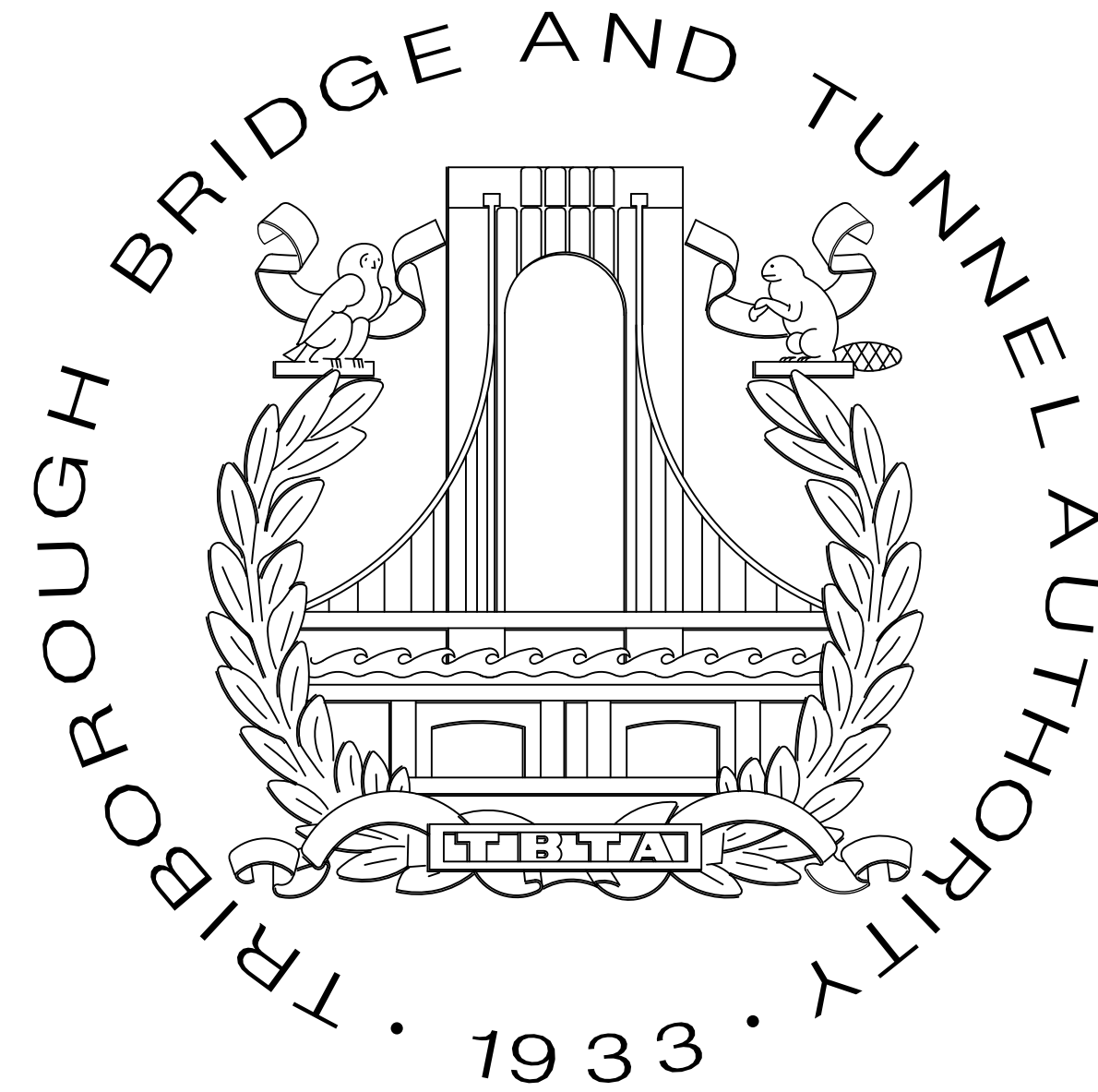


TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY



CONTRACT NO. PSC-16-2991

MEDIAN BARRIER EXTENSION CRASH TEST AND FABRICATION  
FOR THE BRONX WHITESTONE BRIDGE  
AS-BUILT DRAWINGS

PREPARED BY:

HNTB CORPORATION  
EMPIRE STATE BUILDING  
350 5TH AVE, 57TH FL.  
NEW YORK, NY 10118

DATE: 06/05/2019

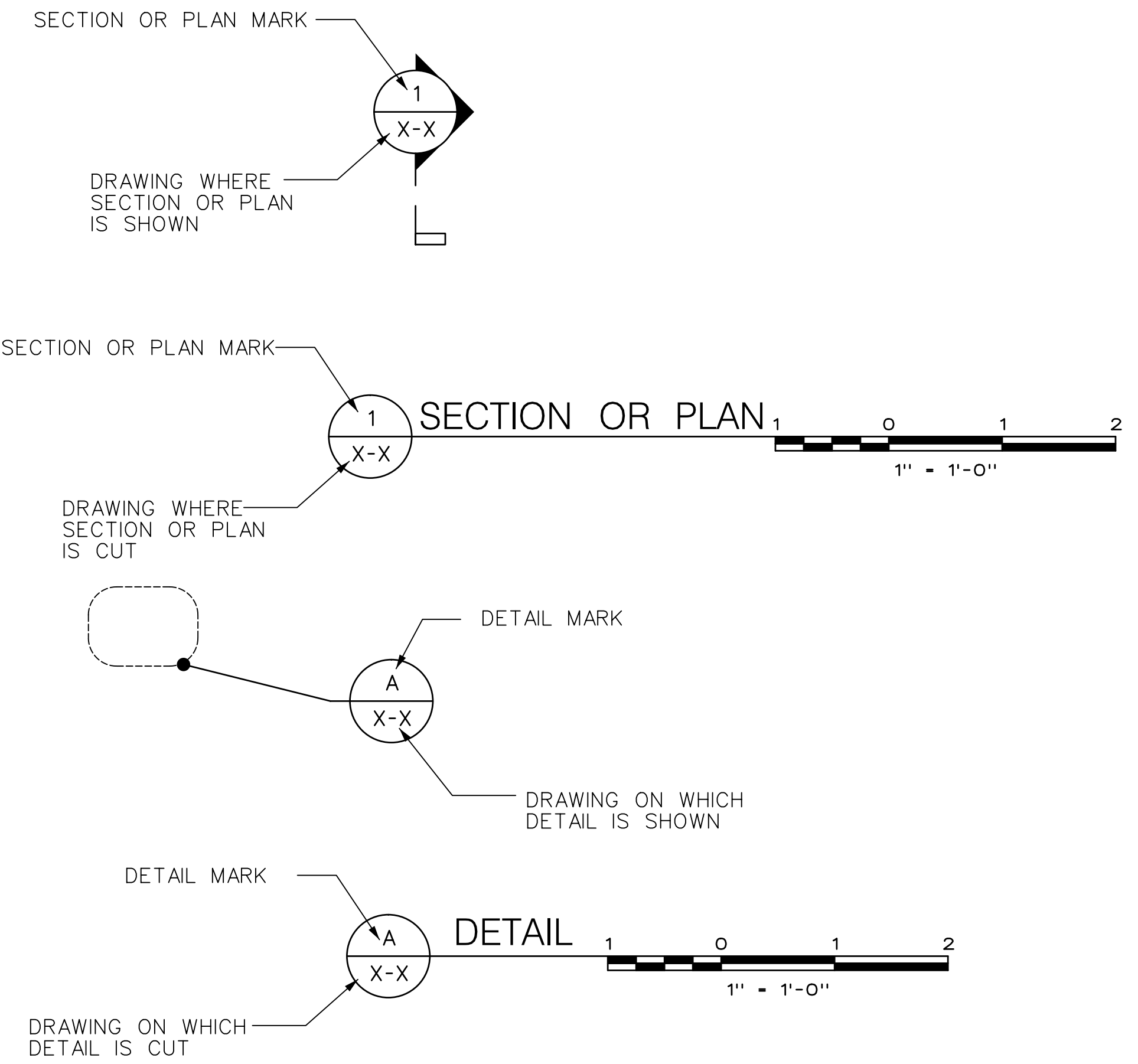
INDEX OF DRAWINGS

SHEET NO.	DWG. NO.	DRAWING TITLE	REV. NO.	DWG. DATE
<b>GENERAL</b>				
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002	G-001	INDEX OF DRAWINGS, ABBREVIATIONS AND LEGENDS	1	06/05/2019
003	G-002	GENERAL NOTES	1	06/05/2019
004	G-003	GENERAL ELEVATION SHEET 1 OF 2	1	06/05/2019
005	G-004	GENERAL ELEVATION SHEET 2 OF 2	1	06/05/2019
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006	S-001	MEDIAN BARRIER TYPICAL ELEVATION	1	06/05/2019
007	S-002	MEDIAN BARRIER TYPICAL SECTIONS	1	06/05/2019
008	S-003	MEDIAN BARRIER POST DETAILS	1	06/05/2019
008A	S-003A	MOCK DECK PLATE DETAILS	1	06/05/2019
009	S-004	MEDIAN BARRIER SPLICE DETAILS	1	06/05/2019
010	S-005	MEDIAN BARRIER RAILING DETAILS	1	06/05/2019
011	S-006	TYPICAL ELEVATION AND CROSS SECTION OF MEDIAN BARRIER EXTENSION	1	06/05/2019
012	S-007	MEDIAN BARRIER EXTENSION TYPICAL DETAILS - 1	1	06/05/2019
013	S-008	MEDIAN BARRIER EXTENSION TYPICAL DETAILS - 2	1	06/05/2019
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017	S-012	MEDIAN BARRIER EXTENSION TYPICAL SPLICE DETAILS	1	06/05/2019

ABBREVIATIONS

AASHTO	=	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRAFFIC OFFICIALS
ASTM	=	AMERICAN SOCIETY OF TESTING AND MATERIALS
BOT.	=	BOTTOM
CL	=	CENTER LINE
CLR.	=	CLEAR
CONC.	=	CONCRETE
CONN.	=	CONNECTION
CPGW	=	COMPLETE PENETRATION GROOVE WELD
CTSK	=	COUNTERSUNK
CVN	=	CHARPY V-NOTCH TEST
DET.	=	DETAIL
DIA./DIAM.	=	DIAMETER
DWG.	=	DRAWING
EF	=	EACH FACE
ELEV./EL.	=	ELEVATION
EQ.	=	EQUAL
FLG	=	FLANGE
F.S.	=	FAR SIDE
GALV.	=	GALVANIZED
H.S.	=	HIGH STRENGTH
K	=	KIPS
LONG.	=	LONGITUDINAL
MAX.	=	MAXIMUM
MBE	=	MEDIAN BARRIER EXTENSION
MIN.	=	MINIMUM
NA	=	NOT APPLICABLE
NO.	=	NUMBER
N.S.	=	NEAR SIDE
NT	=	NON-TYPICAL
N.T.S.	=	NOT TO SCALE
NYSSCM	=	NEW YORK STATE STEEL CONSTRUCTION MANUAL
OC	=	ON CENTER
OPP	=	OPPOSITE
O TO O	=	OUT TO OUT
P.E.	=	PROFESSIONAL ENGINEER
PL	=	PLATE
PLS.	=	PLATES
PPGW	=	PARTIAL PENETRATION GROOVE WELD
QTY.	=	QUANTITY
R / RAD	=	RADIUS
REQD	=	REQUIRED
REV.	=	REVISION
SPA.	=	SPACE/SPACING
SPL	=	SPLICE
STD.	=	STANDARD
STIFF.	=	STIFFENER
STL	=	STEEL
SYMM.	=	SYMMETRICAL
TRANS.	=	TRANSVERSE
TYP.	=	TYPICAL
UON	=	UNLESS OTHERWISE NOTED
UT	=	ULTRASONIC TESTING
VERT	=	VERTICAL
WP	=	WORKING POINT

SECTION AND DETAIL LEGEND



LEGEND:

	STEEL IN SECTION
	CONCRETE IN SECTION
	EPDM RUBBER GASKET IN SECTION

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 \$\$\$P1\$\$\$  
 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$

DRAWN BY C. GAUNT DESIGNED BY C. GAUNT CHECKED BY E. ZUKER SCALE: NONE					Triborough Bridge and Tunnel Authority MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE INDEX OF DRAWINGS, ABBREVIATIONS AND LEGENDS	CONTRACT NO. PSC-16-2991 DRAWING NO. G-001 SHEET 002 OF 018 DATE JUNE 5, 2019 REVISION NO. 1
1 AS-BUILT UPDATES REV. DESCRIPTION DATE APP'D.	06/05/19 GPD	PROJECT NO. GFM-520H	PROJECT NO. GFM-520H				

"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."

**GENERAL NOTES:**

SCOPE OF WORK

- 1. FABRICATION OF THE MEDIAN BARRIER AND MEDIAN BARRIER EXTENSION FOR THE LIMITS SHOWN ON THE CONTRACT DRAWINGS AND SHIPMENT TO THE TESTING FACILITY.

DESIGN SPECIFICATIONS

- 1. DESIGN, DETAILING, FABRICATION AND EXECUTION OF ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT EDITIONS OF THE FOLLOWING PUBLICATIONS:
  - A. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS
  - B. NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS CONSTRUCTION AND MATERIALS AND ANY PROJECT SPECIAL SPECIFICATIONS
  - C. AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS
  - D. NEW YORK STATE STEEL CONSTRUCTION MANUAL (NYSSCM)
  - E. AASHTO/AWS BRIDGE WELDING CODE D1.5

STRUCTURAL STEEL

- 1. ALL STRUCTURAL STEEL FOR THE MEDIAN BARRIER SHALL CONFORM TO THE FOLLOWING:
 

PLATES	ASTM A709, GR 50
HSS RAILING AND SPLICE TUBES	ASTM A500, GR B
H.S. BOLTS	ASTM F3125, GR A325, TYPE 1
NUTS	ASTM A563
WASHERS	ASTM F436
SPLICE BOLTS	ASTM A449
FLAT HEAD COUNTER SUNK SCREWS	ASTM F835
- 2. ALL STRUCTURAL STEEL FOR THE MEDIAN BARRIER EXTENSION SHALL CONFORM TO THE FOLLOWING:
 

PLATES AND ANGLES	ASTM A709, GR 50
HSS POSTS, RAILING AND SPLICE TUBES	ASTM A500, GR C
H.S. BOLTS	ASTM F3125, GR A325, TYPE 1
NUTS	ASTM A563
WASHERS	ASTM F436
- 3. ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH SECTION 719 OF THE NYS STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
- 4. ALL FASTENERS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH SECTION 719 OF THE NYS STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.
- 5. REPAIRS TO DAMAGED GALVANIZING SHALL BE MADE IN ACCORDANCE WITH ASTM A780.
- 6. ALL HIGH STRENGTH BOLTED CONNECTIONS SHALL BE INSTALLED IN STANDARD SIZE HOLES, EXCEPT WHERE SLOTTED HOLES OR OVERSIZED HOLES ARE SHOWN ON THE CONTRACT DRAWINGS. THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE. HIGH STRENGTH BOLTS SHALL BE TIGHTENED USING THE TURN-OF-NUT METHOD IN ACCORDANCE WITH THE NYSSCM, UNLESS OTHERWISE NOTED. HARDENED WASHERS SHALL BE PLACED UNDER BOTH THE HEAD AND THE NUT.
- 7. HD BLIND BOLTS WHERE INDICATED TO BE COATED WITH DACRALON ZINC FINISH.
- 8. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AASHTO/AWS D1.5 AND THE NYSSCM, THE STRICTER PROVISIONS SHALL APPLY. ALL WELDING SHALL BE PERFORMED WITH MATCHING FILLER METAL BY AN AASHTO/AWS OR NYSDOT QUALIFIED WELDER.
- 9. NON-DESTRUCTIVE TESTING SHALL BE PERFORMED IN ACCORDANCE WITH AASHTO/AWS D1.5, NYSSCM AND THE SPECIFICATIONS.
- 10. TRANSPARENT COLORLESS ACRYLIC PANELS SHALL BE "ACRYLITE SOUNDSTOP GS CC", 0.78" (20 MM) THICK EMBEDDED WITH COLORLESS POLYAMIDE FILAMENTS.
- 11. RUBBER GASKETS SHALL BE 70 DUROMETER EPDM OR APPROVED EQUAL.

**SUGGESTED INSTALLATION SEQUENCE:**

REQUIREMENTS IN THIS CONTRACT

- 1. FABRICATE MEDIAN BARRIER FOR THE EXTENTS SHOWN ON THE CONTRACT DRAWINGS.
- 2. FABRICATE MEDIAN BARRIER EXTENSION FOR THE EXTENTS SHOWN ON THE CONTRACT DRAWINGS.
- 3. SHOP ASSEMBLE MEDIAN BARRIER AND MEDIAN BARRIER EXTENSION AND VERIFY GEOMETRY AND FIELD SPLICES.
- 4. DISASSEMBLE AND SHIP MEDIAN BARRIER AND MEDIAN BARRIER EXTENSION TO THE CRASH TESTING FACILITY.

REQUIREMENTS BY OTHERS:

- 5. INSTALL CONCRETE SLAB.
- 6. PLACE MEDIAN BARRIER POSTS AT SPACING INDICATED IN S-001.
- 7. POST-INSTALL 7/8" DIA. ADHESIVE ANCHOR BOLTS INTO THE CONCRETE SLAB.
- 8. INSTALL MEDIAN BARRIER SHELL / TUBE ASSEMBLY ON EACH SIDE OF THE POSTS.
- 9. INSTALL BOTH SIDES OF THE MEDIAN BARRIER EXTENSION WITH CONNECTION ANGLES LOOSE ON TOP OF THE MEDIAN BARRIER POSTS.
- 10. INSTALL MEDIAN EXTENSION PANELS, TIGHTEN BLIND BOLTS ON CONNECTION ANGLES.



**SPARE PARTS FOR CRASH TESTING:**

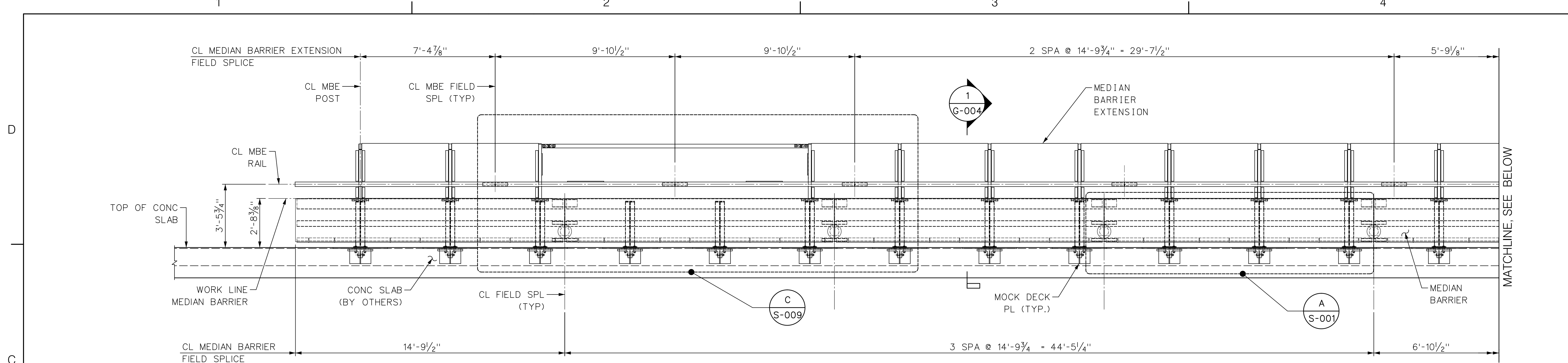
THE FOLLOWING SPARE PARTS FOR REPLACEMENT DURING CRASH TESTING SHALL BE FABRICATED AND SHIPPED ALONG WITH THE TEST BARRIER LENGTH:

- 1. SIX (6) MEDIAN BARRIER EXTENSION PANELS (LENGTH 4'-9 1/4") WITH GASKETS.
- 2. TWO (2) TYPICAL MEDIAN BARRIER EXTENSION STEEL FRAMES (LENGTH 14'-9 1/4")
- 3. TWO (2) TYPICAL MEDIAN BARRIER UNITS (LENGTH 14'-9 1/4")
- 4. ANY ASSOCIATED CONNECTION HARDWARE

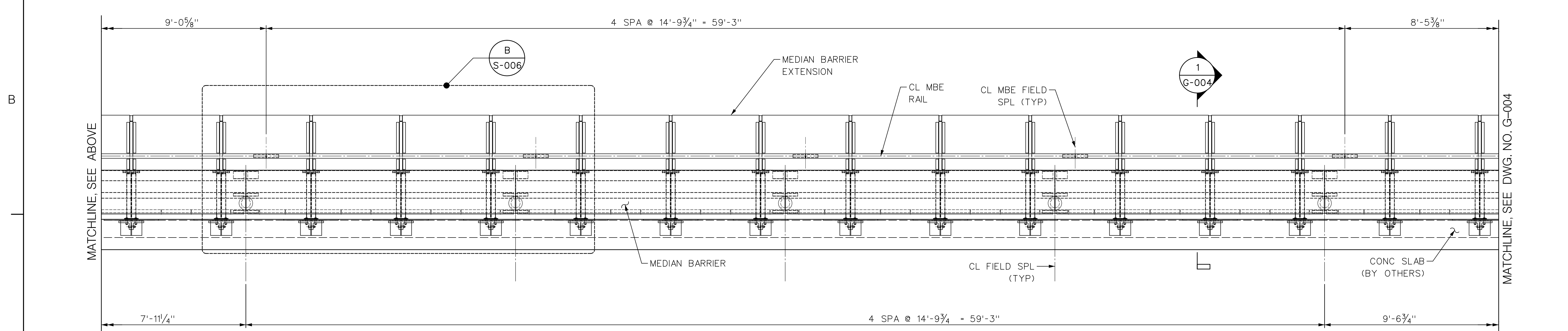
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				DRAWN BY C. GAUNT	  Triborough Bridge and Tunnel Authority	MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS – TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE	CONTRACT NO. PSC-16-2991
1	AS-BUILT UPDATES	06/05/19	GPD	DESIGNED BY C. GAUNT			GENERAL NOTES	DRAWING NO. G-002
REV.	DESCRIPTION	DATE	APP'D.	CHECKED BY E. ZUKER				SHEET 003 OF 018
<small>"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."</small>				SCALE: NONE				DATE JUNE 5, 2019
						PROJECT NO. GFM-520H	REVISION NO. 1	



