

## Sample Plan

### RETAINING WALL DETAILS ----- NARRATIVE

#### References:

Design Scene: Chapter 11 - Walls

Miscellaneous: Metro District's Electronic Details Library

Standards Office's Electronic Details Library

#### General Information:

Any situation that is not included on the Standard Sheets should be considered "Special" for which a detail should be added. For example, provide a detail for Concrete Wall Surface Treatment (rustication, color, etc.).

Contact the Preliminary Bridge Design Unit for information regarding rustication, color, etc. A Visual Quality Manual may need to be prepared or may already be available for the corridor. If a Visual Quality Manual needs to be prepared, it should be done in the preliminary phase of the project so local input can be provided.

The Bridge Office and the Foundations Unit should be consulted for any special details regarding structure modification.

For modular block walls, obtain recommendations and details from the Geotechnical Engineer and the Bridge Standards Unit, and borings and subcuts from the Foundations Unit. Specify height of cap unit (4"), color of block, recommended block face (i.e. straight) and sloping or crowning of cap. Consider the need for rail or fencing at the top of the walls and for drainage and erosion control at the ends of walls. Provide necessary details. Include appropriate standard plan sheets.

Coordinate wall details with any adjacent bridge abutment and wingwall details.

Indicate where the details apply.

Check to see if the stem width needs to be modified for rustication.

If there is lighting on the retaining wall, indicate conduit location on the typical section and note if the conduit is incidental.

Provide details, as necessary, showing how the walls will accommodate utilities.

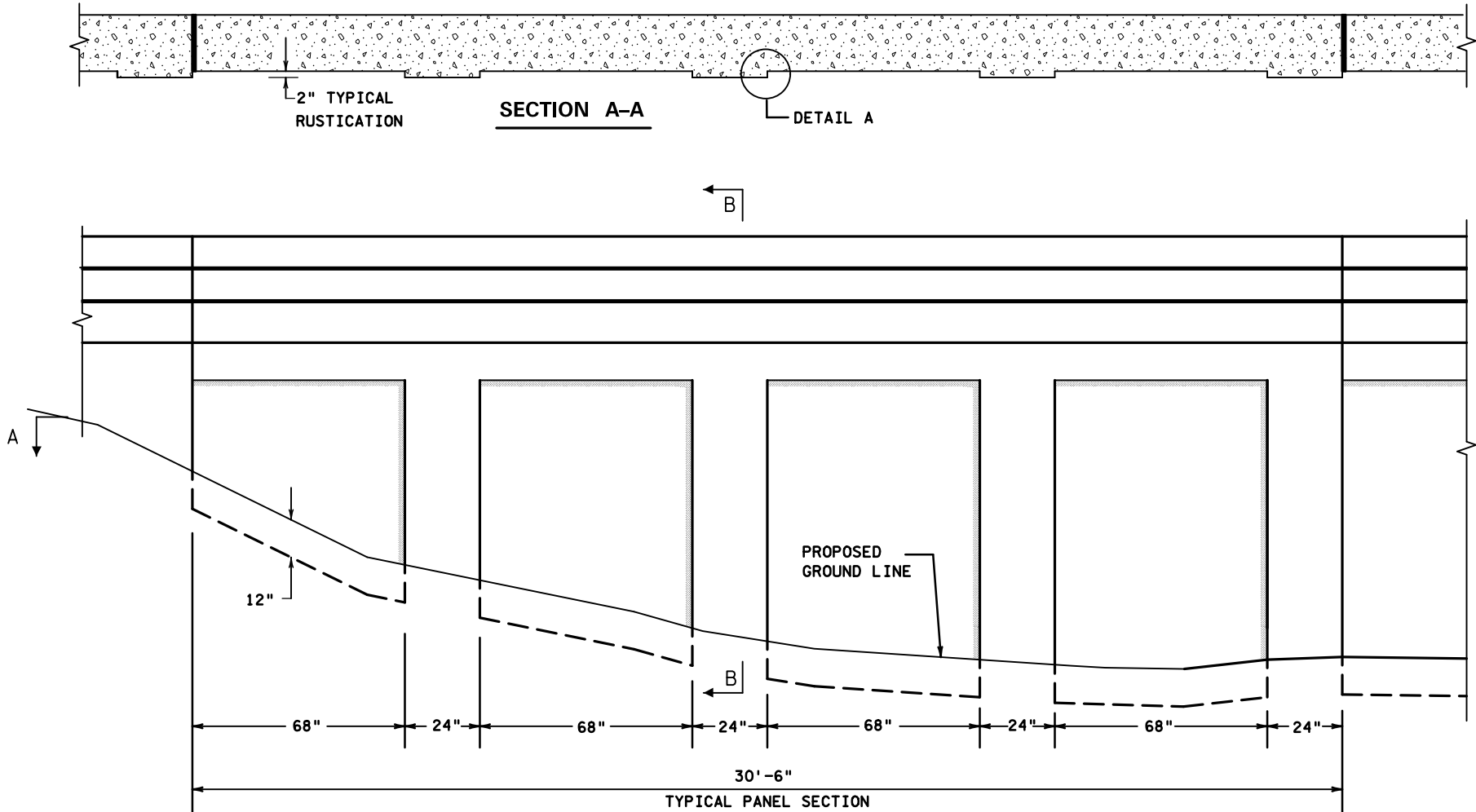
## Sample Plan

### RETAINING WALL DETAILS ----- CHECKLIST

- \_\_\_ 1. Note Incidental Work Which Applies to Details
- \_\_\_ 2. Bar Scale
- \_\_\_ 3. Cross references to other sheets (as applicable)
- \_\_\_ 4. Drawn by: and Checked by: Initials and Engineer's signature

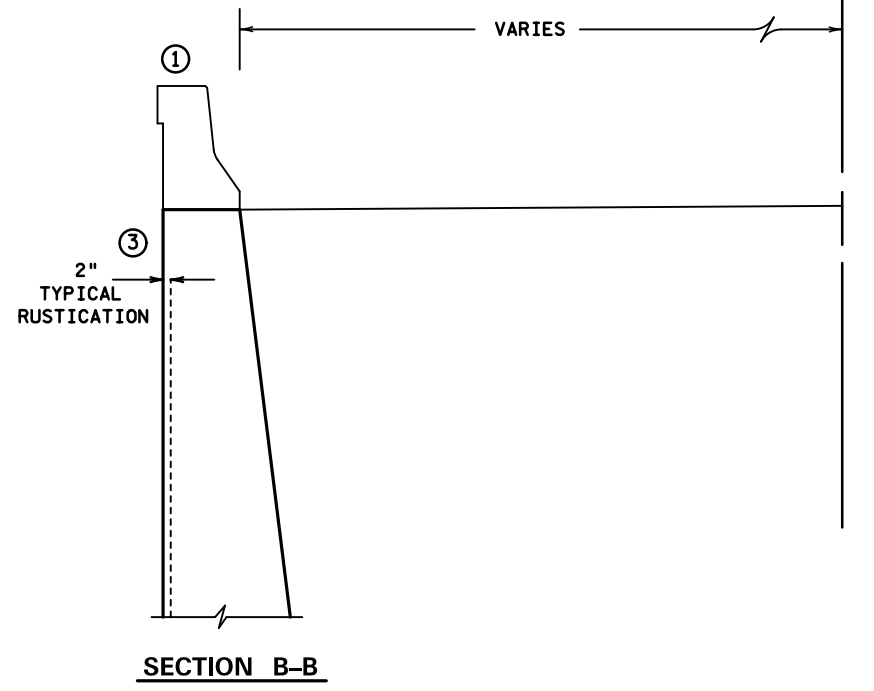
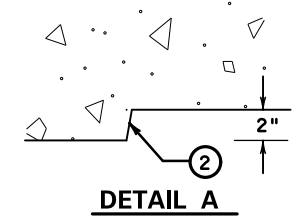
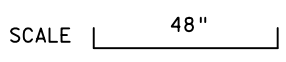
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 PLOTTED/REVISED: 26-JAN-2017 08:48

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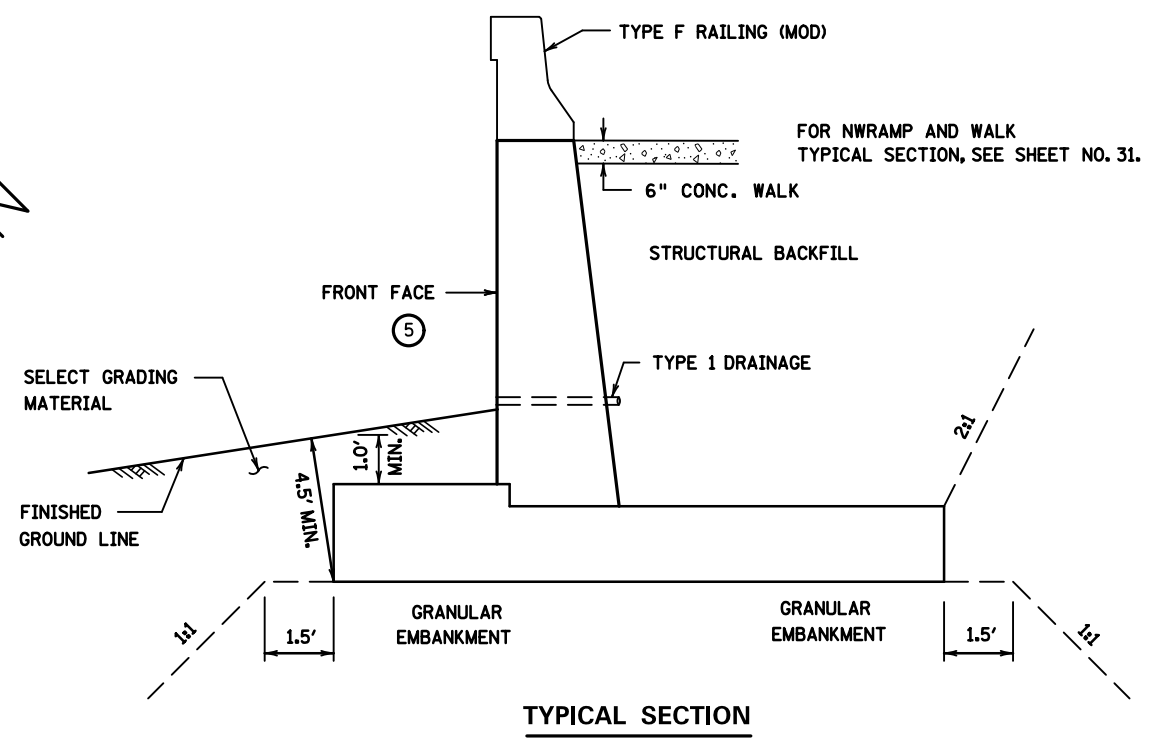


**RETAINING WALL - ALTERNATING RECESSED PANELS**

NOTE:  
 THIS DETAIL APPLIES TO ALL RETAINING WALL LOCATIONS.



SAMPLE PLAN



- ① TYPE F RAILING (MOD.). SEE SHEET NO. 325 FOR DETAILS.
- ② 10° CHAMFER MAY BE USED TO EASE FORM REMOVAL.
- ③ TOP OF STEM WIDTH TO MATCH STANDARD PLAN SHEETS. (NO ADJUSTMENT REQUIRED FOR RUSTICATION.)
- ④ DELETED
- ⑤ ALIGNMENT COMPUTED TO FRONT FACE OF WALL.

