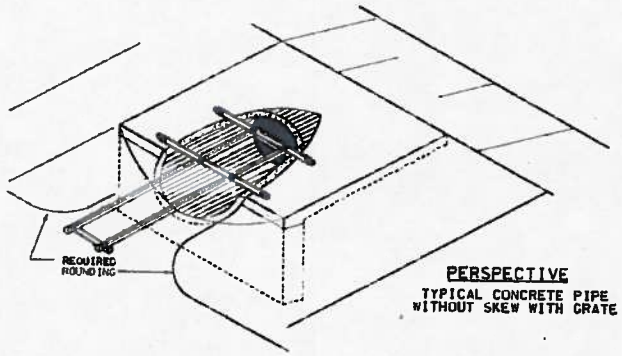
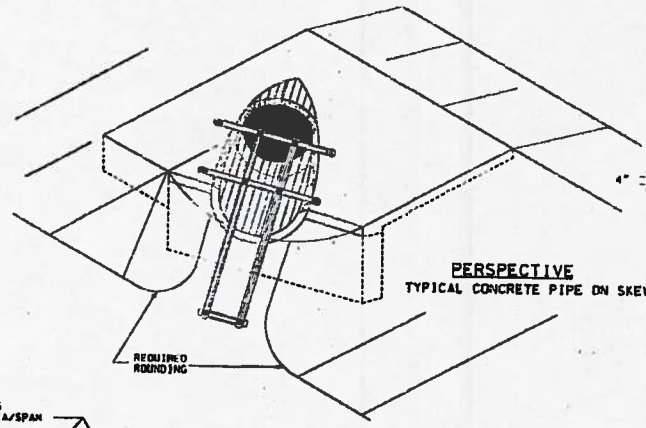
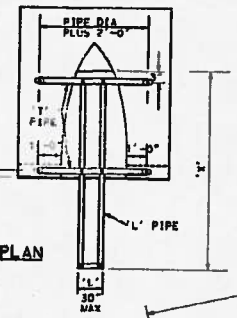
REFERENCE PROJECT NO	FISCAL YEAR	SHEET NO



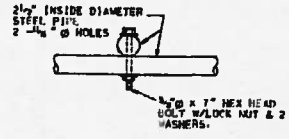
PERSPECTIVE
TYPICAL CONCRETE PIPE WITHOUT SKEW WITH GRATE



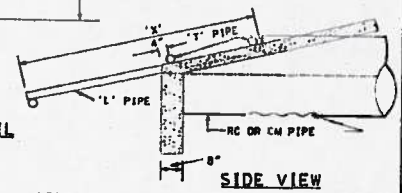
PERSPECTIVE
TYPICAL CONCRETE PIPE ON SKEW



