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 PLOTTED ON: 9/11/2017

PLOTTED: Friday, March 28, 2014 3:10:57 PM
 FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS\SAN-SEW-STD-04.SIGNED.DWG

<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p style="text-align: center;">NON-VENTED MANHOLE COVER</p> <p style="text-align: right;">1 of 2</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-24 OKLAHOMA CITY UTILITIES DEPARTMENT</p>	<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p style="text-align: center;">NON-VENTED MANHOLE COVER</p> <p style="text-align: right;">2 of 2</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-25 OKLAHOMA CITY UTILITIES DEPARTMENT</p>	<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p style="text-align: center;">SERVICE CONNECTION INSTALLATION</p> <p style="text-align: right;">S-26</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-26 OKLAHOMA CITY UTILITIES DEPARTMENT</p>	<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p>1. EXTERNAL CONNECTIONS FOR NEW CONSTRUCTION</p> <p>a. WYE BRANCHES – For new construction there shall be installed wye branches of size and type shown on the plans with six (6") openings at locations shown on the plans or as described by the Engineer.</p> <p>b. ELECTRO FUSION BONDED SADDLES – For new construction using "Trenchless Construction" technology with HDPE pipe, service connections shall be installed with an electro fusion bonded saddle.</p> <p>2. EXTERNAL CONNECTION TO EXISTING MAIN – Connections to existing main may be accomplished as follows:</p> <p>a. SADDLES – Connections may be made by excavating the existing main and cutting a hole using approved equipment and installing a saddle. Sewer service connections constructed with saddles shall include straps, a one-eighth (1/8") degree bend, and a closure piece, when existing main has been rehabilitated by trenchless method of construction, the saddle connection shall be made to the pipe/liner.</p> <p>b. TEES – Connections may be made by removing a section of existing pipe and installing a wye branch. Fittings and closure assembly shall be used to make the connection and shall be supplied in a normal diameter or six (6") inches. The external connection shall be considered complete when backfilling and surface restoration is complete. Service connections constructed with wye branches shall include a one-eighth (1/8") degree bend, elbow, and when required, a closure piece.</p> <p>3. RISER</p> <p>a. INSTALLATION – The pipe may be installed in one of four ways shown or "Service Connection Details." Vertical installation is only approved if approved by the City Engineer.</p> <p>b. SIZE AND MATERIAL – The riser pipe shall be four inch (4") PVC.</p> <p>4. LOCATOR TAPE – A locator tape, green in color stating "CAUTION – SANITARY SEWER RISER BURIED BELOW" shall be attached to the sanitary sewer riser and extended to a minimum of two (2) feet above the ground, the tape shall be three (3") inch wide DuraTac as manufactured by THOR Enterprises, Inc., of Sun Prairie, Wisconsin or approved equal.</p> <p style="text-align: center;">SERVICE CONNECTION INSTALLATION</p> <p style="text-align: right;">S-27</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-27 OKLAHOMA CITY UTILITIES DEPARTMENT</p>																																																																																																
<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p style="text-align: center;">SECTION</p> <p>NOTES: PLUGGED PIPE ENDS OPTION A - GROUT – both ends of the casing pipe shall be plugged with a grout or concrete having a minimum compressive strength of twenty-five hundred (2500 psi) pounds per square inch or grouted masonry. Each plug shall be a minimum length of eighteen (18) inches. The grouting pressure shall be in accordance with the pipe manufacturer's recommendations. OPTION B - SEALS – both ends shall be sealed with neoprene rubber seals with stainless steel bandings.