**ALTERNATING RECESSED PANEL  
 TYPICAL SECTION**  
 SHEET 1 OF 3

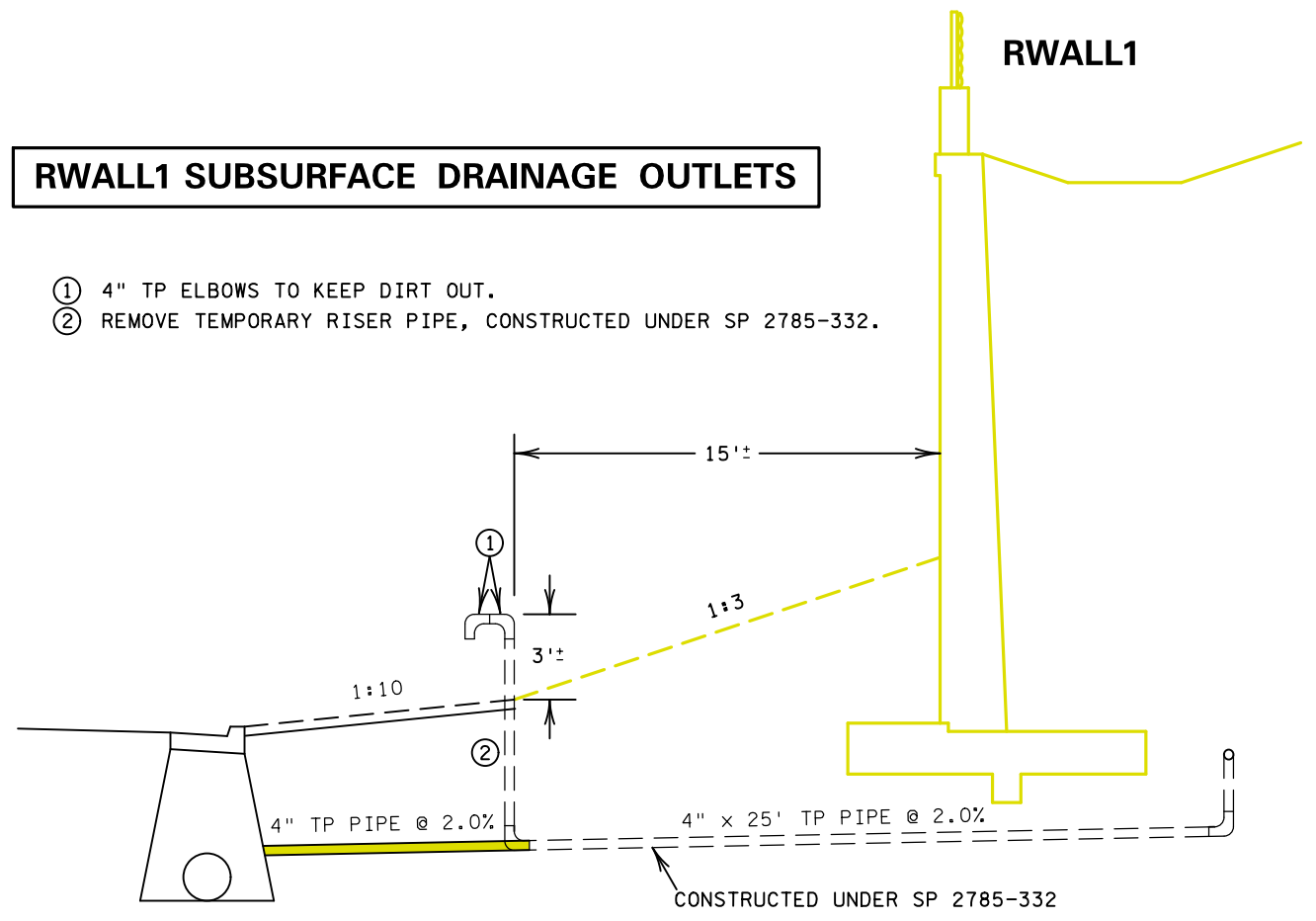
**RETAINING WALL DETAILS**

REVISION DATE 12/27/16  
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**RWALL1 SUBSURFACE DRAINAGE OUTLETS**

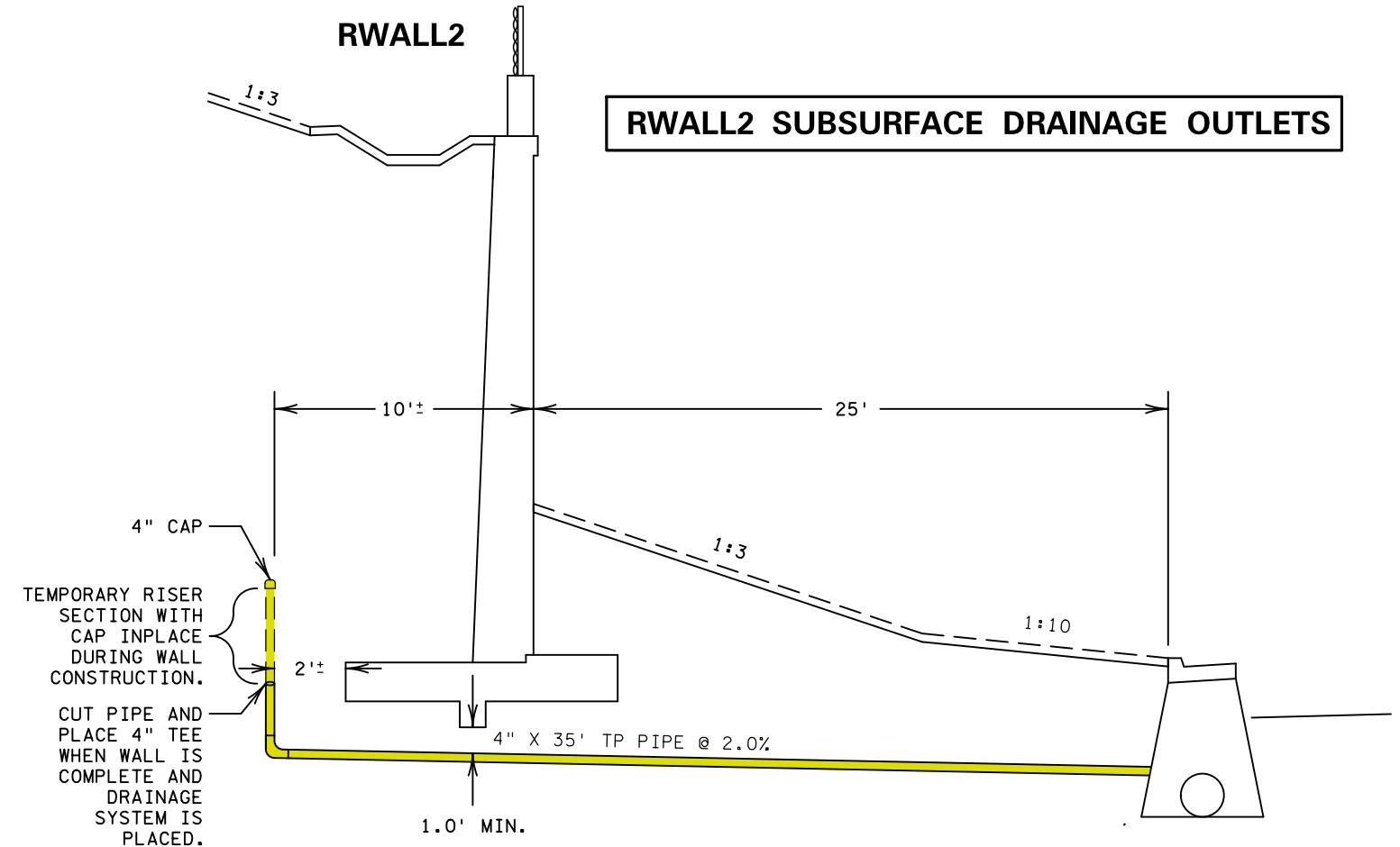
- ① 4" TP ELBOWS TO KEEP DIRT OUT.
- ② REMOVE TEMPORARY RISER PIPE, CONSTRUCTED UNDER SP 2785-332.



RWALL1 RETAINING WALL SUBSURFACE DRAINAGE OUTLETS <span style="border: 1px solid black; padding: 2px;">DD</span>					
POINT NO. ①	STATIONING		EXISTING PIPE ELEVATION	DRAINS TO CATCH BASIN NO.	4" TP PIPE ②
					LIN. FT.
6201	RWALL1 - 2+70	EB494 - 385+32	830.9	5516	32
6203	RWALL1 - 5+80	EB494 - 388+44	831.3	5639	16
6205	RWALL1 - 14+40	EB494 - 397+10	828.8	5609	23
6207	RWALL1 - 20+20	EB494 - 402+90	825.0	5620	75
6209	RWALL1 - 24+20	EB494 - 406+94	823.5	5624	40
<b>RWALL2 RETAINING WALL SUBSURFACE DRAINAGE OUTLET</b>					
		WB494	STATION 380+60	5523	35
<b>TOTAL</b>					221

- ① LOCATION OF TEMPORARY RISER PIPE, CONSTRUCTED UNDER S.P. 2785-332. (6201 IN S.P. 2785-327 = 5201 IN S.P. 2785-332, ETC.)
- ② REMOVAL OF TEMPORARY RISER PIPE, CONSTRUCTED UNDER S.P. 2785-332, IS INCIDENTAL.

**RWALL2 SUBSURFACE DRAINAGE OUTLETS**



TEMPORARY RISER SECTION WITH CAP INPLACE DURING WALL CONSTRUCTION.  
 CUT PIPE AND PLACE 4" TEE WHEN WALL IS COMPLETE AND DRAINAGE SYSTEM IS PLACED.

SAMPLE PLAN

SUBSURFACE DRAINAGE CROSSINGS SHEET 2 OF 3

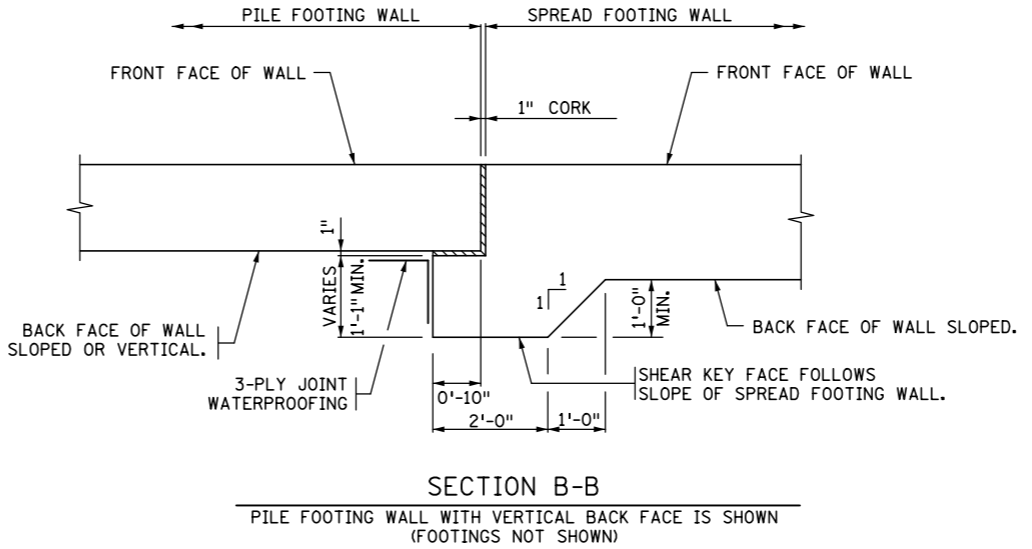
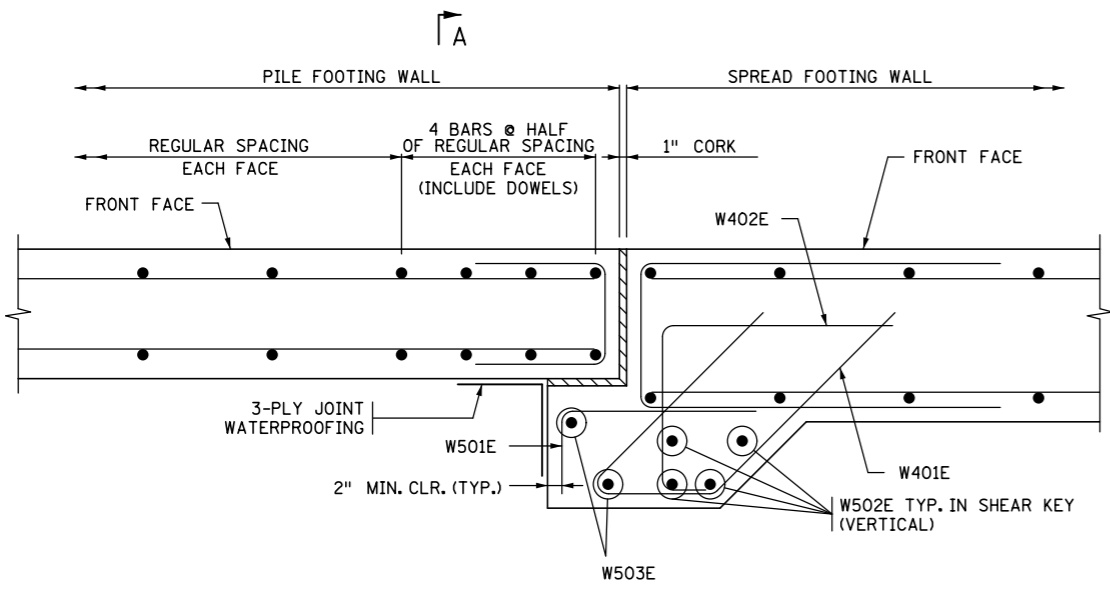
**RETAINING WALL DETAILS**