ELEVATION  
  
 $\frac{3}{8}'' = 1'-0''$

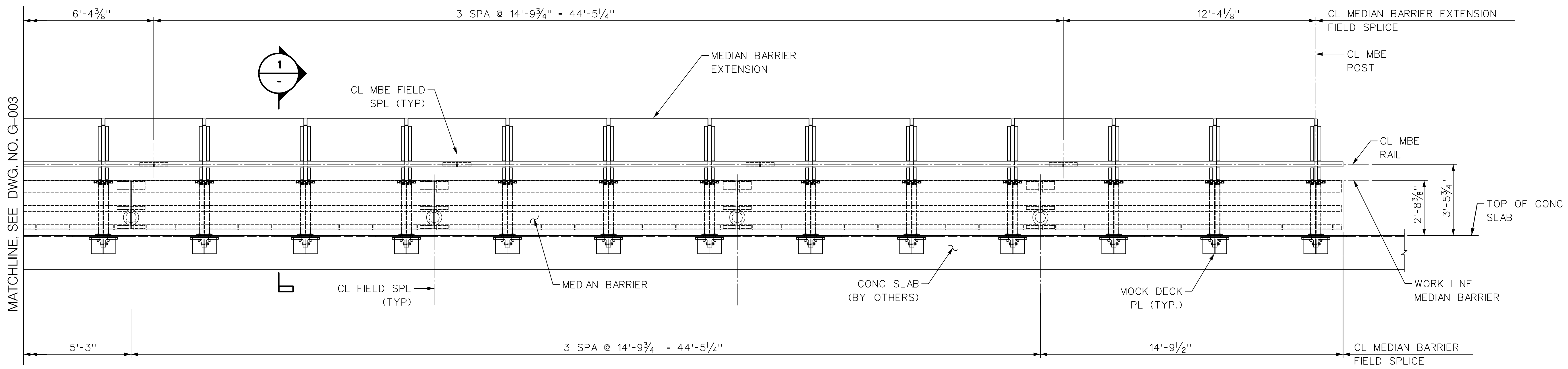


ELEVATION  
  
 $\frac{3}{8}'' = 1'-0''$

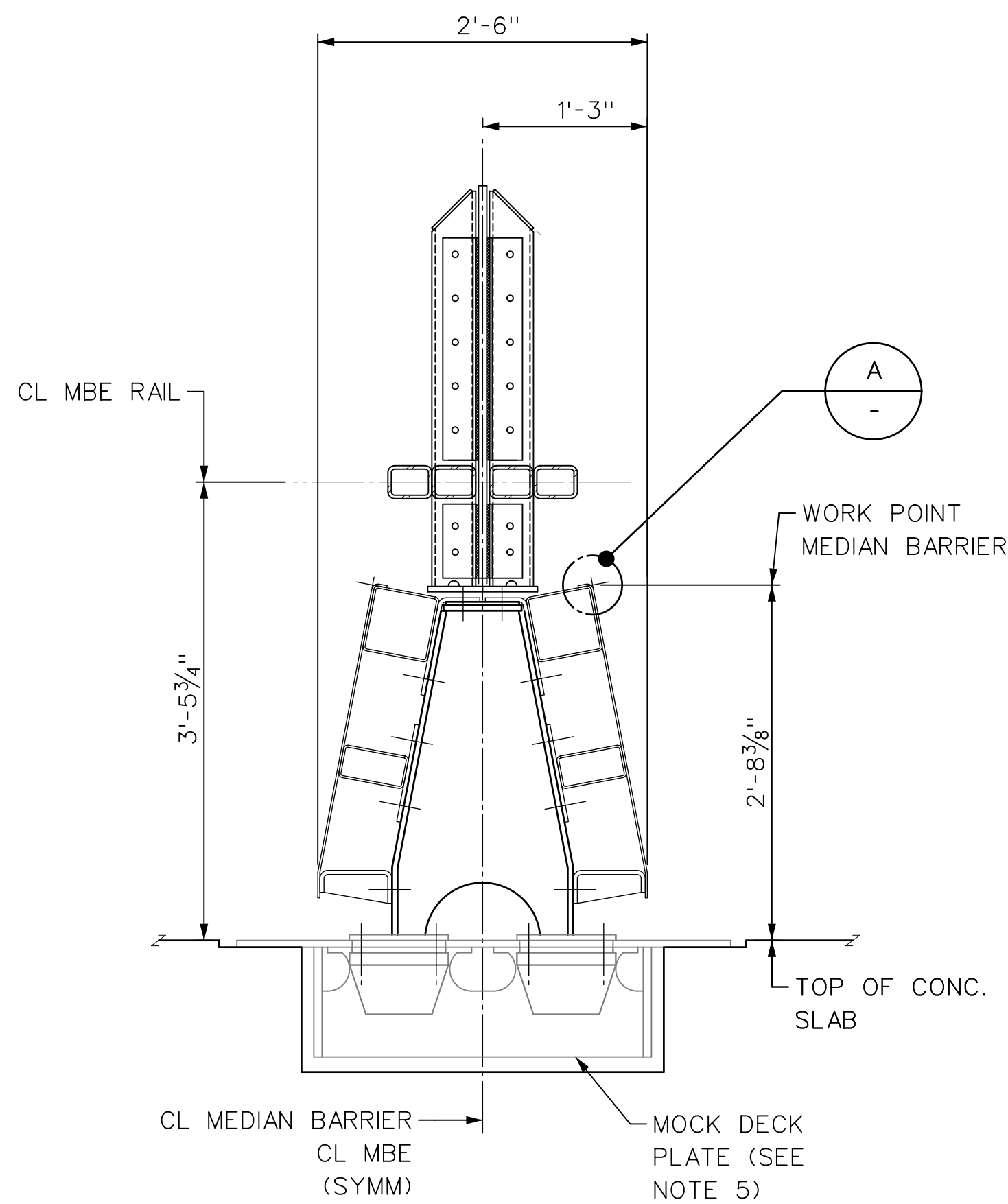
- NOTES:**
1. FOR MEDIAN BARRIER WORK POINT (WORK LINE) LOCATION DETAIL, SEE DWG. NO. G-004.
  2. FOR MEDIAN BARRIER DETAILS SEE DWG. NOS. S-001 THRU S-005.
  3. FOR MEDIAN BARRIER EXTENSION DETAILS SEE DWG. NOS. S-006 THRU S-012.
  4. FOR CONCRETE SLAB DETAILS, SEE TTI FOUNDATION DETAILS 2018-11-26.

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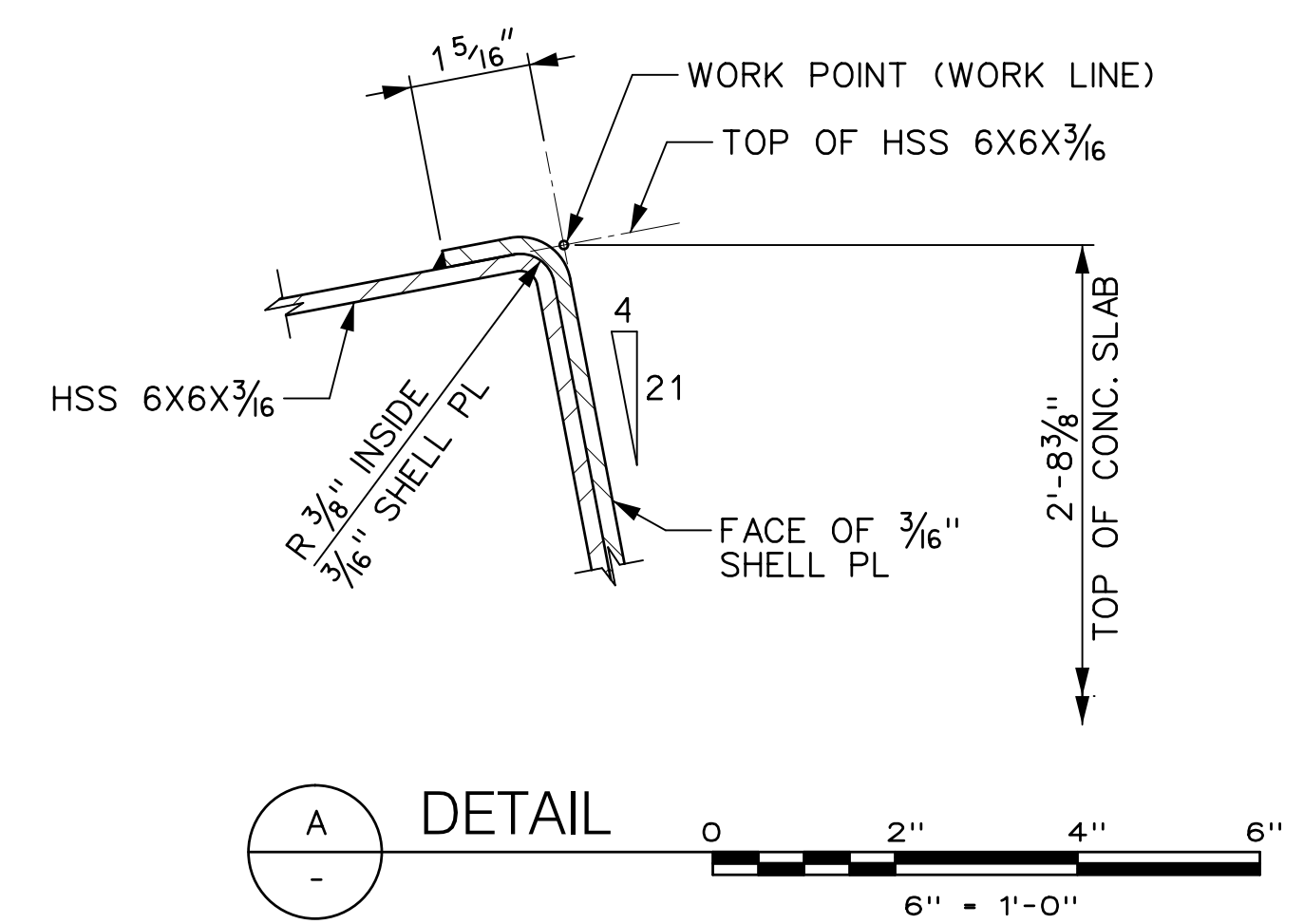
1 AS-BUILT UPDATES		06/05/19	GPD	DRAWN BY C. GAUNT		 Triborough Bridge and Tunnel Authority	MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE	GENERAL ELEVATION SHEET 1 OF 2	CONTRACT NO. PSC-16-2991
REV.	DESCRIPTION	DATE	APP'D.	CHECKED BY E. ZUKER				PROJECT NO. GFM-520H		DRAWING NO. G-003
"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."				SCALE: $\frac{3}{8}'' = 1'-0''$				DATE JUNE 5, 2019		SHEET 004 OF 018
								REVISION NO. 1		



GENERAL ELEVATION



SECTION

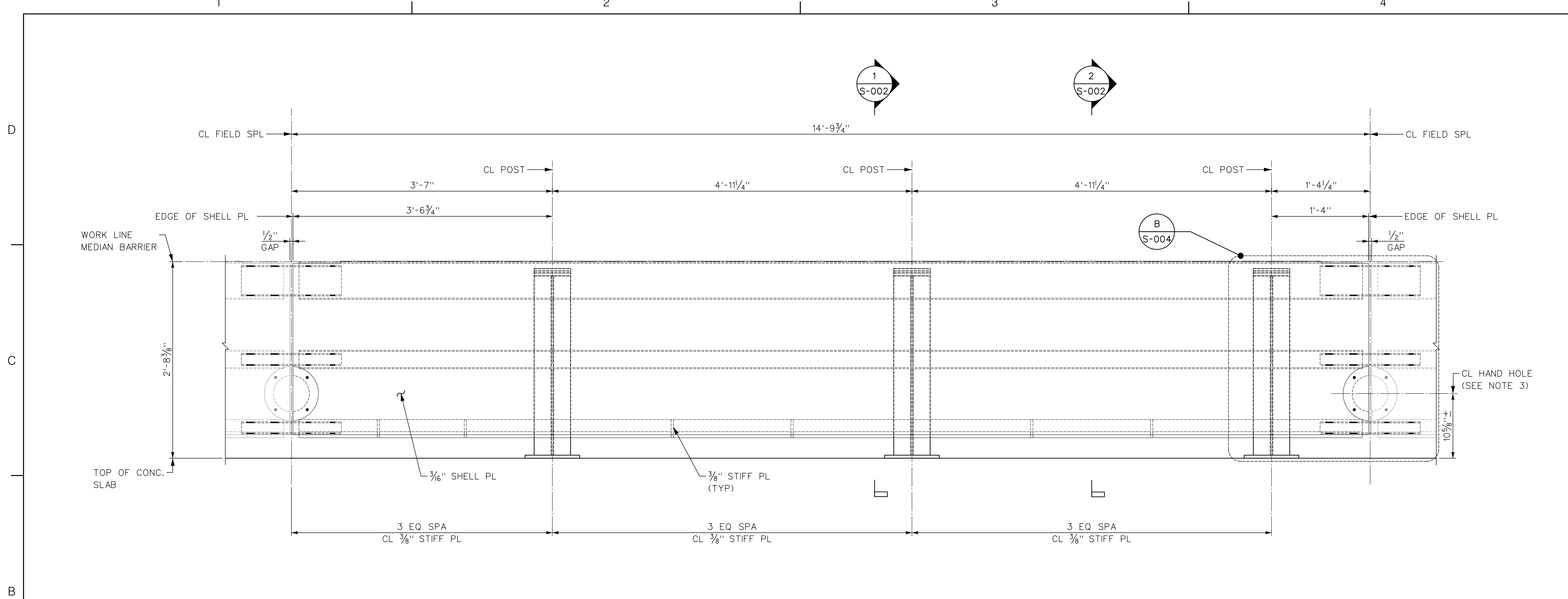


DETAIL

- NOTES:**
1. FOR TYPICAL MEDIAN BARRIER ELEVATION, SEE DWG. NO. S-001.
  2. FOR TYPICAL MEDIAN BARRIER EXTENSION ELEVATION, SEE DWG. S-006.
  3. WORK DETAIL A WITH DETAILS SHOWN ON DWG. NOS. S-002 TO S-005.
  4. FOR CONCRETE SLAB DETAILS, SEE TTI FOUNDATION DETAILS 2018-11-26.
  5. FOR MOCK DECK PLATE DETAILS, SEE DWG. NO. S-003A.

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 \$\$\$PLOT\$\$\$  
 \$\$\$REFLOT\$\$\$  
 \$\$\$REFLOT2\$\$\$  
 \$\$\$REFLOT3\$\$\$  
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DRAWN BY C. GAUNT		DESIGNED BY C. GAUNT			Triborough Bridge and Tunnel Authority	DRAWING TITLE  GENERAL ELEVATION SHEET 2 OF 2	CONTRACT NO. PSC-16-2991
CHECKED BY E. ZUKER		SCALE: 3/8" = 1'-0"					DRAWING NO. G-004
DATE 06/05/19		APP'D. GPD					DATE JUNE 5, 2019
REV. 1 AS-BUILT UPDATES		DESCRIPTION		MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS		PROJECT NO. GFM-520H	REVISION NO. 1
DATE 06/05/19		APP'D. GPD				SHEET 005 OF 018	
<small>"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."</small>							

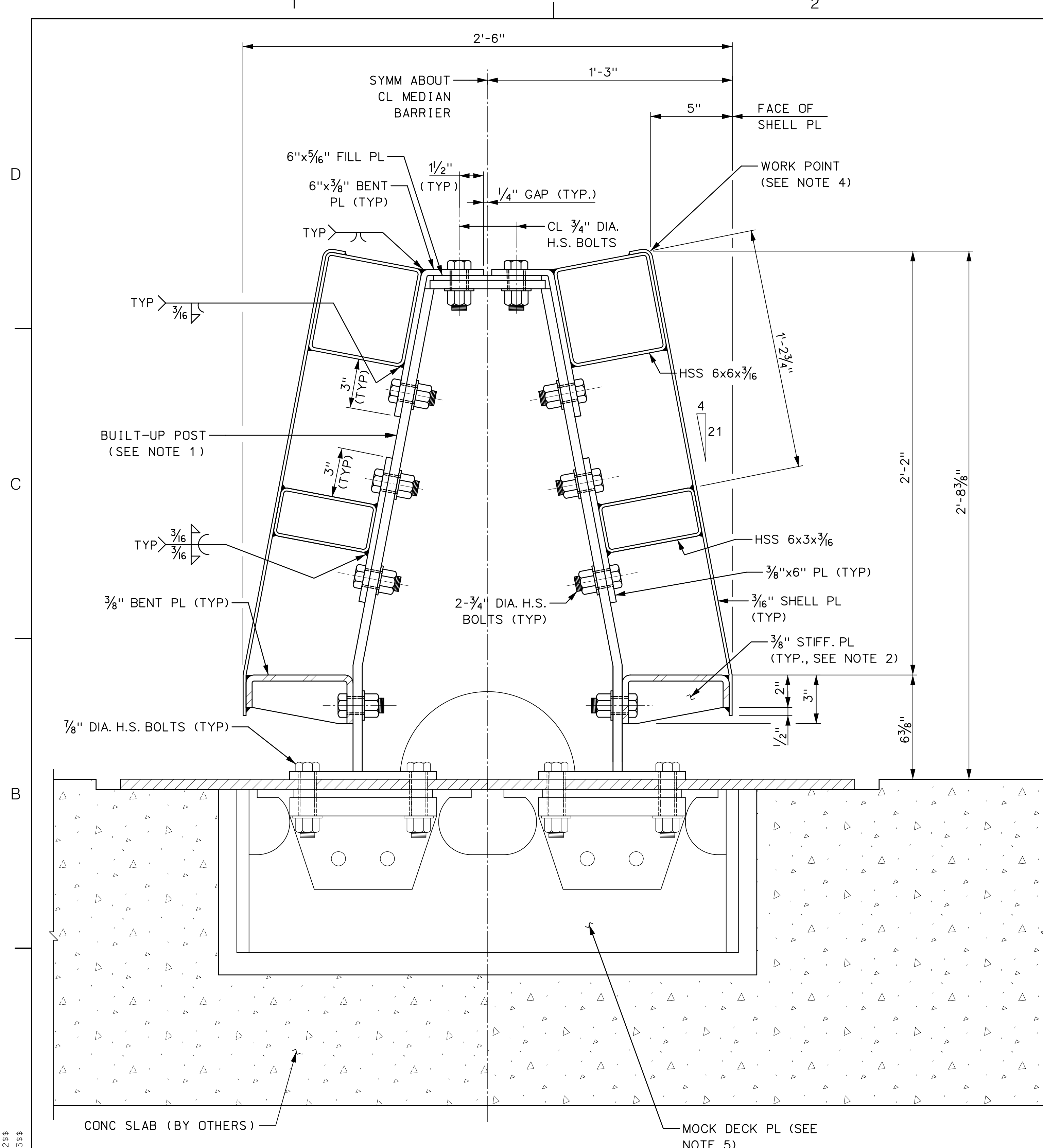


(A) TYPICAL ELEVATION  
 G-003  
 1/2" = 1'-0"

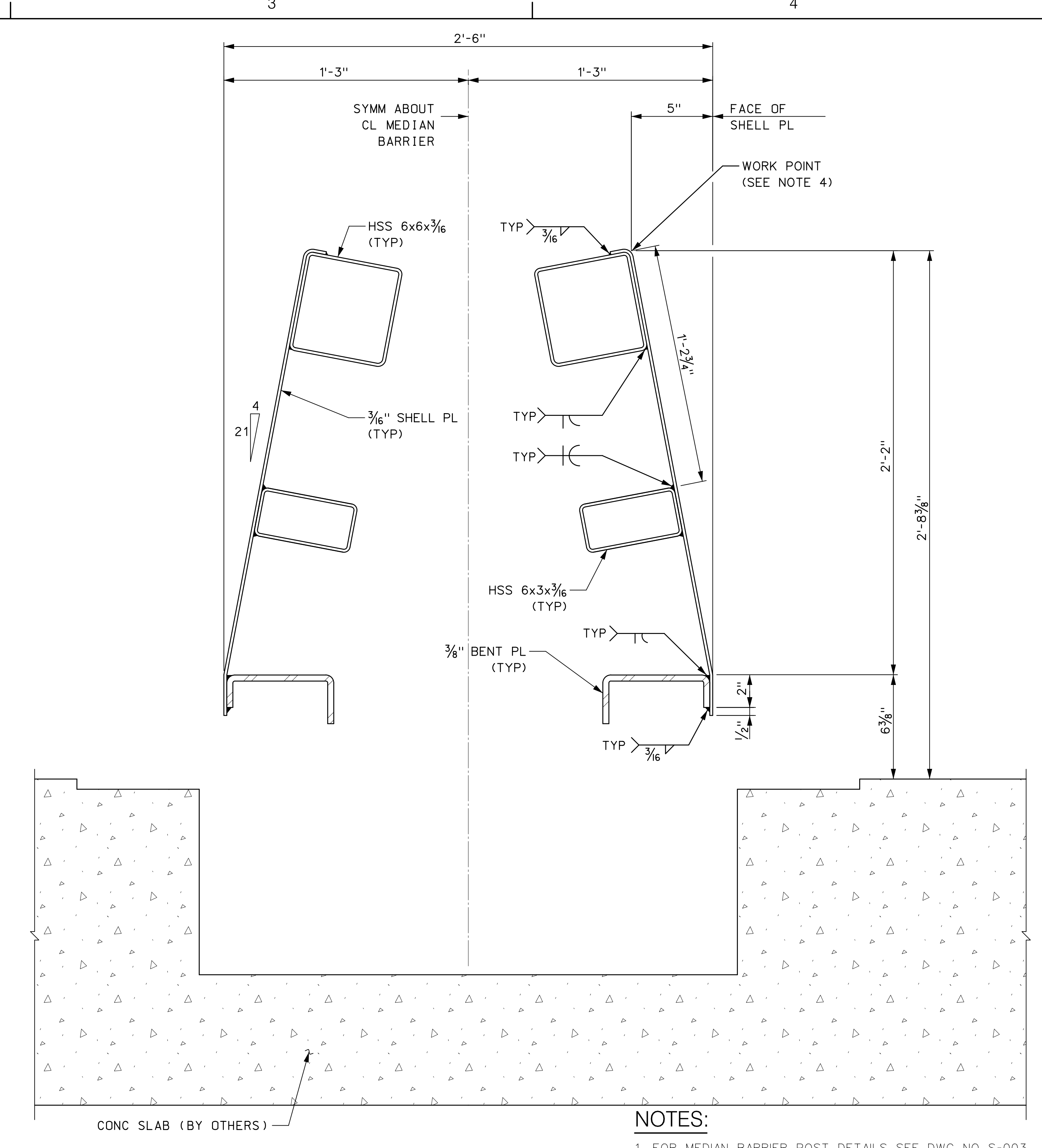
- NOTES:**
1. FOR MEDIAN BARRIER WORK POINT (WORK LINE) LOCATION DETAIL, SEE DWG. G-004.
  2. FOR SHELL PLATE DETAIL, SEE DWG. NO. S-005.
  3. OMIT HAND HOLES AT MEDIAN BARRIER END SEGMENTS WHERE NO FIELD SPLICES ARE PRESENT.
  4. MEDIAN BARRIER EXTENSION NOT SHOWN FOR CLARITY, SEE DWG. NO. S-006 FOR DETAILS.
  5. MOCK DECK PLATE AND CONCRETE SLAB NOT SHOWN FOR CLARITY, SEE DWG. NOS. S-003 AND S-003A FOR DETAILS.

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DRAWN BY C. GAUNT DESIGNED BY C. GAUNT CHECKED BY E. ZUKER SCALE: 1 1/2" = 1'-0"				 <b>HNTB</b>	 Triborough Bridge and Tunnel Authority	MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE	CONTRACT NO. PSC-16-2991
1	AS-BUILT UPDATES	06/05/19	GPD				MEDIAN BARRIER TYPICAL ELEVATION	DRAWING NO. S-001
REV.	DESCRIPTION	DATE	APP'D.				PROJECT NO. GFM-520H	SHEET 006 OF 018
<small>           "IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."         </small>							DATE JUNE 5, 2019	REVISION NO. 1



1 MEDIAN SECTION BARRIER AT POST  
 3" 6" 9" 1  
 3" = 1'-0"



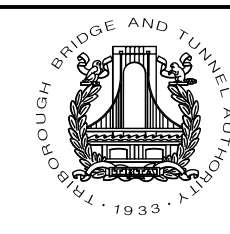
2 SECTION  
 3" 6" 9" 1  
 3" = 1'-0"

- NOTES:**
1. FOR MEDIAN BARRIER POST DETAILS, SEE DWG. NO. S-003.
  2. FOR BENT PLATE STIFFENER SPACING, SEE DWG. NO. S-001.
  3. FOR ADDITIONAL RAILING DETAILS, SEE DWG. NO. S-005.
  4. FOR WORK POINT DETAIL, SEE DWG. NO. G-004.
  5. FOR MOCK DECK PLATE DETAILS SEE DWG. NO. S-003A.

