NOTES:

1. THE SKETCHES ABOVE INDICATE TYPICAL WATER SERVICE AND METER BOX LOCATIONS. ACTUAL LOCATIONS OF BOXES MAY VARY SLIGHTLY ACCORDING TO FIELD CONDITIONS ENCOUNTERED. TYPICALLY, THE METER BOX SHALL BE LOCATED AT THE R/W LINE BUT INSIDE THE 7 1/2' ELECTRIC EASEMENT.

2. UNLESS SPECIFIED OTHERWISE BY THE APPLICABLE COUNTY (NASSAU, CLAY OR ST. JOHNS COUNTY), THE METER BOX SHALL BE LOCATED IN THE JEA 7 1/2' UTILITY EASEMENT, AND TWO FEET INSIDE OF THE PROLONGATION OF ONE OF THE SIDE PROPERTY LINES. IF A CONFLICT EXISTS WITH OTHER UTILITIES, THE METER BOX MAY BE ADJUSTED TO FOUR FEET (MAX.) INSIDE PROPERTY LINES (IN LIEU OF TWO FEET). UNLESS APPROVED OTHERWISE BY JEA, THE WATER METER BOX SHALL BE LOCATED IN NON-TRAFFIC AREAS (NOT IN SIDEWALKS OR DRIVEWAYS). IF THE METER BOX IS IDENTIFIED BY JEA TO BE LOCATED IN A DRIVEWAY OR SIDEWALK, THEN THE CONSTRUCTION SHALL MEET STANDARD DETAIL NUMBERS W-3&4, AT A MINIMUM (SEE W-3 AND W-4 FOR THE REQUIREMENTS OF SPECIAL ORDER POLYMER BOX AND TOP). SET TOP OF BOX AT FINISHED GRADE. IF AN UNAPPROVED METER BOX IS IDENTIFIED BY JEA, THEN THE CONTRACTOR OR CUSTOMER SHALL BE RESPONSIBLE FOR THE COST OF RELOCATING ANY METER BOX WHICH IS LOCATED IN THE SIDEWALK OR DRIVEWAY OR THE COST TO PROVIDE THE CORRECT METER BOX. JEA SHALL APPROVE ALL DEVIATIONS TO THE ABOVE PRIOR TO CONSTRUCTION.

3. IF DRAINAGE OR OTHER EASEMENT LOCATED BETWEEN LOTS, METER BOXES SHALL BE LOCATED AT THE EASEMENT LINE BUT OUTSIDE THE EASEMENT AREA.

4. FOR SINGLE SERVICES, THE HORIZONTAL DISTANCE (PERPENDICULAR TO THE MAIN) BETWEEN THE SERVICES SADDLE AND THE METER BOX SHALL BE 2 FEET MAXIMUM. FOR DOUBLE 1" SERVICES, THE 2" POLY MAIN SHALL BE LOCATED CENTERED BETWEEN THE TWO METER BOXES. LOCATE WIRE IS REQUIRED ON ALL SERVICES 10' OR GREATER IN LENGTH. IF LOCATE WIRE IS REQUIRED, THE WIRE SHALL RUN FROM THE METER BOX (W/PIG TAIL) TO THE MAIN (DEAD END SHALL BE TAPPED WITH NO CONNECTION TO MAIN WIRE WITH THE LAST 24 INCHES STRIPED OF INSULATION/BARE WIRE AS GROUND). ALL EXCEPTIONS TO THIS REQUIREMENT MUST BE APPROVED BY JEA. THIS WILL ASSIST IN LOCATING EXISTING SERVICE LINES IN THE FUTURE.

5. GANG WATER SERVICES: FOR 3 OR 4 SERVICES IN ONE AREA, A DUCTILE IRON PIPE (D.I.P.) WATER MAIN EXTENSION WILL LOCATE WIRE MAY BE UTILIZED ON EITHER SHORT-SIDE OR LONG SIDE SERVICES WHERE SHOWN ON THE DRAWINGS. LOCATE WIRE SHALL EXTEND FROM ONE METER BOX TO CORP STOP AT WATER MAIN. FOR 5 OR MORE SERVICES IN ONE AREA, A WATER MAIN EXTENSION WILL BE UTILIZED ON EITHER SHORT-SIDE OR LONG SIDE SERVICES WHERE SHOWN ON THE DRAWINGS. EXAMPLE: CONSTRUCT A 4" MAIN PVC CROSSING THE STREET FOR 5 RESIDENTIAL CUSTOMERS, UTILIZING 4" DIP, 4" PIPE, 4"X1" SADDLES AND 1" CORP STOPS (NO GLUED TEE FITTINGS). THE 4" OR LARGER D.I.P. WATER MAIN MUST BE SIZED AND DESIGNED BY THE P.E. ENGINEER.

6. DOUBLE 1" WATER SERVICES IS ALLOWED FOR SHORT SIDE OR LONG SIDE SERVICES AND WHERE SHOWN ON THE DRAWINGS.

7. A 1" IRRIGATION SERVICE MAYBE TAPPED INTO THE (1" MIN) DOMESTIC WATER SERVICE LINE (WHICH SERVES THE SAME CUSTOMER) UTILIZING A 1" BRONZE "Y" FITTING. (IN AREAS WHERE NO RECLAIMED WATER IS AVAILABLE).

8. NO 2" AND SMALLER WATER SERVICE TAPS PERMITTED ON WATER MAINS WHICH ARE 20" AND LARGER SIZE.

9. RECLAIMED WATER METER BOXES OR SERVICES SHALL BE CONSTRUCTED SIMILAR TO THE ABOVE AND SHALL BE LOCATED AT A MIN. OF 10' FROM THE POTABLE WATER SERVICE, AND/OR BOX AND NOT ALLOWED IN CONCRETE OR ASPHALT UNLESS APPROVED OTHERWISE BY JEA.

10. SERVICE SIZE SHALL BE SAME AS THE METER SIZE.
ACCEPTABLE RANGE FOR TAPS 0°-45°

NOTES:

1. SEE PLATE W-1 FOR METER LOCATION REQUIREMENTS.

2. SINGLE BAND SADDLES SHALL BE UTILIZED ON NEW 1" WATER SERVICES WHICH ARE INSTALLED ON A DRY 10" SIZE OR SMALLER WATER MAIN (NEW WATER MAIN CONSTRUCTION). FOR WET TAPS OR WATER MAINS 12" SIZE AND LARGER, A DOUBLE BAND SADDLE IS REQUIRED. BRASS SADDLES MAY BE UTILIZED ON NEW 1 INCH AND SMALLER WATER SERVICES WHICH ARE INSTALLED ON A DRY 10 INCH OR SMALLER PVC WATER MAIN.

3. NO OPEN CUT UNDER ROADWAY PAVING ALLOWED UNLESS THE ROADWAY IS BEING RECONSTRUCTED OR IF DIRECTED OTHERWISE BY J.E.A. CONSTRUCT POLY LINE WITH 24" (MIN.) COVER UNDER ROADWAYS. THE POLY WATER SERVICE LINE SHALL BE SAME SIZE AS THE METER (1" MINIMUM) AND BE INSTALLED PERPENDICULAR TO THE MAIN AND NOT EXCEED 100LF UNLESS APPROVED OTHERWISE BY JEA.

4. INSTALL PVC PLUG IN ALL CURB STOPS IF WATER SERVICE IS "NOT IN USE" (I.E.: IF NO METER IS INSTALLED). WATER SERVICES SERVING VACANT LOTS (SERVICE NOT IN USE), SHALL INCLUDE A "W" CUT INTO THE CURB (CLOSEST TO THE METER BOX), AND PAINTED BLUE (PAINTED PURPLE FOR RECLAIMED WATER). IN ADDITION, FOR NEW DEVELOPMENT AREAS WHERE THE WATER SERVICE IS "NOT IN USE", A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED BLUE OR PURPLE FOR RECLAIMED WATER). THE REMOVAL OR TRANSFER OF A WATER SERVICE SHALL INCLUDE BRASS METER COUPLINGS (HEX ON BARREL TYPE).