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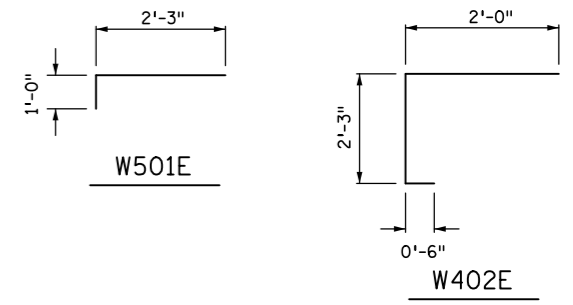
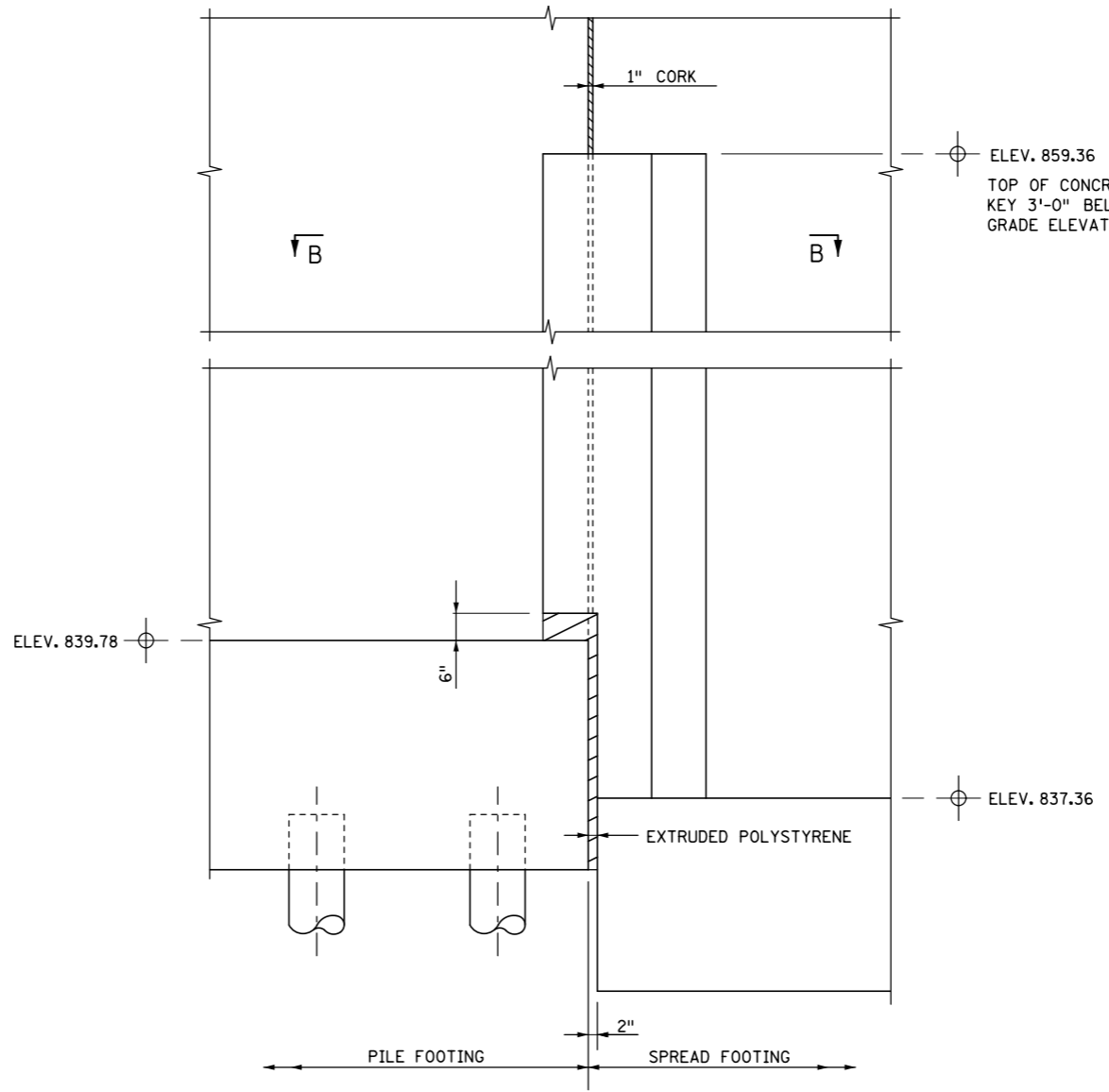
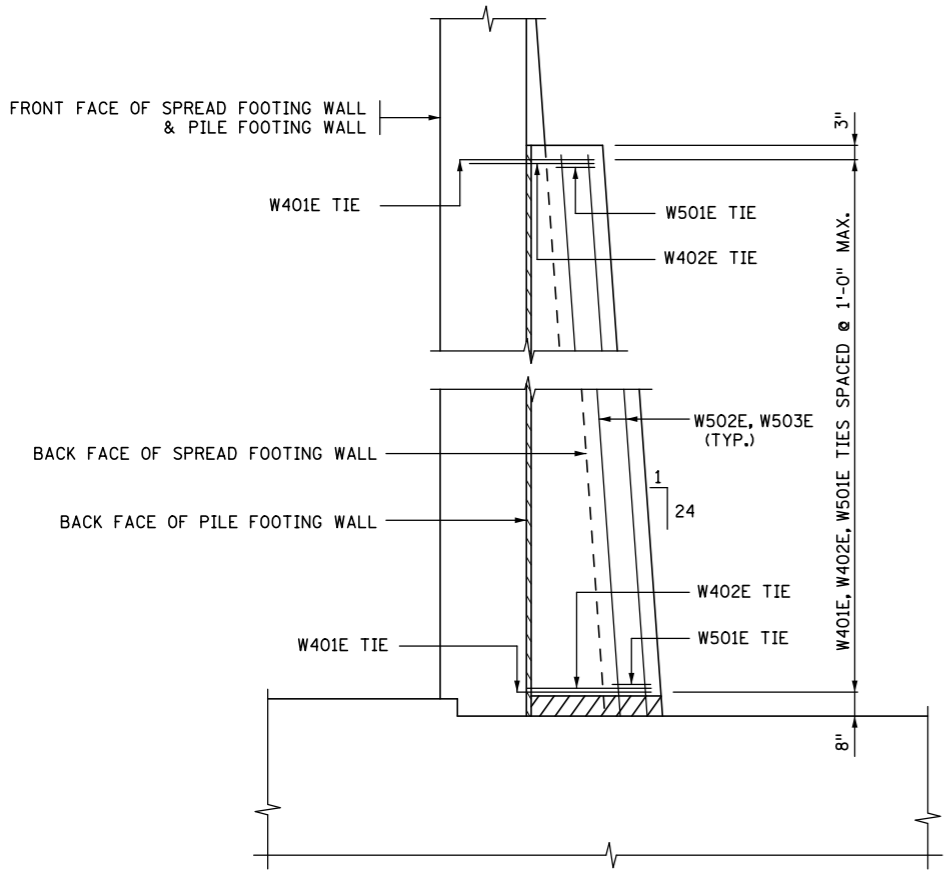
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BILL OF REINFORCEMENT FOR SHEAR KEY					
BAR	NO.	LENGTH	SHAPE	LOCATION	MASS (LB)
W401E	19	8'-3"		HORIZONTAL TIE	105
W402E	22	4'-9"		HORIZONTAL TIE	70
W501E	19	3'-3"		HORIZONTAL TIE	64
W502E	4	21'-9"		VERTICAL	91
W503E	2	18'-7"		VERTICAL	39
REINFORCEMENT BARS (EPOXY) TOTAL					369

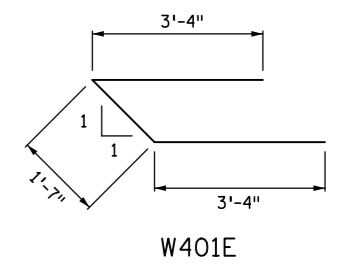
STRUCTURAL CONCRETE (3Y43)  
 1.8 CU YD



SECTION THROUGH SHEAR KEY  
 FOOTING NOT SHOWN



SAMPLE PLAN



NOTES:

USE THIS DETAIL AT A RETAINING WALL JOINT WHEN THE WALL IS SUPPORTED ON PILE FOUNDATION ON ONE SIDE OF THE JOINT AND SPREAD FOOTING ON THE OTHER SIDE.

THE SHEAR KEY SHALL BE PROVIDED ON THE SPREAD FOOTING WALL AS SHOWN.

SHEAR KEY IS NOT REQUIRED IF:

- WALL HEIGHT FROM TOP OF FOOTING TO TOP OF WALL IS LESS THAN 16 FT., WITH OR WITHOUT A NOISE BARRIER.
- THE COMBINED HEIGHT OF RETAINING WALL AND NOISE BARRIER IS LESS THAN 23 FT. AND WALL HEIGHT FROM TOP OF FOOTING TO GRADE IS LESS THAN 13 FT.

THIS SHEET IS A DETAIL FOR USE WITH RETAINING WALL 1 ON THE SP 2785-327 (TH 494). IT IS NOT A STANDARD SHEET.

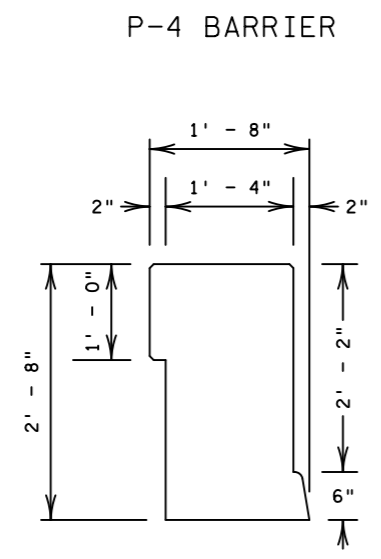
NOTE:  
 PAYMENT FOR SHEAR KEY SHALL BE UNDER ITEM NO. 2411 REINFORCEMENT BARS (EPOXY COATED) BY THE POUND AND ITEM NO. 2411 STRUCTURAL CONCRETE (3Y43) BY THE CUBIC YARD. ALL OTHER MISCELLANEOUS ITEMS REQUIRED, SUCH AS 1" CORK, POLYSTYRENE, WATERPROOFING, ETC. SHALL BE INCIDENTAL.

SHEAR KEY DETAILS AND REINFORCEMENT  
 SHEET 3 OF 3

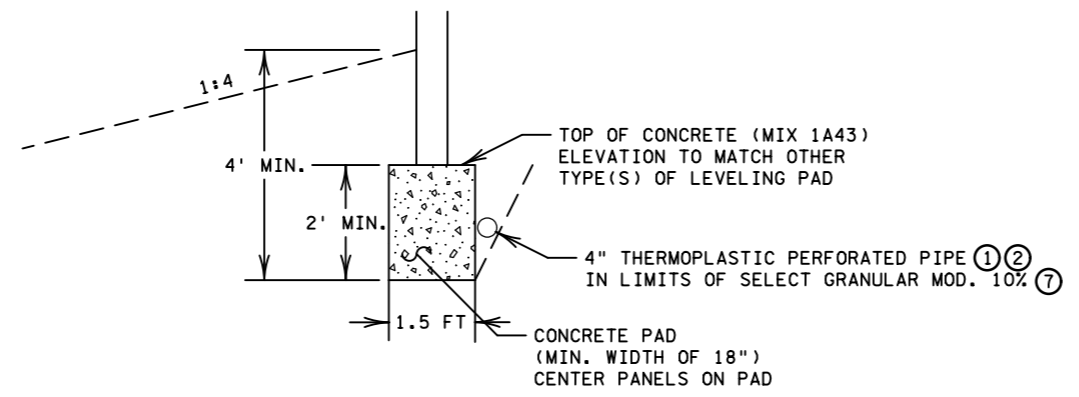
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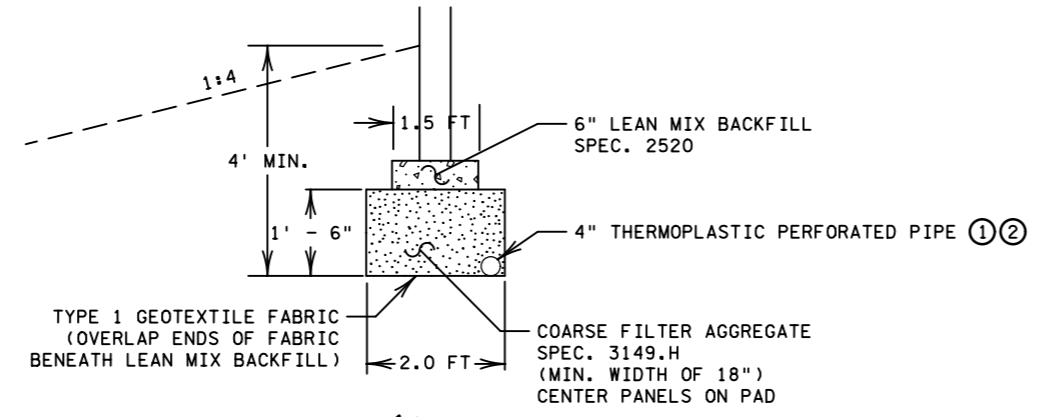
SAMPLE PLAN



