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CITY OF MERCER ISLAND
ENGINEERING STANDARDS 7-41
SANITARY SEWER
DIVISION 7
City Plan Holders List

Standards Book
Utilities Operations Manager
Assistant City Engineer
Utility and Site Improvement Inspector
CRT
SR Development Engineer
City Engineer
Internet
DUCTILE IRON WATER MAIN

5'-0' MIN. (SEE NOTE 3)

CAST IRON WATER MAIN

1'-6' MIN. (SEE NOTE 5)

SEWER

1'-6' MIN. (SEE NOTE 5)

WATER MAIN

SEWER

9'-0"

9'-0"

PARALLEL INSTALLATION

CROSSING WATER OVER SEWER

CROSSING WATER UNDER SEWER

STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.

NOTES
1. ANY EXCEPTIONS TO THE STANDARD PLAN MAY BE APPROVED BY THE CITY ENGINEER.

2. "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.

3. WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS INCLUDING WATER MAIN PRESSURE TESTING REQUIREMENTS.

4. NO VERTICAL CLEARANCE REQUIRED.

5. IF VERTICAL SEPARATION CANNOT BE MET, WATER MAIN SHALL BE A STANDARC SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.

6. SEWER SHALL HAVE ADEQUATE FOUNDATION SUPPORT TO PREVENT SETTLEMENT ON THE WATER MAIN AND TO PREVENT DEFLECTION OF WATER MAIN JOINTS.

7. CROSSINGS AT AN ANGLE BETWEEN 90' AND 45' MAY OCCUR BETWEEN 9'-0" AND 6'-0" OF WATER MAIN JOINT FOR CROSSINGS LESS THAN 45', SEE NOTE 1.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
WATER & SEWER CLEARANCES
AND MATERIAL REQUIREMENTS
6-5-2009 NO SCALE S-2

REV DATE

APPROVED
NOTES

1. ALL TRENCH BACKFILL IN PUBLIC RIGHT-OF-WAY OR ROADWAY AREAS SHALL BE CRUSHED SURFACING PER WSDOT 9-09.9(3) OR BANK RUN GRAVEL PER WSDOT 9-03.19, COMPACTED IN 6" LIFTS.

2. CDF FOR BACKFILL MAY BE REQUIRED BY CITY ENGINEER WHEN PROPER COMPACTION AROUND EXISTING UTILITIES MAY NOT BE POSSIBLE. CDF SHALL BE PER WSDOT 2-09.3(1)E.

3. SEE S-4 FOR PIPE BEDDING DETAILS.

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>PIPE ZONE MAX. TRENCH WIDTH</th>
<th>MAX. TRENCH WIDTH AT SUBGRADE</th>
<th>MAX. RESTORATION WIDTH AT SURFACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIDE SEWER</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>4&quot; OR 6&quot;</td>
<td>2'-2&quot;</td>
<td>3'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2'-4&quot;</td>
<td>4'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td>2'-6&quot;</td>
<td>4'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
<td>2'-8&quot;</td>
<td>4'-6&quot;</td>
<td>8'-6&quot;</td>
</tr>
</tbody>
</table>
BEDDING FOR RIGID PIPE MATERIAL

TRENCH WIDTH
(SEE NOTE 5)

PIPE ZONE BACKFILL
(SEE DETAIL S-3)

1/2 O.D.
6"

1/2 O.D.

GRAVEL BACKFILL FOR PIPE
ZONE BEDDING PER WSDOT 9-03.12(3)

GRAVEL BACKFILL AS REQUIRED.
SEE NOTE 1.

BEDDING FOR FLEXIBLE PIPE MATERIAL

TRENCH WIDTH
(SEE NOTE 5)

GRAVEL BACKFILL FOR PIPE
ZONE BEDDING PER WSDOT 9-03.12(3)

GRAVEL BACKFILL AS REQUIRED.
SEE NOTE 1.

NOTES

1. EXCAVATE UNSTABLE MATERIAL DOWN TO FIRM SOIL.
   REPLACE WITH GRAVEL BACKFILL PER WSDOT 9-03.12(3)
   AS DIRECTED BY THE CITY ENGINEER.

2. PROVIDE UNIFORM SUPPORT UNDER BARREL.

3. HAND TAMP UNDER HAUNCHES.

4. COMPACT BEDDING AND BACKFILL MATERIAL TO 95% MAX.
   DENSITY EXCEPT DIRECTLY OVER PIPE. HAND TAMP ONLY
   UNTIL MINIMUM 6" ABOVE TOP OF PIPE.

5. 30" MAXIMUM TRENCH WIDTH FOR PIPE UP TO AND
   INCLUDING 12", FOR PIPE LARGER THAN 12", USE O.D.
   PLUS 16".

ADJUSTMENT TO GRADE TO BE MADE WITH PRE CAST CONCRETE RINGS. USING MORTAR BETWEEN RINGS, SO EXCESSES PUSHES OUT WHEN RING IS INSTALLED. THEN FINISH

PRE CAST ECCENTRIC CONCRETE CONE.

RUBBER GASKETED PRE CAST CONCRETE SECTIONS

SAFETY STEPS & LADDER SEE STANDARD DETAIL S-16

VARIATES

MAXIMUM PIPE SIZE = "E"

PRE CAST CONCRETE BASE SECTION

CAST IN PLACE CHANNEL AND SHELF WITH 3,000 P.S.I. CONCRETE 3/4 WAY UP PIPE SLOPE 2% MIN. AFTER LINES AND MANHOLE ARE INSTALLED. CHANNELS THROUGH MANHOLE TO BE HAND FINISHED TO INSURE A SMOOTH UNINTERRUPTED FLOW.