5. NO 2" AND SMALLER WATER SERVICE TAPS PERMITTED ON WATER MAINS WHICH ARE 20" AND LARGER SIZE.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF THE METER OR ELECTRONIC DEVICES IF DAMAGED BY THE CONTRACTOR DURING THE CONSTRUCTION PERIOD.

7. METER BOX AND TOP SHALL BE CLEAR OF ALL DEBRIS TO ALLOW FULL ACCESS TO BOX (I.E. NO DIRT, TRASH OR OTHER DEBRIS PLACED ON TOP OF BOX).

8. LOCATE WIRING REQUIRED ON ALL SERVICES 10' OR GREATER IN LENGTH. SEE PLATE W-44.
WATER METER BOX & COVER FOR 1" AND SMALLER METERS

1. THE STANDARD BOX (A-8 ASTM C857): LOAD RATING WITH STRAIGHT VERTICAL WALLS) & TOP (A-8 ASTM C857) RATING WITH 2 HOLES) SHALL BE MADE OF POLYMER CONCRETE (SIMILAR TO OLD BROOKS SERIES 37 BOX). BOX WALLS SHALL BE FIBERGLASS. THE INSIDE LIP OF THE BOX SHALL BE RATED SAME AS THE BOX. THE ONE HOLE LIDS ARE FOR SPECIAL ORDERS ONLY AND REQUIRE JEA'S APPROVAL PRIOR TO USE.

2. ALL SIZES SHOWN ARE IN INCHES AND ARE APPROXIMATE SIZES.

3. POLYMER BOX APPROXIMATE WEIGHT 25lbs. POLYMER TOP APPROXIMATE WEIGHT 20lbs. SEE CONSTRUCTION DETAILS W-3A (TWO HOLE) AND W-3B (ONE HOLE) FOR MANUFACTURING DETAILS FOR COVERS.

4. UNLESS APPROVED OTHERWISE IN WRITING BY JEA, ALL METER BOXES SHALL BE LOCATED IN NON-TRAFFIC AREAS (NOT IN THE ROADWAY, DRIVEWAYS OR SIDEWALKS). IF AN EXCEPTION TO THIS RULE IS APPROVED BY JEA, THEN THE FOLLOWING SHALL BE PROVIDED:
   A) UNDER NO CIRCUMSTANCE SHALL A METER BOX BE LOCATED IN A COMMERCIAL TRAFFIC AREA.
   B) IF AN EXCEPTION IS APPROVED IN WRITING THE METER BOX LOCATED IN A SIDEWALK OR RESIDENTIAL DRIVEWAY SHALL INCLUDE A POLYMER BOX WITH FLARED OUTWARD WALLS (NOT STRAIGHT WALLS) AND A POLYMER TOP. BOX AND TOP SHALL COMPLY WITH A-8 (ASTM C857), LOAD RATING.
   C) METAL TOPS MAY BE UTILIZED IF SPECIFICALLY APPROVED BY JEA MANAGER OR JEA METER O&M STAFF.
NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
2. COLOR SHALL BE OFF-WHITE, NON-POROUS, SAND TEXTURED SATIN FINISH.
3. ALL TOPS SHALL MEET A-8 (ASTM C857) LOAD RATING.
4. THE LID SHALL BE CERTIFIED BY CELLNET TECHNOLOGY INC AND SENSUS METERING SYSTEMS TO BE RF COMPATIBLE WITH THE SENSUS MTU.
5. METAL DETECTOR PLATE SHALL BE DETECTABLE BY JEA MAGNETIC LOCATE EQUIPMENT.

WATER METER BOX POLYMER COVER
MODEL No. 37 - TWO HOLE

JANUARY 2020
PLATE W-3A
NOTES:
1. ALL DIMENSIONS ARE IN INCHES.
2. COLOR SHALL BE OFF-WHITE, NON-POROUS, SAND TEXTURED SATIN FINISH.
3. ALL TOPS SHALL MEET A-8 (ASTM C857) LOAD RATING.
4. THE LID SHALL BE CERTIFIED BY CELLNET TECHNOLOGY INC AND SENSUS METERING SYSTEMS TO BE RF COMPATIBLE WITH THE SENSUS MTU.
5. METAL DETECTOR PLATE SHALL BE DETECTABLE BY JEA MAGNETIC LOCATE EQUIPMENT.
6. THE ONE HOLE LIDS ARE FOR SPECIAL ORDERS ONLY AND REQUIRE JEA'S APPROVAL PRIOR TO USE.

WATER METER BOX POLYMER COVER
MODEL No. 37 - ONE HOLE

JANUARY 2020 PLATE W-3B
NOTES:

1. THE STANDARD BOX (FLARED OUTWARD WALLS) & TOP (2 HOLE) SHALL BE MADE OF POLYMER CONCRETE. (SIMILAR TO OLD BROOKS SERIES 65). BOX WALLS SHALL BE FIBERGLASS. BOX, INCLUDING THE INSIDE LIP, AND TOP SHALL MEET A-8 (ATSM C857) LOAD RATING.

2. ALL SIZES SHOWN ARE IN INCHES AND ARE APPROXIMATE SIZES.

3. POLYMER BOX APPROXIMATE WEIGHT 50lbs. POLYMER TOP APPROXIMATE WEIGHT 50lbs. SEE CONSTRUCTION DETAIL W-4A FOR MANUFACTURING DETAIL FOR TWO HOLE COVER.

4. UNLESS APPROVED OTHERWISE IN WRITING BY JEA, ALL METER BOXES SHALL BE LOCATED IN NON-TRAFFIC AREAS (NOT IN THE ROADWAY, DRIVEWAYS OR SIDEWALKS).

5. METAL TOPS MAY BE UTILIZED IF SPECIFICALLY APPROVED BY A JEA MANAGER OR BY JEA METER O&M STAFF.

WATER METER BOX & COVER FOR
1-1/2" AND 2" METERS

JANUARY 2020
PLATE W-4
NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. COLOR SHALL BE OFF-WHITE, NON-POROUS, SAND TEXTURED SATIN FINISH.
3. ALL TOPS SHALL MEET A-8 (ASTM C857) LOAD RATING.
4. THE LID SHALL BE CERTIFIED BY CELLNET TECHNOLOGY INC AND SENSUS METERING SYSTEMS TO BE RF COMPATIBLE WITH THE SENSUS MTU.
5. METAL DETECTOR PLATE SHALL BE DETECTABLE BY JEA MAGNETIC LOCATE EQUIPMENT.

WATER METER BOX POLYMER CONCRETE COVER
MODEL No. 65 - TWO HOLE

JANUARY 2020
PLATE W-4A
1. The sketches above are suggestions for some typical large meter (3" and large size meter) installations. Actual installations will vary according to field conditions encountered. For other location limitations see plate nos. W-10 & W-11.

2. The water meter box shall be co-polymer material. If the box is located in a driveway or roadway, the box shall be concrete with heavy-duty all galvanized (with reinforced galv.) top. Boxes located in driveways or roadways must be approved by JEA, prior to construction.

3. For typical box installation details see plate no. W-6 thru W-8.

4. For typical manifold installation, see plate no. W-9.
EXISTING WATER MAIN

TAPPING SLEEVE

NOTE #9

METER

CONTRACTOR NOTES:

1. For "PRE-PAVE" installations, the contractor shall construct tap and water main piping (PVC or D.I.P.) between tapping valve and R/W providing an un-installed (open) pipe section with a "minimum laying length" as shown above for the meter box and by-pass piping. The finished grade grade at the proposed meter vault shall be flat. Contractor shall provide meter box. JEA will install meter box and meter assembly (including meter, three (3) gate valves and associated ductile iron pipe all the same size).

2. For "FULL-TAP" meter assembly, JEA will provide and install the tap, meter box and all of the above piping within the R/W.

3. For box details see plates W-7 and W-8.

4. All potable pipe and fittings to be same size as meter. If utilizing HDPE pipe.

5. Mechanical retainer gland restraints or mega lugs shall be utilized to restrain all joints. The use of thrust blocks, tie rods and/or bell/rod restraints shall only be used if specifically approve by JEA management.

