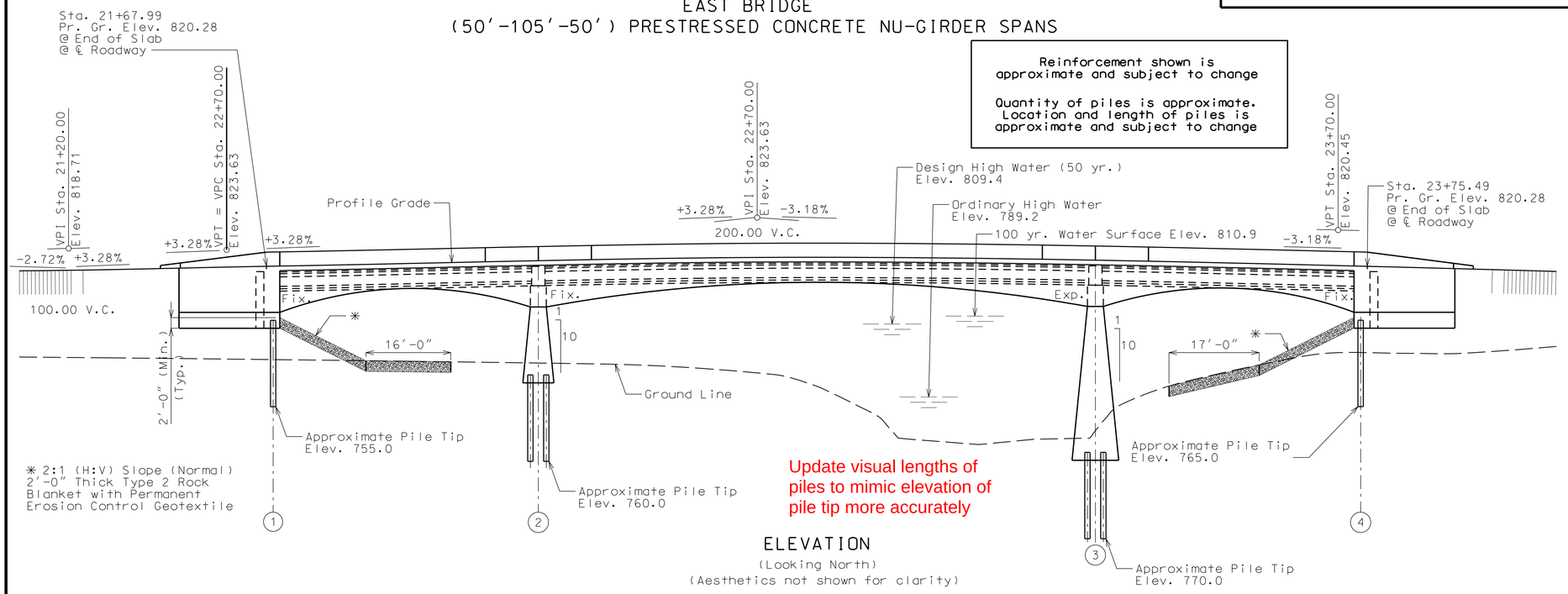
SEC/SUR 34 TWP 48N RGE 32W

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

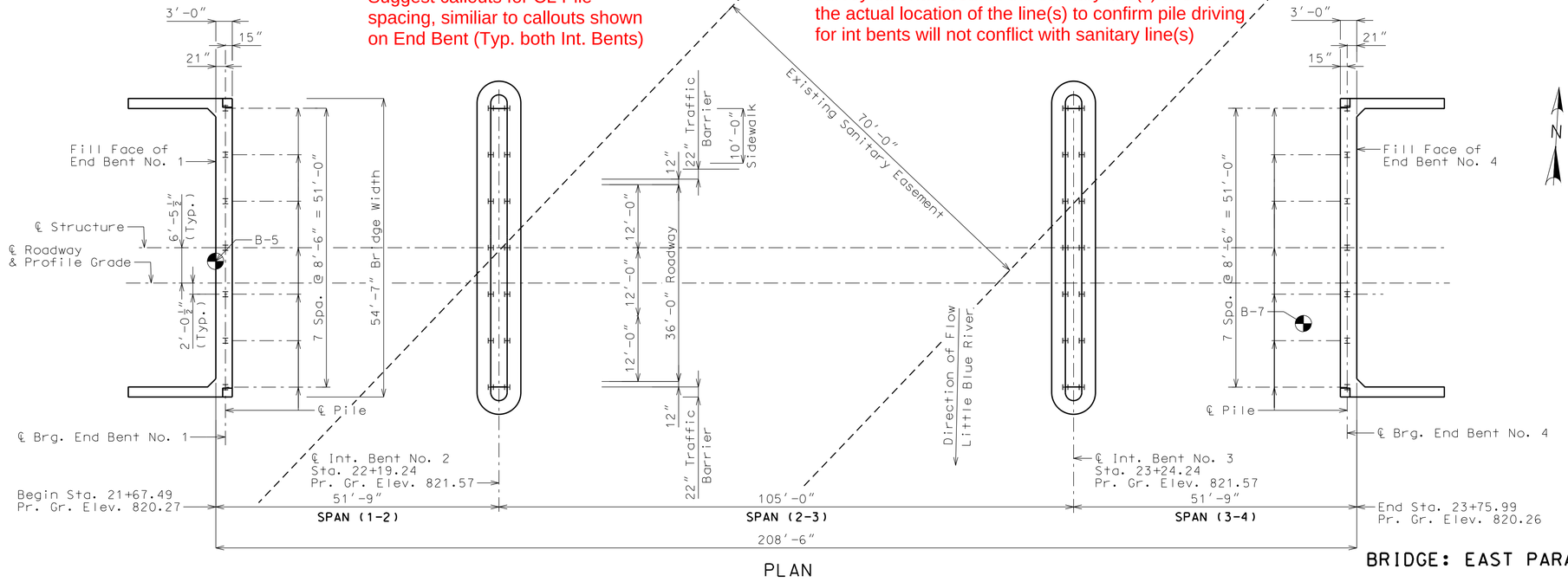


ELEVATION
(Looking North)
(Aesthetics not shown for clarity)

Update visual lengths of piles to mimic elevation of pile tip more accurately

Suggest callouts for CL Pile spacing, similiar to callouts shown on End Bent (Typ. both Int. Bents)

The easement is shown for the sanitary, but is there survey that has located the sanitary line(s) to show the actual location of the line(s) to confirm pile driving for int bents will not conflict with sanitary line(s)



PLAN

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
1	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, 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 Engineer for the design of the bridge, are shown on Sheet(s) No(s). __ - __. 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
High Freeboard (50-year)
Design ~~H.G.~~ Water = 809.4
Freeboard = 2.6 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency N/A years
Flood Elevation = N/A

Notes:

Roadway fill shall be completed to the final roadway section and up to the elevation 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.

BRIDGE: EAST PARAGON PARKWAY OVER LITTLE BLUE RIVER

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	2
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

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

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 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. __1.
For Prestressed Girder Stresses, See Sheets No. __ & __.

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.

Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including 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.

Traffic Handling:
Structure to be closed during construction. See roadway plans for traffic control.

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

Reinforcement quantity provided is based on _____lbs/cy of concrete.

FOUNDATION DATA

TYPE	DESIGN DATA		BENT NUMBER 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP12x53	HP12x53	HP12x53	HP12x53
	Number	ea	8	--	--	8
	Approximate Length per Each	ft	--	--	--	--
	Pile Point Reinforcement	ea	--	--	--	--
	Min. Galvanized Penetration (Elev.)	ft	--	--	--	--
	Minimum Nominal Axial Compressive Resistance	kip	--	--	--	--

DT = Dynamic Testing

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

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 down to the minimum galvanized penetration (elevation).

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.

Estimated Quantities

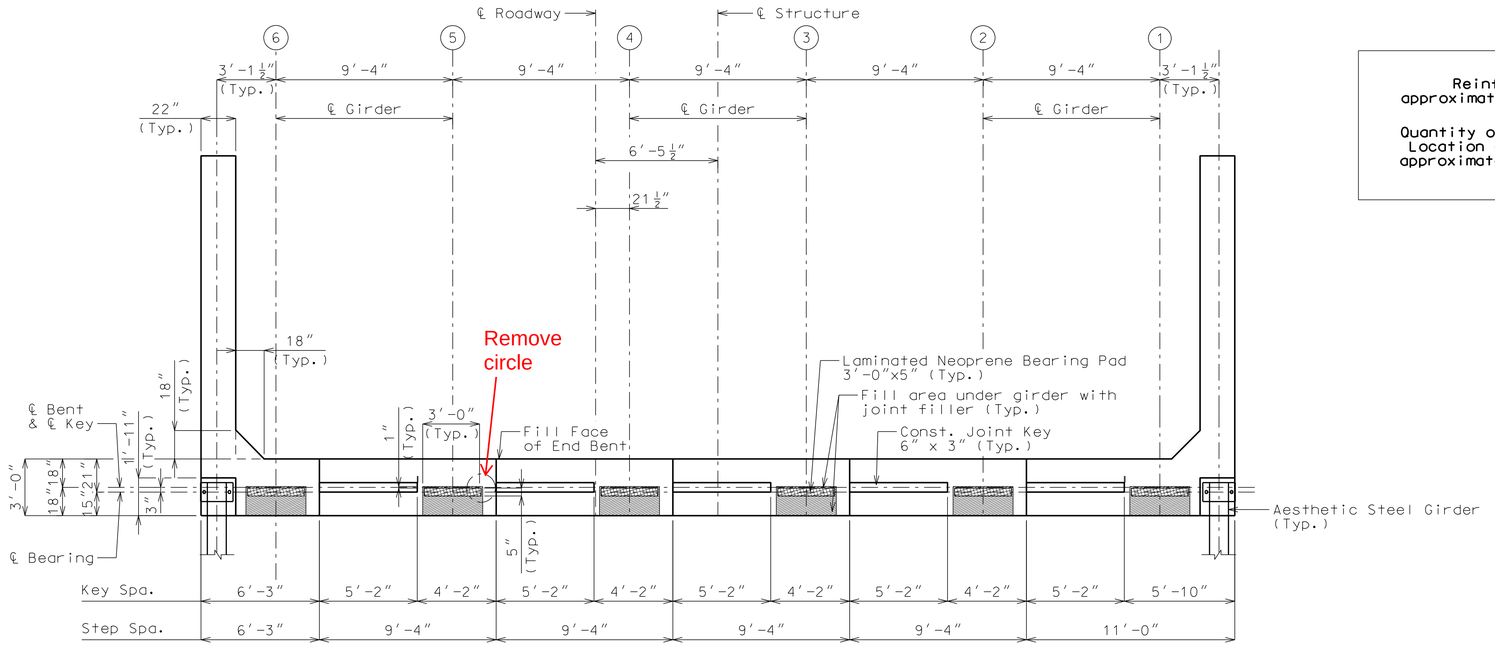
Item		Total
Class B-2 Concrete (Superstructure Concrete on NU-Girder)	cu. yard	--
Reinforcing Steel (Epoxy Coated)	pound	--

The table of Estimated Quantities represents the quantities used by the Engineer in preparing the cost estimate. Payment for the Bridge will be considered completely covered by the contract Lump sum price. Variations may be encountered in the estimated quantities but the variations cannot be used for adjustment in the contract Lump sum price.

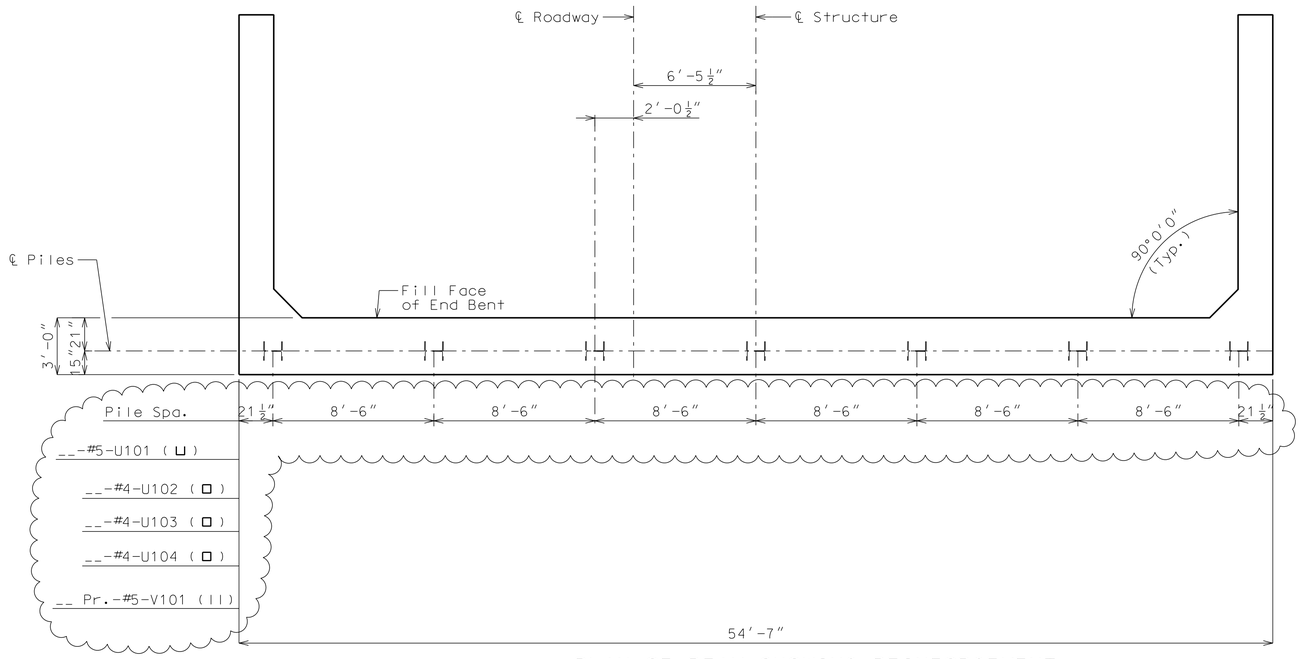
Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II, or III.

GENERAL NOTES AND QUANTITIES

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. 1

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

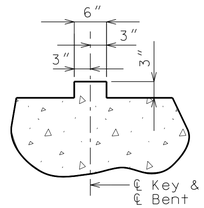
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	3
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

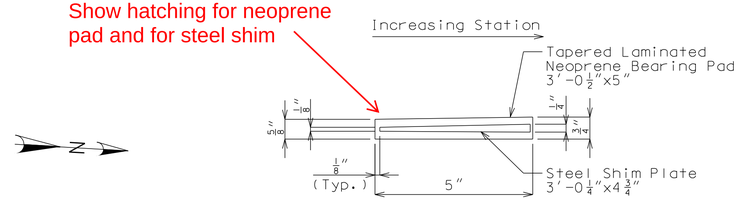
Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

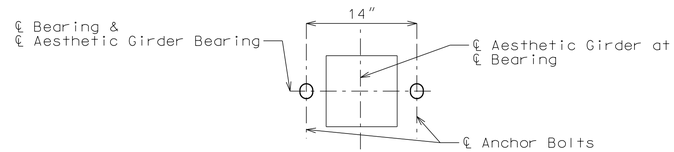


SECTION THRU KEY

Show hatching for neoprene pad and for steel shim



~~BEARING PAD DETAIL~~
SECTION THRU TAPERED LAMINATED NEOPRENE BEARING PAD



ANCHOR BOLT DETAIL

Notes:

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

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½″.

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Roadway.

For Substructure Quantity Table, see Sheet No. _.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	4
TOTAL SHEETS	33

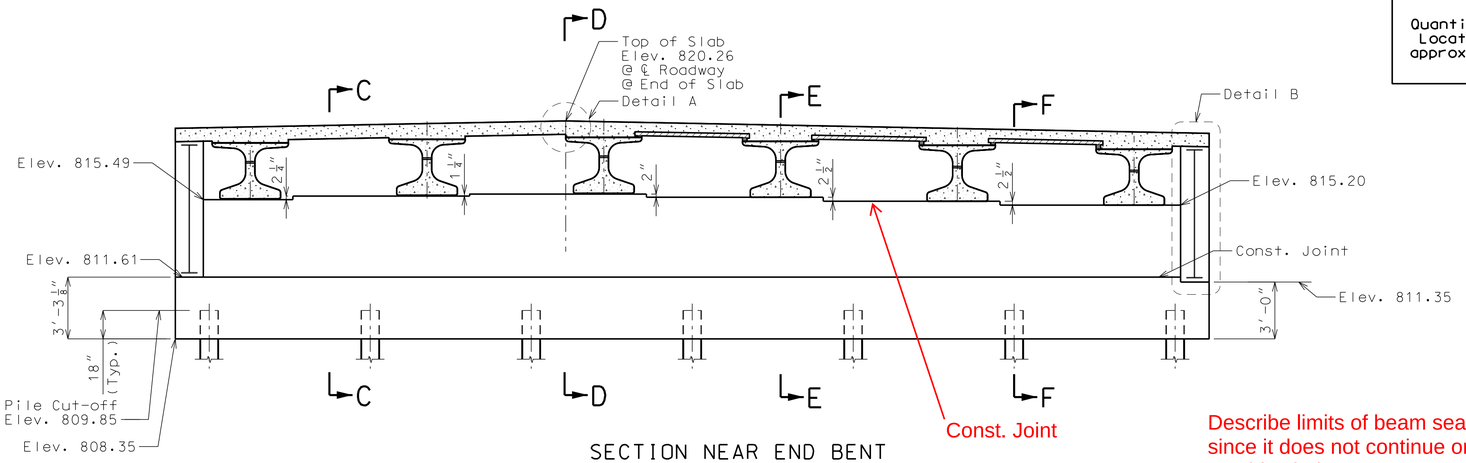
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

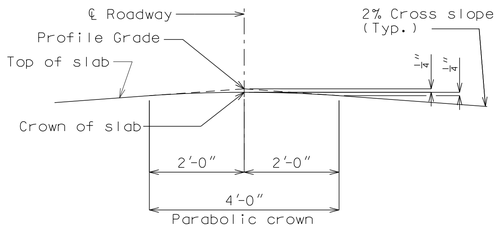
Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

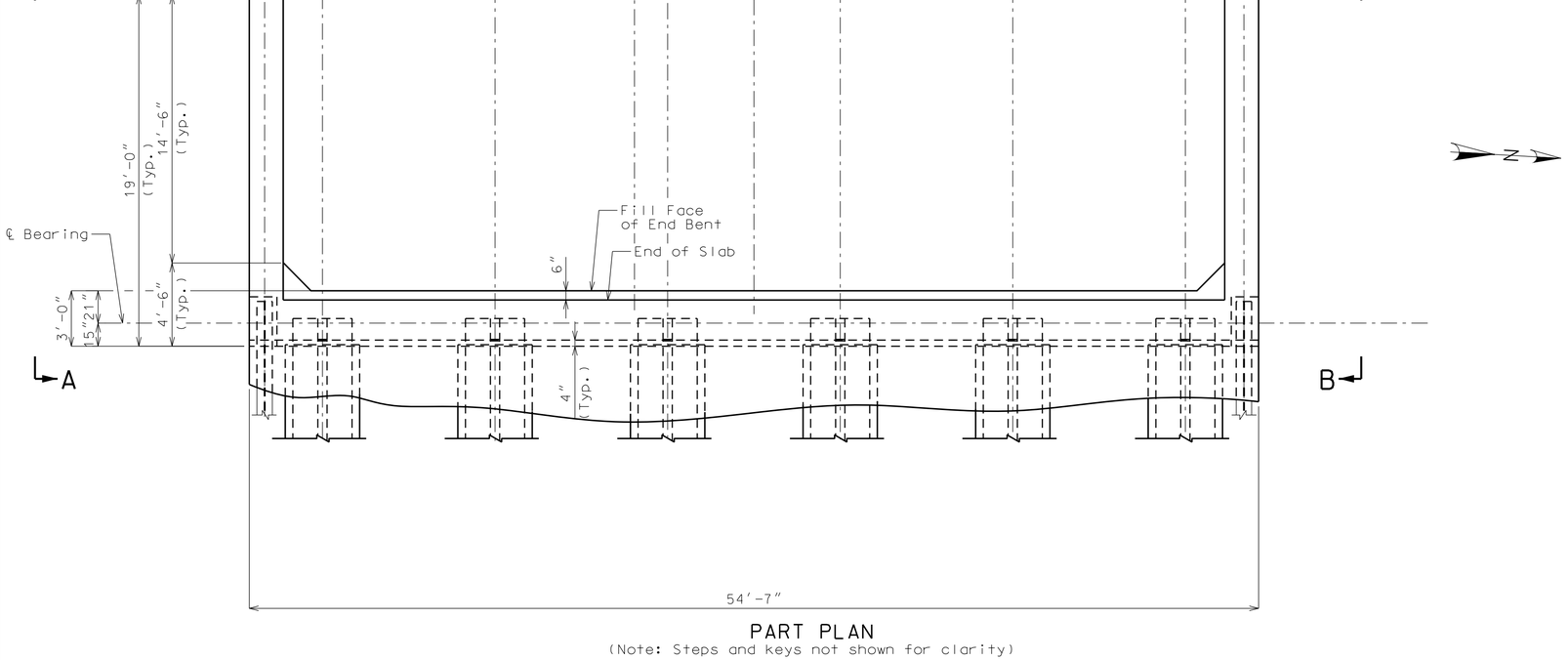


SECTION NEAR END BENT

Describe limits of beam seat joint more clearly since it does not continue on to the wings. Will provide clarity to contractor to construct.



DETAIL A



PART PLAN
(Note: Steps and keys not shown for clarity)

Is this joint filler between the slab and girder top flange intended to run the entire length of the girder? Callout length of girder for which joint filler is to be used.

DETAIL B

Notes:

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

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

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. __ & __.

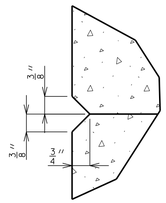
The U-bars and Pairs-V bars shall be placed parallel to ℄ Structure.

DETAILS OF END BENT NO. 1

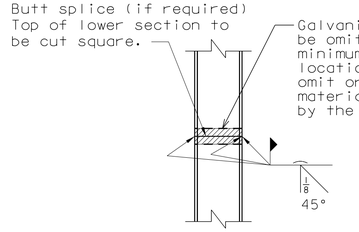
Note: This drawing is not to scale. Follow dimensions.

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change



DETAIL G



DETAIL OF STEEL PILE SPLICE

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

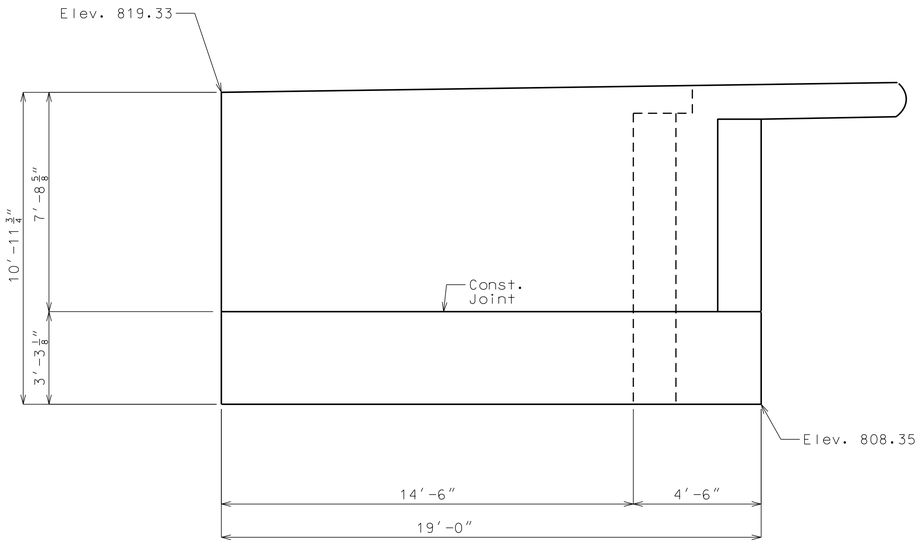
DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	5
TOTAL SHEETS	33

Bridge Plans

Paragon Star Development

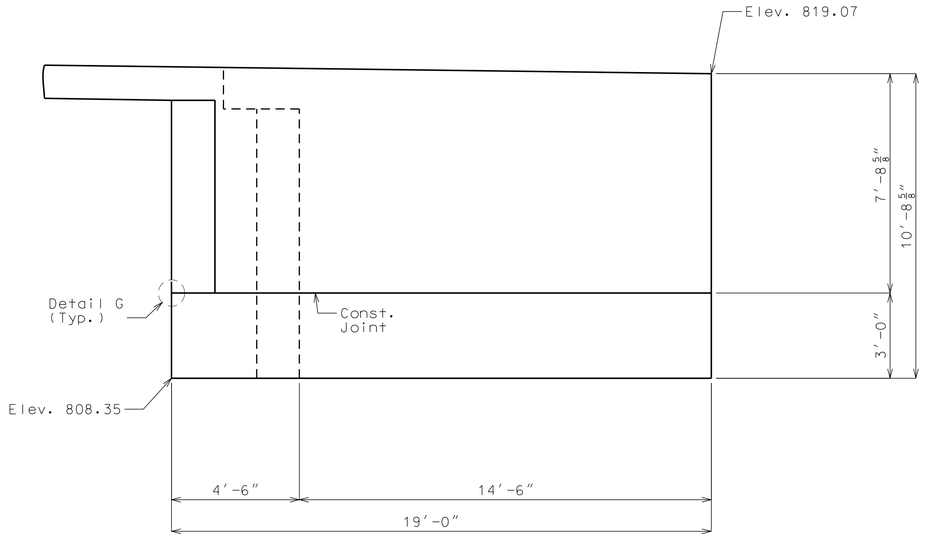
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

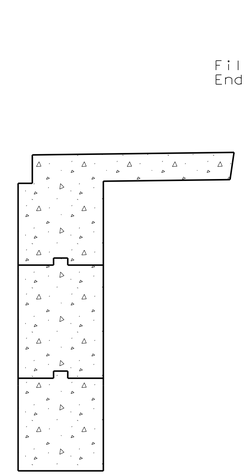


ELEVATION A-A

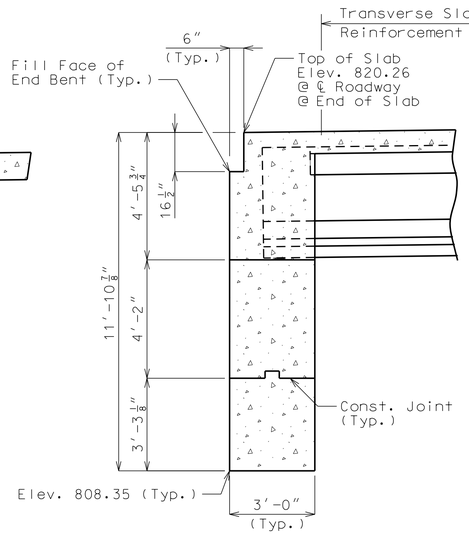
TYPICAL SECTION THRU WING



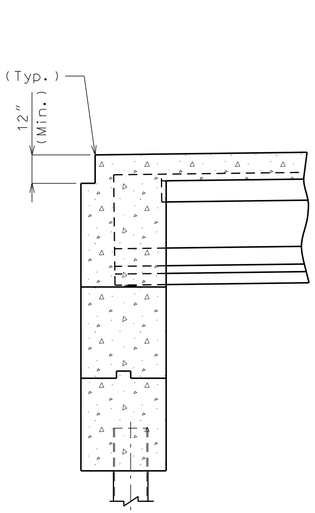
ELEVATION B-B



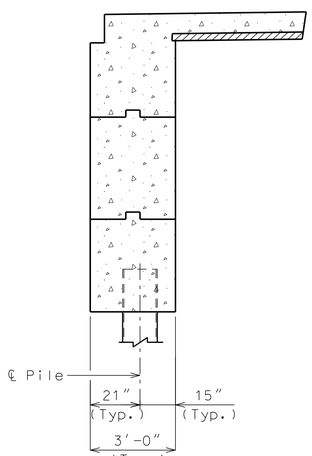
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

DETAILS OF END BENT NO. 1

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

Notes:

For details of End Bent No. 1 not shown, See Sheets No. 4 & 5.

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

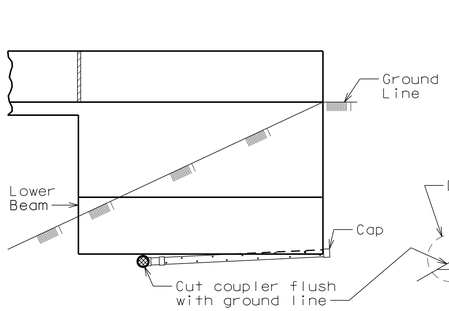
For location of Sections C-C, D-D, E-E & F-F See Sheet No. 5.

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

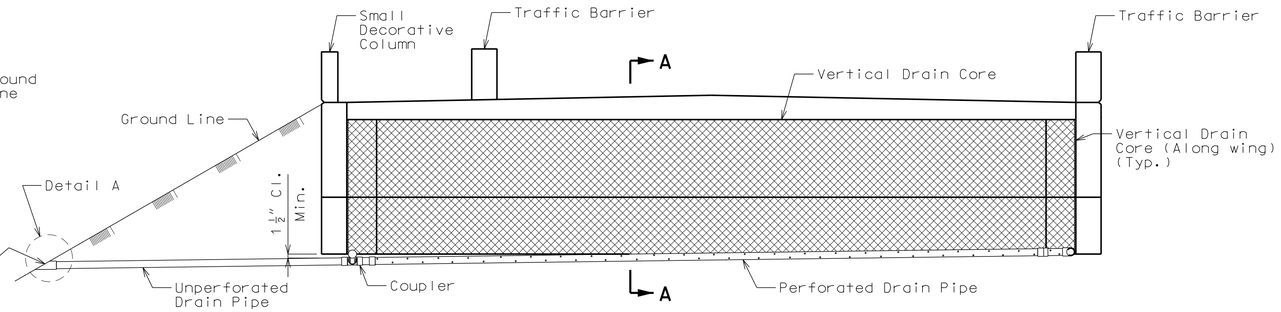
For reinforcement of Safety Barrier Curb, See Sheets No. __ & __.

For reinforcement of Pedestrian Curb, see Sheet No. __.

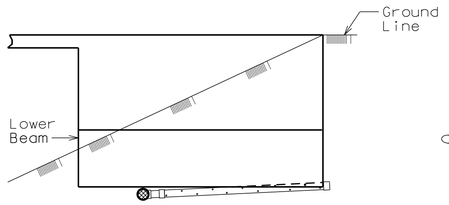
HP pile shall be galvanized to the minimum galvanized penetration (elevation) (See Foundation Data).



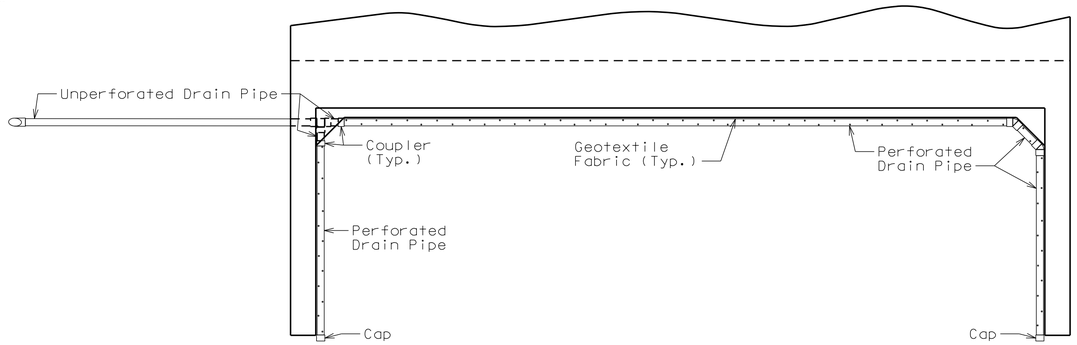
ELEVATION OF SOUTH WING



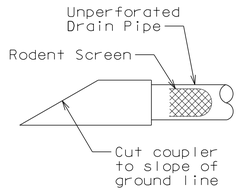
ELEVATION OF END BENT



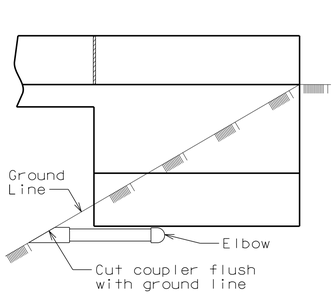
ELEVATION OF NORTH WING



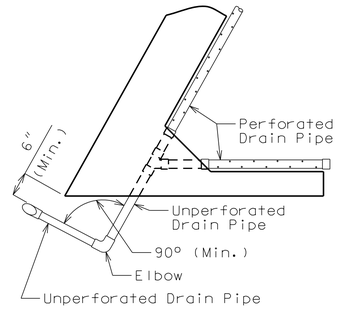
PLAN OF END BENT



DETAIL A

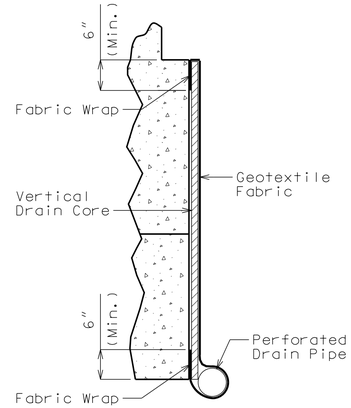


ELEVATION OF WING



PART PLAN

OPTIONAL TURNED DRAIN
(Only if rock is encountered outside of wing)



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.

VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

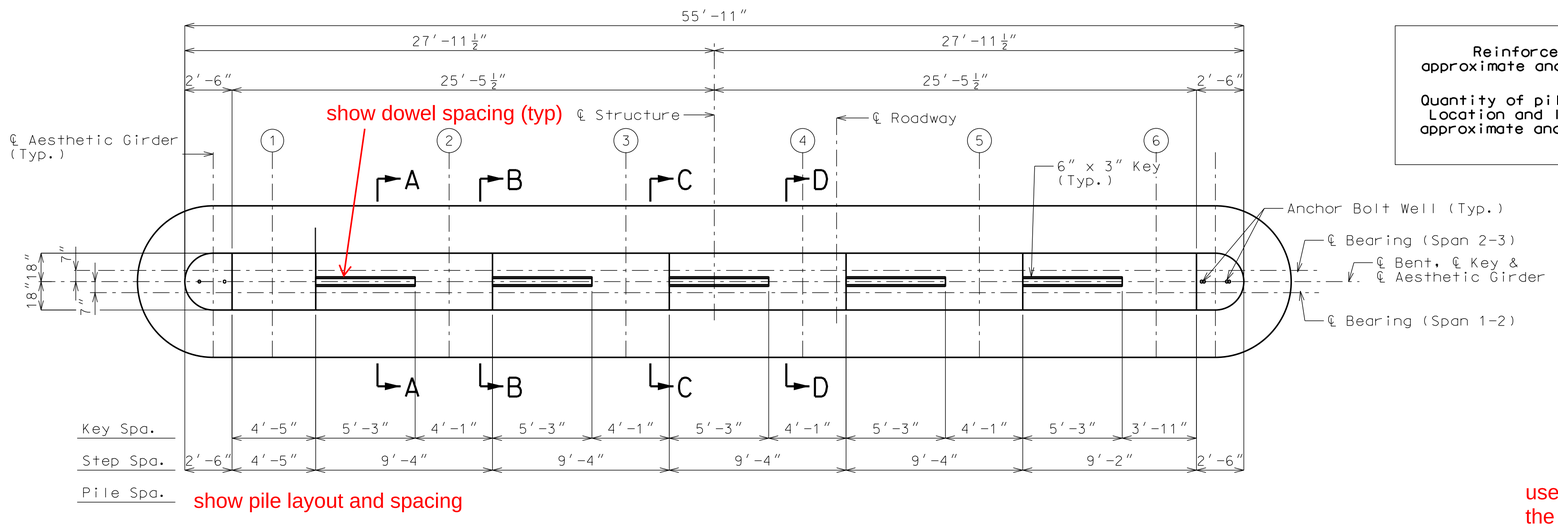
GBA
architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	6
TOTAL SHEETS	33

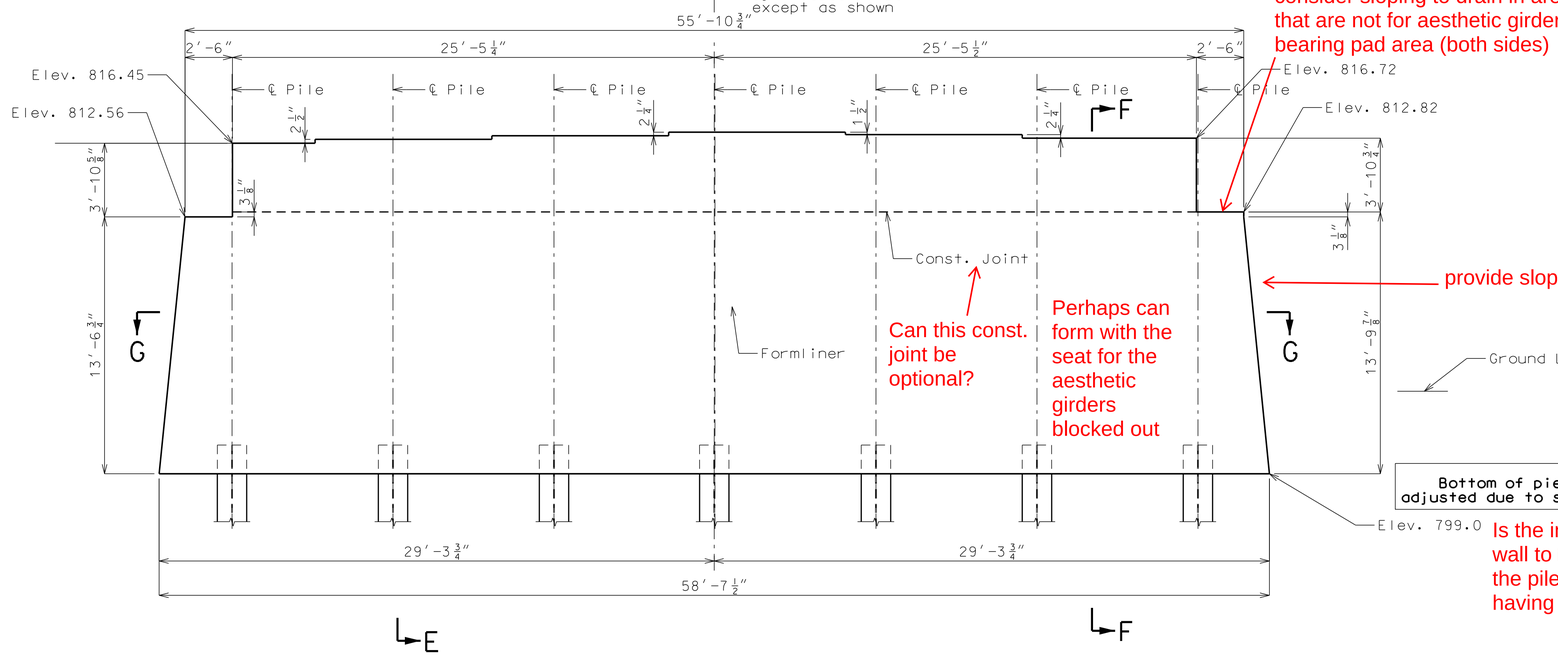
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF BEAM SHOWING REINFORCEMENT



ELEVATION

DETAILS OF INTERMEDIATE BENT NO. 2

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

consider sloping to drain in areas that are not for aesthetic girder bearing pad area (both sides)

provide slope of pier wall

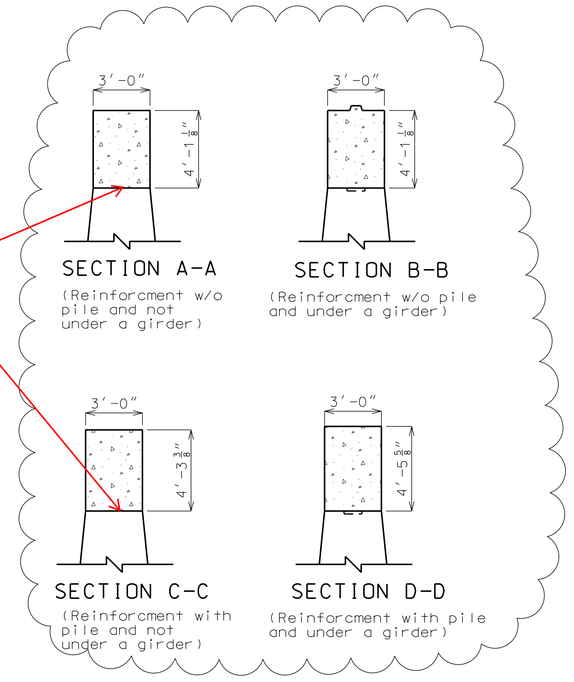
Can this const. joint be optional?

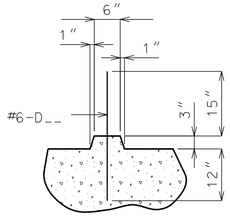
Perhaps can form with the seat for the aesthetic girders blocked out

Bottom of pier wall may be adjusted due to scour requirements

Is the intent to lower the bottom of pier wall to the lowest scour elevation, so the piles can be designed without having unbraced length due to scour?

use a key for the const. joint





DETAIL OF KEY

Notes:

For Sections E-E, F-F & G-G, see Sheet No. __.

For details of Int. Bent No. 2 not shown, see Sheet No. __.

Reinforcing steel shall be shifted to clear piles. U-bars shall clear pile by at least 1½″.

For Substructure Quantity Table, see Sheet No. __.

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	7
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	8
TOTAL SHEETS	33

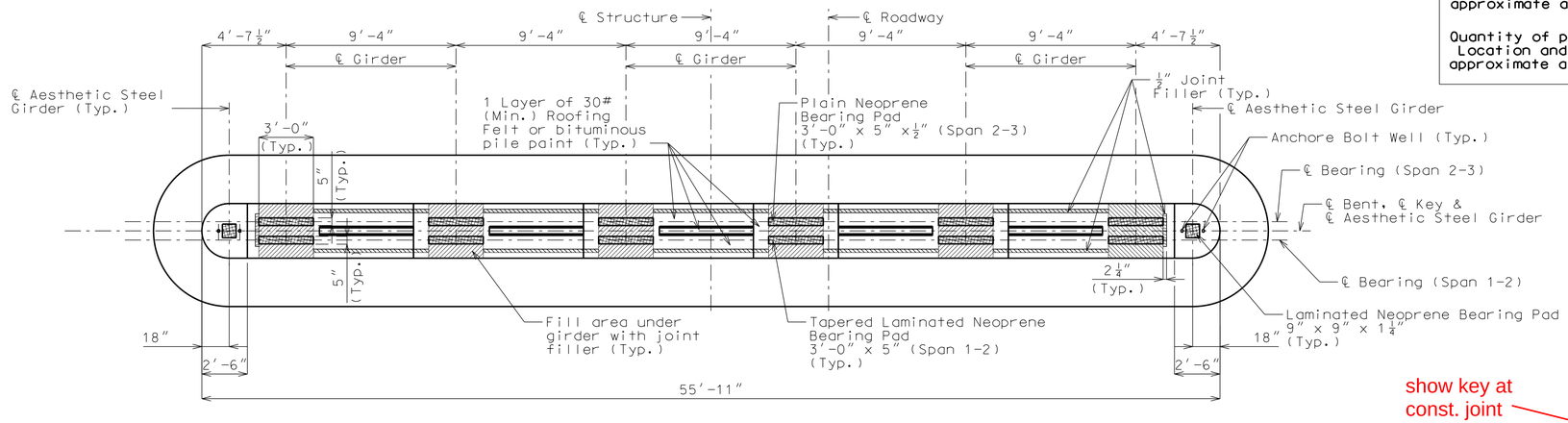
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

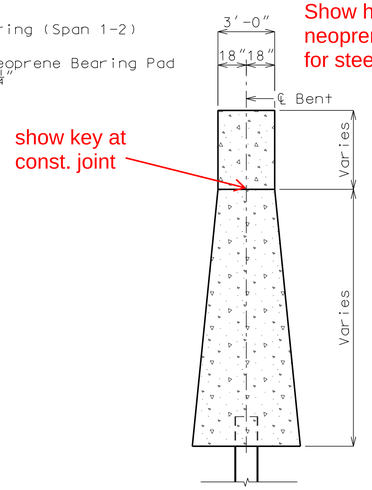
Paragon Star Development

Kansas City, Missouri

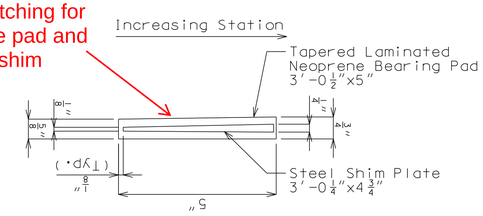
NO.	DATE	REVISIONS	BY	APPROVED



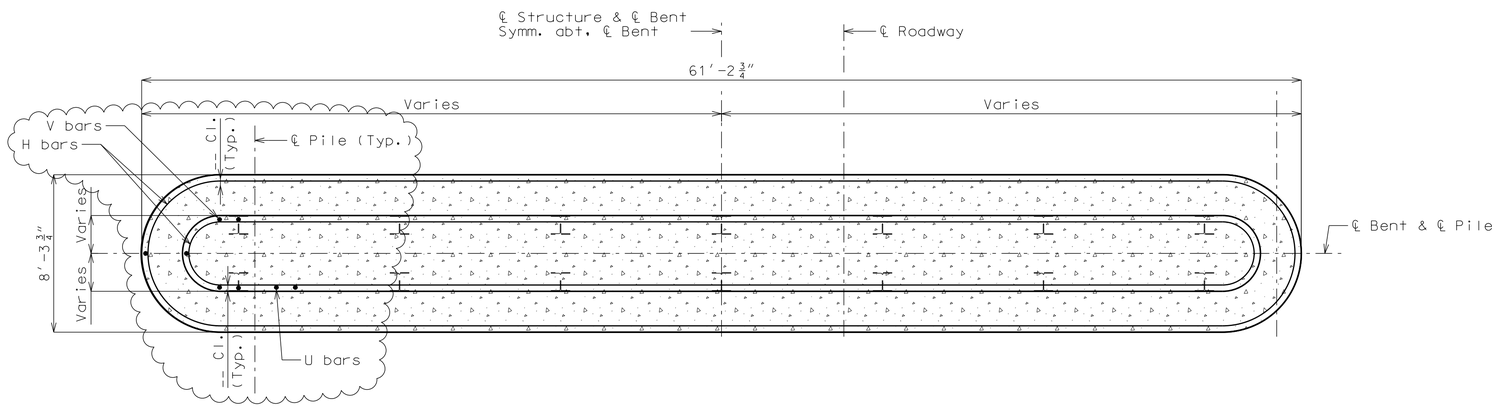
PLAN OF BEAM



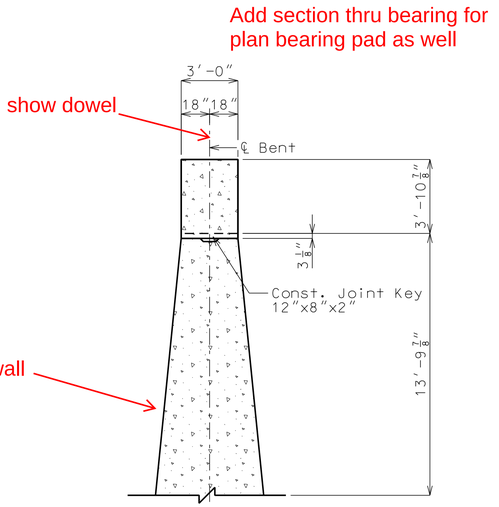
SECTION E-E



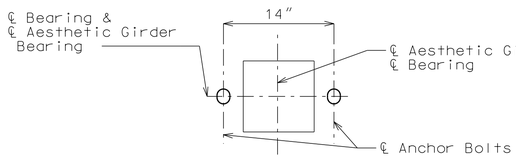
BEARING PAD DETAIL



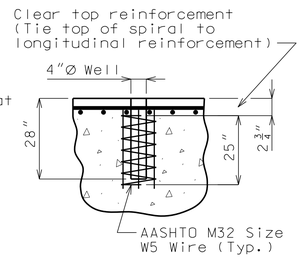
SECTION G-G



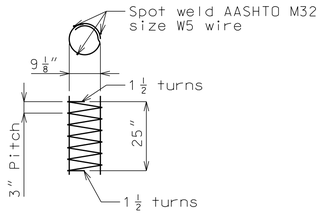
SECTION F-F



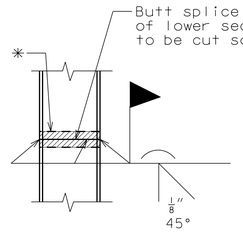
ANCHOR BOLT DETAIL



ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT



STEEL PILE SPLICE
(if required)

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

Notes:

For details of Int. Bent No. 2 not shown, see Sheet No. __.

