

G:\12720\Micro\Bridges\Bridges-East\12720000100_East_Bridge_Title_Sheet.dwg Layout: 1 Cover Sheet -- Copyright 2020, George Butler Associates, Inc. Architect 00212, Professional Engineer 000133, Professional Land Surveyor 000059

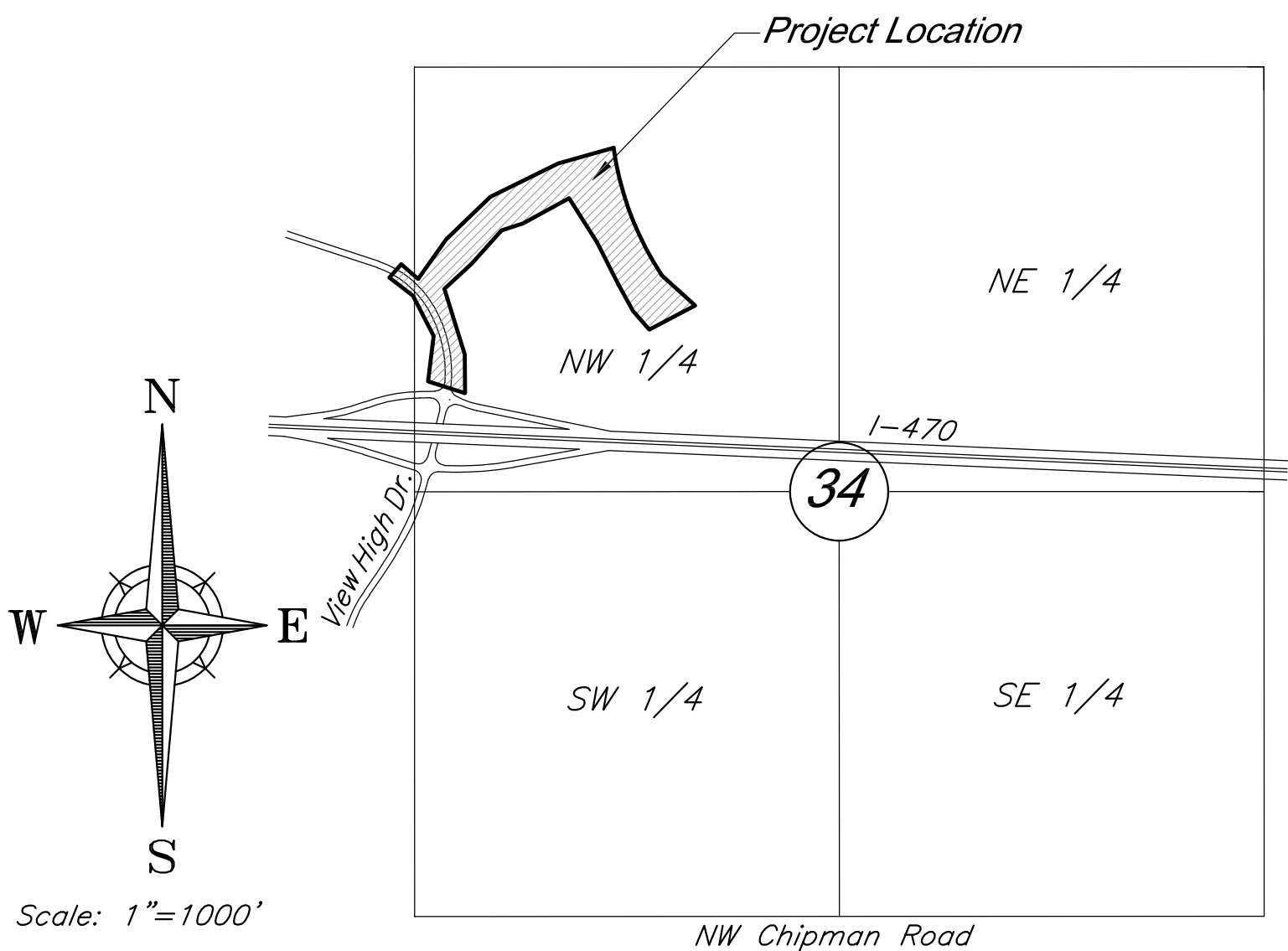
*EAST BRIDGE PLANS
FOR
PARAGON STAR DEVELOPMENT – LEE’S SUMMIT, MO
View High Dr, View High Pkwy, River Rd
Sections 33 & 34–Township 48–Range 32
City of Lee’s Summit
Jackson County, Missouri*

Summary of Quantities

Item No.	Description	Unit	Unit Quantity
1	East Bridge	L.S.	1

PROJECT BENCHMARK

BM #11 – Chiseled “L” on top
Northeast corner of concrete guardrail
at the Northeast corner of 1470 bridge
spanning View High Drive.
EL=833.80



VICINITY MAP

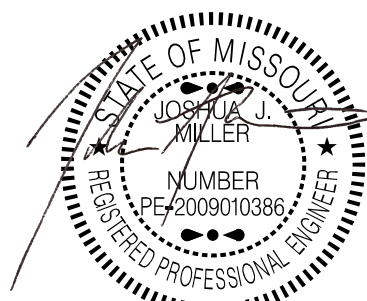
Section 33 & 34-T48N-R32W

UTILITY CONTACTS

Sanitary Sewers	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Gas	Mr. Donnie Richards Missouri Gas Energy 7500 E 35th Terrace Kansas City, MO 64129 (816) 472-9464 Fax (816) 472-3488 email: donnie.richards@sug.com
	Mr. Jeff Shook Little Blue Valley Sewer District 21101 East 78 Highway Independence, MO 64057 (816) 285-1522 email: jshook@lbvsd.net	Cable Television	Mr. Greg Thomas Time Warner Cable 8221 W. 119th Street Overland Park, KS 66213 (913) 643-1950 email: greg.thomas@twcable.com
Water	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Telephone	Ms. Glenda Charles AT&T 1425 Oak Street Kansas City, MO 64106 (816) 365-1669 Fax (816) 275-1109 email: gc6954@att.com
Electric Service	Mr. Nathan Michael Evergy P.O. Box 418679 Kansas City, MO 64141 (816) 220-5210 Fax (816) 245-3623 email: Nathan.Michael@kcpl.com		

DEVELOPED AND OWNED BY:
PARAGON STAR LLC
801 NORTHWEST COMMERCE CENTER
LEE'S SUMMIT, MISSOURI 64086
PHONE: (816) 802-6801
CONTACT: Mr. Flip Short
EMAIL: fshort@legacytouch.com

PREPARED & SUBMITTED BY:
GEORGE BUTLER ASSOCIATES, INC.
9801 RENNER BOULEVARD
LENEXA, KANSAS 66219
PHONE: 913-492-0400
FAX: 913-577-8312
CONTACT: BRAD BURTON P.E.
EMAIL: BBURTON@GBATEAM.COM



PROJECT ENGINEER:

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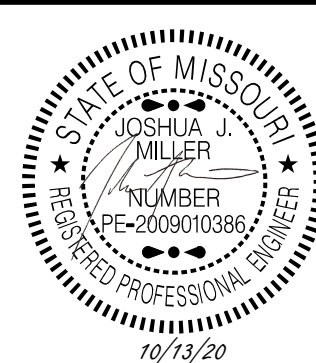
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EAST BRIDGE
(50'-105'-50') PRESTRESSED CONCRETE NU-GIRDER SPANS

SEC/SUR 34

TWP 48N

RGE 32W



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Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE: 09-17-20
DESIGN BY: JJM
DRAWN BY: DWM
PROJECT NO.: 12720
SHEET NO. 1
TOTAL SHEETS 30

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

East Bridge Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

BM #11 Chiseled "L" on top Northeast corner of concrete guardrail at Northeast corner of I-470 Bridge spanning View High Drive. Elev. = 833.80

Notice and Disclaimer Regarding Boring Log Data

"" Indicates location of borings.

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the Geotechnical Engineer for the design of the bridge, are shown on Sheet No. 30. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the Engineer or elsewhere.

The Engineer does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this bridge. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here, or on any other documentation not expressly warranted, which the contractor may obtain from the Engineer.

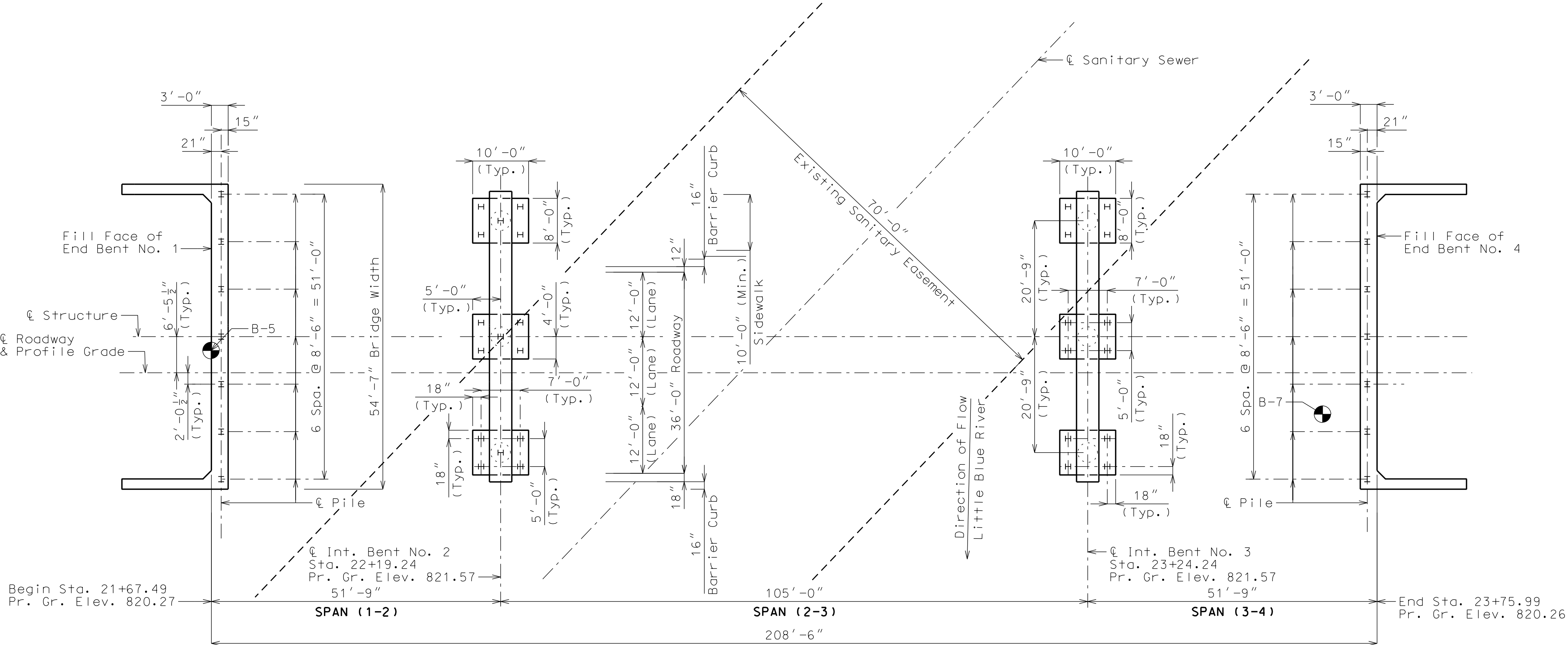
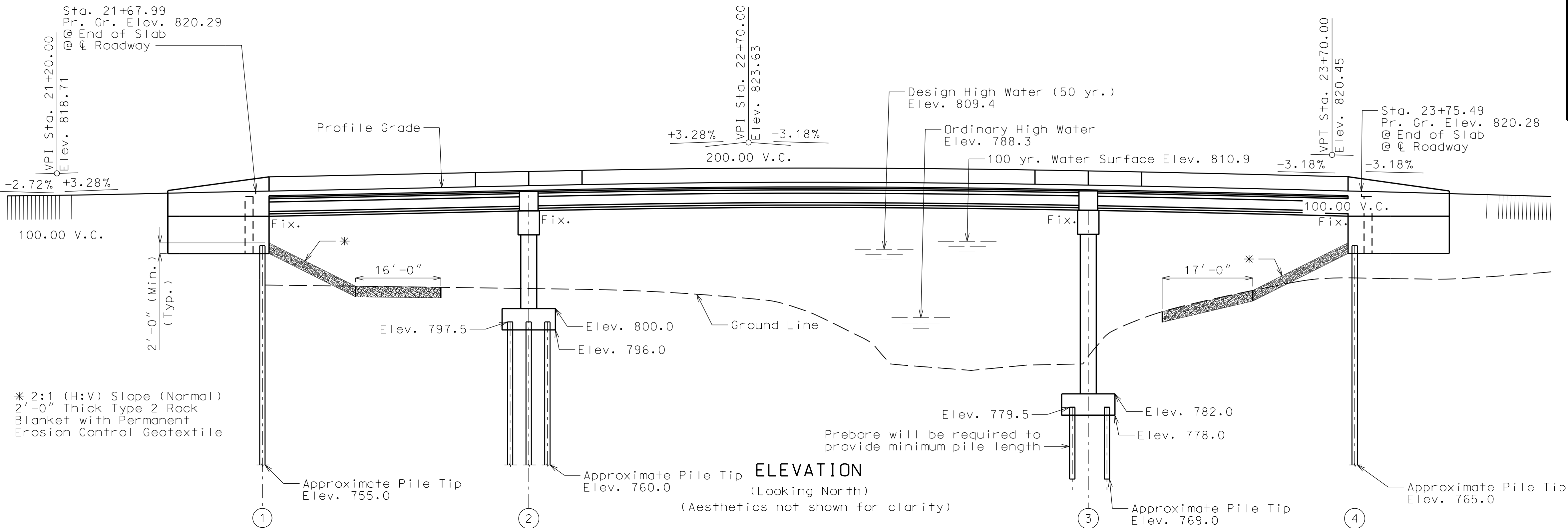
Hydrologic Data
Drainage Area = 56.8 (sq. mi.) Design Flood Frequency = 50 years Design Flood Discharge = 4,794 cfs Design Flood (D.F.) Elevation = 809.4
Base Flood (100-year)
Base Flood Elevation = 810.9 Base Flood Discharge = 5,636 cfs Estimated Backwater = 0.1 ft Average Velocity thru Opening = 2.4 ft/s
Freeboard (50-year)
Design High Water = 809.4 Freeboard = 2.6 ft
Roadway Overtopping
Overtopping Flood Frequency >500 years

Notes:

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.

All bents are parallel.

All longitudinal dimensions shown are horizontal.



PLAN

Note: This drawing is not to scale. Follow dimensions.

BRIDGE: EAST PARAGON PARKWAY OVER LITTLE BLUE RIVER

General Notes:

Design Specifications:
2012 AASHTO LRFD Bridge Design Specifications (6th Ed.) and 2013 Interim Revisions.
Seismic Design Category = A
All referenced specifications shall refer to Missouri Standard Specifications for Highway Construction unless otherwise noted. Construction of the bridge shall conform to the MoDOT standard specification. Payment for construction of the bridge shall be completely covered by the lump sum.

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 70 lb/cf

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 4,000 psi
Class B-1 Concrete (Barrier Curb) f'c = 4,000 psi
Class B-2 Concrete (Superstructure except Barrier Curb) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50S) fy = 50,000 psi
For Precast Prestressed Panel Stresses, see Sheet No. 17.
For Prestressed Girder Stresses, See Sheets No. 14 & 15.

Neoprene Pads:
Plain and Laminated Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec 716.

Joint Filler:
All joint filler shall be in accordance with Section 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.
All reinforcement shall be epoxy coated.

Minimum clearance between galvanized piles and uncoated (plain) bar supports shall be 1 1/2". Nylon, PVC, or other polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Miscellaneous:
City Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

- ☐ Constant Joint Filler
☐ Variable Joint Filler

FOUNDATION DATA					
TYPE	DESIGN DATA	BENT NUMBER			
		1	2	3	4
Load Bearing Pile	Pile Type and Size	HP12x53	HP12x53	HP12x53	HP12x53
	Number	ea	7	15	12
	Approximate Length per Each	ft	55	38	10
	Pile Point Reinforcement	ea	7	15	12
	Min. Galvanized Penetration (Elev.)	ft	full depth	full depth	full depth
	Est. Max. Scour Depth 500 (Elev.)	ft	794	790	792
	Pile Driving Verification Method		WEAP	DT	DT
	Resistance Factor		0.5	0.65	0.65
	Minimum Nominal Axial Compressive Resistance	kip	428	512	540

WEAP = Wave Equation Analysis of Piles

Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor

Prebore for piles at Bent No. 3 to elevation 769.0.

HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702.

All piles shall be galvanized to the full length of pile.

Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.

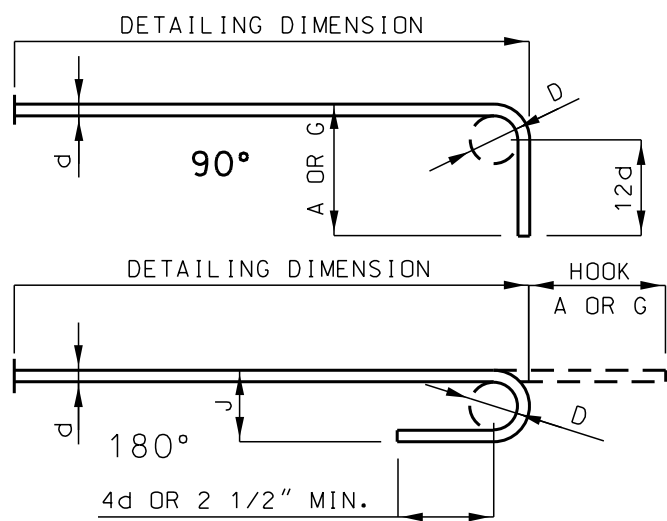
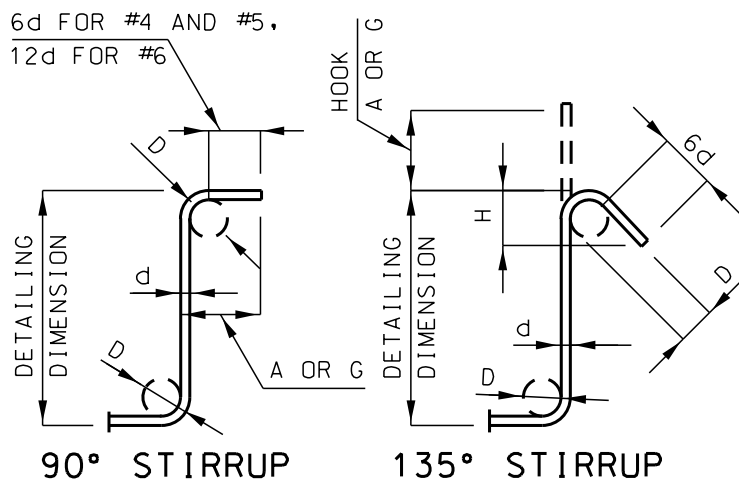
The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of the minimum will be considered acceptable provided the contractor makes the necessary corrections to ensure the minimum penetration is achieved on subsequent piles.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II, or III.

Contractor to provide shoring plan for piers signed and sealed by a professional engineer licensed in the State of Missouri.

For all drill and grout applications the contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039

Contractor shall provide rebar shop drawings for review prior to ordering reinforcement.



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS	90° HOOKS	
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

DATE: 09-17-20

DESIGN BY: JJM

DRAWN BY: DWM

PROJECT NO.: 12720

SHEET NO. 2

TOTAL SHEETS 30

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9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
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East Bridge Plans

Paragon Star Development

Lee's Summit, Missouri

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

NO. DATE

REVISIONS

BY APPROVED

GENERAL NOTES

Note: This drawing is not to scale. Follow dimensions.

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JOSHUA J. MILLER
REGISTERED PROFESSIONAL ENGINEER
10/13/20

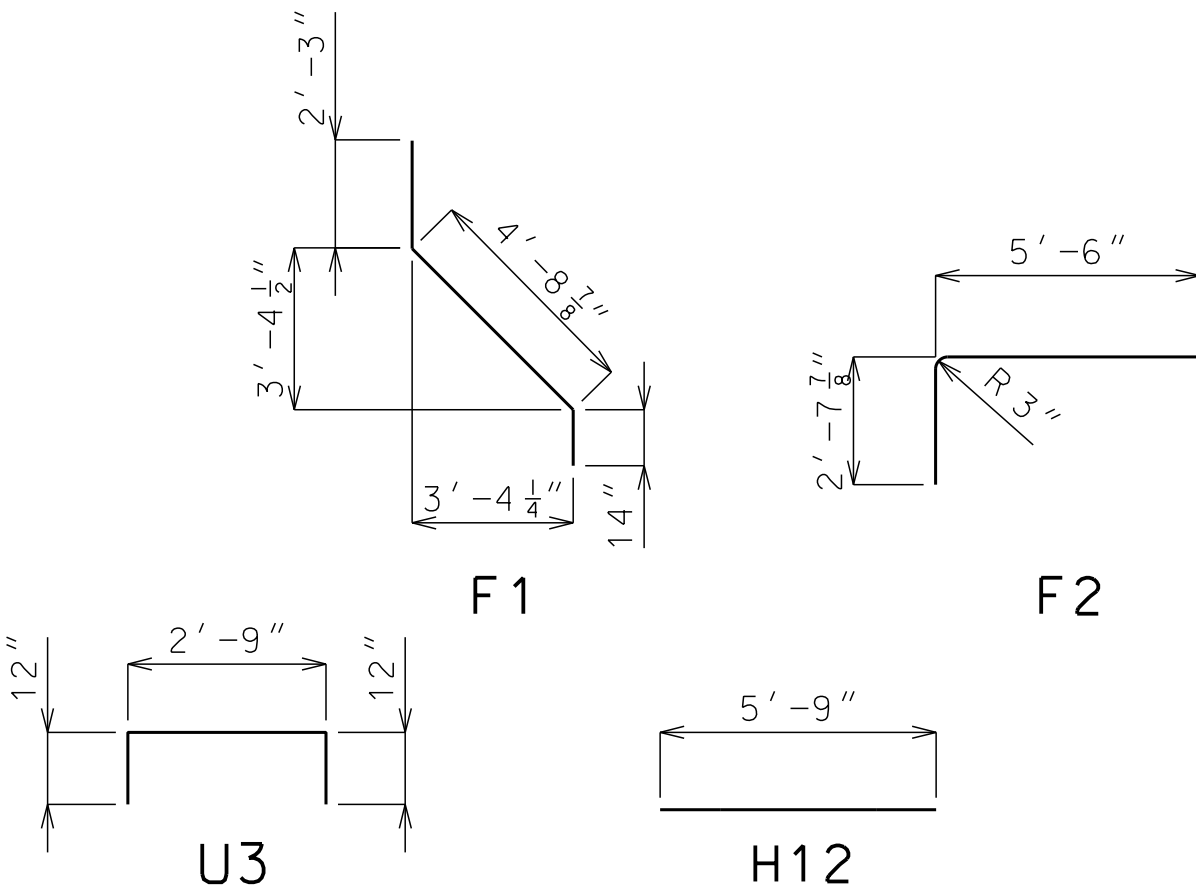
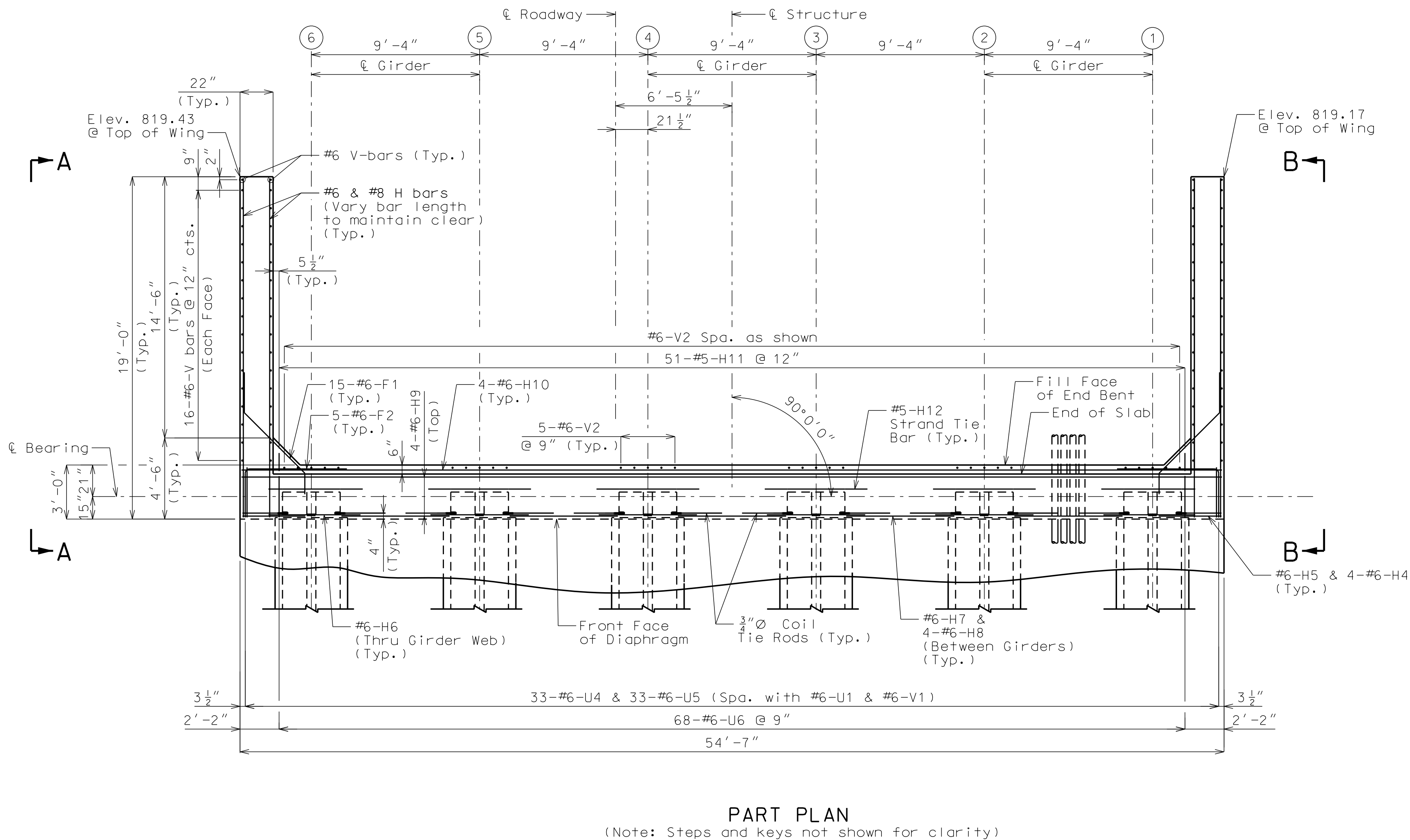
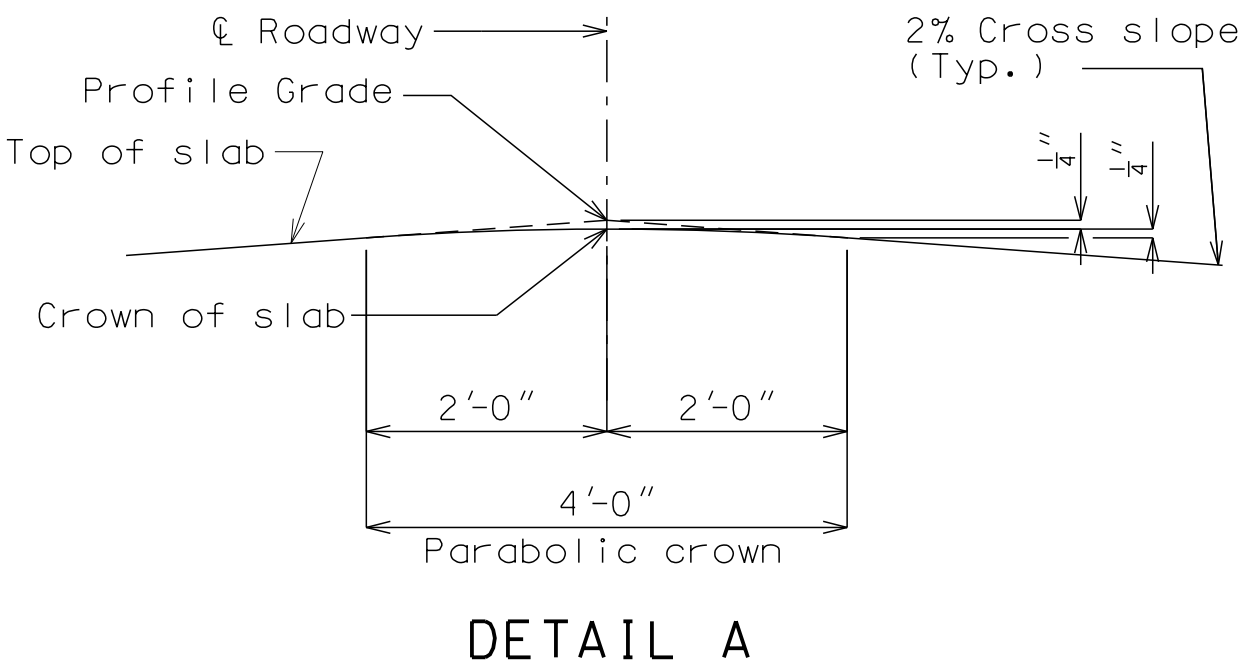
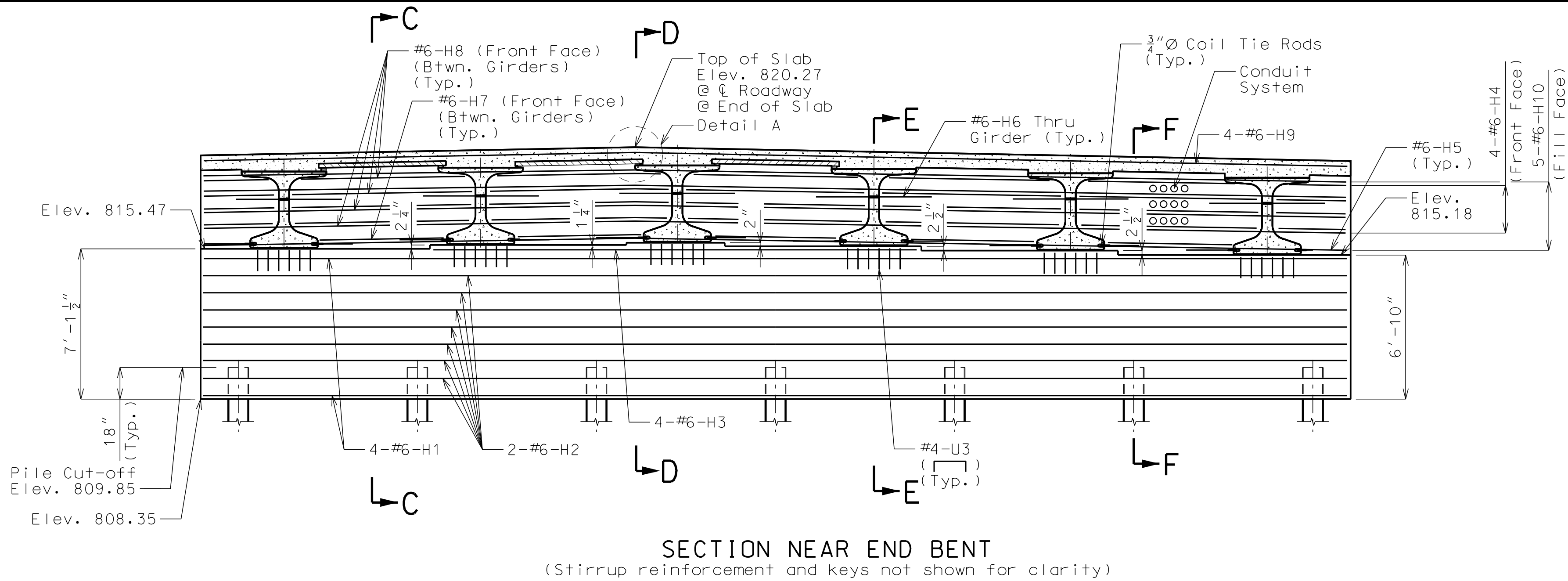
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PROJECT NO.: 12720
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GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

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Lee's Summit, Missouri

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

NO. DATE REVISIONS BY APPROVED



Notes:

For details of End Bent No. 1 not shown, see Sheets No. 3 & 5.

For details of Vertical Drain at End Bents, see Sheet No. 6.

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1 1/2".

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

For reinforcement of Barrier Curb, see Sheets No. 21-23 and 26.

Reinforcing steel shall be shifted as necessary to miss conduit system.

For Conduit Details, see Sheet No. 26 and 27.

For Elevations A-A & B-B, See Sheet No. 5.

For Sections C-C, D-D, E-E & F-F See Sheet No. 5.

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

NUMBER
PE-2009010386

DATE: 09-17-20

DESIGN BY: JJM

DRAWN BY: DWM

PROJECT NO.: 12720

SHEET NO. 5

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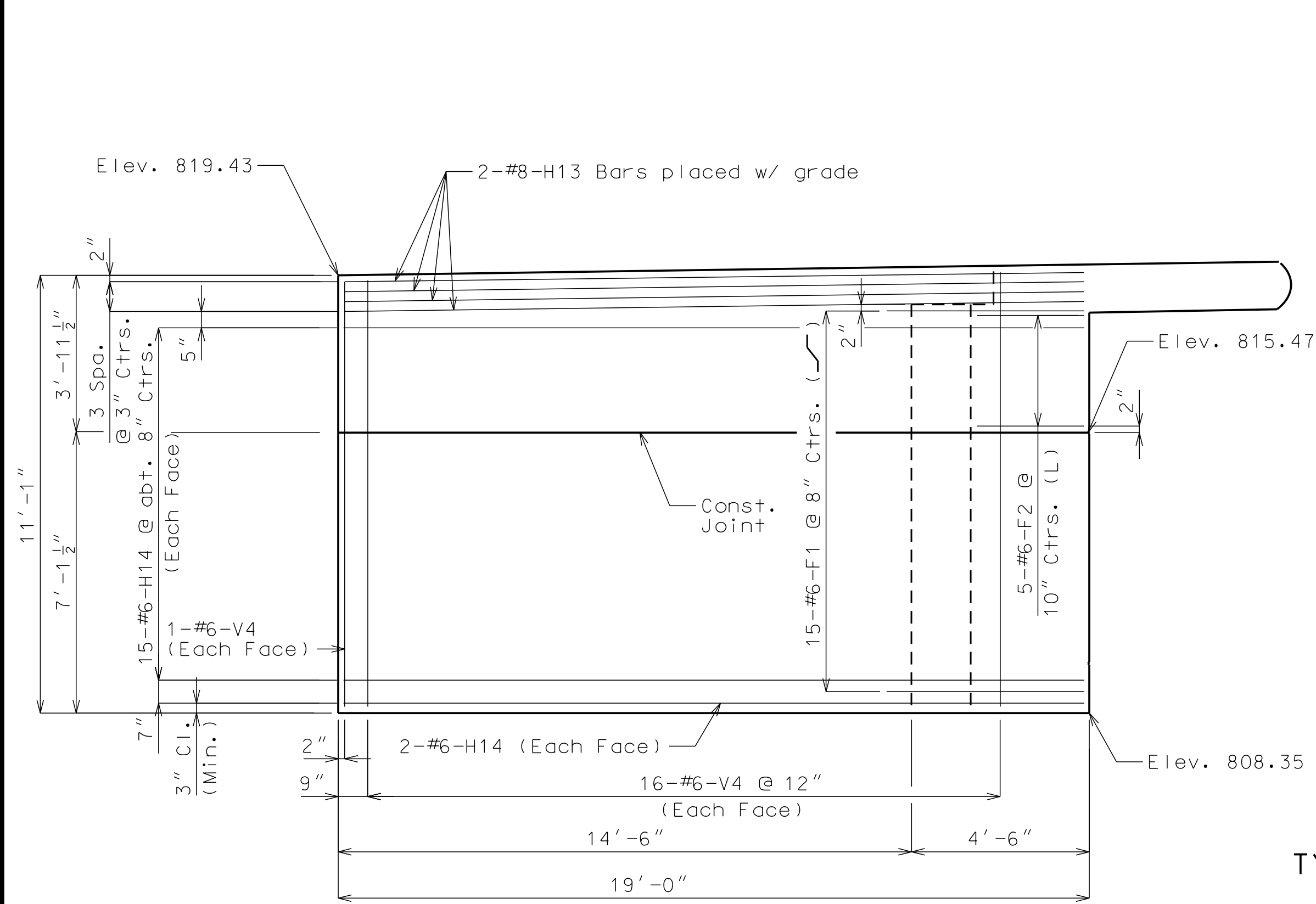
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Lee's Summit, Missouri

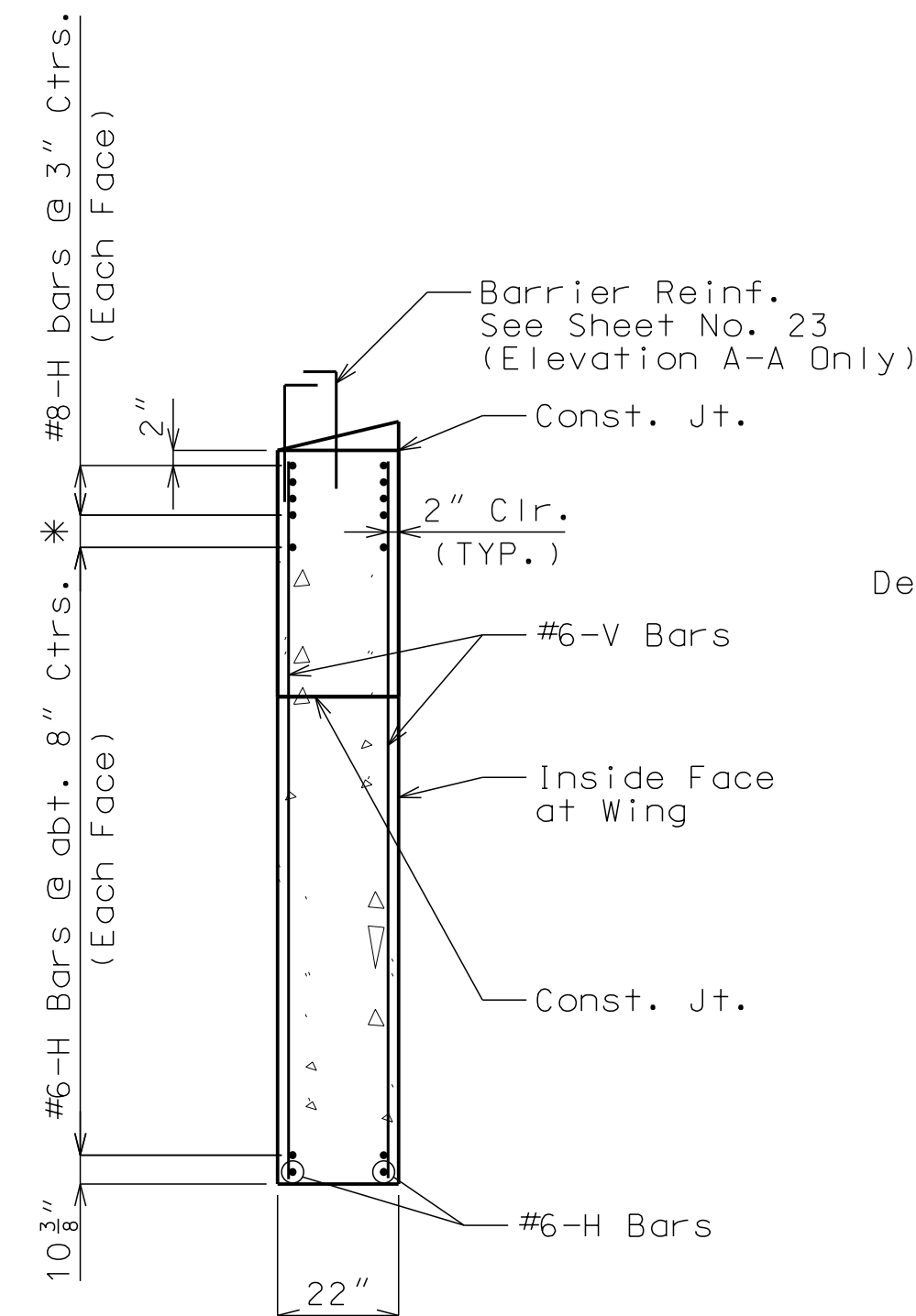
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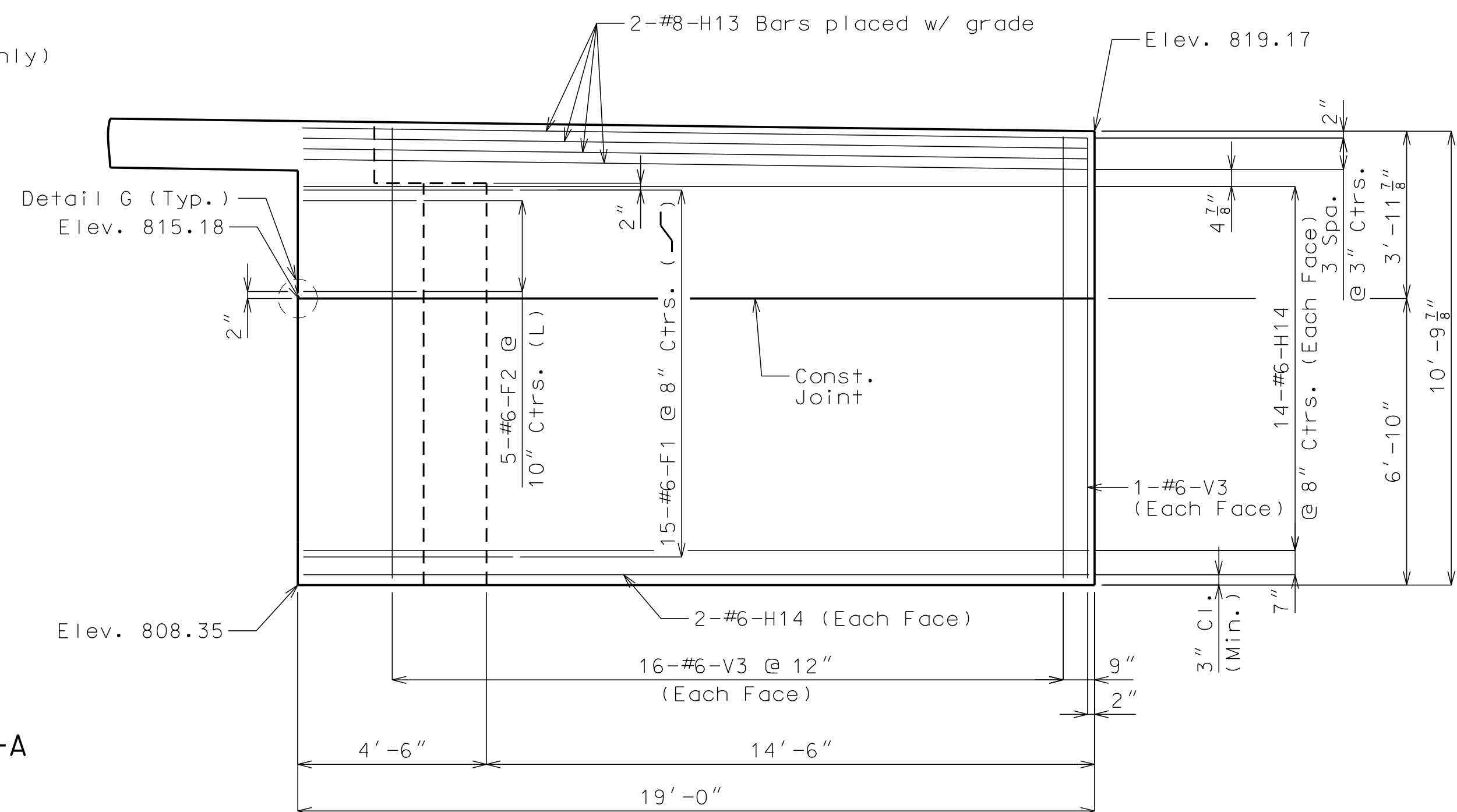
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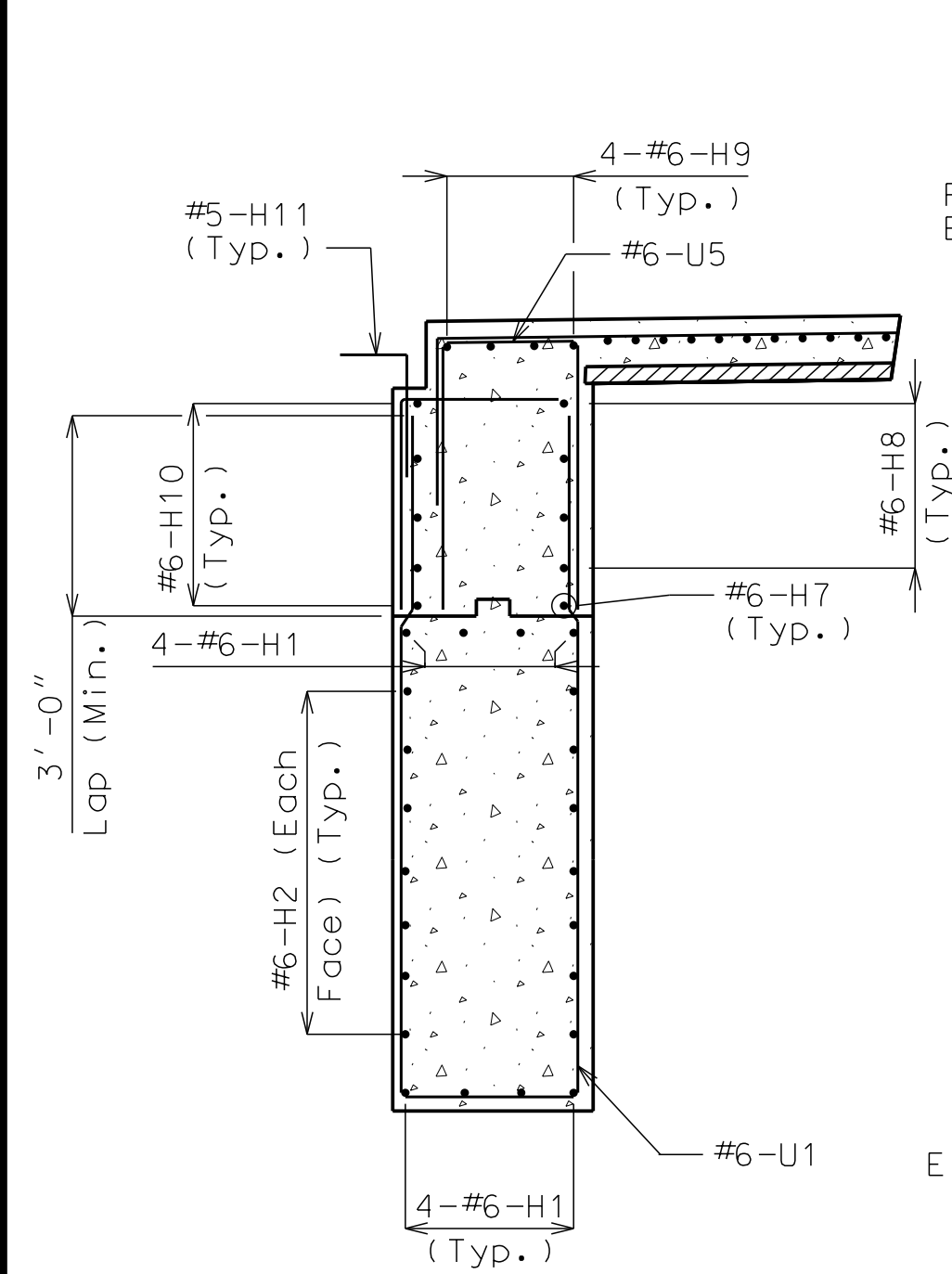
ELEVATION A-A



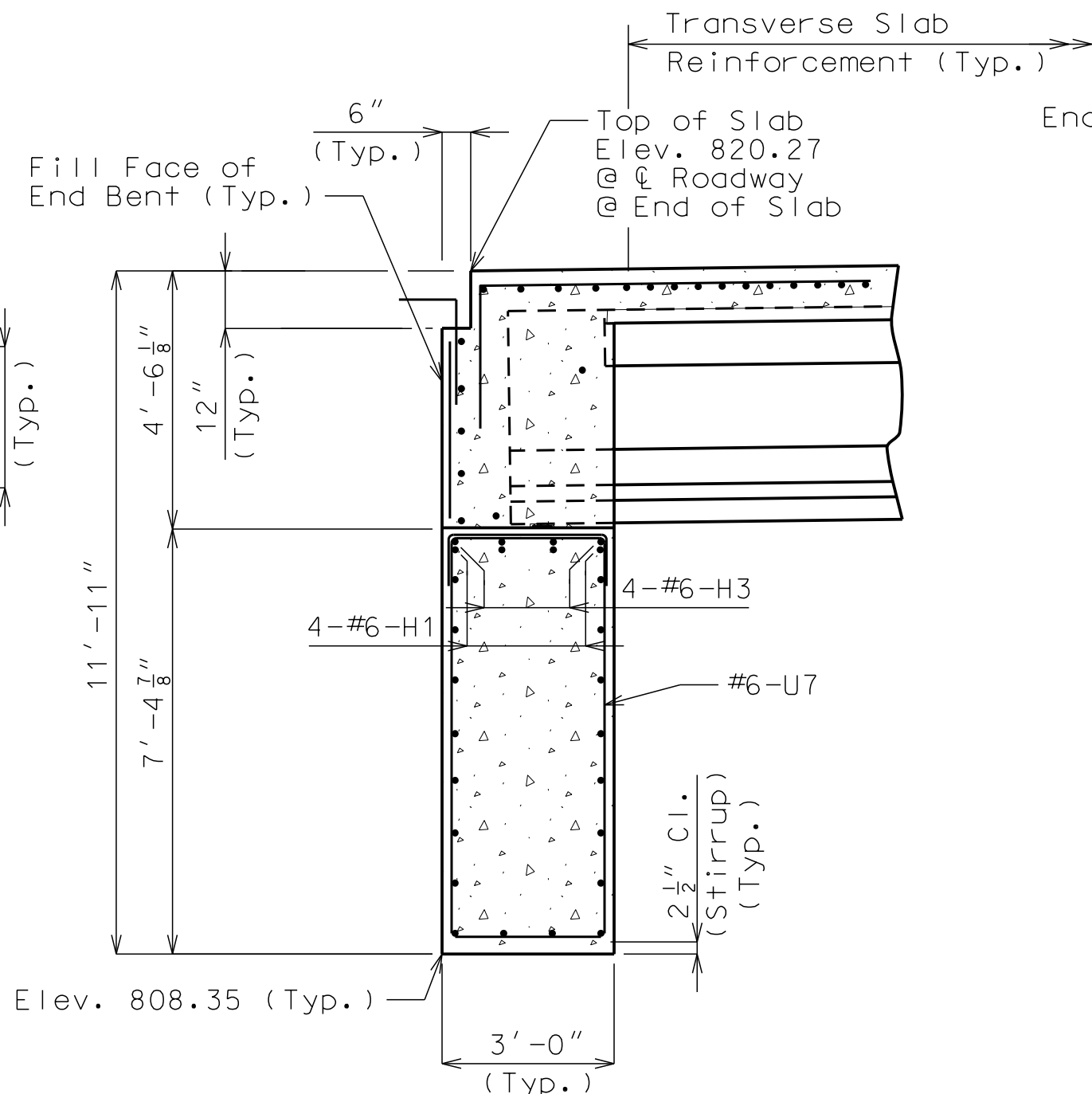
TYPICAL SECTION THRU ELEVATION A-A
Looking down station
(*Varies)