"A"  "B"  "C"  "D"  "E"

<table>
<thead>
<tr>
<th>48” MH</th>
<th>48” 6 MIN.</th>
<th>5” MIN.</th>
<th>24” MIN.</th>
<th>21” I.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>54” MH</td>
<td>54” 8 MIN.</td>
<td>5.5” MIN.</td>
<td>24” MIN.</td>
<td>24” I.D.</td>
</tr>
<tr>
<td>60” MH</td>
<td>60” 8 MIN.</td>
<td>6” MIN.</td>
<td>42” MIN.</td>
<td>30” I.D.</td>
</tr>
</tbody>
</table>

NOTES

1. PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.

2. SAFETY STEPS, 1” MINIMUM, SEE STANDARD DETAILS S-16. STEPS IN PRE CAST BASE SECTION MAY BE CAST IN PLACE OR MOVABLE SAFETY LADDER GROUTED IN PLACE.

3. ALL HOLES FOR PIPE SHALL BE BLOCKED OUT AT THE TIME OF CASTING THE SECTION.

4. ALL RUBBER GASKETED MANHOLES SHALL BE FURNISHED WITH RUBBER GASKET JOINT CONFORMING ASTM C-443.

5. MINIMUM 2% SLOPE ACROSS MANHOLE.

6. SEE STANDARD DETAIL S-13 FOR MANHOLE FRAME AND COVER.

7. CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC x CONCRETE ADAPTER.

8. ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC. OR APPROVED EQUAL.

9. BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.

10. LOCATION OF MANHOLE STEPS SHALL NOT BE OVER FLOW LINES AND SHALL BE APPROVED BY THE CITY ENGINEER.
NOTES
1. PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.

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6. SEE STANDARD DETAIL S-13 FOR MANHOLE FRAME AND COVER.

7. CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC X CONCRETE ADAPTER.

8. ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" WITH "MEDGE KORBAND" MANUFACTURED BY NPC, INC. OR APPROVED EQUAL.

9. BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.

10. LOCATION OF MANHOLE STEPS SHALL NOT BE OVER FLOW LINES AND SHALL BE APPROVED BY THE CITY ENGINEER.

11. SEE STANDARD DETAIL S-15 FOR THE INSTALLATION OF A MANHOLE OVER AN EXISTING SEWER LINE.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

TYPE II MANHOLE – 72"

6-5-2009 NO SCALE S-6

APPROVED
NOTES

1. PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.

2. SAFETY STEPS, 1" MINIMUM, SEE STANDARD DETAILS S–16. STEPS IN PRE CAST BASE SECTION MAY BE CAST IN PLACE OR MOVABLE SAFETY LADDER GROUTED IN PLACE.

3. ALL HOLES FOR PIPE SHALL BE BLOCKED OUT AT THE TIME OF CASTING THE SECTION.

4. ALL RUBBER GASKETED MANHOLES SHALL BE FURNISHED WITH RUBBER GASKET JOINT CONFORMING ASTM C–443.

5. MINIMUM 2% SLOPE ACROSS MANHOLE.

6. SEE STANDARD DETAIL S–13 FOR MANHOLE FRAME AND COVER.

7. CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC X CONCRETE ADAPTER.

8. ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR–N–SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC. OR APPROVED EQUAL.

9. BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.

10. LOCATION OF MANHOLE STEPS SHALL NOT BE OVER FLOW LINES AND SHALL BE APPROVED BY THE CITY ENGINEER.
CASTING SEE STANDARD DETAIL S-13

ADJUSTMENT RINGS
AS REQUIRED

PRECAST
CONCENTRIC
CONE

4" MIN./12" MAX.

48" MAX./5" MIN.

4" MIN. PEA GRAVEL

POURED IN PLACE BASE

48"
PAVEMENT RESTORATION

MATCH EXISTING SURFACE IN TYPE AND DEPTH

3,000 P.S.I. PORTLAND CEMENT CONCRETE PERIMETER SEAL

CONCRETE PERIMETER SEAL SHALL EXTEND 2" BELOW ADJUSTMENT RINGS

NEAT SAW CUT EXISTING PAVEMENT

12"

PRE CAST ECCENTRIC CONE

CONCRETE BRICKS OR PRE-CAST CONCRETE ADJUSTMENT RINGS SET IN 3/4" GROUT (TYP.)

PRECAST MANHOLE

GRAVEL OR NATIVE MATERIAL RESTORATION
NOTES
1. ALL DUCTILE IRON PIPE SHALL BE CL. 50.
2. OUTSIDE DROP STRUCTURE SHALL BE INSTALLED ONLY WHERE APPROVED BY THE CITY ENGINEER.
3. DROP TEE TO BE INSTALLED MINIMUM 3' BELOW CONE SECTION.

