HEADWALL TYPE	DIA. OF PIPE	HEADWALL DIMENSIONS				
		A	B	C	D	E
④ STANDARD	15"	1'-8 ½"	1'-2 ½"	4'-3"	2'-9"	6'-9"
	18"	1'-9"	1'-3"	4'-6"	3'-0"	7'-6"
	21"	1'-9 ½"	1'-3 ½"	4'-9"	3'-3"	8'-3"
	24"	1'-10"	1'-4"	5'-0"	3'-6"	9'-0"
	27"	1'-10 ½"	1'-4 ½"	5'-3"	3'-9"	9'-9"
⑤ RAISED	15"	1'-8 ½"	1'-2 ½"	4'-9"	3'-3"	8'-3"
	18"	1'-9"	1'-3"	5'-0"	3'-6"	9'-0"
	21"	1'-9 ½"	1'-3 ½"	5'-3"	3'-9"	9'-9"
	24"	1'-10"	1'-4"	5'-6"	4'-0"	10'-6"
	27"	1'-10 ½"	1'-4 ½"	5'-9"	4'-3"	11'-3"

NOTES:

① HEIGHT OF FOOTER SHALL BE 18" FOR SOIL AND 12" IN ROCK.

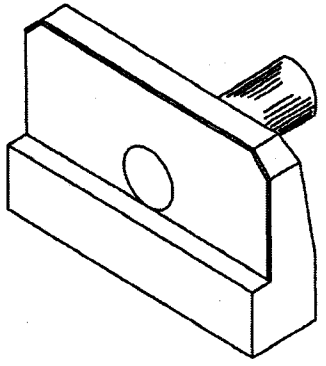
2. ALL EXPOSED EDGES TO BE CHAMFERED ¾".

3. ALL EXPOSED SURFACES TO HAVE A RUBBED FINISH.

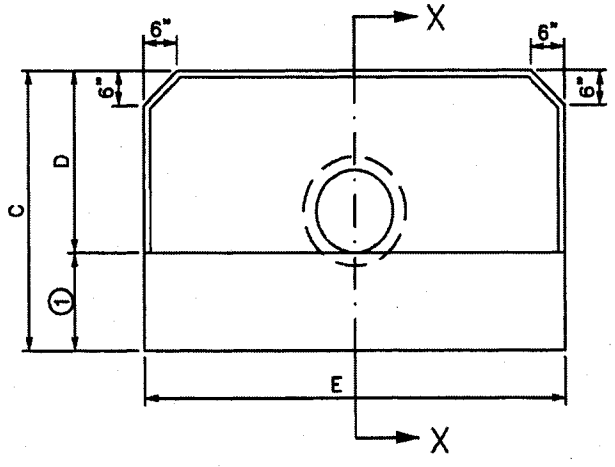
④ STANDARD HEADWALLS ARE FLUSH WITH SOIL FILL.

⑤ RAISED HEADWALLS PROTRUDE 6" ABOVE SOIL FILL.

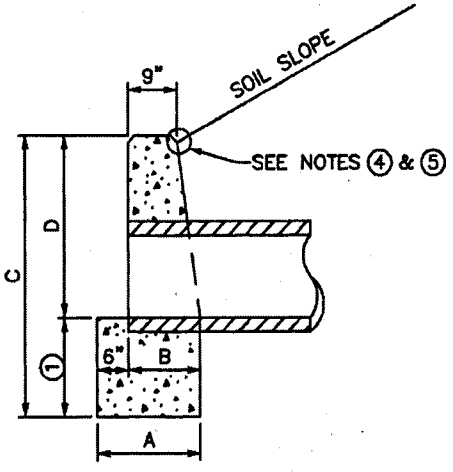
6. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "D" IS GREATER THAN 30".



ISOMETRIC VIEW



PLAN ELEVATION



SECTION X–X

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

STRAIGHT HEADWALLS

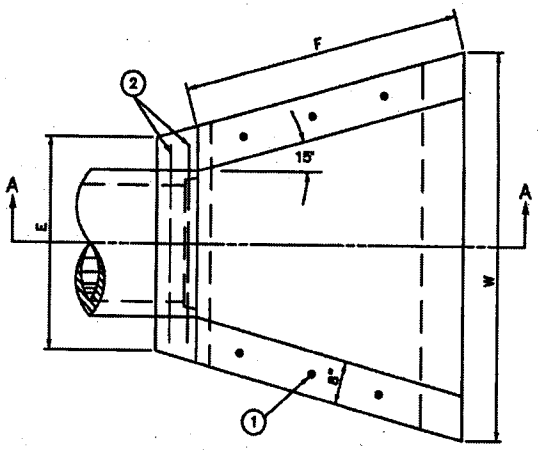
STANDARD DRAWING NO. 150

APPROVED 5/1/08

URBAN COUNTY ENGINEER DATE

COMMISSIONER DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



PLAN VIEW

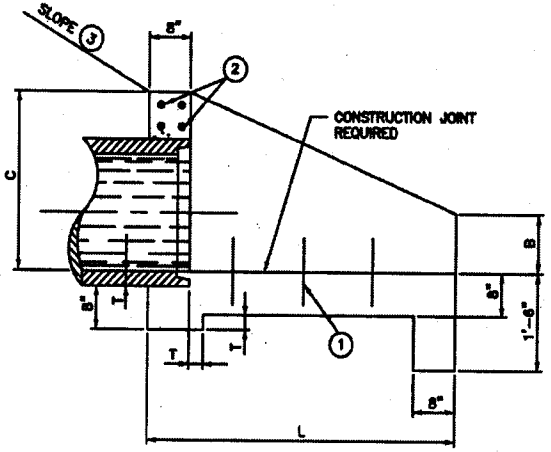
PIPE DIA.	DIMENSIONS							CLASS 'A' CONC.	REINF. STEEL
	B	C	E	F	L	W	T	C.Y.	LBS.
15"	0'-7½"	2'-0"	2'-9"	3'-5⅜"	4'-0"	4'-10¾"	2¼"	0.90	10
18"	0'-9"	2'-3"	3'-0"	3'-11⅝"	4'-6"	5'-4 15/16"	2½"	0.97	11
21"	0'-10½"	2'-6"	3'-3"	4'-5 13/16"	5'-0"	5'-11⅛"	2¾"	1.17	12
24"	1'-0"	2'-9"	3'-6"	5'-0"	5'-6"	6'-5⅜"	3"	1.38	12
27"	1'-1½"	3'-0"	3'-9"	5'-8 3/16"	6'-0"	6'-11⅝"	3¼"	1.62	13

SHEET NOTES:

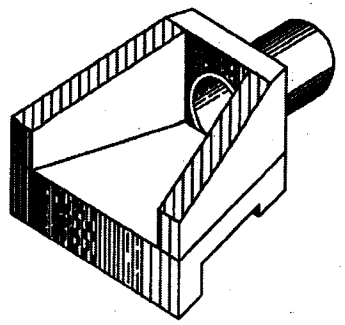
1. 6 #4 x 1'-0" DOWELS
2. 4 #4 x ("E" DIMENSION MINUS 4")
3. SLOPE SHALL BE WARPED TO FIT HEADWALL WHEN PIPE IS SKEWED AND / OR NORMAL SLOPE VARIES FROM 2:1.

NOTES:

1. REINFORCING STEEL MINIMUM GRADE 40, EVENLY SPACED (MIN. SPACING 12" O.C.)
2. VOLUME DISPLACED BY PIPE COMPUTED USING INSIDE DIAMETER OF PIPE.
3. WING ANGLES AND / OR DIMENSIONS MAY BE ALTERED DURING CONSTRUCTION TO ACCOMMODATE FLOW OF WATER.
4. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, BUT NOT TO EXCEED 5%. FRONT FACE OF HEADWALL SHALL REMAIN VERTICAL.
5. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "C" IS GREATER THAN 30".
6. ALL EXPOSED EDGES ARE TO HAVE ¾" CHAMFER.
7. SKEWED PIPE REQUIRES SPECIAL DESIGN.



SECTION A–A



ISOMETRIC VIEW

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PIPE CULVERT HEADWALLS
0° SKEW
15"–27" CIRCULAR PIPE

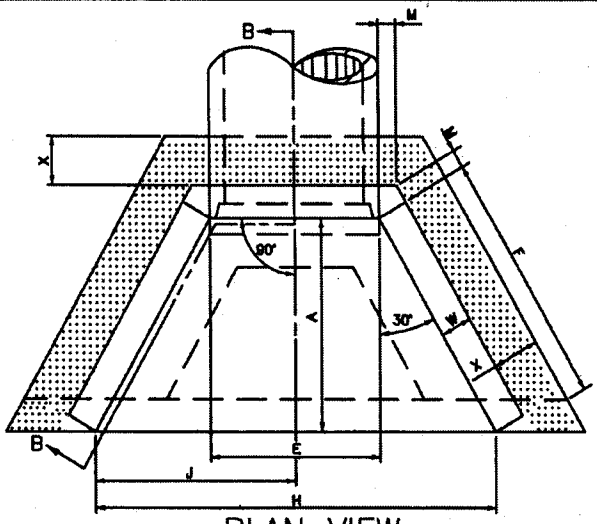
STANDARD DRAWING NO. 153

APPROVED _____ DATE 5/1/08

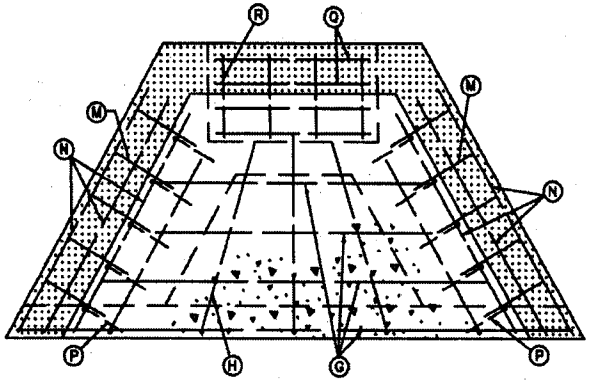
URBAN COUNTY ENGINEER _____ DATE 5/1/08

COMMISSIONER

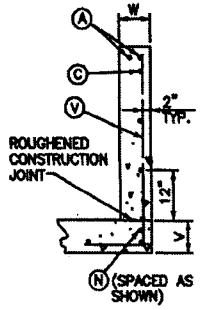
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



PLAN VIEW

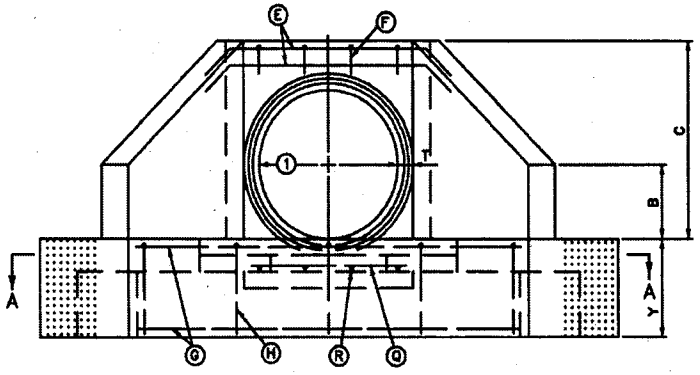


SECTION A–A

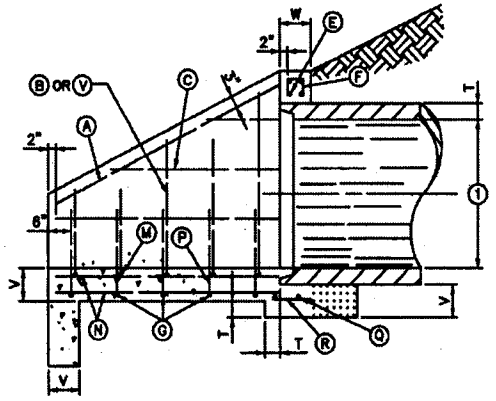


WING SECTION

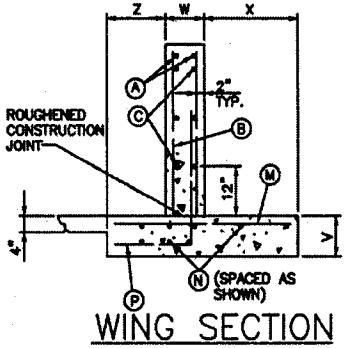
30"–60" CIRCULAR PIPE



FRONT ELEVATION



SECTION B–B



WING SECTION

66"–108" CIRCULAR PIPE

SHEET NOTE: ①

① DIAMETER OF PIPE

NOTES:

1. [dotted] APPLIES TO 66" DIAMETER AND GREATER. (CIRCULAR PIPE)
2. SEE SHEETS 2, 3, AND 4 OF CURRENT STD. DWG. 154 FOR DIMENSIONS, QUANTITIES, AND BILL OF REINFORCEMENT.
3. DIMENSIONS FROM FACE OF CONCRETE TO STEEL SHALL BE 2" CLEAR DISTANCE UNLESS OTHERWISE NOTED.
4. ENCIRCLED LETTERS, Ⓐ, INDICATE STEEL BAR LOCATIONS.
5. BARS Ⓑ·Ⓒ·Ⓖ·Ⓟ·Ⓜ·Ⓥ ARE SPACED 1'–0" O.C. ALL OTHER BARS SHALL BE EVENLY SPACED.
6. BARS Ⓑ AND Ⓥ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT THE END OF EACH WING.
7. BARS Ⓒ ARE PLACED IN ORDER OF INCREASING LENGTHS, BEGINNING AT TOP OF EACH WING.
8. HEADWALLS LOCATED AT EDGE OF SHOULDER SHALL BE PARALLEL TO CENTERLINE OF THE ROAD.
9. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, NOT TO EXCEED 5%.
10. FRONT OF HEADWALL AND ENDS OF WINGS SHALL REMAIN VERTICAL.
11. FENCE AND / OR HANDRAIL IS REQUIRED FOR ALL HEADWALLS, SEE STD. DWG. 308.
12. ALL EXPOSED EDGES ARE TO HAVE ¾" CHAMFER.

SHEET 1 OF 4

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PIPE CULVERT HEADWALLS
0° SKEW
30"–108" PIPE

STANDARD DRAWING NO. 154–1

APPROVED: [signature] DATE 5/1/08

URBAN COUNTY ENGINEER / COMMISSIONER [signature] DATE 5/1/08

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

DIMENSION	DIAMETER OF PIPE														DIMENSION
	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"	108"	
A	3'-9"	4'-4"	4'-11"	5'-6"	6'-1"	6'-8"	7'-5"	8'-0"	8'-7"	9'-2"	9'-9"	10'-4"	10'-11"	11'-6"	A
B	1'-3"	1'-6"	1'-9"	2'-0"	2'-3"	2'-6"	2'-9"	3'-0"	3'-3"	3'-6"	3'-9"	4'-0"	4'-3"	4'-6"	B
C	3'-6"	4'-0"	4'-7"	5'-1"	5'-8"	6'-2"	7'-0"	7'-5"	8'-0"	8'-6"	9'-1"	9'-7"	10'-2"	10'-8"	C
E	3'-1"	3'-8"	4'-3"	4'-10"	5'-5"	6'-0"	6'-7"	7'-2'	7'-9"	8'-4"	8'-11"	9'-6"	10'-1"	10'-8"	E
F	4'-4"	5'-0"	5'-8"	6'-4"	7'-0"	7'-8"	8'-7"	9'-3"	9'-11"	10'-7"	11'-3"	11'-11"	12'-7"	13'-3"	F
H	7'-6"	8'-8"	10'-0"	11'-2"	12'-6"	13'-8"	15'-2"	16'-6"	17'-8"	19'-0"	20'-2"	21'-6"	22'-8"	24'-0"	H
J	3'-9"	4'-4"	5'-0"	5'-7"	6'-3"	6'-10"	7'-7"	8'-3"	8'-10"	9'-6"	10'-1"	10'-9"	11'-4"	12'-0"	J
M	0'-5"						0'-6"								M
T	0'-3.5"	0'-4.0"	0'-4.5"	0'-5.0"	0'-5.5"	0'-6.0"	0'-6.5"	0'-7.0"	0'-7.5"	0'-8.0"	0'-8.5"	0'-9.0"	0'-9.5"	0'-10.0"	T
V	0'-8"						1'-0"								V
W	0'-8"						0'-10"								W
X	–						2'-0"				2'-6"				X
Y	2'-0"						2'-6"				3'-0"				Y
Z	–						1'-3"				1'-9"				Z
CU.YDS.CONC. 2 HEADWALLS	3.36	4.30	5.35	6.53	7.82	9.22	18.76	20.95	23.25	25.67	31.48	34.31	37.25	40.32	CU.YDS.CONC. 2 HEADWALLS
LBS.STEEL 2 HEADWALLS	281	363	430	496	583	687	1320	1571	1815	2043	2451	2753	3050	3379	LBS.STEEL 2 HEADWALLS

SHEET 2 OF 4

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

DIMENSIONS AND QUANTITIES
30"-108" HEADWALLS
CIRCULAR PIPE
0° SKEW

STANDARD DRAWING NO. 154-2

APPROVED: 5/1/08
URBAN COUNTY ENGINEER DATE
COMMISSIONER 5/1/08 DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
30"						
A	5	4	4	8		
C1	4	2	2	4		
C2	4	2	4	2		
E1	5	2	6	4	3	4
E2	5	2	6	8	3	8
F	4	3	1	3	0	4
G1	4	2	3	10		
G2	4	3	6	2		
H	4	4	5	1	3	5
N	4	6	4	2		
Q	4	2	2	9		
R	4	3	0	8		
V1	5	4	3	1	1	10
V2	5	4	4	1	2	10
36"						
A	5	4	5	5		
C1	4	2	1	7		
C2	4	2	3	8		
C3	4	2	4	10		
E1	5	2	6	11	3	11
E2	5	2	7	3	4	3
F	4	4	1	3	0	4
G1	4	3	5	0		
G2	4	3	7	4		
H	4	5	5	8	4	0
N	4	6	4	10		
Q	4	2	3	4		
R	4	4	0	8		
V1	5	4	3	4	2	1
V2	5	4	4	4	3	1
V3	5	2	5	4	4	1
42"						
A	5	4	6	2		
C1	4	2	2	9		
C2	4	2	4	9		
C3	4	2	5	6		
E1	5	2	7	6	4	6
E2	5	2	7	10	4	10
F	4	4	1	3	0	4
G1	4	3	6	4		
G2	4	3	8	7		

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
42" (CONTINUED)						
H	4	5	6	3	4	7
N	4	6	5	6		
Q	4	2	3	11		
R	4	4	0	9		
V1	5	4	3	6	2	3
V2	5	4	4	6	3	3
V3	5	4	5	6	4	3
48"						
A	5	4	6	11		
C1	4	2	1	10		
C2	4	2	3	10		
C3	4	2	5	10		
C4	4	2	6	2		
E1	5	2	8	1	5	1
E2	5	2	8	5	5	5
F	4	5	1	3	0	4
G1	4	1	4	0		
G2	4	3	7	5		
G3	4	3	9	9		
H	4	6	6	10	5	2
N	4	6	6	2		
Q	4	2	4	6		
R	4	5	0	9		
V1	5	4	3	9	2	6
V2	5	4	4	9	3	6
V3	5	4	5	9	4	6
54"						
A	5	4	7	7		
C1	4	2	0	11		
C2	4	2	3	0		
C3	4	2	5	1		
C4	4	4	6	10		
E1	5	2	8	8	5	8
E2	5	2	9	0	6	0
F	4	6	1	3	0	4
G1	4	1	5	3		
G2	4	3	8	9		
G3	4	3	11	0		
H	4	6	7	5	5	9
N	4	6	6	10		
Q	4	2	5	1		
R	4	6	0	10		
V1	5	4	4	0	2	9

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
54" (CONTINUED)						
V2	5	4	5	0	3	9
V3	5	4	6	0	4	9
V4	5	2	7	0	5	9
60"						
A	5	4	8	4		
C1	4	2	2	1		
C2	4	2	4	2		
C3	4	2	6	3		
C4	4	4	7	7		
E1	5	2	9	3	6	3
E2	5	2	9	7	6	7
F	4	6	1	3	0	4
G1	4	2	6	6		
G2	4	3	10	0		
G3	4	3	12	4		
H	4	7	8	0	6	4
N	4	6	7	7		
Q	4	2	5	8		
R	4	6	0	10		
V1	5	4	4	3	3	0
V2	5	4	5	3	4	0
V3	5	4	6	2	4	11
V4	5	4	7	2	5	11
66"						
A	5	4	9	4		
B1	5	8	2	10		
B2	5	8	3	10		
B3	5	8	4	9		
B4	5	8	5	9		
C1	4	4	1	5		
C2	4	4	3	5		
C3	4	4	5	6		
C4	4	4	7	7		
C5	4	8	8	4		
E1	5	2	11	9	6	10
E2	5	2	12	3	7	4
F	4	7	1	9	0	6
G1	4	3	8	0		
G2	4	3	11	4		
G3	4	3	13	10		
H	4	7	9	3	7	1
M	4	16	3	9		
N	4	14	8	4		

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
66" (CONTINUED)						
P	5	16	5	0	3	3
Q	5	3	6	2		
R	5	7	2	7		
72"						
A	5	4	10	1		
B1	5	8	3	0		
B2	5	8	4	0		
B3	5	8	4	11		
B4	5	8	5	11		
B5	5	4	6	10		
C1	4	4	2	7		
C2	4	4	4	8		
C3	4	4	6	9		
C4	4	4	8	10		
C5	4	8	9	1		
E1	5	2	12	5	7	5
E2	5	2	12	11	7	11
F	4	8	1	9	0	6
G1	4	3	9	2		
G2	4	3	12	6		
G3	4	3	14	10		
H	4	9	9	10	7	8
M	4	18	3	9		
N	4	14	9	1		
P	5	18	5	3	3	6
Q	5	3	6	10		
R	5	7	2	7		
78"						
A	5	4	10	10		
B1	5	8	3	4		
B2	5	8	4	3		
B3	5	8	5	3		
B4	5	8	6	2		
B5	5	8	7	2		
C1	4	4	1	7		
C2	4	4	3	8		
C3	4	4	5	10		
C4	4	4	7	11		
C5	4	12	9	9		
E1	5	2	13	0	8	0
E2	5	2	13	6	8	6
F	4	8	1	9	0	6
G1	4	1	7	1		

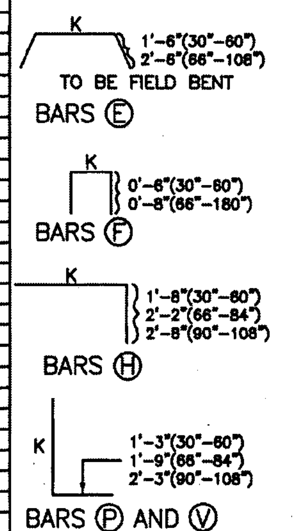
MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
78" (CONTINUED)						
G2	4	3	10	6		
G3	4	3	14	0		
G4	4	3	16	4		
H	4	9	10	5	8	3
M	4	20	3	9		
N	4	14	9	9		
P	5	20	5	6	3	9
Q	5	3	7	5		
R	5	8	2	8		
84"						
A	5	4	11	7		
B1	5	8	3	6		
B2	5	8	4	6		
B3	5	8	5	5		
B4	5	8	6	5		
B5	5	8	7	4		
B6	5	4	8	4		
C1	4	4	2	10		
C2	4	4	4	11		
C3	4	4	7	0		
C4	4	4	9	1		
C5	4	12	10	5		
E1	5	2	13	7	8	7
E2	5	2	14	2	9	2
F	4	9	1	9	0	6
G1	4	1	9	6		
G2	4	3	11	10		
G3	4	3	15	2		
G4	4	3	17	6		
H	4	9	11	0	8	10
M	4	22	3	9		
N	4	14	10	5		
P	5	22	5	9	4	0
Q	5	3	8	0		
R	5	9	2	8		

MARK	SIZE	NO (1)	LGTH FT	LGTH IN	K FT	K IN
90"						
A	5	4	12	3		
B1	5	8	3	10		
B2	5	8	4	9		
B3	5	8	5	9		
B4	5	8	6	8		
B5	5	8	7	7		
B6	5	4	8	6		
C1	4	4	1	11		
C2	4	4	4	0		
C3	4	4	6	1		
C4	4	4	8	3		
C5	4	4	10	4		
C6	4	12	11	1		
E1	5	2	14	2	9	2
E2	5	2	14	8	9	8
F	4	9	1	9	0	6
G1	4	2	9	6		
G2	4	3	13	0		
G3	4	3	16	5		
G4	4	3	18	9		
H	4	10	12	1	9	5
M	4	22	4	9		
N	4	16	11	1		
P	6	22	6	6	4	3
Q	5	4	8	7		
R	5	9	3	3		

NOTES:

1. (1) NUMBER OF BARS IN ONE HEADWALL.
2. DIMENSIONS ARE OUT TO OUT OF BARS.
3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

BENT BAR SHAPES



SHEET 3 OF 4

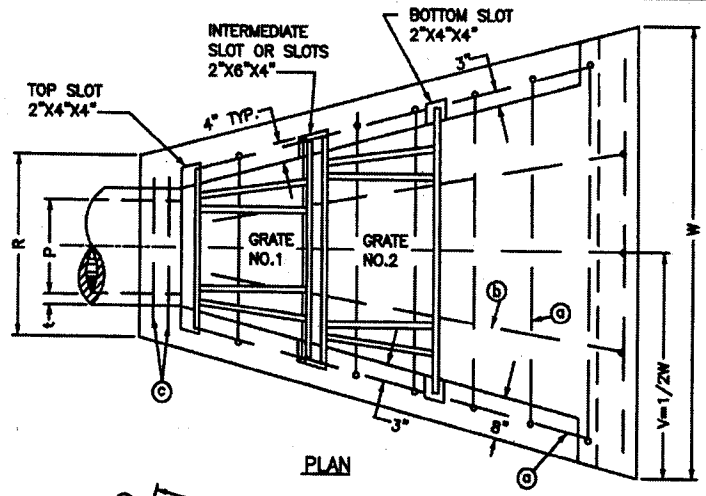
NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

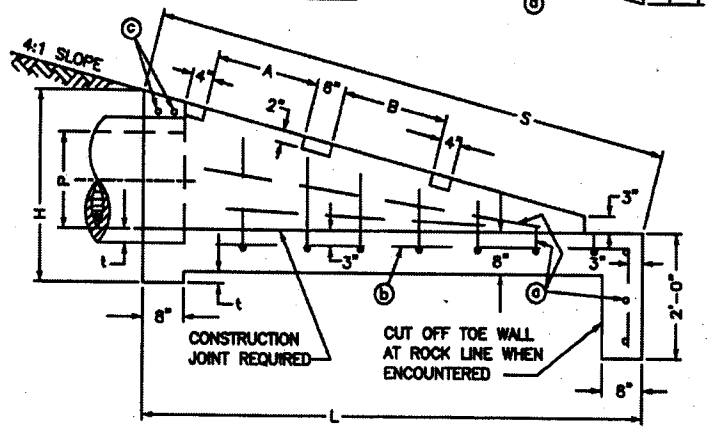
BILL OF REINFORCEMENT
30"-90" DIAMETER
CIRCULAR PIPE HEADWALLS
0° SKEW

STANDARD DRAWING NO. 154-3
APPROVED: URBAN COUNTY ENGINEER 5/1/08 DATE
COMMISSIONER DATE

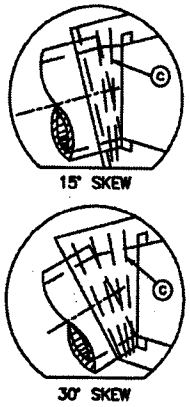
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



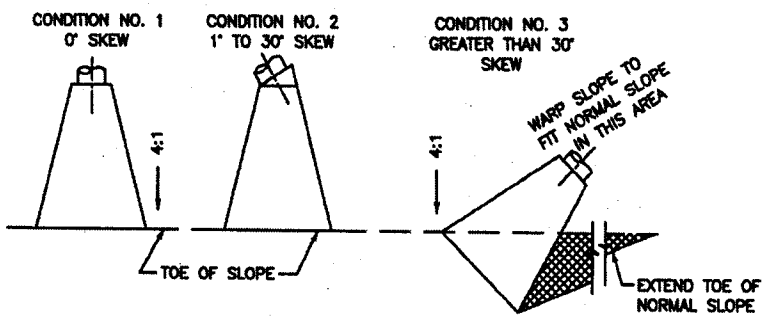
PLAN



ELEVATION

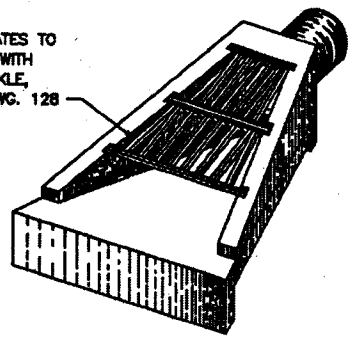


PLAN VIEW OF STRUCTURE LOCATIONS



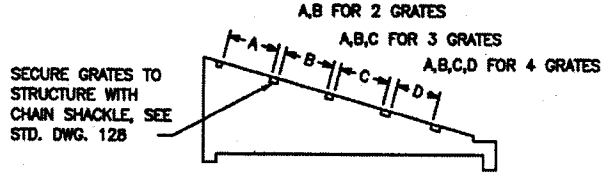
NOTES:

1. THE MINIMUM REQUIREMENT FOR REINFORCING STEEL SHALL BE GRADE 40. FIELD BENDING WILL BE PERMITTED.
2. ONE ADDITIONAL ⓒ BAR WILL BE REQUIRED FOR EACH 15° SKEW.
3. t IS CONCRETE PIPE WALL THICKNESS.



18"–24"
TRIMETRIC VIEW

DETAIL SHOWING LOCATION
OF SLOTS FOR GRATES



SEE STD. DWG. 163 FOR GRATE DETAILS.

DIMENSIONS										
P	H	L	S	R	V	W	A	B	C	D
18"	3'–0"	8'–6"	8'–9 1/8"	2'–11 1/2"	3'–7 1/2"	7'–3"	1'–9"	1'–9"	–	–
24"	3'–7"	10'–8"	11'–0"	3'–6 1/2"	4'–5 1/2"	8'–11"	2'–9"	2'–9"	–	–
30"	4'–2"	12'–10"	13'–2 3/4"	4'–1 1/2"	5'–3 1/2"	10'–7"	2'–9"	2'–9"	1'–9"	–
36"	4'–9"	15'–0"	15'–5 1/2"	4'–8 1/2"	6'–1 1/2"	12'–3"	2'–9"	2'–9"	1'–9"	1'–9"

NO. OF GRATES REQ'D	
2'	3'
2	–
–	2
1	2
2	2

NO. 4 REINFORCEMENT BARS NUMBER–LENGTH AND WEIGHT				CLASS "A" CONC.
ⓐ	ⓑ	② ⓒ	LBS.	CU.YD.
14 AT 6'–5"	3 AT 8'–6"	2 AT 2'–8"	81	1.8
16 AT 8'–0"	3 AT 10'–6"	2 AT 3'–3"	111	2.7
18 AT 9'–7"	3 AT 12'–9"	2 AT 3'–10"	146	3.8
20 AT 11'–4"	3 AT 15'–0"	2 AT 4'–5"	187	5.1

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

SLOPED AND FLARED
BOX INLET–OUTLET
18"–24"–30"–36"
ALL SKEWS

STANDARD DRAWING NO. 162

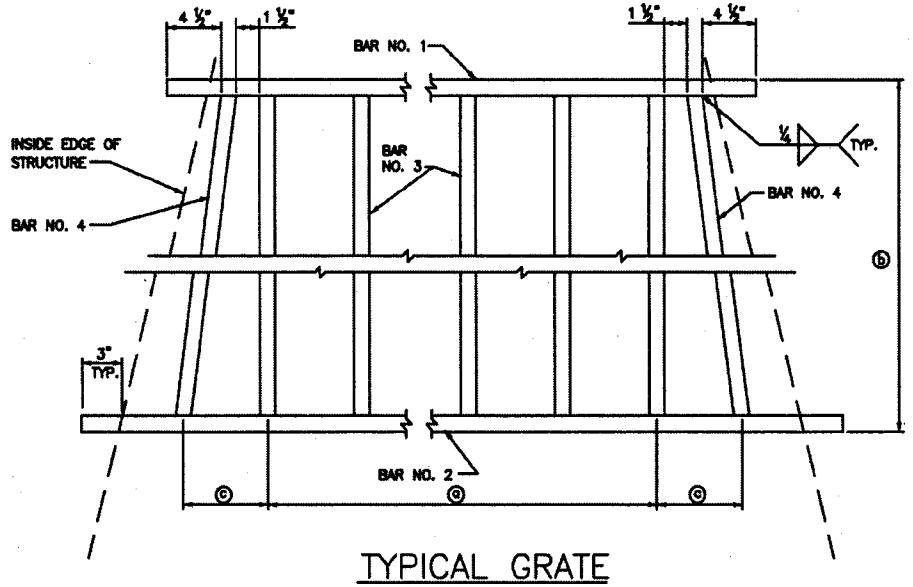
APPROVED _____ DATE 5/1/08

DIRECTOR _____ DATE

COMMISSIONER

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

BOX INLET–OUTLET SIZE	GRATE		BAR NO. 1	BAR NO. 2	BAR NO. 3		BAR NO. 4	LBS. STRUCTURAL STEEL	
	NO.	SIZE	LENGTH	LENGTH	NO. BARS	LENGTH	LENGTH	EACH GRATE	TOTAL
18"	1	2'–0"	2'–6 ½"	3'–5 ¾"	4	1'–10"	1'–10 ¼"	116	272
	2	2'–0"	3'–7 ⅝"	4'–6 ⅞"	6	1'–10"	1'–10 ¼"	156	
24"	1	3'–0"	3'–1 ½"	4'–6 ⅝"	5	2'–10"	2'–10 ⅜"	187	454
	2	3'–0"	4'–8 ½"	6'–1 ⅝"	8	2'–10"	2'–10 ⅜"	267	
30"	1	3'–0"	3'–8 ½"	5'–1 ½"	6	2'–10"	2'–10 ⅜"	215	796
	2	3'–0"	5'–3 ½"	6'–8 ⅝"	9	2'–10"	2'–10 ⅜"	294	
	3	2'–0"	6'–10 ½"	7'–9 ¾"	13	1'–10"	1'–10 ¼"	287	
36"	1	3'–0"	4'–3 ½"	5'–8 ½"	7	2'–10"	2'–10 ⅜"	242	1218
	2	3'–0"	5'–10 ½"	7'–3 ⅝"	10	2'–10"	2'–10 ⅜"	321	
	3	2'–0"	7'–5 ½"	8'–4 ¾"	14	1'–10"	1'–10 ¼"	308	
	4	2'–0"	8'–6 ¾"	9'–5 ⅞"	16	1'–10"	1'–10 ¼"	347	



TYPICAL GRATE

NOTES:

ⓐ EQUALLY SPACE BARS NO. 3.

ⓑ SIZE OF GRATE EITHER 2'–0" OR 3'–0".

ⓒ 5 ½" FOR 2'–0" GRATE, 7" FOR 3'–0" GRATE.

1. ALL COMPONENTS ARE 1" x 2" STRUCTURAL STEEL BARS.
2. SEE STD. DWG. 162.
3. SECURE GRATE TO STRUCTURE WITH CHAIN SHACKLE, SEE STD. DWG. 128.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

GRATES FOR SLOPED AND FLARED BOX INLET–OUTLET

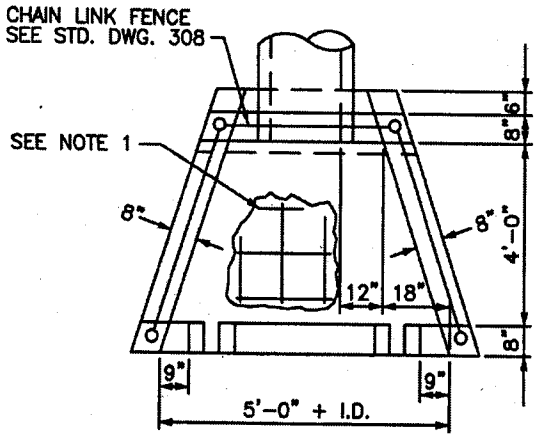
STANDARD DRAWING NO. 163

5/1/08 DATE

5/1/08 DATE

COMMISSIONER

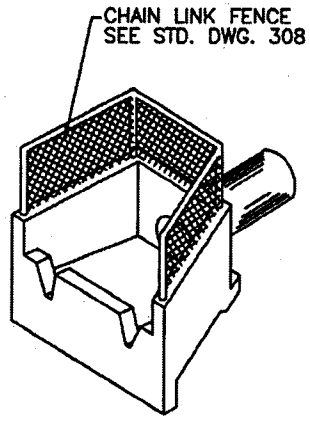
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



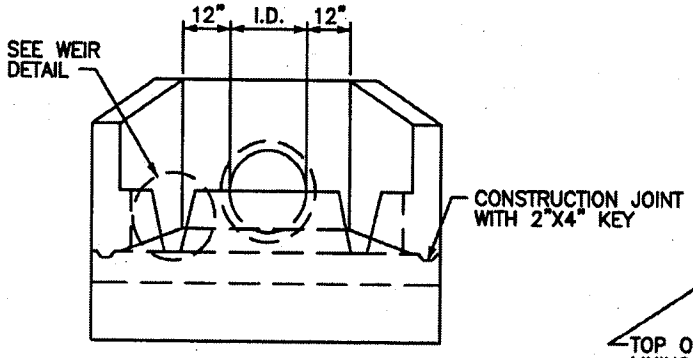
PLAN ELEVATION

NOTES:

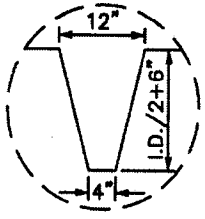
1. NO. 5 STEEL BARS TO BE USED THROUGHOUT ON 12" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE. TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. CHANNEL LINING TO BE WIDTH OF END SILL, 18" MINIMUM THICKNESS, AND COMPOSED OF CLASS III CHANNEL LINING.
5. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
6. ALL EXPOSED FLAT WORK TO HAVE A HAND FLOATED AND BROOMED FINISH.
7. ALL EXPOSED EDGES SHALL HAVE A ¾" CHAMFER.
8. ALL STEEL SHALL HAVE 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE WALLS.
9. FENCES REQUIRED ON HEADWALLS.



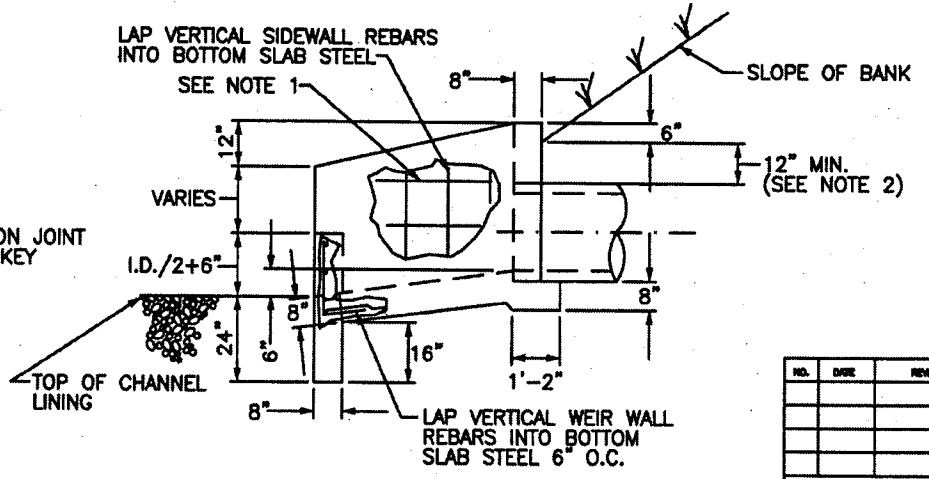
ISOMETRIC VIEW



FRONT ELEVATION



WEIR DETAIL



SIDE ELEVATION

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

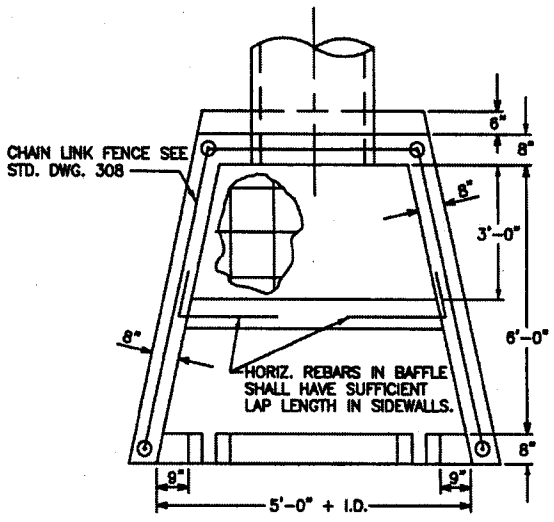
IMPACT STILLING BASIN
15"–24" PIPES

STANDARD DRAWING NO. 164

APPROVED 5/1/02
URBAN COUNTY ENGINEER DATE

APPROVED 5/1/02
COMMISSIONER DATE

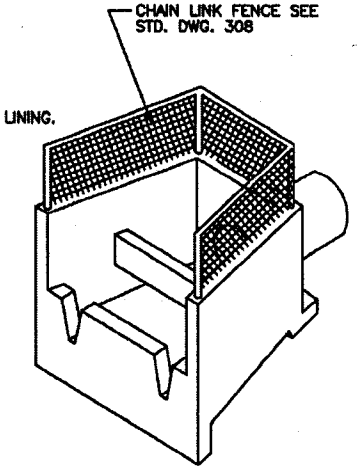
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



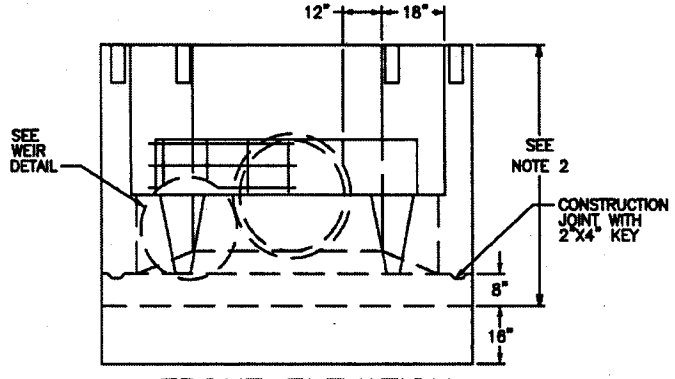
PLAN ELEVATION

NOTES:

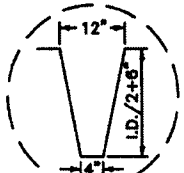
1. NO. 5 STEEL BARS SHALL BE USED THROUGHOUT ON 12" CENTERS EXCEPT ON BAFFLE WHERE HORIZONTAL AND VERTICAL STEEL WILL BE ON 6" CENTERS.
2. HEIGHT OF WALL SHALL BE DETERMINED BY THE AMOUNT OF FILL BEHIND PIPE. TOP OF WALL SHALL BE 18" ABOVE TOP O.D. OF PIPE.
3. TOP OF END SILL SHALL BE LEVEL WITH CENTERLINE OF PIPE.
4. TOP OF BAFFLE SHALL BE LEVEL WITH CROWN OF PIPE, AND THE BOTTOM SHALL BE LEVEL WITH CENTERLINE OF PIPE.
5. CHANNEL LINING TO BE 2 TIMES THE WIDTH OF THE END SILL AND EXTEND A MINIMUM OF 4' BEYOND THE STILLING BASIN WITH AN 18" MINIMUM THICKNESS AND COMPOSED OF CLASS III CHANNEL LINING.
6. CHANNEL LINE SPILL SLOPES BEYOND SIDES OF HEADWALL WITH CLASS III CHANNEL LINING. CHANNEL LINING SHALL EXTEND 4' IN WIDTH ON SLOPES AT WINGWALL AND TO DOWNSTREAM END OF CHANNEL.
7. ALL VERTICAL OR SLOPED EXPOSED SURFACES SHALL HAVE A RUBBED FINISH.
8. ALL EXPOSED FLATWORK SHALL HAVE A HANDFLOATED AND BROOMED FINISH.
9. ALL EXPOSED EDGES SHALL HAVE A ¾" CHAMFER.
10. ALL STEEL SHALL HAVE A 2" MINIMUM CLEARANCE TO THE CONCRETE FACE ON THE BACKFILL SIDE OF THE STRUCTURE.
11. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN THE VERTICAL FACE IS GREATER THAN 30".
12. ALL LARGER PIPES SHALL HAVE A SPECIAL DESIGN STILLING BASIN.
13. ALL LONGITUDINAL REINFORCING BARS IN BAFFLE SHALL HAVE SUFFICIENT ANCHORAGE LENGTH IN SIDEWALLS.



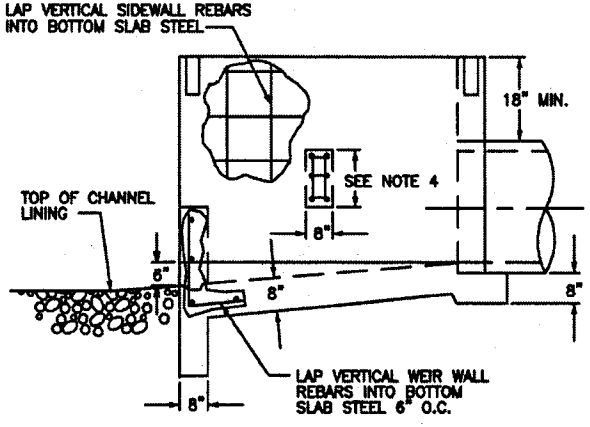
ISOMETRIC VIEW



FRONT ELEVATION



WEIR DETAIL



SIDE ELEVATION

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

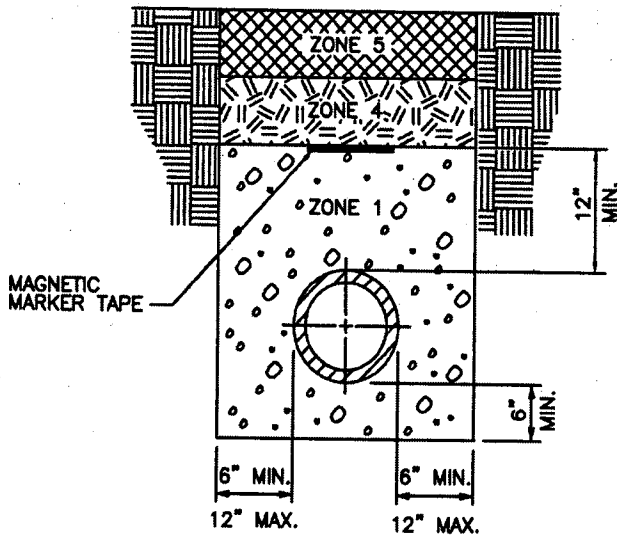
IMPACT STILLING BASIN
27"–48" PIPES

STANDARD DRAWING NO. 165

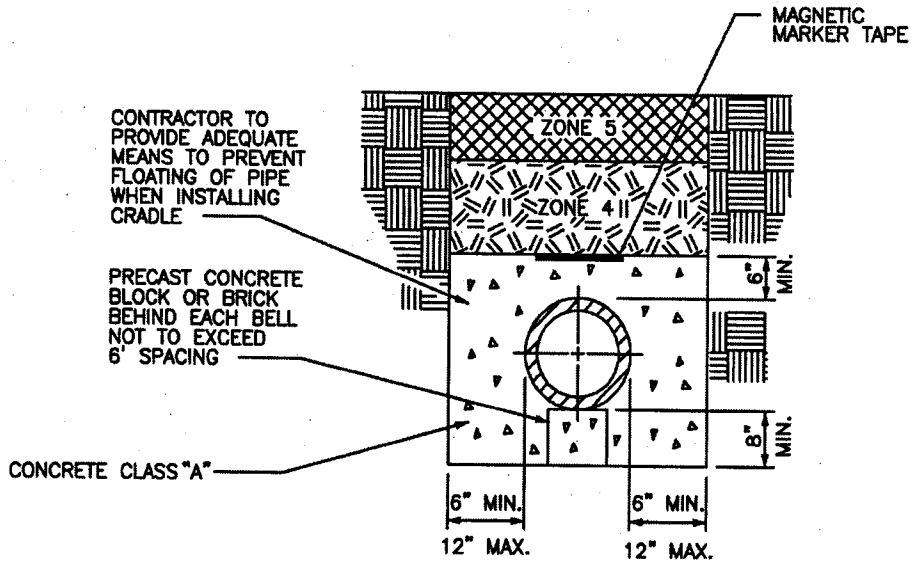
APPROVED: 5/1/08 DATE

URBAN COUNTY ENGINEER / COMMISSIONER 5/1/08 DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



PIPE LAID IN ROCK OR SOIL TRENCH



STANDARD CONCRETE ENCASEMENT (NOTE: AS REQUIRED BY DESIGN)

PIPE BACKFILL DESCRIPTIONS	
ZONE 1	NO. 9 STONE
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER), NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL, NO ROCK ALLOWED

NOTES:

1. COVER, UP TO AND INCLUDING ZONE 4 SHALL BE ESTABLISHED BEFORE TRENCH EXCAVATION.
2. ALL SANITARY SEWER LINES CONSTRUCTED FROM NON-METALLIC MATERIALS SHALL HAVE MAGNETIC MARKER TAPE INSTALLED IN THE TRENCH ABOVE THE SANITARY SEWER LINE.
3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

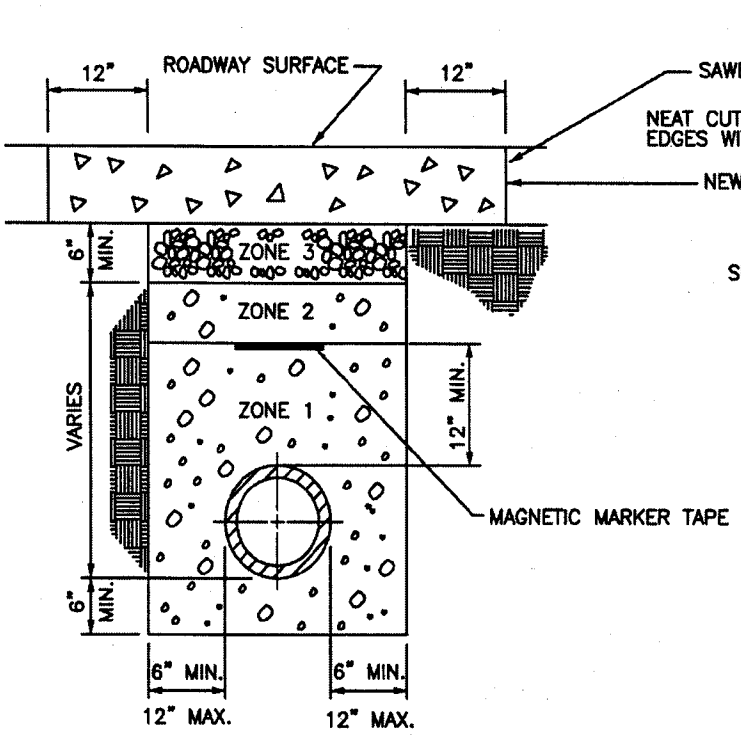
TRENCHING, LAYING, BACKFILLING AND BEDDING OUTSIDE R/W LIMITS

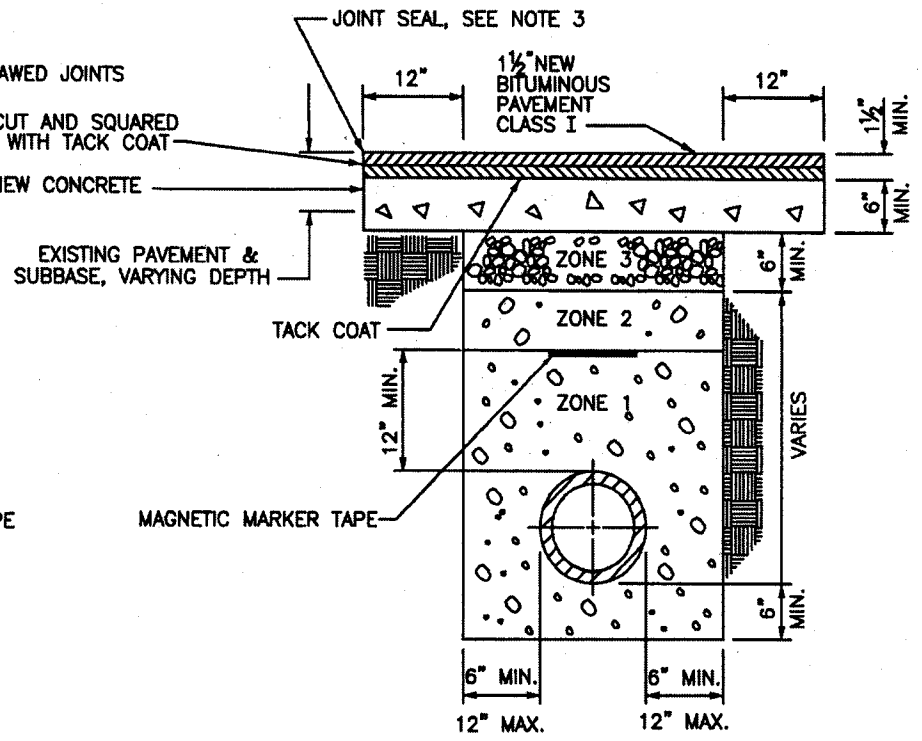
STANDARD DRAWING NO. 200

APPROVED 5/1/08 DATE

URBAN COUNTY ENGINEER / COMMISSIONER DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT





CONCRETE PAVEMENT

BITUMINOUS PAVEMENT

PIPE BACKFILL DESCRIPTIONS	
ZONE 1	NO. 9 STONE
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER), NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL, NO ROCK ALLOWED

NOTES:

1. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHEVER IS GREATER.
2. JOINT SEAL PERIMETER OF CUT PAVEMENT WITH FLEXMASTER POURABLE CRACK SEALANT 1109 OR APPROVED EQUAL.
3. MAGNETIC MARKER TAPE FOR SANITARY SEWER ONLY.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

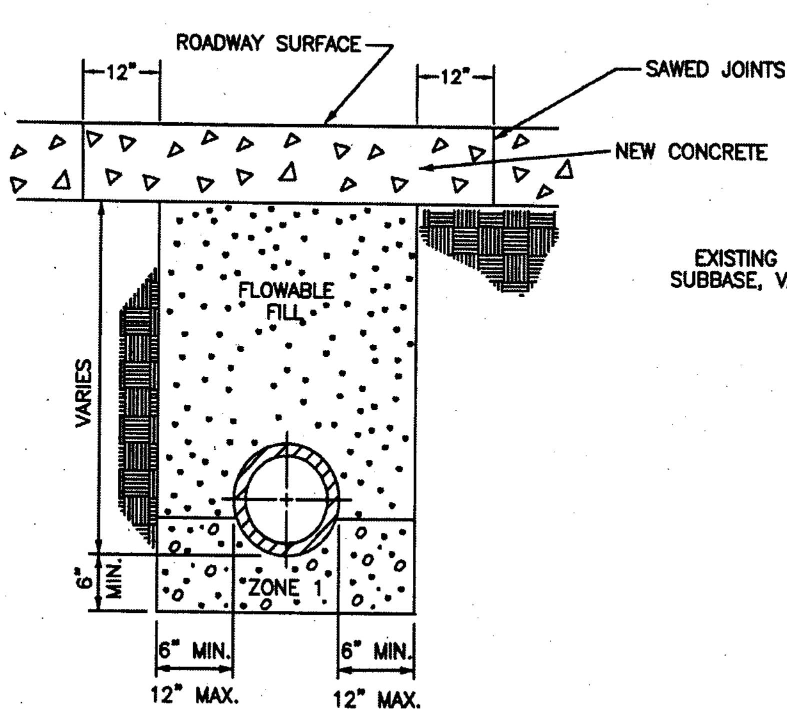
TRENCHING, LAYING, BACKFILLING AND BEDDING UNDER STREET PAVEMENT

STANDARD DRAWING NO. 201-1

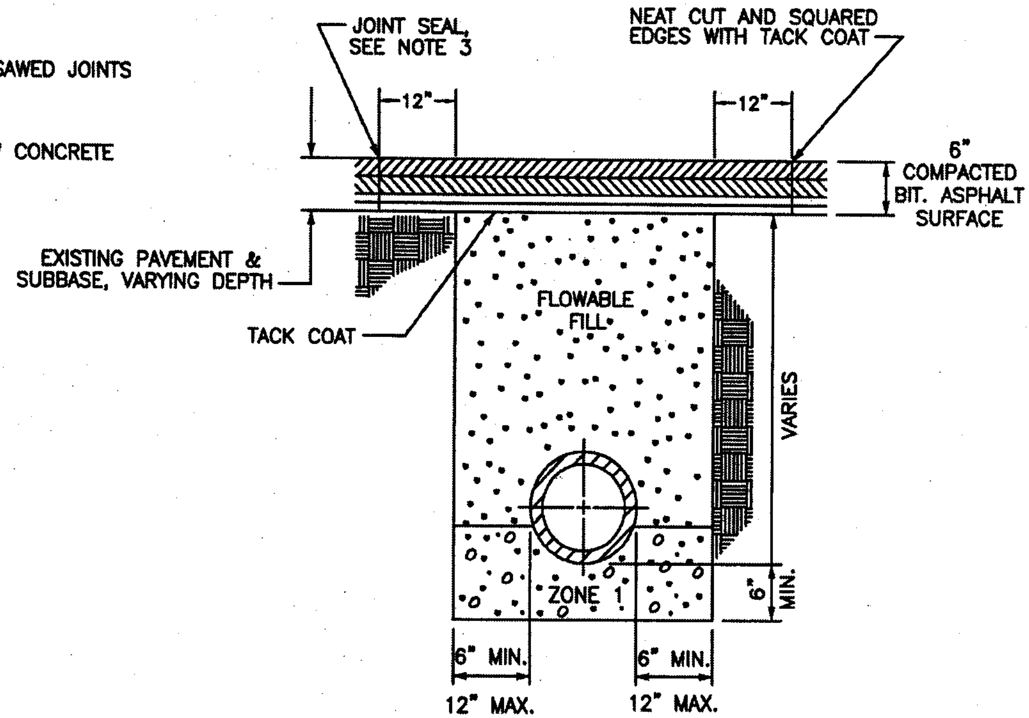
APPROVED: 5/1/08 DATE

DIRECTOR 5/1/08 DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



CONCRETE PAVEMENT



BITUMINOUS PAVEMENT

PIPE BACKFILL DESCRIPTIONS	
ZONE 1	**NO. 9 STONE**
ZONE 2	NO. 9 OR NO. 57 STONE
ZONE 3	COMPACTED DGA
ZONE 4	CONSOLIDATED SOIL, (NO ROCK GREATER THAN 6" DIAMETER), NO. 9, OR NO. 57 STONE
ZONE 5	12" MAX. TOPSOIL, NO ROCK ALLOWED

NOTES:

1. PER KYTC SPECIFICATION 601.03.03 FROM STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION EDITION 2004, OR MOST RECENT.
2. REPLACE CONCRETE PAVEMENT WITH NEW CONCRETE PAVEMENT, 6" MINIMUM OR EXISTING THICKNESS, WHICHEVER IS GREATER.
3. JOINT SEAL PERIMETER OF CUT PAVEMENT WITH FLEXMASTER POURABLE CRACK SEALANT 1109 OR APPROVED EQUAL.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

TRENCHING, LAYING, BACKFILLING, AND BEDDING UNDER STREET PAVEMENT USING FLOWABLE FILL

STANDARD DRAWING NO. 201-2

APPROVAL: URBAN COUNTY ENGINEER 5/1/08 DATE
COMMISSIONER 5/1/08 DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

TABLE OF:

MAXIMUM ALLOWABLE FILL HEIGHTS

(LIVE LOAD NOT INCLUDED)

DIAMETER (INCHES)	DUCTILE IRON PIPE	POLYVINYL CHLORIDE (PVC) PIPE	
	CLASS 50 *	SDR-35	SDR-26 HEAVY WALL
	MAXIMUM DEPTH OF COVER (FEET)	MAXIMUM DEPTH OF COVER (FEET)	MAXIMUM DEPTH OF COVER (FEET)
4	–	–	–
6	20	15	–
8	20	15	–
10	20	15	–
12	20	15	–
14	20	–	–
15	–	15	–
16	20	–	–
18	20	–	20
20	18	–	–
21	–	–	20
24	17	–	20
27	–	–	20
30	14	–	–
36	14	–	–
42	13	–	–
48	13	–	–

* LIGHTEST CLASS OF DUCTILE IRON PIPE

NOTES:

1. DEPTH IS BASED ON LAYING CONDITION UTILIZING NO. 9 STONE ENCASING PIPE FROM 6" MINIMUM BELOW PIPE TO A PLANE, LEVEL WITH THE TOP OF THE PIPE AND 6" TO 12" NO. 9 STONE TO EDGE OF TRENCH.
2. WEIGHT OF SOIL AND ROCK COVER MIX IS ASSUMED TO BE APPROXIMATELY 120 LB./CU. FT.
3. DUCTILE IRON PIPE HAS FLEXIBLE LINING.
4. DESIGN ENGINEERS SHOULD USE THIS STANDARD DRAWING FOR GENERAL GUIDELINES AND SHOULD CHECK THEIR DESIGN FOR SAFE, NON-DESTRUCTIVE FILL HEIGHTS FOR ACTUAL BRAND OF PIPE PROPOSED.
5. SPECIAL TRENCHING DETAILS AND PROCEDURES SHOULD BE USED WHERE FILL DEPTHS ARE HIGHER THAN THOSE SHOWN IN TABLE.
6. INSTALLATIONS REQUIRING A DEPTH GREATER THAN 20', MUST BE APPROVED BY THE ENGINEER.