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 \$\$\$R102\$\$  
 \$\$\$R103\$\$

1	AS-BUILT UPDATES	06/05/19	GPD
REV.	DESCRIPTION	DATE	APP'D.

DRAWN BY	C. GAUNT
DESIGNED BY	C. GAUNT
CHECKED BY	E. ZUKER
SCALE:	3" = 1'-0"

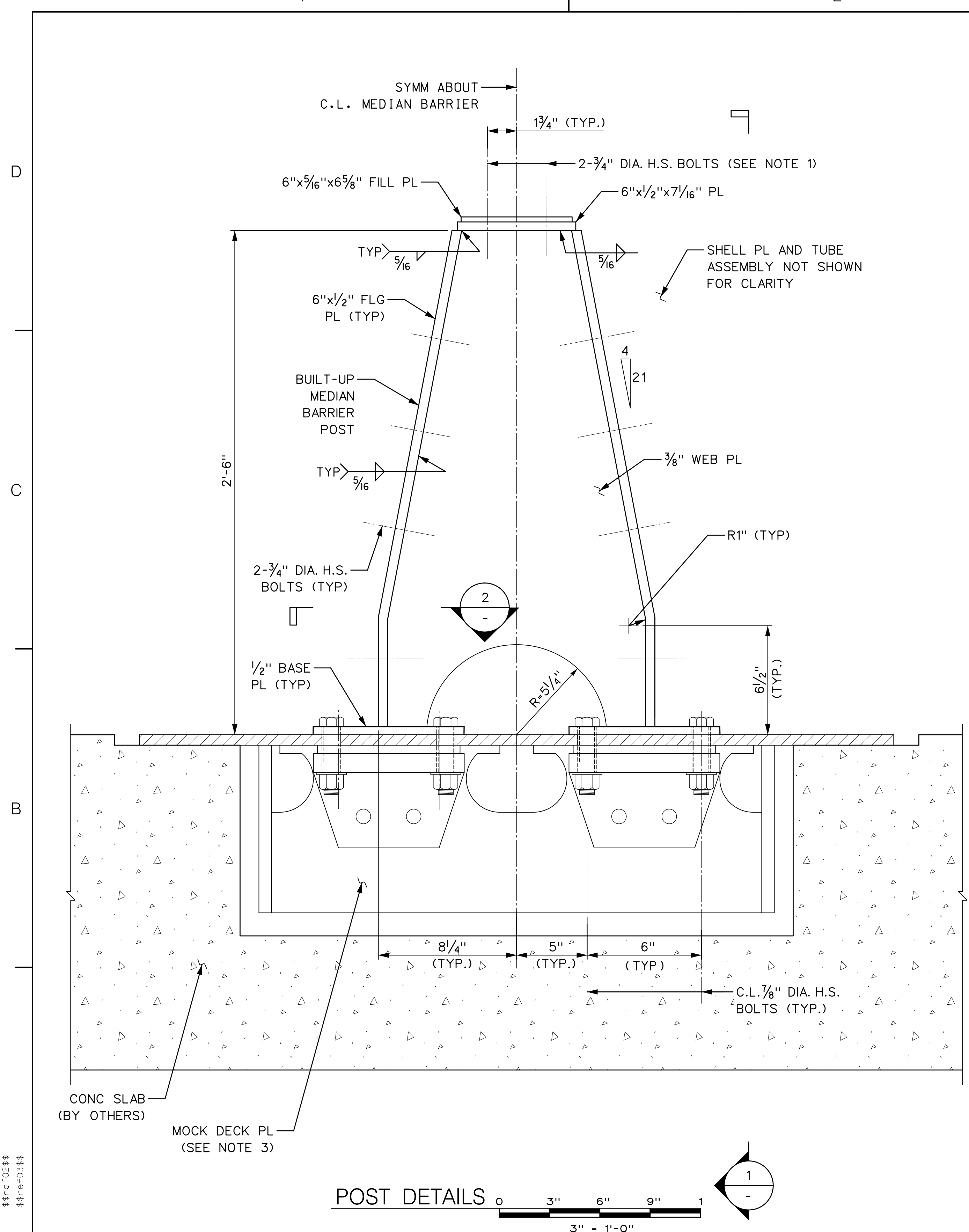


Triborough  
 Bridge and Tunnel  
 Authority  
 MISCELLANEOUS DESIGN SERVICES ON AN  
 AS-NEEDED BASIS - TASK ORDER 21  
 CRASH TEST FABRICATION DRAWINGS

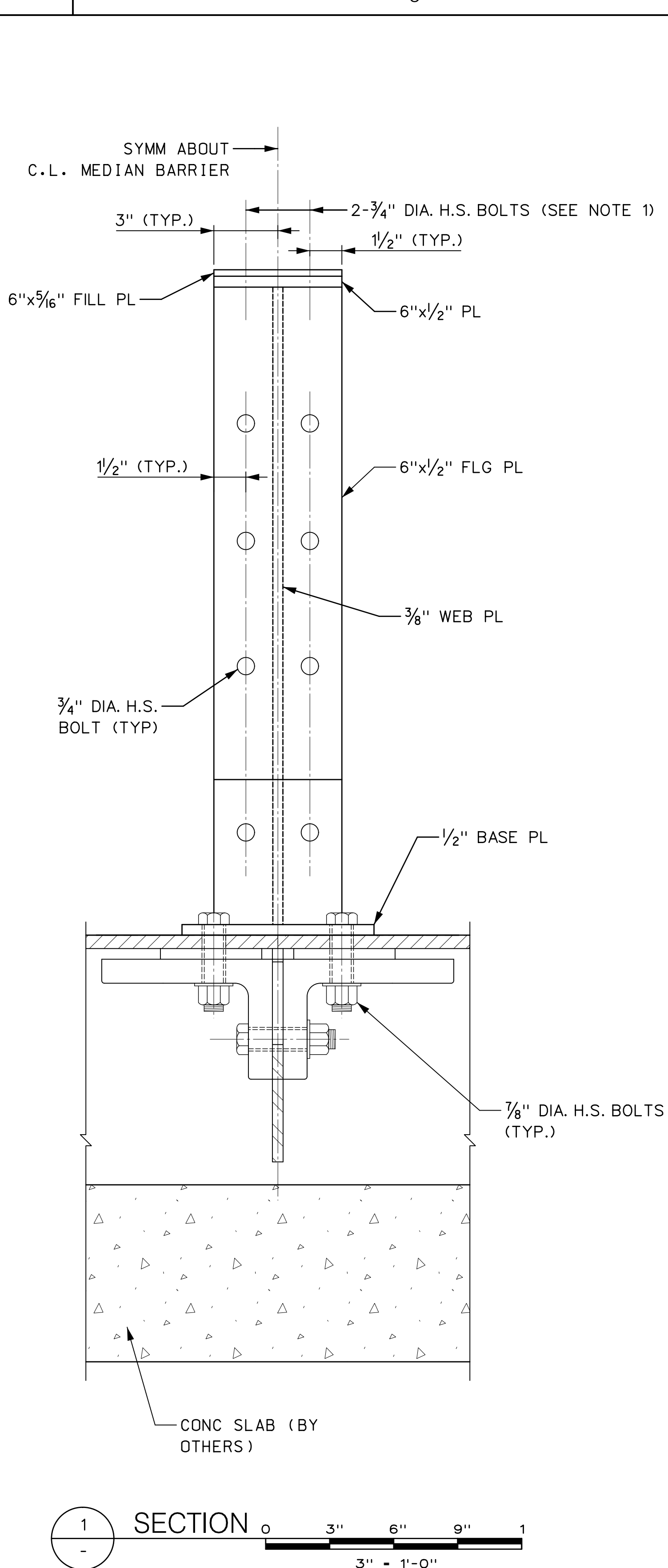
DRAWING TITLE	MEDIAN BARRIER TYPICAL SECTIONS
PROJECT NO.	GFM-520H

CONTRACT NO.	PSC-16-2991
DRAWING NO.	S-002
DATE	JUNE 5, 2019
REVISION NO.	1

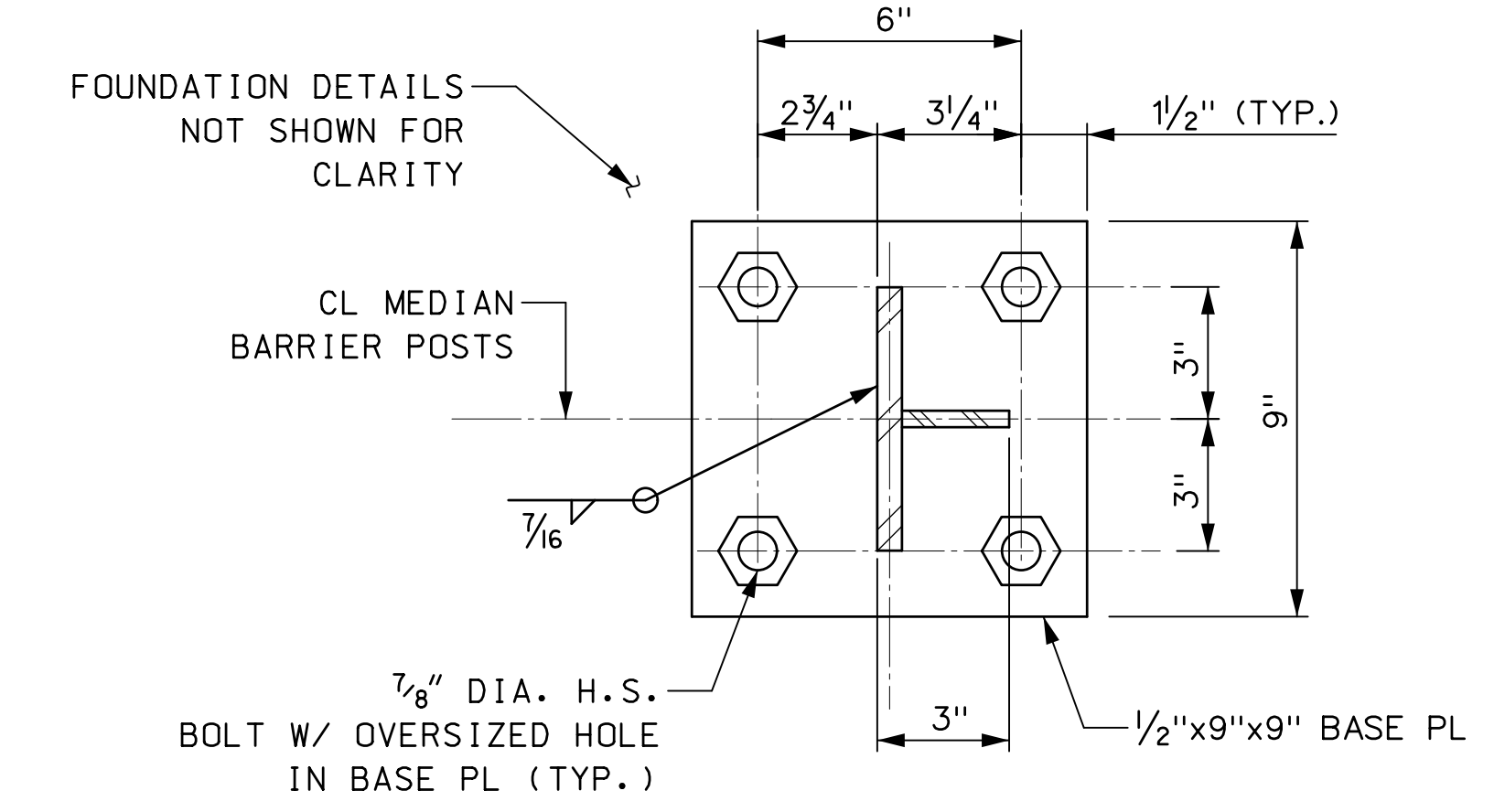
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 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$



POST DETAILS 0 3" 6" 9" 1  
 3" = 1'-0"



SECTION 1 0 3" 6" 9" 1  
 3" = 1'-0"



SECTION 2 0 3" 6" 9" 1  
 3" = 1'-0"

- NOTES:**
1. COORDINATE BOLT POSITIONS WITH MEDIAN BARRIER EXTENSION CONNECTION PLATE DETAILS, SEE DWG. NO. S-008.
  2. COORDINATE WITH RAILING DETAILS, SEE DWG. NOS. S-002 AND S-005.
  3. FOR MOCK DECK PLATE DETAILS, SEE DWG. NO. S-003A.

1	AS-BUILT UPDATES	06/05/19	GPD	DRAWN BY C. GAUNT
REV.	DESCRIPTION	DATE	APP'D.	CHECKED BY E. ZUKER
"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."				SCALE: 3" = 1'-0"

**HNTB**

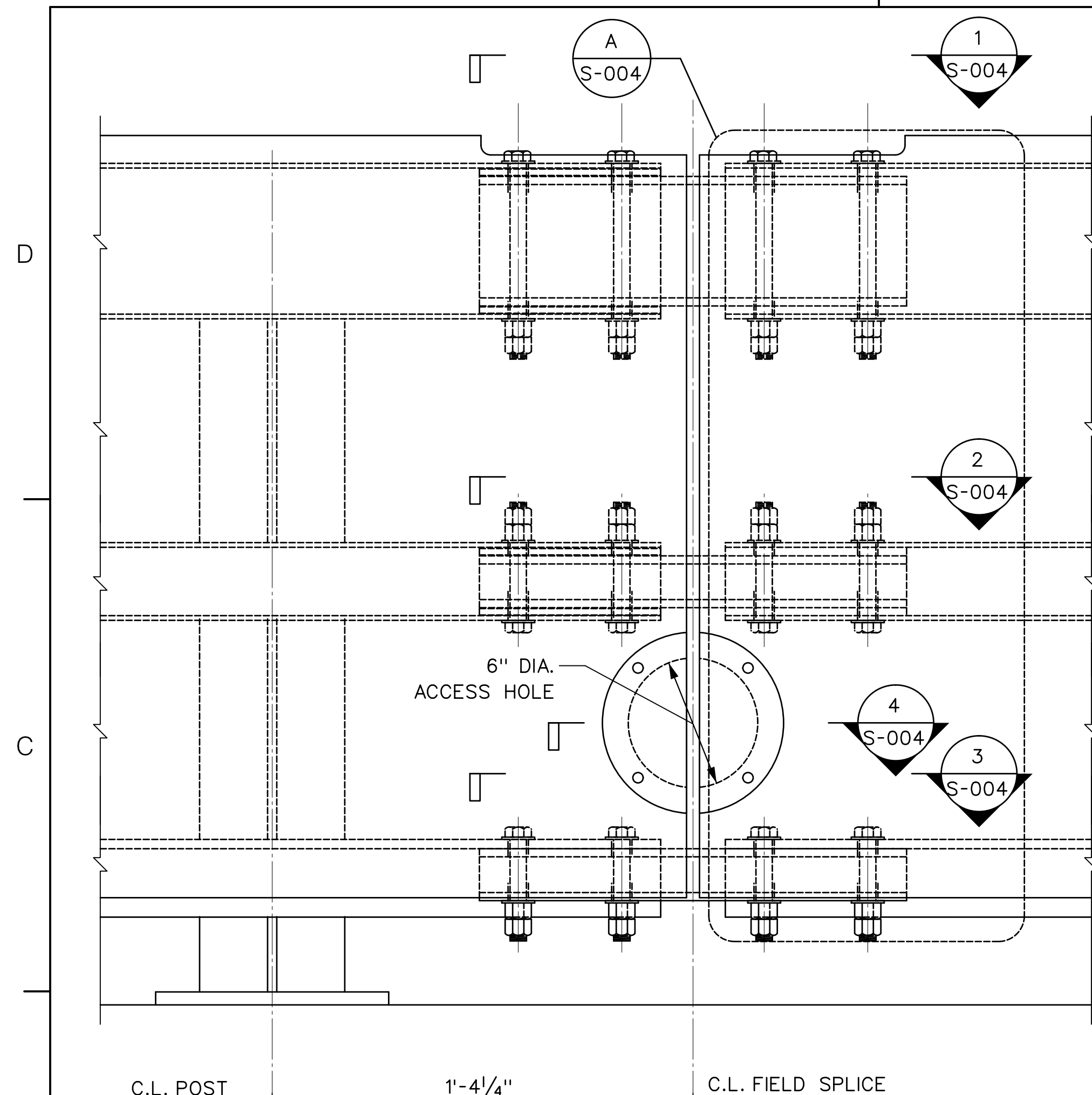
Triborough  
 Bridge and Tunnel  
 Authority

MISCELLANEOUS DESIGN SERVICES ON AN  
 AS-NEEDED BASIS - TASK ORDER 21  
 CRASH TEST FABRICATION DRAWINGS

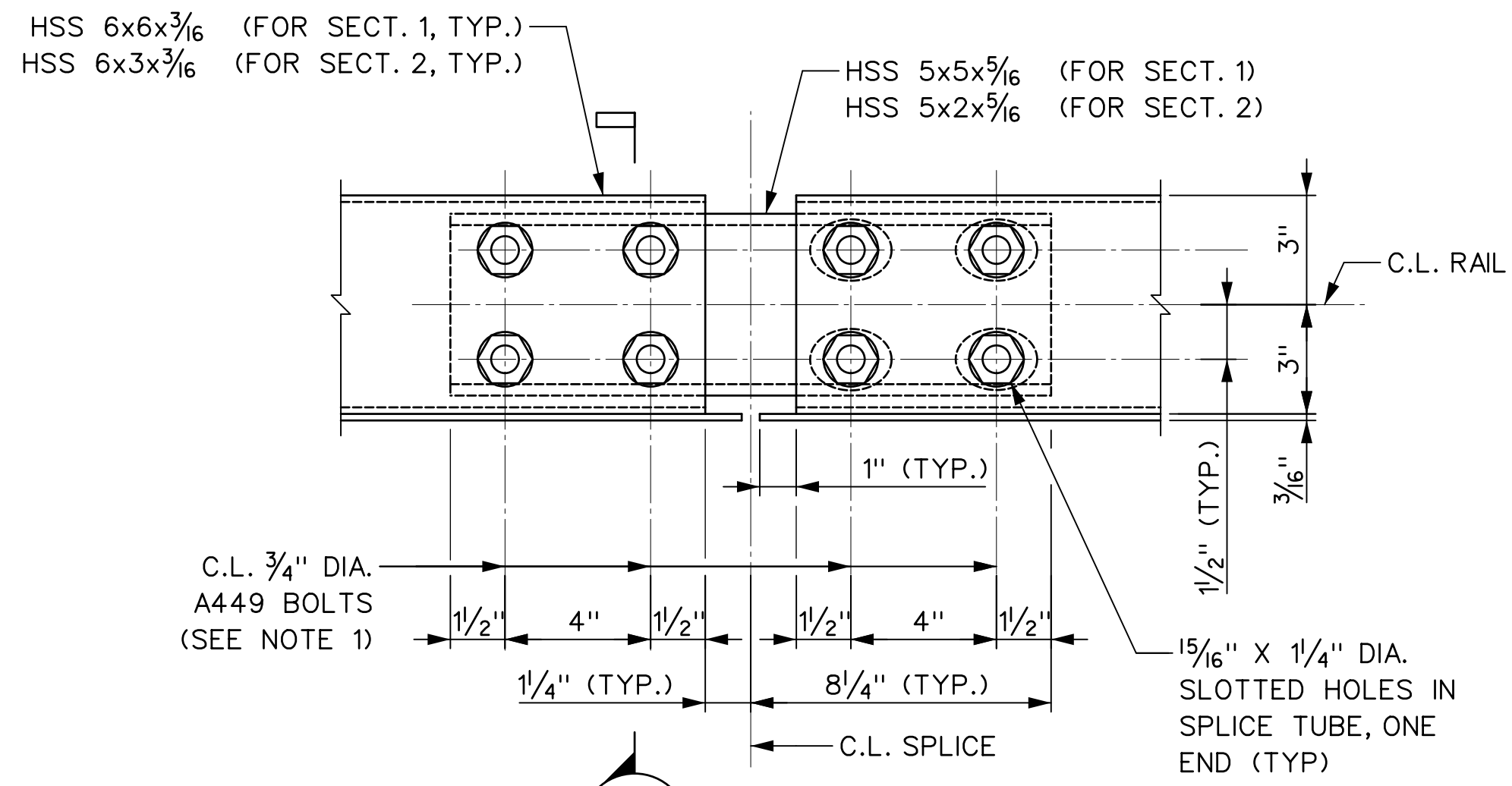
DRAWING TITLE	MEDIAN BARRIER POST DETAILS	CONTRACT NO.	PSC-16-2991
DRAWING NO.	S-003	DATE	JUNE 5, 2019
PROJECT NO.	GFM-520H	REVISION NO.	1



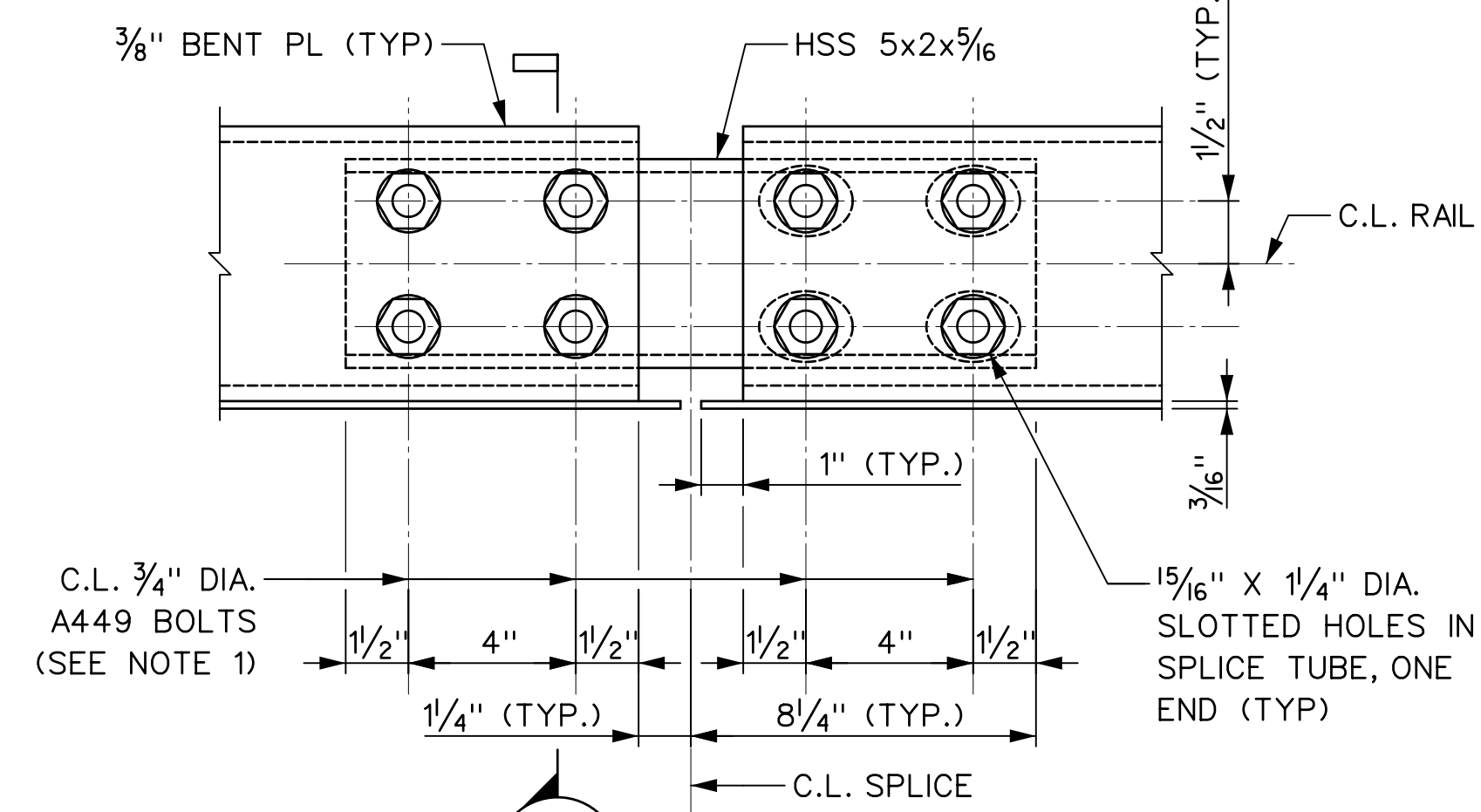




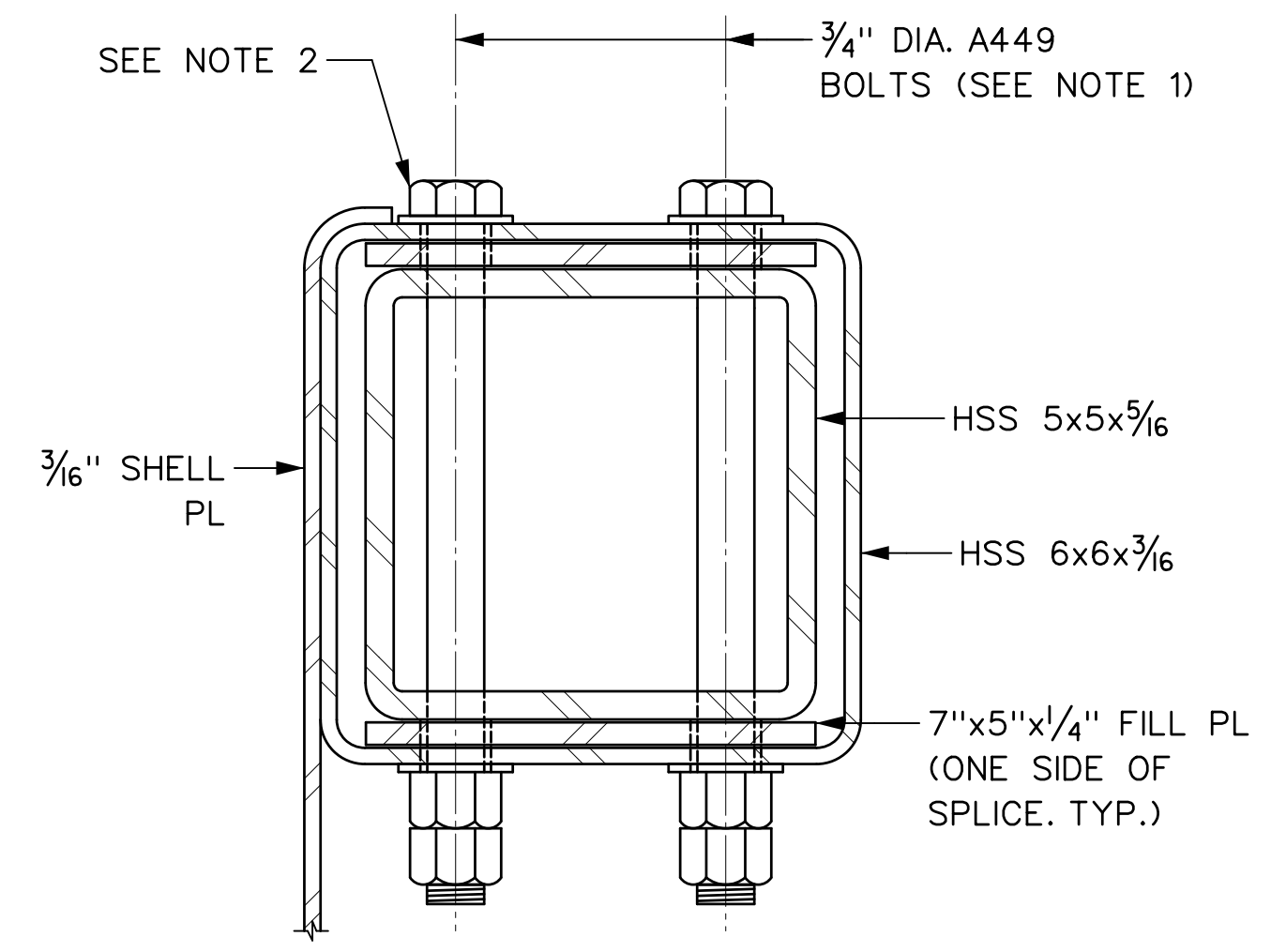
**B** MEDIAN BARRIER SPLICE (DEVELOPED VIEW)  
S-001