6. Pipe from tap to R/W line shall be restrained.

7. Maximum cover of large water meters shall be 36" (from top of pipe to grade).

8. Locating wiring required from existing water main to meter box. See plate W-44.

9. For meters larger than 10" size, please contact JEA meter shop for additional requirements.

10. Each service (fire main, potable water, etc.) shall include a separate isolation valve (tapping valve or gate valve, below ground type) located prior to tee "A." Also, un-metered fire main services shall include a separate isolation valve (tapping valve or gate valve, below ground type).

11. For typical manifold installation, see plate no. W-9.

12. Service size shall be same as the meter size.

JEA NOTES:

1. All potable piping between tee fittings (tee "A" and tee "B") shall be DR18 or Class 150 D.I.P., including by-pass piping.

2. All potable valves and fittings to be ductile iron restrained joint.

3. Minimum length of ten (10) pipe diameters of straight pipe to be installed on inlet side of meter and five (5) pipe diameters of straight pipe to be installed on outlet side of meter.

4. All meter installations require a test tee to be installed between the meter and valve on consumer side of meter.

WATER METER INSTALLATION DETAILS

3" - 20" METERS

JANUARY 2020

PLATE W-6
1. THE DIMENSIONS SHOWN ARE FOR A STANDARD 36" WIDE BY 60" LONG BY 48" DEEP BOX. DIMENSIONS VARY ACCORDING TO METER SIZE & TYPE. SEE PLATE W-8. ALL DIMENSIONS ARE SHOWN IN INCHES.

2. CONCRETE OR ASPHALT SLOPE: 1/8 IN./FT.

3. GRADE TO SLOPE AWAY FROM METER BOX.

4. DO NOT INSTALL METER BOX IN AREA SUBJECTED TO FLOODING.

5. LOCATING WIRING REQUIRED. SEE DETAIL W-44.

6. THE LARGE BOXES REQUIRE TWO 2" RECESSED HOLES TO FIT ANTENNA.

7. A 4" THICK CONCRETE BOTTOM SHALL BE CONSTRUCTED DURING THE BOX INSTALLATION.

**36" x 60" x 48" CO-POLYMER WATER METER BOX**

**3" & 4" METERS**
NOTES:
1. THE DIMENSIONS SHOWN ARE FOR A STANDARD 48" WIDE BY 72" LONG BY 48" DEEP BOX. DIMENSIONS VARY ACCORDING TO METER SIZE & TYPE. SEE PLATE W-8. ALL DIMENSIONS ARE SHOWN IN INCHES.
2. CONCRETE OR ASPHALT SLOPE: 1/8 IN./FT.
3. GRADE TO SLOPE AWAY FROM METER BOX.
4. DO NOT INSTALL METER BOX IN AREA SUBJECTED TO FLOODING.
5. LOCATING WIRING REQUIRED. SEE DETAIL W-44.
6. THE LARGE BOXES REQUIRE TWO 2" RECESSED HOLES TO FIT ANTENNA.
7. A 4" THICK CONCRETE BOTTOM SHALL BE CONSTRUCTED DURING THE BOX INSTALLATION.

48" x 72" x 48" CO-POLYMER WATER METER BOX
4" & 6" METERS

JANUARY 2020
PLATE W-7A
NOTES:
1. THE DIMENSIONS SHOWN ARE FOR A STANDARD 48" WIDE BY 96" LONG BY 48" DEEP BOX. DIMENSIONS VARY ACCORDING TO METER SIZE & TYPE. SEE PLATE W-8. ALL DIMENSIONS ARE SHOWN IN INCHES.
2. CONCRETE OR ASPHALT SLOPE: 1/8 IN./FT.
3. GRADE TO SLOPE AWAY FROM METER BOX.
4. DO NOT INSTALL METER BOX IN AREA SUBJECTED TO FLOODING.
5. LOCATING WIRING REQUIRED. SEE DETAIL W-44.
6. THE LARGE BOXES REQUIRE TWO 2" RECESSED HOLES TO FIT ANTENNA.
7. A 4" THICK CONCRETE BOTTOM SHALL BE CONSTRUCTED DURING THE BOX INSTALLATION.

48" x 96" x 48" CO-POLYMER WATER METER BOX
6" - 20" METERS

JANUARY 2020
NOTES:


2. FOR WATER METERS LARGER THAN 6" OR FIRE MAINS LARGER THAN 10" SIZE, PLEASE CONTACT JEA METER SHOP FOR CONSTRUCTION REQUIREMENTS.

<table>
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<tr>
<th>Meter Description</th>
<th>Polymer Concrete Box Non-Traffic Rated (Note 1)</th>
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<td>Width x Length x Depth (O.D.)</td>
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<tr>
<td>Type</td>
<td>SIZE</td>
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<td>C-2 or T-2</td>
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<tr>
<td>Omni Style</td>
<td>6&quot;</td>
</tr>
<tr>
<td>Fire Meter</td>
<td>4&quot;</td>
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<tr>
<td></td>
<td>8&quot;</td>
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* Includes 6" Thick Bottom

WATER METER BOX DIMENSIONS (3" - 20" METERS)

WATER METER BOX DIMENSIONS
3" - 20" METERS

JANUARY 2020
PLATE W-8
WATER SERVICE MANIFOLD ARRANGEMENT

CASE I
SEPARATE INDIVIDUAL SERVICE ARRANGEMENT

CASE II
MANIFOLD SERVICE ARRANGEMENT

KEY

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<th>Symbol</th>
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<tr>
<td>GATE VALVE</td>
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</tr>
<tr>
<td>(B) VALVE COVER PAINT COLOR</td>
<td>B = BLUE, Y = YELLOW</td>
</tr>
<tr>
<td>* JEA POINT OF SERVICE</td>
<td></td>
</tr>
<tr>
<td>• BACKFLOW PREVENTER (NOTE #2)</td>
<td></td>
</tr>
<tr>
<td>JEA WATER DISTRIBUTION MAIN</td>
<td></td>
</tr>
<tr>
<td>(M) JEA METER</td>
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NOTES:

1. SHOULD AN INSTALLATION INCLUDE MULTIPLE WATER SERVICES FOR THE SAME CUSTOMER (i.e. DOMESTIC, IRRIGATION, FIRE) AND ONE OR MORE OF THOSE SERVICES ARE 3 INCH OR LARGER, A MANIFOLD ARRANGEMENT (SEE CASE II ABOVE) IS ACCEPTABLE PROVIDED:
   A. THE PROJECT DESIGN ENGINEER (FLORIDA PROFESSIONAL ENGINEER) PROVIDES ACCEPTABLE HYDRAULIC CALCULATION (ENGINEERED, SIGNED AND SEALED) WHICH MEETS THE MOST HYDRAULICALLY DEMANDING CASE.
   B. TO MEET JEA AND LOCAL FIRE CODE REQUIREMENTS, A SEPARATE ISOLATION VALVE (BELOW GROUND TYPE GATE VALVE OR CORP STOP) SHALL BE PROVIDED FOR EACH SERVICE ON A MANIFOLD ARRANGEMENT.
   C. THE SPECIFIC PROPOSED WATER SERVICE ARRANGEMENT IS IN ACCORDANCE WITH JEA STANDARDS AND IS REVIEWED AND APPROVED BY JEA.

2. BACKFLOW PREVENTER (BFP) - THE ABOVE GROUND VALVE SHALL MEET JEA'S CROSS-CONNECTION CONTROL PROGRAM. THIS JEA APPROVED VALVE SHALL BE INSTALLED WITHIN TEN (10) FEET OF RIGHT-OF-WAY LINE OR JEA EASEMENT UNLESS APPROVED OTHERWISE BY JEA. ALL BFPs INSTALLED ON A FIRE MAIN SHALL INCLUDE A DETECTOR.

