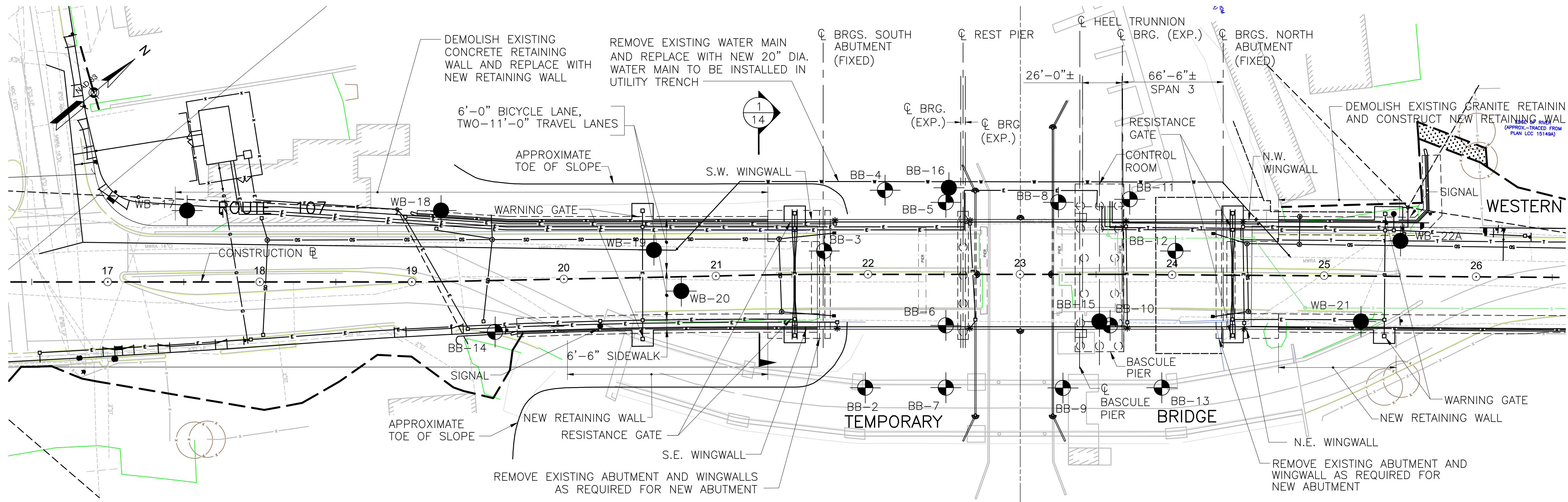
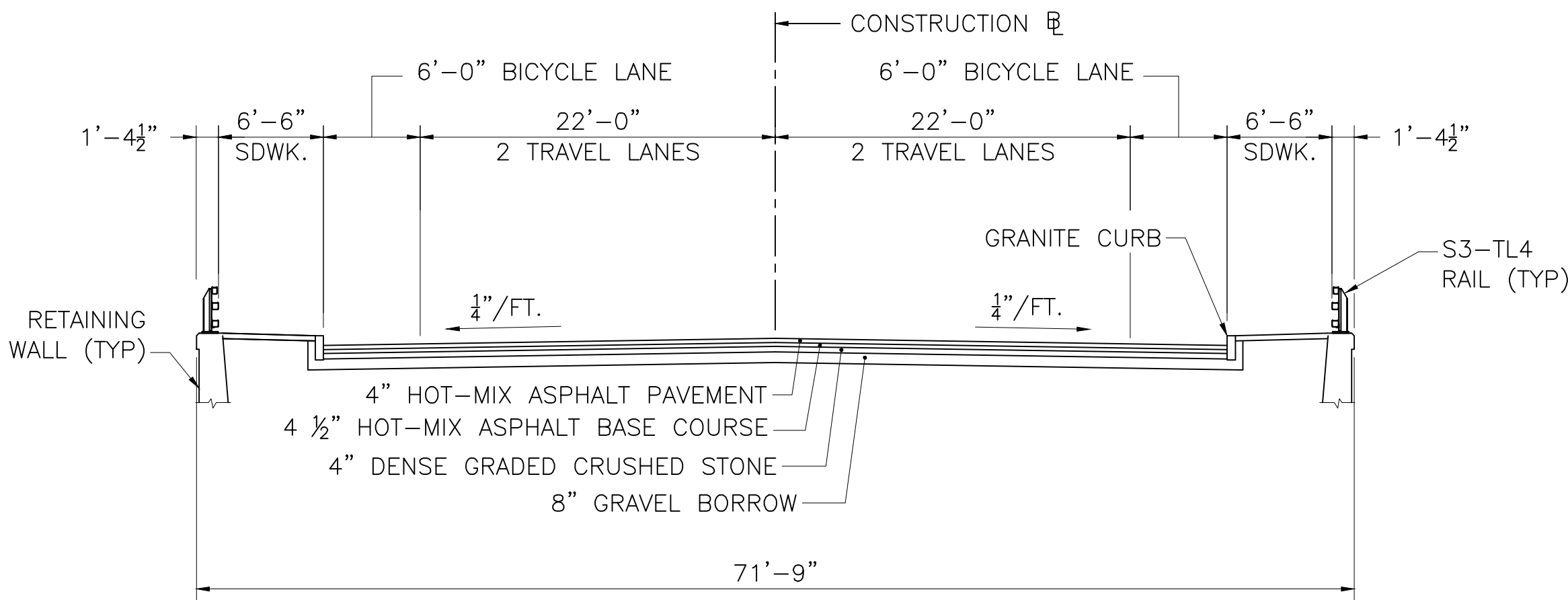


LYNN/SAUGUS
ROUTE 107 OVER SAUGUS RIVER

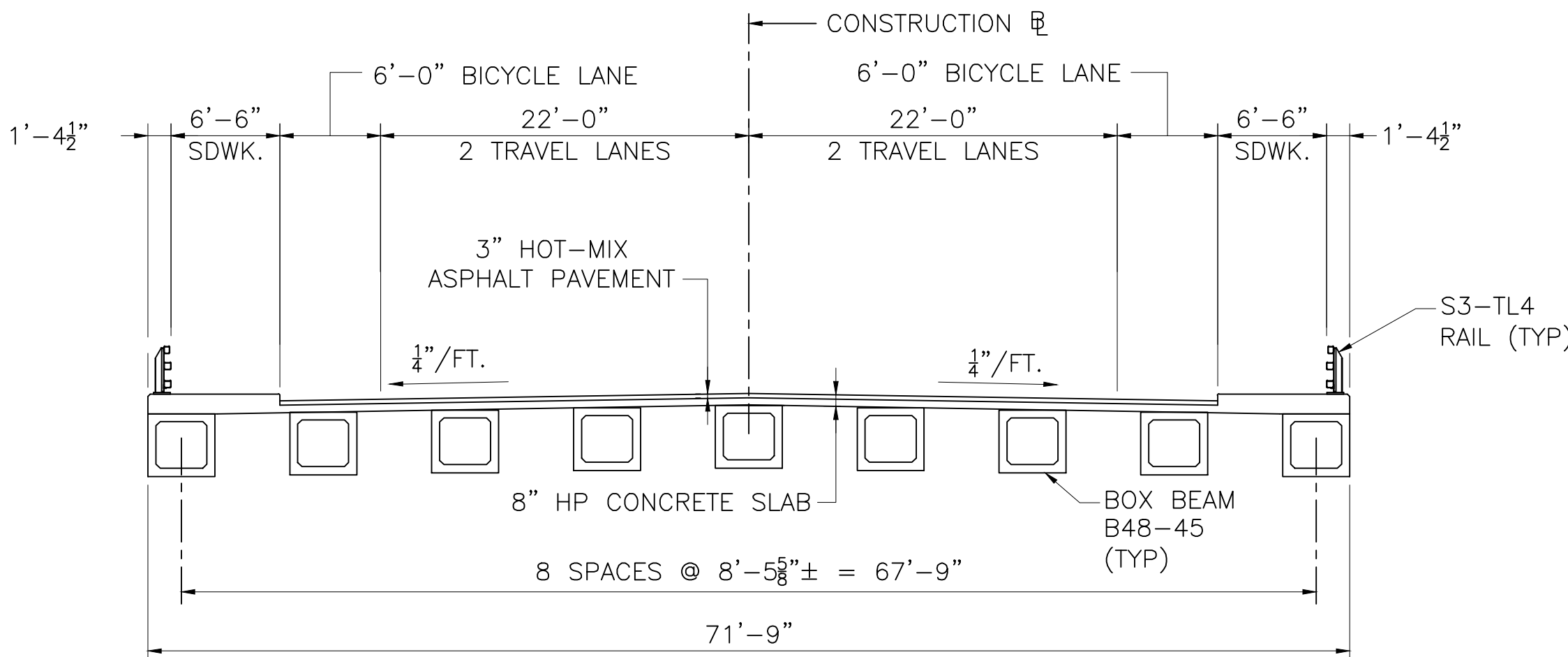
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-		X
PROJECT FILE NO. 604952			



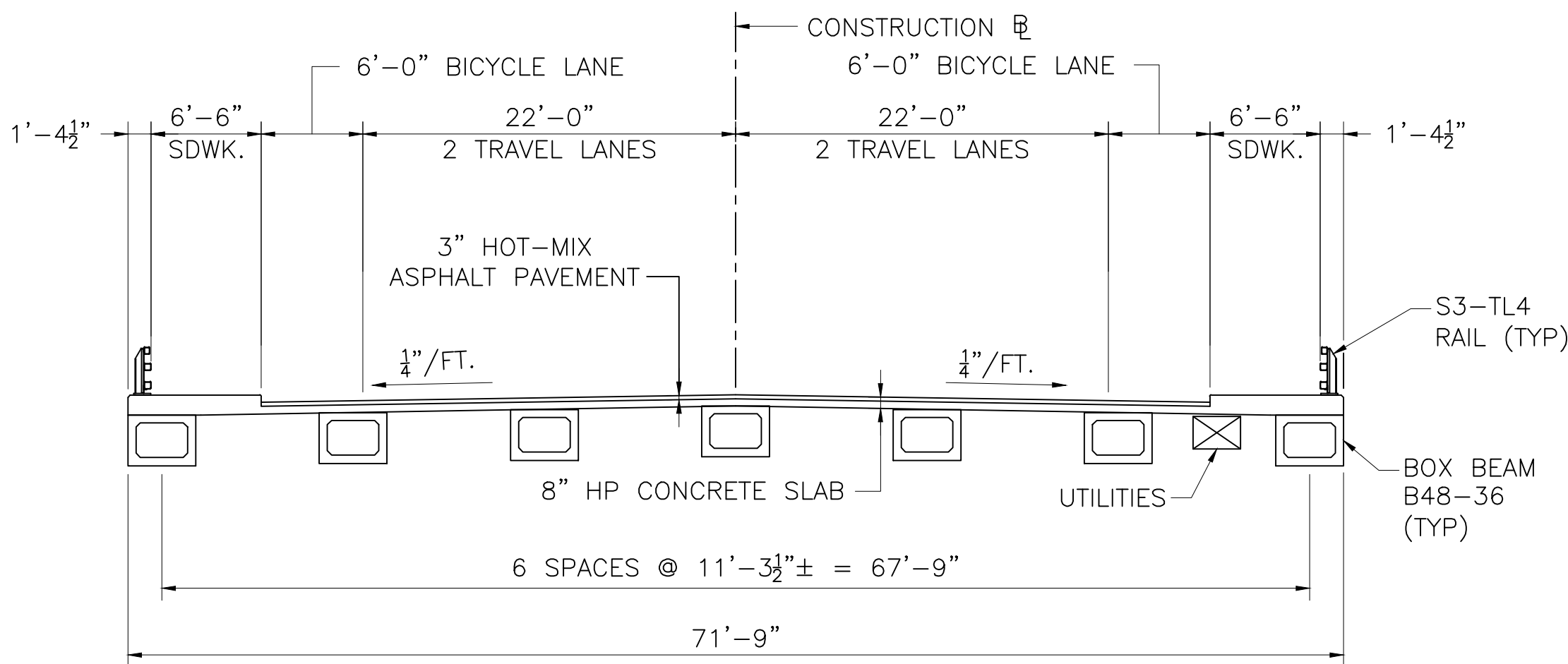
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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APPROACH SECTION
SCALE: 1/8" = 1'-0"

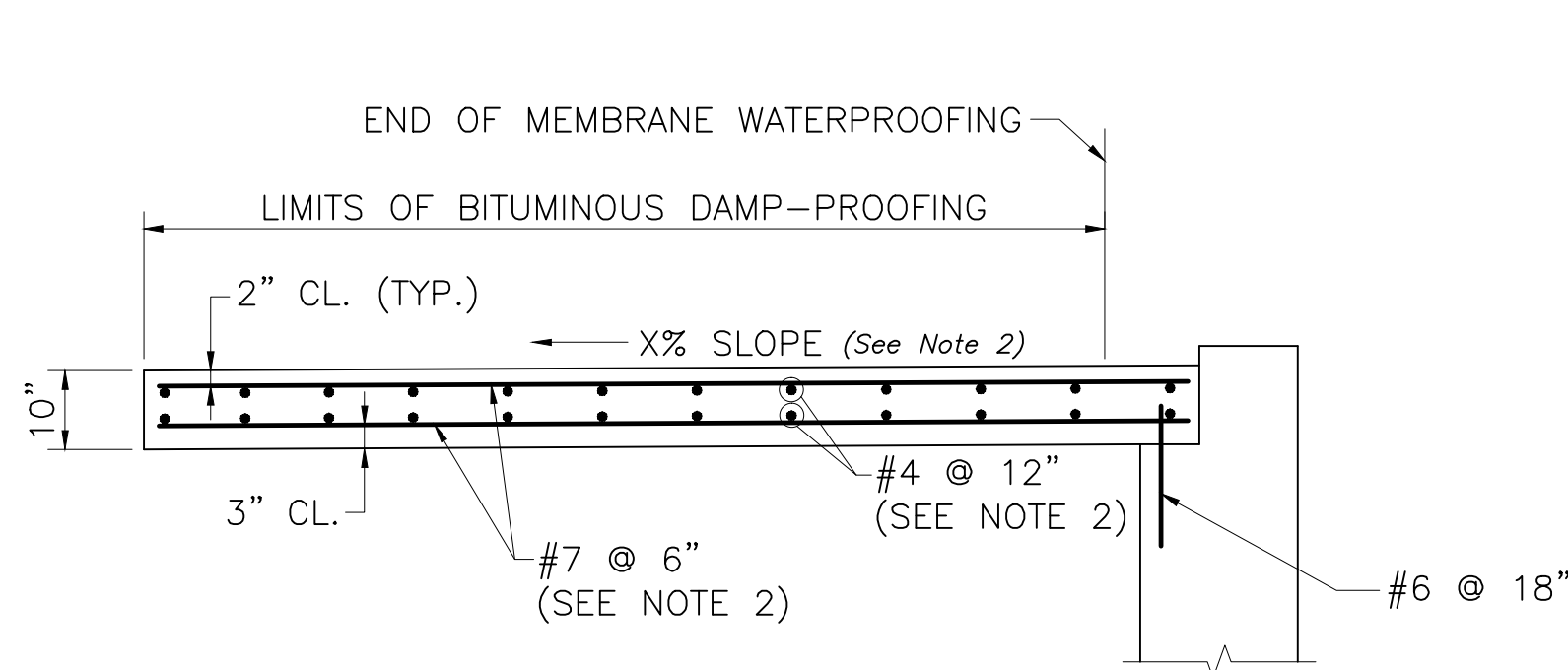


SECTION - CONCRETE BOX BEAMS
SPAN 1
SCALE: 1/8" = 1'-0"



SECTION - CONCRETE BOX BEAMS - SPAN 3
SCALE: 1/8" = 1'-0"

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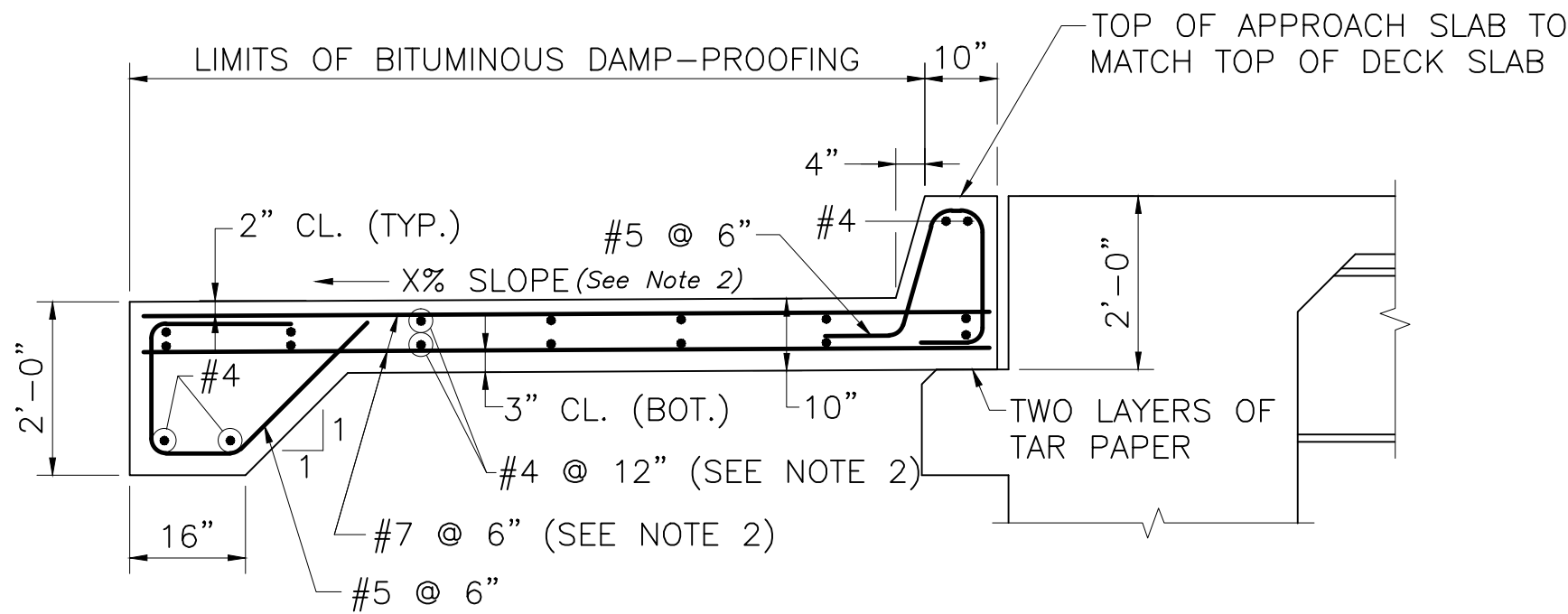


- NOTES:
- APPROACH SLAB TO BE 4000 PSI, 1½ IN, 565 CEMENT CONCRETE.
 - PLACE LONGITUDINAL REINFORCEMENT (Specify orientation per Dwg. No. 3.1.12).
PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.

TYPE I –APPROACH SLAB DETAILS

SCALE: ½" = 1'–0"

- NOTES:
- See Roadway Section drawings for abutment details and dimensions not shown here.
 - If approach roadway slopes down and away from the abutment at greater than 2%, change slope of approach slab to approach roadway grade plus 1%, rounded up to the nearest 1%. Otherwise set slope at 2%.

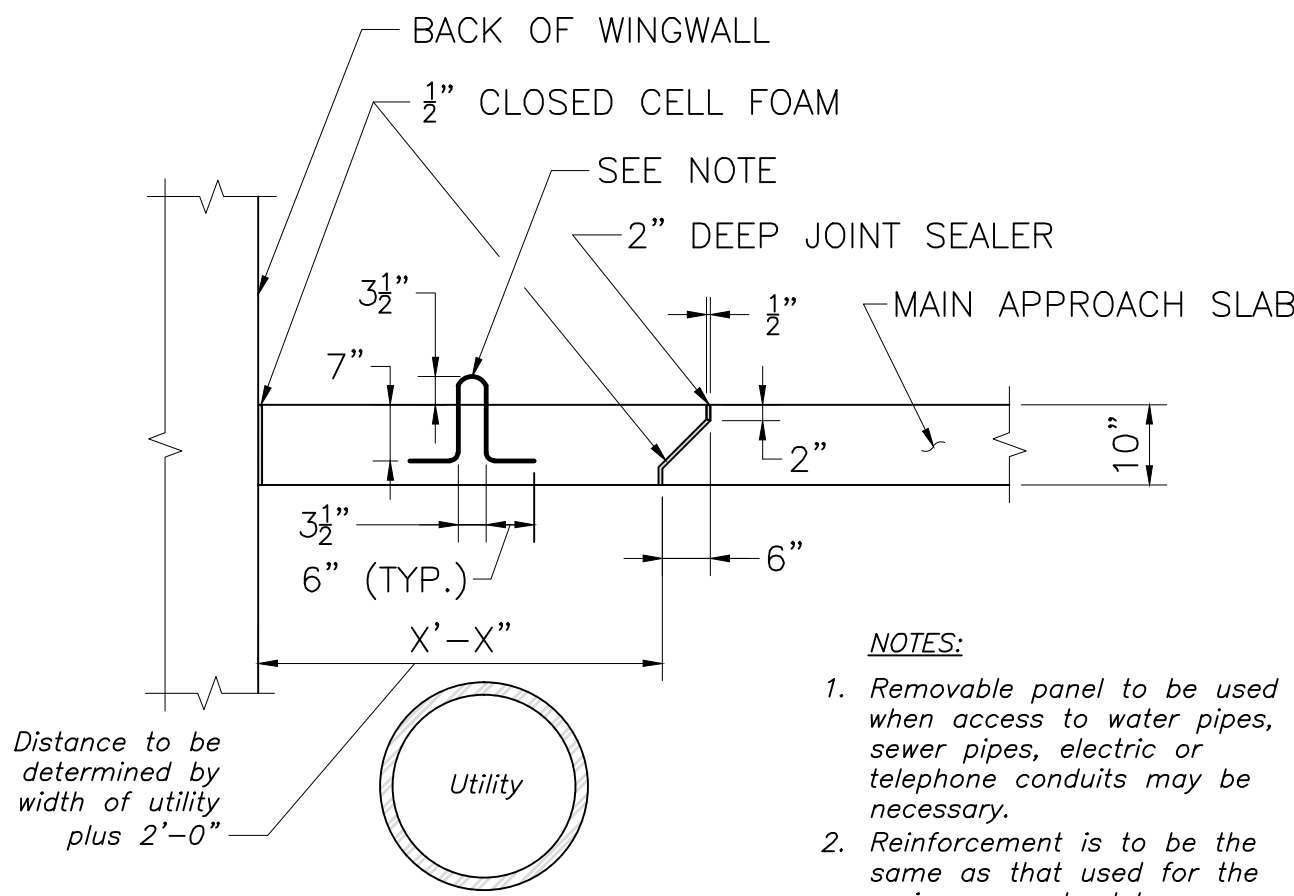


- NOTES:
- APPROACH SLAB TO BE 4000 PSI, 1½ IN, 565 CEMENT CONCRETE.
 - PLACE LONGITUDINAL REINFORCEMENT (Specify orientation per Dwg. No. 3.1.12).
PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT.

TYPE II –APPROACH SLAB DETAILS

SCALE: ½" = 1'–0"

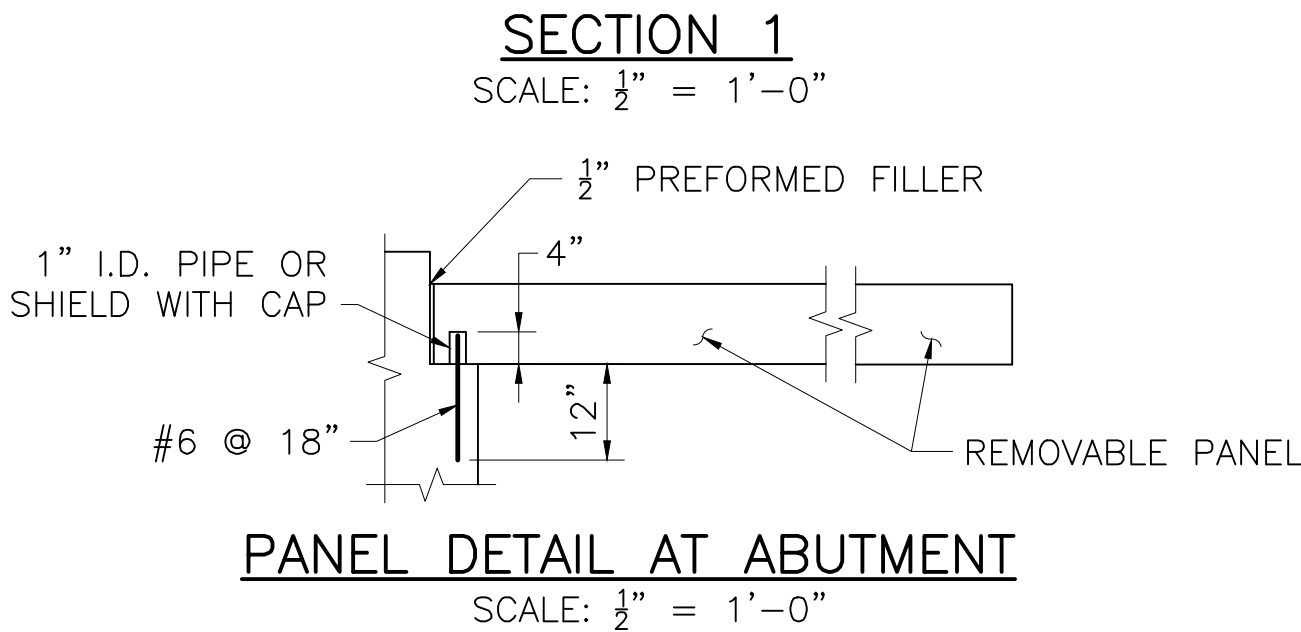
- NOTES:
- See Roadway Section drawings for abutment details and dimensions not shown here.
 - If approach roadway slopes down and away from the abutment at greater than 2%, change slope of approach slab to approach roadway grade plus 1%, rounded up to the nearest 1%. Otherwise set slope at 2%.



- NOTES:
- Removable panel to be used when access to water pipes, sewer pipes, electric or telephone conduits may be necessary.
 - Reinforcement is to be the same as that used for the main approach slab.

NOTE:

2 LIFT HOOKS REQUIRED. USE #5 COATED REBAR AT QUARTER POINTS.



PANEL DETAIL AT ABUTMENT

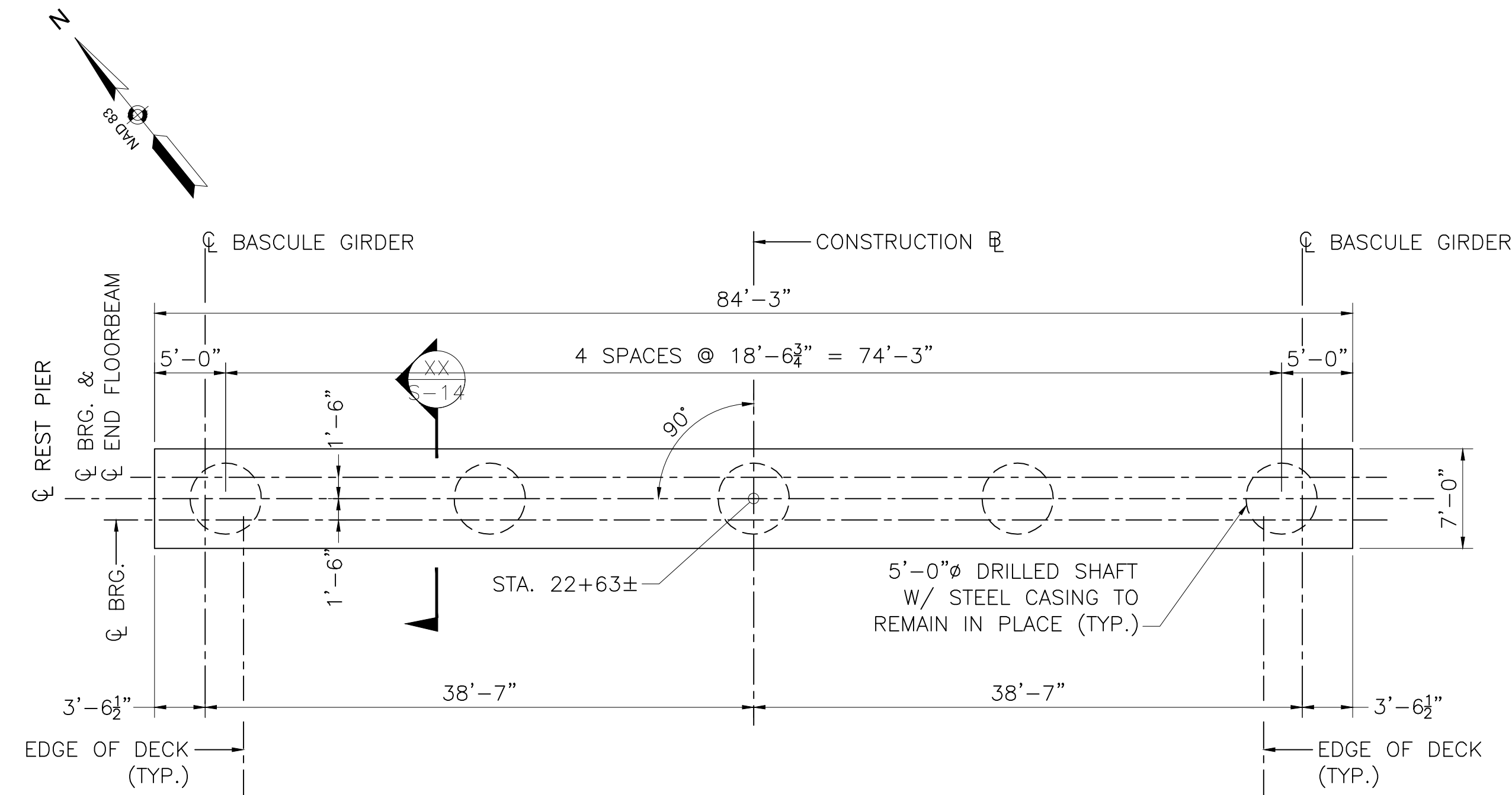
SCALE: ½" = 1'–0"

