

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	400		400
Removal of Bridges (G0248)	lump sum			1
Bridge Approach Slab (Minor)	sq. yard		116	116
Galvanized Structural Steel Piles (12 in.)	linear foot	652		652
Pile Point Reinforcement	each	34		34
Class B Concrete (Substructure)	cu. yard	154.2		154.2
Type D Barrier	linear foot		308	308
Slab on Concrete NU-Girder	sq. yard		338	338
NU 43, Prestressed Concrete NU-Girder	linear foot		402	402
Reinforcing Steel (Bridges)	pound	7,540		7,540
Slab Drain	each		16	16
Vertical Drain at End Bents	each		2	2
Plan Neoprene Bearing Pad	each		8	8

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 (except detached wing walls) is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Cost of L4x4 ASTM A709 Grade 36 HP pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 bolts, complete in place, will be considered completely covered by the contract unit price for Galvanized Structural Steel Piles (12 in.).

Estimated Quantities for Slab on Concrete NU Girder		Total
Item		
Class B-2 Concrete	cu. yard	153
Reinforcing Steel (Epoxy Coated)	pound	14,610

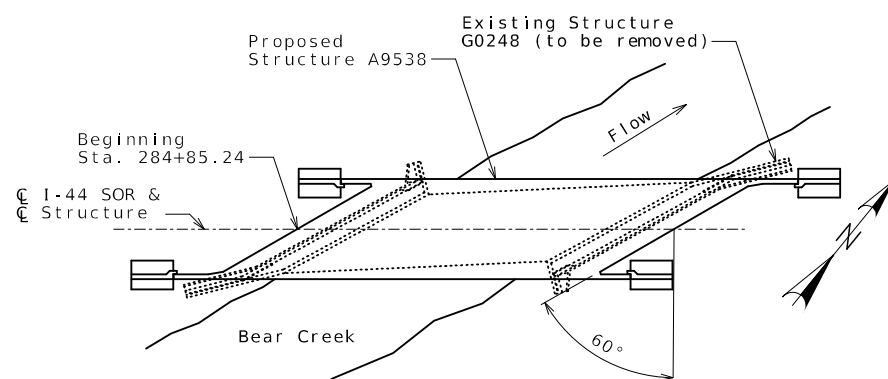
The table of Estimated Quantities for Slab on Concrete NU Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from 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 epoxy coated 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 Estimated Quantities for Slab on Concrete NU-Girder are based on skewed precast prestressed end panels.

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

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



LOCATION SKETCH

Hydrologic Data
Drainage Area = 7.9 mi <sup>2</sup>
Design Flood Frequency = 50 years
Design Flood Discharge = 3,370 cfs
Design Flood (D.F.) Elevation = 1074.9
Base Flood (100-year)
Base Flood Elevation = 1075.8
Base Flood Discharge = 4,390 cfs
Estimated Backwater = 0.0 ft
Average Velocity thru Opening = 7.6 ft/s
Freeboard (50-year)
Freeboard = -1.3 ft
Roadway Overtopping
Overtopping Flood Discharge > 5,950 cfs
Overtopping Flood Frequency > 500 years
500-year Flood Elevation = 1077.3

General Notes:

Design Specifications:  
 2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)  
 2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)  
 Seismic Design Category = B

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

Design Unit Stresses:  
 Class B Concrete (Substructure) f'c = 3,000 psi  
 Class B-2 Concrete (Superstructure, except Prestressed Girders and Barrier) f'c = 4,000 psi  
 Class B-1 Concrete (Barrier) f'c = 4,000 psi  
 Reinforcing Steel (ASTM A706 Grade 60) fy = 60,000 psi  
 Structural Steel HP Pile (ASTM A709 Grade 50) fy = 50,000 psi  
 For prestressed panel stresses, see Sheet No. 14.  
 For prestressed girder stresses, see Sheets No. 12 & 13.

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

Miscellaneous:  
 Payment for furnishing all materials, labor and excavation necessary to construct both detached wing walls at End Bents No. 1 and No. 2 including the Class 1 Excavation, Galvanized Structural Steel Pile, (12 in.) Class B Concrete (Substr.) and Reinforcing Steel (Bridges), will be considered completely covered by the contract unit price for these items.

