Table of Contents

Roadway Details:
1. Road Cross Section with Utility Locations
2. Turn-Arounds for Dead-End Streets
3. Gradation for Gravel Base and Subbase
4. Concrete Bound
5. Driveway Apron
6. Driveway Entrance Berm Section
7. Vertical Curb Transition Piece
8. Bituminous Concrete Sidewalk
9. Concrete Sidewalk
10. Sloped Granite Curb
11. Granite Vertical Curb
12. Cape Cod Style Bituminous Berm

Drainage Details:
13. Drainage Structure Frame and Cover/Grate
14. Throat Stone and Transition Ends
15. Precast Concrete Catch Basin with Hood
16. Diversion Catchbasin
17. Precast Concrete Drain Manhole
18. Drain Pipe Trench
19. Standard Precast Drainage Inlet
20. Headwall Outfall
21. Concrete Headwall with Wingwalls
22. Driveway Crossing Culvert
23. Reinforced Concrete Pipe Flared End
24. HDPE Flared End

Wastewater Details:
25. Precast Concrete Sewer Manhole
26. Sewer Trench
27. Drop Inlet Sewer Manhole
28. Water Service/Sewer Crossing
29. Thrust Block

Water Details:
30. Watermain Trench
31. Water Service/Sewer Crossing
32. Hydrant Assembly
33. Thrust Block

Utility Details:
34. Typical Utility Trench
35. Light Pole

* Please consult with individual departments for specifications and details not included herein.

** All work shall conform to Massachusetts Highway Department Standard Specifications for Highways and Bridges.
ROADWAY DETAILS
NOTE:
ROAD BASE SHALL BE 12" COMPacted GRAVEL BASE CONSISTING OF:
6" OF \frac{3}{4}" PROCESSED GRAVEL COMPACTED TO MINIMUM 95% ON TOP OF
6" GRADED GRAVEL COMPACTED TO MINIMUM 95%

<table>
<thead>
<tr>
<th># RESIDENTIAL DWELLINGS</th>
<th>D</th>
<th>ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>26'</td>
<td>40'</td>
</tr>
<tr>
<td>&gt;=40</td>
<td>31'</td>
<td>45'</td>
</tr>
</tbody>
</table>
NOTE:
- CONCRETE BOUNDS (C.B.) INSTALLED AT ALL POINT OF CURVATURES (P.C.), POINT OF TANGENCIES (P.T.) OF THE RIGHT OF WAY (R.O.W.) AND AT THE CENTER OF THE ISLAND
- OPTIONAL SLOPED GRANITE CURBING INSTALLED AROUND THE ISLAND
GRAVEL BASE
GRADATION REQUIREMENTS FOR GRAVEL USED AS BASE MATERIAL SHALL CONFORM TO THE FOLLOWING:
   M1.03.0 TYPE C* – 2 INCHES LARGEST DIMENSION (SEE GRADATION REQUIREMENTS BELOW)

GRAVEL SUBBASE
GRADATION REQUIREMENTS FOR GRAVEL USED AS SUBBASE MATERIAL TO A DEPTH OF FOUR FEET BELOW FINISH GRADE SHALL CONFORM TO THE FOLLOWING:
   M1.03.0 TYPE B* – 3 INCHES LARGEST DIMENSION (SEE GRADATION REQUIREMENTS BELOW)

GRADATION REQUIREMENTS FOR GRAVEL USED AS SUBBASE MATERIAL BELOW FOUR FEET FROM FINISH GRADE SHALL CONFORM TO THE FOLLOWING:
   M1.03.0 TYPE A* – 6 INCHES LARGEST DIMENSION (SEE GRADATION REQUIREMENTS BELOW)

