Hagerstown Water Details

W1. Roadway, Shoulder and Paved Parking Area - Trench, Excavation and Backfill
W2. Grassed Area Repair
W3. Ductile Iron Tyton Joint Pipe and Pipe Deflection Details
W4. Hagerstown Standard Hydrant Thread
W5. Fire Hydrant Setting
W6. Blow Off Valve
W7. Sleeve Boring and Jacking Detail
W8. Casing for Main Under Highway
W9. Standard Restraint – Tees, Bends, Dead Ends
W10. Buttress for Mechanical Joint Tees
W11. Buttress for Horizontal M.J. Bends Less Than 90°
W12. Anchorages for M.J. Bends
W13. Buttress for Horizontal M.J. Bends
W14. Buttress for Push On Plug
W15. Air and Vacuum Relief Valve
W16. 1 Inch Single Water House Connection
W17. 1 inch Double Water House Connection
W18. 1 Inch Residential Standard Double Water House Connection
W19. 4 Inch Fire Domestic Meter Vault
EXISTING SHOULDER, DRIVeway, OR PAVED PARKING AREA

SAw CUT EDGEs

6" wide WARNING TAPE "CAUTION--WATER LINE BURIED BELOW"

2-6'

VARIES

4'-0"

3'-0"

1'-0"

6" MINIMUM DCR-6 BEDDING TAMPPED TO PROVIDE FIRM BEARING FOR FULL LENGTH OF BARREL. DIG OUT FOR BELL

NOTES:
1. BACKFILL TO BE COMPACTED IN 8" LAYERS TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE AASHTO--T--99 STANDARD PROCTOR.

2. MAINTAIN MINIMUM OF 3'-6" COVER TO TOP OF PIPE UNLESS NOTED ON PLANS OR DIRECTED BY ENGINEER.

3. SEE THE CITY, COUNTY OR STATE STANDARD REQUIREMENTS FOR BACKFILL.
NOTES:
1. BACKFILL TO BE COMPACTED IN 8" LAYERS TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE AASHTO-T-99 STANDARD PROCTOR.
2. MAINTAIN MINIMUM OF 3'-6" COVER TO TOP OF PIPE UNLESS NOTED ON PLANS OR DIRECTED BY ENGINEER.
3. SEE THE CITY, COUNTY OR STATE STANDARD REQUIREMENTS FOR BACKFILL.
DUCTILE IRON TYTON PUSH-ON JOINTS PIPE STANDARD
DIMENSIONS

<table>
<thead>
<tr>
<th>SIZE IN INCHES</th>
<th>LAYING IN LENGTH</th>
<th>&quot;A&quot; OUTSIDE DIAMETER Ø</th>
<th>&quot;D&quot; DEPTH OF SOCKET</th>
<th>&quot;F&quot; BELL OUTSIDE DIAMETER O.D.</th>
<th>&quot;G&quot; BELL INSIDE DIAMETER I.D.</th>
<th>DIMENSIONS IN INCHES</th>
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<tbody>
<tr>
<td>4</td>
<td>20'-1&quot;</td>
<td>4.80</td>
<td>3.31</td>
<td>7.00</td>
<td>4.91</td>
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<tr>
<td>6</td>
<td>20'-1&quot;</td>
<td>6.90</td>
<td>3.38</td>
<td>9.13</td>
<td>7.01</td>
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<tr>
<td>8</td>
<td>20'-1&quot;</td>
<td>9.05</td>
<td>3.75</td>
<td>11.50</td>
<td>9.16</td>
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<tr>
<td>10</td>
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<td>11.10</td>
<td>3.75</td>
<td>13.63</td>
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<td>12</td>
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<td>3.75</td>
<td>15.75</td>
<td>13.31</td>
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<tr>
<td>14</td>
<td>20'-0 1/2&quot;</td>
<td>15.30</td>
<td>4.50</td>
<td>18.00</td>
<td>15.44</td>
<td></td>
</tr>
<tr>
<td>16</td>
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<td>17.40</td>
<td>4.50</td>
<td>20.00</td>
<td>17.54</td>
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<tr>
<td>18</td>
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<td>4.50</td>
<td>23.94</td>
<td>19.64</td>
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<td>29.94</td>
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<td>6.00</td>
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<td>36</td>
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<td>6.00</td>
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<tr>
<td>42</td>
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<td>44.50</td>
<td>5.25</td>
<td>48.00</td>
<td>44.67</td>
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<tr>
<td>48</td>
<td>20'-0 1/2&quot;</td>
<td>50.80</td>
<td>5.25</td>
<td>54.66</td>
<td>50.97</td>
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<tr>
<td>54</td>
<td>20'-0 1/2&quot;</td>
<td>57.10</td>
<td>5.25</td>
<td>61.44</td>
<td>57.27</td>
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</table>