APPROACH SLAB DETAIL

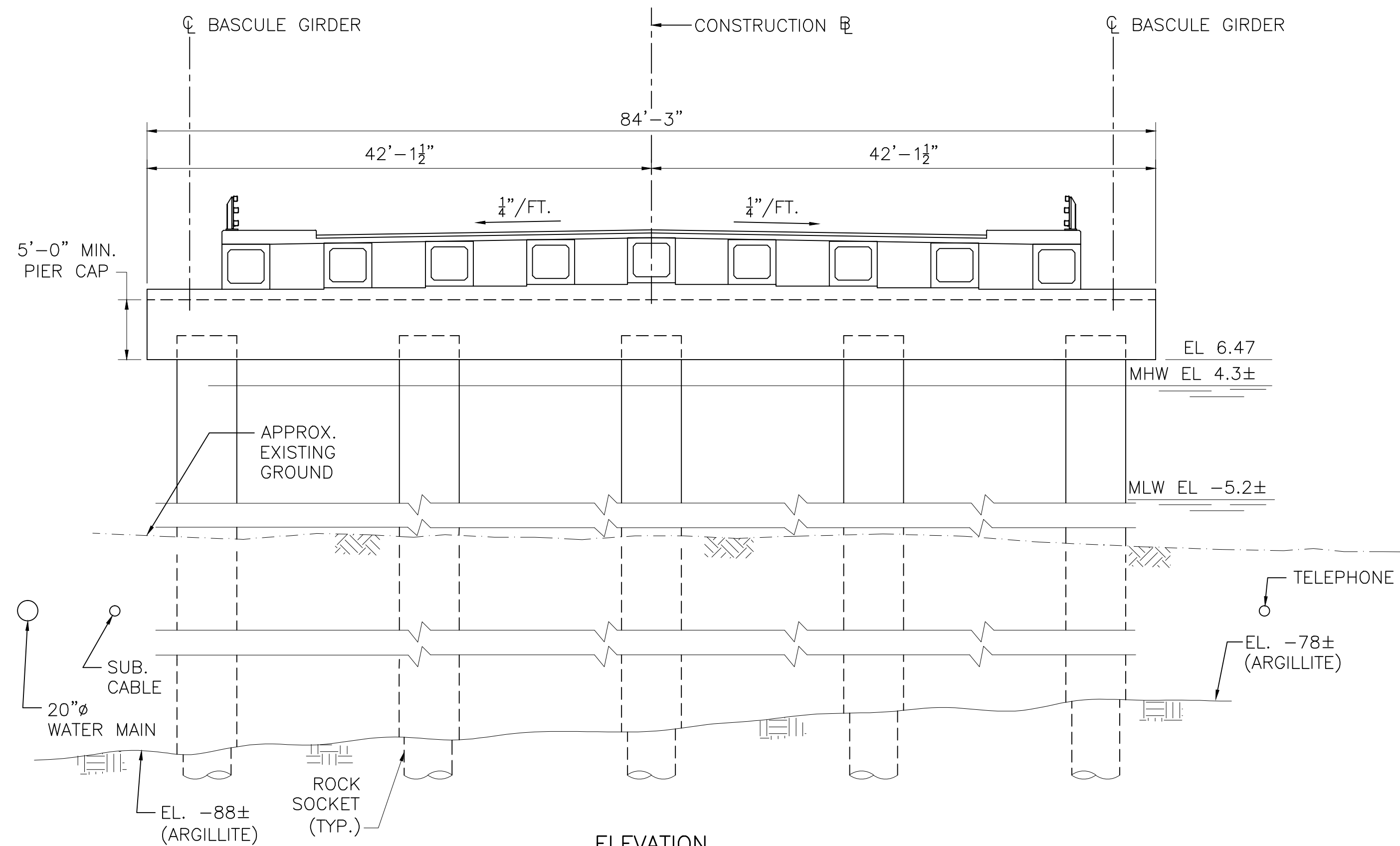
MOVABLE APPROACH SLAB DETAIL

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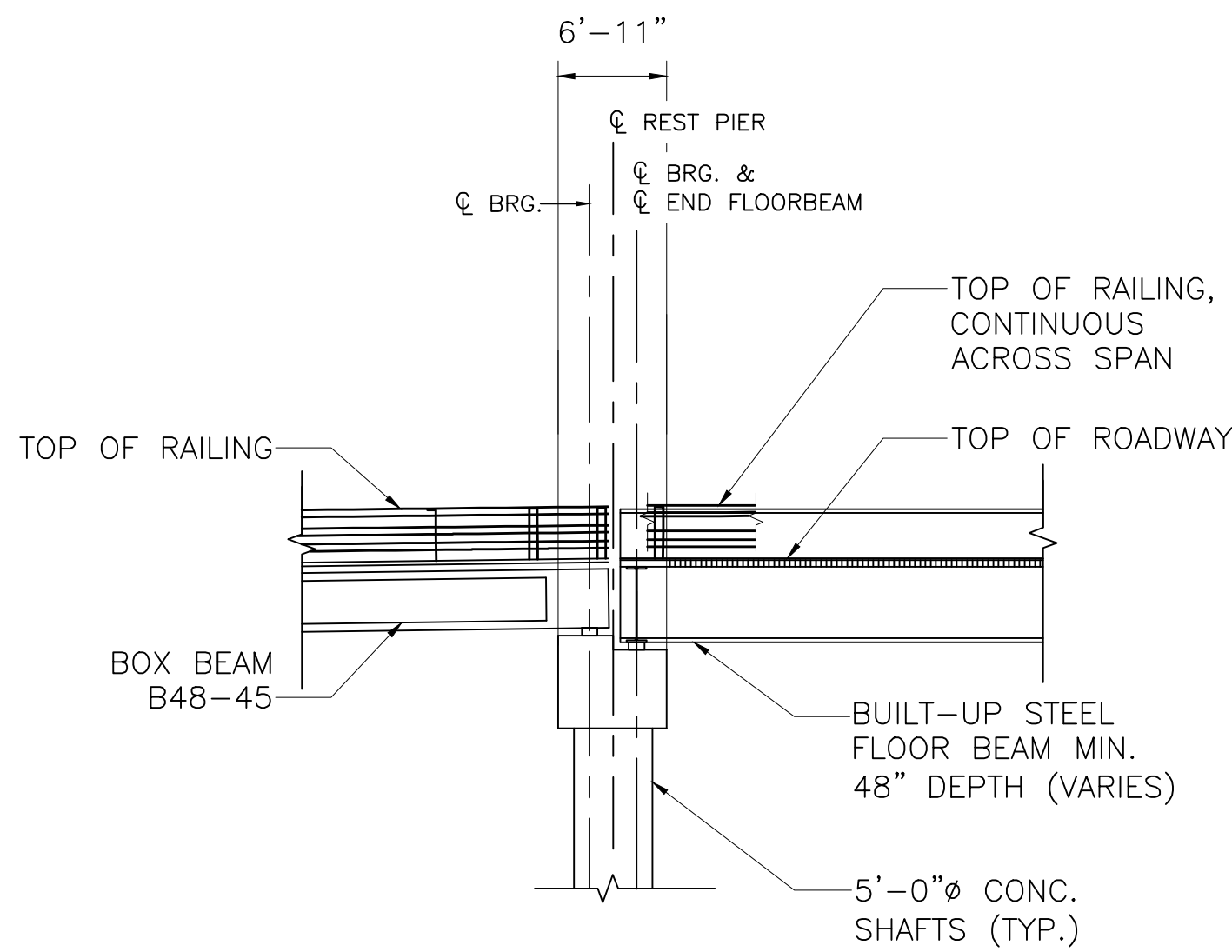
REST PIER PLAN
SCALE: $\frac{1}{8}$ " = 1'-0"



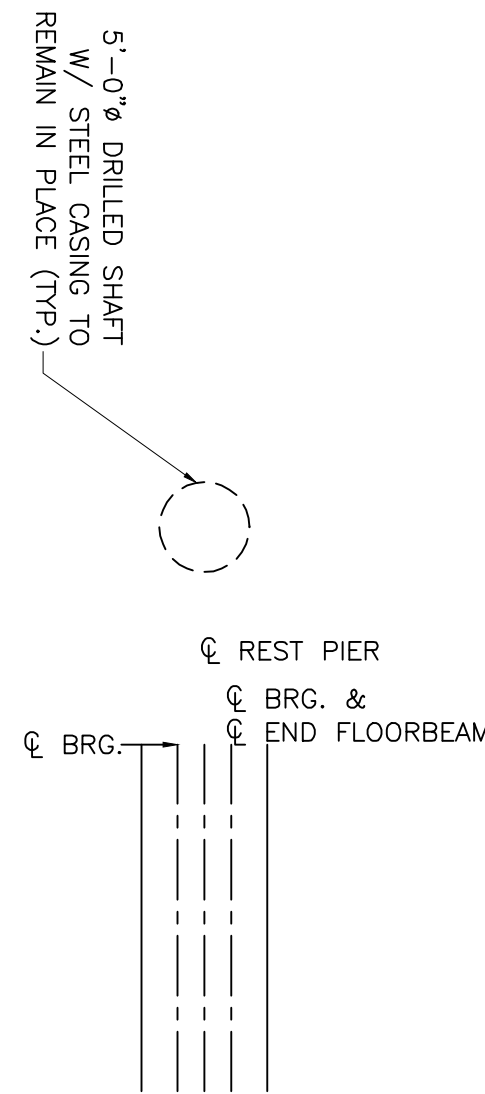
ELEVATION
REST PIER PLAN (LOOKING NORTH)
SCALE: $\frac{1}{8}$ " = 1'-0"

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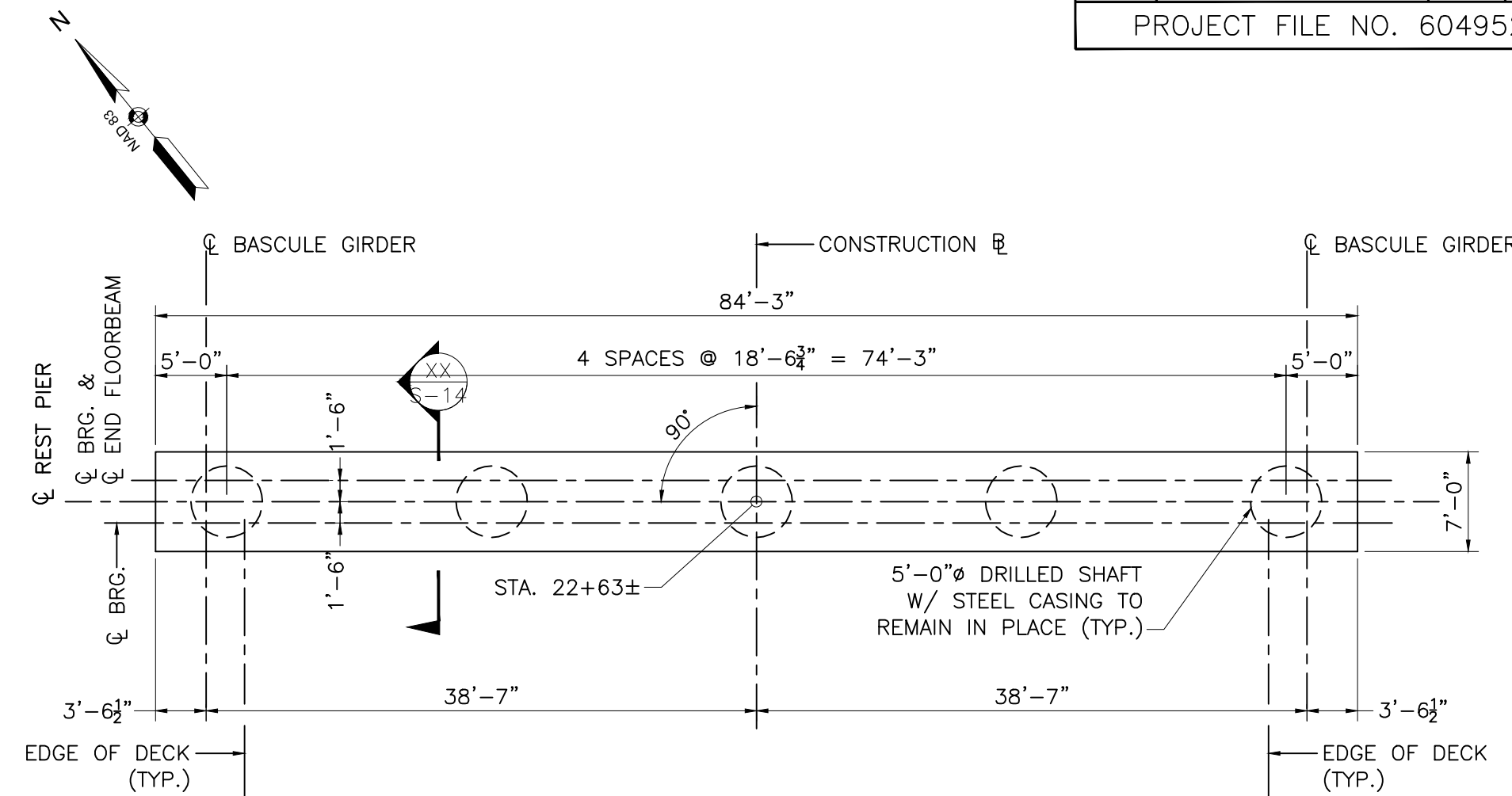
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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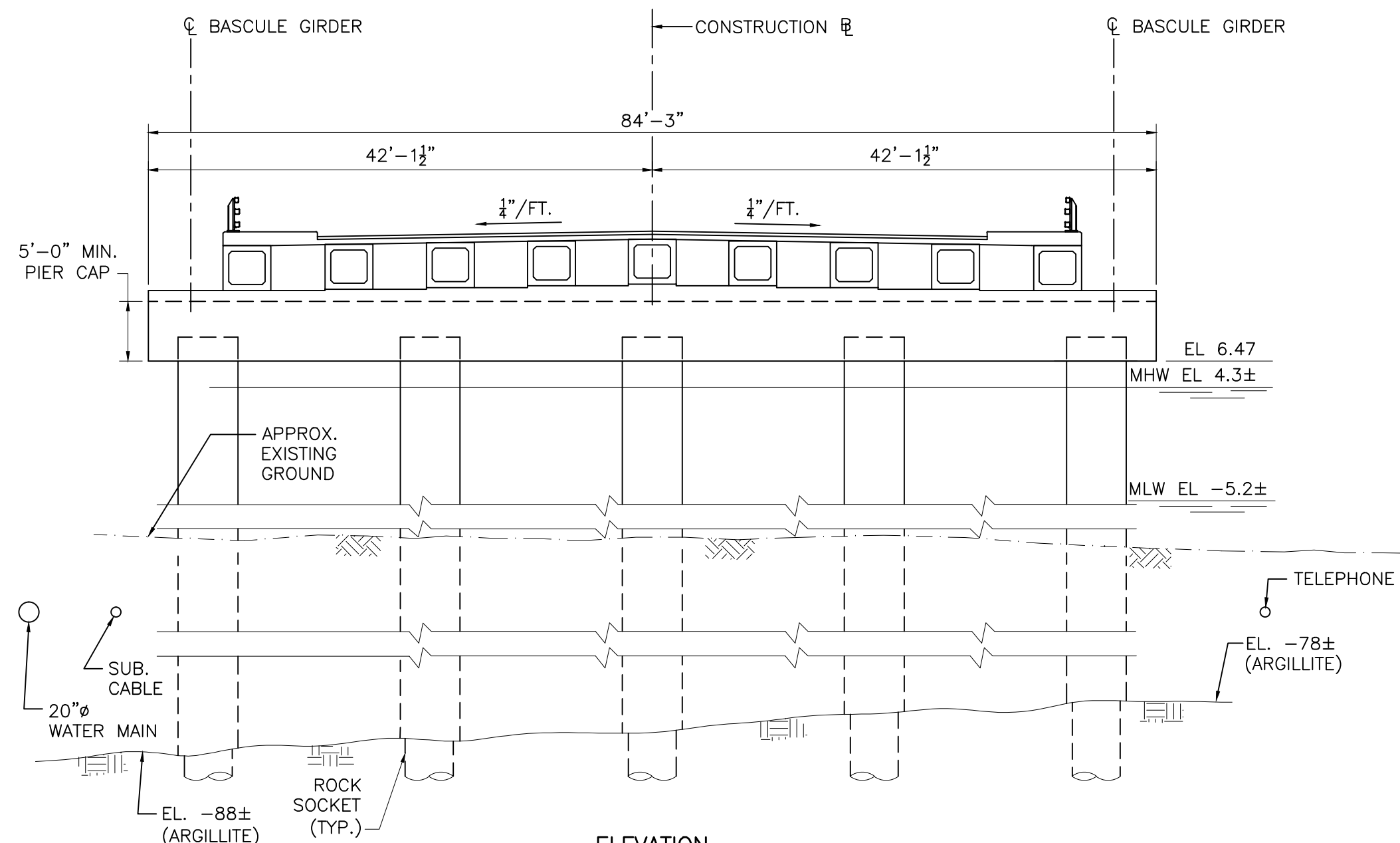
REST PIER SECTION XX
SCALE: $\frac{1}{8}'' = 1'-0''$



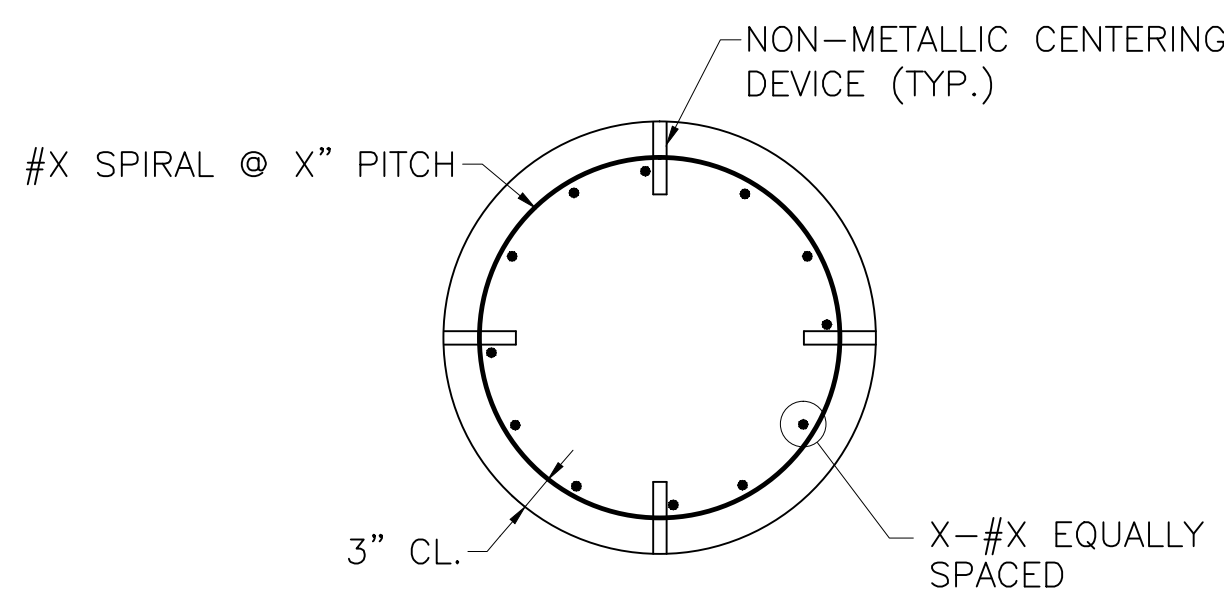
REST PIER SECTION XX
SCALE: $\frac{1}{8}'' = 1'-0''$



REST PIER PLAN
SCALE: $\frac{1}{8}'' = 1'-0''$



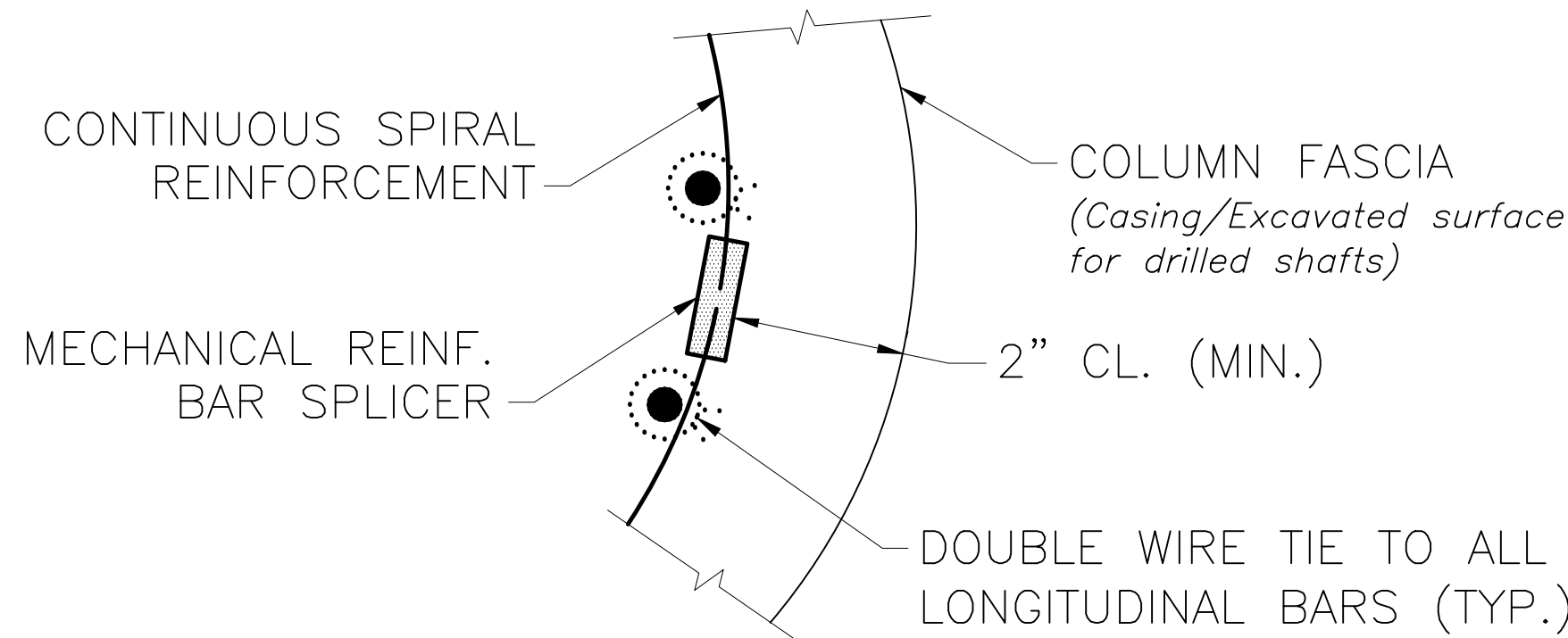
REST PIER PLAN (LOOKING NORTH)
SCALE: $\frac{1}{8}'' = 1'-0''$



NOTE:
NON-METALLIC CENTERING DEVICES TO BE PLACED AT 1/4 POINTS IN COLUMN. DETAILS OF ALTERNATIVE CENTERING DEVICES MUST BE SUBMITTED TO AND APPROVED BY THE DIRECTOR OF BRIDGES AND STRUCTURES.

NOTE:
Include non-metallic centering device detail from Dwg. No. 3.6.10 on Construction Drawings.

SECTION 2
SCALE: $\frac{3}{4}'' = 1'-0''$

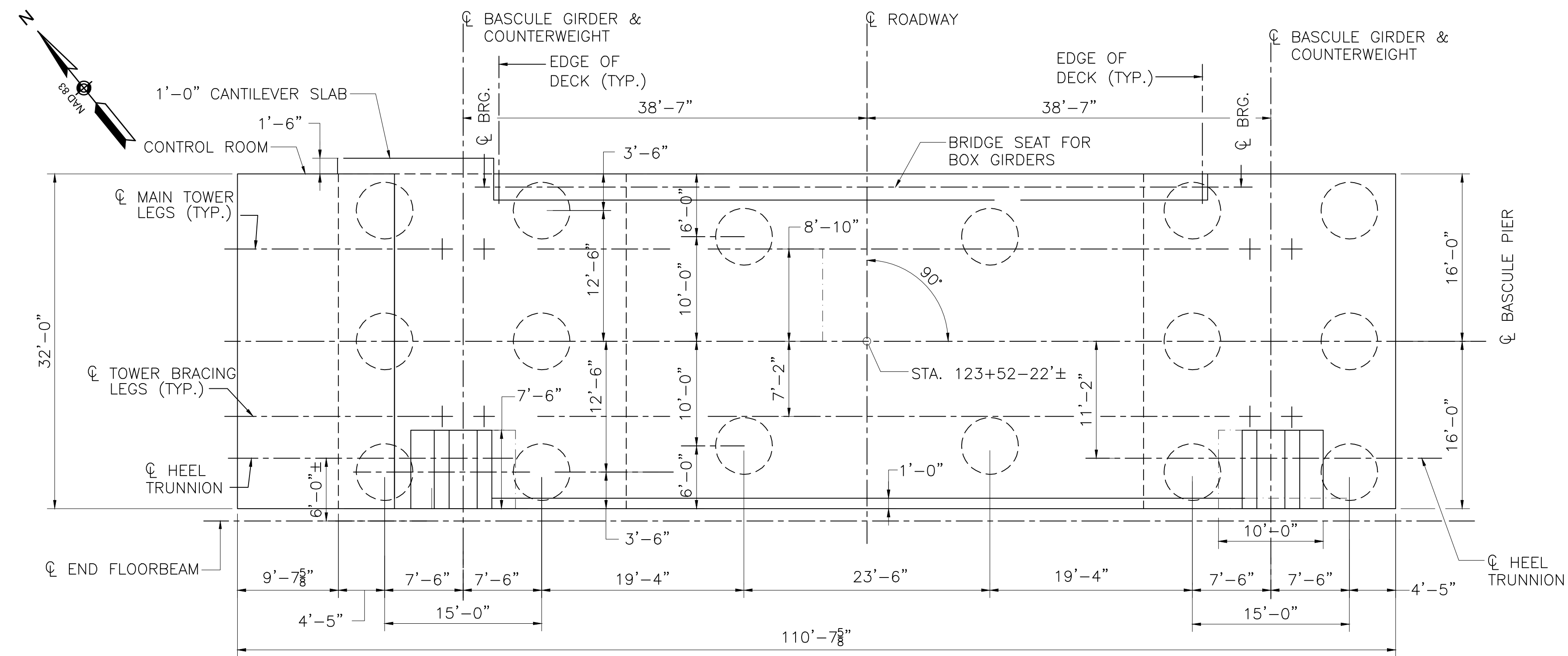


SPIRAL REINFORCEMENT SPLICE DETAIL
NOT TO SCALE

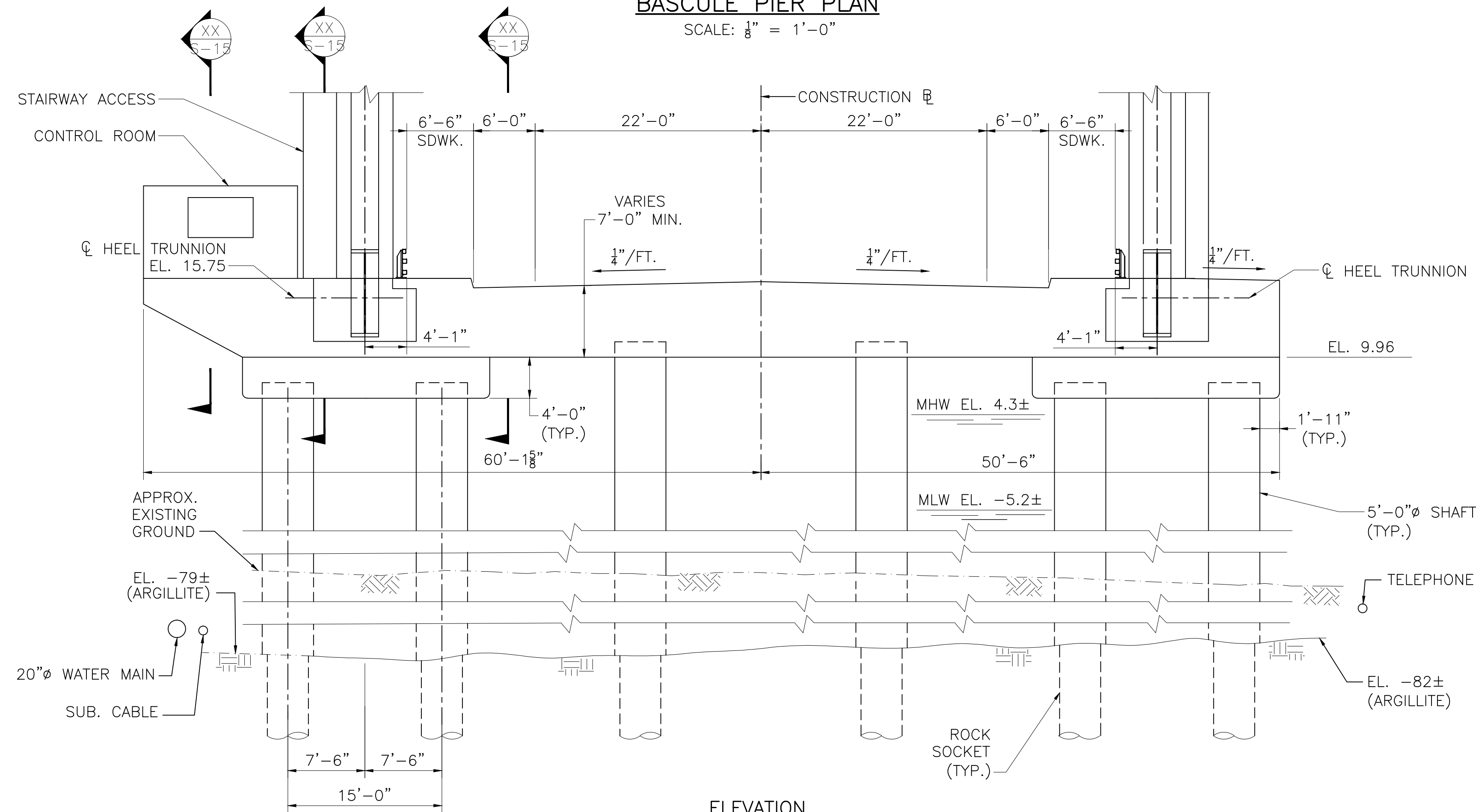
NOTE:
This detail is also applicable to the drilled shafts.
(See Note 9 on Dwg. No. 3.6.11)

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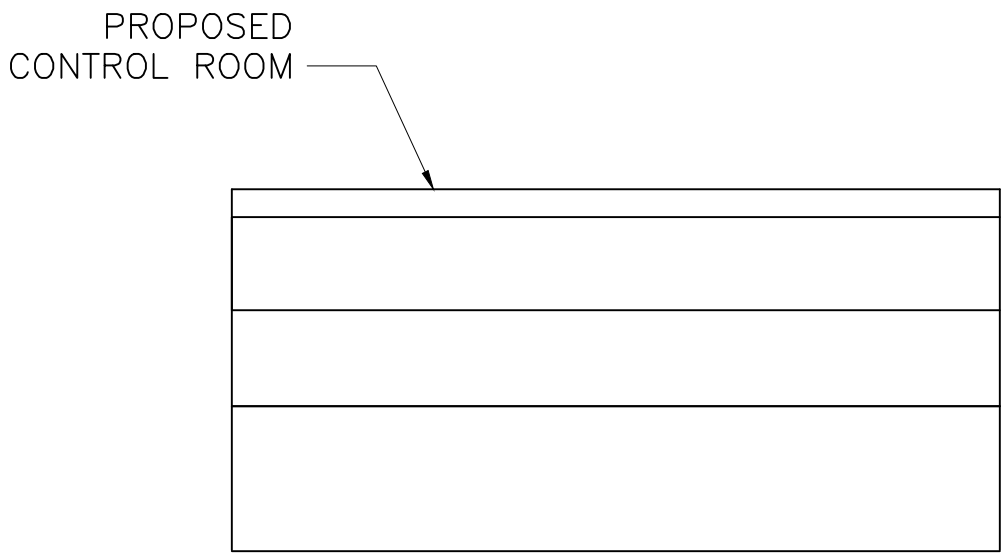
BASCULE PIER PLAN
SCALE: $\frac{1}{8}$ " = 1'-0"



