

# DRAINAGE



## *Hamilton County Government*

CLAUDE RAMSEY, COUNTY EXECUTIVE  
CHATTANOOGA, TENNESSEE

May 30, 2006

### **TO WHOM IT MAY CONCERN:**

### **RE: Drainage Structure Standards**

All subdivisions receiving final approval after June 1, 2006 will be required to use the drainage structure details shown in the "City of Chattanooga and Hamilton County Tennessee, Design and Construction Standards" (Green Book) approved and adopted December 10, 1999 for design and construction.

The above mentioned details are listed under "Drainage" and are shown on drawing numbers as follows, SD-600.01, SD-601.01, SD-602.01, SD-603.01, SD-604.01, SD-605.01, SD-606.01, SD-607.01, SD-608.01, SD-608.02, SD-609.01, SD-609.02, SD-610.01, SD-610.02, SD-610.03, SD-610.04 and Hamilton County Concrete Flume/Headwall.

All other previously used design types and standards will no longer be accepted after the June 1, 2006 date for final approval has passed.

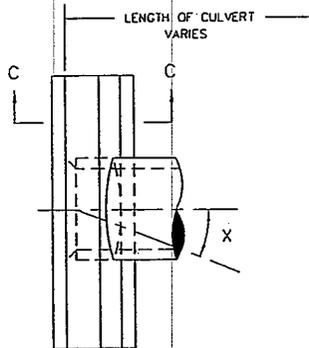
Sincerely,

A handwritten signature in black ink that reads "Michael W. Hendrix".

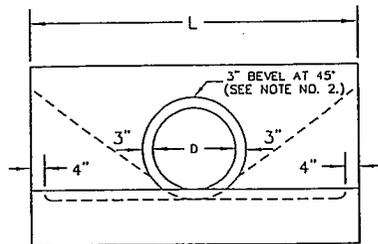
Michael W. Hendrix, Inspection Manager

cc: Mike Howard, County Engineer  
Fred Bruner, RPA  
Harold Austin, Highway Department

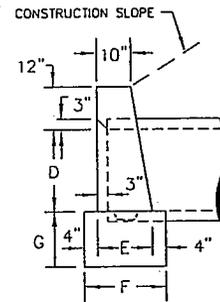




PLAN



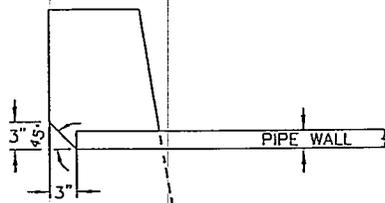
FRONT ELEVATION



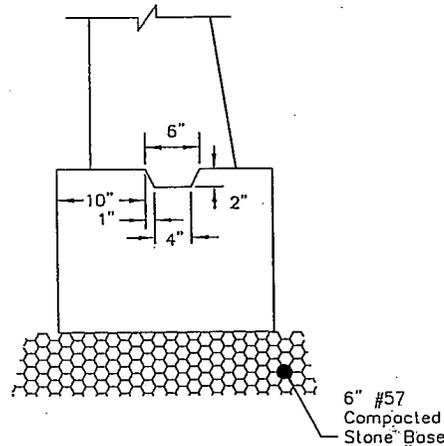
SIDE ELEVATION

TABLE "A" - DIMENSIONS FOR ONE STRAIGHT, CONCRETE ENDWALL (X=0)					
DIMENSIONS					
OPENING	WALL		FOOTING		
D	L	H	E	F	G
1'-6"	6'-0"	2'-6"	1'-3"	1'-11"	1'-3"
2'-0"	8'-0"	3'-0"	1'-4"	2'-0"	1'-4"
2'-6"	10'-0"	3'-6"	1'-6"	2'-2"	1'-6"

TABLE "B" - VALUE OF "L" WHEN ANGLE "X" IS GREATER THAN 0°					
D	0(+)-10°	10(+)-20°	20(+)-30°	30(+)-40°	40(+)-50°
1'-6"	6'-0"	6'-5"	6'-11"	7'-10"	9'-4"
2'-0"	8'-2"	8'-6"	9'-3"	10'-5"	12'-6"
2'-6"	10'-2"	10'-7"	11'-6"	13'-2"	15'-7"



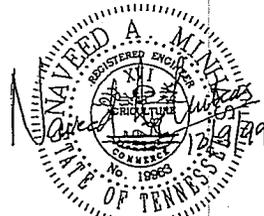
DETAIL OF BEVEL



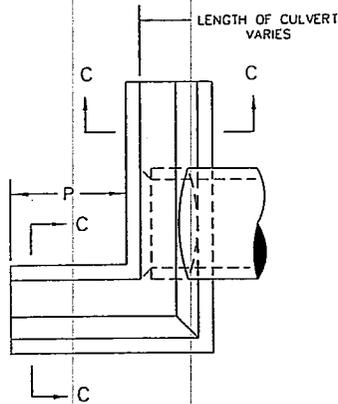
SECTION C-C  
SHOWING CONSTRUCTION JOINT

NOTES

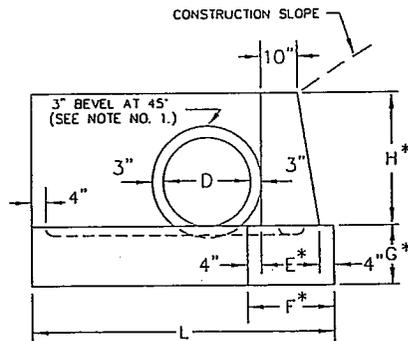
1. WHEN A PIPE IS ON A SKEW, REFER TO TABLE "B" FOR THE VALUE OF "L".
2. ALL TYPE "S", CONCRETE ENDWALLS ON THE INLET END OF THE PIPE AND AT 90° TO THE PIPE SHALL BE BEVELED 3" AT A 45° ANGLE. THE BEVEL WILL NOT BE REQUIRED WHEN THE ENDWALL IS CONSTRUCTED ON THE "BELLED" END OF A CONCRETE PIPE.
3. WHEN MORE THAN ONE LINE OF PIPE IS REQUIRED, THE DISTANCE FROM CENTER TO CENTER OF PIPES SHALL BE (D+1'-0").
4. A 1" CHAMFER SHALL BE USED ON EACH EXPOSED EDGE AND CORNER.
5. ENDWALLS SHALL HAVE #4 BARS AT 12" ON CENTER, EACH WAY, IN THE CENTER OF ALL SLABS AND WALLS.
6. EIGHT INCH (8") BRICK WALLS MAY BE SUBSTITUTED FOR CONCRETE WALLS WHEN "D" IS 36" OR LESS.



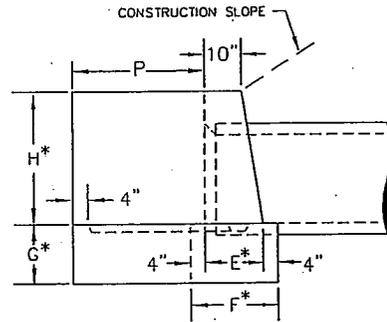
		<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
		<b>CONCRETE ENDWALL (TYPE "S")</b>	
0	INITIAL ISSUE	12/10/99	DATE OF ORIGINAL ISSUE
		STANDARD NIMRFR · SD-601 01	



PLAN

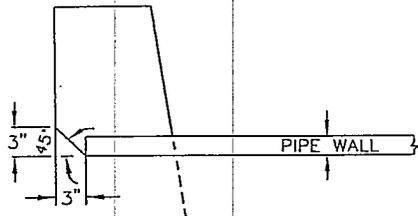


FRONT ELEVATION

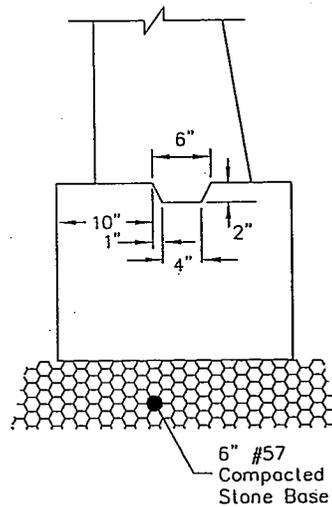


SIDE ELEVATION

TABLE OF DIMENSIONS FOR ONE TYPE "L", CONCRETE ENDWALL		
DIMENSIONS *		
D	P	L
1'-3"	2'-3"	5'-9"
1'-6"	2'-3"	6'-0"
2'-0"	3'-0"	8'-0"
2'-6"	3'-9"	10'-0"



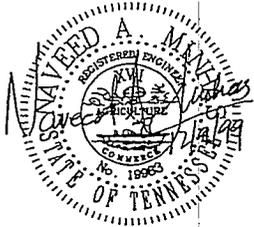
DETAIL OF BEVEL



SECTION C-C  
SHOWING CONSTRUCTION JOINT

**NOTES**

- ALL TYPE "L", CONCRETE ENDWALLS ON THE INLET END OF THE PIPE AND AT 90° TO THE PIPE SHALL BE BEVELED 3" AT A 45° ANGLE. THE BEVEL WILL NOT BE REQUIRED WHEN THE ENDWALL IS CONSTRUCTED ON THE "BELLED" END OF A CONCRETE PIPE.
- WHEN MORE THAN ONE LINE OF PIPE IS REQUIRED, THE DISTANCE FROM CENTER TO CENTER OF PIPES SHALL BE (D+1'-0").
- A 1" CHAMFER SHALL BE USED ON EACH EXPOSED EDGE AND CORNER.
- ENDWALLS SHALL HAVE #4 BARS AT 12" ON CENTER, EACH WAY, IN THE CENTER OF ALL SLABS AND WALLS.
- \* DIMENSIONS NOT SHOWN IN THE TABLE ARE THE SAME AS THOSE FOR A TYPE "S" ENDWALL. SEE SD-601.01.

