



CUY-90-14.90

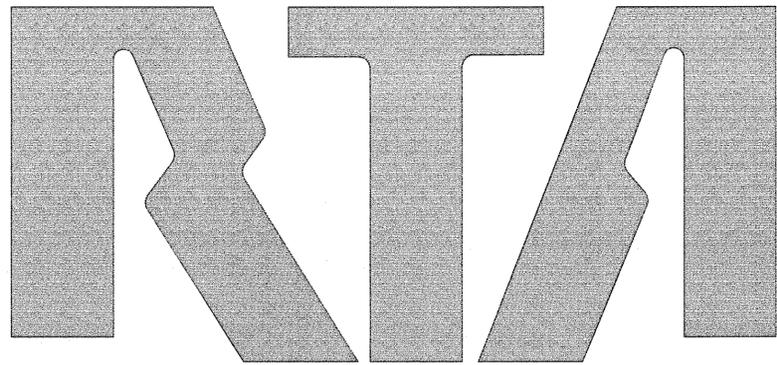
PID 77332/85531

APPENDIX EX-67

**Abbey Avenue over GCRTA
(Reference Document)**

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

**Innerbelt Bridge
Construction Contract Group 1 (CCG1)**



GREATER CLEVELAND
REGIONAL TRANSIT AUTHORITY



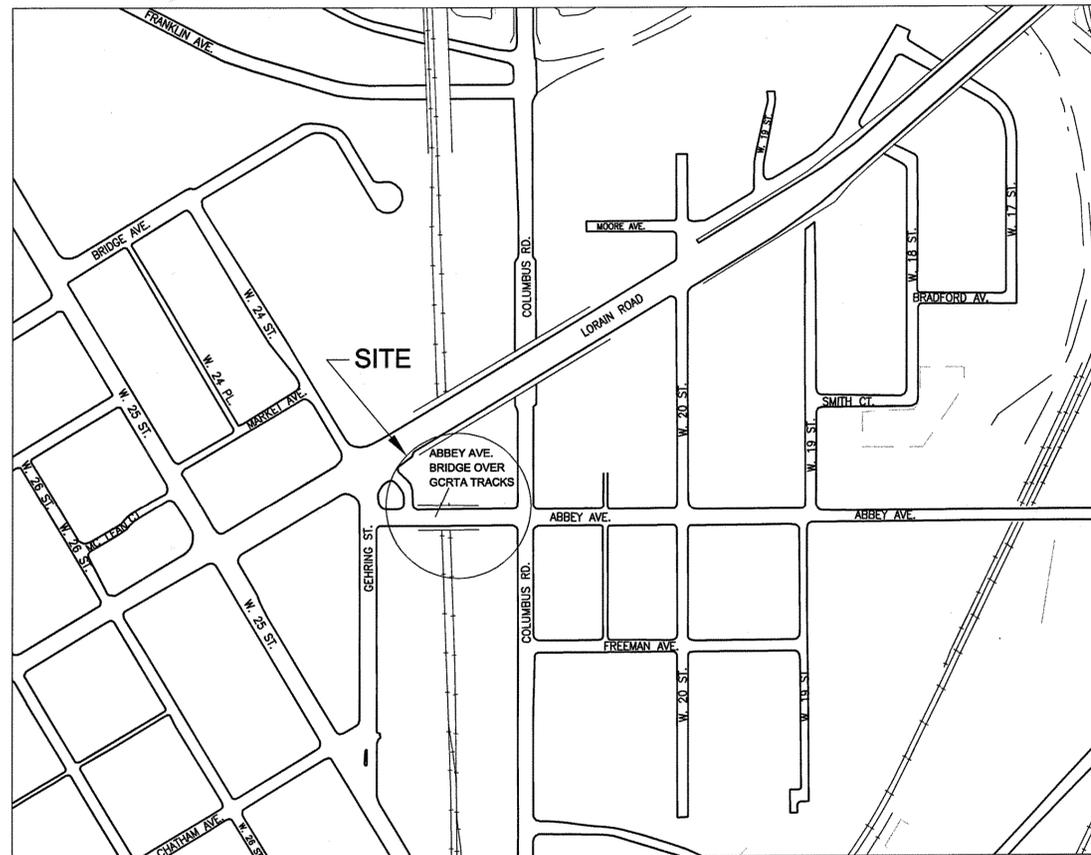
THE PREPARATION OF THIS STUDY WAS FINANCED BY THE
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

DRAWING INDEX

GENERAL	TITLE SHEET	-----	G-1
CIVIL	ROADWAY PLAN & PROFILE	-----	C-1
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PROJECT NO. 29D

REHABILITATION OF ABBEY AVENUE BRIDGE
OVER GCRTA TRACKS



LOCATION MAP

N.T.S.

STRUCTURAL AND UTILITY
PLANS (EXCEPT SHEETS
S-38 TO S-40)
PREPARED BY:
HNTB OHIO, INC.

ENGINEER SEAL:



SIGNED: *[Signature]*
DATE: 6-7-07

CIVIL PLANS
PREPARED BY:
CENTRAL ENGINEERING, INC.

ENGINEER SEAL:



SIGNED: *[Signature]*
DATE: 6-7-07

UNDERGROUND UTILITIES

TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

ENGINEERING AND PROJECT
MANAGEMENT

ENGINEERS: HNTB OHIO, INC.
SUBCONSULTANTS: CENTRAL ENGINEERING, INC.
PRIME ENGINEERING AND ARCHITECTURE, INC.

NOTE:
CONTRACTOR SHALL ACQUIRE ALL THE NECESSARY PERMITS
FROM THE CITY OF CLEVELAND AND NOTIFY THE APPROPRIATE
CITY AGENCIES PRIOR TO START OF WORK.

ODOT STANDARD CONSTRUCTION DRAWINGS								CITY OF CLEVELAND	SUPPLEMENTAL SPECIFICATIONS
BP-1.1	7-28-00	MT-101.60	9-20-06	HL-10.11	1-16-04	AS-1-81	7-19-02	CURB RAMPS	
BP-2.1	7-16-04	MT-101.70	10-18-02	HL-10.12	1-19-07	PSBD-1-93	4-20-07	TYPE 1* 1-17-03	843 4-18-03
				HL-10.13	1-17-03	PSID-1-99	4-20-07	TYPE 3* 1-17-03	
BP-3.1	7-16-04	RM-4.2	10-20-06	HL-20.11	1-19-07	VPF-1-90	7-19-02	TYPE 5* 1-17-03	
BP-4.1	7-16-04			HL-20.14	1-21-05			CB-1 4-29-05	
BP-5.1	7-28-04			HL-30.11	1-21-05			* MODIFIED, SEE	
				HL-30.21	1-19-07			SHEET C-1, NOTE 7	
				HL-30.22	1-21-05				
				HL-30.31	1-21-05				
F-1.1	7-16-04			HL-30.32	4-19-02				
				HL-30.33	1-21-05				

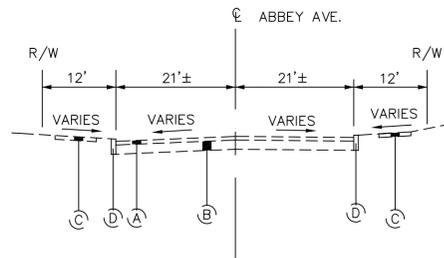
Use general.ctb and generalhalf.ctb to plot this drawing

ABBEE-DRIVE-TYP.dwg

LEGEND

- (A) EXISTING ASPHALT (VARIABLE THICKNESS)
- (B) GRANITE PAVING STONE & LEVELING COURSE ON TOP OF CONCRETE SLAB
- (C) EXISTING CONCRETE WALK (VARIABLE WIDTH)
- (D) EXISTING SANDSTONE / CONC. CURB
- (E) EXISTING CONCRETE BASE (8"±)

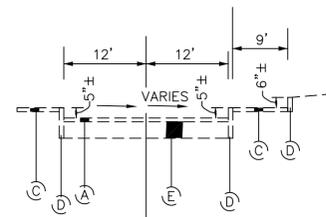
- ① ITEM 448 ASPHALT CONCRETE SURFACE COURSE (MIN. 1 1/4"), TYPE 1, PG 64-22
- ② ITEM 609 CURB, TYPE 6 MODIFIED (SEE DETAIL, SHEET C-3)
- ③ ITEM 608 5" CONCRETE WALK (VARIABLE WIDTH) - SEE DETAIL, SHEET C-3.
- ④ ITEM 202 WEARING COURSE REMOVED (MIN. 1 1/2")
- ⑤ ITEM 407 TACK COAT
- ⑥ ITEM 659 SEEDING & MULCHING
- ⑦ ITEM 448 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG 64-22
- ⑧ ITEM 301 6" ASPHALT CONCRETE BASE
- ⑨ ITEM 304 12" AGGREGATE BASE
- ⑩ ITEM 204 SUBGRADE COMPACTION
- ⑪ ITEM 305 9" PORTLAND CEMENT CONCRETE BASE
- ⑫ ITEM 609 CURB TYPE 8 MODIFIED (SEE DETAIL, SHEET C-3)
- ⑬ ITEM 609 12" CURB (SEE DETAIL, SHEET C-3)
- ⑭ ITEM 653 TOP SOIL FURNISHED & PLACED (4")
- ⑮ ITEM 408 PRIME COAT



EXISTING TYPICAL SECTION

STA. 10+26.00 TO STA. 11+33.79
STA. 12+84.62 TO STA. 13+85.00

ABBEE AVENUE
N.T.S.

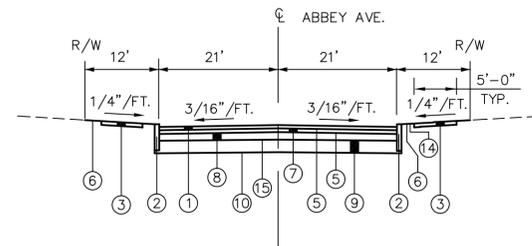


EXISTING TYPICAL SECTION

STA. 0+21.50 TO STA. 0+61.33

RTA DROP OFF RAMP

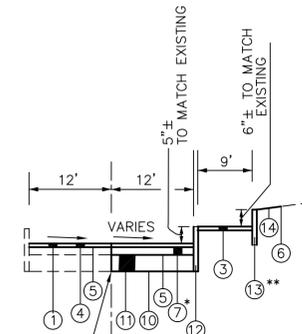
N.T.S.



**PROPOSED TYPICAL SECTION
FULL DEPTH REPLACEMENT**

STA. 11+05.63 TO STA. 11+13.79
STA. 13+04.62 TO STA. 13+14.62

ABBEE AVENUE
N.T.S.



**PROPOSED TYPICAL SECTION
MILL AND RESURFACE**

STA. 10+26.00 TO STA. 11+05.63
STA. 13+14.62 TO STA. 13+85.00

ABBEE AVENUE
N.T.S.

PROVIDE LONGITUDINAL JOINT AS PER ODOT STD. DWG. BP-2.1

PROPOSED TYPICAL SECTION

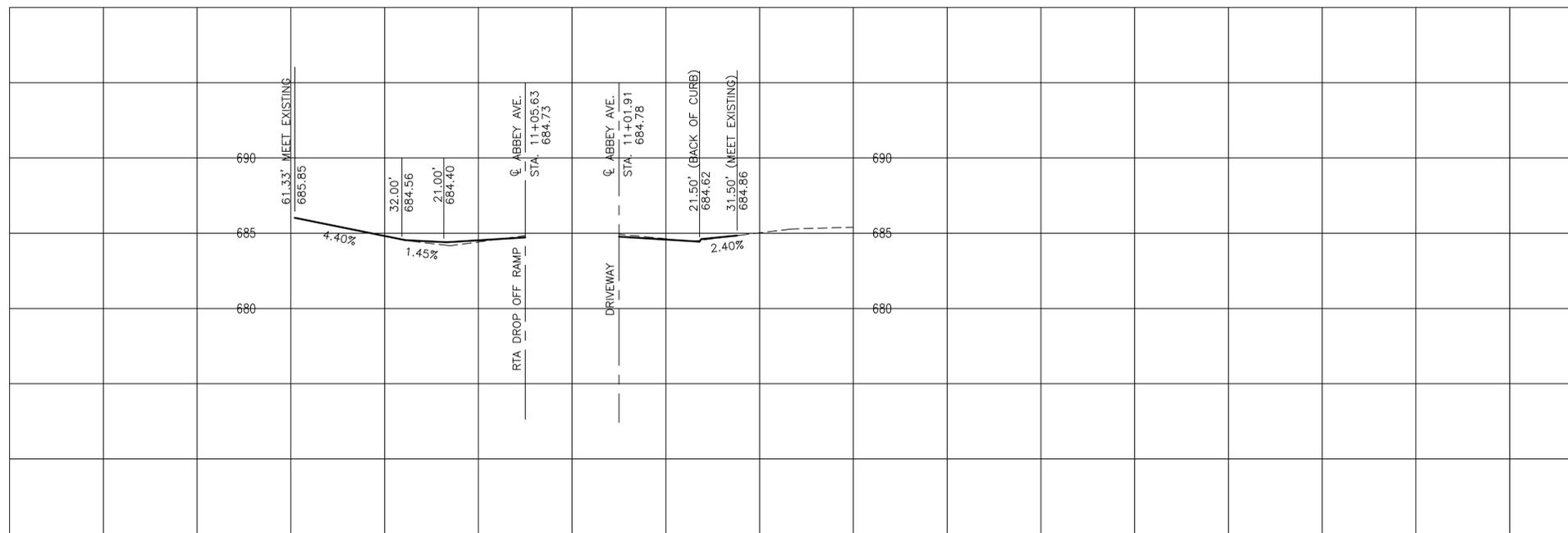
STA. 0+21.50 TO STA. 0+61.33

RTA DROP OFF RAMP

N.T.S.

- * 5 3/4"± THICK (SEE NOTE)
- ** STA. 0+36± TO STA. 0+61.33

NOTE: CONTRACTOR TO ADJUST THICKNESS OF INTERMEDIATE COURSE TO MATCH EXISTING ASPHALT THICKNESS



DRIVEWAY PROFILES



REVISIONS

DRAWN: HW
CHECKED: KS
APPROVED: AP
DATE: 6-1-2007
JOB NO.:

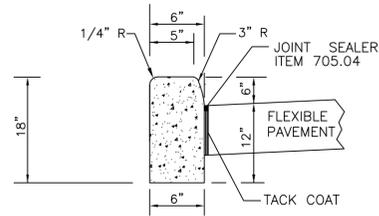
CENTRAL ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS
13477 PROSPECT ROAD, SUITE 101B
STRONGSVILLE, OHIO 44149
ENGINEERING & PROJECT
MANAGEMENT DIVISION

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

SECTIONS
SHEET ON WHICH
DETAIL IS CUT
SHEET ON WHICH
DETAIL APPEARS
SECTION OR
DETAIL NO.

TYPICAL SECTIONS AND
DRIVEWAY PROFILES
REHABILITATION OF ABBEE AVE.
BRIDGE OVER GCRTA TRACKS

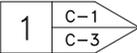
RTA PROJ
29D
SHEET
C-2



ODOT TYPE 6

CURB DETAILS

N.T.S.



JOINTS: EXPANSION JOINTS SHALL EXTEND UP TO THE SURFACE OF THE RIGID PAVEMENT. ALL JOINTS SHALL BE CONSTRUCTED PERPENDICULAR TO THE SURFACE OF THE PAVEMENT. EPOXY COATED SMOOTH DOWEL BARS SHALL BE USED IN THE CURB SECTION AT EXPANSION JOINTS, GREASE ONE END OF DOWEL BAR.

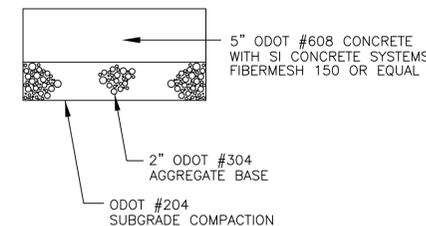
EXPANSION JOINT MATERIAL AND JOINT SEALER ARE REQUIRED FOR THAT PORTION OF THE CURB WHICH IS ADJACENT TO A SIDEWALK.

TRANSVERSE EXPANSION JOINT MATERIAL SHALL MEET THE REQUIREMENTS OF 705.03.

CONTRACTOR TO MAINTAIN EXISTING CURB DRAIN.

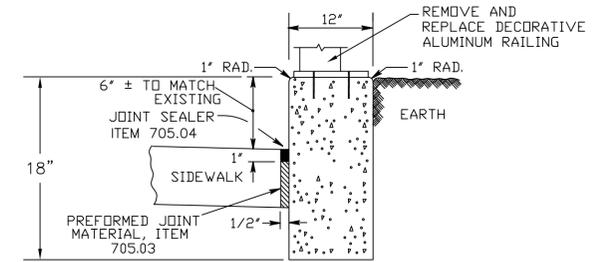
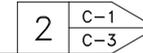
INSTALL JOINT SEALER & 1/2" WIDE PREFORMED JOINT MATERIAL, ITEM 705.03, WHEN THERE IS RIGID PAVEMENT BEHIND CURB.

FOR DETAILS/NOTES NOT SHOWN HERE REFER TO ODOT STANDARD BP-5.1



5" CONCRETE WALK

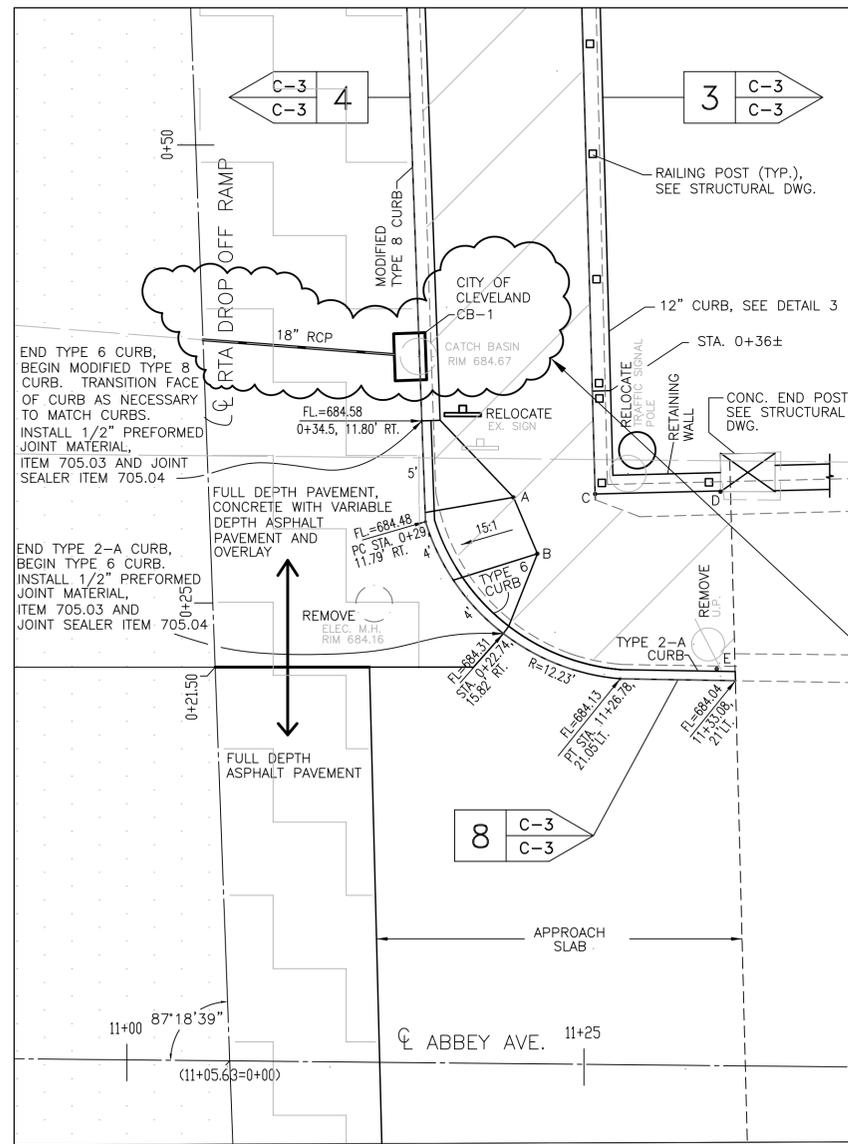
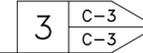
N.T.S.



12" CURB

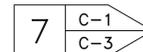
CURB DETAILS

N.T.S.

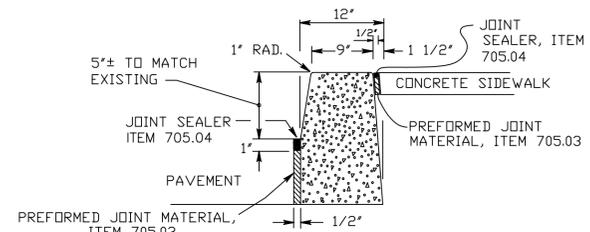


CURB RAMP DETAIL

SCALE: 1"=5'



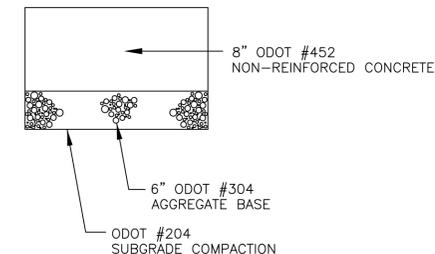
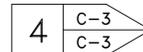
REF. POINTS	STA., OFFSET	ELEVATION
A	11+20.84, 30.9' LT.	684.82
B	11+22.18, 27.8' LT.	684.73
C	11+25.44, 31.3' LT.	684.86
D	11+32.10, 31.3' LT.	684.77
E	11+32.05, 21.5' LT.	684.57



ODOT TYPE 8 MODIFIED

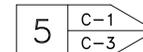
CURB DETAILS

N.T.S.

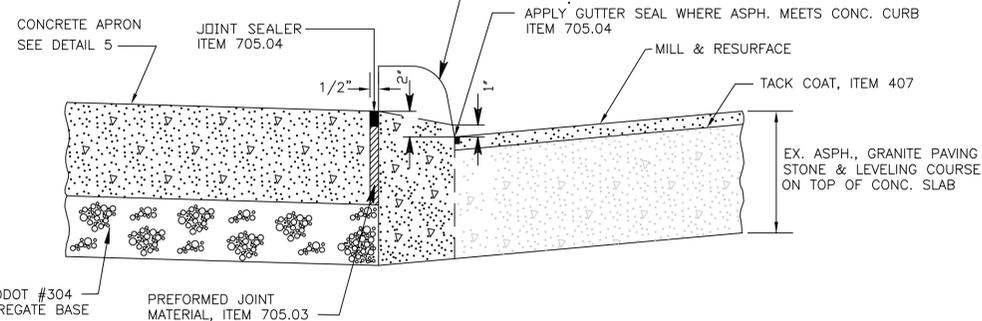


8" CONCRETE APRON

N.T.S.

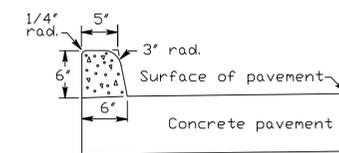
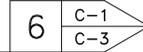


EXISTING 18" RCP AND ATTACHED CATCH BASIN WERE SALVAGED AND NOT REPLACED



DROP CURB AT DRIVEWAYS

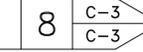
N.T.S.



ODOT TYPE 2-A

CURB DETAILS

N.T.S.



Use general.ctb and generalHalf.ctb to plot this drawing

ABBEY-DETAIL-1.dwg

REVISIONS: AS BUILT

DRAWN: HW
CHECKED: KS
APPROVED: AP
DATE: 6-1-2007
JOB NO:

CENTRAL ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS
13477 PROSPECT ROAD, SUITE 101B
STRONGSVILLE, OHIO 44149
ENGINEERING & PROJECT
MANAGEMENT DIVISION

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

SECTIONS
SHEET ON WHICH
DETAIL IS CUT
SHEET ON WHICH
DETAIL APPEARS
DETAIL NO.

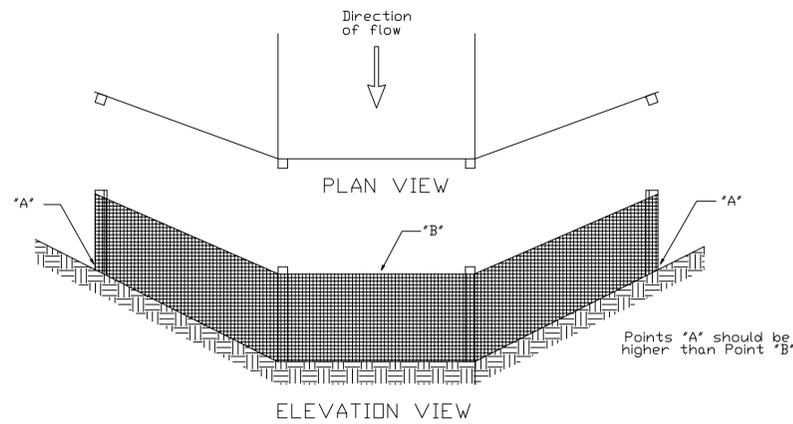
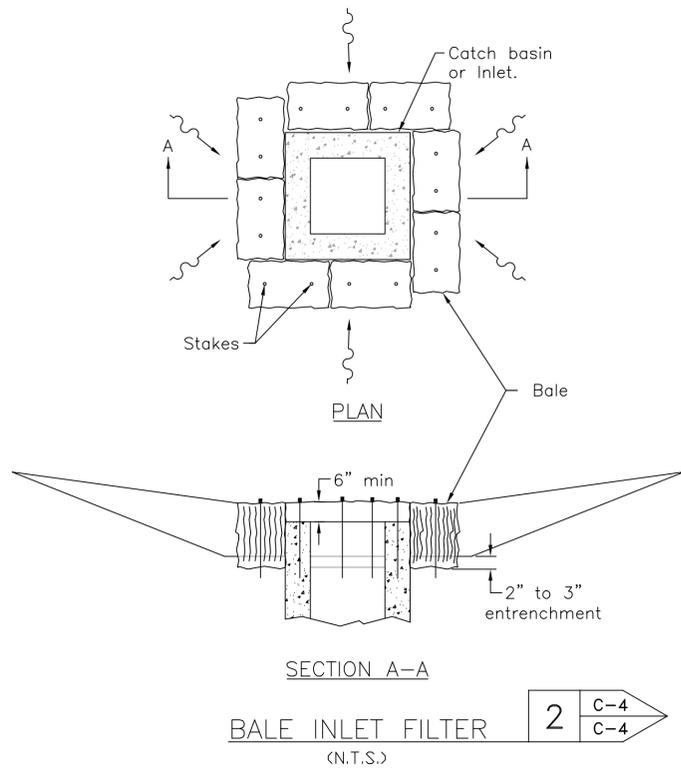
DETAILS

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ BID
29D PAC

SHEET

C-3



NOTES:

BALE PLACEMENT: Bale shall be tightly placed, adjacently, and entrenched 2" to 3" before staking; or a small amount of loose soil shall be lightly compacted along the upstream edge of the bales.

Each bales shall be firmly staked with a minimum of 2 stakes of least 3' in length. Stakes shall be wooden 2"x2", reinforcing bars or fence posts, as approved by the engineer.

Loose straw or hay shall be scattered for a distance of 10' on the upstream side of each ditch check, and shall be wedged between and under staked bales.

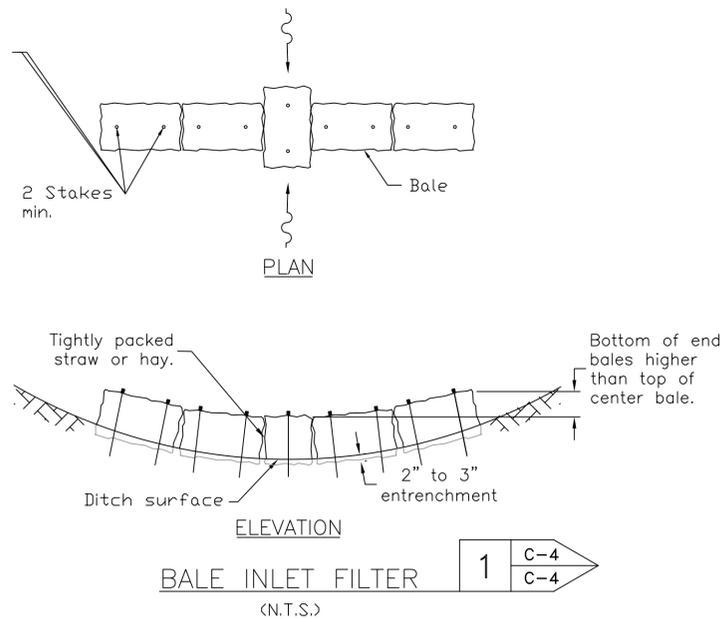
Sediment Control devices shall be installed per the direction of Resident Engineer or site inspector. These measures may be required at the base of both end slopes to protect RTA ditches along the tracks and station platform. Cost to be included with Item TS202, portions of structure removed.

CONSTRUCTION: The bottom of the fabric shall be buried 6" [150] below the ground. The ends of adjacent sections of fence shall be overlapped with the end stake of each section wrapped together prior to installation. The ground elevation of the fence shall be held constant except that the end elevations shall be raised upslope to prevent flow around the end of the fence.

MAINTENANCE: The filter fabric fence shall be maintained to be functional. This shall include removal of trapped sediment and required cleaning, repair, and replacement of the filter fabric.

ROADWAY ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT	DESCRIPTION
TS 202	1	LS	REMOVAL OF STRUCTURES AND OBSTRUCTIONS
TS 204	320	SY	SUBGRADE COMPACTION
TS 207	100	FT	FILTER FABRIC DITCH CHECK
TS 301	13	CY	ASPHALT CONCRETE BASE
TS 304	39	CY	AGGREGATE BASE
TS 305	51	SY	CONCRETE BASE
TS 407	104	GALL	TACK COAT
TS 408	32	GALL	PRIME COAT
TS 448	7	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG 64-22
TS 448	38	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22
TS 452	26	SY	NON-REINFORCED CONCRETE PAVEMENT
TS 603	12	FT	18" CONDUIT, TYPE B
TS 604	1	EA	CITY OF CLEVELAND CATCH BASIN CB-1
TS 607	80	FT	FENCE, TYPE CL
TS 608	1445	SF	CONCRETE WALK
TS 608	8	EA	CURB RAMPS, CITY OF CLEVELAND
TS 609	14	FT	CURB, TYPE 2A
TS 609	313	FT	CURB, TYPE 6
TS 609	40	FT	12" CURB
TS 609	27	FT	CURB, TYPE 8 MODIFIED
TS 614	1	LS	MAINTAINING TRAFFIC
TS 622	210	LF	PORTABLE CONCRETE BARRIER, 32"
TS 630	1	EA	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION
TS 632	1	EA	REMOVAL OF PEDESTRIAN SIGNAL AND REERECTION
TS 638	2	EA	WATER VALVE BOX ADJUSTED TO GRADE
TS 642	0.06	MILE	CENTER LINE
TS 642	62	FT	STOP LINE
TS 642	118	FT	CROSSWALK LINE
TS 653	9	CY	TOPSOIL FURNISHED AND PLACED
TS 659	80	SY	SEEDING AND MULCHING



Use general.ctb and generalhalf.ctb to plot this drawing

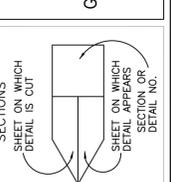
ABBEY--SEDIMENT.dwg

REVISIONS

DRAWN:	HW
CHECKED:	KS
APPROVED:	AP
DATE:	6-1-2007
JOB NO.:	

CENTRAL ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS
13477 PROSPECT ROAD, SUITE 101B
STRONGSVILLE, OHIO 44149

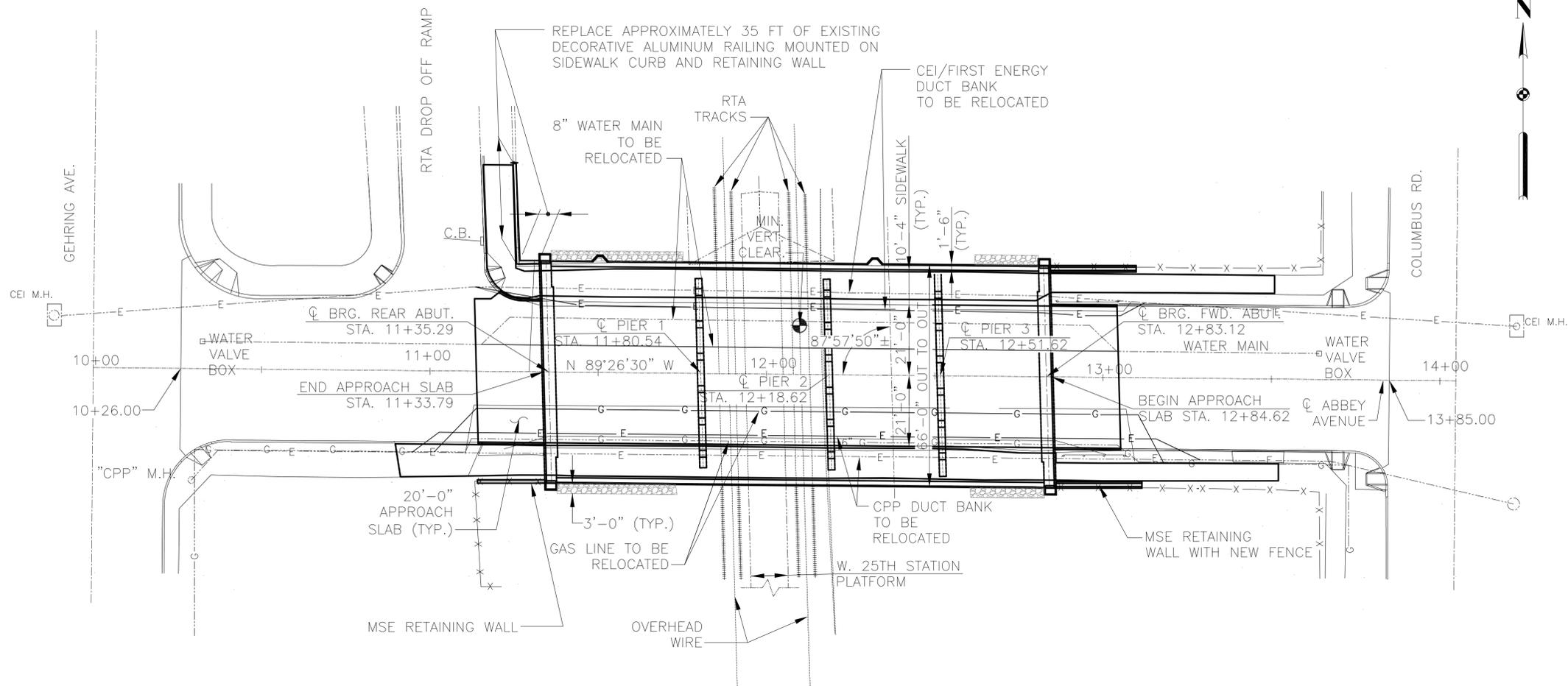
ENGINEERING & PROJECT
MANAGEMENT DIVISION



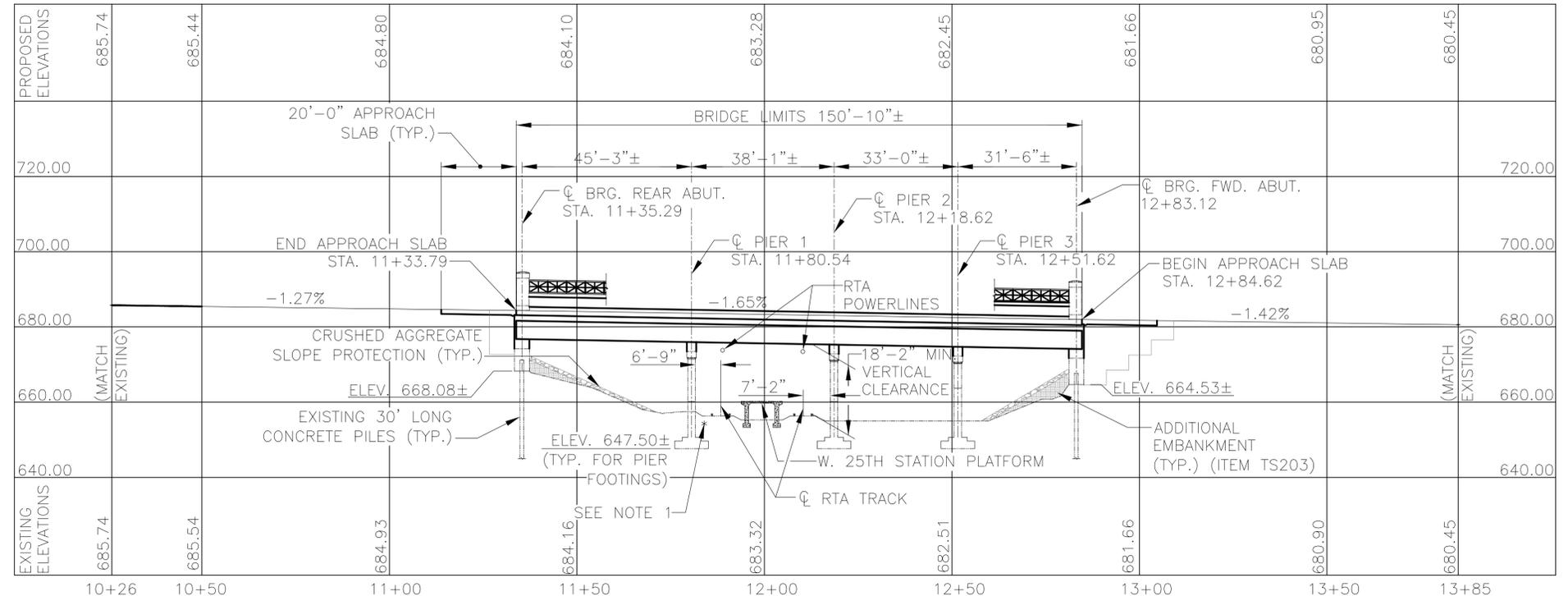
SEDIMENT & EROSION
CONTROL DETAILS
ROADWAY QUANTITIES

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ
29D
SHEET
C-4



PLAN
SCALE: 1"=20'



PROFILE ALONG C ABBEY AVE.

<p>EXISTING STRUCTURE</p> <p>TYPE: 4 SPAN CONTINUOUS REINFORCED CONCRETE BEAM SUPERSTRUCTURE WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE</p> <p>SPANS: 45'-3"±, 38'-0"±, 33'-0"±, 31'-6"± MEASURED ALONG C ABBEY AVENUE</p> <p>ROADWAY: 42'-0" TOE/TOE SIDEWALK</p> <p>LOADING: 1924 CLEVELAND UNION TERMINAL SPECIFICATIONS FOR VEHICULAR AND LIGHT RAIL</p> <p>SKEW: 2'-02'-10" RIGHT FORWARD</p> <p>APPROACH SLABS: NONE</p> <p>ALIGNMENT: TANGENT</p> <p>CROWN: 3/16"/FT.</p> <p>STRUCTURE FILE NUMBER: 1869248</p> <p>DATE BUILT: 1928</p>
<p>PROPOSED WORK</p> <ol style="list-style-type: none"> 1. REPLACE EXTERIOR GIRDERS WITH PRECAST CONCRETE GIRDERS 2. REPLACE DECK AND SIDEWALKS 3. REUSE EXISTING DECORATIVE RAILING AND FENCE 4. PATCH AND REPAIR DETERIORATED PIER AND ABUTMENT ELEMENTS AS REQUIRED 5. REPLACE EXISTING WINGWALLS
<p>PROPOSED STRUCTURE</p> <p>TYPE: 4 SPAN CONTINUOUS REINFORCED CONCRETE BEAM SUPERSTRUCTURE WITH PRECAST CONCRETE FASCIA GIRDERS AND REINFORCED CONCRETE DECK AND SUBSTRUCTURE</p> <p>SPANS: 45'-3"±, 38'-1"±, 33'-0"±, 31'-6"± MEASURED ALONG C ABBEY AVENUE</p> <p>ROADWAY: 42'-0" TOE/TOE SIDEWALKS</p> <p>LOADING: EXISTING SUPERSTRUCTURE HAS BEEN RATED FOR AND NEW GIRDERS DESIGNED FOR HS20, ALTERNATE MILITARY & 60 PSF FUTURE WEARING SURFACE</p> <p>SKEW: 2'-02'-10" RIGHT FORWARD</p> <p>APPROACH SLABS: 20'-0" LONG (AS-1-81)</p> <p>ALIGNMENT: TANGENT</p> <p>CROWN: 3/16"/FT.</p>

NOTES:

MIN. = MINIMUM
VERT. = VERTICAL

1. POSSIBLE EXISTENCE OF UTILITIES IN TRACK BED, UNKNOWN.

<p>REVISIONS:</p>
<p>DRAWN: GIE CHECKED: JFM APPROVED: RHW DATE: 6-1-2007 JOB NO.:</p>
<p>DESIGN AGENCY HNTB 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816</p>
<p>ENGINEERING & PROJECT MANAGEMENT DIVISION</p>
<p>RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY</p>
<p>SITE PLAN</p> <p>REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS</p>
<p>RTA PROJ 29D SHEET S-1</p>

J:\JOBS\42374\TECHPROD\BRIDGE\Final\Submital Contract Documents JUNE 8 2007\Plans\AUTO CADD 10/22/2009 1:38 PM Files\As Built\HNTB\Drawings\Qty_1.dwg

COMPUTED BY : CMM
 CHECKED BY : JFM
 DATE : 11/06
 DATE : 11/06

ESTIMATED QUANTITIES									
ITEM	TOTAL	UNIT	DESCRIPTION	ABUTS.	PIERS	SUPER	GEN	REF. SHEET NO.	*CONTINGENCY
TS 202	LUMP		PORTIONS OF STRUCTURE REMOVED				LUMP	S-11 S-12 S-13 S-19	
TS 203	65	CU YD	EMBANKMENT					S-17 S-18	65
TS 203	450	CU YD	SELECT GRANULAR BACKFILL				450		
TS 304	10	CU YD	MSE AGGREGATE BASE						10
TS 503	LUMP		COFFERDAMS, CRIBS, AND SHEETING				LUMP		
TS 503	LUMP		UNCLASSIFIED EXCAVATION				LUMP	S-4	
TS 509	113,961	POUND	EPOXY COATED REINFORCING STEEL	6,430	15,238	91,421	872		
TS 510	200	EACH	DOWEL HOLES	92	108				
TS 511	11	CU YD	CLASS C CONCRETE, PIER COLUMNS		11				
TS 511	8	CU YD	CLASS C CONCRETE, RETAINING WALLS				8		
TS 511	141	CU YD	CLASS S CONCRETE, ABUTMENT AND PIER DIAPHRAGMS	76	65				
TS 511	266	CU YD	CLASS S CONCRETE, BRIDGE DECK			266			
TS 511	154	CU YD	CLASS S CONCRETE, BRIDGE SIDEWALK & PARAPET			154			
TS 512	397	SQ YD	SEALING OF CONCRETE SURFACES (NON-EPOXY)			397			
TS 512	3,120	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)	169	682	2,204	65	S-26	
TS 513	11	EACH	CROSSFRAMES, CITY OF CLEVELAND DIVISION OF WATER			11			
TS 513	11	EACH	CROSSFRAMES, CLEVELAND PUBLIC POWER			11			
TS 513	LUMP		CROSSFRAMES, FIRST ENERGY			LUMP			
TS 513	LUMP		CROSSFRAMES, DOMINION EAST OHIO GAS			LUMP			
TS 515	16	EACH	PRESTRESSED CONCRETE COMPOSITE BOX BEAM MEMBERS, LEVEL 1, CB17-48			16			
TS 515	8	EACH	STRAIGHT STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 2, TYPE IV			8			
TS 516	135	FT	INTEGRAL ABUTMENT EXPANSION JOINT SEAL	135					
TS 516	64	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), BOX BEAM	16	48			S-35	
TS 516	4	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), I BEAM	4				S-34	
TS 516	4	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), ABUTMENT STEM	4				S-34	
TS 517	36	LIN FT	REPLACE DECORATIVE ALUMINUM RAILING			36			
TS 517	292	LIN FT	DECORATIVE-STEEL BRIDGE RAILING-MODIFIED			292			
TS 518	169	CU YD	POROUS BACKFILL WITH FILTER FABRIC	169					
TS 518	211	FT	6" PERFORATED CORRUGATED PLASTIC PIPE, 707.33, TYPE SP	140			71		
TS 518	50	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, 707.33, TYPE S	50					
TS 519	707	SQ FT	PATCHING CONCRETE STRUCTURES, EXISTING BEAMS			589			118
TS 519	427	SQ FT	PATCHING CONCRETE STRUCTURES, SUBSTRUCTURE	163	192				72
TS 526	193	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=13")	193				S-36	
TS 530	397	SQ FT	COMPOSITE FIBER WRAP			397			
TS 601	485	SQ YD	CRUSHED AGGREGATE SLOPE PROTECTION	485					
TS 610	810	SQ FT	MSE RETAINING WALLS				810		
TS 690	LUMP		ASBESTOS TESTING				LUMP		
TS 690	LUMP		ASBESTOS ABATEMENT				LUMP		LUMP

* TO BE USED AS DIRECTED BY THE ENGINEER

REVISIONS:
 AS BUILT

DESIGN AGENCY
HNTB
 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816

ENGINEERING & PROJECT MANAGEMENT DIVISION

RTA
 GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

ESTIMATED QUANTITIES-1
 REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
 BID PAC
 SHEET S-2

DATE: 6-1-2007
 JOB NO.:

DRAWN: CMM
 CHECKED: JFM
 APPROVED: RHW

COMPUTED BY : CMM DATE : 11/06
 CHECKED BY : JFM DATE : 11/06

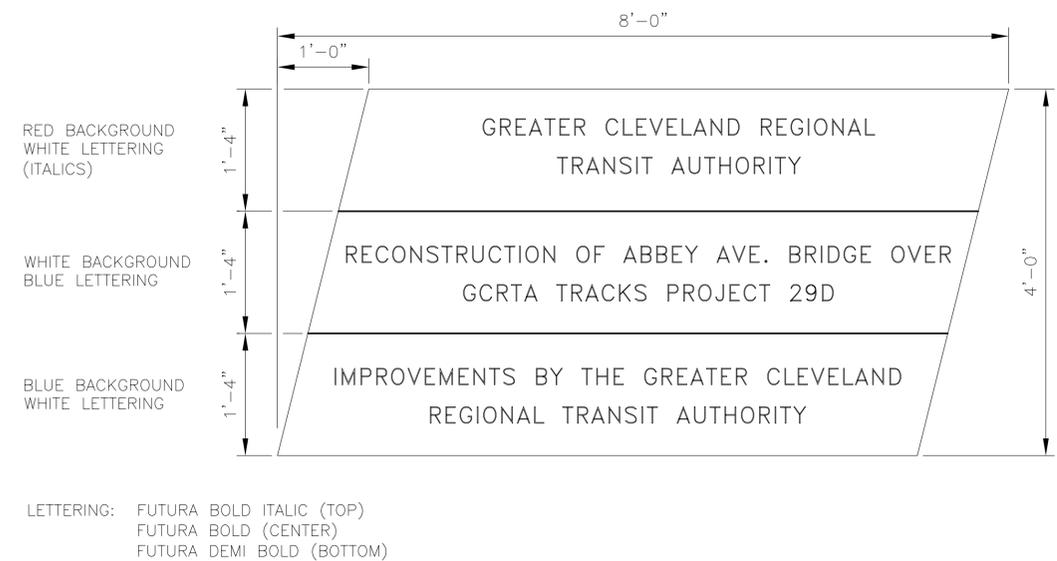
ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTS.	PIERS	SUPER	GEN	REF. SHEET NO.	*CONTINGENCY
WATER WORK									
TS 638	19	LIN FT	8" WATERMAIN, DUCTILE IRON PIPE WITH BOLTLESS RESTRAINED JOINTS AND FITTINGS, ANSI CLASS 56				19		
TS 638	27	LIN FT	12" WATERMAIN, DUCTILE IRON PIPE WITH BOLTLESS RESTRAINED JOINTS AND FITTINGS, ANSI CLASS 56				27		
TS 638	154	LIN FT	12" WATERMAIN, GALVANIZED STEEL PIPE ASTM A53, GRADE B				154		
TS 638	1	EACH	2" AIR RELIEF VALVE WITH VALVE BOX, COMPLETE				1		
TS 638	2	EACH	8" GATE VALVE WITH VALVE BOX, COMPLETE				2		
POWER WORK									
TS 625	40	LIN FT	CONDUIT MISC.: NON-REINFORCED, CONCRETE ENCASED, 4-5" PVC CONDUIT BANK	40					
TS 625	145	LIN FT	CONDUIT MISC.: NON-ENCASED, STRUCTURE SUPPORTED, 4-5" FIBERGLASS REINFORCED EPOXY CONDUIT BANK			145			
ROADWAY LIGHTING									
FOR QUANTITIES SEE SHEET U-29									

* TO BE USED AS DIRECTED BY THE ENGINEER

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PROJECT SIGN

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ENGINEERING & PROJECT MANAGEMENT DIVISION

DRAWN: CMM
 CHECKED: JFM
 APPROVED: RHW
 DATE: 6-1-2007
 JOB NO.:

RTA
 GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

ESTIMATED QUANTITIES-2
 REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
 BID PAC
 SHEET S-3

6/16/2007 12:38 PM

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REFERENCES

REFERENCE SHALL BE MADE TO THE FOLLOWING OHIO DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS:

AS-1-81	DATED	07-19-02
PSBD-1-93	DATED	04-20-07
VPF-1-90	DATED	07-19-02
PSID-1-99	DATED	04-20-07

AND TO SUPPLEMENTAL SPECIFICATION: 843 DATED 04-18-03

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS 17th ADDITION, 2002 AND THE OHIO DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL.

DESIGN LOADING

HS20 AND THE ALTERNATIVE MILITARY LOADING, FUTURE WEARING SURFACE OF 60 LBS/FT².

DESIGN DATA

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)
CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)
REINFORCING STEEL - ASTM A615 OR A996 GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI

CONCRETE FOR I BEAM - COMPRESSIVE STRENGTH (FINAL) - 5500 PSI

COMPRESSIVE STRENGTH (RELEASE) - 4000 PSI

CONCRETE FOR BOX BEAMS - COMPRESSIVE STRENGTH (FINAL) - 7000 PSI

COMPRESSIVE STRENGTH (RELEASE) - 5000 PSI

PRESTRESSING STRANDS - AREA = 0.153 IN²
ULTIMATE STRENGTH = 270 KSI
INITIAL STRESS = 202.5 KSI
(LOW RELAXATION STRANDS)

DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL, 2½" CONCRETE COVER.

MONOLITHIC WEARING SURFACE

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

APPROVALS

ALL ITEMS IN THE PLANS OR SPECIAL PROVISIONS WHICH REQUIRE APPROVAL BY GCRTA, OR THE OWNER SHALL BE PROCESSED THROUGH THE PROJECT ENGINEER.

CONSTRUCTION CLEARANCE

A CONSTRUCTION CLEARANCE OF 6'-6" HORIZONTALLY FROM THE CENTER OF THE TRACKS AND 16'-0" VERTICALLY FROM A POINT LEVEL WITH THE TOP OF THE HIGH RAIL SHALL BE MAINTAINED AT ALL TIMES.

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE BID EXAMINATION OF THE EXISTING STRUCTURES BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

ORIGINAL EXISTING STRUCTURE PLANS MAY BE REVIEWED AT THE OFFICES OF THE GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY, 1240 W. 6TH STREET, CLEVELAND OHIO 44113.

FIELD RECORDS

THE CONTRACTOR SHALL MAINTAIN A MARKED UP SET OF PLANS IN THE FIELD, RECORDING AS BUILT CONDITIONS. WHERE A CHANGE ORDER OR ADDITIONAL DRAWINGS OR SKETCHES ARE ISSUED, THEY SHOULD BE CROSS REFERENCED TO THE FIELD SET AND MAINTAINED WITH THAT SET.

TS 202 -PORTIONS OF STRUCTURE REMOVED

THIS WORK SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF PORTIONS OF THE EXISTING STRUCTURE, EXCLUDING PORTIONS OF THE STRUCTURE TO BE REMOVED UNDER OTHER ITEMS OF THE CONTRACT, IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND ODOT CMS ITEM 202 WITH THE FOLLOWING ADDITIONS AND/OR MODIFICATIONS.

THIS ITEM SHALL INCLUDE, BUT NOT BE LIMITED TO:

1. THE COMPLETE REMOVAL OF THE CONCRETE DECK, INCLUDING SIDEWALKS, RAILING, ASPHALT OVERLAY, BRICK PAVERS, CONCRETE BASE AND WATERPROOFING MEMBRANE.
2. REMOVAL OF THE EXTERIOR BEAMS AND UTILITY CHAMBER SLAB.
3. REMOVAL OF EXISTING UTILITIES INCLUDING THOSE SUPPORTED FROM THE BRIDGE AND EMBEDDED IN THE EXISTING BRIDGE BEAMS BEING REMOVED. THIS INCLUDES THE CEI/FIRST ENERGY MANHOLE LOCATED ADJACENT TO THE REAR ABUTMENT.
4. REMOVAL OF THE EXISTING CRIB WALLS AND RETAINING WALL.
5. REMOVAL OF PORTIONS OF THE ABUTMENTS AND PIERS AS NOTED IN THE PLANS.
6. REMOVAL OF ANY DEBRIS AND CONCRETE SLABS ALONG THE END SLOPES BENEATH THE BRIDGE.

PRIOR TO THE REMOVALS, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN OR RAILROAD) ADJACENT TO AND/OR UNDER THE STRUCTURE TO THE GCRTA FOR APPROVAL. THESE PLANS SHALL ALSO INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO PROTECT THE W25th STREET STATION AND LOADING PLATFORM. THE PLANS SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OHIO AND SHALL BEAR HIS SEAL. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR OF HIS FULL RESPONSIBILITY FOR SAFELY EXECUTING WORK. ANY DAMAGE TO THE TRACK STRUCTURE OR STATION AS DETERMINED BY THE GCRTA, WILL BE REPAIRED TO THE SATISFACTION OF THE GCRTA BY THE CONTRACTOR AT HIS EXPENSE.

THE DEMOLITION PROCEDURES SHALL NOT PERMIT REMOVED CONCRETE AND DEBRIS TO DROP TO THE GROUND WITHIN THE GCRTA RIGHT OF WAY. PLANS SHALL INCLUDE INFORMATION AS TO EQUIPMENT AND MATERIALS TO BE USED, PERSONNEL, SUPERVISION, HOURS OF OPERATION AND DURATION OF THE JOB. REMOVAL PLANS SHALL PROVIDE FOR PROTECTION OF THE GCRTA TRACKS DURING DEMOLITION AND CONSTRUCTION. TO PREVENT DAMAGE TO THE TRACK STRUCTURE, THE CONTRACTOR SHALL USE RUBBER WHEELED EQUIPMENT WHEN WORKING AROUND GCRTA TRACKS. IF THE TRACK STRUCTURE IS PROPERLY PROTECTED, STEEL TRACKED EQUIPMENT MAYBE USED WITH THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SUPPORTS AS REQUIRED UNDER PORTIONS OF THE EXISTING STRUCTURE TO PERMIT NECESSARY DEMOLITION WORK WHILE MAINTAINING A STABLE STRUCTURE. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORTS, AT HIS EXPENSE, WHEN IN THE OPINION OF THE ENGINEER THEY ARE REQUIRED. THE TEMPORARY STRUCTURE FOR PROTECTION OF GCRTA TRACKS SHALL MAINTAIN 16'-0" MINIMUM VERTICAL CLEARANCE AND 6'-6" MINIMUM HORIZONTAL CLEARANCE FROM CENTERLINE OF TRACK.

ALL PROTECTIVE STRUCTURES AND TEMPORARY SUPPORTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR WHEN THE CONSTRUCTION IS COMPLETE.

BASIS OF PAYMENT:

PAYMENT FOR THE ITEMS REMOVED AND DISPOSED OF WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, WHICH PRICE SHALL BE FULL COMPENSATION FOR REMOVALS AND STORAGE OR DISPOSAL OR SUCH ITEMS, INCLUDING EXCAVATION AND BACKFILL INCIDENTAL TO THEIR REMOVAL. ALL REMOVAL ITEMS NOT DESIGNATED FOR REUSE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF ACCORDANCE WITH CITY, STATE AND FEDERAL REGULATIONS AND SHALL BE INCLUDED IN THE PRICE FOR THIS ITEM.

PAYMENT FOR PROTECTION OF TRAFFIC, W25th STREET STATION, TEMPORARY SUPPORTS AND STRUCTURE REMOVALS SHALL BE INCLUDED WITH ITEM TS 202, PORTIONS OF STRUCTURE REMOVED.

ITEM TS 503. UNCLASSIFIED EXCAVATION

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH ITEM 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE C.M.S. 304 MATERIAL PLACED IN 6 INCH LIFTS. THE CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING LABORATORY TO PERFORM COMPACTION TESTS.