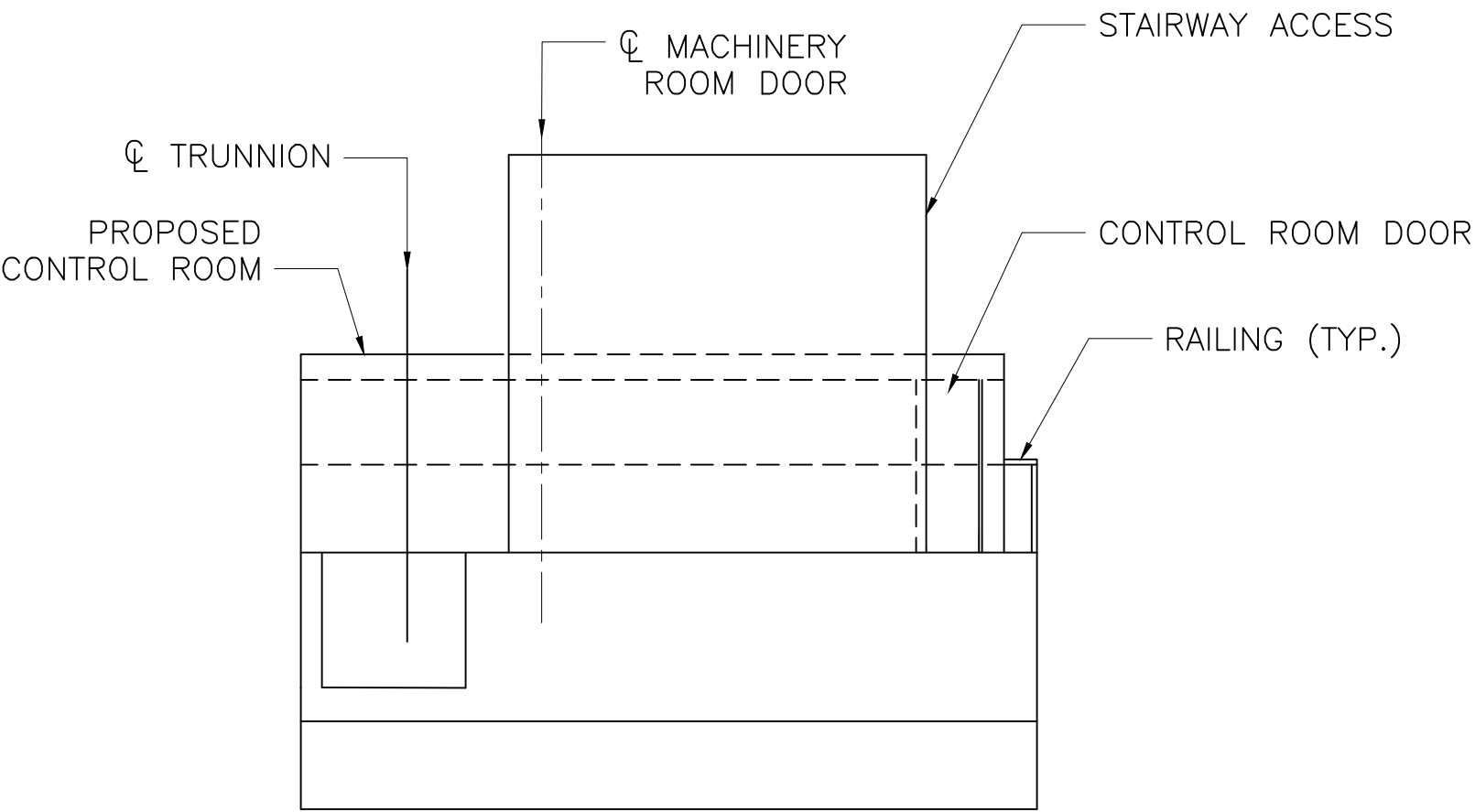
BASCULE PIER (LOOKING NORTH)
SCALE: $\frac{1}{8}$ " = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
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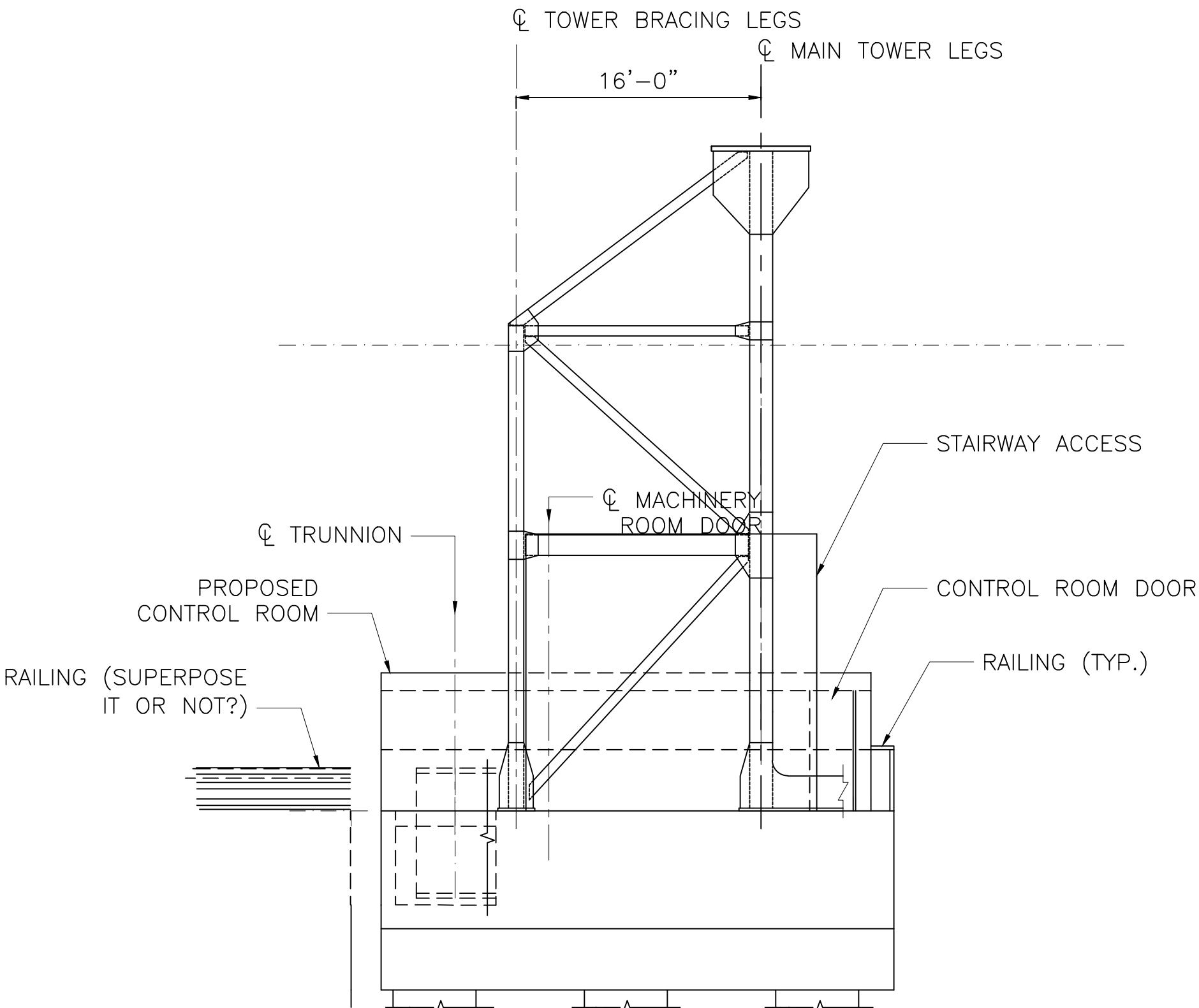
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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SECTION A



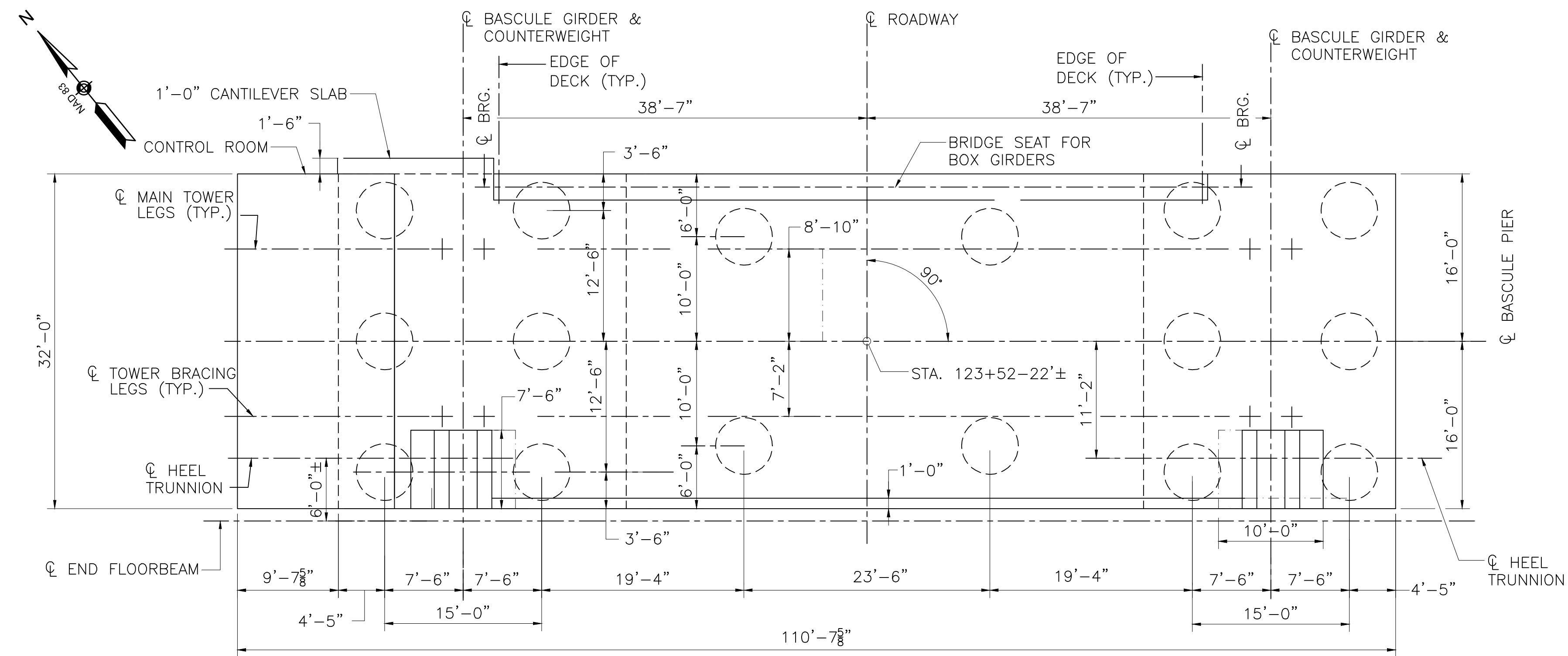
SECTION B



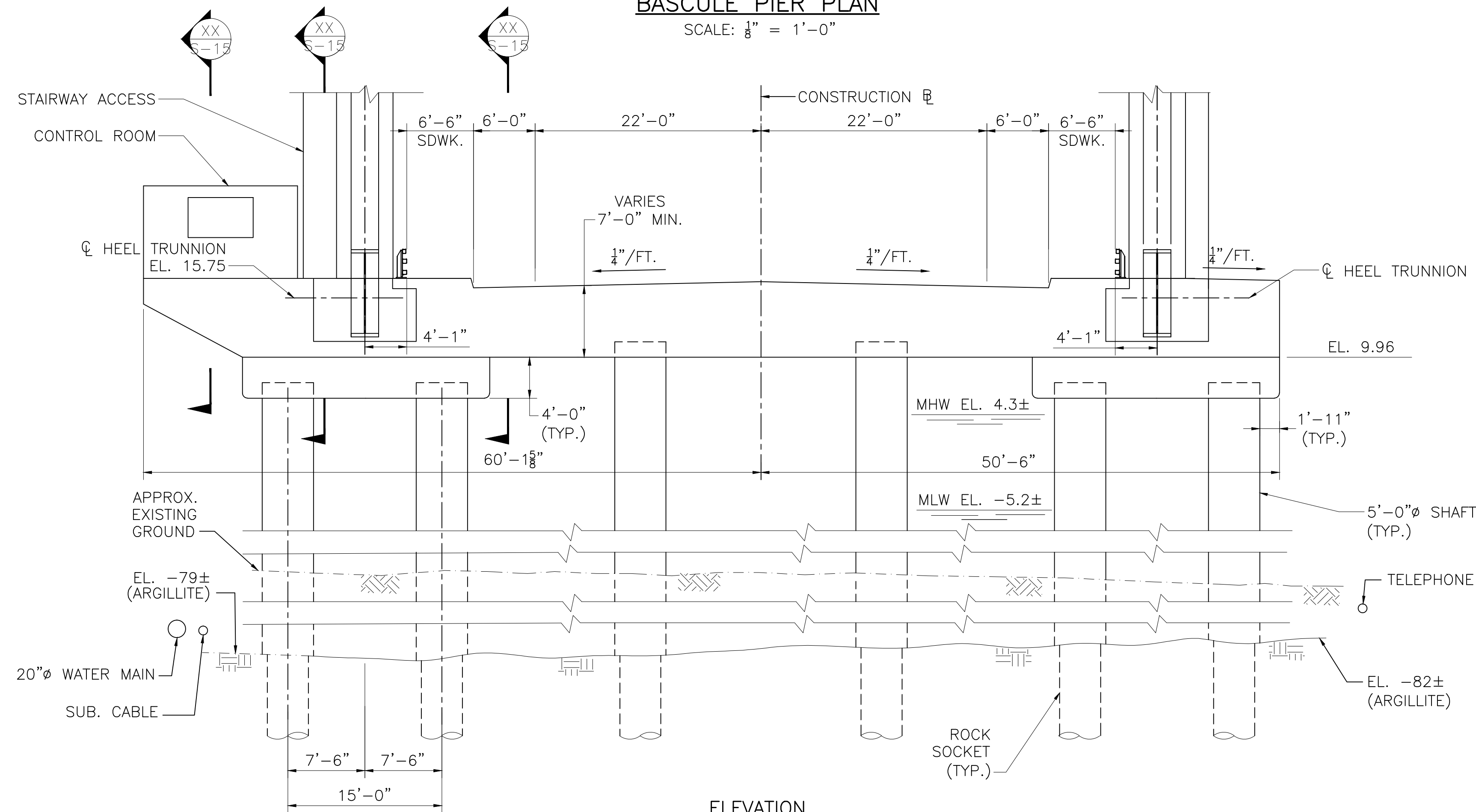
SECTION C

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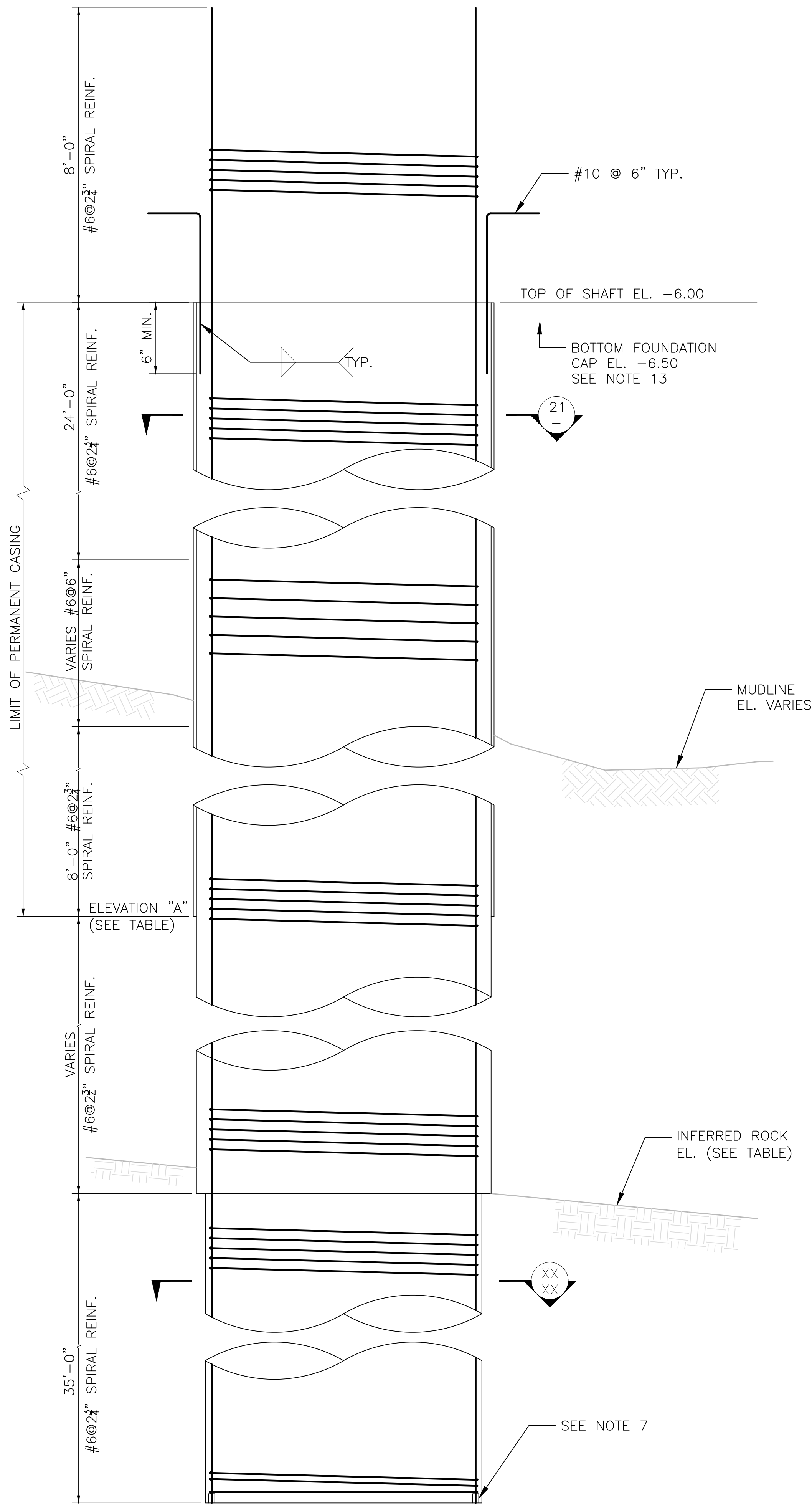
BASCULE PIER PLAN
SCALE: 1/8" = 1'-0"



ELEVATION
BASCULE PIER (LOOKING NORTH)
SCALE: 1/8" = 1'-0"

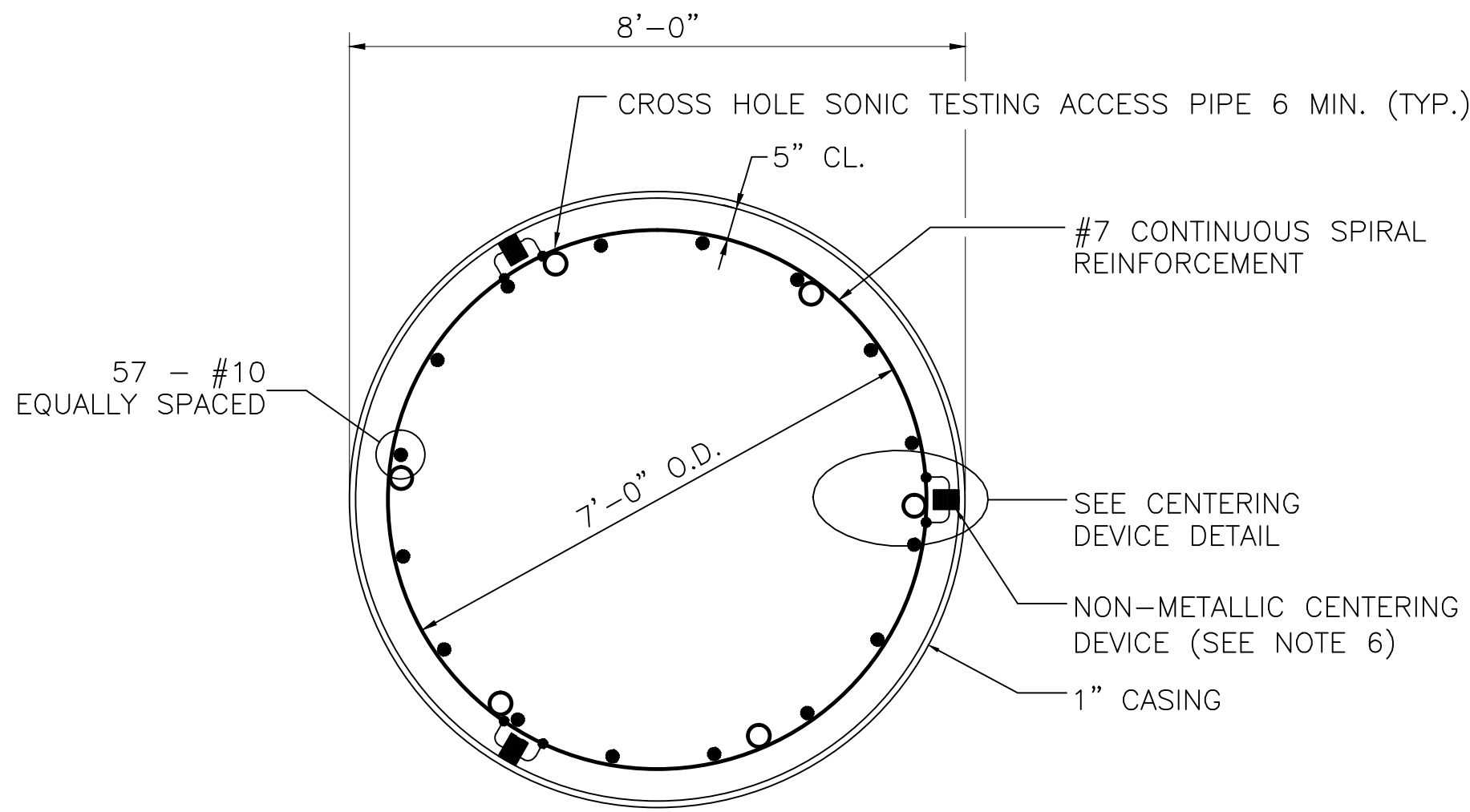
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DRILLED SHAFT VERTICAL SECTION

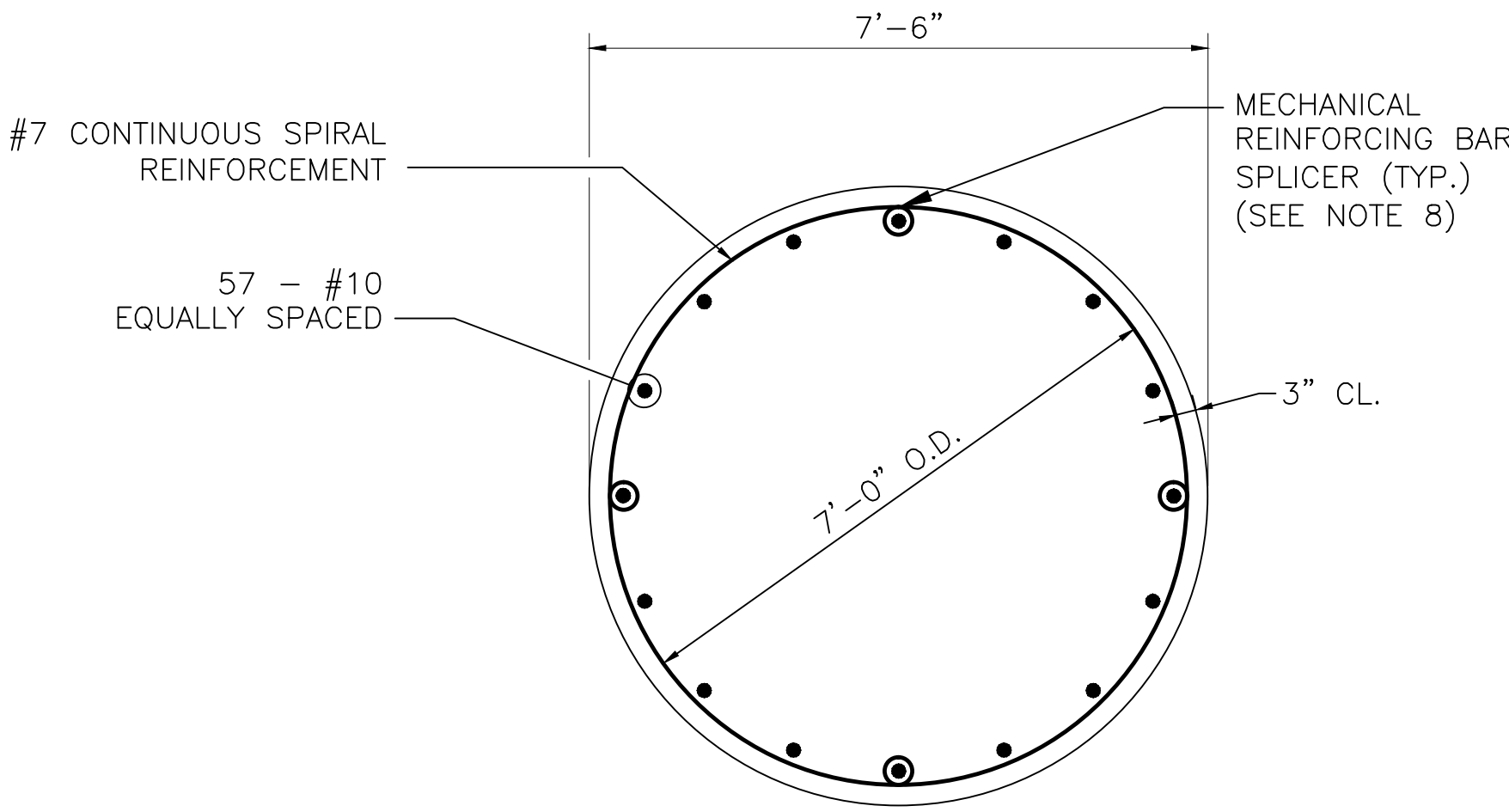
SCALE: $\frac{1}{2}$ " = 1'-0"



NOTE: WELDED REBAR NOT SHOWN FOR CLARITY.

SECTION 21

SCALE: $\frac{1}{2}$ " = 1'-0"



SECTION 22

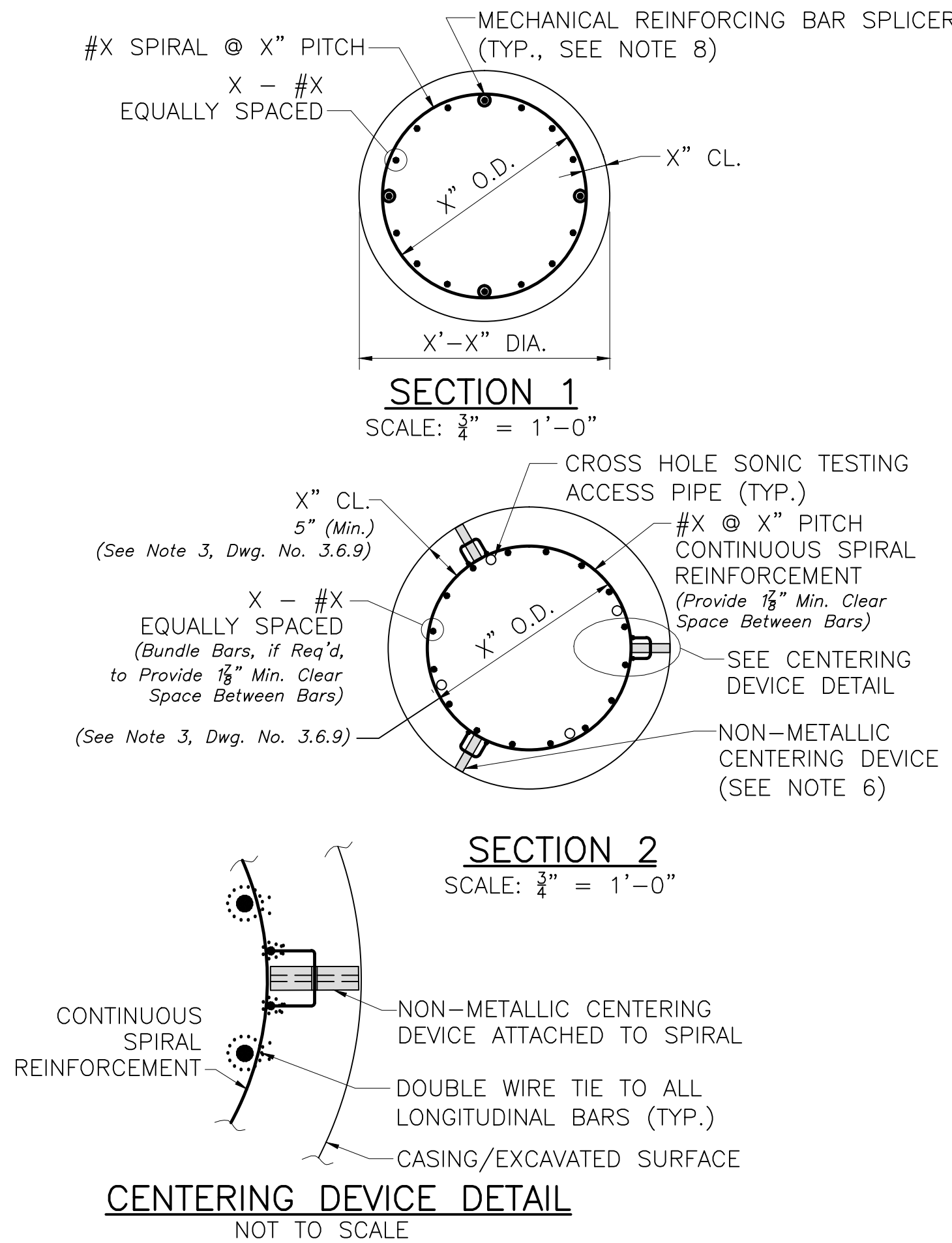
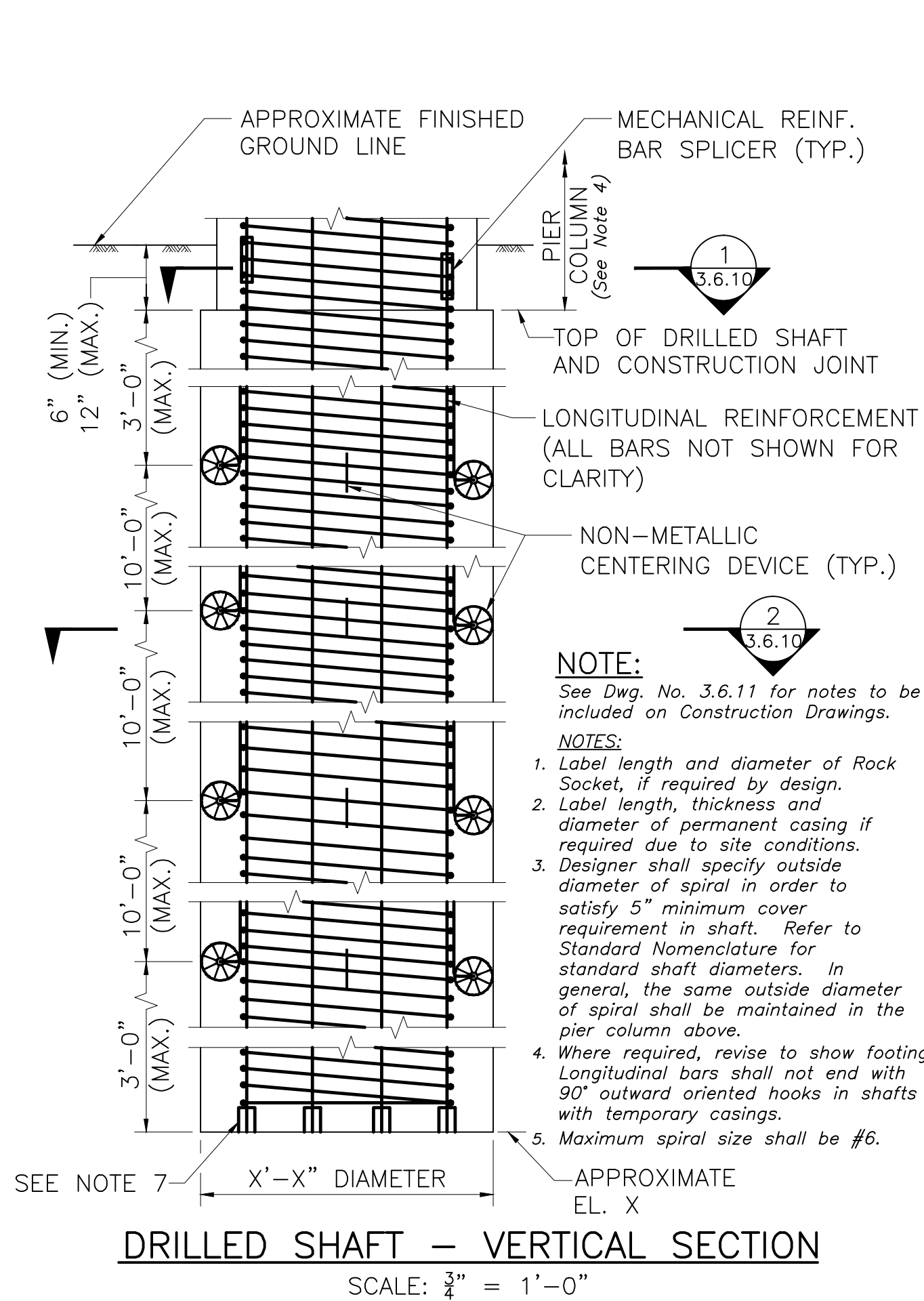
SCALE: $\frac{1}{2}$ " = 1'-0"

NOTES:

1. DRILLED SHAFT CONCRETE SHALL BE 4000 PSI, $\frac{3}{8}$ IN., 660 CONCRETE. THE CLEAR SPACING BETWEEN STEEL REINFORCING BARS SHALL BE AT LEAST $1\frac{1}{2}$ ".
2. THE FACTORED GEOTECHNICAL SHAFT RESISTANCE IS 6998 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 12724 KIPS AND A RESISTANCE FACTOR OF 0.55. THE FACTORED DESIGN AXIAL LOAD PER SHAFT IS 6271 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH III LOAD COMBINATION. THE FACTORED STRUCTURAL SHAFT RESISTANCE IS 19296 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 25728 KIPS AND A RESISTANCE FACTOR OF 0.75.
3. CENTERING DEVICES SHALL BE CONSTRUCTED OF AN APPROVED NON-METALLIC DURABLE MATERIAL.
4. THE NON-METALLIC CENTERING DEVICES SHALL BE OF ADEQUATE SIZE TO INSURE A MINIMUM 5" ANNULAR SPACE BETWEEN THE OUTSIDE OF THE REINFORCING CAGE AND THE SIDES OF THE EXCAVATED HOLE OR INSIDE OF CASING.
5. THERE SHALL BE A MINIMUM OF 3 GROUPS OF NON-METALLIC CENTERING DEVICES FOR SHAFTS LESS THAN 26'-0" IN LENGTH.
6. NON-METALLIC CENTERING DEVICES SHALL BE PLACED AT A MAXIMUM SPACING OF 2'-6" AROUND THE CIRCUMFERENCE OF THE SHAFT.
7. EACH LONGITUDINAL BAR SHALL BE SUPPORTED BY A 3" HIGH BOLSTER OF APPROVED NON-METALLIC DURABLE MATERIAL.
8. SPLICES OF LONGITUDINAL REINFORCEMENT SHALL BE ARRANGED IN GROUPS OF TWO DIAGONALLY OPPOSITE PAIRS THAT ARE STAGGERED VERTICALLY AT LEAST 12" ON CENTER.
9. IF SPLICING OF SPIRAL REINFORCING IS NECESSARY, A MINIMUM OF 2" CLEARANCE SHALL BE PROVIDED BETWEEN THE OUTSIDE SURFACE OF MECHANICAL REINFORCING BAR SPLICERS AND THE DRILLED SHAFT CASING OR EXCAVATED SURFACE.
10. WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. WELDING OF LONGITUDINAL REINFORCING SHALL NOT BE PERMITTED.
11. SPIRAL REINFORCING SHALL BE ANCHORED AT THE BOTTOM OF THE DRILLED SHAFT BY PROVIDING AN ADDITIONAL 1.5 TURNS OF SPIRAL BAR.
12. THE ELEVATIONS SHOWN IN THE INFERRED ROCK TABLE ARE FOR ESTIMATING PURPOSES ONLY. CONDITIONS IN THE FIELD MAY VARY.
13. ELEVATION OF BOTTOM OF FOUNDATION CAP SHOWN SEE SHEET S-7 FOR MORE INFORMATION.

