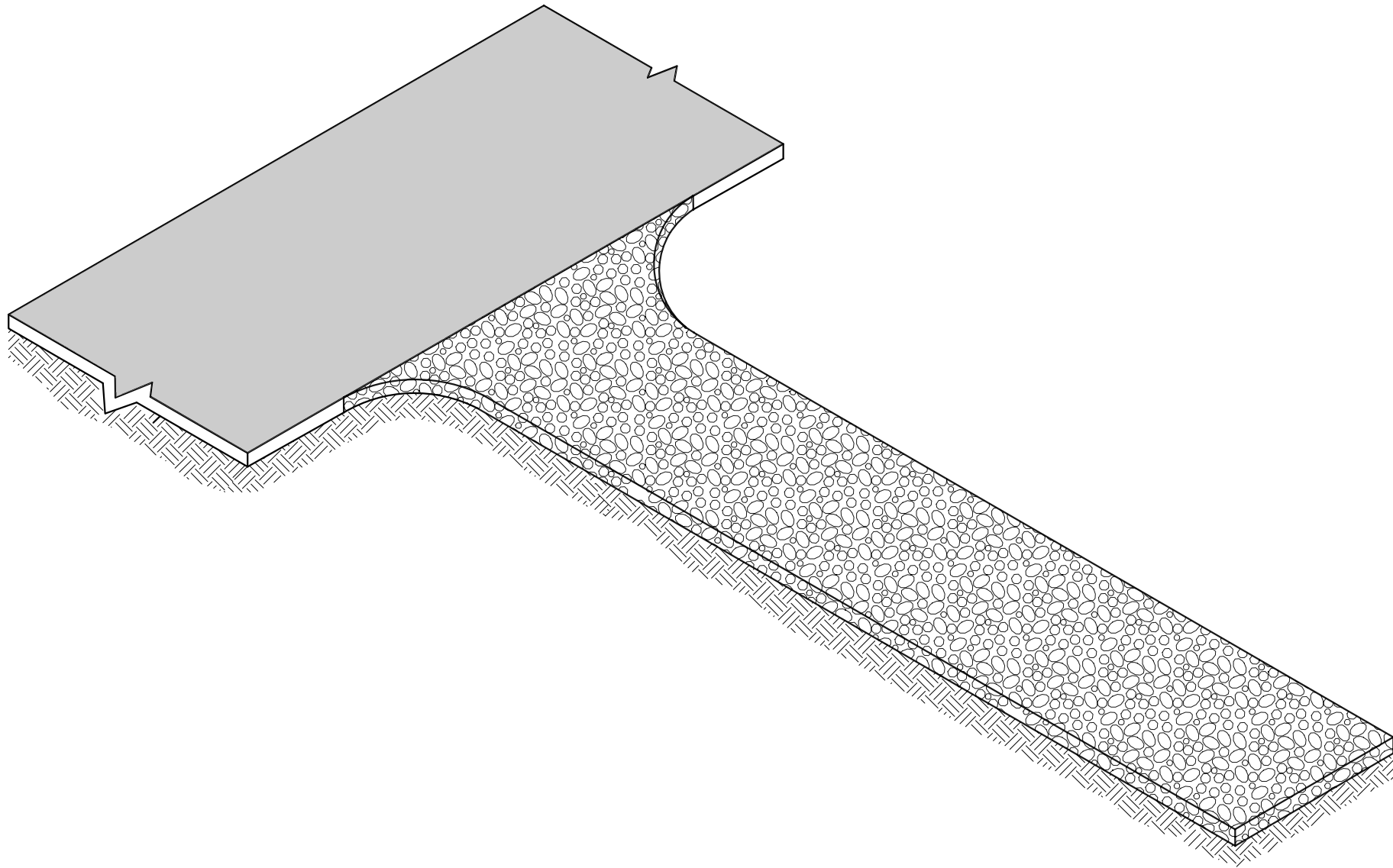


✓*	SHEET NO.	TITLE	APPROVAL DATE**
✓	HW-211_01	ANTI-TRACKING PAD	11-09-22
✓	HW-286_01	DRAINAGE TRENCH EXCAVATION	11-09-22
	HW-505_01a	STRAIGHT ENDWALLS	01-21-25
	HW-505_01b	STEEL REINFORCING FOR STRAIGHT ENDWALLS (2" DIFF BASE TO FLOW LINE)	01-05-24
	HW-505_01c	STEEL REINFORCING FOR STRAIGHT ENDWALLS (STANDARD RIPRAP APPLICATION)	01-05-24
	HW-505_02	TYPE "D-G" & "L" ENDWALLS	01-05-24
✓	HW-586_01	CATCH BASIN AND DROP INLET TYPES "C" AND "C-L" STRUCTURES	01-05-24
	HW-586_02	CATCH BASIN ( TYPES "C" AND "C-L" ) FOR DOUBLE GRATE TYPE I STRUCTURES	01-05-24
	HW-586_03	CATCH BASIN ( TYPES "C" AND "C-L" ) FOR DOUBLE GRATE TYPE II STRUCTURES	01-05-24
	HW-586_04	PRECAST CATCH BASIN AND ROUND STRUCTURE	10-17-24
	HW-586_05	PRECAST CATCH BASIN TYPES FOR DOUBLE GRATE TYPE I	10-17-24
	HW-586_06	PRECAST CATCH BASIN TYPES FOR DOUBLE GRATE TYPE II	10-17-24
✓	HW-586_07a	CATCH BASIN TYPE "C" AND "C-L" TOPS	01-05-24
	HW-586_07b	CATCH BASIN TYPE "C" AND "C-L" DOUBLE GRATE TYPE I TOPS	11-09-22
	HW-586_07c	CATCH BASIN TYPE "C" AND "C-L" DOUBLE GRATE TYPE II TOPS	11-08-22
	HW-586_07d	CATCH BASIN TYPE "C-G" AND "C-M" BARRIER CURB TOPS	11-09-22
✓	HW-586_08	CATCH BASIN FRAMES AND GRATES	11-09-22
	HW-586_09	CATCH BASIN LOCK DOWN TOPS	11-09-22
✓	HW-586_10a	MANHOLE FRAME AND COVER	01-05-24
	HW-586_10b	MANHOLE FRAME AND GRATE	01-05-24
	HW-586_10c	REINFORCED PRECAST CONCRETE MANHOLE	11-08-22
	HW-586_10d	MANHOLE NON-PRECAST CONCRETE UNIT	11-08-22
✓	HW-686_01a	CONCRETE PIPE CONNECTION SHEET 1	11-08-22
✓	HW-686_01b	CONCRETE PIPE CONNECTION SHEET 2	11-08-22
	HW-686_02a	DRAINANGE PIPE ENDS SHEET 1 [ CORRUGATED METAL PIPE ]	11-08-22
✓	HW-686_02b	DRAINAGE PIPE ENDS SHEET 2 [ CONCRETE PIPE ]	11-08-22
	HW-751_01	UNDERDRAINS AND UNDERDRAIN OUTLETS	10-17-24
	HW-803_01	PAVED APRONS	11-08-22
	HW-811_01	CONCRETE CURBING	11-08-22
✓	HW-813_01	GRANITE STONE TRANSITION CURBING	11-08-22
✓	HW-813_02	STONE CURBING	11-08-22
✓	HW-815_01	BITUMINOUS CONCRETE CURBING	11-08-22

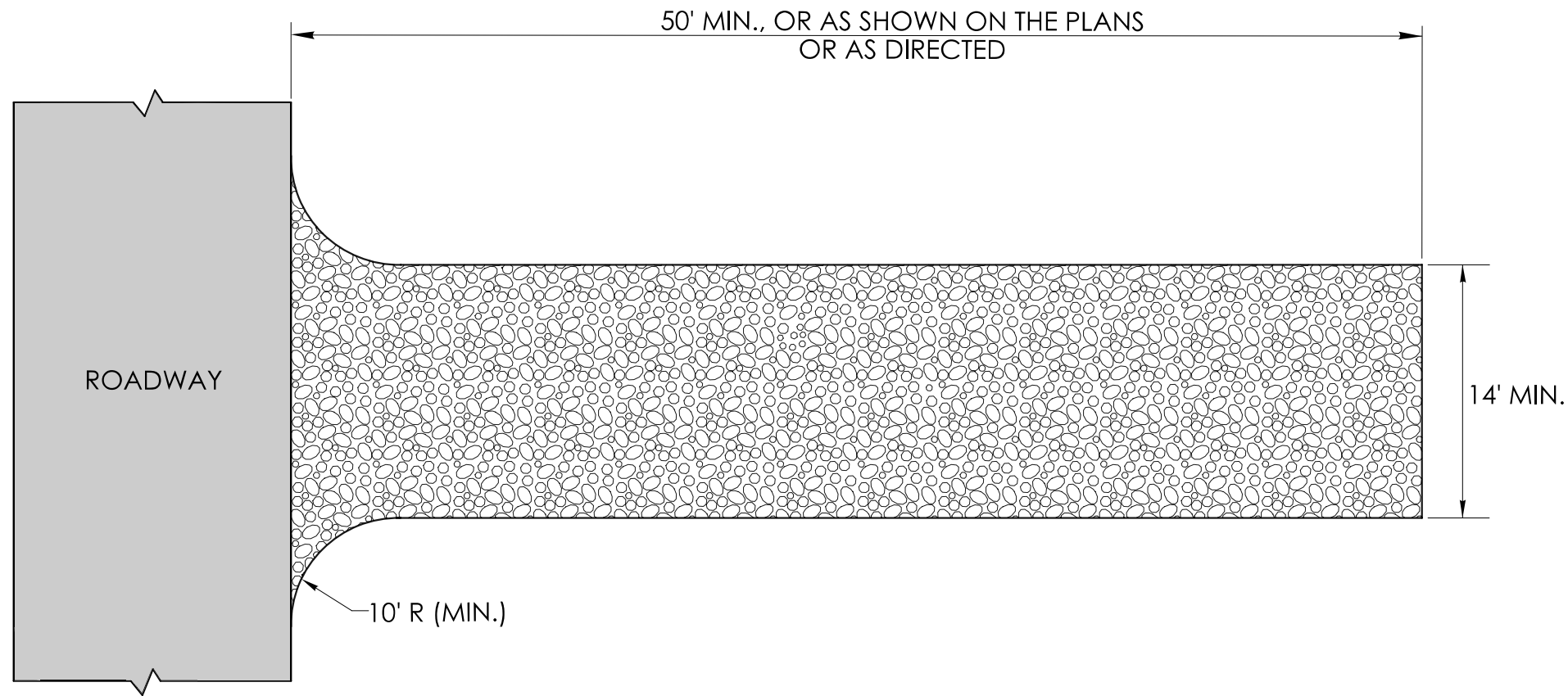
✓*	SHEET NO.	TITLE	APPROVAL DATE**
	HW-821_01a	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_01b	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_01c	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 3	11-08-22
	HW-821_02a	45" F-SHAPE PRECAST CONCRETE BARRIER CURB SHEET 1	11-08-22
	HW-821_02b	45" F-SHAPE PRECAST CONCRETE BARRIER CURB SHEET 2	11-08-22
	HW-821_03a	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_03b	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_03c	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 3	11-08-22
	HW-821_03d	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 4	11-08-22
	HW-821_03e	TRANSITION - 32" JERSEY SHAPE TO 45" F-SHAPE	11-08-22
	HW-821_04a	MERRITT PARKWAY NARROW MEDIAN BARRIER	11-08-22
	HW-821_04b	MERRITT PARKWAY - 2' WIDE MEDIAN BARRIER AND ROADSIDE BARRIER	11-08-22
	HW-821_05a	TRANSITION - 45" F-SHAPE TO 54" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_05b	TRANSITION - 45" F-SHAPE TO 54" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_06	54" VERTICAL SHAPE BARRIER	11-08-22
	HW-821_07	MISCELLANOUS DETAILS FOR BARRIER TRANSITIONS	11-08-22
	HW-821_08a	F-SHAPE CONC. BARRIER CURB (21"x45") TRANSITION FOR THRIE-BEAM	10-17-24
	HW-821_08b	F-SHAPE CONC. BARRIER CURB (21"x45") TRANSITION FOR THRIE-BEAM - REINF.	11-08-22
	HW-821_09a	SINGLE SLOPE CONC. BARRIER CURB (20"x42") TRANS. FOR THRIE-BEAM	11-08-22
	HW-821_09b	SINGLE SLOPE CONC. BARRIER CURB (20"x42") TRANS. FOR THRIE-BEAM - REINF.	11-08-22
	HW-821_10a	VERTICAL FACE CONC. (21"x54") TRANSITION FOR THRIE-BEAM	11-08-22
	HW-821_10b	VERTICAL FACE CONC. (21"x54") TRANSITION FOR THRIE-BEAM REINF.	11-08-22
	HW-821_11a	42" SINGLE SLOPE PRECAST CONCRETE BARRIER CURB -SHEET 1	01-05-24
	HW-821_11b	42" SINGLE SLOPE PRECAST CONCRETE BARRIER CURB -SHEET 2	01-05-24
✓	HW-822_01	TEMPORARY PRECAST CONCRETE BARRIER CURB	11-08-22
	HW-822_02a	TEMPORARY TRAFFIC BARRIER - DETAILS	11-08-22
	HW-822_02b	TEMPORARY TRAFFIC BARRIER (BOLTED)	01-23-25
	HW-822_02c	TEMPORARY TRAFFIC BARRIER & TEMPORARY TRAFFIC BARRIER (PINNED)	01-23-25
	HW-905_01	STONE WALL FENCE	11-09-22
	HW-906_01	WIRE FENCE	11-08-22



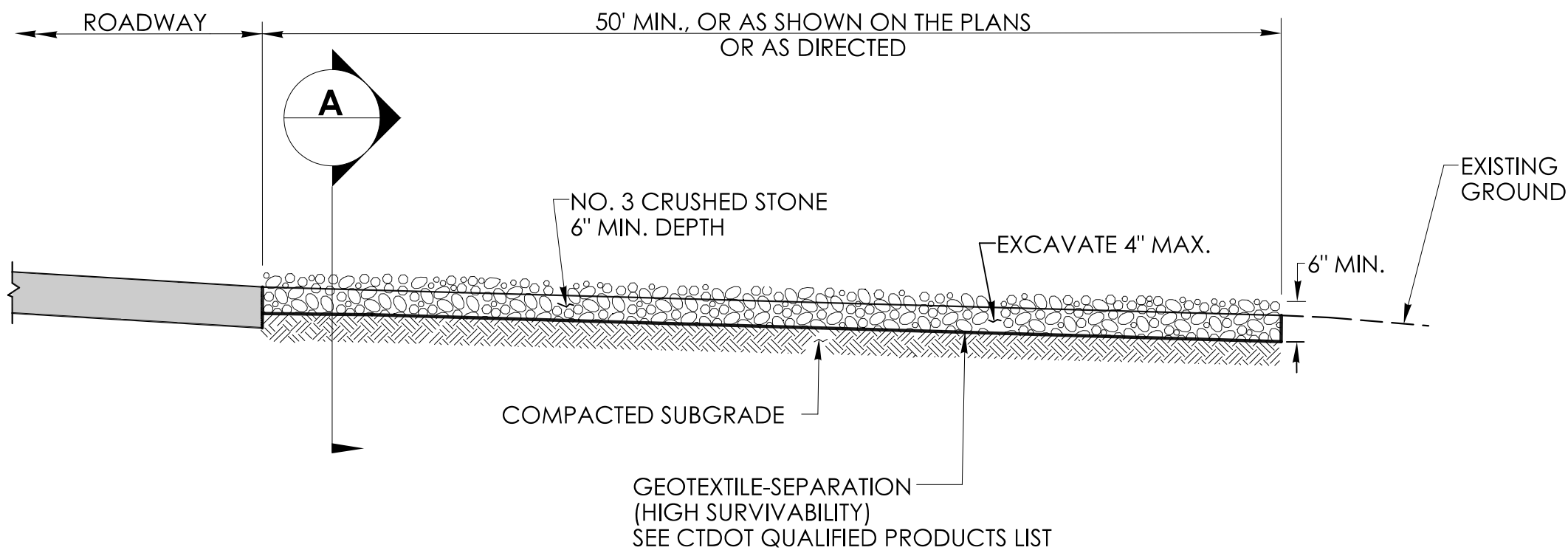
**GENERAL NOTE:**  
1. THE LENGTH OF THE ANTI-TRACKING PAD SHALL BE INCREASED AS DIRECTED FOR SITES COMPOSED OF CLAY OR SILTS.



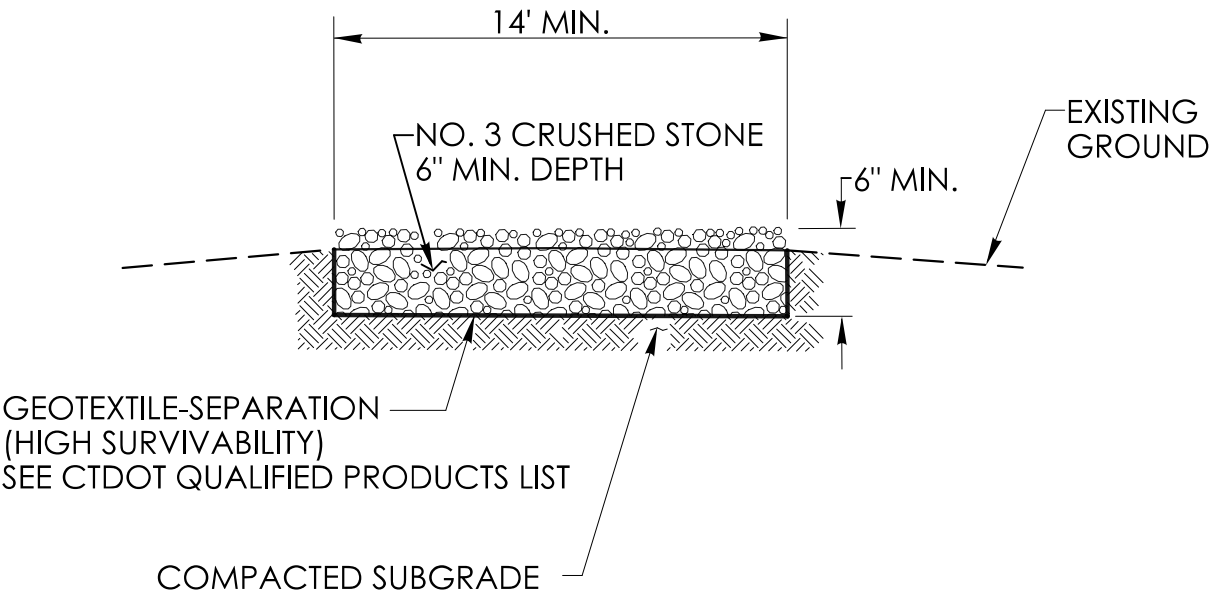
ANTI-TRACKING PAD



PLAN

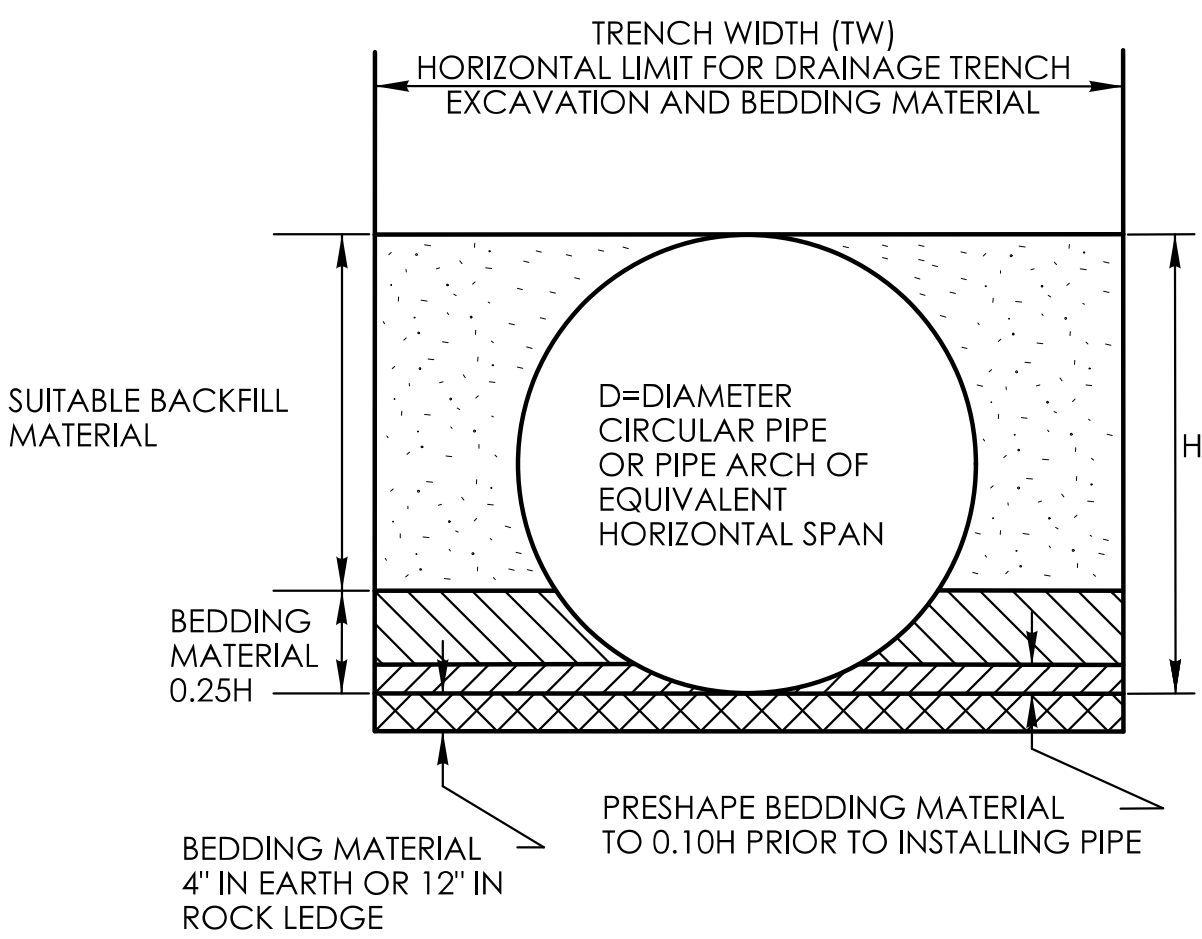


ELEVATION

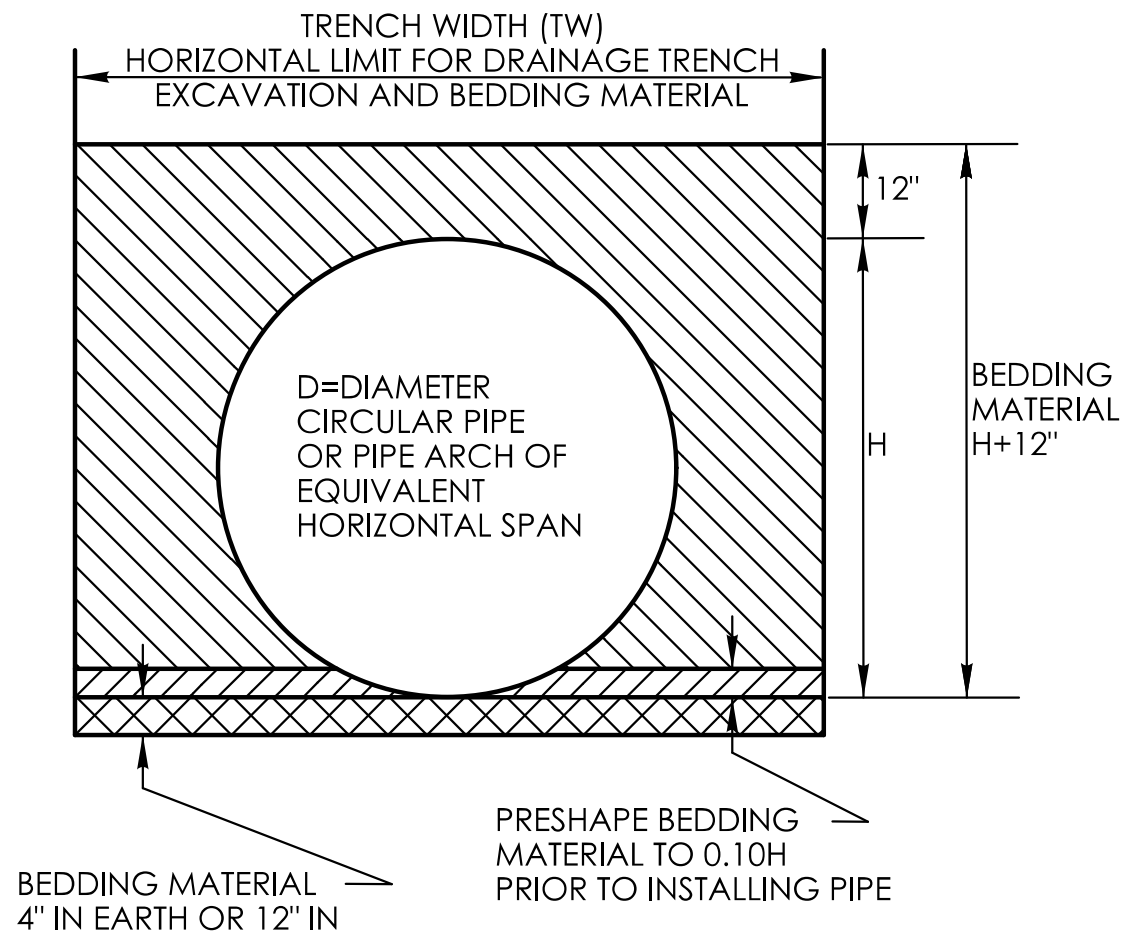


SECTION A





PIPE TRENCH  
FOR PIPES LESS THAN 48"

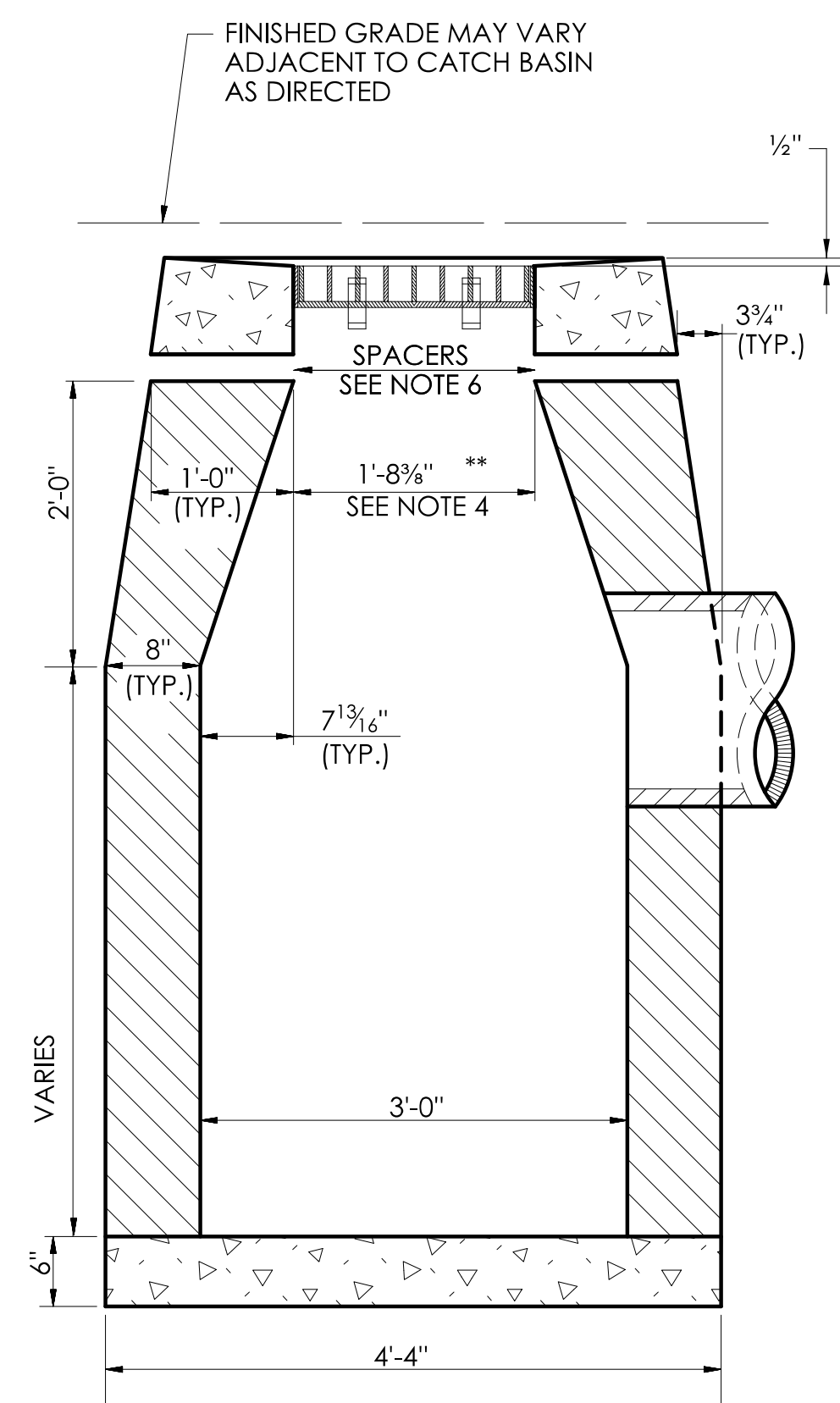


PIPE TRENCH  
FOR PIPES GREATER THAN  
OR EQUAL TO 48"

TRENCH WIDTH (TW) CHART

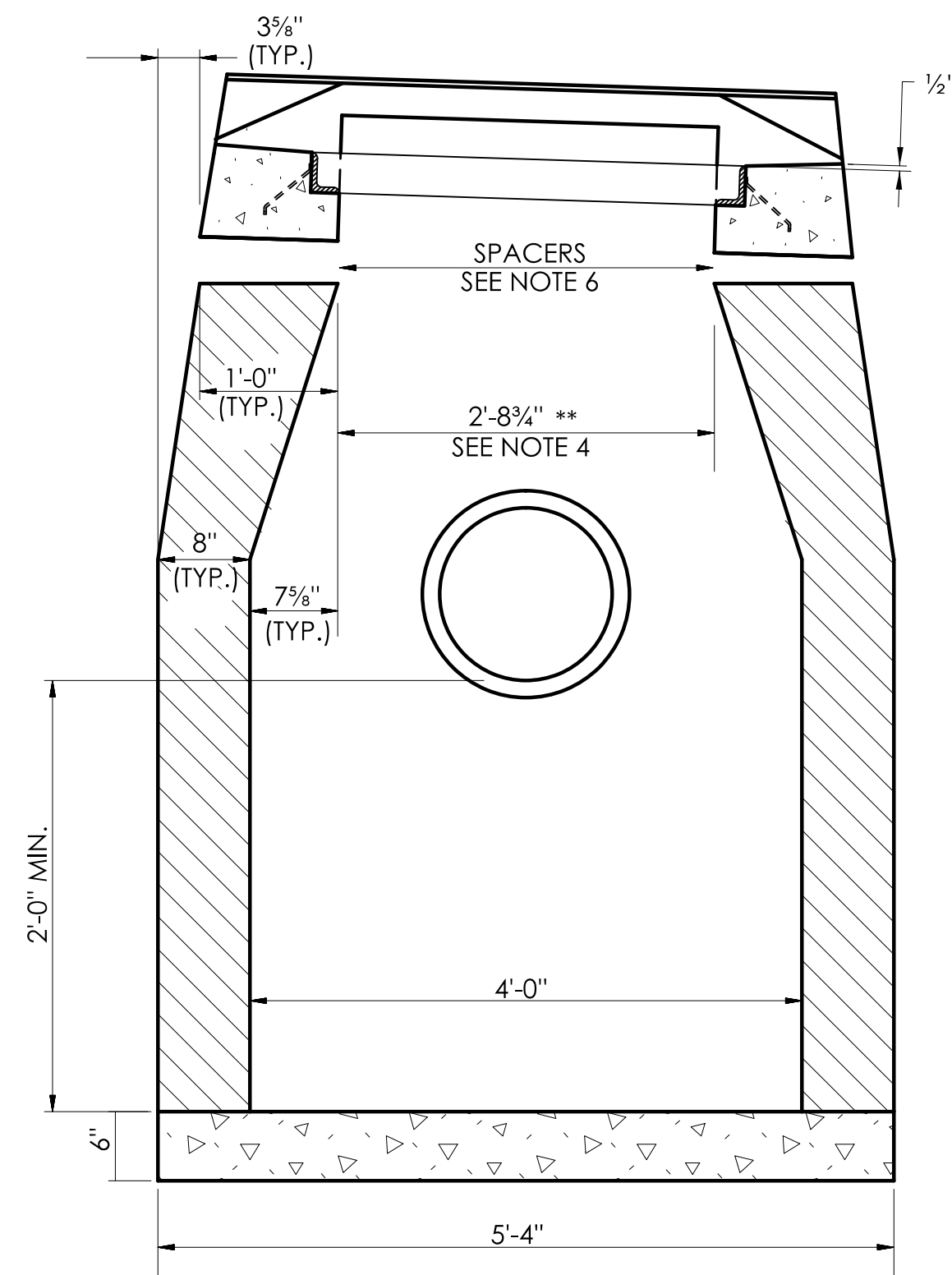
PIPE, PIPE-ARCH, OR DRAINAGE STRUCTURE	TRENCH WIDTH
PIPE OR PIPE-ARCH WITH NOMINAL INSIDE HORIZONTAL SPAN LESS THAN 30'	2' GREATER THAN NOMINAL INSIDE HORIZONTAL SPAN
PIPE OR PIPE-ARCH WITH NOMINAL INSIDE HORIZONTAL SPAN GREATER THAN OR EQUAL TO 30'	3' GREATER THAN NOMINAL INSIDE HORIZONTAL SPAN
PIPE OR PIPE-ARCH FABRICATED FROM STRUCTURAL PLATES	4' GREATER THAN NOMINAL INSIDE HORIZONTAL SPAN
DRAINAGE STRUCTURES	2' BEYOND ALL EXTERIOR OR FOUNDATION WALLS





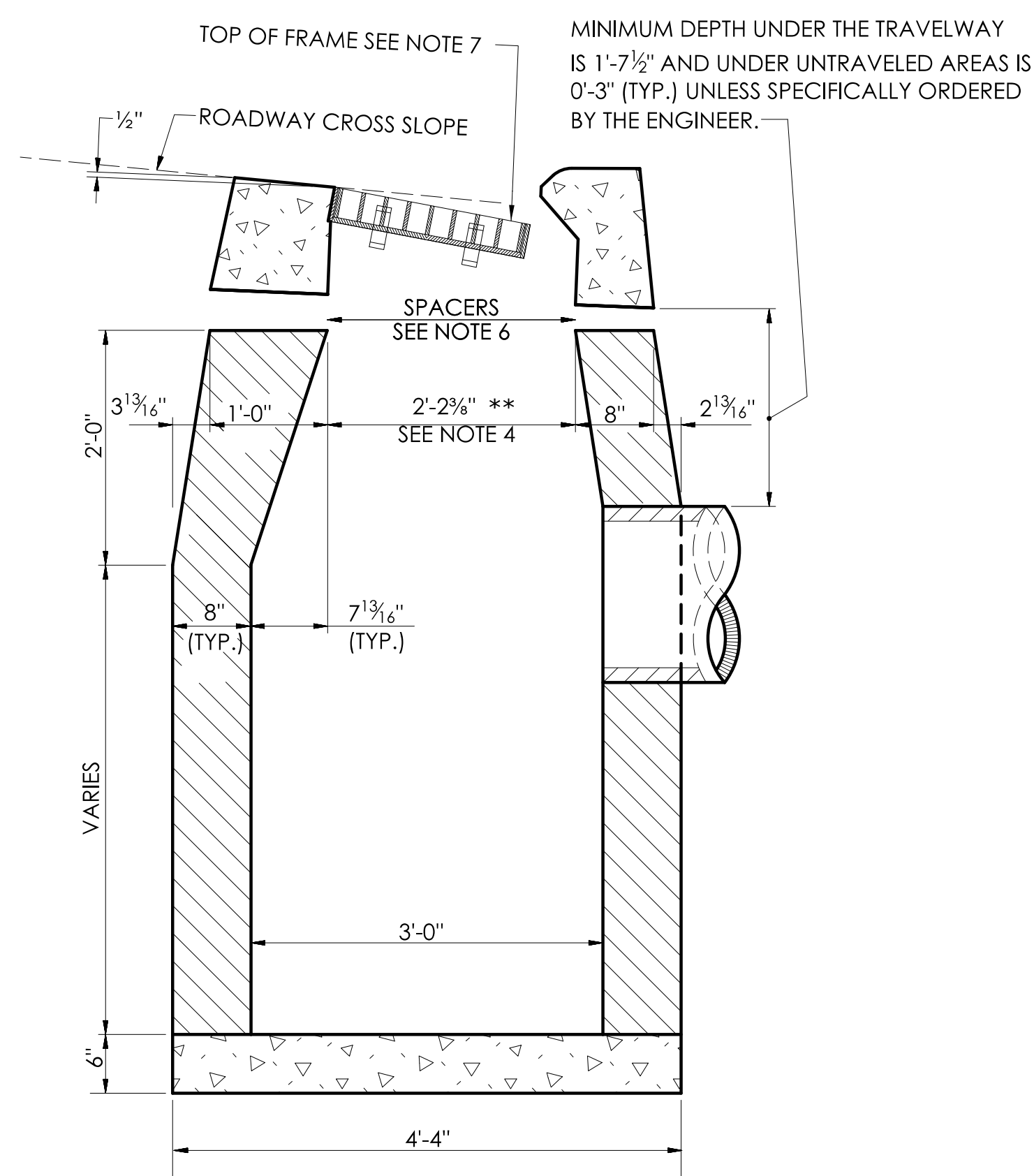
**SECTION** **B**

**TYPE "C-L" CATCH BASIN**



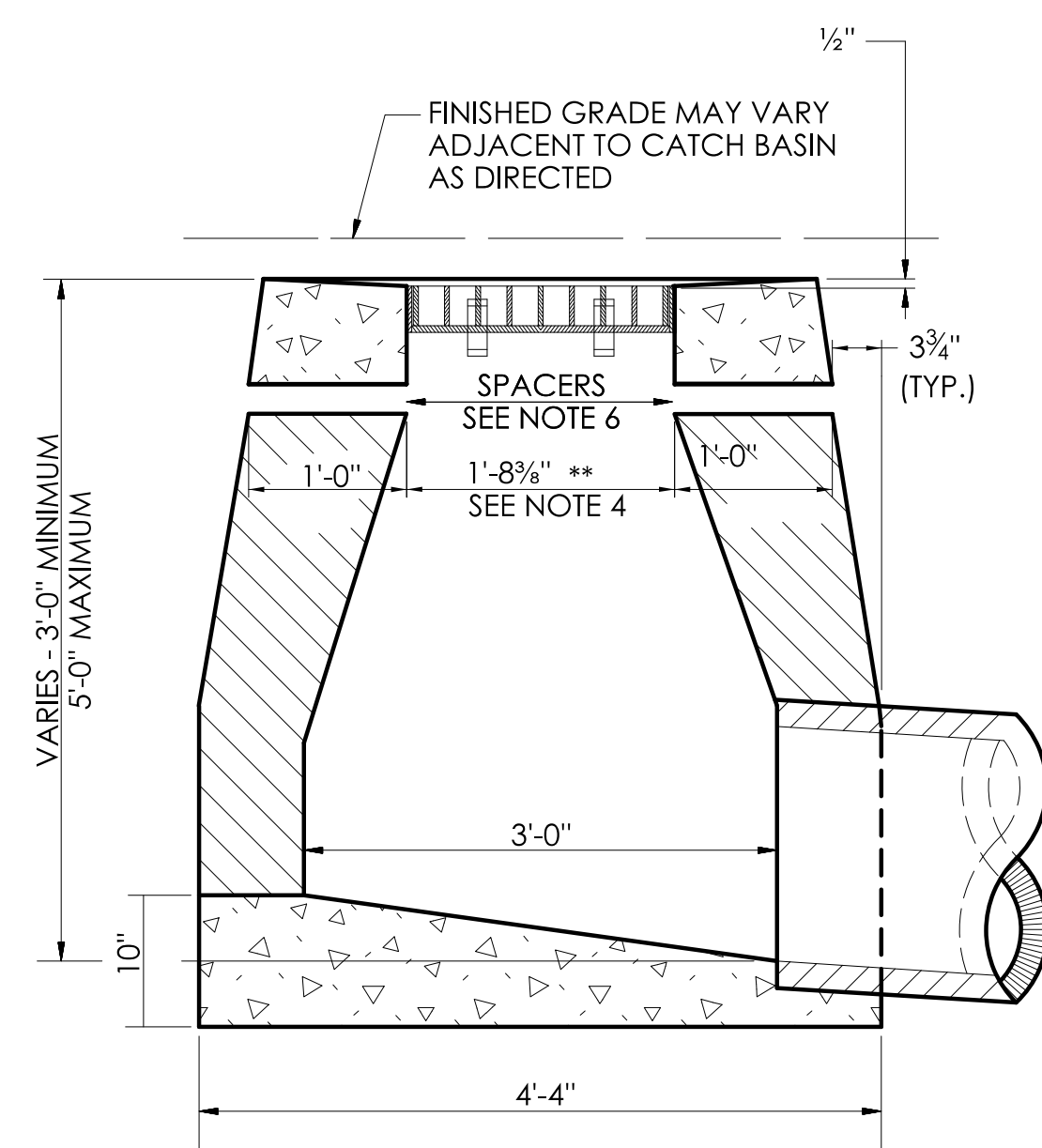
**SECTION     A**

**TYPE "C" & "C-L" CATCH BASIN  
(TYPE "C" TOP SHOWN)**



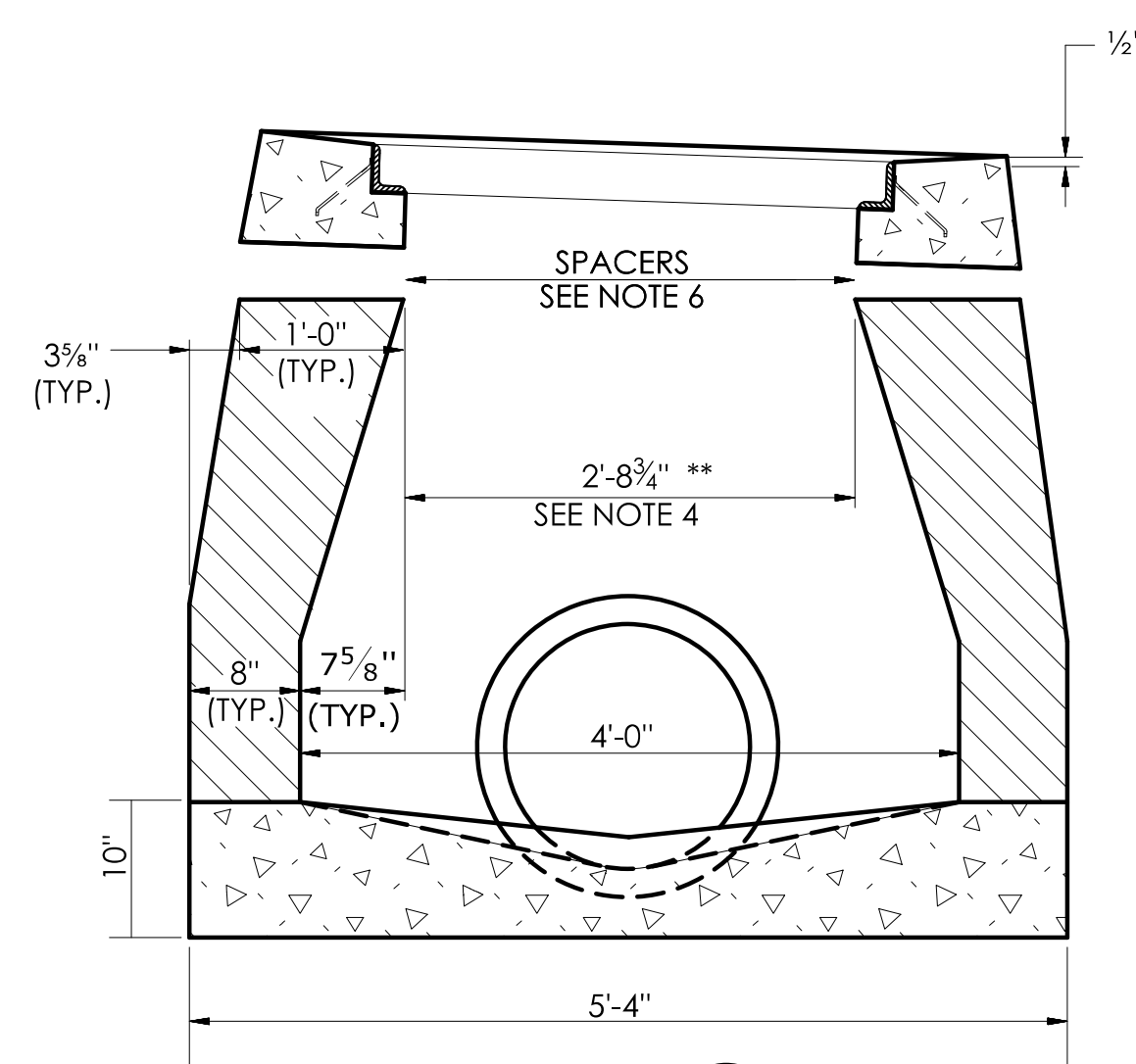
**SECTION B**

**TYPE "C" CATCH BASIN**



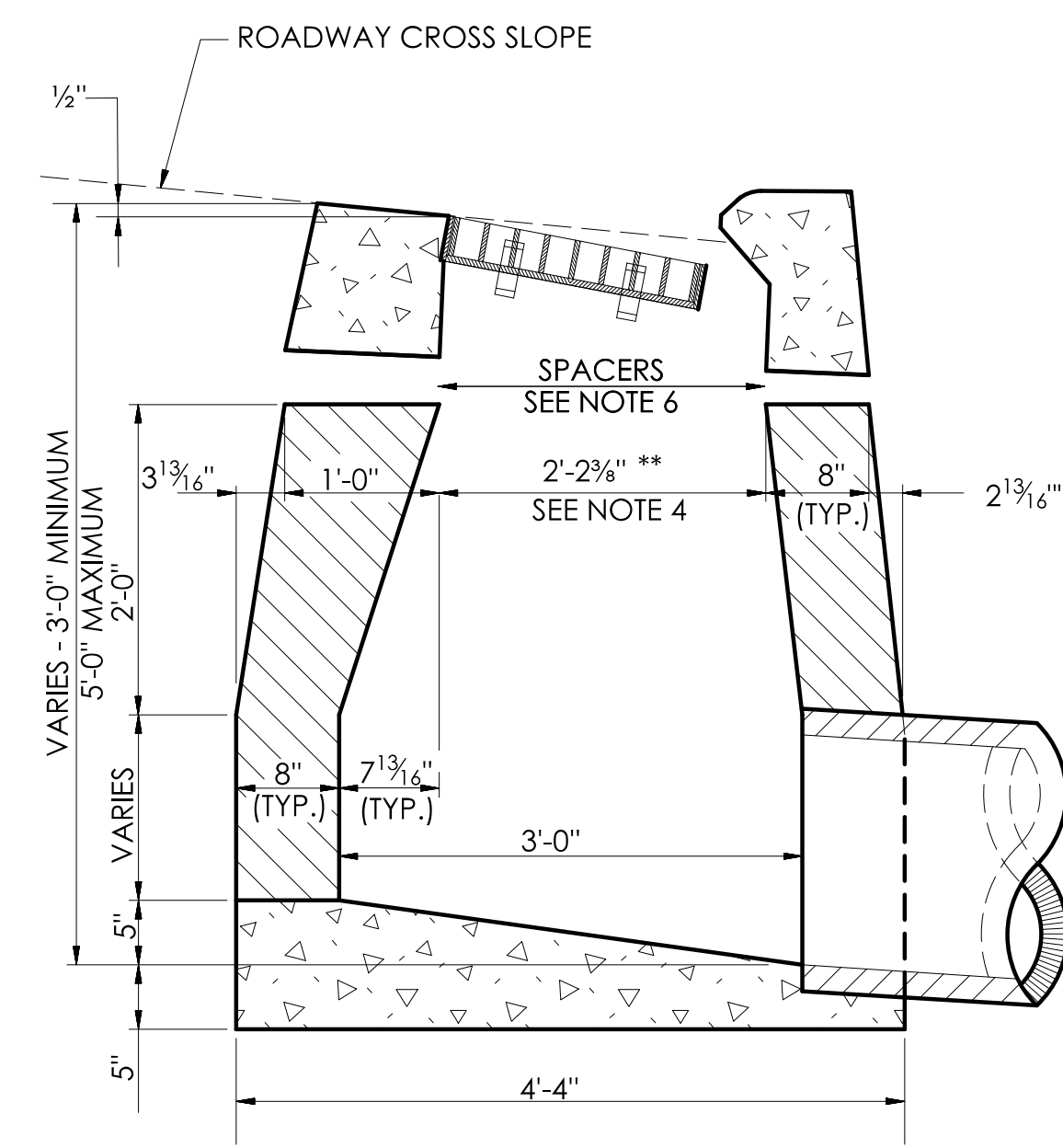
**SECTION B**


**TYPE "C-L" DROP INLET**



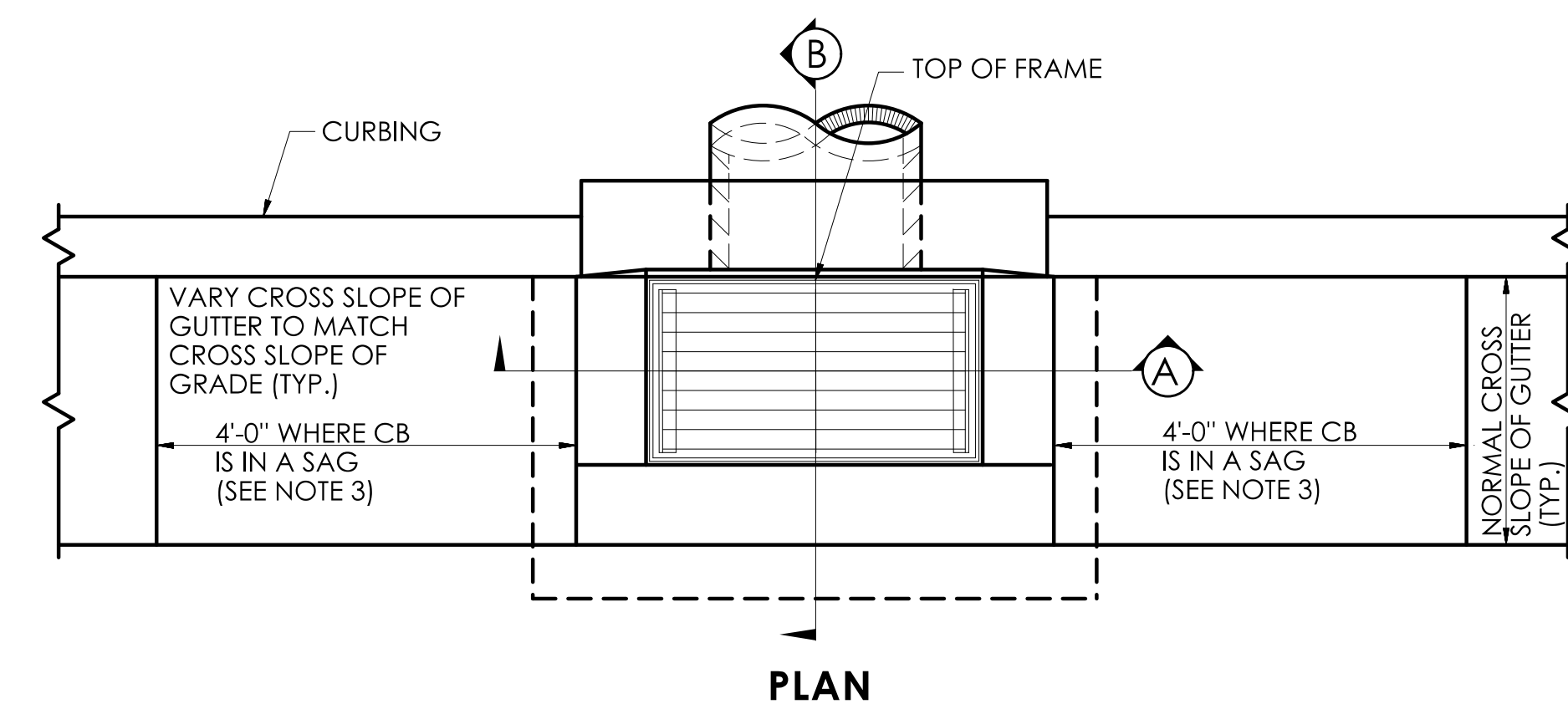
**SECTION (A)**

**TYPE "C" & "C-L" DROP INLET  
(TYPE "C-L" TOP SHOWN)**

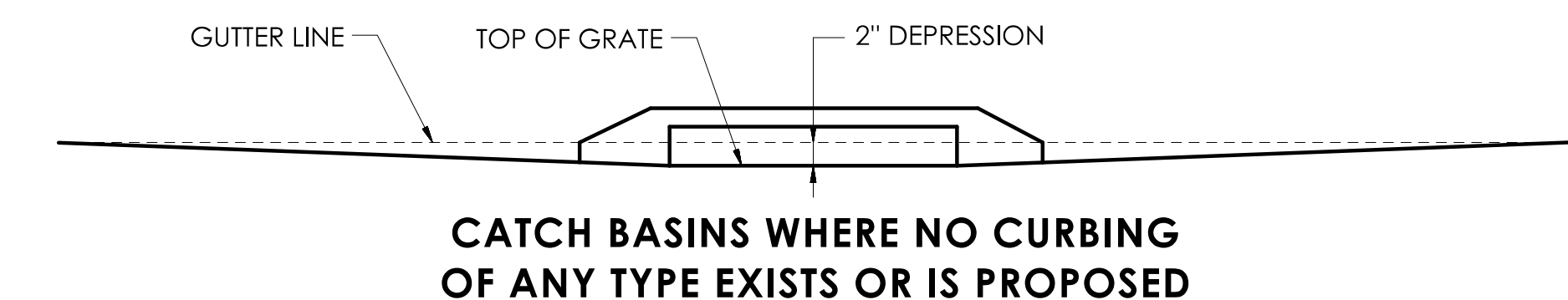


**SECTION** 

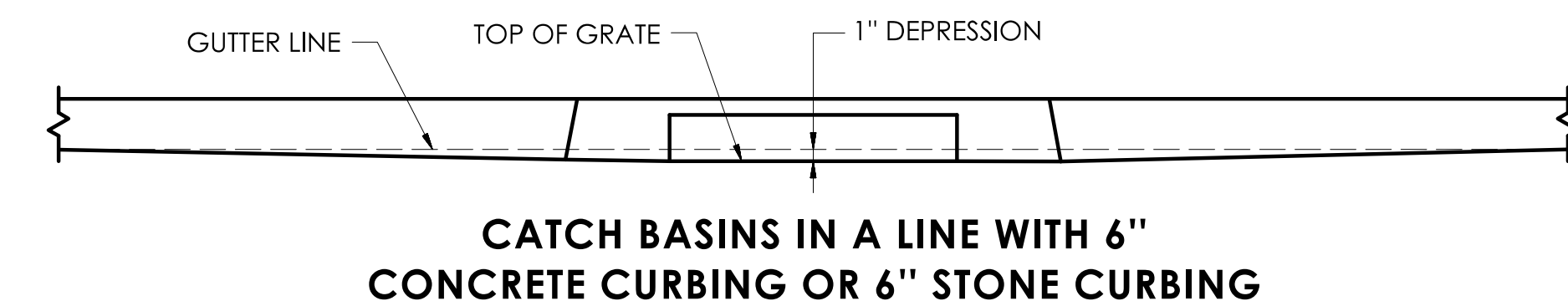
**TYPE "C" DROP INLET**



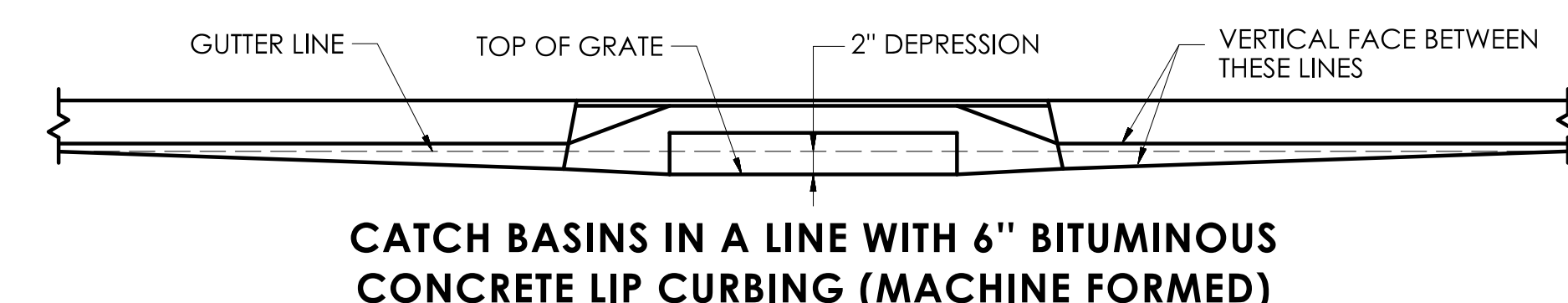
**CATCH BASINS IN A LINE WITH 4" CONCRETE PARK CURBING OR 4" BITUMINOUS CONCRETE PARK CURBING**



**CATCH BASINS WHERE NO CURBING  
OF ANY TYPE EXISTS OR IS PROPOSED**



**CATCH BASINS IN A LINE WITH 6" CONCRETE CURBING OR 6" STONE CURBING**



### CATCH BASINS IN A LINE WITH 6" BITUMINOUS CONCRETE LIP CURBING (MACHINE FORMED)

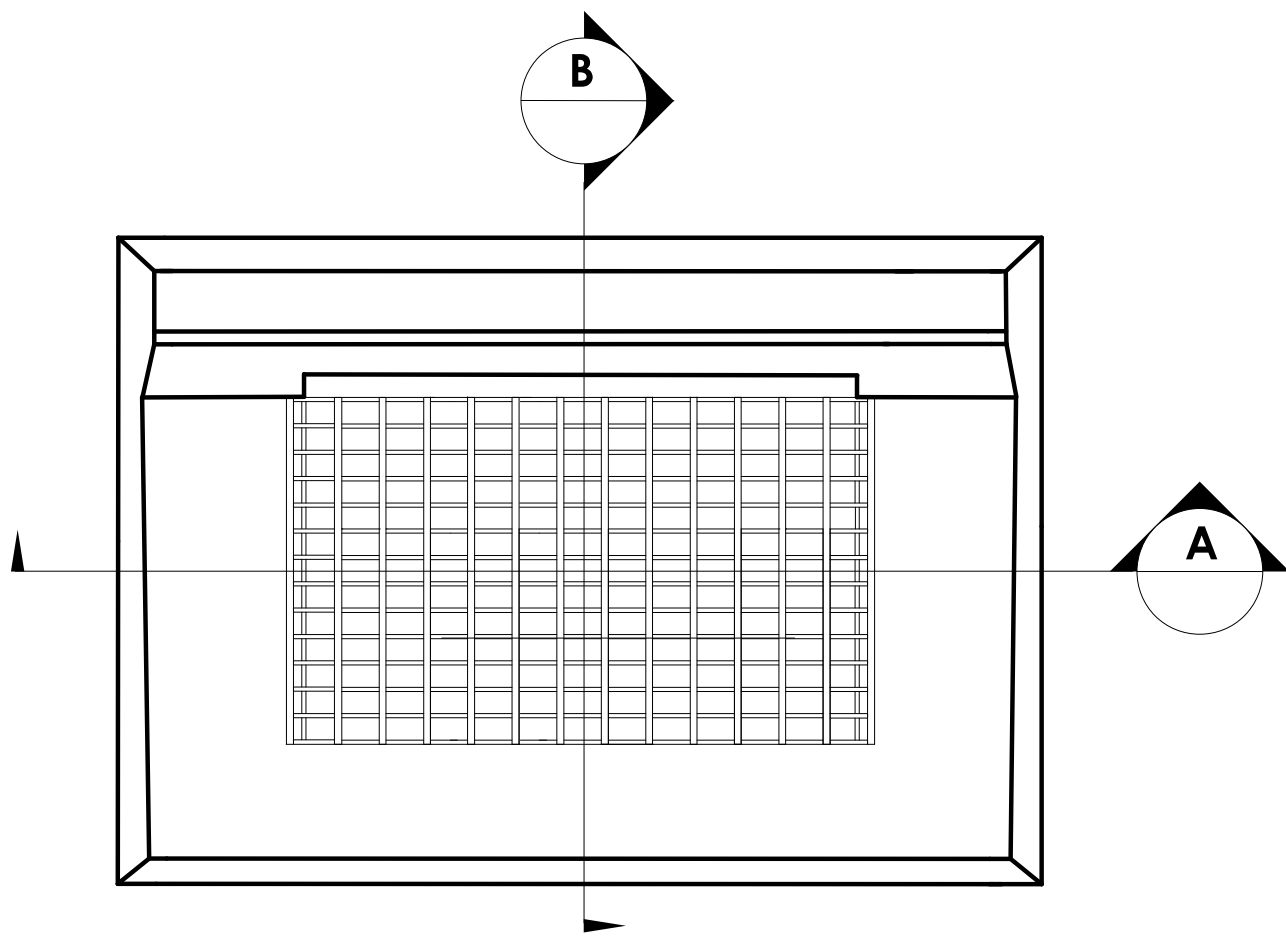
### DETAILS OF DEPRESSED GUTTER STRIP FOR TYPE "C" CATCH BASIN

- GENERAL NOTES:**

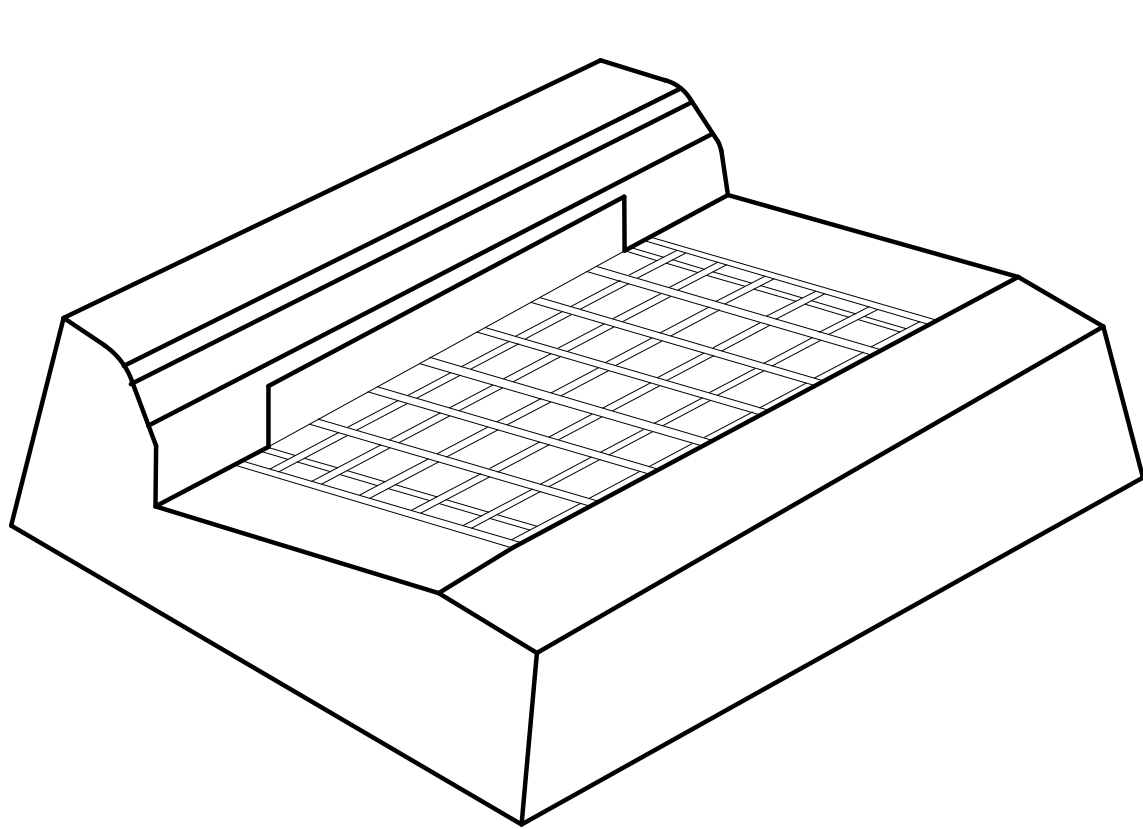
1. FOR CATCH BASIN TOPS, SEE SHEET NO. HW-586\_07.
2. ALL FACES OF STRUCTURES IN CONTACT WITH CONCRETE PAVEMENT SHALL BE COVERED WITH A LAYER OF TAR PAPER OR APPROVED EQUAL.
3. USE 6'-0" ON UPGRADE SIDE (SEE PLAN VIEW) OF CONTINUOUS GRADE AND 1'-0" ON DOWNGRADE SIDE OF CONTINUOUS GRADE OR AS DIRECTED BY THE ENGINEER.
4. IF MASONRY UNITS ARE REQUIRED, THE BASIN SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE DIMENSIONS SHOWN. CORBELLING SHALL BE PERMITTED TO A MAXIMUM OF 3". NO PROJECTION SHALL EXTEND INSIDE THE LIMITS FOR THE CATCH BASIN OPENINGS SHOWN IN THE SECTION VIEWS \*\*.
5. WALL THICKNESS OF ALL CATCH BASINS OVER 10' DEEP SHALL BE INCREASED TO 12" THICK. INSIDE DIMENSION SHALL REMAIN THE SAME. 12" THICKNESS SHALL START AFTER THE FIRST 10'.
6. FOR GRADE ADJUSTMENT OF THE CATCH BASIN TOP ( TO MATCH THE ROADWAYS' PROFILE AND CROSS SLOPE SHOWN ON THE PLANS) USE: SPACERS EITHER CONCRETE MASONRY UNIT OR PRECAST WITH THE REQUIRED REINFORCING ( RECOMMENDED BY THE MANUFACTURER) COMBINED WITH MORTAR AS NEEDED TO PROVIDE THE PROPER GRADE ADJUSTMENTS.
7. TOP OF FRAME ELEVATION SHALL BE MEASURED IN THE CENTER OF GRATE AT GUTTER LINE.