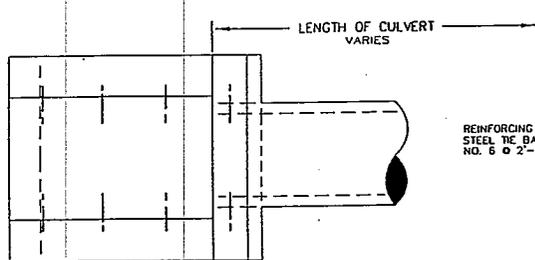


0	INITIAL ISSUE	12/10/99
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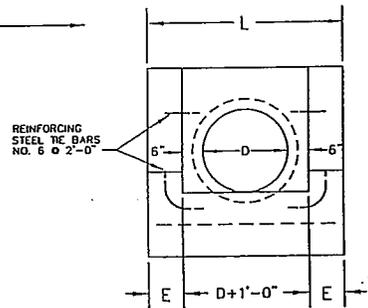
**CITY OF CHATTANOOGA AND HAMILTON COUNTY**  
**CONCRETE ENDWALL (TYPE "L")**

DATE OF ORIGINAL ISSUE  
DECEMBER 10 1999

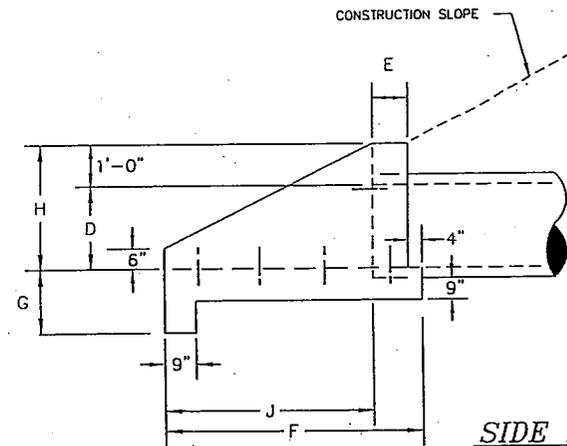
STANDARD NUMBER: SD-602.01



PLAN



FRONT ELEVATION



SIDE ELEVATION

NOTES

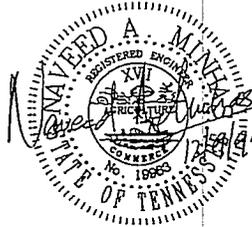
1. WHEN MORE THAN ONE LINE OF PIPE IS REQUIRED, THE DISTANCE FROM CENTER TO CENTER OF PIPES SHALL BE (D+1'-0").
2. A 1" CHAMFER SHALL BE USED ON EACH EXPOSED EDGE AND CORNER.
3. ENDWALLS SHALL HAVE #4 BARS AT 12" ON CENTER, EACH WAY, IN CENTER OF ALL SLABS AND WALLS.

**TABLE OF DIMENSIONS**  
TYPE "U", CONCRETE ENDWALL (SLOPE 1-1/2:1 & 2:1)

DIMENSIONS						
OPENING	WALL			FOOTING		
D	L	H	E	J	F	G
1'-3"	3'-9"	2'-3"	9"	4'-0"	5'-1"	1'-3"
1'-6"	4'-0"	2'-6"	9"	4'-0"	5'-1"	1'-3"
2'-0"	4'-8"	3'-0"	10"	5'-0"	6'-2"	1'-6"
2'-6"	5'-2"	3'-6"	10"	6'-0"	7'-2"	1'-6"

**TABLE OF DIMENSIONS**  
TYPE "U", CONCRETE ENDWALL (SLOPE 3:1 OR FLATTER)

DIMENSIONS						
OPENING	WALL			FOOTING		
D	L	H	E	J	F	G
1'-3"	3'-9"	2'-3"	9"	6'-0"	7'-1"	1'-3"
1'-6"	4'-0"	2'-6"	9"	6'-0"	7'-1"	1'-3"
2'-0"	4'-8"	3'-0"	10"	7'-6"	8'-8"	1'-6"
2'-6"	5'-2"	3'-6"	10"	9'-0"	10'-2"	1'-6"

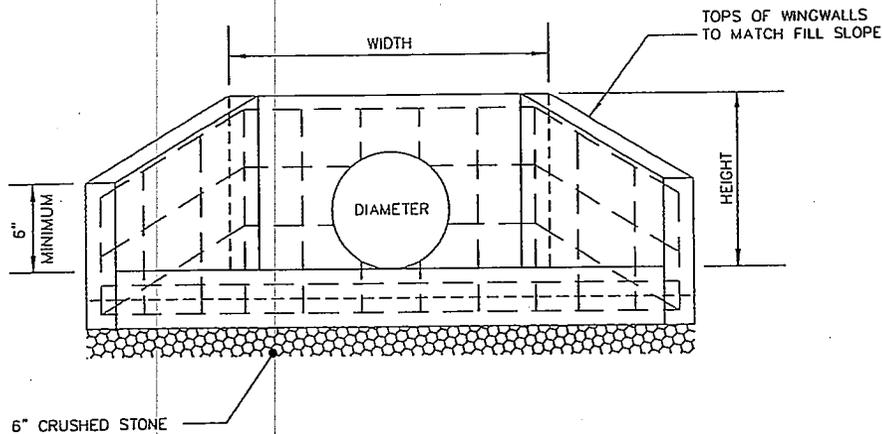


0	INITIAL ISSUE	12/10/99
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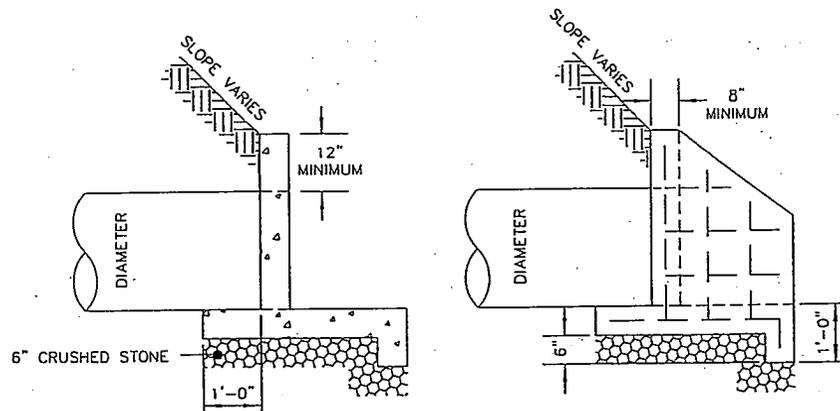
**CITY OF CHATTANOOGA AND HAMILTON COUNTY**  
**CONCRETE ENDWALL (TYPE "U")**

DATE OF ORIGINAL ISSUE: **DECEMBER 10 1999**

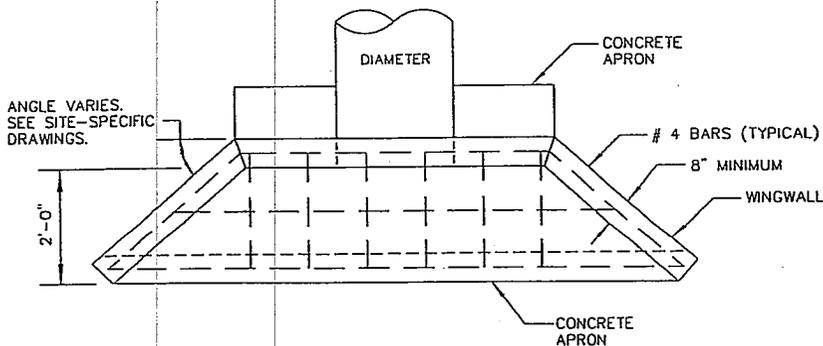
STANDARD NUMBER: **SD-603.01**



FRONT VIEW



CROSS SECTION



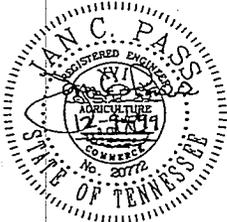
PLAN

PIPE SIZE CHART *				
DIAMETER	15"	18"	24"	30"
HEIGHT	2'-9"	3'-0"	3'-6"	4'-0"
WIDTH	4'-3"	4'-6"	5'-0"	5'-6"

\* ALL DIMENSIONS SHOWN ARE MINIMUMS.