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- NOTES:
- DRILLED SHAFT CONCRETE SHALL BE 4000 PSI, $\frac{3}{8}$ IN., 660 CONCRETE. THE CLEAR SPACING BETWEEN STEEL REINFORCING BARS SHALL BE AT LEAST $1\frac{1}{2}"$.
 - THE FACTORED GEOTECHNICAL SHAFT RESISTANCE IS 6998 KIPS AND IS THE PRODUCT OF THE NOMINAL GEOTECHNICAL RESISTANCE OF 12724 KIPS AND A RESISTANCE FACTOR OF 0.55. THE FACTORED DESIGN AXIAL LOAD PER SHAFT IS 6271 KIPS AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH III LOAD COMBINATION. THE FACTORED STRUCTURAL SHAFT RESISTANCE IS 19296 KIPS AND IS THE PRODUCT OF THE NOMINAL STRUCTURAL RESISTANCE OF 25728 KIPS AND A RESISTANCE FACTOR OF 0.75.
 - CENTERING DEVICES SHALL BE CONSTRUCTED OF AN APPROVED NON-METALLIC DURABLE MATERIAL.
 - THE NON-METALLIC CENTERING DEVICES SHALL BE OF ADEQUATE SIZE TO INSURE A MINIMUM 5" ANNULAR SPACE BETWEEN THE OUTSIDE OF THE REINFORCING CAGE AND THE SIDES OF THE EXCAVATED HOLE OR INSIDE OF CASING.
 - THERE SHALL BE A MINIMUM OF 3 GROUPS OF NON-METALLIC CENTERING DEVICES FOR SHAFTS LESS THAN 26'-0" IN LENGTH.
 - NON-METALLIC CENTERING DEVICES SHALL BE PLACED AT A MAXIMUM SPACING OF 2'-6" AROUND THE CIRCUMFERENCE OF THE SHAFT.
 - EACH LONGITUDINAL BAR SHALL BE SUPPORTED BY A 3" HIGH BOLSTER OF APPROVED NON-METALLIC DURABLE MATERIAL.
 - SPLICES OF LONGITUDINAL REINFORCEMENT SHALL BE ARRANGED IN GROUPS OF TWO DIAGONALLY OPPOSITE PAIRS THAT ARE STAGGERED VERTICALLY AT LEAST 12" ON CENTER.
 - IF SPLICING OF SPIRAL REINFORCING IS NECESSARY, A MINIMUM OF 2" CLEARANCE SHALL BE PROVIDED BETWEEN THE OUTSIDE SURFACE OF MECHANICAL REINFORCING BAR SPLICERS AND THE DRILLED SHAFT CASING OR EXCAVATED SURFACE.
 - WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. WELDING OF LONGITUDINAL REINFORCING SHALL NOT BE PERMITTED.
 - SPIRAL REINFORCING SHALL BE ANCHORED AT THE BOTTOM OF THE DRILLED SHAFT BY PROVIDING AN ADDITIONAL 1.5 TURNS OF SPIRAL BAR.
 - THE ELEVATIONS SHOWN IN THE INFERRED ROCK TABLE ARE FOR ESTIMATING PURPOSES ONLY. CONDITIONS IN THE FIELD MAY VARY.
 - ELEVATION OF BOTTOM OF FOUNDATION CAP SHOWN SEE SHEET S-7 FOR MORE INFORMATION.

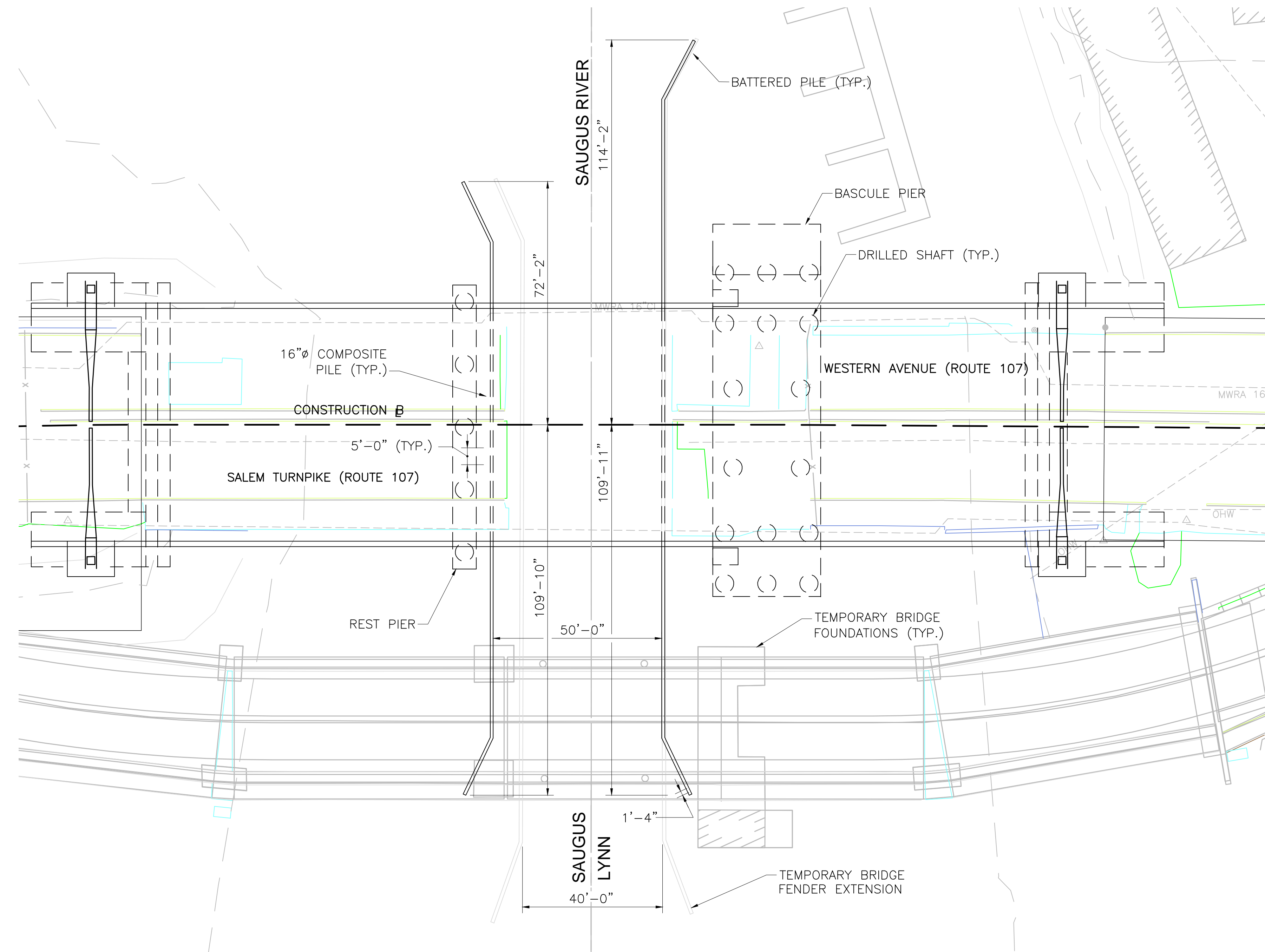
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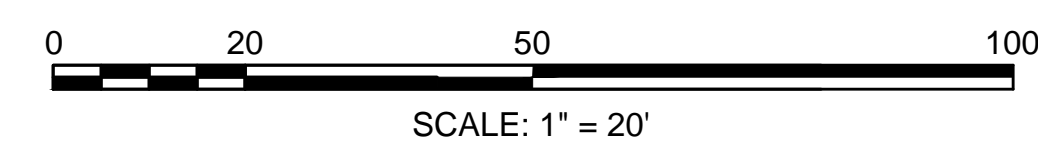
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NOTES:

- LIMITS OF PROPOSED FENDER SYSTEM UPSTREAM AND DOWNSTREAM AND GENERAL CONFIGURATION MATCHES PREVIOUS PERMANENT BRIDGE.
- CONTRACTOR WILL BE REQUIRED TO PROVIDE TEMPORARY FENDER TRANSITIONS BETWEEN EXISTING AND PROPOSED BRIDGE FENDER SYSTEM.
- EAST END OF FENDER SYSTEM TO BE CONSTRUCTED AFTER TEMPORARY BRIDGE AND TEMPORARY BRIDGE FENDER EXTENSION IS DEMOLISHED.

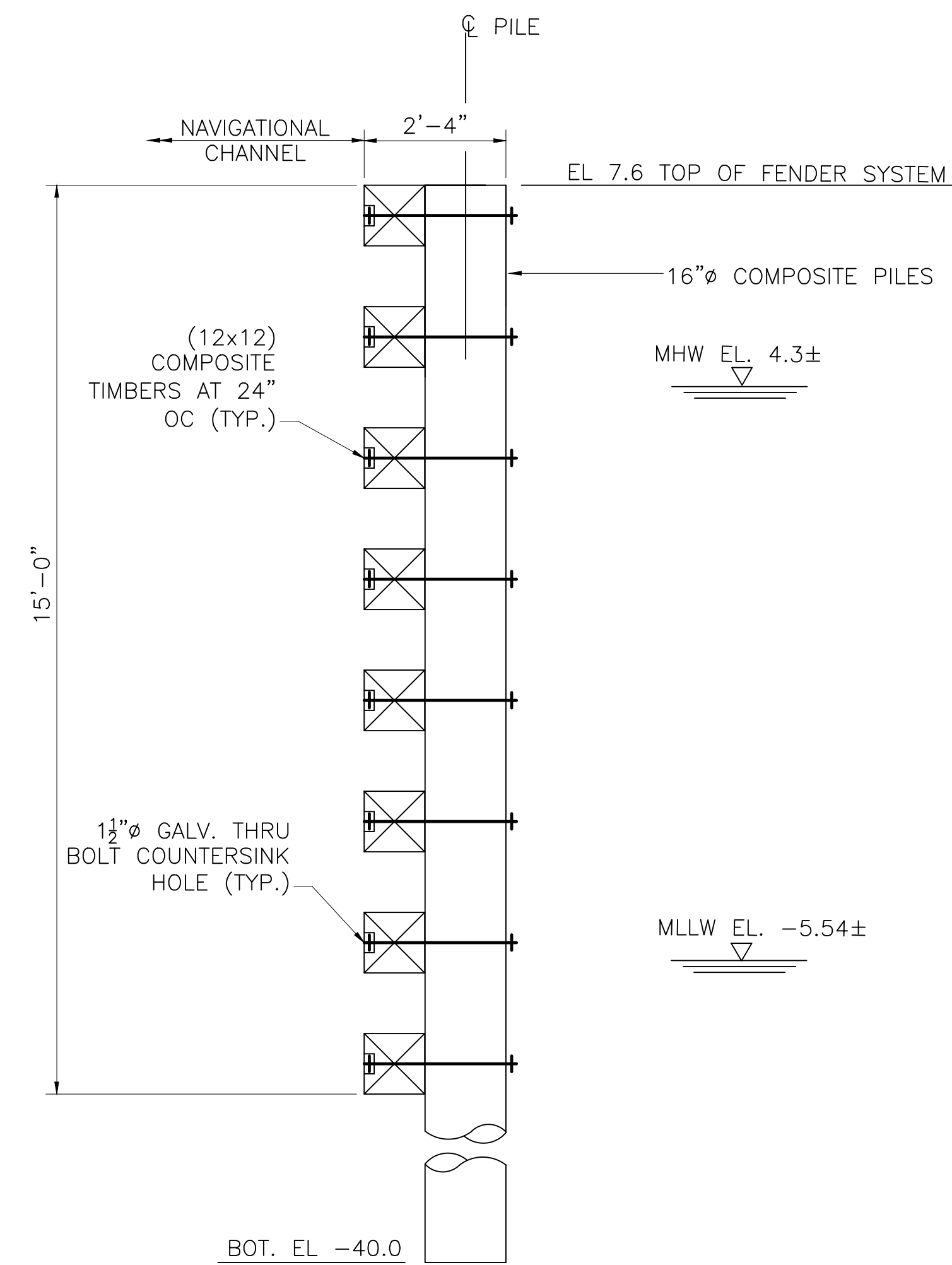


FENDER PLAN

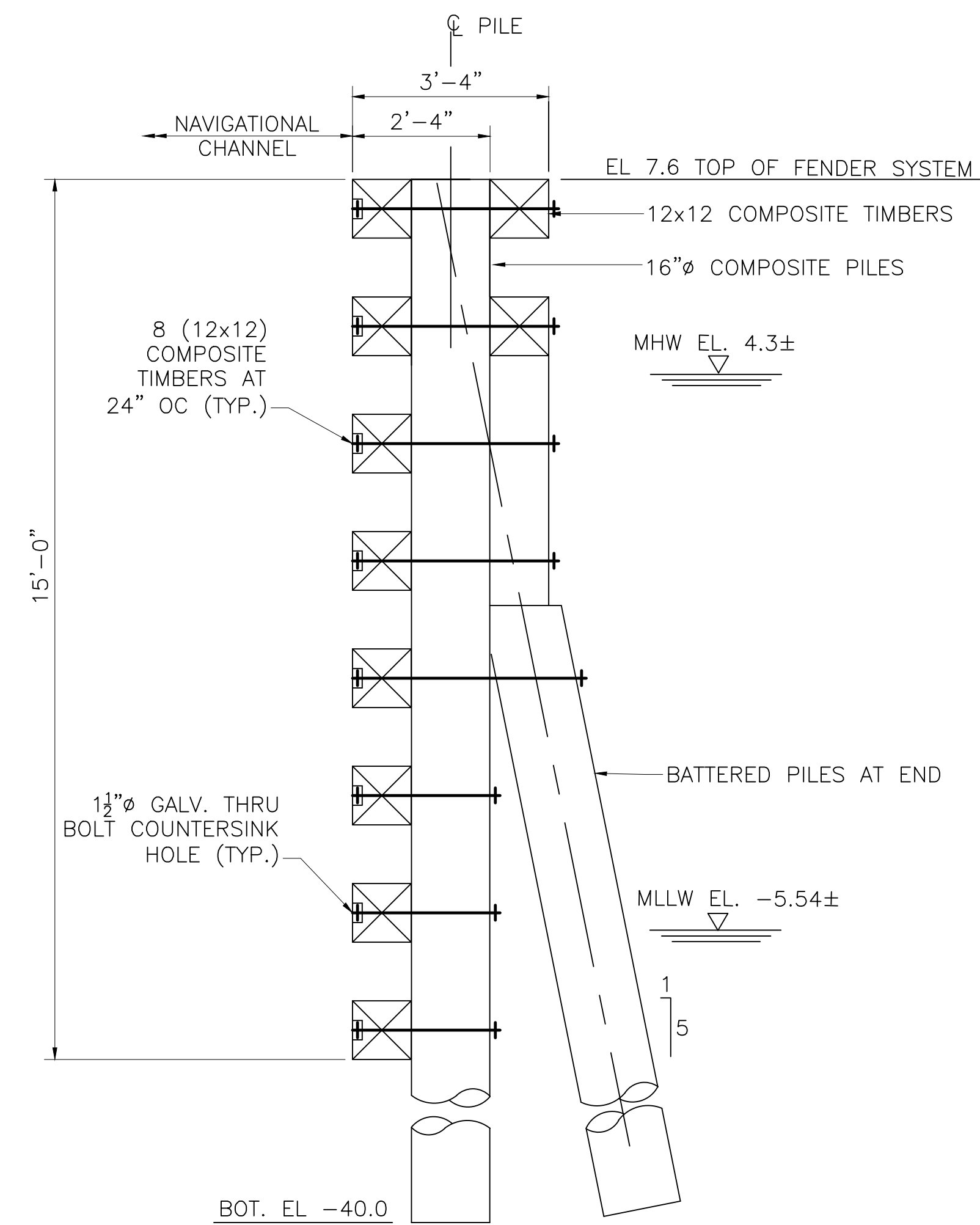


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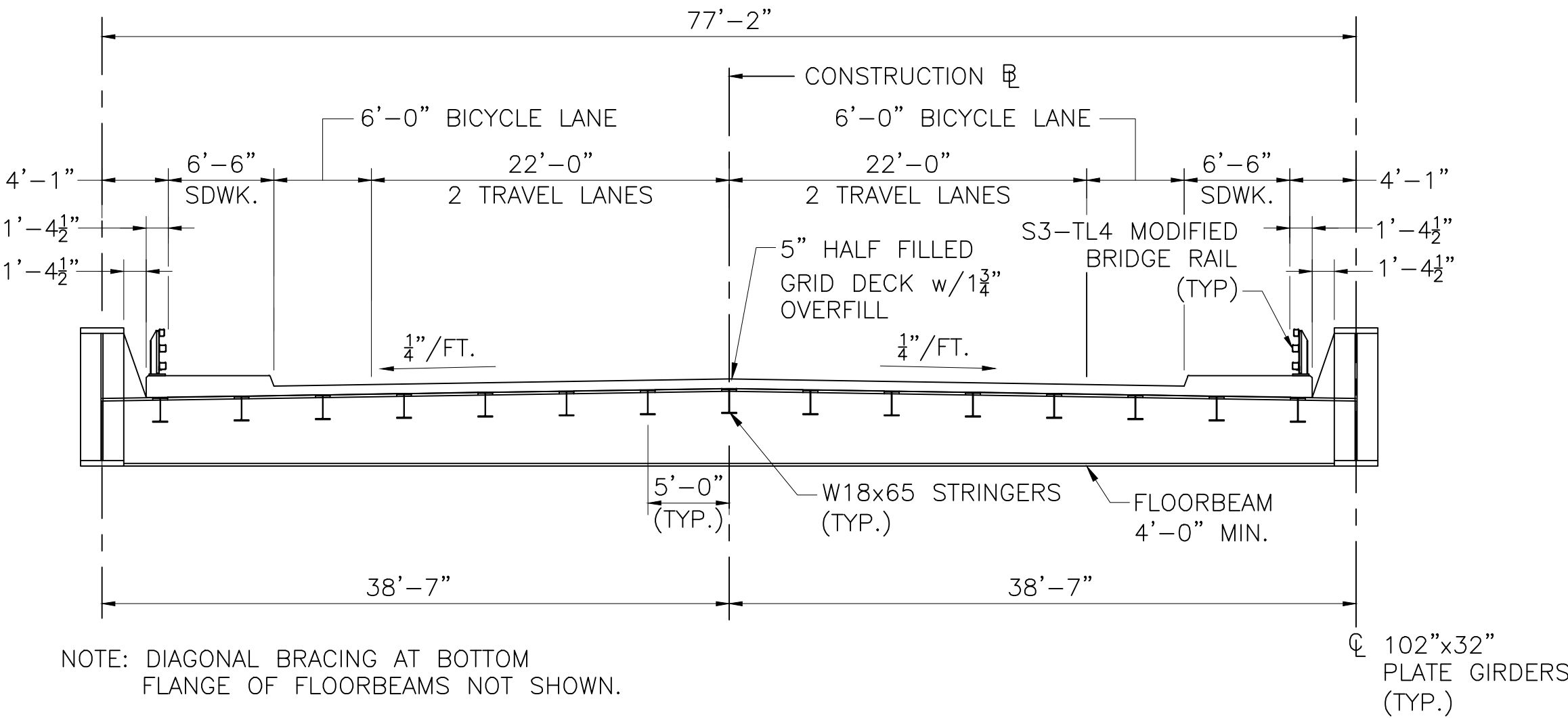
FENDER SECTION 1
SCALE: 1/2" = 1'-0"



FENDER SECTION 2
SCALE: 1/2" = 1'-0"

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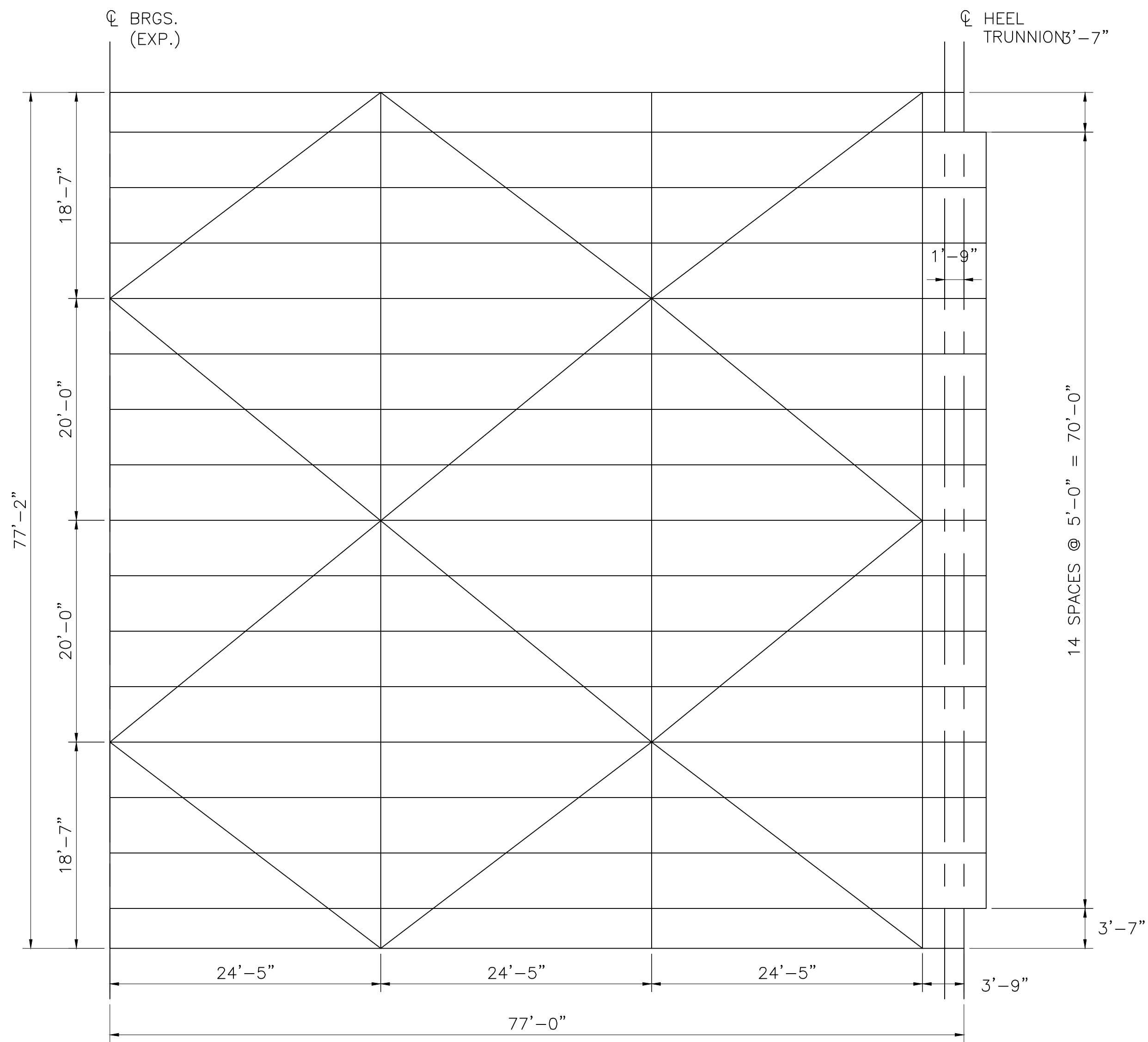


SECTION - BASCULE PLAN - SPAN 2 (MAIN SPAN)
SCALE: 1/8" = 1'-0"

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NOTES:

- The Theoretical Camber shall be shown on the Construction Drawings by either a camber diagram or a table. Provide a minimum number of different camber diagrams for all beams in a given span. Group beams within a span whose maximum total camber does not vary by more than $\frac{1}{8}$ ".
- The Camber shall be specified by equally spaced ordinates at the mid-length of the segment to be curved and by as many additional points as necessary to be defined clearly.
- In the calculation for the Minimum Theoretical Camber, do not include camber tolerances. Do not show tolerances on the Construction Drawings.
- The minimum Theoretical Camber shall be a sum of the following values:

X = 100% Dead Load Deflection
 Y = Vertical Curve Camber (See Notes 3 and 4 below)
 Z = Additional Camber (from the Table below)

ADDITIONAL CAMBER — "Z"			
Profile Grade	Simple Span	Multiple Simple Spans	Multiple Spans Continuous
Vertical Curve	$\frac{1}{16}$ " per 10' of Span	0	0
Tangent	$\frac{1}{8}$ " per 10' of Span	$\frac{1}{16}$ " per 10' of Span	$\frac{1}{16}$ " per 10' of Span

CAMBER TABLE												
BM. NO.		SPAN NO. X										C BRG. ABUT./PIER
		C BRG. ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	
1	STEEL DL DEFLECTION											
	CONC. DL DEFLECTION											
	S.D.L. DEFLECTION											
	VERT. CURVE CAMBER											
	ADDITIONAL CAMBER											
	TOTAL CAMBER											
2	STEEL DL DEFLECTION											
	CONC. DL DEFLECTION											
	S.D.L. DEFLECTION											
	VERT. CURVE CAMBER											
	ADDITIONAL CAMBER											
	TOTAL CAMBER											

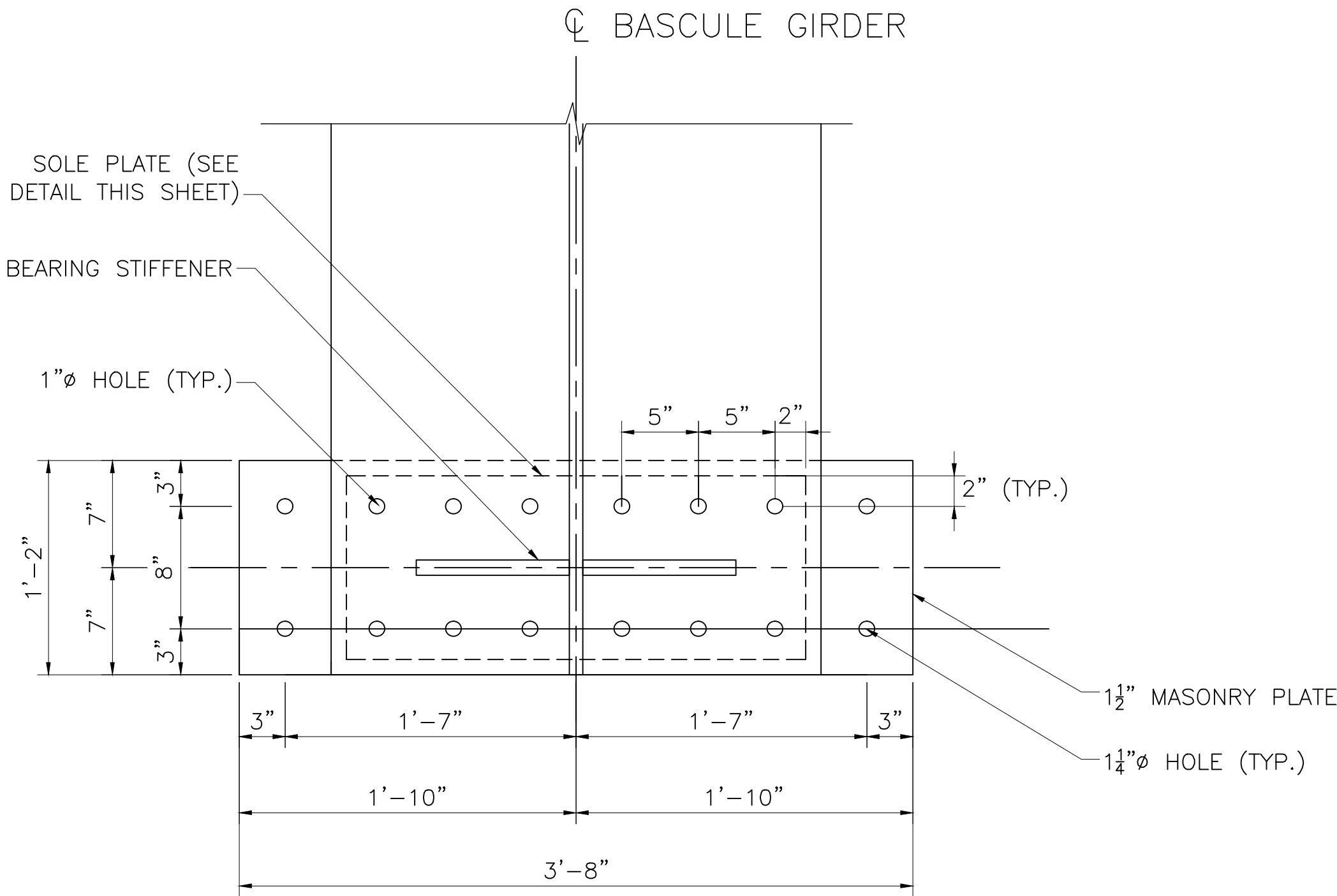
NOTES:

- Camber values shall be shown in inches.
- Expand the table, as necessary, for additional beams and spans.
- $Y = B2 - (B1 + B3)/2$ where:

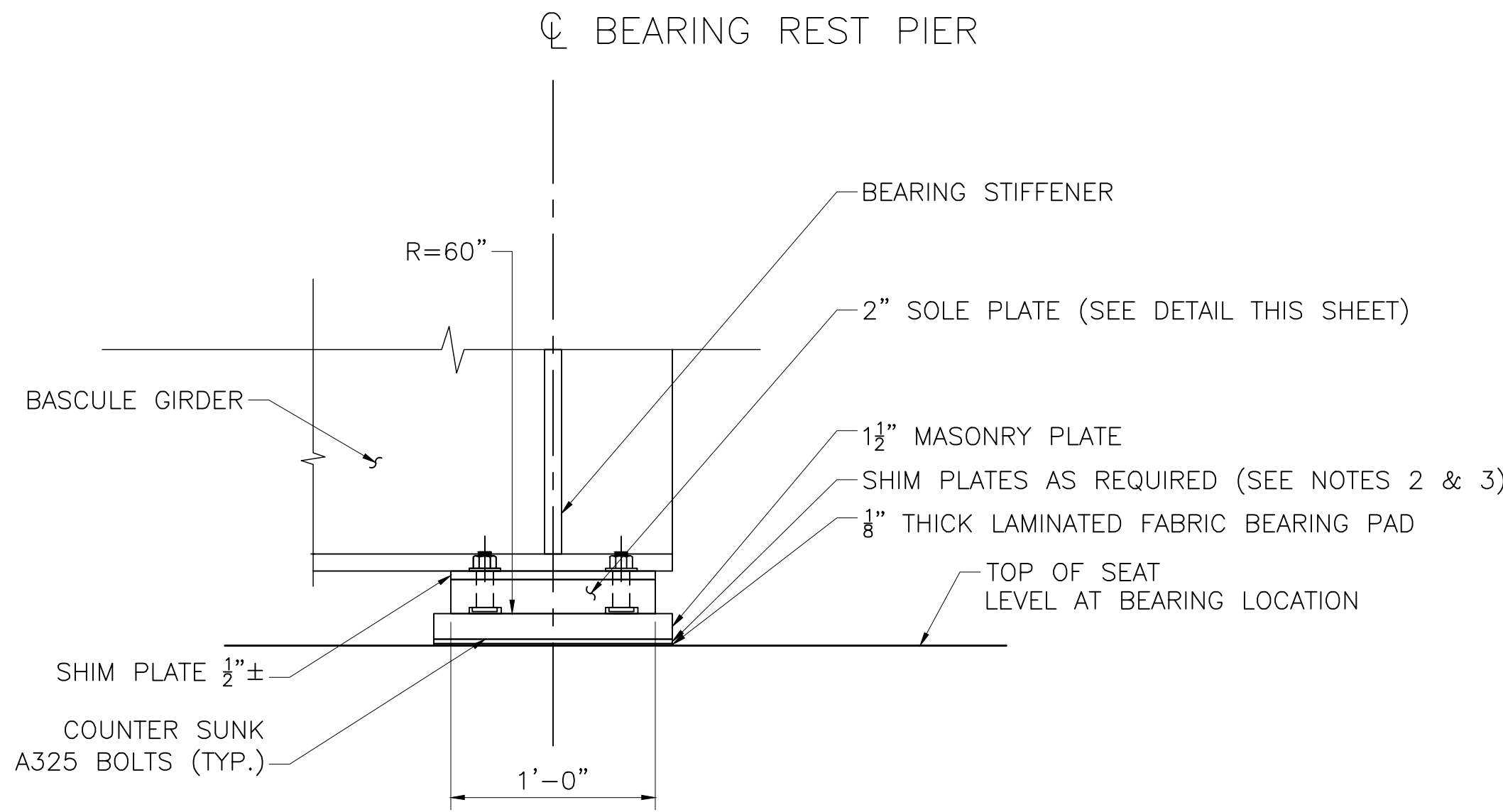
$B1$ = Final top of roadway elevation @ C of Bearing @ Support #1
 $B2$ = Final top of roadway elevation @ mid span of the beam
 $B3$ = Final top of roadway elevation @ C of Bearing @ Support #2
- $Y = 0$ for a Negative Vertical Curve.