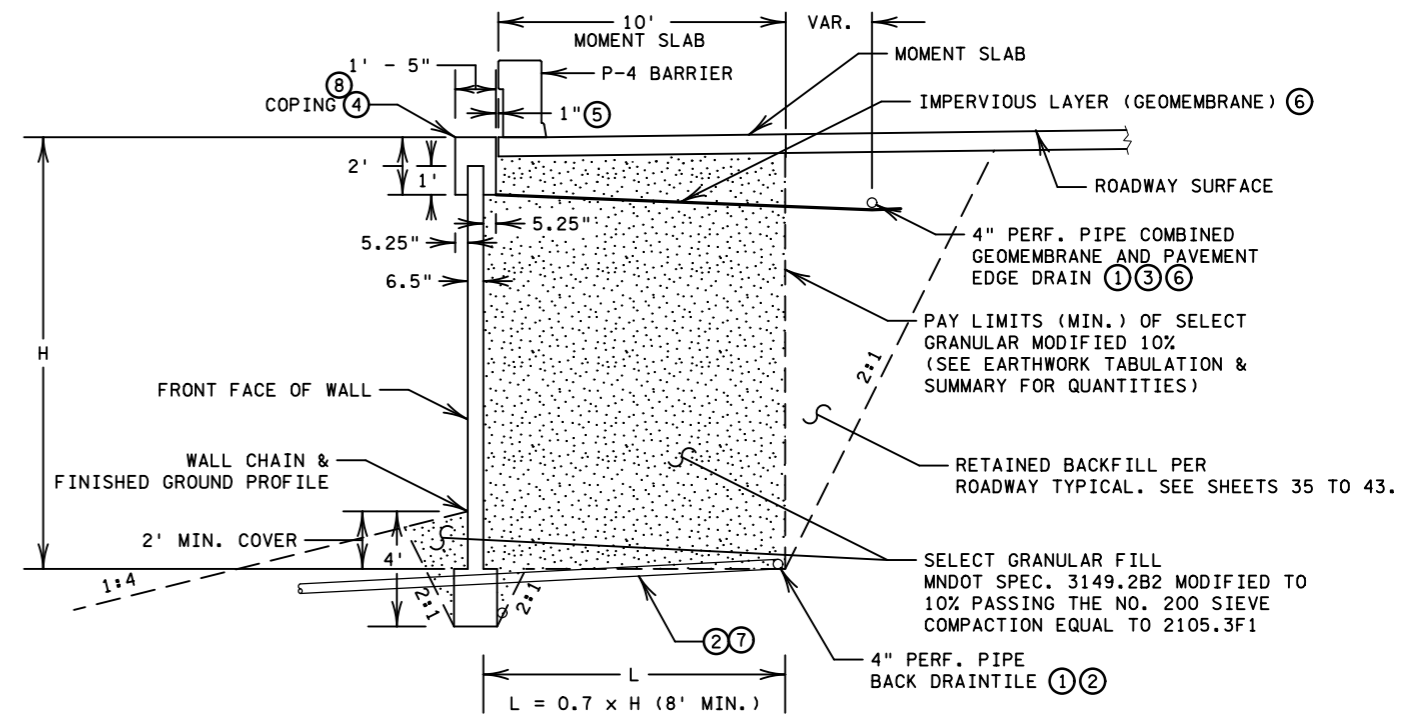
DETAIL B  
 CONCRETE PAD OPTION



DETAIL A  
 AGGREGATE LEVELING PAD OPTION



MSE WALL TYPICAL (MOMENT SLAB AS SHOULDER)



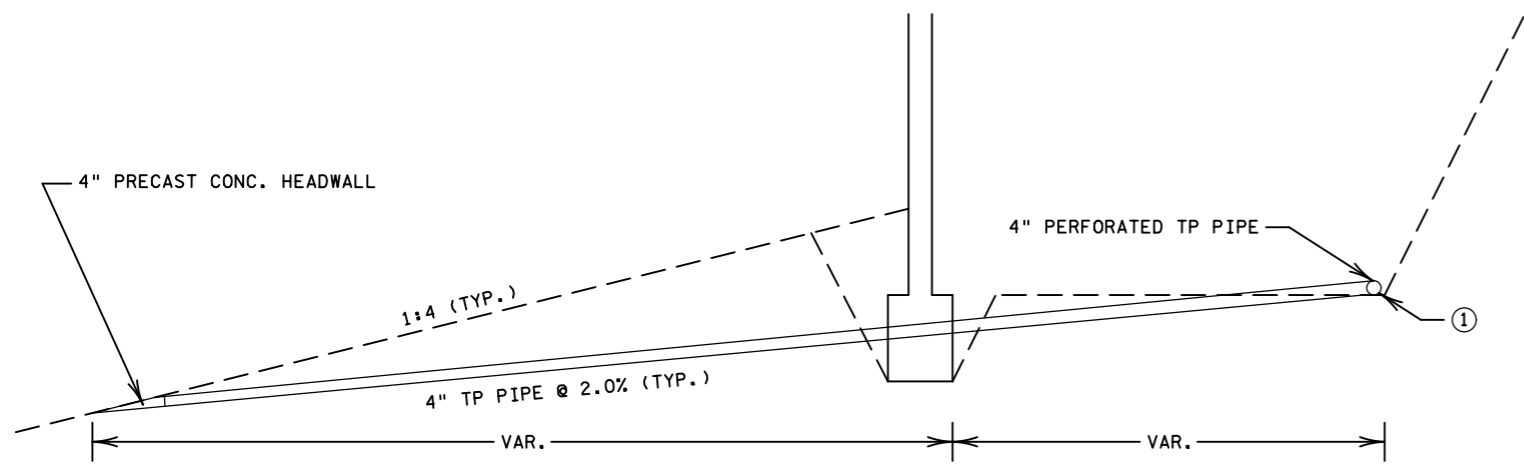
NOTES:

- ALL PIPE SHALL BE AS PER MNDOT SPEC. 3245.
- ① 4" THERMOPLASTIC PERFORATED PIPE, SPEC. 3245. WRAP WITH TYPE I GEOTEXTILE. ATTACH TO PIPE AS PER MNDOT SPEC. 2502.
- ② CONNECT NON-PERFORATED PIPE TO INPLACE OR PROPOSED DRAINAGE SYSTEM AT 150' MAX. SPACING ALONG LENGTH OF DRAIN TILE. SEE SUBSURFACE DRAINAGE OUTLET DETAILS ON SHEET NO. 109.
- ③ CONNECT TO INPLACE OR PROPOSED PAVEMENT EDGE DRAIN AT ENDS OF MSE WALL.
- ④ COPING SHALL BE INCIDENTAL.
- ⑤ DETAILS FOR DRAINAGE STRUCTURES IN MOMENT SLAB SHALL BE DESIGNED BY CONTRACTOR AND APPROVED BY THE ENGINEER.
- ⑥ ONLY NEEDED IF METAL STRAPS ARE USED.
- ⑦ A PIPE SLEEVE, BLOCK-OUT, OR SLOT SHALL BE CAST INTO THE LEVELING PAD AT APPROPRIATE INTERVALS TO ACCEPT THE PIPE OUTLETS FROM THE WALL DRAINAGE SYSTEM, AT INTERVALS NO GREATER THAN 150 FT. NON-PERFORATED PIPE SHALL BE CONNECTED TO THE WALL DRAINAGE SYSTEM AND PLACED SO AS TO PASS THROUGH THE LEVELING PAD, BELOW THE BOTTOM WALL PANELS. THE DRAIN SYSTEM SHALL BE PLACED SUCH THAT POSITIVE DRAINAGE IS MAINTAINED. AVOID 90 DEGREE OR "TEE" CONNECTIONS BY USING 45 DEGREE, "Y", OR RADIUS CONNECTORS TO AID IN CLEAN-OUT AND OBSERVATION BY INSPECTION CAMERAS WHEN REQUIRED. CONNECTION DETAILS SHALL BE INCLUDED IN SHOP DRAWING SUBMITTALS.
- ⑧ WALL SHALL BE BUILT TO FULL HEIGHT AND ALLOWED TO SETTLE FOR 2 WEEKS PRIOR TO PLACING COPING, MOMENT SLAB AND PAVEMENT.

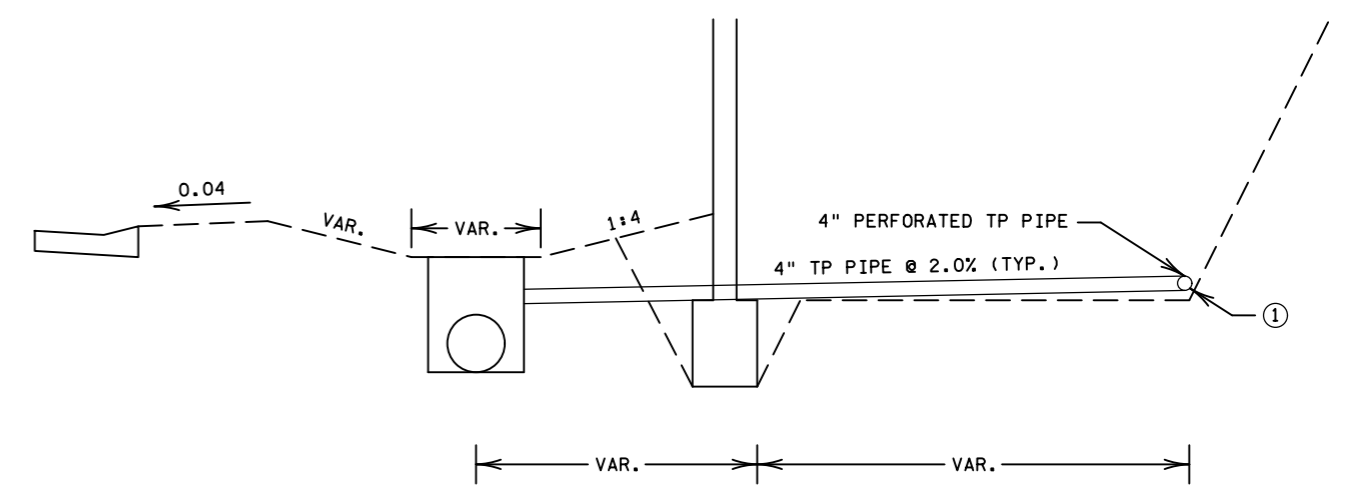
MSE WALL DETAILS

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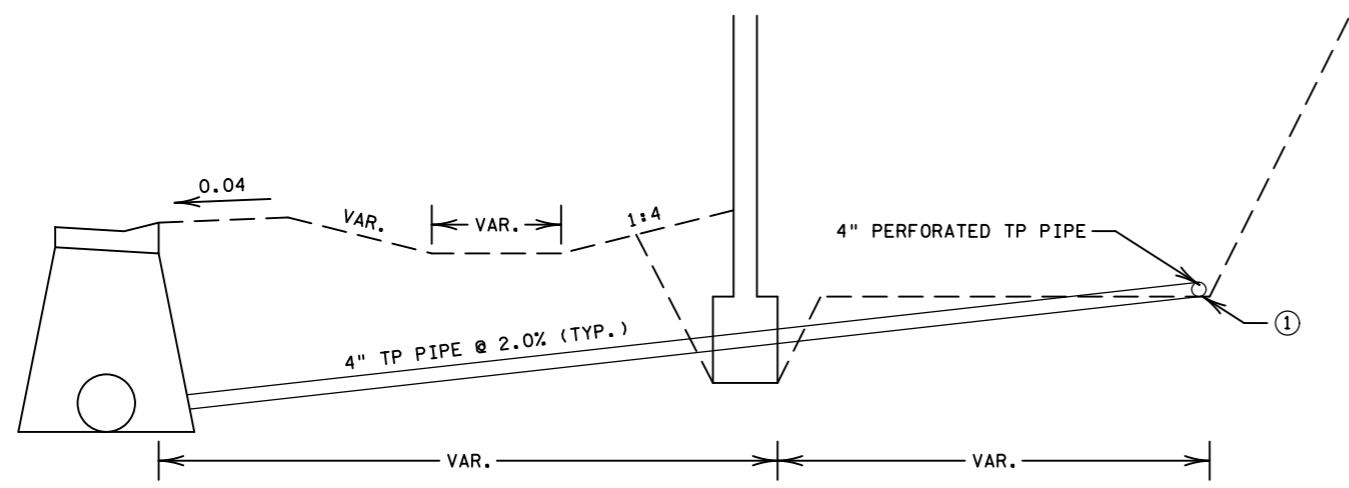
**SUBSURFACE DRAINAGE OUTLETS TO HEADWALL  
 DETAIL A**



**SUBSURFACE DRAINAGE OUTLETS TO SUBSURFACE PIPE  
 DETAIL C**



**SUBSURFACE DRAINAGE OUTLETS TO STRUCTURE  
 DETAIL B**



SAMPLE PLAN

NOTES:

- SEE SHEET NO. 110 THRU 120A AND SHEET NO. 20 FOR WALL DETAILS AND DRAINAGE PIPE OUTLET LOCATIONS.
- CROSS SLOPES ARE IN FT./ FT.
- ① PROVIDE A 45 DEGREE Y OR RADIUS CONNECTION TO AID IN CLEAN OUT AND OBSERVATION BY INSPECTION CAMERAS.

