Estimated Quantities for Slab on Concrete NU-Girder

Item		Total
Class B-2 Concrete	cu. yard	670
Reinforcing Steel (Epoxy Coated)	pound	210,200

The table of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit 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.

The prestressed panel quantities are not included in the table of Estimated Quantities for Concrete NU-Girder.

Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

Slab between Girders 1 and 2 shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

Precast prestressed panels will be permitted between Girders 2 and 5.

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Removal of Miscellaneous ACM (Non-Friable)	sq. foot	——	——	418
Class 1 Excavation	cu. yard	240	——	240
Removal of Bridges (J0782)	lump sum	——	——	1
Bridge Approach Slab (Minor)	sq. yard	——	204	204
(96 in.) Decorative Pedestrian Fence (Structures)	linear foot	503	——	503
Drilled Shaft (4 ft. 0 in. Dia.)	linear foot	156	——	156
Rock Socket (3 ft. 6 in. Dia.)	linear foot	168	——	168
Video Camera Inspection	each	12	——	12
Foundation Inspection Holes	linear foot	288	——	288
Sonic Logging Testing	each	12	——	12
Galvanized Structural Steel Piles (14 in.)	linear foot	520	——	520
Pile Point Reinforcement	each	16	——	16
Class B Concrete (Substructure)	cu. yard	223.2	——	223.2
Type D Barrier	linear foot	——	1,020	1,020
Slab on Concrete NU-Girder	sq. yard	——	2,423	2,423
Concrete Curb (Bridge Rail)	linear foot	——	503	503
NU-43, Prestressed Concrete NU-Girder	linear foot	——	2,367	2,367
Reinforcing Steel (Bridges)	pound	72,320	——	72,320
Slab Drains	each	——	86	86
Vertical Drain at End Bents	each	——	——	2
Plain Neoprene Bearing Pad	each	——	5	5
Laminated Neoprene Bearing Pad (Tapered)	each	——	45	45

72
3

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Foundation Data

Type	Design Data		Bent Number 1	2	3	4	5	6
Load Bearing Pile	HP Pile Type and Size		HP14x73	--	--	--	--	HP14x73
	Number		8	--	--	--	--	8
	Approximate Length Per Each	ft	35	--	--	--	--	30
	Pile Point Reinforcement	ea	All	--	--	--	--	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	--	--	--	--	Full Length
	Minimum Tip Penetration (Elev.)	ft	Elev. 833.00	--	--	--	--	Elev. 843.00
	Criteria for Min. Tip Penetration		Min. Embed.	--	--	--	--	Min. Embed.
	Pile Driving Verification Method		DF	--	--	--	--	DF
	Resistance Factor		0.4	--	--	--	--	0.4
	Minimum Nominal Axial Compressive Resistance	kip	550	--	--	--	--	465
Rock Socket	Number	ea	---	3	3	3	3	---
	Layer 1: Foundation Material		---	Strong Rock	Strong Rock	Strong Rock	Strong Rock	---
	Layer 1: Elevation Range	ft	---	839-809	839-809	840-809	842-812	---
	Layer 1: Design Side Friction (Side Resistance)	ksf	---	35.7	35.7	35.7	35.7	---
	Layer 1: Design End Bearing Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	---	215.0	215.0	215.0	215.0	---

DF = FHWA-modified Gates Dynamic Formula

Drilled Shaft Notes:

The contractor shall review the provided geotechnical report regarding the groundwater conditions of the site prior to commencement of drilling and construction of the drilled shafts and rock sockets.

Rock Socket (Drilled Shafts):

Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resitance Factor}}$
(Side Resistance + Tip Resistance)

Thickness of permanent steel casng shall be 3/8" in accordance with Sec 701.

Sonic logging testing shall be performed on all drilled shafts & rock sockets.

Driven Pile Notes:

Minimum Nominal Axial Compressive Resistance = $\frac{\text{Maximum Factored Loads}}{\text{Resitance Factor}}$

Manufactured pile point reinforcement shall be used on all piles in this structure.

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. When pile refusal on rock occurs, as approved by the engineer, the minimum nominal axial compressive resistance is verified and no additional pile driving verification method is required.

All piles shall be galvanized full length.