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

Foundation Data					
Type	Design Data	Bent Number			
		1 (Detached Wing Walls Only)	1 (Except Detached Wing Walls)	2 (Detached Wing Walls Only)	2 (Except Detached Wing Walls)
Load Bearing Pile	Pile Type and Size	HP 12x53	HP 12x53	HP 12x53	HP 12x53
	Number	ea 10	7	10	7
	Approximate Length Per Each	ft 21	24	12	22
	Pile Point Reinforcement	ea All	All	All	All
	Min. Galvanized Penetration (Elev.)	ft Full Length	Full Length	Full Length	Full Length
	Pile Driving Verification Method	DF	DF	DF	DF
	Resistance Factor	0.40	0.40	0.40	0.40
	Minimum Nominal Axial Compressive Resistance	kip 350	543	350	543

DF = FHWA-modified Gates Dynamic Pile Formula

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

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

All piles shall be galvanized down to the minimum galvanized penetration (elevation).

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.

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.

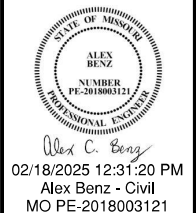
GENERAL NOTES AND QUANTITIES

REVISIONS

Detailed Aug. 2024  
 Checked Aug. 2024

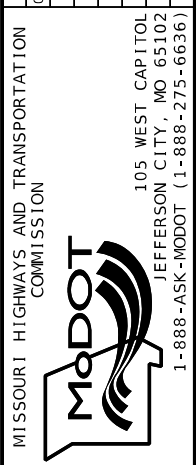
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 of 25



DATE PREPARED 2/18/2025	
ROUTE SOR 44E	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY LACLEDE	
JOB NO. JCD0101	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9538	

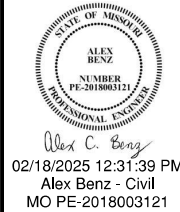
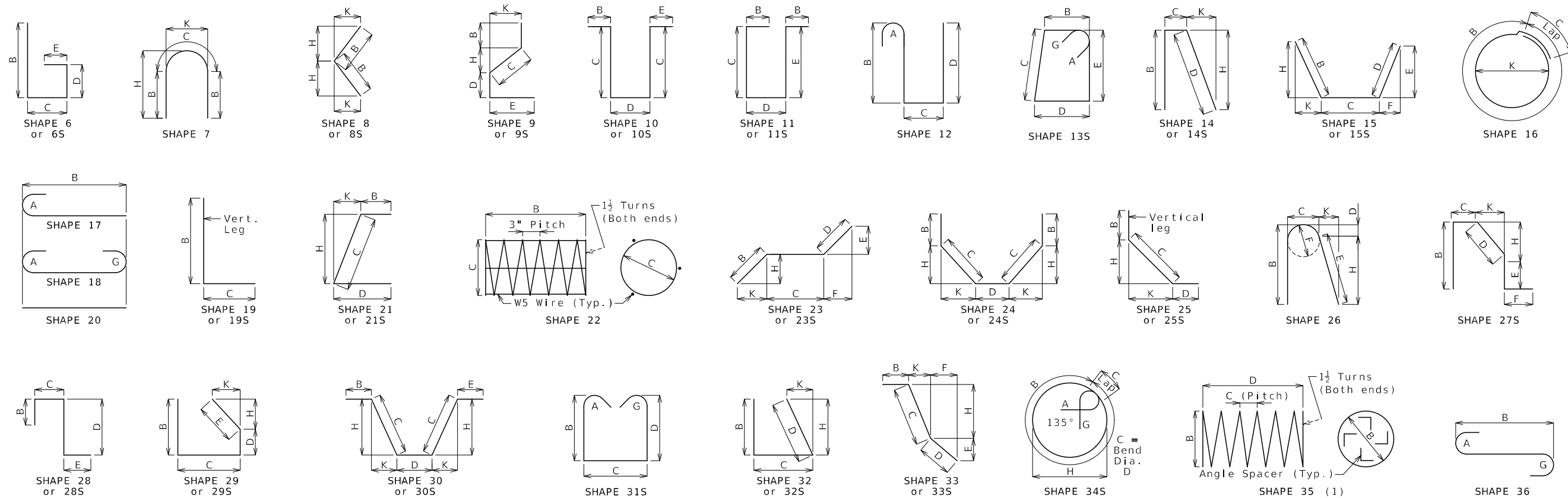
DESCRIPTION	QUANTITIES
02-18-25 REVISED ESTIMATED SLAB QUANTITIES	



105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

**EFK Moen**  
 Civil Engineering Design  
 13523 Barrett Parkway Dr  
 Suite 250  
 St. Louis, MO 63021  
 Phone 314-394-3100  
 Fax 314-394-3199  
 Missouri Certificate of Authority: 001578

REV.