- GENERAL NOTES:**
- SEE SHEET HW-586\_08, FOR CATCH BASIN FRAMES AND GRATES AND HW-586\_09 FOR CATCH BASIN LOCK DOWN TOPS.
  - SEE SHEET HW-586\_01, CATCH BASIN AND DROP INLET TYPES "C" AND "C-L" TO DETERMINE THE TOP OF FRAME DEPRESSION AT THE GUTTER.
  - ALL BARS SHALL HAVE A MINIMUM 2" COVER.
  - Manufacturing Dimensional Tolerance Table

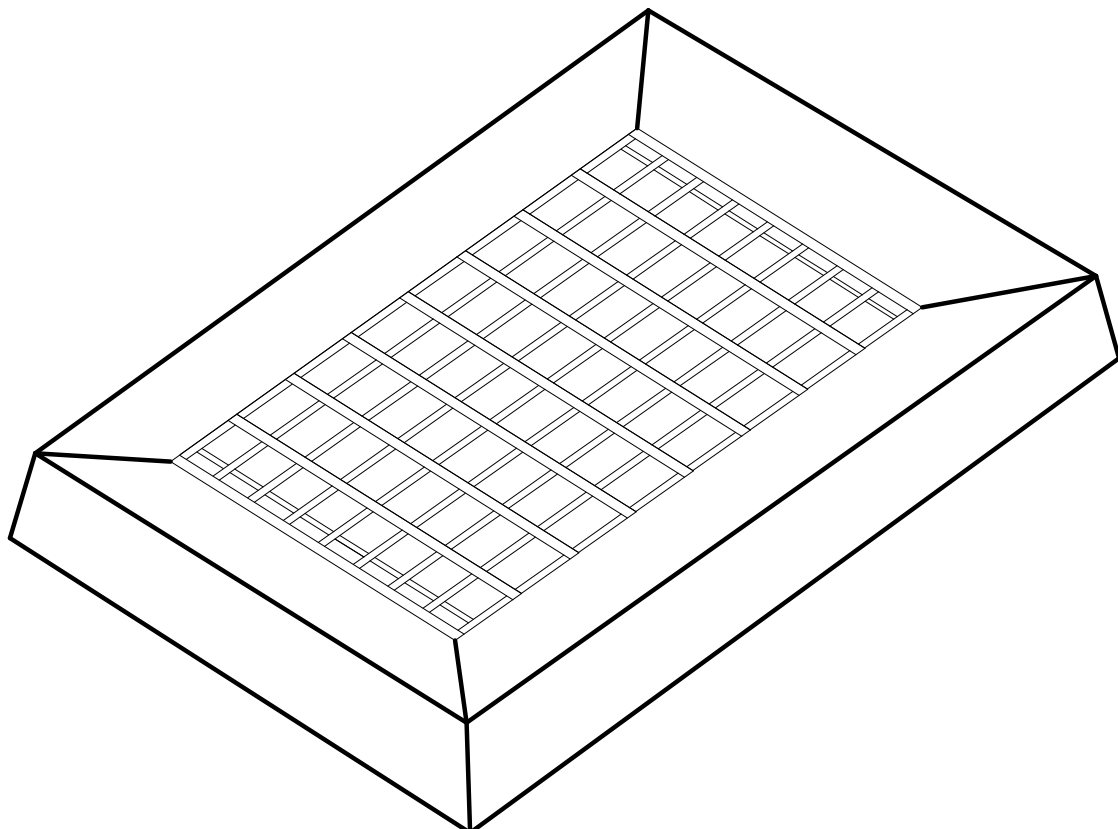
Any Dimension (D)	Allowable Tolerance
D < 5"	± ¼"
5" ≤ D ≤ 10"	± ½"
D > 10"	± 1"



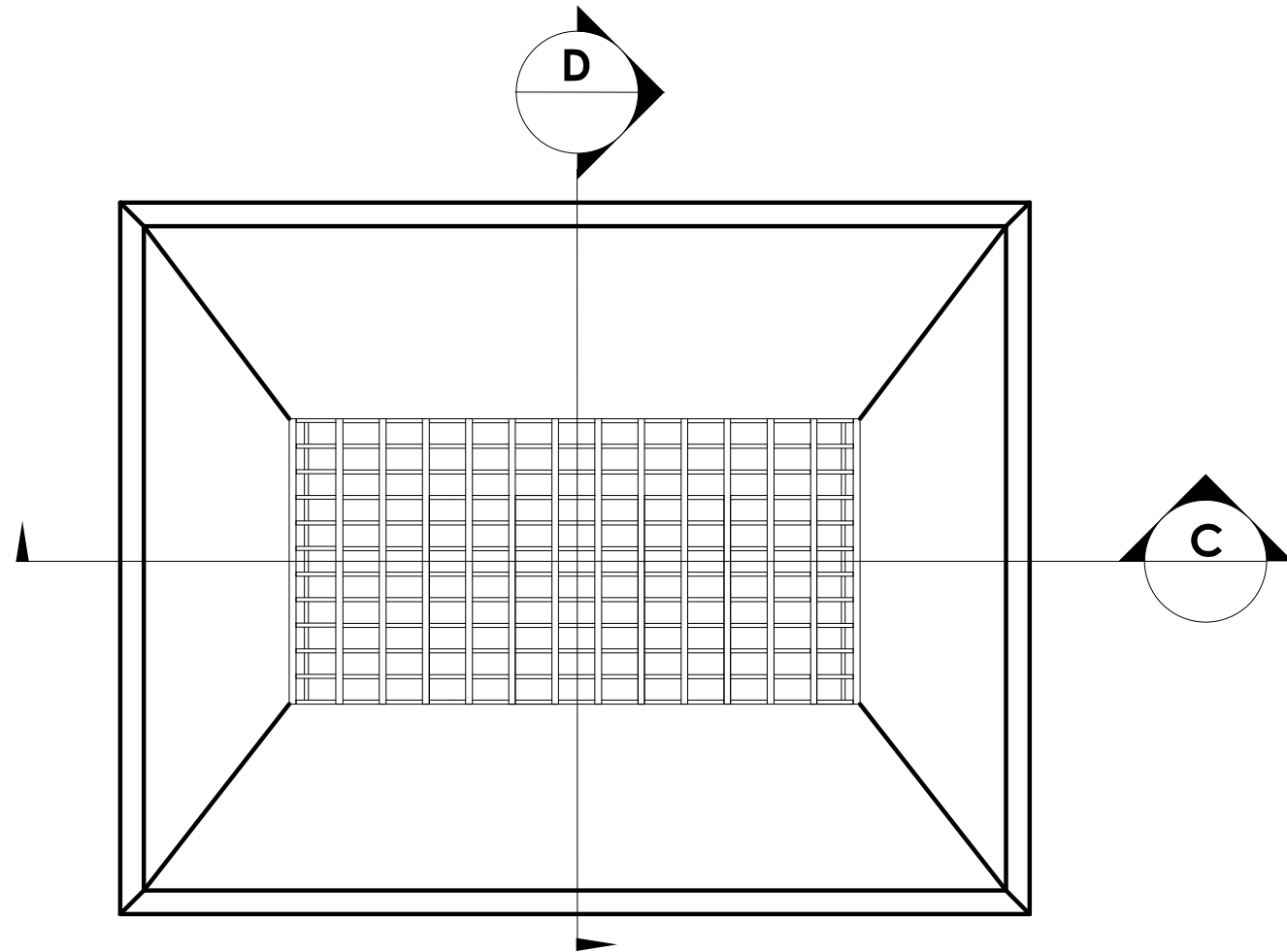
TYPE "C" CATCH BASIN TOP  
PLAN



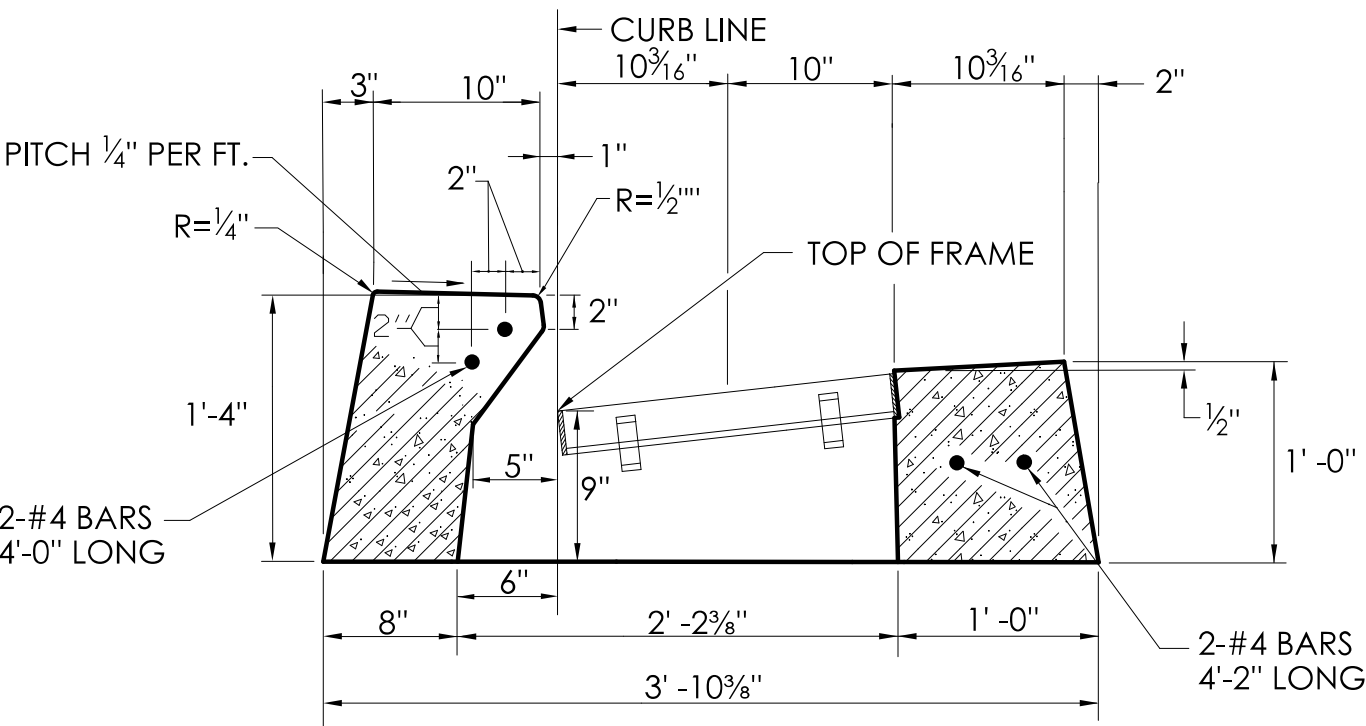
TYPE "C" CATCH BASIN TOP



TYPE "C-L" CATCH BASIN TOP

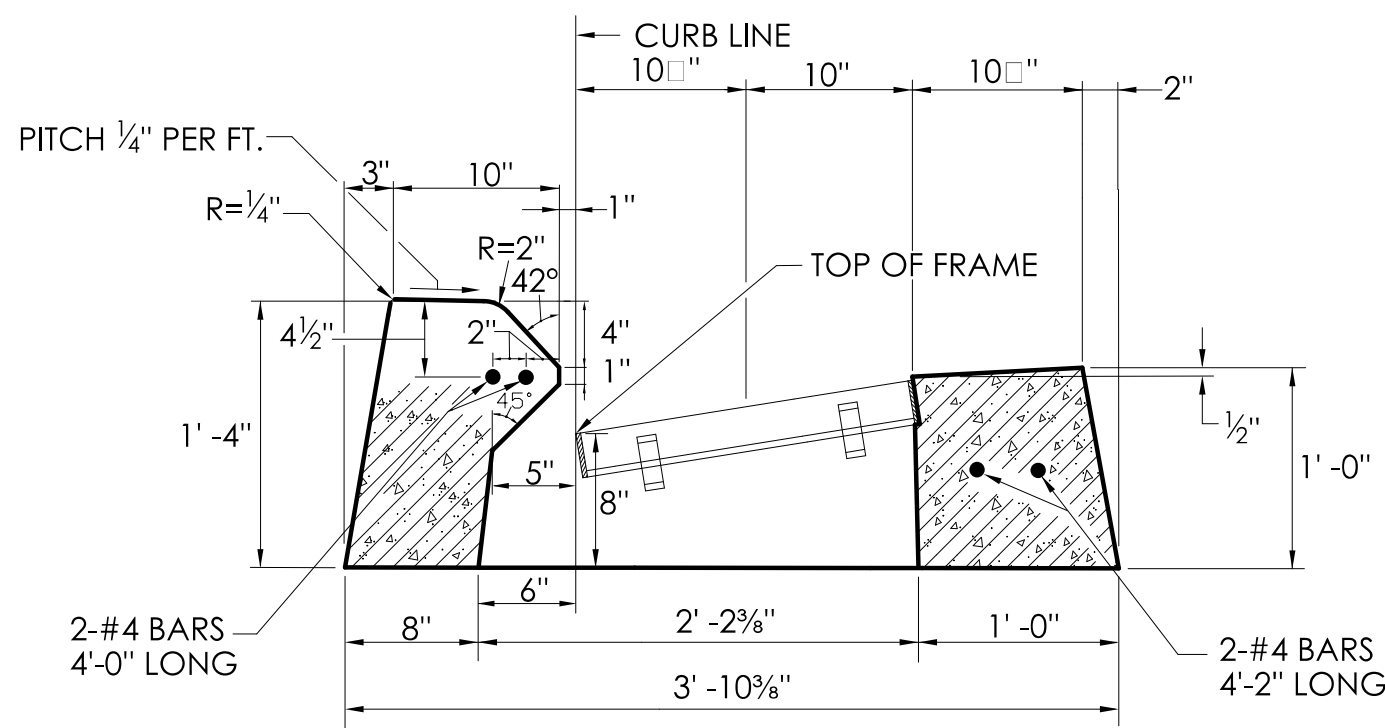


TYPE "C-L" CATCH BASIN TOP  
PLAN



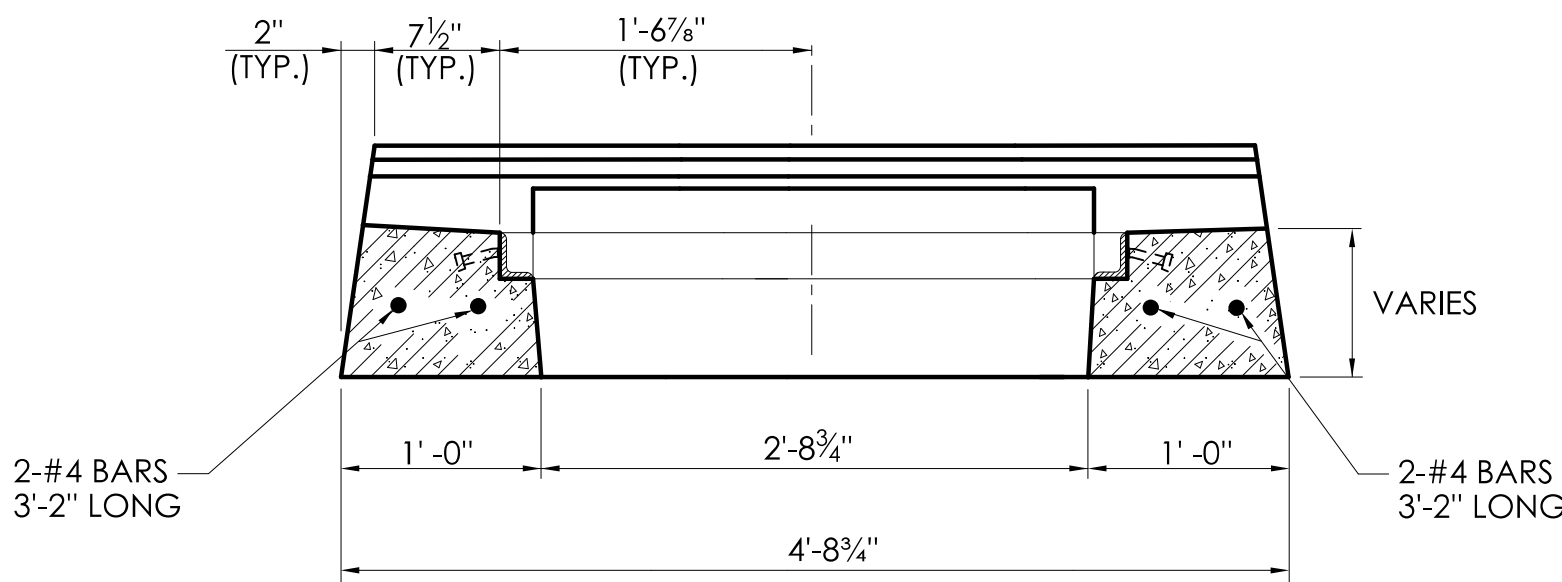
TYPE "C" CATCH BASIN TOP FOR  
6" CONCRETE CURBING OR 6" STONE CURBING

SECTION B

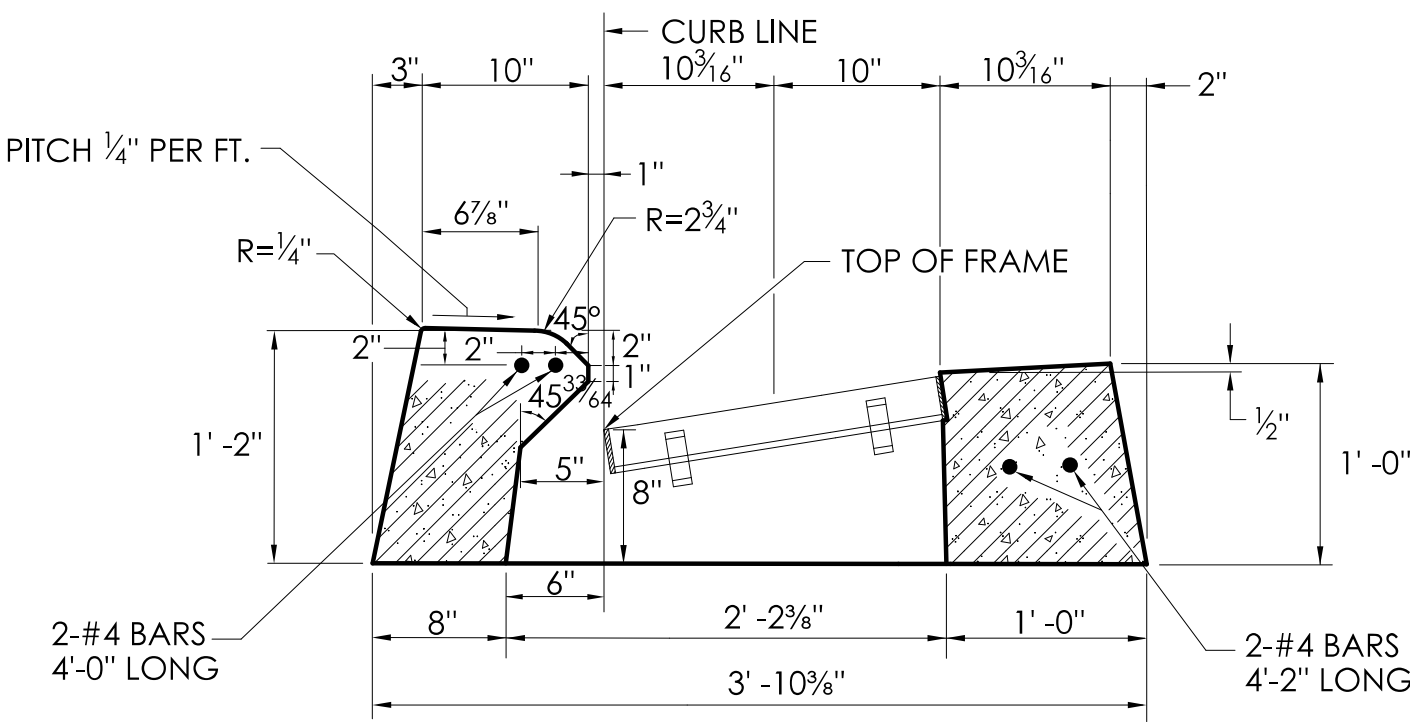


TYPE "C" CATCH BASIN TOP FOR  
6" BITUMINOUS CONCRETE LIP CURBING

SECTION B

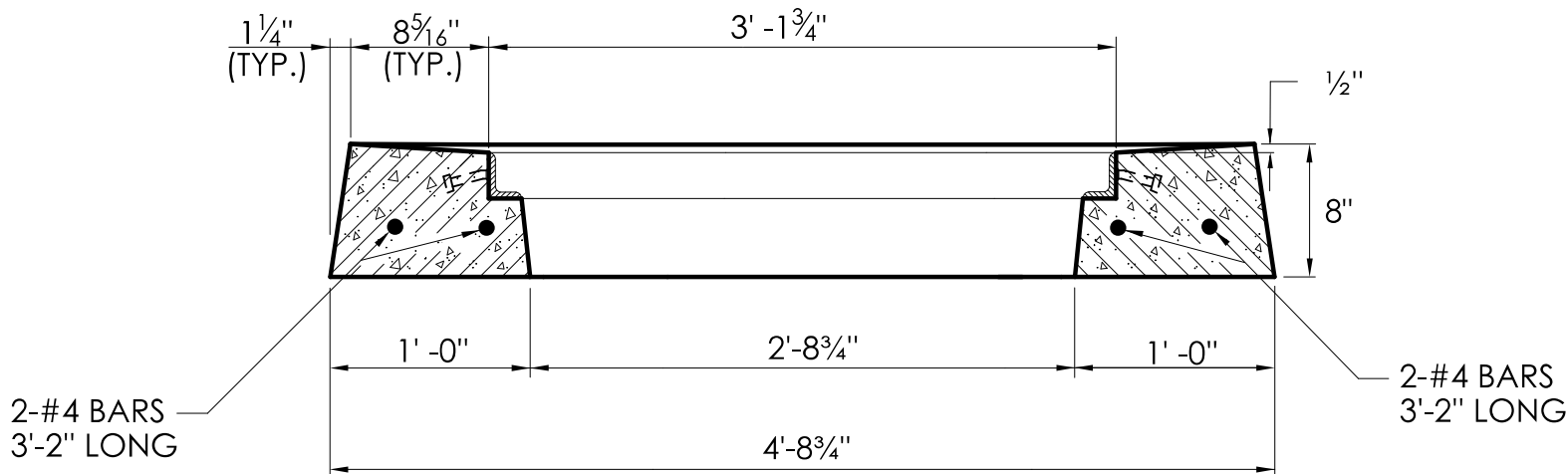


TYPE "C" CATCH BASIN TOP  
SECTION A

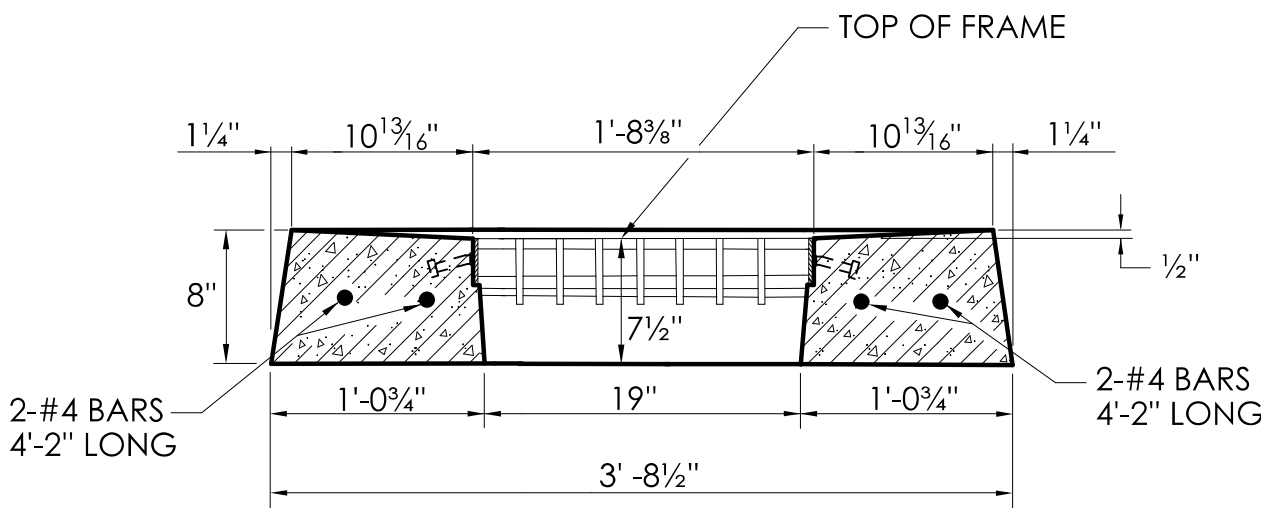


TYPE "C" CATCH BASIN TOP FOR  
4" CONCRETE PARK CURBING OR  
4" BITUMINOUS CONCRETE PARK CURBING

SECTION B

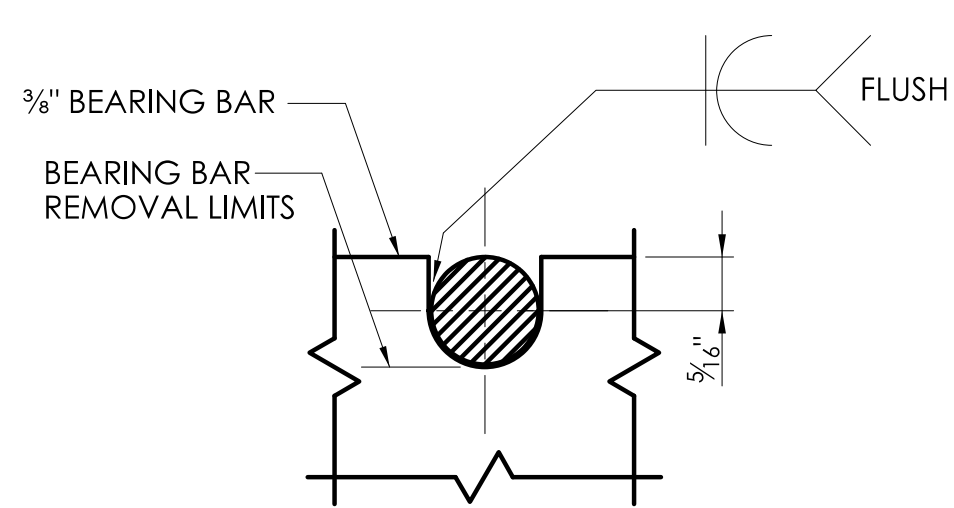


TYPE "C-L" CATCH BASIN TOP  
SECTION C



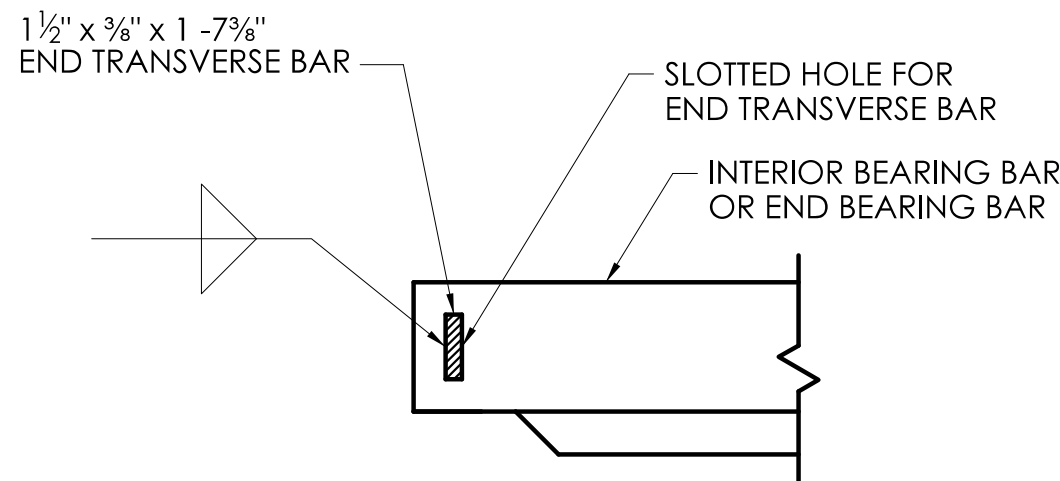
TYPE "C-L" CATCH BASIN TOP  
SECTION D



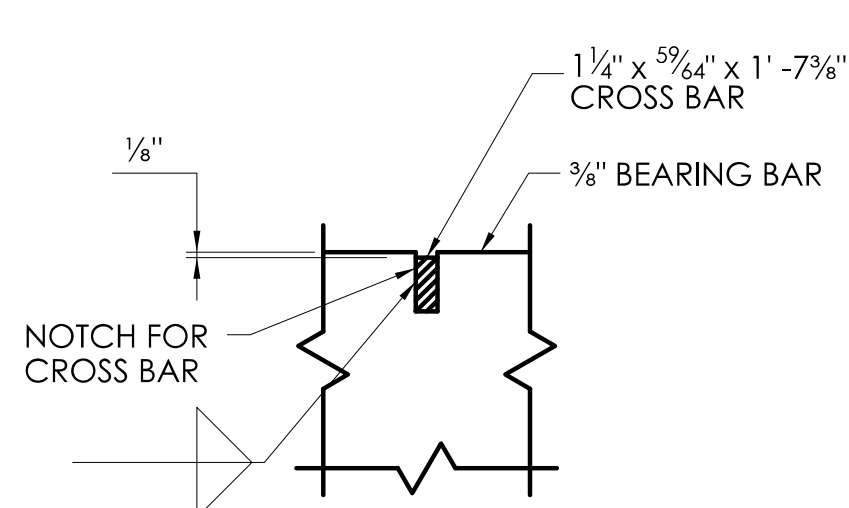


NOTE:  
3/8" DIA. ROUND BAR SHALL CONTACT BEARING BAR AT BOTTOM AND BE FLUSH AT TOP.

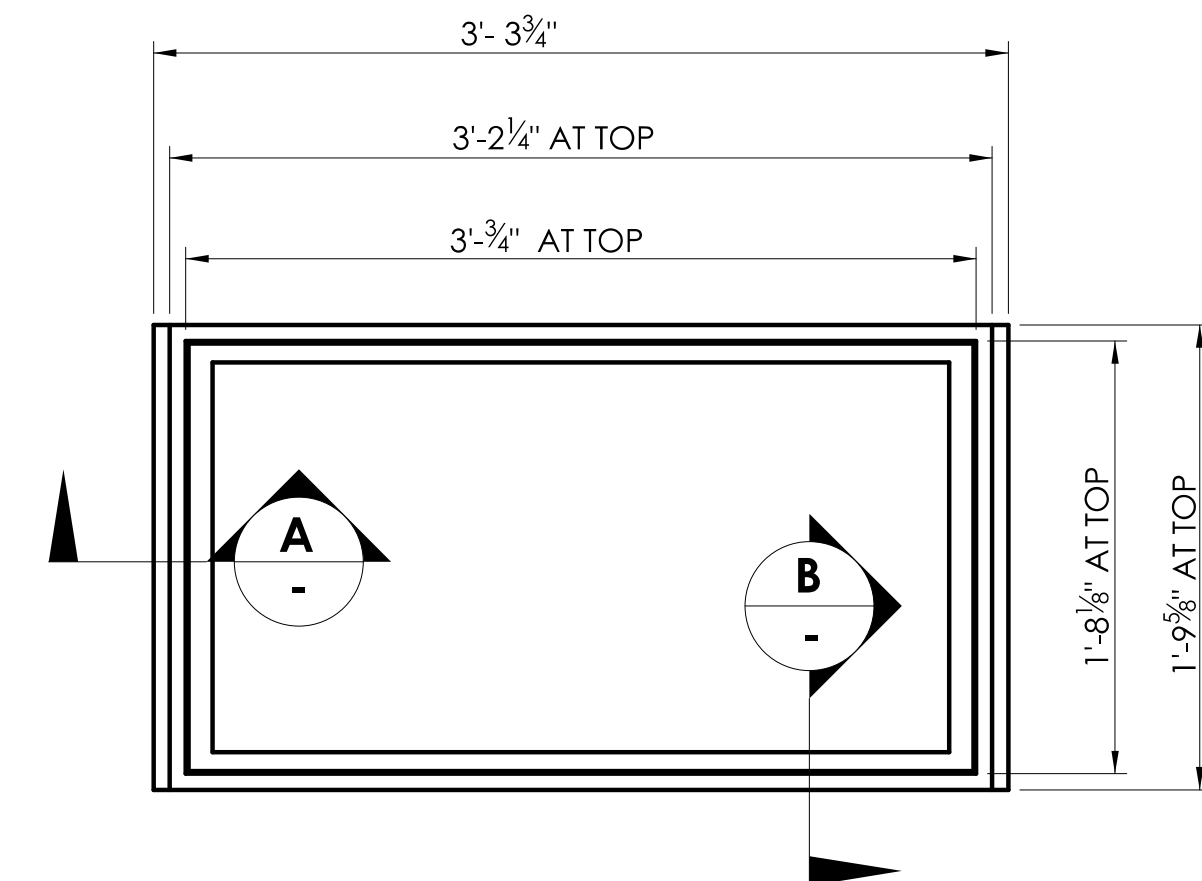
**ROUND BAR ATTACHMENT  
CATCH BASIN GRATE TYPE A**



**END TRANSVERSE BAR ATTACHMENT  
CATCH BASIN GRATE TYPE A AND B**



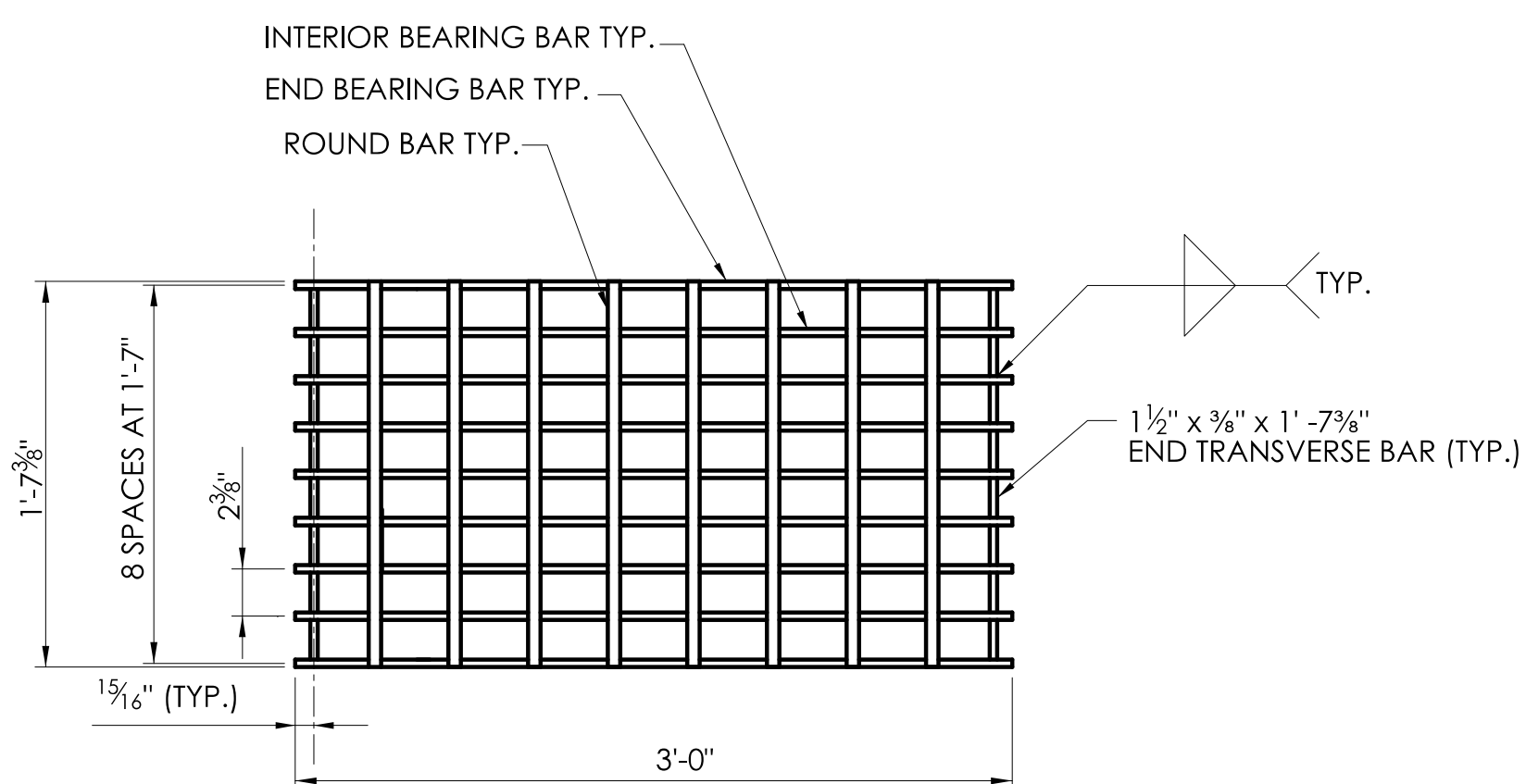
**CROSS BAR ATTACHMENT  
CATCH BASIN GRATE TYPE B**



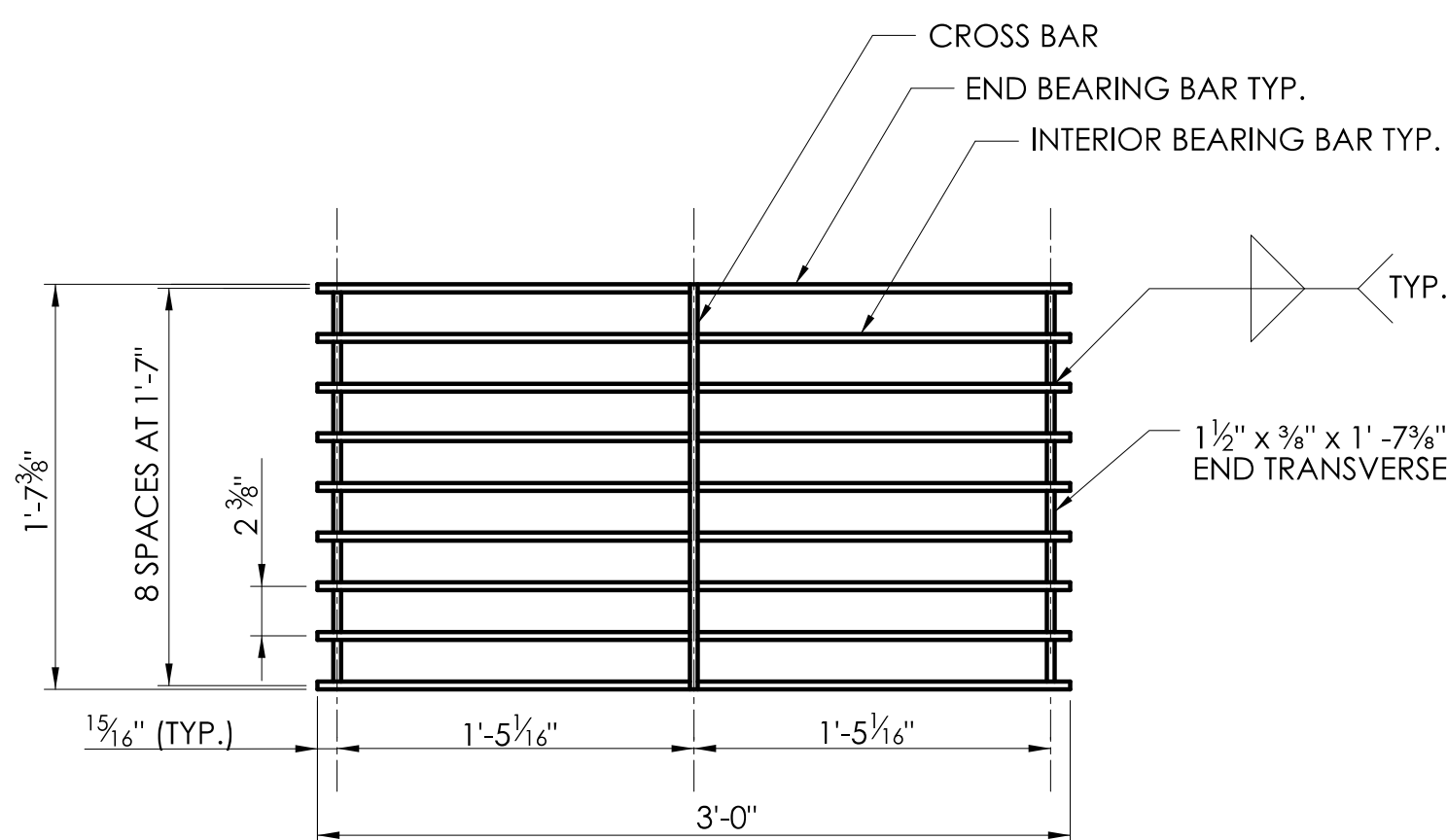
**PLAN**

**GENERAL NOTES:**

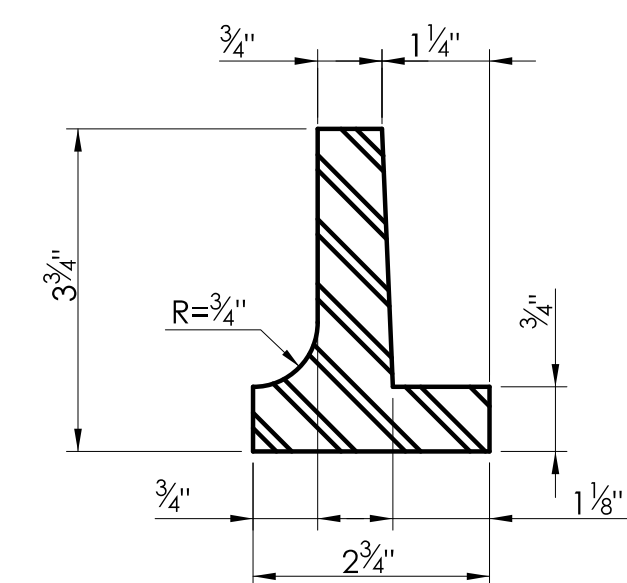
1. STEEL OR CAST IRON SHALL BE USED FOR FRAMES. STEEL SHALL BE USED FOR TYPE "A" AND "B" GRATES.
2. TYPE "A" GRATES SHALL BE USED ON ALL ROADWAYS WHERE BICYCLE TRAFFIC IS ALLOWED OR ON HEAVY DUTY LOCK DOWN TOPS AS DIRECTED BY THE ENGINEER.
3. TYPE "B" GRATES SHALL BE USED ON ALL LIMITED ACCESS HIGHWAYS, RAMP AND WHERE BICYCLE TRAFFIC IS NOT ALLOWED OR AS DIRECTED BY THE ENGINEER.
4. DO NOT GALVANIZE CAST IRON FRAMES.
5. DIMENSIONAL TOLERANCES SHALL BE  $\pm 3/16$ ".
6. ALL STEEL BARS SHALL BE WELDED AT ALL INTERSECTIONS.



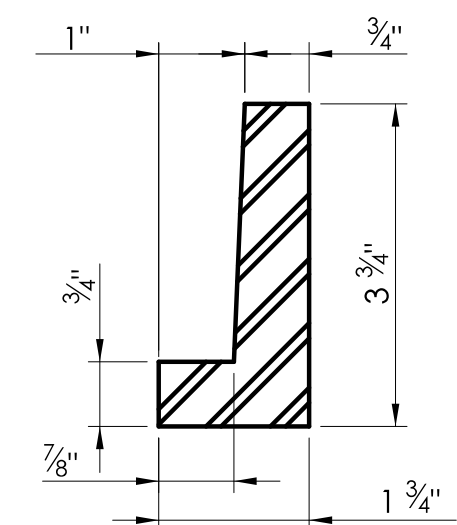
**PLAN**



**PLAN**

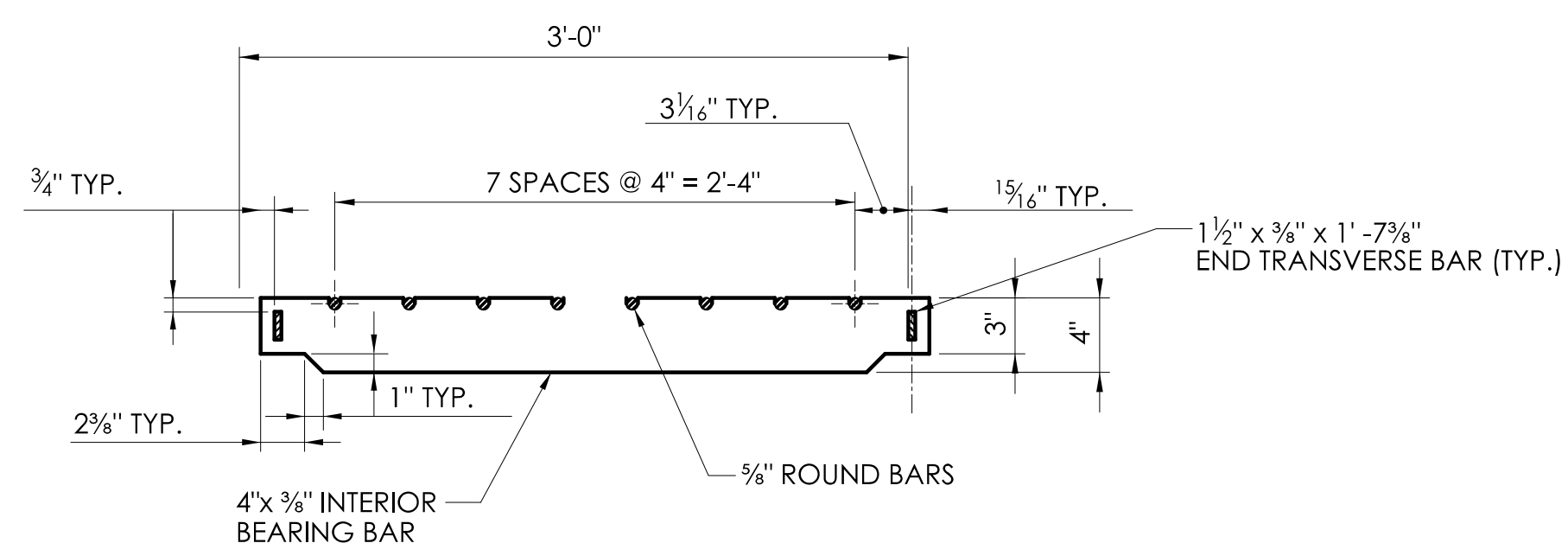


**SECTION A**

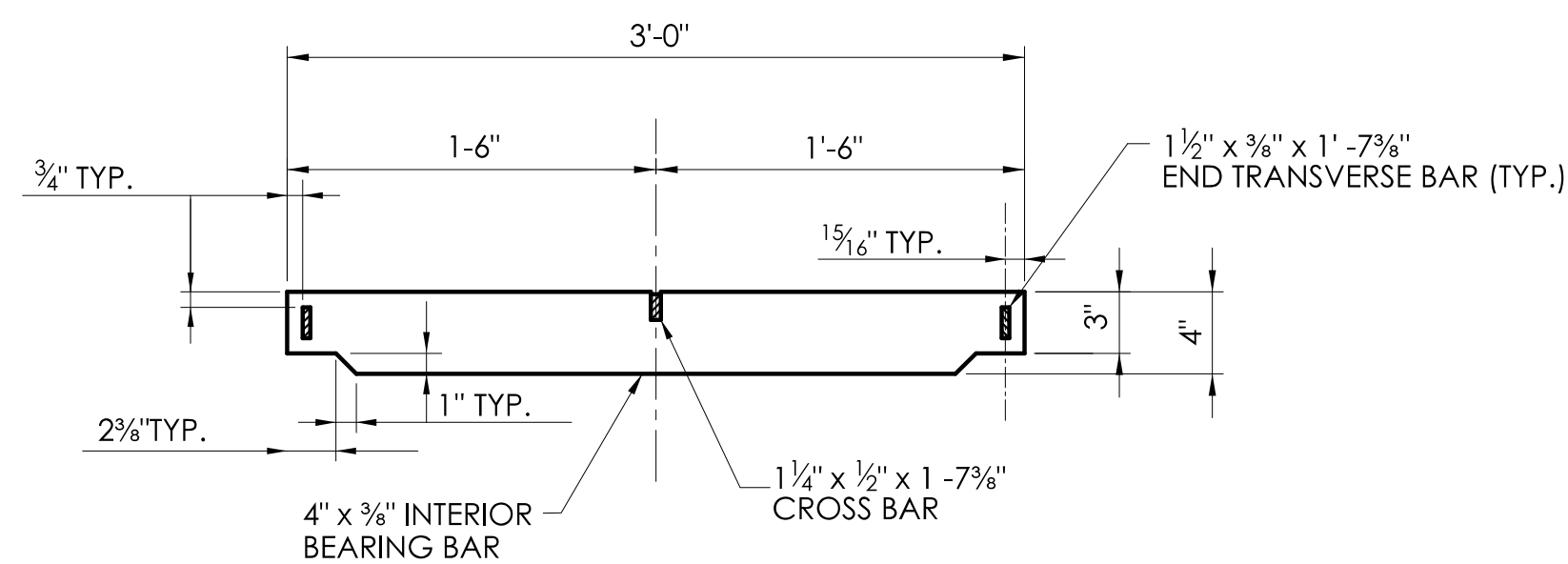


**SECTION B**

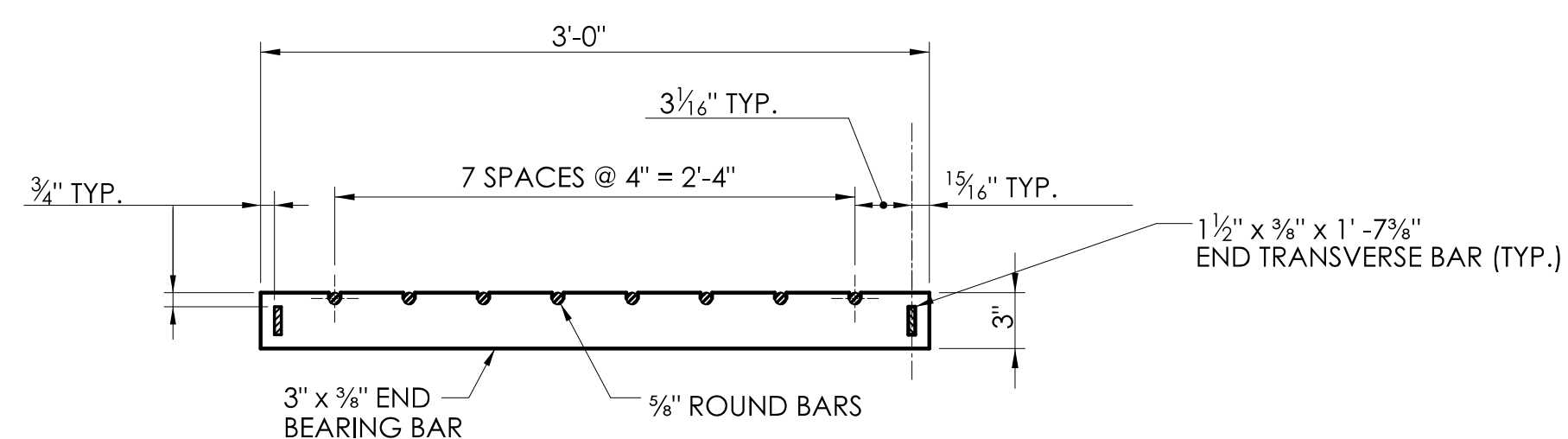
**CAST IRON FRAME ALTERNATE**



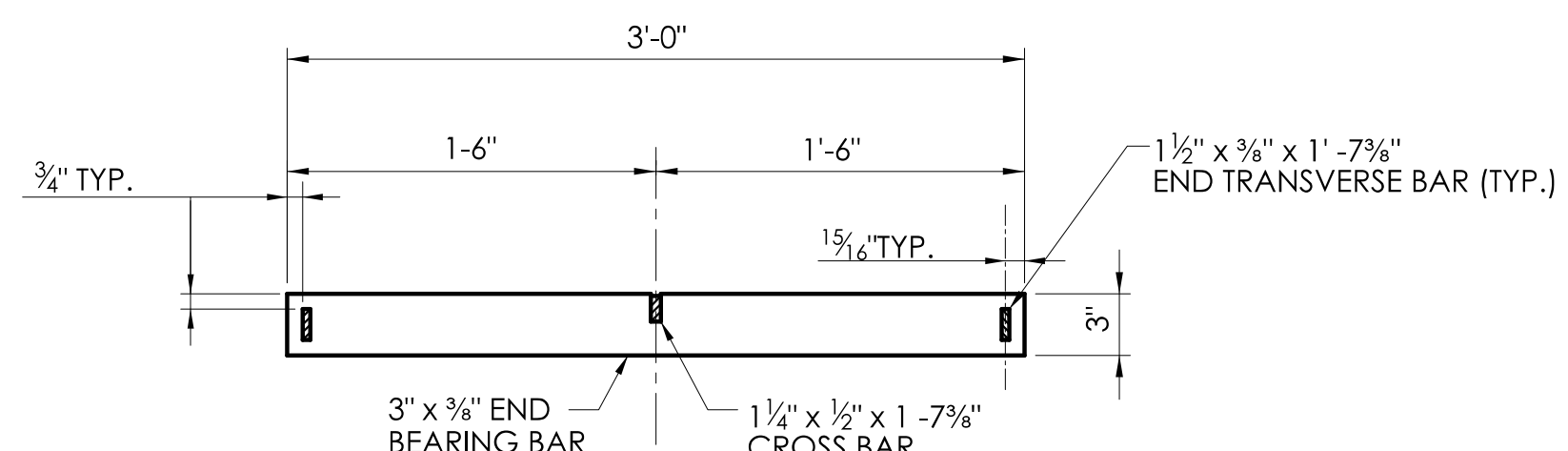
**ELEVATION- INTERIOR BEARING BAR**



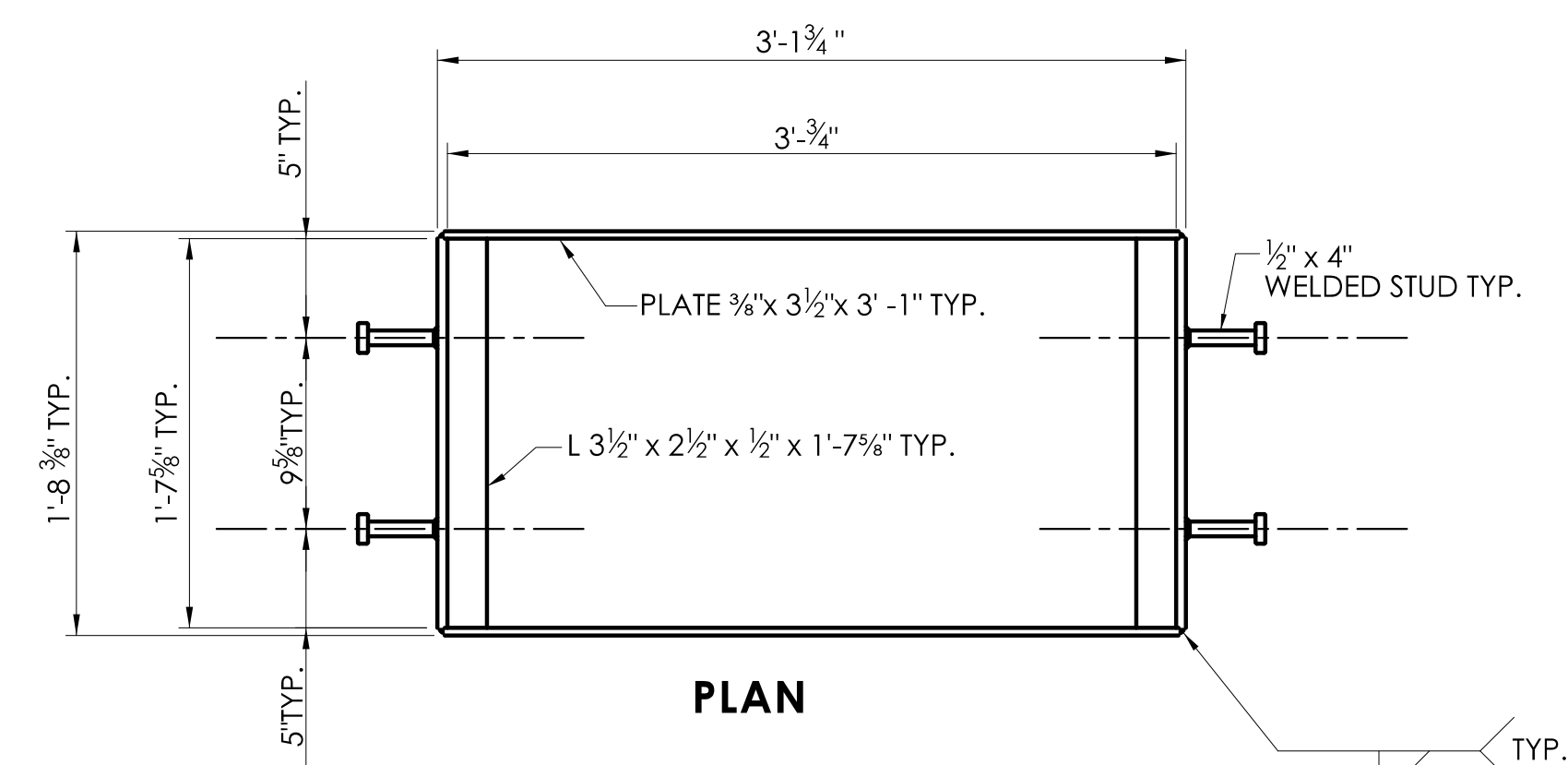
**ELEVATION- INTERIOR BEARING BAR**



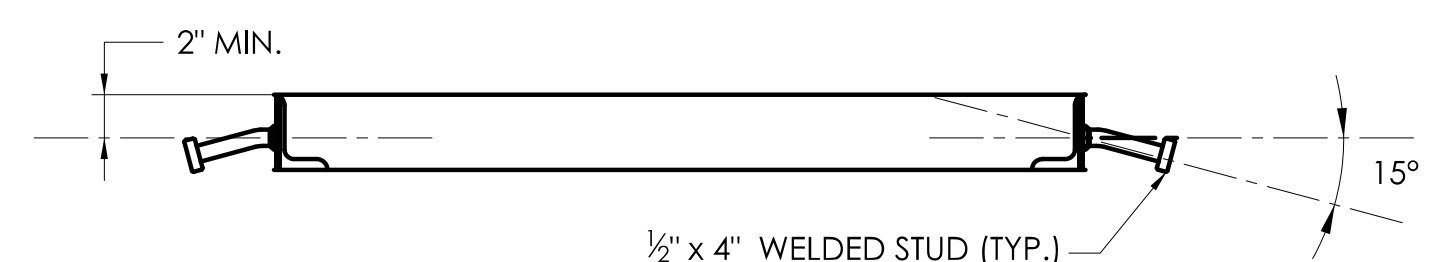
**ELEVATION- END BEARING BAR  
CATCH BASIN GRATE TYPE A**



**ELEVATION- END BEARING BAR  
CATCH BASIN GRATE TYPE B**



**PLAN**

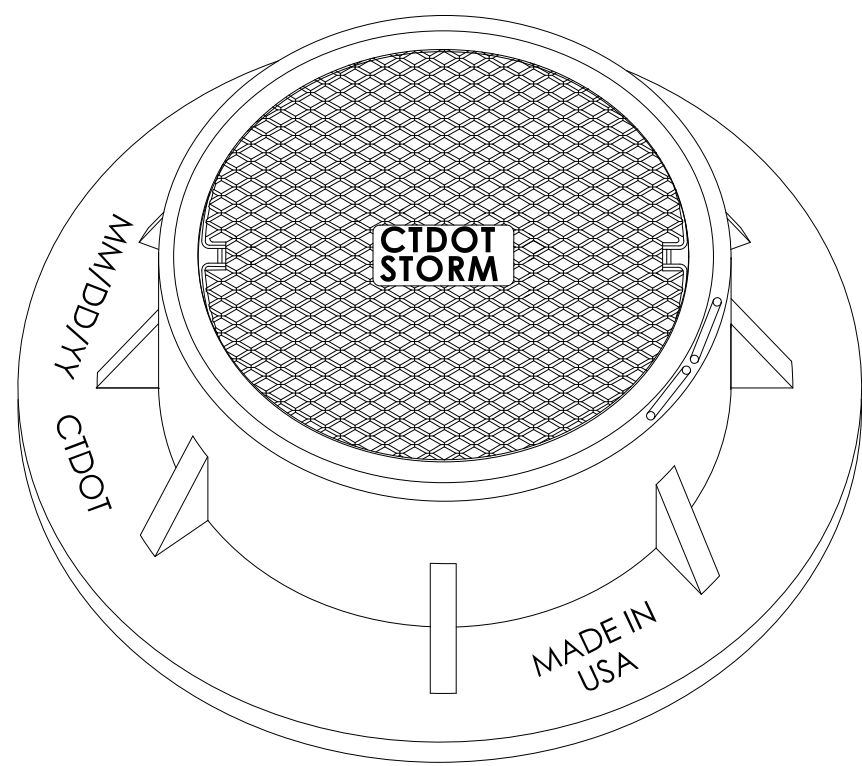


**WELDED STUD ANCHOR DETAILS  
STEEL FRAME**

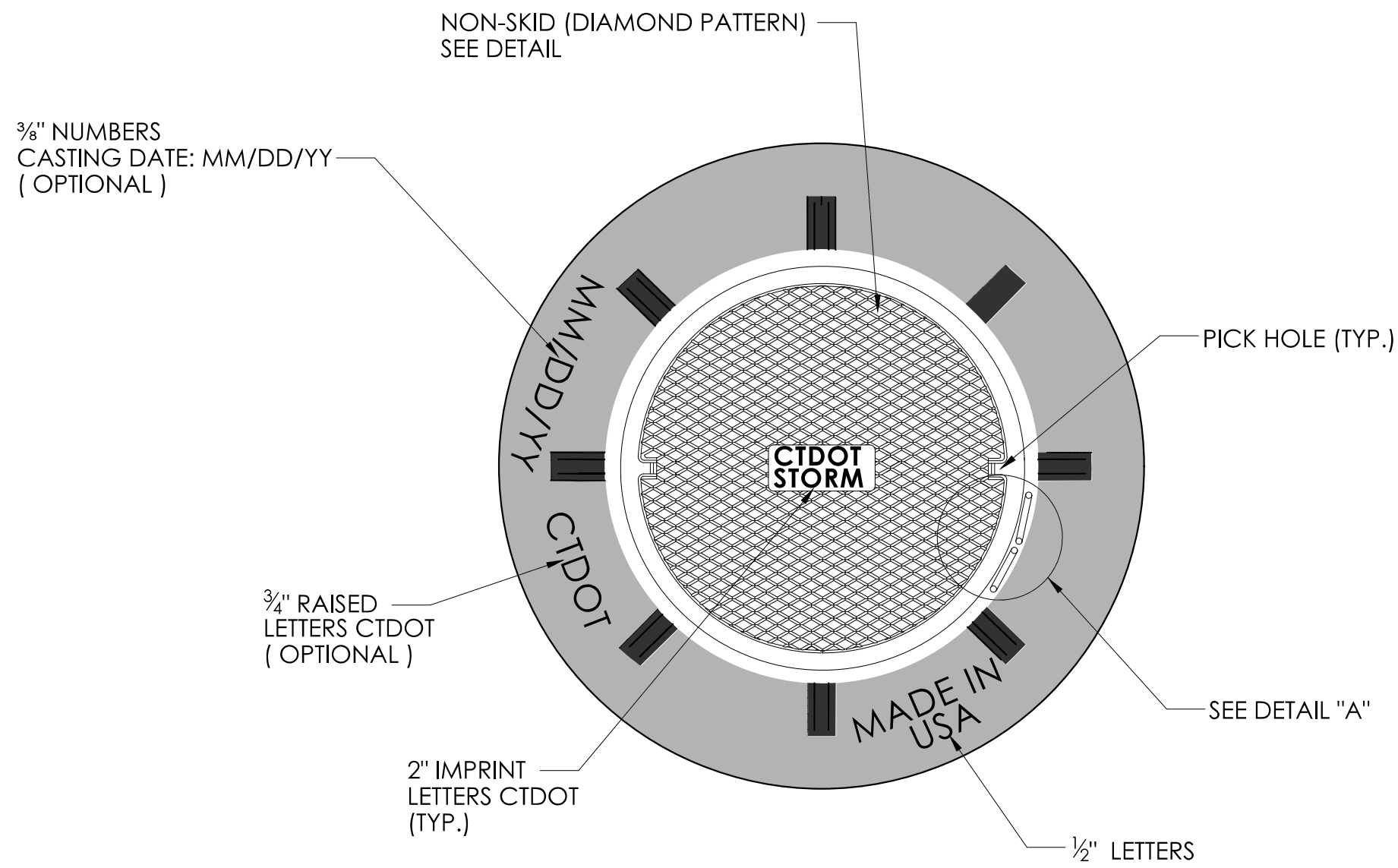


GENERAL NOTES:

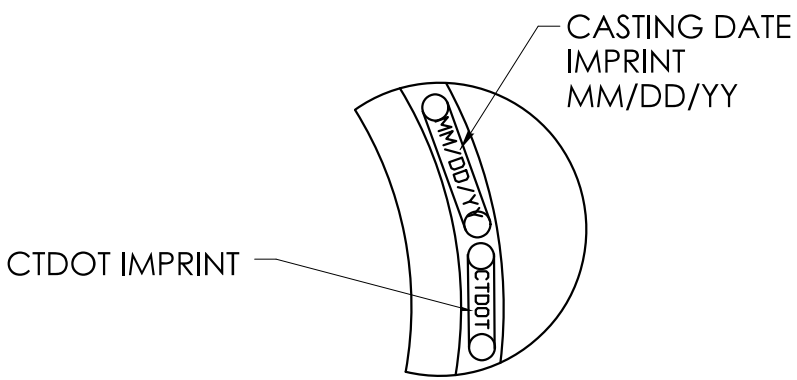
1. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
2. CASTING DATE SHALL BE INDICATED ON EACH; FRAME ( SEE DETAIL A) AND COVER (PLACED ON UNDERSIDE).