Hydrologic Data

Drainage Area = 441 sq mi
Design Flood Frequency = 50 years
Design Flood Discharge = 48,300 cfs
Design Flood (D.F.) Elevation = 862.4
Base Flood (100-year)
Base Flood Elevation = 863.7
Base Flood Discharge = 56,100 cfs
Estimated Backwater = 1.2 ft
Average Velocity thru Opening = 9.7 ft/s
Freeboard (50-year)
Freeboard = 3.6 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency = >500 years
500-Yr. Flood Elevation = 866.6

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specification (9th Ed.)

Seismic Design Category A

Design earthquake response spectral acceleration coefficient at 1.0 second period, S_{D1} < 0.15

Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.058.

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf (Min.)
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load.
Continuous Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-1 Concrete (Barrier & Curb Rail)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier/Curb Rail)	f'c = 4,000 psi
Reinforcing Steel (ASTM A615 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For precast prestressed panel stresses, see Sheet No. 27.

For precast prestressed girder stresses, see Sheets No. 20 - 25.

Standard Plans:

606.22, 609.00, 617.10 and 706.35

Neoprene Pads:

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 Sec 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.

Traffic Handling:

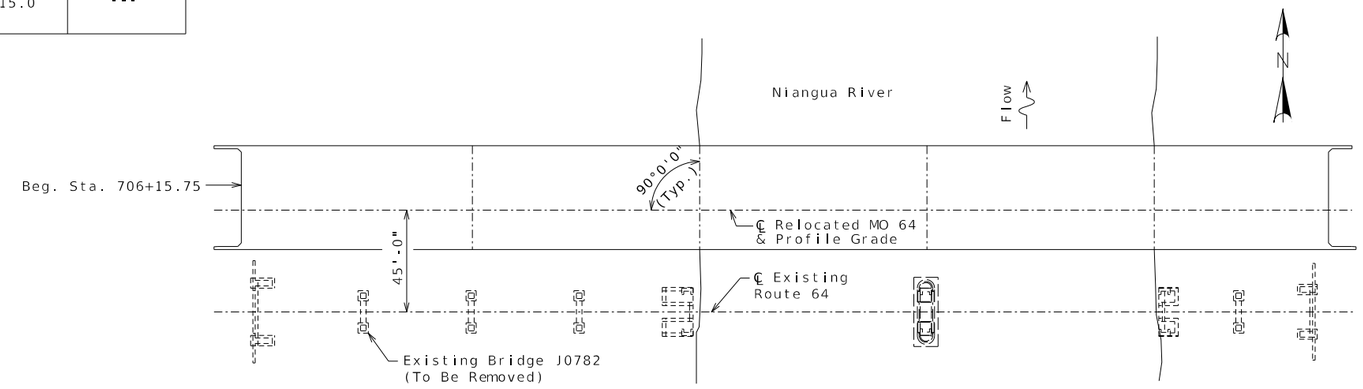
Traffic to be maintained on existing structure during construction. See roadway plans for traffic control.

Miscellaneous:

All stations are along ℄ Relocated MO 64 unless otherwise noted.

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

☐ Constant Joint Filler
☐ Variable Joint Filler



LOCATION SKETCH

3 REVISED

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Detailed: BWC 05/01/25
Checked: HNG 05/30/25

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

GENERAL NOTES AND ESTIMATED QUANTITIES

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000756
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 06/12/26
ROUTE 64 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY DALLAS
JOB NO. J7P3542
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9346