PLAN

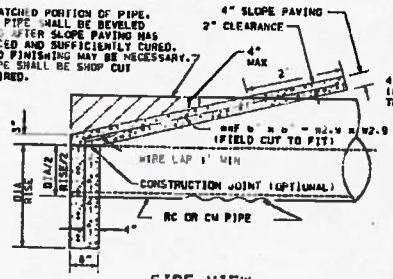


FASTENING DETAIL

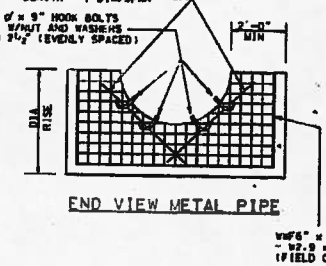


GRATE DETAIL

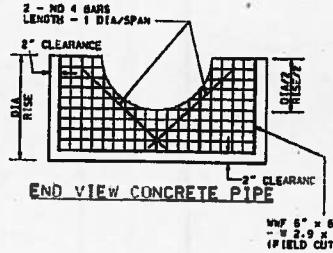
SIDE VIEW



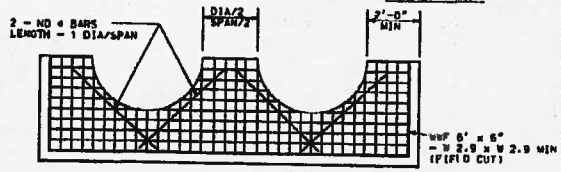
SIDE VIEW



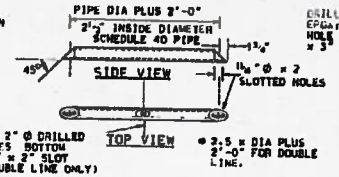
END VIEW METAL PIPE



END VIEW CONCRETE PIPE

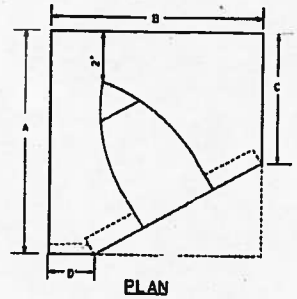


END VIEW-DOUBLE CONCRETE PIPE

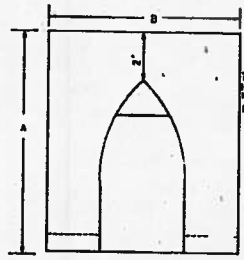


PIPE DETAIL

GRATE ATTACHMENT DETAIL



PLAN
ON SKEW



PLAN
NO SKEW

GENERAL NOTES

1. THE FILL SHALL BE PLACED AND FINISHED AND ALL SHORING REMOVED BEFORE ANY CONCRETE SHALL BE PLACED ON SLOPES.
2. QUANTITIES SHOWN INCLUDES TWO (2) COMPLETE HEADWALLS.
3. WHERE 4:1 FRONT SLOPES ARE REQUIRED. THEY SHALL BE WARPED TO FIT 4:1 INSTALLATION.
4. 8" THICK END WALL SHALL BE PERPENDICULAR TO FLOW LINE. WARP AND DRESS ADJACENT FILL TO FIT SKEWED CONDITIONS. EDGES OF PAVING PLACED UPON FRONT SLOPE SHALL BE PARALLEL TO SLOPE LINE.
5. DETAIL AND QUANTITIES SHOWN ON THIS DRAWING APPLIES TO REINFORCED CONCRETE AND CORRUGATED METAL PIPES.
6. SLOP D PAVED HEADWALL WITHOUT GRATE SHALL BE CLASS 1. HEAD WALL WITH GRATE SHALL BE CLASS 2.
7. A 24" PIPE WITH GREATER THAN A 30° SKEW AND 30" OR GREATER IN DIAMETER SHALL HAVE A CLASS 2 END TREATMENT WHEN TERMINATED WITHIN THE CLEAR ZONE.
8. AN ADDITIONAL 4" THICK TOEWALL THAT IS 12" DEEP WILL BE REQUIRED ON 30° AND 45° SKEWED PIPES. SEE DIMENSION "D" ON PLAN VIEW.

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS
1. Added by [illegible] on [illegible] by J.A.C.
2. Changed note No. 7 and added a grate to concrete pipe on skew on 10-11-00 by G.R.A.

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 COLISEUM BOULEVARD
MONTGOMERY, AL 36130-3050

DESIGN BUREAU SPECIAL DRAWING

SLOPE PAVED HEADWALL DETAIL FOR REINFORCED CONCRETE AND CORRUGATED METAL ROADWAY PIPE

Bureau Std Engr: L.V.S.
plans Eng: DATE prepared 05-07-99

SPECIAL DRAWING NO: HW-614-B (SHEET 1 OF 2)