DATE PREPARED  
2/18/2025  
ROUTE  
SOR 44E MO  
DISTRICT  
BR SHEET NO.  
22  
COUNTY  
LACLEDE  
JOB NO.  
JCD0101  
CONTRACT ID.  
PROJECT NO.  
BRIDGE NO.  
A9538

DESCRIPTION	REVISED REINFORCING STEEL TOTALS
02-18-25	

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
MoDOT  
105 WEST CAPITOL  
JEFFERSON CITY, MO 65102  
1-888-ASK-MODOT (1-888-275-6636)

**EFK Moen**  
Civil Engineering Design  
13523 Barrett Parkway Dr  
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### Finished Bend Diameters D and Hook Dimensions

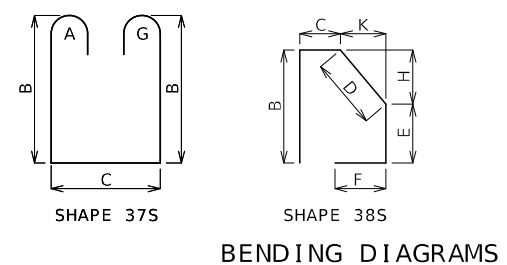
#### Standard Pin Bend Shapes

Size	Case	D	A or G			J
			90°	180°	180°	
#4	1	3"	8"	6"	4"	
#5	1	3 3/4"	10"	7"	5"	
#6	1	4 1/2"	12"	8 1/4"	6"	
#7	2	5 1/4"	14"	9 3/4"	7"	
	3	7"	15"	11 1/2"	8 3/4"	
#8	2	6"	16"	11"	8"	
	3	8"	17"	13 3/4"	10"	
#9	1	9 1/2"	19 1/2"	15 1/2"	11 3/4"	
#10	1	10 3/4"	22"	17 1/2"	13 1/4"	
#11	1	12"	24 1/2"	19 1/2"	14 7/8"	
#14	1	18 1/4"	31 1/4"	27 1/2"	21 5/8"	
#18	1	24"	41 1/2"	36 1/4"	28 1/2"	

#### Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G			H	J
			90°	135°	180°		
#4	2	2"	4 1/2"	4 1/2"	5"	2 5/8"	3"
	3	3"	5"	5 1/4"	6"	3"	4"
#5	2	2 1/2"	5 3/4"	5 3/4"	5 3/4"	3 3/8"	3 3/4"
	3	3 3/4"	6 1/4"	6 1/4"	7"	3 3/8"	5"
#6	1	4 1/2"	12"	7 3/4"	8 1/4"	4 3/8"	6"

Applicable for all grades of steel.  
Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.



All dimensions are out to out. (1) Shall be a deformed or plain spiral bar or wire.

Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.

Unless otherwise noted, finished bending diameter D is the same for all bends of a shape.

Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

### Reinforcing Steel Totals (Pounds)

Size	Substructure		Superstructure			Entire Bridge		
	Plain	Epoxy	Slab		Barrier	Slip Form	Epoxy	
			Plain	Epoxy				
4	940	0	0	1566	0	0	940	1566
5	1366	0	0	2474	9249	315	1366	13673
6	472	0	0	8035	0	0	472	27846
7	1602	0	0	1400	0	0	1602	2800
8	0	0	0	1132	0	0	0	1132
9	3156	0	0	0	0	0	3156	0
By Type	7,536	0	0	14,607	9,249	315	7,536	47,017

All superstructure reinforcing steel shall be epoxy coated unless otherwise specified.

37,453  
4109  
27846  
2800  
1132

**BENDING DIAGRAMS AND REINFORCING STEEL TOTALS**

REVIS