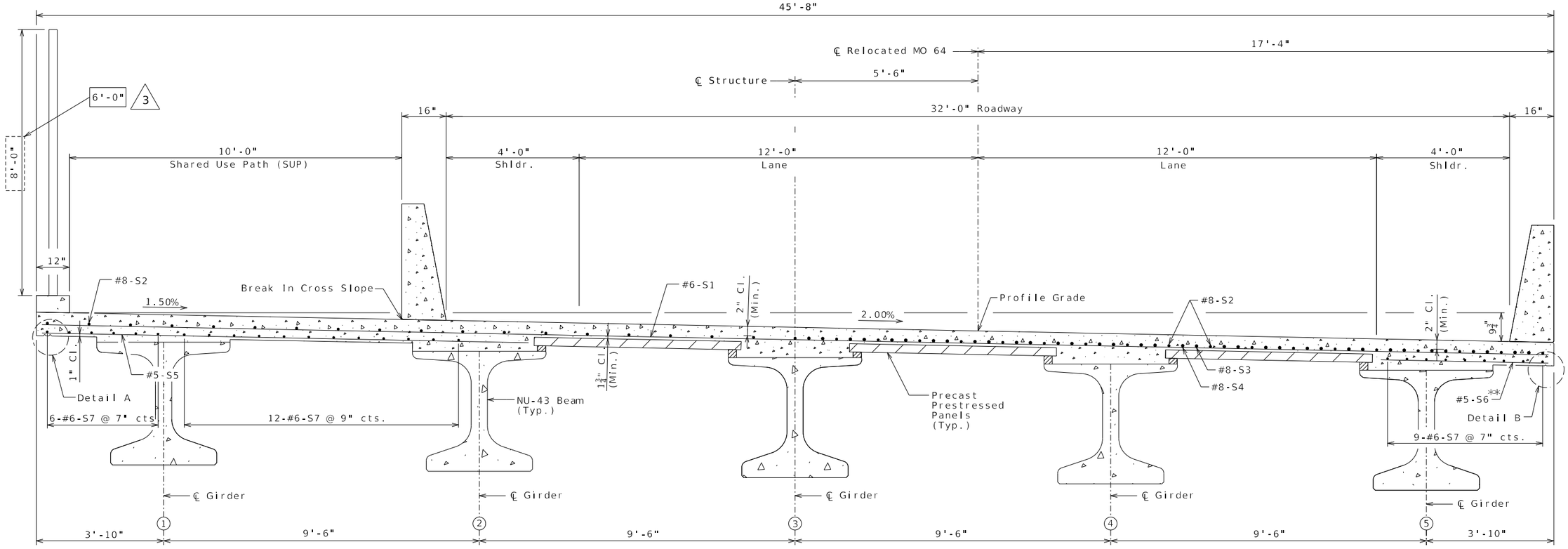
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MoDOT

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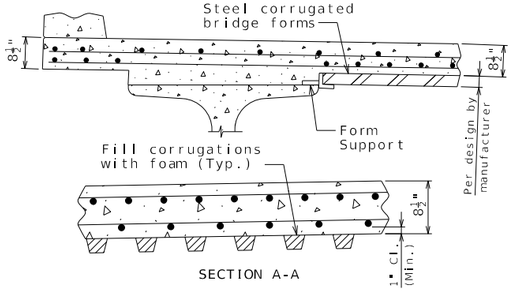
HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INTERMEDIATE BENT

SECTION THRU SLAB

(Looking ahead station)

** Alternate bar shape available, see barrier sheet.



OPTIONAL STAY-IN-PLACE FORM DETAILS

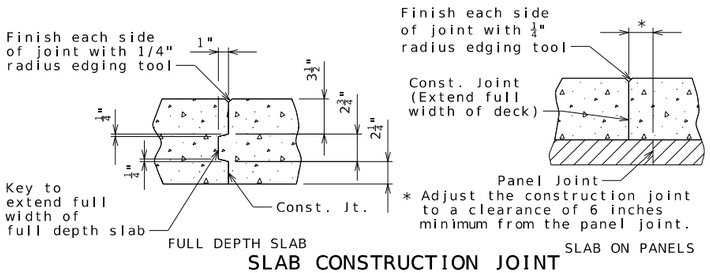
Stay-In-Place Forms:

Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Welding on or drilling holes in the girder flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding of the form supports.

The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for falsework and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.



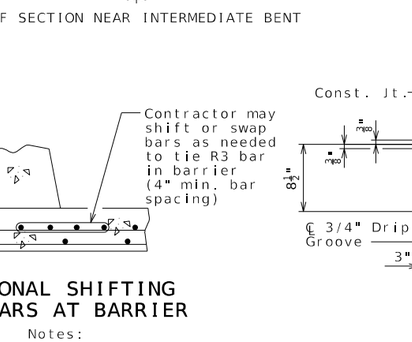
SLAB CONSTRUCTION JOINT

	Sequence of Pours									Min. Rate of Pour Cu. Yds./Hr.
	Direction									With Retarder
Basic Sequence	1	2	3	4	5	6	7	8	9	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	9 + 2		8 + 3		7 + 4		6 + 5		34
	End to 9	1 to 8		2 to 7		3 to 6		4 to End		
Alternate B Pours	1 + 9 + 2			8 + 3		7 + 4 + 6 + 5				34
	End to 8			2 to 7		3 to End				
Alternate C Pours	1 + 9 + 2 + 8 + 3					7 + 4 + 6 + 5				34
	End to 7					3 to End				
Alternate D Pours	1 + 9 + 2 + 8 + 3 + 7 + 4 + 6 + 5									34
	End to End									

