METER BOX - HDPE
DEPTH 18 INCHES MINIMUM

4" MIN
6" MAX

DUAL ANGLE-CHECK VALVE

3/4" OR 1" METER

FLOW

ANGLED METER STOP (LOCKABLE)

COPPER METER SETTER

3" MIN. #67 STONE

18"

12"

6" MIN 8" MAX

TYPE 'K' COPPER TUBING

3/4" & 1" WATER SERVICE & METER BOX
SIDEWALK

DO NOT EXCEED 45° ANGLE

EASEMENT LINE

EASEMENT

1'

5' SQUARE

ROADWAY

CURB & GUTTER

COMPACTED BACKFILL

METER BOX - HDPE

DEPTH 18 INCHES MINIMUM

SERVICE CONNECTION TO
METER BOX TO BE TYPE 'K'
SOFT COPPER EXTENDED 18" MIN. AND/OR TO THE BOTTOM
OF DITCH LINE AND TURNED
TOWARD CONNECTION

TYPE 'K' SOFT
COPPER PIPE

WATER MAIN

AS SPECIFIED

TAPPING SADDLE

AS SPECIFIED

WATER MAIN

AS SPECIFIED

TRANSITION COUPLING IF REQ'D.

BOTTOM OF DITCH LINE

POLY OR COPPER SERVICE LINE

TOWN OF APEX STANDARDS

3/4" & 1" WATER SERVICE & METER BOX

EFFECTIVE: DECEMBER 18, 2012

STD. NO. 600.01

SHEET 2 OF 2
NOTES:

1. METER YOKE - MUELLER, MCDONALD OR FORD WITH LOCKABLE BY-PASS AND METER STOPS.

2. BOX MAY BE CONCRETE (STAY RIGHT MB 2737 OR EQUAL) OR LIGHTWEIGHT POLYMER CONCRETE.

#67 WASHED STONE TO 3" DEPTH

METER FLANGE SPACING
13-1/4" FOR 1-1/2" METER
17-1/4" FOR 2" METER

DO NOT COVER BYPASS WITH STONE

TO BACKFLOW PREVENTER
<table>
<thead>
<tr>
<th>METER</th>
<th>OPENING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>12 1/2</td>
</tr>
<tr>
<td>4&quot;</td>
<td>14 1/2</td>
</tr>
<tr>
<td>6&quot;</td>
<td>18 1/2</td>
</tr>
<tr>
<td>8&quot;</td>
<td>20 1/2</td>
</tr>
</tbody>
</table>

SECTION VIEW

TOWN OF APEX
STANDARDS
EFFECTIVE: JANUARY 22, 2014

3" & LARGER METER INSTALLATION & VAULT

STD. NO. 600.03
SHEET 1 OF 2
3" & LARGER METER INSTALLATION & VAULT

STANDARD VALVE BOX

DUCTILE IRON PIPE CLASS 350

# 57 STONE

ALL PIPING INTO VAULT SHALL BE RESTRAINED

4" MIN. FLOOR DRAIN W/ DEBRIS SCREEN
DRAIN @ 1% MINIMUM SLOPE TO DAYLIGHT OR STORM DRAINAGE

FLOW

METER

ACCESS DOOR BILCO KD-3 OR EQUAL (SHOWN CLOSED)

GATE VALVE (TYPICAL)

MORTAR

SLAM LOCK

LIFTING HANDLE

UTILITY ANCHORS (TYPICAL)

RESTRAINED FLANGED COUPLING ADAPTER

FLOW

12" MIN.

2'-5" MIN.

4'-0"

12'-0"

6"
BLIND FLANGE W/ 2" THREADED PLUG

GROUND LINE OR PAVEMENT

ASPHALT BASE

MINIMUM 4" CLEARANCE UNDER & ABOVE FLANGE

CONCRETE RISER RING

PROPERTY/PHASE LINE

MECHANICAL JOINT 90° BEND W/ GRIP RING ACC.

BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED

BLOWOFF VALVE

SAME SIZE AS MAIN

6"-8"

3000 PSI CONCRETE FOR TEMPORARY BLOWOFF, CONCRETE BLOCKING BEHIND BEND ONLY

10' MAX

5' MIN.

10' MAX.
NOTES:

1. HYDRANT TO BE PLACED WITH PUMPER NOZZLE FACING THE CLOSEST CURB.

2. HYDRANT TO BE PAINTED ONE COAT OF RED AFTER INSTALLATION.

3. WATER SERVICES SHALL NOT BE PERMITTED ON HYDRANT LEGS.
ALL DIMENSIONS ARE TO BACK OF CURB

2' MIN. - 5' MAX.

CURB AND GUTTER

14' MIN.  
25' MAX.
NON-FREEZE YARD HYDRANT
'SIMMONS' MODEL SP813
OR APPROVED EQUAL.

18" MIN

TOP OF SLAB OR GRADE

BURIED 24" MIN

TYPE K, 1"Ø COPPER WITH
THREADED TO COMPRESSION FITTING
OR FLARE FITTING AT HYDRANT

TO METER/BACKFLOW PREVENTER

#57 WASHED STONE

YARD HYDRANT (NON-FREEZE)
1. **ALL VALVE BOXES AND COVERS SHALL MEET ASTM A48, GRADE 35B IRON REQUIREMENTS.**

2. **IN CASES WHERE MAX. VALVE BOX HEIGHT IS EXCEEDED, USE 6" DIP AS A PROTECTIVE SLEEVE AND INCLUDE A VALVE NUT EXTENSION.**
VALVE COVER

TOP VIEW

1 1/8"
7/16"

(2) PICKHOLES
1" LETTERS
RECESSED FLUSH

WATER
USA

TOP VIEW

7/16"
1 1/8"

(2) PICKHOLES
1/4" LETTERS
RECESSED FLUSH

FIRE LINE
TOWN OF APEX
DO NOT CLOSE

USA

BOTTOM VIEW

MANUFACTURER
USA
MODEL
MO/DY/YR

FRONT VIEW

7 5/16"
4"
2"
5 1/4"
5 3/4"

SECTION VIEW

4"
3 1/2"

COVER WEIGHT: 16 LBS
COMPACTED BACKFILL

CONCRETE THRUST COLLAR (3000 PSI)

UNDISTURBED SOIL

ANCHOR RING

TRENCH WALL

UNDISTURBED SOIL

MECHANICAL JOINT TAPPED PLUG

CONCRETE THRUST COLLAR (3000 PSI)

ANCHOR RING

SECTION Z-Z

TOWN OF APEX STANDARDS

THRUSt COLLAR INSTALLATION

EFFECTIVE: DECEMBER 3, 2002

600.11

SHEET 1 OF 1

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>CONCRETE THRUST COLLAR</th>
<th>ANCHOR RING</th>
<th>RINGS REQUIRED</th>
</tr>
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<tbody>
<tr>
<td>6&quot;/8&quot;/12&quot;</td>
<td>1'-0&quot;</td>
<td>1'-0&quot;</td>
<td>2&quot; ONE</td>
</tr>
<tr>
<td>16&quot;</td>
<td>1'-4&quot;</td>
<td>1'-0&quot;</td>
<td>2&quot; ONE</td>
</tr>
<tr>
<td>20&quot;</td>
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<td>1'-4&quot;</td>
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</tr>
<tr>
<td>30&quot;</td>
<td>1'-4&quot;</td>
<td>1'-2&quot;</td>
<td>4&quot; TWO</td>
</tr>
<tr>
<td>36&quot;</td>
<td>1'-4&quot;</td>
<td>1'-4&quot;</td>
<td>4&quot; TWO</td>
</tr>
</tbody>
</table>