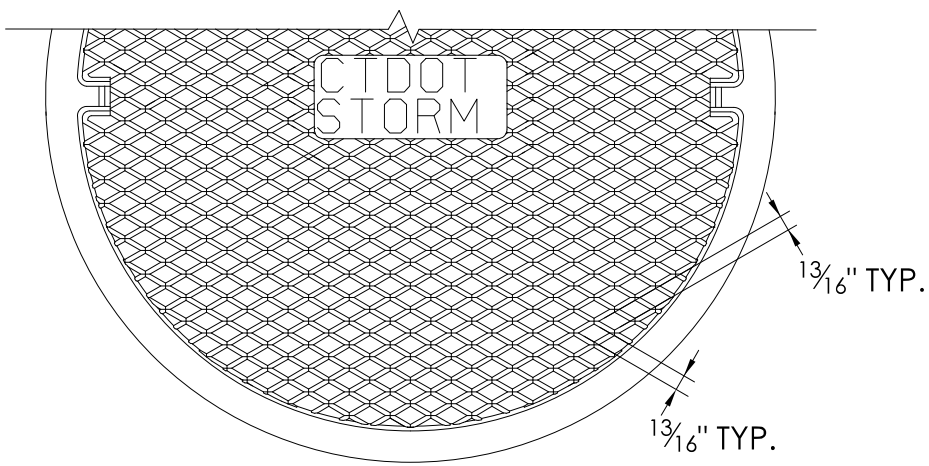
MANHOLE FRAME AND COVER



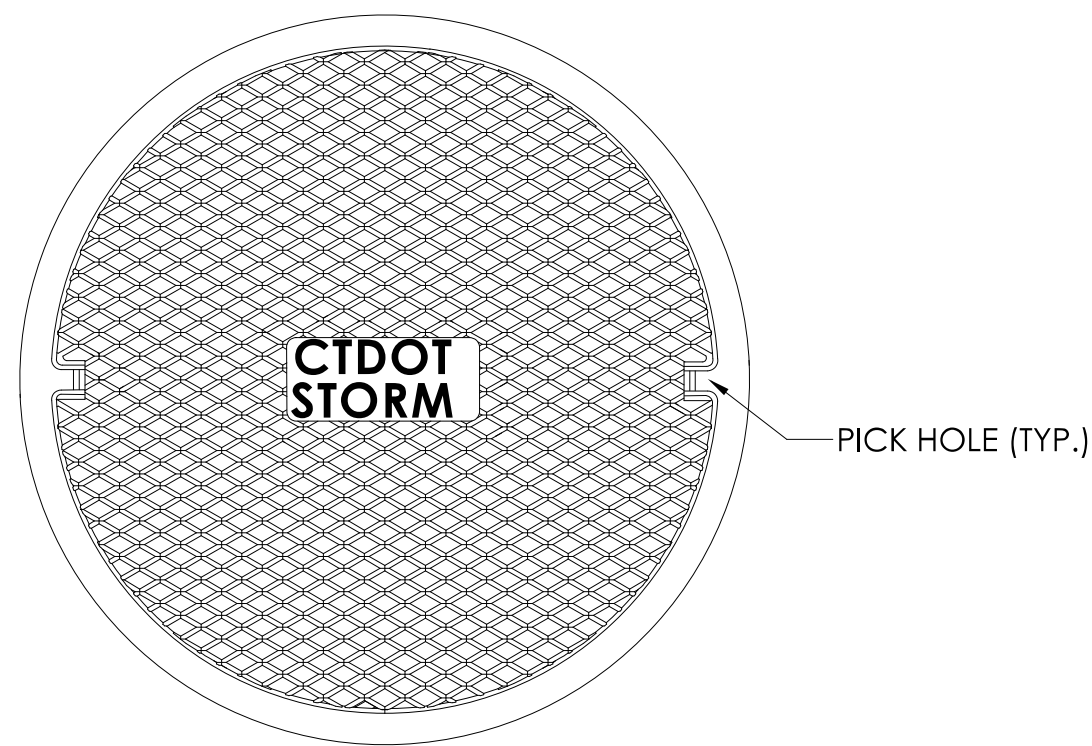
PLAN



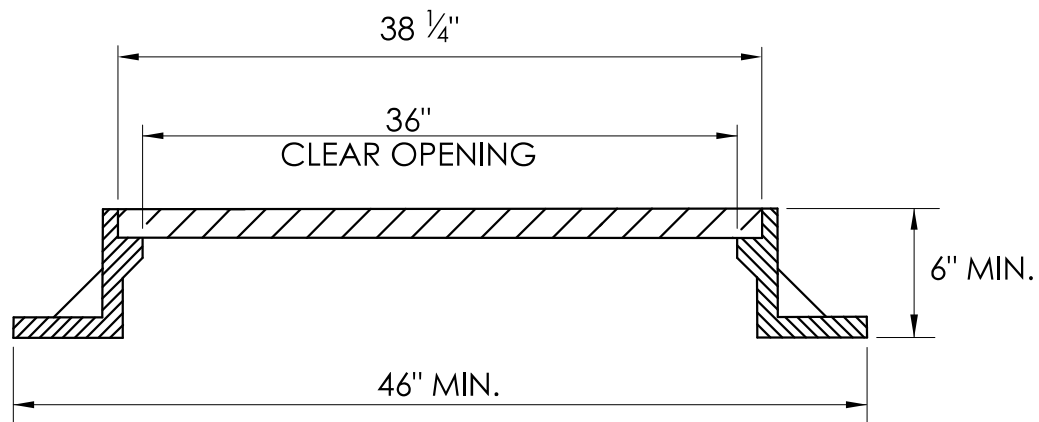
DETAIL "A"



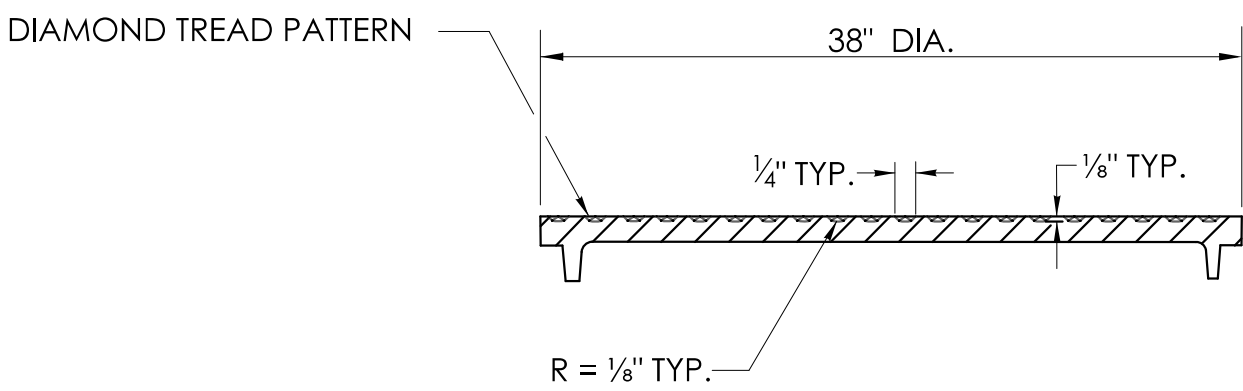
DIAMOND PATTERN PLAN



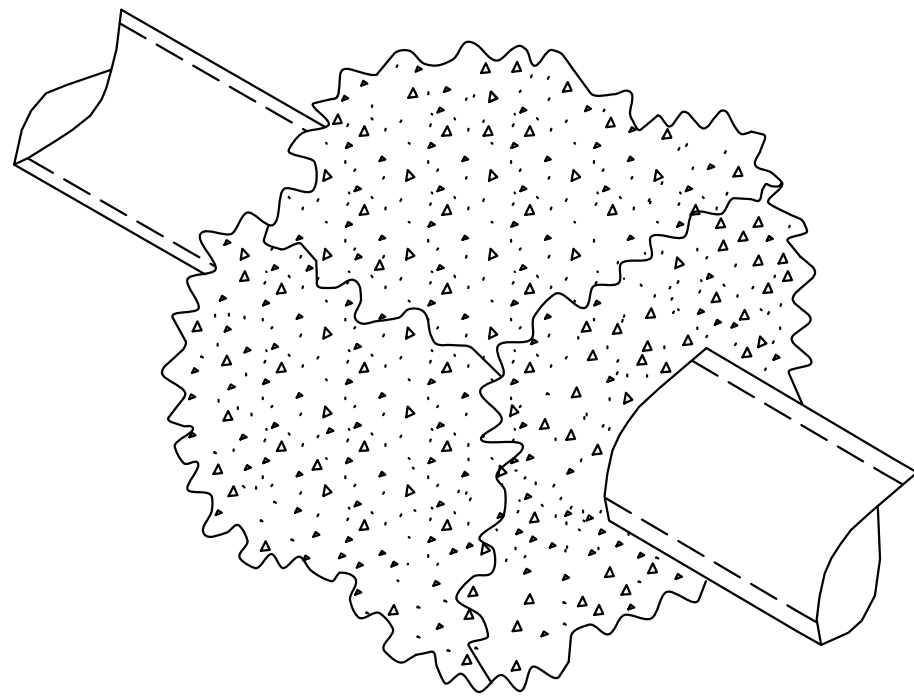
MANHOLE COVER PLAN



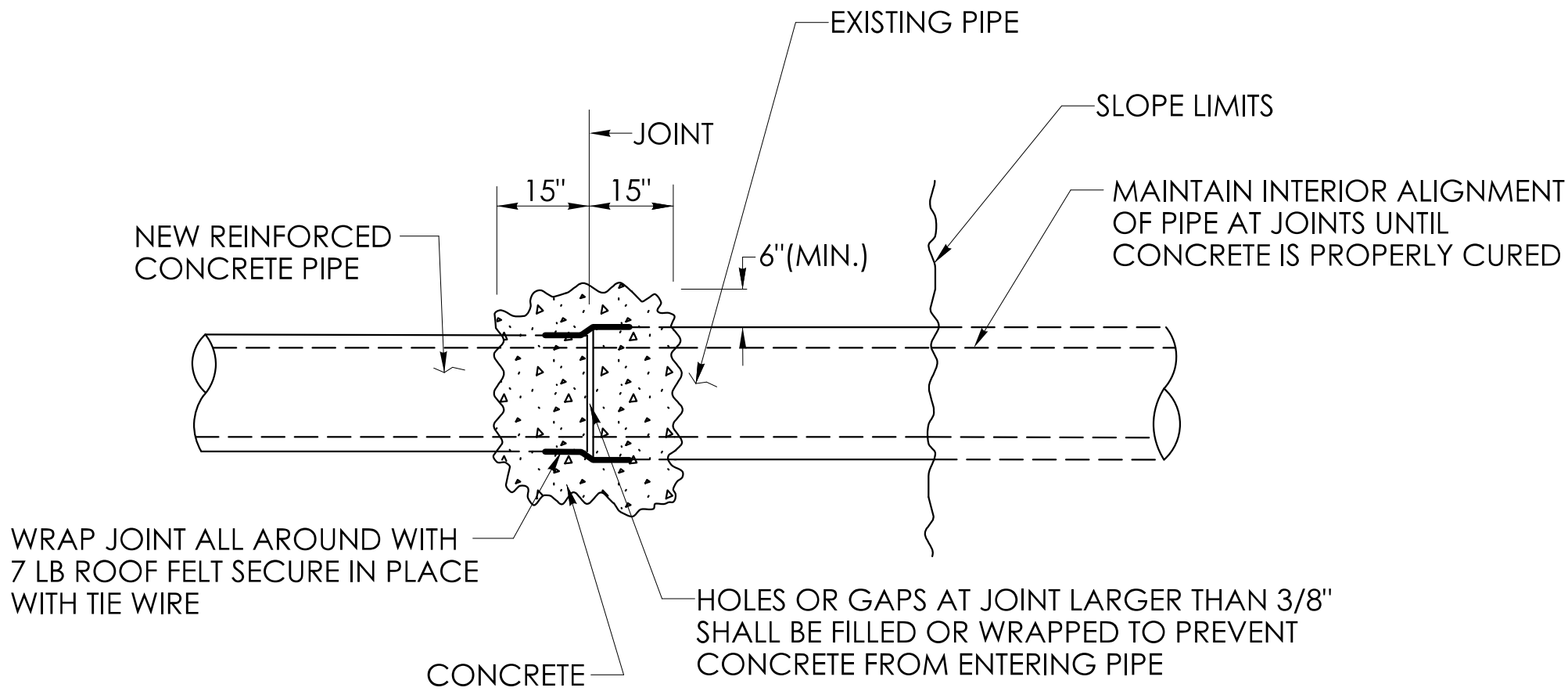
MANHOLE FRAME AND COVER



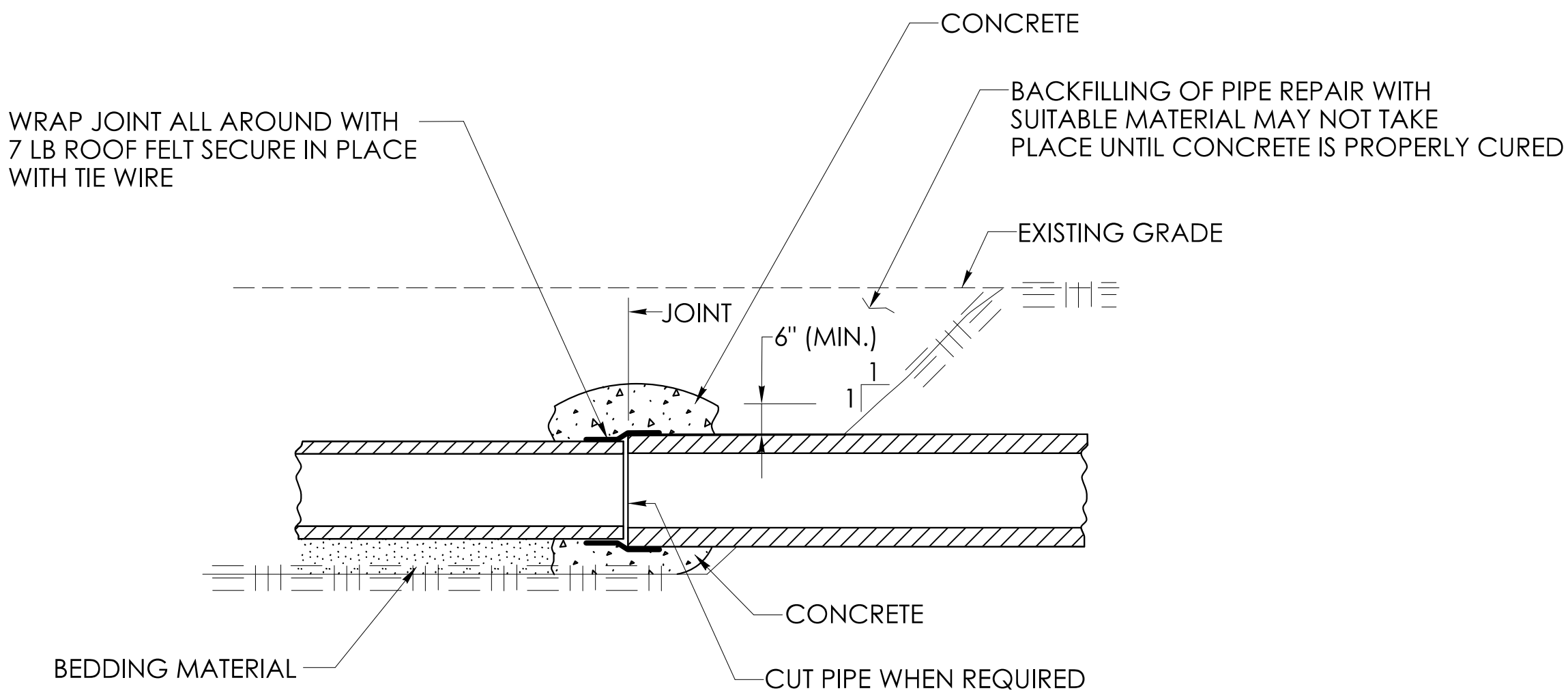
MANHOLE COVER WITH DIAMOND PATTERN



CONCRETE PIPE AT THE JOINT



PLAN

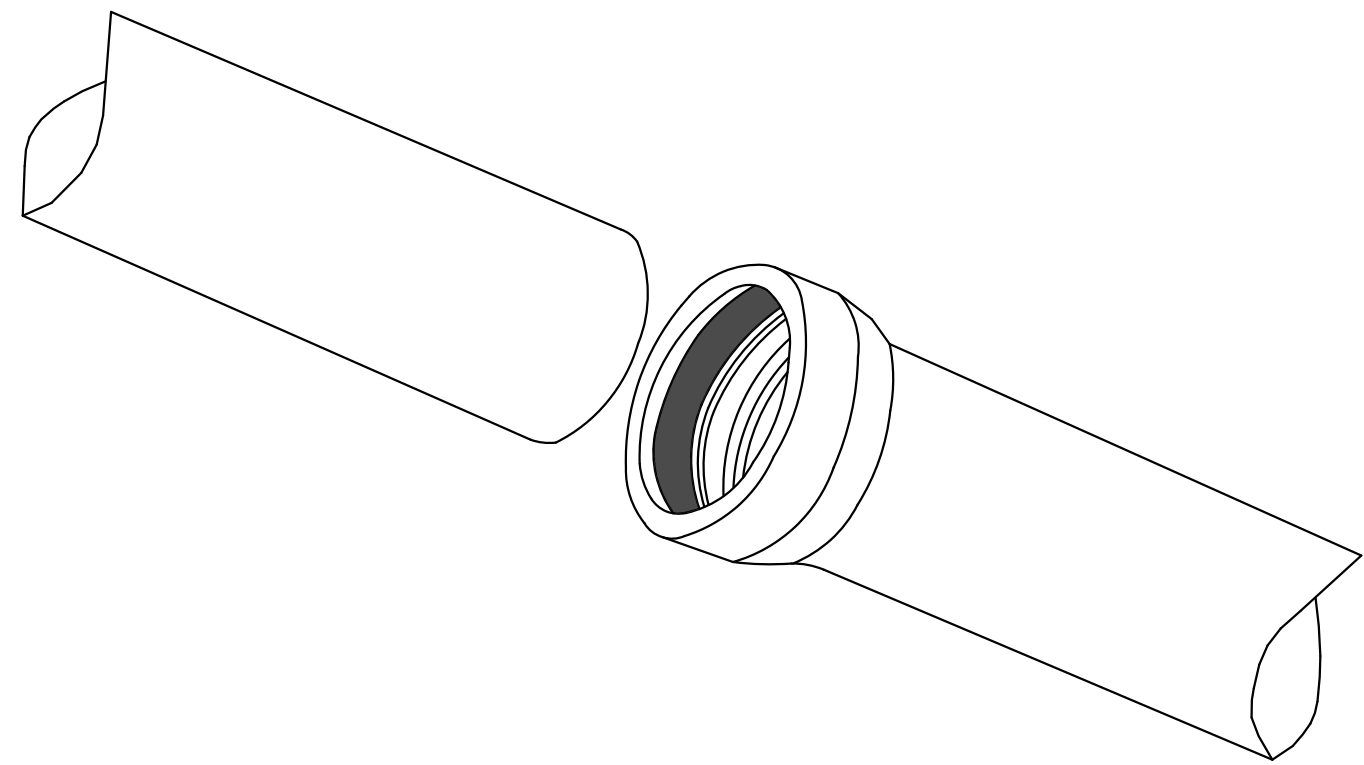


SECTION  
CONCRETE PIPE CONNECTION

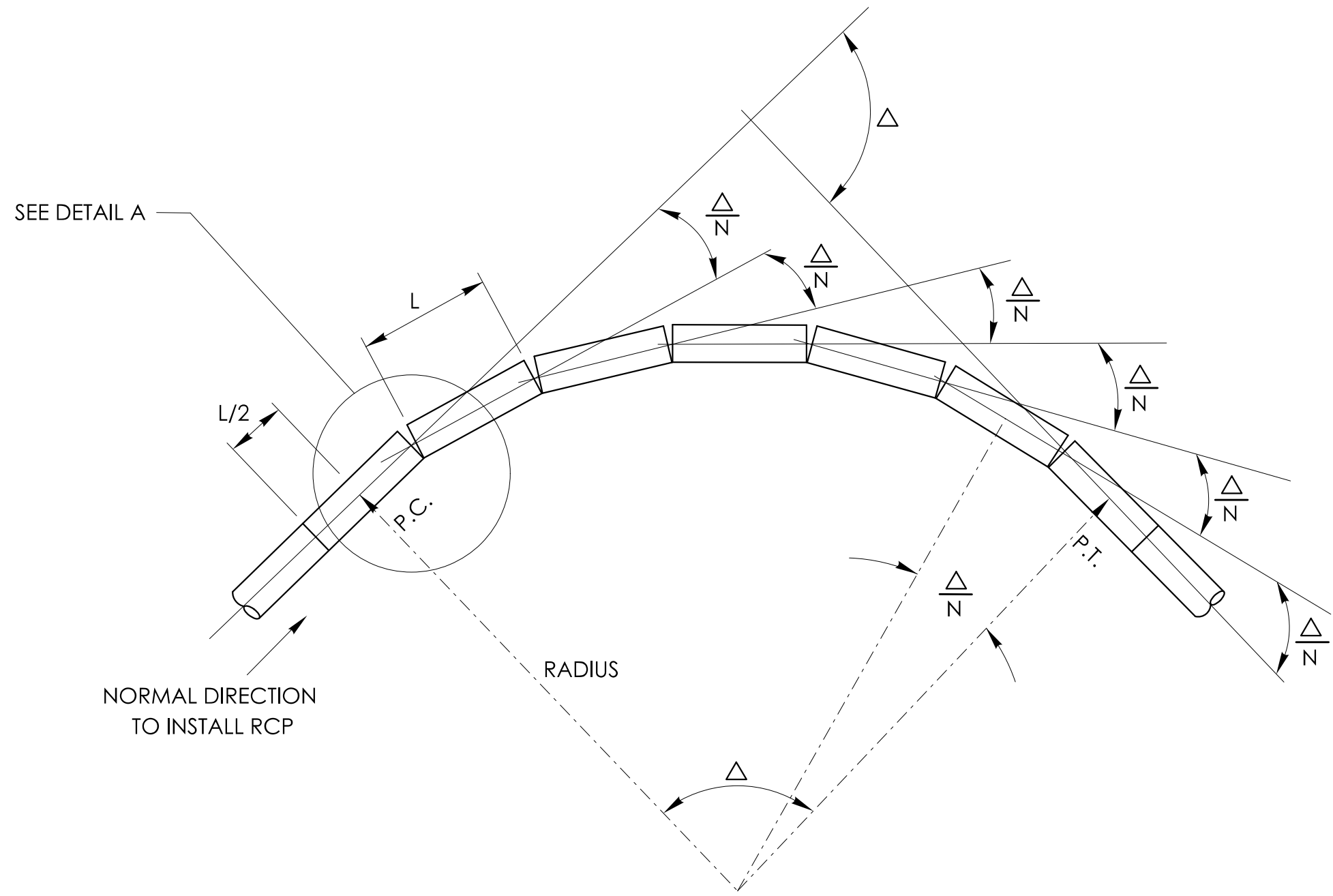
GENERAL NOTES:

1. "CONCRETE PIPE CONNECTION" IS INTENDED FOR USE WHERE A REINFORCED CONCRETE PIPE REPAIR OR MODIFICATION IS NEEDED SOMEWHERE WITHIN A PIPE RUN WHERE A BELL/SPIGOT JOINT CANNOT BE ACHIEVED.
2. MAINTAIN INTERIOR ALIGNMENT OF PIPE AT JOINTS UNTIL CONCRETE IS PROPERLY CURED.
3. BACKFILL OF PIPE REPAIR WITH SUITABLE MATERIAL MAY NOT TAKE PLACE UNTIL THE CONCRETE IS PROPERLY CURED.
4. CONTRACTOR SHALL MAINTAIN LINE AND GRADE OF PIPE REPAIR OR MODIFICATION BY METHODS APPROVED BY THE ENGINEER
5. HOLES OR GAPS AT JOINT LARGER THAN 3/8" SHALL BE FILLED OR WRAPPED TO PREVENT CONCRETE FROM ENTERING THE PIPE.

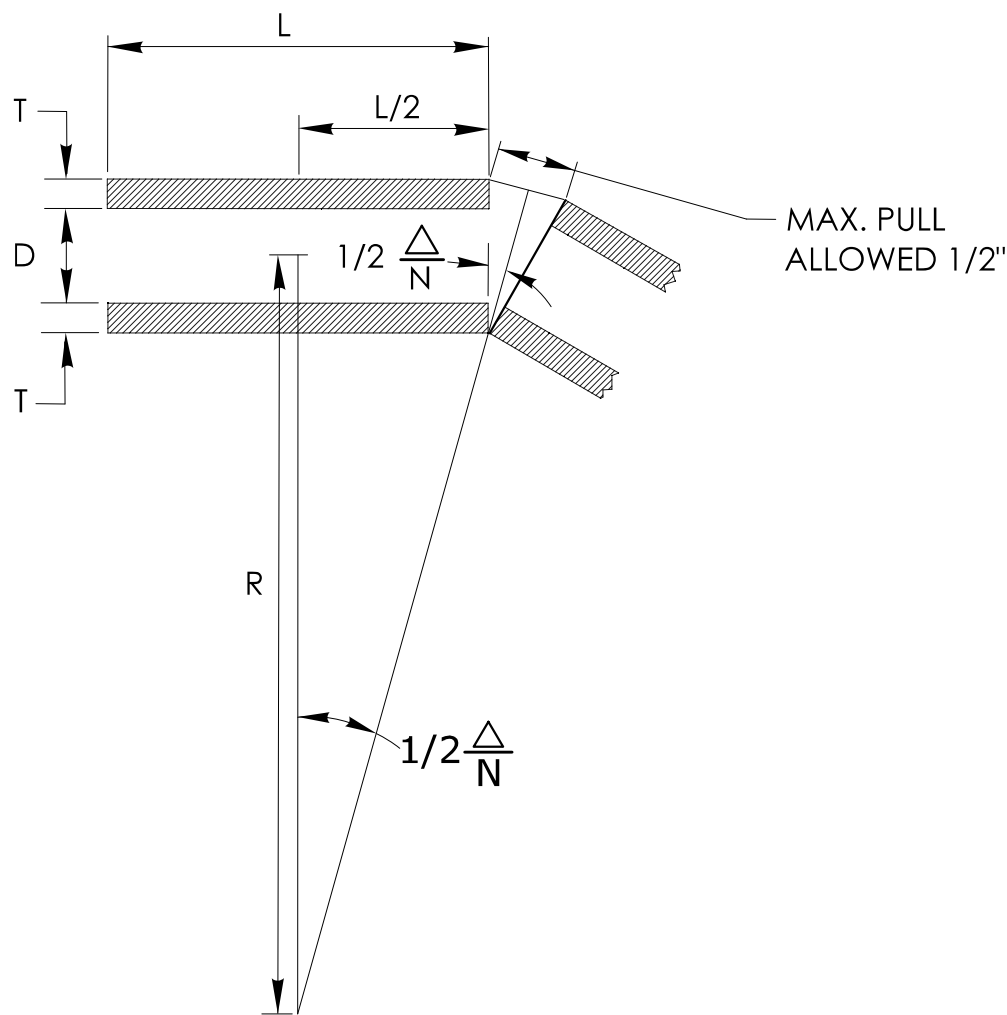




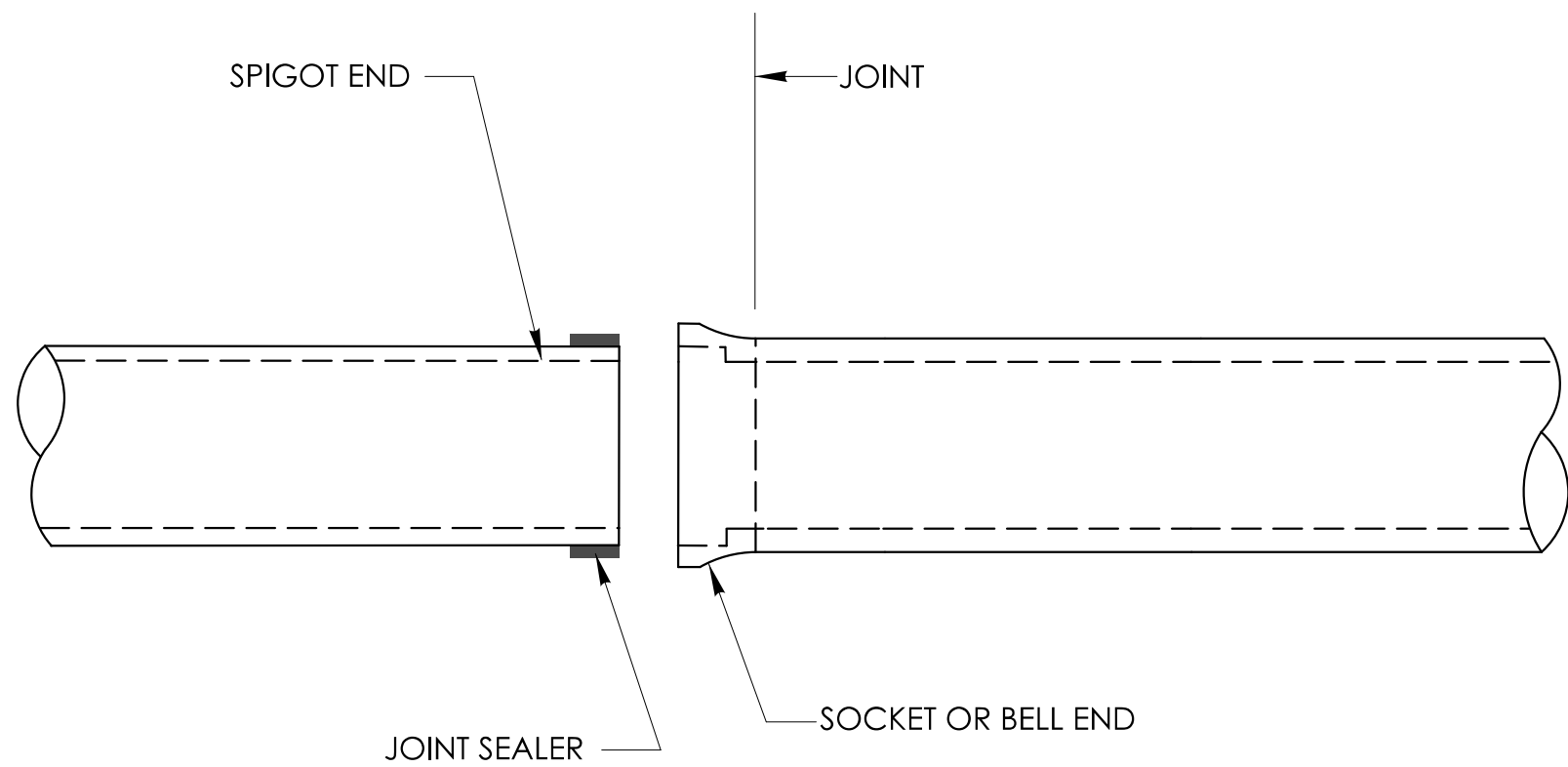
CONCRETE PIPE ASSEMBLY AT THE JOINT



CURVED ALIGNMENT USING DEFLECTED STRAIGHT PIPE FOR MAXIMUM PULL 1/2"



DETAIL A DEFLECTING STANDARD FOR RCP



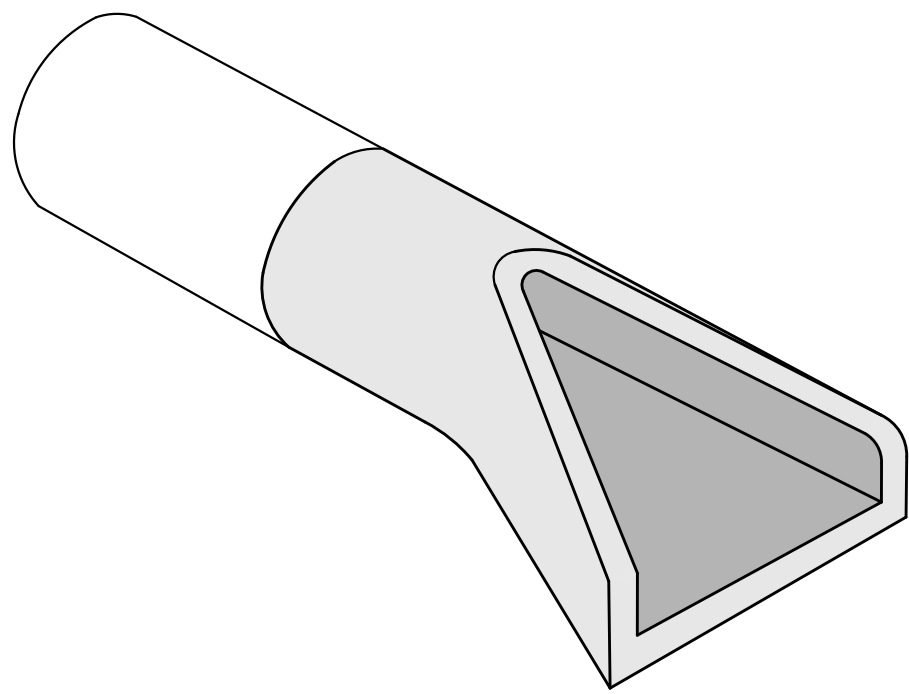
STANDARD CONNECTION FOR CONCRETE PIPE

MINIMUM RADII FOR RCP PIPE ON CURVED ALIGNMENT

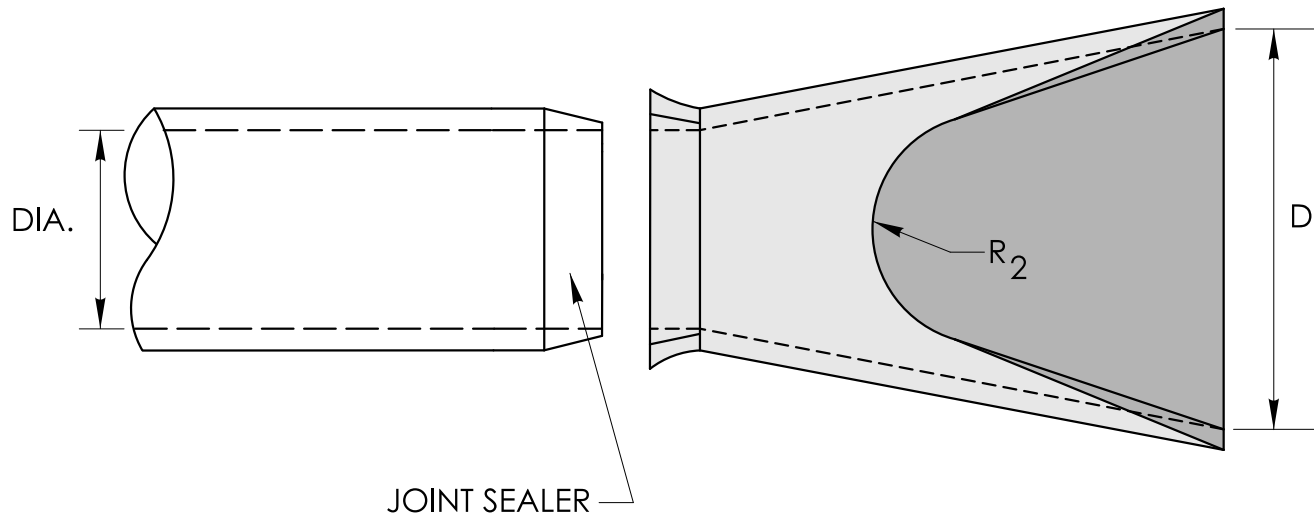
DIAMETER (D)	MINIMUM RADII USING 8' PIPE LENGTHS
IN.	FT.
15	337
18	392
21	401
24	452
30	617
36	729
42	842
48	953
54	1066
60	1178
72	1403

- NOTES:**
1. N IS THE NUMBER OF PIPE SEGMENTS
  2. D IS PIPE DIAMETER
  3. L IS LENGTH OF PIPE
  4. T IS PIPE THICKNESS
  5. Δ IS THE DEGREE OF CURVATURE

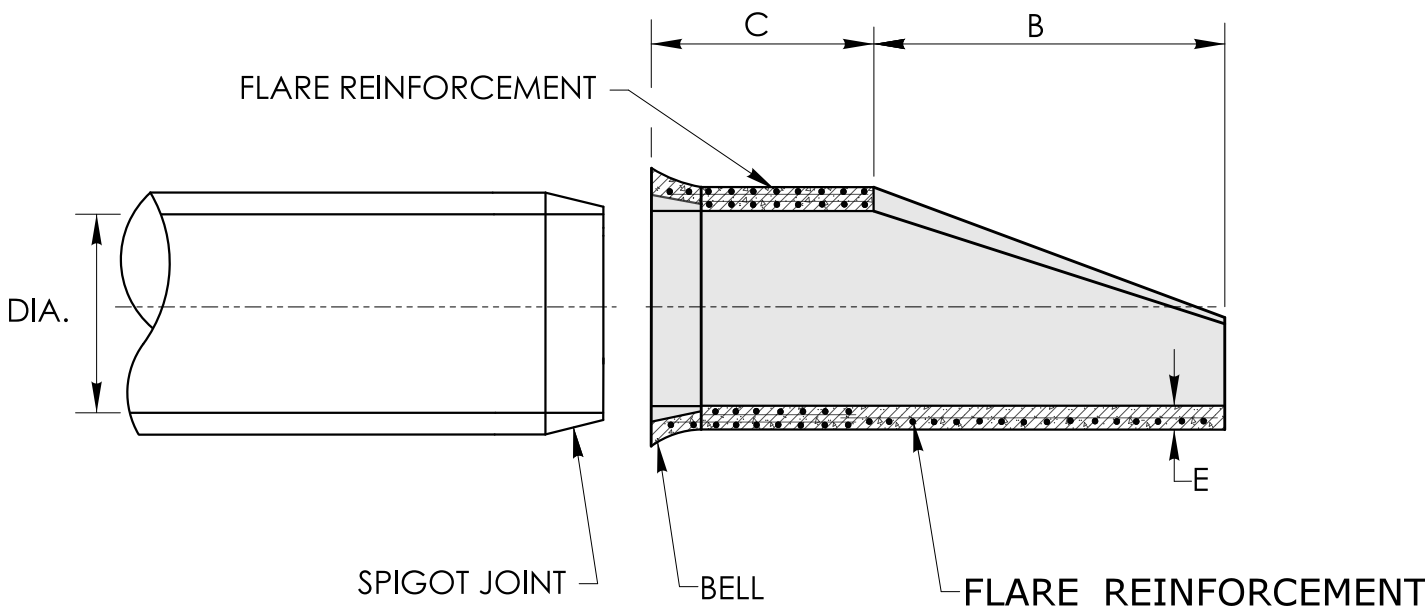




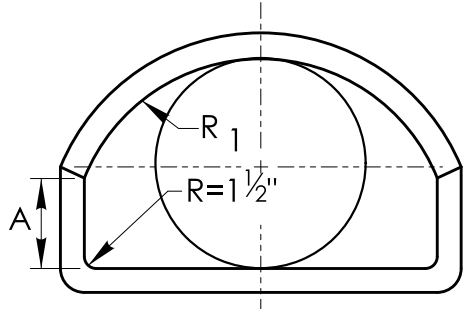
PRECAST CONCRETE PIPE END



PLAN



SECTION

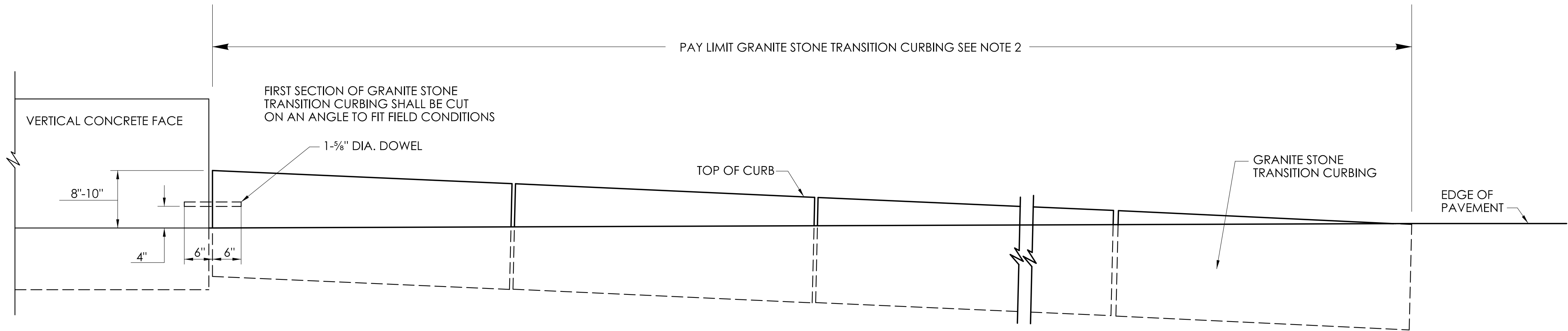


ELEVATION

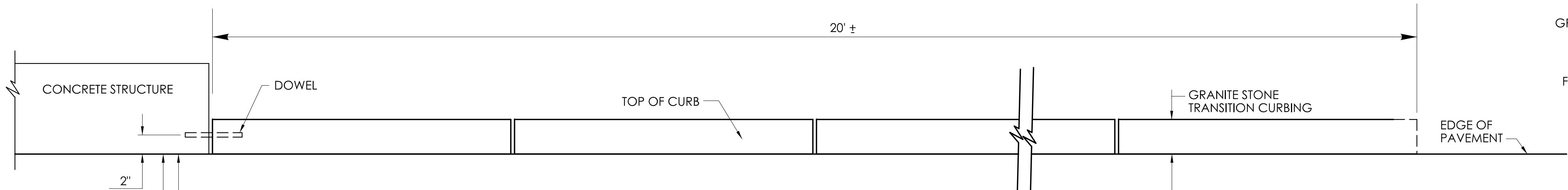
END SECTION FOR REINFORCED CONCRETE PIPE END								FLARE REINFORCEMENT ONE LAYER ONLY IN CENTER OF WALL	
PIPE DIAMETER INCHES	A INCHES	B INCHES	C INCHES	D INCHES	E INCHES	R <sub>1</sub> INCHES	R <sub>2</sub> INCHES	MIN. AREA OF LONGITUDINAL STEEL SQ. IN PER FT.	MIN. AREA OF TRANSVERSE STEEL STEEL SQ. IN PER FT.
12	4	24	48 <sup>7</sup> / <sub>8</sub>	24	3	10 <sup>1</sup> / <sub>4</sub>	9	0.048	0.048
15	6	27	46	30	3	12 <sup>1</sup> / <sub>2</sub>	11	0.054	0.054
18	9	27	46	36	3	15 <sup>1</sup> / <sub>2</sub>	12	0.060	0.060
24	9 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	30	48	3	16 <sup>3</sup> / <sub>8</sub>	14	0.072	0.072
30	12	54	19 <sup>3</sup> / <sub>4</sub>	60	3 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	15	0.084	0.084
36	15	63	34 <sup>3</sup> / <sub>4</sub>	72	4	24 <sup>3</sup> / <sub>8</sub>	20	0.096	0.096
42	21	63	35	78	4 <sup>1</sup> / <sub>2</sub>	27 <sup>1</sup> / <sub>2</sub>	22	0.108	0.108
48	24	72	26	84	5	28 <sup>1</sup> / <sub>2</sub>	22	0.120	0.120
54	27	65	35	90	5 <sup>1</sup> / <sub>2</sub>	33 <sup>1</sup> / <sub>8</sub>	24	0.132	0.132
60	30	60	39	96	6	36 <sup>1</sup> / <sub>8</sub>	24	0.144	0.144

GENERAL NOTES:

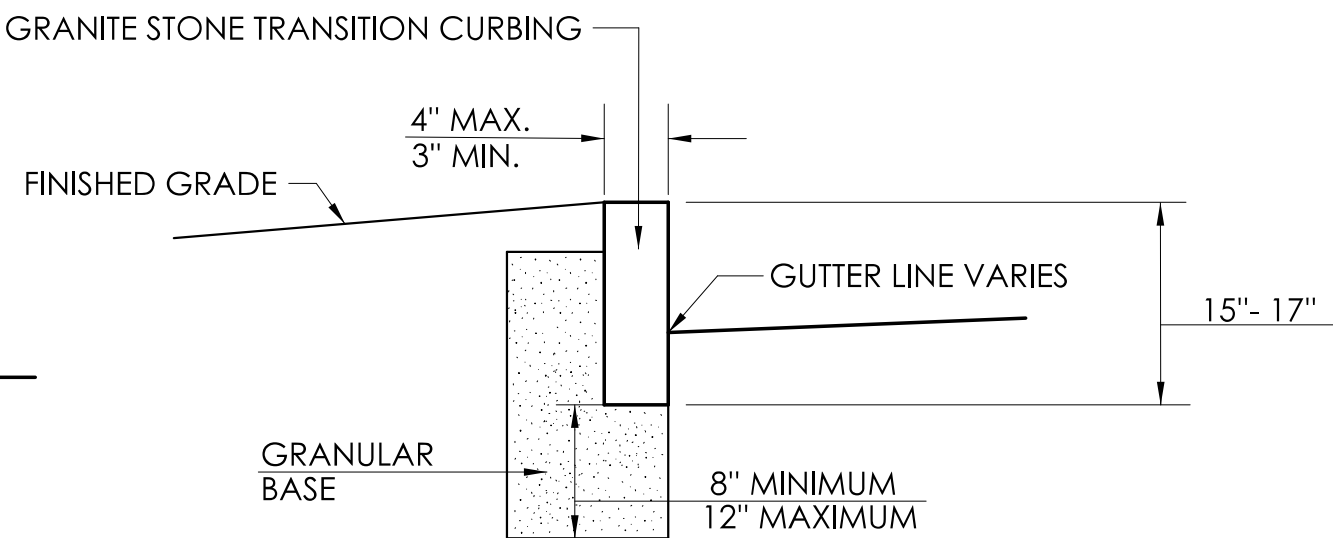
- 1. GRANITE STONE TRANSITION CURBING (INCLUDING DOWEL) WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR "GRANITE STONE TRANSITION CURBING".
- 2. FOR NEW R-B 350 GUIDERAIL TRANSITIONS, ADJUSTMENT OF EXISTING CURBING HEIGHT TO A 4" REVEAL AT THE BRIDGE PARAPET WILL BE REQUIRED. IT MAY BE PAID FOR, WHEN NOTED ON THE PLANS, UNDER THE ITEM "RESET CURBING".
- 3. NEW INSTALLATIONS OF THIS CURBING SHALL ONLY BE ALLOWED ON THE MERRITT PARKWAY.
- 4. GRANITE STONE TRANSITION CURBING SHALL BE INSTALLED TO MATCH THE SLOPE OF SLOPED GRANITE STONE CURBING ON THE BRIDGE. ALL SECTIONS OF THE TRANSITION CURBING SHALL BE 2'-0" LONG.



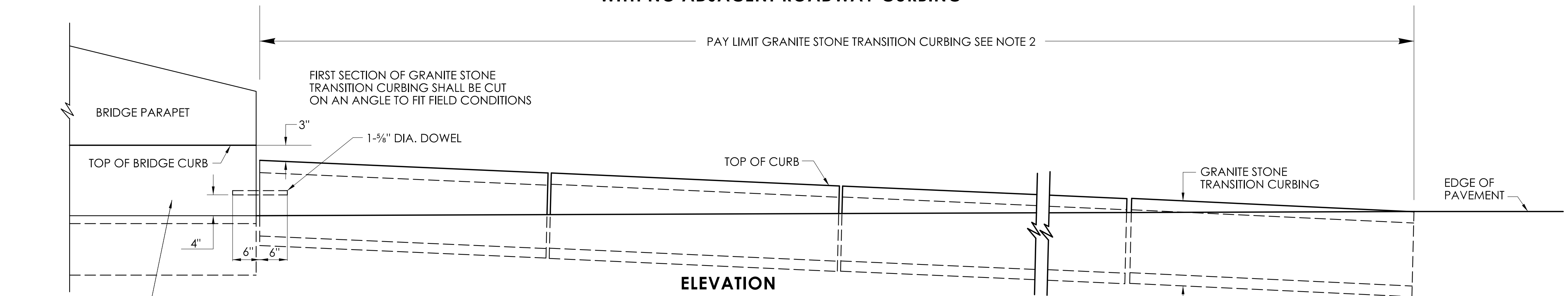
ELEVATION



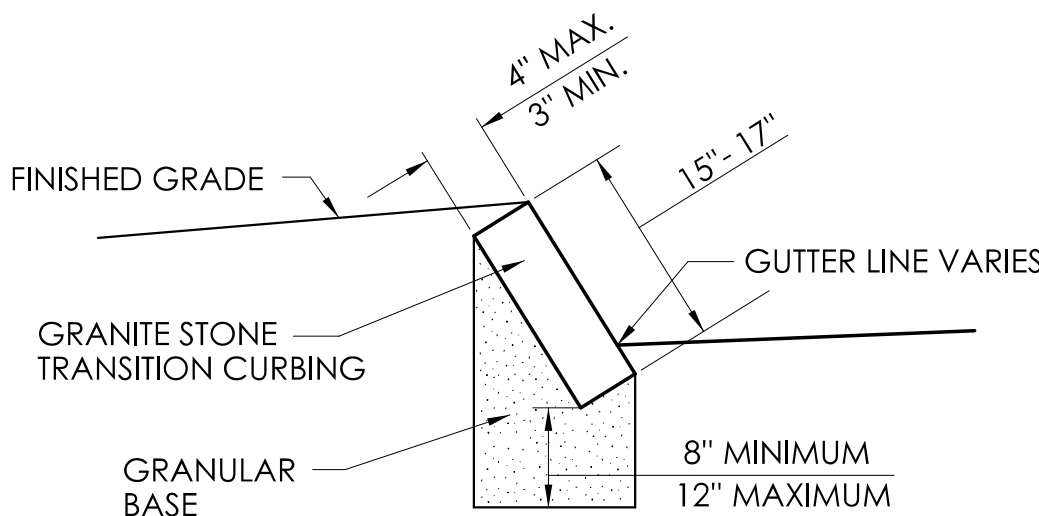
PLAN  
DETAIL SHOWING INSTALLATION OF  
GRANITE STONE TRANSITION CURBING  
ADJACENT TO VERTICAL CONCRETE BARRIER OR  
VERTICAL FACE CONCRET BRIDGE BUILD-OUT  
WITH NO ADJACENT ROADWAY CURBING



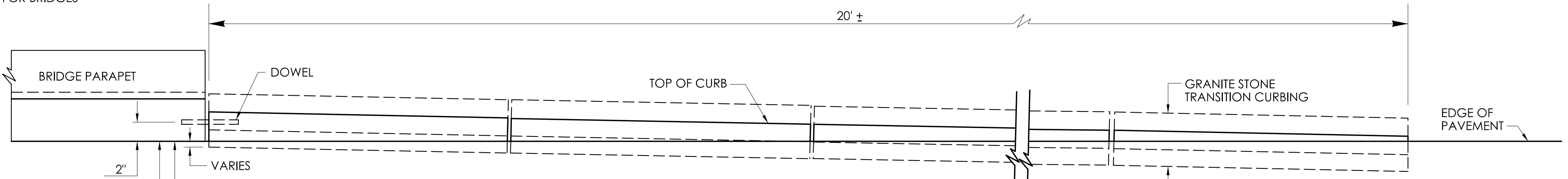
TYPICAL SECTION SHOWING  
INSTALLATION OF  
GRANITE STONE TRANSITION CURBING  
AT VERTICAL FACE



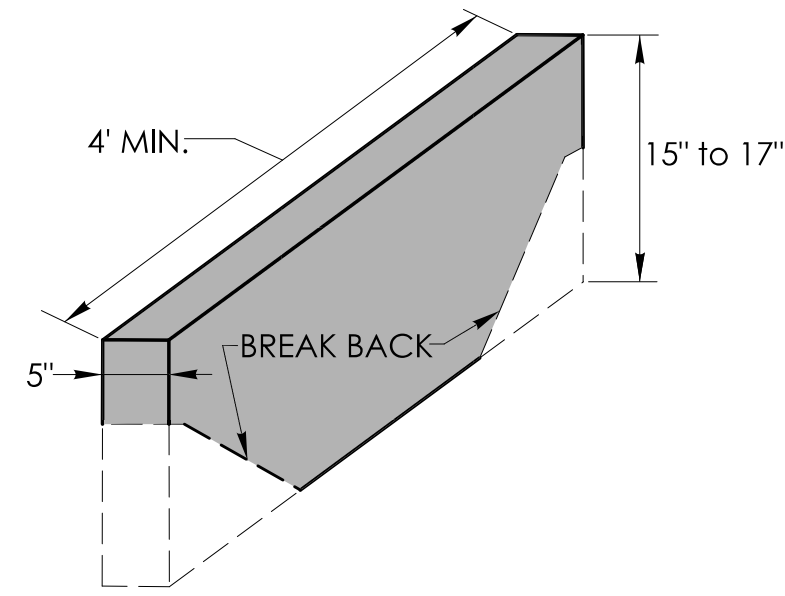
ELEVATION



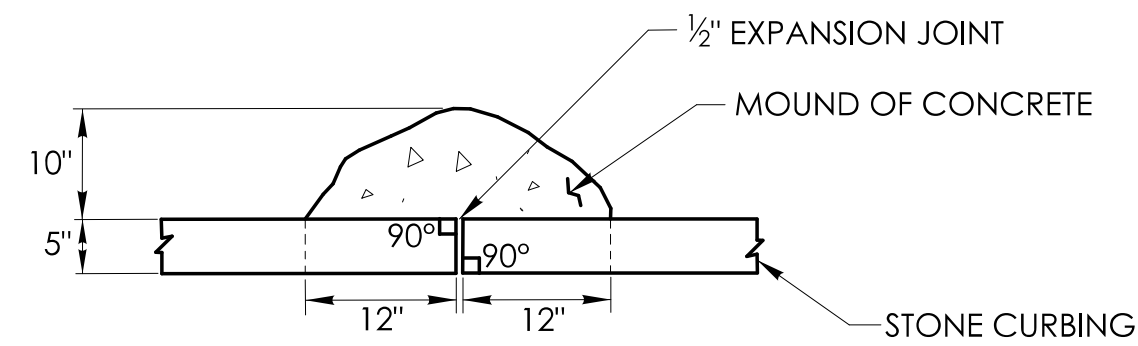
TYPICAL SECTION SHOWING  
INSTALLATION OF  
GRANITE STONE TRANSITION CURBING  
AT SLOPED GRANITE BRIDGE CURBING



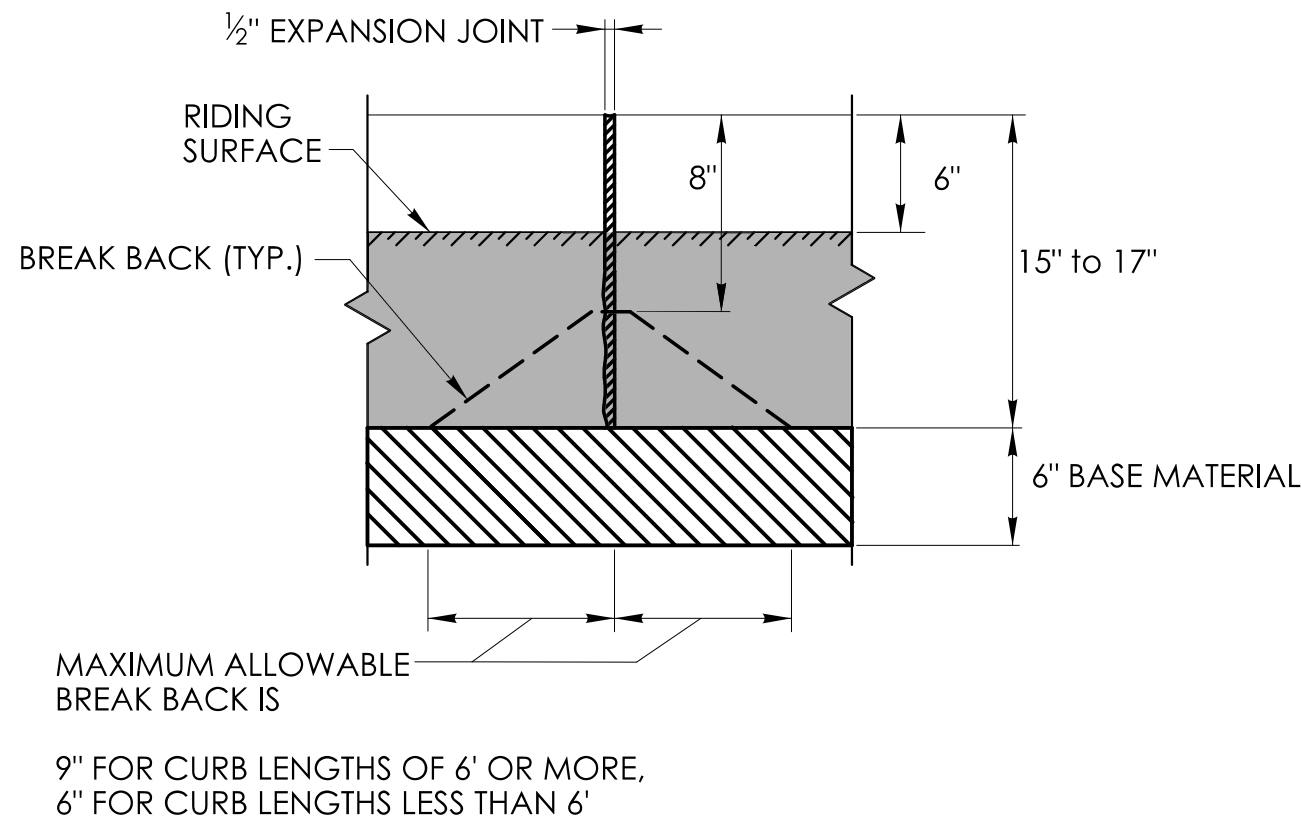
PLAN  
DETAIL SHOWING INSTALLATION OF  
GRANITE STONE TRANSITION CURBING  
ADJACENT TO BRIDGE CURBING WITH  
NO ADJACENT ROADWAY CURBING