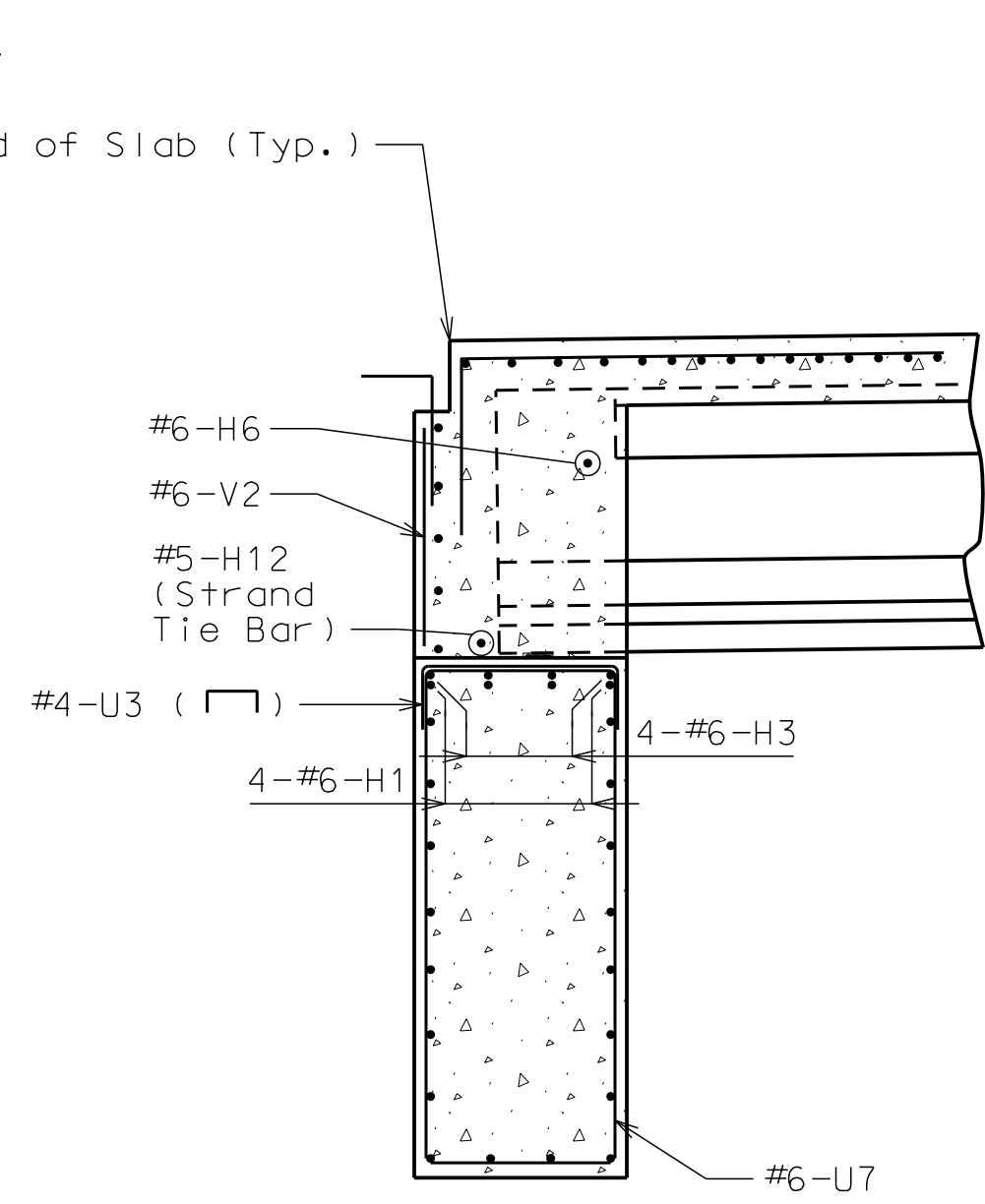
ELEVATION B-B



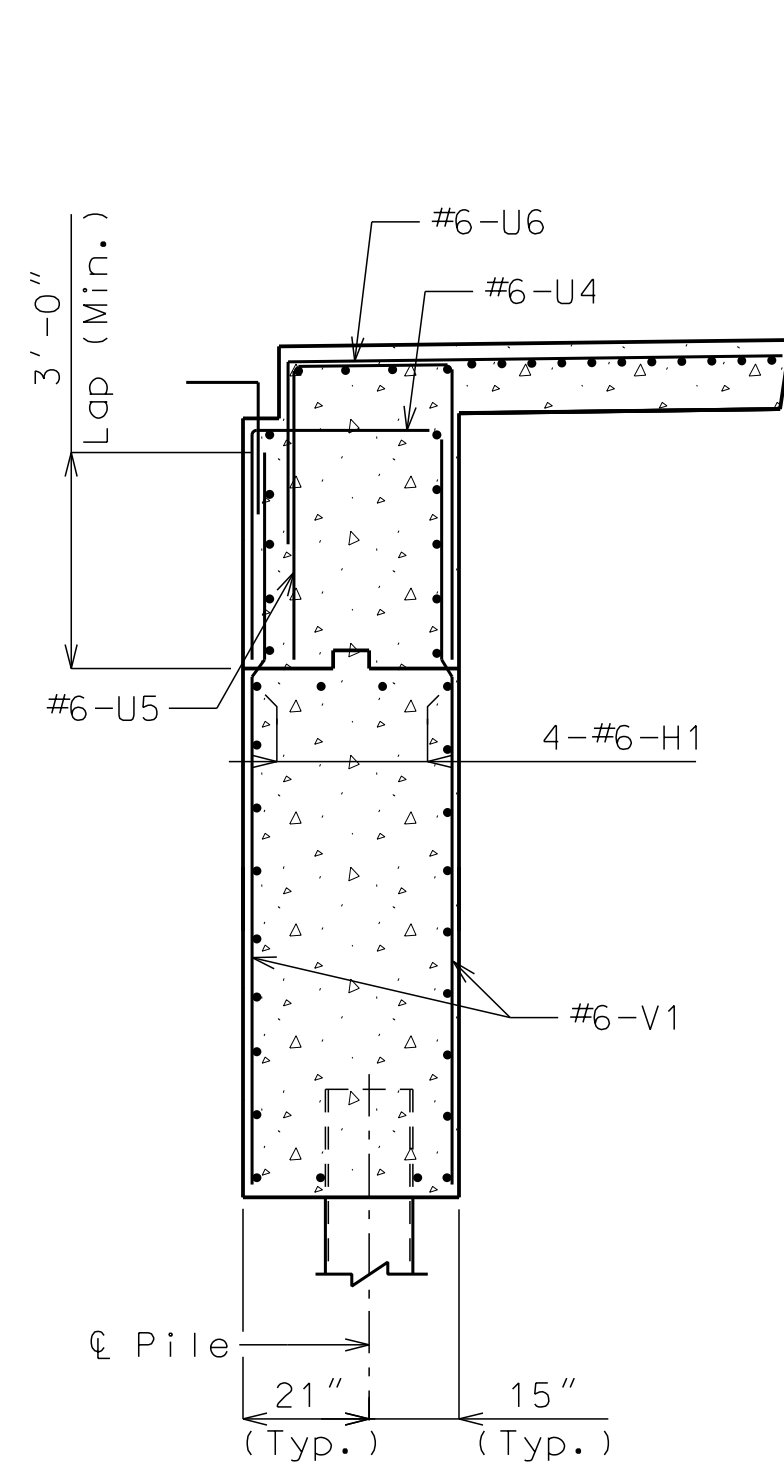
SECTION C-C



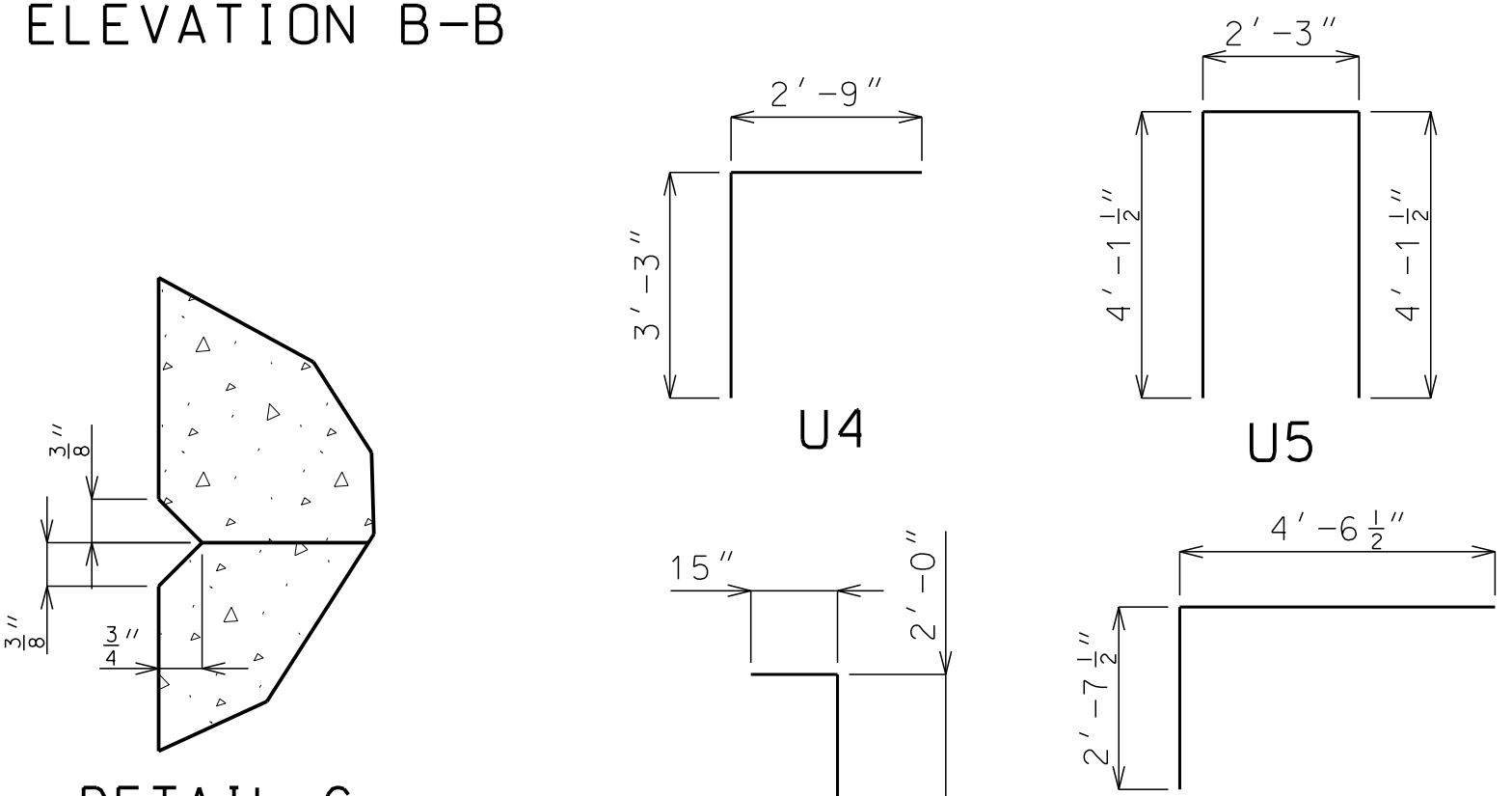
SECTION D-D



SECTION E-E



SECTION F-F



BAR BENDING DIAGRAMS

Notes:

For details of End Bent No. 1 not shown, See Sheets No. 3 & 4.

For location of Elevations A-A & B-B, See Sheet No. 4.

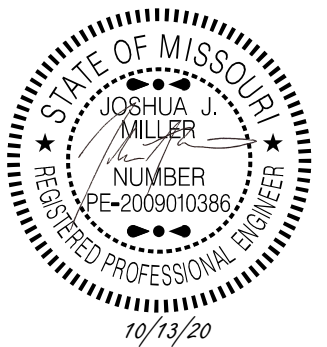
For location of Sections C-C, D-D, E-E & F-F See Sheet No. 4.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inch.

For reinforcement of Barrier Curb, See Sheets No. 21-23 and 26.

HP pile shall be galvanized to the minimum galvanized penetration (elevation) (See Foundation Data).

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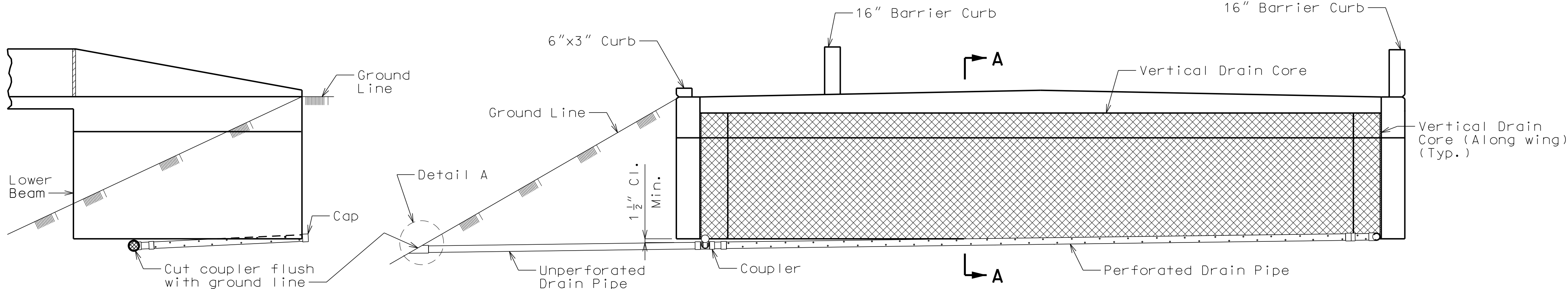
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PROJECT NO.: 12720

SHEET NO. 6
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JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

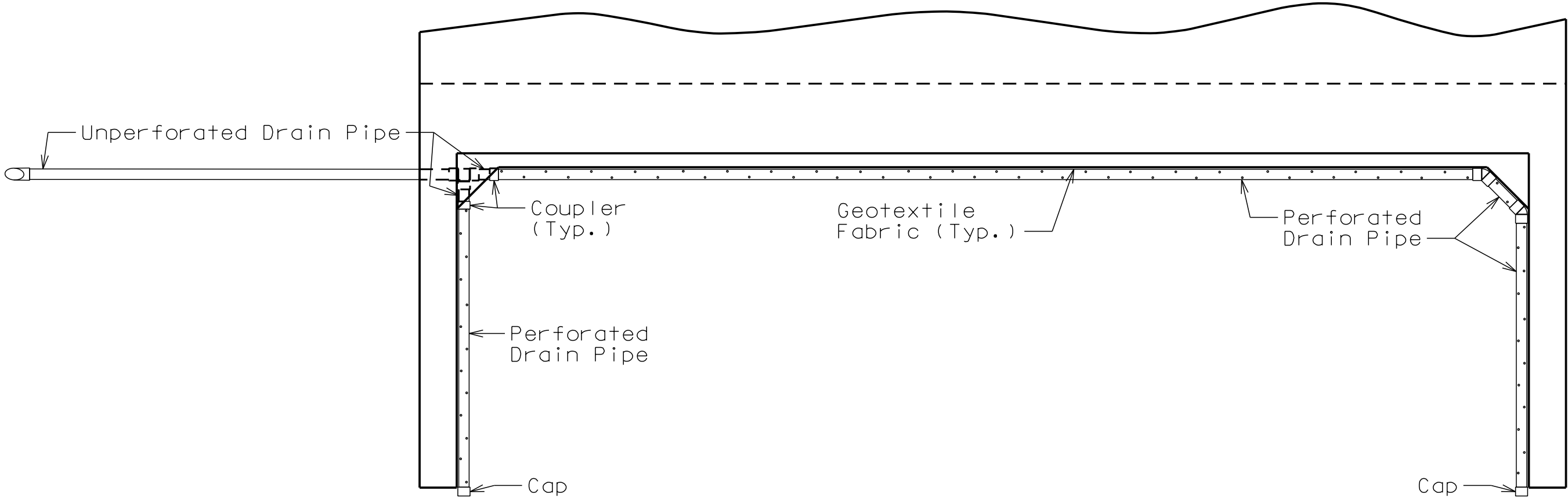
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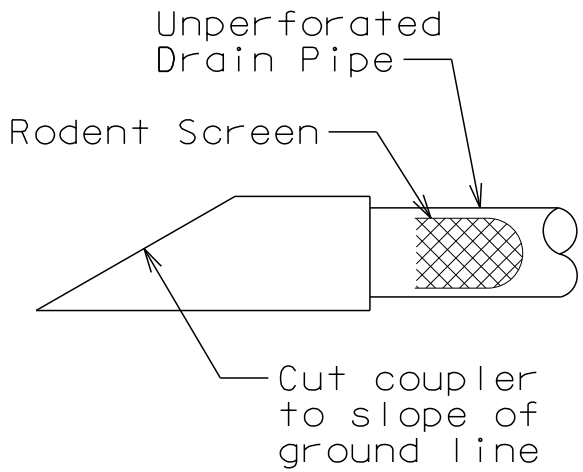


ELEVATION OF SOUTH WING

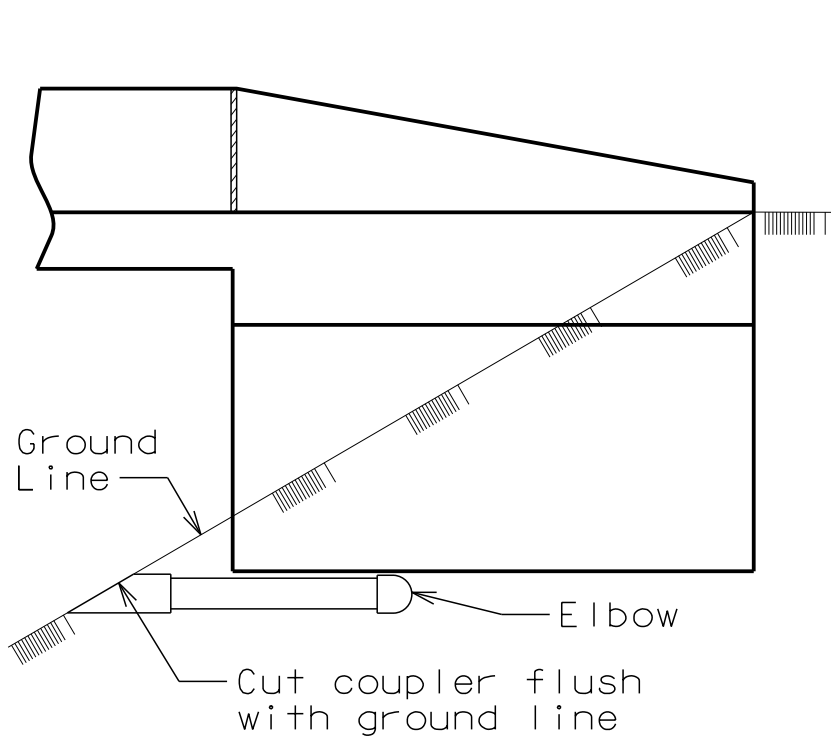
ELEVATION OF END BENT



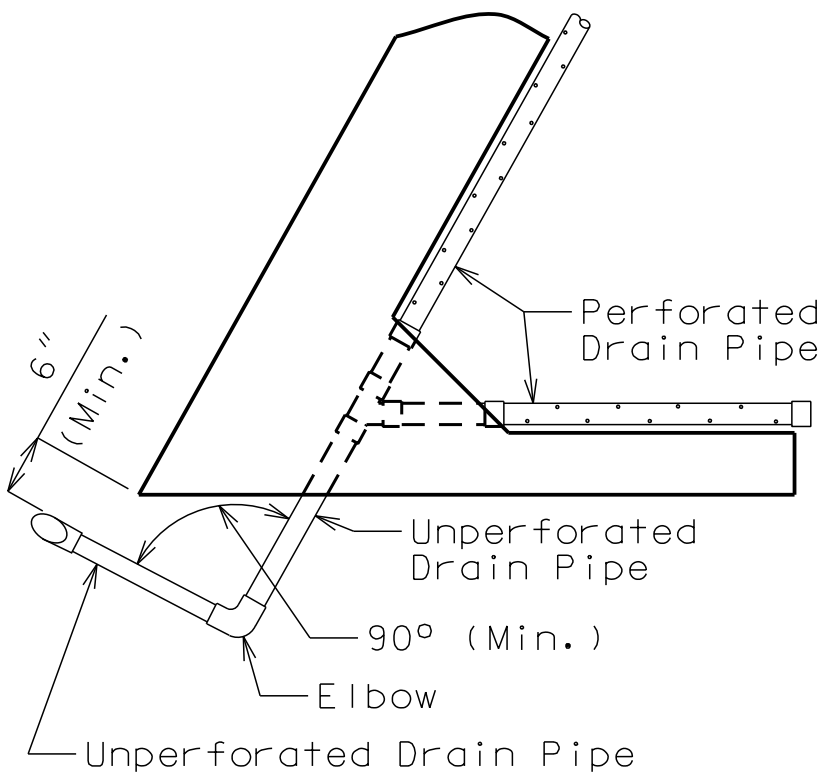
PLAN OF END BENT



DETAIL A



ELEVATION OF SOUTH WING

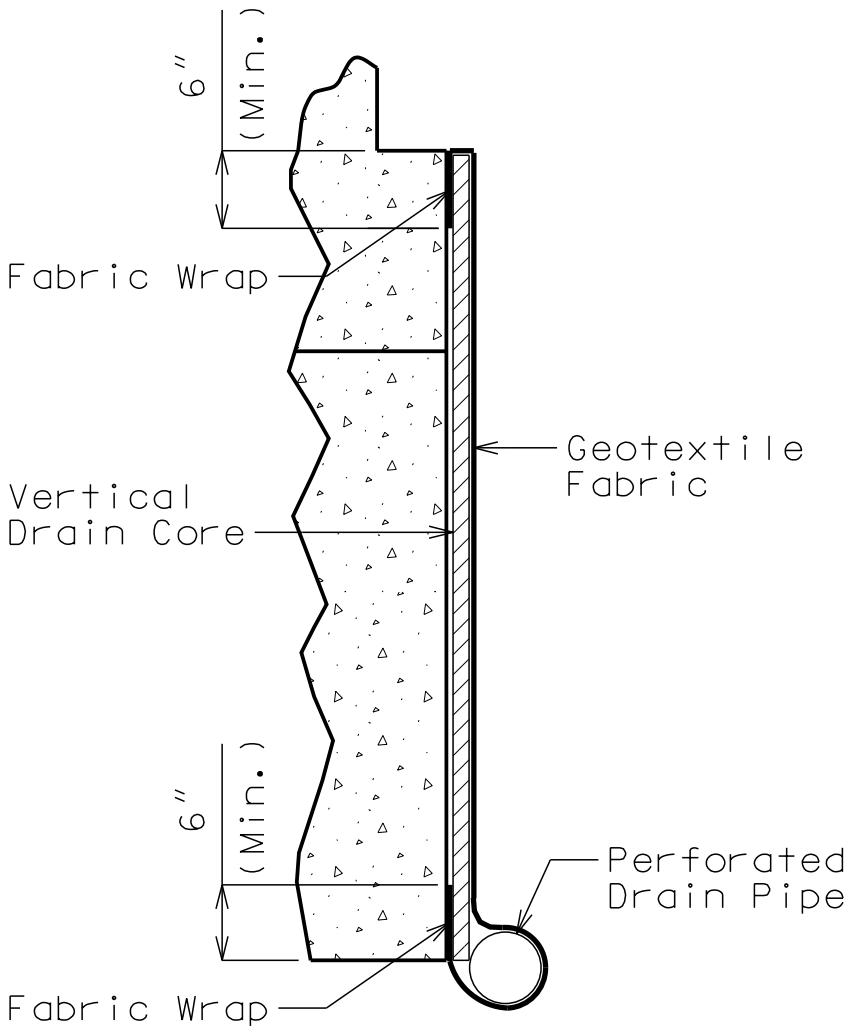


PART PLAN

OPTIONAL TURNED DRAIN

(Only if rock is encountered outside of wing)

VERTICAL DRAIN AT END BENTS
(Squared end bent shown, skewed end bent similar)



PART SECTION A-A
(Section thru wing similar)

General Notes:

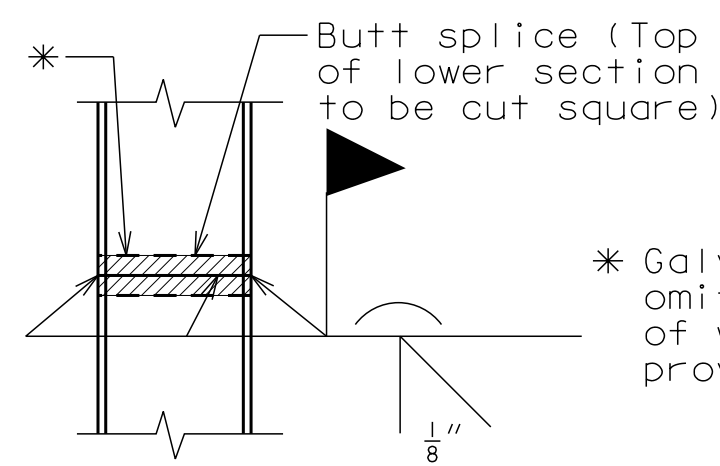
All drain pipe shall be sloped 1 to 2 percent.

Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe underdrain, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.

Drain pipe shall be placed at fill face of end bent and inside face of wings. The pipe shall slope to lowest grade of ground line, also missing the lower beam of end bent by a minimum of 1 1/2 inches.

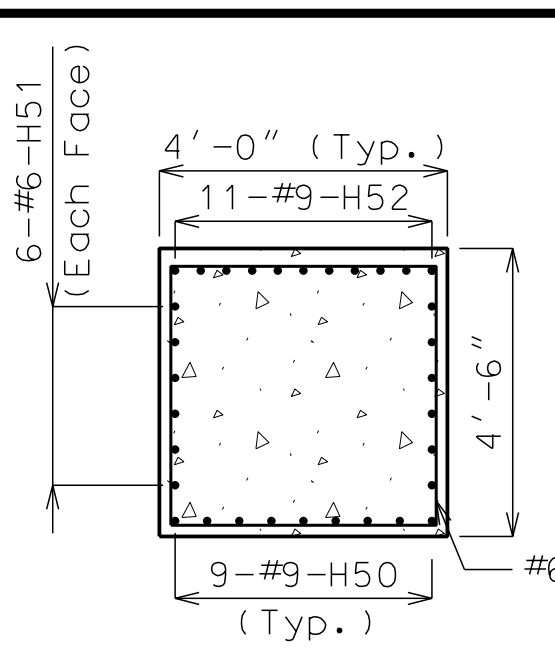
Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

Note: This drawing is not to scale. Follow dimensions.

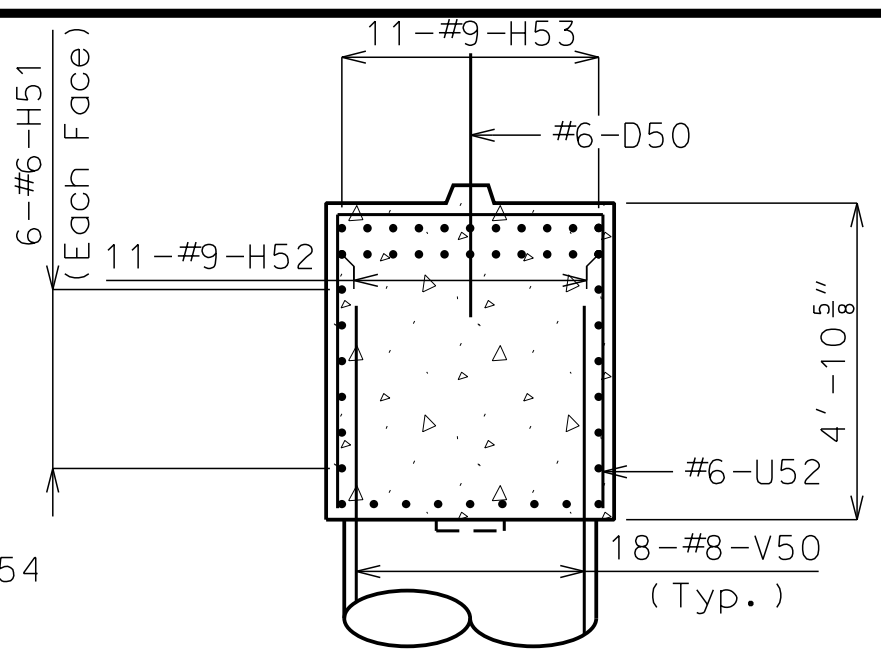


STEEL PILE SPLICE
(if required)

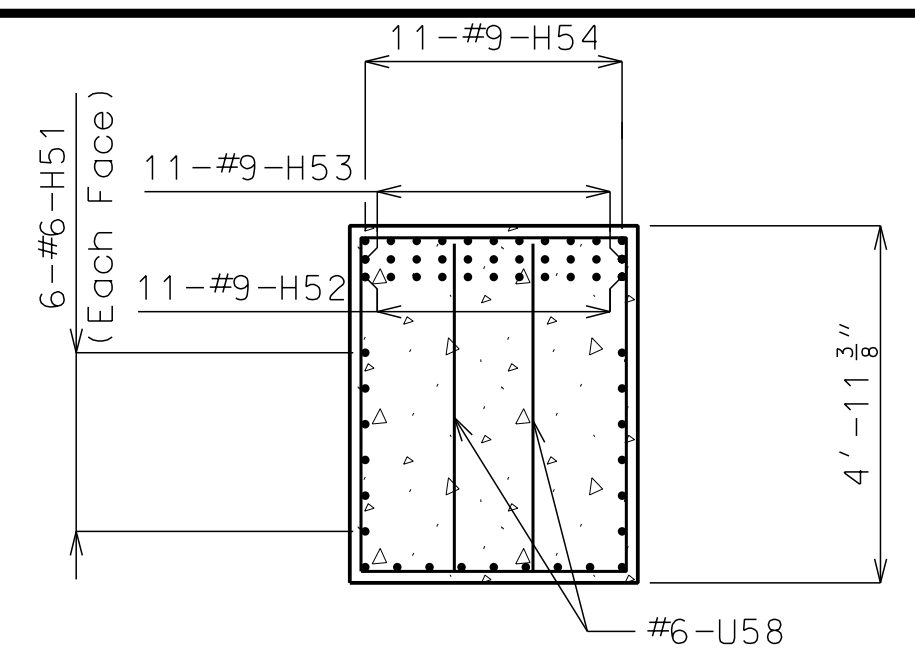
* Galvanizing material shall be omitted or removed 1 inch clear of weld locations. See special provisions.



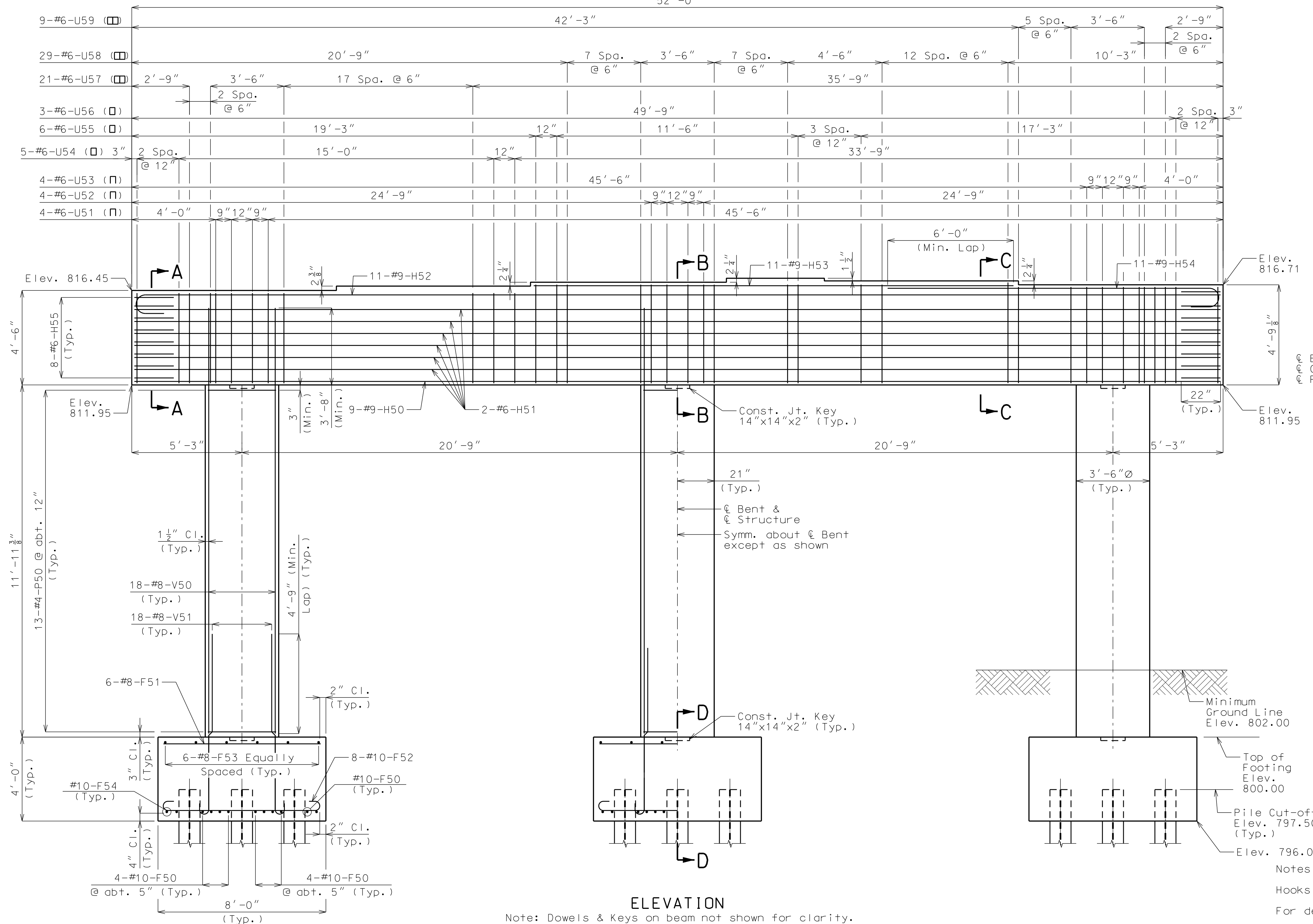
SECTION A-A



SECTION B-B



SECTION C-C



ELEVATION

Note: Dowels & Keys on beam not shown for clarity.

DETAILS OF INTERMEDIATE BENT NO. 2

Note: This drawing is not to scale. Follow dimensions.



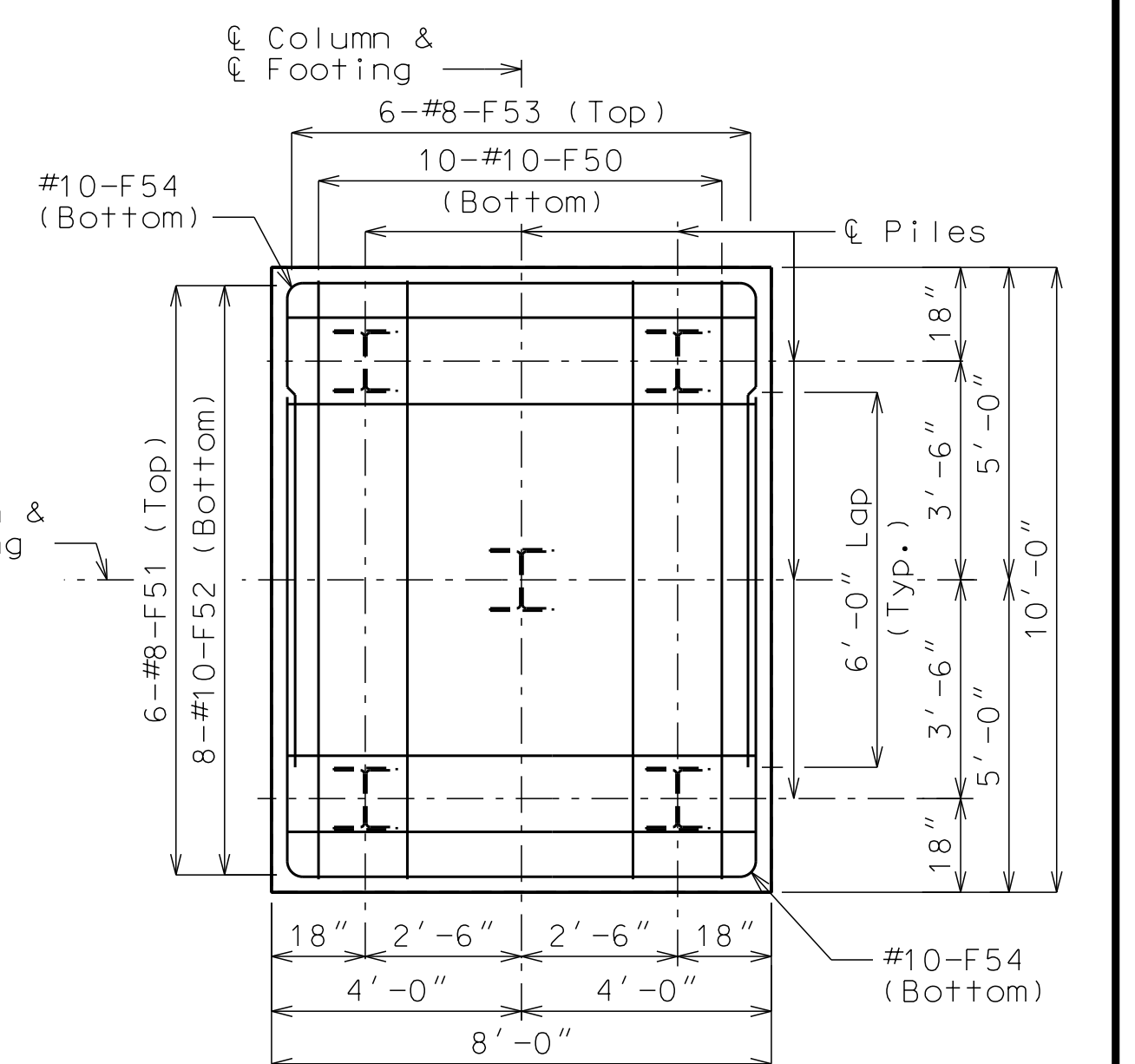
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
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DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
7	30

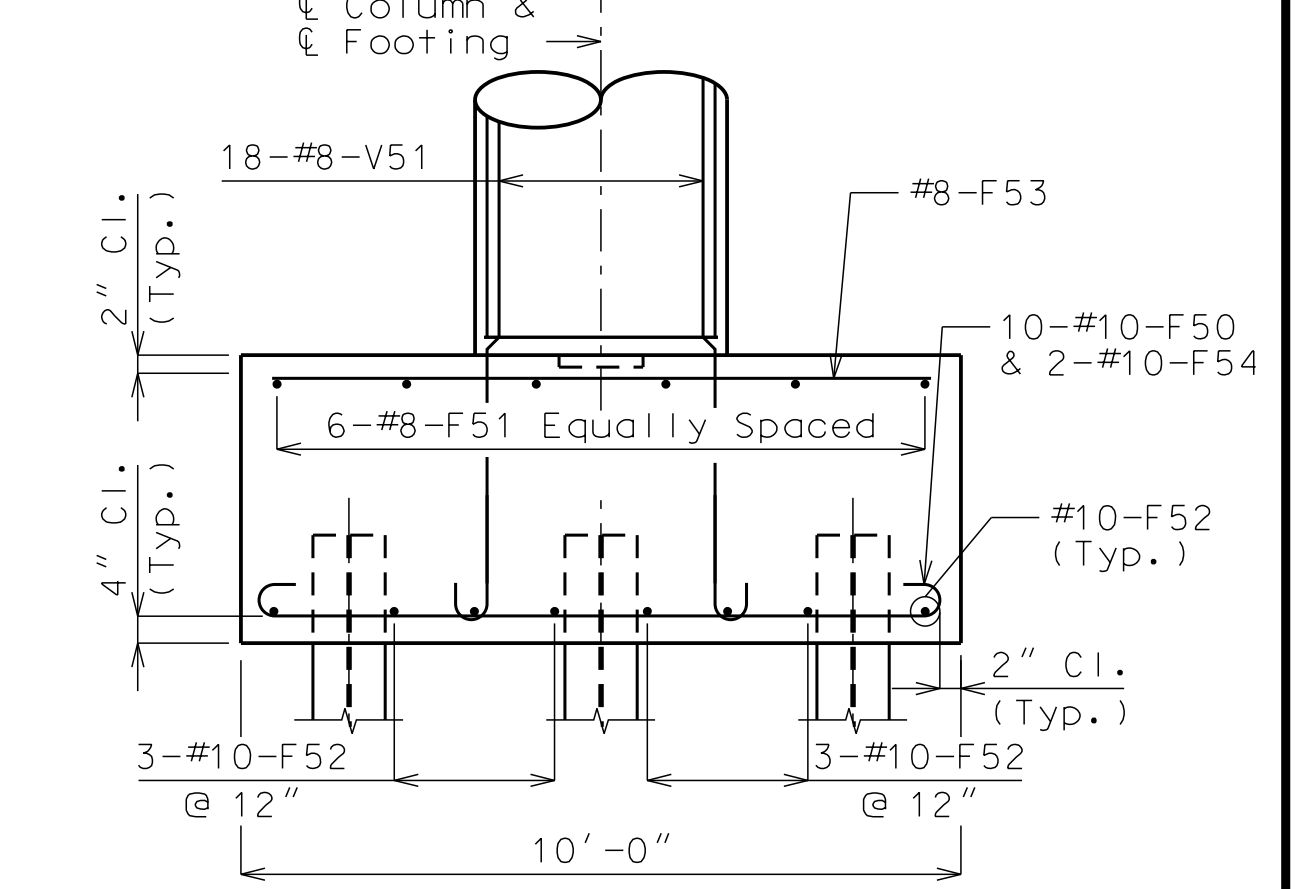
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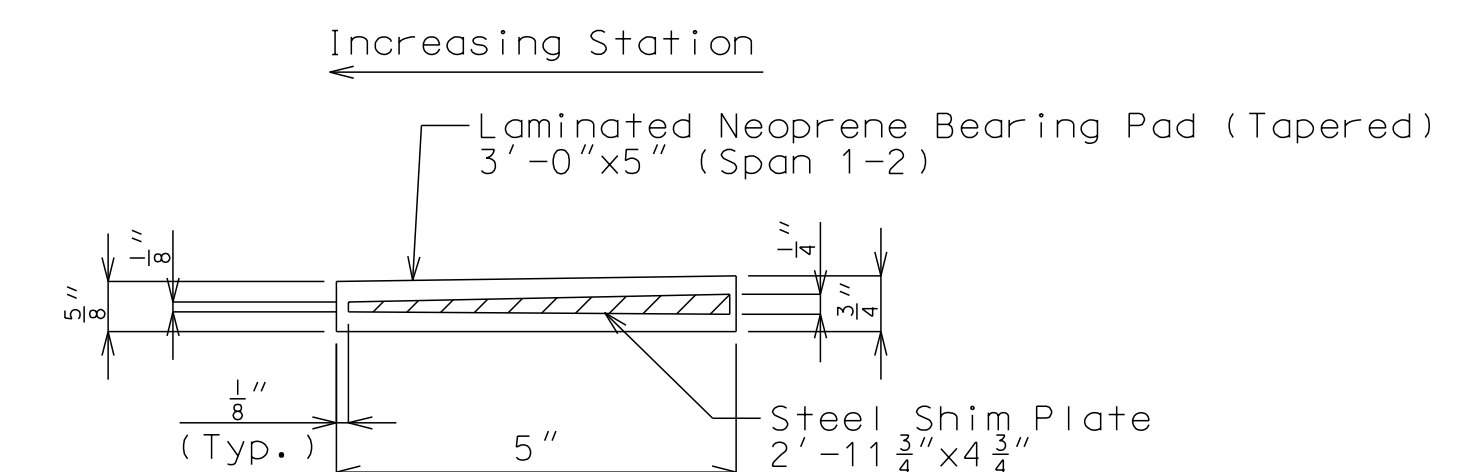
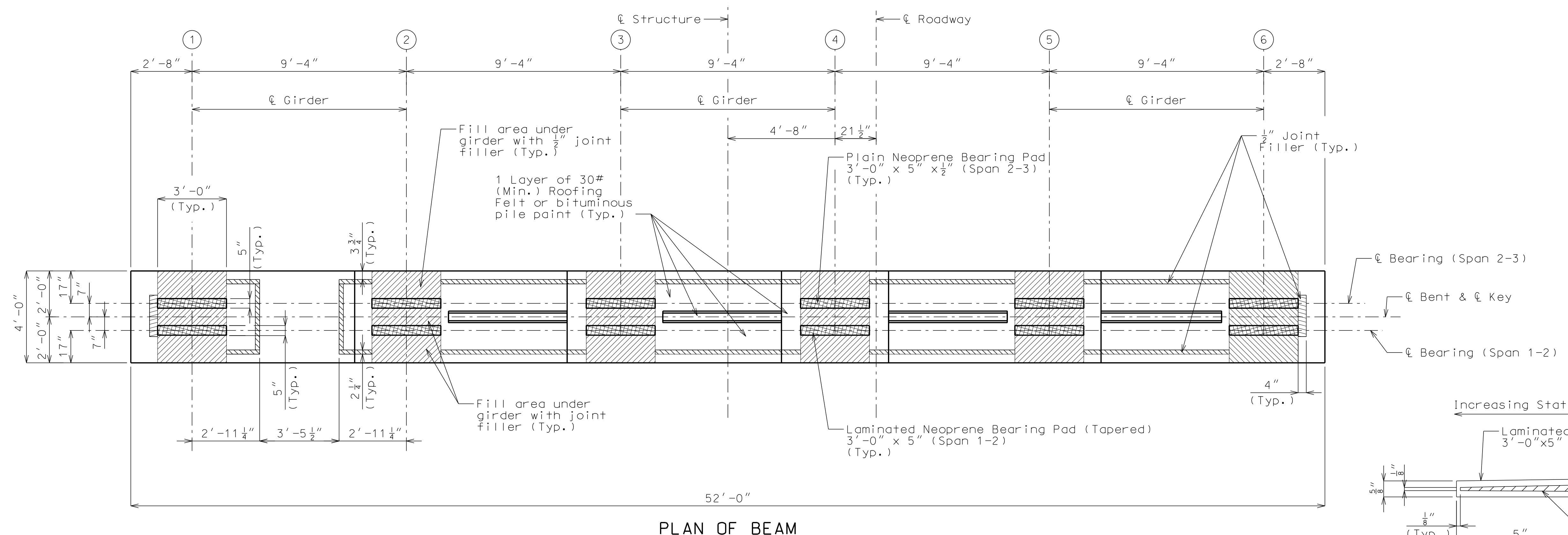
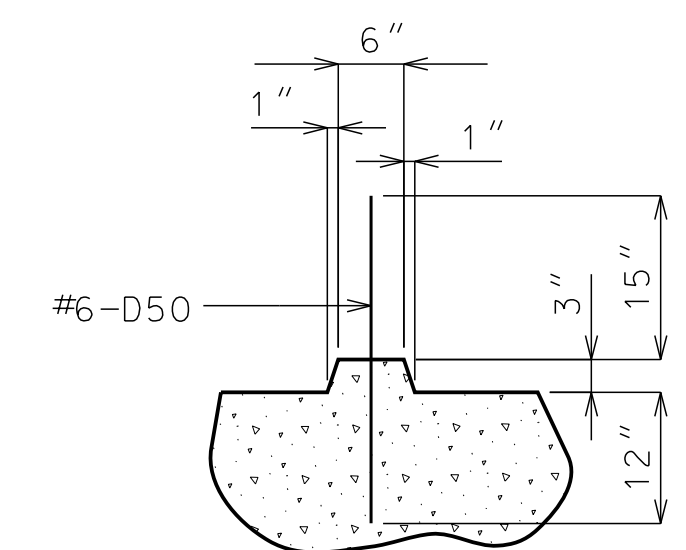
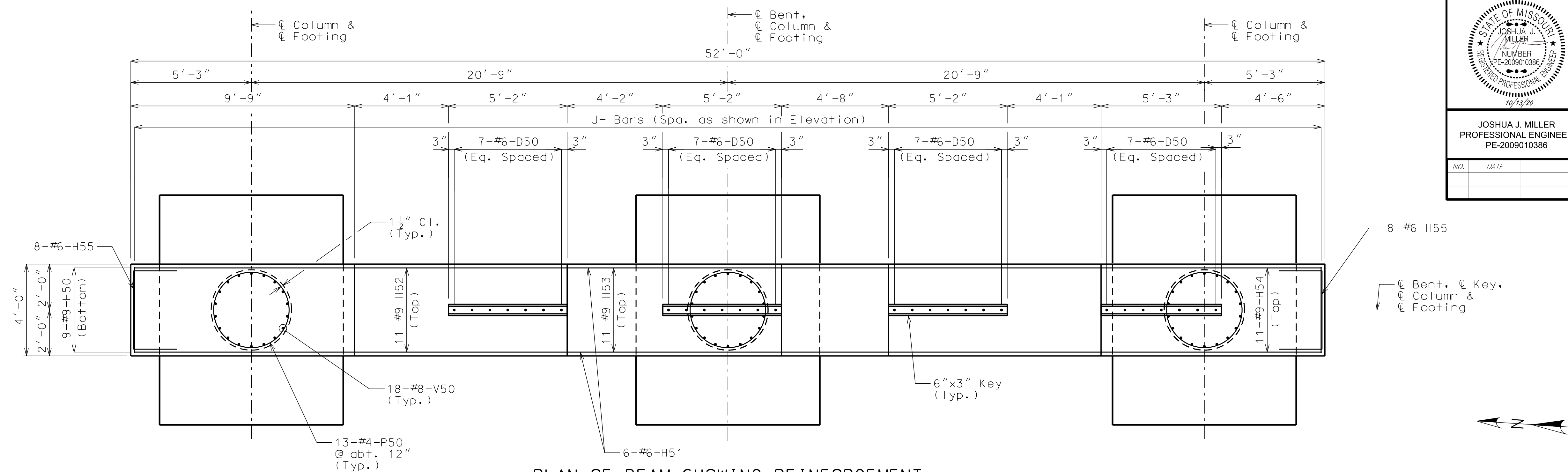
PLAN OF FOOTING



SECTION D-D

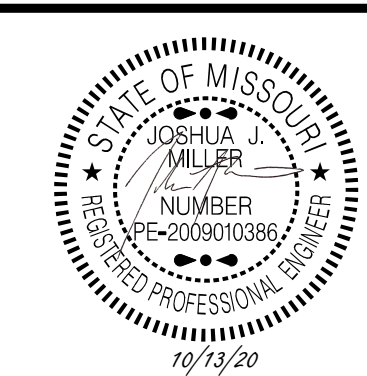
Notes:

- Hooks shown shall be standard 180 degree hooks.
- For details of Int. Bent No. 2 not shown, see Sheet No. 8.
- Reinforcing steel shall be shifted to clear piles by 1 1/2".
- For steps 2" or more, use 2 1/4"x1/2" joint filler up vertical face.



DETAILS OF INTERMEDIATE BENT NO. 2

Note: This drawing is not to scale. Follow dimensions.