DUCTILE IRON TYTON PUSH-ON
JOINT PIPE ALLOWABLE JOINT DEFLECTION

MAXIMUM RECOMMENDED DEFLECTION

<table>
<thead>
<tr>
<th>SIZE IN INCHES</th>
<th>NORMAL LAYING LENGTH FEET</th>
<th>&quot;X&quot; OFFSET PER LENGTH IN INCHES</th>
<th>&quot;Y&quot; DEFLECTION ANGLE</th>
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<tbody>
<tr>
<td>4</td>
<td>20</td>
<td>21</td>
<td>0'-5&quot;</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>21</td>
<td>0'-5&quot;</td>
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<tr>
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<td>48</td>
<td>20</td>
<td>8</td>
<td>0'-2&quot;</td>
</tr>
<tr>
<td>54</td>
<td>20</td>
<td>6</td>
<td>0'-1 1/2&quot;</td>
</tr>
</tbody>
</table>
NOTES:
1. THREADS TO BE 60° "V" THREAD PATTERN WITH .01 INCH CUT OFF TOP OF THREAD & .01 INCH LEFT IN BOTTOM OF VALLEY ON THE 2-1/2, 3, AND 3-1/2 INCH COUPLING, AND .02 INCH CUT OFF TOP & .02 INCH LEFT IN BOTTOM OF VALLEY ON 4-1/2 INCH COUPLING. OPEN LEFT
2. STEAMER (4.5") THREAD IS ALSO NATIONAL STANDARD.

<table>
<thead>
<tr>
<th>DIMENSION IN INCHES</th>
<th>CONNECTION</th>
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<tbody>
<tr>
<td></td>
<td>STEAMER</td>
</tr>
<tr>
<td>A INSIDE DIAMETER OF HOSE COUPLING</td>
<td>4.500</td>
</tr>
<tr>
<td>B OUTSIDE DIAMETER OF THREAD</td>
<td>5.750</td>
</tr>
<tr>
<td>C DIAMETER OF ROOT OF THREAD</td>
<td>5.397</td>
</tr>
<tr>
<td>D TOTAL LENGTH OF MALE PART</td>
<td>1.375</td>
</tr>
<tr>
<td>E LENGTH OF BLANK END OF MALE PART</td>
<td>0.250</td>
</tr>
<tr>
<td>F LENGTH OF FEMALE THREAD</td>
<td>1.250</td>
</tr>
<tr>
<td>G DIAMETER OF TOP OF FEMALE THREAD</td>
<td>5.800</td>
</tr>
<tr>
<td>H NUMBER OF THREAD PER INCH</td>
<td>4.000</td>
</tr>
</tbody>
</table>
NOTE:

1. ALL PIPE MUST BE RESTRAINED FROM MAIN TO FIRE HYDRANT TO ELIMINATE CONCRETE BUTTRESS.
2. COVER FITTING WITH POLYETHYLENE WRAP 5 MIL. OR GREATER.
2" Brass or Galvanized

2" Brass Ell Drilled Opening for Drain

DCR-6 Compacted

Undisturbed Earth

Concrete Buttress

2" Brass Nipples

2" Gate Valve

Conc. Block

2" Brass Ell

2" Brass Street Ell

Cover the plug with plywood or polyethylene wrap flush with plug tapped pipe plug or M.J. Cap

