

THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

DATE PREPARED  
12/30/2025

ROUTE STATE  
T MO

DISTRICT SHEET NO.  
BR 2

COUNTY  
PERRY

JOB NO.  
J9S3670

CONTRACT ID.

PROJECT NO.

BRIDGE NO.  
A9408

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT

1-888-ASK-MODOT (1-888-275-6636)

MISSOURI DESIGN FIRM PE-00166

OATES ASSOCIATES

### Estimated Quantities

Item	Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	41	41
Temporary Shoring	lump sum		1
Removal of Bridges (S0734)	lump sum		1
Bridge Approach Slab (Minor)	sq. yard	108	108
Galvanized Structural Steel Piles (14 in)	linear foot	250	250
Pre-Bore for Piling	linear foot	203	203
Pile Point Reinforcement	each	14	14
Class B Concrete (Substructure)	cu. yard	32.8	32.8
Type H Barrier	linear foot	487	487
Slab on Concrete NU-Girder	sq. yard	659	659
NU 53, Prestressed Concrete NU-Girder	linear foot	661	661
Reinforcing Steel (Bridges)	pound	1,290	1,290
Steel Intermediate Diaphragm for P/S Concrete Girders	each	8	8
Slab Drain	each	40	40
Vertical Drain at End Bents	each	2	2
Plain Neoprene Bearing Pad	each	6	6
Laminated Neoprene Bearing Pad	each	6	6

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.

Cost of 4x4 ASTM A709 Grade 36 HP pile anchor 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 Pile (14 in).

### Estimated Quantities for Slab on Concrete NU-Girder

Item	Total
Class B-2 Concrete	cu. yard 193
Reinforcing Steel (Epoxy Coated)	pound 63,440

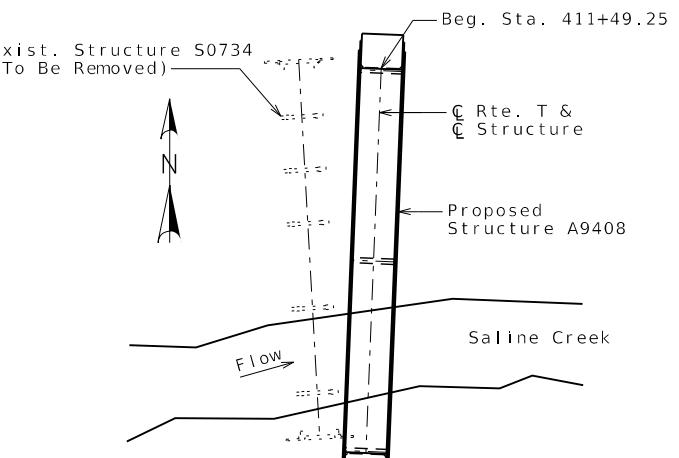
The table of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from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

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

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

Hydrologic Data	
Drainage Area = 21.2 mi <sup>2</sup>	
Design Flood Frequency = 50 years	
Design Flood Discharge = 7,600 cfs	
Design Flood (D.F.) Elevation = 527.1	
Base Flood (100-year)	
Base Flood Elevation = 528.0	
Base Flood Discharge = 8,950 cfs	
Estimated Backwater = 0.0 ft	
Average Velocity thru Opening = 4.8 ft/s	
Freeboard (50-year)	
Freeboard = 2.6 ft	
Roadway Overtopping	
Overtopping Flood Discharge > N/A cfs	
Overtopping Flood Frequency > 500 years	
500 Year Flood Elevation = 529.3	



LOCATION SKETCH

Detailed Feb. 2025  
Checked Mar. 2025

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

Foundation Data			
Type	Design Data	Bent Number	
		1	2
Load Bearing Pile	Pile Type and Size	HP 14x73	HP 14x73
	Number	ea 4	6 4
	Approximate Length Per Each	ft 17	19 17
	Pile Point Reinforcement	ea ALL	ALL ALL
	Min. Galvanized Penetration (Elev.)	ft Full Length	Full Length Full Length
	Pile Driving Verification Method	DF *	DF DF
	Resistance Factor	0.4	0.4 0.4
	Minimum Nominal Axial Compressive Resistance	kip 670	759 670

DF = FHWA-modified Gates Dynamic Pile Formula

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

\*\*All piles shall bear on rock. Piles shall be placed in predrilled holes. Ensure the piles are seated on bedrock and not rubble in bottom of the hole. The annular space around the pile shall be backfilled with Class B concrete as shown. Concrete below the water line shall be placed with tremie. Verification of pile driving is not required. Cost of Class B concrete will be completely covered by the contract unit price for Pre-Bore for Piling.