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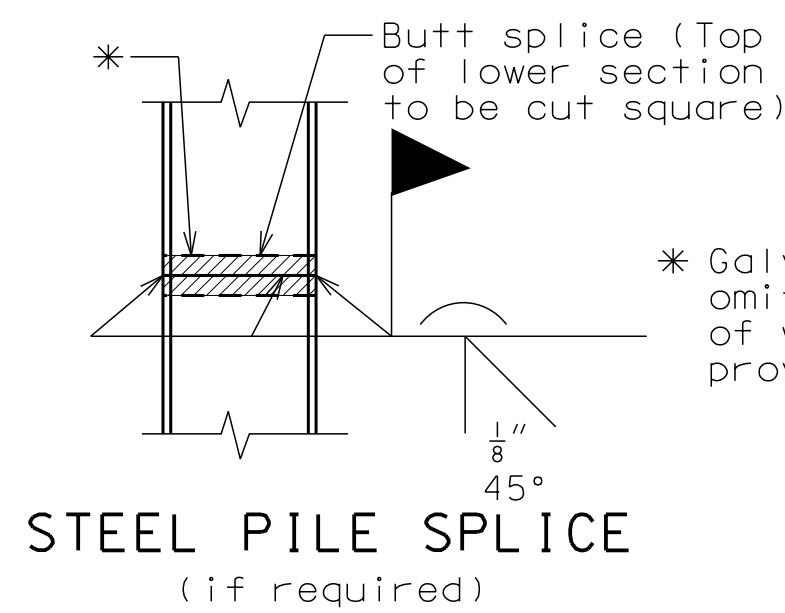
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DATE: 09-17-20	
DESIGN BY: JJM	
DRAWN BY: DWM	
PROJECT NO.: 12720	
SHEET NO.	TOTAL SHEETS
8	30

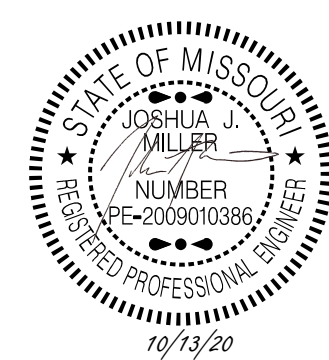
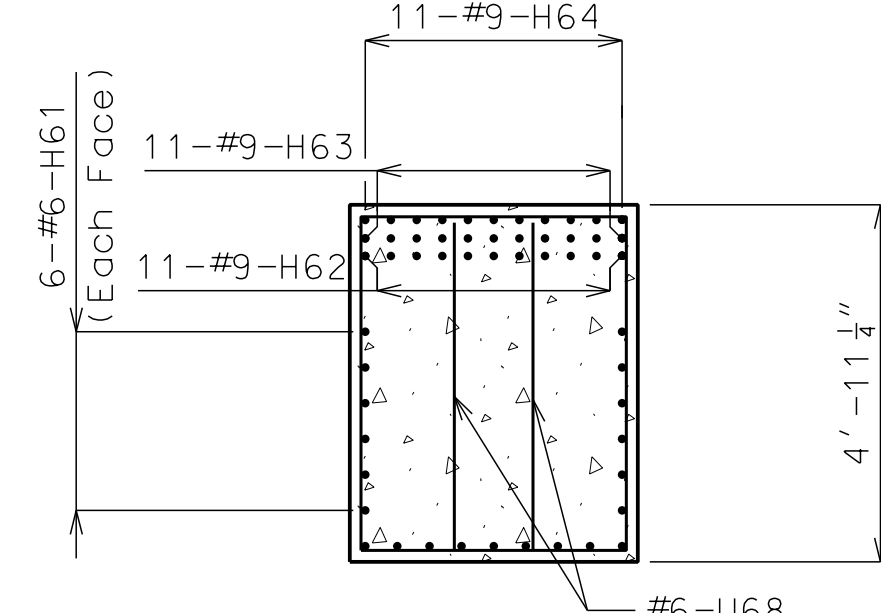
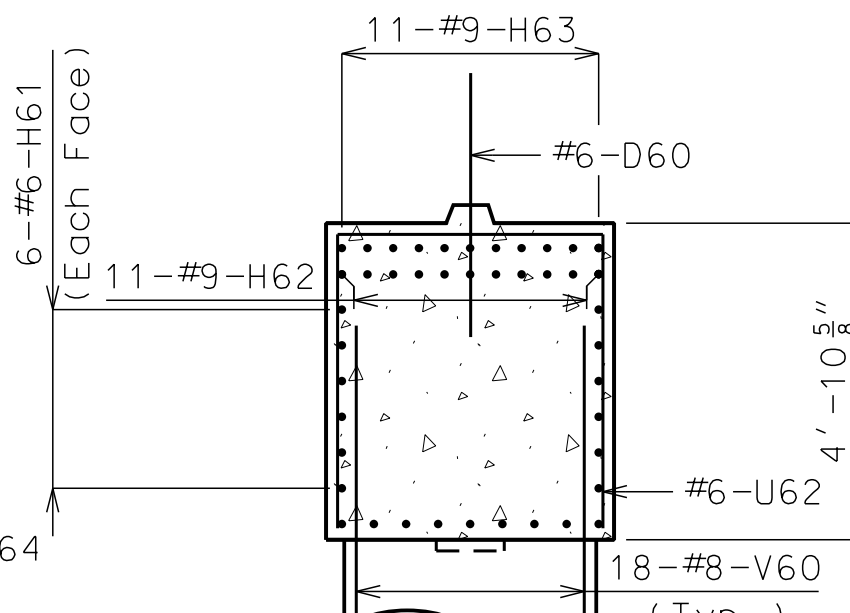
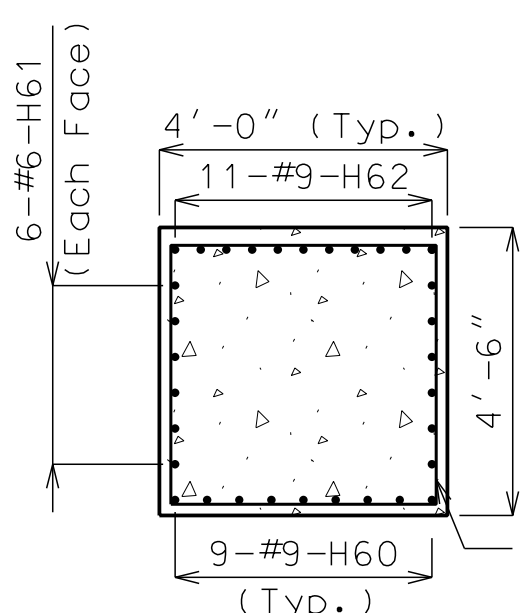
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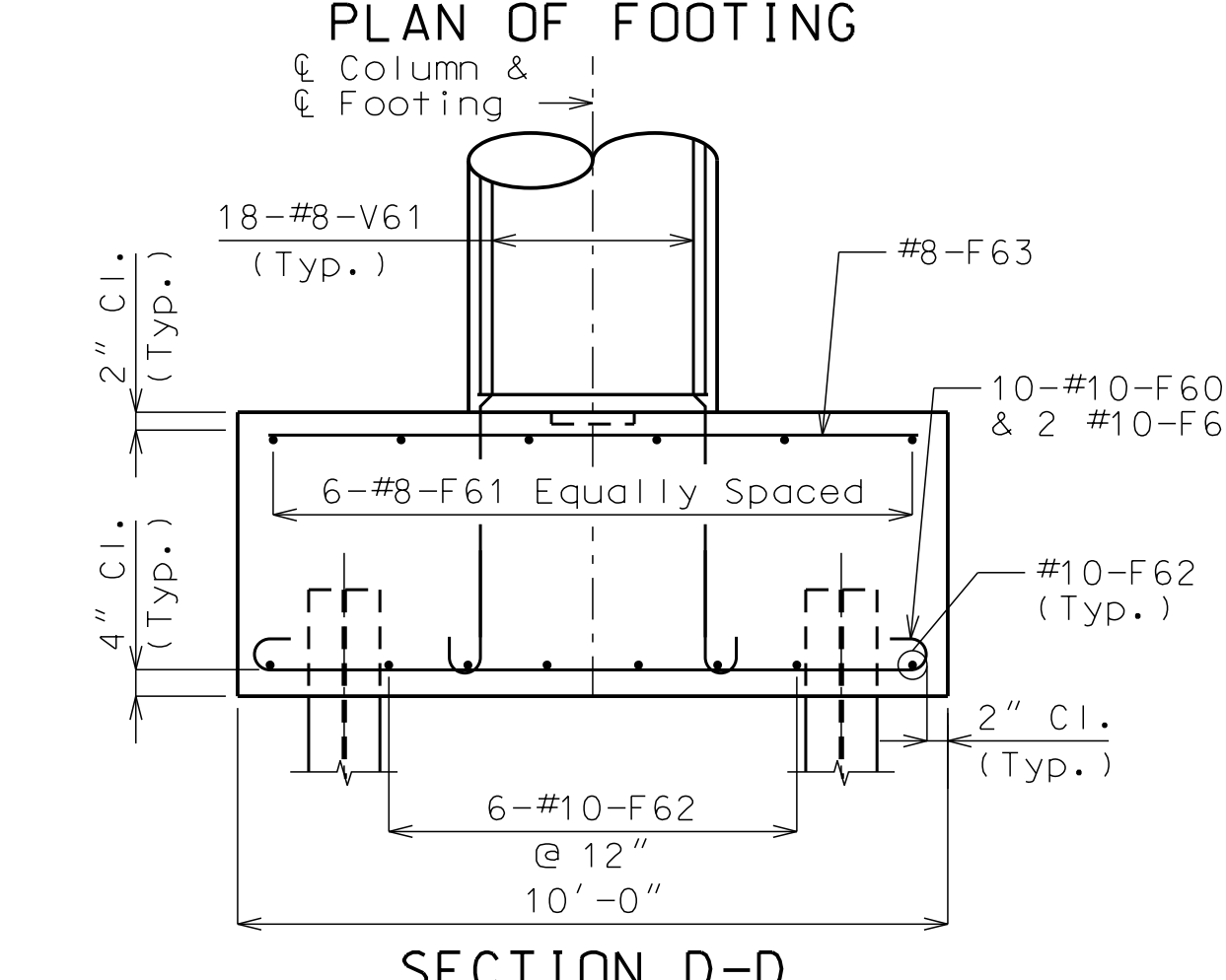
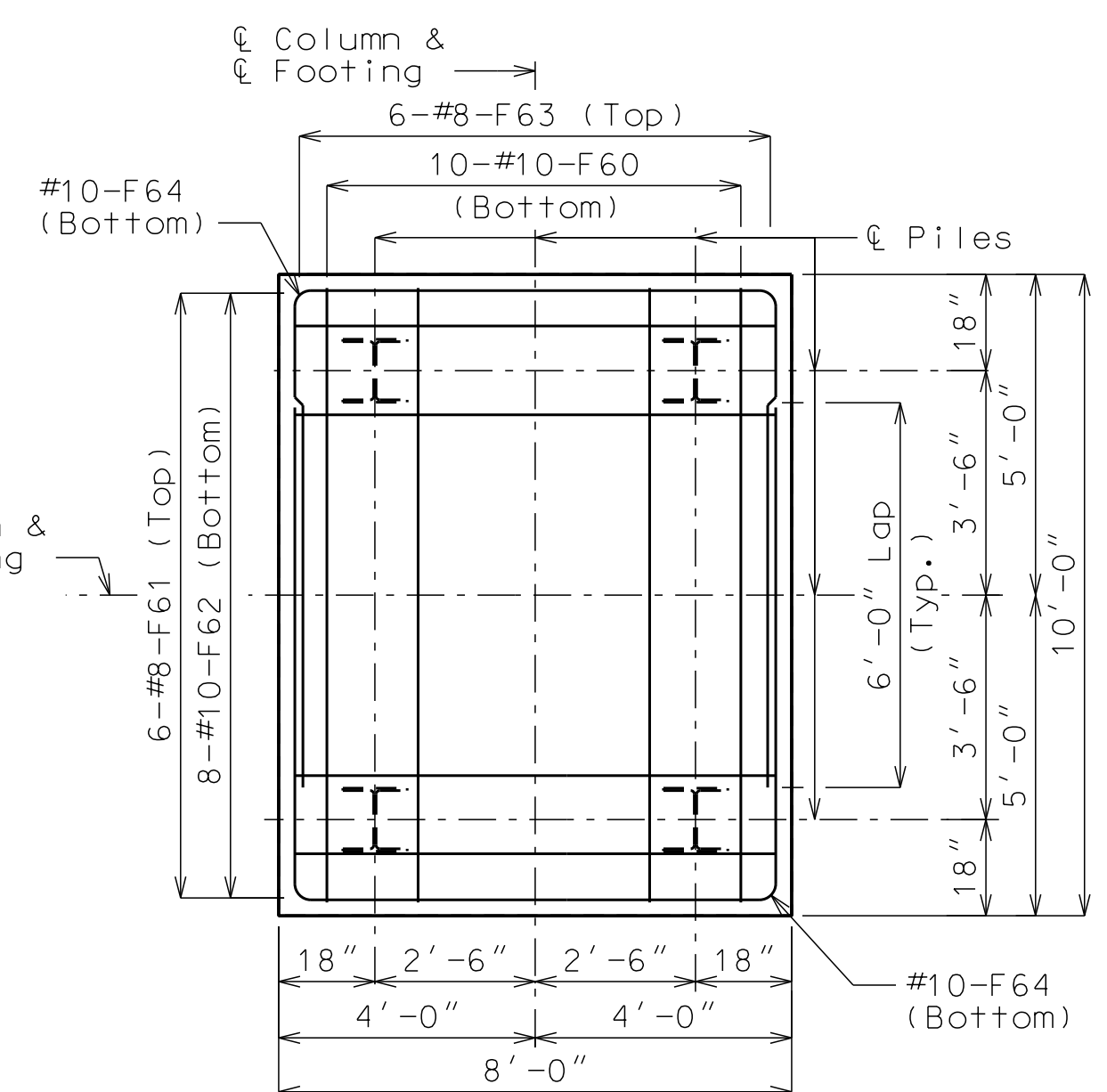
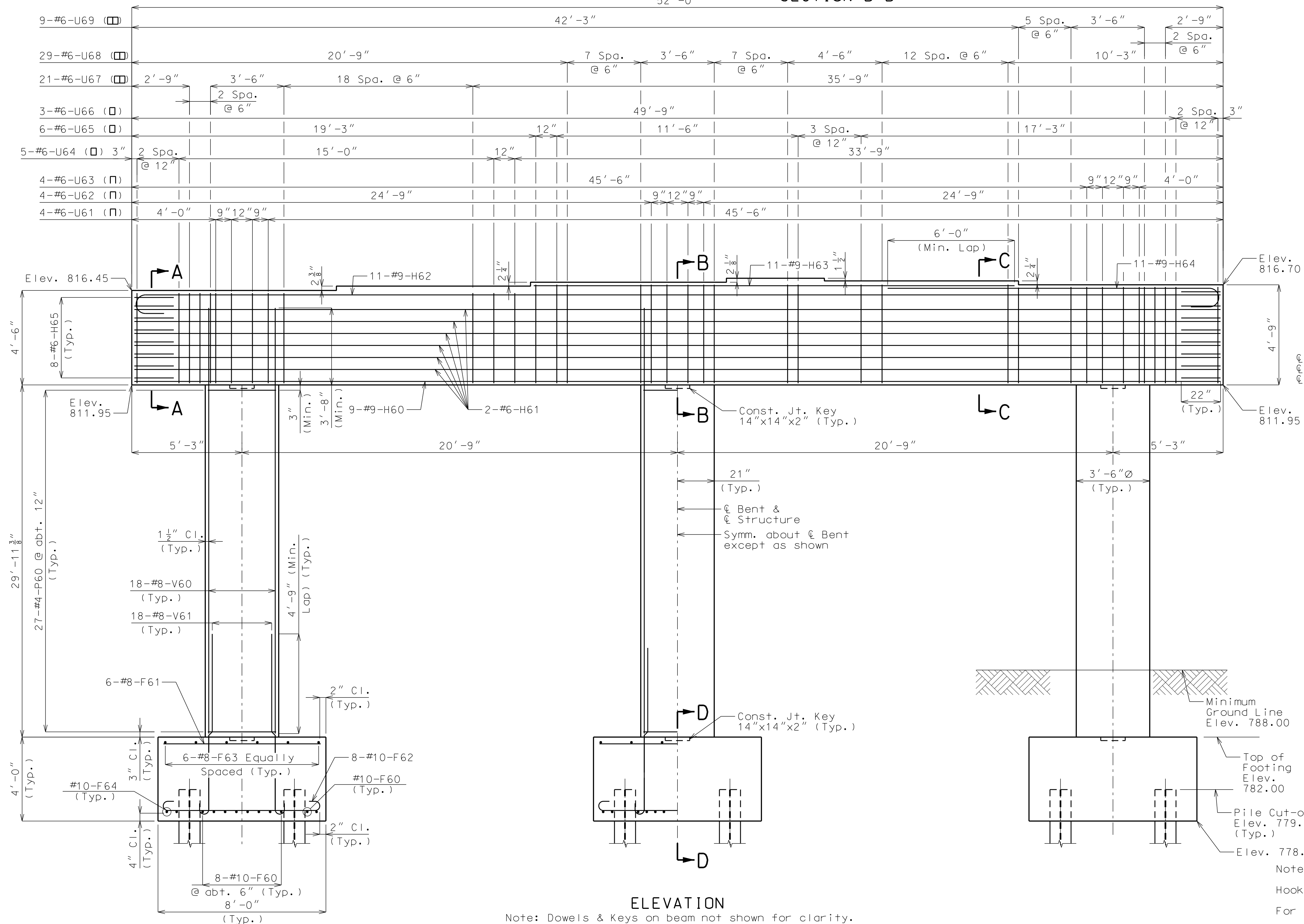
* Galvanizing material shall be omitted or removed 1 inch clear of weld locations. See special provisions.



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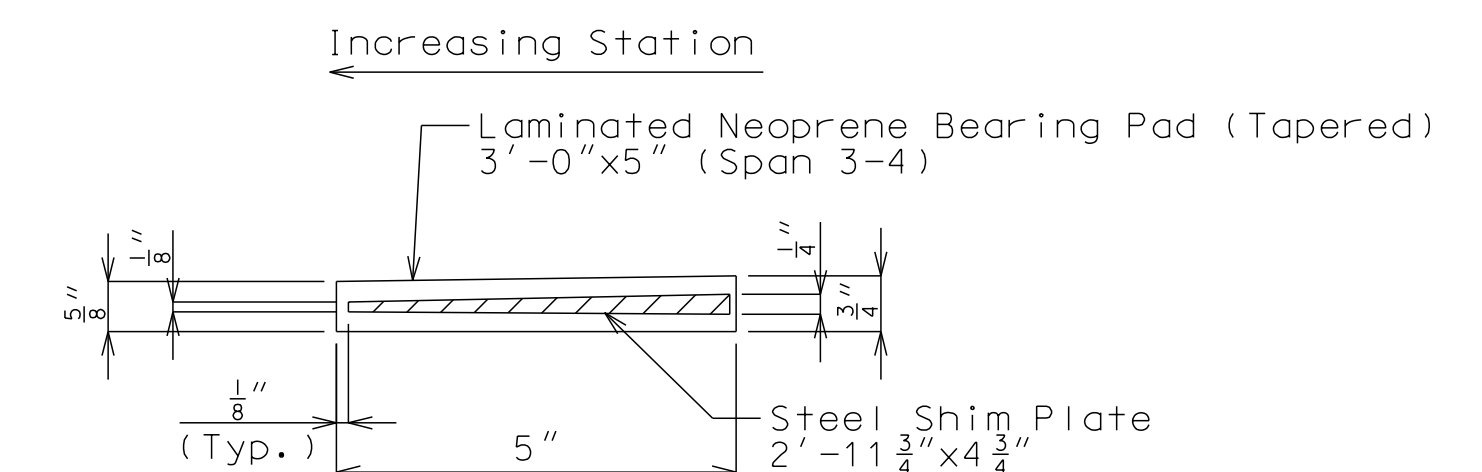
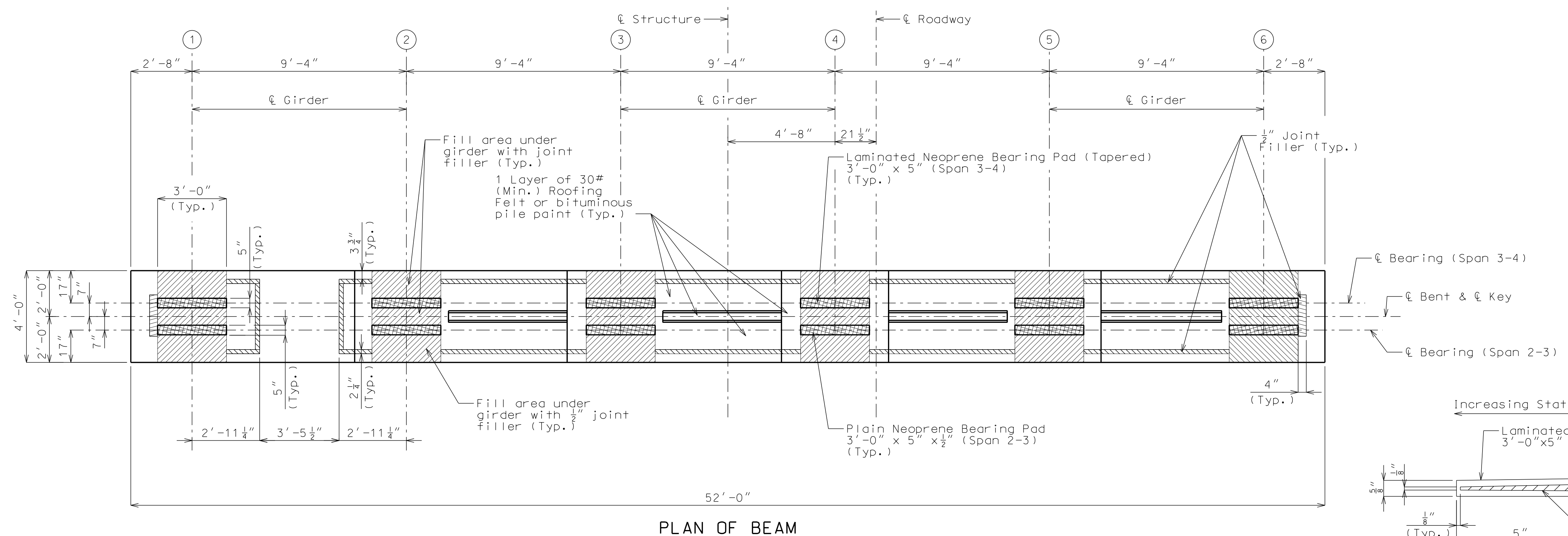
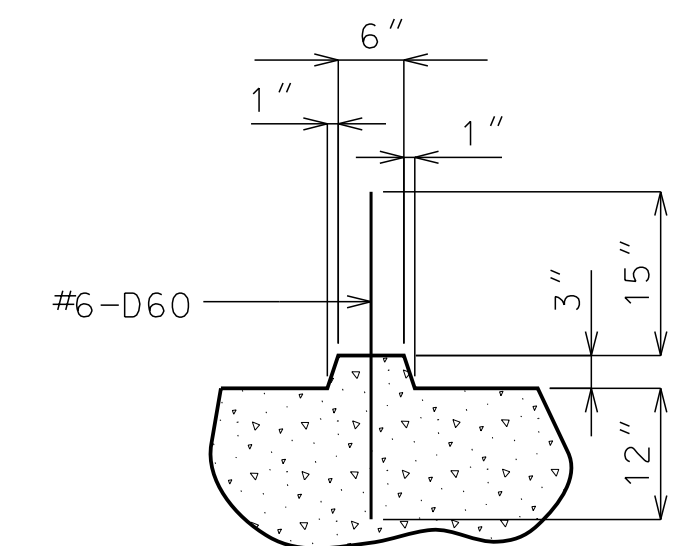
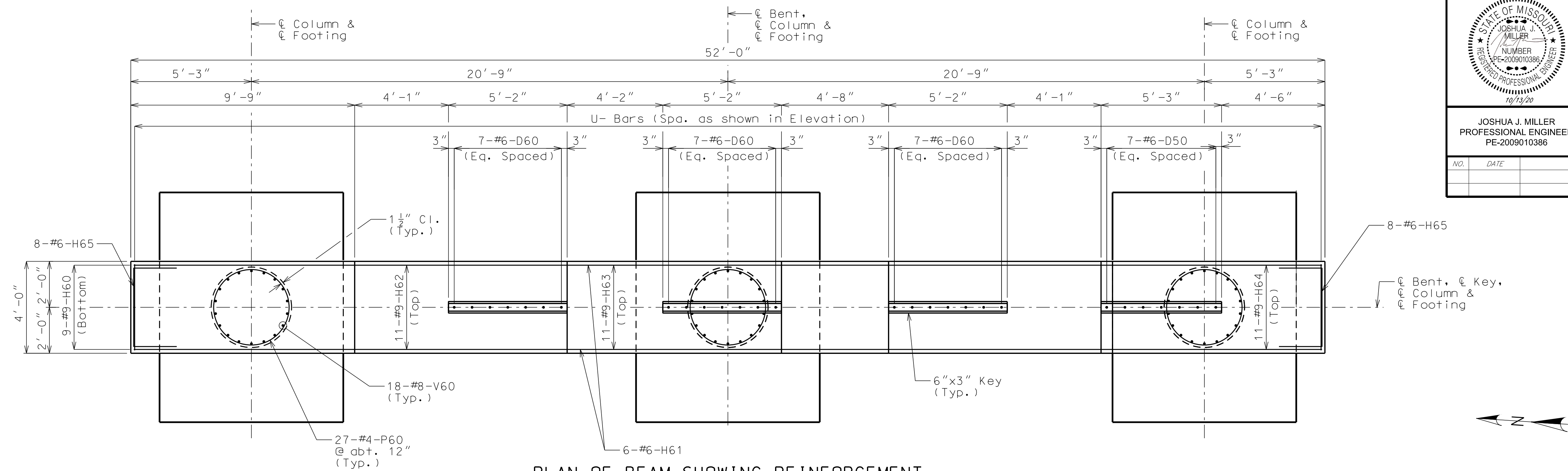
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DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
9	30

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ELEVATION
Note: Dowels & Keys on beam not shown for clarity.
DETAILS OF INTERMEDIATE BENT NO. 3
Note: This drawing is not to scale. Follow dimensions.

Notes:
Hooks shown shall be standard 180 degree hooks.
For details of Int. Bent No. 3 not shown, see Sheet No. 10.
Reinforcing steel shall be shifted to clear piles by 1 1/2".
For steps 2" or more, use 2 1/4"x1/2" joint filler up vertical face.



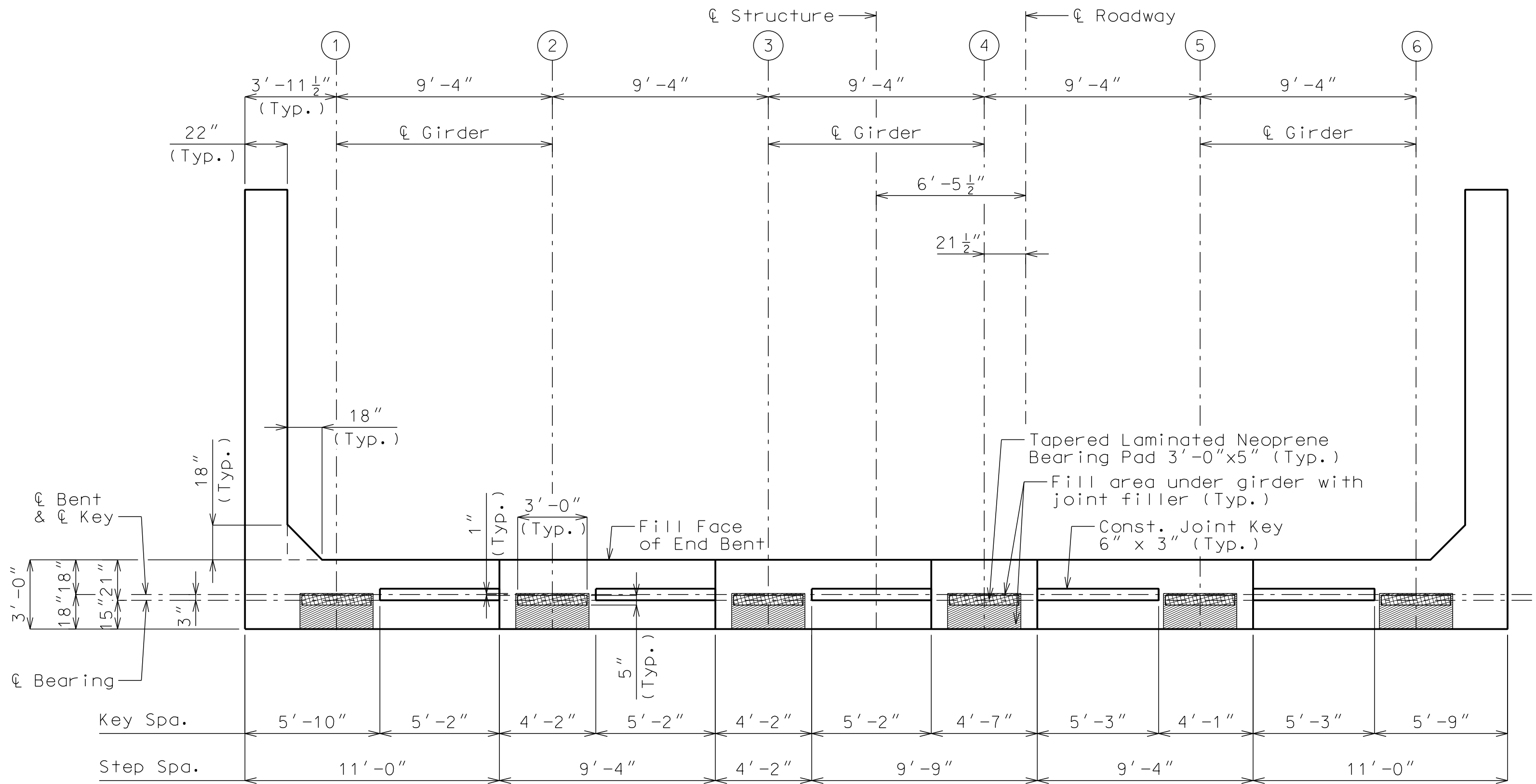
Notes:

For details of Int. Bent No. 3 not shown, see Sheet No. 9.

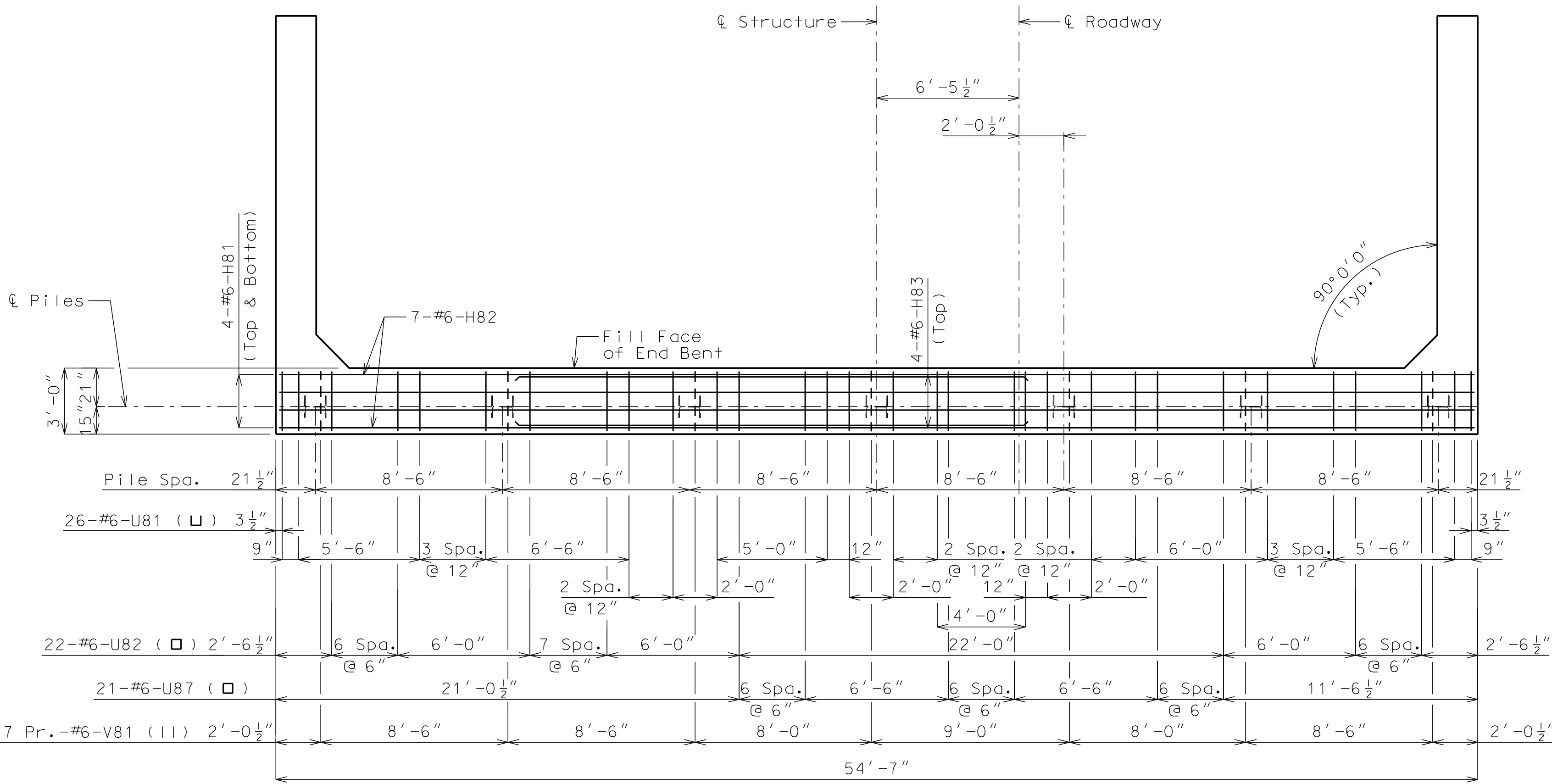
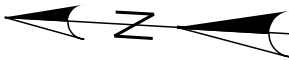
For steps 2" or more, use 2¼"x½" joint filler up vertical face.

DETAILS OF INTERMEDIATE BENT NO. 3

Note: This drawing is not to scale. Follow dimensions.



PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT
(Note: Steps and keys not shown for clarity)

DETAILS OF END BENT NO. 4

Note: This drawing is not to scale. Follow dimensions.

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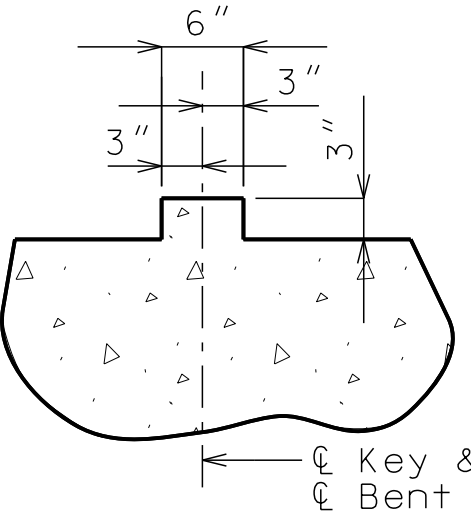
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PROJECT NO.: 12720

SHEET NO. 11
TOTAL SHEETS 30

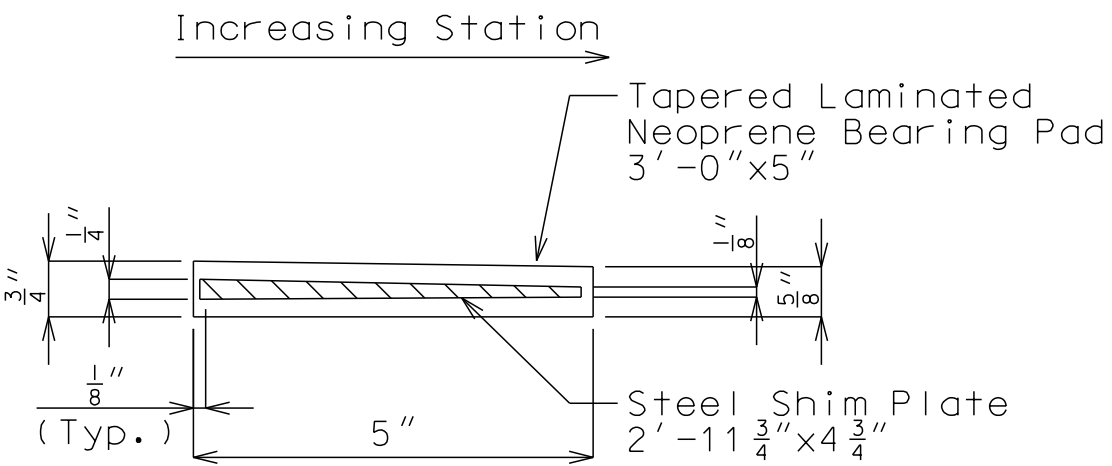
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SECTION THRU KEY



BEARING PAD DETAIL

- Notes:
- For details of End Bent No. 4 not shown, see Sheets No. 12 and 13.
 - For details of Vertical Drain at End Bents, see Sheet No. 6.
 - Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1 1/2".
 - All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
 - For reinforcement of Barrier Curb, see Sheets No. 21-23 and 26.

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

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DATE: 09-17-20

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SHEET NO. 13

TOTAL SHEETS 30

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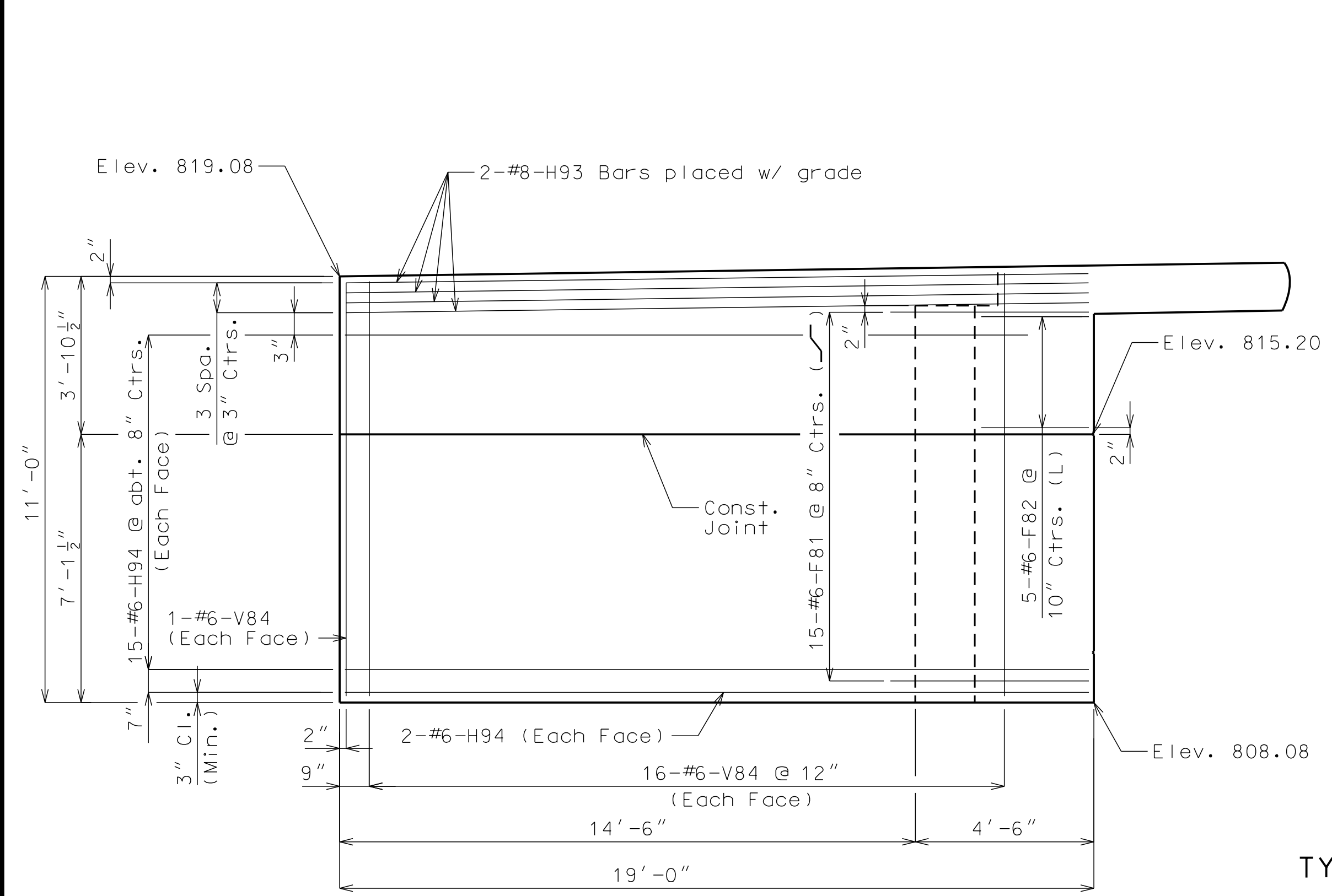
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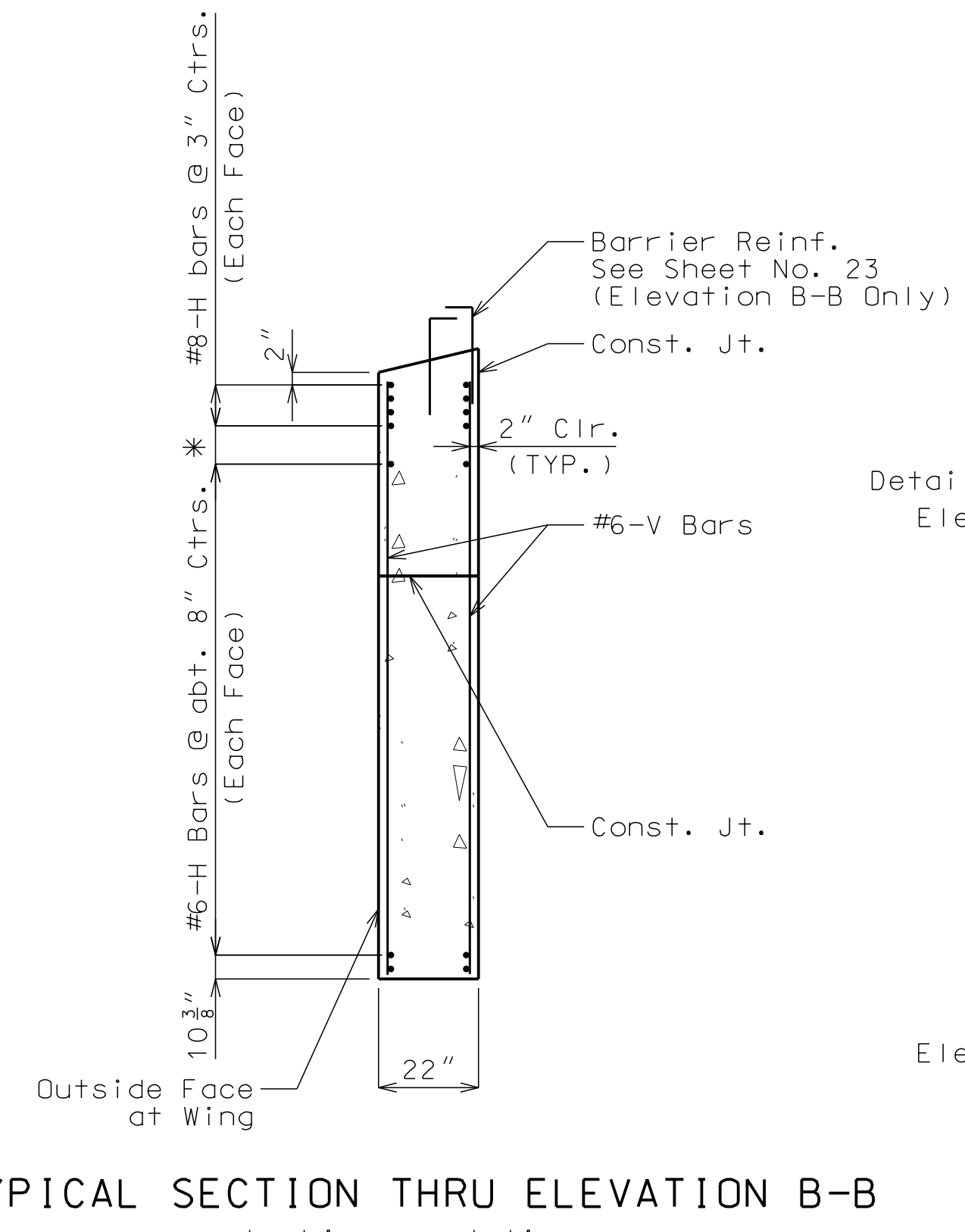
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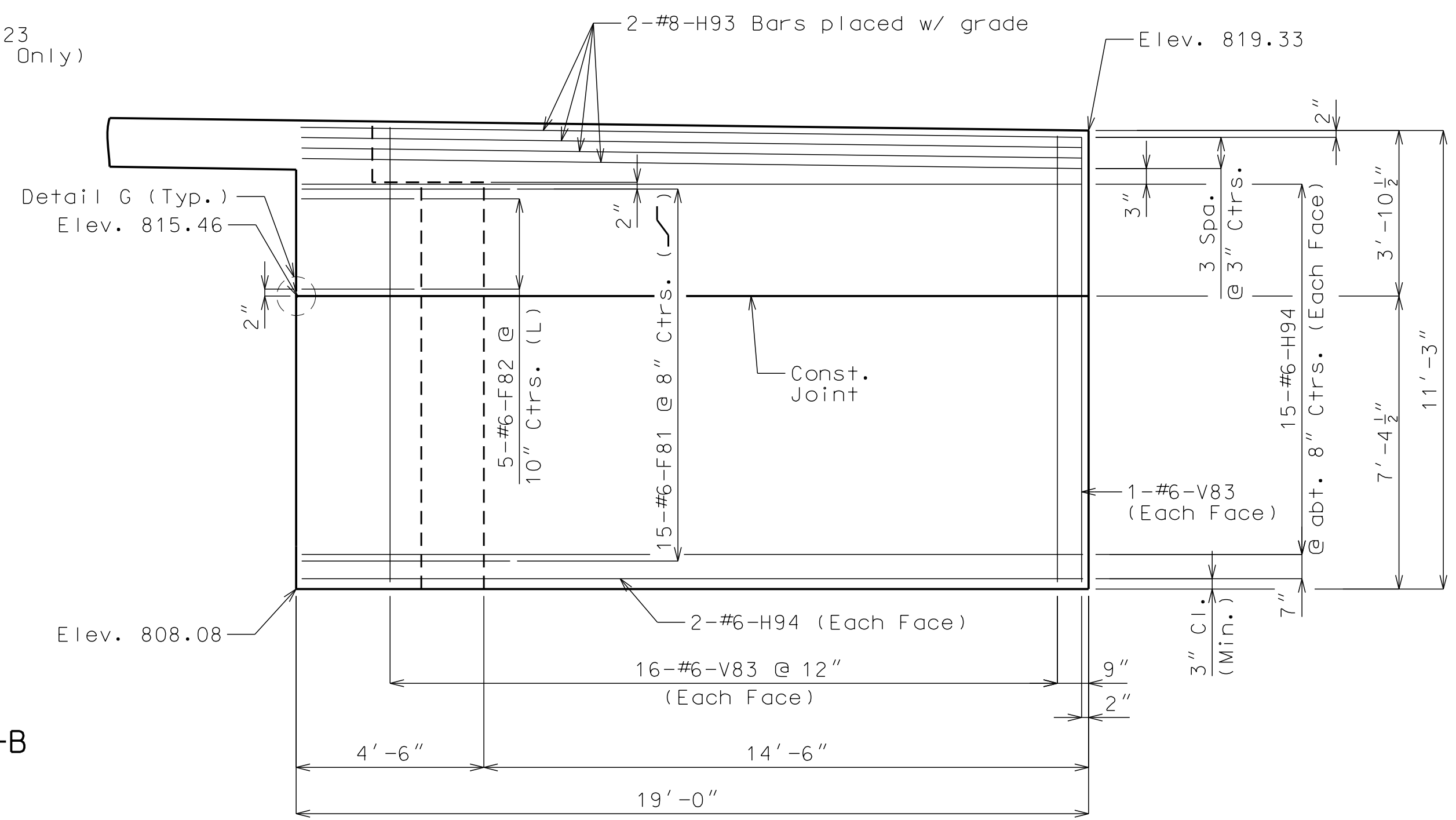


ELEVATION A-A

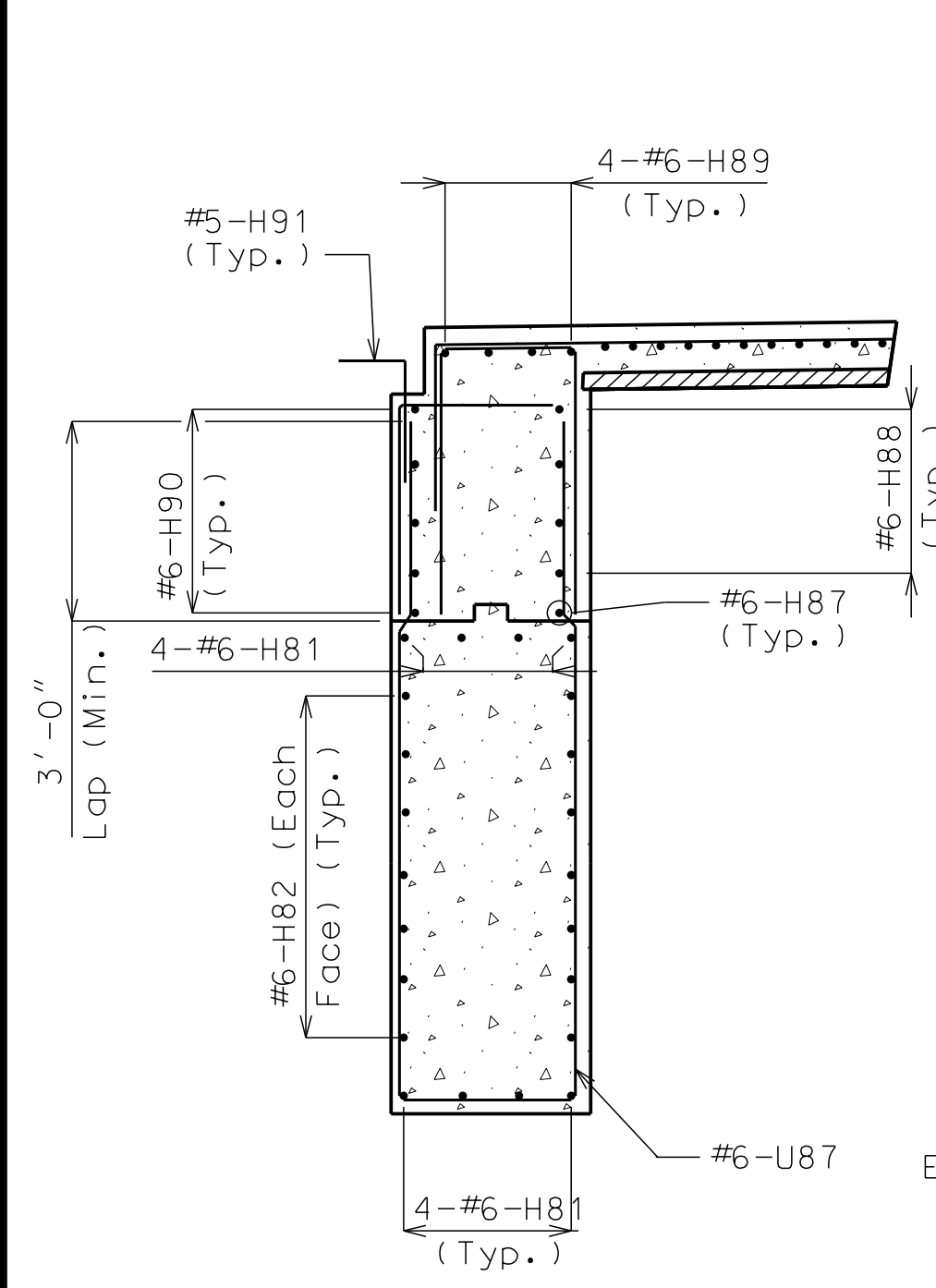


TYPICAL SECTION THRU ELEVATION B-B

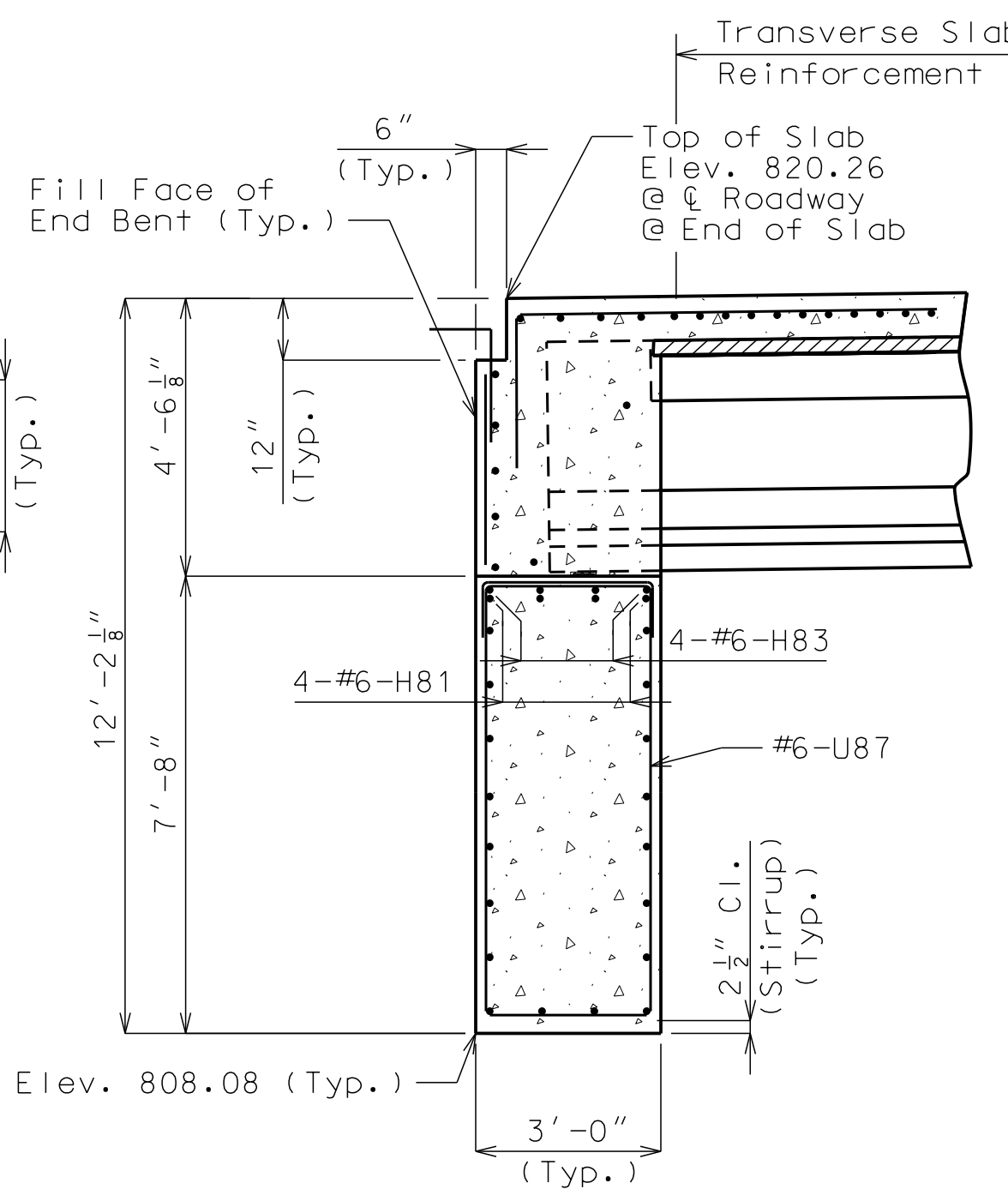
Looking up station
(*Varies)