REINFORCING

NOTE:
6" TO 16" MAINS -- 12-N0. 7 BARS
20" TO 36" MAINS -- 12-N0. 8 BARS
* BARS PLACED AS SHOWN
NOTES:
1. TAP SIZE AND ISOLATION VALVE TO BE SAME SIZE AS AIR VALVE.
2. ALL PIPING AND FITTINGS IN THE MANHOLE SHALL BE BRASS OR BRONZE UNLESS NOTED OTHERWISE.
3. MANHOLE STEPS SHALL BE PLACED 16" O.C. WHEN DEPTH OF MANHOLE EXCEEDS 4 FEET.
4. MANHOLE INTERIOR SHALL BE EPOXY COATED IN THE CASE OF SEWER.
### Minimum Concrete Blocking (C.Y.)*

<table>
<thead>
<tr>
<th>Nom. Pipe DIA. (Inches)</th>
<th>Tees &amp; Dead Ends</th>
<th>90° Bend</th>
<th>45° Bend</th>
<th>22-1/2° Bend</th>
<th>11-1/4° Bend</th>
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<tbody>
<tr>
<td>4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
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<td>0.1</td>
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<td>0.3</td>
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<tr>
<td>16</td>
<td>0.7</td>
<td>0.9</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
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<tr>
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<td>0.9</td>
<td>1.2</td>
<td>0.7</td>
<td>0.6</td>
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<tr>
<td>20</td>
<td>1.1</td>
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<td>2.3</td>
<td>1.6</td>
<td>0.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

* Concrete shall be 3000 psi

*Note: Wrap fittings in 6 mil plastic before pouring concrete*
NOTES:
1. THERE SHALL BE NO MULTIPLE CONNECTIONS FOR SERVICES OTHER THAN 3/4".
2. GATE VALVE REQUIRED ON SERVICE LINE 2" OR GREATER.
3. CURB STOP SHALL BE AS MANUFACTURED BY FORD OR APPROVED EQUAL.
4. METER BOXES SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS UNDER WATER DISTRIBUTION; HOWEVER, THE INLET SHALL BE IRON PIPE THREADED INLETS.
5. CURB STOPS SHALL BE CENTERED ON MULTIPLE BRANCH SERVICE AND CONTAINED WITHIN A VALVE BOX.
NOTES:

1. WITNESS POST TO BE INSTALLED UPRIGHT WITH THE CAST 'MV' FACING THE NEAREST STREET.

2. DIRECTION AND DISTANCE MUST BE ETCHED OR STAMPED INTO THE BRONZE INSERT.

3. ONE POST TO BE INSTALLED FOR EACH VALVE LOCATED OUTSIDE OF THE PAVEMENT.

4. WITNESS POST TO BE INSTALLED AT THE RIGHT OF WAY.

5. NO POST REQUIRED FOR FIRE HYDRANT ISOLATION VALVES.

TOWN OF APEX STANDARDS

EFFECTIVE: DECEMBER 3, 2002

VALVE BOX MARKER FOR UNPAVED AREAS

STD. NO. 600.15

SHEET 1 OF 1
FIELD ADJUSTMENT INSTRUCTIONS:

1. REMOVE THE BODY FROM THE TOP OF THE INDICATOR POST ASSEMBLY.

2. CUT THE REQUIRED LENGTH OF THE BOTTOM OF THE STANDPIPE FOR THE GROUND LINE TO MATCH UP WITH THE STANDPIPE GROUND LINE MARK.

3. CUT THE 1" SQ. EXTENSION AT A DISTANCE OF 9" ABOVE THE TOP OF THE STANDPIPE.

4. SET THE "OPEN" AND "SHUT" TARGETS FOR THE APPROPRIATE VALVE SIZE.

5. REATTACH THE BODY TO THE TOP OF THE INDICATOR POST ASSEMBLY.

6. LOCATION OF VALVE PER NFPA.
STANDARD WATER TYPE RING AND COVER ATTACHED WITH 4-3/8" ANCHOR BOLTS, Labeled WATER

FINISHED GRADE

PRECAST 5’ DIAMETER MANHOLE WITH OPENING FOR VALVE ACTUATOR

STEPS AT 16" O.C.

5"

BRICK & MORTAR TO SEAL AROUND OPENING

7.5"

12"

NOTE:
1. MANHOLE TO BE USED ON ALL VALVES 16" AND LARGER.
2. THIS CONFIGURATION TO BE USED ON ALL BUTTERFLY VALVES 16" AND LARGER.