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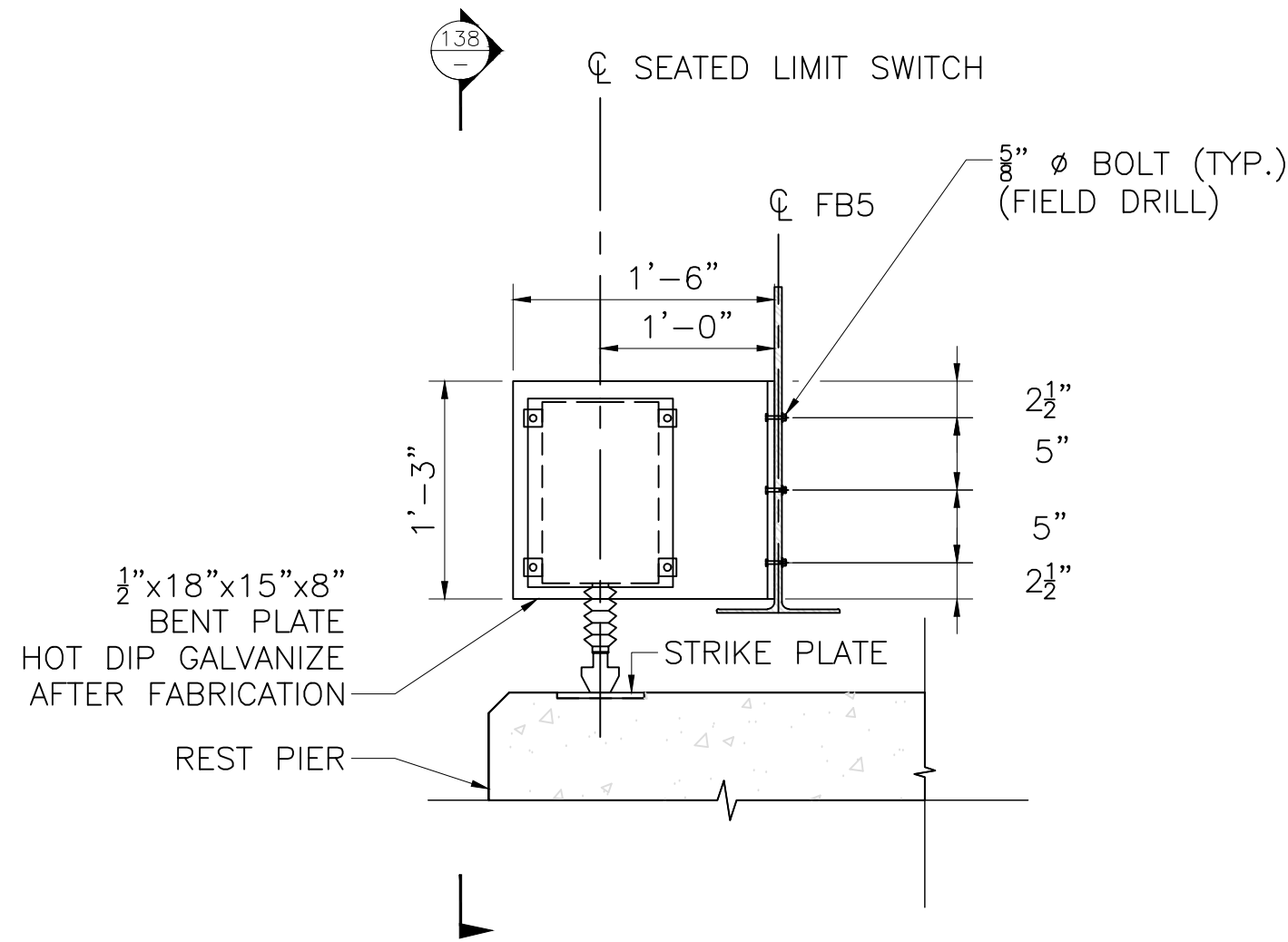
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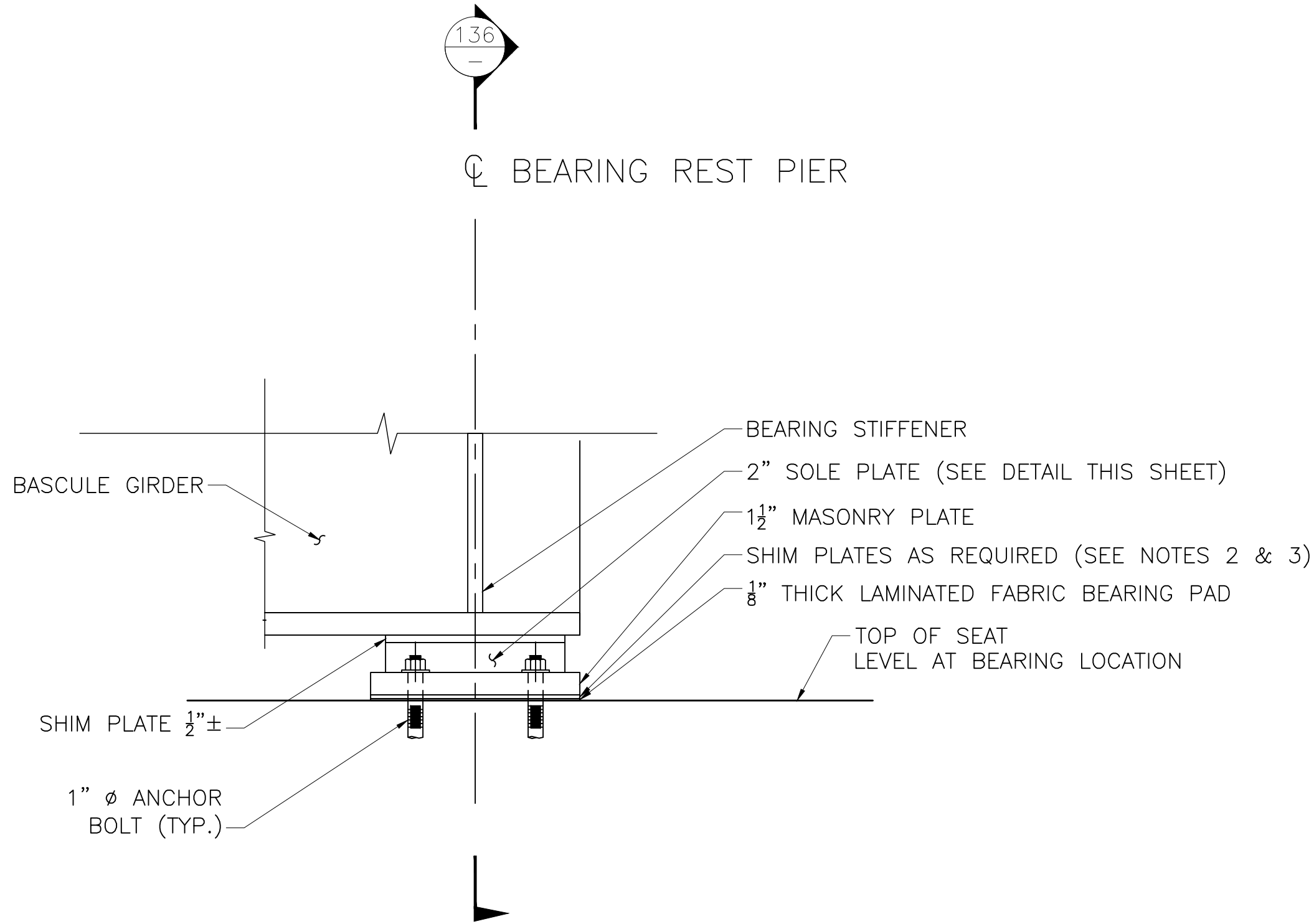
PLAN



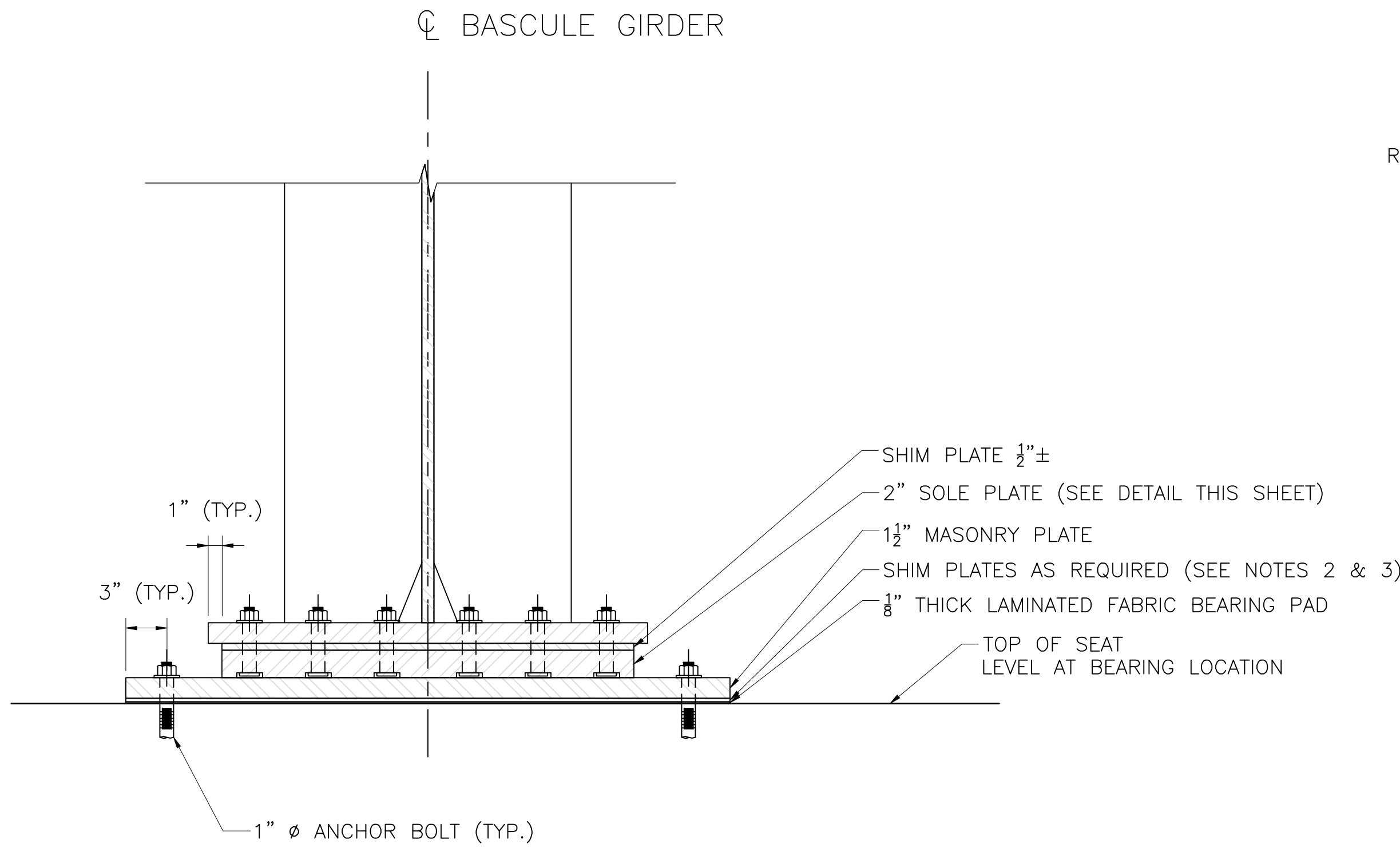
SOLE PLATE



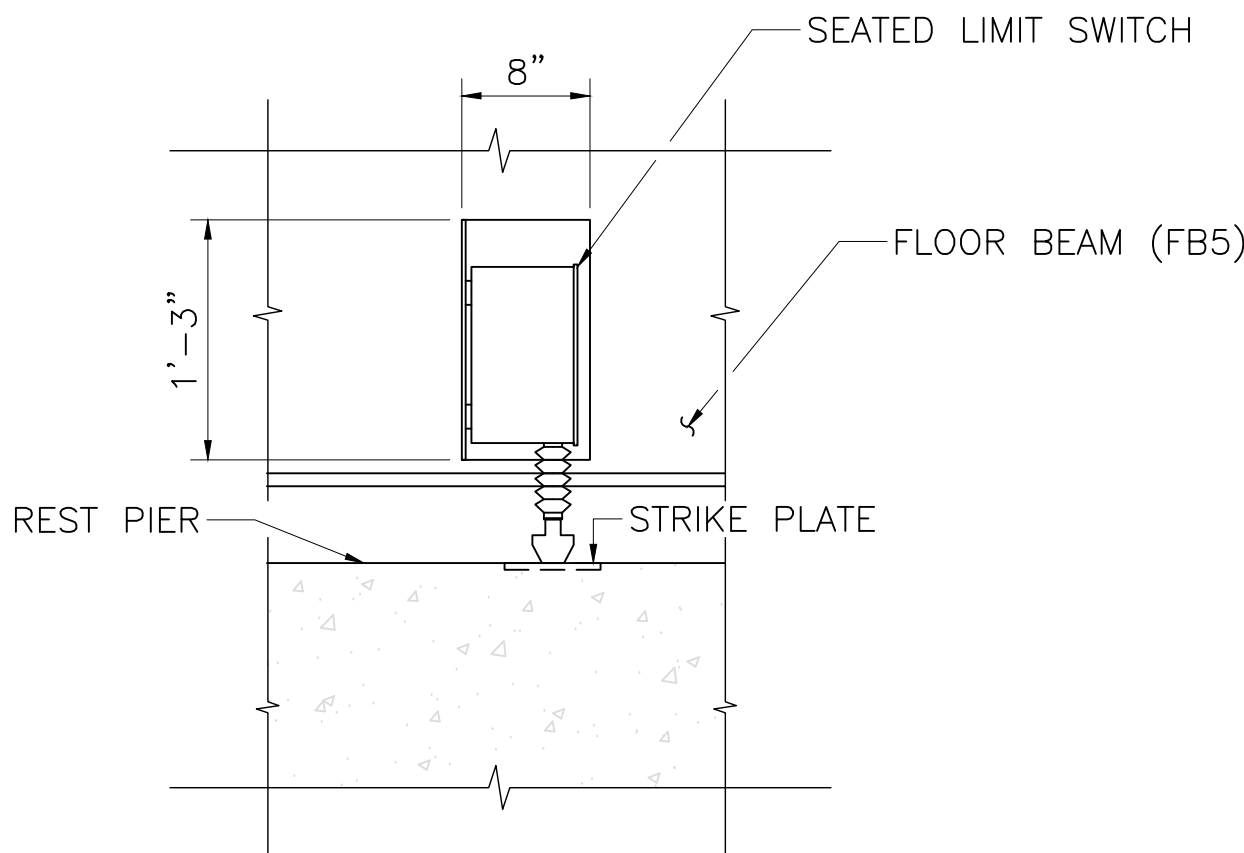
SECTION 138



ELEVATION



SECTION 136



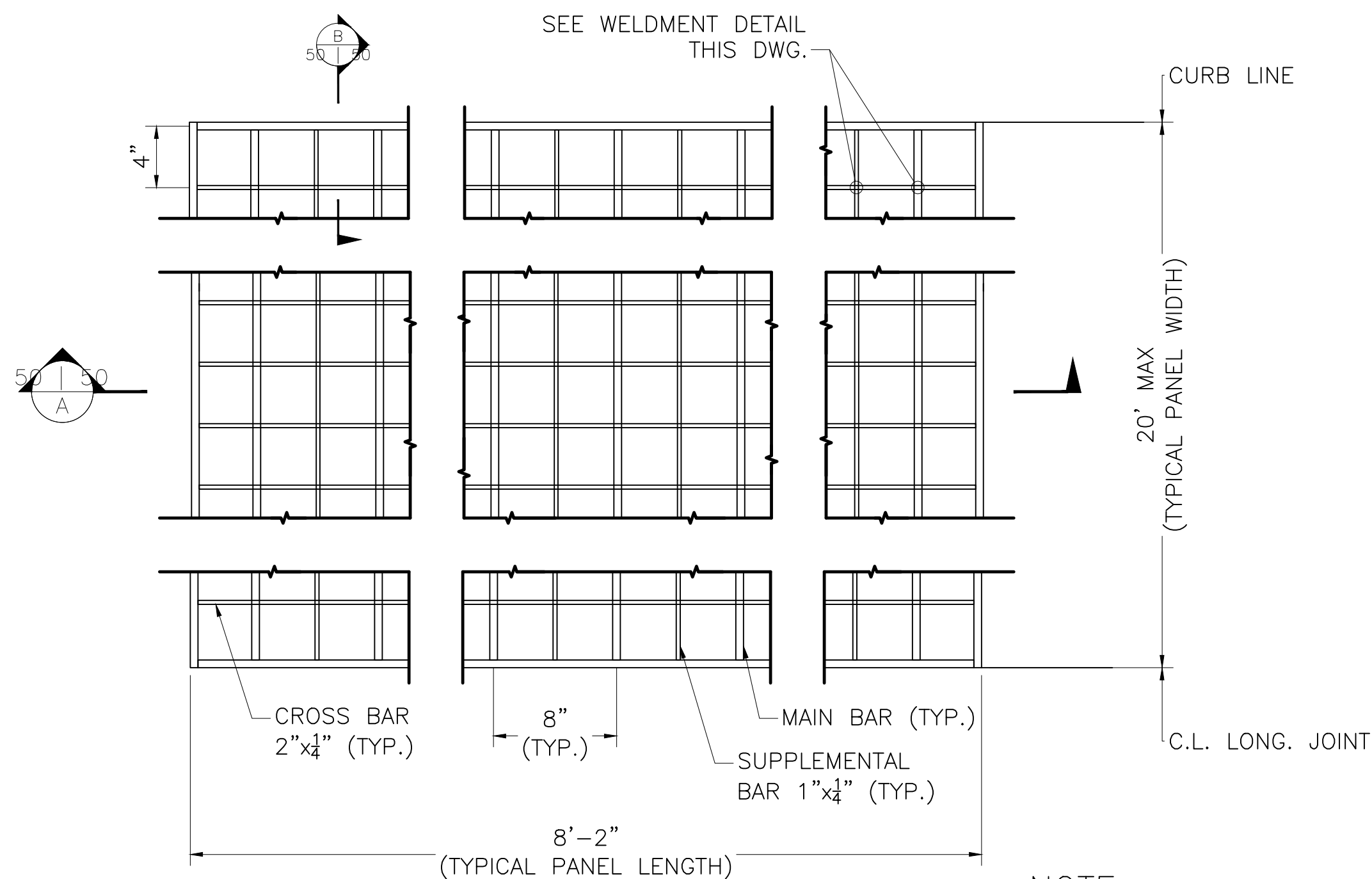
SECTION 138

NOTES:

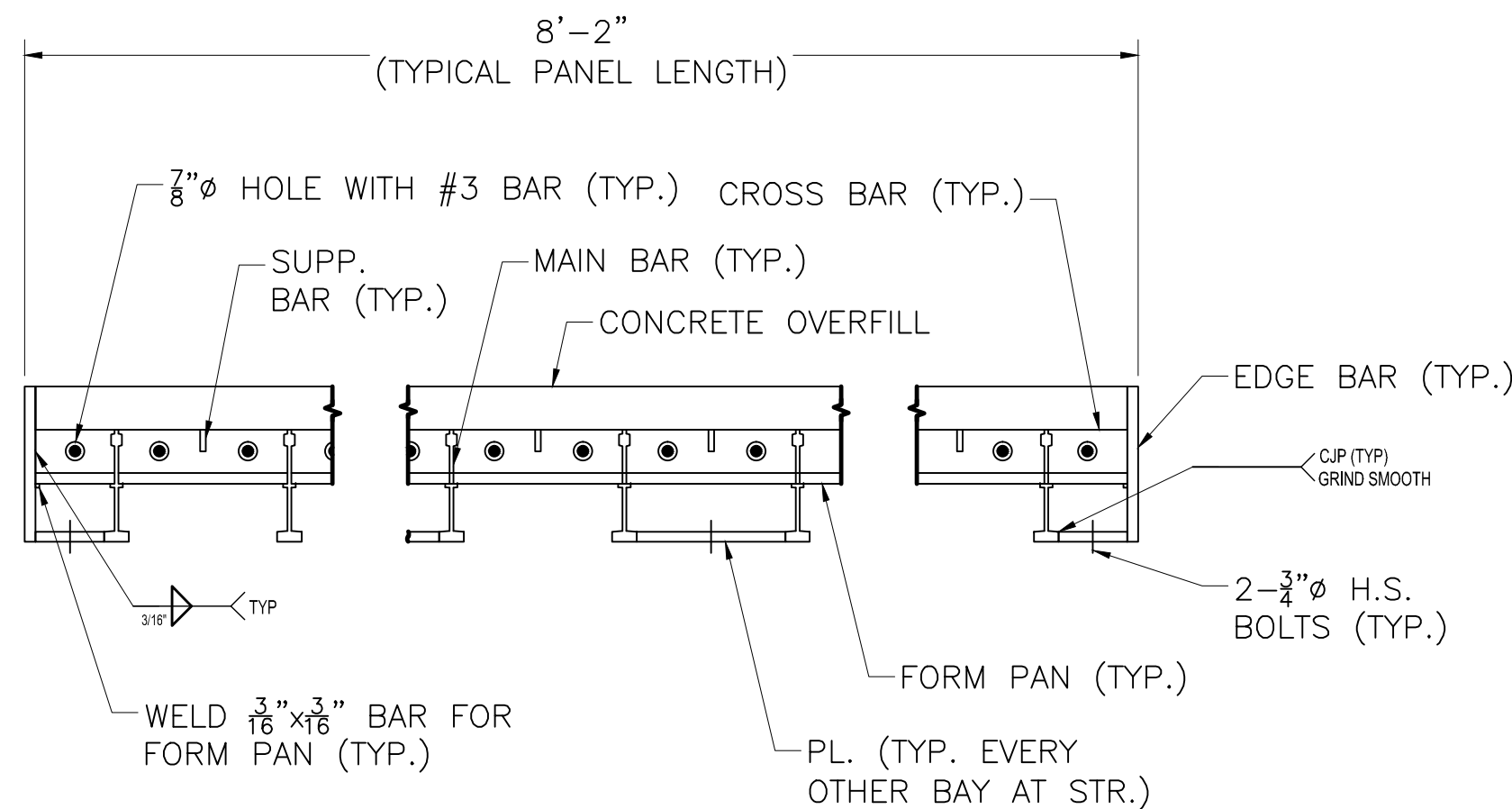
1. FOR GENERAL NOTES, SEE SHEETS S3 & S4.
2. STAINLESS STEEL SHIM PLATES OF VARIOUS THICKNESS FROM 1/4" TO 1/8" SHALL BE PROVIDED.
3. THE SHIM PLATES SHALL BE THE SAME SIZE AS THE MASONRY PLATE.
4. BEARING SOLE PLATES, MASONRY PLATES AND BUMPER PLATES SHALL BE STEEL.

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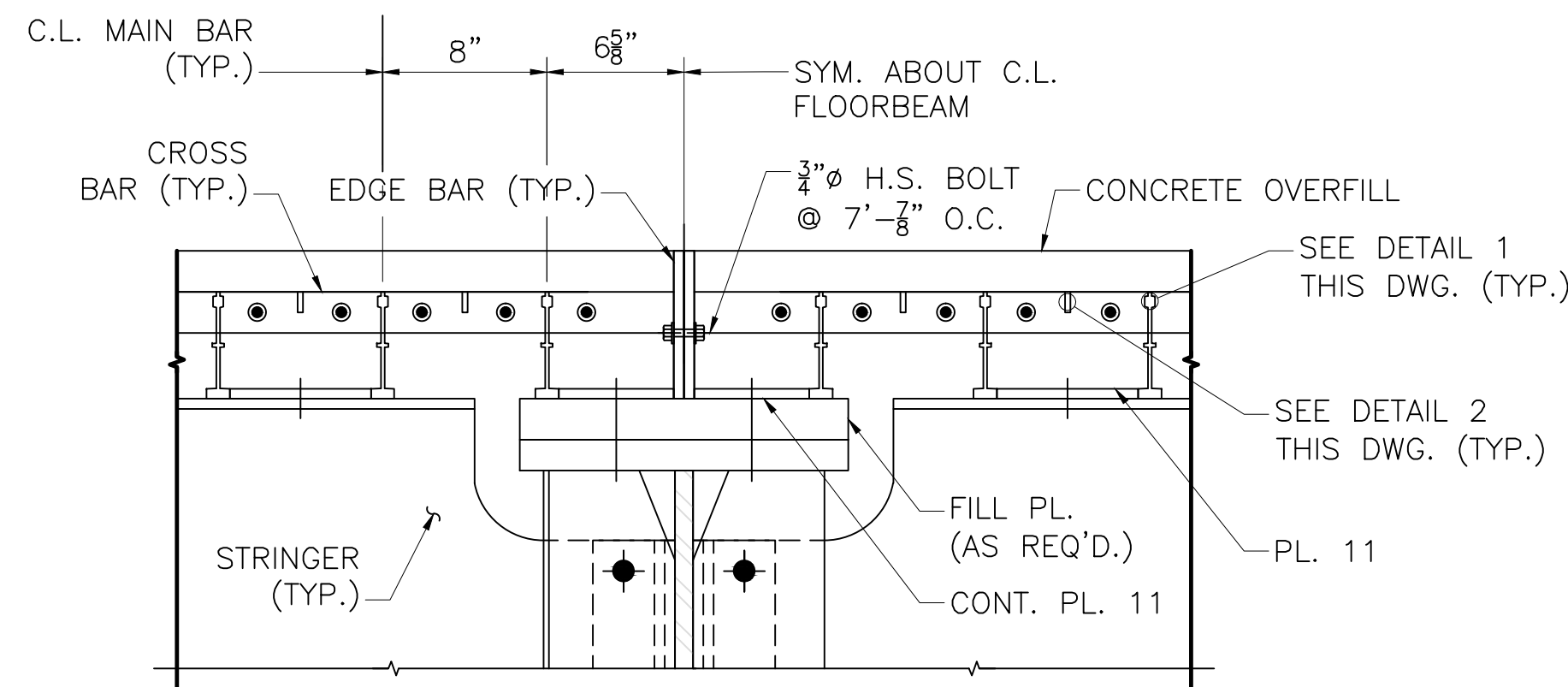
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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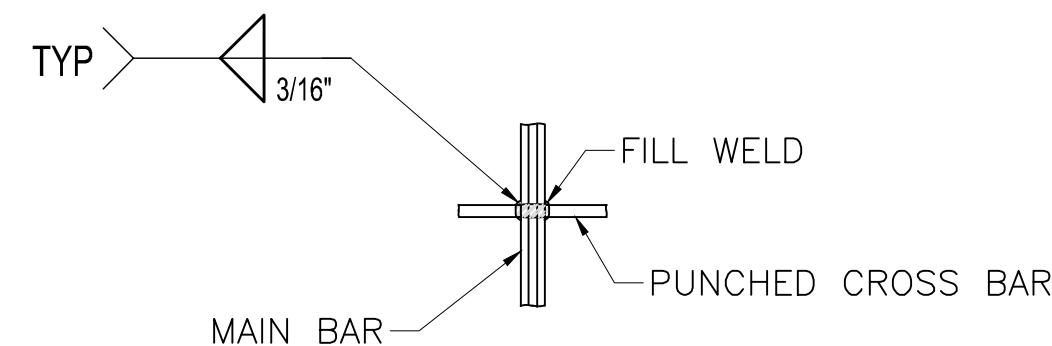
TYPICAL INTERIOR DECK PANEL