**NOTES**

1. IF CONDITIONS REQUIRE ANY VARIATION IN THE SIZE OF A WINGWALL, IT MUST FIRST BE APPROVED BY THE GOVERNMENTAL ENGINEER BEFORE CONSTRUCTION BEGINS.
2. ALL REINFORCING STEEL SHALL HAVE A 2" (MINIMUM) CONCRETE COVER.
3. SEE PIPE SIZE CHART FOR DIMENSIONS ASSOCIATED WITH PIPE DIAMETERS.
4. A 1" CHAMFER SHALL BE USED ON EACH EXPOSED EDGE AND CORNER.
5. #4 BARS (TYPICAL) SHALL BE @ 1'-0" C.C. EACH WAY IN THE CENTER OF SLABS AND WALLS.

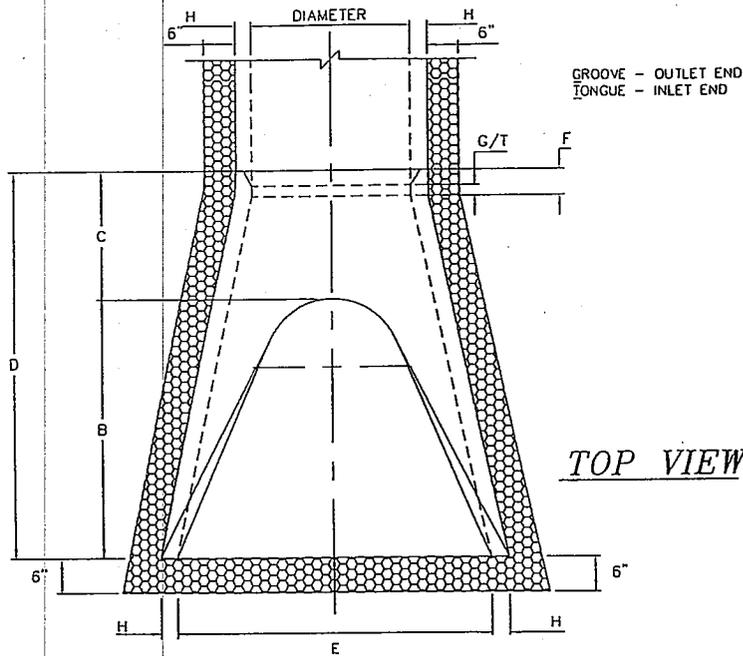


0	INITIAL ISSUE	12/10/99
NO	REVISION	DATE

**CITY OF CHATTANOOGA AND HAMILTON COUNTY**  
**CONCRETE ENDWALL (TYPE "W")**

DATE OF ORIGINAL ISSUE  
 DECEMBER 10, 1999

STANDARD NUMBER: SD-604.01

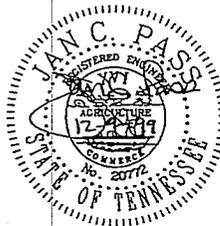
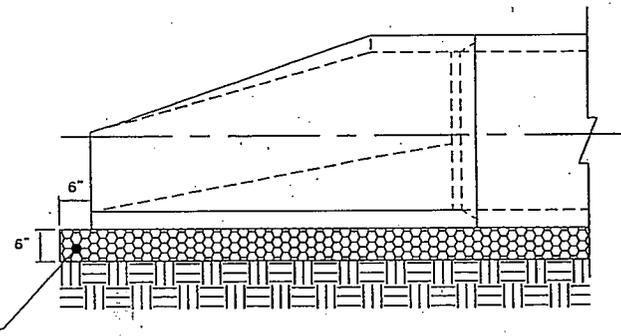
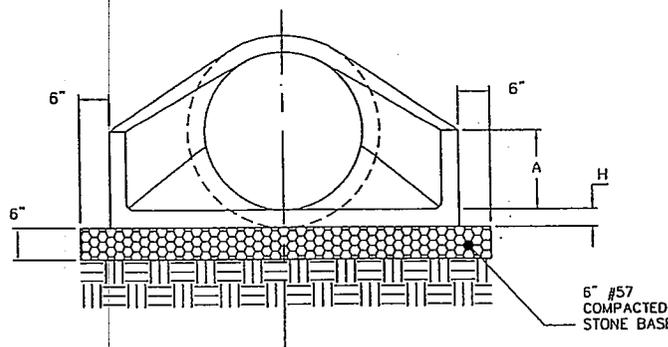


FLARED-END SECTION DIMENSIONS (INCHES)

PIPE SIZE	A	B	C	D	E	F	G/T	H
15"	6.0	27.0	46.00	73.00	30	3.5	2.0	2.25
18"	9.0	27.0	46.00	73.00	36	4.0	2.5	2.50
24"	9.5	43.5	30.00	73.50	48	4.5	2.5	3.00
30"	12	54.0	19.75	73.75	60	5.0	3.0	3.25

**NOTES**

G DENOTES GROOVE - OUTLET END.  
T DENOTES TONGUE - INLET END.  
H DENOTES THE WALL THICKNESS.



**FRONT VIEW**

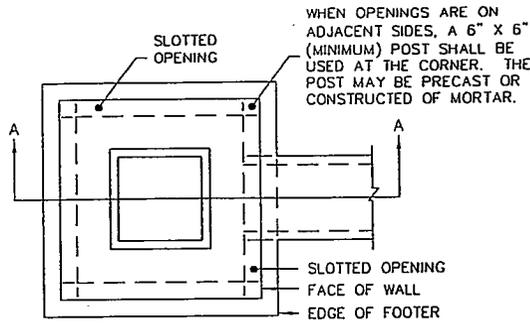
**RIGHT SIDE VIEW**

NO	INITIAL ISSUE	12/10/99
	REVISION	DATE

**CITY OF CHATTANOOGA AND HAMILTON COUNTY**  
**CONCRETE ENDWALL (PRECAST/FLARED)**

DATE OF ORIGINAL ISSUE  
**DECEMBER 10, 1999**

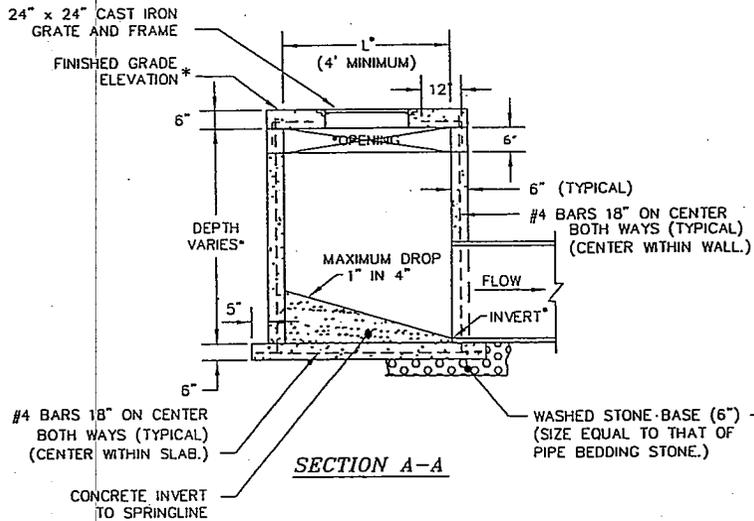
STANDARD NUMBER: **SD-605.01**



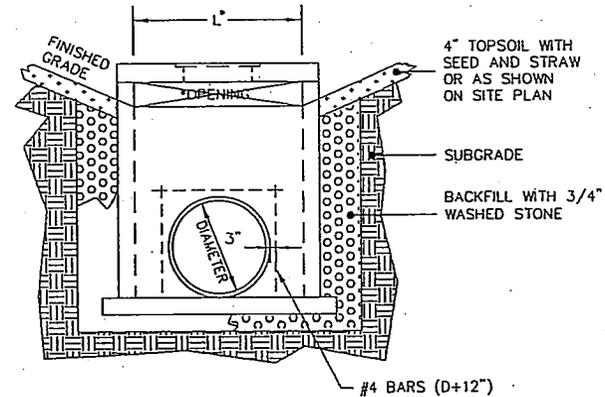
PLAN

NOTES

1. WHEN THE DEPTH OF THE STRUCTURE IS GREATER THAN 4'-0", STEPS SHALL BE PROVIDED AT 16" ON CENTER.
2. PRECAST ELEMENTS SHALL BE ALLOWED UP TO THE BOTTOM OF THE OPENING, WITH DOWELS ON 12" CENTERS SECURING THE REMAINDER THAT SHALL BE CAST-IN-PLACE CONCRETE.
3. CONCRETE CONSTRUCTION IS SHOWING, BUT 8" BRICK CONSTRUCTION WILL BE ALLOWED.