<table>
<thead>
<tr>
<th>SIEVE</th>
<th>3/4&quot; PROCESSED GRAVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>% PASSING</td>
<td>% PASSING</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>50–85</td>
</tr>
<tr>
<td>NO. 4</td>
<td>40–75</td>
</tr>
<tr>
<td>NO. 50</td>
<td>8–28</td>
</tr>
<tr>
<td>NO. 200</td>
<td>0–8</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES" THE COMMONWEALTH OF MASSACHUSETTS (1988 EDITION)
NOTE:
1. BOUNDS SHALL BE OF SOUND CONCRETE PRECAST WITH REINFORCEMENT BAR TO THE DIMENSIONS SHOWN.
2. BOUNDS FOR FRONT YARD CORNERS AND STREET LAYOUT POINTS SHALL BE 30”–36” IN LENGTH AND SET WITH THE TOP OF THE BOUND FLUSH WITH THE FINISH GRADE. BOUNDS FOR SUBDIVISION PERIMETER SHALL BE 30”–36” IN LENGTH AND SET WITH THE TOP OF THE BOUND 3” ABOVE FINISH GRADE.
3. BOUNDS SHALL BE BACKFILLED WITH CLEAN GRAVEL OR SAND, THOROUGHLY TAMPE.
4. WHERE BOUNDS FALL ON SOLID LEDGE OR IN ANY UNSTABLE AREA, STEEL RODS, DRILL HOLES OR OFFSET MONUMENTS MAY BE USED WITH ENGINEER’S CONSENT.
SECTION A–A

ISOMETRIC VIEW

DRIVEWAY APRON
NOT TO SCALE

CITY OF ATTLEBORO
Department of Public Works
Phone: (508) 323-2222
NOTE:
1. MATCH ALL EXISTING SIDEWALK WIDTH WHERE APPLICABLE.
2. ROADWAY EDGE OF BERM SHALL BE ROADWAY EDGE (STRAIGHT FLOWLINE).
3. BERM CONSTRUCTED OF BITUMINOUS CONCRETE WEARING COURSE AS SHOWN.
BITUMINOUS CONCRETE SIDEWALK
NOT TO SCALE

CITY OF ATTLEBORO
Department of Public Works
Phone: (508) 223-2222
NOTE:
1. PROVIDE EXPANSION JOINTS AT MIN. 30 FT. O.C. WITH PRE-FORMED JOINT FILLER.
2. PROVIDE TOOLED CONTROL JOINTS AT 6' O.C.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.
4. CEMENT CONCRETE SHALL BE 4000 PSI-TYPE II.
5. MATCH ALL EXISTING SIDEWALK WIDTH WHERE APPLICABLE.

SECTION

CONCRETE SIDEWALK
NOT TO SCALE

CITY OF ATTLEBORO
Department of Public Works
Phone: (508) 223-2222
LOAM AND SEED UNLESS OTHERWISE SPECIFIED IN THE PLANS (SLOPE 2:1 MAX.) SEE SITE PLAN SLOPE & MATERIAL

BIT. CONC. WEARING SURFACE COURSE OVER BIT. CONC. BINDER COURSE WITH APPROVED SUB-BASE (SEE DETAIL)

CEMENT CONCRETE FOOTING (MIN. 2,500 PSI)

SLOPED GRANITE CURB MIN HEIGHT – 18” MIN WIDTH – 6”

COMPACTED DENSE GRADE GRAVEL (6” MIN. DEPTH) (95% COMPACTION)

COMPACTED APPROVED SUBGRADE (95% COMPACTION)