For location of Section A-A, B-B & C-C, see Sheet No. __.

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

Reinforcing steel shall be shifted to clear anchor bolt well by at least 1/2 inch.

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

✳ Embed #4-U38 and #4-V30 bars 18″ into pile cap. (Min.)

DETAILS OF INTERMEDIATE BENT NO. 2

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	9
TOTAL SHEETS	33

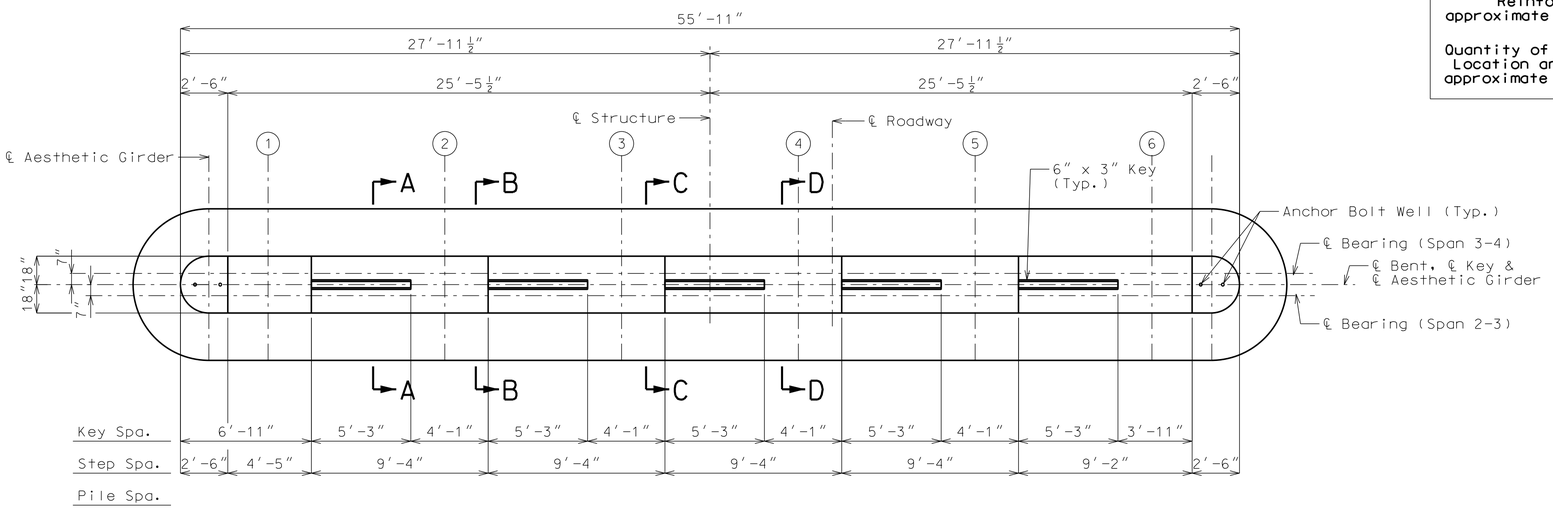
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

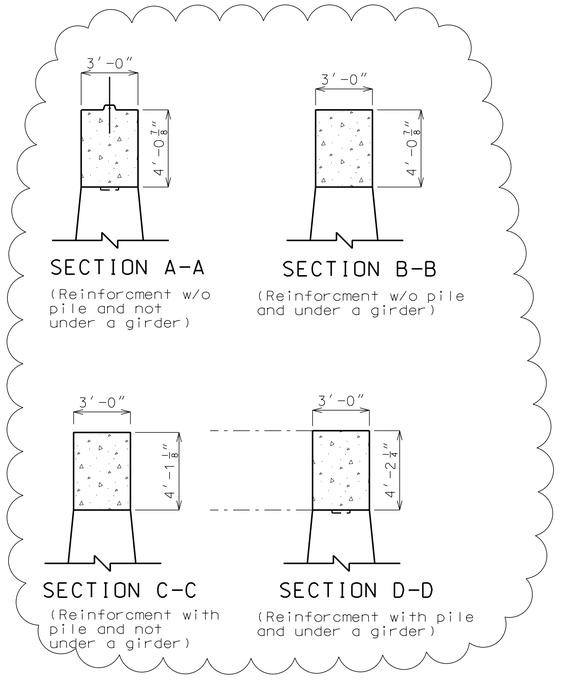
Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF BEAM SHOWING REINFORCEMENT

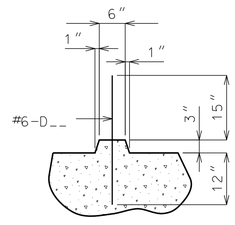


ELEVATION

DETAILS OF INTERMEDIATE BENT NO. 3

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

Same comments as Sheet No. 7



DETAIL OF KEY

Bottom of pier wall may be adjusted due to scour requirements

Notes:

For Sections E-E, F-F & G-G, see Sheet No. __.

For details of Int. Bent No. 2 not shown, see Sheet No. __.

Reinforcing steel shall be shifted to clear piles. U-bars shall clear pile by at least 1½″.

For Substructure Quantity Table, see Sheet No. __.

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	10
TOTAL SHEETS	33

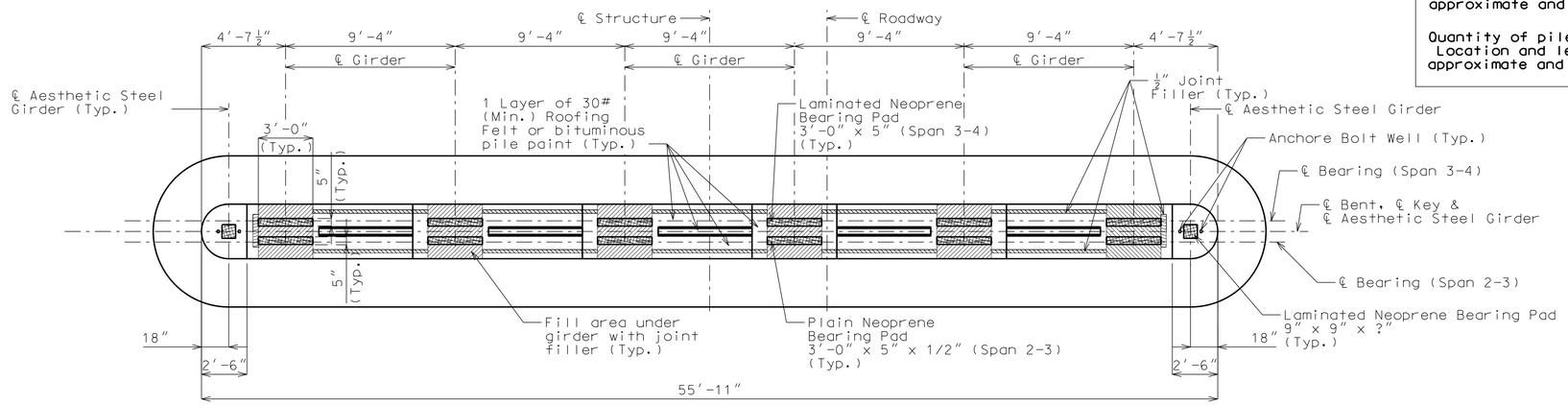
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

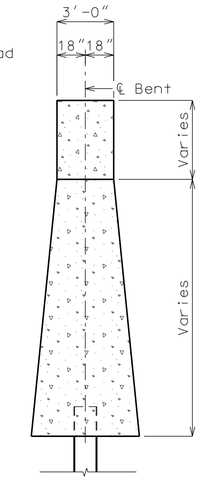
Paragon Star Development

Kansas City, Missouri

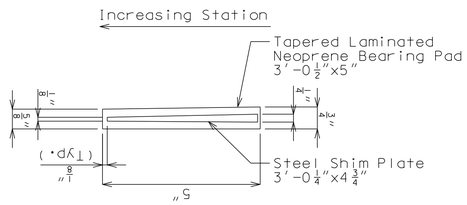
NO.	DATE	REVISIONS	BY	APPROVED



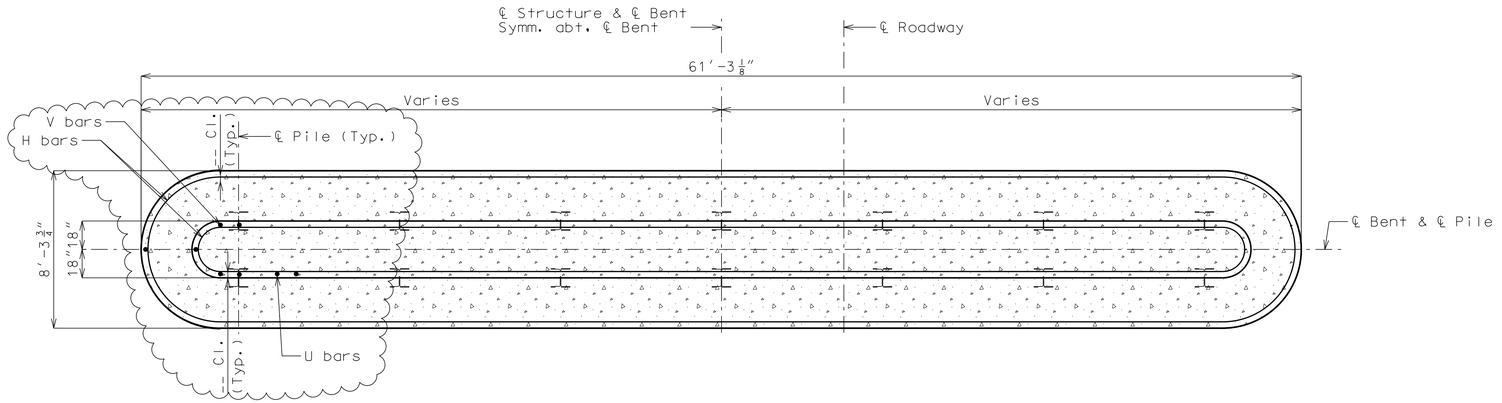
PLAN OF BEAM



SECTION E-E

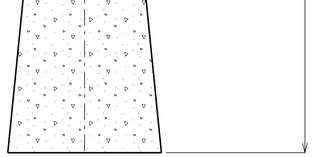


BEARING PAD DETAIL

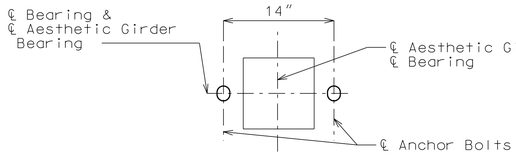


SECTION G-G

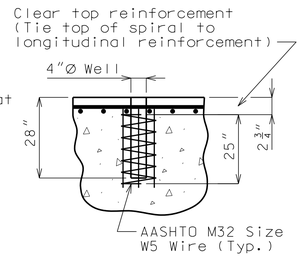
Same comments as Sheet No. 8



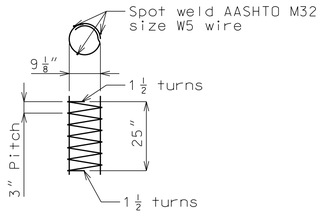
SECTION F-F



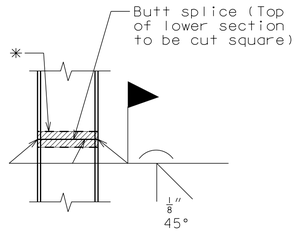
ANCHOR BOLT DETAIL



ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT



STEEL PILE SPLICE
(if required)

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

Notes:

For details of Int. Bent No. 2 not shown, see Sheet No. __.

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

Reinforcing steel shall be shifted to clear anchor bolt well by at least 1/2 inch.

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

* Embed #4-U38 and #4-V30 bars 18″ into pile cap. (Min.)

DETAILS OF INTERMEDIATE BENT NO. 3

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

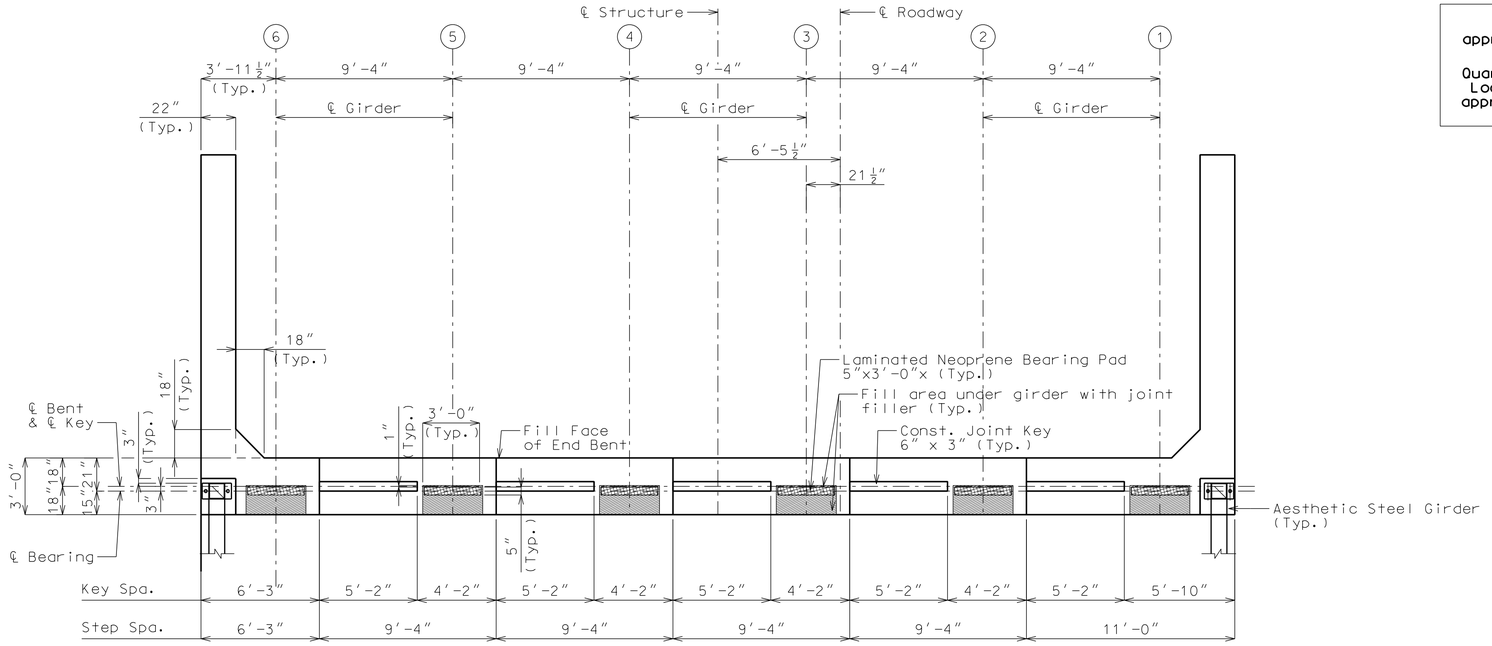
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	11
TOTAL SHEETS	33

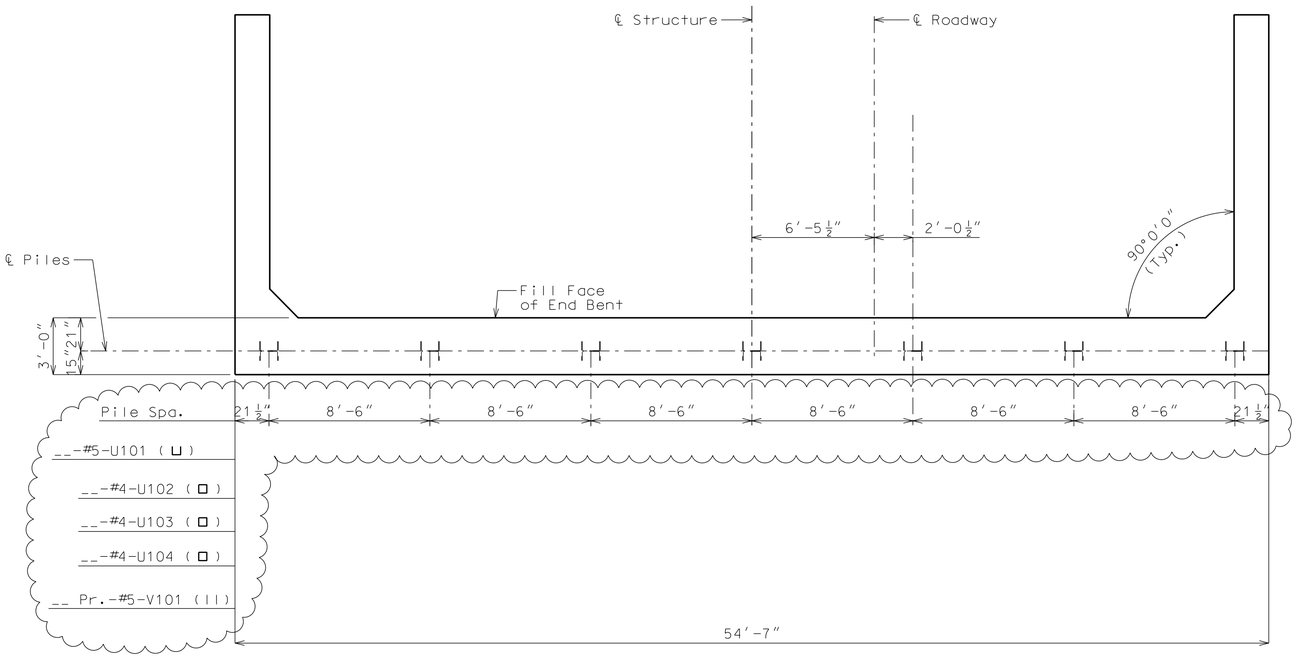
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

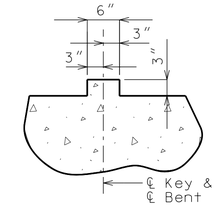
NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF BEAM

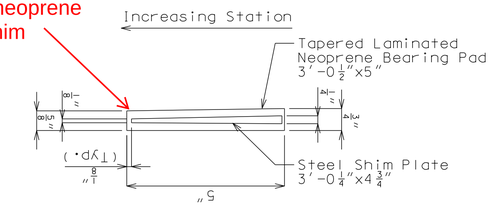


PLAN OF BEAM SHOWING REINFORCEMENT
(Note: Steps and keys not shown for clarity)

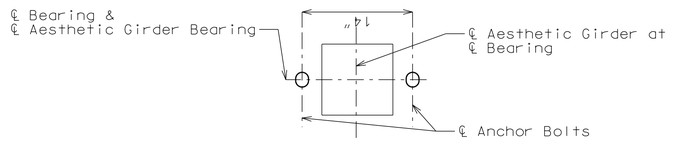


SECTION THRU KEY

Show hatching for neoprene pad and for steel shim



~~BEARING PAD DETAIL~~
SECTION THRU TAPERED LAMINATED NEOPRENE BEARING PAD



ANCHOR BOLT DETAIL

Notes:

For details of End Bent No. 4 not shown, see Sheets No. _ & _.

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½″.

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Roadway.

For Substructure Quantity Table, see Sheet No. 5.

DETAILS OF END BENT NO. 4

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	12
TOTAL SHEETS	33

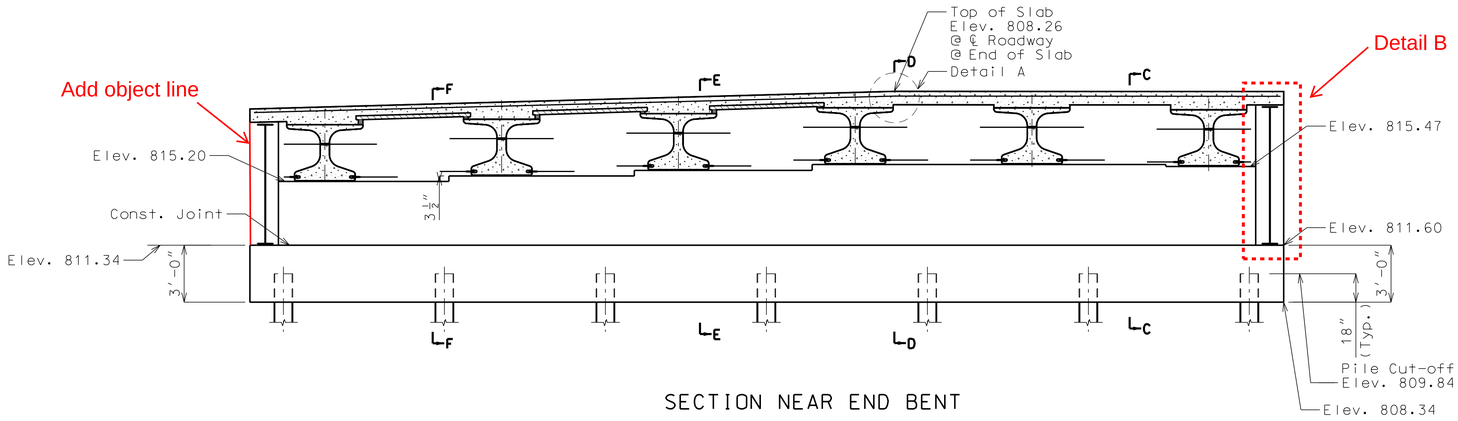
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

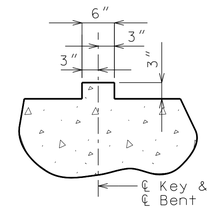
Paragon Star Development

Kansas City, Missouri

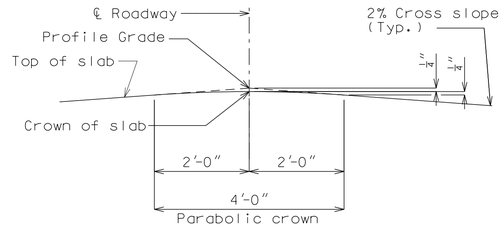
NO.	DATE	REVISIONS	BY	APPROVED



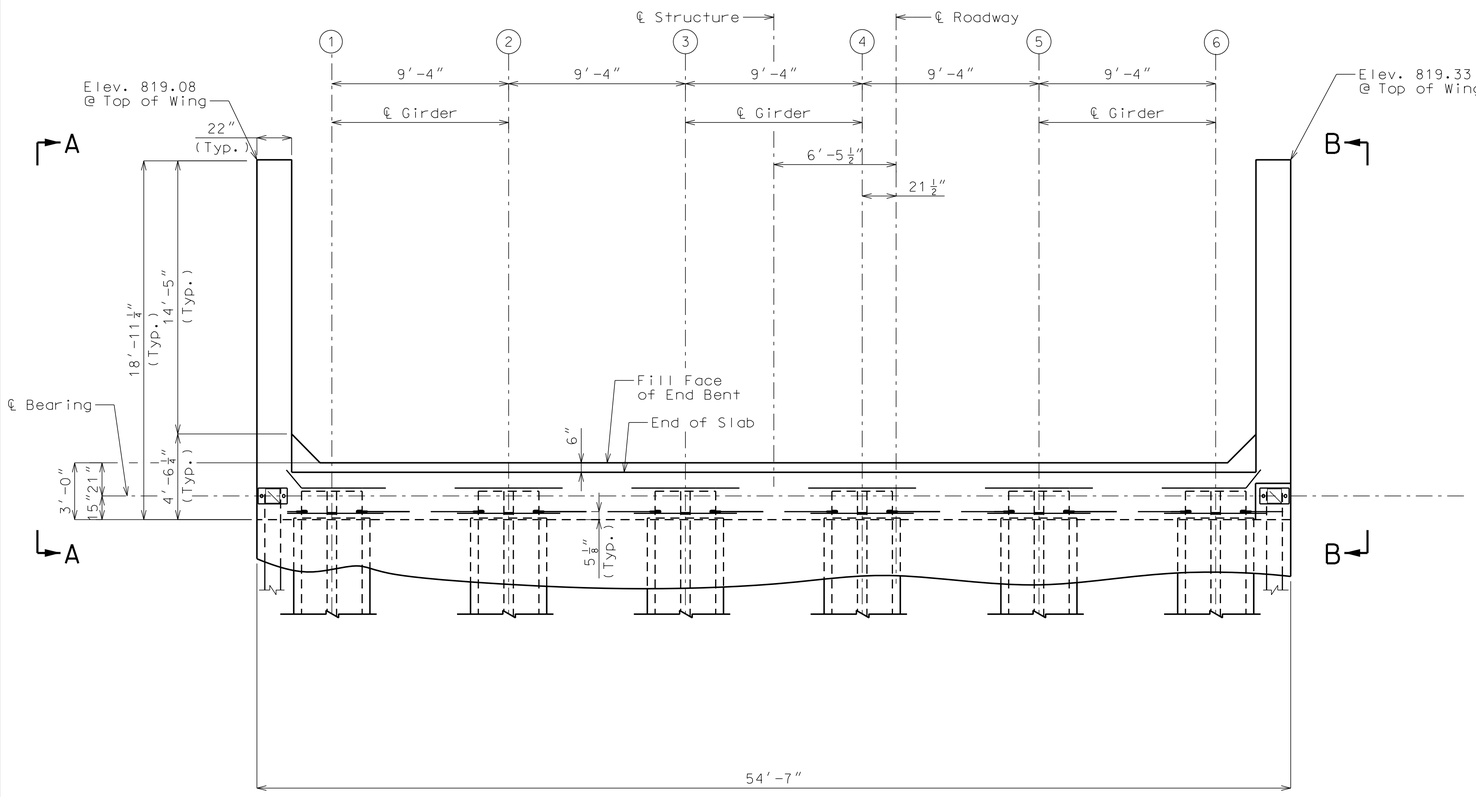
SECTION NEAR END BENT



SECTION THRU KEY



DETAIL A



PART PLAN
(Note: Steps and keys not shown for clarity)

Same comments as Sheet No. 4

DETAIL B

Notes:

For details of End Bent No. 4 not shown, see Sheets No. _ & _.

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½".

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. __ & __.

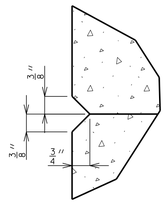
The U-bars and Pairs-V bars shall be placed parallel to ℄ Structure.

DETAILS OF END BENT NO. 4

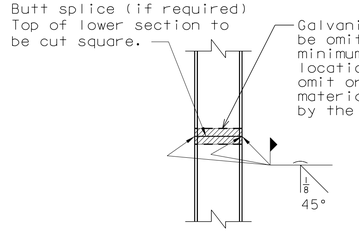
Note: This drawing is not to scale. Follow dimensions.

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change



DETAIL G



DETAIL OF STEEL PILE SPLICE

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

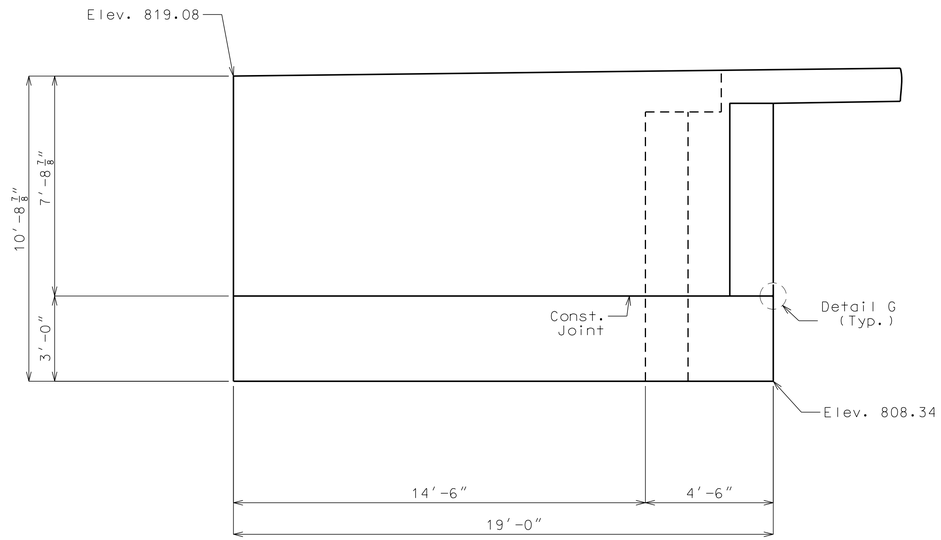
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	13
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

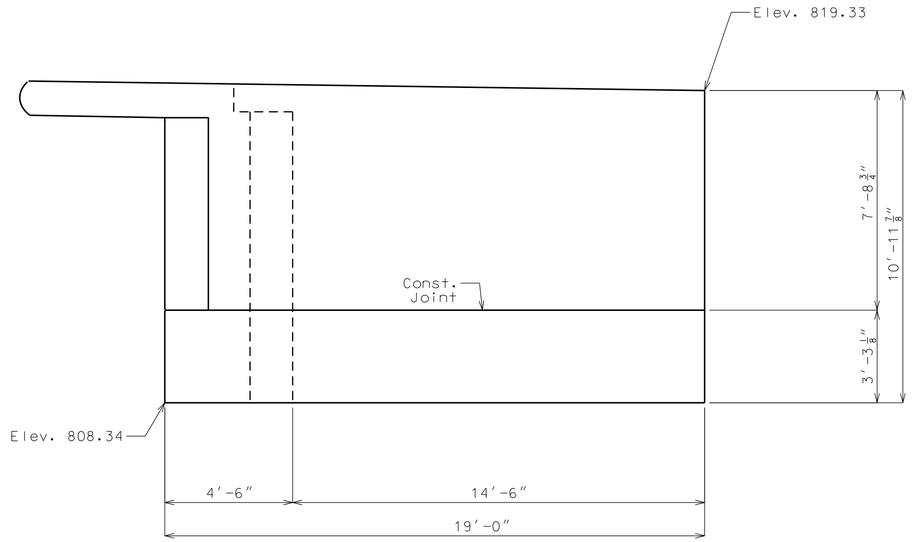
Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

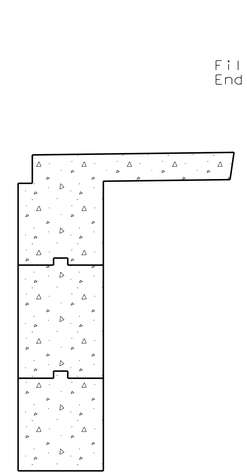


ELEVATION A-A

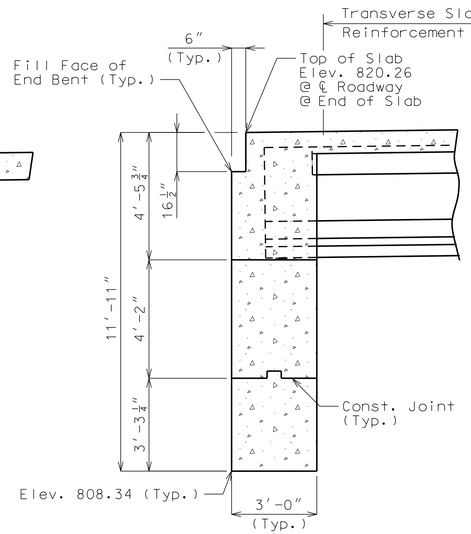
TYPICAL SECTION THRU WING



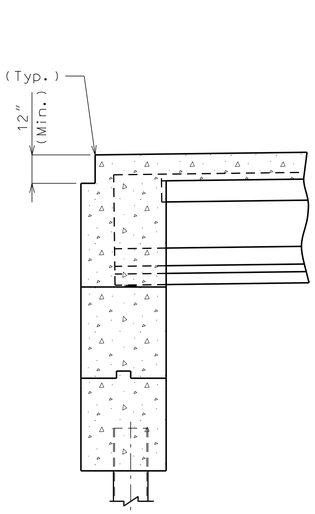
ELEVATION B-B



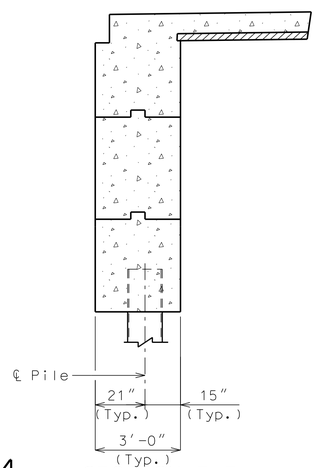
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

Notes:

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

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

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

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

For reinforcement of Safety Barrier Curb, See Sheets No. __ & __.

For reinforcement of Pedestrian Curb, see Sheet No. __.

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

DETAILS OF END BENT NO. 4

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	14
TOTAL SHEETS	33

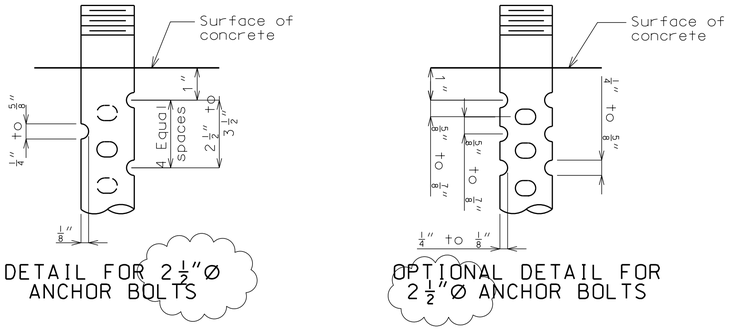
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

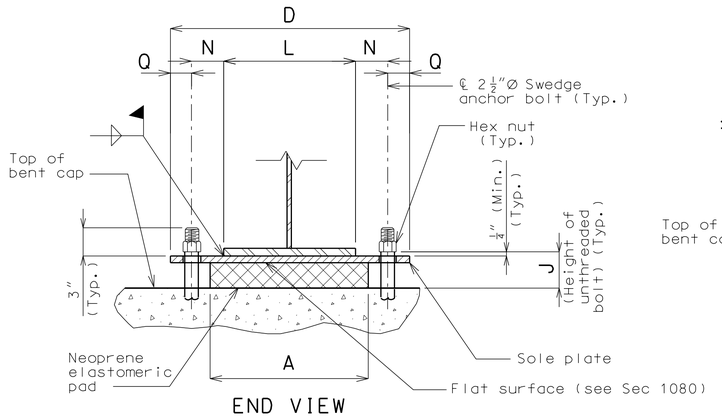
Paragon Star Development

Kansas City, Missouri

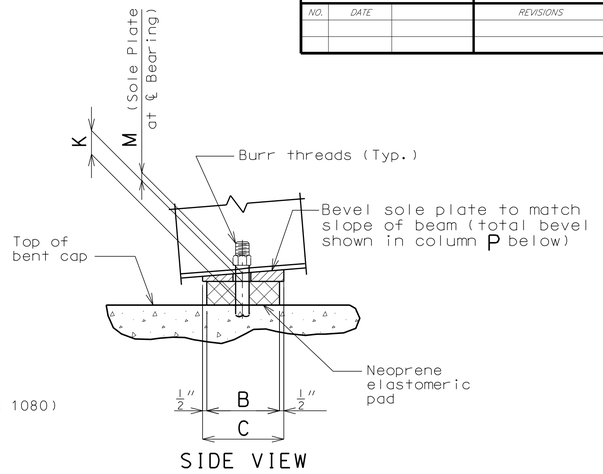
NO.	DATE	REVISIONS	BY	APPROVED



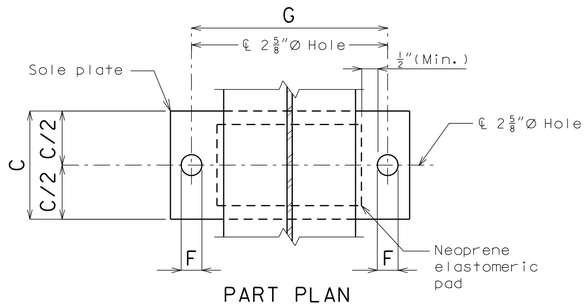
SWEDGE ANCHOR BOLT DETAILS



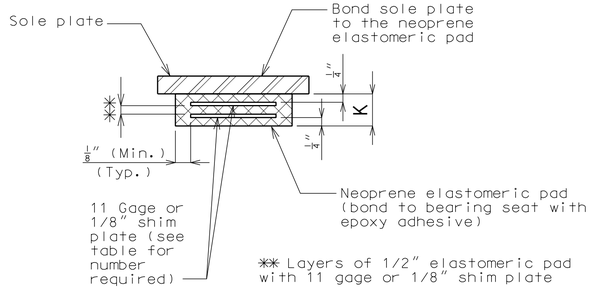
END VIEW



SIDE VIEW



PART PLAN



NEOPRENE ELASTOMERIC PAD

FIXED BEARINGS

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES *	NUMBER REQUIRED
1	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	X	2
2	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	X	2
3	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	X	2
4	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	X	2
														TOTAL BEARINGS	8

* The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor bolts shall be 2 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 25" into the concrete with ASTM A563 Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

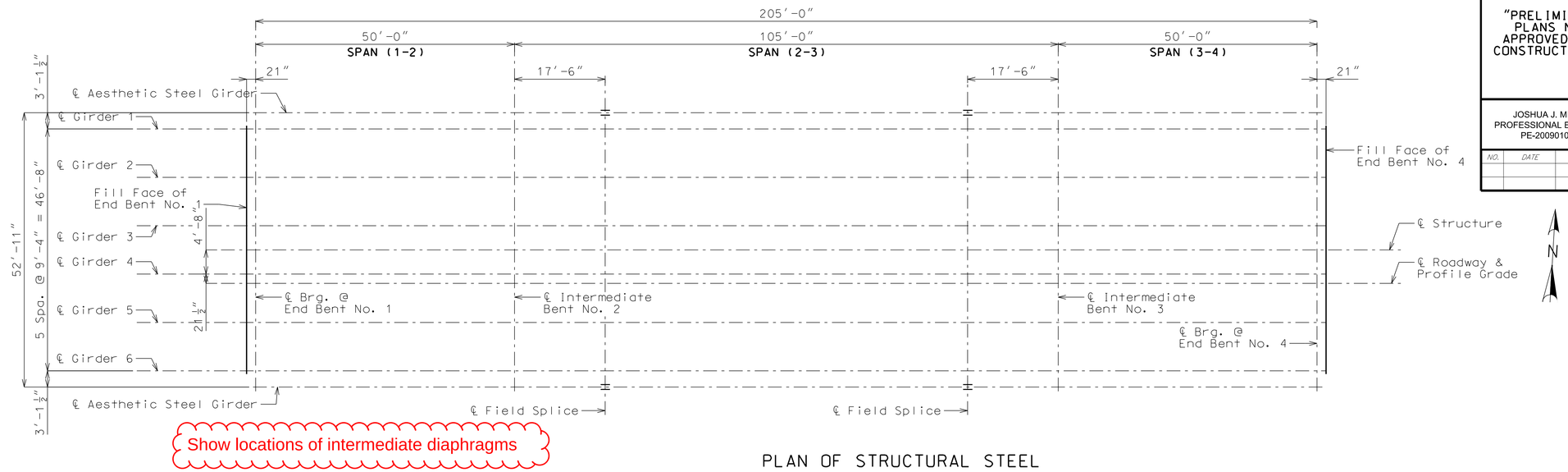
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50W. The welds shall have corrosion resistance and weathering characteristics compatible with the base material.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

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



PLAN OF STRUCTURAL STEEL

Show details of steel intermediate diaphragms between concrete girders

Add steel diaphragm notes

FRAMING PLAN

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	15
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	16
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

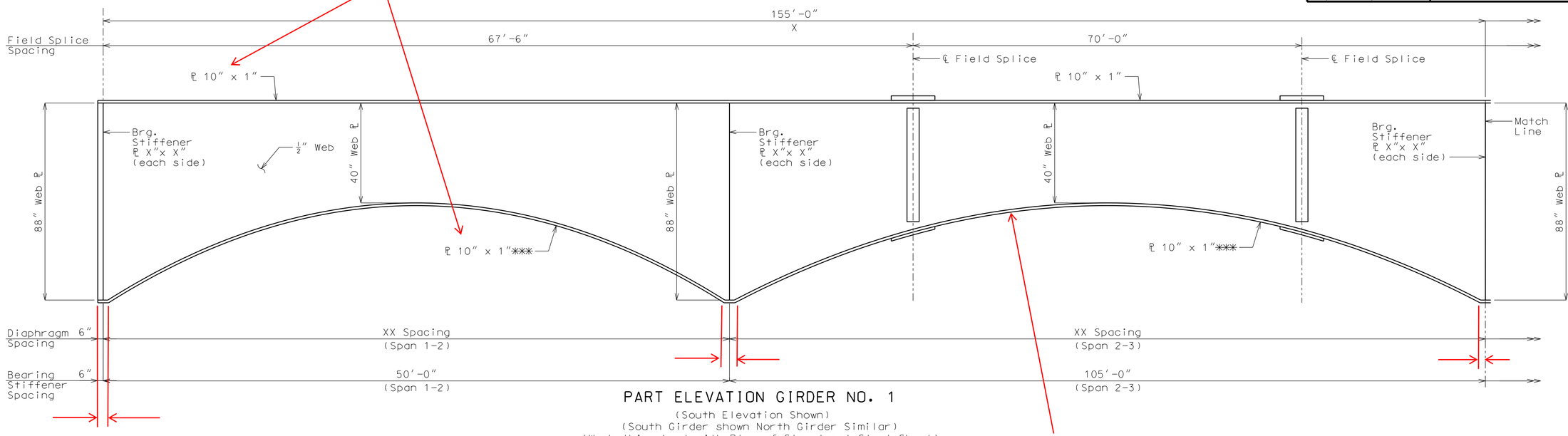
Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

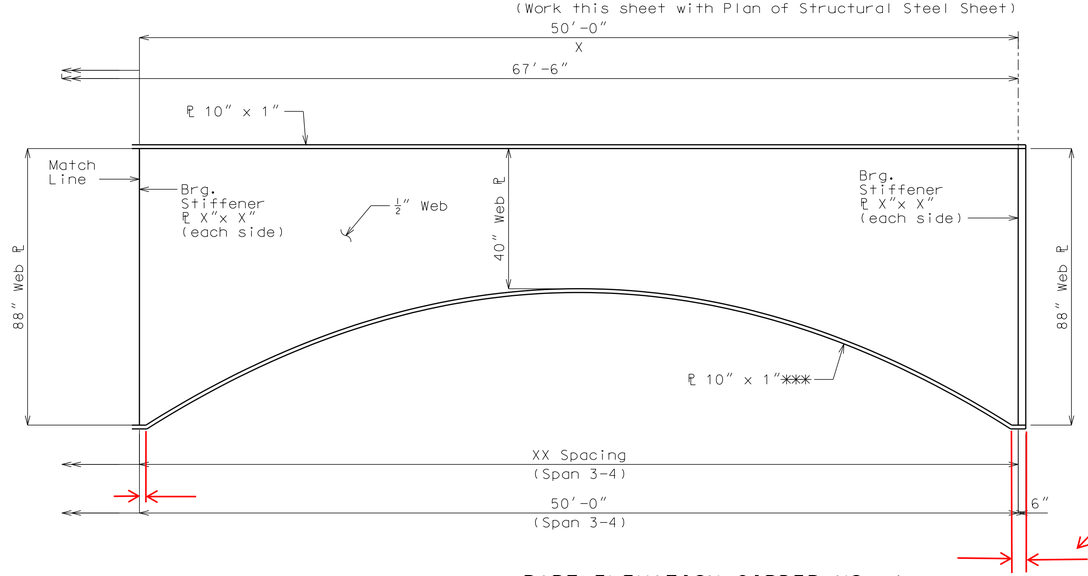
10" flange widths seem narrow for plate girders that has web depths up to 88". Check constructibility of girders for force effects induced from erection.



PART ELEVATION GIRDER NO. 1

(South Elevation Shown)
(South Girder shown North Girder Similar)
(Work this sheet with Plan of Structural Steel Sheet)

Provide parabolic equation for haunching of steel girder for fabrication (typ)



PART ELEVATION GIRDER NO. 1

(South Elevation Shown)
(South Girder shown North Girder Similar)
(Work this sheet with Plan of Structural Steel Sheet)

Provide length of "flat" portion of girder bottom flange (typ)

Diaphragm connection plates on north side of south girder and south side of north girder only.

Diaphragms on north side of south girder and south side of north girder only.

Notes:
Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. XX.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

The flange and web splice plates shall be subject to notch toughness requirements, when notch toughness is required for flanges on both sides of splice.

Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

Fabricated structural, low alloy steel shall be ASTM A709 Grade 50W, except as noted.

Longitudinal dimensions are horizontal. See Part Longitudinal Sections on Sheet No. XX.

For Details of Bolted Field Splice see Sheet No. XX.

For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet No. XX.

For Plan of Aesthetic Girder Steel, see Sheet No. XX.

AESTHETIC STEEL GIRDER ELEVATION

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

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

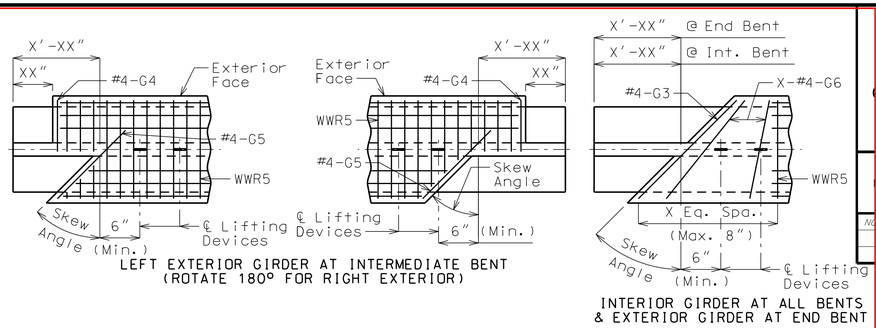
(+) indicates prestressing strand.