PAGE NO: 413

NOT TO SCALE

ALDOT Special Drawing HW-614-SP

REFERENCE PROJECT NO	FISCAL YEAR	SHEET NO

DIMENSIONS AND QUANTITIES TABLES FOR ROUND PIPE

0° SKEW

PIPE DIA	ROUND PIPE	2:1 SLOPE A	2:1 SLOPE B	2:1 SLOPE CU YD CONC	3:1 SLOPE A	3:1 SLOPE B	3:1 SLOPE CU YD CONC	4:1 SLOPE A	4:1 SLOPE B	4:1 SLOPE CU YD CONC
15"	SINGLE	3'-5"	5'-3"	.4	4'-0"	5'-3"	.4	4'-7"	5'-3"	.4
	DOUBLE	3'-5"	7'-2"	.5	4'-0"	7'-2"	.5	4'-7"	7'-2"	.6
18"	SINGLE	3'-8"	5'-4"	.4	4'-4"	5'-6"	.4	5'-1"	5'-6"	.5
	DOUBLE	[illegible]	[illegible]	.5	[illegible]	[illegible]	.6	[illegible]	[illegible]	.7
24"	SINGLE	4'-3"	6'-0"	.5	5'-2"	6'-0"	.6	6'-2"	6'-0"	.6
	DOUBLE	4'-3"	9'-0"	.8	5'-2"	9'-0"	.8	6'-2"	9'-0"	.9
30"	SINGLE	4'-10"	6'-6"	.6	5'-11"	6'-6"	.7	7'-2"	6'-6"	.7
	DOUBLE	4'-10"	10'-3"	1.0	6'-0"	10'-3"	1.0	7'-2"	10'-3"	1.1
36"	SINGLE	5'-4"	7'-0"	.8	6'-9"	7'-0"	.8	8'-2"	7'-0"	.9
	DOUBLE	5'-5"	11'-6"	1.2	6'-9"	11'-6"	1.2	8'-3"	11'-6"	1.3
42"	SINGLE	5'-11"	7'-6"	.9	7'-7"	7'-6"	.9	9'-3"	7'-6"	1.0
	DOUBLE	5'-11"	12'-9"	1.4	7'-7"	12'-9"	1.5	9'-3"	12'-9"	1.5
48"	SINGLE	6'-6"	8'-0"	1.0	8'-4"	8'-0"	1.1	10'-3"	8'-0"	1.1
	DOUBLE	6'-6"	14'-0"	1.6	8'-4"	14'-0"	1.7	10'-3"	14'-0"	1.7
54"	SINGLE	7'-0"	8'-6"	1.1	9'-1"	8'-6"	1.2	11'-3"	8'-6"	1.2
	DOUBLE	7'-0"	15'-3"	1.9	9'-1"	15'-3"	2.0	11'-4"	15'-3"	2.0
60"	SINGLE	7'-7"	9'-0"	1.3	9'-11"	9'-0"	1.3	12'-4"	9'-0"	1.3
	DOUBLE	7'-7"	16'-6"	2.2	9'-11"	16'-6"	2.3	12'-4"	16'-6"	2.2

15° SKEW

PIPE DIA	ROUND PIPE	2:1 A	2:1 B	2:1 C	2:1 D	2:1 CU YD CONC	3:1 A	3:1 B	3:1 C	3:1 D	3:1 CU YD CONC	4:1 A	4:1 B	4:1 C	4:1 D	4:1 CU YD CONC
15"	SINGLE	[illegible]	5'-5"	2'-9"	5"	.4	4'-6"	5'-1"	3'-4"	7"	.4	5'-3"	5'-9"	3'-11"	9"	.5
	DOUBLE	[illegible]	7'-3"	2'-9"	5"	.6	5'-2"	7'-5"	3'-4"	7"	.6	5'-9"	7'-7"	3'-11"	9"	.6
18"	SINGLE	[illegible]	5'-9"	3'-0"	6"	.4	5'-1"	5'-11"	3'-8"	8"	.5	5'-10"	5'-2"	4'-4"	10"	.6
	DOUBLE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6'-5"	8'-4"	[illegible]	10"	.7
24"	SINGLE	[illegible]	[illegible]	[illegible]	[illegible]	.6	5'-11"	6'-8"	4'-5"	11"	.6	6'-11"	6'-11"	5'-4"	1'-1"	.7
	DOUBLE	[illegible]	9'-1"	3'-6"	8"	.8	6'-9"	9'-7"	4'-5"	11"	.9	7'-8"	9'-10"	5'-5"	1'-1"	1.0
30"	SINGLE	[illegible]	7'-0"	4'-0"	9"	.7	6'-10"	7'-4"	5'-2"	1'-1"	.8	8'-0"	7'-6"	6'-1"	1'-5"	.9
	DOUBLE	[illegible]	10'-4"	4'-0"	9"	1.1	7'-10"	11'-0"	5'-2"	1'-1"	1.2	9'-0"	11'-4"	6'-1"	1'-5"	1.3
36"	SINGLE	6'-3"	7'-8"	4'-6"	11"	.8	7'-6"	8'-0"	5'-10"	1'-4"	.9	9'-1"	8'-5"	7'-4"	1'-8"	1.0
	DOUBLE	7'-5"	12'-0"	4'-6"	11"	1.3	8'-10"	12'-5"	5'-10"	1'-4"	1.4	10'-3"	12'-10"	7'-4"	1'-8"	1.5
42"	SINGLE	[illegible]	8'-4"	5'-0"	1'-1"	1.0	8'-6"	8'-9"	6'-7"	1'-6"	1.1	10'-2"	9'-2"	8'-3"	2'-0"	1.2
	DOUBLE	[illegible]	13'-5"	5'-0"	1'-1"	1.6	9'-11"	13'-10"	6'-7"	1'-6"	1.7	11'-7"	14'-3"	8'-3"	2'-0"	1.8
48"	SINGLE	[illegible]	8'-11"	5'-6"	1'-3"	1.1	9'-4"	9'-6"	7'-4"	1'-9"	1.2	11'-3"	9'-11"	9'-3"	2'-3"	1.4
	DOUBLE	[illegible]	14'-9"	5'-6"	1'-3"	1.9	10'-11"	15'-3"	7'-4"	1'-9"	2.0	12'-10"	15'-9"	9'-3"	2'-3"	2.1
54"	SINGLE	[illegible]	9'-7"	6'-0"	1'-4"	1.2	10'-3"	10'-1"	8'-0"	1'-11"	1.4	12'-5"	10'-8"	10'-3"	2'-6"	1.5
	DOUBLE	[illegible]	16'-1"	6'-0"	1'-4"	2.2	12'-0"	16'-8"	8'-0"	1'-11"	2.3	14'-7"	17'-5"	10'-3"	2'-6"	2.4
60"	SINGLE	[illegible]	10'-2"	6'-5"	1'-6"	1.4	11'-1"	10'-10"	8'-9"	2'-2"	1.6	13'-6"	11'-5"	11'-2"	2'-10"	1.7
	DOUBLE	[illegible]	17'-0"	6'-5"	1'-6"	2.5	13'-1"	18'-1"	8'-9"	2'-2"	2.7	15'-5"	18'-9"	11'-2"	2'-10"	2.8