NOTE:
1. PROVIDE EXPANSION JOINTS AT 5’-0” O.C.
2. CURB REPLACEMENT IN EXISTING PAVEMENT – SAWCUT EDGE MIN. 12” FROM CURB.
NOTE:
1. VERTICAL CURBING SHALL BE INSTALLED AS SHOWN ON THE SITE PLAN.
2. PROVIDE CURB EXPANSION JOINTS AT 5'-0" O.C.
3. CURB REPLACEMENT IN EXISTING PAVEMENT - SAWCUT EDGE MIN. 12" FROM CURB.
4. CONCRETE CURB - PROVIDE 1" CHAMFER OF EDGE ALONG PAVEMENT SIDE FACE.
NOTE:
1. BERM CONSTRUCTED OF BIT. CONC. WEARING SURFACE COURSE AS SHOWN
2. PROVIDE 1” CHAMFER OF EDGE ALONG BERM FACE
3. BERM TO BE CONSTRUCTED INTEGRAL WITH TOP PAVEMENT COURSE.
NOTE:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL 12" WIDE MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
5. FRAME AND COVER SHALL CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (H2O).
6. CONCRETE PIPE HOOD SHALL BE "SNOUT" OR APPROVED EQUIVALENT. HDPE PIPE HOOD SHALL BE 90° BEND FASTENED TO PIPE WITH SEALANT. BEND SHALL HAVE 1 INCH PURGE HOLE DRILLED INTO TOP OF ELBOW.

PRECAST CONCRETE CATCH BASIN WITH HOOD
NOT TO SCALE
NOTE:
1. WEIR WALL SHALL EITHER BE PRECAST WITHIN STRUCTURE BY CATCHBASIN MANUFACTURER OR CONSTRUCTED OF BRICK AND MORTAR BY CONTRACTOR AFTER MANHOLE INSTALLATION.
2. TOP OF WEIR WALL ELEVATION WITHIN THE DIVERSION CATCHBASIN & PIPE SIZES SHALL BE AS SPECIFIED ON DESIGN PLANS.
NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL 12" MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
6. DO NOT PLACE MORTAR BED AROUND STRUCTURE UNTIL IT IS AT THE REQUIRED FINISH ELEVATION AND ALIGNMENT.
7. FRAME AND COVER SHALL CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT).

PRECAST CONCRETE DRAIN MANHOLE
NOT TO SCALE
NOTE:

1. **FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A SUITABLE COMPACTED GRAVEL MATERIAL OR AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.

2. **BEDDING, HAUNCHING AND INITIAL BACKFILL:** SUITABLE MATERIAL SHALL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;</td>
<td>85–95</td>
</tr>
<tr>
<td>No. 4</td>
<td>5–15</td>
</tr>
<tr>
<td>No. 8</td>
<td>0–2</td>
</tr>
</tbody>
</table>

   UNLESS OTHERWISE APPROVED BY ENGINEER.

MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4” (100mm) FOR 4”–24” PIPE (100–600mm).

3. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

<table>
<thead>
<tr>
<th>NOMINAL Ø</th>
<th>MIN. RECOMMENDED TRENCH WIDTH, in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 (200)</td>
<td>36 (915)</td>
</tr>
<tr>
<td>10 (250)</td>
<td>36 (915)</td>
</tr>
<tr>
<td>12 (300)</td>
<td>36 (915)</td>
</tr>
<tr>
<td>15 (375)</td>
<td>42 (1070)</td>
</tr>
<tr>
<td>18 (450)</td>
<td>60 (1520)</td>
</tr>
</tbody>
</table>

GENERAL BACKFILL:
BACKFILL (INCLUDING DISTURBED AREAS SURROUNDING TRENCHES) SHALL BE PLACED AND COMPACTED IN 12” (MAX.) VERTICAL LIFTS.