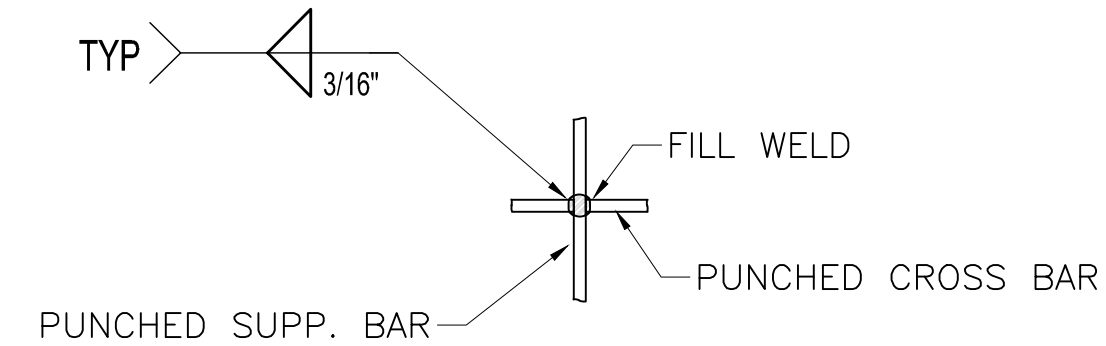
SECTION A



TRANSVERSE DECK JOINT DETAIL

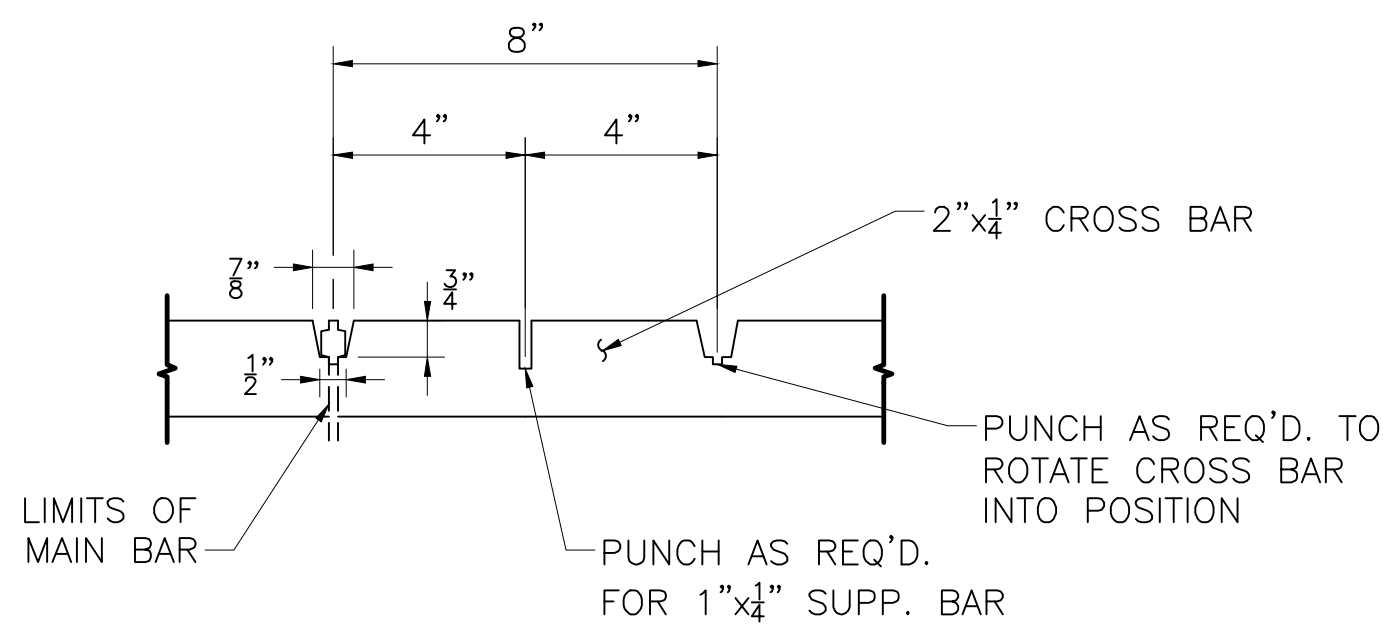


MAIN BAR/CROSS BAR

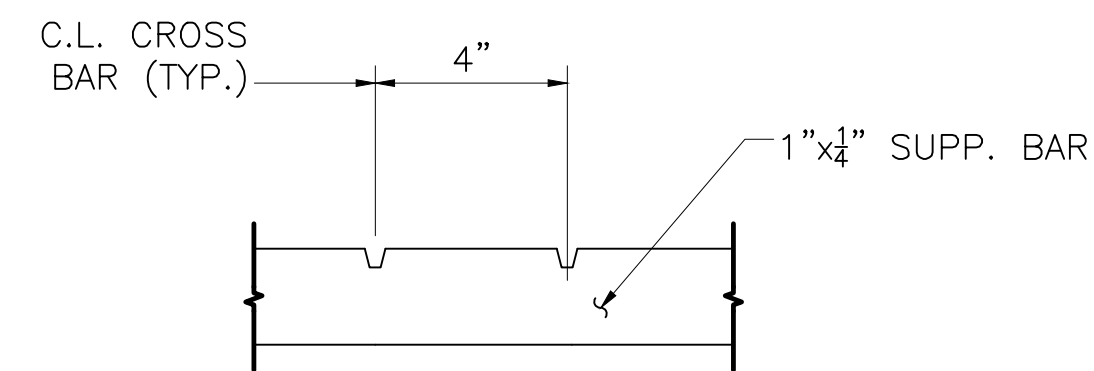


CROSS BAR/SUPPLEMENTAL BAR

WELDMENT DETAILS

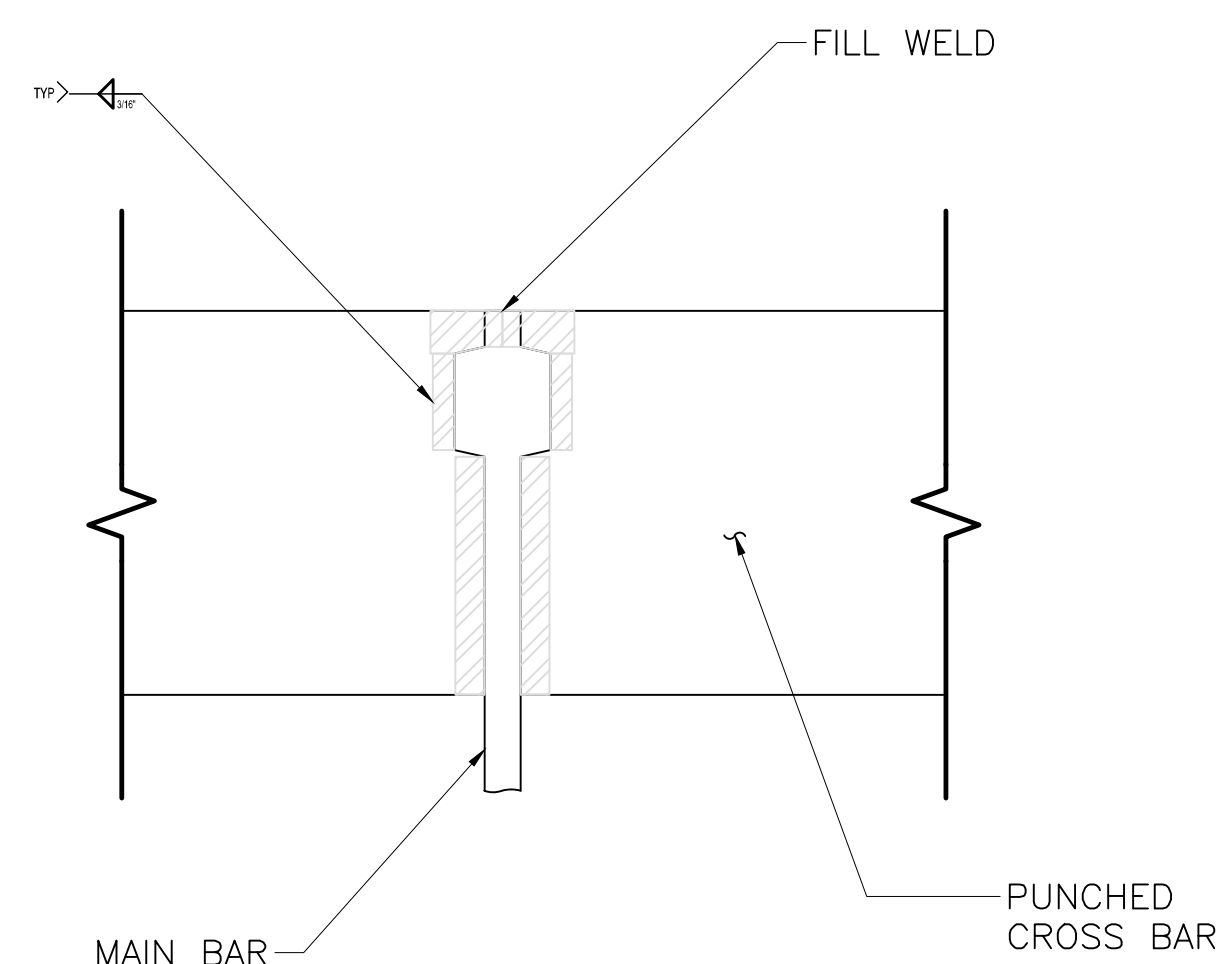


CROSS BAR

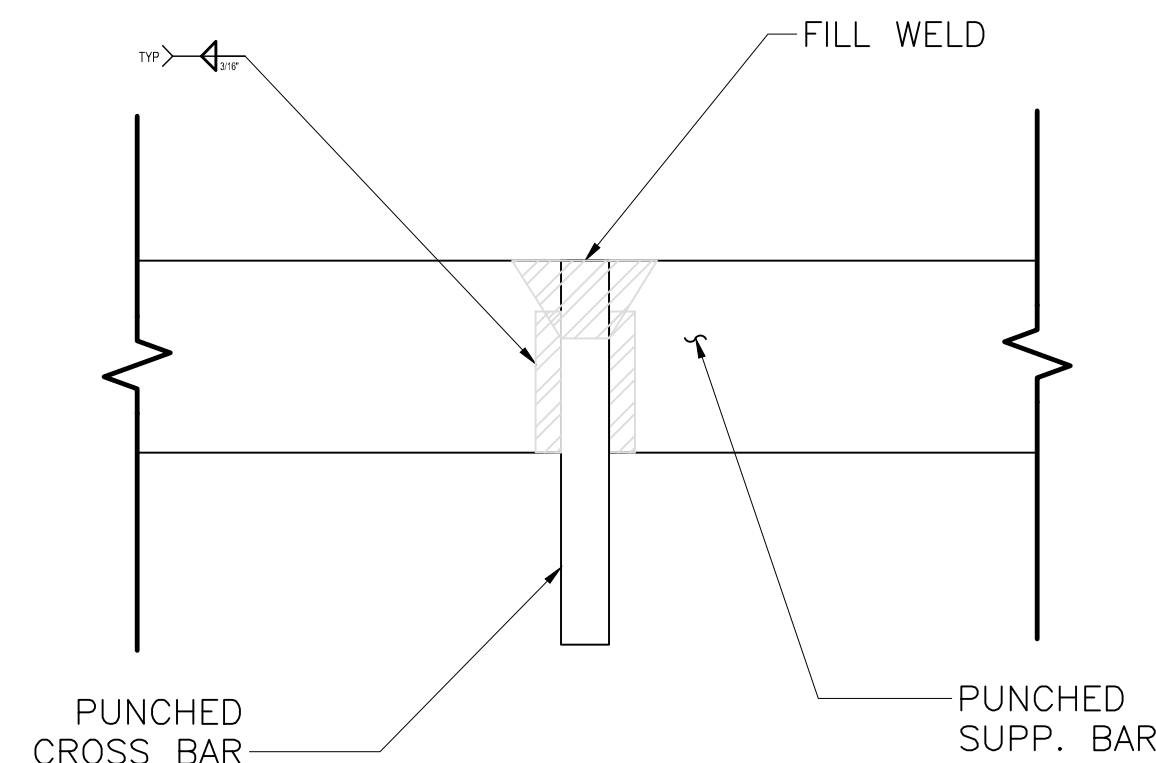


SUPPLEMENTAL BAR

BAR PUNCHING DETAILS



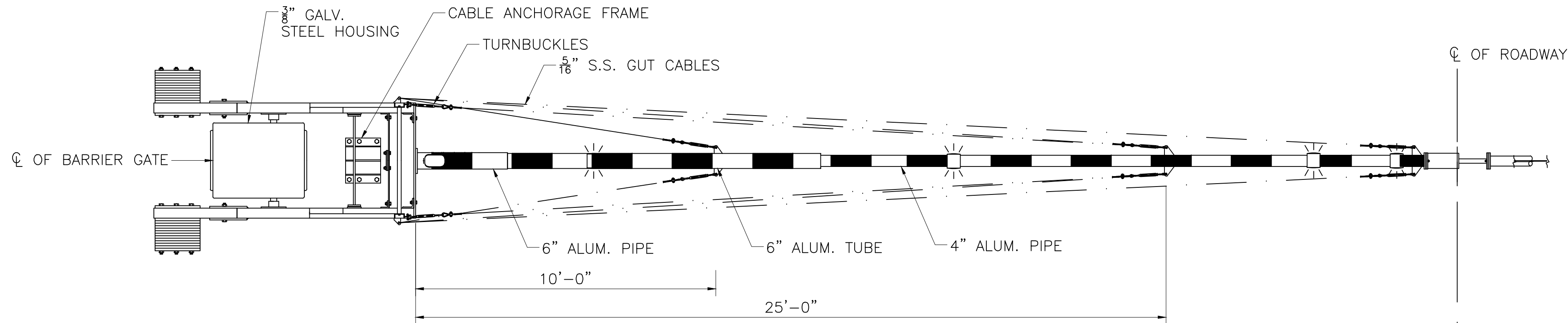
DETAIL 1



DETAIL 2

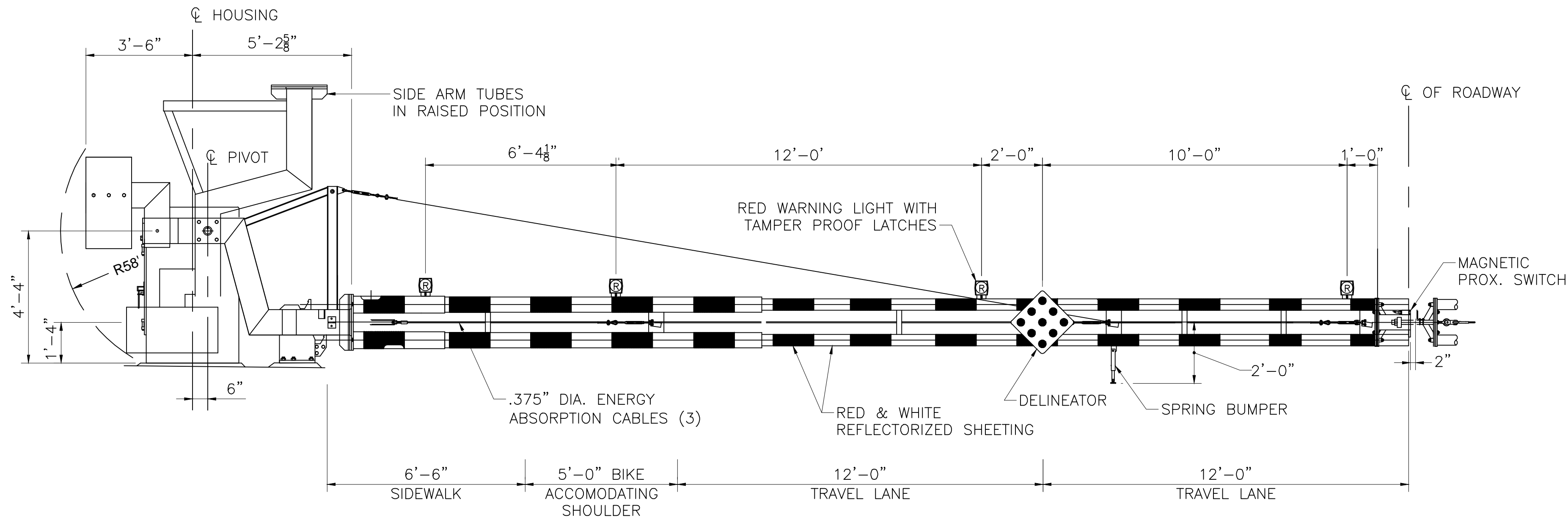
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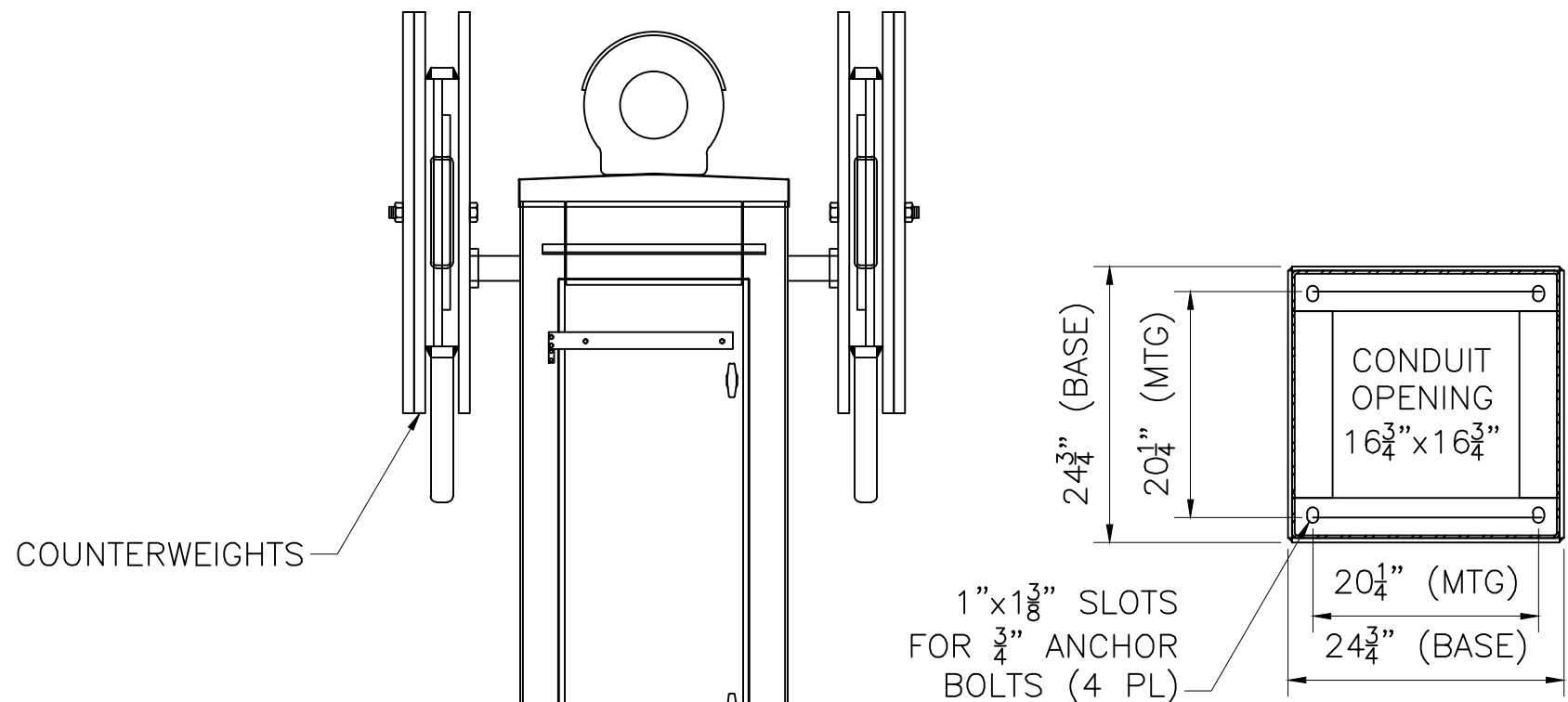
BRIDGE BARRIER GATE PLAN

SCALE: $\frac{3}{8}$ " = 1'-0"



BRIDGE BARRIER GATE ELEVATION

SCALE: $\frac{3}{8}$ " = 1'-0"



SECTION 1

BARRIER GATES

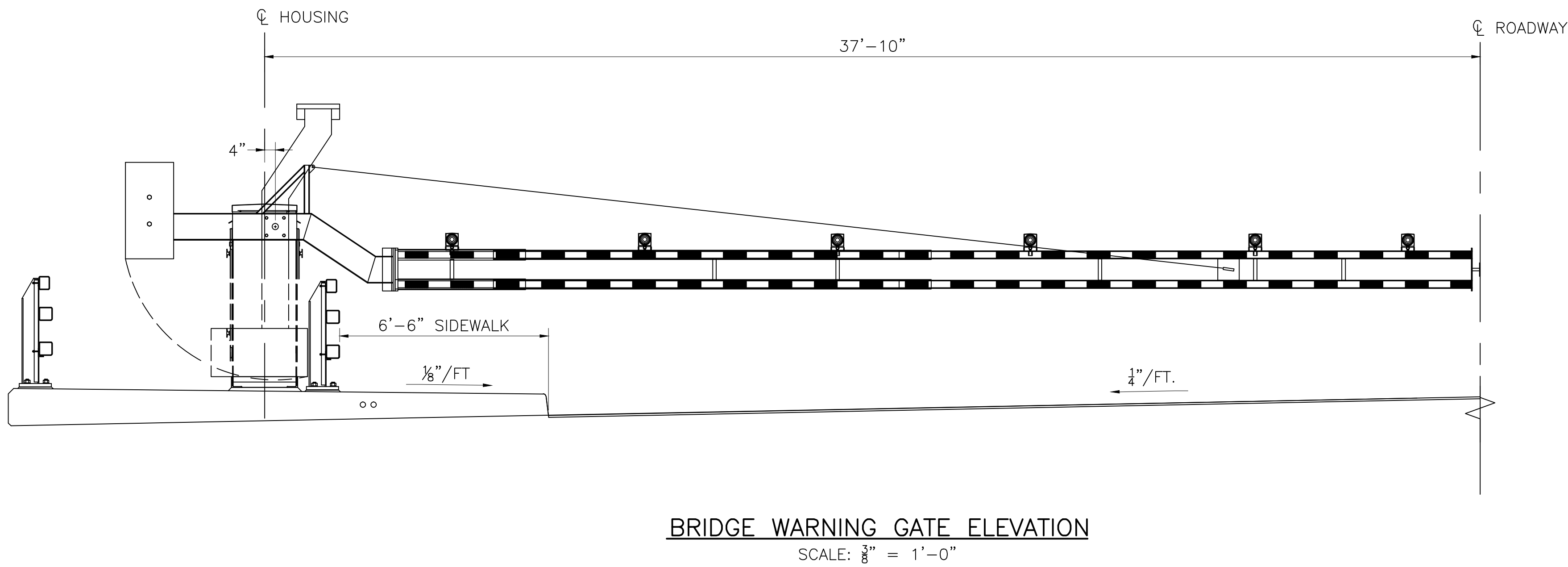
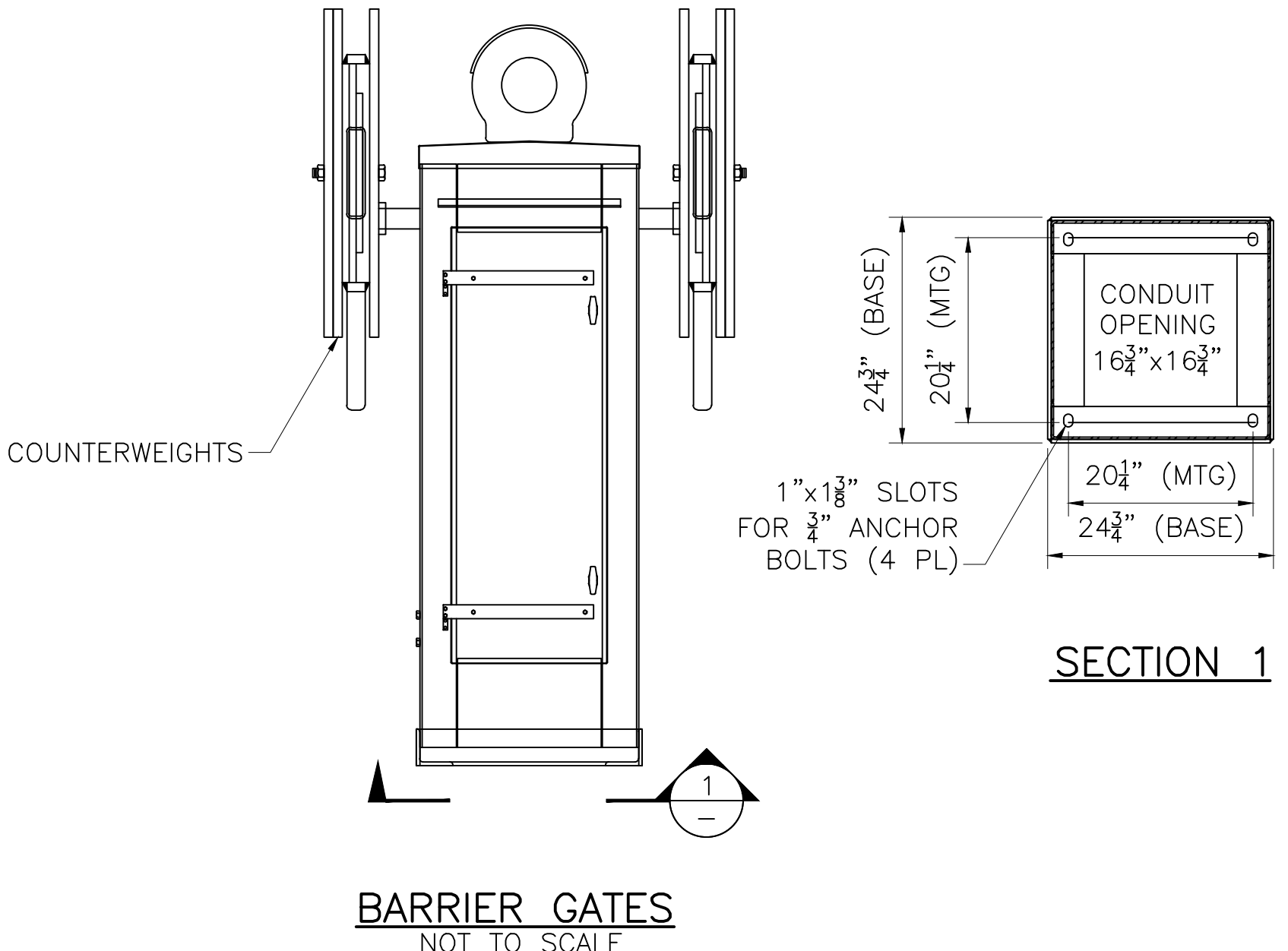
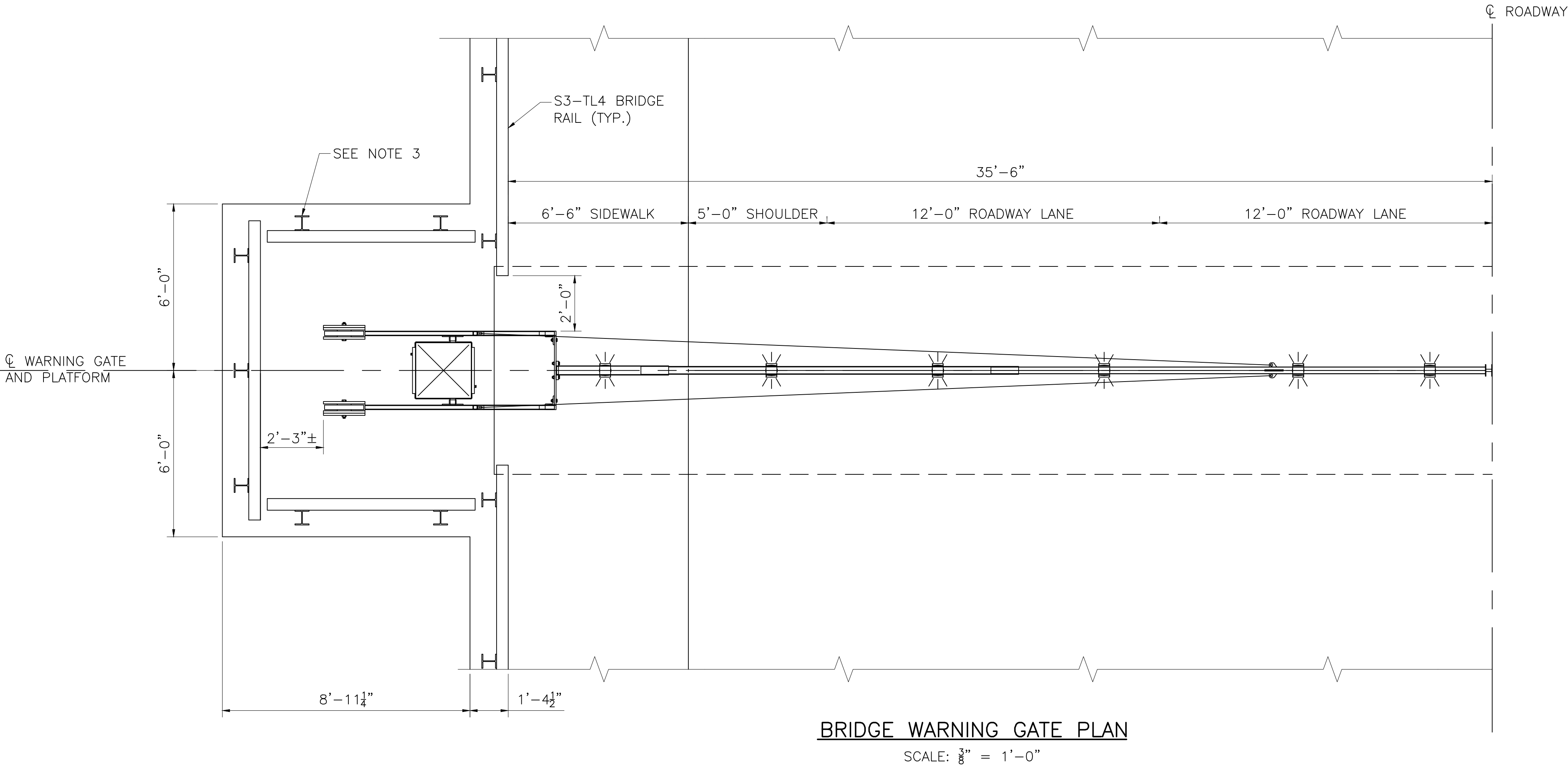
NOT TO SCALE

NOTES:

1. DETAILS HAVE BEEN PROVIDED TO SHOW GENERAL INTENT. ALL DETAILS SHALL BE FINALIZED AND COORDINATED WITH THE APPROPRIATE TRADES AND MANUFACTURERS REQUIREMENTS BASED ON FINAL DESIGN SELECTIONS.

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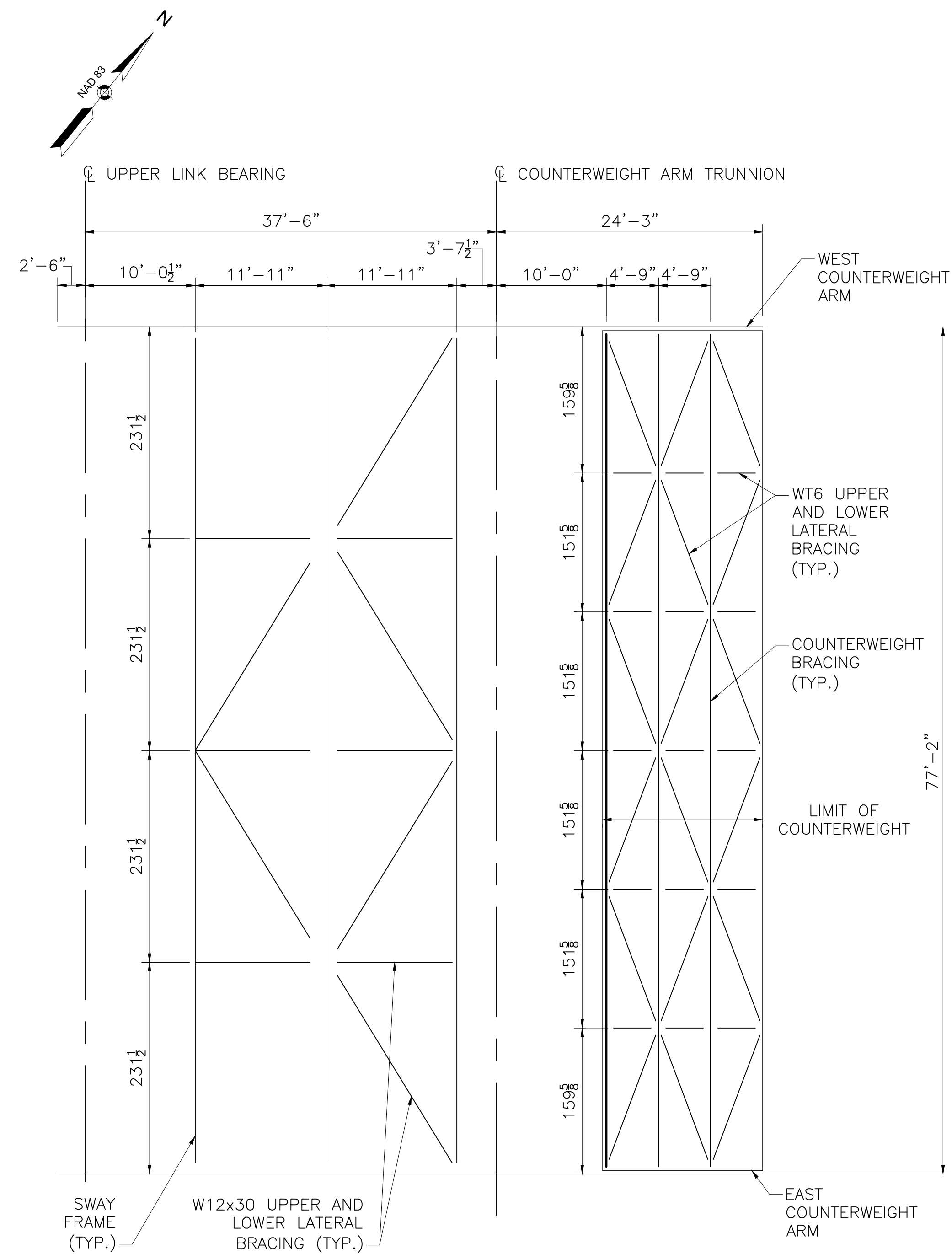
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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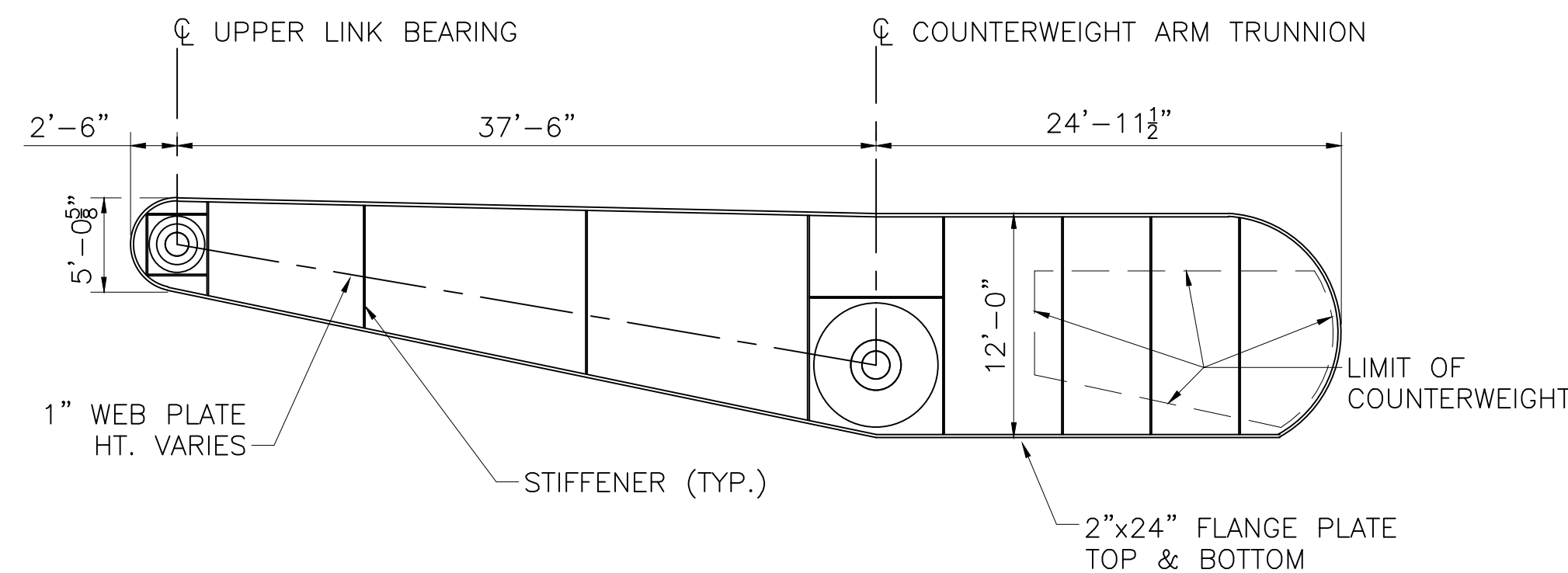
- NOTES:
- DETAILS HAVE BEEN PROVIDED TO SHOW GENERAL INTENT. ALL DETAILS SHALL BE FINALIZED AND COORDINATED WITH THE APPROPRIATE TRADES AND MANUFACTURERS REQUIREMENTS BASED ON FINAL DESIGN SELECTIONS.