REVISIONS:

DRAWN:	CMM
CHECKED:	RHW
APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	

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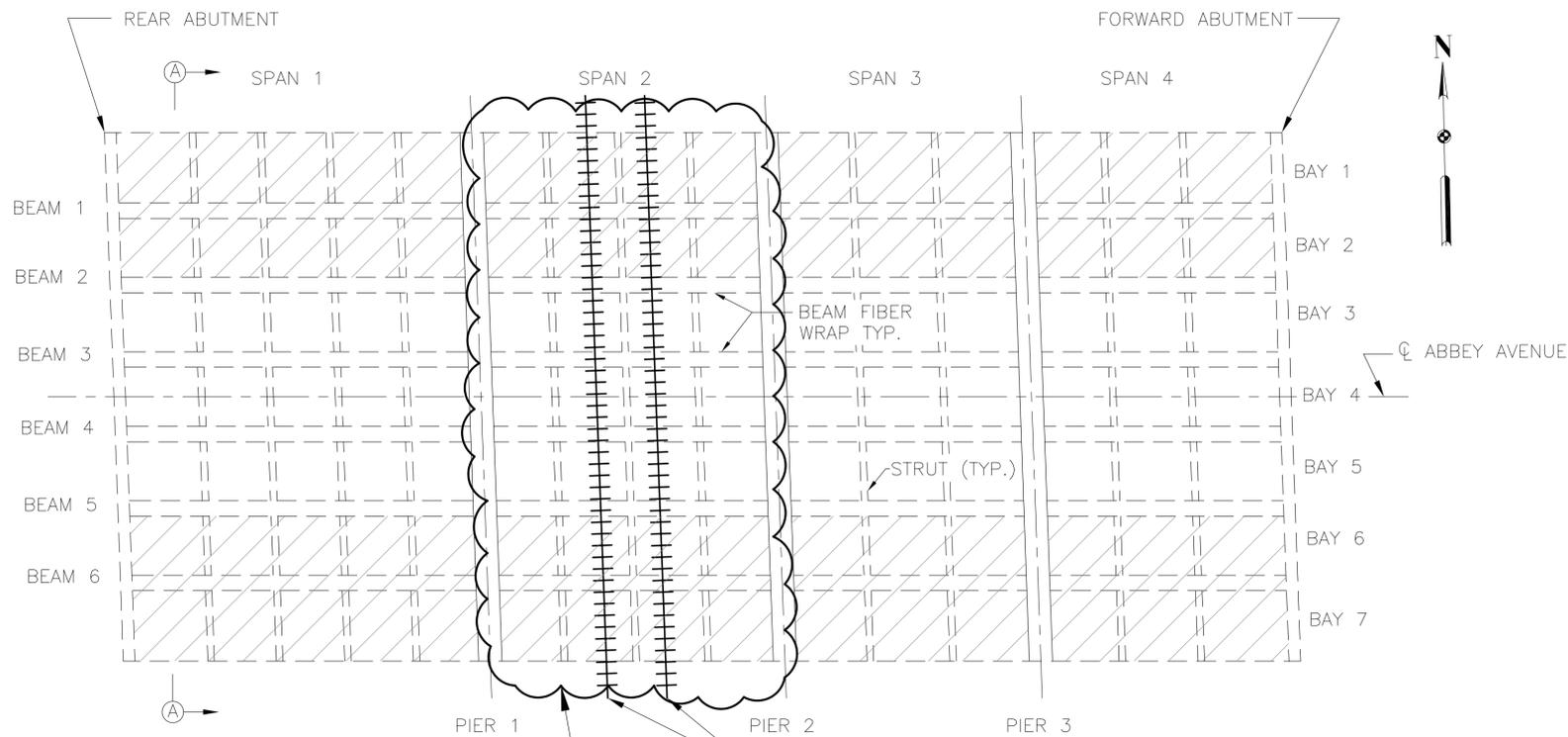
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STRUCTURE
GENERAL NOTES
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

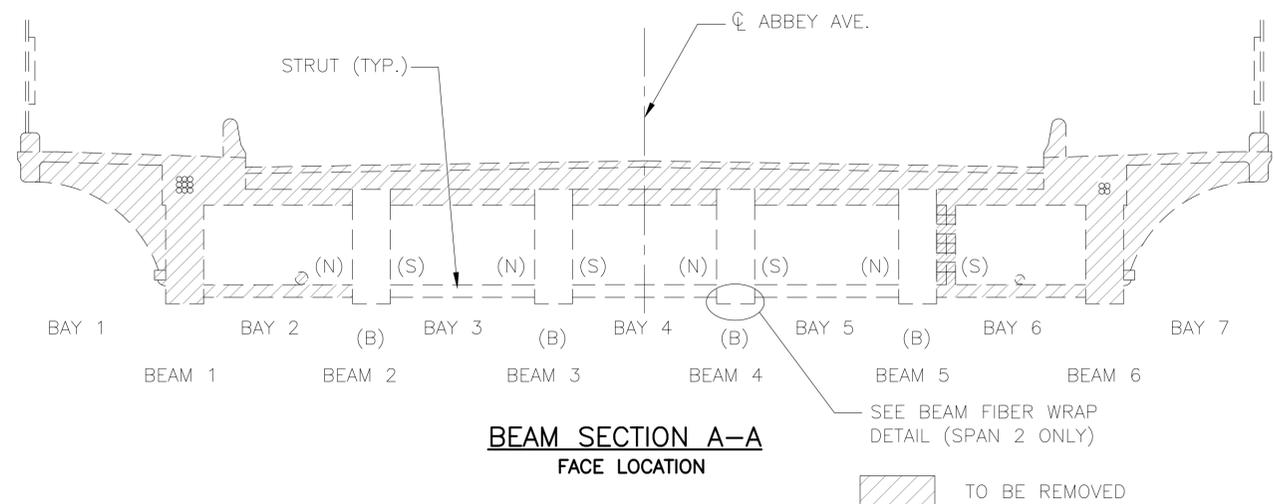
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BID PAC
SHEET S-4

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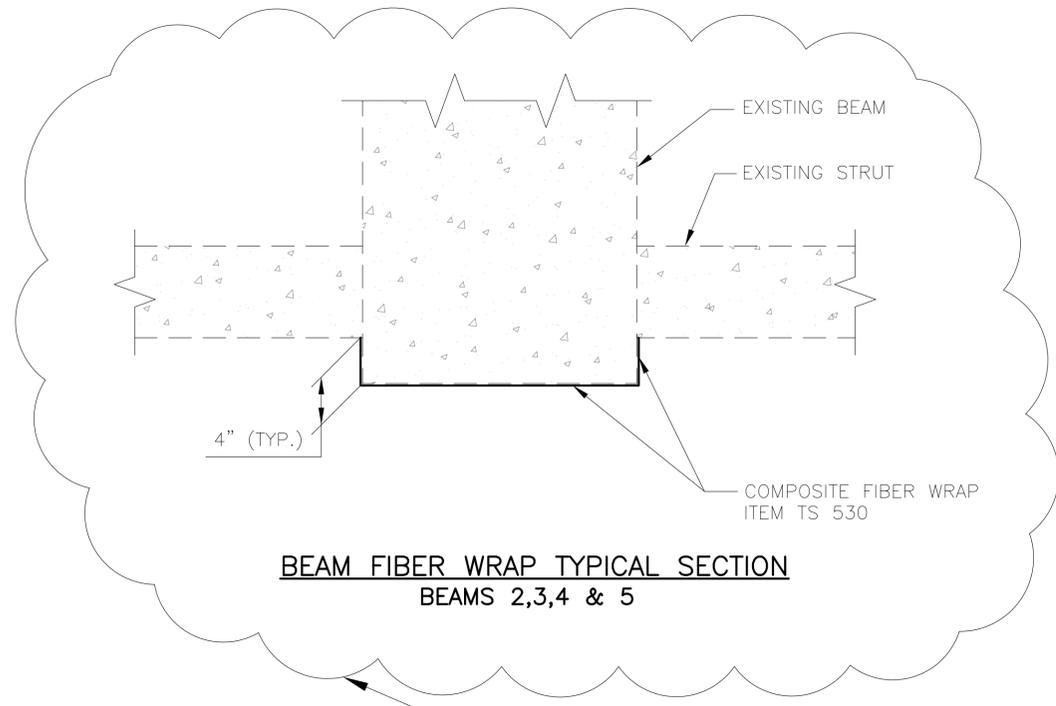


**DECK PLAN
PATCH LOCATION**

INSTALLED GALVASHIELD XP+ SACRIFICIAL ANODES IN SPAN 2 DURING BEAM PATCHING 1



**BEAM SECTION A-A
FACE LOCATION**



**BEAM FIBER WRAP TYPICAL SECTION
BEAMS 2,3,4 & 5**

CARBON FIBER WRAP ITEM NON-PERFORMED 1

NOTES:

- BEAM POP OUTS:**
MINOR POP OUTS ALONG BOTTOM OF BEAM DUE TO INSUFFICIENT COVER OVER STIRRUPS AND EXPOSED ANGLES THAT WERE USED AS REINFORCING CHAIRS WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS-519. AREAS WILL BE COATED AND SEALED PER TS 512, SEE SHEET S-26. FOR SPAN 2 BEAMS SEE SPECIAL PROVISION TS 530.
- STRUT REPAIR:**
MINOR POP OUTS ALONG BOTTOM OF STRUTS DUE TO INSUFFICIENT COVER OVER STIRRUPS WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS-519. AREAS WILL BE COATED AND SEALED PER TS 512, SEE SHEET S-26.
- THE ESTIMATED QUANTITY FOR ITEM TS 519 - PATCHING OF CONCRETE STRUCTURES, HAS BEEN INCREASED 20% OVER FIELD MEASURED AREAS. FINAL AREAS TO BE REPAIRED WILL BE APPROVED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

BEAM CONCRETE PATCH QUANTITIES														
BEAM	SPAN 1			SPAN 2			SPAN 3			SPAN 4			TOTAL	
	NORTH (N)	BOTTOM (B)	SOUTH (S)	NORTH (N)	BOTTOM (B)	SOUTH (S)	NORTH (N)	BOTTOM (B)	SOUTH (S)	NORTH (N)	BOTTOM (B)	SOUTH (S)		
	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	
1	---	---	---	---	---	---	---	---	---	---	---	---	REMOVE	
2	*35	4	3	*28	38	5	*24	44	16	*24	0	4	225	
3	7	0	1	2	9	0	3	17	14	3	4	3	63	
4	3	0	5	1	12	0	11	30	11	9	16	12	110	
5	1	0	*35	0	30	*28	14	9	*24	4	22	*24	191	
6	---	---	---	---	---	---	---	---	---	---	---	---	REMOVE	
TOTAL	46	4	44	31	89	33	52	100	65	40	42	43	589	
													** ADJUSTED TOTAL	707

* VALUE SHOWN FOR BEAM 2 (NORTH FACE) AND BEAM 5 (SOUTH FACE) ARE APPROXIMATED QUANTITIES DUE TO INACCESSIBILITY OF EXISTING UTILITY CHAMBERS. A CONTINGENCY VALUE OF 15% OF THE SURFACE AREA HAS BEEN INCLUDED.

** SEE NOTE 3.

REVISIONS:
AS BUILT

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BEAM CONCRETE PATCH
QUANTITIES

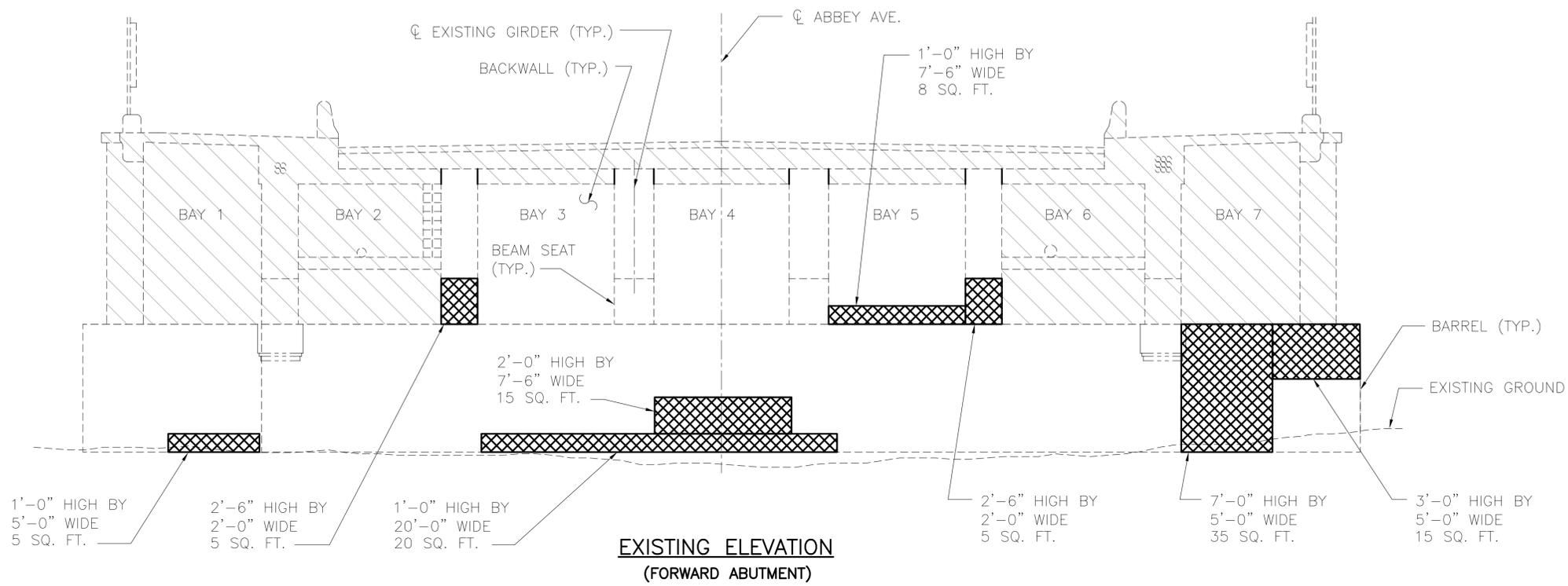
REHABILITATION OF ABBEE AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
29D
SHEET
S-5

BID
PAC

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FORWARD ABUTMENT CONCRETE PATCH QUANTITIES				
	BACKWALL	BARREL	BEAM SEAT	TOTAL
	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.
BAY 1	--	5	--	5
BAY 2	--	0	0	0
BAY 3	0	0	5	5
BAY 4	0	35	0	35
BAY 5	8	0	0	8
BAY 6	--	0	5	5
BAY 7	--	50	--	50
TOTAL	8	90	10	108
		* ADJUSTED TOTAL		130

* SEE NOTE - 1.

NOTES:

1. THE ESTIMATED QUANTITY FOR ITEM TS 519 - PATCHING OF CONCRETE STRUCTURES, HAS BEEN INCREASED 20% OVER FIELD MEASURED AREAS. FINAL AREAS TO BE REPAIRED WILL BE APPROVED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
2. FOR PORTIONS OF STRUCTURE REMOVED NOTE AND EXISTING STRUCTURE VERIFICATION NOTE, SEE STRUCTURE GENERAL NOTES SHEET S-4.
3. MINOR POP OUTS ALONG ABUTMENT FACES DUE TO INSUFFICIENT COVER OVER MISC. REBAR WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS 519. AREAS WILL BE COATED AND SEALED PER TS 512.

LEGEND:

- LIMITS OF REMOVAL
- LIMITS OF PATCHING

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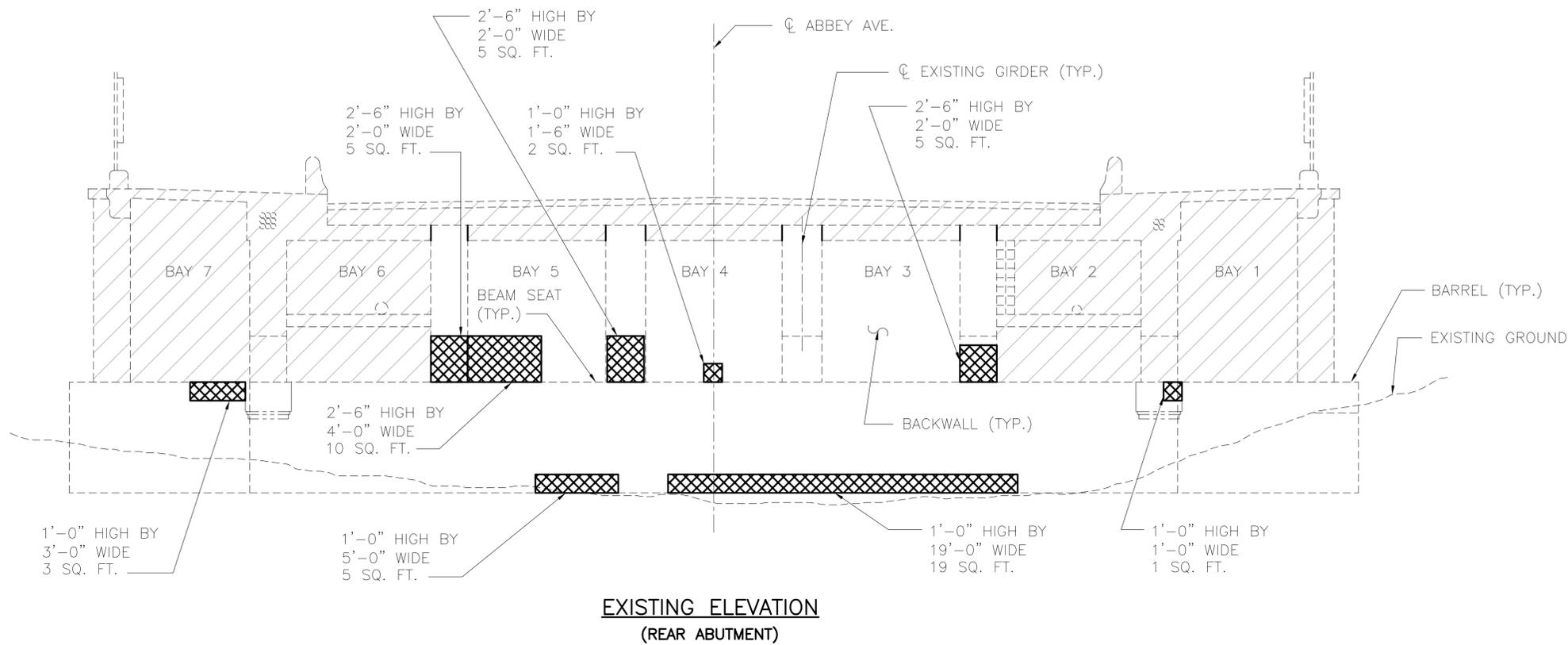
FORWARD ABUTMENT REPAIR
CONCRETE PATCH
REHABILITATION OF ABBEEY AVE.
BRIDGE OVER GCRTA TRACKS

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NOTES:

1. THE ESTIMATED QUANTITY FOR ITEM TS 519 - PATCHING OF CONCRETE STRUCTURE, HAS BEEN INCREASED 20% OVER FIELD MEASURED AREAS. FINAL AREAS TO BE REPAIRED WILL BE APPROVED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
2. FOR PORTIONS OF STRUCTURE REMOVED NOTE AND EXISTING STRUCTURE VERIFICATION NOTE, SEE STRUCTURE GENERAL NOTES SHEET S-4.
3. MINOR POP OUTS ALONG ABUTMENT FACES DUE TO INSUFFICIENT COVER OVER MISC. REBAR WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS 519. AREAS WILL BE COATED AND SEALED PER TS 512.

LEGEND:

- [Hatched Box] LIMITS OF REMOVAL
- [Cross-hatched Box] LIMITS OF PATCHING

REAR ABUTMENT CONCRETE PATCH QUANTITIES				
	BACKWALL	BARREL	BEAM SEAT	TOTAL
	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.
BAY 1	--	0	--	0
BAY 2	--	1	--	1
BAY 3	0	19	5	24
BAY 4	2	0	0	2
BAY 5	10	5	5	20
BAY 6	--	0	5	5
BAY 7	--	3	--	3
TOTAL	12	28	15	55
		* ADJUSTED TOTAL		66

* SEE NOTE - 1.

REVISIONS:

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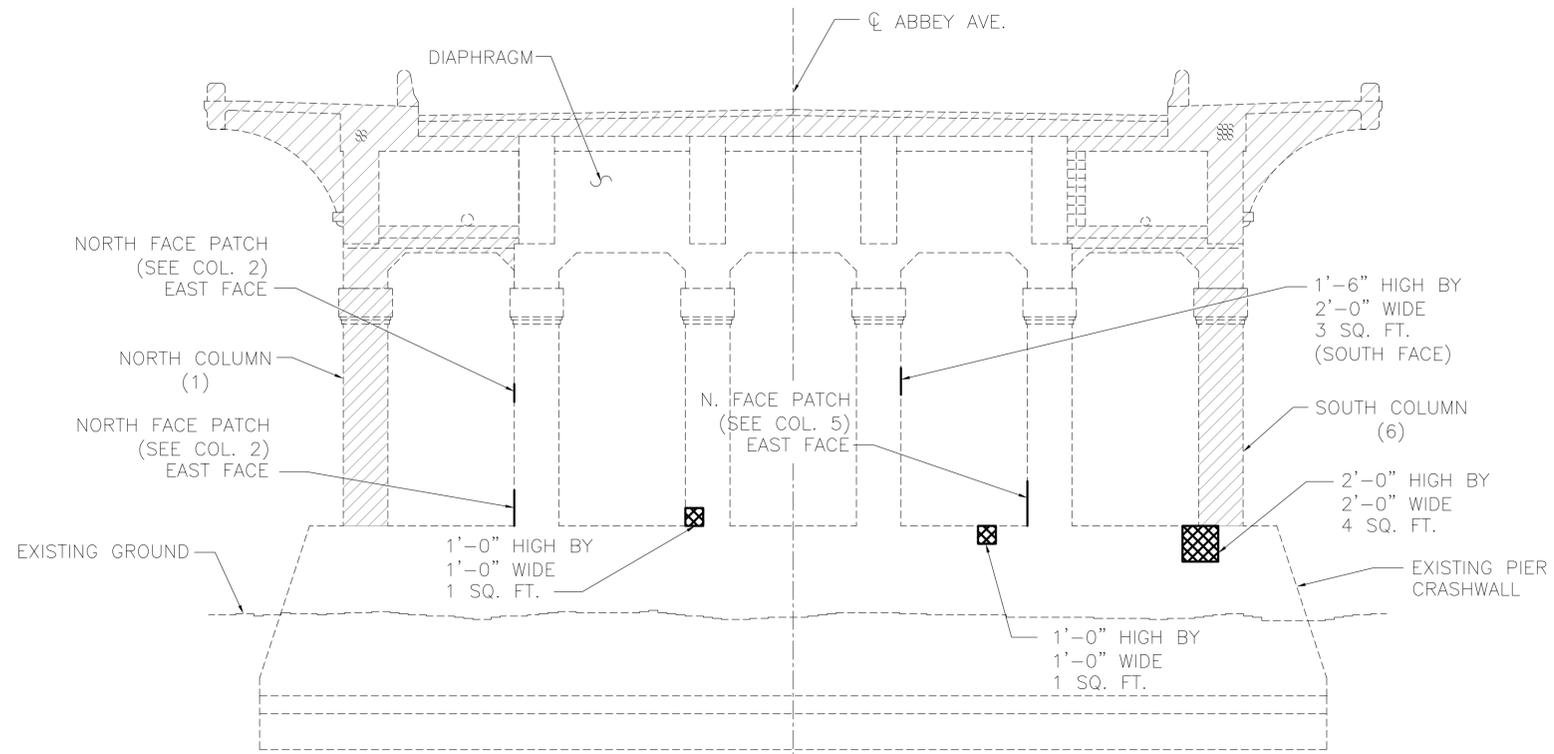
REAR ABUTMENT REPAIR
 CONCRETE PATCH
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

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**PIER 2 CONCRETE REPAIR
(WEST FACE)**

NOTES:

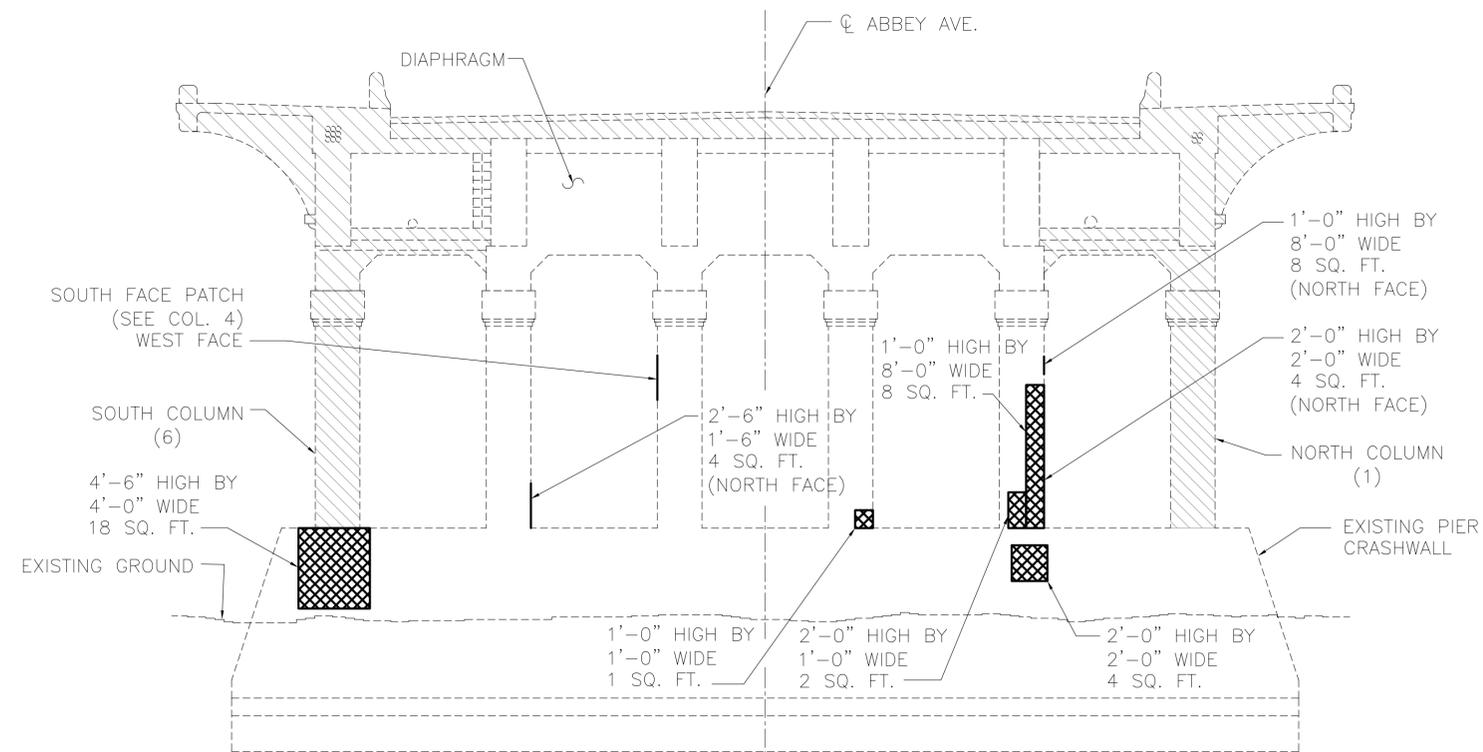
- PIER POP OUT:** MINOR POP OUTS ALONG PIER FACES DUE TO INSUFFICIENT COVER OVER MISC. REBAR WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS 519. AREAS WILL BE COATED AND SEALED PER TS 512.
- THE ESTIMATED QUANTITY FOR ITEM TS 519 - PATCHING OF CONCRETE STRUCTURE, HAS BEEN INCREASED 20% OVER FIELD MEASURED AREAS. FINAL AREAS TO BE REPAIRED WILL BE APPROVED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

LEGEND:

- LIMITS OF REMOVAL
- LIMITS OF PATCHING

PIER 2 CONCRETE PATCH QUANTITIES									
FACE	DIAPHRAM SQ. FT.	COLUMN SQ. FT.						CRASHWALL SQ. FT.	TOTAL SQ. FT.
		1	2	3	4	5	6		
NORTH	0	-	12	0	0	4	-	0	16
SOUTH	0	-	0	0	3	0	-	0	3
EAST	0	-	10	1	0	0	-	22	33
WEST	0	-	0	1	0	0	-	5	6
TOTAL	0	-	22	2	3	4	-	27	58
* ADJUSTED TOTAL									70

* SEE NOTE - 2.



**PIER 2 CONCRETE REPAIR
(EAST FACE)**

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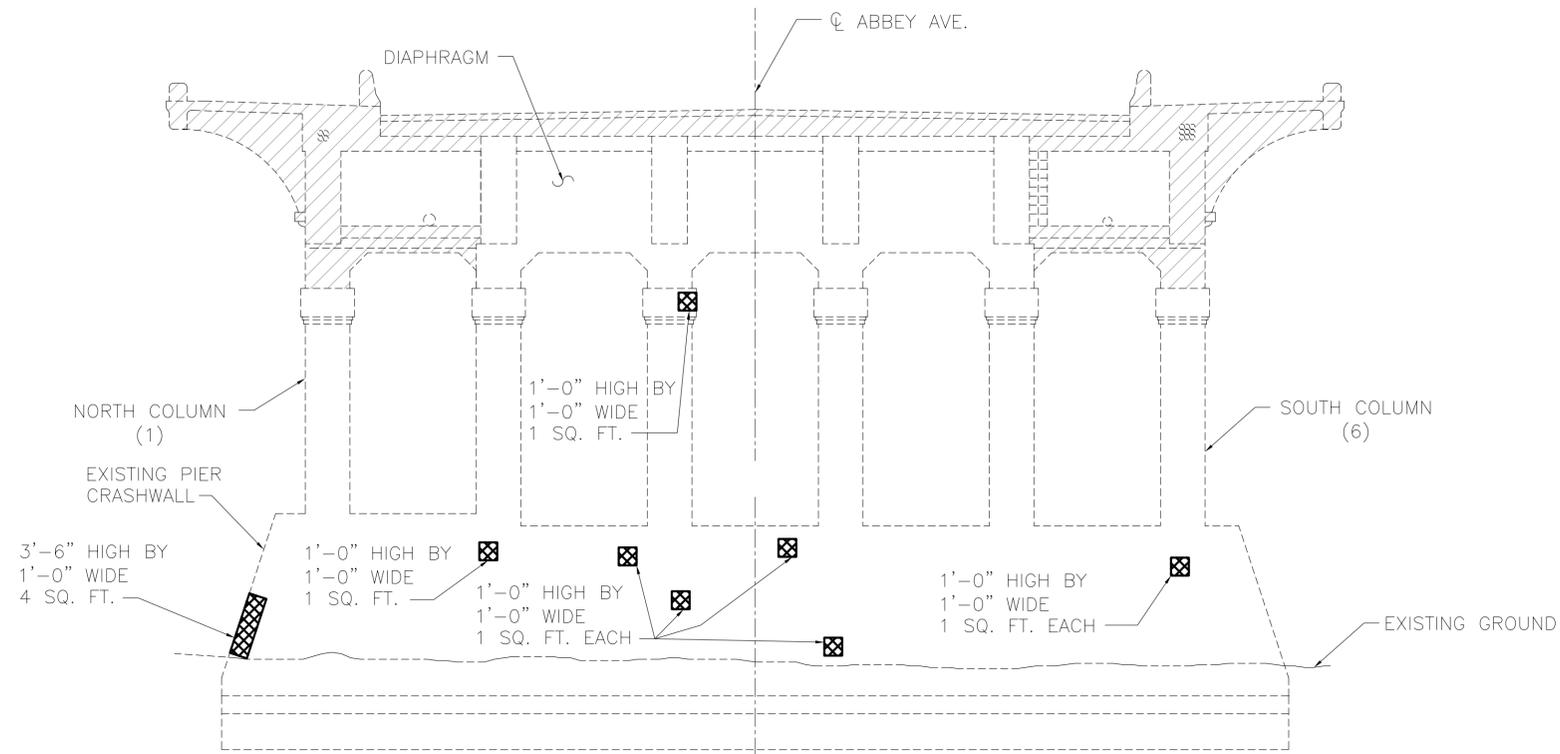
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CONCRETE REPAIR
PIER 2
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

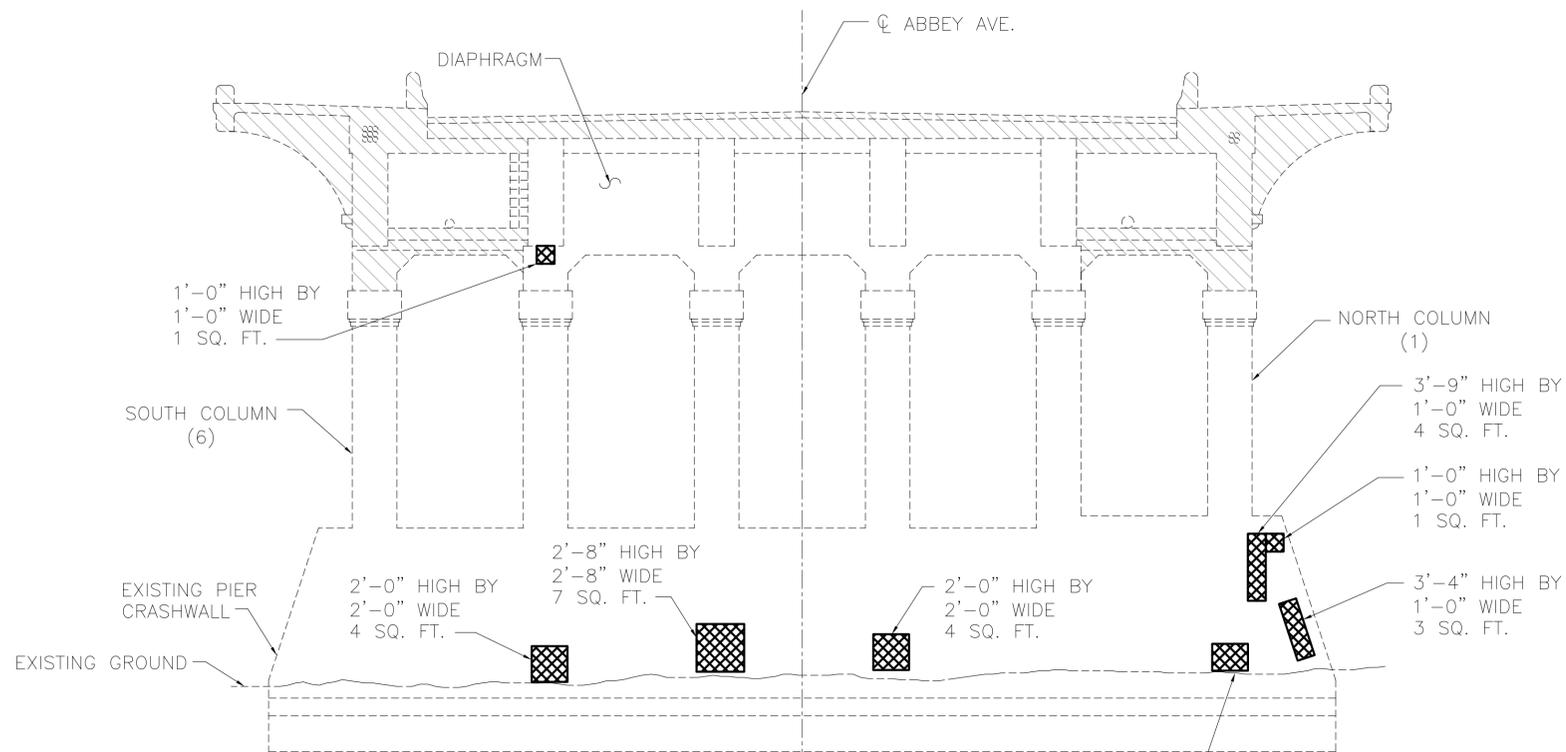
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PROJ
29D
SHEET
S-9

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**PIER 3 CONCRETE REPAIR
(WEST FACE)**



**PIER 3 CONCRETE REPAIR
(EAST FACE)**

NOTES:

1. **PIER POP OUT:** MINOR POP OUTS ALONG PIER FACES DUE TO INSUFFICIENT COVER OVER MISC. REBAR WILL NOT BE PATCHED. REMOVE ALL LOOSE CONCRETE TO SATISFACTION OF ENGINEER. COST OF REMOVAL IS INCIDENTAL TO ITEM TS 519. AREAS WILL BE COATED AND SEALED PER TS 512.
2. THE ESTIMATED QUANTITY FOR ITEM TS 519 - PATCHING OF CONCRETE STRUCTURE, HAS BEEN INCREASED 20% OVER FIELD MEASURED AREAS. FINAL AREAS TO BE REPAIRED WILL BE APPROVED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

LEGEND:

- LIMITS OF REMOVAL
- LIMITS OF PATCHING

PIER 3 CONCRETE PATCH QUANTITIES									
FACE	DIAPHRAGM SQ. FT.	COLUMN SQ. FT.						CRASHWALL SQ. FT.	TOTAL SQ. FT.
		1	2	3	4	5	6		
NORTH	0	0	0	0	0	0	0	0	
SOUTH	0	0	0	0	0	0	0	0	
EAST	1	0	0	0	0	0	0	28	
WEST	0	0	0	1	0	0	0	10	
TOTAL	1	0	0	1	0	0	0	38	
* ADJUSTED TOTAL								48	

* SEE NOTE - 2.

REVISIONS:

DRAWN:	CMM
CHECKED:	JAD
APPROVED:	RHW
DATE:	6-1-2007
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CONCRETE REPAIR
PIER 3
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

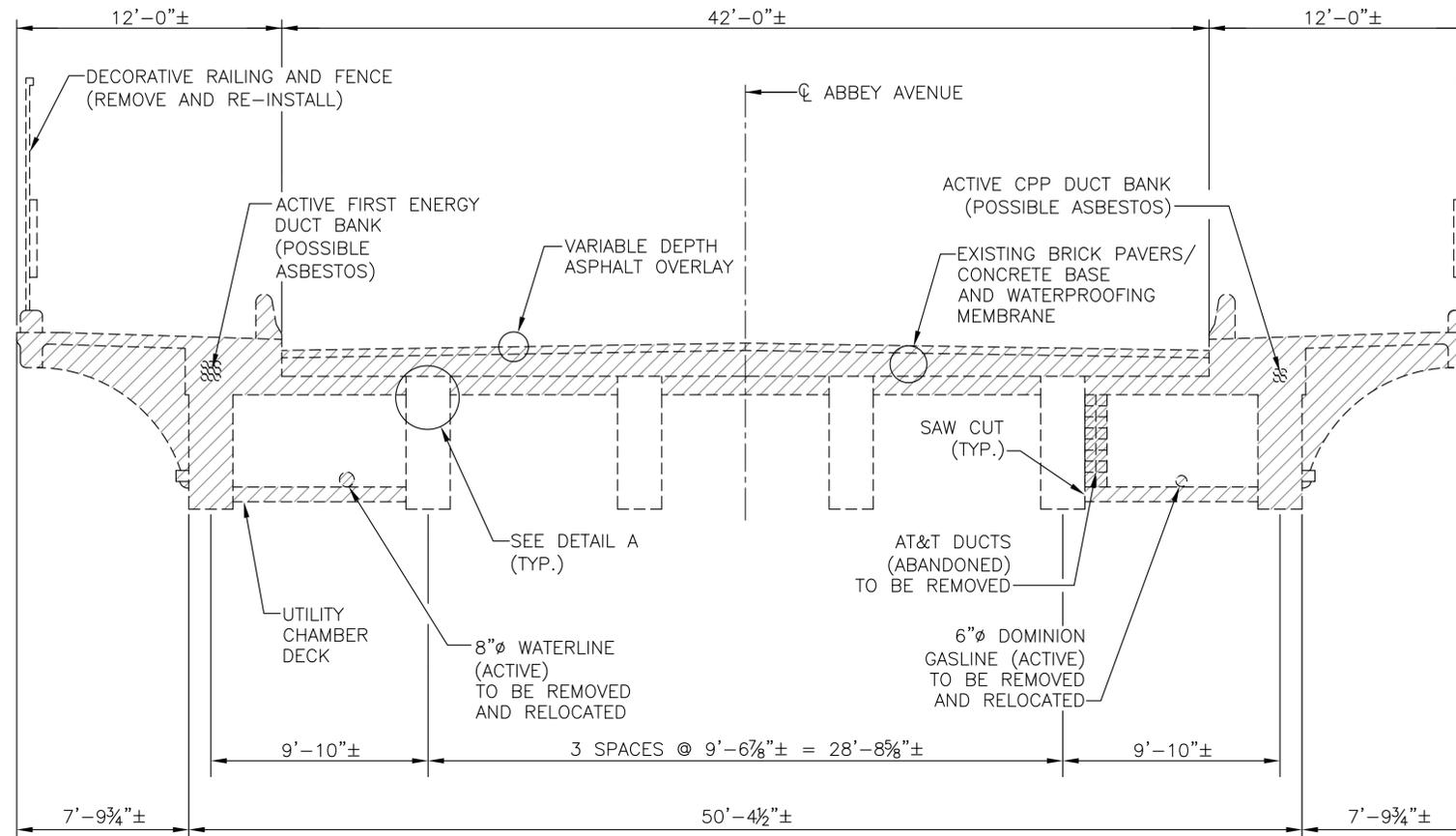
RTA
PROJ
29D

BID
PAC

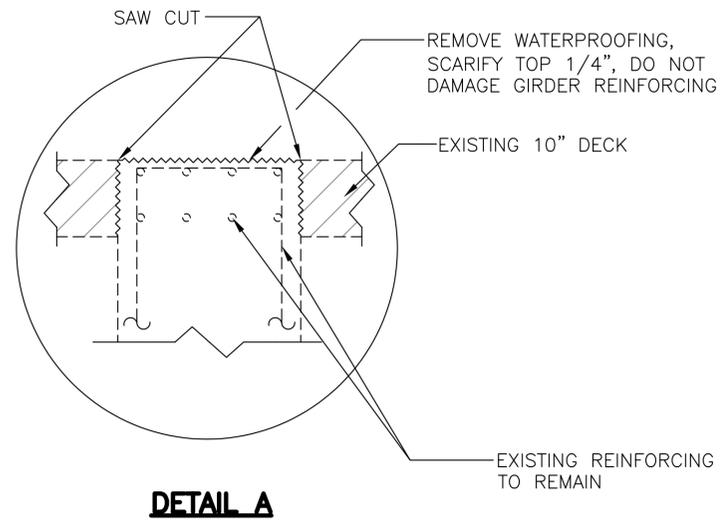
SHEET
S-10

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DECK SECTION REMOVAL DETAILS



DETAIL A

 TO BE REMOVED

REVISIONS

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DECK REMOVAL DETAILS
**REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS**

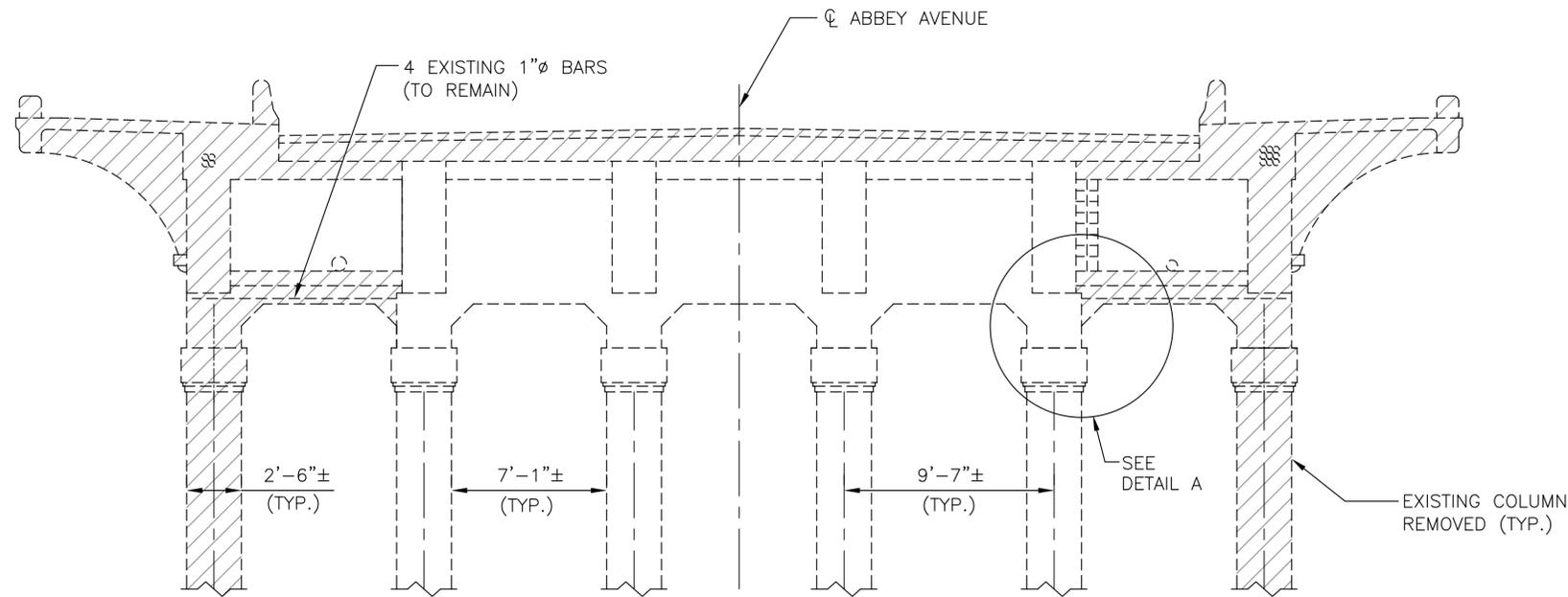
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 PROJ
29D

BID
 PAC

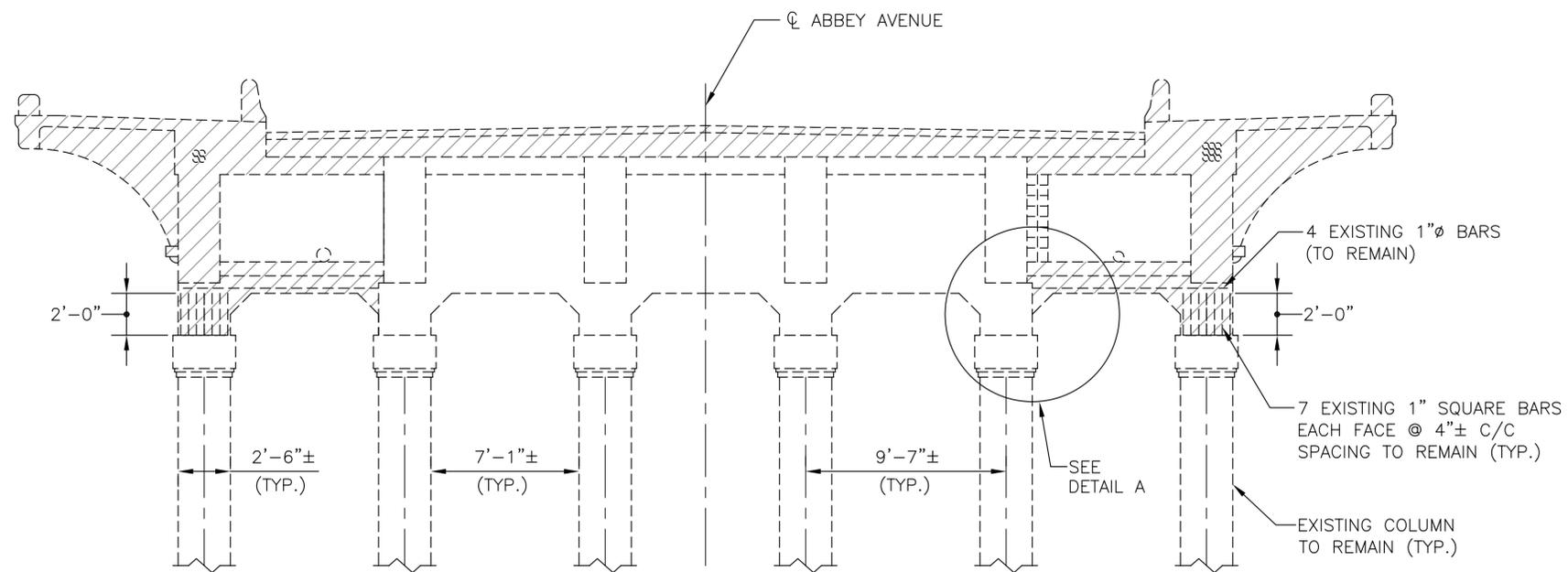
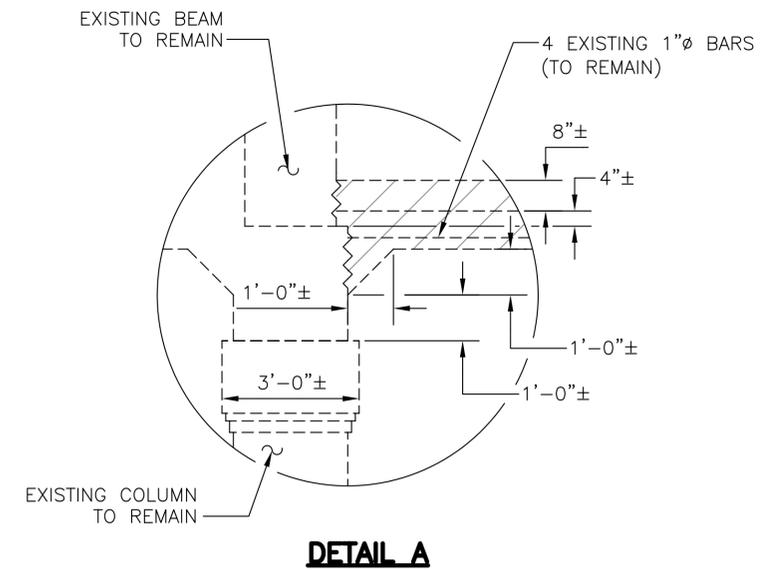
SHEET
S-11

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PIERS 1 AND 2 DIAPHRAGM REMOVAL



PIER 3 DIAPHRAGM REMOVAL

LEGEND

- TO BE REMOVED
- TYP. = TYPICAL

NOTES:

1. FOR PIER DIAPHRAGM REPLACEMENT DETAILS, SEE SHEET S-21.

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DATE: 6-1-2007
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PIER DIAPHRAGM REMOVAL

**REHABILITATION OF ABBEE AVE.
 BRIDGE OVER GCRTA TRACKS**

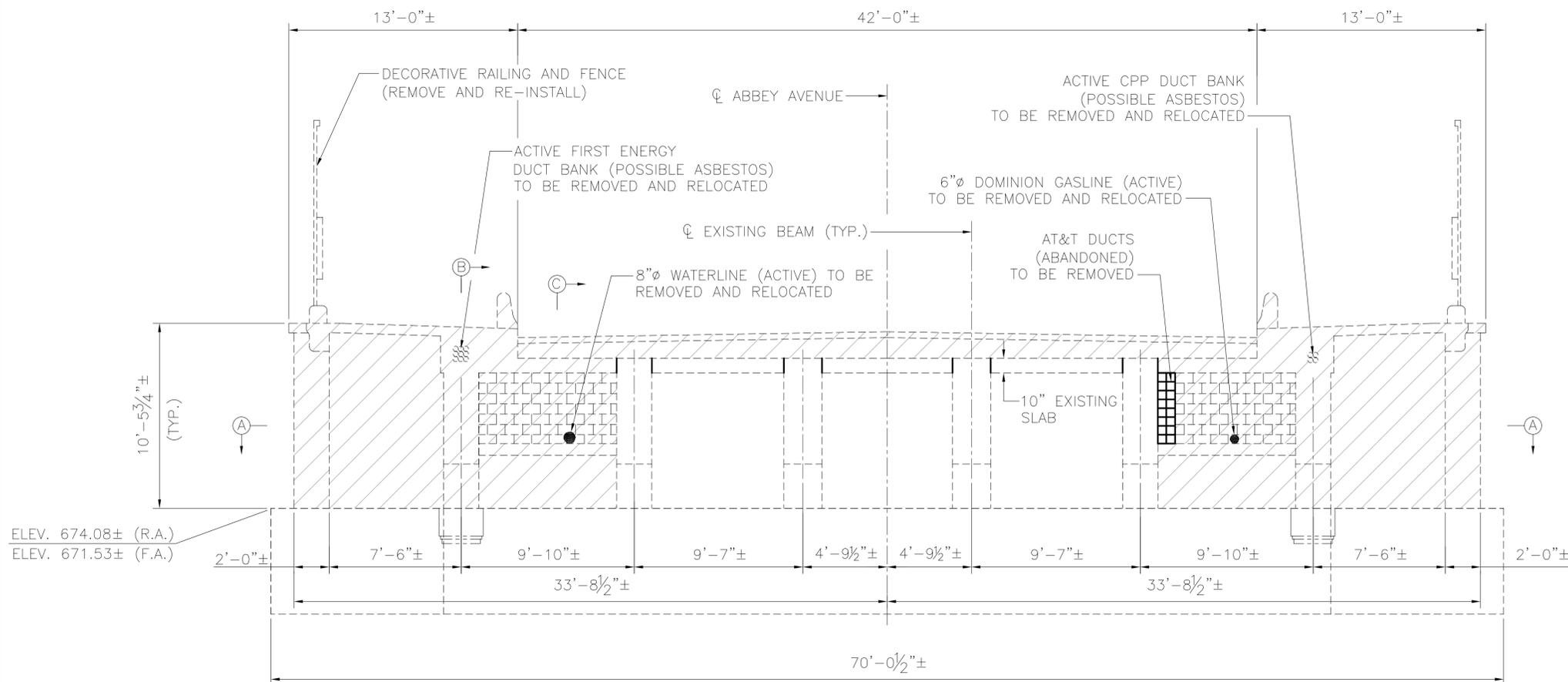
RTA PROJ
29D

SHEET
S-12

BID PAC

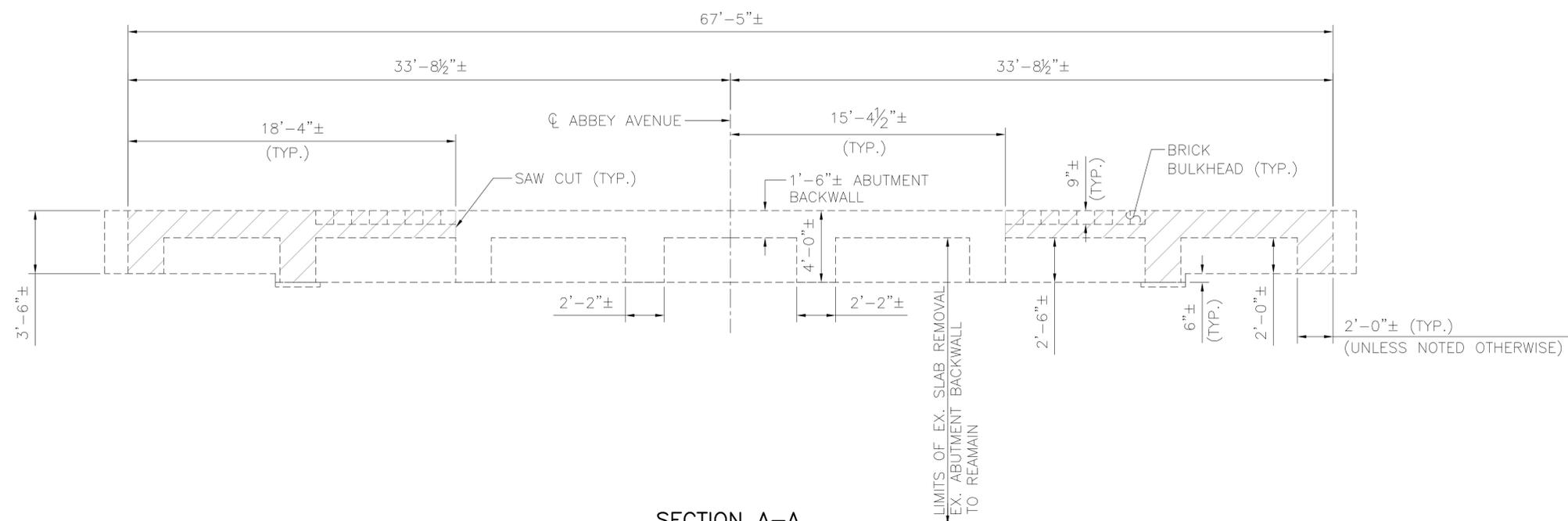
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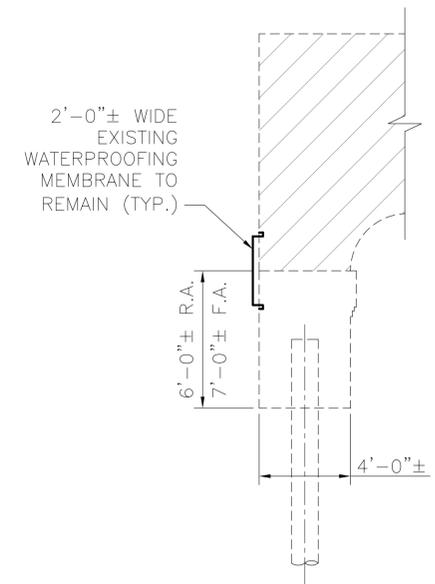
EXISTING ABUTMENT ELEVATION

(REAR ABUTMENT SHOWN; FORWARD ABUTMENT SIMILAR)
(EXISTING PILES NOT SHOWN)

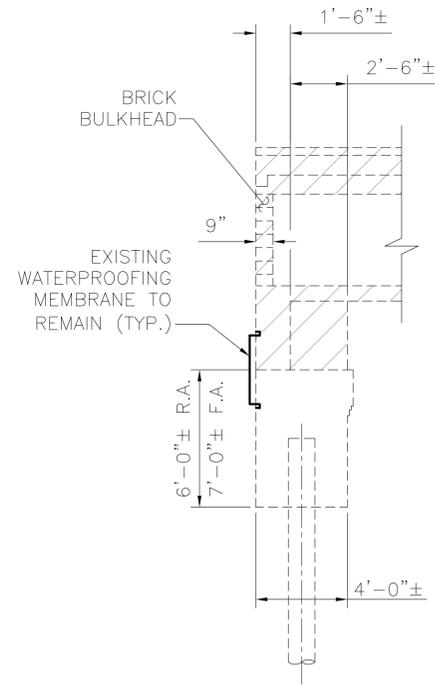


SECTION A-A

(EXISTING PILES NOT SHOWN)



SECTION B-B



SECTION C-C

LEGEND:

- TO BE REMOVED
- ELEV. = ELEVATION
- F.A. = FORWARD ABUTMENT
- R.A. = REAR ABUTMENT
- TYP. = TYPICAL

NOTES:

1. FOR ABUTMENT REHAB DETAILS, SEE SHEETS S-14, S-15, AND S-16.

REVISIONS:

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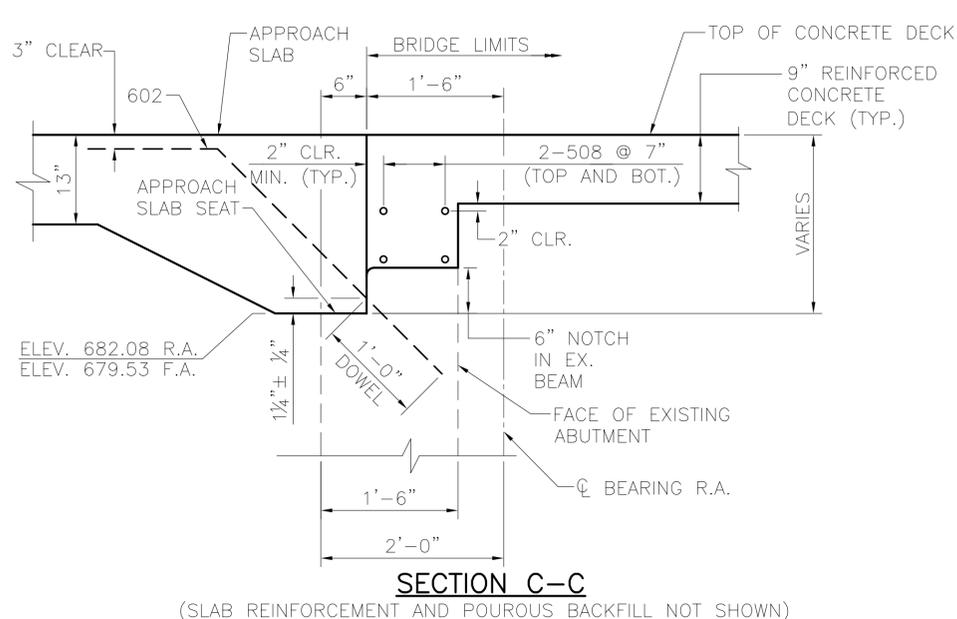
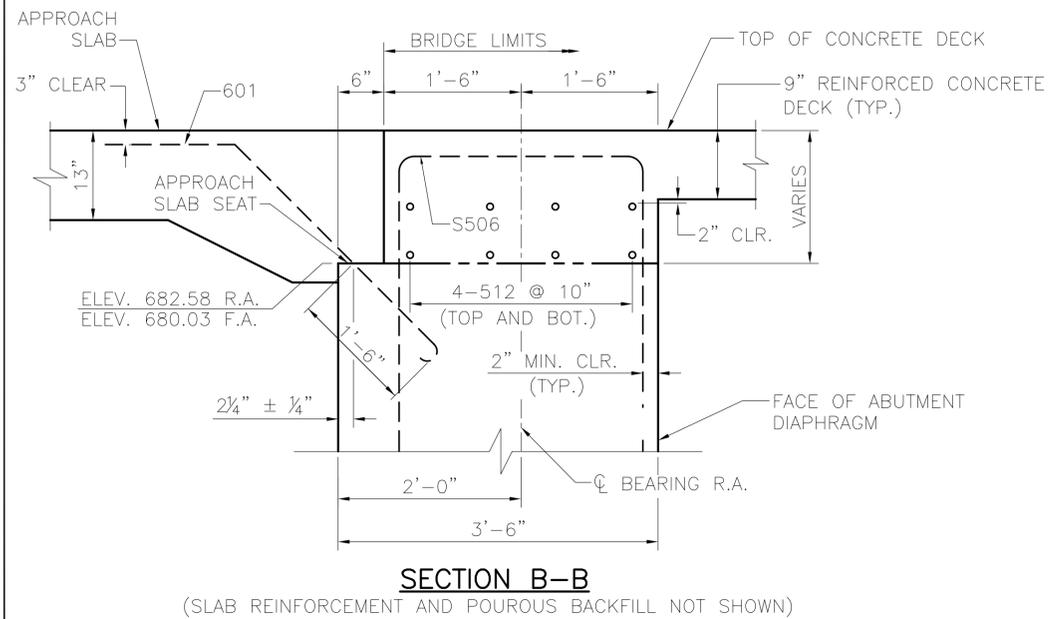
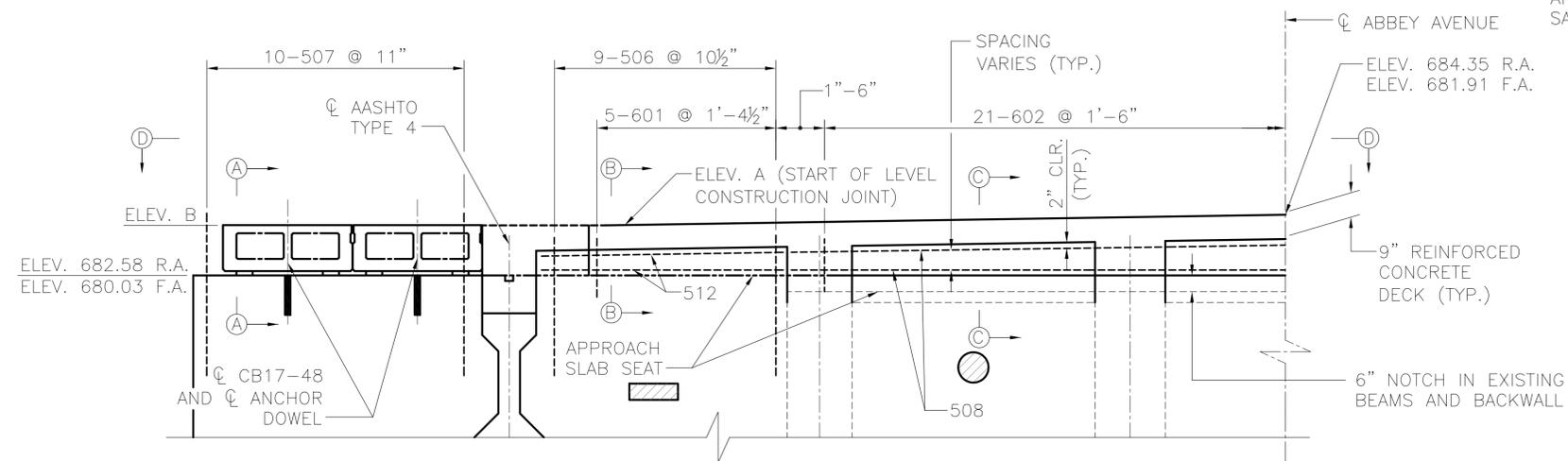
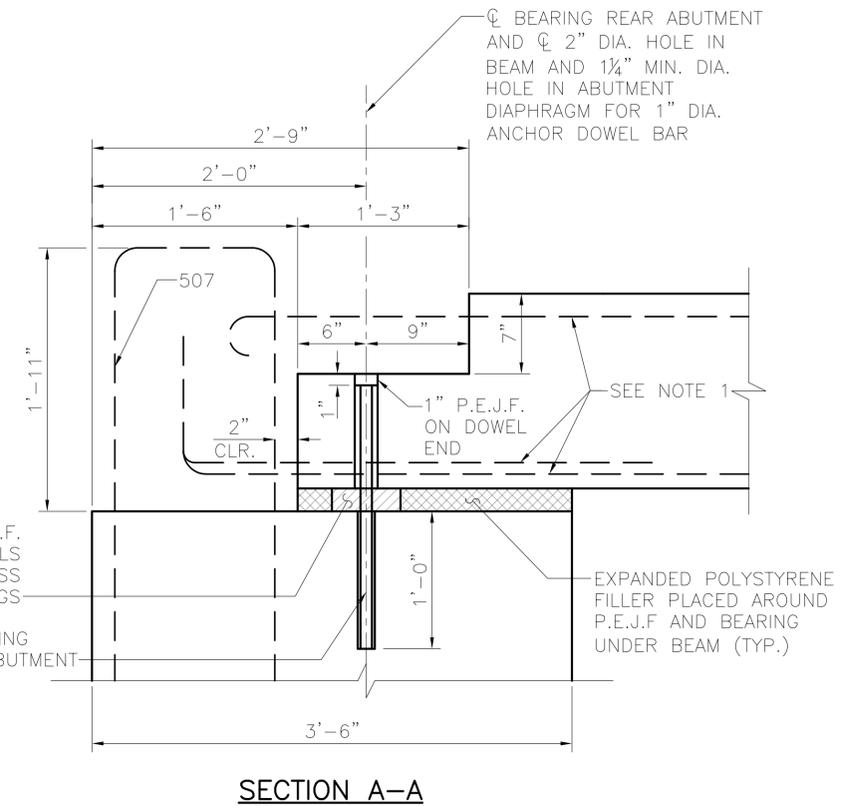
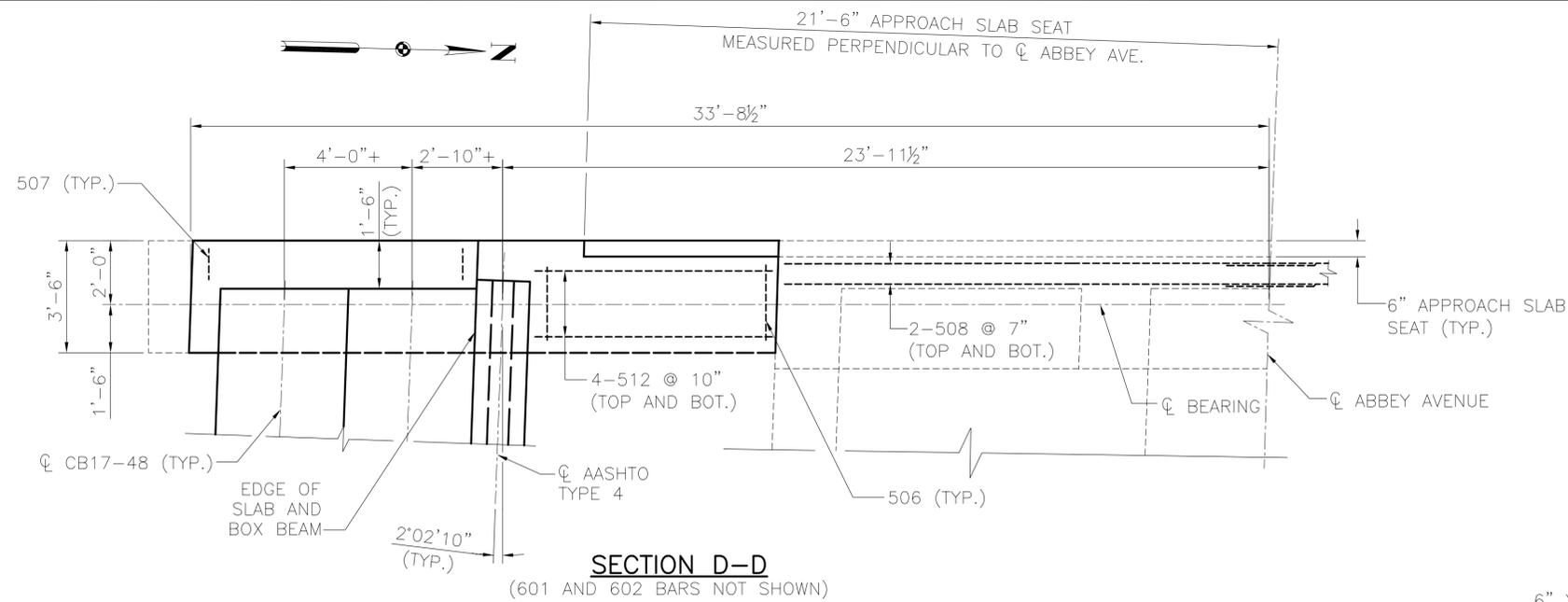
ABUTMENT REMOVAL
DETAILS

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
29D
SHEET
S-13

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LEGEND:
DIA. = DIAPHRAGM
EX. = EXISTING
F.A. = FORWARD ABUTMENT
MIN. = MINIMUM
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
R.A. = REAR ABUTMENT
TYP. = TYPICAL

NOTES:
1. FOR PRESTRESSED BOX BEAM DETAILS, SEE SHEET S-24.
2. FOR ADDITIONAL NOTES, SEE STAGE I ABUTMENT DETAILS, SHEET S-14.
3. FOR APPROACH SLAB DETAILS, SEE SHEET S-36.

	ELEVATIONS AT CL ABUTMENT BEARINGS LOOKING UPSTATION			
	REAR ABUTMENT		FORWARD ABUTMENT	
	LEFT	RIGHT	LEFT	RIGHT
ELEV. A	684.03	684.01	681.59	681.57
ELEV. B	684.15	684.15	681.58	681.58

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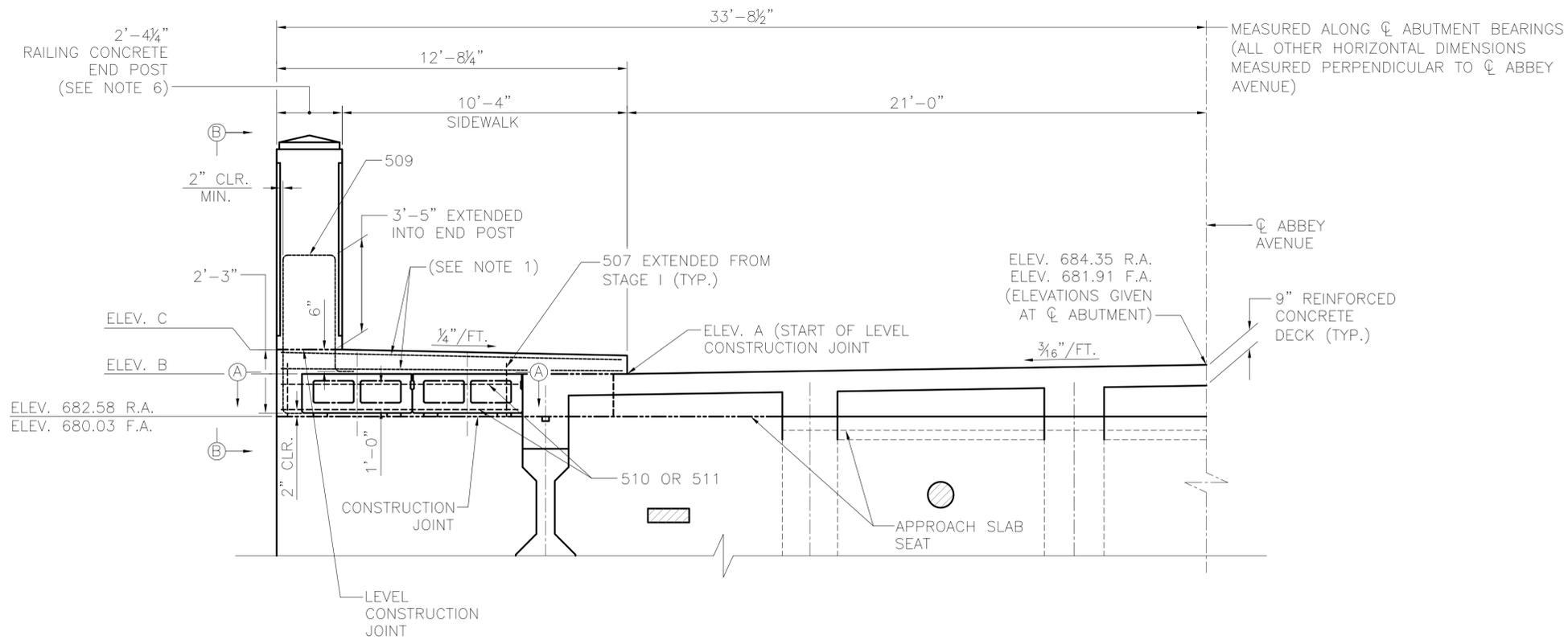
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STAGE II
ABUTMENT DETAILS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
SHEET S-15

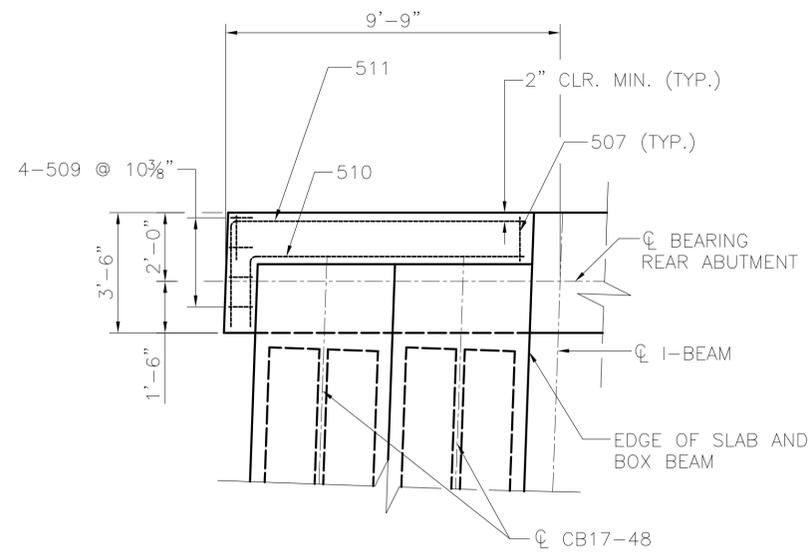
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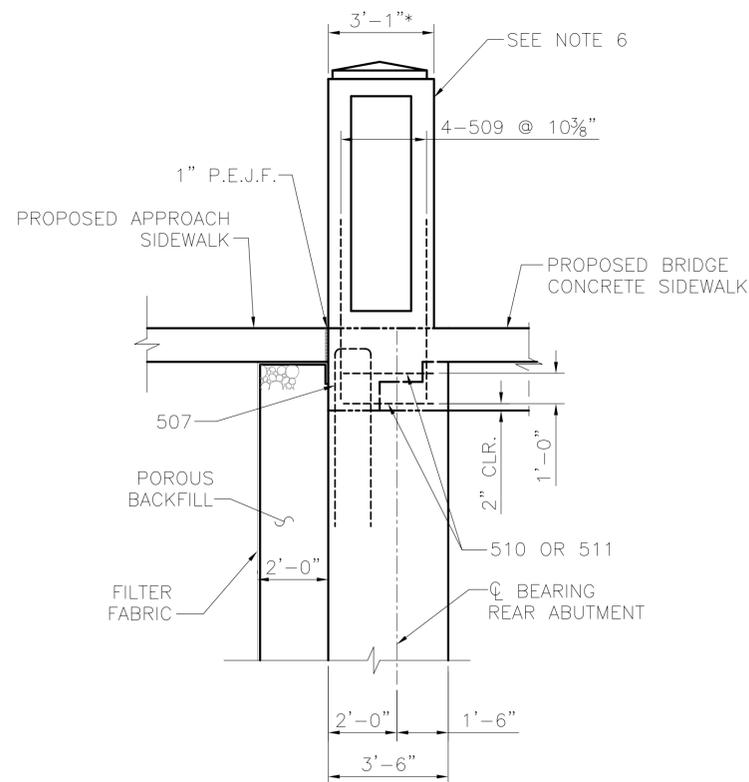


STAGE III CONSTRUCTION (ABUTMENT ELEVATION)

(CONSTRUCT SIDEWALK AND RAILING CONCRETE END POST)
 (REAR ABUTMENT-SOUTH SIDE SHOWN; NORTHSIDE OPPOSITE HAND SYMMETRICAL ABOUT ϕ ABBEY AVENUE)
 (FORWARD ABUTMENT SIMILAR)
 (CONCRETE PARAPET AND DECORATIVE RAILING NOT SHOWN)



SECTION A-A



VIEW B-B

(CONCRETE PARAPET AND DECORATIVE RAILING NOT SHOWN)

LEGEND:

- CLR. = CLEARANCE
- ELEV. = ELEVATION
- F.A. = FORWARD ABUTMENT
- MIN. = MINIMUM
- R.A. = REAR ABUTMENT
- TYP. = TYPICAL

* = FINAL END POST DIMENSION MUST BE COORDINATED WITH REUSE OF EXISTING DECORATIVE RAILING

NOTES:

1. FOR BRIDGE SIDEWALK DETAILS, SEE SHEET S-30.
2. FOR ADDITIONAL NOTES, SEE STAGE I ABUTMENT DETAILS, SHEET S14.
3. ALL REINFORCING BARS FOR THE REAR ABUTMENT SHALL BE PREFIXED RA.
4. ALL REINFORCING BARS FOR THE FORWARD ABUTMENT SHALL BE PREFIXED FA.
5. FOR APPROACH SIDEWALK DETAILS, SEE SHEET C-2.
6. FOR RAILING CONCRETE END POST DETAILS, SEE SHEET S-31.

	ELEVATIONS AT ϕ ABUTMENT BEARINGS LOOKING UPSTATION			
	REAR ABUTMENT		FORWARD ABUTMENT	
	LEFT	RIGHT	LEFT	RIGHT
ELEV. A	684.03	684.01	681.59	681.57
ELEV. B	684.15	684.15	681.58	681.58
ELEV. C	684.92	684.88	682.48	682.44

REVISIONS:

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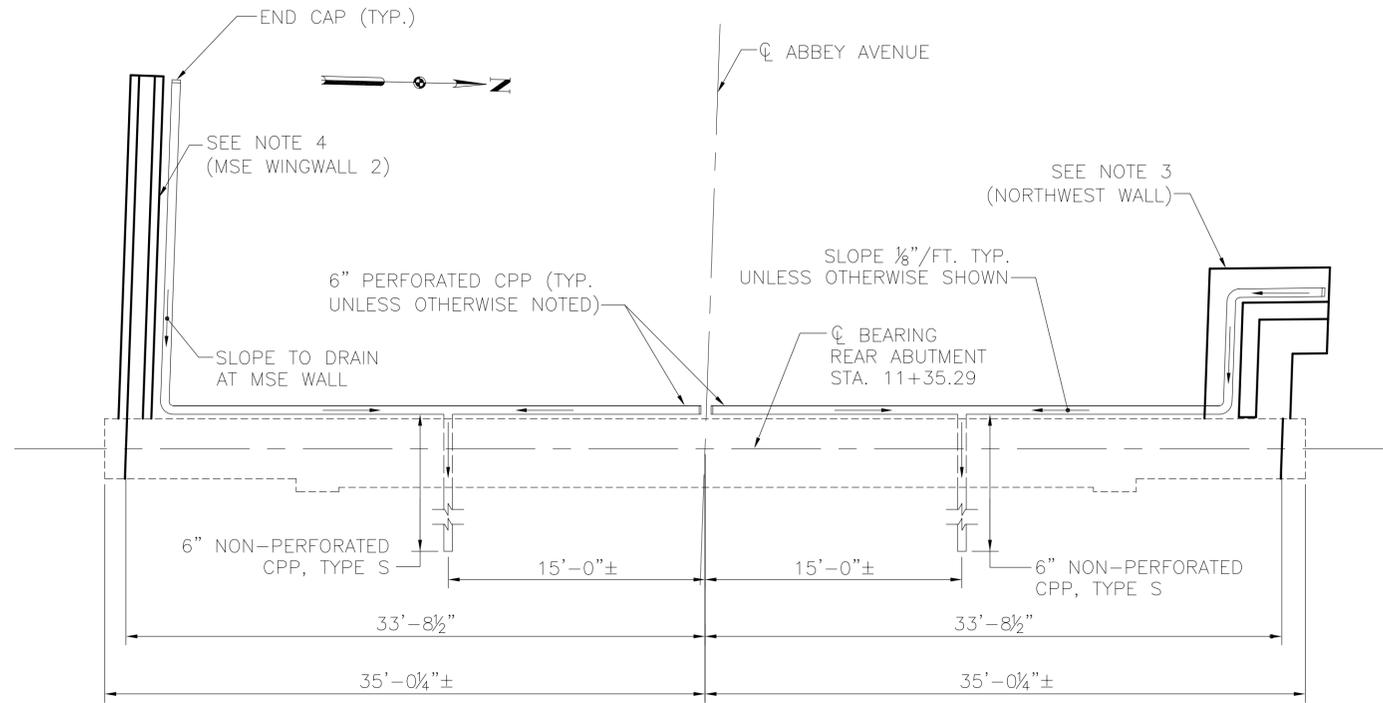
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 REGIONAL TRANSIT
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STAGE III
 ABUTMENT DETAILS
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

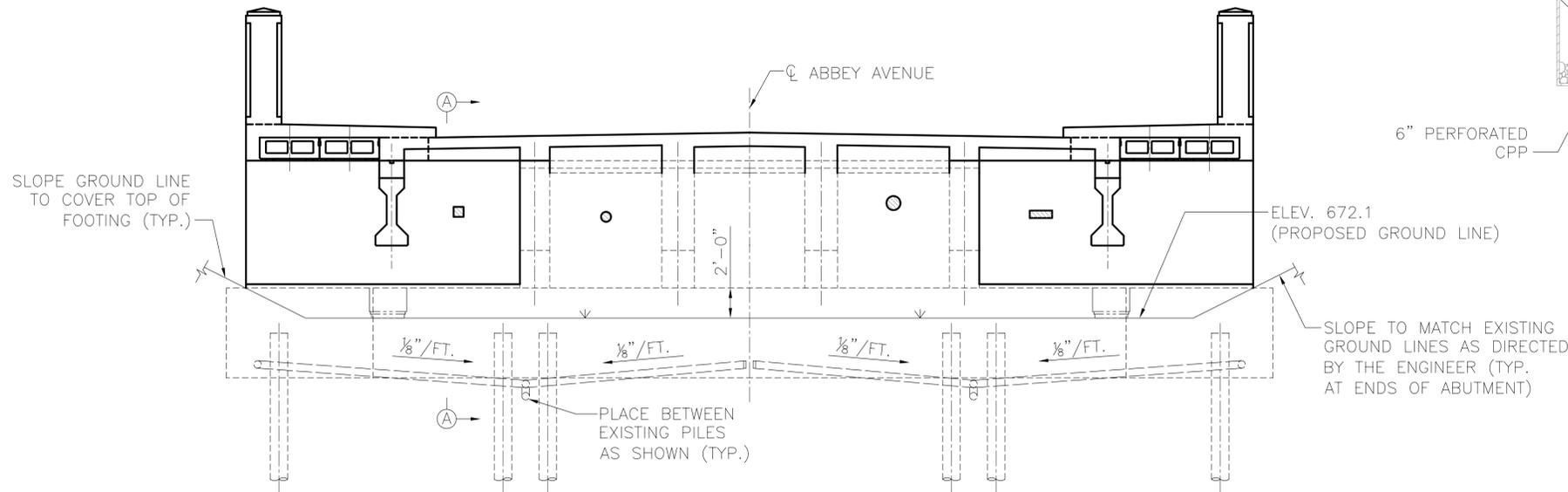
RTA
 PROJ
 29D
 SHEET
 S-16

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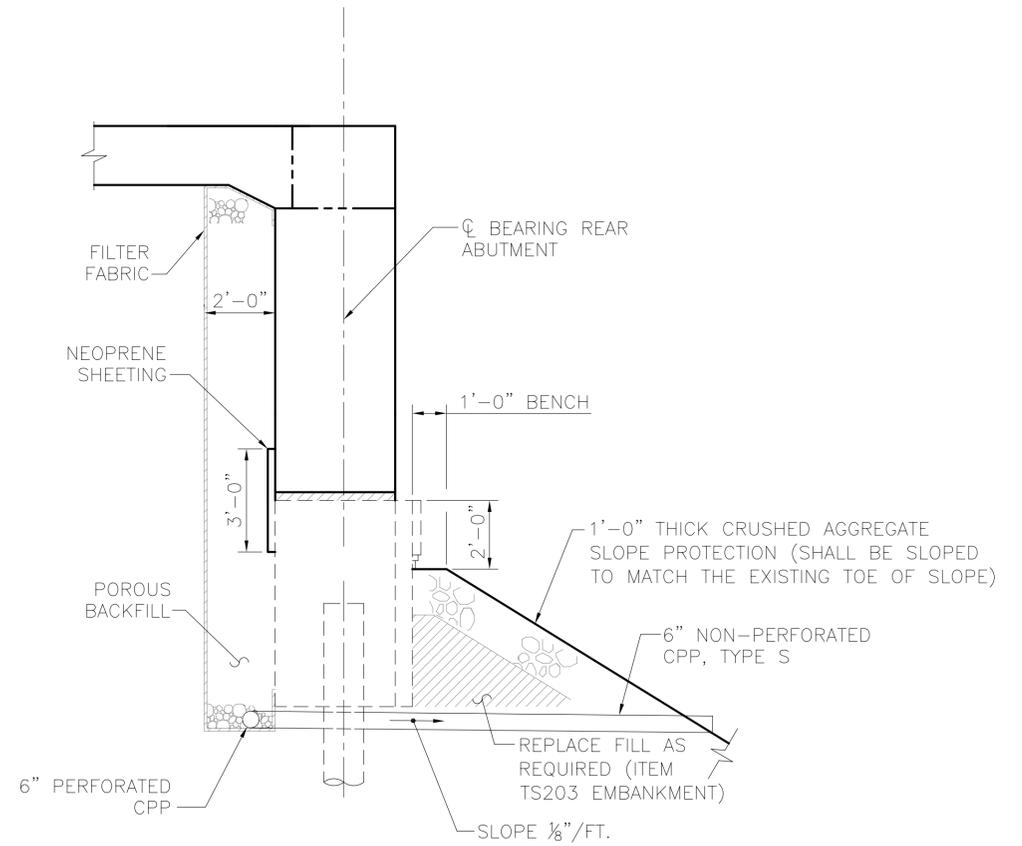
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REAR ABUTMENT PLAN



REAR ABUTMENT ELEVATION
(LOOKING BACKSTATION) (ALL PILES NOT SHOWN)



SECTION A-A

LEGEND:
CPP = CORRUGATED PLASTIC PIPE
ELEV. = ELEVATION

- NOTES:
1. FOR ABUTMENT DETAILS, SEE SHEETS S-14, S-15, AND S-16.
 2. CONTRACTOR SHALL REMOVE ANY EXISTING DEBRIS AND CONCRETE SLOPE PROTECTION AS DIRECTED BY THE ENGINEER AND SHALL BE INCLUDED WITH ITEM TS202.
 3. FOR NORTHWEST WALL DETAILS, SEE SHEET S-37.
 4. FOR MSE WINGWALL 2 DETAILS, SEE SHEET S-38.

REVISIONS:	

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REAR ABUTMENT
 DRAINAGE DETAILS

REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

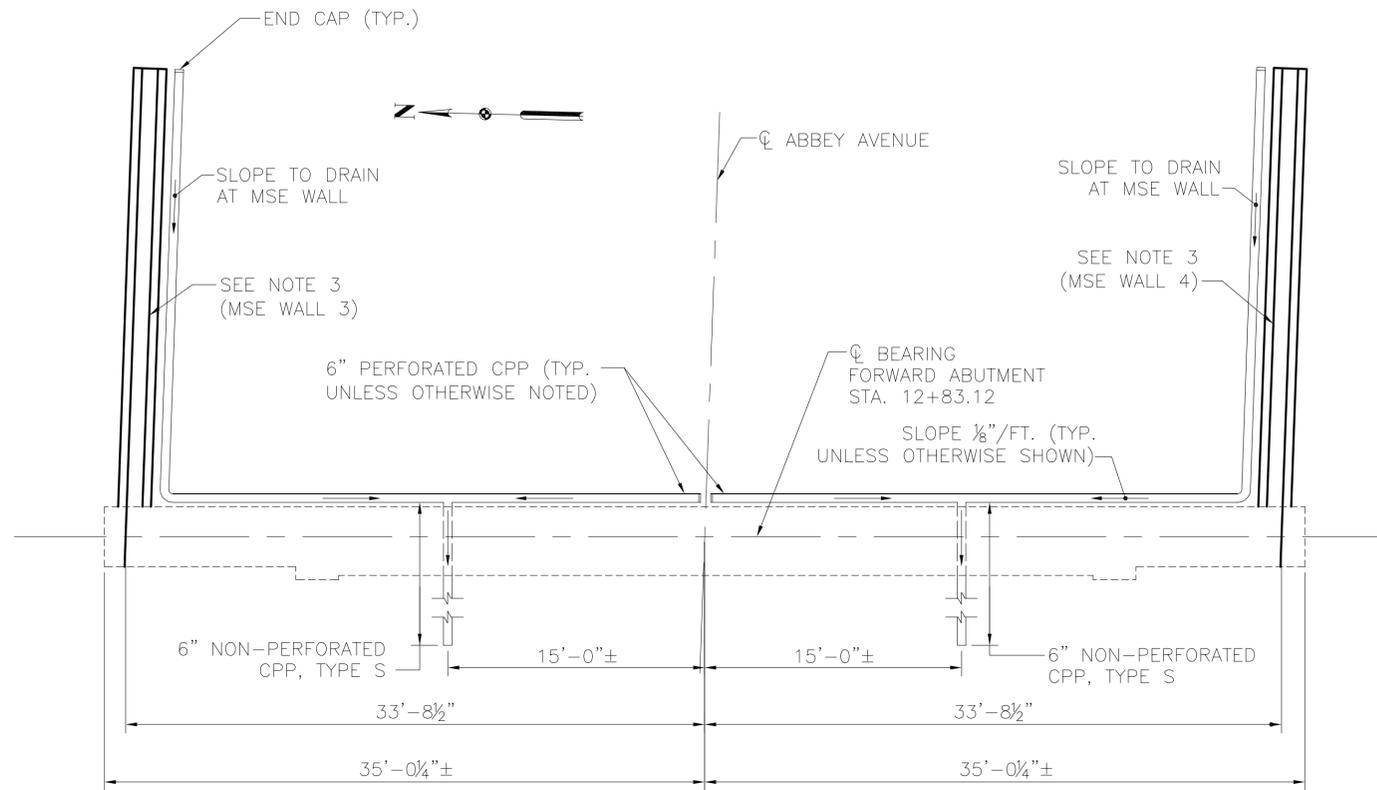
RTA
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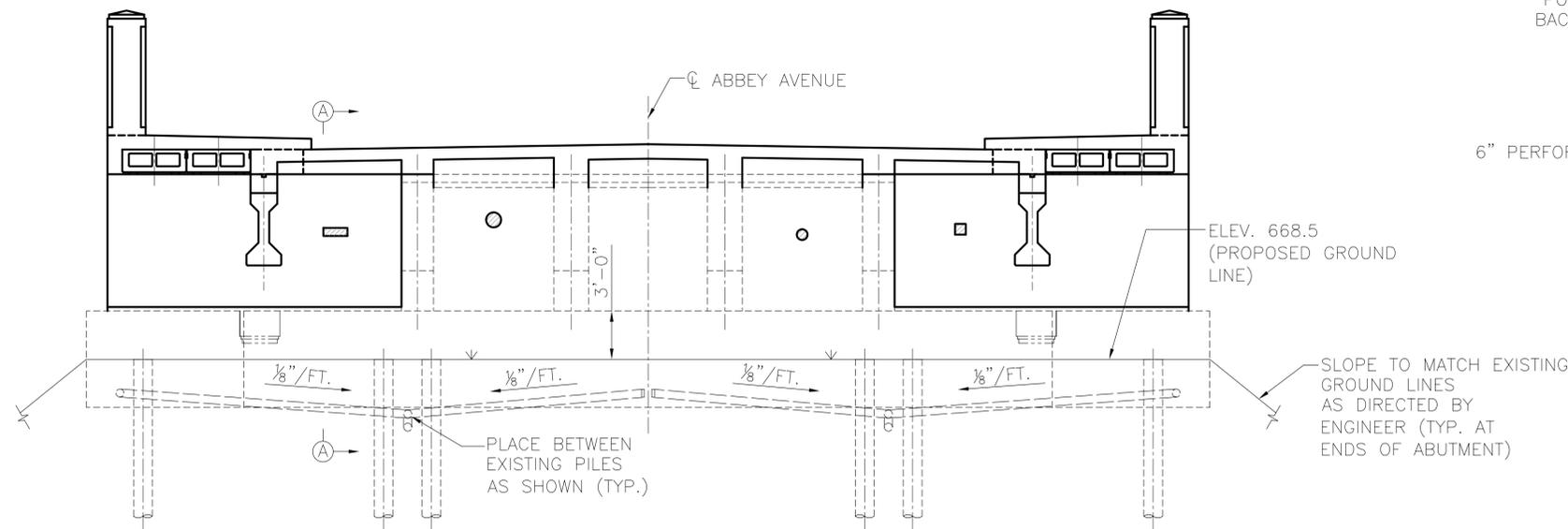
SHEET
 S-17

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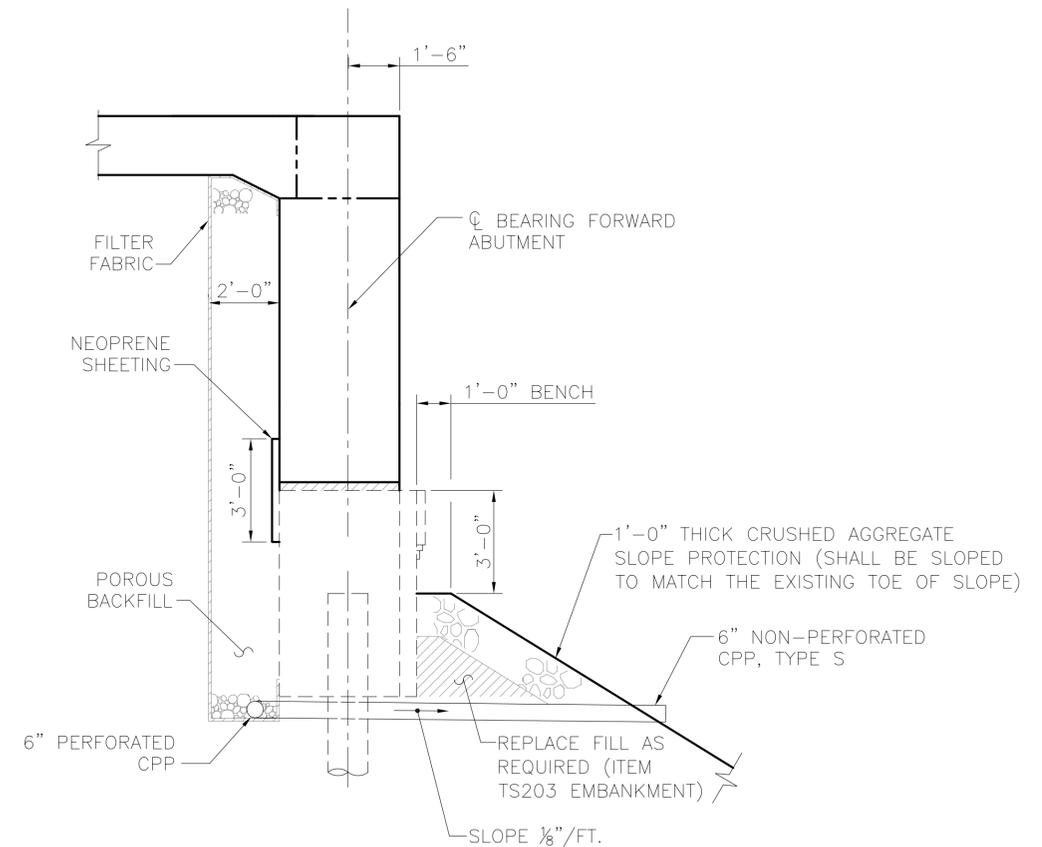
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FORWARD ABUTMENT PLAN



FORWARD ABUTMENT ELEVATION
(LOOKING UPSTATION) (ALL PILES NOT SHOWN)



SECTION A-A

LEGEND:
 CPP = CORRUGATED PLASTIC PIPE
 ELEV. = ELEVATION

NOTES:
 1. FOR ABUTMENT DETAILS, SEE SHEETS S-14, S-15, AND S-16.
 2. CONTRACTOR SHALL REMOVE ANY EXISTING DEBRIS AND CONCRETE SLOPE PROTECTION AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE INCLUDED WITH ITEM TS202.
 3. FOR MSE WINGWALL DETAILS, SEE SHEET S-39.

REVISIONS:

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**FORWARD ABUTMENT
 DRAINAGE DETAILS**

REHABILITATION OF ABBEE AVE.
 BRIDGE OVER GCRTA TRACKS

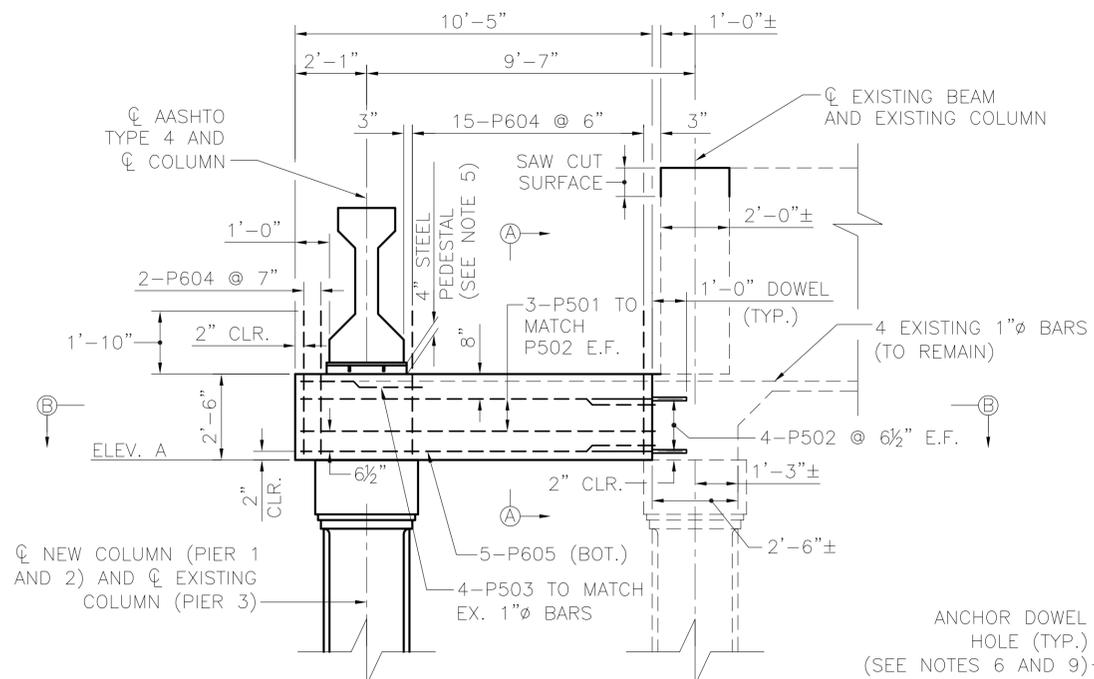
RTA
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 29D

BID
 PAC

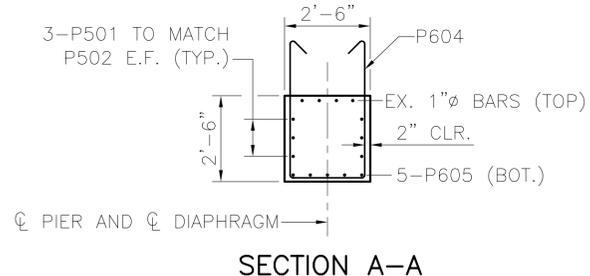
SHEET
 S-18

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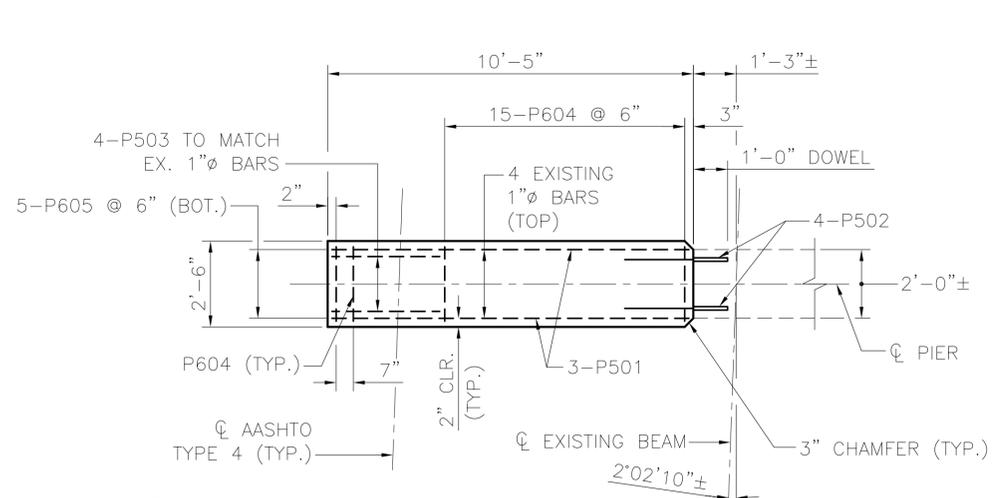
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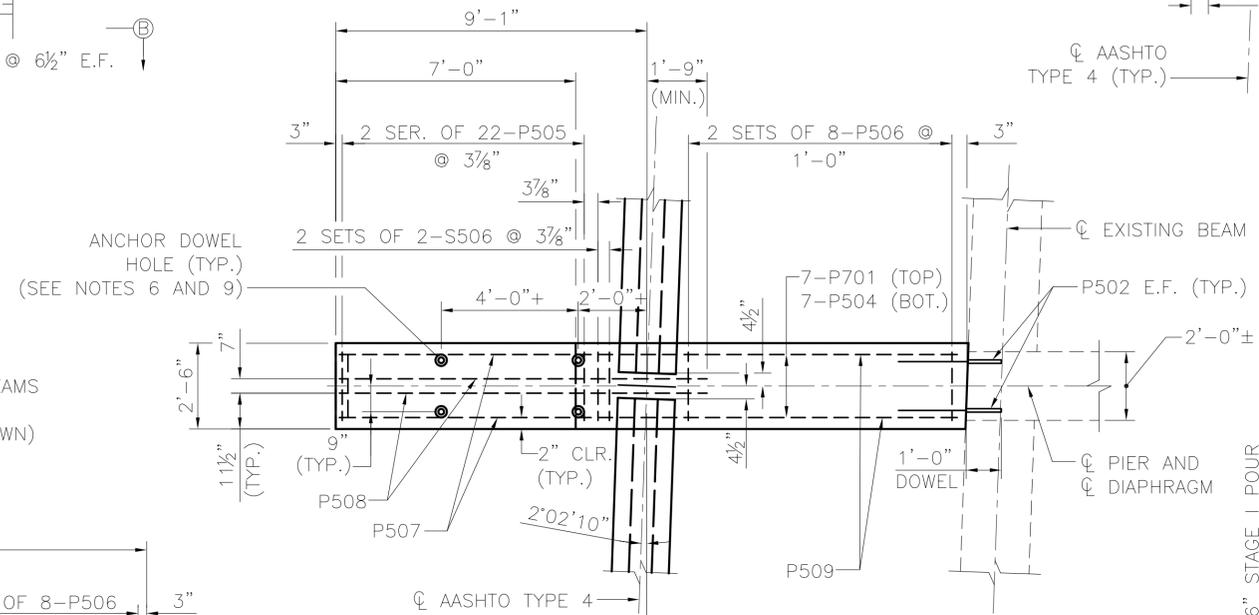
**STAGE I CONSTRUCTION
TYPICAL PIER CAP ELEVATION**
CONSTRUCT PIER CAPS TO ALLOW PLACEMENT OF CONCRETE I-BEAMS (NORTHSIDE SHOWN; SOUTHSIDE OPPOSITE HAND) (REINFORCING EXTENDED FROM COLUMN INTO PIER CAP NOT SHOWN) (HORIZONTAL DIMENSIONS MEASURED ALONG ϕ PIER)



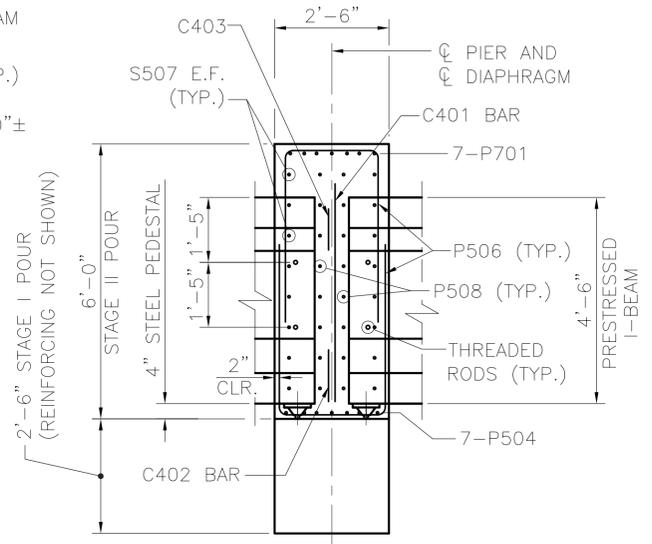
SECTION A-A



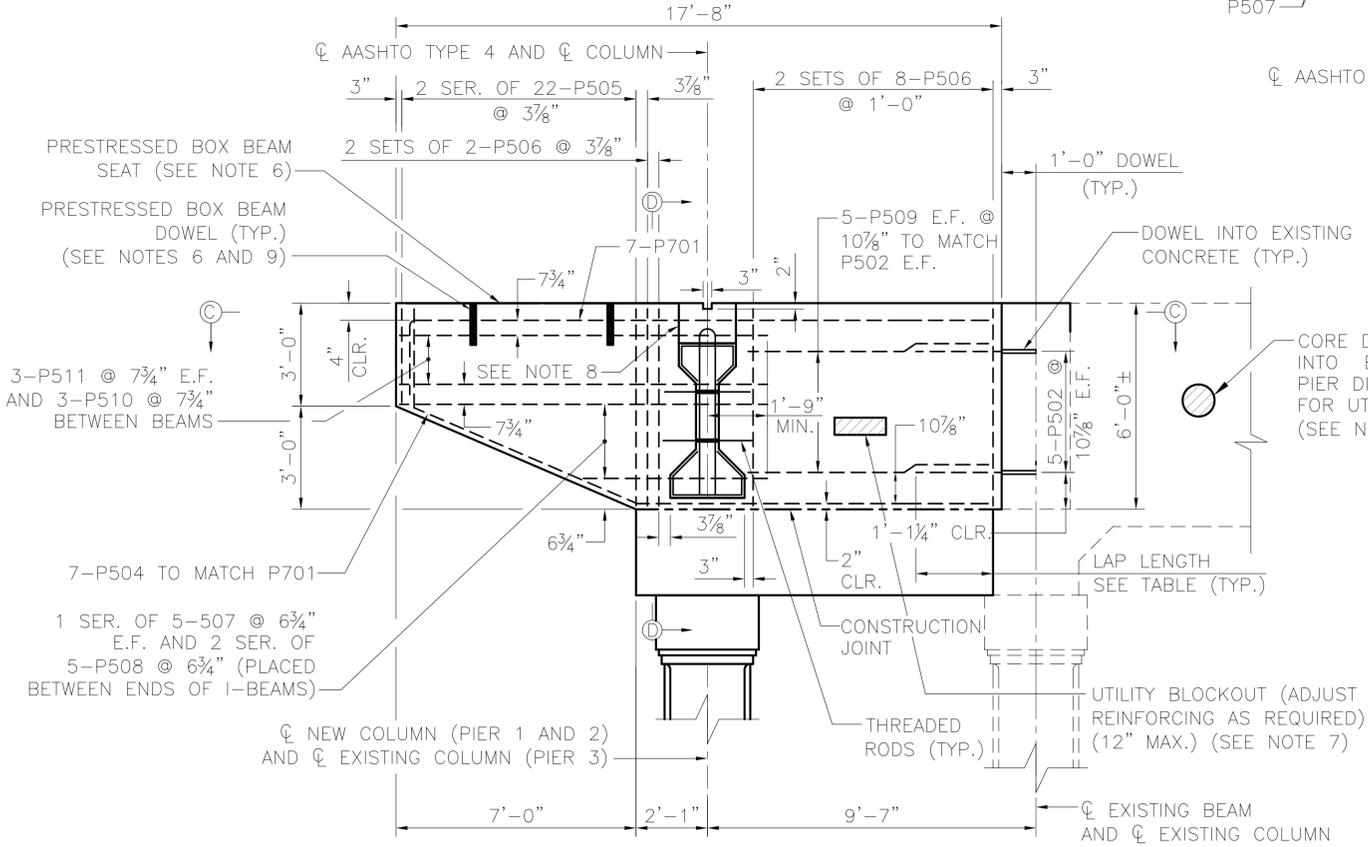
SECTION B-B



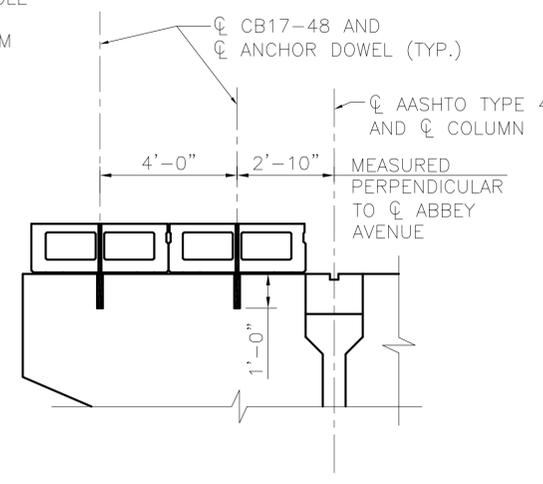
SECTION C-C



**SECTION D-D
(COLUMNS NOT SHOWN)**



**STAGE II CONSTRUCTION
TYPICAL PIER DIAPHRAGM ELEVATION**
CONSTRUCT PIER DIAPHRAGMS AND SIDEWALK SUPPORT BRACKETS (NORTHSIDE SHOWN; SOUTHSIDE OPPOSITE HAND) (PIER CAP AND HAUNCH REINFORCEMENT NOT SHOWN) (HORIZONTAL DIMENSIONS MEASURED ALONG ϕ PIER)



**STAGE III CONSTRUCTION
ERECT SIDEWALK BOX BEAMS
(SEE NOTE 6)**

REQUIRED MINIMUM LAP LENGTHS

NO. 5 BARS	2'-6"
NO. 6 BARS	3'-1"

PIER	ELEVATION A
1	673.29
2	672.65
3	672.10

LEGEND:
BOT. = BOTTOM
CLR. = CLEAR
E.F. = EACH FACE
EX. = EXISTING
SER. = SERIES
TYP. = TYPICAL

- NOTES:
- FOR FRAMING PLAN, SEE SHEET S-22.
 - FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET S-23.
 - FOR SLAB PLAN, SEE SHEET S-27.
 - FOR COLUMN REMOVAL AND REPLACEMENT DETAILS, SEE SHEET S-19 AND S-20.
 - FOR PRESTRESSED I-BEAM BEARING DETAILS, SEE SHEET S-34.
 - FOR PRESTRESSED BOX BEAM CONNECTION AT PIER, SEE SHEET S-24.
 - FOR UTILITY DETAILS, SEE SHEETS U-3, U-4, U-6 AND U-20.
 - PLACE HAUNCH POUR FOR THE I-BEAM CONCURRENTLY WITH THE PIER DIAPHRAGM POUR. REBAR IN THE PIER DIAPHRAGM TO BE FIELD ADJUSTED AS NECESSARY TO AVOID INTERFERENCE WITH THE REINFORCING IN THE HAUNCH POUR.
 - PRESTRESSED BOX BEAM SEAT REINFORCING, SETTING ANCHOR DOWELS: REINFORCING STEEL IN THE VICINITY OF THE BOX BEAM BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR DOWEL HOLES.

REVISIONS:

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DATE: 6-1-2007
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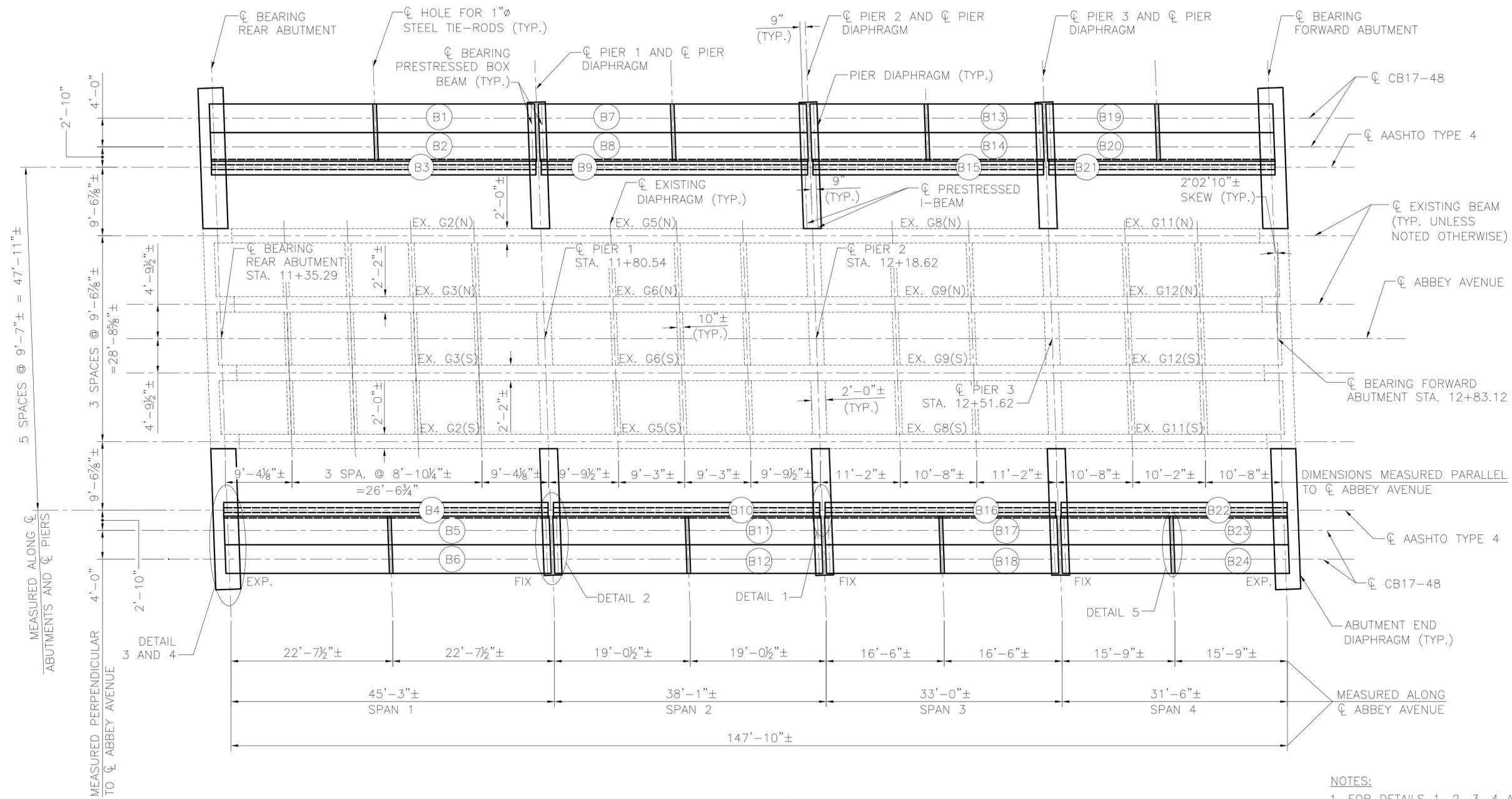
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PIER DIAPHRAGM DETAILS

REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS

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FRAMING PLAN
1/8" = 1'-0"

LEGEND:
EX. = EXISTING
N = NORTH
S = SOUTH
TYP. = TYPICAL

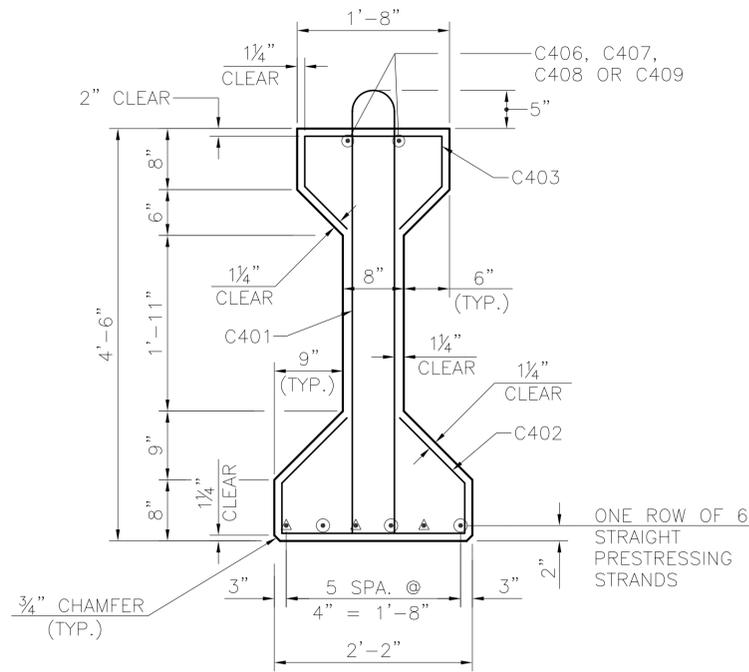
NOTES:

1. FOR DETAILS 1, 2, 3, 4 AND 5 SEE SHEET S-25.
2. FOR UTILITY SUPPORT DETAILS, SEE SHEET U-1.
3. FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET S-23.
4. FOR PRESTRESSED BOX BEAM DETAILS, SEE SHEET S-24.
5. FOR PRESTRESSED I-BEAM BEARING DETAILS, SEE SHEET S-34.
6. FOR PRESTRESSED BOX BEAM BEARING DETAILS, SEE SHEET S-35.
7. FOR PIER DIAPHRAGM DETAILS, SEE SHEET S-21.
8. FOR ABUTMENT DIAPHRAGM, SEE SHEET S-14.
9. FOR TRANSVERSE SECTION, SEE SHEET S-26.