CONTRACTOR SHALL ACHIEVE 95% COMPACTION FOR THE BEDDING UNLESS OTHERWISE APPROVED BY THE ENGINEER.
NOTE:
1. PRECAST REINFORCED CONCRETE SHALL BE CERTIFIED FOR H-20 LOADING.
2. PRECAST CONCRETE CONIC RISER SECTIONS MAY BE USED WHERE NECESSARY.
3. ALL CONNECTED JOINTS SHALL BE SEALED WITH PREFORMED BUTYL RUBBER AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. OUTSIDE FACE OF ALL STRUCTURE JOINTS SHALL BE FILLED WITH NON-SHRINK MORTAR.
5. STEPS SHALL BE INSTALLED IF STRUCTURE IS GREATER THAN 3'-FT IN DEPTH. STEPS SHALL BE A MAX OF 16" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
6. "V" KNOCKOUTS SHALL BE PROVIDED FOR ALL PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE.
7. FRAME AND COVER SHALL BE SET IN FULL MORTAR BED AND ADJUSTED TO GRADE WITH REINFORCED CONCRETE RISER OR CLAY BRICK AND MORTAR (2 BRICK COURSE TYP., 5 BRICK COURSE MAX).
8. FRAME AND COVER MAY BE CENTERED ON STRUCTURE AS NECESSARY.
SHAPE CHANNEL AS REQUIRED

FILTER FABRIC (TYP.)

SECTION

HEADWALL (TYPE PER DESIGN PLANS)

5D
(SLOPE TO SUIT 2.0% MAX.)

STONE AT 1 1/2:1 SLOPE

DEPTH PER DESIGN PLANS (1' MIN.)

SEE HEADWALL DETAIL RIP RAP STONE (SIZE PER DESIGN PLANS MIN. D50 = 6")

NON WOVEN FILTER FABRIC

APPROVED SUBGRADE

STONE CHECK DAM AS NECESSARY

3/4" CRUSHED STONE BASE (6" MIN.)

PROFILE
NOTES:
1. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI AIR ENTRAINED TYPE II CEMENT.
2. INSTALL IMPERMEABLE TRENCH DAM ANTI-SEEP COLLAR AROUND DRAIN PIPE PRIOR TO HEADWALL LOCATION.

<table>
<thead>
<tr>
<th>PIPE DIA.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>2'-6&quot;</td>
<td>3'-8&quot;</td>
<td>2'-11&quot;</td>
<td>4'-0&quot;</td>
<td>3'-3&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>3'-0&quot;</td>
<td>4'-2&quot;</td>
<td>3'-3&quot;</td>
<td>4'-6&quot;</td>
<td>3'-6&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>3'-6&quot;</td>
<td>4'-8&quot;</td>
<td>3'-6&quot;</td>
<td>5'-0&quot;</td>
<td>3'-9&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td>4'-0&quot;</td>
<td>5'-3&quot;</td>
<td>4'-3&quot;</td>
<td>5'-10&quot;</td>
<td>4'-0&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>36&quot;</td>
<td>4'-6&quot;</td>
<td>5'-11&quot;</td>
<td>5'-0&quot;</td>
<td>6'-4&quot;</td>
<td>4'-3&quot;</td>
<td>1'-8&quot;</td>
</tr>
<tr>
<td>42&quot;</td>
<td>5'-0&quot;</td>
<td>6'-6&quot;</td>
<td>5'-9&quot;</td>
<td>6'-11&quot;</td>
<td>4'-6&quot;</td>
<td>1'-10&quot;</td>
</tr>
<tr>
<td>48&quot;</td>
<td>5'-6&quot;</td>
<td>7'-2&quot;</td>
<td>6'-6&quot;</td>
<td>7'-5&quot;</td>
<td>4'-9&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>60&quot;</td>
<td>6'-6&quot;</td>
<td>8'-5&quot;</td>
<td>8'-0&quot;</td>
<td>8'-6&quot;</td>
<td>5'-3&quot;</td>
<td>2'-4&quot;</td>
</tr>
</tbody>
</table>
| 72"       | 7'-6"| 9'-9"| 9'-6"| 9'-7"| 5'-9"| 2'-8"

SECTION B–B

SECTION A–A

CITY OF ATTLEBORO
Department of Public Works
Phone: (508) 223-2222

CONCRETE HEADWALL WITH WINGWALLS
NOT TO SCALE
DRIVEWAY CROSSING CULVERT
NOT TO SCALE
### Table: Diameters and Dimensions