DRAWN BY: RO

CHECKED BY: DG

CERTIFIED BY Will D. Zure  
LICENSED PROFESSIONAL ENGINEER

LIC. NO. 00000 DATE 09/22/10

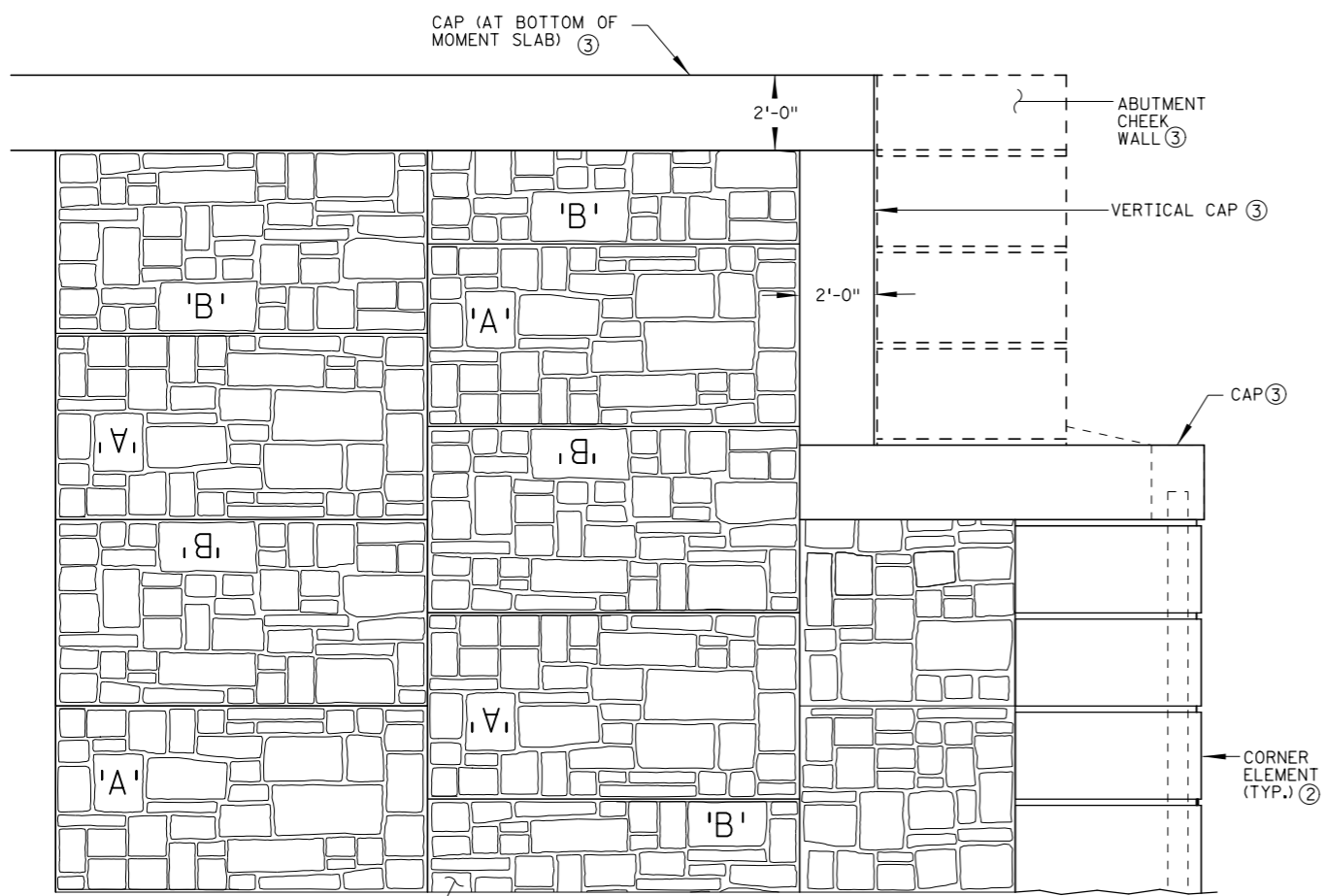
**MSE WALL DETAILS**

STATE PROJ. NO. 0000-00 (T.H. 00 ) SHEET NO. 58 OF 84 SHEETS

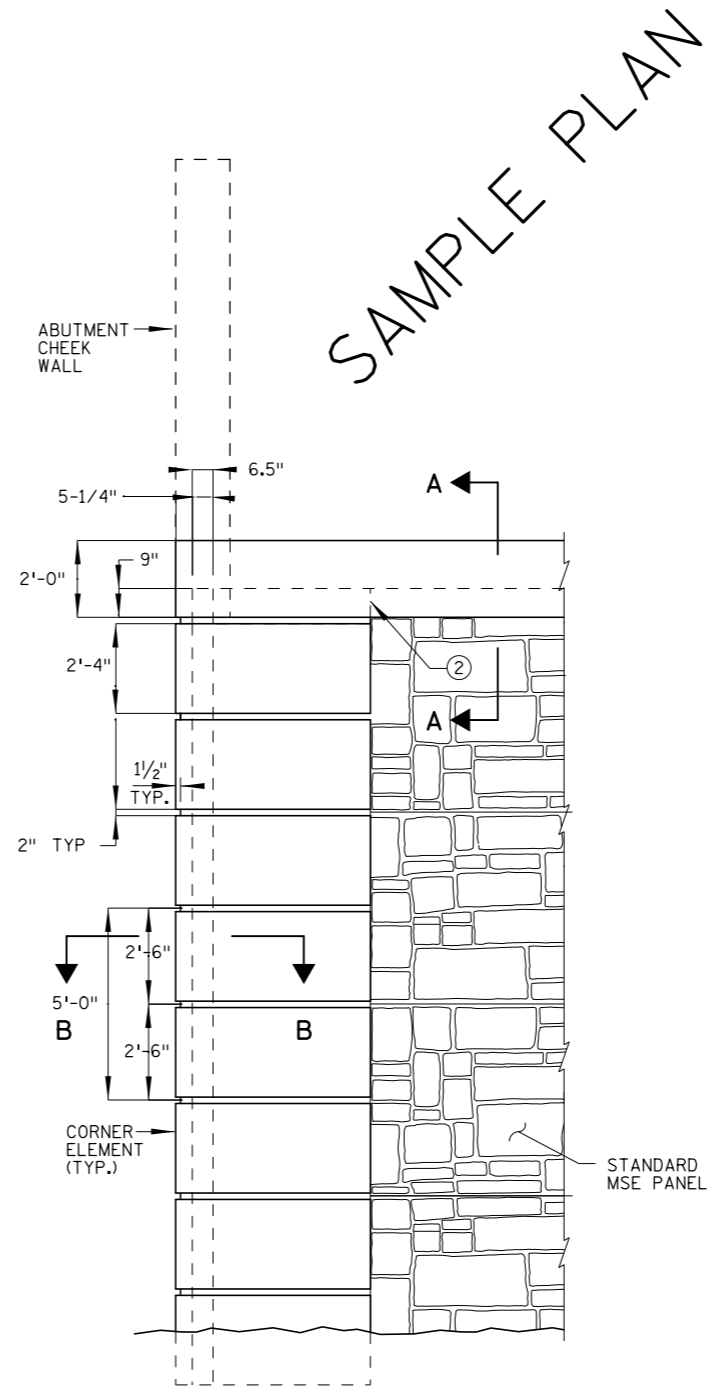
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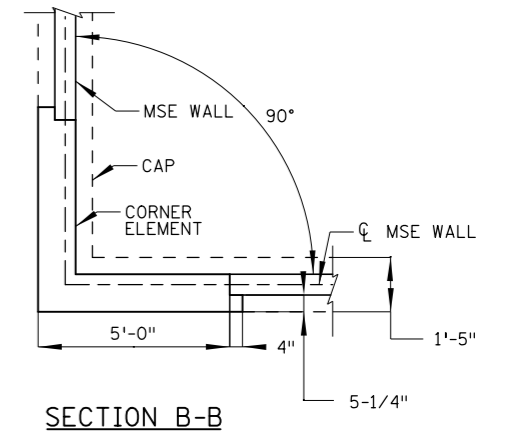


MSE WALL ELEVATION VIEW

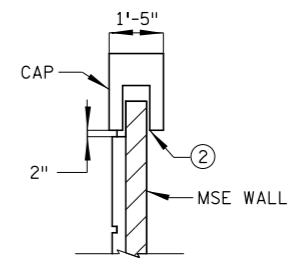


ELEVATION VIEW

SAMPLE PLAN



SECTION B-B



SECTION A-A

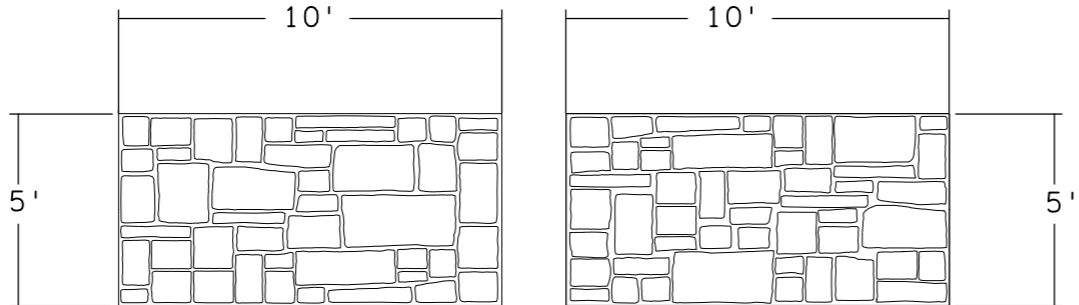
GENERAL NOTES:

MSE WALL SUPPLIER SHALL VERIFY DIMENSIONS TO ENSURE CAPS, CORNER ELEMENTS AND MSE PANELS FIT PROPERLY.

NOTES:

- ② CORNER ELEMENT SHALL BE MODIFIED TO FIT INTO CAP AT TOP OF WALL.
- ③ ARCHITECTURAL SURFACE FINISH (SINGLE COLOR). SEE SPECIAL PROVISIONS.
- ④ ARCHITECTURAL SURFACE FINISH (MULTI COLOR). SEE SPECIAL PROVISIONS.

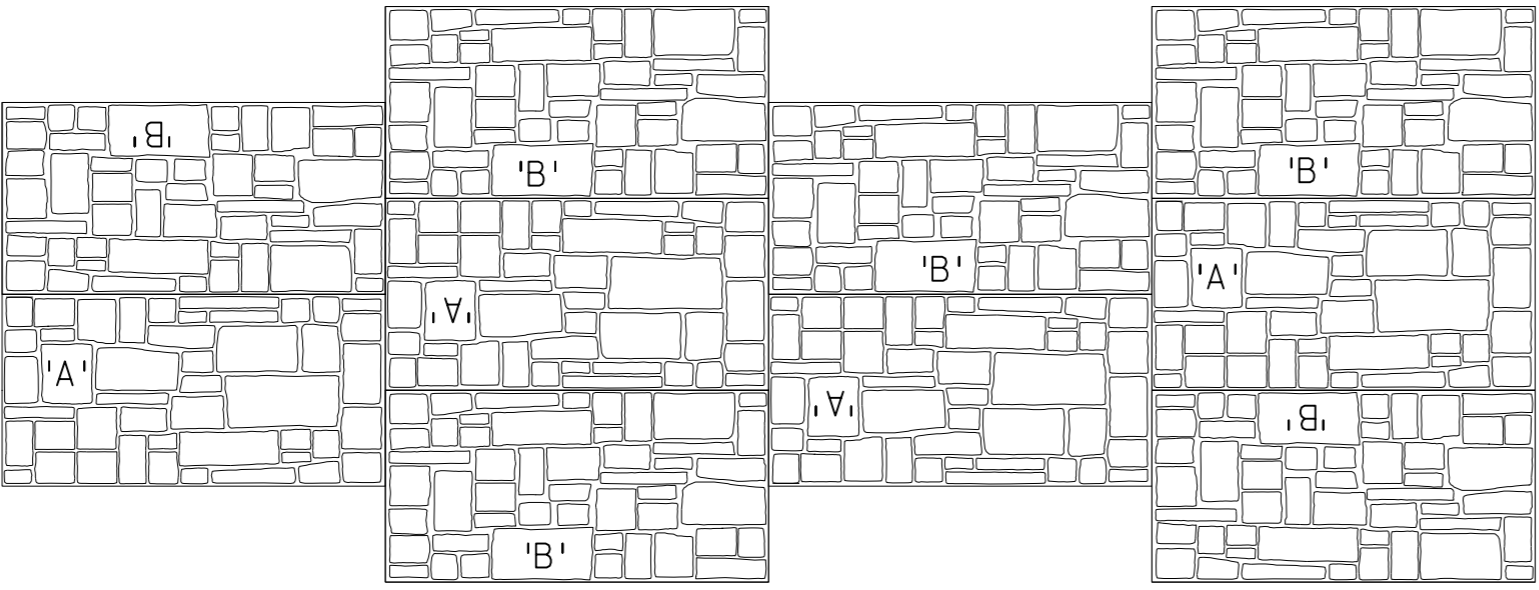
MSE WALL DETAILS



PANEL 'A'

PANEL 'B'

SAMPLE PLAN



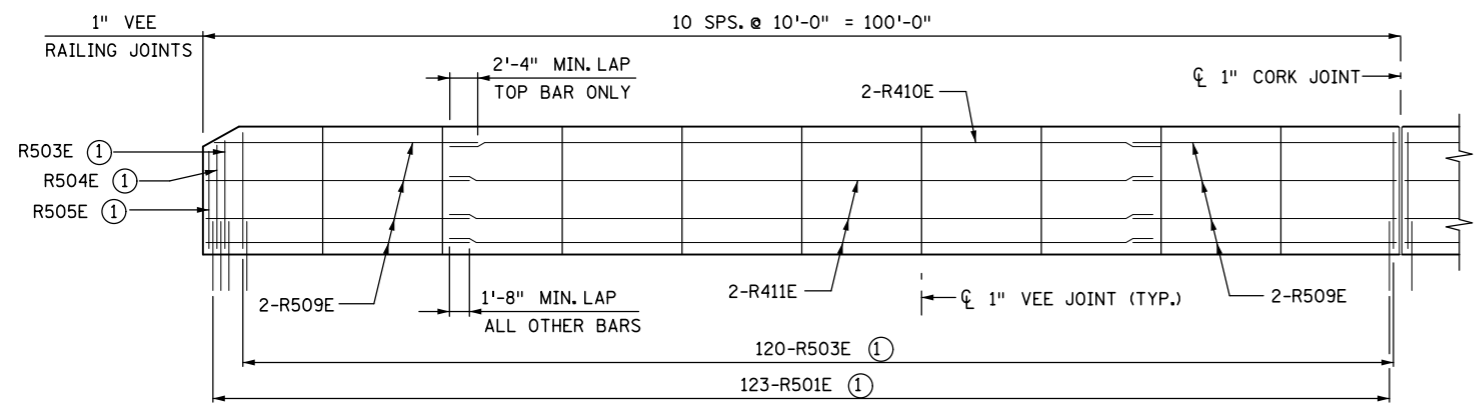
PANEL CONFIGURATION

- GENERAL NOTES:
- 1. ALL JOINTS - 1 3/4 " WIDE x 1" DEEP
  - 2. ARCHITECTURAL CONCRETE TEXTURE (MINNESOTA ASHLAR) CUSTOM ROCK PATTERN NO. 1214. SEE SPECIAL PROVISIONS.
  - 3. ARCHITECTURAL SURFACE FINISH (MULTI COLOR). SEE SPECIAL PROVISIONS.

MSE WALL DETAILS

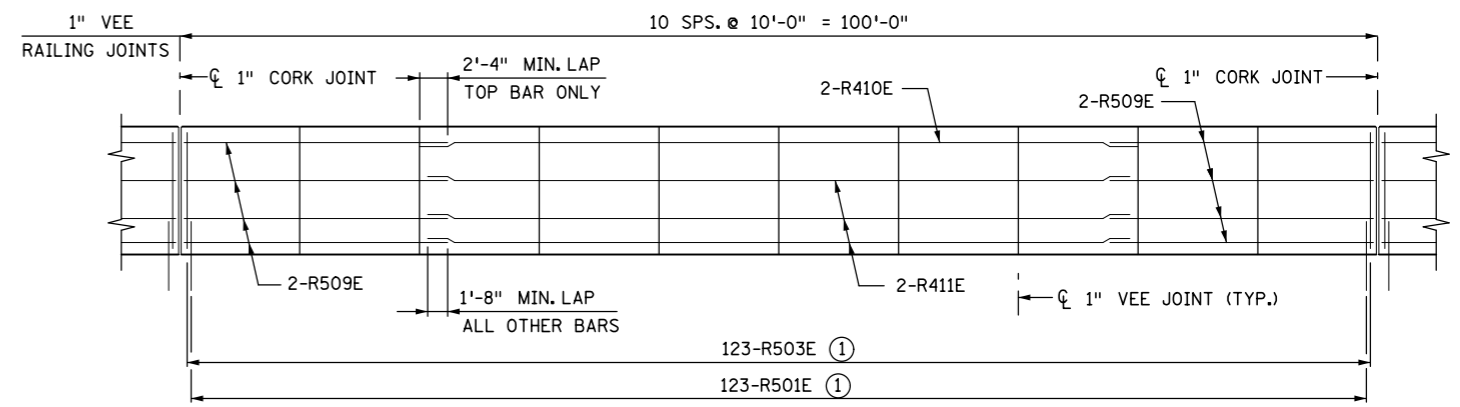


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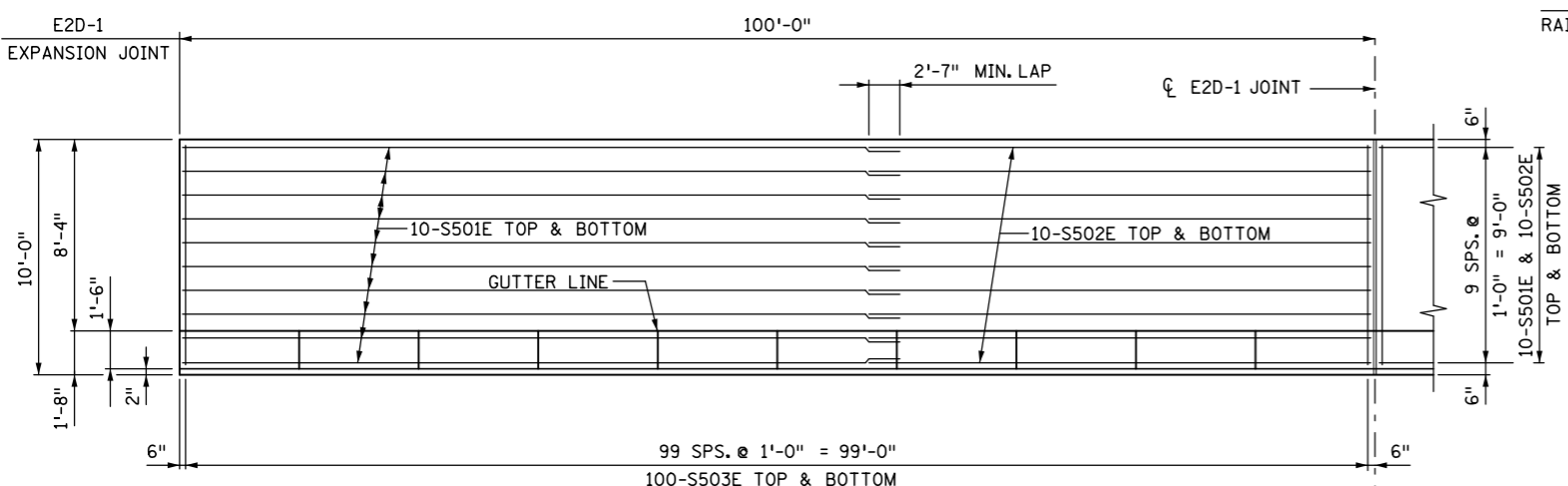
**BARRIER END SECTION ELEVATION**

NOTE: ① FOR SPACING SEE BARRIER SHEET TYPE 1 SHOWN

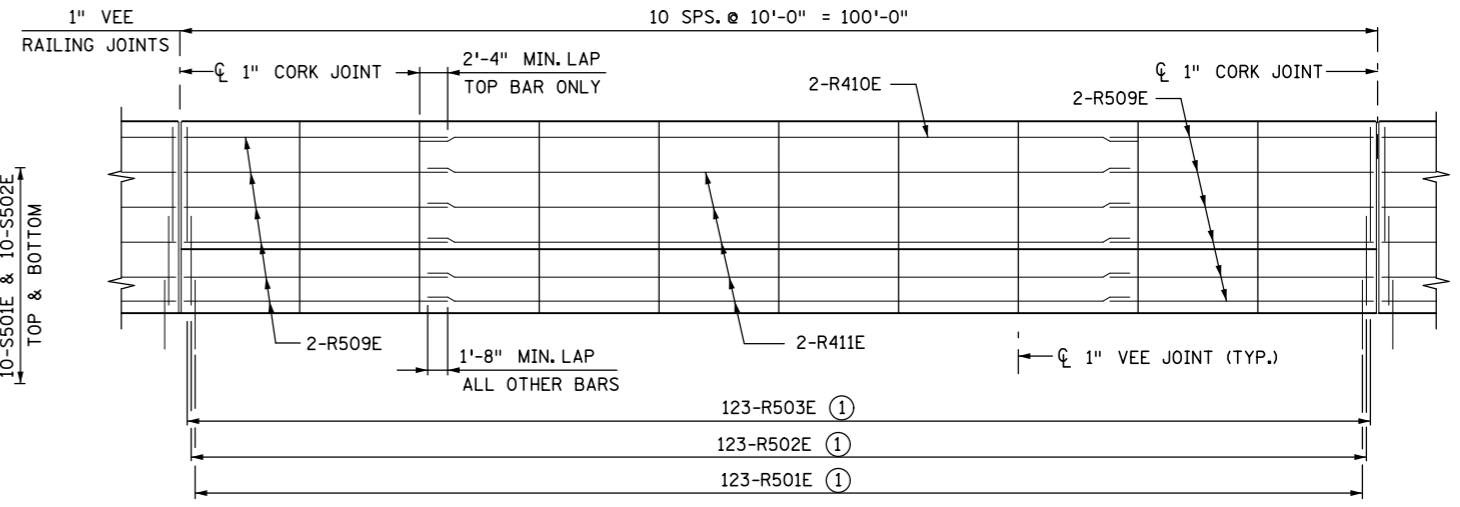


**BARRIER MIDDLE SECTION ELEVATION**

NOTE: ① FOR SPACING SEE BARRIER SHEET TYPE 1 SHOWN

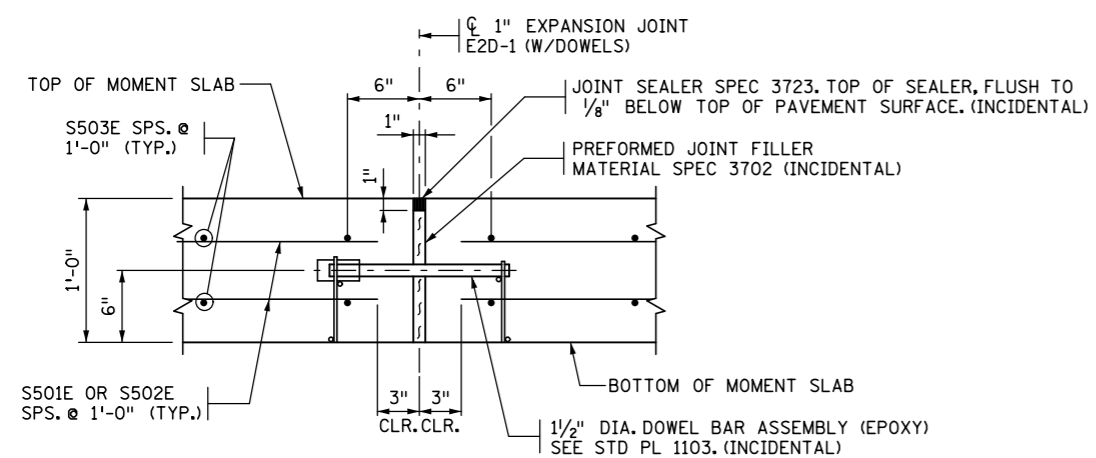


**MOMENT SLAB PLAN**

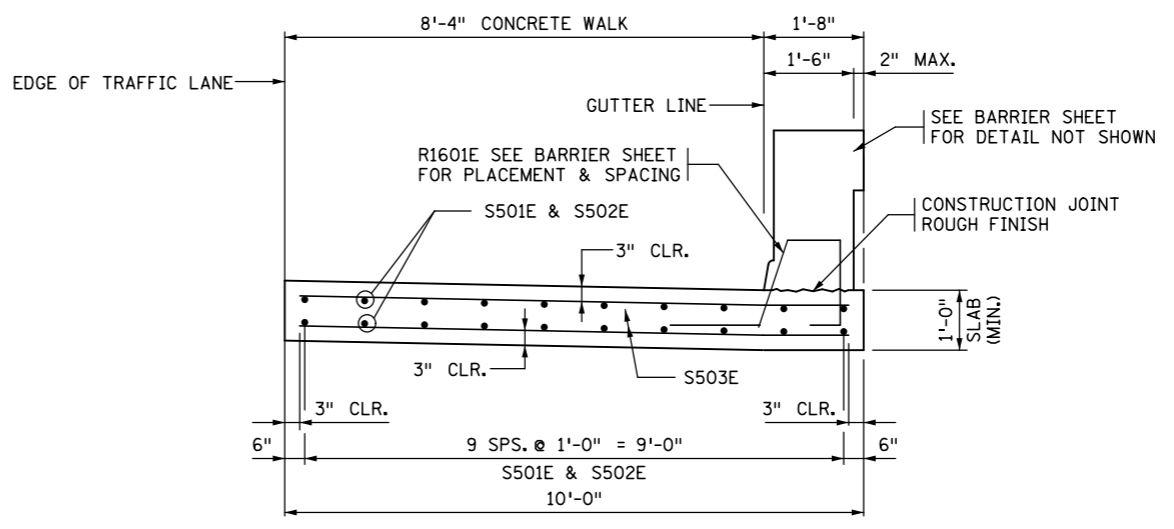


**BARRIER MIDDLE SECTION ELEVATION**

NOTE: ① FOR SPACING SEE BARRIER SHEET TYPE 2 SHOWN



**EXPANSION JOINT E2D-1**

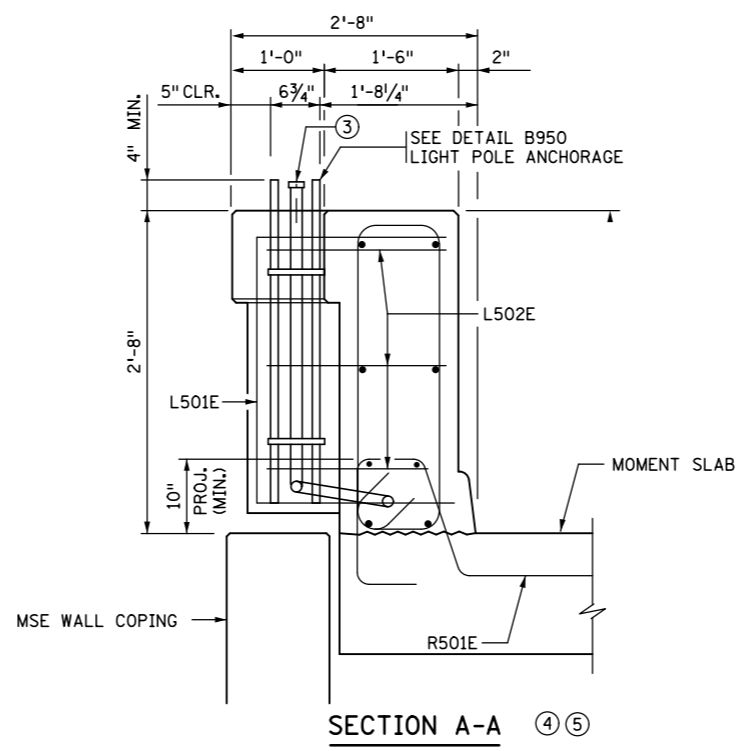
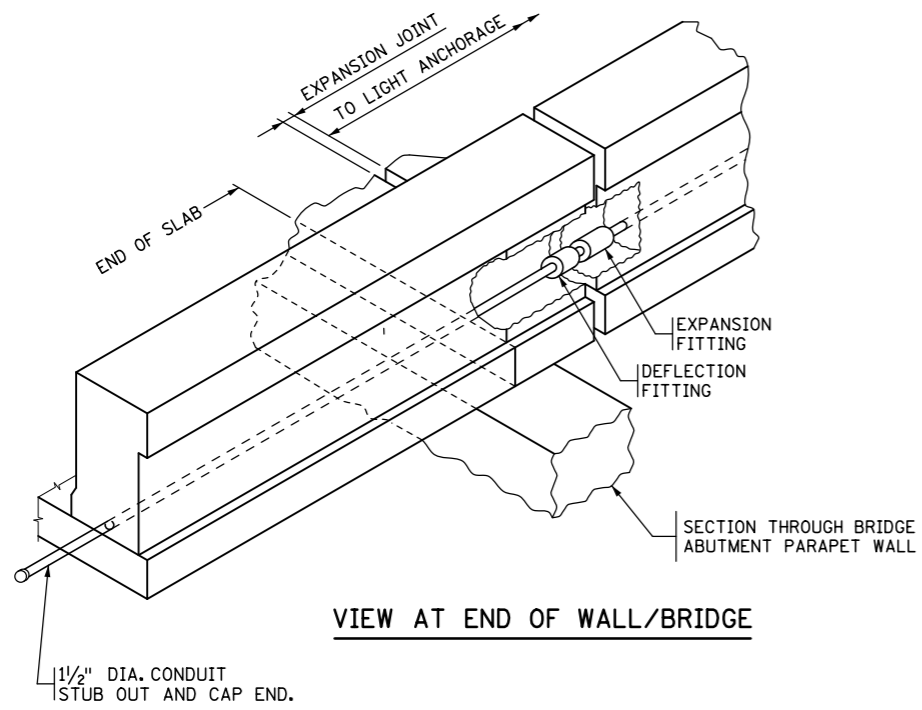


**TRANSVERSE SECTION**

TYPE 1 SHOWN

SAMPLE PLAN

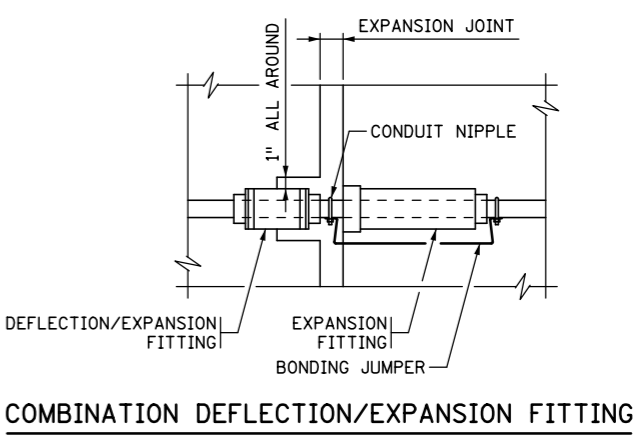
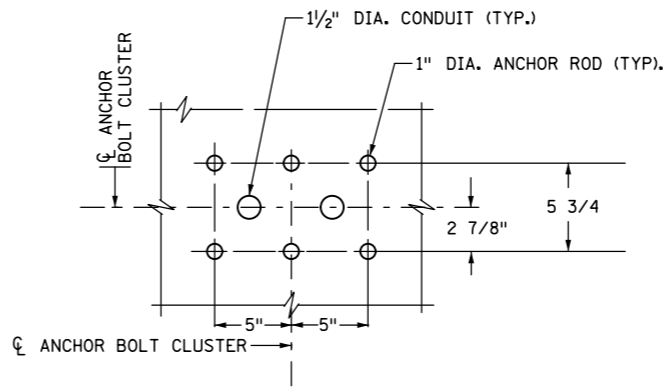
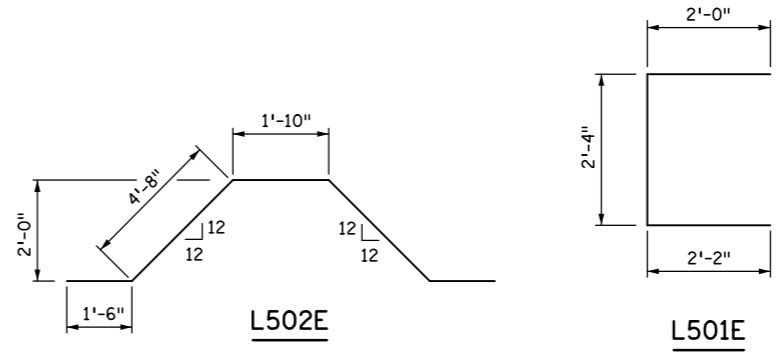
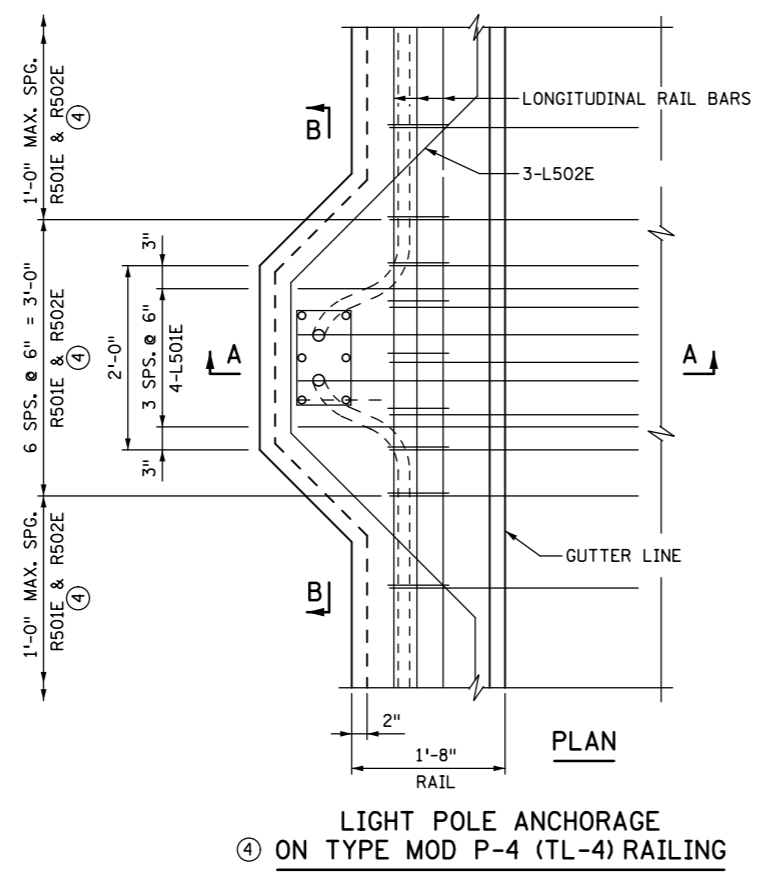
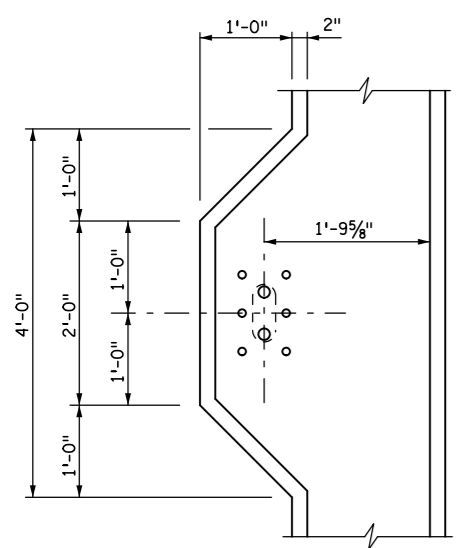
**MSE WALL DETAILS**



SAMPLE PLAN

BILL OF REINFORCEMENT FOR BARRIER AT LIGHT POLE				
BAR	NO.	LENGTH	SHAPE	LOCATION
L501E	4	6'-4"	□	VERTICAL TIE
L502E	3	10'-3"	~	LONGITUDINAL TIE

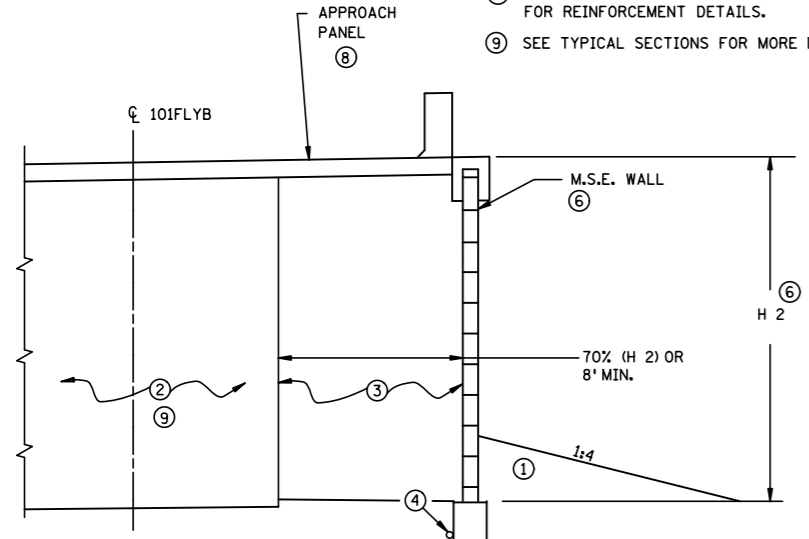
- NOTES:
- ③ THE 1 1/2" DIA. CONDUIT SHALL EXTEND 3" ABOVE THE RAILING AND BE CAPPED.
  - ④ SEE STANDARD RAILING SHEETS FOR ADDITIONAL REINFORCEMENT PLACEMENT AND DETAIL DIMENSIONS.
  - ⑤ SEE SHEET NO. 168 FOR ADDITIONAL DETAILS.