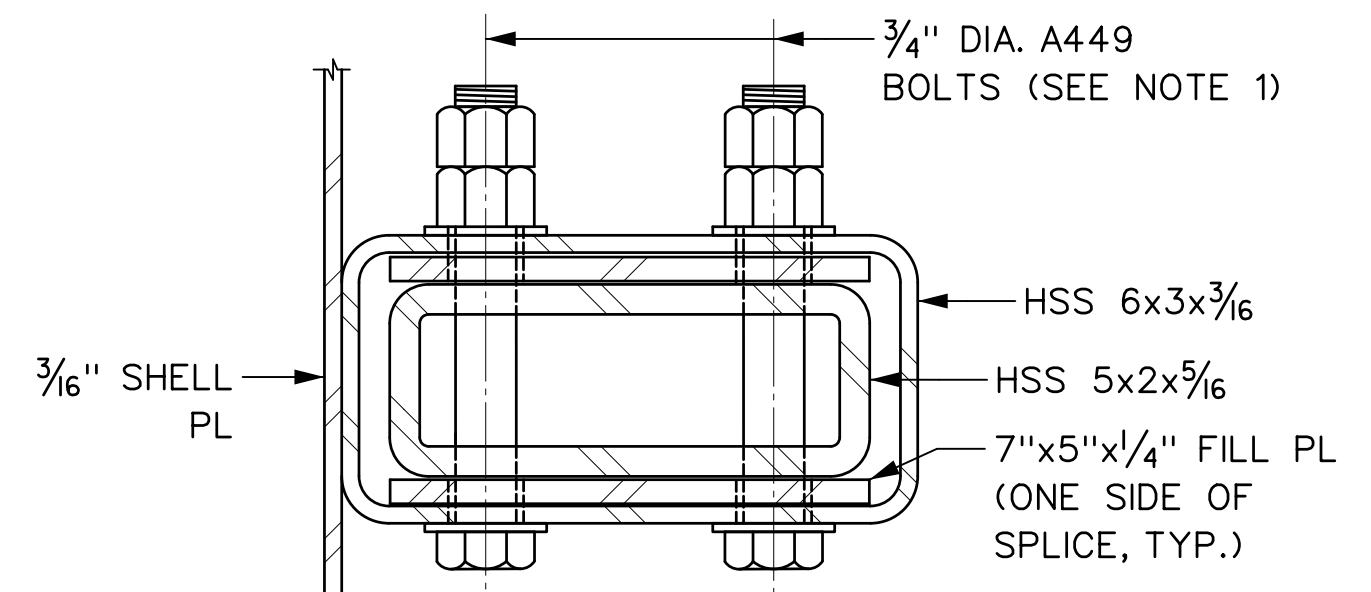
**SECTION 1**  
S-004



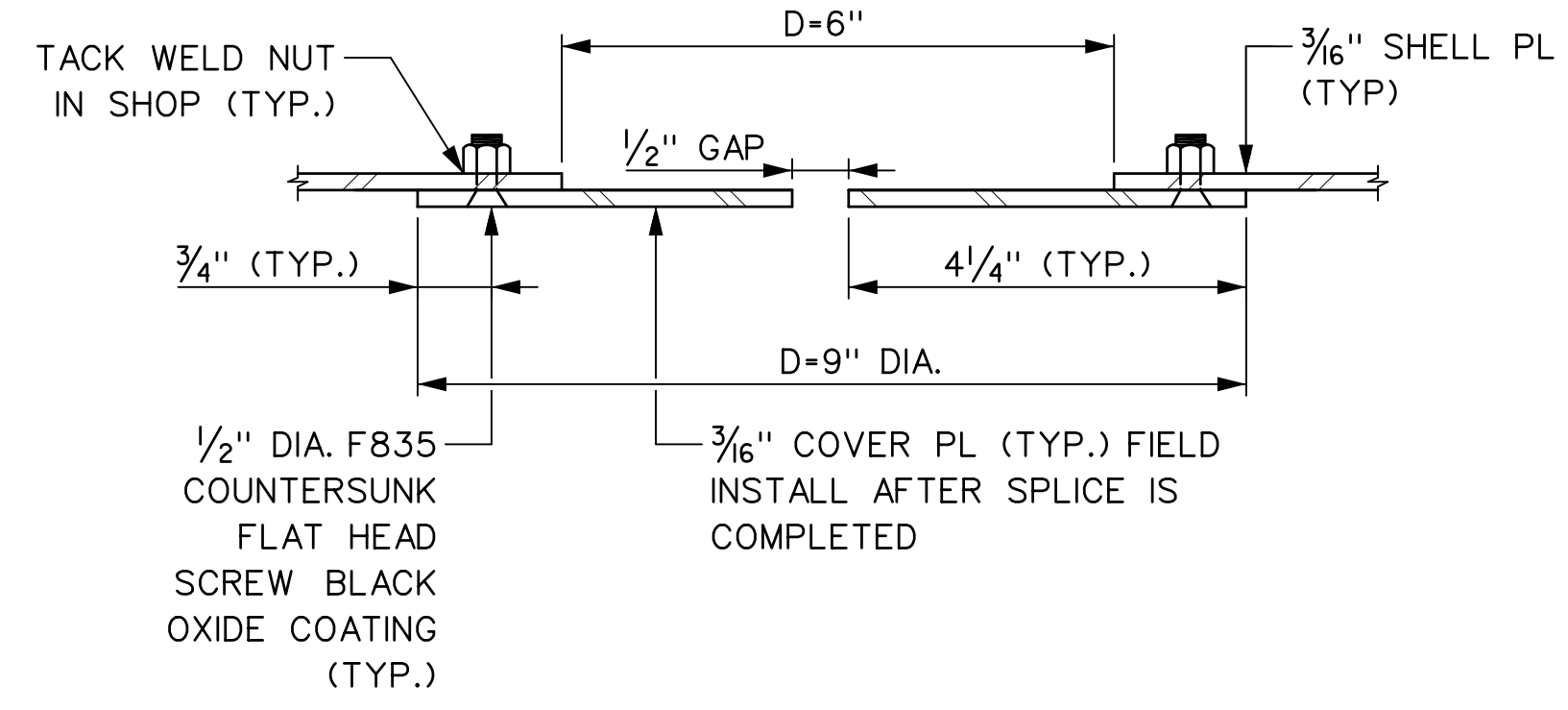
**SECTION 2**  
S-004



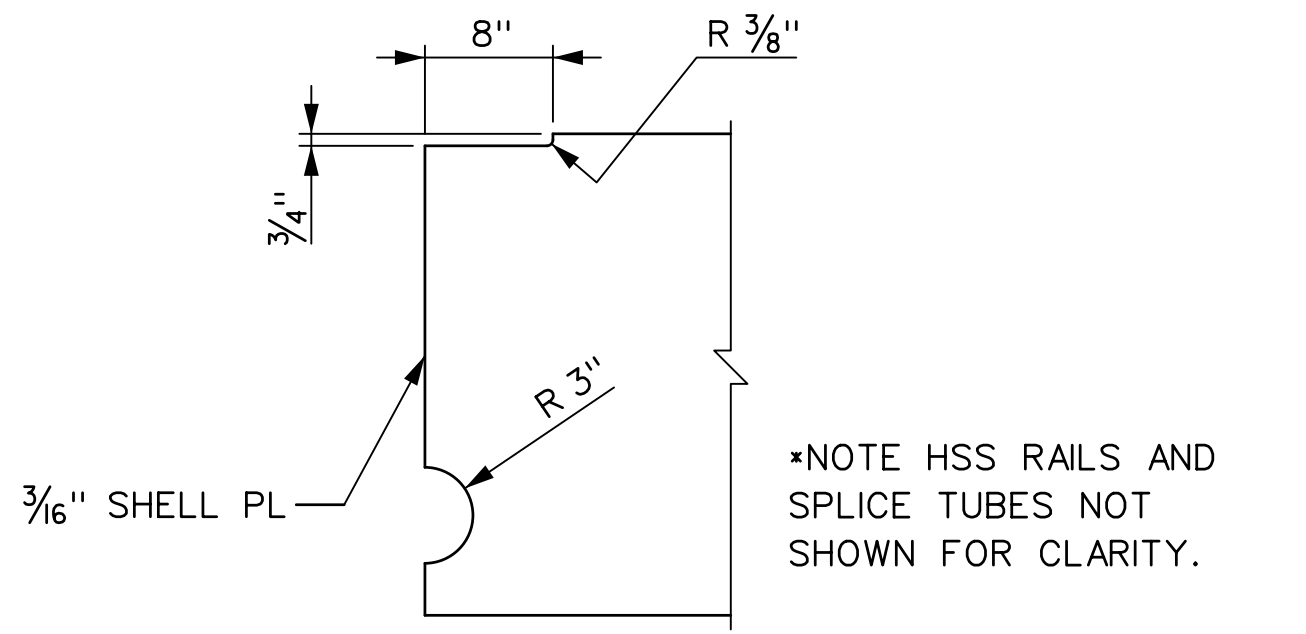
**SECTION 3**  
S-004



**SECTION 4**  
S-004



**SECTION 4**  
S-004



**SECTION 5**  
S-004

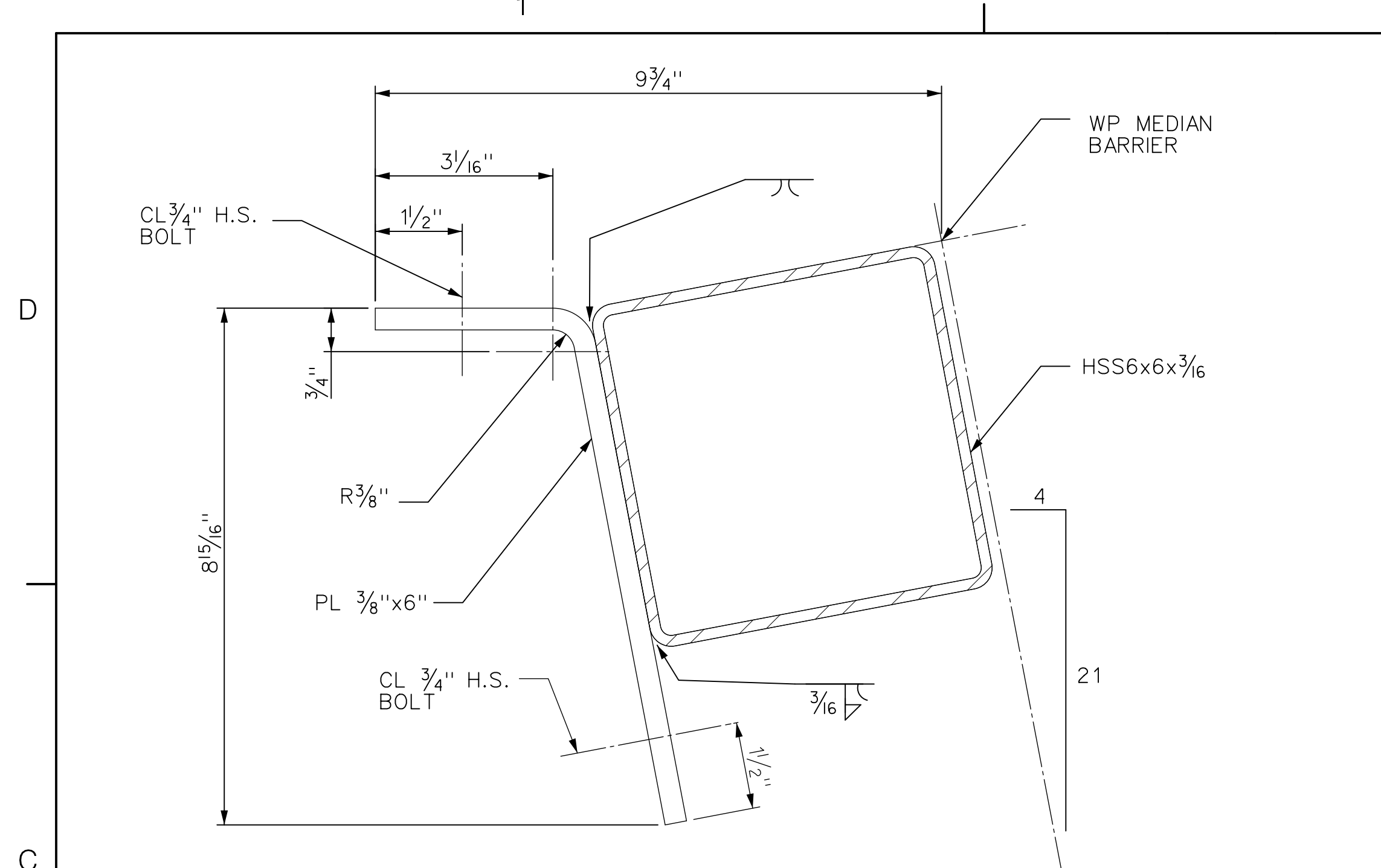
**NOTES:**

- ALL 3/4" DIA. A449 BOLTS FOR MEDIAN BARRIER RAIL SPLICES SHALL BE INSTALLED SNUG TIGHT. EACH BOLT SHALL CONTAIN TWO (2) HARDENED WASHERS AND TWO (2) HEAVY HEX NUTS.
- RAIL SPLICE BOLTS FOR THE TOP TUBE AND BOTTOM BENT PL ONLY SHALL BE INSTALLED WITH NUTS ON THE BOTTOM SIDE OF THE TUBE.

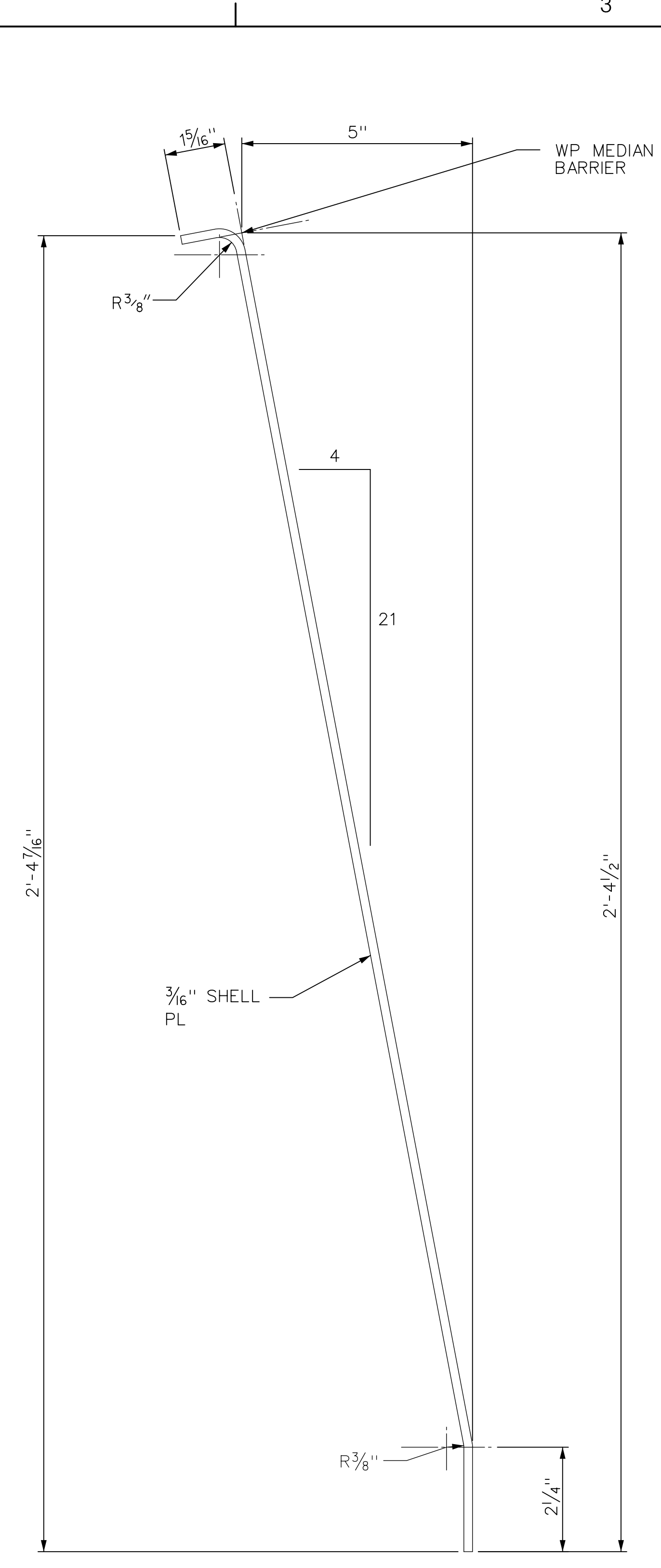
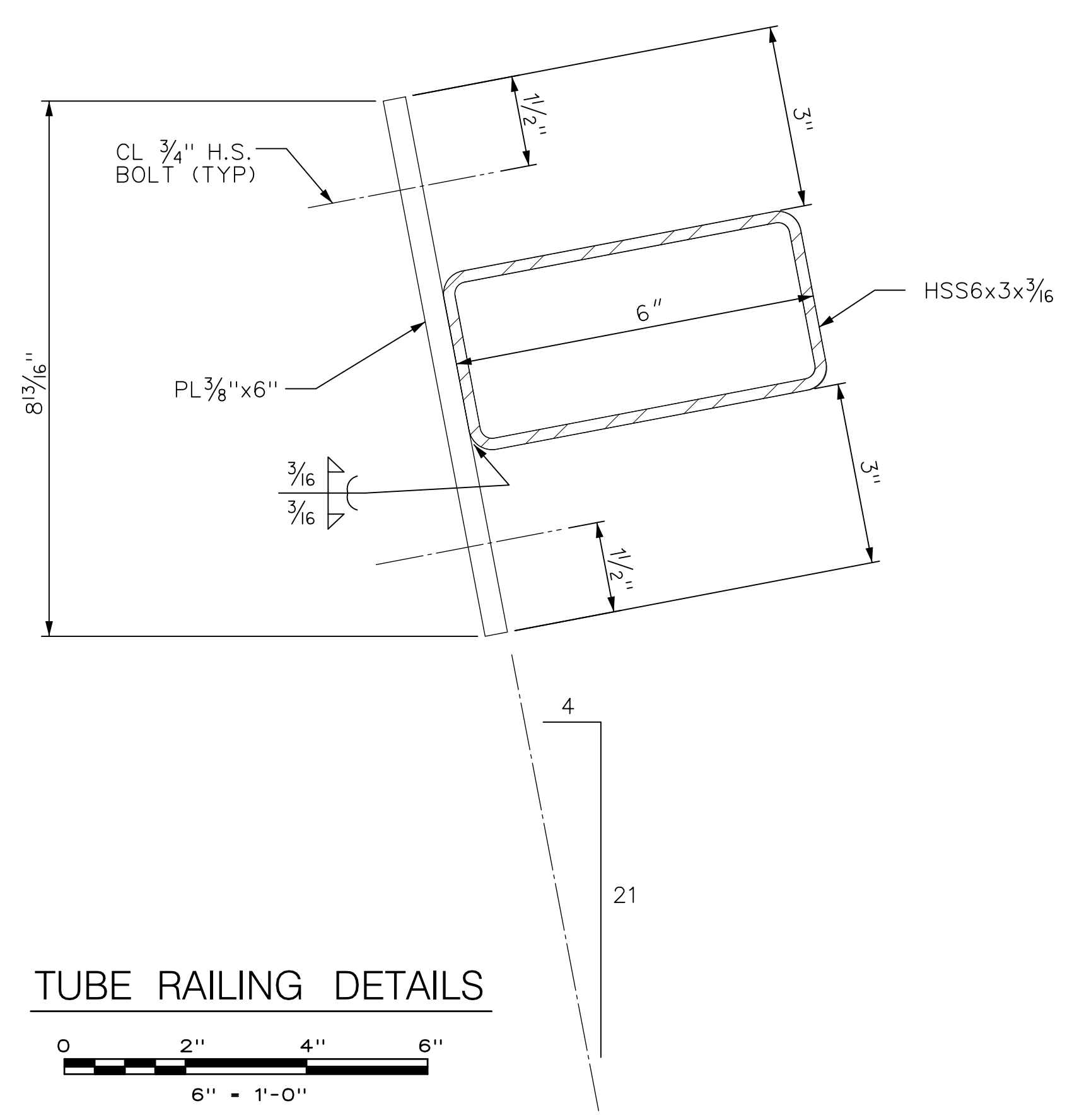
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 \$\$\$R101\$\$  
 \$\$\$R102\$\$  
 \$\$\$R103\$\$  
 TDG-68648-TD1  
 11:09:51 AM  
 gda1y

DRAWN BY C. GAUNT DESIGNED BY C. GAUNT CHECKED BY E. ZUKER SCALE: AS NOTED					Triborough Bridge and Tunnel Authority MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE <b>MEDIAN BARRIER SPLICE DETAILS</b>		CONTRACT NO. PSC-16-2991
1 AS-BUILT UPDATES REV. DESCRIPTION DATE APP'D.	06/05/19 GPD	PROJECT NO. GFM-520H				DRAWING NO. <b>S-004</b> SHEET 009 OF 018 DATE JUNE 5, 2019 REVISION NO. 1		

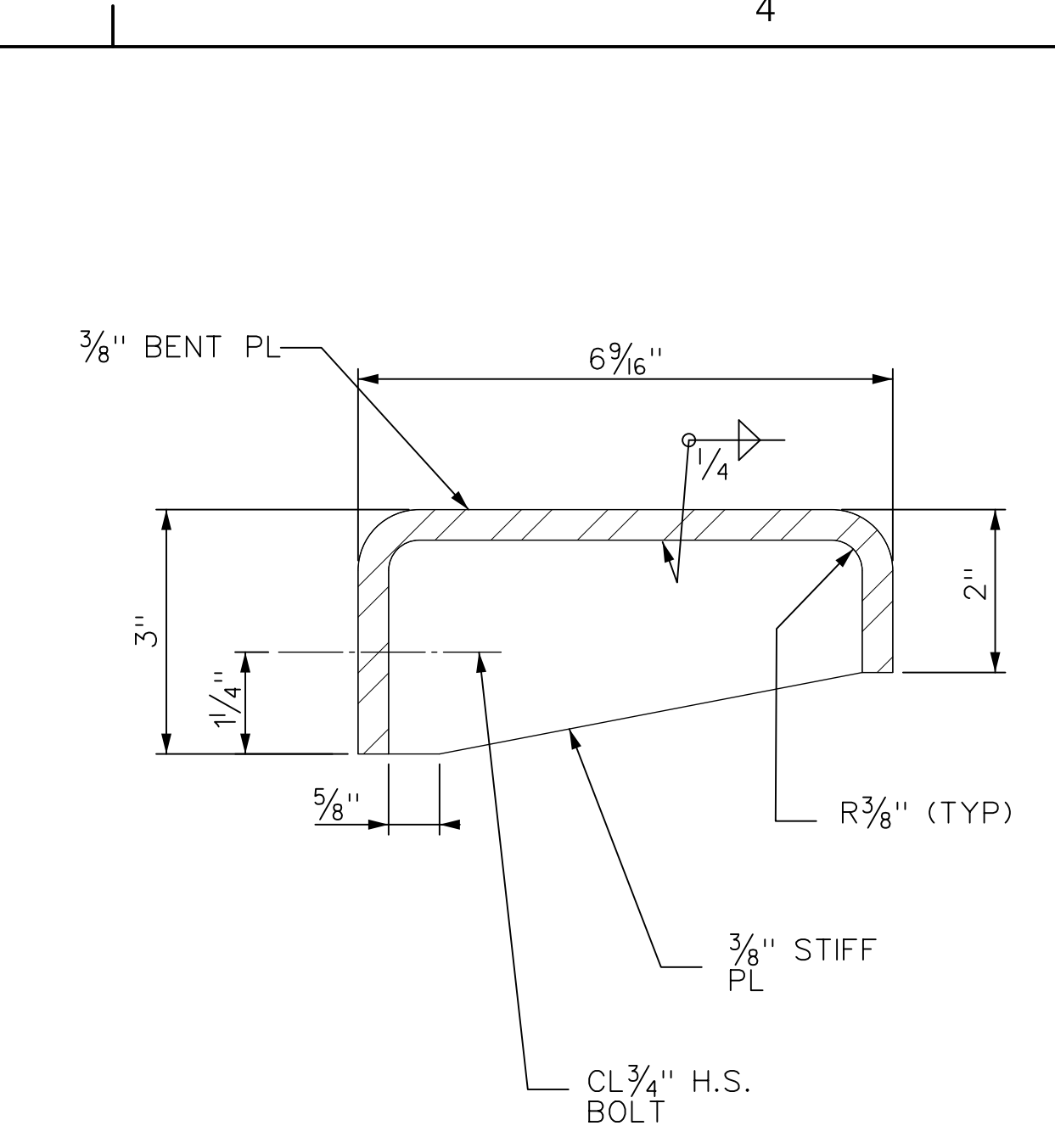
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 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$