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>W (mm)</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>D (m)</th>
<th>E (mm)</th>
<th>P (mm)</th>
<th>DI A. +25 mm (1&quot;)</th>
<th>R1 (mm)</th>
<th>R2 (mm)</th>
<th>SLOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 (12&quot;)</td>
<td>51</td>
<td>102</td>
<td>610</td>
<td>1.829</td>
<td>610</td>
<td>508</td>
<td>(19 15/16&quot;)</td>
<td>257</td>
<td>229</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>375 (15&quot;)</td>
<td>57</td>
<td>152</td>
<td>686</td>
<td>1.829</td>
<td>762</td>
<td>616</td>
<td>(24 5/16&quot;)</td>
<td>406</td>
<td>318</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>450 (18&quot;)</td>
<td>64</td>
<td>229</td>
<td>686</td>
<td>1.829</td>
<td>914</td>
<td>737</td>
<td>(29&quot;)</td>
<td>482</td>
<td>394</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>525 (21&quot;)</td>
<td>70</td>
<td>230</td>
<td>838</td>
<td>1.829</td>
<td>1.07</td>
<td>803</td>
<td>(31 5/8&quot;)</td>
<td>558</td>
<td>410</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>600 (24&quot;)</td>
<td>76</td>
<td>241</td>
<td>1.105</td>
<td>1.829</td>
<td>1.22</td>
<td>843</td>
<td>(33 3/16&quot;)</td>
<td>427</td>
<td>356</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>685 (27&quot;)</td>
<td>83</td>
<td>267</td>
<td>1.219</td>
<td>1.829</td>
<td>1.37</td>
<td>914</td>
<td>(36&quot;)</td>
<td>711</td>
<td>471</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>760 (30&quot;)</td>
<td>89</td>
<td>305</td>
<td>1.372</td>
<td>1.829</td>
<td>1.52</td>
<td>940</td>
<td>(37&quot;)</td>
<td>787</td>
<td>470</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>915 (36&quot;)</td>
<td>102</td>
<td>381</td>
<td>1.60</td>
<td>1.829</td>
<td>1.85</td>
<td>1.214</td>
<td>(47 13/16&quot;)</td>
<td>939</td>
<td>618</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>1.07 m (42&quot;)</td>
<td>114</td>
<td>533</td>
<td>1.60</td>
<td>2.439</td>
<td>1.98</td>
<td>1.368</td>
<td>(53 7/8&quot;)</td>
<td>1.092</td>
<td>699</td>
<td>1V : 3H</td>
</tr>
<tr>
<td>1.22 m (48&quot;)</td>
<td>127</td>
<td>610</td>
<td>1.829</td>
<td>2.439</td>
<td>2.13</td>
<td>1.435</td>
<td>(58 1/2&quot;)</td>
<td>1.244</td>
<td>724</td>
<td>IV : 3H</td>
</tr>
</tbody>
</table>

### Notes:
1. See standard specifications for the type of pipe to be used.
2. See standard specifications for the type of pipe and placing of steel reinforcement.
3. The joints are to be compatible with the main run of pipe.