30° SKEW

PIPE DIA	ROUND PIPE	2:1 A	2:1 B	2:1 C	2:1 D	2:1 CU YD CONC	3:1 A	3:1 B	3:1 C	3:1 D	3:1 CU YD CONC	4:1 A	4:1 B	4:1 C	4:1 D	4:1 CU YD CONC
15"	SINGLE	4'-9"	5'-4"	2'-1"	10"	.4	5'-3"	5'-8"	2'-8"	1'-2"	.4	5'-11"	6'-0"	3'-4"	1'-6"	.5
	DOUBLE	5'-8"	7'-0"	2'-1"	10"	.5	6'-3"	7'-4"	2'-8"	1'-2"	.6	6'-10"	7'-8"	3'-4"	1'-6"	.7
18"	SINGLE	5'-1"	6'-9"	2'-4"	1'-0"	.4	5'-9"	5'-9"	3'-0"	1'-5"	.4	5'-8"	6'-6"	3'-5"	1'-10"	.5
	DOUBLE	[illegible]	[illegible]	2'-4"	[illegible]	[illegible]	6'-11"	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1'-10"	[illegible]
24"	SINGLE	5'-5"	6'-6"	2'-9"	1'-4"	.6	6'-6"	7'-0"	3'-8"	1'-10"	.7	7'-7"	7'-7"	4'-4"	2'-3"	.8
	DOUBLE	7'-3"	9'-1"	2'-9"	1'-4"	.9	8'-2"	9'-8"	3'-8"	1'-10"	1.0	9'-2"	10'-3"	4'-8"	2'-5"	1.1
30"	SINGLE	6'-5"	7'-3"	3'-9"	1'-6"	.7	7'-2"	7'-11"	4'-1"	2'-4"	.8	8'-9"	8'-7"	5'-7"	3'-0"	1.0
	DOUBLE	8'-4"	10'-6"	3'-9"	1'-6"	1.1	9'-6"	11'-2"	4'-1"	2'-4"	1.3	10'-8"	11'-11"	5'-7"	3'-0"	1.4
36"	SINGLE	7'-1"	8'-0"	3'-8"	1'-11"	.9	8'-6"	8'-10"	5'-0"	2'-9"	1.0	9'-11"	9'-6"	6'-6"	3'-7"	1.2
	DOUBLE	9'-5"	11'-11"	3'-8"	1'-11"	1.4	10'-9"	12'-9"	5'-0"	2'-9"	1.5	12'-3"	13'-7"	6'-6"	3'-7"	1.7
42"	SINGLE	7'-9"	8'-9"	4'-1"	2'-4"	1.0	9'-5"	9'-8"	5'-8"	3'-3"	1.2	11'-1"	10'-8"	7'-3"	4'-2"	1.4
	DOUBLE	10'-5"	13'-1"	4'-1"	2'-4"	1.7	12'-1"	14'-1"	5'-8"	3'-3"	1.9	13'-9"	15'-3"	7'-3"	4'-2"	2.0
48"	SINGLE	8'-6"	9'-6"	4'-6"	2'-7"	1.1	10'-4"	10'-7"	6'-4"	3'-8"	1.3	12'-3"	11'-8"	8'-3"	4'-10"	1.6
	DOUBLE	11'-6"	14'-9"	4'-6"	2'-7"	2.0	13'-4"	15'-10"	6'-4"	3'-8"	2.2	15'-3"	16'-11"	8'-3"	4'-10"	2.4
54"	SINGLE	9'-2"	10'-3"	4'-11"	2'-11"	1.3	11'-3"	11'-6"	7'-0"	4'-2"	1.5	13'-5"	12'-9"	9'-2"	5'-5"	1.8
	DOUBLE	12'-7"	15'-2"	4'-11"	2'-11"	2.4	14'-8"	17'-4"	7'-0"	4'-2"	2.6	16'-10"	18'-7"	9'-2"	5'-5"	2.9
60"	SINGLE	9'-10"	11'-0"	5'-5"	3'-3"	1.5	12'-2"	12'-4"	7'-6"	4'-7"	1.7	14'-7"	13'-9"	10'-1"	6'-0"	2.0
	DOUBLE	13'-8"	17'-7"	5'-5"	3'-3"	2.7	15'-11"	18'-11"	7'-6"	4'-7"	3.0	18'-4"	20'-3"	10'-1"	6'-0"	3.2

