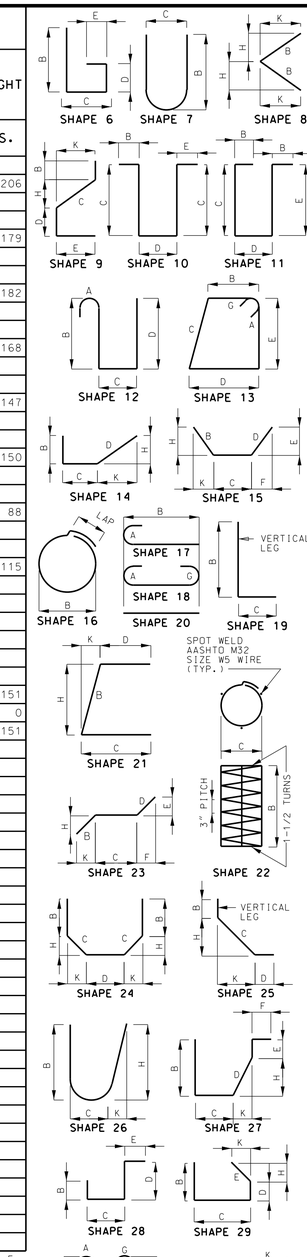
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			FOOTING																									
248	4	D1	FOOTING	E	20					6	8.000													6	8	6	8	1104
32	4	D2	FOOTING	E	20					25	9.000													25	9	25	9	550
105	4	D3	FOOTING	E	20					27	9.000													27	9	27	9	1946
167	4	U1	FOOTING	E	10	S						2	3.000	8.000										5	2	5	0	558
			WALL																									
6	4	H1	WALL	E	20					25	9.000													25	9	25	9	103
6	4	H2	WALL	E	20			V	1	24	9.000													24	9	24	9	
			INCREMENT =							6	4.000													6	4	6	4	62
			44.250 INCH																									
4	4	H3	WALL	E	20			V	1	22	11.000													22	11	22	11	
			INCREMENT =							6	4.000													6	4	6	4	39
			66.375 INCH																									
2	4	H4	WALL	E	20					26	5.000													26	5	26	5	35
72	4	H5	WALL	E	20					27	9.000													27	9	27	9	1335
2	4	H6	WALL	E	20					18	9.000													18	9	18	9	25
1	4	H7	WALL	E	20					22	1.000													22	1	22	1	15
2	4	H8	WALL	E	20					8	3.000													8	3	8	3	11
1	4	H9	WALL	E	20					10	3.000													10	3	10	3	7
1	4	H10	WALL	E	20					20	1.000													20	1	20	1	13
42	4	V1	WALL	E	20			V	1	2	0.000													2	0	2	0	
			INCREMENT =							7	7.000													7	7	7	7	134
			1.625 INCH																									
9	4	V2	WALL	E	20					7	7.000													7	7	7	7	46
21	4	V3	WALL	E	19	S		V	1	2	0.000	4	0.000											6	0	5	11	
			INCREMENT =							7	7.000	4	0.000											11	7	11	6	122
			3.375 INCH																									
5	4	V4	WALL	E	19	S				7	8.000	4	0.000											11	8	11	7	39
56	4	V5	WALL	E	20			V	1	7	6.000													7	6	7	6	
			INCREMENT =							7	0.000													7	0	7	0	271
			0.125 INCH																									
28	4	V6	WALL	E	19	S		V	1	7	8.000	4	0.000											11	8	11	7	
			INCREMENT =							7	2.000	4	0.000											11	2	11	1	212
			0.250 INCH																									
56	4	V7	WALL	E	20			V	1	7	0.000													7	0	7	0	
			INCREMENT =							6	5.000													6	5	6	5	251
			0.125 INCH																									
28	4	V8	WALL	E	19	S		V	1	7	2.000	4	0.000											11	2	11	1	
			INCREMENT =							6	7.000	4	0.000											10	7	10	6	202
			0.250 INCH																									
56	4	V9	WALL	E	20			V	1	6	5.000													6	5	6	5	
			INCREMENT =							6	2.000													6	2	6	2	235
28	4	V10	WALL	E	19	S		V	1	6	6.750	4	0.000											10	7	10	6	
			INCREMENT =							6	3.500	4	0.000											10	4	10	3	194
			0.125 INCH																									
56	4	V11	WALL	E	20			V	1	6	1.000													6	1	6	1	
			INCREMENT =							5	8.000													5	8	5	8	220
			0.125 INCH																									
28	4	V12	WALL	E	19	S		V	1	6	3.000	4	0.000											10	3	10	2	
			INCREMENT =							5	10.500	4	0.000											9	11	9	10	187
			0.125 INCH																									