---

**Reinforced Concrete Pipe Flared End**

**City of Attleboro**
Department of Public Works
Phone: (508) 223-2222

---
<table>
<thead>
<tr>
<th>PART #</th>
<th>PIPE SIZE</th>
<th>A</th>
<th>B (MAX)</th>
<th>H</th>
<th>L</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>1210NP</td>
<td>12 in</td>
<td>6.50 in</td>
<td>10.00 in</td>
<td>6.50 in</td>
<td>25.00 in</td>
<td>29.00 in</td>
</tr>
<tr>
<td></td>
<td>(300 mm)</td>
<td>(165 mm)</td>
<td>(254 mm)</td>
<td>(165 mm)</td>
<td>(635 mm)</td>
<td>(737 mm)</td>
</tr>
<tr>
<td>1510NP</td>
<td>15 in</td>
<td>6.50 in</td>
<td>10.00 in</td>
<td>6.50 in</td>
<td>25.00 in</td>
<td>29.00 in</td>
</tr>
<tr>
<td></td>
<td>(375 mm)</td>
<td>(165 mm)</td>
<td>(254 mm)</td>
<td>(165 mm)</td>
<td>(635 mm)</td>
<td>(737 mm)</td>
</tr>
<tr>
<td>1810NP</td>
<td>18 in</td>
<td>7.50 in</td>
<td>15.00 in</td>
<td>6.50 in</td>
<td>32.00 in</td>
<td>35.00 in</td>
</tr>
<tr>
<td></td>
<td>(450 mm)</td>
<td>(191 mm)</td>
<td>(381 mm)</td>
<td>(165 mm)</td>
<td>(813 mm)</td>
<td>(889 mm)</td>
</tr>
<tr>
<td>2410NP</td>
<td>24 in</td>
<td>7.50 in</td>
<td>18.00 in</td>
<td>6.50 in</td>
<td>36.00 in</td>
<td>45.00 in</td>
</tr>
<tr>
<td></td>
<td>(600 mm)</td>
<td>(191 mm)</td>
<td>(457 mm)</td>
<td>(165 mm)</td>
<td>(914 mm)</td>
<td>(1143 mm)</td>
</tr>
<tr>
<td>3012NP</td>
<td>30 in</td>
<td>10.50 in</td>
<td>N/A</td>
<td>7.00 in</td>
<td>53.00 in</td>
<td>68.00 in</td>
</tr>
<tr>
<td></td>
<td>(750 mm)</td>
<td>(267 mm)</td>
<td></td>
<td>(178 mm)</td>
<td>(1346 mm)</td>
<td>(1727 mm)</td>
</tr>
<tr>
<td>3612NP</td>
<td>36 in</td>
<td>10.50 in</td>
<td>N/A</td>
<td>7.00 in</td>
<td>53.00 in</td>
<td>68.00 in</td>
</tr>
<tr>
<td></td>
<td>(900 mm)</td>
<td>(267 mm)</td>
<td></td>
<td>(178 mm)</td>
<td>(1346 mm)</td>
<td>(1727 mm)</td>
</tr>
</tbody>
</table>

NOTE:
1. PE THREADED ROD W/WING NUTS PROVIDED FOR END SECTIONS 12”–24”. 30” & 36” END SECTIONS TO BE WELDED TO PIPE PER MANUFACTURER’S RECOMMENDATIONS.
2. ALL DIMENSIONS ARE NOMINAL.
3. DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS, INC.
WASTEWATER DETAILS
PRECAST CONCRETE SEWER MANHOLE
NOT TO SCALE

SEWER MANHOLE
INVERT PLAN VIEW

BRICK W/ MORTAR CHANNEL AND SHELF OR Poured CONCRETE WITH PVC CHANNEL

PROVIDE WYE CHANNEL

MANHOLE FRAME & COVER (H2O) CONFORM TO ASTM STANDARD A48 CLASS 30

SET FRAME IN FULL BED OF MORTAR (12" MIN WIDTH)

ADJUST TO REQUIRED GRADE WITH PRECAST REINFORCED CONCRETE RISER OR W/ MIN 2 OR MAX 4 BRICK COURSES

4'-0" ECCENTRIC CONE SECTION

HEIGHT OF RISER SECTIONS VARY FROM 1' TO 4'

MORTAR ALL JOINTS

1" CLEAR REBAR COVERAGE

CARRY CHANNEL VERTICAL FROM SPRING LINE TO CROWN

MIN. 6" 3/8" CRUSHED STONE BASE OVER APPROVED MATERIAL.