NO.	DATE	REVISION DESCRIPTION	BY

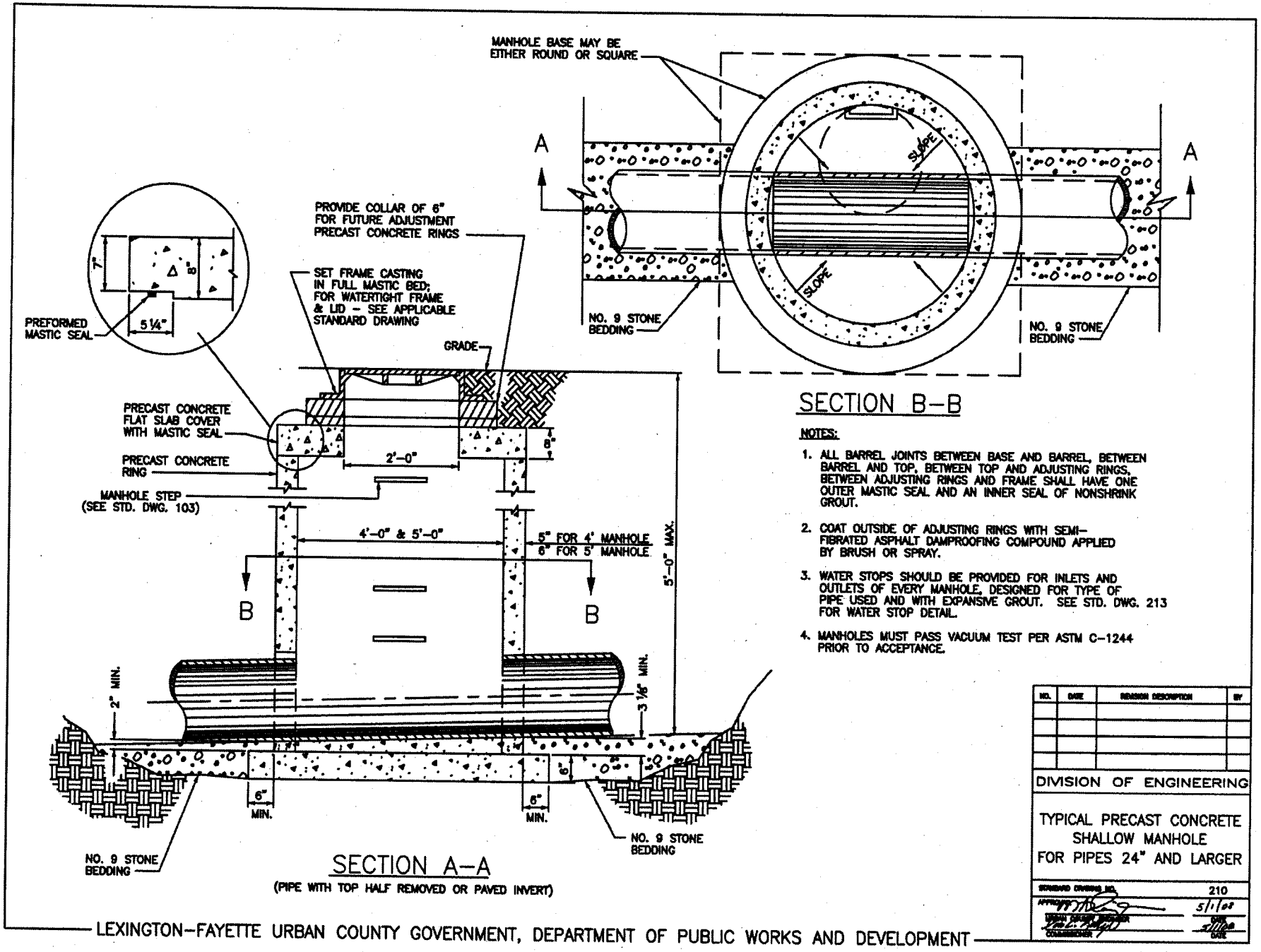
DIVISION OF ENGINEERING

SANITARY SEWER PIPE: TYPES & MAXIMUM ALLOWABLE FILL HEIGHTS

STANDARD DRAWING NO. 204

APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/08

COMMISSIONER — DATE



SECTION B–B

SECTION A–A

(PIPE WITH TOP HALF REMOVED OR PAVED INVERT)

NOTES:

1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI–FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER STOP DETAIL.
4. MANHOLES MUST PASS VACUUM TEST PER ASTM C–1244 PRIOR TO ACCEPTANCE.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

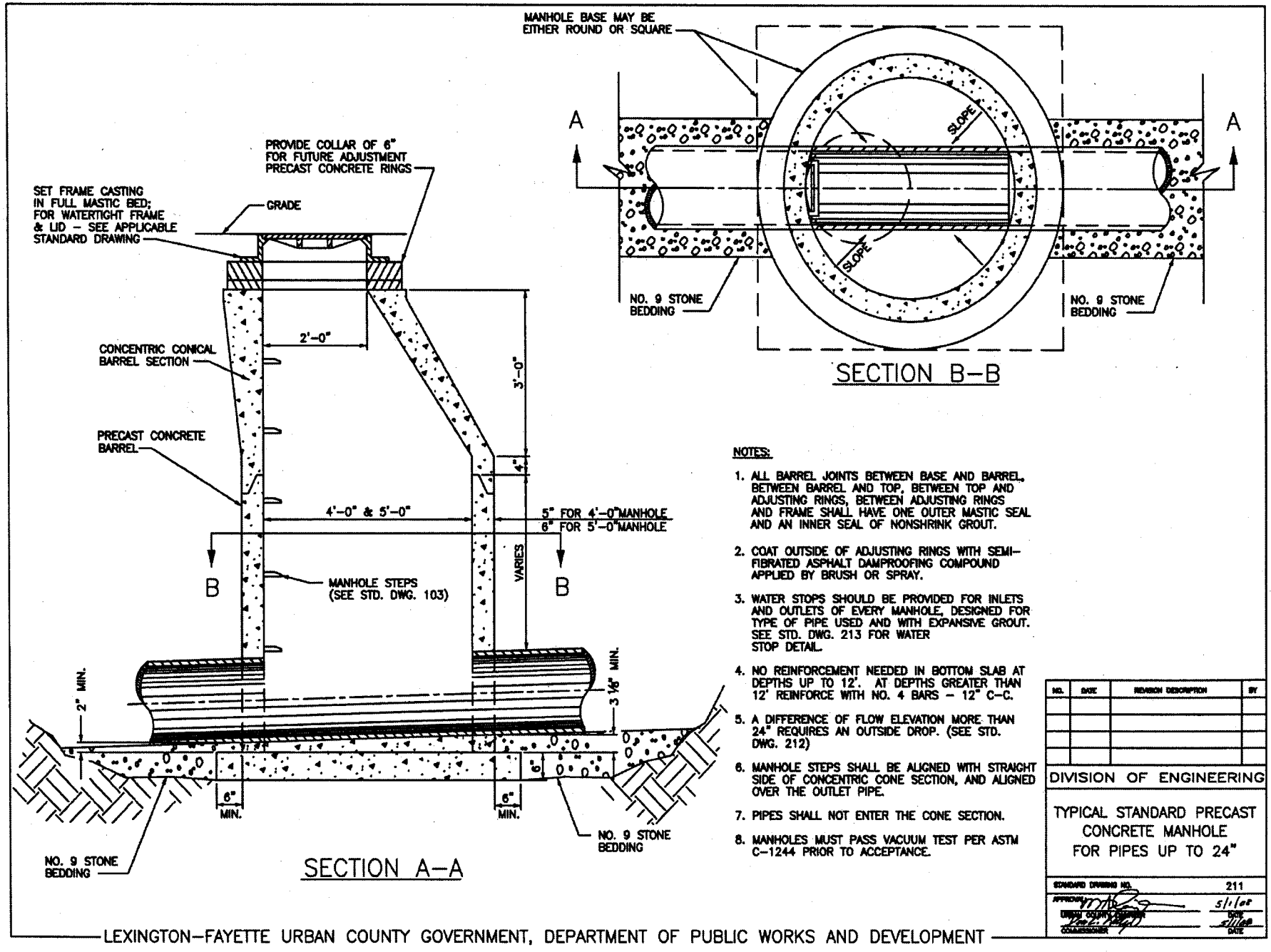
TYPICAL PRECAST CONCRETE SHALLOW MANHOLE FOR PIPES 24" AND LARGER

STANDARD DRAWING NO. 210

APPROVED 5/1/08

URBAN COUNTY ENGINEER / COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTES:

1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI–FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 FOR WATER STOP DETAIL.
4. NO REINFORCEMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12'. AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS – 12" C–C.
5. A DIFFERENCE OF FLOW ELEVATION MORE THAN 24" REQUIRES AN OUTSIDE DROP. (SEE STD. DWG. 212)
6. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER THE OUTLET PIPE.
7. PIPES SHALL NOT ENTER THE CONE SECTION.
8. MANHOLES MUST PASS VACUUM TEST PER ASTM C–1244 PRIOR TO ACCEPTANCE.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

TYPICAL STANDARD PRECAST CONCRETE MANHOLE FOR PIPES UP TO 24"

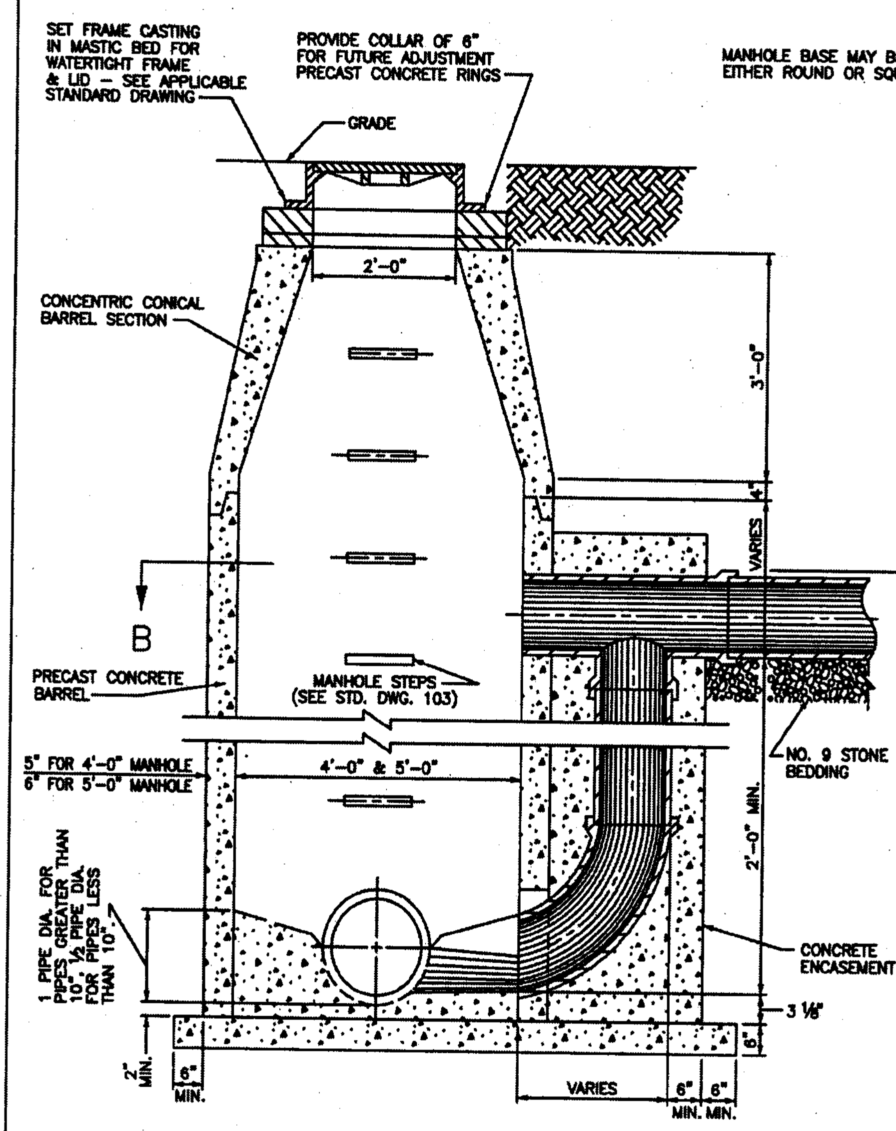
STANDARD DRAWING NO. 211

APPROVED: 5/1/08 DATE

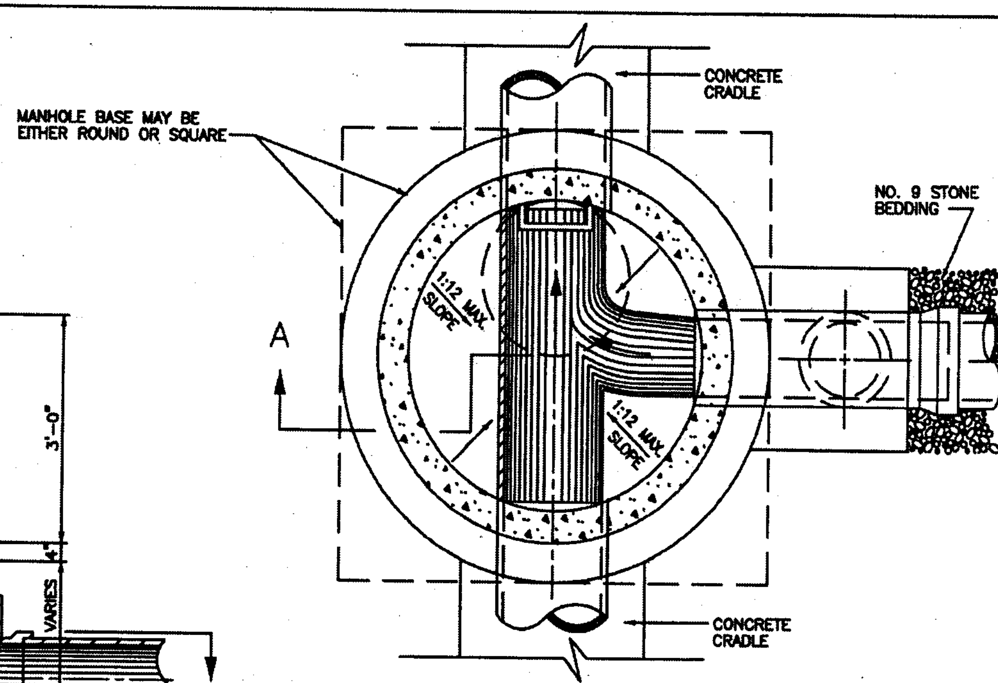
URBAN COUNTY ENGINEER

COMMISSIONER 5/1/08 DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



SECTION A–A



SECTION B–B

NOTES:

1. ALL BARREL JOINTS BETWEEN BASE AND BARREL, BETWEEN BARREL AND TOP, BETWEEN TOP AND ADJUSTING RINGS, BETWEEN ADJUSTING RINGS AND FRAME SHALL HAVE ONE OUTER MASTIC SEAL AND AN INNER SEAL OF NONSHRINK GROUT.
2. COAT OUTSIDE OF ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. WATER STOPS SHOULD BE PROVIDED FOR INLETS AND OUTLETS OF EVERY MANHOLE, DESIGNED FOR TYPE OF PIPE USED AND WITH EXPANSIVE GROUT. SEE STD. DWG. 213 APPLICABLE FOR WATER STOP DETAIL.
4. NO REINFORCEMENT NEEDED IN BOTTOM SLAB AT DEPTHS UP TO 12'. AT DEPTHS GREATER THAN 12' REINFORCE WITH NO. 4 BARS – 12" C–C.
5. PROVIDE A MINIMUM FALL OF 0.1 FOOT FROM DROP TO MANHOLE OUTLET.
6. MANHOLES SHALL PASS VACUUM TEST PER ASTM C–1244 PRIOR TO ACCEPTANCE.
7. PIPE SHALL NOT ENTER CONE SECTION.
8. MANHOLE STEPS SHALL BE ALIGNED WITH STRAIGHT SIDE OF CONCENTRIC CONE SECTION, AND ALIGNED OVER OUTLET PIPE.
9. DO NOT USE IN CASES WHERE THE DROP IS 2'-0" OR LESS.

NO.	DATE	REVISION DESCRIPTION	BY

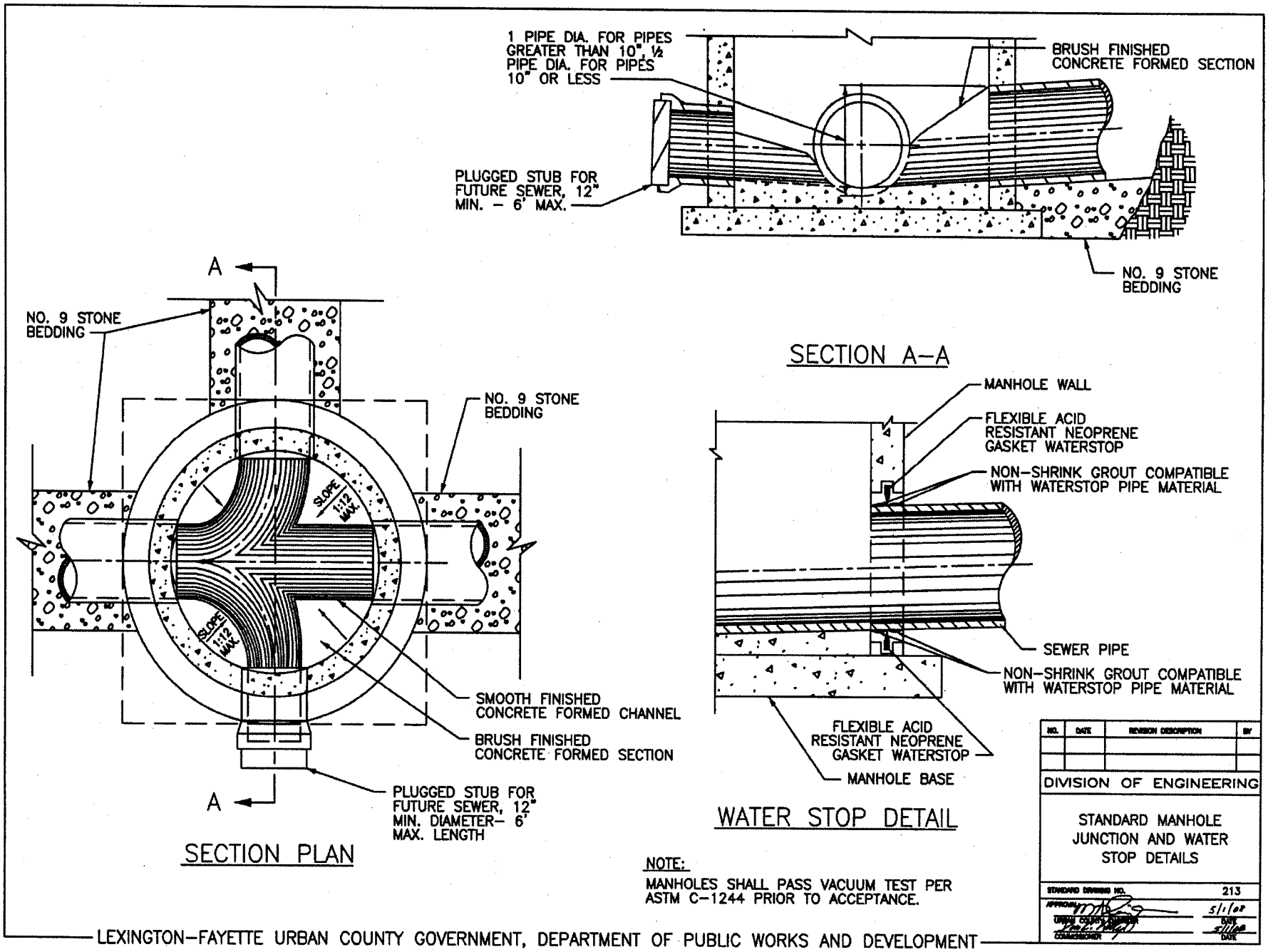
DIVISION OF ENGINEERING

TYPICAL PRECAST CONCRETE DROP MANHOLE FOR PIPES UP TO 36"

STANDARD DRAWING NO. 212

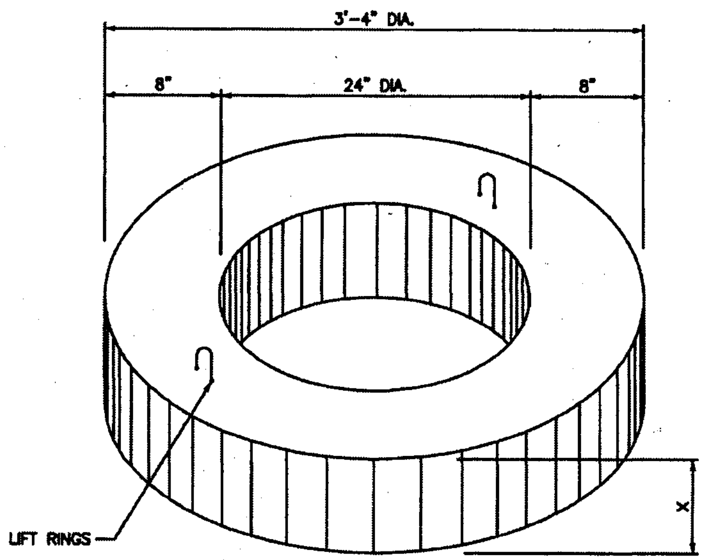
APPROVAL: URBAN COUNTY ENGINEER 5/1/08 DATE
COMMISSIONER 5/1/08 DATE

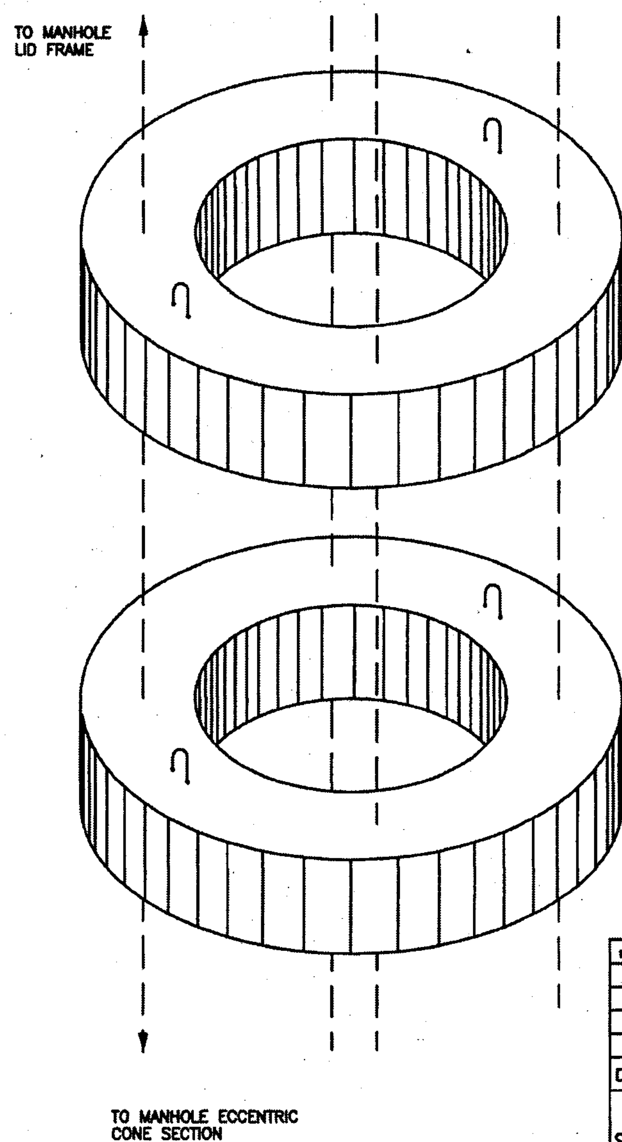
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT


1 PIPE DIA. FOR PIPES GREATER THAN 10", ½ PIPE DIA. FOR PIPES 10" OR LESS
BRUSH FINISHED CONCRETE FORMED SECTION
PLUGGED STUB FOR FUTURE SEWER, 12" MIN. – 6' MAX.
NO. 9 STONE BEDDING
SECTION A–A
A
NO. 9 STONE BEDDING
NO. 9 STONE BEDDING
SLOPE 1:12 MAX.
SLOPE 1:12 MAX.
SMOOTH FINISHED CONCRETE FORMED CHANNEL
BRUSH FINISHED CONCRETE FORMED SECTION
PLUGGED STUB FOR FUTURE SEWER, 12" MIN. DIAMETER– 6' MAX. LENGTH
A
SECTION PLAN
MANHOLE WALL
FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP
NON–SHRINK GROUT COMPATIBLE WITH WATERSTOP PIPE MATERIAL
SEWER PIPE
NON–SHRINK GROUT COMPATIBLE WITH WATERSTOP PIPE MATERIAL
FLEXIBLE ACID RESISTANT NEOPRENE GASKET WATERSTOP
MANHOLE BASE
WATER STOP DETAIL
NOTE:
MANHOLES SHALL PASS VACUUM TEST PER ASTM C–1244 PRIOR TO ACCEPTANCE.
NO. | DATE | REVISION DESCRIPTION | BY
DIVISION OF ENGINEERING
STANDARD MANHOLE JUNCTION AND WATER STOP DETAILS
STANDARD DRAWING NO. 213
APPROVED
URBAN COUNTY ENGINEER
5/1/02
DATE
COMMISSIONER
DATE
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

NOTES:

1. LIFT RINGS TO BE CUT BEFORE ADDING THE NEXT RING OR TOP.
2. COAT OUTSIDE AND IN BETWEEN ADJUSTING RINGS WITH SEMI-FIBRATED ASPHALT DAMPROOFING COMPOUND APPLIED BY BRUSH OR SPRAY.
3. GRADE RINGS WITH NON-PARALLEL SURFACES MAY BE USED TO ADJUST CASTING TO SLOPED SURFACE.
4. CONCRETE: CLASS "A" 3500 PSI AT 28 DAYS, AND IN ACCORDANCE WITH ASTM C-478, OR LATEST EDITION.
5. NO MORE THAN 2 GRADE RINGS MAY BE USED AT ONE LOCATION AND THE MAXIMUM HEIGHT OF ALL RINGS USED SHALL NOT EXCEED 12 INCHES.
6. APPLY MASTIC BETWEEN ALL JOINTS.





GRADE RING WIDTH CHART

X	WEIGHT LBS.
2"	140
3"	210
4"	279
6"	419
8"	560
12"	730

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

SEWER MANHOLE ADJUSTMENT GRADE RINGS

STANDARD DRAWING NO. 214

APPROVAL: URBAN COUNTY ENGINEER 5/1/07 DATE

COMMISSIONER DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

GENERAL NOTES

1. SHALLOW MANHOLE TYPE CONSTRUCTION SHOWN ON STD. DWG. 210 MAY BE USED FOR ALL MANHOLES UP TO 5' IN DEPTH.
2. ALL DIMENSIONS ARE BASED ON SIZE OF LARGEST PIPE IN MANHOLE.
3. MANHOLES FOR PIPE LARGER THAN 36" SHALL BE SPECIALLY DESIGNED.
4. BOTTOM SLAB OF MANHOLES SHALL BE SPECIALLY DESIGNED WITH REGARD TO AREA, THICKNESS, AND REINFORCING IN SITUATIONS WHERE HIGH WATER TABLE OR UNSTABLE SOIL CONDITIONS EXIST.
5. MANHOLE STEPS SHALL BE INSTALLED IN A VERTICAL LINE AND SHALL COMPLY WITH OSHA STANDARDS IN ALL RESPECTS.
6. ALL FLOORS OF MANHOLES SHALL SLOPE AT LEAST 1" PER FT. FROM WALL TO CHANNELS AND SHALL HAVE SMOOTH FLOAT AND BRUSH FINISH.
7. CHANNEL SURFACE OF MANHOLES FROM INLET TO OUTLET SHALL HAVE SMOOTH FLOAT FINISH.
8. ELEVATIONS OF PIPES IN MANHOLES SHALL BE SUCH THAT THE TOP OF ALL INFLUENT PIPES WILL BE AT AN EL-EVATION EQUAL TO OR GREATER THAN THE TOP OF THE EFFLUENT PIPE.
9. A MINIMUM FALL OF 0.10 FOOT SHALL BE PROVIDED.
10. BASE OF MANHOLES GREATER THAN 12' DEEP TO BE REINFORCED WITH NO. 4 BARS AT 12" BOTH WAYS.
11. ASPHALT DAMPROOFING COMPOUND IS REQUIRED ON PRECAST MANHOLES IN WET AREAS OR OTHERWISE AS DIRECTED BY THE ENGINEER.
12. LEAKS IN MANHOLES OBSERVED DURING CONSTRUCTION OR INSPECTION SHALL BE CORRECTED IMMEDIATELY.
13. MANHOLES SHALL PASS VACUUM TEST PER ASTM C-1244 PRIOR TO ACCEPTANCE.
14. ALL INLETS, INCLUDING LATERALS, MUST HAVE FLOW CHANNELS.
15. NEW CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES MUST REPLACE EXISTING BRICK MANHOLES OR DAMAGED MANHOLES AT NO EXPENSE TO THE LFUCG.
16. FIELD POURED BASES (DOGHOUSE MANHOLES) SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF THE LFUCG.

SPECIFICATIONS

1. CASTINGS SHALL BE ASTM A-48, CLASS 35.
2. CONCRETE FOR MANHOLES, CRADLE ENCASEMENT, ETC. SHOWN IN THESE DETAILS SHALL BE CLASS "A".
3. CONCRETE MANHOLE BARREL CONSTRUCTION SHALL CONFORM TO ASTM C-478 OR ITS LATEST REVISION.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

MANHOLE SIZE STANDARDS AND GENERAL NOTES FOR DEEP MANHOLES

STANDARD DRAWING NO. 216

APPROVAL — DATE 5/1/08

URBAN COUNTY ENGINEER — DATE 5/1/08

COMMISSIONER

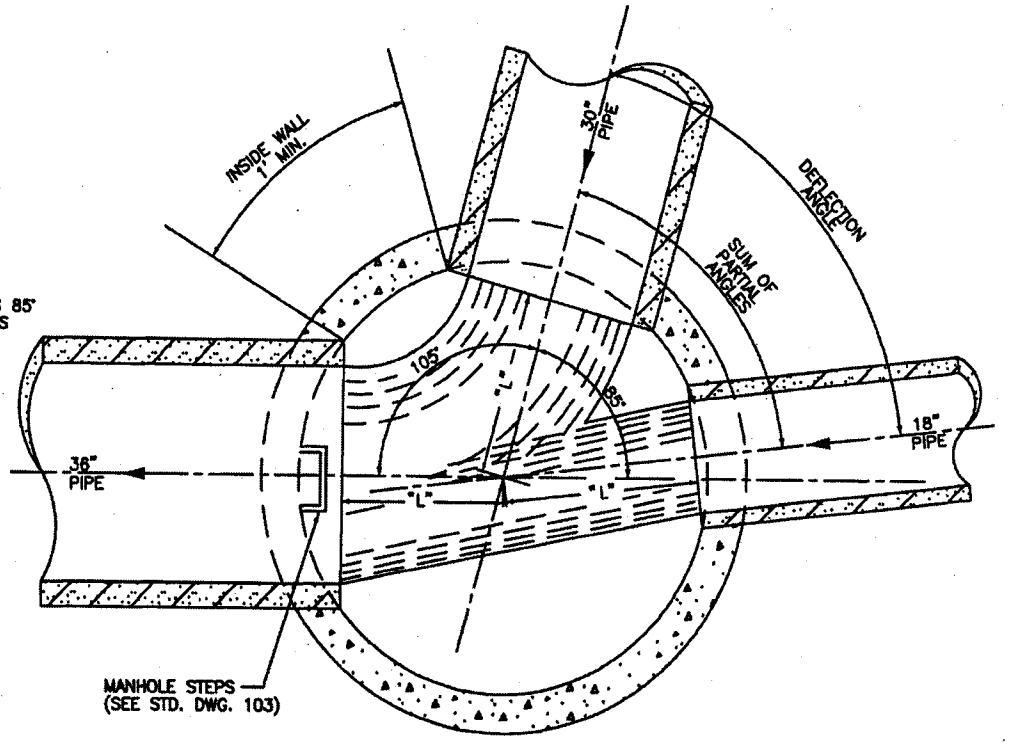
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

CIRCULAR MANHOLE NOTES:

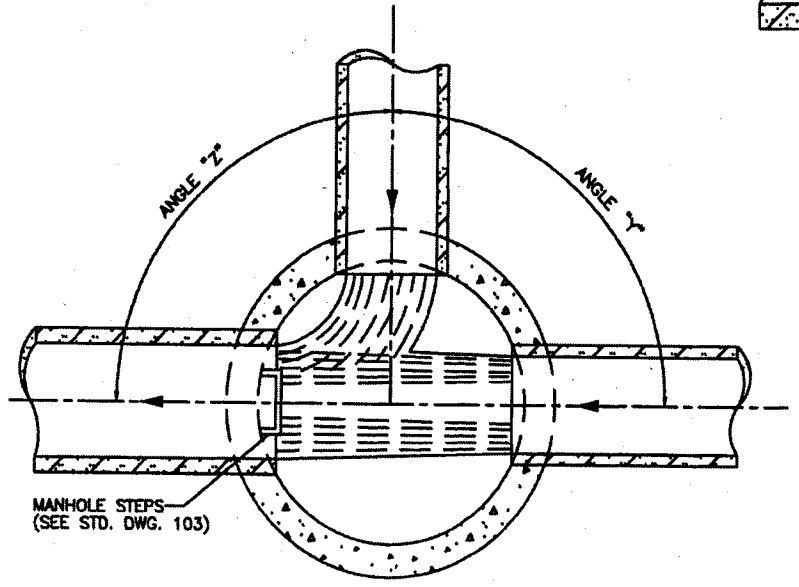
1. THE ANGLE BETWEEN ANY TWO PIPES (e.g. ANGLE "Y" OR "Z") MUST BE GREATER THAN THE SUM OF THE PARTIAL ANGLES. REFER TO SEPARATE STANDARD DRAWINGS FOR TABLE OF MINIMUM PARTIAL ANGLES. ANGLES SMALLER THAN LISTED ON TABLE SHALL REQUIRE LARGER MANHOLE SELECTION.
2. THE MAXIMUM DEFLECTION ANGLE BETWEEN ANY INCOMING PIPE AND THE CENTERLINE EXTENSION OF THE DISCHARGE PIPE SHALL BE NO MORE THAN 90° FOR PIPES UP TO 24" IN DIAMETER. THE MAXIMUM DEFLECTION ANGLE FOR 27" TO 36" PIPES SHALL BE 75°.

EXAMPLE FOR SANITARY MANHOLE SIZE SELECTION:

FOR MANHOLE SHOWN AT RIGHT, THE ANGLE BETWEEN THE 18" AND 30" PIPES IS 85° AND THE ANGLE BETWEEN THE 30" AND 36" PIPES IS 105°. THE TABLE INDICATES THAT FOR A 5'-0" DIAMETER MANHOLE THE MINIMUM PARTIAL ANGLE FOR AN 18" PIPE IS 34° AND FOR A 30" PIPE IS 50°. THE SUM OF THE PARTIAL ANGLES IS 84°, THIS SUM IS LESS THAN THE 85° THEREFORE, A 5'-0" MANHOLE DIAMETER IS ACCEPTABLE.



PLAN SECTION



PLAN SECTION

TABLE OF MINIMUM PARTIAL ANGLES FOR SANITARY MANHOLES

PIPE SIZE	MANHOLE SIZE			
	4'-0"		5'-0"	
	P. ANGLE	L. DIST.	P. ANGLE	L. DIST.
15"	38°	1'-10"	30°	2'-3"
18"	43°	1'-8"	34°	2'-3"
24"	53°	1'-6"	39°	2'-2"
27"	–	–	45°	2'-0"
30"	–	–	50°	1'-11"

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

DEFLECTION ANGLE CRITERIA FOR SANITARY MANHOLES

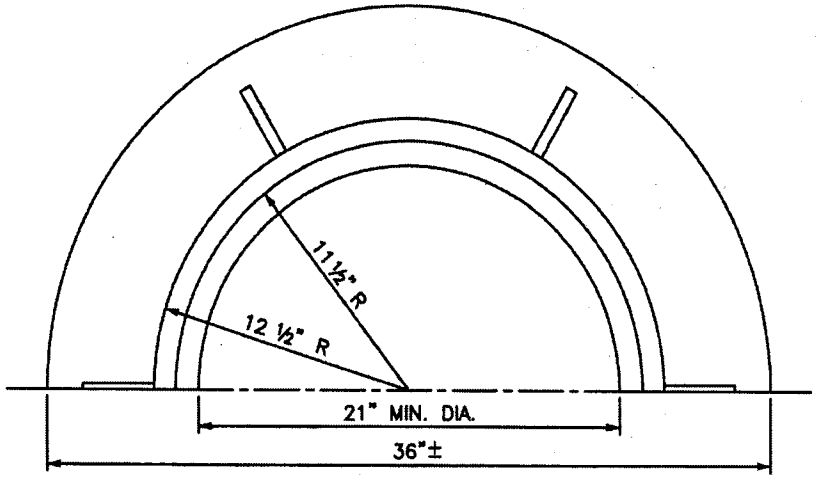
STANDARD DRAWING NO. 217

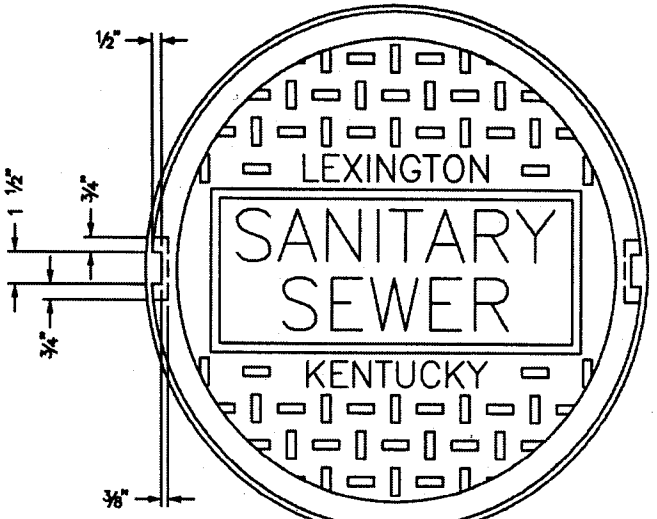
APPROVED 5/1/08

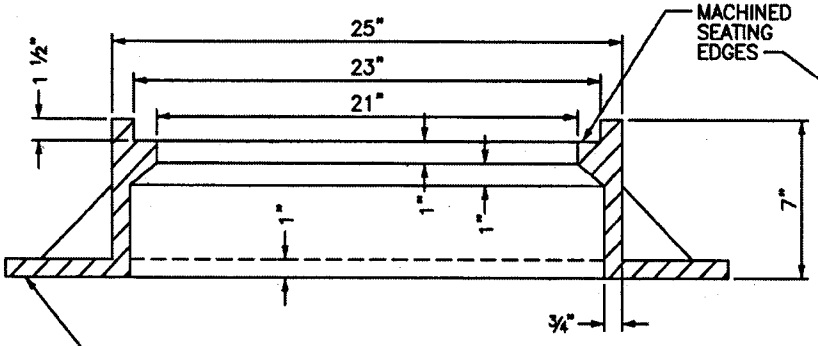
DIRECTOR, DIVISION OF ENGINEERING AND ENVIRONMENTAL MANAGEMENT — DATE

COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT







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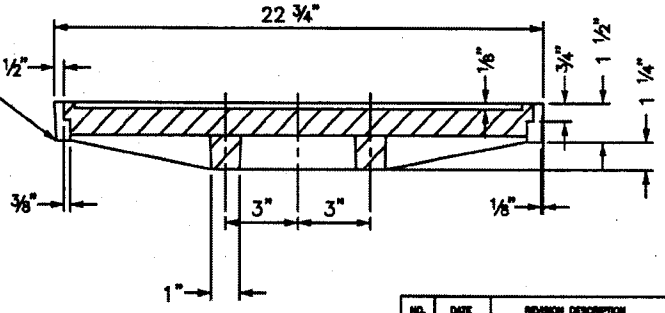


COVER DETAIL

NOTE:

MANHOLE FRAME & LID ASSEMBLY SHALL HAVE A MINIMUM LID WEIGHT OF 120 LBS. AND A TOTAL MINIMUM FRAME & LID WEIGHT OF 305 LBS. WITH ALL STEEL IN ACCORDANCE WITH ASTM A–48 CLASS 35 SPEC.

NO.	DATE	REVISION DESCRIPTION	BY

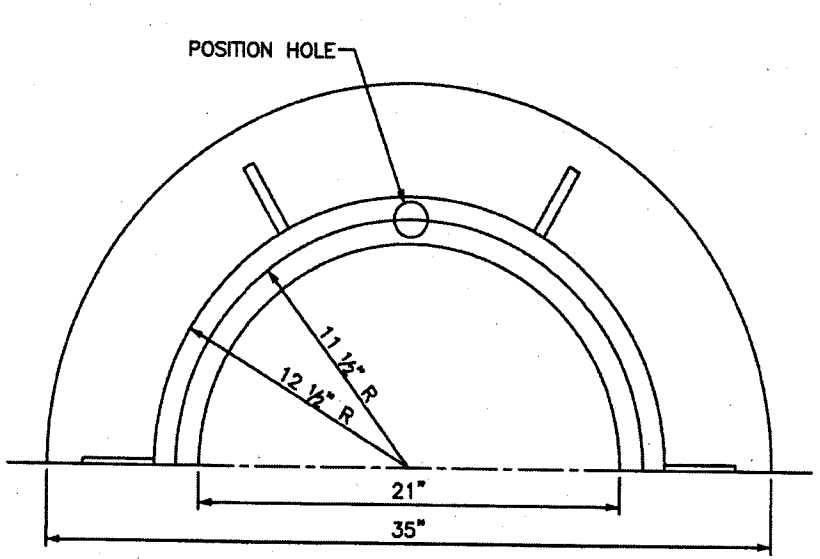
DIVISION OF ENGINEERING

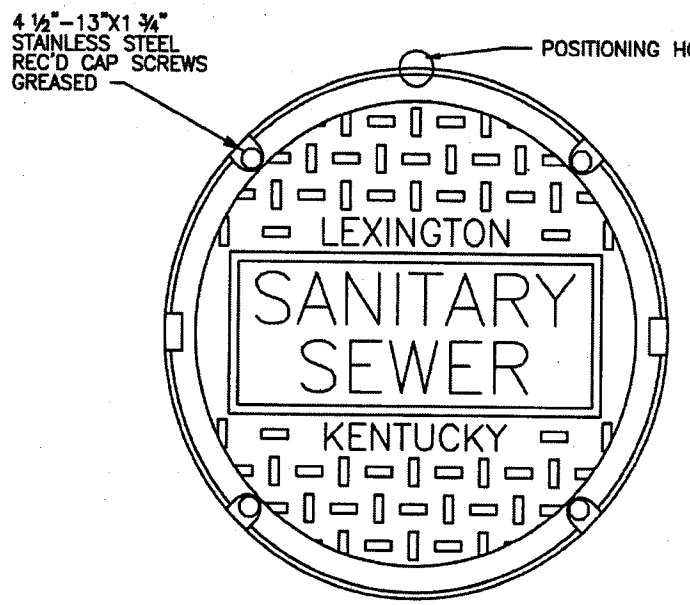
STANDARD CIRCULAR
MANHOLE FRAME & COVER

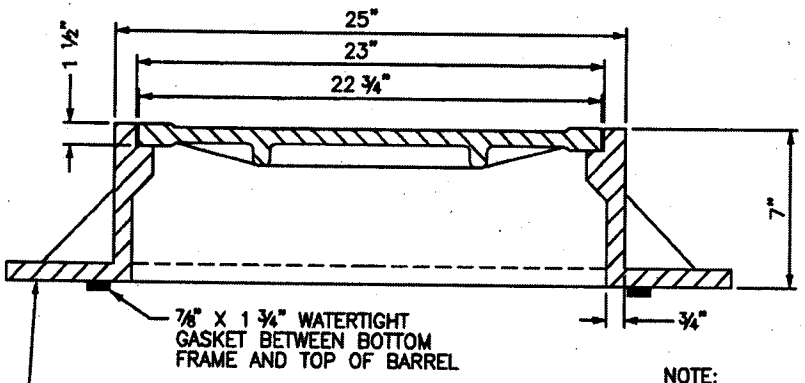
STANDARD DRAWING NO. 220

APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/08
DIRECTOR — DATE
COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT







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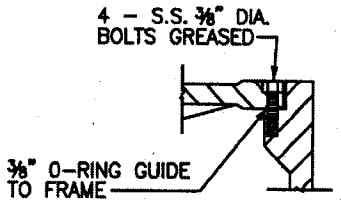
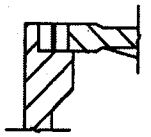


WATERTIGHT DETAIL



POSITIONING HOLE

COVER DETAIL

NOTE:

MANHOLE FRAME & LID ASSEMBLY SHALL BE NEENAH #R–1916–D OR APPROVED EQUAL, HAVE A MINIMUM LID WEIGHT OF 150 LBS. AND A TOTAL MINIMUM FRAME & LID WEIGHT OF 335 LBS. WITH ALL STEEL IN ACCORDANCE WITH ASTM A–48 CLASS 35 SPEC. OR HIGHER.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

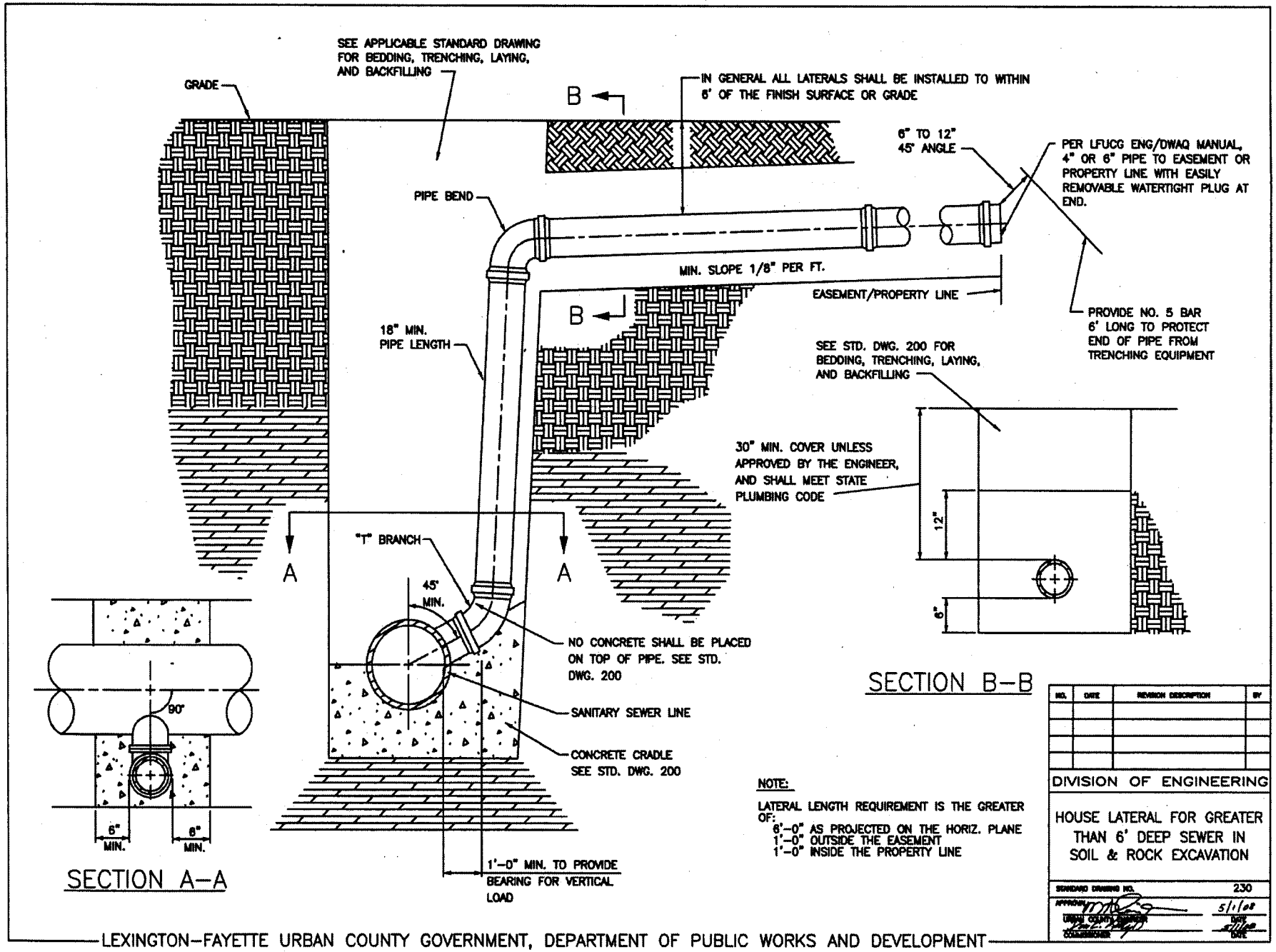
STANDARD WATERTIGHT MANHOLE FRAME & COVER

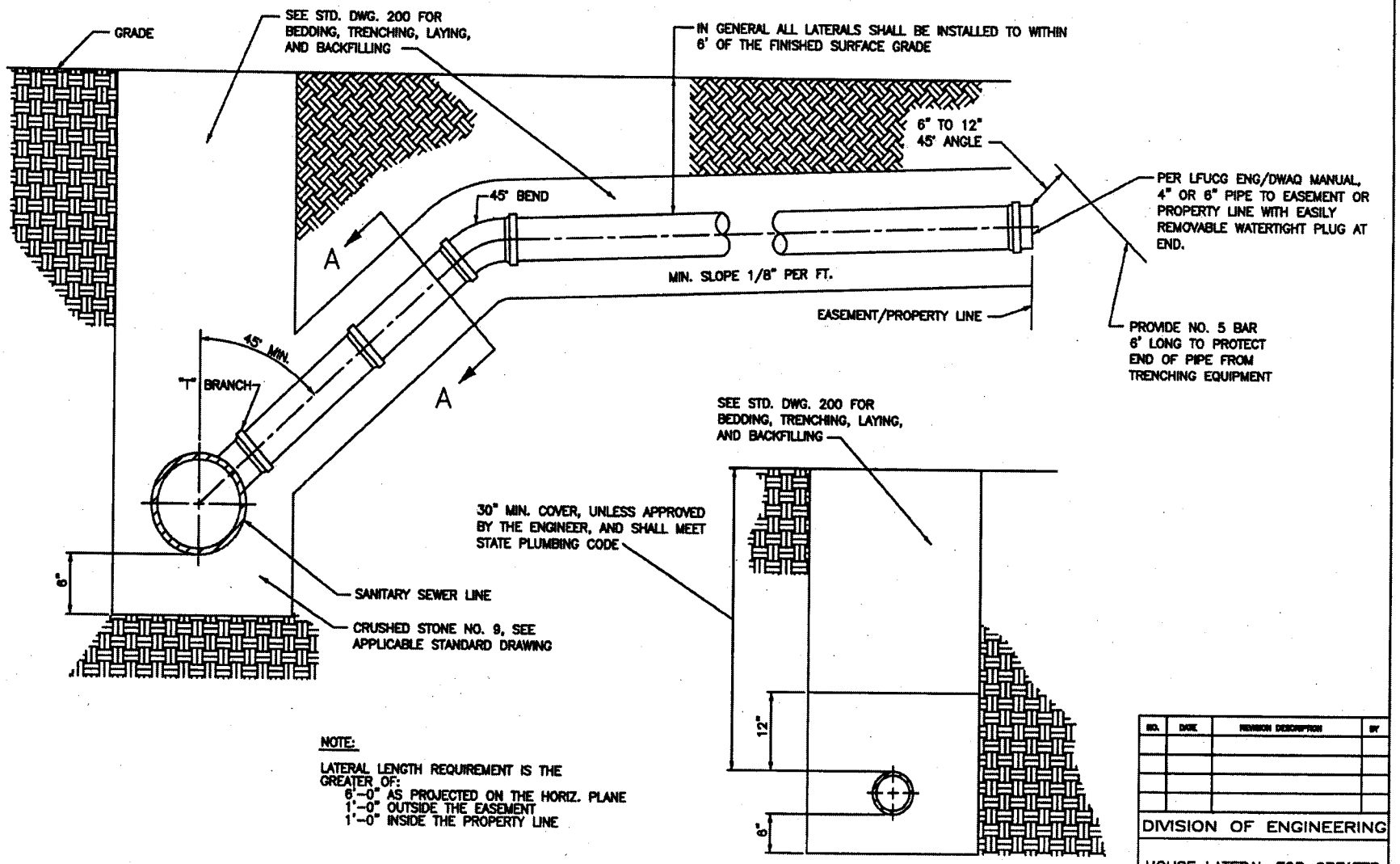
STANDARD DRAWING NO. 222

APPROVED 5/1/08 DATE

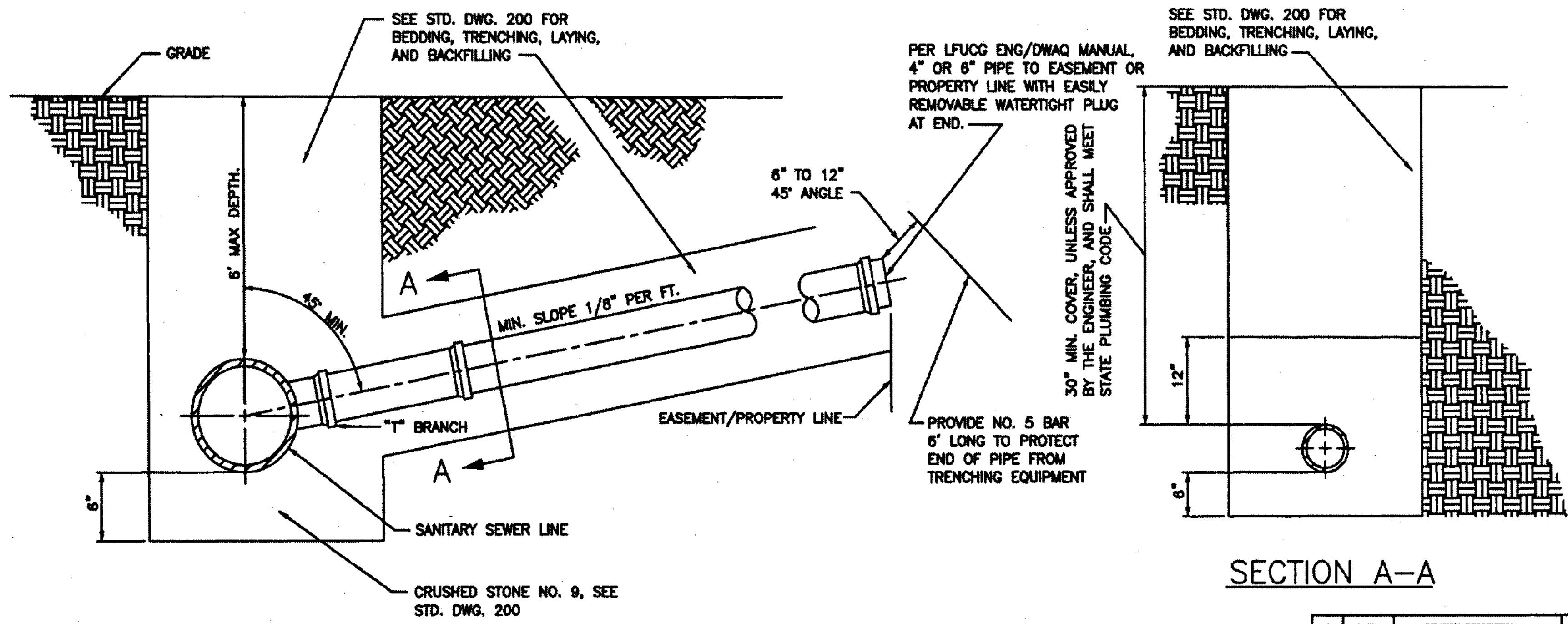
DIRECTOR, DIVISION OF ENGINEERING & CONSTRUCTION DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT


SEE APPLICABLE STANDARD DRAWING FOR BEDDING, TRENCHING, LAYING, AND BACKFILLING
GRADE
B
IN GENERAL ALL LATERALS SHALL BE INSTALLED TO WITHIN 6' OF THE FINISH SURFACE OR GRADE
6" TO 12" 45° ANGLE
PER LFUCG ENG/DWAQ MANUAL, 4" OR 6" PIPE TO EASEMENT OR PROPERTY LINE WITH EASILY REMOVABLE WATERTIGHT PLUG AT END.
PIPE BEND
MIN. SLOPE 1/8" PER FT.
EASEMENT/PROPERTY LINE
B
18" MIN. PIPE LENGTH
PROVIDE NO. 5 BAR 6' LONG TO PROTECT END OF PIPE FROM TRENCHING EQUIPMENT
SEE STD. DWG. 200 FOR BEDDING, TRENCHING, LAYING, AND BACKFILLING
30" MIN. COVER UNLESS APPROVED BY THE ENGINEER, AND SHALL MEET STATE PLUMBING CODE
12"
6"
A
A
"T" BRANCH
45° MIN.
NO CONCRETE SHALL BE PLACED ON TOP OF PIPE. SEE STD. DWG. 200
SANITARY SEWER LINE
CONCRETE CRADLE SEE STD. DWG. 200
90°
6" MIN.
6" MIN.
1'-0" MIN. TO PROVIDE BEARING FOR VERTICAL LOAD
SECTION A-A
SECTION B-B
NOTE:
LATERAL LENGTH REQUIREMENT IS THE GREATER OF:
6'-0" AS PROJECTED ON THE HORIZ. PLANE
1'-0" OUTSIDE THE EASEMENT
1'-0" INSIDE THE PROPERTY LINE
NO. DATE REVISION DESCRIPTION BY
DIVISION OF ENGINEERING
HOUSE LATERAL FOR GREATER THAN 6' DEEP SEWER IN SOIL & ROCK EXCAVATION
STANDARD DRAWING NO. 230
APPROVED
URBAN COUNTY ENGINEER
COMMISSIONER
5/1/08
DATE
DATE
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



SECTION A–A

NOTE:

LATERAL LENGTH REQUIREMENT IS THE GREATER OF:
6'–0" AS PROJECTED ON THE HORIZ. PLANE
1'–0" OUTSIDE THE EASEMENT
1'–0" INSIDE THE PROPERTY LINE

NO.	DATE	REVISION DESCRIPTION	BY

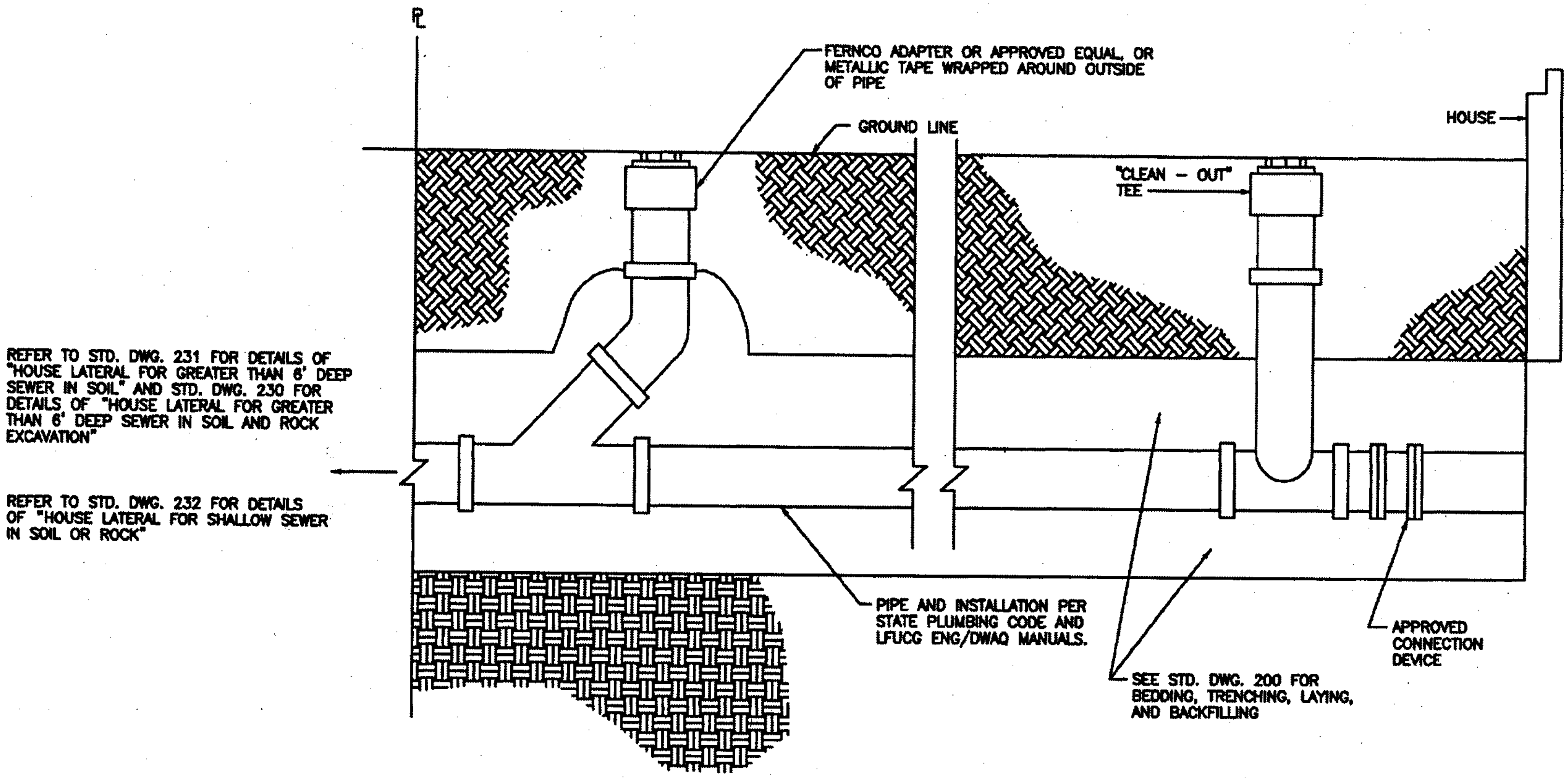
DIVISION OF ENGINEERING

HOUSE LATERAL
FOR SHALLOW SEWER
IN SOIL OR ROCK

STANDARD DRAWING NO. 232

APPROVAL [signature] URBAN COUNTY ENGINEER — DATE 5/1/08
[signature] COMMISSIONER — DATE [illegible]

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTE:

SEWER PIPE FROM HOUSE TO THE LONG SWEEP "L" MUST BE IN ACCORDANCE WITH STATE PLUMBING CODE AND LFUCG ENG/DWAG MANUALS.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

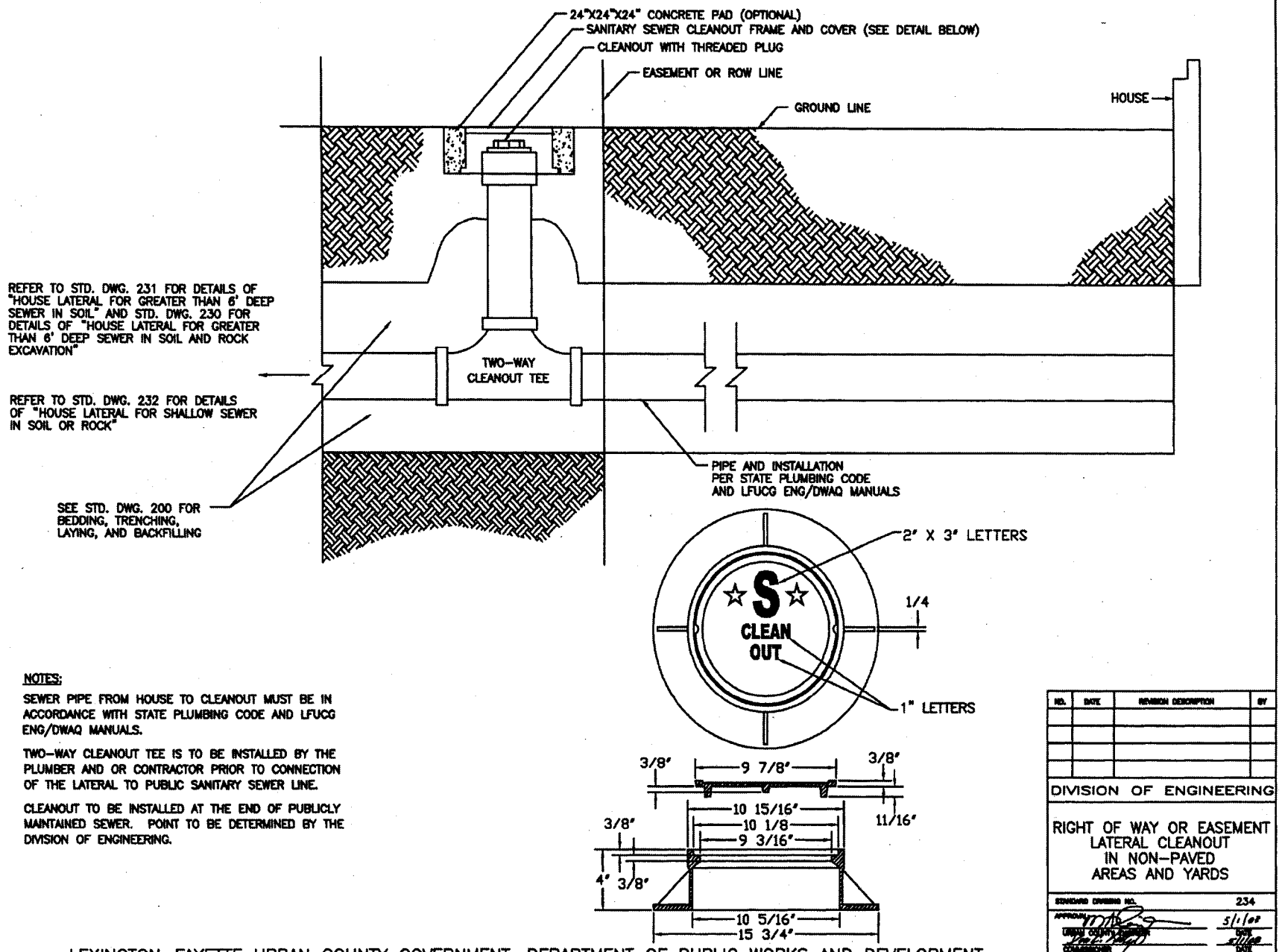
LATERAL CLEANOUT IN NON-PAVED AREAS AND YARDS

STANDARD DRAWING NO. 233

APPROVAL: URBAN COUNTY ENGINEER — DATE 5/1/08

COMMISSIONER — DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTES:

SEWER PIPE FROM HOUSE TO CLEANOUT MUST BE IN ACCORDANCE WITH STATE PLUMBING CODE AND LFUCG ENG/DWAQ MANUALS.