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

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

Prebore for piles at Bents No. 1,2 & 3 to elevations 511, 509 & 511, respectively.

### General Notes:

#### Design Specifications:

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

2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design (3rd Ed.)

Seismic Design Category = B (Seismic Details)

Design earthquake response spectral acceleration coefficient at 1.0 second period, SD1 = 0.22g

Acceleration Coefficient (effective peak ground acceleration coefficient), As = 0.34g

#### Design Loading:

Vehicular = HL-93

Future Wearing Surface = 35 lb/sf

Earth = 120 lb/cf

Equivalent Fluid Pressure = 45 lb/cf (Min.)

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 (Superstructure, except Prestressed

f'c = 4,000 psi

Girders and Barrier)

f'c = 4,000 psi

Class B-1 Concrete (Barrier)

fy = 60,000 psi

Reinforcing Steel (ASTM A706 Grade 60)

fy = 50,000 psi

Structural Steel HP Pile (ASTM A709 Grade 50)

For precast prestressed panel stresses, see Sheet No. 13.

For prestressed girder stresses, see Sheets No. 9 & 10.

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.

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

#### Traffic Handling:

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

#### Miscellaneous:

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

1 REVISED 12/30/2025

### GENERAL NOTES & QUANTITIES

STATE OF MISSOURI  
JASON A. DREYER  
NUMBER PE-201303897  
PROFESSIONAL ENGR.  
THIS SHEET HAS BEEN  
SIGNED, SEALED AND DATED  
ELECTRONICALLY.

DATE PREPARED  
12/30/2025

ROUTE T STATE MO  
DISTRICT BR SHEET NO. 21  
COUNTY PERRY  
JOB NO. J953670  
CONTRACT ID.  
PROJECT NO.

