDREA M. HEHLINGER
ROBIN GRAUEL
T-333 (OLD LINCOLN HIGHWAY)
T-679 (SERVICE ROAD)
T-680 (SERVICE ROAD)
S.R. 0001 SB
S.R. 0001 NB
S.R. 8067 INTERCHANGE
RAMP C
S.R. 2037
BEGIN STRUCTURE STA. 138+11.23
BEGIN STRUCTURE STA. 139+49.25
BRIDGE S-33182
BRIDGE S-33181
END STRUCTURE STA. 144+07.56
END STRUCTURE STA. 145+42.83
SIGN STRUCTURE, SS-20A STA. 148+88.00, S.R. 0001 SB S-XXXXX
SIGN STRUCTURE, SS-19 STA. 845+60.00, S.R. 2037 S-XXXXX
GROUND MTD SOUND BARRIER S-XXXXX
SINGLE FACE CONC BARRIER
STR MTD SOUND BARRIER S-XXXXX
MOMENT SLAB (BURIED) WITH TYP CIP BARRIER
TIE TO EXIST CONC RETENTION WALL STA. 849+75.00
BMP 15
THE NESHAMINY LAND CORPORATION
THE KORMAN CO.
NEW YORK CENTRAL LINES LLC
PRINCETON HOLDINGS, LLC
P.O.C. STA. 140+92.93 S.R. 0001 NB = P.O.T. STA. 843+70.33 S.R. 2037
END S.R. 2037 FULL DEPTH PAVING BEGIN MILL AND OVERLAY STA. 849+78.08
END S.R. 2037 MILL AND OVERLAY STA. 852+33.08
END RAMP C MILL, OVERLAY AND FULL DEPTH WIDENING STA. 898+57.08
END RAMP C FULL DEPTH PAVING BEGIN MILL, OVERLAY AND FULL DEPTH WIDENING STA. 896+04.17
P.O.T. STA. 853+93.01 S.R. 2037 RAMP B = P.O.T. STA. 900+16.92 SPUR C, 27.00' RT.
STOP WORK STA. 855+11.00 SEG. 0070 OFF. 0613 SEG. 0071 OFF. 0613 S.R. 2037
LIMIT OF WORK STA. 856+25.00 SEG. 0070 OFF. 0727 SEG. 0071 OFF. 0727 S.R. 2037 MIDDLETOWN TOWNSHIP BUCKS COUNTY
STOP WORK STA. 900+16.92 SEG. 0070 OFF. 0495 (S.R. 2037) SEG. 0071 OFF. 0495 (S.R. 2037) RAMP C
SEE PLAN SHEET 64
SEE PLAN SHEET 66

LEGEND

- REMOVAL OF EXISTING PAVEMENT
- EXISTING PIPE
- PROPOSED INLET AND PIPE
- PROPOSED TRAPEZOIDAL CHANNEL
- PROPOSED TRIANGULAR CHANNEL
- ROCK OUTFALL PROTECTION
- ENVIRONMENTALLY SENSITIVE AREA BOUNDARY
- PERMANENT IMPACT ATTENUATING DEVICE, TYPE II, TEST LEVEL 3 (ENERGY ABSORBING TERMINALS, TANGENT)
- PERMANENT IMPACT ATTENUATING DEVICE, TYPE V (STANDARD), TEST LEVEL 3
- TYPE 31-STRONG POST ANCHOR TERMINAL/ TERMINAL SECTION, SINGLE

SCALE

0 50 100 FEET

FOR REFERENCE CIRCLES, SEE SHEETS 19 AND 20
FOR CURVE DATA, SEE SHEET 21
FOR STRUCTURE DATA, SEE SHEET 7
FOR PROFILE S.R. 0001 NB, SEE SHEETS 72 AND 73
FOR PROFILE S.R. 0001 SB, SEE SHEETS 76 AND 77
FOR PROFILE S.R. 2037, SEE SHEETS 80 AND 81
FOR PROFILE RAMP C, SEE SHEETS 96 AND 97

SURVEY BOOK NOS. 10428, 10429, 10430, 10431, 10432, 10433, 10434, 10435, AND 10273

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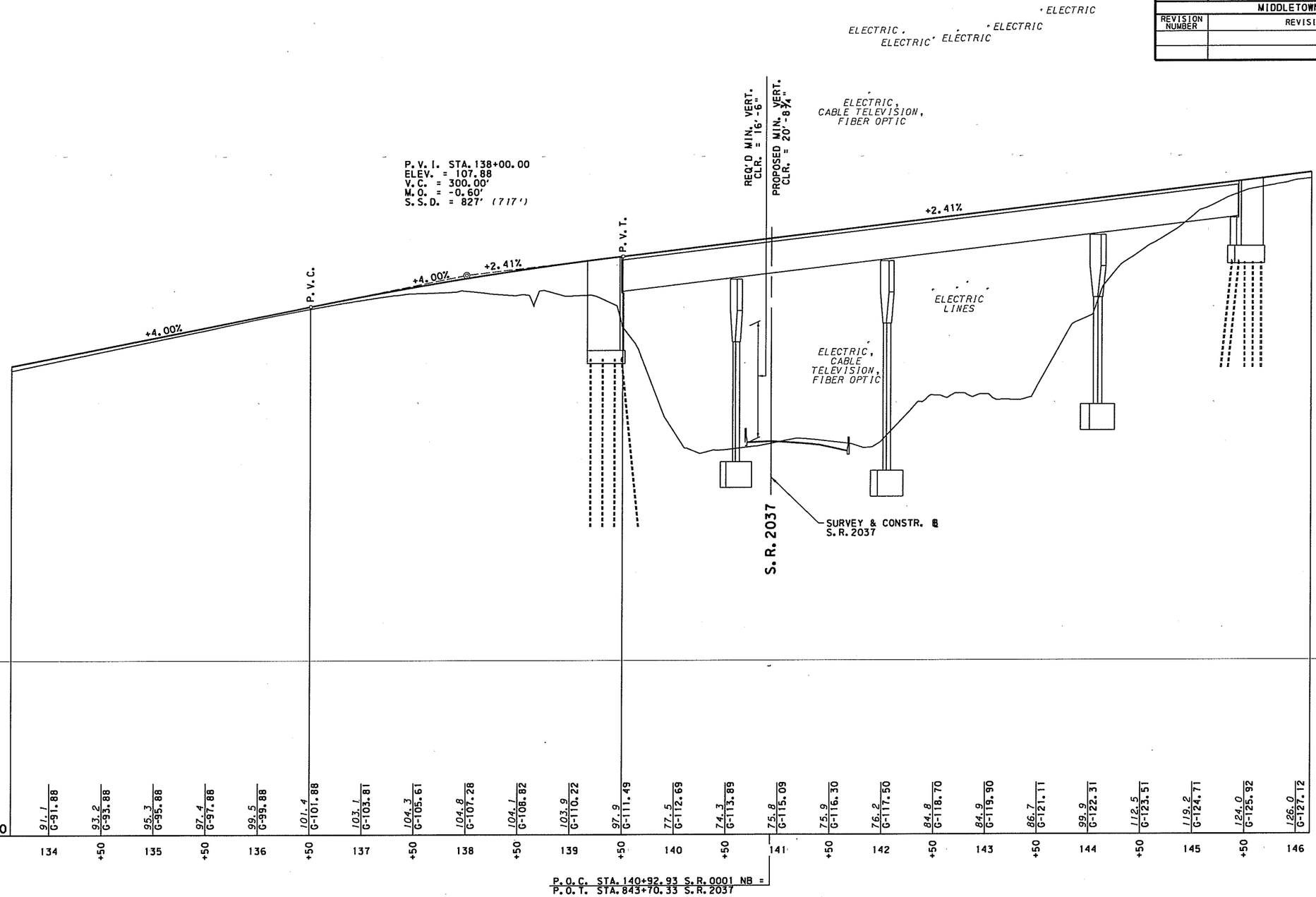
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	BUCKS	0001	RC2	72 OF 98
MIDDLETOWN TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

SEE PLAN SHEET 71

SEE PLAN SHEET 73



S.R. 0001 NB

SCALE

HORIZONTAL: 0 50 100 FEET

VERTICAL: 0 10 20 FEET

FOR PLAN, SEE SHEETS 64 AND 65

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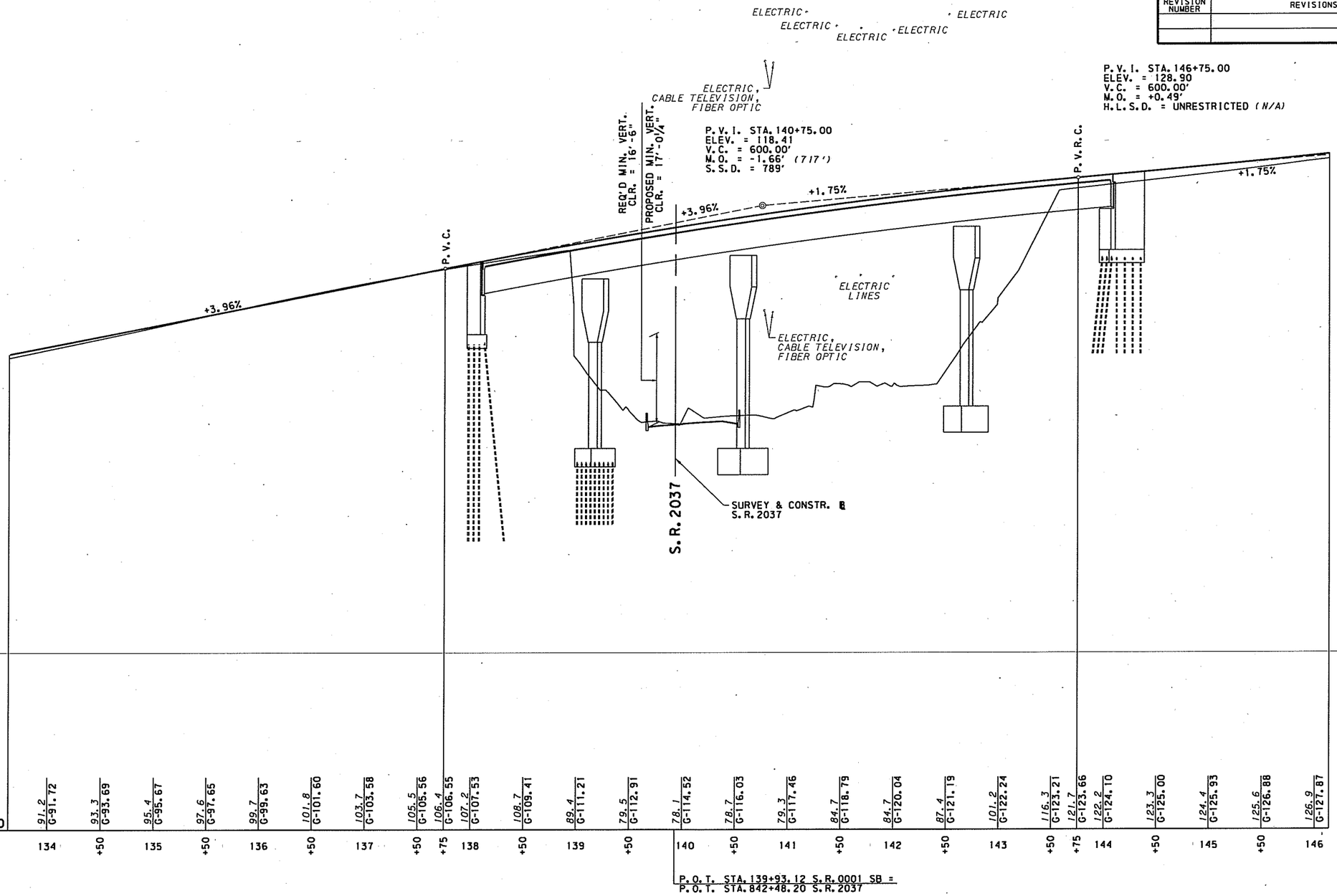
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	BUCKS	0001	RC2	76 OF 98
MIDDLETOWN TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

SEE PLAN SHEET 75

SEE PLAN SHEET 77



S. R. 0001 SB

SCALE

HORIZONTAL 0 50 100 FEET

VERTICAL 0 10 20 FEET

FOR PLAN, SEE SHEETS 64 AND 65

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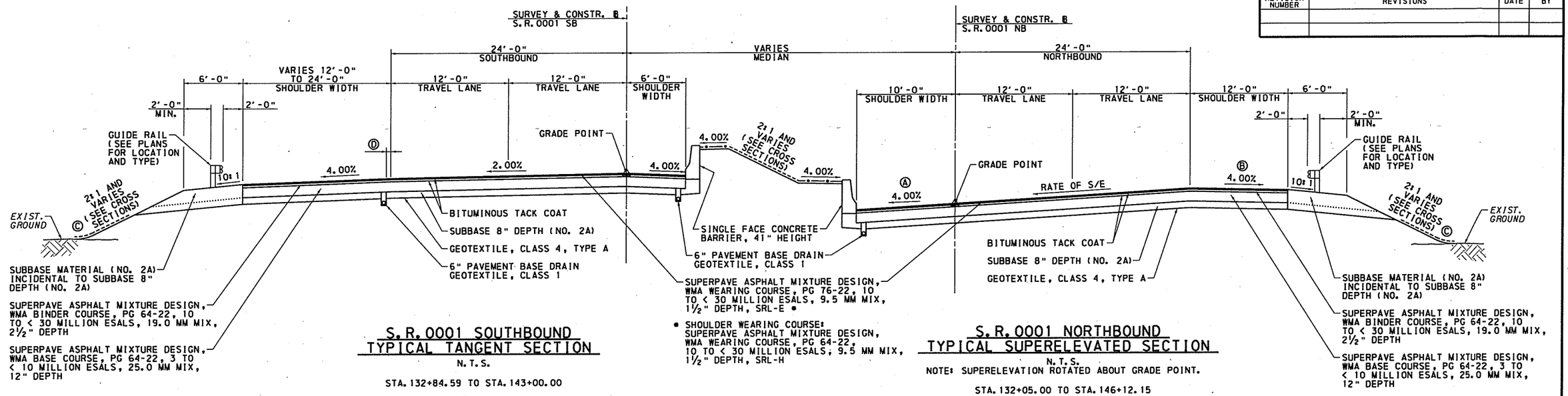
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	BUCKS	0001	RC2	43 OF 98
BENSALEM AND MIDDLETOWN TOWNSHIPS				

REVISION NUMBER	REVISIONS	DATE	BY



S.R. 0001 SOUTHBOUND TYPICAL TANGENT SECTION

N.T.S.

STA. 132+84.59 TO STA. 143+00.00

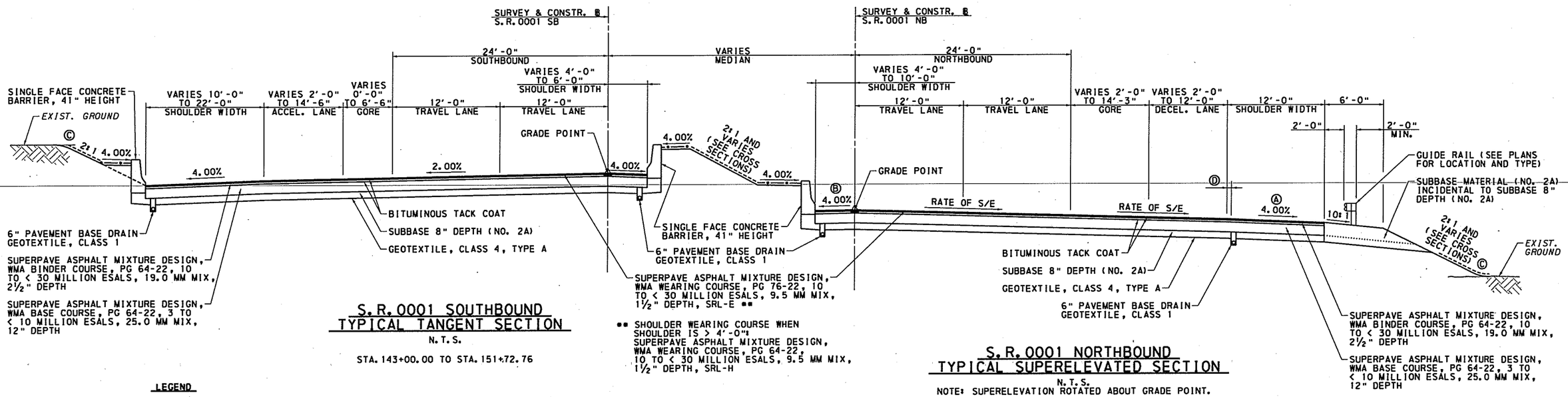
• SHOULDER WEARING COURSE: SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, PG 64-22, 10 TO < 30 MILLION ESALS, 9.5 MM MIX, 1½" DEPTH, SRL-H

S.R. 0001 NORTHBOUND TYPICAL SUPERELEVATED SECTION

N.T.S.

NOTE: SUPERELEVATION ROTATED ABOUT GRADE POINT.

STA. 132+05.00 TO STA. 146+12.15



S.R. 0001 SOUTHBOUND TYPICAL TANGENT SECTION

N.T.S.

STA. 143+00.00 TO STA. 151+72.76

•• SHOULDER WEARING COURSE WHEN SHOULDER IS > 4'-0": SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, PG 64-22, 10 TO < 30 MILLION ESALS, 9.5 MM MIX, 1½" DEPTH, SRL-H

S.R. 0001 NORTHBOUND TYPICAL SUPERELEVATED SECTION

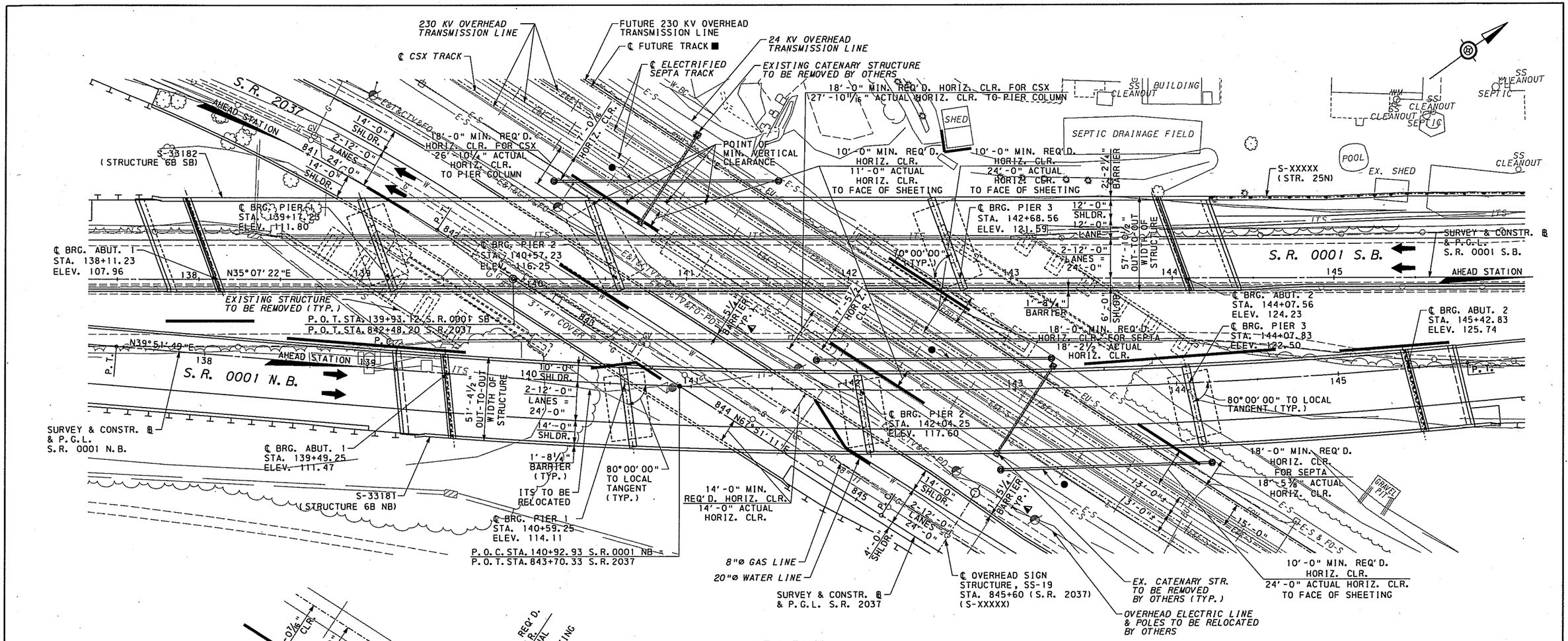
N.T.S.

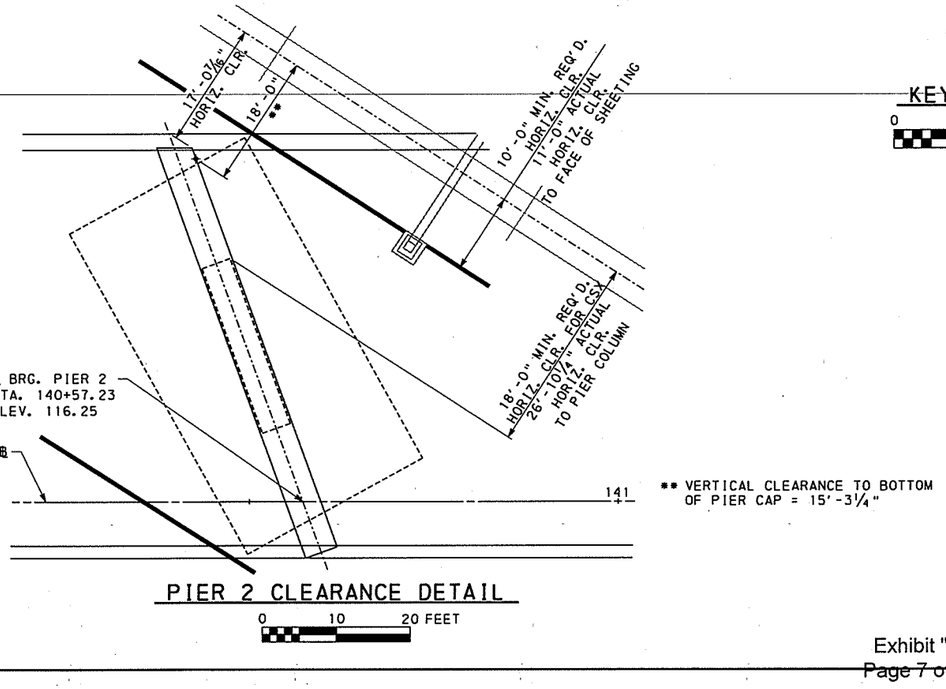
NOTE: SUPERELEVATION ROTATED ABOUT GRADE POINT.

STA. 146+12.15 TO STA. 152+90.87

LEGEND

- Ⓐ SLOPE SAME RATE AS S/E WHEN S/E EXCEEDS SHOULDER SLOPE
- Ⓑ SLOPE -2.00% WHEN RATE OF S/E EXCEEDS +2.00%
- Ⓒ SEE RC-10M FOR ROUNDING DETAILS
- Ⓓ THE DISTANCE FROM THE EDGE OF PAVEMENT WILL BE EQUAL TO THE SUBBASE DEPTH
- -------- SEEDING AND SOIL SUPPLEMENTS - FORMULA L
- —•—•— SEEDING AND SOIL SUPPLEMENTS - FORMULA D





PIER 2 CLEARANCE DETAIL

0 10 20 FEET

KEY PLAN

0 30 60 FEET

■ GRADING AND INSTALLATION OF NEW TRACK TO BE PERFORMED BY OTHERS AFTER CONSTRUCTION OF PROPOSED BRIDGE STRUCTURE

● PROPOSED LOCATION OF NEW CATENARY TOWER

** VERTICAL CLEARANCE TO BOTTOM OF PIER CAP = 15'-3 1/4"

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
S.B. KEY PLAN

PREPARED BY:
JOHNSON, MIRMIRAN & THOMPSON
220 ST. CHARLES WAY,
SUITE 200
YORK, PA 17402

RECOMMENDED _____
DISTRICT BRIDGE ENGINEER

SIGNATURE AND DATE

SHEET 1 OF 9

S-33182

DES: MDR | DWG: ALC | CKD: SPR

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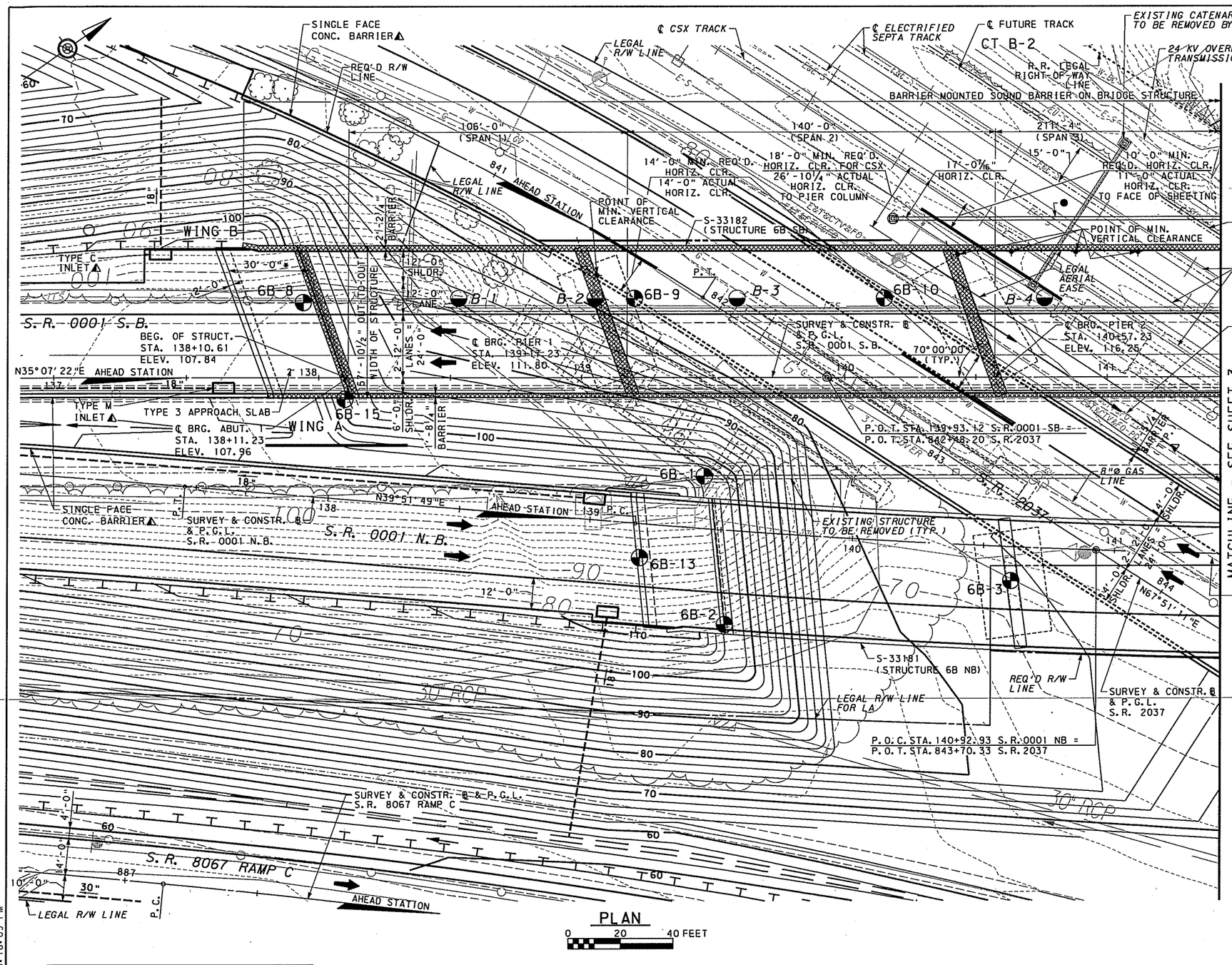

PLAN

0 20 40 FEET

NOTES:

1. FOR ELEVATION VIEW AND VERTICAL CURVE DATA, SEE SHEET 4.
2. WORK THIS SHEET WITH SHEET 3.
3. FOR GENERAL NOTES, SEE SHEET 7.
4. PROTECTIVE FENCE TO BE INSTALLED WHEN SHORING IS WITHIN 15'-0" OF ℄ TRACKS.

INDEX OF DRAWINGS

LEGEND

- PROPOSED TEST BORINGS
- EXISTING BORINGS TAKEN IN 1964
- ROADWAY ITEM
- 10'-0" PROPOSED CONTOUR
- 2'-0" PROPOSED CONTOUR
- 10'-0" EXISTING CONTOUR
- 2'-0" EXISTING CONTOUR
- TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM
- * MEASURED ALONG ℄ S.R. 0001 S.B.
- PROPOSED CATENARY TOWER LOCATION

HORIZONTAL CURVE DATA-S.R. 2037

P.I. STA. 837+73.76
△ = 44°09'38" RT.
D = 4°59'59"
R = 1146.00'
T = 464.88'
L = 883.27'
E = 90.70'
P.C. STA. 833+08.88
P.T. STA. 841+92.15

PROPOSED TEST BORINGS

BORING NO.	STATION *	OFFSET	APPROX. EXIST. GROUND ELEV.
6B-8	137+94.00	28.5' LT.	106'
6B-9	139+20.00	30' LT.	78'
6B-10	140+15.00	30' LT.	79'
6B-15	138+10.00	8' RT.	108'

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
TYPE, SIZE & LOCATION 1

RECOMMENDED _____

SHEET 2 OF 9

S-33182

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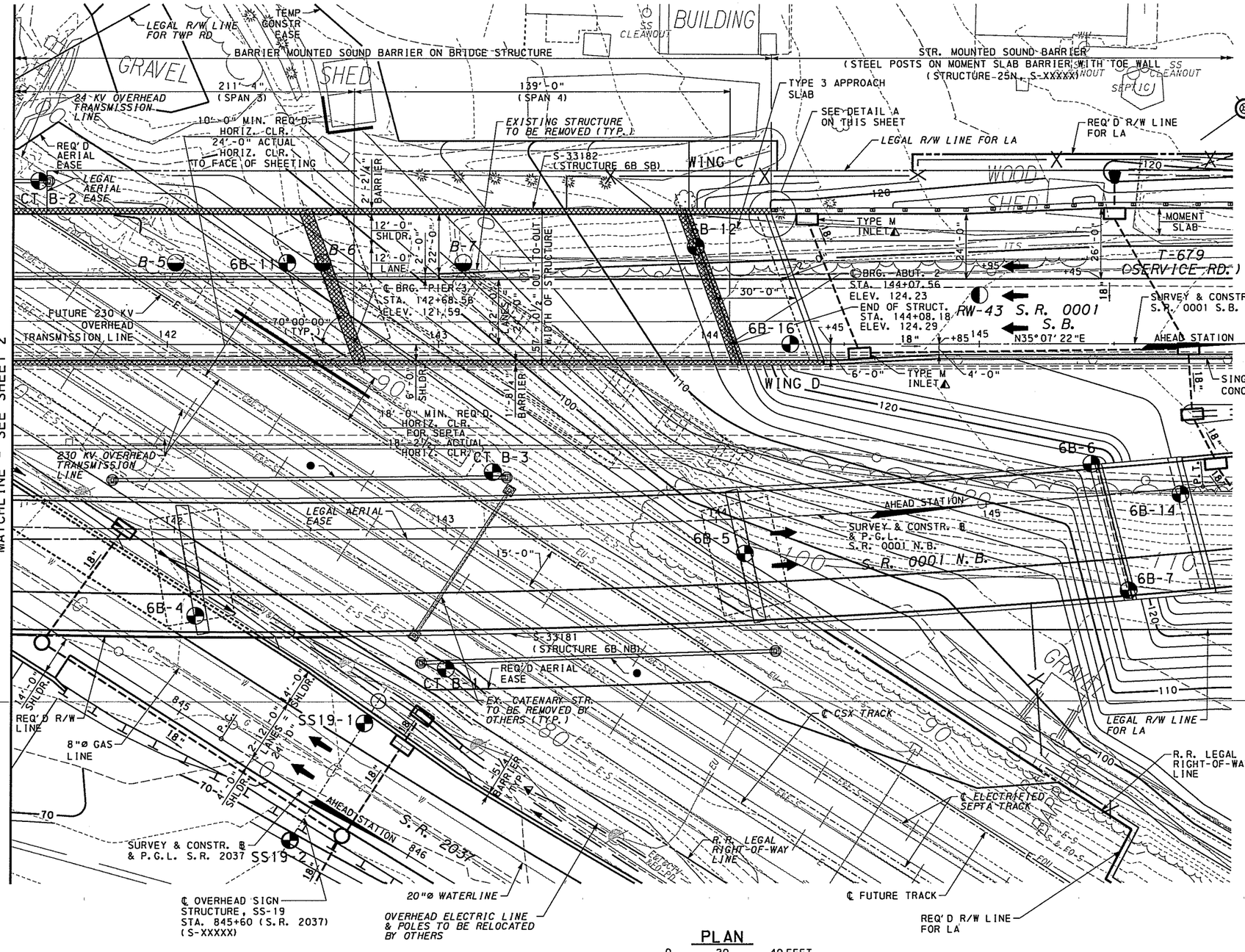
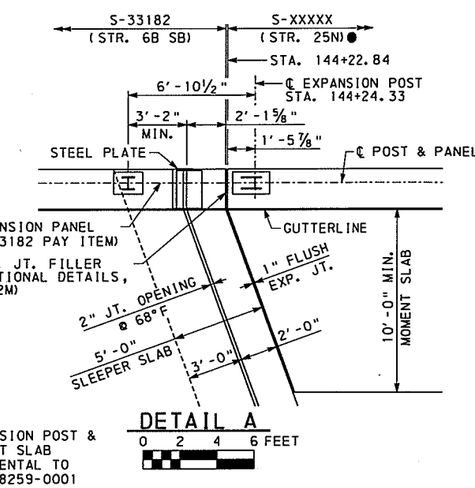


PLAN

0 20 40 FEET

LEGEND

- PROPOSED TEST BORINGS
- EXISTING BORINGS TAKEN IN 1964
- EXISTING BORINGS TAKEN IN 2014
- ROADWAY ITEM
- 10'-0" PROPOSED CONTOUR
- 2'-0" PROPOSED CONTOUR
- 10'-0" EXISTING CONTOUR
- 2'-0" EXISTING CONTOUR
- TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM
- * MEASURED ALONG ℄ S.R. 0001 S.B.
- ◆ MEASURED ALONG SURVEY & CONSTR. ℄ & P.G.L. S.R. 2037
- PROPOSED CATENARY TOWER LOCATION



DETAIL A

0 2 4 6 FEET

★ EXPANSION POST & MOMENT SLAB INCIDENTAL TO ITEM 8259-0001

PROPOSED TEST BORINGS			
BORING NO.	STATION	OFFSET	APPROX. EXIST. GROUND ELEV.
6B-11	142+44.00*	30' LT.	98'
6B-12	143+95.00*	36' LT.	118'
6B-16	144+30.00*	0'	123'
SS19-1	845+60◆	33' LT.	72'
SS19-2	845+60◆	18' RT.	67'

HORIZONTAL CURVE DATA - S.R. 2037

P.I. STA. 846+31.90
△ = 3°24'13" LT.
D = 1°30'00"
R = 3820.00'
T = 113.50'
L = 226.93'
E = 1.69'
P.C. STA. 845+18.40
P.T. STA. 847+45.34

NOTES:

1. WORK THIS SHEET WITH SHEET 2.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
TYPE, SIZE & LOCATION 2

RECOMMENDED _____

SHEET 3 OF 9

S-33182

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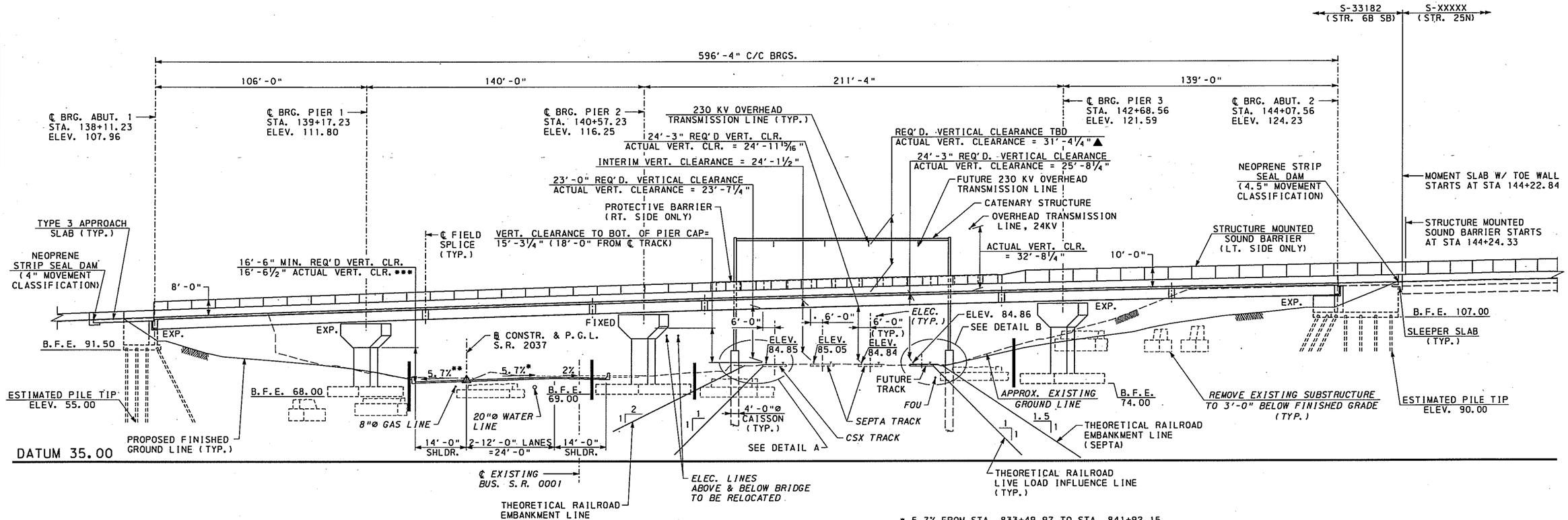


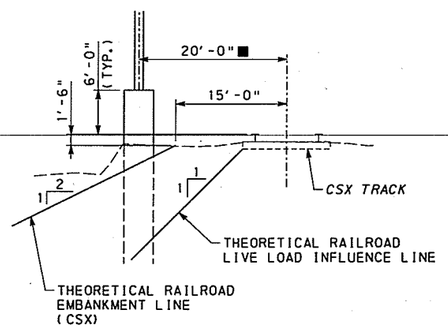
ELEVATION (ALONG ℄)

0 25 50 FEET

* 5.7% FROM STA. 833+49.97 TO STA. 841+92.15
VARIES FROM 5.7% @ STA. 841+92.15 TO 0% @ STA. 844+10.93

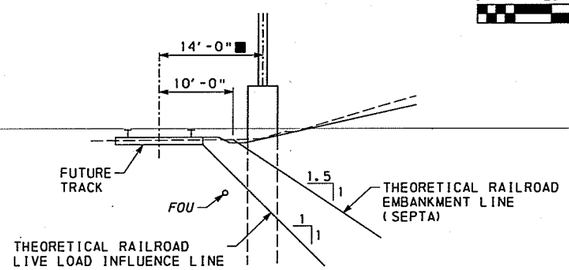
** VARIES FROM 5.7% @ STA. 841+92.15 TO 4% @ STA. 842+57.40

■ NORMAL TO ℄ TRACK



DETAIL A

N.T.S.



DETAIL B

N.T.S.

VERTICAL CURVE DATA - S.R. 0001 S.B.

P.V.I. STA. 140+75.00
ELEV. = 118.41'
V.C.L. = 600.00'
M.O. = -1.66'
S.S.D. = 789'

+3.955% △ +1.748%

P.V.I. STA. 146+75.00
ELEV. = 128.90'
V.C.L. = 600.00'
M.O. = +0.49'
H.L.S.D. = UNRESTRICTED

+1.748% △ +2.405%

VERTICAL CURVE DATA - S.R. 2037

P.V.I. STA. 841+75.00
ELEV. = 81.15'
V.C.L. = 650.0'
M.O. = -4.82'
S.S.D. = 455'

+3.46% △ -2.47%

NOTES:

1. WORK THIS SHEET WITH SHEETS 2 & 3.
2. FOR GENERAL NOTES, SEE SHEET 7.
3. EXISTING SUBSTRUCTURE TO BE REMOVED TO 3'-0" BELOW PROPOSED FINISHED GRADE OR AS NECESSARY TO CONSTRUCT NEW SUBSTRUCTURE.

*** ACTUAL VERTICAL CLEARANCE MEASURED TO BOTTOM OF PIER CAP @ THE N.W. CORNER.

▲ VERTICAL CLEARANCE IS BASED ON A TEMPERATURE OF 50° AND EXISTING CATENARY TOWER LAYOUT. CONSTRUCTION OF S.B. STRUCTURE REQUIRES RELOCATION OF AT LEAST ONE CATENARY POLE. FINAL POSITION OF CATENARY STRUCTURE AND VERTICAL CLEARANCE TO BE DETERMINED BY OTHERS. MINIMUM REQUIRED VERTICAL CLEARANCE MUST BE VERIFIED BY PECO.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
ELEVATION

RECOMMENDED _____

SHEET 4 OF 9

S-33182

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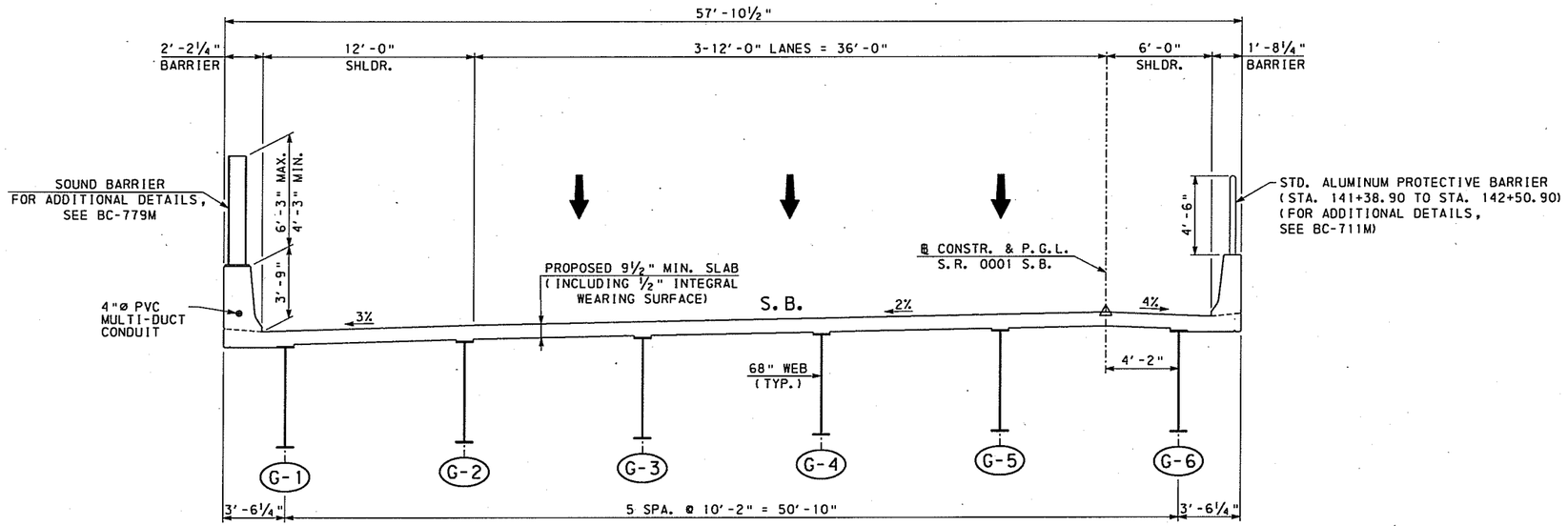

TYPICAL SECTION

0 2 4 6 FEET

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
TYPICAL SECTION

RECOMMENDED _____

SHEET 5 OF 9

S-33182

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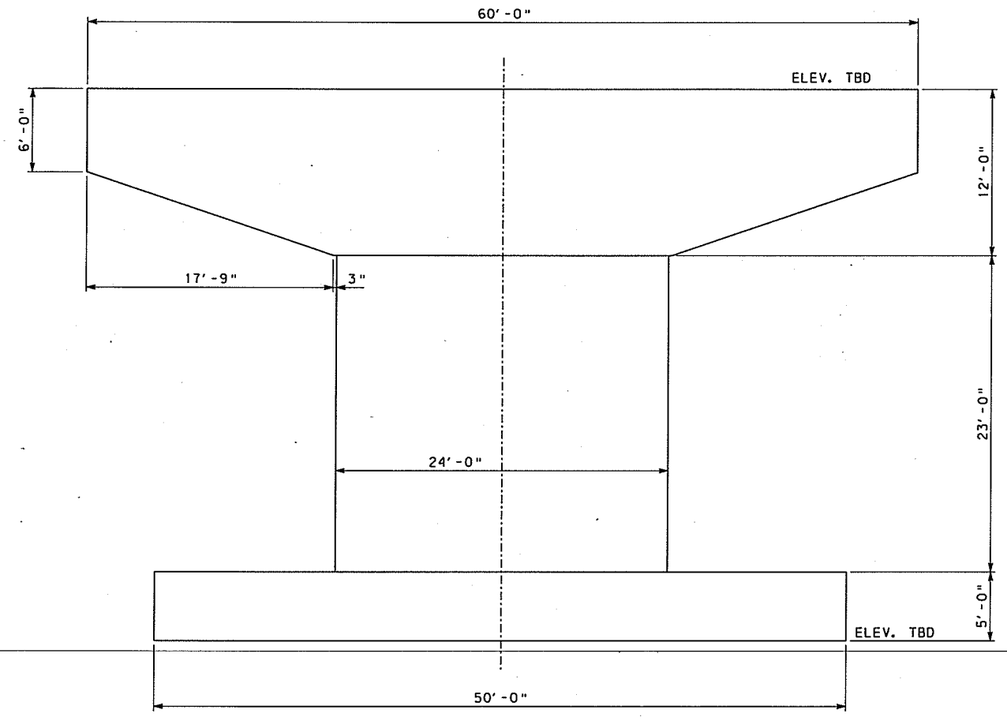
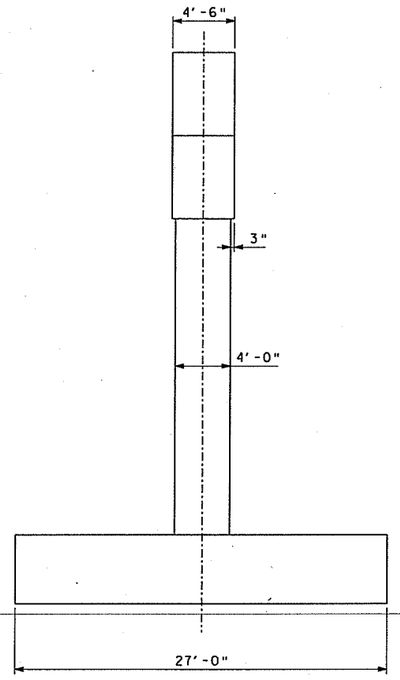


6B SB - PIER ELEVATION

0 2 4 6 8 FEET



6B SB - PIER SECTION

0 2 4 6 8 FEET

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE

PIER ELEVATION & SECTION

RECOMMENDED _____

SHEET 6 OF 9

S-33182

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DES: MDR | DWG: ALC | CKD: SPR

GENERAL NOTES

1. DESIGN SPECIFICATIONS:

   2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION (INCLUDING INTERIM SPECIFICATIONS), AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, APRIL 2015 EDITION.

   LIVE LOAD DISTRIBUTION TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

   DESIGN IS IN ACCORDANCE WITH THE LRFD METHOD.

2. DESIGN LIVE LOADS:

   PHL-93 OR P-82 (204K PERMIT LOAD)

   FATIGUE DESIGN IS BASED ON THE FOLLOWING: ADTT = 2389 NORTHBOUND (2043)
   ADTT = 4610 SOUTHBOUND (2043)
   (ONE-DIRECTIONAL)

3. DEAD LOADS:

   INCLUDES SURFACE AREA DENSITY OF 30 LBS. PER SQUARE FT. FOR FUTURE WEARING SURFACE ON THE DECK SLAB.

   INCLUDES A SURFACE AREA DENSITY OF 15 LBS. PER SQUARE FT. 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.

   INCLUDES PROTECTIVE FENCE WEIGHT OF 36 LBS. PER FT.
   NO STRUCTURE MOUNTED UTILITIES ARE CURRENTLY PRESENT.

   INCLUDES SOUND BARRIER WEIGHT OF 547 LBS. PER FT. FOR 6'-3" PANEL AND 372.5 LBS. PER FT. FOR 4'-3" PANEL.

4. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408/2016, ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5-2008, AND CONTRACT SPECIAL PROVISIONS.

5. PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M270, GRADE 50 (ASTM A709, GRADE 50) DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

6. PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

7. ALL DIMENSIONS SHOWN ARE HORIZONTAL, EXCEPT AS NOTED.

8. USE CLASS AAAP CEMENT CONCRETE IN DECK SLAB AND TYPE 3 APPROACH SLABS.

9. USE CLASS AA CEMENT CONCRETE IN WINGWALL BARRIERS, SLAB BARRIERS, CHEEKWALLS, CONCRETE DIAPHRAGMS, ABUTMENT END DIAPHRAGMS, SHEAR BLOCKS, CURBS AND U-WINGS ABOVE BRIDGE SEAT CONSTRUCTION JOINT, AS SHOWN ON DRAWINGS.

10. USE CLASS A CEMENT CONCRETE IN PIERS, ABUTMENTS BELOW BRIDGE SEAT, PEDESTALS, WINGWALLS, AND FOOTINGS.

11. A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

12. PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A615, A996 AND A706. 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 (A996) REINFORCEMENT BARS IN ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, BARRIERS OR WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

13. USE EPOXY-COATED REINFORCEMENT BARS IN THE DECK SLAB, BARRIERS, U-WINGS ABOVE THE CONSTRUCTION JOINT, AND STIRRUPS PROTRUDING FROM DIAPHRAGMS INTO THE DECK SLAB. EPOXY COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

14. RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

15. SITE CLASS IS NOT CLASS E OR CLASS F.

16. PLACE CHEEKWALL, CONCRETE SHEAR BLOCKS AND CONCRETE END DIAPHRAGMS AFTER BEAMS ARE SET IN POSITION.

17. USE EITHER PERMANENT METAL DECK FORMS OR REMOVABLE FORMS TO CONSTRUCT THE DECK SLAB.

18. DECK SLAB THICKNESS INCLUDES A ½" INTEGRAL WEARING SURFACE.

19. CHAMFER EXPOSED CONCRETE EDGES 1"x1", EXCEPT AS NOTED.

20. SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR A NORMAL TEMPERATURE OF 68°F.

21. PROVIDE MINIMUM EMBEDMENT AND SPLICE LENGTHS IN ACCORDANCE WITH STD. DWG. BC-736M, UNLESS OTHERWISE INDICATED.

22. VERIFY ALL DIMENSIONS AND GEOMETRY OF THE EXISTING STRUCTURE IN THE FIELD AS NECESSARY FOR PROPER FIT OF THE PROPOSED CONSTRUCTION.

23. 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 AGENTS AS POSITIVE REPRESENTATIONS OF ANY OF THE CONDITIONS THAT YOU WILL ENCOUNTER IN THE FIELD.

24. THE INFORMATION SHOWN ON THE PLANS FOR THE EXISTING BRIDGE IS NOT PART OF THE PLANS, PROPOSAL, OR CONTRACT 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 IS CORRECTLY SHOWN. 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.

   EXISTING STRUCTURE DRAWINGS:
   S-6625 SHEETS 1 THRU 18 APPROVED DECEMBER 9, 1964
   S-870 SHEETS 1 THRU 8 APPROVED JANUARY 6, 1934

25. PROTECTIVE COATING FOR REINFORCED CONCRETE SURFACES:
    APPLY A PENETRATING SEALER AS SPECIFIED IN PUB. 408, SECTION 1019.3 (c) 2 FOR ANY DECK OR WINGWALL BARRIER OR APPROACH SLAB PLACED BETWEEN SEPT. 1 AND MARCH 1. APPLY PROTECTIVE COATING TO TOP AND ROADWAY FACE OF BARRIERS.

    APPLY PENETRATING SEALER TO THE HORIZONTAL PORTION OF ABUTMENT & PIER BEARING SEATS (EXCLUDING THE TOP OF PEDESTALS) AND EXPOSED ABUTMENT, WINGWALL AND PIER SURFACES ABOVE THE TOP OF FOOTING ELEVATION OR A PLANE 3'-0" BELOW FINISHED GRADE, WHICHEVER IS GREATER.

26. THE EXISTING BRIDGE STRUCTURAL MEMBERS MAY CONTAIN LEAD PAINT AND OTHER TOXIC MATERIALS, SUCH AS CADMIUM, CHROMIUM, ARSENIC, ETC. IT SHOULD BE ASSUMED THAT ASBESTOS CONTAINING MATERIALS ARE PRESENT. LABORATORY TESTING WILL BE REQUIRED.

27. PAINT ALL STRUCTURAL STEEL (INCLUDING STIFFENERS, DIAPHRAGMS, ETC.) IN ACCORDANCE WITH PUBLICATION 408, SECTION 1060 AND IN ACCORDANCE WITH FEDERAL STANDARD 595B, COLOR NO. 33105 (BROWN).

28. BLAST CLEAN THE FAYING SURFACES OF SPLICES AND CONNECTIONS OF ALL STRUCTURAL ELEMENTS IN ACCORDANCE WITH PUBLICATION 408 SECTION 1060.3(b)3. REBLAST UNPAINTED ELEMENTS THAT REMAIN UNASSEMBLED FOR A PERIOD OF 12 MONTHS OR MORE FOLLOWING THE INITIAL CLEANING.

29. IF GIRDERS CANNOT BE SHIPPED IN LENGTHS SHOWN ON THE PLANS, FIELD SPLICES WILL BE PERMITTED AT THE REQUEST OF THE CONTRACTOR, BUT NO COMPENSATION WILL BE ALLOWED FOR THE SPLICES.

30. IF GIRDERS CAN BE FABRICATED IN LENGTHS LONGER THAN THE SECTIONS SHOWN ON THE PLANS BY ELIMINATING FIELD SPLICES, FIELD SPLICES MAY BE OMITTED AT THE REQUEST OF THE CONTRACTOR. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR SECURING A HAULING PERMIT. APPROVAL FOR ELIMINATION OF A FIELD SPLICE AT THE SHOP DRAWING STAGE DOES NOT OBLIGATE THE DEPARTMENT TO ISSUE A HAULING PERMIT.

31. DO NOT USE FORM SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION TO PERMANENT BRIDGE MEMBERS.

32. ALL FASTENERS ARE ⅞"Ø H.S. ASTM A325, BOLTS, THREADS EXCLUDED FROM THE SHEAR PLANE, EXCEPT AS NOTED. ANCHOR BOLTS ARE A.S.T.M. F1554 GRADE 55.

33. REAM SUBDRILLED OR SUBPUNCHED HOLES FOR FIELD SPLICES IN THE FABRICATION SHOP.

34. PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(k)9.

35. DO NOT MAKE WELDS BY MANUAL SHIELDED METAL ARC PROCESS FOR PRIMARY GIRDER WELDS, SUCH AS FLANGE-TO-WEB WELDS OR FOR SHOP SPLICES OF WEBS AND FLANGES.

36. DO NOT WELD PERMANENT METAL DECK FORMS OR OTHER ATTACHMENTS TO GIRDER TOP FLANGES IN TENSION AREAS. (TENSION AREAS OF TOP FLANGES ARE DESIGNATED ON THE PLANS). THREADED STUDS FOR THE SUPPORT OF THE OVERHANG DECK FORMING BRACKET ARE PERMITTED PROVIDED THE THREADED STUD IS ATTACHED WITH THE SAME WELDING PROCESS AS THE SHEAR STUDS.

37. PROVIDE WELDED STUD SHEAR CONNECTORS MANUFACTURED FROM STEEL CONFORMING TO ASTM A108.

38. SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NONSHRINK GROUT. FILL ANY CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NON-HARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

39. OVERHANG FORMS TO BE SUPPORTED FROM THE BOTTOM FLANGE OR WITHIN 6" OF THE BOTTOM FLANGE OF THE FASCIA GIRDERS.

40. STABILITY OF PARTIAL GIRDERS AND COMPLETE GIRDERS IS TO BE MAINTAINED BY THE CONTRACTOR DURING ERECTION, UNTIL ALL GIRDERS AND DIAPHRAGMS ARE IN-PLACE AND ALL BOLTS ARE PROPERLY INSTALLED. ERECTION LOADS INCLUDING SELF WEIGHT OF THE STEEL MEMBERS, WIND LOADING AND CONSTRUCTION LIVE LOAD EFFECTS ARE TO BE EVALUATED BY THE CONTRACTOR FOR STABILITY, STRESSES AND DEFLECTIONS ON THE STEEL MEMBERS DURING ANY STAGE OF ERECTION.

41. PROVIDE CHARPY V-NOTCH (CVN) TESTING AS PER PUB. 408, SECTION 1105.02 (a) 5.

ASTM	THICKNESS	ZONE 2 NONFRACTURE CRITICAL MEMBERS
A709 GR. 50	t ≤ 1½"	15 FT.-LB @ 40°F
	1½" ≤ t ≤ 2"	15 FT.-LB @ 40°F
	2" ≤ t ≤ 4"	20 FT.-LB @ 40°F

42. BRIDGE IS NOT WEIGHT RESTRICTED. SEE PUBLICATION 408 SECTION 105.17 FOR CONSTRUCTION LOADING LIMITS.

43. CONSTRUCT DECK SLAB TRANSVERSE CONSTRUCTION JOINTS PARALLEL TO BRIDGE CENTERLINE OF BEARINGS.

UTILITY NOTES

1. COORDINATE, LOCATE AND CONDUCT ALL WORK RELATED TO PUBLIC AND PRIVATE UTILITIES IN ACCORDANCE WITH PUBLICATION 408, SECTIONS 105.06 AND 107.12.

2. VERIFY AND LOCATE ALL EXISTING UTILITES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED AND ASSUME RESPONSIBILITY FOR ANY DAMAGE TO UTILITES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND\OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

FOUNDATION NOTES

1. USE A FRICTION COEFFICIENT OF 0.70 FOR SLIDING RESISTANCE OF MASS CONCRETE ON ROCK OR CLASS C CEMENT CONCRETE.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. DIVERT ALL SURFACE RUNOFF AWAY FROM THE EXCAVATION USING CURBING OR A BARRIER PLACED ALONG THE TOP OF THE SLOPE. IF REQUIRED, COVER EXCAVATED SLOPES WITH PLASTIC TO PROTECT AGAINST INFILTRATION. PERFORM EXCAVATIONS IN ACCORDANCE WITH OSHA REQUIREMENTS.

3. THOROUGHLY DEWATER THE FOUNDATION EXCAVATIONS IF ANY SEEPAGE IS ENCOUNTERED.

4. HAVE A QUALIFIED GEOTECHNICAL ENGINEER PRESENT AT THE SITE TO PHYSICALLY INSPECT THE BEARING SURFACE AT THE FOOTING LOCATION TO VERIFY THAT THE ENGINEERING PROPERTIES OF THE EXPOSED ROCK AND BEARING MATERIAL ARE CONSISTENT WITH THOSE ASSUMED IN THE DESIGN AND TO ENSURE THAT THE RECOMMENDED SUBGRADE TREATMENT HAS BEEN CARRIED OUT.

5. TEMPORARY EXCAVATIONS:
   DESIGN ALL TEMPORARY EXCAVATIONS IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS (REF. CONSTRUCTION STANDARDS FOR EXCAVATIONS, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, 29 CFR PART 1926.650-.652. SUBPART P).

6. TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM (SEE SPECIAL PROVISIONS)

   IF SPACE LIMITATION PREVENTS USE OF AN OPEN EXCAVATION, USE A SHORING SYSTEM. UTILIZE THE FOLLOWING EFFECTIVE SOIL PARAMETERS FOR THE DESIGN OF THE TEMPORARY GROUND SUPPORT:

EFFECTIVE ANGLE OF FRICTION, ϕ	= 32°
EFFECTIVE COHESION, c	= 0.0 PSF
MOIST UNIT WEIGHT OF SOIL, γm	= 115 LB/FT³
SATURATED UNIT WEIGHT OF SOIL, γsat	= 125 LB/FT
SHEAR STRENGTH OF ROCK MASS	= 5.75 TSF

7. SPREAD FOOTINGS MAY BE ORDERED BY THE REPRESENTATIVE TO BE AT ANY ELEVATION OR OF ANY DIMENSION NECESSARY TO PROVIDE A PROPER FOUNDATION.

8. BLASTING FOR ROCK EXCAVATION IS NOT PERMITTED.

9. REMOVE UNSUITABLE OR UNSTABLE FOUNDATION MATERIAL BELOW BOTTOM OF ABUTMENT FOOTING ELEVATION AND REPLACE WITH CLASS C CEMENT CONCRETE.

10. PILE DRIVING REQUIREMENTS:
    CONTROL PILE DRIVING BY THE WAVE EQUATION ANALYSIS. DRIVE TEST PILES TO ABSOLUTE REFUSAL. THE ENGINEER WILL 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 THE TEST PILES. THE ENGINEER WILL DETERMINE THE ACCEPTABILITY OF THE BEARING PILES WHICH ATTAIN ABSOLUTE REFUSAL ABOVE THE PREDETERMINED TIP ELEVATIONS.

CONTRACTOR TO COMPLETE FOLLOWING TABLE AFTER INSTALLATION OF TEST PILES:

SUBSTRUCTURE UNIT	PILE TYPE	PILE TIP (Y OR N)	PILE TIP ELEVATION	FACTORED DESIGN LOAD (KIPS)	ULTIMATE PILE CAPACITY AT END OF DRIVING (KIPS)	WEAP OR PDA

	ABUT. 1, WINGS A & B	PIER 1	PIER 2	PIER 3	ABUT. 2, WINGS C & D
APPLICABLE BORINGS	6B-8	6B-9	6B-10	6B-11	6B-12
BEARING STRATUM					
BOTTOM OF FOOTING ELEVATION					
RECOVERY (%)					
RQD (%)					
INTERFACE FRICTION ANGLE					
ELASTIC MODULUS (KSI)					
POISSON'S RATIO					
BEARING RESISTANCE FACTOR, ϕr	0.55	0.55	0.55	0.55	0.55
SLIDING RESISTANCE FACTOR, ϕs	1.0	1.0	1.0	1.0	1.0
$Q_{ULT.}$ (TSF)					

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
GENERAL NOTES

RECOMMENDED

SHEET 7 OF 9

S-33182

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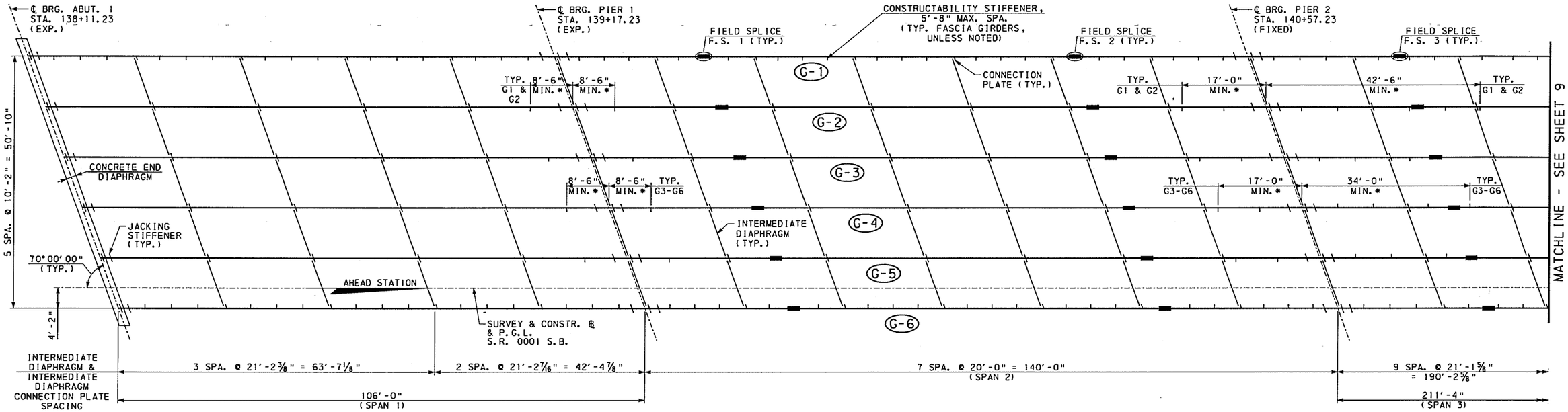

FRAMING PLAN

0 10 20 FEET

* TRANSVERSE STIFFENERS REQUIRED FOR FINAL DESIGN SHEAR, 8'-6" MAX. SPA.

NOTES:

1. WORK THIS SHEET WITH SHEET 9.
2. FOR TYPICAL SECTION, SEE SHEET 5.
3. FOR GENERAL NOTES, SEE SHEET 7.
4. EXACT LOCATIONS AND/OR SPACINGS OF JACKING STIFFENERS, CONSTRUCTABILITY STIFFENERS AND TRANSVERSE STIFFENERS TO BE DETERMINED IN FINAL DESIGN.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
S.B. FRAMING PLAN 1

RECOMMENDED

SHEET 8 OF 9

S-33182

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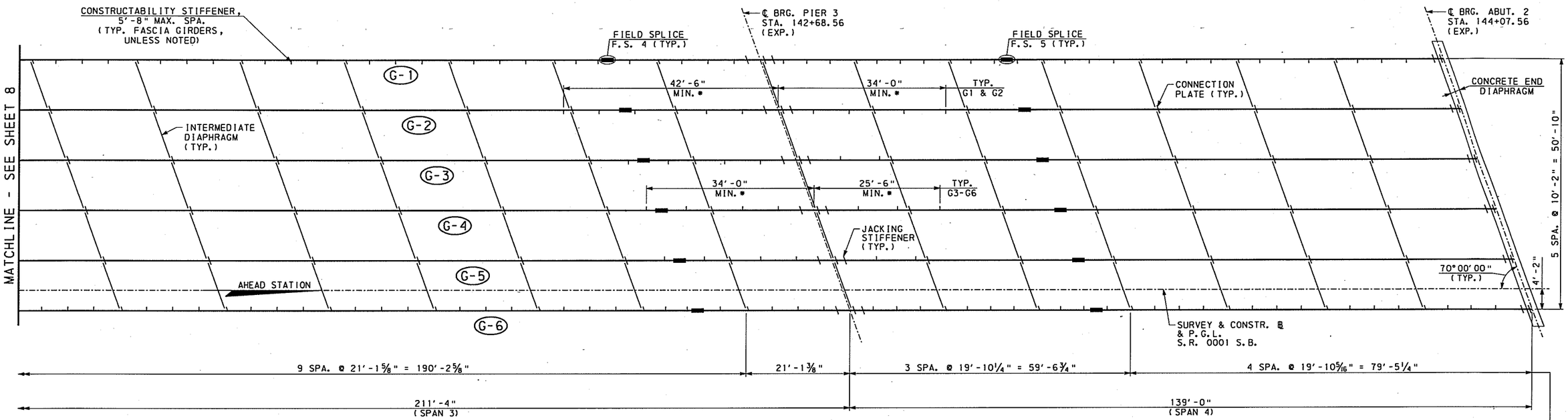

FRAMING PLAN

0 10 20 FEET

* TRANSVERSE STIFFENERS REQUIRED FOR FINAL DESIGN SHEAR, 8'-6" MAX. SPA.

NOTES:

1. WORK THIS SHEET WITH SHEET 8.
2. FOR TYPICAL SECTION, SEE SHEET 5.
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Mark	Description	By	Chk'd.	Recm'd.	Date
REVISIONS					

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B SB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMPOSITE
STEEL PLATE GIRDER BRIDGE
S.B. FRAMING PLAN 2

RECOMMENDED _____

SHEET 9 OF 9

S-33182

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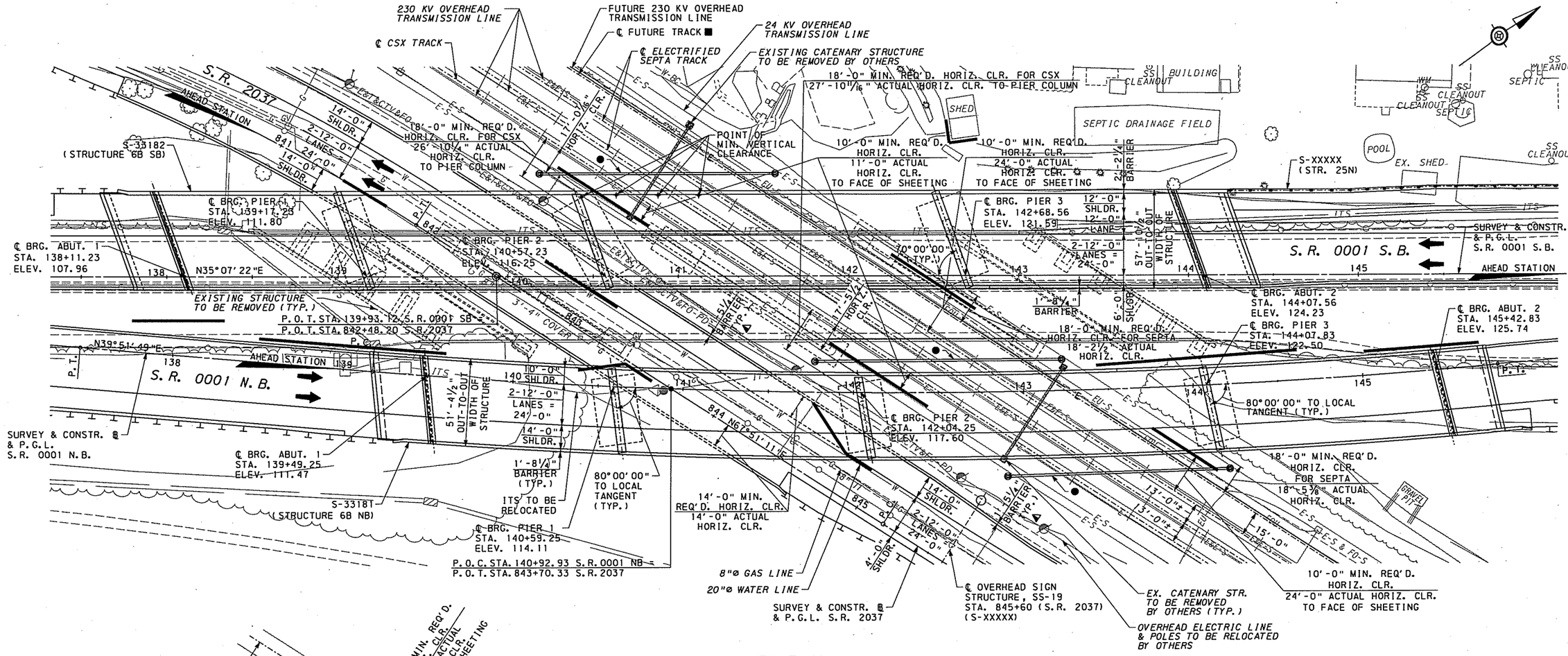
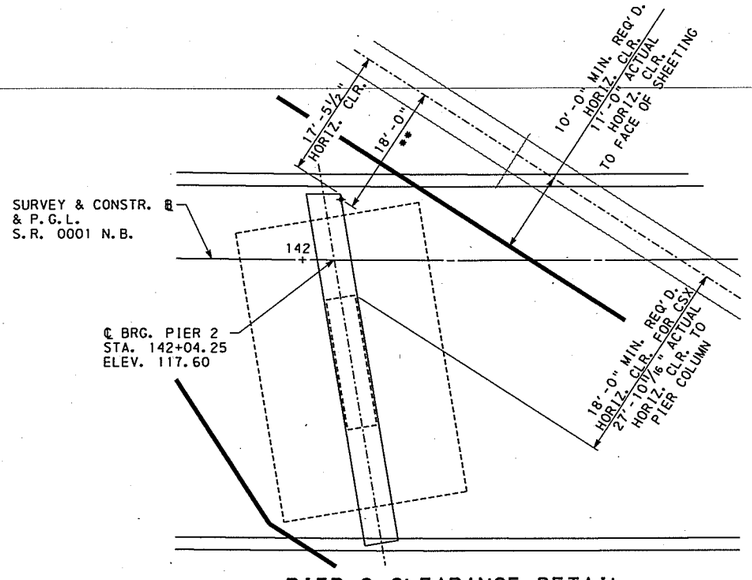


KEY PLAN

0 30 60 FEET



PIER 2 CLEARANCE DETAIL

0 10 20 FEET

■ GRADING AND INSTALLATION OF NEW TRACK TO BE PERFORMED BY OTHERS AFTER CONSTRUCTION OF PROPOSED BRIDGE STRUCTURE

● PROPOSED LOCATION OF NEW CATENARY TOWER

** VERTICAL CLEARANCE TO BOTTOM OF PIER CAP = 17'-11"

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
N.B. KEY PLAN

PREPARED BY:
JOHNSON, MIRMIRAN & THOMPSON
220 ST. CHARLES WAY,
SUITE 200
YORK, PA 17402

SIGNATURE AND DATE

RECOMMENDED

DISTRICT BRIDGE ENGINEER

SHEET 1 OF 10 AND SUPPLEMENTAL DRAWINGS

S-33181

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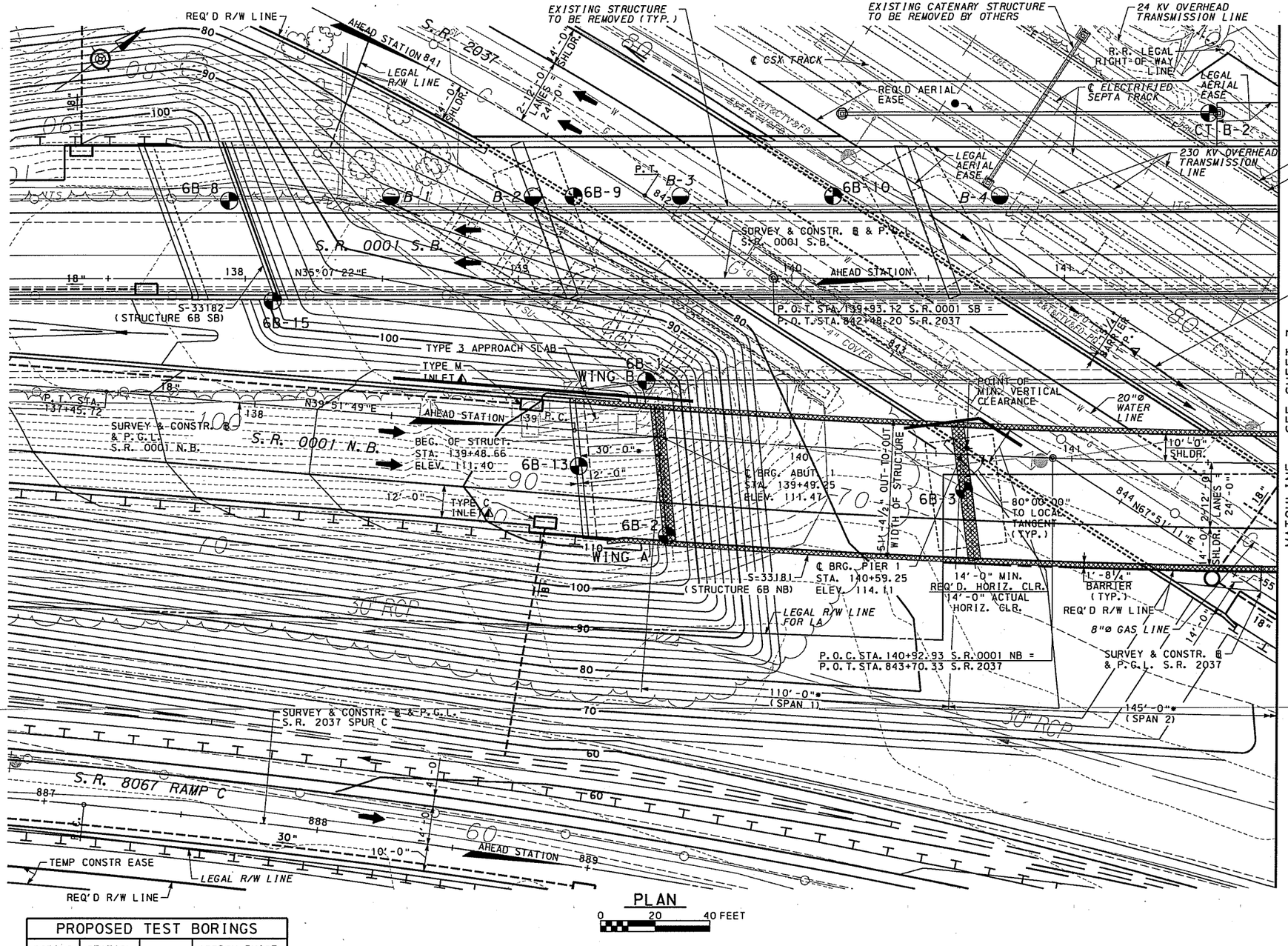

PLAN

0 20 40 FEET

NOTES:

1. FOR ELEVATION VIEW AND VERTICAL CURVE DATA, SEE SHEET 4.
2. WORK THIS SHEET WITH SHEET 3.
3. FOR GENERAL NOTES, SEE SHEET 8.
4. PROTECTIVE FENCE TO BE INSTALLED WHEN SHORING IS WITHIN 15'-0" OF ℄ TRACKS.

INDEX OF DRAWINGS

LEGEND

- PROPOSED TEST BORINGS
- EXISTING BORINGS TAKEN IN 1964
- ROADWAY ITEM
- 10'-0" PROPOSED CONTOUR
- 2'-0" PROPOSED CONTOUR
- 10'-0" EXISTING CONTOUR
- 2'-0" EXISTING CONTOUR
- TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM
- * MEASURED ALONG ℄ S.R. 0001 N.B.
- PROPOSED CATENARY TOWER LOCATION

PROPOSED TEST BORINGS

BORING NO.	STATION *	OFFSET	APPROX. EXIST. GROUND ELEV.
6B-1	139+34	23.5' LT.	110.6'
6B-2	139+54	36' RT.	75'
6B-3	140+61	13' RT.	73'
6B-13	139+20	13' RT.	95'

HORIZONTAL CURVE DATA-S.R. 0001 N.B.

P.I. STA. 142+49.77
Δ = 9°56'52" LT.
D = 1°30'00"
R = 3820.00'
T = 332.45'
L = 663.23'
E = 14.44'
S/E = 0.037'/'
P.C. STA. 139+17.32
P.T. STA. 145+80.55

HORIZONTAL CURVE DATA-S.R. 2037

P.I. STA. 837+73.76
Δ = 44°09'38" RT.
D = 4°59'59"
R = 1146.00'
T = 464.88'
L = 883.27'
E = 90.70'
P.C. STA. 833+08.88
P.T. STA. 841+92.15

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
GENERAL PLAN 1

RECOMMENDED _____

SHEET 2 OF 10

S-33181

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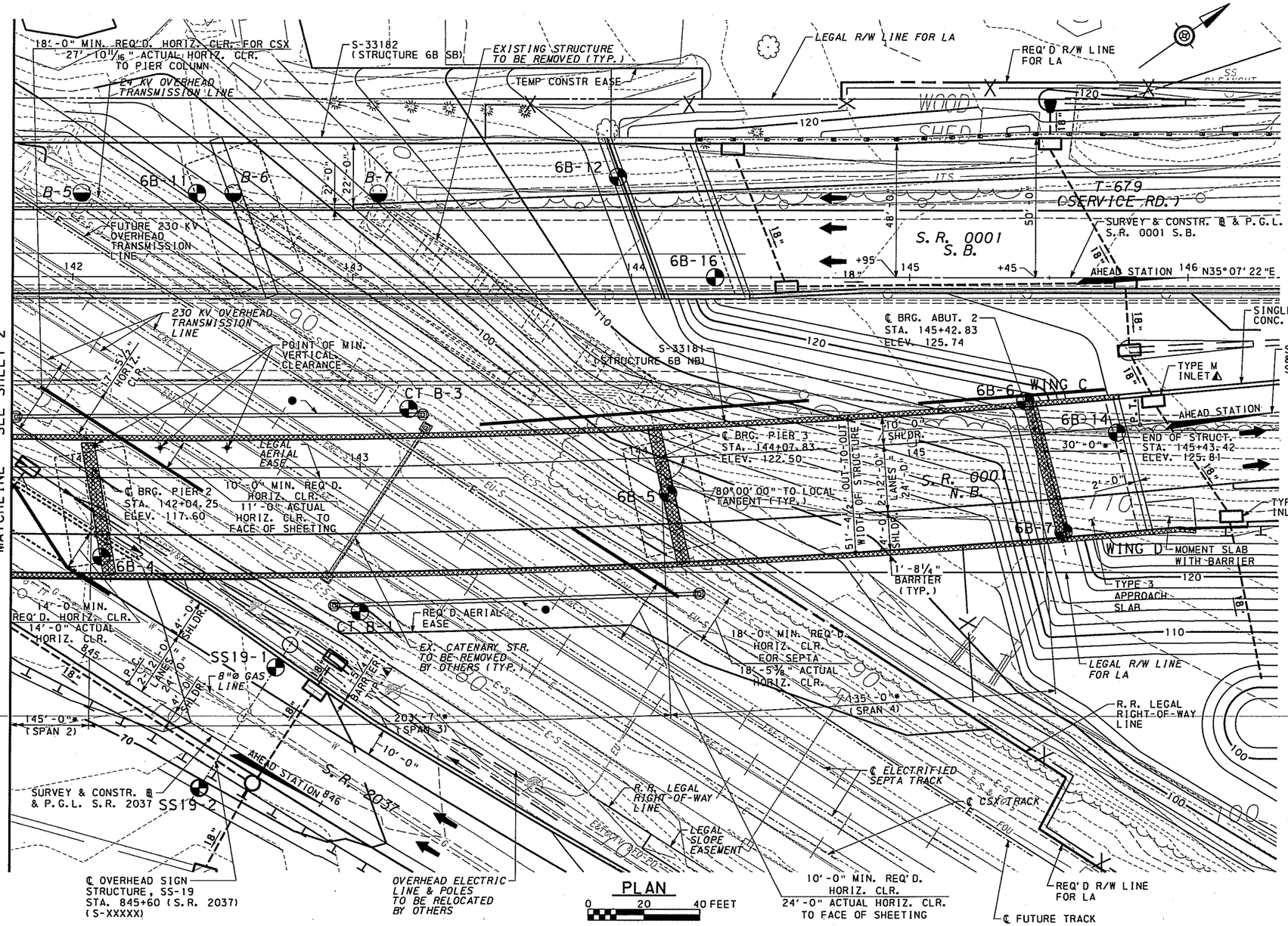

LEGEND

- PROPOSED TEST BORINGS
- EXISTING BORINGS TAKEN IN 1964
- ▲ ROADWAY ITEM
- 10'-0" PROPOSED CONTOUR
- 2'-0" PROPOSED CONTOUR
- 10'-0" EXISTING CONTOUR
- 2'-0" EXISTING CONTOUR
- TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM
- * MEASURED ALONG ℄ S.R. 0001 N.B.
- ◆ MEASURED ALONG SURVEY & CONSTR. ℄ & P.G.L S.R. 2037
- ● PROPOSED CATENARY TOWER LOCATION

HORIZONTAL CURVE DATA - S.R. 2037

P.I. STA. 846+31.90
△ = 3°24'13" LT.
D = 1°30'00"
R = 3820.00'
T = 113.50'
L = 226.93'
E = 1.69'
P.C. STA. 845+18.40
P.T. STA. 847+45.34

NOTES:

1. WORK THIS SHEET WITH SHEET 2.

PROPOSED TEST BORINGS

BORING NO.	STATION	OFFSET	APPROX. EXIST. GROUND ELEV.
6B-4	142+08*	32' RT.	74'
6B-5	144+10*	13' RT.	99'
6B-6	145+40*	12' LT.	124.7'
6B-7	145+50*	36' RT.	104'
6B-14	145+72*	7' LT.	124.7'
SS19-1	845+60◆	33' LT.	72'
SS19-2	845+60◆	18' RT.	67'

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
GENERAL PLAN 2

RECOMMENDED _____

SHEET 3 OF 10

S-33181

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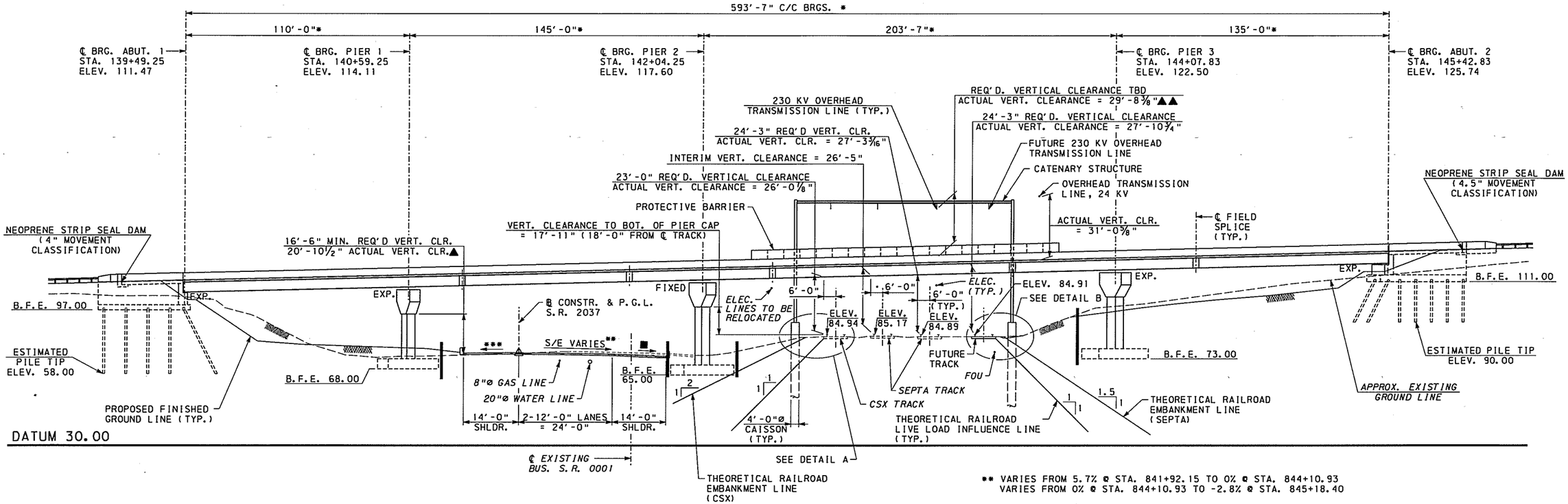


ELEVATION (ALONG ℄)

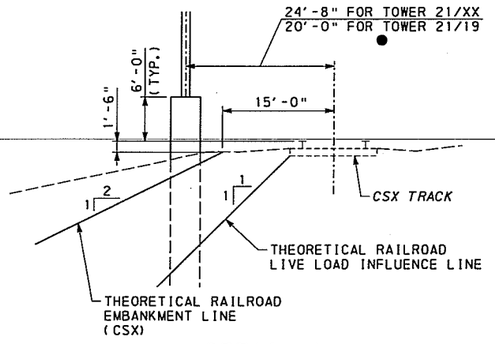
0 25 50 FEET

** VARIES FROM 5.7% @ STA. 841+92.15 TO 0% @ STA. 844+10.93
VARIES FROM 0% @ STA. 844+10.93 TO -2.8% @ STA. 845+18.40

*** VARIES FROM 5.7% @ STA. 841+92.15 TO 4% @ STA. 842+57.40
4% FROM STA. 842+57.40 TO STA. 844+87.69
2% FROM STA. 844+87.69 TO STA. 847+74.14

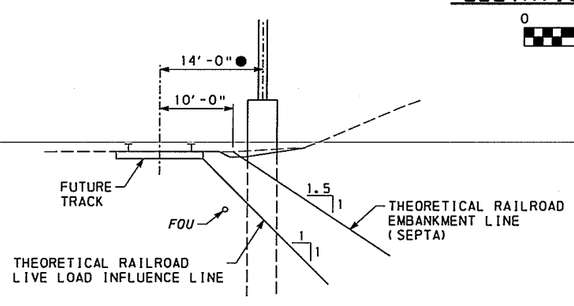
■ 2% FROM STA. 841+92.15 TO STA. 843+34.16
4% FROM STA. 843+34.16 TO STA. 849+00.00

● NORMAL TO ℄ TRACK



DETAIL A

N.T.S.



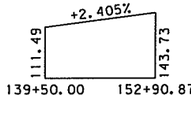
DETAIL B

N.T.S.

VERTICAL CURVE DATA - S.R. 0001 N.B.

P.V.I. STA. 138+00.00
ELEV. = 107.88
V.C.L. = 300.00'
M.O. = -0.598
S.S.D. = 827'

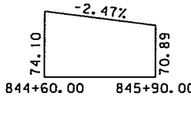
+4.00% +2.405%



VERTICAL CURVE DATA - S.R. 2037

P.V.I. STA. 841+75.00
ELEV. = 81.15
V.C.L. = 650.00'
M.O. = -4.82'
S.S.D. = 455'

+3.46% -2.47%



NOTES:

1. WORK THIS SHEET WITH SHEETS 2 & 3.
2. FOR GENERAL NOTES, SEE SHEET 8.

* MEASURED ALONG ℄ CONSTR. S.R. 0001 N.B.

▲ ACTUAL VERTICAL CLEARANCE MEASURED TO BOTTOM OF PIER CAP @ THE N.W. CORNER.