TWO-WAY CLEANOUT TEE IS TO BE INSTALLED BY THE PLUMBER AND OR CONTRACTOR PRIOR TO CONNECTION OF THE LATERAL TO PUBLIC SANITARY SEWER LINE.

CLEANOUT TO BE INSTALLED AT THE END OF PUBLICLY MAINTAINED SEWER. POINT TO BE DETERMINED BY THE DIVISION OF ENGINEERING.

NO.	DATE	REVISION DESCRIPTION	BY

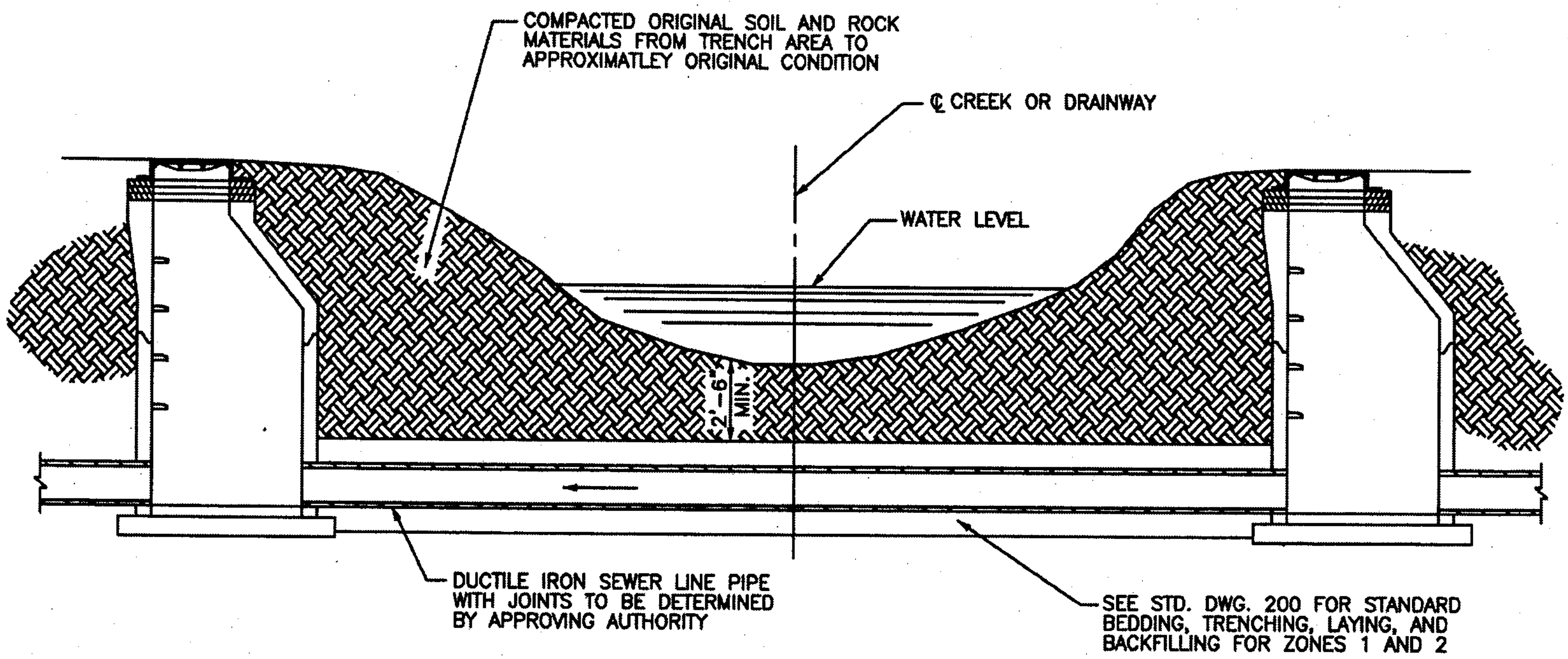
DIVISION OF ENGINEERING

RIGHT OF WAY OR EASEMENT
LATERAL CLEANOUT
IN NON-PAVED
AREAS AND YARDS

STANDARD DRAWING NO. 234

APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/08
URBAN COUNTY ADMINISTRATOR — DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTES:

1. A WATERSTOP SHALL BE PROVIDED ON THE UPSTREAM SIDE OF THE DOWNSTREAM MANHOLE.
2. SPECIAL DESIGN REQUIRED WHEN COVER IS 30" OR LESS.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

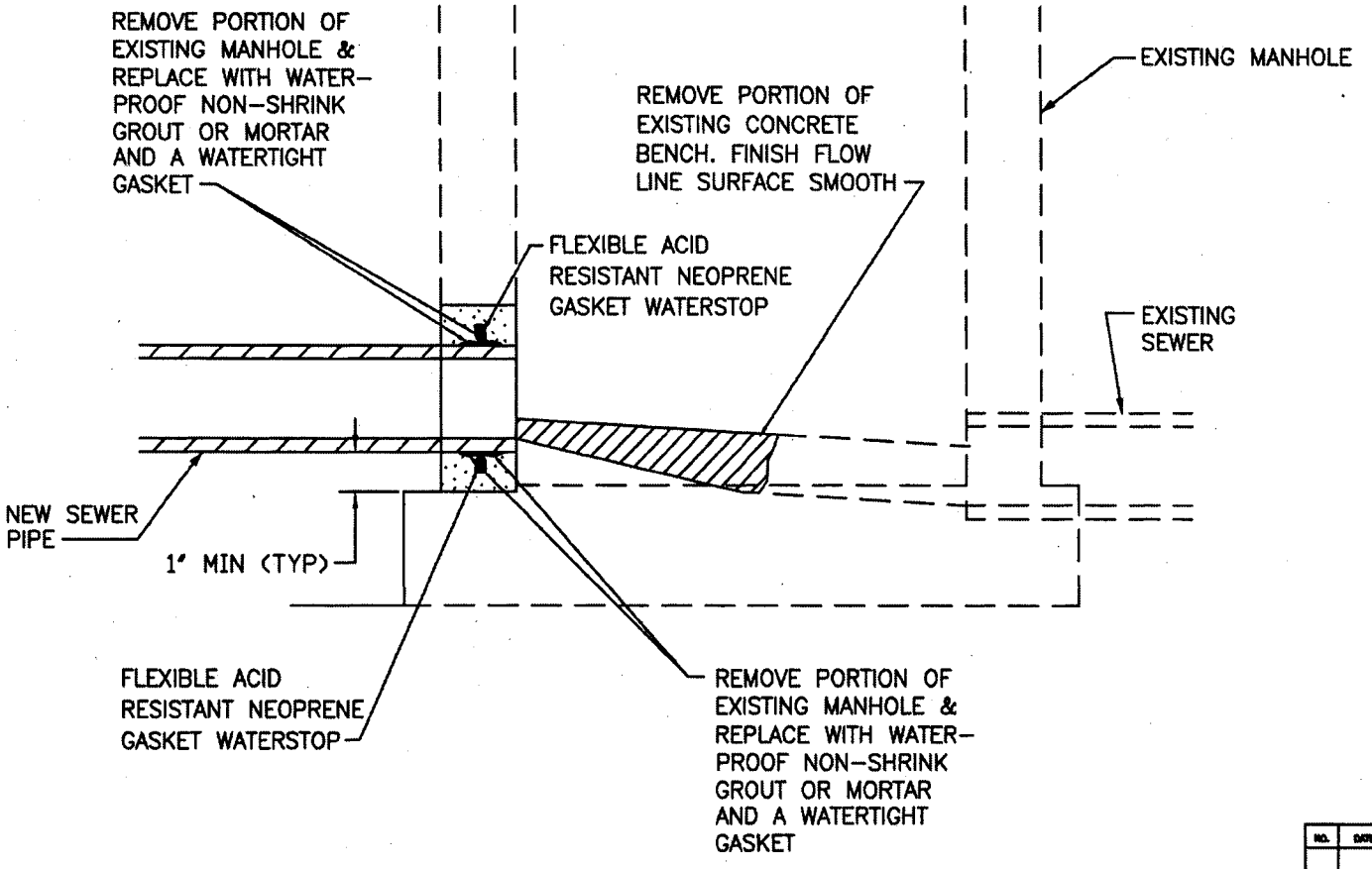
TYPICAL CREEK CROSSING FOR SANITARY SEWER LINE

STANDARD DRAWING NO. 240

APPROVAL 5/1/08

COMMISSIONER DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



ALL HOLES CUT INTO SEWER MANHOLES SHALL BE CORE DRILLED.

SEWER CONNECTION TO EXISTING MANHOLE

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

SEWER CONNECTION TO EXISTING CONCRETE MANHOLE

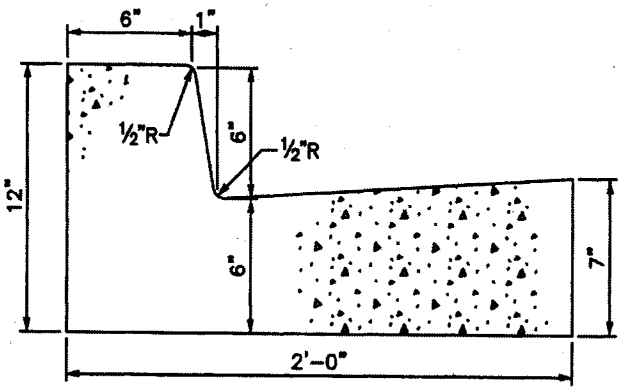
STANDARD DRAWING NO. 260

APPROVED: [signature] DATE 5/1/08

URBAN COUNTY ENGINEER [signature] DATE

COMMISSIONER [signature] DATE

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



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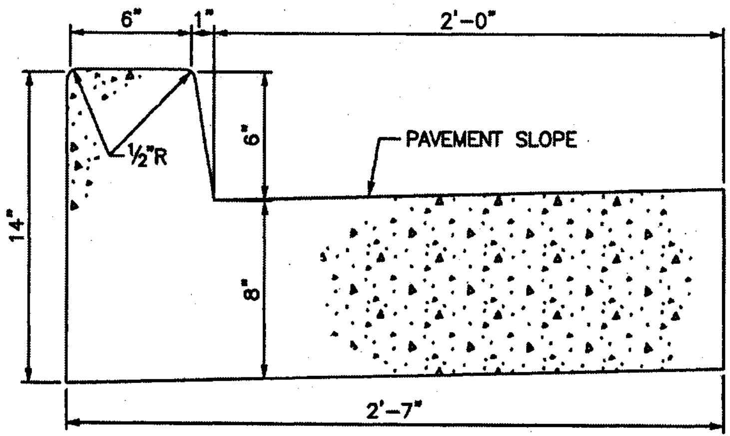
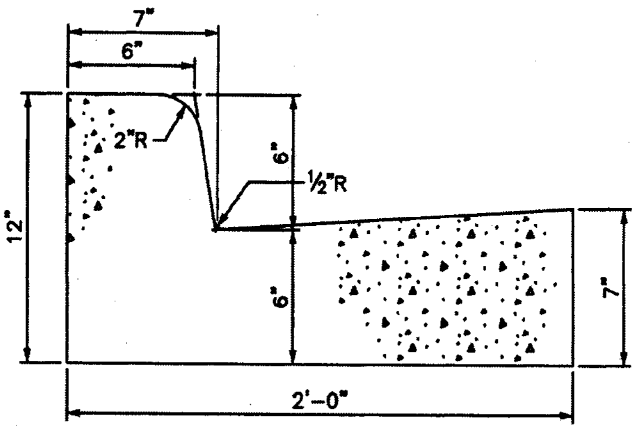


TYPE 2



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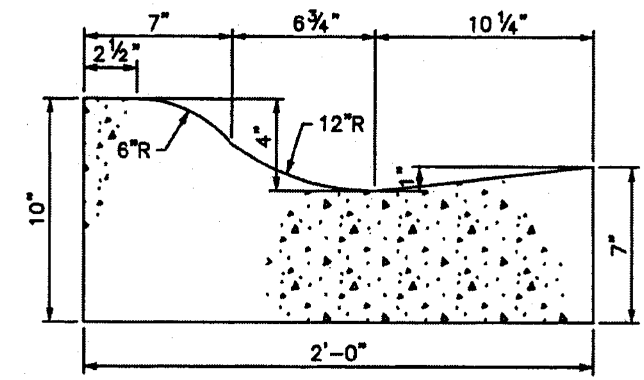


TYPE 4

(RESIDENTIAL LOCAL STREETS ONLY)

NOTES:

1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, WITH A MIN. DEPTH OF 3", IN ACCORDANCE WITH KDOT STANDARD SPECIFICATION.
3. EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT CONTACT WITH NEW OR EXISTING CONCRETE, AT ALL DRAINAGE INLETS, AT THE BEGINING AND ENDING POINTS OF CURVES, AND NOT TO EXCEED 200' MAXIMUM SPACING FOR SLIP FORM APPLICATION AND 30' MAXIMUM SPACING FOR HAND PLACED.
4. ALL CONCRETE SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

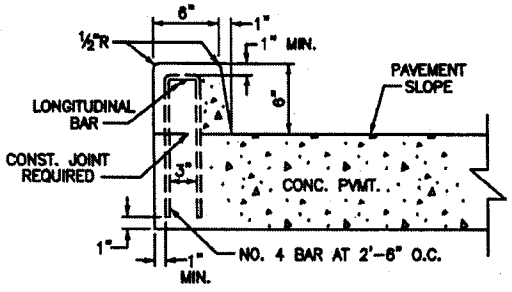
CURB & GUTTER

STANDARD DRAWING NO. 301

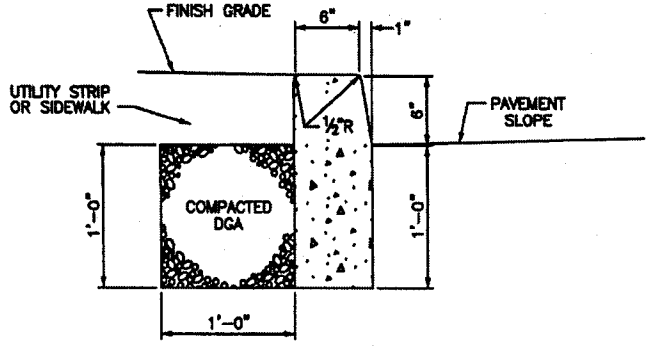
APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/02

COMMISSIONER — DATE

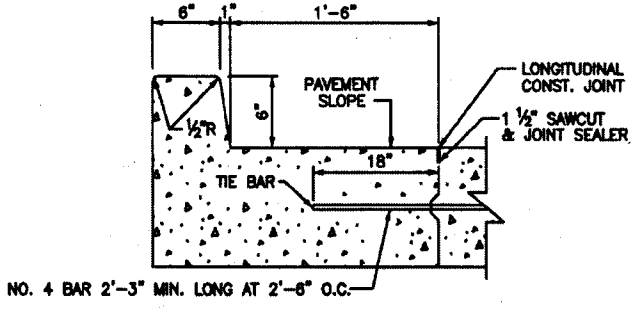
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



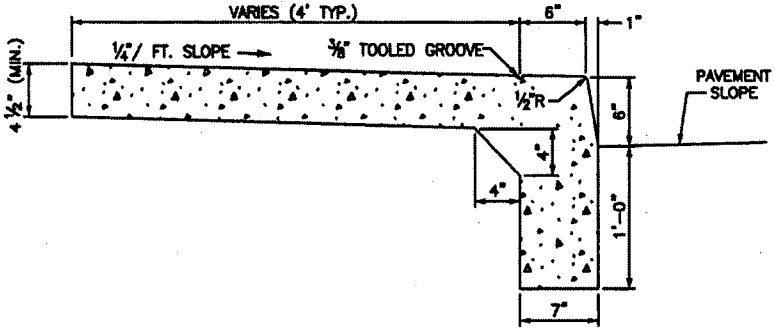
INTEGRAL CURB, TYPE 1



HEADER CURB



INTEGRAL CURB, TYPE 2



MONOLITHIC CURB AND SIDEWALK

NOTES:

1. CONCRETE SHALL BE KDOT CLASS "A".
2. SAWED CONTRACTION JOINTS SHALL BE CONSTRUCTED EVERY 20 FEET, 3" MINIMUM DEPTH.
3. THE CONTRACTOR HAS THE OPTION OF CONSTRUCTING THE STANDARD INTEGRAL CURB AS DETAILED IN EITHER TYPE 1 OR 2. IF TYPE 2 IS CHOSEN A LONGITUDINAL CONSTRUCTION JOINT SHALL BE REQUIRED AND THE REMAINING PAVEMENT AND CURB SHALL BE CONSTRUCTED MONOLITHIC WITHOUT A HORIZONTAL CONSTRUCTION JOINT AND ACCOMPANYING REINFORCING STEEL (TYPE 1).
4. EXPANSION JOINTS SHALL BE CONSTRUCTED AT ALL BREAKS IN ALIGNMENT, AT ALL DRAINAGE INLETS AND AT THE BEGINNING AND ENDING POINTS OF CURVES.
5. ALL CONCRETE, EXCEPT BONDING SURFACES, SHALL BE CURED WITH WHITE PIGMENTED MEMBRANE FORMING COMPOUND (AASHTO M 148, TYPE 2).

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

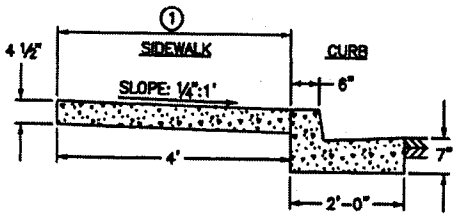
INTEGRAL CURB, HEADER CURB, MONOLITHIC CURB & SIDEWALK

STANDARD DRAWING NO. 302

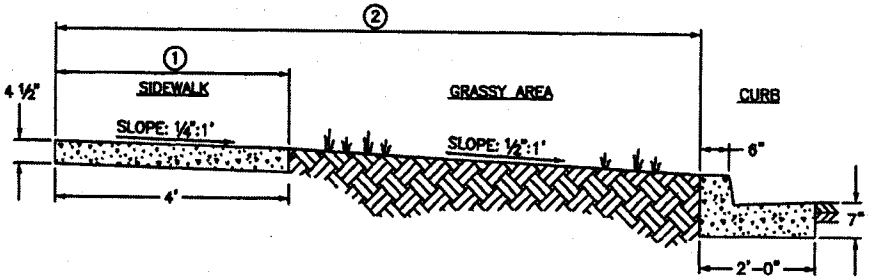
APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/08

URBAN COUNTY COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



SIDEWALK/CURB AND GUTTER



SIDEWALK/CURB AND GUTTER
WITH GRASS UTILITY STRIP

NOTES:

1. CONCRETE SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED ON A THOROUGHLY COMPACTED SUB-GRADE AND SHALL BE FOUR AND ONE HALF (4 ½) INCHES IN THICKNESS AND A MINIMUM WIDTH OF FOUR (4) FEET. CONCRETE SHALL HAVE SPECIFICATIONS FOR CLASS "A", KENTUCKY DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS, CURRENT EDITION. WHITE PIGMENTED (TYPE 2, CLASS "A" OR "B") CURING COMPOUND IS REQUIRED (ALSO KENTUCKY DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS, CURRENT EDITION).
2. EXPANSION JOINTS SHALL BE PLACED AT THIRTY-TWO (32) FOOT INTERVALS. IN EXISTING NEIGHBORHOODS, EXPANSION MATERIAL SHALL BE PLACED AT THE BEGINNING AND END OF NEWLY CONSTRUCTED AREAS.
3. THE SIDEWALKS SHALL BE PLACED ADJACENT TO THE STREET RIGHT-OF-WAY LINE. SLOPE TOWARD CURB SHALL BE ONE QUARTER (¼) OF AN INCH TO THE FOOT. CONSTRUCTION IN EXISTING NEIGHBORHOODS SHALL REQUIRE THE CONTRACTOR TO MATCH EXISTING GRADE AND SIDEWALK WIDTH UNLESS SPECIFIED OTHERWISE BY THE DIVISION OF ENGINEERING.

SHEET NOTES:

① NORMAL SIDEWALK WIDTH SHALL BE 4' UNLESS CHANGE IS AUTHORIZED BY URBAN COUNTY ENGINEER'S OFFICE.

② DISTANCE WILL VARY WITH ROAD CROSS-SECTION.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

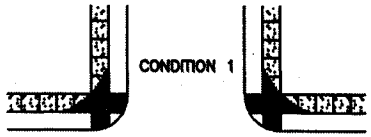
SIDEWALK CONSTRUCTION SPECIFICATIONS

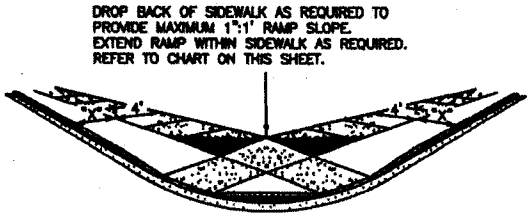
STANDARD DRAWING NO. 303

APPROVED _____ DATE 5/1/08
URBAN COUNTY ENGINEER

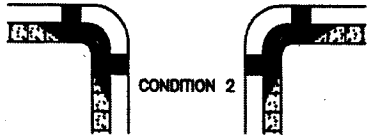
_____ DATE 5/1/08
COMMISSIONER

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



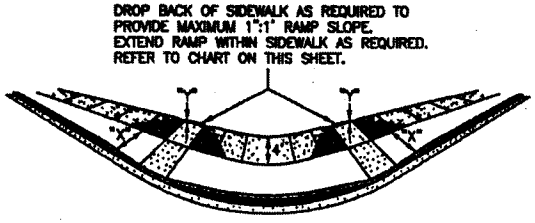


RAMP TYPE 1 CONDITION 1



RAMP TYPE 1

NORMAL TREATMENT FOR ARTERIALS AND SIGNALIZED INTERSECTIONS

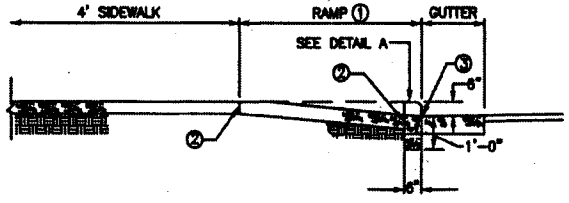


RAMP TYPE 1 CONDITION 2

NOTE:
FOR USE WITH 6" HEADER CURB OR 6" CURB AND GUTTER

① UTILITY STRIP WIDTH "X"	② BACK OF 4' SIDEWALK DROP FROM NORMAL "Y"*
0	3"
1	2 ½"
2	2"
3	1 ½"
4	1"
5	½"
≥6	0

① ½":1' CROSS SLOPE ② ¼":1' CROSS SLOPE
*WHERE ROLL CURB IS USED, "Y" DOES NOT APPLY.

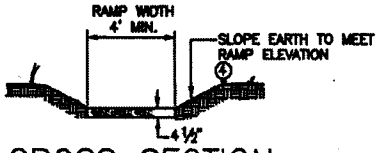


PROFILE RAMP TYPE 1

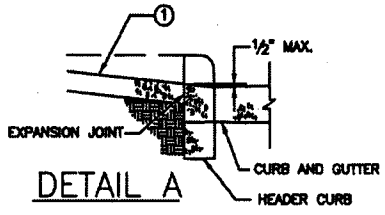
NOTES:

1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION.
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE. STEP-SAFE® TRANSPO INDUSTRIES TILE OR ENGINEER APPROVED EQUIVALENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.
5. WHERE NO CURB EXISTS, STREET EDGE SHALL BE SAW CUT, OR AS DIRECTED BY L.F.U.C.G. ENGINEER.

SHEET NOTES:
① MAXIMUM RAMP SLOPE 1":1'.
② ½" EXPANSION JOINT AT BACK OF CURBLINE AND SIDEWALK LINE.
③ NO BUMP PERMITTED.
④ SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1":1' AT GUTTER LINE.



CROSS SECTION RAMP TYPE 1



DETAIL A

NO.	DATE	REVISION DESCRIPTION	BY

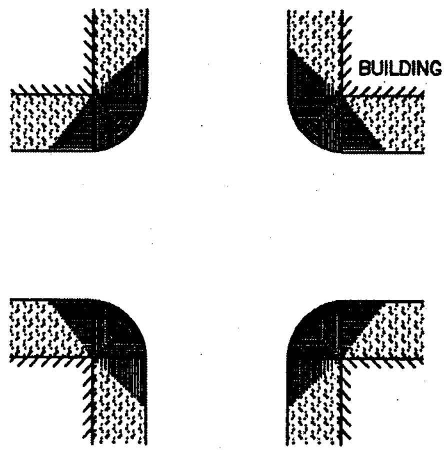
DIVISION OF ENGINEERING

SIDEWALK
RAMP TYPE 1

STANDARD DRAWING NO. 304

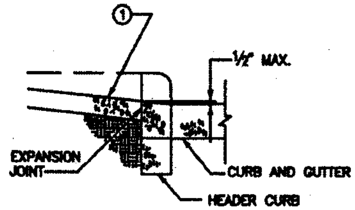
APPROVED: [signature] 5/1/02
URBAN COUNTY ENGINEER DATE
[signature] 5/1/02
COMMISSIONER DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

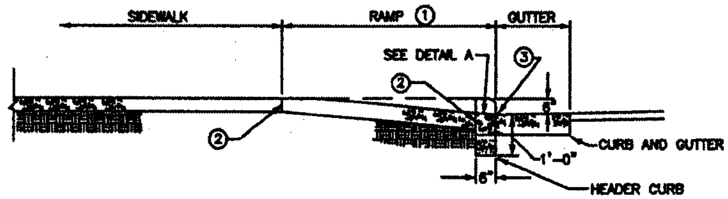


RAMP TYPE 3

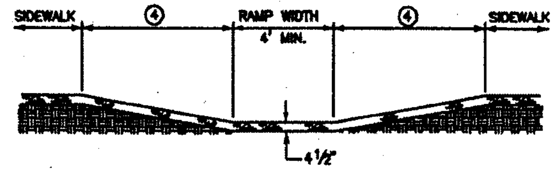
NORMAL TREATMENT FOR SIDEWALK ADJACENT TO CURB



DETAIL A



PROFILE RAMP TYPE 3



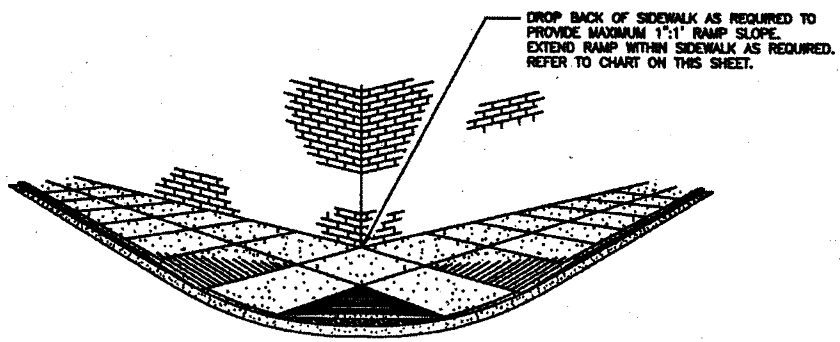
CROSS SECTION RAMP TYPE 3

NOTES:

1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION.
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE. STEP-SAFE® TRANSPO INDUSTRIES TILE OR ENGINEER APPROVED EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.

SHEET NOTES: ○

① MAXIMUM RAMP SLOPE 1":1'.
② ½" EXPANSION JOINT AT BACK OF CURBLINE AND SIDEWALK LINE.
③ NO BUMP PERMITTED.
④ SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1":1'. AT GUTTER LINE.



RAMP TYPE 3

NOTE:
FOR USE WITH 6" HEADER CURB OR 6" CURB AND GUTTER

SIDEWALK WIDTH ① "X"	BACK OF SIDEWALK DROP FROM NORMAL "Y"*
4'	3"
5'	2¼"
6'	1½"
7'	¾"
≥ 8'	0

① ¼":1' CROSS SLOPE
* WHERE ROLL CURB IS USED, "Y" DOES NOT APPLY.

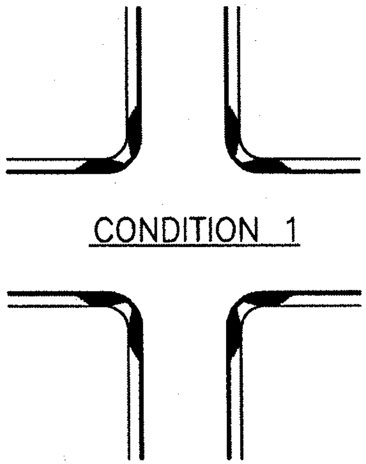
NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

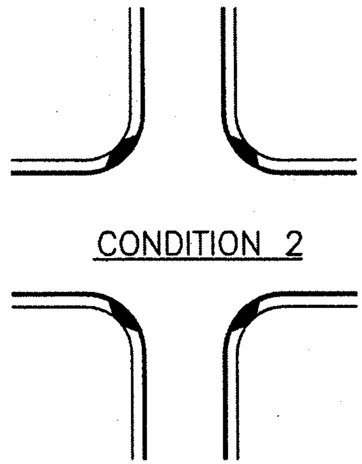
SIDEWALK
RAMP TYPE 2

STANDARD DRAWING NO. 305
APPROVAL: [signature] 5/1/02
URBAN COUNTY ENGINEER / COMMISSIONER — DATE

LEXINGTON—FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



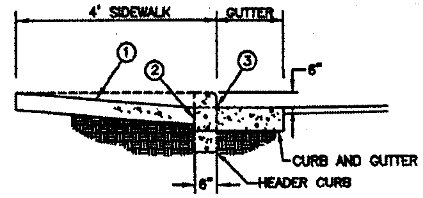
CONDITION 1



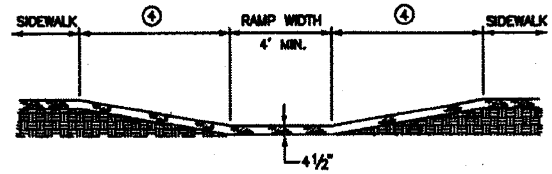
CONDITION 2

4' SIDEWALK ADJACENT TO CURB

4' SIDEWALK ADJACENT TO CURB



RAMP PROFILE



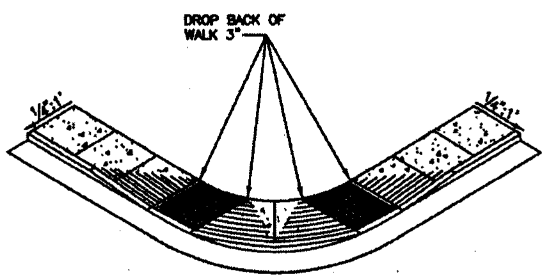
RAMP CROSS-SECTION

NOTES:

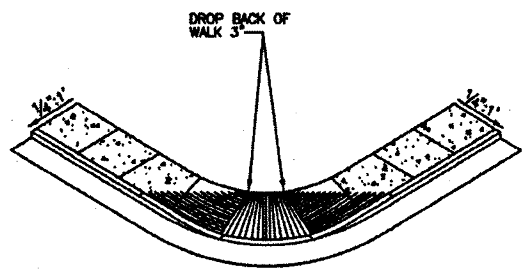
1. INLET LOCATIONS WILL VARY, DEPENDENT ON CROSSWALK AND RAMP LOCATION
2. THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE. STEP-SAFE® TRANSPO INDUSTRIES TILE OR ENGINEERS APPROVED EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. THE NORMAL GUTTER LINE SHOULD BE MAINTAINED THROUGH THE RAMP.
4. RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.

SHEET NOTES: ○

1. MAXIMUM RAMP SLOPE 1":1'.
2. ½" EXPANSION JOINT AT BACK OF CURBLINE AND SIDEWALK LINE.
3. NO BUMP PERMITTED.
4. SLOPE VARIES UNIFORMLY TO A MAXIMUM OF 1":1' AT GUTTER LINE.



CONDITION 1



CONDITION 2

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

SIDEWALK RAMP
TYPE 3

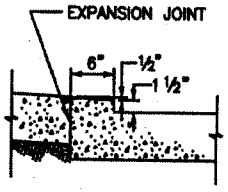
STANDARD DRAWING NO. 306

APPROVAL: URBAN COUNTY ENGINEER 5/1/08 DATE
COMMISSIONER DATE

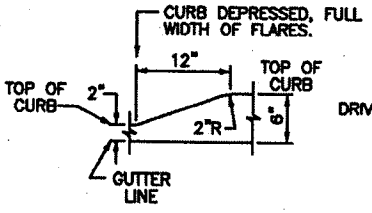
LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

MAXIMUM ALLOWABLE APRON AND DRIVEWAY WIDTHS

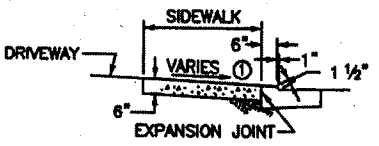
CLASSIFICATION	DRIVEWAY	APRON
SINGLE RESIDENTIAL	12'	18'
DOUBLE OR JOINT RESIDENTIAL	20'	26'



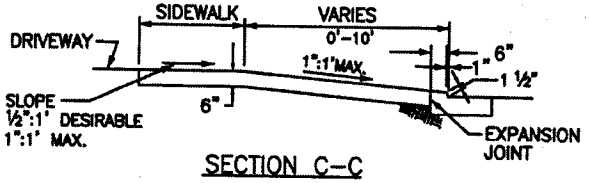
SECTION A–A



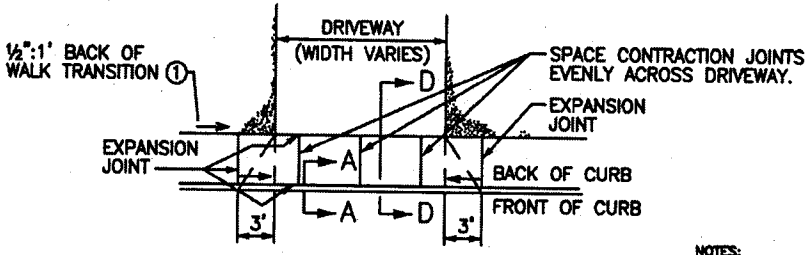
SECTION B–B



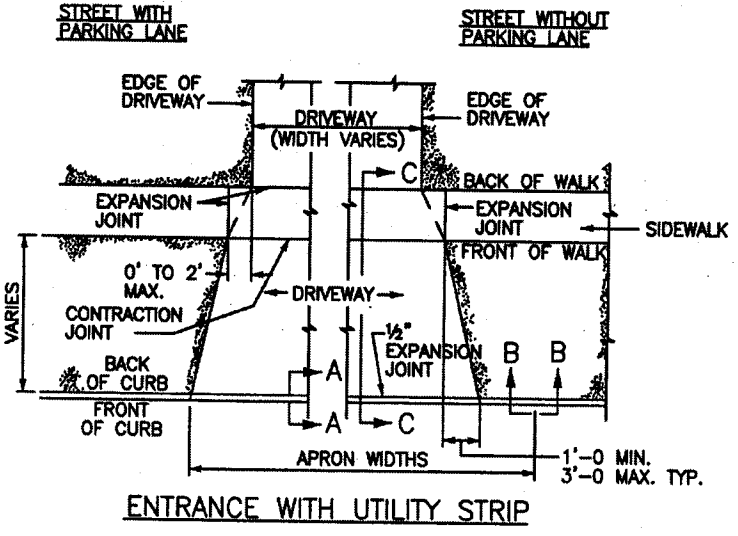
SECTION D–D



SECTION C–C



ENTRANCE WITHOUT UTILITY STRIP



ENTRANCE WITH UTILITY STRIP

NOTE:
FOR USE WITH 6" HEADER CURB OR 6" CURB AND GUTTER

BASED ON UTILITY STRIP WITH ½":1' CROSS SLOPE

UTILITY STRIP WIDTH	DROP BACK OF 4' SIDEWALK	SIDEWALK SLOPE	SLOPE ON APRON
0'	1½"	7.29%	N/A
2'	1½"	5.21%	8.33%
4'	1½"	3.12%	8.33%
5'	1½"	2.08%	8.33%
6'	1"	2.08%	8.33%
8'	0"	2.08%	8.33%
10'	0"	2.08%	7.50%

BASED ON UTILITY STRIP WITH ¼":1' CROSS SLOPE

UTILITY STRIP WIDTH	DROP BACK OF 4' SIDEWALK	SIDEWALK SLOPE	SLOPE ON APRON
0'	1½"	7.29%	N/A
2'	1½"	4.17%	8.33%
3'	1½"	2.60%	8.33%
4'	1"	2.08%	8.33%
6'	0"	2.08%	7.64%
8'	0"	2.08%	6.25%
10'	0"	2.08%	5.42%

NOTES:

① DROP BACK OF SIDEWALK GRADE 1 ½" OVER 3' TO PROVIDE A MAXIMUM SLOPE OF 1":1'.

2. PROVIDE A SAWED JOINT ALONG CENTER LINE OF APRON.
3. MAXIMUM DROP AT BACK OF SIDEWALK SHALL NOT EXCEED 1 ½".
4. MAXIMUM CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 1":1' (8.3%).
5. MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 1":1' (8.3%).
6. ENTIRE APRON FROM BACK OF CURB TO BACK OF SIDEWALK SHALL BE CONSTRUCTED WITH A SINGLE POUR.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

RESIDENTIAL ENTRANCE DETAILS

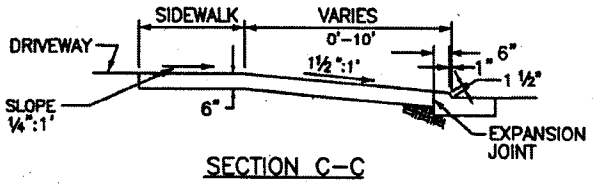
STANDARD DRAWING NO. 307

APPROVED 5/1/02
DIRECTOR, DIVISION OF ENGINEERING — DATE
COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

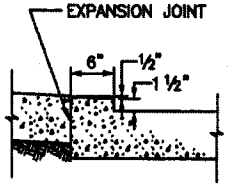
MAXIMUM ALLOWABLE APRON AND DRIVEWAY WIDTHS

CLASSIFICATION	DRIVEWAY	STANDARD APRON	ALTERNATE APRON
NON–RESIDENTIAL	30'	5' STRAIGHT FLARE=40' CURB CUT	10' RADIAL FLARE=50' CURB CUT
COMMERCIAL LOADING	30'	15' STRAIGHT FLARE=60' CURB CUT	20' RADIAL FLARE=70' CURB CUT
INDUSTRIAL	40'	20' STRAIGHT FLARE=80' CURB CUT	25' RADIAL FLARE=90' CURB CUT

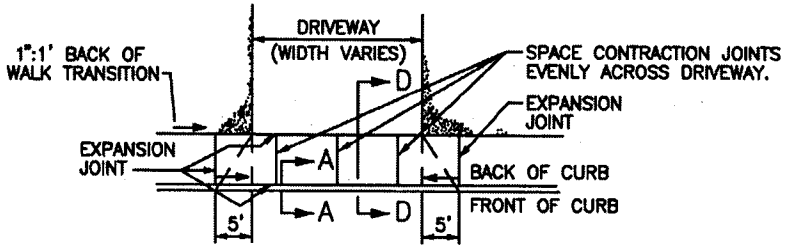


SECTION C–C

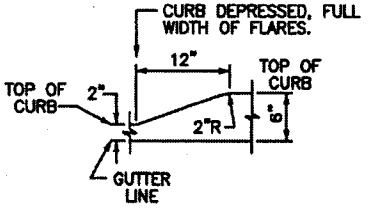
FRONT OF SIDEWALK ELEVATION DETERMINED BY ADDING ½" : 1' ACROSS UTILITY STRIP FROM TOP OF CURB. IF COMING OFF 1½" LIP ADD ANOTHER 4½" TO DETERMINE ELEVATION AT FRONT OF SIDEWALK.



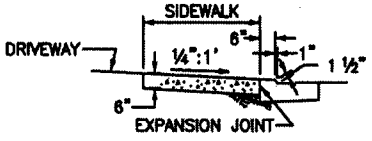
SECTION A–A



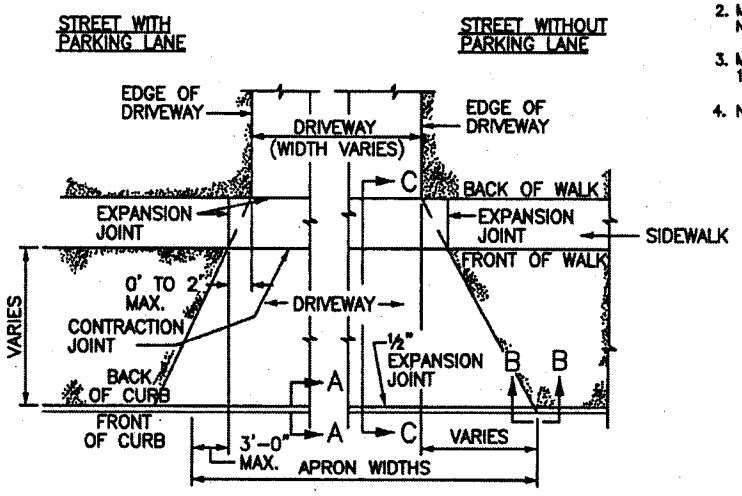
ENTRANCE WITHOUT UTILITY STRIP



SECTION B–B



SECTION D–D



ENTRANCE WITH UTILITY STRIP

NOTES:

1. PROVIDE A SAWED JOINT ALONG CENTER LINE OF APRON.
2. MAXIMUM CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED ¼":1'.
3. MAXIMUM SLOPE ON APRON SHALL NOT EXCEED 1½":1'.
4. NO CATCH BASINS WILL BE PUT IN APRONS.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

COMMERCIAL ENTRANCE DETAILS

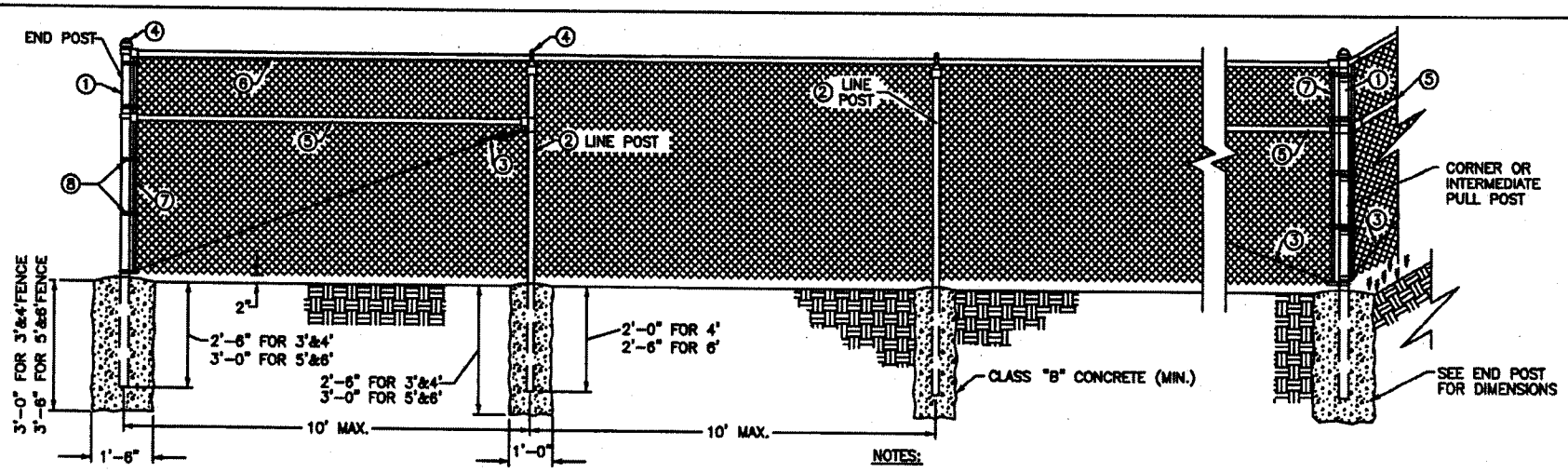
STANDARD DRAWING NO. 307–1

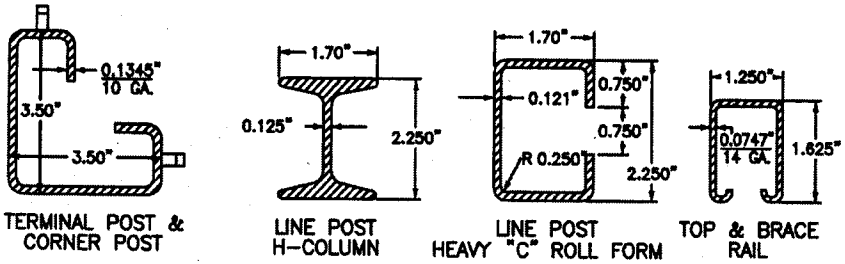
APPROVED 5/1/08 DATE

DIRECTOR

COMMISSIONER 5/7/08 DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT





TERMINAL POST & CORNER POST

LINE POST H-COLUMN

LINE POST HEAVY "C" ROLL FORM

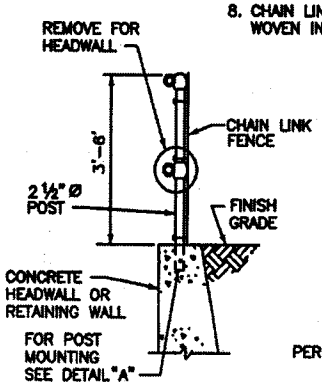
TOP & BRACE RAIL

NOTES:

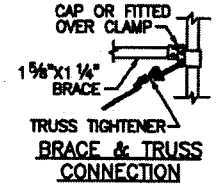
1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. 3' HIGH FENCE SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH FENCE SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH FENCE SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH FENCE SHALL HAVE 6' FABRIC HEIGHT.
3. BRACE BANDS SHALL BE 7/8"X 1/8" GALVANIZED STEEL 5/16"X1 1/4" CARRIAGE BOLT.
4. POST CAPS AND SOCKET TYPE BRACE END CONNECTIONS SHALL BE GALVANIZED MALLEABLE IRON OR OTHER TYPE AS APPROVED BY THE ENGINEER. THEY SHALL BE DESIGNED IN A MANNER TO EXCLUDE MOISTURE FROM INSIDE POSTS AND RAILS.
5. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL--ASTM A-120 SHALL GOVERN.
6. STRUCTURAL SHAPES SHALL CONFORM TO STD. SPEC. 816.07.01 EXCEPT YIELD SHALL BE A MIN. 45,000 P.S.I.
7. INDISCRIMINATE MIXING OF POSTS WILL NOT BE PERMITTED.
8. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO. 9 GAGE) WIRE WOVEN IN 2 INCH MESH.

LEGEND--(ALTERNATES)

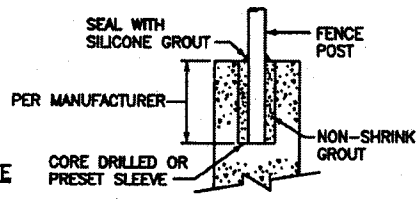
	TUBULAR	ROLL FORMED
①	2 1/2" O.D. @ 3.65#/L.F.	3.5"X3.5" @ 5.14#/L.F.
②	2" O.D. @ 2.72#/L.F.	2.250" H-COL.@ 3.26#/L.F. OR 2.250" C-COL.@ 2.64#/L.F.
③	3/8"Ø TRUSS ROD & TIGHTENER	0.375"Ø TRUSS ROD & TIGHTENER
④	APPROVED CAPS	NOT REQUIRED
⑤	1 5/8" BRACE @ 2.27#/L.F.	1.250"X1.625" @ 1.35#/L.F.
⑥	1 5/8" O.D. @ 2.27#/L.F.	1.250"X1.625" @ 1.35#/L.F.
⑦	3/16"X3/4" FLAT STRETCHER BAR	NOT REQUIRED
⑧	BRACE BAND & TENSION BAND	NOT REQUIRED



CHAIN LINK FENCE MOUNTED TO CONCRETE HEADWALL OR RETAINING WALL



BRACE & TRUSS CONNECTION



DETAIL "A"

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

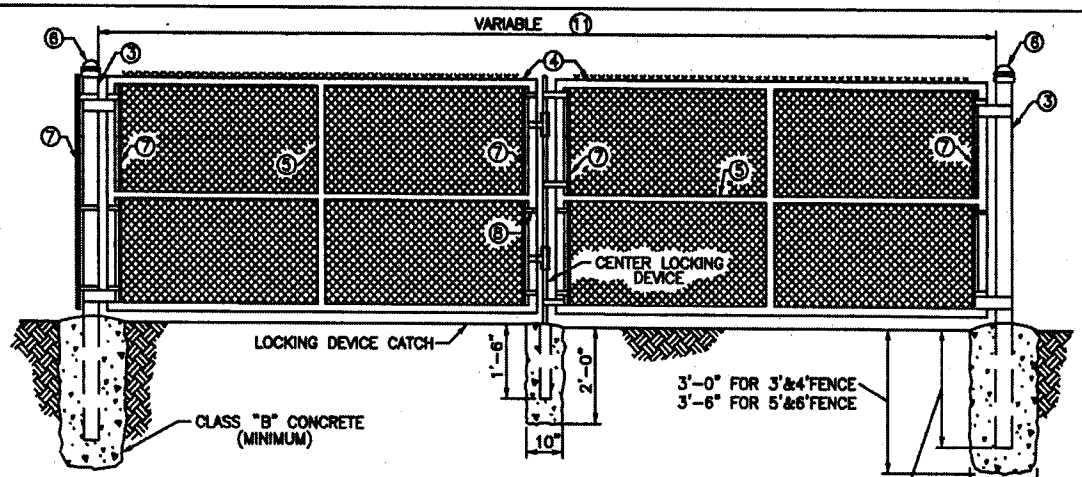
CHAIN LINK FENCE
3'-6"

STANDARD DRAWING NO. 308

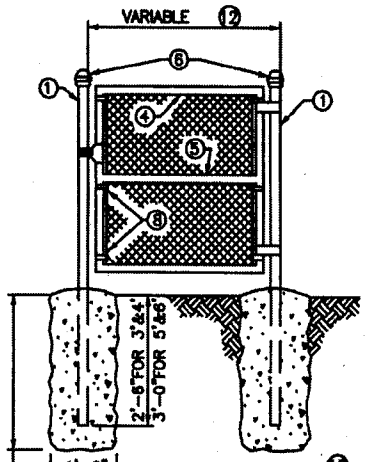
APPROVED 5/1/02 DATE

DIRECTOR 5/1/02 DATE

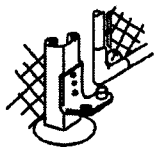
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



VEHICULAR GATE (3'-6' HIGH FENCE)

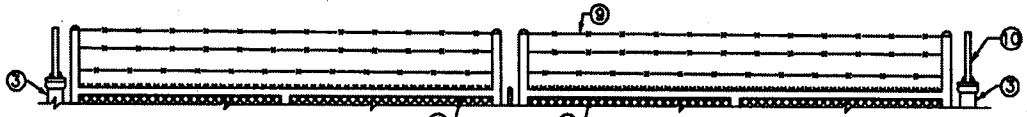


PEDESTRIAN GATE (3'-6' HIGH FENCE)



HINGE DETAIL

DETAIL "A"



DETAIL "B"

LEGEND – (ALTERNATES)

	TUBULAR	ROLL FORMED
①	END POST 2½" O.D. @ 3.65#/L.F.	3½"X3½" @ 5.14#/L.F.
②	END POST 3" O.D. @ 3.65#/L.F.	3½"X3½" @ 5.14#/L.F.
③	4" O.D. @ 9.1#/L.F. GATE POST	NO ALTERNATE
④	2" O.D. @ 2.72#/L.F. GATE FRAME	NO ALTERNATE
⑤	1⅝" O.D. @ 2.27#/L.F.	NO ALTERNATE
⑥	APPROVED CAPS	NOT REQUIRED
⑦	3/16"X⅜" FLAT STRETCHER BAR	NOT REQUIRED
⑧	BRACE BAND & TENSION BAND	NOT REQUIRED
⑨	BARBED WIRE	BARBED WIRE
⑩	BARBED WIRE ARMS	BARBED WIRE ARMS

NOTES:

1. ALL POSTS SHALL BE SET IN CONCRETE TO THE DIMENSIONS AS INDICATED ON THIS DRAWING.
2. VEHICULAR AND PEDESTRIAN GATES SHALL HAVE HEAVY PRESSED STEEL CORNERS SECURELY RIVETED OR SHALL BE MACHINE NOTCHED, AND ELECTRICALLY WELDED SO AS TO BE RIGID AND WATER TIGHT; AND EQUIPPED WITH PADLOCKING DEVICE AND GROUND STOP.
3. ALL WELDED JOINTS SHALL BE CLEANED AND PAINTED WITH TWO (2) COATS OF ALUMINUM PAINT.
4. 3' HIGH GATES SHALL HAVE 3' FABRIC HEIGHT. 4' HIGH GATES SHALL HAVE 4' FABRIC HEIGHT. 5' HIGH GATES SHALL HAVE 5' FABRIC HEIGHT. 6' HIGH GATES SHALL HAVE 6' FABRIC HEIGHT. 8' HIGH GATES SHALL HAVE 7' FABRIC HEIGHT. 9' HIGH GATES SHALL HAVE 8' FABRIC HEIGHT. 10' HIGH GATES SHALL HAVE 9' FABRIC HEIGHT. 11' HIGH GATES SHALL HAVE 10' FABRIC HEIGHT. 12' HIGH GATES SHALL HAVE 11' FABRIC HEIGHT.
5. SEE DETAIL "A" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH PEDESTRIAN GATES.
6. SEE DETAIL "B" FOR BARBED WIRE INSTALLATION ON 8' TO 12' HIGH VEHICULAR GATES.
7. THE CONTRACTOR IS NOT TO ORDER GATES UNTIL THEIR NECESSITY AND LOCATION HAVE BEEN CERTIFIED BY THE ENGINEER.
8. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL – ASTM A-120 SHALL GOVERN.
9. CHAIN LINK FENCE FABRIC SHALL BE 0.148 INCH NOMINAL DIAMETER (NO.9 GAGE) WIRE WOVEN 2 INCH MESH.