MINIMUM 0.12 IN. STEEL PER VERTICAL FOOT, PLACED ACCORDING TO AASHTO DESIGNATION M199

CONTINUOUS BUTYL RUBBER GASKET AT ALL JOINTS

WATERTIGHT RUBBER BOOT PROVIDE "V" OPENINGS OUTSIDE OF PIPE +2 IN. CLEARANCE

TYP. MANHOLE COVER

S=0.02

S=0.02

26" MIN.

3"
NOTE:
1. GRAVITY SEWER AND FORCE MAIN SHALL BE INSULATED WHEN VERTICAL OR HORIZONTAL SOIL COVER IS LESS THAN 4 FEET AND WHERE SHOWN ON PLANS. IN CERTAIN INSTANCES, DI PIPE MAY BE REQUIRED.
2. BACKFILL PLACED IN UTILITY TRENCHES INCLUDING DISTURBED AREAS SURROUNDING UTILITY TRENCHES SHALL BE PLACED AND COMPACTED IN 12" (MAX.) VERTICAL LIFTS.
3. TRACER TAPE FOR NON–FERROUS PIPE SHALL BE CONSTRUCTED OF A METALLIC CORE BONDED TO PLASTIC LAYERS. THE METALLIC TRACER TAPE SHALL BE A MINIMUM 5mm THICK AND MUST BE LOCATABLE AT A DEPTH OF 18 INCHES WITH ORDINARY PIPE LOCATORS.
4. PEA GRAVEL SHALL CONSIST OF CLEAN, HARD, ROUND PARTICLES OF GRAVEL MEETING THE FOLLOWING:
   
<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>PERCENT PASSING</th>
</tr>
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<tbody>
<tr>
<td>3/8&quot;</td>
<td>85–95</td>
</tr>
<tr>
<td>NO. 4</td>
<td>5–15</td>
</tr>
<tr>
<td>NO. 8</td>
<td>0–2</td>
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5. CONTRACTOR SHALL ACHIEVE 95% COMPACTION FOR THE BEDDING. TRENCH BACKFILL UNDER ROADWAYS SHALL BE COMPACTED TO 95%.
6. ZONE AROUND PIPE; BACKFILL WITH PROCESSED SAND, FINE GRAVEL, OR OTHER MATERIAL APPROVED BY THE WASTEWATER DEPARTMENT.
7. FOR PVC PIPE 3/4" CRUSHED STONE 6" AROUND ENTIRE PIPE.
8. FOR CONCRETE PIPE 3/4" STONE 6" UNDER PIPE AND HALFWAY UP PIPE.
NOTE:
1. SEE STANDARD SEWER MANHOLE DETAIL FOR ADDITIONAL INFORMATION.
2. SUPPORT BOTTOM OF PIPE WITH CONCRETE. REMAINDER OF TRENCH SHALL BE FILLED WITH FLOWABLE FILL.
IF CONDITIONS REQUIRE PIPES TO BE CLOSER THAN 18", ENCASE SEWER 10' EACH SIDE OF CROSSING OR USE D.I. FOR SEWER

SEWER BELOW < 18"

SEPARATION

SEWER BELOW ≥ 18"

SEPARATION

IF SEWER LINES MUST CROSS WATER SUPPLY LINES, BOTH PIPES SHALL BE CONSTRUCTED OF CLASS 150 PRESSURE PIPE OR BETTER AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS. IF CROSSING IS WITHIN 18" MINIMUM, BOTH MAINS MUST BE ENCASED IN CONCRETE 10' EITHER SIDE OF CROSSING

SEWER ABOVE

NOTE:
1. SEWER MAINS ARE TO BE LOCATED UNDER WATER MAINS WHENEVER POSSIBLE. SEWER MAINS THAT CROSS WATER SUPPLY LINES SHALL FOLLOW THE ABOVE DESIGN.
2. SEWER SERVICES THAT CROSS WATER SUPPLY LINES SHALL BE SLEEVED WITH SDR 35 PVC PIPE TO EXTEND TEN (10) FEET ON BOTH SIDES OF THE WATER SUPPLY LINES.
**MINIMUM TABLE OF BEARING AREAS (S.F.)**