<p>REVISIONS:</p>	
<p>DRAWN: JFM</p>	<p>CHECKED: BMG</p>
<p>APPROVED: RHW</p>	<p>DATE: 6-1-2007</p>
<p>JOB NO.:</p>	
<p>DESIGN AGENCY HNTB 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816</p>	
<p>ENGINEERING & PROJECT MANAGEMENT DIVISION</p>	
<p>RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY</p>	
<p>FRAMING PLAN</p>	
<p>REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS</p>	
<p>RTA PROJ 29D</p>	<p>BID PAC</p>
<p>SHEET S-22</p>	

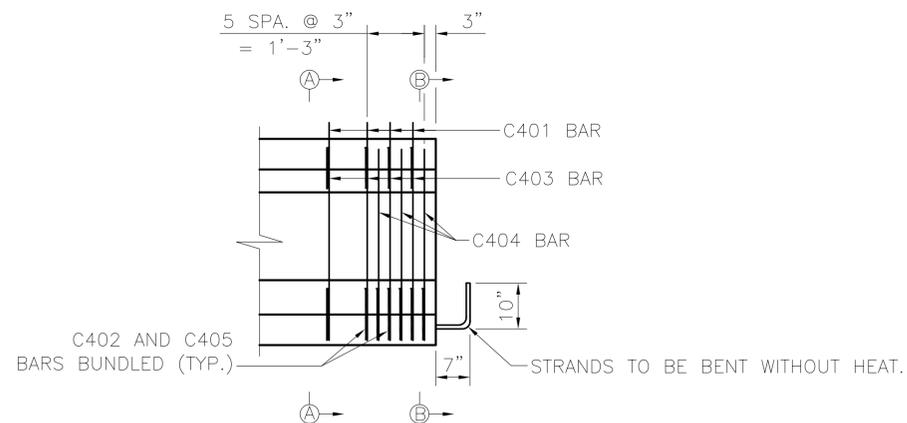
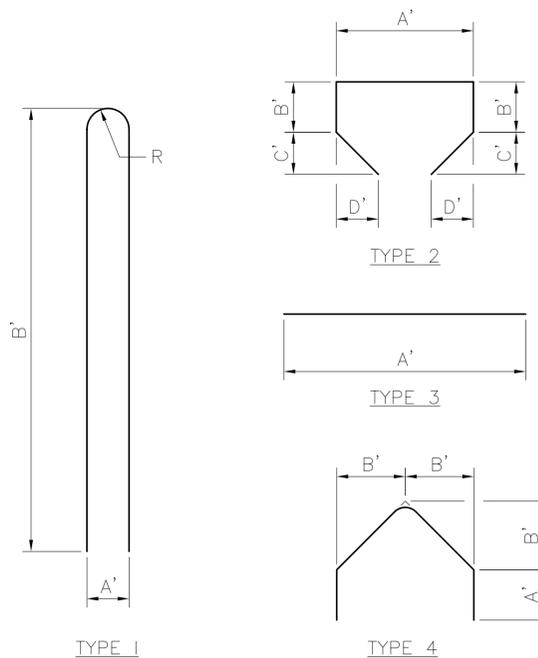
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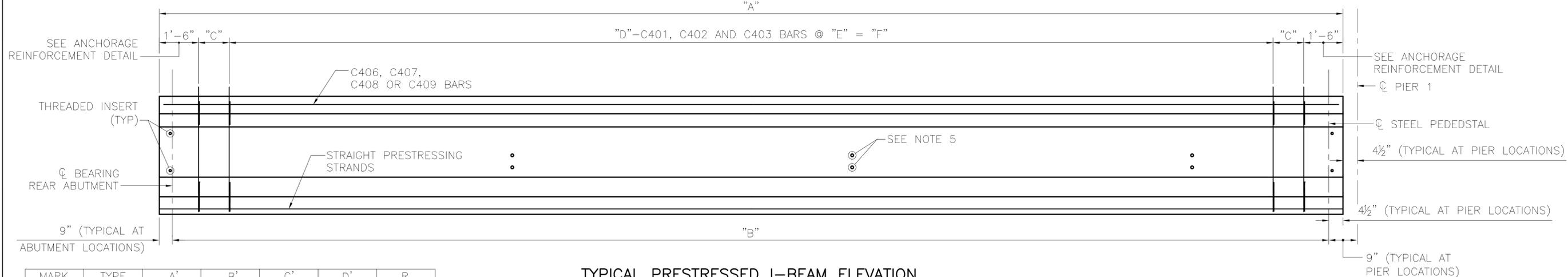
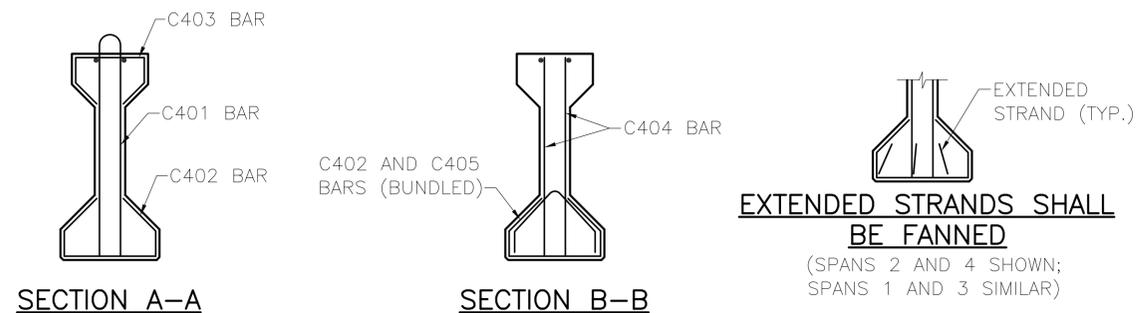


AASHTO TYPE 4 (54") - ALL SPANS

○ - EXTENDED STRAND AT FORWARD STATION ENDS OF BEAMS AT PIERS
 △ - EXTENDED STRAND AT BACK STATION ENDS OF BEAMS AT PIERS



ANCHORAGE REINFORCEMENT DETAIL
 DETAIL SHOWN AT PIER 1; ALL OTHER LOCATIONS SIMILAR



TYPICAL PRESTRESSED I-BEAM ELEVATION

AASHTO TYPE 4 (54")
 (SPAN 1 SHOWN; SPANS 2, 3 AND 4 SIMILAR)

MARK	TYPE	A'	B'	C'	D'	R
C401	1	5 1/2"	4'-10"			2 1/4"
C402	2	1'-11 1/2"	6 1/4"	8 1/2"	8 1/2"	
C403	2	1'-5 1/2"	5 1/2"	5 1/2"	5 1/2"	
C404	3	4'-2 3/4"				
C405	4	6 1/4"	11 3/4"			
C406	3	45'-3"				
C407	3	37'-0"				
C408	3	31'-11"				
C409	3	31'-6"				

BEAM MARK	SPAN	NO. RQD.	DIMENSIONS						APPROXIMATE WEIGHT (LBS.)
			A	B	C	D	E	F	
B3	1	1	45'-7 1/2"	44'-6"	1'-3 3/4"	21	2'-0"	40'-0"	37,504
B4	1	1	45'-7 1/2"	44'-6"	1'-3 3/4"	21	2'-0"	40'-0"	37,504
B9	2	1	37'-4"	36'-7"	1'-2"	17	2'-0"	32'-0"	30,688
B10	2	1	37'-4"	36'-7"	1'-2"	17	2'-0"	32'-0"	30,688
B15	3	1	32'-3"	31'-6"	1'-7 1/2"	14	2'-0"	26'-0"	26,510
B16	3	1	32'-3"	31'-6"	1'-7 1/2"	14	2'-0"	26'-0"	26,510
B21	4	1	31'-10 1/2"	30'-9"	1'-5 1/4"	14	2'-0"	26'-0"	26,201
B22	4	1	31'-10 1/2"	30'-9"	1'-5 1/4"	14	2'-0"	26'-0"	26,201

BEAM DETAILS												
BEAM MARK	NO. OF STRANDS	CONCRETE STRENGTHS (psi)		C401 BARS RQD.	C402 BARS RQD.	C403 BARS RQD.	C404 BARS RQD.	C405 BARS RQD.	C406 BARS RQD.	C407 BARS RQD.	C408 BARS RQD.	C409 BARS RQD.
		f'ci	f'c									
SPAN 1												
B3	6	4,000	5,500	27	33	27	12	12	2	0	0	0
B4	6	4,000	5,500	27	33	27	12	12	2	0	0	0
SPAN 2												
B9	6	4,000	5,500	23	29	23	12	12	0	2	0	0
B10	6	4,000	5,500	23	29	23	12	12	0	2	0	0
SPAN 3												
B15	6	4,000	5,500	20	26	20	12	12	0	0	2	0
B16	6	4,000	5,500	20	26	20	12	12	0	0	2	0
SPAN 4												
B21	6	4,000	5,500	20	26	20	12	12	0	0	0	2
B22	6	4,000	5,500	20	26	20	12	12	0	0	0	2

LEGEND:
 RQD. = REQUIRED

- NOTES:
- FOR ADDITIONAL DETAILS AND NOTES SEE ODOT STANDARD DRAWING PSID-1-99.
 - ALL STANDARD REINFORCING STEEL SHALL BE EPOXY COATED.
 - FOR GIRDER HAUNCH DETAIL, SEE SHEET S-29.
 - FOR FRAMING PLAN, SEE SHEET S-22.
 - FOR UTILITY SUPPORT DETAILS, SEE SHEET U-1.

REVISIONS:	

DRAWN: JFM	CHECKED: BMG	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:
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DESIGN AGENCY
HNTB 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816
 ENGINEERING & PROJECT
 MANAGEMENT DIVISION

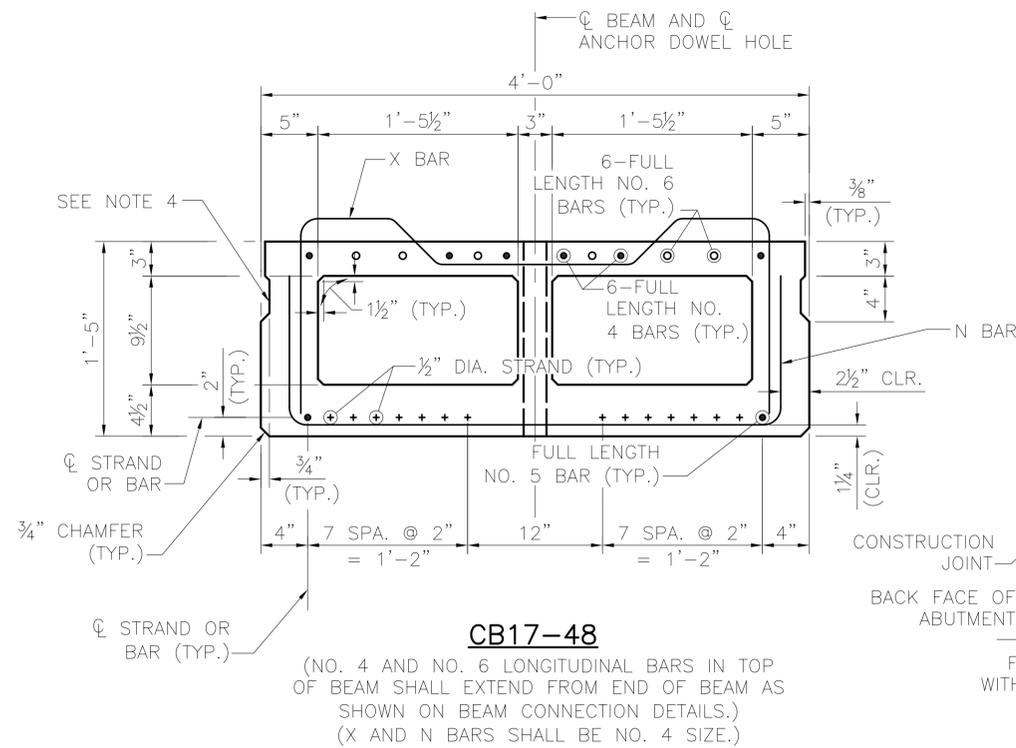
RTA
 GREATER CLEVELAND
 REGIONAL TRANSIT
 AUTHORITY

PRESTRESSED I-BEAM
 DETAILS
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
 BID PAC
 SHEET S-23

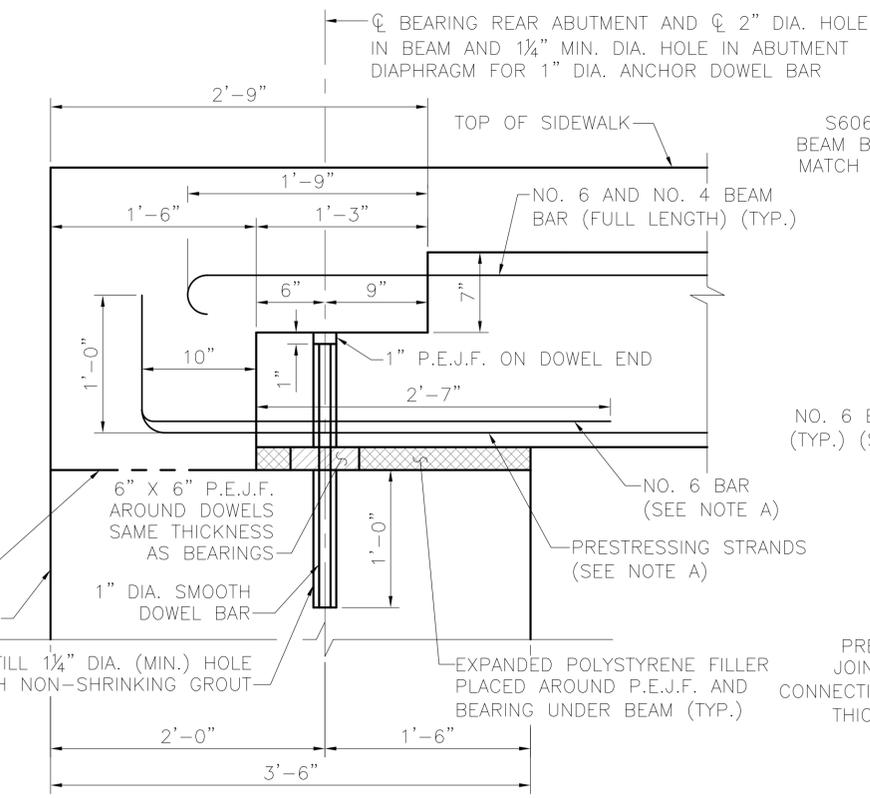
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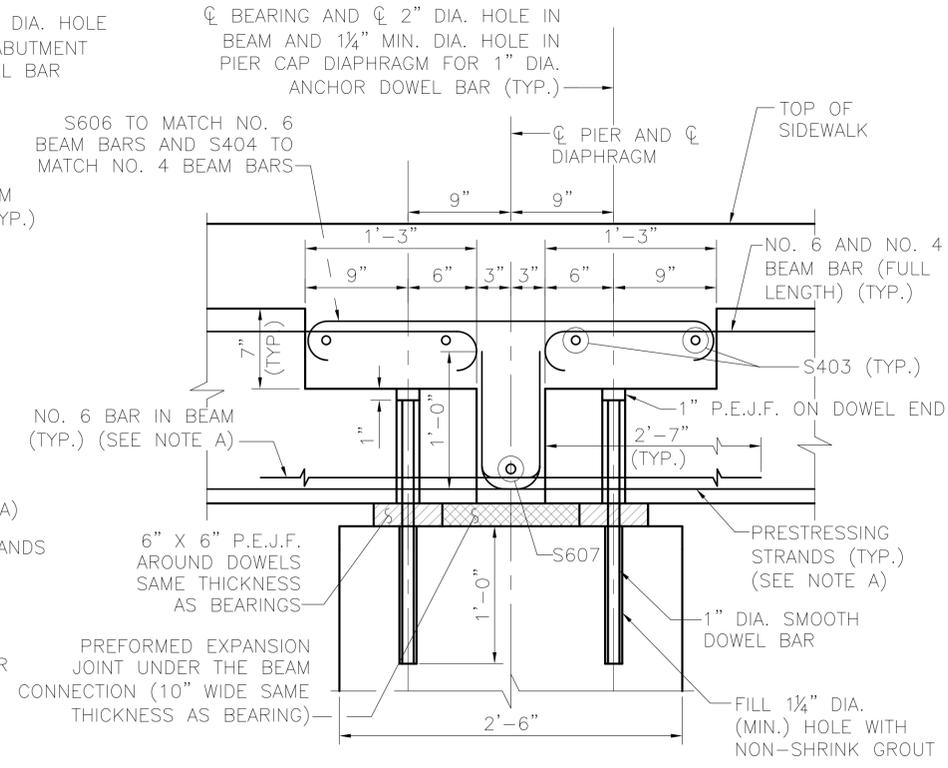
CB17-48

(NO. 4 AND NO. 6 LONGITUDINAL BARS IN TOP OF BEAM SHALL EXTEND FROM END OF BEAM AS SHOWN ON BEAM CONNECTION DETAILS.) (X AND N BARS SHALL BE NO. 4 SIZE.)



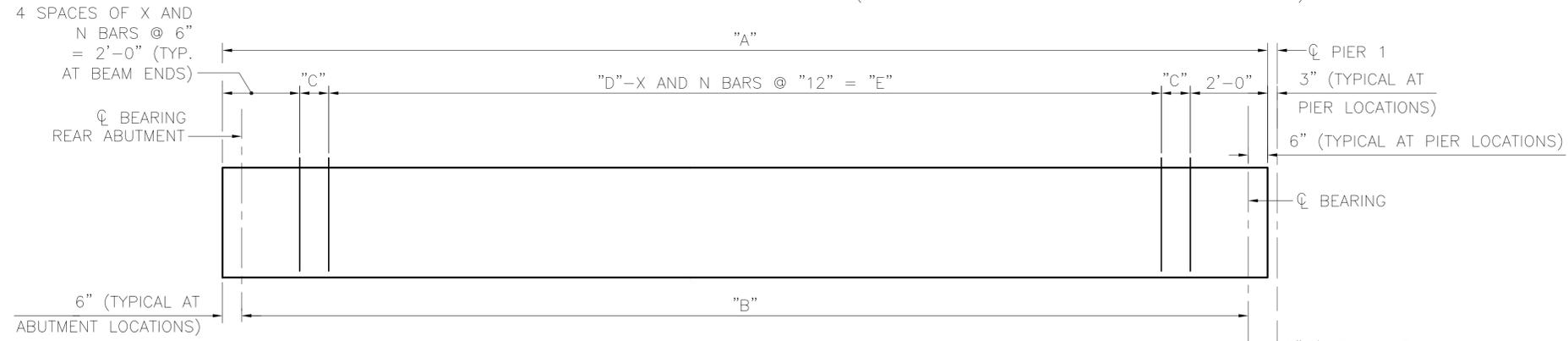
BOX BEAM CONNECTION AT ABUTMENTS

(REAR ABUTMENT SHOWN; FORWARD ABUTMENT SIMILAR) (SIDEWALK AND ABUTMENT REINFORCING NOT SHOWN)



BOX BEAM CONNECTION AT PIER

(PIER 1 SHOWN; PIERS 2 AND 3 SIMILAR) (SIDEWALK AND PIER DIAPHRAGM REINFORCING NOT SHOWN)

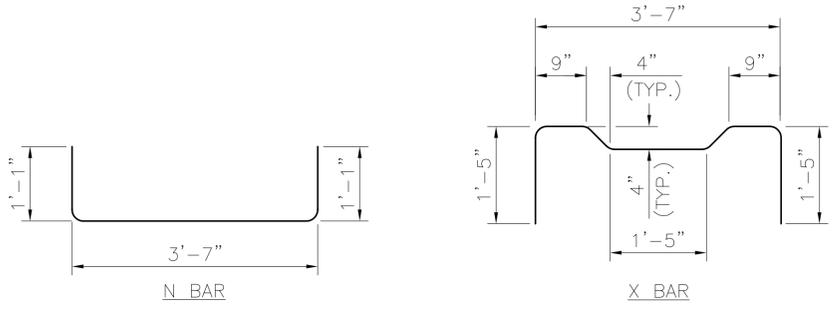


TYPICAL PRESTRESSED BOX BEAM ELEVATION

(SPAN 1 SHOWN; SPANS 2, 3 AND 4 SIMILAR)

BEAM MARK	SPAN	NO. RQD.	BEAM DETAILS DIMENSIONS				
			A	B	C	D	E
B1	1	1	45'-6"	44'-6"	9"	41	40'-0"
B2	1	1	45'-6"	44'-6"	9"	41	40'-0"
B5	1	1	45'-6"	44'-6"	9"	41	40'-0"
B6	1	1	45'-6"	44'-6"	9"	41	40'-0"
B7	2	1	37'-7"	36'-7"	9 1/2"	33	32'-0"
B8	2	1	37'-7"	36'-7"	9 1/2"	33	32'-0"
B11	2	1	37'-7"	36'-7"	9 1/2"	33	32'-0"
B12	2	1	37'-7"	36'-7"	9 1/2"	33	32'-0"
B13	3	1	32'-6"	31'-6"	9"	28	27'-0"
B14	3	1	32'-6"	31'-6"	9"	28	27'-0"
B17	3	1	32'-6"	31'-6"	9"	28	27'-0"
B18	3	1	32'-6"	31'-6"	9"	28	27'-0"
B19	4	1	31'-9"	30'-9"	10 1/2"	27	26'-0"
B20	4	1	31'-9"	30'-9"	10 1/2"	27	26'-0"
B23	4	1	31'-9"	30'-9"	10 1/2"	27	26'-0"
B24	4	1	31'-9"	30'-9"	10 1/2"	27	26'-0"

DESIGN DATA FOR CB17-48 BOX BEAMS				
	SPAN 1	SPAN 2	SPAN 3	SPAN 4
NO. OF 270ksi 1/2"Ø STRANDS (AREA = 0.153 IN ²)	14	14	14	14
STRAND POSITION	SEE DIAGRAM			
TOTAL NUMBER OF DEBONDED STRANDS	0	0	0	0



LEGEND:
 DIA. = DIAMETER
 MIN. = MINIMUM
 P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
 TYP. = TYPICAL

NOTE A:
 PROVIDE 6 NO. 6 BARS @ EACH BEAM END. NO. 6 BARS SHALL BE LOCATED ON TOP OF N-BARS AND SHALL BE UNIFORMLY SPACED ACROSS THE BEAM.

AT THE FABRICATOR'S OPTION, STRANDS MAY BE EXTENDED AND BENT UP IN LIEU OF NO. 6 BARS. A MINIMUM OF 6 STRANDS SHALL BE BENT UP FOR EACH BEAM AND SHALL BE STAGGERED IN ABUTTING BEAM ENDS TO AVOID INTERFERENCE.

- NOTES:**
- FOR ADDITIONAL DETAILS AND NOTES SEE ODOT STANDARD DRAWING PSBD-1-93.
 - FOR PRESTRESSED BOX BEAM BEARING DETAILS, SEE SHEET S-35.
 - ANCHOR DOWELS FOR PIERS AND ABUTMENTS WILL BE A FIXED DOWEL ANCHOR.
 - OMIT SHEAR KEY ON EXTERIOR FACE OF FASICA BEAMS.
 - FOR FRAMING PLAN, SEE SHEET S-22.
 - ALL REINFORCING BARS PROJECTING FROM THE BEAMS SHALL BE EPOXY COATED.
 - FOR REBAR SCHEDULE, SEE SHEET S-41.
 - FOR TRANSVERSE SECTION, SEE SHEET S-26.
 - ALL PREFORMED EXPANSION JOINT FILLER INCLUDED FOR PAYMENT WITH ITEM TS 515.

REVISIONS	

DESIGN AGENCY	JFM
CHECKED	BMG
APPROVED	RHW
DATE	6-1-2007
JOB NO.	

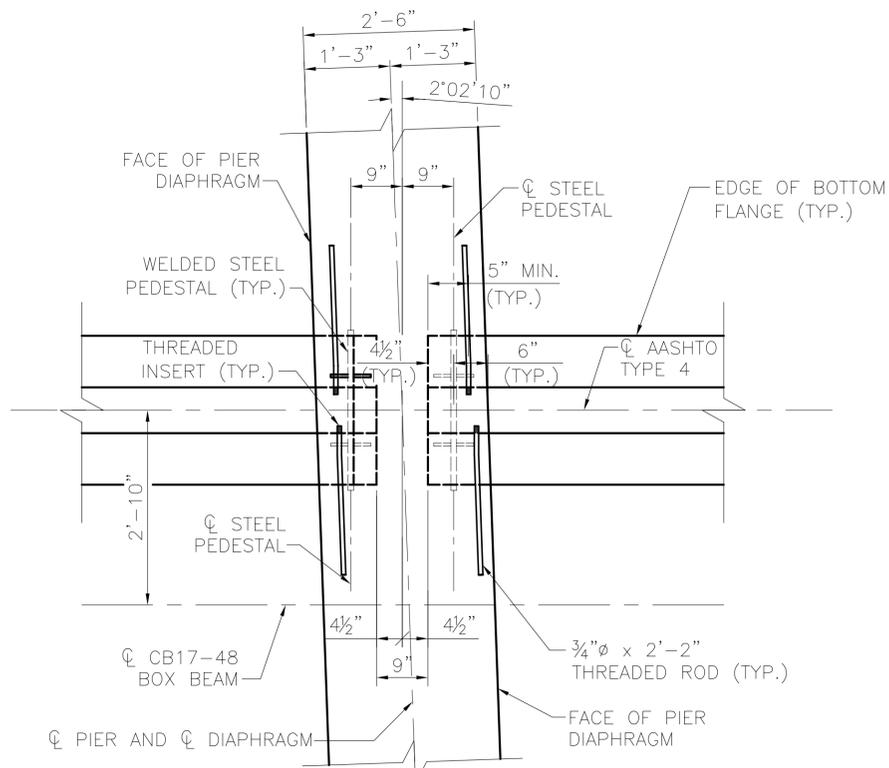
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ENGINEERING & PROJECT MANAGEMENT DIVISION

RTA
 GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY

PRESTRESSED BOX BEAM DETAILS
 REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS

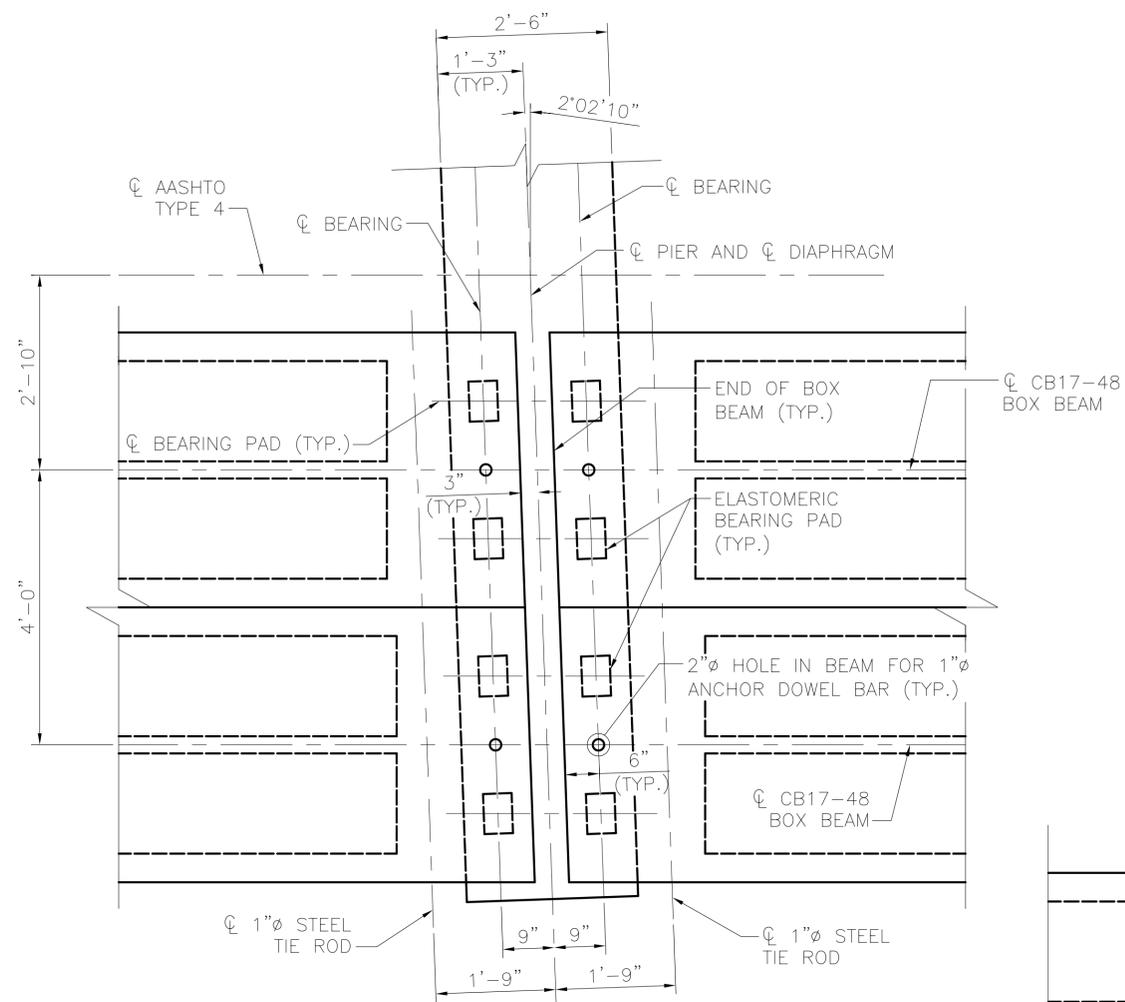
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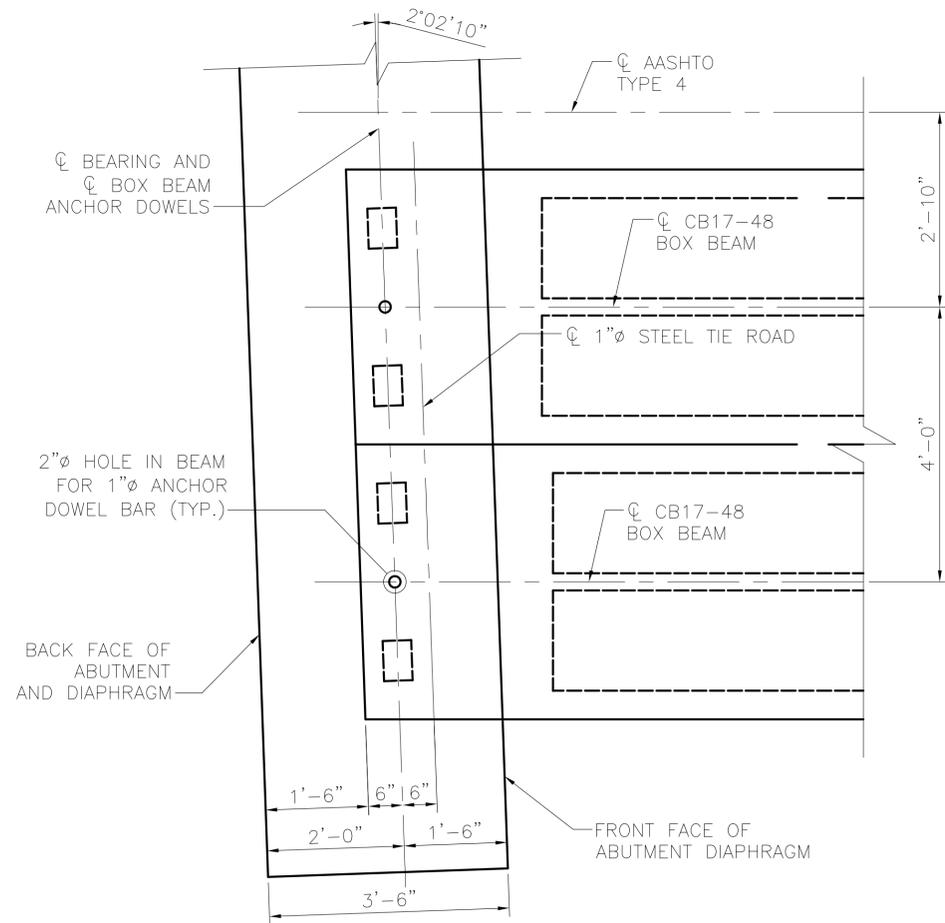
DETAIL 1

(PIER 2 SOUTH SIDE SHOWN, NORTH SIDE OPPOSITE HAND; PIERS 1 AND 3 SIMILAR)
(REINFORCING STEEL NOT SHOWN FOR CLARITY)



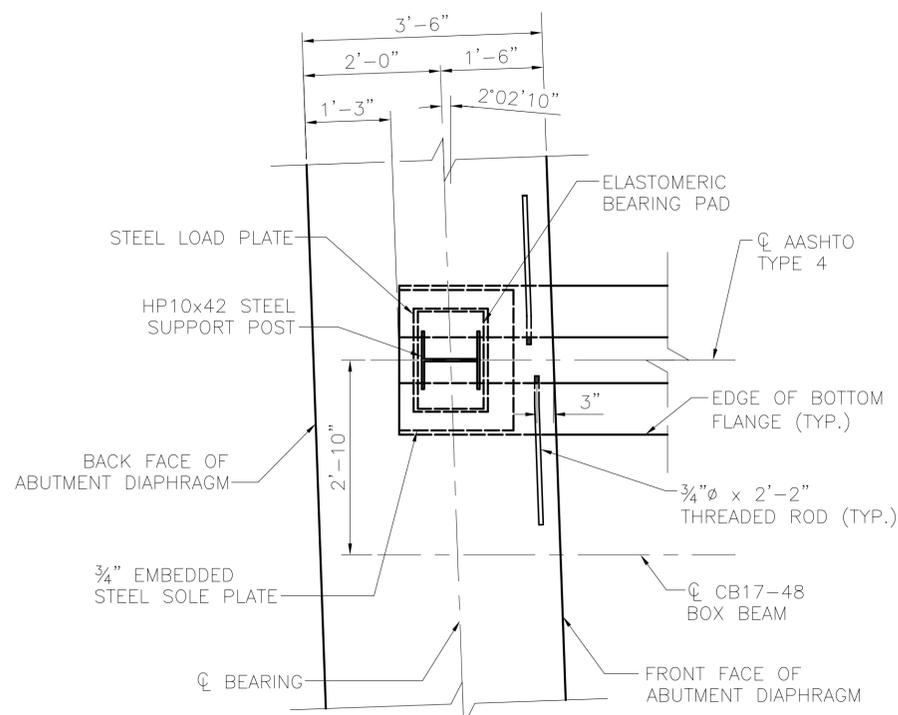
DETAIL 2

(PIER 1 SOUTH SIDE SHOWN, NORTH SIDE OPPOSITE HAND;
PIERS 2 AND 3 SIMILAR)



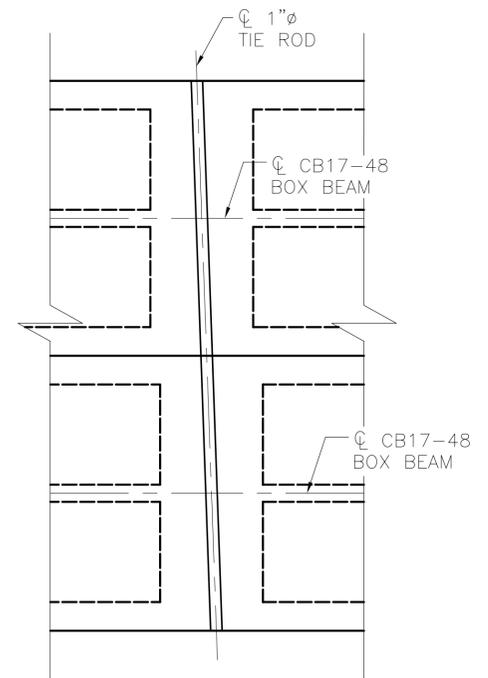
DETAIL 3

(REAR ABUTMENT SOUTH SIDE SHOWN, NORTH SIDE OPPOSITE HAND; FORWARD ABUTMENT SIMILAR)



DETAIL 4

(REAR ABUTMENT SOUTH SIDE SHOWN, NORTH SIDE OPPOSITE HAND; FORWARD ABUTMENT SIMILAR)



DETAIL 5

(ALL INTERMEDIATE TRANSVERSE TIE RODS SIMILAR)

LEGEND:
MIN. = MINIMUM
TYP. = TYPICAL

NOTES:

1. FOR ADDITIONAL DETAILS AND NOTES, SEE ODOT STANDARD DRAWINGS PSID-1-99 AND PSBD-1-93.
2. FOR PRESTRESSED BOX BEAM BEARING DETAILS, SEE SHEET S-35.
3. FOR FRAMING PLAN, SEE SHEET S-22.
4. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET S-14.
5. FOR PIER DIAPHRAGM DETAILS, SEE SHEET S-21.
6. FOR PRESTRESSED I-BEAM BEARING DETAILS, SEE SHEET S-34.



REVISIONS:	
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	APPROVED: RHW
	DATE: 6-1-2007
	JOB NO.:

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HNTB
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CLEVELAND, OHIO 44114-1816

ENGINEERING & PROJECT
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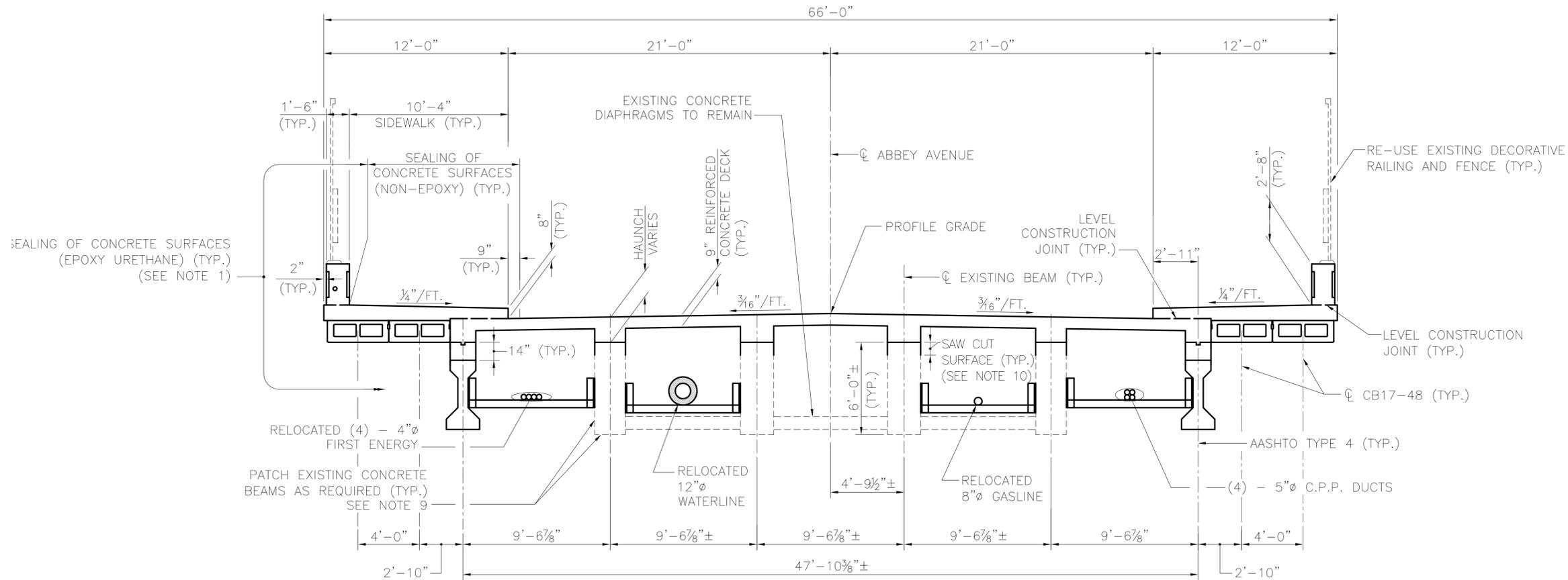
RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

BEAM DETAILS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ
29D
SHEET
S-25

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TRANSVERSE SECTION

(PIER DIAPHRAGM AND SIDEWALK SUPPORT BRACKETS NOT SHOWN)

NOTES:

1. SEAL ENTIRE BOTTOM PERIMETER OF SUPERSTRUCTURE EXCLUDING BOTTOM OF DECK.
2. FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET S-23.
3. FOR PRESTRESSED BOX BEAM DETAILS, SEE SHEET S-24.
4. FOR SCREED INFORMATION, SEE SHEET S-28.
5. FOR DECK REINFORCING, SEE SHEET S-27.
6. FOR FRAMING PLAN, SEE SHEET S-22.
7. FOR PARAPET RECESS PANEL INFORMATION AND CRACK CONTROL JOINT SPACING, SEE SHEET S-32.
8. FOR RAILING DETAILS, SEE SHEET S-33.
9. FOR BEAM PATCHING DETAILS, SEE SHEET S-5.
10. FOR DECK REMOVAL DETAILS, SEE SHEET S-11.

REVISIONS:

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APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	

DESIGN AGENCY
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 REGIONAL TRANSIT
 AUTHORITY

TRANSVERSE SECTION

REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

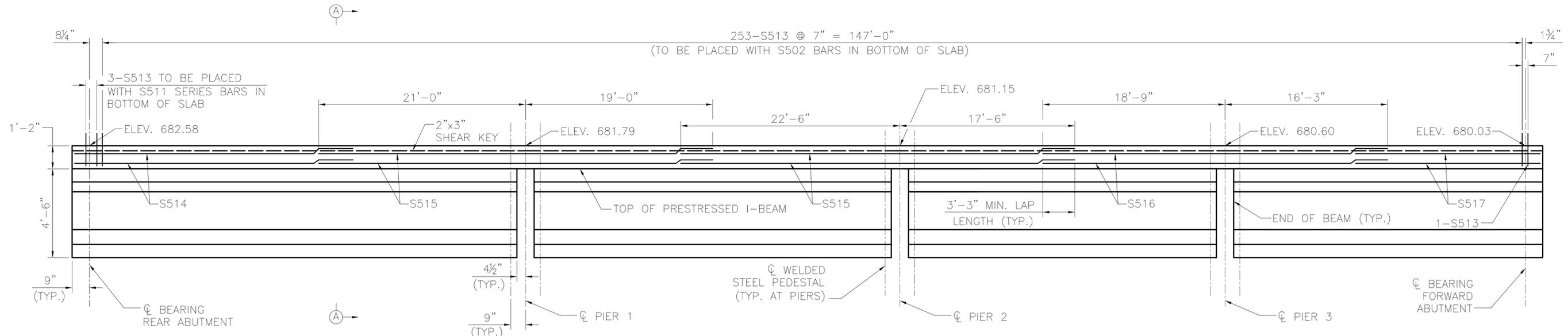
RTA
 PROJ
 29D

BID
 PAC

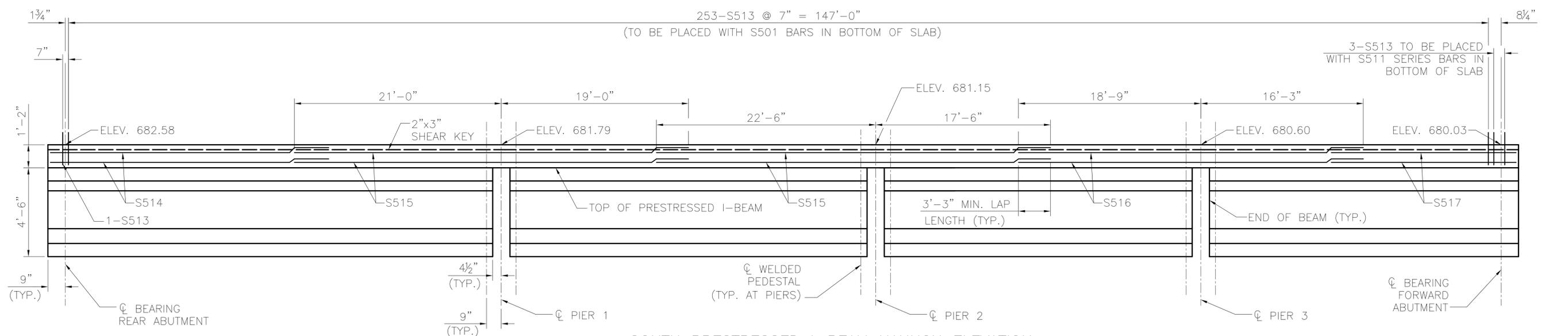
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 S-26

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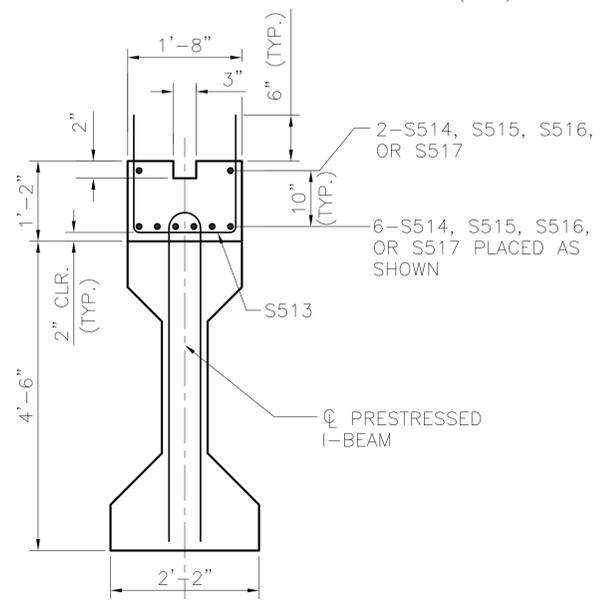
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NORTH PRESTRESSED I-BEAM HAUNCH ELEVATION
 (ABUTMENT AND PIER DIAPHRAGMS NOT SHOWN)



SOUTH PRESTRESSED I-BEAM HAUNCH ELEVATION
 (ABUTMENT AND PIER DIAPHRAGMS NOT SHOWN)



SECTION A-A
 (NORTH I-BEAM SHOWN; SOUTH I-BEAM SIMILAR)

LEGEND:
 CLR. = CLEAR
 ELEV. = ELEVATION
 EQ. = EQUAL
 SPA. = SPACES
 TYP. = TYPICAL

NOTES:
 1. FOR FRAMING PLAN, SEE SHEET S-22.
 2. FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET S-23.
 3. FOR SLAB PLAN, SEE SHEET S-27.

REVISIONS:

DRAWN: JFM	CHECKED: BMG	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:
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DESIGN AGENCY
HNTB
 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816

ENGINEERING & PROJECT
 MANAGEMENT DIVISION

RTA
 GREATER CLEVELAND
 REGIONAL TRANSIT
 AUTHORITY

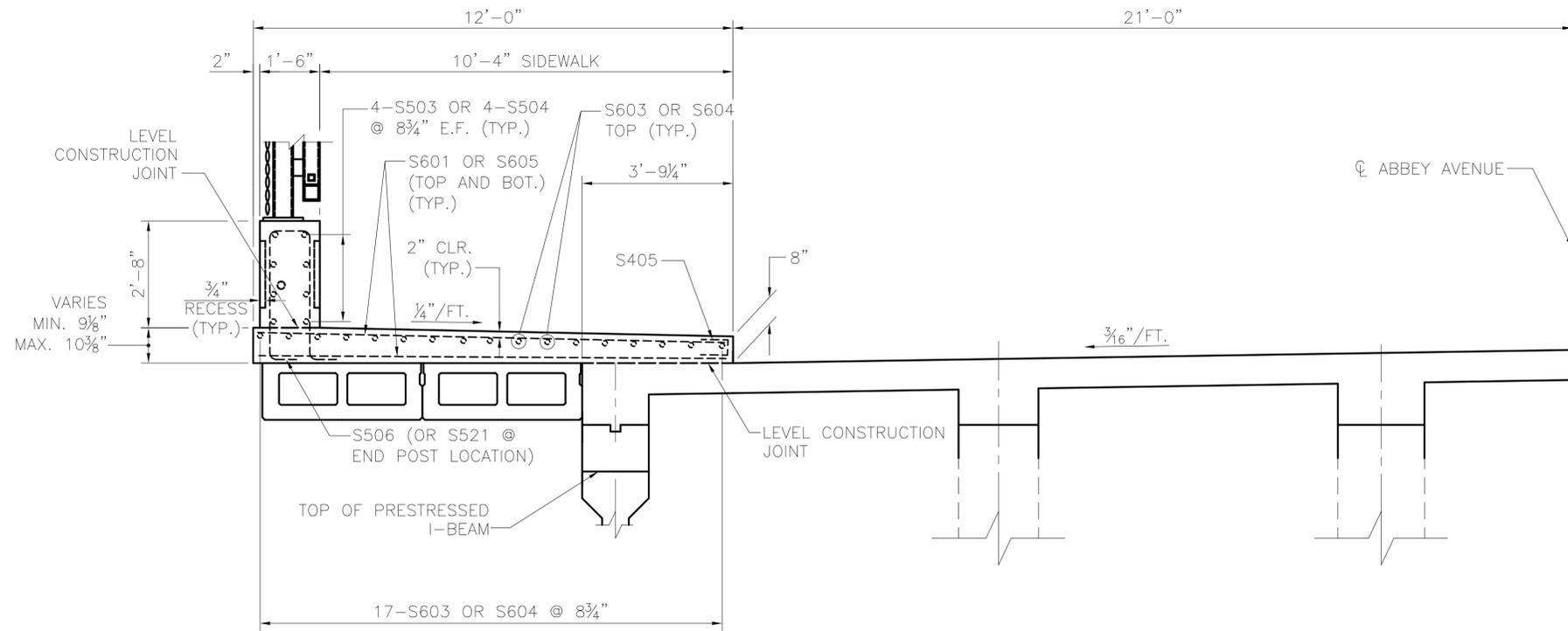
PRESTRESSED I-BEAM
 HAUNCH DETAIL

REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

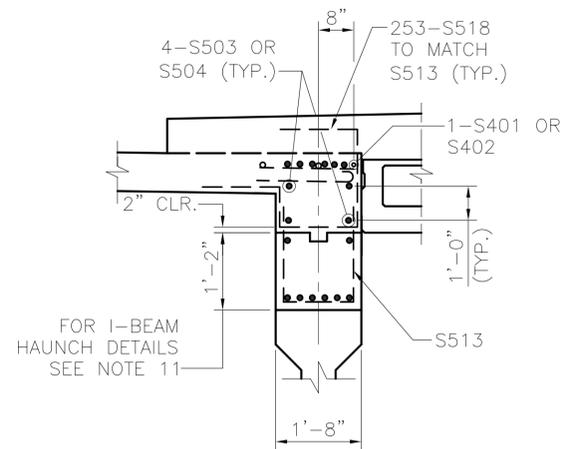
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 SHEET S-29

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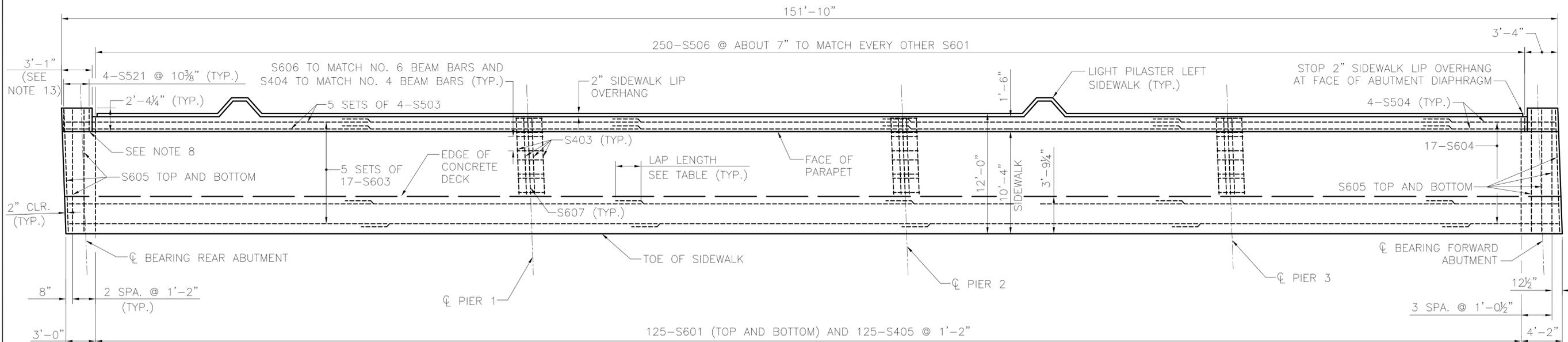
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SECTION A-A
(DECK AND HAUNCH REINFORCEMENT NOT SHOWN)



DETAIL 1
(RIGHT PRESTRESSED I-BEAM SHOWN;
LEFT PRESTRESSED I-BEAM OPPOSITE HAND)



SIDEWALK PLAN
(LEFT SIDEWALK SHOWN; RIGHT SIDEWALK OPPOSITE HAND)
EXCEPT AS NOTED

LEGEND:
BOT. = BOTTOM
CLR. = CLEAR
MAX. = MAXIMUM
MIN. = MINIMUM
TYP. = TYPICAL

REQUIRED MINIMUM LAP LENGTHS	
NO. 4 BARS	3'-0"
NO. 5 BARS	3'-3"
NO. 6 BARS	3'-3"

- NOTES:**
- FOR PRESTRESSED I-BEAM DETAILS, SEE SHEETS S-23.
 - FOR PRESTRESSED BOX BEAM DETAILS, SEE SHEET S-24.
 - FOR REBAR SCHEDULE, SEE SHEET S-42.
 - FOR PIER DIAPHRAGM DETAILS, SEE SHEET S-21.

- FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEETS S-14.
- FOR PARAPET RECESS PANEL INFORMATION AND CRACK CONTROL JOINT SPACING, SEE SHEET S-32.
- FOR SCREED ELEVATIONS, SEE SHEET S-28.
- FOR RAILING CONCRETE END POST DETAILS, SEE SHEET S-31.
- VERTICAL PARAPET REINFORCING STEEL SHALL CLEAR THE CONTROL JOINTS BY THREE INCHES MINIMUM. OBTAIN CLEARANCE BY FIELD ADJUSTING THE REINFORCING STEEL SPACING.
- FOR DECK AND HAUNCH DETAILS, SEE SHEET S-29.
- FOR SLAB PLAN, SEE SHEET S-27.
- FOR FRAMING PLAN, SEE SHEET S-22.
- FINAL END POST DIMENSION MUST BE COORDINATED WITH RE-USE OF EXISTING RAILING.

REVISIONS:

DESIGN AGENCY

HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816

ENGINEERING & PROJECT
MANAGEMENT DIVISION

DRAWN: JFM
CHECKED: BMG
APPROVED: RHW
DATE: 6-1-2007
JOB NO.:

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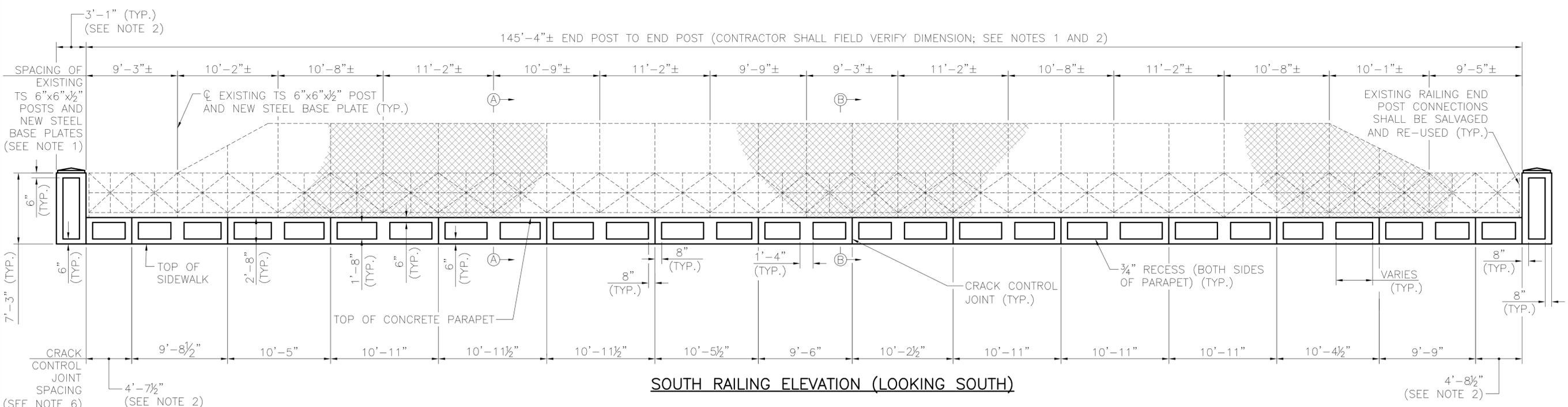
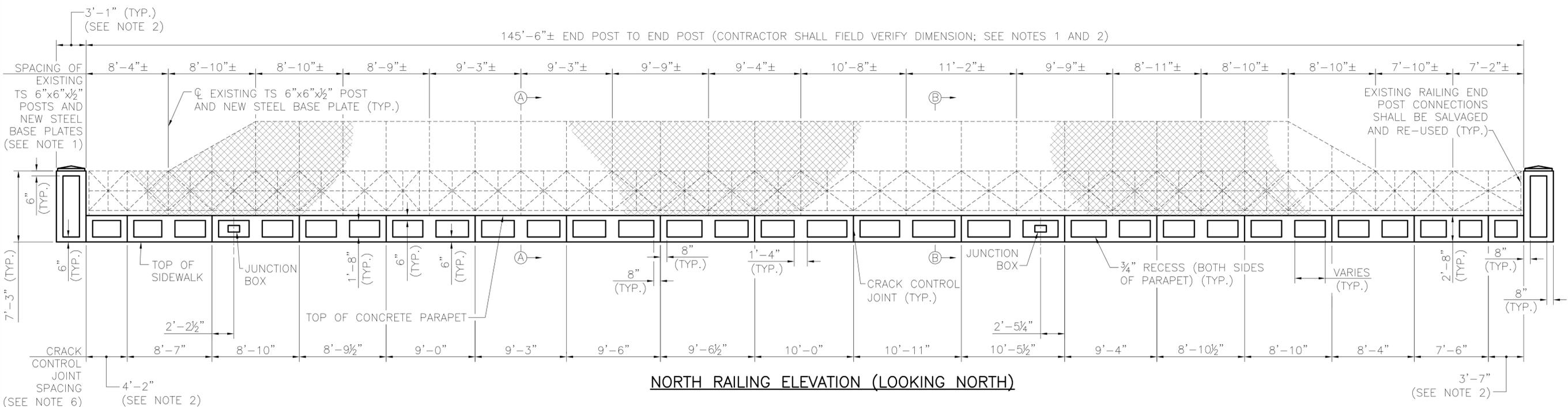
SIDEWALK DETAILS

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ
29D
SHEET
S-30

BID
PAC

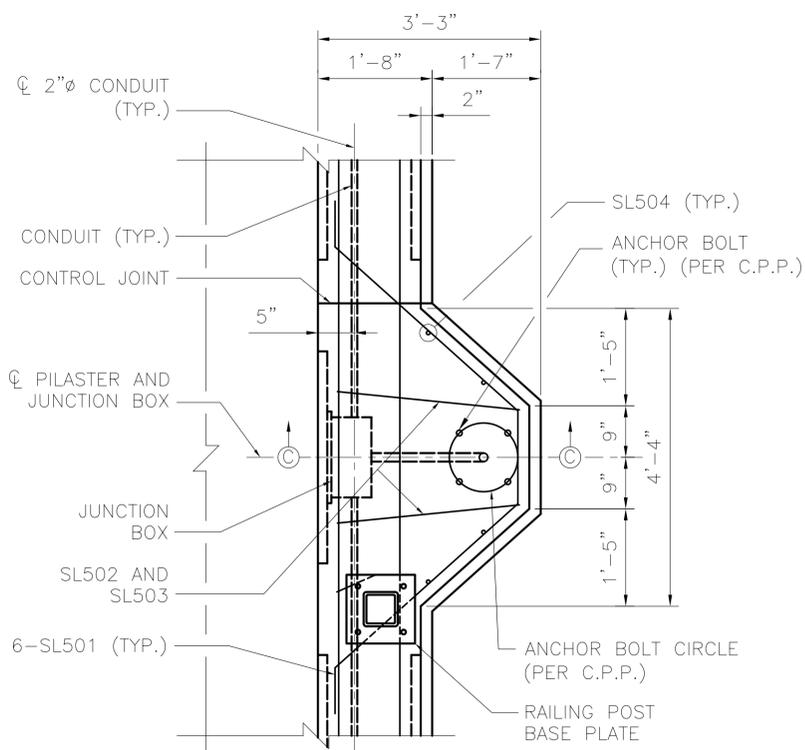
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- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND RE-USING THE EXISTING RAILING AS SHOWN IN THESE PLANS, EXCLUDING THE FENCE FABRIC WHICH SHALL BE REPLACED.
 2. FINAL CONCRETE END POST DIMENSION MUST COORDINATED WITH RE-USE OF EXISTING RAILING.
 3. FOR SECTIONS A-A AND B-B SEE SHEET S-33
 4. FOR RAILING CONCRETE END POST DETAILS, SEE SHEET S-31.
 5. FOR PARAPET REINFORCING DETAILS, SEE SHEET S-30.
 6. VERTICAL PARAPET REINFORCING STEEL SHALL CLEAR THE CONTROL JOINTS BY THREE INCHES MINIMUM. OBTAIN CLEARANCE BY FIELD ADJUSTING THE REINFORCING STEEL SPACING.