⑪ 6' TO 13' WIDTH FOR SINGLE GATE OR 12' TO 26' WIDTH FOR DOUBLE GATE.

⑫ 4' TO 6' WIDTH

NO.	DATE	REVISION DESCRIPTION	BY

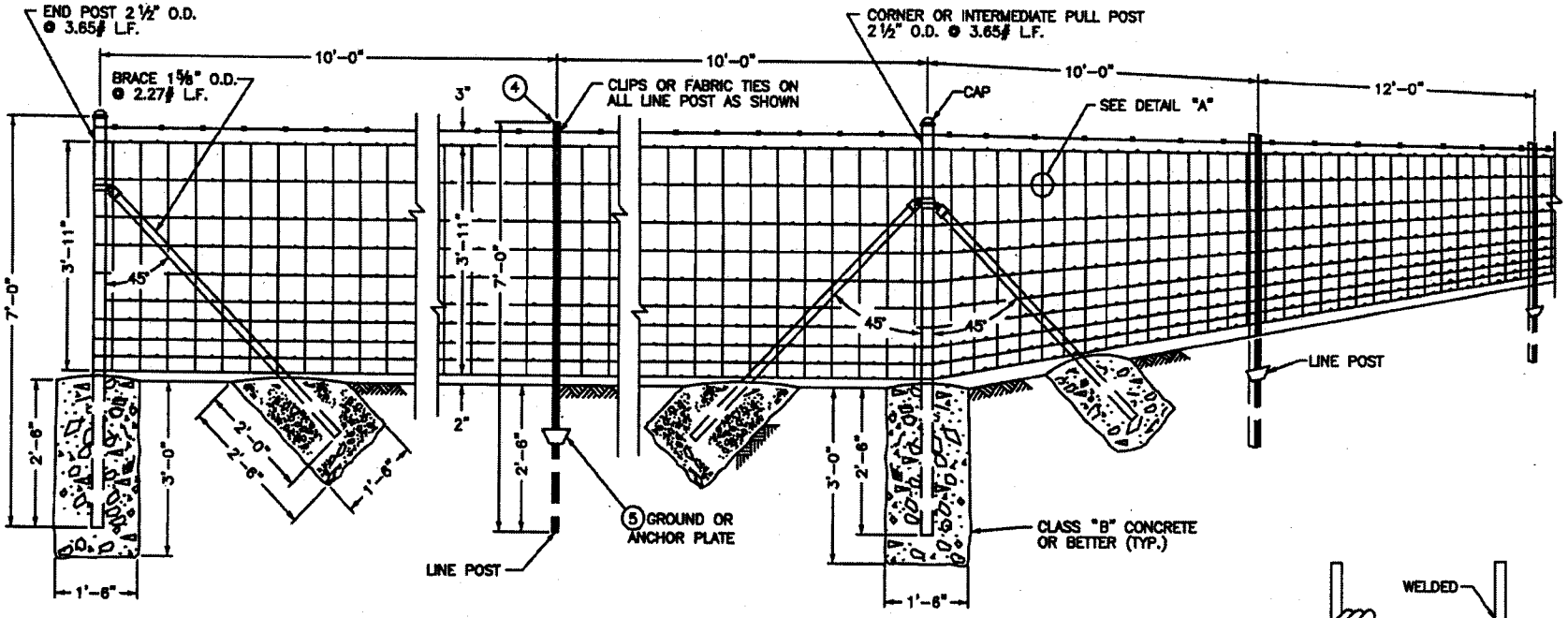
DIVISION OF ENGINEERING

CHAIN LINK GATE

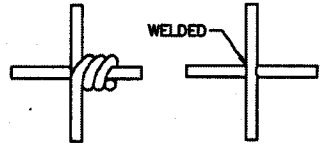
STANDARD DRAWING NO. 310

APPROVED: URBAN COUNTY ENGINEER / COMMISSIONER — DATE 5/1/08

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



RIGHT-OF-WAY FENCE

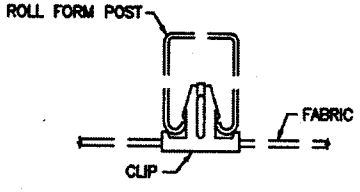


ALTERNATE METHODS OF SECURING VERTICAL STAY WIRE TO THE HORIZONTAL WIRE OF THE FABRIC.

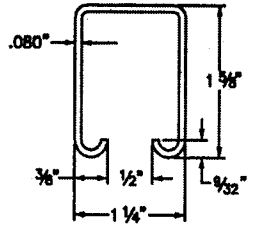
DETAIL "A"

NOTES:

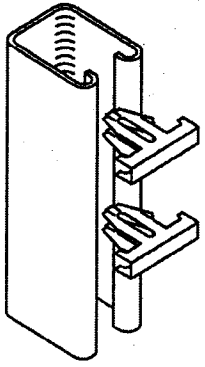
1. WOVEN-WIRE USED FABRIC IN RIGHT-OF-WAY FENCE SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.
2. ALL FENCE FITTINGS SHALL COMPLY WITH ASTM F 626.
3. O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL - ASTM F 1083 SHALL GOVERN.
4. STUDDED "T" POST AT 1.33 LBS. PER FOOT.
   - OR -
   ROLL FORM POST AT 1.35 LBS. PER FOOT. (SEE DETAIL)
5. NOT REQUIRED FOR ROLL FORM POST.



PLAN VIEW OF CLIP
INSTALLED IN ROLL FORM POST



PLAN VIEW OF
ROLL FORM POST



ISOMETRIC EXPLODED VIEW
OF ROLL FORM POST AND CLIPS

CLIPS SHALL BE SPRING STEEL ALUMINUM - FINISHED

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

WOVEN WIRE
RIGHT-OF-WAY FENCE
TYPE 1

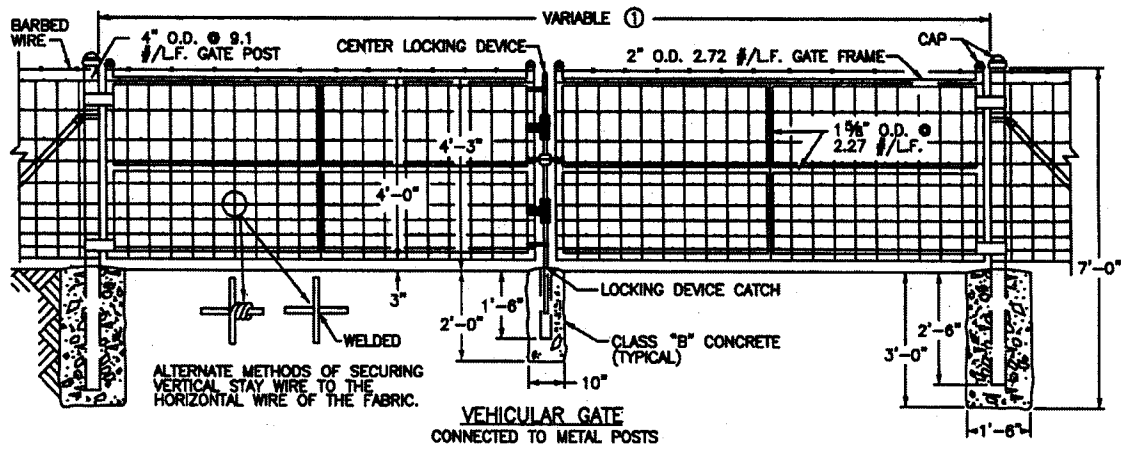
STANDARD DRAWING NO. 312

APPROVED _____ DATE 5/1/08

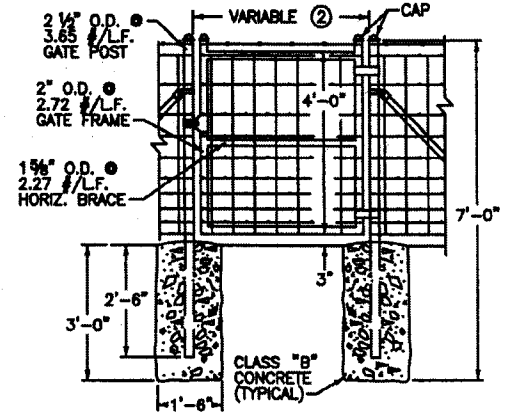
URBAN COUNTY ENGINEER _____ DATE

COMMISSIONER _____ DATE

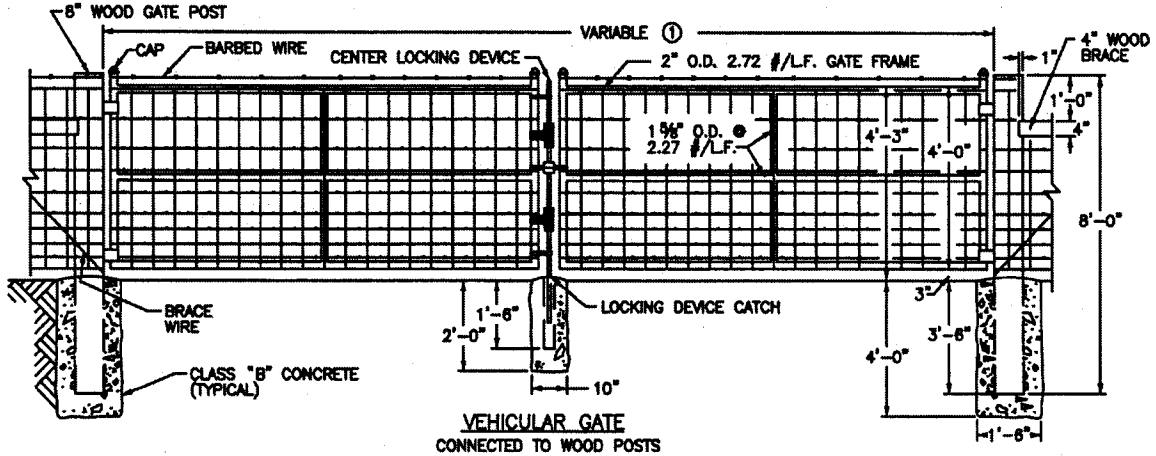
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



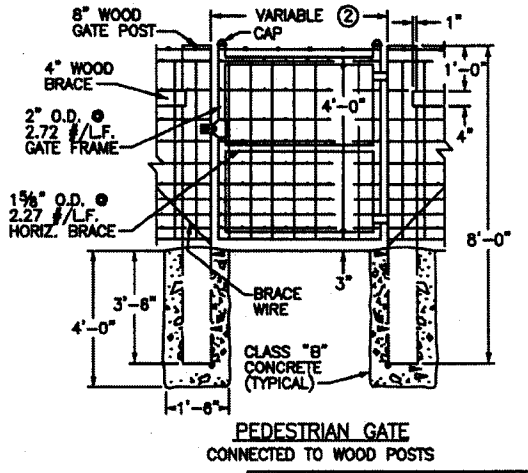
VEHICULAR GATE
CONNECTED TO METAL POSTS



PEDESTRIAN GATE
CONNECTED TO METAL POSTS



VEHICULAR GATE
CONNECTED TO WOOD POSTS



PEDESTRIAN GATE
CONNECTED TO WOOD POSTS

NOTES:

BASIS OF PAYMENT:

THE CONTRACT UNIT PRICE FOR WOVEN WIRE GATES SHALL BE:

① FEET WIDE SINGLE VEHICULAR WOVEN WIRE GATE
① FEET WIDE DOUBLE VEHICULAR WOVEN WIRE GATE
② FEET WIDE PEDESTRIAN WOVEN WIRE GATE
① – ② AS SHOWN ON PLANS

CONSTRUCTION REQUIREMENTS:

FABRIC TIE WIRES SHALL BE SPACED 12 INCHES ON CENTERS. THE CONTRACTOR IS NOT TO ORDER GATES UNTIL THEIR NECESSITY AND LOCATION HAVE BEEN CERTIFIED BY THE ENGINEER.

MATERIALS:

WOVEN-WIRE FABRIC USED IN THE GATES SHALL EITHER BE ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.

O.D. DEPICTED FOR TUBULAR POSTS IS NOMINAL – ASTM F 1083 SHALL GOVERN.

GATES SHALL HAVE HEAVY PRESSED STEEL CORNERS SECURELY RIVETED OR SHALL BE MACHINE NOTCHED AND ELECTRICALLY WELDED SO AS TO BE RIGID AND WATER TIGHT. ALL WELDED JOINTS SHALL BE CLEANED AND PAINTED WITH TWO (2) COATS OF ALUMINUM PAINT.

GENERAL:

① 6' TO 13' WIDTH FOR SINGLE GATE AND 12' TO 26' WIDTH FOR DOUBLE GATE.
② 4' TO 6' WIDTH

NO.	DATE	REVISION DESCRIPTION	BY

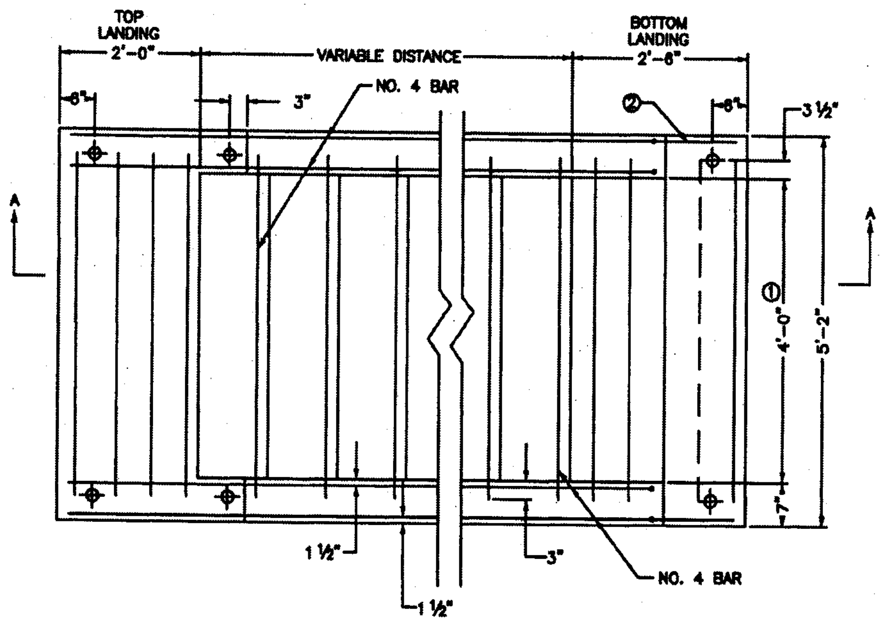
DIVISION OF ENGINEERING

WOVEN WIRE GATES

STANDARD DRAWING NO. 314

APPROVED 5/1/08
URBAN COUNTY ENGINEER / COMMISSIONER — DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



PLAN

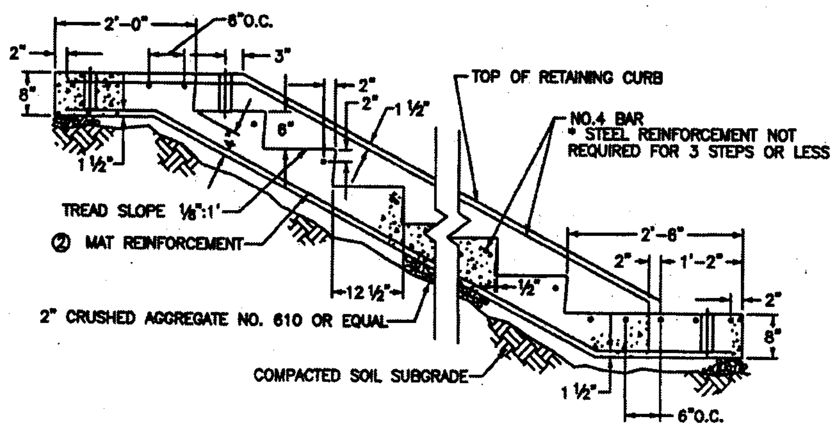
NOTES:

1. MAT REINFORCEMENT ②
   NO. 4 REINFORCEMENT BARS, LONG. BARS 6"O.C. AND TRANSV. BARS 12"O.C., MIN. GRADE 40, OR WELDED WIRE FABRIC-6X6-W4XW4, 58 LBS./100 SQ. FT.
2. NO. 4 REINFORCEMENT BARS ADDITIONALLY AS SHOWN.
3. ROUND ALL EXPOSED EDGES AND CORNERS ¼" R.
4. MAT REINFORCEMENT IN BOTTOM OF THE STEPS SHALL BE WIRE FABRIC OR BAR MAT ②.
5. HANDRAIL SHALL BE REQUIRED WITH THREE OR MORE STEPS.

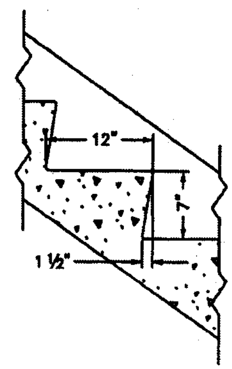
TABLE OF QUANTITIES

SLOPE	LOCATION	ADDITIONAL NO. 4 BAR REINF. (LBS)		MAT REINFORCEMENT WIRE FABRIC(SQ.FT.)		MAT REINFORCEMENT BAR MAT (LBS)		CU. YDS. CLASS "A" CONCRETE	
		4' WIDTH	①	4' WIDTH	①	4' WIDTH	①	4' WIDTH	①
2:1	BOTTOM LANDING	23.547	3.340	11.776	2.375	27.388	5.177	0.337	0.059
	INTERMEDIATE STEP	8.015	1.336	5.991	1.208	12.191	2.283	0.16	0.025
	TOP LANDING	22.483	3.340	9.504	1.917	20.708	3.897	0.265	0.051
1½:1	BOTTOM LANDING	23.603	3.340	12.602	2.542	28.613	5.400	0.36	0.062
	INTERMEDIATE STEP	7.431	1.336	5.268	1.063	11.119	2.088	0.17	0.027
	TOP LANDING	22.545	3.340	9.710	1.958	21.014	3.952	0.281	0.054

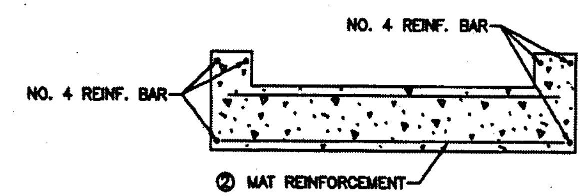
① APPROXIMATE QUANTITY TO ADD FOR EACH ADDITIONAL FOOT OF WIDTH OVER 4'-0".



SECTION A-A 2:1 SLOPE



STEP DETAIL FOR 1½:1 SLOPE



STEP CROSS SECTION

NO.	DATE	REVISION DESCRIPTION	BY

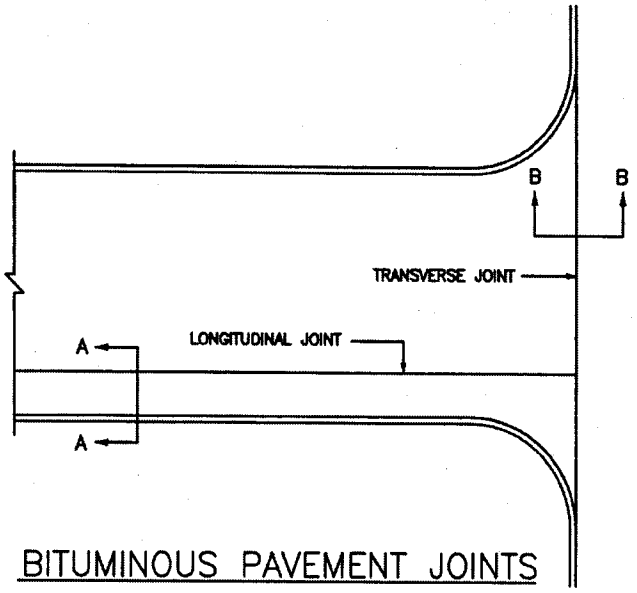
DIVISION OF ENGINEERING

CONCRETE STEPS

STANDARD DRAWING NO. 315

APPROVED: URBAN COUNTY ENGINEER — DATE 5/1/08
COMMISSIONER — DATE 5/1/08

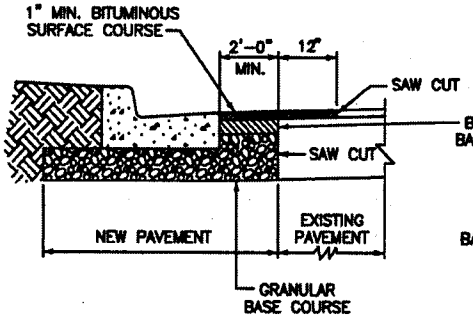
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



BITUMINOUS PAVEMENT JOINTS

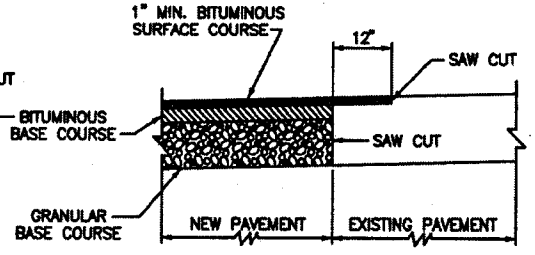
NOTES:

1. ALL SAW-CUTS SHALL BE NEAT AND STRAIGHT.
2. IMMEDIATELY BEFORE LAYING NEW BITUMINOUS COURSES, ALL SAW CUT EDGES SHALL BE CLEANED OF DUST AND DEBRIS AND SPRAYED WITH A BITUMINOUS TACK COAT.
3. EDGE KEY SHALL NOT BE REQUIRED IF BOTH EXISTING AND NEW PAVEMENT ARE TO RECEIVE AN OVERLAY AS PART OF THIS CONTRACT.



SECTION A-A

LONGITUDINAL EDGE KEY



SECTION B-B

TRANSVERSE EDGE KEY

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

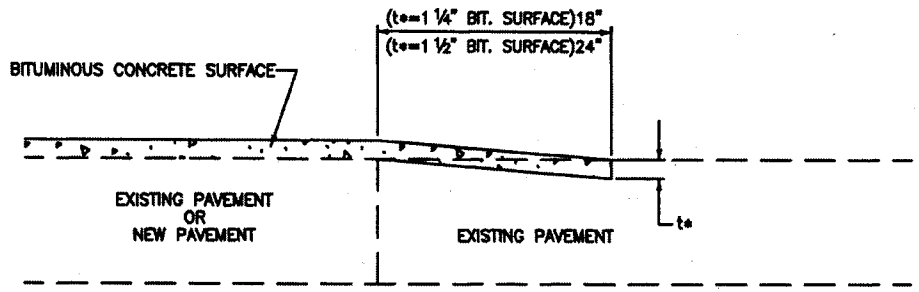
EDGE KEY

STANDARD DRAWING NO. 318

APPROVED: DATE 5/1/08

URBAN COUNTY ENGINEER / COMMISSIONER DATE 5/1/08

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



EDGE KEY

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

TYPICAL EDGE KEY
FOR
MINIMUM OVERLAYS,
SHORT PROJECTS,
LOW SPEED

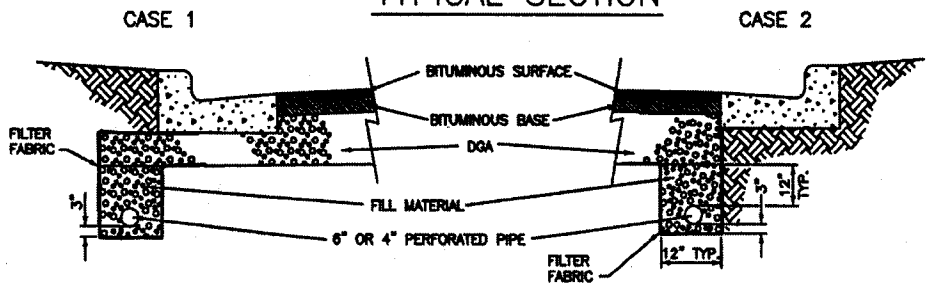
STANDARD DRAWING NO. 319

5/1/08
DATE

DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

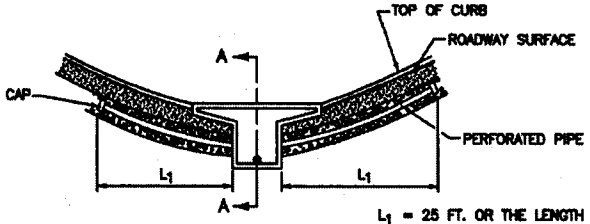
TYPICAL SECTION



NOTES:

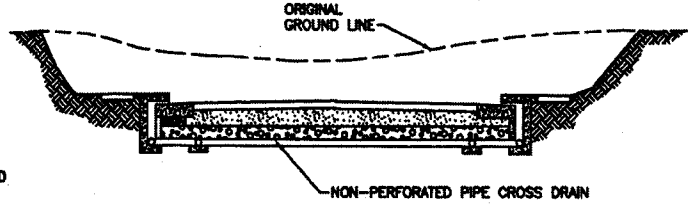
1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE SURFACING PHASE OF CONSTRUCTION, AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO CONSTRUCTING PAVING MATERIALS.
2. THE CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.
3. TERMINATE PERFORATED PIPE IN CATCH BASIN AT AN ELEVATION WHICH PROVIDES POSITIVE DRAINAGE (MAY REQUIRE ADDITIONAL OPENING IN CATCH BASIN WALL).
4. BACKFILL TO CONSIST OF NO. 78, 8, 9M COARSE AGGREGATE OR NATURAL SAND. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 8 INCHES LOOSE MEASUREMENT.
5. CONNECTIONS TO DRAINAGE STRUCTURES AND PIPE TERMINI SHALL BE NON-PERFORATED PIPE MEETING THE REQUIREMENTS OF THE PERFORATED PIPE EXCEPT FOR PERFORATIONS.
6. ALL RAISED NON-PAVED MEDIANS SHALL HAVE SUBGRADE DRAINAGE ASSOCIATED WITH CURB AND GUTTER.

TYPICAL SUBGRADE DRAINAGE LOCATIONS

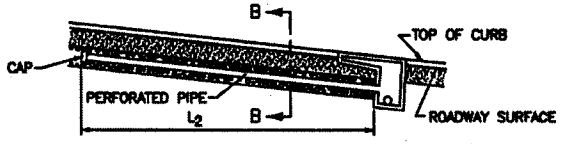


SAG VERTICAL CURVE

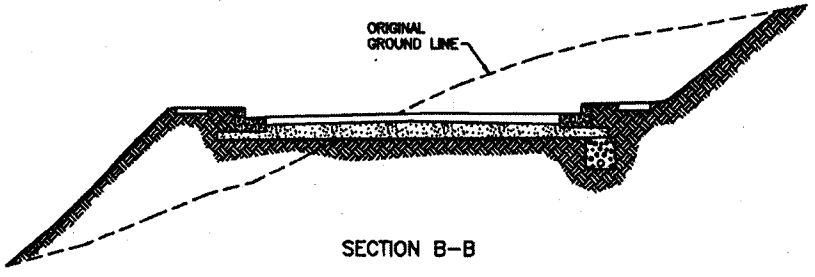
L_1 = 25 FT. OR THE LENGTH REQUIRED TO REACH THE 1% SLOPE POINT, WHICHEVER IS LARGER.



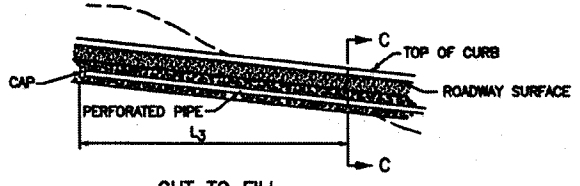
SECTION A-A



HILLSIDE L_2 = 50 FT. OR THE LENGTH TO THE CREST OF THE HILL, WHICHEVER IS LARGER.

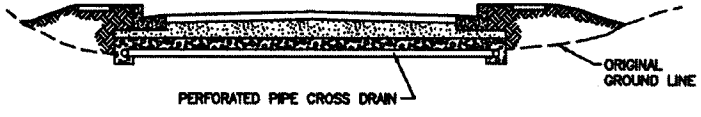


SECTION B-B



CUT TO FILL

L_3 = 25 FT. OR THE LENGTH REQUIRED TO REACH THE CREST OF THE HILL, WHICHEVER IS LARGER.



SECTION C-C

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PERFORATED PIPE SUBGRADE DRAINAGE ALONG ROADWAY

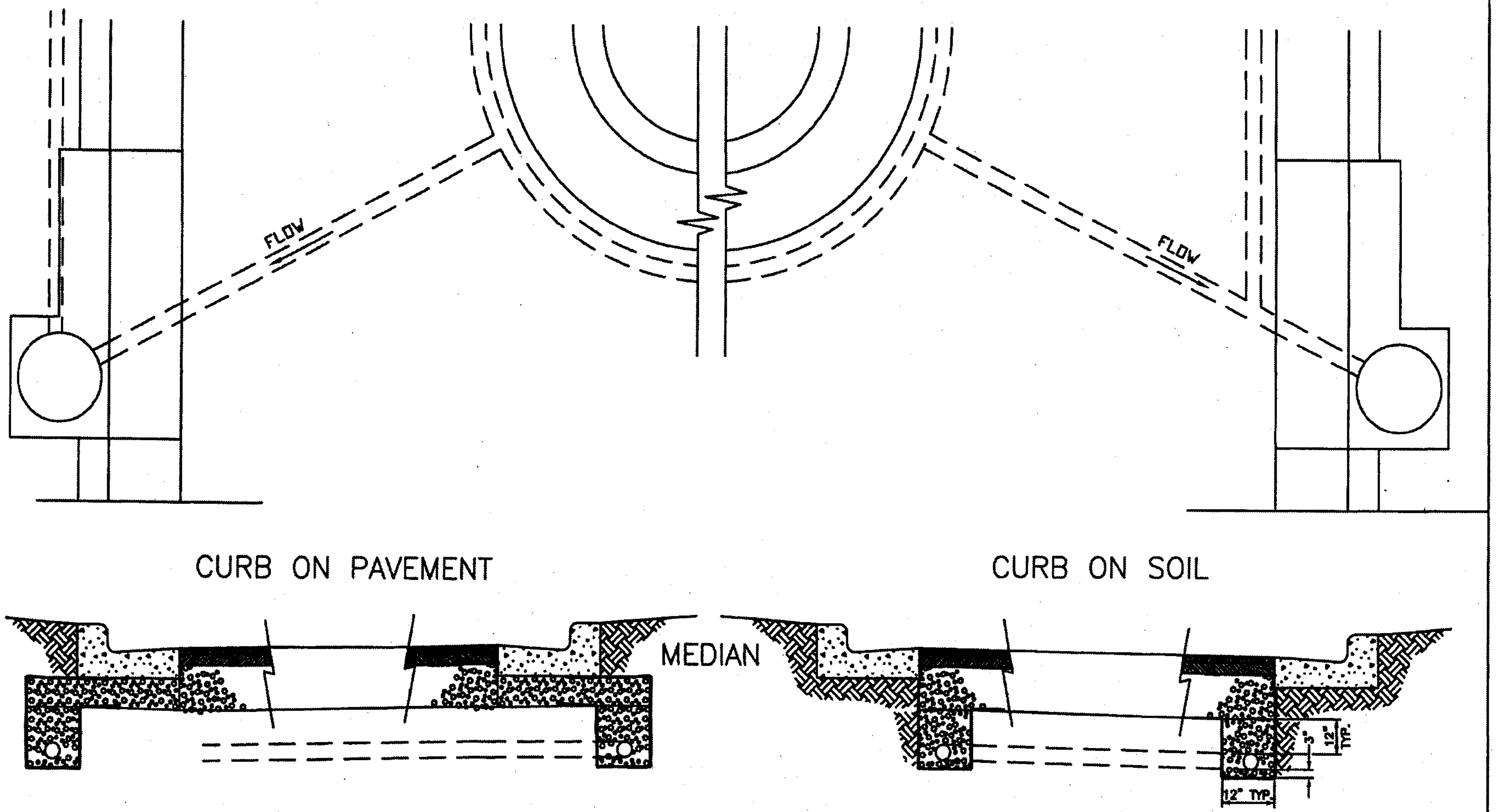
STANDARD DRAWING NO. 320

APPROVED _____ DATE 5/1/08

DIRECTOR _____ DATE 5/1/08

COMMISSIONER

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



TYPICAL SECTION

1. For installation of perforated pipe see Detail Sheet #320
2. Perforated pipe shall completely surround all islands
3. For islands greater than 50" long or wide, perforated pipe surrounding island and leading to the curb inlet shall be 6" diameter.

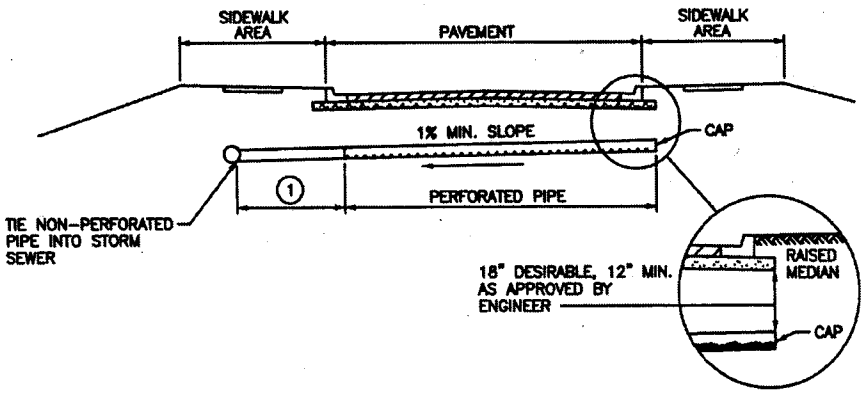
NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PERFORATED PIPE SUBGRADE DRAINAGE FOR RAISED NON-PAVED MEDIANS

STANDARD DRAWING NO. 320-1
APPROVED: 5/1/08
URBAN COUNTY ENGINEER — DATE
COMMISSIONER — DATE

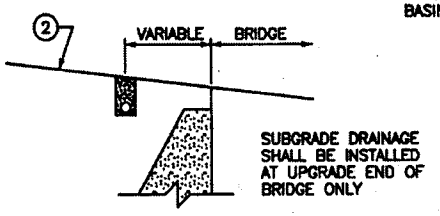
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTES:

1. SUBGRADE DRAINAGE, AS DEPICTED, IS INTENDED FOR USE WITH THE ROADWAY CONSTRUCTION PHASE AND SHALL BE INSTALLED ONLY AFTER THE SUBGRADE HAS BEEN COMPLETED, AND PRIOR TO PLACING PAVING MATERIALS.
2. SUBGRADE DRAINAGE WILL NOT BE REQUIRED WHEN:
   A. AGGREGATE SUBGRADE OR NATURAL BANK GRAVEL IS SPECIFIED.
   B. POROUS OR FREE DRAINING SUBGRADES ARE EVIDENT.
   C. DIRECTED BY THE ENGINEER.
3. THE CAP SHALL BE A STANDARD MANUFACTURED ITEM FURNISHED BY THE PIPE SUPPLIER.
4. FLOW SHALL BE DIRECTED TOWARD THE FILL SIDE OF THE ROADWAY WHEN POSSIBLE.
5. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.
6. A MIN. OF 50' OF PERFORATED PIPE IS REQUIRED UPHILL FROM BASINS ON GRADE AND 25' OF PERFORATED PIPE IS REQUIRED EACH WAY FROM SAG BASINS.

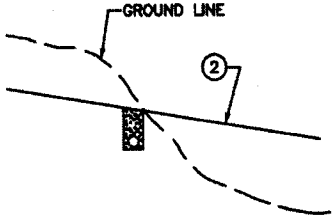
SAG VERTICAL CURVES



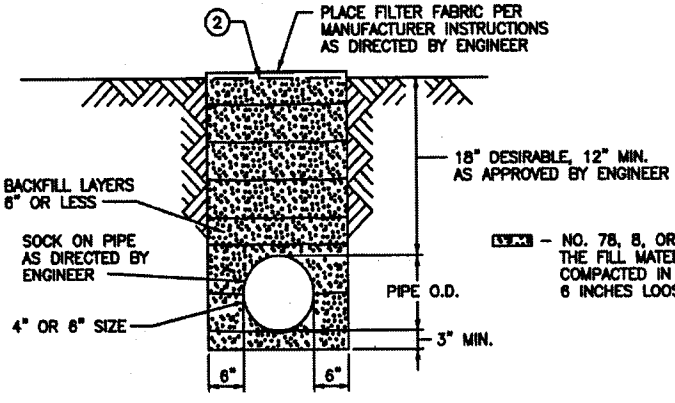
BRIDGES

(1) APPROXIMATELY 8 TO 12 FEET OF PIPE AT THE OUTLET SHALL BE NON-PERFORATED PIPE MEETING THE REQUIREMENTS OF THE PERFORATED PIPE, EXCEPT FOR PERFORATIONS.

(2) SUBGRADE ELEVATION



CUT TO FILL



TRENCH DETAIL

#57 – NO. 78, 8, OR 9M COARSE AGGREGATE. THE FILL MATERIAL SHALL BE THOROUGHLY COMPACTED IN LAYERS NOT EXCEEDING 6 INCHES LOOSE MEASUREMENT.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PERFORATED PIPE FOR SUBGRADE DRAINAGE

STANDARD DRAWING NO. 321

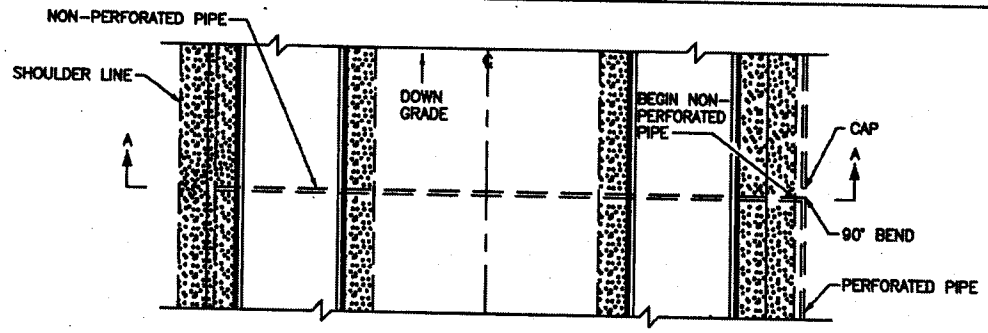
APPROVED: DATE 5/1/08

URBAN COUNTY ENGINEER

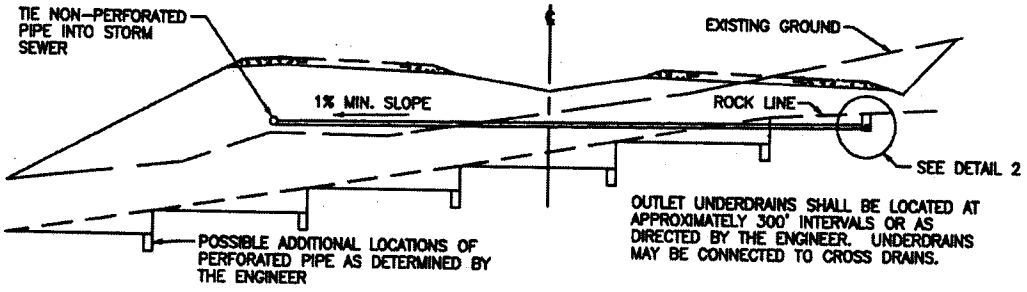
COMMISSIONER DATE 5/1/08

TYPICAL SUBGRADE DRAINAGE LOCATIONS

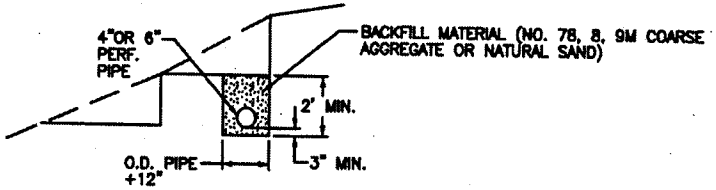
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



PLAN VIEW



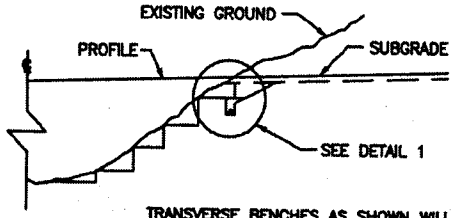
SECTION A–A



DETAIL 2

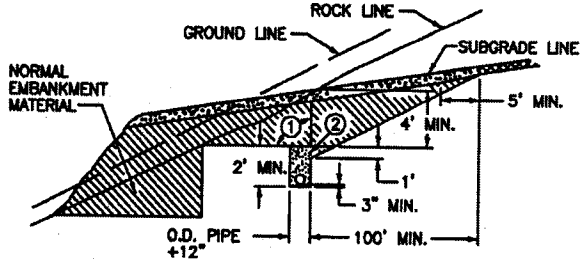
DETAIL FOR LONGITUDINAL UNDERDRAINS

DETAIL FOR TRANSVERSE UNDERDRAIN CUT TO FILL CONDITION



TRANSVERSE BENCHES AS SHOWN WILL BE REQUIRED WHERE PROPOSED GRADE INTERSECTS EXISTING GROUND.

1. UNDERDRAINS WILL BE REQUIRED ON UPGRADE BENCH. THIS PERFORATED PIPE UNDERDRAIN SHOULD BE PLACED IN ROCK OR SHALE FORMATIONS IF POSSIBLE. EXACT LOCATIONS TO BE DETERMINED BE THE ENGINEER ON CONSTRUCTION.
2. BENCHING AND UNDERDRAIN SHALL BE REQUIRED AT ALL TRANSITIONS FROM ROCK CUTS TO FILL WHETHER OR NOT UNDERDRAIN IS REQUIRED.
3. IF ROCK IS ENCOUNTERED WITHIN 24" OF SUBGRADE, PERFORATED PIPE IS REQUIRED THE FULL LENGTH OF ROCK. POSITIVE OUTLET IS REQUIRED.



DETAIL 1

SHEET NOTES: ○

① LIMITS OF FIRST BENCH.

② BACKFILL MATERIAL

NOTE:

1. ALL PERFORATED AND NON-PERFORATED PIPE SHALL COMPLY WITH ASTM & KDOT SPECIFICATIONS.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

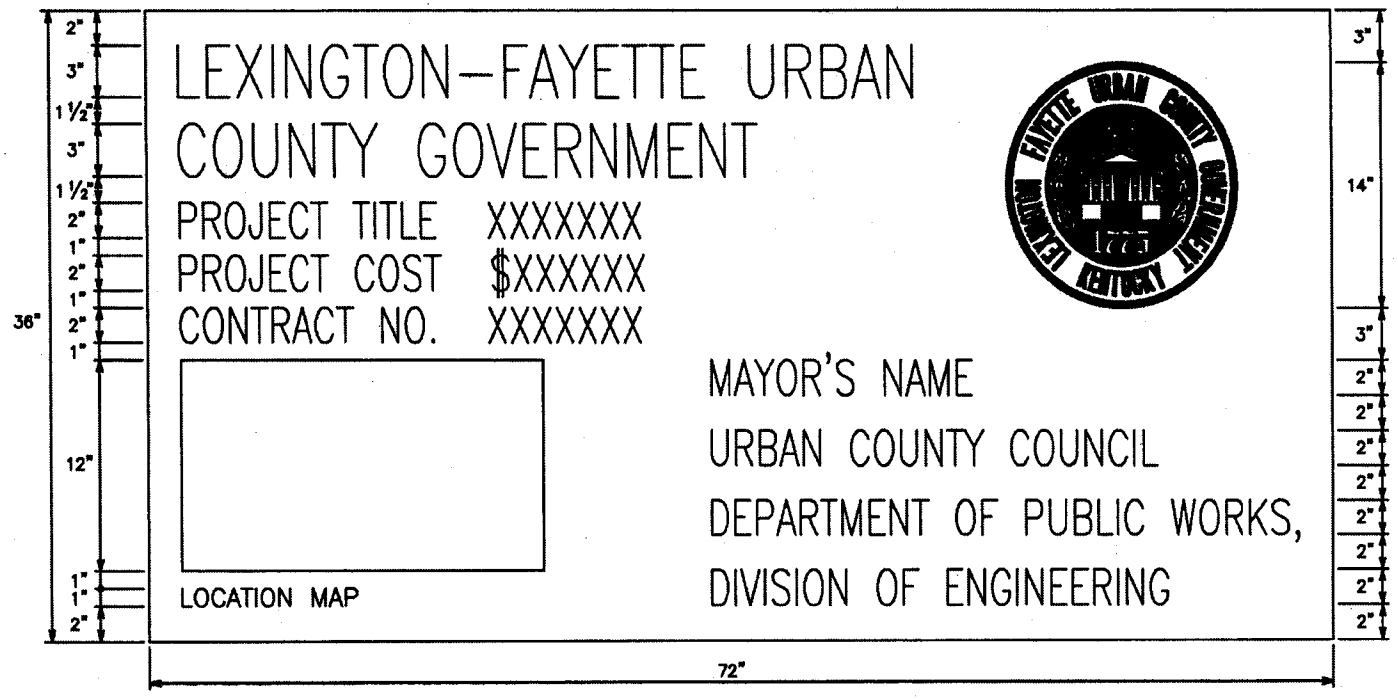
PERFORATED PIPE UNDERDRAINS

STANDARD DRAWING NO. 322

APPROVED: 5/1/08 DATE

COMMISSIONER DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT



NOTES:

THIS SIGN SHALL BE:

1. FURNISHED AND ERECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE, IN ADDITION TO THE NORMAL WARNING AND REGULATORY SIGNS.
2. OF GOOD QUALITY EXTERIOR PLYWOOD OR OTHER APPROVED MATERIAL.
3. PAINTED WITH SOLID BLUE LETTERS ON A WHITE BACKGROUND.
4. UPDATED AS NEEDED TO INDICATE THE APPROPRIATE MAYOR'S NAME.
5. FRAMED AND BRACED SO AS TO REMAIN VERTICAL AND PLAINLY VISIBLE TO THE TRAVELING PUBLIC.
6. ERECTED PRIOR TO STARTING CONSTRUCTION WORK.
7. ERECTED AT EACH END OF THE PROJECT AT LOCATIONS DIRECTED BY THE ENGINEER AND AT OTHER LOCATIONS SPECIFIED ON THE PLANS OR IN THE PROPOSAL.
8. KEPT CLEAN AND IN GOOD CONDITION FOR THE DURATION OF THE CONSTRUCTION AS DIRECTED BY THE ENGINEER.
9. THE COST SHOWN APPLIES ONLY TO THE PORTION OF PROJECT UNDER CONSTRUCTION IN A CONTINUOUS SECTION. IN THE EVENT THE PROJECT CONSISTS OF MORE THAN ONE CONTINUOUS SECTION THE COST SHOWN SHALL BE FOR THE PARTICULAR SECTION WHERE WORK IS IN PROGRESS.

NO.	DATE	REVISION DESCRIPTION	BY

DIVISION OF ENGINEERING

PUBLIC IMPROVEMENT SIGN

STANDARD DRAWING NO. 323

APPROVED: URBAN COUNTY ENGINEER 5/1/08 DATE

URBAN COUNTY COMMISSIONER 5/1/08 DATE

LEXINGTON–FAYETTE URBAN COUNTY GOVERNMENT, DEPARTMENT OF PUBLIC WORKS AND DEVELOPMENT

APPENDIX B

Lexington-Fayette Urban County Government
Erosion and Sediment Control Standard Drawings

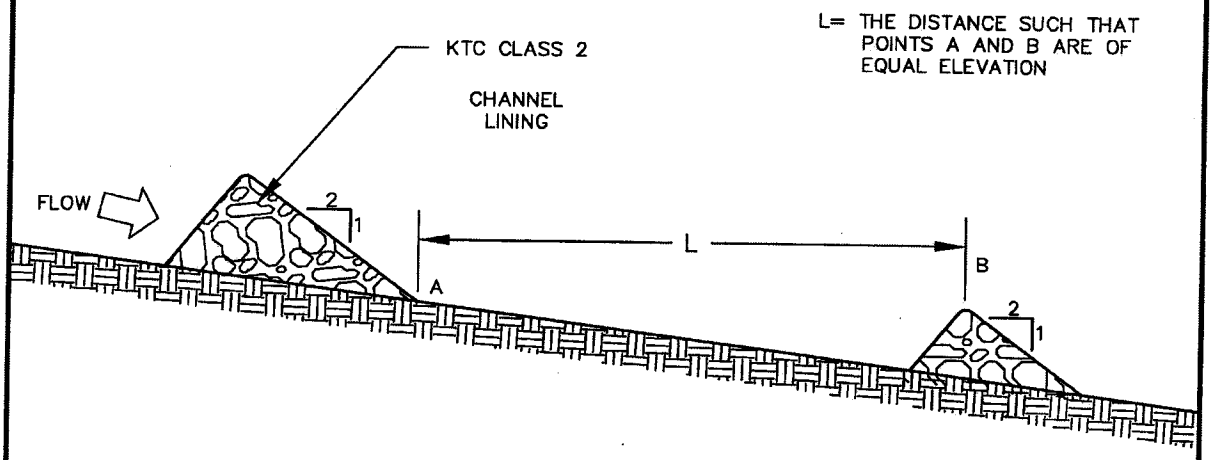
Lexington-Fayette Urban County Government
Erosion and Sediment Control Standard Drawings
Table of Contents

STORMWATER MANUAL

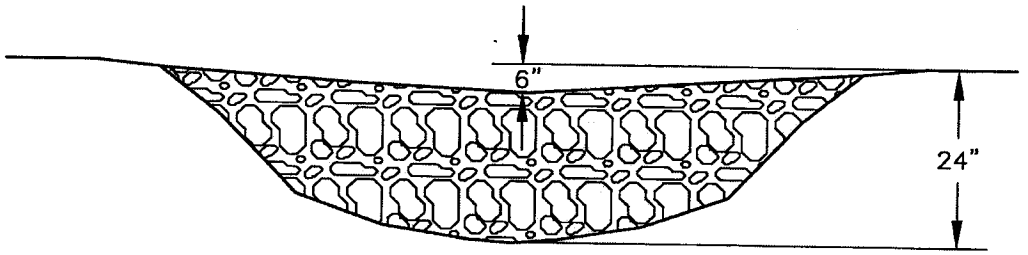
FIGURE 11–16

ROCK CHECK DAM

(EFFECTIVE DATE 8/29/11)



LONGITUDINAL SECTION SHOWING SPACING BETWEEN CHECK DAMS



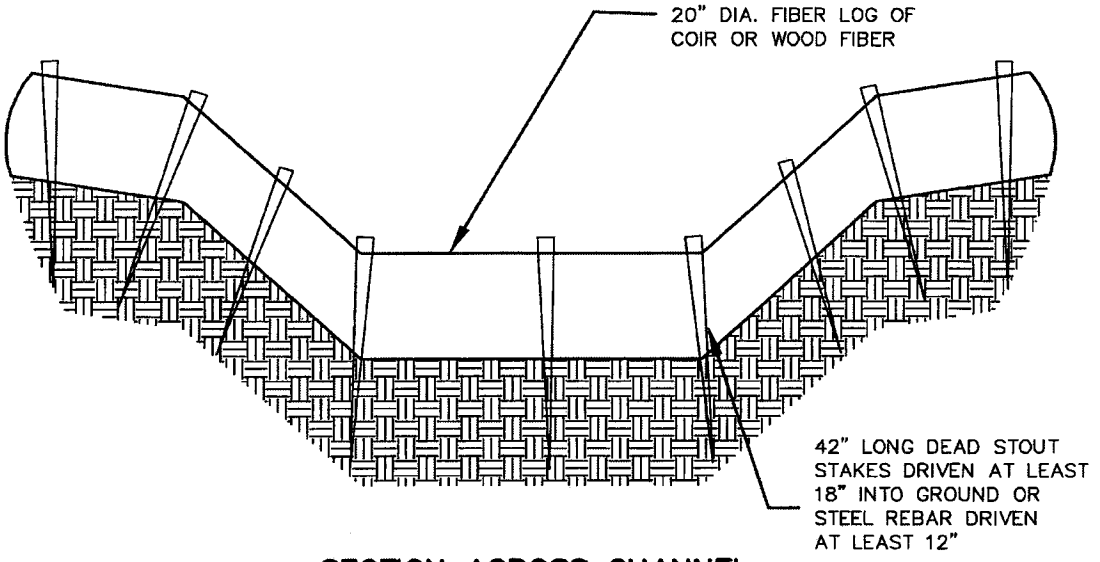
SECTION ACROSS CHANNEL

STORMWATER MANUAL

FIGURE 11-17

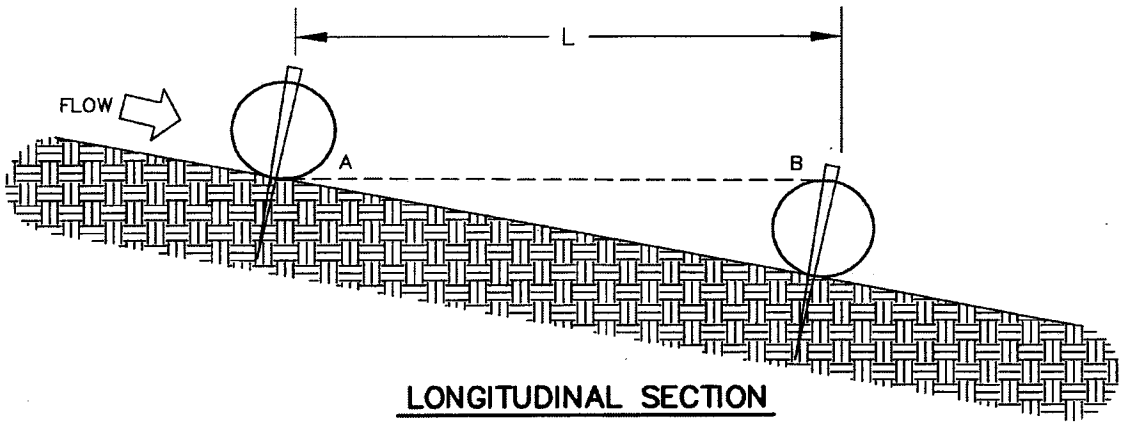
FIBER LOG CHECK DAM

(EFFECTIVE DATE 8/29/11)



SECTION ACROSS CHANNEL

STAKES SHALL BE SPACED NO FURTHER THAN 24" AND SHALL BE DRIVEN AT EACH SIGNIFICANT SLOPE BREAK AND WITHIN 6" OF EACH END.



LONGITUDINAL SECTION

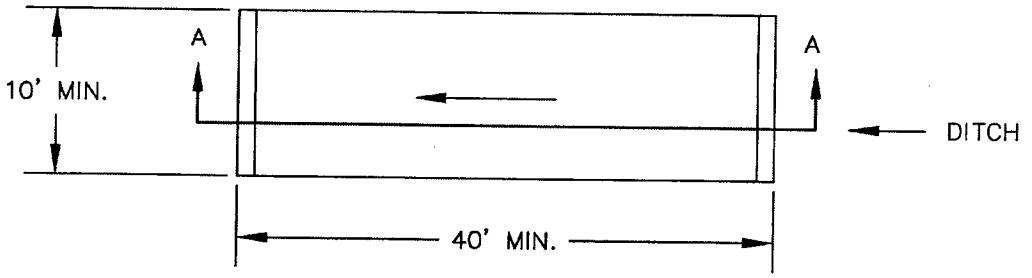
L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

STORMWATER MANUAL

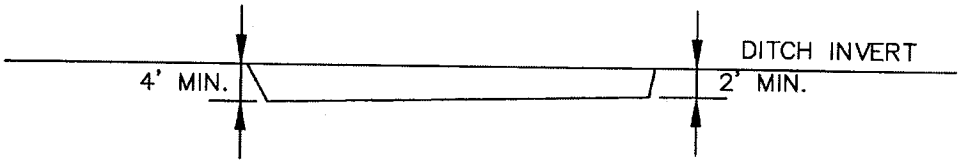
FIGURE 11–18

SEDIMENT TRAP

(EFFECTIVE DATE 8/29/11)



PLAN VIEW



SECTION A–A

NOTES:

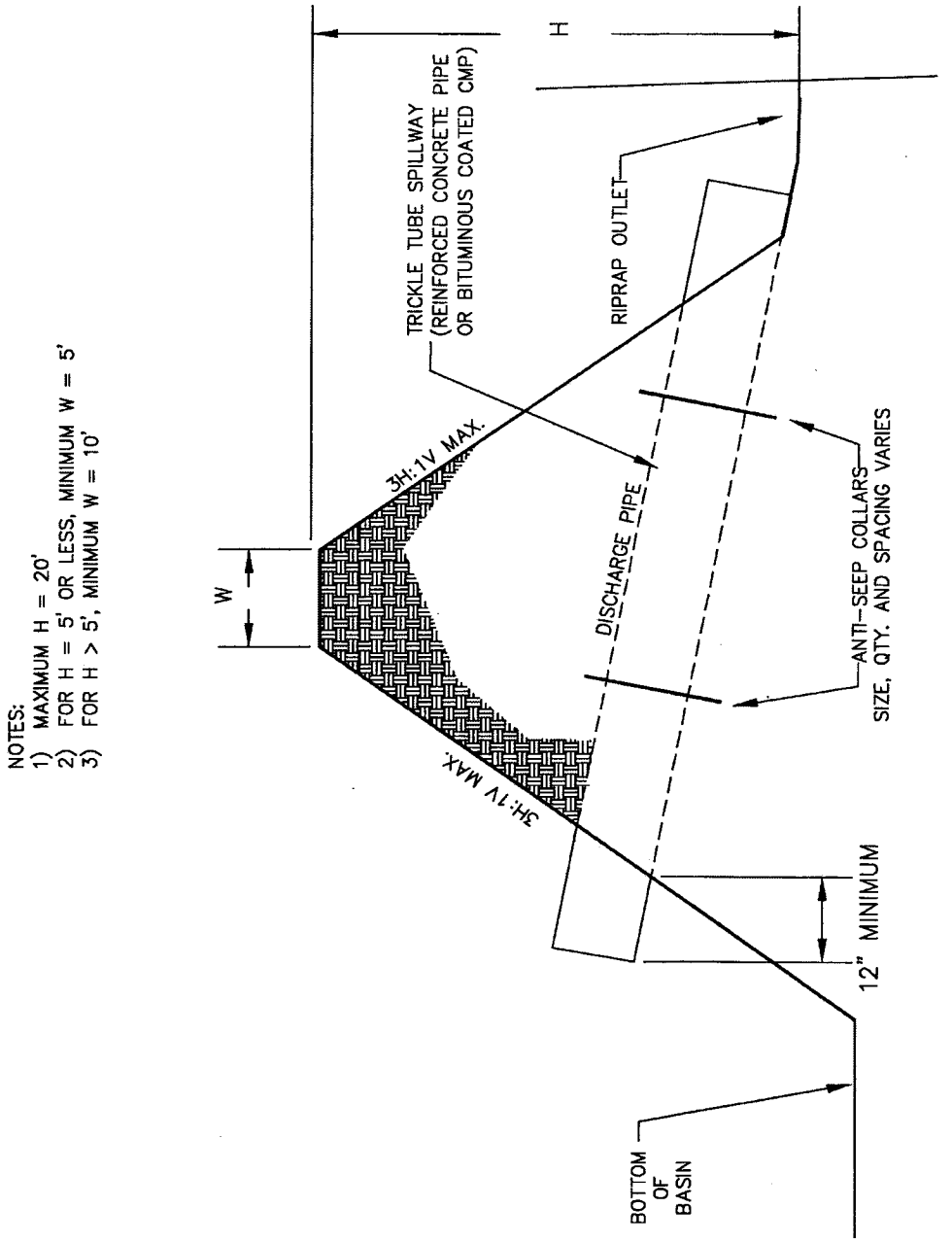
1) THE SIZE, SHAPE AND LOCATION OF TRAP MAY BE ADJUSTED FROM THAT SHOWN IN THE CONSTRUCTION PLANS, AS DIRECTED BY THE ENGINEER.
2) THE SEDIMENT TRAP MAY BE CONSTRUCTED AS DIRECTED BY THE ENGINEER AS LONG AS THE AREA AND DEPTH IS AT LEAST AS THAT INDICATED ON THE PLANS.
3) SEDIMENT TRAP SHALL BE CONSTRUCTED BY EXCAVATING THE BASIN IN NATURAL OR EXCAVATED CHANNELS. SEDIMENT DEPOSITS IN TRAP SHALL BE REMOVED EACH TIME THE TRAP IS APPROXIMATELY 50 PERCENT FILLED. WHEN THEIR USEFULNESS HAS ENDED, THE TRAPS SHALL BE REMOVED, SURPLUS MATERIAL DISPOSED OF AND THE ENTIRE DISTURBED AREA SHALL BE SEEDED AND PROTECTED, OR SODDED, AS DIRECTED. SEDIMENT TRAPS MAY REMAIN IN PLACE UPON COMPLETION OF THE PROJECT ONLY WHEN PERMITTED BY THE ENGINEER OR THE PLANS.

STORMWATER MANUAL

FIGURE 11–20

SEDIMENT POND PRINCIPAL SPILLWAY DETAIL

(EFFECTIVE DATE 8/29/11)



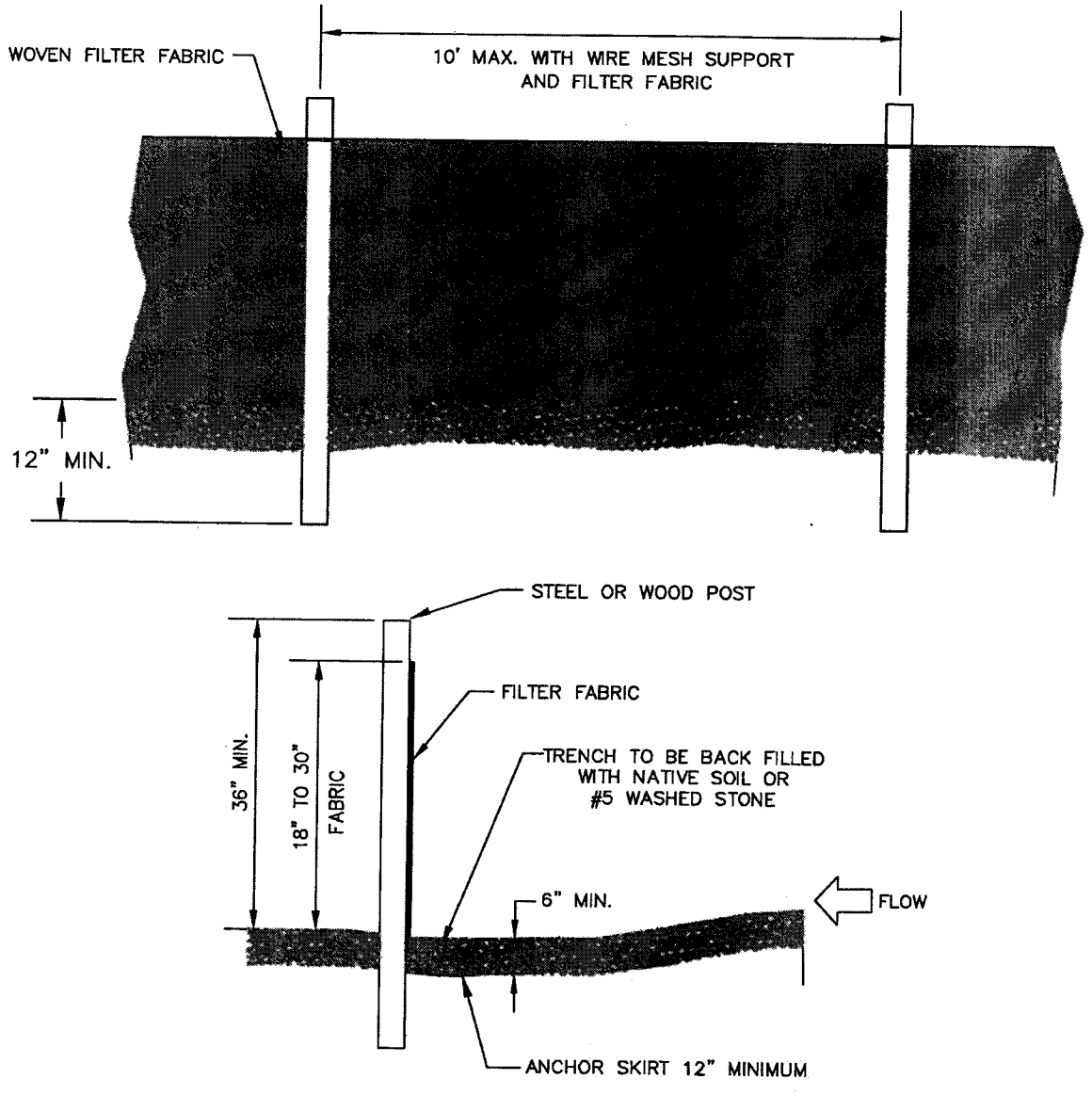
NOTES:
1) MAXIMUM H = 20'
2) FOR H = 5' OR LESS, MINIMUM W = 5'
3) FOR H > 5', MINIMUM W = 10'

STORMWATER MANUAL

FIGURE 11-21

TEMPORARY SILT FENCE

(EFFECTIVE DATE 8/29/11)



STORMWATER MANUAL

FIGURE 11–22

TEMPORARY SILT FENCE
GENERAL NOTES

(EFFECTIVE DATE 8/29/11)

GENERAL NOTES

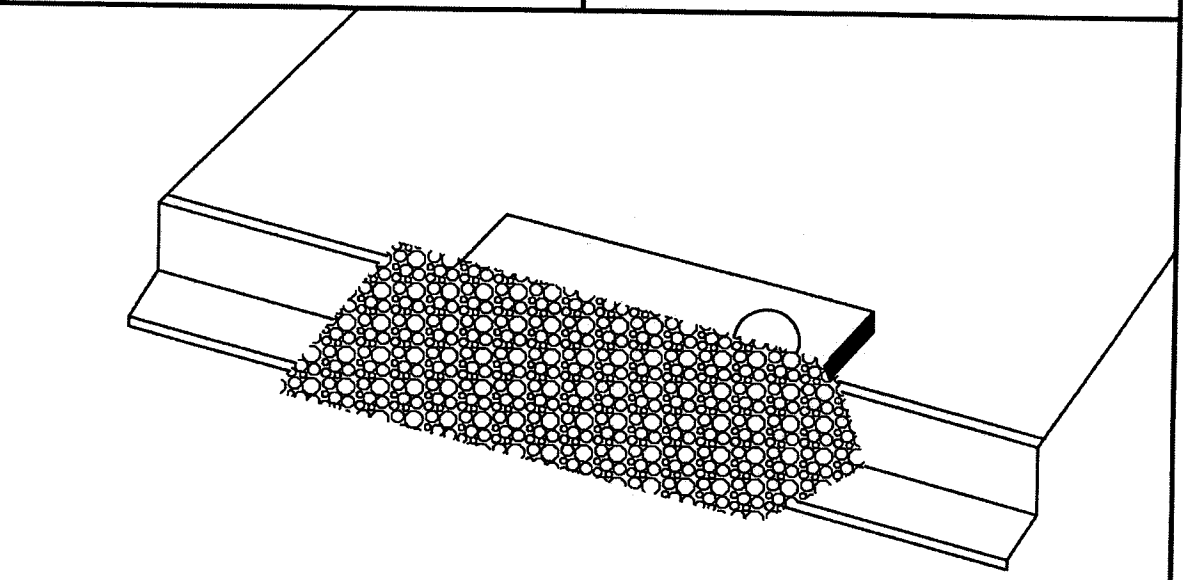
1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO THE LENGTH OF THE BARRIER. WHEN JOINTS CANNOT BE AVOIDED, FILTER FABRIC SHALL BE SPLICED TOGETHER ONLY AT A POST WITH 3 FOOT MIN. OVERLAP, AND SECURELY SEALED.
2. POSTS SHALL BE SPACED AT 6 FOOT INTERVALS IN AREAS OF RAPID RUNOFF.
3. POSTS SHALL BE AT LEAST 5 FEET IN LENGTH.
4. STEEL POSTS SHALL HAVE PROJECTIONS FOR FASTENING WIRE AND FABRIC.
5. WOOD POSTS SHALL BE 2 INCHES BY 2 INCHES OR EQUIVALENT. STEEL POSTS SHALL BE 1.33 LBS PER LINEAR FOOT.
6. A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH IN LENGTH, WIRE TIES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. WASHED STONE SHALL BE USED TO BURY SKIRT WHEN SILT FENCE IS USED ADJACENT TO A CHANNEL, CREEK, OR POND.
8. TURN SILT FENCE UP SLOPE AT ENDS.

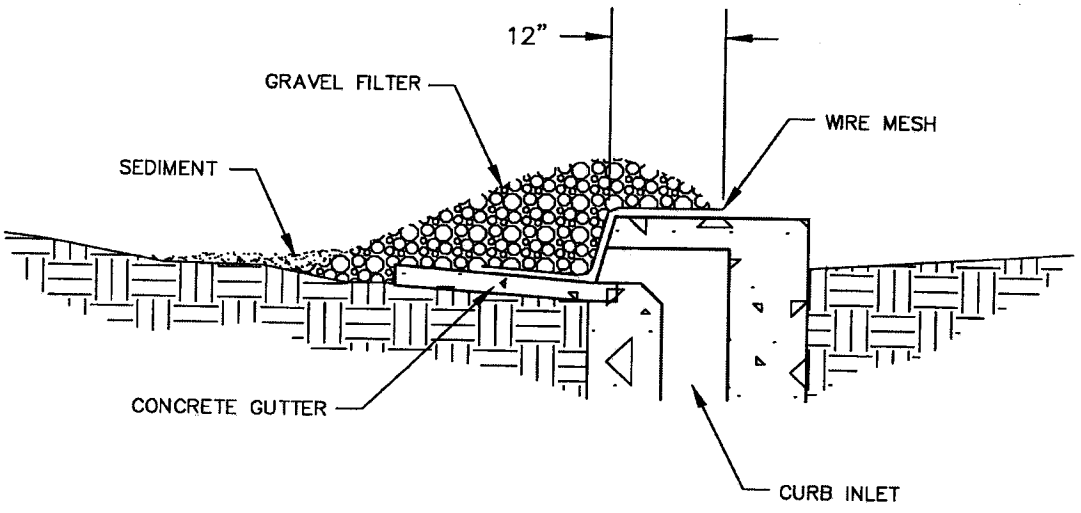
STORMWATER MANUAL

FIGURE 11–24

GRAVEL CURB INLET SEDIMENT FILTER

(EFFECTIVE DATE 8/29/11)



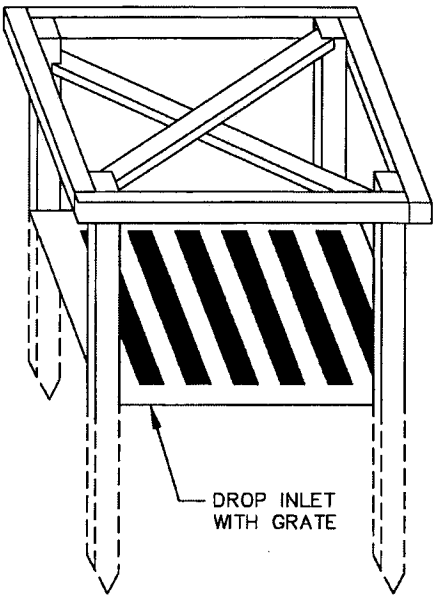


STORMWATER MANUAL

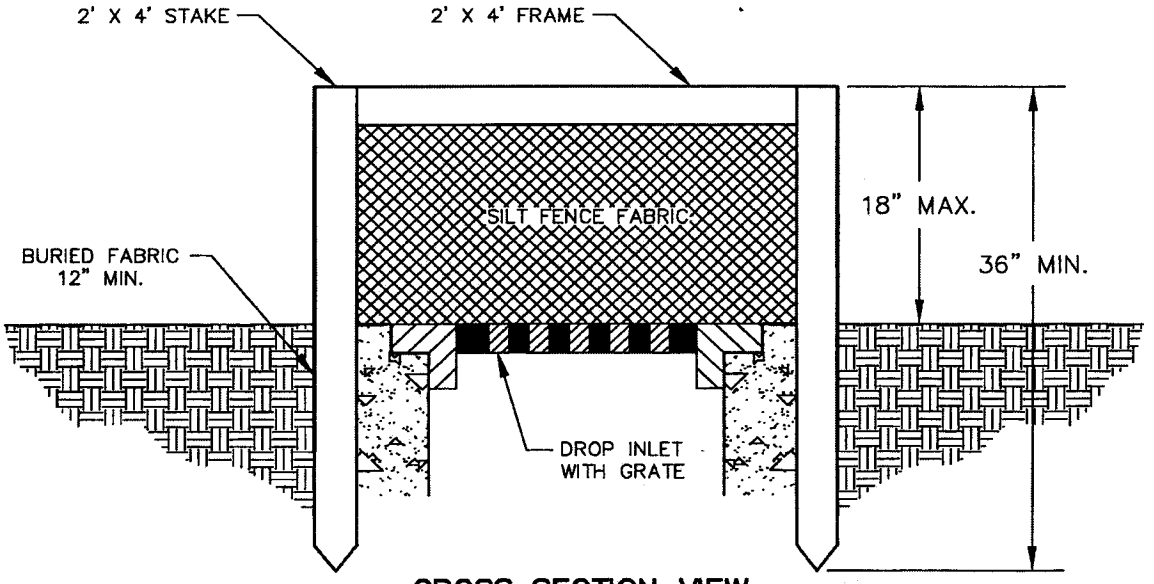
FIGURE 11–23

DROP INLET PROTECTION
USING SILT FENCE

(EFFECTIVE DATE 8/29/11)



ISOMETRIC VIEW OF
2 X 4 WOOD FRAME



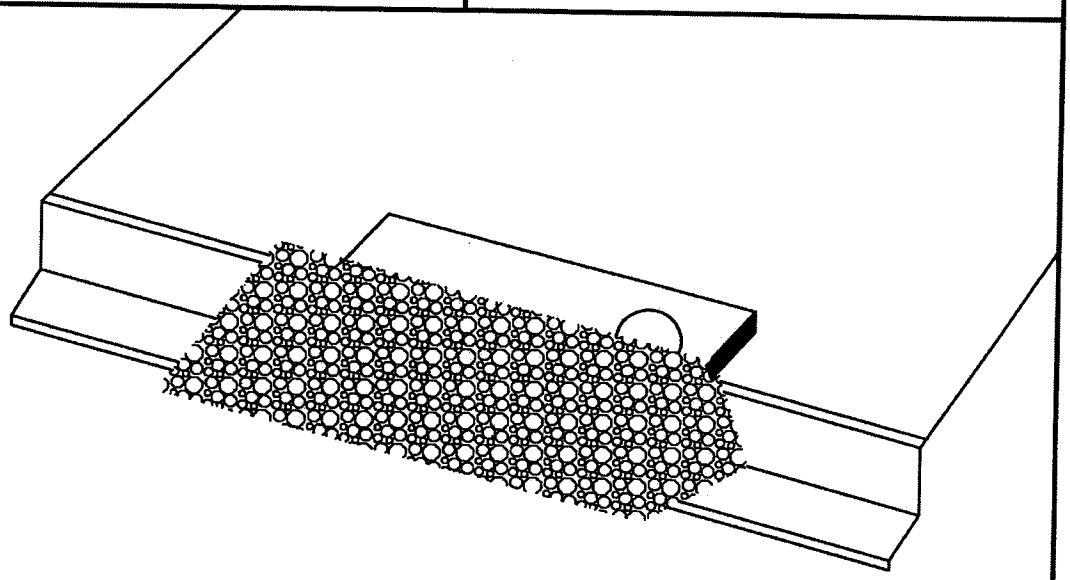
CROSS SECTION VIEW

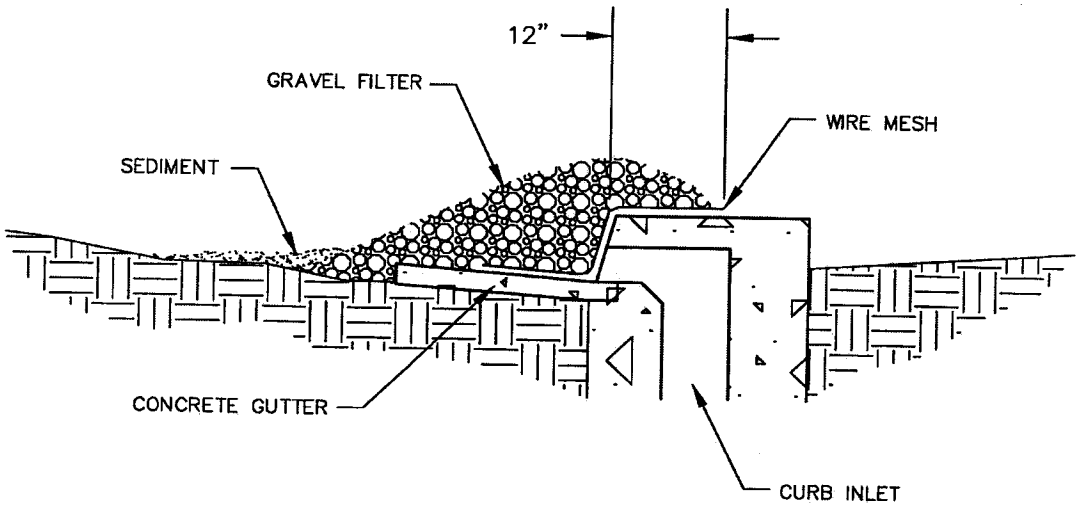
STORMWATER MANUAL

FIGURE 11–24

GRAVEL CURB INLET SEDIMENT FILTER

(EFFECTIVE DATE 8/29/11)



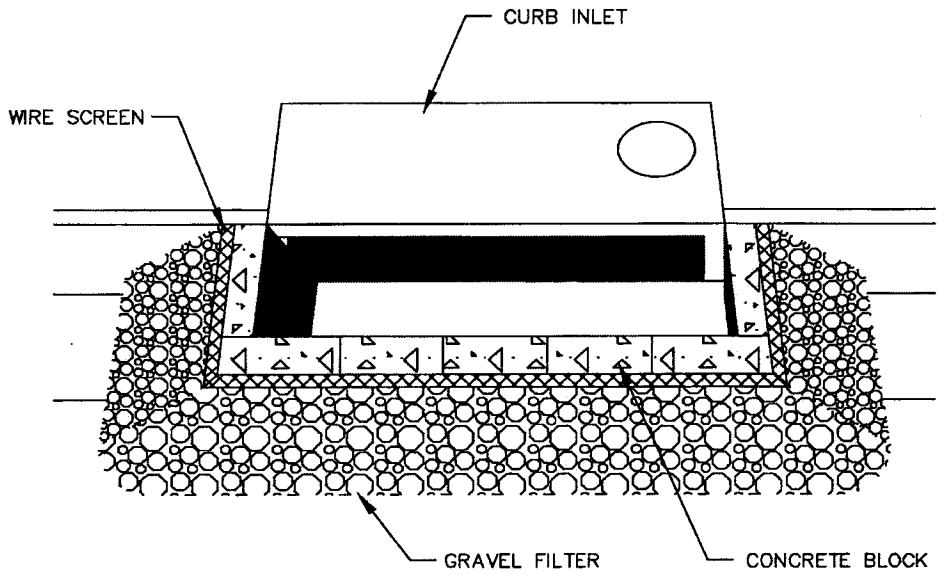


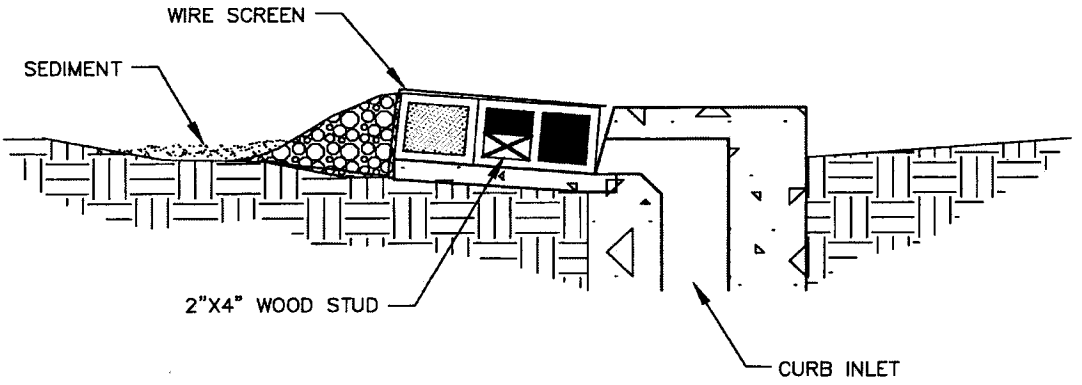
STORMWATER MANUAL

FIGURE 11–25

BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER

(EFFECTIVE DATE 8/29/11)

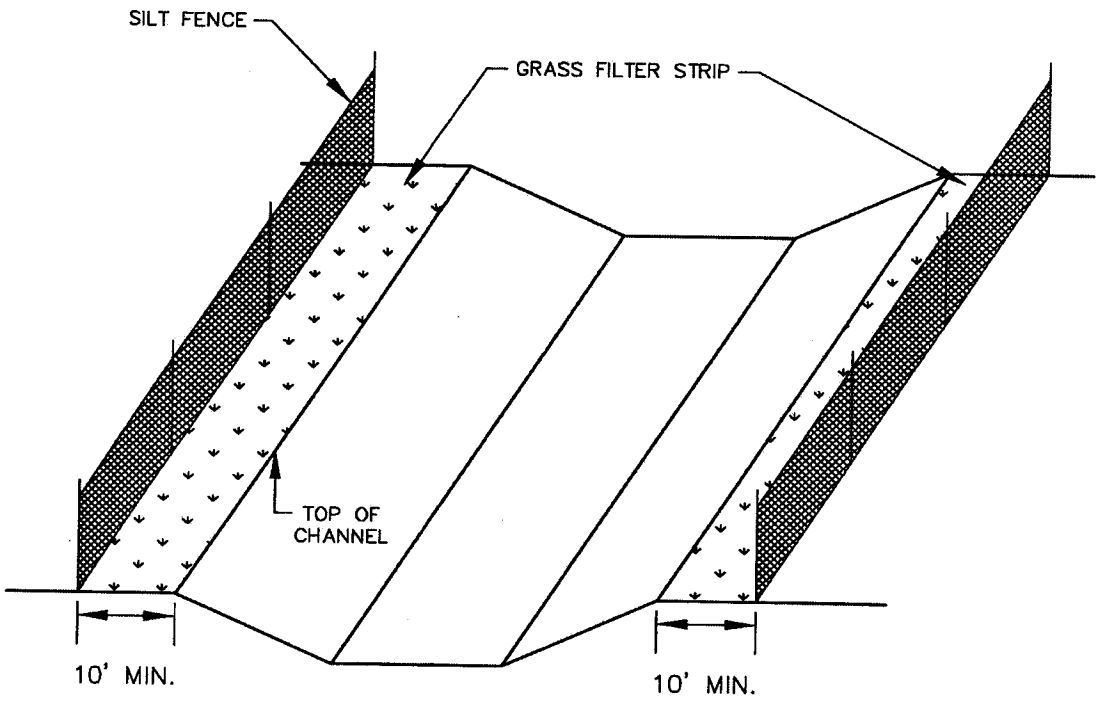




STORMWATER MANUAL

FIGURE 11–26
FILTER STRIP FOR
CONSTRUCTED CHANNEL

(EFFECTIVE DATE 8/29/11)

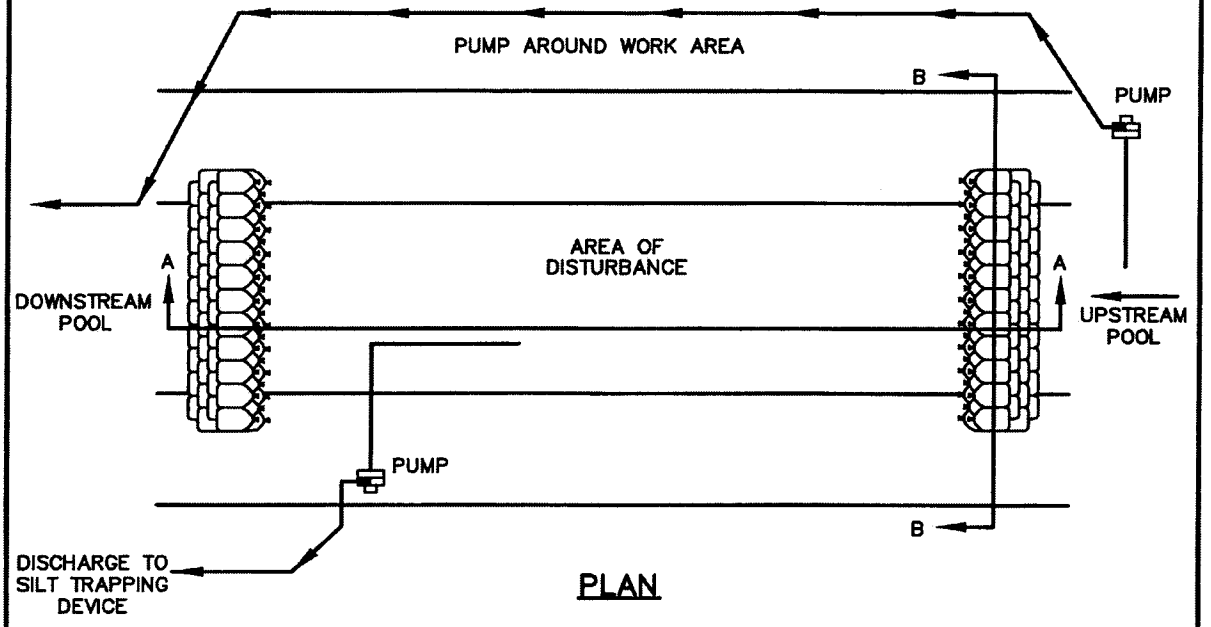


STORMWATER MANUAL

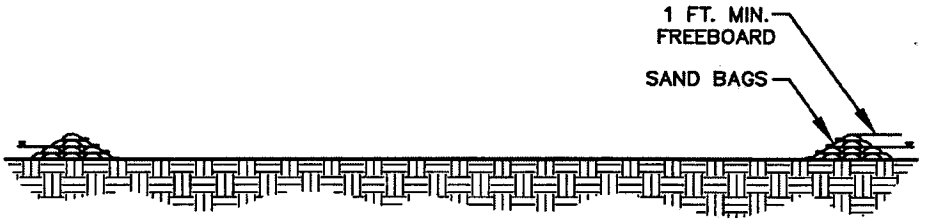
FIGURE 11–27

PUMP–AROUND FLOW DIVERSION

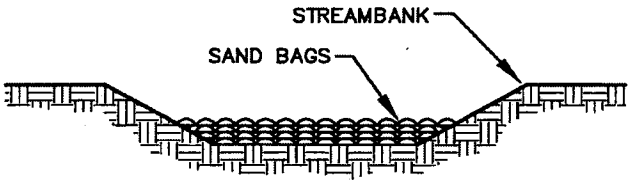
(EFFECTIVE DATE 8/29/11)



PLAN



SECTION A–A



SECTION B–B

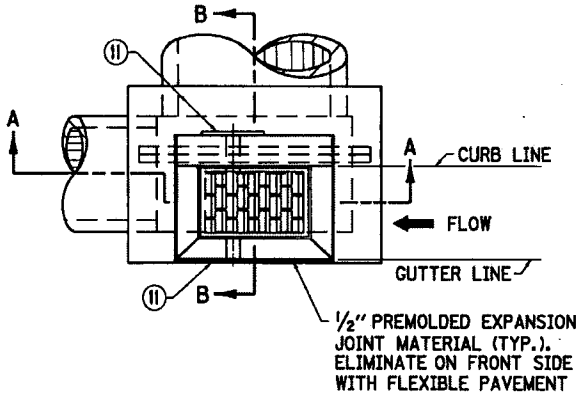
APPENDIX C

Kentucky Department of Highways
Standard Drawings

Kentucky Department of Highways - Standard Drawings
Table of Contents

All Kentucky Department of Highways Standard Drawings may be viewed on the Kentucky Transportation Cabinet web site:

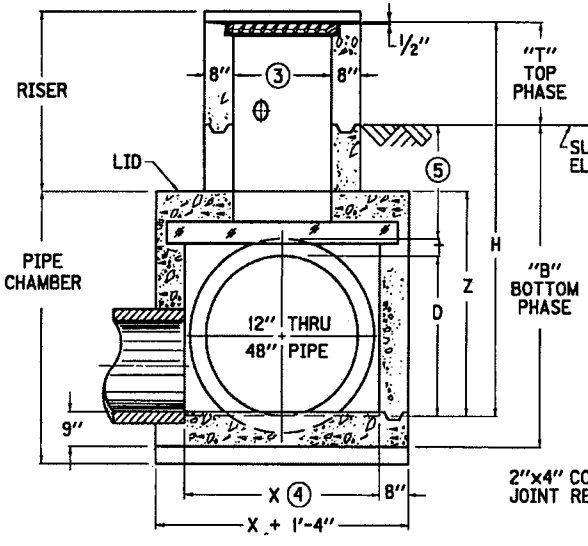
http://transportation.ky.gov/highway-design/pages/2012-standard-drawings.aspx
or http://tinyurl.com/nylln8y



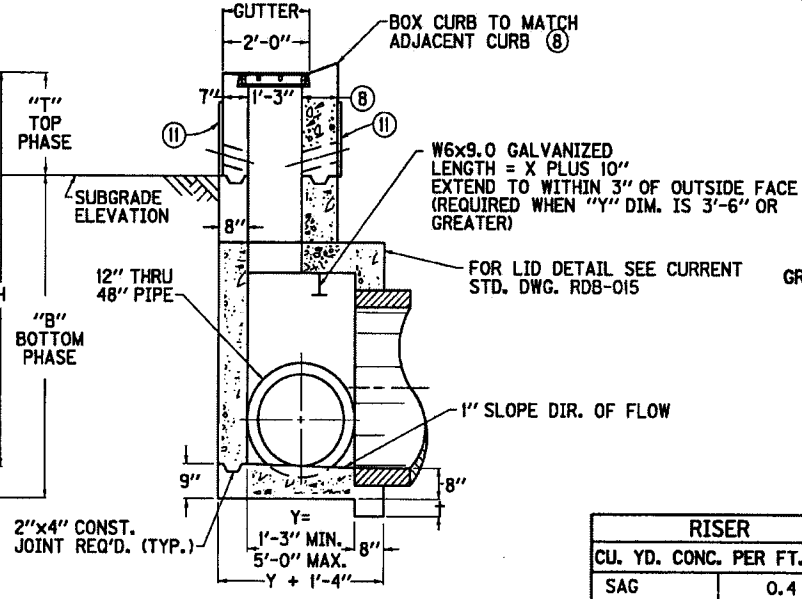
PLAN VIEW

NOTES

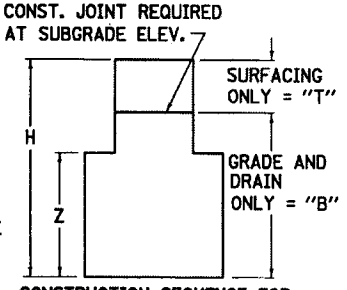
1. BOX INLET SHALL BE CONSTRUCTED IN TWO PHASES (BOTTOM AND TOP) AND MAY BE CONSTRUCTED IN A SAG VERTICAL CURVE OR ON GRADE.
   BID ITEM: DROP BOX INLET TYPE 13 (Δ) (✱)
   (Δ) = "S" (SAG CONDITION)
   (Δ) = "G" (GRADE CONDITION)
   (✱) = "T" (TOP PHASE)
   (✱) = "B" (BOTTOM PHASE)
   WITH NO "T" OR "B" SUFFIX A COMPLETE INLET IS REQUIRED.
2. FOR ILLUSTRATION PURPOSES THIS DRAWING DEPICTS A BOX LOCATED ON A GRADE CONDITION. SEE CURRENT STD. DWG. RDB-014, FOR DETAILS OF SAG AND GRADE CONDITIONS.
3. DIMENSION VARIES DEPENDING UPON LOCATION OF BOX; GRADE CONDITION = 2'-3", SAG CONDITION = 4'-11".
4. GRADE CONDITION: X = 2'-3" MIN. TO 5'-0" MAX., SAG CONDITION: X = 4'-11".
5. 2'-0" DESIRED COVER, 1'-0" MINIMUM COVER OVER PIPE AND/OR LID.
6. "+" IS CONCRETE PIPE WALL THICKNESS OR METAL CORRUGATION DEPTH.
7. ALL WALLS AND SLABS ARE 8" THICK UNLESS OTHERWISE SHOWN.
8. THICKNESS = CURB WIDTH + 2" (MINIMUM WIDTH 8" WITHOUT CURB). INLET MAY BE CONSTRUCTED WITH OR WITHOUT A CURB. THE CURB ON THE BOX SHALL BE CONSTRUCTED TO MATCH THE ADJOINING CURB WITH THE SAME CONSTRUCTION AND MATERIAL DETAILS (SEE CURRENT STD. DWG. RPM-100). THIS DRAWING DEPICTS A LIP CURB APPLICATION.
9. THE TOP PHASE SHALL BE CAST AFTER THE ADJOINING CURB AND GUTTER HAVE BEEN CAST.
10. SEE CURRENT STD. DWG. RDB-014, 015, 016, 018 AND RDB-019 FOR FRAME AND GRATE DETAIL, STEEL PATTERN, DIMENSIONS AND QUANTITIES.
11. FABRIC WRAPPED BACKFILL DRAIN, (ONE PER WEEP HOLE).
12. THIS GRATE IS BICYCLE FRIENDLY.



SECTION A-A



SECTION B-B



CONSTRUCTION SEQUENCE FOR GRADE & DRAIN AND/OR SURFACING

RISER	
CU. YD. CONC. PER FT. HT.	
SAG	0.4
GRADE	0.2

USE WITH CUR. STD. DWGS.: RDB-014, 015, 016, 017, 018, AND RDB-019

KENTUCKY DEPARTMENT OF HIGHWAYS

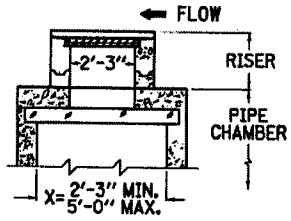
DROP BOX INLET TYPE 13

(DETAIL SHEET)

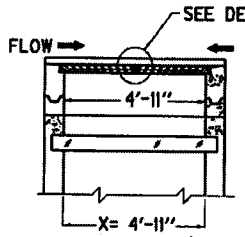
STANDARD DRAWING NO. RDB-013-06

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 11-21-07 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 11-21-07 DATE



GRADE CONDITION
(1 GRATE & 1 FRAME REQ'D.)

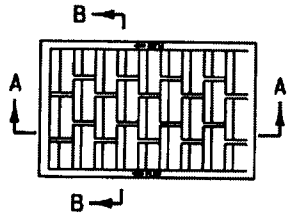


SAG CONDITION
(2 GRATES & 2 FRAMES REQ'D.)

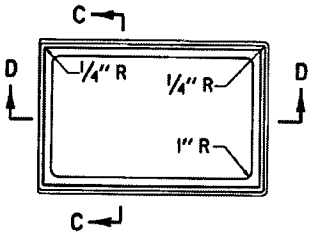
NOTES

1. ALL FILLETS AND ROUNDS SHALL BE 1/8" R.
2. THE FRAME AND GRATE SHALL BE MANUFACTURED OF CAST GRAY IRON CONFORMING TO ASTM A-48 CLASS 35B.

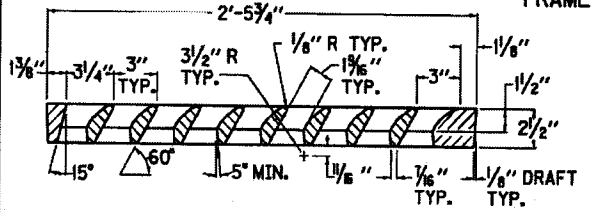
APPROX. WEIGHT	
1 GRATE	160 LBS.
1 FRAME	70 LBS.



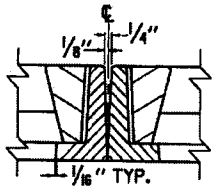
GRATE PLAN VIEW



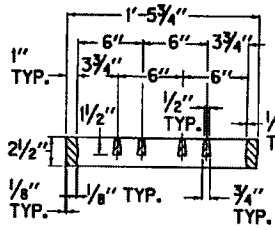
FRAME PLAN VIEW



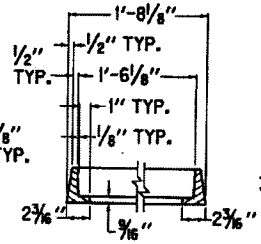
SECTION A-A



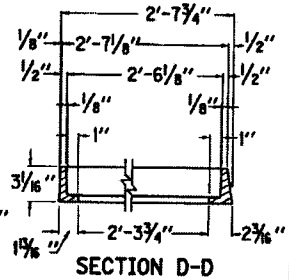
DETAIL "A"



SECTION B-B



SECTION C-C

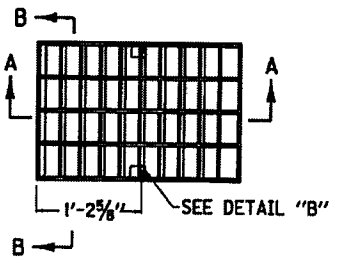


SECTION D-D

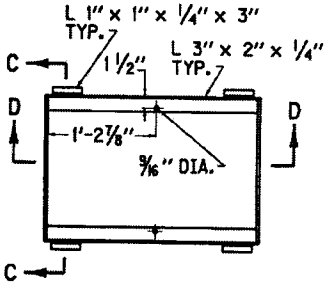
GRAY IRON CASTING

NOTES

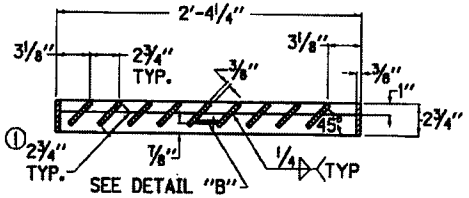
① THE 2 3/4" BAR SHALL BE NOTCHED TO RECEIVE THE 1" BAR.
② THE FRAME AND GRATE SHALL BE ASSEMBLED WITH 2 (TWO) 1/2" X 2 1/4" STAINLESS HEX HEAD BOLTS AND NUTS (COMMERICAL QUALITY).
③ ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36.



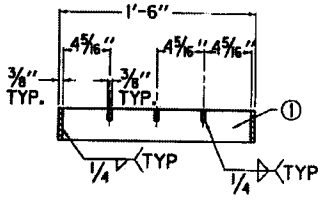
GRATE PLAN VIEW



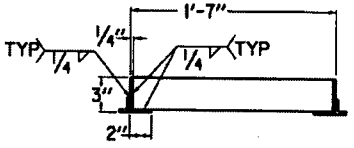
FRAME PLAN VIEW



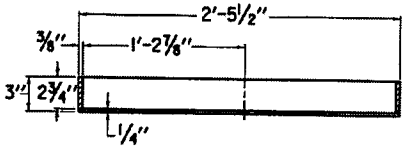
SECTION A-A



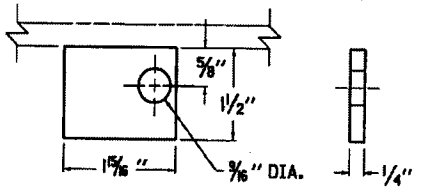
SECTION B-B



SECTION C-C



SECTION D-D



DETAIL "B"

③ STR. STEEL WTS.		
1 GRATE	TOTAL	1 FRAME
82 LBS.	126 LBS.	44 LBS.

STRUCTURAL STEEL

USE WITH CUR. STD. DWGS. RDB-013, 015, 016, 017, 018, AND RDB-019 OR RDB-030, 031, 032, 033, 034 AND RDB-035

KENTUCKY DEPARTMENT OF HIGHWAYS

DROP BOX INLET
TYPE 13 AND TYPE 16
(FRAME AND GRATE DETAILS)

STANDARD DRAWING NO. RDB-014-05

SUBMITTED [signature] DIRECTOR DIVISION OF WORK — 12-1-99 DATE

APPROVED [signature] STATE HIGHWAY ENGINEER — 12-1-99 DATE

REINFORCEMENT STEEL FOR 8" LID

(GRADE CONDITION)

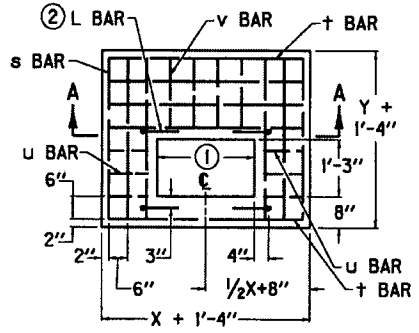
SIZE		NO. 5 STEEL BARS								
		BAR s		BAR †		BAR u		BAR v		
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	LBS.
2'-3"	1'-3"	--	--	--	--	--	--	--	--	7
	2'-0"	4	3'-0"	8	3'-3"	--	--	10	1'-0"	57
	2'-6"		3'-6"	10					1'-6"	71
	3'-0"		4'-0"	12					2'-0"	85
	3'-6"		4'-6"	14					2'-6"	99
	4'-0"		5'-0"	16					3'-0"	113
	4'-6"		5'-6"	18					3'-6"	127
	5'-0"		6'-0"	20					4'-0"	142
2'-6"	1'-3"	8	2'-3"	4	3'-6"	--	--	--	--	40
	2'-0"		3'-0"	8				8	1'-0"	70
	2'-6"		3'-6"	10					1'-6"	85
	3'-0"		4'-0"	12					2'-0"	101
	3'-6"		4'-6"	14					2'-6"	116
	4'-0"		5'-0"	16					3'-0"	132
	4'-6"		5'-6"	18					3'-6"	148
	5'-0"		6'-0"	20					4'-0"	163
3'-0"	1'-3"	8	2'-3"	4	4'-0"	--	--	--	--	42
	2'-0"		3'-0"	8				10	1'-0"	76
	2'-6"		3'-6"	10					1'-6"	94
	3'-0"		4'-0"	12					2'-0"	111
	3'-6"		4'-6"	14					2'-6"	129
	4'-0"		5'-0"	16					3'-0"	147
	4'-6"		5'-6"	18					3'-6"	164
	5'-0"		6'-0"	20					4'-0"	182
3'-6"	1'-3"	12	2'-3"	4	4'-6"	12	0'-11"	--	--	65
	2'-0"		3'-0"	8				8	1'-0"	102
	2'-6"		3'-6"	10					1'-6"	122
	3'-0"		4'-0"	12					2'-0"	142
	3'-6"		4'-6"	14					2'-6"	161
	4'-0"		5'-0"	16					3'-0"	181
	4'-6"		5'-6"	18					3'-6"	201
	5'-0"		6'-0"	20					4'-0"	221
4'-0"	1'-3"	12	2'-3"	4	5'-0"	12	1'-2"	--	--	71
	2'-0"		3'-0"	8				10	1'-0"	111
	2'-6"		3'-6"	10					1'-6"	133
	3'-0"		4'-0"	12					2'-0"	155
	3'-6"		4'-6"	14					2'-6"	177
	4'-0"		5'-0"	16					3'-0"	199
	4'-6"		5'-6"	18					3'-6"	221
	5'-0"		6'-0"	20					4'-0"	243
4'-6"	1'-3"	16	2'-3"	4	5'-6"	12	1'-5"	--	--	85
	2'-0"		3'-0"	8				8	1'-0"	129
	2'-6"		3'-6"	10					1'-6"	153
	3'-0"		4'-0"	12					2'-0"	177
	3'-6"		4'-6"	14					2'-6"	201
	4'-0"		5'-0"	16					3'-0"	225
	4'-6"		5'-6"	18					3'-6"	249
	5'-0"		6'-0"	20					4'-0"	273

(GRADE CONDITION)

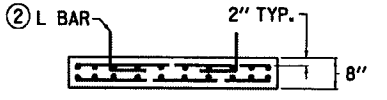
SIZE		NO. 5 STEEL BARS								
		BAR s		BAR †		BAR u		BAR v		
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	LBS.
5'-0"	1'-3"	16	2'-3"	4	6'-0"	12	1'-8"	--	--	90
	2'-0"		3'-0"	8				10	1'-0"	138
	2'-6"		3'-6"	10					1'-6"	164
	3'-0"		4'-0"	12					2'-0"	191
	3'-6"		4'-6"	14					2'-6"	217
	4'-0"		5'-0"	16					3'-0"	243
	4'-6"		5'-6"	18					3'-6"	269
	5'-0"		6'-0"	20					4'-0"	295

REINFORCEMENT STEEL FOR 8" LID
(SAG CONDITION)

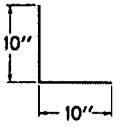
SIZE		NO. 5 STEEL BARS								
		BAR s		BAR †		BAR u		BAR v		
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	LBS.
4'-11"	1'-3"	--	--	--	--	--	--	--	--	7
	2'-0"	4	3'-0"	8	5'-11"	--	--	22	1'-0"	92
	2'-6"		3'-6"	10					1'-6"	118
	3'-0"		4'-0"	12					2'-0"	144
	3'-6"		4'-6"	14					2'-6"	169
	4'-0"		5'-0"	16					3'-0"	195
	4'-6"		5'-6"	18					3'-6"	221
	5'-0"		6'-0"	20					4'-0"	247



PLAN VIEW OF 8" LID



SECTION A-A



L BAR DETAIL

NOTES:

1. DIMENSION VARIES DEPENDING UPON LOCATION OF BOX : GRADE CONDITION= 2'-3" SAG CONDITION= 4'-11"
2. IN ADDITION TO THE CHARTED STEEL, FOUR L BARS ARE REQUIRED IN THE LID AND ARE INCLUDED IN THE TOTALS.
3. CONCRETE QUANTITIES FOR LID ARE INCLUDED ON " DIMENSIONS AND ESTIMATE OF QUANTITIES FOR D.B.I. TYPE 13". SEE CUR. STD. DWGS. RDB-016 AND RDB-017.
4. REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE OUTSIDE FACE UNLESS OTHERWISE SHOWN.

USE WITH CUR. STD. DWGS.: RDB-013, 014, 016, 017, 018, AND RDB-019

KENTUCKY DEPARTMENT OF HIGHWAYS

DROP BOX INLET TYPE 13

(DETAIL & BAR CHART FOR LID)

STANDARD DRAWING NO. RDB-015-03

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-1-99 DATE

DIMENSIONS AND ESTIMATE OF QUANTITIES
(PIPE CHAMBER-GRADE CONDITION)

INLET SIZE ④			MAX. PIPE DIA.	PIPE LOCATION	Z ①	CONCRETE	
NO. ⑥	X	Y				CU. YD. ①②	Q ③
1	2'-3"	1'-3"	12"	X OR Y	2'-2"	0.8	0.2
2			15"	X	2'-5"		
3		2'-0"		X OR Y		1.0	0.3
4		1'-3"	18"	X	2'-9"	0.9	0.2
5		2'-0"		X OR Y		1.1	0.3
6		1'-3"	21"	X	3'-0"	1.0	0.2
7		2'-0"				1.2	0.3
8		2'-6"		X OR Y		1.3	
9			24"	Y	3'-3"	1.4	
10	2'-6"	1'-3"		X		1.1	
11		2'-0"				1.3	
12		2'-6"		X OR Y		1.5	
13	2'-3"	3'-0"	27"	Y	3'-6"	1.6	
14	2'-6"					1.7	
15	3'-0"	1'-3"		X		1.3	
16		2'-0"				1.6	
17		2'-6"				1.7	
18		3'-0"		X OR Y		1.9	0.4
19	2'-3"	3'-6"	30"	Y	4'-1"	2.0	0.3
20	2'-6"					2.1	0.4
21	3'-0"					2.3	
22	3'-6"	1'-3"		X	3'-10"	1.5	0.3
23		2'-0"				1.8	
24		2'-6"				2.0	0.4
25		3'-0"				2.2	
26		3'-6"		X OR Y	4'-1"	2.5	
27	2'-3"	3'-6"	33"	Y	4'-4"	2.1	0.3
28	2'-6"					2.2	0.4
29	3'-0"					2.4	
30	3'-6"	1'-3"		X	4'-1"	1.6	0.3
31		2'-0"				1.9	
32		2'-6"				2.1	0.4
33		3'-0"				2.3	
34		3'-6"		X OR Y	4'-4"	2.6	
35	2'-3"	4'-0"	36"	Y	4'-7"	2.4	0.4
36	2'-6"					2.5	
37	3'-0"					2.7	
38	3'-6"					3.0	
39	4'-0"	1'-3"		X	4'-4"	1.8	0.3
40		2'-0"				2.2	
41		2'-6"				2.4	0.4
42		3'-0"				2.6	
43		3'-6"			4'-7"	3.0	
44		4'-0"		X OR Y		3.2	0.5
45	2'-3"	4'-6"	42"	Y	5'-2"	2.8	0.4
46	2'-6"					2.9	
47	3'-0"	4'-6"	42"	Y	5'-2"	3.2	0.4
48	3'-6"					3.4	0.5
49	4'-0"					3.7	
50	4'-6"	1'-3"		X	4'-11"	2.2	0.3
51		2'-0"				2.6	0.4
52		2'-6"				2.8	
53		3'-0"				3.1	
54		3'-6"			5'-2"	3.4	0.5
55		4'-0"				3.7	
56		4'-6"		X OR Y		4.0	
57	2'-3"	5'-0"	48"	Y	5'-8"	3.2	0.4
58	2'-6"					3.3	
59	3'-0"					3.6	0.5
60	3'-6"					3.9	
61	4'-0"					4.2	
62	4'-6"					4.5	
63	5'-0"	1'-3"		X	5'-5"	2.5	0.4
64		2'-0"				3.0	
65		2'-6"				3.2	
66		3'-0"				3.5	0.5
67		3'-6"			5'-8"	3.9	
68		4'-0"				4.2	
69		4'-6"				4.5	
70		5'-0"		X OR Y		4.8	0.6

REFERENCE CHART

DIA. OF PIPE	D.B.I. TYPE 13		CONCRETE TO DEDUCT FOR EACH PIPE
	PIPE ON "X" SIDE OF INLET	PIPE ON "Y" SIDE OF INLET	CUBIC YARDS
0	2'-3"	1'-3"	----
12"		2'-0"	0.1
15"-18"		2'-6"	
21"			
24"	2'-6"	3'-0"	0.2
27"	3'-0"	3'-6"	
30"-33"	3'-6"	4'-0"	0.3
36"	4'-0"	4'-6"	0.4
42"	4'-6"	5'-0"	0.5
48"	5'-0"		

NOTES

① BASED ON Z AS EQUAL TO D+†+1'-0" WHEN "Y" DIMENSION IS LESS THAN 3'-6".
BASED ON Z AS EQUAL TO D+†+1'-3" WHEN "Y" DIMENSION IS 3'-6" OR GREATER.

② SEE REFERENCE CHART FOR QUANTITIES TO DEDUCT FOR PIPE.

③ Q = CU. YD. PER FOOT INCREASE OR DECREASE WHEN Z VARIES.

④ SEE CURRENT STD. DWGS. RDB-013 AND RDB-014 FOR DIMENSIONS.

5. SEE CUR. STD. DWG. RDB-018 AND RDB-019 FOR STEEL REINFORCEMENT IN PIPE CHAMBER AND RISER WHEN H = 8'-0" OR GREATER.

⑥ INLET IS SHOWN ON PLANS AS "DROP BOX INLET TYPE 13". FOLLOWING THIS IS A NUMBER AND A BOX HEIGHT. USE THIS NUMBER WITH THIS CHART.

7. SEE CURRENT STD. DWG. RDB-017 FOR DIMENSIONS AND ESTIMATE OF QUANTITIES WHEN BOXES ARE LOCATED IN A SAG CONDITION.

USE WITH CUR. STD. DWGS. RDB-013, 014, 015, 017, 018, AND RDB-019

KENTUCKY
DEPARTMENT OF HIGHWAYS

DROP BOX INLET
TYPE 13
(PIPE CHAMBER-GRADE CONDTN.)

STANDARD DRAWING NO. RDB-016-02

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-1-99 DATE

DIMENSIONS AND ESTIMATE OF QUANTITIES
(PIPE CHAMBER-SAG CONDITION)

INLET SIZE ④			MAX. PIPE DIA.	PIPE LOCATION	Z ①	CONCRETE	
NO. ⑥	X	Y				CU. YD. ①②	Q ③
71	4'-11"	1'-3"	12"	X OR Y	2'-2"	1.2	0.4
72			15"	X	2'-5"	1.3	
73		2'-0"		X OR Y		1.6	
74		1'-3"	18"	X	2'-9"	1.4	
75		2'-0"		X OR Y		1.8	
76		1'-3"	21"	X	3'-0"	1.5	
77		2'-0"				1.9	
78		2'-6"		X OR Y		2.1	
79		1'-3"	24"	X	3'-3"	1.6	
80		2'-0"				2.0	
81		2'-6"		X OR Y		2.2	
82		1'-3"	27"	X	3'-6"	1.7	
83		2'-0"				2.1	
84		2'-6"				2.3	
85		3'-0"		X OR Y		2.5	0.5
86		1'-3"	30"	X	3'-10"	1.8	0.4
87		2'-0"				2.2	
88		2'-6"				2.4	
89		3'-0"				2.7	0.5
90		3'-6"		X OR Y		3.0	
91		1'-3"	33"	X	4'-1"	1.9	0.4
92		2'-0"				2.3	
93		2'-6"				2.5	
94		3'-0"				2.8	0.5
95		3'-6"		X OR Y		3.2	
96		1'-3"	36"	X	4'-4"	2.0	0.4
97		2'-0"				2.4	
98		2'-6"				2.7	
99		3'-0"				2.9	0.5
100		3'-6"			4'-7"	3.3	
101		4'-0"		X OR Y		3.5	
102		1'-3"	42"	X	4'-11"	2.2	0.4
103		2'-0"				2.6	
104		2'-6"				2.9	
105		3'-0"				3.2	0.5
106		3'-6"			5'-2"	3.6	
107		4'-0"				3.8	
108		4'-6"		X OR Y		4.1	
109		1'-3"	48"	X	5'-5"	2.4	0.4
110		2'-0"				2.8	
111		2'-6"				3.1	
112		3'-0"				3.4	0.5
113		3'-6"			5'-8"	3.8	
114		4'-0"				4.1	
115		4'-6"				4.4	
116		5'-0"		X OR Y		4.6	0.6

REFERENCE CHART

DIA. OF PIPE	D.B.I. TYPE 13		CONCRETE TO DEDUCT FOR EACH PIPE
	PIPE ON "X" SIDE OF INLET	PIPE ON "Y" SIDE OF INLET	CUBIC YARDS
0	4'-11"	1'-3"	----
12"			0.1
15"-18"		2'-0"	
21"		2'-6"	
24"			
27"		3'-0"	0.2
30"-33"		3'-6"	
36"		4'-0"	0.3
42"		4'-6"	0.4
48"		5'-0"	0.5

NOTES

① BASED ON Z AS EQUAL TO D+†+1'-0" WHEN "Y" DIMENSION IS LESS THAN 3'-6".
BASED ON Z AS EQUAL TO D+†+1'-3" WHEN "Y" DIMENSION IS 3'-6" OR GREATER.

② SEE REFERENCE CHART FOR QUANTITIES TO DEDUCT FOR PIPE .

③ Q = CU. YD. PER FOOT INCREASE OR DECREASE WHEN Z VARIES .

④ SEE CURRENT STD. DWGS. RDB-013 AND RDB-014 FOR DIMENSIONS.

5. SEE CUR. STD. DWG. RDB-018 AND RDB-019 FOR STEEL REINFORCEMENT IN PIPE CHAMBER AND RISER WHEN H = 8'-0" OR GREATER .

⑥ INLET IS SHOWN ON PLANS AS "DROP BOX INLET TYPE 13". FOLLOWING THIS IS A NUMBER AND A BOX HEIGHT. USE THIS NUMBER WITH THIS CHART .

7. SEE CURRENT STD. DWG. RDB-016 FOR DIMENSIONS AND ESTIMATE OF QUANTITIES WHEN BOXES ARE LOCATED IN A GRADE CONDITION.

USE WITH CUR. STD. DWGS.
RDB-013, 014, 015, 016, 018,
AND RDB-019

KENTUCKY
DEPARTMENT OF HIGHWAYS

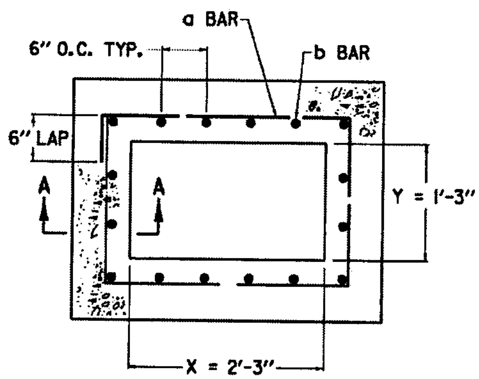
DROP BOX INLET
TYPE 13
(PIPE CHAMBER-SAG CONDITION)

STANDARD DRAWING NO. RDB-017-02

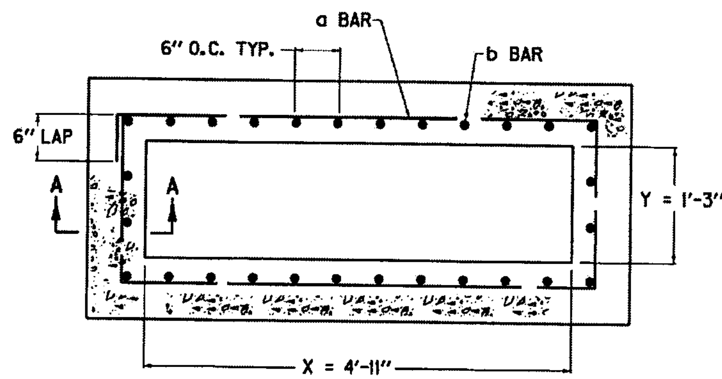
SUBMITTED [signature] DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

APPROVED [signature] STATE HIGHWAY ENGINEER 12-1-99 DATE

ADDITIONAL STEEL REINFORCEMENT REQUIREMENTS
(RISER, H = 8'-0" TO 15'-0", GRADE AND SAG CONDITION)



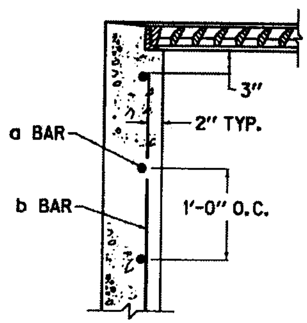
GRADE CONDITION



SAG CONDITION

NOTES

1. STEEL REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE FACE UNLESS OTHERWISE SHOWN.
2. ALL STEEL REINFORCEMENT SHALL BE NO. 5 BARS.