3. REDUCER ONLY REQUIRED IF APPROVED BY JEA REPRESENTATIVE (3" SERVICE REDUCER MUST BE AT CONTROL VALVE AT MAIN, 2" SERVICE CAN BE REDUCED TO 1 1/2 INSIDE THE METER BOX)
**HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS**

**PROPOSED UTILITY**

<table>
<thead>
<tr>
<th>CONFLICTING UTILITY</th>
<th>POTABLE WATER</th>
<th>WASTEWATER GRAVITY AND FORCE MAIN</th>
<th>RECLAIMED WATER</th>
<th>VACUUM SEWERS</th>
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<td>JOINT SPACING*</td>
<td>HORIZ. VERT.</td>
<td>JOINT SPACING*</td>
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<td>WASTEWATER (GRAVITY AND FORCE MAIN)</td>
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<td>VACUUM SEWERS</td>
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<td>ALL OTHER UTILITIES</td>
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<td>12&quot;</td>
<td>3' NOTE 1</td>
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**NOTES:**

1. **THIS SEPARATION REQUIREMENT IS TO PROVIDE ACCESSIBILITY FOR CONSTRUCTION AND MAINTENANCE. THREE FEET OF HORIZONTAL SEPARATION IS THE MINIMUM FOR PIPES WITH THREE FEET OF COVER. FOR PIPES INSTALLED AT GREATER DEPTH, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.**

2. **THE MINIMUM JOINT SPACING REQUIRED FROM CROSSING FROM OTHER UTILITIES WHILE STILL MAINTAINING MINIMUM VERTICAL SEPARATION.**

3. **DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.**

4. **NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURES.**

5. **WATER MAIN SHOULD CROSS ABOVE OTHER PIPES WHENEVER POSSIBLE. WHEN WATER MAIN MUST BE BELOW OTHER UTILITY PIPING, THE MINIMUM SEPARATION SHALL BE 12 INCHES.**

6. **REFER TO POTABLE WATER PIPING- SECTION 350, III.4.11.**

7. **SEE SECTION 350, III.4.10 FOR MINIMUM SEPARATION REQUIREMENTS FROM PIPE TO STRUCTURES.**

**SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS**

**JANUARY 2020**

**PLATE W-10**
NOTES ON UTILITY SEPARATION REQUIREMENTS

1. IT IS REQUIRED THAT "WATER MAINS" BE INSTALLED, CLEANED, DISINFECTED AND HAVE A SATISFACTORY BACTERIOLOGICAL SURVEY PERFORMED IN ACCORDANCE WITH THE LATEST APPLICABLE AWWA STANDARDS, CHAPTER 62-555, F.A.C. AND LATEST JEA WATER AND SEWER STANDARDS. FOR THE PURPOSE OF THIS SECTION, THE PHRASE "WATER MAINS" SHALL MEAN MAINS, INCLUDING TREATMENT PLANT PROCESS PIPING, CONVEYING EITHER RAW, PARTIALLY TREATED, OR FINISHED DRINKING WATER; FIRE HYDRANT LEADS; AND SERVICE LINES THAT HAVE AN INSIDE DIAMETER OF THREE (3) INCHES OR GREATER. IN ADDITION, THE PHRASE "RECLAIMED WATER" REFERS TO THE WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

2. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE (3) FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER.

3. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS MAY BE REDUCED TO THREE (3) FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX (6) INCHES ABOVE THE TOP OF THE SEWER (SPECIAL CASE).

4. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY OR VACUUM-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX (6) INCHES, AND PREFERABLE TWELVE (12) INCHES, ABOVE OR AT LEAST TWELVE (12) INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

5. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS A LEAST TWELVE (12) INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

6. AT THE UTILITY CROSSINGS DESCRIBED IN NOTES 4 AND 5 ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE (3) FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER, AND AT LEAST SIX (6) FEET FROM ALL JOINTS IN GRAVITY OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINE CONVEYING RECLAIMED WATER.

7. NEW OR RELOCATED FIRE HYDRANTS SHALL BE LOCATED SO THAT THE HYDRANTS ARE AT LEAST THREE (3) FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER; AT LEAST THREE (3) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER; AT LEAST SIX (6) FEET, AND PREFERABLY TEN (10) FEET, FROM ANY EXISTING OR PROPOSED GRAVITY OR PRESSURE-TYPE SANITARY SEWER OR WASTEWATER FORCE MAIN.

8. WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND JOINTS IN THE WATER MAIN ARE BEING LOCATED LESS THAN THE REQUIRED MINIMUM DISTANCE FROM JOINTS IN THE OTHER PIPELINE, THE CONTRACTOR SHALL CONSULT THE DESIGN ENGINEER TO OBTAIN APPROVAL OF ANY ALTERNATIVE CONSTRUCTION METHODS, PRIOR TO CONSTRUCTION.
1. LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE. THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARAGRAPH.

2. FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK. ALL HYDRANTS SHALL BE LOCATED NO LESS THAN THREE (3) FEET FROM THE EDGE OF PAVEMENT OR BACK OF CURB OF THE ADJACENT ROADWAY AND NO LESS THAN THREE (3) FEET FROM ANY PHYSICAL FEATURE WHICH MAY OBSTRUCT ACCESS OR VIEW OF ANY HYDRANT UNLESS OTHERWISE APPROVED BY THE JEA. THE MAXIMUM DISTANCE (BACK OF CURB) SHALL BE IN COMPLIANCE WITH LOCAL COUNTY FIRE DEPARTMENT RULES AND AS APPROVED BY JEA. FOR OTHER LOCATION LIMITATIONS SEE PLATES W-10 AND W-11. IF PIPING BETWEEN TEE AND HYDRANT IS LONGER THAN 80 LF, AN ADDITIONAL 6" GATE VALVE IS REQUIRED AT THE HYDRANT LOCATION (PROVIDE 30" SEPARATION). ALL PIPING, VALVES AND FITTINGS ALONG THE HYDRANT BRANCH MAIN WHICH IS WITHIN 15 LF OF THE HYDRANT SHALL BE RESTRAINED UTILIZING ONLY TWO 3/4" DIA (THREADED ENDS) STEEL RODS AND EYE BOLTS (NO JOINT RESTRAINT DEVICES REQUIRED). A SPLIT SERRATED RING WITH RESTRAINT EARS (EBAA 15 PF06 or EQUAL) MAYBE USED IN THIS ASSEMBLY. ALL OTHER JOINTS ALONG THE HYDRANT BRANCH MAIN OUTSIDE OF THE FIRST 15 LF SHALL INCLUDE JOINT RESTRAINTS.

3. OPERATION OF THE FIRE HYDRANT SHALL BE EITHER FULL OPEN POSITION OR TOTALLY CLOSED POSITION. THE HYDRANT SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.

4. PRIOR TO PROJECT FINAL INSPECTION, THE HYDRANT AND ALL ABOVE GROUND PIPING SHALL BE RE-OILED, GREASED AND REPAINTED (RUS- KIL ENAMEL-INTERNATIONAL YELLOW OR EQUAL). PRIVATELY OWNED AND MAINTAINED FIRE HYDRANTS SHALL BE PAINTED RED.

5. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN, UNLESS APPROVED OTHERWISE BY JEA. THE INSTALLATION OF (45°) BENDS IS NOT ACCEPTABLE WHEN UTILIZED TO CORRECT AN IMPROPERLY FURNISHED HYDRANT. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.

6. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REFLECTIVE FACE OF THE MARKER IS PERPENDICULAR TO A LINE PARALLEL TO THE ROADWAY CENTERLINE. THE BLUE REFLECTIVE MARKERS SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.

FIRE HYDRANT INSTALLATION USING TAPPING SLEEVE & VALVE

JANUARY 2020

PLATE W-12
FIRE HYDRANT INSTALLATION USING MECHANICAL JOINT TEE

PLATE W-13

1. LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE. THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARAGRAPH.


3. OPERATION OF THE FIRE HYDRANT SHALL BE EITHER FULL OPEN POSITION OR TOTALLY CLOSED POSITION. THE HYDRANT SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.

4. PRIOR TO PROJECT FINAL INSPECTION, THE HYDRANT AND ALL ABOVE GROUND PIPING SHALL BE RE-OILED, GREASED AND REPainted (RUS-KIL ENAMEL-INTERNATIONAL YELLOW OR EQUAL). PRIVATELY OWNED AND MAINTAINED FIRE HYDRANTS SHALL BE PAINTED RED.

5. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN. UNLESS APPROVED OTHERWISE BY JEA, THE INSTALLATION OF (45°) BENDS IS NOT ACCEPTABLE WHEN UTILIZED TO CORRECT AN IMPROPERLY FURNISHED HYDRANT. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.

6. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REFLECTIVE FACE OF THE MARKER IS PERPENDICULAR TO A LINE PARALLEL TO THE ROADWAY CENTERLINE. THE BLUE REFLECTIVE MARKERS SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.

NOTES:

1. LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE. THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARAGRAPH.


3. OPERATION OF THE FIRE HYDRANT SHALL BE EITHER FULL OPEN POSITION OR TOTALLY CLOSED POSITION. THE HYDRANT SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.

4. PRIOR TO PROJECT FINAL INSPECTION, THE HYDRANT AND ALL ABOVE GROUND PIPING SHALL BE RE-OILED, GREASED AND REPainted (RUS-KIL ENAMEL-INTERNATIONAL YELLOW OR EQUAL). PRIVATELY OWNED AND MAINTAINED FIRE HYDRANTS SHALL BE PAINTED RED.

5. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN. UNLESS APPROVED OTHERWISE BY JEA, THE INSTALLATION OF (45°) BENDS IS NOT ACCEPTABLE WHEN UTILIZED TO CORRECT AN IMPROPERLY FURNISHED HYDRANT. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.

6. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REFLECTIVE FACE OF THE MARKER IS PERPENDICULAR TO A LINE PARALLEL TO THE ROADWAY CENTERLINE. THE BLUE REFLECTIVE MARKERS SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.
FIRE HYDRANT INSTALLATION LIMITED SPACE

PLATE W-14

WATER MAIN

6"-90° D.I. BEND (MJ)

4'x4' SQUARE x 6" THICK CONCRETE SLAB IMMEDIATELY BELOW BREAKABLE FLANGE (SEE NOTE 2) (3000 psi CONCRETE WITH #4 REBAR AT 12" O.C. EACH WAY).

FOR LOCATE WIRE REQUIREMENTS (SEE NOTE #1)

HYDRANT SUMP (PROVIDE GRAVEL AND FABRIC AS SHOWN)

3/4" ROD ALONG FIRST 15 LF FROM HYDRANT (NOTE #2)

BARE WIRE DEAD END (NOTE #1)

NOTE #5: "BURY DEPTH" VARIES (SEE NOTE #5)

4"-4" SQUARE x 6" THICK CONCRETE SLAB IMMEDIATELY BELOW BREAKABLE FLANGE (SEE NOTE 2) (3000 psi CONCRETE WITH #4 REBAR AT 12" O.C. EACH WAY).

BREAKABLE FLANGE LOCATED (1" MAX) ABOVE FINISHED GRADE

FINISHED GRADE

LEAVE DRAIN HOLES OPEN

WATER VALVE BOX & COVER (COVER PAINTED YELLOW)

HYDRANT SUMP

3 WAY FIRE HYDRANT PUMPER NOZZLE TO FACE C OF PAVEMENT (NOTES #3 & #4)

LOCATE WIRE REQUIRED (SEE NOTE #1)

LEAVE DRAIN HOLES OPEN

PROVIDE FILTER FABRIC (MARAFI 700X, 140'S OR EQUAL) TO TOP AND ALL 4 SIDES

NOTES:

1. LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4" ABOVE FINAL GRADE. THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARAGRAPH.

2. FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK. ALL HYDRANTS SHALL BE LOCATED NO LESS THAN THREE (3) FEET FROM THE EDGE OF PAVEMENT OR BACK OF CURB OF THE ADJACENT ROADWAY AND NO LESS THAN THREE (3) FEET FROM ANY PHYSICAL FEATURE WHICH MAY OBLIQUE ACCESS OR VIEW OF ANY HYDRANT UNLESS OTHERWISE APPROVED BY THE JEA. THE MAXIMUM DISTANCE (BACK OF CURB) SHALL BE IN COMPLIANCE WITH LOCAL COUNTY FIRE DEPARTMENT RULES AND AS APPROVED BY JEA. FOR OTHER LOCATION LIMITATIONS SEE PLATES W-10 AND W-11. IF PIPING BETWEEN TEE AND HYDRANT IS LONGER THAN 80 LF, AN ADDITIONAL 6" GATE VALVE IS REQUIRED AT THE HYDRANT LOCATION (PROVIDE 30" SEPARATION). ALL PIPING, VALVES AND FITTINGS ALONG THE HYDRANT BRANCH MAIN WHICH IS WITHIN 15 LF OF THE HYDRANT SHALL BE RESTRAINED UTILIZING ONLY TWO 3/4" DIA (THREADED ENDS) STEEL RODS AND EYE BOLTS (NO JOINT RESTRAINT DEVICES REQUIRED). A SPLIT SERRATED RING WITH RESTRAINT EARS (EBAA 15 PF06 or EQUAL) MAY BE USED IN THIS ASSEMBLY. ALL OTHER JOINTS ALONG THE HYDRANT BRANCH MAIN OUTSIDE OF THE FIRST 15 LF SHALL INCLUDE JOINT RESTRAINTS.

3. OPERATION OF THE FIRE HYDRANT SHALL BE EITHER FULL OPEN POSITION OR TOTALLY CLOSED POSITION. THE HYDRANT SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.


5. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN. UNLESS APPROVED OTHERWISE BY JEA, THE INSTALLATION OF (45°) BENDS IS NOT ACCEPTABLE WHEN UTILIZED TO CORRECT AN IMPROPERLY FURNISHED HYDRANT. THE USE OF HYDRANT EXTENSIONS SHOULD BE MINIMIZED.

6. BLUE REFLECTIVE MARKERS SHALL BE INSTALLED IN SUCH A MANNER THAT THE REFLECTIVE FACE OF THE MARKER IS PERPENDICULAR TO A LINE PARALLEL TO THE ROADWAY CENTERLINE. THE BLUE REFLECTIVE MARKERS SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.

FIRE HYDRANT INSTALLATION LIMITED SPACE

JANUARY 2020

PLATE W-14
1. THE POTABLE WATER CUSTOMER IS REQUIRED TO INSTALL AND MAINTAIN A JEA APPROVED CROSS-CONNECTION DEVICE ON THEIR POTABLE WATER SERVICE LINE. OPERATION AND MAINTENANCE OF THIS CROSS-CONNECTION DEVICE SHALL COMPLY WITH JEA'S CROSS-CONNECTION CONTROL PROGRAM AND ASSOCIATED OPERATIONS POLICIES. ALL REDUCED PRESSURE ASSEMBLIES SHALL BE MOUNTED ABOVE GRADE.

2. ONLY DOUBLE CHECK VALVE ASSEMBLIES MAY BE INSTALLED BELOW GROUND. THESE DEVICES MAY BE INSTALLED IN A TYPICAL 1" (CO-POLYMER) METER BOX WITH SOLID LID (GENERIC LID WITH NO "JEA" LOGO. SEE ALSO W-3). THE SIZE OF BOX SHALL BE 12"x20", AT A MINIMUM. IT SHALL BE NOTED THAT IF THE HIGH MEAN GROUND WATER LEVEL FALLS INSIDE THIS BOX, THEN THE CROSS-CONNECTION CONTROL DEVICE MUST BE INSTALLED ABOVE GROUND. ACCEPTABLE DOUBLE CHECK VALVE ASSEMBLIES (BRONZE BODY WITH TWO CHECK VALVES, TWO BALL VALVES AND UNION CONNECTIONS BETWEEN BALL VALVES AND THE DEVICE). INCLUDE: WATTS U007M2QT, WILKINS 950XLTU OR JEA APPROVED EQUAL.