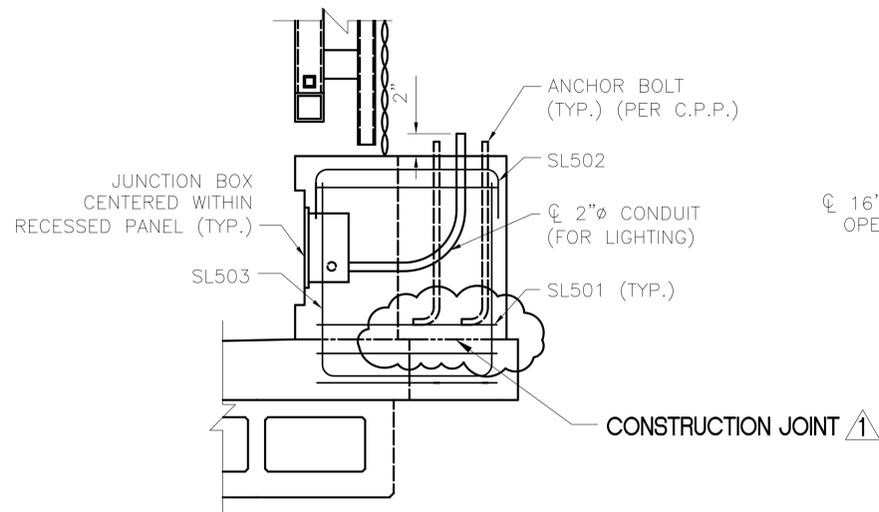
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DRAWN BY: JFM/CM	CHECKED BY: BMG/RHW	APPROVED BY: RHW	DATE: 6-1-2007	JOB NO.:					
DESIGN AGENCY 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816					GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY				
ENGINEERING & PROJECT MANAGEMENT DIVISION									
RAILING DETAILS - 1					REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS				
RTA PROJ 29D					BID PAC				
SHEET S-32									

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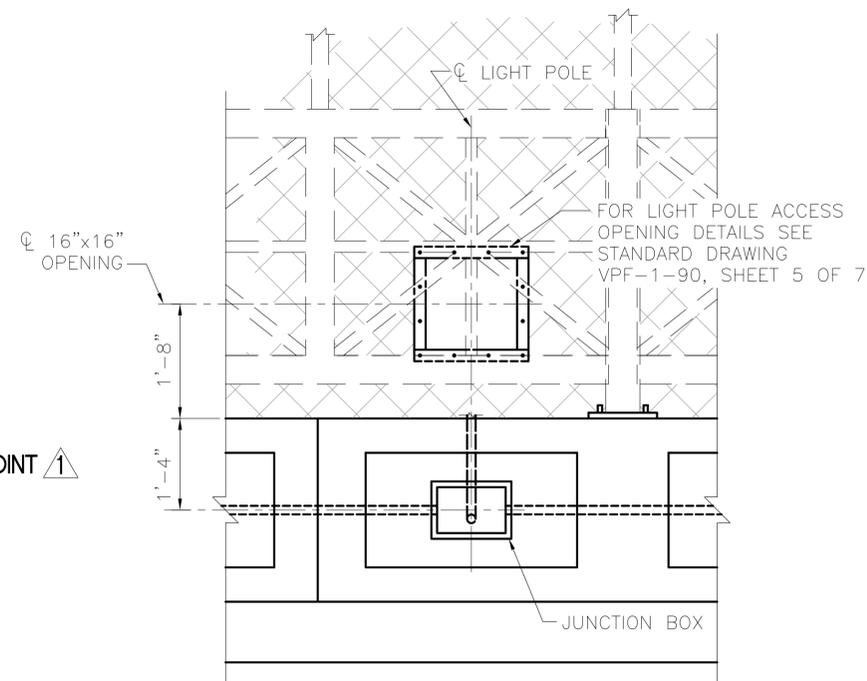


LIGHTING PILASTER AT NORTH PARAPET

PILASTER AT STA. 11+50.2, LT. SHOWN
 PILASTER AT STA. 12+31.8, LT. SIMILAR

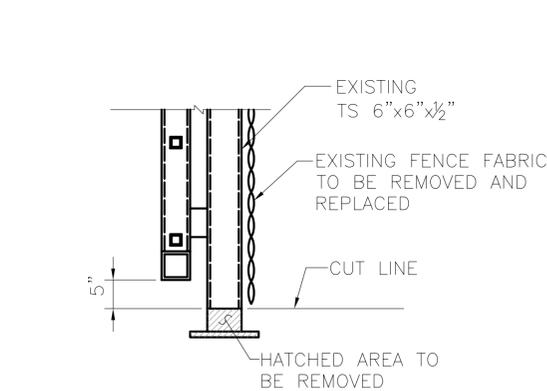


SECTION C-C
 (PARAPET AND DECK
 REINFORCING NOT SHOWN)

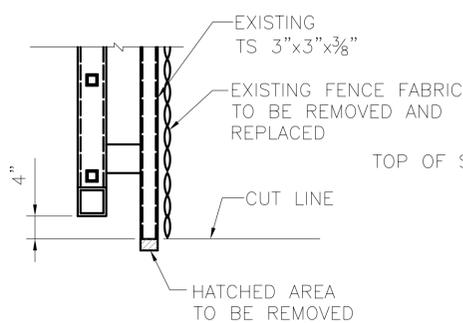


PILASTER AND ACCESS OPENING ELEVATION

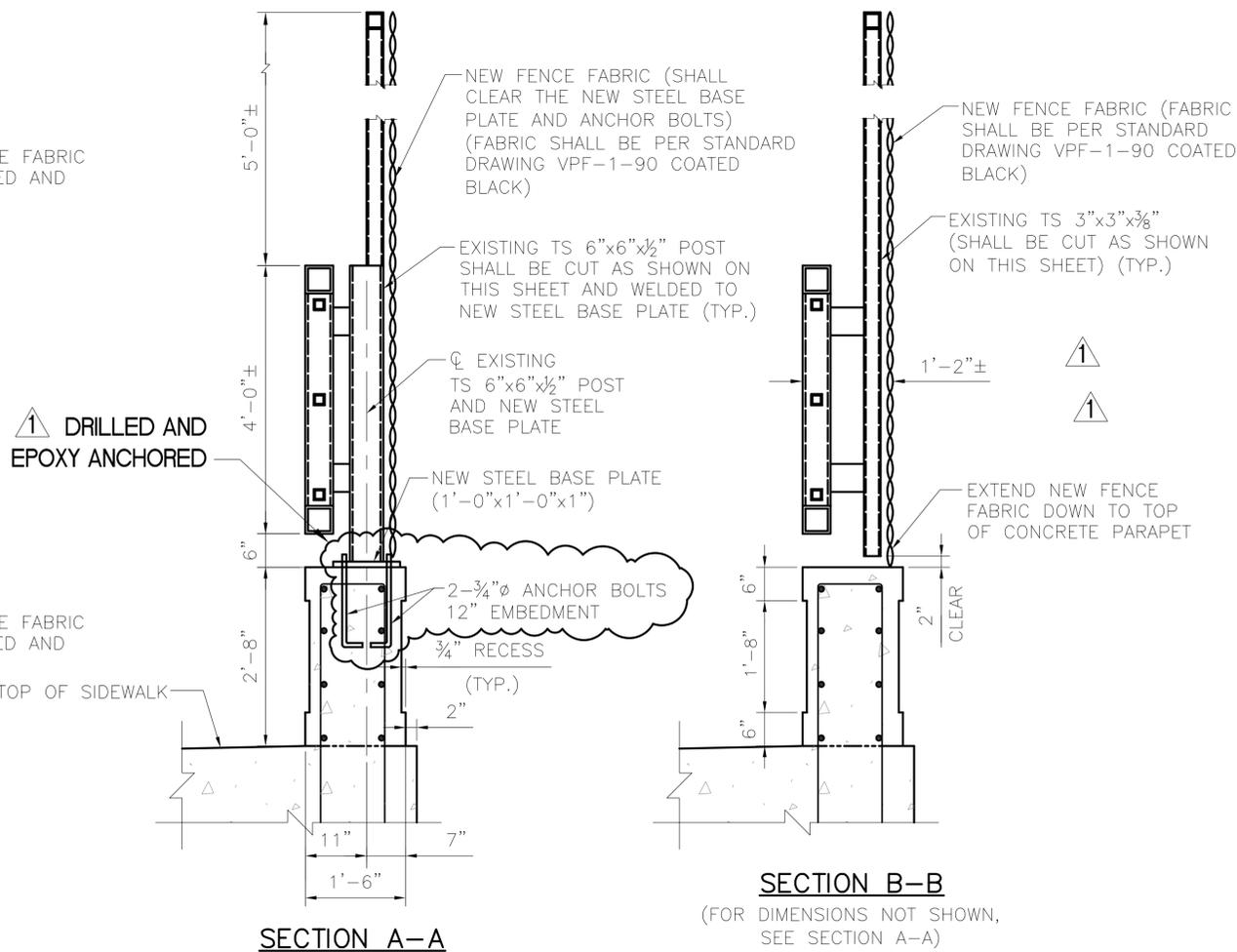
(LOOKING NORTH)
 STA. 11+50.2 SHOWN
 STA. 12+31.8 SIMILAR
 (COVER NOT SHOWN)



TYPICAL EXISTING TS 6"x6"x1/2" POST CUTTING DETAIL
 (SEE NOTE 1)

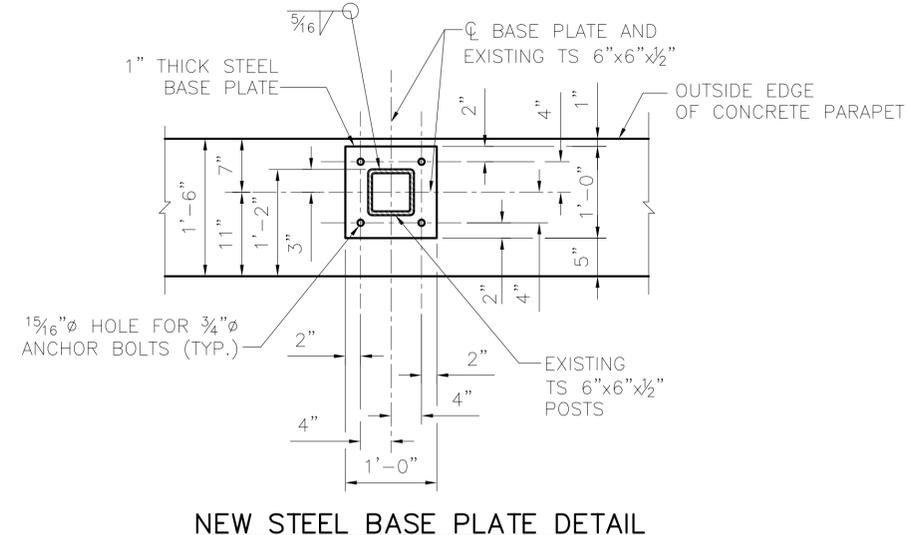


TYPICAL EXISTING TS 3"x3"x3/8" CUTTING DETAIL
 (SEE NOTE 1)



SECTION A-A

SECTION B-B
 (FOR DIMENSIONS NOT SHOWN,
 SEE SECTION A-A)



NEW STEEL BASE PLATE DETAIL

NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND RE-USING THE EXISTING RAILING AS SHOWN IN THESE PLANS, EXCLUDING THE FENCE FABRIC WHICH SHALL BE REPLACED.
2. FOR ADDITIONAL DETAILS AND NOTES SEE SHEET S-32.
3. FOR REINFORCING STEEL LIST SEE SHEET S-42.

REVISIONS:
 AS BUILT

DRAWN: JFM/CM
 CHECKED: BMG/RHW
 APPROVED: RHW
 DATE: 6-1-2007
 JOB NO.:

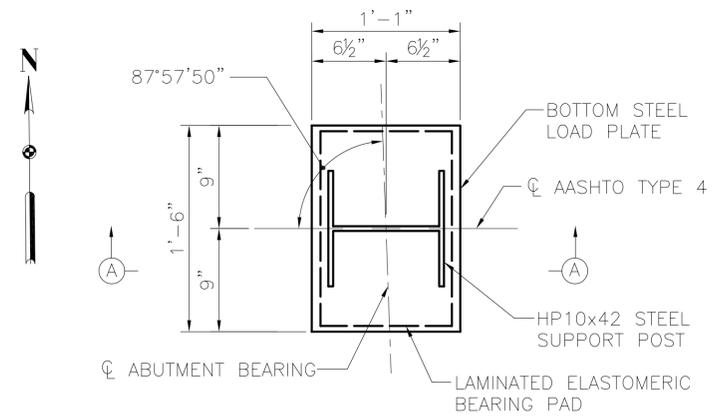
DESIGN AGENCY
HNTB
 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816
 ENGINEERING & PROJECT
 MANAGEMENT DIVISION

RTA
 GREATER CLEVELAND
 REGIONAL TRANSIT
 AUTHORITY

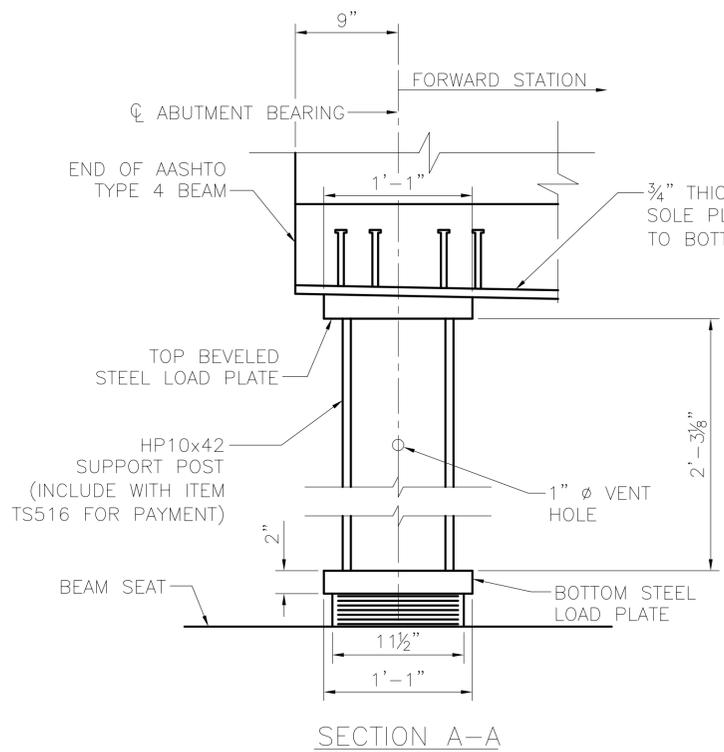
RAILING DETAILS - 2
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA PROJ
 29D
 SHEET
 S-33

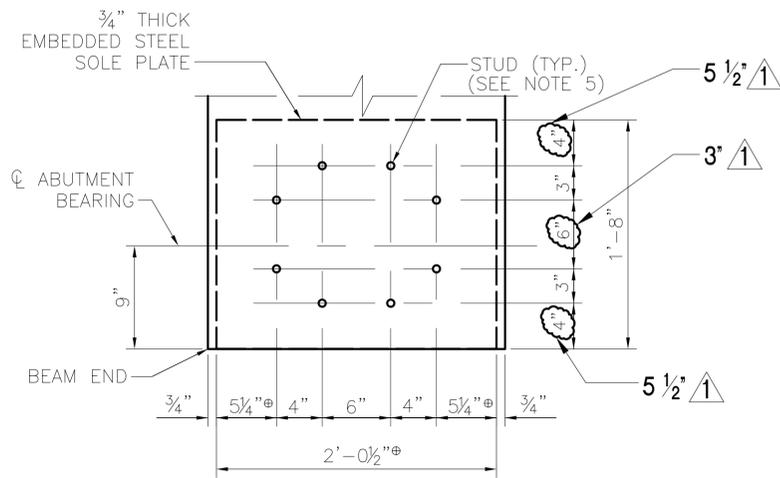
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PRESTRESSED I-BEAM BEARING PLAN VIEW
(REAR ABUTMENT SHOWN;
FORWARD ABUTMENT SIMILAR)

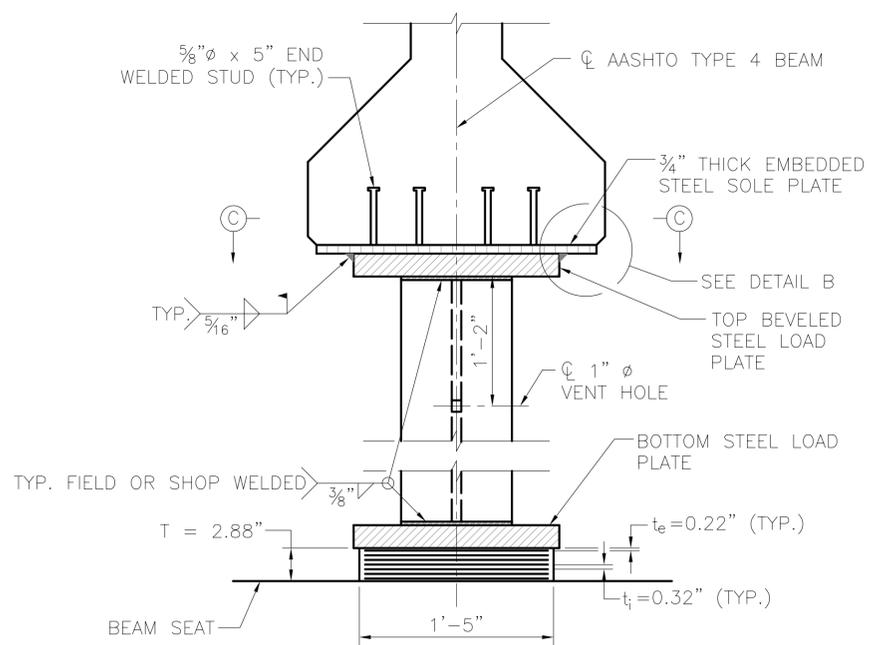


SECTION A-A



SECTION C-C

(BEARING PAD, LOAD PLATES, AND HP SECTION NOT SHOWN)
⊕ - IN ORDER TO ALLOW FOR FIT-UP, THE PLATE WIDTH MAY BE DECREASED BY 3/8". THESE DIMENSIONS SHALL BE CORRECTED ACCORDINGLY.

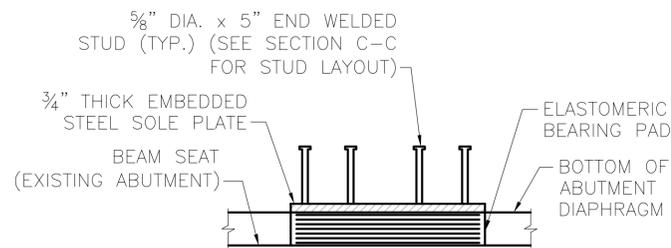


END VIEW AT ABUTMENT

(PAID FOR BY TS516 ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), I BEAM)

t_i = THICKNESS OF INTERNAL LAYER
 t_e = THICKNESS OF EXTERNAL LAYER
T = TOTAL THICKNESS OF ELASTOMERIC BEARING PAD
N = NUMBER OF STEEL LAMINATES = 7
INTERNAL STEEL LAMINATE THICKNESS = 0.0747"
DUROMETER OF ELASTOMER = 50

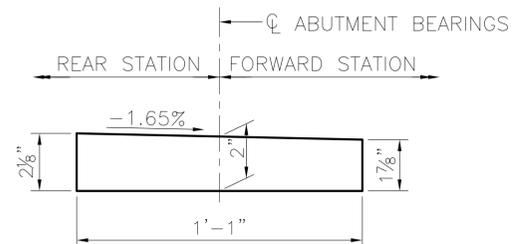
DL = 122 KIPS
LL = 17 KIPS
MAXIMUM DESIGN LOAD = 139 KIPS



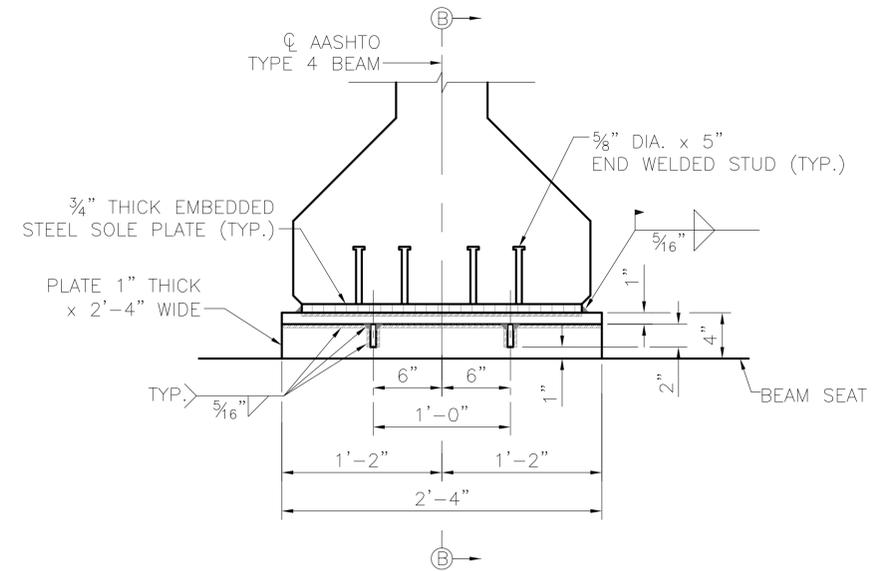
BEARINGS AT CORNER OF ABUTMENTS

(PAID FOR BY TS516 ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), ABUTMENT STEM)

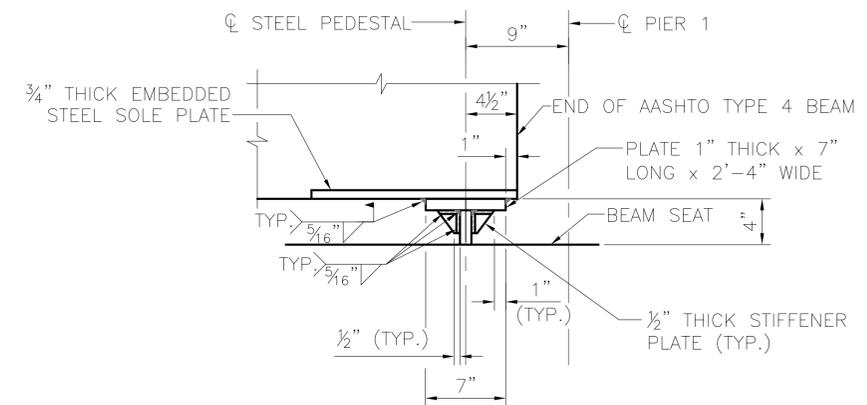
(FOR ELASTOMERIC BEARING DETAILS, SEE "END VIEW AT ABUTMENT" THIS SHEET)



TOP BEVELED STEEL LOAD PLATE DETAIL
(TYPICAL BOTH ABUTMENTS)
(LENGTH = 1'-1"; WIDTH = 1'-6")

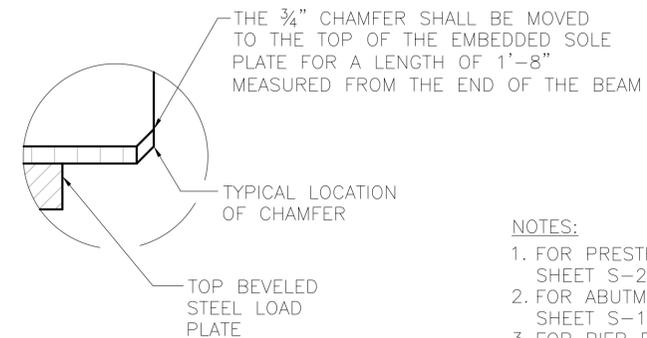


END VIEW AT PIER
(DIMENSIONS MEASURED AT ϕ STEEL PEDESTAL)



SECTION B-B

(DETAIL NOT PAID FOR SEPARATELY; INCIDENTAL TO COST OF TS515)
(REAR STATION OF ϕ PIER 1 SHOWN; FORWARD STATION OPPOSITE HAND)
(PIER 1 SHOWN; PIERS 2 AND 3 SIMILAR)
(STUDS NOT SHOWN; SEE SECTION C-C FOR STUD LAYOUT)



DETAIL B

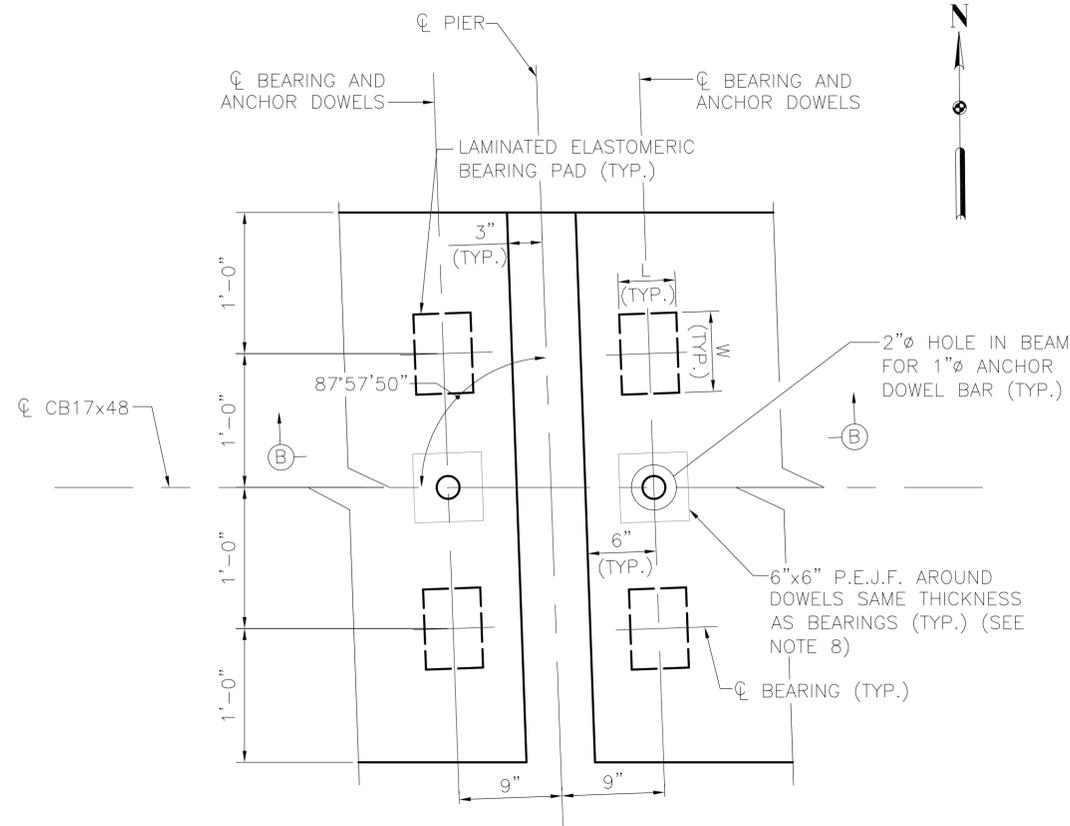
NOTES:

1. FOR PRESTRESSED I-BEAM DETAILS, SEE SHEET S-23.
2. FOR ABUTMENT DIAPHRAGM DETAILS, SEE SHEET S-14.
3. FOR PIER DIAPHRAGM DETAILS, SEE SHEET S-21.
4. FOR ADDITIONAL DETAILS AND NOTES, SEE ODOT STANDARD DRAWING PSID-1-99.
5. END WELDED STUDS MAY BE MOVED SLIGHTLY IN ORDER TO AVOID REINFORCING STEEL AND PRESTRESSING STRANDS.
6. OTHER NOTES PERTAINING TO THIS SHEET CAN BE FOUND ON SHEET S-35.

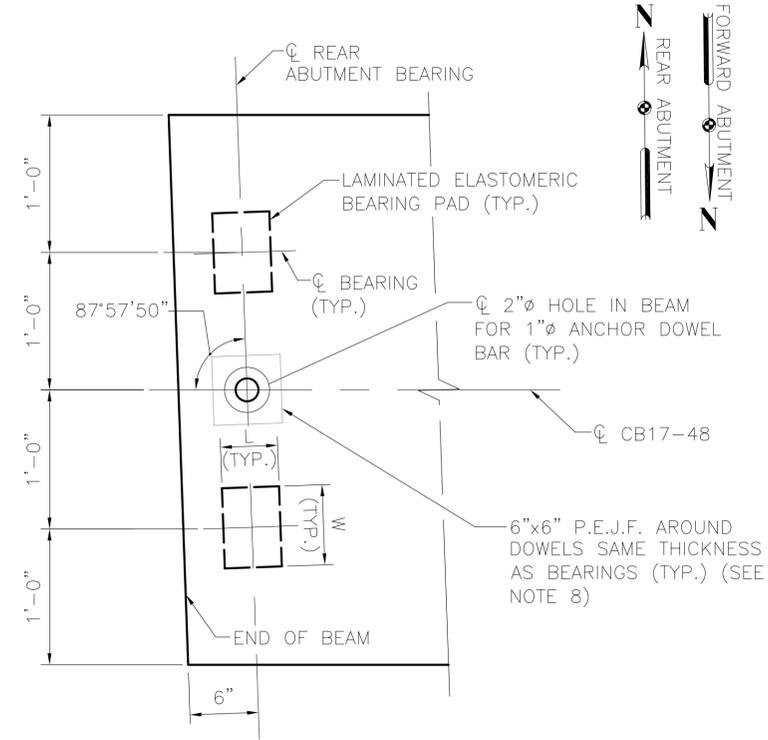
REVISIONS:		AS BUILT	
DRAWN: JFM	CHECKED: BMG	APPROVED: RHW	DATE: 6-1-2007
DESIGN AGENCY		ENGINEERING & PROJECT MANAGEMENT DIVISION	
HNTB		1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816	
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY		REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS	
RTA PROJ	BID PAC	29D	
SHEET		S-34	

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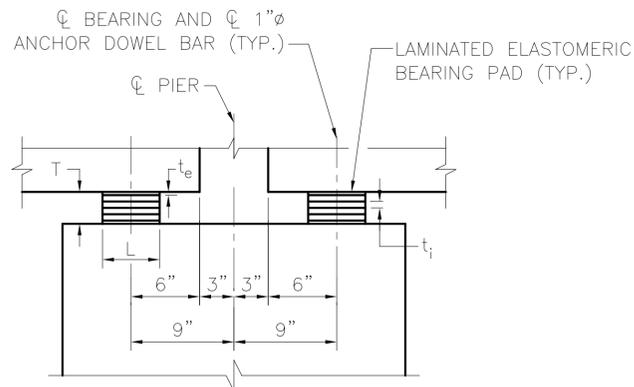


TYPICAL BOX BEAM PIER BEARING PLAN VIEW



TYPICAL BOX BEAM ABUTMENT BEARING PLAN VIEW

(REAR ABUTMENT SHOWN; FORWARD ABUTMENT OPPOSITE HAND)



SECTION B-B

ALL BOX BEAM BEARINGS PAID FOR BY TS516 ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), BOX BEAM

t_i = THICKNESS OF INTERNAL LAYER
 t_e = THICKNESS OF EXTERNAL LAYER
 T = TOTAL THICKNESS OF ELASTOMERIC BEARING
 N = NUMBER OF STEEL LAMINATES
 INTERNAL STEEL LAMINATE THICKNESS = 0.0747"
 DUROMETER OF ELASTOMER = 50

LOCATION	L	W	DL(kips)	LL(kips)	TOTAL(kips)	t_e	t_i	N	T
REAR ABUTMENT	6"	8"	15.4	4.4	19.8	0.14	0.30	5	1.85"
PIER 1	6"	8"	17.7	4.7	22.4	0.14	0.30	5	1.85"
PIER 2	5"	6½"	12.9	4.3	17.2	0.14	0.25	5	1.65"
PIER 3	5"	6½"	12.8	4.4	17.2	0.14	0.25	5	1.65"
FORWARD ABUTMENT	5"	6½"	10.5	3.7	14.2	0.14	0.25	5	1.65"

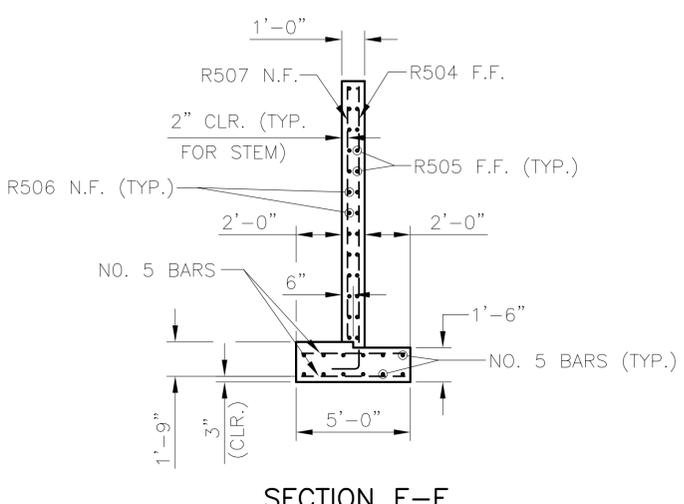
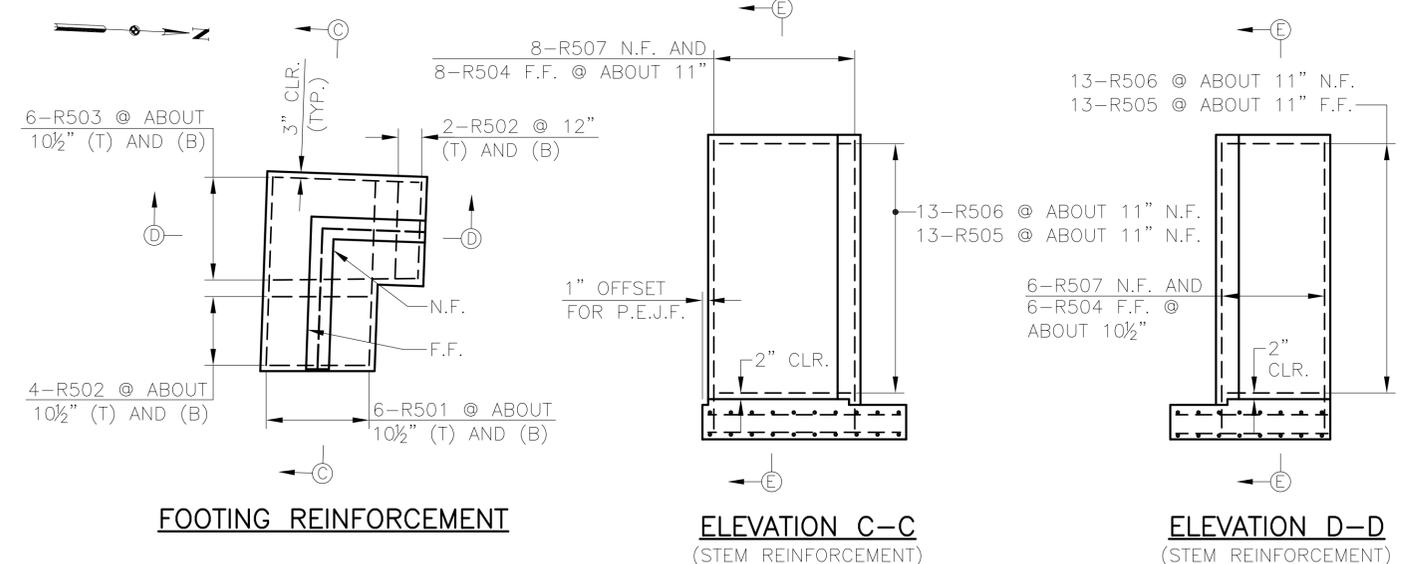
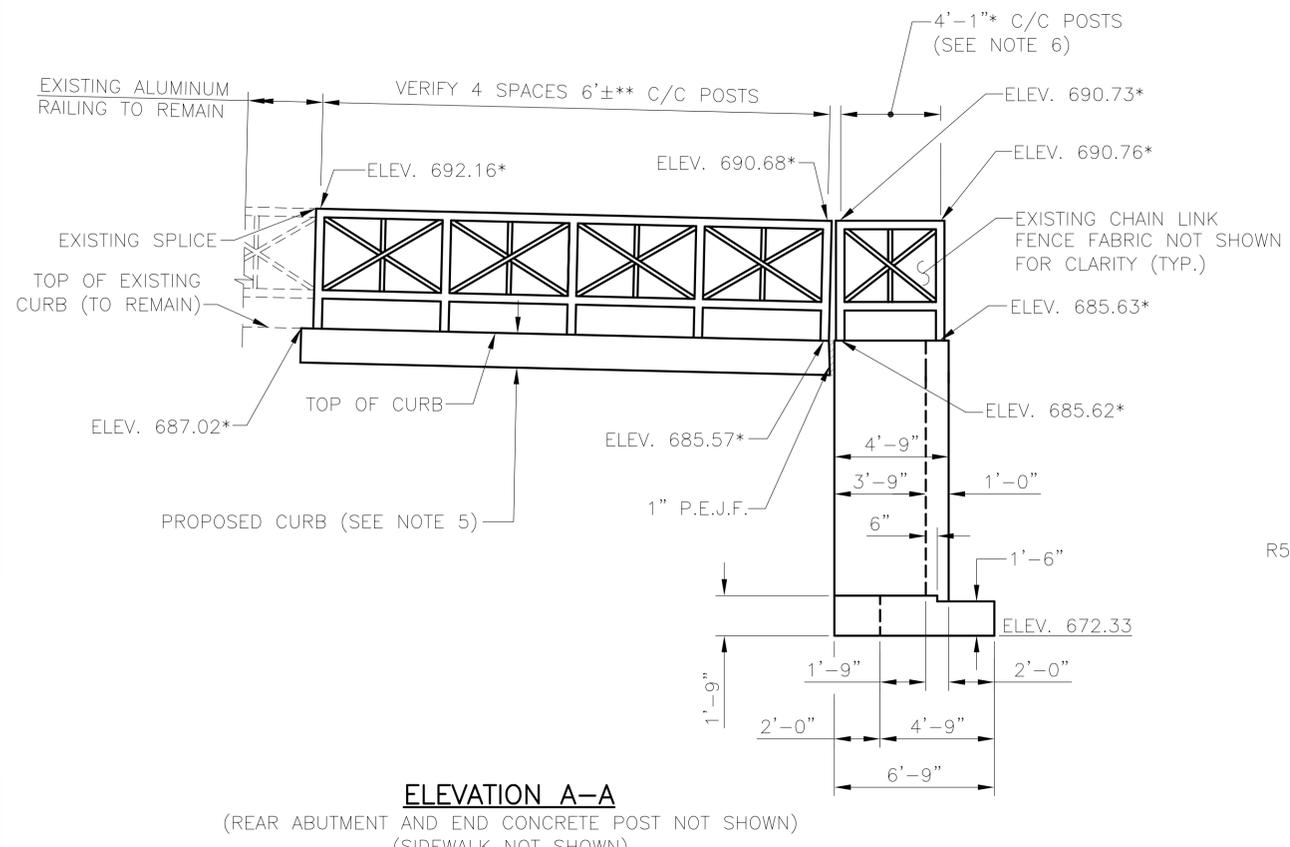
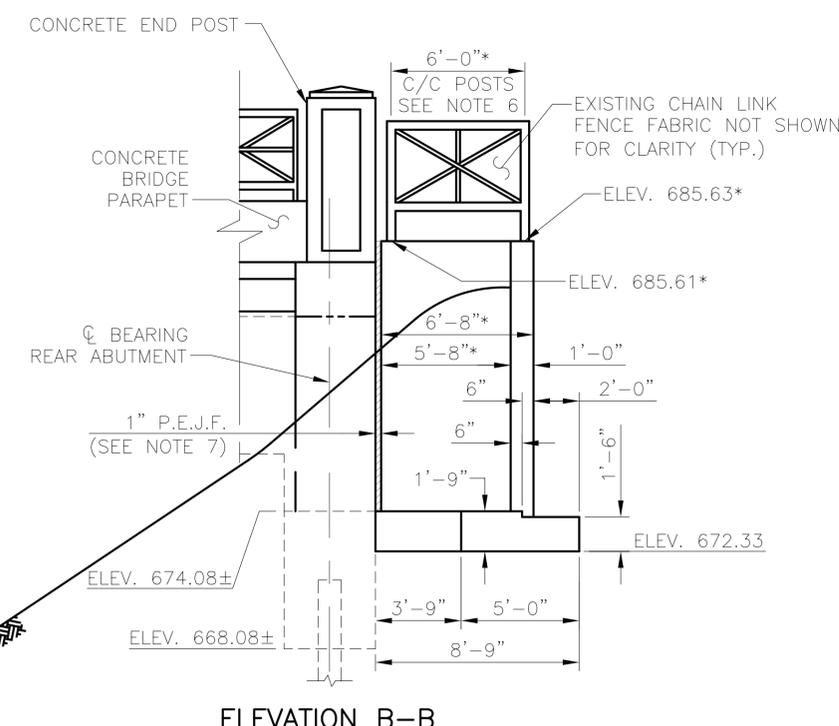
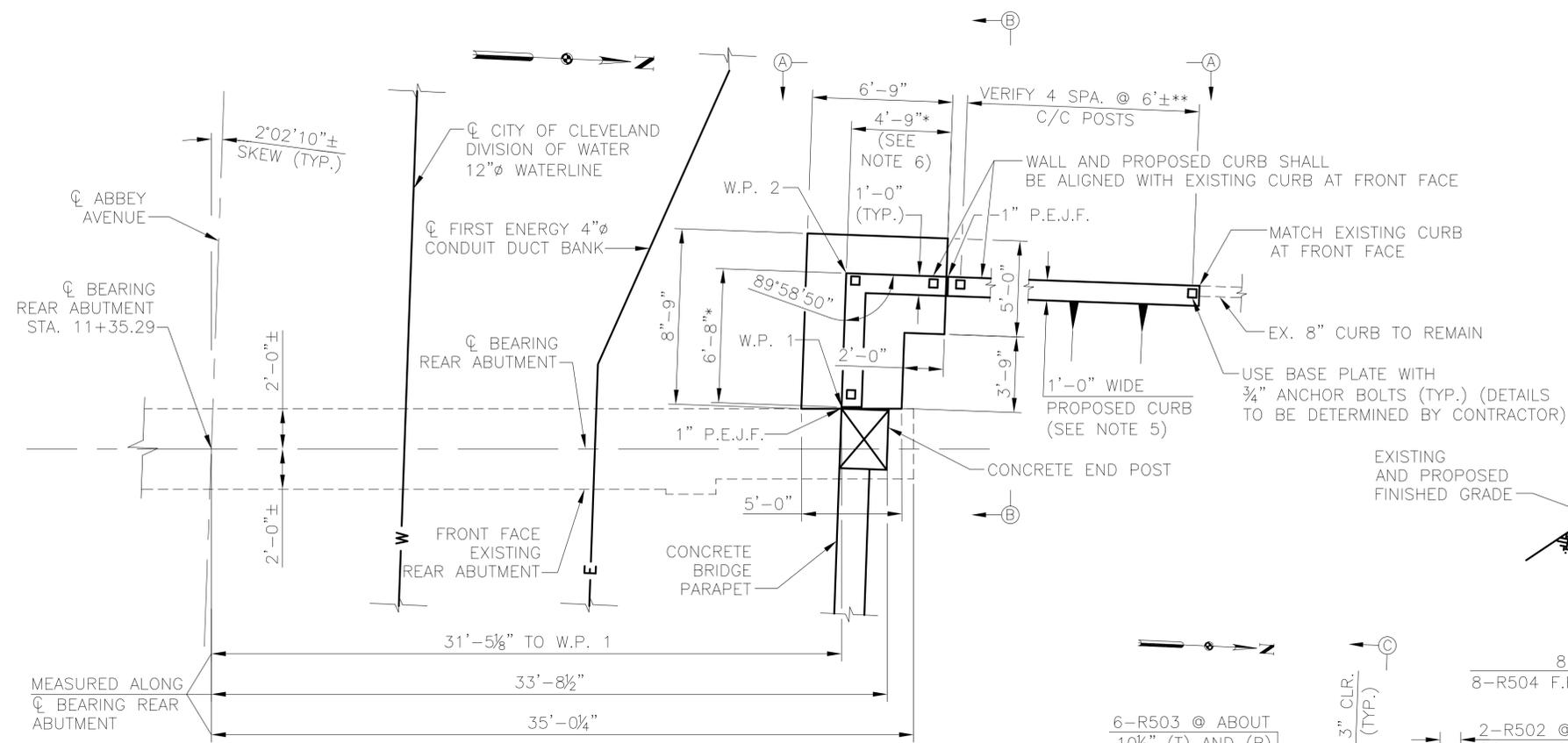
LEGEND:
 P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
 TYP. = TYPICAL

- NOTES:**
1. THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.6.6 (METHOD A) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
 2. THE COST OF THE PRESTRESSED I-BEAM WELDED STEEL PEDESTAL AT THE PIERS SHALL BE INCLUDED WITH ITEM TS515.
 3. IF THE CONCRETE BEAMS ARE ERECTED AT AN AMBIENT TEMPERATURE HIGHER THAN 80° OR LOWER THAN 40° AND THE BEARING SHEAR DEFLECTION EXCEEDS 1/8 OF THE BEARING HEIGHT AT 60°F ± 10°F, THE BEAMS SHALL BE RAISED TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 60°F ± 10°F.
 4. FOR BOX BEAM DETAILS, SEE SHEET S-24.
 5. THE STEEL LOAD PLATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572 GRADE 50 AND SHALL BE GALVANIZED PER 711.02. THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS. WELDING OF THE LOAD PLATE TO THE SUPERSTRUCTURE SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE SHALL NOT EXCEED 300°F AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.
 6. THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM TS516, EACH.
 7. FOR FRAMING, SEE SHEET S-22.
 8. PREFORMED EXPANSION JOINT FILLER IS TO BE INCLUDED WITH TS511, CLASS S CONCRETE, PIER AND ABUTMENT DIAPHRAGMS.

REVISIONS:	
DRAWN: JFM	CHECKED: BMG
APPROVED: RHW	DATE: 6-1-2007
JOB NO.:	
DESIGN AGENCY	
HNTB 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816	
ENGINEERING & PROJECT MANAGEMENT DIVISION	
RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY	
PRESTRESSED BOX BEAM BOX BEARING DETAILS	
REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS	
RTA PROJ 29D	BID PAC
SHEET S-35	

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LEGEND:

(B) = BOTTOM
CLR. = CLEAR
ELEV. = ELEVATION
F.F. = FAR FACE

N.F. = NEAR FACE
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
(T) = TOP
W.P. = WORK POINT

W.P.	STATION	OFFSET	ELEV.
1*	11+32.10	31.33	685.61
2*	11+25.44	31.33	685.63

- * = CONTRACTOR TO FIELD VERIFY DIMENSIONS AND ELEVATIONS TO MATCH EXISTING
- ** = CONTRACTOR TO REPLACE EXISTING ALUMINUM RAILING AND FENCE FABRIC TO EXISTING SPLICE.
- NOTES:
- FOR ABUTMENT DETAILS, SEE SHEET S-14 TO S-17.
 - FOR BACKFILL REQUIREMENTS, SEE ITEM TS 503 GENERAL NOTES SHEET S-4.
 - FOR BRIDGE RAILING DETAILS, SEE SHEET S-33.
 - FOR CONCRETE END POST DETAILS, SEE SHEET S-31.
 - SEE ROADWAY PLANS, SHEET C-3, FOR 1'-0" WIDE CURB.
 - DIMENSION IS MADE 3"± LESS THAN EXISTING IN ORDER TO MAKE THE PROPOSED WALL FLUSH WITH THE CONCRETE END POST.
 - PREFORMED EXPANSION JOINT FILLER IS TO BE INCLUDED WITH TS511, CLASS S CONCRETE, RETAINING WALLS.

REVISIONS:

DATE:	6-1-2007
JOB NO.:	
APPROVED:	RHW
CHECKED:	BMG
DRAWN:	JFM

DESIGN AGENCY
HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816

ENGINEERING & PROJECT
MANAGEMENT DIVISION

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

NORTHWEST RETAINING
WALL

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
29D

BID
PAC

SHEET
S-37

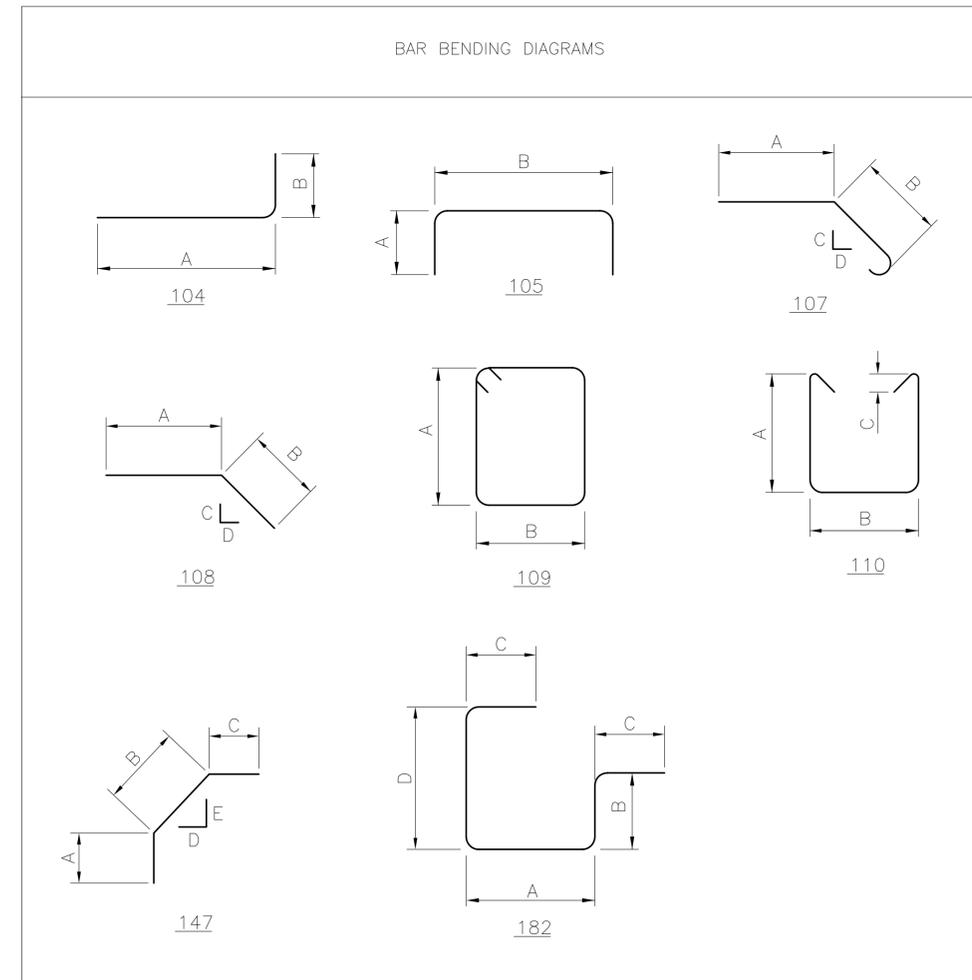
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REINFORCING STEEL LIST										
MARK	NUMBER REQUIRED	LENGTH	WEIGHT	TYPE	A	B	C	D	E	INCR.
PIERS										
P401	56	8'-2"	305	109	2'-2"	1'-8"				
P501	36	10'-0"	375	STR.						
P502	132	3'-9"	516	STR.						
P503	24	5'-6"	138	STR.						
P504	42	20'-4"	891	147	10'-5"	7'-5"	2'-8"	3	7	
P505	12 SER. OF 22	7'-5" TO 10'-1"	2,409	105	2'-9" TO 4'-1"	2'-2"				¾"
P506	120	10'-1"	1,262	105	4'-1"	2'-2"				
P507	12 SER. OF 5	2'-3" TO 7'-6"	305	STR.						1'-3¾"
P508	12 SER. OF 5	5'-3" TO 10'-9"	501	STR.						1'-4½"
P509	60	7'-0"	438	STR.						
P510	36	10'-9"	404	STR.						
P511	36	7'-9"	291	STR.						
P601	8	17'-0"	204	STR.						
P602	8	16'-3"	195	STR.						
P603	14	8'-0"	168	STR.						
P604	102	12'-0"	1,838	110	4'-2"	2'-2"	4½"			
P605	30	10'-0"	451	STR.						
P701	42	19'-5"	1,667	104	17'-4"	2'-3"				
P901	28	15'-6"	1,476	STR.						
P902	28	14'-9"	1,404	STR.						
		TOTAL =	15,238	LBS.						

REINFORCING STEEL LIST										
MARK	NUMBER REQUIRED	LENGTH	WEIGHT	TYPE	A	B	C	D	E	INCR.
REAR ABUTMENT										
RA501	76	13'-7"	1,077	105	5'-4"	3'-2"				
RA502	24	18'-0"	451	STR.						
RA503	14	7'-2"	105	STR.						
RA504	14	8'-4"	122	STR.						
RA505	46	4'-0"	192	STR.						
RA506	18	10'-11"	205	105	4'-3"	2'-8"				
RA507	20	10'-11"	228	105	5'-0"	1'-2"				
RA508	8	16'-9"	140	STR.						
RA509	8	12'-1"	101	182	1'-10"	3'-11"	7"	5'-8"		
RA510	4	9'-11"	41	104	8'-0"	2'-0"				
RA511	4	11'-8"	49	104	8'-7"	3'-2"				
RA512	8	7'-3"	60	STR.						
RA601	10	5'-2"	78	107	1'-5"	3'-1"	1	1		
RA602	21	4'-9"	150	108	1'-5"	3'-3"	1	1		
RA603	8	18'-0"	216	STR.						
		TOTAL =	3,215	LBS.						

REINFORCING STEEL LIST										
MARK	NUMBER REQUIRED	LENGTH	WEIGHT	TYPE	A	B	C	D	E	INCR.
FORWARD ABUTMENT										
FA501	76	13'-7"	1,077	105	5'-4"	3'-2"				
FA502	24	18'-0"	451	STR.						
FA503	14	7'-2"	105	STR.						
FA504	14	8'-4"	122	STR.						
FA505	46	4'-0"	192	STR.						
FA506	18	10'-11"	205	105	4'-3"	2'-8"				
FA507	20	10'-11"	228	105	5'-0"	1'-2"				
FA508	8	16'-9"	140	STR.						
FA509	8	12'-1"	101	182	1'-10"	3'-11"	7"	5'-8"		
FA510	4	9'-11"	41	104	8'-0"	2'-0"				
FA511	4	11'-8"	49	104	8'-7"	3'-2"				
FA512	8	7'-3"	60	STR.						
FA601	10	5'-2"	78	107	1'-5"	3'-1"	1	1		
FA602	21	4'-9"	150	108	1'-5"	3'-3"	1	1		
FA603	8	18'-0"	216	STR.						
		TOTAL =	3,215	LBS.						



REINFORCING STEEL SAMPLES
 REFER TO CMS SECTIONS 106.03, 700, 709.00, AND 709.01.
 SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED
 FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE
 STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE
 WITH 509.08.