**TUBE RAILING DETAILS**



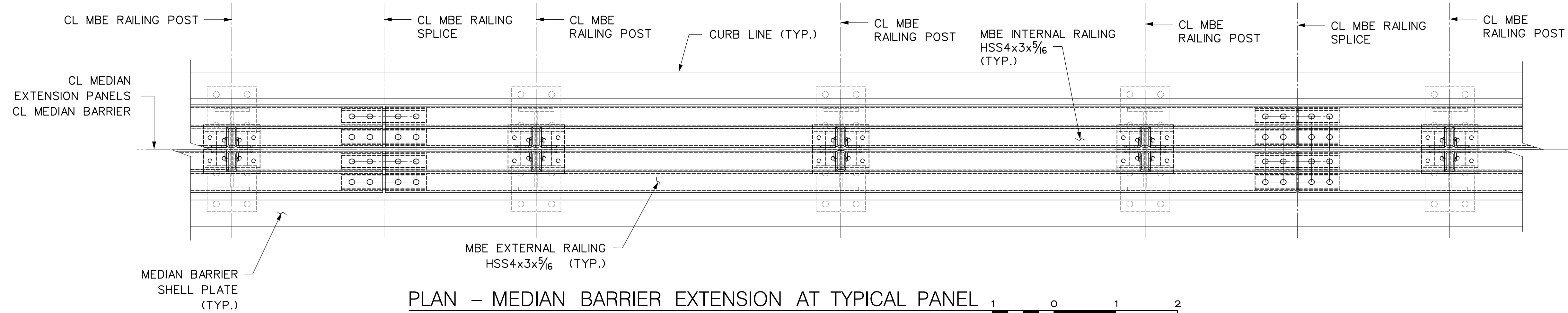
**SHELL PLATE DETAIL**



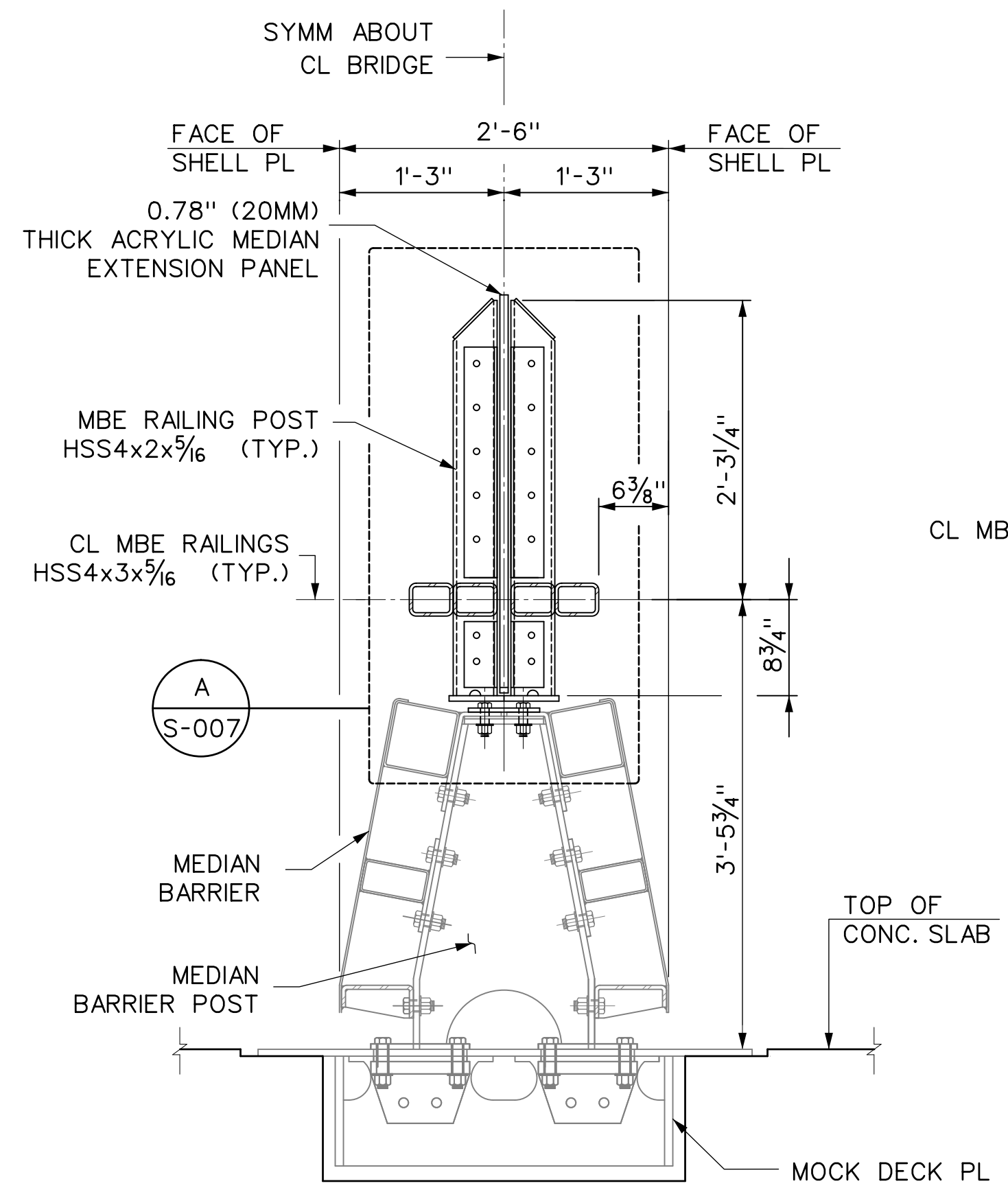
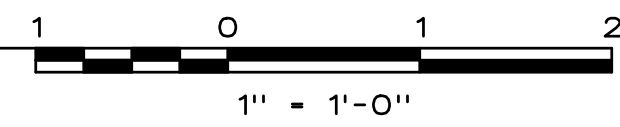
**BENT PLATE RAIL DETAIL**

- NOTES:**
1. DETAILS SHOWN ON THIS SHEET ARE SIMILAR AND OPPOSITE HAND ABOUT THE CENTERLINE OF THE MEDIAN BARRIER.
  2. COORDINATE THESE DETAILS WITH DETAILS SHOWN ON DWG. NOS. S-002 AND S-003.

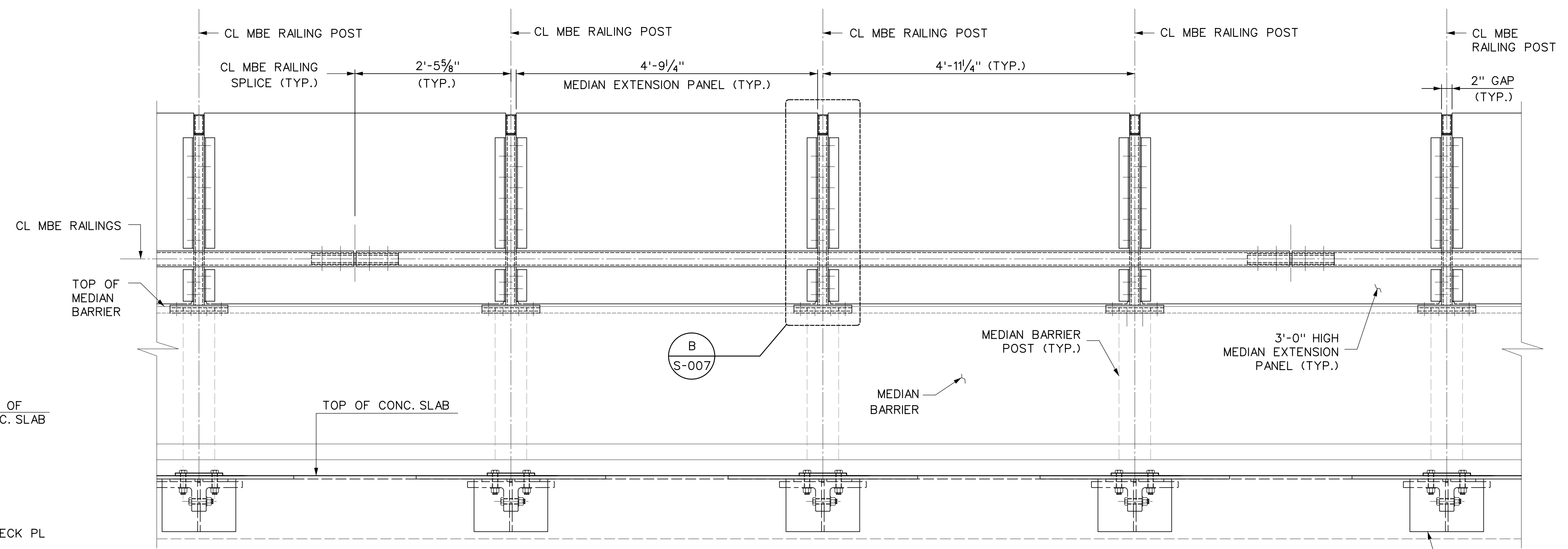
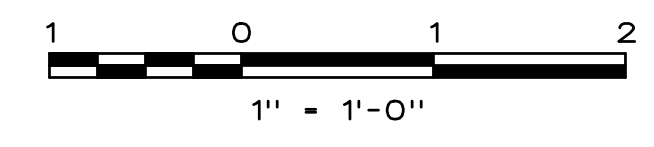
<table border="1"> <tr> <td>1</td> <td>AS-BUILT UPDATES</td> <td>06/05/19</td> <td>GPD</td> </tr> <tr> <td>REV.</td> <td>DESCRIPTION</td> <td>DATE</td> <td>APP'D.</td> </tr> </table>				1	AS-BUILT UPDATES	06/05/19	GPD	REV.	DESCRIPTION	DATE	APP'D.	DRAWN BY C. GAUNT DESIGNED BY C. GAUNT CHECKED BY E. ZUKER SCALE: 3" = 1'-0"			Triborough Bridge and Tunnel Authority	DRAWING TITLE <b>MEDIAN BARRIER RAILING DETAILS</b>	CONTRACT NO. PSC-16-2991 DRAWING NO. <b>S-005</b> SHEET 010 OF 018
1	AS-BUILT UPDATES	06/05/19	GPD														
REV.	DESCRIPTION	DATE	APP'D.														
"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."				MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS		PROJECT NO. GFM-520H DATE JUNE 5, 2019 REVISION NO. 1											



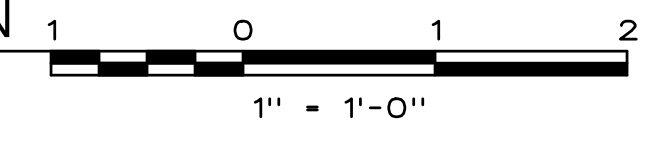
PLAN - MEDIAN BARRIER EXTENSION AT TYPICAL PANEL



TYPICAL MEDIAN BARRIER SECTION AT POST



TYPICAL FRONT ELEVATION OF MEDIAN BARRIER EXTENSION



**NOTES:**

1. FOR MBE RAILING SPLICE DETAIL, REFER TO DWG. NO. S-012.
2. PRIOR TO GALVANIZING, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16\"/>
- 3. EXTERNAL VENT HOLES SHALL BE DRILLED IN THE RAIL TUBES AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

W0015006  
 \$\$\$DWT\$\$\$  
 \$\$\$RFOT\$\$\$  
 \$\$\$RFOT2\$\$\$  
 \$\$\$RFOT3\$\$\$  
 TDTC-68648-TD1  
 11:09:55 AM  
 gdaly

1	AS-BUILT UPDATES	06/05/19	GPD
REV.	DESCRIPTION	DATE	APP'D.

DRAWN BY G. DALY  
 DESIGNED BY G. DALY  
 CHECKED BY E. ZUKER  
 SCALE: 1" = 1'0"

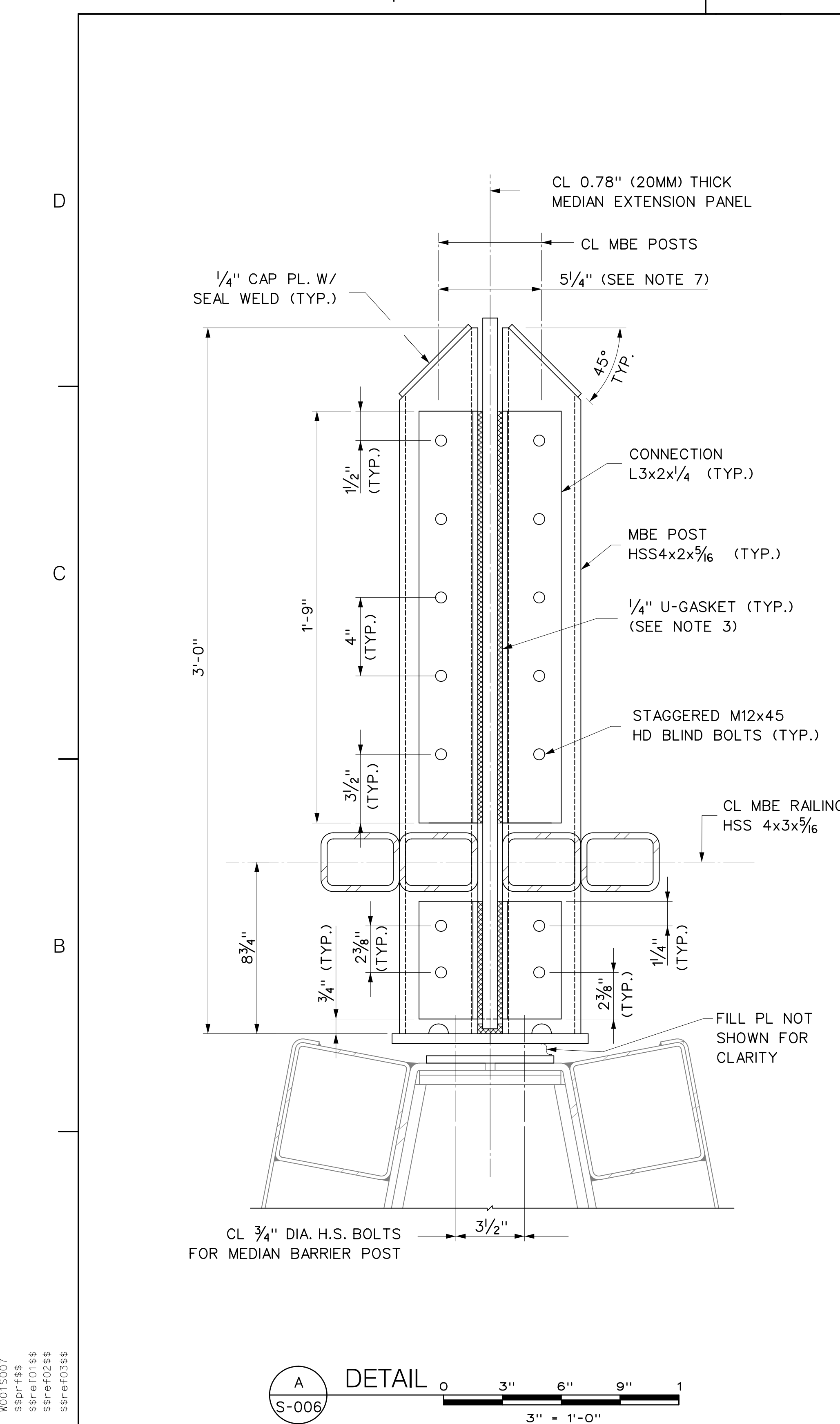


Triborough  
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 MISCELLANEOUS DESIGN SERVICES ON AN  
 AS-NEEDED BASIS - TASK ORDER 21  
 CRASH TEST FABRICATION DRAWINGS

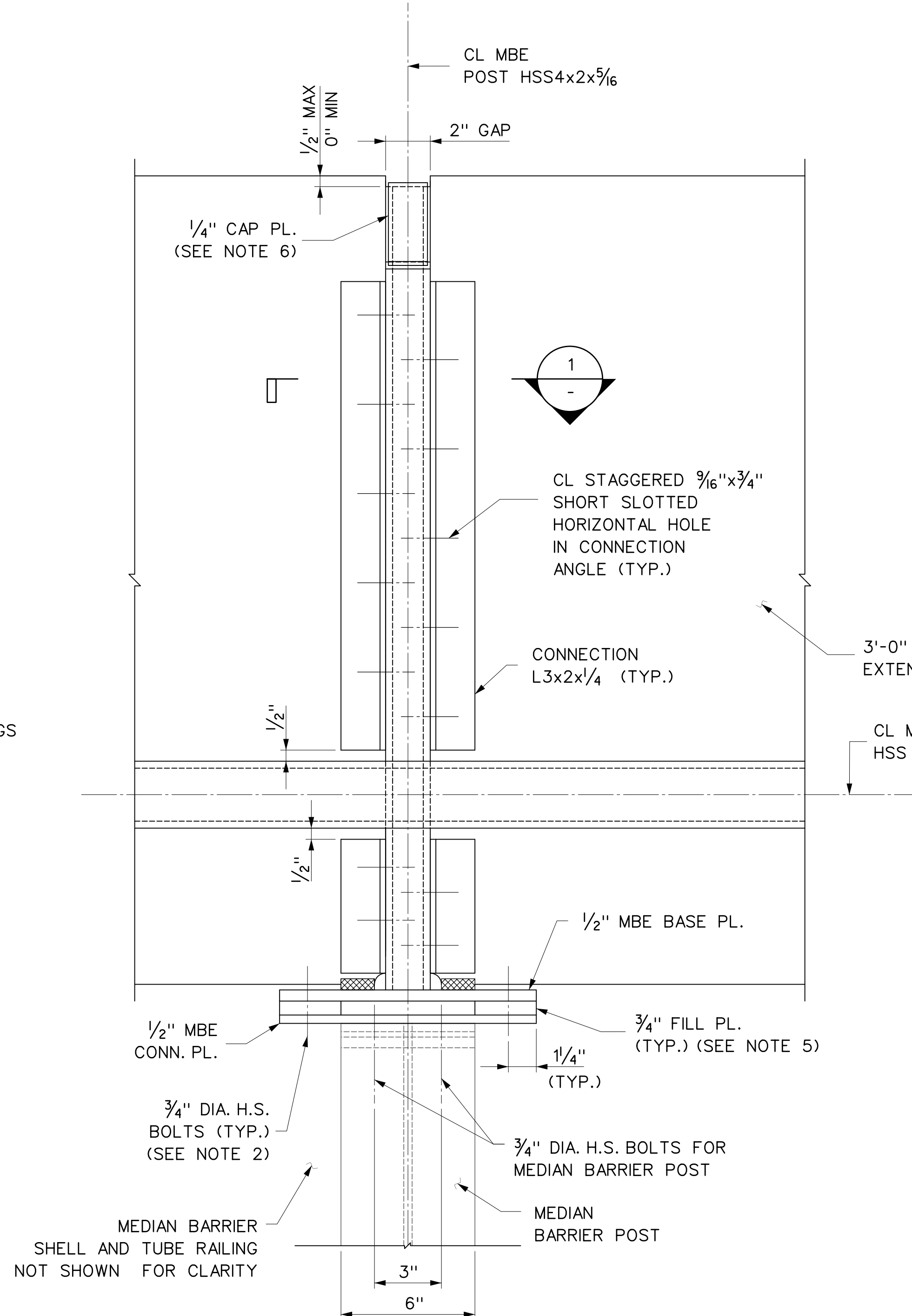
DRAWING TITLE	TYPICAL ELEVATION AND CROSS SECTION OF MEDIAN BARRIER EXTENSION
PROJECT NO.	GFM-520H

CONTRACT NO.	PSC-16-2991
DRAWING NO.	S-006
DATE	JUNE 5, 2019
REVISION NO.	1

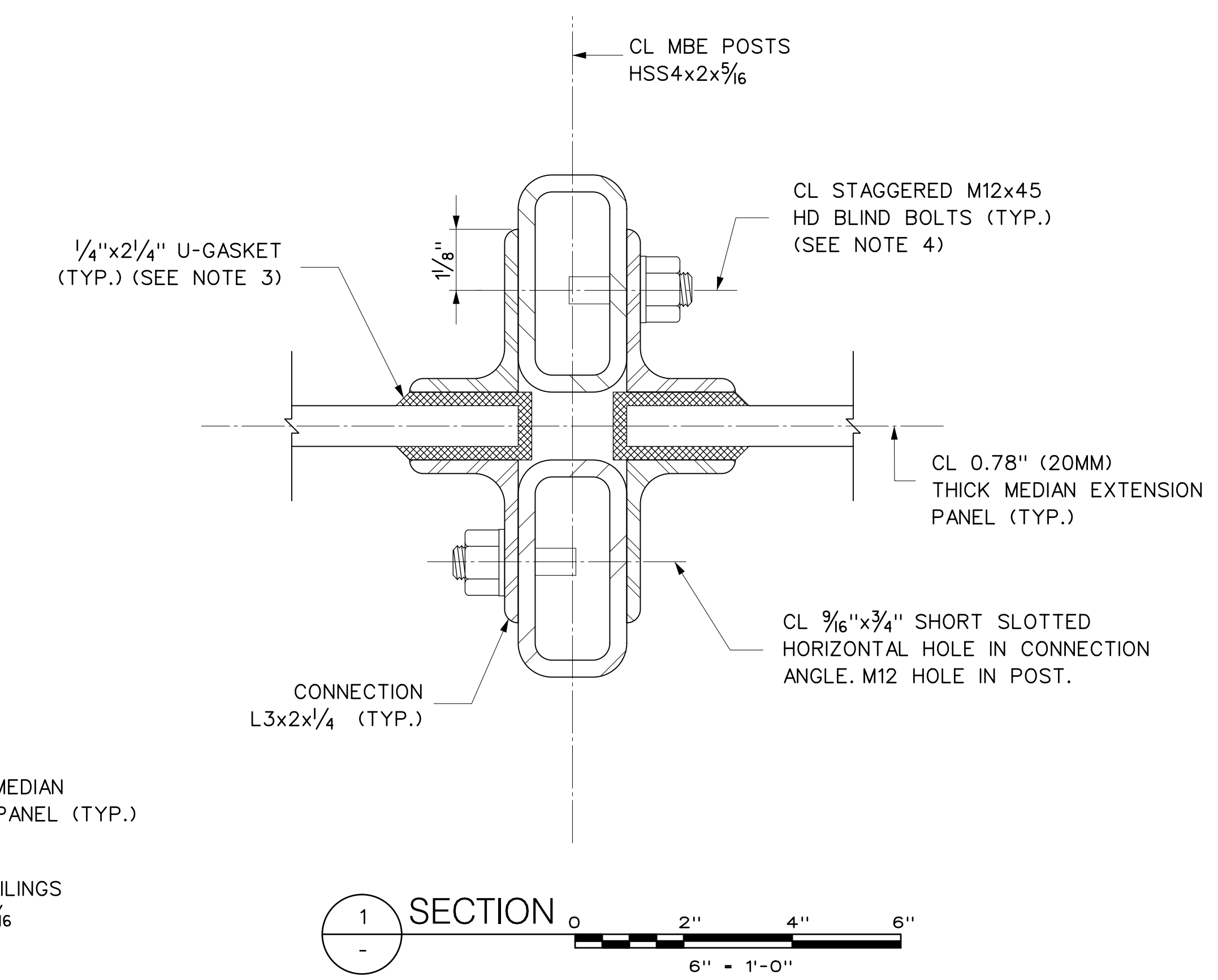
\*IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION.\*