Use __ strands with an initial prestress force of _____ 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.

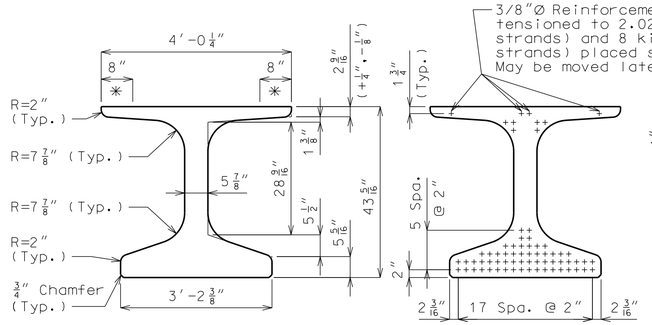
✳ Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a 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.



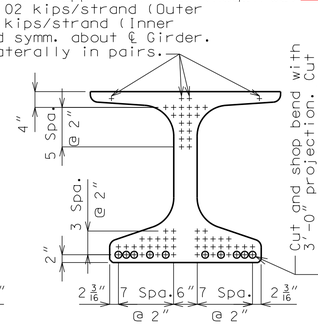
TOP FLANGE BLOCKOUT

Girders are not skewed, update detail for non-skewed option



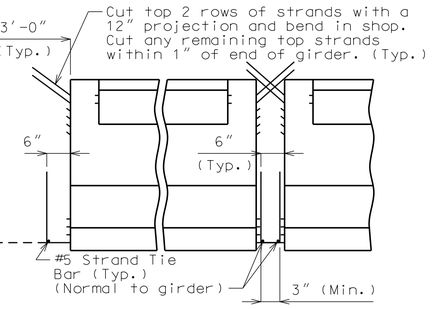
DIMENSIONS

℄ GIRDER



END OF GIRDER

STRAND ARRANGEMENTS



END BENT INTERMEDIATE BENT

STRAND DETAILS AT GIRDER ENDS

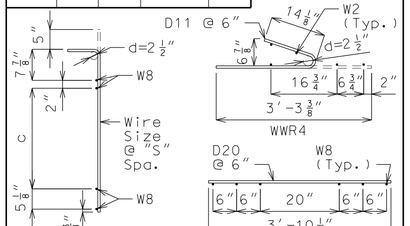
BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAMS
XXX	3 G1	2'-10"	8	
XXX	X G2	X'-X"	11	
2	4 G3	X'-X"	20	
2	4 G4	2'-1"	20	
2	4 G5	X'-X"	20	
XXX	4 G6	Varies	20	

BENDING DIAGRAMS: 16" 16" 6" SHAPE 8; 4 1/2" Top leg, d, 9 1/2" SHAPE 11; SHAPE 20

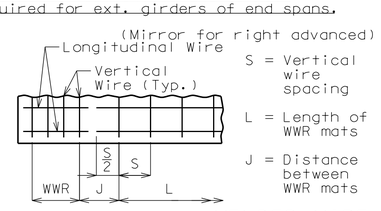
G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

WELDED WIRE REINFORCEMENT - EACH GIRDER				
MARK	WIRE SIZE	S	L	J
WWR1	X	X"	X'-X"	X"
WWR2	X	X"	X'-X"	X"
WWR3	X	X"	X'-X"	X"

BENDING DIAGRAMS

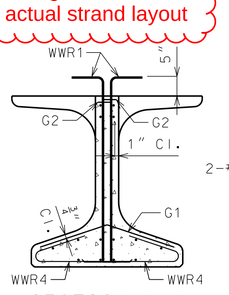


WWR4



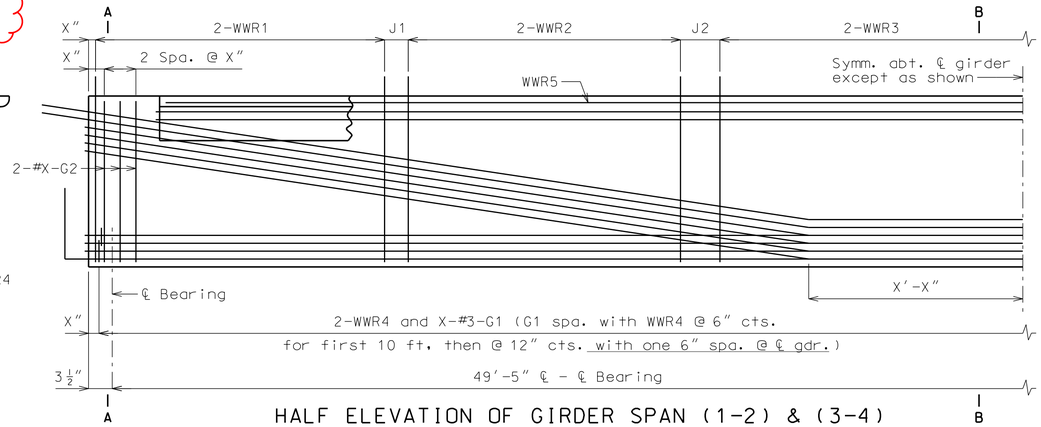
WELDED WIRE PLACEMENT

Update girder sheets for actual strand layout

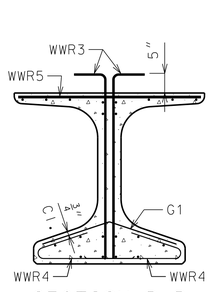


SECTION A-A

Strands not shown for clarity.



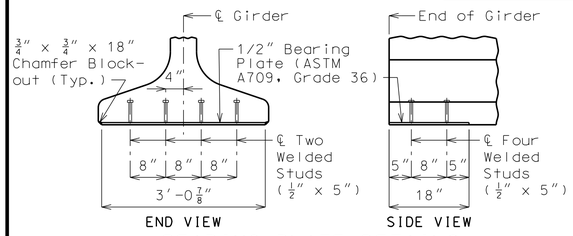
HALF ELEVATION OF GIRDER SPAN (1-2) & (3-4)



SECTION B-B

Strands not shown for clarity.

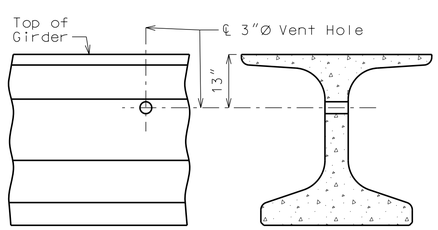
Exterior and interior girders are the same, except for coil ties, and top flange blockout and coil inserts for slab drains. Reinforcement support strands not shown for clarity.



BEARING PLATE DETAILS

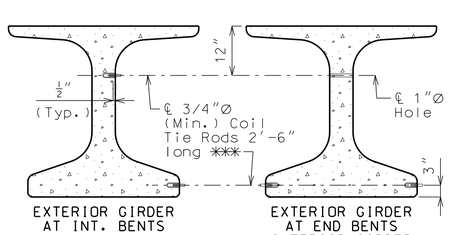
Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.



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 and steel interm. diaphragm bolt connections by 6" 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 = _'-_".

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

General Notes:

Are alternate bar reinforcement options going to be provided for girder fabrication

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:

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

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. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

For location of coil inserts at slab drains, see Sheet No. __.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. __ and __.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. __.

For Girder Camber Diagram, see Sheet No. __.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	17
TOTAL SHEETS	33

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

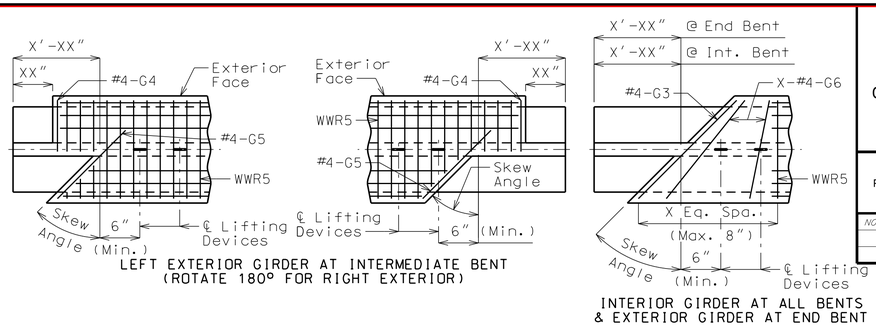
(+) indicates prestressing strand.

Use __ strands with an initial prestress force of _____ 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.

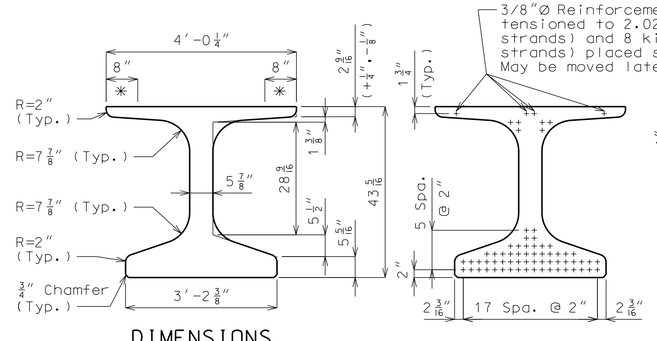
✳ Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a 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.

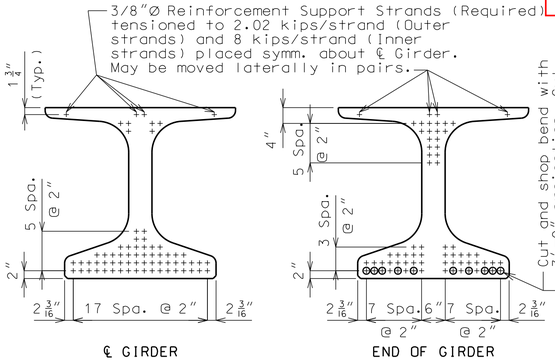


TOP FLANGE BLOCKOUT

Girders are not skewed, update detail for non-skewed option



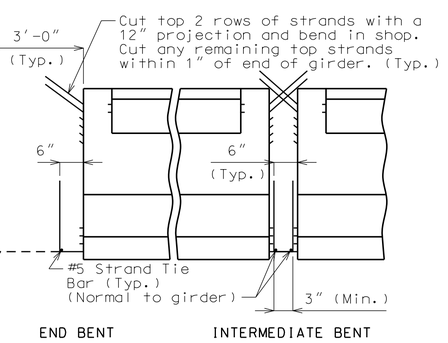
DIMENSIONS



℄ GIRDER

END OF GIRDER

STRAND ARRANGEMENTS



END BENT INTERMEDIATE BENT

STRAND DETAILS AT GIRDER ENDS

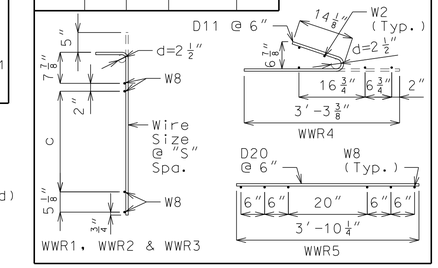
Update girder sheets for actual strand layout

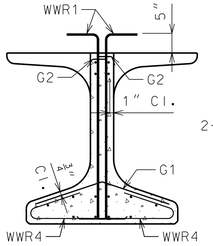
BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAMS
XXX	3 G1	2'-10"	8	
XXX	X G2	X'-X"	11	
2	4 G3	X'-X"	20	
2	4 G4	2'-1"	20	
2	4 G5	X'-X"	20	
XXX	4 G6	Varies	20	

BENDING DIAGRAMS: 16" 16" 6" SHAPE 8; 4½" Top leg, d, 9½" SHAPE 11; SHAPE 20

G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

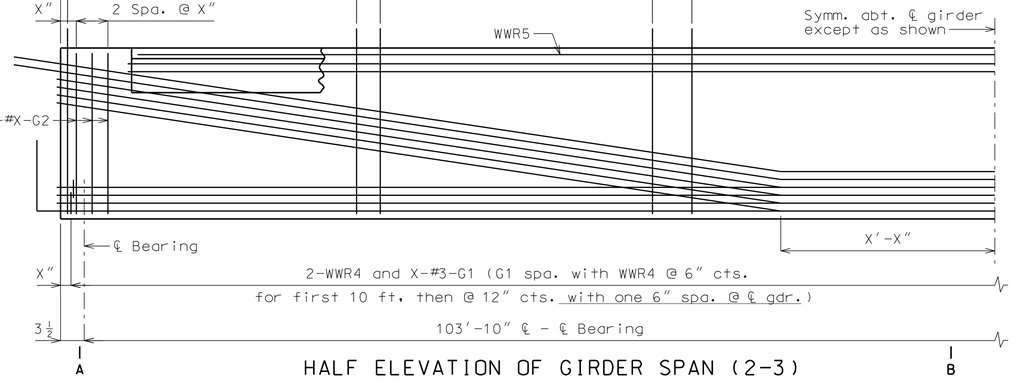
WELDED WIRE REINFORCEMENT - EACH GIRDER					
MARK	WIRE SIZE	S	L	J	BENDING DIAGRAMS
WWR1	X	X"	X'-X"	X"	
WWR2	X	X"	X'-X"	X"	
WWR3	X	X"	X'-X"	X"	





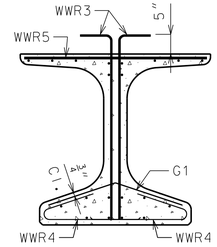
SECTION A-A

Strands not shown for clarity.



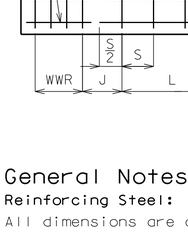
HALF ELEVATION OF GIRDER SPAN (2-3)

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

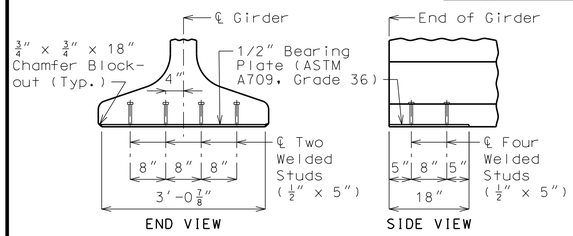


SECTION B-B

Strands not shown for clarity.



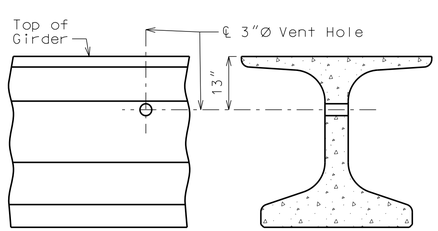
WELDED WIRE PLACEMENT



BEARING PLATE DETAILS

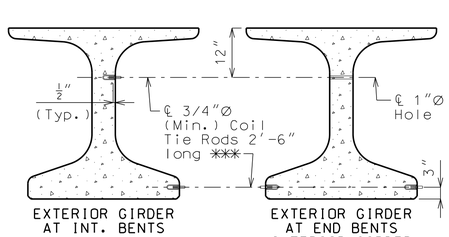
Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.



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 and steel interm. diaphragm bolt connections by 6" 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 = _'-_".

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

General Notes:

Reinforcing Steel:

All dimensions are out to out.

Are alternate bar reinforcement options going to be provided for girder fabrication

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:

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

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. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

For location of coil inserts at slab drains, see Sheet No. __.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. __ and __.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. __.

For Girder Camber Diagram, see Sheet No. __.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

NO.	DATE	REVISIONS	BY	APPROVED

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	18
TOTAL SHEETS	33

Bridge Plans

Paragon Star Development

Kansas City, Missouri

Reinforcement shown is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	19
TOTAL SHEETS	33

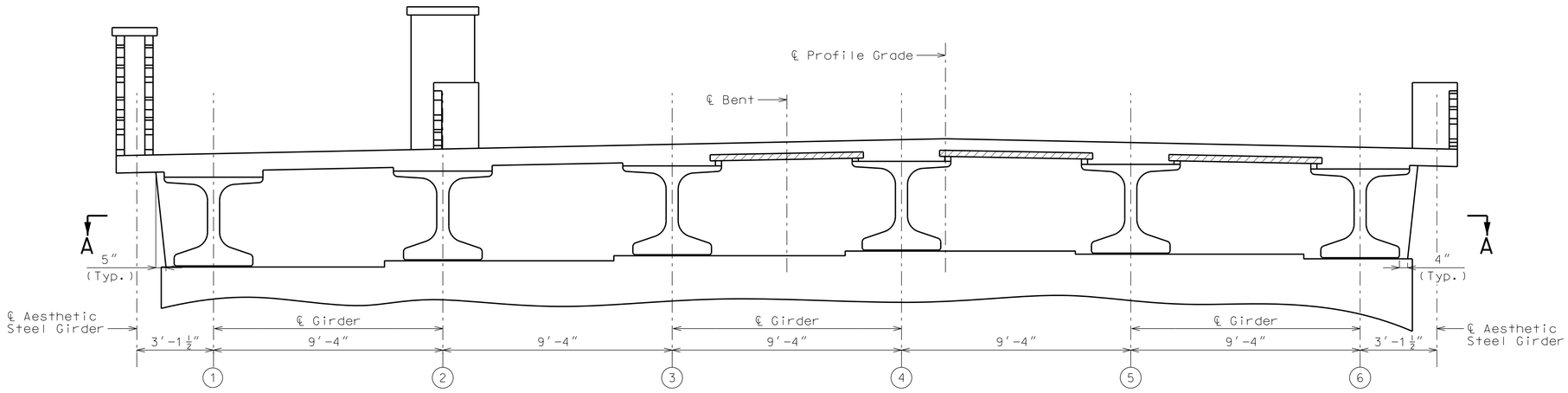
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

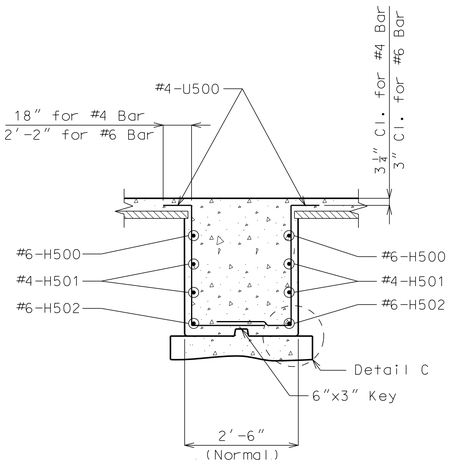
Paragon Star Development

Kansas City, Missouri

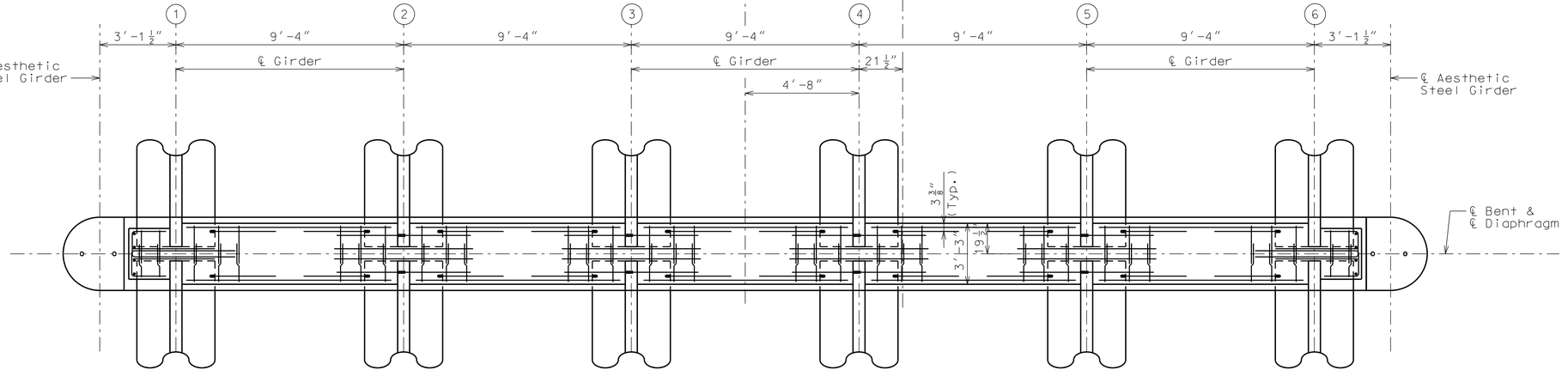
NO.	DATE	REVISIONS	BY	APPROVED



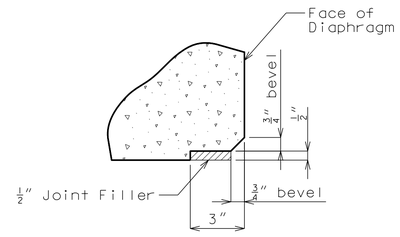
SECTION NEAR INTERMEDIATE BENT



SECTION B-B



SECTION A-A



DETAIL C

Notes:
Diaphragms at Intermediate Bents shall be built vertically.
All U-bars in the diaphragm are to be placed parallel to ℄ Roadway.
For locations of Strand Tie Bars, see Sheets No. 14 - 19.
For locations and details of Coil Tie Rods, see Sheets No. 14 - 19.

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

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	20
TOTAL SHEETS	33

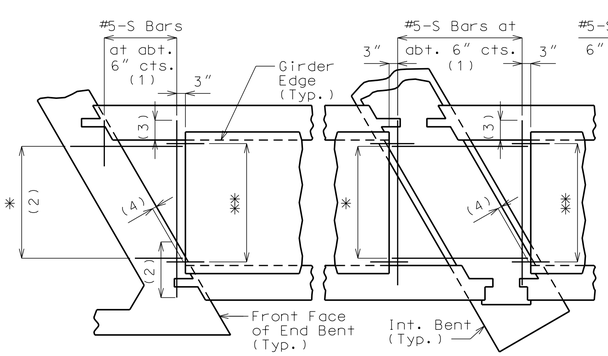
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

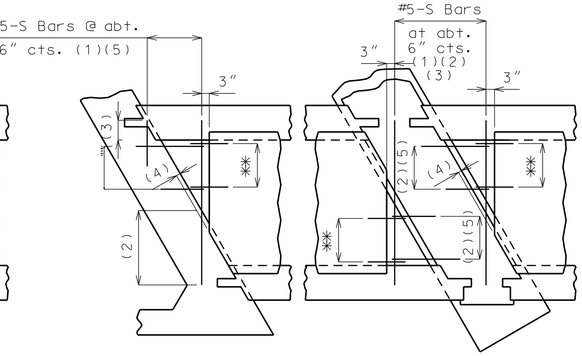
Bridge Plans

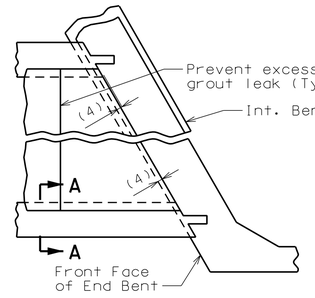
Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



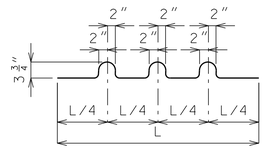




SQUARED END PANELS OR TRUNCATED END PANELS

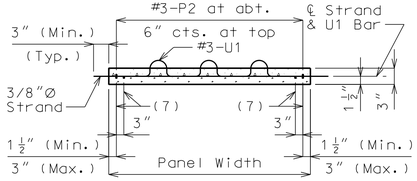
PLAN SHOWING PANELS PLACEMENT

* #5-S Bars at abt. 9" cts. (1)
** #3-P1 at 12" cts. (End panels only)

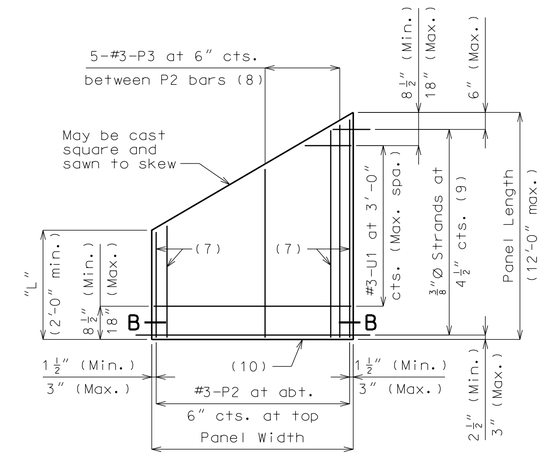


BENDING DIAGRAM FOR U1 BAR

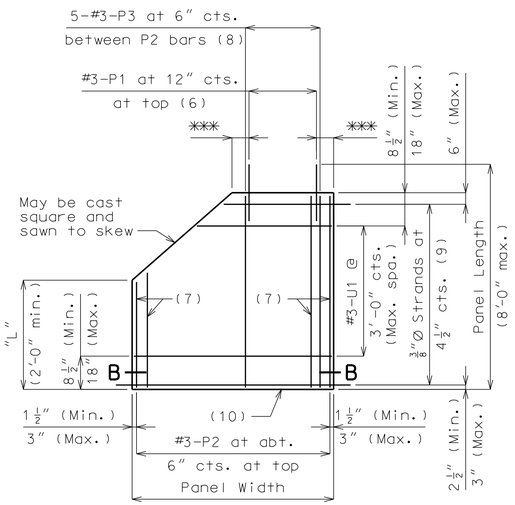
U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.



SECTION B-B

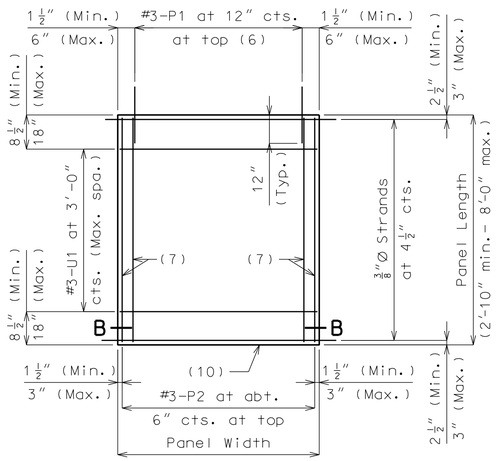


PLAN OF OPTIONAL SKEWED END PANEL



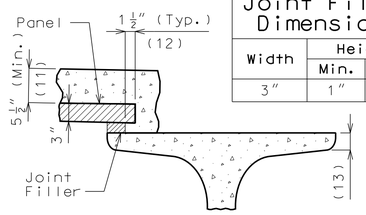
PLAN OF OPTIONAL TRUNCATED END PANEL

*** 3" (Min.), 6" (Max.)



PLAN OF SQUARED PANEL

SKEWED END PANELS



SECTION A-A

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"

Reference Notes:

Plan of Panels Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

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.

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
- #3-P2 bars at 16 inches.
- WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. XX for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

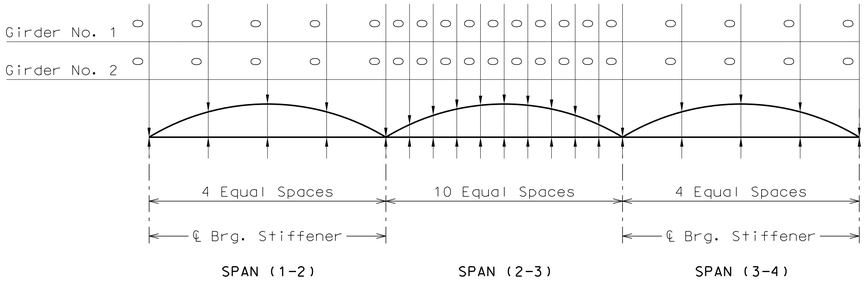
The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

DETAILS OF PRESTRESSED PANELS

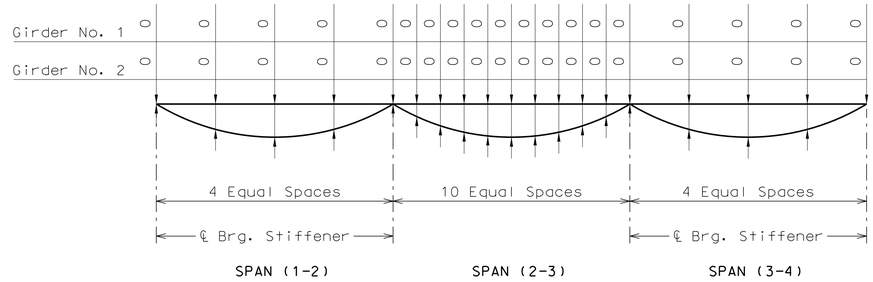
Note: This drawing is not to scale. Follow dimensions.



CAMBER DIAGRAM

Note:
Camber includes allowance for vertical curve and for dead load deflection due to concrete slab, barrier curbs, pedestrian curb and structural steel.

Longitudinal dimensions are measured horizontally.



"+" Downward from chord
"−" Upward from chord

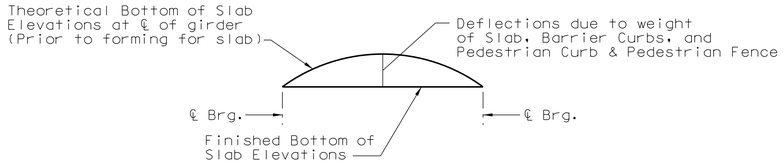
DEAD LOAD DEFLECTION

Note:

15% of dead load deflection is due to the weight of structural steel.

Dead Load deflection includes weight of structural steel, concrete slab, barrier curbs, and pedestrian curb & pedestrian fence.

GIRDER NO.	SPAN LENGTHS (℄ Brg.- ℄ Brg.)		
	Span (1-2)	Span (2-3)	Span (3-4)
1	__'-____"	__'-____"	__'-____"
2	__'-____"	__'-____"	__'-____"



TYPICAL SLAB ELEVATIONS DIAGRAM

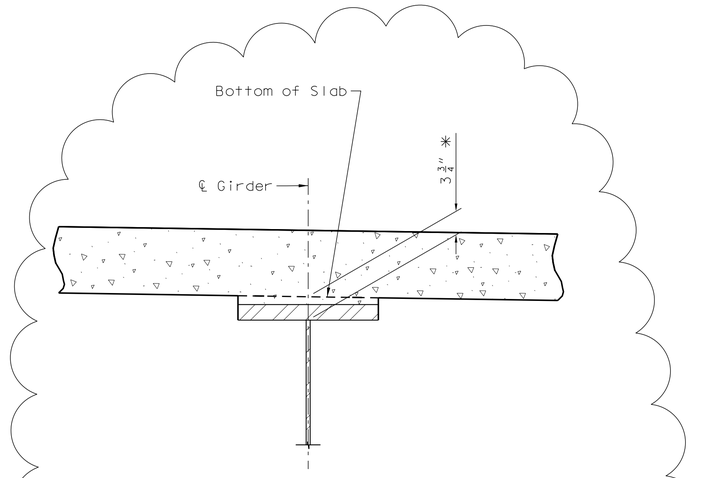
**Theoretical Bottom of Slab Elevations at ℄ of Girder (Prior to forming for slab)

Span 1 (℄ Brg.-℄ Brg.)					
Gdr. No.	℄ Brg Bent No. 1	.25	.50	.75	℄ Brg Bent No. 2
1	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__

Span 2 (℄ Brg.-℄ Brg.)											
Gdr. No.	℄ Brg Bent No. 2	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg Bent No. 3
1	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__

Span 3 (℄ Brg.-℄ Brg.)					
Gdr. No.	℄ Brg Bent No. 3	.25	.50	.75	℄ Brg Bent No. 4
1	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of Slab, Barrier Curbs, and Pedestrian Curb & Pedestrian Fence.



THEORETICAL SLAB HAUNCH

Notes:

* Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more than or less than the % of D.L. deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

~~Increase the haunch by 1/2 inch ± more than what is required to make one size shear connector work for both CIP and SIP options.~~

Shear connectors are not being used. Remove note.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	21
TOTAL SHEETS	33

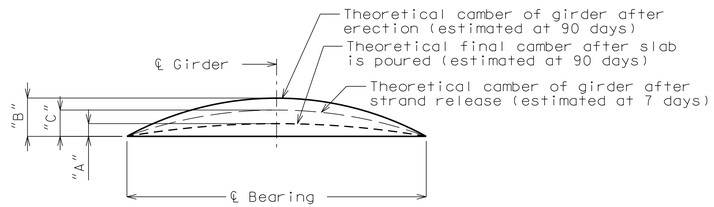
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

CAMBER, HAUNCHING, & ELEVATIONS (STEEL)

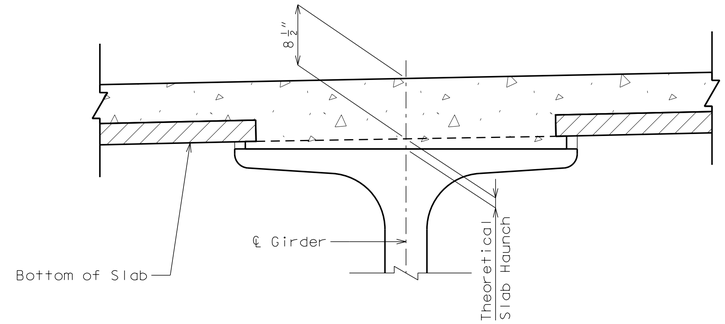
Note: This drawing is not to scale. Follow dimensions.



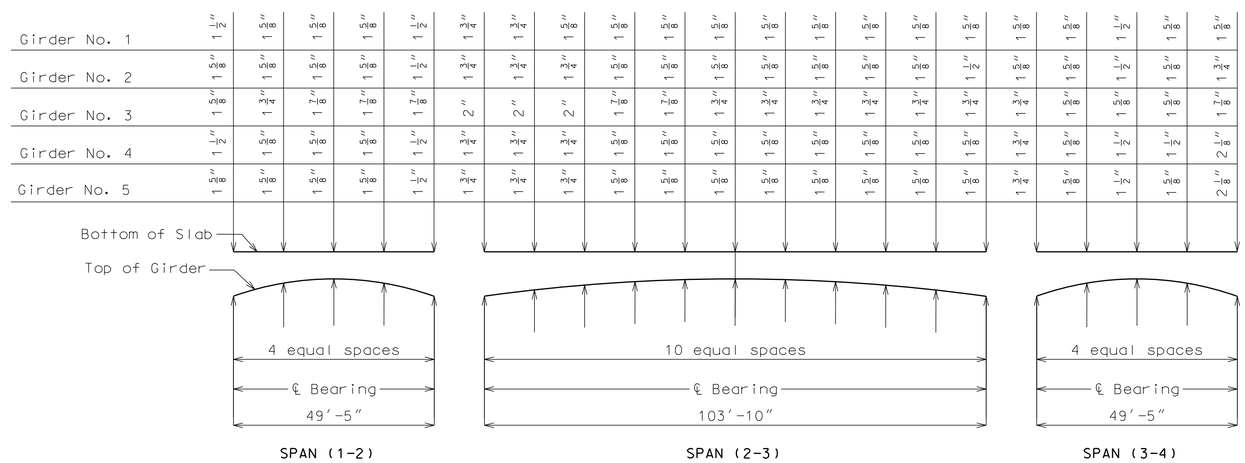
	Span (1-2)			Span (2-3)			Span (3-4)		
	"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"
Ext. Beam	1/8"	3/8"	1/4"	3/4"	2 1/4"	1 1/4"	5/8"	1 1/2"	7/8"
Int. Beam	1/8"			3/4"			5/8"		

GIRDER CAMBER DIAGRAM

Conversion factors for girder camber (Estimated at 90 days)
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.



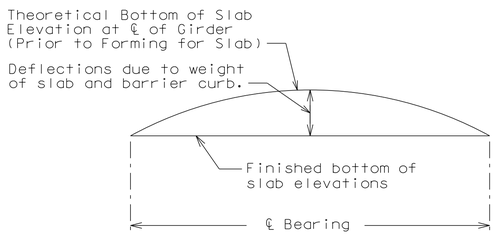
THEORETICAL SLAB HAUNCH



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU Girder.



TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

	Span (1-2) (48'-4 1/2" ℄ brg - ℄ brg.)					Span (2-3) (77'-8" ℄ brg - ℄ brg.)											Span (3-4) (67'-4" ℄ 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	769.64	769.84	770.03	770.19	770.33	770.34	770.47	770.59	770.70	770.80	770.88	770.94	770.99	771.02	771.04	771.05	771.06	771.20	771.28	771.31	771.28
Girder No. 2	769.73	769.94	770.12	770.29	770.43	770.45	770.58	770.71	770.82	770.92	771.00	771.06	771.11	771.15	771.17	771.18	771.19	771.34	771.43	771.46	771.44
Girder No. 3	769.70	769.91	770.10	770.26	770.41	770.43	770.57	770.69	770.81	770.91	771.00	771.06	771.12	771.15	771.18	771.19	771.20	771.36	771.46	771.49	771.50
Girder No. 4	769.45	769.67	769.86	770.03	770.19	770.21	770.34	770.48	770.59	770.70	770.79	770.86	770.91	770.95	770.98	771.00	771.01	771.17	771.27	771.32	771.35
Girder No. 5	769.21	769.43	769.63	769.80	769.96	769.98	770.12	770.25	770.38	770.48	770.57	770.65	770.70	770.75	770.78	770.80	770.81	770.97	771.09	771.14	771.17

Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.

SLAB DETAILS

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

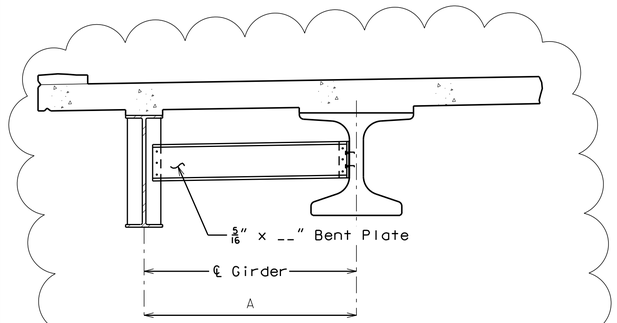
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	22
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

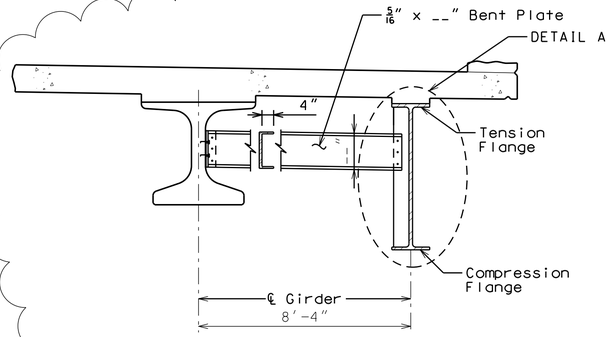
NO.	DATE	REVISIONS	BY	APPROVED



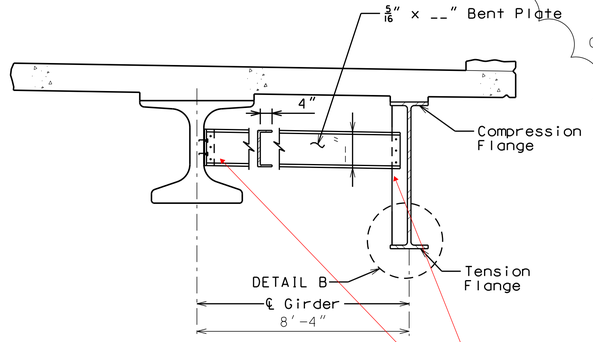
TYPICAL PART SECTION SHOWING
INT. BENT DIAPHRAGMS

Note: Slope diaphragms at intermediate bents.

INT. BENT DIAPHRAM DATA	
INT. BENT DIAPHRAM	DIM. A
BENT 2	
GIRDER 1-2	10'-11 5/8"
GIRDER 2-3	10'-10 1/2"
GIRDER 3-4	10'-9 7/16"
GIRDER 4-5	10'-8 1/2"
BENT 3	
GIRDER 1-2	10'-11 5/8"
GIRDER 2-3	10'-10 1/2"
GIRDER 3-4	10'-9 7/16"
GIRDER 4-5	10'-8 1/2"

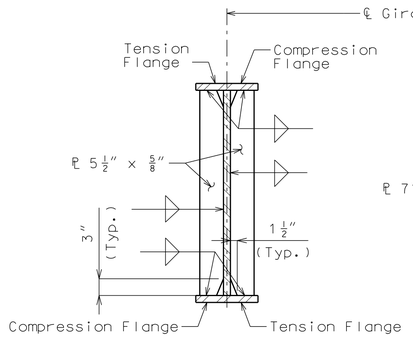


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

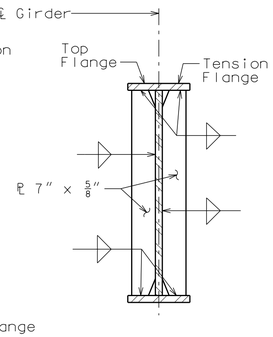


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

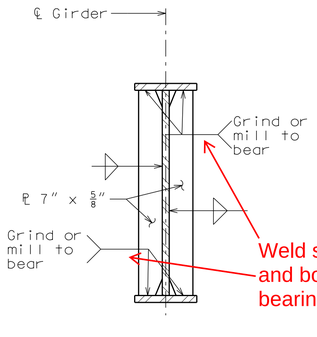
Make sure flange stress ranges meet the infinite life fatigue threshold for C' detail (12 ksi) if welding to tension flanges



INTERMEDIATE DIAPHRAGM
CONNECTION PLATE &
INTERMEDIATE WEB STIFFENERS



INTERMEDIATE BENT
BEARING STIFFENER

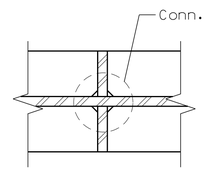


Weld stiffeners to top and bottom flange for bearing locations

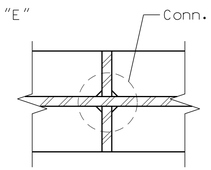
END BENT BEARING
STIFFENER

WELDING DETAILS

Typical for all intermediate web stiffeners, intermediate diaphragm connection plates, and bearing stiffeners.

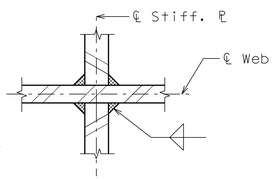


END BRG. STIFF.

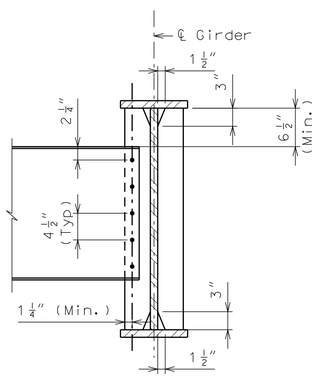


DIA. CONN. PLATE

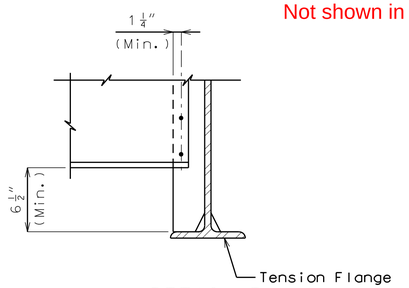
Designer should consider using oversized holes with snug tight fasteners (and double nut or burr threads) on the cross frames attached to the concrete girders. This could allow the steel girders to flex as they expand and contract at a different rate versus the concrete girders. It could also allow for the creep and shrinkage of the concrete girders.



CONN. E



DETAIL A



DETAIL B

Will the girders have intermediate diaphragms/connection plates? Not shown in girder details.

TYPICAL LOCATION DETAILS

DIAPHRAGM DETAILS

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

Notes:

All structural steel for diaphragms shall conform to the requirements of ASTM A709 Grade 50W.

All bolts shall be 3/4 inch high strength steel bolts with 13/16 inch Ø holes.

For locations of diaphragms, see Girder Elevation Sheets No. 17-21.

For Structural Steel Notes, see Plan of Structural Steel Sheet No. 16.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

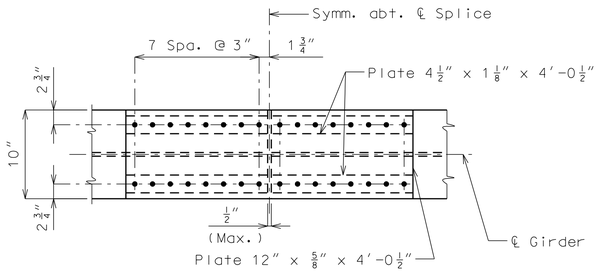
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	23
TOTAL SHEETS	33

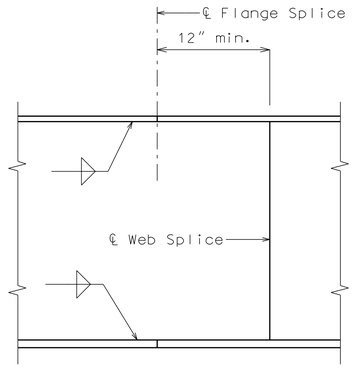
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



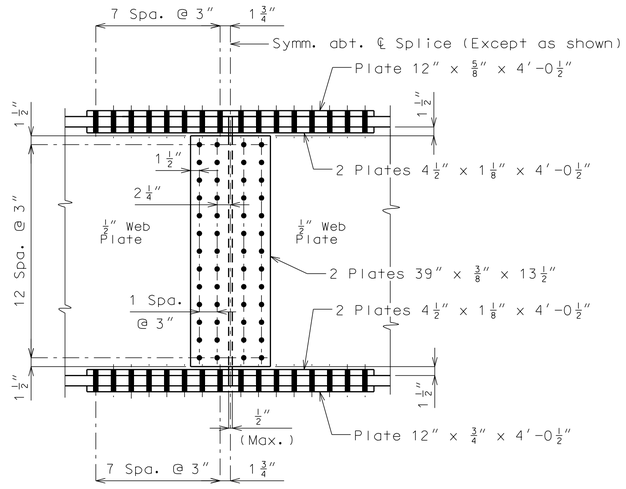
PLAN OF TOP FLANGE SPLICE PLATE



ELEVATION

WELDED SHOP WEB AND FLANGE SPLICE

Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



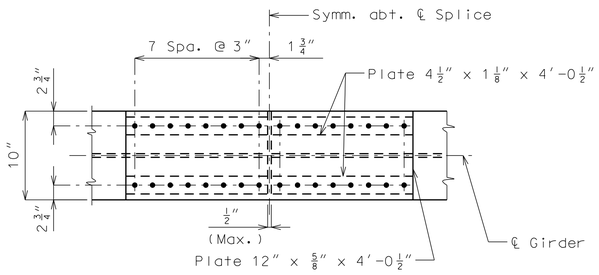
DETAIL OF BOLTED FIELD SPLICE

Use 7/8″Ø high strength bolts with 15/16″Ø holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.