</p> <p style="text-align: center;">BORE AND ENCASEMENT DETAIL</p> <p style="text-align: right;">1 of 2</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-28 OKLAHOMA CITY UTILITIES DEPARTMENT</p>	<h3 style="text-align: center;">SANITARY SEWER STANDARD DETAIL</h3> <p>2. CASING PIPE SIZE – Steel casing pipe shall have the following suggested minimum diameters:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PIPE NOMINAL SIZE (INCHES)</th> <th>SUGGESTED CASING PIPE INSIDE DIAMETER (INCHES)</th> </tr> </thead> <tbody> <tr><td>4</td><td>6 to 10</td></tr> <tr><td>6</td><td>10 to 12</td></tr> <tr><td>8</td><td>14 to 16</td></tr> <tr><td>10</td><td>16 to 18</td></tr> <tr><td>12</td><td>18 to 20</td></tr> <tr><td>15</td><td>20 to 22</td></tr> <tr><td>18</td><td>24 to 26</td></tr> <tr><td>20</td><td>33 to 35</td></tr> <tr><td>22</td><td>33 to 36</td></tr> <tr><td>30</td><td>36 to 42</td></tr> <tr><td>36</td><td>42 to 48</td></tr> <tr><td>42</td><td>54 to 60</td></tr> <tr><td>48</td><td>60 to 66</td></tr> </tbody> </table> <p>3. CASING PIPE THICKNESS – Steel casing pipe shall have the following minimum thickness(es), in inches, for the indicated maximum depth of cover(s), in feet or as required by the railroad at the time of construction:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">OUTSIDE DIAMETER (INCHES)</th> <th colspan="2">UNDER HIGHWAY</th> <th colspan="2">UNDER RAILROAD</th> </tr> <tr> <th>WALL THICKNESS (INCHES)</th> <th>MAXIMUM COVER (FEET)</th> <th>BNSS (INDICATED) WALL THICKNESS (INCHES)</th> <th>UNION PACIFIC WALL THICKNESS (INCHES)</th> </tr> </thead> <tbody> <tr><td>≤ 12</td><td>0.1880</td><td>30</td><td>0.2500</td><td>0.2500</td></tr> <tr><td>16</td><td>0.2500</td><td>30</td><td>0.3125</td><td>0.3125</td></tr> <tr><td>18</td><td>0.2500</td><td>30</td><td>0.3125</td><td>0.3125</td></tr> <tr><td>20</td><td>0.2500</td><td>30</td><td>0.3125</td><td>0.3125</td></tr> <tr><td>24</td><td>0.2500</td><td>30</td><td>0.4375</td><td>0.4375</td></tr> <tr><td>30</td><td>0.3200</td><td>30</td><td>0.5000</td><td>0.5000</td></tr> <tr><td>36</td><td>0.3750</td><td>30</td><td>0.5625</td><td>0.5625</td></tr> <tr><td>42</td><td>0.3750</td><td>25</td><td>0.5625</td><td>0.5625</td></tr> <tr><td>48</td><td>0.4380</td><td>25</td><td>0.6250</td><td>0.6250</td></tr> <tr><td>54</td><td>0.4380</td><td>25</td><td>OVER 4" MUST BE APPROVED BY BNSS/RR</td><td>OVER 4" MUST BE APPROVED BY U.P.R.R.CO.</td></tr> <tr><td>60</td><td>0.4380</td><td>25</td><td></td><td></td></tr> <tr><td>66</td><td>0.4380</td><td>20</td><td></td><td></td></tr> </tbody> </table> <p>4. CASING MATERIAL – Steel casing pipe shall conform with ASTM A-190, Standard Specification for Electric-Fusion (ARC)-Welded Steel Pipe (NPS4 and over). The steel material shall be new, smooth wall, carbon steel, Grade B, with a minimum tensile strength, and minimum thirty-five thousand (35,000 psi) pounds per square inch yield strength.</p> <p style="text-align: center;">BORE AND ENCASEMENT DETAIL</p> <p style="text-align: right;">2 of 2</p> <p style="font-size: small;">03/13/14 DATE: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: 3/14/14 S-29 OKLAHOMA CITY UTILITIES DEPARTMENT</p>		PIPE NOMINAL SIZE (INCHES)	SUGGESTED CASING PIPE INSIDE DIAMETER (INCHES)	4	6 to 10	6	10 to 12	8	14 to 16	10	16 to 18	12	18 to 20	15	20 to 22	18	24 to 26	20	33 to 35	22	33 to 36	30	36 to 42	36	42 to 48	42	54 to 60	48	60 to 66	OUTSIDE DIAMETER (INCHES)	UNDER HIGHWAY		UNDER RAILROAD		WALL THICKNESS (INCHES)	MAXIMUM COVER (FEET)	BNSS (INDICATED) WALL THICKNESS (INCHES)	UNION PACIFIC WALL THICKNESS (INCHES)	≤ 12	0.1880	30	0.2500	0.2500	16	0.2500	30	0.3125	0.3125	18	0.2500	30	0.3125	0.3125	20	0.2500	30	0.3125	0.3125	24	0.2500	30	0.4375	0.4375	30	0.3200	30	0.5000	0.5000	36	0.3750	30	0.5625	0.5625	42	0.3750	25	0.5625	0.5625	48	0.4380	25	0.6250	0.6250	54	0.4380	25	OVER 4" MUST BE APPROVED BY BNSS/RR	OVER 4" MUST BE APPROVED BY U.P.R.R.CO.	60	0.4380	25			66	0.4380	20		
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The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

DATE: 03/14/14
DRAWN BY: JDS
CHECKED BY: MWS/EJW
SCALE: AS SHOWN
SHEET NUMBER: S-STD-04