**A** DETAIL  
 S-006  
 3" = 1'-0"



**B** DETAIL  
 S-006  
 3" = 1'-0"



**1** SECTION  
 6" = 1'-0"

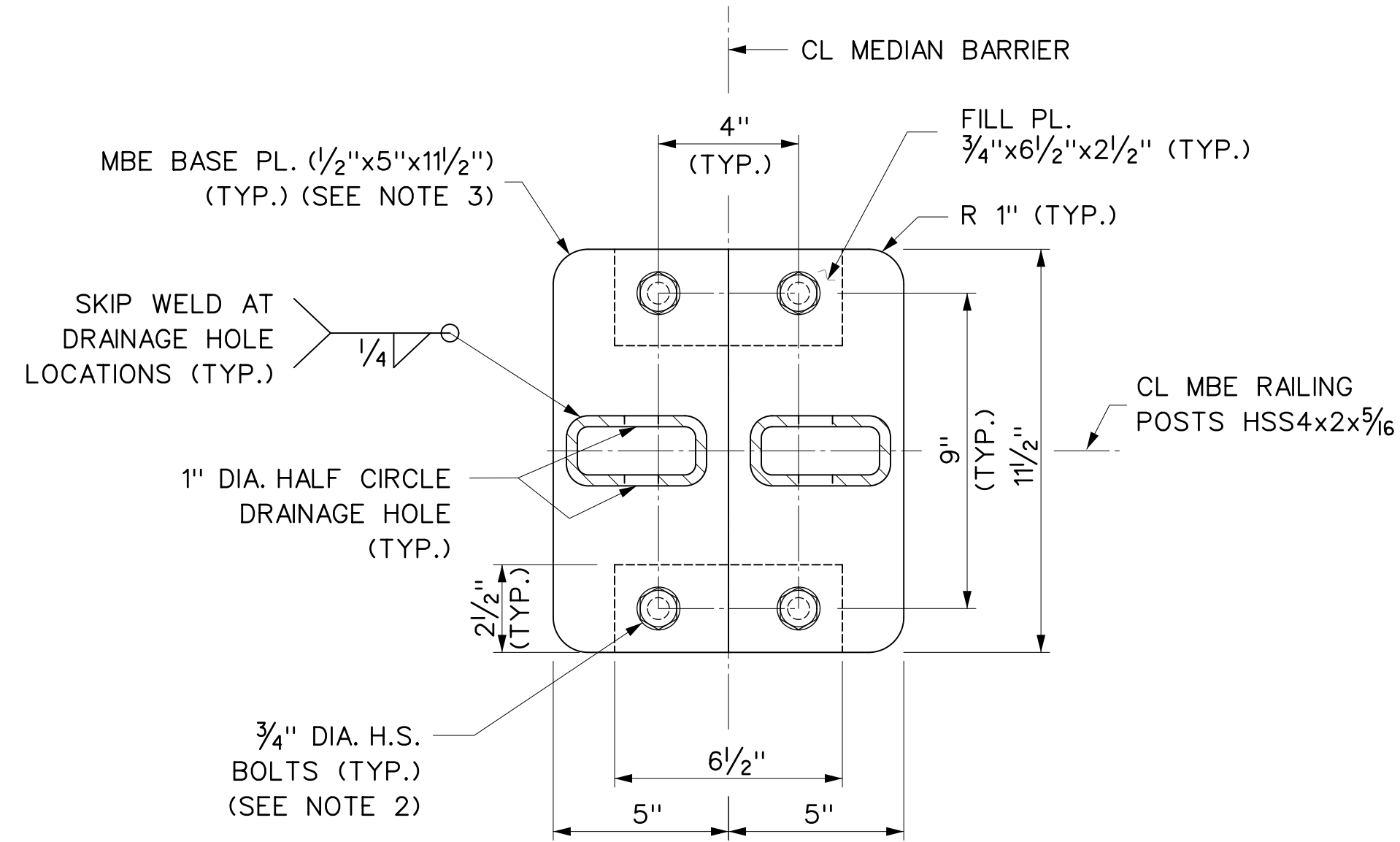
**NOTES:**

- FOR ADDITIONAL NOTES AND DETAILS SEE DWG. NOS. S-006 AND S-008.
- UNLESS OTHERWISE NOTED, HIGH STRENGTH BOLTS SHALL CONFORM TO AASHTO M164, ASTM A325, TYPE 1. THREADS OF HIGH STRENGTH BOLTS SHALL BE EXCLUDED FROM SHEAR PLANES.
- A 70 DUROMETER EPDM GASKET OR APPROVED EQUAL SHALL BE PROVIDED BETWEEN ACRYLITE PANEL FACE AND STEEL POST CONTACT POINTS.
- HD BLIND BOLTS TO BE STAGGERED EITHER SIDE OF EACH POST TO AVOID CONFLICT. CONNECTION IS SLIP CRITICAL. AFTER GALVANIZING HAND WIRE BRUSH SURFACE OF L3x2x1/4 FOR CLASS C FAYING SURFACE.
- FILL PLATE THICKNESS TO PROVIDE CONSISTENT HEIGHT OF MEDIAN BARRIER EXTENSION FRAMING AND CLEARANCE ABOVE BOLTS OF MEDIAN BARRIER POST.
- ALL POST CAP PLATE CORNERS SHALL HAVE RADIUS TO MATCH HSS POSTS.
- COORDINATE POST TRANSVERSE SPACING WITH GASKET THICKNESS.

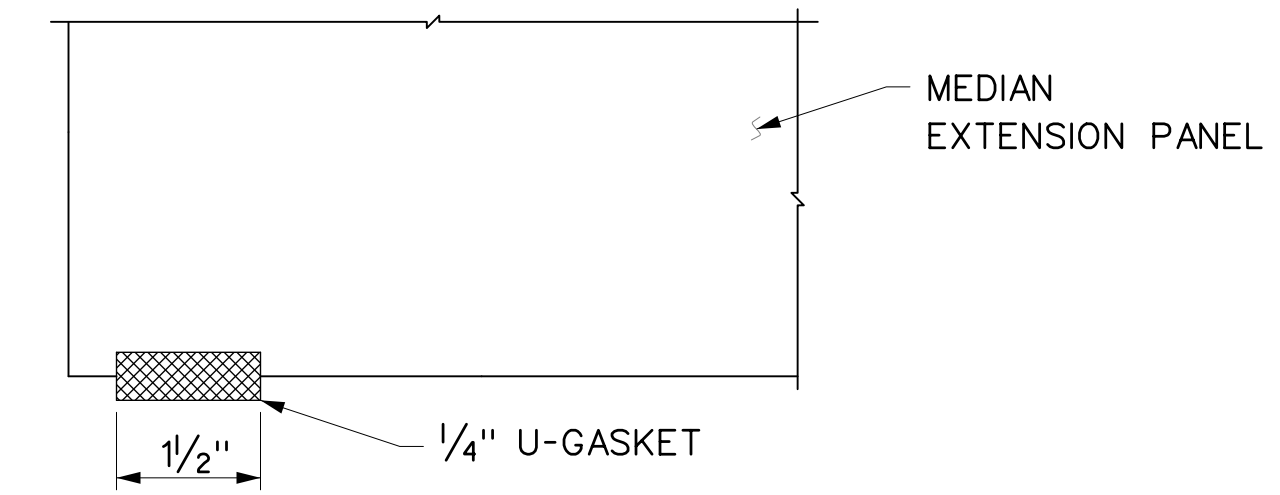
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 \$\$\$R2\$\$\$  
 \$\$\$R3\$\$\$  
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 11:09:57 AM  
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1	AS-BUILT UPDATES	06/05/19	GPD	DRAWN BY G. DALY
REV.	DESCRIPTION	DATE	APP'D.	DESIGNED BY G. DALY
				CHECKED BY E. ZUKER
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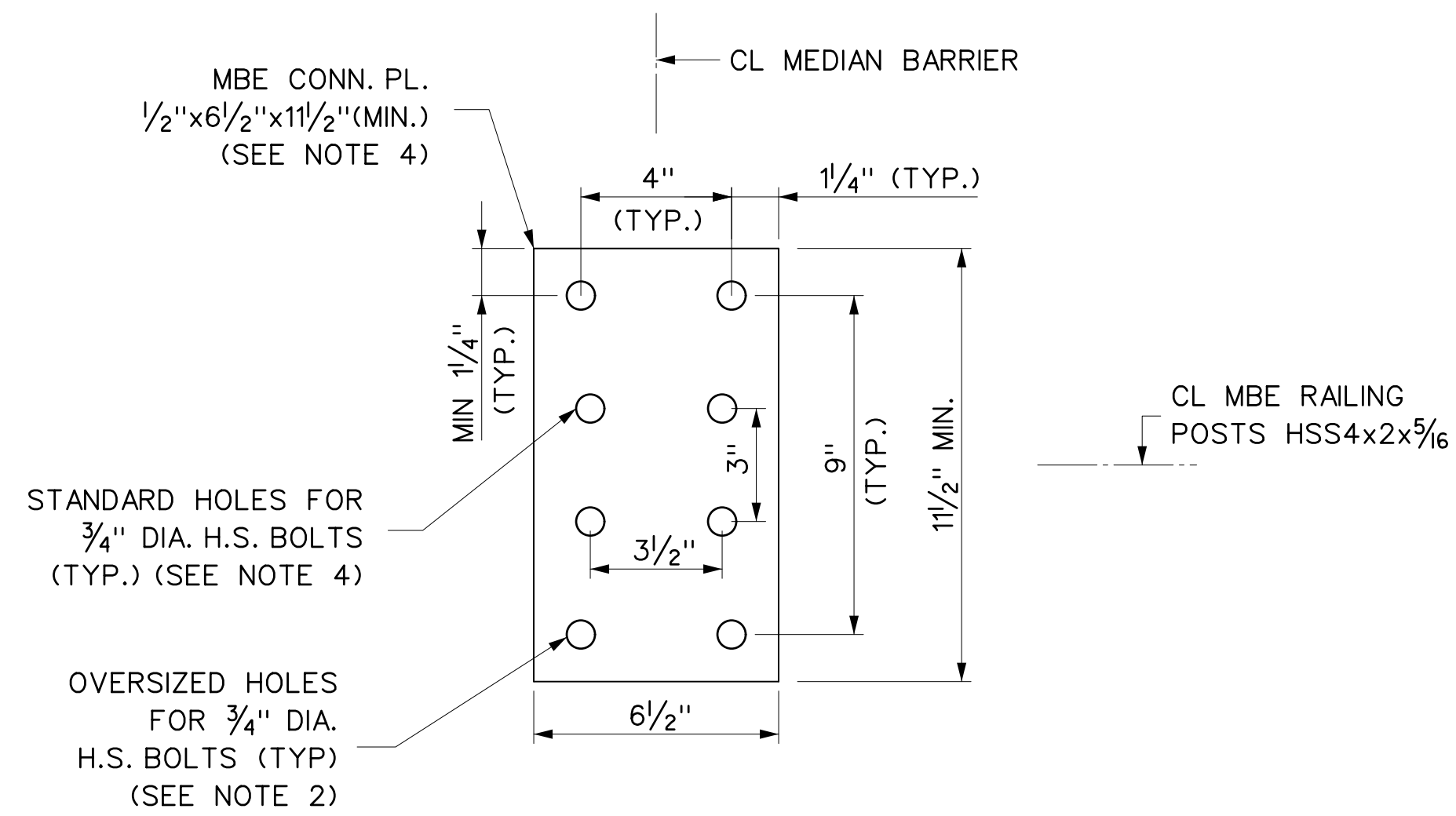
		Triborough Bridge and Tunnel Authority	DRAWING TITLE	CONTRACT NO. PSC-16-2991
			MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	MEDIAN BARRIER EXTENSION TYPICAL DETAILS - 1
			PROJECT NO. GFM-520H	



BASE PLATE DETAIL  
 0 3" 6" 9" 1  
 3" = 1'-0"



PANEL BASE DETAIL  
 0 2" 4" 6"  
 6" = 1'-0"



CONNECTION PLATE DETAIL  
 0 3" 6" 9" 1  
 3" = 1'-0"

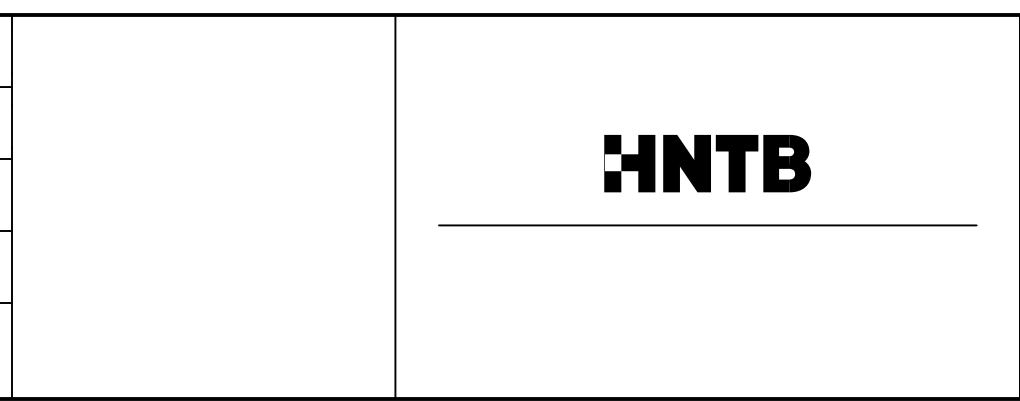
**NOTES:**

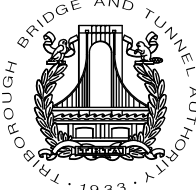
- FOR ADDITIONAL NOTES SEE DWG. NO. S-007.
- CONNECTION PLATE BOLT HOLES ARE OVERSIZE. BASE PLATE AND FILL PLATE HOLES ARE STANDARD SIZE.
- EACH MBE POST TUBE HAS A SEPARATE 5" WIDE BASE PLATE TO ALLOW FOR EASE OF INSTALLATION.
- COORDINATE CONNECTION PLATE LENGTH AND BOLT HOLE POSITIONS WITH TOP OF MEDIAN BARRIER POST, SEE DWG. NO. S-003.
- FAYING SURFACES FOR BOLTED CONNECTIONS WITH OVERSIZED HOLES TO BE HAND WIRE BRUSHED FOR CLASS C FINISH.

W0015008  
 \$\$\$P1\$\$\$  
 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$  
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1	AS-BUILT UPDATES	06/05/19	GPD
REV.	DESCRIPTION	DATE	APP'D.

DRAWN BY	G. DALY
DESIGNED BY	G. DALY
CHECKED BY	E. ZUKER
SCALE:	3" = 1'-0"

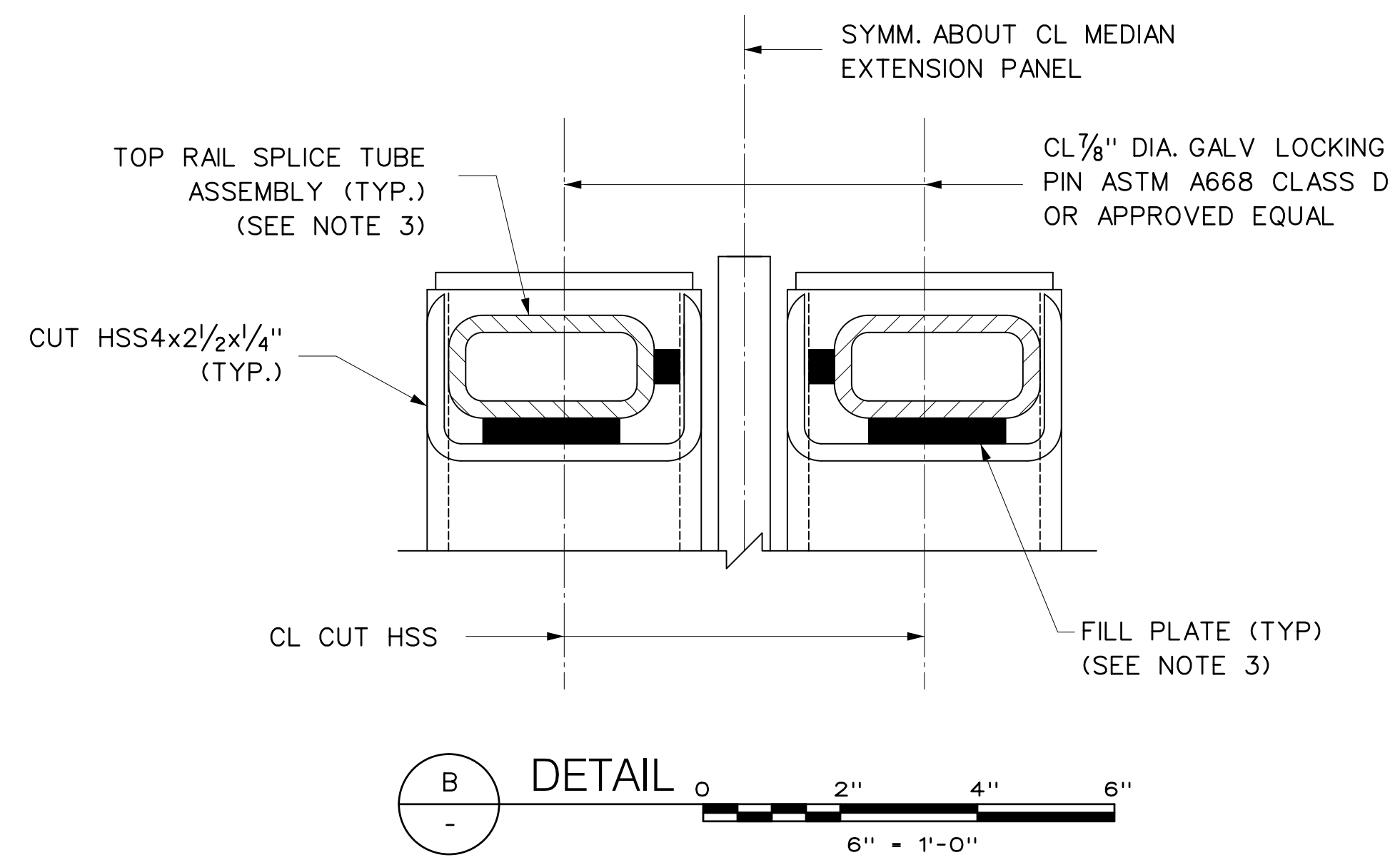
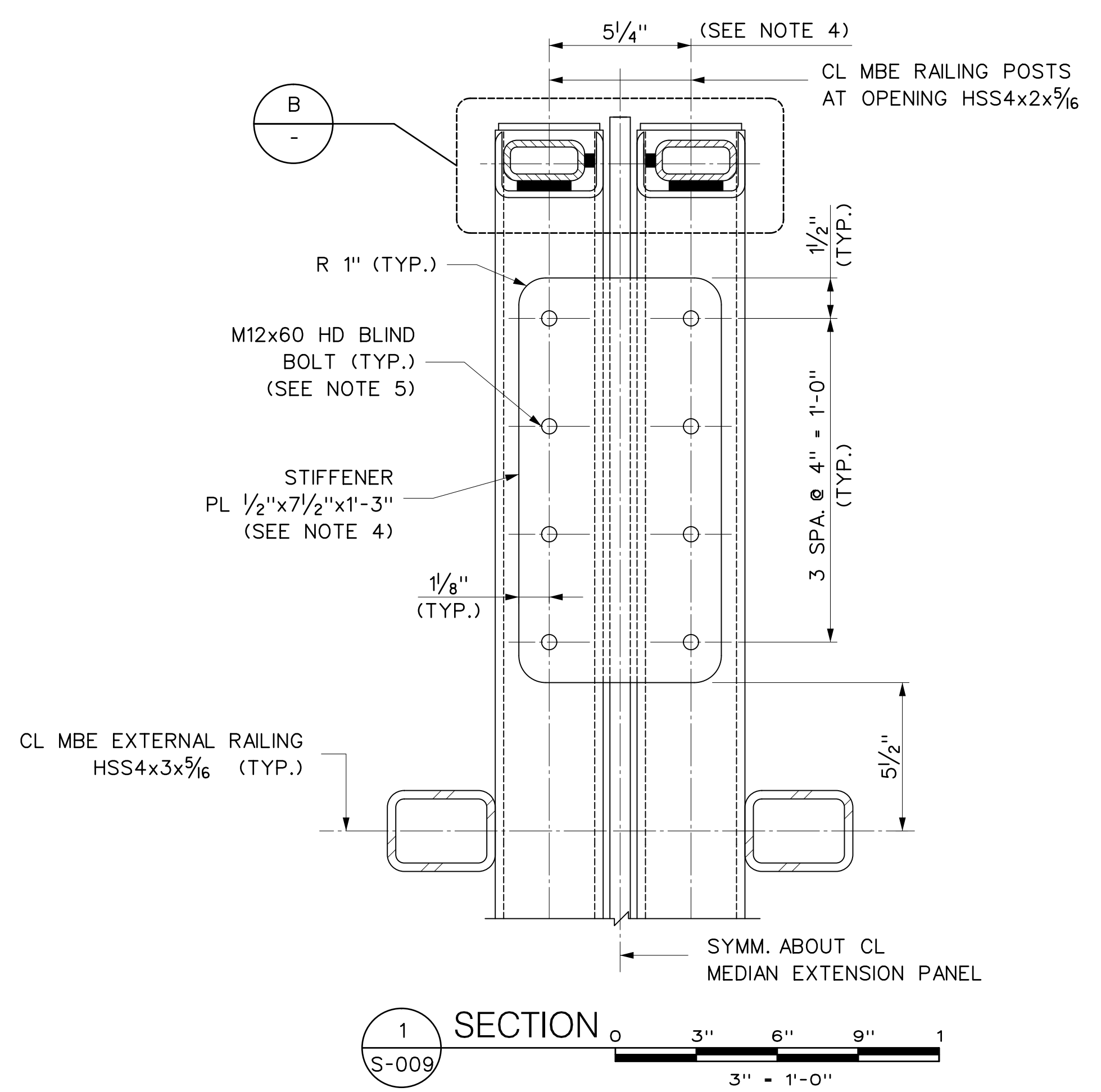
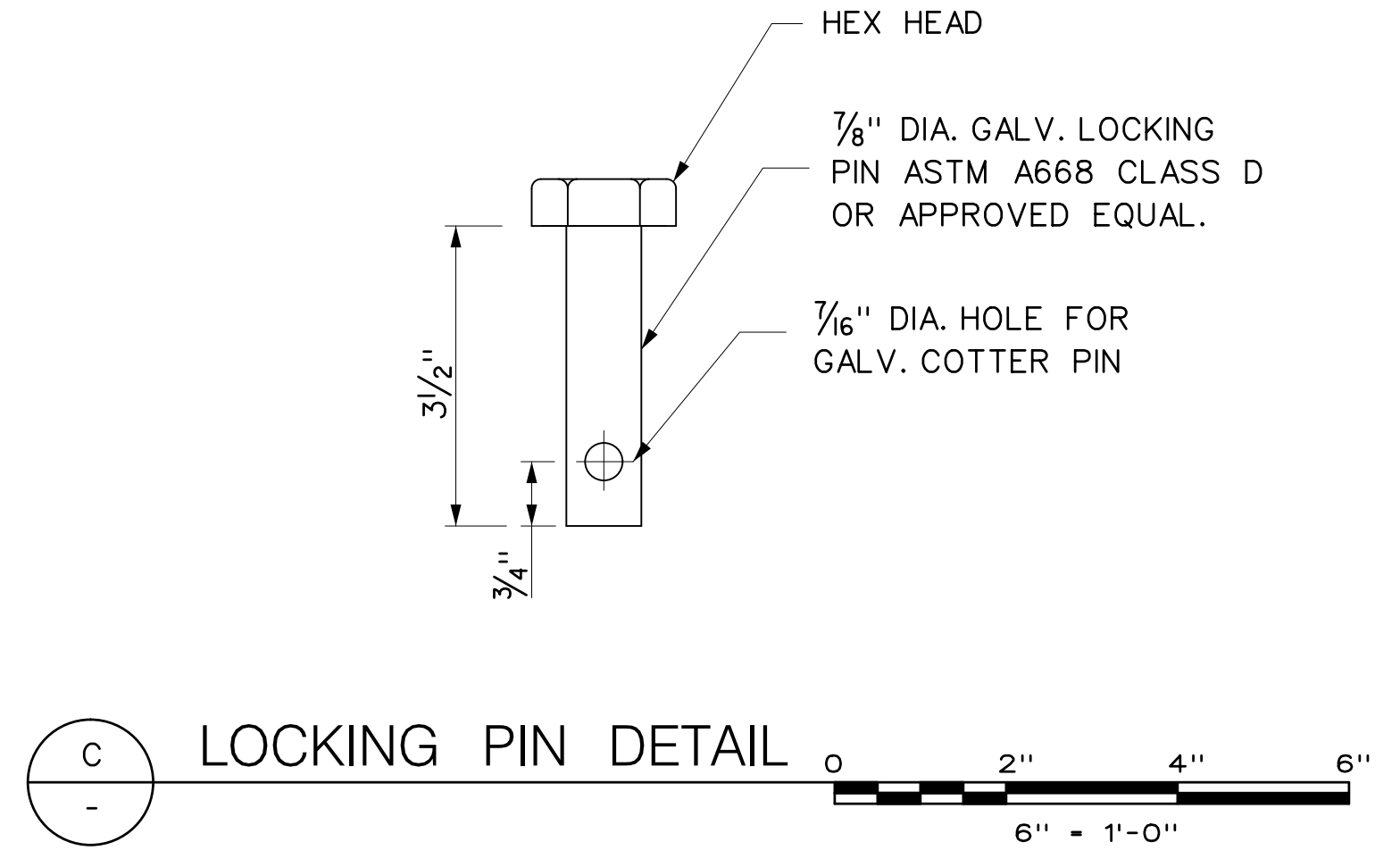
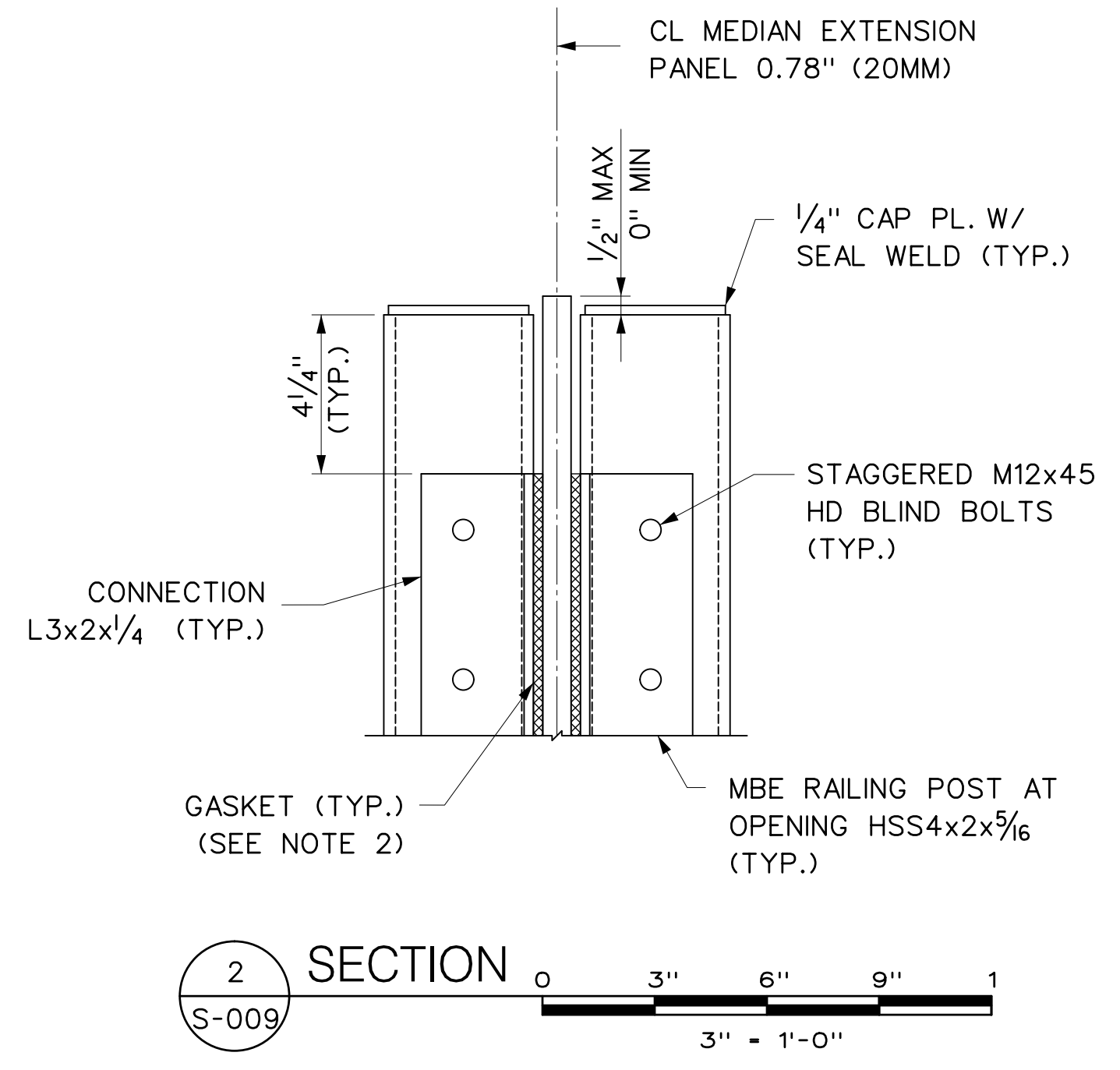
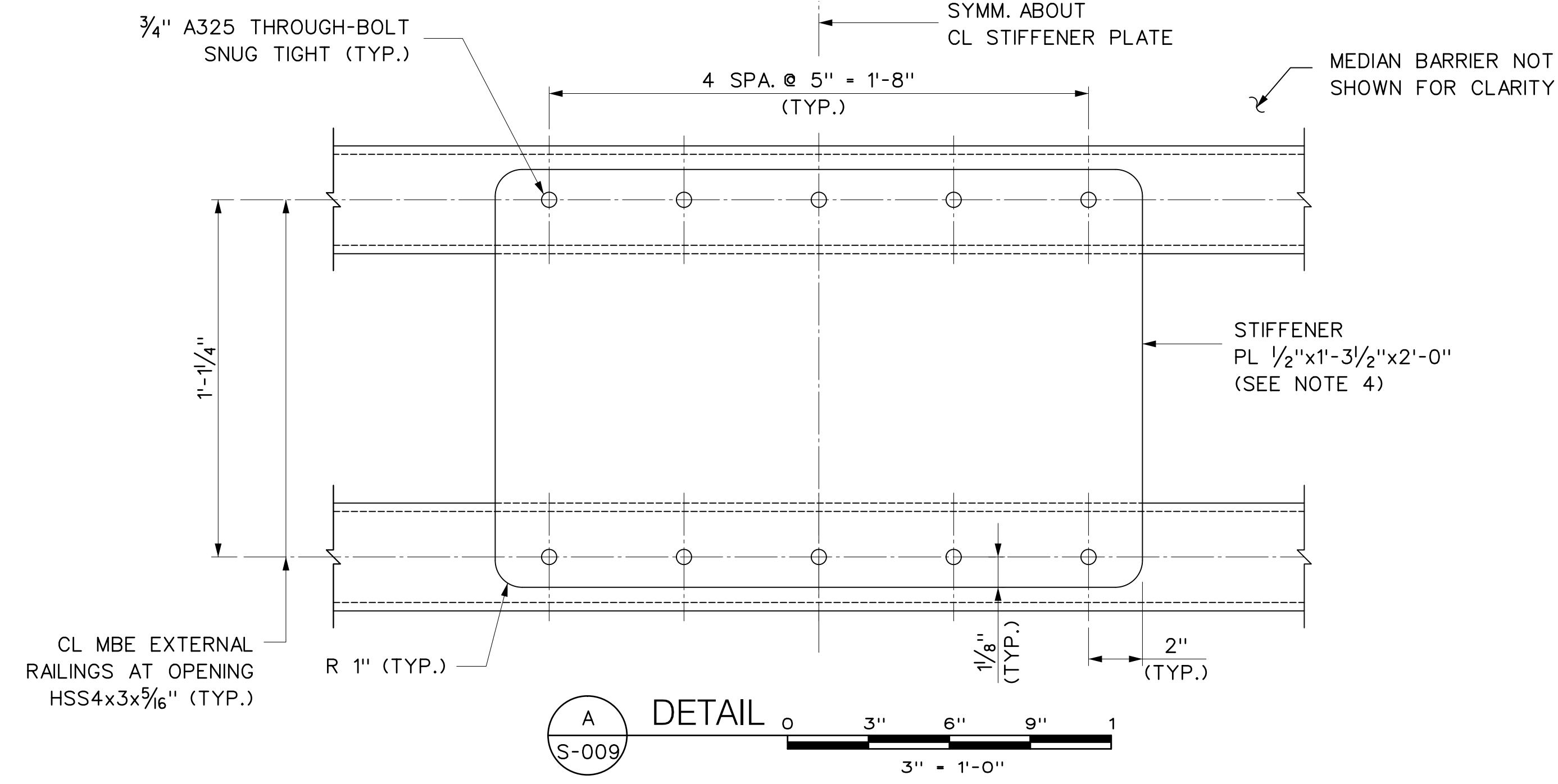