TABLE "A"

<table>
<thead>
<tr>
<th>HEIGHT OF DROP (FT.)</th>
<th>MINIMUM BEARING AREA (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 - 5</td>
<td>1.0</td>
</tr>
<tr>
<td>6 - 10</td>
<td>2.0</td>
</tr>
<tr>
<td>11 - 15</td>
<td>2.5</td>
</tr>
<tr>
<td>16 - 20</td>
<td>3.0</td>
</tr>
<tr>
<td>21 - 25</td>
<td>4.0</td>
</tr>
</tbody>
</table>

BEARING AREA BASED ON 2,000 P.S.I. BEARING LOAD (UP TO 18" DIAMETER PIPE).
NOTES

1. PVC PIPE IS TO BE ASTM 3034 SDR 35, WITH RUBBER GASKET JOINTS.

2. DROP TEE TO BE INSTALLED MINIMUM 3' BELOW CONE SECTION.

3. INSIDE DROP STRUCTURE SHALL BE INSTALLED ONLY WHERE APPROVED BY THE CITY ENGINEER.
NOTES
1. COMPLETE ASSEMBLY TO BE GALVANIZED.
NON-SKID PATTERN TO BE CAST INTEGRAL ON TOP OF COVER

FOR 5/8" - NC x 1 1/4" SS SOC HD CAP SCREW (3 REQ'D.) (WHEN LOCKING LIDS ARE REQUIRED)

MANHOLE COVER PLAN

SECTION A-A
CAST IRON—LOCKING COVER
MINIMUM WEIGHT 150 LBS.

SECTION B-B
CAST IRON FRAME
MINIMUM WEIGHT: 150 LBS

NOTES
1. COVER SHALL HAVE THE WORD "SEWER" IN 2" RAISED LETTERS.
2. MANHOLE FRAME AND COVER 24" ROUND SHALL BE OLYMPIC FOUNDRY #MH30D/T.
3. WHEN LOCKING LIDS ARE REQUIRED, PROVIDE WRENCH FOR CAP SCREW TO CITY AS REQUIRED.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
24" MANHOLE FRAME WITH COVER

REV DATE
6-5-2009
N0 SCALE
S-13
APPROVED
NOTES

1. MIN. 0.1' DROP ACROSS CHANNEL MAX. 1.0' DROP ACROSS CHANNEL.

2. DEPTH OF CHANNEL MUST BE SAME AS PIPE DIAMETER.

CHANNEL TO BE FLUSH WITH PIPE

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
SEWER MANHOLE
MAIN CHANNEL AND SHELF

6-5-2009 NO SCALE S-14

REV DATE APPROVED
NOTES

1. EXISTING PIPE SHALL BE SUPPORTED AT ALL TIMES.

2. NO WEIGHT OF THE PRECAST UNIT SHALL BEAR ON THE EXISTING PIPE.

3. CONCRETE FOR CAST-IN-PLACE BASE SHALL BE CLASS 4000.

4. PRECAST MANHOLE SECTION SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD PLAN FOR THE SPECIFIED MANHOLE SIZE AND TYPE.

5. MANHOLE SECTIONS SHALL NOT BE INSTALLED UNTIL CONCRETE BASE HAS SET FOR 12 HOURS.


7. GROUT ALL OPENINGS TO ENSURE WATER TIGHT STRUCTURE.

8. A FLEXIBLE PIPE-TO-MANHOLE CONNECTOR SHALL BE EMPLOYED IN ALL CONNECTIONS OF RIGID AND FLEXIBLE PIPES TO NEW PRECAST CONCRETE MANHOLES. THE CONNECTOR SHALL BE "KOR-N-SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC., OR APPROVED EQUAL.

9. BASE REINFORCING STEEL SHALL BE PER MANUFACTURER'S RECOMMENDATION.
NOTES


2. THE STEPS MAY BE INSTALLED IN THE FOLLOWING MANNER.
A. CAST IN PLACE.
B. DRIVEN INTO PREFORMED HOLES WITH CONCRETE CURED TO 3,000 P.S.I. MINIMUM.
C. DRIVEN INTO PARALLEL 1" DIAMETER HOLES DRILLED 13" ON CENTER, 3 1/2" DEEP.
D. DRILL TWO 1 1/8" OR 1 1/4" HOLES 3 1/2" DEEP. APPLY EPOXY IN THE HOLE AND AROUND THE BARDHS OF THE STEP. PUSH THE STEP INTO THE HOLES ALLOWING THE EPOXY TO FLOW OUT TO THE SQUARE SHOULDER OF THE STEP. ANY OF THE ABOVE METHODS SHALL RESIST A PULLOUT FORCE OF OVER 1,000 LBS.
NOTES