Splice detail is approximate and subject to change

This will be reviewed with next submittal



PLAN OF BOTTOM FLANGE SPLICE PLATE

SPLICE PLATE DETAILS OF AESTHETIC STEEL GIRDER

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	24
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

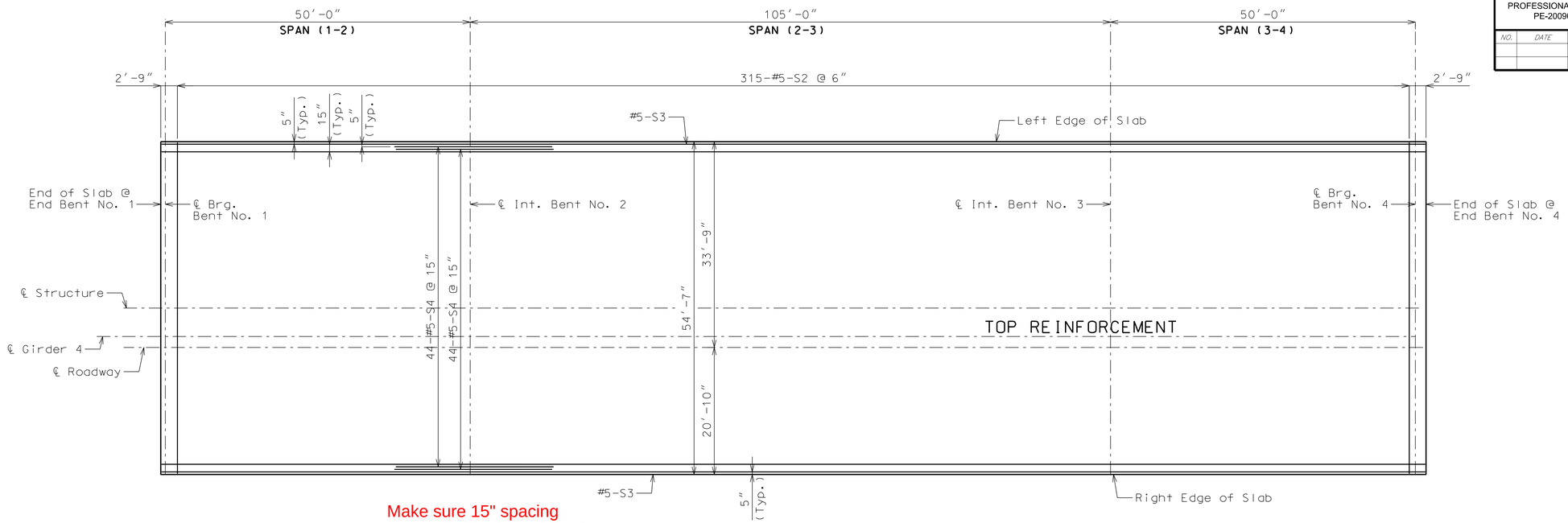
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	25
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF SLAB SHOWING REINFORCING

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	26
TOTAL SHEETS	33

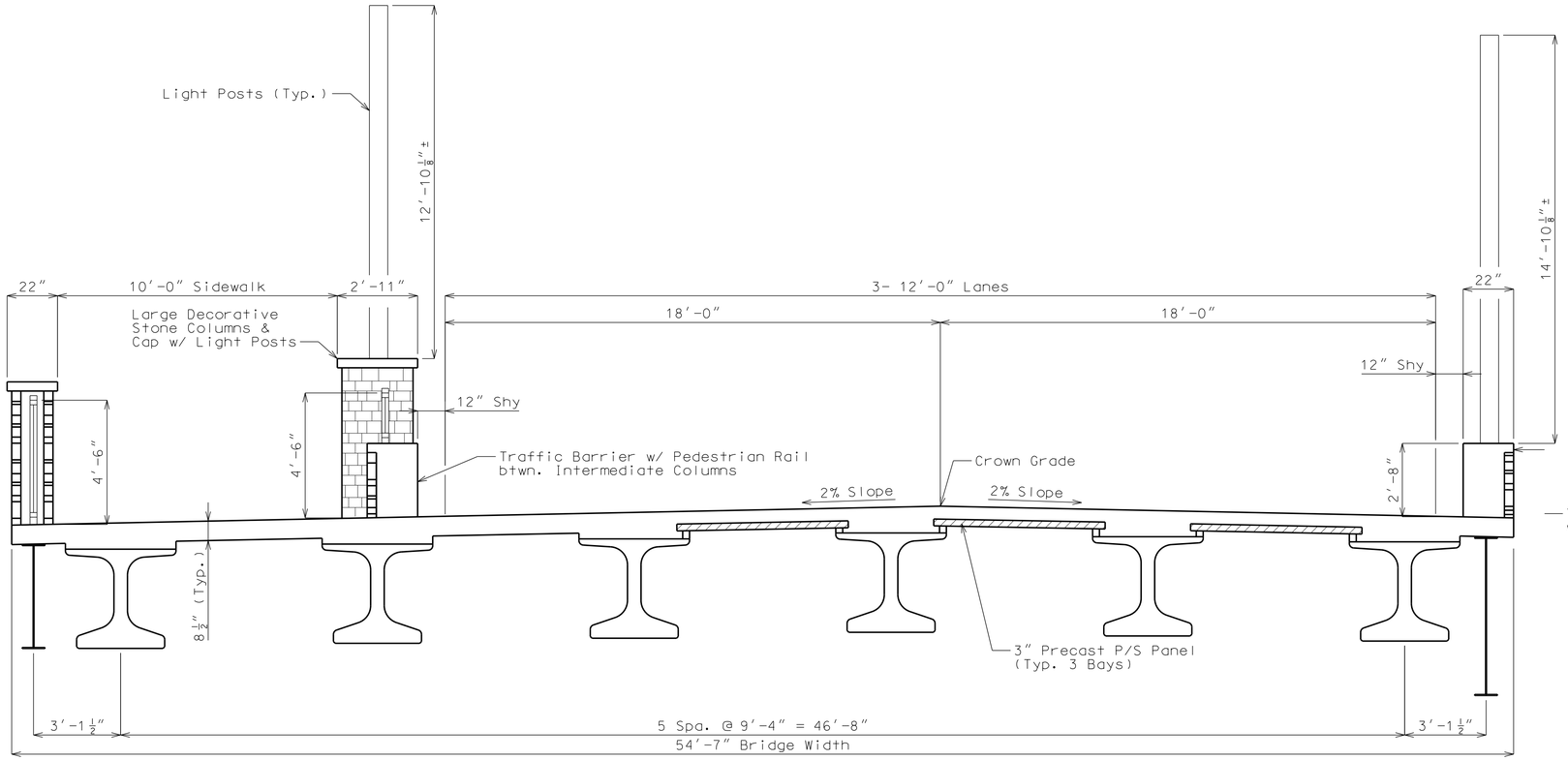
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

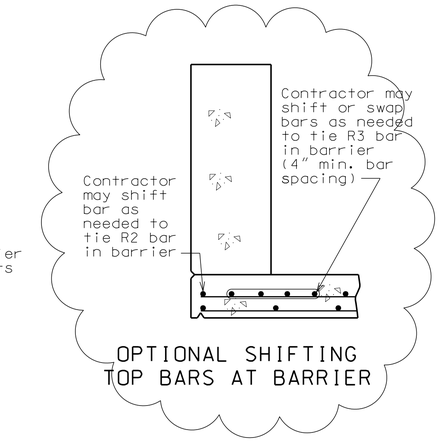
NO.	DATE	REVISIONS	BY	APPROVED



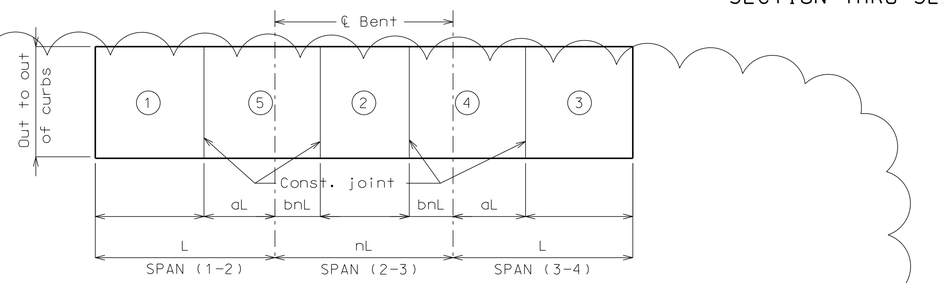
HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB

HALF SECTION NEAR INTERMEDIATE BENT



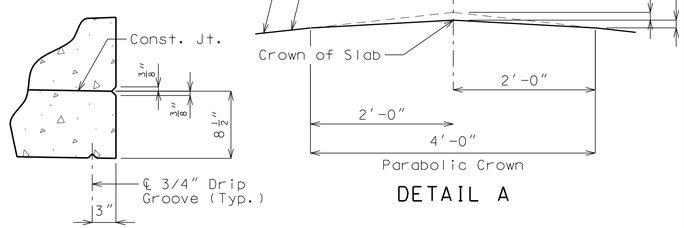
OPTIONAL SHIFTING TOP BARS AT BARRIER



	Sequence of Pours					Min. rate of pour cu. yds./hr.	
	Direction					With retarder	No retarder
Basic sequence	1	2	3	4	5	25	25
	Either direction						
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	—	—
	End to 5		1 to 4		2 to end		
Alternate "B" pours	1 + 5 + 2			4 + 3		—	—
	End to 4			2 to end			
Alternate "C" pours	1 + 5 + 2 + 4 + 3					—	—
	End to end						

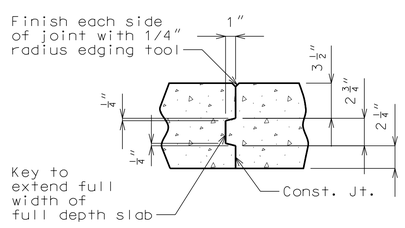
Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

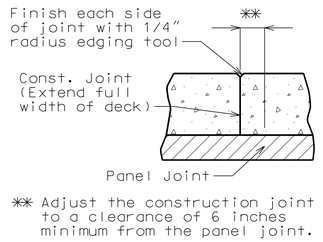


DETAIL A

DETAIL B



FULL DEPTH SLAB



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

SLAB ON PANELS

SLAB CONSTRUCTION JOINT

Notes:

For details of precast prestressed panels, see Sheet No. 21.

For reinforcement of safety barrier curb not shown, see Sheets No. 29 & 30.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 24.

For Plan of Slab Showing Reinforcement, see Sheet No. 25.

SLAB DETAILS

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	27
TOTAL SHEETS	33

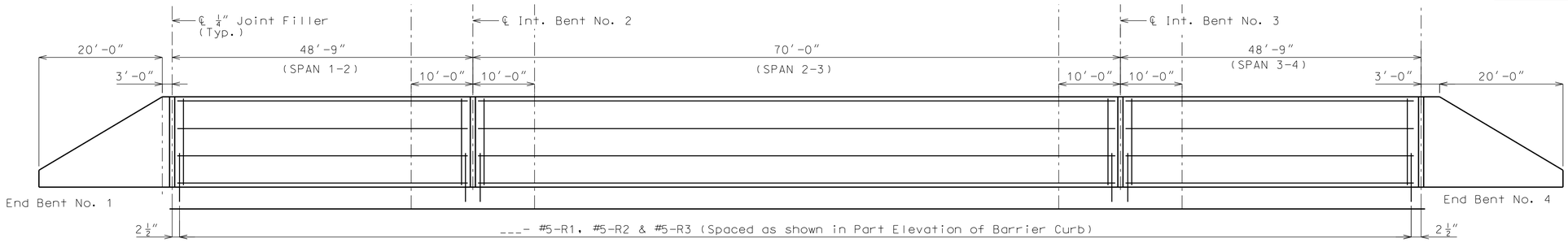
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

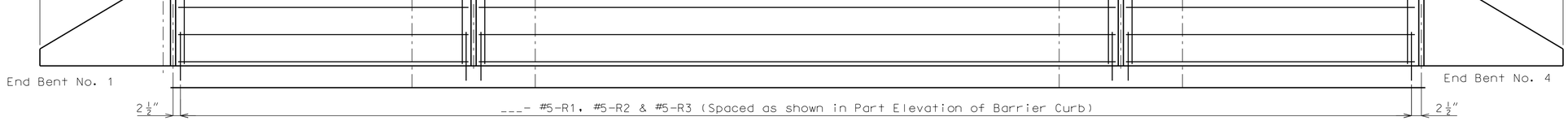
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



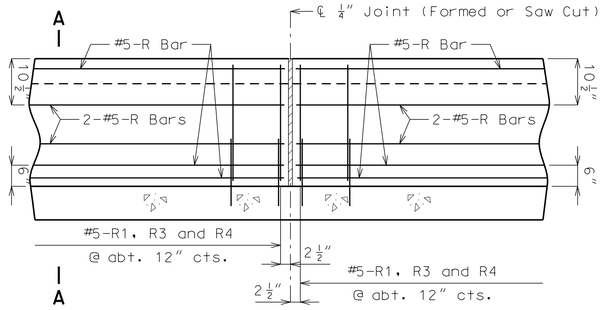
ELEVATION OF LEFT BARRIER CURB

Longitudinal dimensions are horizontal.

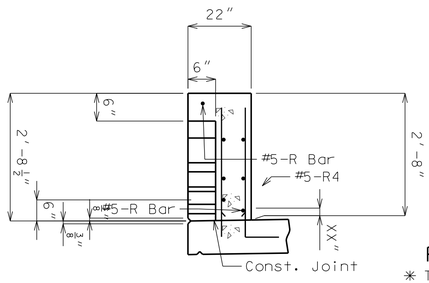


ELEVATION OF RIGHT BARRIER CURB

Longitudinal dimensions are horizontal.



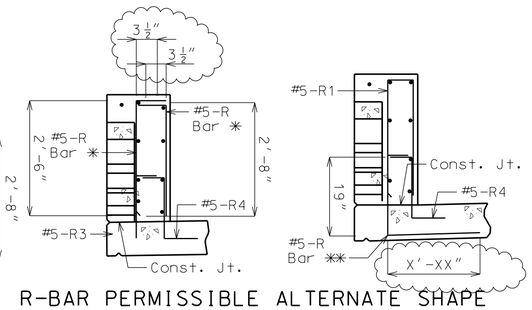
PART ELEVATION OF SAFETY BARRIER CURB



SECTION A-A

Use a minimum lap of 3'-1" for #5 horizontal safety barrier curb bars.

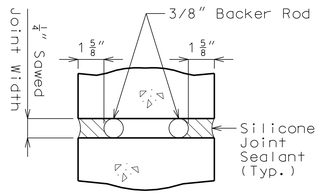
The cross-sectional area above the slab = X.XX sq. ft.



R-BAR PERMISSIBLE ALTERNATE SHAPE

✱ The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

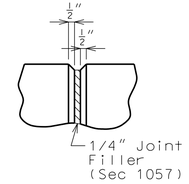
✱✱ The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



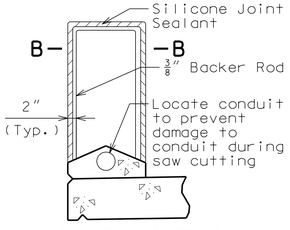
SECTION B-B

CONVENTIONAL-FORMED SAFETY BARRIER CURB

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



PART ELEVATION AT FORMED JOINT



SECTION THRU SAW CUT JOINT

(Use when conduit is required)

General Notes

Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb per linear foot.

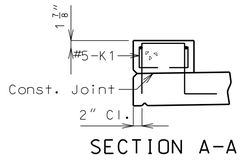
Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

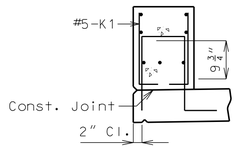
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

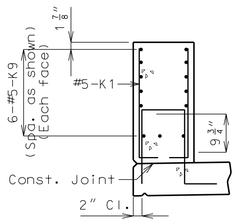
Plastic waterstop shall not be used with saw cut joints.



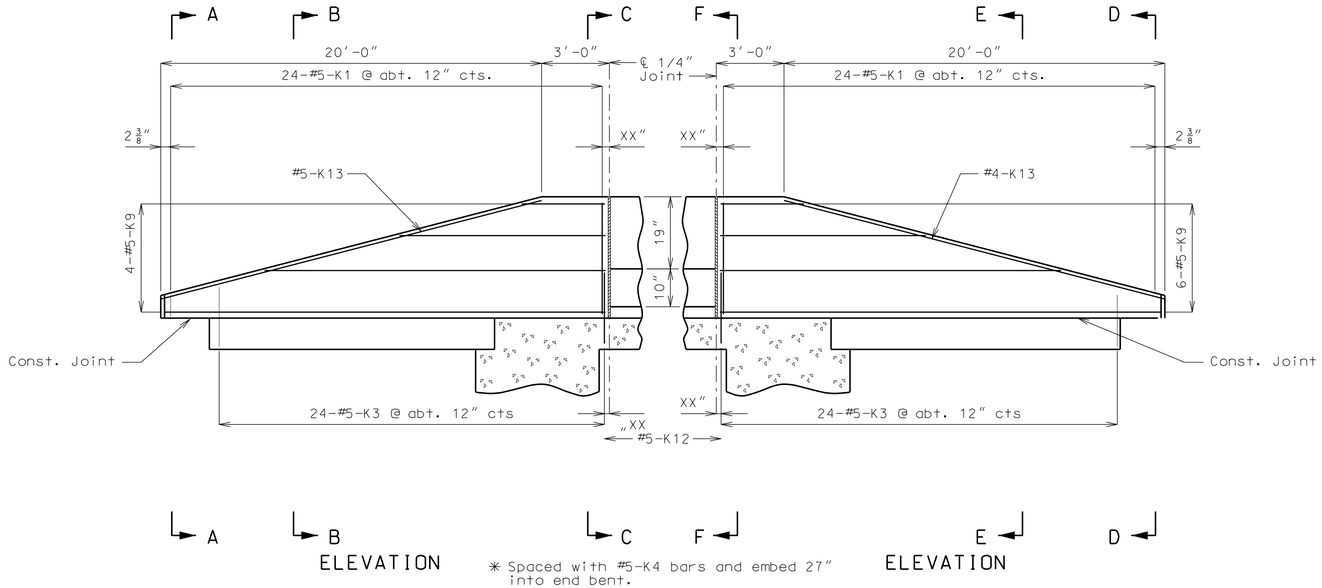
SECTION A-A



SECTION B-B



SECTION C-C

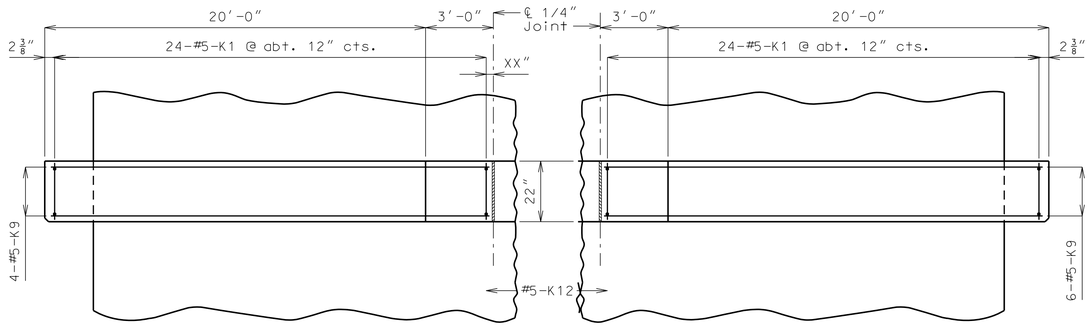


ELEVATION

ELEVATION

* Spaced with #5-K4 bars and embed 27" into end bent.

** Fit bar to follow transition face of curb.



PLAN

PLAN

Show detail of barrier curb at end bents for a skewed structure. Extend joint past front face of end bent on skewed structures.

General Notes

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

Use a minimum lap of 2'-7" between K9 and K10 or K13 bars.

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

(Left barrier curb shown, right barrier curb similar)

Detailed
Checked

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

Sheet No. of

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	28
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	29
TOTAL SHEETS	33

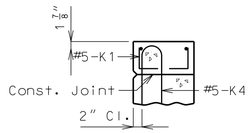
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

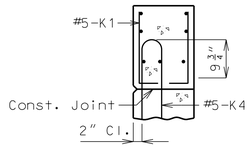
Paragon Star Development

Kansas City, Missouri

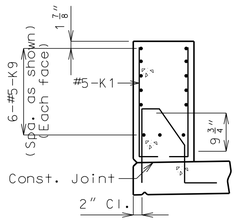
NO.	DATE	REVISIONS	BY	APPROVED



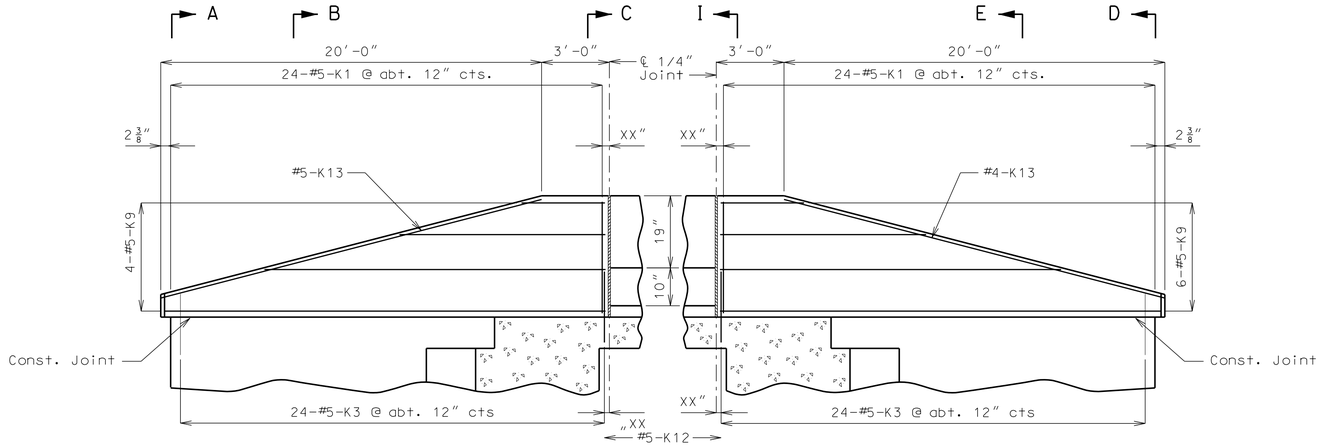
SECTION A-A



SECTION B-B



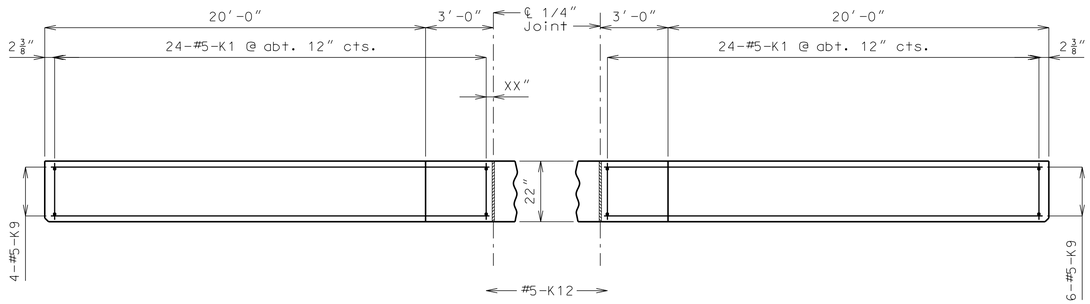
SECTION C-C



A B ELEVATION C I ELEVATION E D

✳ Spaced with #5-K4 bars and embed 27" into end bent.

✳✳ Fit bar to follow transition face of curb.



PLAN PLAN

Show detail of barrier curb at end bents for a skewed structure. Extend joint past front face of end bent on skewed structures.

General Notes

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Reinforcing Steel:

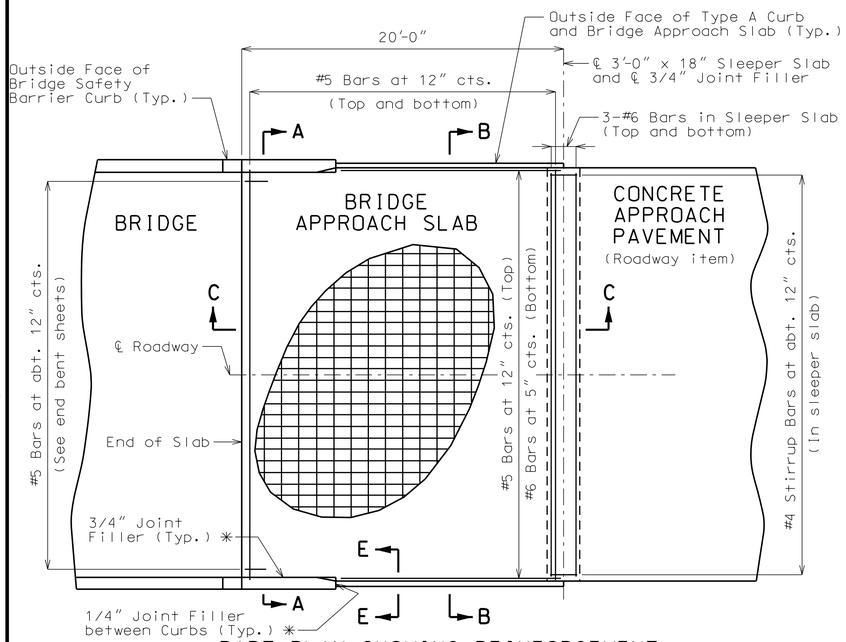
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

Use a minimum lap of 2'-7" between K9 and K10 or K13 bars.

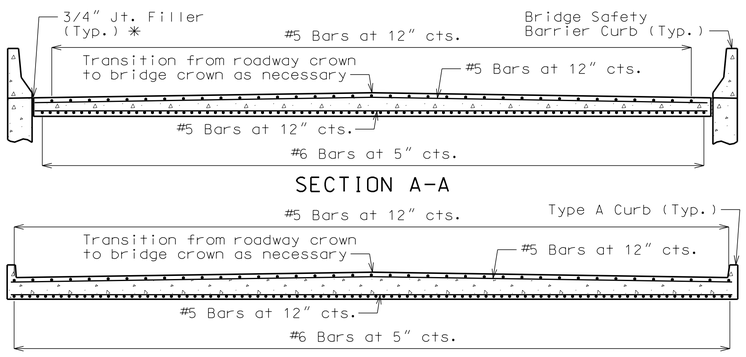
CONVENTIONAL-FORMED SAFETY BARRIER CURB AT END BENTS ON WING

(Left barrier curb shown, right barrier curb similar)

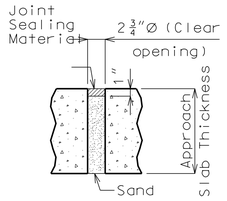
Note: This drawing is not to scale. Follow dimensions.



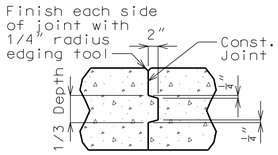
PART PLAN SHOWING REINFORCEMENT



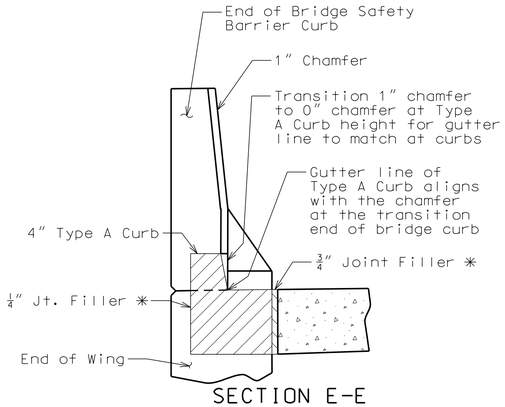
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



UNDERSEAL ACCESS HOLE DETAIL
(If required)



CONST. JOINT DETAIL



SECTION E-E
(Between curbs)

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 fy = 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".

Mechanical bar splices shall be in accordance with Sec 710.

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.

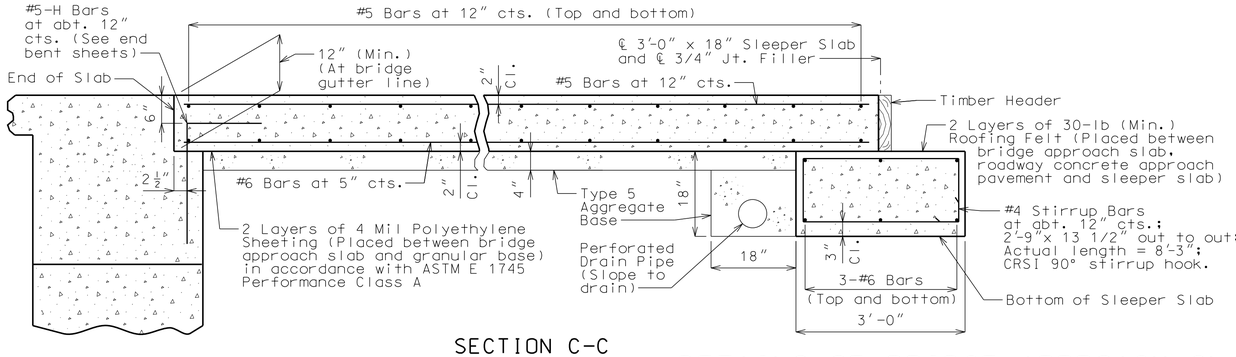
Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

For Concrete Approach Pavement details, see roadway plans.

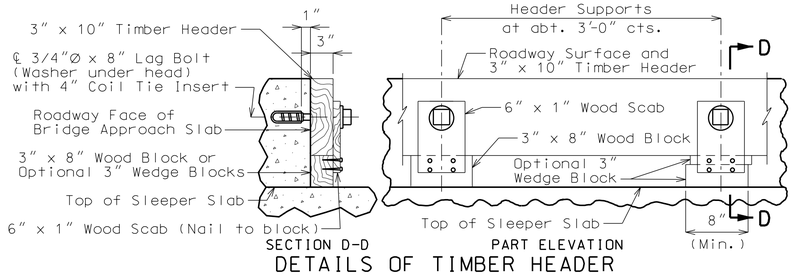
See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

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 unit price for Bridge Approach Slab (Major Road) per square yard.

✳ 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.



SECTION C-C



DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

DETAILS OF BRIDGE APPROACH SLAB (MAJOR ROAD)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	30
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	31
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, 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					

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
					INT. BENT NO. 3
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
					END BENT NO. 4
36					
37					
38					
39					
40					
41					
42					

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 MoDOT construction personnel.

AS-BUILT PILE DATA

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

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

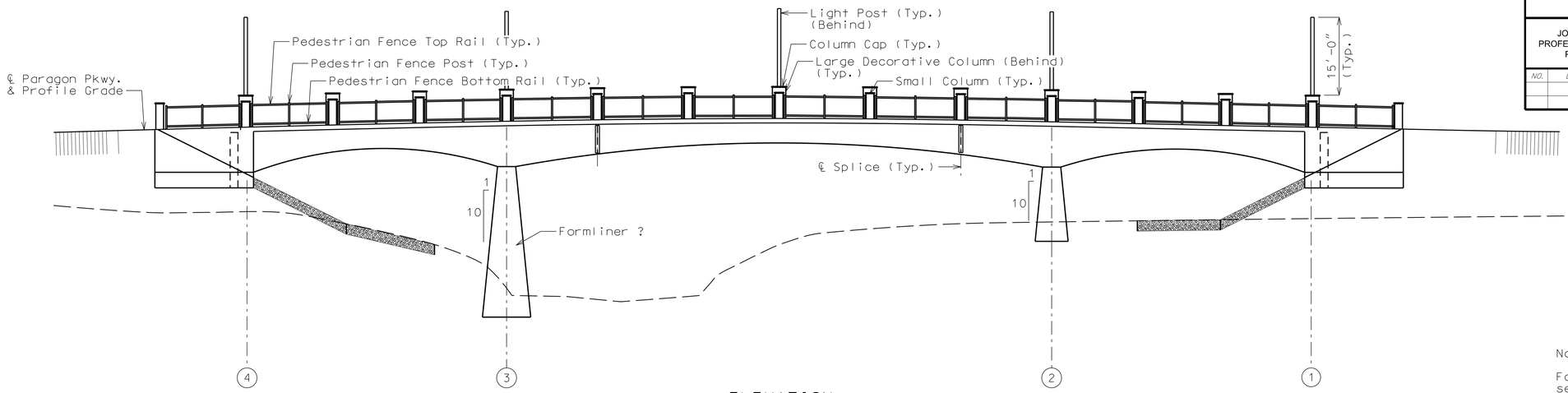
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	32
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

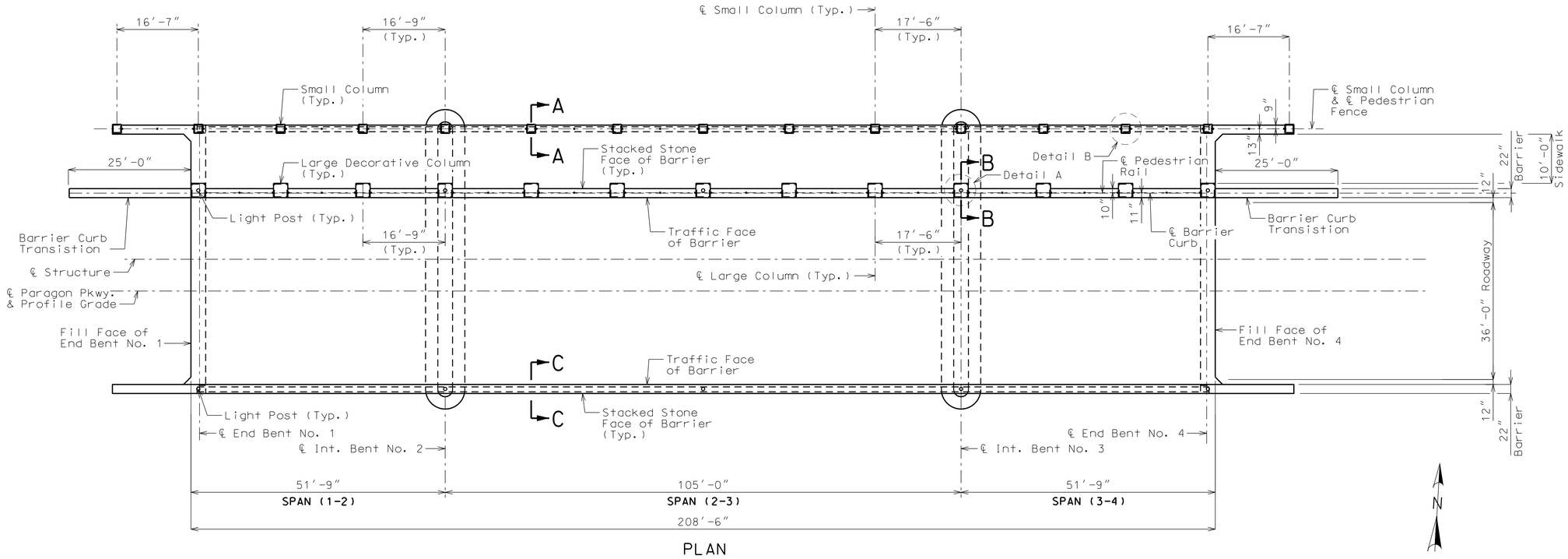
NO.	DATE	REVISIONS	BY	APPROVED



ELEVATION
(Looking South)

Notes:

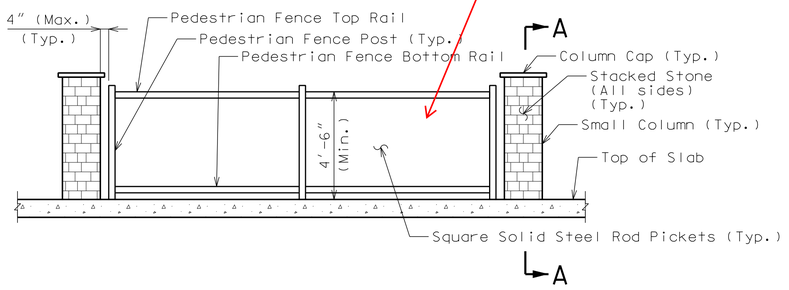
For Detail A, Detail B, Section A-A, B-B & C-C, see Sheet No. 5.



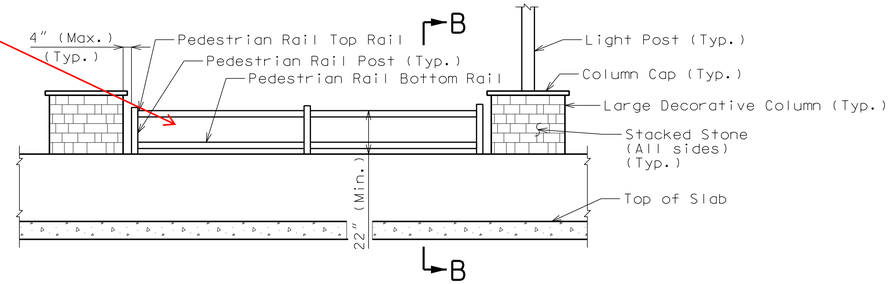
PLAN

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

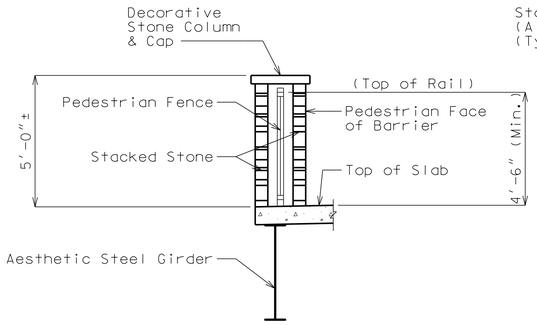
Show pickets and detail spacing



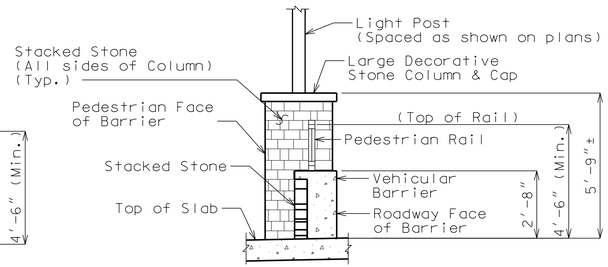
PEDESTRIAN FENCE DETAIL ELEVATION



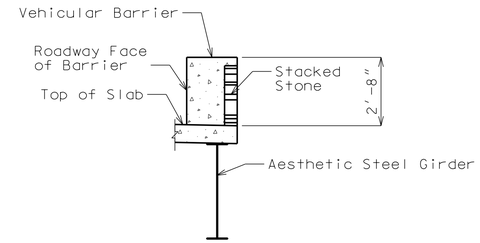
VEHICULAR BARRIER DETAIL ELEVATION
(Vehical side shown)



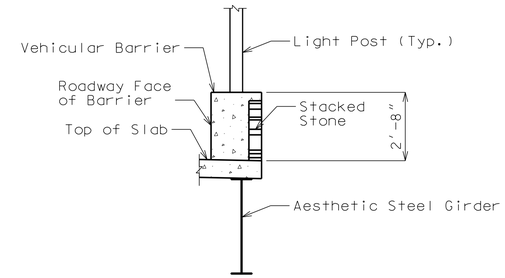
SECTION A-A



SECTION B-B

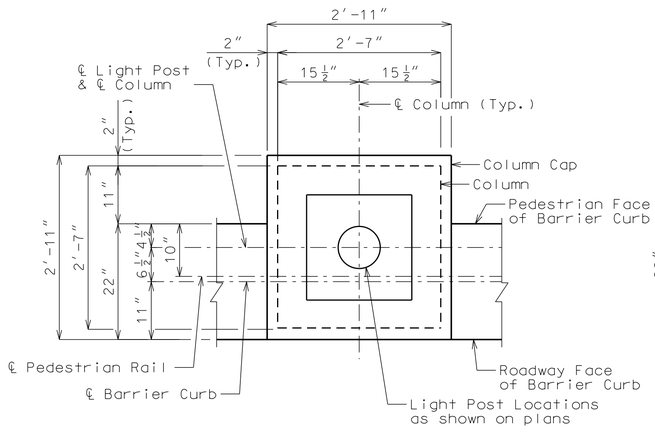


SECTION C-C

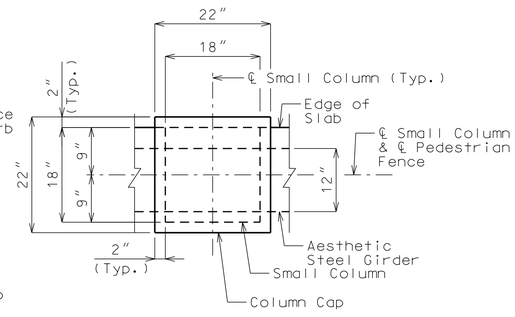


SECTION C-C (w/ Light Post)

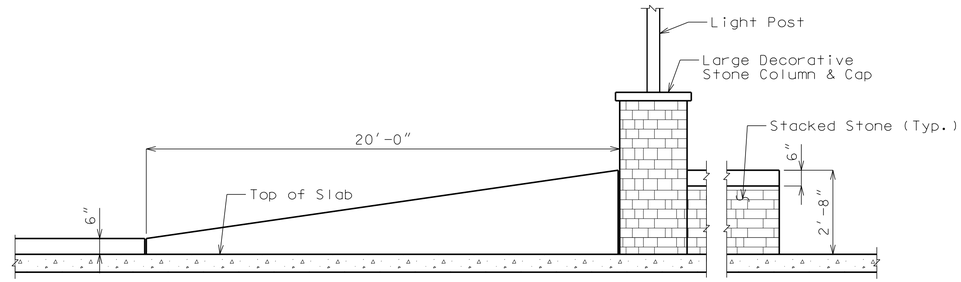
DETAILS OF BARRIER & PEDESTRIAN FENCE



DETAIL A



DETAIL B



VEHICULAR BARRIER CURB TRANSITION DETAIL
(Pedestrian side shown)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	33
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

WEST BRIDGE
(58'-70'-58') PRESTRESSED CONCRETE NU-GIRDER SPANS

SEC/SUR 34 TWP 48N RGE 32W

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

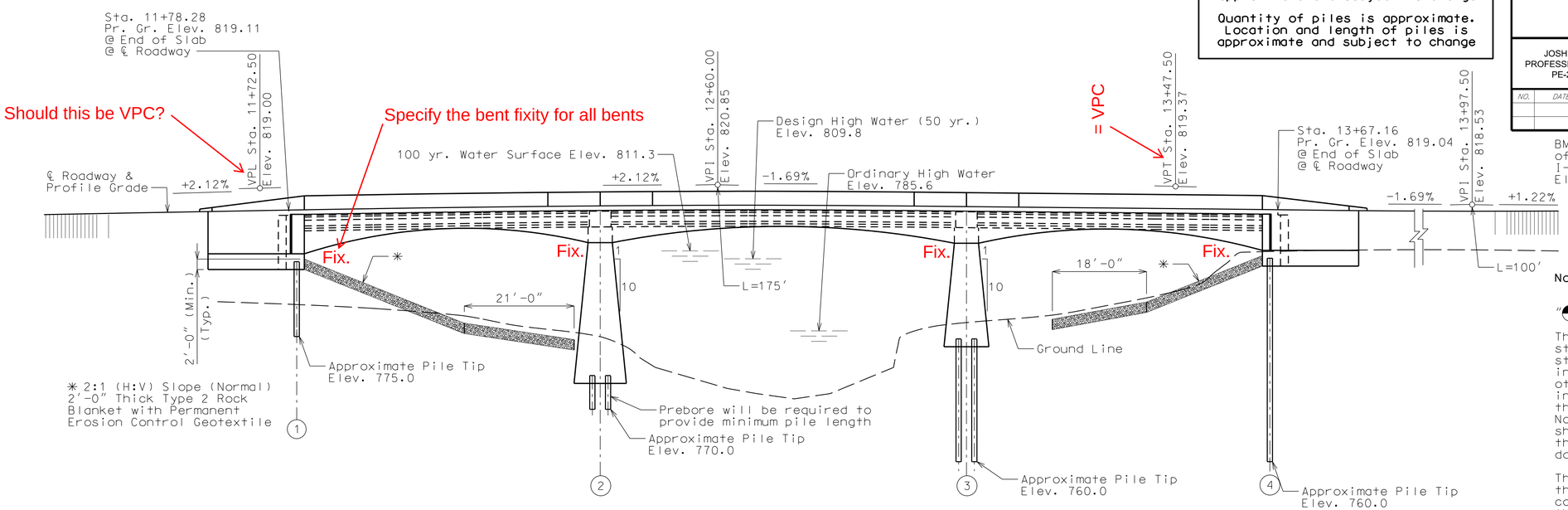
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	1
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

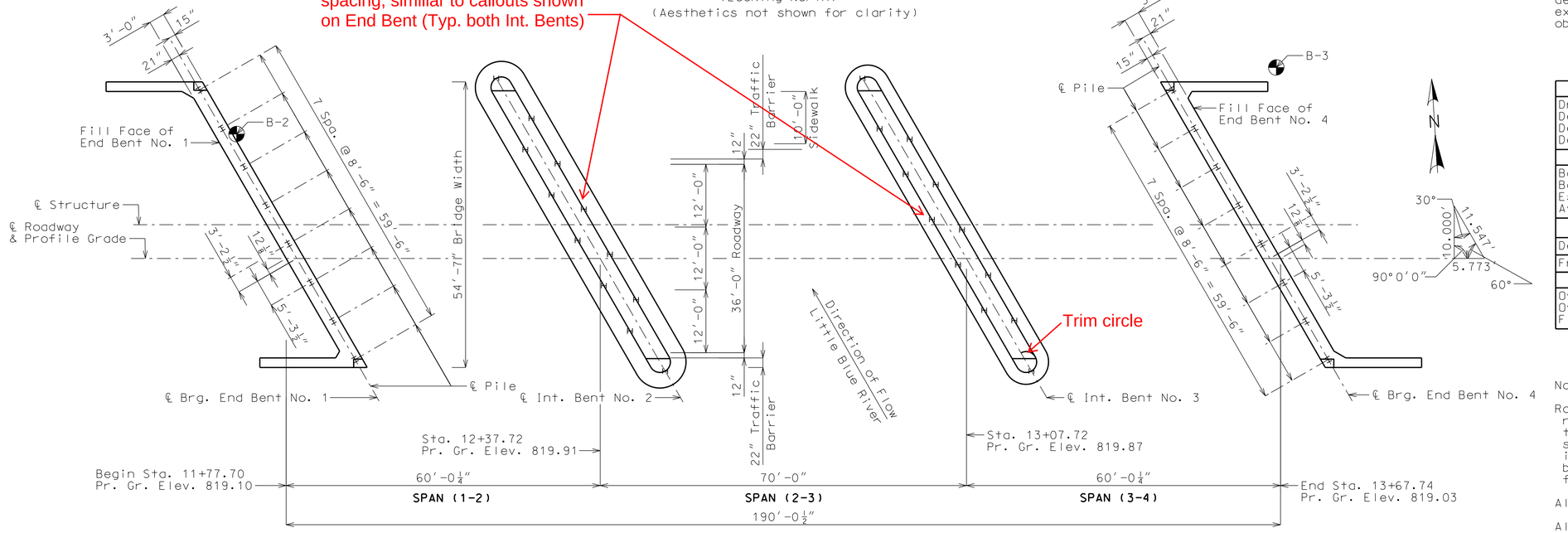
Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



ELEVATION
(Looking North)
(Aesthetics not shown for clarity)

Suggest callouts for CL Pile spacing, similiar to callouts shown on End Bent (Typ. both Int. Bents)



PLAN

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

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 Engineer for the design of the bridge, are shown on Sheet(s) No. (-- - --). 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 = 809.8
Base Flood (100-year)
Base Flood Elevation = 811.28 Base Flood Discharge = 5,636 cfs Estimated Backwater = 0.2 ft Average Velocity thru Opening = 2.6 ft/s
High Freeboard (50-year)
Design ~~High~~ Water = 809.8
Freeboard = 2.6 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A Overtopping Flood Frequency N/A years Flood Elevation = N/A

Notes:

Roadway fill shall be completed to the final roadway section and up to the elevation 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.