BRIDGE NO. A9408

DESCRIPTION

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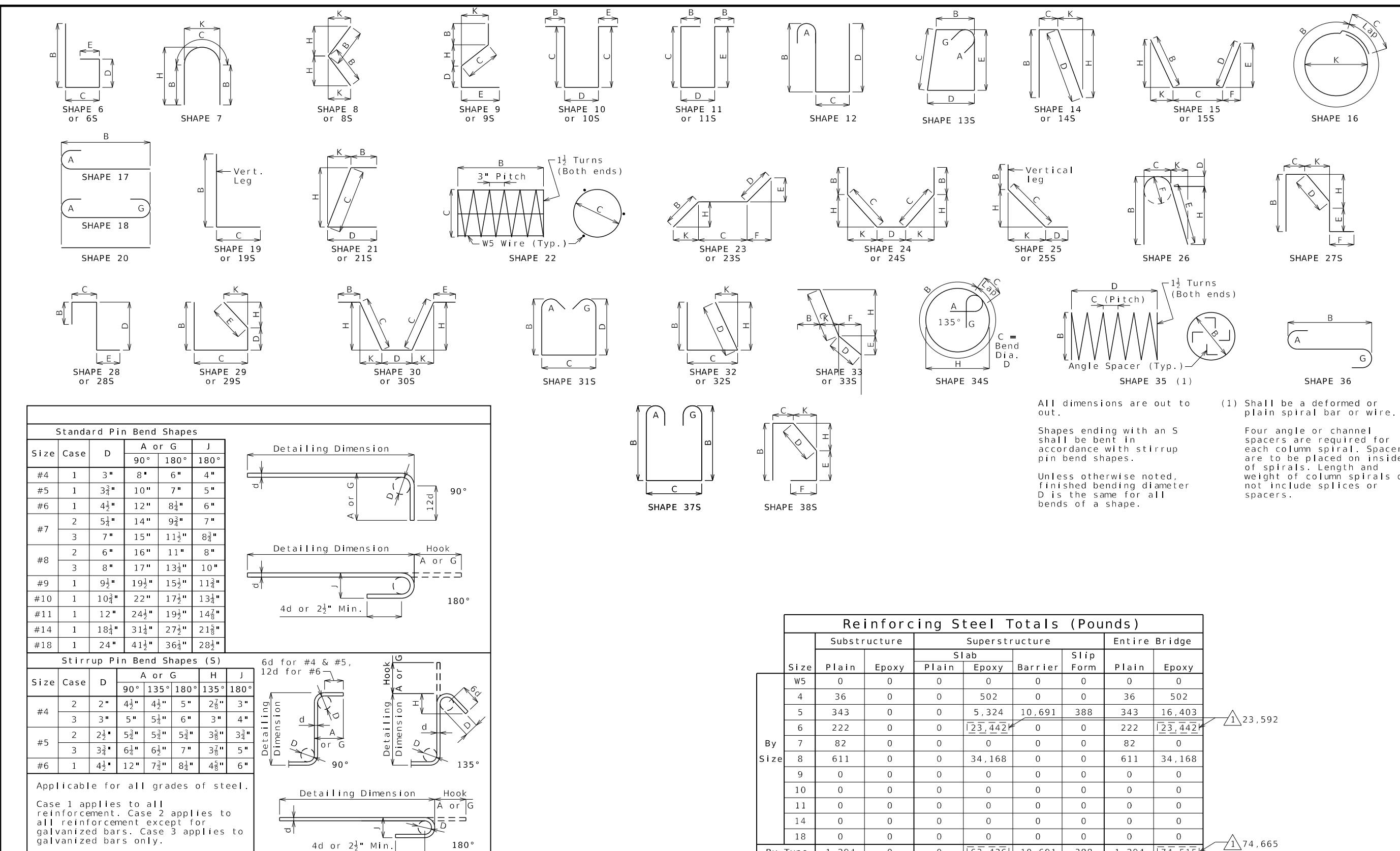
REVISION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MISSOURI DESIGN FIRM PE-001166

OATES ASSOCIATES



Reinforcing Steel Totals (Pounds)								
By Size	Substructure		Superstructure			Entire Bridge		
	Plain	Epoxy	Slab		Barrier	Slip Form	Plain	Epoxy
			Plain	Epoxy				
W5	0	0	0	0	0	0	0	0
4	36	0	0	502	0	0	36	502
5	343	0	0	5,324	10,691	388	343	16,403
6	222	0	0	123,442	0	0	222	123,442
7	82	0	0	0	0	0	82	0
8	611	0	0	34,168	0	0	611	34,168
9	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0
By Type	1,294	0	0	163,436	10,691	388	1,294	174,515

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

All bars shall be ASTM A706 Grade 60.

(1) Shall be a deformed or plain spiral bar or wire.

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.

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

All dimensions are out to out.