WATER LINE

COVER THE PLUG WITH PLYWOOD OR POLYETHYLENE WRAP FLUSH WITH PLUG TAPPED PIPE PLUG OR M.J. CAP

1-1/2"x 2" Corp. Stop

WATER LINE

COVER THE PLUG WITH PLYWOOD OR POLYETHYLENE WRAP FLUSH WITH PLUG TAPPED PIPE PLUG OR M.J. CAP

WATER LINE

COVER THE PLUG WITH PLYWOOD OR POLYETHYLENE WRAP FLUSH WITH PLUG TAPPED PIPE PLUG OR M.J. CAP

Water Line

2" Brass Ell'S

STANDARD C.I. ROADWAY BOX'S

GRADE

4"
**EXCAVATION**

PUMP IN NON-SHRINK GROUT BETWEEN SLEEVE AND EXCAVATION IF REQUIRED. PROVIDE GROUT HOLES

* NOTE: MECHANICAL JOINT PIPE ONLY IN CASING.

3" x 1/4" STEEL STRAP WITH TURNBUCKLE TWO STRAPS ON EACH LENGTH OF PIPE

2500 P.S.I. CONCRETE

STEEL SLEEVE OR C.M.P. GALVANIZED SLEEVE

10"

MAX. CLEARANCE 1"

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>SLEEVE MIN. SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;-10&quot;-12&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>14&quot;-16&quot;</td>
<td>42&quot;</td>
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<td>20&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>54&quot;</td>
</tr>
</tbody>
</table>

SUPPORT INSULATOR—WEYERHAUSESER CHOICE DEK OR PRESSURE TREATED WOOD W/ THOMPSONS WATER SEAL
ENDE SEAL INSTALLATION

SECTION A-A

ALTERNATE SUPPORT INSULATORS AS SHOWN

CONCENTRIC SUPPORT INSULATORS
BY T.D. WILLIAMSON, INC. OR EQUAL
(TWO PER PIPE SECTION).

LOCATION OF INSULATORS

<table>
<thead>
<tr>
<th>NOMINAL DIAMETERS</th>
<th>CASING-INSIDE DIAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN</td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>10&quot;</td>
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<tr>
<td>8&quot;</td>
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<td>20&quot;</td>
<td>28&quot;</td>
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<tr>
<td>24&quot;</td>
<td>32&quot;</td>
</tr>
</tbody>
</table>

NOTES:
1. CASING SHALL CONFORM TO AWWA C202. WALL THICKNESS ON SIZES THRU 10" SHALL BE 1/4", OTHERS SHALL BE 3/8".
2. DUCTILE IRON CARRIER PIPE SHALL BE COATED IN ACCORDANCE WITH AWWA C-104.
3. SEE MANUFACTURERS SPECIFICATIONS FOR THE USE OF FIELD LOC’S.
4. USE OF MECHANICAL JOINT PIPE AS DIRECTED BY CITY OF HAGERSTOWN WATER/SEWER DIVISION INSPECTOR.
STANDARD TEE RESTRAINT

NOTE:
FOR THIS CONDITION NEED
ONLY RESTRAIN THE BRANCH
OUTLET OF THE TEE.

VERTICAL BEND

NOTE:
FULL PIECE OF PIPE OUT OF
THE BEND EACH DIRECTION
SHALL BE RESTRAINED.

DEAD END/EACH SIDE OF VALVE

NOTE:
NORMAL PRACTICE IS A
CONCRETE BUTTRESS AT
THE END OF THE MAIN
WITH 2” BLOWOFF.