REVISIONS:

DRAWN: JFM
 CHECKED: BMG
 APPROVED: RHW
 DATE: 6-1-2007
 JOB NO.:

DESIGN AGENCY
HNTB
 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816
 ENGINEERING & PROJECT
 MANAGEMENT DIVISION

RTA
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 REGIONAL TRANSIT
 AUTHORITY

REBAR SCHEDULE

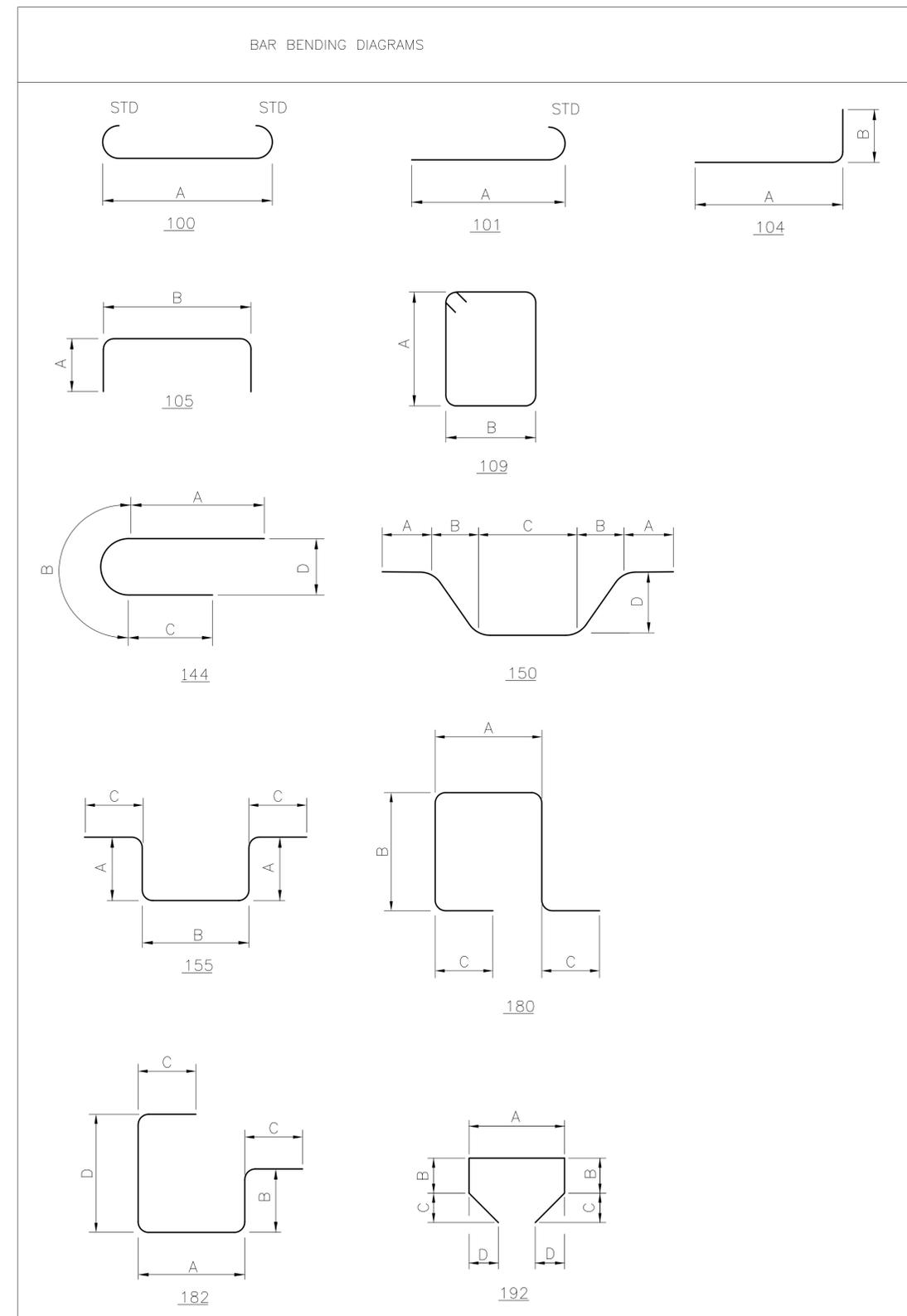
REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
 BID PAC
 SHEET S-41

6/6/2007 12:46 PM

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REINFORCING STEEL LIST										
MARK	NUMBER REQUIRED	LENGTH	WEIGHT	TYPE	A	B	C	D	E	INCR.
SUPERSTRUCTURE										
C401	6	9'-11"	40	144	4'-7 1/4"	8 5/8"	4'-7 1/4"	5 1/2"		
C402	6	4'-10"	19	192	1'-11 1/2"	6 1/4"	8 1/2"	8 1/2"		
C403	6	3'-6"	14	192	1'-5 1/2"	5 1/2"	5 1/2"	5 1/2"		
S401	240	30'-0"	4,810	STR.						
S402	48	16'-6"	529	STR.						
S403	24	7'-8"	123	STR.						
S404	36	3'-8"	88	100	2'-8"					
S405	250	1'-2"	195	105	6"	4"				
S501	257	31'-10"	8,533	101	31'-3"					
S502	257	22'-1"	5,919	101	21'-6"					
S503	486	30'-0"	15,207	STR.						
S504	90	17'-9"	1,666	STR.						
S505	514	26'-3"	14,073	STR.						
S506	500	7'-10"	4,085	180	1'-0"	3'-0"	8"			
S507	8	3'-5"	29	STR.						
S508	NOT USED									
S509	36	18'-0"	676	STR.						
S510	36	21'-0"	789	STR.						
S511	2 SER. OF 3	20'-0" 40'-0"	188	101	19'-5" 39'-5"					10'-0"
S512	2 SER. OF 3	19'-6" 39'-6"	185	STR.						10'-0"
S513	514	4'-5"	2,368	105	1'-8"	1'-4"				
S514	16	28'-3"	471	STR.						
S515	32	40'-0"	1,335	STR.						
S516	16	35'-0"	584	STR.						
S517	16	19'-3"	321	STR.						
S518	514	6'-4"	3,395	182	1'-4"	10"	1'-6"	1'-8"		
S519	522	6'-2"	3,357	155	1'-0"	1'-8"	1'-6"			
S520	524	6'-4"	3,461	155	1'-0"	1'-10"	1'-6"			
S521	16	15'-3"	254	105	6'-11"	1'-8"				
S522	32	9'-9"	325	109	2'-9"	1'-10"				
S523	4	9'-3"	39	109	1'-10"	2'-6"				
S601	500	11'-8"	8,762	STR.						
S602	NOT USED									
S603	170	30'-0"	7,660	STR.						
S604	34	17'-9"	906	STR.						
S605	28	12'-4"	519	STR.						
S606	36	4'-0"	216	100	2'-8"					
S607	6	7'-8"	69	STR.						
PILASTERS										
SL501	12	10'-0"	125	150	10"	2'-4"	1'-4"	2'-4"		
SL502	4	3'-7"	15	105	8"	2'-6"				
SL503	4	8'-3"	34	105	3'-0"	2'-6"				
SL504	8	4'-5"	37	104	3'-0"	1'-6"				
		TOTAL =	91,421	LBS.						

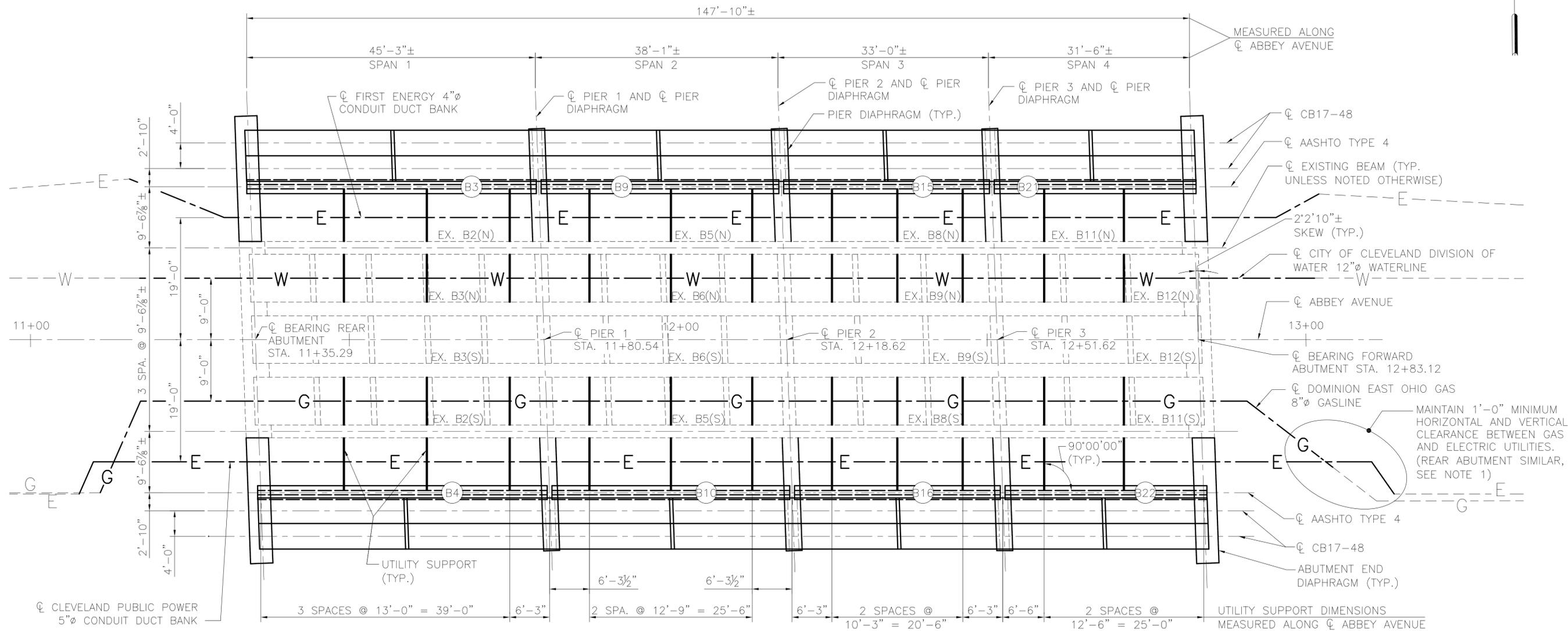


REINFORCING STEEL SAMPLES
 REFER TO CMS SECTIONS 106.03, 700, 709.00, AND 709.01.
 SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED
 FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE
 STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE
 WITH 509.08.

REVISIONS:									
DRAWN: JFM	CHECKED: BMG	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:					
DESIGN AGENCY 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816					ENGINEERING & PROJECT MANAGEMENT DIVISION				
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY									
SUPERSTRUCTURE REINFORCING					REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS				
RTA PROJ		29D		BID PAC					
SHEET S-42									

6/16/2007 12:53 PM

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UTILITY SUPPORT CHANNEL LOCATION AND LAYOUT

LEGEND:

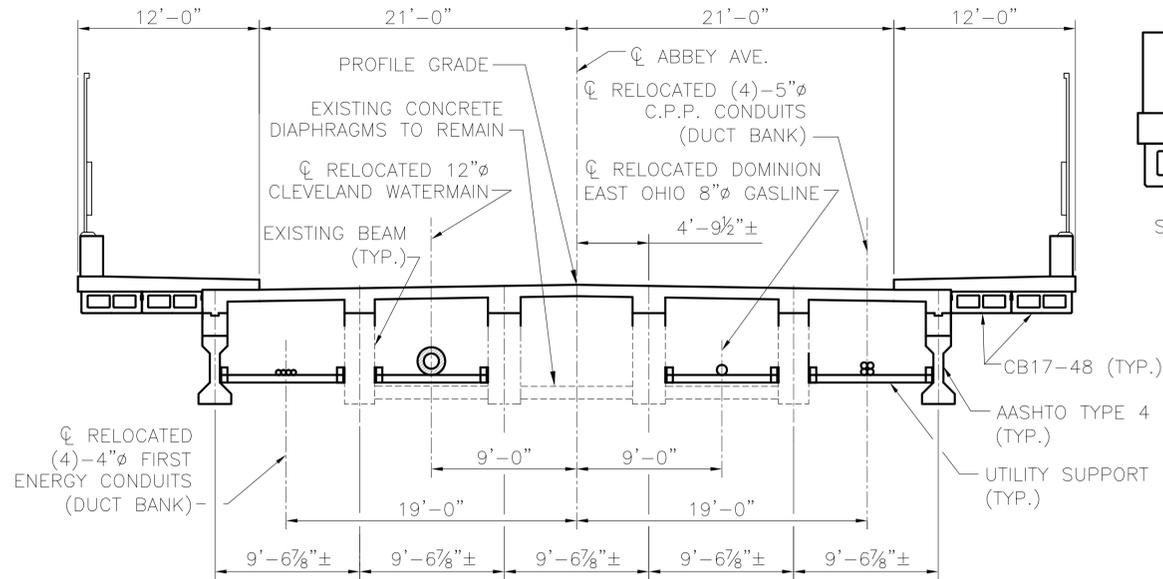
- EX. = EXISTING
- N = NORTH
- E = ELECTRIC
- W = WATER
- S = SOUTH
- TYP. = TYPICAL
- G = GAS

NOTES:

- 1) BASED ON EXISTING PLAN DATA IT APPEARS THE EXISTING DOMINION EAST OHIO GASLINE AND CLEVELAND PUBLIC POWER DUCT BANKS ARE IN CLOSE PROXIMITY TO ONE ANOTHER. CONTRACTOR SHALL COORDINATE PLACEMENT OF ELECTRICAL DUCT BANK WITH GASLINE TO AVOID CONFLICTS.
- 2) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.

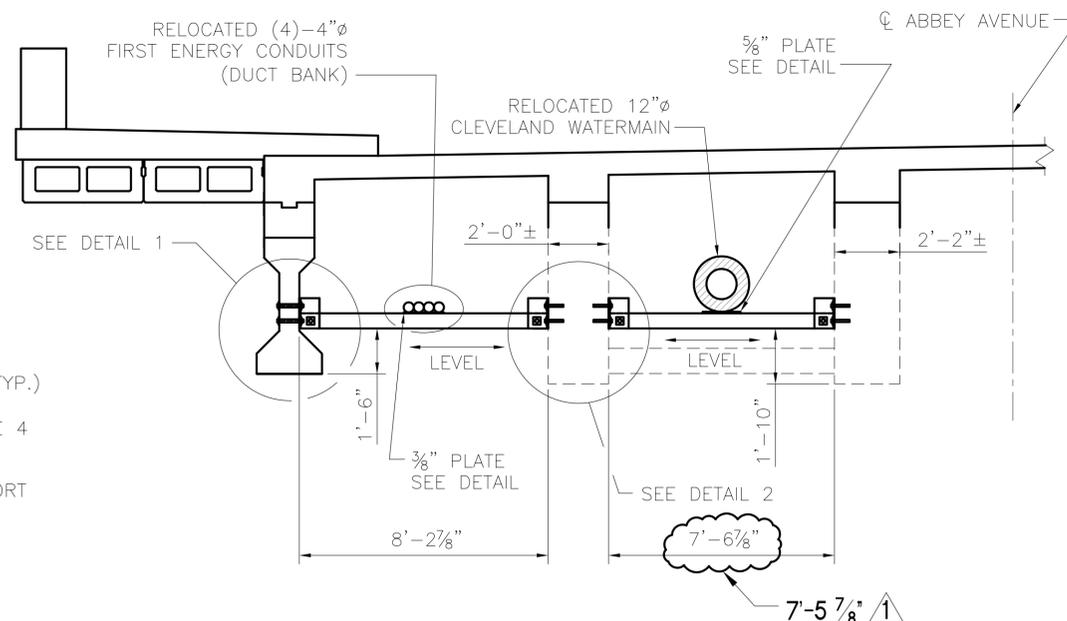


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GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY		
UTILITY SUPPORT FRAMING PLAN		REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS
RTA PROJ 29D	BID PAC	
SHEET U-1		



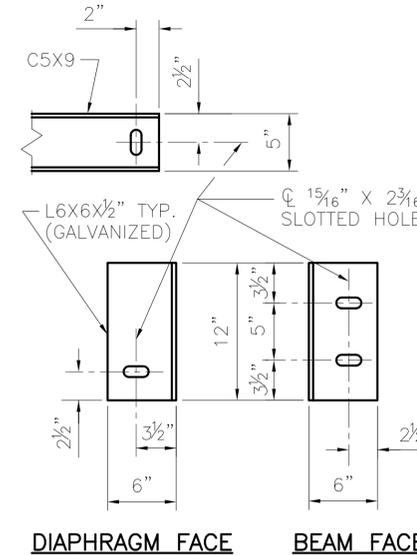
TRANSVERSE SECTION

PIER DIAPHRAGM AND SIDEWALK BRACKETS NOT SHOWN

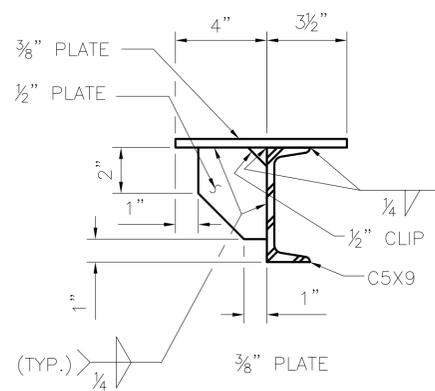


UTILITY SUPPORTS FOR FIRST ENERGY AND CLEVELAND WATERMAIN

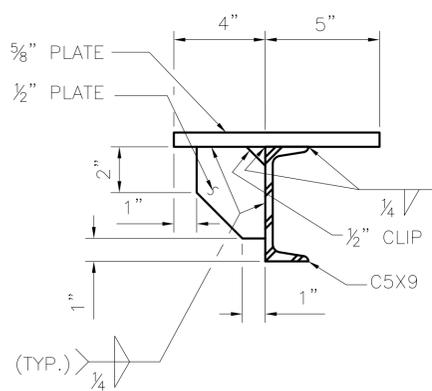
UTILITY SUPPORTS FOR C.P.P. DUCT BANK AND DOMINION EAST OHIO GASLINE SIMILAR



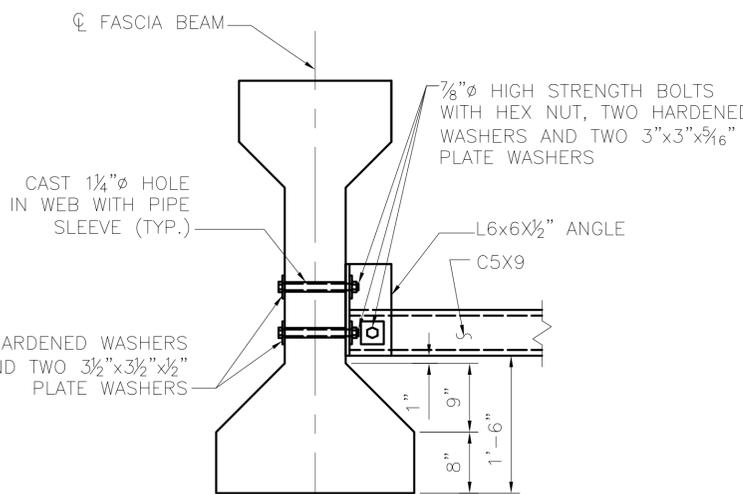
DETAIL 3
(FASCIA BEAM CHANNEL AND ANGLE DETAILS SIMILAR)



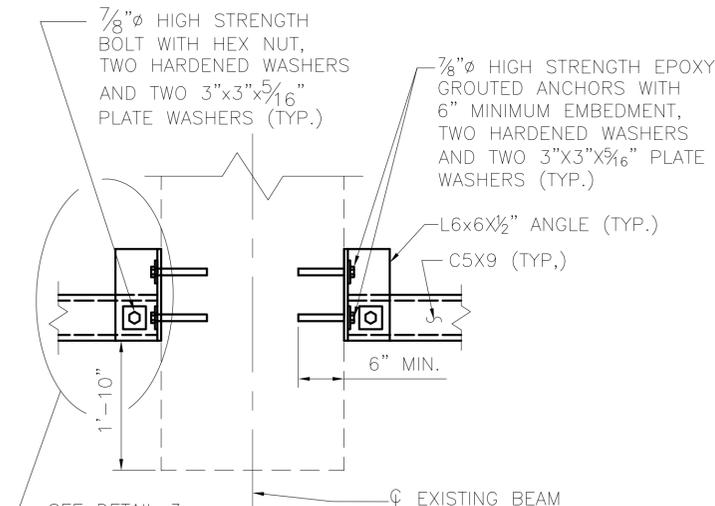
SECTION B-B



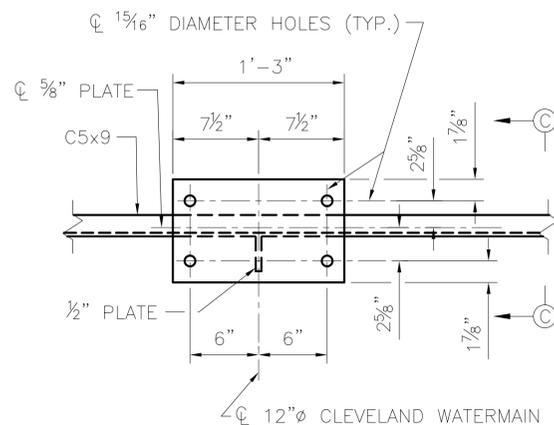
SECTION C-C



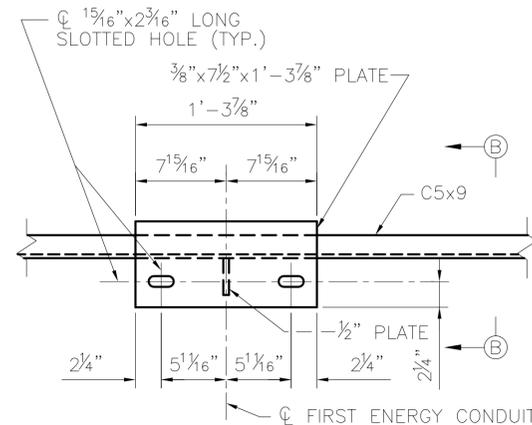
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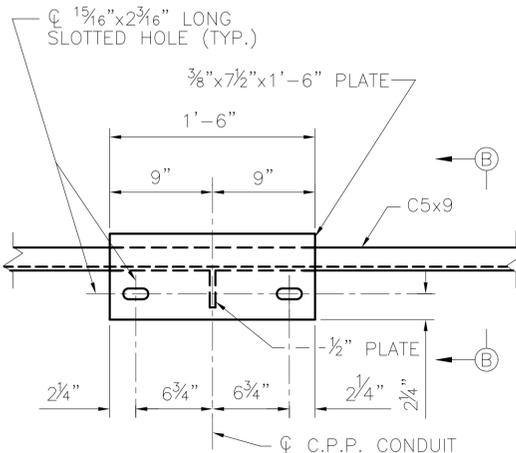
DETAIL 2



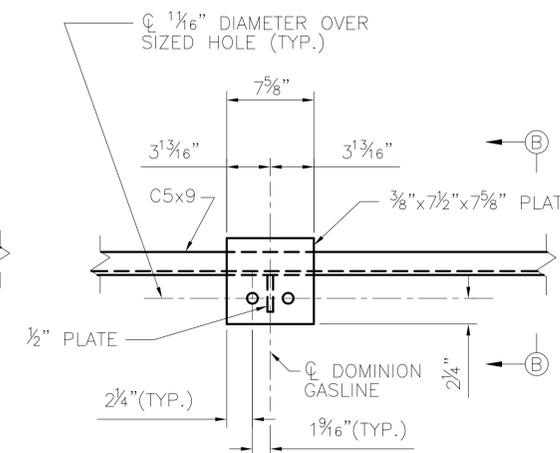
CLEVELAND WATERMAIN SUPPORT DETAIL



FIRST ENERGY DUCT BANK SUPPORT DETAIL



C.P.P. DUCT BANK SUPPORT DETAIL



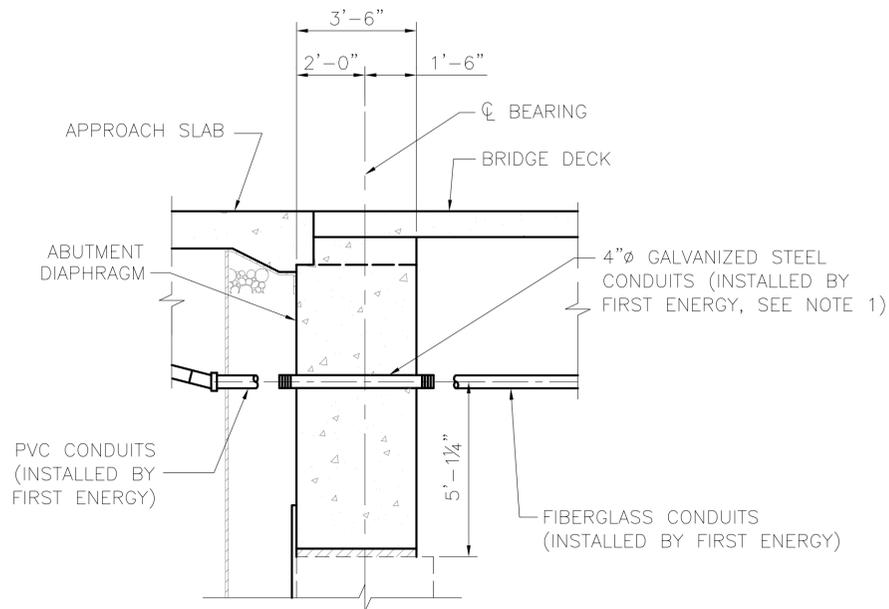
DOMINION EAST OHIO GASLINE SUPPORT DETAIL

NOTES:
ALL STRUCTURE STEEL, INCLUDING BOLTS, NUTS AND WASHERS, SHALL MEET THE FABRICATION AND ERECTION REQUIREMENTS SPECIFIED IN TS 513.
ALL STRUCTURE STEEL SHALL BE ASTM A709, GRADE 36 OR 50, GALVANIZED ACCORDING TO TS 711.02.

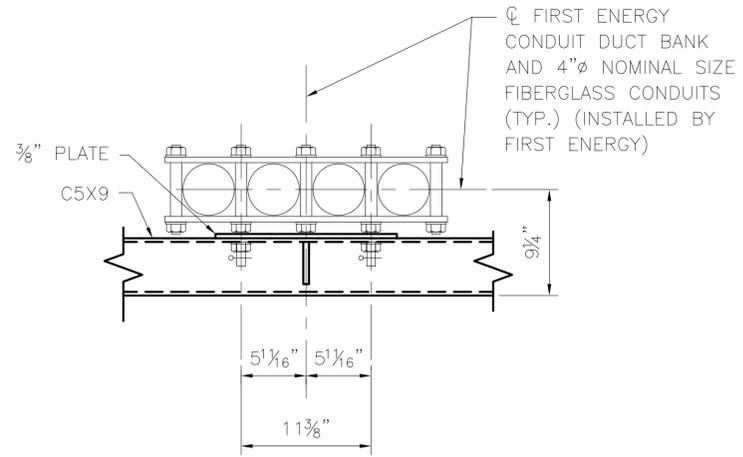
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DRAWN:	CMM
CHECKED:	JFM
APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	
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ENGINEERING & PROJECT MANAGEMENT DIVISION	
RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY	
UTILITY SUPPORT DETAILS	
REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS	
RTA PROJ 29D	BID PAC
SHEET U-2	

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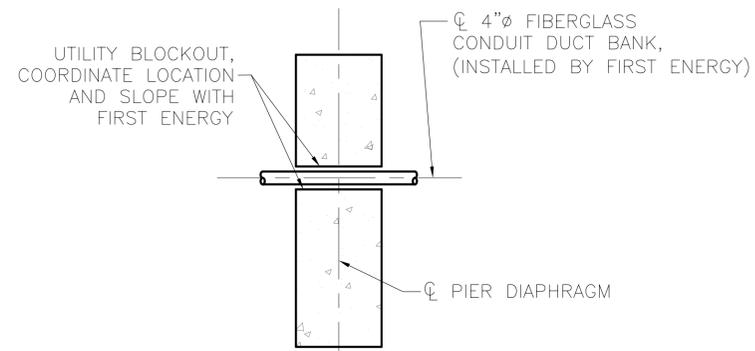
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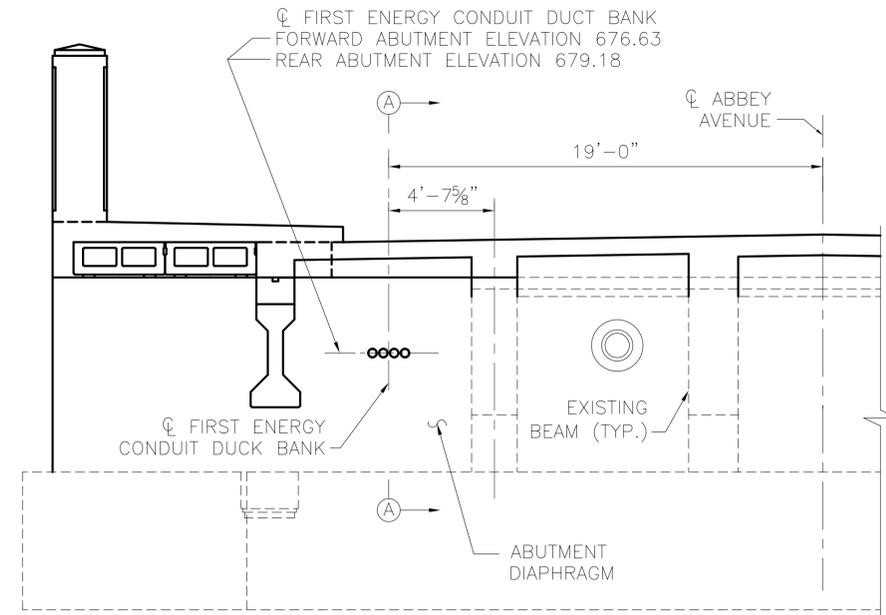
SECTION A-A
FORWARD ABUTMENT SHOWN;
REAR ABUTMENT SIMILAR



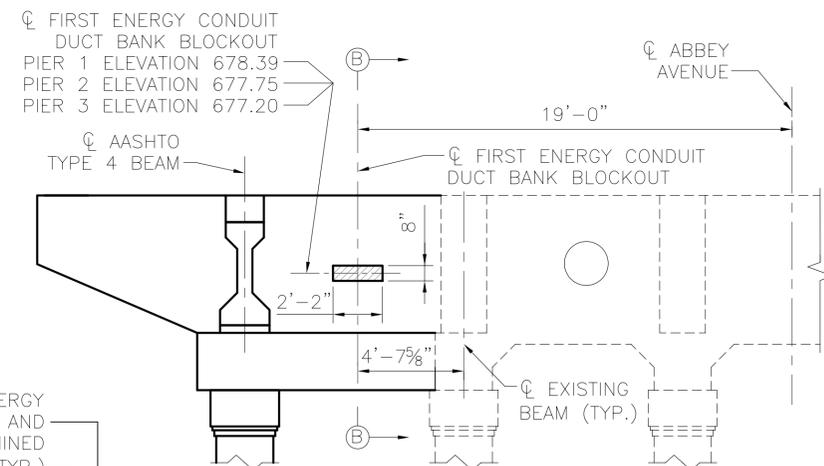
FIRST ENERGY CONDUIT DUCT BANK SUPPORT DETAIL
(DUCT BANK SUPPLIED AND INSTALLED BY FIRST ENERGY)



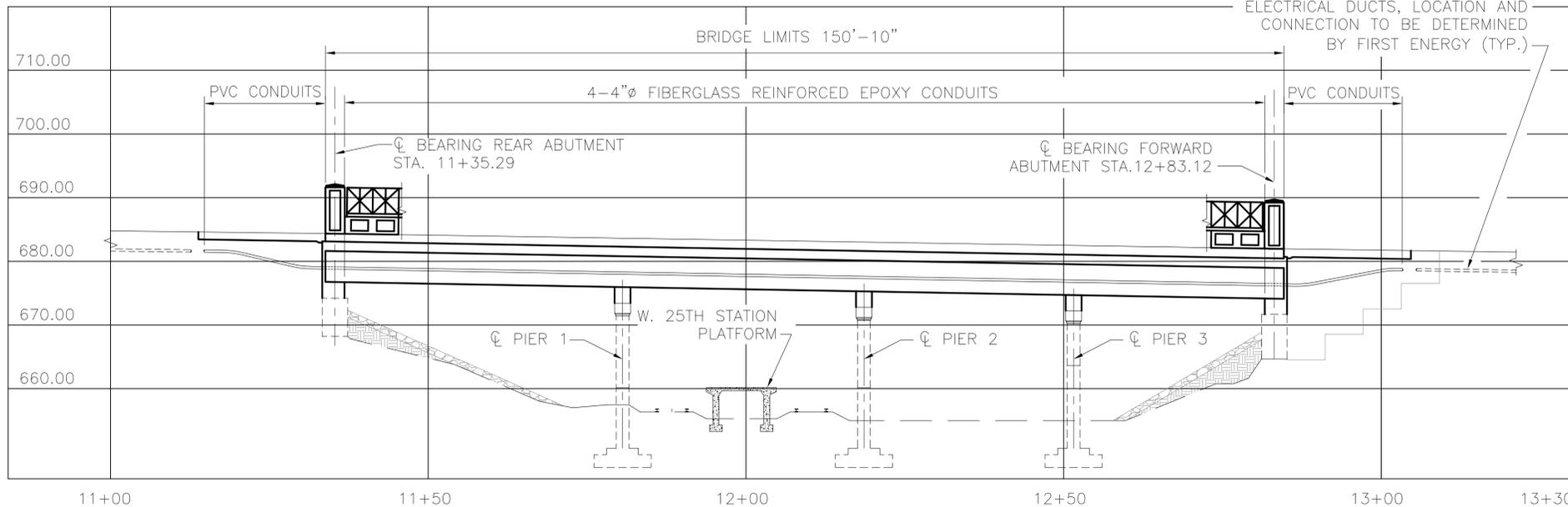
SECTION B-B



CONDUIT DUCT BANK - ABUTMENT DETAIL
(FORWARD ABUTMENT SHOWN; REAR ABUTMENT SIMILAR)



**CONDUIT DUCT BANK BLOCKOUT
TYPICAL PIER DIAPHRAGM DETAIL**



FIRST ENERGY ELECTRIC UTILITY PROFILE

LEGEND:

L.F. LINEAR FEET

NOTES:

- 1) CONTRACTOR SHALL COORDINATE WITH FIRST ENERGY FOR LOCATION OF ABUTMENT STEEL CONDUITS.
- 2) FOR SUPPORT LOCATIONS, SEE SHEET U-1.
- 3) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.

REVISIONS:

DRAWN:	CMM
CHECKED:	JFM
APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	

DESIGN AGENCY
HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816

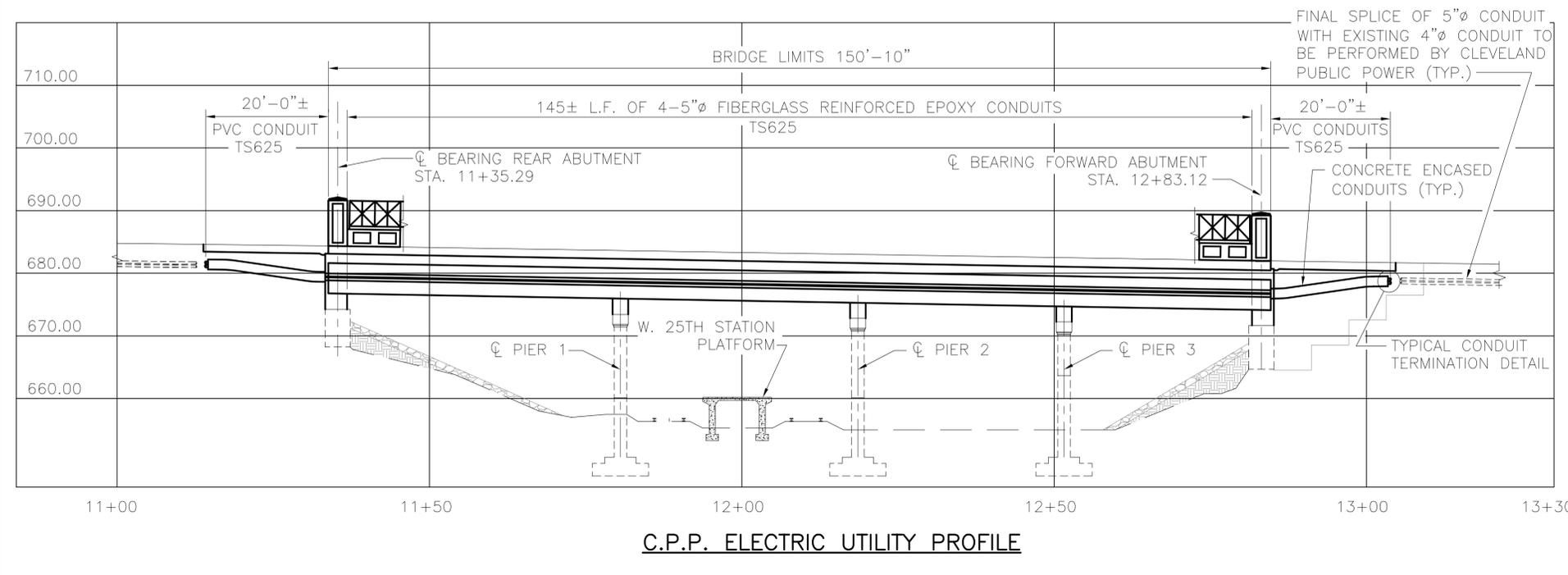
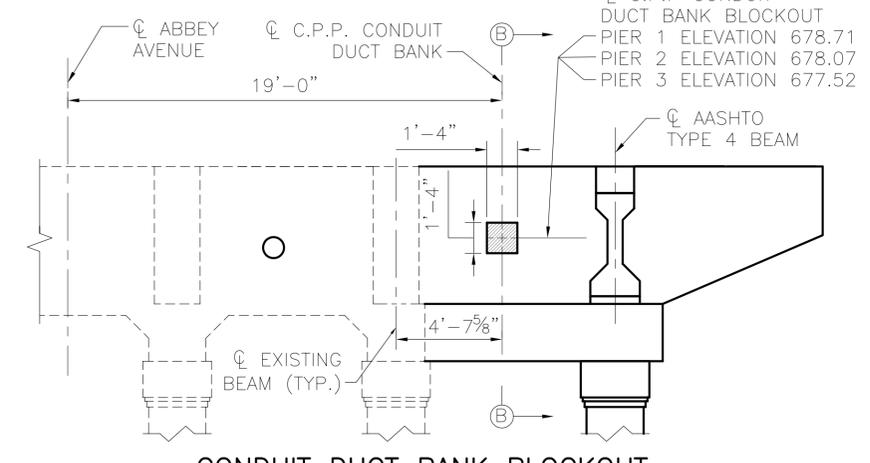
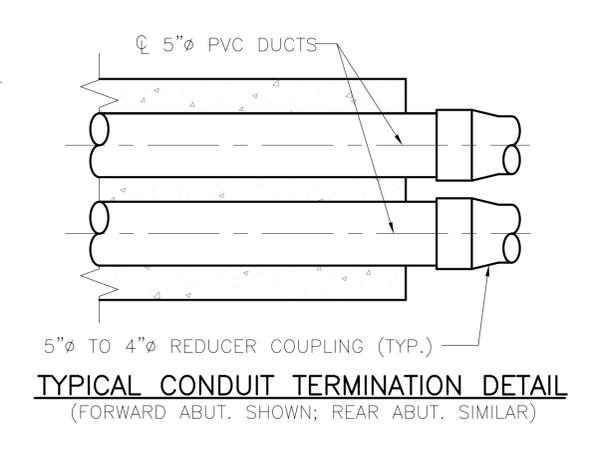
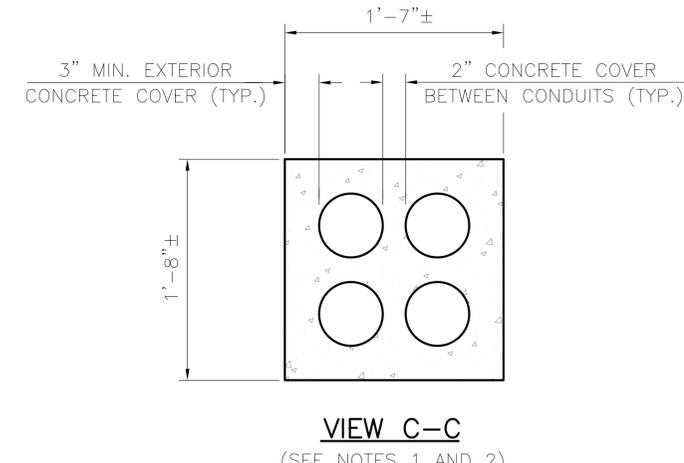
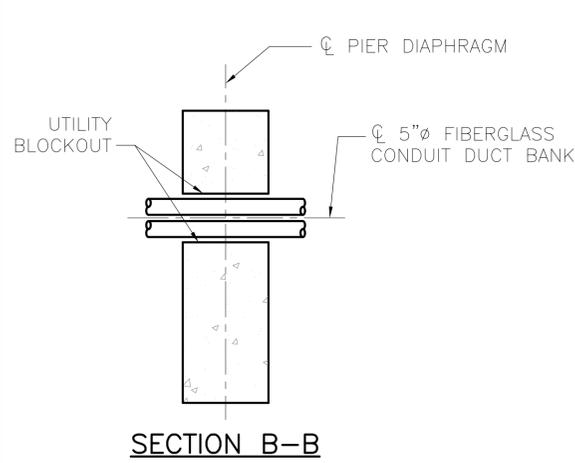
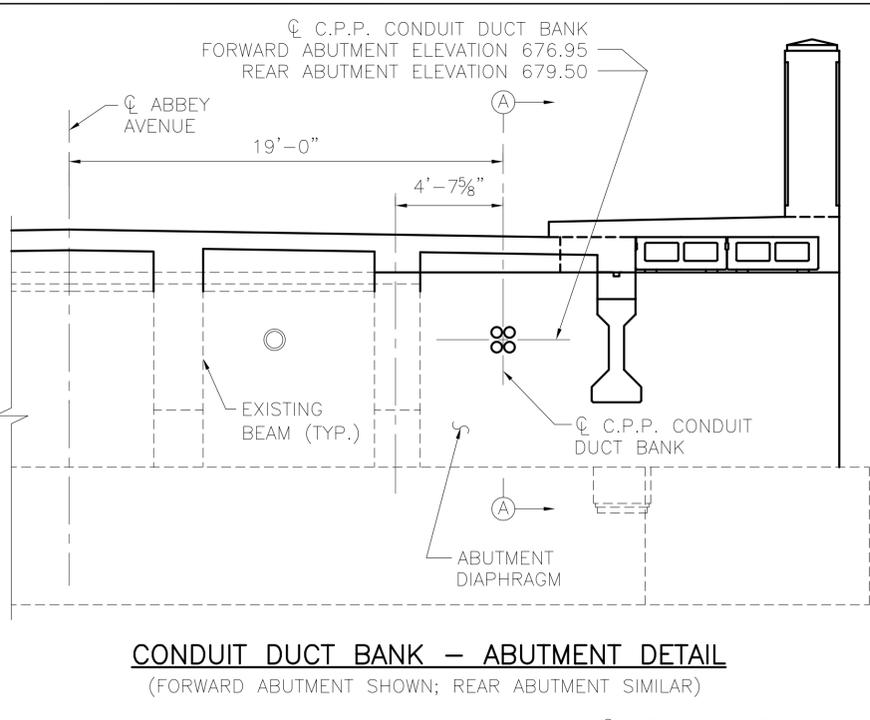
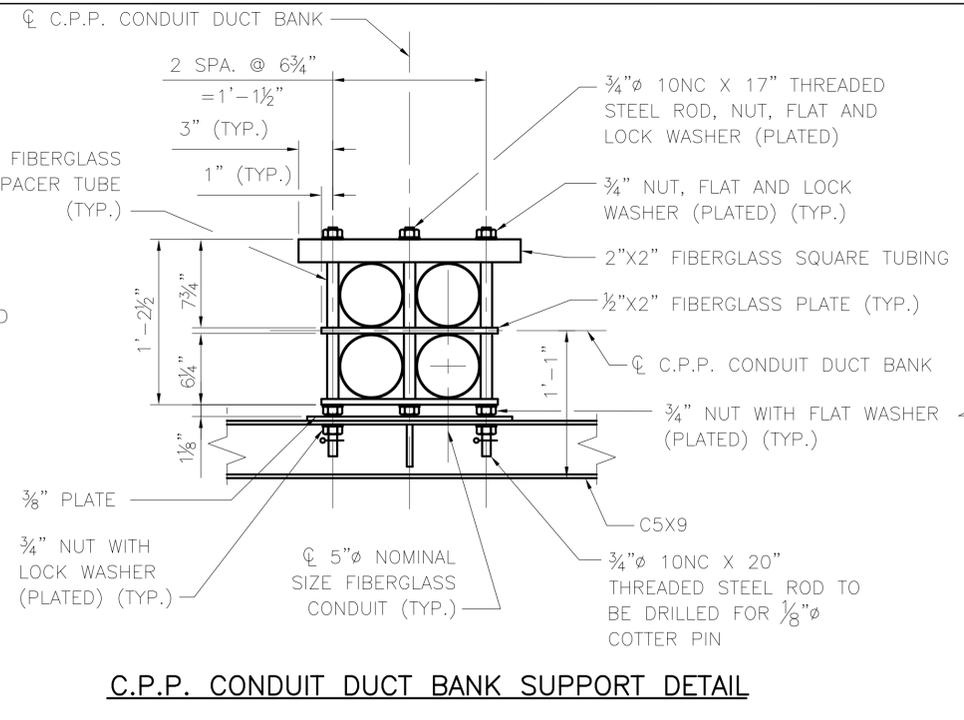
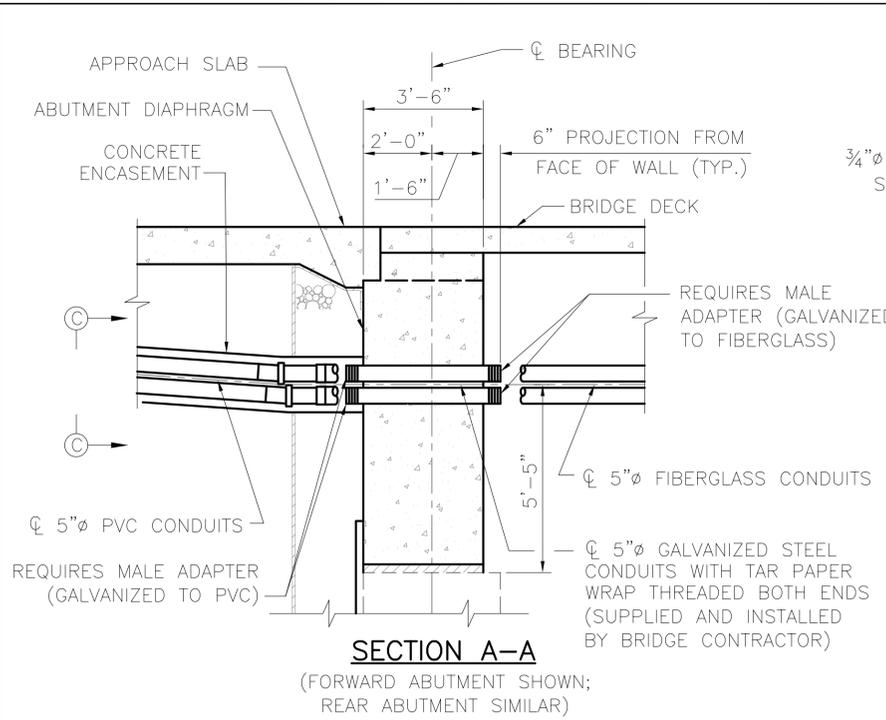
RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

FIRST ENERGY
UTILITY DETAILS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
29D
SHEET
U-3

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- LEGEND:**
C.P.P. = CLEVELAND PUBLIC POWER
MIN. = MINIMUM
- NOTES:**
- 1) DUCT SPACING ACHIEVED WITH STANDARD BASE AND INTERMEDIATE SPACERS.
 - 2) CONCRETE ENCASEMENT SHALL BE CLASS C. PAYMENT SHALL BE INCLUDED WITH PVC CONDUIT.
 - 3) FOR SUPPORT LOCATIONS SEE SHEET U-1.
 - 4) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.

REVISIONS: DRAWN: CMM CHECKED: JFM APPROVED: RHW DATE: 6-1-2007 JOB NO.:	
DESIGN AGENCY HNTB 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816	ENGINEERING & PROJECT MANAGEMENT DIVISION
RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY	
CLEVELAND PUBLIC POWER UTILITY DETAILS REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS	
RTA PROJ 29D	BID PAC
SHEET U-4	

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GENERAL

SPECIFICATIONS

ALL WORK IN THIS CONTRACT SHALL CONFORM TO THE LATEST STATE OF OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIALS SPECIFICATIONS, GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY (RTA), NATIONAL ELECTRIC SAFETY CODE AND OSHA REQUIREMENTS, EXCEPT WHERE LOCAL REGULATIONS ARE MORE STRINGENT, IN WHICH CASE LOCAL REGULATIONS SHALL GOVERN.

SCOPE OF WORK

- A. THE CONTRACTOR SHALL RELOCATE AND REMOVE ALL CLEVELAND PUBLIC POWER (CPP) FACILITIES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PROPERLY COMPLETED, INCLUDING INCIDENTALS, AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED.
- B. THE MAJOR ITEMS OF WORK TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE AS FOLLOWS:
 - 1. PERMANENT UNDERGROUND 5" CONCRETE ENCASED PVC DUCTS AT BOTH APPROACH ENDS FROM ABUTMENT APPROXIMATELY 20 FT TO EXISTING CPP 4" DUCTS.
 - 2. PERMANENT DUCT SYSTEM ON THE ROADWAY BRIDGE.
- C. CONSTRUCTION SEQUENCE NECESSARY TO ACCOMPLISH THE REQUIRED SCOPE OF WORK IS:
 - 1. PRIOR TO THE BRIDGE CLOSING, CPP WILL DEACTIVATE THE EXISTING LINE AND TEMPORARILY RELOCATE IT OFF THE BRIDGE. RTA CONTRACTOR IS TO REMOVE THE EXISTING FASCIA GIRDER WITH CPP ENCASED DUCTS. RTA CONTRACTOR SHALL THEN INSTALL THE NEW FASCIA GIRDER AND CAST GALVANIZED CONDUITS THROUGH THE PROPOSED ABUTMENTS. DURING CONSTRUCTION INSTALL CONDUITS, SUPPORTS, RACKS, ETC. ON THE BRIDGE.
 - 2. INSTALL FOUR - 5"Ø PVC CONDUITS WITH ENCASEMENT EAST AND WEST FROM FORWARD AND REAR ABUTMENTS RESPECTFULLY, WITH 5" TO 4" REDUCER AT ENDS. COORDINATE LOCATION AND ELEVATION WITH CITY INSPECTOR AND COOPERATE AND COORDINATE WITH DOMINION EAST OHIO GAS.
 - 3. C.P.P. WILL MAKE THE FINAL SPLICE CONNECTION OF THE NEW PVC CONDUIT TO THE EXISTING 4" FIBER DUCT. C.P.P. WILL THEN RUN THE NEW CABLE AND REENERGIZE THE LINE.
 - 4. THE CUT-OVER OF CABLES WILL BE PERFORMED ONE AT A TIME AND WILL REQUIRE COORDINATION BETWEEN CONTRACTOR AND C.P.P.

SUBMITTALS

- A. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON THE FOLLOWING ITEMS OF EQUIPMENT:
 - DUCT HANGERS
 - PVC AND FRE CONDUITS

DEFINITIONS

WHENEVER IN THESE SPECIFICATIONS OR IN ANY DOCUMENTS OR INSTRUCTIONS ON CONSTRUCTION WHERE THESE SPECIFICATIONS GOVERN, THE FOLLOWING TERMS (OR PRONOUNS IN PLACE OF THEM) ARE USED, THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS:

THE CITY, OR "THE CITY OF CLEVELAND", IS THE DIRECTOR OF THE CITY OF CLEVELAND DEPARTMENT OF PUBLIC UTILITIES.

STATUS OF CITY INSPECTOR

INSPECTORS AS DESIGNATED BY THE CITY OF CLEVELAND SHALL BE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED. SUCH INSPECTING MAY EXTEND TO ALL OR ANY PART OF THE WORK, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE WORK. THE CITY INSPECTOR AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES SHALL GIVE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER.

ITEM TS 625 – CONDUIT, MISC.: NON–REINFORCED CONCRETE ENCASED CONDUIT BANKS

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR, AND SHALL PROPERLY CONSTRUCT AND CONNECT TO GALVANIZED PIPE SLEEVES THROUGH ABUTMENT AS SHOWN ON THE PLANS OR AS DIRECTED, ALL NON–REINFORCED CONCRETE–ENCASED PVC (EB) CONDUIT BANKS AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. ALL APPLICABLE SECTIONS OF ODOT CMS ITEM 625 SHALL BE UNDERSTOOD AS PART OF THIS SECTION.

B. CONDUIT AND FITTINGS

POLYVINYL CHLORIDE (PVC) EB20 CONDUIT SHALL CONFORM TO UL 651 STANDARDS, 5–INCH INSIDE DIAMETER WITH CONCRETE ENCASEMENT AS DETAILED ON PLANS. COUPLINGS SHALL BE SOCKET TYPE. 5" ANGLE COUPLINGS, STANDARD COUPLINGS, VARIOUS DEGREE SWEEPS, 1¼" TO 90 DEGREE INCLUDING FIELD BENDS, AND PLUGS OR CAPS TO CLOSE UNUSED CONDUITS, SHALL BE MADE OF THE SAME MATERIAL AS THE CONDUIT. CONDUIT SPACERS MAY BE MADE OF PLASTIC, STYRENE, POLYVINYL CHLORIDE OR POLYETHYLENE. CONCRETE BLOCK SPACERS WILL NOT BE ACCEPTED.

C. CONCRETE

CONCRETE USED FOR ENCASEMENT OF CONDUITS SHALL CONFORM TO ODOT SPECIFICATION 499, CLASS C, USING NO. 8 SIZE AGGREGATE.

D. INSTALLATION

CONDUIT SHALL BE INSTALLED BY THE BUILT–UP METHOD WITH JOINTS IN ADJACENT DUCTS STAGGERED. NECESSARY SPACERS SHALL BE PLACED AT NO GREATER THAN 5–FEET INTERVALS TO HOLD DUCTS IN THE DESIRED CONFIGURATION, WITH THE DUCTBANK BRACED SECURELY TO KEEP IT FROM SHIFTING AND FLOATING WHILE CONCRETE IS POURED. SEALER COMPOUND FURNISHED BY THE CONDUIT MANUFACTURER SHALL BE APPLIED TO EACH SECTION OF CONDUIT AND EACH SECTION SHALL BE TAPPED SECURELY INTO PLACE IN THE PREVIOUS COUPLING TO OBTAIN JOINTS THAT ARE TIGHT AND LEAKPROOF.

- 1. CONCRETE SHALL BE WORKED INTO THE SPACES BETWEEN DUCTS SO THAT THE CONDUIT BANK IS EFFECTIVELY ENCASED IN CONCRETE WITHOUT VOIDS OR EMPTY SPACES.
- 2. CONDUIT WHICH IS CUT TO FIT SHORT SECTIONS SHALL BE DEBURRED ON THE DUCT END AND THE END OF THE BELL SHALL BE REAMED IN THE INSIDE DIAMETER FOR EACH ENTRY OF THE DUCT INTO THE COUPLING TO PRODUCE THE SAME JOINTING CONDITIONS AS PROVIDED BY FACTORY–MADE CONDUIT SECTIONS.
- 3. ALL END BELLS SHALL BE GROUTED IN PLACE.

E. MEASUREMENT

THE NUMBER OF LINEAR FEET OF CONDUIT BANK TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED AND ACCEPTED IN ACCORDANCE WITH THESE SPECIFICATIONS, AS MEASURED ALONG THE AXIS OF THE CONDUIT LINE, INCLUDING FITTINGS.

F. PAYMENT

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT PRICE BID PER LINEAR FOOT UNDER ITEM TS 625 AS DESCRIBED BELOW, CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR EXCAVATING AND FOR FURNISHING, HAULING, PLACING THE CONDUIT, FITTINGS, CAPPING, SPACERS, CONCRETE, SHEETING AND BRACING, INCIDENTAL CONCRETE AND DUCT CLEANING, REMOVAL OF ALL SURPLUS EXCAVATION AND DISCARDED MATERIAL AND ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

ITEMS AS MEASURED AND PROVIDED ABOVE SHALL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
TS 625	L.F.	CONDUIT MISC.; NON–REINFORCED, CONCRETE ENCASED, FOUR–5 INCH PVC CONDUIT BANK

ITEM TS 625 – CONDUIT, MISC.: NON–ENCASED, STRUCTURE–SUPPORTED 5–INCH FIBERGLASS REINFORCED EPOXY CONDUIT BANK

A. WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR, AND SHALL PROPERLY INSTALL AND CONNECT TO EXPANSION COUPLINGS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, ALL NON–ENCASED, STRUCTURE–SUPPORTED FIBERGLASS REINFORCED EPOXY CONDUIT AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. ALL APPLICABLE SECTIONS OF ITEM 625 SHALL BE UNDERSTOOD AS PART OF THIS SECTION.

B. FIBERGLASS REINFORCED EPOXY (FRE) CONDUIT AND FITTINGS

FIBERGLASS REINFORCED EPOXY CONDUIT SHALL BE COMPOSED OF GLASS FILAMENTS ENCAPSULATED IN AN EPOXY MATRIX. THE CONDUIT AND FITTINGS SHALL BE FILAMENT WOUND. THE GLASS FIBER CONTENT SHALL NOT BE LESS THAN 60% BY WEIGHT OF THE REINFORCED WALL THICKNESS. CONDUIT AND FITTINGS SHALL BE "UL" LISTED. EACH CONDUIT LENGTH SHALL HAVE AN INTEGRAL WOUND–IN EXPANDED COUPLING INCORPORATING AN INTEGRAL URETHANE GASKET FOR SEALING. NO THREADS OR ADHESIVES SHALL BE REQUIRED TO ASSURE WATERTIGHT JOINTS. ALL CONDUIT AND FITTINGS WILL BE PIGMENTED WITH CARBON BLACK DISPERSED HOMOGENEOUSLY THROUGH THE EPOXY GLASS MATRIX FOR ULTRAVIOLET PROTECTION.

FRE DUCT SHALL HAVE THE FOLLOWING PHYSICAL PROPERTIES MEETING APPLICABLE ASTM TEST SPECIFICATIONS:

INSIDE DIAMETER	5 INCHES
WALL THICKNESS	0.096 INCHES
WEIGHT	1.2 LB./FT.
5% DEFLECTION LOAD	205 LB./FT.
THERMAL EXPANSION	0.015 IN./100 FT./DEGREE F
TENSILE STRENGTH	11,000 PSI (AXIAL)

C. DUCTBANK SUPPORT COMPONENTS

ALL STEEL COMPONENTS SHALL BE EITHER HOT–DIP GALVANIZED OR PER ASTM A583. ELEMENTS IN CONTACT WITH FRE DUCT SHALL BE PVC COATED OR FIBERGLASS.

D. MEASUREMENT

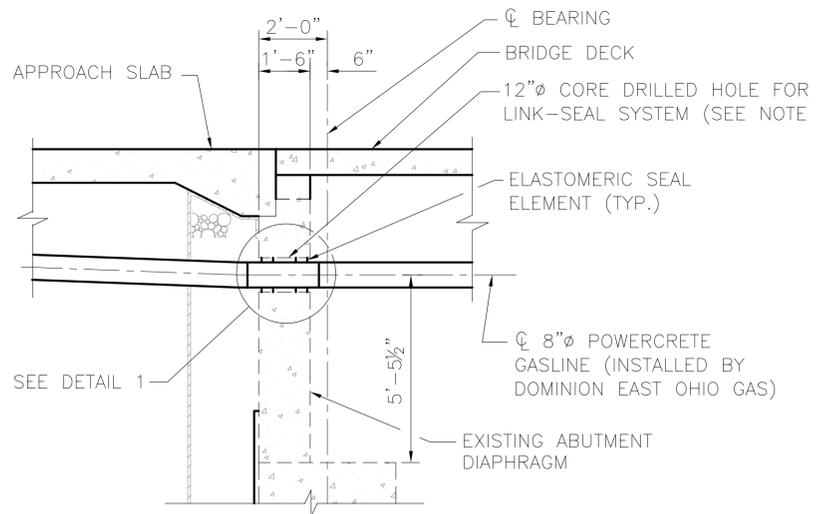
THE NUMBER OF LINEAR FEET OF CONDUIT BANK TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AS MEASURED ALONG THE AXIS OF THE CONDUIT LINE, INCLUDING FITTINGS.