SECTION A-A

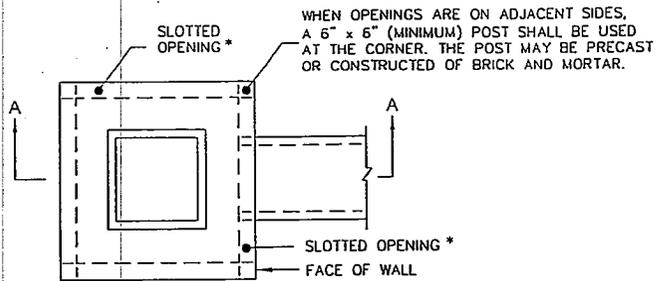


SIDE VIEW

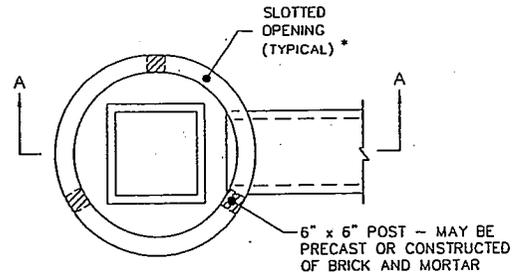
\* SEE SITE-SPECIFIC PLANS AND PROFILES FOR 'L', DEPTHS, ELEVATIONS, AND NUMBER AND LOCATIONS OF OPENINGS.



		<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
		<b>DROP INLET</b>	
0	INITIAL ISSUE	12/10/99	DATE OF ORIGINAL ISSUE DECEMBER 10, 1999
			STANDARD NUMBER: SD-606.01



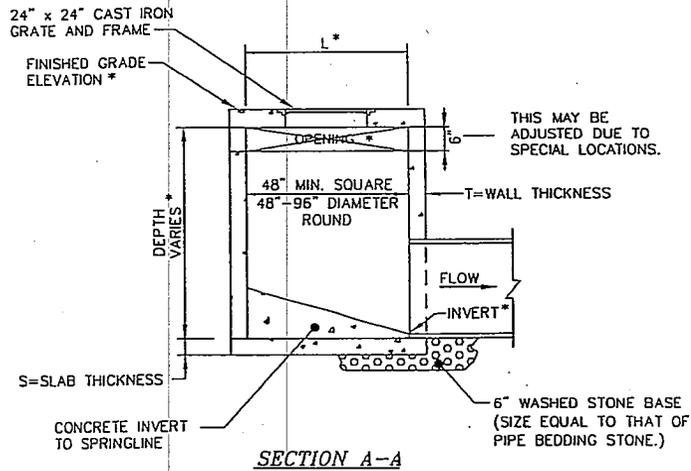
**PLAN**  
SQUARE BASIN  
(48" x 48" MINIMUM) \*\*



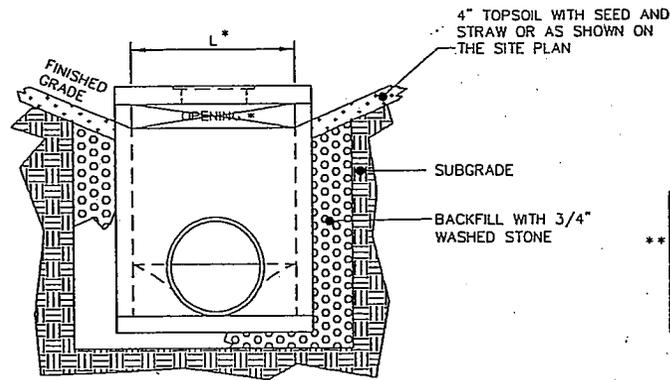
**PLAN**  
ROUND MANHOLE TYPE  
(48" DIAMETER - 96" DIAMETER)

**NOTES**

1. STEPS SHALL BE PROVIDED WHEN THE DEPTH OF THE STRUCTURE IS GREATER THAN 4'-0". STEPS SHALL BE PLACED ON 16" CENTERS.
2. SQUARE INLETS MAY HAVE FOUR OPENINGS AND MAY BE LOCATED ON ANY OR ALL SIDES. ROUND-MANHOLE-TYPE DROP INLETS MAY HAVE A MAXIMUM OF THREE OPENINGS.
- \*\*3. SQUARE INLETS SHALL MEET A.S.T.M. C 931 REQUIREMENTS FOR WALL THICKNESS, SLAB THICKNESS, CONCRETE STRENGTH, AND STEEL REINFORCEMENT REQUIREMENTS. ROUND INLETS SHALL MEET A.S.T.M. C 478.
4. THE TOP AND ITS SUPPORTS MAY BE PRECAST AS ONE UNIT.



**SECTION A-A**



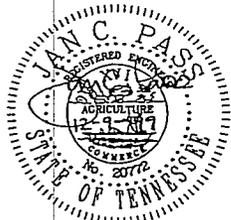
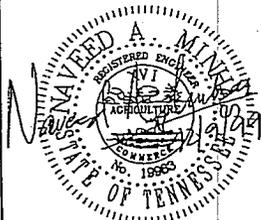
**SIDE VIEW**

STRUCTURE TYPE	(T) WALL THICKNESS	(S) SLAB THICKNESS
** 48" x 48"	8"	8"
48" DIAM.	5"	6"
60" DIAM.	6"	8"
72" DIAM.	7"	8"
84" DIAM.	8"	8"
96" DIAM.	8"	8"

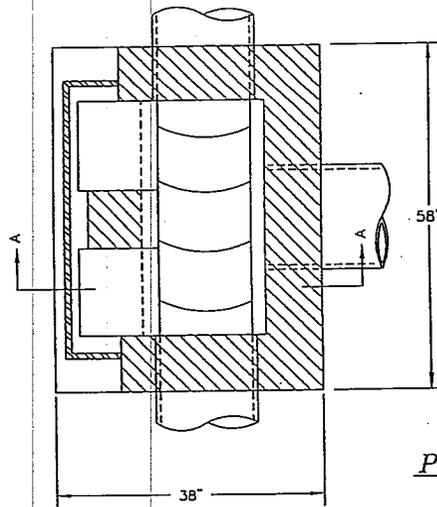
\*\*

\* SEE SITE-SPECIFIC PLANS AND PROFILES FOR 'L', DEPTHS, ELEVATIONS, AND NUMBER AND LOCATIONS OF OPENINGS.

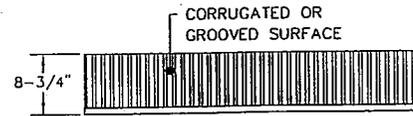
\*\* LARGER SIZES MEETING A.S.T.M. C931 REQUIREMENTS ARE AVAILABLE UPON REQUEST.



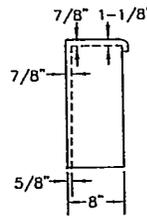
<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
<b>DROP INLET (PRECAST CONCRETE)</b>	
DATE OF ORIGINAL ISSUE DECEMBER 10, 1999	STANDARD NUMBER: SD-607.01
INITIAL ISSUE	12/10/99



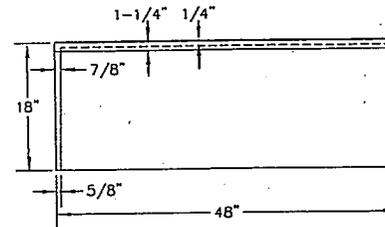
PLAN



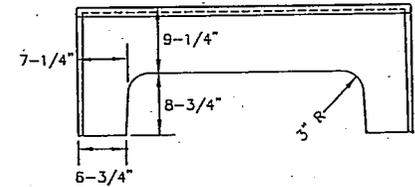
PLAN  
SOLID OR OPEN BACK



SIDE VIEW

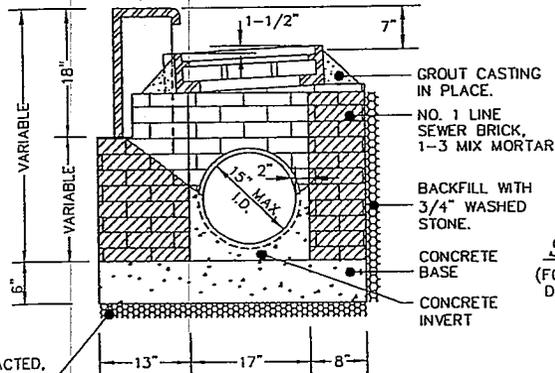


FRONT VIEW  
SOLID BACK



FRONT VIEW  
OPEN BACK

CURB IRON OR UPRIGHT FRAME



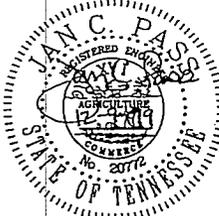
SECTION A-A  
(FOR CLARITY, THE CROSS DRAIN IS NOT SHOWN.)

6" COMPACTED, CRUSHED STONE, 33-P (PUG)\*

CATCH BASIN WITH BACK

\* "33-P (PUG)" - 303-01, TYPE A, GRADING D ("33-P"), TENNESSEE D.O.T. SPECIFICATIONS.