▲▲ VERTICAL CLEARANCE IS BASED ON A TEMPERATURE OF 50° AND EXISTING CATENARY TOWER LAYOUT. CONSTRUCTION OF N.B. STRUCTURE REQUIRES RELOCATION OF AT LEAST ONE CATENARY POLE. FINAL POSITION OF CATENARY STRUCTURE AND VERTICAL CLEARANCE TO BE DETERMINED BY OTHERS. MINIMUM REQUIRED VERTICAL CLEARANCE MUST BE VERIFIED BY PECO.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
ELEVATION

RECOMMENDED _____

SHEET 4 OF 10

S-33181

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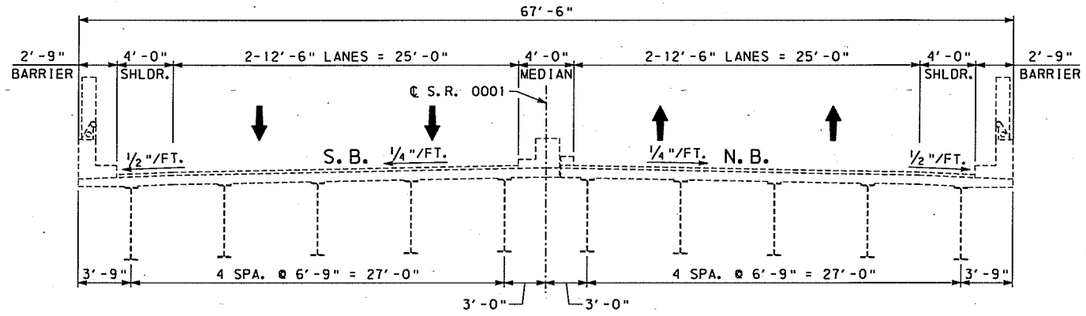
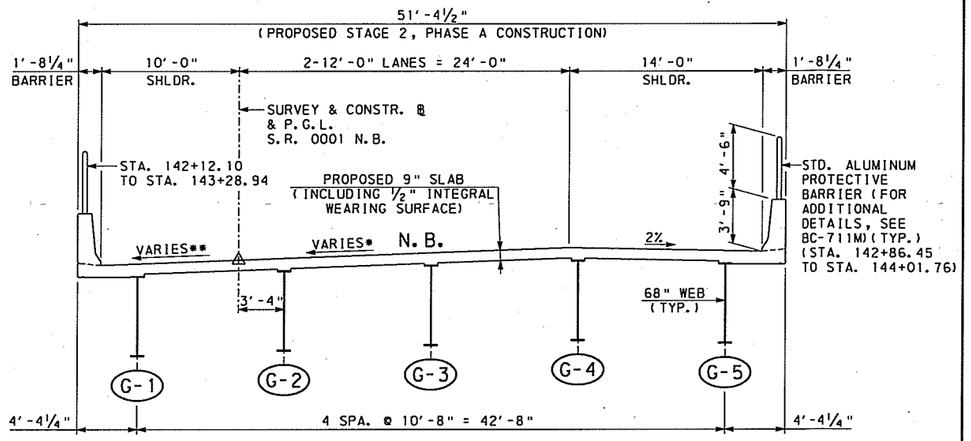
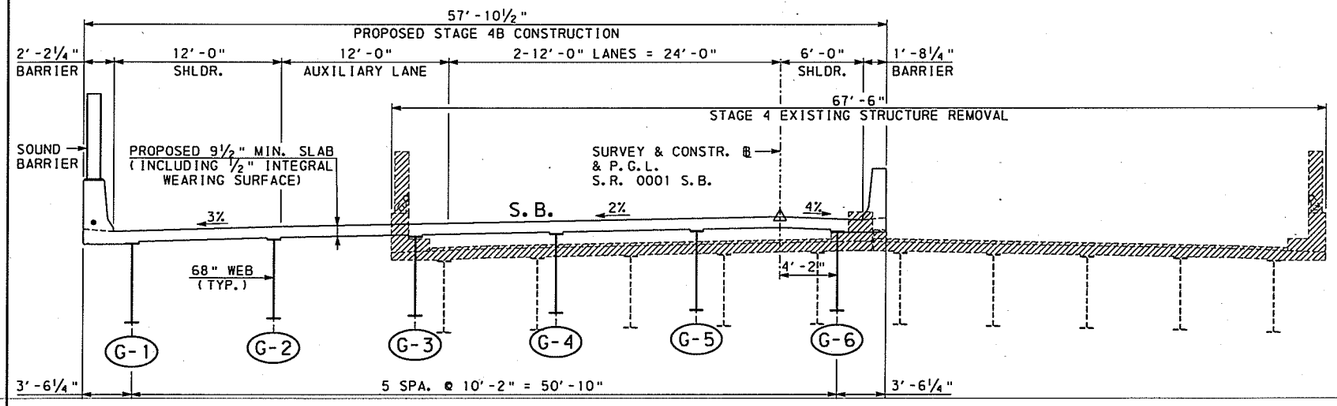
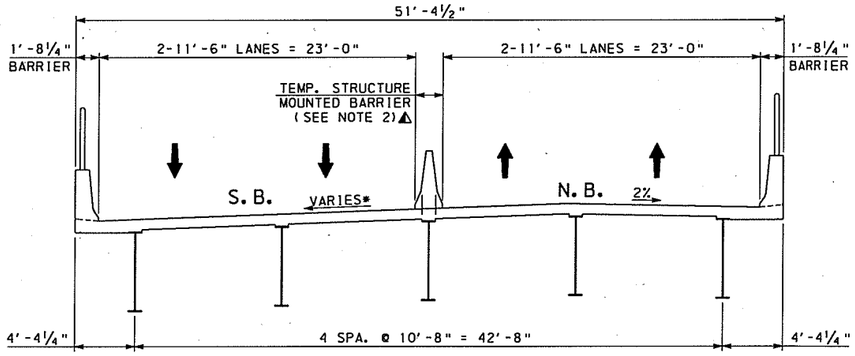


STAGE 2 PHASE A CONSTRUCTION

0 2 4 6 8 FEET







STAGE 4 CONSTRUCTION

0 2 4 6 8 FEET

▨ CONCRETE TO BE REMOVED

▲ ROADWAY ITEM

* VARIES FROM 2.5% @ STA. 139+17.32 TO 3.7% @ STA. 139+65.32
3.7% FROM STA. 139+65.32 TO STA. 145+50.13
VARIES FROM 3.7% @ STA. 145+50.13 TO 2.9% @ STA. 145+80.55

** VARIES FROM 3% TO 3.7%

NOTES:

1. FOR ADDITIONAL BARRIER DETAILS, SEE STD. DWG. BC-719M.
2. TEMPORARY STRUCTURE MOUNTED STEEL BARRIER, TEST LEVEL 3, BARRIER DEFLECTION DISTANCE </= 3" (AT BASE) TO BE USED ON NEW CONCRETE DECK.
3. UNLESS NOTED OTHERWISE, ALL DIMENSIONS MEASURED NORMAL TO SURVEY & CONSTR. ℄ S.R. 0001 N.B. & S.R. 0001 S.B.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
CONSTRUCTION SEQUENCE SECTIONS

RECOMMENDED _____

SHEET 5 OF 10

S-33181

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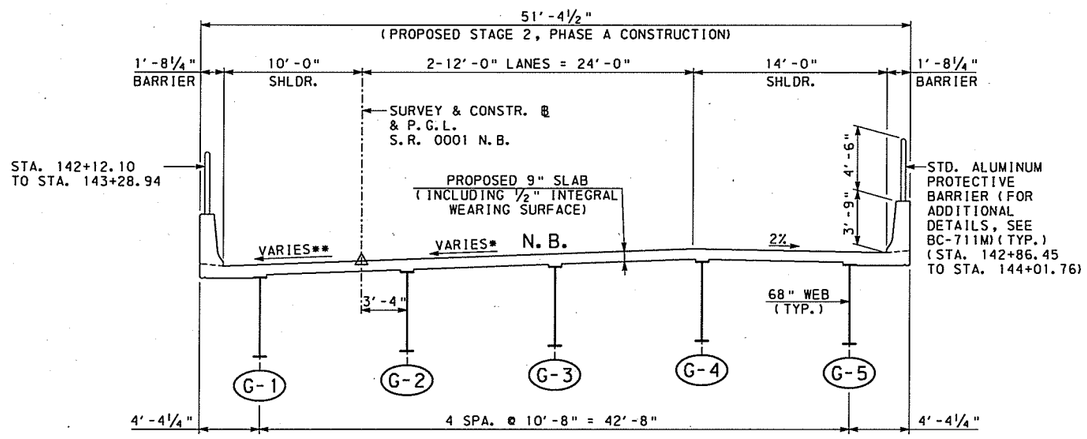

PROPOSED TYPICAL SECTION

0 2 4 6 8 FEET

* VARIES FROM 2.5% @ STA. 139+17.32 TO 3.7% @ STA. 139+65.32
3.7% FROM STA. 139+65.32 TO STA. 145+50.13
VARIES FROM 3.7% @ STA. 145+50.13 TO 2.9% @ STA. 145+80.55

** VARIES FROM 3% TO 3.7%

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
TYPICAL SECTION

RECOMMENDED _____

SHEET 6 OF 10

S-33181

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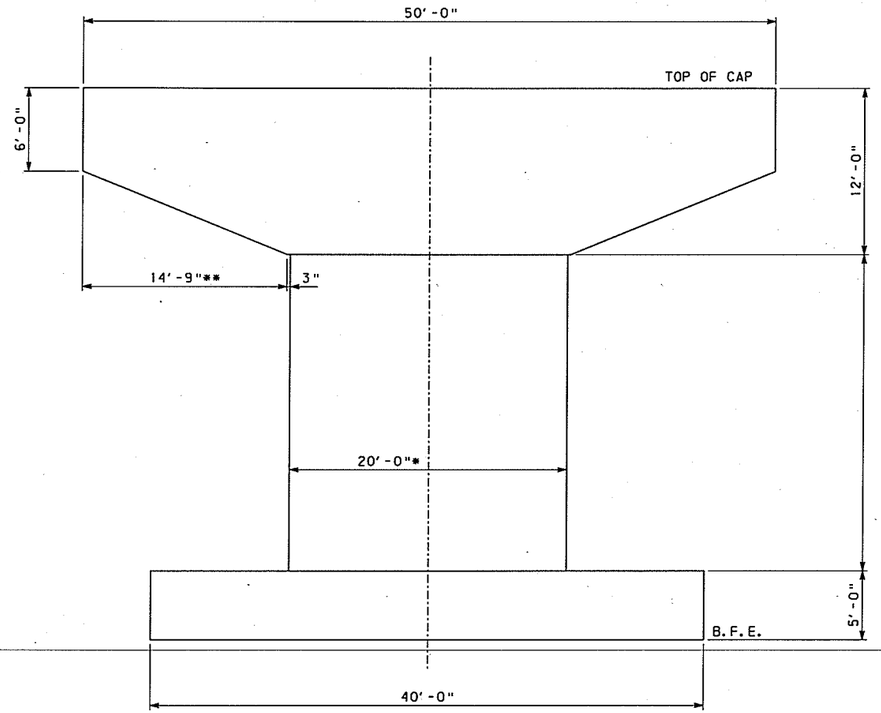
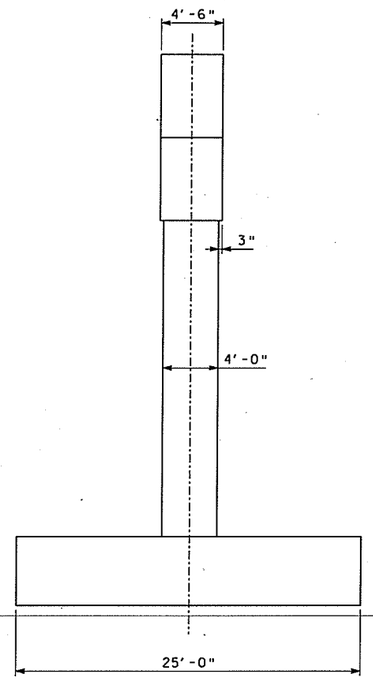


6B NB - PIER ELEVATION

0 2 4 6 8 FEET

* 18'-0" @ PIER 2

** 15'-9" @ PIER 2



6B NB - PIER SECTION

0 2 4 6 8 FEET

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE

PIER ELEVATION & SECTION

RECOMMENDED _____

SHEET 7 OF 10

S-33181

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DES: MDR | DWG: ALC | CKD: SPR

GENERAL NOTES

1. DESIGN SPECIFICATIONS:

   2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION (INCLUDING INTERIM SPECIFICATIONS), AND AS SUPPLEMENTED BY DESIGN MANUAL PART 4, APRIL 2015 EDITION.

   LIVE LOAD DISTRIBUTION TO BEAMS IS BASED UPON DM-4 DISTRIBUTION FACTORS.

   DESIGN IS IN ACCORDANCE WITH THE LRFD METHOD.

2. DESIGN LIVE LOADS:

   PHL-93 OR P-82 (204K PERMIT LOAD)

   FATIGUE DESIGN IS BASED ON THE FOLLOWING: ADTT = 2389 NORTHBOUND (2043)
   ADTT = 4610 SOUTHBOUND (2043)
   (ONE-DIRECTIONAL)

3. DEAD LOADS:

   INCLUDES SURFACE AREA DENSITY OF 30 LBS. PER SQUARE FT. FOR FUTURE WEARING SURFACE ON THE DECK SLAB.

   INCLUDES A SURFACE AREA DENSITY OF 15 LBS. PER SQUARE FT. 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.

   INCLUDES PROTECTIVE FENCE WEIGHT OF 36 LBS. PER FT.
   NO STRUCTURE MOUNTED UTILITIES ARE CURRENTLY PRESENT.

4. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408/2016, ANSI/AASHTO/AWS BRIDGE WELDING CODE D1.5-2008, AND CONTRACT SPECIAL PROVISIONS.

5. PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M270, GRADE 50 (ASTM A709, GRADE 50) DESIGNATION, EXCEPT WHEN NOTED OTHERWISE.

6. PROVIDE 2" CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.

7. ALL DIMENSIONS SHOWN ARE HORIZONTAL, EXCEPT AS NOTED.

8. USE CLASS AAAP CEMENT CONCRETE IN DECK SLAB AND TYPE 3 APPROACH SLABS.

9. USE CLASS AA CEMENT CONCRETE IN WINGWALL BARRIERS, SLAB BARRIERS, CHEEKWALLS, CONCRETE DIAPHRAGMS, ABUTMENT END DIAPHRAGMS, SHEAR BLOCKS, CURBS AND U-WINGS ABOVE BRIDGE SEAT CONSTRUCTION JOINT, AS SHOWN ON DRAWINGS.

10. USE CLASS A CEMENT CONCRETE IN PIERS, ABUTMENTS BELOW BRIDGE SEAT, PEDESTALS, WINGWALLS, AND FOOTINGS.

11. A HIGHER CLASS CONCRETE MAY BE SUBSTITUTED FOR A LOWER CLASS CONCRETE AT NO ADDITIONAL COST TO THE DEPARTMENT.

12. PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A615, A996 AND A706. 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 (A996) REINFORCEMENT BARS IN ABUTMENTS, SHEAR BLOCKS, BEAMS, FOOTINGS, BARRIERS OR WHERE BENDING OR WELDING OF THE REINFORCEMENT BARS IS INDICATED.

13. USE EPOXY-COATED REINFORCEMENT BARS IN THE DECK SLAB, BARRIERS, U-WINGS ABOVE THE CONSTRUCTION JOINT, AND STIRRUPS PROTRUDING FROM DIAPHRAGMS INTO THE DECK SLAB. EPOXY COAT SUBSTRUCTURE REINFORCEMENT BARS AS INDICATED.

14. RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.

15. SITE CLASS IS NOT CLASS E OR CLASS F.

16. PLACE CHEEKWALL, CONCRETE SHEAR BLOCKS AND CONCRETE END DIAPHRAGMS AFTER BEAMS ARE SET IN POSITION.

17. USE EITHER PERMANENT METAL DECK FORMS OR REMOVABLE FORMS TO CONSTRUCT THE DECK SLAB.

18. DECK SLAB THICKNESS INCLUDES A ½" INTEGRAL WEARING SURFACE.

19. CHAMFER EXPOSED CONCRETE EDGES 1"x1", EXCEPT AS NOTED.

20. SUPERSTRUCTURE DIMENSIONS SHOWN ARE FOR A NORMAL TEMPERATURE OF 68°F.

21. PROVIDE MINIMUM EMBEDMENT AND SPLICE LENGTHS IN ACCORDANCE WITH STD. DWG. BC-736M, UNLESS OTHERWISE INDICATED.

22. VERIFY ALL DIMENSIONS AND GEOMETRY OF THE EXISTING STRUCTURE IN THE FIELD AS NECESSARY FOR PROPER FIT OF THE PROPOSED CONSTRUCTION.

23. 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 AGENTS AS POSITIVE REPRESENTATIONS OF ANY OF THE CONDITIONS THAT YOU WILL ENCOUNTER IN THE FIELD.

24. THE INFORMATION SHOWN ON THE PLANS FOR THE EXISTING BRIDGE IS NOT PART OF THE PLANS, PROPOSAL, OR CONTRACT 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 IS CORRECTLY SHOWN. 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.

   EXISTING STRUCTURE DRAWINGS:
   S-6625 SHEETS 1 THRU 18 APPROVED DECEMBER 9, 1964
   S-870 SHEETS 1 THRU 8 APPROVED JANUARY 6, 1934

25. PROTECTIVE COATING FOR REINFORCED CONCRETE SURFACES:
    APPLY A PENETRATING SEALER AS SPECIFIED IN PUB. 408, SECTION 1019.3 (c) 2 FOR ANY DECK OR WINGWALL BARRIER OR APPROACH SLAB PLACED BETWEEN SEPT. 1 AND MARCH 1. APPLY PROTECTIVE COATING TO TOP AND ROADWAY FACE OF BARRIERS.

    APPLY PENETRATING SEALER TO THE HORIZONTAL PORTION OF ABUTMENT & PIER BEARING SEATS (EXCLUDING THE TOP OF PEDESTALS) AND EXPOSED ABUTMENT, WINGWALL AND PIER SURFACES ABOVE THE TOP OF FOOTING ELEVATION OR A PLANE 3'-0" BELOW FINISHED GRADE, WHICHEVER IS GREATER.

26. THE EXISTING BRIDGE STRUCTURAL MEMBERS MAY CONTAIN LEAD PAINT AND OTHER TOXIC MATERIALS, SUCH AS CADMIUM, CHROMIUM, ARSENIC, ETC. IT SHOULD BE ASSUMED THAT ASBESTOS CONTAINING MATERIALS ARE PRESENT. LABORATORY TESTING WILL BE REQUIRED.

27. PAINT ALL STRUCTURAL STEEL (INCLUDING STIFFENERS, DIAPHRAGMS, ETC.) IN ACCORDANCE WITH PUBLICATION 408, SECTION 1060 AND IN ACCORDANCE WITH FEDERAL STANDARD 595B, COLOR NO. 33105 (BROWN).

28. BLAST CLEAN THE FAYING SURFACES OF SPLICES AND CONNECTIONS OF ALL STRUCTURAL ELEMENTS IN ACCORDANCE WITH PUBLICATION 408 SECTION 1060.3(b)3. REBLAST UNPAINTED ELEMENTS THAT REMAIN UNASSEMBLED FOR A PERIOD OF 12 MONTHS OR MORE FOLLOWING THE INITIAL CLEANING.

29. IF GIRDERS CANNOT BE SHIPPED IN LENGTHS SHOWN ON THE PLANS, FIELD SPLICES WILL BE PERMITTED AT THE REQUEST OF THE CONTRACTOR, BUT NO COMPENSATION WILL BE ALLOWED FOR THE SPLICES.

30. IF GIRDERS CAN BE FABRICATED IN LENGTHS LONGER THAN THE SECTIONS SHOWN ON THE PLANS BY ELIMINATING FIELD SPLICES, FIELD SPLICES MAY BE OMITTED AT THE REQUEST OF THE CONTRACTOR. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR SECURING A HAULING PERMIT. APPROVAL FOR ELIMINATION OF A FIELD SPLICE AT THE SHOP DRAWING STAGE DOES NOT OBLIGATE THE DEPARTMENT TO ISSUE A HAULING PERMIT.

31. DO NOT USE FORM SUPPORT SYSTEMS THAT WILL CAUSE UNACCEPTABLE OVERSTRESS OR DEFORMATION TO PERMANENT BRIDGE MEMBERS.

32. ALL FASTENERS ARE ⅞"ø H.S. ASTM A325, BOLTS, THREADS EXCLUDED FROM THE SHEAR PLANE, EXCEPT AS NOTED. ANCHOR BOLTS ARE A.S.T.M. F1554 GRADE 55.

33. REAM SUBDRILLED OR SUBPUNCHED HOLES FOR FIELD SPLICES IN THE FABRICATION SHOP.

34. PREPARE BEARING AREAS AS SPECIFIED IN PUBLICATION 408, SECTION 1001.3(k)9.

35. DO NOT MAKE WELDS BY MANUAL SHIELDED METAL ARC PROCESS FOR PRIMARY GIRDER WELDS, SUCH AS FLANGE-TO-WEB WELDS OR FOR SHOP SPLICES OF WEBS AND FLANGES.

36. DO NOT WELD PERMANENT METAL DECK FORMS OR OTHER ATTACHMENTS TO GIRDER TOP FLANGES IN TENSION AREAS. (TENSION AREAS OF TOP FLANGES ARE DESIGNATED ON THE PLANS). THREADED STUDS FOR THE SUPPORT OF THE OVERHANG DECK FORMING BRACKET ARE PERMITTED PROVIDED THE THREADED STUD IS ATTACHED WITH THE SAME WELDING PROCESS AS THE SHEAR STUDS.

37. PROVIDE WELDED STUD SHEAR CONNECTORS MANUFACTURED FROM STEEL CONFORMING TO ASTM A108.

38. SET ANCHOR BOLTS TO TEMPLATE OR IN PREFORMED HOLES. DO NOT DRILL UNLESS SPECIFICALLY INDICATED ON PLANS. FILL THE PREFORMED HOLES WITH NONSHRINK GROUT. FILL ANY CLEARANCE BETWEEN ANCHOR BOLTS AND HOLES IN MASONRY PLATES WITH APPROVED NON-HARDENING CAULKING COMPOUND CONFORMING TO PUBLICATION 408, SECTION 705.8.

39. OVERHANG FORMS TO BE SUPPORTED FROM THE BOTTOM FLANGE OR WITHIN 6" OF THE BOTTOM FLANGE OF THE FASCIA GIRDERS.

40. STABILITY OF PARTIAL GIRDERS AND COMPLETE GIRDERS IS TO BE MAINTAINED BY THE CONTRACTOR DURING ERECTION, UNTIL ALL GIRDERS AND DIAPHRAGMS ARE IN-PLACE AND ALL BOLTS ARE PROPERLY INSTALLED. ERECTION LOADS INCLUDING ~~SELF WEIGHT OF THE STEEL MEMBERS, WIND LOADING AND CONSTRUCTION LIVE LOAD~~ EFFECTS ARE TO BE EVALUATED BY THE CONTRACTOR FOR STABILITY, STRESSES AND DEFLECTIONS ON THE STEEL MEMBERS DURING ANY STAGE OF ERECTION.

41. PROVIDE CHARPY V-NOTCH (CVN) TESTING AS PER PUB. 408, SECTION 1105.02(a) 5.

ASTM	THICKNESS	ZONE 2 NONFRACTURE CRITICAL MEMBERS
A709 GR. 50	$t \leq 1\frac{1}{2}$"	15 FT.-LB @ 40°F
	$1\frac{1}{2}" \leq t \leq 2"$	15 FT.-LB @ 40°F
	$2" \leq t \leq 4"$	20 FT.-LB @ 40°F

42. BRIDGE IS NOT WEIGHT RESTRICTED. SEE PUBLICATION 408 SECTION 105.17 FOR CONSTRUCTION LOADING LIMITS.

43. CONSTRUCT DECK SLAB TRANSVERSE CONSTRUCTION JOINTS PARALLEL TO BRIDGE CENTERLINE OF BEARINGS.

UTILITY NOTES

1. COORDINATE, LOCATE AND CONDUCT ALL WORK RELATED TO PUBLIC AND PRIVATE UTILITIES IN ACCORDANCE WITH PUBLICATION 408, SECTIONS 105.06 AND 107.12.

2. VERIFY AND LOCATE ALL EXISTING UTILITES PRIOR TO STARTING WORK; CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED AND ASSUME RESPONSIBILITY FOR ANY DAMAGE TO UTILITES DURING CONSTRUCTION. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND\OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

FOUNDATION NOTES

1. USE A FRICTION COEFFICIENT OF 0.70 FOR SLIDING RESISTANCE OF MASS CONCRETE ON ROCK OR CLASS C CEMENT CONCRETE.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. DIVERT ALL SURFACE RUNOFF AWAY FROM THE EXCAVATION USING CURBING OR A BARRIER PLACED ALONG THE TOP OF THE SLOPE. IF REQUIRED, COVER EXCAVATED SLOPES WITH PLASTIC TO PROTECT AGAINST INFILTRATION. PERFORM EXCAVATIONS IN ACCORDANCE WITH OSHA REQUIREMENTS.

3. THOROUGHLY DEWATER THE FOUNDATION EXCAVATIONS IF ANY SEEPAGE IS ENCOUNTERED.

4. HAVE A QUALIFIED GEOTECHNICAL ENGINEER PRESENT AT THE SITE TO PHYSICALLY INSPECT THE BEARING SURFACE AT THE FOOTING LOCATION TO VERIFY THAT THE ENGINEERING PROPERTIES OF THE EXPOSED ROCK AND BEARING MATERIAL ARE CONSISTENT WITH THOSE ASSUMED IN THE DESIGN AND TO ENSURE THAT THE RECOMMENDED SUBGRADE TREATMENT HAS BEEN CARRIED OUT.

5. TEMPORARY EXCAVATIONS:
   DESIGN ALL TEMPORARY EXCAVATIONS IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS (REF. CONSTRUCTION STANDARDS FOR EXCAVATIONS, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, 29 CFR PART 1926.650-.652. SUBPART P).

6. TEMPORARY EXCAVATION SUPPORT AND PROTECTION SYSTEM (SEE SPECIAL PROVISIONS)

   IF SPACE LIMITATION PREVENTS USE OF AN OPEN EXCAVATION, USE A SHORING SYSTEM. UTILIZE THE FOLLOWING EFFECTIVE SOIL PARAMETERS FOR THE DESIGN OF THE TEMPORARY GROUND SUPPORT:

EFFECTIVE ANGLE OF FRICTION, ϕ	= 32°
EFFECTIVE COHESION, c	= 0.0 PSF
MOIST UNIT WEIGHT OF SOIL, γm	= 115 LB/FT³
SATURATED UNIT WEIGHT OF SOIL, γsat	= 125 LB/FT
SHEAR STRENGTH OF ROCK MASS	= 5.75 TSF

7. SPREAD FOOTINGS MAY BE ORDERED BY THE REPRESENTATIVE TO BE AT ANY ELEVATION OR OF ANY DIMENSION NECESSARY TO PROVIDE A PROPER FOUNDATION.

8. BLASTING FOR ROCK EXCAVATION IS NOT PERMITTED.

9. REMOVE UNSUITABLE OR UNSTABLE FOUNDATION MATERIAL BELOW BOTTOM OF ABUTMENT FOOTING ELEVATION AND REPLACE WITH CLASS C CEMENT CONCRETE.

10. PILE DRIVING REQUIREMENTS:
    CONTROL PILE DRIVING BY THE WAVE EQUATION ANALYSIS. DRIVE TEST PILES TO ABSOLUTE REFUSAL. THE ENGINEER WILL 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 THE TEST PILES. THE ENGINEER WILL DETERMINE THE ACCEPTABILITY OF THE BEARING PILES WHICH ATTAIN ABSOLUTE REFUSAL ABOVE THE PREDETERMINED TIP ELEVATIONS.

CONTRACTOR TO COMPLETE FOLLOWING TABLE AFTER INSTALLATION OF TEST PILES:

SUBSTRUCTURE UNIT	PILE TYPE	PILE TIP (Y OR N)	PILE TIP ELEVATION	FACTORED DESIGN LOAD (KIPS)	ULTIMATE PILE CAPACITY AT END OF DRIVING (KIPS)	WEAP OR PDA

	ABUT. 1, WINGS A & B	PIER 1	PIER 2	PIER 3	ABUT. 2, WINGS C & D
APPLICABLE BORINGS	6B-1 & 6B-2	6B-3	6B-4	6B-5	6B-6 & 6B-7
BEARING STRATUM					
~~BOTTOM OF FOOTING ELEVATION~~					
RECOVERY (%)					
RQD (%)					
INTERFACE FRICTION ANGLE					
ELASTIC MODULUS (KSI)					
POISSON'S RATIO					
BEARING RESISTANCE FACTOR, ϕr	0.55	0.55	0.55	0.55	0.55
SLIDING RESISTANCE FACTOR, ϕs	1.0	1.0	1.0	1.0	1.0
$Q_{ULT.}$ (TSF)					

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

REVISIONS

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
GENERAL NOTES

RECOMMENDED _____

SHEET 8 OF 10

S-33181

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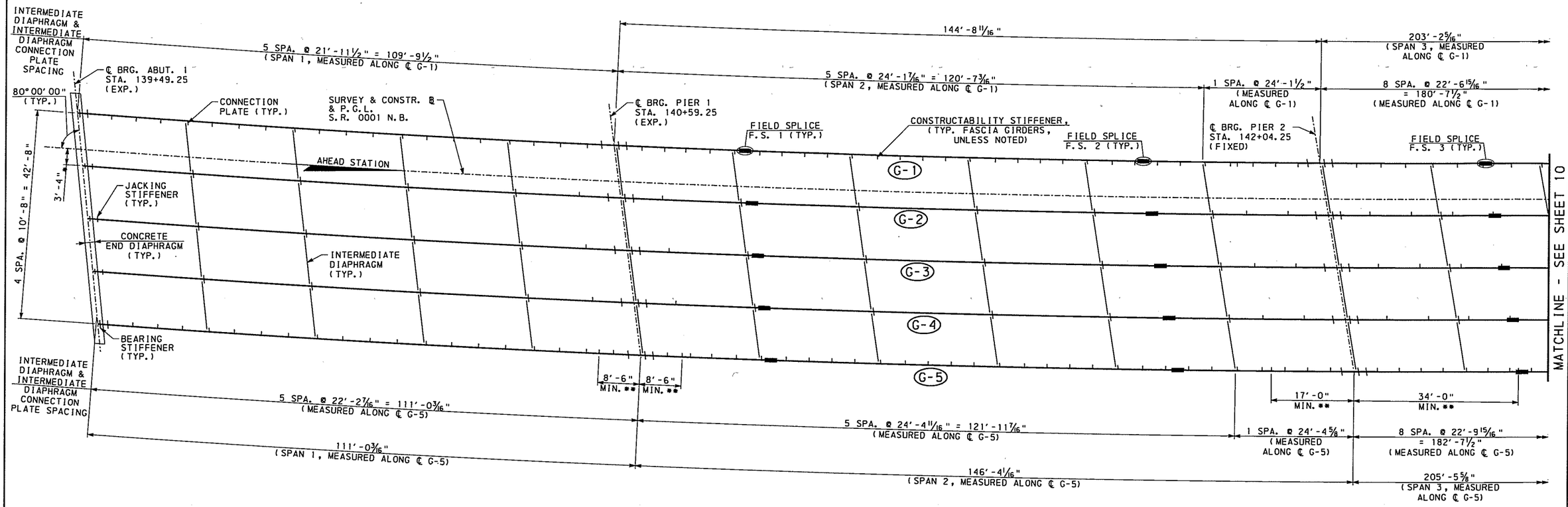

FRAMING PLAN

0 10 20 FEET

GIRDER	RADIUS
G-1	3812.67'
G-2	3823.33'
G-3	3834.00'
G-4	3844.67'
G-5	3855.33'
℄	3820.00'

* MEASURED RADIAL TO GIRDERS

** TRANSVERSE STIFFENERS REQUIRED FOR FINAL DESIGN SHEAR, 8'-6" MAX. SPA.

NOTES:

1. WORK THIS SHEET WITH SHEET 10.
2. FOR TYPICAL SECTIONS, SEE SHEET 6.
3. FOR GENERAL NOTES, SEE SHEET 8.
4. EXACT LOCATIONS AND/OR SPACINGS OF JACKING STIFFENERS, CONSTRUCTIBILITY STIFFENERS AND TRANSVERSE STIFFENERS TO BE DETERMINED IN FINAL DESIGN.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
N.B. FRAMING PLAN 1

RECOMMENDED _____

SHEET 9 OF 10

S-33181

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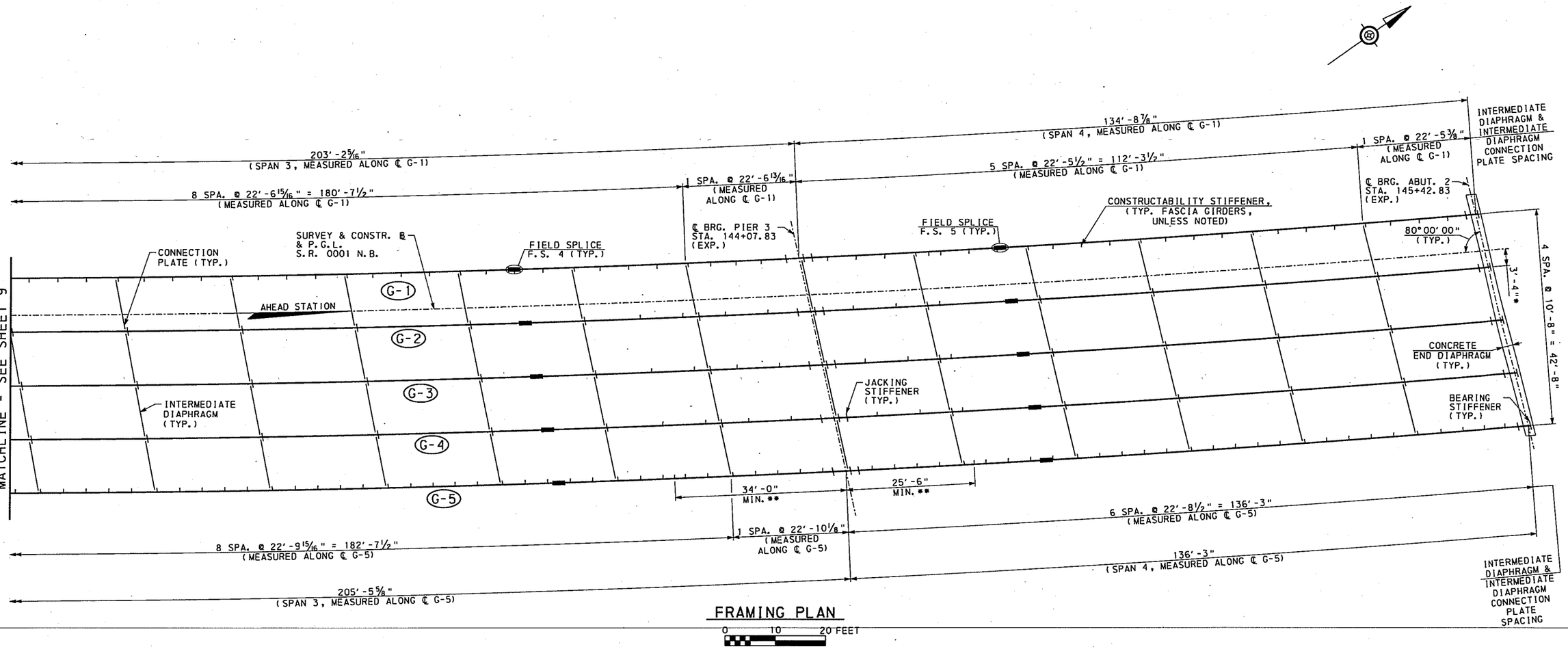

FRAMING PLAN

0 10 20 FEET

GIRDER	RADIUS
G-1	3812.67'
G-2	3823.33'
G-3	3834.00'
G-4	3844.67'
G-5	3855.33'
℄	3820.00'

* MEASURED RADIAL TO GIRDERS

** TRANSVERSE STIFFENERS REQUIRED FOR SHEAR, 8'-6" MAX. SPA.

NOTES:

1. WORK THIS SHEET WITH SHEET 9.
2. FOR TYPICAL SECTIONS, SEE SHEET 6.
3. FOR GENERAL NOTES, SEE SHEET 8.
4. EXACT LOCATIONS AND/OR SPACINGS OF JACKING STIFFENERS, CONSTRUCTIBILITY STIFFENERS AND TRANSVERSE STIFFENERS TO BE DETERMINED IN FINAL DESIGN.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

STRUCTURE 6B NB

COMMONWEALTH OF PENNSYLVANIA
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BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
OVER CSX, SEPTA & S.R. 2037
4 SPAN CONT. COMP. CURVED
STEEL PLATE GIRDER BRIDGE
N.B. FRAMING PLAN 2

RECOMMENDED _____

SHEET 10 OF 10

S-33181

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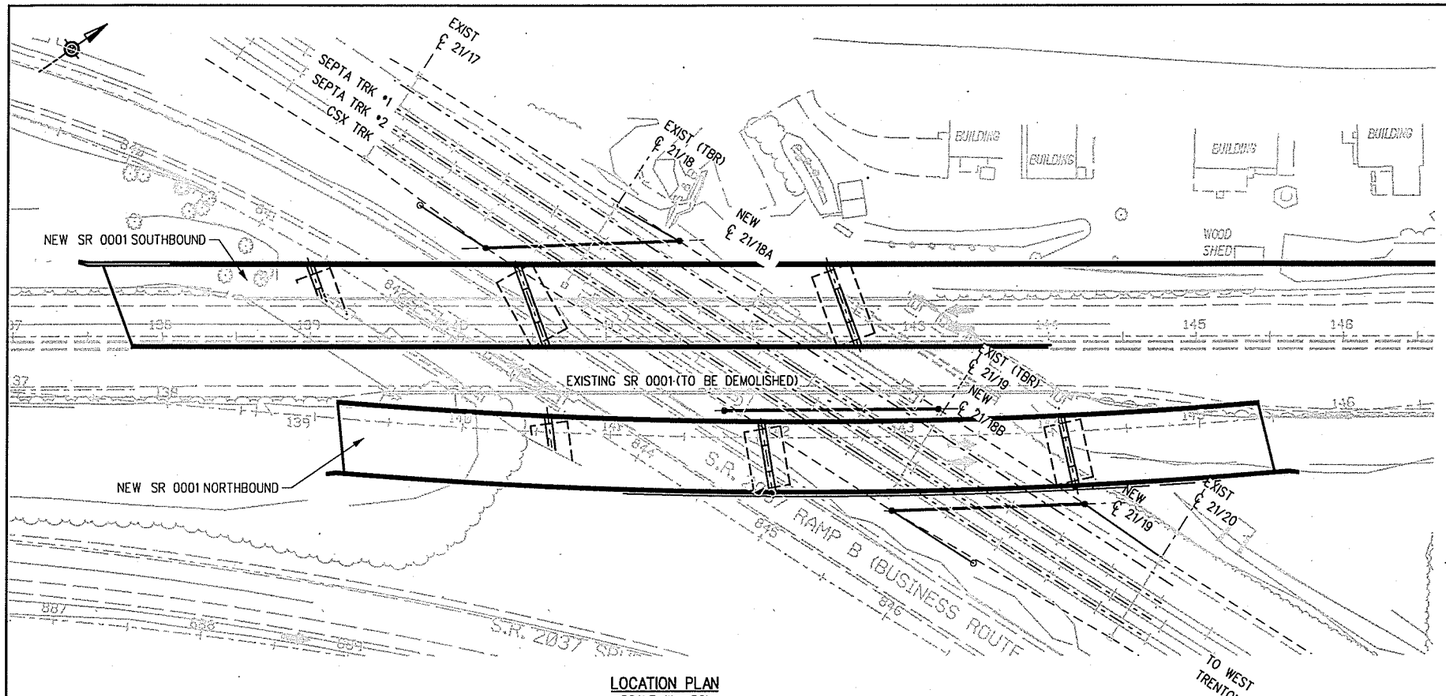

LOCATION PLAN
SCALE 1" = 50'

INDEX OF DRAWINGS

GENERAL NOTES

1. WORKMANSHIP TO CONFORM TO CURRENT APPLICABLE SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY (SEPTA) STANDARDS AND SPECIFICATIONS, AND IN ACCORDANCE WITH CURRENT APPLICABLE PENNDOT AND AREMA SPECIFICATIONS.
2. WHEREVER A MANUFACTURED ITEM IS LISTED ON THE DRAWINGS, AN APPROVED EQUAL IS ACCEPTABLE.
3. FOR REFERENCE DRAWINGS BDO-XXX AND BDS-XXX REFER TO SEPTA'S GENERAL, OCS, STEEL, AND FOUNDATION ASSEMBLY AND COMPONENT DETAIL DRAWINGS.

CONCRETE NOTES

1. CONCRETE COMPRESSIVE STRENGTH WILL BE 4000 PSI AT 28 DAYS.
2. ALL CONCRETE WORK TO CONFORM TO THE LATEST EDITION OF ACI 301 AND ACI 318.
3. REINFORCING STEEL WILL BE ASTM A-615, GRADE 60.
4. CHAMFER ALL EXPOSED CONCRETE EDGES 1 INCH UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL TO CONFORM TO ASTM STANDARDS, DESIGNATION A992 GRADE 50 FOR ROLLED SHAPES, A36 FOR ALL OTHER SHAPES.
2. ALL NEW STEEL TO BE GALVANIZED, IN ACCORDANCE WITH ASTM A123 AND A153.
3. BOLTS TO BE 7/8"ø WITH 15/16" ø HOLES UNLESS OTHERWISE SPECIFIED ON THE PLANS.
4. ALL BEAM SPLICES TO BE SHOP BOLTED.
5. ALL BOLTS TO HAVE HEXAGONAL HEAD, NUT AND WASHER.
6. ALL CONNECTION BOLTS TO CONFORM TO THE REQUIREMENTS OF ASTM STANDARDS, DESIGNATION A325 AND TO BE GALVANIZED.
7. STRUCTURAL MEMBERS AND CATENARY SUPPORT CLAMPS TO BE SHIPPED WITH ALL PARTS COMPLETELY ASSEMBLED.
8. ALL DIMENSIONS TO BE VERIFIED IN FIELD.
9. ALL GALVANIZED STEEL ITEMS CUT OR MODIFIED IN FIELD TO BE CLEANED WITH A WIRE BRUSH AND PAINTED WITH ONE BRUSH COAT OR TWO SPRAY COATS OF ZINC REPAIR MATERIAL IN THE AFFECTED AREAS.
10. STEEL DETAILING, FABRICATION AND ERECTION TO COMPLY WITH THE CURRENT AISC MANUAL.
11. ALL WELDS AND WELDING TO CONFORM WITH THE APPLICABLE REQUIREMENTS OF AWS D1.1. OF THE AMERICAN WELDING SOCIETY.
12. STEEL FABRICATION NOT TO BEGIN BEFORE FIELD VERIFICATION OF ALL FOUNDATION LOCATIONS.
13. ALL FIELD WORK TO BE BOLTED, UNLESS OTHERWISE NOTED.

ABBREVIATIONS

AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MAX.	MAXIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MESS.	MESSENGER
ASS'Y	ASSEMBLY	MIN.	MINIMUM
AWS.	AMERICAN WELDING SOCIETY	MOD.	MODIFIED
AUX.	AUXILIARY	No.	NUMBER
B.O.S.	BOTTOM OF STEEL	N.S.	NEAR SIDE
BR	BRIDGE	N.T.S.	NOT TO SCALE
CL., ℄	CENTER LINE	O.H.	OVER HEAD
COL.	COLUMN	PL.	PLATE
CONT.	CONTACT	R	RADIUS
CONT'D	CONTINUED	REF.	REFERENCE
CU.YD.	CUBIC YARD	RR	RAIL ROAD
CORR.	CORRUGATED	REQ'D	REQUIRED
C	CHANNEL	R.O.W.	RIGHT OF WAY
DIA.	DIAMETER	SPA.	SPACE
DET.	DETAIL	SPEC.	SPECIFICATION
DWG.	DRAWING	ST.	STREET
EA.	EACH	STA.	STATION
EL.,ELEV.	ELEVATION	STD.	STANDARD
EXIST.	EXISTING	STR.	STRUCTURE
F.S.	FAR SIDE	TBR	TO BE REMOVED
FT.	FEET	TEMP.	TEMPORARY
IN.	INCHES	T/FND	TOP OF FOUNDATION
IB	IMPEDANCE BOND	THK.	THICK
GALV.	GALVANIZED	T.O.S.	TOP OF STEEL
G.W.	GROUND WIRE	T/R	TOP OF RAIL
HEX.	HEXAGONAL	TYP.	TYPICAL
HOR.	HORIZONTAL	VERT.	VERTICAL
LB., LBS.	POUND, POUNDS	U.O.N.	UNLESS OTHERWISE NOTED
LG.	LONG	W./	WITH
L	ANGLE	W.P.	WORKING POINT
L.FT.	LINEAR FEET	WT	STRUCTURAL TEES
		TRK	TRACK

SYMBOLS

- INSULATOR
- INSULATOR, SUSPENSION
- EXISTING CATENARY STRUCTURE
- NEW CATENARY STRUCTURE
- DOWN GUY ANCHOR
- CENTER LINE
- GROUND WIRE
- DEGREE
- FIELD MEASUREMENT
- FEET
- INCHES
- PERPENDICULAR
- PARALLEL

RIGHT OF WAY SIDE (R) — (P) PLAIN SIDE, (T) TRACK SIDE, (S) STEP SIDE

(D) — SECTION, SHEET NUMBER WHERE SECTION IS DRAWN

SECTION (D) SECTION
SECTION NUMBER WHERE SECTION IS CUT

DETAIL (D) DETAIL
SHEET NUMBER WHERE DETAIL IS DRAWN OR CUT

(S) STEP SIDE
TRACK SIDE (T) — (R) RIGHT OF WAY SIDE
(P) PLAIN SIDE

DIVISION OF WORK & MATERIAL SUPPLY

ITEM No.	DESCRIPTION	MATERIAL	FABRICATION	ERECTION	LABOR
1	INSTALL NEW CATENARY FOUNDATIONS	C	C	C	C
2	INSTALL NEW CATENARY STRUCTURES	C	C	C	C
3	GROUND AND BOND CATENARY STRUCTURES	C	C	C	C
4	INSTALL NEW CATENARY/FEEDER ASSEMBLIES	S	S	S	S
5	INSTALL NEW 230 KV ASSEMBLIES	P	P	P	P
6	TRANSFER EXISTING CATENARY/FEEDERS TO NEW STRUCTURES AND REPROFILE	S	S	S	S
7	TRANSFER 230 KV TRANSMISSION WIRES TO NEW STRUCTURES	P	P	P	P
8	DEMOLISH EXISTING CATENARY STRUCTURES 21/18 AND 21/19	C	C	C	C
9	CONSTRUCT NB BRIDGE	C	C	C	C
10	INSTALL NEW NB BRIDGE GROUNDING	C	C	C	C
11	INSTALL DEMOLITION SHIELDS	C	C	C	C
12	DEMOLITION EXISTING BRIDGE	C	C	C	C
13	CONSTRUCT SB BRIDGE	C	C	C	C
14	INSTALL NEW SB BRIDGE GROUNDING	C	C	C	C

LEGEND
C ... CONTRACTOR
S ... SEPTA
P ... PECO

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)
LOCATION PLAN, INDEX, NOTES AND SYMB.

RECOMMENDED_____

SHEET 1 OF 17

ET-1

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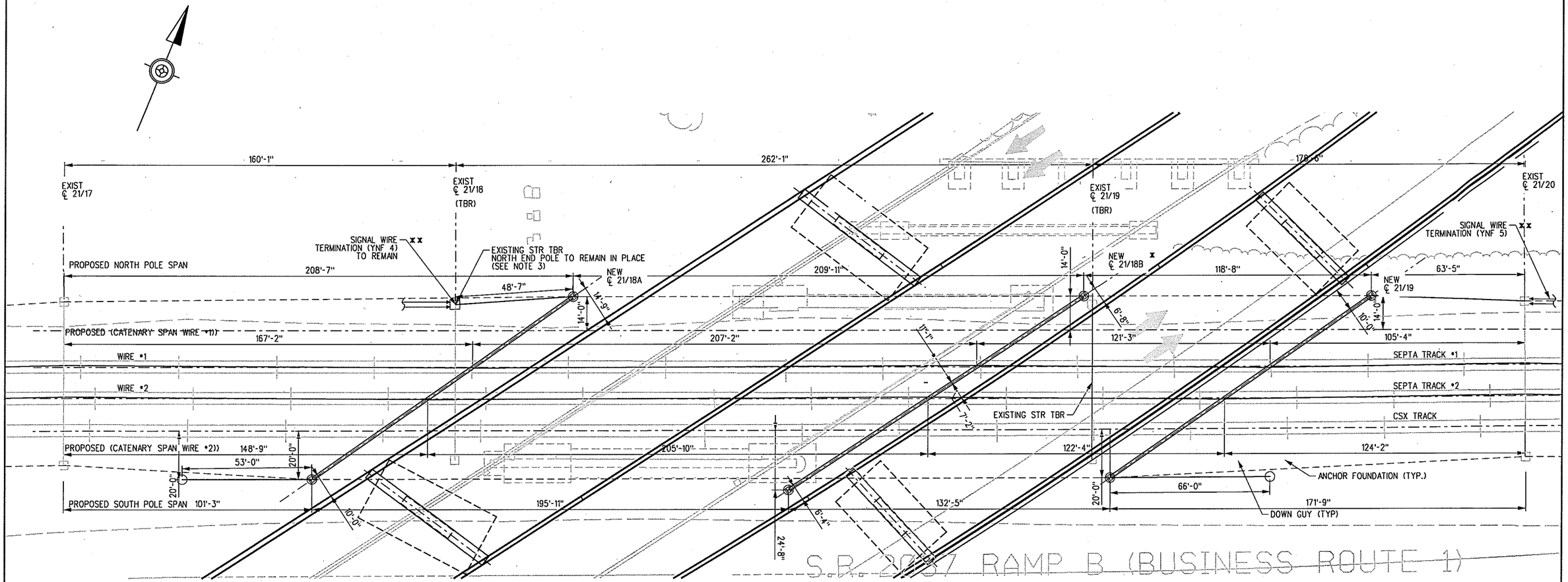

WIRING PLAN

SCALE 1" = 20'

x THE LOCATION AND DESIGN OF THE NEW CATENARY STRUCTURE 21/18B, ALONG WITH ANY TEMPORARY BRIDGE SUPPORTS, AS NEEDED, TO BE DETERMINED DURING THE FINAL DESIGN. IF TEMPORARY BRIDGE SUPPORTS ARE UTILIZED THE NEW CATENARY STRUCTURE MAY BE PLACED MIDWAY BETWEEN THE PROPOSED NB AND SB BRIDGES AFTER THE EXISTING SUBSTRUCTURE IS REMOVED AND BOTH NEW BRIDGES ARE ERECTED.

xx ALTERNATE OPTIONS FOR EXISTING UNDERGROUND SIGNAL WIRE BETWEEN EXISTING STRUCTURES 21/18 AND 21/20 TO BE CONSIDERED DURING FINAL DESIGN

NOTES:

1. FOR GENERAL NOTES, SYMBOLS & ABBREVIATIONS SEE DRAWING ET-1
2. TRANSMISSION WIRES NOT SHOWN FOR CLARITY
3. NORTH END POLE OF EXISTING STRUCTURE 21/18 TO BE FIELD CUT 4 FEET ABOVE SIGNAL WIRE TERMINATION HEIGHT.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
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SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

WIRING PLAN

RECOMMENDED_____

SHEET 2 OF 17

ET-2

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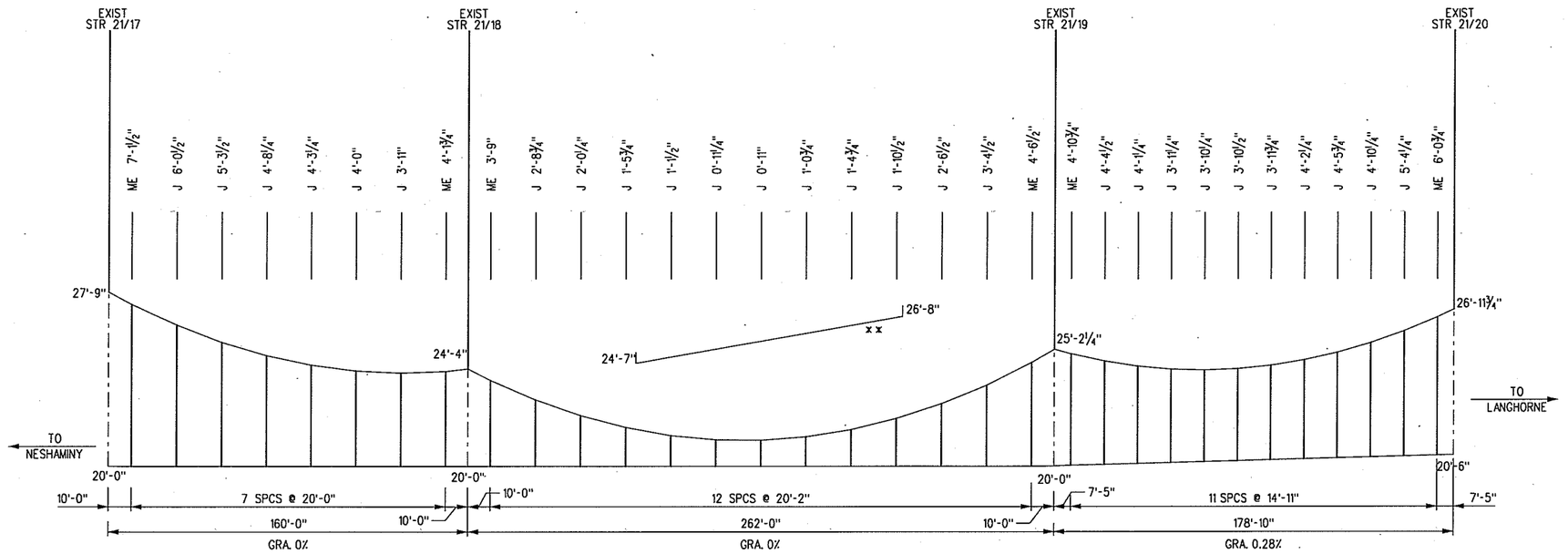


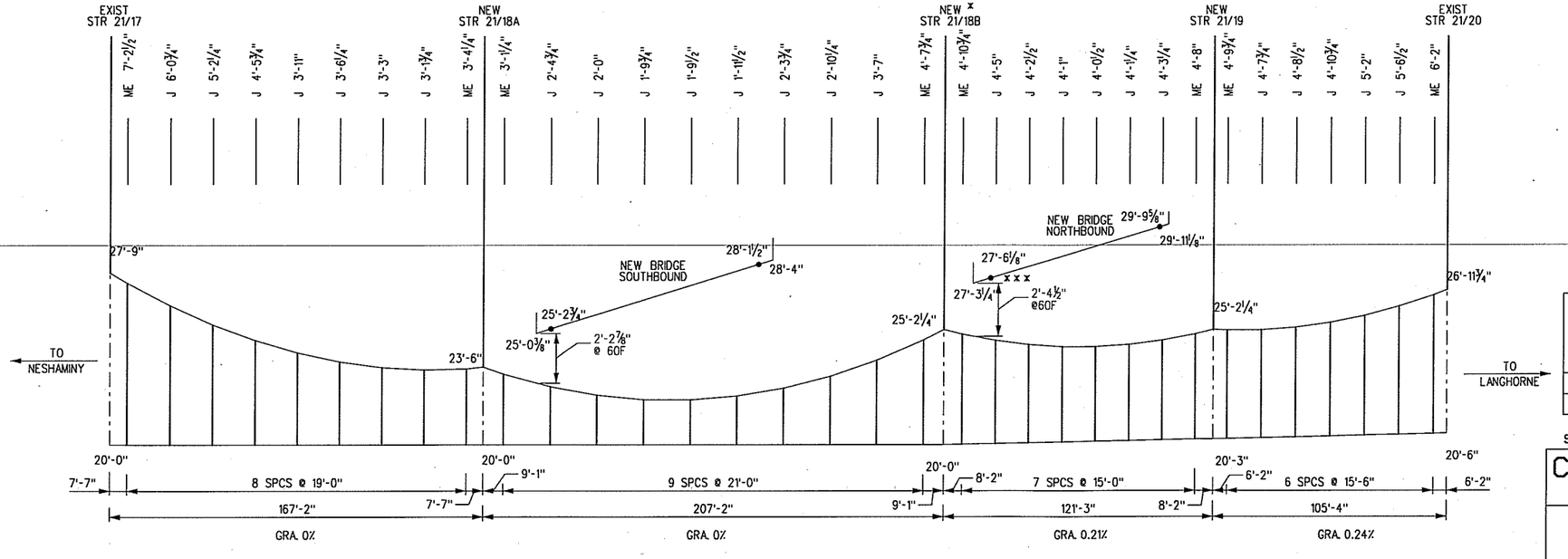
EXISTING WIRE #1 CATENARY PROFILE

BILL OF MATERIAL			
MARK	DESCRIPTION	REFERENCE DRAWING	QTY
ME	HANGER ASSEMBLY	BD0-030	8
J	HANGER ASSEMBLY	BD0-030	26

x THE LOCATION AND DESIGN OF THE NEW STRUCTURE 21/18B, ALONG WITH ANY TEMPORARY BRIDGE SUPPORTS, AS NEEDED, TO BE DETERMINED DURING THE FINAL DESIGN.

xx POTENTIAL TEMPORARY BRIDGE SUPPORT LOCATION ON EXISTING BRIDGE DURING CONSTRUCTION OF NEW NORTHBOUND BRIDGE.

xxx POTENTIAL TEMPORARY BRIDGE SUPPORT LOCATION ON NEW NORTHBOUND BRIDGE DURING DEMOLITION OF EXISTING BRIDGE.



FINAL WIRE #1 CATENARY PROFILE

WIRE PARAMETERS			
WIRE	DESCRIPTION	TENSION @ 60°F (LB)	WEIGHT (LB/FT)
MESSENGER	5/8" DIA. COPPERWELD 19-#9 STRAND PER SEPTA SPEC #132	4640	0.848
CONTACT	336.4 KCMIL BRONZE GROOVED WIRE	5000	1.02

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

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OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

CATENARY PROFILES TRACK #1

RECOMMENDED_____

SHEET 3 OF 17

ET-3

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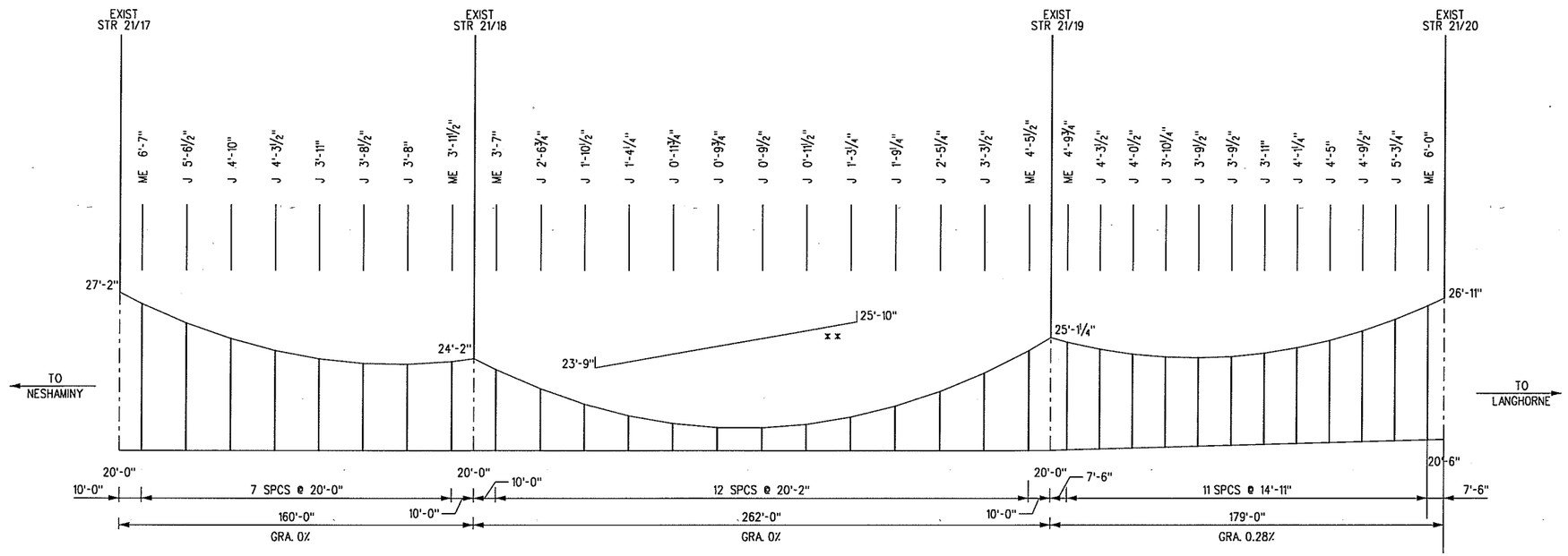
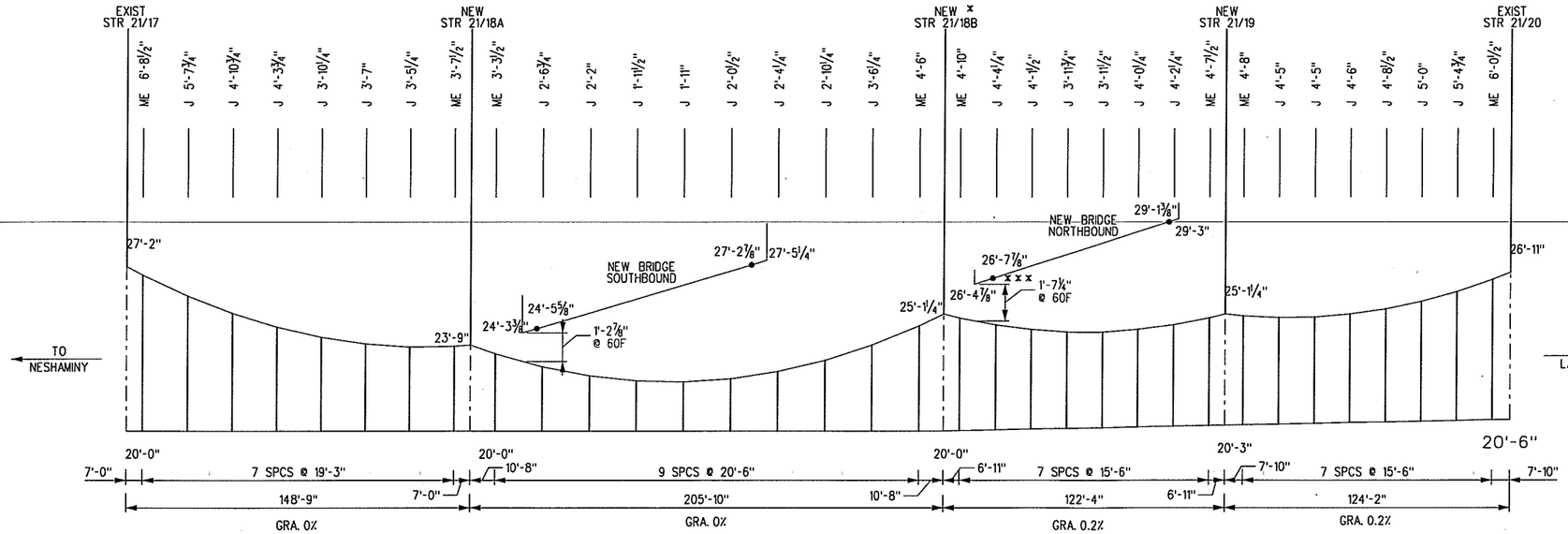


EXISTING WIRE #2 CATENARY PROFILE



FINAL WIRE #2 CATENARY PROFILE

BILL OF MATERIAL

MARK	DESCRIPTION	REFERENCE DRAWING	QTY
ME	HANGER ASSEMBLY	BD0-030	8
J	HANGER ASSEMBLY	BD0-030	26

x THE LOCATION AND DESIGN OF THE NEW STRUCTURE 21/18B, ALONG WITH ANY TEMPORARY BRIDGE SUPPORTS, AS NEEDED, TO BE DETERMINED DURING THE FINAL DESIGN.

xx POTENTIAL TEMPORARY BRIDGE SUPPORT LOCATION ON EXISTING BRIDGE DURING CONSTRUCTION OF NEW NORTHBOUND BRIDGE.

xxx POTENTIAL TEMPORARY BRIDGE SUPPORT LOCATION ON NEW NORTHBOUND BRIDGE DURING DEMOLITION OF EXISTING BRIDGE.

WIRE PARAMETERS

WIRE	DESCRIPTION	TENSION @ 60°F (LB)	WEIGHT (LB/FT)
MESSENGER	5/8" DIA. COPPERWELD 19-#9 STRAND PER SEPTA SPEC #132	4640	0.848
CONTACT	336.4 KCMIL BRONZE GROOVED WIRE	5000	1.02

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

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S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

CATENARY PROFILES TRACK #2

RECOMMENDED_____

SHEET 4 OF 17

ET-4

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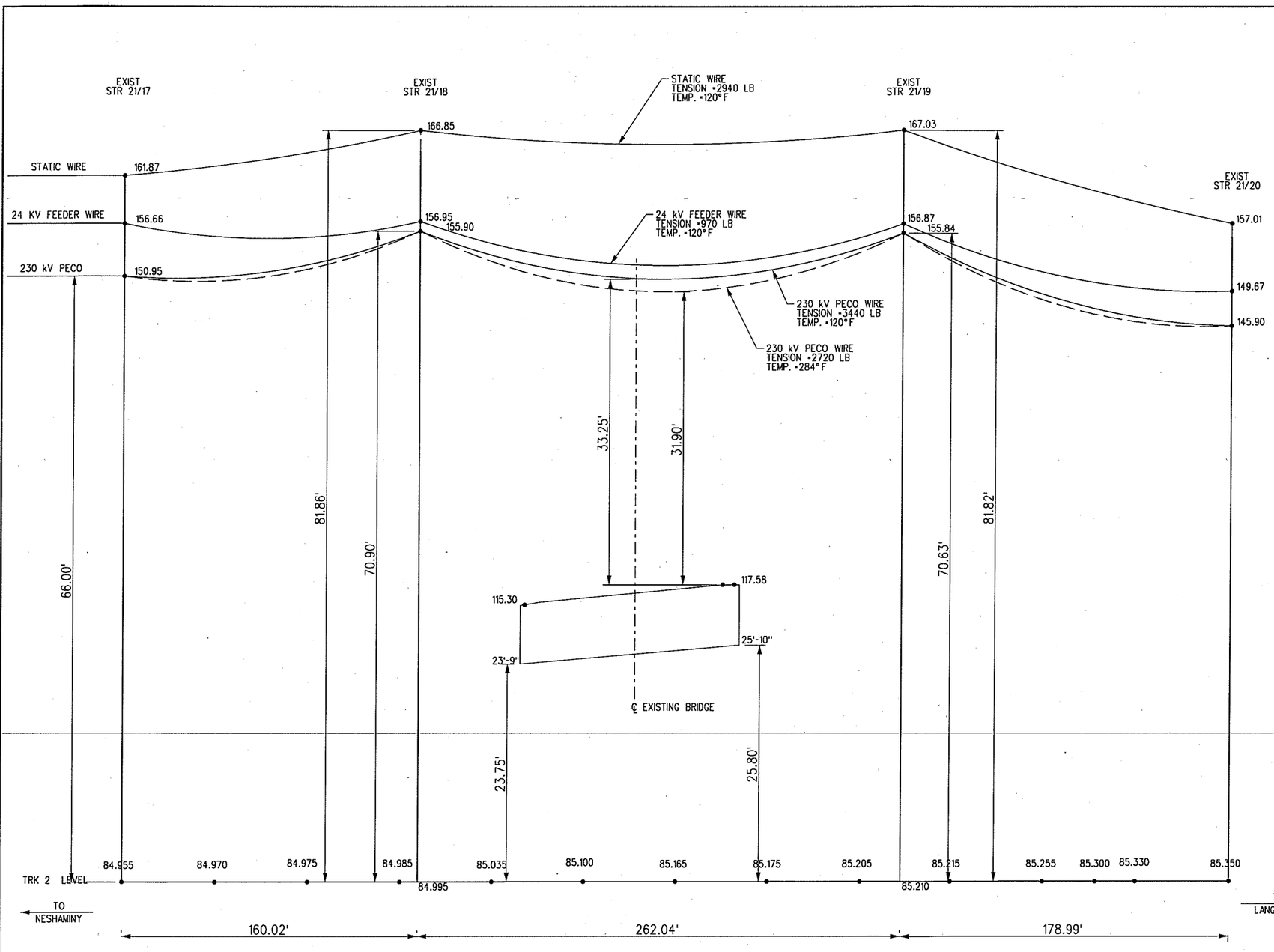

EXISTING ANCILLARY WIRES PROFILE

CONDUCTOR PARTICULARS

DESCRIPTION	230 KV PECO TRANSMISSION CABLE	OVERHEAD GROUND (STATIC)	24 KV SEPTA FEEDER
SIZE	1590 MCM	7 NO. 5 AWG	336.4 MCM
MATERIAL	ALUMINIUM/STEEL	ALUMOWELD	ALUMINIUM/STEEL
MAKE-UP	54-STRAND (AL) 19-STRAND (STEEL)	-	30-STRAND (AL) 7-STRAND (STEEL)
OVERALL DIAMTER - IN	1.545	0.546	0.741
CROSS SECTION AREA - IN2	1.4072*	0.18193	0.3259*
WEIGHT - LB/FT (NO ICE)	2.044	0.5249	0.5271
NORMAL TENSION - LB (60°F NO WIND)	4,600	3,940	1,180*
TENSION AT MAX. LOAD - LB (0°F, 1/2" ICE & 8PSF WIND)	10,200	7,330	5,250**
TENSION AT MAX. TEMP - LB (120 °F)	3,440	2,940	970**
TENSION AT 284 °F TEMP - LB	2,720**	1,070**	700**
BREAKING STRENGTH - LB	56,000	27,030	17,800

* ASSUMED VALUES ** CALCULATED VLAUES

NOTE:

1. THE EXISTING ANCILLARY WIRE HEIGHTS ELEVATIONS AND EXISTING BRIDGE TOP ELEVATIONS ARE BASED ON SURVEY DATA
2. THE EXISTING BRIDGE BOTTOM ELEVATION IS BASED ON AS - BUILT DRAWINGS

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

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S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

EXISTING ANCILLARY WIRES PROFILES

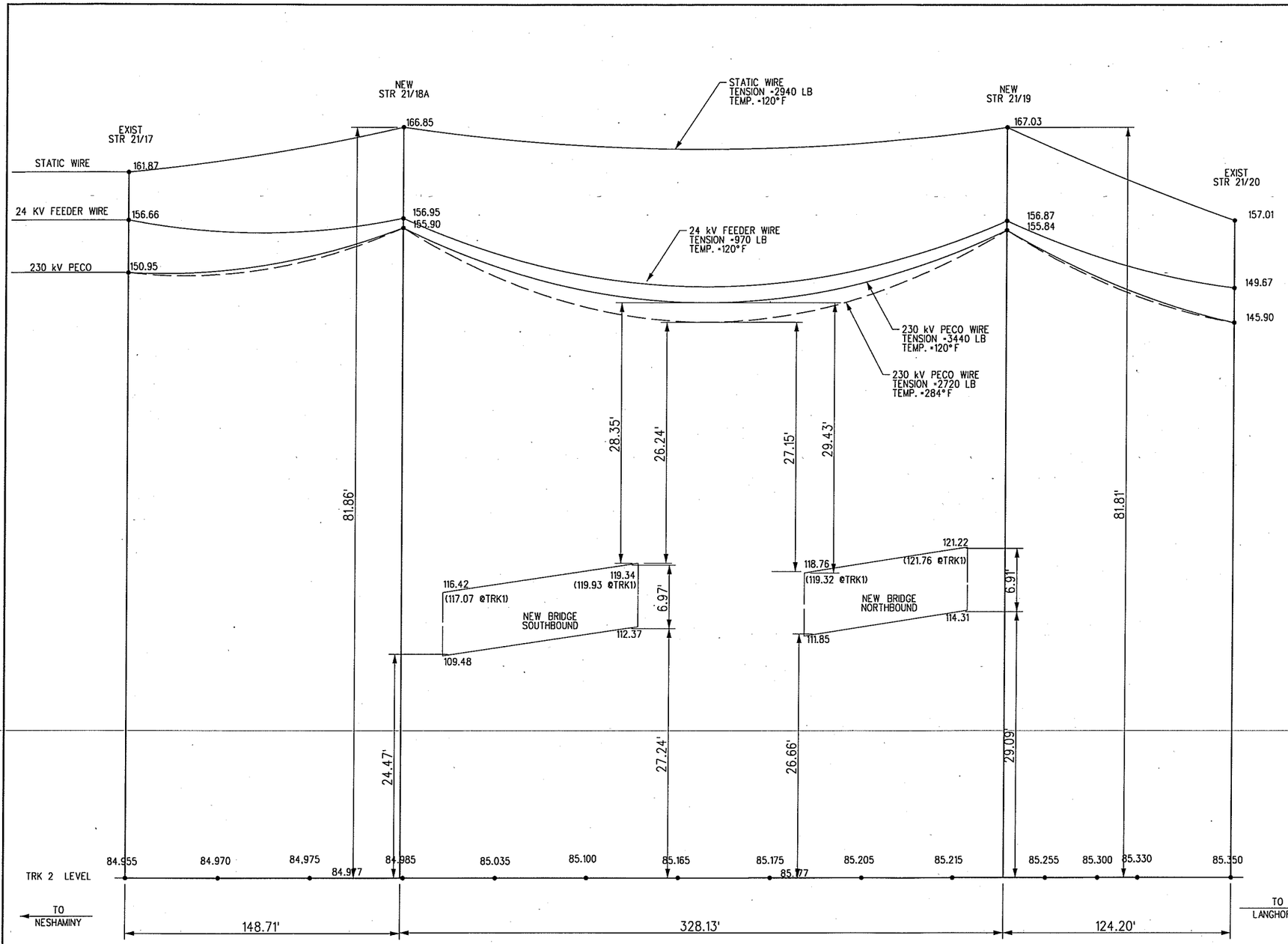
RECOMMENDED_____

SHEET 5 OF 17

ET-5

DES: EYN | DWG: EYN | CKD: SRA

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\5-Existing Static-Transmission Wire Profile.dgn
DATE: 11/8/2019 4:08:03 PM



FINAL ANCILLARY WIRES PROFILE

CONDUCTOR PARTICULARS

DESCRIPTION	230 KV PECO TRANSMISSION CABLE	OVERHEAD GROUND (STATIC)	24 KV SEPTA FEEDER
SIZE	1590 MCM	7 NO. 5 AWG	336.4 MCM
MATERIAL	ALUMINIUM/STEEL	ALUMOWELD	ALUMINIUM/STEEL
MAKE-UP	54-STRAND (AL) 19-STRAND (STEEL)	-	30-STRAND (AL) 7-STRAND (STEEL)
OVERALL DIAMTER - IN	1.545	0.546	0.741
CROSS SECTION AREA - IN2	1.4072*	0.18193	0.3259*
WEIGHT - LB/FT (NO ICE)	2.044	0.5249	0.5271
NORMAL TENSION - LB (60°F NO WIND)	4,600	3,940	1,180*
TENSION AT MAX. LOAD - LB (0°F, 1/2" ICE & 8PSF WIND)	10,200	7,330	5,250**
TENSION AT MAX. TEMP - LB (120 °F)	3,440	2,940	970**
TENSION AT 284 °F TEMP - LB	2,720**	1,070**	700**
BREAKING STRENGTH - LB	56,000	27,030	17,800

* ASSUMED VALUES ** CALCULATED VALUE

NOTE:

1. THE EXISTING ANCILLARY WIRE HEIGHTS ELEVATIONS AND EXISTING BRIDGE TOP ELEVATIONS ARE BASED ON SURVEY DATA
2. THE EXISTING BRIDGE BOTTOM ELEVATION IS BASED ON AS - BUILT DRAWINGS.
3. MODIFICATIONS TO EXISTING STRUCTURES 21/17 AND 21/20, AS REQUIRED, TO ELIMINATE ANCILLARY WIRE UPLIFT LOADS TO BE INCLUDED IN THE FINAL DESIGN.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

PROPOSED ANCILLARY WIRES PROFILES

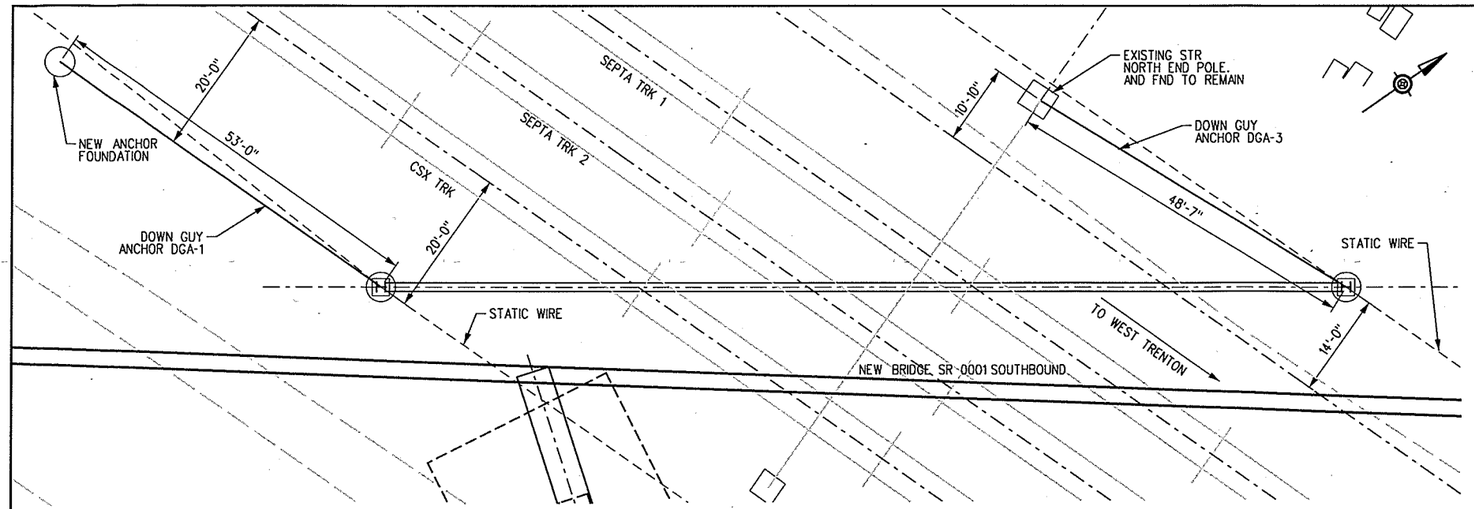
RECOMMENDED_____

SHEET 6 OF 17

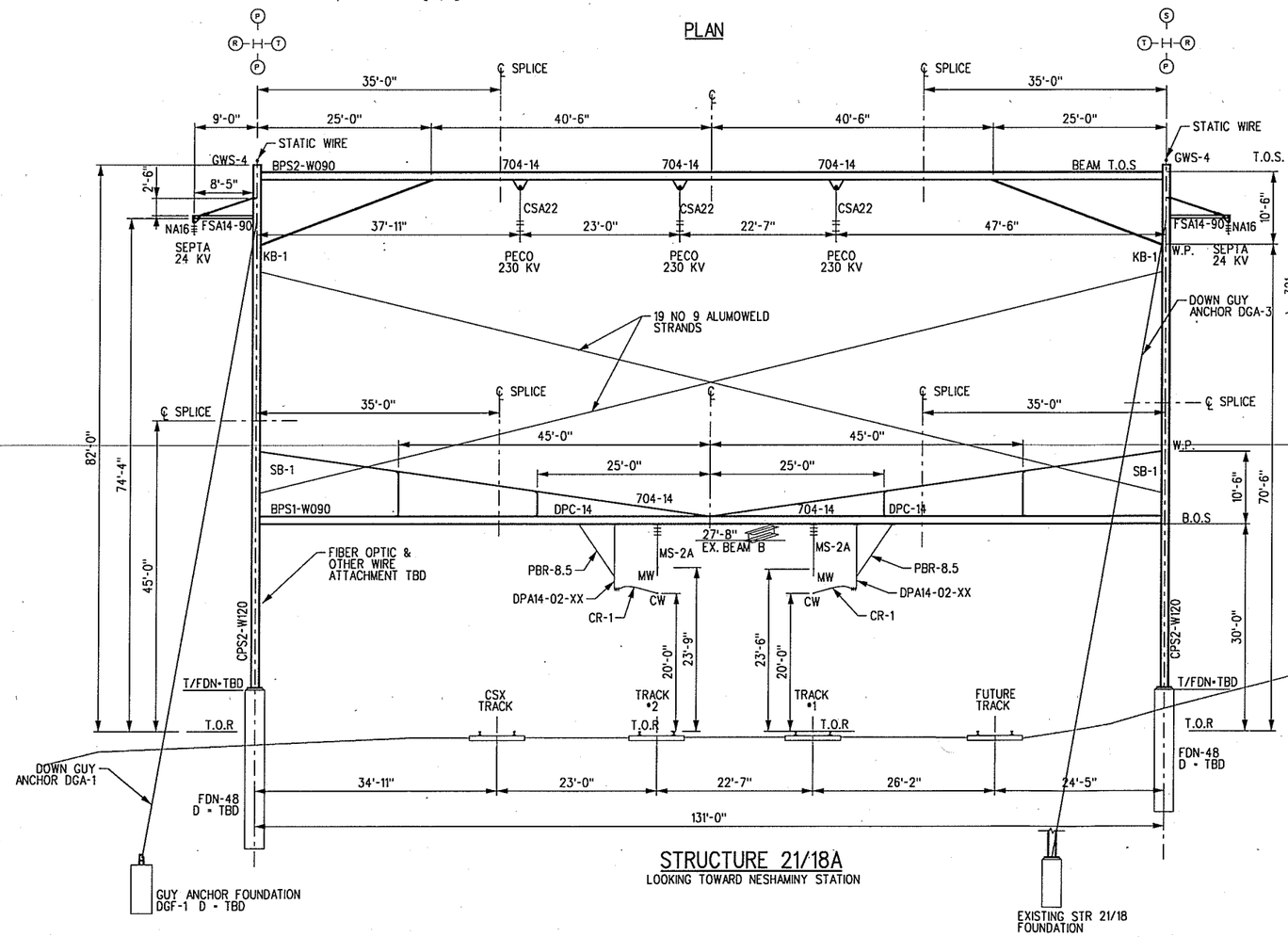
ET-6

DES: EYN | DWG: EYN | CKD: SRA

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\6-Proposed Static-Transmission Wire Profile.dgn
DATE: 11/8/2019 4:09:21 PM

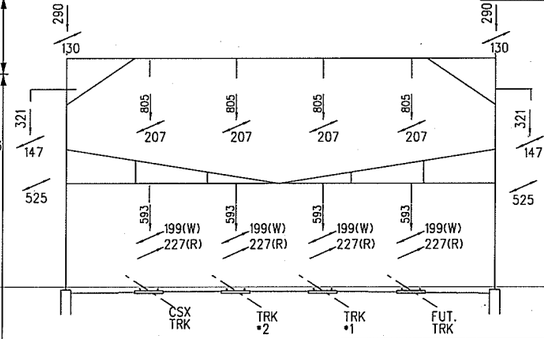


PLAN



STRUCTURE 21/18A

LOOKING TOWARD NESHAMINY STATION



LOADING DIAGRAM

LOADING CONDITION:
0°, 1/2" ICE, 40 MPH WIND

WIRE HEIGHTS

	PHASE	WIRE #1	WIRE #2
BOTTOM OF STEEL	EXISTING	---	---
	FINAL	30'-0"	30'-0"
MESSENGER	EXISTING	---	---
	FINAL	23'-6"	23'-9"
CONTACT	EXISTING	---	---
	FINAL	20'-0"	20'-0"

FINAL ANCILLARY WIRE HEIGHTS

	230 KV PECO WIRES		
	WIRE #1	WIRE #2	WIRE #3
BOTTOM OF STEEL (BPS2-W090)	79'-10"	79'-10"	79'-10"
230 KV PECO WIRE	70'-11"	70'-11"	70'-11"
	24 KV SEPTA FEEDR WIRES		
	WIRE #1	WIRE #2	
BOTTOM OF STEEL (FSA14-90)	74'-4"	74'-4"	
24 KV FEEDER	72'-0"	71'-8"	

BILL OF MATERIAL

MARK	DESCRIPTION	REFERENCE DRAWING	QTY
CPS2-W120	STEEL POLE - W 14X120	ET-22	2
BPS1-W090	STEEL PORTAL BEAM - W 14X90	ET-23	1
BPS2-W090	STEEL PORTAL BEAM - W 14X90	ET-24	1
SB-1	SAG BRACE	ET-25	2
KB-1	KNEE BRACE	ET-26	2
FDN-48	48" DIA FOUNDATION	ET-31	2
DGF-1	36" DIA GUY ANCHOR FOUNDATION	ET-32	1
DGA-1	DOWN GUY ANCHOR ASSMEBLY	BDO-080	1
DGA-3	DOWN GUY ANCHOR ASSMEBLY	BDO-082	1
BS-1	BEAM SPLICE	ET-23	-
FSA14-90	FEEDER SUPPORT ARM ASSEMBLY	BDS-089	2
704-14	BEAM SLIDING CONNECTION	BDS-001	5
MS-2A	MESSENGER SUPPORT ASSEMBLY	BDO-040	2
NA16	FEEDER SUPPORT ASSEMBLY	BDO-108	2
GWS-4	STATIC WIRE ASSEMBLY	-	2
CSA22	PECO 230 KV HANGER ASSEMBLY	-	3
CR-1	CONTACT WIRE REGISTRATION A.	BDO-054	2
DPA14-02-XX	DROP PIPE	BDS-165	2
PBR-8.5	PIPE BRACE	BDO-082	2
DPC-14	SLIDING CONNECTION ASSEMBLIES	BDS-004	2

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL ERECTION DIAGRAM 21/18A

RECOMMENDED_____

SHEET 7 OF 17

ET-11

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\11-STR 21.18A.dgn
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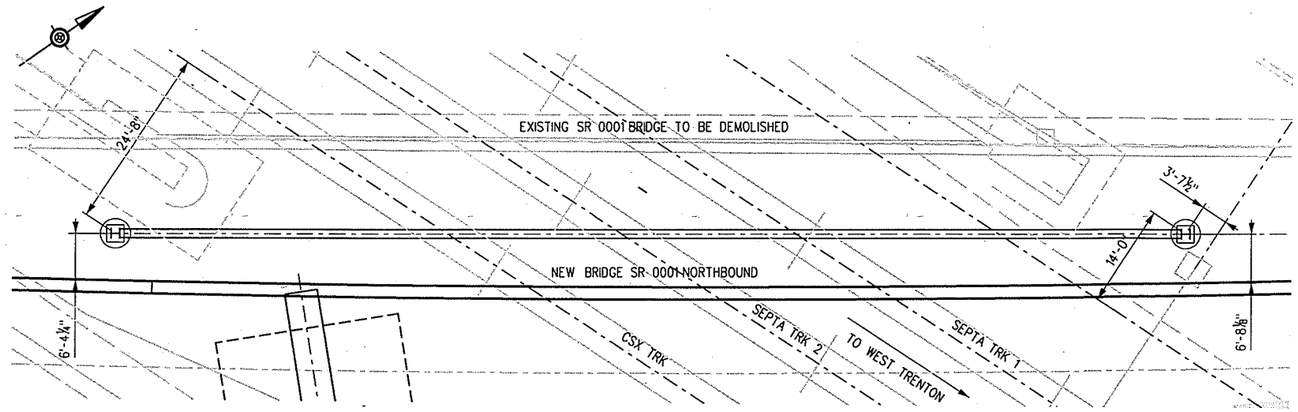
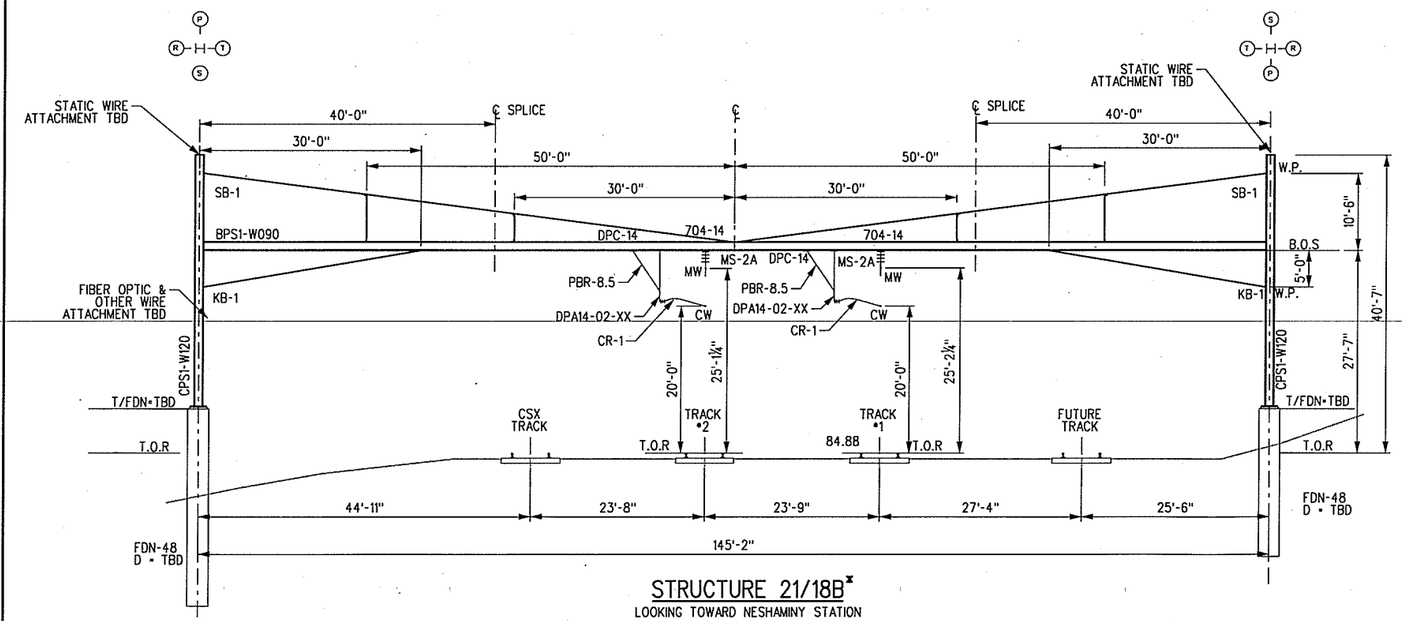


PLAN

BILL OF MATERIAL			
MARK	DESCRIPTION	REFERENCE DRAWING	QTY
CPS2-W120	STEEL POLE - W 14X120	ET-22	2
BPS1-W090	STEEL PORTAL BEAM - W 14X90	ET-23	1
SB-1	SAG BRACE	ET-25	2
KB-1	KNEE BRACE	ET-26	2
FDN-48	48" DIA FOUNDATION	ET-31	2
BS-1	BEAM SPLICE	ET-23	-
704-14	BEAM SLIDING CONNECTION	BDS-001	2
MS-2A	MESSENGER SUPPORT ASSEMBLY	BDO-040	2
SA-1R	REGISTRATION ASSEMBLY	BDO-50	2
NA16	FEEDER SUPPORT ASSEMBLY	BDO-108	2
CR-1	CONTACT WIRE REGISTRATION A.	BDO-054	2
DP14-01-XX	DROP PIPE	BDS-165	2
DPC-14	SLIDING CONNECTION ASSEMBLIES	BDS-004	2
PBR-8.5	PIPE BRACE	BDO-082	2

NOTE:
1. STATIC WIRE ASSEMBLY TO BE INCLUDED IN NEXT THE SUBMITTAL.



STRUCTURE 21/18B[x]
LOOKING TOWARD NESHAMINY STATION

[x] THE LOCATION AND DESIGN OF THE NEW STRUCTURE 21/18B TO BE DETERMINED DURING THE FINAL DESIGN. THE USE OF TEMPORARY BRIDGE SUPPORTS TO BE CONSIDERED TO REDUCE THE 145' ACROSS-TRACK LENGTH OF STRUCTURE TO APPROXIMATELY 110'.

LOADING DIAGRAM
LOADING CONDITION: 0°, 1/2" ICE, 40 MPH WIND

WIRE HEIGHTS			
	PHASE	WIRE #1	WIRE #2
BOTTOM OF STEEL	EXISTING	---	---
	FINAL	27'-7"	27'-7"
MESSENGER	EXISTING	---	---
	FINAL	25'-2¼"	25'-1¼"
CONTACT	EXISTING	---	---
	FINAL	20'-0"	20'-0"

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)
STRUCTURAL ERECTION DIAGRAM 21/18B

RECOMMENDED_____

SHEET 8 OF 17

ET-12

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CADD\CADD Files 08-15-18\Sheet\12-STR 21_18B.dgn
DATE: 11/8/2019 3:35:18 PM

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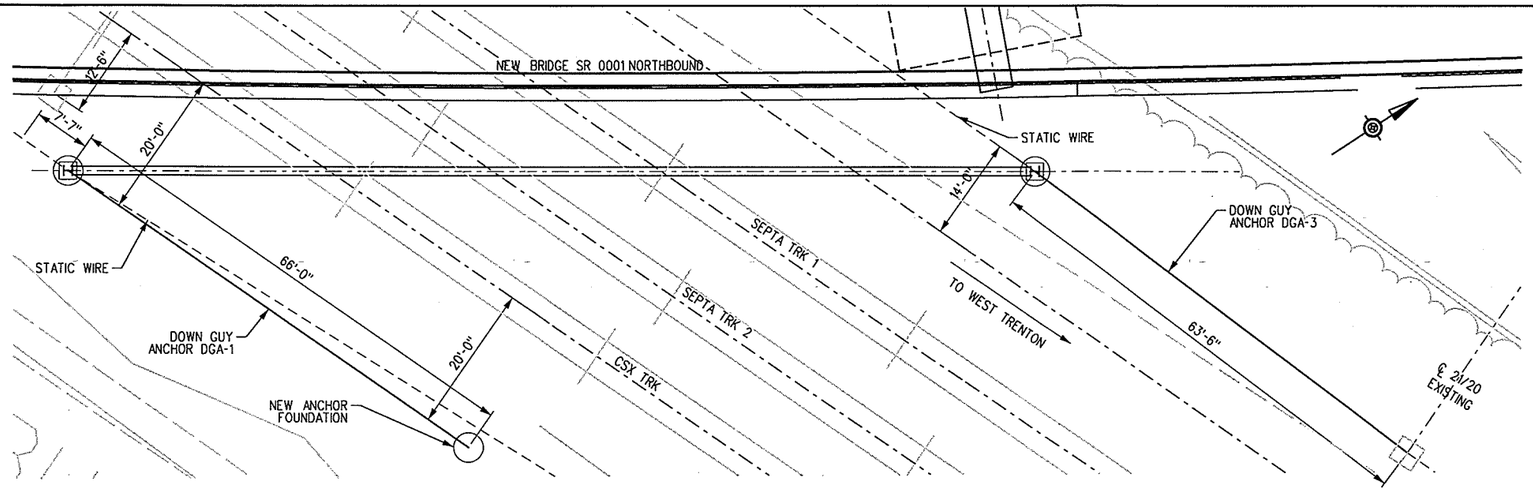
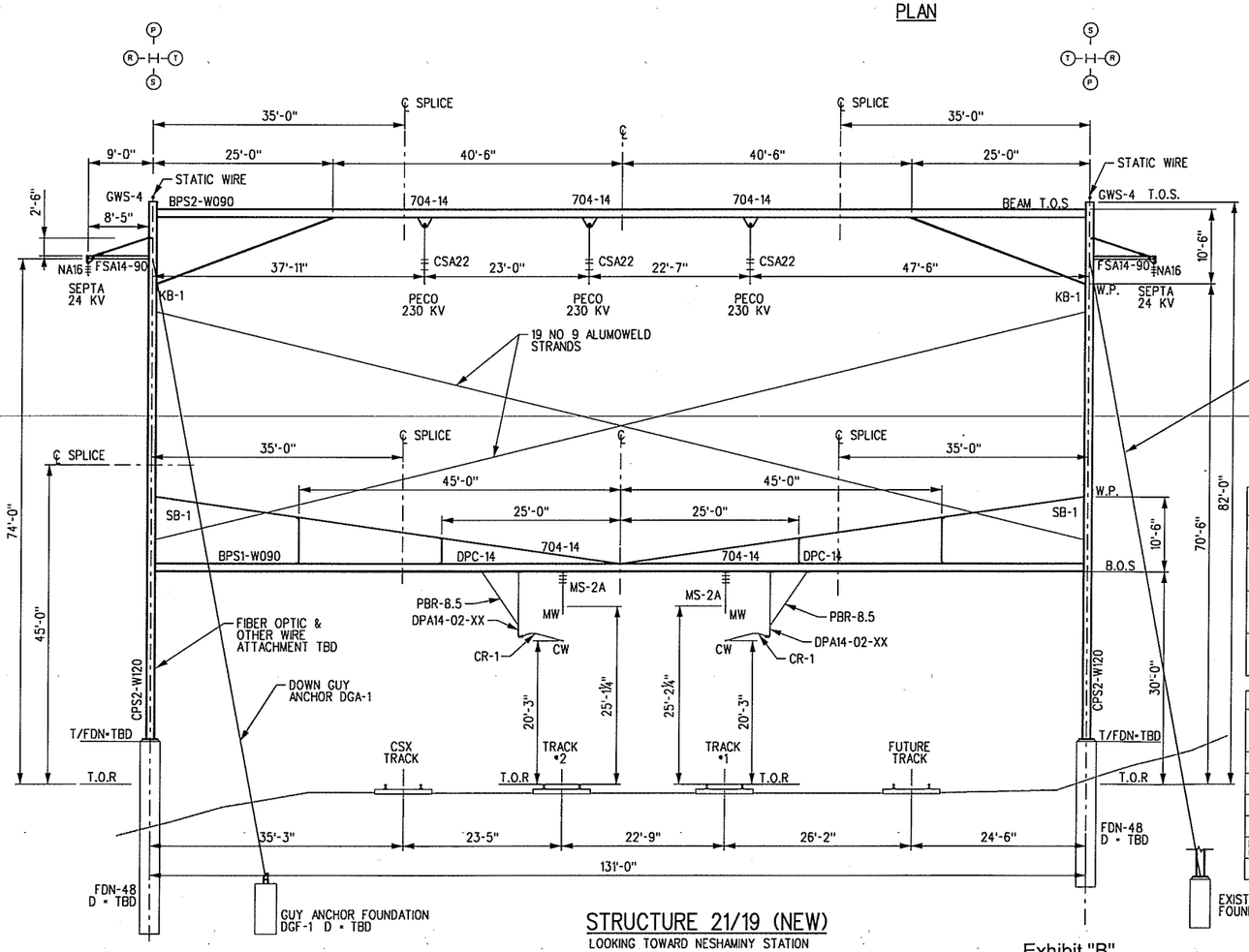
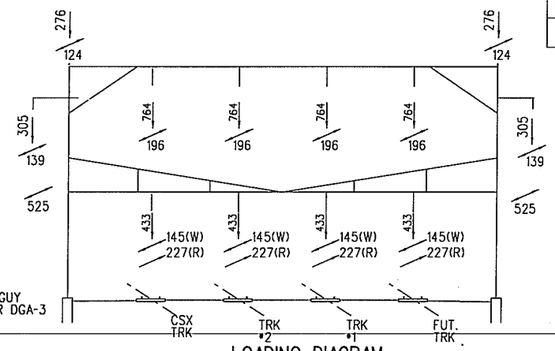


PLAN



STRUCTURE 21/19 (NEW)
LOOKING TOWARD NESHAMINY STATION



LOADING DIAGRAM
LOADING CONDITION: 0°, 1/2" ICE, 40 MPH WIND

BILL OF MATERIAL

MARK	DESCRIPTION	REFERENCE DRAWING	QTY
CPS2-W120	STEEL POLE - W 14X120	ET-22	2
BPS1-W090	STEEL PORTAL BEAM - W 14X90	ET-23	1
BPS2-W090	STEEL PORTAL BEAM - W 14X90	ET-24	1
SB-1	SAG BRACE	ET-25	2
KB-1	KNEE BRACE	ET-26	2
FDN-48	48" DIA FOUNDATION	ET-31	2
DGF-1	36" DIA GUY ANCHOR FOUNDATION	ET-32	1
DGA-1	DOWN GUY ANCHOR ASSMEBLY	BDO-080	1
DGA-3	DOWN GUY ANCHOR ASSMEBLY	BDO-082	1
BS-1	BEAM SPLICE	ET-23	-
FSA14-90	FEEDER SUPPORT ARM ASSEMBLY	BDS-089	2
704-14	BEAM SLIDING CONNECTION	BDS-001	5
MS-2A	MESSENGER SUPPORT ASSEMBLY	BDO-040	2
NA16	FEEDER SUPPORT ASSEMBLY	BDO-108	2
GWS-4	STATIC WIRE ASSEMBLY	-	2
CSA22	PECO 230 KV HANGER ASSEMBLY	-	3
CR-1	CONTACT WIRE REGISTRATION A.	BDO-054	2
DPA14-02-XX	DROP PIPE	BDS-165	2
PBR-8.5	PIPE BRACE	BDO-082	2
DPC-14	SLIDING CONNECTION ASSEMBLIES	BDS-004	2

CATENARY WIRE HEIGHTS

	PHASE	WIRE #1	WIRE #2
BOTTOM OF STEEL	EXISTING	---	---
	FINAL	30'-0"	30'-0"
MESSENGER	EXISTING	---	---
	FINAL	25'-2¼"	25'-1¼"
CONTACT	EXISTING	---	---
	FINAL	20'-3"	20'-3"

FINAL ANCILLARY WIRE HEIGHTS

	230 KV PECO WIRES		
	WIRE #1	WIRE #2	WIRE #3
BOTTOM OF STEEL (BPS2-W090)	79'-10"	79'-10"	79'-10"
230 KV PECO WIRE	70'-7"	70'-7"	70'-7"
	24 KV SEPTA FEEDR WIRES		
	WIRE #1	WIRE #2	
BOTTOM OF STEEL (FSA14-90)	74'-0"	74'-0"	
24 KV FEEDER	71'-8"	71'-8"	

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)
STRUCTURAL ERECTION DIAG. 21/19(NEW)

RECOMMENDED_____

SHEET 9 OF 17

ET-13

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\13-STR 21_19A.dgn
DATE: 11/8/2019 3:39:20 PM

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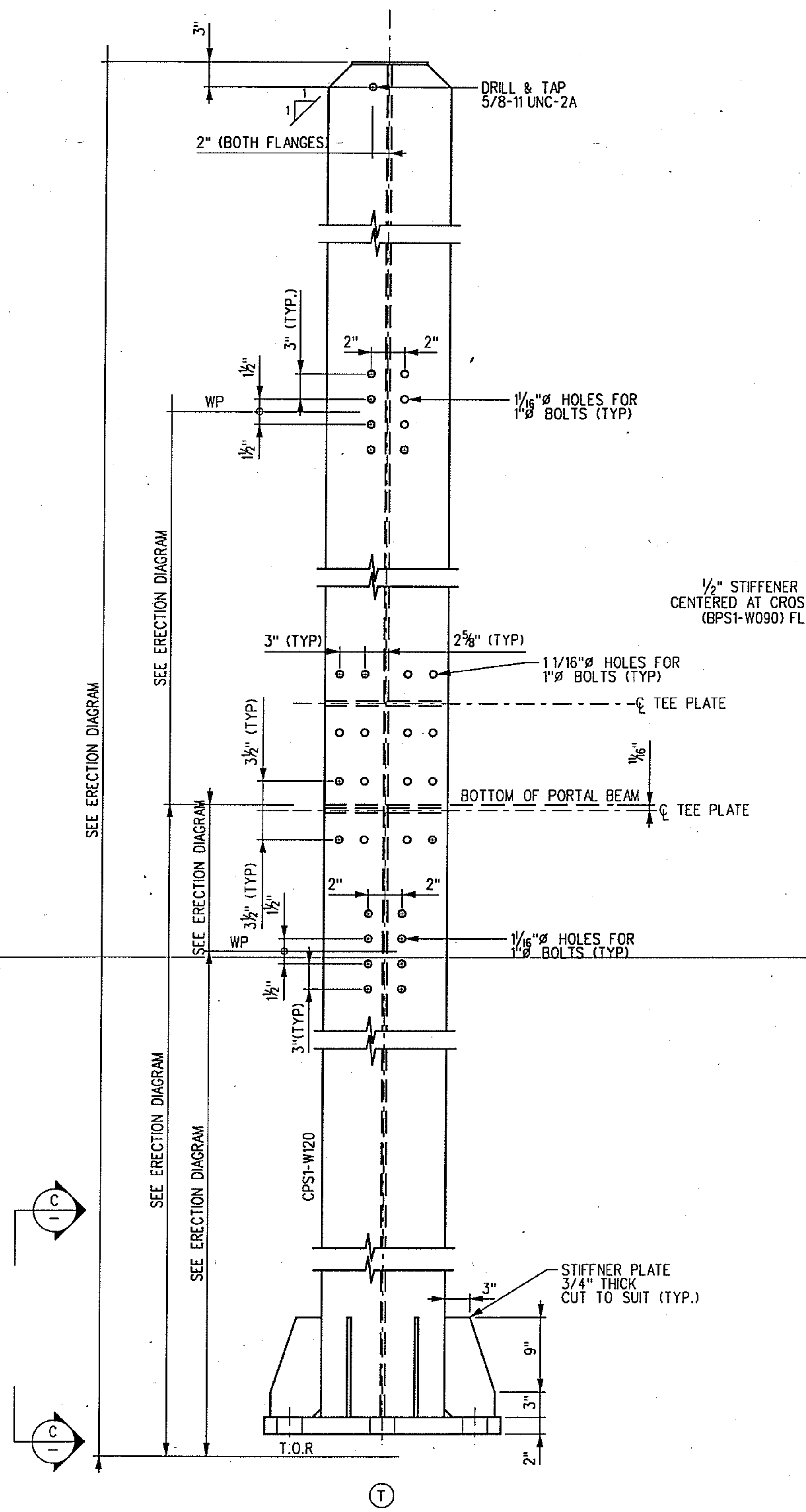
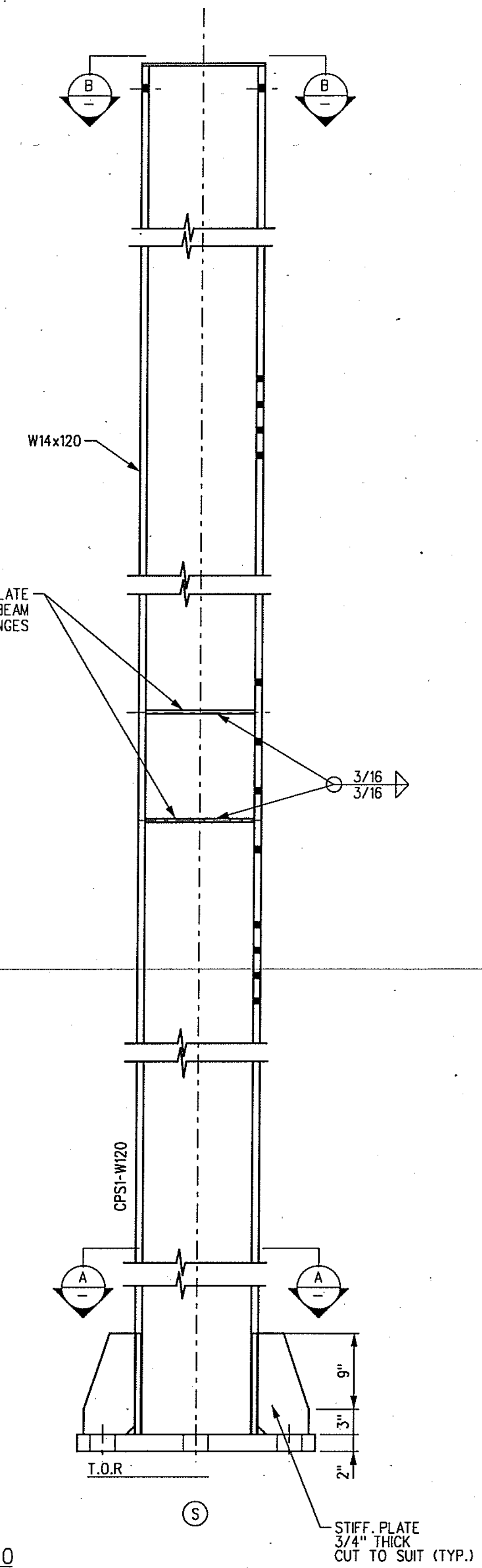
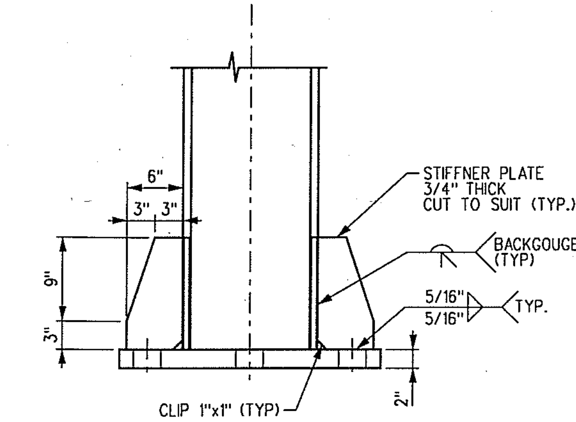


COLUMN TYPE CPS1–W120

SCALE: 1"=1'-0"





C SECTION
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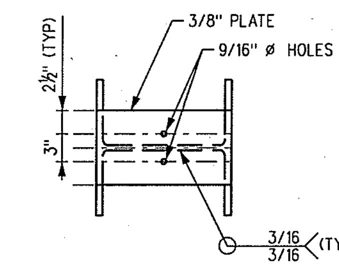
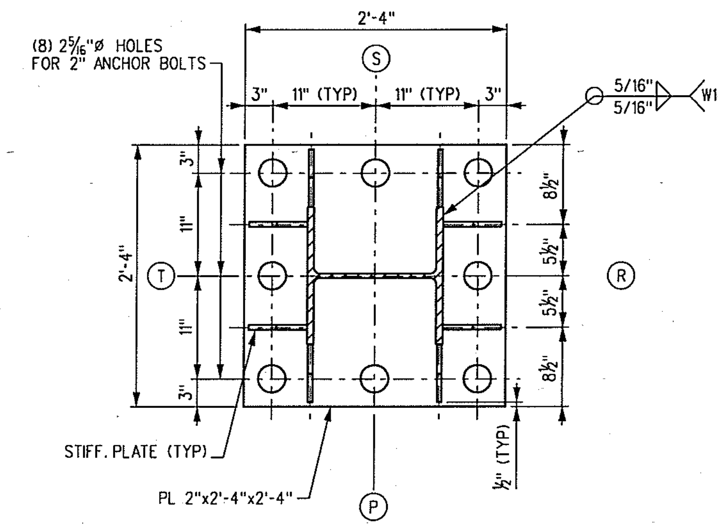


B SECTION
SCALE: 1"=1'-0"



A SECTION
SCALE: 1"=1'-0"

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS, SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS NOTED OTHERWISE.

COLUMN NOMENCLATURE

C|X|X|#|# - X|#|#|# - #|#

COLUMN — STYLE — VARIATION SEQUENCE — LENGTH (FT) — SIZE — STRUCTURAL SHAPE

LEGEND (STYLE):

DE - DEAD LOAD
PO - PULL OFF
PS - PORTAL STRUCTURE
CS - CANTILEVER STRUCTURE (SINGLE OR MULTI TRACK)

LEGEND (STRUCTURAL SHAPE):

W - WIDE FLANGE

LEGEND (SIZE):

W - WEIGHT (LBS PER FT)

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

REVISIONS

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 1

RECOMMENDED________________

SHEET 10 OF 17

ET-21

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\21-STRUTURAL STEEL DETAILS-COLUMN1.dgn
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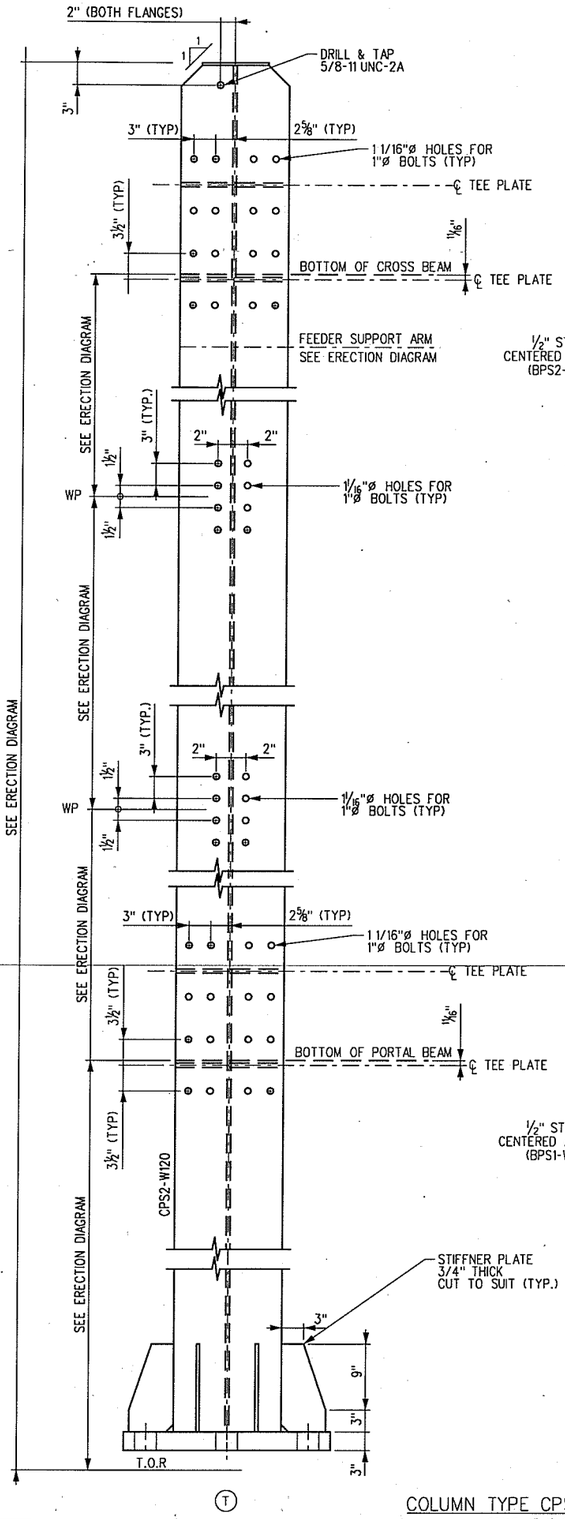

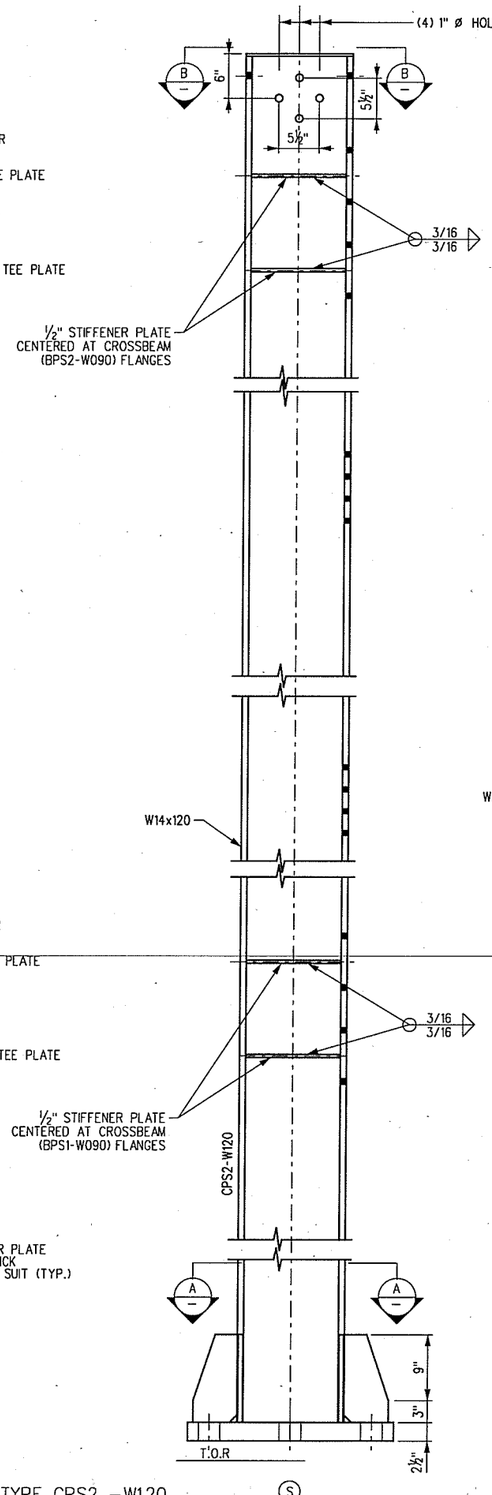

COLUMN TYPE CPS2 –W120
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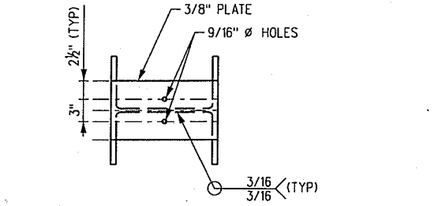
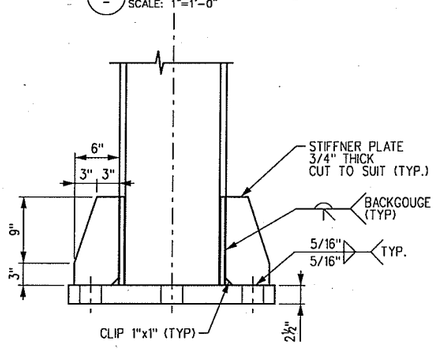
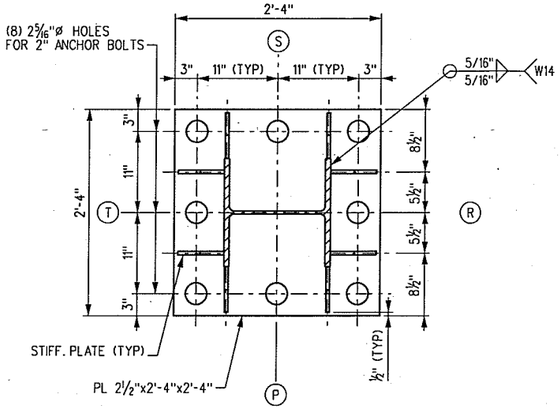


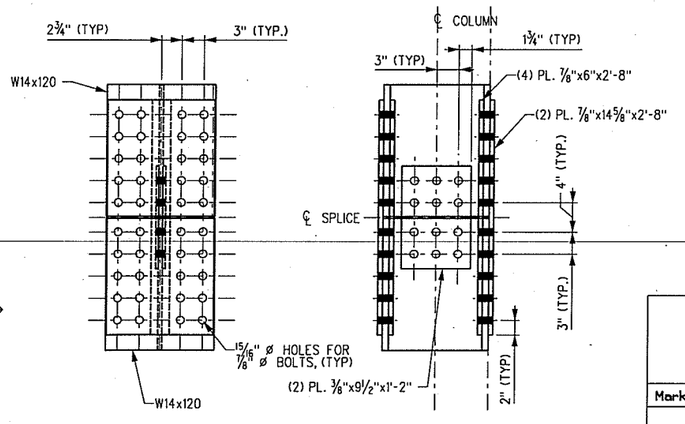
B – SECTION
SCALE: 1"=1'-0"



C – SECTION
SCALE: 1"=1'-0"



A – SECTION
SCALE: 1"=1'-0"

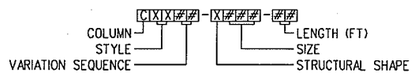


COLUMN SPLICE CS–120
SCALE: 1" = 1'-0"

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS, SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS NOTED OTHERWISE.
3. COLUMN SPLICE MAY BE ELIMINATED WITH APPROVAL OF THE ENGINEER.

COLUMN NOMENCLATURE



LEGEND (STYLE):

DE - DEAD LOAD
PO - PULL OFF
PS - PORTAL STRUCTURE
CS - CANTILEVER STRUCTURE (SINGLE OR MULTITRACK)

LEGEND (STRUCTURAL SHAPE):

W - WIDE FLANGE

LEGEND (SIZE):

W - WEIGHT (LBS PER FT)

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 2

RECOMMENDED_____

SHEET 11 OF 17

ET-22

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\22-STRUTURAL STEEL DETAILS-COLUMN2.dgn
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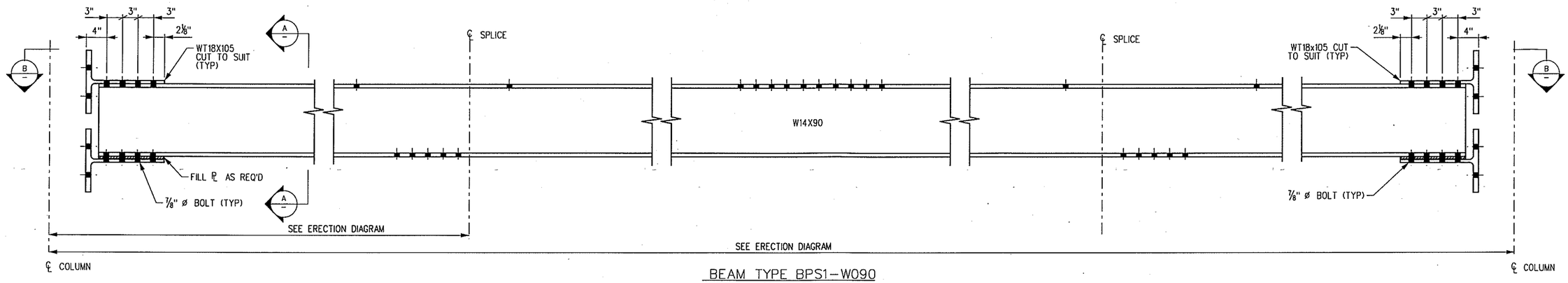
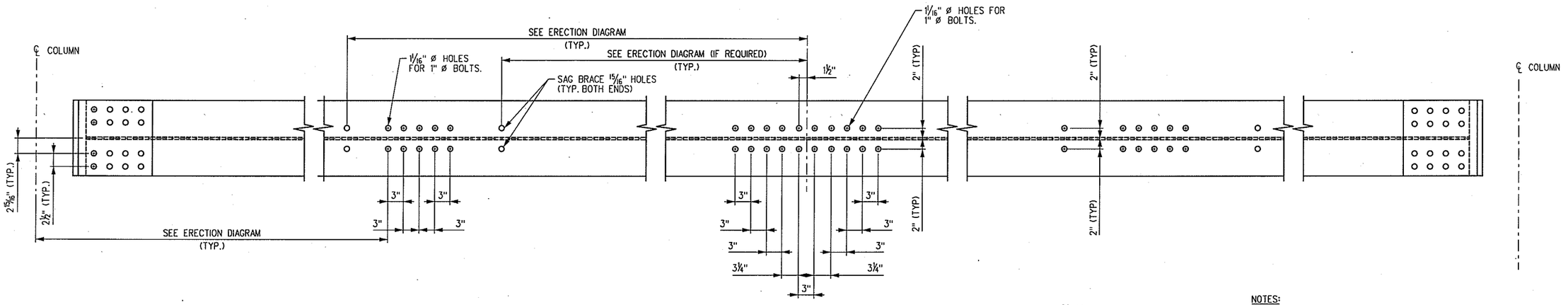




BEAM TYPE BPS1-W090

SCALE: N.T.S.

B SECTION

SCALE: N.T.S.

CAMBER DIAGRAM

NOT TO SCALE

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS, SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS NOTED OTHERWISE.
3. BEAM SPLICE MAY BE ELIMINATED WITH APPROVAL OF THE ENGINEER.

A SECTION

SCALE: 1"=1'

BEAM SPLICE "SP-1"

SCALE: 1" = 1'-0"

BEAM NOMENCLATURE

LEGEND (STYLE):

DE - DEAD LOAD
PO - PULL OFF
PS - PORTAL STRUCTURE
CS - CANTILEVER STRUCTURE (SINGLE OR MULTITRACK)

LEGEND (STRUCTURAL SHAPE):

W - WIDE FLANGE

LEGEND (SIZE):

W - WEIGHT (LBS PER FT)

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

REVISIONS

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 3

RECOMMENDED________________

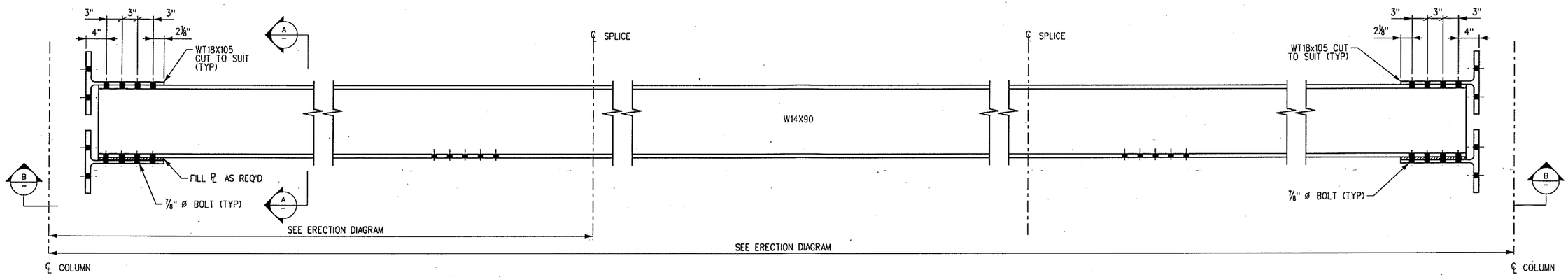
SHEET 12 OF 17

ET-23

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\23-STRUTURAL STEEL DETAILS-CROSS BEAM1.dgn
DATE: 11/7/2019 3:53:59 PM

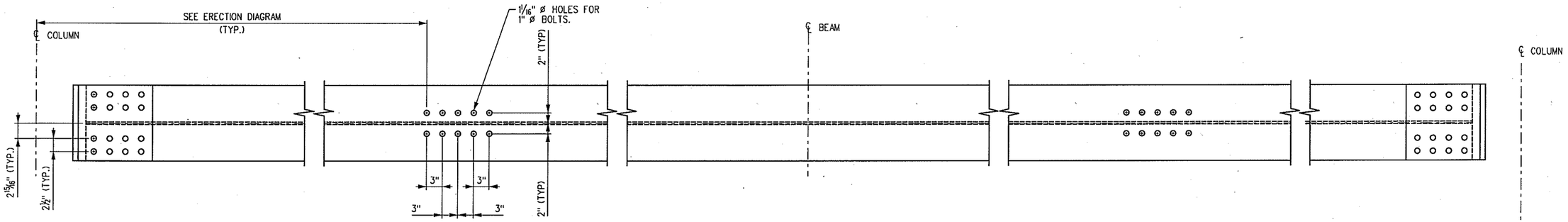
DES: EYN | DWG: EYN | CKD: EHT

Exhibit "B"



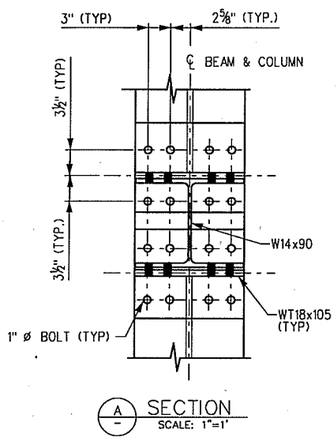
BEAM TYPE BPS2–W090

SCALE: N.T.S.



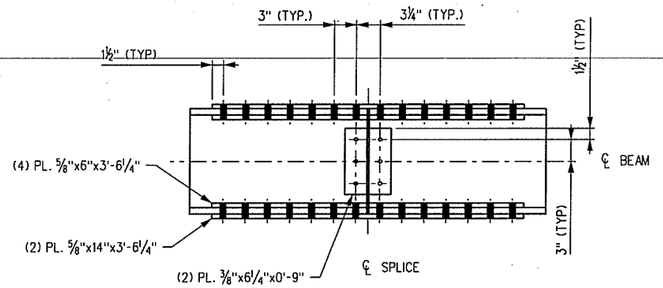
(B) SECTION

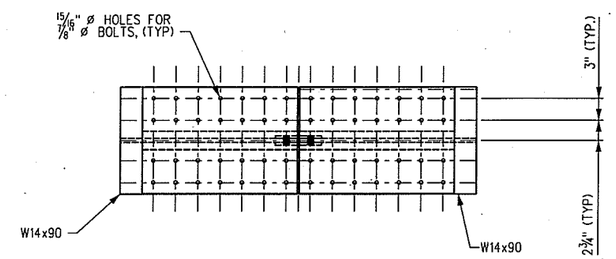
SCALE: N.T.S.



(A) SECTION

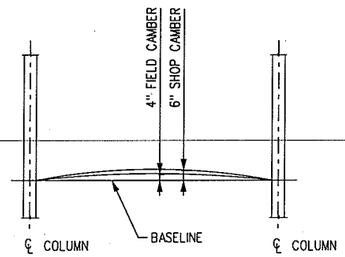
SCALE: 1"=1'





CROSS BEAM SPLICE "SP–1"

SCALE: 1" = 1'–0"



CAMBER DIAGRAM

NOT TO SCALE

BEAM NOMENCLATURE

[B][X][##]-[X][###]-[##]

- B — BEAM STYLE
- X — VARIATION SEQUENCE
- ## — LENGTH (FT)
- ### — SIZE
- X — STRUCTURAL SHAPE

LEGEND (STYLE):

DE - DEAD LOAD
PO - PULL OFF
PS - PORTAL STRUCTURE
CS - CANTILEVER STRUCTURE (SINGLE OR MULTI TRACK)

LEGEND (STRUCTURAL SHAPE):

W - WIDE FLANGE

LEGEND (SIZE):

W - WEIGHT (LBS PER FT)

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS, SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS NOTED OTHERWISE.
3. BEAM SPLICE MAY BE ELIMINATED WITH APPROVAL OF THE ENGINEER.

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 4

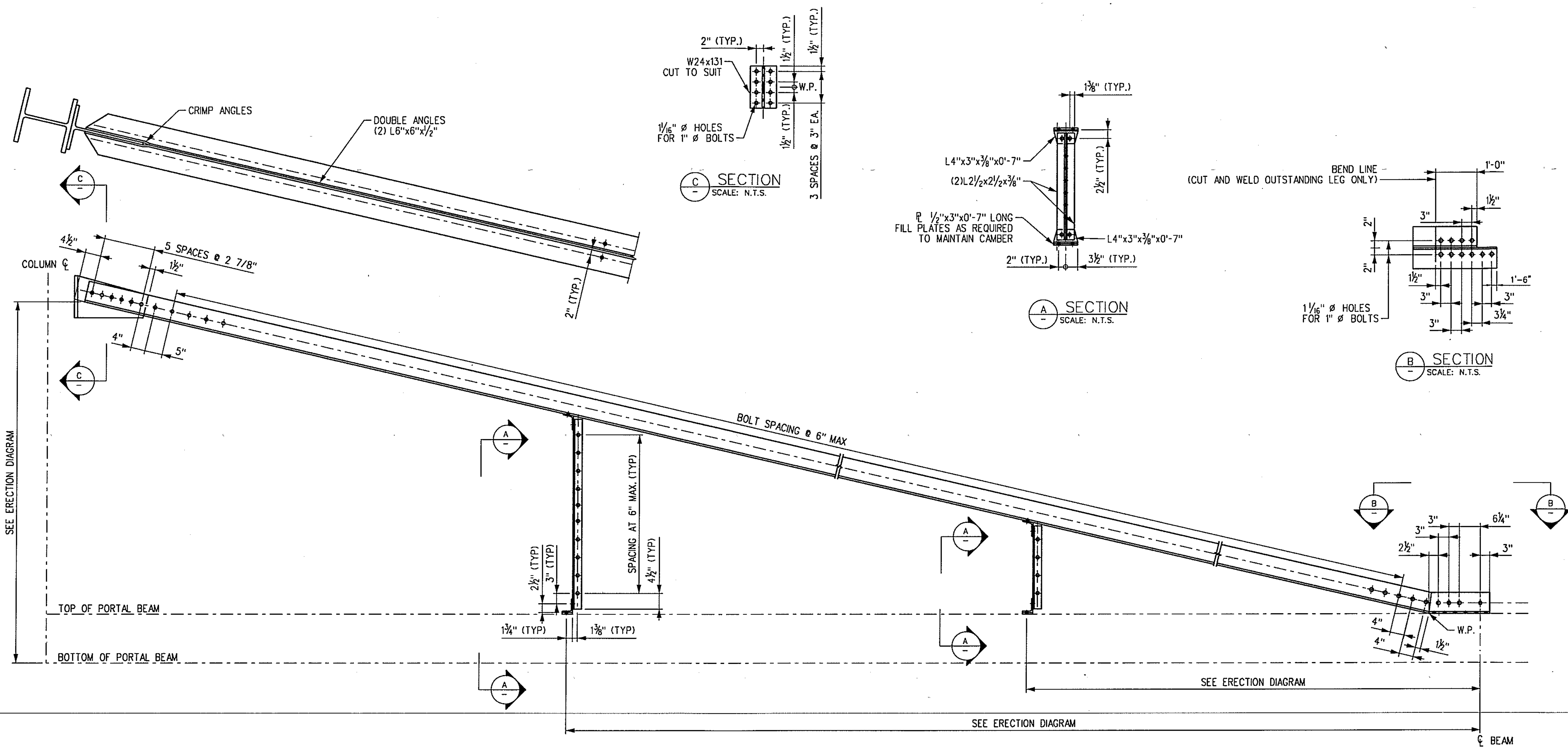
RECOMMENDED_____

SHEET 13 OF 17

ET-24

DES: EYN | DWG: EYN | CKD: EHT

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\24-STRUTURAL STEEL DETAILS-CROSS BEAM2.dgn
DATE: 11/7/2019 3:55:20 PM



SAG BRACE – SB1
SCALE: 3/4" = 1'-0"

SAG BRACE NOMENCLATURE

SB##-## : SAG BRACE / VARIATION SEQUENCE / LENGTH (FT)

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS OTHERWISE NOTED.

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

REVISIONS

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 5

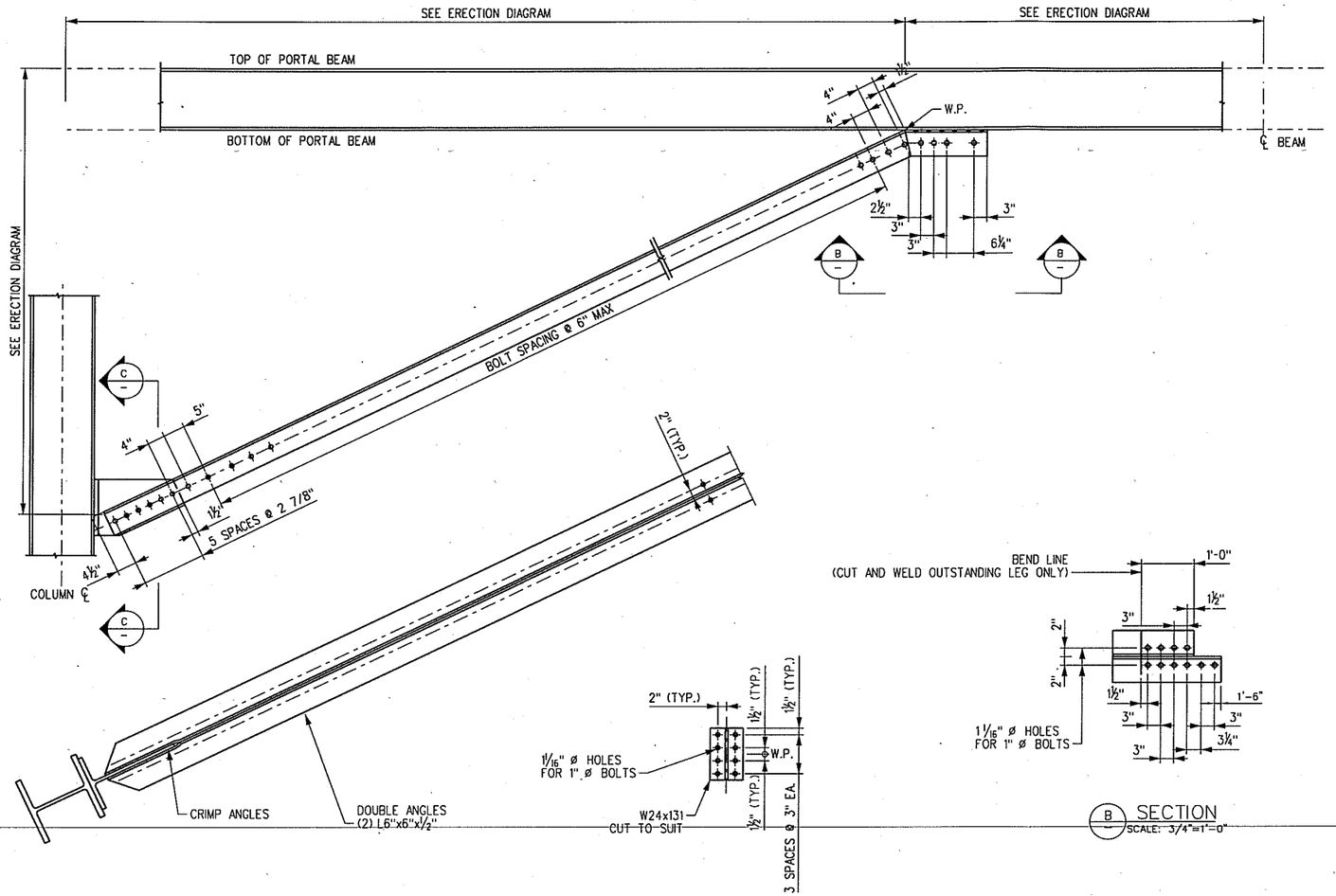
RECOMMENDED________

SHEET 14 OF 17

ET-25

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\25-STRUTURAL STEEL DETAILS-SAG BRACE.dgn
DATE: 11/7/2019 3:57:16 PM

DES: EYN | DWG: EYN | CKD: EHT



C SECTION
SCALE: 1"=1'-0"

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

KNEE BRACE – KB1
SCALE: 3/4" = 1'-0"

NOTES:

1. FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS SEE DRAWING NO. ET-1.
2. ALL HOLES 15/16" ø HOLE FOR 7/8" BOLTS UNLESS OTHERWISE NOTED.

KNEE BRACE NOMENCLATURE

KB##-##
- SAG BRACE VARIATION SEQUENCE
- LENGTH (FT)

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

STRUCTURAL STEEL DETAILS SHEET 6

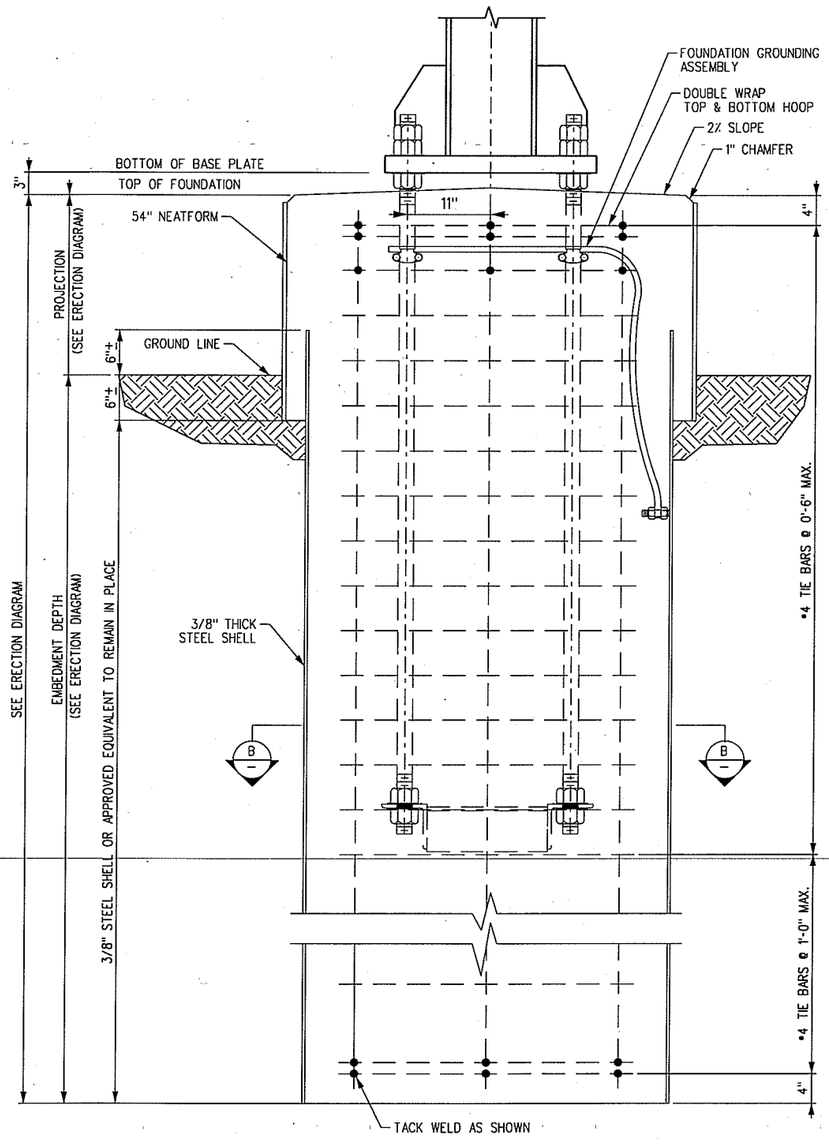
RECOMMENDED_____

SHEET 15 OF 17

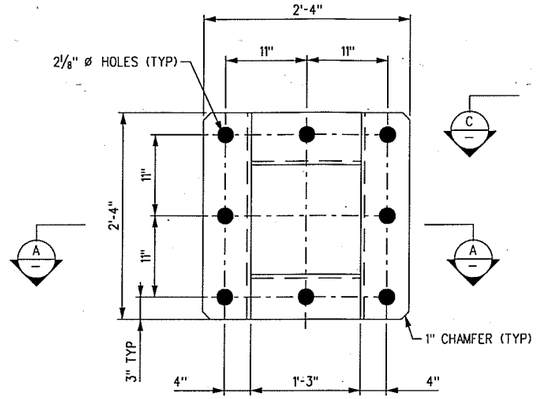
ET-26

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\26-STRUTURAL STEEL DETAILS-KNEE BRACE.dgn
DATE: 11/7/2019 3:59:01 PM

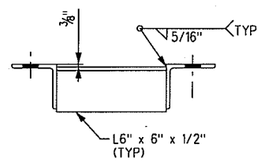
DES: EYN | DWG: EYN | CKD: EHT



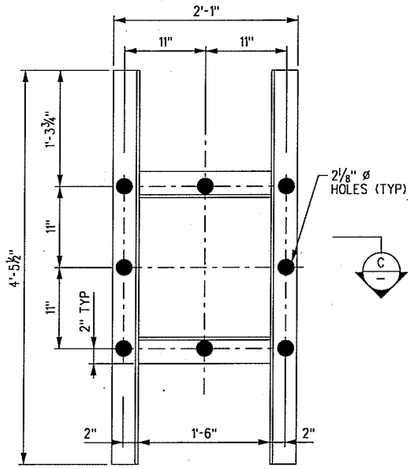
FOUNDATION TYPE FDN48-XX
SCALE: 1"=1'-0"



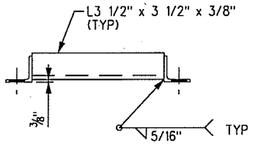
EMBEDMENT PLATE DETAIL



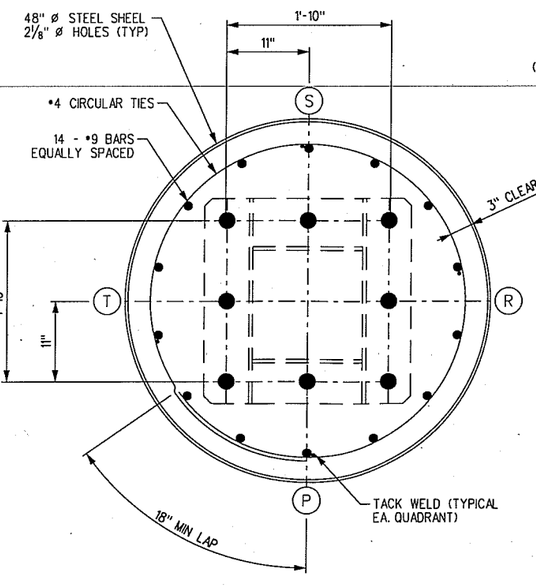
A SECTION
SCALE: 1"=1'-0"



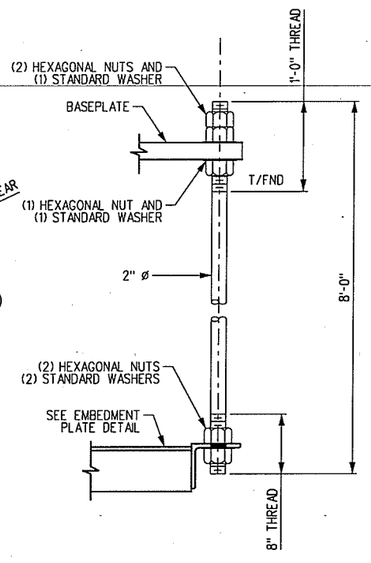
ANCHOR BOLT TEMPLATE



C SECTION
SCALE: 1"=1'-0"



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



ANCHOR BOLT DETAIL
SCALE: 1"=1'-0"

CAISSON AND ANCHOR ROD NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS SEE DRAWING ET-1.
2. FOUNDATION DRILLED PIERS ARE DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND SEPTA DESIGN CRITERIA. THE OVERALL FOUNDATION TOTAL DEPTH TO BE THE EMBEDMENT DEPTH, AS SCHEDULED ON THE STRUCTURAL ERECTION DIAGRAMS (SED), PLUS THE EXPOSED DEPTH OF THE FOUNDATION TOP ABOVE FINISH GRADE.
3. EMBEDMENT DEPTH REQUIREMENTS FROM THE EXISTING GROUND LEVEL TO BE DETERMINED BASED ON ACTUAL FIELD CONDITIONS AND CACULATED IN THE FINAL DESIGN.
4. CASINGS TO BE MARKED WITH THEIR IDENTIFYING STRUCTURE NUMBERS.
5. REBAR CAGES TO BE FULLY ASSEMBLED AND SHIPPED WITHIN THEIR RESPECTIVE CASING.
6. REBAR CAGE ASSEMBLY TO CONSIST OF TACK WELDING #4 CIRCULAR TIES TO #9 VERTICAL BARS AT THE FOUR QUADRANTS SHOWN PER THE CONTRACT DRAWINGS. THE REMAINDER OF THE ASSEMBLY TO BE TIE WIRED AT A MINIMUM OF TWO WRAPS PER CONNECTION.
7. VERTICAL REINFORCEMENT TO HAVE A CLEAR CONCRETE COVER OF 3 INCHES
8. ANCHOR RODS TO BE ASTM F1554 GRADE 55 WITH HEAVY HEX NUTS AND WASHERS AS SHOWN AND HOT DIPPED GALVANIZED PER ASTM A153.
9. USE A BOLT PATTERN TEMPLATE AS SHOWN TO ASSURE ACCURATE INSTALLATION OF ANCHOR RODS. THE TEMPLATE TO REMAIN IN PLACE UNTIL THE CONCRETE HAS SET.
10. PROVIDE ALL POLE SETTING NUTS AND WASHERS.
11. FOUNDATION ANCHOR RODS TO BE SHIPPED ON A SEPARATE SKID FOR EACH FOUNDATION LOCATION.
12. FOUNDATION ANCHOR RODS TO BE SHIPPED WITH THREAD PROTECTORS.
13. FOUNDATION ANCHOR RODS TO BE FULLY GALVANIZED ALONG WITH ALL ASSOCIATED NUTS, WASHERS AND EMBEDMENT ASSEMBLIES.
13. FOUNDATION ANCHOR ROD EMBEDMENT PLATE NOT TO BE GALVANIZED.

FOUNDATION NOMENCLATURE

[F][D][N][X][X]-[X][X]-[X][X]
- FOUNDATION DIAMETER (IN)
- VARIATION SEQUENCE
- STYLE

LEGEND (STYLE):

DE - DEAD LOAD
PO - PULL OFF
PS - PORTAL STRUCTURE
CS - CANTILEVER STRUCTURE (SINGLE OR MULTITRACK)

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)
FOUNDATION DETAILS

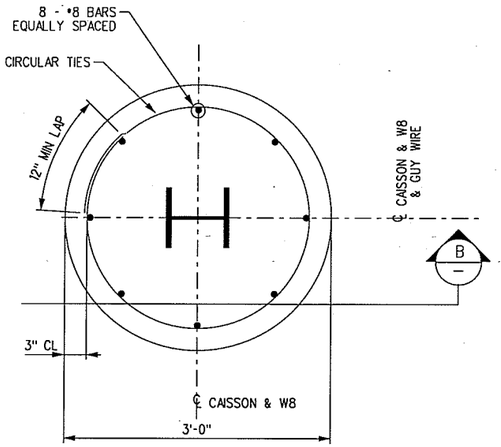
RECOMMENDED_____

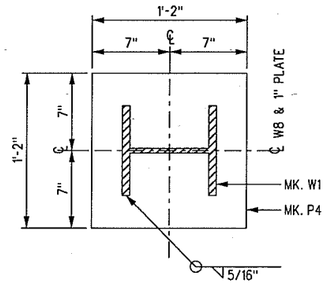
SHEET 16 OF 17

ET-31

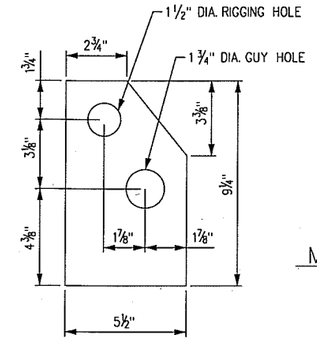
FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\31-FOUNDATION DETAILS.dgn
DATE: 11/8/2019 4:05:16 PM

DES: EYN | DWG: EYN | CKD: EHT

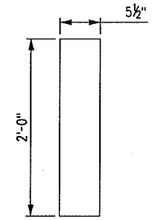




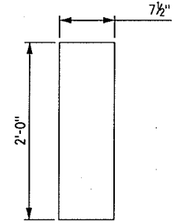
BASE PLATE MK P4
SCALE: 1 1/2" = 1'



MK P1 3/8" PLATE
SCALE: 3" = 1'



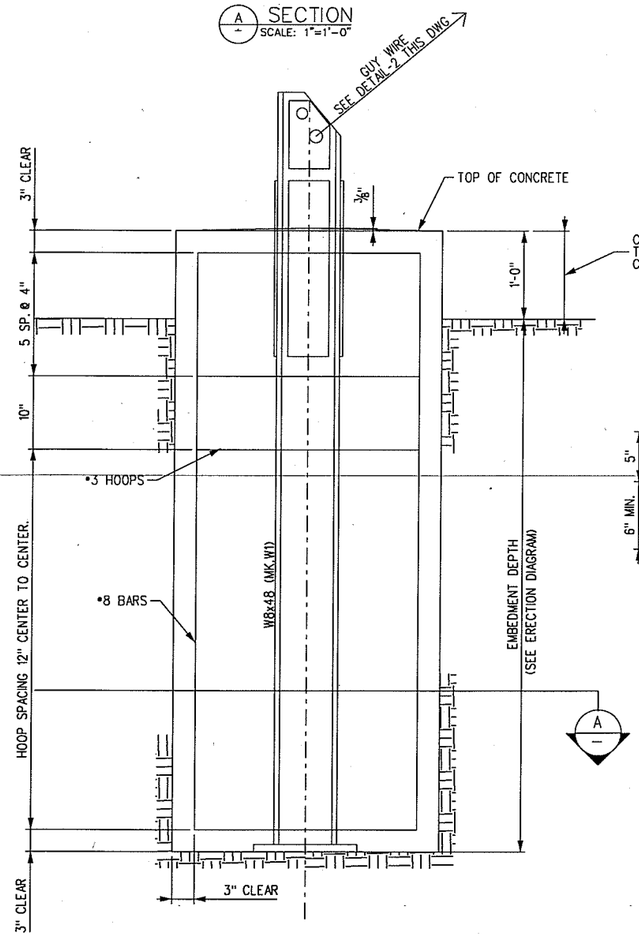
MK P2 3/8" PLATE
SCALE: 1" = 1'

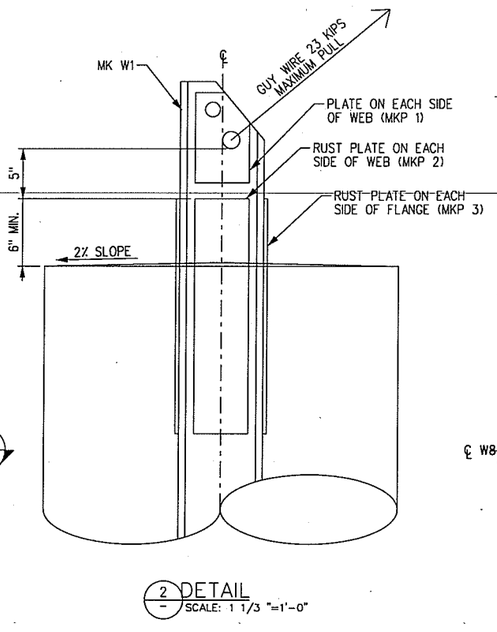


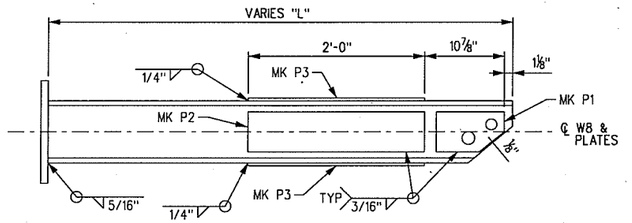
MK P3 3/8" PLATE
SCALE: 1" = 1'

NOTES

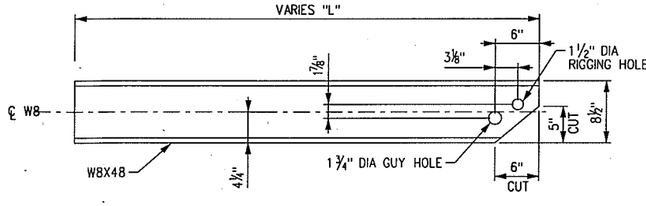
1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS SEE DRAWING ET-1.
2. FOUNDATION DRILLED PIERS ARE DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND SEPTA DESIGN CRITERIA. THE OVERALL FOUNDATION TOTAL DEPTH TO BE THE EMBEDMENT DEPTH, AS SCHEDULED ON THE STRUCTURAL ERECTION DIAGRAMS (SED), PLUS THE EXPOSED DEPTH OF THE FOUNDATION TOP ABOVE FINISH GRADE.
3. VERIFY EXISTING CONDITIONS, DIMENSIONS, AND LOCATIONS PRIOR TO FABRICATION AND INSTALLATION.
4. CASINGS TO BE MARKED WITH THEIR IDENTIFYING STRUCTURE NUMBERS.
5. REBAR CAGES TO BE FULLY ASSEMBLED AND SHIPPED WITHIN THEIR RESPECTIVE CASING.
6. REBAR CAGE ASSEMBLY TO CONSIST OF TACK WELDING #4 CIRCULAR TIES TO #8 VERTICAL BARS AT THE FOUR QUADRANTS SHOWN PER THE CONTRACT DRAWINGS. THE REMAINDER OF THE ASSEMBLY TO BE TIE WIRED AT A MINIMUM OF TWO WRAPS PER CONNECTION.
7. VERTICAL REINFORCEMENT TO HAVE A CLEAR CONCRETE COVER OF 3 INCHES
8. ALL STEEL TO BE HOT DIP GALVANIZED PER ASTM A123.







MK W1 W8X48 LOCATION FOR PLATES (MK.P1, MK.P2, MK.P3 AND MK.P4)
SCALE: 1" = 1'



MK W1 W8X48 LOCATION FOR HOLES AND END CUTS
SCALE: 1" = 1'

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

S.R. 0001 PREVIOUSLY KNOWN AS L.R. 281 PAR

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

BUCKS COUNTY
S.R. 0001 SEC. RC2
SEGMENT 0060 OFFSET 1173
S.R. 0001 N.B. STA. 142+46.04
SEGMENT 0061 OFFSET 1304
S.R. 0001 S.B. STA. 141+09.40
OVER CSX, SEPTA & S.R. 2037 (BUS. RT. 1)

GUY ANCHOR FOUNDATION DETAILS

RECOMMENDED _____

SHEET 17 OF 17

ET-32

DES: EYN | DWG: EYN | CKD: EHT

FILE: Z:\Projects Active\SEPTA_PennDOT\Working\CAD\CADD Files 08-15-18\Sheet\32-GUY ANCHOR FOUNDATION DETAILS.dgn
DATE: 11/8/2019 4:01:17 PM