E. PAYMENT

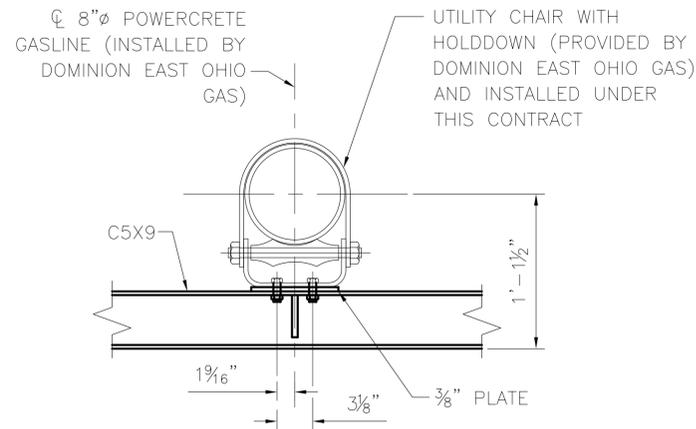
THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT PRICE BID PER LINEAR FOOT FOR ITEM TS 625 AS DESCRIBED BELOW, CLASSIFIED AS TO SIZE AND TYPE, WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING, HAULING AND PLACING THE CONDUIT, FITTINGS, SPACERS, AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM. SUPPORT BRACKETS AND CROSSFRAMES ARE PAID FOR SEPARATELY UNDER ITEM TS 513. THE ITEMS AS MEASURED AND PROVIDED ABOVE SHALL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
TS 625	L.F.	CONDUIT MISC.; NON–ENCASED, STRUCTURE– SUPPORTED FOUR 5 INCH FRE CONDUIT BANK

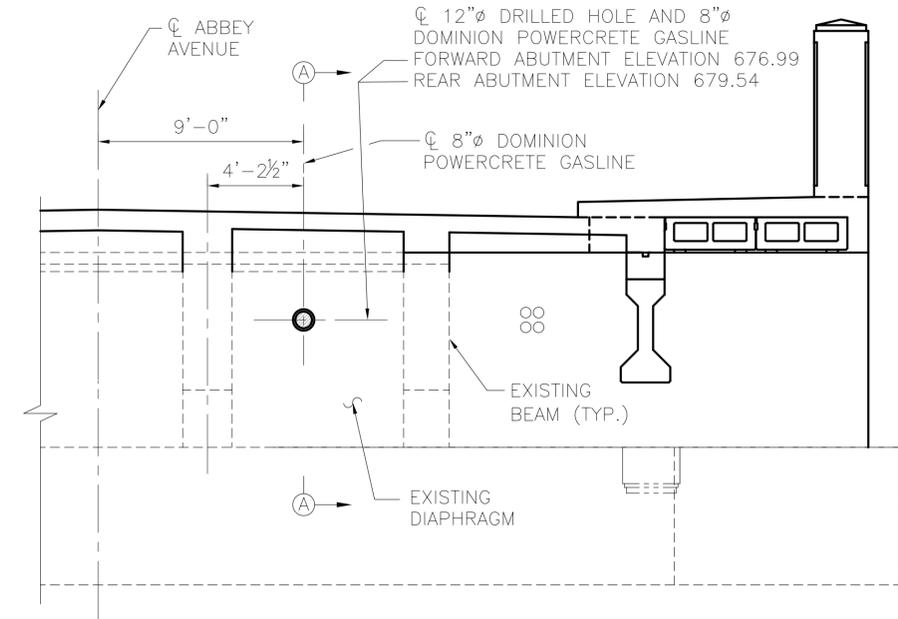
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GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY									
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SHEET U-5									



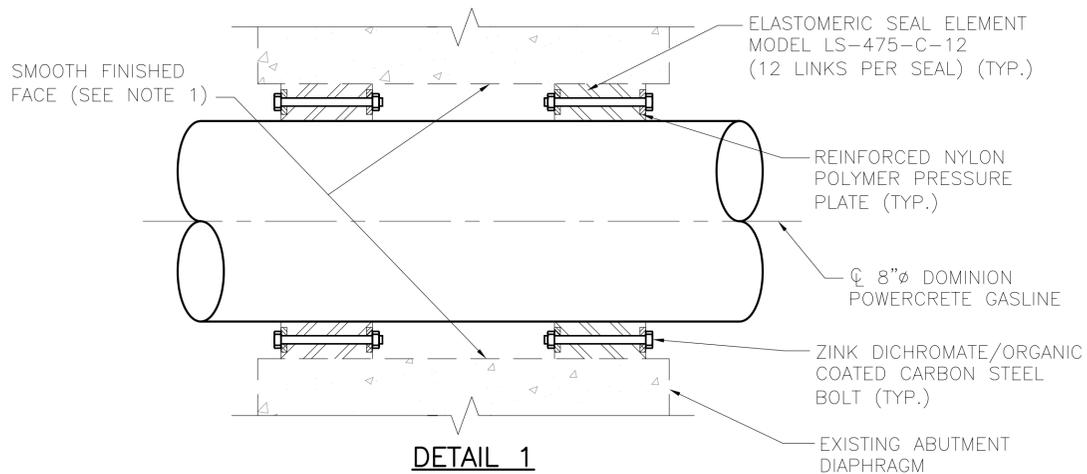
SECTION A-A
(FORWARD ABUTMENT SHOWN;
REAR ABUTMENT SIMILAR)



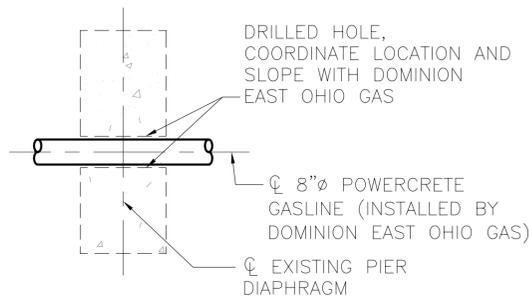
DOMINION EAST OHIO GAS SUPPORT DETAIL



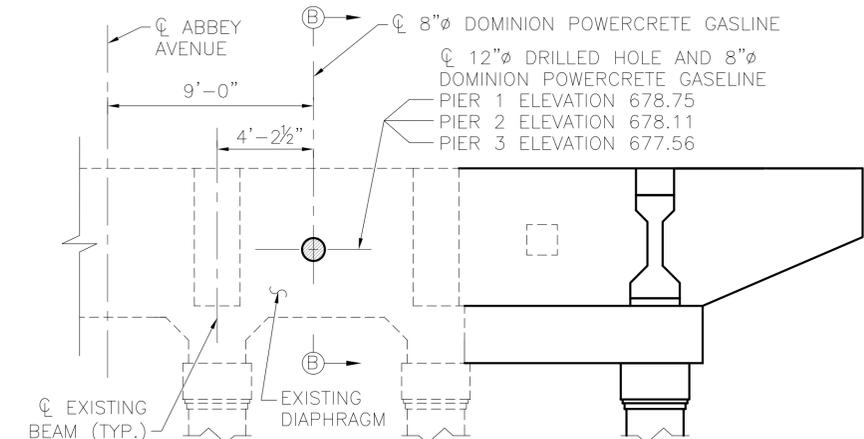
CORE DRILLED HOLE - ABUTMENT DETAIL
(FORWARD ABUTMENT SHOWN; REAR ABUTMENT SIMILAR)



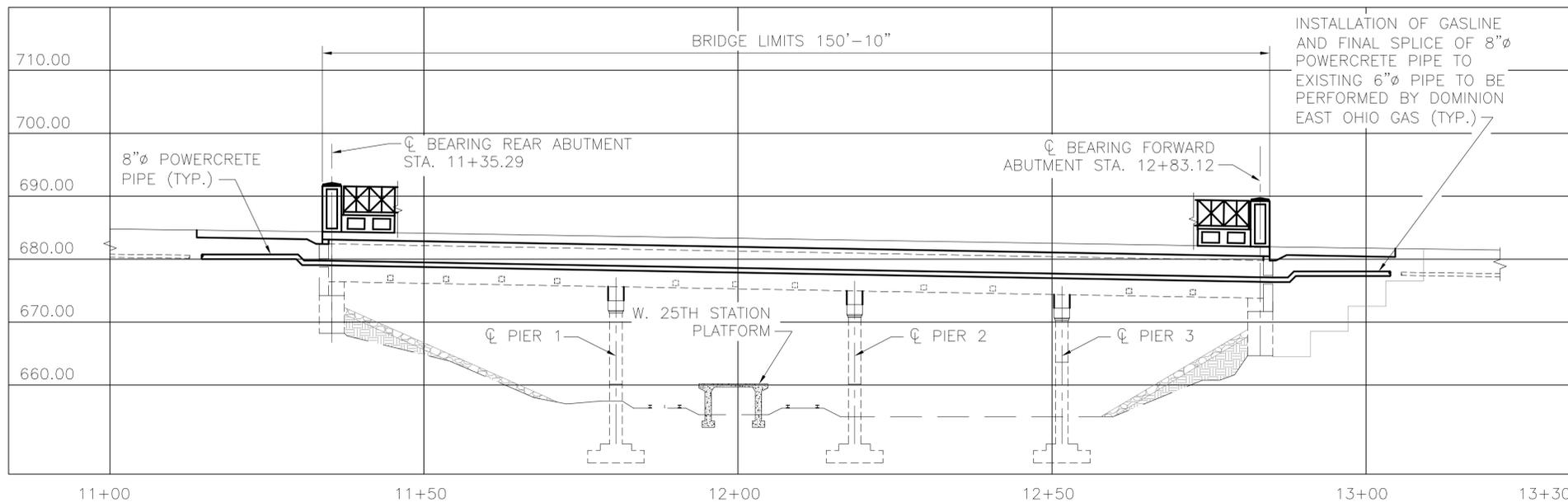
DETAIL 1
(FORWARD ABUTMENT SHOWN;
REAR ABUTMENT SIMILAR)



SECTION B-B



**CORE DRILLED HOLE
TYPICAL PIER DIAPHRAGM DETAIL**



DOMINION EAST OHIO GAS UTILITY PROFILE

LEGEND:

L.F. = LINEAR FEET

NOTES:

- 1) CONTRACTOR TO CORE DRILL HOLE THROUGH ABUTMENT OBTAINING A ROUND, SMOOTH FACE WHEN COMPLETE.
- 2) FOR SUPPORT LOCATIONS, SEE SHEET U-1.
- 3) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.

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REVISIONS:

DRAWN:	CMM
CHECKED:	JFM
APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	

DESIGN AGENCY
HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

DOMINION EAST OHIO GAS
UTILITY DETAILS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
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(O) MARKING

ALL GATE VALVES 3 INCHES AND OVER SHALL HAVE THE IDENTITY OF MAKER, SIZE AND THE YEAR WHEN MADE AND ALSO THE LETTERS "C.W.D." CAST UPON ITS BODY OR DOME IN RAISED LETTERS.

(P) STUFFING BOXES

THE STUFFING BOX ON EACH GATE VALVE 3 INCHES OR OVER MUST BE SEPARATE FROM THE DOME AND FASTENED TO IT BY BOLTS. FOR 2 INCH VALVES AND UNDER, THE STUFFING BOXES MAY BE FORMED IN THE DOME OF THE VALVE. WHEN REQUIRED BY THE ENGINEER, VALVES 16 INCHES AND SMALLER SHALL BE FURNISHED WITH "O" RING TYPE SEAL PLATE. THE SEAL PLATE SHALL BE FITTED WITH AT LEAST TWO (2) "O" RINGS, THE LOWER "O" RING SERVING AS THE PRESSURE SEAL AND THE UPPER "O" RING AS A COMBINED DIRT AND MOISTURE SEAL. THE "O" RINGS SHALL BE COMPOUNDED TO MEET ASTM D200, AND HAVE PHYSICAL PROPERTIES SUITABLE FOR THE APPLICATION.

(Q) SEAT AND GATE RINGS

DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS SHALL BE PROPORTIONED TO FIT THE TEST PRESSURE REQUIRED, AND SHALL MEET THE APPROVAL OF THE ENGINEER. GATE RINGS SHALL BE ROLLED OR PRESSED INTO GROOVES MACHINED IN THE DISCS OR FASTENED BY SOME OTHER METHOD ACCEPTABLE TO THE CITY. DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS FOR GATE VALVES SHALL BE + OR - 1/8 INCH OF THAT SPECIFIED IN THE FOLLOWING TABLES. BODY SEAT RINGS SHALL BE MADE OF GRADE ONE BRONZE. GATE SEAT RINGS SHALL BE MADE OF GRADE ONE BRONZE.

BODY AND GATE RINGS (DIMENSIONS IN INCHES)

BODY WEDGE

VALVE SIZE	A FACE	B DEPTHS	C THICK.	D THICK.	E FACE	F THICK.	G THICK.
3	7/16	9/16	3/16	3/16	1/2	5/32	1/4
4	1/2	9/16	3/16	3/16	9/16	1/8	5/16
6	1/2	9/16	3/16	5/16	9/16	1/8	5/16
8	5/8	5/8	3/16	7/32	11/16	5/32	5/16
10	3/4	5/8	3/16	7/32	11/16	5/32	11/32
12	3/4	5/8	7/32	7/32	13/16	5/32	11/32
16	1	3/4	1/4	9/32	1	3/16	1/2
20	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
24	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
30	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4
36	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4
42	1-3/4	1-1/2	1/2	1/2	1-3/4	1/2	7/8
48	2	1-3/4	1/2	5/8	2	5/8	1

SIDE WEDGE

VALVE SIZE	BODY RINGS			GATE RINGS			F THICK.	G THICK.
	A FACE	B DEPTHS	C THICK.	D THICK.	E FACE	F THICK.		
3	13/32	1/2	3/16	3/16	ALL	BRONZE	DISK	
4	7/16	9/16	3/16	3/16	1/2	5/32	21/64	
6	1/2	11/16	9/32	1/4	5/8	5/32	21/64	
8	17/32	11/16	9/32	1/4	11/16	5/32	21/64	
10	5/8	13/16	3/8	5/16	13/16	5/32	21/64	
12	5/8	13/16	3/8	5/16	13/16	5/32	21/64	
16	3/4	1	15/32	3/8	7/8	3/16	13/32	
20	7/8	1-5/16	17/32	7/16	1	1/4	17/32	
24	1-1/16	1-3/8	21/32	1/2	1-3/16	5/16	19/32	
30	1-5/16	1-1/2	25/32	1/2	1-7/16	5/16	19/32	
36	1-1/2	1-1/2	27/32	1/2	1-9/16	5/16	19/32	
42	1-3/4	1-9/16	29/32	9/16	1-13/16	5/16	5/8	
48	2	1-5/8	29/32	5/8	2-1/16	3/8	11/16	

(R) VALVE STEM

ALL GATE VALVES SHALL BE OF SINGLE SCREW TYPE. ALL THE STEMS SHALL BE OF BRONZE AND MEET THE MINIMUM TENSILE STRENGTH, MAXIMUM NOMINAL YIELD AND MAXIMUM ELONGATION. THE THREADS OF STEMS AND STEM NUTS SHALL BE ACME, MODIFIED ACME OR ONE-HALF V TYPE. THE LENGTH OF THE FLAT ON THE VALVE STEM SHALL BE EQUAL TO THE HEIGHT OF THE OPERATING NUT. IF REQUESTED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS. THE DIAMETERS OF STEMS AT THE BASE OF THE THREAD SHALL BE NOT LESS THAN THOSE SHOWN BELOW, SUFFICIENT LENGTH TO ALLOW THE REMOVAL OF PACKING WITHOUT NECESSITATING THE REMOVAL OF THE OPERATING NUT. THE STEM OPENING AND THRUST BEARING RECESS SHALL BE GRADE ONE, BRONZE BUSHED WITH TWO "O" RING SEALS LOCATED ABOVE THE THRUST COLLAR OR HAVE AN "O" RING LOCATED ABOVE THE THRUST COLLAR AND ONE BELOW FORMING A LUBRICANT CHAMBER. THE NUMBER OF THREADS PER INCH SHALL BE GIVEN BELOW:

SIZE OF VALVE INCHES	MINIMUM TENSILE STRENGTH	DIA. OF STEM @ BASE OF THREAD-IN	MAXIMUM NOMINAL YIELD	NO. OF THREADS PER INCH	NO. ELONG.
1	60,000 PSI	0.469	35,000 PSI	4	15%
1-1/2	"	"	"	"	"
2	"	"	"	"	"
3	"	0.859	"	"	"
4	"	"	"	3	"
6	"	1.000	"	"	"
8	"	"	"	"	"
10	"	1.125	"	"	"
12	"	1.188	"	"	"
16	"	1.438	"	"	"
20	"	1.772	20,000 PSI	"	"
24	"	1.980	"	2	"
30	80,000 PSI	2.480	32,000 PSI	"	"
36	"	2.7301	"	"	"
42	"	3.230	"	"	"
48	"	3.750	"	"	"

THE MANUFACTURER SHALL SUPPLY DATA CONCERNING TORQUE AND END PULL OR PUSH AT THE REQUEST OF THE DIRECTOR.

(S) WRENCH CAPS

THE WRENCH CAPS AND RETAINING NUTS ON HEADS OF VALVE STEMS AND PINION SHAFTS SHALL BE OF BRONZE OR DUCTILE IRON SPECIFICATION A 536, ON VALVES 24 INCH AND OVER, WRENCH CAPS SHALL BE 2 INCH SQUARE AND 2 INCH DEEP. ON VALVES 4 INCHES TO 20 INCHES INCLUSIVE, THEY SHALL BE 1-3/4 INCHES SQUARE ON TOP, 1-7/8 INCHES SQUARE AT BASE, AND 1-3/4 INCHES DEEP. ON 3 INCH VALVES AND UNDER THEY SHALL BE 1-1/4 INCHES SQUARE ON TOP, 1-3/8 INCHES SQUARE AT BASE AND 1-1/2 INCHES DEEP. MACHINED WRENCH CAPS FOR VALVES 3-INCHES TO 48-INCHES INCLUSIVE SHALL BE FITTED TO A MACHINED SQUARE STEM OR PINION SHAFT AND HELD IN PLACE BY A RETAINING NUT OF BRONZE, ON 1-1/2 INCH AND 2-INCH VALVES THE WRENCH CAP SHALL BE SECURED TO THE SHAFT WITH A BRASS PIN. WRENCH CAPS SHALL HAVE A CUTAWAY SKIRT TO PERMIT EASY ACCESS TO GLAND BOLTS.

(T) VALVES

VALVES ARE TO OPEN CLOCKWISE EXCEPT THOSE 2 INCHES AND UNDER. ALL GATE VALVES 3 INCHES AND OVER INCLUDING BYPASS VALVES, SHALL BE MADE TO OPEN BY TURNING IN A CLOCKWISE DIRECTION. ALL VALVES ARE TO BE SO MADE THAT THEY CAN BE EASILY OPERATED.

(U) FACING OF GATES

ALL DISCS OF GATES AND THREADS FOR SEAT RINGS IN THE BODY SHALL BE MACHINED TRUE AND A GROOVE OR GROOVES SHALL BE MACHINED IN EACH DISC OR GATE FOR THE RECEPTION OF THE FACE RING. THE DISC AND SEAT RINGS SHALL BE SECURELY AND RIGIDLY ATTACHED TO THE DISCS OR BODY SEATS IN A MANNER APPROVED BY THE ENGINEER, AND THE RINGS ARE TO BE FINISHED TO A TRUE SURFACE.

(V) ROLLERS AND SCRAPERS

IN ALL VALVES 20 INCH IN DIAMETER AND LARGER, DESIGNED TO LIE HORIZONTALLY, EACH GATE OR DISC SHALL BE PROVIDED WITH TWO BRONZE ROLLERS TRAVELLING ON BRONZE TRACKS AND PROVIDED WITH SUITABLE BRONZE SCRAPER; OR TWO STAINLESS STEEL ROLLERS TRAVELLING ON STAINLESS STEEL FACED TRACKS AND PROVIDED WITH SUITABLE STAINLESS STEEL SCRAPERS. THE THICKNESS OF THE FACING OF THE TRACKS SHALL BE NOT LESS THAN 1/4 INCHES. THE BRONZE SHALL BE CLASS 1 AND THE STAINLESS STEEL SHALL BE ASTM A276-75, TYPE 302.

(W) VALVE GUIDES

ALL VALVES 20 INCHES IN DIAMETER AND LARGER, SHALL BE PROVIDED WITH GUIDES OR TRACKS WHICH SHALL BE MADE STRAIGHT AND TRUE, AND ALL IRREGULARITIES MUST BE MACHINED OFF. THE GUIDES OR TRACKS OF HORIZONTAL VALVES SHALL BE SUBSTANTIALLY FACED WITH A MINIMUM OF 1/4 INCH OF GRADE ONE BRONZE, OR STAINLESS STEEL ASTM A276-75, TYPE 302, SATISFACTORY TO THE DIRECTOR, SECURELY FASTENED AND PLANED OFF SMOOTH AND TRUE.

(X) GEARING

ALL VALVES 20 INCHES IN DIAMETER AND LARGER SHALL BE EQUIPPED WITH ENCLOSED CUT TOOTH STEEL GEARS. GEARS, SHAFTS AND BEARINGS, SHALL BE SUCH AS TO PRODUCE EASY OPERATION WITHOUT BENDING OR TWISTING.

(Y) DOWEL PINS

ALL GEAR VALVES SHALL HAVE TWO DOWEL PINS SET IN THE FLANGES CONNECTING THE DOME AND BODY. SIZE OF THE PINS TO BE SHOWN IN PLANS.

(Z) INDICATORS

ALL VALVES 20 INCHES IN DIAMETER AND OVER, SHALL BE EQUIPPED WITH INDICATORS DENOTING THE POSITIONS OF THE GATE. THE MOVING PART AND BEARINGS TO BE OF BRONZE OR BRONZE-LINED.

(AA) GREASE CASES

ALL VALVES 20 INCHES IN DIAMETER AND LARGER, SHALL HAVE WATERTIGHT GREASE CASES INSTALLED. THE GREASE CASES SHALL BE OF THE EXTENDED TYPE AND SHALL BE MADE OF CAST IRON CONFORMING TO ASTM SPECIFICATION SERIAL DESIGNATION: A126, CLASS B OR ANY SUBSEQUENT AMENDMENT THERETO. BEARING SURFACES FOR VALVE STEM AND PINION SHAFT SHALL BE BRONZED BUSHED WITH GRADE ONE BRONZE. THE GREASE CASES SHALL BE SECURELY BOLTED TO THE VALVE BONNET THROUGH A HEAVY CAST IRON YOKE. THE YOKE SHALL BE OF SUFFICIENT LENGTH TO PROVIDE SPACE FOR REPACKING VALVE AND GREASE CASE STUFFING BOXES. ALL GREASE CASES SHALL BE PROVIDED WITH A REMOVABLE COVER SECURELY BOLTED IN PLACE TO ALLOW EASY ACCESS TO THE GEARS. THERE SHALL ALSO BE PROVIDED CONVENIENT FILLING AND DRAINING PLUGS AND SUFFICIENT OIL TO FULLY SUBMERGE THE PINION GEAR. THE VALVES SHALL BE DELIVERED WITH THE GREASE CASES FILLED WITH THE PROPER OIL AS RECOMMENDED BY THE MANUFACTURER.

(BB) BRONZE PARTS

THE STEMS, RETAINING NUTS, DISC AND SEAT RINGS SHALL BE OF SOLID BRONZE. OTHER PARTS SUCH AS WEDGES, GLANDS, THRUST BEARINGS, GEAR SPINDLES, ROLLERS, SCRAPERS TRACKS, STEM NUTS, AND ALL OTHER PARTS COMING TOGETHER IN OPERATION, SHALL BE OF BRONZE OR STAINLESS STEEL OF A THICKNESS NO LESS THAN 1/4 OF AN INCH AND AS SHOWN ON DRAWINGS SUBMITTED AND APPROVED. ALL 2 INCH VALVES AND UNDER SHALL BE MADE ENTIRELY OF BRONZE, EXCEPT HANDWHEELS WHICH SHALL BE MADE OF MALLEABLE IRON.

(CC) CAST IRON PARTS

THE BODIES, COVERS, DISCS, FRAMES, ETC., OF ALL GATE VALVES 3 INCHES AND OVER SHALL BE CAST IRON EXCEPT ITEMS SPECIFYING BRONZE BODIES.

(DD) WATERWAY OPENING

WITH THE VALVE OPEN, AN UNOBSTRUCTED WATERWAY SHALL BE AFFORDED, THE DIAMETER OF WHICH IS NOT TO BE LESS THAN THE FULL NOMINAL DIAMETER OF THE VALVE.

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WATERWORKS	REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS
RTA PROJ	BID PAC
29D	
SHEET	
U-15	

MATERIAL SPECIFICATIONS

(A) STRENGTH OF VALVES

THE GATE AND CHECK VALVES 3 INCHES TO 12 INCHES SHALL BE DESIGNED FOR 200 PSI WORKING PRESSURE AND 16 INCH AND ABOVE 150 PSI. SHALL WITHSTAND AN INTERNALLY APPLIED HYDROSTATIC PRESSURE AT ALL POINTS OF AT LEAST 300 POUNDS PER SQUARE INCH, EXCEPT AS SPECIFIED IN SECTION ON "HYDROSTATIC TESTS AT THE FACTORY". A FACTOR OF SAFETY OF NOT LESS THAN 10 SHALL BE USED ON THE DESIGN. SHOULD TESTS REVEAL ANY WEAKNESS THE VALVES FROM THAT DESIGN SHALL BE REJECTED, AND A NEW DESIGN MADE.

(B) REINFORCEMENT AT FLANGES

ALL VALVE FLANGES SHALL BE REINFORCED BY FILLETS IN ACCORDANCE WITH THE MANUFACTURER'S PRACTICE PROVEN SATISFACTORY IN ACTUAL SERVICE.

(C) JOINTS

ALL JOINTS OF THE VALVES SHALL BE FACED TRUE IN A LATHE OR PLANER, AND PUT TOGETHER WITH A GASKET OF SOME MATERIAL ACCEPTABLE TO THE ENGINEER.

(D) BOLT HOLES

ALL BOLT HOLES SHALL BE ACCURATELY DRILLED FROM TEMPLATES AND SPACED EQUAL DISTANCES APART.

(E) BOLTS AND NUTS

ALL BOLTS AND NUTS SHALL BE MADE OF SILICON BRONZE (ASTM B98-75 ALLOY A), STAINLESS STEEL (ASTM A276-55, TYPE 302), DUCTILE IRON (ASTM A536 SQUARE GRADE 65-45-12), KORETEN A OR AN ACCEPTABLE EQUIVALENT.

(F) PARTS TO BE INTERCHANGEABLE

ALL PARTS OF VALVES OF THE SAME SIZE AND MAKE MUST BE PERFECTLY INTERCHANGEABLE AND ALL WORK MUST BE DONE IN A THOROUGH AND WORKMANLIKE MANNER.

(G) CASTINGS

ALL CASTING, WHETHER OF BRONZE, IRON OR STEEL, SHALL BE SOUND AND SMOOTH WITHOUT COLD SHUTS, SWELLS, LUMPS, SCABS, BLISTERS, SAND HOLES OR OTHER IMPERFECTIONS, AND SHALL BE MADE IN ACCORDANCE WITH THE BEST MODERN FOUNDRY PRACTICE TO OBTAIN CASTINGS OF THE BEST QUALITY AND/OR OF UNIFORM THICKNESS. NO WELDING, PLUGGING OR FILLING OF HOLES OR OTHER DEFECTS WILL BE PERMITTED. FOR PARTS WHOSE THICKNESS IS LESS THAN ONE (1) INCH, CASTINGS BEING THINNER THAN THE SPECIFIED THICKNESS BY 0.06 INCH OR MORE SHALL BE REJECTED; AND FOR PARTS FOR WHOSE THICKNESS IS ONE (1) INCH OR MORE, CASTINGS BEING THINNER THAN SPECIFIED BY 0.08 INCH OR MORE SHALL BE REJECTED.

(H) BRONZE PARTS

1) BRONZE FOR PARTS, OTHER THAN THOSE LISTED BELOW, SHALL BE GRADE ONE OR APPROVED EQUIVALENT.

2) VALVE STEMS, PINION SHAFTS, STEM NUTS, WRENCH CAPS AND RETAINING NUTS SHALL BE MADE OF GRADE THREE BRONZE.

3) DISC RINGS SHALL BE MADE OF GRADE FIVE BRONZE.

(I) TESTS OF BRONZE

1) IF REQUESTED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS.

2) ALL STEMS OF 16 INCH GATE VALVES AND OVER SHALL HAVE A PROLONGATION ON ONE END OF EACH STEM, OF THE SAME DIMENSIONS AND CROSS SECTION AS THE STEM, AND OF SUFFICIENT LENGTH TO ENABLE THE CUTTING OF SPECIMENS PARALLEL WITH THE LONGITUDINAL AXIS OF THE STEM SPECIMENS SHALL BE CUT FROM PROLONGATIONS ONE-HALF WAY BETWEEN SURFACE AND CENTRAL AXIS. OTHER METHODS OF TEST WILL BE CONSIDERED BY THE ENGINEER, BUT MUST BE SUBMITTED IN DETAIL WITH THE BID.

3) FOR ALL STEMS OF GATE VALVES SMALLER THAN 16 INCHES, NOT LESS THAN TWO TEST PIECES SHALL BE CAST FROM THE MOLTEN METAL OF EACH HEAT FROM WHICH VALVE STEMS ARE BEING MADE.

4) ALL STEMS MADE FROM BRONZE SHOWING LESS STRENGTH ELONGATION AND OR DUCTILITY THAN ABOVE REQUIRED SHALL BE REJECTED.

5) TESTS OF VALVE STEMS, OR THE VARIOUS PARTS OF ANY VALVE, MAY BE MADE AT ANY TIME BEFORE OR AFTER DELIVERY, AND IF FOUND TO BE DEFICIENT IN STRENGTH OR UNSATISFACTORY TO THE ENGINEER, THE WHOLE LOT OR SHIPMENT MAY BE REJECTED.

(J) CAST IRON

1) QUALITY: CAST IRON SHALL CONFORM TO ASTM SPECIFICATION A126, CLASS B, OR LATEST REVISION THEREOF. ALL IRON CASTINGS SHALL BE TOUGH AND WITHOUT BRITTLENESS, SUCH AS MAY BE CUT, DRILLED CHIPPED BY HAND WITH DUE EASE. A BLOW FROM A HAMMER SHALL PRODUCE AN INDENTATION ON THE EDGE OF THE CASTING WITHOUT FLAKING THE METAL.

2) TEST BARS FROM THE MOLTEN METAL FROM WHICH THE VALVES ARE BEING MADE SHALL BE TESTED AT SUCH TIME AND IN SUCH MANNER AS THE ENGINEER MAY REQUIRE. THE REQUIREMENTS OF ASTM SPECIFICATIONS A126 CHARACTERISTICS OF THE IRON CASTINGS. SHOULD THE RESULT OBTAINED FROM THE BAR TESTED FAIL TO SHOW THAT THE CAST IRON MEETS THE REQUIREMENTS HEREIN SPECIFIED, THE ENTIRE MELT WILL BE REJECTED. TEST BARS, HOWEVER, WHOSE FAILURE IS DUE TO INHERENT DEFECTS SHALL NOT BE CONSIDERED. ALL VALVES MADE FROM IRON SHOWING LESS STRENGTH THAN CALLED FOR IN THE ASTM SPECIFICATIONS SHALL BE REJECTED.

(K) QUALITY OF MATERIALS

GRADE ONE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B62.

GRADE TWO CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B132, ALLOY A.

GRADE THREE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B132, ALLOY B.

GRADE FOUR ROLLED BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B21, ALLOY A (ONE-HALF HARD).

GRADE FIVE BRONZE SHALL BE SUFFICIENTLY MALLEABLE TO CONFORM TO DOVETAILED GROOVES WHEN PEENED OR ROLLED, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, WITHOUT DEFORMATION, OF 4,000 PSI, AND SHALL HAVE THE FOLLOWING CHEMICAL COMPOSITION:

COPPER, PERCENT	91.0
TIN, PERCENT	0.0
ZINC, PERCENT	5.0
LEAD, PERCENT	4.0

SILICON BRONZE SHALL CONFORM TO ASTM SPECIFICATION B98, ALLOY A.

STAINLESS STEEL SHALL CONFORM TO ASTM SPECIFICATION A276, TYPE 302.

CAST IRON SHALL CONFORM TO ASTM SPECIFICATIONS A126, CLASS B. WROUGHT IRON SHALL BE TOUGH FIBEROUS, AND UNIFORM IN CHARACTER. SPECIMENS CUT FROM BARS AND BROKEN IN A TESTING MACHINE SHALL SHOW A TENSILE STRENGTH OF NOT LESS THAN 4500 PSI WITH AN ELONGATION OF 18 PERCENT IN EIGHT DIAMETERS.

(L) OTHER MATERIALS

ALL OTHER MATERIALS USED IN THE MANUFACTURE OF THESE VALVES AND NOT SPECIFIED IN THE SPECIFICATIONS SHALL BE OF THE BEST QUALITY OF THEIR KINDS, AND SUBJECT TO INSPECTION, TESTS, AND APPROVAL BY THE ENGINEER.

(M) CHEMICAL ANALYSIS

CHEMICAL ANALYSIS OF THE MATERIAL USED SHALL BE FURNISHED BY THE CONTRACTOR WHENEVER REQUIRED BY THE ENGINEER.

(N) CLEANING OF CASTINGS

ALL IRON CASTINGS SHALL BE THOROUGHLY CLEANED ON THE OUTSIDE AND INSIDE SURFACES, AND PROTECTED FROM RAIN OR MOISTURE UNTIL THEY ARE PAINTED.

(O) HYDROSTATIC TESTS AT SHOP

ALL GATE VALVES SHALL BE TESTED IN THE SHOP BY HYDROSTATIC PRESSURE BY CLOSING THE VALVE AND APPLYING THE REQUIRED TEST PRESSURE IN THE BODY AND DOME OF THE VALVE AS SPECIFIED BELOW:

3" AND UNDER.....	300 PSI	- NO TIME REQUIREMENT
4" THROUGH 12".....	400 PSI	- NO TIME REQUIREMENT
14" THROUGH 20".....	300 PSI	- FOR 15 MINUTES, DROP PRESSURE TO 150 PSI, THEN ELEVATE AGAIN TO 300 PSI FOR 15 MINUTES-- A TOTAL OF 1/2 HOUR.
24" THROUGH 48".....	300 PSI	- FOR 1/2 HOUR, DROP PRESSURE TO 150 PSI, THEN ELEVATE AGAIN TO 300 PSI FOR 30 MINUTES-- A TOTAL OF 1 HOUR.

THIS IS A MODIFICATION OF SECTION 29 OF THE "STANDARD SPECIFICATIONS AWWA DESIGNATION: C500-71". ALL LEAKS, FLAWS OR OTHER DEFECTS DEVELOPED IN MAKING THESE TESTS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER OR THE ENTIRE PIECE SHALL BE REJECTED. AFTER TESTING, ALL VALVES SHALL BE THOROUGHLY DRAINED. ALL EQUIPMENT FOR TESTING AND ALL TESTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.

(P) PERFORMANCE TESTS

EACH VALVE SHALL BE OPERATED IN THE POSITION THAT IT WILL ASSURE IN SERVICE, AND FOR THE FULL LENGTH OF GATE TRAVEL IN BOTH DIRECTIONS TO DEMONSTRATE THE FREE AND PERFECT FUNCTIONING OF ALL PARTS IN THE INTENDED MANNER. ANY DEFECTS OF WORKMANSHIP SHALL BE CORRECTED AND THE TEST REPEATED UNTIL SATISFACTORY PERFORMANCE IS DEMONSTRATED.

PLACING AND TESTING

(A) ALL VALVES SHALL BE SET ACCURATELY AND CAREFULLY TO THE LINES AND GRADES GIVEN. ALL CONNECTIONS TO PIPE SHALL HAVE THE NECESSARY FLANGED, LEAD, SOLDERED JOINT, SCREWED OR VICTAULIC ENDS AS REQUIRED UNDER THE VARIOUS SECTIONS OF THESE SPECIFICATIONS AND AS SHOWN ON THE VALVE SCHEDULE.

(B) AFTER THE VALVES ARE SET IN PLACE AND READY TO OPERATE, THE CONTRACTOR SHALL TEST THEM UNDER WORKING PRESSURE AND CONDITIONS HEREIN SPECIFIED UNDER "GENERAL - TESTING MAINS". ANY VALVE FOUND TO LEAK SHALL BE MADE WATERTIGHT AND IF FOUND TO BE OF FAULTY DESIGN, SHALL BE SATISFACTORILY REPAIRED OR REPLACED BY THE CONTRACTOR.

PAINTING

(A) IRON BODY VALVES SHALL EITHER BE DIPPED IN ASPHALT PAINT AND ALL BRONZE PARTS CLEANED, OR ALL IRON CASTINGS SHALL BE PAINTED INSIDE BEFORE ASSEMBLING WITH TWO (2) COATS OF APPROVED PAINT, AND AFTER PASSING THE HYDRAULIC TEST, SHALL BE GIVEN AT LEAST TWO (2) COATS OF APPROVED PAINT OUTSIDE.

(B) AFTER ERECTION, ALL EXPOSED METAL SURFACES OF VALVES EXCEPT BRASS OR BRONZE SHALL BE PAINTED WITH TWO (2) FIELD COATS OF COAL TAR PITCH PAINT USING INERTOL 66, OR KOPPERS BITUMASTIC 50 OR APPROVED EQUAL.

INSPECTION

THE ENGINEER OR HIS AUTHORIZED DESIGNATE WILL INSPECT THE MATERIAL AND WORK DONE, AS THE INTEREST OF THE CITY OR GCRTA MAY REQUIRE. HE SHALL HAVE UNRESTRICTED ACCESS TO THE CONTRACTOR'S PLANT, AND TO ALL PARTS OF THE WORK; AND OTHER PLACES AT WHICH THE PREPARATION OF THE MATERIAL AND THE CONSTRUCTION OF THE DIFFERENT PARTS OF THE WORK TO BE DONE UNDER THESE SPECIFICATIONS ARE CARRIED ON, AND HE SHALL RECEIVE ALL FACILITIES AND ASSISTANCE TO CARRY OUT HIS WORK OF INSPECTION AND TESTING IN A MANNER SATISFACTORY TO THE ENGINEER. SUCH INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, OR ANY MODIFICATIONS THEREOF AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE.

REVISIONS:

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DRAWN: EJK	CHECKED: MJW	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:
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GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

WATERWORKS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D	BID PAC
SHEET U-16	

DATE OF PROPOSAL

PROPOSAL SHALL BE ACCOMPANIED BY DRAWINGS FURNISHED BY THE MANUFACTURER, FULLY AND DISTINCTLY ILLUSTRATING AND DESCRIBING AND GIVING THE WEIGHT OF THE VALVES PROPOSED TO FURNISHED.

DRAWINGS

(A) PRIOR TO THE MANUFACTURE OF ANY VALVES, THE CONTRACTOR SHALL SUBMIT FOR THE APPROVAL OF THE ENGINEER AND DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND COMPLETE WORKING, DETAIL, AND DIMENSION DRAWINGS SHOWING THICKNESS AND KINDS OF MATERIAL, AND SIMILAR INFORMATION.

(B) ONE (1) PRINT EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE ENGINEER. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER THREE (3) SETS OF MYLAR OR REPRODUCIBLE CLOTH, ONE OF WHICH SHALL BE FURNISHED TO THE DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND, AND ONE (1) SET RETURNED TO THE CONTRACTOR. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED.

(C) IF THE VALVE FURNISHED IS ONE PREVIOUSLY APPROVED FOR WHICH DRAWINGS ARE PRESENTLY ON FILE WITH THE DEPARTMENT OF PUBLIC UTILITIES, THE DRAWING REQUIREMENT WILL BE WAIVED.

PAYMENT

THE UNIT PRICE STIPULATED FOR EACH "ITEM TS 638 - VALVES" CLASSIFIED AS TO SIZE AND TYPE, SHALL INCLUDE THE FURNISHING, PLACING, TESTING AND PAINTING OF THE AIR RELIEF LOCKS, DRAIN VALVES, GATE VALVES, CHECK VALVES, INCLUDING BYPASS VALVES, OPERATING NUTS, VALVE BOXES AND COVERS AND OTHER ACCESSORIES AND APPURTENANCES AND THE FURNISHING OF ALL MATERIALS, LABOR, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR AS SHOWN.

ITEM TS 638 - CUTTING-IN VALVE WITH VALVE BOX, COMPLETE

WORK INCLUDED

THE DIVISION OF WATER WILL SET THE TIME OF INSTALLATION AND THE CONTRACTOR WILL DO ALL PIPE CUTTING AND INSTALLING UNDER THE SUPERVISION OF THE DIVISION OF WATER AND HEAT. THE CONTRACTOR SHALL FURNISH AND HAUL TO THE PROPER LOCATION THE HUB VALVE AND VALVE BOX COMPLETE, STANDARD NO. 38 DRESSER COUPLING OR APPROVED SMITH BLAIR COUPLING OR APPROVED EQUAL, CAST IRON PIPE AND LEAD FOR THE INSTALLATION. THE CONTRACTOR SHALL EXCAVATE, PROVIDE SHEETING AND BRACING AS NECESSARY, BACKFILL AND REPAVE AS NECESSARY.

QUALITY OF VALVES

THE VALVES SHALL BE A.P. SMITH MANUFACTURING CO. OR APPROVED EQUAL AND SHALL COMPLY WITH THE REQUIREMENTS OF THE "ITEM TS 638 - VALVES" OF THESE SPECIFICATIONS, INSOFAR AS THEY APPLY.

PAYMENT

THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID FOR EACH "ITEM TS 638 - CUTTING IN VALVE WITH VALVE BOX COMPLETE", CLASSIFIED AS TO SIZE. THE PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL EXCAVATION, SHEETING, BRACING, BACKFILLING, REPAVING, FURNISHING AND INSTALLING THE CUTTING-IN VALVE AND THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM OF WORK.

REVISIONS:

DRAWN:	EJK
CHECKED:	MJW
APPROVED:	RHW
DATE:	6-1-2007
JOB NO.:	

DESIGN AGENCY
HNTB 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816
 ENGINEERING & PROJECT
 MANAGEMENT DIVISION

RTA
 GREATER CLEVELAND
 REGIONAL TRANSIT
 AUTHORITY

WATERWORKS
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA PROJ
 29D
 SHEET
 U-17

DIVISION OF WATER — LABOR CHARGES

THE CITY, DIVISION OF WATER, WILL CHARGE TO THE CONTRACTOR CERTAIN CHARGES PURSUANT TO SECTION 531.03(o) OF THE CODIFIED ORDINANCES OF THE DIVISION OF WATER, AS AMENDED BY ORDINANCE 1043-75 AND ADOPTED BY THE CITY OF CLEVELAND BOARD OF CONTROL RESOLUTION NO: 003-82, AND PER ORDINANCE NO: 2661-81, FOR DIVISION OF WATER LABOR REQUIRED IN THE WORK PAYABLE TO THE PERMITS AND SALES SECTION OF THE DIVISION OF WATER, BEFORE ANY WORK IS PERFORMED.

THE CONTRACTOR SHALL PROVIDE IN HIS BID, INCLUDED WITH THE APPROPRIATE PAY ITEM FOR WATER WORK TO BE PERFORMED IN THIS CONTRACT, ANY AND ALL CITY OF CLEVELAND, DIVISION OF WATER, LABOR CHARGES IN THE AMOUNTS INDICATED HEREIN. NO ADDITIONAL COMPENSATION WILL BE PROVIDED TO THE CONTRACTOR(S) BY GCRTA FOR DIVISION OF WATER LABOR FOR WORK REQUIRED TO BE PERFORMED BY THE DIVISION OF WATER BUT THE REQUIRED CWD LABOR, PERMIT, AND CITY INSPECTION CHARGES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) AND SHALL BE DEEMED TO BE INCLUDED IN THE PRICE BID FOR THE APPROPRIATE WATER WORK PAY ITEM. (SEE WORK TO BE DONE BY THE CITY)

THE CONTRACTOR SHALL PROVIDE COPIES OF ALL CORRESPONDENCE (I.E., INVOICES, RECEIPTS, CANCELLED CHECKS, ETC.) BETWEEN CWD AND THE CONTRACTOR TO THE PROJECT ENGINEER/SUPERVISOR TO DOCUMENT APPROPRIATE PAYMENTS.

DIVISION OF WATER CHARGES STIPULATED HEREIN ARE ON A FLAT RATE BASIS, UNLESS OTHERWISE SPECIFIED AS A "DEPOSIT — COST PLUS" BASIS.

ANY WORK PERFORMED ON CONCRETE WATER MAINS WILL BE PRICED 55% ABOVE THE CHARGES INDICATED BELOW.

PRICES ARE SUBJECT TO CHANGE AND CONTRACTOR MUST PAY MOST CURRENT FEES.

NEW CONNECTIONS: (INSTALLATION ONLY — GENERAL SERVICE AND FIRE LANES)

1"	\$ 135.00	4"	\$ 1,065.00
1" (SINGULAR)	\$ 135.00	6"	\$ 1,120.00
1-1/2"	\$ 640.00	8"	\$ 1,260.00
2"	\$ 690.00	10"	\$ 1,500.00
3"	\$ 835.00	12"	\$ 2,100.00

RETAP AND RECONNECTS: (INSTALLATION ONLY — GENERAL SERVICE AND FIRE LINES)

1"	\$ 135.00	4"	\$ 1,065.00
1" (SINGULAR)	\$ 135.00	6"	\$ 1,120.00
1-1/2"	\$ 640.00	8"	\$ 1,260.00
2"	\$ 690.00	10"	\$ 1,500.00
3"	\$ 835.00	12"	\$ 2,100.00

EXTEND: (INSTALLATION ONLY — GENERAL SERVICE AND FIRE LINES)

1"	\$ 135.00	4"	\$ 1,065.00
1" (SINGULAR)	\$ 135.00	6"	\$ 1,120.00
1-1/2"	\$ 640.00	8"	\$ 1,260.00
2"	\$ 690.00	10"	\$ 1,500.00
3"	\$ 835.00	12"	\$ 2,100.00

FIRE LINES — O.S. & Y. AND CHECK VALVES: (LABOR ONLY — ASSEMBLE AND INSTALL; OR REMOVE AND RESET)

4"	\$ 100.00	10"	\$ 175.00
6"	\$ 125.00	12"	\$ 200.00
8"	\$ 150.00		

METERS — BYPASS AND CHECK VALVES: (LABOR ONLY — ASSEMBLE AND INSTALL; OR REMOVE AND RESET)

1-1/2"	\$ 275.00	6"	\$ 565.00
2"	\$ 275.00	8"	\$ 715.00
3"	\$ 275.00	10"	\$ 900.00
4"	\$ 430.00	12"	\$ 1,100.00

BACKFLOW PREVENTION DEVICE: (LABOR ONLY — REMOVE AND RESET)

1-1/2"	\$ 190.00	6"	\$ 375.00
2"	\$ 190.00	8"	\$ 475.00
3"	\$ 190.00	10"	\$ 600.00
4"	\$ 285.00	12"	\$ 725.00

TAPPING SLEEVES AND VALVES: (LABOR ONLY — INSTALL, TAP, AND TEST) SEE PARAGRAPH "WORK TO BE DONE BY THE CITY"

MAIN SIZE		MAIN SIZE	
6" OR LESS	\$ 700.00	12"	\$ 760.00
8"	\$ 710.00	16"	\$ 890.00
10"	\$ 730.00	20"	\$ 2,700.00 DEPOSIT (COST PLUS)

PIPE CUTTING: (PER CUT)

ANY SIZE	\$ 500.00
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PLUGGING SERVICE CONNECTIONS AND WATER MAINS

MAIN SIZE:	
LESS THAN 2"	\$ 700.00
2" THROUGH 12"	\$ 1200.00
16" AND LARGER	\$ 1500.00 DEPOSIT (COST PLUS)

RESETTING OF SMALL METERS: (LABOR ONLY — COST OF METER NOT INCLUDED)

1" AND SMALLER	\$ 60.00
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CURB VALVES: (LABOR ONLY — ON INSTALLATION REQUIRING AN EASEMENT, INSIDE METER, OR FIRE LINE)

1-1/2" AND 2"	\$ 90.00
3" THROUGH 8"	\$ 200.00
10" AND 12"	\$ 300.00

CHLORINATION: (LABOR ONLY)

MAIN SIZE	COST PER FOOT	MINIMUM CHARGE
6"	\$ 0.35	\$ 420.00
8"	\$ 0.45	\$ 485.00
10"	\$ 0.45	\$ 485.00
12"	\$ 0.55	\$ 550.00
16"	\$ 0.60	\$ 630.00
20" AND LARGER	ACTUAL COST	ACTUAL COST

FLUSH, TEST AND SAMPLE: (LABOR ONLY)

WHERE LENGTH OF NEW /RELOCATED/LOWERED PIPE IS 350 OR LESS — \$ 250.00

REVISIONS:

DRAWN: EJK
CHECKED: MJW
APPROVED: RHW
DATE: 6-1-2007
JOB NO.:

DESIGN AGENCY
HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816
ENGINEERING & PROJECT
MANAGEMENT DIVISION

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

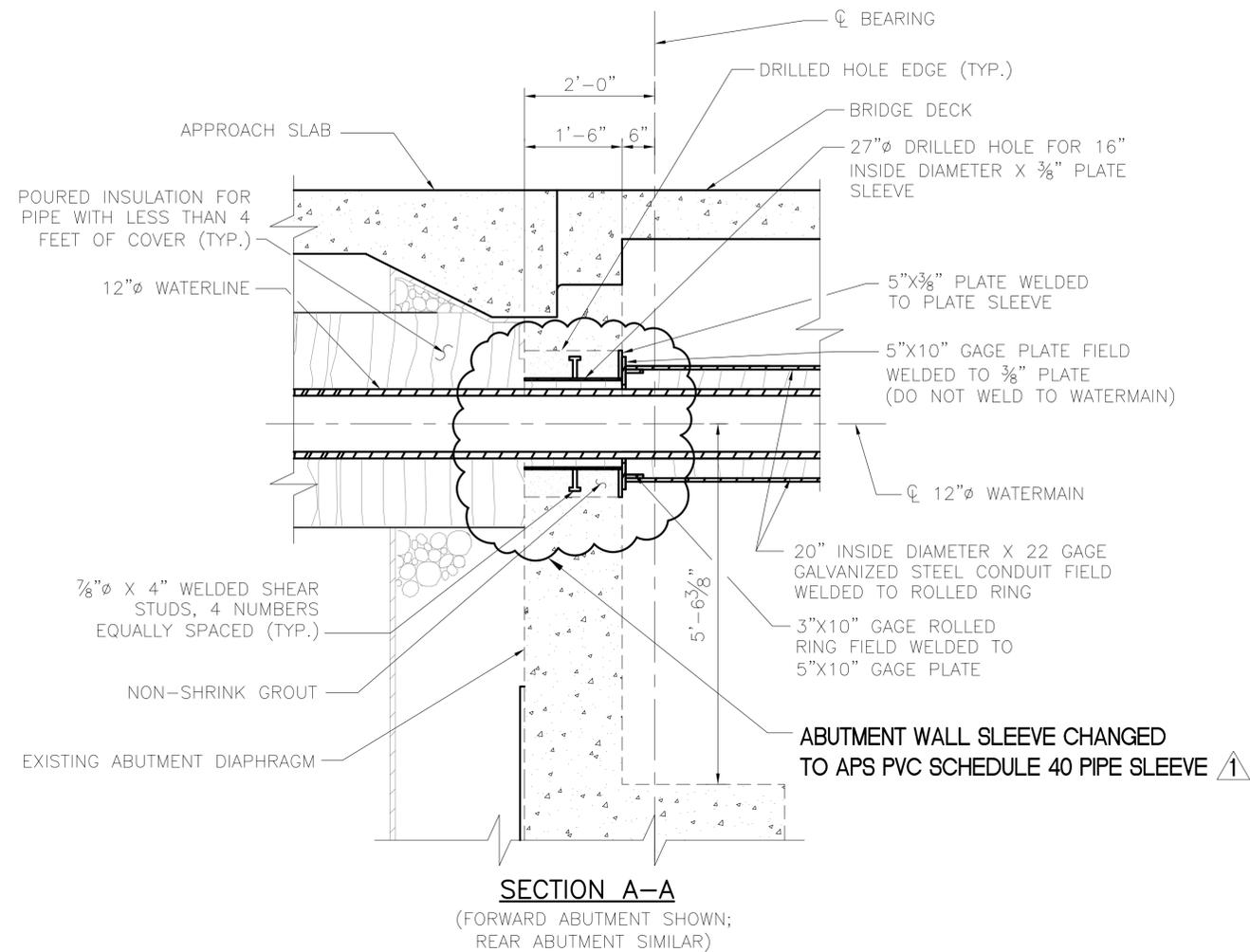
WATERWORKS
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ
BID PAC

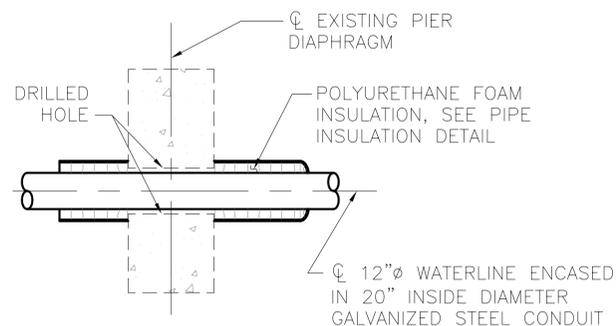
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SHEET
U-18

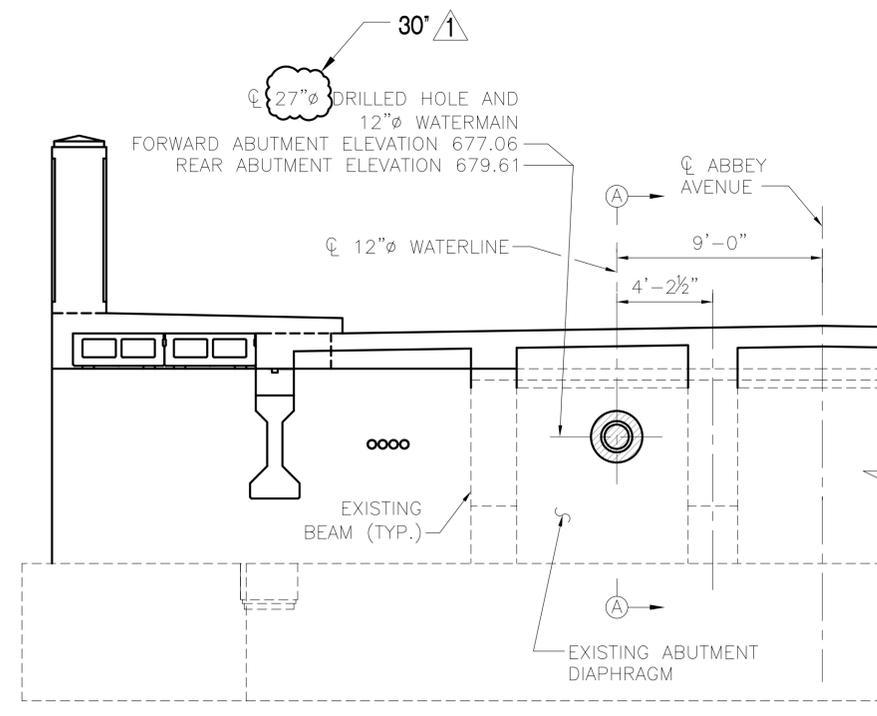
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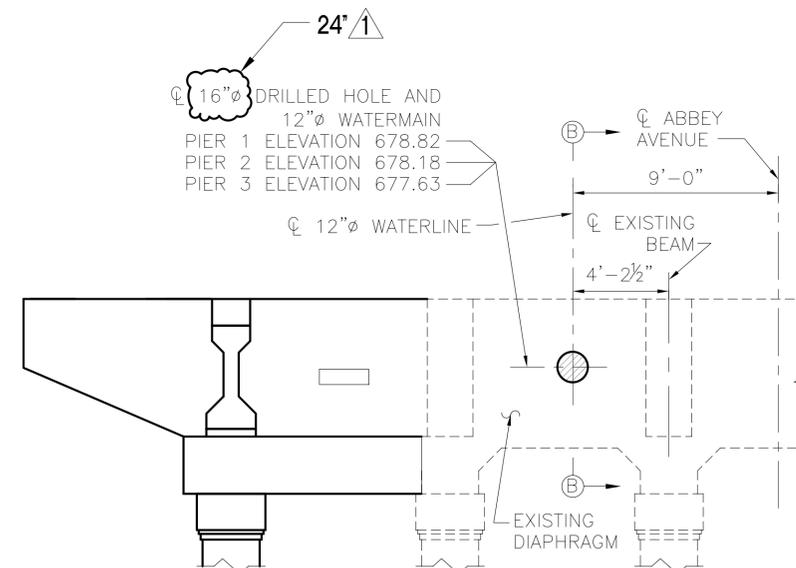
SECTION A-A
 (FORWARD ABUTMENT SHOWN;
 REAR ABUTMENT SIMILAR)



SECTION B-B



CORE DRILLED HOLE - ABUTMENT DETAIL
 (FORWARD ABUTMENT SHOWN; REAR ABUTMENT SIMILAR)



**CORE DRILLED HOLE
 TYPICAL PIER DIAPHRAGM DETAIL**

NOTES:

- 1) EXCEPT FOR BOLTS, LOCK WASHERS AND NUTS WHICH ARE CADMIUM PLATED, ENTIRE ASSEMBLY, INCLUDING SHIMS, IS TO BE HOT DIPPED GALVANIZED, ASTM A-123. SHIMS TO BE INSTALLED (OR DELETED) IN FIELD WHERE REQUIRED.
- 2) FOR SUPPORT LOCATIONS, SEE SHEET U-1.
- 3) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.
- 4) FOR WATERMAIN SUPPORT DETAILS, SEE SHEET U-21.