45° SKEW

PIPE DIA	ROUND PIPE	2:1 A	2:1 B	2:1 C	2:1 D	2:1 CU YD CONC	3:1 A	3:1 B	3:1 C	3:1 D	3:1 CU YD CONC	4:1 A	4:1 B	4:1 C	4:1 D	4:1 CU YD CONC
15"	SINGLE	5'-3"	5'-1"	1'-7"	1'-5"	.4	5'-10"	5'-8"	2'-2"	2'-0"	.5	6'-5"	6'-3"	2'-9"	2'-7"	.5
	DOUBLE	6'-7"	6'-6"	1'-7"	1'-5"	.6	7'-2"	7'-1"	2'-2"	2'-0"	.6	7'-10"	7'-8"	2'-9"	2'-7"	.7
18"	SINGLE	5'-7"	5'-7"	1'-9"	1'-7"	.4	6'-4"	5'-5"	2'-6"	2'-4"	.5	7'-0"	7'-0"	3'-4"	3'-2"	.6
	DOUBLE	[illegible]	[illegible]	1'-9"	1'-7"	[illegible]	7'-11"	[illegible]	[illegible]	2'-5"	.8	8'-8"	8'-7"	3'-2"	3'-2"	.9
24"	SINGLE	6'-4"	6'-6"	2'-2"	2'-3"	.6	7'-3"	7'-5"	3'-1"	3'-2"	.7	8'-3"	8'-4"	4'-1"	4'-2"	.8
	DOUBLE	8'-5"	8'-8"	2'-2"	2'-3"	.9	9'-5"	9'-7"	3'-1"	3'-2"	1.0	10'-5"	10'-6"	4'-1"	4'-2"	1.1
30"	SINGLE	7'-4"	7'-5"	2'-8"	2'-10"	.7	8'-5"	8'-7"	3'-9"	4'-0"	.9	9'-4"	9'-9"	4'-11"	5'-2"	1.1
	DOUBLE	9'-5"	10'-1"	2'-8"	2'-10"	1.2	10'-11"	11'-3"	3'-6"	4'-0"	1.3	12'-2"	12'-5"	4'-11"	5'-2"	1.5
36"	SINGLE	7'-10"	8'-4"	2'-11"	3'-5"	.9	9'-3"	9'-8"	4'-4"	4'-9"	1.1	10'-6"	11'-2"	5'-9"	6'-3"	1.3
	DOUBLE	11'-1"	11'-6"	2'-11"	3'-5"	1.4	12'-5"	12'-11"	4'-4"	4'-9"	1.6	13'-11"	14'-4"	5'-9"	6'-3"	1.8
42"	SINGLE	8'-7"	9'-3"	3'-4"	3'-11"	1.0	10'-2"	10'-10"	4'-11"	5'-7"	1.3	11'-10"	12'-6"	6'-7"	7'-3"	1.6
	DOUBLE	12'-4"	13'-0"	3'-4"	3'-11"	1.8	13'-11"	14'-7"	4'-11"	5'-7"	2.0	15'-7"	16'-3"	6'-7"	7'-3"	2.1
48"	SINGLE	9'-4"	10'-2"	3'-8"	4'-6"	1.2	11'-2"	12'-0"	5'-6"	6'-4"	1.5	13'-1"	13'-11"	7'-5"	8'-3"	1.8
	DOUBLE	13'-7"	14'-5"	3'-8"	4'-6"	2.1	15'-5"	16'-3"	5'-6"	6'-4"	2.3	17'-4"	18'-2"	7'-5"	8'-3"	2.5
54"	SINGLE	10'-0"	11'-0"	4'-1"	5'-1"	1.4	12'-1"	13'-2"	6'-2"	7'-2"	1.7	14'-3"	15'-3"	8'-4"	9'-4"	2.0
	DOUBLE	14'-10"	15'-10"	4'-1"	5'-1"	2.4	16'-10"	17'-11"	6'-2"	7'-2"	2.7	19'-1"	20'-1"	8'-4"	9'-4"	2.9
60"	SINGLE	10'-9"	12'-0"	4'-5"	5'-8"	1.6	13'-1"	14'-3"	6'-9"	7'-11"	1.9	15'-5"	16'-8"	9'-2"	10'-4"	2.3
	DOUBLE	16'-1"	17'-4"	4'-5"	5'-8"	2.8	18'-5"	19'-7"	6'-9"	7'-11"	3.1	20'-10"	22'-0"	9'-2"	10'-4"	3.3