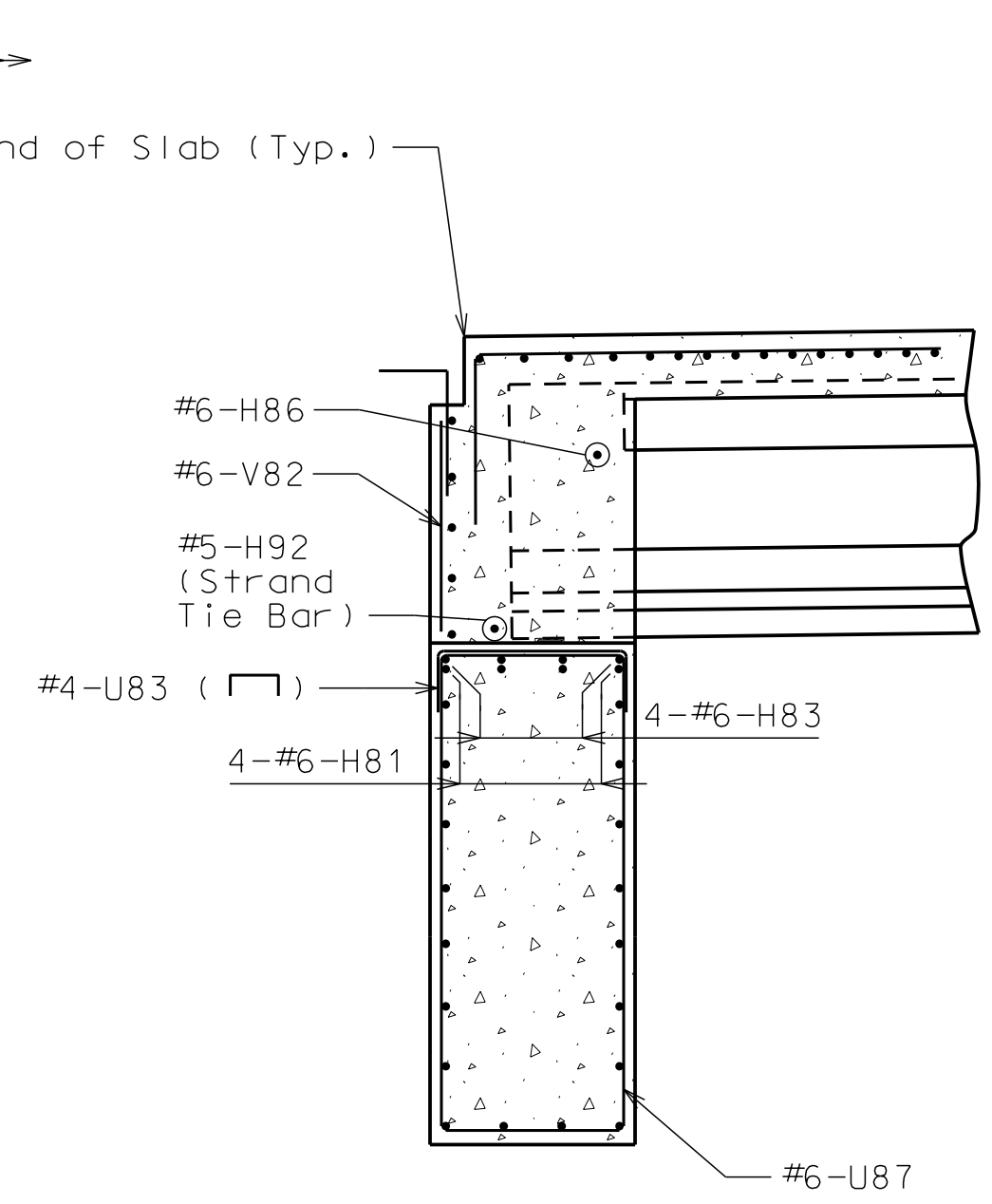
ELEVATION B-B



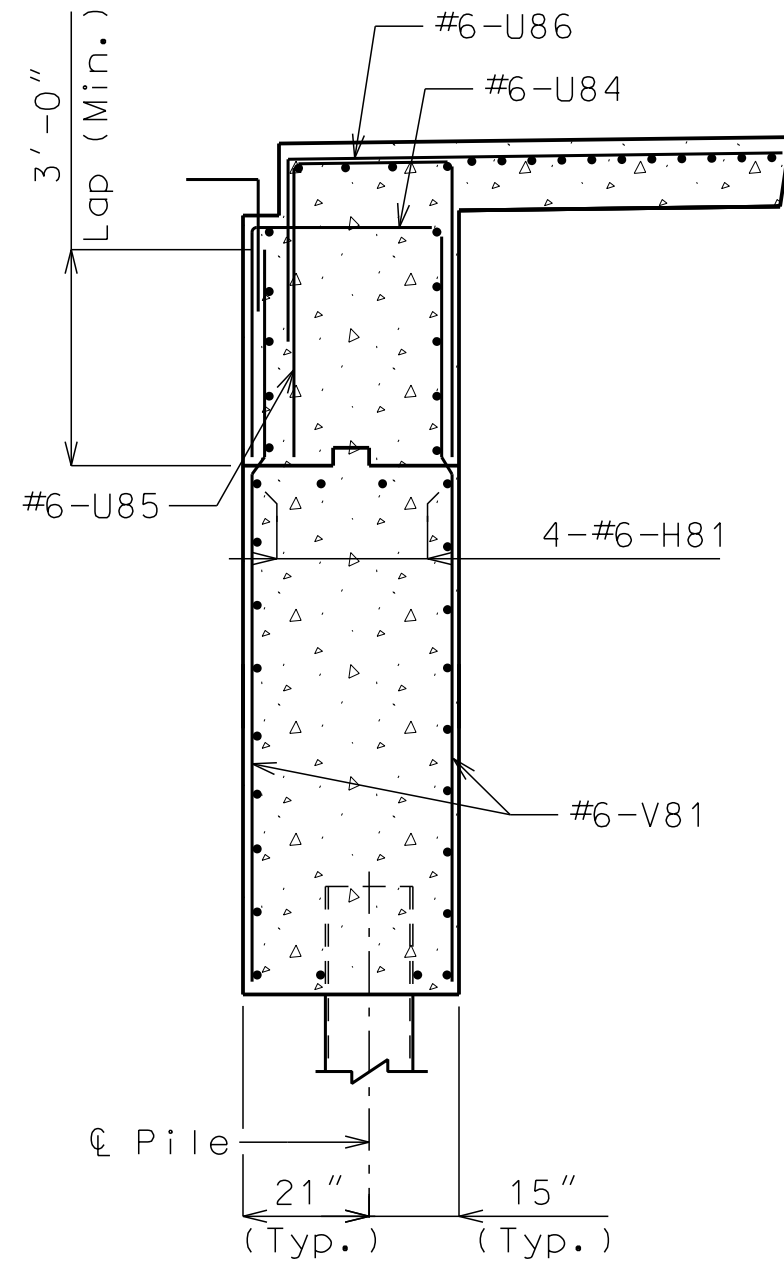
SECTION C-C



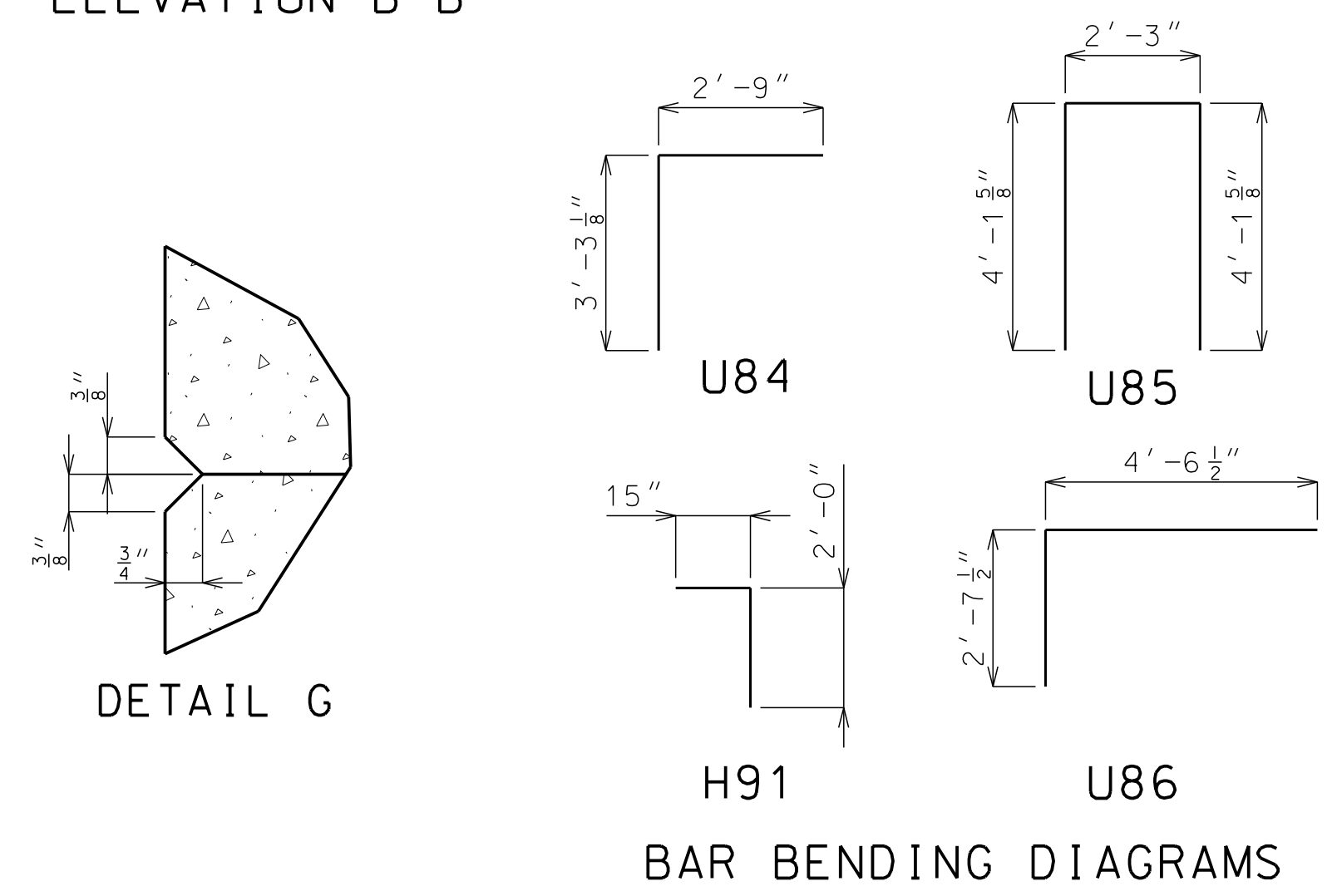
SECTION D-D



SECTION E-E



SECTION F-F



BAR BENDING DIAGRAMS

DETAIL G

Notes:

For details of End Bent No. 4 not shown, See Sheets No. 11 and 12.

For location of Elevations A-A & B-B, See Sheet No. 12.

For location of Sections C-C, D-D, E-E & F-F See Sheet No. 12.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inch.

For reinforcement of Barrier Curb, See Sheets No. 21-23 and 26.

HP pile shall be galvanized to the minimum galvanized penetration (elevation) (See Foundation Data).

Note: This drawing is not to scale. Follow dimensions.

Concrete for prestressed girders shall be Class A-1 with $f'c = 8500$ psi and $f'ci = 7000$ psi.

(+) indicates prestressing strand.

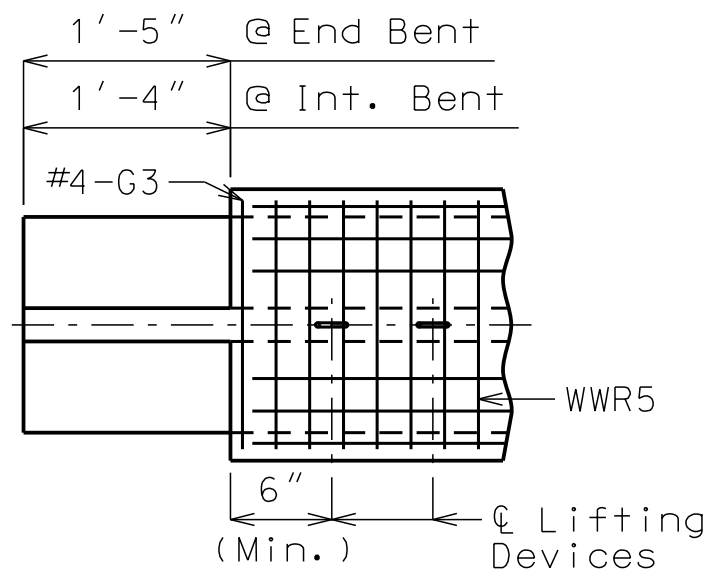
Use 14 strands with an initial prestress force of 615.2 kips.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029. Fabricator shall be responsible for location and design of lifting devices.

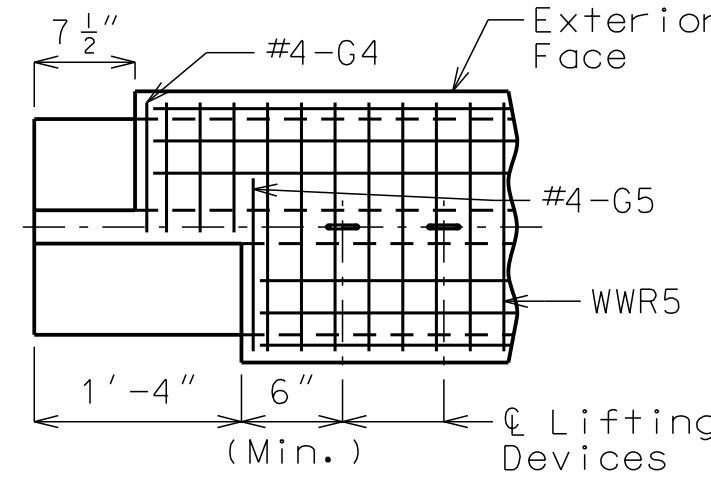
* Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.

** At the contractor's option the location for bent-up strands may be varied from that shown for fully bonded strands only. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

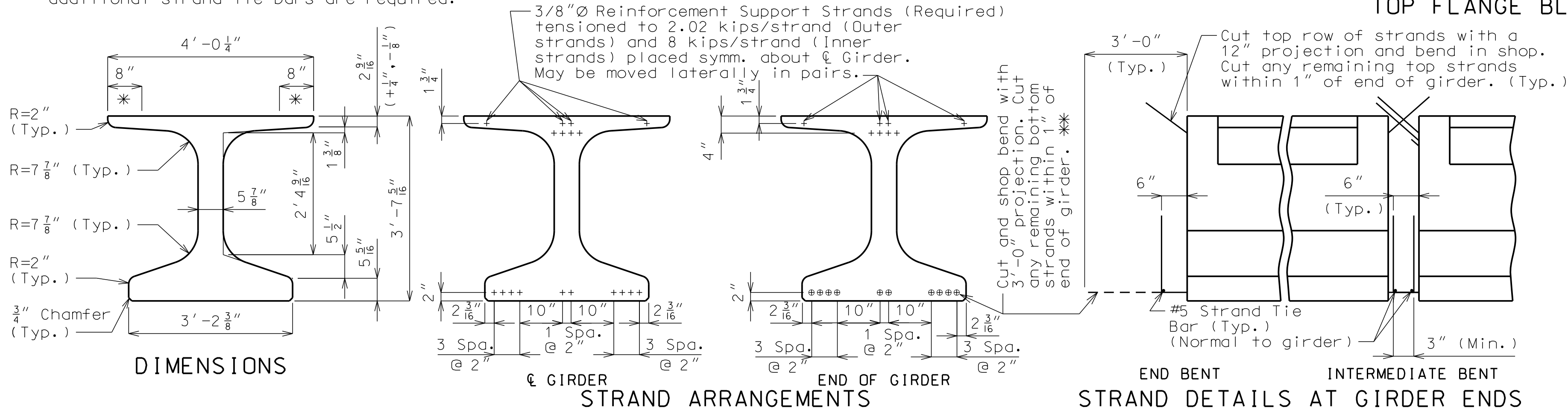
Fabricator shall be responsible for location and design of lifting devices.



INTERIOR GIRDER AT ALL BENTS
& EXTERIOR GIRDER AT END BENT
FOR SPANS 1 & 3 GIRDERS



LEFT EXTERIOR GIRDER AT
INTERMEDIATE BENT FOR SPANS 1 & 3
GIRDERS (ROTATE 180° FOR RIGHT EXTERIOR)

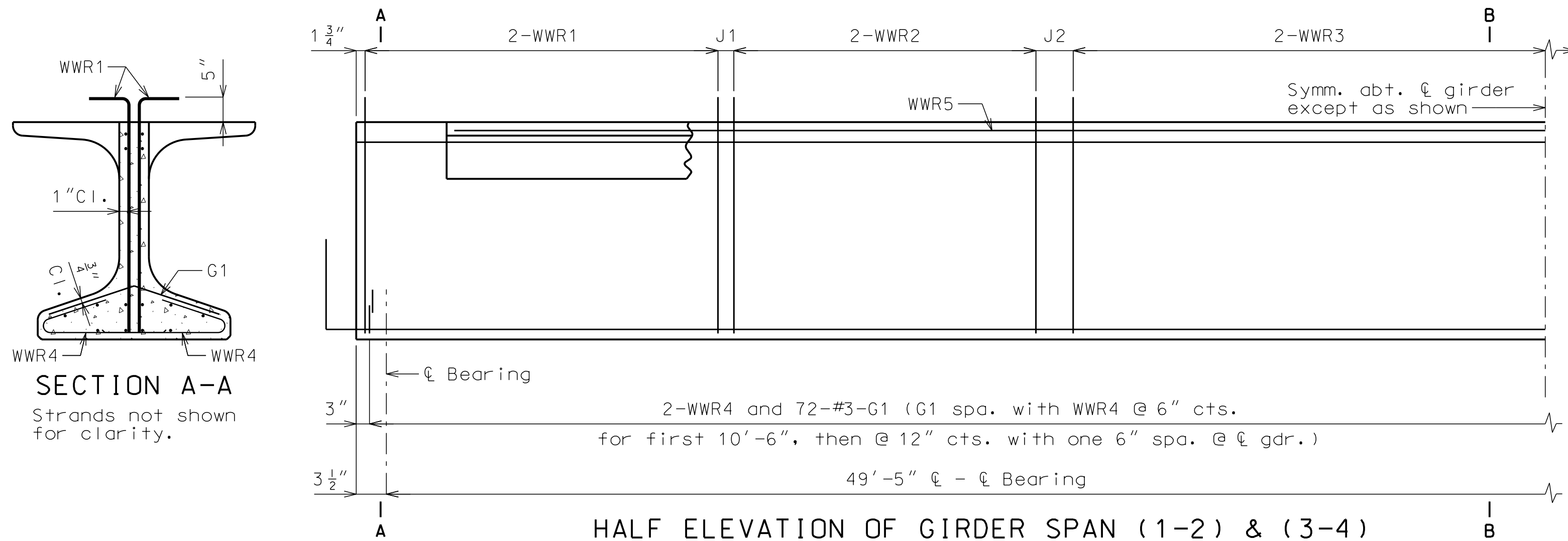


TOP FLANGE BLOCKOUT

BILL OF REINFORCING STEEL - EACH GIRDER					BENDING DIAGRAMS	
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE			
72	3 G1	2'-10"	8			
2	4 G3	3'-10 1/4"	20			
2	4 G4	2'-1"	20			
2	4 G5	2'-8 1/8"	20			

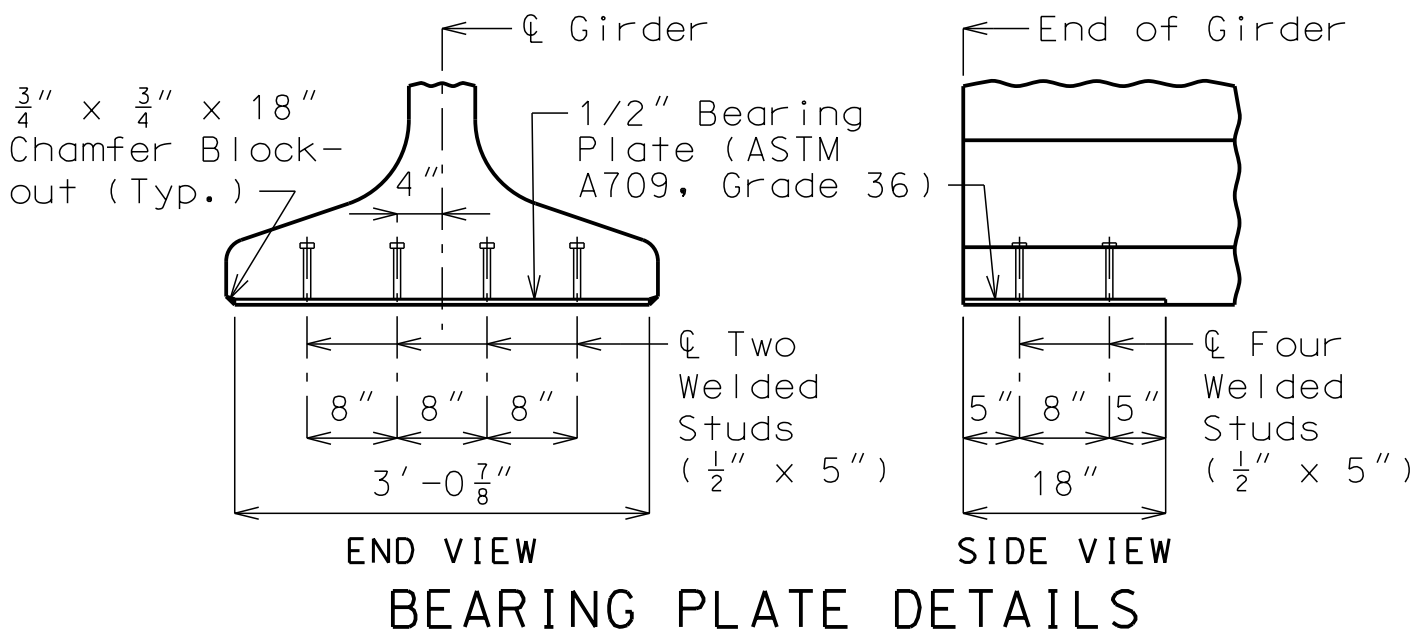
G4 and G5 not required for interior girders.

WELDED WIRE REINFORCEMENT - EACH GIRDER					BENDING DIAGRAMS	
MARK	WIRE SIZE	S	L	J		
WWR1	D31	6"	4'-6"	6"		
WWR2	D31	12"	9'-0"	10 1/4"		
WWR3	D31	12"	20'-0"			



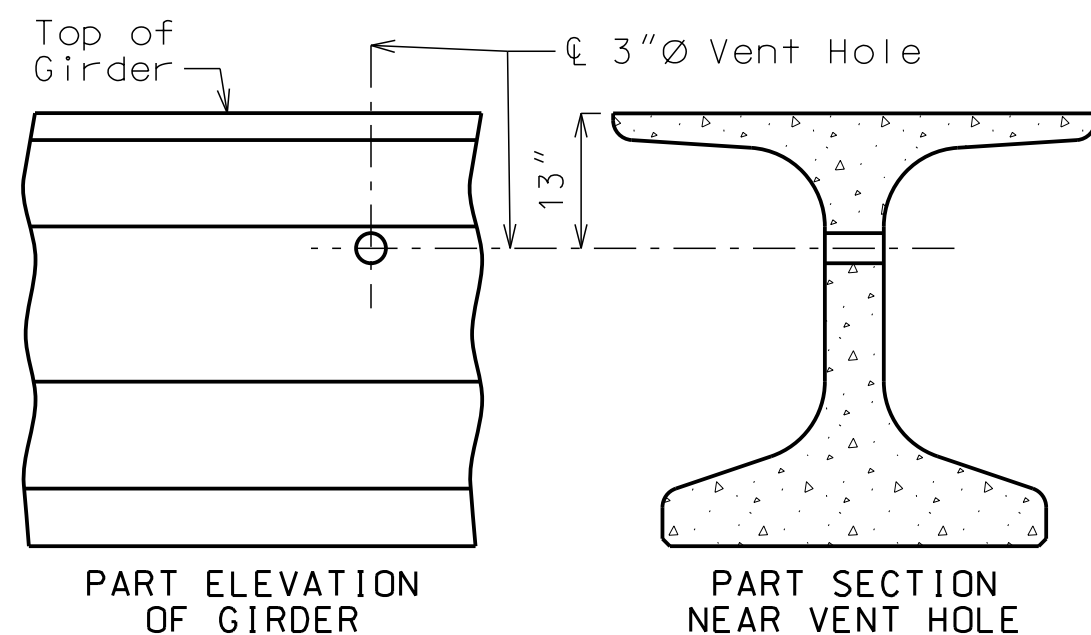
HALF ELEVATION OF GIRDER SPAN (1-2) & (3-4)

Exterior and interior girders are the same, except for coil ties and top flange blockout. Reinforcement support strands not shown for clarity.



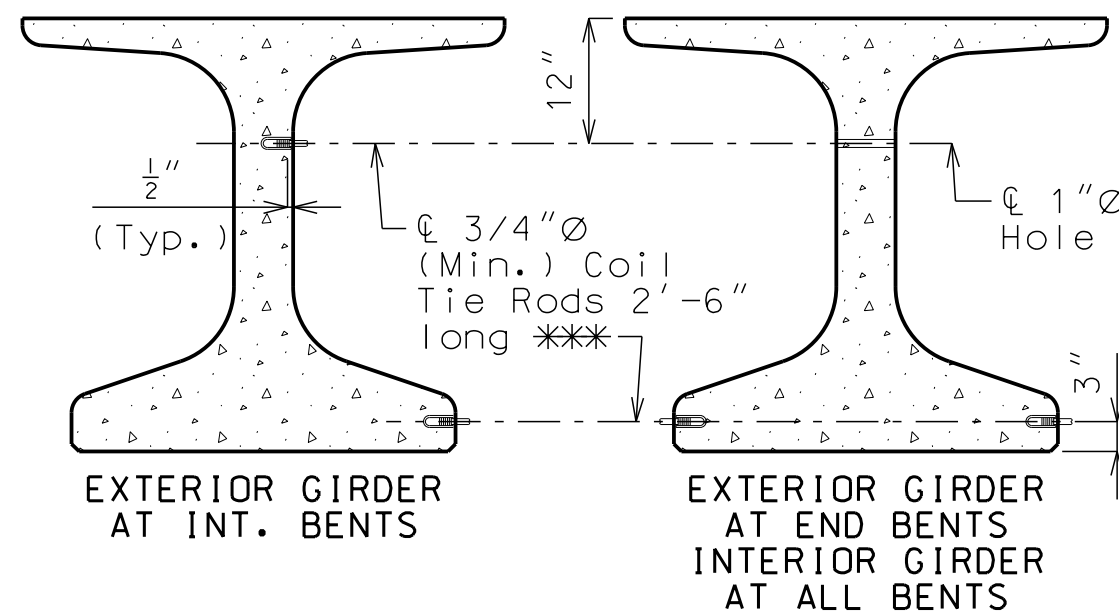
BEARING PLATE DETAILS

Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.



DETAILS OF VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.

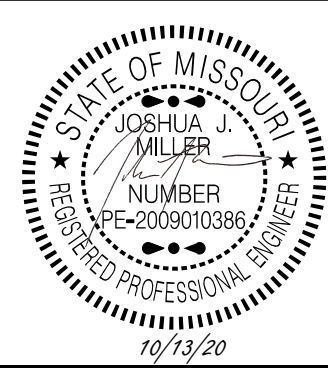


DETAILS OF COIL TIES

Cast 1"Ø hole horizontally in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

*** Length of coil tie rods at exterior face of exterior girders at end bents = 2'-4".

*** Length of coil tie rods at faces adjacent to conduit blockout of Girders No. 1 & 2 at intermediate bents = 17".



JOSHUA J. MILLER
PROFESSIONAL ENGINEER
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Concrete for prestressed girders shall be Class A-1 with $f'c = 8500$ psi and $f'ci = 7000$ psi.

(+) indicates prestressing strand.

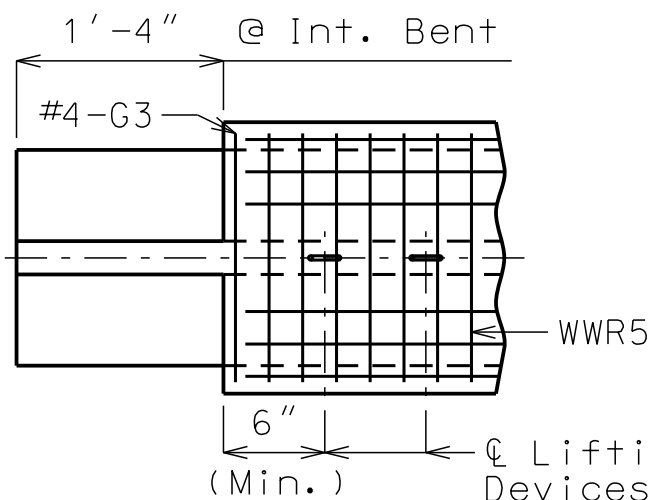
Use 38 strands with an initial prestress force of 1669.8 kips.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029. Fabricator shall be responsible for location and design of lifting devices.

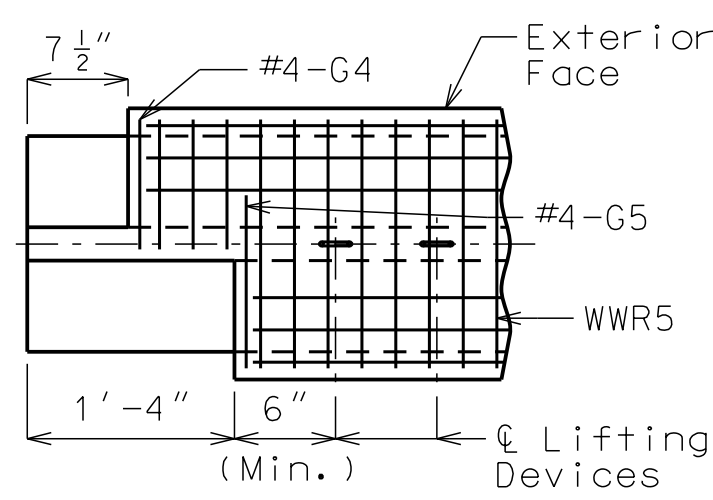
* Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.

** At the contractor's option the location for bent-up strands may be varied from that shown for fully bonded strands only. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

Fabricator shall be responsible for location and design of lifting devices.



INTERIOR GIRDER AT INTERMEDIATE BENT FOR SPAN 2 GIRDERS



LEFT EXTERIOR GIRDER AT INTERMEDIATE BENT FOR SPAN 2 GIRDERS (ROTATE 180° FOR RIGHT EXTERIOR)

TOP FLANGE BLOCKOUT

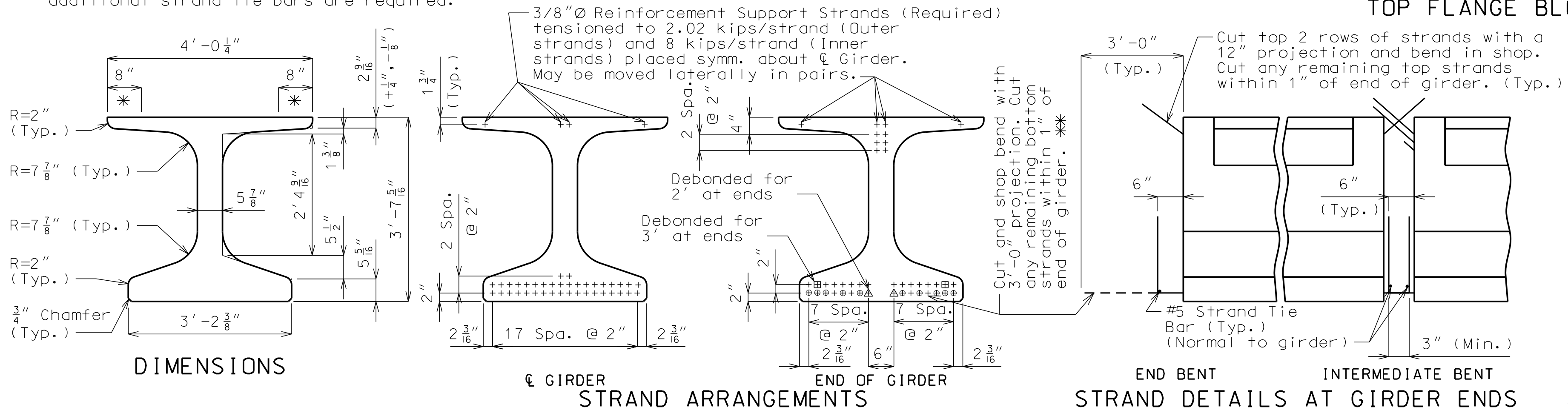
BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	
125	3 G1	2'-10"	8	
2	4 G3	3'-10 1/4"	20	
2	4 G4	2'-1"	20	
2	4 G5	2'-8 1/8"	20	

BENDING DIAGRAMS	
SHAPE 8	SHAPE 11
SHAPE 20	

G4 and G5 not required for interior girders.

WELDED WIRE REINFORCEMENT - EACH GIRDER				
MARK	WIRE SIZE	S	L	J
WWR1	D31	6"	6'-6"	6"
WWR2	D31	6"	8'-6"	6"
WWR3	D31	12"	13'-0"	12"
WWR6	D31	12"	5'-0"	12 3/4"
WWR7	D31	18"	32'-0"	

BENDING DIAGRAMS	
WWR1, WWR2, WWR3, WWR6 & WWR7	W8 (Typ.)
D20 @ 6"	
D11 @ 6"	
W2 (Typ.)	
14 1/8"	
16 3/4"	
6 3/4"	
12"	
3'-3 3/8"	
WWR4	
WWR5	
3'-10 1/4"	
6"	
6"	
20"	
6"	
6"	
W8 (Typ.)	

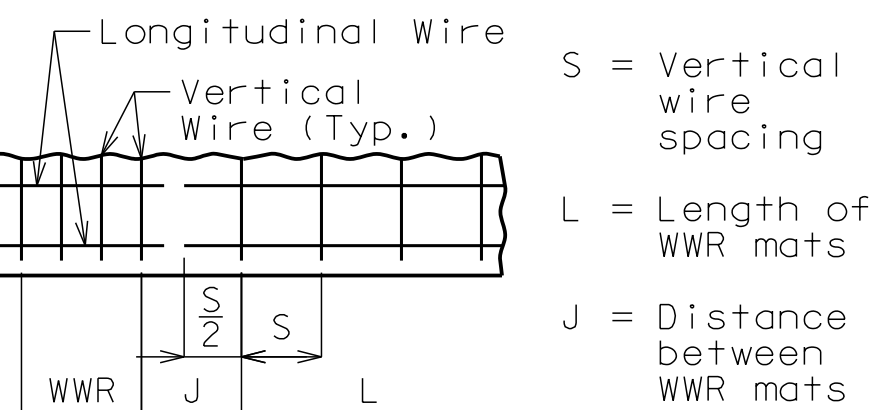


DIMENSIONS

STRAND ARRANGEMENTS

STRAND DETAILS AT GIRDER ENDS

WELDED WIRE PLACEMENT



General Notes:

Reinforcing Steel:

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All bar reinforcement shall be Grade 60.

Welded Wire Reinforcement (WWR) shall be in accordance with AASHTO M 221. WWR shall not be epoxy coated.

Miscellaneous:

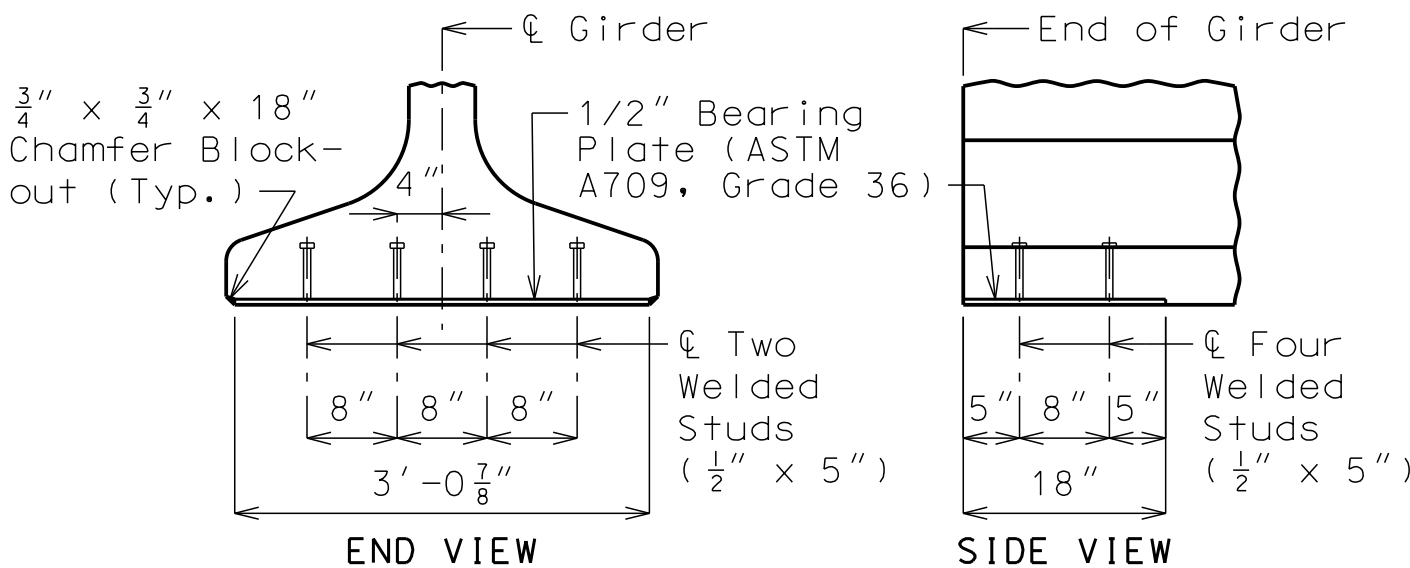
Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until girders are erected, then replaced by coil tie rods.

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not drill holes in the girders.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. 4, 5, 12, 13 and 16.

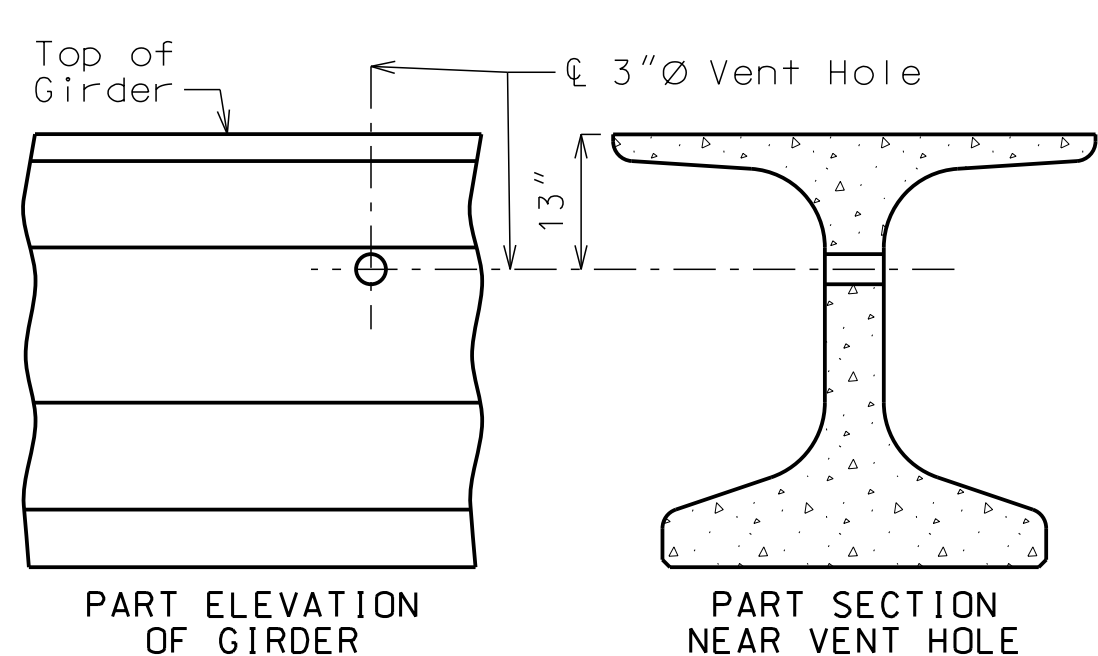
For Girder Camber Diagram, see Sheet No. 18.

Precaster shall make necessary adjustment in length of girder to account for slope of road and camber of girder. Adjust beam length and top flange blockout dimensions as necessary.



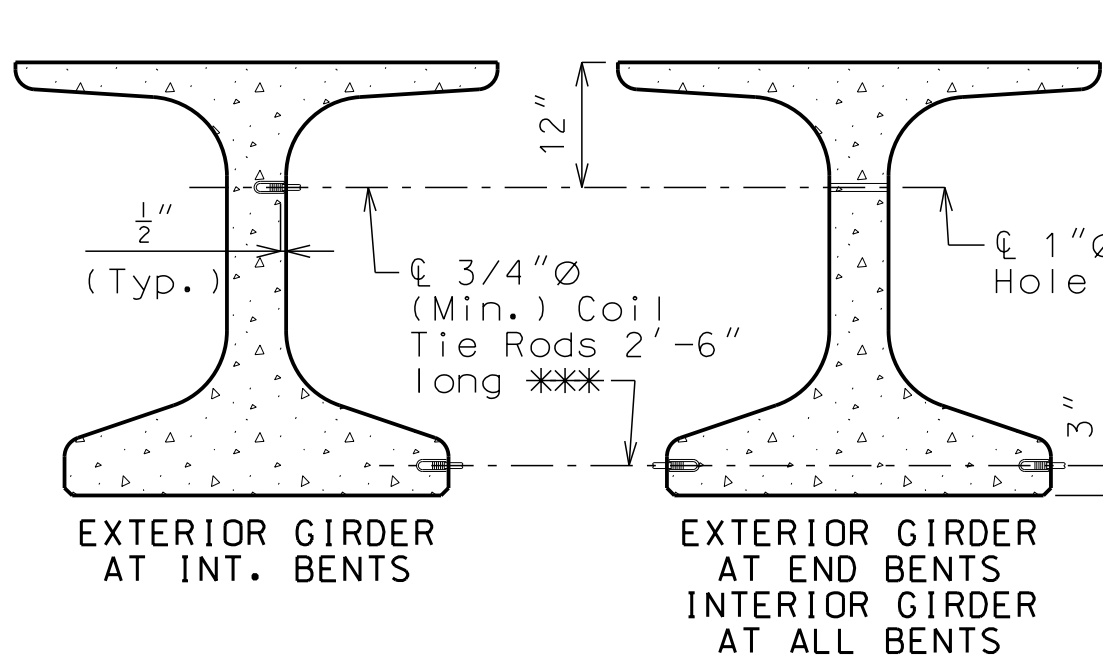
BEARING PLATE DETAILS

Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.



DETAILS OF VENT HOLE

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum.



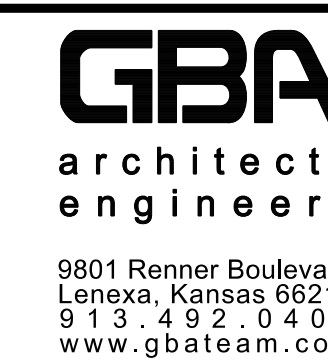
DETAILS OF COIL TIES

Cast 1"Ø hole horizontally in girder for #6 bar 5'-6" long and clear reinforcing steel or strands by 1 1/2" minimum.

*** Length of coil tie rods at exterior face of exterior girders at end bents = 2'-4".

*** Length of coil tie rods at faces adjacent to conduit blockout of Girders No. 1 & 2 at intermediate bents = 17".

Note: This drawing is not to scale. Follow dimensions.

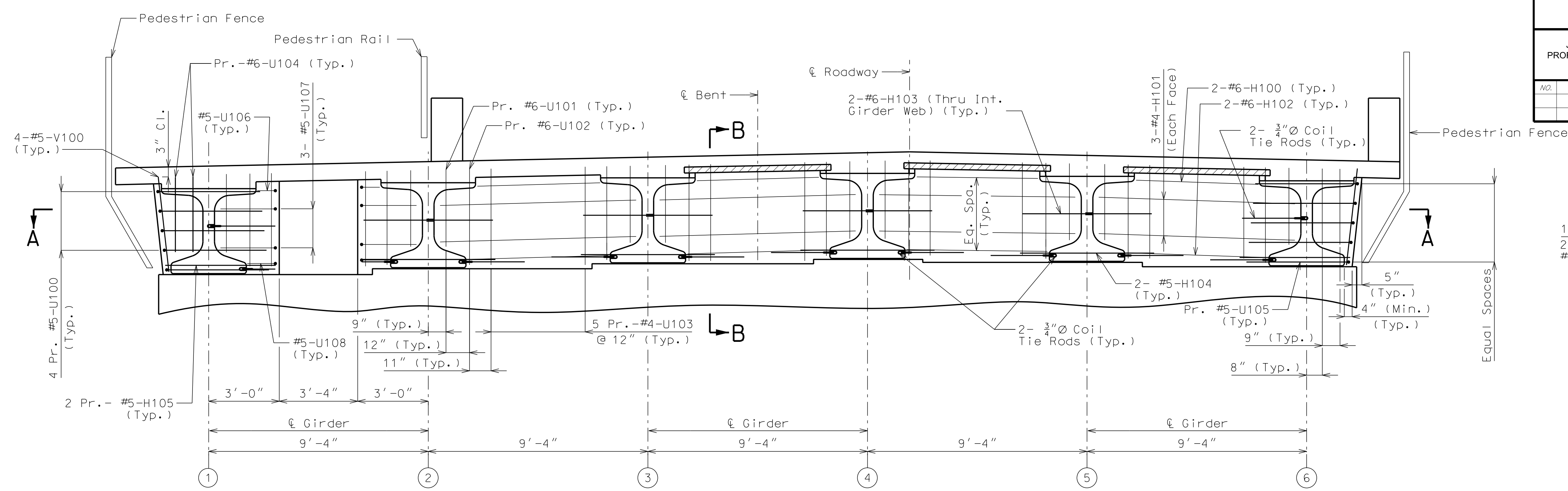


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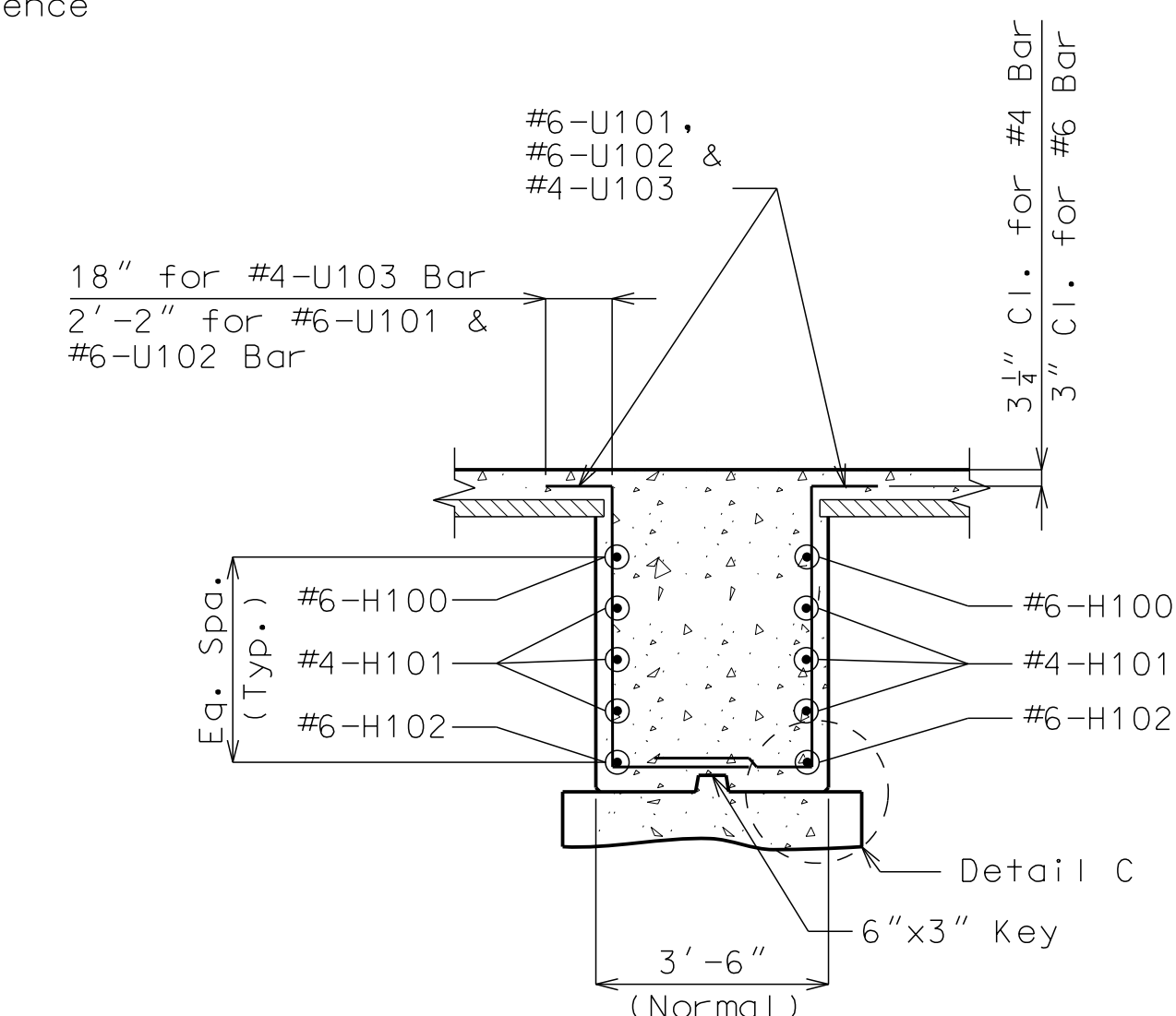
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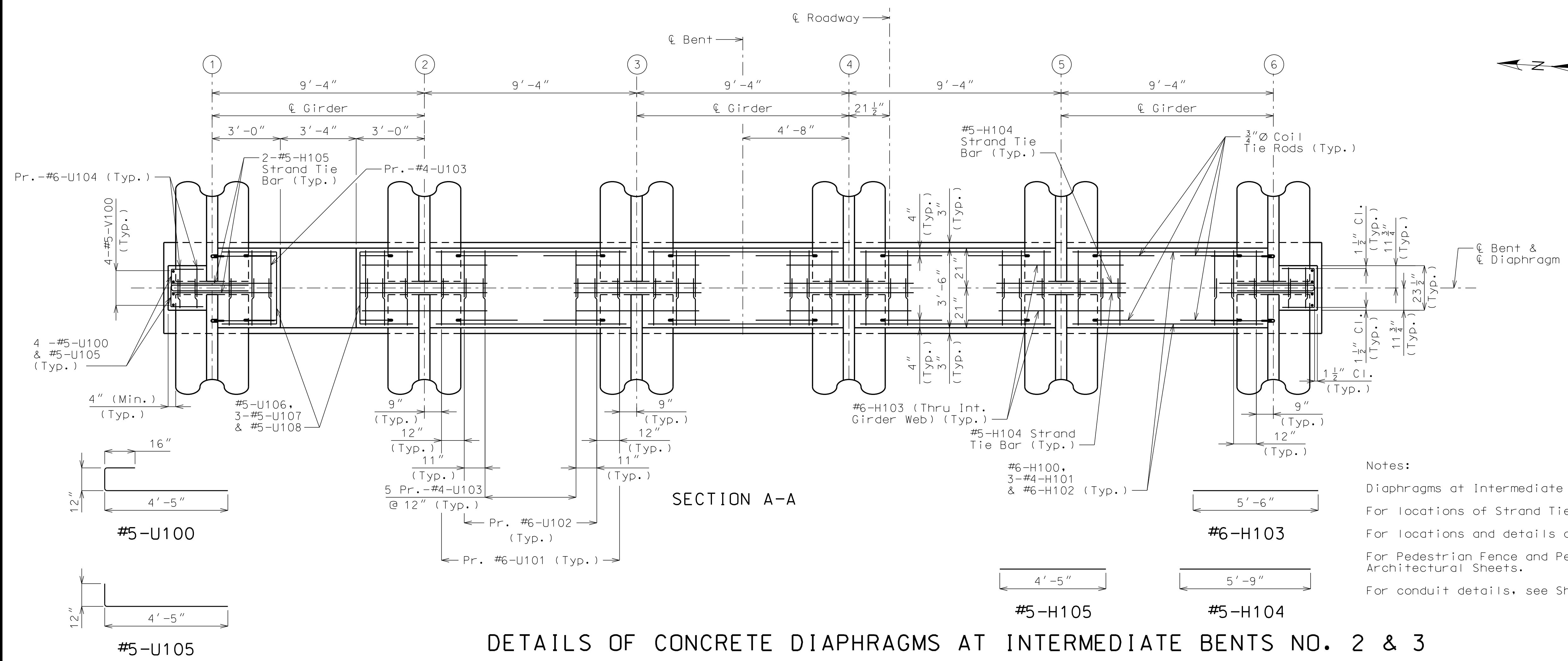
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SECTION NEAR INTERMEDIATE BENT
(Conduits and conduit hanger not shown for clarity.)

