APPENDIX C
STANDARD DETAILS FOR SANITARY SEWERS

SD-300.01 Sanitary/Storm Manhole (Precast)
SD-301.01 Sanitary/Storm Manhole Details
SD-301.02 Sanitary/Storm Manhole Details
SD-301.03 Sanitary/Storm Manhole Details
SD-301.04 Sanitary/Storm Manhole Details
SD-302.01 Sanitary Manhole Drop Connection
SD-303.01 Sanitary Sewer Service Connection and Lateral
SD-304.01 Highway Crossing for Sanitary Sewers
SD-305.01 Creek and Ditch Crossings for Sanitary Sewers
SD-306.01 Trench Check Dam
SD-307.01 Trench Details/Bedding (Storm/Sanitary Sewers)
SD-308.01 Trench Details (Concrete Protection)
SD-308.02 Trench Details (Concrete Protection)
SD-309.01 Sewer Service Tap
1. All materials, design, manufacture, physical test requirements, finish, marking, inspection, rejection, and repairs shall meet A.S.T.M. C478 for precast, reinforced concrete manhole risers and tops except as may be modified in these specifications.

2. Size and locate pipe cutouts as required.

3. Manhole steps - see manhole steps detail on standard number SD-301.04.

4. End-of-line manholes that have future extensions and that are located in pavement shall be backfilled with flowable fill on 33-P stone (PUG). The backfill shall be compacted to 6-inch lifts, and shall extend ten (10') feet from the manhole along each trench.

5. A maximum of two concrete rings may be used for elevation adjustment of the manhole.

6. An eccentric cone manhole shall not be used.

NOTES

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PRECAST CONCRETE MANHOLES

CITY OF CHATTANOOGA AND HAMILTON COUNTY
SANITARY/STORM MANHOLE (PRECAST)

DATE OF ORIGINAL ISSUE: DECEMBER 10, 1999

STANDARD NUMBER: SD-300.01
INVERT SECTION

NOTE
"H" AND "I" DIMENSIONS APPLY
AT BOTH THE UPSTREAM AND THE
DOWNSTREAM EDGES OF MANHOLE.
SEE TABLE 1.

INVERT PLAN

INVERT DETAIL
(WITH DROP LESS THAN 12")

INVERT DETAIL
(WITH DROP OF
12" TO LESS THAN 24")

TABLE II
GOVERNING DIMENSIONS FOR MANHOLE INSERTS

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>Δ' ANGLE</th>
<th>BASE DIA.</th>
<th>R'</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; THRU 12&quot;</td>
<td>0° TO 90°</td>
<td>4&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
<td>0° TO 90°</td>
<td>4&quot;</td>
<td>1'-10&quot;</td>
</tr>
<tr>
<td>15&quot;</td>
<td>6° TO 90°</td>
<td>4&quot;</td>
<td>1'-10&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>0° TO 90°</td>
<td>4&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>6° TO 90°</td>
<td>4&quot;</td>
<td>2'-10&quot;</td>
</tr>
<tr>
<td>21&quot;</td>
<td>0° TO 90°</td>
<td>4&quot;</td>
<td>2'-7&quot;</td>
</tr>
<tr>
<td>21&quot;</td>
<td>6° TO 90°</td>
<td>5&quot;</td>
<td>2'-4&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>0° TO 45°</td>
<td>5&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>45° TO 90°</td>
<td>5&quot;</td>
<td>3'-7&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>0° TO 60°</td>
<td>5&quot;</td>
<td>3'-9&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>60° TO 90°</td>
<td>6&quot;</td>
<td>3'-6&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>0° TO 30°</td>
<td>6&quot;</td>
<td>4'-6&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>30° TO 90°</td>
<td>6&quot;</td>
<td>4'-6&quot;</td>
</tr>
</tbody>
</table>

LARGER THAN 36" 0° TO 90° SEE PLANS

CITY OF CHATTANOOGA AND HAMILTON COUNTY
SANITARY/STORM MANHOLE DETAILS

STANDARD NUMBER: SD-301.01
NOTES

1. LOCATE 4" VENT PIPE OUT OF TRAVELED WAY BEHIND THE CURB OR SIDEWALK OR AS REQUIRED BY THE PLANS.

2. TOP OF VENT SHALL BE A MINIMUM OF 1' ABOVE THE 100 YEAR FLOOD ELEVATION (HIGHER IF THE ELEVATION IS SHOWN ON THE PLANS).