SECTION A-A

APPROXIMATE RISER QUANTITIES PER ONE FOOT IN HEIGHT

CONDITION	SIZE		BAR a		BAR b		LBS STEEL
	X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	
GRADE	2'-3"	1'-3"	3	9'-3"	16	1'-0"	26
SAG	4'-11"		3	14'-7"	28		44

USE WITH CUR. STD. DWGS. RDB-013, 014, 015, 016, 017, AND RDB-019

KENTUCKY
DEPARTMENT OF HIGHWAYS

DROP BOX INLET
TYPE 13
(ADDITIONAL STEEL - RISER)

STANDARD DRAWING NO. RDB-018-03

SUBMITTED: [signature] DATE 12-1-99
APPROVED: [signature] DATE 12-1-99

① ADDITIONAL STEEL REINFORCEMENT REQUIRMENTS
(PIPE CHAMBER, H = 8' TO 15', GRADE CONDITION)

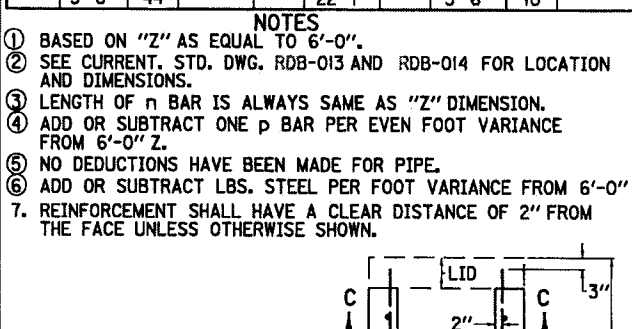
SIZE ②		NO. 5 STEEL BARS									
		③ BAR n		④ BAR p		BAR q		BAR r		LBS. ⑤	
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	TOTAL	⑥
2'-3"	1'-3"	16	6'-0"	6	9'-3"	4	1'-9"	3	2'-9"	174	26
	2'-0"	20			10'-9"		2'-6"	4		214	32
	2'-6"	22			11'-9"		3'-0"	5		238	35
	3'-0"	24			12'-9"		3'-6"	6		262	38
	3'-6"	26			13'-9"		4'-0"	7		286	41
	4'-0"	28			14'-9"		4'-6"	8		309	45
	4'-6"	30			15'-9"		5'-0"	9		333	48
	5'-0"	32			16'-9"		5'-6"	10		357	51
2'-6"	1'-3"	20	6'-0"	6	9'-9"	5	1'-9"	3	3'-0"	205	31
	2'-0"	22			11'-3"		2'-6"	4		234	35
	2'-6"	24			12'-3"		3'-0"	5		258	38
	3'-0"	26			13'-3"		3'-6"	6		283	41
	3'-6"	28			14'-3"		4'-0"	7		307	44
	4'-0"	30			15'-3"		4'-6"	8		332	47
	4'-6"	32			16'-3"		5'-0"	9		356	50
	5'-0"	34			17'-3"		5'-6"	10		381	53
3'-0"	1'-3"	22	6'-0"	6	10'-9"	6	1'-9"	3	3'-6"	227	34
	2'-0"	24			12'-3"		2'-6"	4		257	38
	2'-6"	26			13'-3"		3'-0"	5		283	41
	3'-0"	28			14'-3"		3'-6"	6		308	44
	3'-6"	30			15'-3"		4'-0"	7		334	47
	4'-0"	32			16'-3"		4'-6"	8		359	50
	4'-6"	34			17'-3"		5'-0"	9		385	53
	5'-0"	36			18'-3"		5'-6"	10		410	57
3'-6"	1'-3"	24	6'-0"	6	11'-9"	7	1'-9"	3	4'-0"	249	37
	2'-0"	26			13'-3"		2'-6"	4		281	41
	2'-6"	28			14'-3"		3'-0"	5		307	44
	3'-0"	30			15'-3"		3'-6"	6		334	47
	3'-6"	32			16'-3"		4'-0"	7		360	50
	4'-0"	34			17'-3"		4'-6"	8		387	53
	4'-6"	36			18'-3"		5'-0"	9		414	57
	5'-0"	38			19'-3"		5'-6"	10		440	60
4'-0"	1'-3"	26	6'-0"	6	12'-9"	8	1'-9"	3	4'-6"	271	40
	2'-0"	28			14'-3"		2'-6"	4		304	44
	2'-6"	30			15'-3"		3'-0"	5		332	47
	3'-0"	32			16'-3"		3'-6"	6		359	50
	3'-6"	34			17'-3"		4'-0"	7		387	53
	4'-0"	36			18'-3"		4'-6"	8		415	57
	4'-6"	38			19'-3"		5'-0"	9		442	60
	5'-0"	40			20'-3"		5'-6"	10		470	63
4'-6"	1'-3"	28	6'-0"	6	13'-9"	9	1'-9"	3	5'-0"	293	44
	2'-0"	30			15'-3"		2'-6"	4		328	47
	2'-6"	32			16'-3"		3'-0"	5		356	50
	3'-0"	34			17'-3"		3'-6"	6		385	53
	3'-6"	36			18'-3"		4'-0"	7		414	57
	4'-0"	38			19'-3"		4'-6"	8		442	60
	4'-6"	40			20'-3"		5'-0"	9		471	63
	5'-0"	42			21'-3"		5'-6"	10		500	66

SIZE ②		NO. 5 STEEL BARS									
		③ BAR n		④ BAR p		BAR q		BAR r		LBS. ⑤	
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	TOTAL	⑥
5'-0"	1'-3"	30	6'-0"	6	14'-9"	10	1'-9"	3	5'-6"	316	47
	2'-0"	32			16'-3"		2'-6"	4		351	50
	2'-6"	34			17'-3"		3'-0"	5		381	53
	3'-0"	36			18'-3"		3'-6"	6		410	57
	3'-6"	38			19'-3"		4'-0"	7		440	60
	4'-0"	40			20'-3"		4'-6"	8		470	63
	4'-6"	42			21'-3"		5'-0"	9		500	66
	5'-0"	44			22'-3"		5'-6"	10		529	69

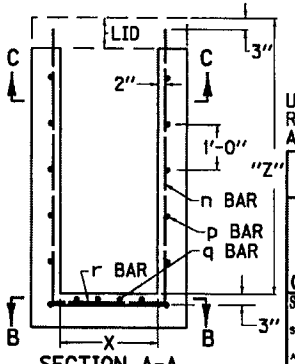
① ADDITIONAL STEEL REINFORCEMENT REQUIRMENTS
(PIPE CHAMBER, H = 8' TO 15', SAG CONDITION)

SIZE ②		NO. 5 STEEL BARS									
		③ BAR n		④ BAR p		BAR q		BAR r		LBS. ⑤	
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	TOTAL	⑥
4'-11"	1'-3"	28	6'-0"	6	14'-7"	10	1'-9"	3	5'-5"	302	44
	2'-0"	32			16'-1"		2'-6"	4		350	50
	2'-6"	34			17'-1"		3'-0"	5		379	53
	3'-0"	36			18'-1"		3'-6"	6		409	56
	3'-6"	38			19'-1"		4'-0"	7		438	60
	4'-0"	40			20'-1"		4'-6"	8		468	63
	4'-6"	42			21'-1"		5'-0"	9		498	66
	5'-0"	44			22'-1"		5'-6"	10		527	69

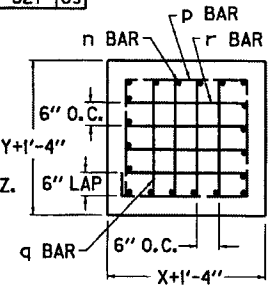
NOTES
① BASED ON "Z" AS EQUAL TO 6'-0".
② SEE CURRENT. STD. DWG. RDB-013 AND RDB-014 FOR LOCATION AND DIMENSIONS.
③ LENGTH OF n BAR IS ALWAYS SAME AS "Z" DIMENSION.
④ ADD OR SUBTRACT ONE p BAR PER EVEN FOOT VARIANCE FROM 6'-0" Z.
⑤ NO DEDUCTIONS HAVE BEEN MADE FOR PIPE.
⑥ ADD OR SUBTRACT LBS. STEEL PER FOOT VARIANCE FROM 6'-0" Z.
7. REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE FACE UNLESS OTHERWISE SHOWN.



SECTION C-C



SECTION A-A



SECTION B-B

USE WITH CUR. STD. DWGS.: RDB-013, 014, 015, 016, 017, AND RDB-018

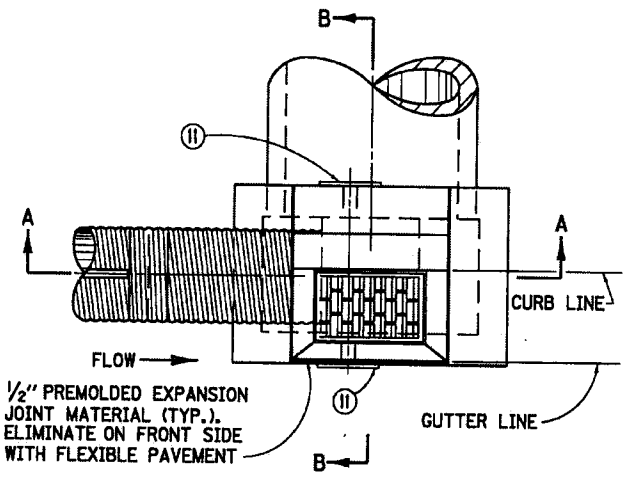
KENTUCKY DEPARTMENT OF HIGHWAYS

DROP BOX INLET TYPE 13
(ADDITIONAL STEEL - CHAMBER)

STANDARD DRAWING NO. RDB-019-03

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

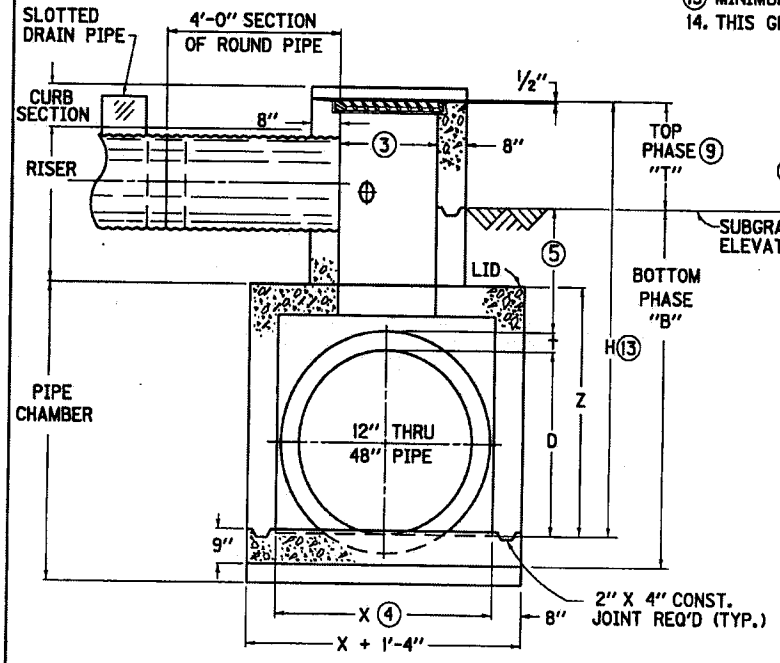
APPROVED _____ STATE HIGHWAY ENGINEER 12-1-99 DATE



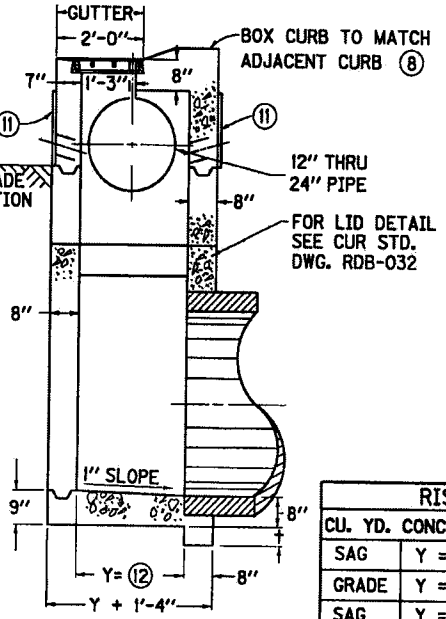
PLAN VIEW

NOTES

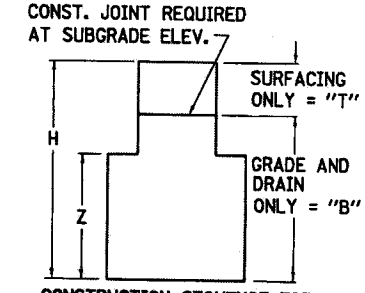
1. BOX INLET MAY BE CONSTRUCTED IN TWO PHASES (BOTTOM AND TOP) AND MAY BE CONSTRUCTED IN A SAG VERTICAL CURVE OR ON GRADE.
   BID ITEM: DROP BOX INLET TYPE 16(Δ) (✻)
   (Δ) = "S" (SAG CONDITION)
   (Δ) = "G" (GRADE CONDITION)
   (✻) = "T" (TOP PHASE)
   (✻) = "B" (BOTTOM PHASE)
   WITH NO "T" OR "B" SUFFIX A COMPLETE INLET IS REQUIRED.
2. FOR ILLUSTRATION PURPOSES THIS DRAWING DEPICTS A BOX LOCATED ON A GRADE CONDITION. SEE CURRENT STD. DWG. RDB-014 , FOR DETAILS OF SAG AND GRADE CONDITIONS.
3. DIMENSION VARIES DEPENDING UPON LOCATION OF BOX: GRADE CONDITION = 2'-3", SAG CONDITION = 4'-11".
4. GRADE CONDITION: X = 2'-3" MIN. TO 5'-0" MAX. , SAG CONDITION: X=4'-11".
5. 2'-0" DESIRED COVER, 1'-0" MIN. COVER OVER PIPE AND/OR LID.
6. "+" IS CONCRETE PIPE WALL THICKNESS OR METAL CORRUGATION DEPTH.
7. ALL WALLS AND SLABS ARE 8" THICK UNLESS OTHERWISE SHOWN.
8. THE CURB ON THE BOX SHALL BE CONSTRUCTED TO MATCH THE ADJOINING CURB WITH THE SAME CONSTRUCTION AND MATERIAL DETAILS (SEE CURRENT STD. DWG. RPM-100). THIS DRAWING DEPICTS A LIP CURB APPLICATION.
9. THE TOP PHASE SHALL BE CAST AFTER THE ADJOINING CURB AND GUTTER HAVE BEEN CAST.
10. SEE CURRENT STD. DWG. RDB-014 FOR FRAME AND GRATE DETAIL. SEE CUR. STD. DWG. RDB-031 FOR STEEL PATTERN. SEE CUR. STD. DWG. RDB-033 FOR DIMENSIONS AND QUANTITIES.
11. FABRIC WRAPPED BACKFILL DRAIN, (ONE PER WEEP HOLE).
12. 2'-0" FOR 12", 15", AND 18" OR 2'-6" FOR 24" SLOTTED DRAIN PIPE.
13. MINIMUM HEIGHT FOR LONGITUDINAL PIPE SHALL BE H = 11" + INSIDE DIAMETER OF PIPE.
14. THIS GRATE IS BICYCLE FRIENDLY.



SECTION A-A



SECTION B-B



CONSTRUCTION SEQUENCE FOR GRADE & DRAIN AND/OR SURFACING

USE WITH CUR. STD. DWGS.: RDI-200, RDB-014, RDB-031, RDB-032 , RDB-033, RDB-034, RDB-035

RISER		
CU. YD. CONC. PER FT. HT.		
SAG	Y = 2'-0"	0.4
GRADE	Y = 2'-0"	0.3
SAG	Y = 2'-6"	0.4
GRADE	Y = 2'-6"	0.3

KENTUCKY DEPARTMENT OF HIGHWAYS

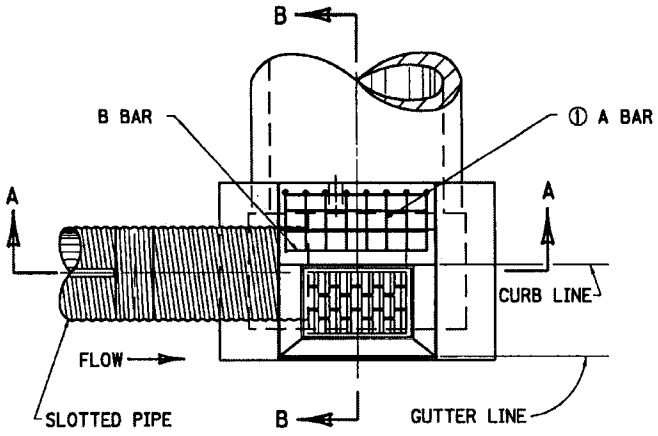
DROP BOX INLET TYPE 16

(DETAIL SHEET)

STANDARD DRAWING NO. RDB-030-03

SUBMITTED: DIRECTOR, DIVISION OF DESIGN — DATE 11-21-07

APPROVED: STATE HIGHWAY ENGINEER — DATE 11-21-07



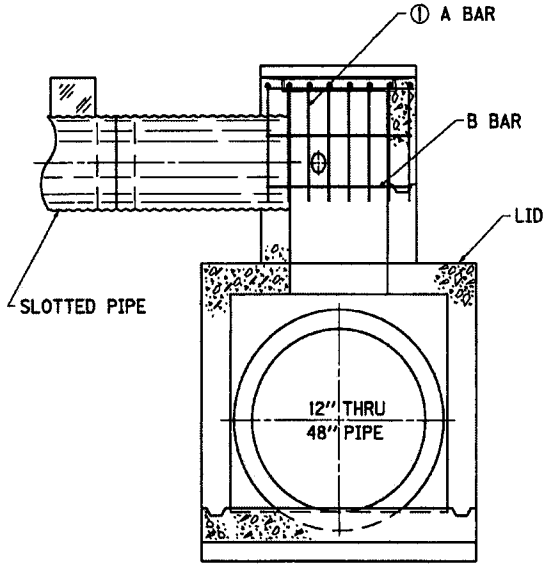
PLAN VIEW

NOTES

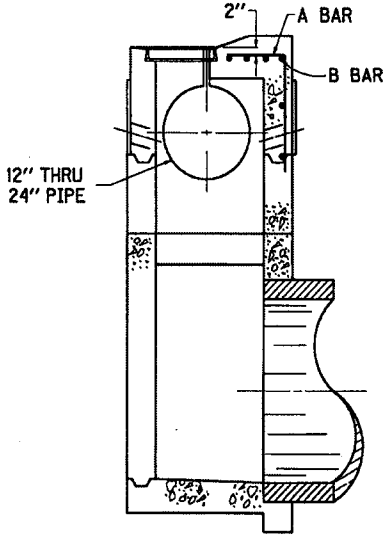
① SLOTTED PIPE SIZE DENOTES WHICH A BAR TO USE, SEE STEEL CHART THIS DRAWING.
2. SEE CUR. STD. DWG. RDB-032 FOR LID REINFORCEMENT.
3. REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE OUTSIDE FACE UNLESS OTHERWISE SHOWN.
4. SPACE A BARS APPROXIMATELY 6" CENTER TO CENTER.
5. SPACE B BARS AS SHOWN.

STEEL REINFORCEMENT CHART

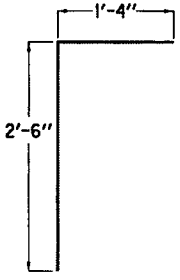
NO. 5 BAR	SLOTTED PIPE SIZE	CONDITION	QTY.	LGTH.	TOTAL LBS
A BAR	12" THRU 18"	GRADE	8	2'-7"	22
B BAR			6	3'-3"	20
A BAR		SAGE	13	2'-7"	35
B BAR			6	5'-11"	37
A BAR	24"	GRADE	8	3'-10"	32
B BAR			6	3'-3"	20
A BAR		SAGE	13	3'-10"	52
B BAR			6	5'-11"	37



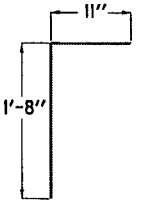
SECTION A-A



SECTION B-B



A BAR DETAIL
24" PIPE



A BAR DETAIL
12" - 18" PIPE

USE WITH CUR. STD. DWGS.: RDI-200, RDB-014, RDB-030, RDB-032, RDB-033, RDB-034, RDB-035

KENTUCKY
DEPARTMENT OF HIGHWAYS

DROP BOX INLET
TYPE 16
(STEEL SHEET)

STANDARD DRAWING NO. RDB-031-03

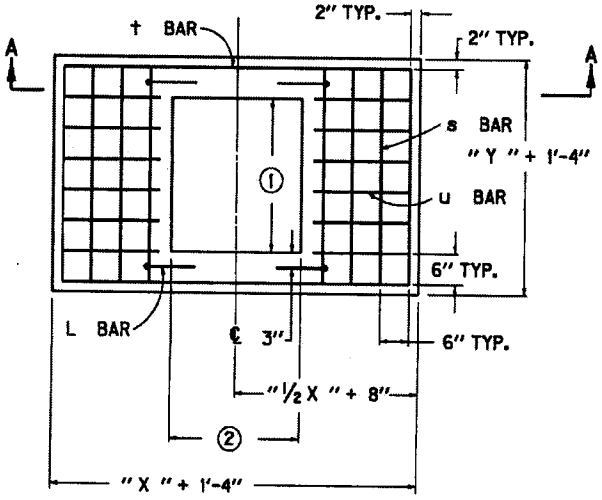
SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-1-99 DATE

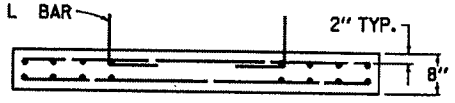
REINFORCEMENT STEEL FOR 8" LID

(GRADE CONDITION)

SIZE		NO. 5 STEEL BARS						
		BAR s		BAR †		BAR u		
X	Y	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	LBS.
2'-3"	2'-0"	4	3'-0"	4	3'-3"	--	--	33
	2'-6"		3'-6"			--	--	35
2'-6"	2'-0"	8	3'-0"		3'-6"	--	--	47
	2'-6"		3'-6"			--	--	51
3'-0"	2'-0"		3'-0"		4'-0"	--	--	49
	2'-6"		3'-6"			--	--	53
3'-6"	2'-0"	12	3'-0"		4'-6"	20	0'-11"	82
	2'-6"		3'-6"			24		89
4'-0"	2'-0"		3'-0"		5'-0"	20	1'-2"	86
	2'-6"		3'-6"			24		101
4'-6"	2'-0"	16	3'-0"		5'-6"	20	1'-5"	110
	2'-6"		3'-6"			24		124
5'-0"	2'-0"		3'-0"		6'-0"	20	1'-8"	117
	2'-6"		3'-6"			24		132



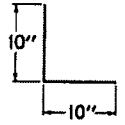
DETAIL OF 8" LID
PLAN VIEW



SECTION A-A

NOTES

① 2'-0" FOR 12", 15", AND 18" OR 2'-6" FOR 24" SLOTTED DRAIN PIPE.
② DIMENSION VARIES DEPENDING UPON LOCATION OF BOX :
GRADE CONDITION = 2'-3"
SAG CONDITION = 4'-11"
3. IN ADDITION TO THE CHARTED STEEL, FOUR L BARS ARE REQUIRED IN THE LID AND ARE INCLUDED IN THE TOTALS.
4. CONCRETE QUANTITIES FOR LID ARE INCLUDED ON "DIMENSIONS AND ESTIMATE OF QUANTITIES FOR D.B.I. TYPE 16". SEE CUR. STD. DWG. RDB-033
5. LID REINFORCING STEEL NOT REQUIRED IN SAG LOCATION.
6. REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE OUTSIDE FACE UNLESS OTHERWISE SHOWN.



L BAR DETAIL

USE WITH CUR. STD. DWGS.:
RDI-200, RDB-014, RDB-030, RDB-031, RDB-033, RDB-034, RDB-035

KENTUCKY
DEPARTMENT OF HIGHWAYS

DROP BOX INLET TYPE 16

(DETAIL & BAR CHART FOR LID)

STANDARD DRAWING NO. RDB-032-03

SUBMITTED _____ DIRECTOR, DIVISION OF DESIGN — DATE 12-1-99

APPROVED _____ STATE HIGHWAY ENGINEER — DATE 12-1-99

DIMENSIONS AND ESTIMATE OF QUANTITIES
(GRADE CONDITION)

INLET SIZE ④			MAX. PIPE DIA.	LOCATION	Z ①	CONCRETE	
NO. ⑥	X	Y				CU. YD. ①②	Q ③
1	2'-3"	2'-0"	12"	X OR Y	2'-2"	0.9	0.3
2			15"		2'-5"	1.0	
3			18"		2'-9"	1.1	
4			21"	X	3'-0"		
5		2'-6"		X OR Y		1.3	
6			24"	Y	3'-3"		
7	2'-6"	2'-0"		X			
8		2'-6"		X OR Y		1.4	
9	3'-0"	2'-0"	27"	X	3'-6"	1.5	
10		2'-6"				1.7	
11	3'-6"	2'-0"	30"		3'-10"	1.8	
12		2'-6"				2.0	0.4
13		2'-0"	33"		4'-1"	1.9	0.3
14		2'-6"				2.0	0.4
15	4'-0"	2'-0"	36"		4'-4"	2.1	
16		2'-6"				2.3	
17	4'-6"	2'-0"	42"		4'-11"	2.5	
18		2'-6"				2.7	
19	5'-0"	2'-0"	48"		5'-5"	2.9	
20		2'-6"				3.2	

DIMENSIONS AND ESTIMATE OF QUANTITIES
(SAG CONDITION)

INLET SIZE ④			MAX. PIPE DIA.	LOCATION	Z ①	CONCRETE	
NO. ⑥	X	Y				CU. YD. ①②	Q ③
21	4'-11"	2'-0"	12"	X OR Y	2'-2"	1.4	0.4
22			15"		2'-5"	1.5	
23			18"		2'-9"	1.7	
24			21"	X	3'-0"	1.8	
25		2'-6"		X OR Y		1.9	
26		2'-0"	24"	X	3'-3"		
27		2'-6"		X OR Y		2.0	
28		2'-0"	27"	X	3'-6"		
29		2'-6"				2.1	
30		2'-0"	30"		3'-10"		
31		2'-6"				2.3	
32		2'-0"	33"		4'-1"	2.2	
33		2'-6"				2.4	
34		2'-0"	36"		4'-4"	2.3	
35		2'-6"				2.5	
36		2'-0"	42"		4'-11"		
37		2'-6"				2.8	
38		2'-0"	48"		5'-5"		
39		2'-6"				3.0	

NOTES

① BASED ON Z AS EQUAL TO D++12" .
② SEE REFERENCE CHART FOR QUANTITIES TO DEDUCT FOR PIPE .
③ Q = CU. YD. PER FOOT INCREASE OR DECREASE WHEN Z VARIES .
④ SEE CUR. STD. DWG. RDB-030 FOR DIMENSIONS.
5. SEE CUR. STD. DWG. RDB-034 AND RDB-035 FOR STEEL REINFORCEMENT IN PIPE CHAMBER AND RISER WHEN H = 8'-0" OR GREATER .
⑥ INLET IS SHOWN ON PLANS AS "DROP BOX INLET TYPE 16". FOLLOWING THIS IS A NUMBER AND A BOX HEIGHT. USE THIS NUMBER WITH THIS CHART .

REFERENCE CHART
(GRADE CONDITION)

DIA. OF PIPE	D.B.I. TYPE 16		CONCRETE TO DEDUCT FOR EACH PIPE
	PIPE ON "X" SIDE OF INLET	PIPE ON "Y" SIDE OF INLET	CUBIC YARDS
0	2'-3"	2'-0"	----
12"			0.1
15"-18"			
21"		2'-6"	
24"	2'-6"		
27"	3'-0"	----	0.2
30"-33"	3'-6"		
36"	4'-0"		0.3
42"	4'-6"		0.4
48"	5'-0"		0.5

REFERENCE CHART
(SAG CONDITION)

DIA. OF PIPE	D.B.I. TYPE 16		CONCRETE TO DEDUCT FOR EACH PIPE
	PIPE ON "X" SIDE OF INLET	PIPE ON "Y" SIDE OF INLET	CUBIC YARDS
0	4'-11"	2'-0"	----
12"			0.1
15"-18"			
21"		2'-6"	
24"			
27"		----	0.2
30"-33"			
36"			0.3
42"			0.4
48"			0.5

USE WITH CUR. STD. DWGS.: RDI-200, RDB-014, RDB-030, RDB-031, RDB-032, RDB-034, RDB-035

KENTUCKY DEPARTMENT OF HIGHWAYS

DROP BOX INLET TYPE 16

(DIMENSIONS & ESTIMATE OF QUANTITIES)

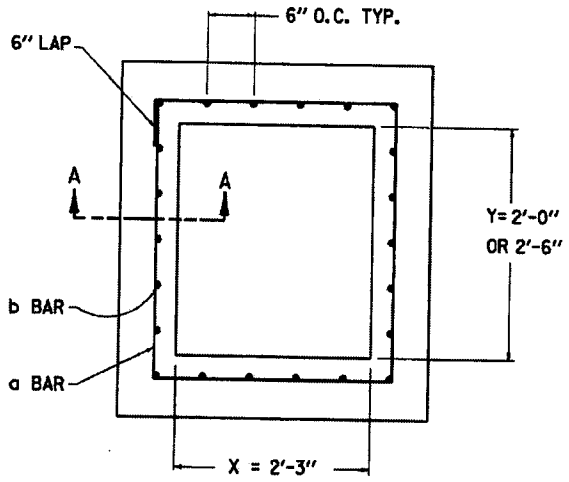
STANDARD DRAWING NO. RDB-033-02

SUBMITTED _____ DIRECTOR, DIVISION OF DESIGN — DATE 12-1-99

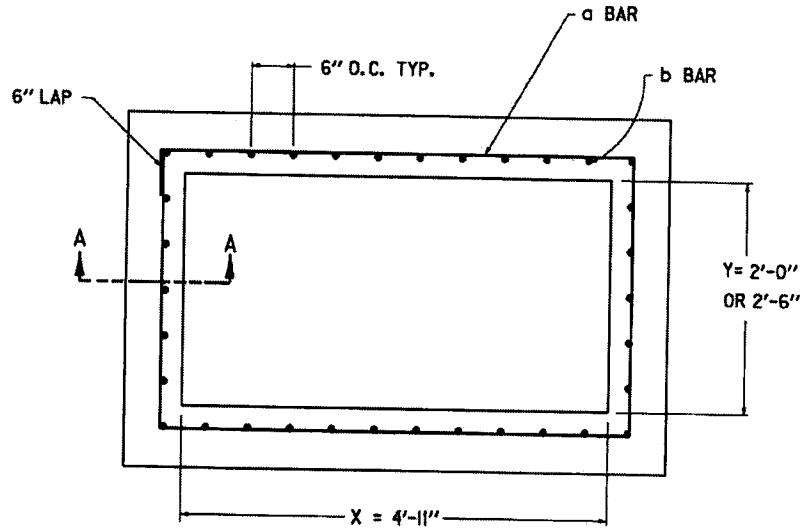
APPROVED _____ STATE HIGHWAY ENGINEER — DATE 12-1-99

ADDITIONAL STEEL REINFORCEMENT REQUIREMENTS

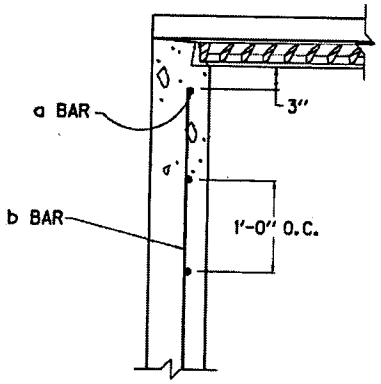
(RISER, H = 8'-0" TO 15'-0", GRADE AND SAG CONDITION)



GRADE CONDITION



SAG CONDITION



SECTION A-A

APPROXIMATE RISER QUANTITIES PER FOOT IN HEIGHT-NO. 5 BARS							
CONDITION	SIZE X	SIZE Y	BAR a QTY.	BAR a LIN. FT.	BAR b QTY.	BAR b LIN. FT.	LBS STEEL
GRADE	2'-3"	2'-0"	1	10'-9"	20	1'-0"	32
		2'-6"	1	11'-6"	22		35
SAG	4'-11"	2'-0"	1	16'-1"	32		50
		2'-6"	1	17'-1"	34		53

USE WITH CUR. STD. DWGS.: RDI-200, RDB-014, RDB-030, RDB-031, RDB-032, RDB-033, RDB-035

KENTUCKY DEPARTMENT OF HIGHWAYS

DROP BOX INLET
TYPE 16
(ADDITIONAL STEEL- RISER)

STANDARD DRAWING NO. RDB-034-03

SUBMITTED: DIRECTOR, DIVISION OF DESIGN — DATE 12-1-99

APPROVED: STATE HIGHWAY ENGINEER — DATE 12-1-99

① ADDITIONAL STEEL REINFORCEMENT FOR PIPE CHAMBER
(H = 8' TO 15', GRADE CONDITION)

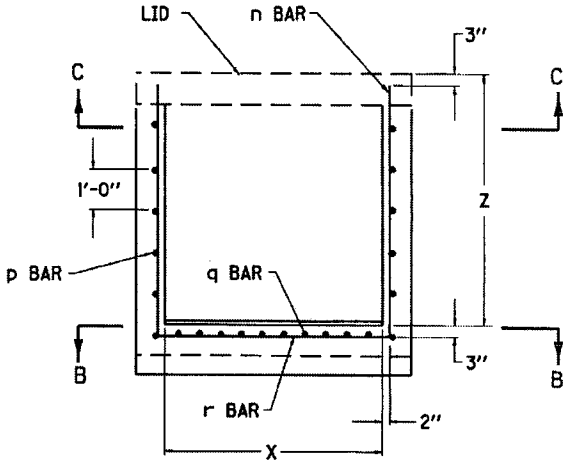
SIZE ②		NO. 5 STEEL BARS									
X	Y	BAR n ③		BAR p ④		BAR q		BAR r		LBS. ⑤	
		QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	TOTAL	⑥
2'-3"	2'-0"	20	6'-0"	6	10'-9"	4	2'-6"	4	2'-9"	214	32
	2'-6"	22			11'-9"		3'-0"	5		238	35
2'-6"	2'-0"				11'-3"	5	2'-6"	4	3'-0"	234	
	2'-6"	24			12'-3"		3'-0"	5		258	38
3'-0"	2'-0"					6	2'-6"	4	3'-6"	257	
	2'-6"	26			13'-3"		3'-0"	5		283	41
3'-6"	2'-0"					7	2'-6"	4	4'-0"	281	
	2'-6"	28			14'-3"		3'-0"	5		307	44
4'-0"	2'-0"					8	2'-6"	4	4'-6"	304	
	2'-6"	30			15'-3"		3'-0"	5		332	47
4'-6"	2'-0"					9	2'-6"	4	5'-0"	328	
	2'-6"	32			16'-3"		3'-0"	5		356	50
5'-0"	2'-0"					10	2'-6"	4	5'-6"	351	
	2'-6"	34			17'-3"		3'-0"	5		381	53

① ADDITIONAL STEEL REINFORCEMENT FOR PIPE CHAMBER
(H = 8' TO 15', SAG CONDITION)

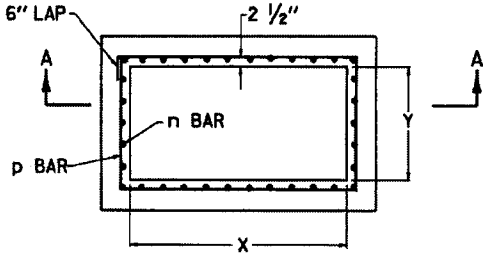
SIZE ②		NO. 5 STEEL BARS									
X	Y	BAR n ③		BAR p ④		BAR q		BAR r		LBS. ⑤	
		QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	TOTAL	⑥
4'-11"	2'-0"	32	6'-0"	6	16'-1"	10	2'-6"	4	5'-5"	350	50
	2'-6"	34			17'-1"		3'-0"	5		379	53

NOTES

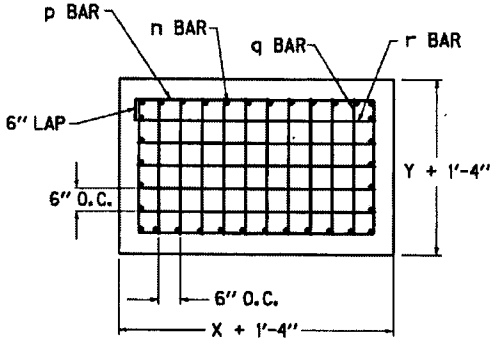
① BASED ON "Z" AS EQUAL TO 6'-0".
② SEE CUR. STD. DWG. RDB-030 FOR LOCATION AND DIMENSIONS.
③ LENGTH OF n BAR IS ALWAYS SAME AS "Z" DIMENSION.
④ ADD OR SUBTRACT ONE p BAR PER EVEN FOOT VARIANCE FROM 6'-0" Z .
⑤ NO DEDUCTIONS HAVE BEEN MADE FOR PIPE .
⑥ ADD OR SUBTRACT LBS. STEEL PER FT. VARIANCE FROM 6'-0" Z .
7. REINFORCEMENT SHALL HAVE A CLEAR DISTANCE OF 2" FROM THE FACE UNLESS OTHERWISE SHOWN .



SECTION A-A



SECTION C-C



SECTION B-B

USE WITH CUR. STD. DWGS.:
RDI-200, RDB-014, RDB-030, RDB-031, RDB-032, RDB-033, RDB-034

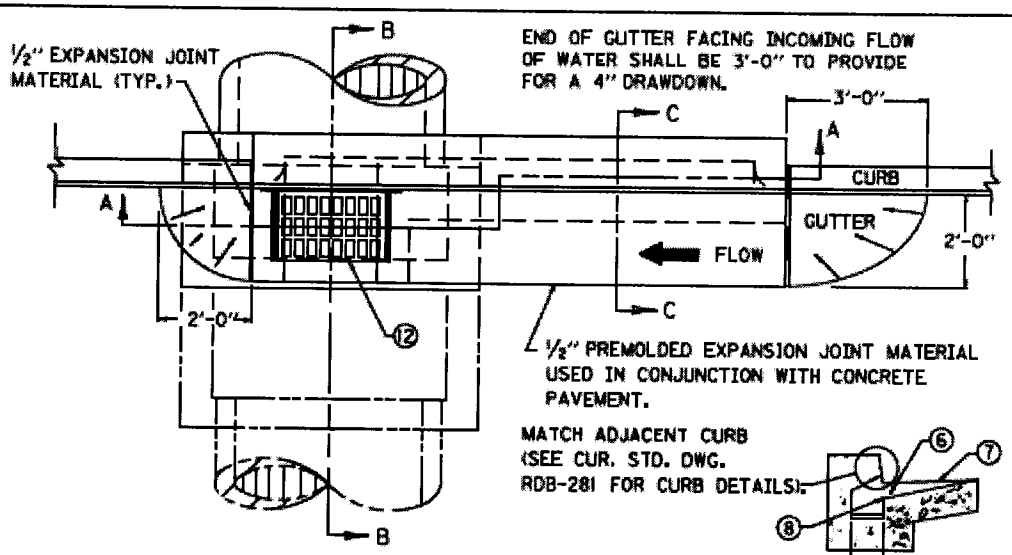
KENTUCKY
DEPARTMENT OF HIGHWAYS

DROP BOX INLET TYPE 16
(ADDITIONAL STEEL- CHAMBER)

STANDARD DRAWING NO. RDB-035-03

SUBMITTED _____ DIRECTOR, Division of Design — DATE 12-1-99

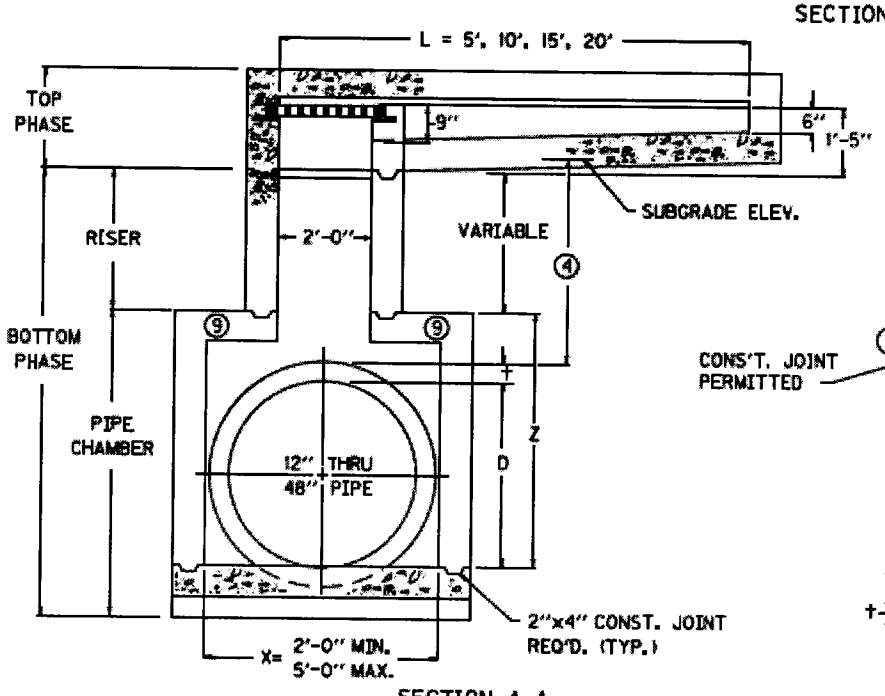
APPROVED _____ STATE Highway Engineer — DATE 12-1-99

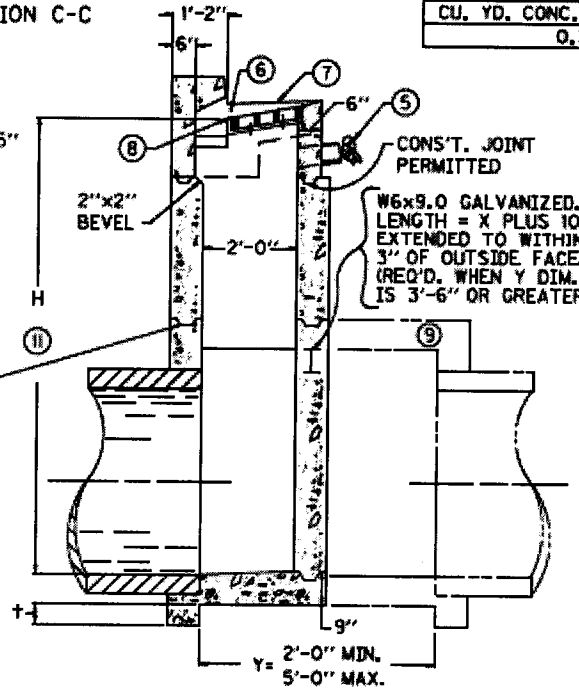


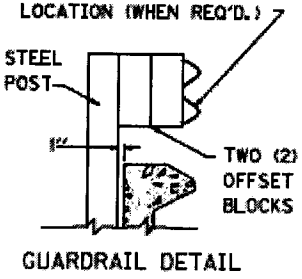
NOTES

1. INLET SHALL BE CONSTRUCTED IN TWO PHASES (BOTTOM AND TOP)
   BID ITEM: CURB BOX INLET TYPE B (Δ)
   Δ (B) = BOTTOM PHASE ONLY
   Δ (T) = TOP PHASE ONLY
   NO SUFFIX INDICATES COMPLETE INLET.
2. SEE CUR. STD. DWGS. RDB-281, RDB-282, RDB-283, RDB-400, RDB-410, AND RDB-420 FOR STEEL PATTERN, DIMENSIONS AND QUANTITIES.
3. ALL WALLS, SLABS AND GUTTERS ARE 8" THICK UNLESS OTHERWISE INDICATED.
4. 24" DESIRED COVER, 12" MINIMUM COVER.
5. SPALLS OR CRUSHED STONE AROUND END OF A 4" OR 6" PIPE FOR SUBGRADE DRAINAGE.
6. 4" MINIMUM DRAWDOWN.
7. GUTTER CROSS SLOPE.
8. FLOW LINE (4" BELOW NORMAL GUTTERLINE ELEVATION).
9. LID MAY BE RAISED OR LOWERED IF APPROVED BY THE ENGINEER.
10. NOTE: "t" IS CONCRETE PIPE WALL THICKNESS OR METAL PIPE CORRUGATION DEPTH.
11. MINIMUM HEIGHT
    H = Z + 1'-4' FOR ALL CURB TYPES
12. SEE CUR. STD. DWG. RDB-282 FOR FRAME AND GRATE DETAIL.

RISER
CU. YD. CONC. PER FT. HT.
0.3







USE WITH CUR. STD. DWGS.:
RDB-281, RDB-282, RDB-283, RDB-400, RDB-410, RDB-420.

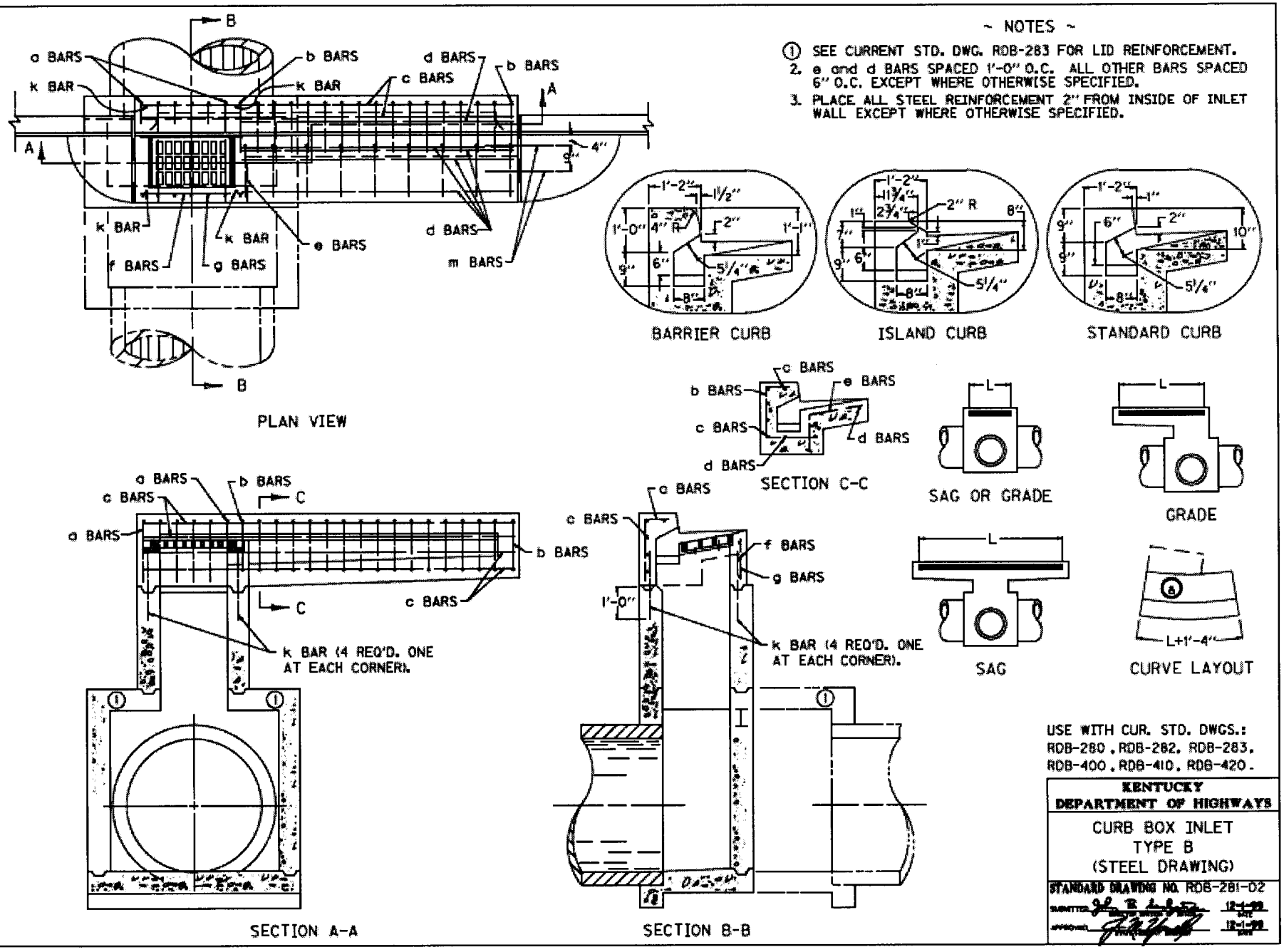
KENTUCKY DEPARTMENT OF HIGHWAYS

CURB BOX INLET TYPE B (DETAIL DRAWING)

STANDARD DRAWING NO. RDB-280-05

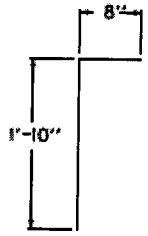
SUBMITTED 11-26-07 DATE

APPROVED 11-26-07 DATE

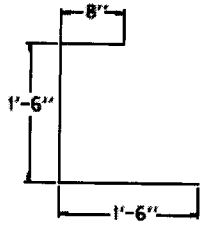

~ NOTES ~
1. SEE CURRENT STD. DWG. RDB-283 FOR LID REINFORCEMENT.
2. e and d BARS SPACED 1'-0" O.C. ALL OTHER BARS SPACED 6" O.C. EXCEPT WHERE OTHERWISE SPECIFIED.
3. PLACE ALL STEEL REINFORCEMENT 2" FROM INSIDE OF INLET WALL EXCEPT WHERE OTHERWISE SPECIFIED.
a BARS
b BARS
c BARS
d BARS
e BARS
f BARS
g BARS
k BAR
m BARS
PLAN VIEW
BARRIER CURB
ISLAND CURB
STANDARD CURB
SECTION C-C
SAG OR GRADE
GRADE
SAG
CURVE LAYOUT
k BAR (4 REQ'D. ONE AT EACH CORNER).
SECTION A-A
SECTION B-B
USE WITH CUR. STD. DWGS.:
RDB-280, RDB-282, RDB-283,
RDB-400, RDB-410, RDB-420.
KENTUCKY DEPARTMENT OF HIGHWAYS
CURB BOX INLET
TYPE B
(STEEL DRAWING)
STANDARD DRAWING NO. RDB-281-02

DIMENSIONS AND ESTIMATE OF QUANTITIES (TOP PHASE)

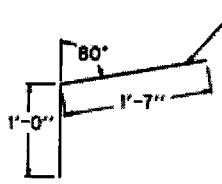
② SIZE NO.		THROAT "L"	CONC.	NO. 5 STEEL BARS																				
				BAR a		BAR b		BAR c		BAR d ④		BAR d ⑤		BAR e		BAR f		BAR g		BAR k ①		BAR m		LBS.
GRADE	SAG	FT.	CU. YD.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	QTY.	LIN. FT.	
1	5	5'-0"	0.8	6	2'-6"	7	3'-7"	5	6'-0"	5	3'-0"	10	1'-6"	4	2'-7"	3	3'-0"	7	1'-2"	4	2'-0"	4	2'-0"	127
2	6	10'-0"	1.5			17			11'-0"		8'-0"		4'-0"	10										233
3	7	15'-0"	2.1			27			16'-0"		13'-0"		6'-6"	14										333
4	8	20'-0"	2.8			37			21'-0"		18'-0"		9'-0"	20										439



a BAR



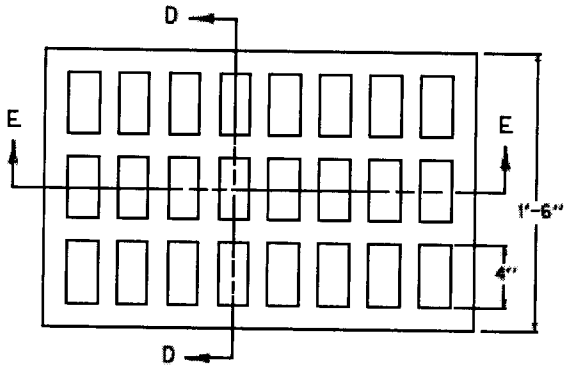
b BAR



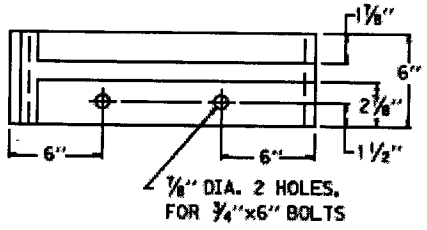
e BAR

~NOTES~

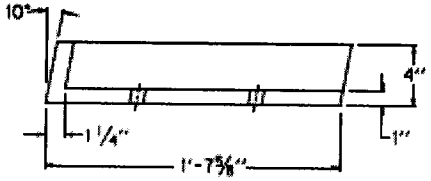
① USE k BARS ONLY IN CONJUNCTION WITH THE RISER.
② INLETS ARE SHOWN ON PLANS AS "CURB BOX INLET TYPE B". FOLLOWING THIS ON THE PLANS ARE TWO NUMBERS AND A BOX HEIGHT. USE SECOND NUMBER WITH THIS CHART.
3. MANUFACTURES' DRAFT WILL BE ACCEPTED ON ALL CASTINGS.
④ THIS SET OF d BARS ARE TO BE USED ONLY WHEN THE BOX INLET IS BUILT ON GRADE.
⑤ THIS SET OF d BARS ARE TO BE USED ONLY WHEN THE BOX INLET IS BUILT IN A SAG.
6. c, d, f, g, k, AND m BARS ARE ALL STRAIGHT BARS.
7. THE ENGINEER MAY REQUIRE ADDITIONAL REINFORCEMENT, TO ELIMINATE SETTLEMENT OF ADJOINING SIDEWALK WHEN APPLICABLE. THIS WORK SHALL BE INCIDENTAL TO THE COST OF THE CURB BOX.



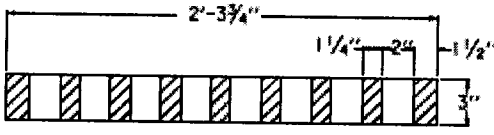
GRATE PLAN VIEW



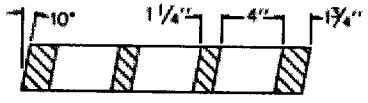
FRAME PLAN VIEW
(LEFT HALF)



FRAME ELEVATION



SECTION E-E



SECTION D-D

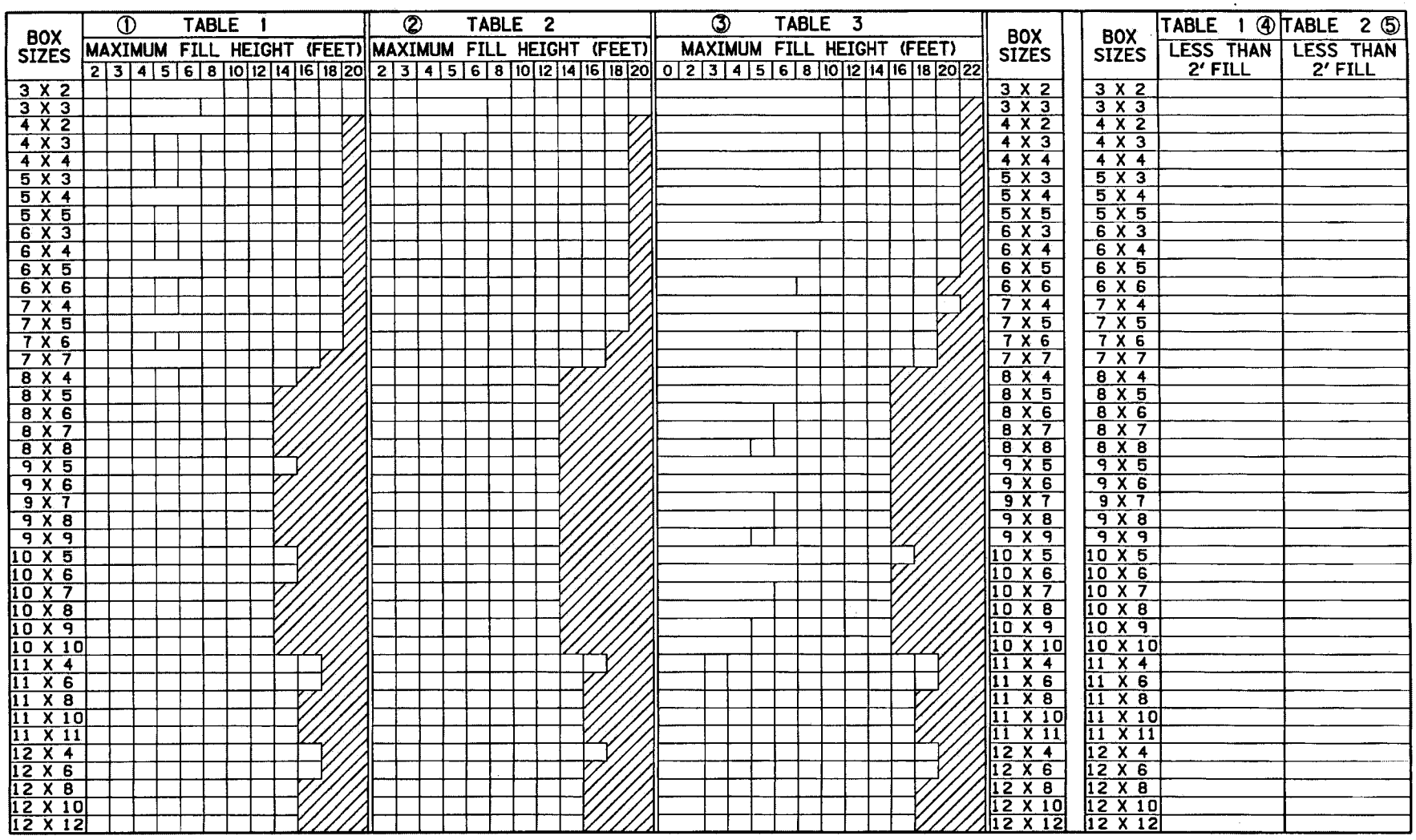
USE WITH CUR. STD. DWGS.
RDB-280, RDB-281, RDB-283
RDB-400, RDB-410, RDB-420

KENTUCKY
DEPARTMENT OF HIGHWAYS

CURB BOX INLET
TYPE B
(TOP PHASE TABLES)

STANDARD DRAWING NO. RDB-282-03

SUBMITTED 12-1-99 DATE
APPROVED 12-1-99 DATE



~ NOTES ~

① HS 25 LIVE LOAD + EARTH DEAD LOAD, AASHTO M259 OR ASTM C789.
② INTERSTATE LIVE LOAD + EARTH DEAD LOAD, AASHTO M259 OR ASTM C789.
③ EARTH DEAD LOAD, AASHTO M259 OR ASTM C789.
④ HS 20 LOADING, AASHTO M273 OR ASTM C850.
⑤ INTERSTATE LOADING, AASHTO M273 OR ASTM C850.