3. BACKFLOW PREVENTION DEVICES REQUIRED WHEN:
   - IRRIGATION SYSTEMS - REQUIRED ON IRRIGATION SYSTEMS AT THE CONNECTION TO POTABLE SYSTEM
   - RESIDENTIAL SYSTEMS - REQUIRED ON WATER SERVICE IF RECLAIMED SERVICE WATER AVAILABLE TO SITE
   - COMMERCIAL SITES - REQUIRED ON ALL WATER SERVICES
   - INDUSTRIAL SITES - REQUIRED ON BOTH WATER AND RECLAIMED SERVICE ON, WATER SERVICE EVEN IF NO RECLAIMED

4. JEA IRRIGATION SERVICE CONNECTIONS REQUIRE ABOVE GRADE REDUCED PRESSURE BACKFLOW PREVENTERS. (SEE PLATE W-15A)
1. WATER SERVICE CONNECTIONS REQUIRE ABOVE GRADE REDUCED PRESSURE BACKFLOW PREVENTERS. (SEE PLATE W-15)

2. BACKFLOW PREVENTION DEVICES REQUIRED WHEN:
   IRRIGATION SYSTEMS - REQUIRED ON IRRIGATION SYSTEMS AT THE CONNECTION TO POTABLE SYSTEM
   RESIDENTIAL SYSTEMS - REQUIRED ON WATER SERVICE IF RECLAIMED SERVICE WATER AVAILABLE TO SITE
   COMMERCIAL SITES - REQUIRED ON ALL WATER SERVICES
   INDUSTRIAL SITES - REQUIRED ON BOTH WATER AND RECLAIMED SERVICE CONNECTIONS.

3. RESIDENTIAL IRRIGATION SERVICES MAY UTILIZE AN ALTERNATE BACKFLOW PREVENTER LOCATION IF THE FOLLOWING CONDITIONS EXITS:
   3.a. CUSTOMER HAS SUBMITTED A COMPLETED “CUSTOMER AFFIDAVIT” FORM AND
   3.b. THERE ARE NO ADDITIONAL CONNECTIONS BETWEEN THE METER AND THE BACKFLOW PREVENTER, AND
   3.c. THE ALTERNATE BACKFLOW LOCATION IS EASILY ACCESSIBLE TO JEA AND BACKFLOW TESTERS.
3/4"  
3/8"  
9/16"  
5"  
1.5 MIN"  
3/8"  
2"  
(2) 1" DIA. PICKHOLES

NOTES:

1. PAINT TOP OF THE COVER WITH ENAMEL PAINT (BLUE COLOR) FOR WATER.
2. FOR "REUSE" PAINT TOP PANTONE PURPLE.
3. LID WEIGHT: APPROX. 12 LBS.

WATER SYSTEM VALVE BOX COVER

JANUARY 2020  
PLATE W-16
NOTES:
1. PAINT THE INSIDE OF THE TOP SECTION OF THE BOX WITH APPLICABLE COLOR (BLUE OR PURPLE)
2. HEAVY DUTY RATING (TOTAL WEIGHT APPROX. 50 LBS.).
3. REFERENCE SECTION 351, PARAGRAPH X.2.

WATER SYSTEM VALVE BOX

JANUARY 2020

PLATE W-17
UNDISTURBED EARTH

12" (MIN) LAYER OF #57 STONE (REQUIRED FOR VALVES 20" AND LARGER, (NOTE #8)

6" PVC RISER PIPE (LENGTH AS REQUIRED)

PROVIDE "V" CUT IN TOP OF 6" RISER PIPE FOR LOCATE WIRE ACCESS INTO VALVE BOX

PLASTIC DEBRIS SHIELD REQUIRED ON ALL VALVES 12" AND SMALLER (SEE NOTE # 9)

RESTRAINED MECHANICAL JOINT (TYP)

APPLY GROUT TO FILL ANNULAR SPACE BETWEEN VALVE BOX AND CONCRETE PAD

24" ROUND PRECAST CONCRETE PAD 6" THICK (SEE SPEC) SET ON COMPACTED EARTH, (SEE NOTE #7)

VALVE BOX ADJUSTMENT (SEE NOTE #7)

FINISHED GRADE

ELECTRONIC LOCATE BALL MARKER LOCATED WITHIN 12" FROM RISER PIPE (NOTE #10)

GATE VALVE W/ 2" OPERATING NUT (NOTE #4)

PIPE W/ LOCATING WIRE

NOTES:

1. FOR UNPAVED LOCATIONS, A PRECAST CONCRETE VALVE PAD SHALL BE PROVIDED AND INSTALLED FLUSH WITH GRADE. CONCRETE PAD IS NOT REQUIRED FOR VALVE LOCATED IN THE ROADWAY, UNLESS SHOWN OR NOTED OTHERWISE.

2. LOCATING WIRE IS REQUIRED ON ALL PRESSURE PIPING (SEE DETAIL W-44).

3. A "V" CUT SHALL BE CARVED IN THE CURB CLOSEST/ADJACENT/( ASPHALT IF NO CURB) TO ALL BELOW GRADE VALVES. THE "V" CUT IS TO BE PAINTED BLUE WATER/PURPLE RECLAIMED.


5. FOR NEW CONSTRUCTION, THE VALVE BOX SHALL BE ADJUSTED TO MIDRANGE TO ALLOW FOR FUTURE BOX ADJUSTMENTS. ROUTE LOCATE WIRES THRU A "V" CUT IN THE TOP OF THE 6" PVC RISER PIPE FOR LOCATE WIRE ACCESS INTO VALVE BOX. THE LOCATE WIRES WITH A 24" LONG PIG-TAIL AT THE TOP SHALL BE CONNECTED TOGETHER WITH A WIRE NUT.

6. BRASS IDENTIFICATION TAG INDICATING "WATER", VALVE SIZE, DIRECTION AND TURNS TO OPEN & VALVE TYPE. PROVIDE A 1/4 HOLE IN BRASS TAG AND ATTACH TAG (TWIST WIRE AROUND TAG) TO THE END OF THE LOCATE WIRE. TAGS ARE NOT REQUIRED ON VALVES INSTALLED ON FIRE HYDRANT BRANCH LINES.

7. IN LIEU OF PRECAST CONCRETE PAD, A 6" THICK X 24" (ROUND OR SQUARE) Poured CONCRETE PAD W/2 - #4 REBAR AROUND PERIMETER, MAY BE USED.

8. GRAVEL SHALL BE PROVIDED UNDER ALL VALVES 20" AND LARGER. THE MINIMUM VERTICAL LIMIT OF GRAVEL IS 12" UNDER THE VALVE UP TO 3" THE OVERALL HEIGHT OF THE VALVE.

9. FOR VALVES 12 INCH AND SMALLER, PROVIDE A WHITE OR BLACK PLASTIC DEBRIS SHIELD WHICH INSTALLS BELOW THE OPERATING NUT. THIS SHIELD SHALL CENTER THE RISER PIPE BOX OVER THE OPERATING NUT AND MINIMIZE INFILTRATION. SHIELD SHALL BE BY AFC, BOXLOK OR APPROVED EQUAL.

10. ALL VALVES SHALL BE INSTALLED WITH AN ELECTRIC LOCATE MARKER. MARKER SHALL BE 4" DIA. COLOR CODED BALL MARKER (3M-1403XR FOR WATER AND 1408XR FOR RECLAIMED WATER).

WATER VALVE INSTALLATION DETAIL

JANUARY 2020 PLATE W-18
WEARING SURFACE (IF REQ.)

VALVE BOX & COVER, SET TOP MAX 1/8" BELOW WEARING SURFACE

EXISTING PAVEMENT

ASPHALT (FULL DEPTH)

24" DIA. CUTOUT (MIN). FILL WITH ASPHALT (FULL DEPTH) 1/2 INCH ABOVE TOP OF NEW PAVEMENT

COVER TO BE SET 1/8" (MAX) BELOW TOP SURFACE

WATER

NOTES:

1. PROVIDE FULL DEPTH ASPHALT 1/2 INCH ABOVE TOP OF NEW PAVEMENT LEVEL, TO ALLOW FOR FUTURE ASPHALT MATERIAL COMPACTION. PLACE AND COMPACT ASPHALT IN 2" (MAX) LIFTS.