DIMENSIONS AND QUANTITIES TABLES FOR ARCH PIPE

PIPE SIZE CONC	ARCH PIPE	EQUIVALENT ROUND PIPE	0° SKEW 4:1 SLOPE A	B	CU YD CONC	15° SKEW 4:1 SLOPE A	B	C	D	CU YD CONC	30° SKEW 4:1 SLOPE A	B	C	D	CU YD CONC	45° SKEW 4:1 SLOPE A	B	C	D	CU YD CONC
1'-6" x 11"	SINGLE	15"	6'-1"	5'-6"	.5	6'-9"	6'-5"	5'-4"	1'-1"	.6	7'-5"	7'-1"	4'-8"	2'-4"	.7	8'-0"	7'-11"	4'-1"	4'-1"	.6
	DOUBLE		6'-1"	7'-9"	.6	7'-6"	8'-7"	5'-4"	1'-1"	.8	8'-7"	9'-0"	4'-8"	2'-4"	.8	9'-7"	9'-7"	4'-1"	4'-1"	.9
1'-10" x 1'-1"	SINGLE	18"	6'-1"	5'-10"	.6	6'-10"	6'-9"	5'-4"	1'-1"	.8	7'-6"	7'-8"	4'-7"	2'-4"	.7	8'-2"	8'-2"	4'-0"	4'-1"	.8
	DOUBLE		6'-1"	8'-7"	.7	7'-6"	9'-5"	5'-4"	1'-1"	.9	8'-11"	9'-10"	4'-7"	2'-4"	1.0	10'-1"	10'-2"	4'-0"	4'-1"	1.0
2'-5" x 1'-6"	SINGLE	21"	6'-1"	6'-9"	.7	6'-11"	7'-4"	5'-3"	1'-2"	.7	7'-4"	7'-11"	4'-6"	2'-6"	.8	8'-4"	8'-8"	3'-10"	4'-1"	.9
	DOUBLE		6'-1"	10'-0"	.9	7'-10"	10'-9"	5'-3"	1'-2"	1.2	9'-6"	11'-0"	4'-6"	2'-5"	1.2	10'-11"	11'-9"	3'-10"	4'-1"	1.2
3'-0" x 1'-10"	SINGLE	30"	6'-2"	7'-0"	.8	7'-1"	7'-11"	5'-3"	1'-2"	.8	7'-11"	8'-6"	4'-5"	2'-6"	.9	8'-7"	9'-1"	3'-8"	4'-2"	1.0
	DOUBLE		6'-2"	11'-6"	1.1	8'-3"	12'-3"	5'-3"	1'-2"	1.3	10'-2"	12'-4"	4'-5"	2'-5"	1.4	11'-10"	12'-3"	3'-8"	4'-2"	1.5
3'-7" x 2'-3"	SINGLE	36"	6'-3"	7'-7"	.9	7'-2"	8'-4"	5'-2"	1'-2"	0.9	8'-1"	9'-0"	4'-4"	2'-5"	1.0	8'-10"	9'-7"	3'-6"	4'-2"	1.1
	DOUBLE		6'-2"	13'-0"	1.3	8'-7"	13'-6"	5'-2"	1'-2"	1.6	10'-10"	13'-8"	4'-4"	2'-5"	1.7	12'-8"	13'-5"	3'-6"	4'-2"	1.8
4'-2" x 2'-7"	SINGLE	42"	6'-3"	8'-2"	1.0	7'-4"	9'-0"	5'-2"	1'-2"	1.1	8'-3"	9'-6"	4'-2"	2'-6"	1.1	9'-2"	10'-0"	3'-4"	4'-3"	1.2
	DOUBLE		6'-3"	14'-5"	1.5	8'-11"	15'-1"	5'-2"	1'-2"	1.8	11'-5"	14'-11"	4'-2"	2'-6"	2.0	13'-7"	14'-5"	3'-4"	4'-3"	2.1