KENTUCKY
DEPARTMENT OF HIGHWAYS

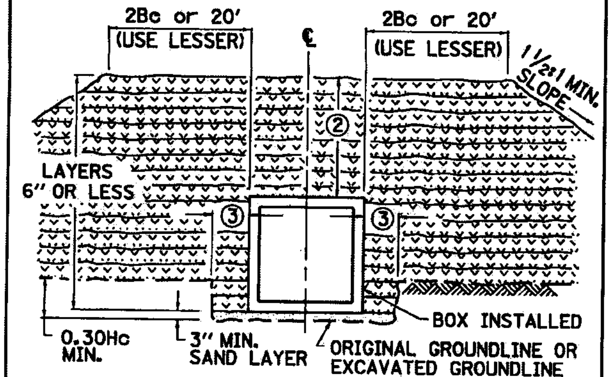
FILL HEIGHTS FOR PRECAST REINF. CONC. BOX CULVERTS

STANDARD DRAWING NO. RDI-100-04

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 11-21-07 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 11-21-07 DATE

POSITIVE PROJECTION



a. IF ROCK FOUNDATION IS ENCOUNTERED, GO TO PARTS b. AND c. OF STEP 3 ZERO PROJECTION AND THEN PROCEED WITH PARTS b. AND c. OF THIS STEP.

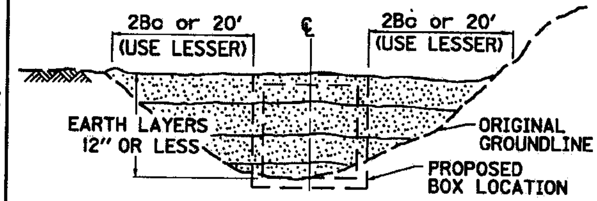
b. UNIFORMLY COMPACT SAND IN TRENCH WITH APPROXIMATELY 3" OF SAND BELOW BOTTOM OF BOX. LEVEL COMPACTED SAND WITH A TEMPLATE TO INSURE UNIFORM SUPPORT THROUGHOUT ENTIRE WIDTH AND LENGTH.

c. COMPACT SELECTED FINE SOIL TO ELEVATION ② IN LAYERS 6" OR LESS TO MEET SAME DENSITY REQUIREMENTS SPECIFIED FOR ADJACENT EMBANKMENT.

② 48" REQUIRED, IF FILL HEIGHT PERMITS.

③ 0.3 Bc OR 1'-0" (USE MAX.)

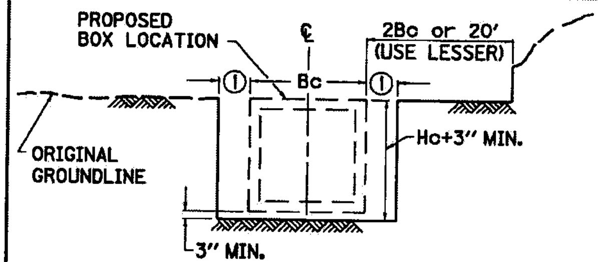
STEP 1 ZERO PROJECTION



a. IF ORIGINAL GROUNDLINE IS AT OR ABOVE THE TOP OF PROPOSED BOX FOR WIDTH OF 2Bc OR 20' (WHICHEVER IS LESS) ON EACH SIDE OF THE BOX, GO DIRECTLY TO STEP 2.

b. IF ORIGINAL GROUNDLINE IS BELOW THE TOP OF PROPOSED BOX, COMPACT EMBANKMENT IN LAYERS 12" OR LESS TO ELEVATION AND WIDTH SHOWN. MEET DENSITY REQUIREMENTS FOR ADJACENT EMBANKMENT.

STEP 2 ZERO PROJECTION



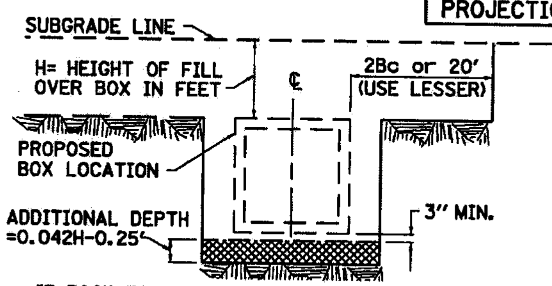
a. EXCAVATE TO TOP OF PROPOSED BOX A WIDTH OF 2Bc OR 20' (USE LESSER) ON EACH SIDE OF BOX.

b. EXCAVATE TRENCH TO WIDTH AND DEPTH SHOWN.

① AT LEAST 12", BUT NOT MORE THAN 15".

ROCK FOUNDATION DETAILS

STEP 3 ZERO PROJECTION

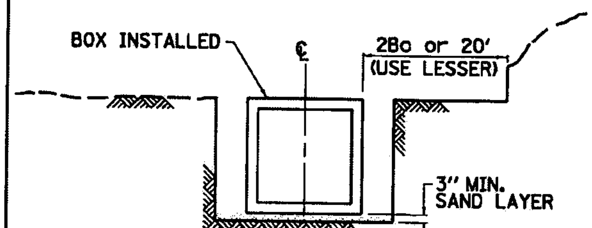


a. IF ROCK FOUNDATION IS NOT ENCOUNTERED, GO DIRECTLY TO STEP 4.

b. IF ROCK FOUNDATION IS ENCOUNTERED, EXCAVATE ADDITIONAL TRENCH DEPTH USING FORMULA GIVEN. THIS ADDITIONAL DEPTH SHALL ALWAYS BE AT LEAST 0.75' AND WILL NOT BE REQUIRED TO BE MORE THAN 0.75HC-0.25', REGARDLESS OF ABOVE FORMULA RESULT.

c. BACKFILL ADDITIONAL EXCAVATED AREA WITH EARTH CUSHION OF FIRMLY COMPACTED FINE SOILS IN LAYERS 6" OR LESS.

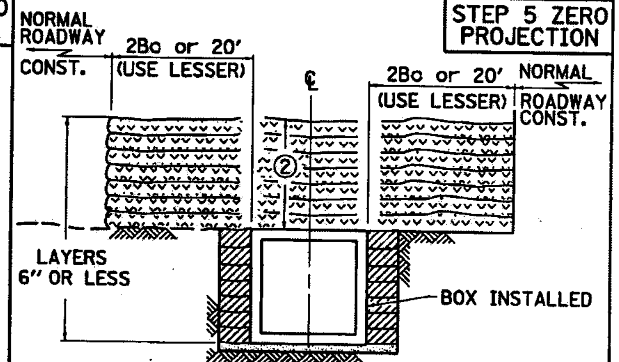
STEP 4 ZERO PROJECTION



a. UNIFORMLY COMPACT SAND IN TRENCH WITH APPROXIMATELY 3" OF SAND BELOW BOTTOM OF BOX. LEVEL COMPACTED SAND WITH A TEMPLATE TO INSURE UNIFORM SUPPORT THROUGHOUT ENTIRE WIDTH AND LENGTH.

b. INSTALL BOX AT CORRECT ALIGNMENT AND ELEVATION. RECOMPACT ANY LOOSE SAND DISTURBED DURING INSTALLATION.

STEP 5 ZERO PROJECTION



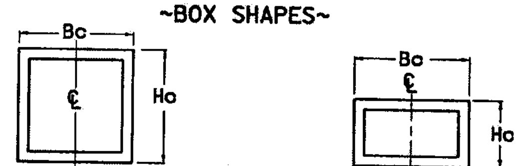
a. COMPACT SELECTED FINE SOIL, NATURAL SAND, OR NO. 10 COARSE AGGREGATE IN LAYERS 6" OR LESS TO TOP OF THE BOX. THEN COMPACT SELECTED FINE SOIL TO ELEVATION ② ABOVE TOP OF BOX. MEET DENSITY REQUIREMENTS FOR ADJACENT EMBANKMENT.

b. PROCEED WITH NORMAL ROADWAY CONSTRUCTION.

② 48" REQUIRED, IF FILL HEIGHT PERMITS.

NOTE: THE CONTRACTOR HAS THE OPTION TO, EITHER BED AND BACKFILL THE PRECAST BOX IN POSITIVE PROJECTION AS DESCRIBED ABOVE, OR MAY BED AND BACKFILL TO ZERO PROJECTION AS DETAILED AND DESCRIBED IN STEPS 1 THRU 5. IN EITHER CASE PARTS b. AND c. OF STEP 3 ZERO PROJECTION MUST BE PERFORMED IN THE EVENT ROCK FOUNDATION IS ENCOUNTERED.

~BOX SHAPES~



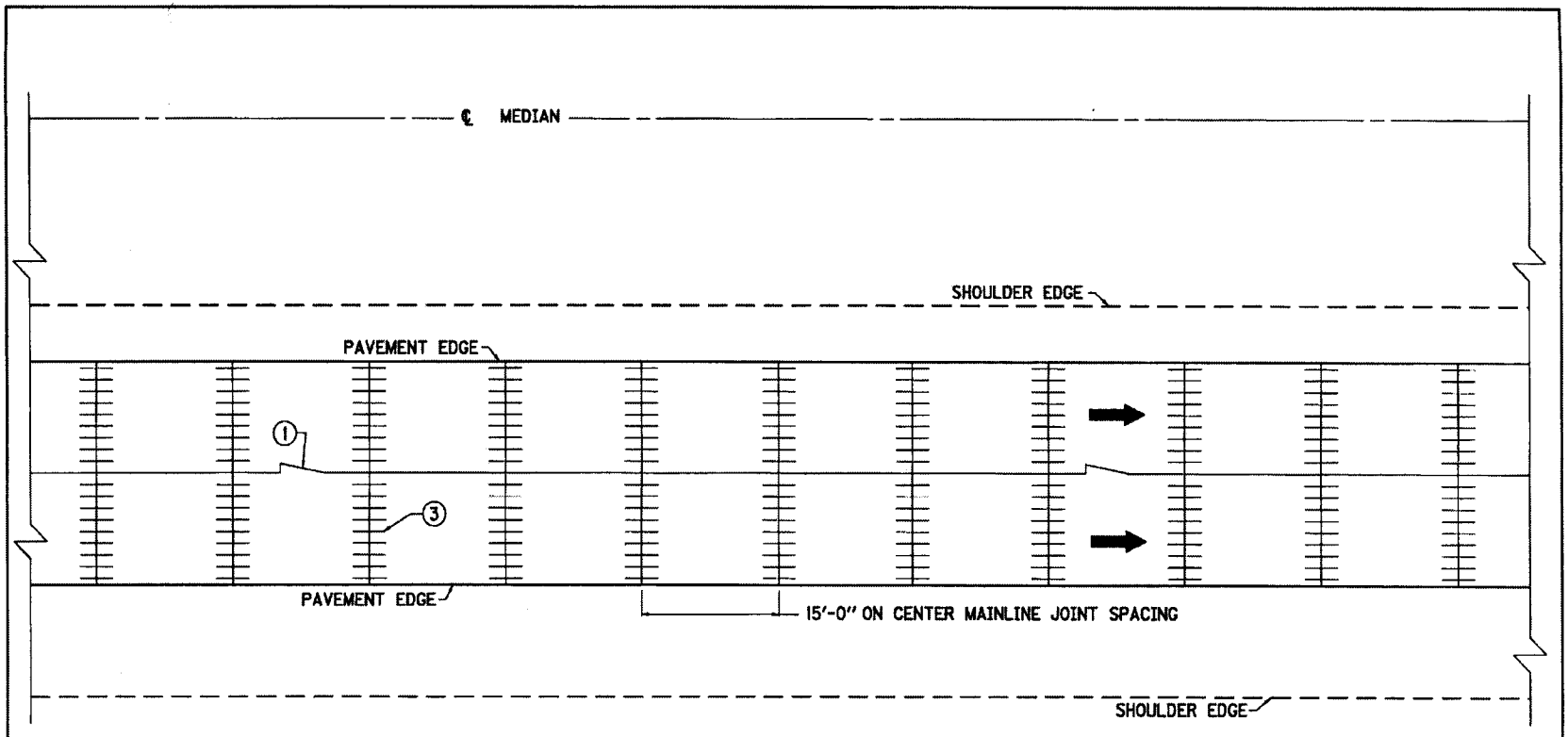
KENTUCKY
DEPARTMENT OF HIGHWAYS

BEDDING FOR PRECAST BOX CULVERTS, SEWERS, STORM DRAINS, AND THEIR COMBINATIONS

STANDARD DRAWING NO. RDI-120-03

SUBMITTED ____ DIRECTOR DIVISION OF DESIGN 12-1-99 DATE

APPROVED ____ STATE HIGHWAY ENGINEER 12-1-99 DATE



PLAN VIEW

NOTES

JOINTS

TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED 15'-0" ON CENTER AND SAWED TO A MINIMUM DEPTH OF ONE THIRD OF THE PAVEMENT THICKNESS (T/3) OR 4" WHICHEVER IS LESS. ALL TRANSVERSE CONTRACTION AND TRANSVERSE EXPANSION JOINTS SHALL REQUIRE LOAD TRANSFER ASSEMBLIES AS DETAILED ON THE PLANS OR STANDARD DRAWINGS.

JOINT SPACING AND TYPE, AT BRIDGE ENDS, SHALL BE REQUIRED AS SHOWN ON THE PLANS OR CURRENT STANDARD DRAWING RPS-010.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 501.03.17.

(1)(3) SEE CURRENT STANDARD DRAWING RPS-010 FOR JOINT SYMBOLS AND DETAILS.

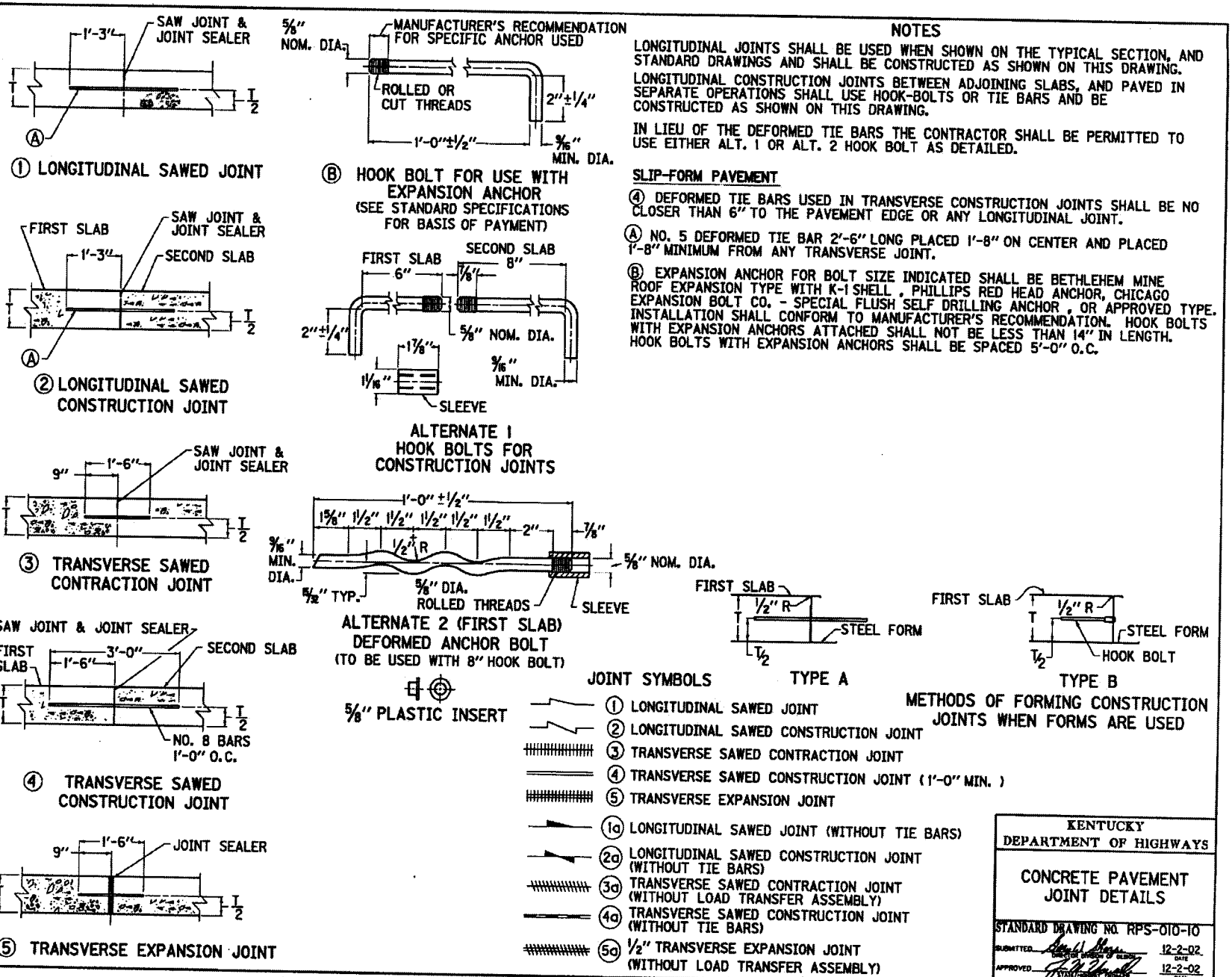
KENTUCKY
DEPARTMENT OF HIGHWAYS

JOINTED PLAIN
CONCRETE PAVEMENT

STANDARD DRAWING NO. RPN-015-04

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



① LONGITUDINAL SAWED JOINT

Ⓑ HOOK BOLT FOR USE WITH EXPANSION ANCHOR
(SEE STANDARD SPECIFICATIONS FOR BASIS OF PAYMENT)

② LONGITUDINAL SAWED CONSTRUCTION JOINT

ALTERNATE 1
HOOK BOLTS FOR CONSTRUCTION JOINTS

③ TRANSVERSE SAWED CONTRACTION JOINT

ALTERNATE 2 (FIRST SLAB)
DEFORMED ANCHOR BOLT
(TO BE USED WITH 8" HOOK BOLT)

5/8" PLASTIC INSERT

④ TRANSVERSE SAWED CONSTRUCTION JOINT

⑤ TRANSVERSE EXPANSION JOINT

NOTES

LONGITUDINAL JOINTS SHALL BE USED WHEN SHOWN ON THE TYPICAL SECTION, AND STANDARD DRAWINGS AND SHALL BE CONSTRUCTED AS SHOWN ON THIS DRAWING.

LONGITUDINAL CONSTRUCTION JOINTS BETWEEN ADJOINING SLABS, AND PAVED IN SEPARATE OPERATIONS SHALL USE HOOK-BOLTS OR TIE BARS AND BE CONSTRUCTED AS SHOWN ON THIS DRAWING.

IN LIEU OF THE DEFORMED TIE BARS THE CONTRACTOR SHALL BE PERMITTED TO USE EITHER ALT. 1 OR ALT. 2 HOOK BOLT AS DETAILED.

SLIP-FORM PAVEMENT

④ DEFORMED TIE BARS USED IN TRANSVERSE CONSTRUCTION JOINTS SHALL BE NO CLOSER THAN 6" TO THE PAVEMENT EDGE OR ANY LONGITUDINAL JOINT.

Ⓐ NO. 5 DEFORMED TIE BAR 2'-6" LONG PLACED 1'-8" ON CENTER AND PLACED 1'-8" MINIMUM FROM ANY TRANSVERSE JOINT.

Ⓑ EXPANSION ANCHOR FOR BOLT SIZE INDICATED SHALL BE BETHLEHEM MINE ROOF EXPANSION TYPE WITH K-1 SHELL , PHILLIPS RED HEAD ANCHOR, CHICAGO EXPANSION BOLT CO. - SPECIAL FLUSH SELF DRILLING ANCHOR , OR APPROVED TYPE. INSTALLATION SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION. HOOK BOLTS WITH EXPANSION ANCHORS ATTACHED SHALL NOT BE LESS THAN 14" IN LENGTH. HOOK BOLTS WITH EXPANSION ANCHORS SHALL BE SPACED 5'-0" O.C.

JOINT SYMBOLS

① LONGITUDINAL SAWED JOINT
② LONGITUDINAL SAWED CONSTRUCTION JOINT
③ TRANSVERSE SAWED CONTRACTION JOINT
④ TRANSVERSE SAWED CONSTRUCTION JOINT (1'-0" MIN.)
⑤ TRANSVERSE EXPANSION JOINT
1a LONGITUDINAL SAWED JOINT (WITHOUT TIE BARS)
2a LONGITUDINAL SAWED CONSTRUCTION JOINT (WITHOUT TIE BARS)
3a TRANSVERSE SAWED CONTRACTION JOINT (WITHOUT LOAD TRANSFER ASSEMBLY)
4a TRANSVERSE SAWED CONSTRUCTION JOINT (WITHOUT TIE BARS)
5a 1/2" TRANSVERSE EXPANSION JOINT (WITHOUT LOAD TRANSFER ASSEMBLY)

TYPE A

TYPE B

METHODS OF FORMING CONSTRUCTION JOINTS WHEN FORMS ARE USED

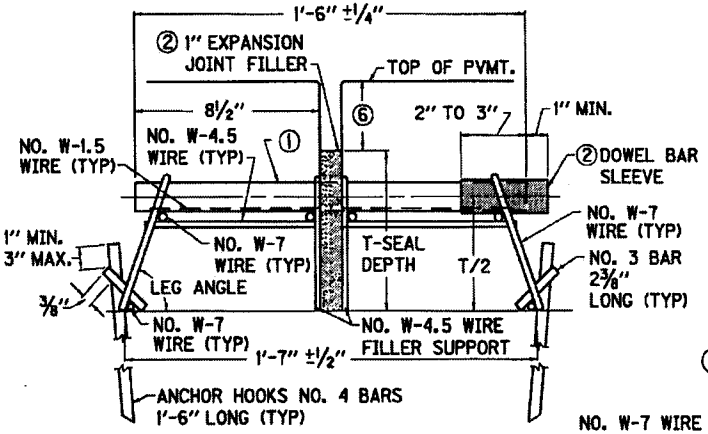
KENTUCKY DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT JOINT DETAILS

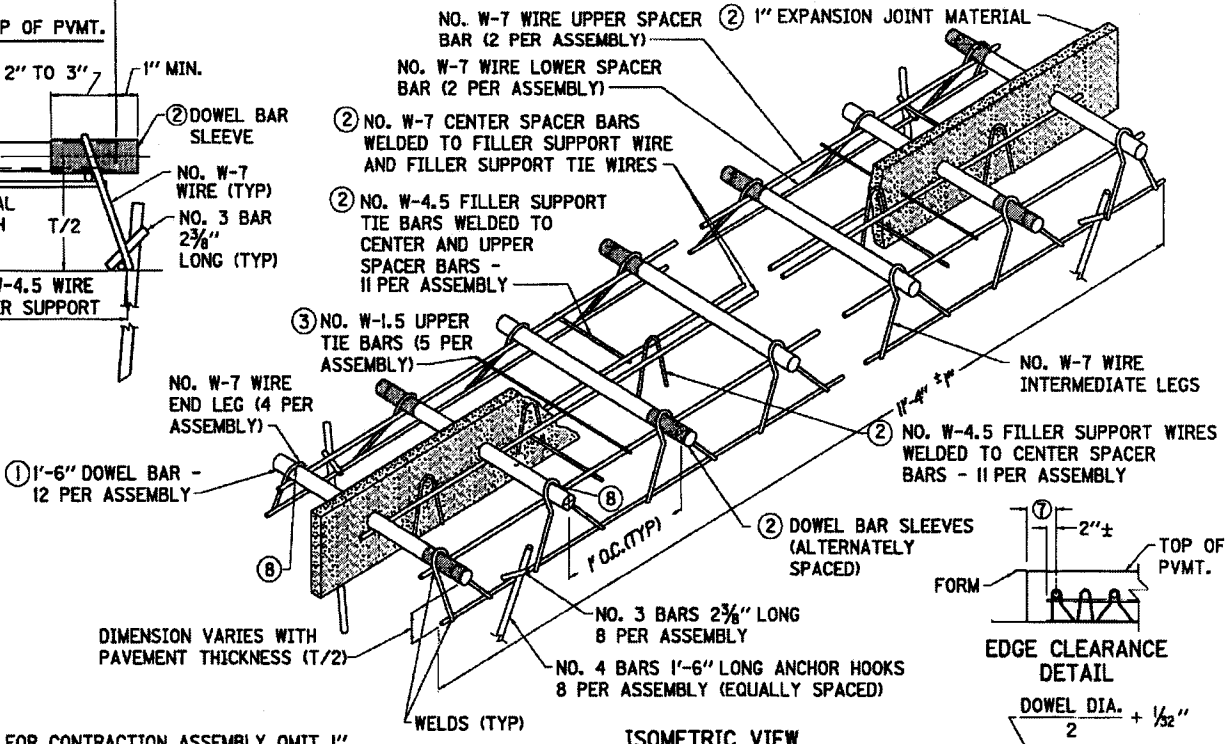
STANDARD DRAWING NO. RPS-010-10

SUBMITTED _____ DIRECTOR DIVISION OF BLDGS. 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



END ELEVATION



ISOMETRIC VIEW

EDGE CLEARANCE DETAIL

NOTES

① DOWEL BAR SIZES

PAVEMENT THICKNESS						
8"	9"	10"	11"	12"	13"	14"
BAR DIAMETER						
1 1/4"			1 1/2"		1 3/4"	
LEG ANGLES +/- 3 DEGREES						
63	63	63	70	70	70	70

② EXPANSION ASSEMBLY IS ILLUSTRATED: FOR CONTRACTION ASSEMBLY OMIT 1" EXPANSION JOINT MATERIAL, NO. W-7 CENTER SPACER BARS, NO. W-4.5 FILLER SUPPORT WIRES, FILLER TIE BARS, AND DOWEL BAR SLEEVES.

③ NO. W-1.5 UPPER TIE BARS WELDED TO UPPER SPACER BARS CUT AFTER FIRST CONCRETE PLACEMENT.

④ FOR END LEGS, BEND WIRE AS SHOWN BY PHANTOM LINES IN INTERMEDIATE LEG DETAIL.

⑤ REFERENCE POINTS SHALL BE REQUIRED ON EACH SIDE OF THE LOAD TRANSFER ASSEMBLY, IN ORDER TO LOCATE THE INTENDED SAWED JOINT AFTER PAVING. ALL SAWING SHALL BE ACCURATELY CONTROLLED TO THE CENTERLINE OF THE LOAD TRANSFER ASSEMBLIES. LONGITUDINAL ORIENTATION OF DOWEL BARS SHALL BE SUCH THAT ALL DOWEL BARS ARE PARALLEL WITH THE CENTERLINE OF EACH PAVING LANE.

⑥ SEE APPLICABLE CURRENT STD. DWG. RPX-010 OR RPX-020 FOR SEAL DEPTH.

⑦ 4 1/2" MIN. AND 10 1/2" MAX. FOR VARIABLE SLAB WIDTH. 6" FOR UNIFORM OR STD. SLAB WIDTH. LOCATION AND SPACING SEE APPLICABLE PAVEMENT STANDARD DRAWINGS.

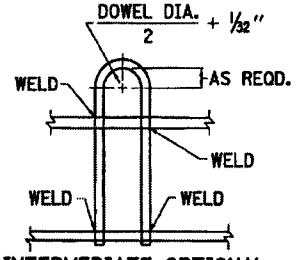
⑧ WELD EITHER NO. W-7 UPPER SPACER BAR OR LEG SUPPORT TO ALTERNATE ENDS OF DOWEL BARS AS TYPICALLY SHOWN.

9. DOWEL ENDS SHALL NOT VARY MORE THAN 1/4" FROM A STRAIGHT LINE.

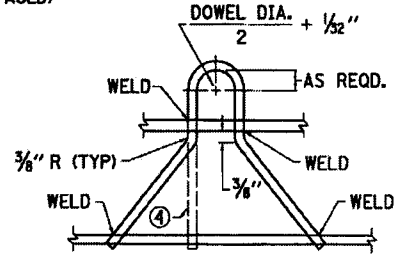
10. DOWELS SHALL BE PARALLEL WITH BASE, WITH A TOLERANCE OF 1/4".

11. EPOXY SHALL BE CLEANED OFF TO BARE METAL BEFORE WELDING DOWEL TO WIRE.

12. "U" LEG OR "A" LEG ARE ACCEPTABLE ALTERNATES PROVIDING MATCHED LEGS ARE SUPPLIED.



INTERMEDIATE OPTIONAL "U" LEG DETAIL



INTERMEDIATE OPTIONAL "A" LEG DETAIL

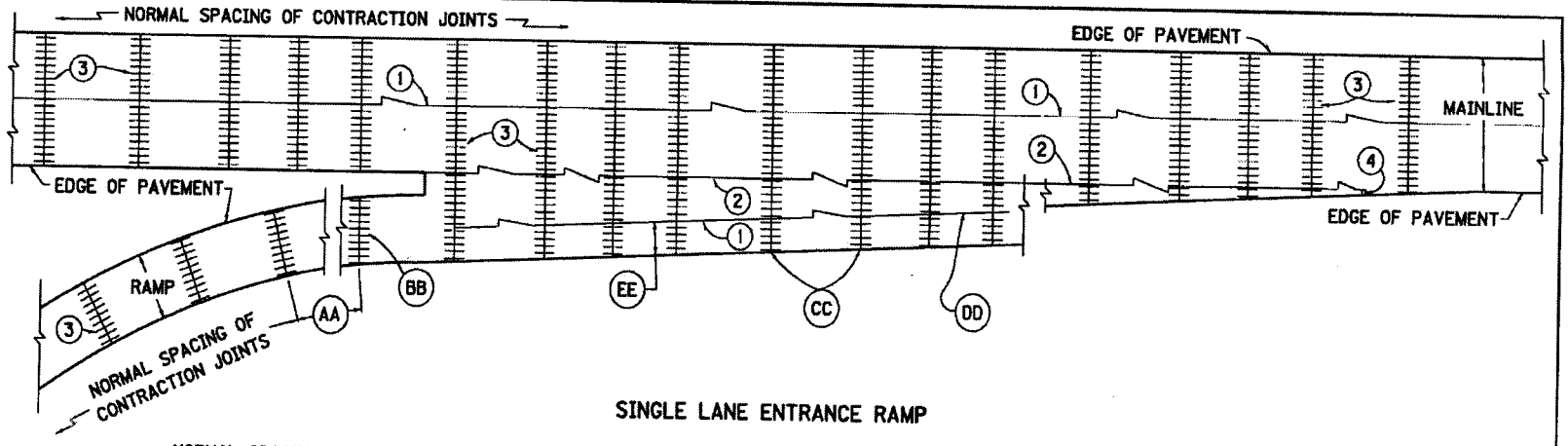
KENTUCKY DEPARTMENT OF HIGHWAYS

EXPANSION AND CONTRACTION JOINT LOAD TRANSFER ASSEMBLIES

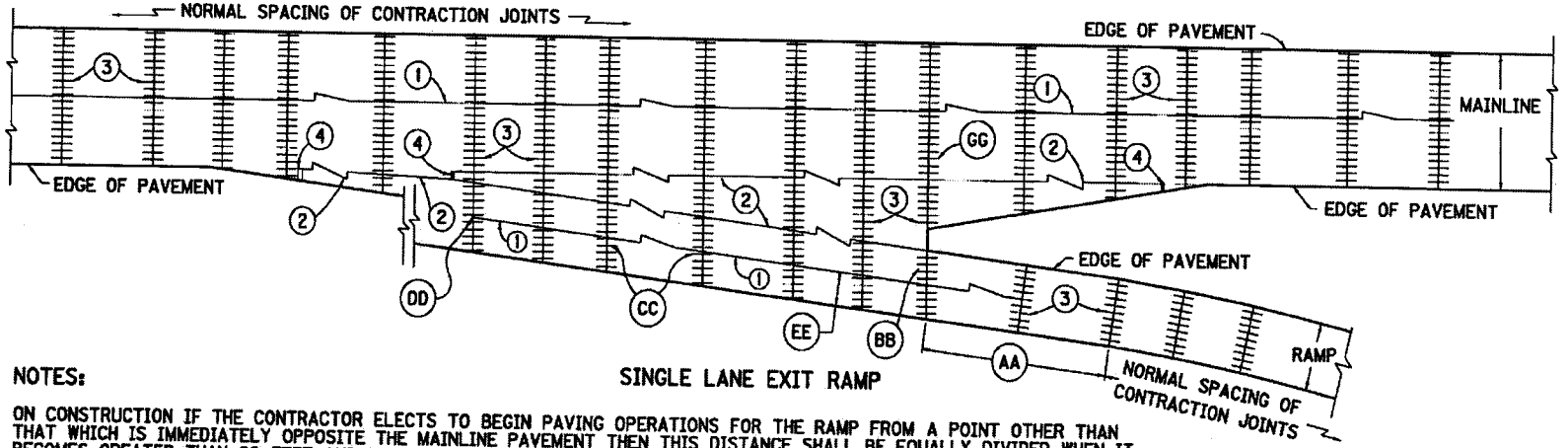
STANDARD DRAWING NO. RPS-020-13

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 11-21-07 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 11-21-07 DATE



SINGLE LANE ENTRANCE RAMP



SINGLE LANE EXIT RAMP

NOTES:

(AA) ON CONSTRUCTION IF THE CONTRACTOR ELECTS TO BEGIN PAVING OPERATIONS FOR THE RAMP FROM A POINT OTHER THAN THAT WHICH IS IMMEDIATELY OPPOSITE THE MAINLINE PAVEMENT THEN THIS DISTANCE SHALL BE EQUALLY DIVIDED WHEN IT BECOMES GREATER THAN 20 FEET AND LESS THAN 40 FEET.

(BB) THIS CONTRACTION JOINT IN THE RAMP SHALL ALWAYS BE OPPOSITE THE CONTRACTION JOINT IN THE MAINLINE PAVEMENT.

(CC) ALL CONTRACTION JOINTS IN THE RAMP IMMEDIATELY OPPOSITE THE MAINLINE PAVEMENT SHALL BE A CONTINUATION OF THE JOINTS IN THE MAINLINE PAVEMENT.

(DD) LONGITUDINAL SAWED JOINT SHALL END AT THE NEAREST CONTRACTION JOINT, WHERE THE OVERALL WIDTH OF THE RAMP IS A MAXIMUM OF 16 FEET.

(EE) THIS DISTANCE SHALL BE EQUAL TO ½ THE NORMAL RAMP SECTION.

FF. LONGITUDINAL SAWED JOINTS AT CENTERLINE SHALL BE REQUIRED FOR ALL RAMPS AND LOOP WIDTHS GREATER THAN 16 FEET.

(GG) THIS CONTRACTION JOINT SHALL ALWAYS BE PLACED OPPOSITE THE NOSE OF THE RAMP. THE TWO CONTRACTION JOINTS IMMEDIATELY PRECEEDING THIS JOINT, DEPENDING ON THE DIRECTION OF PAVING OPERATIONS, SHALL BE EQUALLY DIVIDED, PROVIDED THE SPACING DOES NOT EXCEED THE NORMAL SPACING. SHOULD SPACING BE GREATER THAN NORMAL, AN EXTRA JOINT SHALL BE ADDED AND THE DISTANCE EQUALLY DIVIDED. THE JOINT IMMEDIATELY FOLLOWING THE JOINT THAT IS PLACED OPPOSITE THE RAMP NOSE SHALL BE NORMALLY SPACED.

HH. SEE CURRENT STANDARD DRAWING RPS-010 FOR JOINT SYMBOLS AND DETAILS.

II. NORMAL SPACING OF CONTRACTION JOINTS INDICATED ON THIS DRAWING ARE TO BE IN ACCORDANCE WITH SPACING INDICATED ON CURRENT STANDARD DRAWING RPN-015 .

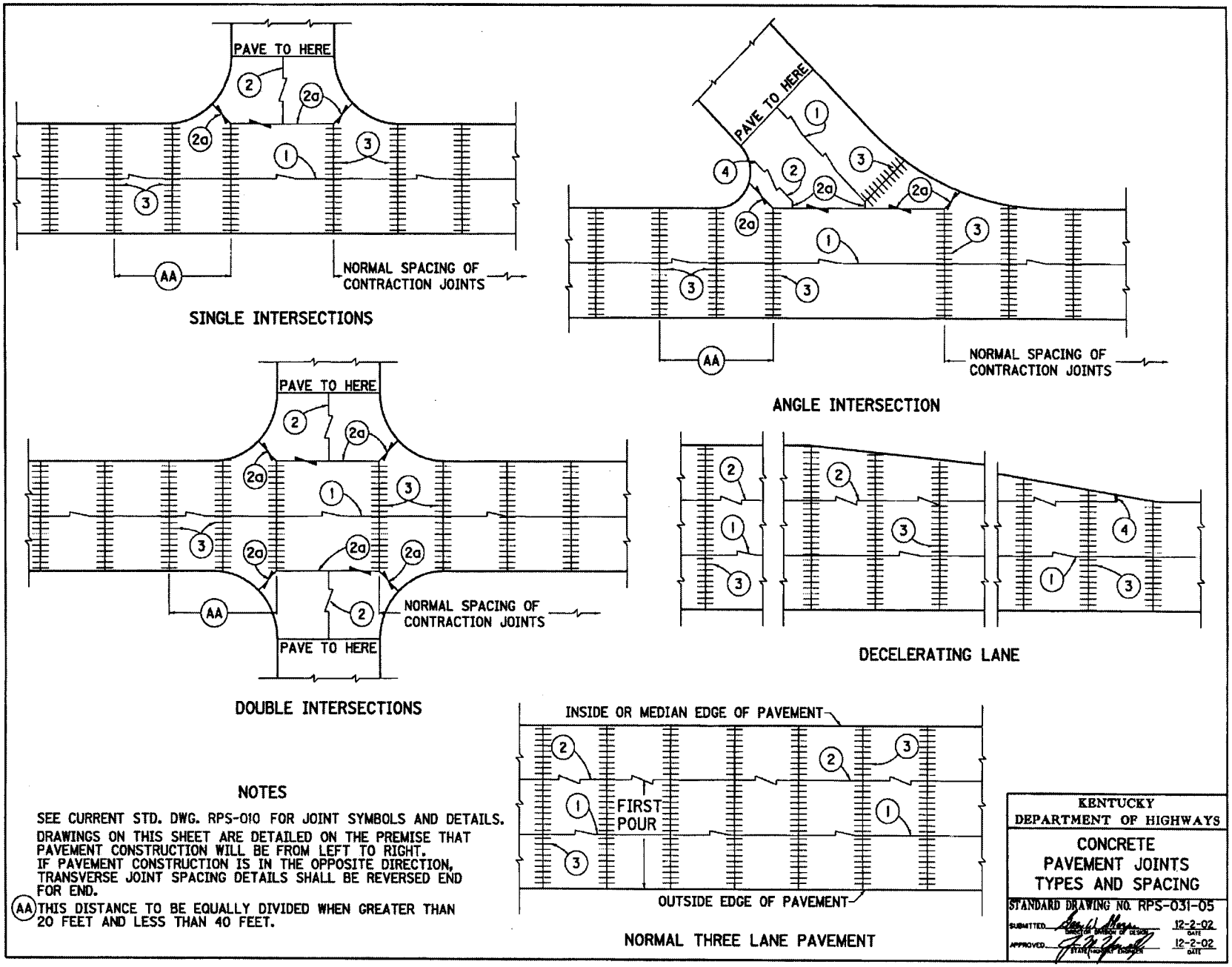
KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE
PAVEMENT JOINTS
TYPES AND SPACING

STANDARD DRAWING NO. RPS-030-05

SUBMITTED _____ 12-2-02
DIRECTOR DIVISION OF DESIGN — DATE

APPROVED _____ 12-2-02
STATE HIGHWAY ENGINEER — DATE


PAVE TO HERE
2
2a
2a
1
3
3
AA
NORMAL SPACING OF CONTRACTION JOINTS
SINGLE INTERSECTIONS
PAVE TO HERE
1
4
2
3
2a
2a
2a
3
1
3
3
AA
NORMAL SPACING OF CONTRACTION JOINTS
ANGLE INTERSECTION
PAVE TO HERE
2
2a
2a
1
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3
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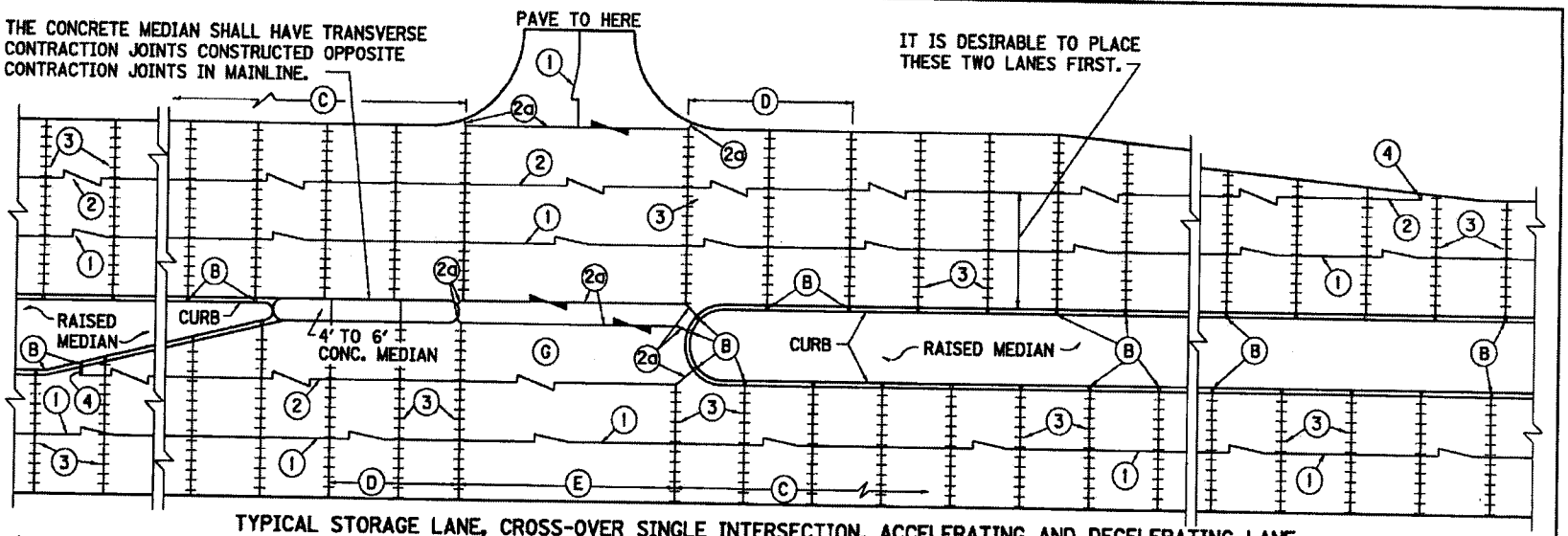
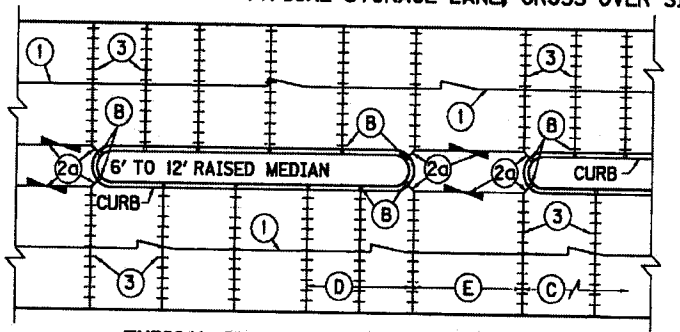
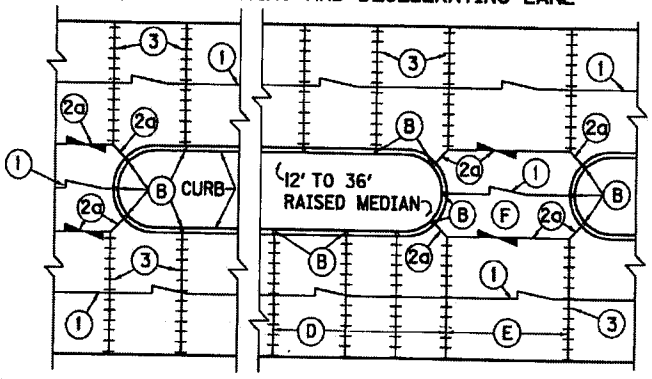
2a
AA
2
NORMAL SPACING OF CONTRACTION JOINTS
PAVE TO HERE
DOUBLE INTERSECTIONS
2
2
1
3
3
1
3
4
1
3
DECELERATING LANE
INSIDE OR MEDIAN EDGE OF PAVEMENT
2
3
2
1
FIRST POUR
1
3
OUTSIDE EDGE OF PAVEMENT
NORMAL THREE LANE PAVEMENT
NOTES
SEE CURRENT STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAILS.
DRAWINGS ON THIS SHEET ARE DETAILED ON THE PREMISE THAT PAVEMENT CONSTRUCTION WILL BE FROM LEFT TO RIGHT. IF PAVEMENT CONSTRUCTION IS IN THE OPPOSITE DIRECTION, TRANSVERSE JOINT SPACING DETAILS SHALL BE REVERSED END FOR END.
(AA) THIS DISTANCE TO BE EQUALLY DIVIDED WHEN GREATER THAN 20 FEET AND LESS THAN 40 FEET.
KENTUCKY DEPARTMENT OF HIGHWAYS
CONCRETE PAVEMENT JOINTS TYPES AND SPACING
STANDARD DRAWING NO. RPS-031-05
SUBMITTED
DIRECTOR DIVISION OF DESIGN
12-2-02
DATE
APPROVED
STATE HIGHWAY ENGINEER
12-2-02
DATE



TYPICAL STORAGE LANE, CROSS-OVER SINGLE INTERSECTION, ACCELERATING AND DECELERATING LANE



TYPICAL DIVIDED PAVEMENT WITH NARROW RAISED MEDIAN AND CROSS-OVER



TYPICAL DIVIDED PAVEMENT WITH WIDE RAISED MEDIAN AND CROSS-OVER

NOTES:

SEE CURRENT STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAIL.

ALL INTEGRAL CURBS CONSTRUCTED WITH CONCRETE BASE OR PAVEMENT SHALL HAVE JOINTS COINCIDING WITH THE TRANSVERSE JOINTS AND OTHER JOINTS SHOWN ON THIS STANDARD DRAWING. THE JOINTS SHALL BE FILLED WITH ½" PREMOLDED EXPANSION JOINT FILLER, CUT TO THE REQUIRED SECTION.

(B) ½" EXPANSION JOINT FILLER.

(C) NORMAL SPACING OF CONTRACTION JOINTS 15'-0" ON CENTER.

(D) THIS DISTANCE TO BE EQUALLY DIVIDED WHEN GREATER THAN 20 FEET AND LESS THAN 40 FEET.

(E) NO CONTRACTION JOINT REQUIRED WHEN DISTANCE LESS THAN NORMAL SPACING OF JOINTS. EQUALLY DIVIDED WHEN DISTANCE IS GREATER THAN 20 FEET AND LESS THAN 40 FEET.

(F) A LONGITUDINAL SAWED JOINT SHALL BE CONSTRUCTED IN THE CROSS-OVER WHEN THE WIDTH OF CROSS-OVER BECOMES GREATER THAN 16 FEET AND LESS THAN 24 FEET. WHEN WIDTH BECOMES GREATER THAN 24 FEET A LONGITUDINAL SAWED AND LONGITUDINAL CONSTRUCTION JOINT SHALL BE CONSTRUCTED IN THE CROSS-OVER.

(G) SHOULD THE CROSS-OVER LENGTH BECOME GREATER THAN NORMAL SPACING OF CONTRACTION JOINTS A TRANSVERSE CONTRACTION JOINT SHALL BE PLACED IN THE CROSS-OVER OPPOSITE THE CONTRACTION JOINTS IN THE MAINLINE.

USE WITH CUR. STD. DWG. RPS-010

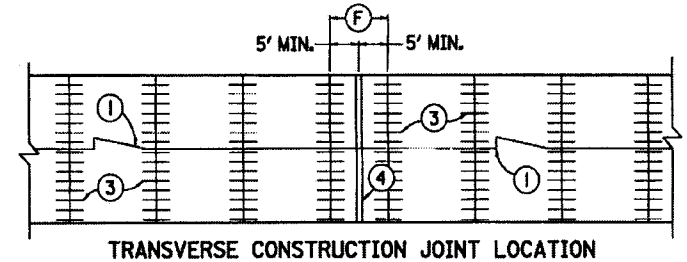
KENTUCKY DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT JOINTS TYPES AND SPACING

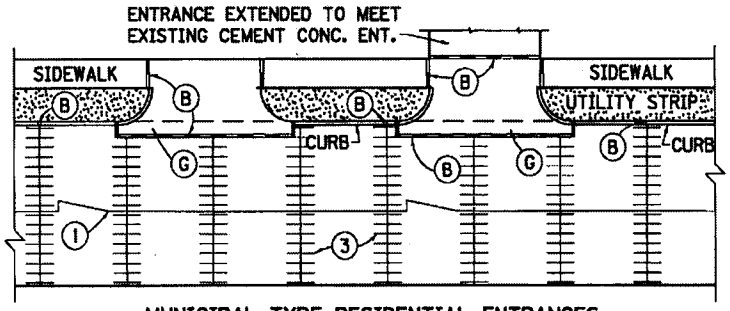
STANDARD DRAWING NO. RPS-032-05

SUBMITTED: DIRECTOR, DIVISION OF DESIGN — 12-2-02 DATE

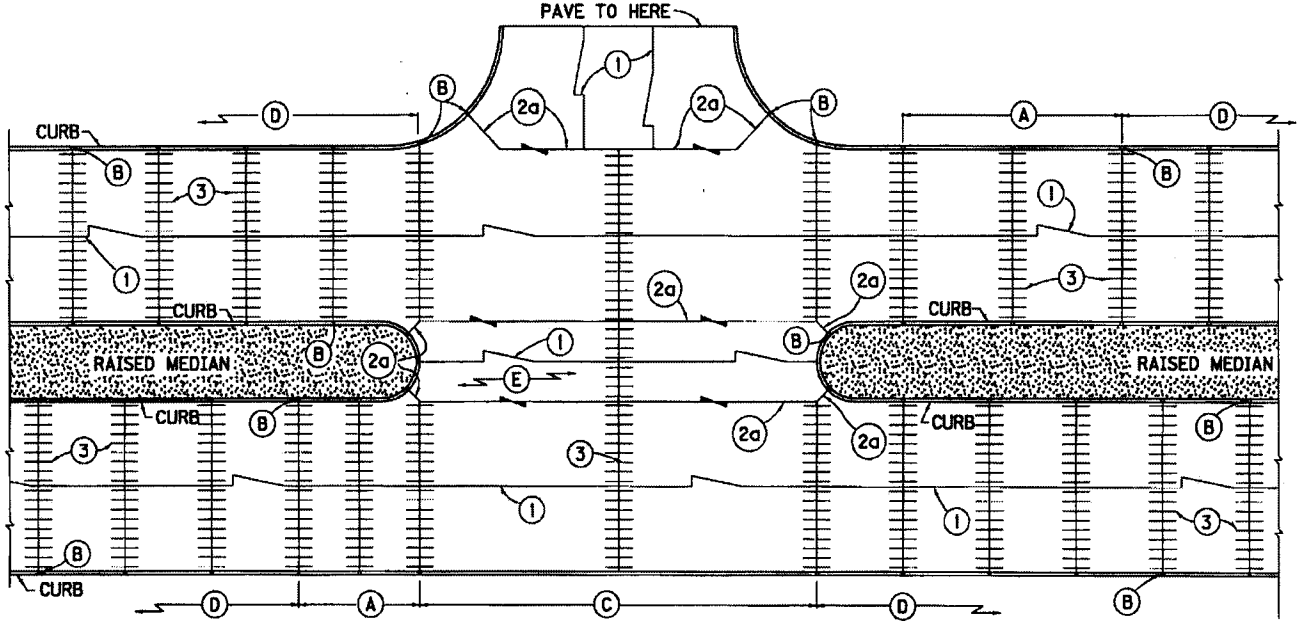
APPROVED: STATE HIGHWAY ENGINEER — 12-2-02 DATE



TRANSVERSE CONSTRUCTION JOINT LOCATION



MUNICIPAL TYPE RESIDENTIAL ENTRANCES



TYPICAL DIVIDED LANE WITH CROSSOVER AND CURB

NOTES

1. SEE CURRENT STANDARD DRAWING RPS-010 FOR JOINT SYMBOLS AND DETAILS.
2. THE INSTALLATION OF LONGITUDINAL SAWED AND CONSTRUCTION JOINTS IN TURNOUTS SHALL DEPEND ON WIDTH OF TURNOUT WITH THE RULE THAT 16 FEET SHALL BE MAXIMUM POUR WITHOUT CONSTRUCTION OF A LONGITUDINAL JOINT.
3. ALL INTEGRAL CURBS CONSTRUCTED WITH CONCRETE BASE OR PAVEMENT SHALL HAVE JOINTS COINCIDING WITH THE TRANSVERSE JOINTS AND OTHER JOINTS SHOWN ON THIS STANDARD DRAWING. THE JOINTS SHALL BE FILLED WITH ½" PREMOLDED EXPANSION JOINT FILLER, CUT TO REQUIRED SECTION.

(A) THIS DISTANCE TO BE EQUALLY DIVIDED WHEN GREATER THAN 20' AND LESS THAN 40'.
(B) ½" EXPANSION JOINT FILLER.
(C) THIS DISTANCE TO BE EQUALLY DIVIDED WHEN GREATER THAN 20' AND LESS THAN 40'. NO TRANSVERSE JOINT WILL BE REQUIRED IF DISTANCE IS LESS THAN NORMAL SPACING OF JOINTS.
(D) NORMAL SPACING OF CONTRACTION JOINTS.
(E) EQUALLY DIVIDE AND CONSTRUCT LONGITUDINAL SAWED JOINT WHEN WIDTH OF CROSSOVER BECOMES GREATER THAN 16' AND LESS THAN 24'. WHEN WIDTH BECOMES GREATER THAN 24', A LONGITUDINAL SAWED AND LONGITUDINAL CONSTRUCTION JOINT SHALL BE CONSTRUCTED IN THE CROSSOVER.
(F) NORMAL SPACING OF TRANSVERSE CONTRACTION JOINTS.
(G) SEE CURRENT STD. DWG. RPM-150 OR RPM-152 , AS APPLICABLE FOR MORE DETAIL.

USE WITH CUR. STD. DWG. RPS-010

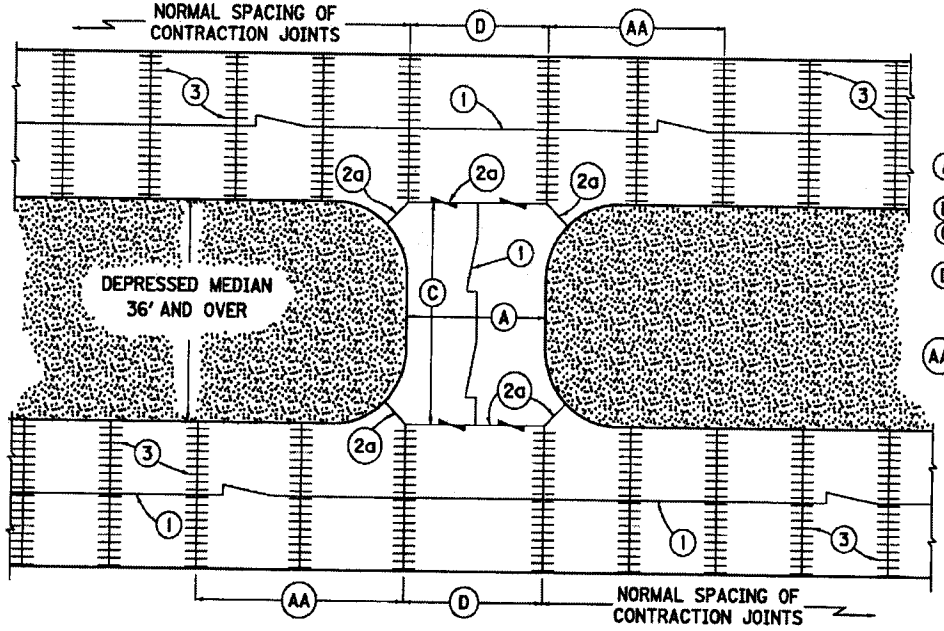
KENTUCKY DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT JOINTS TYPES AND SPACING

STANDARD DRAWING NO. RPS-033-06

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



TYPICAL DIVIDED PAVEMENT WITH DEPRESSED MEDIAN AND CROSSOVER

NOTES

ALL INTEGRAL CURBS CONSTRUCTED WITH CONCRETE BASE OR PAVEMENT SHALL HAVE JOINTS COINCIDING WITH THE TRANSVERSE JOINTS AND OTHER JOINTS SHOWN ON THIS STANDARD DRAWING. THE JOINTS SHALL BE FILLED WITH ½" PREMOLDED EXPANSION JOINT FILLER, CUT TO THE REQUIRED SECTION.

SEE CURRENT STANDARD DRAWING RPS-010 FOR JOINT SYMBOLS AND DETAILS.

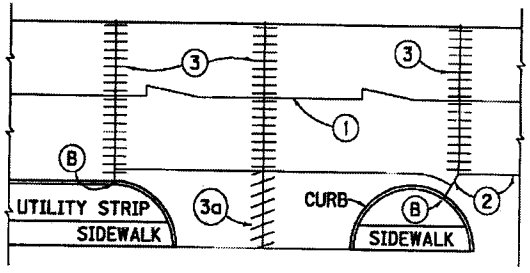
(A) EQUALLY DIVIDE AND CONSTRUCT LONGITUDINAL SAWED JOINT WHEN DISTANCE BECOMES GREATER THAN 16 FEET.

(B) ½" EXPANSION JOINT FILLER.

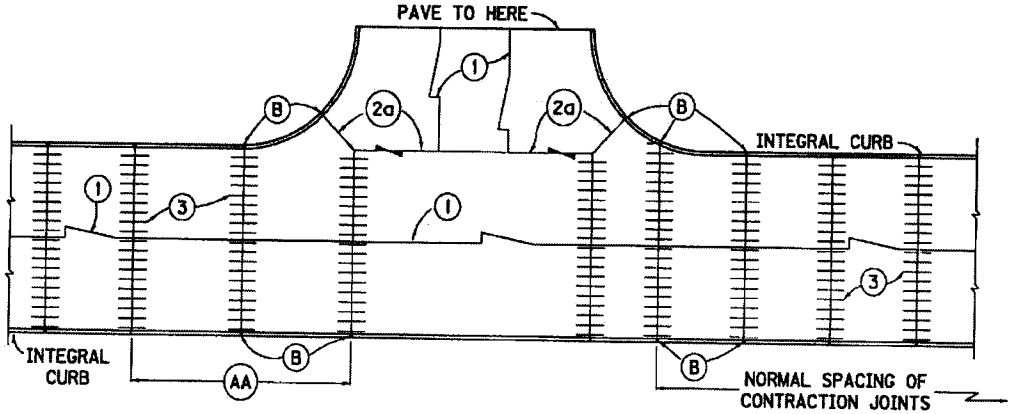
(C) TRANSVERSE CONTRACTION JOINT REQUIRED ONLY WHEN DISTANCE IN EXCESS OF NORMAL SPACING OF CONTRACTION JOINTS.

(D) NO CONTRACTION JOINTS REQUIRED BETWEEN THESE TWO CONTRACTION JOINTS WHEN DISTANCE IS LESS THAN NORMAL SPACING OF JOINTS. EQUALLY DIVIDE WHEN DISTANCE IS GREATER THAN 20 FEET AND LESS THAN 40 FEET.

(AA) THIS DISTANCE TO BE EQUALLY DIVIDED WHEN GREATER THAN 20 FEET AND LESS THAN 40 FEET.