The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

SLAB POURING SEQUENCE



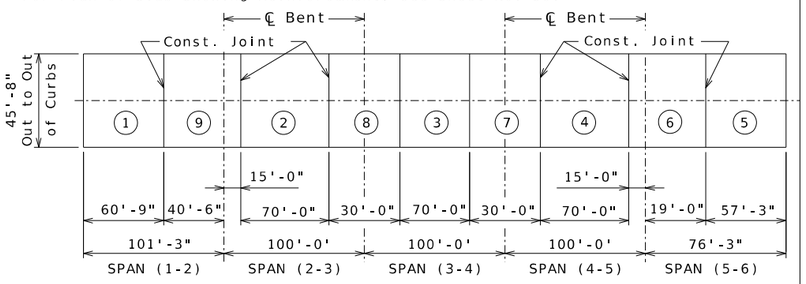
Notes:

For details of precast prestressed panels, see Sheet No. 27.

For reinforcement of barrier not shown, see Sheet No. 32.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram & Theoretical Slab Haunching Diagram, see Sheet No. 29.

For Plan of Slab Showing Reinforcement, see Sheet No. 30.



3 REVISED

Designed: BWC 05/01/25
Detailed: BWC 05/01/25
Checked: HNG 05/30/25

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

Sheet No. 31 of 49

SLAB DETAILS

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DATE PREPARED 06/12/26

ROUTE 64 | STATE MO

DISTRICT BR | SHEET NO. 31

COUNTY DALLAS

JOB NO. J7P3542

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9346

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JEFFERSON CITY, MO 65102
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600 Washington Ave., Suite 950
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Professional Engineer 001632
www.hanson-inc.com
314.770.0467

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Notes:

These details are a general representation of a Decorative Pedestrian Fence. The actual fence components and component positions may be different than what is shown.

Fence shall have a gloss black finish (Federal Standard #17038). See special provisions.

Base plate shall be ASTM A709, Grade 50.

All base plates, U bolts, hex nuts and washers shall be galvanized in accordance with ASTM A123 and Sec 1081.

Measurement of pedestrian fence will be made horizontally and to the nearest linear foot along centerline fence.

Payment for furnishing and erecting the fence complete in place will be considered completely covered by the contract unit price for (96 in.) Decorative Pedestrian Fence (Structures).

All fence posts shall be vertical.

Mortar shall be placed under the post base plates in accordance with Sec 1066.

Decorative pedestrian fencing shall be in accordance with 2020-AASHTO LRFD Bridge Design Specifications, 9th Ed.

Shop drawings and structural calculations will not be required for the decorative pedestrian fences on the Bridge Pre-qualified Products List.

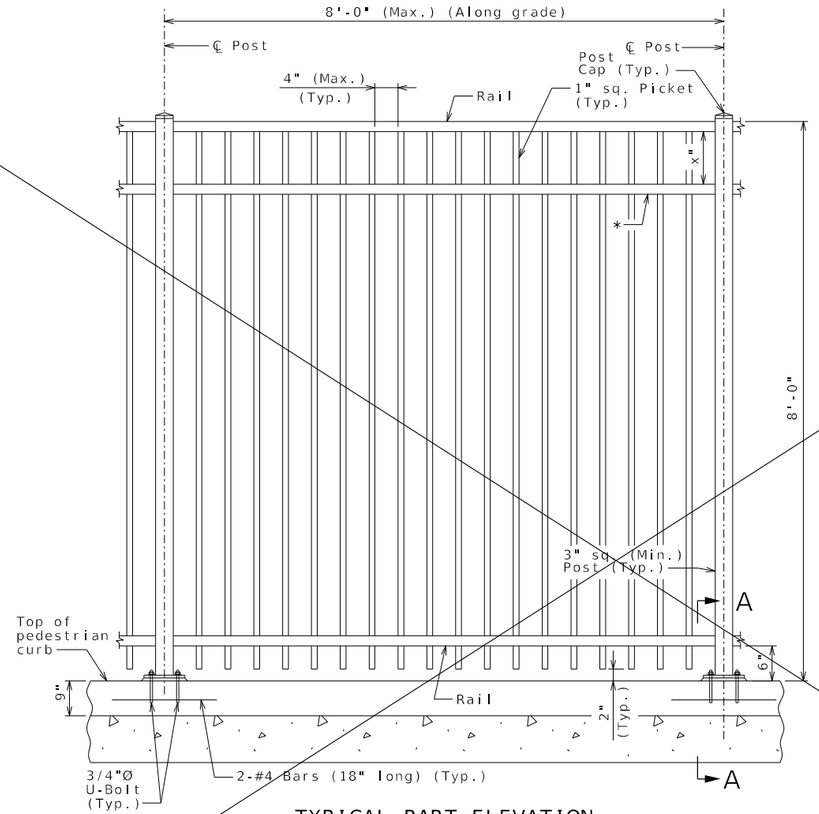
All materials used in fabrication and construction of the decorative pedestrian fencing shall be in accordance with the manufacturer's specifications, except as modified in the contract documents.