WATER VALVE JACKET ADJUSTED TO ROADWAY AFTER RE-SURFACING

JANUARY 2020
NOTES:

1. ALL HANGER COMPONENTS SHALL BE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED. ALL CUT ENDS SHALL HAVE ROUNDED CORNERS.

2. PROVIDE A HANGER AT EACH PIPE BELL. ADDITIONAL HANGERS SHALL BE SPACED AT TEN (10) FOOT CENTERS (MAX).

3. PIPE HANGERS LARGER THAN 12" SIZE SHALL BE SPECIFICALLY DESIGNED FOR HORIZONTAL AND VERTICAL STRUCTURAL SUPPORT. FOR LARGER MAINS, HORIZONTAL SUPPORT MAY BE ACHIEVED BY EXTENDING THE BOTTOM ANGLE TO SPAN BETWEEN TWO EXISTING CONCRETE BEAMS (NOT DIRECTLY CONNECTED TO CONCRETE BEAMS).

4. THE DIMENSION PROVIDED ABOVE MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS.

5. FOR CROSSINGS OVER 250 LINEAR FEET, THE USE OF FLEXIBLE EXPANSION JOINTS SHALL BE UTILIZED.
PLATE ⅜" THICK X 6" WIDE (LENGTH VARIES)

PLATE W-21

NOTES:

1. ALL WELDS TO BE PERFORMED BY A CERTIFIED STRUCTURAL WELDER.
2. ALL SUPPORT BRACKET MEMBERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL NUTS, BOLTS, AND WASHERS SHALL BE 316 STAINLESS STEEL.
4. THE SPACING OF SIDEWALL PIPE SUPPORTS SHALL BE SPECIFICALLY DESIGNED BASED UPON MANY FACTS INCLUDING PIPE SIZE AND MATERIAL EMBEDMENT LIMITATIONS. UNLESS APPROVED OTHERWISE BY JEA, IN NO CASE SHALL THE SPACING OF PIPE SUPPORTS EXCEED TWENTY (20) FEET ON-CENTER FOR PIPE SIZES TWELVE (12) INCH AND SMALLER AND TEN (10) FEET ON-CENTER FOR PIPE SIZES GREATER THAN TWELVE (12) INCHES.

SIDEWALL PIPE HANGER DETAIL

JANUARY 2020
POLES TO BE DESIGNED BY ENGINEER FOR LOAD REQUIREMENTS

MATERIAL SCHEDULE

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<td>D</td>
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<td>1-1/8&quot; U-BOLT</td>
</tr>
<tr>
<td>E</td>
<td>3/4&quot; U-BOLT</td>
<td>1-1/8&quot; U-BOLT</td>
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NOTES:
1. ALL PARTS AND FITTINGS TO BE HOT DIPPED GALVANIZED AFTER FABRICATION SEE PLATE S-37 FOR ADDITIONAL DETAILS.

PIPE SUPPORT & POLE ASSEMBLY
FOR WATER MAIN

JANUARY 2020
PLATE W-22
"A" STANDARD 8" CHANNEL 11.5 LBS.

"B" STANDARD 10" CHANNEL 15.3 LBS.

"C" STANDARD 12" CHANNEL 25 LBS.

"D" ½" U-BOLT

NOTES:
1. FOR PIPE 16" AND LARGER, UTILIZE CHANNEL SIZES AS SCHEDULED ON PLATE W-22, BUT CUSTOMIZE BOLT PATTERN DIMENSIONS TO FIT PIPE SIZE. SEE PLATE W-22 FOR ASSEMBLY LAYOUT.

TABLE

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PIECE SUPPORT DETAILS FOR POLE ASSEMBLY

JANUARY 2020

PLATE W-23
TEMPORARY SAMPLE TAP UTILIZING A NEW 1" WATER SERVICE

NOTES:

1. LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS (AS NOTED) AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.

3. THE CONTRACTOR SHALL UTILIZE THE ABOVE ALTERNATIVE METHODS FOR CONSTRUCTION OF TEMPORARY SAMPLE POINTS IN ALL AREAS, WHERE POSSIBLE.

4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA'S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.
TEMPORARY SAMPLE TAP UTILIZING PLUG AT FLUSHING LOCATION

NOTES:

1. LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS (AS NOTED) AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.

3. THE CONTRACTOR SHALL UTILIZE THE ABOVE ALTERNATIVE METHODS FOR CONSTRUCTION OF TEMPORARY SAMPLE POINTS IN ALL AREAS, WHERE POSSIBLE.

4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA’S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.
NOTES:

1. LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROADWAY SHOULders (NON-TRAFFIC AREAS).

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS (AS NOTED), AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.

3. PIPE AND FITTINGS SHALL BE PVC (SCH. 40) OR GALV. MATERIAL.

4. THE USE OF THE ABOVE CONSTRUCTION FOR A TEMPORARY SAMPLE POINT SHALL BE LIMITED TO AREAS WHERE A SAMPLE TAP BY ALTERNATIVE METHODS (SEE W-24) IS NOT FEASIBLE OR IF DIRECTED OTHERWISE BY JEA.

5. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY JEA’S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.
NOTES:

1. LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROADWAY SHOULDERS (NON-TRAFFIC AREAS).

2. ALL PIPE & FITTING SHALL BE GALVANIZED MATERIAL OR PVC (S-40).

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTING (AS NOTED) AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.

4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA'S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.

2" TEMPORARY SAMPLE TAP FOR STUB OUT

JANUARY 2020

PLATE W-26
1. The above temporary water sample tap is for use on active water mains. Generally, this sample tap is installed adjacent to each water main valve being closed during a water outage. When required, the contractor shall provide the above temporary sample tap and then remove/restore the water meter service after bacteriological clearance.

2. The contractor shall comply with all JEA rules and policies as outlined by the JEA’s Environmental Response Coordinator (ERC) and other associated JEA standards. These services shall include, at a minimum, assistance with outage simulations, assistance with the preparation of customer notification and or boil water notices, distribution of customer notifications and coordination with ERC and the JEA on-site representatives.

3. Contractor shall remove meter box lid and set it next to the box. The contractor shall repair, at the contractors expense, any damage to the electronic NMR/MTU if damaged during the above bacteriological test period and removed after bacteriological clearance.

4. A meter “resetter” shall be installed and removed after bacteriological clearance as shown. The resetter shall include an angled inverted key meter valve on the inlet, meter couplings, 12-inch rise and sized to fit the actual field meter threads. Acceptable: Ford 40 series, Mueller H-14118 or JEA approved equal.
FLUSHING VALVE BELOW GRADE

JANUARY 2020

UNIT PRICE PAY QUANTITY

NOTES:
1. PIPE SHALL BE POLYETHYLENE. FITTINGS SHALL BE BRASS.
2. THE 2" CURB STOP SHALL BE ALL BRONZE. FITTINGS SHALL BE BRASS.
3. ANY RECLAIMED WATER VALVE SHALL HAVE RECLAIMED EMBLEM.
4. LOCATE WIRE FOR 10' OR GREATER IN LENGTH.
5. CANNOT BE PLACED UNDER CONCRETE OR PAVEMENT.
6. PLACE 2 FEET PAST LAST WATER MAIN SERVICE CONNECTION.
W-29