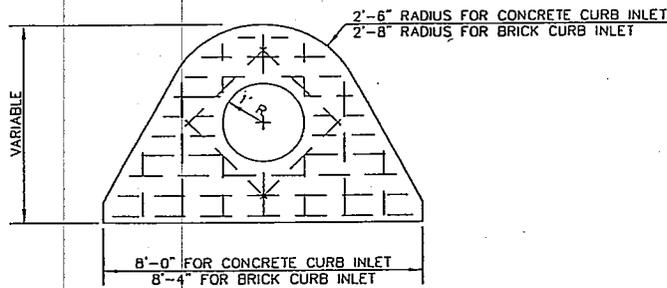
NOTE  
FOR BRICK CONSTRUCTION, JOINTS SHALL ALWAYS BE COMPLETELY FILLED WITH MORTAR. BRICKS SHALL BE LAID WITH VERTICAL MORTAR JOINTS NOT MORE THAN 3/8" THICK AND HORIZONTAL MORTAR JOINTS NOT LESS THAN 3/8" THICK AT THE INSIDE FACE. INSIDE JOINTS SHALL BE TROWEL STRUCK, FLUSH JOINTS TO PROVIDE A SMOOTH, CLEAN SURFACE, WHILE OUTSIDE WALLS SHALL BE ENTIRELY COVERED WITH MORTAR FOR A SMOOTH, CLEAN SURFACE.



CITY OF CHATTANOOGA AND HAMILTON COUNTY	
CATCH BASIN (STANDARD), FRAME, AND GRATE	
0	INITIAL ISSUE
12/10/99	DATE OF ORIGINAL ISSUE
DECEMBER 10 1999	STANDARD NUMBER: SD-608.01

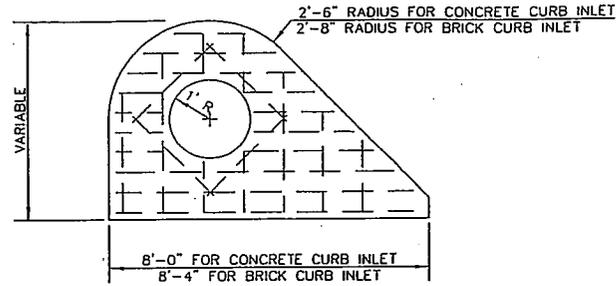






**SUMP INLET TOP SLAB**

(D) = 4'-0"

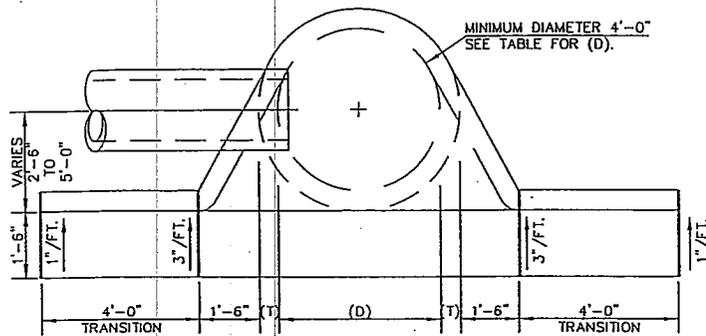


**RIGHT HAND TOP SLAB**

(D) = 4'-0"

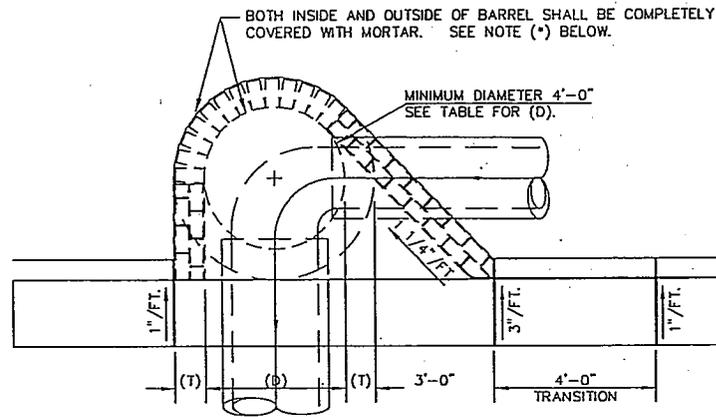
**NOTES**

1. THE TOP COVER IS TO BE PRECAST AND ATTACHED WITH GROUTED DOWELS.
2. MANHOLE STEPS ON 16" CENTERS SHALL BE PROVIDED WHEN CURB INLET DEPTH EXCEEDS FOUR (4) FEET.
3. THE MANHOLE FRAME AND COVER SHALL BE ACHESON FOUNDRY CASTING A-2522-41C OR EQUAL.
4. THE WORD "STORM" OR "DRAIN" IS TO BE ON THE TOP SIDE OF EACH COVER.
5. CATCH BASIN FRAMES, BACKS, AND GRATES THAT ARE REMOVED BY THE CONTRACTOR SHALL REMAIN THE PROPERTY OF THE OWNER.



**SUMP INLET \***

CONCRETE CONSTRUCTION SHOWN, BUT BRICK MAY BE USED.



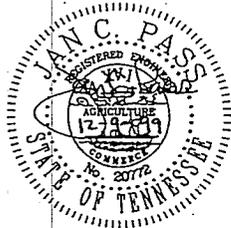
**ECCENTRIC CURB INLET \***

RIGHT HAND PLAN - BRICK CONSTRUCTION SHOWN, BUT CONCRETE MAY BE USED.

PIPE SIZE	(D) INLET DIAMETER	(T) WALL THICKNESS		(H) MINIMUM DEPTH
		CONC.	BRICK	
12"	4'	6"	8"	2.83'
15"	4'	6"	8"	3.10'
18"	4'	6"	8"	3.38'
21"	4'	6"	8"	3.65'
24"	4'	6"	8"	3.92'
30"	4'	6"	8"	4.46'
36"	5'	8"	12"	5.00'
42"	5'	8"	12"	5.54'
48"	6'	8"	12"	6.08'
54"	7'	8"	12"	6.63'
60"	8'	8"	12"	7.17'

SPAN	RISE	(D)	(T)	(H)	
14"	9"	4'	6"	8"	2.42'
17"	13"	4'	6"	8"	2.75'
21"	15"	4'	6"	8"	2.92'
24"	18"	4'	6"	8"	3.21'
28"	20"	4'	6"	8"	3.38'
35"	24"	5'	8"	12"	3.71'
42"	29"	5'	8"	12"	4.17'
49"	33"	6'	8"	12"	4.50'
57"	36"	6'	8"	12"	4.92'
64"	43"	7'	8"	12"	5.33'

**\* NOTE**  
 FOR BRICK CONSTRUCTION, JOINTS SHALL ALWAYS BE COMPLETELY FILLED WITH MORTAR. BRICKS SHALL BE LAID RADIALLY WITH VERTICAL MORTAR JOINTS NOT MORE THAN 3/8" THICK AND HORIZONTAL MORTAR JOINTS NOT LESS THAN 3/8" THICK AT THE INSIDE FACE. INSIDE JOINTS SHALL BE TROWEL STRUCK, FLUSH JOINTS TO PROVIDE A SMOOTH, CLEAN SURFACE, WHILE OUTSIDE WALLS SHALL BE ENTIRELY COVERED WITH MORTAR FOR A SMOOTH, CLEAN SURFACE.



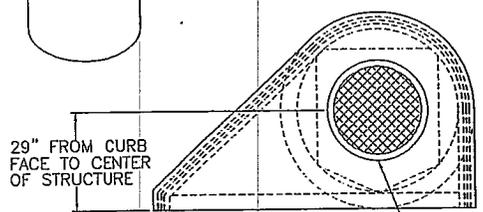
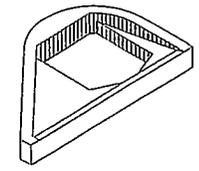
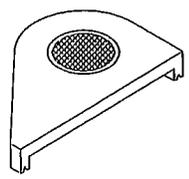
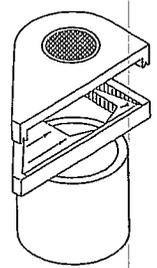
NO.	INITIAL ISSUE	DATE
0		12/10/99

**CITY OF CHATTANOOGA AND HAMILTON COUNTY**  
**CURB INLET (CONCRETE/BRICK)**

DATE OF ORIGINAL ISSUE  
 DECEMBER 10 1999

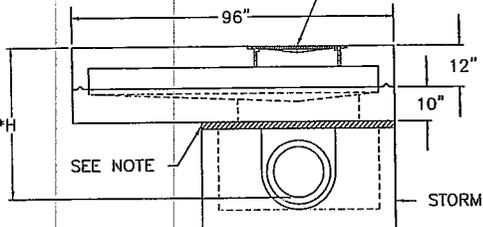
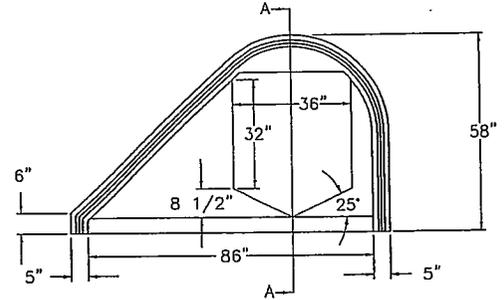
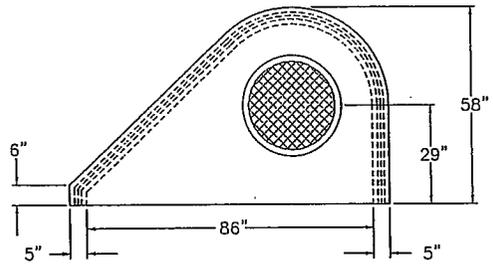
STANDARD NUMBER: SD-609.02