Decorative pedestrian fencing system shall be supplied by only one manufacturer. Decorative pedestrian fencing system shall include all components except the anchor bolts and hardware, and #4 bars welded to the anchor bolts. The assembly of the pickets to the rails and the rails to the posts shall be the same as the style mentioned for the manufacturer.

See Bridge Pre-qualified Products List (BPPL) for a list of approved manufacturers.

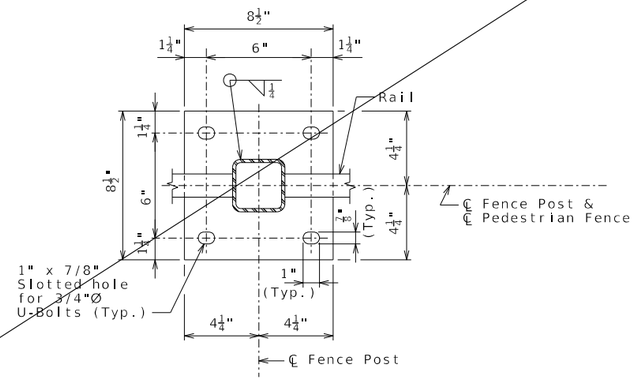
Substitution for the U-bolt cages will not be permitted.

For details of pedestrian curb, see Sheet No. 35.

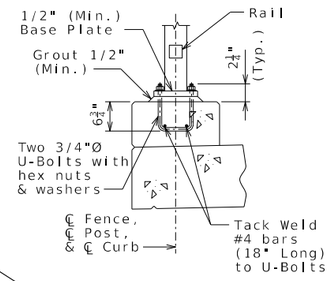


TYPICAL PART ELEVATION

* Optional rail. Need is based on design computations performed by the manufacturer and approved by MoDOT, or may be added for aesthetics.



PART PLAN SHOWING BASE PLATE



SECTION A-A

3 SHEET DELETED

Designed: BWC 05/01/25
Detailed: BWC 05/01/25
Checked: HNG 05/30/25

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

DECORATIVE PEDESTRIAN FENCE

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000756
PROFESSIONAL ENGINEER

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DATE PREPARED 06/12/26

ROUTE	STATE
64	MO
DISTRICT	SHEET NO.
BR	36

COUNTY DALLAS

JOB NO. J7P3542

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9346

DESCRIPTION	DATE

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314.770.0467

Notes:

These details are a general representation of a Decorative Pedestrian Fence. The actual fence components and component positions may be different than what is shown.

Fence shall have a gloss black finish (Federal Standard #17038). See special provisions.

Base plate shall be ASTM A709, Grade 50.

All base plates, U-bolts, hex nuts and washers shall be galvanized in accordance with ASTM A123 and Sec 1081.

Measurement of decorative pedestrian fence will be made horizontally and to the nearest linear foot along centerline fence.

Payment for furnishing and erecting the fence complete in place will be considered completely covered by the contract unit price for (in.) Decorative Pedestrian Fence (Structures).

All fence posts shall be vertical.

Grout shall be placed under the post base plates in accordance with Sec 1066.

Decorative pedestrian fencing shall be in accordance with 2020-AASHTO LRFD Bridge Design Specifications, 9th Ed.

Shop drawings and structural calculations will not be required for the decorative pedestrian fences on the Bridge Pre-qualified Products List.