1. ELBOWS SHALL NOT BE GREATER THAN 45 DEGREES.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90' ACCUMULATED ELBOW/100'.
3. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION AND BE IN ACCORDANCE WITH CITY STANDARDS.
4. ALL TRENCH BACKFILL IN PUBLIC RIGHT-OF-WAY OR ROADWAY AREAS SHALL BE CRUSHED SURFACING PER WSDOT 9-09.9(3) OR BANK RUN GRAVEL PER WSDOT 9-03.19, COMPACTED IN 6'' LIFTS OR MAY BE CDF WHEN DIRECTED BY THE CITY ENGINEER (SEE DETAIL S-3).
5. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH 1/8 BEND OR WYE. 90° CHANGE WITH 1/8 BEND AND WYE.
6. 6" SEWER PIPE MINIMUM SIZE IN RIGHT-OF-WAY, AND ELSEWHERE AS DIRECTED BY ENGINEER. 2% MIN. GRADE (UNLESS DIRECTED BY ENGINEER), 50% MAXIMUM.
7. ALL A.C. MAINS TO BE TAPPED IN ACCORDANCE WITH WAC 296-62-00075 STATE/FEDERAL GUIDELINES AND CERTIFICATION.
8. CONSTRUCTION IN RIGHT-OF-WAY MUST BE DONE BY A REGISTERED AND LICENSED CONTRACTOR.
9. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT CITY SEWER ORDINANCES.
10. WHERE CITY ENGINEER ALLOWS SIDE SEWER CONNECTIONS TO MANHOLE, INVERT OF SIDE SEWER SHALL BE EQUAL TO OR ABOVE MAIN SEWER CROWN, BUT NOT TO EXCEED 18° ABOVE INVERT OF MAIN SEWER.
11. UNLESS OTHERWISE INDICATED ON PLAN, SIDE SEWER SHALL BE MIN. OF 6' DEEP AT PROPERTY LINE, OR 6' LOWER THAN THE LOWEST ELEVATION, WHICH EVER IS LOWER.
12. ALL PIPE MATERIALS NOT TO STANDARDS WILL BE ABANDONED AND REPLACED WITH DUCTILE IRON OR PVC PIPE OF THE SAME SIZE.
13. IF A BUILDING SEWER IS TO SERVE MORE THAN ONE PROPERTY, BY JOINT AGREEMENT OF THE OWNERS, AN APPROVED EASEMENT INSURING THAT ALL PROPERTIES INVOLVED SHALL HAVE PERPETUAL USE OF THE SIDE SEWER, HAVING PROVISIONS FOR OPERATION, MAINTENANCE, RECONSTRUCTION AND FOR ACCESS FOR REPAIR PURPOSES, SHALL BE SIGNED BY THE OWNERS. THIS EASEMENT SHALL BE RECORDED WITH THE COUNTY AUDITOR. A SIX INCH (MINIMUM) DIAMETER PIPE SHALL BE USED FOR THE COMMON LINE AND A SIX INCH CLEANOUT EXTENDING TO WITHIN 12 INCHES OF THE GROUND SURFACE SHALL BE PROVIDED AT THE WYE WHERE THE UPPER GRADE CONNECTIONS ARE MADE. BACKWATER VALVES SHALL BE INSTALLED ON SERVICE LINES UPSTREAM OF THE CONNECTION TO THE SHARED SIDE SEWER.
15. UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE, CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6" MDE X 4 MILS THICK.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
SIDE SEWER CONNECTION AND STUB

6-5-2009  NC SCALE  S-17

REV DATE  APPROVED
See standard detail S-17 for connection to the sewer main.

Removal of 2x4 and cap and installation of house sewer, coupling, reducers, tee and bends to fit.

Building Connection

1. Elbows shall not be greater than 45 degrees.
2. Clean out is required for each pipe length greater than 100' and for each 90' accumulated elbow/100'.
3. All house plumbing outlets must be connected to the sewer. No down spouts or storm drainage may be connected to the sewer system.
4. 18" minimum coverage over pipe.
5. Lay pipe in straight line between bends. Make all changes in grade or line with 1/8 bend or wye. 90° change with 1/8 bend and wye.
6. 4" sewer pipe minimum size on property. 2% minimum grade.
7. All construction shall be in accordance with current sewer ordinances.
8. All construction requires a plan showing property and dimensions and completion of side sewer application and maintenance agreement, as needed.
9. Back water valve (check valve) is required:
   A. If connected to a shared side sewer.
   B. If connection at house is lower than both upstream and downstream manhole.
   C. See S-23 & S-24 for lake line requirements.
10. As-built drawing showing location of side sewer & all bends, c.o. etc., in relation to the house is required after inspection & installation. See standard detail S-38 for a typical "as built".
11. The minimum pipe size for side sewers shall be:
   6" - within the public right-of-way.
   4" - single family residences.
   6" - 2 to 6 single family residences.
   6" - buildings other than single family residences.
12. Utility pipe tracer tape shall be detectable below ground surface, color coded, with utility name printed on tape. Conductive warning tape required over all water pipe. Tape shall be manufacturer's standard permanent, bright-colored, continuous printed plastic tape, aluminum backed, intended for direct-burial service. Tape shall be not less than 6" wide x 4 mils thick.

City of Mercer Island
Standard Details
Sewer

House Sewer Connection

6-5-2009 No Scale S-18

Rev Date

Approved
NOTES
1. SEE S-27 FOR INSTALLATION DETAILS.
NOTES

1.UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE. CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER’S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6” WIDE X 4 MILS THICK.
NOTES
1. PIPE ANCHORS TO BE USED ONLY AS APPROVED BY THE ENGINEER.
2. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.
3. TIE ROD ASSEMBLIES SHALL BE COATED WITH ROYSTON ROSKOTE #612SM OR APPROVED EQUAL.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
PIPE ANCHOR DETAIL
6-5-2009 NO SCALE S-21
REV DATE
APPROVED
DISCONNECTION

WHEN DEMOLISHING AN EXISTING BUILDING, THE BUILDING SIDE SEWER SHALL BE DISCONNECTED PRIOR TO REMOVAL OF BUILDING FOUNDATIONS. THE CONTRACTOR SHALL INSTALL A MECHANICAL PLUG WITH NON-SHRINK GROUT AT THE END OF THE SIDE SEWER TO REMAIN IN PLACE. DISCONNECTION'S SHALL BE PERFORMED IN THE PRESENCE OF THE CITY'S UTILITY INSPECTOR. THE CONTRACTOR SHALL PROVIDE AN AS-BUILT DRAWING DEPICTING THE DISCONNECTED SIDE SEWER UPON COMPLETION OF THE WORK.

RECONNECTION

WHEN RECONNECTING TO AN EXISTING SIDE SEWER, THE POINT OF RECONNECTION WILL BE DETERMINED BASED ON THE MAGNITUDE OF THE CONSTRUCTION ON THE PROPERTY.

1. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION WITH NO ADDITIONAL PLUMBING FIXTURES — NO SIDE SEWER REPLACEMENT REQUIRED UNLESS A KNOWN PROBLEM EXISTS IN THE SIDE SEWER.

2. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION WITH ADDITIONAL PLUMBING FIXTURES—ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO PROPERTY LINE AND REPLACE AS NEEDED.

3. COMPLETE INTERIOR REMODEL OF RESIDENCE — ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO PROPERTY LINE AND REPLACE AS NEEDED. IF EXISTING SIDE SEWER IS ASBESTOS CEMENT OR CONCRETE, SIDE SEWER SHALL BE REPLACED FROM BUILDING TO PROPERTY LINE, UNLESS THE APPLICANT PROVES, TO THE SATISFACTION OF THE CITY ENGINEER, THAT THE SIDE SEWER IS WATER TIGHT AND IN SOUND CONDITION.*

4. COMPLETE INTERIOR REMODEL AND BUILDING ADDITION — NEW SIDE SEWER FROM BUILDING TO PROPERTY LINE.*

5. CONSTRUCTION OF A NEW SINGLE FAMILY RESIDENCE — NEW SIDE SEWER FROM BUILDING TO PROPERTY LINE.*

BACK WATER VALVE INSTALLATION PER CITY ENGINEER, IF SCENARIO 2, 3, 4, OR 5 IS DIRECTLY ATTACHED TO THE LAKE LINE OR THE ELEVATION OF THE LOWEST DRAIN IN THE RESIDENCE IS LOWER THAN THE RIM ELEVATION OF THE UPSTREAM SEWER MANHOLE ON THE MAIN.


PROVIDE A COPY OF THE VIDEO DOCUMENTATION (VIDEO AND HARD COPY REPORT) TO THE CITY ENGINEER.

REPLACEMENT OR REPAIR OF THAT PORTION OF THE SIDE SEWER BETWEEN THE PROPERTY LINE AND THE SEWER MAIN, WILL BE DETERMINED BY THE CITY ENGINEER, BASED ON THE VIDEO INSPECTION.

*IF THE EXISTING SIDE SEWER IS PVC AND IS LESS THAN TEN YEARS OLD, THE SIDE SEWER DOES NOT HAVE TO BE REPLACED IF A VIDEO INSPECTION AND/OR HYDROSTATIC PRESSURE TEST CONFIRMS THAT THE SIDE SEWER IS IN PROPER WORKING CONDITION. THESE TESTS SHALL BE PERFORMED AFTER ALL HEAVY EQUIPMENT THAT COULD DAMAGE THE SIDE SEWER IS OFF OF THE SITE.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
RESIDENTIAL SIDE SEWER
DISCONNECTION & RECONNECTION
6-5-2009 NO SCALE S-22
REV DATE
APPROVED
DISCONNECTION


RECONNECTION

WHEN RECONNECTING TO AN EXISTING SIDE SEWER, THE POINT OF RECONNECTION WILL BE DETERMINED BASED ON THE MAGNITUDE OF THE CONSTRUCTION ON THE PROPERTY.

1. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION WITH NO ADDITIONAL PLUMBING FIXTURES — NO SIDE SEWER REPLACEMENT REQUIRED UNLESS A KNOWN PROBLEM EXISTS IN THE SIDE SEWER.

2. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION WITH ADDITIONAL PLUMBING FIXTURES—ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO PROPERTY LINE AND REPLACE AS NEEDED.

3. COMPLETE INTERIOR REMODEL — ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO SEWER MAIN AND REPLACE AS NEEDED. IF EXISTING SIDE SEWER IS ASBESTOS CEMENT OR CONCRETE, SIDE SEWER SHALL BE REPLACED FROM BUILDING TO PROPERTY LINE.*

4. COMPLETE INTERIOR REMODEL AND BUILDING ADDITION — NEW SIDE SEWER FROM BUILDING AT LEAST TO PROPERTY LINE.*

5. CONSTRUCTION OF A NEW BUILDING — NEW SIDE SEWER FROM BUILDING AT LEAST TO MAIN.*

BACK WATER VALVE INSTALLATION PER CITY ENGINEER, IF SCENARIO 2, 3, 4, OR 5 IS DIRECTLY ATTACHED TO THE LAKE LINE OR THE ELEVATION OF THE LOWEST DRAIN IN THE RESIDENCE IS LOWER THAN THE RIM ELEVATION OF THE UPSTREAM SEWER MANHOLE ON THE MAIN.


PROVIDE A COPY OF THE VIDEO DOCUMENTATION (VIDEO AND HARDCOPY REPORT) TO THE CITY ENGINEER.

REPLACEMENT OR REPAIR OF THAT PORTION OF THE SIDE SEWER BETWEEN THE PROPERTY LINE AND THE SEWER MAIN, WILL BE DETERMINED BY THE CITY ENGINEER, BASED ON THE VIDEO INSPECTION.

*IF THE EXISTING SIDE SEWER IS PVC AND IS LESS THAN TEN YEARS OLD, THE SIDE SEWER DOES NOT HAVE TO BE REPLACED IF A VIDEO INSPECTION AND HYDROSTATIC PRESSURE TEST CONFIRMS THAT THE SIDE SEWER IS IN PROPER WORKING CONDITION. THESE TESTS SHALL BE PERFORMED AFTER ALL HEAVY EQUIPMENT THAT COULD DAMAGE THE SIDE SEWER IS OFF OF THE SITE.
NOTES

1. BACK WATER VALVE ASSEMBLY IS PRIVATE AND SHALL BE THE PROPERTY OWNERS RESPONSIBILITY FOR MAINTENANCE.

2. PIPE AND MATERIAL SHALL BE DUCTILE IRON TO HYDRAULIC GRADIENT LINE.

3. INSTALL GRADIENT WYE AT HYDRAULIC GRADIENT PLUS 2.0' VERTICAL. CAST IRON WYE WITH MJ PLUG AND 12" OF COVER.

4. INSTALL BACK WATER VALVE BETWEEN WYE AND FIRST SERVICE CONNECTION.
NOTES

1. BACK WATER VALVE ASSEMBLY IS PRIVATE AND SHALL BE THE PROPERTY OWNERS RESPONSIBILITY FOR MAINTENANCE.

2. TO BE USED ONLY WITH PRIOR APPROVAL OF THE CITY ENGINEER.
LAKE LINE CLEANOUT

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>MATERIAL</th>
<th>CAP DESCRIPTION</th>
<th>ENCLOSURE DETAILS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>PVC</td>
<td>SIDU MECHANICAL SEWER PLUG</td>
<td>CONC. METER BOX, FOGTITE 1-D</td>
<td>INSTALLATION BELOW HYDRAULIC GRADIENT</td>
</tr>
<tr>
<td>6&quot;</td>
<td>PVC</td>
<td>PVC CAP W/O GASKET</td>
<td>CONC. METER BOX, FOGTITE 1-D</td>
<td>INSTALLATION ABOVE HYDRAULIC GRADIENT</td>
</tr>
<tr>
<td>6&quot;</td>
<td>DIP</td>
<td>MECHANICAL/JOINT CAP</td>
<td>CONC. METER BOX, FOGTITE 1-D</td>
<td>INSTALLATION ABOVE HYDRAULIC GRADIENT</td>
</tr>
<tr>
<td>8&quot;</td>
<td>PVC</td>
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</tbody>
</table>

NOTES
1. IF POSSIBLE, CLEANOUT TO BE LOCATED JUST ABOVE HYDRAULIC GRADIENT OF LAKE LINE. CLEANOUT SHOULD ALSO BE LOCATED TO PROVIDE EASY ACCESS FOR INSPECTION AND MAINTENANCE BY THE HOME OWNER.

2. SEE S-23 & S-24 FOR BACK WATER VALVE LOCATION.
24" FRAME AND COVER MARKED "SEWER" (SEE DETAIL S-13)

48" DIAMETER VALVE CHAMBER

SEAL PIPE ENTRY (TYP.)

TO SEWER

4" TO 8" DIAMETER SIDE SEWER

FLOW

CALDER COUPLING

3" D.I. NIPPLE P.E. CLASS 53 CEMENT LINED

FLANGED COUPLING ADAPTER, ROCKWELL 919 OR EQUAL.

GRAVITY FLOW BACKWATER VALVE (NDS PART NO. 575 OR 575P OR EQUAL WITH PRIOR APPROVAL BY CITY ENGINEER)
NOTES
1. INSTALL SAMPLING TEE ON EXISTING OR NEW SIDE SEWER.
NOTES
1. UTILITY VAULT COMPANY, INC., #660-SA, OR EQUAL.
2. LOCATE WITHIN 20 FEET OF DRIVE FOR ACCESS BY MAINTENANCE VEHICLE.
3. INSPECTION AND SAMPLING TEE TO BE INSTALLED BY CONTRACTOR. LINE SIZED PVC PIPE SHALL BE USED
4. FILL WITH CLEAN WATER PRIOR TO START-UP OF SYSTEM.
5. GRAY AND BLACK WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.
NOTES