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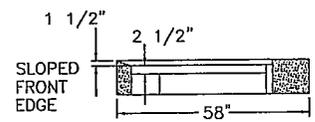
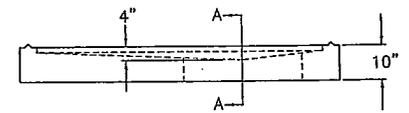
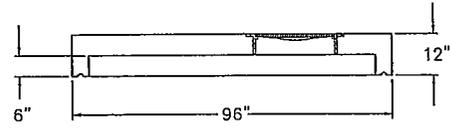
29" FROM CURB  
FACE TO CENTER  
OF STRUCTURE

CHATTANOOGA LOGO JBS 1045  
OR HAMILTON COUNTY  
STANDARD CAST-IN



SEE NOTE

STORM STRUCTURE

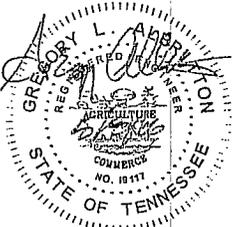


SECTION A-A

**NOTE**

4" OF ADJUSTMENT IF ROADWAY SLOPE IS  
EQUAL TO OR LESS THAN 5 PERCENT. IF  
ROADWAY SLOPE EXCEEDS 5 PERCENT,  
THEN ADDITIONAL ADJUSTMENT MUST BE  
USED UP TO A MAXIMUM OF 8".

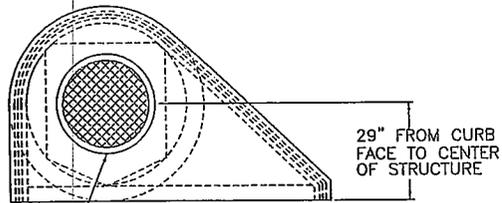
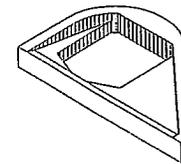
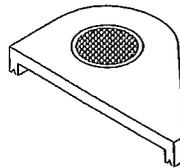
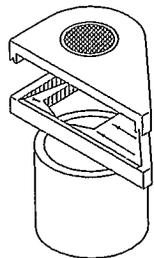
\*H: SEE STANDARD  
SD-610.04



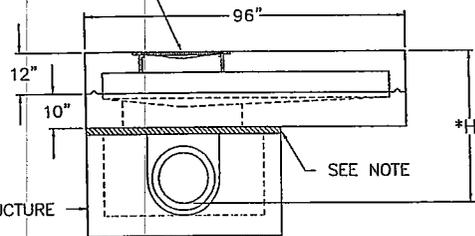
NO.	REVISION	DATE
1	CURB INLET-LEFT MOVED TO THIS SHEET AND UPDATED	3/27/06
0	INITIAL ISSUE	12/10/99

<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
<i>CURB INLET-LEFT (PRECAST CONCRETE)</i>	
DATE OF ORIGINAL ISSUE <b>DECEMBER 10, 1999</b>	STANDARD NUMBER: <b>SD-610.01</b>

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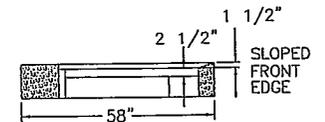
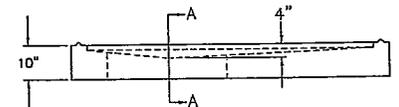
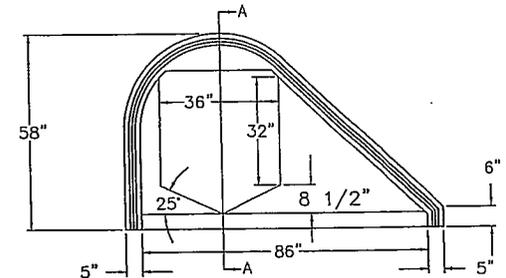
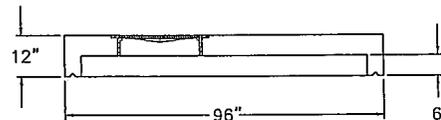
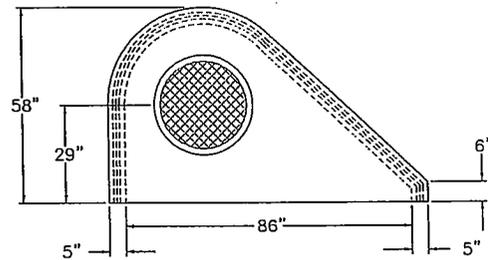


CHATTANOOGA LOGO JBS  
1045 OR HAMILTON COUNTY  
STANDARD CAST-IN



STORM STRUCTURE

SEE NOTE

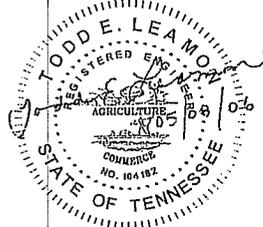
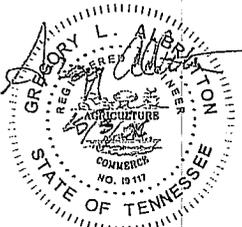


SECTION A-A.

**NOTE**

4" OF ADJUSTMENT IF ROADWAY SLOPE IS EQUAL TO OR LESS THAN 5 PERCENT. IF ROADWAY SLOPE EXCEEDS 5 PERCENT, THEN ADDITIONAL ADJUSTMENT MUST BE USED UP TO A MAXIMUM OF 8".

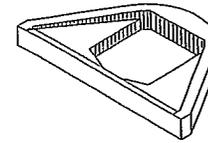
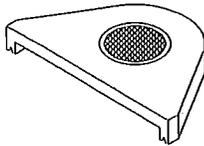
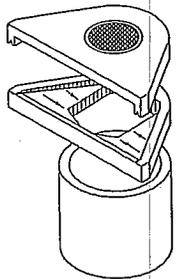
\*H: SEE STANDARD SD-610.04



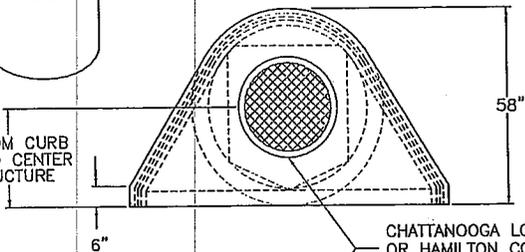
NO.	REVISION	DATE
1	CURB INLET-RIGHT MOVED TO THIS SHEET AND UPDATED	3/27/06
0	INITIAL ISSUE	12/10/99

<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
<i>CURB INLET-RIGHT (PRECAST CONCRETE)</i>	
DATE OF ORIGINAL ISSUE <b>DECEMBER 10, 1999</b>	STANDARD NUMBER: <b>SD-610.02</b>

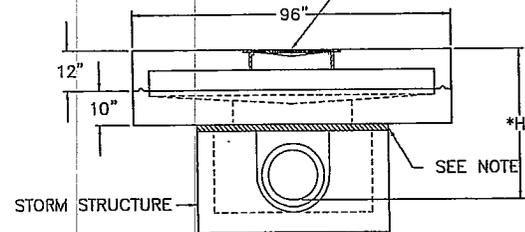
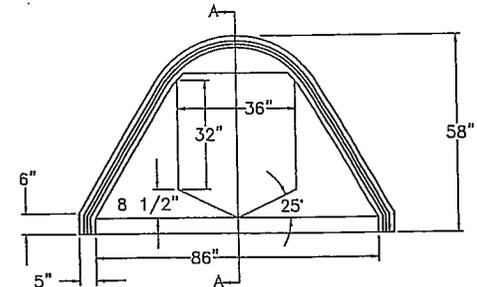
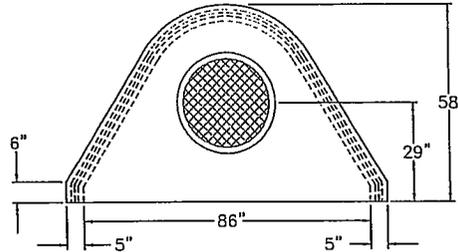
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29" FROM CURB  
FACE TO CENTER  
OF STRUCTURE

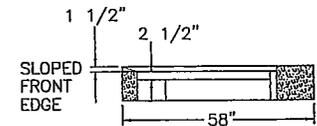
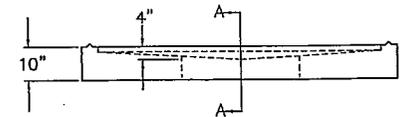
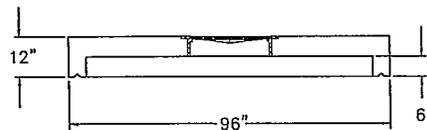


CHATTANOOGA LOGO JBS 1045  
OR HAMILTON COUNTY  
STANDARD CAST-IN



STORM STRUCTURE

SEE NOTE

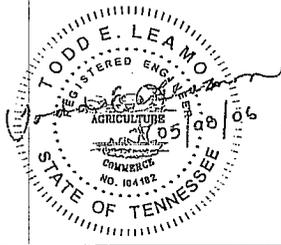


SECTION A-A

**NOTE**

4" OF ADJUSTMENT IF ROADWAY SLOPE IS  
EQUAL TO OR LESS THAN 5 PERCENT. IF  
ROADWAY SLOPE EXCEEDS 5 PERCENT,  
THEN ADDITIONAL ADJUSTMENT MUST BE  
USED UP TO A MAXIMUM OF 8".

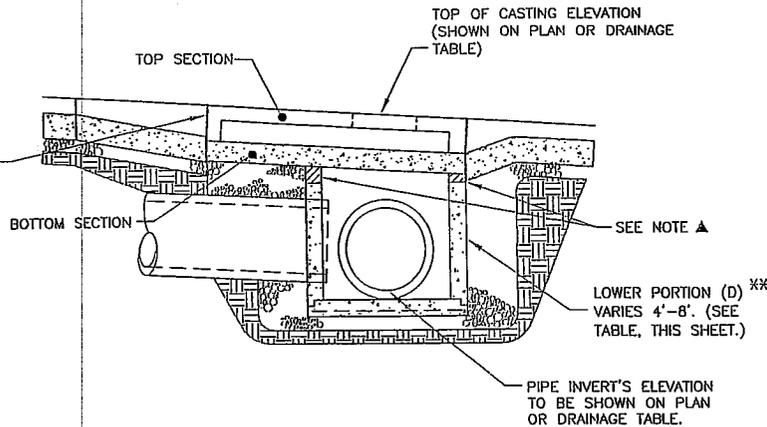
\*H: SEE STANDARD  
SD-610.04



NO.	REVISION	DATE
1	CURB INLET-CENTER MOVED TO THIS SHEET AND UPDATED	3/27/06
0	INITIAL ISSUE	12/10/99

<b>CITY OF CHATTANOOGA AND HAMILTON COUNTY</b>	
<i>CURB INLET-CENTER (PRECAST CONCRETE)</i>	
DATE OF ORIGINAL ISSUE <i>DECEMBER 10, 1999</i>	STANDARD NUMBER : <i>SD-610.03</i>

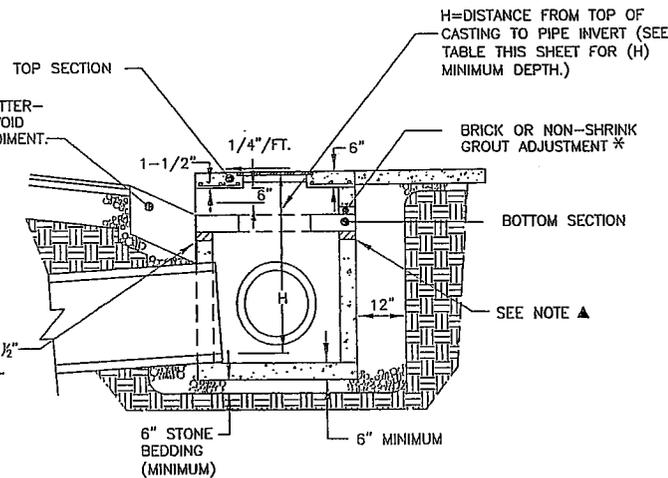
1/2" EXPANSION JOINT ON BOTH SIDES OF PRE-CAST STRUCTURE AT CURB AND GUTTER SECTION.



SECTION A-A

POURED-IN-PLACE GUTTER—MAINTAIN SLOPE TO AVOID ACCUMULATION OF SEDIMENT.

1/2" EXPANSION JOINT WITH 1/2" x 1/2" CAULK JOINT TYPICAL.



SECTION B-B

\* ADJUSTMENTS

FOR BRICK ADJUSTMENT CONSTRUCTION, JOINTS SHALL ALWAYS BE COMPLETELY FILLED WITH MORTAR. VERTICAL MORTAR JOINTS SHALL NOT BE MORE THAN 3/8" THICK AND HORIZONTAL MORTAR JOINTS NOT LESS THAN 3/8" THICK AT THE INSIDE FACE. INSIDE JOINTS SHALL BE TROWEL STRUCK, FLUSH JOINTS TO PROVIDE A SMOOTH, CLEAN SURFACE, WHILE OUTSIDE WALLS SHALL BE ENTIRELY COVERED WITH MORTAR FOR A SMOOTH, CLEAN SURFACE. IF THE REQUIRED ADJUSTMENT IS LESS THAN 3", IT SHALL BE MADE BY PLACING NON-SHRINK GROUT TO OBTAIN THE PROPER ELEVATION AT THE TOP OF THE SLAB.

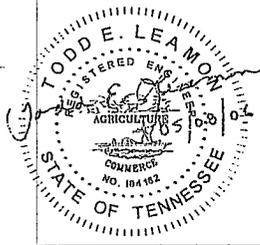
PIPE SIZE	(D) LOWER PORTION INLET DIAMETER**	(T) WALL THICKNESS CONCRETE	(H) MINIMUM DEPTH
12"	4'	5"	3.25'
15"	4'	5"	3.5'
18"	4'	5"	4.0'
21"	4'	5"	4.25'
24"	4'	5"	4.5'
30"	4'	5"	5.0'
36"	5'	6"	6.5'
42"	6'	7"	6.75'
48"	6'	7"	7.25'
54"	7'	8"	8.0'
60"	8'	9"	8.5'
SPAN RISE			
23"x14"	4'	5"	3.75'
30"x19"	4'	6"	4.0'
38"x24"	5'	6"	5.25'
45"x29"	6'	7"	5.75'
53"x34"	7'	8"	6.25'
60"x38"	8'	9"	7.25'

\*\* DIAMETER OF LOWER PORTION SHALL MEET MINIMUM DIAMETER (D) AS LISTED ABOVE. DIAMETER IS BASED ON PROPOSED PIPE SIZE. A PRECAST TRANSITION SLAB WILL BE UTILIZED TO ACCOMMODATE THE USE OF THE TOP PORTION AS SHOWN AND DIMENSIONED ON THIS DETAIL.

▲ 4" OF ADJUSTMENT IF ROADWAY SLOPE IS EQUAL TO OR LESS THAN 5 PERCENT. IF ROADWAY SLOPE EXCEEDS 5 PERCENT, THEN ADDITIONAL ADJUSTMENT MUST BE USED UP TO A MAXIMUM OF 8".

NOTES

1. THE LOWER PORTION (ROUND, PRE-CAST MANHOLE) SHALL BE CONSTRUCTED TO MEET A.S.T.M. C-478.
2. MANHOLE STEPS ON 12" CENTERS SHALL BE PROVIDED WHEN THE CURB INLET DEPTH EXCEEDS FOUR (4) FEET.
3. THE MANHOLE FRAME AND COVER SHALL BE ACHESON FOUNDRY CASTING A-2522-41C OR EQUAL.
4. THE WORDS "NO DUMPING-DRAINS TO RIVER" ARE TO BE ON THE TOP SIDE OF EACH COVER. (SEE SD-301.03.)
5. CATCH BASIN FRAMES, BACKS, AND GRATES THAT ARE REMOVED BY THE CONTRACTOR SHALL REMAIN THE PROPERTY OF THE OWNER.
6. THE TOP SURFACE OF THE TOP SECTION SHALL HAVE A BROOM FINISH TO MATCH THE EXISTING OR PROPOSED SIDEWALK.
7. THE BOTTOM SECTION MAY BE RECTANGULAR.
8. H= DIMENSION FROM TOP OF CURB/CASTING TO PIPE INVERT
9. FORMULA FOR DETERMINING H = 22" FOR TOP UNIT + 4" ADJUSTMENT BETWEEN TOP AND PIPE CHAMBER + PIPE WALL THICKNESS + PIPE I.D. (22 + 4 + P + P).  
-EXAMPLE FOR 18" RCP - P = 2.5 P = 18  
22 + 4 + 2.5 + 18 = 46.5"  
46.5 / 12 = 3.87 (SAY 4.0)  
\*ROUNDED UP TO NEAREST 0.25" TO ALLOW FOR SOME FIELD ADJUSTMENT IF REQUIRED BY MINOR FIELD REVISIONS.
10. IN CRITICAL DEPTH SITUATIONS H MINIMUMS CAN BE REDUCED BY 0.25", BUT WOULD NOT SUGGEST TRYING TO DESIGN ENTIRE SYSTEM WITH CRITICAL DEPTH CUT HEIGHTS.
11. TO MEET THE MINIMUM H DIMENSION, PRECAST STRUCTURES MAY HAVE PIPE OPENINGS THAT DO NOT HAVE ANY CONCRETE ABOVE THE PIPE OPENING. PRECAST MANUFACTURER SHALL PROVIDE STAMPED STRUCTURE CALCULATIONS AND DESIGNS TO INDICATE THIS TYPE OF STRUCTURE WILL ACCOMMODATE HS 20 LOADING WHEN USED IN CONJUNCTION WITH THE TOP PHASE UNITS.
12. 5' DIAMETER AND LARGER PIPE CHAMBERS REQUIRE 8" TRANSITION SLAB.
13. ADDITIONAL PIPES AND ANGLES MAY REQUIRE LARGER INLET DIAMETER. A MINIMUM OF 1'-0" IS REQUIRED FROM OUTSIDE OF CORE TO OUTSIDE OF CORE.



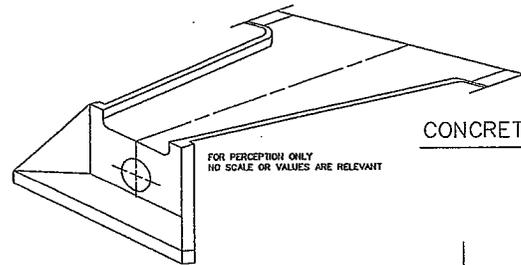
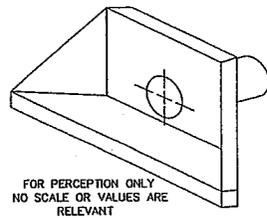
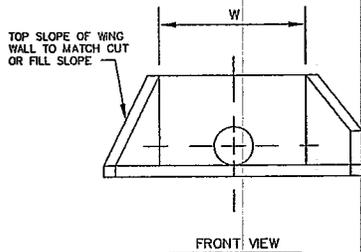
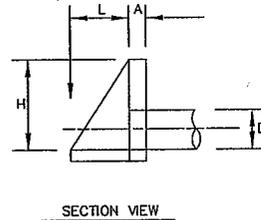
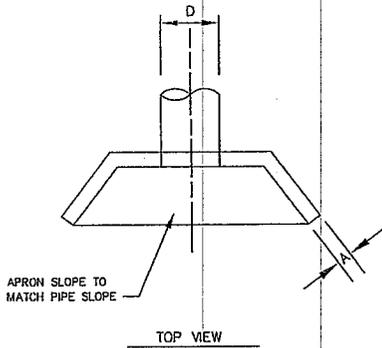
2	ALL MOVED TO THIS SHEET.	3/27/06
	NOTES 8-13 ADDED; SECTIONS A-A AND B-B ADJUSTED; TABLE ADJUSTED	
1	REVISIONS AS MARKED OR CLOUDED	8/24/01
0	INITIAL ISSUE	12/10/99
NO.	REVISION	DATE

CITY OF CHATTANOOGA AND HAMILTON COUNTY  
CURB INLET (PRECAST CONCRETE)

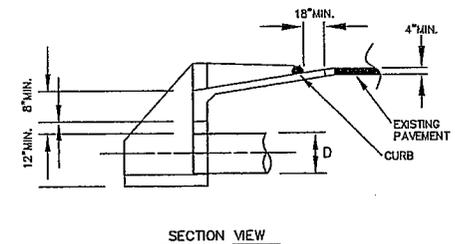
DATE OF ORIGINAL ISSUE  
DECEMBER 10, 1999

STANDARD NUMBER : SD-610.04

D	15"	18"	24"	30"	36"	42"	48"	54"	60"
A	6"	6"	6"	6"	6"	6"	10"	10"	12"
H	2'-0"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	6'-0"	6'-6"	7'-0"
L	2'-0"	2'-0"	2'-0"	2'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"
W	4'-3"	4'-6"	5'-0"	5'-6"	7'-0"	8'-6"	9'-0"	9'-6"	10'-0"



CONCRETE SPILLWAY TYPE 1 WITH HEADWALL AND WINGWALL



If any conditions require any variation in the minimum size of any spillway, headwall, wingwall or other drainage structure it must first be approved by the County Engineer before construction is begun.

All Dimensions shown are minimum.

All structures to be sized to fit conditions.

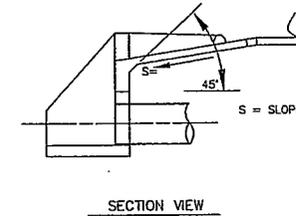
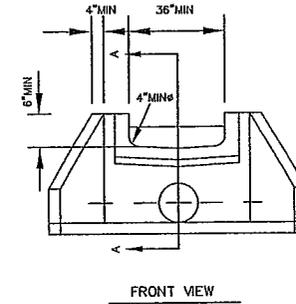
Class "A" concrete to be used only.

Cross sectional area of all spillways to be determined by drainage area of contributory. Said area to be shown on plan.

Elevation or top of headwall is to be 1-1/2" above the elevation of the top of the curb, unless conditions demand adjustments.

Concrete spillways are to be formed on all sides.

See "Headwall and Wingwall for Various Pipes" for dimensions and details.

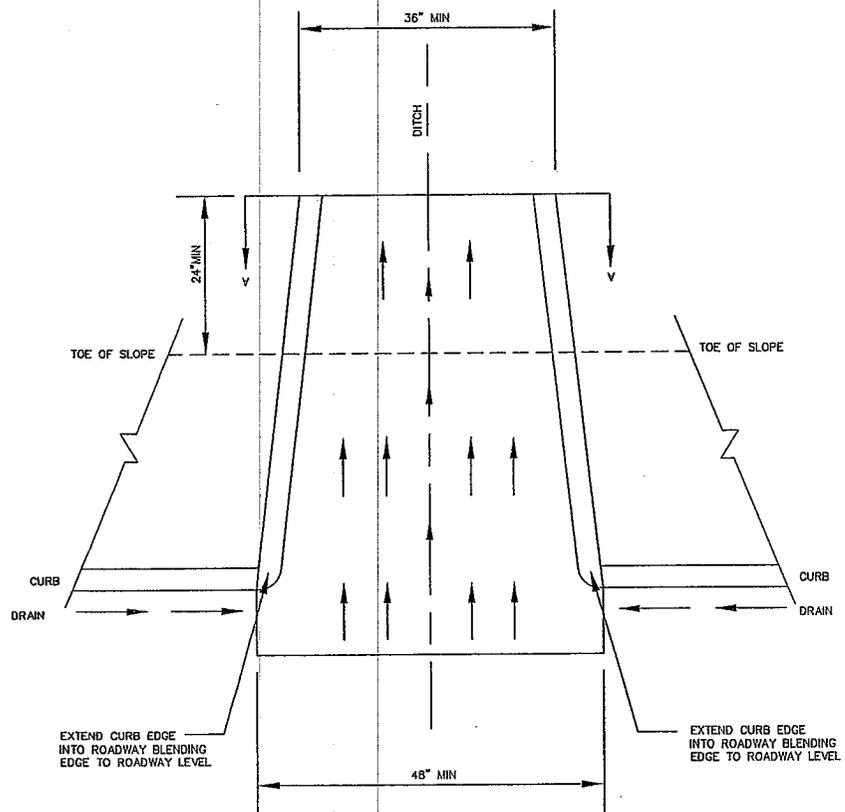


HEADWALL & WINGWALL FOR VARIOUS PIPES

0	REV. 0	DD/MM/YY
NO.	REVISION	DATE

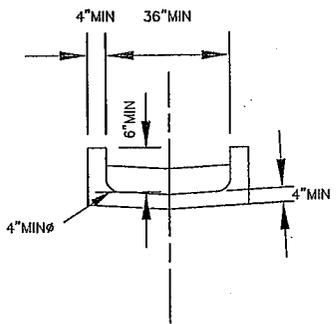
DATE OF ORIGINAL ISSUE  
07-01-06

HAMILTON COUNTY  
CONCRETE FLUME / HEADWALL

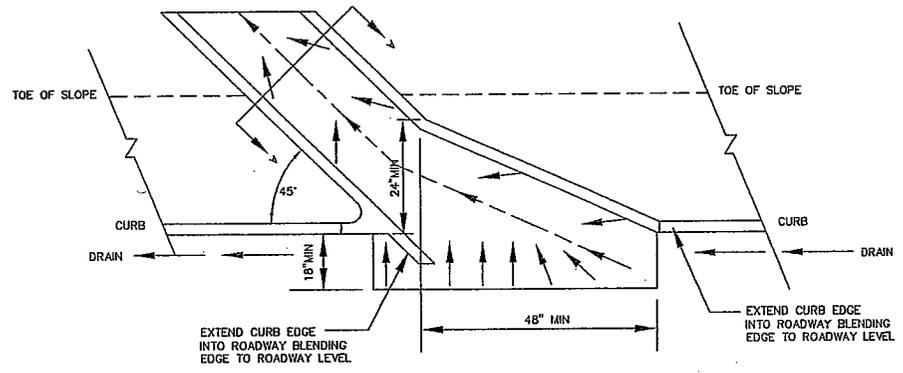


TOP VIEW

CONCRETE SPILLWAY TYPE 1



SECTION A-A



TOP VIEW

CONCRETE SPILLWAY TYPE 2

If any conditions require any variation in the minimum size of any spillway, headwall, wingwall or other drainage structure it must first be approved by the County Engineer before construction is begun.

All Dimensions shown are minimum.

All structures to be sized to fit conditions.

Class "A" concrete to be used only.

Cross sectional area of all spillways to be determined by drainage area of contributory. Said area to be shown on plan.

Concrete spillways are to be formed on all sides.



**HAMILTON COUNTY**  
**CONCRETE FLUME / HEADWALL**

0	REV_0	DD/MM/YY	DATE OF ORIGINAL ISSUE
NO.	REVISION	DATE	07-01-06