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

Bill of Reinforcing Steel																			
No.	Size/ Mark	Location	Codes		Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb					
					B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.								
		SUBSTRUCTURE																	
		INT. BENT 2																	
16	7	D200	BEAM	20	2	6.000					2	6	2	6	82				
8	8	H200	BEAM	18	24	0.000					25	10	25	10	552				
5	8	H201	BEAM	18	2	7.000					4	5	4	5	59				
4	6	H202	BEAM	20	24	0.000					24	0	24	0	144				
8	6	H203	BEAM	10S			2	1.000	2	7.750			6	10	6	6	78		
24	5	U200	BEAM	13S	2	9.000	2	9.000	2	9.000			12	0	11	8	292		
6	5	U201	BEAM	10S			2	9.000	2	9.000			8	3	8	1	51		
15	4	U202	BEAM	10S			6.000	2	9.000			3	9	3	7	36			
		SUPERSTRUCTURE																	
		END BENTS 1 & 3																	
44	6	F100	WING BRACE	E	23	2	3.000	4	8.000	14.000	9.875	9.875	19.125	19.125	8	1	8	0	529
20	6	F101	DIAPHRAGM	E	6	5	8.000	2	8.000						8	4	8	2	245
24	8	H100	BEAM/DIAPHRAGM	E	20	26	5.000								26	5	26	5	1693
6	8	H101	BEAM	E	18	6	3.000								8	1	8	1	130
18	6	H102	BEAM/DIAPHRAGM	E	20	26	5.000								26	5	26	5	714
16	6	H103	DIAPHRAGM	E	20	8	5.000								8	5	8	5	202
4	6	H104	DIAPHRAGM	E	20	5	10.000								5	10	5	10	35
16	6	H105	DIAPHRAGM	E	20	3	5.000								3	5	3	5	82
4	6	H106	DIAPHRAGM	E	20	2	1.000								2	1	2	1	13
6	5	H107	STRAND TIE	E	20	5	8.000								5	8	5	8	35
32	8	H108	WINGWALL	E	20	12	6.000								12	6	12	6	1068
6	6	H109	WINGWALL	E	6S	11	8.000			12.000					12	8	12	6	L1652
1	96																		
28	5	U100	BEAM	E	10S		6	2.000	2	9.000					15	1	14	11	436
42	4	U101	BEAM	E	13S	2	9.000	2	8.000	2	9.000	2	8.000		11	7	11	4	318
64	6	U102	DIAPHRAGM	E	19S	3	2.000	4	7.000						7	9	7	7	729
36	5	U103	DIAPHRAGM	E	10S		5	0.000	2	3.000					12	3	12	1	454
36	6	U104	DIAPHRAGM	E	19S	3	11.000	2	9.000						6	8	6	6	351
48	5	U105	DIAPHRAGM	E	19S	2	0.000			15.000					3	3	3	2	159
16	5	V100	BEAM	E	20	6	2.000								6	2	6	2	103
30	6	V101	DIAPHRAGM	E	20	3	11.000								3	11	3	11	176
88	6	V102	WINGWALL	E	20	8	1.000								8	1	8	1	1068
		INT. BENT 2 DIAPH.																	
4	6	H300	DIAPHRAGM	E	20	5	10.000								5	10	5	10	35
4	6	H301	DIAPHRAGM	E	20	8	3.000								8	3	8	3	50
12	4	H302	DIAPHRAGM	E	20	8	7.000								8	7	8	7	69
2	5	H303	STRAND TIE	E	20	5	8.000								5	8	5	8	12
4	5	H304	STRAND TIE	E	20	4	8.000								4	8	4	8	19
20	4	U300	DIAPHRAGM	E	28S		18.000	5	0.000	2	3.000				8	9	8	7	115
8	6	U301	DIAPHRAGM	E	28S		2	2.000	5	0.000	2	3.000			9	5	9	1	109
8	6	U302	DIAPHRAGM	E	28S		2	2.000	4	2.000	2	3.000			8	7	8	3	99
8	6	U303	DIAPHRAGM	E	28S		2	2.000	4	1.000		22.000			8	1	7	9	93
4	5	U304	DIAPHRAGM	E	6S	4	5.000		12.000						5	5	5	4	22
16	5	U305	DIAPHRAGM	E	6S	4	4.5.000	12.000	14.000						6	7	6	5	111
		INCREMENT =				4	5.000	12.000	19.000						7	0	6	10	
		1.625 INCH																	
8	5	V300	DIAPHRAGM	E	20	5	1.000								5	1	5	1	42
		SLAB																	
435	6	S1	SLAB	E	20	26	5.000								26	5	26	5	17260
436	5	S2	SLAB	E	20	5	5.000								5	5	5	5	2463
115	8	S3	SLAB	E	20	48	3.000								48	3	48	3	14815
80	8	S4	SLAB	E	20	56	5.000								56	5	56	5	12051
48	8	S5	SLAB	E	20	34	5.000								34	5	34	5	4411
30	5	S6	SLAB	E	20	46	11.000								46	11	46	11	1468

Bill of Reinforcing Steel														
No.	Size/ Mark	Location	Codes		Dimensions							Nom. Length ft in.	Actual Length ft in.	Weight lb
B ft in.	C ft in.													
<th