1. UTILITY VAULT COMPANY, INC., #577-SA, OR EQUAL.

2. LOCATE WITHIN 20 FEET OF DRIVE FOR ACCESS BY MAINTENANCE VEHICLE.

3. INSPECTION AND SAMPLING TEE TO BE INSTALLED BY CONTRACTOR. LINE SIZED PVC PIPE SHALL BE USED.

4. FILL WITH CLEAN WATER PRIOR TO START-UP OF SYSTEM.

5. GRAY AND BLACK WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

800 GALLON BAFFLE TYPE OIL/WATER SEPARATOR

6-5-2009 NO SCALE S-29
NOTES
1. IF VAULT IS NOT SLOTTED TO ACCEPT PRE CAST CONCRETE BAFFLE THEN PRE CAST CONCRETE BAFFLE SHALL BE HELD IN PLACE BY (2) 3"x3"x3/8" ANGLE (4' LONG) ATTACHED TO VAULT WALL WITH (4 EA.) 1/2" BOLTS AND NUTS (WITH WASHERS) SPACED 14" O.C. ANGLE AND FASTENERS SHALL BE STAINLESS STEEL OR GALVANIZED AND ASPHALT COATED.
2. PRE CAST FAULT AND BAFFLE SHALL HAVE KNOCKOUTS AT ALL PIPE OPENINGS. IF KNOCKOUTS ARE NOT PRESENT THEN PIPE OPENINGS SHALL BE CORE-DRILLED. PIPE OPENINGS SHALL BE 2" LARGER THAN PIPE DIAMETER.
3. LOCATE INTERCEPTOR WITHIN 20' OF DRIVE FOR ACCESS BY MAINTENANCE VEHICLE.
4. CONNECTION TO CONCRETE WALLS WITH PVC PIPE REQUIRE KOR—N—SEAL CONNECTOR OR A.C. X PVC BRANT ADAPTER. SEAL ALL PIPE CONNECTIONS WITH NON—SHRINK GROUT.
5. LINE—SIZED PVC PIPE SHALL BE USED THROUGHOUT.
6. GRAY—WATER ONLY. BLACK—WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.
7. CLEAN—OUT REQUIRED 3' MAXIMUM DOWNSTREAM OF INTERCEPTOR.
8. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM.
NOTES
1. IF VAULT IS NOT SLOTTED TO ACCEPT PRE CAST CONCRETE BAFFLE THEN PRE CAST CONCRETE BAFFLE SHALL BE HELD IN PLACE BY (2) 3"x3"x3/8" ANGLE (4" LONG) ATTACHED TO VAULT WALL WITH (4 EA.) 1/2" BOLTS AND NUTS (WITH WASHERS) SPACED 14" O.C. ANGLE AND FASTENERS SHALL BE STAINLESS STEEL OR GALVANIZED AND ASPHALT COATED.

2. PRE CAST FAULT AND BAFFLE SHALL HAVE KNOCKOUTS AT ALL PIPE OPENINGS. IF KNOCKOUTS ARE NOT PRESENT THEN PIPE OPENINGS SHALL BE CORE–DRILLED. PIPE OPENINGS SHALL BE 2" LARGER THAN PIPE DIAMETER.

3. POSITION RISERS BELOW ACCESS OPENINGS TO ALLOW CLEAR ACCESS TO RISER AND VAULT CHAMBER.

4. LOCATE INTERCEPTOR WITHIN 20' OF DRIVE FOR ACCESS BY MAINTENANCE VEHICLE.

5. CONNECTION TO CONCRETE WALLS WITH PVC PIPE REQUIRE KOR–N–SEAL CONNECTOR OR A.C. x PVC BRANT ADAPTER. SEAL ALL PIPE CONNECTIONS WITH NON–SHRINK GROUT.

6. LINE–SIZED PVC PIPE SHALL BE USED THROUGHOUT.

7. GRAY–WATER ONLY. BLACK–WATR SHALL BE CARRIED BY SEPARATE SIDE SEWER.

8. CLEAN–OUT REQUIRED 3' maximum downstream of interceptor.

9. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
1,500 GALLON
GREASE INTERCEPTOR
6–5–2009 NO SCALE S-31
ONE PLUG SEALS SEVERAL PIPE SIZES

BYPASS PLUG

1/4" I.P.S. INFLATION FITTING

SCREEN MUST BE INSTALLED TO PREVENT DEBRIS FROM ENTERING MAIN, BEFORE MANHOLE CAN BE SERVICED.

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
SEWER MAIN
BY-PASS PLUG

REV DATE 6-5-2009 NO SCALE APPROVED

S-32
NOTES
1. 24” DIAMETER GALVANIZED COVER.
2. POWER CONDUIT.
3. 1 1/4” PVC TRUE UNION BALL VALVE (SS) HAYWARD OR EQUAL.
4. 1 1/4” GALVANIZED UNION
5. 1 1/4” GALVANIZED NIPPLES
6. CHECK VALVE AND PUMP DISCONNECT HYDROMATIC OR EQUAL.
7. 2 HP GRINDER PUMP.
8. 1 1/4” GALVANIZED PIPING, APPROX. 1.2’.
9. HOT DIPPED GALVANIZED STEEL RAIL GUIDE SYSTEM.
10. HOT DIPPED GALVANIZED PUMP TECH SHORT RAIL.
11. 24” x 60” FIBERGLASS TANK.
12. ACCESS BOX
    NON–TRAFFIC AREAS—EQUAL TO CARSON MODEL 1419–14B, WITH 1419–2B COVER.
    TRAFFIC AREAS—H–20 RATED CONCRETE BOX EQUAL TO FOGTITE B91/2 METER BOX.
    LIDS SHALL BE MARKED ELECTRICAL OR SEWER RESPECTIVELY.
13. TOP CAN BE SET FLUSH WITH GROUND, IF A CONCRETE PAD IS POURED AROUND THE LIFT STATION AND SLOPE AWAY FROM STATION. KEEP ROCKS AND DEBRIS OUT OF STATION.
14. BOTTOM ENTRY WATER TIGHT STRAIN RELIEF CONNECTORS (FOR USE WITH UNDERGROUND CABLES) ATTACH USING LOCK–NUT WITH SEALING FITTING.
NOTES

ITEMS 1–6 BASED ON HYDR-O-RAIL, HYDR-O-GRIND DUPLEX PACKAGE LIFT STATION AS MANUFACTURED BY HYDROMATIC PUMP COMPANY.

1. 2 EXPLOSION-PROOF SUBMERSIBLE SEWAGE GRINDER PUMPS EQUAL TO HYDROMATIC G2FX500. 5 HP, 1750 RPM MOTOR. DESIGN PINT: 55 GPM AT 54' TDH.