BRIDGE: WEST PARAGON PARKWAY OVER LITTLE BLUE RIVER

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	2
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

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

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 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. __1.
For Prestressed Girder Stresses, See Sheets No. __ & __.

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.

Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including 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.

Traffic Handling:
Structure to be closed during construction. See roadway plans for traffic control.

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

Reinforcement quantity provided is based on _____lbs/cy of concrete.

FOUNDATION DATA

TYPE	DESIGN DATA		BENT NUMBER 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP12x53	HP12x53	HP12x53	HP12x53
	Number	ea	8	__	__	8
	Approximate Length per Each	ft	__	__	__	__
	Pile Point Reinforcement	ea	__	__	__	__
	Min. Galvanized Penetration (Elev.)	ft	__	__	__	__
	Minimum Nominal Axial Compressive Resistance	kip	__	__	__	__

DT = Dynamic Testing

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

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 down to the minimum galvanized penetration (elevation).

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.

Estimated Quantities

Item		Total
Class B-2 Concrete (Superstructure Concrete on NU-Girder)	cu. yard	__
Reinforcing Steel (Epoxy Coated)	pound	__

The table of Estimated Quantities represents the quantities used by the Engineer in preparing the cost estimate. Payment for the Bridge will be considered completely covered by the contract Lump sum price. Variations may be encountered in the estimated quantities but the variations cannot be used for adjustment in the contract Lump sum price.

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.

GENERAL NOTES AND QUANTITIES

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	3
TOTAL SHEETS	33

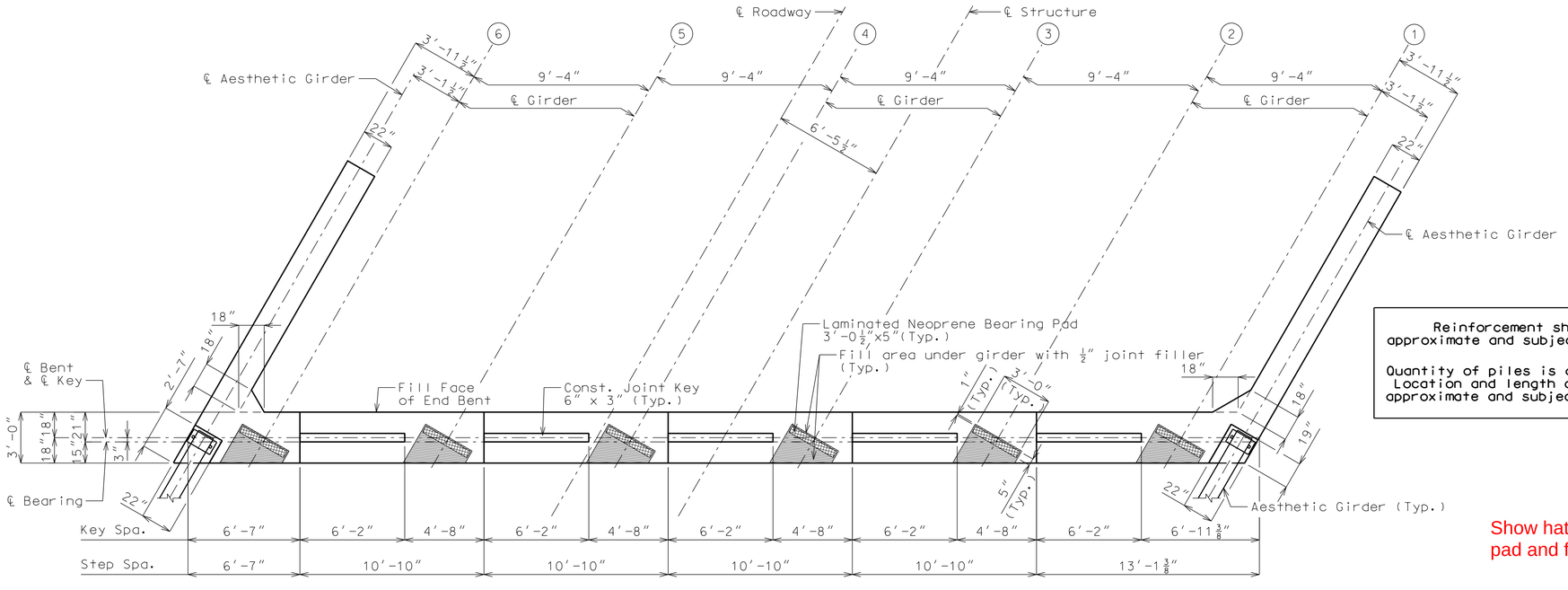
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

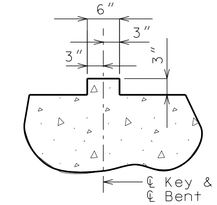
NO.	DATE	REVISIONS	BY	APPROVED



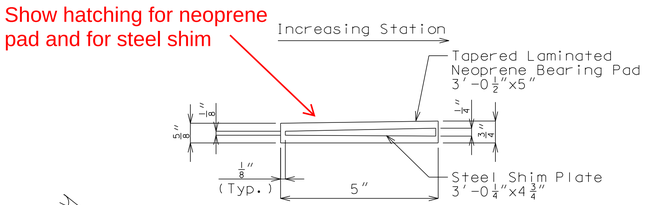
PLAN OF BEAM

Reinforcement shown is approximate and subject to change

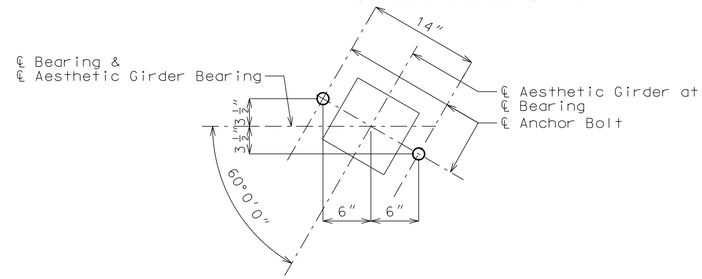
Quantity of piles is approximate. Location and length of piles is approximate and subject to change



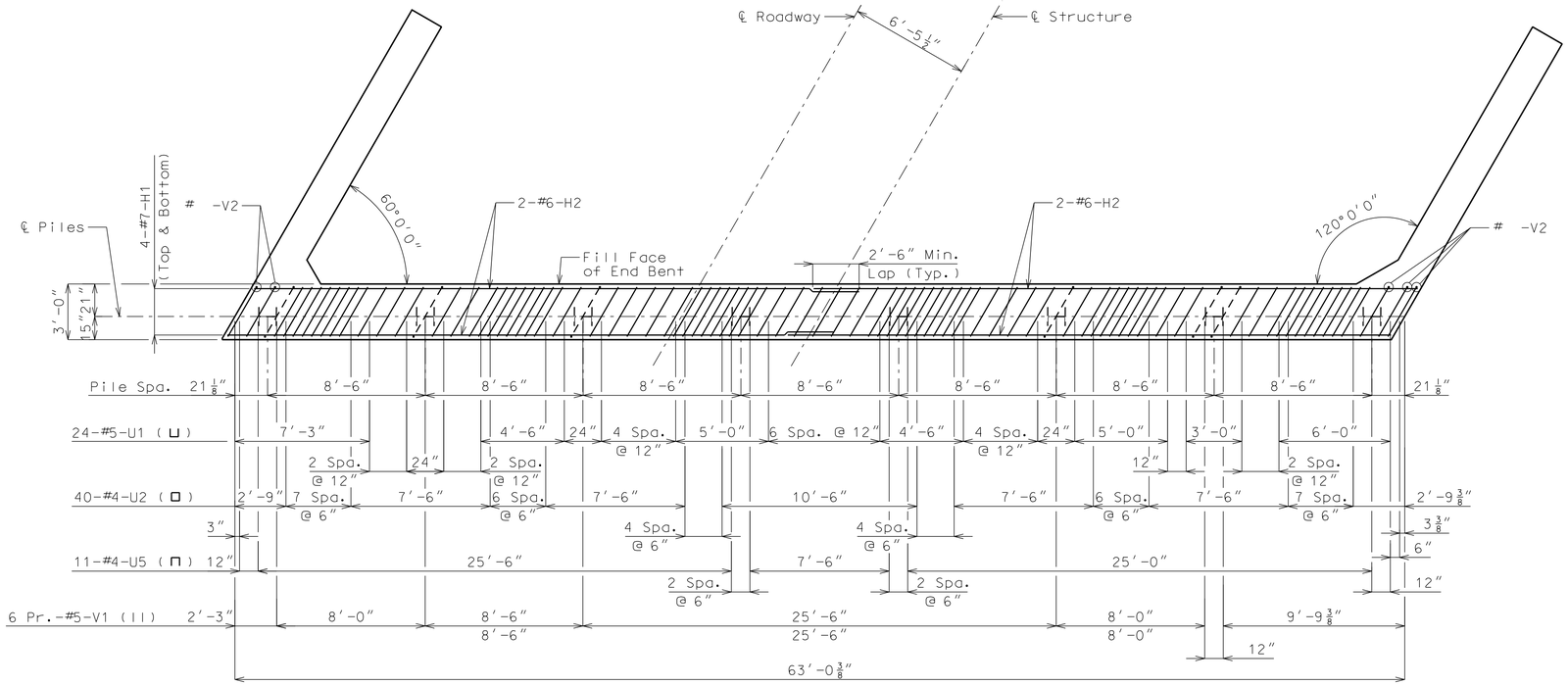
SECTION THRU KEY



SECTION THRU TAPERED LAMINATED NEOPRENE BEARING PAD



ANCHOR BOLT DETAIL



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

Notes:

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

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½".

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Roadway.

For details at Aesthetic Girder bearings not shown see Sheet No. ___.

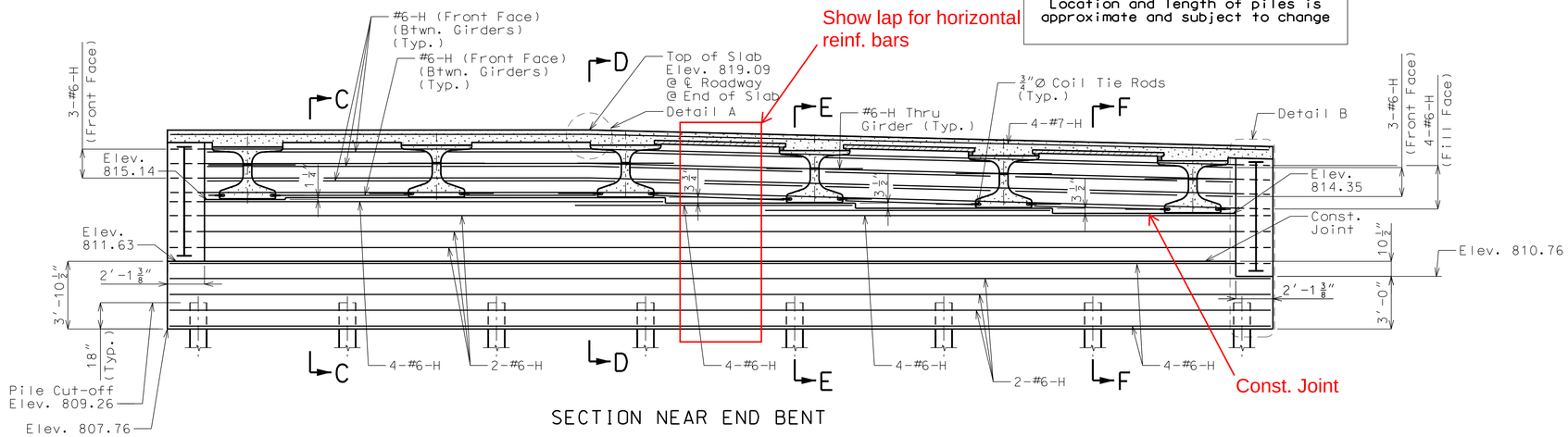
DETAILS OF END BENT NO. 1

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

Reinforcement shown is approximate and subject to change

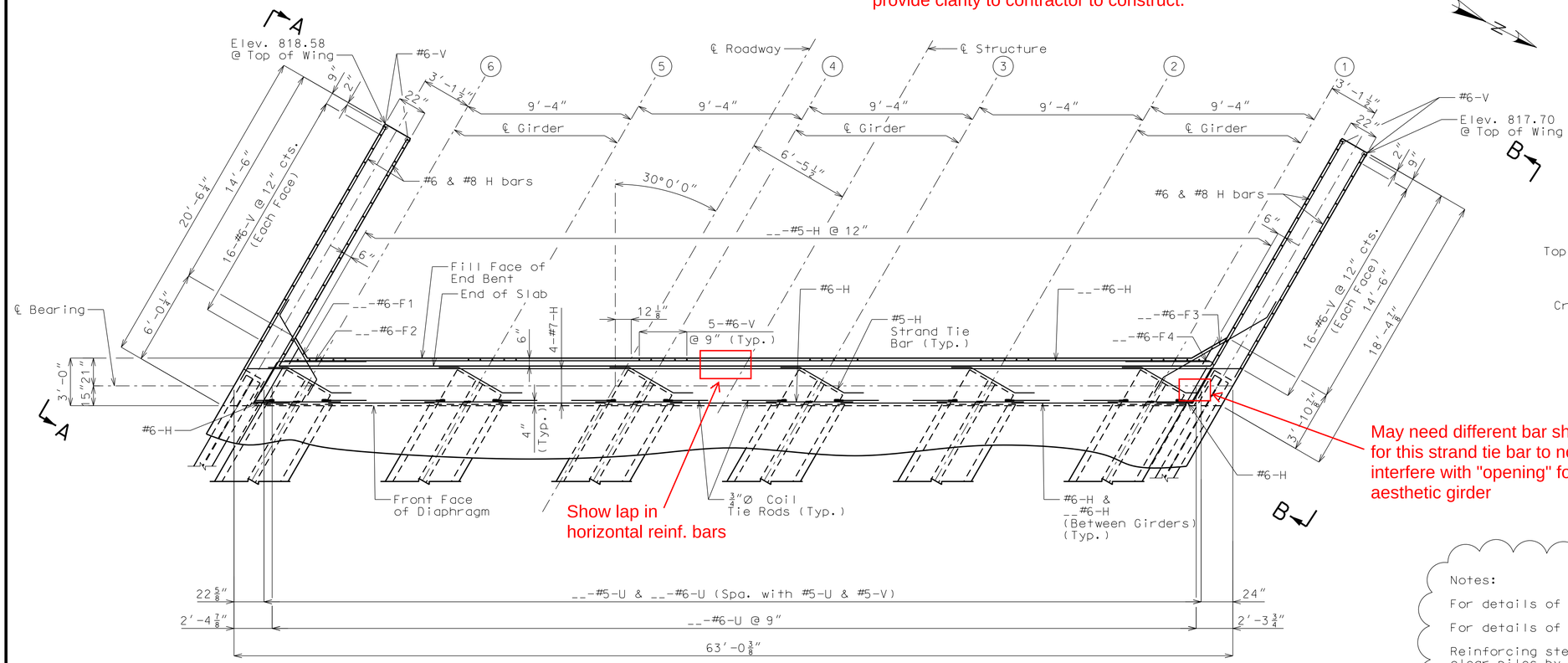
Quantity of piles is approximate. Location and length of piles is approximate and subject to change

Show lap for horizontal reinf. bars



SECTION NEAR END BENT

Describe limits of beam seat joint more clearly since it does not continue on to the wings. Will provide clarity to contractor to construct.

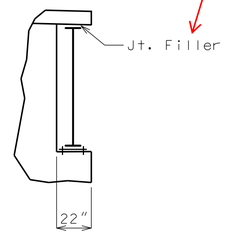


PART PLAN
(Note: Steps and keys not shown for clarity)

Show lap in horizontal reinf. bars

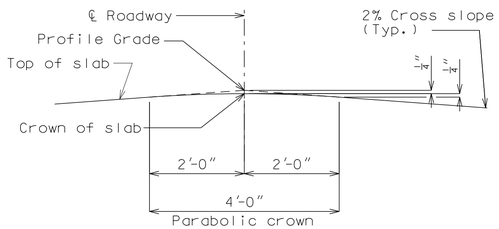
May need different bar shape for this strand tie bar to not interfere with "opening" for aesthetic girder

Is this joint filler between the slab and girder top flange intended to run the entire length of the girder? Callout length of girder for which joint filler is to be used.



Measured perpendicular to face of wing wall

DETAIL B



DETAIL A

Notes:

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

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½".

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Structure.

For Substructure Quantity Table, see Sheet No. _.

DETAILS OF END BENT NO. 1

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	4
TOTAL SHEETS	33

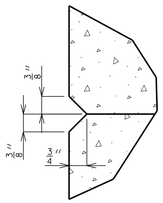
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

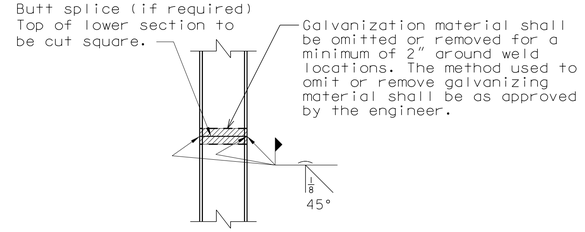
NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

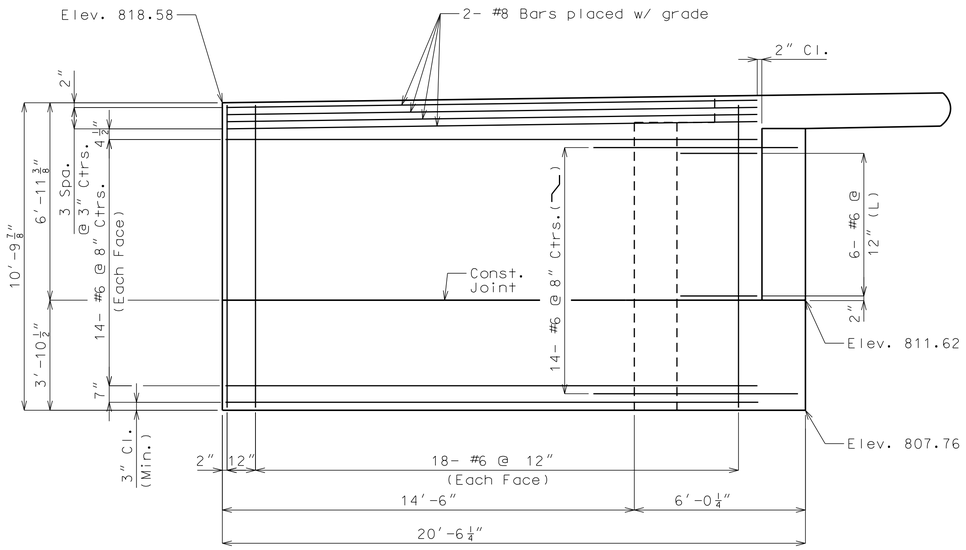
Quantity of piles is approximate. Location and length of piles is approximate and subject to change



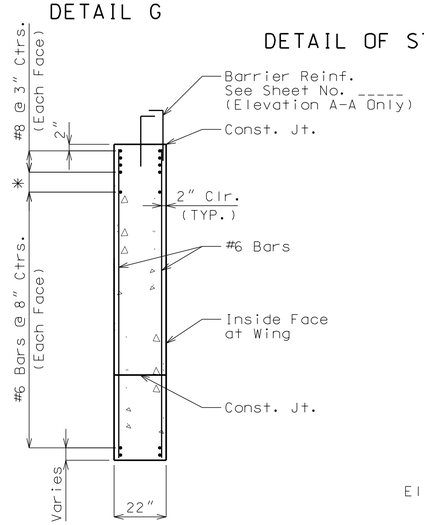
DETAIL G



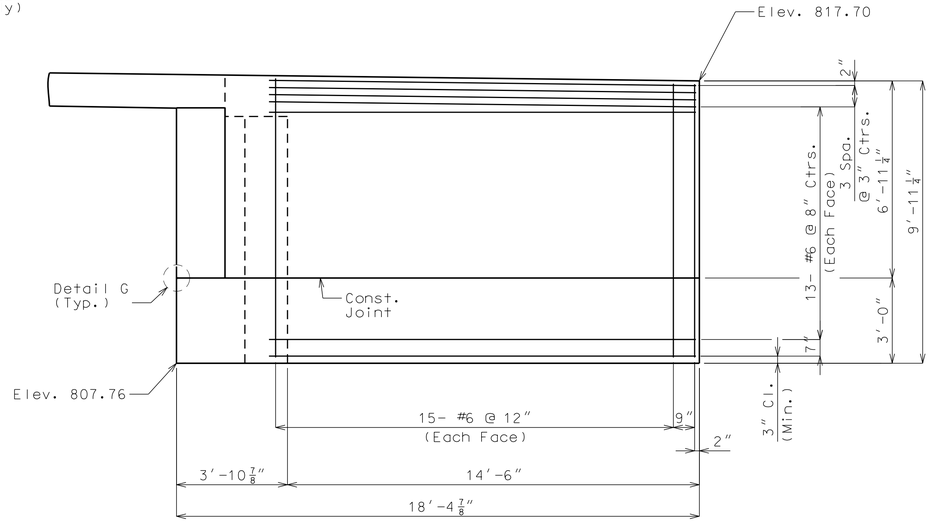
DETAIL OF STEEL PILE SPLICE



ELEVATION A-A



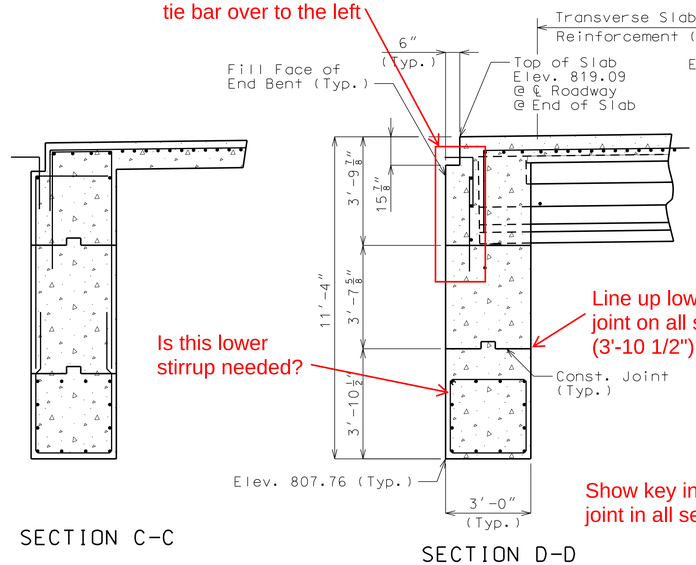
TYPICAL SECTION THRU WING



ELEVATION B-B

Move approach slab tie bar over to the left

Describe limits of beam seat joint more clearly since it does not continue on to the wings. Will provide clarity to contractor to construct.



SECTION C-C

SECTION D-D

Is this lower stirrup needed?

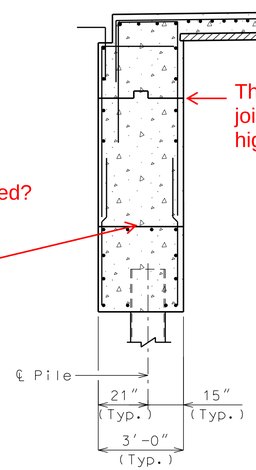
Line up lower const. joint on all sections (3'-10 1/2")

Is this lower stirrup needed?

Show key in lower const. joint in all sections

SECTION E-E

This const. joint is too high



SECTION F-F

Not going to comment too much on the reinforcement for these 60% plans, as it is understood this is not complete

DETAILS OF END BENT NO. 1

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

Notes:

For details of End Bent No. 1 not shown, See Sheets No. 4 & 5.

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

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

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

For reinforcement of Safety Barrier Curb, See Sheets No. __ & __.

For reinforcement of Pedestrian Curb, see Sheet No. __.

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	5
TOTAL SHEETS	33

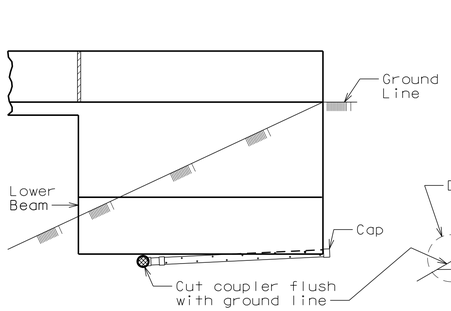
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

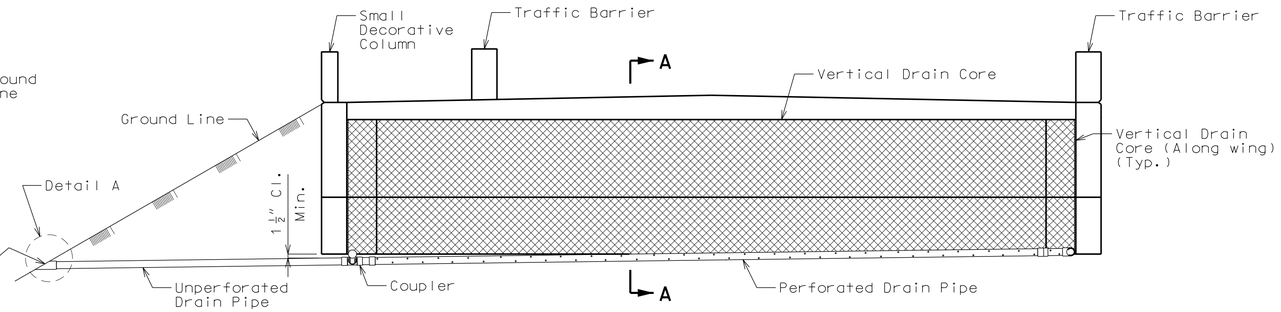
Paragon Star Development

Kansas City, Missouri

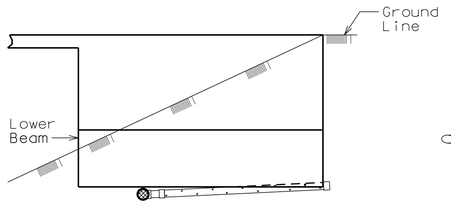
NO.	DATE	REVISIONS	BY	APPROVED



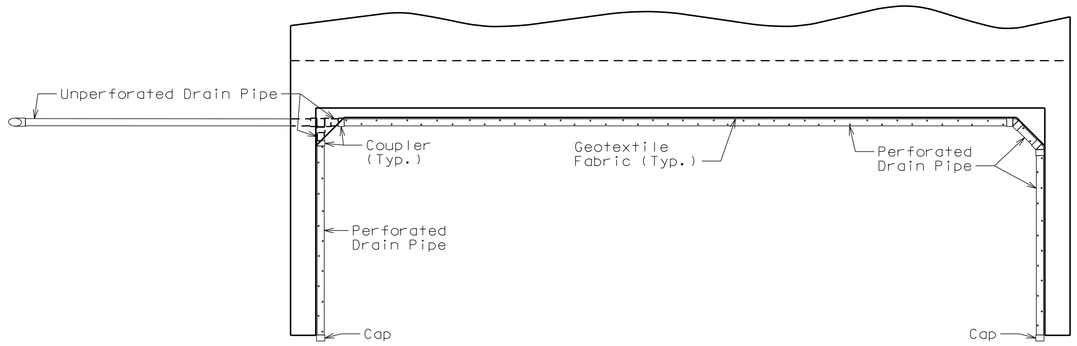
ELEVATION OF SOUTH WING



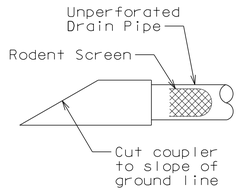
ELEVATION OF END BENT



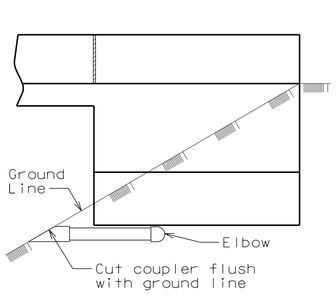
ELEVATION OF NORTH WING



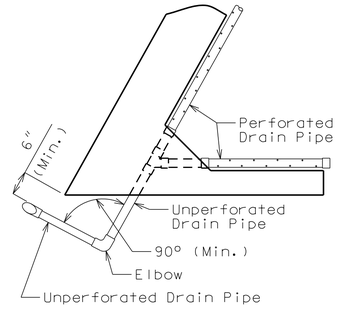
PLAN OF END BENT



DETAIL A

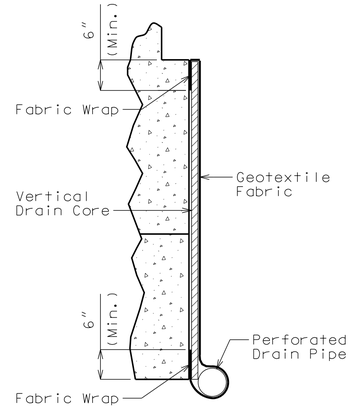


ELEVATION OF WING



PART PLAN

OPTIONAL TURNED DRAIN
(Only if rock is encountered outside of wing)



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.

VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	6
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

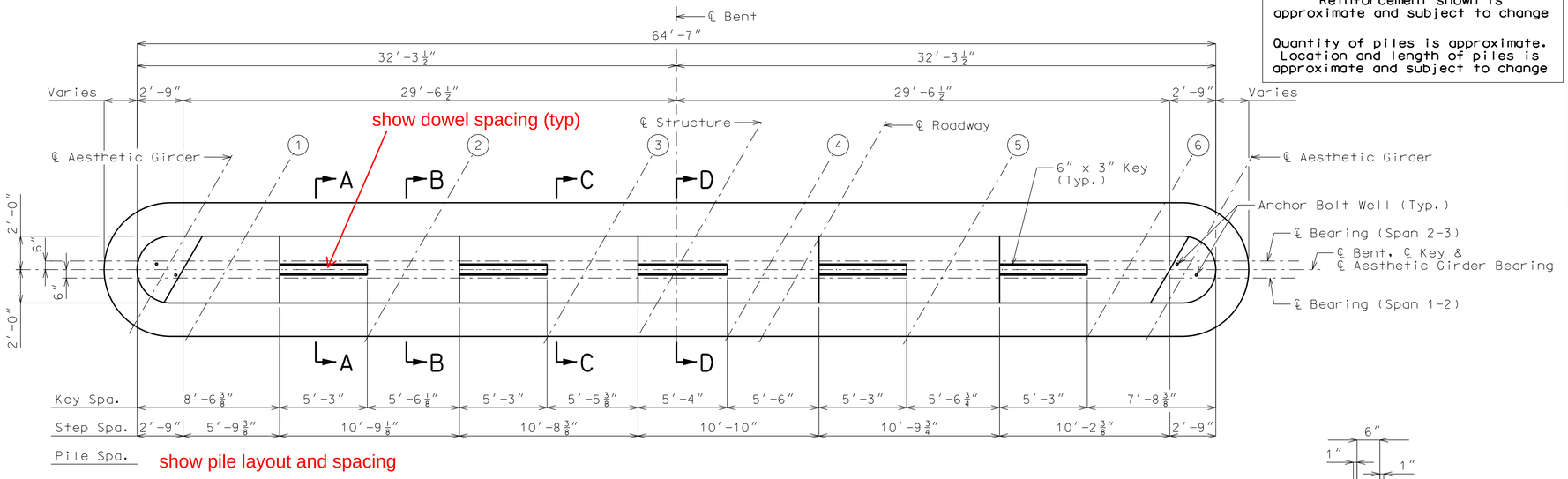
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	7
TOTAL SHEETS	33

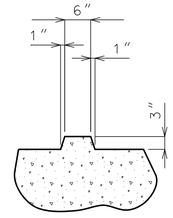
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

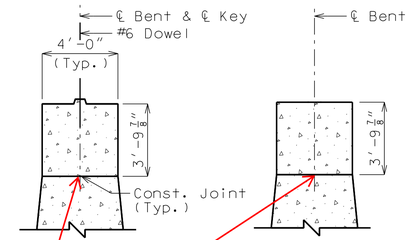


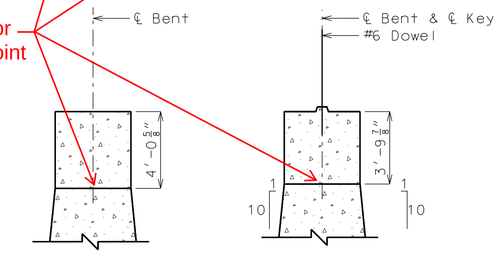
PLAN OF BEAM SHOWING REINFORCEMENT

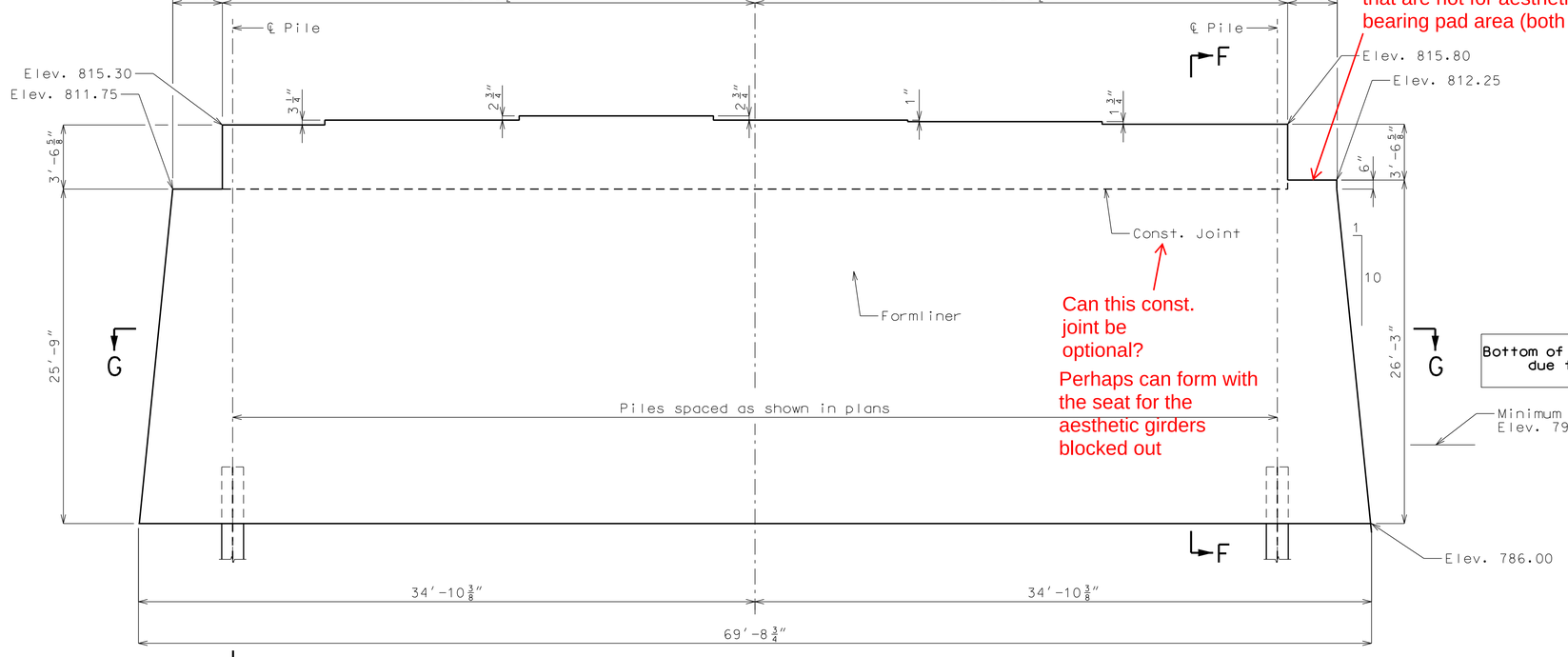


DETAIL OF KEY

use a key for the const. joint







ELEVATION

Is the intent to lower the bottom of pier wall to the lowest scour elevation, so the piles can be designed without having unbraced length due to scour?

DETAILS OF INTERMEDIATE BENT NO. 2

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

Notes:

For Sections E-E, F-F & G-G, see Sheet No. __.

For details of Int. Bent No. 2 not shown, see Sheet No. __.

Reinforcing steel shall be shifted to clear piles. U-bars shall clear pile by at least 1½″.

For Substructure Quantity Table, see Sheet No. __.

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	8
TOTAL SHEETS	33

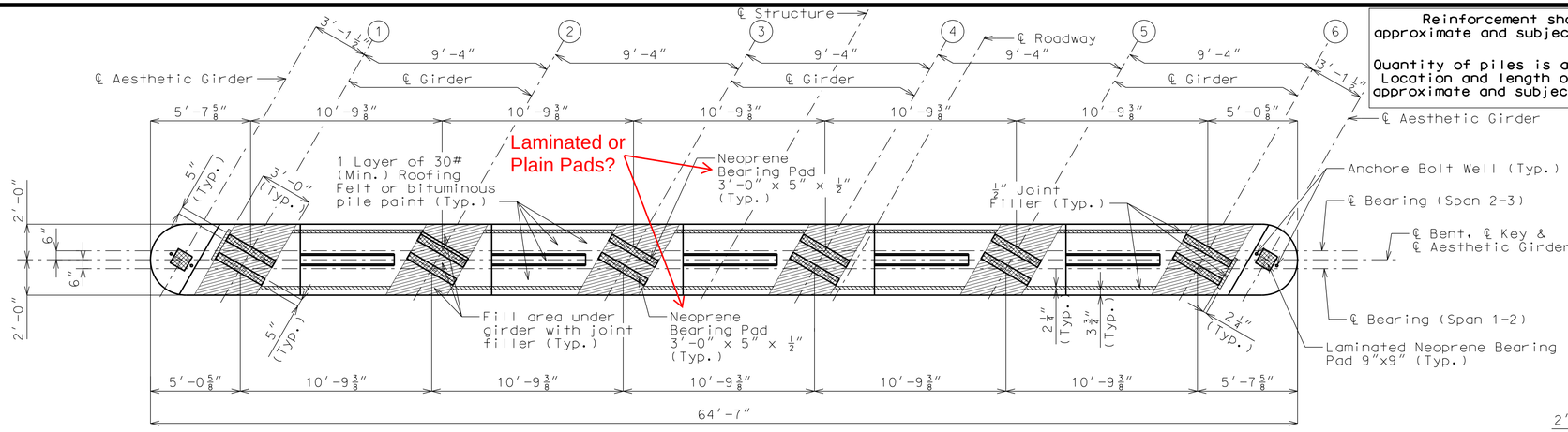
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

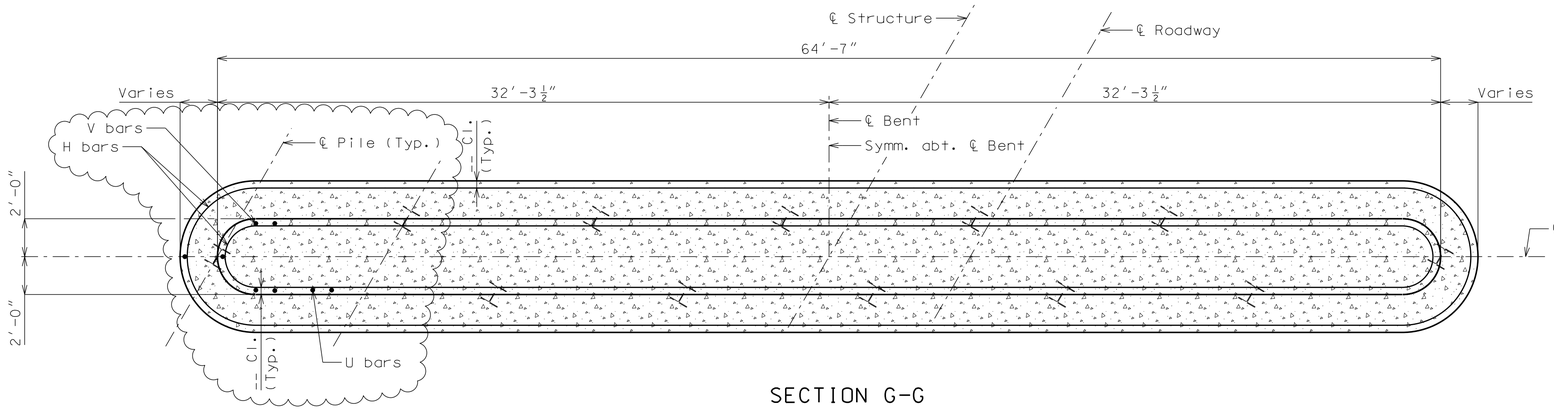
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

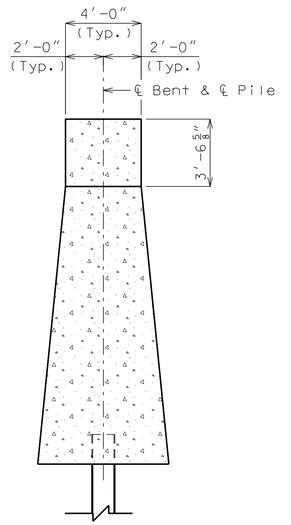


PLAN OF BEAM

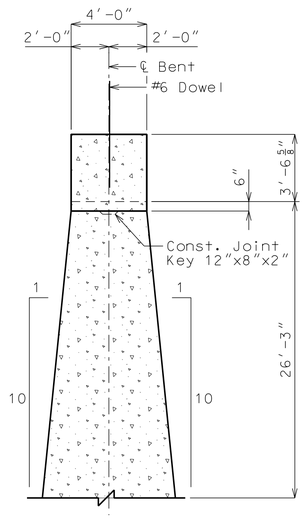
Add section thru bearing pad for intermediate bent



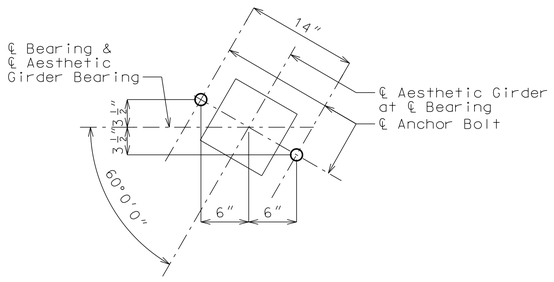
SECTION G-G



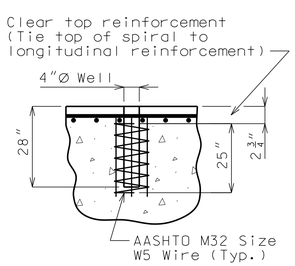
SECTION E-E



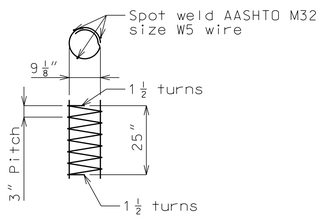
SECTION F-F



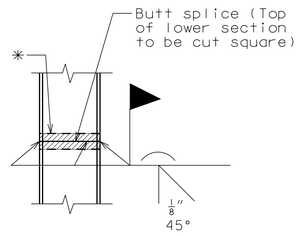
ANCHOR BOLT DETAIL



ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT



STEEL PILE SPLICE
(if required)

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

Notes:

For details of Int. Bent No. 2 not shown, see Sheet No. __.

For location of Section E-E, F-F & G-G, see Sheet No. __.

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

Reinforcing steel shall be shifted to clear anchor bolt well by at least 1/2 inch.

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

✳ Embed #4-U38 and #4-V30 bars 18″ into pile cap. (Min.)

DETAILS OF INTERMEDIATE BENT NO. 2

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	9
TOTAL SHEETS	33

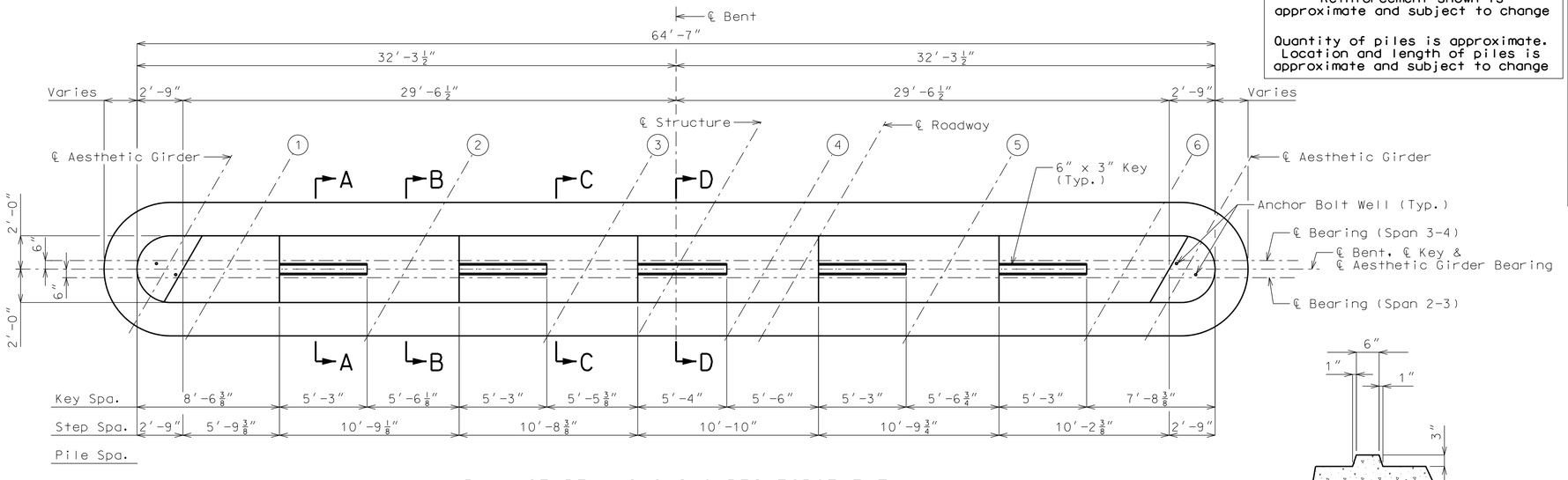
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

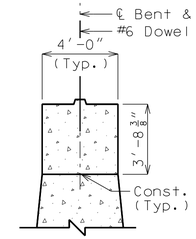
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



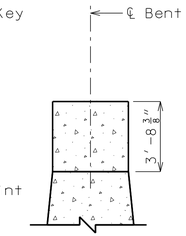
PLAN OF BEAM SHOWING REINFORCEMENT

DETAIL OF KEY



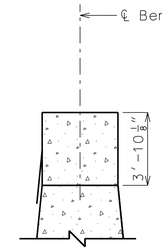
SECTION A-A

(Reinforcment w/o pile and not under a girder)



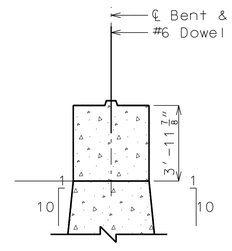
SECTION B-B

(Reinforcment w/o pile and under a girder)



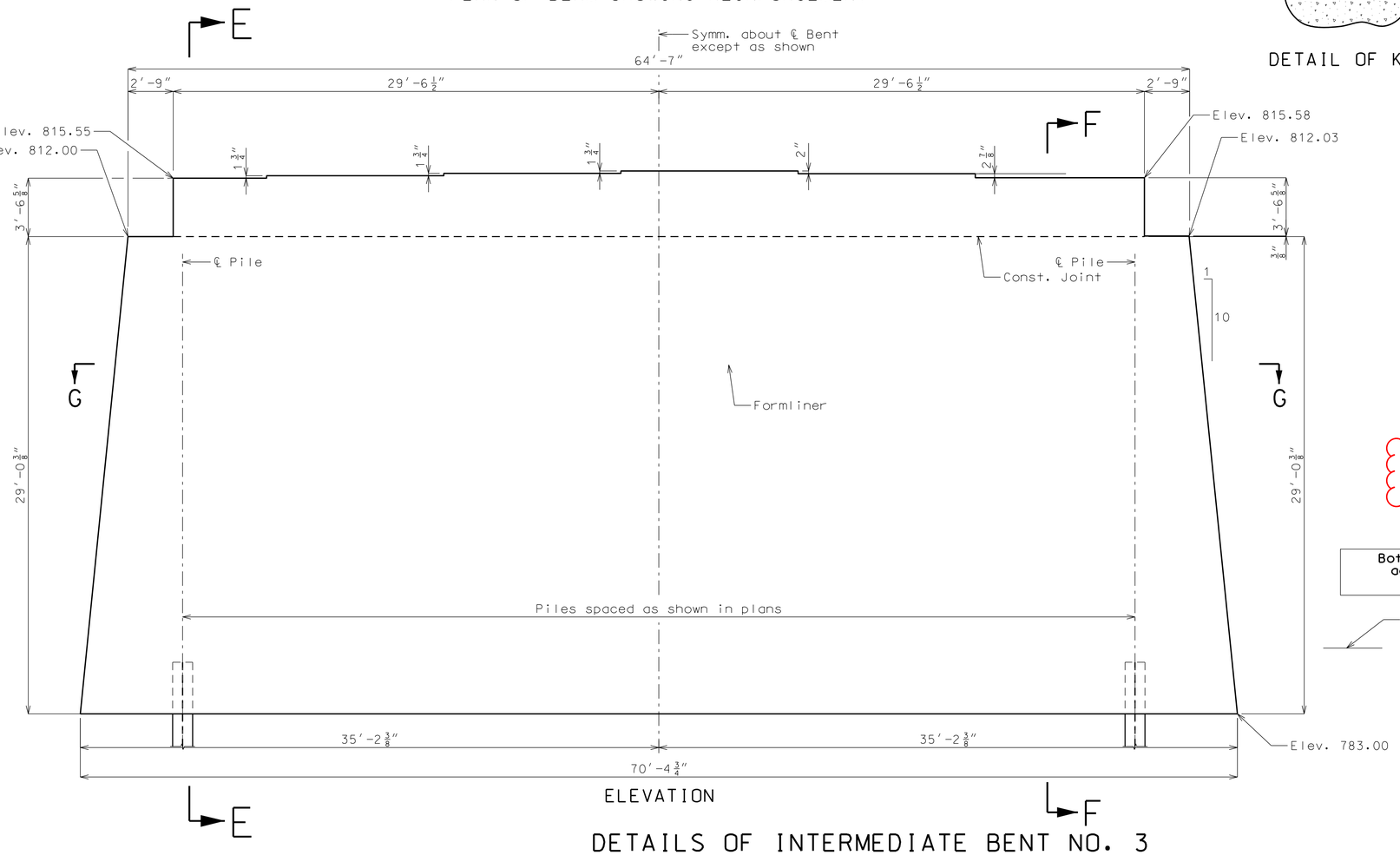
SECTION C-C

(Reinforcment with pile and not under a girder)



SECTION D-D

(Reinforcment with pile and under a girder)



ELEVATION

DETAILS OF INTERMEDIATE BENT NO. 3

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

Same comments as Sheet No. 7

Bottom of pier wall may be adjusted based on scour requirements

Minimum Ground Line Elev. 790.00

Notes:

For Sections E-E, F-F & G-G, see Sheet No. __.

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear pile by at least 1½″.

For Substructure Quantity Table, see Sheet No. __.

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
10	33

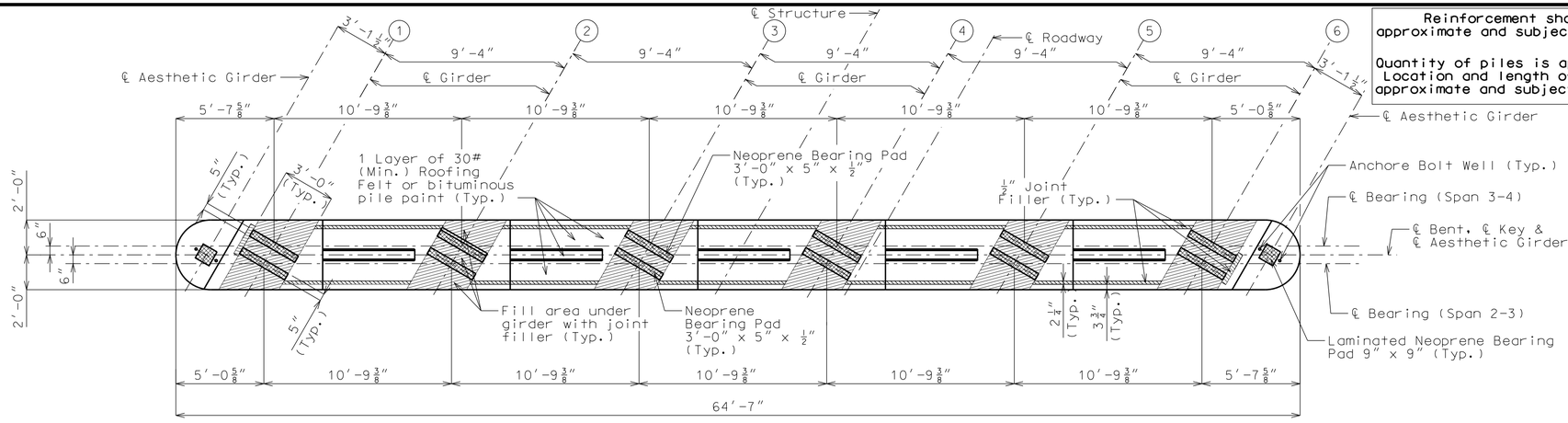
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

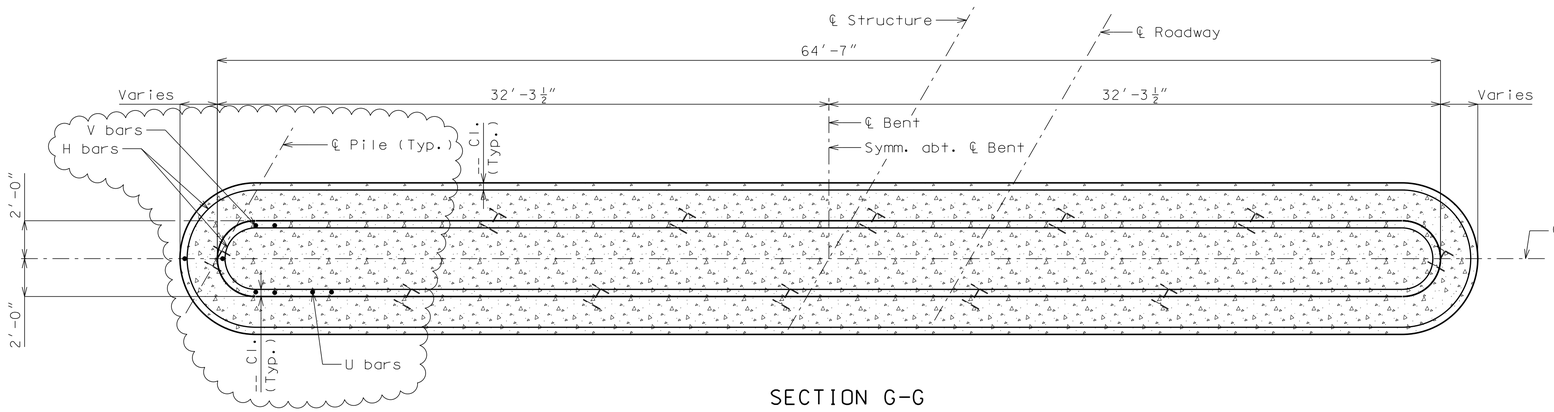
Paragon Star Development

Kansas City, Missouri

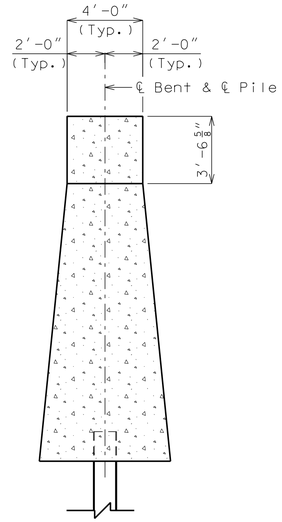
NO.	DATE	REVISIONS	BY	APPROVED



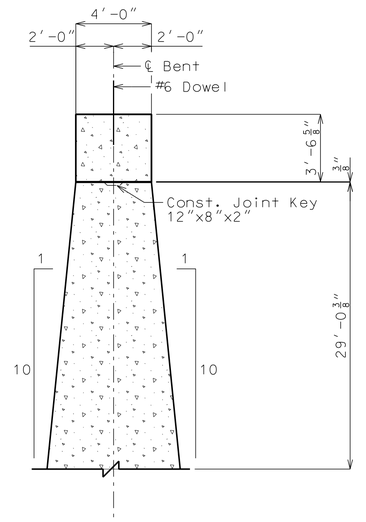
PLAN OF BEAM



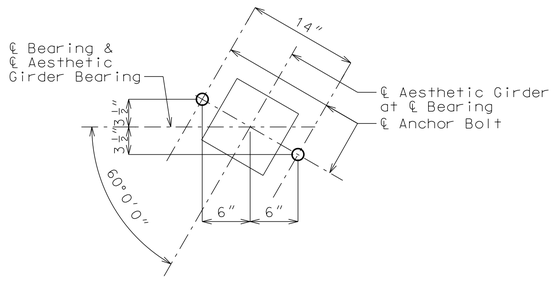
SECTION G-G



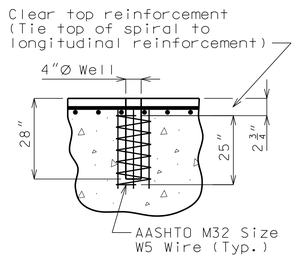
SECTION E-E



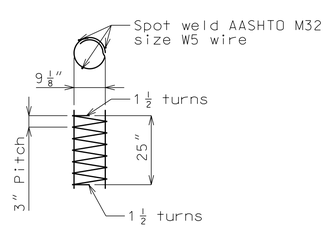
SECTION F-F



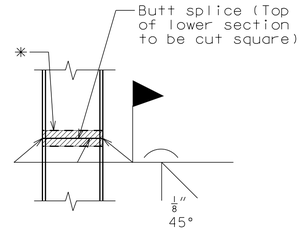
ANCHOR BOLT DETAIL



ANCHOR BOLT WELLS



DETAIL OF SPIRAL REINFORCEMENT



STEEL PILE SPLICE

(if required)

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

Same comments as Sheet No. 8

Notes:

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

For location of Section E-E, F-F & G-G, see Sheet No. __.

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

Reinforcing steel shall be shifted to clear anchor bolt well by at least 1/2 inch.

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

✳ Embed #4-U38 and #4-V30 bars 18" into pile cap. (Min.)

DETAILS OF INTERMEDIATE BENT NO. 3

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	11
TOTAL SHEETS	33

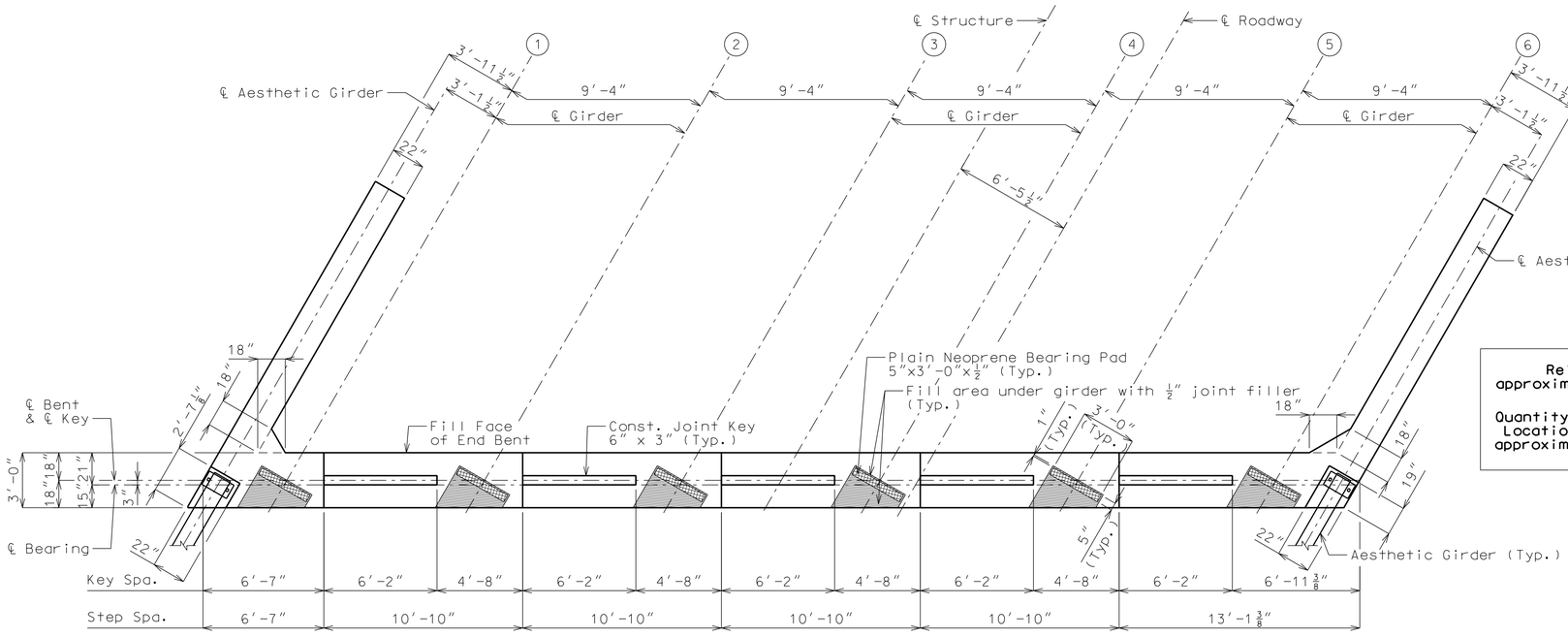
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

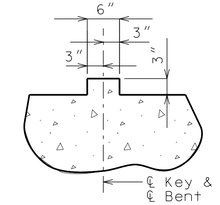
NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF BEAM

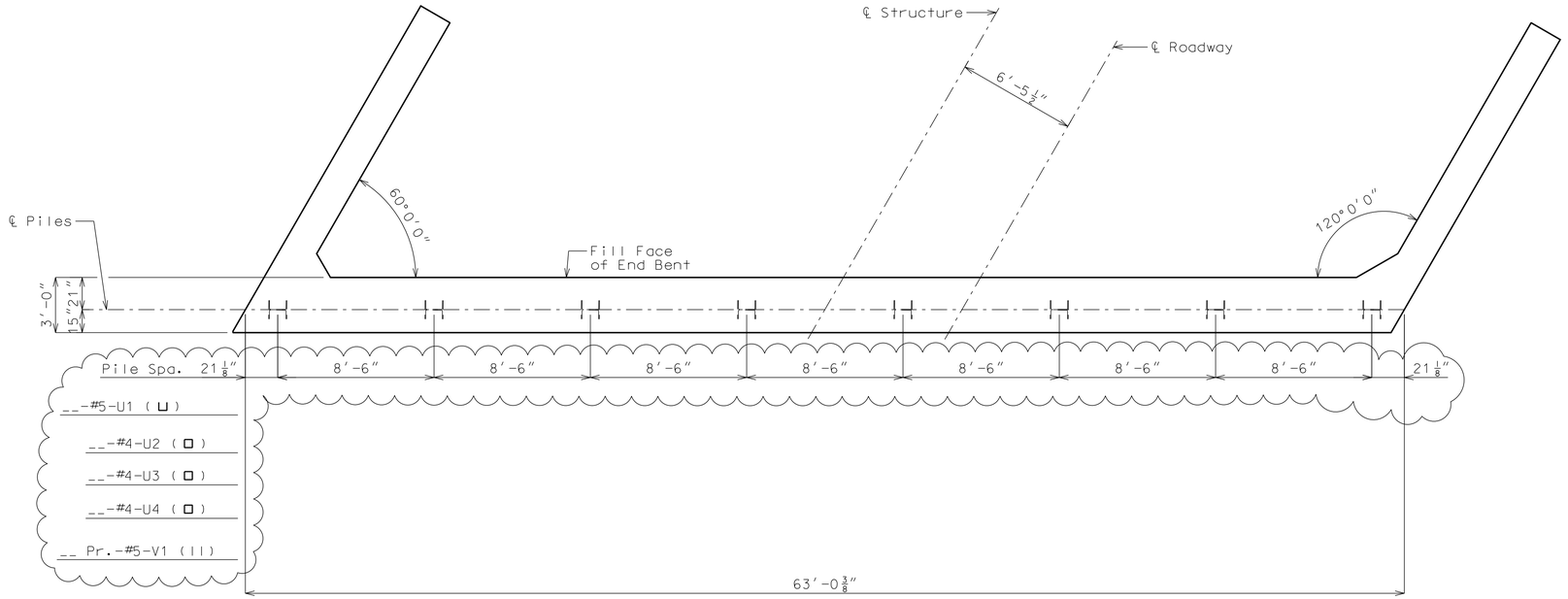
Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

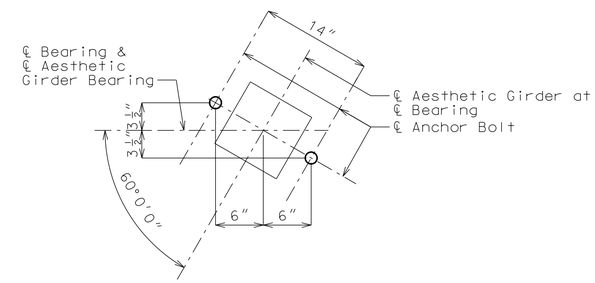


SECTION THRU KEY

Show section thru bearing pad for this end bent



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



ANCHOR BOLT DETAIL

For details of Aesthetic Girder bearings not show see Sheet No. _____

Notes:

For details of End Bent No. 4 not shown, see Sheets No. _ & _.

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

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Roadway.

DETAILS OF END BENT NO. 4

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

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	12
TOTAL SHEETS	33

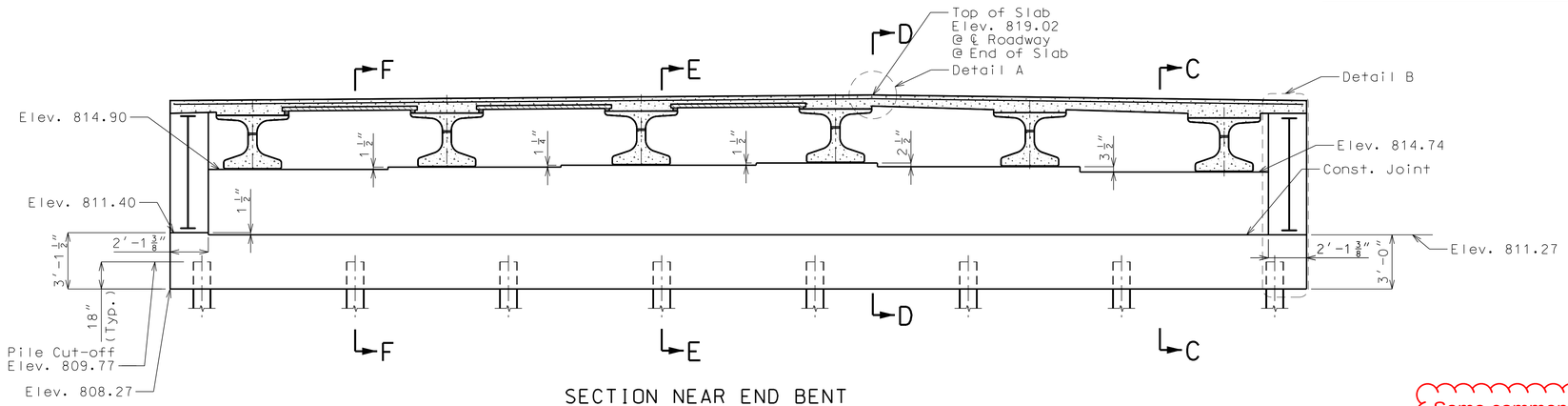
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

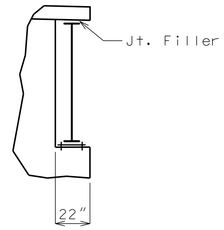
Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



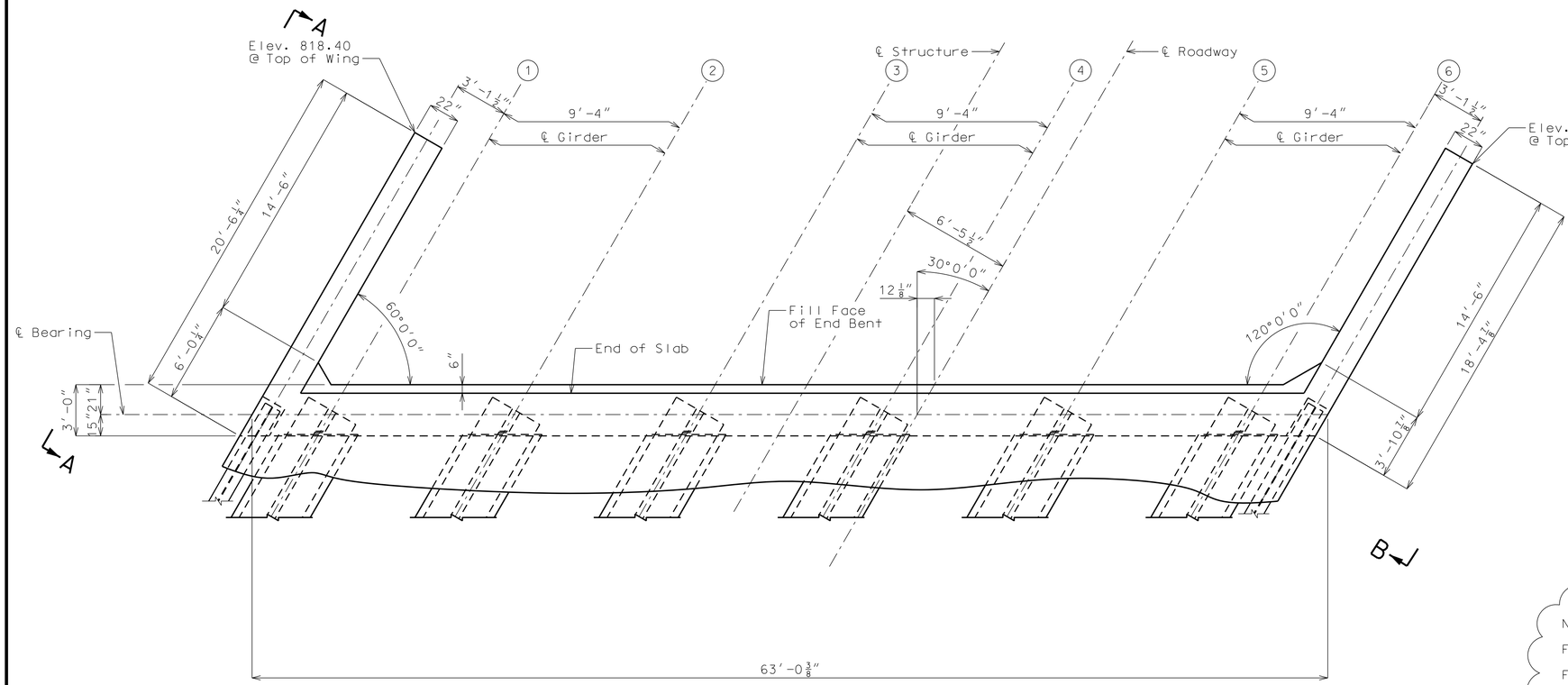
SECTION NEAR END BENT



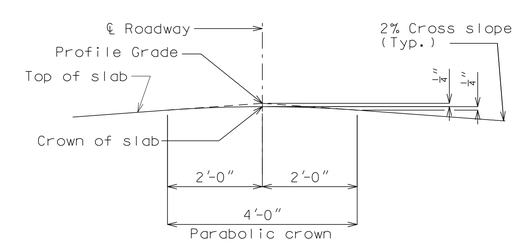
Measured perpendicular to face of wing wall

DETAIL B

Same comments as Sheet No. 4



PART PLAN
(Note: Steps and keys not shown for clarity)



DETAIL A

Notes:

For details of End Bent No. 4 not shown, see Sheets No. _ & _.

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

Reinforcing steel shall be shifted to clear piles. U-bars shall clear piles by at least 1½".

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 (Type D), see Sheets No. __ & __.

The U-bars and Pairs-V bars shall be placed parallel to ℄ Structure.

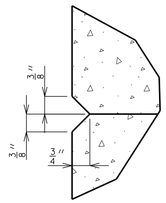
For Substructure Quantity Table, see Sheet No. _.

DETAILS OF END BENT NO. 4

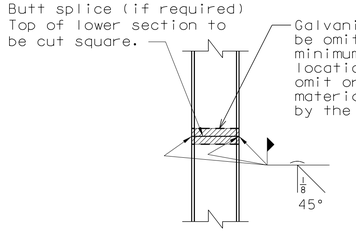
Note: This drawing is not to scale. Follow dimensions.

Reinforcement shown is approximate and subject to change

Quantity of piles is approximate. Location and length of piles is approximate and subject to change



DETAIL G



DETAIL OF STEEL PILE SPLICE

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

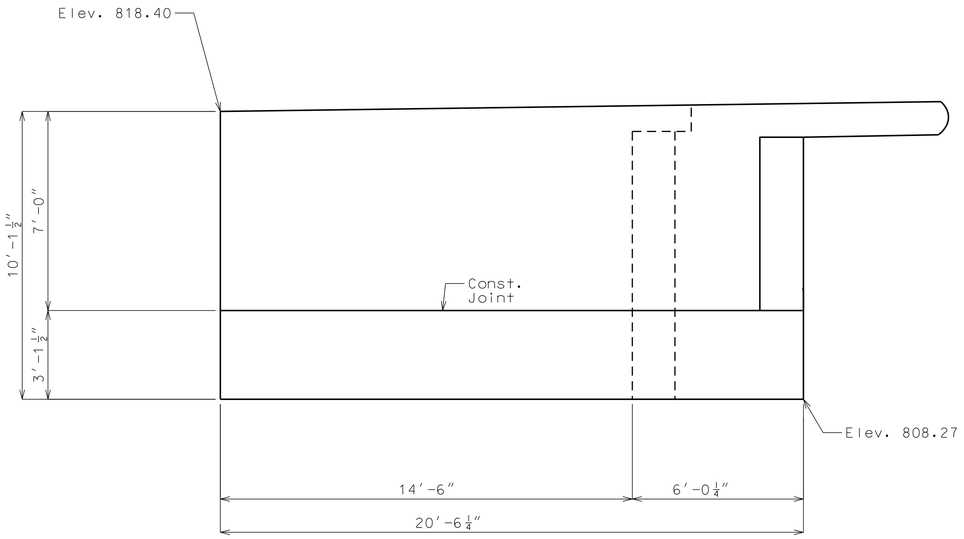
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	13
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

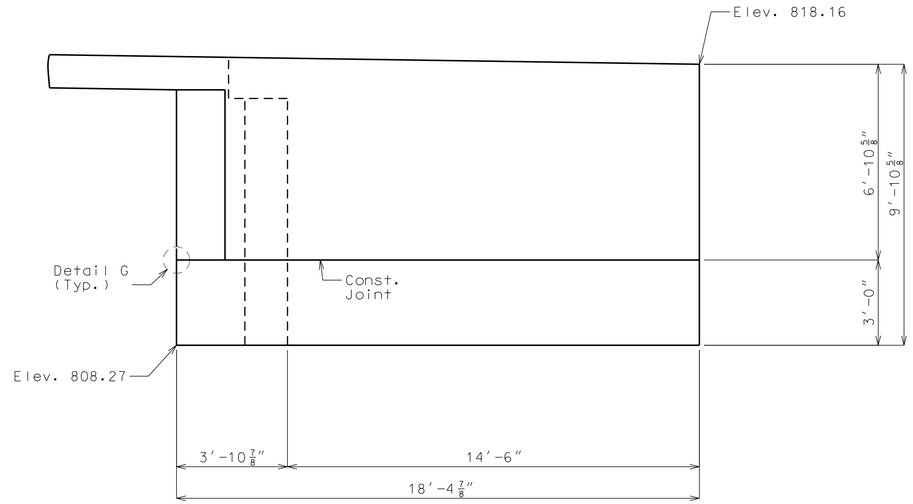
Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

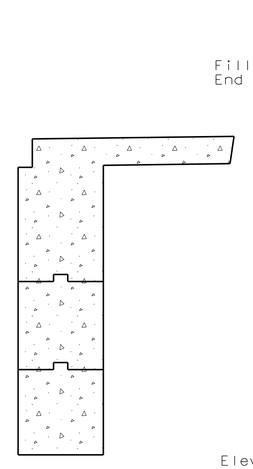


ELEVATION A-A

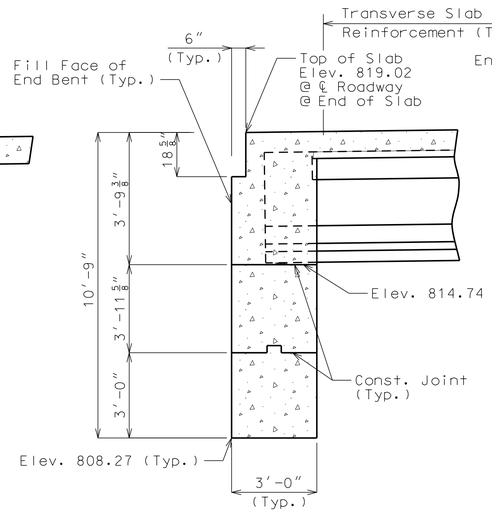
TYPICAL SECTION THRU WING



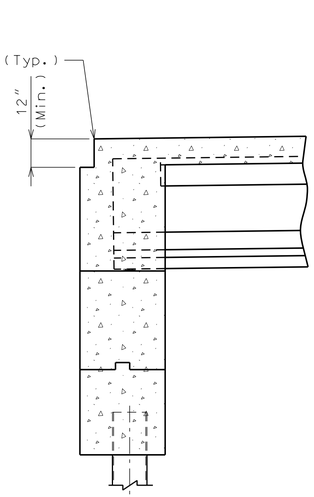
ELEVATION B-B



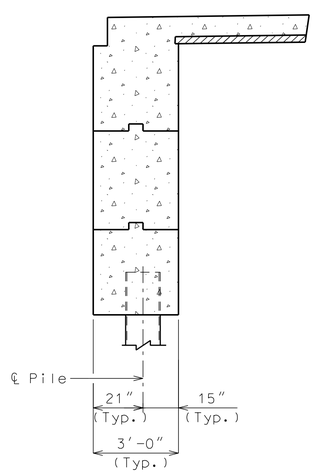
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

Same comments as Sheet No. 5

Notes:

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

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

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

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

For reinforcement of Safety Barrier Curb, See Sheets No. __ & __.

For reinforcement of Pedestrian Curb, see Sheet No. __.

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

DETAILS OF END BENT NO. 4

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	14
TOTAL SHEETS	33

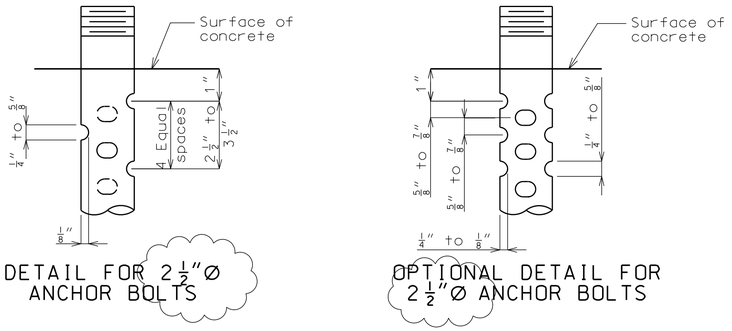
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

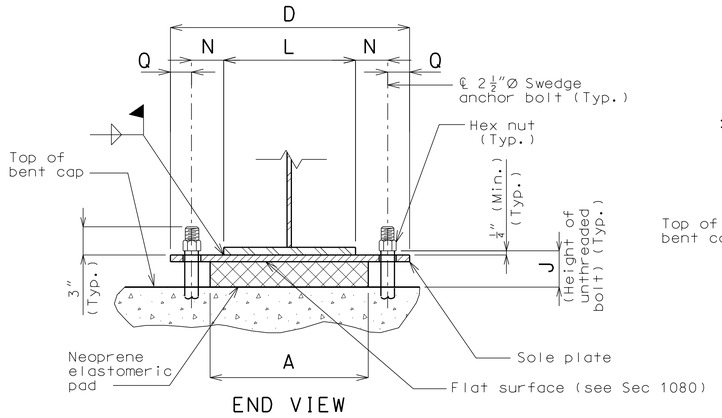
Paragon Star Development

Kansas City, Missouri

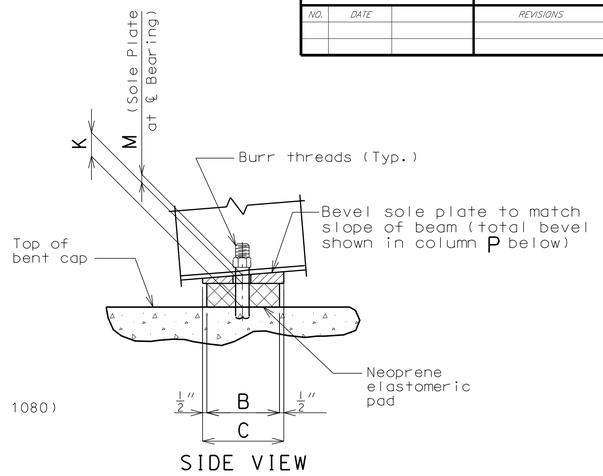
NO.	DATE	REVISIONS	BY	APPROVED



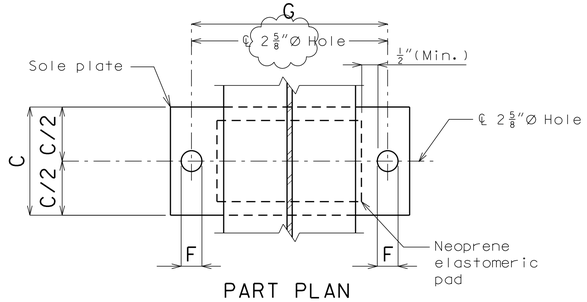
SWEDGE ANCHOR BOLT DETAILS



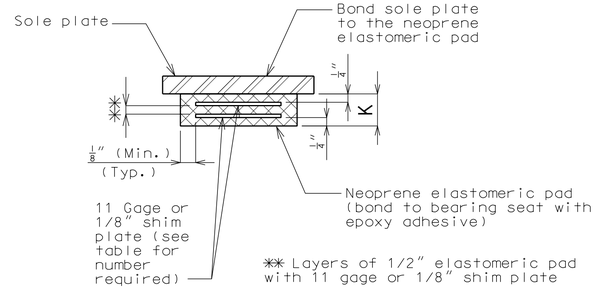
END VIEW



SIDE VIEW



PART PLAN



NEOPRENE ELASTOMERIC PAD

FIXED BEARINGS

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES *	NUMBER REQUIRED
1	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	7	5
2	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"	7	5
3	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"		
4	9"	9"	10"	18 1/2"	2 5/8"	14"	6 1/8"	4 3/8"	10"	1 1/2"	2"	__"	2 1/4"		
														TOTAL BEARINGS	10

* The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor bolts shall be 2 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 25" into the concrete with ASTM A563 Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

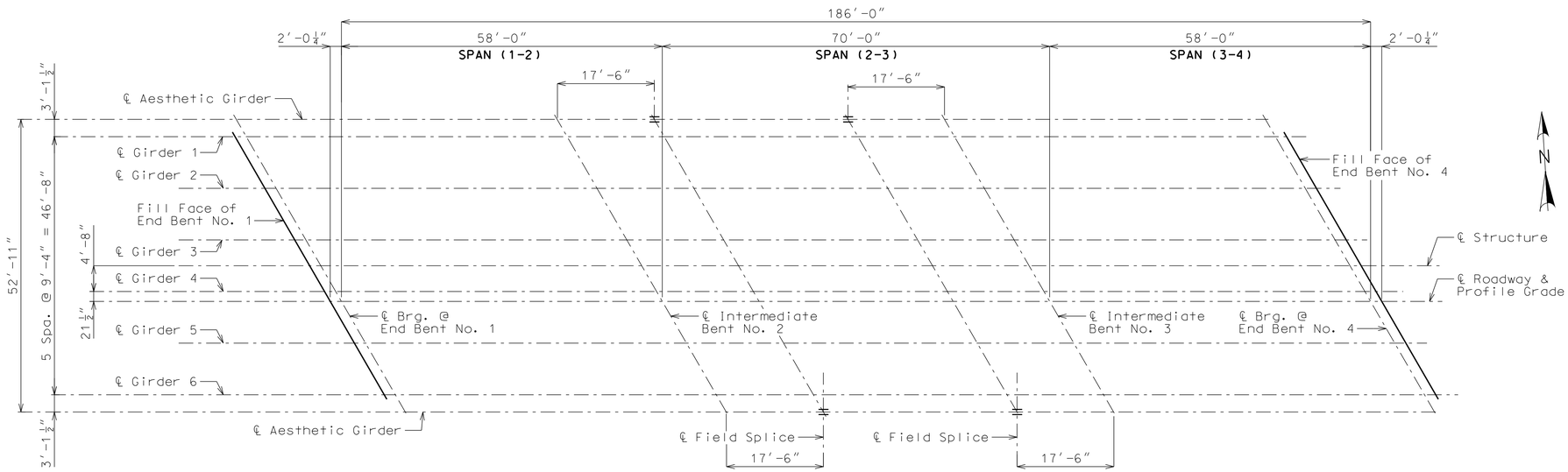
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50W. The welds shall have corrosion resistance and weathering characteristics compatible with the base material.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

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



PLAN OF BEAMS

Show locations of intermediate diaphragms

Show details of steel intermediate diaphragms between concrete girders

Add steel diaphragm notes

FRAMING PLAN

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	15
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
16	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

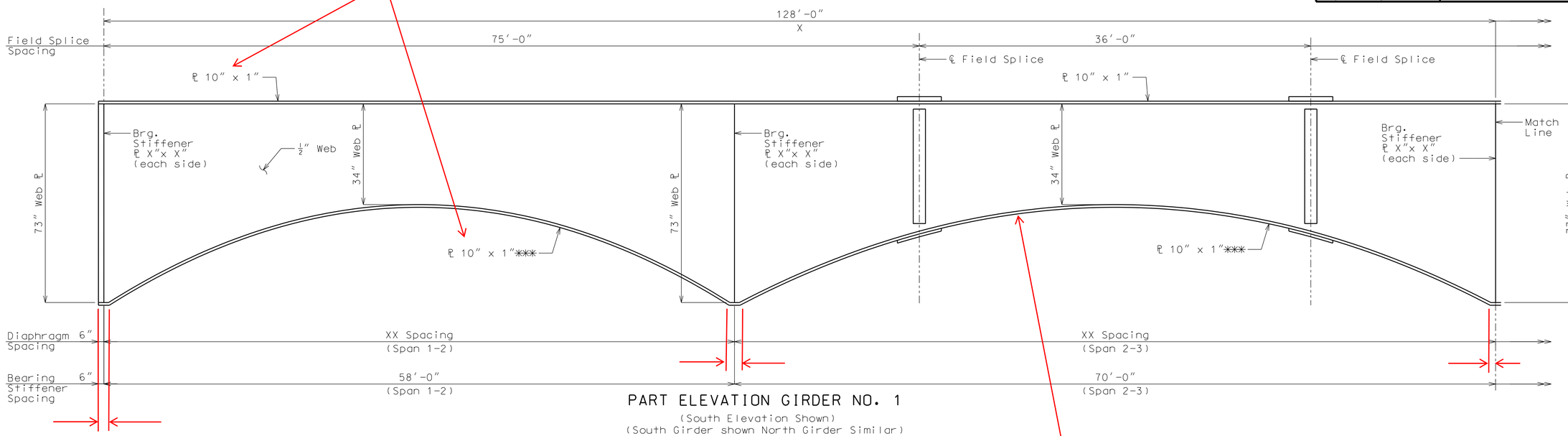
Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

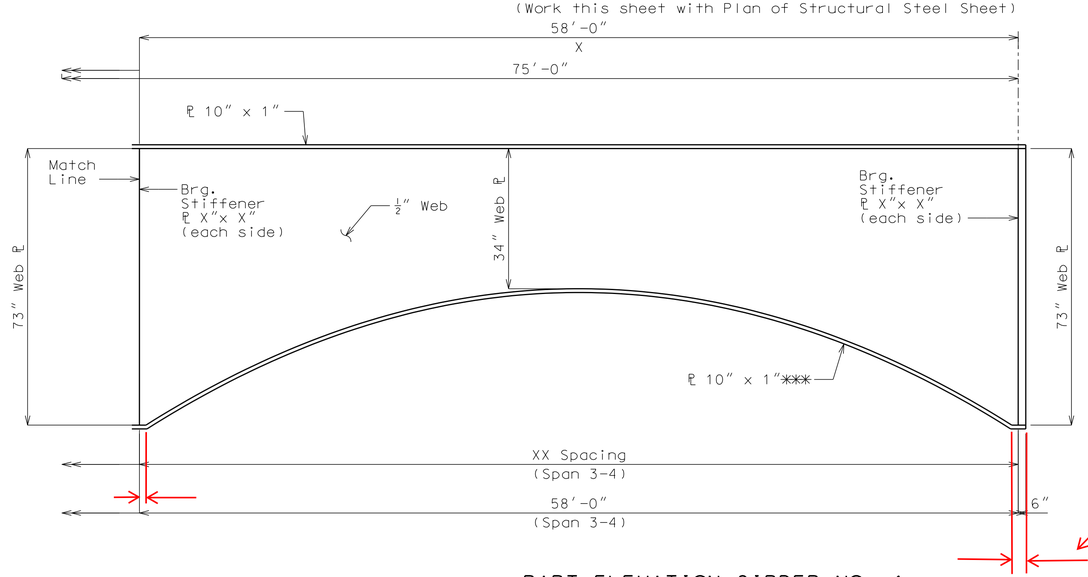
10" flange widths seem narrow for plate girders that has web depths up to 73". Check constructibility of girders for force effects induced from erection.



PART ELEVATION GIRDER NO. 1

(South Elevation Shown)
(South Girder shown North Girder Similar)
(Work this sheet with Plan of Structural Steel Sheet)

Provide parabolic equation for haunching of steel girder for fabrication (typ)



Provide length of "flat" portion of girder bottom flange (typ)

PART ELEVATION GIRDER NO. 1

(South Elevation Shown)
(South Girder shown North Girder Similar)
(Work this sheet with Plan of Structural Steel Sheet)

Diaphragm connection plates on north side of south girder and south side of north girder only.

Diaphragms on north side of south girder and south side of north girder only.

Notes:
Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet No. XX.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

The flange and web splice plates shall be subject to notch toughness requirements, when notch toughness is required for flanges on both sides of splice.

Intermediate web stiffener plate and diaphragm spacing may vary from plan dimensions by a maximum of 3″ for diaphragm to connect to the intermediate web stiffener plate.

Fabricated structural, low alloy steel shall be ASTM A709 Grade 50W, except as noted.

Longitudinal dimensions are horizontal. See Part Longitudinal Sections on Sheet No. XX.

For Details of Bolted Field Splice see Sheet No. XX.

For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet No. XX.

For Plan of Aesthetic Girder Steel, see Sheet No. XX.

AESTHETIC STEEL GIRDER ELEVATION

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

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

(+) indicates prestressing strand.

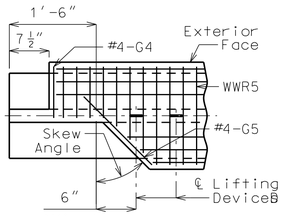
703.08 kips (16 strands x 202.5 ksi x 0.217 in²)

Use 16 strands with an initial prestress force of ~~202.5 kips~~.

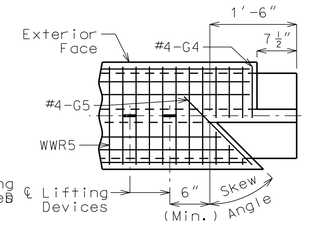
Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.
Fabricator shall be responsible for location and design of lifting devices.

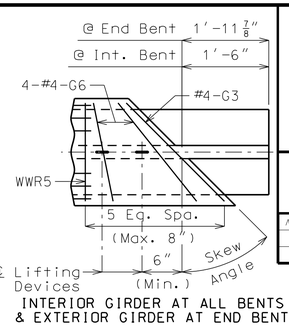
✳ Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a 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.



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





INTERIOR GIRDER AT ALL BENTS
& EXTERIOR GIRDER AT END BENT

TOP FLANGE BLOCKOUT

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

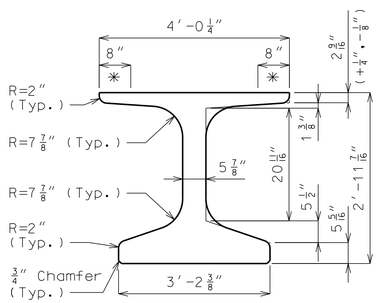
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	17
TOTAL SHEETS	33

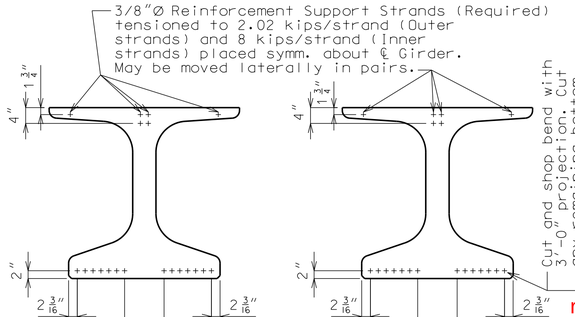
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

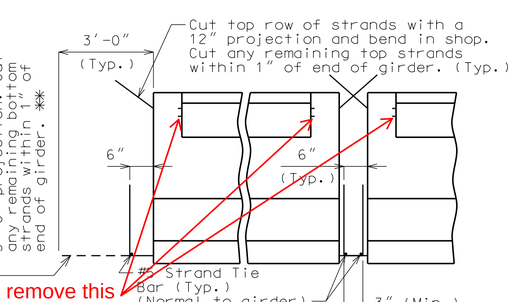
NO.	DATE	REVISIONS	BY	APPROVED



DIMENSIONS



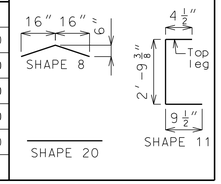
STRAND ARRANGEMENTS



STRAND DETAILS AT GIRDER ENDS

BILL OF REINFORCING STEEL - EACH GIRDER			
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
86	3 G1	2'-10"	8
2	4 G3	3'-1 1/8"	20
2	4 G3	32'-11 1/8"	20
2	4 G5	42'-5 7/16"	20
2	4 G5	44'-5 7/16"	20
4	4 G6	Varies	20

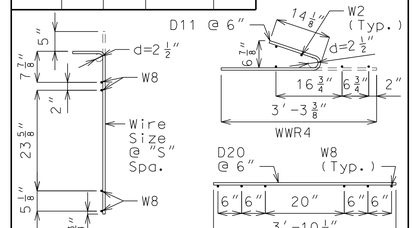
BENDING DIAGRAMS

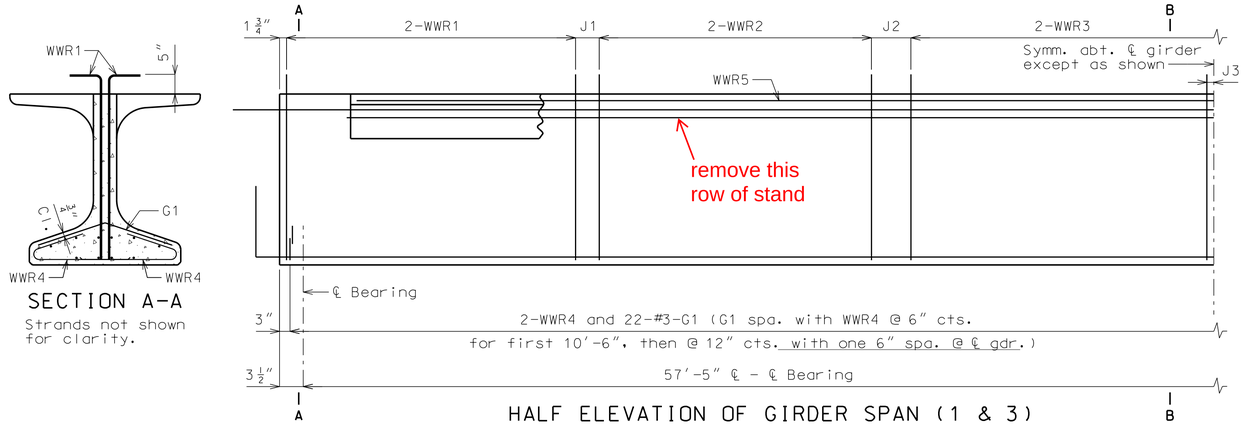


G4 and G5 not required for interior girders. Half no. of G3, G4, G5 and G6 not required for ext. girders of end spans.

WELDED WIRE REINFORCEMENT - EACH GIRDER				
MARK	WIRE SIZE	S	L	J
WWR1	D31	4"	4'-0"	4"
WWR2	D31	8"	8'-0"	4 1/4"
WWR3	D31	12"	16'-0"	2"

BENDING DIAGRAMS



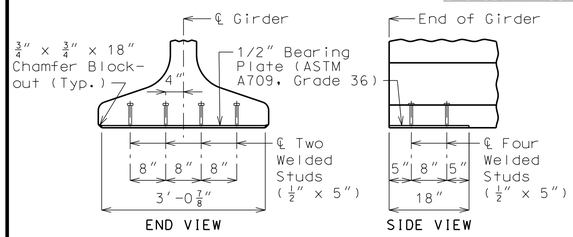


SECTION A-A
Strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

HALF ELEVATION OF GIRDER SPAN (1 & 3)

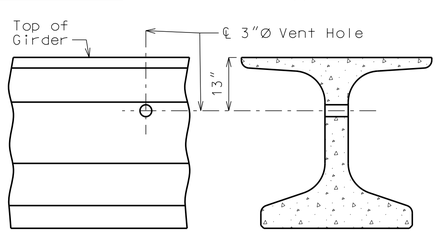
Exterior and interior girders are the same, except for coil ties, and top flange blockout and coil inserts for slab drains. Reinforcement support strands not shown for clarity.



BEARING PLATE DETAILS

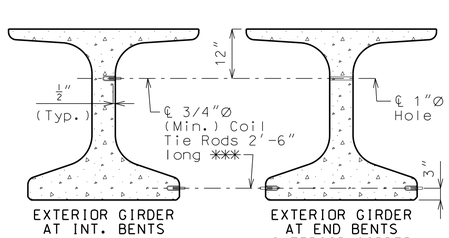
Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.



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 and steel interm. diaphragm bolt connections by 6" minimum.

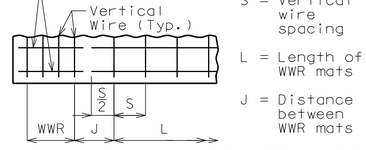


DETAILS OF COIL TIES

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 = _'-_".

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



WELDED WIRE PLACEMENT

General Notes:

Reinforcing Steel:

All dimensions are out to out.

Are alternate bar reinforcement options going to be provided for girder fabrication

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:

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

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. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

For location of coil inserts at slab drains, see Sheet No. __.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. __ and __.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. __.

For Girder Camber Diagram, see Sheet No. __.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

Concrete for prestressed girders shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

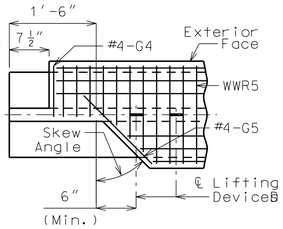
(+) indicates prestressing strand.

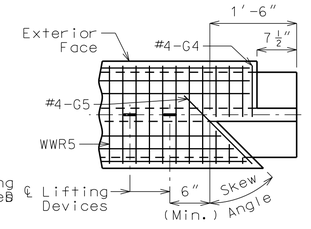
18 → ~~16~~ Use ~~16~~ strands with an initial prestress force of ~~202.5 kips~~. 790.97 kips (16 strands x 202.5 ksi x 0.217 in²)

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.

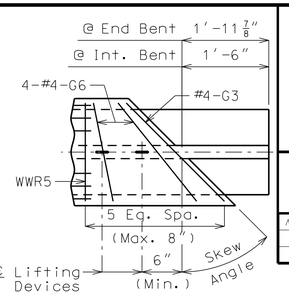
✳ Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a 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.





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



INTERIOR GIRDER AT ALL BENTS
& EXTERIOR GIRDER AT END BENT

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

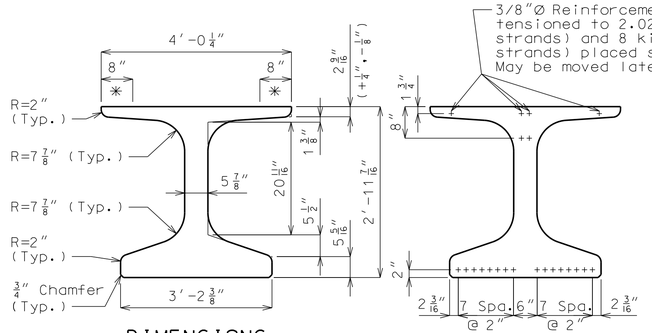
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	18
TOTAL SHEETS	33

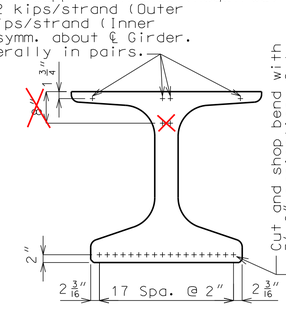
Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



DIMENSIONS

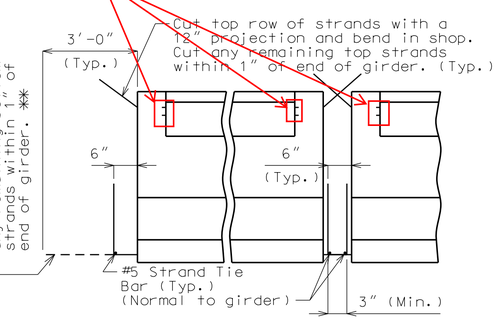
End of Girder
~~℄ GIRDER~~



CL Girder
~~END OF GIRDER~~

STRAND ARRANGEMENTS

remove these strands

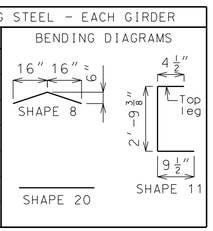


END BENT INTERMEDIATE BENT

STRAND DETAILS AT GIRDER ENDS

TOP FLANGE BLOCKOUT

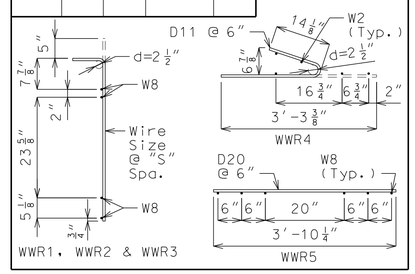
BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAMS
102	3 G1	2'-10"	8	
2	4 G3	3'-1 1/8"	20	
2	4 G4	2'-1"	20	
2	4 G5	4'-5 7/16"	20	
4	4 G6	Varies	20	

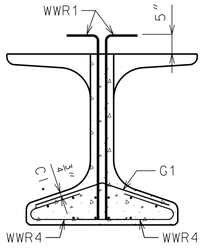


G4 and G5 not required for interior girders. G3 and G6 not required for exterior girders of intermediate spans.

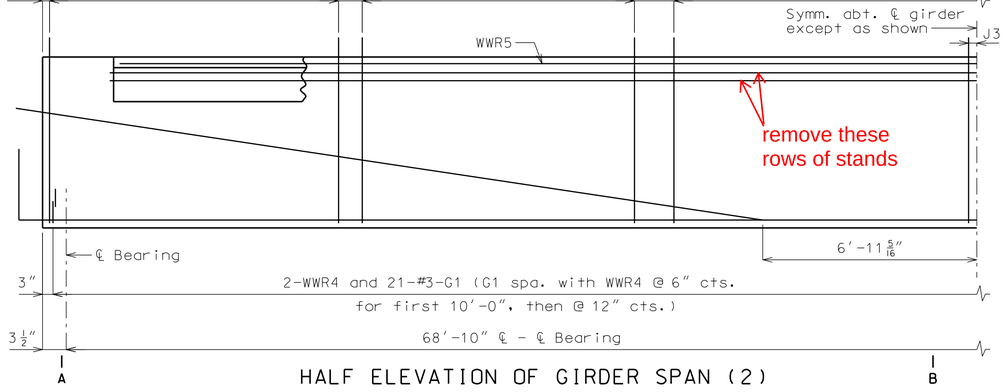
WELDED WIRE REINFORCEMENT - EACH GIRDER					
MARK	WIRE SIZE	S	L	J	
WWR1	D31	4"	6'-0"	4"	
WWR2	D31	8"	6'-0"	8 3/4"	
WWR3	D31	12"	21'-0"	6"	

BENDING DIAGRAMS

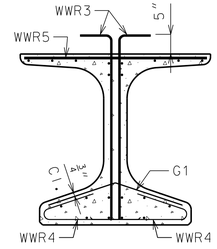




SECTION A-A
Strands not shown for clarity.

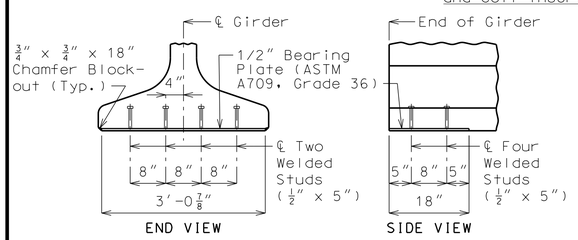


HALF ELEVATION OF GIRDER SPAN (2)



SECTION B-B
Strands not shown for clarity.

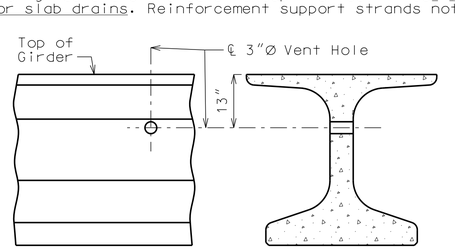
Exterior and interior girders are the same, except for coil ties, and top flange blockout and coil inserts for slab drains. Reinforcement support strands not shown for clarity.



BEARING PLATE DETAILS

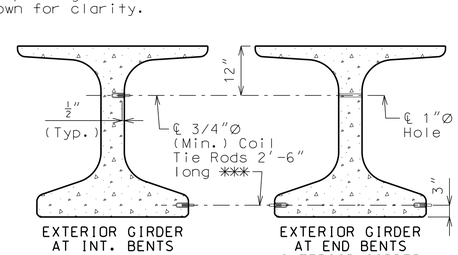
Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.



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 and steel interm. diaphragm bolt connections by 6" minimum.

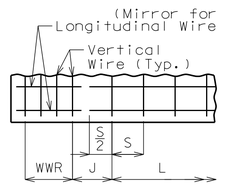


DETAILS OF COIL TIES

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 = _'-_".

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



S = Vertical wire spacing

L = Length of WWR mats

J = Distance between WWR mats

WELDED WIRE PLACEMENT

Are alternate bar reinforcement options going to be provided for girder fabrication

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:

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

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. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

For location of coil inserts at slab drains, see Sheet No. __.

For location of coil ties and #6 bars at concrete bent diaphragms, see Sheets No. __ and __.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. __.

For Girder Camber Diagram, see Sheet No. __.

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

Reinforcement shown is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	19
TOTAL SHEETS	33

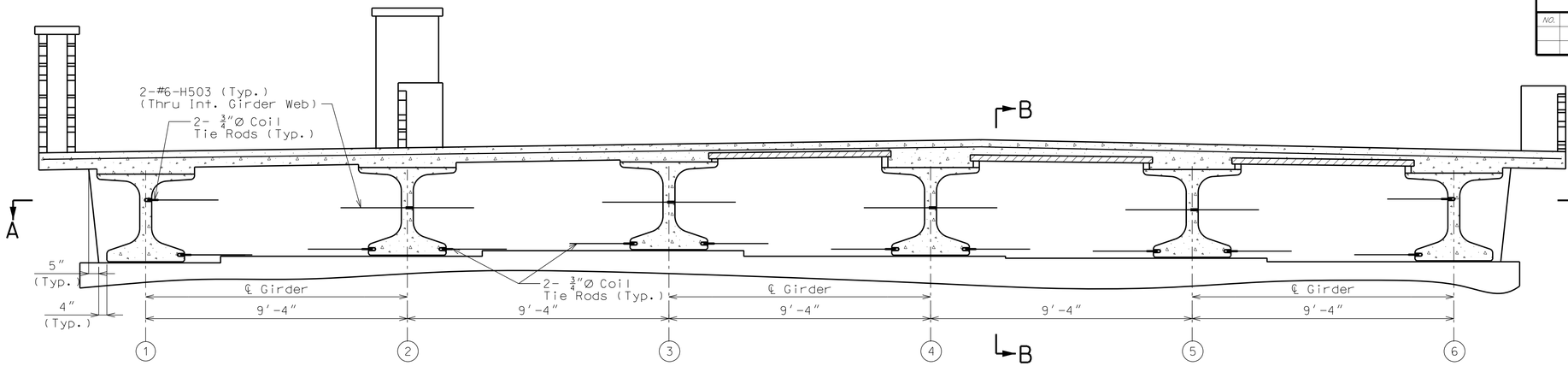
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

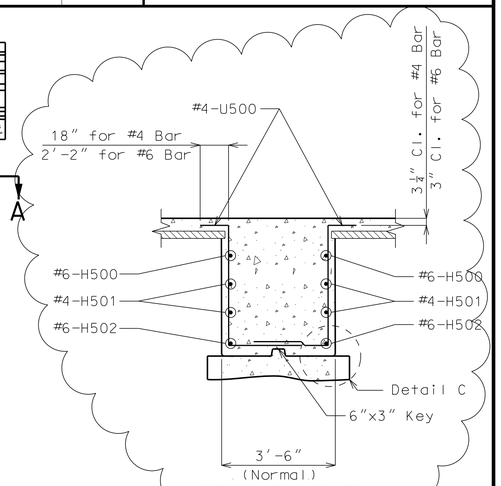
Paragon Star Development

Kansas City, Missouri

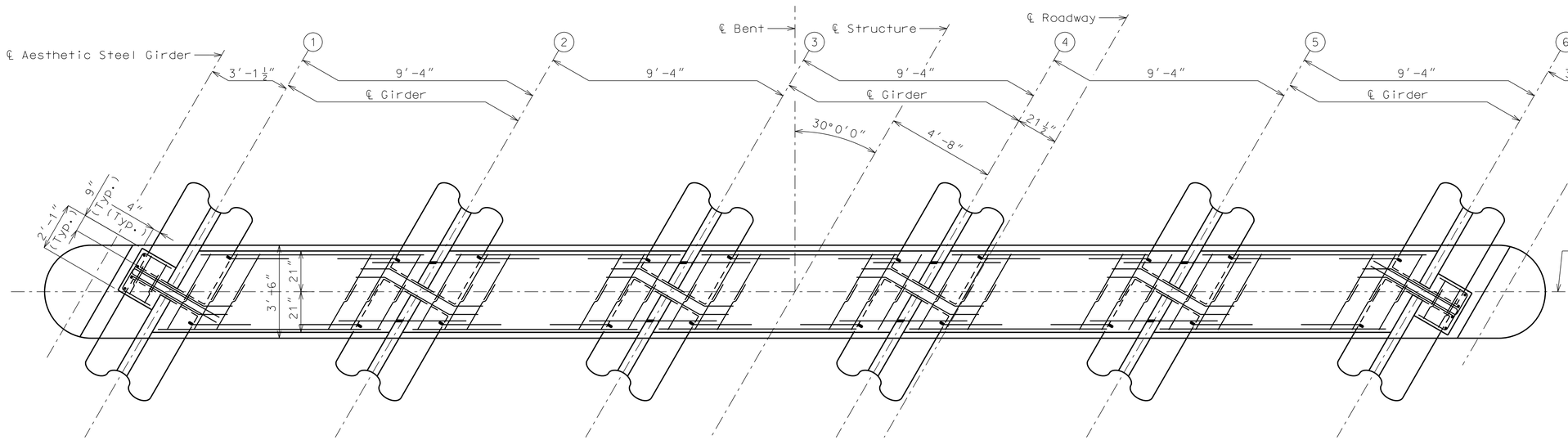
NO.	DATE	REVISIONS	BY	APPROVED



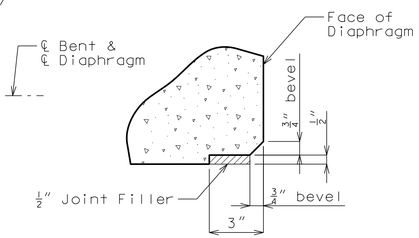
SECTION NEAR INTERMEDIATE BENT



SECTION B-B



SECTION A-A



DETAIL C

Notes:

Diaphragms at Intermediate Bents shall be built vertically.

All U-bars in the diaphragm are to be placed parallel to ℄ Roadway.

For locations of Strand Tie Bars, see Sheets No. 14 - 19.

For locations and details of Coil Tie Rods, see Sheets No. 14 - 19.

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

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	20
TOTAL SHEETS	33

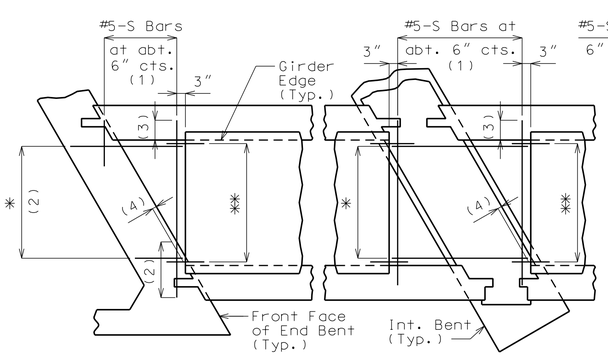
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

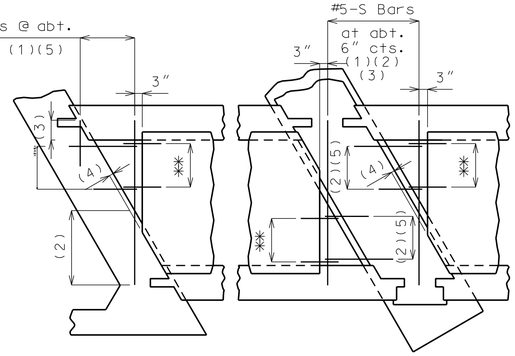
Bridge Plans

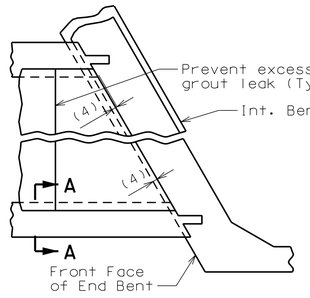
Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



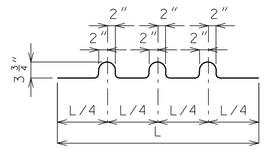




SQUARED END PANELS OR TRUNCATED END PANELS

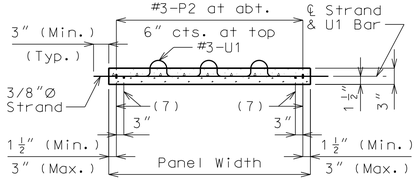
PLAN SHOWING PANELS PLACEMENT

* #5-S Bars at abt. 9" cts. (1)
** #3-P1 at 12" cts. (End panels only)

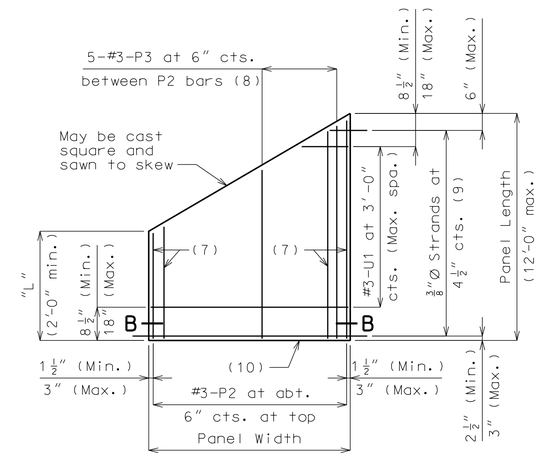


BENDING DIAGRAM FOR U1 BAR

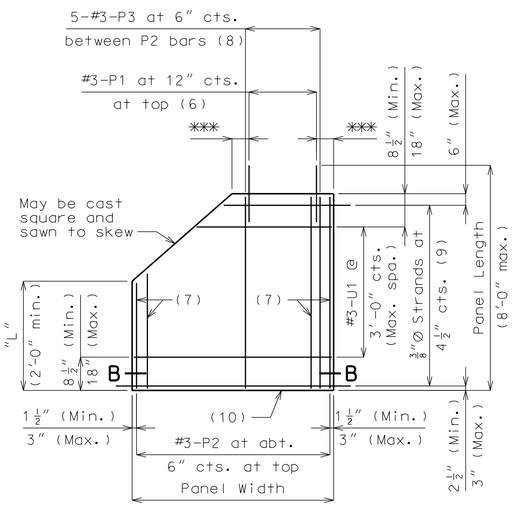
U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.



SECTION B-B

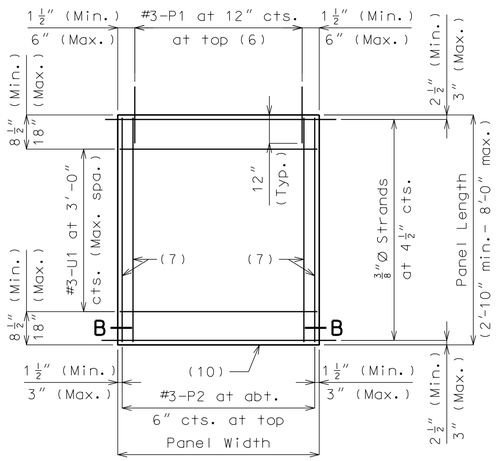


PLAN OF OPTIONAL SKEWED END PANEL



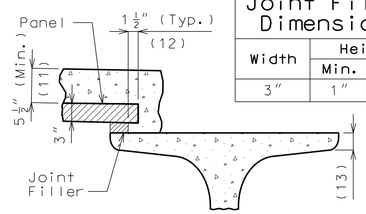
PLAN OF OPTIONAL TRUNCATED END PANEL

*** 3" (Min.), 6" (Max.)



PLAN OF SQUARED PANEL

SKEWED END PANELS



SECTION A-A

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"

Reference Notes:

Plan of Panels Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

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.

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
- #3-P2 bars at 16 inches.
- WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. XX for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

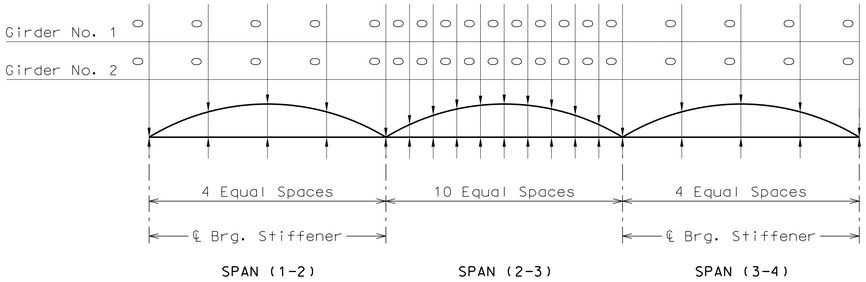
The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

DETAILS OF PRESTRESSED PANELS

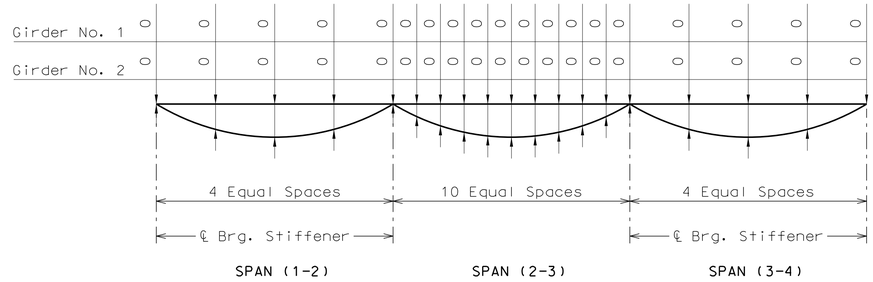
Note: This drawing is not to scale. Follow dimensions.



CAMBER DIAGRAM

Note:
Camber includes allowance for vertical curve and for dead load deflection due to concrete slab, barrier curbs, pedestrian curb and structural steel.

Longitudinal dimensions are measured horizontally.



"+" Downward from chord
"−" Upward from chord

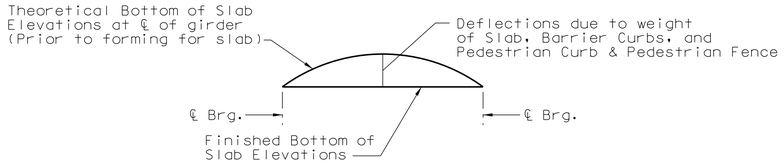
DEAD LOAD DEFLECTION

Note:

15% of dead load deflection is due to the weight of structural steel.

Dead Load deflection includes weight of structural steel, concrete slab, barrier curbs, and pedestrian curb & pedestrian fence.

GIRDER NO.	SPAN LENGTHS (℄ Brg.- ℄ Brg.)		
	Span (1-2)	Span (2-3)	Span (3-4)
1	__'-____"	__'-____"	__'-____"
2	__'-____"	__'-____"	__'-____"



TYPICAL SLAB ELEVATIONS DIAGRAM

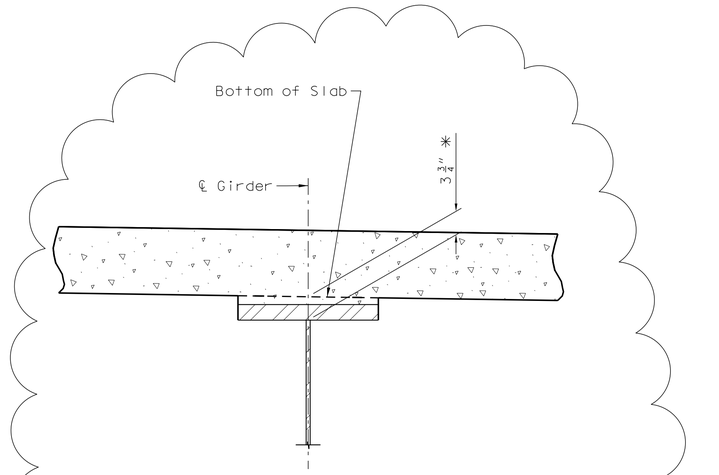
**Theoretical Bottom of Slab Elevations at ℄ of Girder (Prior to forming for slab)

Span 1 (℄ Brg.-℄ Brg.)					
Gdr. No.	℄ Brg Bent No. 1	.25	.50	.75	℄ Brg Bent No. 2
1	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__

Span 2 (℄ Brg.-℄ Brg.)											
Gdr. No.	℄ Brg Bent No. 2	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg Bent No. 3
1	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__	___.__

Span 3 (℄ Brg.-℄ Brg.)					
Gdr. No.	℄ Brg Bent No. 3	.25	.50	.75	℄ Brg Bent No. 4
1	___.__	___.__	___.__	___.__	___.__
2	___.__	___.__	___.__	___.__	___.__

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of Slab, Barrier Curbs, and Pedestrian Curb & Pedestrian Fence.



THEORETICAL SLAB HAUNCH

Notes:

* Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more than or less than the % of D.L. deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

~~Increase the haunch by 1/2 inch + more than what is required to make one size shear connector work for both CIP and SIP options.~~

Shear connectors are not being used. Remove note.

CAMBER, HAUNCHING, & ELEVATIONS (STEEL)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

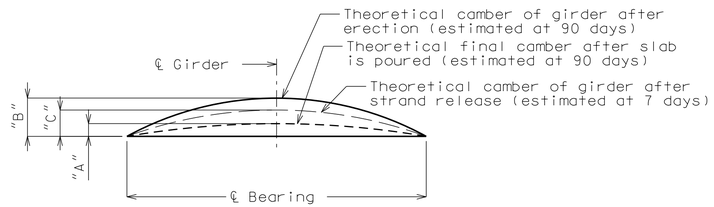
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	21
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

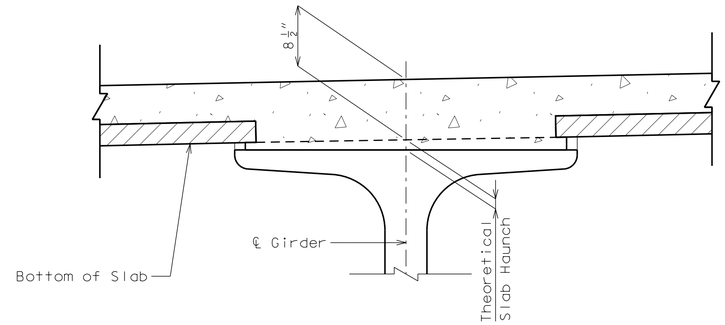


	Span (1-2)			Span (2-3)			Span (3-4)		
	"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"
Ext. Beam	__"	__"	__"	__"	__"	__"	__"	__"	__"
Int. Beam	__"			__"			__"		

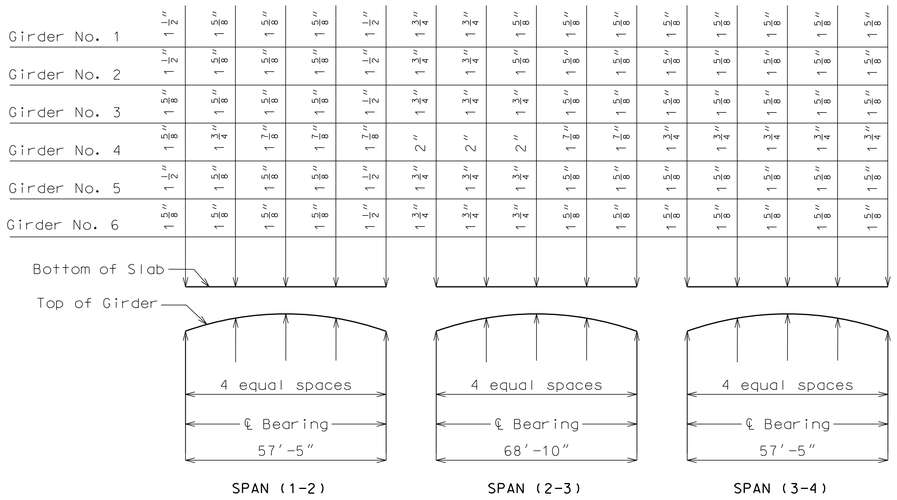
GIRDER CAMBER DIAGRAM

Conversion factors for girder camber (Estimated at 90 days)
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.

TYPICAL SLAB ELEVATIONS DIAGRAM



THEORETICAL SLAB HAUNCH



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU Girder.

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

	Span (1-2) (57'-5" ℄ brg - ℄ brg.)					Span (2-3) (68'-10" ℄ brg - ℄ brg.)					Span (3-4) (57'-5" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.	℄ brg.	0.25	0.50	0.75	℄ brg.	℄ brg.	.25	.50	.75	℄ brg.
Girder No. 1	769.64	769.84	770.03	770.19	770.33	770.34	770.59	770.88	770.99	771.05	771.06	771.20	771.28	771.31	771.28
Girder No. 2	769.73	769.94	770.12	770.29	770.43	770.45	770.71	771.00	771.11	771.18	771.19	771.34	771.43	771.46	771.44
Girder No. 3	769.70	769.91	770.10	770.26	770.41	770.43	770.69	771.00	771.12	771.19	771.20	771.36	771.46	771.49	771.50
Girder No. 4	769.45	769.67	769.86	770.03	770.19	770.21	770.48	770.79	770.91	771.00	771.01	771.17	771.27	771.32	771.35
Girder No. 5	769.21	769.43	769.63	769.80	769.96	769.98	770.25	770.57	770.70	770.80	770.81	770.97	771.09	771.14	771.17
Girder No. 6	769.45	769.67	769.86	770.03	770.19	770.21	770.48	770.79	770.91	771.00	771.01	771.17	771.27	771.32	771.35

Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.

SLAB DETAILS

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

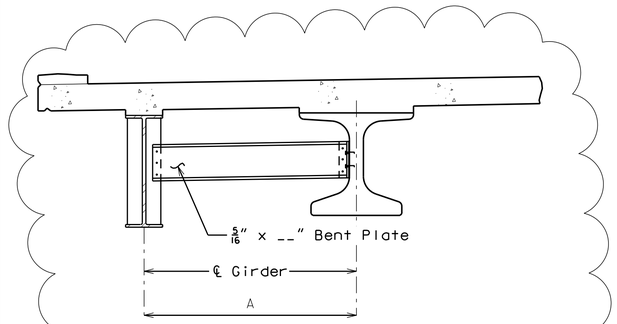
GBA
architects
engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	22
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

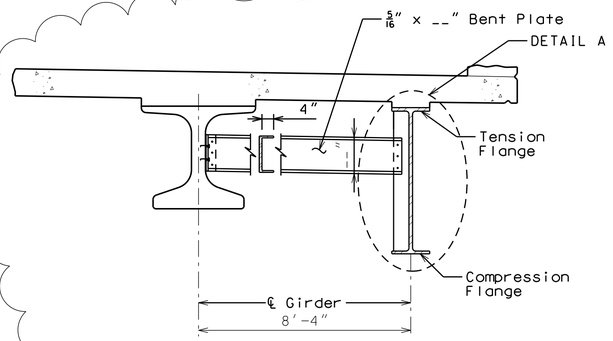
NO.	DATE	REVISIONS	BY	APPROVED



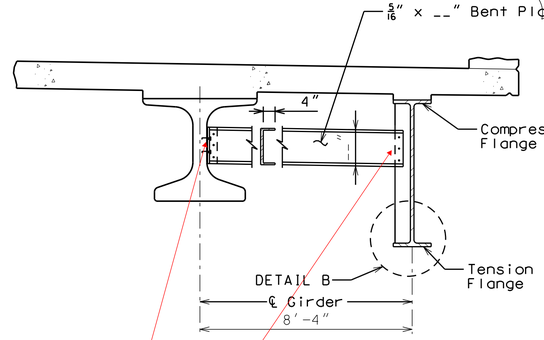
TYPICAL PART SECTION SHOWING
INT. BENT DIAPHRAGMS

Note: Slope diaphragms at intermediate bents.

INT. BENT DIAPHRAM DATA	
INT. BENT DIAPHRAM	DIM. A
BENT 2	
GIRDER 1-2	10'-11 5/8"
GIRDER 2-3	10'-10 1/2"
GIRDER 3-4	10'-9 7/16"
GIRDER 4-5	10'-8 1/2"
BENT 3	
GIRDER 1-2	10'-11 5/8"
GIRDER 2-3	10'-10 1/2"
GIRDER 3-4	10'-9 7/16"
GIRDER 4-5	10'-8 1/2"



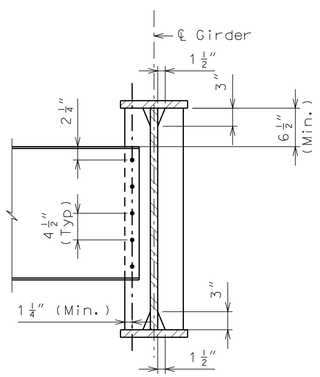
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION



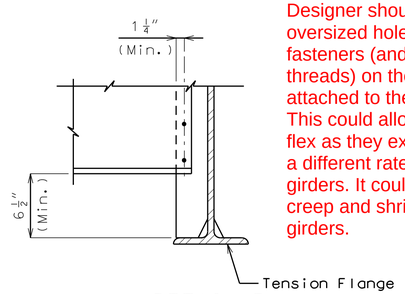
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

Will the girders have intermediate diaphragms/connection plates? Not shown in girder details.

Designer should consider using oversized holes with snug tight fasteners (and double nut or burr threads) on the cross frames attached to the concrete girders. This could allow the steel girders to flex as they expand and contract at a different rate versus the concrete girders. It could also allow for the creep and shrinkage of the concrete girders.

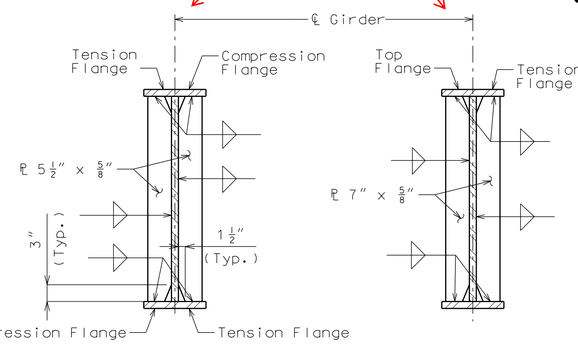


DETAIL A



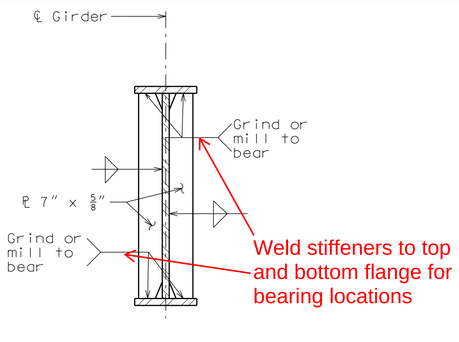
DETAIL B

Make sure flange stress ranges meet the infinite life fatigue threshold for C' detail (12 ksi) if welding to tension flanges



INTERMEDIATE DIAPHRAGM
CONNECTION PLATE &
INTERMEDIATE WEB STIFFENERS

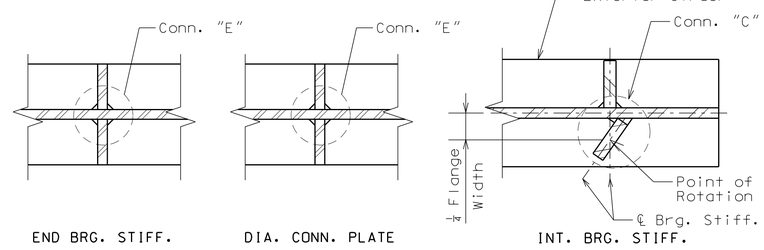
INTERMEDIATE BENT
BEARING STIFFENER



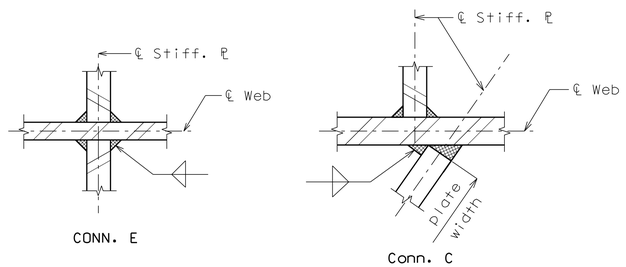
END BENT BEARING
STIFFENER

WELDING DETAILS

Typical for all intermediate web stiffeners, intermediate diaphragm connection plates, and bearing stiffeners.



END BRG. STIFF. DIA. CONN. PLATE INT. BRG. STIFF.



CONN. E Conn. C

TYPICAL LOCATION DETAILS

Notes:

All structural steel for diaphragms shall conform to the requirements of ASTM A709 Grade 50W.

All bolts shall be 3/4 inch high strength steel bolts with 13/16 inch Ø holes.

For locations of diaphragms, see Girder Elevation Sheets No. 17-21.

For Structural Steel Notes, see Plan of Structural Steel Sheet No. 16.

STEEL DIAPHRAGM DETAILS

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

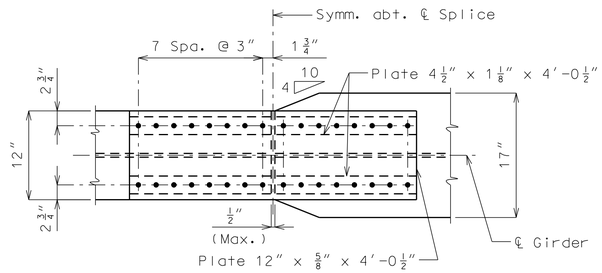
GBA architects engineers
9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
www.gbateam.com

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	23
TOTAL SHEETS	33

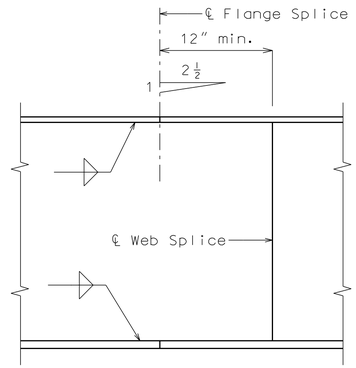
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED



PLAN OF TOP FLANGE SPLICE PLATE



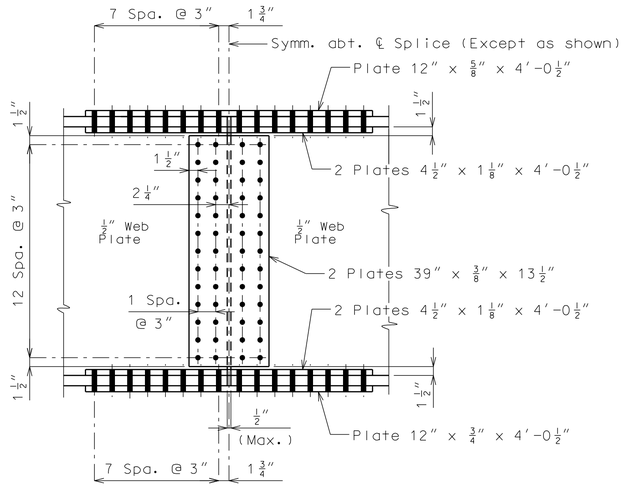
ELEVATION

WELDED SHOP WEB AND FLANGE SPLICE

Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.

Splice detail is approximate and subject to change

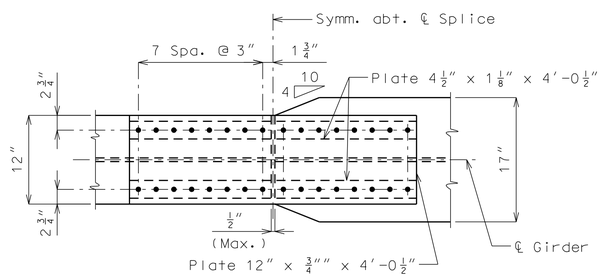
This will be reviewed with next submittal



DETAIL OF BOLTED FIELD SPLICE

Use 7/8"Ø high strength bolts with 15/16"Ø holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.



PLAN OF BOTTOM FLANGE SPLICE PLATE

SPLICE PLATE DETAILS OF AESTHETIC STEEL GIRDER

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	24
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans
Paragon Star Development
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
25	33

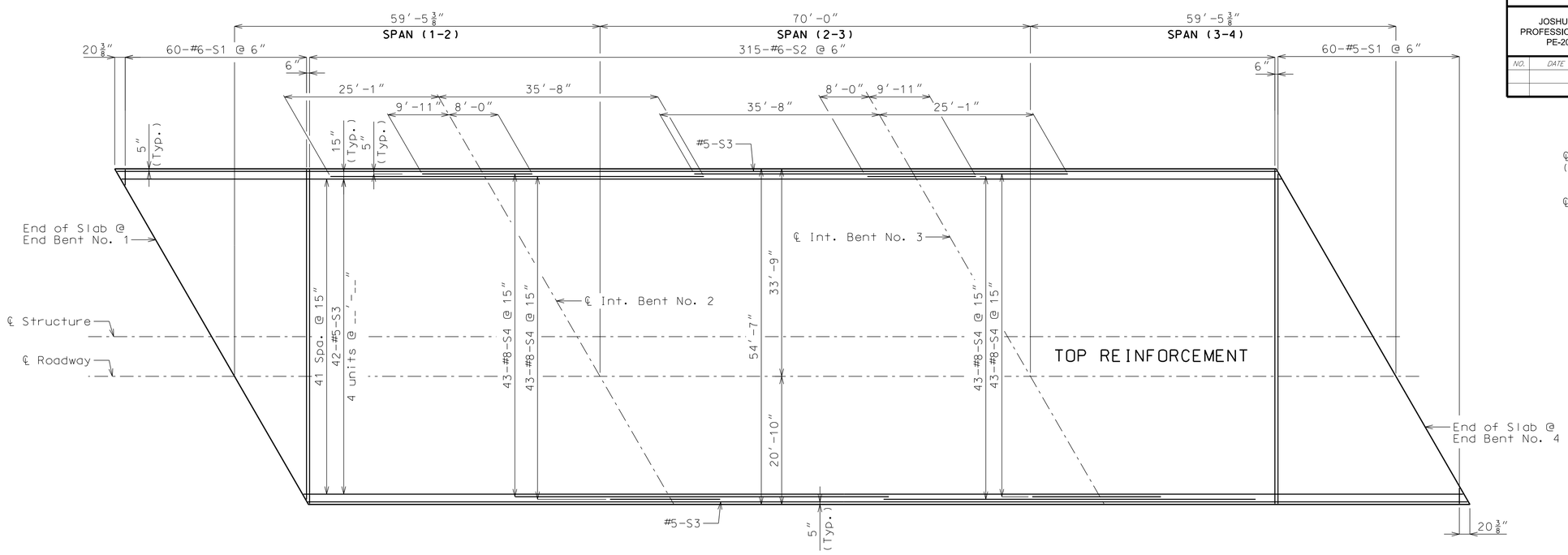
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

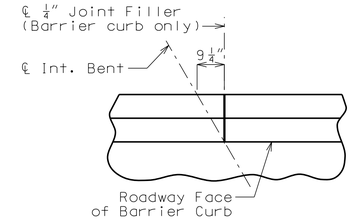
Bridge Plans

Paragon Star Development

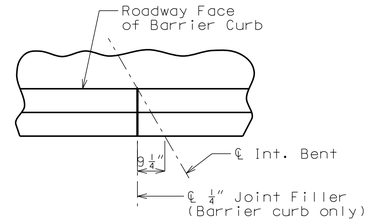
Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

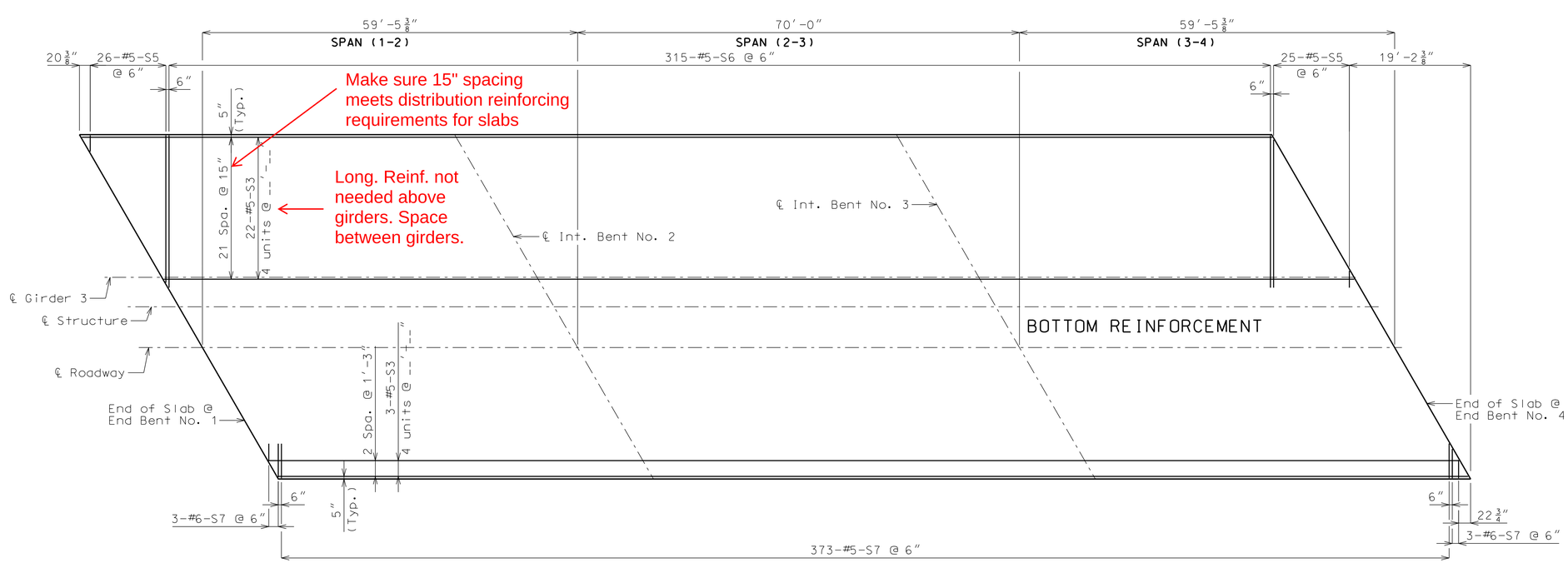




PART PLAN OF BARRIER JOINT ON LEFT BARRIER CURB AT INTERMEDIATE BENT



PART PLAN OF BARRIER JOINT ON RIGHT BARRIER CURB AT INTERMEDIATE BENT



PLAN OF SLAB SHOWING REINFORCING

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	26
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

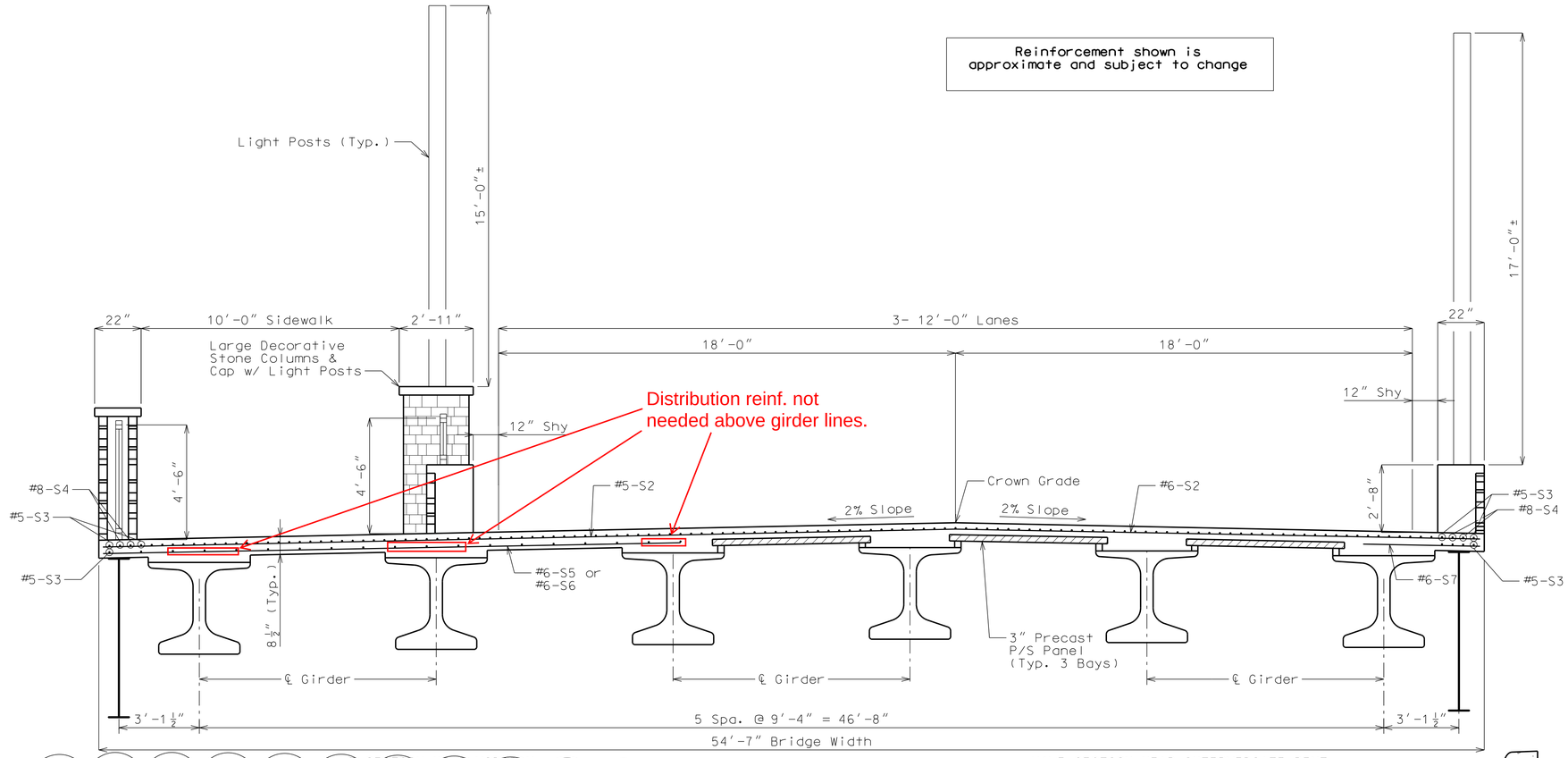
Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

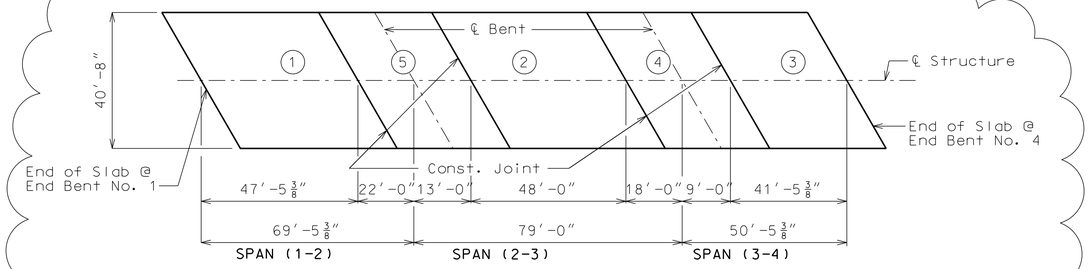
Reinforcement shown is approximate and subject to change



HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB

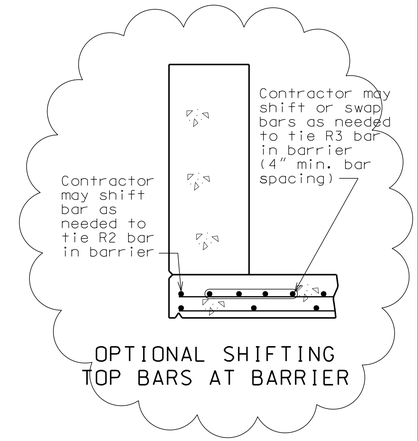
HALF SECTION NEAR INTERMEDIATE BENT



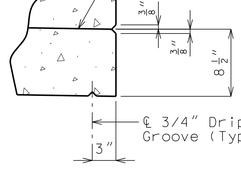
	Sequence of Pours					Min. Rate of Pour Cu. Yds./Hr.
	Direction					With Retarder
Basic Sequence	1	2	3	4	5	25
	Either Direction					
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.						
Alternate A Pours	1	5 + 2		4 + 3		25
	End to 5	1 to 4		2 to End		
Alternate B Pours	1 + 5 + 2			4 + 3		25
	End to 4			2 to End		
Alternate C Pours	1 + 5 + 2 + 4 + 3					25
	End to End					

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

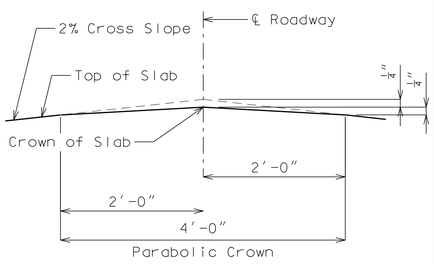
SLAB POURING SEQUENCE



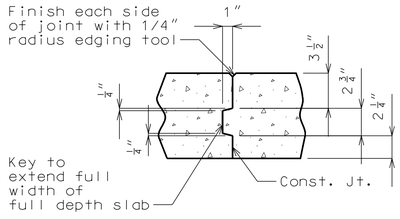
OPTIONAL SHIFTING TOP BARS AT BARRIER



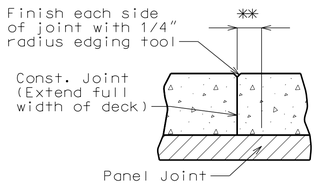
DETAIL B



DETAIL A



FULL DEPTH SLAB



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

SLAB ON PANELS

SLAB CONSTRUCTION JOINT

SLAB DETAILS

Notes:

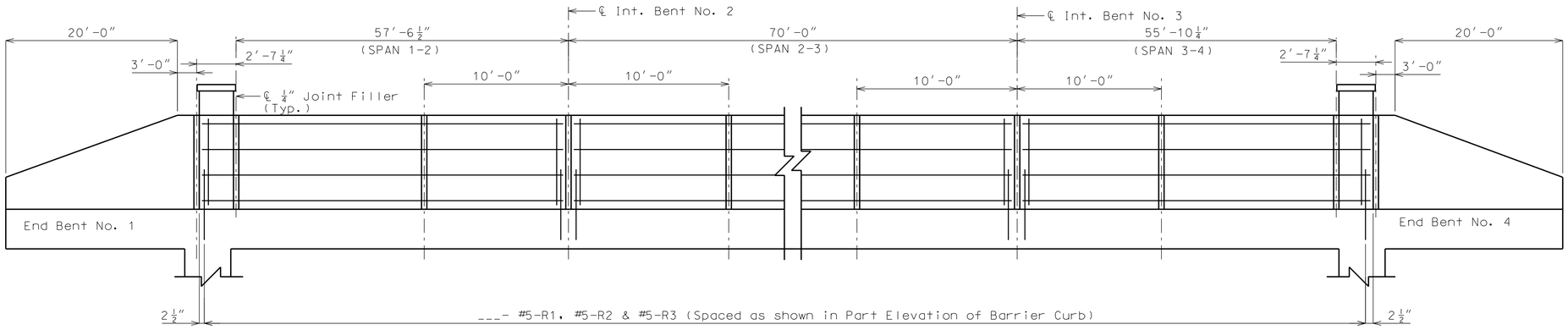
For details of precast prestressed panels, see Sheet No. 21.

For reinforcement of safety barrier curb not shown, see Sheets No. 29 & 30.

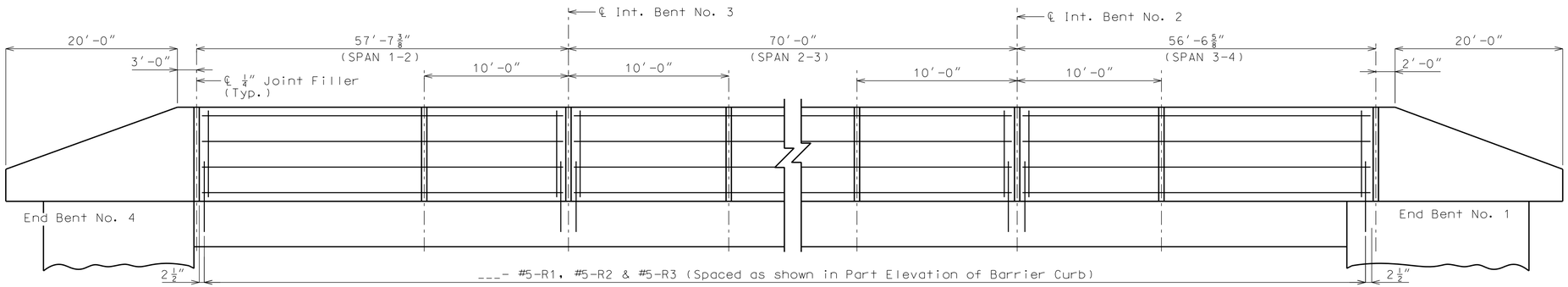
For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 24.

For Plan of Slab Showing Reinforcement, see Sheet No. 25.

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

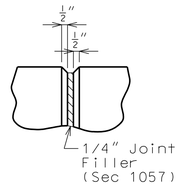


ELEVATION OF BARRIER CURB ON DECK

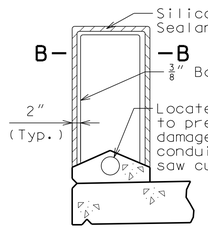


ELEVATION OF RIGHT BARRIER CURB

Longitudinal dimensions are horizontal.

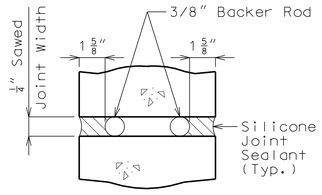


PART ELEVATION AT FORMED JOINT

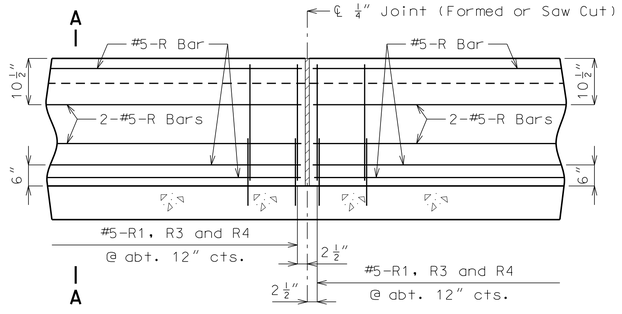


SECTION THRU SAW CUT JOINT

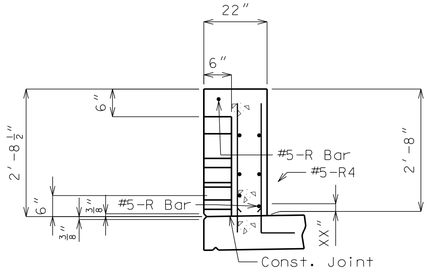
(Use when conduit is required)



SECTION B-B



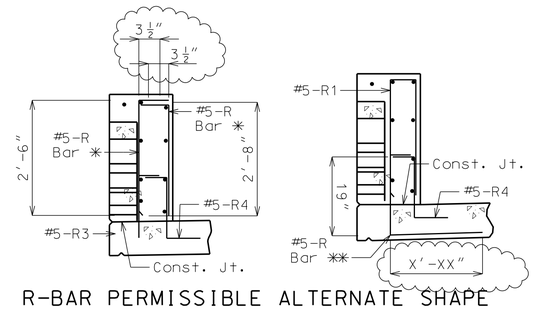
PART ELEVATION OF SAFETY BARRIER CURB



SECTION A-A

Use a minimum lap of 3′-1″ for #5 horizontal safety barrier curb bars.

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



R-BAR PERMISSIBLE ALTERNATE SHAPE

✳ The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

✳✳ 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 SAFETY BARRIER CURB

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	27
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

General Notes

Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb per linear foot.

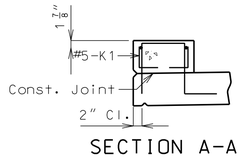
Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

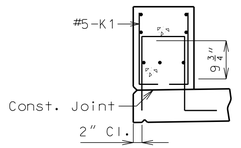
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

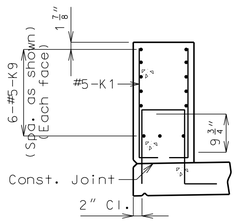
Plastic waterstop shall not be used with saw cut joints.



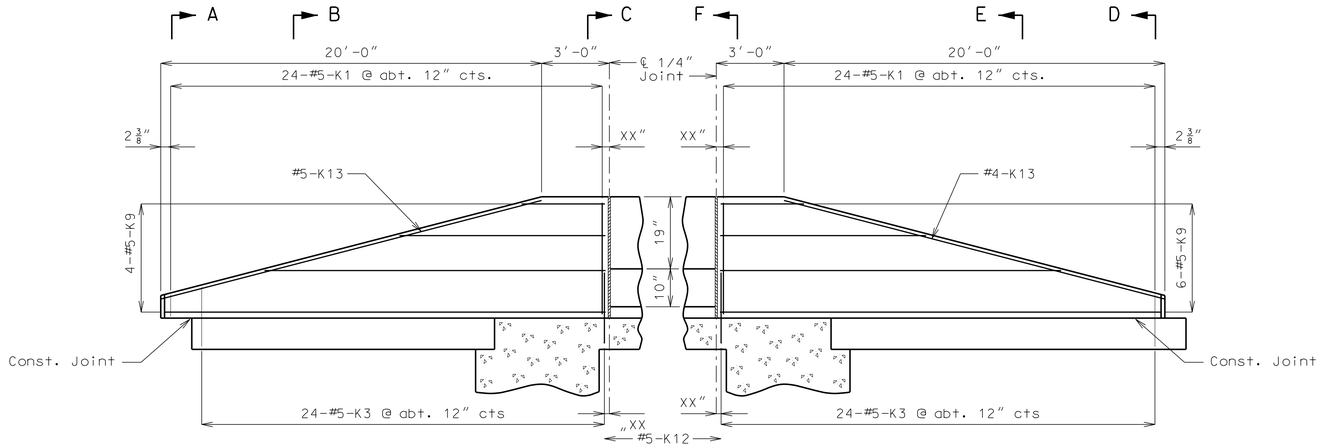
SECTION A-A



SECTION B-B



SECTION C-C

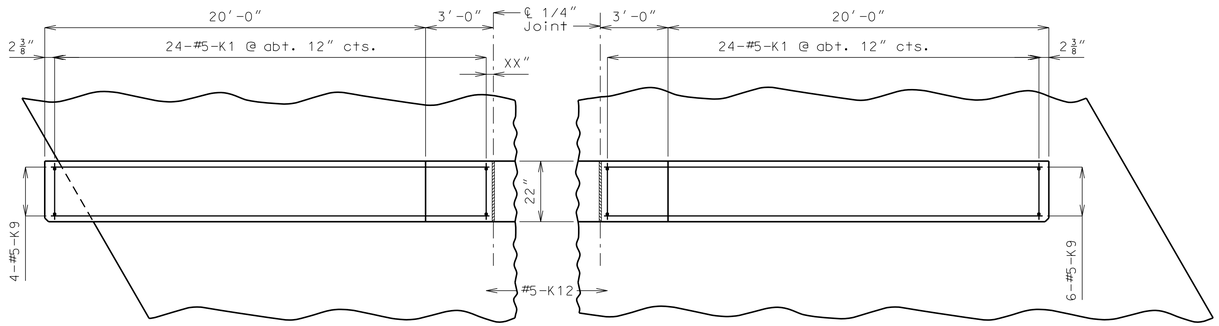


ELEVATION

ELEVATION

* Spaced with #5-K4 bars and embed 27" into end bent.

** Fit bar to follow transition face of curb.



PLAN

PLAN

Show detail of barrier curb at end bents for a skewed structure. Extend joint past front face of end bent on skewed structures.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	28
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

General Notes

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

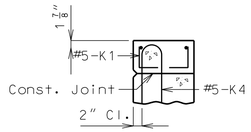
Use a minimum lap of 2'-7" between K9 and K10 or K13 bars.

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

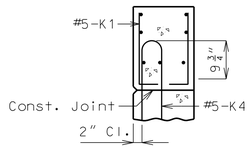
(Left barrier curb shown, right barrier curb similar)

Detailed
Checked

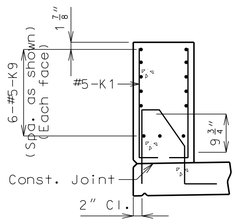
Note: This drawing is not to scale. Follow dimensions. Sheet No. of



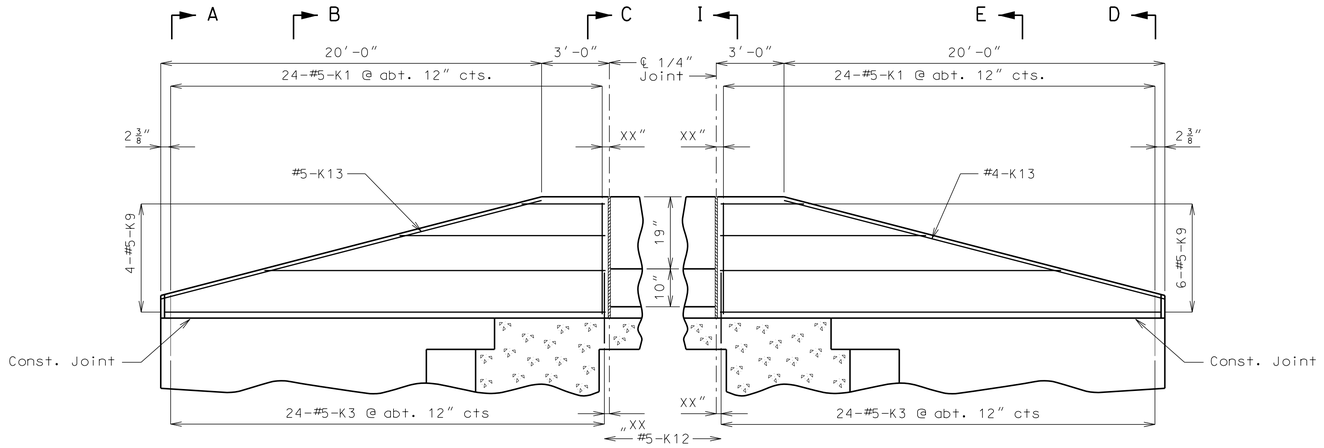
SECTION A-A



SECTION B-B



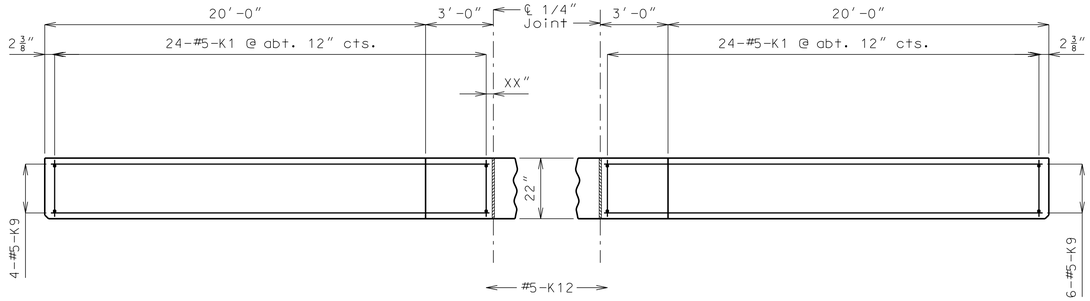
SECTION C-C



A B ELEVATION C I E ELEVATION D

* Spaced with #5-K4 bars and embed 27" into end bent.

** Fit bar to follow transition face of curb.



PLAN PLAN

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	29
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Reinforcement shown is approximate and subject to change

Show detail of barrier curb at end bents for a skewed structure. Extend joint past front face of end bent on skewed structures.

General Notes

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

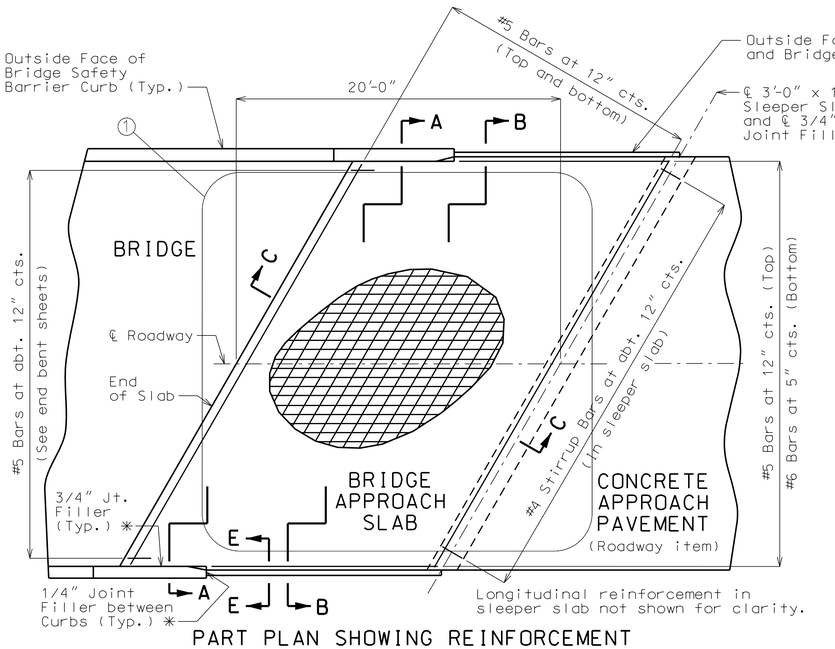
Use a minimum lap of 2'-7" between K9 and K10 or K13 bars.

CONVENTIONAL-FORMED SAFETY BARRIER CURB AT END BENTS ON WING

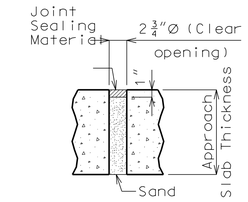
(Left barrier curb shown, right barrier curb similar)

Detailed
Checked

Note: This drawing is not to scale. Follow dimensions. Sheet No. of

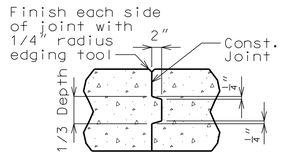


PART PLAN SHOWING REINFORCEMENT

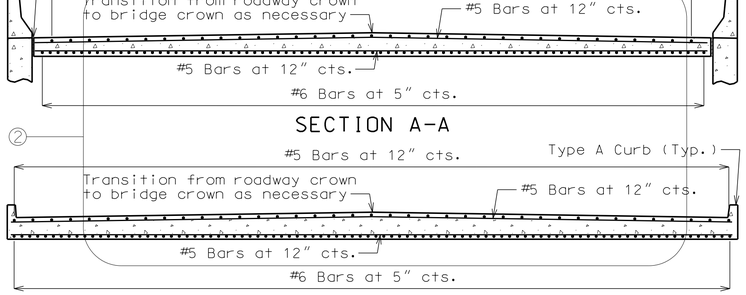


UNDERSEAL ACCESS HOLE DETAIL

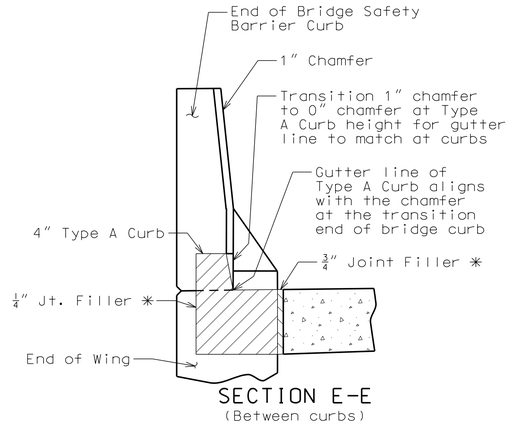
(If required)

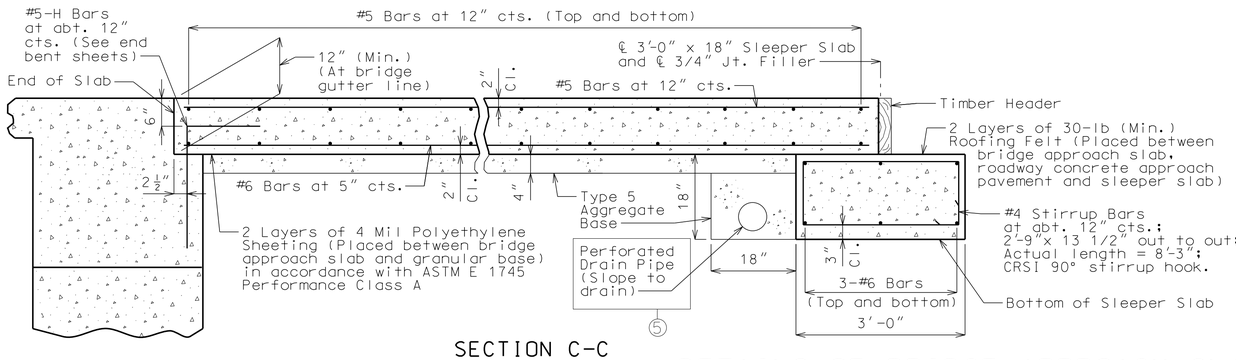


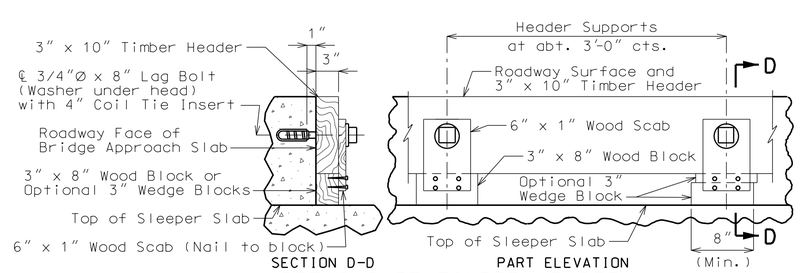
CONST. JOINT DETAIL



With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.







DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

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 fy = 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".

Mechanical bar splices shall be in accordance with Sec 710. (3)

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.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab. (4)

For Concrete Approach Pavement details, see roadway plans.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

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 unit price for Bridge Approach Slab (Major Road) per square yard.

✳ 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.

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	30
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Detailed
Checked

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

Sheet No. of

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.	31
TOTAL SHEETS	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

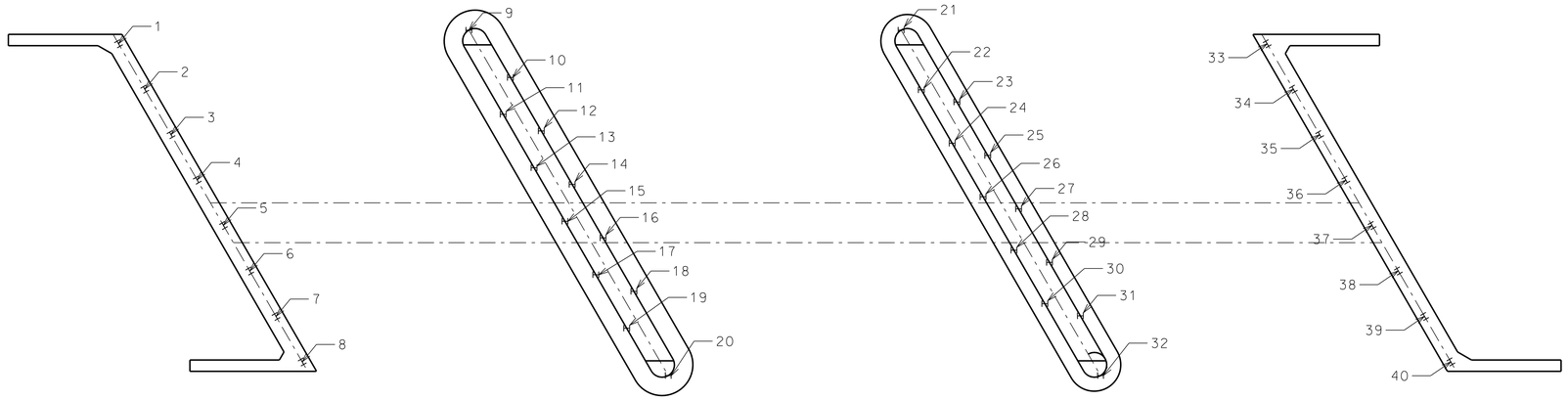
Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED

Quantity of piles is approximate. Location and length of piles is approximate and subject to change



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					
8					
					INT. BENT NO. 2
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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
					INT. BENT NO. 3
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
					END BENT NO. 4
33					
34					
35					
36					
37					
38					
39					
40					

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 MoDOT construction personnel.

AS-BUILT PILE DATA

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

WEST BRIDGE
(58'-70'-58') PRESTRESSED CONCRETE NU-GIRDER SPANS

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	32
TOTAL SHEETS	33

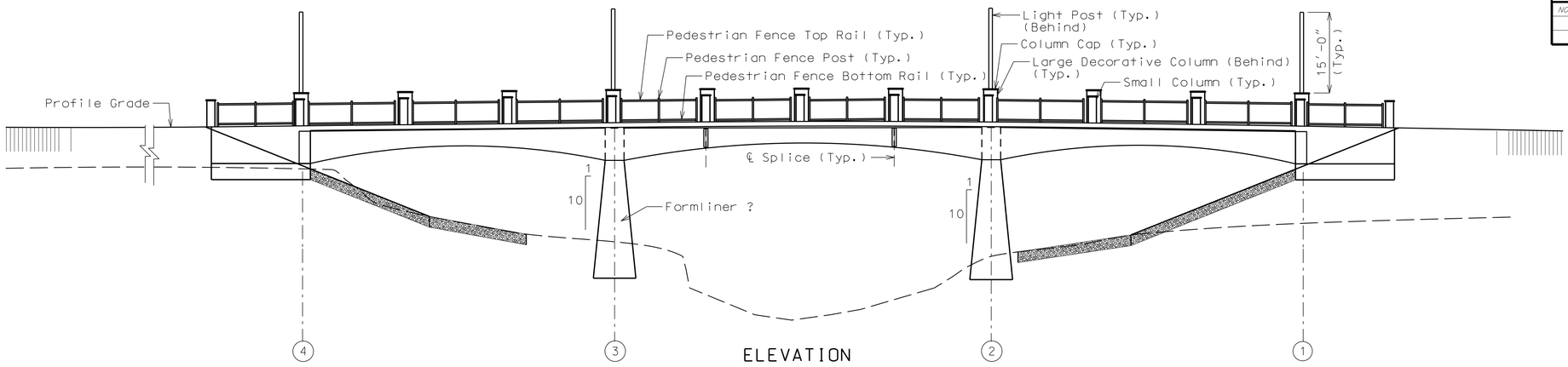
JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

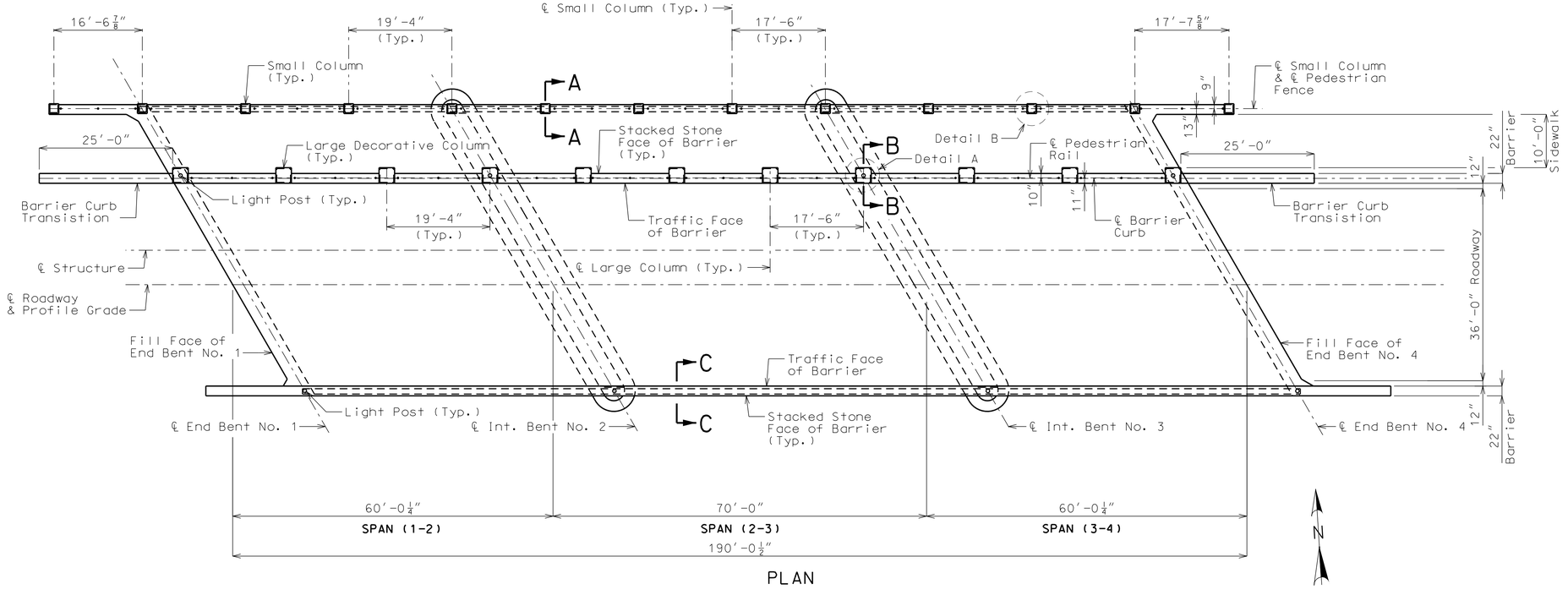
NO.	DATE	REVISIONS	BY	APPROVED



ELEVATION
(Looking South)

Notes:

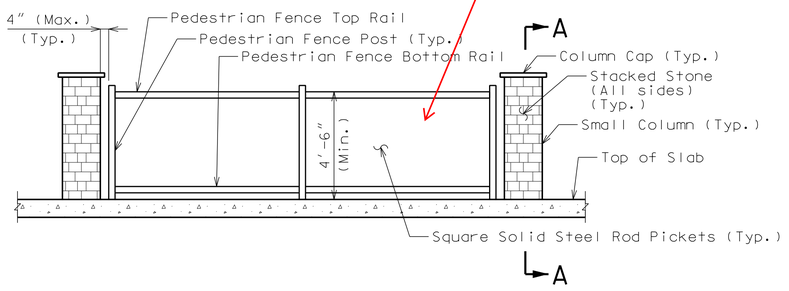
For Detail A, Detail B, Section A-A, B-B & C-C, see Sheet No. 5.



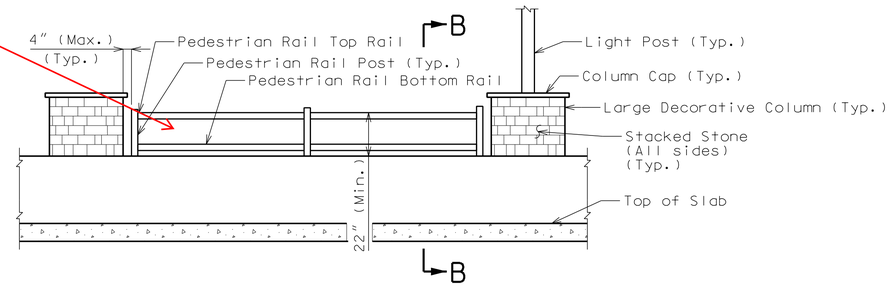
PLAN

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

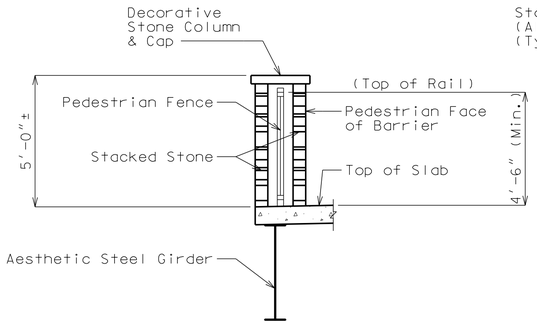
Show pickets and detail spacing



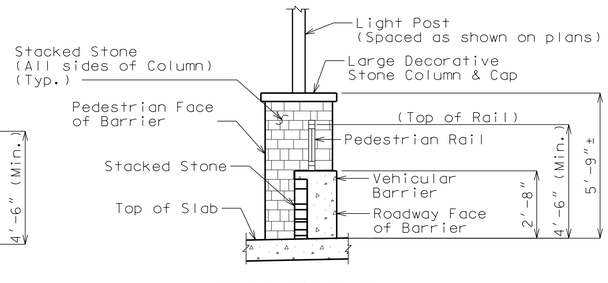
PEDESTRIAN FENCE DETAIL ELEVATION



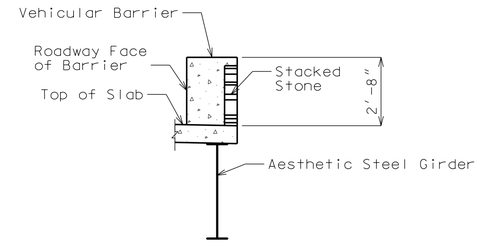
VEHICULAR BARRIER DETAIL ELEVATION
(Vehical side shown)



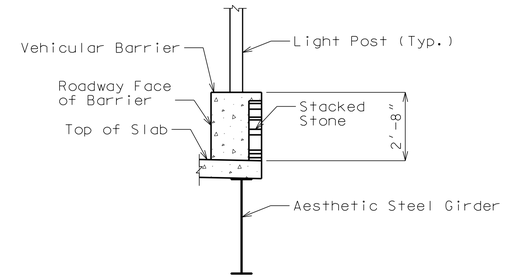
SECTION A-A



SECTION B-B

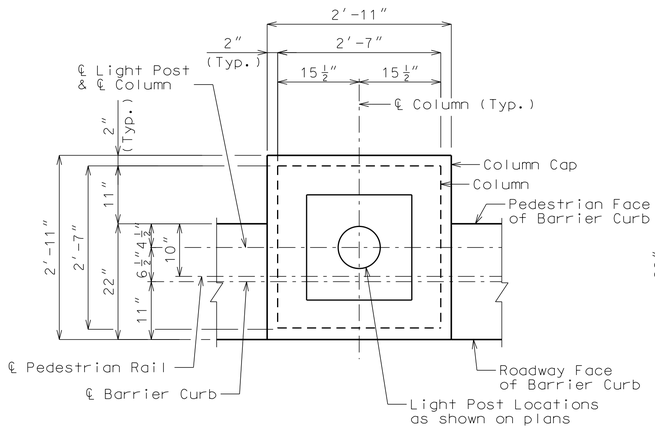


SECTION C-C

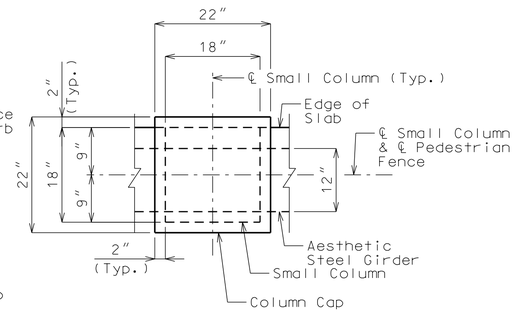


SECTION C-C (w/ Light Post)

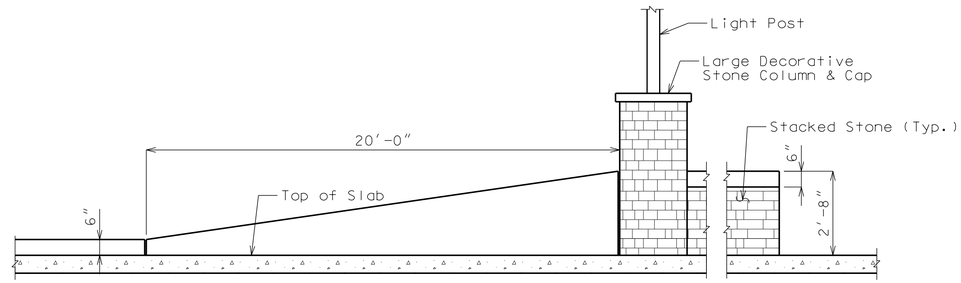
DETAILS OF BARRIER & PEDESTRIAN FENCE



DETAIL A



DETAIL B



VEHICULAR BARRIER CURB TRANSITION DETAIL
(Pedestrian side shown)

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

"PRELIMINARY PLANS NOT APPROVED FOR CONSTRUCTION."

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

DATE:	10-11-19
DESIGN BY:	JJM
DRAWN BY:	DWM
PROJECT NO.:	12720
SHEET NO.:	33
TOTAL SHEETS:	33

JOSHUA J. MILLER
PROFESSIONAL ENGINEER
PE-2009010386

Bridge Plans

Paragon Star Development

Kansas City, Missouri

NO.	DATE	REVISIONS	BY	APPROVED