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
56	4	V13	WALL	E	20			V	1	5	9.000													5	9	5	9	
			INCREMENT =							5	3.000													5	3	5	3	206
			0.125 INCH																									
28	4	V14	WALL	E	19	S		V	1	5	10.500	4	0.000											9	11	9	10	
			INCREMENT =							5	4.500	4	0.000											9	5	9	4	179
			0.250 INCH																									
56	4	V15	WALL	E	20			V	1	5	2.000													5	2	5	2	
			INCREMENT =							4	7.000													4	7	4	7	182
			0.125 INCH																									
28	4	V16	WALL	E	19	S		V	1	5	4.000	4	0.000											9	4	9	3	
			INCREMENT =							4	9.000	4	0.000											8	9	8	8	168
			0.250 INCH																									
56	4	V17	WALL	E	20			V	1	4	7.000													4	7	4	7	
			INCREMENT =							3	3.000													3	3	3	3	147
			0.250 INCH																									
28	4	V18	WALL	E	19	S		V	1	4	8.750	4	0.000											8	9	8	8	
			INCREMENT =							3	4.500	4	0.000											7	5	7	4	150
			0.625 INCH																									
51	4	V19	WALL	E	20			V	1	3	2.000													3	2	3	2	
			INCREMENT =							2	0.000													2	0	2	0	88
			0.250 INCH																									
26	4	V20	WALL	E	19	S		V	1	3	4.000	4	0.000											7	4	7	3	
			INCREMENT =							2	0.750	4	0.000											6	1	6	0	115
			0.625 INCH																									
			TOTALS																									
	4			E																								9151
			TOTAL																									0
			TOTAL	E																								9151



STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER PE-23576
PROFESSIONAL ENGINEER

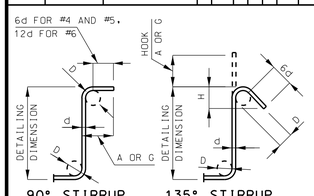
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
7/21/2011	
ROUTE	STATE
I-270	MO
DISTRICT	SHEET NO.
BR	4
COUNTY	
ST. LOUIS	
JOB NO.	
J6P2354	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A8058	

DATE	DESCRIPTION

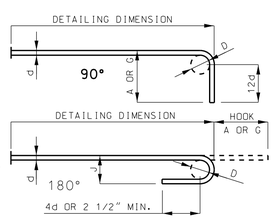
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



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

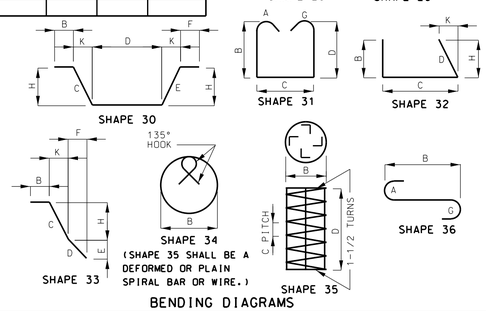
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



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

TWO ADDITIONAL #4-D2 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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



BENDING DIAGRAMS

Detailed July 2011
Checked July 2011

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