ENCASEMENT AS REQUIRED BY OTHER DETAILS

STANDARD VALVE BOX CAST INTO FLAT TOP

OPERATOR NUT

VALVE BOX

SEE SPACER DETAIL

SPACER DETAIL

TOP VIEW

CONCRETE ENCASEMENT

SHEET METAL SPACER DISC WITH A DIAMETER SLIGHTLY SMALLER THAN THE INSIDE DIAMETER OF THE VALVE BOX AND A SQUARE HOLE CENTERED TO BE PLACED OVER THE VALVE OPERATOR NUT.

OPERATOR NUT

VALVE BOX LID

SIDE VIEW

CONCRETE ENCASEMENT

SHEET METAL SPACER

STEM EXTENSION

NO. 57 STONE
GROUT AND BLOCK TO SEAL HIGH SIDE OF CARRIER PIPE

INSTALL MECHANICAL SPIDERS @ PIPE CENTER LINE & WITHIN 3’ OF ANY JOINT

CROSSING PIPE (WATER OR SEWER) CARRIER PIPE (CASING)

<table>
<thead>
<tr>
<th>WATER</th>
<th>WALL THICKNESS (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE PVC</td>
<td>CASING PVC</td>
</tr>
<tr>
<td>6-8</td>
<td>18</td>
</tr>
<tr>
<td>10-12</td>
<td>24</td>
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<tr>
<td>16-18</td>
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<tr>
<td>20-24</td>
<td>42</td>
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<tr>
<td>30-36</td>
<td>48</td>
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<table>
<thead>
<tr>
<th>SEWER</th>
<th>WALL THICKNESS (IN.)</th>
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</thead>
<tbody>
<tr>
<td>PIPE PVC</td>
<td>CASING PVC</td>
</tr>
<tr>
<td>4-12</td>
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<td>42</td>
<td>54</td>
</tr>
<tr>
<td>48</td>
<td>60</td>
</tr>
</tbody>
</table>

NOTES:
1. CASING SHALL BE UNCOATED SPIRAL WELDED STEEL MEETING ASTM A-139, GRADE B WITH A YIELD STRENGTH OF 35,000 PSI.
2. CROSSINGS ON NCDOT MAINTAINED ROADS TO BE IN ACCORDANCE WITH CURRENT NCDOT STANDARDS AND APPROVED ENCROachment AGREEMENT.
3. RESTRAINED JOINT PIPE ONLY. MEGE-LUGS ARE NOT PERMITTED.
4. SPIDER SUPPORTS SHALL BE MANUFACTURED BY ADVANCE PRODUCTS & SYSTEMS, INC, PIPELINE SEAL AND INSULATOR LTD, OR BWM COMPANY.
SPRINKLER RISER & FIRE DEPARTMENT CONNECTION

TOWN OF APEX STANDARDS
EFFECTIVE: NOVEMBER 20, 2007

SECTION A-A
N.T.S.
NOTE:
1. TOP OF BLOCKING SHALL BE 2" FROM BALL DRIP WEEP HOLE.
FINISHED GRADE / SUBGRADE

BACKFILL
INITIAL LIFT: 12" MAX.
NON TRAFFIC AREAS: 12" MAX. LIFTS
TRAFFIC AREAS: 6" MAX. LIFTS
COMPACCIÓN: 95% MAX. DRY DENSITY
(STANDARD PROCTOR)

TRENCH WIDTH
MIN: PIPE OUTSIDE DIA. +8" EACH SIDE
MAX: PIPE OUTSIDE DIA. +12" EACH SIDE

NOTES:

1. NO STONES SHALL BE INCLUDED IN THE BACKFILL MATERIAL FOR AT LEAST 2 FEET ABOVE THE TOP OF THE PIPE.
2. PROVIDE RECESSES TO RECEIVE PIPE BELL.
3. UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH APPROVED MATERIAL.
4. WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION. DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES.