GENERAL NOTES:

TYPE 1A:
WHEN "P" (PAVEMENT THICKNESS) IS 8" USE MANHOLE FRAME WITH 9" HEIGHT (F) APPROXIMATE WEIGHT OF FRAME & COVER, 540 LBS., CLASS 35 CASTING.

TYPE 1B:
WHEN "P" (PAVEMENT THICKNESS) IS 9" OR 10", USE MANHOLE FRAME WITH 10" HEIGHT (F) APPROXIMATE WEIGHT OF FRAME & COVER, 570 LBS., CLASS 35 CASTING.

TYPE 1C:
TYPE 1C MANHOLE FRAME AND COVER WILL BE ACCEPTED AS AN ALTERNATE TO TYPE 1A OR TYPE 1B, APPROXIMATE WEIGHT OF FRAME AND COVER, 290 LBS.

FOR "P" GREATER THAN 10" ADJUSTING RINGS COMBINED WITH MANHOLE FRAMES WITH 7" COVR. TO 9" OR 10" SHALL BE USED TO MATCH PAVEMENT THICKNESS.

THE PRICE BID FOR MANHOLE FRAME AND COVER SHALL INCLUDE THE NUMBER OF ADJUSTING RINGS REQUIRED TO MATCH PAVEMENT THICKNESS.

WHEN SPECIFIED, USE A LOCK TYPE FRAME & COVER WITH A MINIMUM OF THREE LOCK BLOCKS AND BOLTS.

MANHOLE ADJUSTING RINGS SHALL BE SECURED TO EITHER THE FRAME OR PAVEMENT TO PREVENT MOVEMENT UNDER TRAFFIC.

A CHECKERED DESIGN TOP SHALL BE FURNISHED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
	MANHOLE FRAMES AND COVERS		
DATE:	EFFECTIVE: 03-01-1996	614.30E	1/1

VARIABLE DIMENSIONS					
SIZE OF PIPE	W	T	B	M	N
1'-25"	3'–0"	4'–6"	7"	VARIABLE	1 1/2 "
30"	3'–9"	4'–6"	7"		1 1/2 "
36"	4'–3"	5'–2"	7"		8"
42"	4'–9"	5'–8"	8"		9 1/2 " *
48"	5'–0"	6'–2"	8"		7"*

* 4–#5 BARS ADDED

QUANTITIES								
		TO & INCLUDING 20' DEPTH			20' TO & INCLUDING 30' DEPTH			
SIZE (M)	D=1'-3" D=4'-3"	ADD OR SUBTRACT FOR EACH 1' FT.	ADD OR SUBTRACT FOR EACH 3 IN.	ADDITIONAL CONC. TO BOTTOM SLAB IN #4 BARS	ADD OR SUBTRACT FOR EACH 1' FT.	ADD OR SUBTRACT FOR EACH 3 IN.	ADDITIONAL CONC. TO BOTTOM SLAB IN #4 BARS	
2'-0" x 3'-0"	C	1.62	1.83	0.31	0.05	0.31	0.05	
	S	157.90	176.80	18.60	2.00	20.64	3.15	35.14
2'-0" x 3'-8"	C	1.77	2.11	0.33	0.05	0.33	0.05	
	S	173.80	194.80	20.60	2.30	23.12	3.78	34.85
2'-0" x 4'-0"	C	1.83	2.28	0.35	0.05	0.35	0.05	
	S	187.10	208.60	21.30	2.30	24.27	4.07	39.56
2'-0" x 4'-8"	C	2.16	2.53	0.38	0.05	0.38	0.05	
	S	211.30	234.70	23.30	2.70	28.75	5.69	44.25
2'-0" x 5'-0"	C	2.32	2.71	0.40	0.10	0.40	0.10	
	S	219.60	243.80	24.00	2.70	27.60	6.87	48.57
2'-6" x 3'-8"	C	1.94	2.29	0.35	0.05	0.35	0.05	
	S	192.40	213.10	22.70	2.70	25.65	5.40	40.27
2'-6" x 4'-0"	C	2.10	2.48	0.38	0.05	0.38	0.05	
	S	204.30	227.70	23.40	2.70	26.75	6.69	45.89
2'-6" x 4'-8"	C	2.35	2.75	0.40	0.10	0.40	0.10	
	S	230.00	255.50	25.30	3.00	29.23	7.31	51.11
2'-6" x 5'-0"	C	2.53	2.95	0.42	0.10	0.42	0.10	
	S	240.90	267.10	26.00	3.00	30.38	7.60	58.53
4'-0" x 4'-0"	C	2.29	2.68	0.40	0.10	0.40	0.10	
	S	218.70	240.80	24.10	2.70	27.60	6.87	51.63
4'-0" x 4'-8"	C	2.55	2.97	0.42	0.10	0.42	0.10	
	S	246.40	272.60	26.00	3.00	30.38	7.60	57.05
4'-0" x 5'-0"	C	2.74	3.18	0.44	0.11	0.44	0.11	
	S	255.60	282.50	26.70	3.00	31.53	7.88	64.10
4'-6" x 4'-6"	C	2.75	3.19	0.44	0.11	0.44	0.11	
	S	278.80	304.90	28.00	3.30	32.86	8.22	64.81
4'-6" x 5'-0"	C	2.84	3.41	0.46	0.12	0.46	0.12	
	S	289.40	318.30	28.70	3.30	34.01	8.50	71.68
5'-0" x 5'-0"	C	3.15	3.64	0.48	0.12	0.48	0.12	
	S	299.80	329.30	29.40	3.30	35.16	8.79	79.33

TO AND INCLUDING 20 FOOT DEPTH

NOTE:
TO COMPUTE THE QUANTITIES FOR "C"s NOT SHOWN, REFER TO TABLE FOR THE SIZE OF MANHOLE REQUIRED. SUM TH THESE QUANTITIES AND THE QUANTITIES SHOWN FOR 1 FOOT TIMES THE NUMBER OF FULL FOOT INCREMENTS IN THE ADDITIONAL "D" DEPTH. THEN ADD THE QUANTITIES GIVEN FOR "-" TIMES THE NUMBER OF "3" INCREMENTS IN THE REMAINING FOOT OF "D".

FOR EXAMPLE: QUANTITIES FOR 3'–0" X 4'–0" MANHOLE WITH 8'–9" "D" HAVING 1–18", 1–24" & 1–36" PIPE OPENINGS ARE DETERMINED AS FOLLOWS:

		CONC.	STEEL
"D" REQUIRED = 8'–9" "D" GIVEN IN TABLE = 4'–3" "D" ADDITIONAL = 4'–6"			
FROM TABLE FOR 4'–3" "D"	2.28	208.6	
ADD (2 X QUANTITIES FOR 1 FOOT)	0.70	42.6	
ADD (6" – 2 X 3") (2 X QUANTITIES FOR 3")	0.18	4.8	
SUBTOTAL	3.16	255.8	
DEDUCT CONCRETE FOR THE PIPE OPENINGS	0.40		
ADD STEEL FOR PIPE OPENING 3'–3" & 1–#4 WALLS			19.5
TOTAL	2.76	275.3	
USE	2.80	280.0	

MORE THAN 20 FOOT TO AND INCLUDING 30 FOOT DEPTH

FIRST: COMPUTE QUANTITIES FOR 20' DEPTH FROM THE TABLE "TO AND INCLUDING 20' DEPTH".

FOR EXAMPLE: QUANTITIES FOR 3'–0" X 4'–0" MANHOLE WITH 30'–0" "D" HAVING 1–18", 1–24" AND 1–36" PIPE OPENINGS ARE DETERMINED AS FOLLOWS:

		CONC.	STEEL
"D" REQUIRED = 30'–0" "D" COMPUTED = 20'–0" "D" ADDITIONAL = 10'–0"			
FROM TABLE FOR 4'–3" "D"	2.28	208.6	
ADD (10 X QUANTITIES FOR 1 FOOT)	5.20	318.5	
ADD (9" – 3x3")(3 X QUANTITY FOR 3")	0.27	6.9	
SUBTOTAL	7.80	533.0	
DEDUCT CONCRETE FOR THE PIPE OPENINGS	0.40		
ADD STEEL FOR PIPE OPENING 3'–3" & 1–#4 WALLS			19.50
SUB-TOTAL (30' DEPTH)	7.40	514.5	
ADD CONCRETE (10 X QUANTITY FOR 1 FOOT)	3.50		
ADD STEEL (10 X QUANTITY FOR 1 FOOT)			242.70
ADD STEEL (ADDITIONAL STEEL IN BOTTOM)		39.58	
TOTAL (30' FT. DEPTH)	10.90	838.78	1040.00
USE	10.9	840.0	

SECOND: COMPUTE QUANTITIES FOR DEPTHS BEYOND 20 FEET TO A MAXIMUM OF 30 FEET USING THE TABLE "20–FOOT TO AND INCLUDING 30–FOOT DEPTH", AND ADD TO THE QUANTITIES FOR 20–FOOT DEPTH. AFOD ADD THE DIFFERENCE IN STEEL IN THE BOTTOM DUE TO AN INCREASE IN SIZE OF BARS FROM #4 TO #5 BARS ON 7–INCH CENTERS.

FOR EXAMPLE:

"D" REQUIRED	= 30'–0"	
"D" COMPUTED	= 20'–0"	
"D" ADDITIONAL	= 10'–0"	
ADD CONCRETE (10 X QUANTITY FOR 1 FOOT)	3.50	
ADD STEEL (10 X QUANTITY FOR 1 FOOT)		242.70
ADD STEEL (ADDITIONAL STEEL IN BOTTOM)	39.58	
TOTAL (30' FT. DEPTH)	10.90	838.78 1040.00
USE	10.9	840.0

FOR PIPE OPENINGS								
	PIPE SIZES							
	12"	15"	18"	24"	30"	36"	42"	48"
CU. YDS. CONC. TO DEDUCT	0.03	0.04	0.05	0.11	0.16	0.23	0.31	0.40
ADDITIONAL STEEL REQUIRED FOR PIPE OPENING								
WIDTH OF WALL REQUIRED FOR PIPE	3'–0"	3'–4"	3'–6"	4'–0"	4'–6"	5'–0"		
LENGTH OF #5 BAR REQUIRED	4'–0"	4'–8"	5'–0"	5'–6"	6'–0"	6'–6"		
WEIGHT OF BAR LBS.	6.0	6.8	7.5	8.3	9.0			

NOTE:
CONCRETE QUANTITIES IN TABLE INCLUDE WASTE. THE QUANTITY OF STEEL FOR 3'–0" TO 5'–0" SQ. SLABS IS BASED ON 1 FOOT CUTS. STEEL FOR 3'–6" TO 5'–0" SQ. SLABS IS BASED ON 1 FOOT CUTS. FOR 1 FOOT OF "D" OR "C" USE QUANTITY IN 1 FOOT COLUMN FOR FULL FEET AND IN 5" COLUMN FOR FRACTIONAL FEET.

GENERAL NOTES:

THE MAXIMUM DEPTH OF MANHOLE USING #4 HORIZONTAL BARS AT 12" CENTERS IS 20'.

OVER 20' DEPTH, HORIZONTAL BARS SHALL BE INCREASED TO A #5 BAR AT 10" CENTERS TO A MAXIMUM DEPTH OF 30'.

OVER 30' DEPTH WILL REQUIRE A SPECIAL DESIGN.

BOTTOM STEEL AT MORE THAN 20' DEPTH TO A MAXIMUM DEPTH OF 30' IS INCREASED TO #5 BARS AT 7" CENTERS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
	CONCRETE MANHOLES		
DATE:	EFFECTIVE: 04-01-1983	604.30F	1/1

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HUTCHINGS FARM PLAZA
CONSRUCTION DETAILS
ST. CHARLES COUNTY, MISSOURI

Prepared For:
Hutchings Farm Plaza LLC

8 PARKLAND AVE.
GLENDALE, MO 63122

REVISIONS		
NO.	DATE	

ENGINEERS AUTHENTICATION
The responsibility for professional engineering liability on this project is hereby limited to the set of plans authenticated by the seal, signature, and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in this project and specifically excludes revisions after this date unless reauthenticated.

PICKETT, RAY & SILVER, INC
STATE OF MISSOURI
ERIC SCOTT KIRCHNER
E-2001004618
REGISTERED PROFESSIONAL ENGINEER
2/13/2004

DRAWN	J.M.WINTERS	DATE	1.27.04
CHECKED	E.S.KIRCHNER	DATE	1.27.04
PROJECT #	95234.ARIM.OOC		
TASK #	1	FIELD BOOK	

HUTCHINGS FARM PLAZA
CONSTRUCTION DETAILS

SHEET 9 OF 11

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