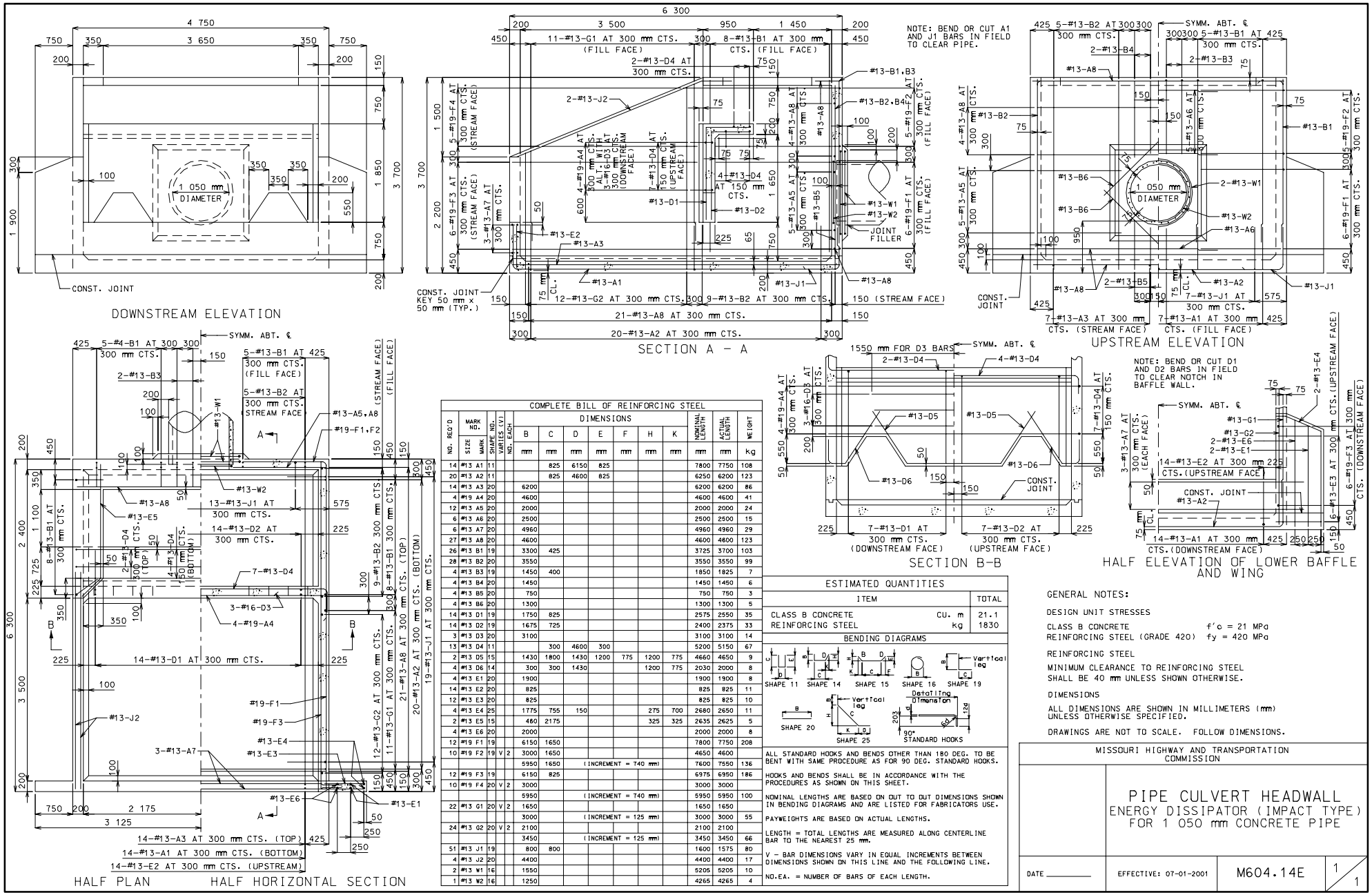

COMPLETE BILL OF REINFORCING STEEL

NO. REQ'D	MARK NO. SIZE	MARK	SHAPE NO.	VARIES (V)	NO. EACH	DIMENSIONS B mm	C mm	D mm	E mm	F mm	H mm	K mm	NOMINAL LENGTH mm	ACTUAL LENGTH mm	WEIGHT kg
14	#13 A1	11					825	6150	825				7800	7750	108
20	#13 A2	11					825	4600	825				6250	6200	123
14	#13 A3	20				6200							6200	6200	86
4	#19 A4	20				4600							4600	4600	41
12	#13 A5	20				2000							2000	2000	24
6	#13 A6	20				2500							2500	2500	15
6	#13 A7	20				4960							4960	4960	29
27	#13 A8	20				4600							4600	4600	123
26	#13 B1	19				3300	425						3725	3700	103
28	#13 B2	20				3550							3550	3550	99
4	#13 B3	19				1450	400						1850	1825	7
4	#13 B4	20				1450							1450	1450	6
4	#13 B5	20				750							750	750	3
4	#13 B6	20				1300							1300	1300	5
14	#13 D1	19				1750	825						2575	2550	35
14	#13 D2	19				1675	725						2400	2375	33
3	#13 D3	20				3100							3100	3100	14
13	#13 D4	11					300	4600	300				5200	5150	67
2	#13 D5	15				1430	1800	1430	1200	775	1200	775	4660	4650	9
4	#13 D6	14				300	300	1430			1200	775	2030	2000	8
4	#13 E1	20				1900							1900	1900	8
14	#13 E2	20				825							825	825	11
12	#13 E3	20				825							825	825	10
4	#13 E4	25				1775	755	150			275	700	2680	2650	11
2	#13 E5	15				460	2175				325	325	2635	2625	5
4	#13 E6	20				2000							2000	2000	8
12	#19 F1	19				6150	1650						7800	7750	208
10	#19 F2	19	V	2		3000	1650						4650	4600	
						5950	1650	(INCREMENT = 740 mm)					7600	7550	136
12	#19 F3	19				6150	825						6975	6950	186
10	#19 F4	20	V	2		3000							3000	3000	
						5950		(INCREMENT = 740 mm)					5950	5950	100
22	#13 G1	20	V	2		1650							1650	1650	
						3000		(INCREMENT = 125 mm)					3000	3000	55
24	#13 G2	20	V	2		2100							2100	2100	
						3450		(INCREMENT = 125 mm)					3450	3450	66
51	#13 J1	19				800	800						1600	1575	80
4	#13 J2	20				4400							4400	4400	17
2	#13 W1	16				1550							5205	5205	10
1	#13 W2	16				1250							4265	4265	4

ESTIMATED QUANTITIES

ITEM		TOTAL
CLASS B CONCRETE	CU. m	21.1
REINFORCING STEEL	Kg	1830

BENDING DIAGRAMS

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

LENGTH = TOTAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST 25 mm.

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.

GENERAL NOTES:

DESIGN UNIT STRESSES

CLASS B CONCRETE f'c = 21 MPa
REINFORCING STEEL (GRADE 420) fy = 420 MPa

REINFORCING STEEL

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 40 mm UNLESS SHOWN OTHERWISE.

DIMENSIONS

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (mm) UNLESS OTHERWISE SPECIFIED.

DRAWINGS ARE NOT TO SCALE. FOLLOW DIMENSIONS.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

PIPE CULVERT HEADWALL
ENERGY DISSIPATOR (IMPACT TYPE) FOR 1 050 mm CONCRETE PIPE

DATE _____ | EFFECTIVE: 07-01-2001 | M604.14E | 1/1