GENERAL NOTE: L=FULL LENGTH OF PIPE (MINIMUM 20 FEET)
CONCRETE BUTTRESS

COVER THE PIPE WITH POLYETHYLENE WRAP

SECTION A–A

D | H | I | J | K
---|---|---|---|---
4" | 0'–9" | 0'–6" | 0'–9" | 0'–5"
6" | 0'–9" | 0'–8" | 0'–9" | 0'–6"
8" | 0'–9" | 0'–10" | 1'–0" | 0'–8"
10" | 0'–10" | 1'–0" | 1'–3" | 0'–8"
12" | 1'–0" | 1'–3" | 1'–5" | 0'–8"
16" | 1'–2" | 1'–8" | 1'–10" | 0'–10"
20" | 1'–4" | 2'–1" | 2'–3" | 1'–2"
24" | 1'–6" | 2'–6" | 2'–8" | 1'–4"
30" | 1'–9" | 3'–1" | 3'–4" | 1'–6"
36" | 2'–0" | 3'–9" | 3'–11" | 1'–10"

NOTES:
1. ALL CONCRETE TO BE 2,500 P.S.I.
2. CARRY CONCRETE TO UNDISTURBED EARTH.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. NO CONCRETE SHALL COVER FITTING HARDWARE.
5. COVER FITTING WITH POLYETHYLENE WRAP 5 MIL OR GREATER.
NOTES:
1. ALL CONCRETE TO BE 2,500 P.S.I.
2. CARRY CONCRETE TO UNDISTURBED EARTH.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. NO CONCRETE SHALL COVER FITTING HARDWARE.
5. COVER FITTING WITH POLYETHYLENE WRAP 5 MIL OR GREATER.

<table>
<thead>
<tr>
<th>DIA</th>
<th>45'</th>
<th>22-1/2'</th>
<th>11-1/4'</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1'-0&quot;</td>
<td>0'-6&quot;</td>
<td>0'-9&quot;</td>
</tr>
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<td>36&quot;</td>
<td>8'-11&quot;</td>
<td>2'-6&quot;</td>
<td>3'-4&quot;</td>
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</tbody>
</table>
NOTES:
1. ALL CONCRETE TO BE 2,500 P.S.I.
2. CARRY CONCRETE TO UNDISTURBED EARTH.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. NO CONCRETE SHALL COVER FITTING HARDWARE.
5. COVER FITTING PIPE WITH POLYETHYLENE WRAP 5 MIL. OR GREATER.

STAINLESS STEEL ROD OR EPOXY COATED REBAR 1/2" OR LARGER (4 REQUIRED)

1/4 OF OUTSIDE Ø OF PIPE

POLYETHYLENE WRAP

6" BEDDING PER TRENCH DETAIL
BOTTOM OF TRENCH

CARRY TO UNDISTURBED EARTH

STAINLESS STEEL ROD OR EPOXY COATED REBAR 1/2" OR LARGER (4 REQUIRED)
NOTES:

1. ALL CONCRETE TO BE 2,500 P.S.I.

2. CARRY CONCRETE TO UNDISTURBED EARTH.

3. ALL DIMENSIONS SHOWN ARE MINIMUM.

4. NO CONCRETE SHALL COVER FITTING HARDWARE.

* 3" MINIMUM—6" MAXIMUM

5. USE OF 90° BENDS AS DIRECTED BY ENGINEERING DIVISION.
NOTES:

1. ALL CONCRETE TO BE 2,500 P.S.I.
2. CARRY CONCRETE TO UNDISTURBED EARTH.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. NO CONCRETE SHALL COVER FITTING HARDWARE.
5. COVER FITTING PIPE WITH POLYETHYLENE WRAP 5 MIL. OR GREATER.
NOTES

1. AIR RELEASE VALVE SHALL BE "VAL-MATIC AIR AND VACUUM VALVE" OR APPROVED EQUAL.

2. CONCRETE TO BE 2500 P.S.I.
NOTES:
1. METER SETTINGS SHALL NOT BE LOCATED IN TRAFFIC AREAS (DRIVEWAYS) OR DRAINAGE SWALES.
2. THE SERVICE SHALL HAVE 1'-0" OF COMPACTED DCR-6 STONE WITH MARKING TAPE.