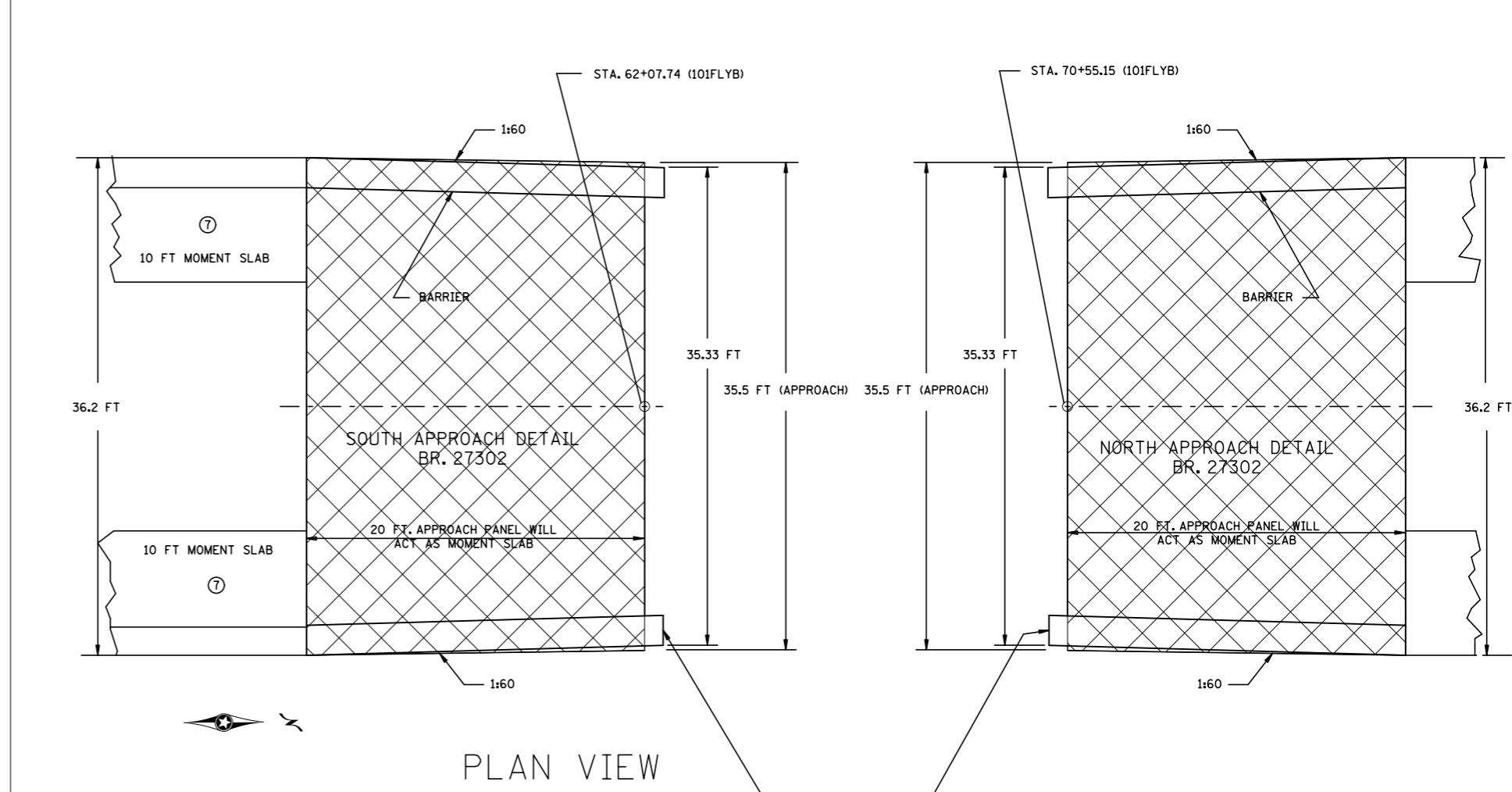
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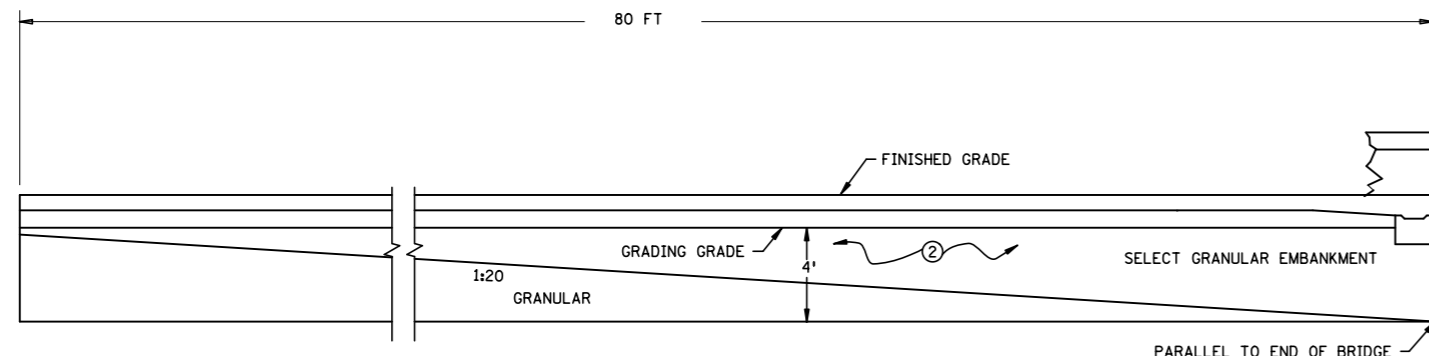
- NOTES:**
- ① SUITABLE GRADING MATERIAL PLACED BY THE CONTRACTOR.
  - ② BACKFILL PLACED BY THE CONTRACTOR. MATERIAL SHALL COMPLY WITH SPEC. 3149.2B ( SELECT GRANULAR BORROW ), 363 SQ. FT UNDER SOUTH APPROACH, 355 SQ FT. UNDER NORTH APPROACH.
  - ③ SELECT GRANULAR MATERIAL MODIFIED 10% SHALL COMPLY WITH SPEC. 3149.2B, MODIFIED TO 10% OR LESS PASSING THE NUMBER 200 SIEVE. MATERIAL SHALL BE PLACED AS THE M.S.E. WALLS ARE BEING SET. 84 SQ FT UNDER SOUTH APPROACH, 80 SQ FT UNDER NORTH APPROACH.
  - ④ DRAIN REQUIRED. SEE BRIDGE STANDARD DETAIL B910.
  - ⑤ ACTUAL SLOPE TO BE DETERMINED DURING CONSTRUCTION BY THE CONTRACTOR, DEPENDING ON INSITU SOIL PROPERTIES AND/OR SAFETY FACTORS. ( USE 1:1 FOR DESIGN )
  - ⑥ SEE M.S.E. WALL PLAN AND PROFILE SHEETS FOR H DIMENSION AND OTHER DETAILS.
  - ⑦ SEE MSE WALL DETAILS FOR REINFORCEMENT.
  - ⑧ SEE STANDARD PLAN ON SHEET 73A FOR REINFORCEMENT DETAILS.
  - ⑨ SEE TYPICAL SECTIONS FOR MORE DETAILS, SHEETS 35-43.



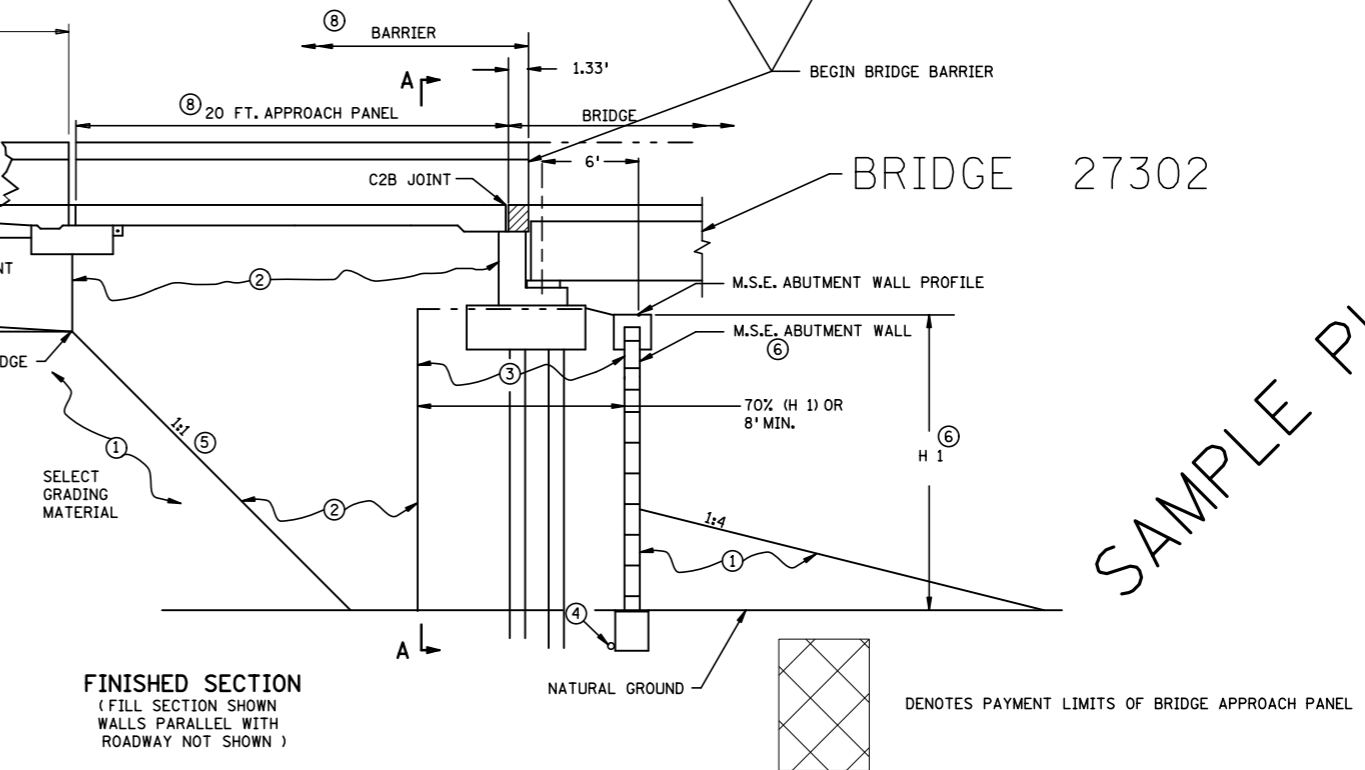
**HALF SECTION A-A**  
 ( FILL SECTION  
 BRIDGE SUPPORT AND  
 ABUTMENT WALL NOT SHOWN )



**PLAN VIEW**



BRIDGE APPROACH PANELS							E
LOCATION	OFFSET	LENGTH FT	BRIDGE APPROACH PANELS SQ YD	STRUCTURAL CONCRETE 3Y43 CU YD	TYPE P-4 (TL-4) RAILING CONCRETE (3Y46) LIN FT	REINFORCEMENT BARS (EPOXY COATED)	
						APPROACH SLAB POUND	
101FLYB							
61+87.74 TO 62+07.74	18.08 LT TO 18.08 RT	20	80.3	27	42.7	3895	
70+55.15 TO 70+75.15	18.08 LT TO 18.08 RT	20	80.3	27	42.7	3895	
TOTALS		40	161	54	85	7790	



**FINISHED SECTION**  
 ( FILL SECTION SHOWN  
 WALLS PARALLEL WITH  
 ROADWAY NOT SHOWN )

SAMPLE PLAN

**MSE WALL DETAILS**