 Triborough  
 Bridge and Tunnel  
 Authority  
 MISCELLANEOUS DESIGN SERVICES ON AN  
 AS-NEEDED BASIS - TASK ORDER 21  
 CRASH TEST FABRICATION DRAWINGS

DRAWING TITLE	MEDIAN BARRIER EXTENSION TYPICAL DETAILS - 2
PROJECT NO.	GFM-520H

CONTRACT NO.	PSC-16-2991
DRAWING NO.	S-008
DATE	JUNE 5, 2019
REVISION NO.	1





- NOTES:**
- FOR ADDITIONAL NOTES, SEE DWG NOS. S-006 AND S-009.
  - A 70 DUROMETER EPDM GASKET OR APPROVED EQUAL SHALL BE PROVIDED AT ALL INTERFACES BETWEEN ACRYLITE PANEL AND STEEL POST CONTACT POINTS.
  - SEE DETAILS ON S-011.
  - COORDINATE PANEL GASKET THICKNESS WITH POST TRANSVERSE SPACING AND STIFFENER PLATE WIDTH.
  - COORDINATE VERTICAL STIFFENER PLATE BOLTS WITH PANEL CONNECTION ANGLE BOLTS ON REAR SIDE OF POST.

W0015010  
 \$\$\$P1\$\$\$  
 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$

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 11:10:04 AM  
 gdaly

1	AS-BUILT UPDATES	06/05/19	GPD	DRAWN BY G. DALY
REV.	DESCRIPTION	DATE	APP'D.	DESIGNED BY G. DALY
				CHECKED BY E. ZUKER
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**HNTB**

Triborough Bridge and Tunnel Authority

MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS

DRAWING TITLE	CONTRACT NO. PSC-16-2991
MEDIAN BARRIER EXTENSION DETAILS FOR STANDPIPE VALVE OPENING - 1	DRAWING NO. S-010
	SHEET 015 OF 018
PROJECT NO. GFM-520H	DATE JUNE 5, 2019
	REVISION NO. 1