COMMERCIAL ENTRANCE



CEMENT CONCRETE BASE WITH INTEGRAL CURB

USE WITH CUR. STD. DWG. RPS-010

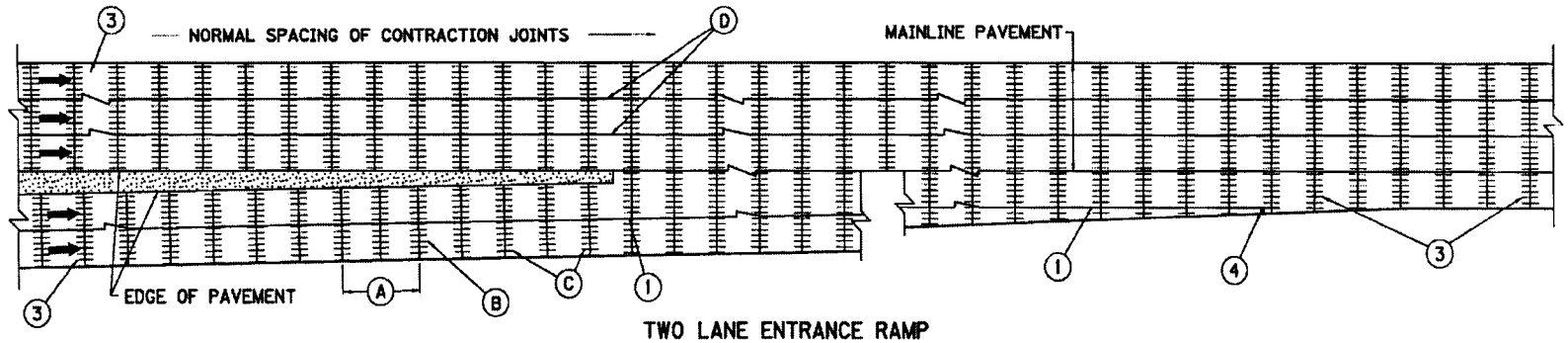
KENTUCKY DEPARTMENT OF HIGHWAYS

CONCRETE PAVEMENT JOINTS TYPES AND SPACING

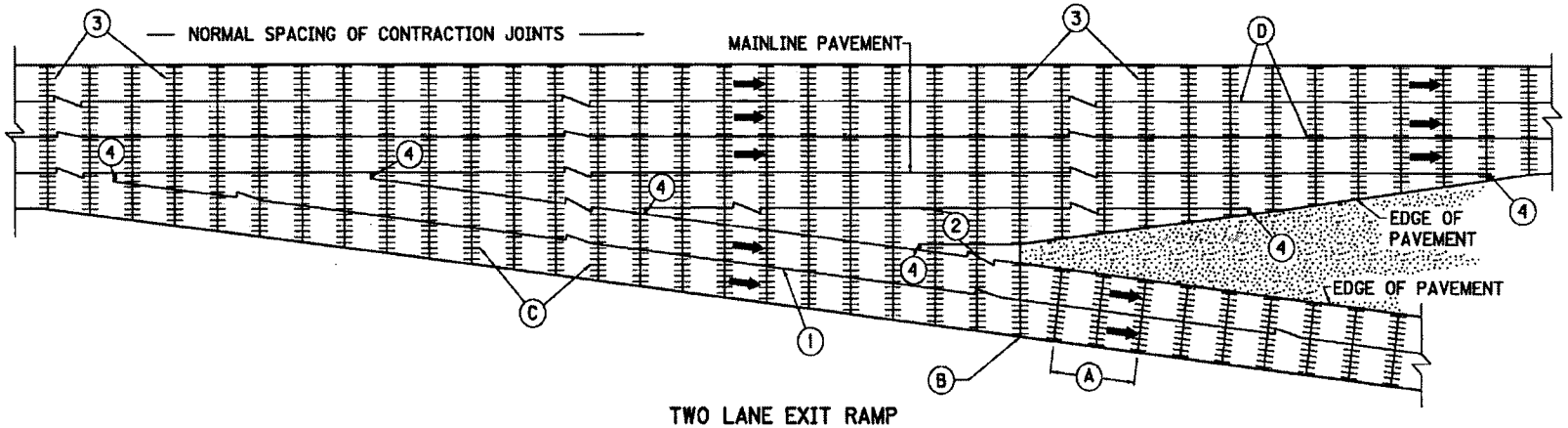
STANDARD DRAWING NO. RPS-034-06

SUBMITTED _____ DIRECTOR, DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



TWO LANE ENTRANCE RAMP



TWO LANE EXIT RAMP

NOTES

NORMAL SPACING OF CONTRACTION JOINTS INDICATED ON THIS DRAWING ARE TO BE IN ACCORDANCE WITH SPACING INDICATED ON CURRENT STANDARD DRAWING RPN-015.

(A) ON CONSTRUCTION IF THE CONTRACTOR ELECTS TO BEGIN PAVING OPERATIONS FOR THE RAMP FROM A POINT OTHER THAN WHICH IS IMMEDIATELY OPPOSITE THE MAINLINE PAVEMENT, THIS DISTANCE SHALL BE EQUALLY DIVIDED WHEN IT BECOMES GREATER THAN 20 FEET AND LESS THAN 40 FEET.

(B) THIS CONTRACTION JOINT IN THE RAMP SHALL ALWAYS BE OPPOSITE THE CONTRACTION JOINT IN THE MAINLINE PAVEMENT.

(C) ALL CONTRACTION JOINTS IN THE RAMP IMMEDIATELY OPPOSITE THE MAINLINE PAVEMENT SHALL BE A CONTINUATION OF THE JOINTS IN THE MAINLINE PAVEMENT.

(D) SEE TYPICAL SECTIONS FOR SPECIFIC TYPE OF LONGITUDINAL JOINT.
SEE CURRENT STANDARD DRAWING RPS-010 FOR JOINT SYMBOL AND DETAIL.

USE WITH CUR. STD. DWG.
RPS-010

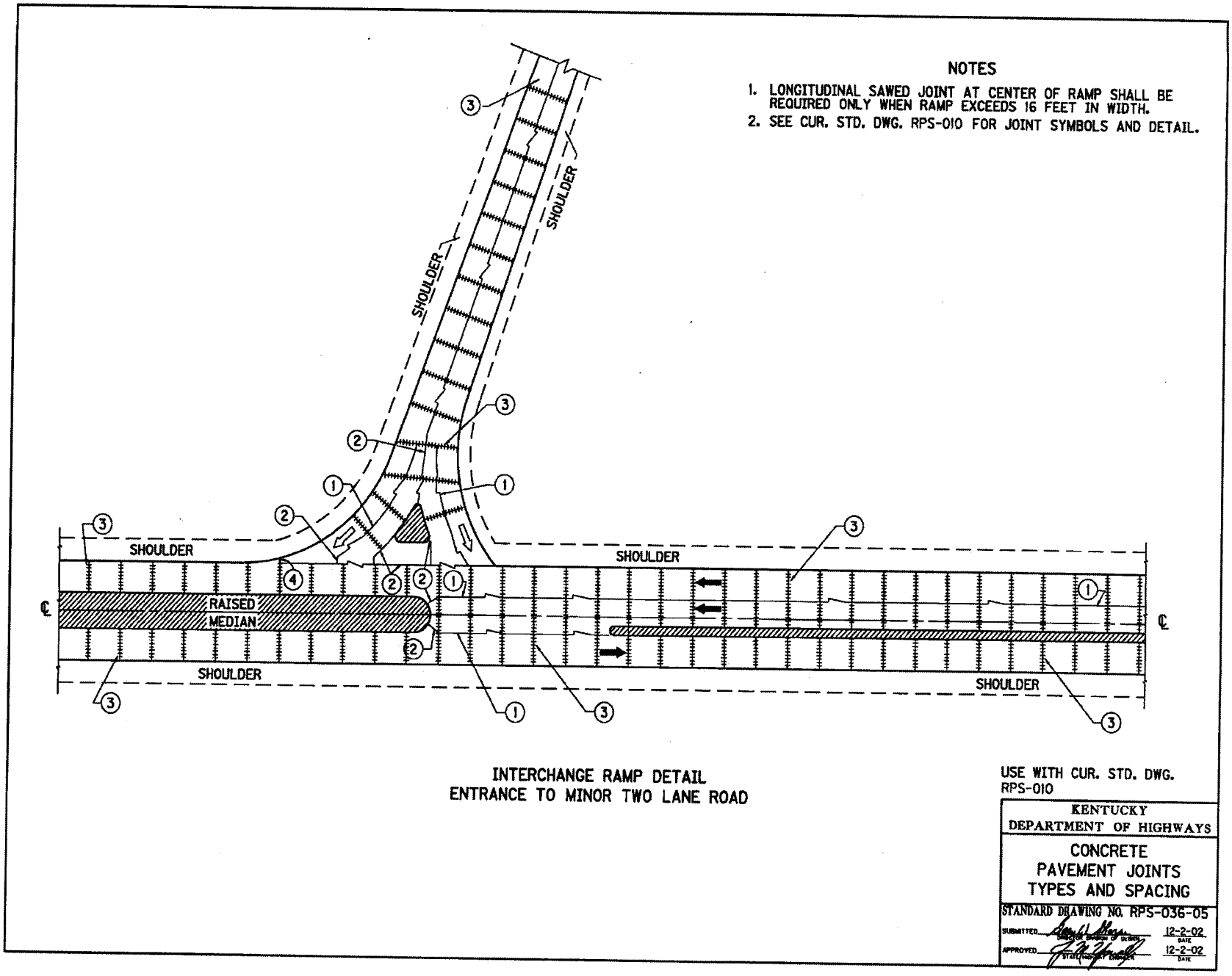
KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE
PAVEMENT JOINTS
TYPES AND SPACING

STANDARD DRAWING NO. RPS-035-05

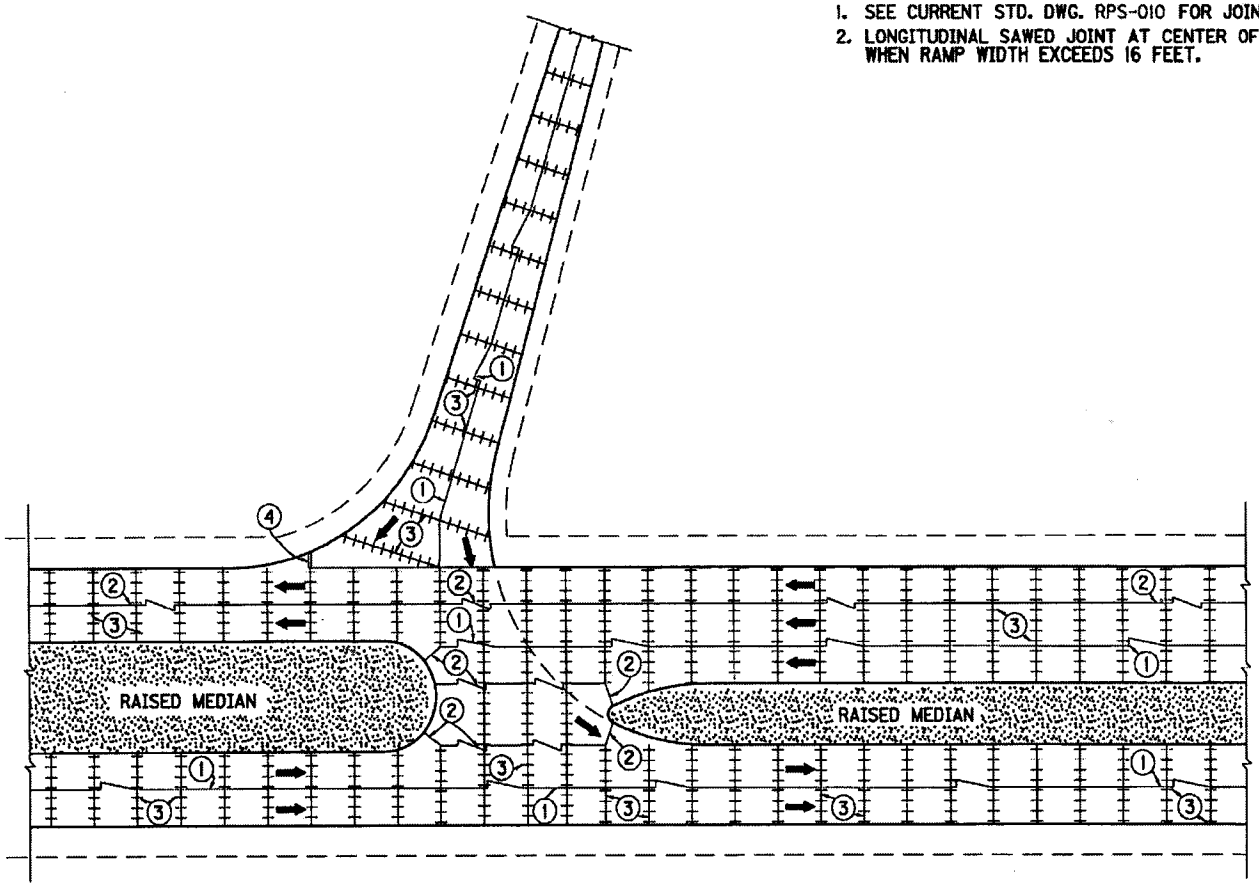
SUBMITTED: DIRECTOR DIVISION OF DESIGN — 12-2-02 DATE

APPROVED: STATE HIGHWAY ENGINEER — 12-2-02 DATE


NOTES
1. LONGITUDINAL SAWED JOINT AT CENTER OF RAMP SHALL BE REQUIRED ONLY WHEN RAMP EXCEEDS 16 FEET IN WIDTH.
2. SEE CUR. STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAIL.
SHOULDER
SHOULDER
SHOULDER
SHOULDER
SHOULDER
RAISED
MEDIAN
℄
℄
INTERCHANGE RAMP DETAIL
ENTRANCE TO MINOR TWO LANE ROAD
USE WITH CUR. STD. DWG. RPS-010
KENTUCKY
DEPARTMENT OF HIGHWAYS
CONCRETE
PAVEMENT JOINTS
TYPES AND SPACING
STANDARD DRAWING NO. RPS-036-05
SUBMITTED
12-2-02
DATE
APPROVED
12-2-02
DATE

NOTES

1. SEE CURRENT STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAIL.
2. LONGITUDINAL SAWED JOINT AT CENTER OF RAMP SHALL BE REQUIRED ONLY WHEN RAMP WIDTH EXCEEDS 16 FEET.



INTERCHANGE RAMP DETAIL
ENTRANCE TO MINOR FOUR LANE ROAD

USE WITH CUR. STD. DWG.
RPS-010

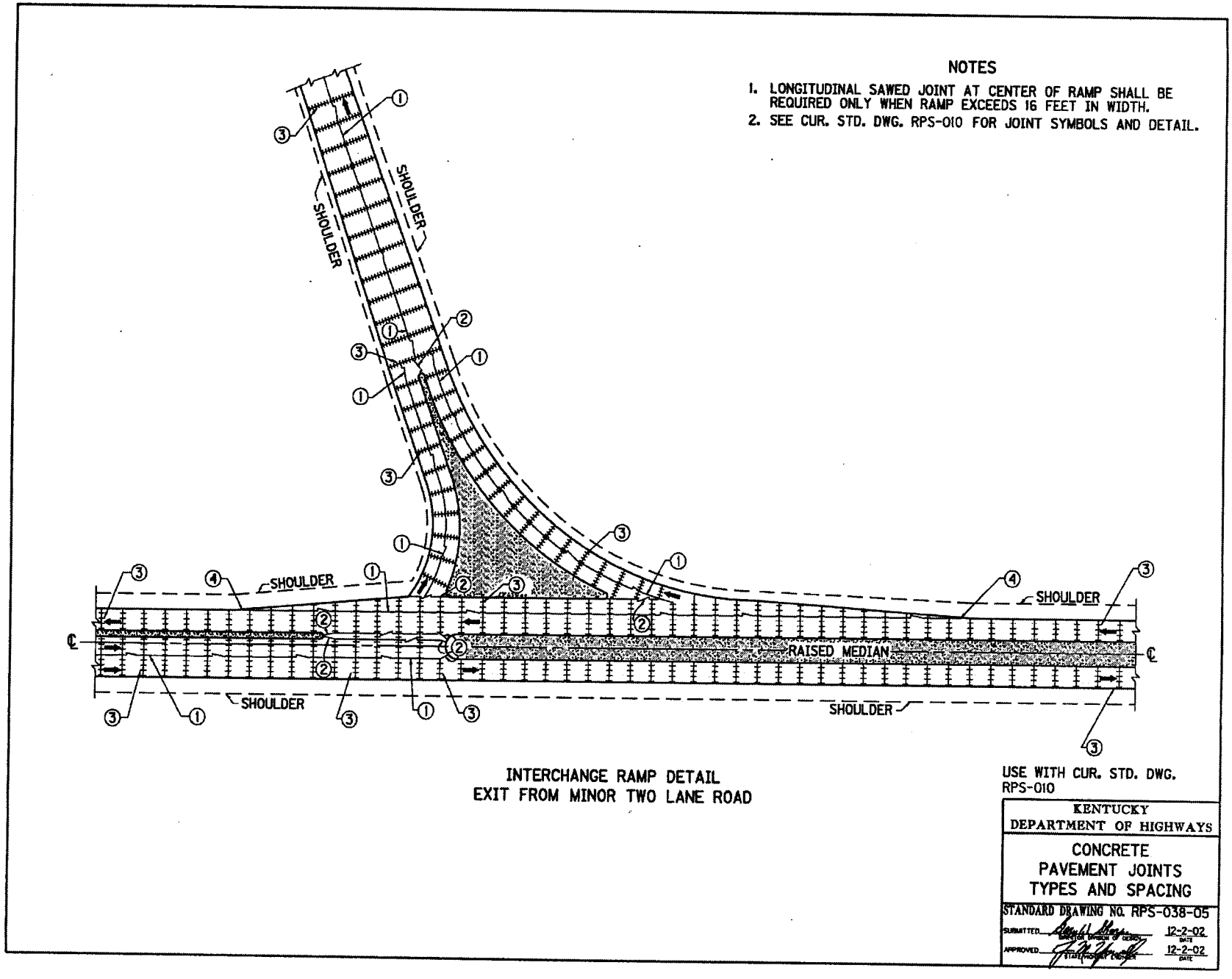
KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE
PAVEMENT JOINTS
TYPES AND SPACING

STANDARD DRAWING NO. RPS-037-05

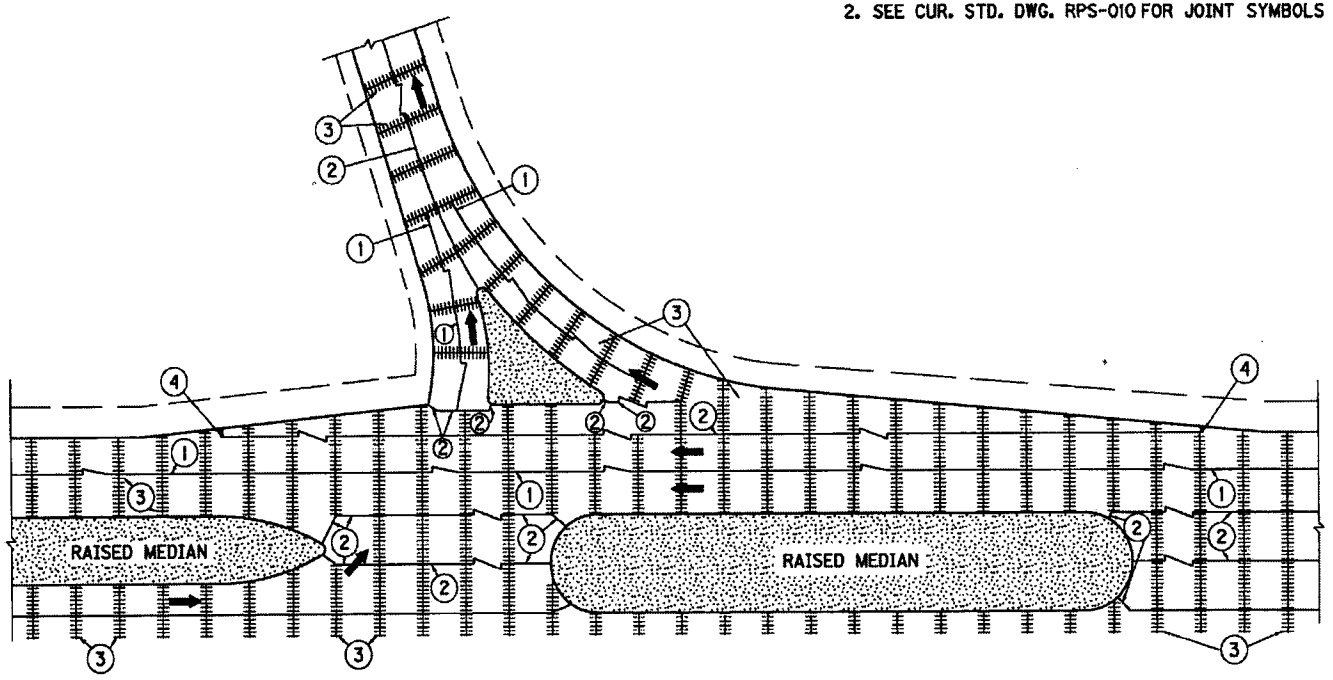
SUBMITTED _____ 12-2-02 DATE
DIRECTOR DIVISION OF DESIGN

APPROVED _____ 12-2-02 DATE
STATE HIGHWAY ENGINEER


NOTES
1. LONGITUDINAL SAWED JOINT AT CENTER OF RAMP SHALL BE REQUIRED ONLY WHEN RAMP EXCEEDS 16 FEET IN WIDTH.
2. SEE CUR. STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAIL.
SHOULDER
SHOULDER
SHOULDER
SHOULDER
SHOULDER
SHOULDER
RAISED MEDIAN
INTERCHANGE RAMP DETAIL
EXIT FROM MINOR TWO LANE ROAD
USE WITH CUR. STD. DWG. RPS-010
KENTUCKY DEPARTMENT OF HIGHWAYS
CONCRETE PAVEMENT JOINTS TYPES AND SPACING
STANDARD DRAWING NO. RPS-038-05
SUBMITTED 12-2-02
APPROVED 12-2-02

NOTES

1. LONGITUDINAL SAWED JOINT AT CENTER OF RAMP SHALL BE REQUIRED ONLY WHEN RAMP EXCEEDS 16 FEET IN WIDTH.
2. SEE CUR. STD. DWG. RPS-010 FOR JOINT SYMBOLS AND DETAIL.



INTERCHANGE RAMP DETAIL
EXIT FROM MINOR FOUR LANE ROAD

USE WITH CUR. STD. DWG.
RPS-010

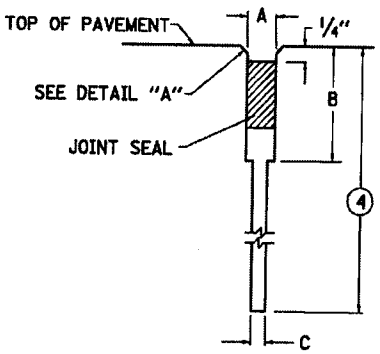
KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE
PAVEMENT JOINTS
TYPES AND SPACING

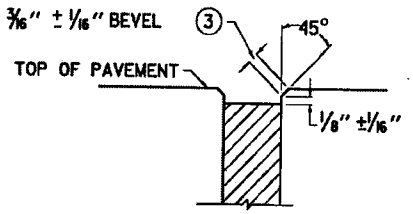
STANDARD DRAWING NO. RPS-039-05

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



JOINT SHAPE FOR
TRANSVERSE SAWED CONTRACTION JOINT



DETAIL "A"

JOINT SPACING	DIMENSIONS A	B	C	SEAL WIDTH UNCOMPRESSED
15'-0"	3/8"	2"	1/8" TO 3/8"	11/16"
25'-0"	1/2"	2"	1/8" TO 1/2"	1"
50'-0"	5/8"	2"	1/8" TO 5/8"	1 1/4"

- NOTES -

PAYMENT FOR ALL WORK SHALL BE INCIDENTAL TO THE UNIT PRICE BID PER SQ. YD. OF PAVEMENT.

TOLERANCES ON ALL JOINT WIDTH DIMENSIONS PLUS OR MINUS 1/16".

INSTALLATION OF PREFORMED POLYCHLOROPRENE SEALS (NEOPRENE) SHALL BE IN ACCORDANCE WITH ARTICLE 501.03.18 OF THE CURRENT STANDARD SPECIFICATIONS, EXCEPT TRANSVERSE EXPANSION JOINTS SHALL RECEIVE PREFORMED SEALS IN ACCORDANCE WITH THIS DRAWING .

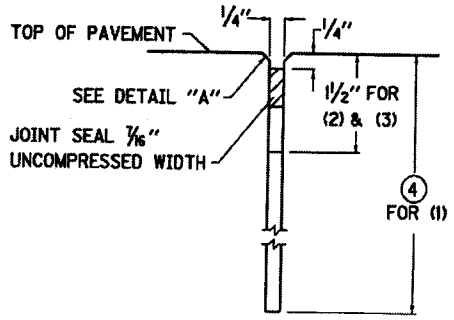
(1) THE REMAINING JOINT SHALL BE IN ACCORDANCE WITH CURRENT STD. DWG. RPS-010 AND RPS-020.

(2) ALL LONGITUDINAL AND TRANSVERSE SAWED CONSTRUCTION JOINTS SHALL BE CUT TO THE DEPTH SHOWN AND SHALL BE SEALED WITH HOT POURED ELASTIC JOINT SEAL.

(3) THESE EDGES SHALL BE BEVELED USING A CUTTING OR GRINDING DEVICE .

(4) JOINT DEPTH IS T/3 OR 4" WHICHEVER IS LESS.

T = PAVEMENT THICKNESS

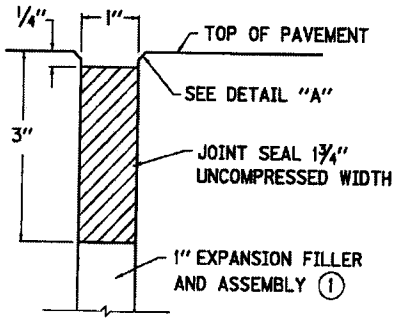


JOINT SHAPE FOR

(1) LONGITUDINAL SAWED JOINT (TIED)

(2) LONGITUDINAL SAWED CONSTRUCTION JOINT (TIED) (2)

(3) TRANSVERSE SAWED CONSTRUCTION JOINT (TIED) (2)



JOINT SHAPE FOR
TRANSVERSE EXPANSION JOINT

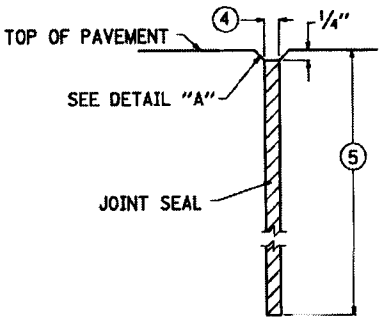
KENTUCKY
DEPARTMENT OF HIGHWAYS

PREFORMED COMPRESSION JOINT SEAL FOR CONCRETE PAVEMENT

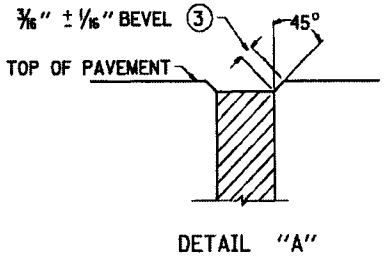
STANDARD DRAWING NO. RPX-010-04

SUBMITTED _____ DIRECTOR DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



JOINT SHAPE FOR
TRANSVERSE SAWED CONTRACTION JOINT



DETAIL "A"

- NOTES -

PAYMENT FOR ALL WORK SHALL BE INCIDENTAL TO THE UNIT PRICE BID PER SQ. YD. OF PAVEMENT.

① THE REMAINING JOINT SHALL BE IN ACCORDANCE WITH CURRENT STD. DWG. RPS-010 AND RPS-020.

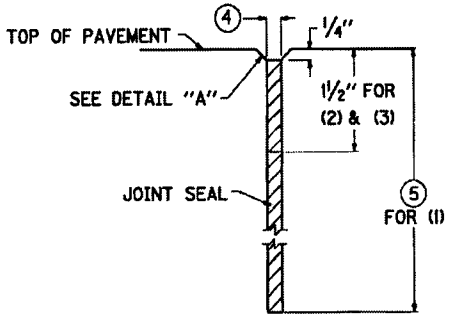
2. ALL LONGITUDINAL AND TRANSVERSE SAWED JOINTS SHALL BE CUT TO THE DEPTH SHOWN AND SHALL BE SEALED WITH HOT POURED ELASTIC JOINT SEAL.

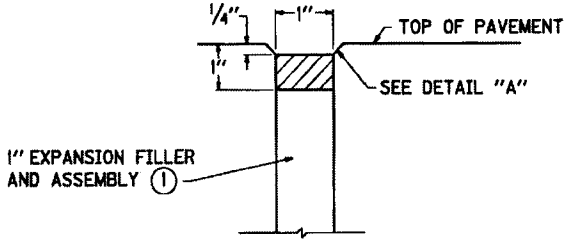
③ THESE EDGES SHALL BE BEVELED USING A CUTTING OR GRINDING DEVICE .

④ 1/8" MIN. - 1/4" MAX.

⑤ JOINT DEPTH IS T/3 OR 4" WHICHEVER IS LESS.

T = PAVEMENT THICKNESS





JOINT SHAPE FOR
TRANSVERSE EXPANSION JOINT

(1) LONGITUDINAL SAWED JOINT (TIED)

(2) LONGITUDINAL SAWED CONSTRUCTION JOINT (TIED)

(3) TRANSVERSE SAWED CONSTRUCTION JOINT (TIED)

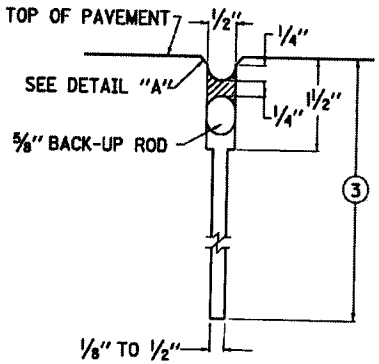
KENTUCKY
DEPARTMENT OF HIGHWAYS

HOT-POURED ELASTIC
JOINT SEALS FOR
CONCRETE PAVEMENT

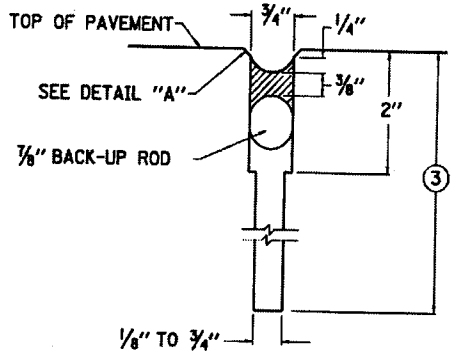
STANDARD DRAWING NO. RPX-015-03

SUBMITTED _____ DIRECTOR, DIVISION OF DESIGN 12-2-02 DATE

APPROVED _____ STATE HIGHWAY ENGINEER 12-2-02 DATE



JOINT SHAPE FOR
TRANSVERSE SAWED CONTRACTION JOINT
(WHEN SLAB LENGTH DOES NOT EXCEED 25'-0")



JOINT SHAPE FOR
TRANSVERSE SAWED CONTRACTION JOINT
(WHEN SLAB LENGTH EXCEEDS 25'-0")

- NOTES -

T = PAVEMENT THICKNESS.

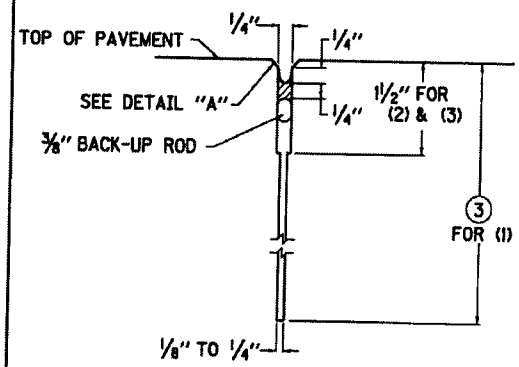
PAYMENT FOR WORK SHALL BE INCIDENTAL TO THE UNIT PRICE PER SQ. YD. OF PAVEMENT.

(1) THE REMAINING JOINT SHALL BE IN IN ACCORDANCE WITH CURRENT STD. DWGS. RPS-020 AND RPS-010.

(2) THESE EDGES SHALL BE BEVELED USING A CUTTING OR GRINDING DEVICE.

JOINT TOLERANCES : SAW CUT DEPTH -0" TO + 1/2"
SAW CUT WIDTH -0" TO + 1/16"
SEAL BEAD THICKNESS -0" TO + 1/8"

(3) JOINT DEPTH IS T/3 OR 4" WHICHEVER IS LESS.

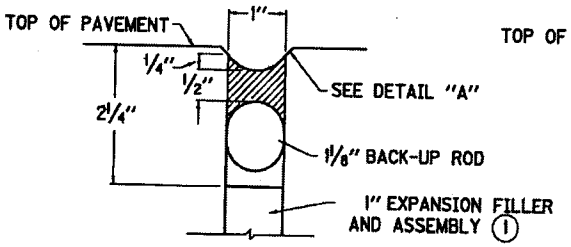


JOINT SHAPE FOR

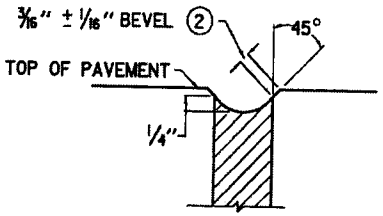
(1) LONGITUDINAL SAWED JOINT (TIED)

(2) LONGITUDINAL SAWED CONSTRUCTION JOINT (TIED)

(3) TRANSVERSE SAWED CONSTRUCTION JOINT (TIED)



JOINT SHAPE FOR
TRANSVERSE EXPANSION JOINT



DETAIL "A"

KENTUCKY
DEPARTMENT OF HIGHWAYS

SILICONE RUBBER SEALS
FOR
CONCRETE PAVEMENT

STANDARD DRAWING NO. RPX-020-05

SUBMITTED _____ 12-2-02
DATE

APPROVED _____ 12-2-02
DATE

POST-BID INSERT

Bid Tabulation

Bid Opening 08/24/14
New Unit Prices Effective 10/09/14

2014 Construction Unit Price Contract
Bid Opening: 2:00 PM Local Time, August 25, 2014

Bid Tabulation - Bid No. 107-2014
Effective October 9, 2014.

Lexington-Fayette Urban County Government

#	Item	Unit	ASL Excavating Inc	Bluegrass Contracting Corp.	L-M Asphalt Partners Ltd., dba ATS Construction	Sensabaugh Design and Construction LLC	The Allen Company	Todd Johnson Contracting	Tom Chestnut Excavation and Construction LLC	Woodall Construction Co.	ZKB Services LLC
			Unit Price								
1	Excavation	CY	14.50	15.00	11.50	11.50	17.35	15.00	12.00	12.00	75.00
2	Embankment	CY	16.00	15.00	11.50	13.00	19.45	30.00	12.00	12.00	~~no bid~~
3	Rock Excavation (Mechanical)	CY	37.25	250.00	200.00	300.00	270.00	150.00	200.00	175.00	65.00
4	Remove Portland Cement Concrete Pavement	SY	28.50	25.00	25.00	14.00	41.25	80.00	10.00	10.00	25.50
5	Remove Curb and Gutter	LF	8.00	7.00	6.00	11.00	16.25	60.00	8.00	5.00	11.50
6	Remove Sidewalk, Entrance Pavement	SY	10.30	12.00	11.00	10.50	29.00	80.00	11.00	10.00	22.50
7	Remove Bituminous Concrete Pavement	SY	7.00	6.00	8.00	6.50	11.50	80.00	11.00	5.00	25.50
8	Remove Pipes less than 24" - up to 8' deep	LF	12.00	15.00	15.00	11.00	21.80	110.00	12.00	10.00	60.00
9	Remove Pipes 30"- 48" - up to 8' deep	LF	18.00	20.00	20.00	16.00	29.00	110.00	16.00	13.00	68.00
10	Remove Fence	LF	3.00	5.00	4.50	8.00	5.00	15.00	5.00	5.00	2.25
11	Remove Headwalls and Inlet Structures	EA	700.00	600.00	600.00	450.00	815.00	1,000.00	600.00	450.00	750.00
12	Remove Tree (5" dia. to 12" dia.)	EA	250.00	500.00	380.00	300.00	550.00	~~no bid~~	500.00	300.00	225.00
13	Remove Tree (>12" dia. to 24" dia.)	EA	595.00	800.00	650.00	500.00	1,625.00	~~no bid~~	800.00	750.00	275.00
14	Remove Tree (>24" dia. to 36" dia.)	EA	1,300.00	1,200.00	1,100.00	1,000.00	2,375.00	~~no bid~~	1,200.00	975.00	325.00
15	Remove Tree (>36" dia. and up)	EA	2,500.00	2,500.00	1,800.00	1,200.00	3,000.00	~~no bid~~	1,500.00	1,100.00	425.00
16	Dense Graded Aggregate Base	TN	22.00	25.00	25.00	19.90	25.50	25.00	24.00	22.00	52.00
17	No. 2 Stone	TN	23.00	25.00	26.00	19.90	31.50	25.00	24.00	22.00	57.00
18	No. 9 Stone	TN	24.00	25.00	26.00	19.90	31.50	25.00	24.00	23.00	57.00
19	No. 57 Stone	TN	21.00	25.00	24.00	19.90	31.50	25.00	24.00	22.00	54.00
20	Steel Reinforcement for Concrete	LB	1.20	2.00	2.00	2.00	2.50	5.00	2.00	5.00	6.00
21	Unfinished Concrete less than 10 CY	CY	140.00	180.00	165.00	180.00	215.00	150.00	150.00	175.00	35.00
22	Unfinished Concrete more than 10 CY	CY	135.00	180.00	155.00	180.00	210.00	150.00	150.00	150.00	35.50
23	Formed Class A Concrete less than 10 CY	CY	800.00	750.00	775.00	440.00	1,200.00	850.00	600.00	400.00	41.50
24	Formed Class A Concrete more than 10 CY	CY	590.00	650.00	675.00	440.00	1,100.00	650.00	600.00	400.00	42.50
25	4-1/2" Concrete Sidewalk	SY	38.00	50.00	38.00	34.50	44.50	~~no bid~~	50.00	32.00	35.90
26	6" Concrete Sidewalk	SY	45.00	60.00	46.00	45.00	54.00	~~no bid~~	54.00	35.00	36.75
27	6" Concrete Entrance Pavement	SY	61.00	60.00	50.00	45.00	65.00	~~no bid~~	54.00	42.00	38.50

#	Item	Unit	ASL Excavating Inc	Bluegrass Contracting Corp.	L-M Asphalt Partners Ltd., dba ATS Construction	Sensabaugh Design and Construction LLC	The Allen Company	Todd Johnson Contracting	Tom Chestnut Excavation and Construction LLC	Woodall Construction Co.	ZKB Services LLC
			Unit Price								
28	Sidewalk Ramp	SY	102.00	60.00	72.00	70.00	82.00	~~no bid~~	54.00	70.00	91.00
29	Header Curb	LF	30.00	20.00	25.00	19.80	31.75	~~no bid~~	22.00	20.00	23.00
30	Curb and Gutter, Type 1	LF	21.50	20.00	20.00	19.80	26.00	~~no bid~~	22.00	20.00	21.00
31	Curb and Gutter, Type 4	LF	25.00	20.00	20.00	19.80	26.00	~~no bid~~	24.00	20.00	21.00
32	Bituminous Pavement Milling and Texturing	TN	30.85	50.00	34.00	38.00	55.00	~~no bid~~	100.00	50.00	~~no bid~~
33	Bituminous Base	TN	60.35	85.00	78.60	80.00	87.50	~~no bid~~	125.00	95.00	~~no bid~~
34	Class I, Bituminous Surface less than 50 tons	TN	73.65	105.00	86.75	85.00	136.50	~~no bid~~	140.00	120.00	~~no bid~~
35	Class I, Bituminous Surface greater than 50 tons	TN	66.15	92.50	92.25	79.00	93.00	~~no bid~~	125.00	95.00	~~no bid~~
36	Bituminous Material for Tack	TN	600.00	850.00	750.00	500.00	800.00	~~no bid~~	575.00	700.00	~~no bid~~
37	Type A Surface Inlet	EA	4,000.00	2,000.00	2,400.00	2,400.00	3,550.00	2,875.00	2,000.00	2,000.00	750.00
38	Type B Surface Inlet	EA	3,800.00	2,000.00	2,400.00	2,400.00	3,550.00	2,700.00	2,000.00	2,000.00	950.00
39	Curb Box Inlet Type A	EA	4,200.00	3,200.00	3,400.00	2,600.00	4,200.00	3,648.00	2,500.00	2,700.00	1,150.00
40	Curb Box Inlet Type B	EA	3,975.00	3,200.00	3,500.00	2,900.00	4,200.00	3,640.00	2,600.00	2,800.00	1,450.00
41	Curb Box Inlet Type C	EA	3,700.00	3,200.00	3,700.00	2,600.00	4,200.00	~~no bid~~	2,800.00	3,000.00	1,850.00
42	Curb Box Inlet Type D	EA	2,850.00	2,500.00	2,900.00	2,800.00	3,125.00	2,273.00	2,800.00	3,000.00	2,101.00
43	Curb Box Inlet Type B (KDOH)	EA	3,900.00	3,300.00	3,600.00	2,800.00	4,200.00	3,010.00	2,800.00	3,600.00	2,250.00
44	Drop Box Inlet Type 13 (KDOH)	EA	2,750.00	3,300.00	2,600.00	2,800.00	4,385.00	3,200.00	3,000.00	5,200.00	2,300.00
45	Drop Box Inlet Type 16 (KDOH)	EA	3,000.00	3,300.00	2,700.00	2,600.00	3,245.00	2,324.70	3,000.00	5,200.00	2,650.00
46	Lex Storm Sewer Manhole (4' dia.) (0-8' No rock)	EA	3,000.00	2,800.00	2,300.00	2,000.00	2,475.00	2,699.00	2,500.00	2,000.00	950.00
47	Lex Storm Sewer Manhole (5' dia.) (0-8' No rock)	EA	5,000.00	3,200.00	2,900.00	2,600.00	3,510.00	3,202.00	3,500.00	2,800.00	1,125.00
48	Lex Storm Sewer Manhole (6' dia.) (0-8' No rock)	EA	6,000.00	4,200.00	4,200.00	2,900.00	6,100.00	4,575.00	4,500.00	3,600.00	1,350.00
49	Pipe Tie-in into Manhole or Curb Box Inlet	EA	800.00	750.00	600.00	600.00	775.00	1,575.00	800.00	600.00	~~no bid~~
50	15" RCP Storm Sewer (0-8' No rock)	LF	56.00	42.00	44.00	34.00	51.95	85.12	45.00	35.00	93.75
51	18" RCP Storm Sewer (0-8' No rock)	LF	66.00	47.00	47.00	39.00	55.00	87.16	45.00	40.00	100.00
52	24" RCP Storm Sewer (0-8' No rock)	LF	71.00	52.00	57.00	49.00	72.50	96.34	65.00	50.00	128.50
53	30" RCP Storm Sewer (0-8' No rock)	LF	87.00	67.00	74.00	55.00	82.00	110.75	75.00	68.00	168.25
54	36" RCP Storm Sewer (0-8' No rock)	LF	120.00	82.00	93.00	75.00	98.00	137.91	100.00	80.00	206.75
55	42" RCP Storm Sewer (0-8' No rock)	LF	130.00	112.00	120.00	110.00	119.00	169.45	130.00	115.00	243.78
56	48" RCP Storm Sewer (0-8' No rock)	LF	180.00	127.00	140.00	160.00	135.00	197.99	150.00	125.00	262.50
57	15" HDPE Storm Sewer (0-8' No rock)	LF	50.00	38.00	43.00	24.00	50.00	85.00	45.00	36.00	118.00

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			Unit Price								
58	18" HDPE Storm Sewer (0-8' No rock)	LF	54.50	40.00	46.00	32.00	53.00	91.00	50.00	38.00	128.00
59	24" HDPE Storm Sewer (0-8' No rock)	LF	60.00	50.00	56.00	42.00	70.00	104.00	60.00	40.00	181.25
60	30" HDPE Storm Sewer (0-8' No rock)	LF	82.00	60.00	73.00	50.00	81.00	118.00	70.00	50.00	218.25
61	36" HDPE Storm Sewer (0-8' No rock)	LF	105.00	75.00	92.00	55.00	92.00	122.56	85.00	60.00	250.00
62	15" PP Storm Sewer (0-8' No rock)	LF	52.00	38.00	45.00	28.00	45.00	85.12	no bid	no bid	118.75
63	18" PP Storm Sewer (0-8' No rock)	LF	56.50	40.00	49.00	30.00	50.00	87.16	no bid	no bid	140.50
64	24" PP Storm Sewer (0-8' No rock)	LF	62.50	50.00	59.00	38.00	60.00	96.34	no bid	no bid	183.50
65	30" PP Storm Sewer (0-8' No rock)	LF	85.00	60.00	75.00	48.00	72.00	101.57	no bid	no bid	218.75
66	36" PP Storm Sewer (0-8' No rock)	LF	108.00	75.00	95.00	49.00	85.00	122.56	no bid	no bid	250.00
67	15" Elliptical RCP Storm Sewer	LF	62.00	65.00	56.00	50.00	69.00	no bid	65.00	50.00	118.75
68	18" Elliptical RCP Storm Sewer	LF	72.00	70.00	64.00	55.00	85.00	no bid	75.00	55.00	145.75
69	24" Elliptical RCP Storm Sewer	LF	78.00	85.00	77.00	60.00	104.00	no bid	85.00	65.00	167.50
70	30" Elliptical RCP Storm Sewer	LF	93.00	100.00	88.00	70.00	137.00	no bid	110.00	85.00	181.50
71	36" Elliptical RCP Storm Sewer	LF	136.00	130.00	112.00	90.00	170.00	no bid	140.00	105.00	218.50
72	42" Elliptical RCP Storm Sewer	LF	145.00	150.00	140.00	110.00	202.00	no bid	160.00	135.00	250.00
73	48" Elliptical RCP Storm Sewer	LF	201.00	185.00	170.00	140.00	260.00	no bid	175.00	140.00	262.50
74	Internal Inspection of Sewer Pipe: CCTV	LF	no bid	5.00	12.00	2.00	2.50	no bid	no bid	8.00	no bid
75	15" Straight Headwall - Standard or Raised	EA	1,300.00	1,500.00	1,500.00	950.00	1,500.00	1,550.00	1,200.00	1,250.00	1,250.00
76	18" Straight Headwall - Standard or Raised	EA	1,400.00	1,600.00	1,600.00	1,100.00	1,500.00	1,650.00	1,500.00	1,900.00	1,500.00
77	24" Straight Headwall - Standard or Raised	EA	1,675.00	1,800.00	2,100.00	1,350.00	2,050.00	1,771.00	2,500.00	2,150.00	1,750.00
78	15" Pipe Culvert Headwall	EA	1,200.00	1,400.00	1,600.00	900.00	1,200.00	1,543.00	1,000.00	1,000.00	1,325.00
79	18" Pipe Culvert Headwall	EA	1,300.00	1,500.00	1,700.00	1,100.00	1,250.00	1,645.00	2,500.00	1,200.00	1,600.00
80	24" Pipe Culvert Headwall	EA	1,450.00	1,700.00	2,200.00	1,150.00	1,300.00	1,740.00	2,500.00	1,400.00	1,950.00
81	30" Pipe Culvert Headwall	EA	1,900.00	2,000.00	2,300.00	1,300.00	1,900.00	2,015.00	4,500.00	1,800.00	2,050.00
82	36" Pipe Culvert Headwall	EA	2,400.00	2,500.00	2,400.00	1,500.00	2,200.00	2,360.00	4,000.00	2,300.00	2,250.00
83	42" Pipe Culvert Headwall	EA	2,750.00	4,000.00	2,800.00	1,700.00	2,500.00	2,665.00	5,000.00	2,900.00	2,550.00
84	48" Pipe Culvert Headwall	EA	3,600.00	5,000.00	3,500.00	2,000.00	3,350.00	3,087.00	4,000.00	3,500.00	2,750.00
85	18" Sloped and Flared Box Inlet-Outlet	EA	2,250.00	1,800.00	2,600.00	2,600.00	2,150.00	2,160.00	2,800.00	2,500.00	2,250.00
86	24" Sloped and Flared Box Inlet-Outlet	EA	2,800.00	2,400.00	3,250.00	3,200.00	2,950.00	2,787.00	4,500.00	3,000.00	2,450.00
87	30" Sloped and Flared Box Inlet-Outlet	EA	4,100.00	3,000.00	4,000.00	4,200.00	4,600.00	2,075.00	6,500.00	4,000.00	2,650.00

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			Unit Price								
88	36" Sloped and Flared Box Inlet-Outlet	EA	5,800.00	3,800.00	4,600.00	6,500.00	5,900.00	4,221.00	8,000.00	6,000.00	2,850.00
89	15" Impact Stilling Basin	EA	1,500.00	2,000.00	2,100.00	1,850.00	2,870.00	~~no bid~~	2,200.00	1,800.00	~~no bid~~
90	18" Impact Stilling Basin	EA	1,600.00	2,100.00	2,300.00	1,950.00	3,085.00	3,801.00	2,200.00	2,000.00	~~no bid~~
91	24" Impact Stilling Basin	EA	2,000.00	2,300.00	2,550.00	2,200.00	4,000.00	3,901.00	3,000.00	2,200.00	~~no bid~~
92	30" Impact Stilling Basin	EA	2,700.00	2,500.00	2,800.00	2,900.00	5,250.00	~~no bid~~	3,000.00	2,400.00	~~no bid~~
93	36" Impact Stilling Basin	EA	3,350.00	3,000.00	3,200.00	6,500.00	6,545.00	7,995.00	3,000.00	2,800.00	~~no bid~~
94	48" Impact Stilling Basin	EA	4,200.00	3,500.00	3,800.00	7,200.00	8,000.00	8,140.00	4,000.00	3,100.00	~~no bid~~
95	Bottom Paved Ditch	SY	88.00	80.00	55.00	38.00	90.00	~~no bid~~	90.00	48.00	39.00
96	Aggregate Channel Lining for Slope Protection	TN	27.00	35.00	36.00	30.00	42.50	76.00	30.00	40.00	~~no bid~~
97	Seeding and Protection	SY	1.20	2.50	3.00	1.50	2.75	1.00	2.00	3.50	28.50
98	Sodding	SY	5.50	8.00	9.00	4.00	6.80	8.00	4.25	6.00	24.50
99	Gabion Mattress Channel Lining	CY	145.00	200.00	170.00	140.00	275.00	~~no bid~~	190.00	165.00	~~no bid~~
100	4" HDPE Perforated Pipe	LF	7.00	10.00	15.00	5.00	15.00	20.00	5.00	6.00	7.50
101	6" HDPE Perforated Pipe	LF	9.00	12.00	16.00	7.00	15.00	37.00	8.00	12.00	9.50
102	4" PVC Pipe	LF	20.00	20.00	24.00	11.00	27.00	62.00	15.00	18.00	7.00
103	6" PVC Pipe	LF	23.00	25.00	26.00	13.50	32.00	64.21	16.00	25.00	9.00
104	8" PVC Sanitary Sewer (0-8' No Rock)	LF	30.00	65.00	36.00	24.00	34.10	71.37	25.00	28.00	11.00
105	10" PVC Sanitary Sewer (0-8' No Rock)	LF	36.00	75.00	41.00	27.00	35.60	82.90	35.00	30.00	13.00
106	12" PVC Sanitary Sewer (0-8' No Rock)	LF	46.00	80.00	50.00	30.00	40.55	93.50	39.00	33.00	15.00
107	15" PVC Sanitary Sewer (0-8' No Rock)	LF	54.00	85.00	52.00	33.00	50.20	101.14	45.00	40.00	17.00
108	18" PVC Sanitary Sewer (0-8' No Rock)	LF	68.00	90.00	58.00	38.00	80.00	120.00	55.00	50.00	19.00
109	8" Ductile Iron Sewer Pipe (0-8' No Rock)	LF	68.00	80.00	55.00	40.00	50.00	121.41	~~no bid~~	48.00	~~no bid~~
110	10" Ductile Iron Sewer Pipe (0-8' No Rock)	LF	74.00	85.00	58.00	50.00	59.50	147.51	~~no bid~~	55.00	~~no bid~~
111	12" Ductile Iron Sewer Pipe (0-8' No Rock)	LF	78.00	90.00	67.00	60.00	64.00	169.30	~~no bid~~	80.00	~~no bid~~
112	14" Ductile Iron Sewer Pipe (0-8' No Rock)	LF	110.00	95.00	75.00	70.00	92.00	183.09	~~no bid~~	95.00	~~no bid~~
113	Sanitary Sewer By-Pass Pumping	DAY	2,500.00	1,000.00	2,500.00	1,600.00	750.00	1,550.00	~~no bid~~	2,350.00	~~no bid~~
114	Two Way Sewer Service Cleanout	EA	750.00	500.00	650.00	300.00	375.00	674.85	~~no bid~~	560.00	~~no bid~~
115	4"x 8" Sanitary Sewer Tee & up to 6' of lateral pipe	EA	550.00	100.00	65.00	75.00	105.00	629.85	~~no bid~~	500.00	~~no bid~~
116	6"x 8" Sanitary Sewer Tee& up to 6' of lateral pipe	EA	600.00	105.00	80.00	90.00	115.00	679.85	~~no bid~~	600.00	~~no bid~~
117	Lex Sanitary Sewer Manhole (4' dia.) (0-8' No rock)	EA	3,000.00	2,400.00	2,400.00	2,000.00	2,600.00	2,654.00	~~no bid~~	2,000.00	~~no bid~~

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			Unit Price								
118	Lex Sanitary Sewer Manhole (5' dia.) (0-8' No rock)	EA	4,500.00	3,000.00	3,200.00	3,000.00	3,500.00	3,967.00	no bid	3,600.00	no bid
119	Lex Sanitary Sewer Manhole (6' dia.) (0-8' No rock)	EA	6,500.00	5,500.00	5,100.00	4,800.00	5,850.00	4,763.00	no bid	5,700.00	no bid
120	Manhole-Additional vertical depth > 8' (4' dia.)	VF	160.00	175.00	160.00	500.00	300.00	307.00	no bid	175.00	no bid
121	Manhole-Additional vertical depth > 8' (5' dia.)	VF	220.00	275.00	200.00	600.00	400.00	356.00	no bid	225.00	no bid
122	Manhole-Additional vertical depth > 8' (6' dia.)	VF	250.00	450.00	240.00	700.00	450.00	468.00	no bid	350.00	no bid
123	Manhole-Additional for adjustable frame and cover	EA	1,250.00	1,000.00	1,000.00	400.00	1,600.00	500.00	no bid	900.00	no bid
124	Woven Wire Fence 4' height	LF	8.00	15.00	12.50	10.00	20.00	38.00	10.00	10.00	4.25
125	Chain Link Fence 4' height	LF	19.50	25.00	23.00	15.00	35.00	80.00	14.00	12.00	6.25
126	Privacy Fence	LF	36.00	50.00	50.00	25.00	85.00	85.00	28.00	30.00	19.50
127	Backhoe (small) with Operator	HR	88.00	85.00	95.00	65.00	115.50	85.00	85.00	100.00	75.00
128	Dump Truck (single axle) with driver	HR	77.50	75.00	80.00	60.00	75.00	70.00	75.00	75.00	75.00
129	Dump Truck (tri-axle) with driver	HR	90.00	90.00	90.00	80.00	80.00	88.00	80.00	85.00	95.00
130	Jackhammer with Operator	HR	75.00	65.00	75.00	80.00	75.00	80.00	80.00	85.00	45.00
131	Skid Loader with Operator	HR	85.00	75.00	90.00	60.00	75.00	80.00	80.00	125.00	65.00
132	Check Dam	TN	32.00	50.00	35.00	30.00	50.00	500.00	55.00	43.00	no bid
133	Sediment Trap	CY	32.00	75.00	45.00	13.00	50.00	500.00	60.00	20.00	no bid
134	Sediment Pond	CY	36.00	60.00	45.00	13.00	40.00	1,500.00	35.00	20.00	no bid
135	Silt Fence	LF	2.60	5.00	3.25	3.00	3.50	3.00	5.00	500.00	3.75
136	Storm Drain Inlet Protection	EA	160.00	350.00	325.00	150.00	275.00	150.00	250.00	250.00	6.75
137	Filter Strip	SY	7.00	30.00	no bid	7.00	19.50	110.00	15.00	15.00	7.00
138	Stream Crossing	EA	3,500.00	7,500.00	8,500.00	3,000.00	5,000.00	6,600.00	3,800.00	8,000.00	no bid
139	Pump-Around Flow Diversion	DAY	2,500.00	600.00	225.00	600.00	2,400.00	450.00	1,200.00	3,000.00	no bid
140	Construction Dewatering	DAY	70.00	600.00	125.00	600.00	2,400.00	450.00	1,200.00	3,000.00	no bid
141	Geotextile Construction Type I	SY	1.80	4.00	2.00	2.70	5.25	5.80	9.00	6.00	5.00
142	Geotextile Construction Type II	SY	1.86	4.00	2.10	1.80	5.25	5.60	40.00	6.00	7.00
143	Geotextile Construction Type III	SY	1.90	4.00	2.00	1.50	5.25	5.50	8.00	6.00	9.00
144	Geotextile Construction Type IV	SY	1.92	4.00	2.10	2.40	5.25	5.10	8.00	12.00	11.00
145	Edge Key	LF	6.50	10.00	10.00	6.00	16.25	no bid	10.00	10.00	4.00
146	Pipe Plugging for Pipes less than or equal to 24"	EA	750.00	300.00	260.00	300.00	450.00	600.00	600.00	1,500.00	no bid
147	Pipe Plugging for Pipes 30"- 48"	EA	900.00	800.00	525.00	500.00	750.00	750.00	800.00	1,800.00	no bid

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			Unit Price								
148	Flowable Fill	CY	132.00	150.00	160.00	150.00	175.00	150.00	140.00	200.00	no bid
149	Fiber Reinforced PCC Pavement	CY	no bid	300.00	350.00	275.00	300.00	no bid	50.00	275.00	47.50
150	Single Block Masonry Retaining Wall	SF	no bid	30.00	32.00	20.00	26.00	125.00	35.00	30.00	12.50
151	Degradable Erosion Control Mat	SY	1.20	10.00	9.00	7.00	no bid	10.60	8.00	8.00	8.00
152	Turf Reinforcement Mat	SY	5.75	15.00	9.00	7.00	9.25	15.60	10.00	8.00	8.50
153	Project Sign	EA	750.00	800.00	800.00	600.00	550.00	450.00	1,000.00	600.00	475.00
154	Steel W Beam Guardrail and End Treatments	LF	no bid	no bid	no bid	50.00	54.00	no bid	36.00	130.00	53.50
155	Articulating Concrete Block	SY	no bid	315.00	no bid	500.00	no bid	no bid	800.00	80.00	14.50
156	Reinf Conc Pipe Crack Repairs and Manhole Rehab	LF	no bid	no bid	no bid	400.00	no bid	307.00	no bid	50.00	19.50
157	Saw cutting	LF	3.00	6.00	5.00	2.00	2.35	3.00	2.75	5.00	3.75
158	Precast Reinforced Concrete Box Culvert 3' X 2'	LF	no bid	600.00	335.00	350.00	375.00	1,540.00	1,500.00	575.00	62.00
159	Precast Reinforced Concrete Box Culvert 3' X 3'	LF	no bid	800.00	360.00	400.00	405.00	1,620.00	1,500.00	600.00	72.50
160	Precast Reinforced Concrete Box Culvert 4' X 2'	LF	435.00	800.00	365.00	420.00	435.00	1,580.00	1,500.00	650.00	84.50
161	Precast Reinforced Concrete Box Culvert 4' X 3'	LF	515.00	900.00	375.00	450.00	460.00	1,840.00	1,500.00	800.00	88.50
162	Detectable Warning Surface Tile-Overlay	SF	75.00	100.00	42.00	45.00	97.00	no bid	no bid	600.00	6.25
163	Detectable Warning Surface Tile-Imbedded	SF	60.00	100.00	42.00	60.00	375.00	no bid	350.00	600.00	8.25
164	Bulb-out: Gutter Cover	LF	no bid	no bid	175.00	28.00	no bid	no bid	no bid	no bid	24.50
165	Bulb-out: Asphalt Repair	SF	no bid	100.00	400.00	30.00	no bid	no bid	no bid	no bid	no bid
166	Grader with Operator	HR	170.00	130.00	185.00	95.00	140.00	150.00	100.00	175.00	195.00
167	Roller/Compactor with Operator	HR	94.00	90.00	165.00	65.00	115.00	85.00	100.00	175.00	175.00
168	Topsoil Placement	CY	26.00	150.00	30.00	60.00	22.50	35.00	20.00	30.00	49.00