4'-10" x 3'-0"	SINGLE	48"	6'-4"	8'-10"	1.1	7'-5"	9'-9"	5'-2"	1'-2"	1.2	8'-6"	10'-2"	4'-1"	2'-6"	1.3	9'-5"	10'-7"	3'-2"	4'-4"	1.3
	DOUBLE		6'-4"	16'-1"	1.8	9'-4"	16'-9"	5'-2"	1'-2"	2.2	12'-2"	16'-5"	4'-1"	2'-6"	2.4	14'-7"	15'-8"	3'-2"	4'-4"	2.5
5'-5" x 3'-4"	SINGLE	54"	6'-4"	9'-5"	1.3	7'-7"	10'-3"	5'-2"	1'-2"	1.3	8'-9"	10'-8"	4'-0"	2'-6"	1.4	9'-8"	11'-0"	3'-0"	4'-4"	1.5
	DOUBLE		6'-4"	17'-6"	2.1	9'-8"	18'-1"	5'-2"	1'-2"	2.5	12'-9"	17'-8"	4'-0"	2'-6"	2.7	15'-5"	16'-9"	3'-0"	4'-4"	2.7
6'-0" x 3'-8"	SINGLE	60"	6'-4"	10'-0"	1.4	7'-9"	10'-10"	5'-2"	1'-2"	1.5	8'-11"	11'-3"	3'-11"	2'-7"	1.5	10'-0"	11'-6"	2'-11"	4'-5"	1.6
	DOUBLE		6'-4"	19'-0"	2.3	10'-1"	19'-0"	5'-2"	1'-2"	2.8	13'-5"	19'-0"	3'-11"	2'-7"	3.1	16'-1"	17'-11"	2'-11"	4'-5"	3.2

GRATE FABRICATION TABLES

ARCH ROADWAY PIPE SPAN RISE	SKEW	SLOPE	"X"	ROADWAY PIPE GRATE "L" PIPE	"T" PIPE
3'-7" x 2'-3"	0°	4:1	7'-0"	2 @ 14" CC	3
3'-7" x 2'-3"	15°	4:1	7'-4"	2 @ 14" CC	3
3'-7" x 2'-3"	30°	4:1	8'-4"	2 @ 14" CC	3
3'-7" x 2'-3"	45°	4:1	10'-6"	2 @ 14" CC	3
4'-2" x 2'-7"	0°	4:1	7'-3"	2 @ 17" CC	3
4'-2" x 2'-7"	15°	4:1	7'-6"	2 @ 17" CC	3
4'-2" x 2'-7"	30°	4:1	8'-6"	2 @ 17" CC	3
4'-2" x 2'-7"	45°	4:1	10'-8"	2 @ 17" CC	3
4'-10" x 3'-0"	0°	4:1	7'-4"	2 @ 19" CC	3
4'-10" x 3'-0"	15°	4:1	7'-8"	2 @ 19" CC	3
4'-10" x 3'-0"	30°	4:1	8'-8"	2 @ 19" CC	3
4'-10" x 3'-0"	45°	4:1	10'-10"	2 @ 19" CC	3
5'-5" x 3'-4"	0°	4:1	7'-4"	2 @ 22" CC	3
5'-5" x 3'-4"	15°	4:1	7'-8"	2 @ 22" CC	3
5'-5" x 3'-4"	30°	4:1	8'-8"	2 @ 22" CC	3
5'-5" x 3'-4"	45°	4:1	11'-0"	2 @ 22" CC	3
6'-0" x 3'-8"	0°	4:1	7'-4"	2 @ 24" CC	3
6'-0" x 3'-8"	15°	4:1	7'-10"	2 @ 24" CC	3
6'-0" x 3'-8"	30°	4:1	8'-10"	2 @ 24" CC	3
6'-0" x 3'-8"	45°	4:1	11'-4"	2 @ 24" CC	3