All materials used in fabrication and construction of the decorative pedestrian fencing shall be in accordance with the manufacturer's specifications, except as modified in the contract documents.

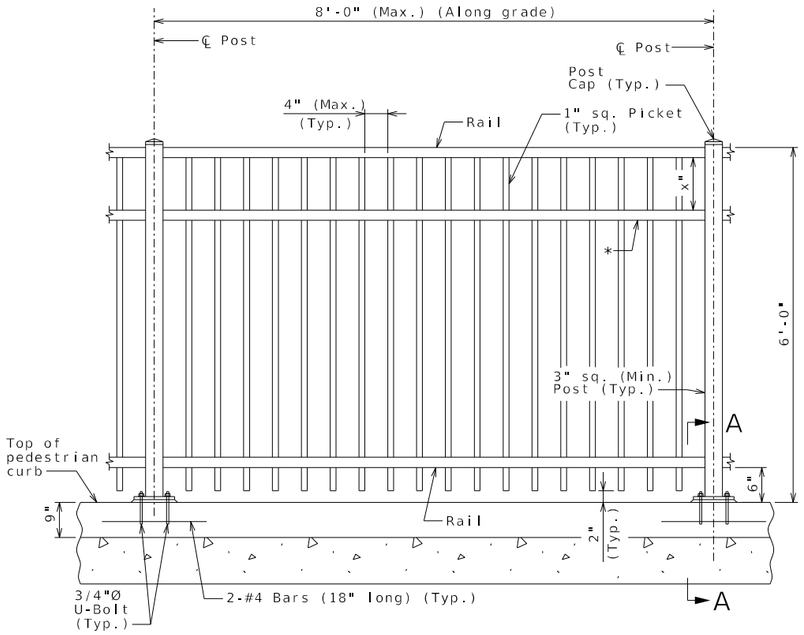
Decorative pedestrian fencing system shall be supplied by only one manufacturer. Decorative pedestrian fencing system shall include all components except the U-bolts, hardware, and #4 bars welded to the U-bolts. The assembly of the pickets to the rails and the rails to the posts shall be the same as the style mentioned for the manufacturer.

See Bridge Pre-qualified Products List (BPPL) for a list of approved manufacturers.

Substitution for the U-bolt cages will not be permitted.

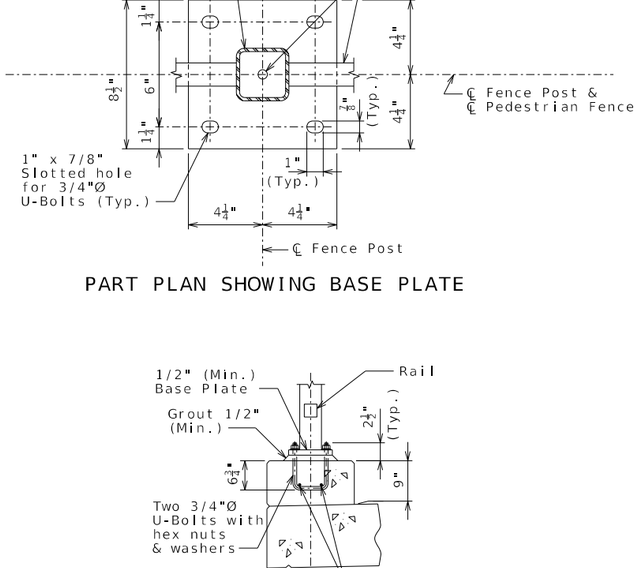
U-bolts shall be ASTM F1554 Grade 36.

For details of pedestrian curb, see Sheet No. 35.



TYPICAL PART ELEVATION

* Optional rail. Need is based on design computations performed by the manufacturer and approved by MoDOT, or may be added for aesthetics.



PART PLAN SHOWING BASE PLATE

SECTION A-A

1/2-inch diameter hole in base plate not shown for clarity.

3 SHEET ADDED

Designed: BWC 05/01/25
Detailed: BWC 05/01/25
Checked: HNG 05/30/25

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

DECORATIVE PEDESTRIAN FENCE WITH U-BOLTS

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DATE PREPARED 06/12/26
ROUTE 64 | STATE MO
DISTRICT BR | SHEET NO. 36A
COUNTY DALLAS
JOB NO. J7P3542
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9346

DESCRIPTION | DATE

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