3. USE TREATED SUPPORT POST WHEN $h > 3.0'$. 

160° BEND

BIRD SCREEN

1' MINIMUM

TREATED SUPPORT POST

1' MINIMUM

STAINLESS STEEL RANGLING MATERIAL Ø 1" C.C.

4" DUCTILE IRON PIPE VENT

6" MINIMUM CLASS "B" CONCRETE ON ALL SIDES

90° SHORT RADIUS ELBOW

MINIMUM SLOPE 1/8"/FT.

4" DUCTILE IRON PIPE WITH RUBBER BOOT

GRAVITY SEWER

10° MINIMUM

17° MAXIMUM

NOTE
SHAPE INVERT TO DIRECT FLOW TOWARD OUTLET OPENING.

MANHOLE VENT

CONNECTION OF FORCE
MAIN TO MANHOLE

CITY OF CHATTANOOGA AND HAMILTON COUNTY
SANITARY/STORM MANHOLE DETAILS

DATE OF ORIGINAL ISSUE: DECEMBER 10, 1999
STANDARD NUMBER: SD-301.02
NOTES
1. AIR RELEASE VALVE IS TO BE "CRISPIN SEWER VALVE", APCO 400 SEWAGE VALVE, OR EQUAL.
2. AIR-VACUUM VALVE INSTALLATION IS TO BE SIMILAR EXCEPT THAT THE VALVE IS TO BE APCO 402 SEWAGE VALVE, OR EQUAL.
3. 2" RELEASE LINE, GATE VALVE, AND CHECK VALVE ON AIR-VACUUM VALVE ONLY.
4. AIR RELEASE VALVE HOLES FOR 3/4" STAINLESS STEEL MANHOLE SECTION CONE WATER-TIGHT FRAME AND COVER
5. 2' TAP (STANDARD PIPE TAP) OR 2" TAPPED TEE (STANDARD PIPE TAP) DETERMINED BY WALL THICKNESS FOR PRESSURE PIPE AS RECOMMENDED BY THE PIPE MANUFACTURER.
6. THE MANUFACTURER SHALL CERTIFY THE TRAFFIC BEARING CAPACITY OF FRAMES AND COVERS.
7. MANHOLES IN PAVED AREAS MAY NOT REQUIRE ANCHOR BOLTS.
8. BEARING SURFACES BETWEEN COVER AND FRAME SHALL BE MACHINED TO PREVENT ROCKING.
MANHOLE STEPS

NOTES:
1. STEPS SHALL BE 3/8" STEEL REINFORCED ROD ENCAPSULATED IN POLYPROPYLENE PLASTIC.
2. RISER SECTIONS SHALL BE SET SO THAT STEPS ALIGN VERTICALLY.
3. THE FIRST STEP SHALL BE NO MORE THAN 16" BELOW THE TOP OF THE MANHOLE CONE.

JOINT AND GASKET FOR PRECAST MANHOLE SECTIONS

NOTES:
1. CLEAN ALL DEBRIS FROM JOINTS PRIOR TO GASKET APPLICATION.
2. TRIM PROTRUDING GASKET INSIDE AND OUTSIDE.
NOTES
1. SET INLET FROM DROP TO MATCH CROWNS WITH OUTLET EXCEPT THAT MINIMUM FALL ACROSS MANHOLE INVERT MUST BE 3'.

2. FOR DETAILS NOT SHOWN, SEE SANITARY/STORM MANHOLE DETAILS ON STANDARDS SD-301.01, SD-301.02, SD-301.03, AND SD-301.04.

3. THE RISER PIPE SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THAT OF THE INCOMING LINE.

MANHOLE DROP CONNECTION
(DROP OF 24" OR GREATER)
WYE BRANCH FOR FUTURE CONNECTION
PLUG AT THIS POINT.

FULL DEPTH BACKFILL WITH 33-P* STONE IN ROADWAYS (TYPICAL), REFER TO SD-700.01 AND SD-700.02 FOR BACKFILL.