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COUNTERWEIGHT ARM FRAMING PLAN
SCALE: 1/8" = 1'-0"

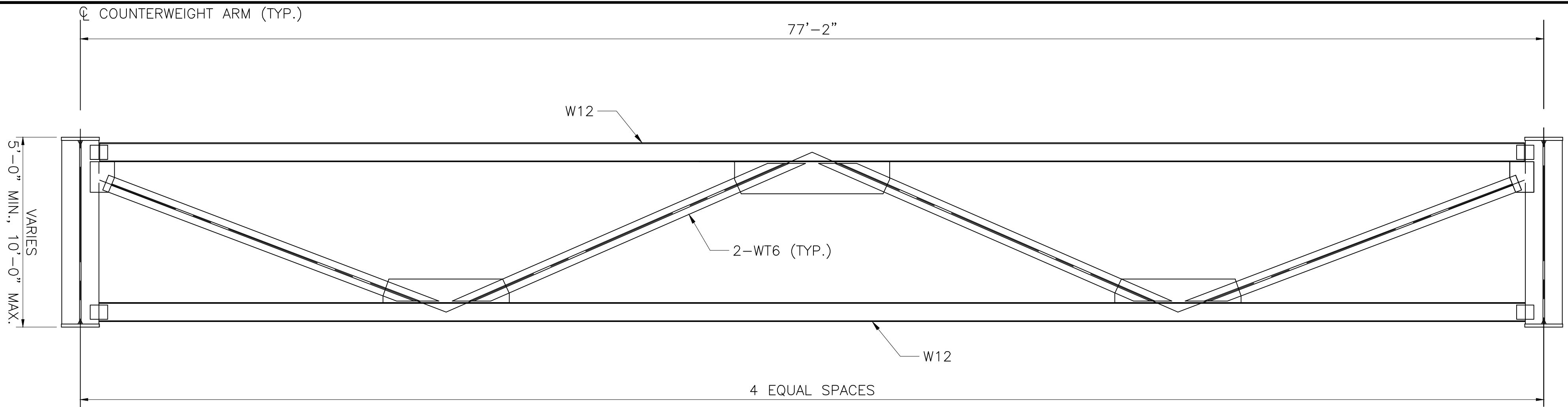


COUNTERWEIGHT ARM ELEVATION
SCALE: 1/8" = 1'-0"

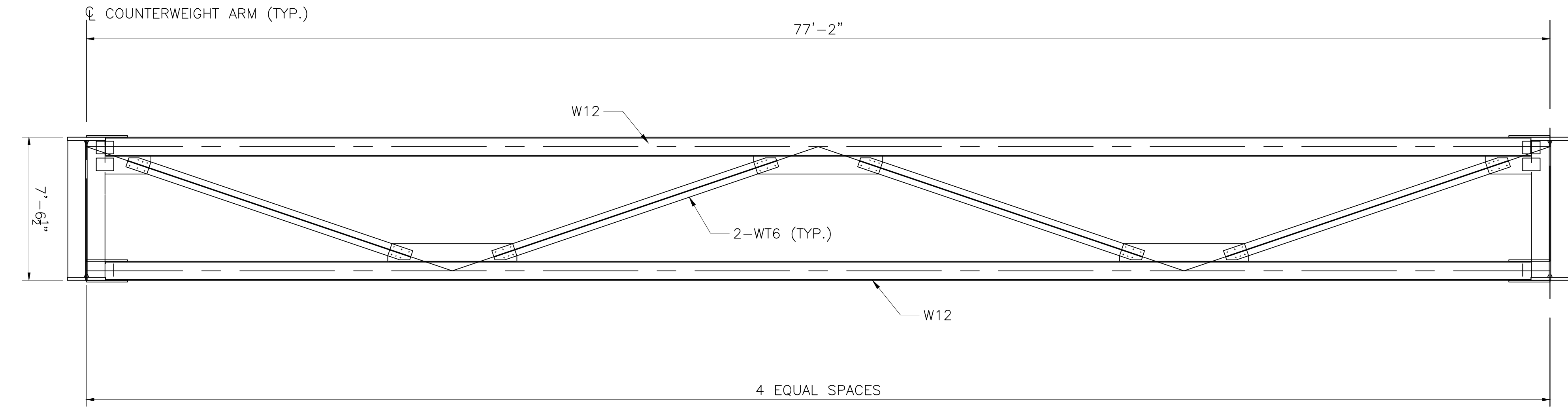
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LYNN/SAUGUS
ROUTE 107 OVER SAUGUS RIVER

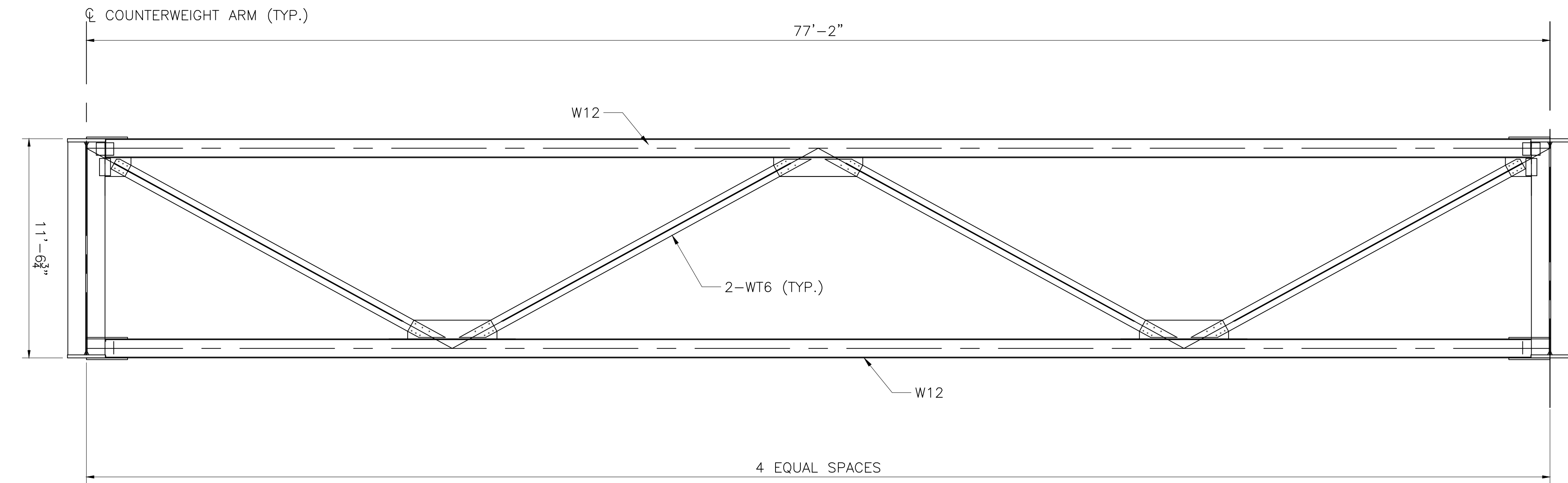
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SWAY FRAME BRACING
SCALE: 1/4" = 1'-0"



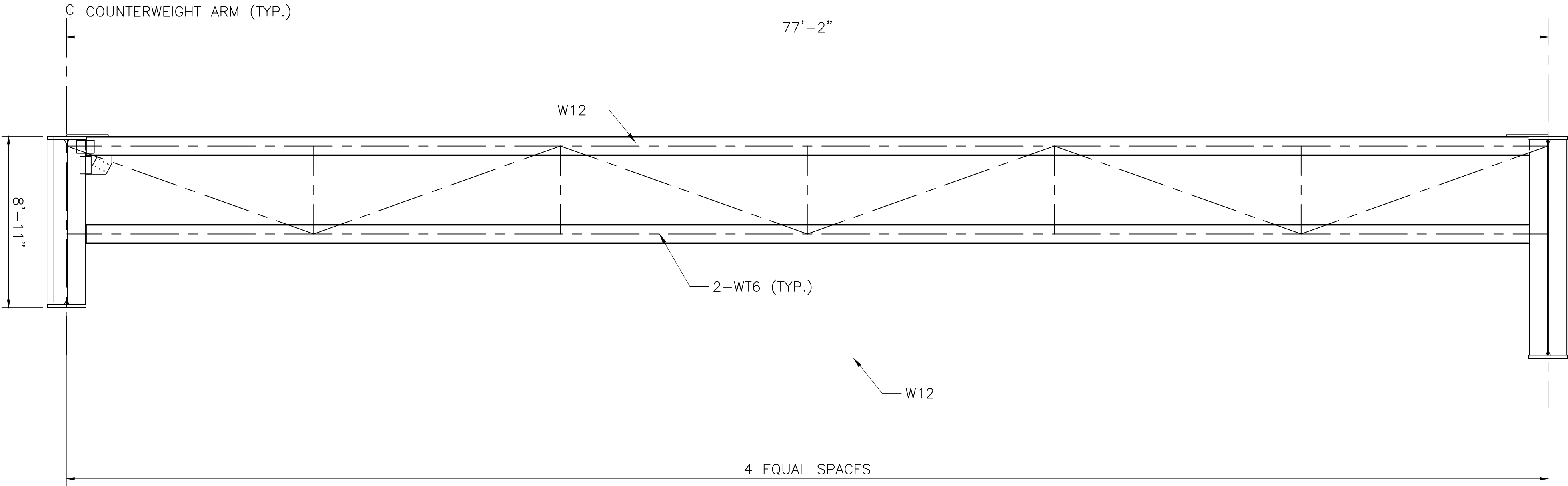
SWAY FRAME BRACING
SCALE: 1/4" = 1'-0"



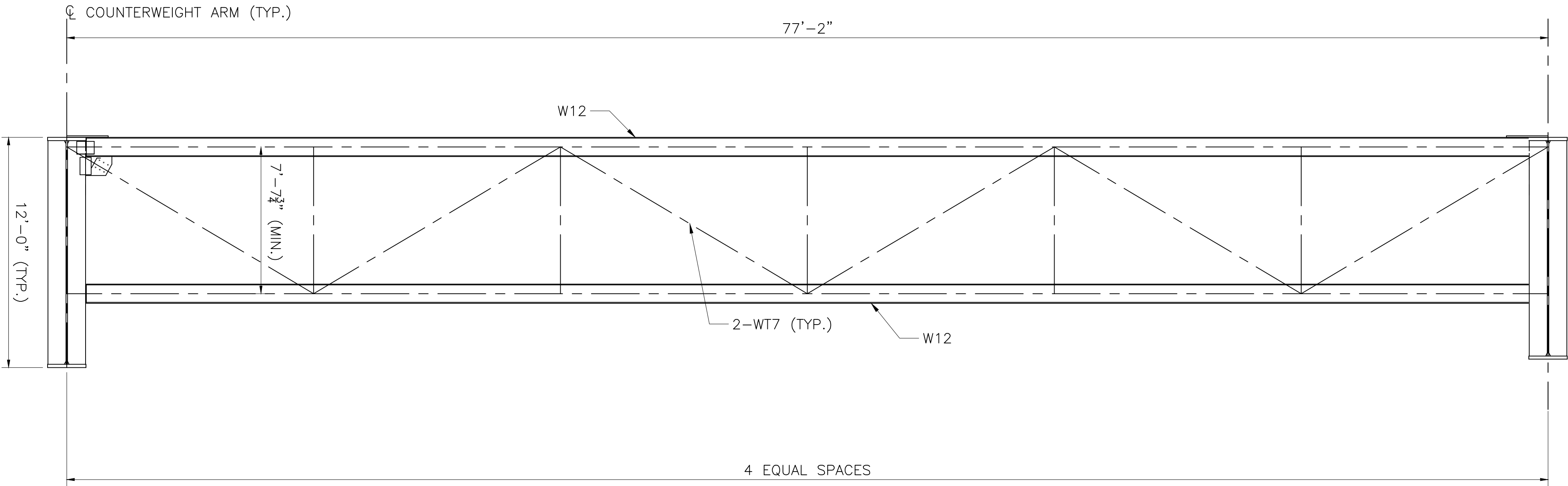
SWAY FRAME BRACING
SCALE: 1/4" = 1'-0"

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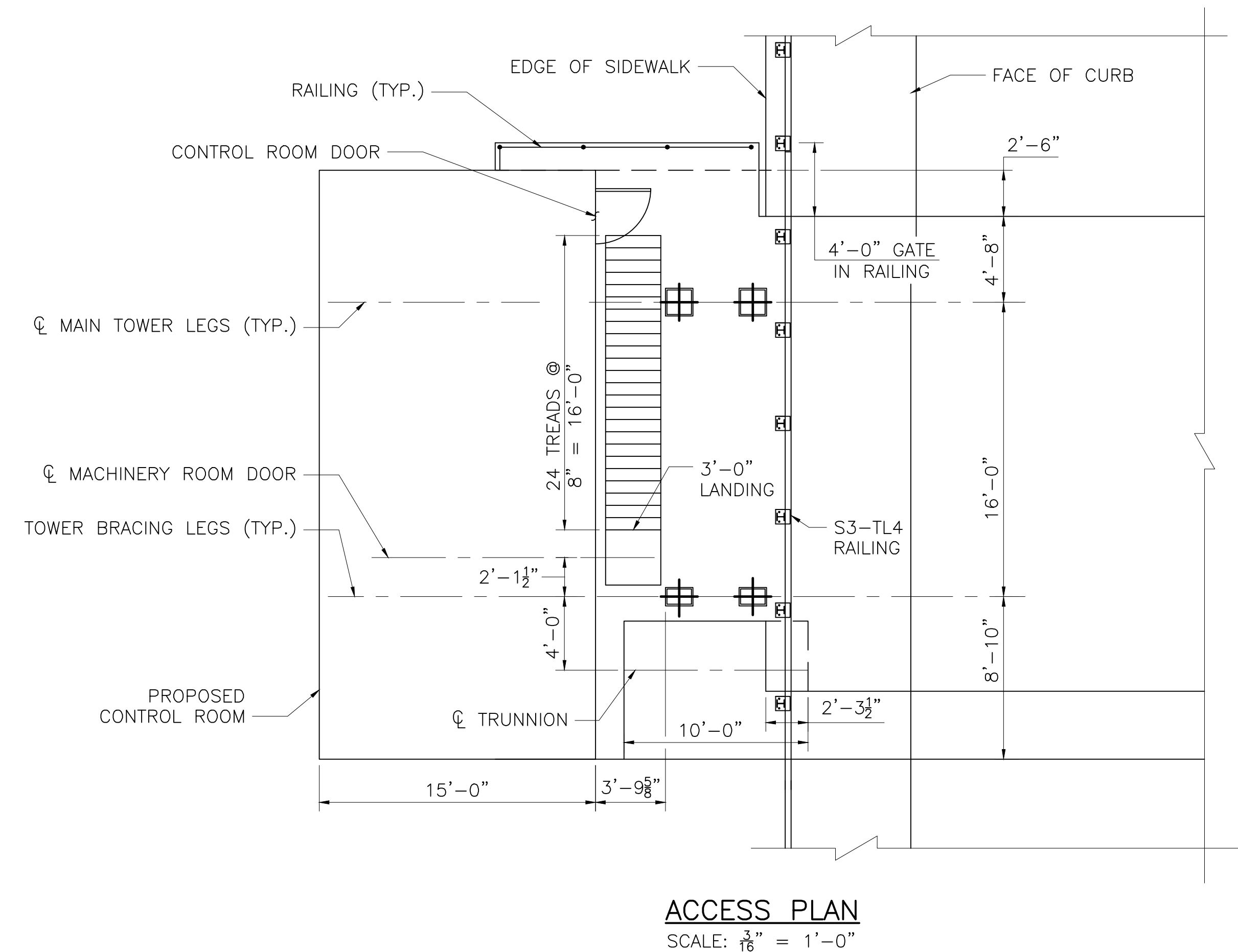
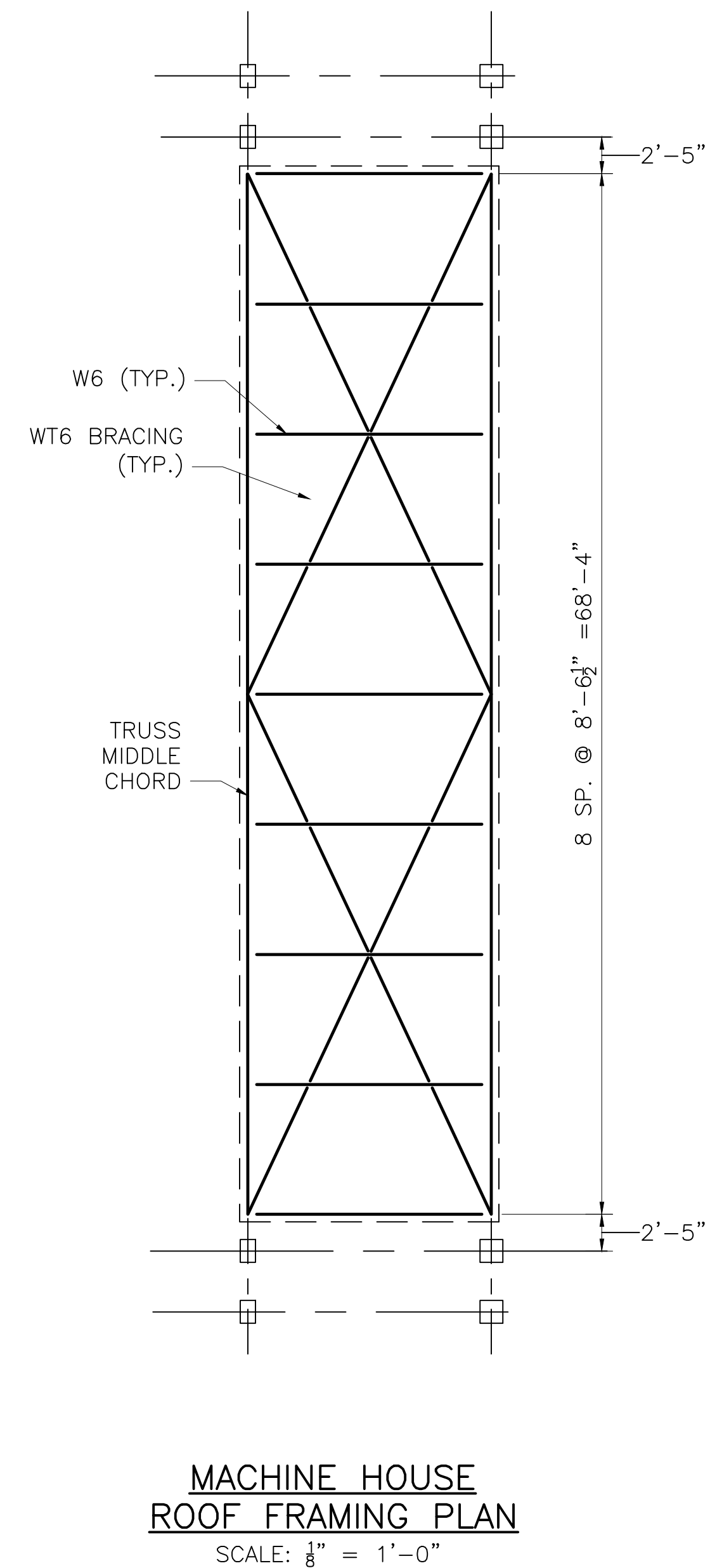
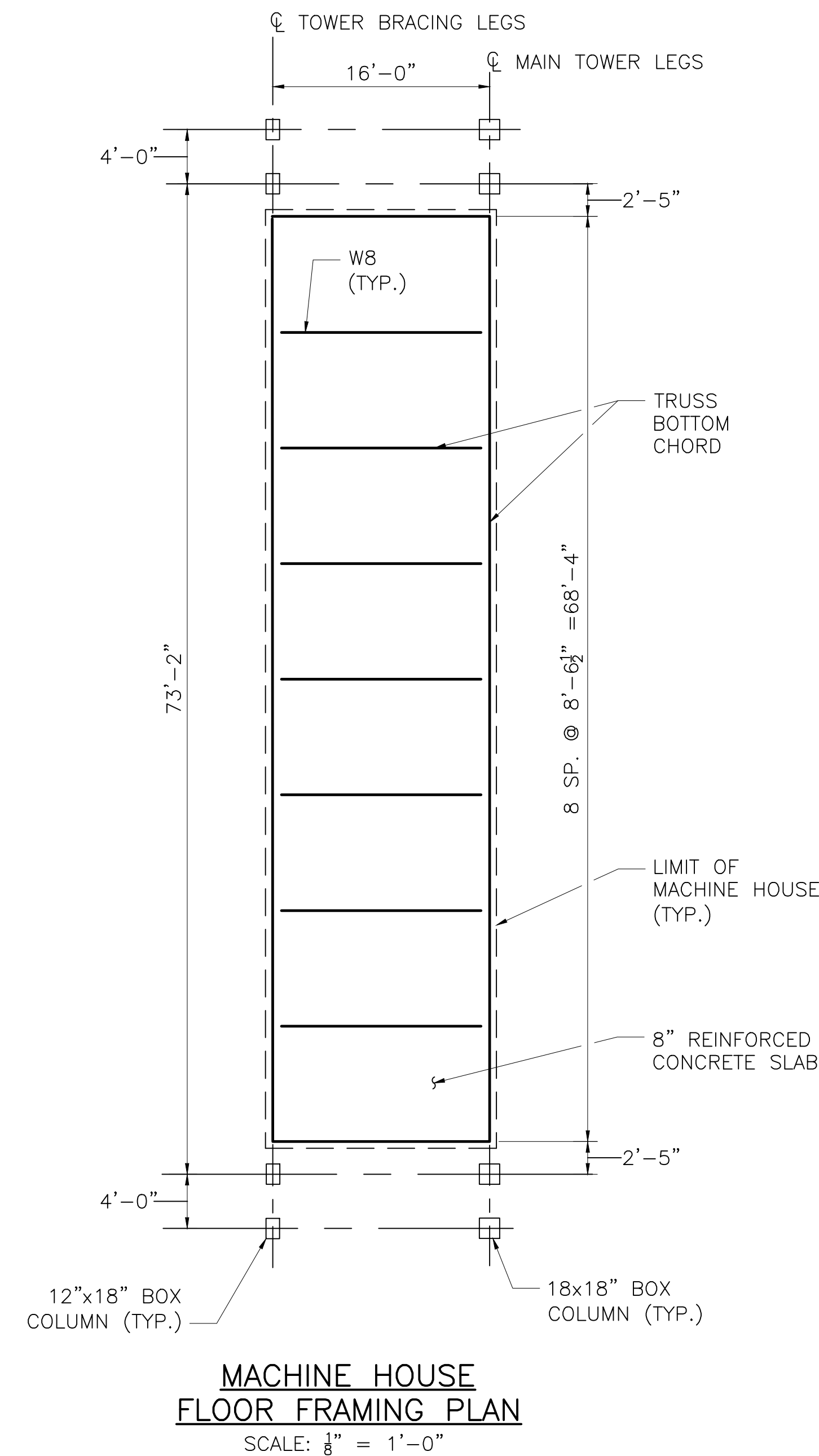
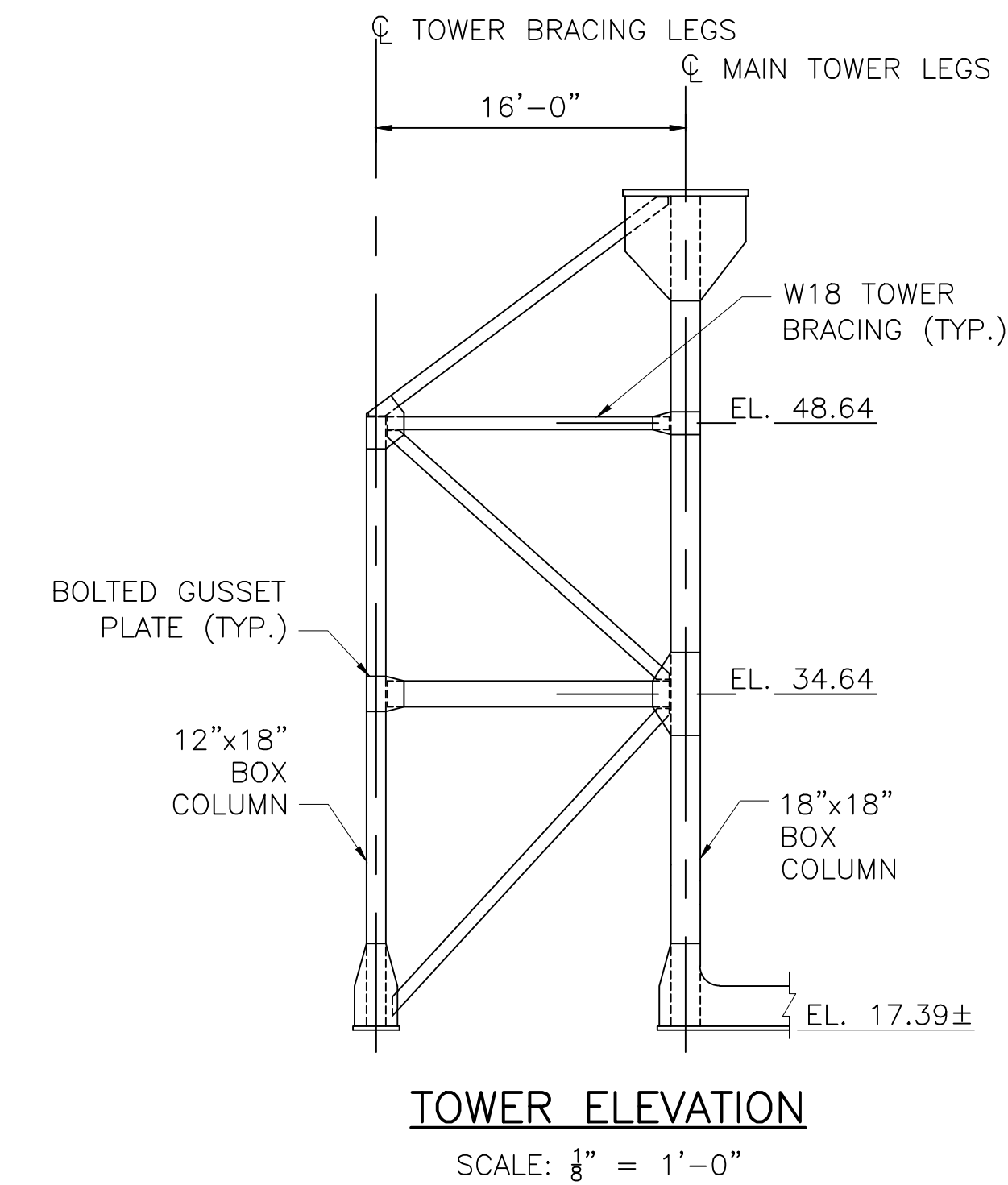
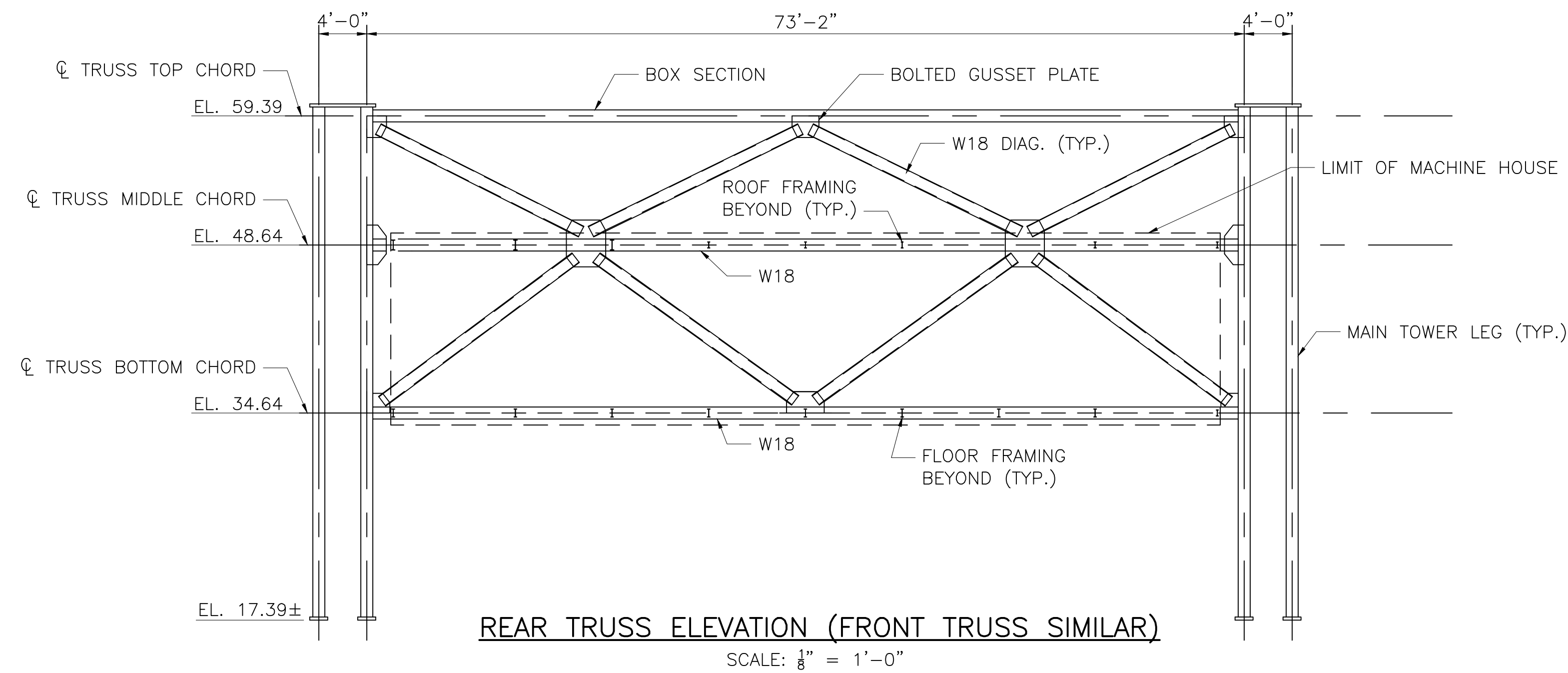
SWAY FRAME BRACING
SCALE: $\frac{1}{4}$ " = 1'-0"