D

C

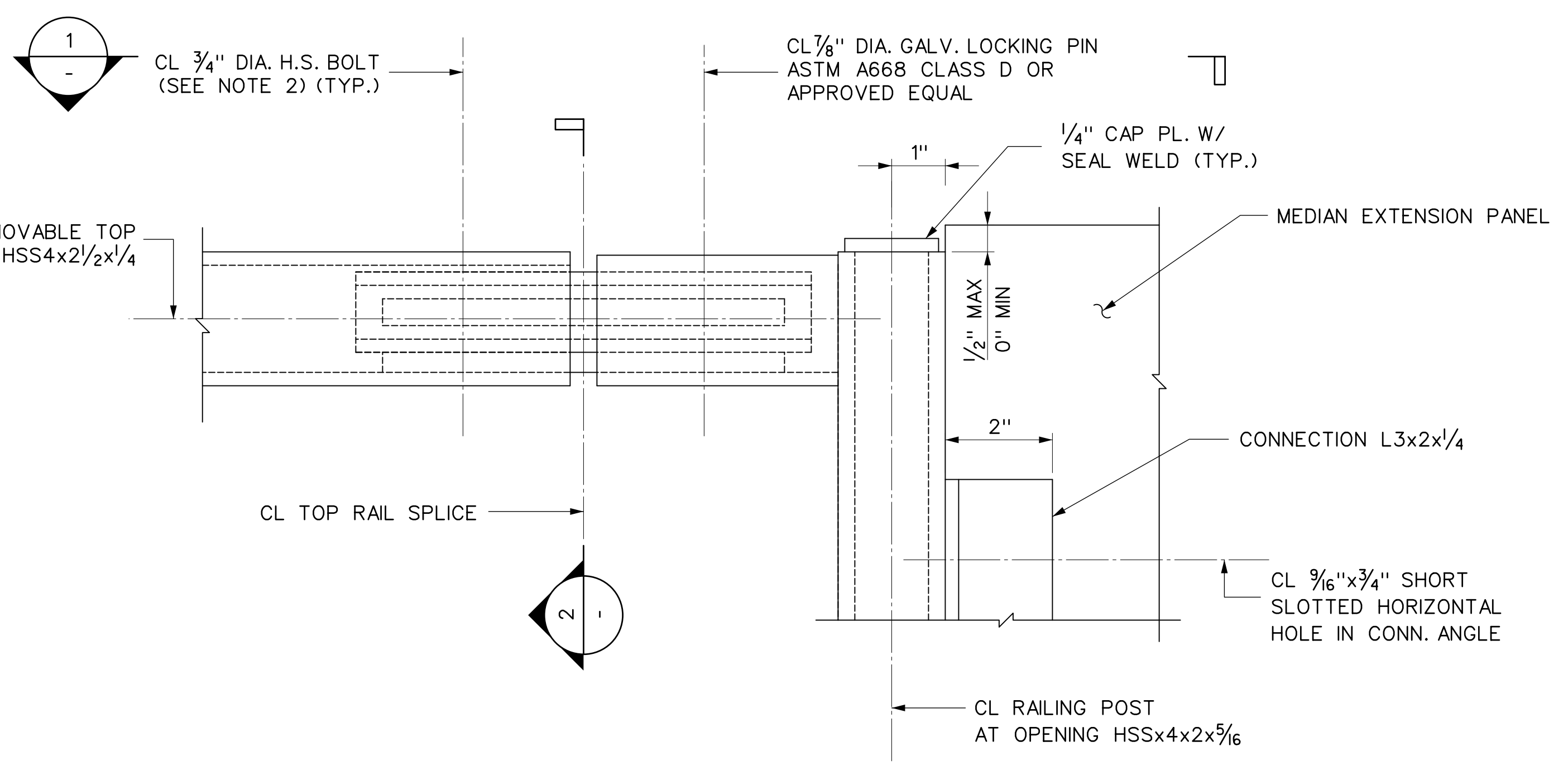
B

D

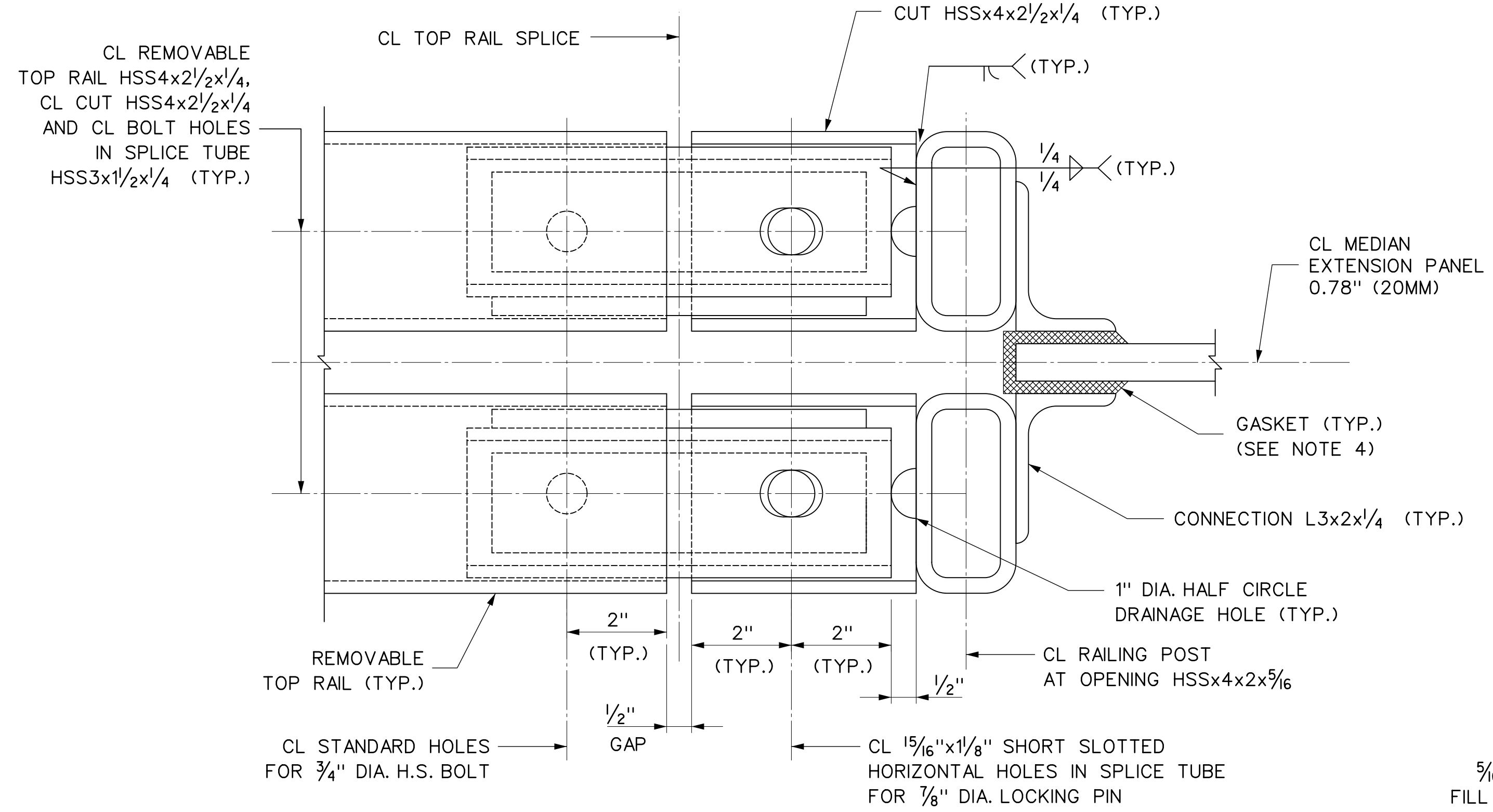
C

B

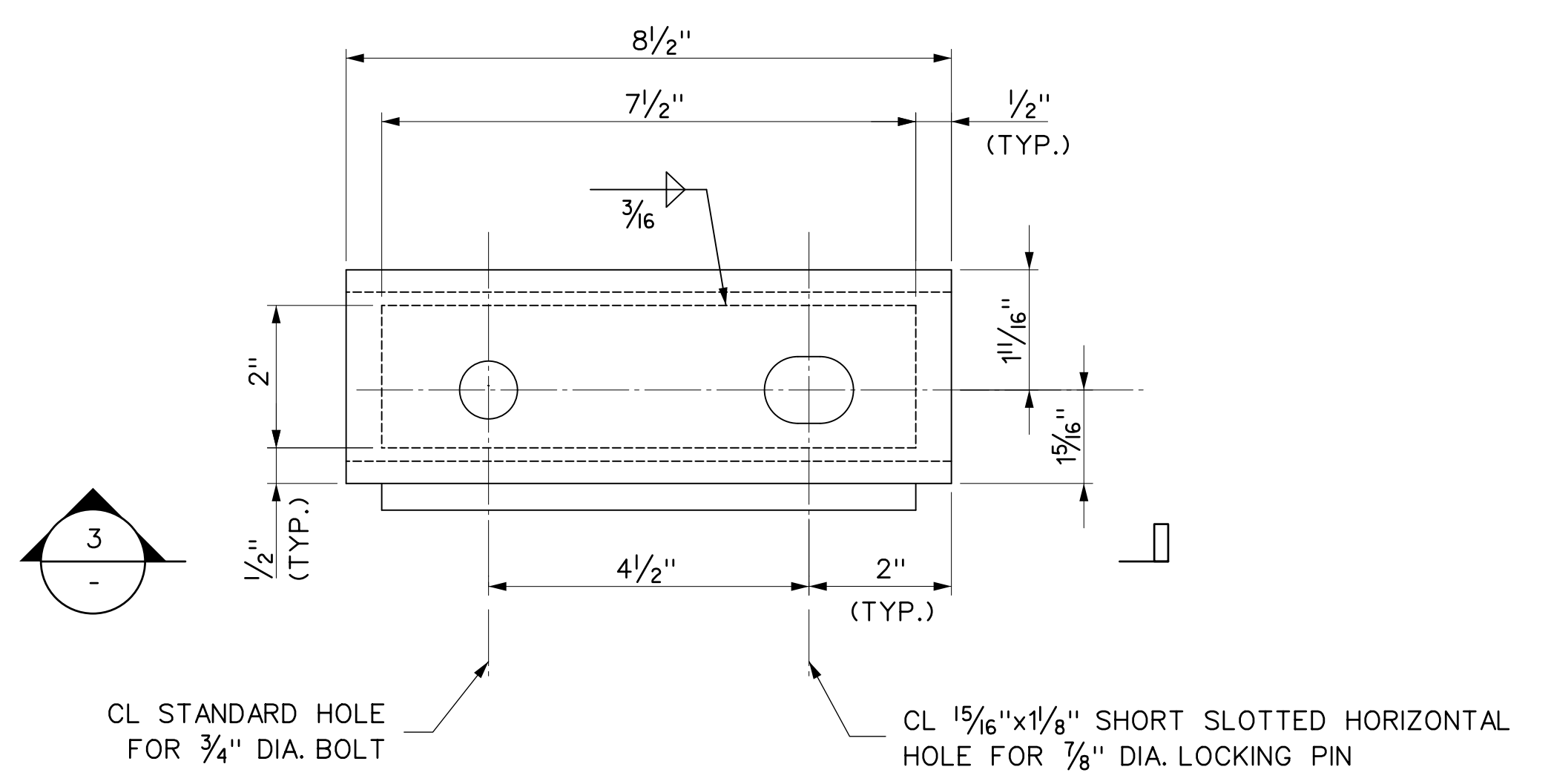
A



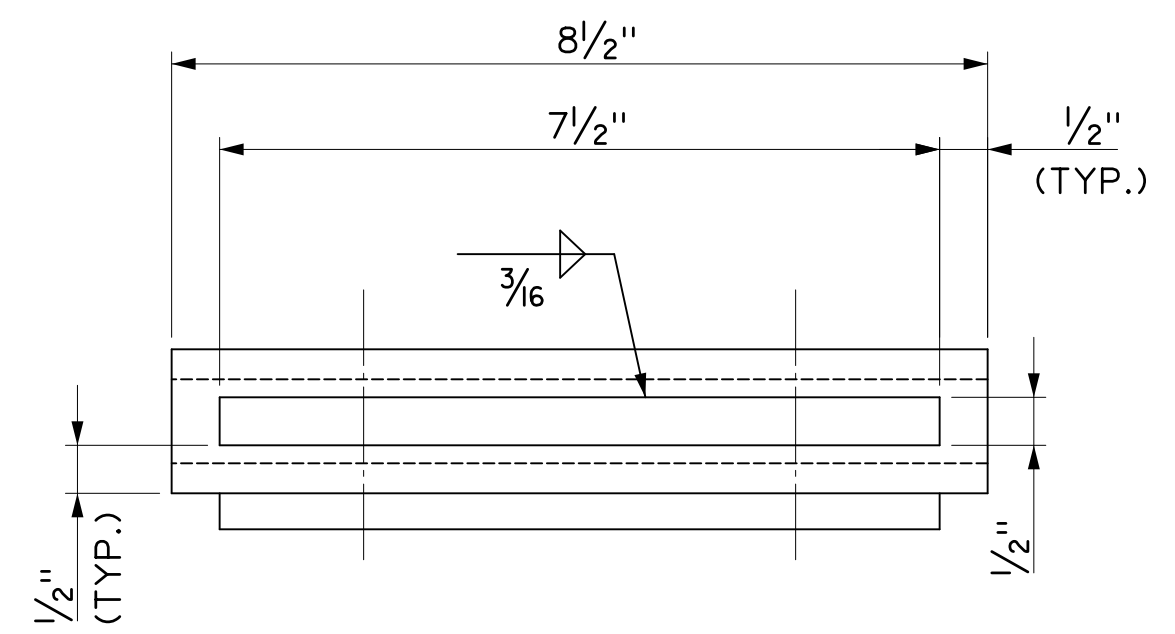
**B** DETAIL  
S-009



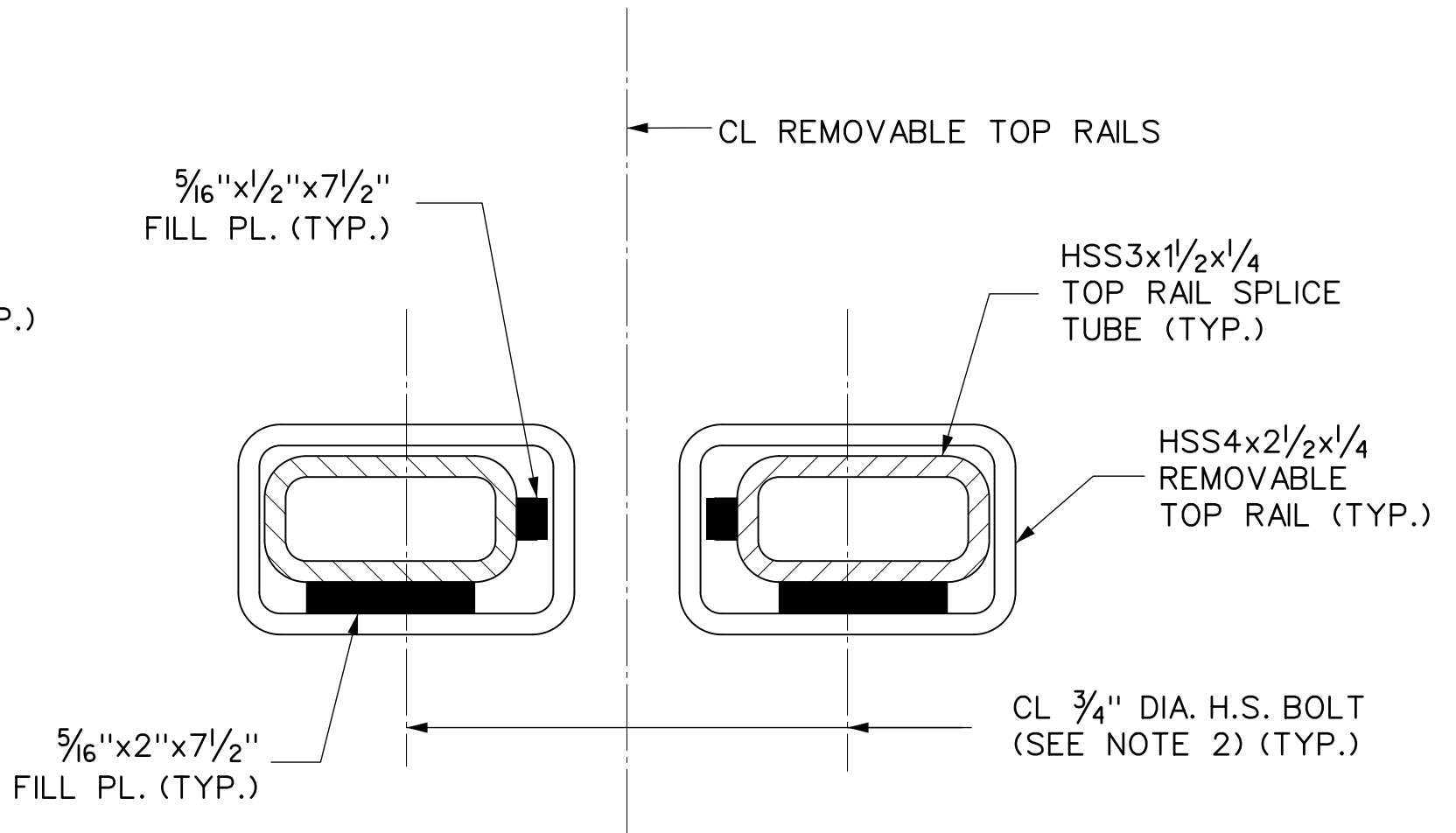
**1** SECTION



**TOP RAIL SPLICE TUBE**



**3** SECTION



**2** SECTION

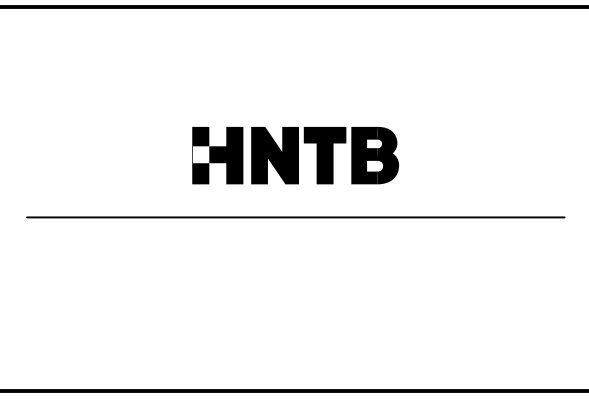
**NOTES:**

- UNLESS OTHERWISE NOTED, HIGH STRENGTH BOLTS SHALL CONFORM TO AASHTO M164, ASTM A325, TYPE 1. THREADS OF HIGH STRENGTH BOLTS SHALL BE EXCLUDED FROM SHEAR PLANES.
- TWO WASHERS AND A HEAVY HEX NUT ON EACH BOLT, NUT TO BE FINGER TIGHT AND THE FIRST THREAD BELOW THE NUT TO BE DAMAGED A.O.B.E.
- FOR ADDITIONAL NOTES, SEE DWG. NOS. S-006 AND S-010.
- A 70 DUROMETER EPDM GASKET OR APPROVED EQUAL SHALL BE PROVIDED BETWEEN ACRYLITE PANEL FACE AND STEEL POST CONTACT POINTS.
- PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILINGS, SPLICE TUBES, AND FILL PLATES.

W0015011  
 \$\$\$P1\$\$  
 \$\$\$R101\$\$\$  
 \$\$\$R102\$\$\$  
 \$\$\$R103\$\$\$

1	AS-BUILT UPDATES	06/05/19	GPD
REV.	DESCRIPTION	DATE	APP'D.

DRAWN BY	G. DALY
DESIGNED BY	G. DALY
CHECKED BY	E. ZUKER
SCALE:	3" = 1'-0"



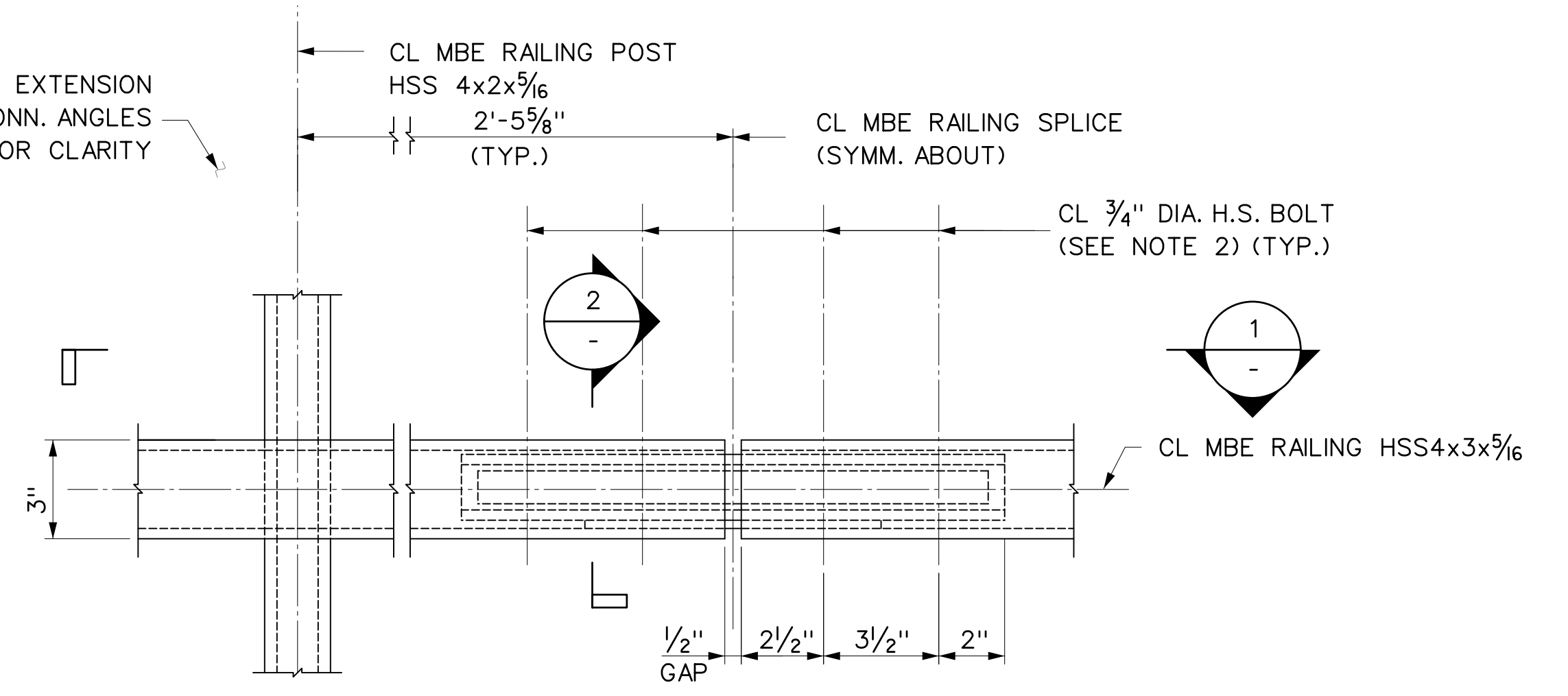
Triborough Bridge and Tunnel Authority

MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS

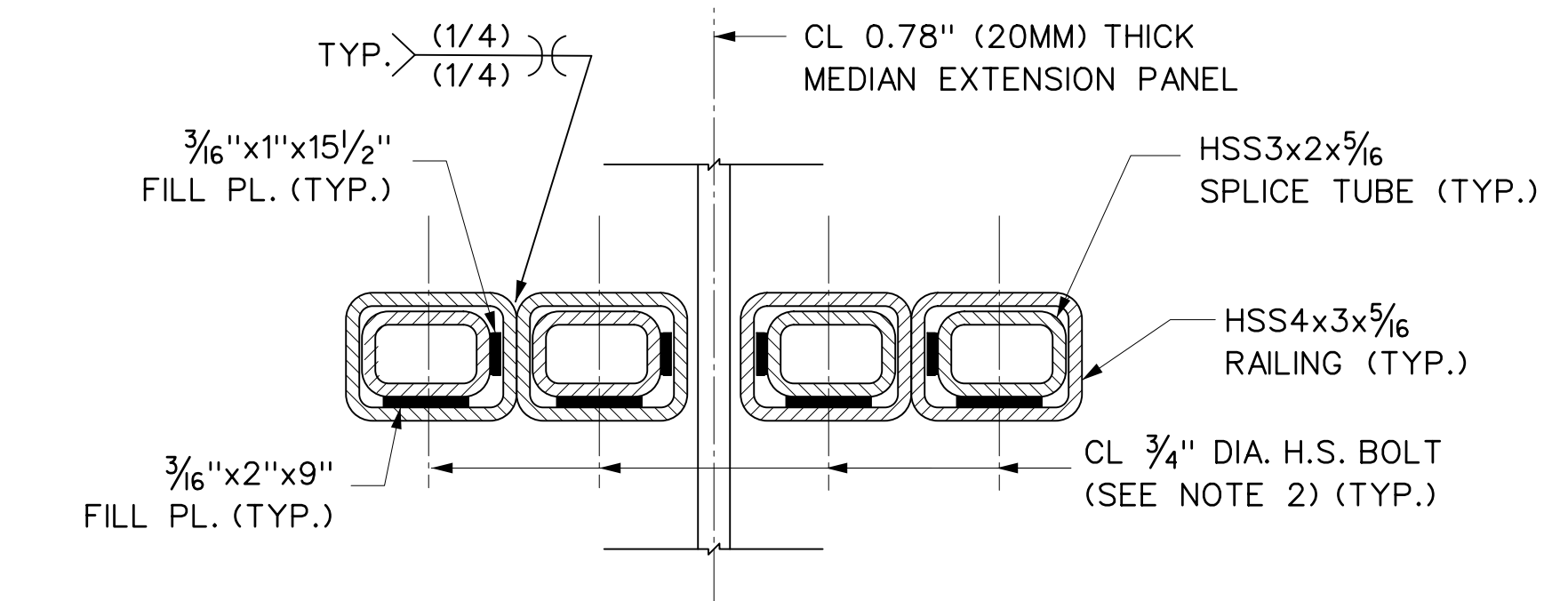
DRAWING TITLE	MEDIAN BARRIER EXTENSION DETAILS FOR STANDPIPE VALVE OPENING - 2
PROJECT NO.	GFM-520H

CONTRACT NO.	PSC-16-2991
DRAWING NO.	S-011
DATE	JUNE 5, 2019
REVISION NO.	1

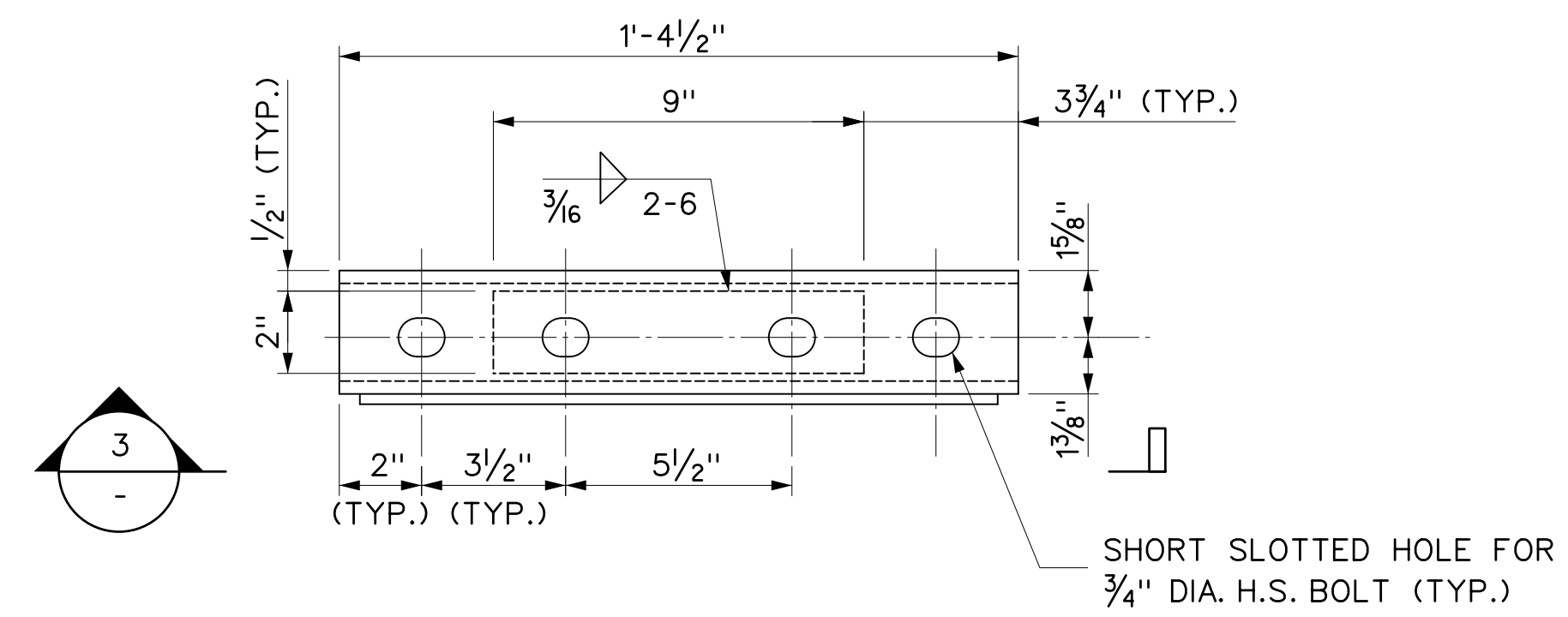
MEDIAN EXTENSION  
PANEL AND CONN. ANGLES  
NOT SHOWN FOR CLARITY



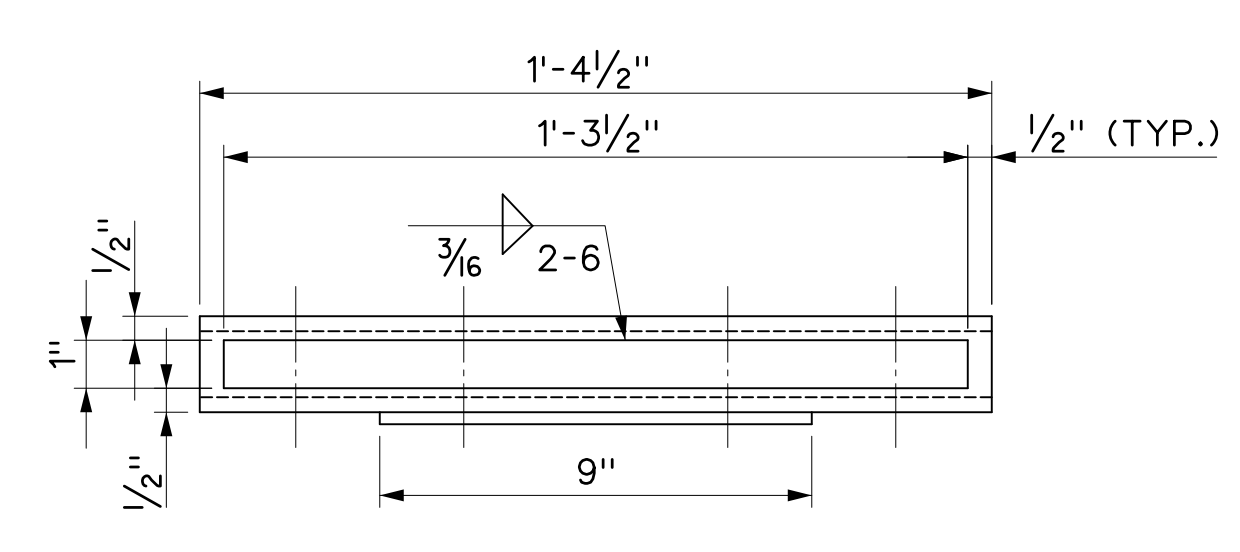
RAILING SPLICE DETAIL  
0 3" 6" 9" 1  
3" = 1'-0"



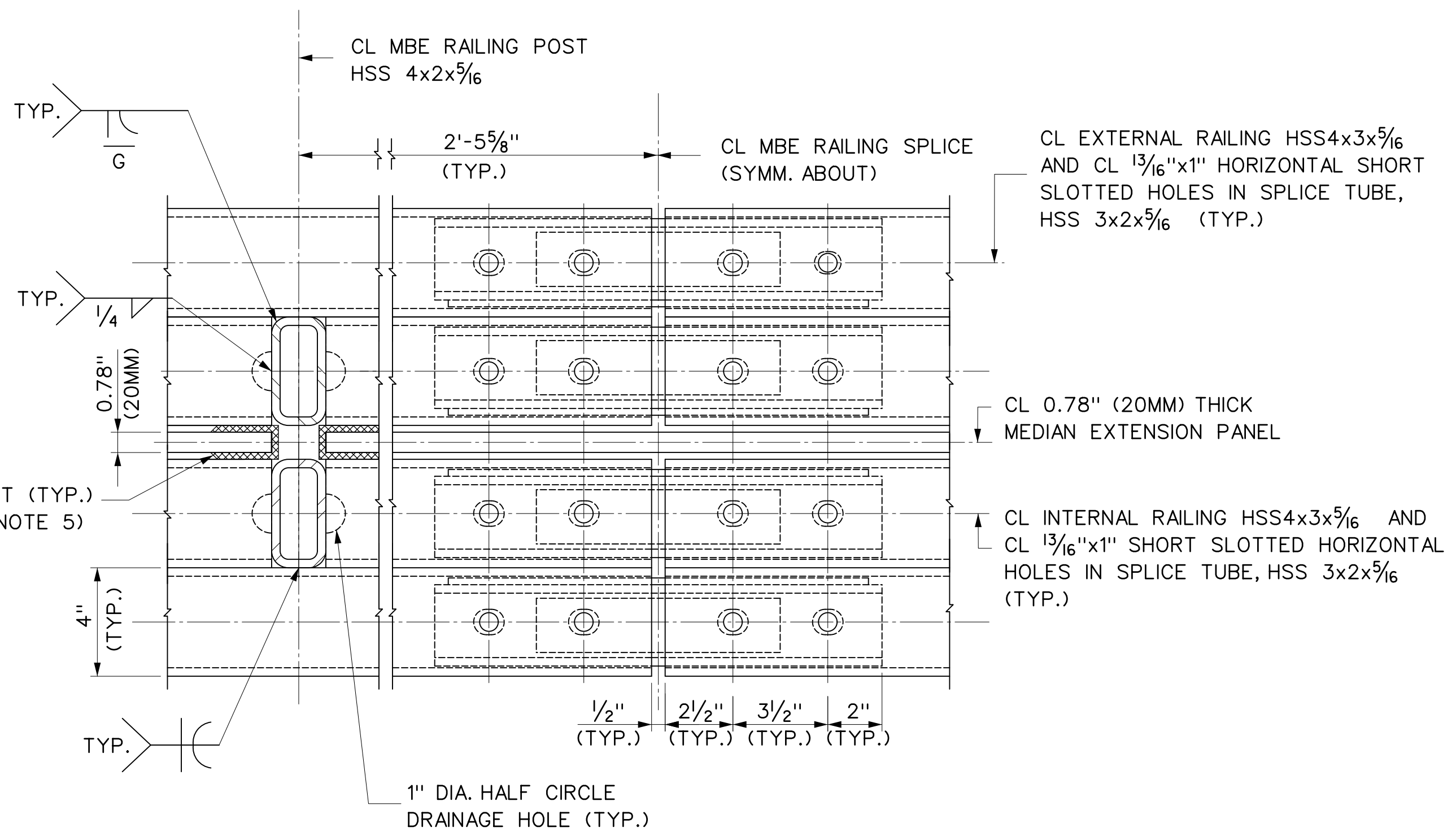
SECTION 2  
0 3" 6" 9" 1  
3" = 1'-0"



SPLICE TUBE PLAN  
0 3" 6" 9" 1  
3" = 1'-0"



SECTION 3  
0 3" 6" 9" 1  
3" = 1'-0"



SECTION 1  
0 3" 6" 9" 1  
3" = 1'-0"

\*NOTE PANEL CONN.  
ANGLES NOT SHOWN  
FOR CLARITY

**NOTES:**

1. FABRICATOR TO ADD SPLICES WHERE DEEMED NECESSARY FOR FIT-UP.
2. TWO WASHERS AND A HEAVY HEX NUT ON EACH BOLT, NUT TO BE FINGER TIGHT AND THE FIRST THREAD BELOW THE NUT TO BE DAMAGED A.O.B.E.
3. HIGH STRENGTH BOLTS SHALL CONFORM TO AASHTO M164, ASTM A325, TYPE 1. THREADS OF HIGH STRENGTH BOLTS SHALL BE EXCLUDED FROM SHEAR PLANES.
4. FOR ADDITIONAL NOTES, SEE DWG. NO. S-006.
5. A 70 DUROMETER EPDM GASKET OR APPROVED EQUAL SHALL BE PROVIDED BETWEEN ACRYLITE PANEL FACE AND STEEL POST CONTACT POINTS.
6. PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE RAILINGS, SPLICE TUBES, AND FILL PLATES.

W0015012  
 \$\$\$P1\$\$\$  
 \$\$\$P01\$\$\$  
 \$\$\$P02\$\$\$  
 \$\$\$P03\$\$\$  
 TDG-68648-TD1  
 11:10:09 AM  
 gdaly

1	AS-BUILT UPDATES	06/05/19	GPD	DRAWN BY G. DALY
REV.	DESCRIPTION	DATE	APP'D.	DESIGNED BY G. DALY
				CHECKED BY E. ZUKER
"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION."				SCALE: 3" = 1'-0"

		Triborough Bridge and Tunnel Authority	MISCELLANEOUS DESIGN SERVICES ON AN AS-NEEDED BASIS - TASK ORDER 21 CRASH TEST FABRICATION DRAWINGS	DRAWING TITLE	CONTRACT NO. PSC-16-2991
				MEDIAN BARRIER EXTENSION TYPICAL SPLICE DETAILS	DRAWING NO. <b>S-012</b> SHEET 017 OF 018
				PROJECT NO. GFM-520H	DATE JUNE 5, 2019
				REVISION NO. 1	