REVISIONS:
 AS BUILT

DRAWN: CMM
 CHECKED: JFM
 APPROVED: RHW
 DATE: 6-1-2007
 JOB NO.:

DESIGN AGENCY
HNTB
 1100 SUPERIOR AVE., SUITE 1330
 CLEVELAND, OHIO 44114-1816
 ENGINEERING & PROJECT
 MANAGEMENT DIVISION

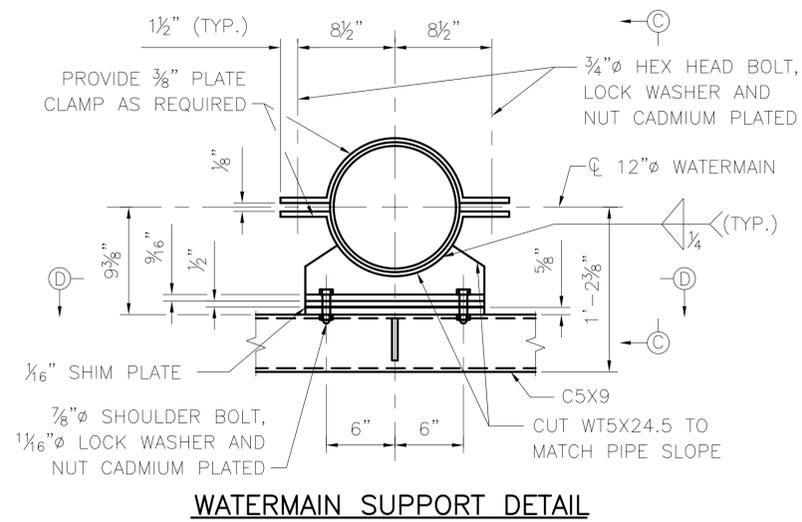
RTA
 GREATER CLEVELAND
 REGIONAL TRANSIT
 AUTHORITY

CITY OF CLEVELAND WATER
 UTILITY DETAILS-1
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

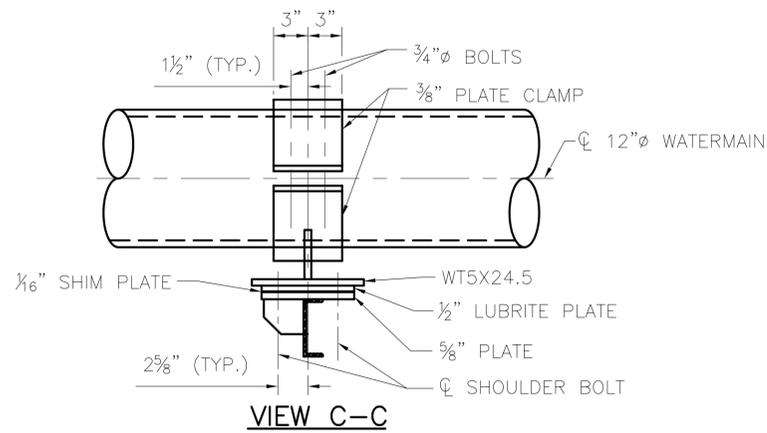
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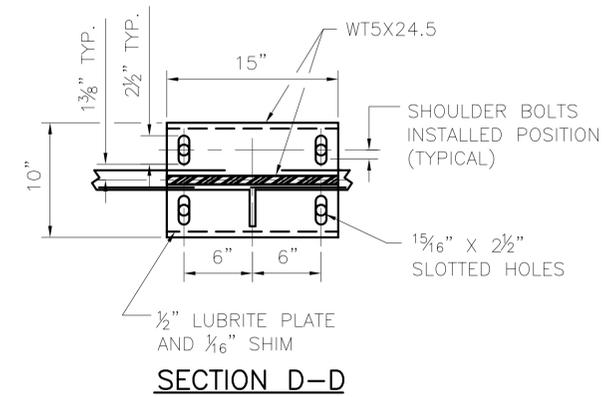
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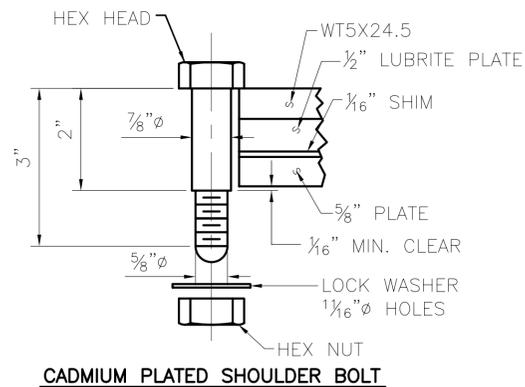
WATERMAIN SUPPORT DETAIL



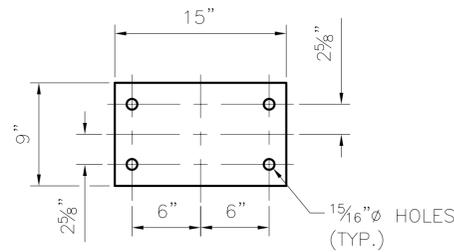
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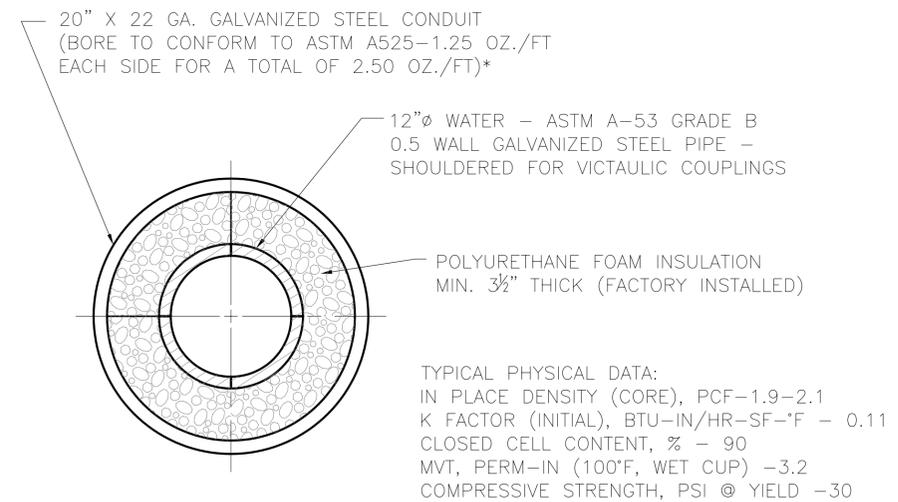
SECTION D-D



CADMIUM PLATED SHOULDER BOLT



1/2" LUBRITE PLATE AND 1/8" STEEL SHIM PLATE



PIPE INSULATION DETAIL

* IN LIEU OF A 20" X 22GA. GALVANIZED STEEL CONDUIT CONTRACTOR MAY FURNISH A FACTORY INSTALLED POLYURETHANE FOAM INSULATED PIPE WITH A FIBERGLASS REINFORCED POLYESTER OUTER JACKET.

NOTES:

- 1) EXCEPT FOR BOLTS, LOCK WASHERS AND NUTS WHICH ARE CADMIUM PLATED, ENTIRE ASSEMBLY, INCLUDING SHIMS, IS TO BE HOT DIPPED GALVANIZED, ASTM A-123. SHIMS TO BE INSTALLED (OR DELETED) IN FIELD WHERE REQUIRED.
- 2) FOR SUPPORT LOCATIONS, SEE SHEET U-1.
- 3) FOR UTILITY SUPPORT DETAILS, SEE SHEET U-2.
- 4) FOR WATERLINE DETAILS, SEE SHEET U-19.

REVISIONS:							
DRAWN: CMM	CHECKED: JFM/MJW	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:			
DESIGN AGENCY HNTB 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816		ENGINEERING & PROJECT MANAGEMENT DIVISION					
RTA GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY		CITY OF CLEVELAND WATER UTILITY DETAILS-2 REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS					
RTA PROJ 29D	BID PAC						
SHEET U-21							

*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.

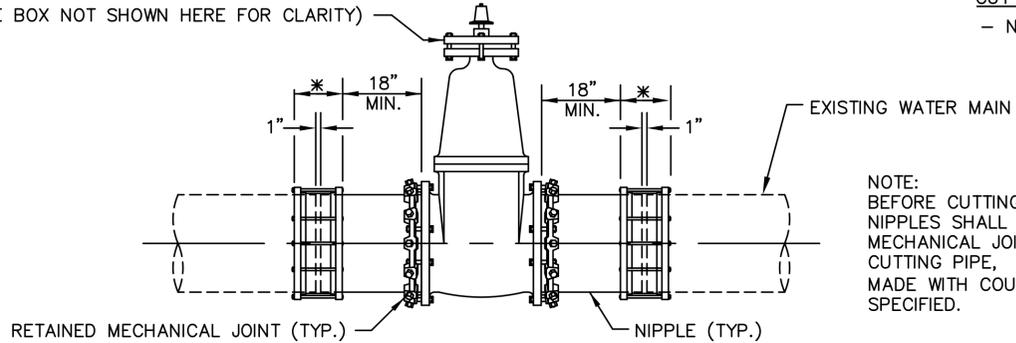
ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

THE DIVISION OF WATER WILL DETERMINE THE FIELD LOCATION OF THE CUT-IN-VALVE ASSEMBLY. THE DIVISION OF WATER WILL ALSO SET THE TIME OF INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY.

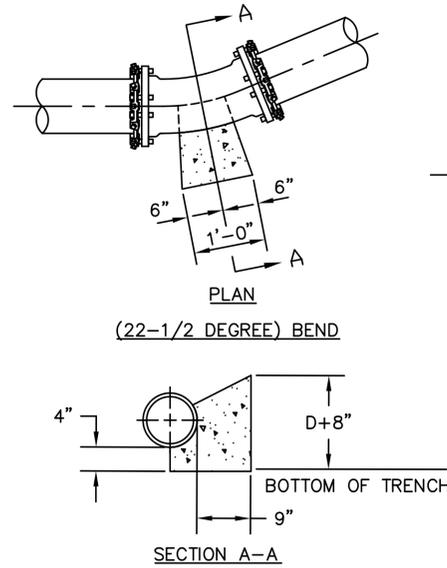
THE CONTRACTOR SHALL DO ALL PIPE CUTTING AND INSTALLATION. HOWEVER, THE INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY SHALL BE DONE UNDER THE SUPERVISION OF THE DIVISION OF WATER.

C.W.D. SQUARE HEAD RETAINED MECHANICAL JOINT BELL END GATE VALVE WITH VALVE BOX COMPLETE. (VALVE BOX NOT SHOWN HERE FOR CLARITY)

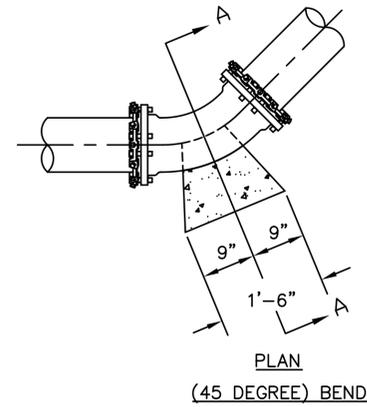
CUT-IN-VALVE DETAIL
- NOT TO SCALE -



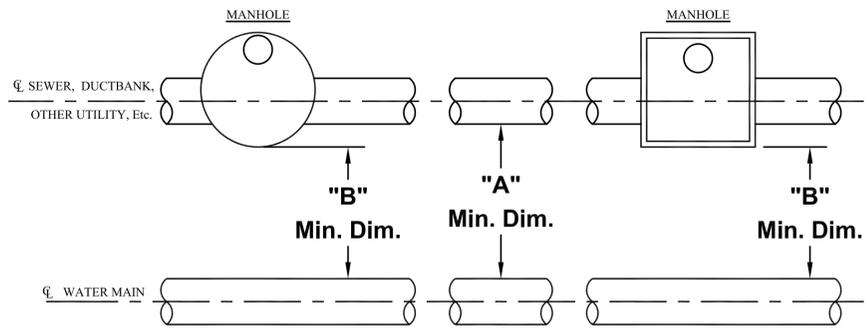
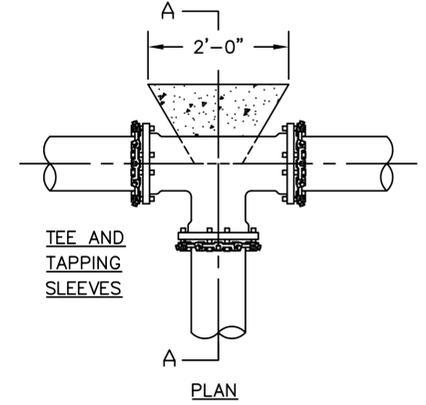
NOTE:
BEFORE CUTTING EXISTING WATER MAIN, THE NIPPLES SHALL BE CONNECTED TO THE MECHANICAL JOINT BELL END GATE VALVE. AFTER CUTTING PIPE, FINAL CONNECTIONS SHALL BE MADE WITH COUPLINGS/SOLID SLEEVES AS SPECIFIED.



TYPICAL THRUST BLOCK DETAIL
FOR HORIZONTAL DEFLECTION
FOR PIPE UP TO 16" DIAMETER
- NOT TO SCALE -
D = PIPE DIAMETER

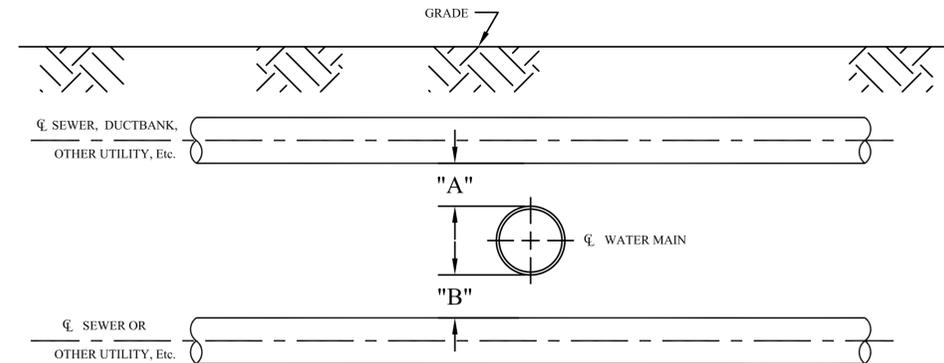


- NOTES
- 1: ALL DIMENSIONS SHOWN HEREON ARE MINIMUM; THRUST BLOCK SHALL BE POURED TO UNDISTURBED EARTH.
 - 2: ALL CONCRETE FOR THRUST BLOCKS SHALL BE CLASS "C" HAVING 4,000 PSI 28 DAY COMPRESSIVE STRENGTH.
 - 3: DO NOT COVER BOLTS WITH CONCRETE ON MECHANICAL JOINTS.
 - 4: USE FORMS WHEN POURING CONCRETE TO MAINTAIN SHAPE AND DIMENSIONS OF THRUST BLOCKS.



	HORIZONTAL CLEARANCE	STORM SEWER	SANITARY SEWER	GAS, DUCTBANK, OTHER UTILITY, Etc.
WHEN BOTTOM OF UTILITY PIPE IS AT OR ABOVE BOTTOM OF WATER MAIN	"A"	4'-0"	10'-0" MIN.	3'-0"
	"B"	4'-0"	7'-0" MIN.	3'-0"
WHEN BOTTOM OF UTILITY PIPE IS BELOW BOTTOM OF WATER MAIN	"A"	5'-0"	10'-0" MIN.	5'-0"
	"B"	5'-0"	7'-0" MIN.	5'-0"

CLEARANCE FOR UTILITIES
NOT TO SCALE



VERTICAL CLEARANCE	SANITARY SEWER LESS THAN 24"	SANITARY SEWER 24" & LARGER	STORM SEWER, DUCTBANK, GAS, OTHER UTILITY LESS THAN 24"	STORM SEWER, DUCTBANK, GAS, OTHER UTILITY 24" & LARGER	REMARKS
"A"	18" Min.	*18" Min.	***12"	*12"	*WATER MAIN IN CASING: CLEARANCE TO TOP OF CASING
"B"	18" Min.	**18" Min.	12"	**12"	**CLEARANCE TO TOP OF UTILITY OR TOP OF CASING; WHEN UTILITY IS IN CASING

CLEARANCE FOR UTILITIES
NOT TO SCALE

***INCREASE TO 18" WHEN WIDTH OR DIAMETER OF UTILITY IS GREATER THAN DIAMETER OF WATER MAIN

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REVISIONS:

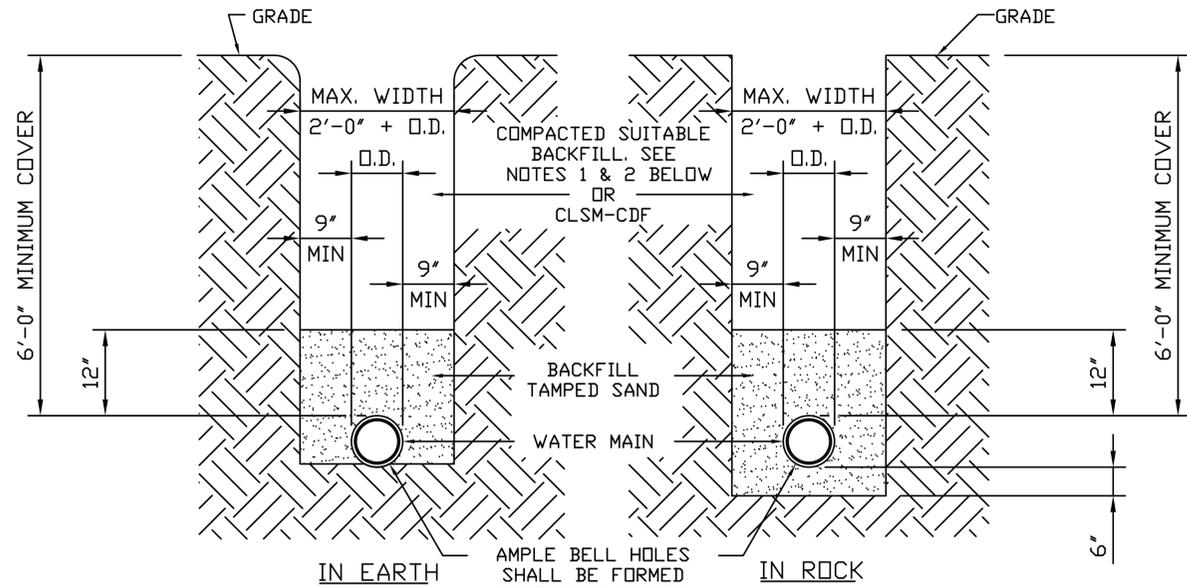
DRAWN: EJK
CHECKED: MJW
APPROVED: RHW
DATE: 6-1-2007
JOB NO.:

DESIGN AGENCY
HNTB
1100 SUPERIOR AVE., SUITE 1330
CLEVELAND, OHIO 44114-1816
ENGINEERING & PROJECT
MANAGEMENT DIVISION

RTA
GREATER CLEVELAND
REGIONAL TRANSIT
AUTHORITY

CITY OF CLEVELAND WATER
UTILITY DETAILS-3
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA
PROJ
29D
SHEET
U-22



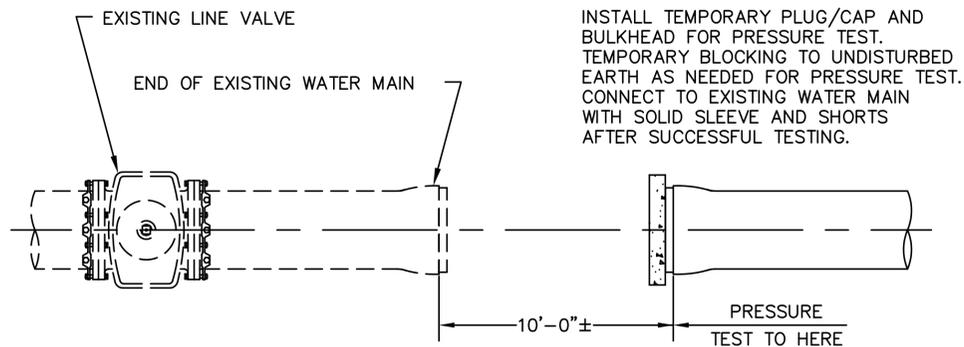
WATER MAIN TRENCH DETAILS

- NOT TO SCALE -

* CONTROLLED LOW STRENGTH MATERIAL-CONTROLLED DENSITY FILL (CLSM-CDF) "FLOWABLE FILL" IS REQUIRED WITHIN THE CITY OF CLEVELAND CORPORATION LIMITS AND PERMITTED IN ALL COMMUNITIES SERVICED BY CWD. CHECK LOCAL REQUIREMENTS.

NOTES:

- 1) PREMIUM BACKFILL REQUIRED UNDER EXISTING OR FUTURE PAVEMENTS, SIDEWALKS, AND/OR DRIVES OR WHEN REQUIRED BY LOCAL MUNICIPALITY.
- 2) PREMIUM BACKFILL SHALL BE LIMESTONE GRADED PER ODOT 304.02 OR ODOT 411. NO SLAG IS PERMITTED.*
- 3) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING BACKFILL, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
- 4) MINIMUM COMPACTION FOR ALL SAND BEDDING BACKFILL, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.
- 5) PAVEMENT, SIDEWALK OR DRIVES TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPALITY'S SPECIFICATIONS.



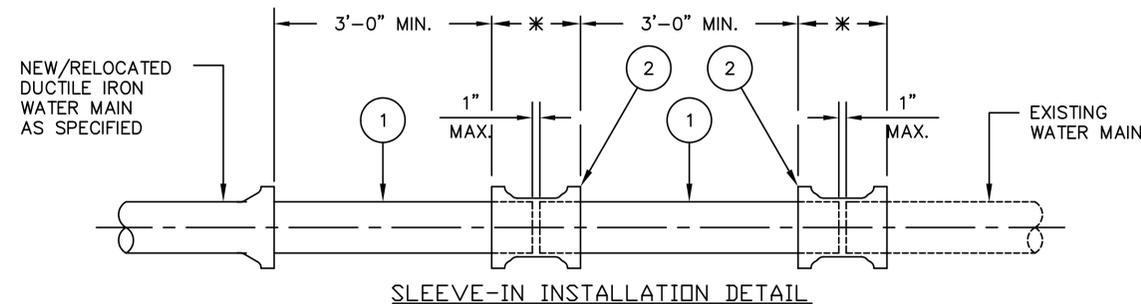
NOTE:

PRESSURE TESTING OF WATER MAINS:

WHERE NEW/EXTENDED WATER MAINS ARE CONNECTED TO AN EXISTING WATER MAIN FOR PRESSURE TEST, RESULTING IN FAILURE OF THE PRESSURE TEST OR ANY DAMAGE TO THE EXISTING WATER MAIN, OR ITS APPURTENANCES, THE REPAIR THEREOF SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL REPAIRS SHALL BE DONE TO THE SATISFACTION OF THE DIVISION OF WATER.

ALTERNATE PRESSURE TESTING DETAIL

- NOT TO SCALE -



SLEEVE-IN INSTALLATION DETAIL

- NOT TO SCALE -

- 1) PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT TO SUIT).
- 2) *CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) ER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.
- 3) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

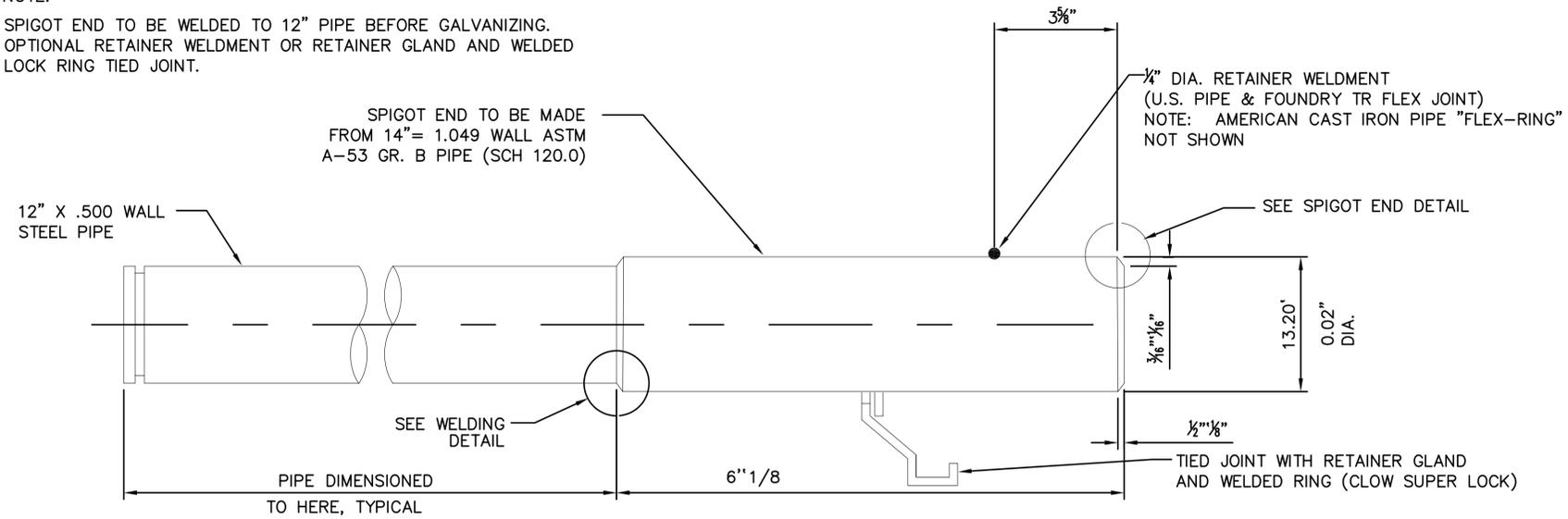
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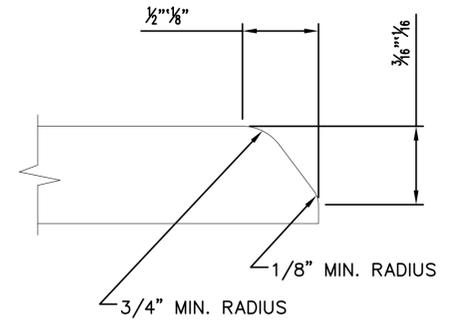
REVISIONS:									
DRAWN: EJK	CHECKED: MJW	APPROVED: RHW	DATE: 6-1-2007	JOB NO.:					
DESIGN AGENCY 1100 SUPERIOR AVE., SUITE 1330 CLEVELAND, OHIO 44114-1816					ENGINEERING & PROJECT MANAGEMENT DIVISION				
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY									
CITY OF CLEVELAND WATER UTILITY DETAILS-4					REHABILITATION OF ABBEY AVE. BRIDGE OVER GCRTA TRACKS				
RTA PROJ 29D		BID PAC							
SHEET U-23									

NOTE:

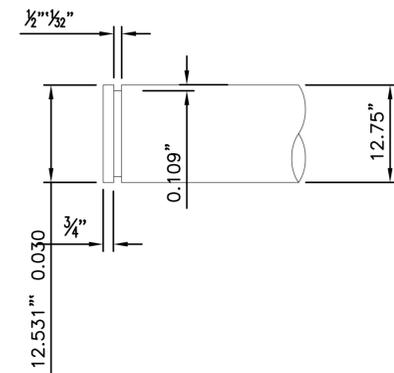
SPIGOT END TO BE WELDED TO 12" PIPE BEFORE GALVANIZING.
 OPTIONAL RETAINER WELDMENT OR RETAINER GLAND AND WELDED
 LOCK RING TIED JOINT.



**STEEL TO DUCTILE IRON PIPE
 TRANSITION SLEEVE DETAIL**
 - NOT TO SCALE -



SPIGOT END DETAIL
 - NOT TO SCALE -

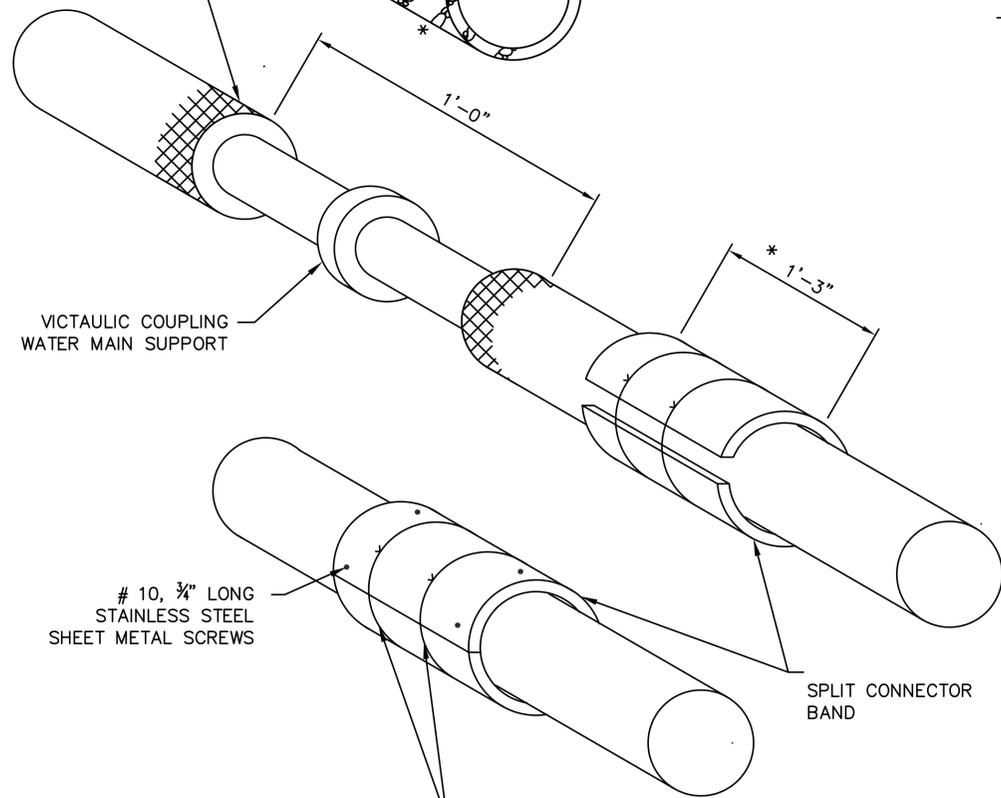


STYLE #77
VICTAULIC GROOVING DETAIL

FIELD INSTALLED
 FLEXIBLE POLYURETHANE
 FOAM INSULATION

* ADJUST DIMENSIONS
 FOR EXPANSION JOINT
 ASSEMBLY

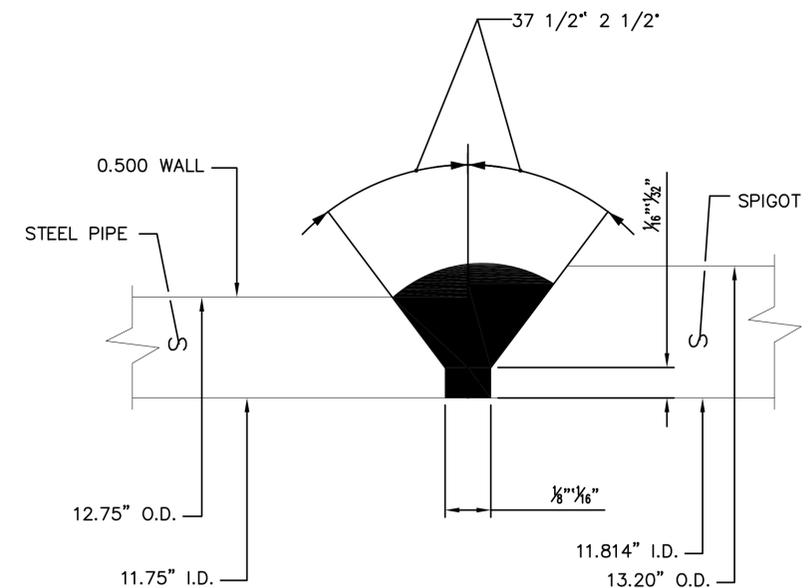
BUTYL RUBBER SEALER



FIELD JOINT DETAILS

FIELD JOINT SEQUENCE

1. SLIDE SPLIT CONNECTOR BAND ON TO UNIT. MAKE JOINT AND TEST.
2. WRAP FLEXIBLE POLYURETHANE FOAM AROUND EXPOSED PIPE AND COUPLING AND TAPE INTO PLACE.
3. APPLY BUTYL RUBBER SEALER TO BOTH SIDES OF JOINT.
4. CENTER SPLIT CONNECTOR BAND OVER JOINT AND DRAW DOWN TIGHT WITH HOSE CLAMPS. SECURE SPLIT CONNECTOR BAND TO JACKET WITH SHEET METAL SCREWS (4 SCREWS PER END).



WELDING DETAILS
 - NOT TO SCALE -

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CITY OF CLEVELAND WATER
 UTILITY DETAILS-5

REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

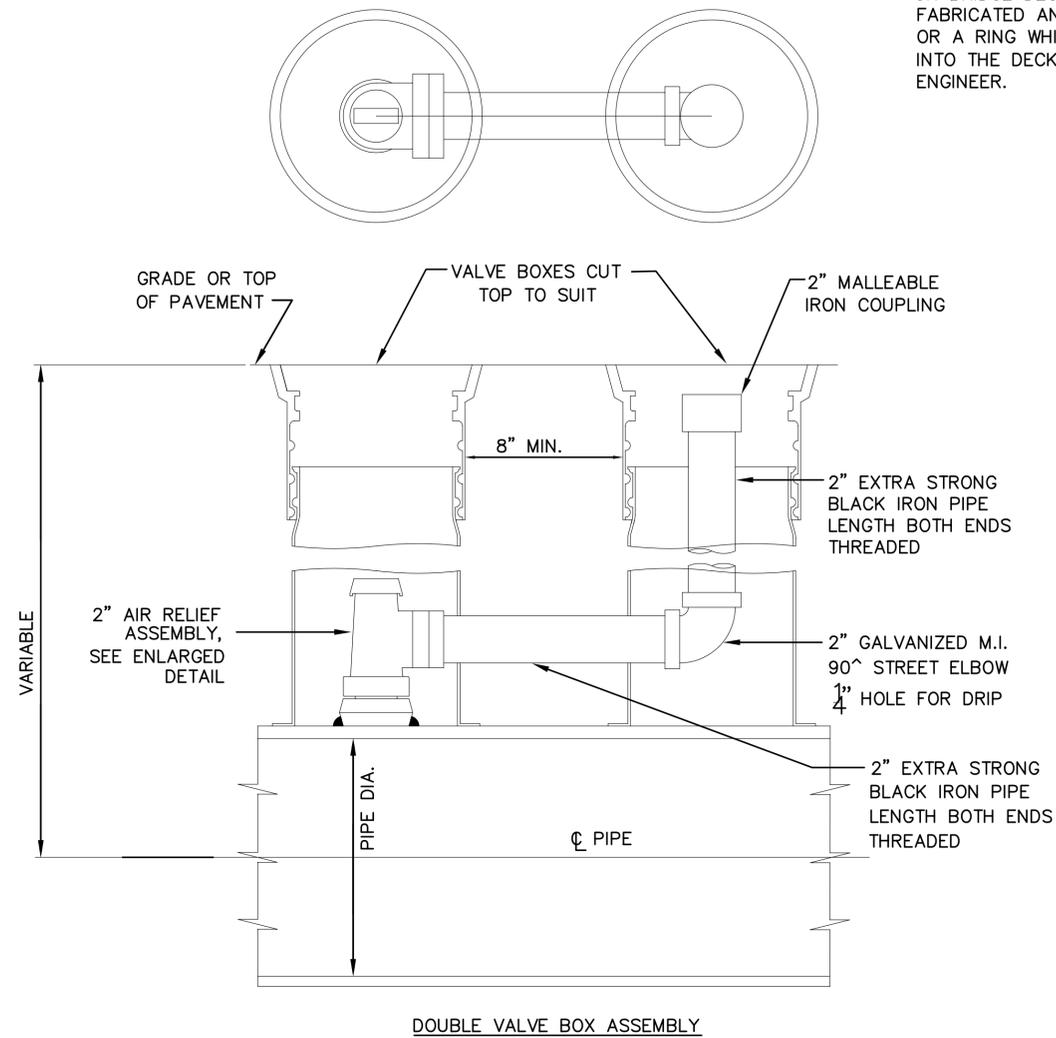
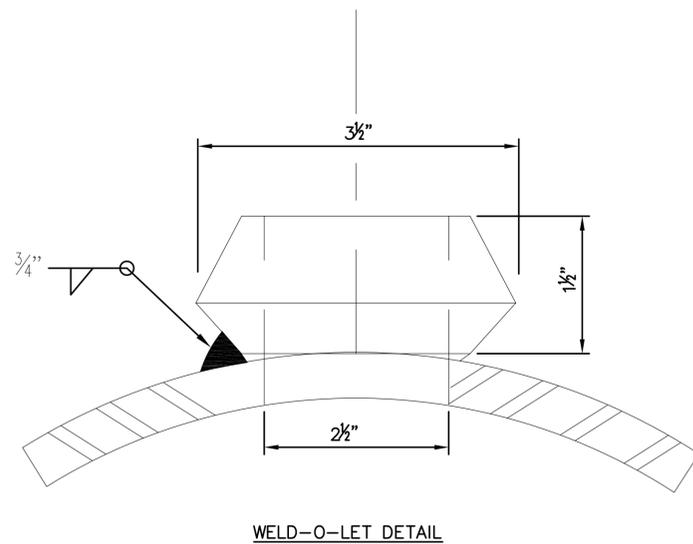
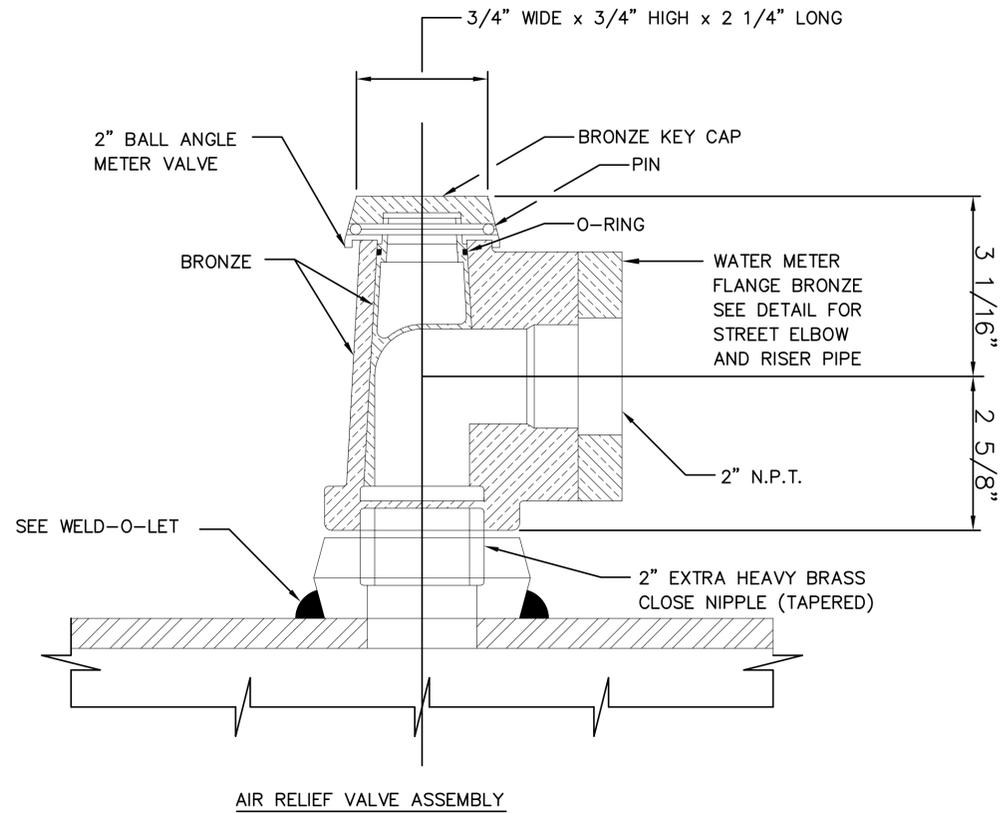
RTA PROJ
 29D

BID PAC

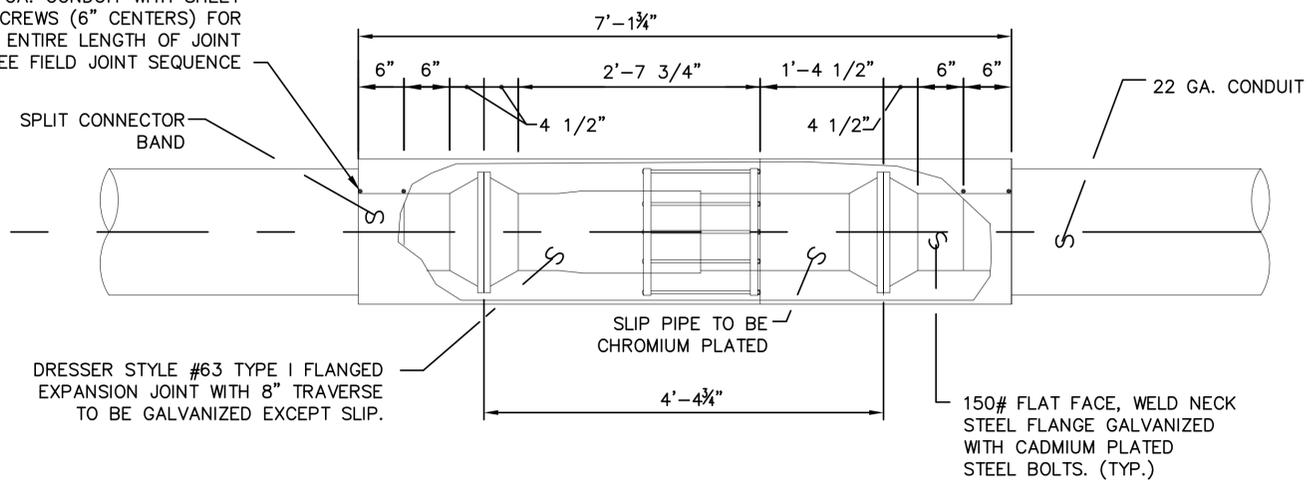
SHEET
 U-24

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SECURE SPLIT CONNECTOR BAND TO 22 GA. CONDUIT WITH SHEET METAL SCREWS (6" CENTERS) FOR ENTIRE LENGTH OF JOINT SEE FIELD JOINT SEQUENCE



DRESSER STYLE #63 TYPE I FLANGED EXPANSION JOINT WITH 8" TRAVERSE TO BE GALVANIZED EXCEPT SLIP.

EXPANSION JOINT ASSEMBLY

NOTE: BODY AND SLIP PIPE TO BE MIN. 1/2" THICK.

NOTE: AIR RELIEF VALVE BOX(ES) INSTALLED ON BRIDGE DECK(S) SHALL HAVE INTEGRAL, OR FABRICATED AND SECURELY FASTENED, LUGS OR A RING WHICH WILL ANCHOR THE BOX(ES) INTO THE DECK SLAB, AS APPROVED BY THE ENGINEER.

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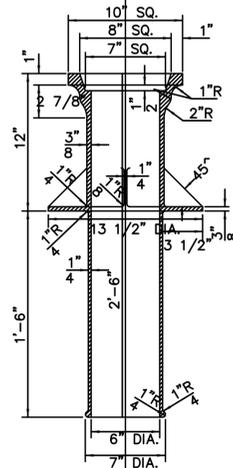
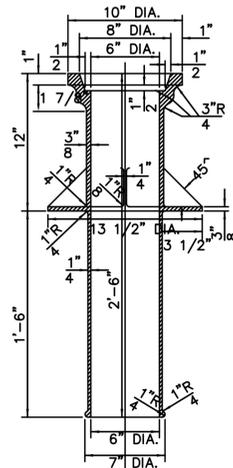
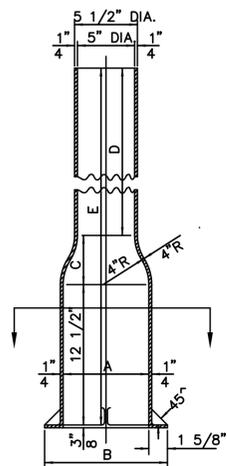
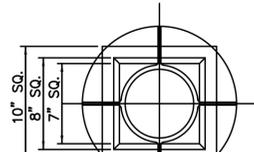
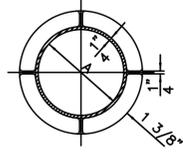
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CITY OF CLEVELAND WATER
 UTILITY DETAILS-6
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA PROJ
 29D
 SHEET
 U-25

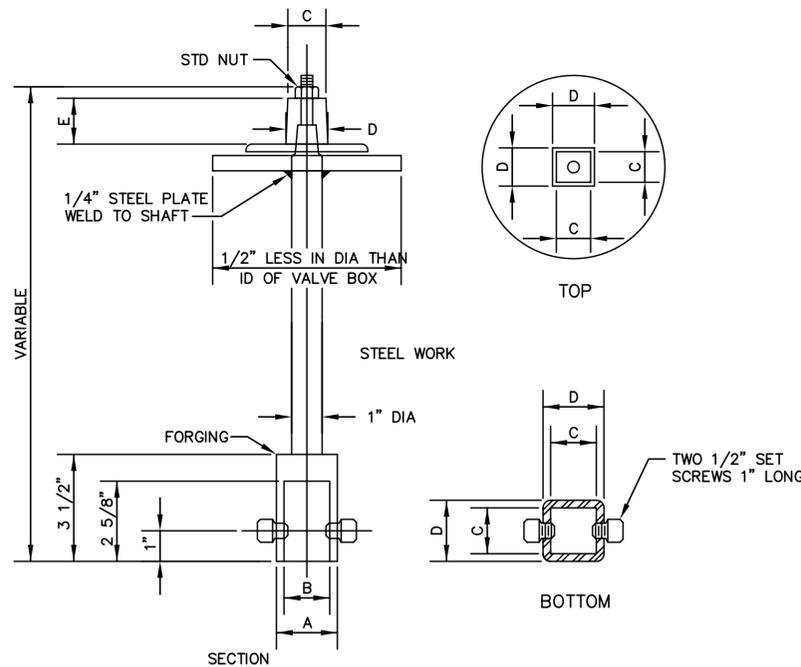
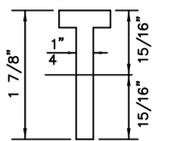
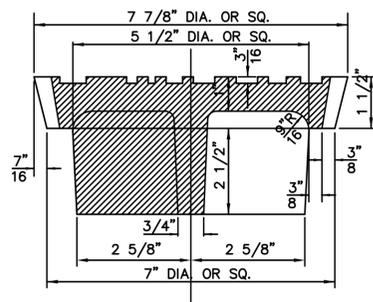
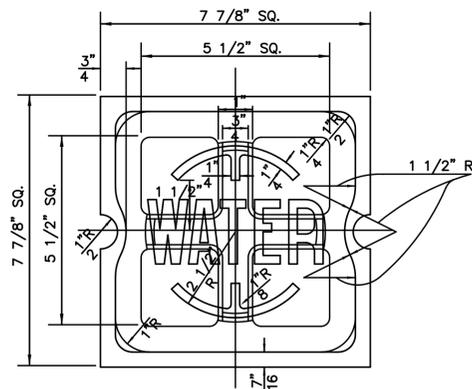
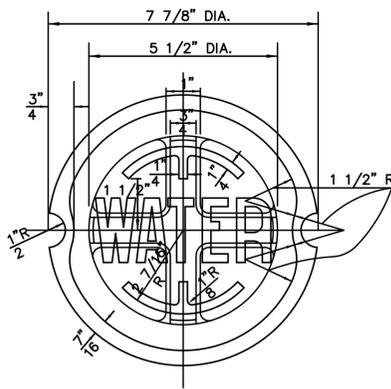
BASE NO.	VALVE SIZE	A	B	C	D	E
2 & 3	3", 4", 6" & 8"	7 1/2"	10 3/4"	4 1/4"	3'-1 1/4"	4'-6"
4	10", 12" & 16"	11"	14 1/4"	6 1/4"	2'-5 1/4"	4'-0"



BASE NO. 2, 3 & 4
EST. WT. 71 POUNDS (NOS. 2 & 3)
EST. WT. 79 POUNDS (NOS. 4)

TOP NO. 1 & 2 (ROUND HEAD)
EST. WT. 73 POUNDS

TOP NO. 3 & 4 (SQUARE HEAD)
EST. WT. 73 POUNDS

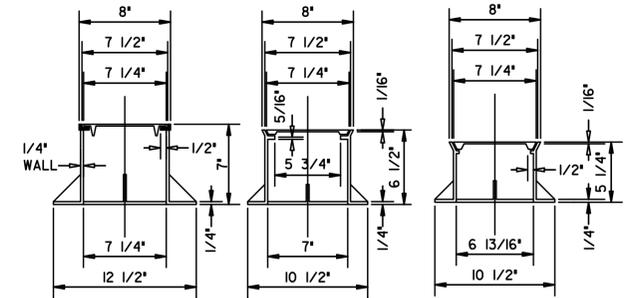


NOTE: VALVE NUTS TO BE CONTERSUNK 1/8" TO RECEIVE SET SCREWS

VALVE SIZE	A	B	C	D	E
3" AND SMALLER	2"	1 1/2"	1 1/4"	1 3/8"	1 1/2"
4" TO 20"	2 1/2"	2"	1 3/4"	1 7/8"	1 3/4"
24" AND LARGER	2 5/8"	2 1/8"	* 2"	* 2"	2"

*-NOT TAPERED

NOTE: EXTENSION STEM REQUIRED WHENEVER DEPTH TO TOP OF VALVE OPERATING NUT EXCEEDS 4'-0"



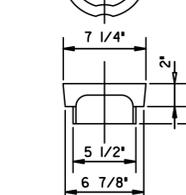
ALTERNATE SHORT
TOP NO. 1
WT 36 LBS



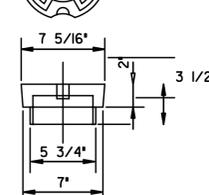
ALTERNATE SHORT
TOP NO. 2
WT 29 LBS



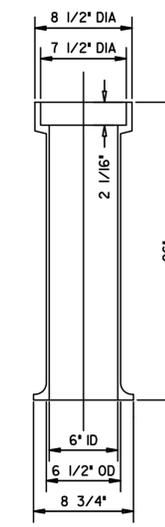
ALTERNATE SHORT
TOP NO. 3
WT 21 LBS



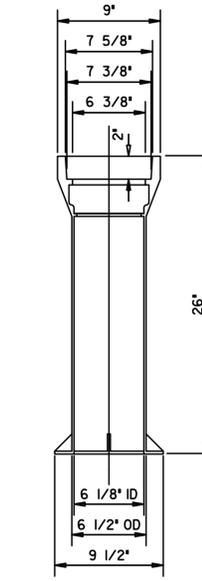
ALTERNATE COVER NO. 1



ALTERNATE COVER NO. 2
WEIGHT 13 POUNDS



ALTERNATE LONG TOP NO. 1
WEIGHT 55.5 POUNDS



ALTERNATE LONG TOP NO. 2
WEIGHT 65 POUNDS

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CITY OF CLEVELAND WATER
UTILITY DETAILS-7
REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D
SHEET U-26
BID PAC

SHEET NUMBER										ITEM	GRAND TOTAL	UNIT	DESCRIPTION
U-28													
3										TS625	3	EACH	LIGHT POLE, DECORATIVE, INSTALLATION ONLY
2										TS625	2	EACH	LIGHT POLE ANCHOR BOLTS, MISC: SET FOR PILASTER MOUNTED LIGHT POLE
1										TS625	1	EACH	LIGHT POLE FOUNDATION
425										TS625	425	FT	CONDUIT, 2", 725.05, SCH 80 PVC
1										TS625	1	EACH	WEATHERPROOF SERVICE HEAD, 2"
190										TS625	190	FT	TRENCH 24" DEEP
1										TS625	1	EACH	PULL BOX, 725.08, 24"
2										TS625	2	EACH	JUNCTION BOX, STRUCTURE 18"x12"x8"
1										TS625	1	EACH	GROUND ROD, 8'
3										TS625	3	EACH	LUMINAIRE, CONVENTIONAL, INSTALLATION ONLY
3										TS625	3	EACH	BRACKET ARM, 8', INSTALLATION ONLY

REVISIONS:

DRAWN: JRH	CHECKED: RLS	DATE: 6/01/07
APPROVED: JGS		JOB NO.:

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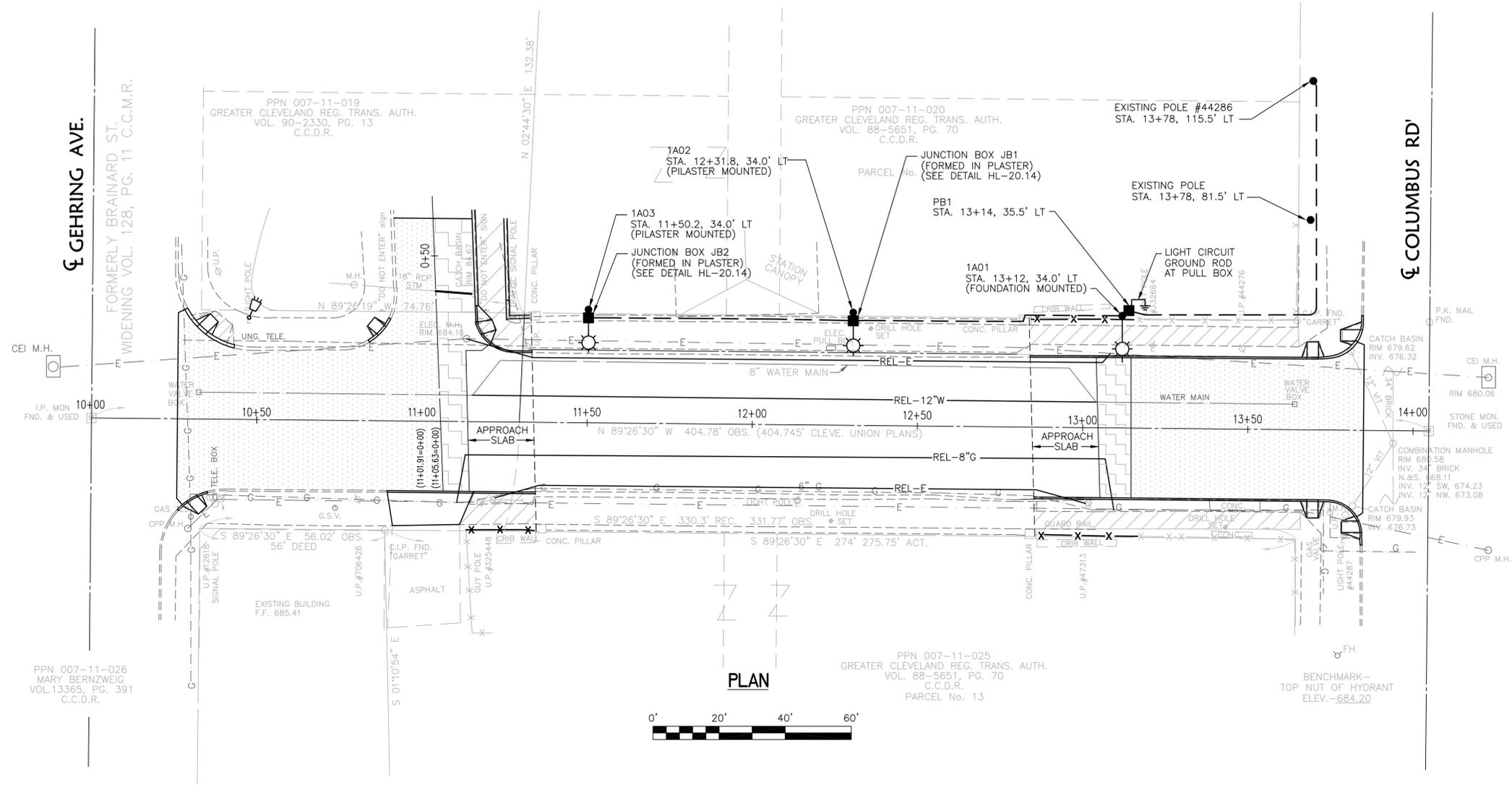
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 AUTHORITY

LIGHTING GENERAL
 SUMMARY
 REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA
 PROJ
 29D
 BID
 PAC
 SHEET
 U-29

Use general.ctb and generalhalf.ctb to plot this drawing

ABBEY-PLAN.dwg



LEGEND

-  250 WATT HPS LUMINAIRE ON 30' ROADWAY POLE
-  EXISTING FLOOD LIGHT
-  PULL BOX OR JUNCTION BOX
-  2" SCH 80 PVC CONDUIT



REVISIONS:

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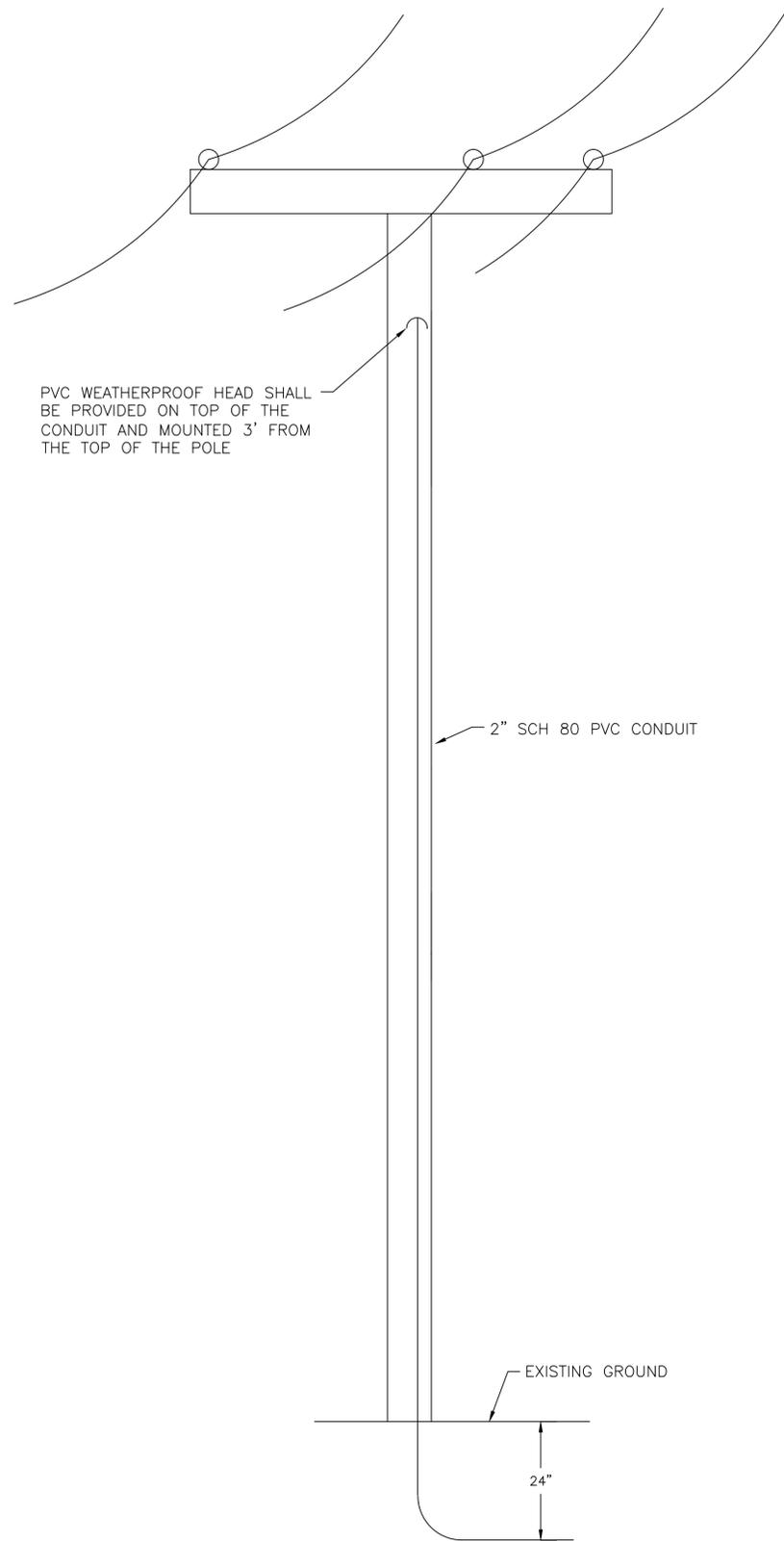
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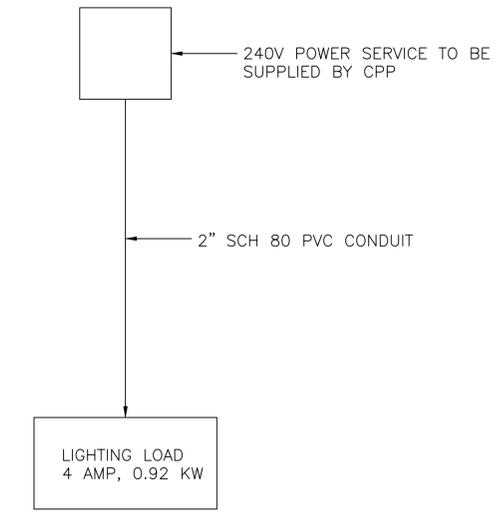
ROADWAY PLAN &
PROFILE

REHABILITATION OF ABBEY AVE.
BRIDGE OVER GCRTA TRACKS

RTA PROJ 29D	BID PAC
SHEET U-30	



POLE #44286 INSTALLATION DETAIL
NOT TO SCALE



POWER DIAGRAM

NOTES:

1. CONDUIT SHALL BE SECURED TO POLE IN 6' INCREMENTS PER CPP REQUIREMENTS.

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APPROVED:	JGS
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JOB NO.:	

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LIGHTING DETAILS

REHABILITATION OF ABBEY AVE.
 BRIDGE OVER GCRTA TRACKS

RTA
 PROJ
 29D

BID
 PAC
 SHEET
 U-31