2. 60" LD CONCRETE MANHOLE WITH GROUTED HOPPER BOTTOM.

3. 2" BALL CHECK AGAINST HYDRAULICALLY SEALED DISCHARGE FLANGE EQUAL TO HYDROMATIC.

4. 2" GATE VALVE.

5. 1 1/2" GALVANIZED GUIDE RAILS (2 EACH PER PUMP)

6. GATE VALVE EXTENSION (1 EACH PER VALVE)

7. 2" G.I. 90° BENDS (SxS)

8. 2" G.I. PIPE (SxS)

9. 2" BALL CHECK (SxS)

10. 2" UNION

11. 2" GATE VALVE (SxS)

12. 2" G.I. TEE (SxS)

13. 2" x 2 1/2" G.I. REDUCER (SxS)

14. 2 1/2" G.I. PIPE (SxS)

15. 2 1/2" COUPLING - G.I. TO PVC

16. 2 1/2" PVC PIPE AND FITTINGS—ASTM D 2241

17. CONCRETE VAULT – 3.5' H x 3.5' L x 3.5' W EQUAL TO UTILITY VAULT MODEL 444-LA WITH 44–332P COVER. DRAIN TO NEAREST STORM DRAIN SYSTEM.
NOTES
1. ADDITIONAL PERMITS THROUGH THE BUILDING DEPARTMENT MAY BE REQUIRED.
2. THE COMPLETE DISCHARGE SYSTEM TO BE PERMANENTLY PLUMBED.
3. AIR GAP = 2 x DISCHARGE PIPE INSIDE DIAMETER (2" PIPE I.D. X 2 = 4" AIR GAP) ABOVE THE FLOOD RIM ELEVATION. (MIN. 1")
4. TIGHT PLUMB TO SANITARY SEWER SYSTEM; WITHIN OR OUTSIDE THE HOUSE.
   A. IF INSIDE THE HOUSE: A PLUMBING PERMIT THROUGH THE BUILDING DEPARTMENT IS REQUIRED.
   B. IF OUTSIDE THE HOUSE: A SIDE SEWER REVISION PERMIT IS REQUIRED THROUGH THE DEVELOPMENT SERVICE DEPARTMENT.

APPLICABLE CODES
1. MERCER ISLAND MUNICIPAL CODE SECT. 17.30.070
2. MERCER ISLAND SEWER DISTRICT ADMINISTRATION CODE SECT 9.04
3. I.A.P.M.O. – UNIFORM SWIMMING POOL, SPA AND HOT TUB CODE 1982

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
GUIDELINES FOR INSTALLATION
HOT TUBS, JACUZZIS &
SWIMMING POOLS
6-5-2009 NO SCALE S-35
EXISTING 12" SEWER

3" CLEAR (TYP.)

6" CLEAR

1'-6" MAX. (TYP.)

10'-0" MIN. (TYP.)

PROPOSED 8" WATER

ELEVATION

6" x 6" #10/#10 WELDED WIRE FABRIC

1 1/2" CLEAR

3" MIN. ALL AROUND

SECTION

CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER
CONCRETE ENCASSEMENT DETAIL
6-5-2009 NO SCALE S-36
WHERE SANITARY SEWER LINE Crosses
A.C. WATER MAIN, A SECTION OR SECTIONS OF A.C.
PIPE MUST BE REPLACED WITH DUCTILE IRON
PIPE, CEMENT LINED, CLASS 52, OR SIZE REMOVED.

18"
MIN.

EXISTING A.C. WATERMAIN

SLIP JOINT

NEW SANITARY SEWER MAIN

SECTION

NOTES

1. IF A.C. PIPE IS TO BE REMOVED, ALL ENVIRONMENTAL PROTECTION AGENCY RULES, PUGET SOUND
AIR POLLUTION CONTROL AGENCY REGULATIONS, AND LABOR AND INDUSTRY REQUIREMENTS MUST
BE MET.
CITY OF MERCER ISLAND  
SIDE SEWER AS BUILT  

□ New  □ Repair  □ Reconnect  

PERMIT NO. 0601-750  
MAIN PERMIT NO. 0501-991  
SKETCH NTS □

OWNER  MAY  Address  4823 79 FL. SE.  Contractor  SEWER R US  
Date Permit Issued  06-12-2001  Date job completed and accepted  07-01-2001  By  MIKE F.  □ Copy Maintenance  

EXIST. SEWER MH  
DEPTH OF SEWER MAIN AT Stub  
INFERRED ELEVATION  
EX. 6" CONC. Stub  
8" CIP SEWER  

STREET NAME  
79TH PL. SE.  

PROPERTY LINE  

NORTH  

NOT TO SCALE  

4" CLEANOUT  
36" DEEP  

1. Type of Pipe  PVC 3034  
2. New manhole No. nearest downstream manhole  
3. Old manhole No. nearest downstream manhole  
4. Map no.  

4823  
6'0"  
FERNO COUPLING  
12'-0"  
4" PVC 9034 50196  
V-22" BEND  
11-22" BEND  
5'-0"  
4" WTE (40" DEEP)  
6" ROMAC CONC PVC COUPLING  

REV DATE  
6-5-2009  
NO SCALE  
APPROVED  
"AS-BUILT" DRAWING  
CITY OF MERCER ISLAND  
STANDARD DETAILS  
S-38  

SAMPLE