GRATE FABRICATION TABLES

ROUND ROADWAY PIPE DIA	SKEW	SLOPE	"X"	ROADWAY PIPE GRATE "L" PIPE	"T" PIPE
36"	0°	3:1	8'-6"	2 @ 12" CC	3
36"	15°	3:1	8'-10"	2 @ 12" CC	3
36"	30°	3:1	10'-0"	2 @ 12" CC	3
36"	45°	3:1	12'-4"	2 @ 12" CC	3
36"	0°	4:1	11'-0"	2 @ 12" CC	3
36"	15°	4:1	11'-6"	2 @ 12" CC	3
36"	30°	4:1	13'-0"	2 @ 12" CC	3
36"	45°	4:1	16'-2"	2 @ 12" CC	3
42"	0°	3:1	10'-2"	2 @ 14" CC	3
42"	15°	3:1	10'-6"	2 @ 14" CC	3
42"	30°	3:1	11'-10"	2 @ 14" CC	3
42"	45°	3:1	14'-8"	2 @ 14" CC	3
42"	0°	4:1	13'-2"	2 @ 14" CC	3
42"	15°	4:1	13'-7"	2 @ 14" CC	3
42"	30°	4:1	15'-4"	2 @ 14" CC	3
42"	45°	4:1	19'-0"	2 @ 14" CC	3
48"	0°	3:1	11'-8"	2 @ 16" CC	3
48"	15°	3:1	12'-1"	2 @ 16" CC	3
48"	30°	3:1	13'-8"	2 @ 16" CC	3
48"	45°	3:1	16'-10"	2 @ 16" CC	3

ROUND ROADWAY PIPE DIA.	SKEW	SLOPE	"X"	ROADWAY PIPE GRATE "L" PIPE	"T" PIPE
48"	0°	4:1	15'-2"	2 @ 16" CC	3
48"	15°	4:1	15'-9"	2 @ 16" CC	3
48"	30°	4:1	17'-8"	2 @ 16" CC	3
48"	45°	4:1	22'-0"	2 @ 16" CC	3
54"	0°	3:1	13'-2"	2 @ 18" CC	3
54"	15°	3:1	13'-8"	2 @ 18" CC	3
54"	30°	3:1	15'-6"	2 @ 18" CC	3
54"	45°	3:1	19'-2"	2 @ 18" CC	3
54"	0°	4:1	17'-2"	2 @ 18" CC	3
54"	15°	4:1	17'-10"	2 @ 18" CC	3
54"	30°	4:1	20'-2"	2 @ 18" CC	3
54"	45°	4:1	24'-10"	2 @ 18" CC	3
60"	0°	3:1	14'-10"	2 @ 20" CC	3
60"	15°	3:1	15'-4"	2 @ 20" CC	3
60"	30°	3:1	17'-3"	2 @ 20" CC	3
60"	45°	3:1	21'-4"	2 @ 20" CC	3
60"	0°	4:1	19'-4"	2 @ 20" CC	3
60"	15°	4:1	20'-0"	2 @ 20" CC	3
60"	30°	4:1	22'-6"	2 @ 20" CC	3
60"	45°	4:1	27'-10"	2 @ 20" CC	3

--SPECIFICATIONS--
CURRENT ALABAMA DEPARTMENT OF TRANSPORTATION

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REVISIONS
1. Added to CADD on [illegible] by JAT
2. Corrected various numbers in the charts on [illegible] by JTJ

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DESIGN BUREAU SPECIAL DRAWING

SLOPE PAVED HEADWALL DETAIL FOR REINFORCED CONCRETE AND CORRUGATED METAL ROADWAY PIPE

SPECIAL DRAWING NO. HW-614-B (SHEET 2 OF 2) — INDEX NO. 414

NOT TO SCALE