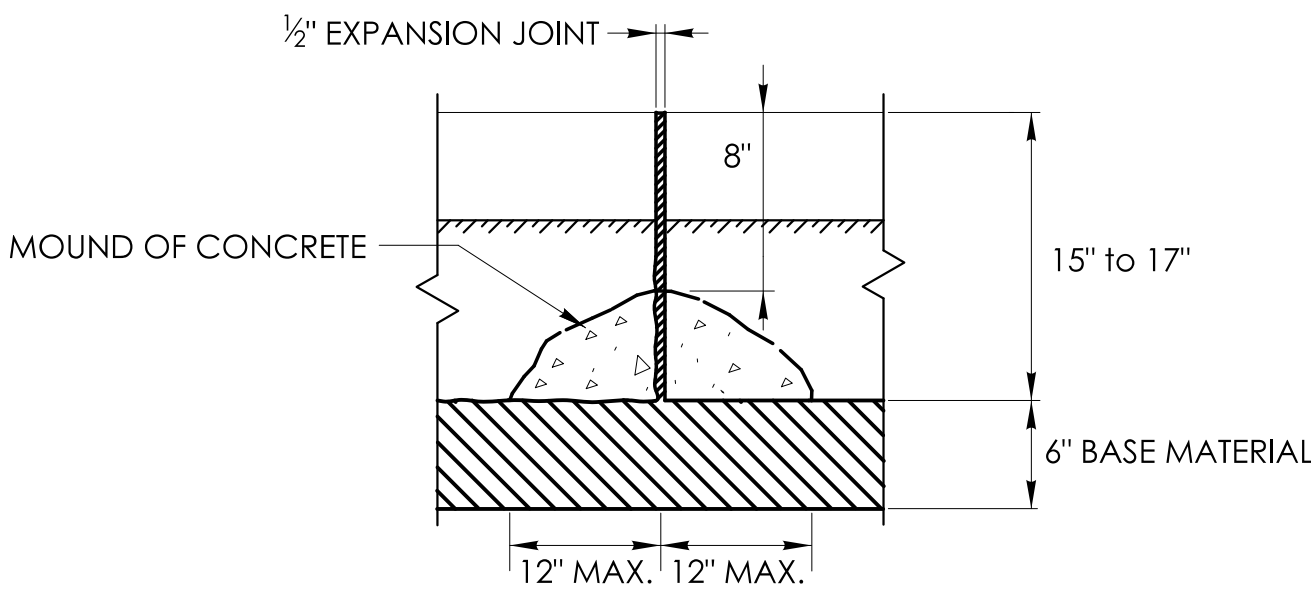
STONE CURBING



PLAN

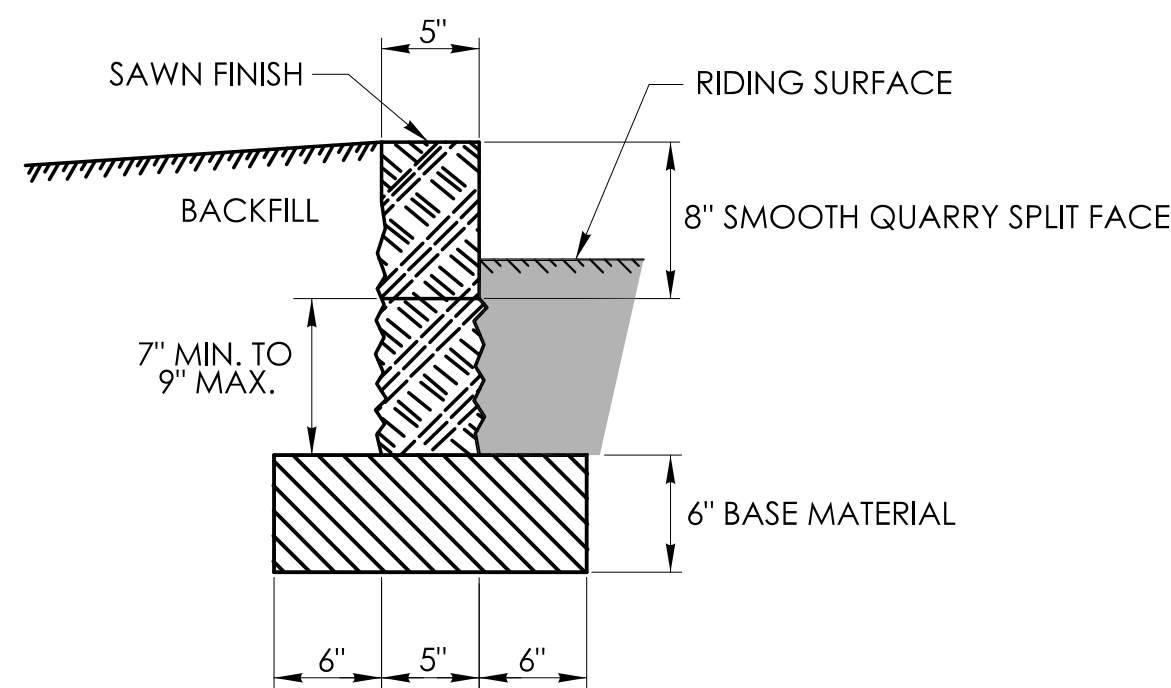


FRONT  
ELEVATION



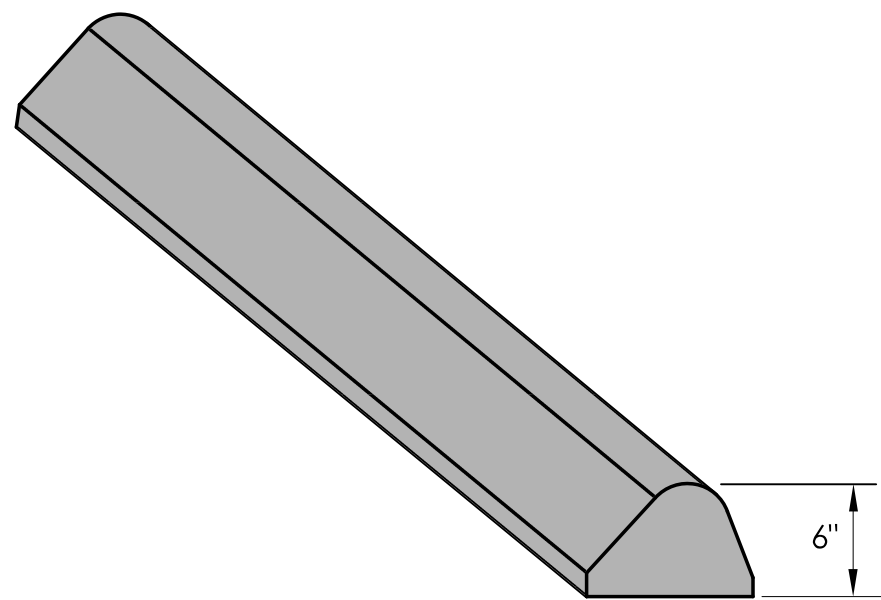
BACK  
ELEVATION

MOUND OF CONCRETE AT ALL JOINTS  
FOR STONE CURBING

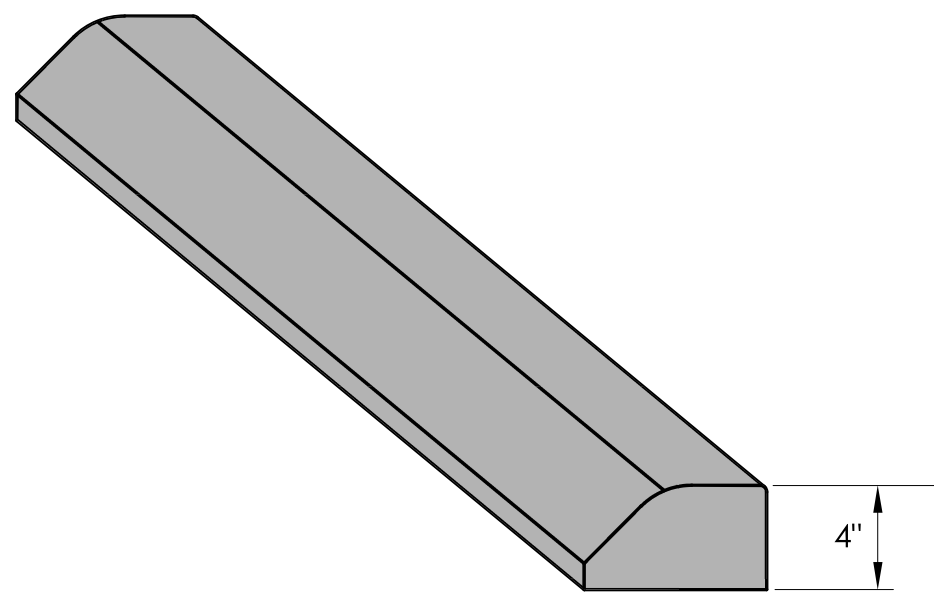


SECTION

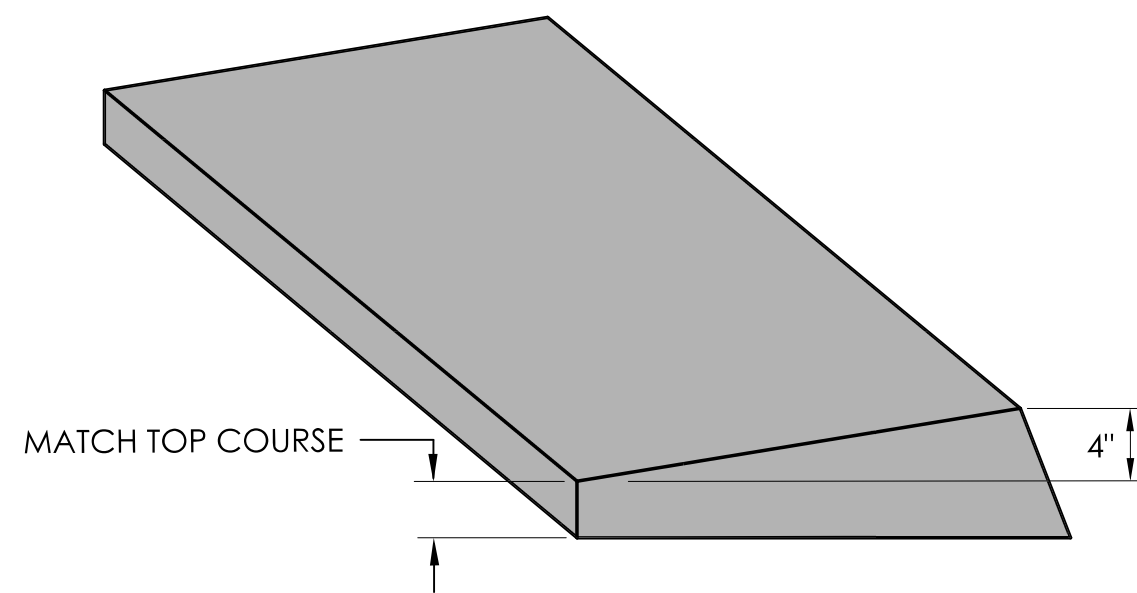




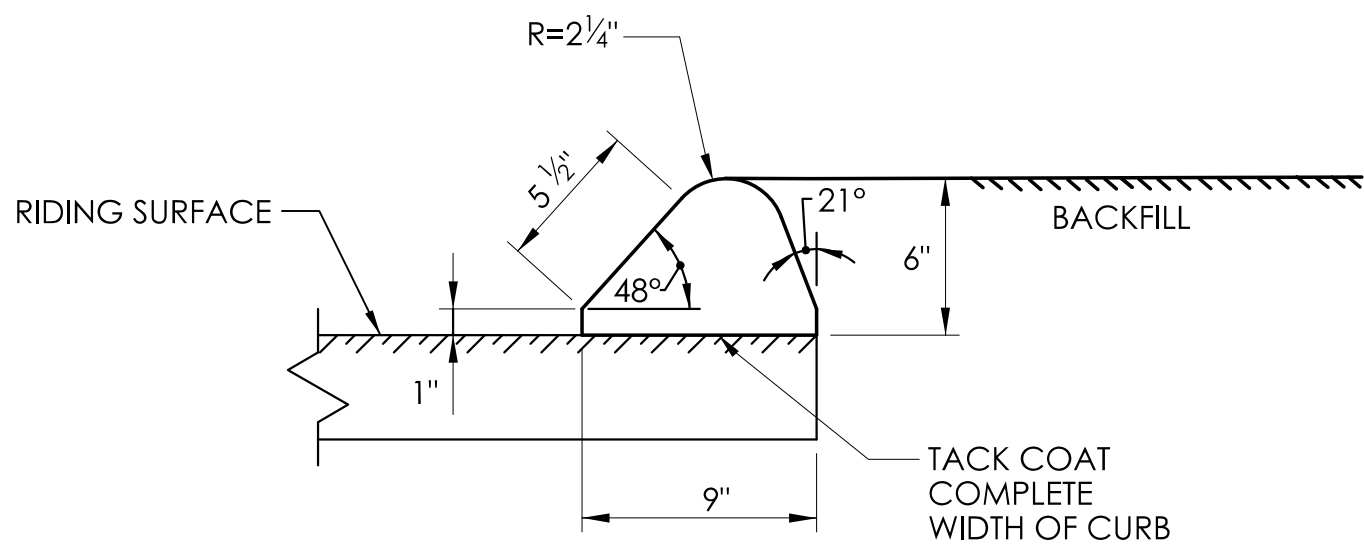
BITUMINOUS CONCRETE LIP CURBING  
(6" HIGH)



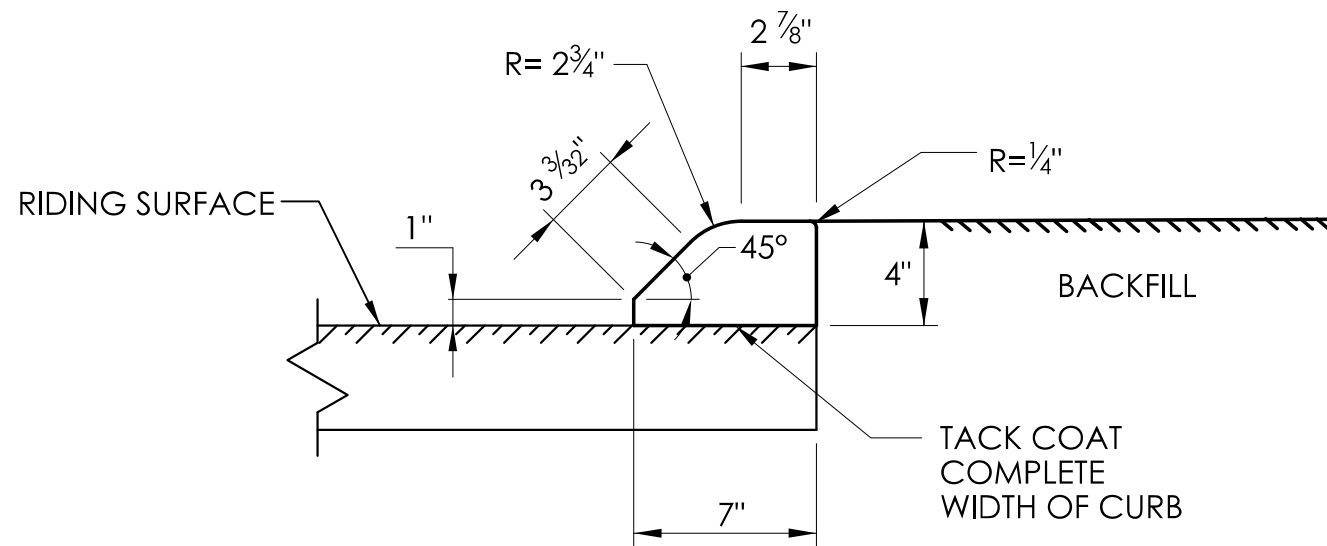
BITUMINOUS CONCRETE PARK CURBING  
(4" HIGH)



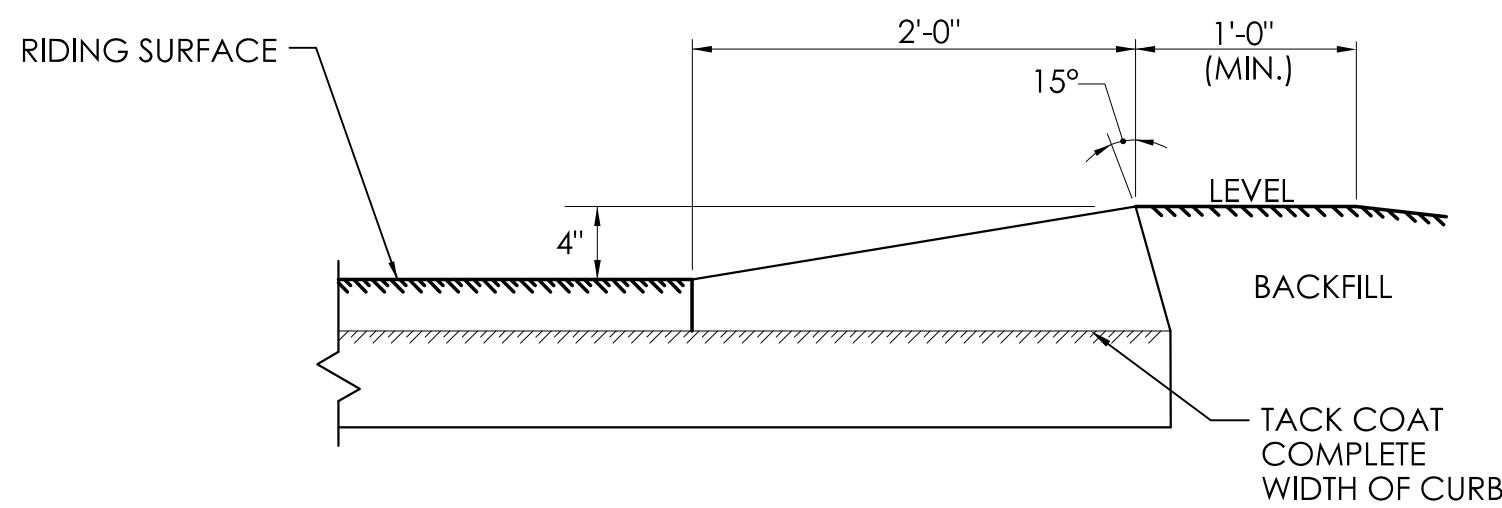
BITUMINOUS CONCRETE BERM CURBING  
(4" HIGH)



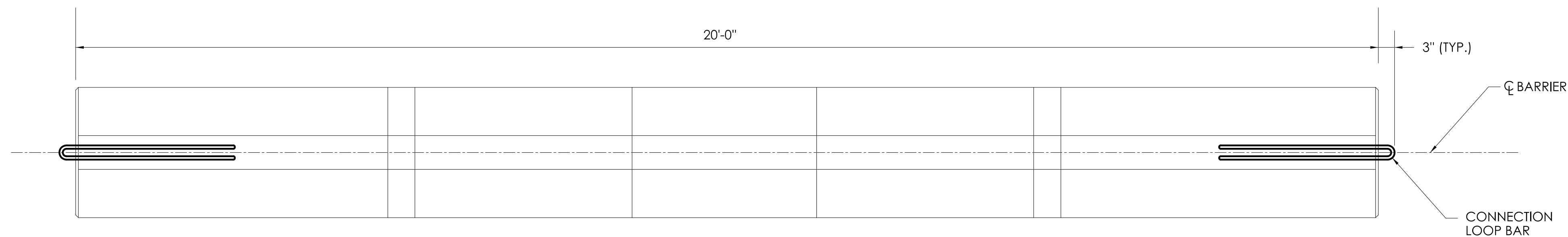
SECTION



SECTION

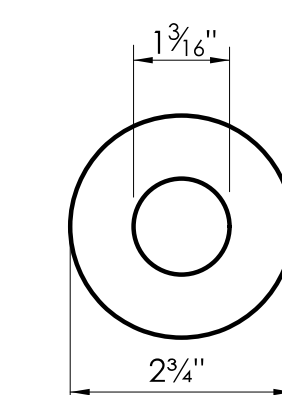
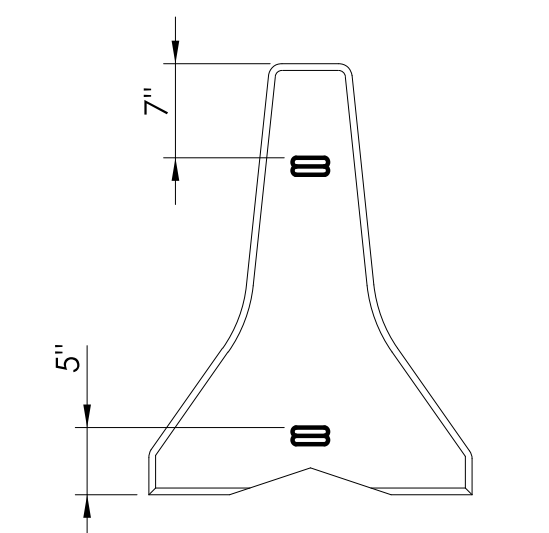
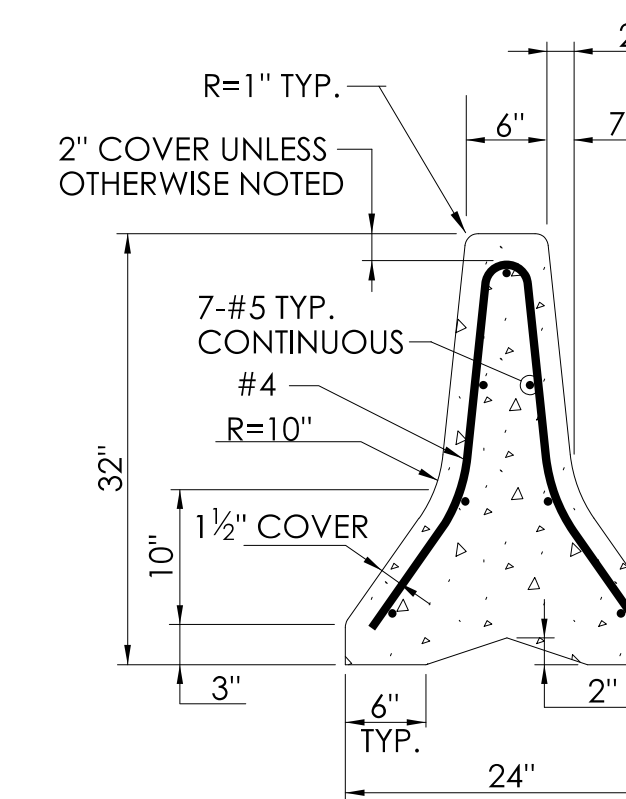
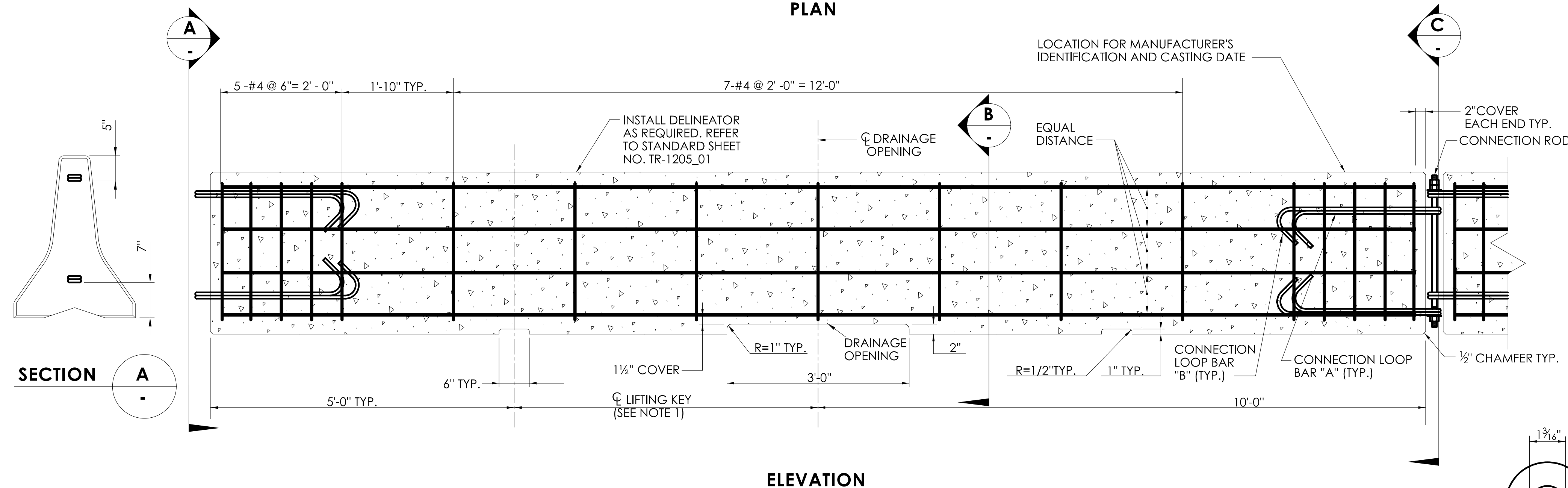


SECTION

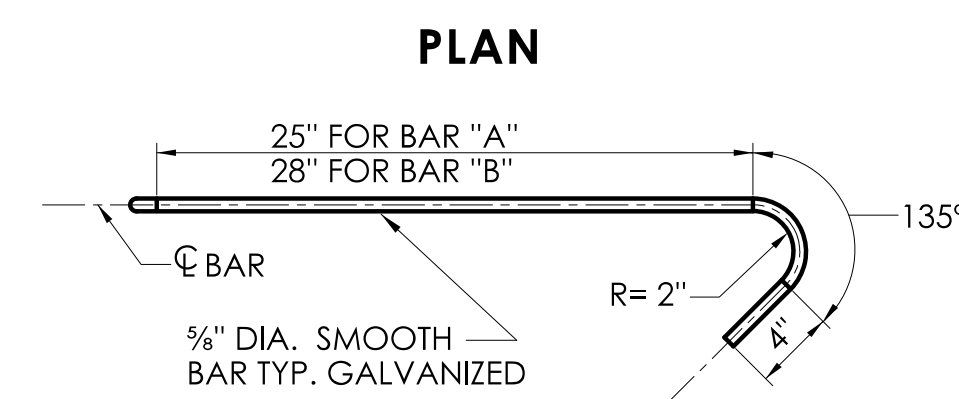
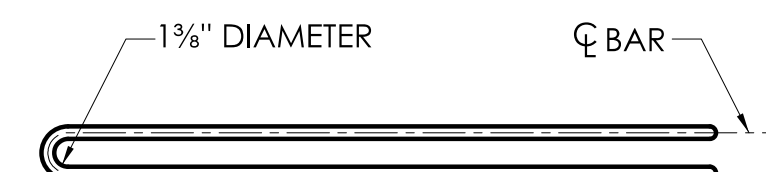


### GENERAL NOTES:

1. ALTERNATE DESIGNS FOR LIFTING KEYS, HOLES OR OTHER HANDLING DEVICES MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. EXPECTED PERMANENT DYNAMIC DEFLECTION IS 3'-6" BASED ON TL-3 CRASH TESTS WITH 240' OF TPCBC.



### WASHER DETAIL



### CONNECTION LOOP BAR

BAR "A" = 6'-0" TOTAL  
BAR "B" = 6'-6" TOTAL

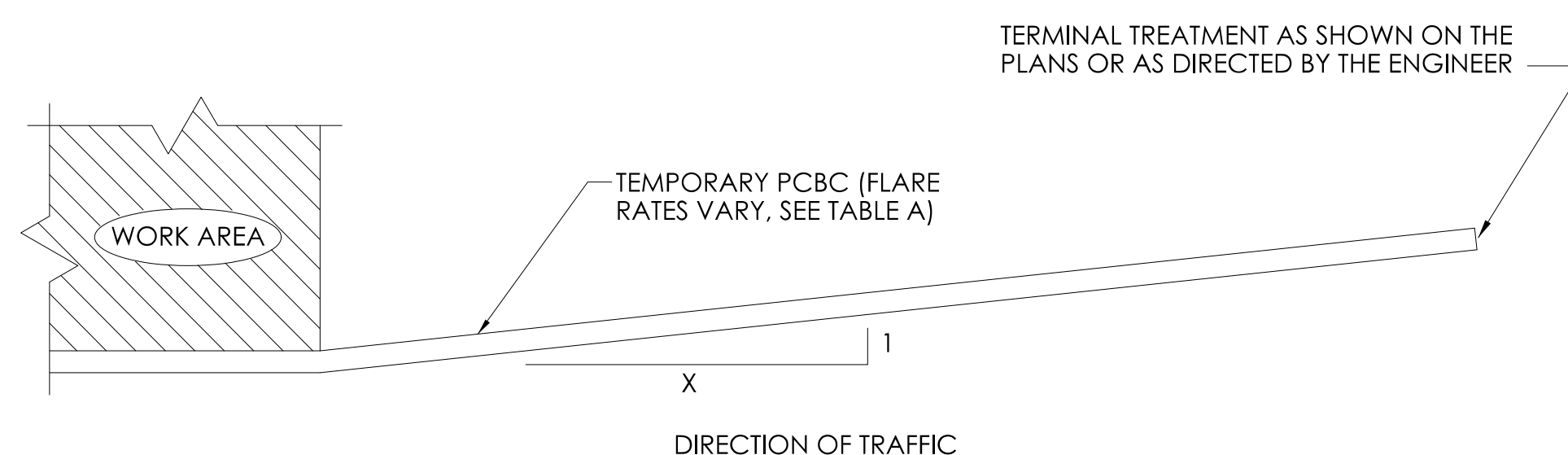
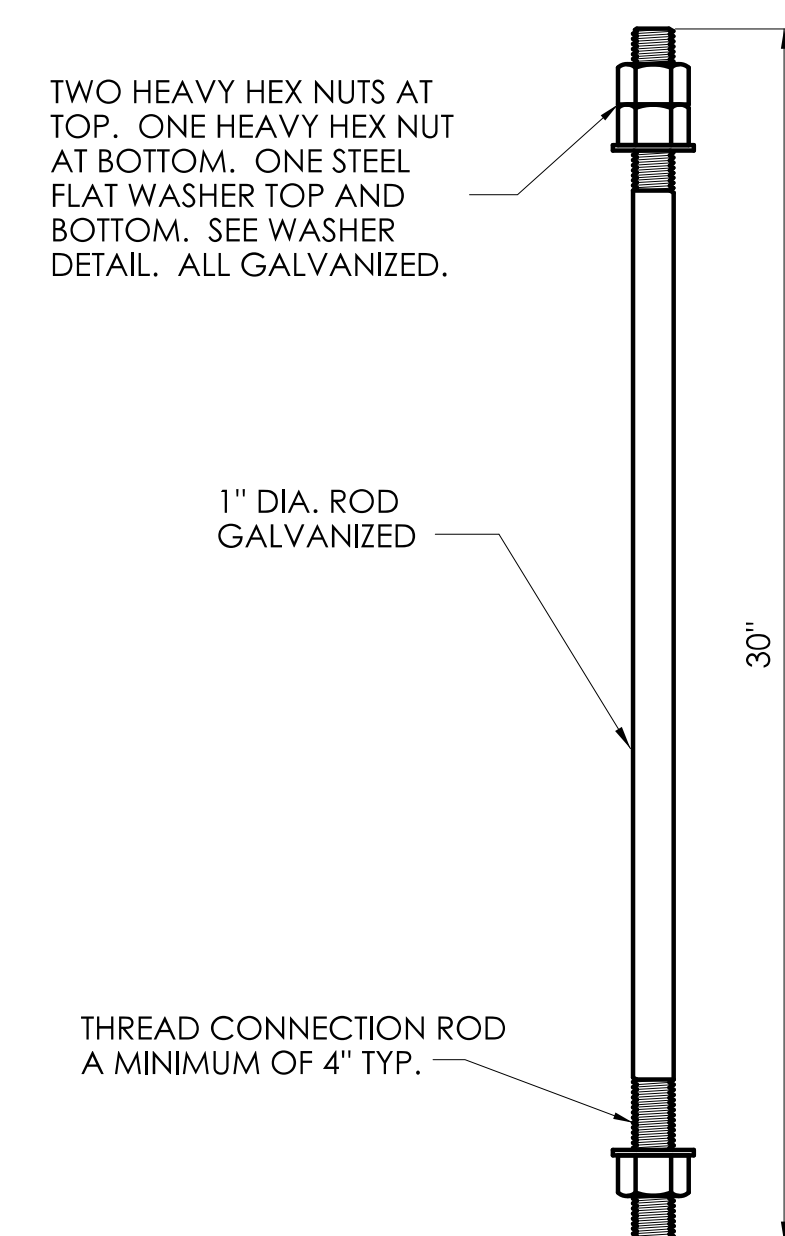


TABLE A FLARE RATES	
* SPEED	FLARE RATE (X : 1)
≤ 30MPH	4 : 1
> 30MPH BUT < 45MPH	6 : 1
≥ 45MPH NON-LIMITED ACCESS HIGHWAYS	8 : 1
ALL LIMITED ACCESS HGWAYS	10 : 1

\* DESIGN SPEED THROUGH THE WORK AREA.

NOT TO SCALE

SIGNATURE BLOCK:  
OFFICE OF ENGINEERING  
2800 BERLIN TURNPIKE  
NEWINGTON, CT 06111

SUBMITTED BY:  
Digitally signed by  
Leo Fontaine, P.E.  
Date: 2024.12.16  
14:21:58-05'00'

APPROVED BY:  
Digitally signed by  
Michael N. Calabrese, P.E.  
Date: 2025.01.21  
13:39:44-05'00'



CONNECTICUT  
DEPARTMENT OF  
TRANSPORTATION

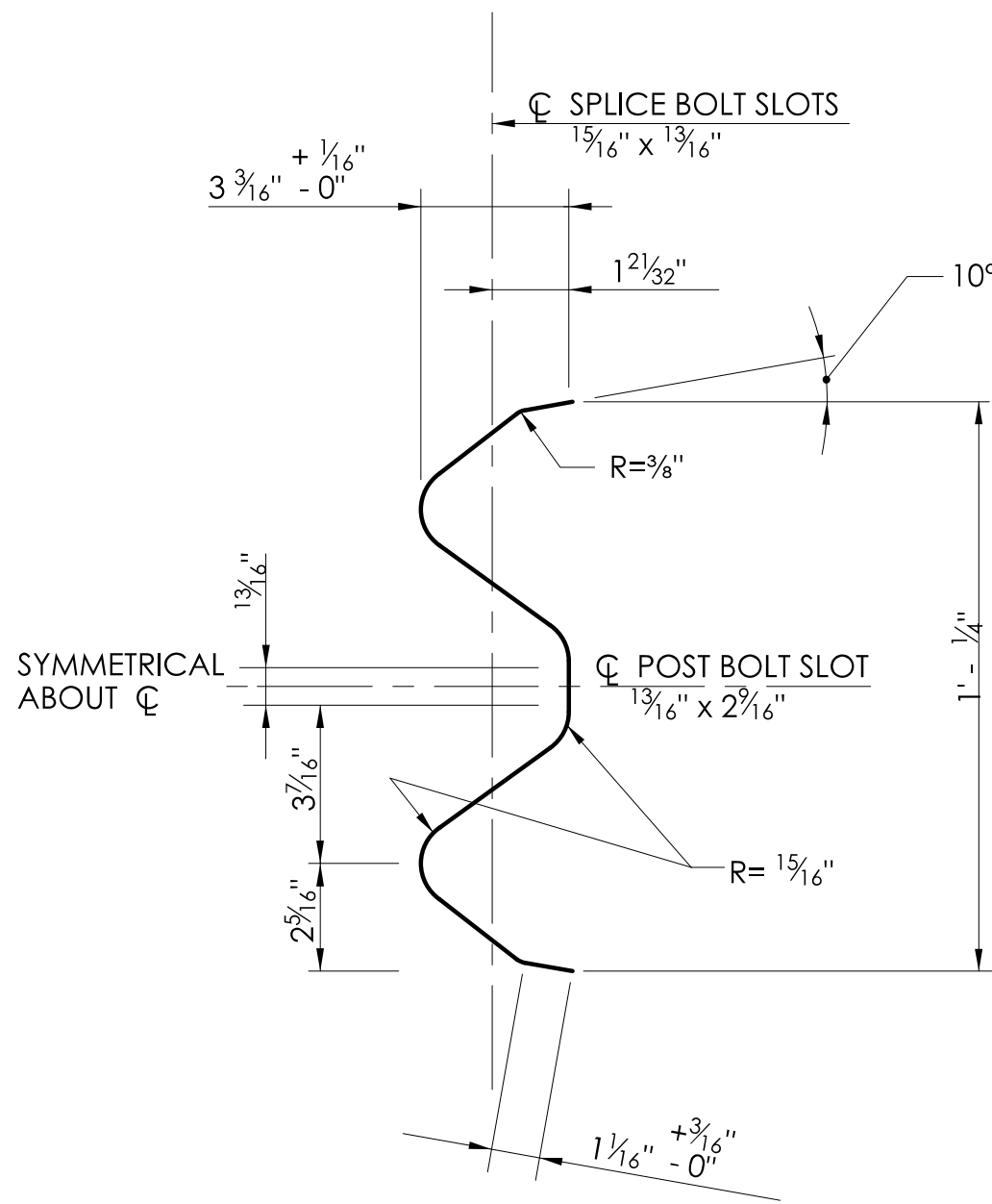
CTDOT  
STANDARD SHEET

STANDARD SHEET TITLE:

TEMPORARY PRECAST CONCRETE BARRIER CURB

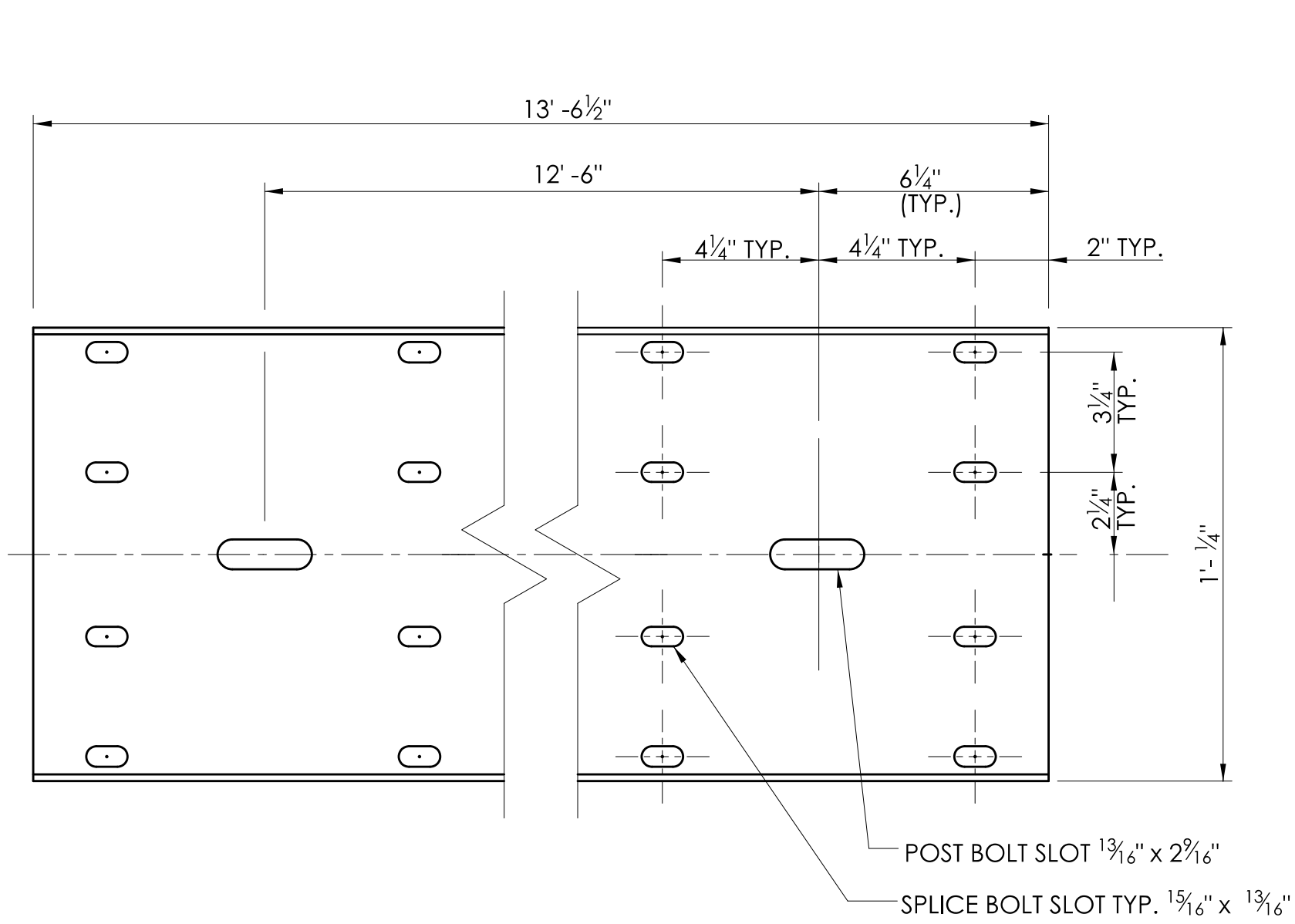
STANDARD SHEET NO.:

HW-822\_01

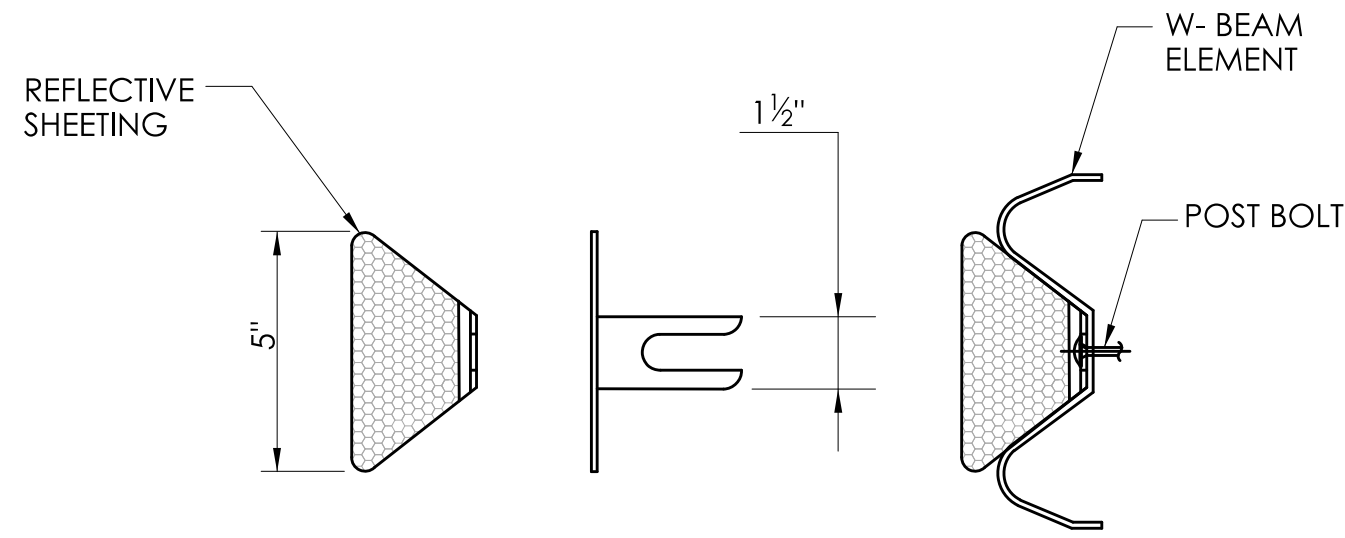


### SELECTION THRU RAIL ELEMENT END VIEW

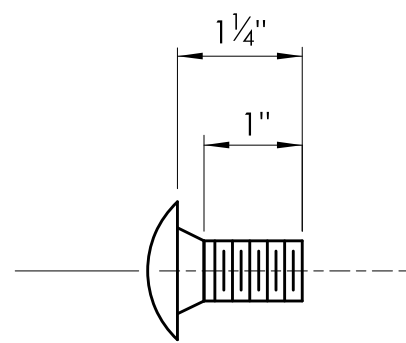
NOTE: ALL DIMENSIONS SUBJECT TO  
MANUFACTURING TOLERANCES



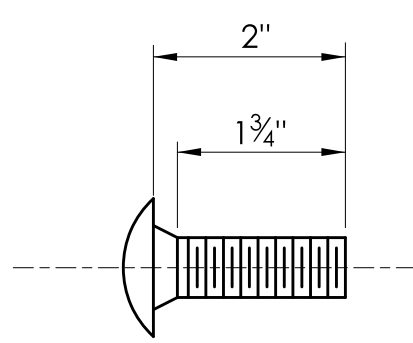
### TYPICAL W-BEAM RAIL ELEMENT CLASS A, TYPE II



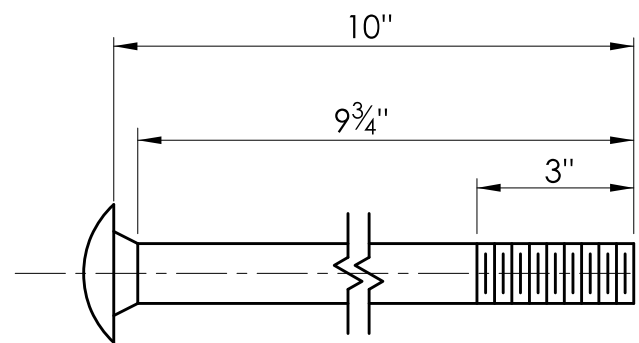
### DELINEATOR DETAIL



### W-BEAM SPLICE BOLT DETAIL

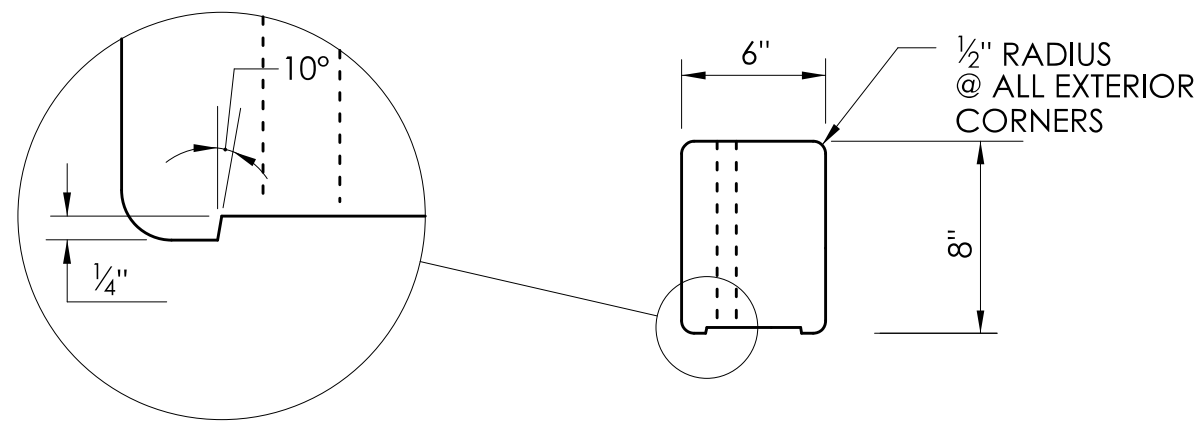


### POST BOLT DETAIL FOR R-B 350 SYSTEM 6 RUBRAIL

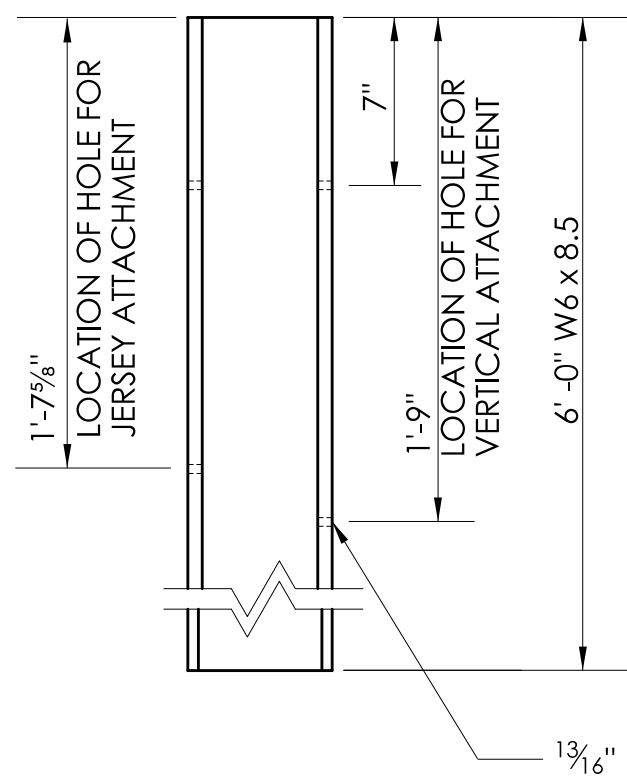
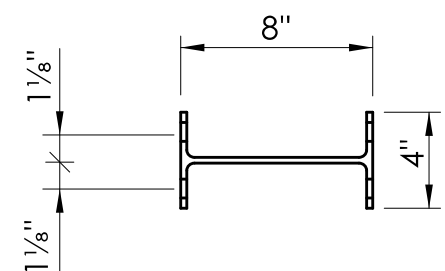
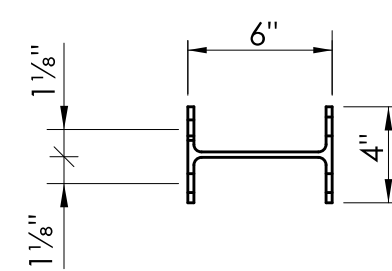


### POST BOLT DETAIL FOR R-B 350 AND MD-B 350 GUIDERAIL

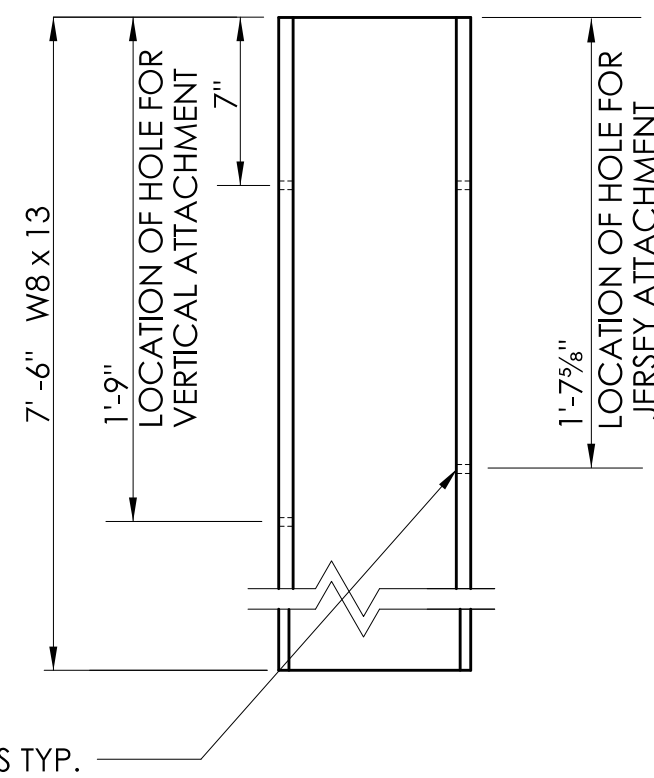
(UNTHREADED PORTION NOT TO EXCEED 6 3/4")



### PLAN

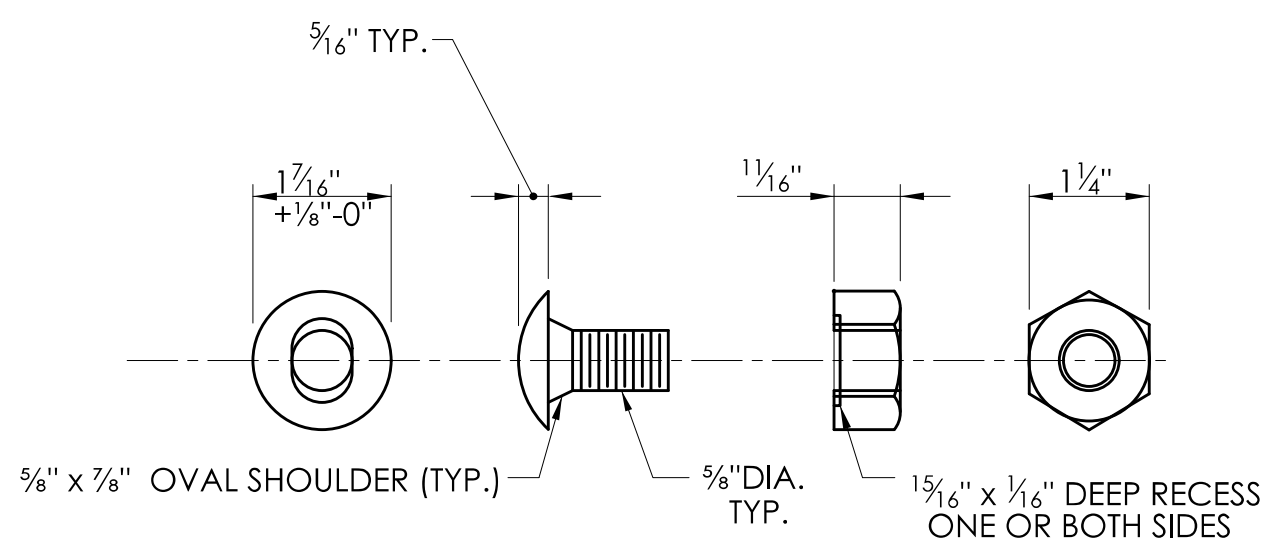


### W6x8.5 POST 6'-0" LONG



### W8x13 POST 7'-6" LONG

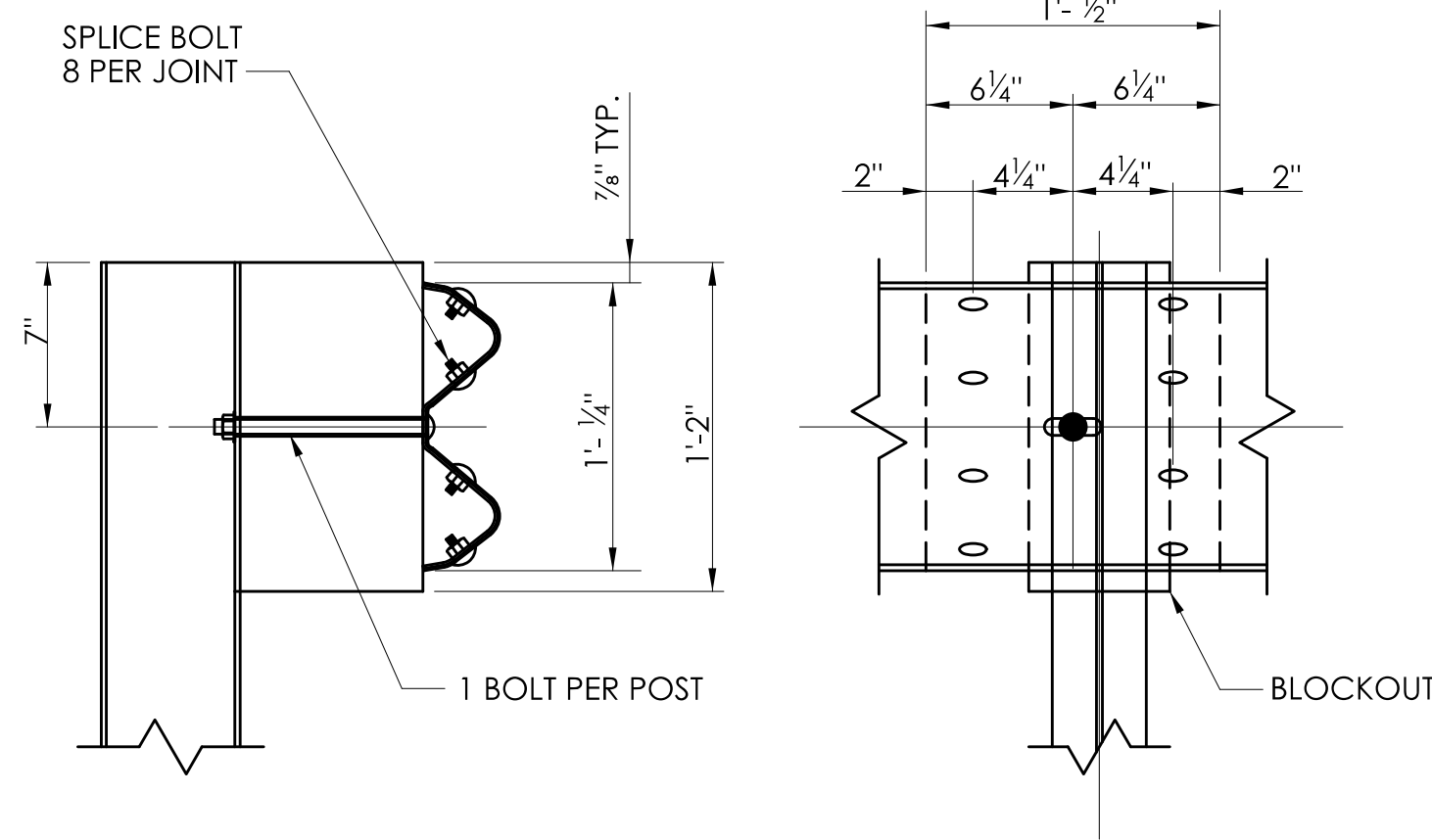
### BOLT HOLE LAYOUT FOR W8 x 13 AND W6 x 8.5 UNIFORM POST (REFER TO GENERAL NOTES)



### BUTTONHEAD BOLT

### HEX NUT

NOTE: AFTER GALVANIZING, THE NUT SHALL BE FREE RUNNING ON  
THE BOLT. DIAMETER SHOWN IS TYPICAL FOR ALL GUIDERAIL  
BOLTS. SEE DETAILS ABOVE FOR SPECIFIC LENGTHS.

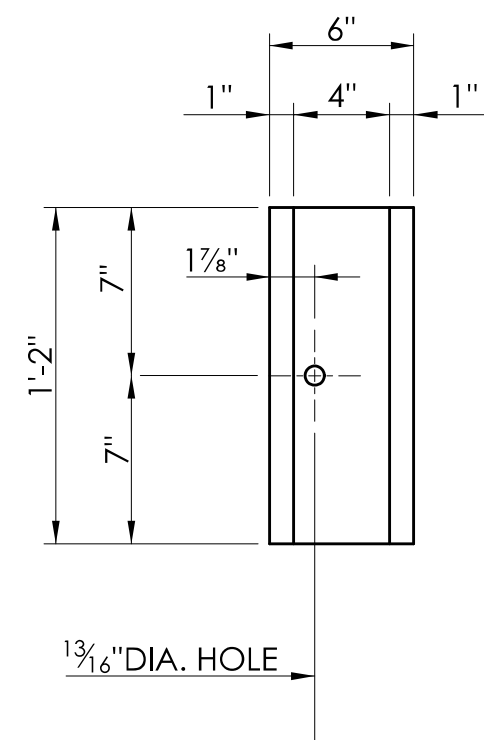


### SECTION

### ELEVATION

### LAP DETAIL

NOTE: LAP RAIL SECTION IN DIRECTION OF TRAFFIC

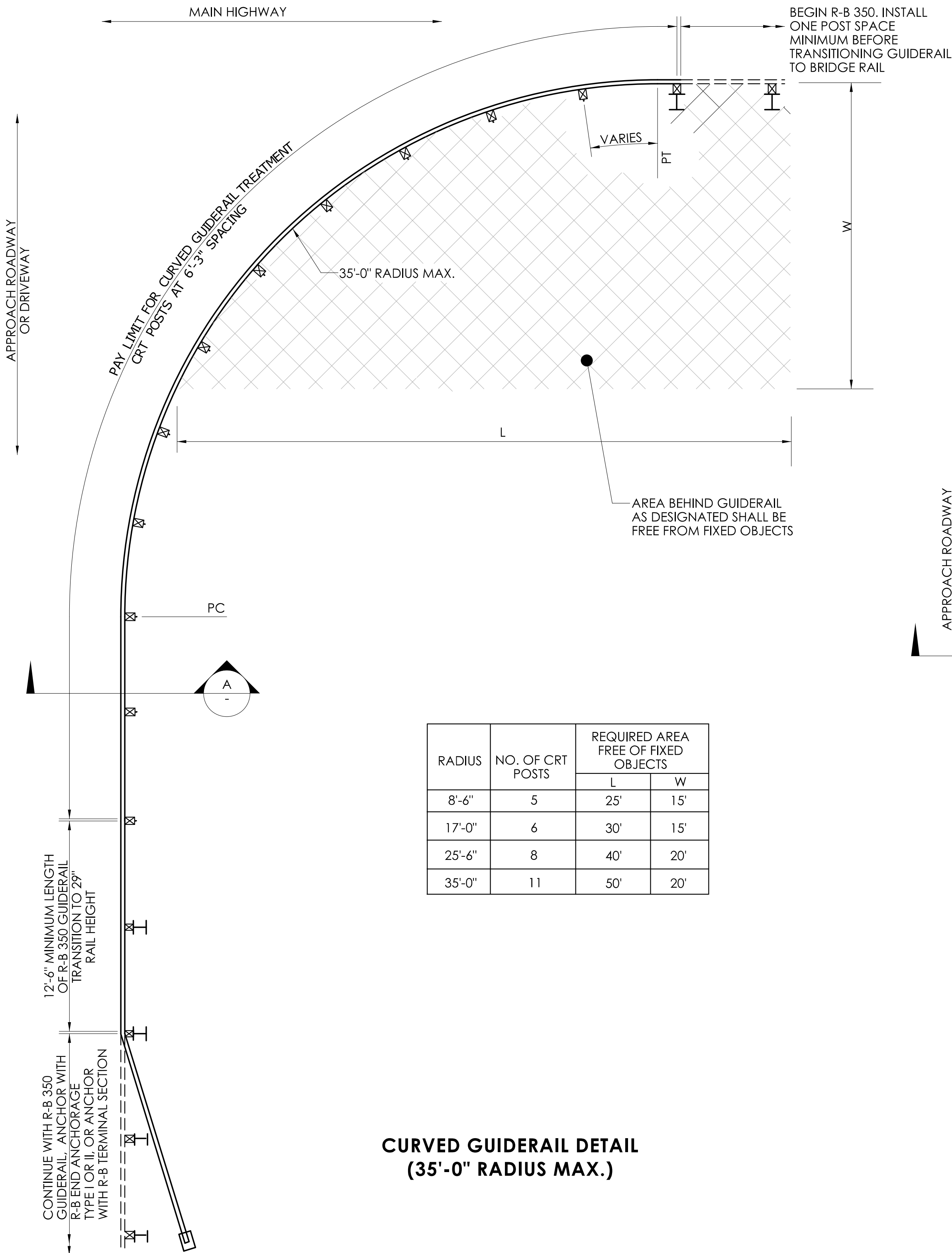


### ELEVATION

### R-B 350 PLASTIC BLOCKOUT DETAIL

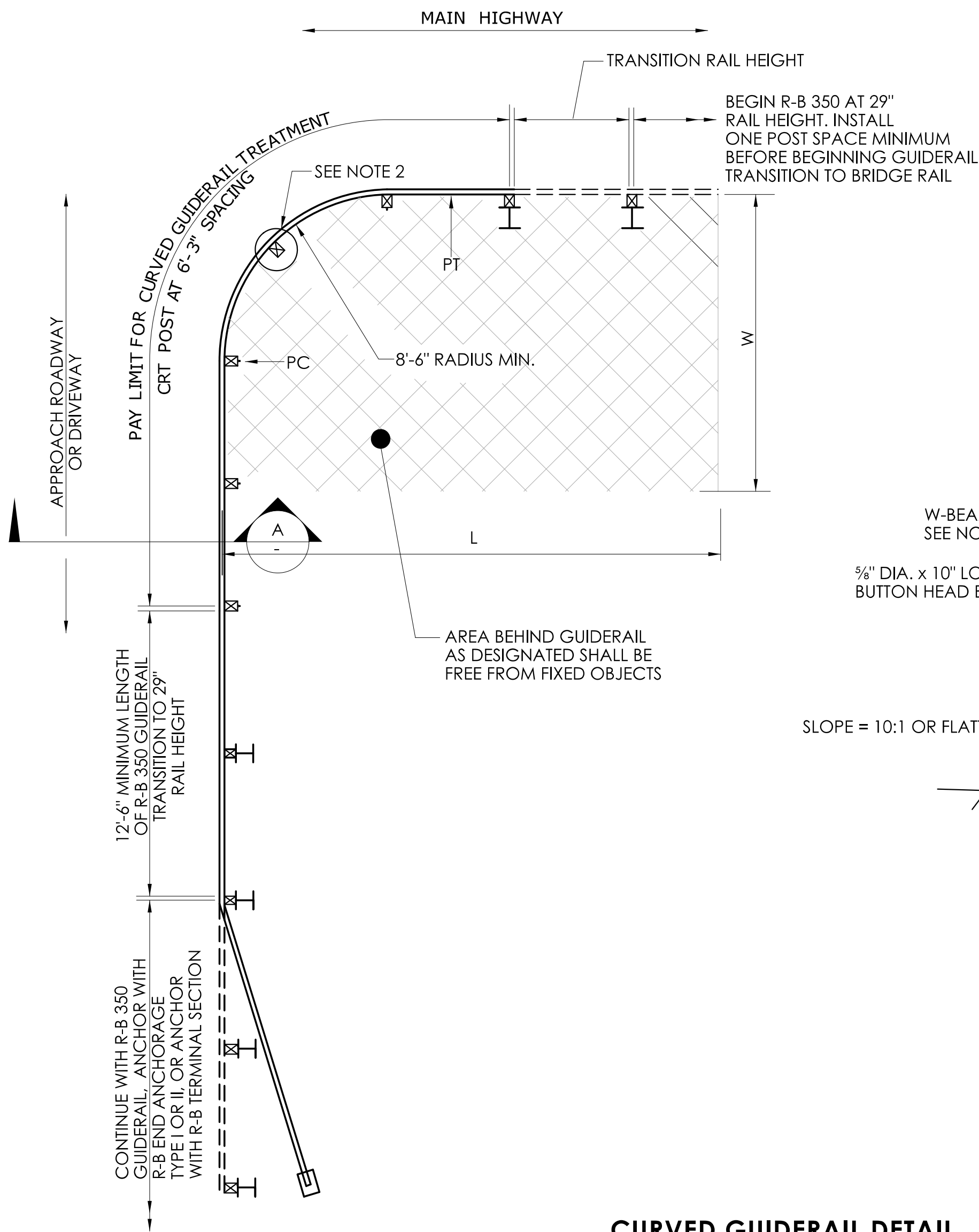






RADIUS	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS	
		L	W
8'-6"	5	25'	15'
17'-0"	6	30'	15'
25'-6"	8	40'	20'
35'-0"	11	50'	20'

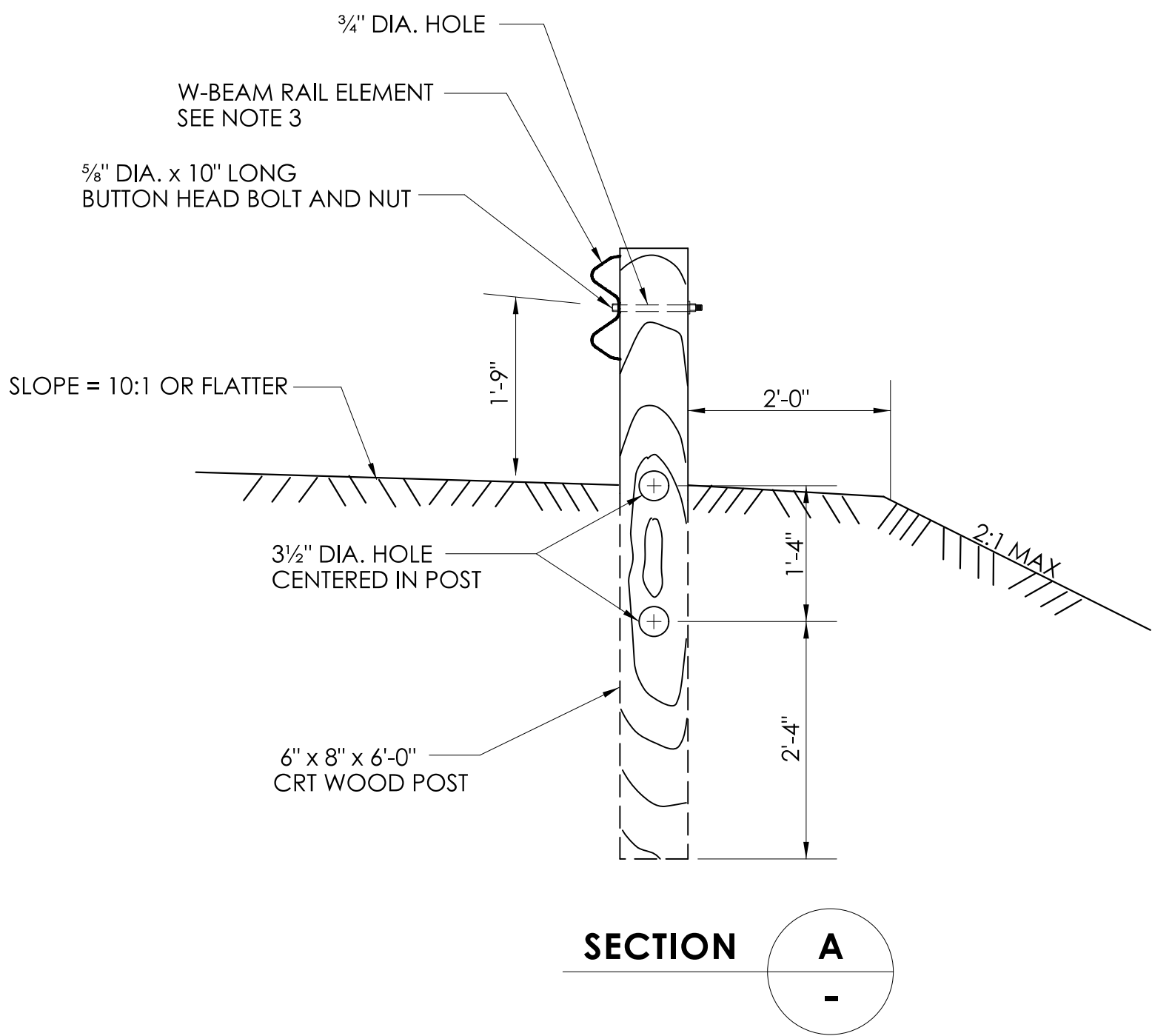
CURVED GUIDERAIL DETAIL  
(35'-0" RADIUS MAX.)