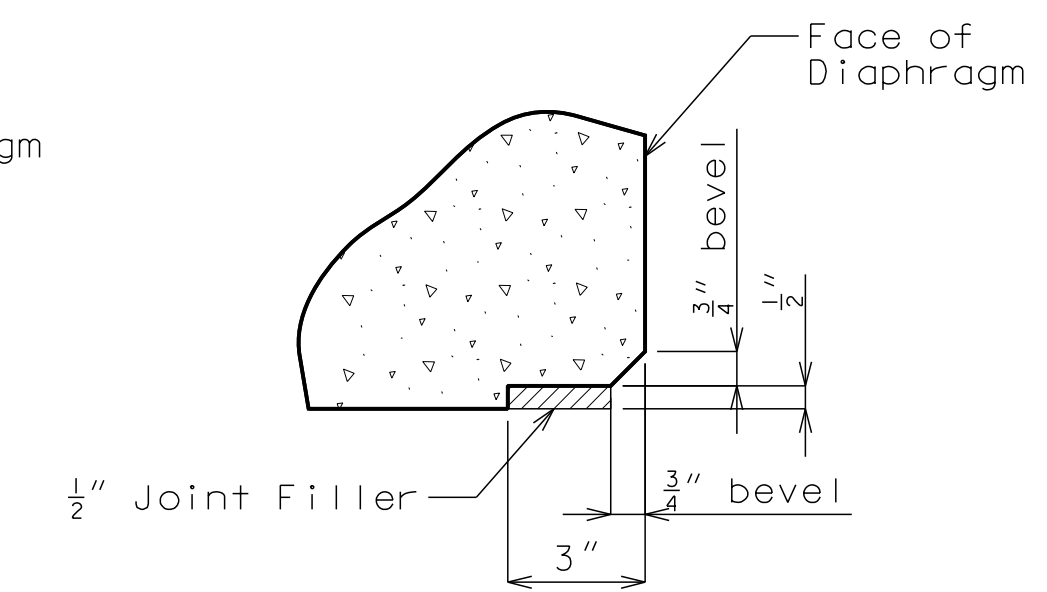


SECTION B-B



DETAILS OF CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3

Note: This drawing is not to scale. Follow dimensions.



DETAIL C

Notes:

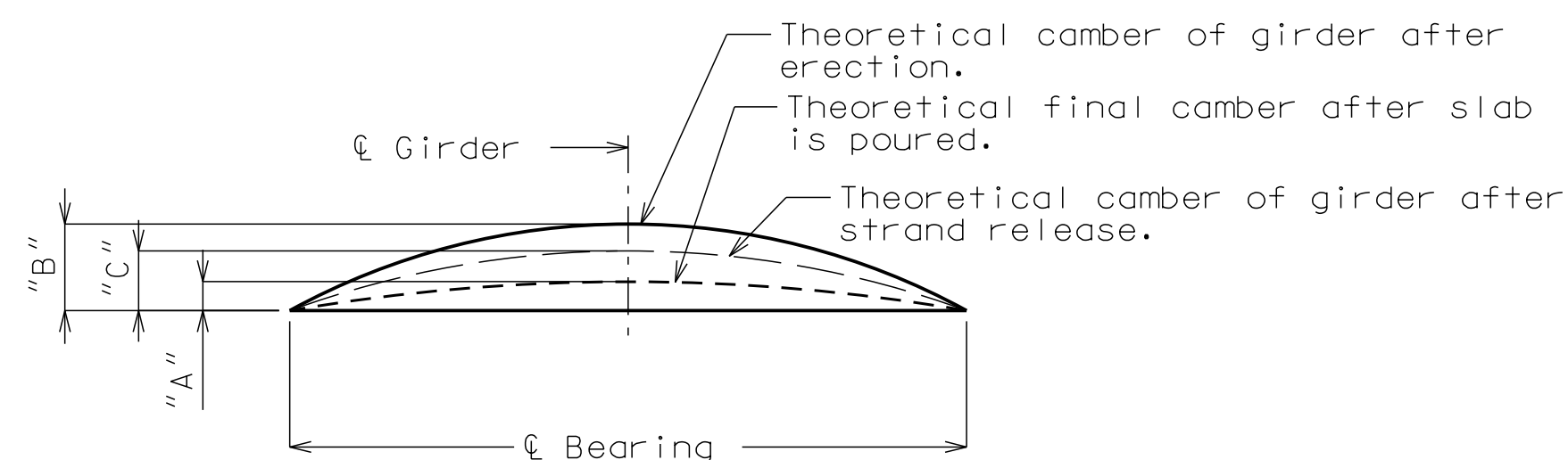
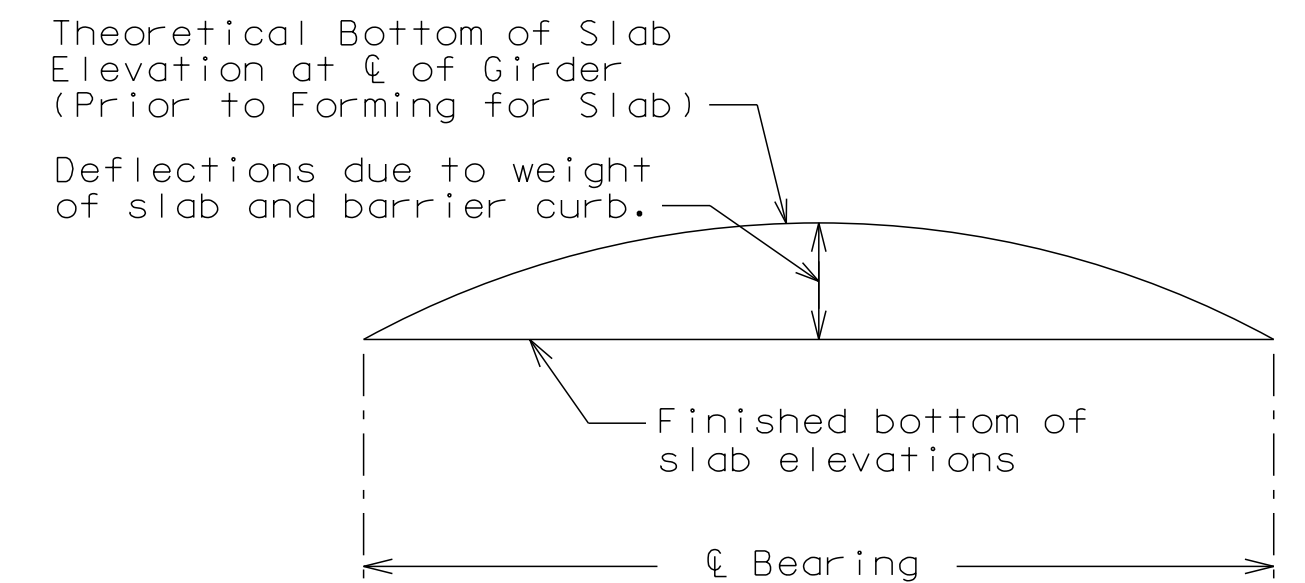
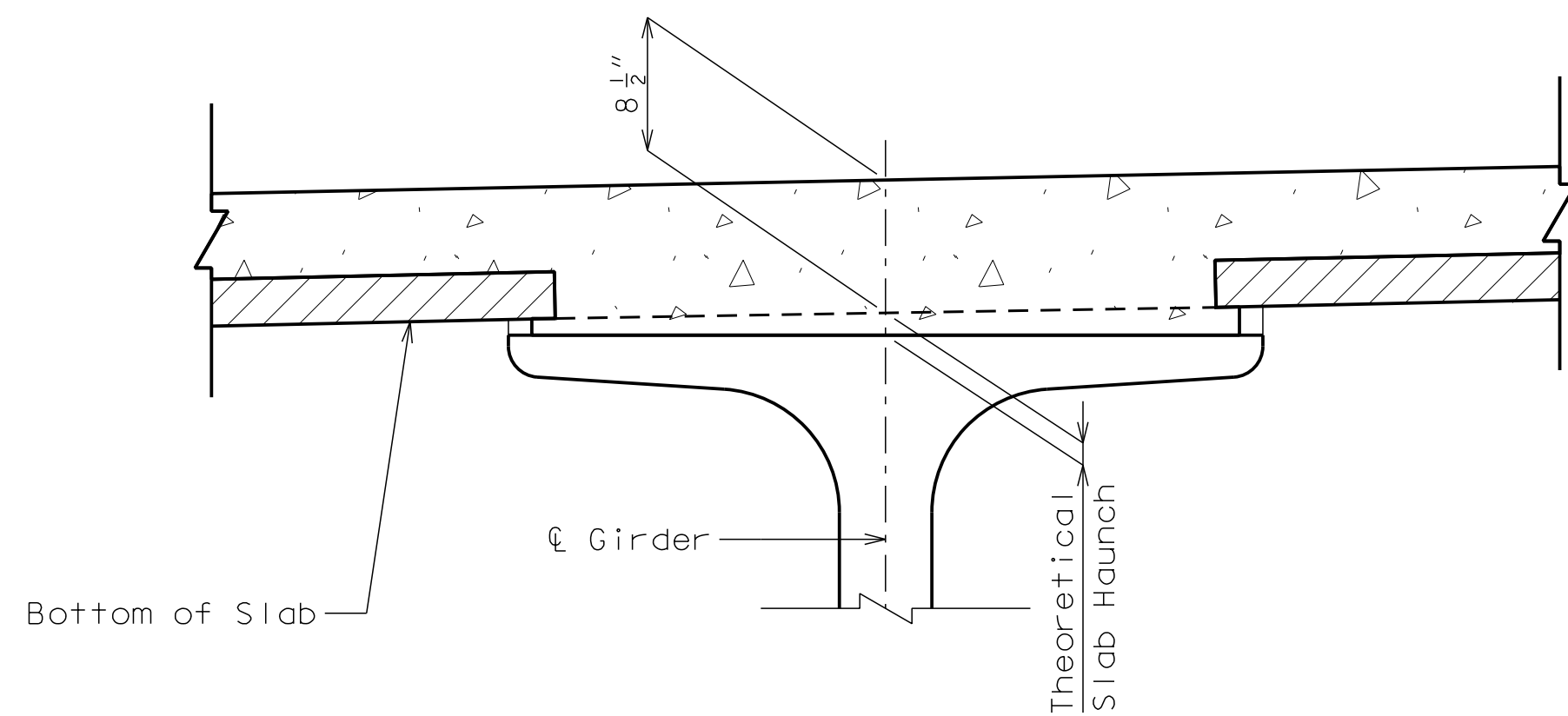
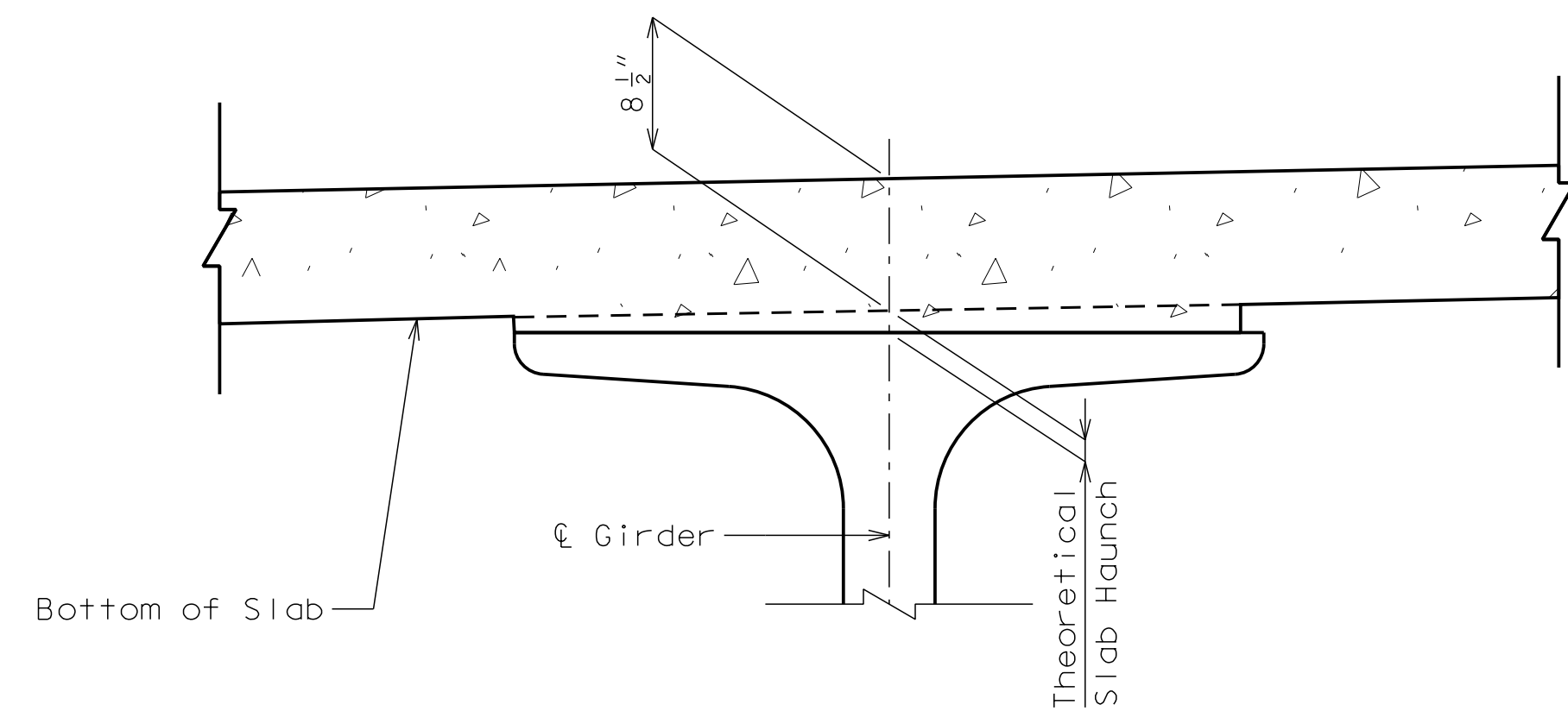
Diaphragms at Intermediate Bents shall be built vertically.

For locations of Strand Tie Bars, see Sheets No. 14 and 15.

For locations and details of Coil Tie Rods, see Sheets No. 14 and 15.

For Pedestrian Fence and Pedestrian Rail details, see Architectural Sheets.

For conduit details, see Sheets No. 26 and 27.



	Span (1-2)			Span (2-3)			Span (3-4)		
	"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"
Ext. Girder	0"	$\frac{1}{8}$ "	$\frac{1}{8}$ "	$1\frac{7}{8}$ "	5"	$2\frac{3}{4}$ "	0"	$\frac{1}{8}$ "	$\frac{1}{8}$ "
Int. Girder	0"			$1\frac{3}{4}$ "			0"		

Conversion factors for girder camber.

0.1 pt.	=	0.314	x	0.5 pt.
0.2 pt.	=	0.593	x	0.5 pt.
0.25 pt.	=	0.7125	x	0.5 pt.
0.3 pt.	=	0.813	x	0.5 pt.
0.4 pt.	=	0.952	x	0.5 pt.

[illegible]

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab)																					
	Span (1-2) (49'-5" @ brg - @ brg.)					Span (2-3) (103'-10" @ brg - @ brg.)										Span (3-4) (49'-5" @ brg - @ brg.)					
	@ brg.	.25	.50	.75	@ brg.	@ brg.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	@ brg.	@ brg.	.25	.50	.75	@ brg.
Girder No. 1	819.02	819.41	819.75	820.03	820.26	820.28	820.51	820.71	820.85	820.94	820.96	820.93	820.85	820.70	820.51	820.27	820.25	820.02	819.74	819.40	819.01
Girder No. 2	819.21	819.60	819.94	820.22	820.45	820.47	820.71	820.90	821.05	821.14	821.17	821.14	821.05	820.90	820.70	820.46	820.44	820.21	819.93	819.59	819.20
Girder No. 3	819.39	819.79	820.13	820.41	820.63	820.65	820.89	821.09	821.24	821.32	821.35	821.32	821.23	821.09	820.89	820.65	820.63	820.40	820.12	819.78	819.38
Girder No. 4	819.58	819.97	820.31	820.59	820.82	820.84	821.08	821.28	821.42	821.51	821.54	821.51	821.42	821.27	821.07	820.83	820.81	820.59	820.30	819.96	819.57
Girder No. 5	819.47	819.86	820.20	820.48	820.70	820.72	820.97	821.16	821.31	821.40	821.43	821.40	821.30	821.16	820.96	820.72	820.70	820.47	820.19	819.85	819.46
Girder No. 6	819.28	819.67	820.01	820.29	820.52	820.54	820.77	820.97	821.11	821.19	821.22	821.19	821.10	820.96	820.77	820.53	820.51	820.28	820.00	819.66	819.27

Elevations are based on a constant slab thickness of $8\frac{1}{2}"$ and include allowance for theoretical dead load deflections due to weight of slab including precast panel.

SLAB DETAILS

Note: This drawing is not to scale. Follow dimensions.

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JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

PE-2009010386

DATE: 09-17-20

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DRAWN BY: DWM

PROJECT NO.: 12720

SHEET NO. 19

TOTAL SHEETS 30

GBA

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engineers

9801 Renner Boulevard

Lenexa, Kansas 66219

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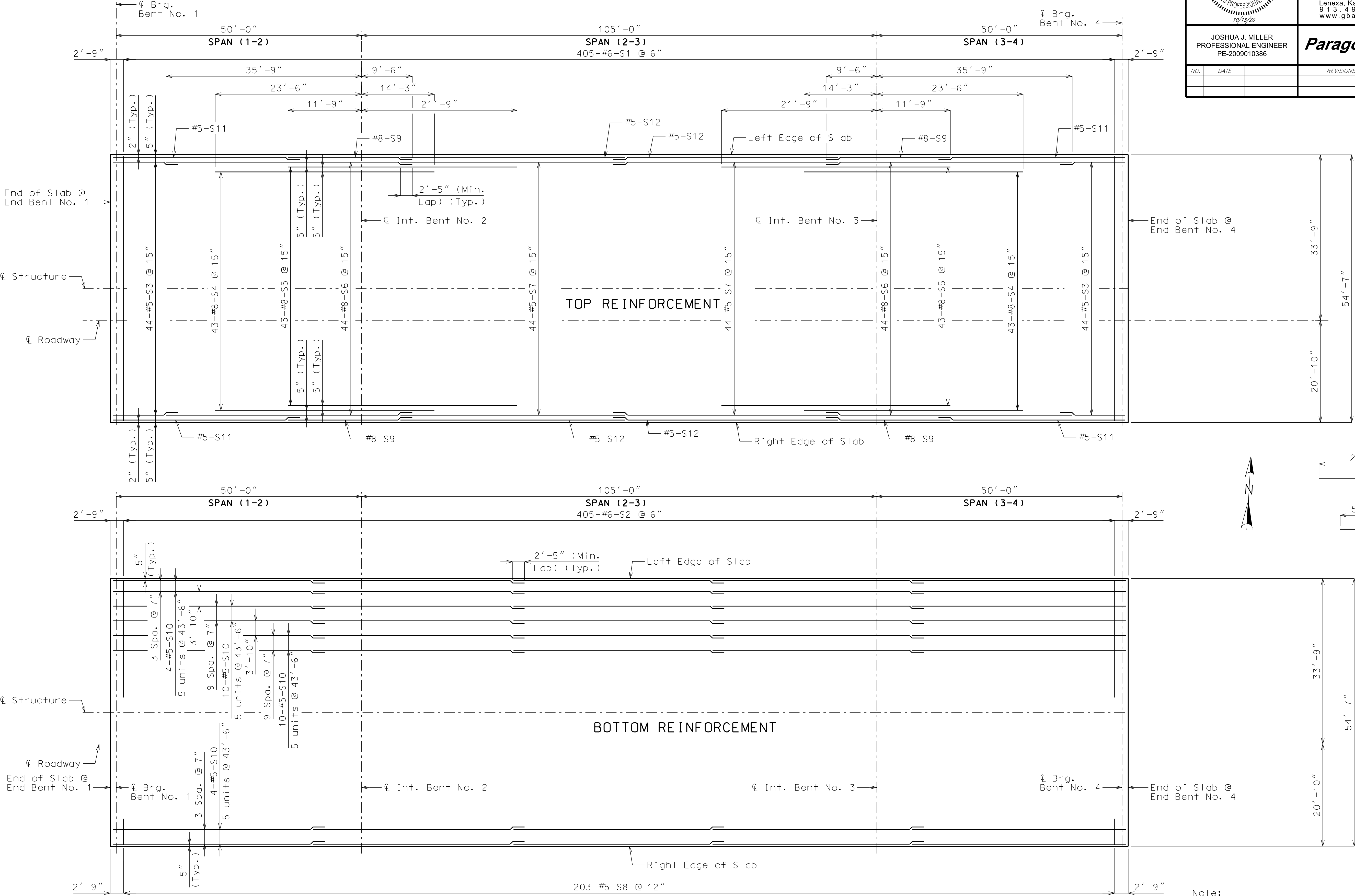
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PLAN OF SLAB SHOWING REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Note: Barrier and curb reinforcement not shown for clarity.

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GBA

architects

engineers

9801 Renner Boulevard

Lenexa, Kansas 66219

913.492.0400

www.gbateam.com

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Light Posts (By Others) (Beyond) (Typ.)

54'-7"

27'-3 1/2"

13'-5"

10'-0" (Min.) Sidewalk

16"

12" Shy

36'-0" Roadway

3- 12'-0" Lanes = 36'-0"

16"

18" Shy

6'-5 1/2"

27'-3 1/2"

3'-6" (Min)

#6-S1

#5-S3 or #5-S7

#5-S11 or #5-S12

2" (Typ.)

5" (Typ.)

4-#5-S10 @ 7" (Typ.)

3'-10"

10-#5-S10 @ 7"

3'-10"

10-#5-S10 @ 7"

3'-11 1/2"

9'-4"

9'-4"

9'-4"

9'-4"

9'-4"

3'-11 1/2"

2 3/4" CL.

2% Slope

2% Slope

3" Precast P/S Panel (Typ. 3 Bays)

#6-S2

#5-S8 (Typ.)

#8-S4

#8-S5

#8-S6

#8-S9

3'-6" (Min)

2'-8"

2" (Typ.)

5" (Typ.)

4-#5-S10 @ 7" (Typ.)

3'-6"

12" Shy

Safety Barrier Curb

Const. Joint

#5-S3 or S7 @ 15" (Typ.)

Pedestrian Rail

Pedestrian Fence

Detail A

Detail B (Typ.)

Contractor may shift or swap bars as needed to tie R1 bar in barrier (4" min. bar spacing)

Contractor may shift bar as needed to tie R3 bar in barrier

HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB
(Median not shown for clarity.)

HALF SECTION NEAR INTERMEDIATE BENT

Out to out of curbs

1 5 2 4 3

Const. joint

43'-7" 7'-8" 42'-0" 21'-0" 42'-0" 7'-8" 43'-7"

51'-3" 105'-0" 51'-3"

SPAN (1-2) SPAN (2-3) SPAN (3-4)

6"x3" Curb

Galvanized Strap 1/4" Thk. x 2"W x 4'-0"L w/ 1 1/2" Lip @ end Spaced @ 2'-0" (Max.)

6"

3"

6"

Edge of Slab

Pedestrian Fence

Galvanized Strap 1/4" Thk. x 2"W x 2'-0"L w/ 1 1/2" Lip @ end Spaced @ 2'-0" (Max.)

Const. Joint

Galvanized 7x4x3/8 Continuous Bent Plate

For Curb details, see Sheet No. 25

Const. Jt.

2"

8"

DETAIL B

2% Cross Slope

Top of Slab

Profile Grade

Crown of Slab

2'-0" 2'-0" 4'-0"

Parabolic Crown

DETAIL A

	Sequence of Pours					Min. rate of pour cu. yds./hr.		
	Direction							
	1	2	3	4	5			
Basic sequence	Either direction					25		
Alternate pours to the basic Skip sequence are subject to the approval of the engineer in accordance with Sec 703.								
Alternate "A" pours	1	5 + 2		4 + 3		38		
	End to 5	1 to 4		2 to end				
Alternate "B" pours	1 + 5 + 2	4 + 3				38		
	End to 4	2 to end						
Alternate "C" pours	1 + 5 + 2 + 4 + 3					38		
	End to end							

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given.

SLAB POURING SEQUENCE

SIDEWALK CURB AND PEDESTRIAN FENCE ATTACHMENT DETAIL

Finish each side of joint with 1/4" radius edging tool

1"

3 1/2"

2 3/4"

2"

1 1/2"

1 1/2"

Key to extend full width of full depth slab

Const. Jt.

FULL DEPTH SLAB

Finish each side of joint with 1/4" radius edging tool

Const. Joint (Extend full width of deck)

Panel Joint

** Adjust the construction joint to a clearance of 6 inches minimum from the panel joint.

SLAB ON PANELS

SLAB CONSTRUCTION JOINT

SLAB DETAILS

Note: This drawing is not to scale. Follow dimensions.

Notes:

For details of precast prestressed panels, see Sheet No. 17.

For reinforcement of Barrier Curb not shown, see Sheets No. 21-23 and 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 18.

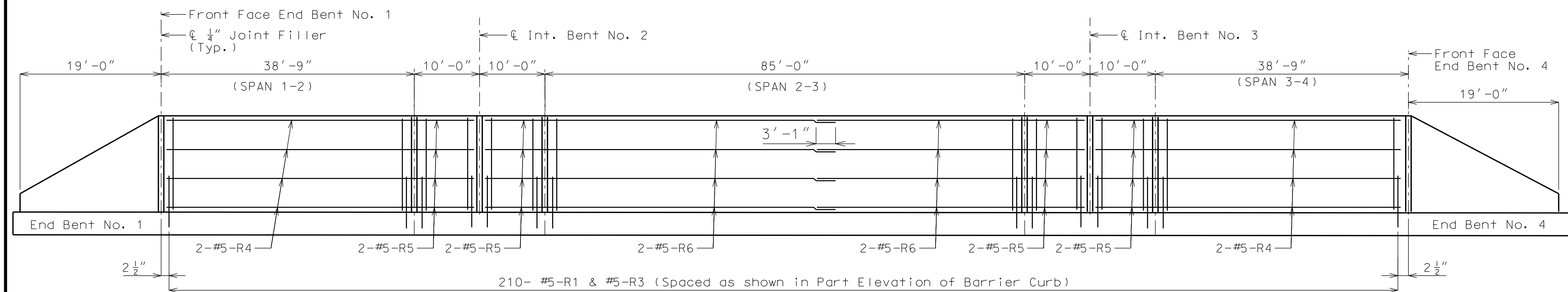
For Plan of Slab Showing Reinforcement, see Sheet No. 19.

For Conduit details, see Sheets No 26 and 27.

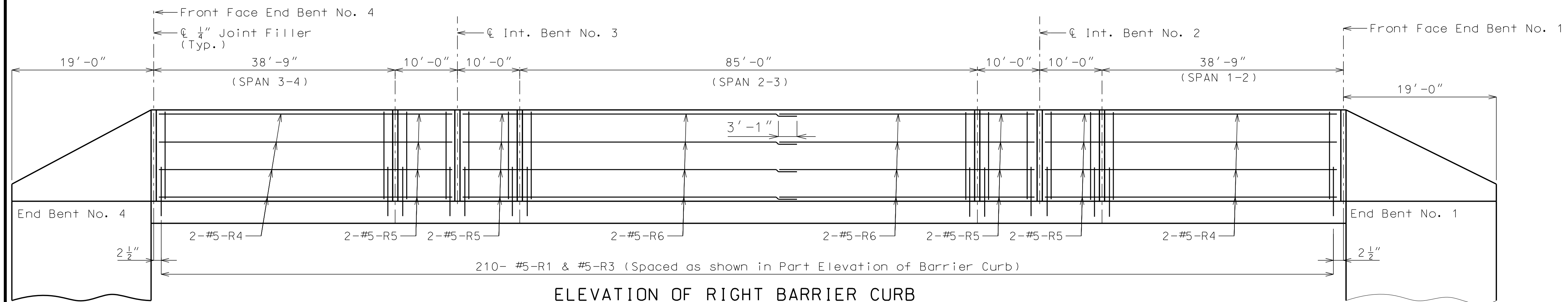
For Pedestrian Fence and Pedestrian Rail details, see Architectural Sheets.

For median details, see Street Plans.

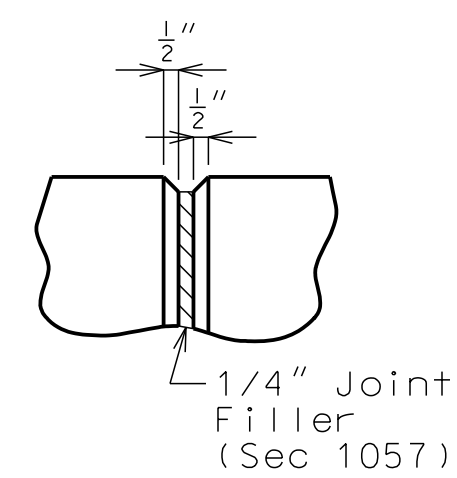
The sidewalk segment of the bridge shall have a minimum cross-slope of 1.5%. Cross-slopes steeper than 2% are not compliant with ADA and must be made compliant by whatever means necessary, including removal and replacement.



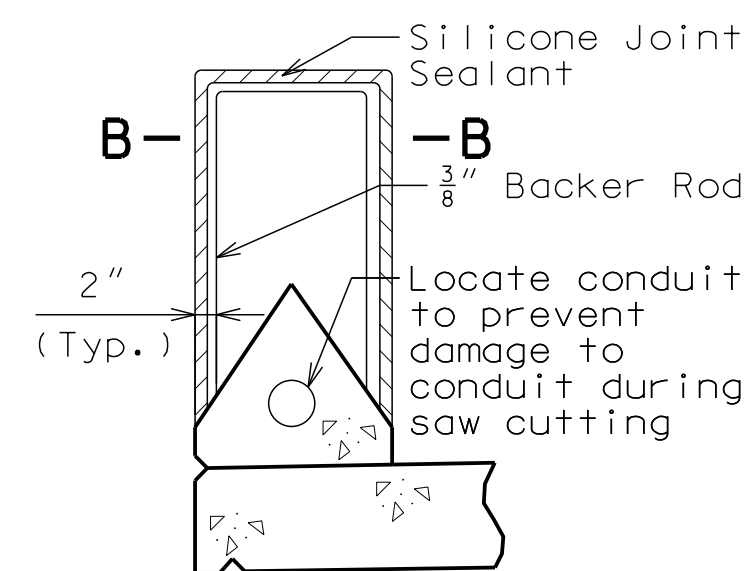
ELEVATION OF LEFT BARRIER CURB
 Longitudinal dimensions are horizontal.



ELEVATION OF RIGHT BARRIER CURB
 Longitudinal dimensions are horizontal.

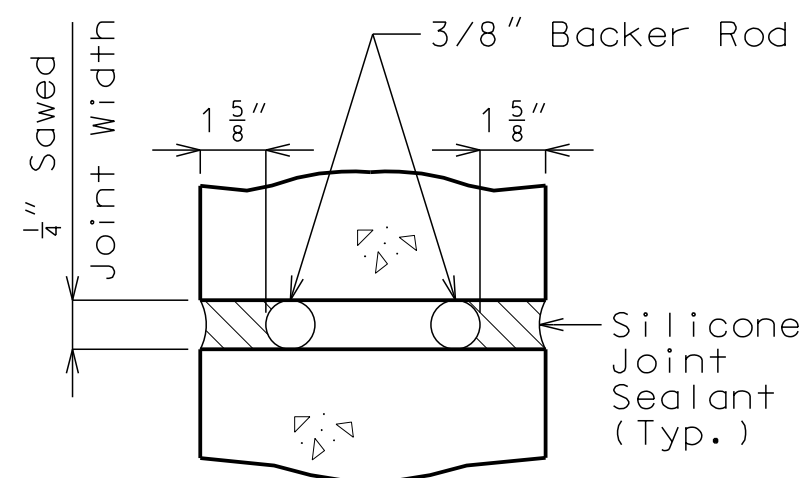


PART ELEVATION AT FORMED JOINT

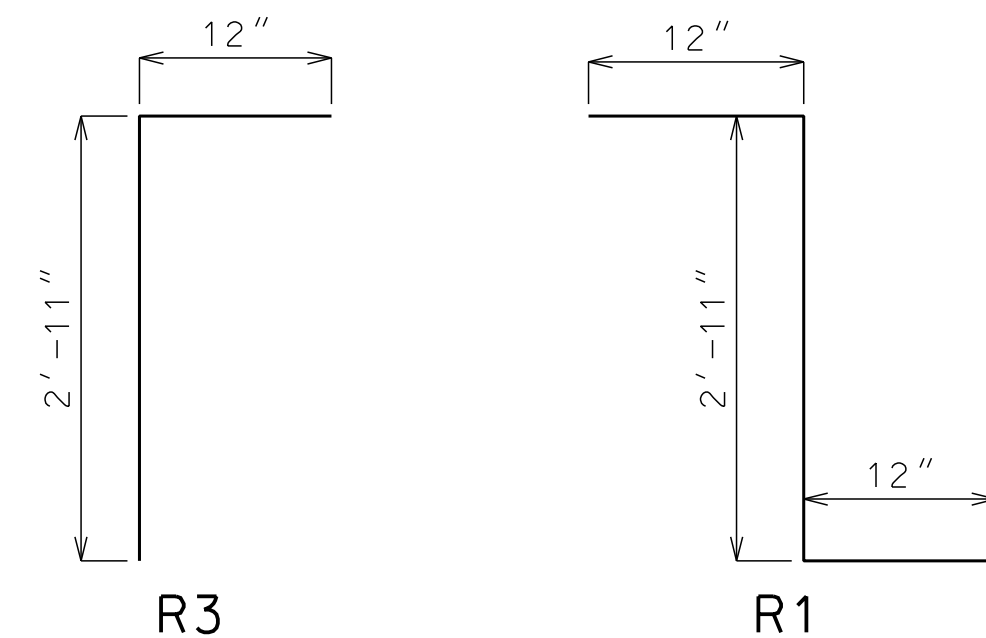


SECTION THRU SAW CUT JOINT

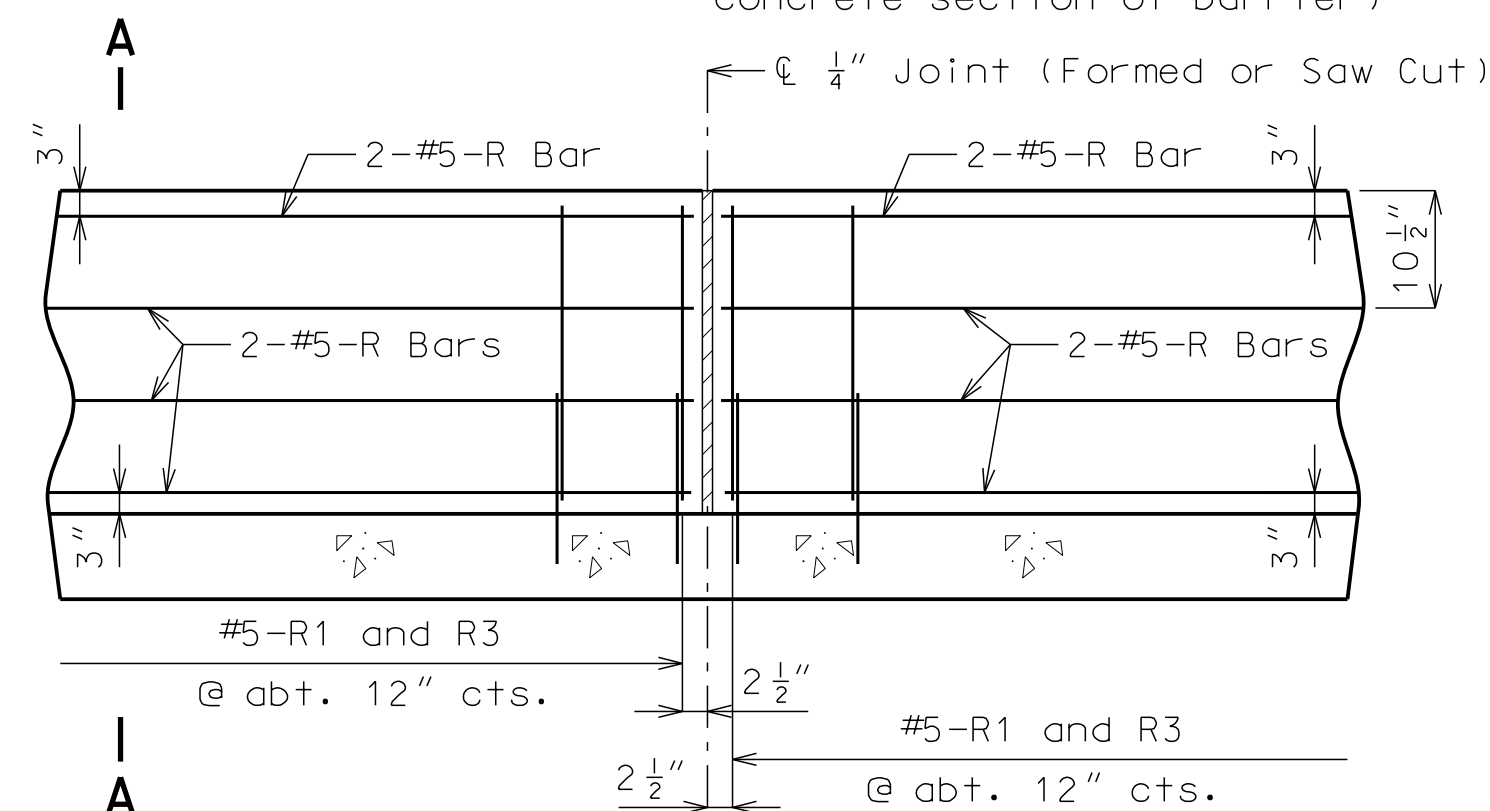
(Use when conduit is required)
 (Place conduit in center of concrete section of barrier)



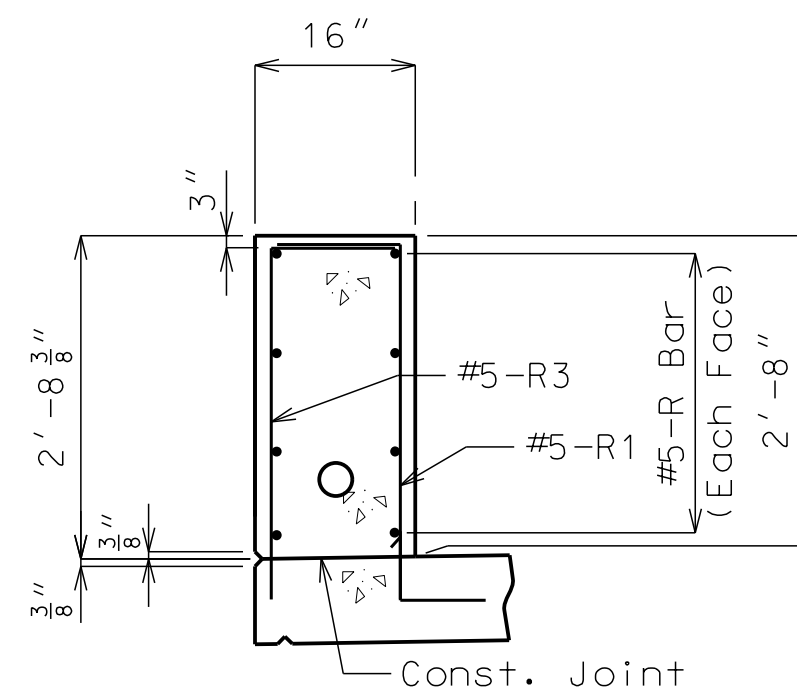
SECTION B-B



BAR BENDING DIAGRAM

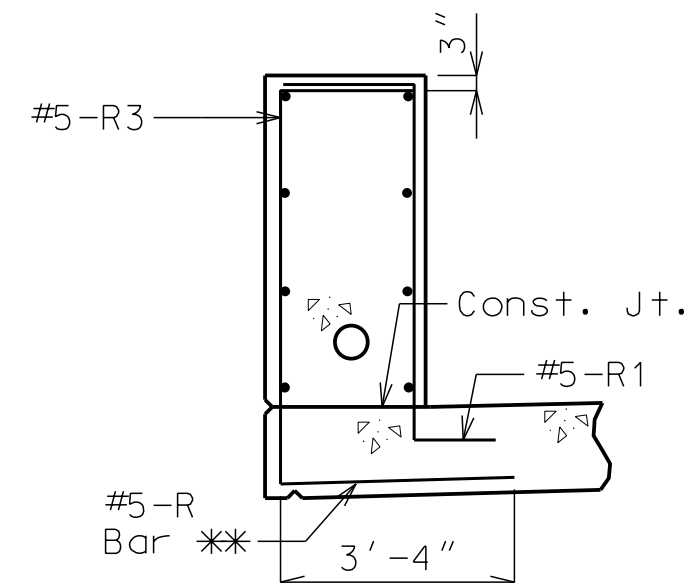


PART ELEVATION OF BARRIER CURB



SECTION A-A

The cross-sectional area above the slab = 3.56 sq. ft.



R-BAR PERMISSIBLE ALTERNATE SHAPE

** The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.

CONVENTIONAL-FORMED BARRIER CURB

Note: This drawing is not to scale. Follow dimensions.

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	NO.	DATE	REVISIONS

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

NUMBER
PE-2009010386

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DESIGN BY: JJM

DRAWN BY: DWM

PROJECT NO.: 12720

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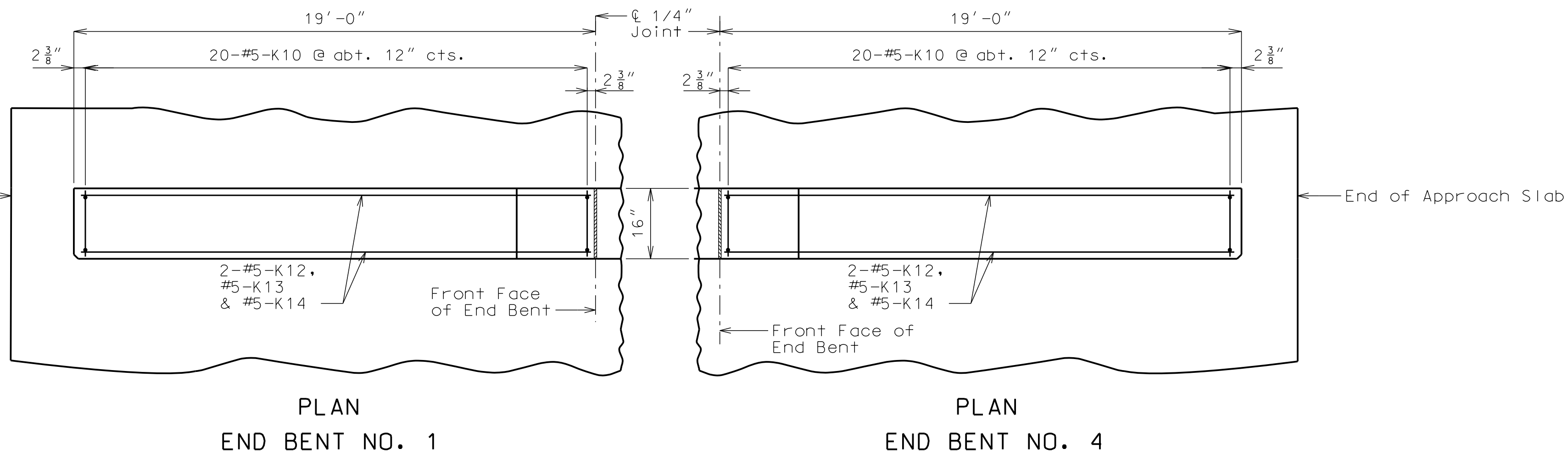
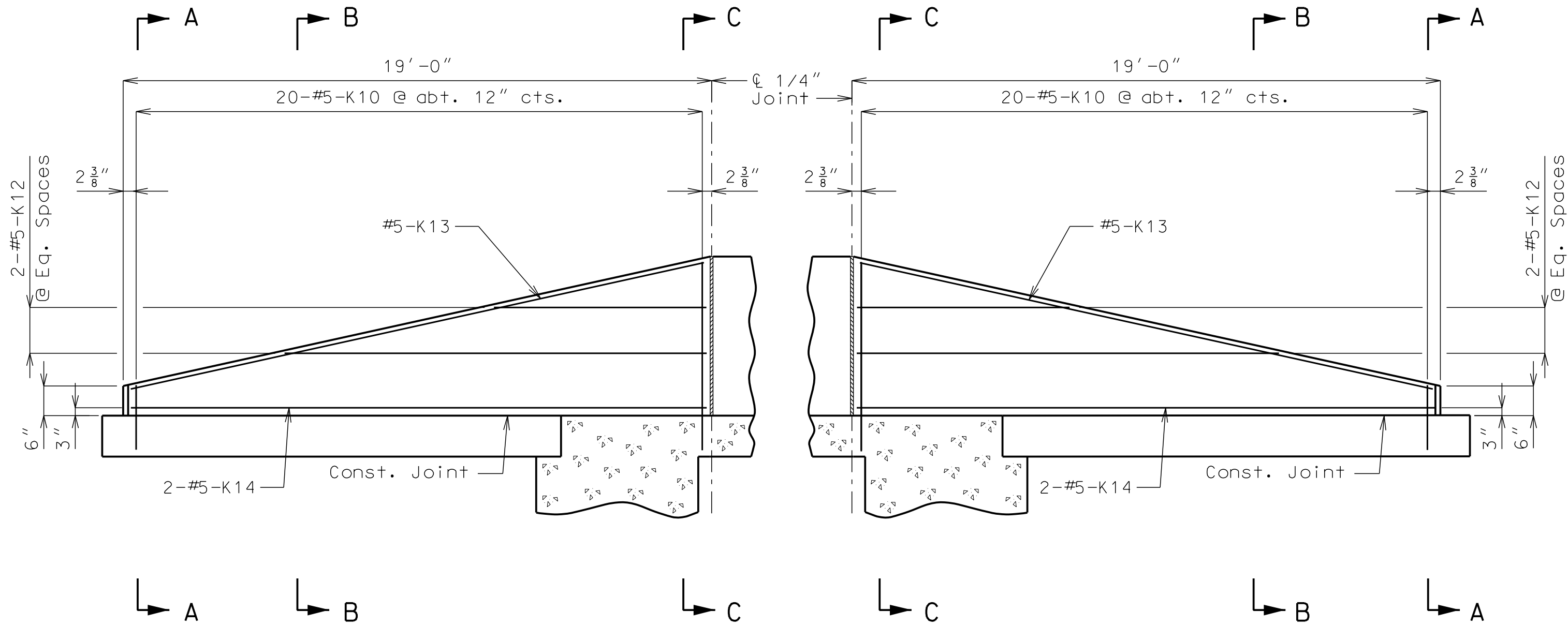
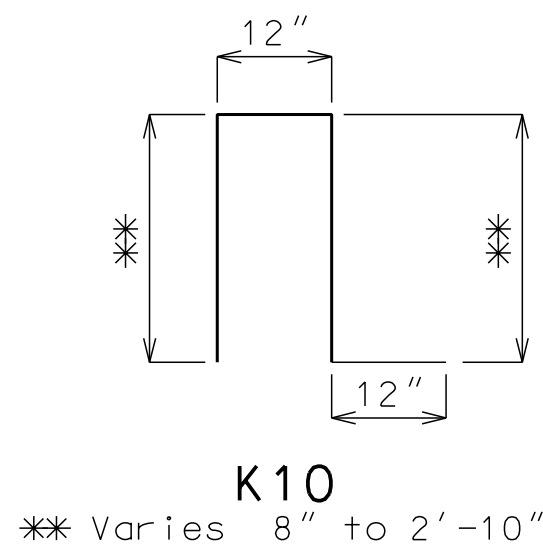
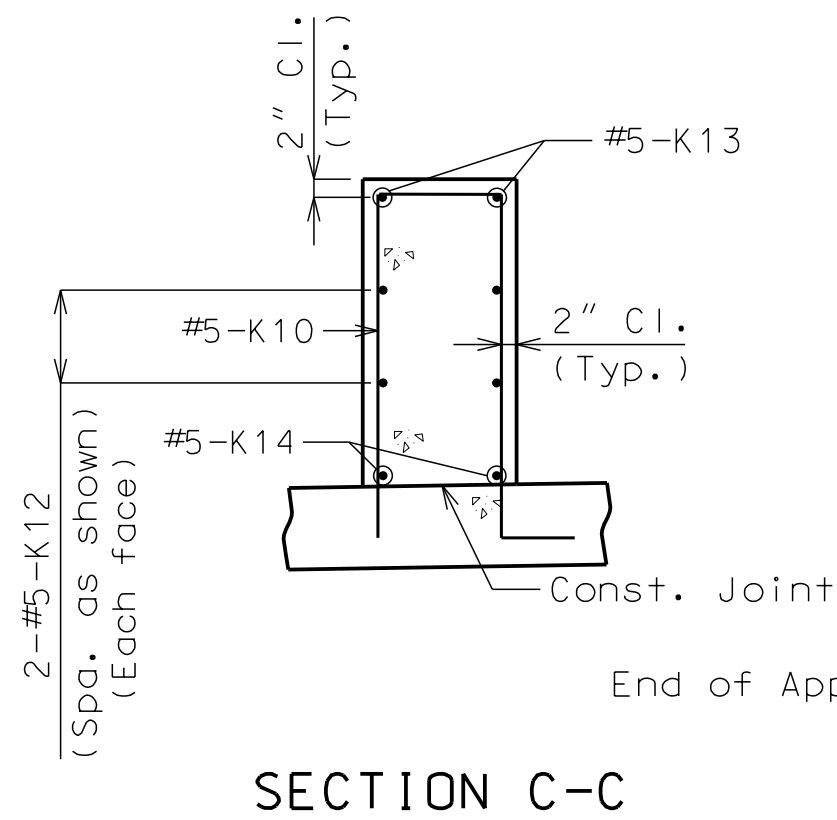
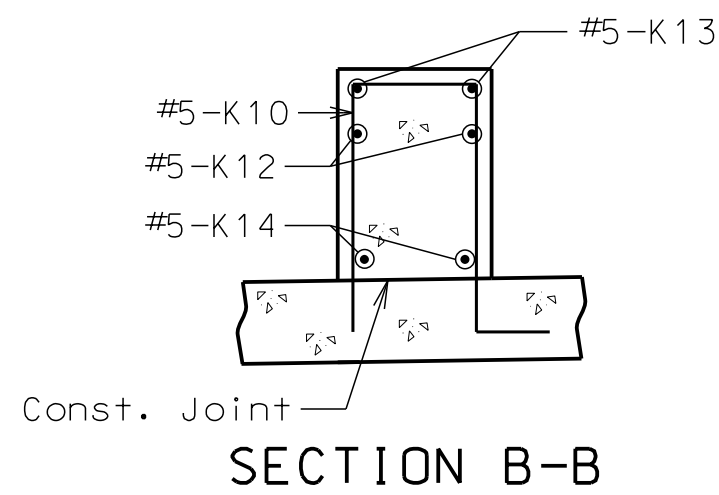
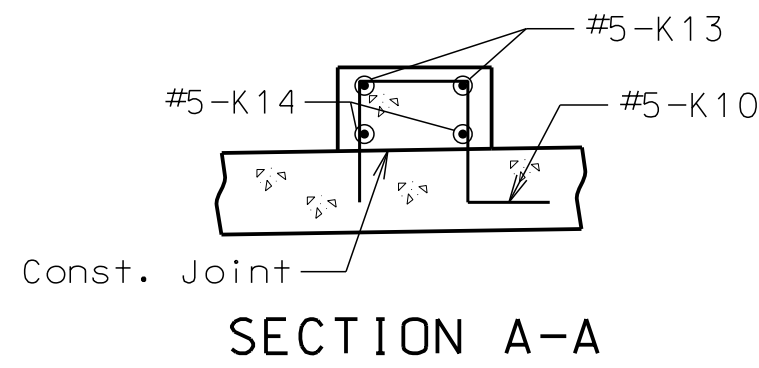
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Lee's Summit, Missouri

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PROFESSIONAL ENGINEER
PE-2009010386

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General Notes

Concrete traffic barrier delineators shall be placed on top of the barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617 of the Missouri Standard Specifications for Highway Construction. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2".

CONVENTIONAL-FORMED LEFT BARRIER CURB AT END BENTS ON CONCRETE APPROACH SLAB

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

NUMBER
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DATE: 09-17-20

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DRAWN BY: DWM

PROJECT NO.: 12720

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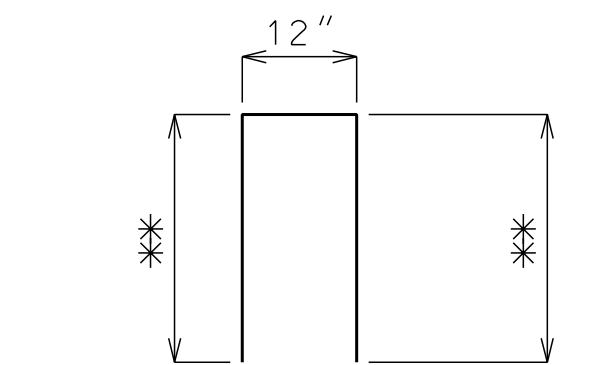
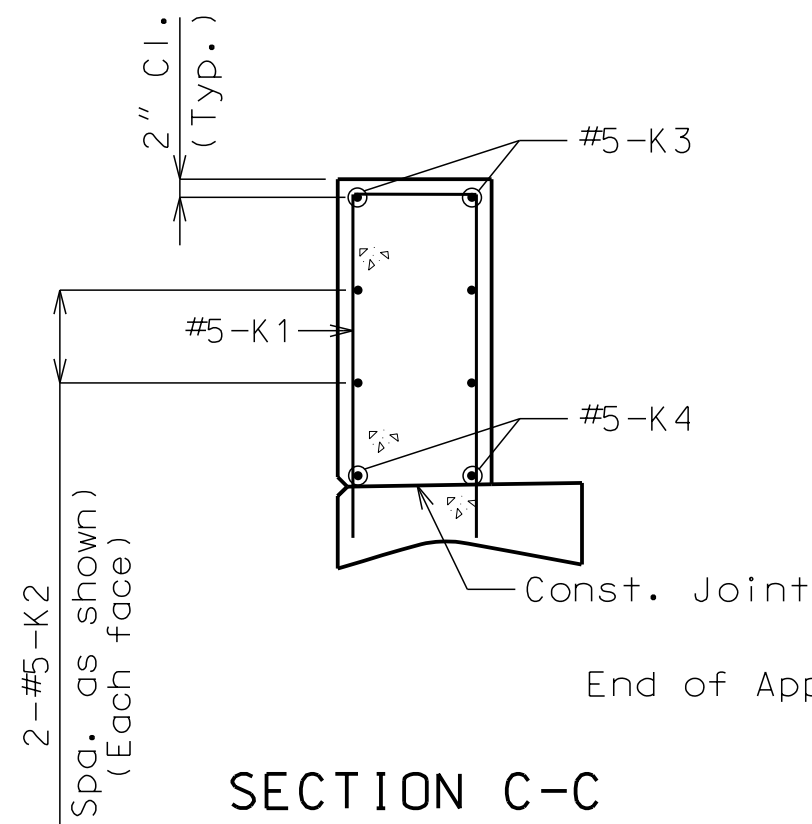
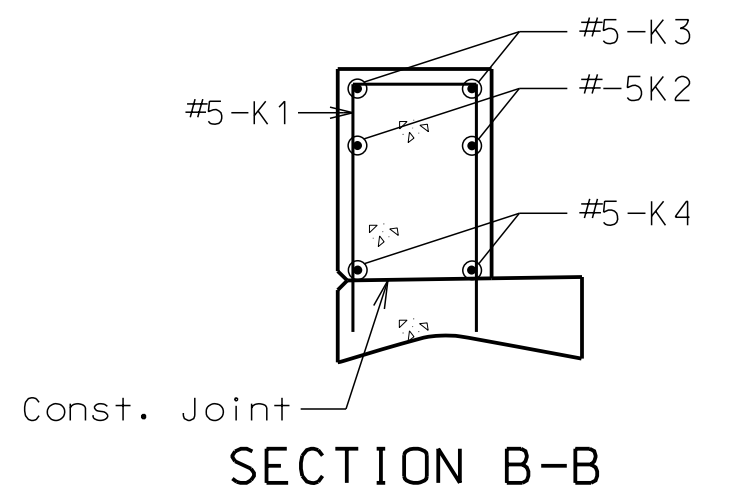
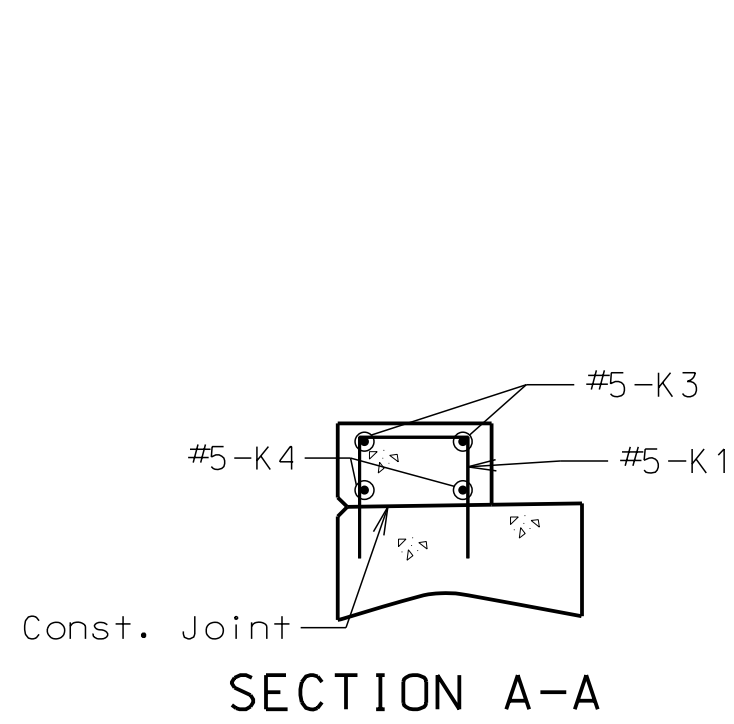
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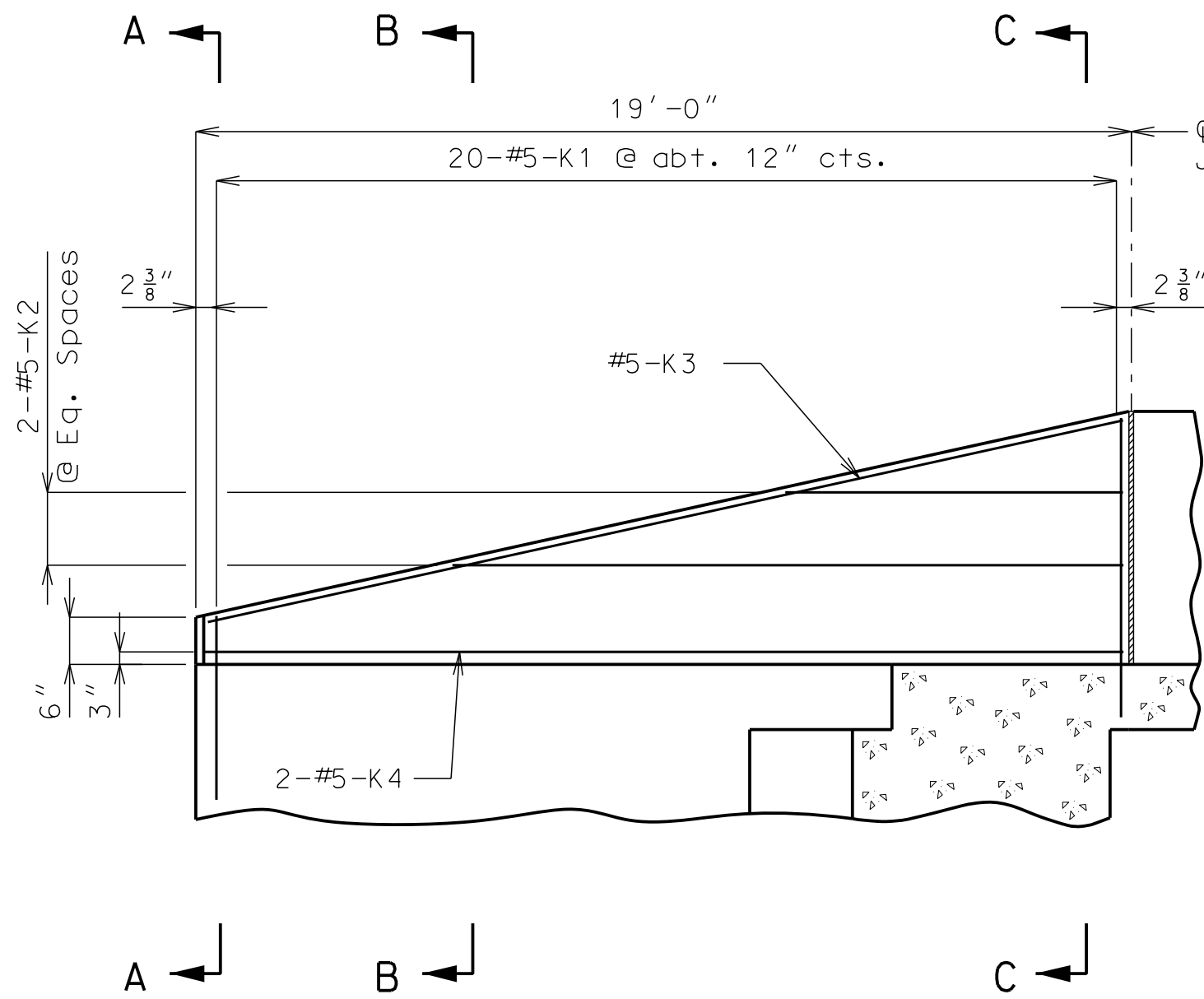
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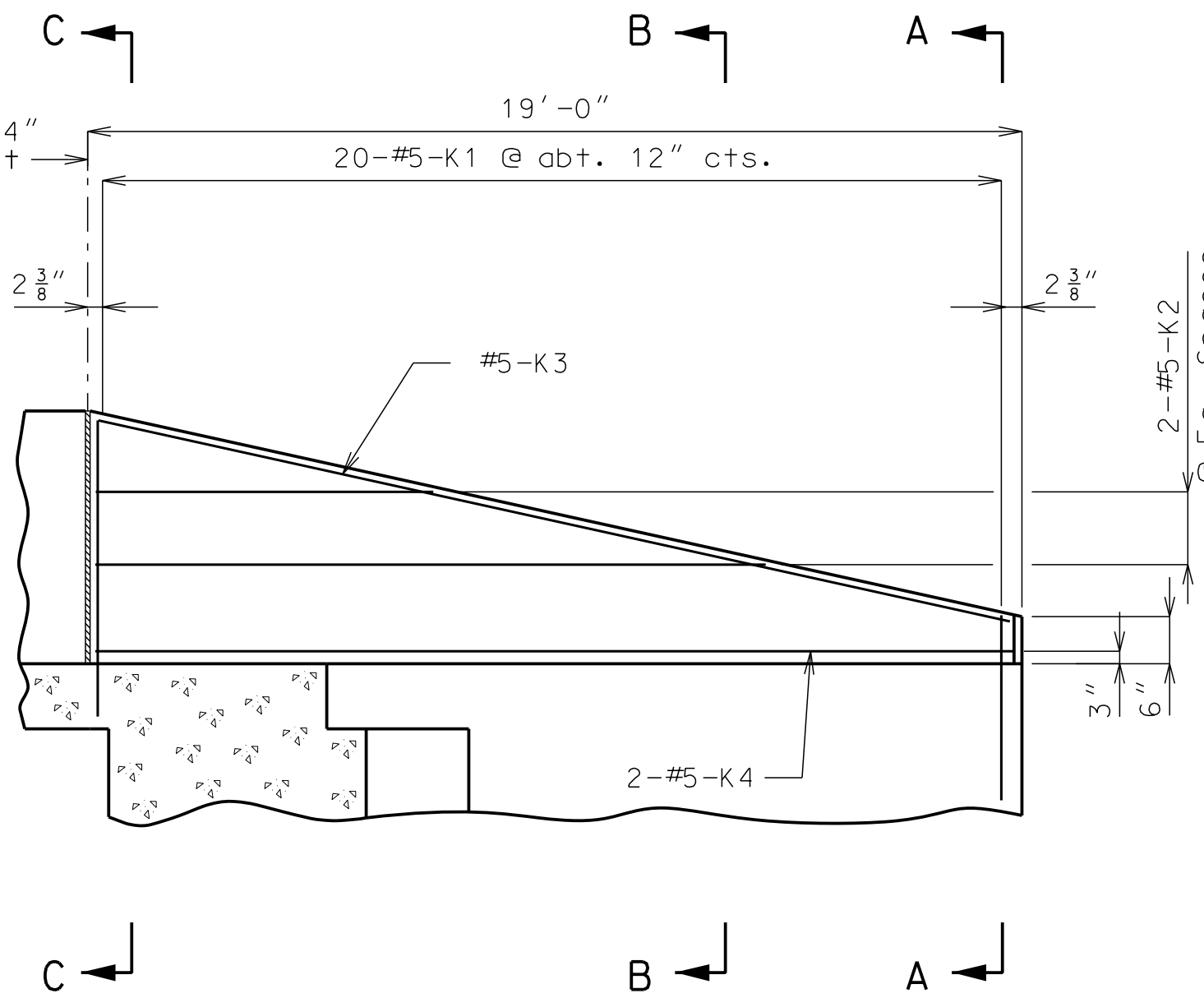
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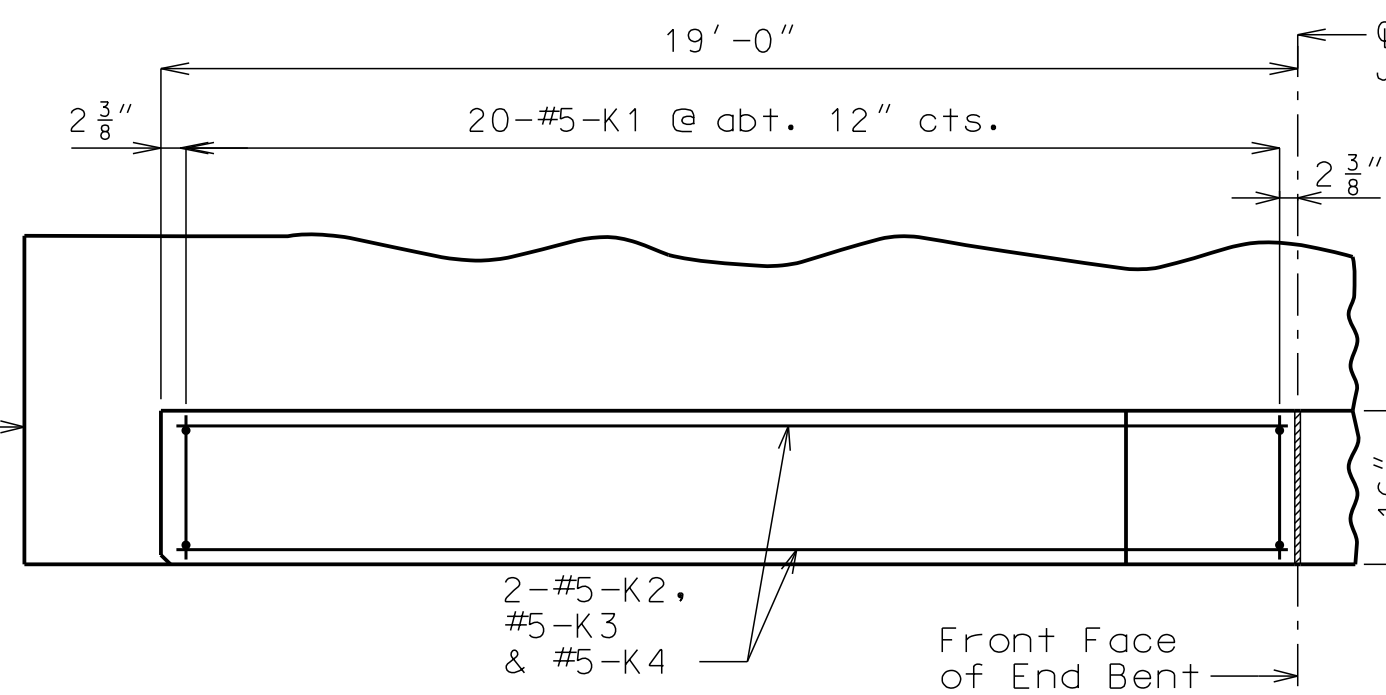
K1
Varies 1'-10" to 4'-0"



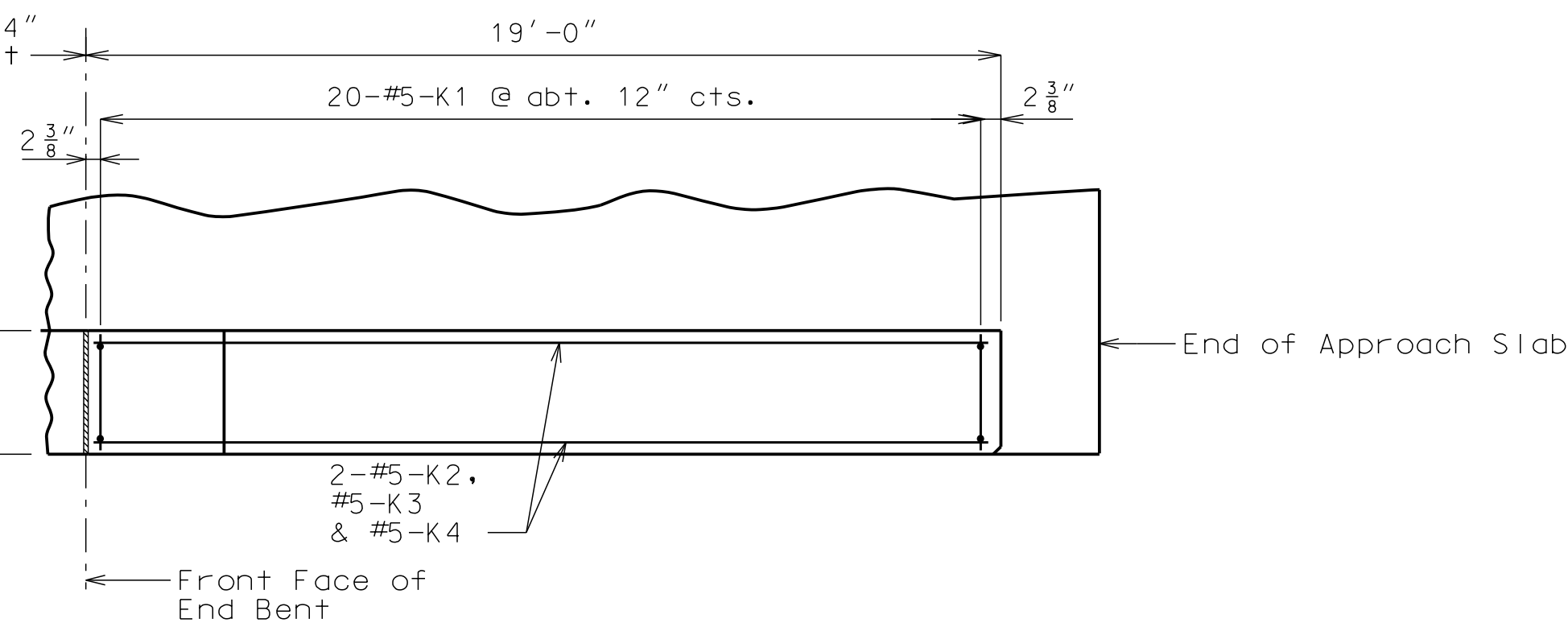
ELEVATION
END BENT NO. 1



ELEVATION
END BENT NO. 4



PLAN
END BENT NO. 1



PLAN
END BENT NO. 4

General Notes

Concrete traffic barrier delineators shall be placed on top of the barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617 of the Missouri Standard Specifications for Highway Construction. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2".

CONVENTIONAL-FORMED RIGHT BARRIER CURB AT END BENTS ON WING

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

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architects
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Lenexa, Kansas 66219
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ELEVATION
(Looking North)
(Pedestrian Fence not shown for clarity. See Architectural Sheets.)

Notes:

For details of Light Support and Barrier reinforcement, see Sheet No. 26.

For conduit details, see Sheets No. 26 and 27.

For light standards, light baseplate, and wiring, see "Public Street, Storm Sewer and Street Lighting Plans for Paragon Star Development Paragon Parkway" plans set.

For curb and raised median details, see Sheet No. 25.

For aesthetic details and connections, see Architectural Sheets.

PLAN
(Conduit System with hanger not shown for clarity)
GENERAL PLAN AND ELEVATION OF AESTHETIC DETAILS, LIGHTING, AND CONDUIT

Note: This drawing is not to scale. Follow dimensions.

DETAIL A

DETAIL B

STATE OF MISSOURI

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architects

engineers

9801 Renner Boulevard

Lenexa, Kansas 66219

913.492.0400

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PART ELEVATION AT FORMED JOINT

1"Ø PVC pipe with screen and geotextile cover to prevent sand escape, approx. 10' spacing.

#4P4 Spa. @ 18"

16" Lap Splice (Typ.)

1" Sand

Pavers per Paragon Standards

R = 1"

#4P2

#4P5 (Typ.) Drill & Grout @ 18"

#4P3 (Typ.) (20" Min. Lap)

#4P1 Spa. @ 18" Ea. Direction

#4P3 Spa. @ 18"

1/4" Joint Filler (Sec 1057)

TYPICAL SECTION

6'-0"

3'-0"

6"

4"

2"

8 1/2" Deck

Ø Roadway & Profile Grade

Ø Girder

Pedestrian Fence

Edge of Slab

6"x3" Curb

Const. Joint

#4 - S100

#4 - S101 @ 12"

For curb extents see Sheet No. 24. Curb joints are similar to barrier curb joints.

SIDEWALK CURB DETAIL ON CONCRETE APPROACH SLAB

Pedestrian Fence

Edge of Slab

6"x3" Curb

Const. Joint

#4 - S100

#4 - S101 @ 12"

For curb extents see Sheet No. 24. Curb joints are similar to barrier curb joints.

SIDEWALK CURB DETAIL ON WING

6'-3 1/4"

10'-0"

10'-0"

38'-9"

6'-0" Median

Ø Roadway & Profile Grade

Face of Pier Beam (below) Int. Bent No. 3

Ø Int. Bent No. 3

Ø End Bent No. 4

Approach Slab

End of Slab

Ø 3'-0" x 18" Sleeper Slab and 1/4" Joint Filler

Front Face of End Bent No. 4

PLAN OF MEDIAN ON BRIDGE & APPROACH SLAB

MEDIAN AND CURB DETAILS

Note: This drawing is not to scale. Follow dimensions.

Note:
See Street Plans for median details and extents.

Notes:

Cost of furnishing and placing anchor bolts for light standard will be considered completely covered by the contract lump sum price for the bridge.

All conduits shall be rigid nonmetallic schedule 40 heavy wall polyvinyl chloride (PVC) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters Laboratories (UL) label.

All conduit clamps for conduits not encased in concrete shall be commercially-available, nonmetallic conduit clamps and approved by the engineer.

Anchor bolts and nuts shall be ASTM F1554 Grade 55. Anchor bolts, nuts and washers shall be fully galvanized.

Shift reinforcing steel in field where necessary to clear conduit and junction boxes.

Light standards, wiring and fixtures shall be furnished and installed by others.

For details of light standards, light baseplate, and wiring, see Lighting Plans sheet.

Contractor shall verify the bolt size and pattern in accordance with the light pole manufacturer's specifications prior to placing the anchor bolts.

Expansion fittings shall be placed as shown and set in accordance with the manufacturer's requirements and based on the air temperature at the time of setting given an estimated total expansion movement of 1 inch using a maximum temperature range of 120°F and a maximum temperature of 110°F. Additional expansion fittings beyond what is specified on the bridge plans shall be provided and placed in accordance with the conduit manufacturer's recommendations.

Use "surface" mounting, except adjacent to sidewalks.

All end bent, intermediate bent, and barrier junction boxes shall be PVC molded in accordance with Sec 1062. The conduit terminations shall be permanentor separable. The terminations and covers shall be of watertight construction and shall meet requirements for NEMA 4 enclosure.

Placement of junction boxes and covers, complete in place, shall be flush with the pedestrian face of barrier. Junction boxes and covers may be recessed up to 1/4".

Weep holes shall be provided at low points or other critical locations to drain any moisture in the conduit system. Conduit shall be sloped to drain.

Drainage shall be provided at low points or other critical locations of all conduits and all junction boxes in accordance with Sec 707. All conduits shall be sloped to drain where possible.

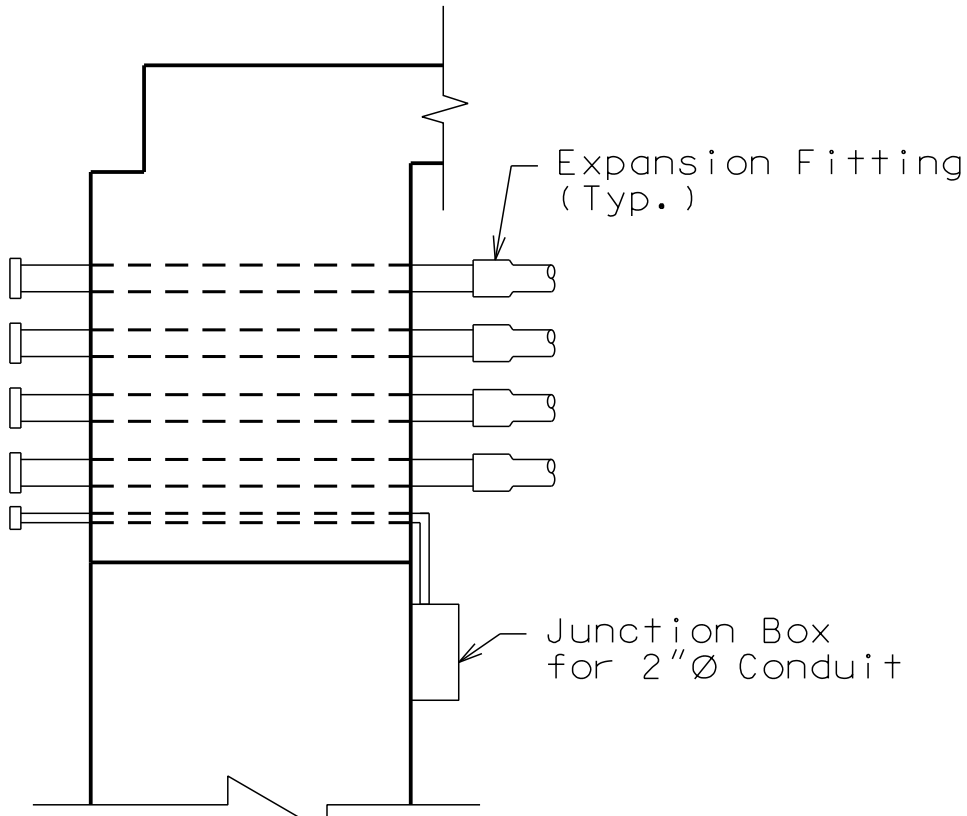
All 1" and 2" diameter conduits shall be secured to concrete with nonmetallic clamps at about 5'-0" cts. Concrete anchors for clamps shall be in accordance with Federal Specification FF-S-325, Group II, Type 4, Class I and shall be galvanized in accordance with ASTM A153, B695-91 Class 50 or stainless steel. Minimum embedment in concrete shall be 1 3/4". The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications.

Junction box size shown on plan may require special order. No other size may be substituted.

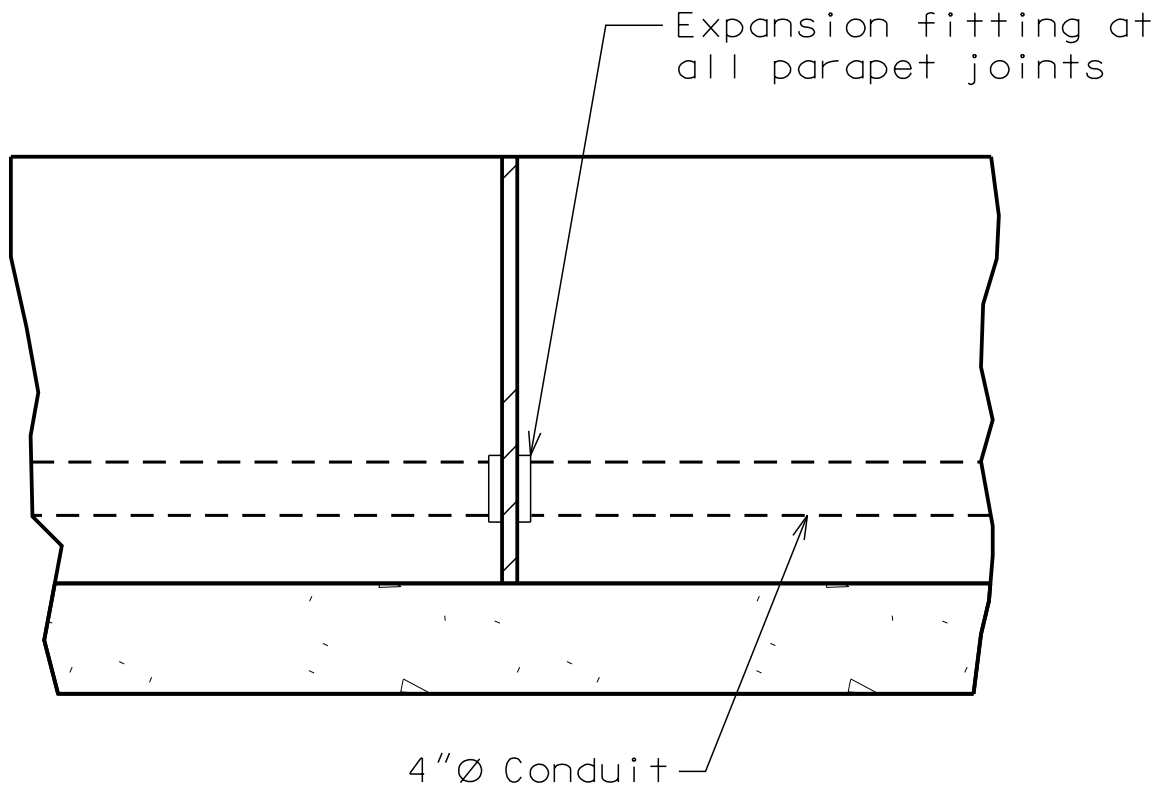
City Construction Personnel: Indicate in field and on bridge plans for future work the exact location of buried conduit at ends of bridge that are capped and not immediately used.

Payment for furnishing and installing light supports, concrete and reinforcing steel, and Conduit System, complete in place, will be considered completely covered by the contract lump sum price for the bridge.

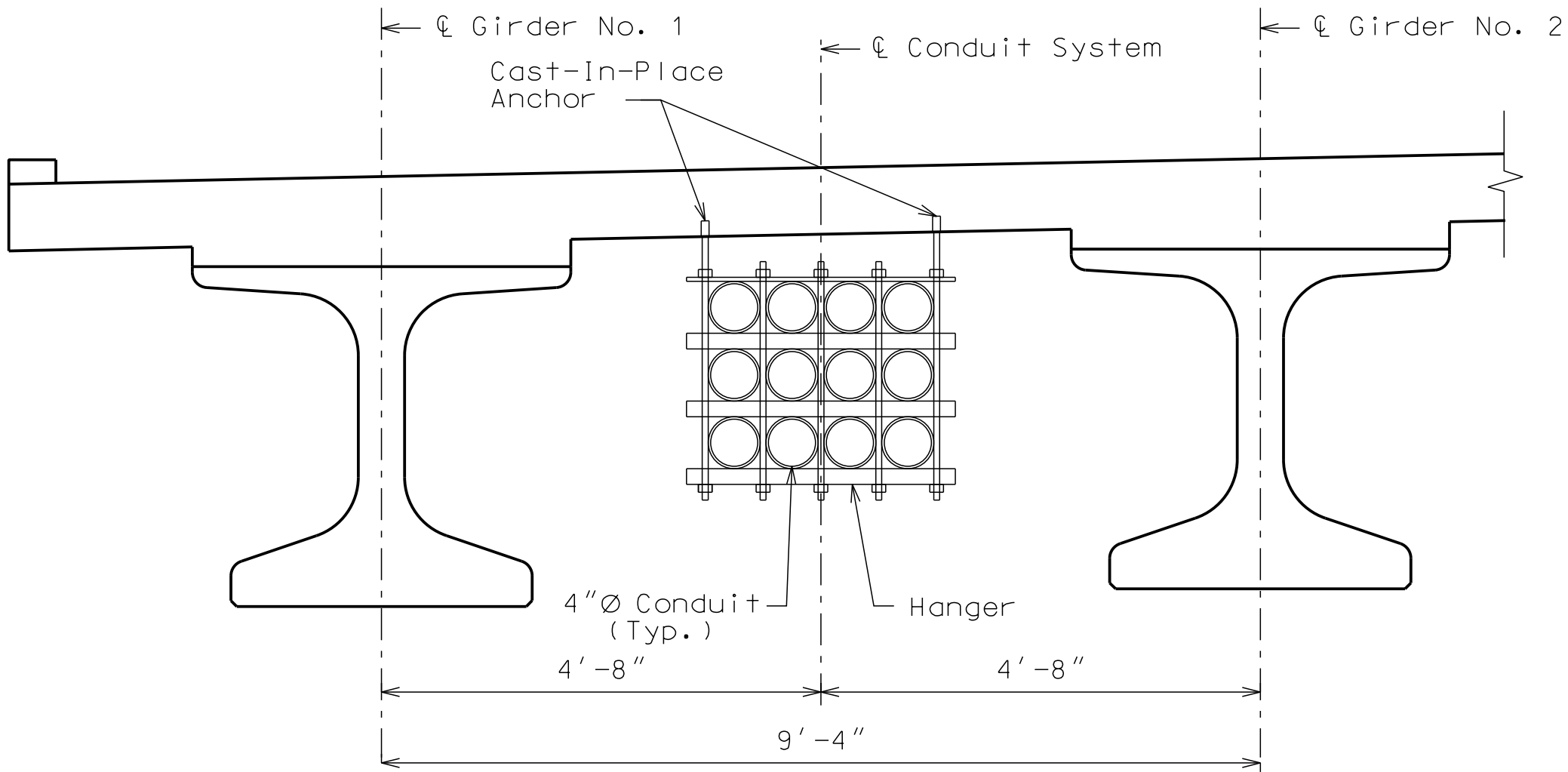
Cast-in-place anchors for the 12-duct conduit system shall be designed per the conduit hanger's engineer and the design shall be signed and sealed by a registerd Professional Engineer in the State of Missouri. The design and details shall be submitted to the owner for review a minimum for four weeks prior to the start of fabrication.



TYPICAL SECTION AT END BENT
SHOWING CONDUIT SYSTEM



EXPANSION FITTING DETAIL



CONDUIT SYSTEM HANGER DETAIL
CONDUIT DETAILS



GBA
architects
engineers

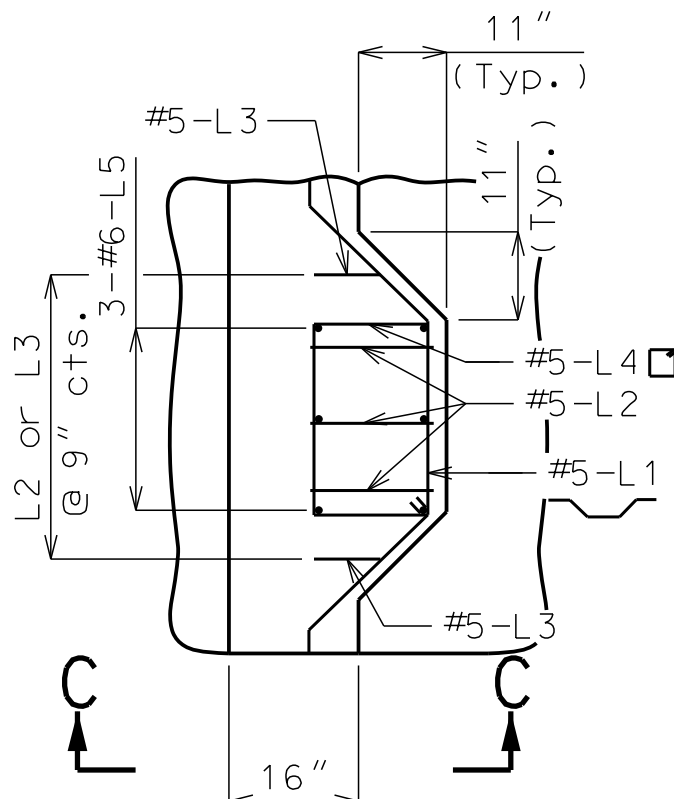
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE: 09-17-20
DESIGN BY: JJM
DRAWN BY: DWM
PROJECT NO.: 12720

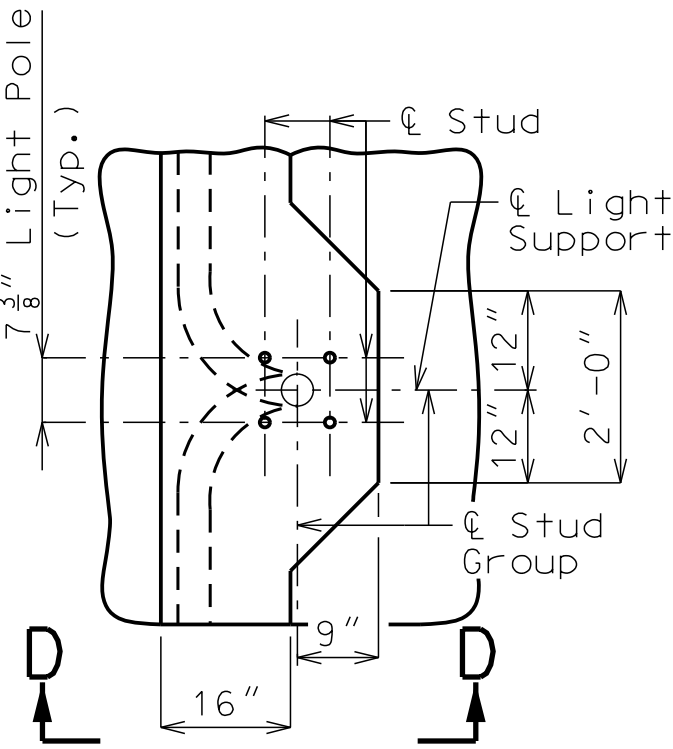
SHEET NO. 26
TOTAL SHEETS 30

East Bridge Plans
Paragon Star Development
Lee's Summit, Missouri

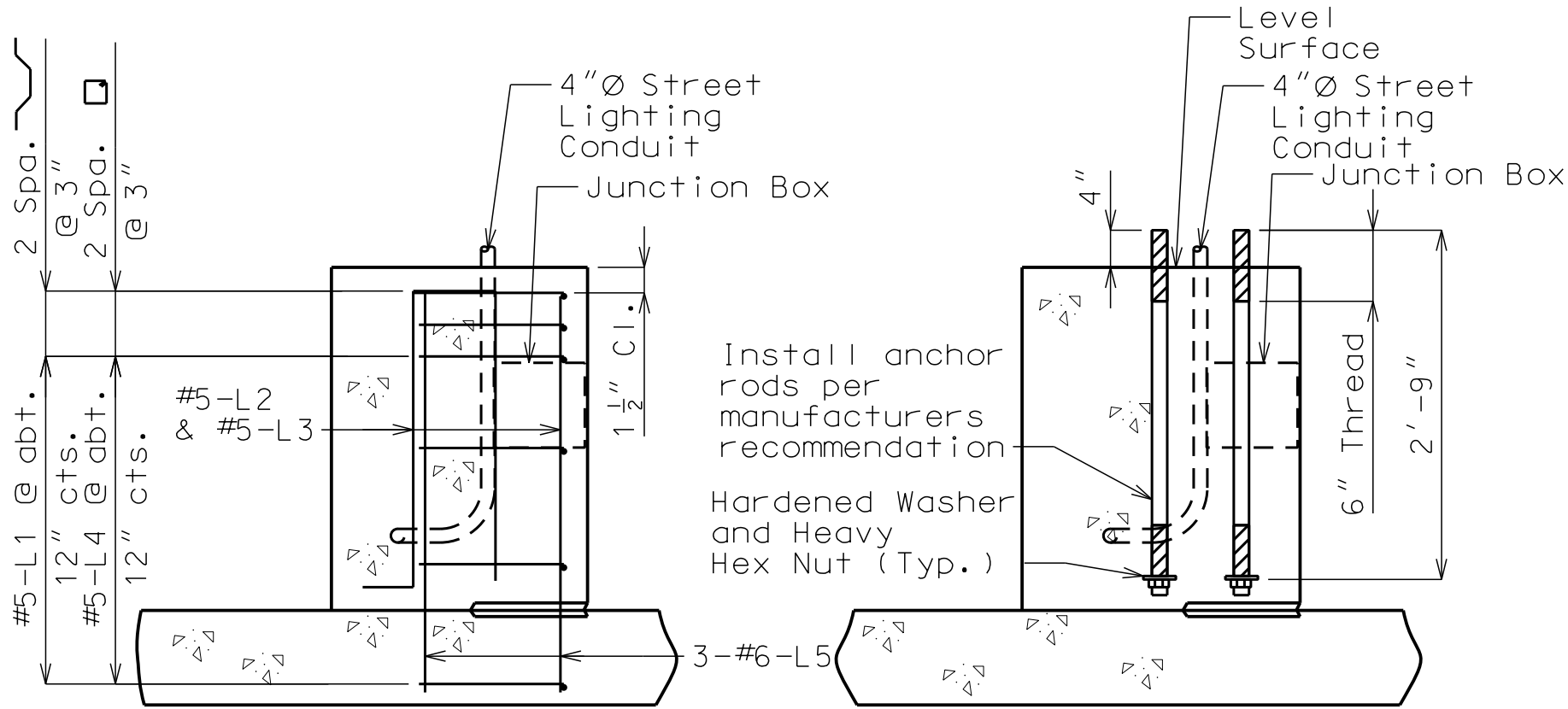
NO.	DATE	REVISIONS	BY	APPROVED



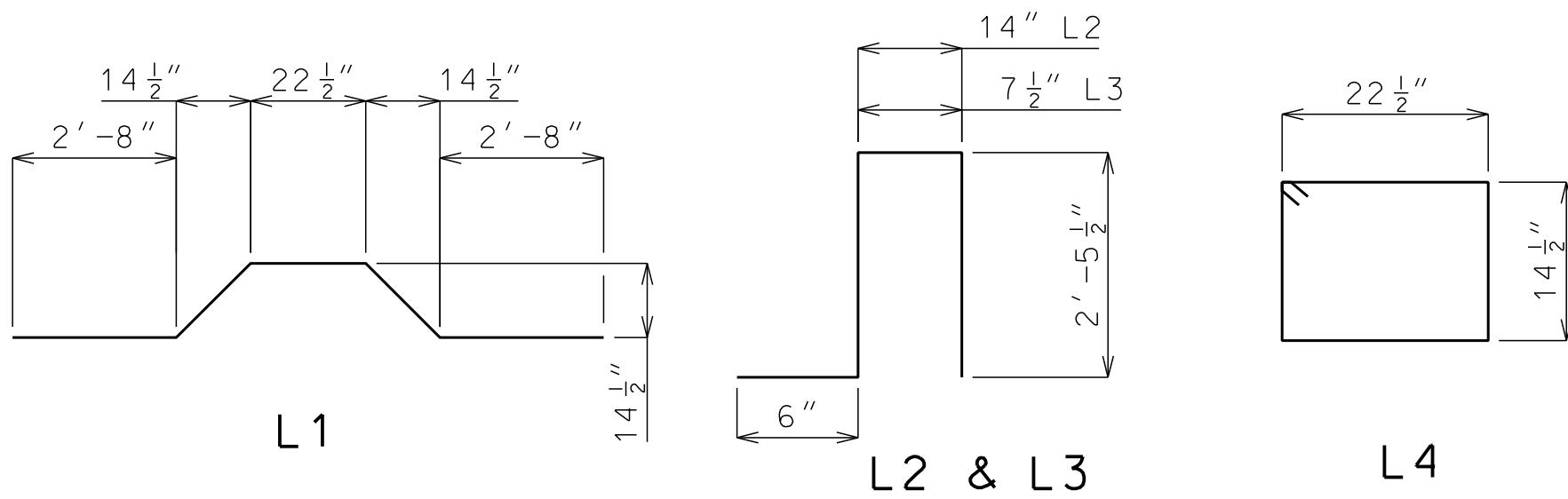
PART PLAN



PART PLAN



SECTION C-C
(Conduit not shown for clarity)
SECTION D-D
LIGHT SUPPORTS ON LEFT BARRIER



BENDING DIAGRAMS

STATE OF MISSOURI

JOSHUA J. MILLER

REGISTERED PROFESSIONAL ENGINEER

10/13/20

PE-2009010386

DATE: 09-17-20

DESIGN BY: JJM

DRAWN BY: DWM

PROJECT NO.: 12720

SHEET NO. 27

TOTAL SHEETS 30

GBA

architects
engineers

9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

East Bridge Plans

Paragon Star Development

Lee's Summit, Missouri

NO.

DATE

REVISIONS

BY

APPROVED

TYPICAL END BENT ELEVATION SHOWING
LIGHTING AND CONDUIT
(End Bent No. 4 shown, End Bent No. 1 similar)

PLAN AT LEFT BARRIER CURB
(Left barrier at End Bent No. 1 shown,
left barrier at End Bent No. 4 similar)

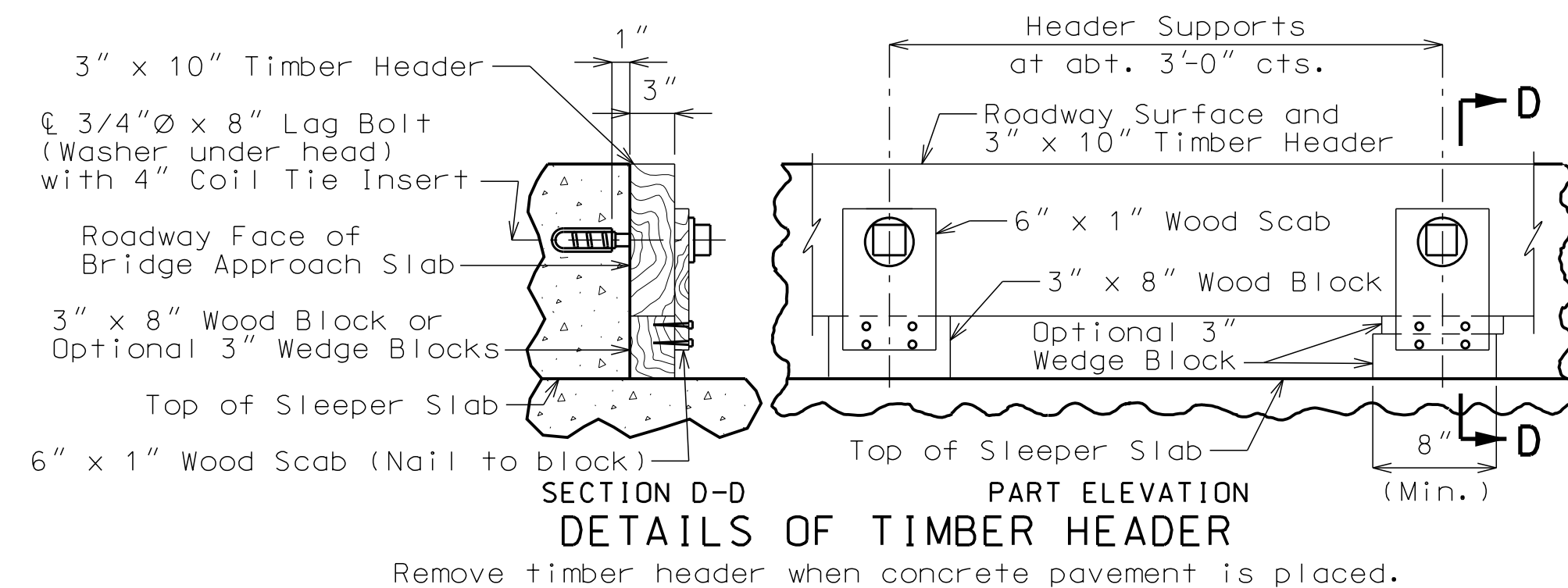
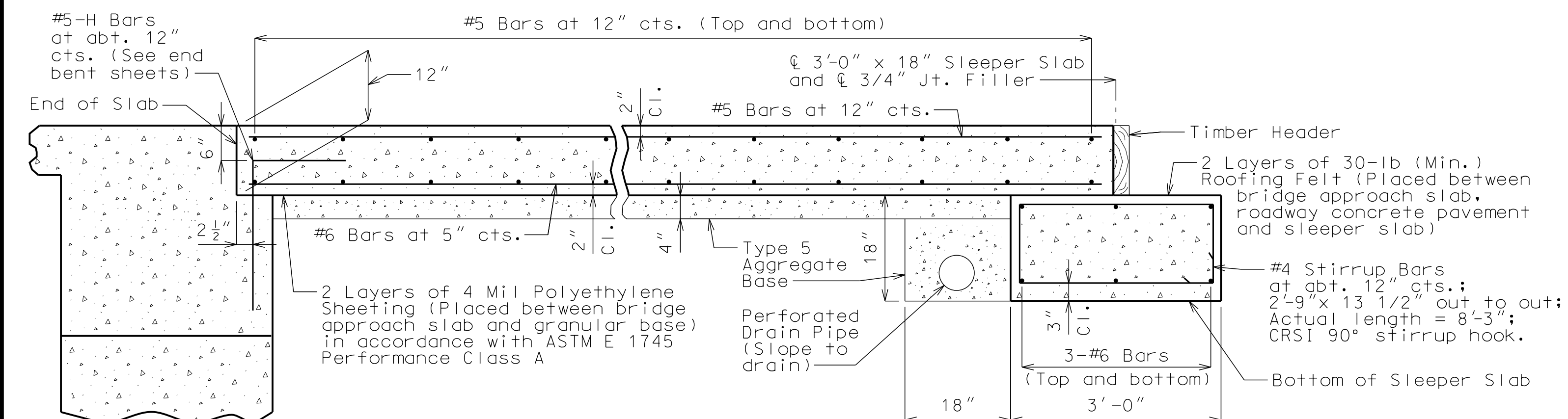
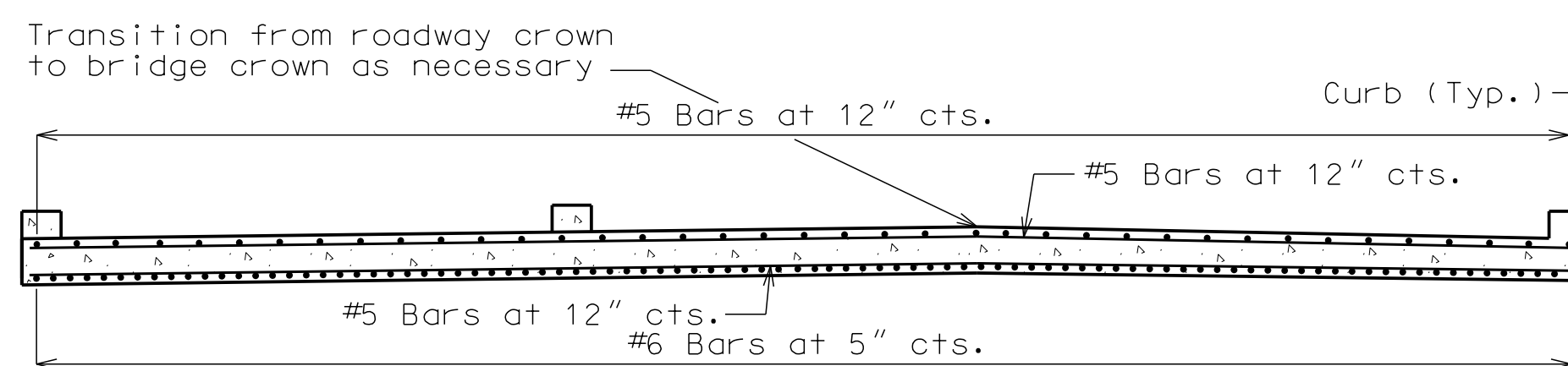
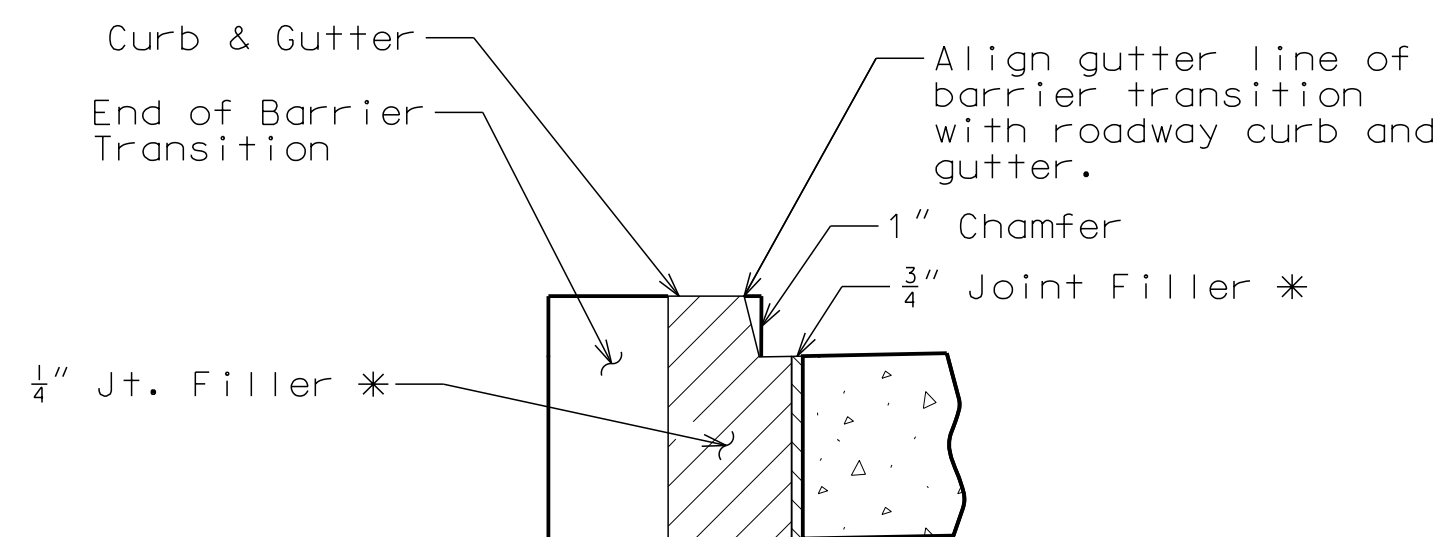
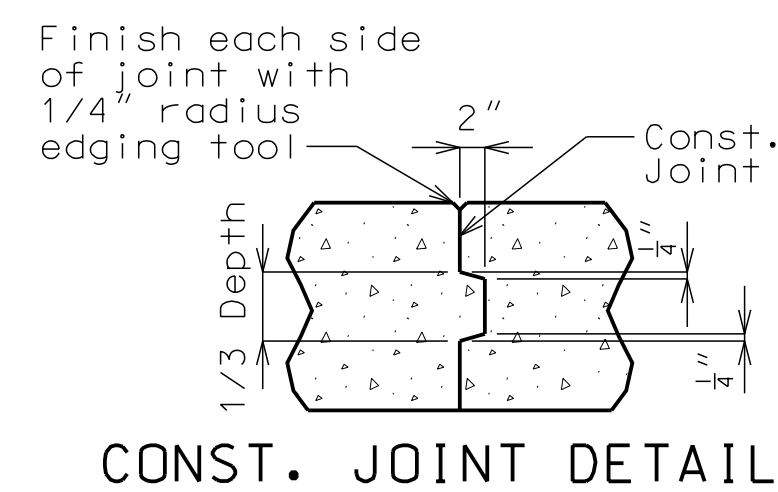
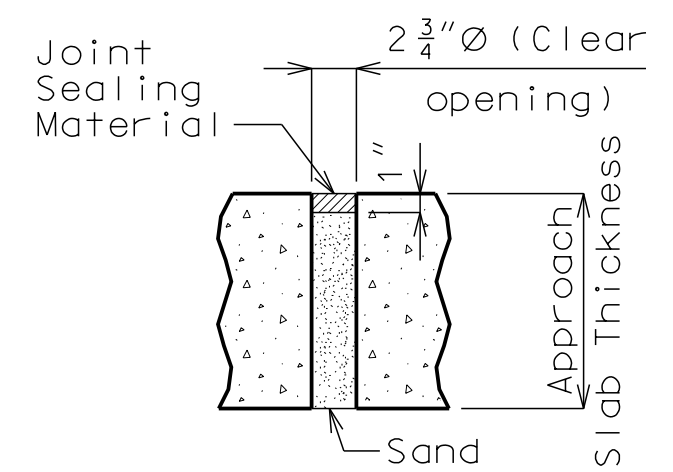
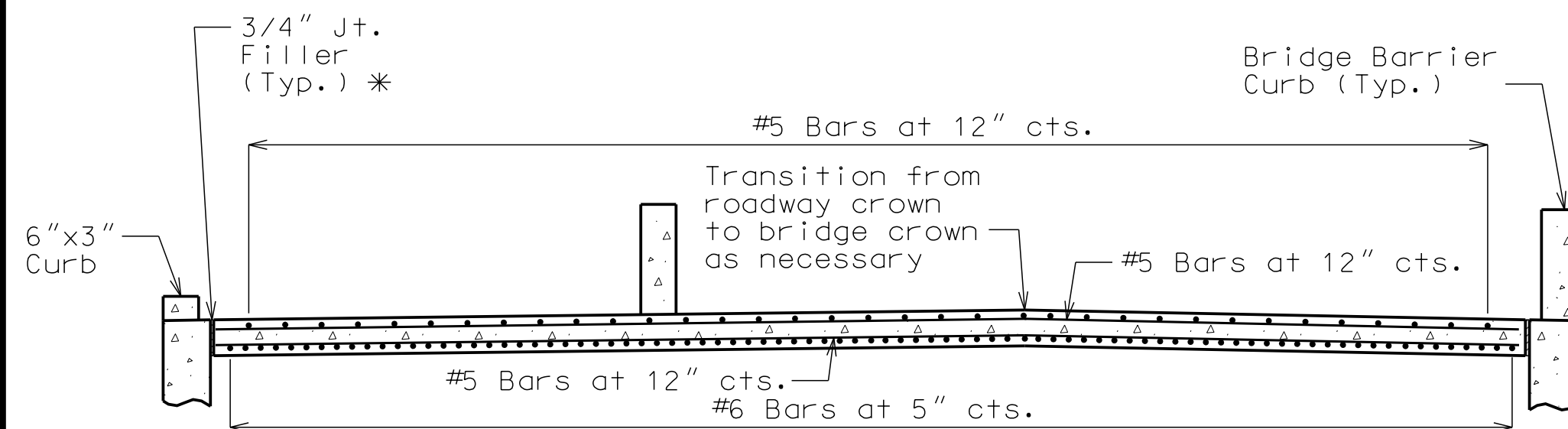
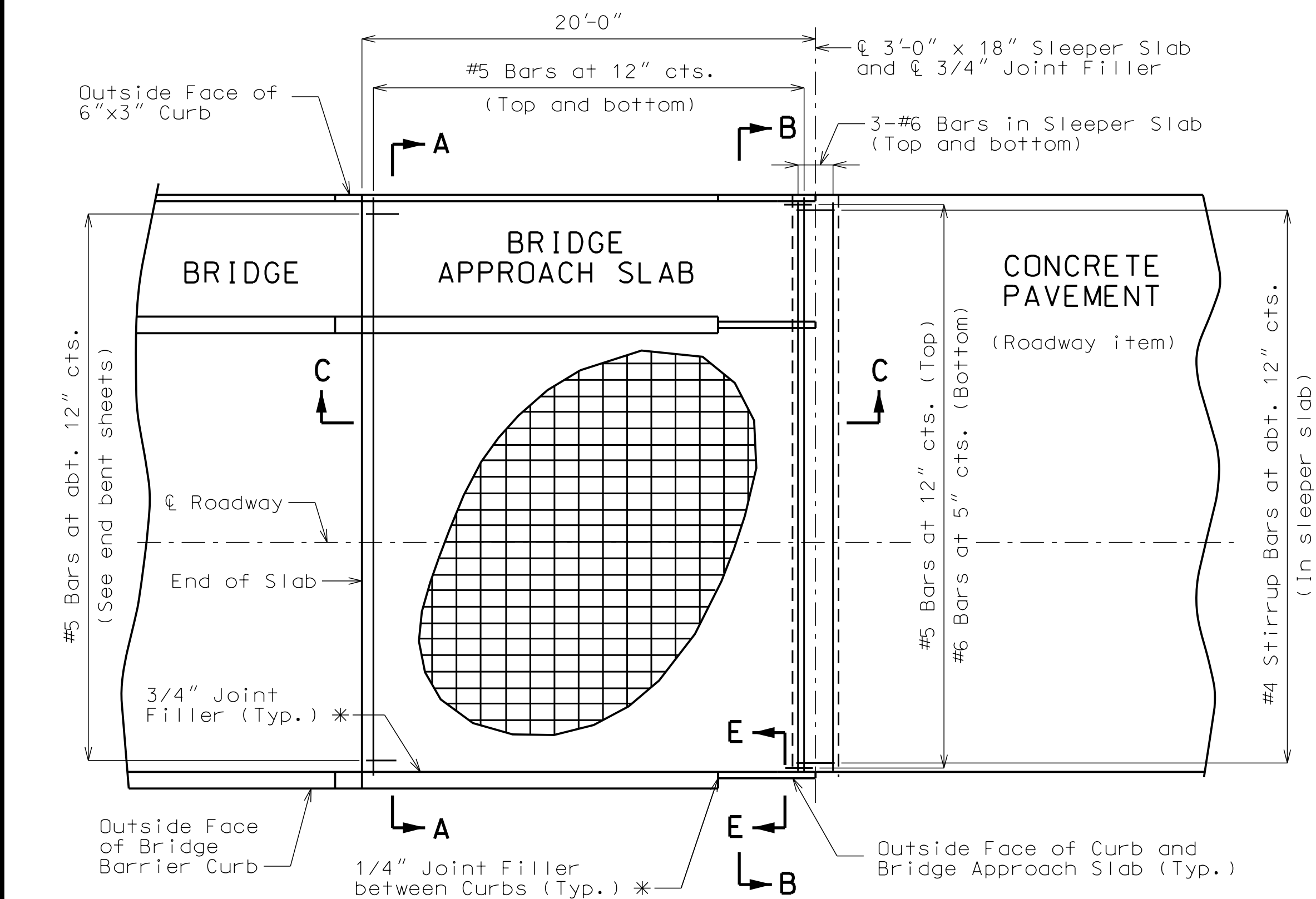
TYPICAL INT. BENT ELEVATION SHOWING
LIGHTING AND CONDUIT
(Right fascia shown, left fascia similar)

ELEVATION SHOWING CONDUITS
NEAR END BENTS AT LEFT
BARRIER CURB
(Left barrier at End Bent No. 1 shown,
Left barrier at End Bent No. 4 similar)

TYPICAL SECTION
OF LEFT
BARRIER CURB

CONDUIT DETAILS

Note: This drawing is not to scale. Follow dimensions.



General Notes:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ($f'_c = 4,000$ psi).

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with $f_y = 60,000$ psi.

Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Minimum clearance to reinforcing steel shall be 1 1/2",
unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #5 bars 29".

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

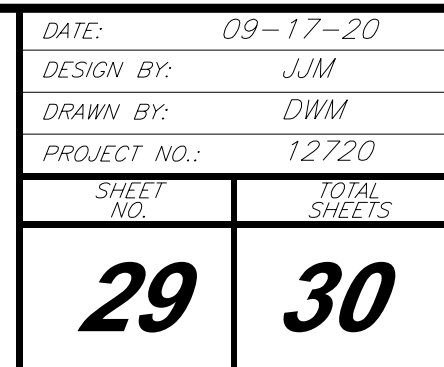
The contractor shall pour and satisfactorily finish the bridge before pouring the bridge approach slab.

For Concrete Approach Pavement details, see Street plans.

See Street Plans for details of Curb on Approach Slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract lump sum price for the bridge.

* Seal joint between vertical face of approach slab and wing with "Silicone Joint Sealant for Saw Cut and Formed Joints" in accordance with Sec 717.



East Bridge Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					END BENT NO. 1
1					
2					
3					
4					
5					
6					
7					
					INT. BENT NO. 2
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

[illegible]

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count
due to minimum tip elevation requirement. A plus sign (+)
shall be placed after the PDA nominal axial compressive
resistance value indicating actual value is higher than
PDA value.)

This sheet to be completed by City construction personnel.

AS-BUILT PILE DATA

Note: This drawing is not to scale. Follow dimensions.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02195051 PARAGON STAR BRID.GPJ TERRACON_DATATEMPLATE.GDT 7/16/19

BORING LOG NO. B-5													Page 1 of 1		
PROJECT: Paragon Star Bridges						CLIENT: GBA Lenexa, KS									
SITE: I-470 and View High Drive Lee's Summit, MO															
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan				DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
		Latitude: 38.9389° Longitude: -94.4442°												LL-PL-PI	
		Approximate Surface Elev.: 802 (Ft.) +/-													
		DEPTH ELEVATION (Ft.)													
		0.5' 6" ROOT ZONE 801.5+/-													
		LEAN CLAY (CL), brown to gray, medium stiff - with organics to 1.5 feet													
		5													
		- very soft to soft, with fine sand below 8 feet													
		10													
		15													
		20													
		25													
		30													
		35													
		40													
		45													
		48.7													
		Boring Terminated at 48.7 Feet													
Stratification lines are approximate. In-situ, the transition may be gradual. Classification estimated from disturbed samples. Core samples and petrographic analysis may reveal other rock types.															
Advancement Method: 0 to 10 ft: Continuous Flight Augers 10 to 48.7 ft.: Wash Bore						See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).						Notes:			
Abandonment Method: Boring backfilled with Auger Cuttings						See Supporting Information for explanation of symbols and abbreviations. Elevations were interpolated from a topographic site plan.									
WATER LEVEL OBSERVATIONS						Terracon						Boring Started: 07-01-2019 Drill Rig: 884 Project No.: 02195051			
8 ft. while drilling															
7 ft. at completion															

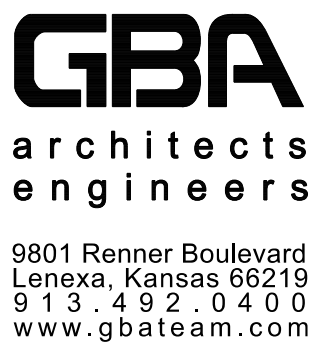
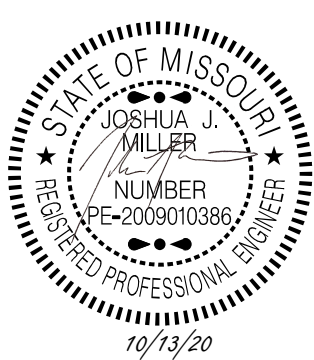
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02195051 PARAGON STAR BRID.GPJ TERRACON_DATATEMPLATE.GDT 7/16/19

BORING LOG NO. B-7													Page 1 of 1		
PROJECT: Paragon Star Bridges						CLIENT: GBA Lenexa, KS									
SITE: I-470 and View High Drive Lee's Summit, MO															
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan				DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
		Latitude: 38.9389° Longitude: -94.4435°												LL-PL-PI	
		Approximate Surface Elev.: 816 (Ft.) +/-													
		DEPTH ELEVATION (Ft.)													
		0.5' 6" ROOT ZONE 815.5+/-													
		LEAN CLAY (CL), with fine sand, brown to gray, medium stiff													
		5													
		- very soft to soft below 8.5 feet													
		10													
		15													
		20													
		25													
		30													
		35													
		40													
		45													
		48.7													
		Boring Terminated at 48.7 Feet													
Stratification lines are approximate. In-situ, the transition may be gradual. Classification estimated from disturbed samples. Core samples and petrographic analysis may reveal other rock types.															
Advancement Method: 0 to 10 ft: Continuous Flight Augers 10 to 48.7 ft.: Wash Bore						See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).						Notes:			
Abandonment Method: Boring backfilled with Auger Cuttings						See Supporting Information for explanation of symbols and abbreviations. Elevations were interpolated from a topographic site plan.									
WATER LEVEL OBSERVATIONS						Terracon						Boring Started: 07-02-2019 Drill Rig: 884 Project No.: 02195051			
8.5 ft. at completion															

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Note: This drawing is not to scale. Follow dimensions.



DATE:	09-17-20
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
30	30

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

East Bridge Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Plotted: 10/13/2020 10:33:48 AM -- BIM 360://12720.62 ParagonStar_Bridges/12720.61 ParagonStar_Bridges_Site.rvt

GENERAL NOTES

1. "A" SERIES DRAWINGS PERTAIN TO, BUT ARE NOT LIMITED TO: BRIDGE RAILS, RAIL STRUCTURE, RAIL FINISHES, AND BRIDGE LIGHTING.
2. ALL SPOT ELEVATIONS ARE TO STATE BASE PLANE COORDINATES USED BY THE BRIDGE AND CIVIL SCOPES.
3. ALL SPOT ELEVATIONS ARE FOR GENERAL COORDINATION PURPOSES ONLY. REFERENCE CIVIL AND BRIDGE SCOPES FOR OFFICIAL ELEVATIONS.
4. ALL WELDS ARE TO BE CONTINUOUS AND WATER TIGHT U.N.O.
5. ALL STEEL IS TO BE FULLY GALVANIZED. ANY GALVANIZING REMOVED DURING THE CONSTRUCTION OR INSTALLATION PROCESS SHALL BE REPAIRED WITH A ZINC-RICH PRIMER. BECAUSE ZINC-RICH PRIMER IS UNDERSTOOD TO BE A SHORTER LIVED FINISH AS WELL AS HAVING A DIFFERENT APPEARANCE THAN ACTUAL GALVANIZING, EVERY EFFORT SHALL BE MADE TO MINIMIZE RELIANCE UPON ZINC-RICH PRIMER.
6. ANY DIMENSIONS BETWEEN PRIMARY STRUCTURAL ELEMENTS (SUCH AS GRIDS) ARE FOR REFERENCE ONLY. REFERENCE BRIDGE STUCTURE DRAWINGS FOR OFFICIAL DIMENSIONS OF BRIDGE STRUCTURE.
7. ALSO FOR REFERENCE ONLY ARE PORTRAYAL OF BRIDGE COMPONENTS, INCLUDING BUT NOT LIMITED TO: BRIDGE DECK, CURB TRANSITION BARRIERS, ROADWAY BARRIERS, GIRDERS, PIER BEAMS, PIERS, ABUTMENTS, ABUTMENT WING WALLS, AND APPROACH SLABS. REFERENCE BRIDGE STUCTURE DRAWINGS FOR OFFICIAL DOCUMENTATION OF BRIDGE COMPONENTS.
8. REFERENCE CIVIL DRAWINGS FOR ADJACENCT CIVIL SCOPE, INCLUDING BUT NOT LIMITED TO: ADJACENT DRIVE PAVING, CURBS, MEDIANS, AND STREET SIGNAGE.
9. REFERENCE BRIDGE ELECTRICAL/LIGHTING PACKAGE FOR ADDITIONAL LIGHTING INFORMATION AT BRIDGE DECK LIGHTING AND AT BRIDGE SIDE LIGHTING.
10. FOR INFORMATION ON CONDUIT ROUTING, REFERENCE ALL OF THE FOLLOWING: BRIDGE RAIL DRAWINGS, BRIDGE DRAWINGS, ELECTRICAL/LIGHTING DRAWINGS.
11. ALL ELECTRICAL CONDUIT SHALL BE WRAPPED TIGHT TO AND ALIGNED WITH ADJACENT SURFACES. RADIUS CORNERS ARE TO BE KEPT TO BUILDABLE MINIMUM, AND CHANGES IN DIRECTION SHALL BE 90 DEGREES WHERE POSSIBLE.

CODE INFORMATION

IBC 2018
GUARD RAIL
HEIGHT: 42" MINIMUM
WHERE REQUIRED: AT LOCATIONS OF ELEVATION CHANGE > 30".
STRUCTURAL RESISTANCE FOR HORIZONTAL FORCES
POINT LOAD: 200 LB
DISTRIBUTED LOAD: 50 LB / LF
MAXIMUM OPENING WIDTH: 4"

PROJECT-SPECIFIC TERMINOLOGY

OFFICIAL TERMS USED THROUGHOUT RAIL SCOPE ARE DENOTED BY *ITALICS*.

BRIDGE AND CIVIL - (FOR REFERENCE ONLY, SEE BRIDGE AND CIVIL DWGS FOR OFFICIAL TERMINOLOGY PERTAINING TO RESPECTIVE SCOPES)

DRIVE - PAVED PATH INTENDED FOR VEHICULAR TRAVEL. ALSO CALLED A ROAD.

APPROACH SLAB - ROADWAY SURFACE TRANSITION SITUATED BETWEEN THE *BRIDGE DECK* AND *DRIVE*.

BRIDGE - A STRUCTURE SPANNING A LAND AREA OF RELATIVELY LOWER GRADE ELEVATIONS, TYPICALLY CONNECTING *DRIVES* AND/OR *PEDESTRIAN PATHWAYS* ON EITHER SIDE.

ROADWAY - AT A PAVED *DRIVE* OR *BRIDGE*, THE PORTION OF CONSTRUCTION INTENDED FOR VEHICULAR TRAVEL.

SIDEWALK - TYPICALLY RUNNING PARALLEL WITH AND IN VICINITY TO A *DRIVE*, A PAVED GROUND CONSTRUCTION INTENDED FOR TRAVEL BY INHABITANTS ON FOOT (PEDESTRIANS).

PEDESTRIAN PATHWAY - ON A *BRIDGE*, THE PORTION OF THE *BRIDGE DECK* INTENDED FOR INHABITANTS ON FOOT (PEDISTRIANS).

BRIDGE DECK - THE CONTINOUS HORIZONTAL CONCRETE SLAB WORKING IN CONCERT WITH THE REST OF THE BRIDGE STRUCTURE. THE DECK'S PRIMARY FUNCTIONS ARE: 1. PROVIDE A FINISH SURFACE FOR VEHICLES AND PEDESTRIANS ON THE *BRIDGE*. 2. (IN SOME CASES) ACT AS A DIAPHRAGM, PROVIDING STABILITY TO OVERALL STRUCTURAL SYSTEM OF THE BRIDGE (RE: BRIDGE DWGS). 3. THE *BRIDGE DECK* AND *BRIDGE DECK EDGE ANGLE* TRANSFER LOADS FROM THE *RAIL ASSEMBLIES* AND *ROADWAY BARRIERS* BACK TO THE *BRIDGE GIRDERS*, *PIER BEAMS* AND *BRIDGE PIERS*.

BRIDGE DECK EDGE ANGLE - THE EMBEDDED STEEL SHAPE AT THE *BRIDGE DECK* EDGE PROVIDING FOR THE *RAIL ASSEMBLIES* IN-FIELD ATTACHMENT TO THE *BRIDGE DECK*.

ABUTMENT - AN ASSEMBLY OF VERTICAL CONCRETE WALLS LOCATED AT THE ENDS OF EACH *BRIDGE* CLEAR SPAN. INCLUDES THE *MAIN ABUTMENT* AND *ABUTMENT WING WALLS*.

ABUTMENT (MAIN) - THE PORTION OF THE *ABUTMENT* RUNNING PERPENDICULAR TO THE DIRECTION OF BRIDGE TRAVEL. MAIN ABUTMENT'S PRIMARY FUNCTIONS ARE TO: 1. SUPPORT THE END RUNS OF BRIDGE GIRDERS AND 2. RETAIN SOIL UNDER THE APPROACH SLAB.

ABUTMENT (WING WALLS) - THE RETURN LEGS OF THE *ABUTMENT* RUNNING PARALLEL WITH THE DIRECTION OF BRIDGE TRAVEL. THE WING WALLS PRIMARY FUNCTIONS ARE: 1. TO RETAIN SOIL UNDER THE APPROACH SLABS.

ROADWAY BARRIER - A CONCRETE WALL ON TOP OF THE *BRIDGE DECK* WHOSE PRIMARY FUNCTIONS INCLUDE: KEEPING VEHICLES ON THE *ROADWAY*. 2. KEEPING PEDESTRIANS OFF THE *ROADWAY (PEDESTRIAN/ROADWAY BARRIER* WHEN DOING BOTH).

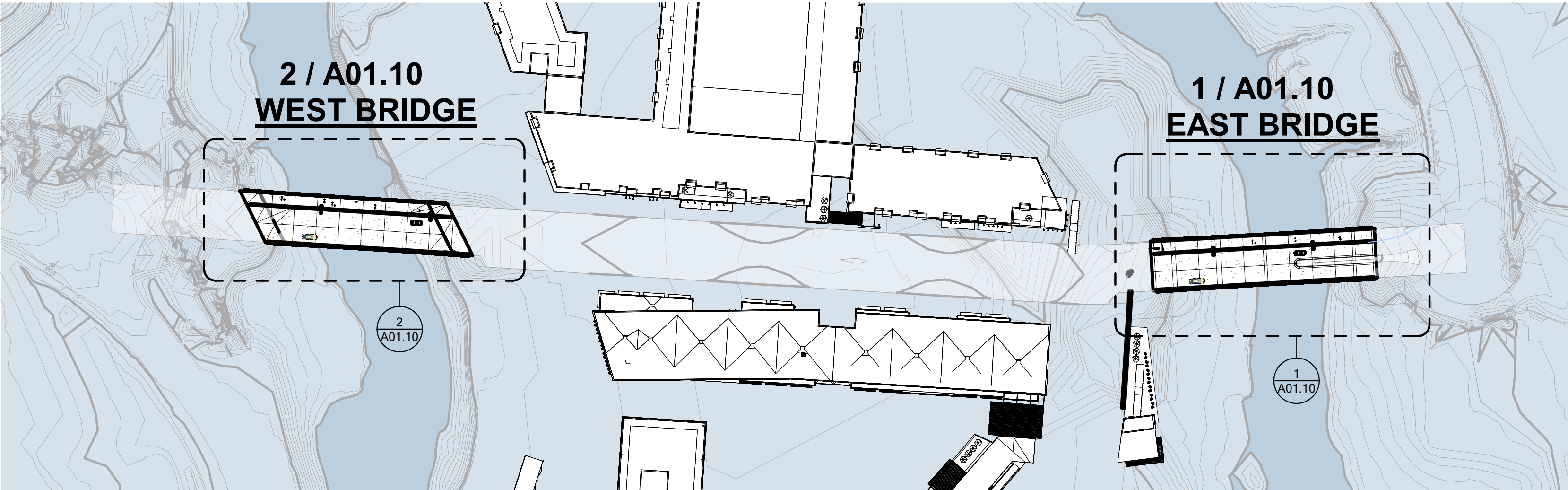
CURB - CONCRETE PROFILE ALONG THE *ROADWAY* EDGE WHOSE PRIMARY FUNCTIONS INCLUDE: 1. CHANNELING WATER DRAINAGE ALONG DESIGNED PATHWAYS. 2. KEEPING STRAY VEHICLES ON THE *ROADWAY* BY ACTING AS A MINOR PHYSICAL BARRIER AND AS A NOTIFICATION.

CURB TRANSITION BARRIER - CONCRETE WALL WITH A SLOPING TOP SURFACE, ACTING AS A GRADUAL CHANGE IN HEIGHT FROM A *ROADWAY CURB* TO A *BRIDGE ROADWAY BARRIER*. PRIMARY FUNCTIONS: 1. ELIMINATE A BLUNT FORCE IMPACT OF STRAY VEHICALS UPON CROSSING A BRIDGE

BRIDGE LONG SPAN GIRDERS - STRUCTURAL MEMBERS THAT SPAN THE OPENING BENEATH THE BRIDGE, SITUATED UNDER THE *BRIDGE DECK* AND OVER THE *BRIDGE PIER BEAMS* / *BENTS*.

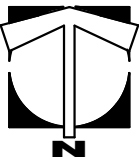
BRIDGE PIER BEAMS OR BENTS - CONCRETE GIRDER DIRECTLY ATOP *BRIDGE PIERS*, THESE MEMBERS COLLECT ALL THE FORCES OF THE *LONG SPAN BRIDGE GIRDERS* AND "BENDS" (*BENT*) THE FORCES TO THE PIERS.

BRIDGE PIERS - SITUATED AT INTERMEDIATE *BRIDGE BENTS*, *PIERS* ARE VERTICAL CONCRETE COLUMNS WHOSE PRIMARY FUNCTIONS ARE TO: 1. TRANSFER VERTICAL LOADS FROM *BRIDGE PIER BEAMS* TO PIER FOUNDATION SYSTEMS IN THE GROUND. 2. CREATE A CLEARING UNDER A BRIDGE FOR OTHER ENTITIES (SUCH AS WATER) TO PASS. 3. MAINTAIN A PLAN PROFILE THAT REDUCES FRICTION BETWEEN MOVING WATER PASSING UNDER THE BRIDGE.



SITE PLAN - ARCHITECTURAL

1
A01.00 SCALE: 1" = 100'-0"



WEST BRIDGE - RAIL SHEET LIST

REV #	SHEET #	DESCRIPTION
A01.00	GENERAL - SITE PLAN	
A01.10	PLANS	
A03.10	WEST BRIDGE - NORTH RAIL RUN	
A03.11	WEST BRIDGE - SOUTH RAIL RUN	
A03.12	WEST BRIDGE - MIDDLE RAIL RUN	
A05.20	RAIL DETAILS	
A05.21	RAIL DETAILS	
A05.30	LIGHT MOUNT DETAILS	
A06.10	RAIL VERT TYPES	
A06.11	SCHEDULE - WEST BRIDGE RAIL VERTS - NORTH RAIL RUN	
A06.12	SCHEDULE - WEST BRIDGE RAIL VERTS - SOUTH RAIL RUN	
A06.13	SCHEDULE - WEST BRIDGE RAIL VERTS - MIDDLE RAIL RUN	

EAST BRIDGE - RAIL SHEET LIST

REV #	SHEET #	DESCRIPTION
A01.00	GENERAL - SITE PLAN	
A01.10	PLANS	
A03.20	EAST BRIDGE - NORTH RAIL RUN	
A03.21	EAST BRIDGE - SOUTH RAIL RUN	
A03.22	EAST BRIDGE - MIDDLE RAIL RUN	
A05.20	RAIL DETAILS	
A05.21	RAIL DETAILS	
A05.30	LIGHT MOUNT DETAILS	
A06.10	RAIL VERT TYPES	
A06.14	SCHEDULE - EAST BRIDGE RAIL VERTS - NORTH RAIL RUN	
A06.15	SCHEDULE - EAST BRIDGE RAIL VERTS - SOUTH RAIL RUN	
A06.16	SCHEDULE - EAST BRIDGE RAIL VERTS - MIDDLE RAIL RUN	

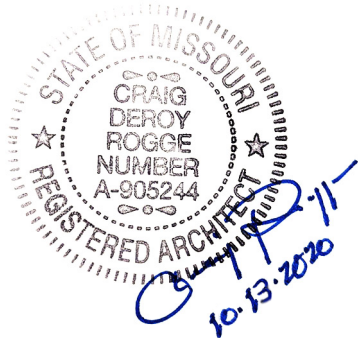
GBA

9801 Renner Blvd. Ste. 300
Lenexa, KS 66219
913.492.0400
gbateam.com

EAST BRIDGE PLANS

View High Dr, View High Pkwy, River Rd
Lee's Summit, MO

REV	DATE	DESCRIPTION



PROJECT NUMBER	12720.62
DATE	2020.10.13
ISSUE FOR CONSTRUCTION	

DESIGNED:	NJC
DRAWN:	NJC
REVIEWED:	CLR

SHEET TITLE

GENERAL - SITE PLAN

SHEET NUMBER

A01.00

© George Butler Associates, Inc. 2020
Engineering COA# 000133
Architecture COA# 000212
Land Surveying COA# 000059

REV	DATE	DESCRIPTION
-----	------	-------------

PROJECT NUMBER
12720.62

DATE

2020.10.13

ISSUE FOR CONSTRUCTION

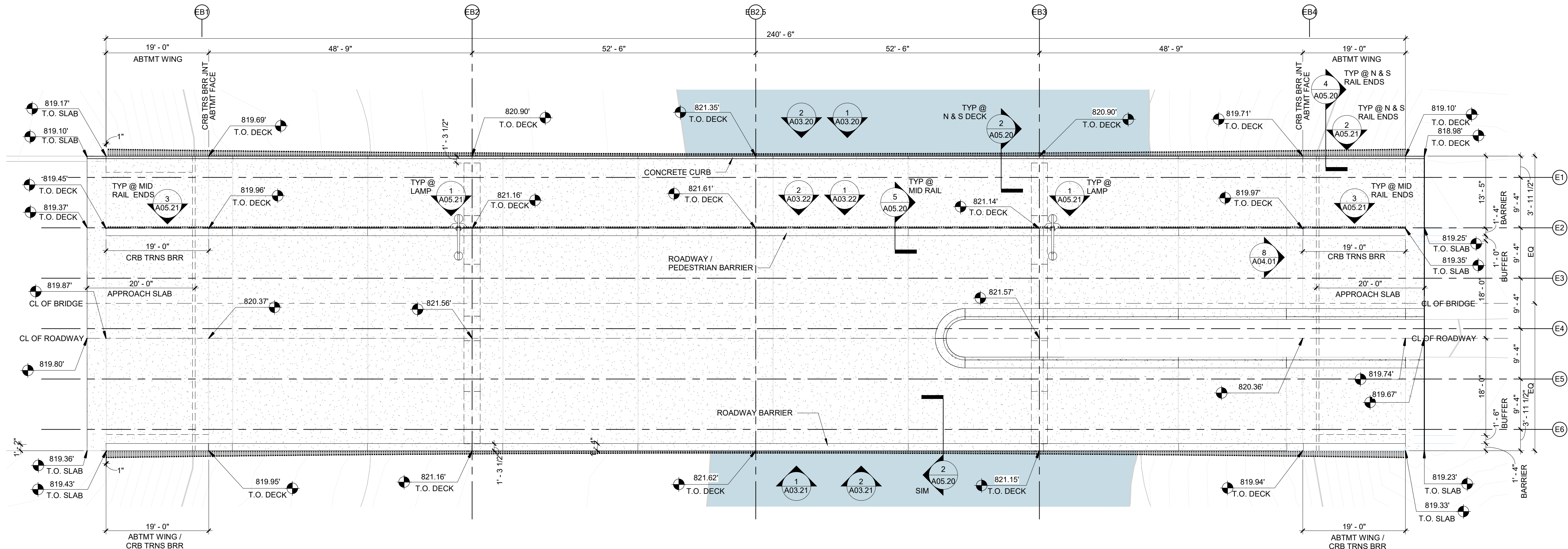
DESIGNED: NJC
DRAWN: NJC
REVIEWED: CLR

SHEET TITLE

PLANS

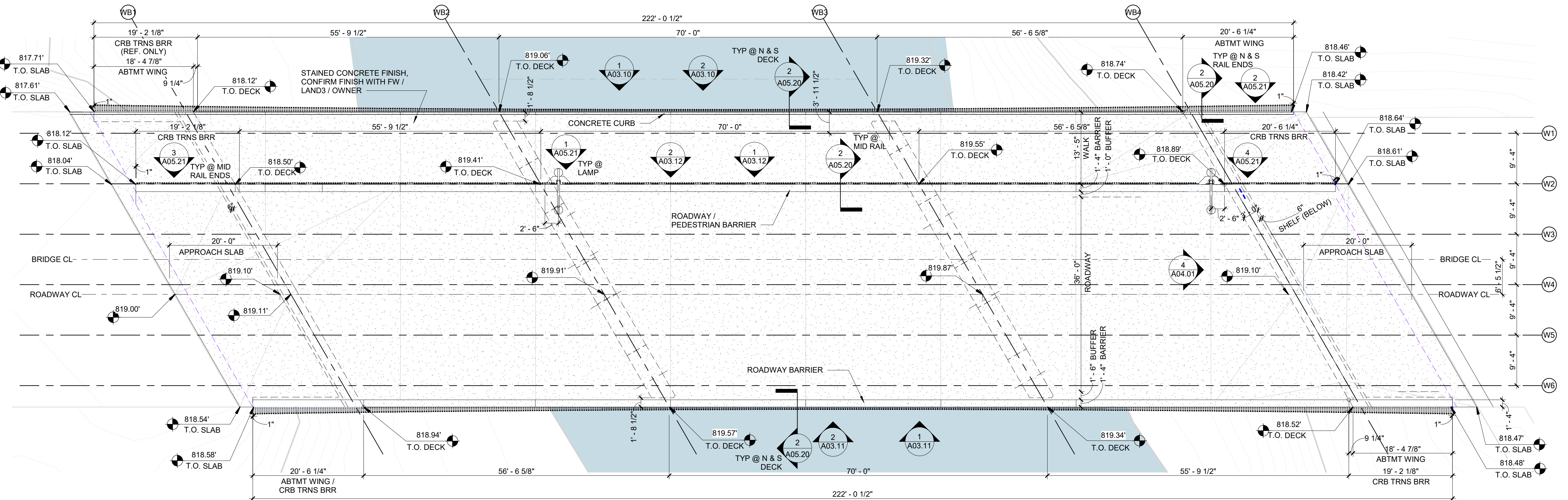
SHEET NUMBER

A01.10

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Engineering COA# E-92
Architecture COA# A-45
Land Surveying COA# LS-8

PLAN-BRIDGE_E

A01.00 | A01.10 SCALE: 3/32" = 1'-0"

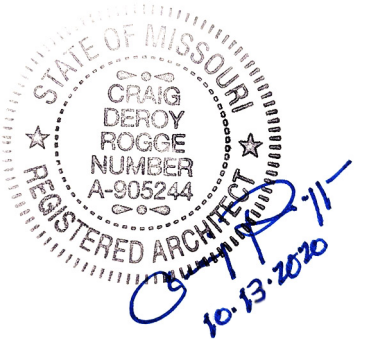


PLAN-BRIDGE_W

A01.00 | A01.10 SCALE: 3/32" = 1'-0"

View High Dr, View High Pkwy, River Rd
Lee's Summit, MO

REV	DATE	DESCRIPTION



PROJECT NUMBER
12720.62

DATE _____

2020.10.13

ISSUE FOR CONSTRUCTION

DESIGNED: NJC

DRAWN: NJC

REVIEWED: CLR

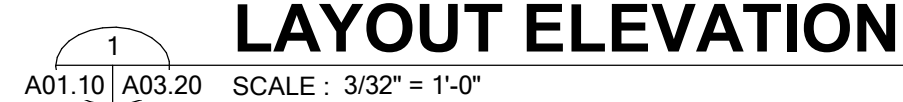
SHEET TITLE

*EAST BRIDGE - NORTH RAIL
RUN*

SHEET NUMBER

A03.20

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Engineering COA# E-92
Architecture COA# A-45
Land Sureveying COA# LS-8

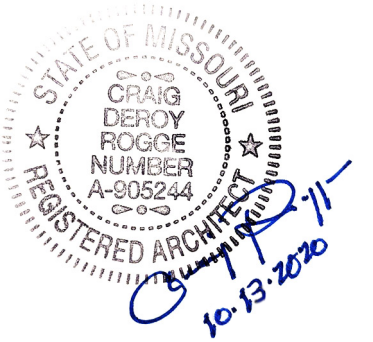


1. RE: A01.00 FOR PROJECT TERMINOLOGY.

2. RE: RAIL ELEVATIONS FOR:
 - a. RAIL VERT LAYOUT
 - b. RAIL HORIZONTAL LAYOUT
 - c. RAIL VERT BREAK LAYOUT.
3. RE: 1 / A06.10 FOR:
 - a. RAIL VERT CONFIGURATION TYPES.
4. RE: RAIL SCHEDULES FOR:
 - a. RAIL VERTICAL LOCATION RELATIVE TO EACH RAIL RUN BASELINE ELEVATION
 - b. RAIL VERT LEG LENGTHS
 - c. RAIL VERT BREAK ANGLES
 - d. ANCHORAGE LOCATIONS
 - e. RAIL HORIZONTAL LOCATIONS

View High Dr, View High Pkwy, River Rd
Lee's Summit, MO

REV	DATE	DESCRIPTION



PROJECT NUMBER
12720.62

DATE _____

2020.10.13

ISSUE FOR CONSTRUCTION

DESIGNED: NJC

DRAWN: NJC

REVIEWED: _____ CLR

SHEET TITLE

*EAST BRIDGE - SOUTH RAIL
RUN*

SHEET NUMBER

A03.21

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Engineering COA# E-92
Architecture COA# A-45
Land Sureveying COA# LS-8



1. LAYOUT LINES PORTRAY BASIC LOCATIONS OF RAIL VERT TOP, BOTTOM & BREAKS, AND RAIL HORIZONTALS.
RE: 01/A06.10 RAIL VERT TYPES AND RAIL SCHEDULES FOR EXACT LOCATIONS AT EACH RAIL VERT.

LAYOUT LINE LEGEND

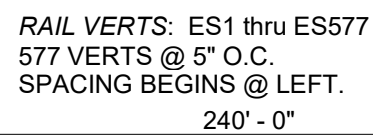
RAIL VERT TOP / BOTTOM LINE

RAIL VERT BREAK LINE

RAIL HORIZONTAL LINE

LAYOUT ELEVATION

2
A01.10 A03.21 SCALE : 3/32" = 1'-0"



ELEVATION

ELEVATION

1

A01.10 A03.21

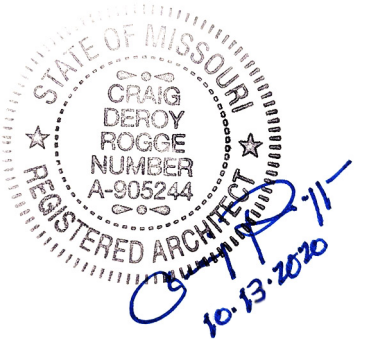
SCALE : 3/32" = 1'-0"

RAIL REFERENCE

1. RE: A01.00 FOR PROJECT TERMINOLOGY.
2. RE: RAIL ELEVATIONS FOR:
 - a. *RAIL VERT LAYOUT*
 - b. *RAIL HORIZONTAL LAYOUT*
 - c. *RAIL VERT BREAK LAYOUT.*
3. RE: 1 / A06.10 FOR:
 - a. *RAIL VERT CONFIGURATION TYPES.*
4. RE: RAIL SCHEDULES FOR:
 - a. *RAIL VERT VERTICAL LOCATION RELATIVE TO EACH RAIL RUN BASELINE ELEVATION*
 - b. *RAIL VERT LEG LENGTHS*
 - c. *RAIL VERT BREAK ANGLES*
 - d. *ANCHORAGE LOCATIONS*
 - e. *RAIL HORIZONTAL LOCATIONS*

View High Dr, View High Pkwy, River Rd
Lee's Summit, MO

REV	DATE	DESCRIPTION

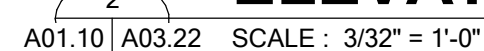
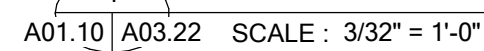


ISSUE FOR CONSTRUCTION

SHEET TITLE

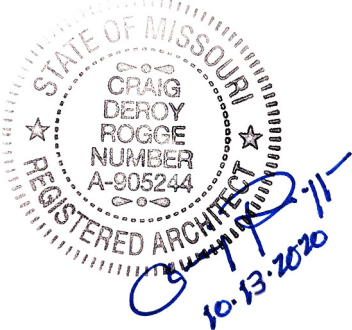
SHEET NUMBER

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Architecture COA# A-45
Land Sureveying COA# LS-8



1. RE: A01.00 FOR PROJECT TERMINOLOGY.
2. RE: RAIL ELEVATIONS FOR:
 - a. RAIL VERT LAYOUT
 - b. RAIL HORIZONTAL LAYOUT
 - c. RAIL VERT BREAK LAYOUT.
3. RE: 1 / A06.10 FOR:
 - a. RAIL VERT CONFIGURATION TYPES.
4. RE: RAIL SCHEDULES FOR:
 - a. RAIL VERT VERTICAL LOCATION RELATIONSHIP
TO EACH RAIL RUN BASELINE ELEVATION
 - b. RAIL VERT LEG LENGTHS
 - c. RAIL VERT BREAK ANGLES
 - d. ANCHORAGE LOCATIONS
 - e. RAIL HORIZONTAL LOCATIONS

REV	DATE	DESCRIPTION
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PROJECT NUMBER	12720.62
DATE	2020.10.13
ISSUE FOR CONSTRUCTION	

DESIGNED:	NJC
DRAWN:	NJC
REVIEWED:	CLR

SHEET TITLE

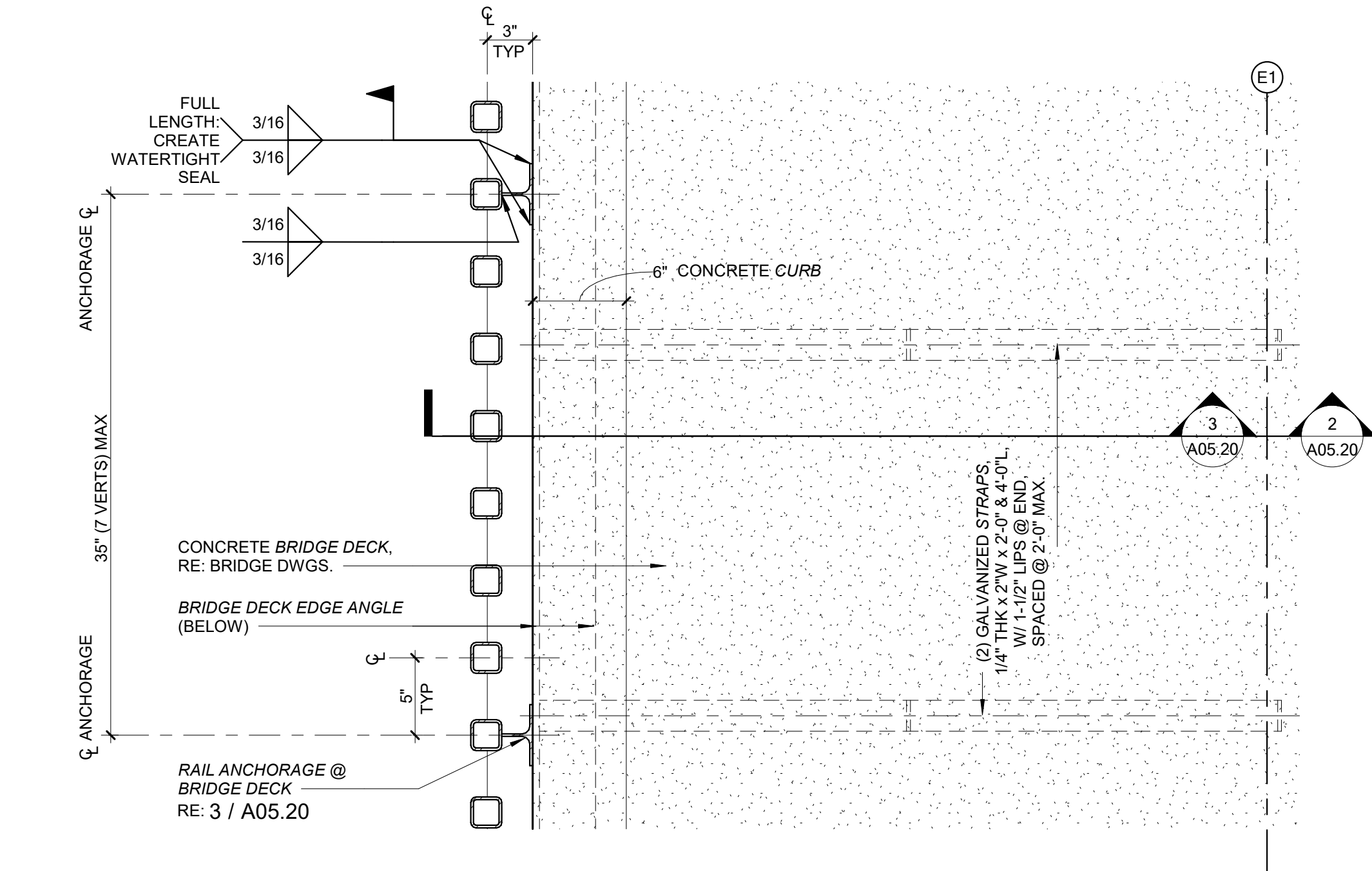
RAIL DETAILS

SHEET NUMBER

A05.20

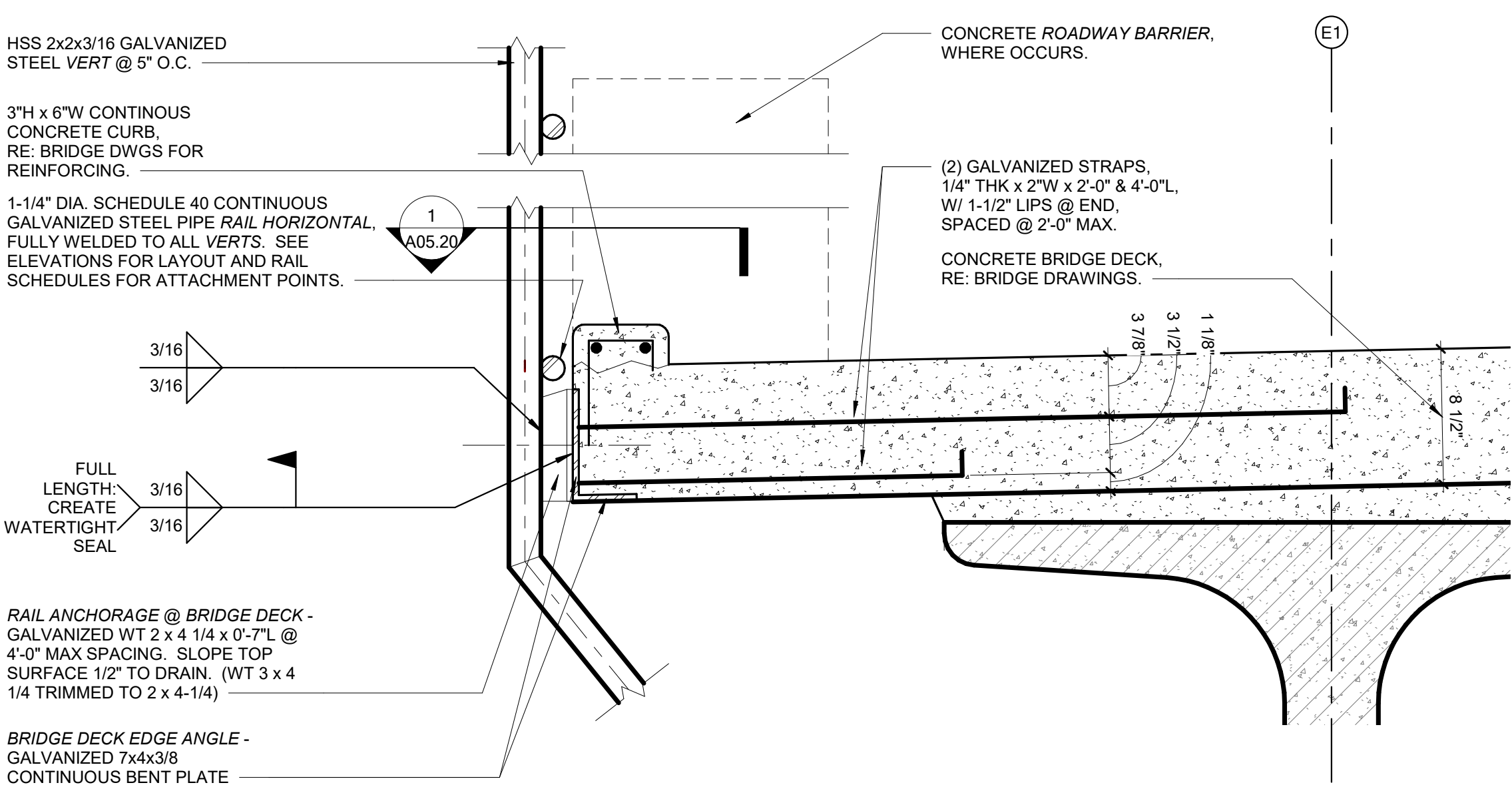
RAIL REFERENCE

- RE: A01.00 FOR PROJECT TERMINOLOGY.
- RE: RAIL ELEVATIONS FOR:
 - RAIL VERT LAYOUT
 - RAIL HORIZONTAL LAYOUT
 - RAIL VERT BREAK LAYOUT.
- RE: 1 / A06.10 FOR:
 - RAIL VERT CONFIGURATION TYPES.
- RE: RAIL SCHEDULES FOR:
 - RAIL VERT VERTICAL LOCATION RELATIVE TO EACH RAIL RUN BASELINE ELEVATION
 - RAIL VERT LEG LENGTHS
 - RAIL VERT BREAK ANGLES
 - ANCHORAGE LOCATIONS
 - RAIL HORIZONTAL LOCATIONS



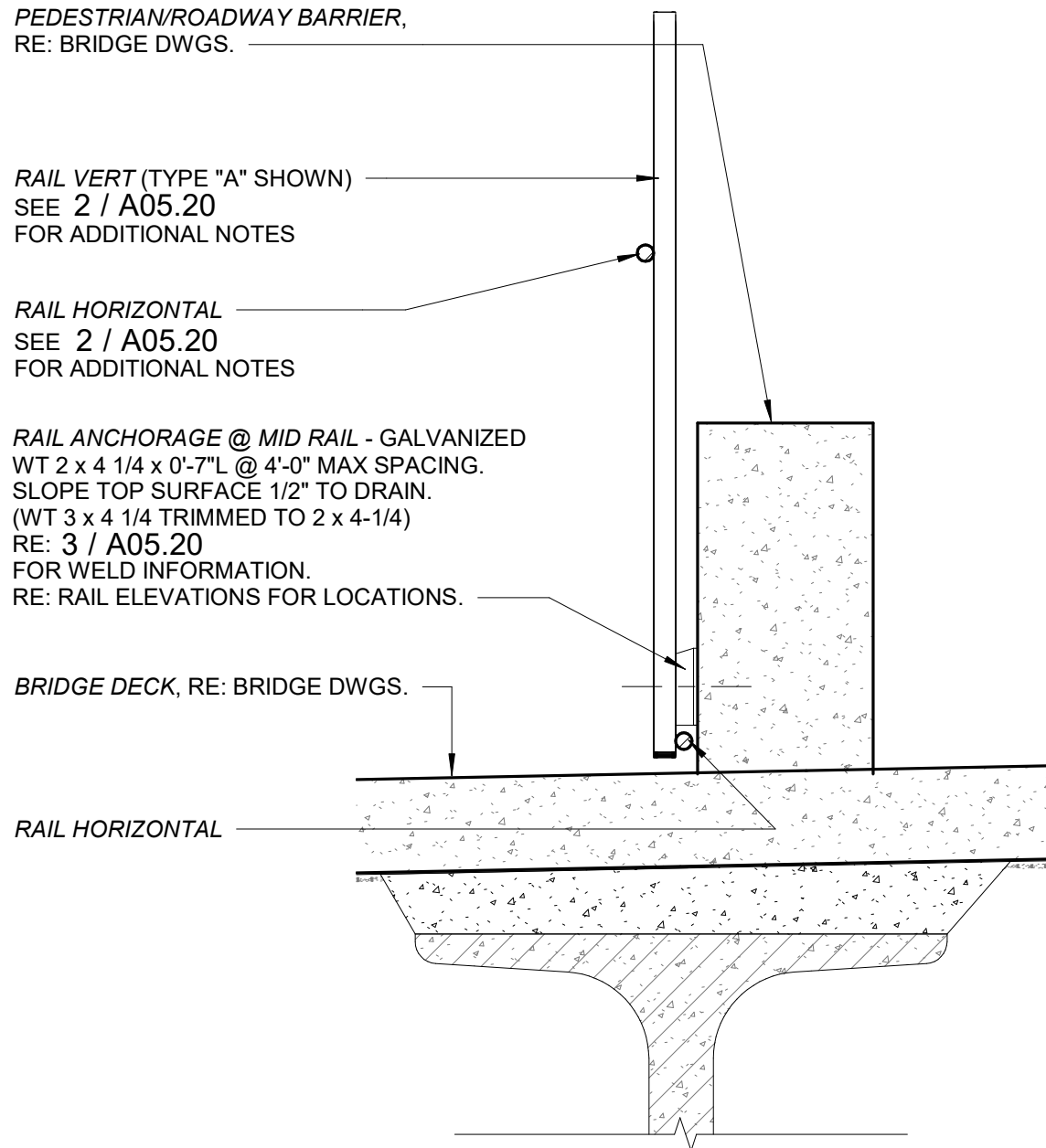
PLAN DETAIL @ TYP. ANCHORAGE

A05.20 1 A05.20 SCALE : 1 1/2" = 1'-0"



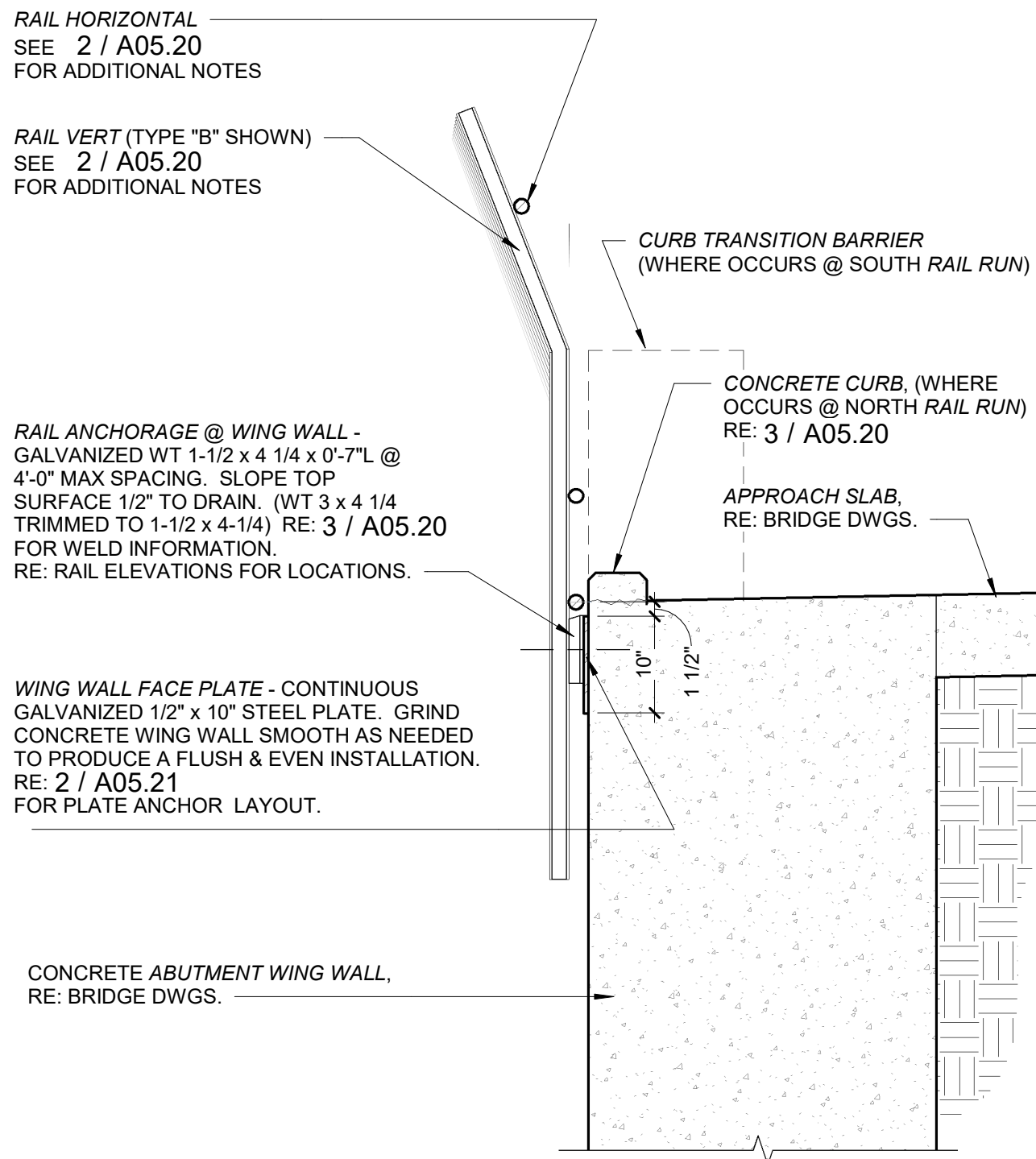
DETAIL - RAIL @ DECK EDGE - TYP

A05.20 3 A05.20 SCALE : 1 1/2" = 1'-0"



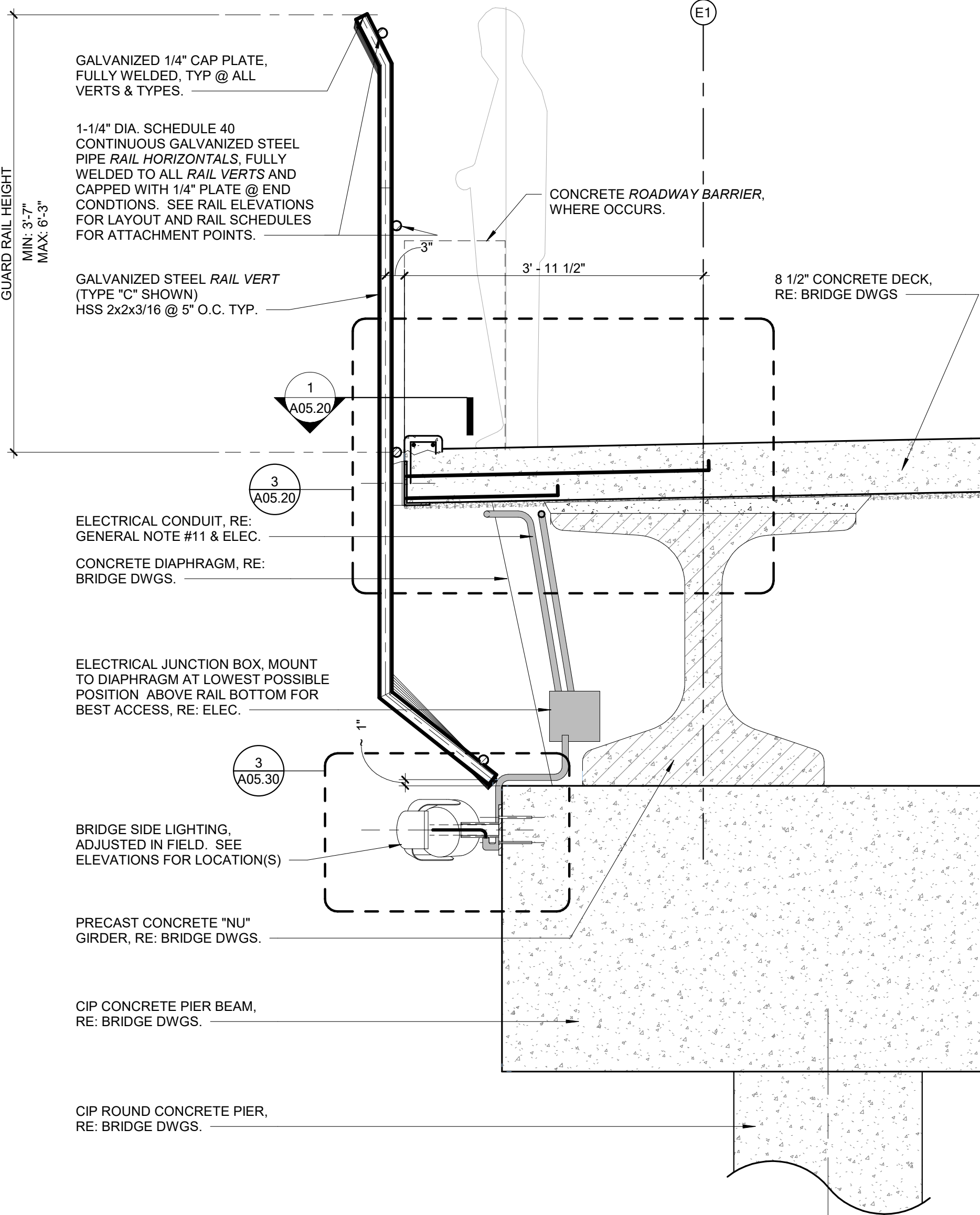
TYP RAIL SECTION @ MID RAIL

A01.10 5 A05.20 SCALE : 3/4" = 1'-0"



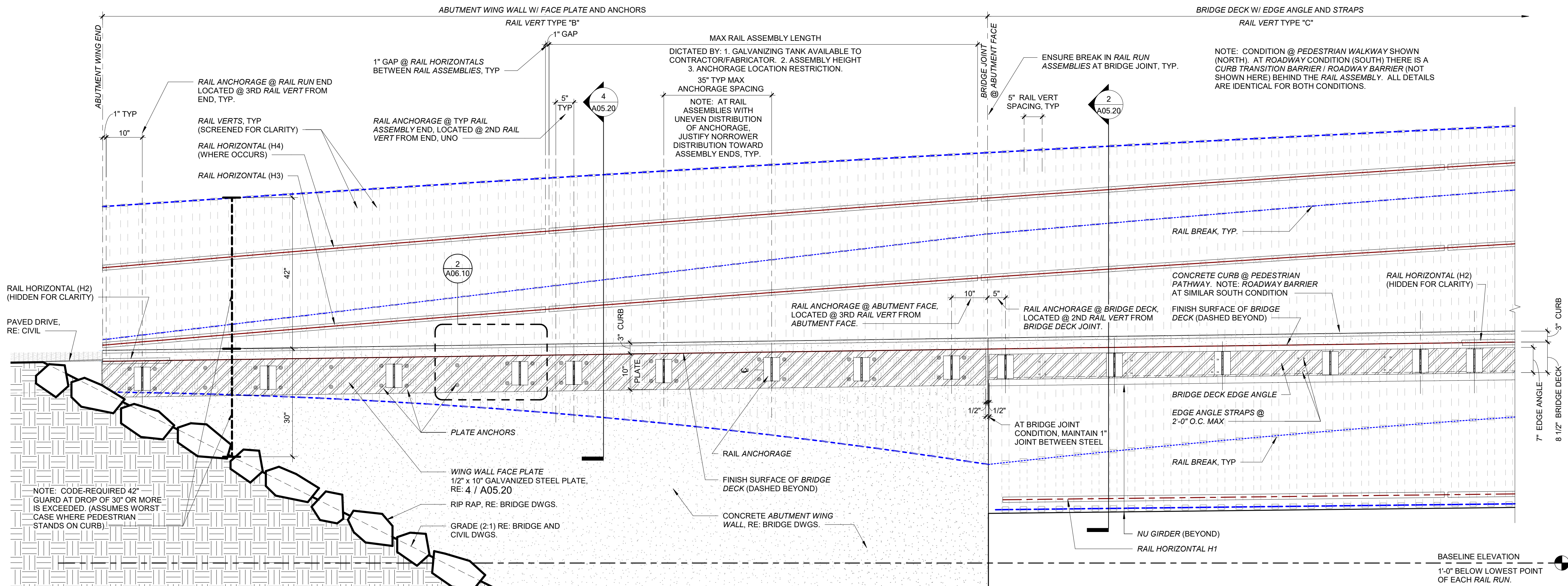
SECTION - TYP RAIL @ N & S ENDS

A01.10 4 A05.20 SCALE : 3/4" = 1'-0"



SECTION - TYP RAIL @ N & S DECK

A01.10 2 A05.20 SCALE : 3/4" = 1'-0"



RAIL ELEVATION - N&S RAIL RUNS

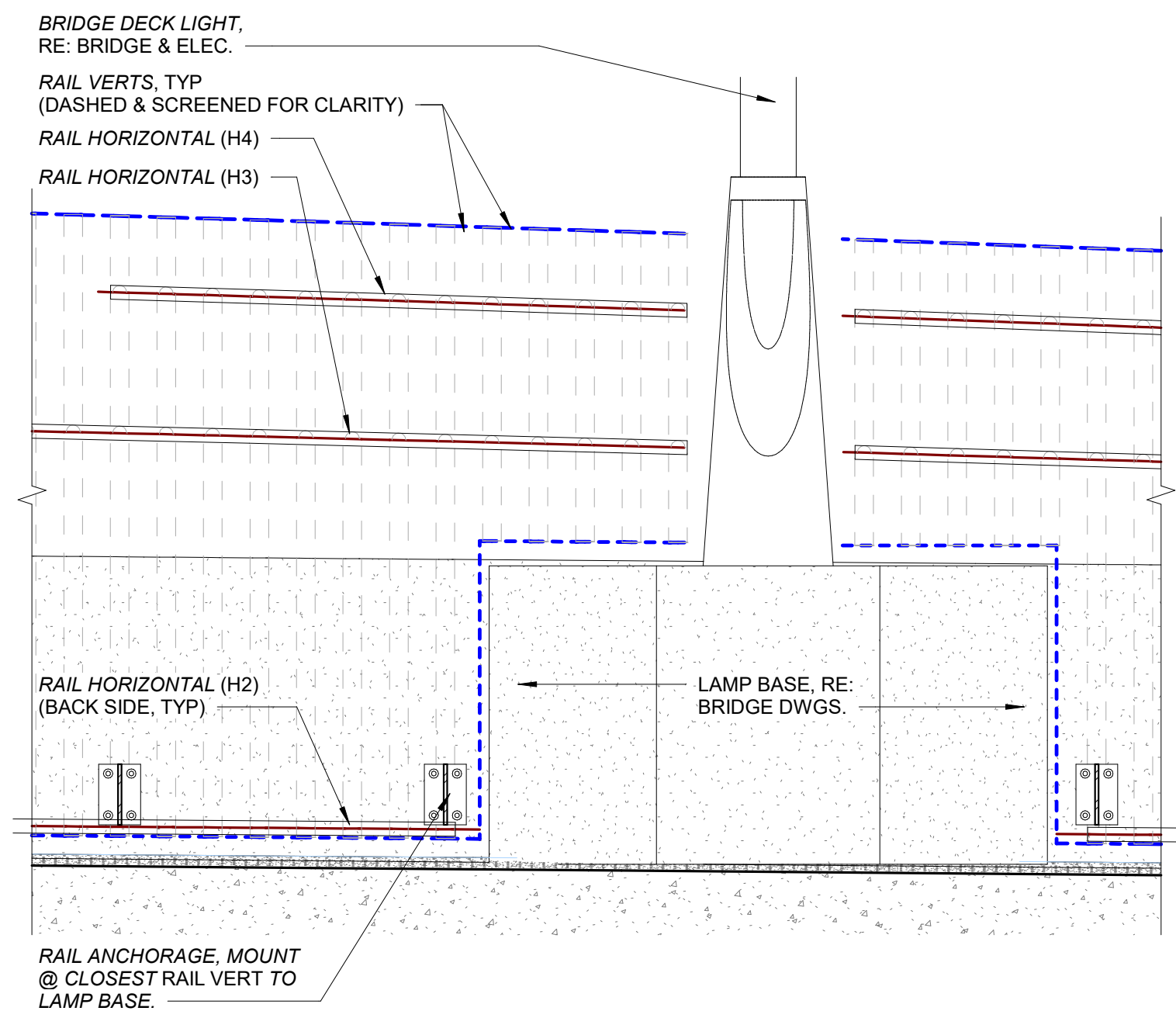
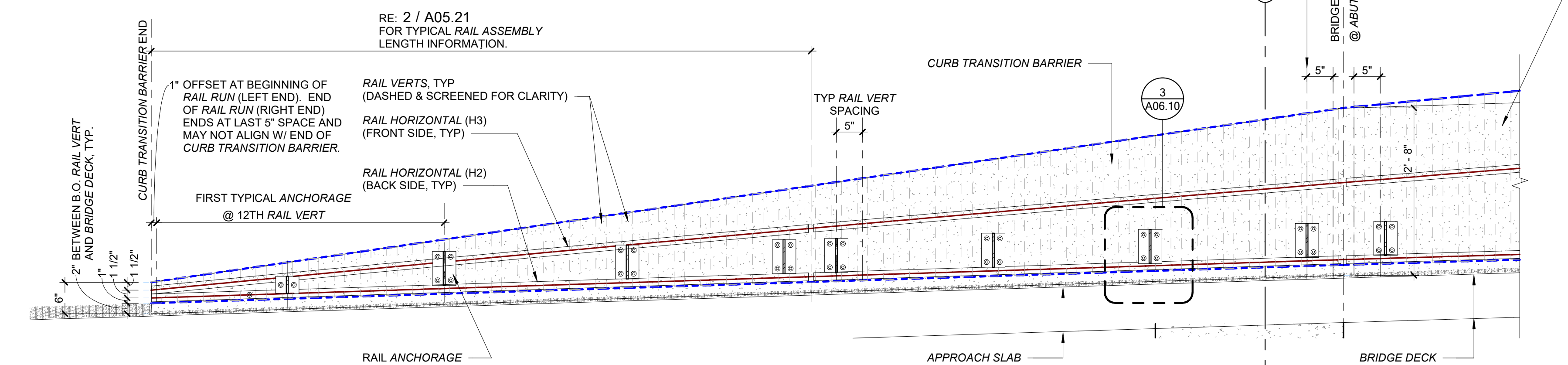
A01.10 | A05.21 SCALE: 3/4" = 1'-0"

LAYOUT LINE LEGEND

- RAIL VERT TOP / BOTTOM LINE
- RAIL VERT BREAK LINE
- RAIL HORIZONTAL LINE

RAIL LAYOUT LINE NOTES

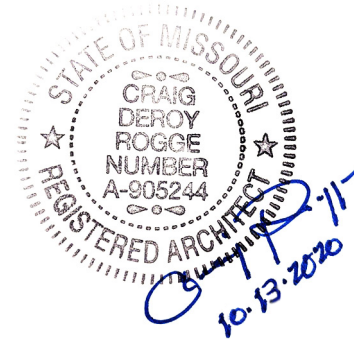
1. LAYOUT LINES PORTRAY BASIC LOCATIONS OF RAIL VERT TOP, BOTTOM & BREAKS, AND RAIL HORIZONTALS.
RE: 01/A06.10 RAIL VERT TYPES AND RAIL SCHEDULES FOR EXACT LOCATIONS AT EACH RAIL VERT.



RAIL ELEVATION - AT LAMP

A01.10 | A05.21 SCALE: 3/4" = 1'-0"

REV	DATE	DESCRIPTION

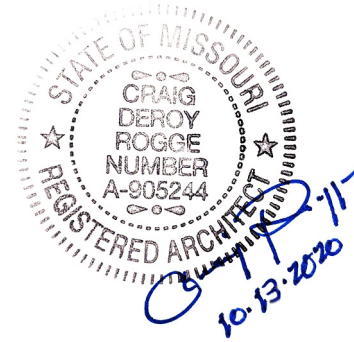


PROJECT NUMBER	12720.62
DATE	2020.10.13
ISSUE FOR CONSTRUCTION	
DESIGNED:	NJC
DRAWN:	NJC
REVIEWED:	CLR
SHEET TITLE	RAIL DETAILS
SHEET NUMBER	A05.21



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Architecture COA# A-45
Land Sureveying COA# LS-8

REV	DATE	DESCRIPTION



PROJECT NUMBER	12720.62
DATE	2020.10.13
ISSUE FOR CONSTRUCTION	
DESIGNED:	NJC
DRAWN:	NJC
REVIEWED:	CLR
SHEET TITLE	

RAIL VERT TYPES

SHEET NUMBER

A06.10

RAIL VERT TYPE NOTES

1. RAIL "P01V" ELEVATIONS SHALL BE USED FOR VERTICAL ALIGNMENT OF MEMBERS DURING SHOP ASSEMBLY.
2. VERTICAL DIMENSIONS OR ELEVATIONS STATED IN RAIL VERT SCHEDULES ARE TO BASELINE ELEVATION FOR EACH RAIL RUN. THE BASELINE ELEVATION IS ARBITRARILY SET TO 1'-0" BELOW THE LOWEST POINT OF EACH RAIL RUN AND IS UNIQUE TO EACH RAIL RUN.
3. ANCHORAGE SPACING LOGIC IS SPECIFIED IN DOCUMENTS, BUT ANCHORAGE IS NOT PRESENT AT EVERY RAIL VERT. BECAUSE SPECIFIC ANCHORAGE PLAN LOCATIONS ARE LAID OUT BY FABRICATOR, "ANV" ELEVATION HAS BEEN PROVIDED FOR ALL RAIL VERTS.

RAIL VERT TYPE LEGEND

"##" SYMBOL REPRESENTS A NUMBER

P0# - POINT AT CENTERPOINT OF RAIL VERT SEGMENT, LOCATED AT EITHER: RAIL VERT ENDS (TOP/BOTTOM) OR RAIL VERT BREAKS.

P0#V - POINT VERTICAL DISTANCE TO BASELINE ELEVATION

L0# - RAIL VERT SEGEMENT (LEG) OR LENGTH OF SEGMENT (LEG)

H0# - RAIL HORIZONTAL

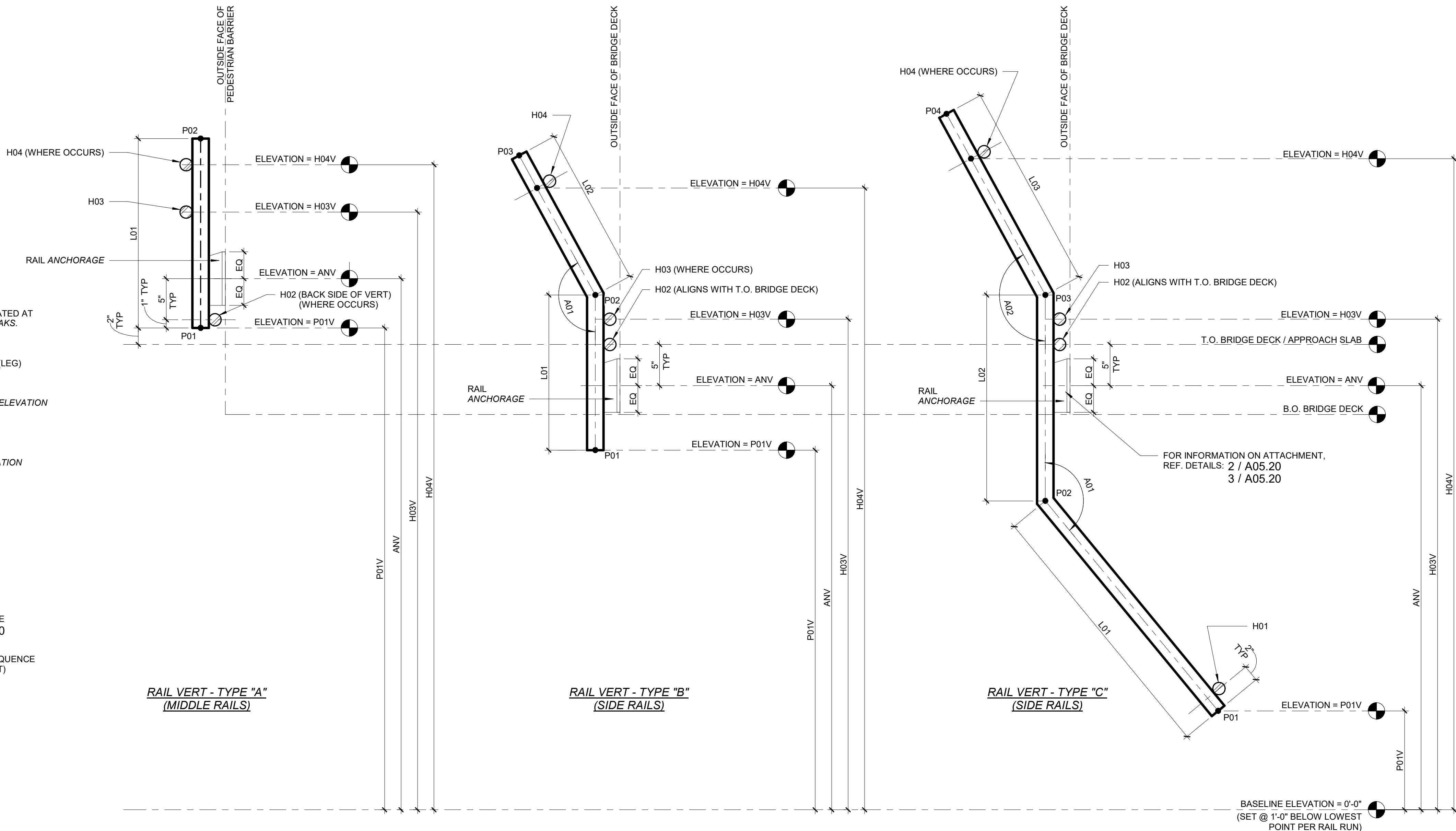
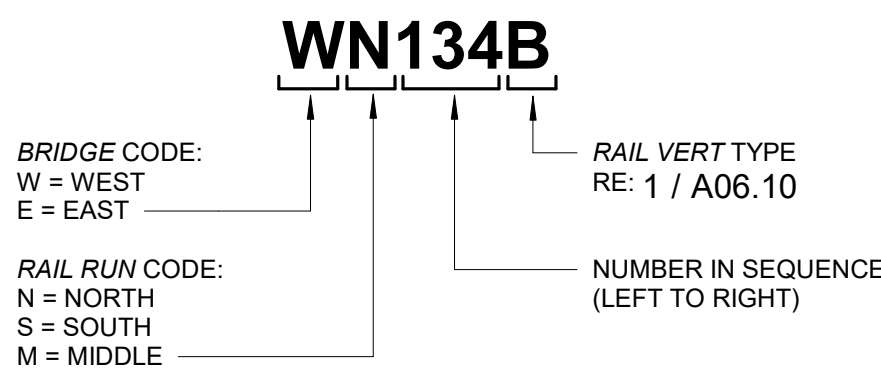
H0#V - RAIL HORIZONTAL VERTICAL DISTANCE TO BASELINE ELEVATION

A0# - ANGLE BETWEEN ADJACENT RAIL VERT SEGMENTS

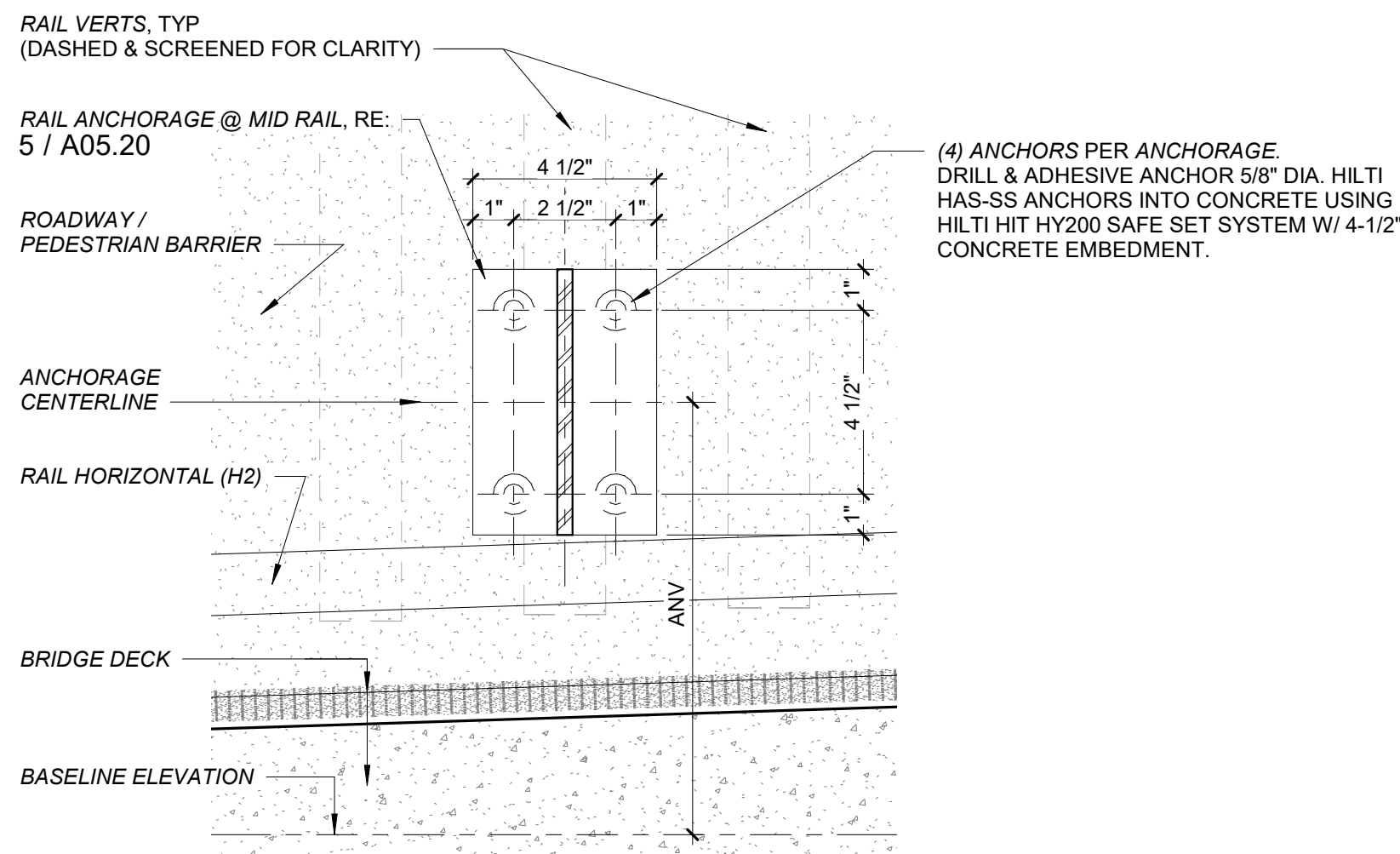
AN01 - CENTERLINE OF ANCHORAGE

ANV - ANCHORAGE VERTICAL DISTANCE TO BASELINE ELEVATION

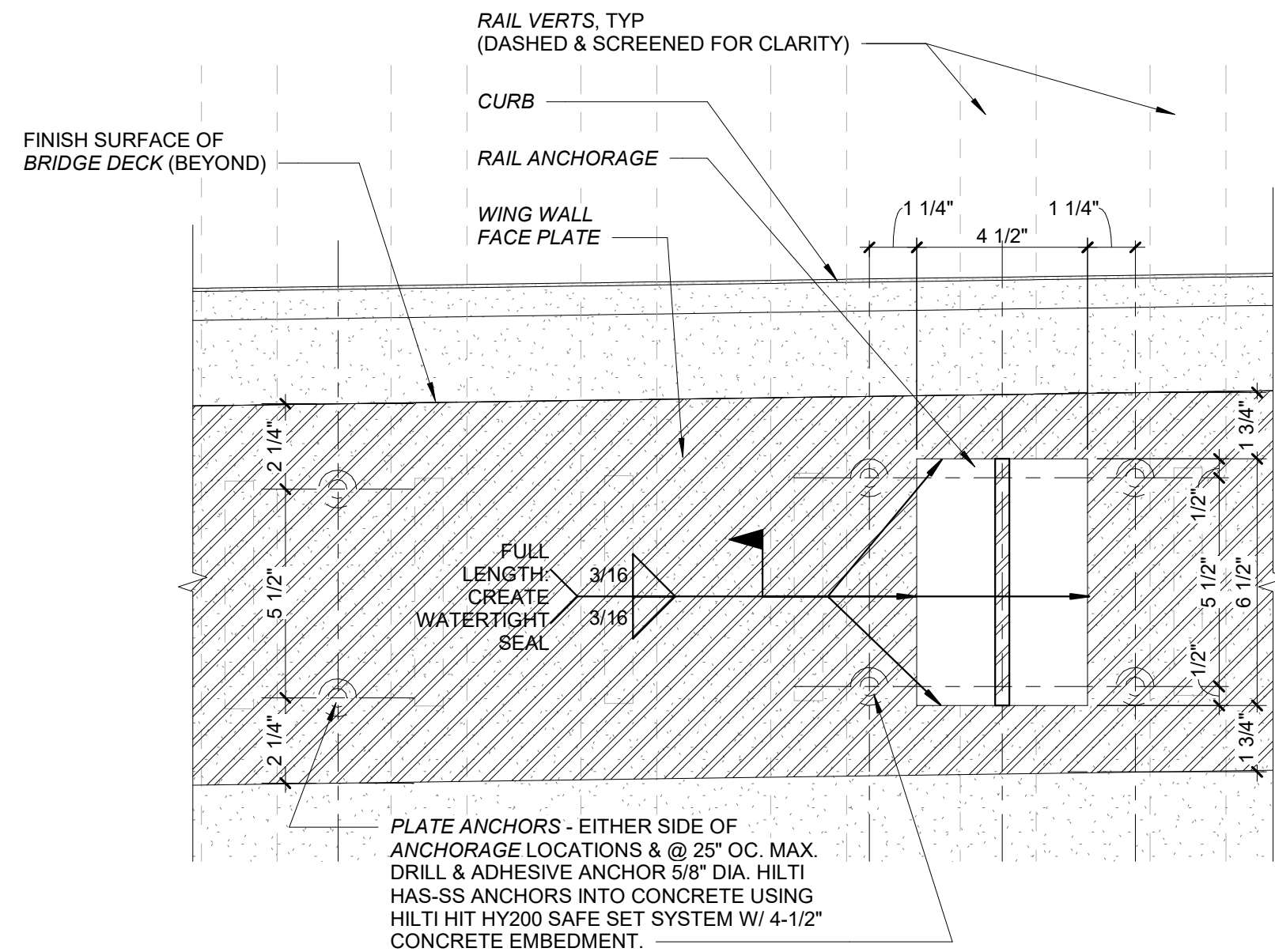
RAIL VERT ID LOGIC



RAIL VERT TYPES

1
A06.10 SCALE : 1 1/2" = 1'-0"

DETAIL ELEVATION - ANCHORAGE AT MID RAIL RUN

3
A05.21 A06.10 SCALE : 3" = 1'-0"

DETAIL ELEVATION - PLATE ANCHORS

2
A05.21 A06.10 SCALE : 3" = 1'-0"

EAST BRIDGE - NORTH RUN

ID	P01V	L01	A01	L02	A02	L03	LTOT	ANV	H03V	H04V
EN1B	4.0-7'8"	1-2'14"	162,021"	3-2'78"		4-6-18"	4-4-18"	5'-1-58"	7'-1-18"	
EN2B	4.0-7'8"	1-3"	161,911"	3-2'12"		4-6-12"	4-4-14"	5-2-78"	7'-1-58"	
EN3B	4.0-7'8"	1-3-1/2"	161,801"	3-2'12"		4-6-12"	4-3-18"	5-2-18"	7-2-18"	
EN4B	4.0-7'8"	1-4-58"	161,686"	3-1'78"		4-6-12"	4-4-12"	5-3-18"	7-2-58"	
EN5B	4.0-5'8"	1-5-12"	161,571"	3-1'12"		4-7"	4-4-34"	5-3-58"	7-3-18"	
EN6B	4.0-5'8"	1-5-12"	161,456"	3-1'12"		4-7-1/2"	4-3-18"	5-3-18"	7-3-12"	
EN7B	4.0-5'8"	1-7-14"	161,342"	3-0'78"		4-8-18"	4-5"	5-4-12"	7-4"	
EN8B	4.0-1'8"	1-8-18"	161,227"	3-0'18"		4-8-58"	4-5-18"	5-5"	7-4-58"	
EN9B	4.0-1'8"	1-9-18"	161,112"	3-0'18"		4-8-58"	4-5-18"	5-5"	7-4-58"	
EN10B	3-11-34"	1-10-1"	161,000"	2-11'78"		4-9-78"	4-5-12"	5-5"	7-5-12"	
EN11B	3-11-12"	1-11"	160,885"	2-11-12"		4-10-12"	4-5-58"	5-6-38"	7-5-78"	
EN12B	3-11-14"	1-11-1/2"	160,770"	2-11-18"		4-10-12"	4-5-58"	5-6-38"	7-5-78"	
EN13B	3-11-1"	2-1"	161,286"	2-11-12"		4-11-34"	4-6"	5'-7-38"	7-6-18"	
EN14B	3-10-58"	2-2"	161,209"	2-10-12"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN15B	3-10-14"	2-3-18"	161,132"	2-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN16B	3-10-12"	2-3-18"	161,055"	2-10-12"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN17B	3-9-58"	2-5-14"	160,964"	2-9-12"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN18B	3-9-18"	2-5-14"	160,878"	2-9-12"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN19B	3-8-34"	2-7-12"	160,787"	2-8-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN20B	3-8-14"	2-8-34"	160,692"	2-8-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN21B	3-7-78"	2-9-78"	160,594"	2-8-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN22B	3-7-18"	2-11-18"	160,494"	2-7-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN23B	3-6-78"	3-0-38"	160,390"	2-7-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN24B	3-6-14"	3-1-58"	160,282"	2-7-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN25B	3-5-38"	3-1-78"	160,174"	2-7-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN26B	3-5-18"	3-1-14"	160,054"	2-6-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN27B	3-4-14"	3-5-58"	159,935"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN28B	3-3-78"	3-5-18"	159,815"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN29B	3-3-14"	3-8-38"	159,692"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN30B	3-2-12"	3-8-34"	159,550"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN31B	3-1-78"	3-11-18"	159,424"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN32B	3-1-18"	3-8-38"	159,296"	2-5-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN33B	3-0-38"	4-2-18"	159,119"	2-3-34"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN34B	2-11-58"	4-3-58"	158,967"	2-3-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN35B	2-11-18"	4-3-58"	158,815"	2-3-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN36B	2-10-1"	4-6-34"	158,642"	2-2-58"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN37B	2-9-18"	4-14"	158,471"	2-2-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN38B	2-8-14"	4-14"	158,300"	2-2-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN39B	2-7-38"	4-11-12"	158,126"	2-1-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN40B	2-6-12"	5-1-18"	157,954"	2-1-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN41B	2-5-18"	5-1-18"	157,782"	2-1-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN42B	2-4-58"	5-4-12"	157,570"	2-0-38"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN43B	2-3-58"	5-6-18"	157,351"	2-0-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN44B	2-2-58"	5-6-18"	157,126"	2-0-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN45B	2-1-12"	5-9-58"	156,834"	1-11-14"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN46B	2-0-12"	5-11-12"	156,580"	1-10-78"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN47B	2-0-18"	6-10-18"	156,326"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN48B	1-11-18"	6-10-18"	156,072"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN49B	1-10-18"	6-10-18"	155,818"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN50B	1-9-18"	6-10-18"	155,564"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN51B	1-8-18"	6-10-18"	155,310"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN52B	1-7-18"	6-10-18"	155,056"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN53B	1-6-18"	6-10-18"	154,802"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN54B	1-5-18"	6-10-18"	154,548"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN55B	1-4-18"	6-10-18"	154,294"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN56B	1-3-18"	6-10-18"	154,040"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN57B	1-2-18"	6-10-18"	153,786"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN58B	1-1-18"	6-10-18"	153,532"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN59B	1-0-18"	6-10-18"	153,278"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN60B	1-0-18"	6-10-18"	153,024"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN61B	1-0-18"	6-10-18"	152,770"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN62B	1-0-18"	6-10-18"	152,516"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN63B	1-0-18"	6-10-18"	152,262"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN64B	1-0-18"	6-10-18"	152,008"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN65B	1-0-18"	6-10-18"	151,754"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN66B	1-0-18"	6-10-18"	151,500"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN67B	1-0-18"	6-10-18"	151,246"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN68B	1-0-18"	6-10-18"	150,992"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN69B	1-0-18"	6-10-18"	150,738"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN70B	1-0-18"	6-10-18"	150,484"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN71B	1-0-18"	6-10-18"	150,230"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN72B	1-0-18"	6-10-18"	149,976"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN73B	1-0-18"	6-10-18"	149,722"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN74B	1-0-18"	6-10-18"	149,468"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN75B	1-0-18"	6-10-18"	149,214"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN76B	1-0-18"	6-10-18"	148,960"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN77B	1-0-18"	6-10-18"	148,706"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN78B	1-0-18"	6-10-18"	148,452"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN79B	1-0-18"	6-10-18"	148,198"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN80B	1-0-18"	6-10-18"	147,944"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN81B	1-0-18"	6-10-18"	147,690"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN82B	1-0-18"	6-10-18"	147,436"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN83B	1-0-18"	6-10-18"	147,182"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN84B	1-0-18"	6-10-18"	146,928"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN85B	1-0-18"	6-10-18"	146,674"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN86B	1-0-18"	6-10-18"	146,420"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN87B	1-0-18"	6-10-18"	146,166"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN88B	1-0-18"	6-10-18"	145,912"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN89B	1-0-18"	6-10-18"	145,658"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN90B	1-0-18"	6-10-18"	145,404"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN91B	1-0-18"	6-10-18"	145,150"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN92B	1-0-18"	6-10-18"	144,896"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN93B	1-0-18"	6-10-18"	144,642"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN94B	1-0-18"	6-10-18"	144,388"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN95B	1-0-18"	6-10-18"	144,134"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN96B	1-0-18"	6-10-18"	143,880"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN97B	1-0-18"	6-10-18"	143,626"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN98B	1-0-18"	6-10-18"	143,372"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN99B	1-0-18"	6-10-18"	143,118"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN100B	1-0-18"	6-10-18"	142,864"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN101B	1-0-18"	6-10-18"	142,610"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN102B	1-0-18"	6-10-18"	142,356"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN103B	1-0-18"	6-10-18"	142,102"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN104B	1-0-18"	6-10-18"	141,848"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN105B	1-0-18"	6-10-18"	141,594"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN106B	1-0-18"	6-10-18"	141,340"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN107B	1-0-18"	6-10-18"	141,086"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN108B	1-0-18"	6-10-18"	140,832"	1-10-18"		4-11-12"	4-6-18"	5-7-78"	7-7-14"	
EN109B	1-0-									

EAST BRIDGE - MIDDLE RUN

ID	P01V	L01	A01	L02	A02	L03	LTOT	ANV	H03V	H04V
EM1A	1'-0"	0'-4.18"				0'-4.18"	1'-5"	1'-2.58"		
EM2A	1'-0.14"	0'-4.58"				0'-4.58"	1'-5.14"	1'-3.18"		
EM3A	1'-0.38"	0'-5.18"				0'-5.18"	1'-5.78"	1'-3.58"		
EM4A	1'-0.12"	0'-5.78"				0'-5.78"	1'-6.12"	1'-4.18"		
EM5A	1'-0.58"	0'-6.38"				0'-6.38"	1'-6.98"	1'-4.12"		
EM6A	1'-1.18"	0'-7.12"				0'-7.12"	1'-7.78"	1'-4.12"		
EM7A	1'-1"	0'-7.12"				0'-7.12"	1'-7"	1'-4.12"		
EM8A	1'-1.18"	0'-8.18"				0'-8.18"	1'-8.18"	1'-5"		
EM9A	1'-1.38"	0'-8.18"				0'-8.18"	1'-8.38"	1'-5"		
EM10A	1'-1.12"	0'-9.14"				0'-9.14"	1'-9.12"	1'-5"		
EM11A	1'-1.58"	0'-9.78"				0'-9.78"	1'-9.58"	1'-7.38"		
EM12A	1'-1.34"	0'-9.38"				0'-9.38"	1'-9.14"	1'-7.78"		
EM13A	1'-2"	0'-11"				0'-11"	1'-7"	1'-8.38"		
EM14A	1'-2.18"	0'-11.12"				0'-11.12"	1'-7.18"	1'-8.78"		
EM15A	1'-2.14"	1'-0.18"				1'-0.18"	1'-2.14"	1'-8.18"		
EM16A	1'-2.12"	1'-0.58"				1'-0.58"	1'-7.12"	1'-9.34"		
EM17A	1'-2.58"	1'-1.14"				1'-1.14"	1'-7.58"	1'-10.14"		
EM18A	1'-2.34"	1'-1.34"				1'-1.34"	1'-7.34"	1'-10.58"		
EM19A	1'-2.78"	1'-2.38"				1'-2.38"	1'-7.78"	1'-11.18"		
EM20A	1'-3.18"	1'-3"				1'-3"	1'-8.18"	1'-11.58"		
EM21A	1'-3.14"	1'-3.12"				1'-3.12"	1'-8.14"	1'-12"		
EM22A	1'-3.38"	1'-4.18"				1'-4.18"	1'-8.38"	1'-11.78"		
EM23A	1'-3.58"	1'-4.58"				1'-4.58"	1'-8.58"	1'-11"		
EM24A	1'-3.34"	1'-5.14"				1'-5.14"	1'-8.34"	1'-11.38"		
EM25A	1'-3.78"	1'-5.78"				1'-5.78"	1'-8.78"	1'-11.78"		
EM26A	1'-4"	1'-6.38"				1'-6.38"	1'-9"	1'-12.14"		
EM27A	1'-4.14"	1'-7"				1'-7"	1'-9.14"	1'-12.34"		
EM28A	1'-4.38"	1'-7.12"				1'-7.12"	1'-9.38"	1'-12.12"		
EM29A	1'-4.12"	1'-8.18"				1'-8.18"	1'-9.12"	1'-12.58"		
EM30A	1'-4.34"	1'-8.58"				1'-8.58"	1'-9.34"	1'-12.48"		
EM31A	1'-4.78"	1'-9.18"				1'-9.18"	1'-9.78"	1'-12.48"		
EM32A	1'-5"	1'-9.34"				1'-9.34"	1'-10"	1'-12.5"		
EM33A	1'-5.18"	1'-10.38"				1'-10.38"	1'-10.18"	1'-12.58"		
EM34A	1'-5.38"	1'-10.78"				1'-10.78"	1'-10.38"	1'-12.78"		
EM35A	1'-5.78"	1'-10.12"				1'-10.12"	1'-10.58"	1'-12.12"		
EM36A	1'-5.58"	1'-10.18"				1'-10.18"	1'-10.58"	1'-12.34"		
EM37A	1'-5.78"	1'-10.58"				1'-10.58"	1'-10.78"	1'-12.18"		
EM38A	1'-6.18"	1'-11.14"				1'-11.14"	1'-11.14"	1'-12.14"		
EM39A	1'-6.18"	1'-11.14"				1'-11.14"	1'-11.14"	1'-12.14"		
EM40A	1'-6.14"	1'-11.18"				1'-11.18"	1'-11.18"	1'-12.18"		
EM41A	1'-6.12"	1'-11.18"				1'-11.18"	1'-11.18"	1'-12.18"		
EM42A	1'-6.58"	1'-11.78"				1'-11.78"	1'-11.78"	1'-12.18"		
EM43A	1'-6.34"	1'-12.14"				1'-12.14"	1'-11.34"	1'-12.58"		
EM44A	1'-6.58"	1'-12.14"				1'-12.14"	1'-11.34"	1'-12.58"		
EM45A	1'-7"	1'-12.14"				1'-12.14"	1'-11.34"	1'-12.58"		
EM46A	1'-7.14"	1'-12.34"				1'-12.34"	1'-11.54"	1'-12.78"		
EM47A	1'-7.38"	1'-12.34"				1'-12.34"	1'-11.54"	1'-12.78"		
EM48A	1'-7.58"	1'-12.12"				1'-12.12"	1'-11.58"	1'-12.78"		
EM49A	1'-7.34"	1'-12.18"				1'-12.18"	1'-11.34"	1'-12.78"		
EM50A	1'-7.78"	1'-12.78"				1'-12.78"	1'-11.78"	1'-12.78"		
EM51A	1'-8"	1'-12.78"				1'-12.78"	1'-11.78"	1'-12.78"		
EM52A	1'-8.18"	1'-13.18"				1'-13.18"	1'-11.38"	1'-12.78"		
EM53A	1'-8.14"	1'-13.14"				1'-13.14"	1'-11.34"	1'-12.78"		
EM54A	1'-8.12"	1'-13.18"				1'-13.18"	1'-11.38"	1'-12.78"		
EM55A	1'-8.58"	1'-13.78"				1'-13.78"	1'-11.78"	1'-12.78"		
EM56A	1'-8.34"	1'-13.94"				1'-13.94"	1'-11.94"	1'-12.78"		
EM57A	1'-8.78"	1'-14.58"				1'-14.58"	1'-12.58"	1'-12.78"		
EM58A	1'-8.78"	1'-14.58"				1'-14.58"	1'-12.58"	1'-12.78"		
EM59A	1'-9"	1'-14.58"				1'-14.58"	1'-12.58"	1'-12.78"		
EM60A	1'-9.18"	1'-14.58"				1'-14.58"	1'-12.58"	1'-12.78"		
EM61A	1'-9.12"	1'-14.58"				1'-14.58"	1'-12.58"	1'-12.78"		
EM62A	1'-9.58"	1'-15.14"				1'-15.14"	1'-12.58"	1'-12.78"		
EM63A	1'-9.34"	1'-15.14"				1'-15.14"	1'-12.58"	1'-12.78"		
EM64A	1'-9.78"	1'-15.78"				1'-15.78"	1'-12.78"	1'-12.78"		
EM65A	1'-10"	1'-15.78"				1'-15.78"	1'-12.78"	1'-12.78"		
EM66A	1'-10.18"	1'-15.78"				1'-15.78"	1'-12.78"	1'-12.78"		
EM67A	1'-10.14"	1'-15.78"				1'-15.78"	1'-12.78"	1'-12.78"		
EM68A	1'-10.12"	1'-15.78"				1'-15.78"	1'-12.78"	1'-12.78"		
EM69A	1'-10.58"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM70A	1'-10.34"	1'-16.34"				1'-16.34"	1'-13.34"	1'-12.78"		
EM71A	1'-10.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM72A	1'-11"	1'-16.34"				1'-16.34"	1'-13.34"	1'-12.78"		
EM73A	1'-11.18"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM74A	1'-11.38"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM75A	1'-11.12"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM76A	1'-11.58"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM77A	1'-11.34"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM78A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM79A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM80A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM81A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM82A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM83A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM84A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM85A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM86A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM87A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM88A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM89A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM90A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM91A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM92A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM93A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM94A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM95A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM96A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM97A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM98A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM99A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM100A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM101A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM102A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM103A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM104A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM105A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM106A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM107A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM108A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM109A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM110A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM111A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM112A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM113A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM114A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM115A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM116A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM117A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM118A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM119A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM120A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM121A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM122A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM123A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM124A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM125A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM126A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM127A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM128A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM129A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM130A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM131A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM132A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		
EM133A	1'-11.78"	1'-16.38"				1'-16.38"	1'-13.38"	1'-12.78"		