MINIMUM:

FULL DEPTH, BACKFILL WITH 33-P* STONE IN ROADWAYS (TYPICAL), REFER TO SD-700.01 AND SD-700.02 FOR BACKFILL.

PIECE FOR FUTURE CONNECTION, PLUG AT THIS POINT.

MINIMUM:

FOR FUTURE CONNECTION, PLUG AT THIS POINT.

STANDARD BEDDING, REFER TO TRENCH DETAIL (SD-303.01) FOR BACKFILL REQUIREMENTS.

COMPACTED 33-P:

4" MINIMUM

TRENCH CHECK DAM

4" MINIMUM

FOR FUTURE CONNECTION, PLUG AT THIS POINT.

MINIMUM:

MAIN SEWER

FULL DEPTH BACKFILL WITH 33-P* STONE IN ROADWAYS (TYPICAL), REFER TO SD-700.01 AND SD-700.02 FOR BACKFILL.

1/2" WASHED STONE

PIECE FOR FUTURE CONNECTION, PLUG AT THIS POINT.

MINIMUM:

MAIN SEWER

PLUG AT THIS POINT.

MINIMUM:

FOR FUTURE CONNECTION, PLUG AT THIS POINT.

MINIMUM:

MAIN SEWER

NOTES:
1. STANDARD BEDDING SHALL EXTEND 4" MINIMUM ON EACH SIDE OF THE PIPE.
2. FOR DEPTH LESS THAN 4", PIPE SHALL BE DUCTILE IRON.

SHALLOW SEWER

DEEP SEWER

CITY OF CHATTANOOGA AND HAMILTON COUNTY
SANITARY SEWER SERVICE CONNECTION AND LATERAL DETAIL

DATE OF ORIGINAL ISSUE: DECEMBER 10, 1992
STANDARD NUMBER: SD-303.01
For details, see opposite end.

For size and wall thickness of casing pipe, see Table A. Pipe shall be coated inside and out per specification and shall be installed by boring, jacking, or tunneling.

Casing pipe shall be supported with Vertical and Horizontal Casing Spacers, as required by the Engineer.

Concrete Collar (When joining pipes of different materials) shall be coated inside and out as approved by the Engineer.

For carrier pipe size, see plan and profile drawings.

Concrete collar shall be supported with Vertical and Horizontal Casing Spacers, as required by the Engineer.

For size and wall thickness of Carrier pipe 54" or less, see Table A. Pipe shall be supported with Vertical and Horizontal Casing Spacers, as required by the Engineer.

For size and wall thickness of Carrier pipe 60" or greater, shall be installed by boring, jacking, or tunneling.

Concrete collar shall be supported with Vertical and Horizontal Casing Spacers, as required by the Engineer.

Casing pipe as required.
**Ditch Crossing Detail**

**Creek Crossing Detail**

**Table: Pipe Size and Trench Width**

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Size (in)</th>
<th>Trench Width &quot;BD&quot; (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2.35</td>
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<tr>
<td>10</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>2.67</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>3.25</td>
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<td>30</td>
<td>4.42</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>5.67</td>
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</tr>
<tr>
<td>42</td>
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<td></td>
</tr>
<tr>
<td>48</td>
<td>6.83</td>
<td></td>
</tr>
</tbody>
</table>

**City of Chattanooga and Hamilton County**

**Creek and Ditch Crossings for Sanitary Sewers**

Date of Original Issue: DECEMBER 10, 1999

Standard Number: SD-305.01
PAVEMENT REPLACEMENT

CRUSHED STONE (33-P) BASE (COMPACTED)

EXISTING GROUND

6" TOPSOIL

END VIEW
(SPLIT SECTION)

CRUSHED STONE (33-P) BASE (COMPACTED)
(MAY USE CLAY BACKFILL FOR CREEK CROSSINGS OR TOPSOIL AREAS.)

STANDARD BACKFILL MATERIAL

SECTION A-A

NOTE
A CHECK DAM SHALL BE LOCATED EVERY 500' ALONG THE TRENCH UNLESS SHOWN OTHERWISE ON THE PLANS.

* "33-P (PUG)" = J03-01, TYPE A, GRADING D ("33-P"), TENNESSEE D.O.T. SPECIFICATIONS.