CURVED GUIDERAIL DETAIL  
(8'-6" RADIUS MIN.)

GENERAL NOTES:

1. NO WASHERS ARE USED ON THE 5/8" DIA. BUTTON HEAD BOLTS CONNECTING THE RAIL TO THE CONTROLLED RELEASING TERMINAL (CRT) POSTS.
2. THE RAIL IS NOT BOLTED TO THE CRT POST AT THE CENTER OF THE NOSE AS SHOWN FOR THE 8'-6" RADIUS CURVED GUIDERAIL TREATMENT ONLY.
3. THE CURVED GUIDERAIL SECTION SHALL BE SHOP BENT.
4. THE SLOPE FROM THE EDGE OF THE SHOULDER TO THE FACE OF THE RAIL SHALL BE 10:1 OR FLATTER. NO CURBING SHALL BE INSTALLED WITHIN THE PAY LIMIT OF THE CURVED GUIDERAIL TREATMENT.
5. THIS SYSTEM SHALL BE USED ONLY ON ROADS WITH DESIGN SPEEDS ≤ 50 mph.
6. MAINTAIN MINIMUM 27 3/4" RAIL HEIGHT THROUGH RADIUS.



NOT TO SCALE

SIGNATURE BLOCK:  
OFFICE OF ENGINEERING  
2800 BERLIN TURNPIKE  
NEWINGTON, CT 06111

SUBMITTED BY:  
*Leo Fontaine*  
Digitally signed by  
Leo Fontaine, P.E.  
Date: 2024.12.17  
15:17:05-05'00'

APPROVED BY:  
*Michael N. Calabrese*  
Digitally signed by  
Michael N.  
Calabrese, P.E.  
Date: 2025.01.29  
12:15:38-05'00'



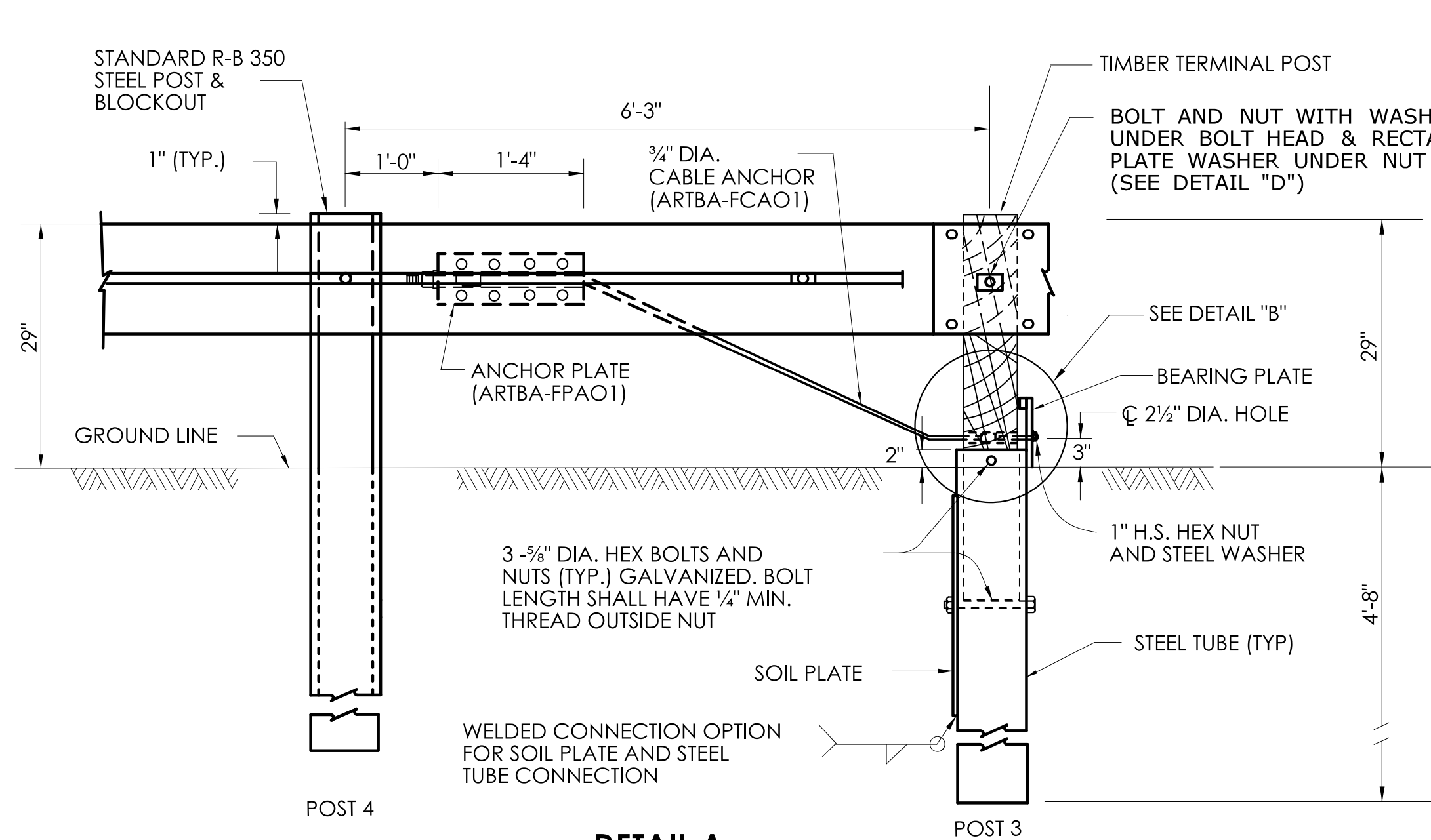
CONNECTICUT  
DEPARTMENT OF  
TRANSPORTATION

CTDOT  
STANDARD SHEET

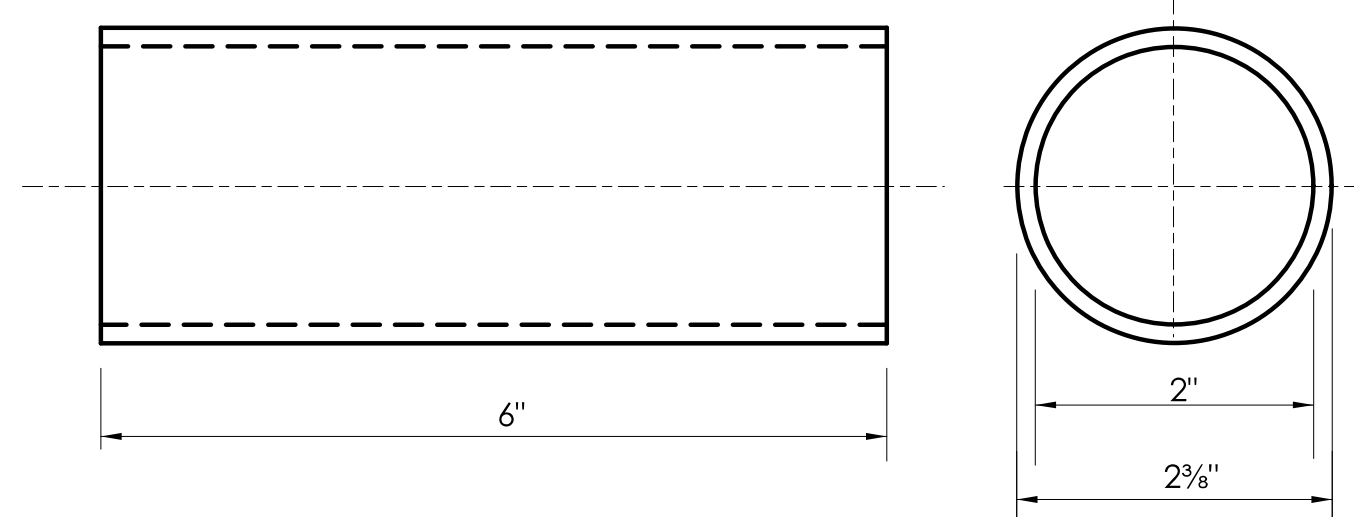
STANDARD SHEET TITLE:  
CURVED GUIDERAIL TREATMENT

STANDARD SHEET NO.:  
HW-910\_11

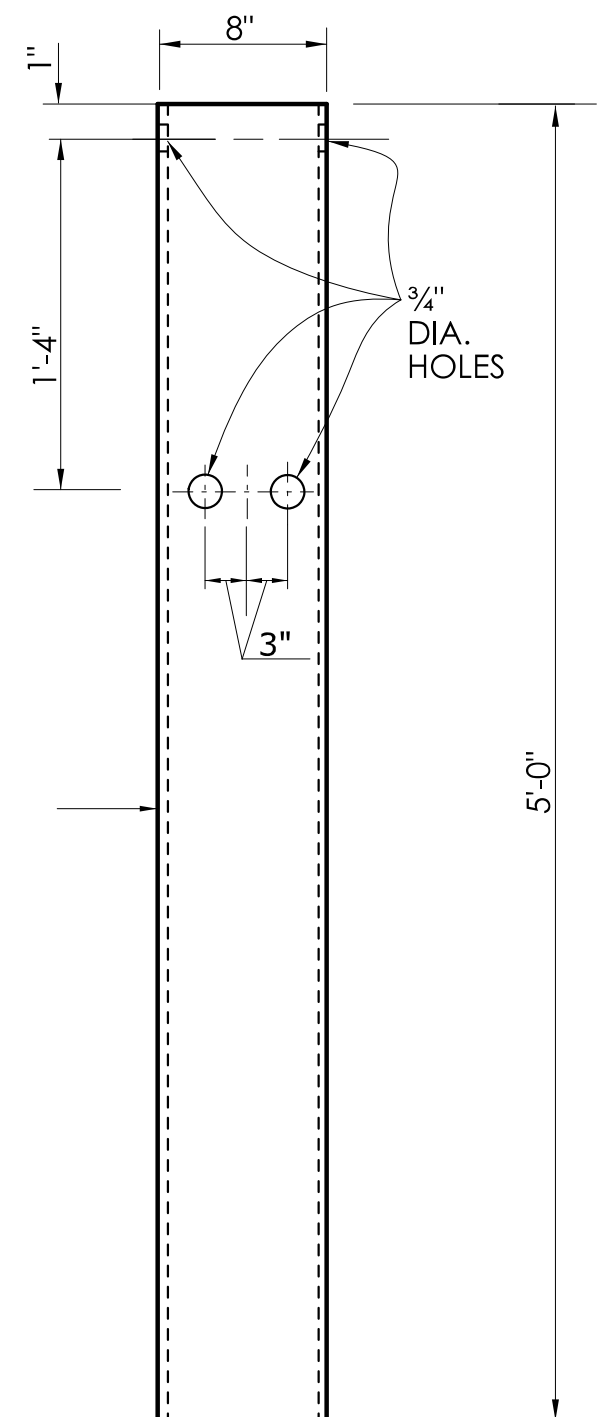




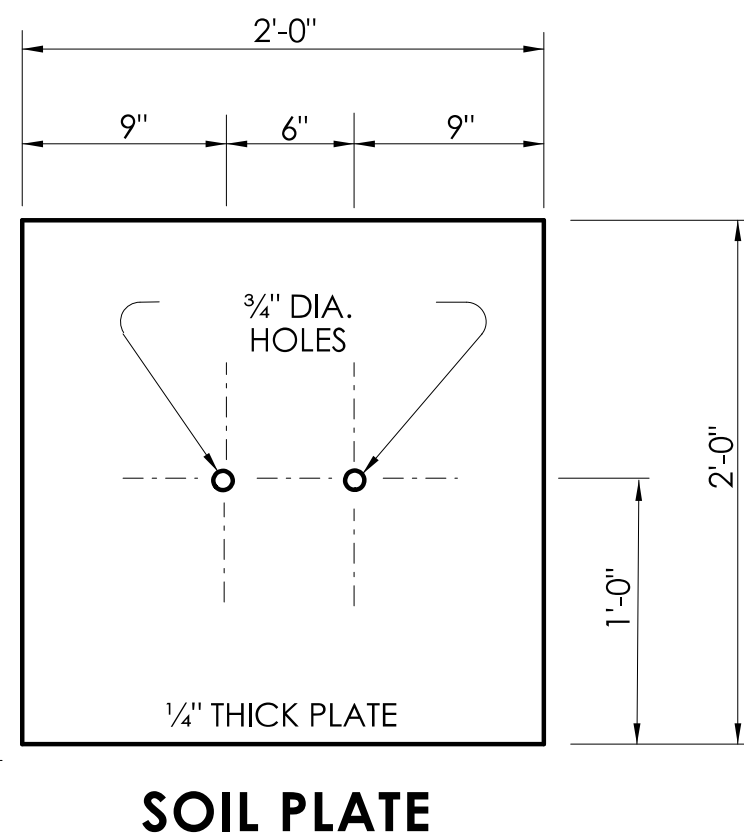
DETAIL A  
CABLE ANCHORAGE ASSEMBLY



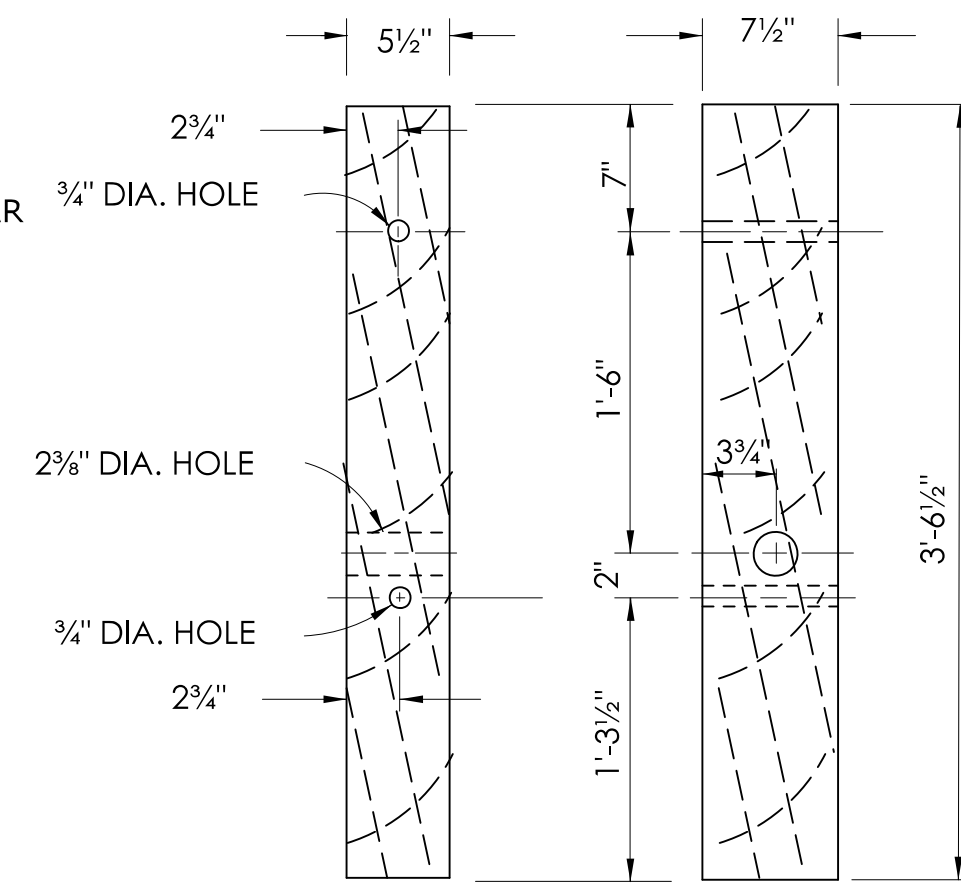
BREAKAWAY TERMINAL POST SLEEVE  
(ARTBA-FMMO2)



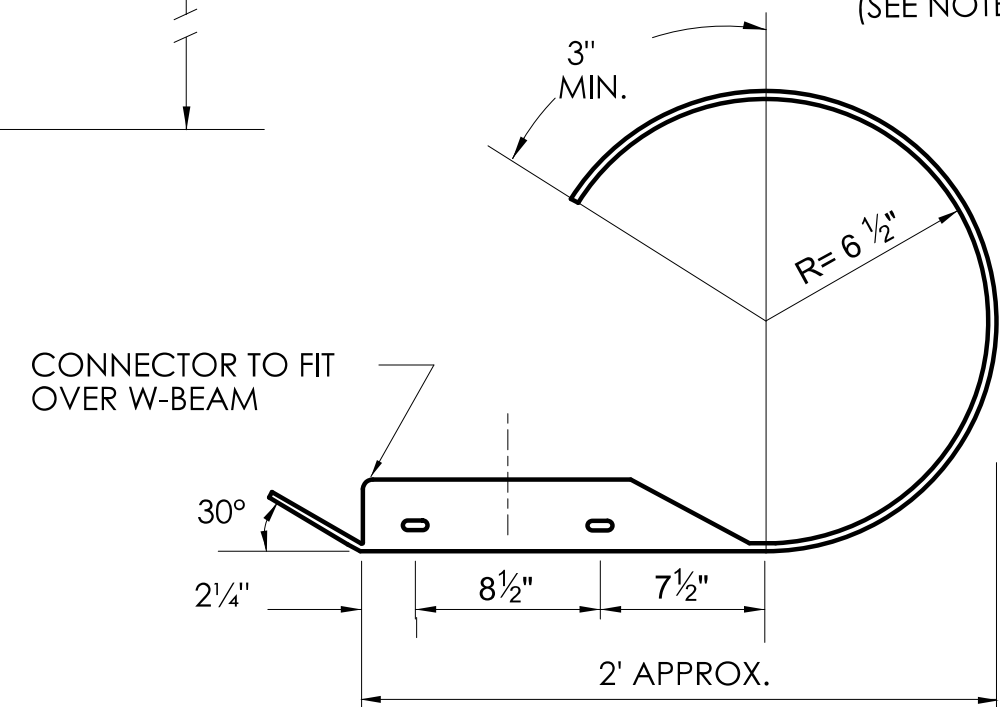
STEEL TUBE



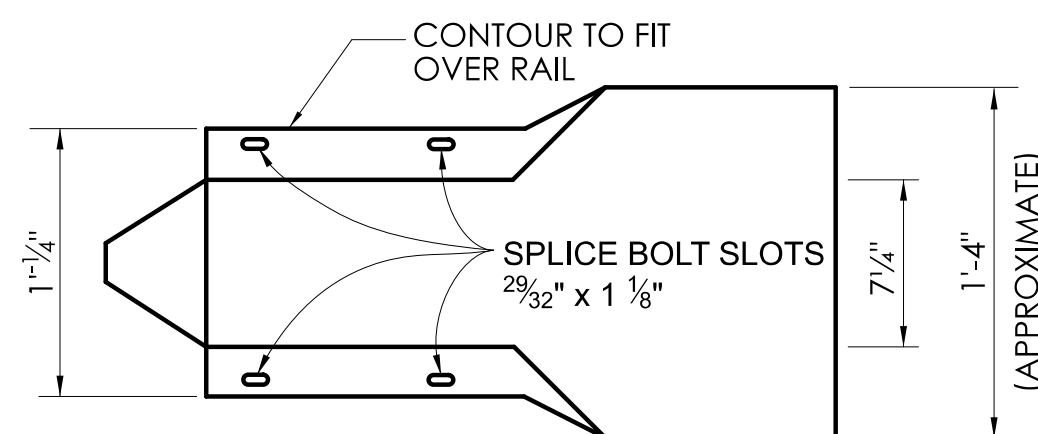
SOIL PLATE



DETAIL C  
TIMBER TERMINAL POST  
(ARTBA-PDFO1)  
(SEE NOTE 2)

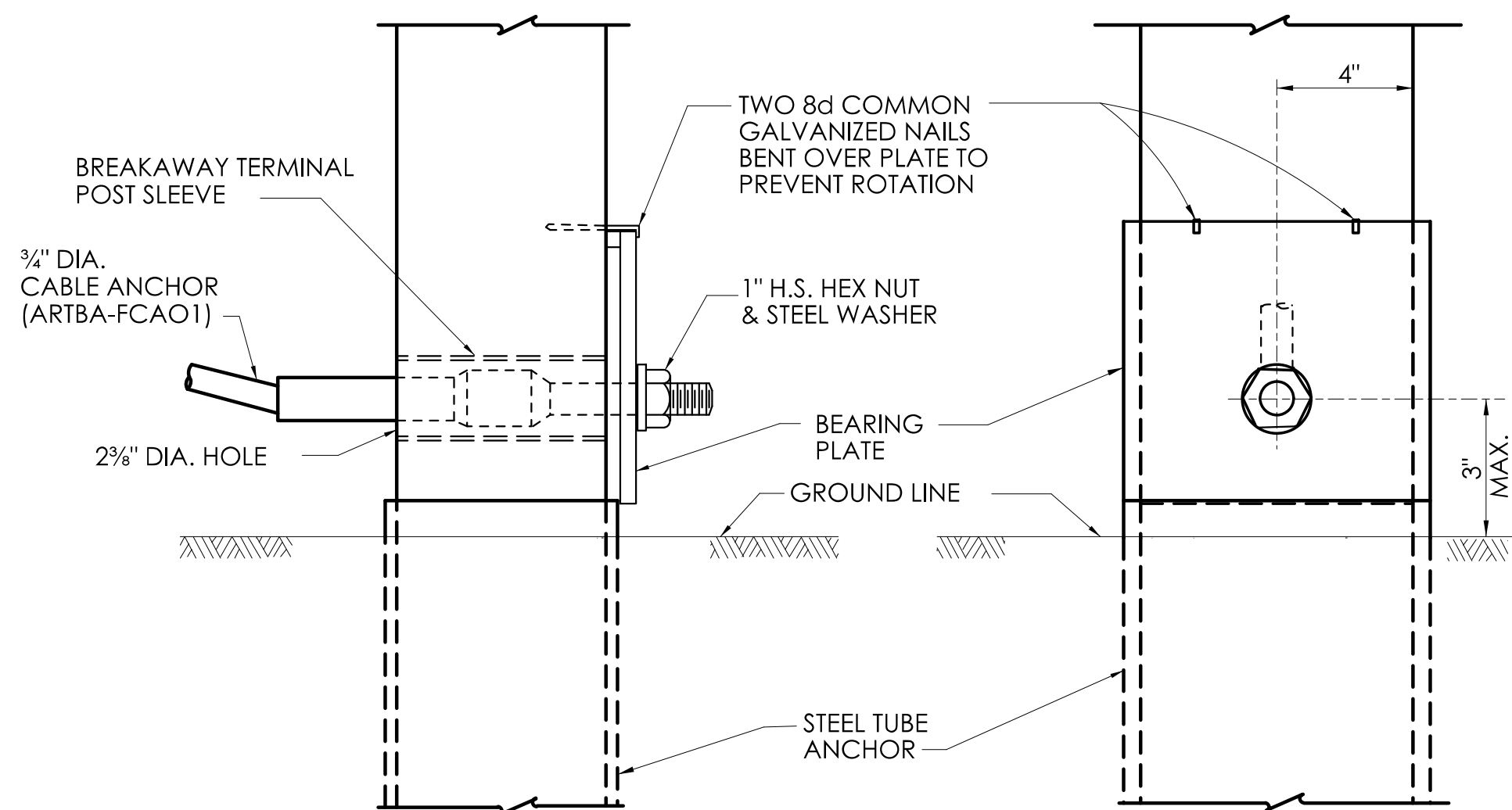


PLAN

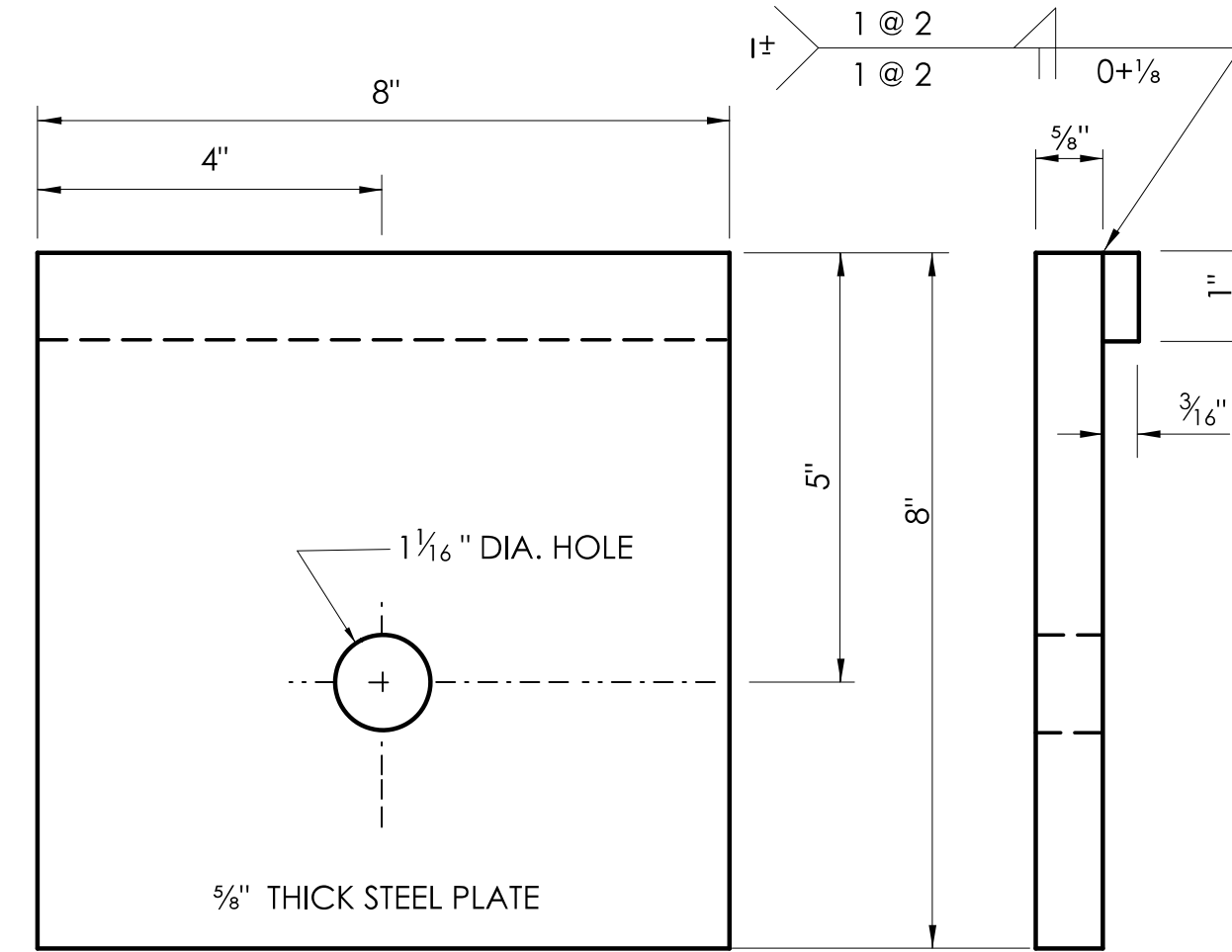


ELEVATION

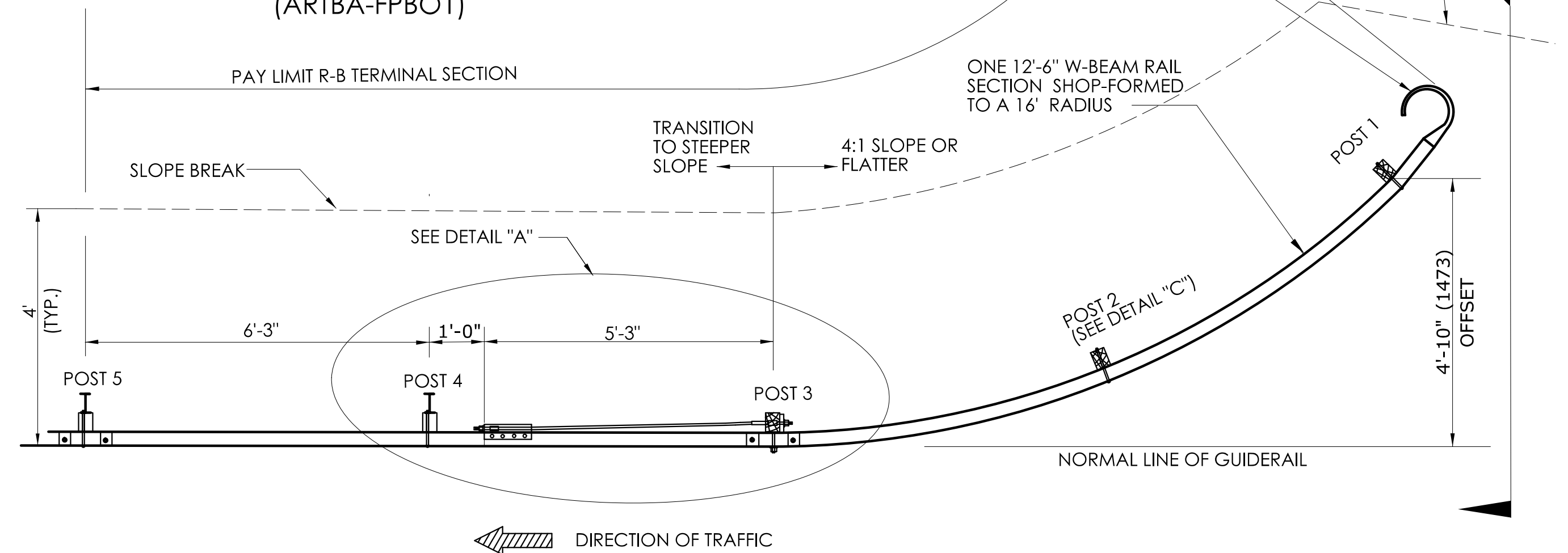
ROUNDED W-BEAM END SECTION



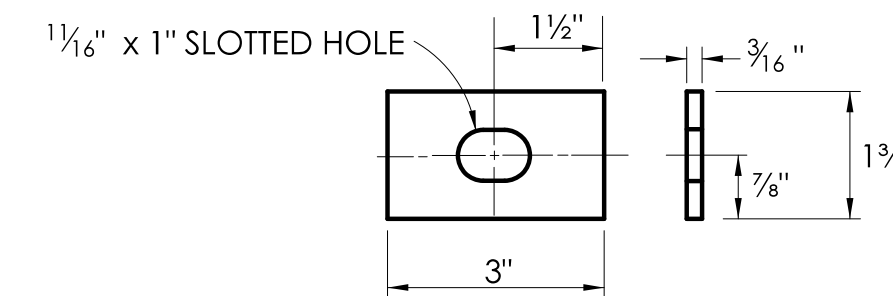
DETAIL B



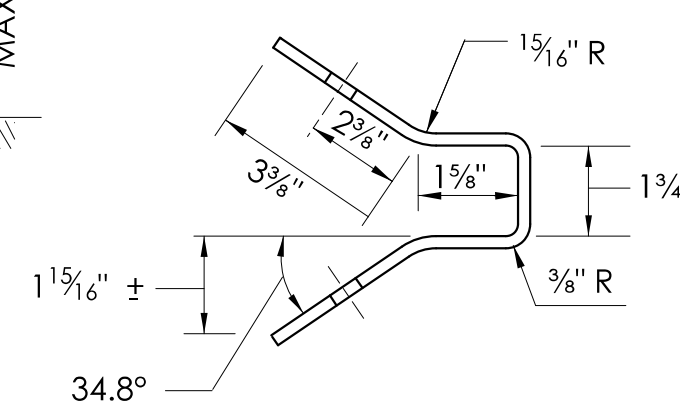
BEARING PLATE  
(ARTBA-FPBO1)



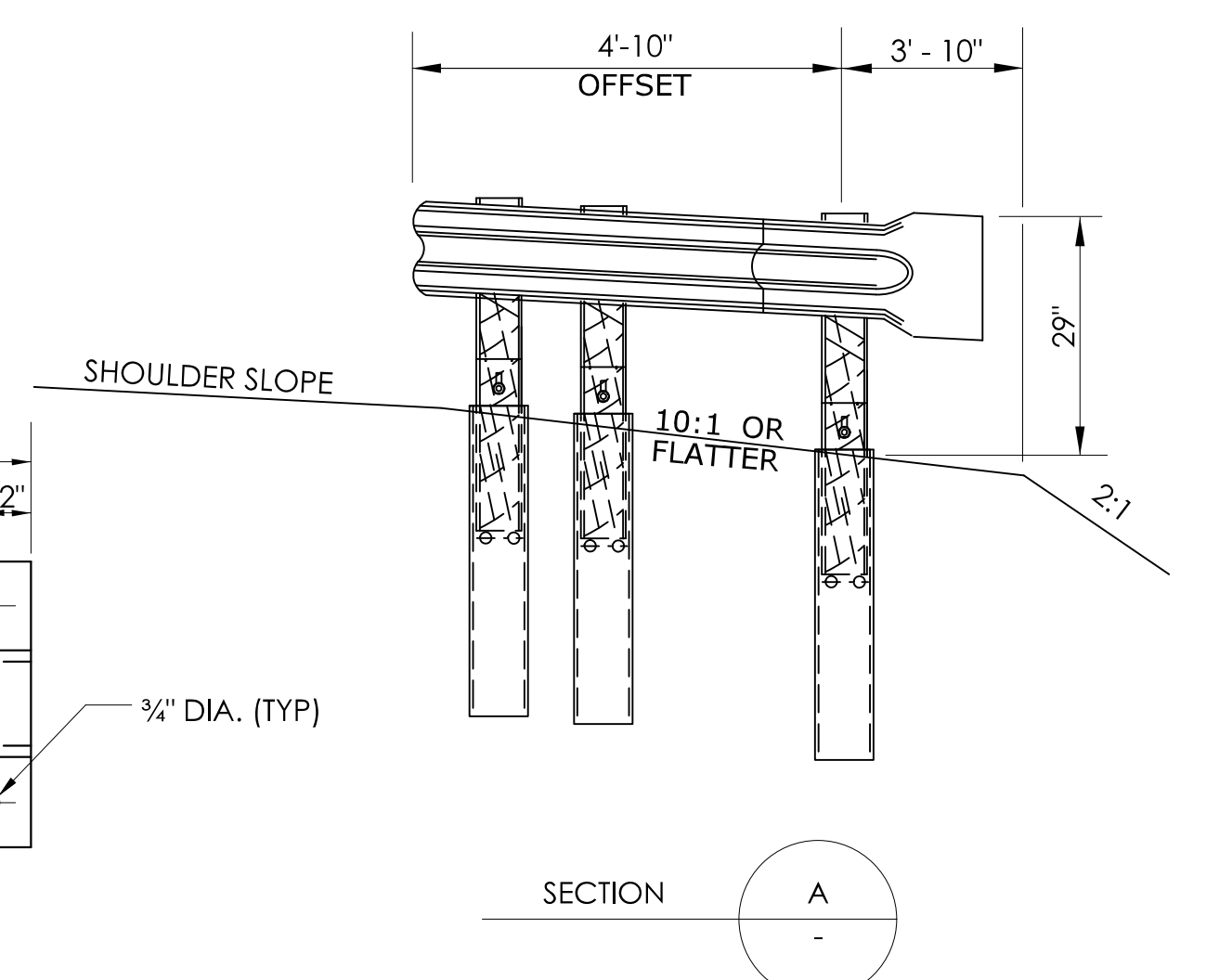
APPROACH END  
(TRAILING END NOT SHOWN)



DETAIL D  
RECTANGULAR PLATE WASHER

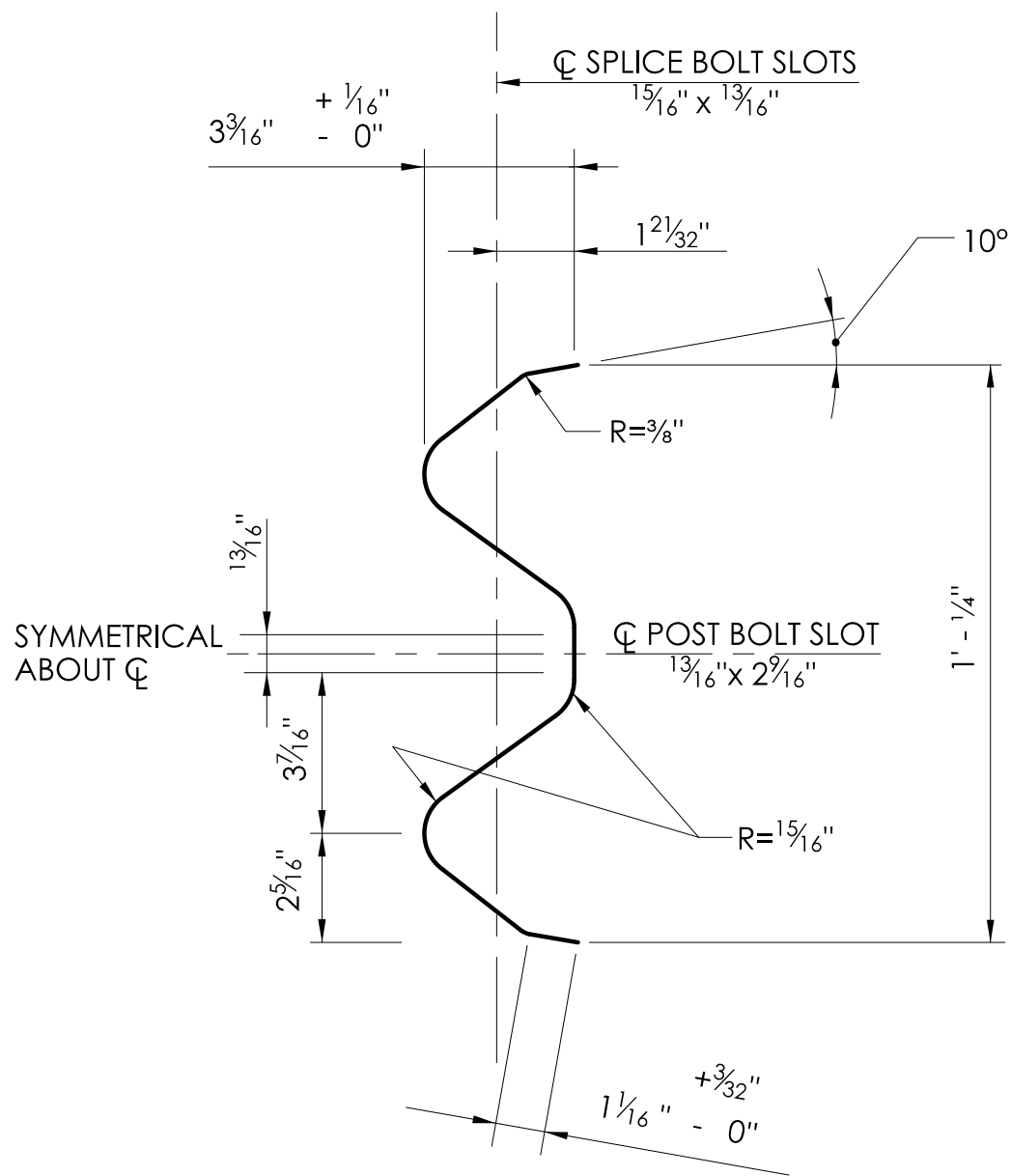


ANCHOR PLATE  
(ARTBA-FPAO1)

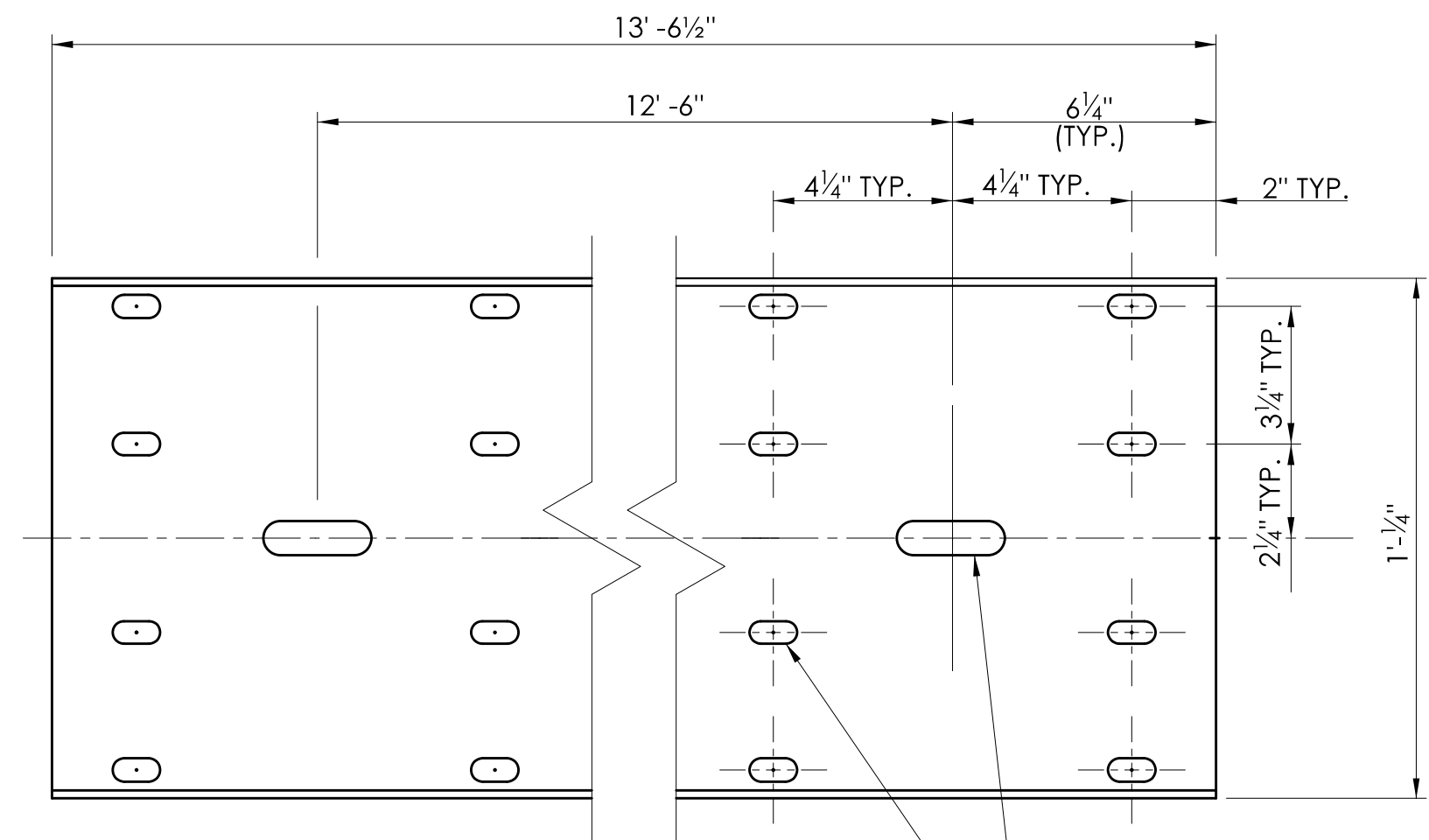


GENERAL NOTES:

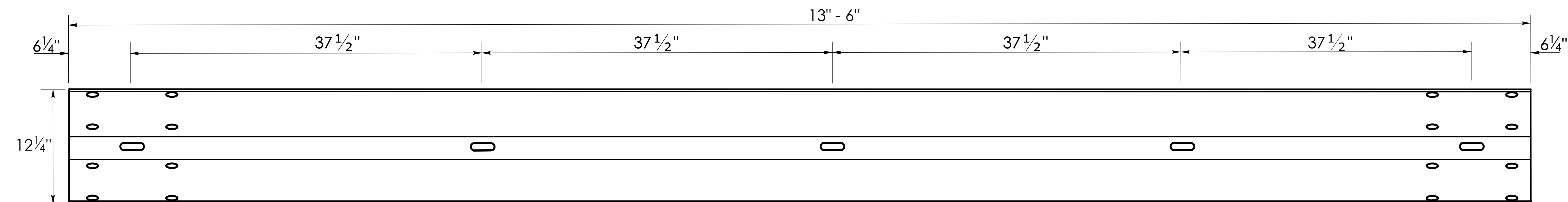
1. APPROACH END R-B TERMINAL SECTION SHALL ONLY BE USED ON LOW SPEED (<45 MPH) ROADWAYS.
2. POSTS 1, 2 AND 3 ARE TIMBER TERMINAL POSTS (DETAIL "C") WITH STEEL TUBES. POSTS 4 AND 5 ARE STANDARD R-B 350 STEEL POSTS WITH BLOCKOUTS.
3. REFER TO CTDOT STANDARD SPECIFICATIONS FOR MATERIAL AND GENERAL CONSTRUCTION METHODS.
4. MINIMUM RAIL HEIGHT FOR NEW CONSTRUCTION SHALL BE 29" +/- 1".



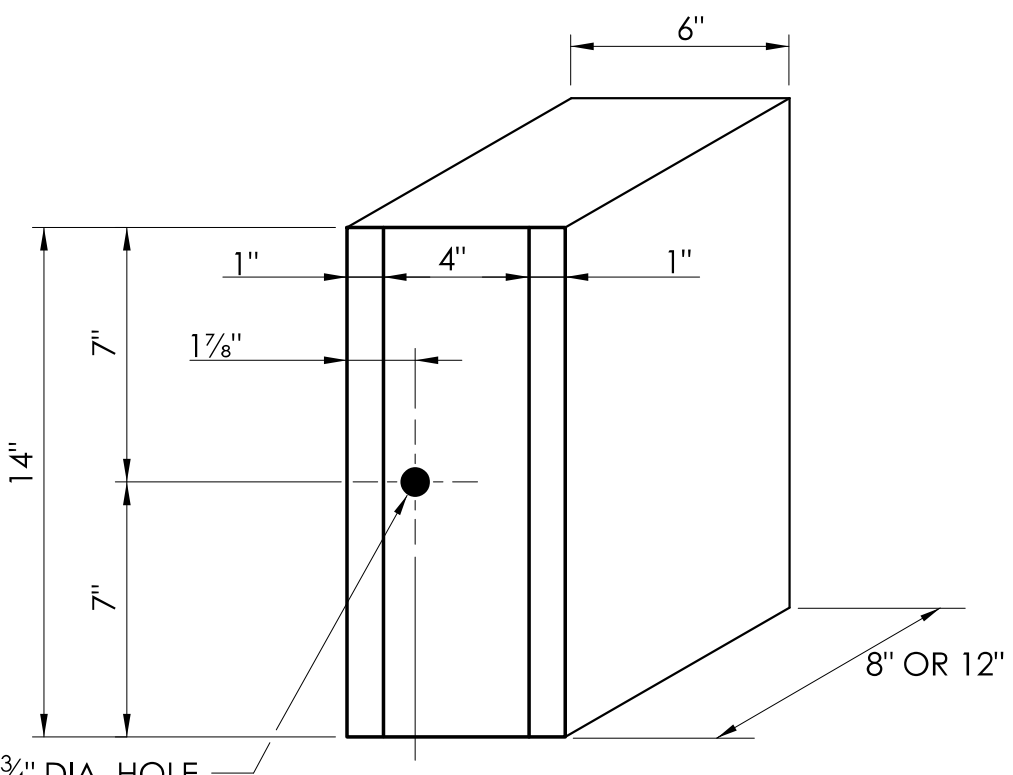
SECTION VIEW



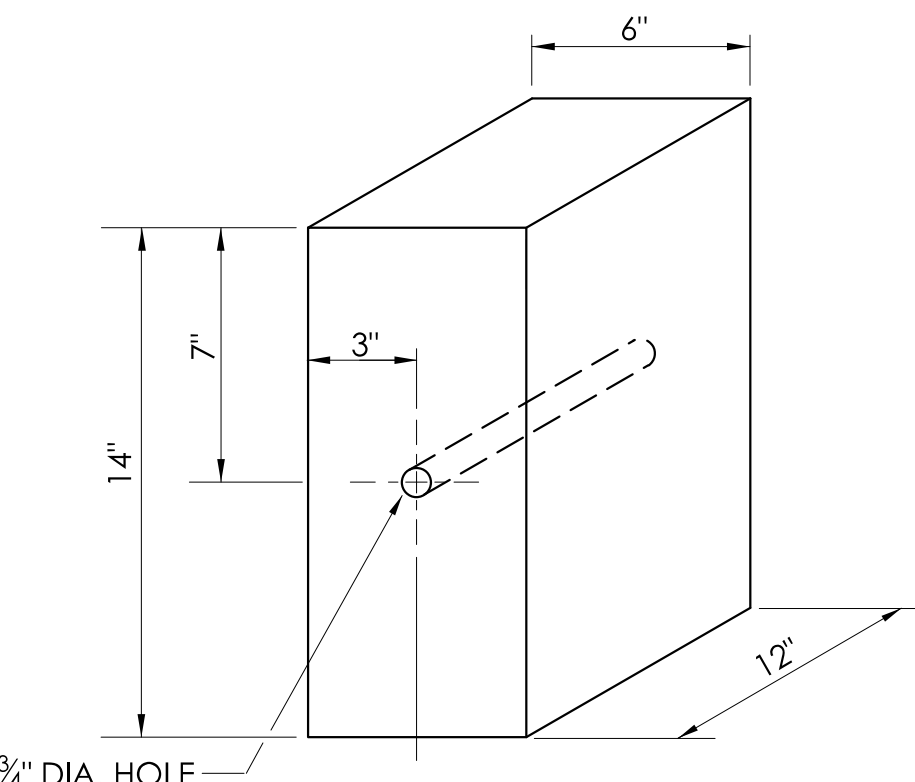
ELEVATION VIEW



TYPICAL W-BEAM RAIL ELEMENT



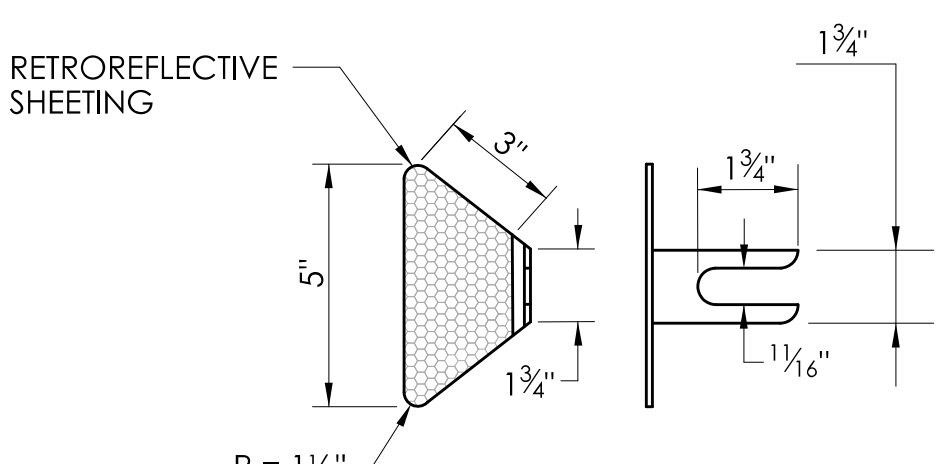
8" or 12" PLASTIC BLOCKOUT  
NOMINAL DIMENSIONS



12" WOOD BLOCKOUT

GENERAL NOTES:

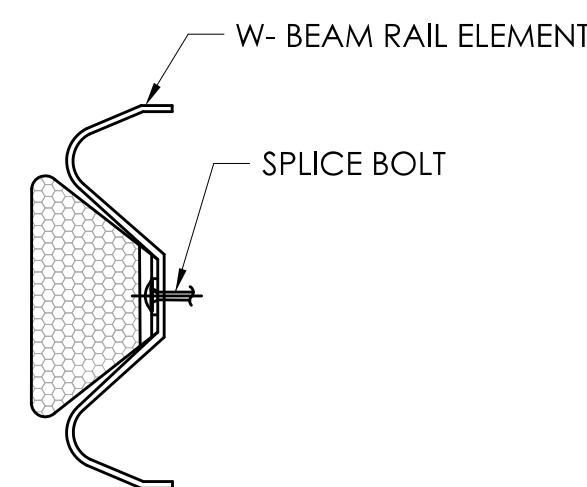
1. W6 x 9 POSTS MAY BE USED IN PLACE OF W6 x 8.5 POSTS.
2. W-BEAM GUIDERAIL SHALL USE CLASS A (12 GAUGE), TYPE II W-BEAM RAIL ELEMENTS.
3. SEVEN FOOT LONG STEEL POSTS (W6 X 8.5) ARE TO BE INSTALLED WHERE INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES



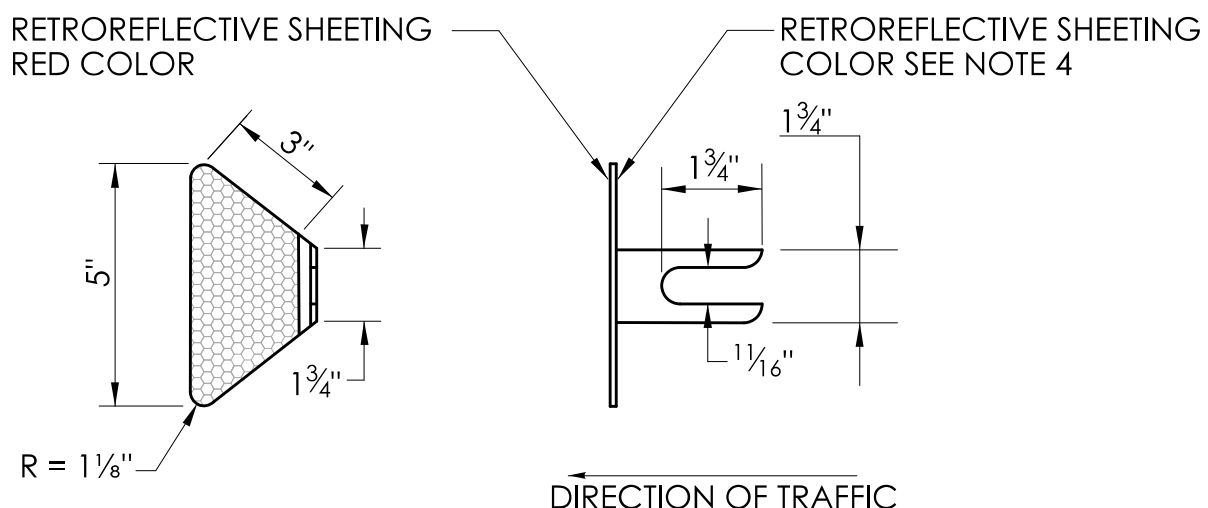
W-BEAM DELINEATOR

INSTALLATION NOTES:

1. INSTALL W-BEAM DELINEATORS ON RAIL THAT IS PARALLEL TO AND NOT GREATER THAN 8' FROM THE EDGE OF THE ROADWAY. A MINIMUM OF THREE W-BEAM DELINEATORS SHALL BE INSTALLED ON ANY LENGTH OF GUIDERAIL.
2. THE SPACING OF W-BEAM DELINEATORS IS 50 FEET, INSTALLED AT RAIL SPLICE LOCATIONS. SPACING IS 25 FEET ON RADII LESS THAN 300 FEET.
3. NO W-BEAM DELINEATORS ARE PERMITTED WITHIN 75 FEET OF THE IMPACT HEAD OF ANY TANGENTIAL OR FLARED IMPACT ATTENUATION SYSTEM.
4. RETROREFLECTIVE SHEETING SHALL BE WHITE EXCEPT ON THE LEFT SIDE OF DIVIDED STREETS, HIGHWAYS, RAMPS, AND ONE WAY ROADS IN THE DIRECTION OF TRAVEL WHERE IT SHALL BE YELLOW.
5. FOR HIGHWAY OFF RAMP, INSTALL W-BEAM DOUBLE SIDED DELINEATORS ACCORDING TO INSTALLATION REQUIREMENTS STATED BELOW FOR W-BEAM DOUBLE SIDED DELINEATORS.



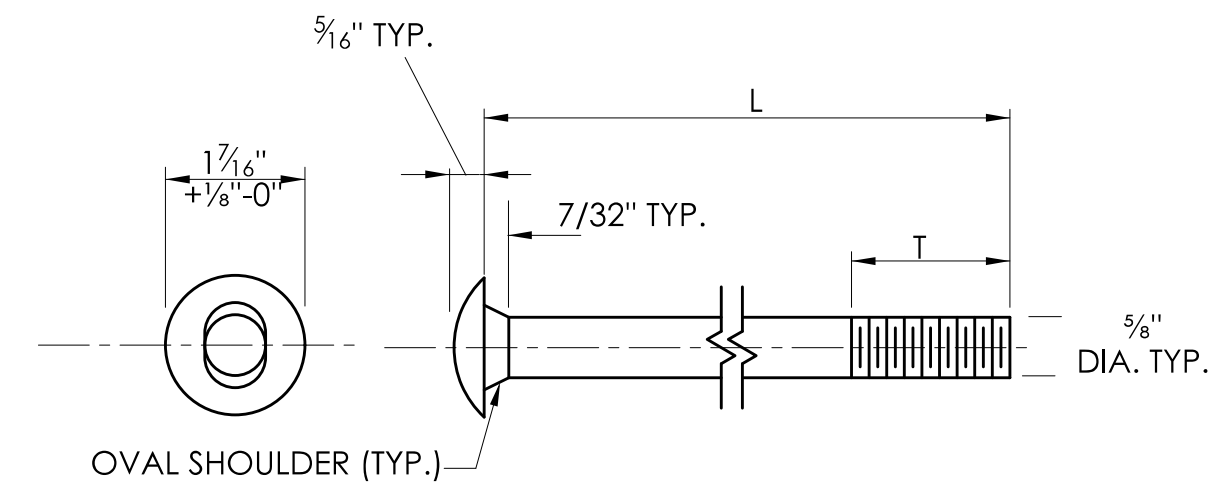
W-BEAM DELINEATOR  
INSTALLATION



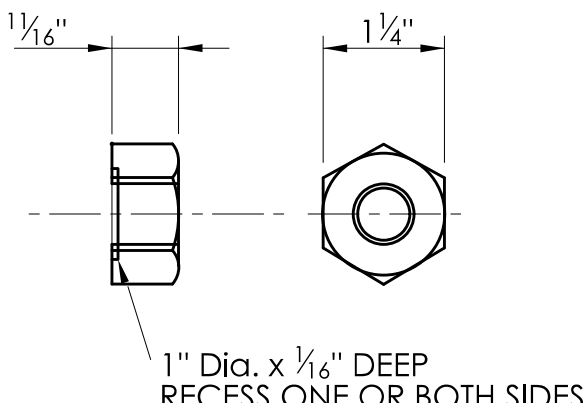
W-BEAM DOUBLE SIDED DELINEATOR  
FOR HIGHWAY OFF RAMPS

INSTALLATION NOTES:

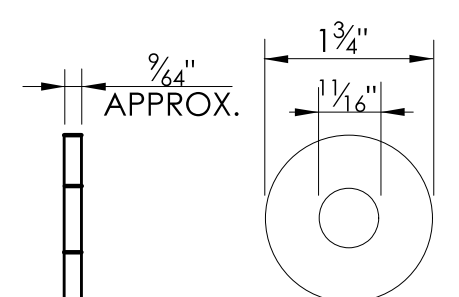
1. INSTALL W-BEAM DOUBLE SIDED DELINEATORS ON HIGHWAY OFF RAMP'S W-BEAM GUIDERAIL BETWEEN THE PAINTED TRAFFIC STOP LINE TO THE FARTHEST "WRONG WAY" SIGNS FROM THE INTERSECTION.
2. INSTALL THE W-BEAM DOUBLE SIDED DELINEATORS AT 6'-3" SPACING.
3. NO W-BEAM DOUBLE SIDED DELINEATORS ARE PERMITTED WITHIN 75 FEET OF THE IMPACT HEAD OF ANY TANGENTIAL OR FLARED IMPACT ATTENUATION SYSTEM.
4. RETROREFLECTIVE SHEETING COLOR SHALL BE RED ON BACKSIDE ( NOT FACING NORMAL DIRECTION OF TRAFFIC) WITH FRONT SIDE HAVING WHITE EXCEPT ON THE LEFT SIDE OF RAMPS WHERE IT SHALL BE YELLOW.



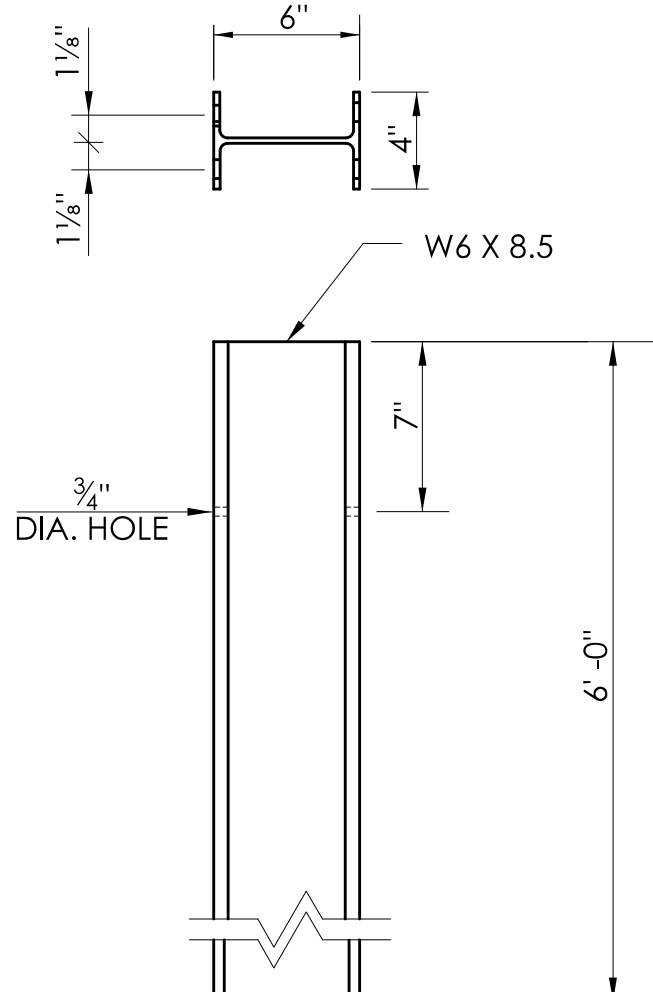
5/8" BUTTONHEAD BOLT



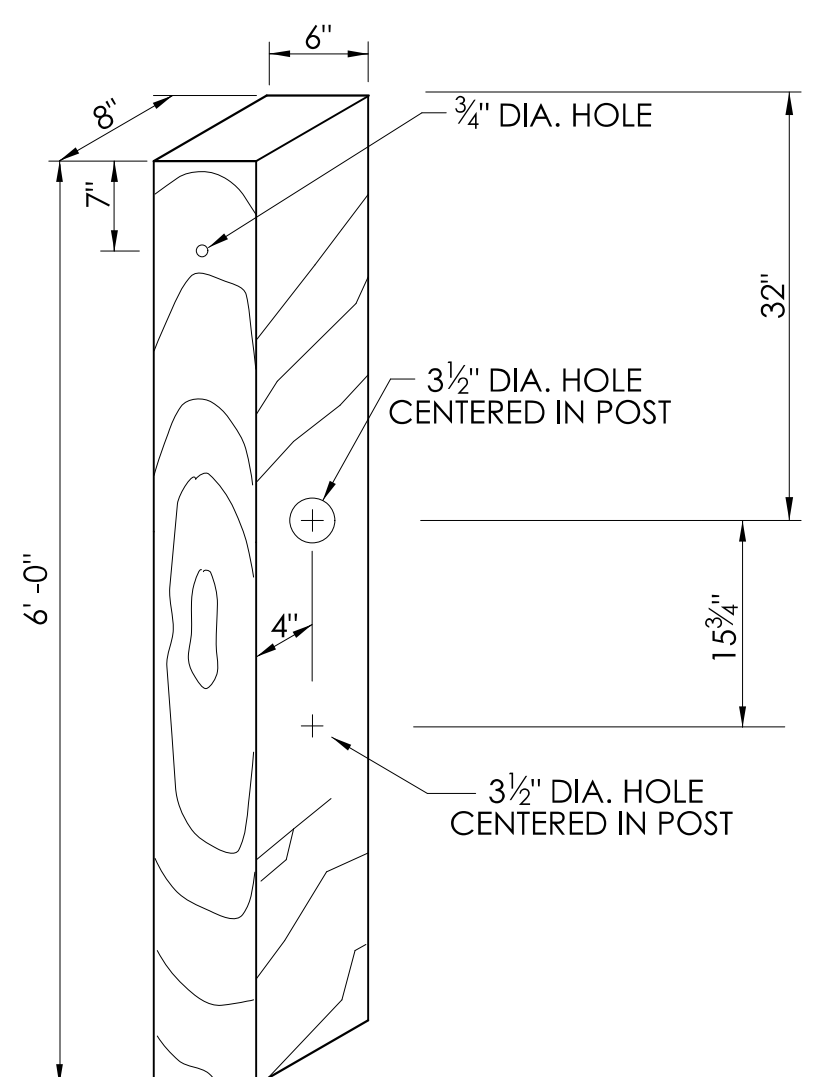
HEX NUT



WASHER  
[ FWC16a ]



STEEL POST  
6' - 0" LONG



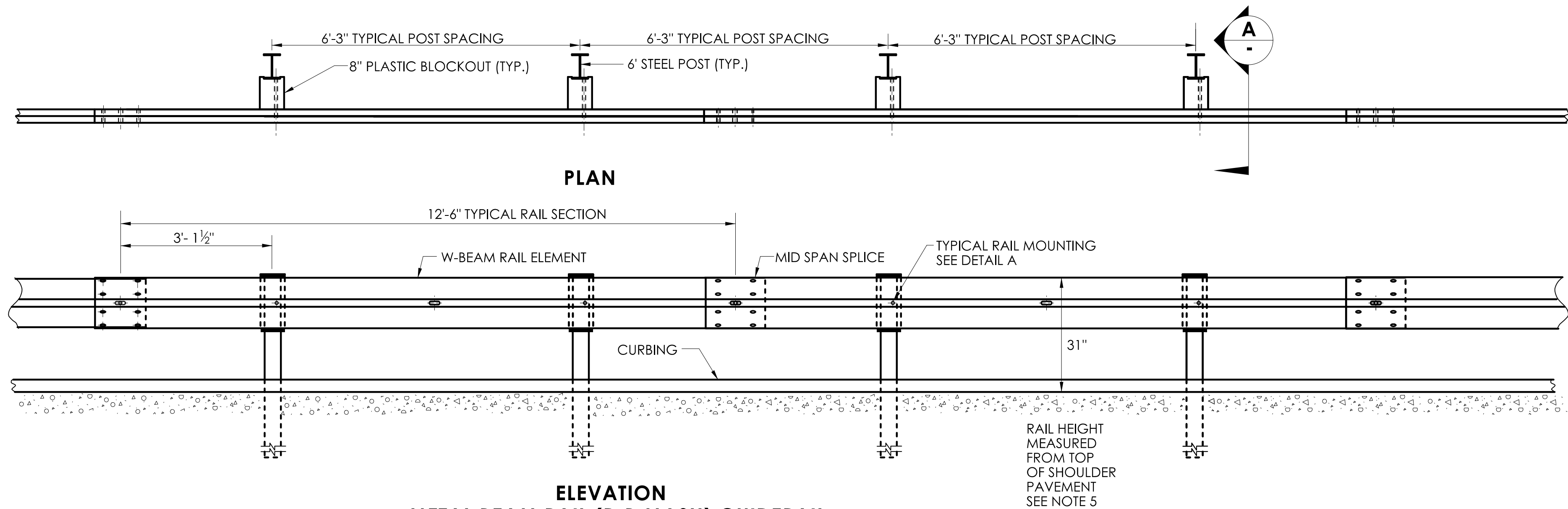
CONTROL RELEASE TIMBER (CRT) POST  
6' - 0" LONG

DESIGNATOR	L	T	INTENDED USE
FBB01	1 1/2"	1 1/8"	RAIL SPLICE BOLTS
FBB02	2"	1 3/4"	RUB RAIL BOLTS
FBB03	10"	4"	POST BOLTS ( 8" BLOCK OUTS )
	14"	4"	POST BOLTS ( 12" BLOCK OUTS )
FBB04	18"	4"	POST BOLTS ( 2-8" BLOCK OUTS )
	22"	4"	POST BOLTS ( CRT WOOD POST SYSTEM )

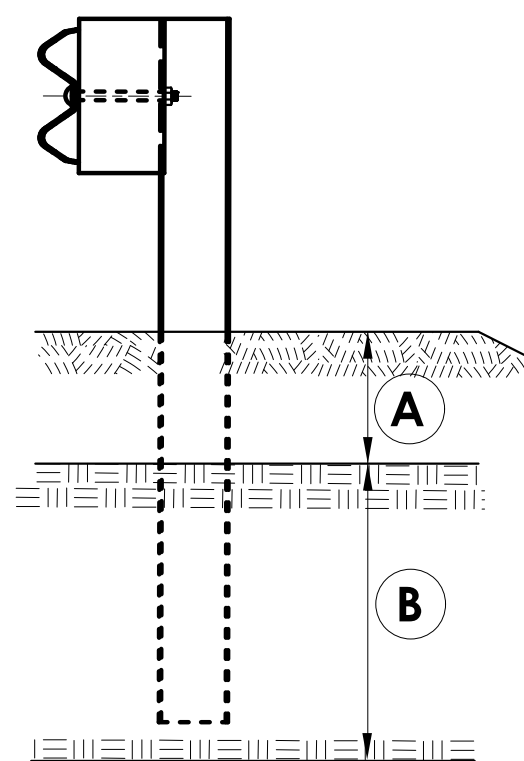
5/8" BUTTON HEAD BOLT(S) AND RECESSED NUT(S)

NOTE: AFTER GALVANIZING, THE NUT SHALL BE FREE RUNNING ON THE BOLT. DIAMETER SHOWN IS TYPICAL FOR ALL GUIDERAIL BOLTS. SEE DETAILS ABOVE FOR SPECIFIC LENGTHS.





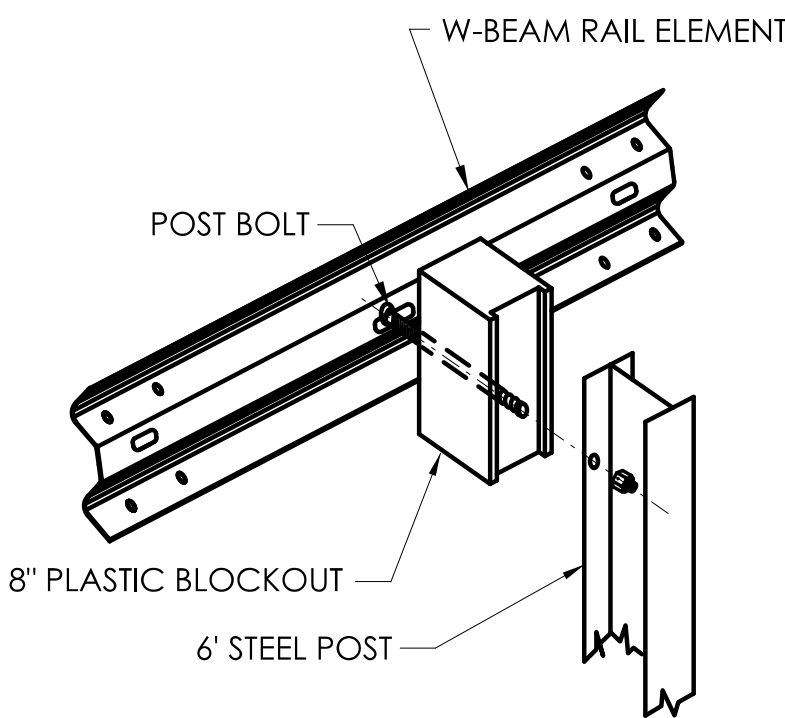
ELEVATION  
METAL BEAM RAIL (R-B MASH) GUIDERAIL



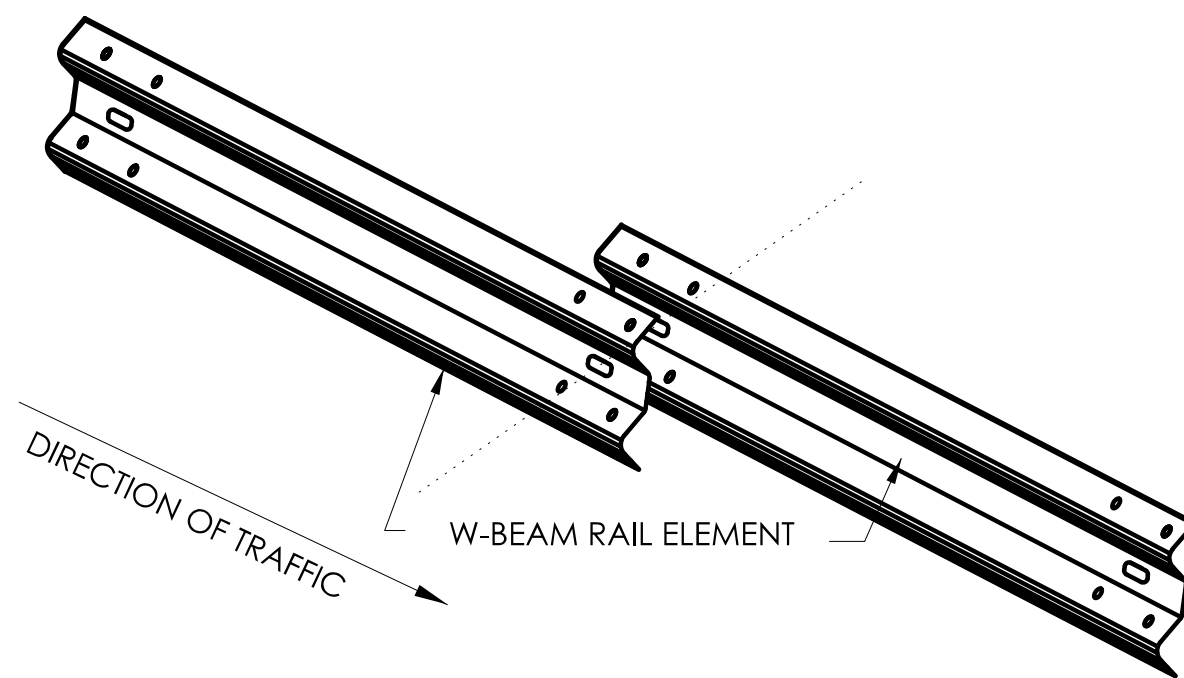
ELEVATION

CONDITION 1:  
IF SOIL DEPTH  
IS  $\leq$  18" DEEP (A)  
DRILL 20" DIA.  
HOLE 24" INTO  
LEDGE. (B)

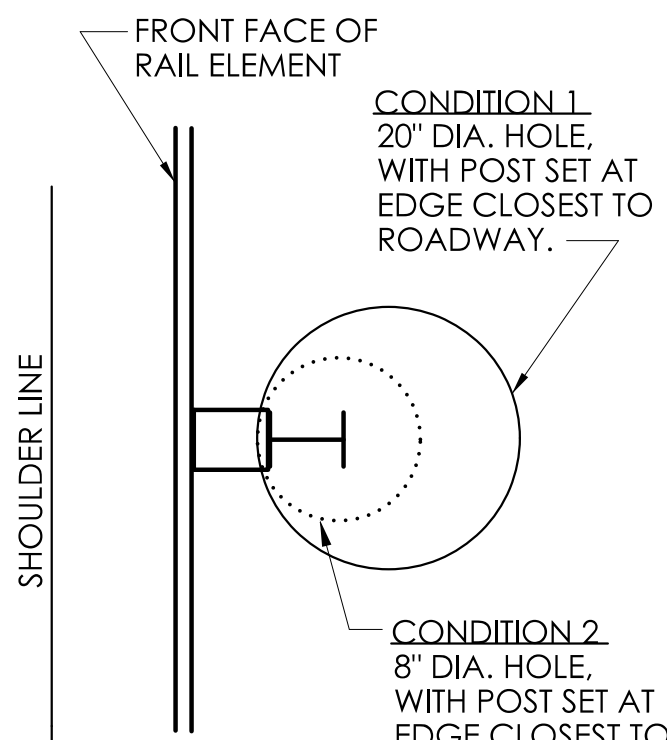
CONDITION 2:  
IF SOIL DEPTH  
IS > 18" DEEP (A)  
DRILL 8" DIA. HOLE  
12" INTO LEDGE (B) OR TO  
THE DEPTH OF FULL  
EMBEDMENT  
WHICHEVER IS LESS.



DETAIL A  
RAIL MOUNTING

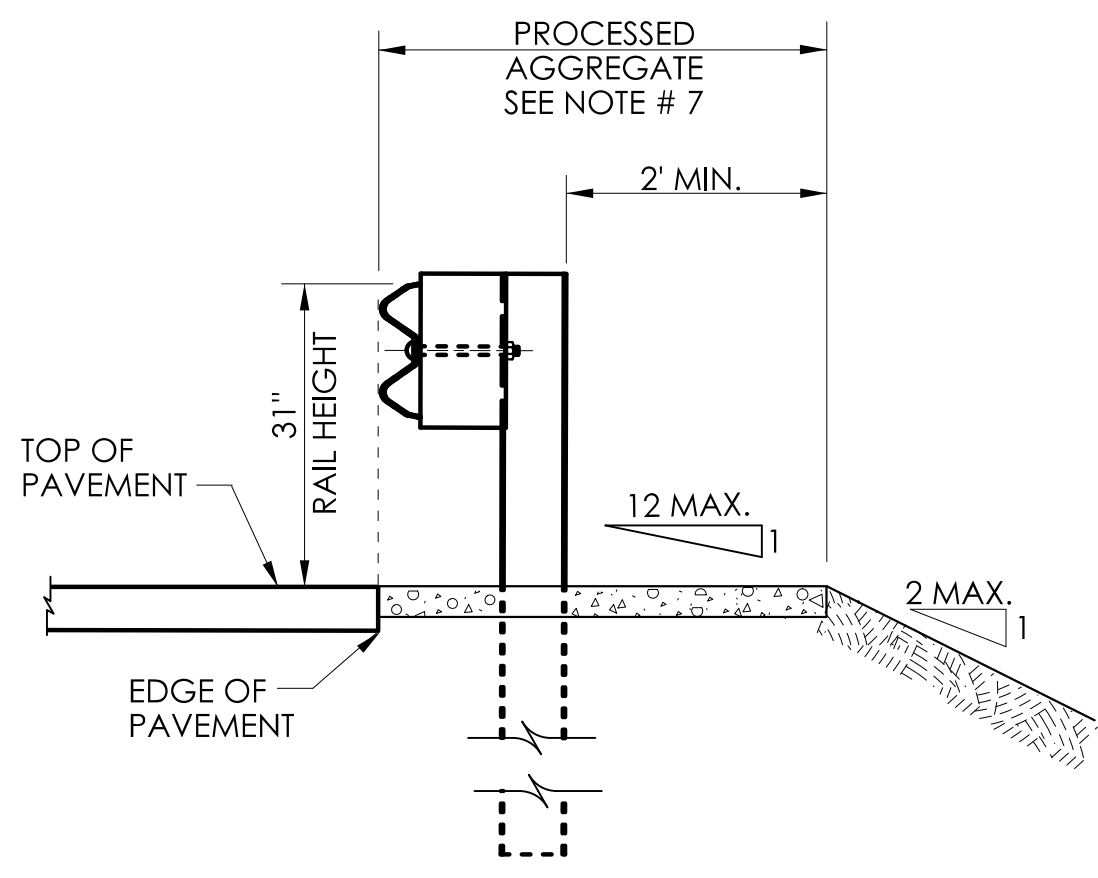


LAP W-BEAM RAIL SECTIONS  
NOTE: EIGHT (8) SPLICE BOLTS PER JOINT



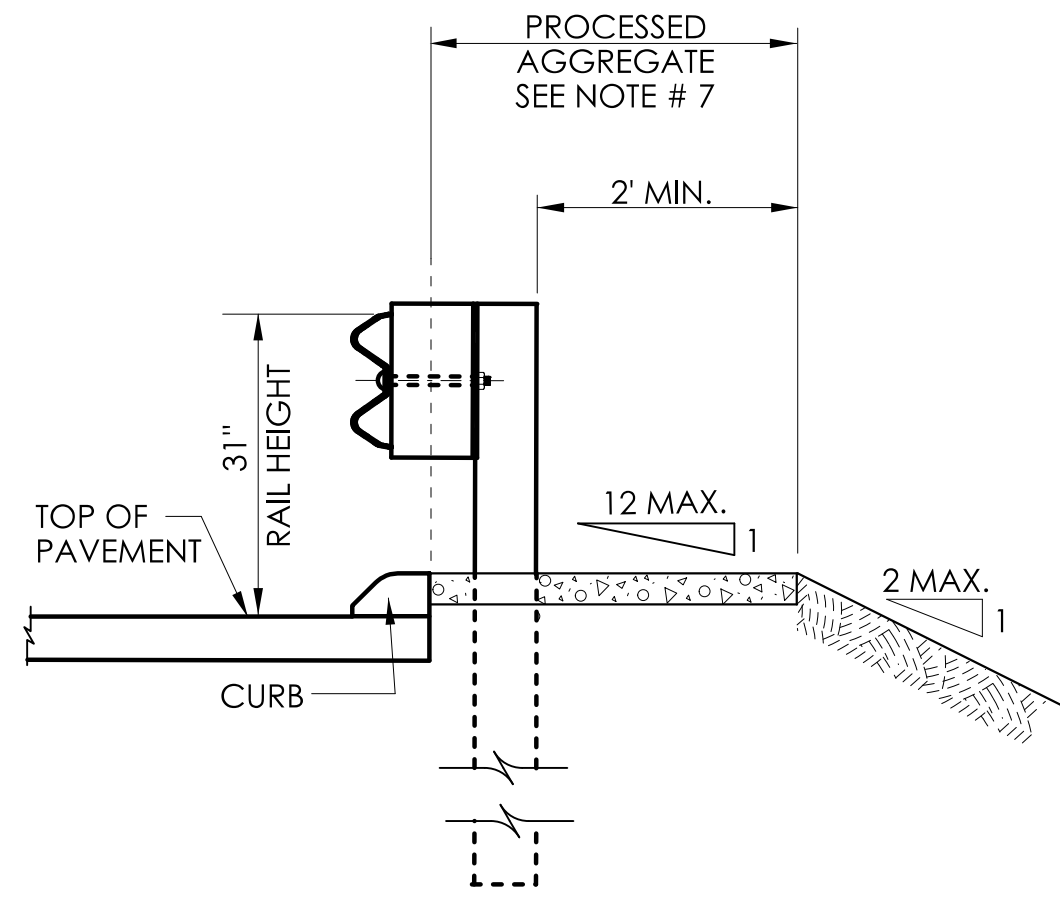
PLAN

GUIDERAIL POSTS IN ROCK



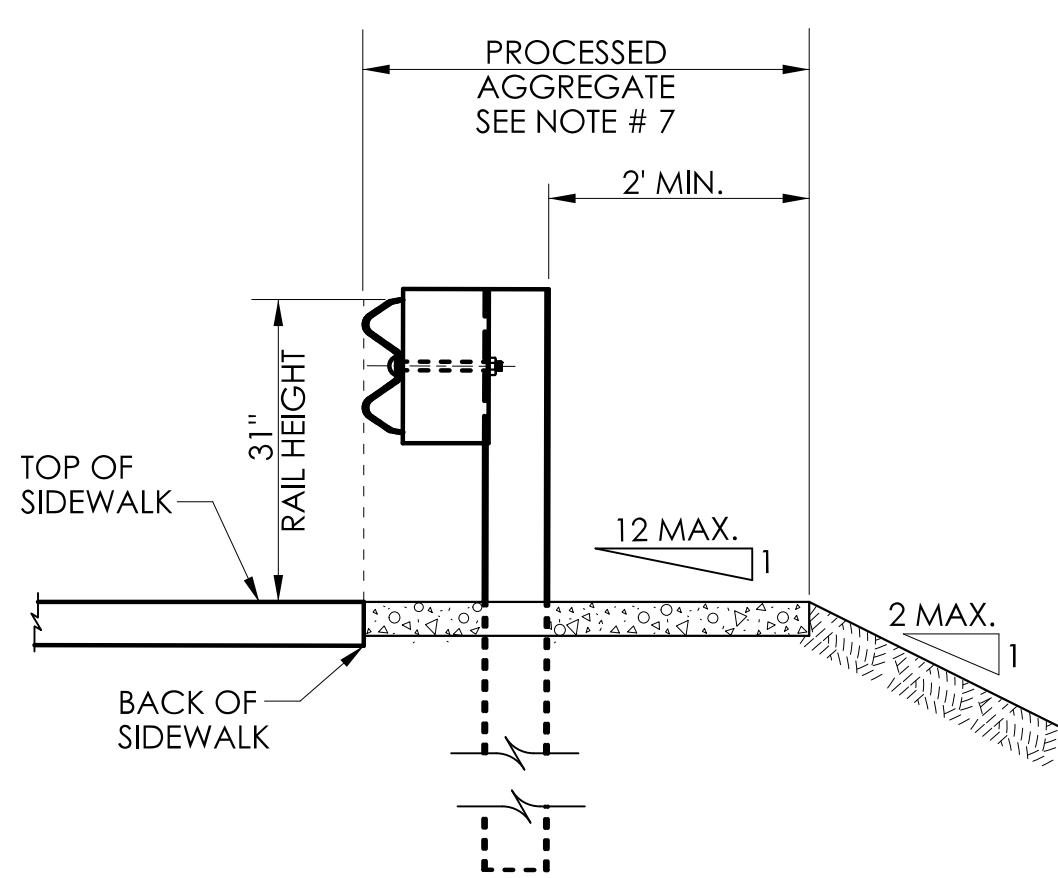
SECTION A

NO CURB APPLICATION



SECTION A

CURB APPLICATION



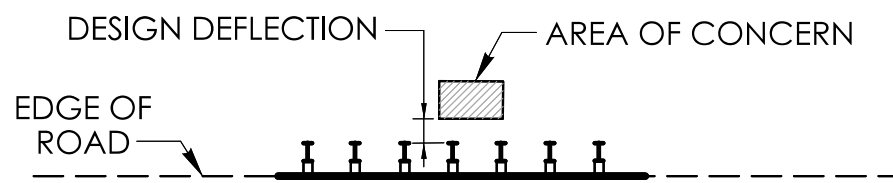
SECTION A

SIDEWALK APPLICATION

GENERAL NOTES:

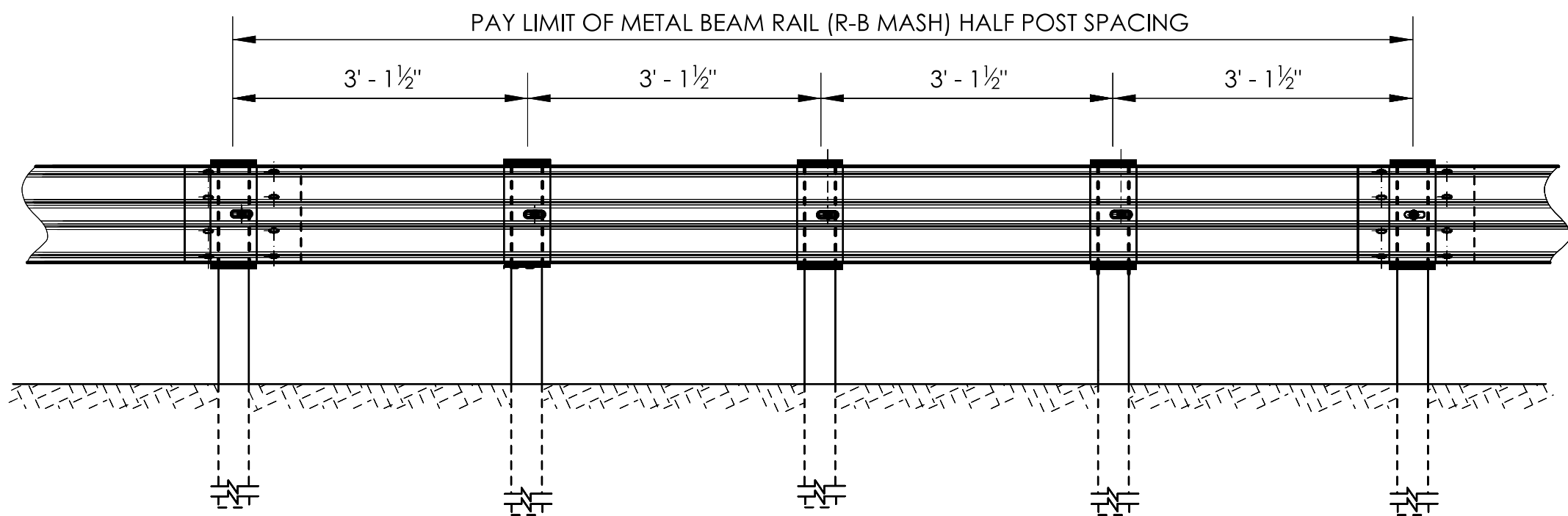
1. SEE SHEET HW-910\_20 FOR MASH W-BEAM HARDWARE AND W-BEAM DELINEATOR DETAILS.
2. THREE BLOCKOUTS MAY BE USED FOR ONE POST ONLY. TWO BLOCKOUTS MAY BE USED FOR A SERIES OF POSTS. THE COST OF ADDITIONAL BLOCKOUTS AND LONGER BOLTS SHALL BE INCLUDED IN THE PRICE PER FOOT OF GUIDERAIL. EXTRA BLOCKOUTS AT TRANSITIONS TO BRIDGE PARAPETS SHOULD BE AVOIDED. DO NOT USE ADDITIONAL BLOCKS IF IT CAUSES THE POST TO BE DRIVEN BEYOND AN EMBANKMENT HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.
3. IF BLOCKOUTS DO NOT AVOID POST FROM OBSTRUCTION, ONE POST MAY BE OMITTED IF 50 FEET OF GUIDERAIL EXISTS ON BOTH SIDES OF LOCATION. USE METAL BEAM RAIL SPAN SECTION TYPE II OR III FOR MORE THAN ONE CONSECUTIVE OMITTED POST, SEE SHEET HW-910\_24.
4. W-BEAM GUIDERAIL MAY BE PLACED 1' OR MORE FROM THE EDGE OF PAVEMENT ONLY ON SLOPES 10:1 OR FLATTER AND WITHOUT CURBING.
5. IF THE RAIL IS INSTALLED WITHIN 2' OF THE EDGE OF PAVEMENT, THE RAIL HEIGHT IS MEASURED FROM THE SHOULDER SLOPE EXTENDED TO THE RAIL. IF THE RAIL IS INSTALLED BEYOND 2' FROM THE EDGE OF PAVEMENT, THE RAIL HEIGHT IS MEASURED FROM THE GROUND DIRECTLY BELOW THE RAIL.
6. RAIL HEIGHT CONSTRUCTION TOLERANCE IS +/- 1 INCH.
7. FOR NEW CONSTRUCTION, PLACE 6 INCH LAYER OF PROCESSED AGGREGATE. FOR CONSTRUCTION PROJECTS WITH GUIDERAIL UPGRADE, THE CONTRACT PLANS MAY CALL OUT PROCESSED AGGREGATE ONLY TO BE PLACED IN LOCATION(S) OF EXISTING VERTICAL PAVEMENT EDGE DROP OFF AS A LEVELING MATERIAL, FILLING IN DEPRESSED AREAS.

- GENERAL NOTES:**
- SEE SHEET HW-910\_20 FOR HARDWARE AND W-BEAM DELINEATOR DETAILS.
  - W-BEAM DELINEATOR MAY BE INSTALLED AT POST BOLT CONNECTION TO MAINTAIN APPROPRIATE DELINEATOR SPACING.

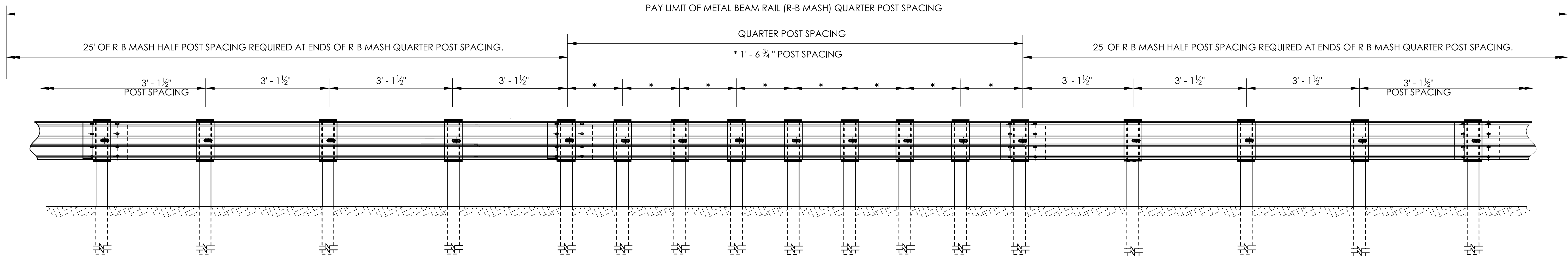


POST SPACING		DESIGN DEFLECTION
STANDARD	(6' - 3")	4' - 3"
HALF POST	(3' - 1½")	2' - 8"
QUARTER POST	(1' - 6¾")	1' - 10"

TABLE 1



METAL BEAM RAIL (R-B MASH) HALF POST SPACING

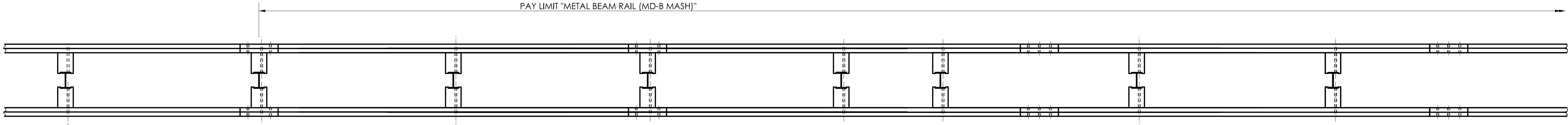


METAL BEAM RAIL (R-B MASH) QUARTER POST SPACING

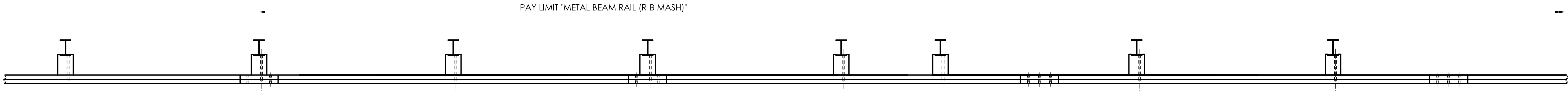
GENERAL NOTES:

GENERAL NOTES:

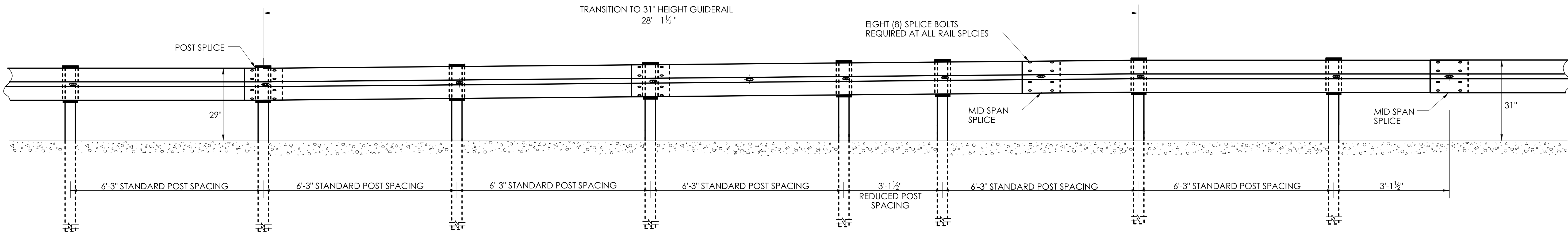
1. SEE SHEET HW-910\_20 FOR HARDWARE AND W-BEAM DELINEATOR DETAILS.  
2. NO POST(S) SHALL BE OMITTED WITHIN THE LENGTH OF GUIDERAIL TRANSITION.



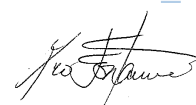

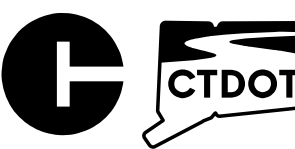
PLAN  
METAL BEAM RAIL MD-B 350 TRANSITION TO METAL BEAM RAIL MD-B MASH



PLAN  
METAL BEAM RAIL R-B 350 TRANSITION TO METAL BEAM RAIL R-B MASH

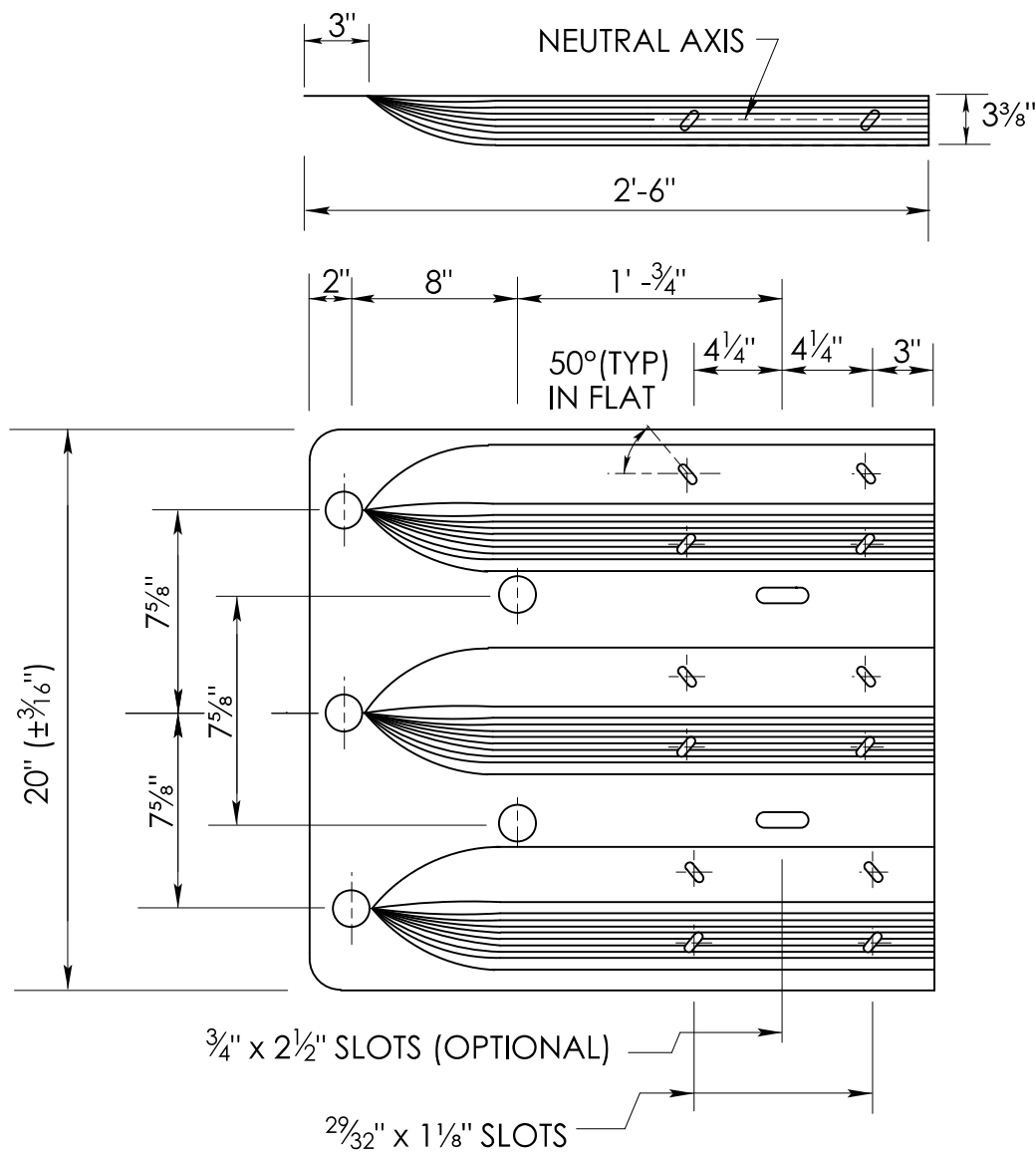


ELEVATION

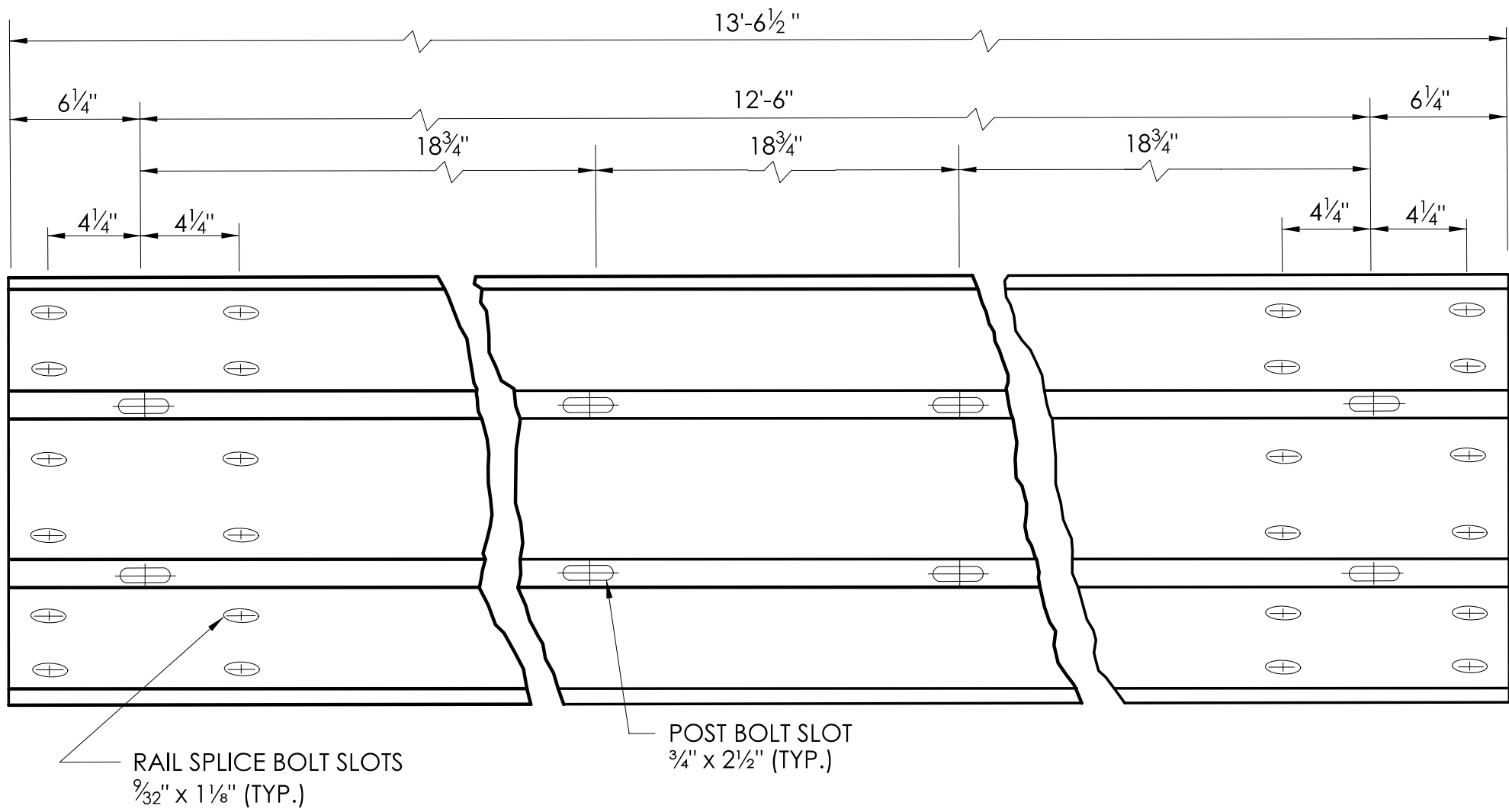
	NOT TO SCALE	SIGNATURE BLOCK: OFFICE OF ENGINEERING 2800 BERLIN TURNPIKE NEWINGTON, CT 06111	SUBMITTED BY:  Digitally signed by Leo Fontaine, P.E. Date: 2024.12.19 15:07:14-05'00'	APPROVED BY:  Digitally signed by Michael N. Calabrese, P.E. Date: 2025.01.29 12:35:10-05'00'		CONNECTICUT DEPARTMENT OF TRANSPORTATION	CTDOT STANDARD SHEET	STANDARD SHEET TITLE: METAL BEAM RAIL TRANSITION 350 TO MASH GUIDERAIL	STANDARD SHEET NO.: HW-910_25a



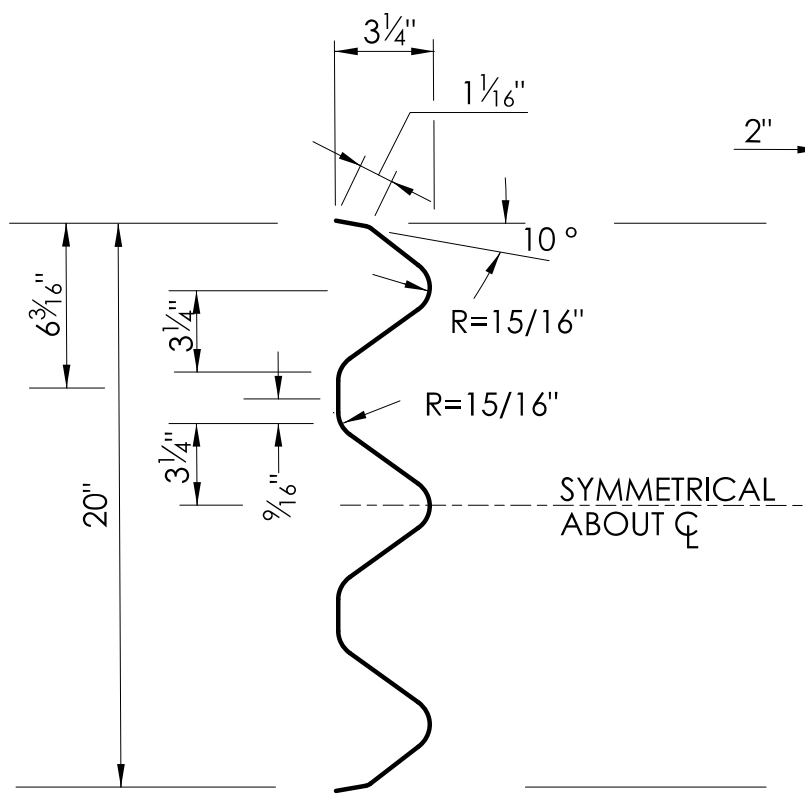
GENERAL NOTE:  
1. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES



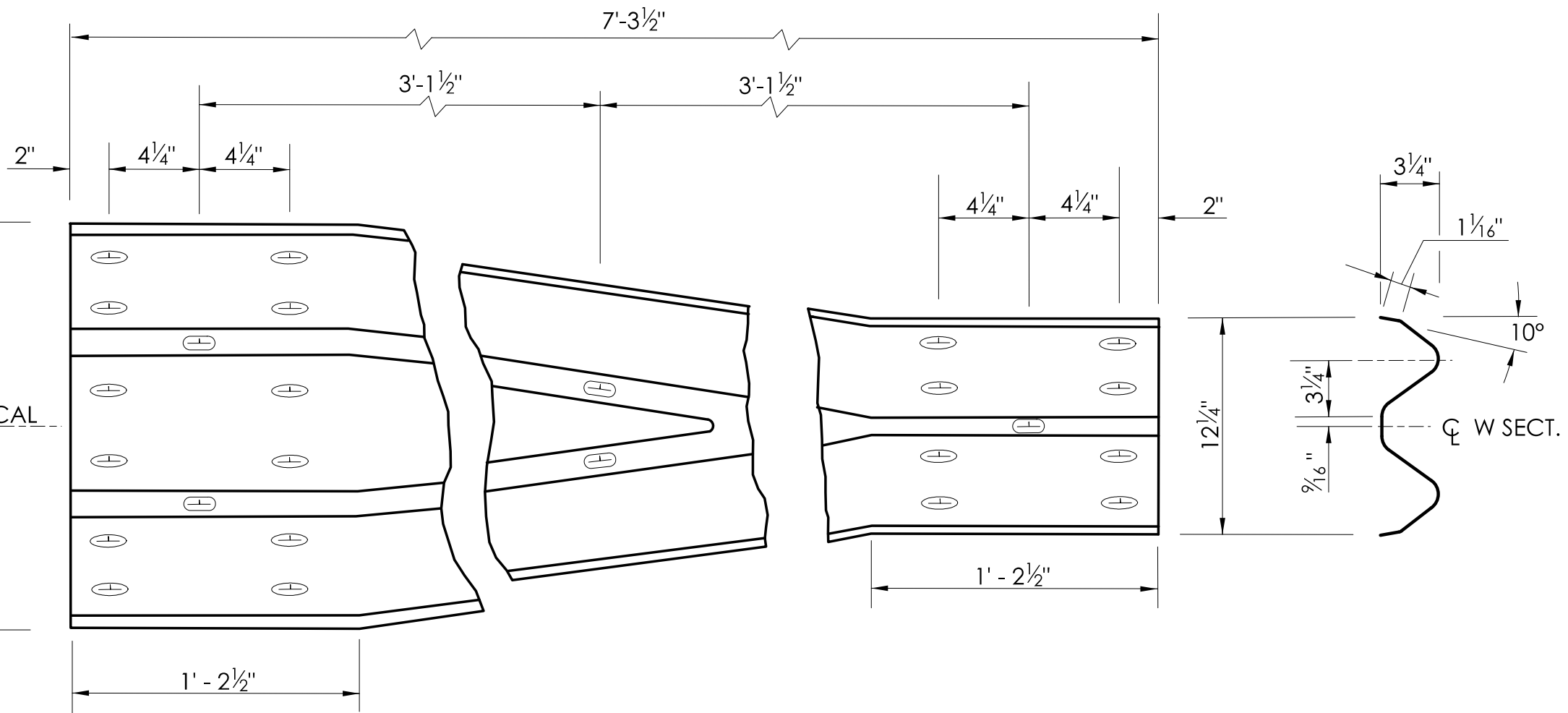
**THRIE-BEAM TERMINAL CONNECTOR**  
[RTE01b]  
(10 GAUGE)



**TYPICAL THRIE-BEAM RAIL ELEMENT**  
[RTM19a FOR 6'-3" AND RTM08a FOR 12'-6" THRIE-BEAM LENGTHS]  
(12 GAUGE)

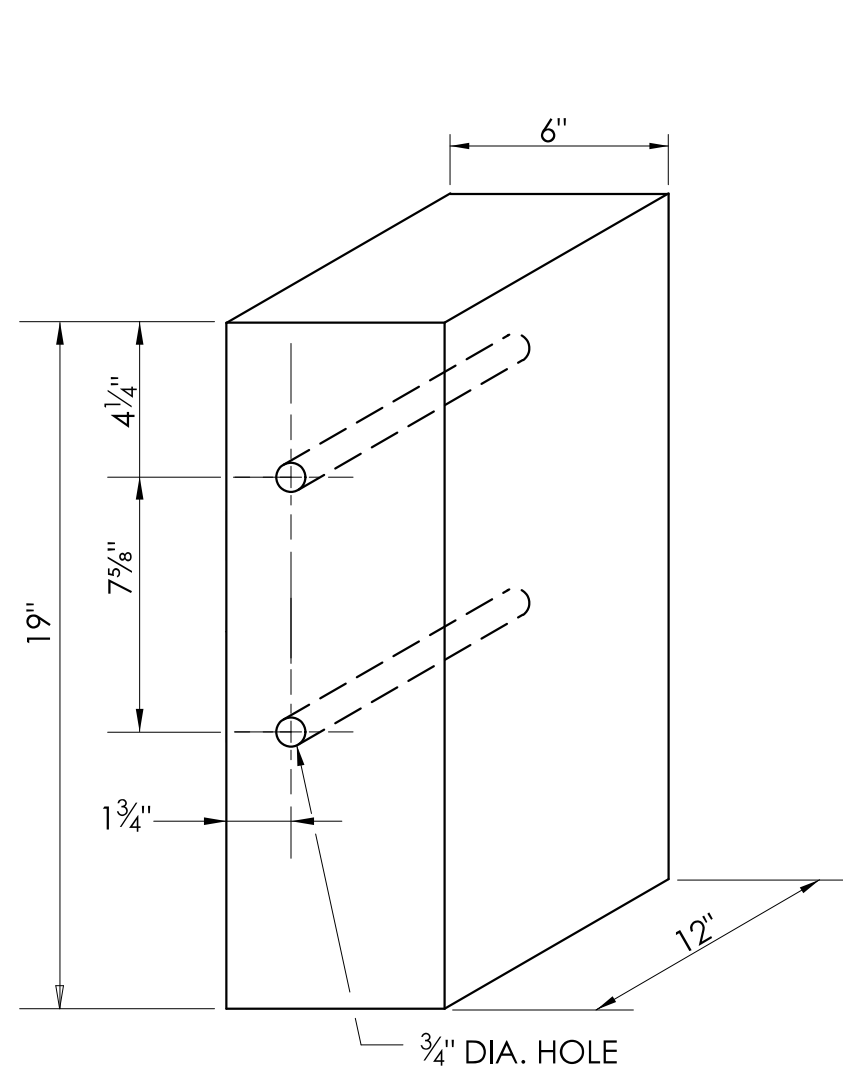


**END VIEW OF TRANSITION**

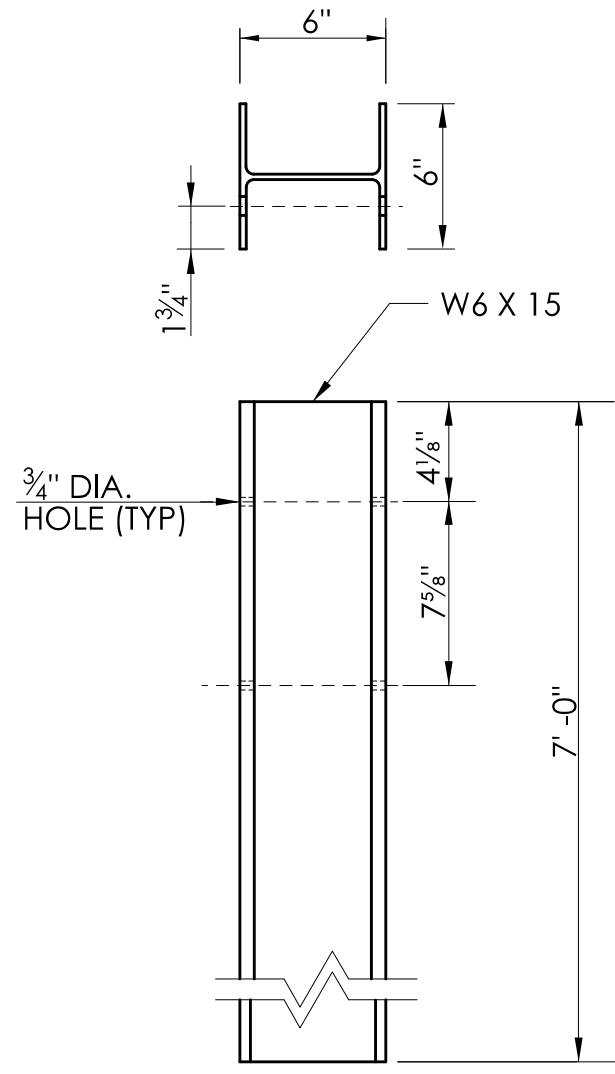


**TYPICAL THRIE-BEAM TRANSITION ELEMENT**  
[RWTO1b]  
(10 GAUGE)

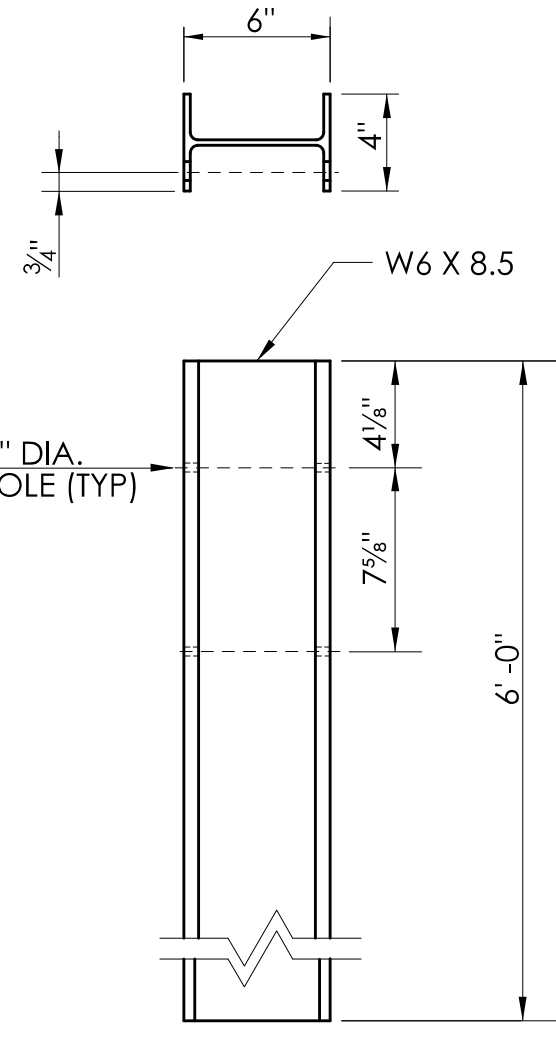
**END VIEW OF TRANSITION**



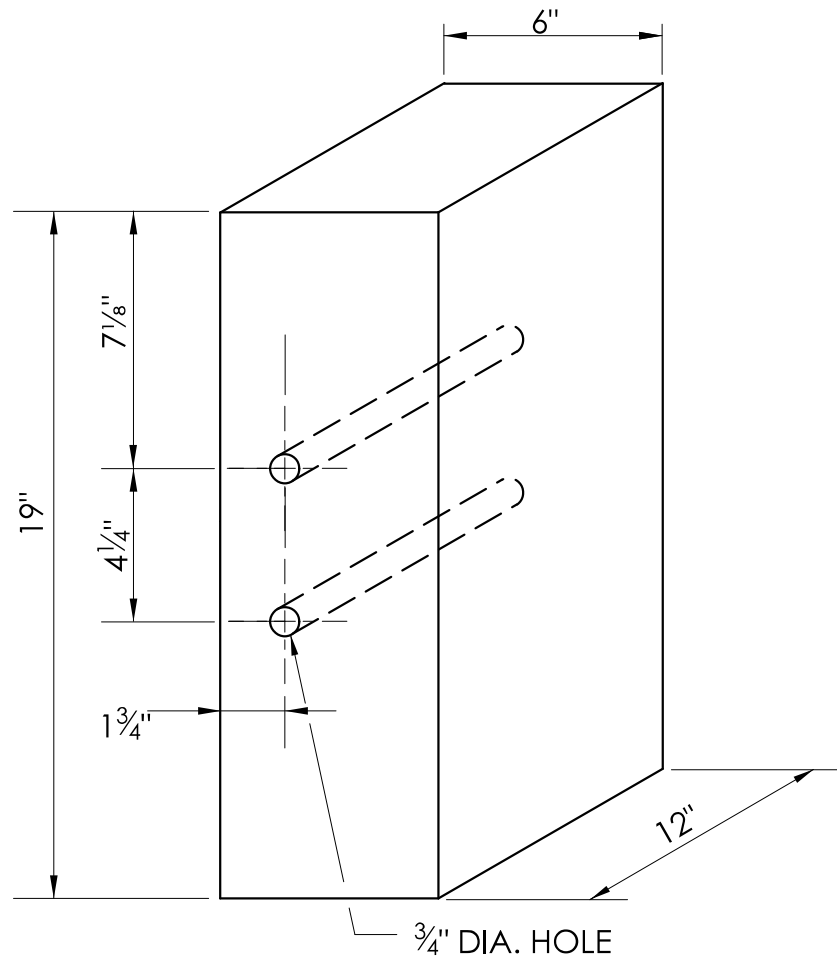
**12" WOOD BLOCKOUT**  
[PDB18]  
(FOR POSTS 1 TO 8)



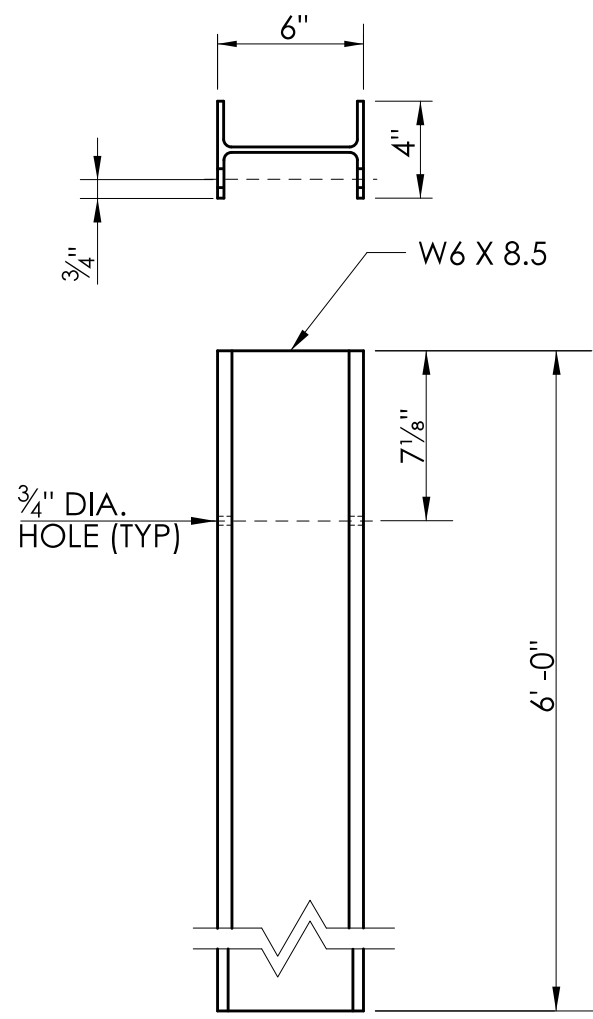
**STEEL POST 7' - 0" LONG**  
[PDB18]  
(FOR POSTS 1 TO 3)



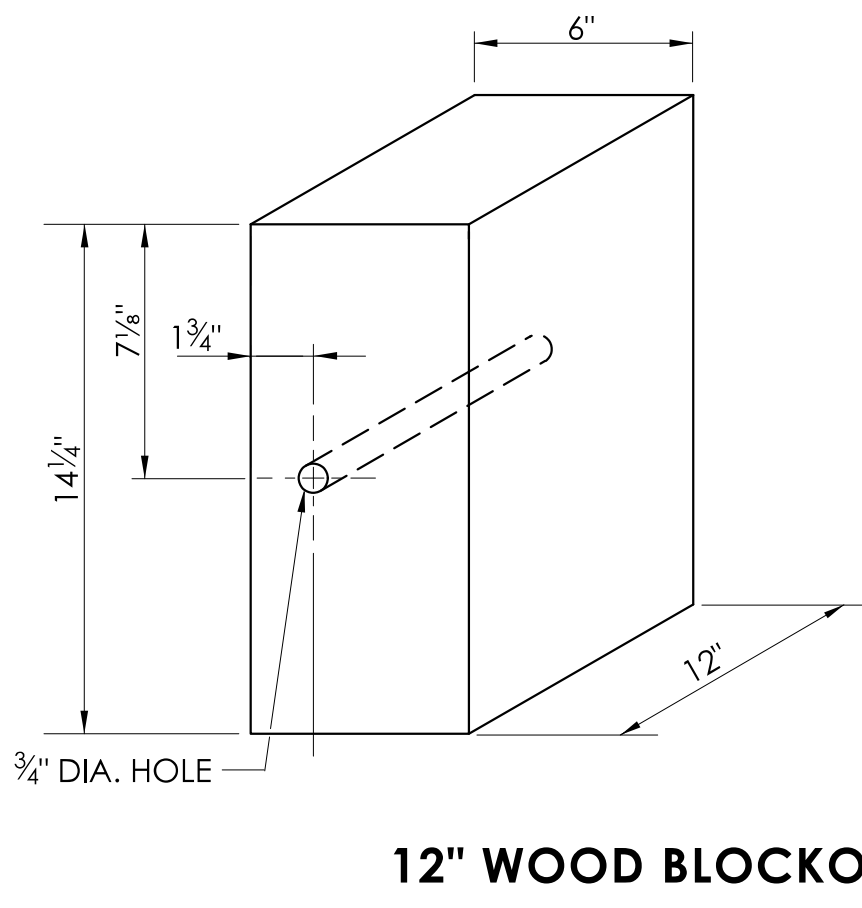
**STEEL POST 6' - 0" LONG**  
[PDB18]  
(FOR POSTS 4 TO 8)



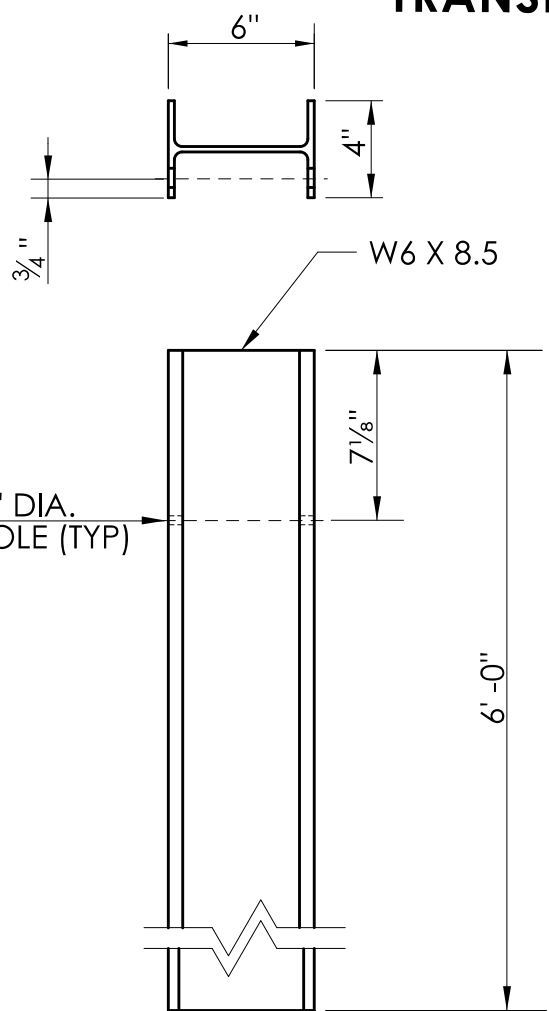
**12" WOOD BLOCKOUT**  
[PDB18]  
(FOR POST 9 ONLY)



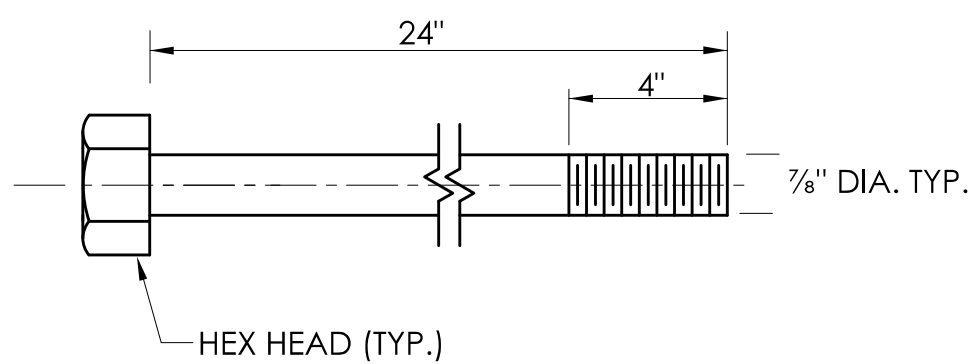
**STEEL POST 6' - 0" LONG**  
[PDB18]  
(FOR POST 9 ONLY)



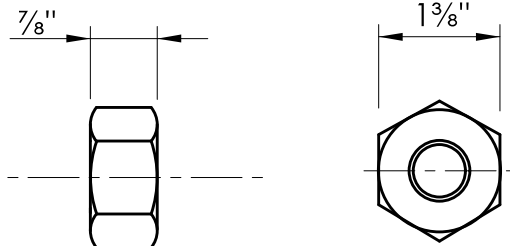
**12" WOOD BLOCKOUT**  
[PDB10a]  
(FOR POSTS 10 TO 12)



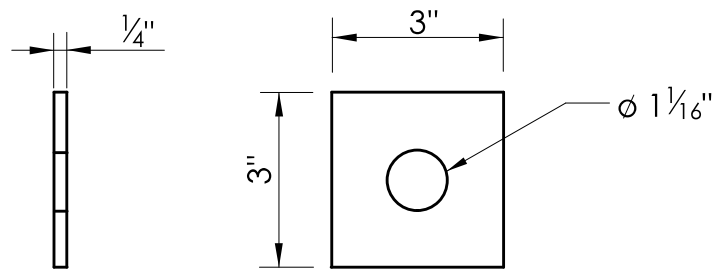
**STEEL POST 6' - 0" LONG**  
[PDB18]  
(POSTS 10 TO 12)



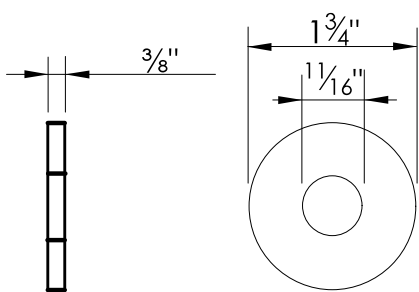
**LONG HEAVY HEX HEAD BOLT**  
[FBX22b]  
(FOR THRIE-BEAM TERMINAL CONNECTOR)



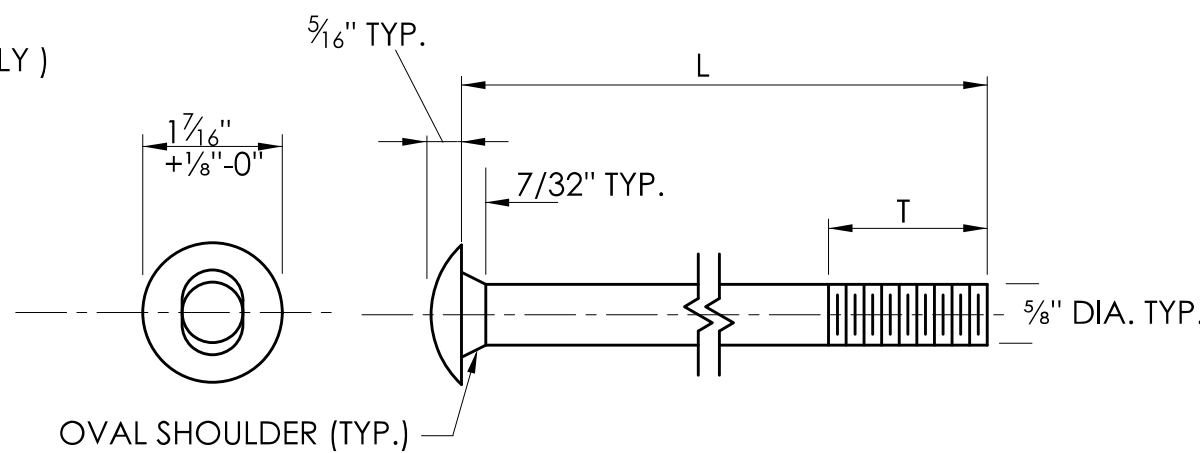
**HEX NUT**



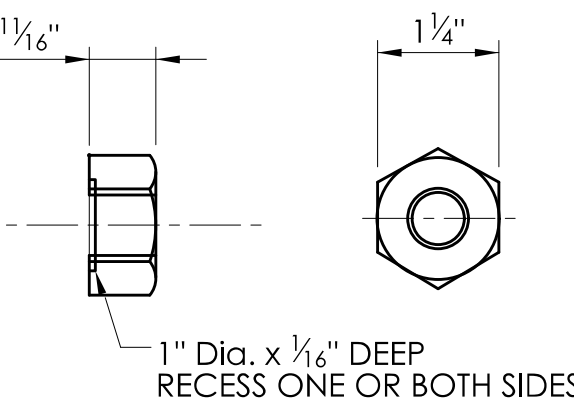
**SQUARE PLATE WASHER**  
[FWR10]  
(FOR THRIE-BEAM TERMINAL CONNECTOR, PLACED BETWEEN HEX NUT AND BACKSIDE OF CONCRETE STRUCTURE)



**WASHER**  
[FWC16a]  
(FOR WASHERS PLACED BETWEEN SPICE NUT AND THRIE-BEAM TERMINAL CONNECTOR)



**BUTTONHEAD BOLT**



**HEX NUT**

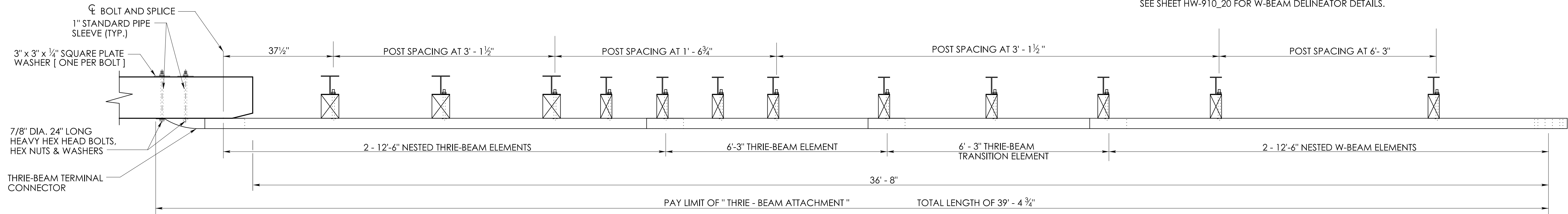
DESIGNATOR	L	T	INTENDED USE
FBBO2	2"	1 1/8"	RAIL SPICE BOLTS
FBBO6	14"	4"	POST BOLT (12" BLOCK OUTS)

**5/8" BUTTON HEAD BOLT(S) AND RECESSED NUT(S)**

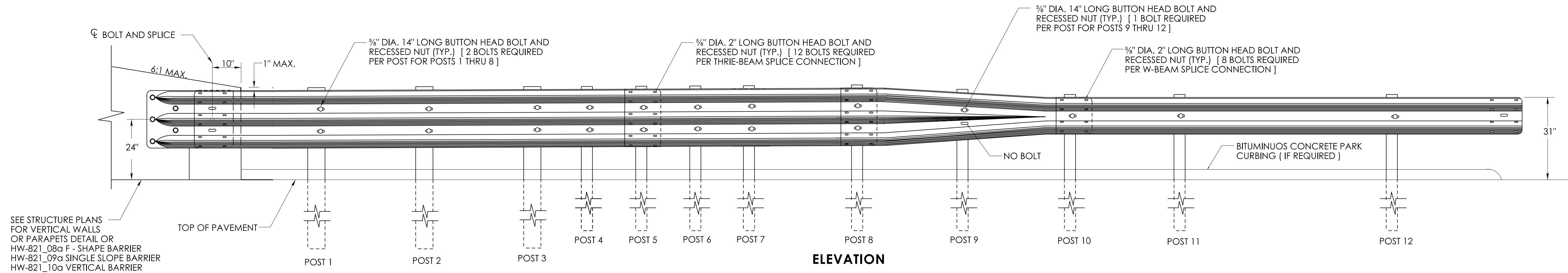
NOTE: AFTER GALVANIZING, THE NUT SHALL BE FREE RUNNING ON THE BOLT. DIAMETER SHOWN IS TYPICAL FOR ALL GUIDERAIL BOLTS. SEE DETAILS ABOVE FOR SPECIFIC LENGTHS.

GENERAL NOTES:

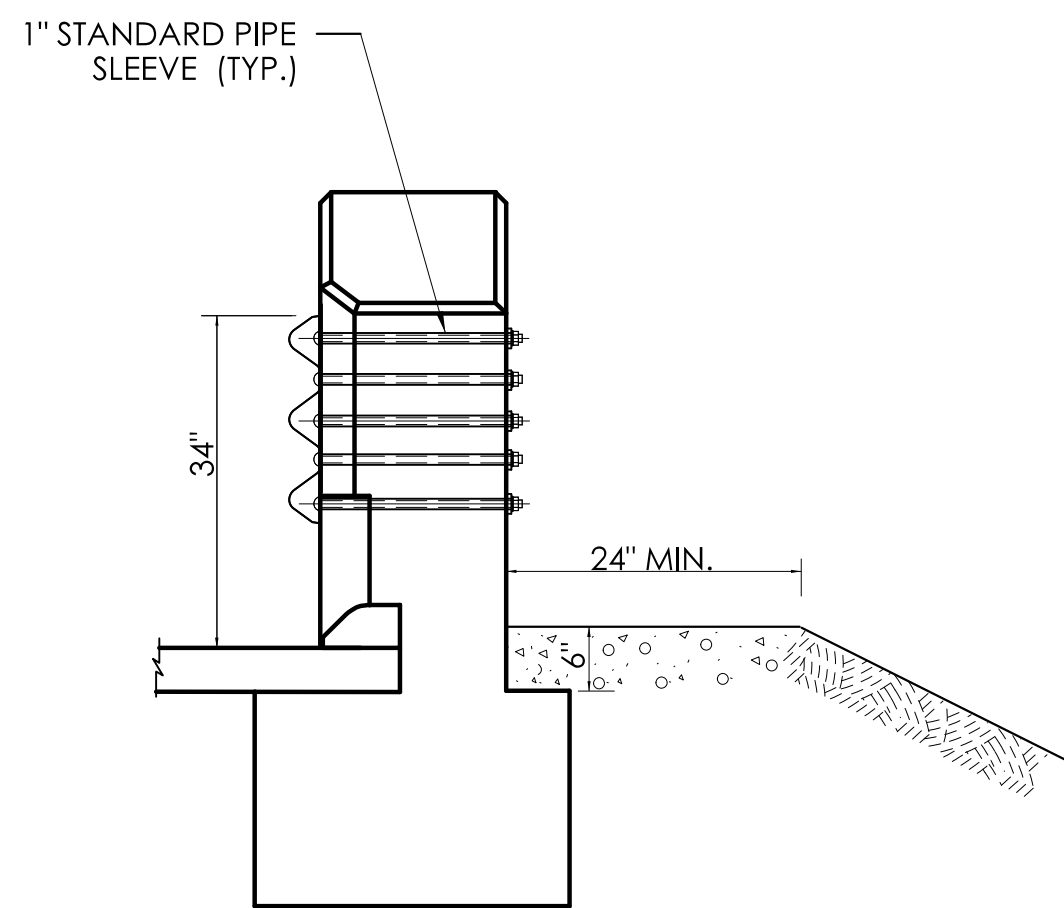
1. PROVIDE 2 FOOT MINIMUM EMBANKMENT BETWEEN THE BACK OF THE GUIDERAIL POST(S) / CONCRETE BARRIER AND THE BREAK IN THE FILL SLOPE.
2. INSTALL THRIE - BEAM TERMINAL CONNECTOR BETWEEN NESTED GUIDERAIL ELEMENTS, EXCEPT FOR SINGLE DIRECTION ROADWAY APPLICATION ONLY WHERE THE THRIE - BEAM TERMINAL CONNECTOR IS INSTALLED OUTSIDE OF NESTED GUIDERAIL ELEMENTS ON THE TRAILING END.
3. DELINEATORS SHALL BE INSTALLED ON THE POST CLOSEST TO THE DESIGNATED SPACING. SEE SHEET HW-910\_20 FOR W-BEAM DELINEATOR DETAILS.



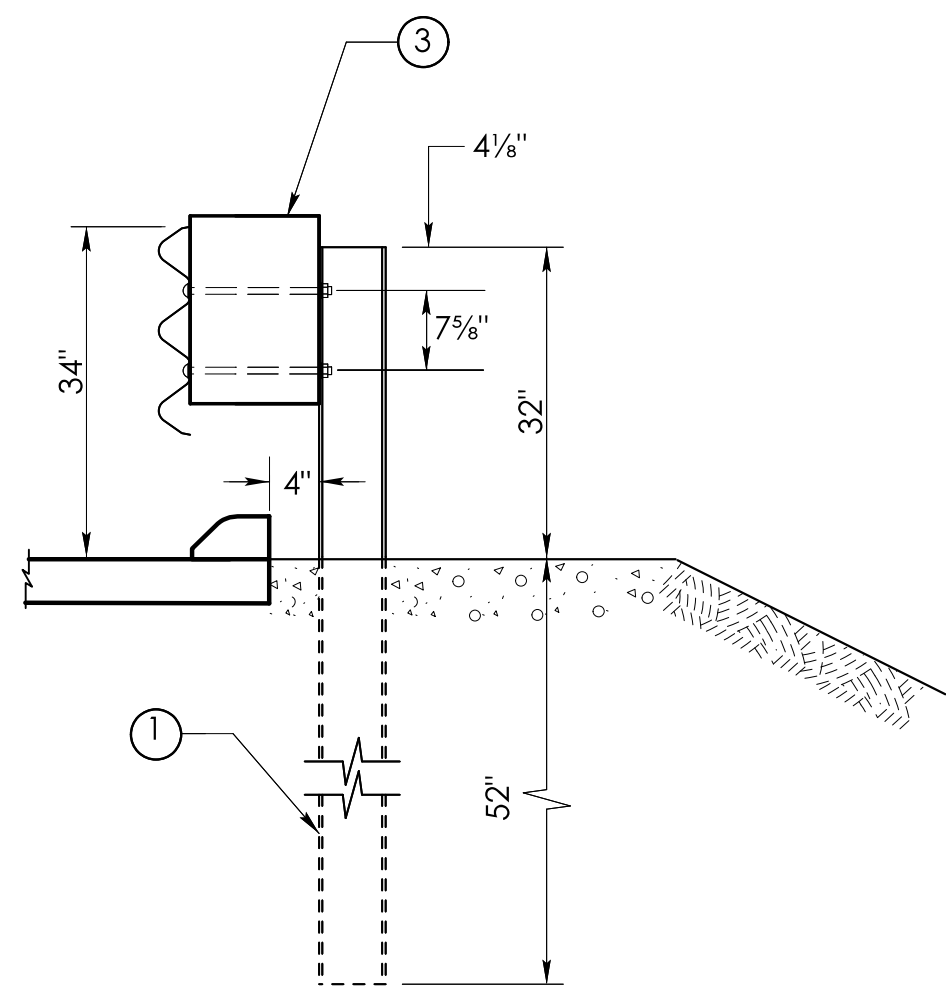
PLAN



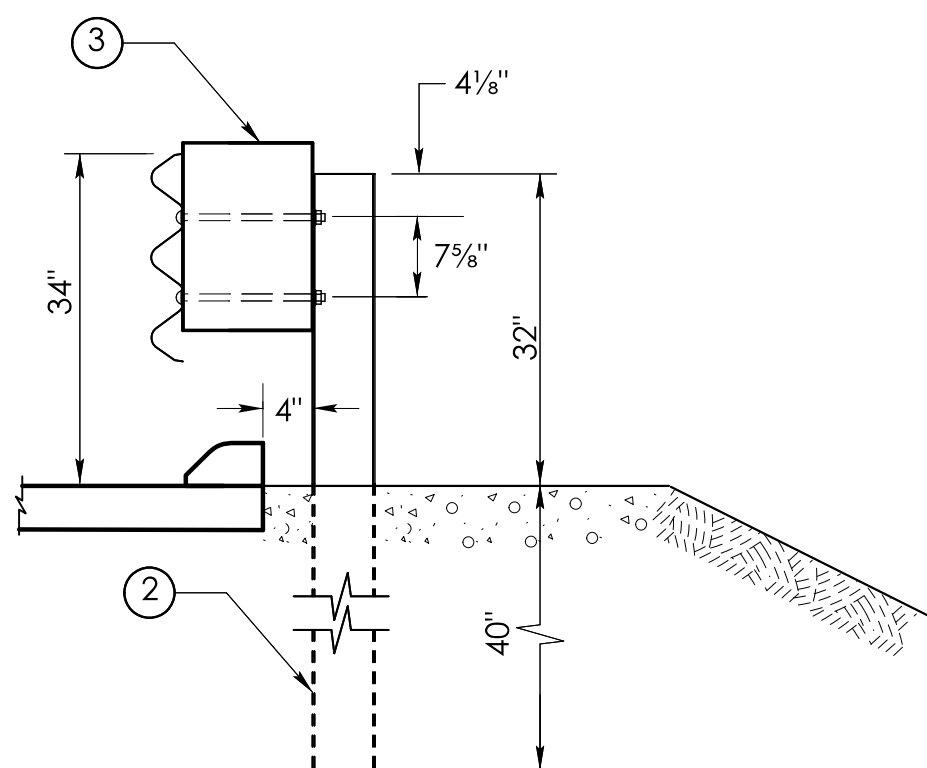
ELEVATION



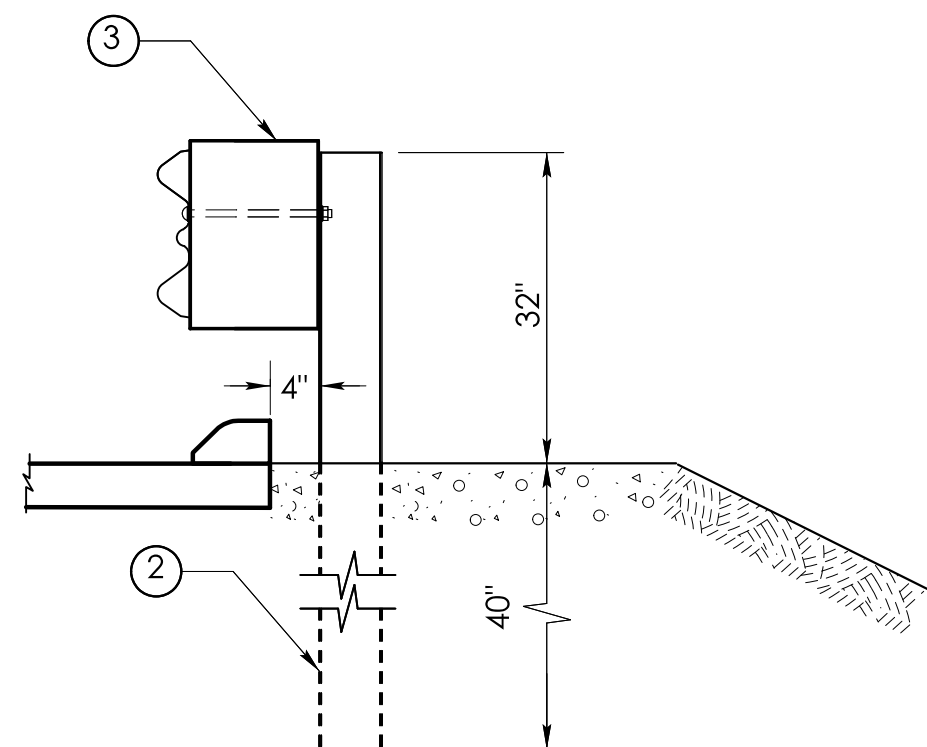
THRIE BEAM CONNECTION



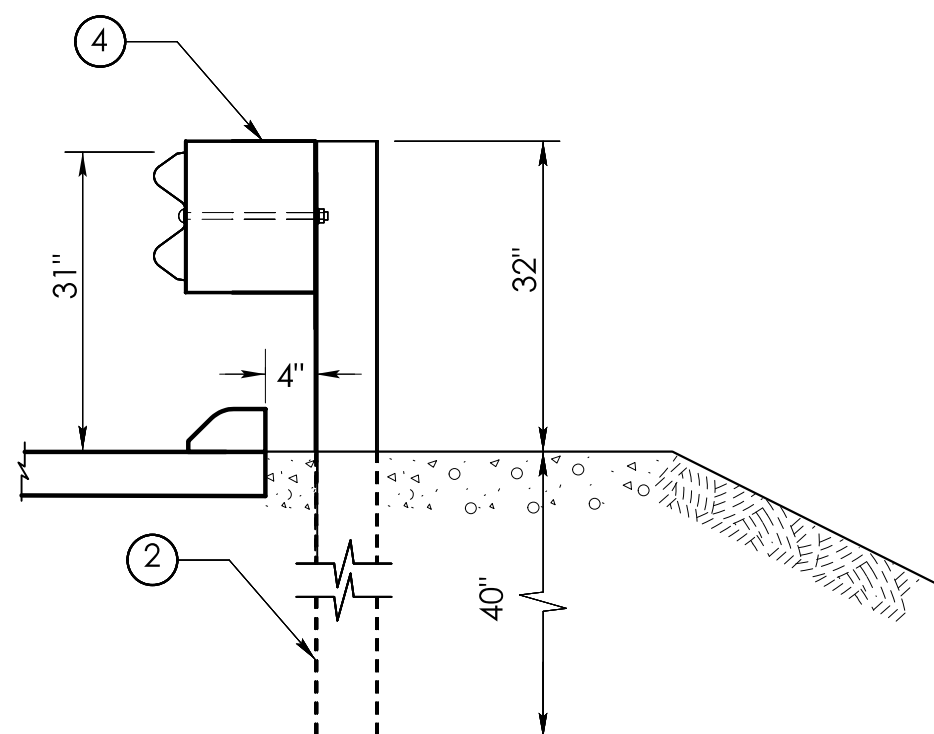
POST 1, 2 & 3



POST 4, 5, 6, 7 & 8



POST 9



POST 10, 11 & 12

LEGEND

- ① W6 x 15, 7 FOOT LONG STEEL POST
- ② W6 x 8.5 OR W6 x 9, 6 FOOT LONG STEEL POST
- ③ 6" x 12" x 19" TREATED TIMBER BLOCKOUT
- ④ 6" x 12" x 14 1/4" TREATED TIMBER BLOCKOUT

NOT TO SCALE

SIGNATURE BLOCK:  
OFFICE OF ENGINEERING  
2800 BERLIN TURNPIKE  
NEWINGTON, CT 06111

SUBMITTED BY:  
Digitally signed by  
Ligo Fontaine, P.E.  
Date: 2024.12.19  
15:06:03-05'00'

APPROVED BY:  
Digitally signed by  
Michael N.  
Calabrese, P.E.  
Date: 2025.01.29  
12:37:54-05'00'



CONNECTICUT  
DEPARTMENT OF  
TRANSPORTATION

CTDOT  
STANDARD SHEET

STANDARD SHEET TITLE:

THRIE-BEAM ATTACHMENT

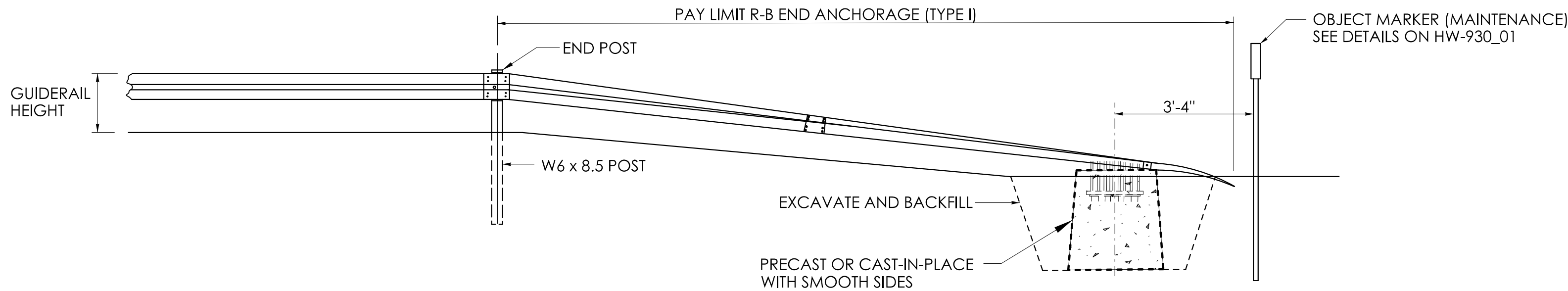
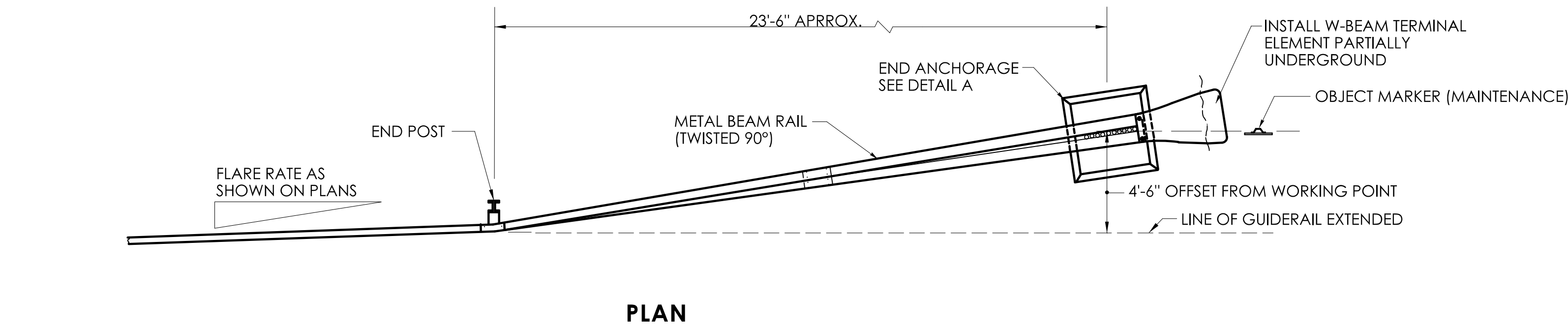
MASH 2016 COMPLIANT  
APPROVAL ID. 2019-01

STANDARD SHEET NO.:

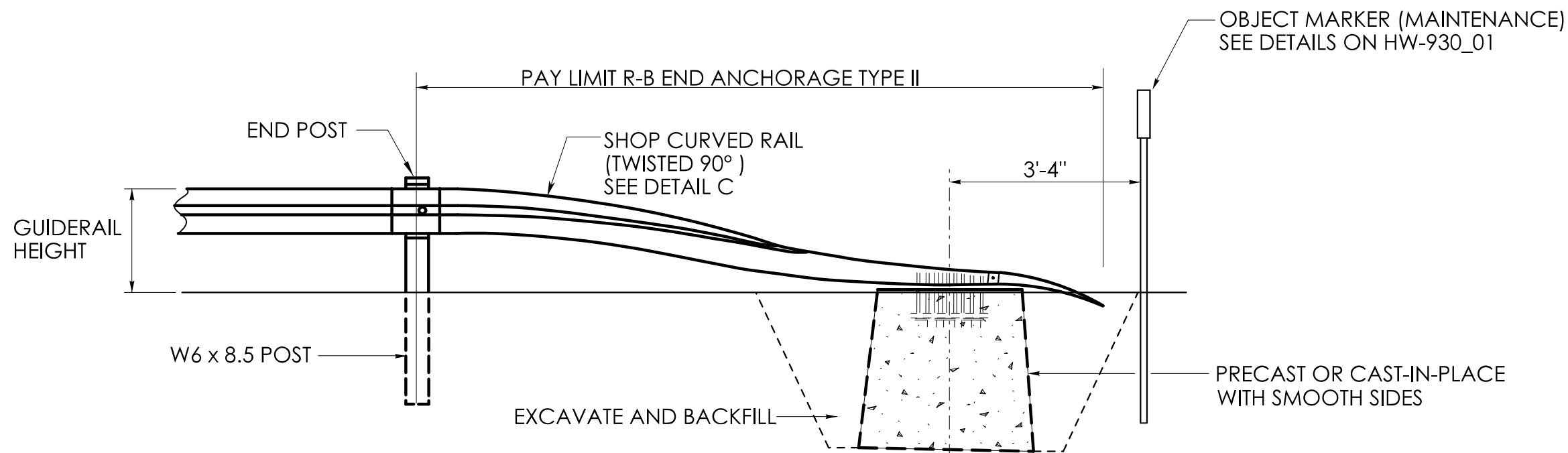
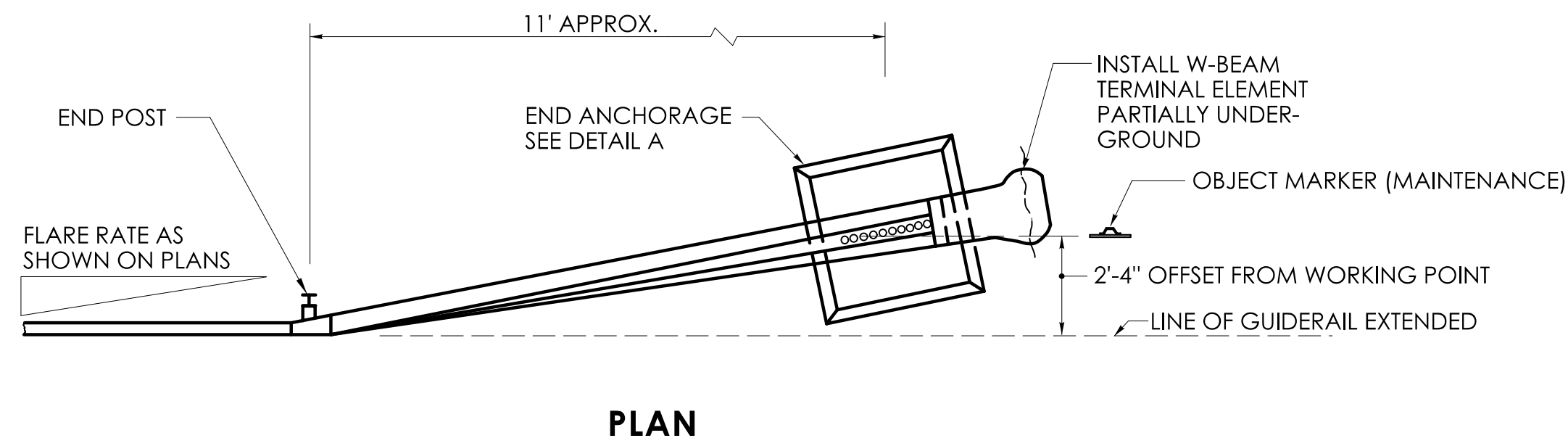
HW-910\_27



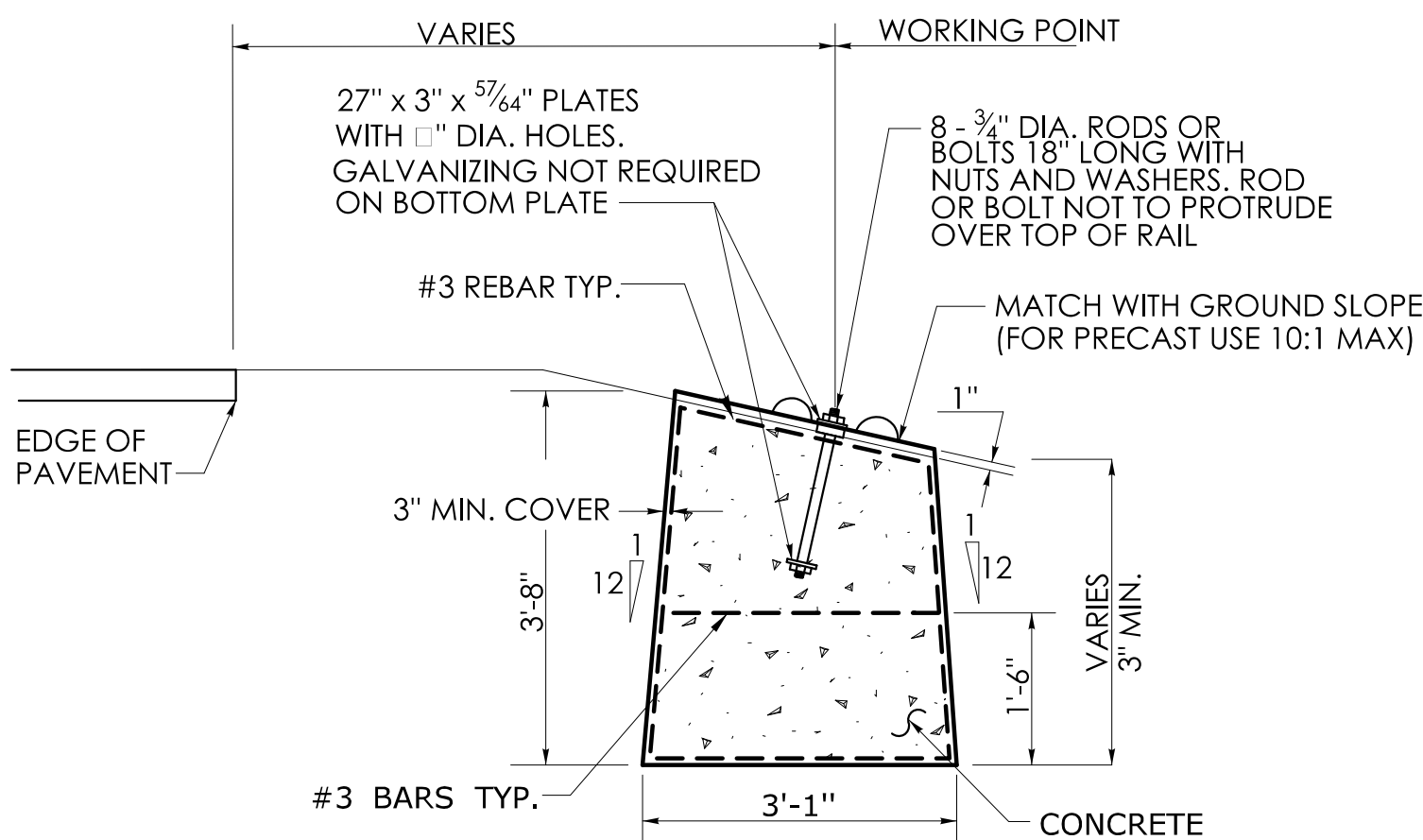
- GENERAL NOTES:**
- J-HOOK BOLTS MAY BE SUBSTITUTED FOR BOTTOM PLATE ANCHORAGE IN CONCRETE END ANCHORS USING THE SAME SIZE, STRENGTH, AND LENGTH AS NOTED ON THE PLANS.
  - INSTALLATION OF RADII DIFFERENT THAN WHAT IS SHOWN IN DETAIL "C" FOR R-B END ANCHORAGE TYPE II MUST BE APPROVED BY THE ENGINEER.



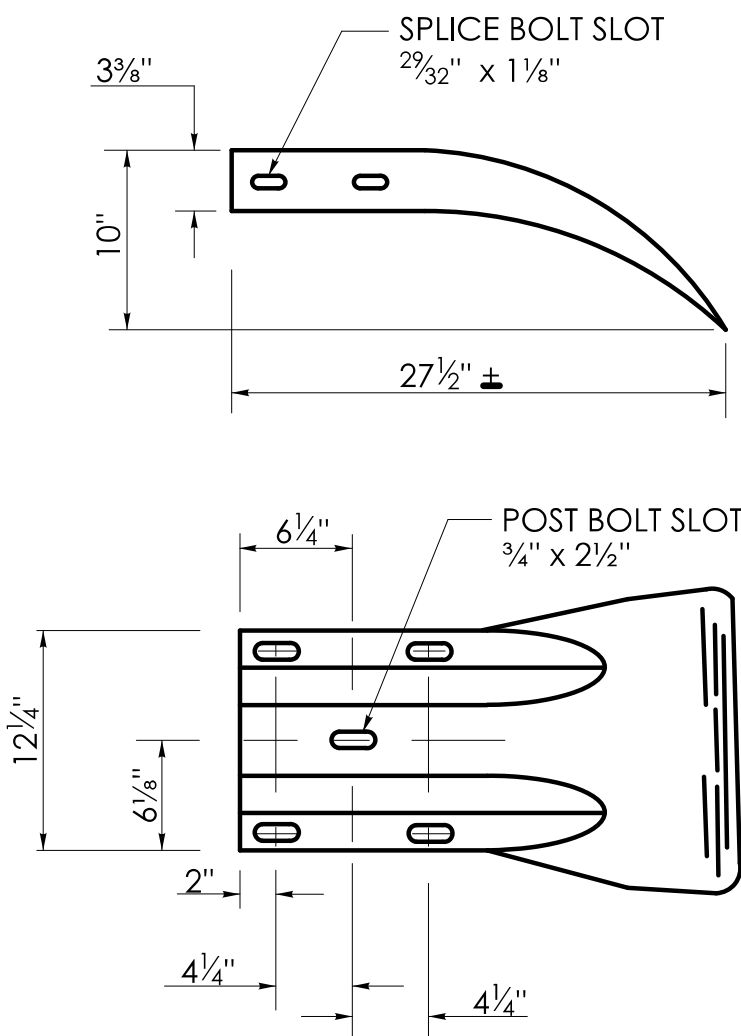
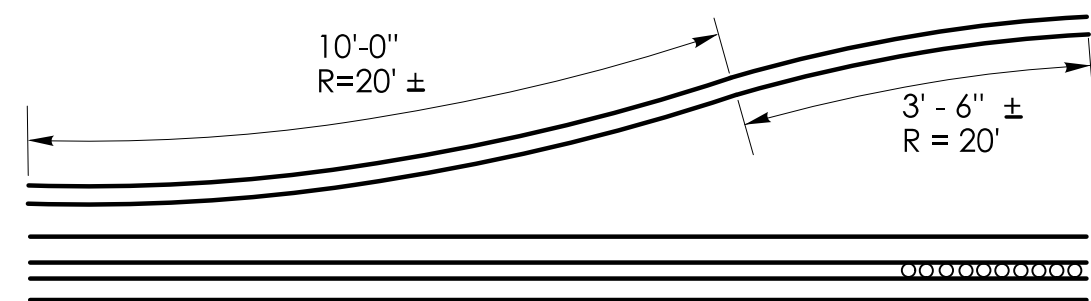
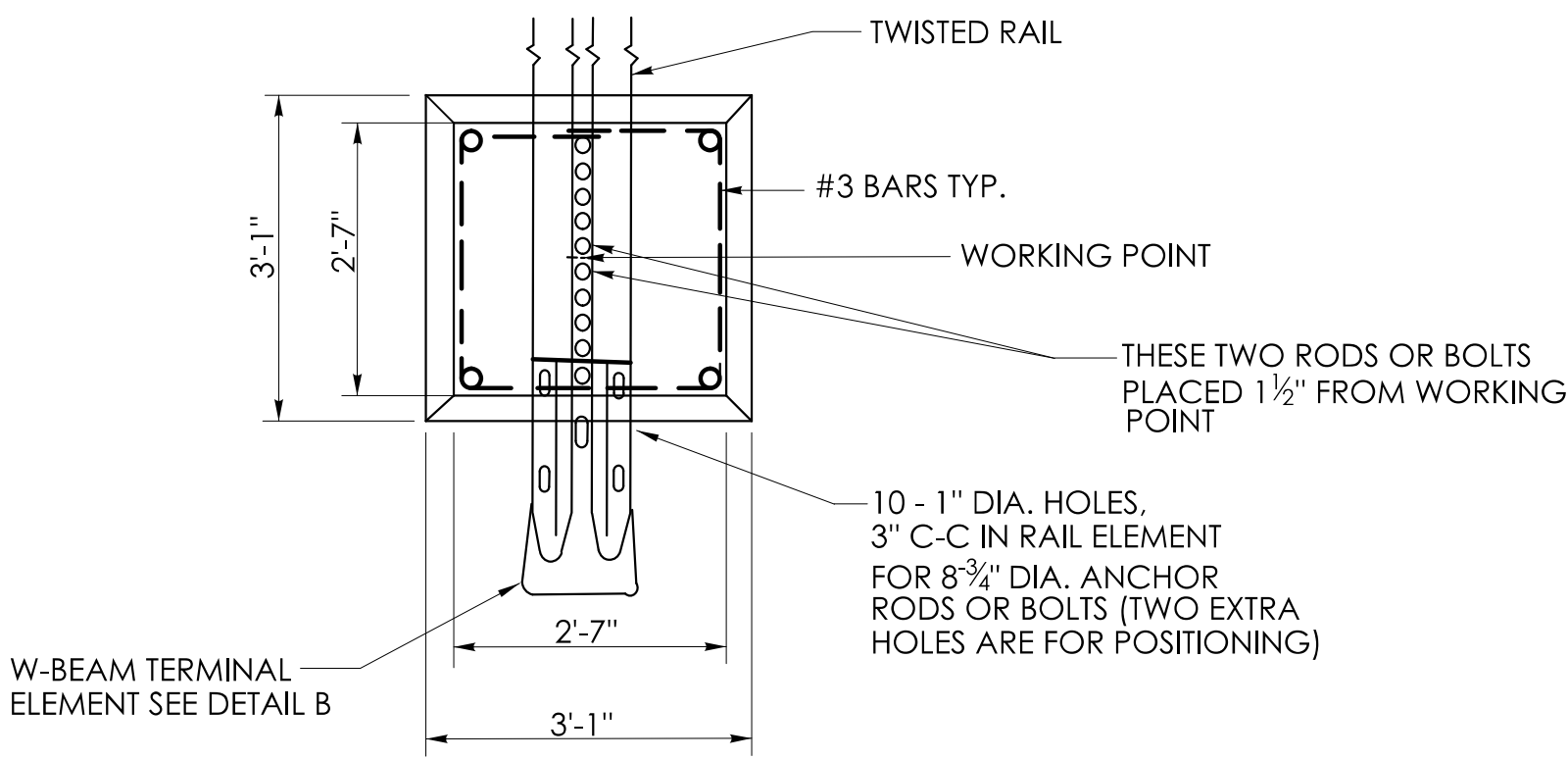
**R-B END ANCHORAGE TYPE I**



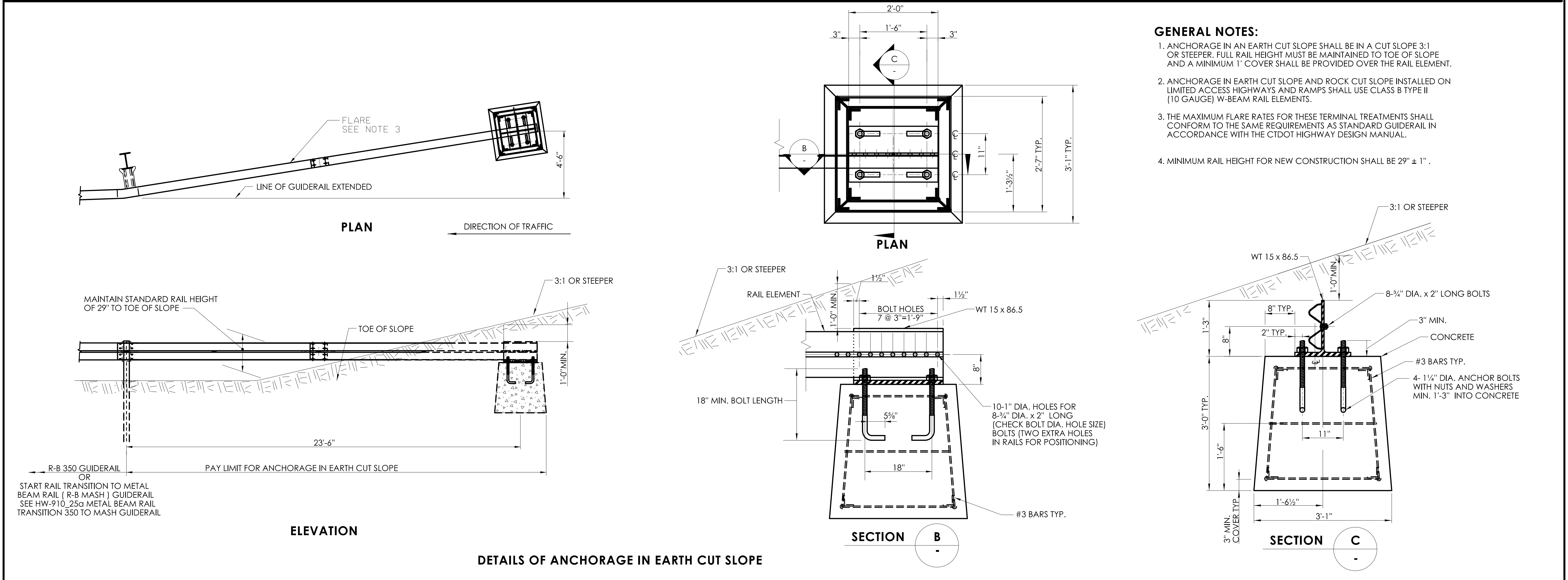
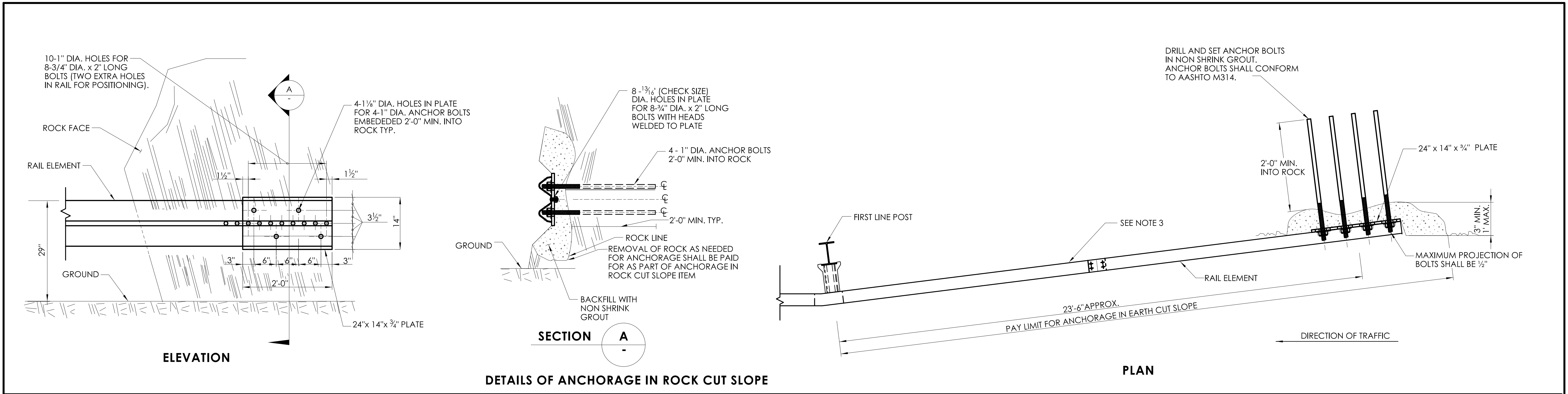
**R-B END ANCHORAGE TYPE II**



**DETAIL A  
ROADSIDE CONCRETE END ANCHOR**  
SEE NOTE 2

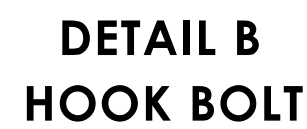






- GENERAL NOTES:**
1. ANCHORAGE IN AN EARTH CUT SLOPE SHALL BE IN A CUT SLOPE 3:1 OR STEEPER. FULL RAIL HEIGHT MUST BE MAINTAINED TO TOE OF SLOPE AND A MINIMUM 1' COVER SHALL BE PROVIDED OVER THE RAIL ELEMENT.
  2. ANCHORAGE IN EARTH CUT SLOPE AND ROCK CUT SLOPE INSTALLED ON LIMITED ACCESS HIGHWAYS AND RAMP SHALL USE CLASS B TYPE II (10 GAUGE) W-BEAM RAIL ELEMENTS.
  3. THE MAXIMUM FLARE RATES FOR THESE TERMINAL TREATMENTS SHALL CONFORM TO THE SAME REQUIREMENTS AS STANDARD GUIDERAIL IN ACCORDANCE WITH THE CTDOT HIGHWAY DESIGN MANUAL.
  4. MINIMUM RAIL HEIGHT FOR NEW CONSTRUCTION SHALL BE 29" ± 1".





- | TEMPERATURE (DEGREES FARENHEIT)  |                  |                  |                  |                 |                  |
|--|------------------|------------------|------------------|-----------------|------------------|
| 120°<br>TO<br>100°   | 79°<br>TO<br>60° | 59°<br>TO<br>40° | 39°<br>TO<br>20° | 19°<br>TO<br>0° | 1°<br>TO<br>-20° |
| SPRING COMPRESSION FROM UNLOADED POSITION<br>IN EACH SPRING = STANDARD SPRING LENGTH |                  |                  |                  |                 |                  |
| 1"   | 1½"              | 2"               | 2½"              | 3"              | 4"               |

- 
- The diagram illustrates the layout of a cable railing system between two terminal sections. Key components and dimensions include:
- Terminal Sections:** Each section starts with an **ANCHOR UNIT (LEFT HAND)** and ends with an **ANCHOR UNIT (RIGHT HAND)**. The distance from the anchor unit to the first post is **16'-0"**.
  - Intermediate Section:** The distance between the first and second posts is **8'-0"**.
  - Cable End Assembly:** The distance from the anchor unit to the cable end assembly is **0'-6"**.
  - Post Spacing:** The distance between posts is **16'-0"**.
  - Pay Limit:** The **PAY LIMIT FOR END ANCHOR TYPE I** is indicated for both terminal sections.
  - Maximum Distance:** The **2000' MAXIMUM DISTANCE BETWEEN TERMINAL SECTIONS, AND BETWEEN TERMINAL SECTIONS AND INTERMEDIATE ANCHORAGE SECTIONS** is shown.

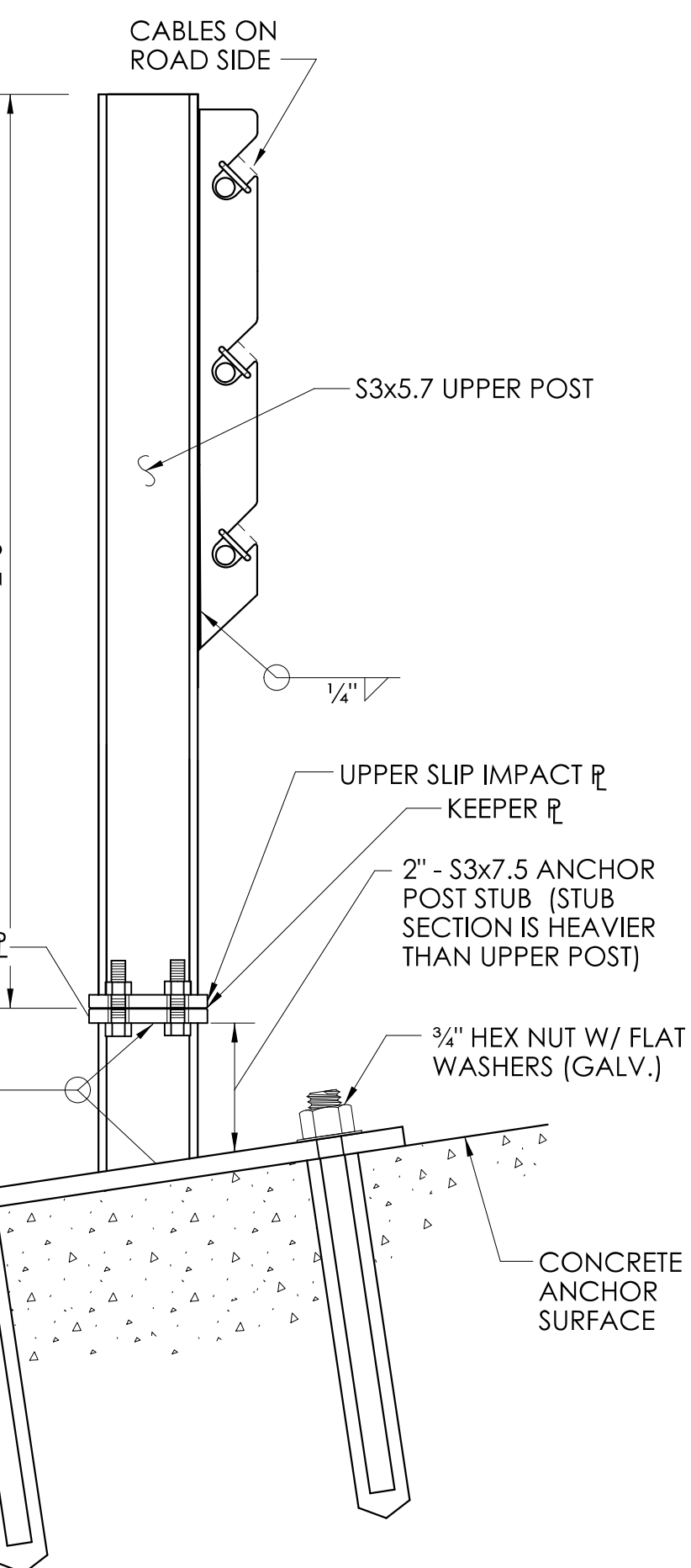
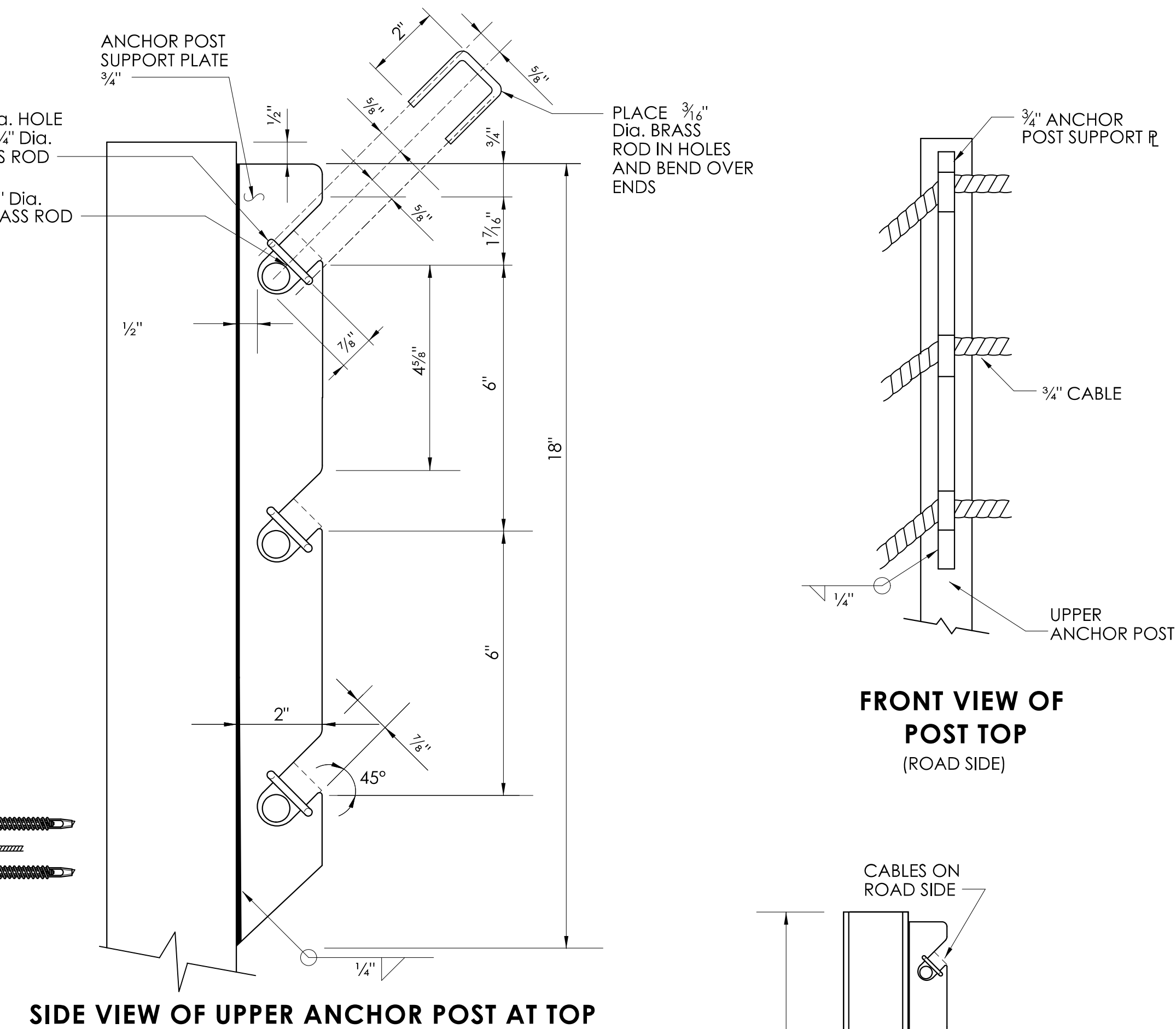
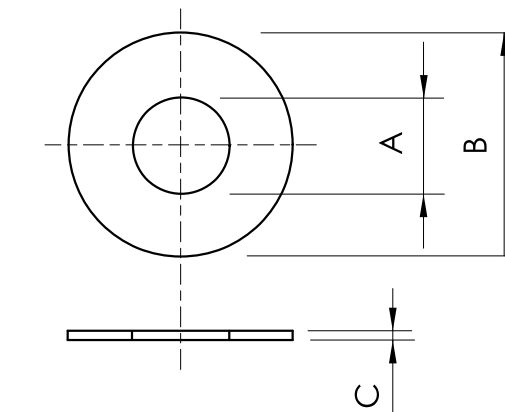
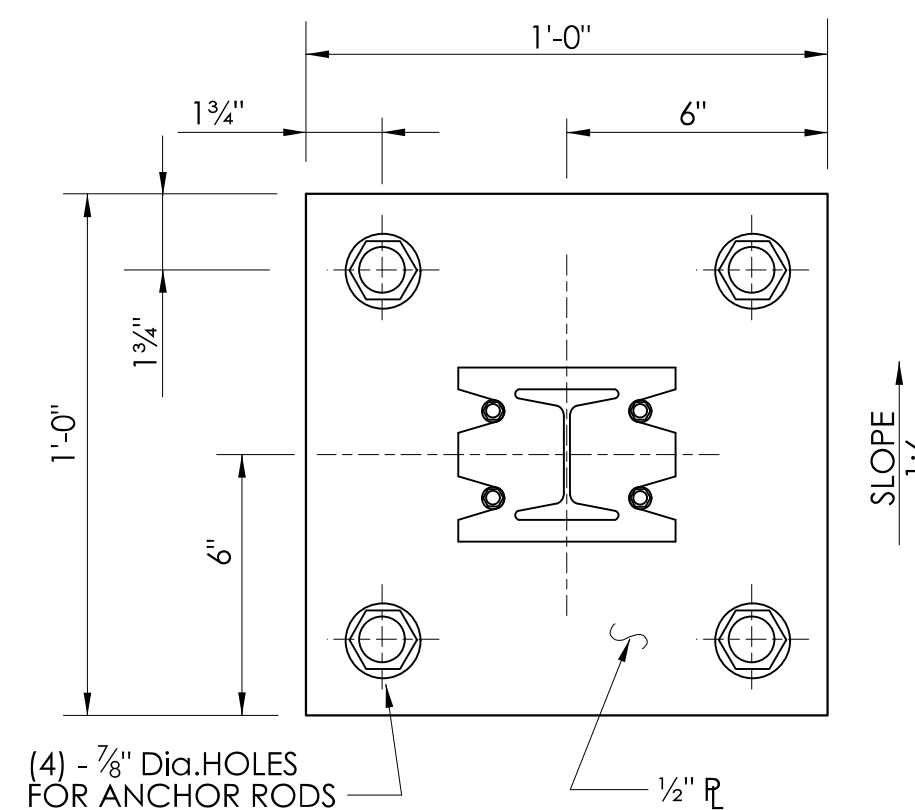
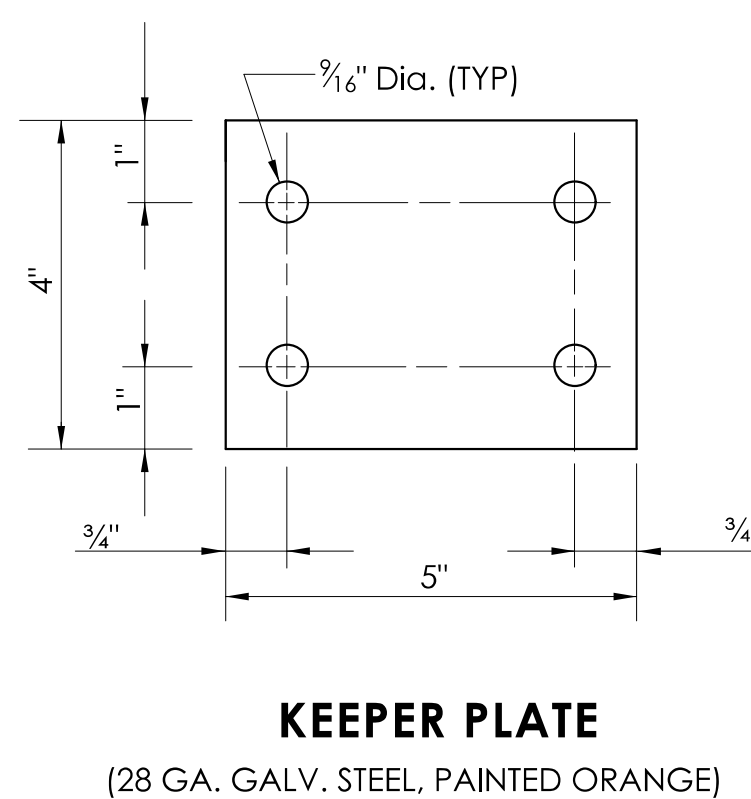
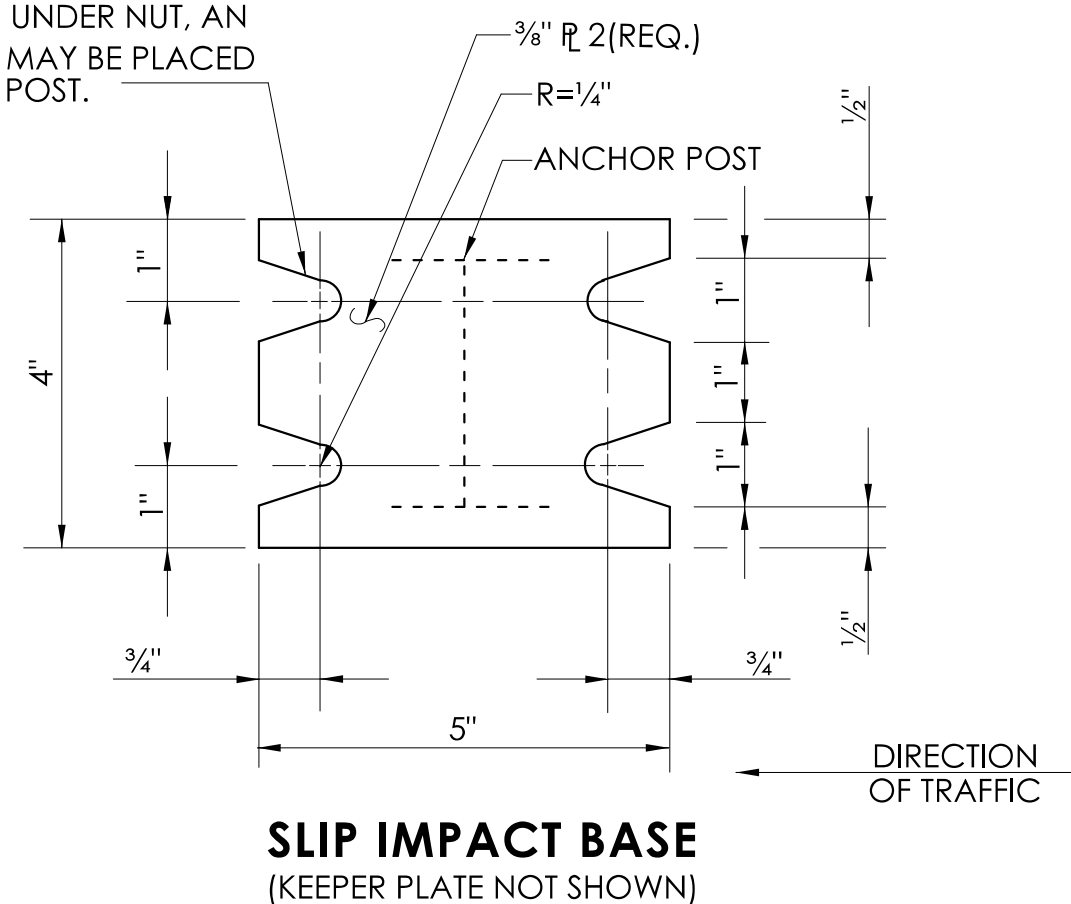
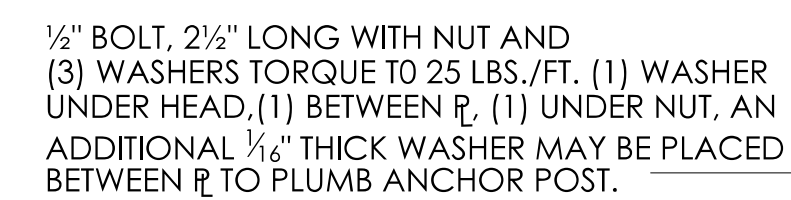
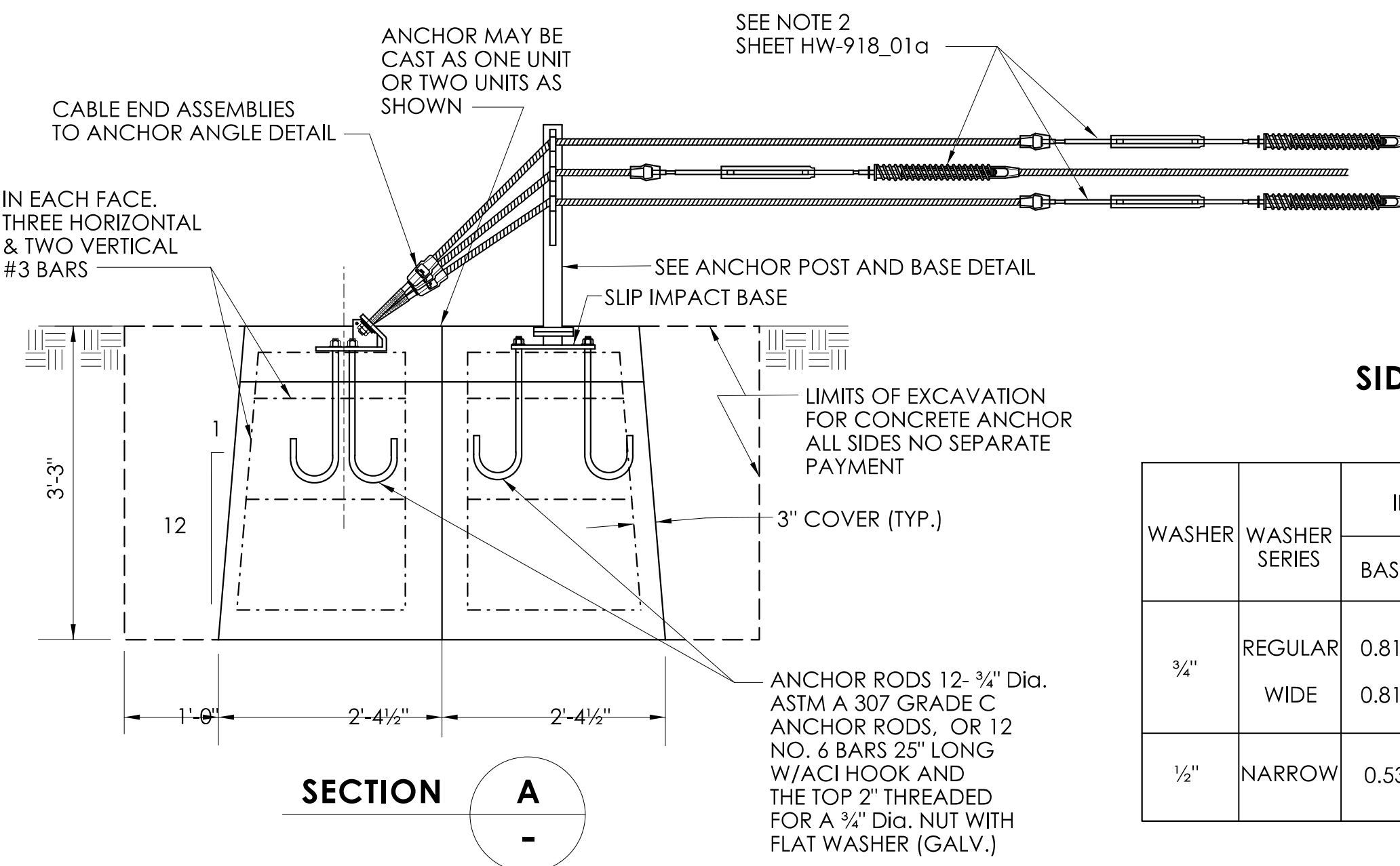
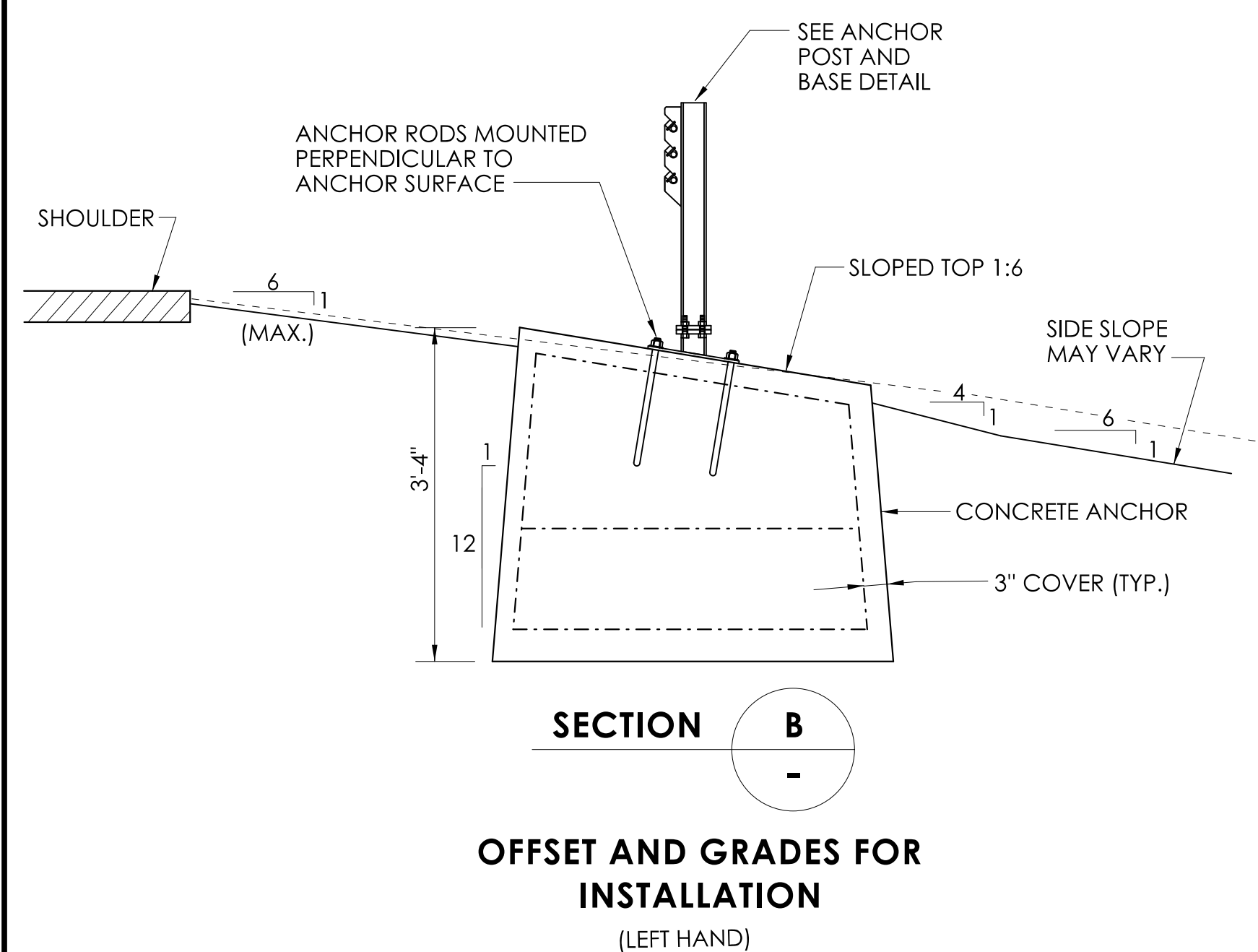
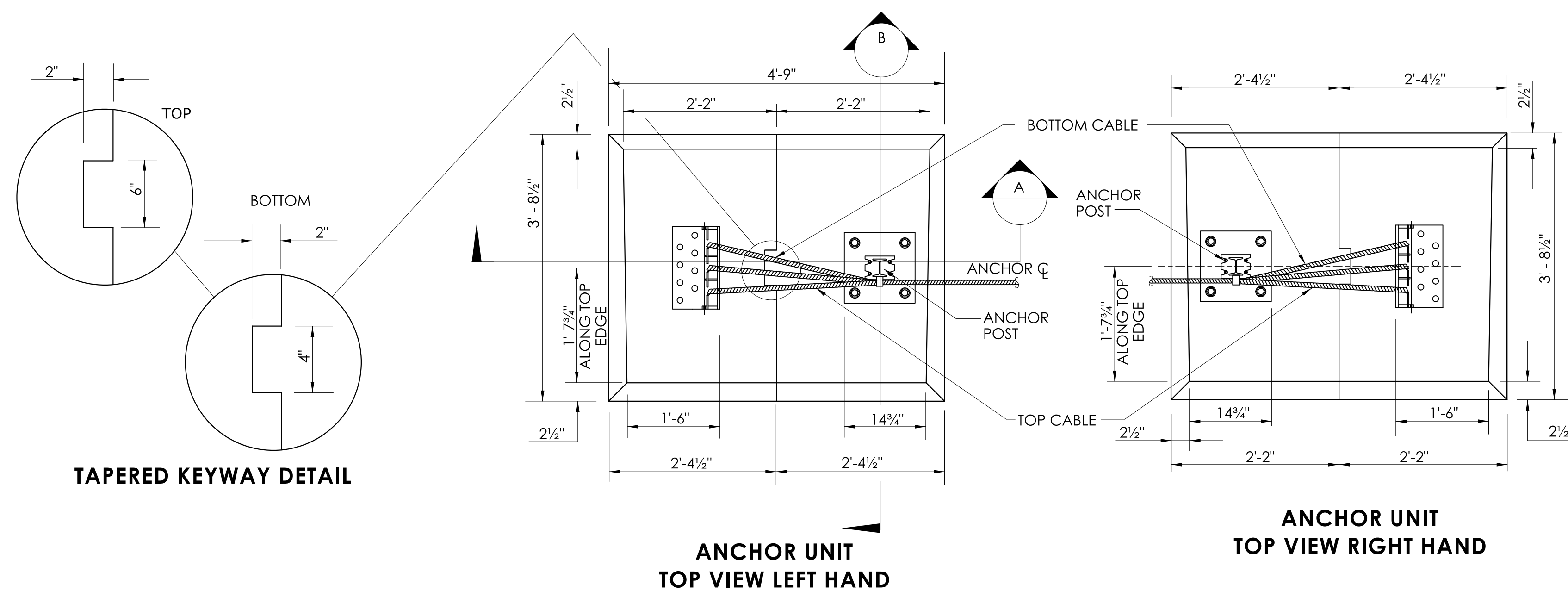
PLAN  
TYPICAL INTERMEDIATE SECTION



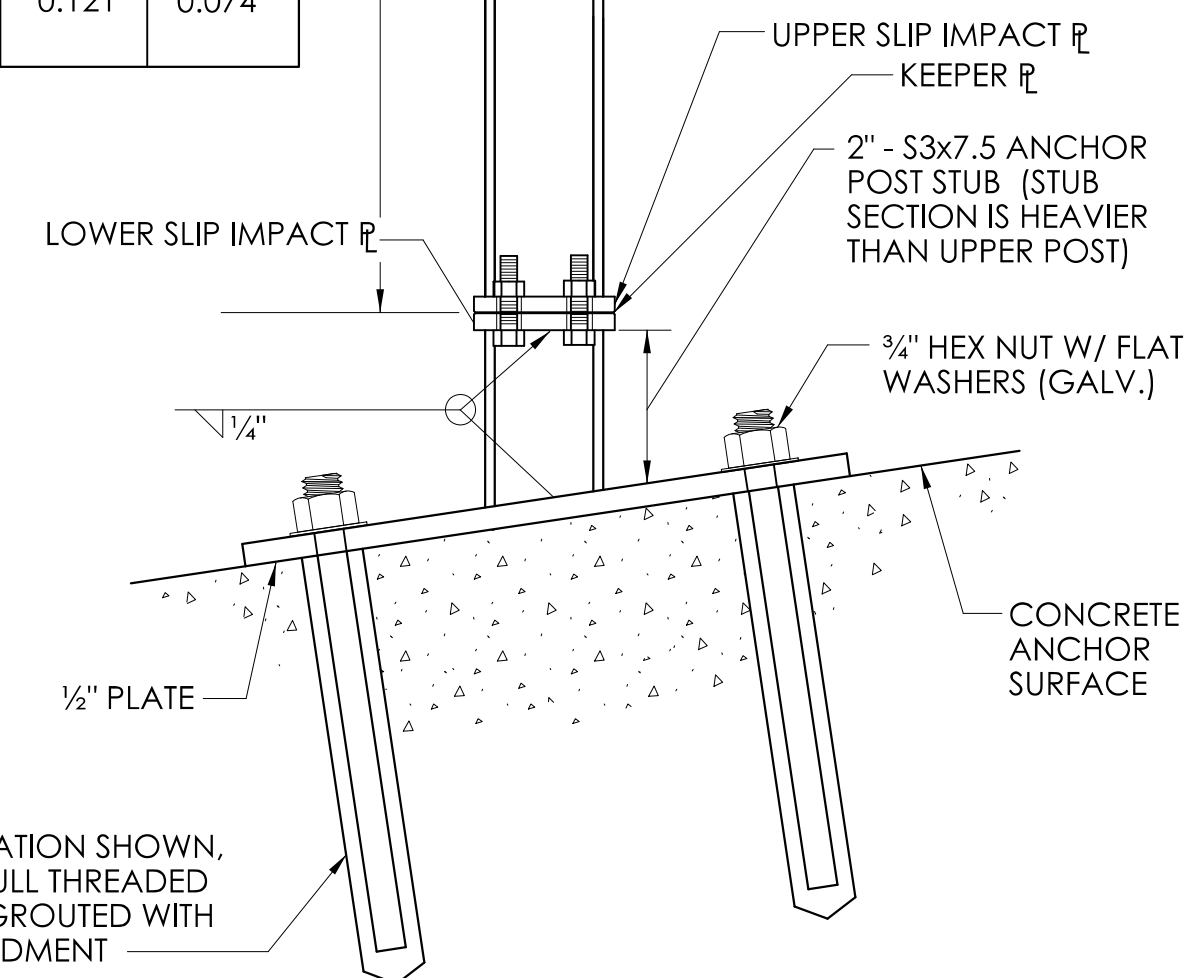
TABLE B		
TYPE OF SYSTEM	POST SPACING	DEFLECTION
STANDARD SYSTEM 2	16' 8'	12' 8'

PLOTTED DATE: 10/23/2024





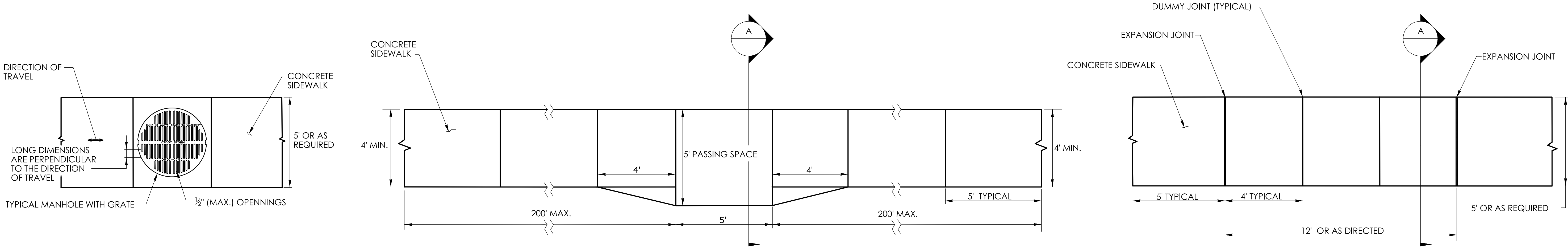
WASHER	WASHER SERIES	INSIDE DIAMETER "A"			OUTSIDE DIAMETER "B"			THICKNESS "C"		
		BASIC	TOLERANCE		BASIC	TOLERANCE		BASIC	MAX.	MIN.
			PLUS	MINUS		PLUS	MINUS			
3/4"	REGULAR	0.812	0.030	0.007	1.469	0.030	0.007	0.134	0.160	0.108
	WIDE	0.812	0.030	0.007	2.000	0.030	0.007	0.165	0.192	0.136
1/2"	NARROW	0.531	0.015	0.005	1.062	0.030	0.007	0.095	0.121	0.074



**ANCHOR POST AND BASE DETAIL**  
NOTE: SEE THE ANCHOR UNIT DETAIL  
FOR TYPICAL INSTALLATION



**GENERAL NOTES:**  
1. SEE CONCRETE SIDEWALK RAMPS GUIDE SHEETS FOR PEDESTRIAN RAMP TYPES.  
2. ALL CURBING SHALL BE INSTALLED AS EITHER PRECAST OR CAST IN PLACE AS DIRECTED.



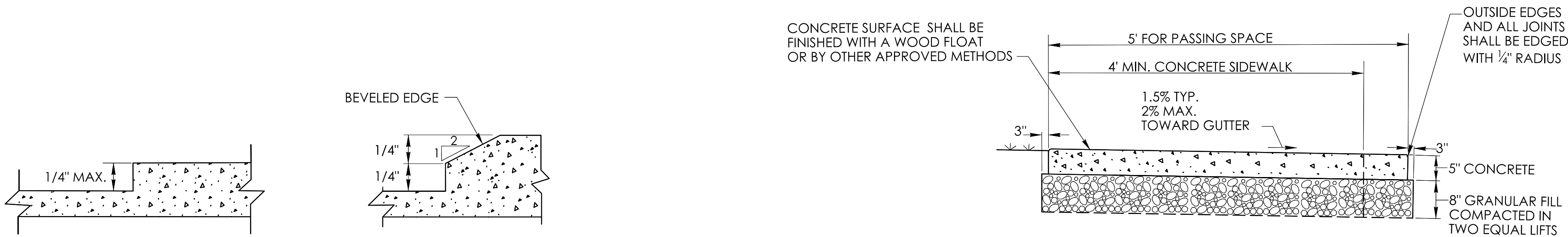
**PEDESTRIAN ACCESS ROUTE  
OVER A MANHOLE WITH GRATE**

1. HORIZONTAL OPENINGS IN GRATES AND JOINTS MUST NOT BE MORE THAN 1/2 INCH
2. ELONGATED OPENINGS IN GRATES MUST BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DIRECTION OF TRAVEL

**5' PASSING SPACE FOR 4' WIDE SIDEWALK  
PLAN**

PASSING SPACES SHALL BE PROVIDED AT INTERVALS OF 200' MAXIMUM FOR SIDEWALKS LESS THAN 5' IN WIDTH

**5' WIDE SIDEWALK  
PLAN**



**VERTICAL SURFACE DISCONTINUITIES**

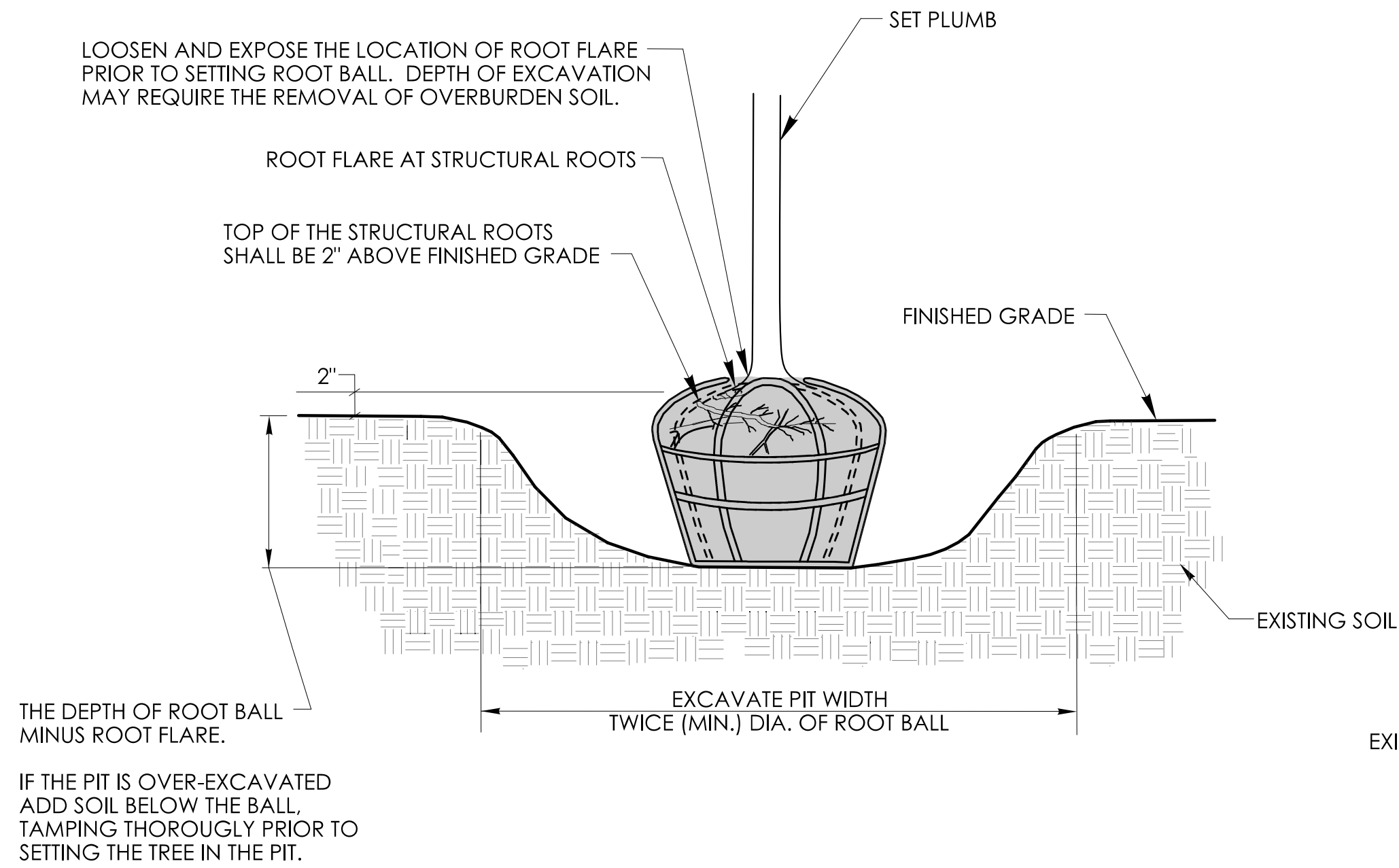
VERTICAL SURFACE DISCONTINUITIES MUST BE BEVELED TO A HEIGHT NOT GREATER THAN 1/4 INCH. THE BEVEL MUST BE THE ENTIRE WIDTH OF THE DISCONTINUITY

**5' PASSING SPACE FOR 4' WIDE SIDEWALK**

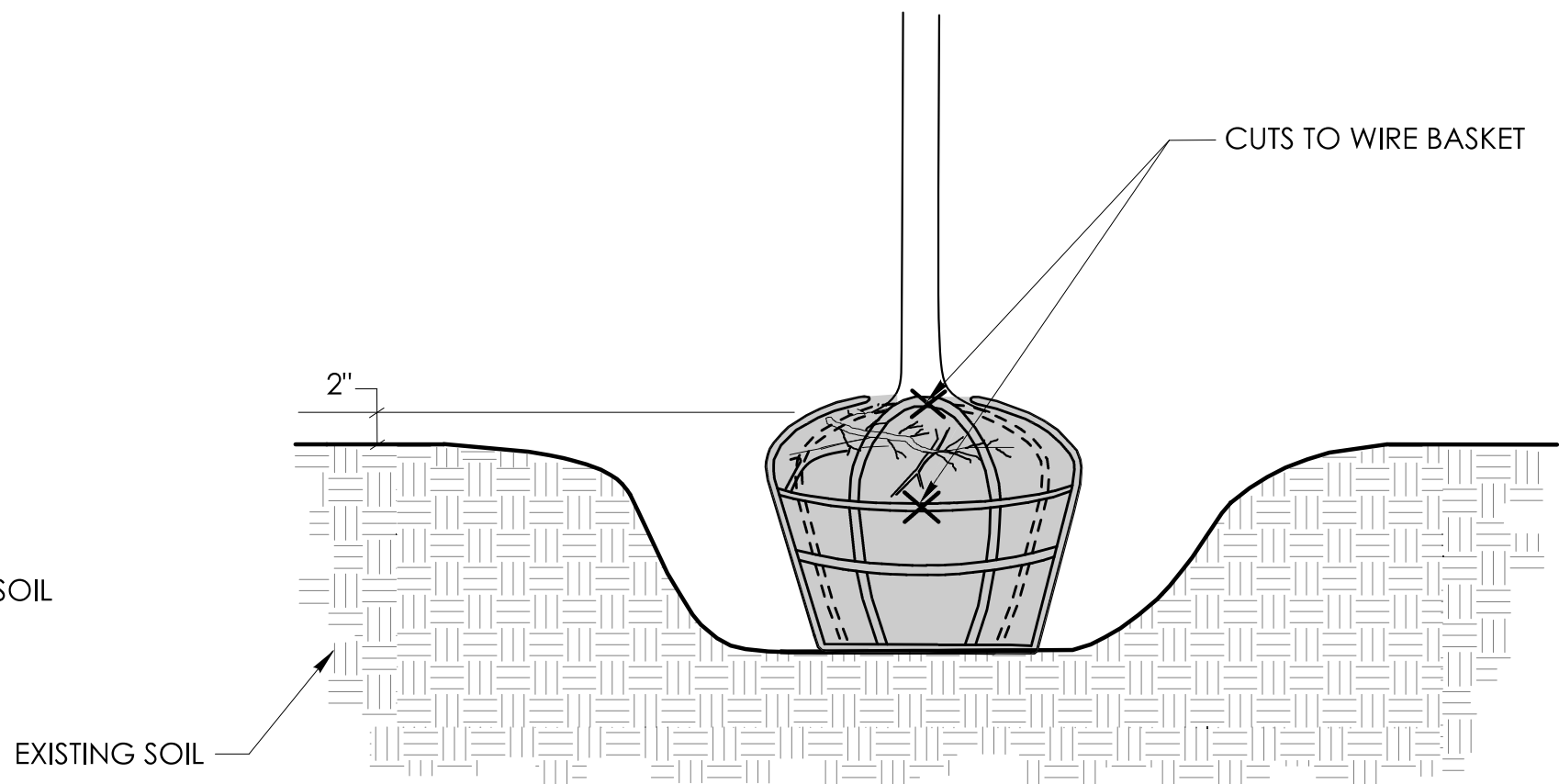
**SECTION A**

GENERAL NOTES:

1. ALL EXTERIOR PACKAGING MATERIAL APPLIED TO PLANTS SHALL BE REMOVED AFTER THE PLANT IS LOCATED IN THE PIT EXCAVATION. CUT AND REMOVE TWINE, BURLAP OR WIRE BASKETS FROM THE TOP TWO-THIRDS OF THE ROOT BALL.
2. PLANT MALUS SPECIES (DECIDUOUS APPLE TREES OR SHRUBS) DEEP ENOUGH IN PIT TO COVER THE GRAFT TO PREVENT SPROUTING FROM THE ROOT STOCK.

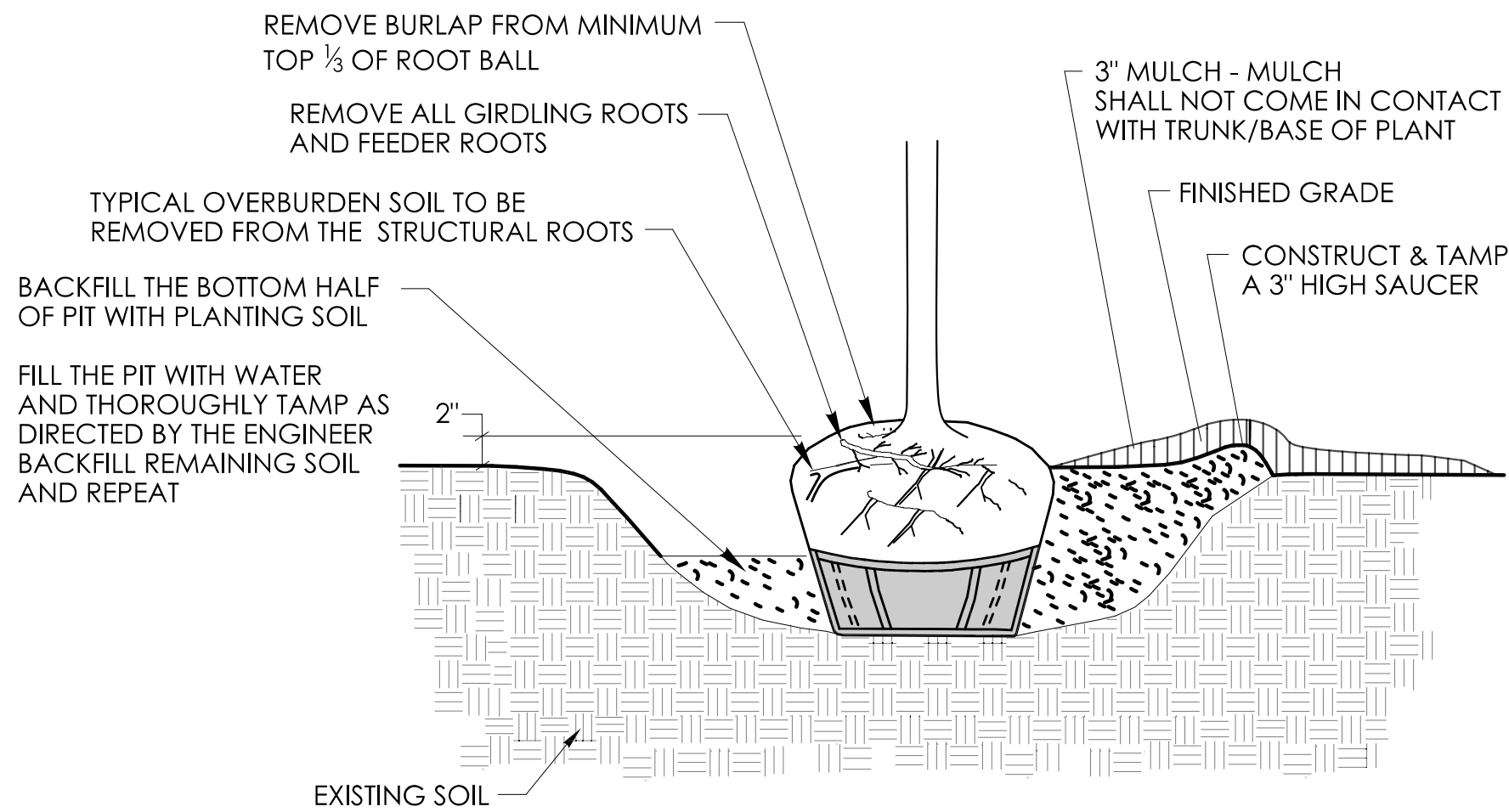


PIT EXCAVATION AND SETTING OF PLANTING

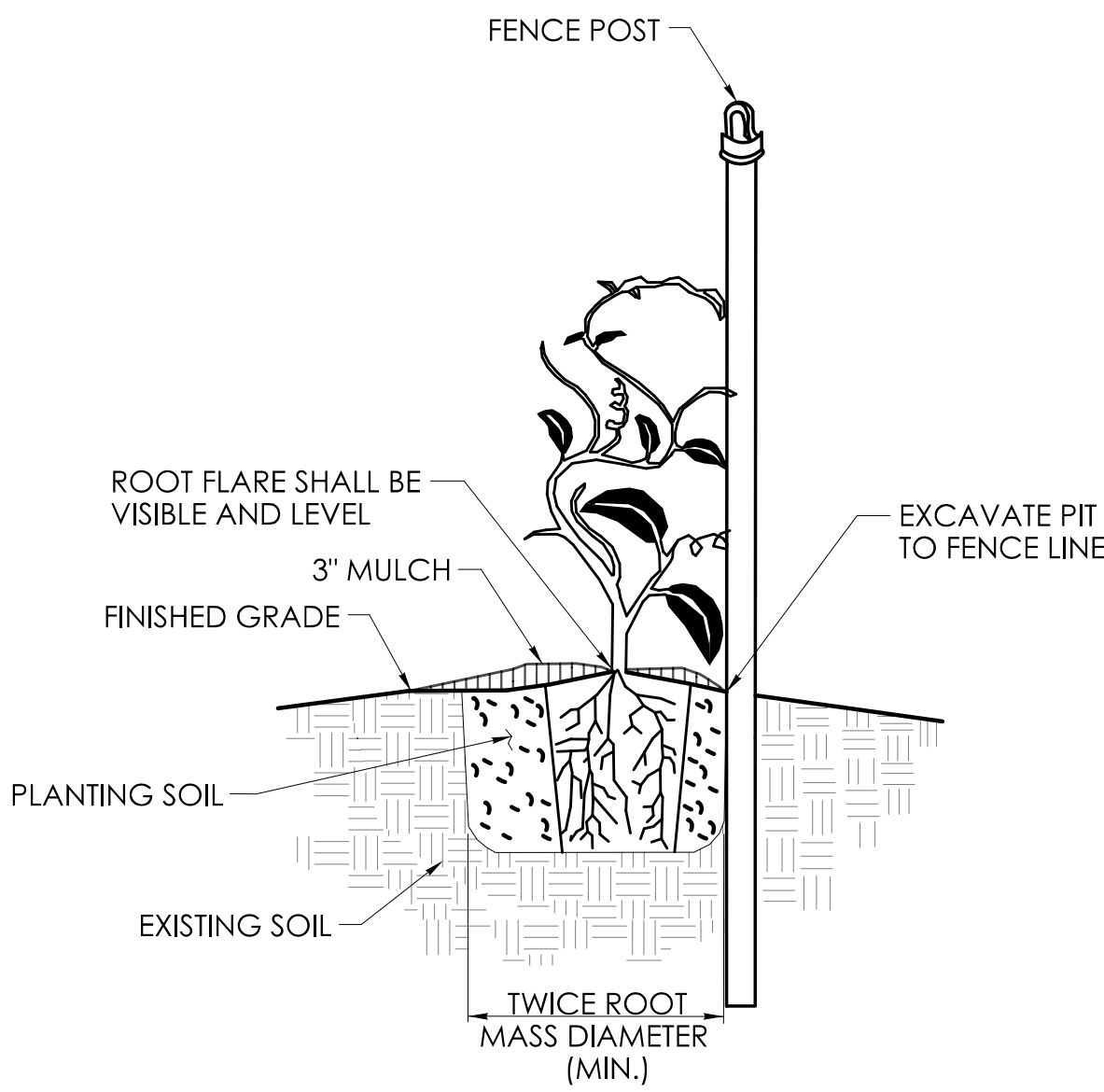


WIRE BASKET REMOVAL

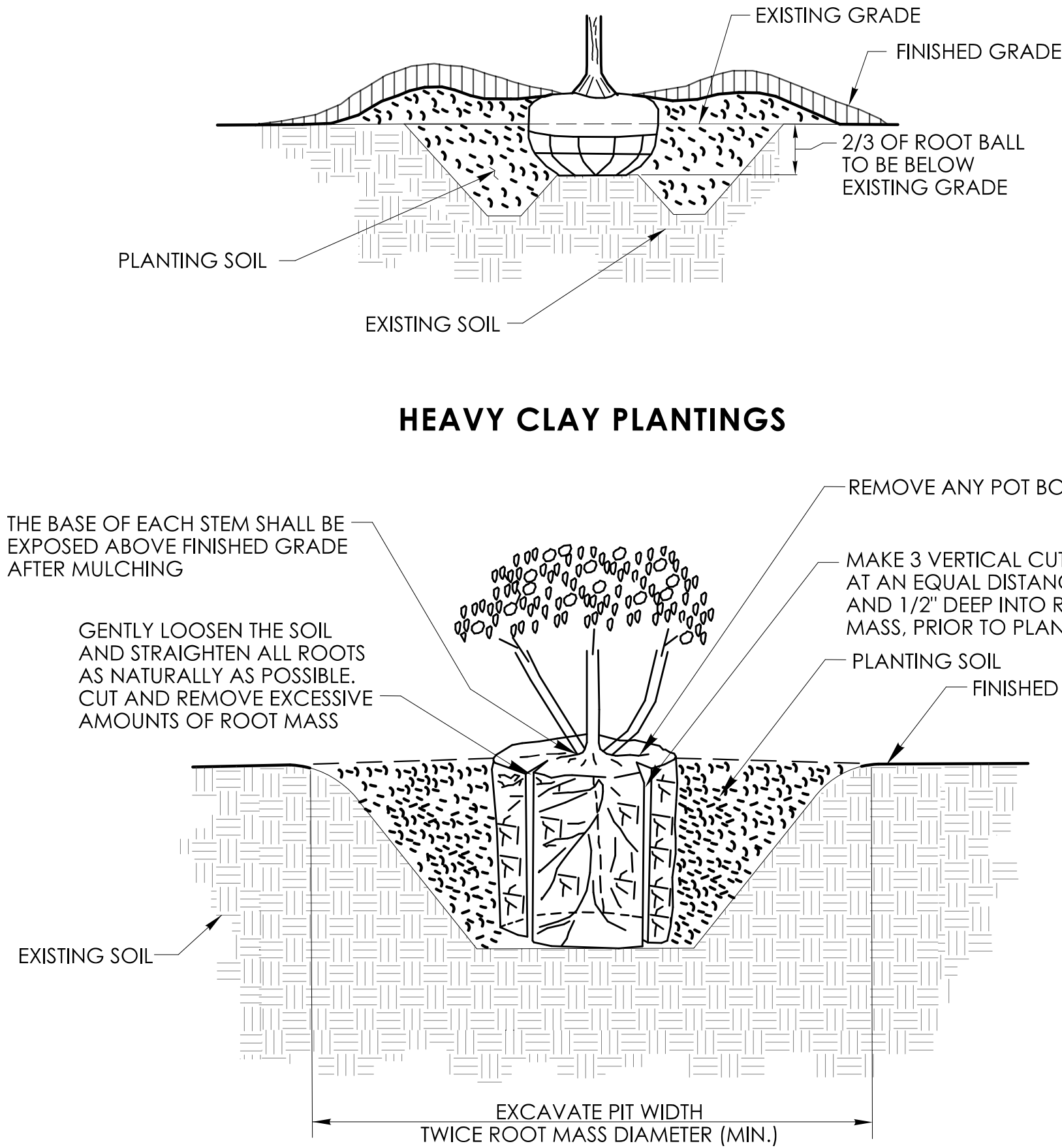
NOTE: IF WIRE BASKETS ARE USED, THE CONTRACTOR SHALL CUT ALL OF THE HORIZONTAL WIRES IN THE TOP 2/3 OF THE ROOT BALL AND BEND DOWN OR REMOVE THE TOP 1/3 OF THE WIRE BASKET



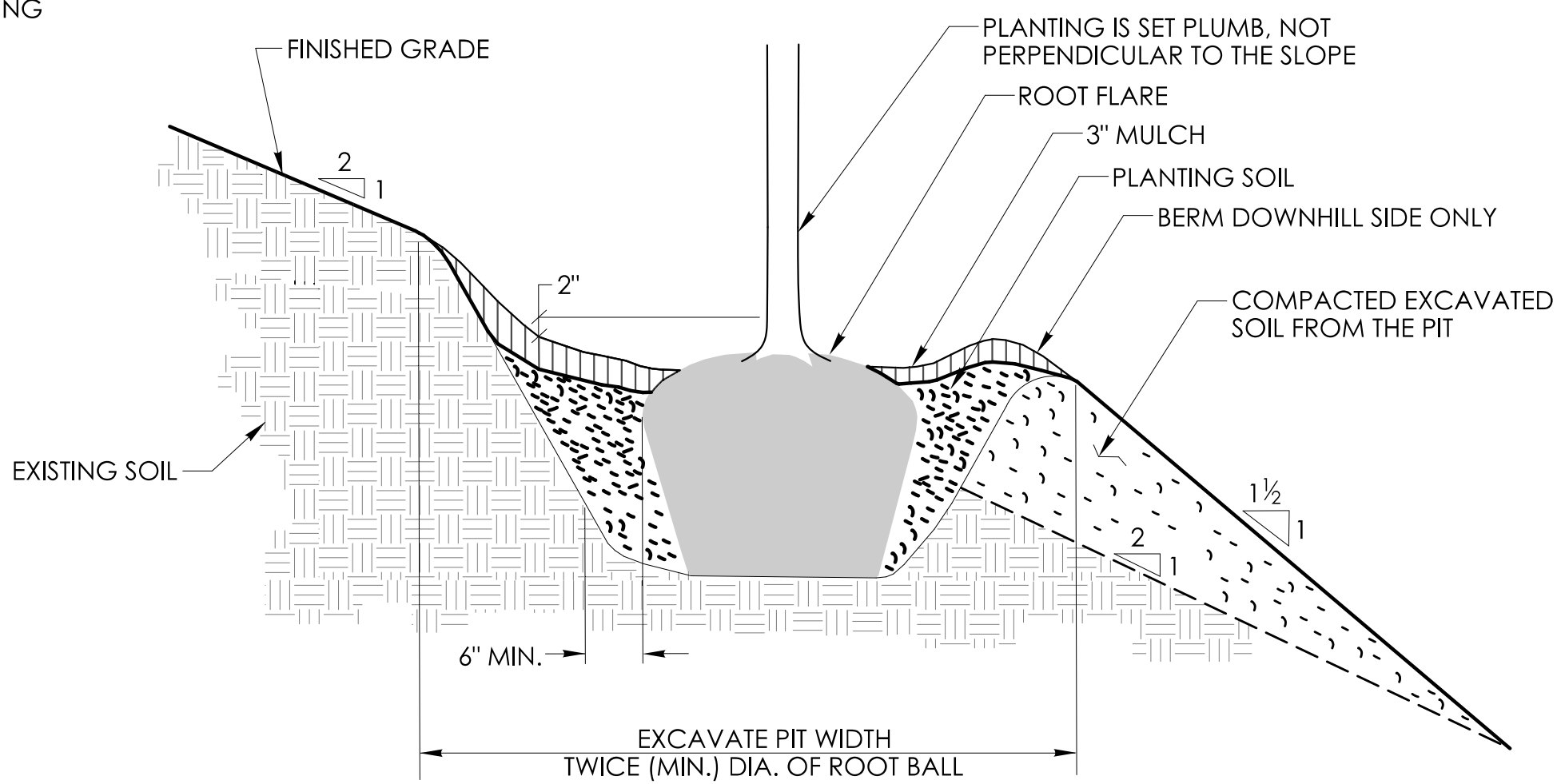
BACKFILL AND MULCH FOR PLANTING



VINE PLANTING

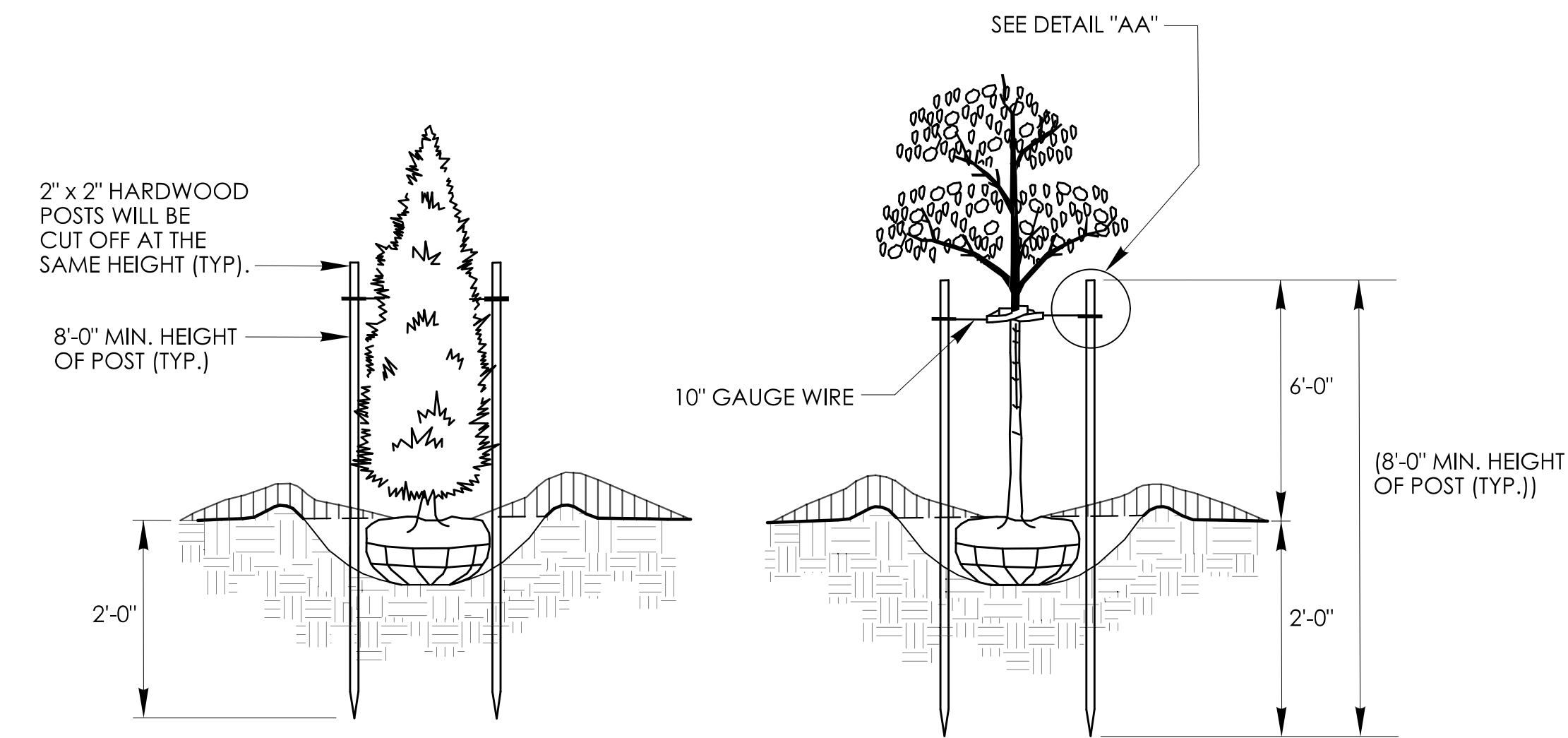


CONTAINER GROWN PLANTING

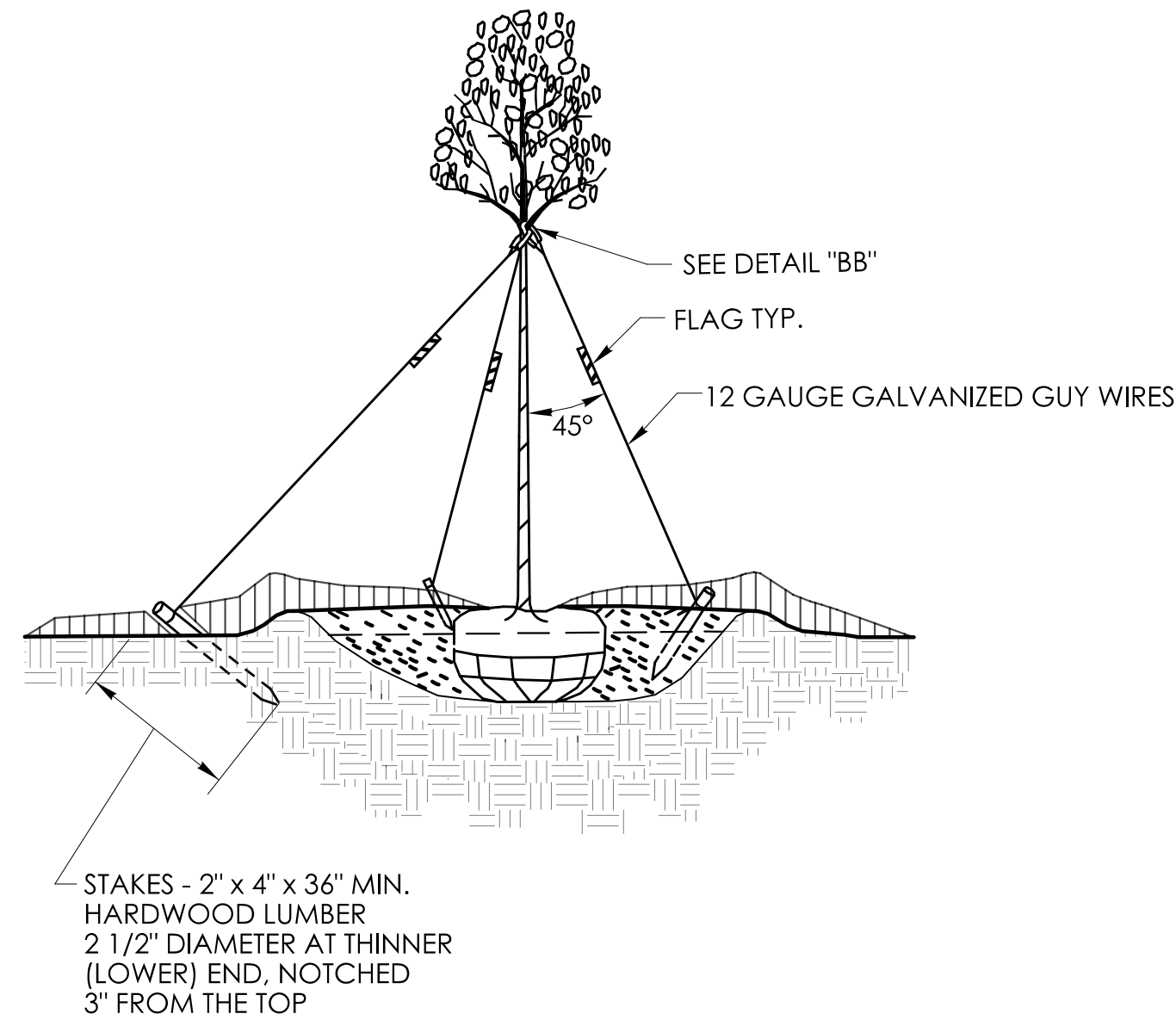


SLOPE PLANTING

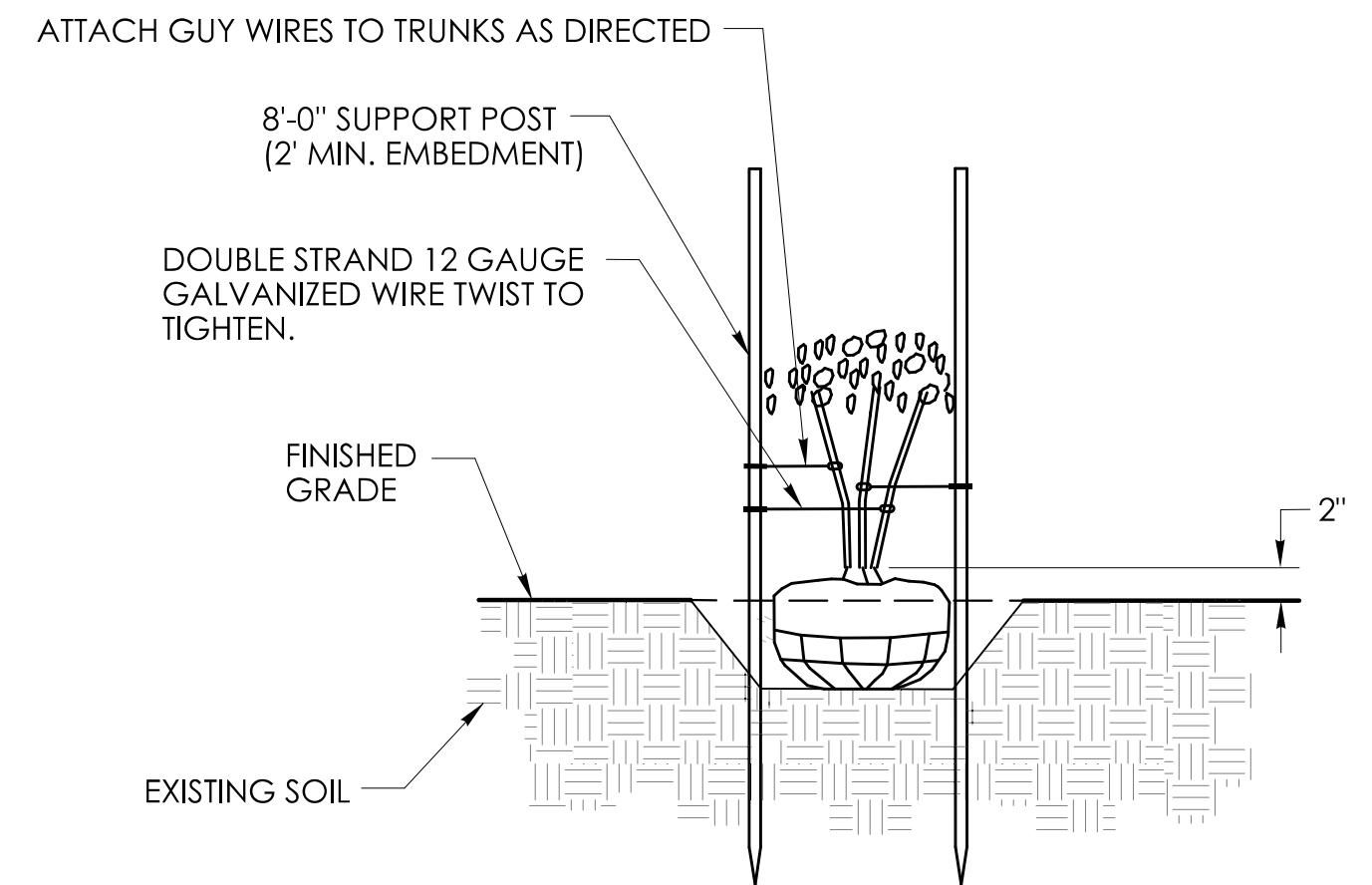




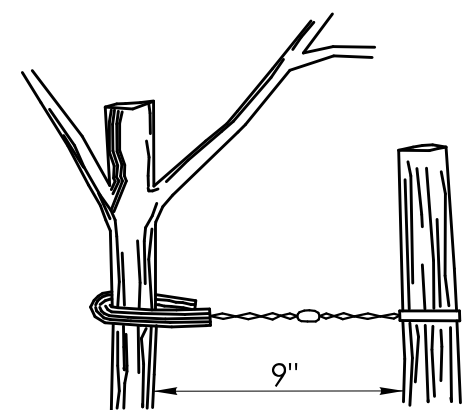
TWO STAKES



THREE GUYS AND STAKES



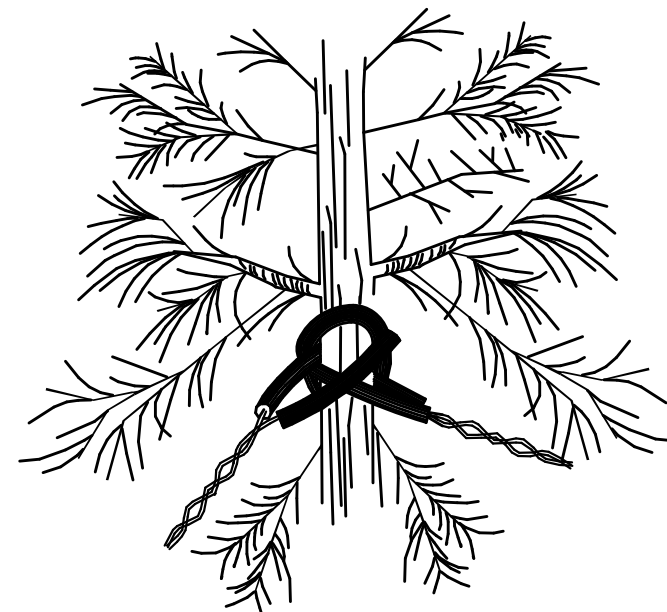
STAKING FOR MULTI-STEMMED TREES



DETAIL "AA"  
POST AND GUY WIRE

ANCHOR TREE TO POST(S) USING  
GALVANIZED GUY WIRE AND 3/8" MIN.  
INSIDE DIAMETER RUBBER HOSE

GUY WIRES SHOULD BE PLACED AT  
LEAST HALF WAY UP THE TRUNK



DETAIL "BB"  
GUY WIRES AROUND TRUNK

ANCHOR TREE TO STAKES USING  
GALVANIZED GUY WIRES AND 3/8" MIN.  
INSIDE DIAMETER RUBBER HOSE

GUY WIRES SHOULD BE PLACED AT  
LEAST HALF WAY UP THE TRUNK

GENERAL NOTES:

1. THE CONTRACTOR SHALL SUBMIT A STAKING PLAN FOR APPROVAL.
2. THE CONTRACTOR SHALL SUBMIT THE USE OF ANY OTHER MATERIALS FOR APPROVAL.
3. USE 3 POSTS FOR STAKING TREES 3" CALIPER OR GREATER AND EVERGREEN TREES 8' HIGH OR GREATER
4. USE DOUBLE STRAND 12 GAUGE GALVANIZED GUY WIRE FOR DECIDUOUS TREES GREATER THAN OR EQUAL TO 3" CALIPER AND USE DOUBLE STRAND 10 GAUGE GALVANIZED GUY WIRE FOR EVERGREEN TREES GREATER THAN OR EQUAL TO 8" CALIPER