SECTION A-A

PLUMBING BY OTHERS TO START HERE (3/4" COMPRESSION CONNECTION)

3/4" DIA. METER YOKE

BRICKS (AS REQUIRED)

4'-6" COMPACTED STONE BASE (DCR-6)

1" TYPE "K" COPPER TUBING (JOINTS PROHIBITED UNDER PAVED AREAS)

1 1/4"x1 1/4" BRASS PLAIN ELL

1"x1 1/4" BRASS CORP. STOP

1" BRASS ADAPTER (MIPT x COMP)

3'-0" MIN.

18"x30" METER TILE

TOP OF SWALE OR CURB WHERE APPLICABLE

DOUBLE LID FRAME AND COVER

3/4" WATER METER BY CITY OF HAGERSTOWN WATER DIVISION

EXPANDER WHEEL

2'-0" MIN.

18"-24"

MARKING TAPE

CURB

C MAIN

1" BRASS ST. ELL
NOTES:
1. METER SETTINGS SHALL NOT BE LOCATED IN TRAFFIC AREAS (DRIVEWAYS) OR DRAINAGE SWALLES.
2. THE SERVICE SHALL HAVE 1'-0" OF COMPACTED DCR-6 STONE WITH MARKING TAPE.
1. METER SETTINGS SHALL NOT BE LOCATED IN TRAFFIC AREAS (DRIVEWAYS) OR DRAINAGE SWALES.
2. THE SERVICE SHALL HAVE 1'-0" OF COMPACTED DCR-6 STONE WITH MARKING TAPE.

PLAN

SECTION A-A

NOTES:
1. METER SETTINGS SHALL NOT BE LOCATED IN TRAFFIC AREAS (DRIVEWAYS) OR DRAINAGE SWALES.
2. THE SERVICE SHALL HAVE 1'-0" OF COMPACTED DCR-6 STONE WITH MARKING TAPE.
NOTES:
1. VAULT, LADDER AND DOOR TO BE ACQUIRED BY OWNER/DEVELOPER AND DELIVERED TO SITE AND SET THE VAULT. (USE A.C. MILLER "HAGERSTOWN STANDARD" ONLY). THE TOP OF THE VAULT NEEDS TO BE REMOVABLE.

2. CONTRACTOR TO INSTALL ALL VALVE BOXES, PIPE TO VAULT AND PRECAST VAULT.

3. CONTRACTOR TO BACKFILL AROUND VAULT UP TO BOTTOM OF PIPE IMMEDIATELY AFTER VAULT IS SET.

4. NO BENDS PERMITTED BETWEEN THE MAIN VALVE AND VAULT.

5. ENTIRE ASSEMBLY TO BE PRESSURE TESTED FROM THE MAIN TO UPSTREAM O.S.&Y. VALVE TO CITY OF HAGERSTOWN WATER DIVISION STANDARDS.

6. ALL JOINTS BETWEEN THE MAIN AND METER ASSEMBLY TO BE RESTRAINED.

7. TOP OF VAULT EXCLUDING THE TOP SLAB TO BE LEVEL IN ALL DIRECTIONS ±± 1". PIPING AND VAULT TO BE PERPENDICULAR TO WATER MAIN. MAXIMUM ALLOWABLE HORIZONTAL OR VERTICAL DEFLECTION IS 1" PER 10'-0".

8. FOR INSTALLATION REQUIRING A "WET TAP" ON EXISTING MAINS, THE MATERIALS AND INSTALLATION TO BE MADE BY CITY OF HAGERSTOWN WATER & SEWER DEPARTMENT.

9. CONTRACTOR SHALL CORE DRILL THE PIPE INTO AND OUT OF THE VAULT FOR THE METER INSTALLATION. THE METER SHALL SET 1'-0" OFF OF THE FLOOR OF THE VAULT.

10. VAULT SHALL BE SEALED WATER TIGHT.

TAPPING VALVE BY CITY OF HAGERSTOWN WATER AND SEWER DEPARTMENT, IF TAP IS NOT MADE CONTRACTOR NEEDS TO USE FOSTER ADAPTERS.