CITY OF CHATTANOOGA AND HAMILTON COUNTY
TRENCH CHECK DAM

STANDARD NUMBER: SD-306.01
SCHEDULE OF BEDDING

NOTES

STANDARD BEDDING
MATERIAL SHALL BE PlACED AS SHOWN BY THE STANDARD DETAILS FOR THE TYPE AND SIZES SPECIFIED. THE BEDDINGS SHALL BE PLACED IN THE UNIT PRICES PER LINEAR FOOT OF PIPE PER VARIOUS TYPES, SIZES, AND DEPTHS LISTED IN THE SCHEDULE.

CLASS "C" BEDDING MATERIAL (SECTION 204.04, TENNESSEE D.O.T. SPECIFICATIONS)
MATERIAL FOR CLASS "C" BEDDING FOR PIPE (CL567) SHALL CONSIST OF SAND OR A NATURAL SSIW MATERIAL OR A MIXTURE OF WHICH PASS A 3/8-INCH SCREEN AND NOT MORE THAN 10 PERCENT OF THE FINISH GRADE OVER THE GRAVEL, CHERT, OR SLAG MEETING THE GRADING REQUIREMENTS FOR OTHER GRADES 6, 12, OR 24, OF SUBSECTION 903.17.

IN ROCK CUTS OR OTHER AREAS DESIGNATED BY THE ENGINEER WHERE A FREE DRAINAGE BEDDING OFF RAMP MATERIAL IS REQUIRED, THE MATERIAI SHALL BE CRUSHED STONE CRUSHED SLIP OR WASHED GRAVEL MEETING THE REQUIREMENTS OF SUBSECTION 903.17.

STORM SEWER ONLY
If LESS THAN 15', CONCRETE IS TO BE USED.

PVC PIPE BEDDING MATERIAL-MAT. 7 WASHED STONE (SECTION 903.22, TENNESSEE D.O.T. SPECIFICATIONS). ROCK TRENCH BEDDING
MATERIAL SHALL BE SAME AS FOR CLASS "C" BEDDING AND SHALL BE PLACED AS SHOWN BY THE STANDARD DETAILS FOR THE TYPE OF PIPE USED. QUANTITIES FOR THE ROCK TRENCH BEDDING ARE THE AMOUNTS IN EXCESS OF THOSE REQUIRED FOR CLASS "C" BEDDING.
CONCRETE CRADLE

NOTES
1. CLASS "B" CONCRETE IS TO BE POURED 18 HOURS BEFORE PLACING BACKFILL, AND IN A MANNER THAT PREVENTS THE FLOATING OF PIPES.
2. PIPES ARE TO BE LAID BEFORE THE CONCRETE HARDENS.
3. SEE STANDARD DRAWING SD-307.01.

CONCRETE CAP FOR SHALLOW PIPE

NOTES
1. CLASS "B" CONCRETE IS TO BE POURED 26 HOURS BEFORE PLACING BACKFILL, AND IN A MANNER THAT PREVENTS THE FLOATING OF PIPES.
2. CONCRETE ENCASEMENT IS REQUIRED FOR DITCHES AND CREEKS WHERE THE COVER IS 2'-6" OR LESS.
3. SEE STANDARD DRAWING SD-307.01.

CITY OF CHATTANOOGA AND HAMILTON COUNTY
TRENCH DETAILS (CONCRETE PROTECTION)

DATE OF ORIGINAL ISSUE: DECEMBER 10, 1999
STANDARD NUMBER: SD-308.01
When this dimension is less than 18", the sewer line shall be encased.

SECTION A-A

CONCRETE ENCASEMENT

BD* — SEE STANDARD SD-307.01.
KOR-N-SEAL BOOT OR APPROVED EQUAL

WIDTH = SEWER MAIN (OUTSIDE DIAMETER) + 4"

CLASS "B" CONCRETE ENCASEMENT TO THE CENTERLINE'S HORIZONTAL PLANE OF SEWER MAIN

4" OR 6" SERVICE LATERAL, PVC OR DUCTILE IRON AS REQUIRED

NOTE
ALL SUCH CONNECTIONS TO PIPES 15" OR LARGER MUST HAVE PRIOR APPROVAL BY CITY.