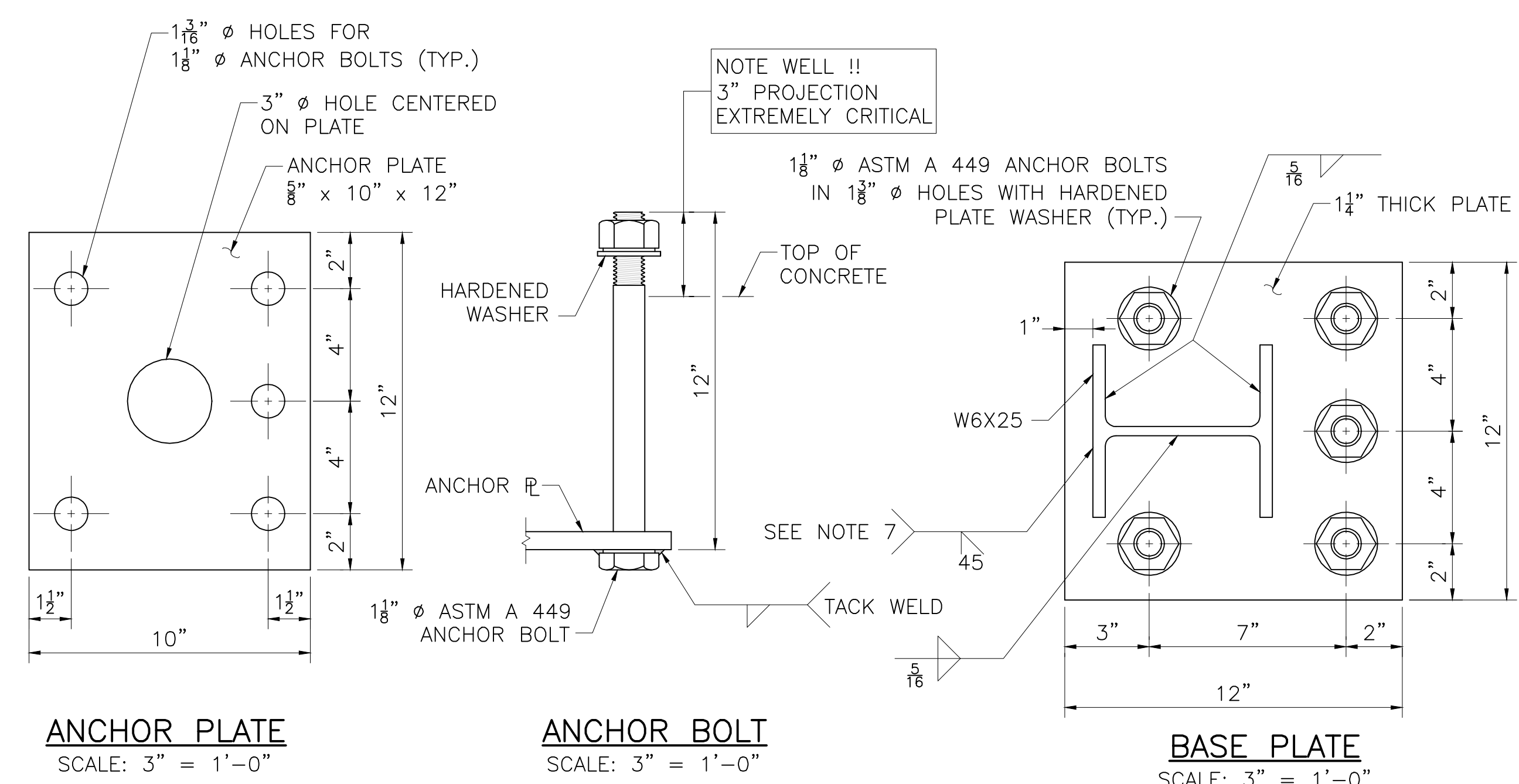
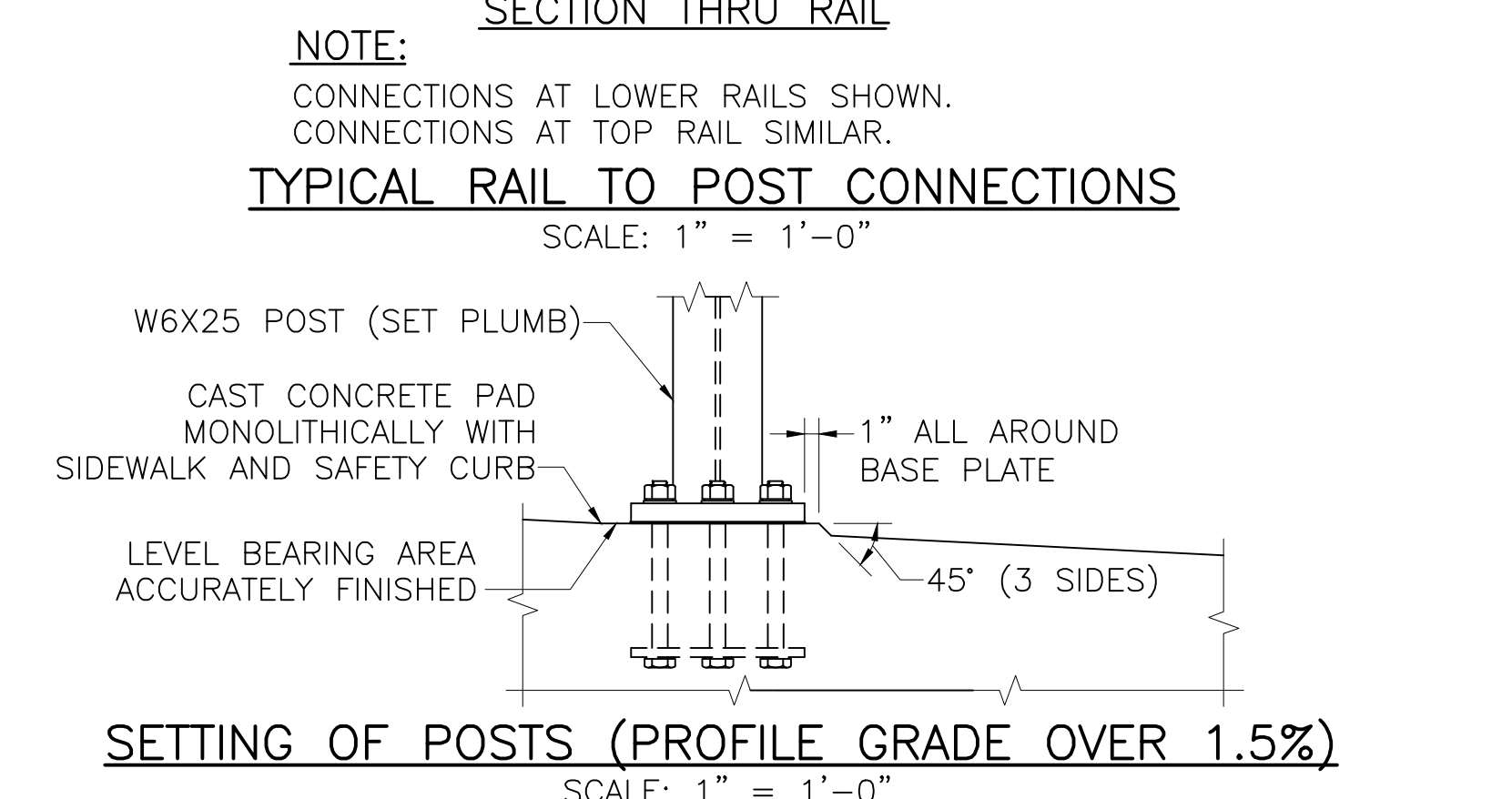
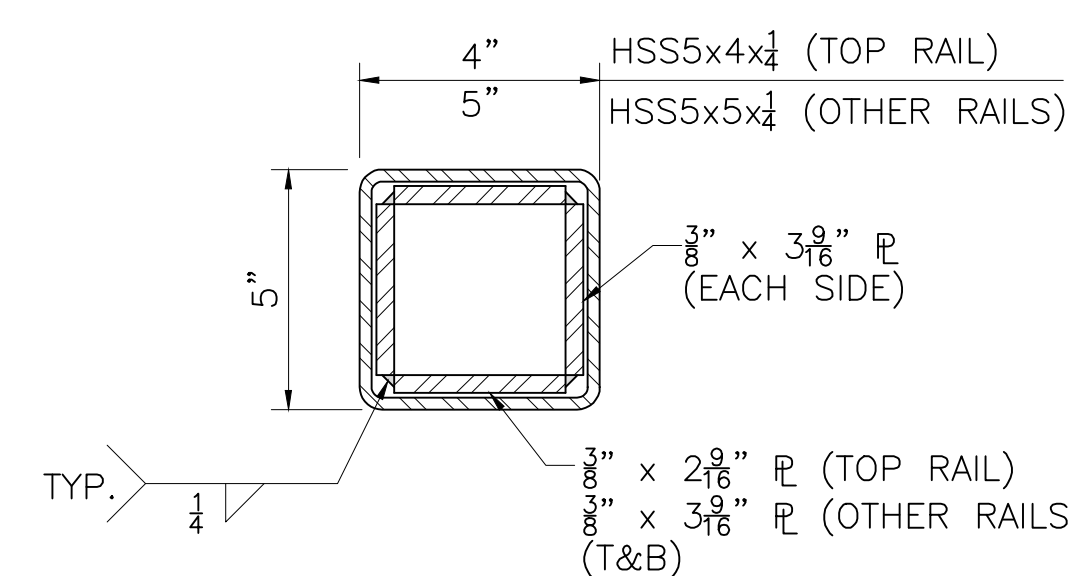
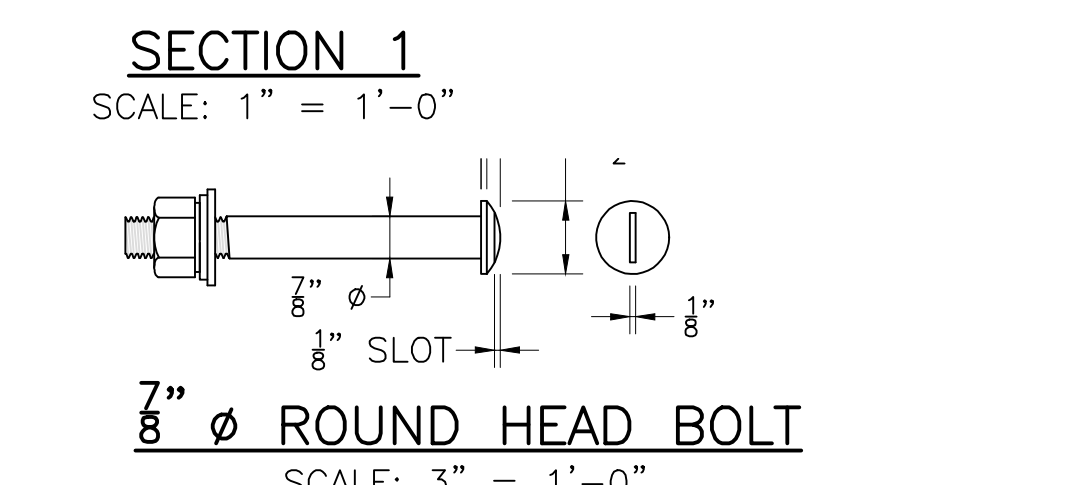
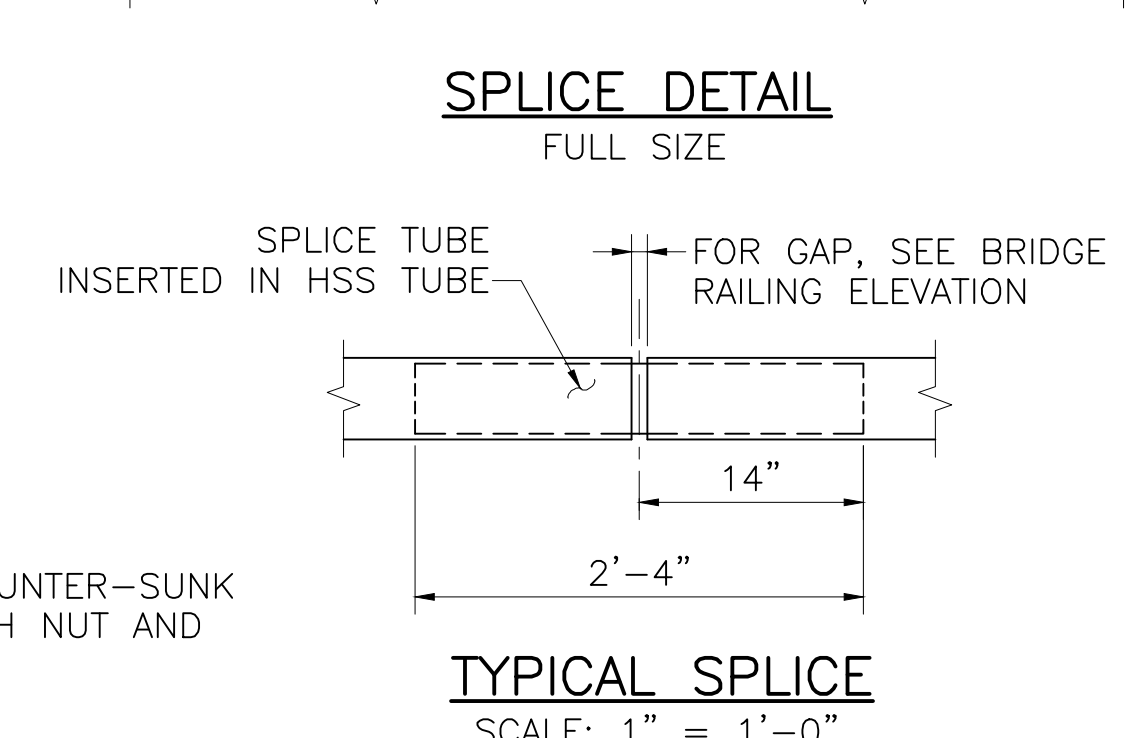
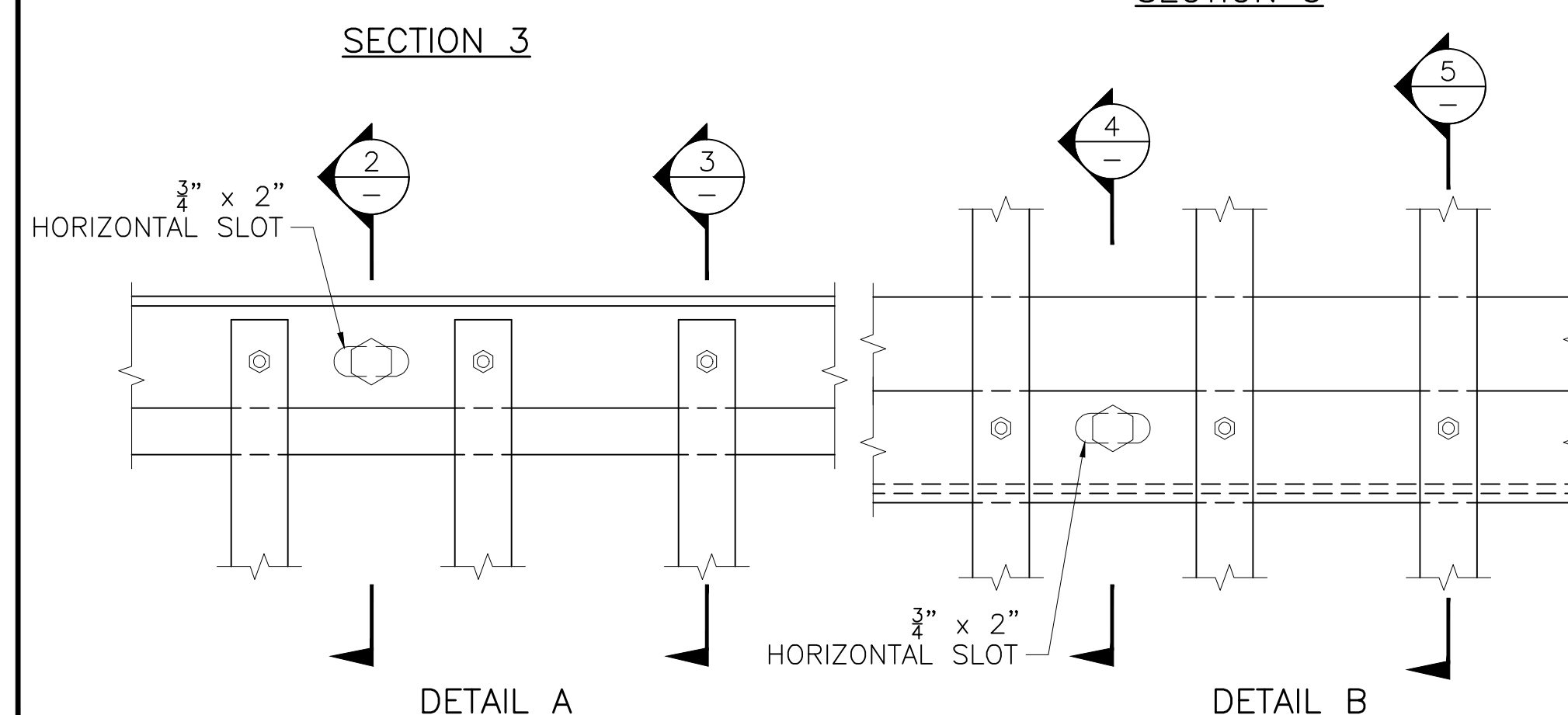
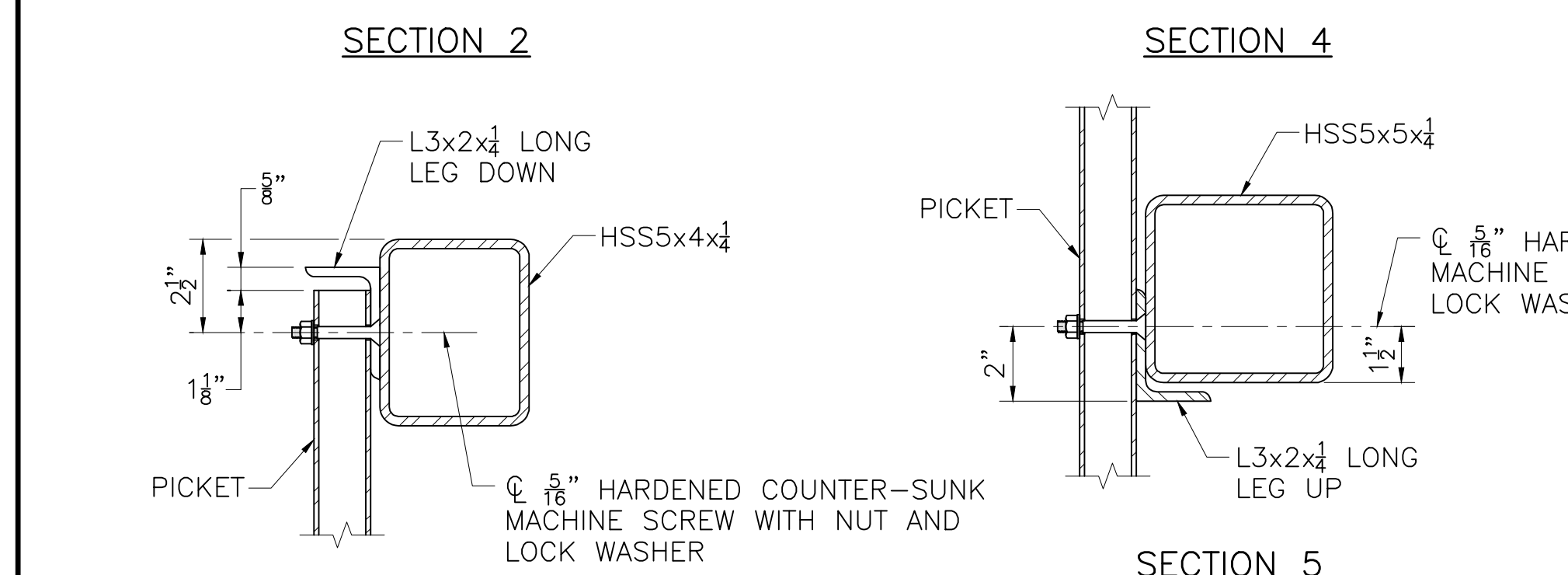
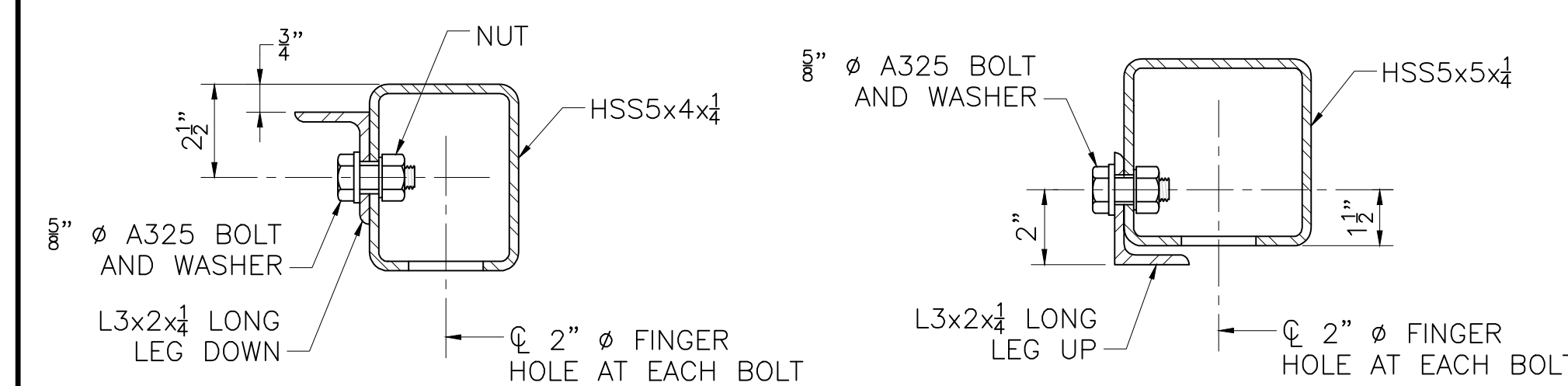
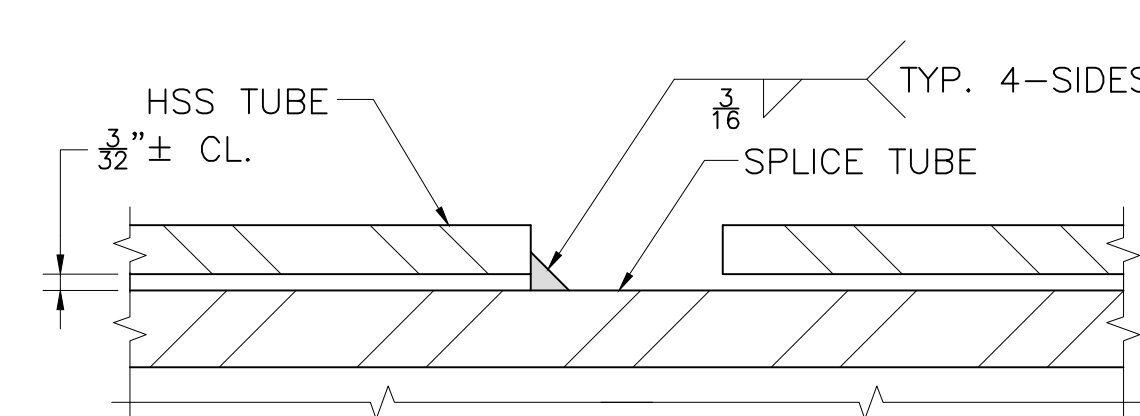
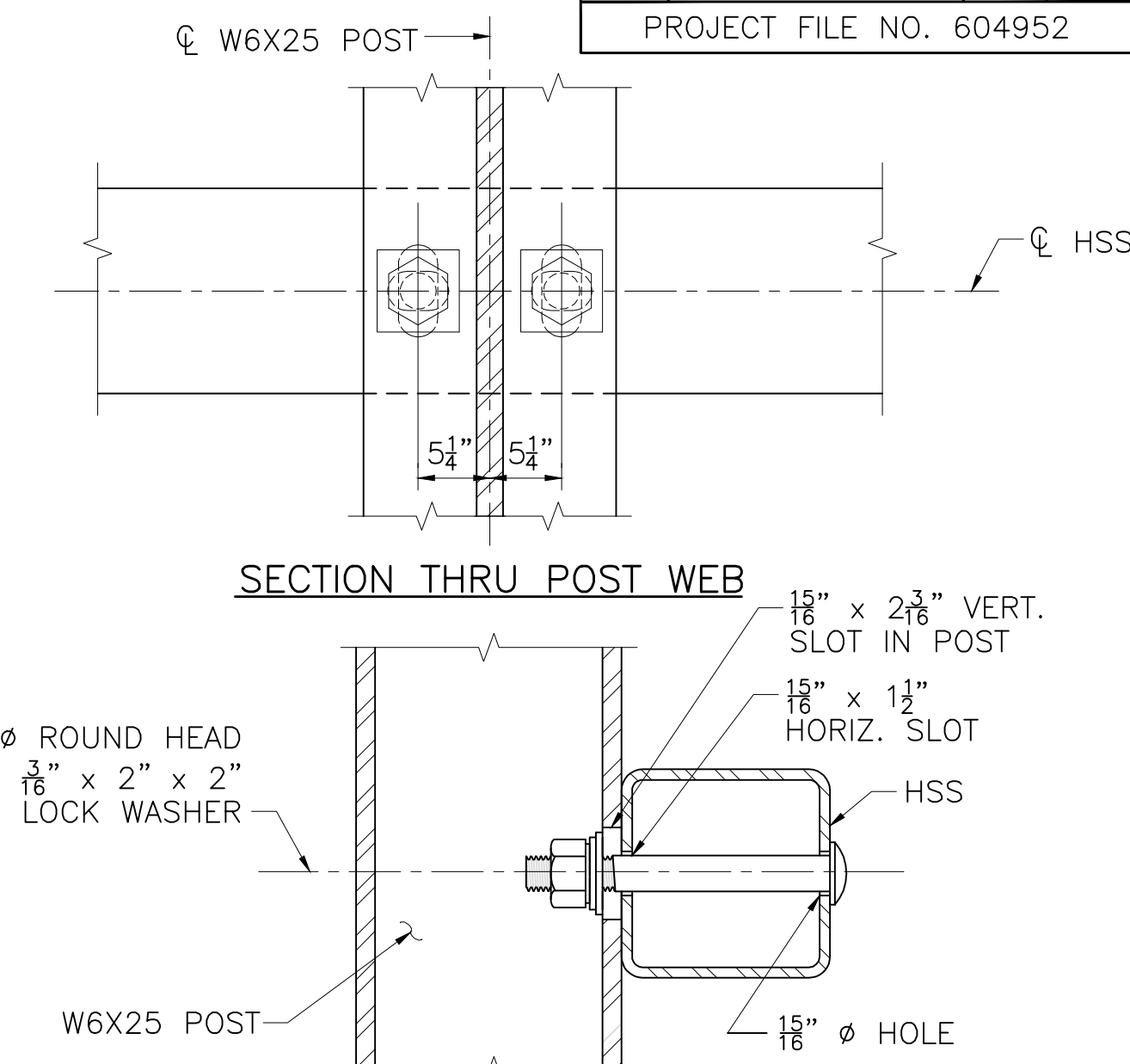
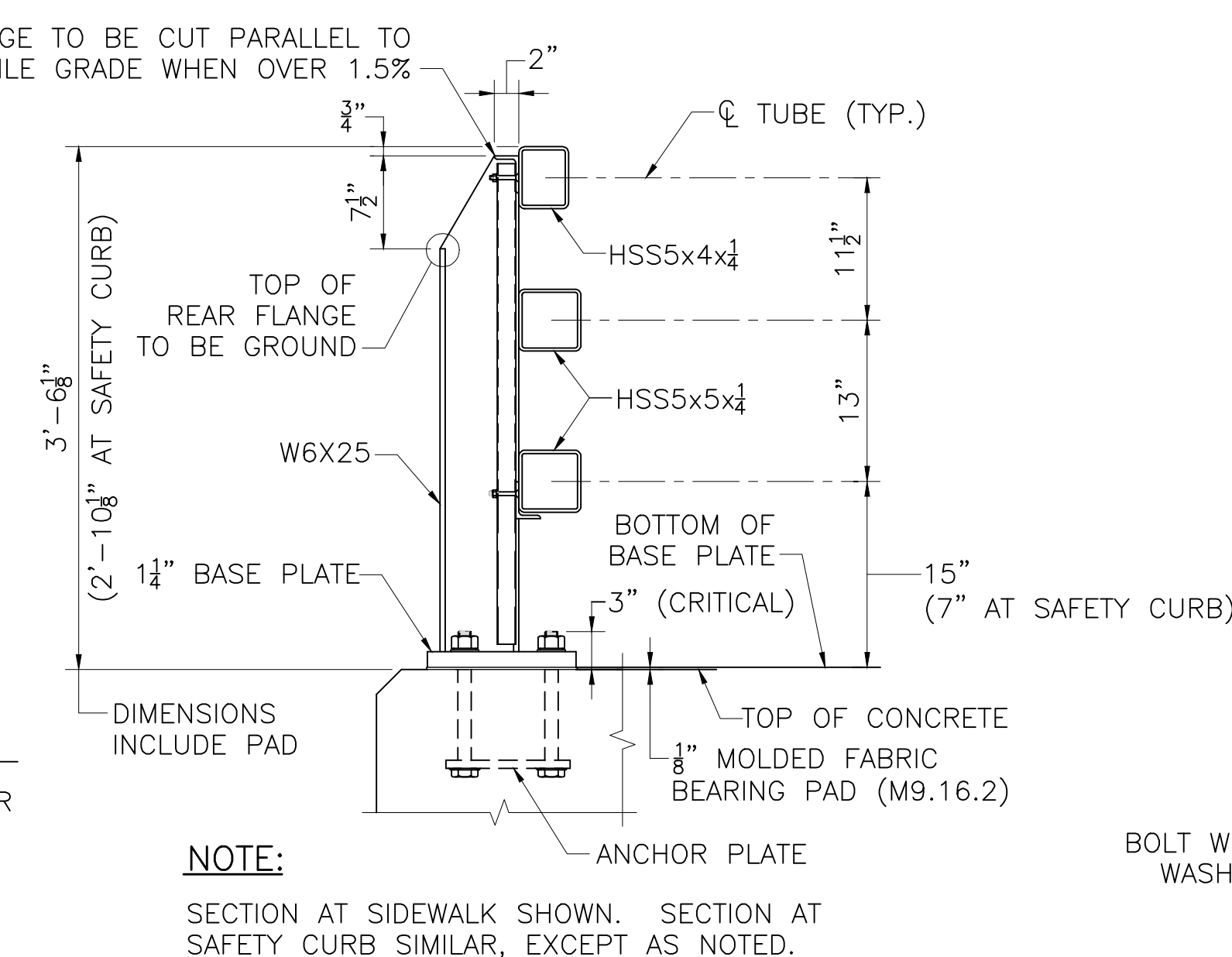
SWAY FRAME BRACING
SCALE: $\frac{1}{4}$ " = 1'-0"

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- ### RAILING NOTES:
1. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500 WITH A CERTIFIED $F_y = 50$ KSI MINIMUM. THE MINIMUM HORIZONTAL BENDING RADII OF THE HSS TUBING SHALL BE 8 FEET. PICKET CARRIER ANGLES, ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 270 GRADE 36. PICKET TUBING SHALL CONFORM TO ASTM A 513 WITH $F_y = 36$ KSI MIN. OR A 500 GRADE B.
 2. ALL STEEL (EXCEPT THE $\frac{5}{8}$ " ANCHOR PLATE AND FASTENERS) SHALL BE GALVANIZED AND PAINTED DARK BRONZE (FEDERAL STD. 595B COLOR NO. 10045). ANCHOR PLATE SHALL BE GALVANIZED ONLY. HEADS OF $\frac{5}{8}$ " ϕ ROUND HEAD BOLTS SHALL BE PAINTED TO MATCH RAIL.
 3. ANCHOR BOLTS SHALL BE SET WITH TEMPLATES. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL $1/8$ TURN AFTER STEEL IS IN PLACE.
 4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN THE PANELS OVER EXPANSION JOINT.
 5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
 6. ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADES LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
 7. POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK-GOUGED ON BACK SIDE EXCEPT AT WEB. WELD IS THE SAME ON BOTH FLANGES.
 8. $\frac{7}{8}$ " ϕ ROUND HEAD BOLTS SHALL CONFORM TO THE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 164.

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