<table>
<thead>
<tr>
<th>SIZE OF MAIN (IN.)</th>
<th>BEND (90°)</th>
<th>BENDS (45° &amp; &lt;)</th>
<th>TEES, CAPS OR PLUGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 &amp; &lt;</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10 &amp; 12</td>
<td>12</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>16 &amp; &gt;</td>
<td>18</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

**NOTE:**
1. TIE RODS SHALL BE INSTALLED AS REQUIRED.
2. BLOCK AND RODS SHALL BE CONSTRUCTED FOR 150 PSI + 50% SURGE ALLOWANCE.
3. CONCRETE FOR THRUST BLOCKS SHALL HAVE MIN. COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
4. THRUST BLOCK BEARING AREAS TO BE IN ACCORDANCE WITH TABLE, UNLESS DETERMINED OTHERWISE BY THE ENGINEER BECAUSE OF SOIL CONDITIONS.
5. THRUST BLOCK SIDES SHALL BE FORMED WITH PLYWOOD.
6. LOCAL MATERIAL, I.E. BOULDERS, ACCEPTABLE.
WATER DETAILS
NOTE:
PAYMENT FOR PAVEMENT INSTALLED BEYOND PAYMENT LINE WILL BE MADE ONLY WHEN SUCH INSTALLATION IS APPROVED BY THE ENGINEER.
WATER MAIN

SEWER PIPE MAIN

IF CONDITIONS REQUIRE PIPES TO BE CLOSER THAN 18", ENCASE SEWER 10' EACH SIDE OF CROSSING OR USE D.I. FOR SEWER

SEWER BELOW < 18"

SEPARATION

WATER MAIN

18” MIN

SEWER PIPE

SEWER BELOW >/= 18"

SEPARATION

SEWER MAIN

18” MIN.

WATER MAIN AND/OR PE WATER TUBING

10’ MIN.

10’ MIN.

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NOTE:
1. DEPTH OF HYDRANT PER DESIGN PLANS WITH MINIMUM DEPTH OF COVER OVER WATERMAIN.
2. THRUST BLOCKS SHALL BE A MINIMUM OF 3-CFT IN VOLUME.
3. DO NOT BLOCK DRAIN WITH THRUST BLOCK.
4. LARGE FLAT ROCKS MAY REPLACE CONCRETE PADS.
5. ROOFING FELT SHALL BE INSTALLED BETWEEN THE CONCRETE PAD AND THE WATERMAIN FITTINGS.
6. SEE TABLE FOR CONCRETE THRUST BLOCK REQUIREMENTS.
7. HYDRANTS AND GATE VALVES OPEN RIGHT.
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UTILITY DETAILS
NOTE:
1. SEE UTILITY COMPANY.
2. SITE WORK SUBCONTRACTOR SHALL PERFORM EXCAVATION, AND BACKFILL FOR ALL CONDUIT INSTALLATIONS. ELECTRICAL SUBCONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS, PULL WIRES, HANDHOLES, AND WARNING TAPE AS REQUIRED FOR ELECTRICAL WORK.
3. UTILITY CONDUITS SHALL INCLUDE A COMBINATION OF ONE, TWO, OR ALL OF (1) FOR TELEPHONE, (1) FOR ELECTRICAL, AND (1) FOR CABLE TELEVISION, (1) FOR OTHER AS SHOWN IN THE SITE PLAN.
NOTE:
CONTACT THE NATIONAL GRID DISTRIBUTION ENGINEERING
DEPARTMENT FOR COMPLETE LIST OF MATERIALS REQUIRED.

LIGHT POLE
NOT TO SCALE

CITY OF ATTLEBORO
Department of Public Works
Phone: (508) 223-2222