NOT USED
CARrier Type and casing pipe sizes (min) in inches

<table>
<thead>
<tr>
<th>carrier pipe no. dia. (d₁)</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>42</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>casing pipe nom. dia. (d₂)</td>
<td>14</td>
<td>16</td>
<td>20</td>
<td>20</td>
<td>24</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>36</td>
<td>42</td>
<td>48</td>
<td>54</td>
<td>60</td>
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</tbody>
</table>

wall thickness railroad-(fec) 0.25 0.25 0.375 0.375 0.375 0.50 0.50 0.50 0.50 0.562 0.625 0.625 0.688 0.781 0.781

wall thickness railroad-(csx) 0.25 0.281 0.375 0.375 0.375 0.469 0.469 0.469 0.469 0.562 0.625 0.625 0.688 0.781 0.844 0.938

wall thickness dot 0.25 0.25 0.25 0.25 0.25 0.312 0.312 0.312 0.312 0.375 0.50 0.50 0.50 0.50 0.50

number of tie rods (each end) 2 2 2 4 4 6 6 8 8 12 14 14 16 16


notes:
1. min. cover to top of casing; a) fdot-3.0' b)railroad-5.5' to base of rail, 4.5' for secondary or industrial tracks. except for f..e.c. (see note 3)
2. the inside diameter of the casing pipe shall be a minimum of 4 inches greater than the outside diameter of the carrier pipe bell or coupling. however, a minimum of 6 inches is required for florida east coast r.r. crossings.
3. the minimum cover for casing under florida east coast railroad shall be 5.0 feet below the bottom of ties for all tracks.
4. all joints within carries pipe shall be mechanical restrained joints.
5. for street uses which are not dot or railroad, use dot casing thickness unless otherwise indicated by engineer.
6. casing pipe shall be furnished in nominal 8 foot lengths (min.) unless otherwise indicated on the drawing or approved by jea.
7. pipe to be used as a casing shall conform to either astm standard a139 for "electric fusion (arc) welded steel pipe", with a minimum yield strength of 35,000 psi or "api specification api-5lx, grade x-42 welded steel pipe".
1. Not allowed under Railroads.

2. The inside diameter of the casing pipe shall be a minimum of 4 inches greater than the outside diameter of the carrier pipe bell or coupling.

3. All joints within carries pipe shall be mechanical restrained joints.

4. For street uses which are not DOT or Railroad, use DOT casing thickness unless otherwise indicated by Engineer.

5. Casing pipe shall be furnished in nominal 8 foot lengths (min.) unless otherwise indicated on the drawing or approved by JEA.

6. Pipe to be used as a casing shall conform to either ASTM standard A139 for "Electric Fusion (Arc) Welded Steel Pipe" with a minimum yield strength of 35,000 PSI or "API specification API-5LX, Grade X-42 Welded Steel Pipe".

### TABLE CARRIER TYPE AND CASING PIPE SIZES (MIN) IN INCHES

<table>
<thead>
<tr>
<th>CARRIER PIPE NO. DIA. (D₂)</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>42</th>
<th>48</th>
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</thead>
<tbody>
<tr>
<td>Casing Pipe Nom. DIA. (D₁)</td>
<td>14</td>
<td>16</td>
<td>20</td>
<td>20</td>
<td>24</td>
<td>30</td>
<td>30</td>
<td>30</td>
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<td>48</td>
<td>54</td>
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<td>66</td>
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</tr>
<tr>
<td>Wall Thickness Railroad-(FEC)</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.375</td>
<td>0.375</td>
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<td>0.625</td>
<td>0.625</td>
<td>0.688</td>
<td>0.781</td>
</tr>
<tr>
<td>Wall Thickness Railroad-(CSX)</td>
<td>0.25</td>
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<td>0.25</td>
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<tr>
<td>Wall Thickness DOT</td>
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<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
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<td>0.312</td>
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<td>Number of Tie Rods (Each End)</td>
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<td>6</td>
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<td>Tie Rod Size (Dia.)</td>
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<td>3/4&quot;</td>
<td>3/4&quot;</td>
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<td>3/4&quot;</td>
<td>3/4&quot;</td>
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<td>1&quot;</td>
<td>1 1/4&quot;</td>
<td>1 1/4&quot;</td>
<td></td>
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</tr>
</tbody>
</table>

### SECTION "A-A"

**CARRIER PIPE & CASING PIPE**

**Material:**
- Steel Casing Pipe, Ferguson Works Material or Equal

**Welds:**
- All welds shall be performed by a certified welder

**Lining/Coatings:**
- Interior: Bare
- Exterior: Bare

**Pipe Main for Crossings Using Split Casing Pipe**

Not allowed under Railroads

### SECTION "B-B"

**Material:**
- Pipe: ASTM A53, Grade B, ERW, Std Wall, Carbon Steel
- Plate: STM A536, Grade B, Carbon Steel (Thickness as noted)

**Welds:**
- All welds shall be performed by a certified welder

**Lining/Coatings:**
- Interior: Bare
- Exterior: Bare

#### TYPICAL SPLIT CASING DETAIL - WATER

JANUARY 2020

PLATE W-30A
PVC PIPE RESTRAINT NOTES:

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.

2. ASSUMPTIONS: PVC PIPE. SAFETY FACTOR=1.5, TEST PRESSURE=150PSI. SOIL=GM OR SM. TRENCH TYPE 3. DEPTH OF COVER=30 INCHES FOR 20" AND SMALLER PIPE SIZE OR 36 INCHES FOR 24" AND LARGER PIPE SIZE.

3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.

4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, LI IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. Ll IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.

5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.

6. HDPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).

7. THE INSTALLATION OF BELL HARNESS RESTRAINTS AT PVC JOINTS (IR-18 & 25 PIPE) SHALL BE COMPLETED PER THE MANUFACTURERS RECOMMENDATION. WHICH INCLUDES NOT OVER TIGHTENING THE PARALLEL ROOD/NUTS. THESE NUTS SHOULD ONLY BE SNUG TIGHT. THE HOME MARKS ON THE PIPE SHOULD ALWAYS BE VISIBLE AFTER THE RESTRAINT IS INSTALLED. OVERTIGHTING THE JOINT MAY CAUSE A FAILURE AT THE BELL RESULTING IN A SERVICE OUTAGE.

PVC PIPE RESTRAINT JOINT SCHEDULE

JANUARY 2020

PLATE W-31A
DUCTILE IRON PIPE RESTRAINT NOTIONS:

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.

2. ASSUMPTIONS: DUCTILE IRON PIPE (WITHOUT POLY WRAP), SAFETY FACTOR=1.5, TEST PRESSURE=150PSI, SOIL=GM OR SM, TRENCH TYPE 3, DEPTH OF COVER=30 INCHES FOR 20" AND SMALLER PIPE SIZE OR 36 INCHES FOR 24" AND LARGER PIPE SIZE. FOR D.I.P. WITH POLY WRAP, USE RESTRAINT JOINT SCHEDULE FOR PVC PIPE.

3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.

4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, Lu IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. Li IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.

5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.


---

DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE

JANUARY 2020

PLATE W -31B

<table>
<thead>
<tr>
<th>NOMINAL PIPE SIZE (IN.)</th>
<th>HORIZONTAL BENDS</th>
<th>VERTICAL OFFSETS</th>
<th>VALVES OR DEAD ENDS</th>
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<tbody>
<tr>
<td></td>
<td>±90° BENDS L (FT.)</td>
<td>±45° BENDS L (FT.)</td>
<td>±11.25° BENDS L (FT.)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
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<th>REDUCERS</th>
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<td>SIZE (IN.)</td>
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<tr>
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</tr>
<tr>
<td>8</td>
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<td>36</td>
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<tr>
<td>42</td>
</tr>
<tr>
<td>48</td>
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</tbody>
</table>

LENGTH (L) TO BE RESTRAINED

SEE PLATE Nos. 38C & 38D FOR ADDITIONAL DETAILS
**MECHANICAL RESTRAINT DETAILS - I**

**PLATE W-31C**

**JANUARY 2020**

**TYPICAL PROFILE**

**SECTION**

**FIRE HYDRANT LATERAL**

**GENERAL NOTE:**

1. PAY ITEM "*" DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIS.

2. PAY ITEM "**" DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.

3. → → INDICATES DIRECTION OF THRUST FORCE.
NOTES:
1. TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN.).
2. PAY ITEM "***" DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIC.
3. PAY ITEM "****" DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.
THE LENGTH OF THE PIPE TO BE RESTRAINED ON EACH SIDE OF BEND SHALL BE IN ACCORDANCE WITH RESTRAINT JOINT SCHEDULE, (SEE DETAIL W-31A OR W-31B)

SEE NOTE #5

EXISTING CONFLICT PIPE

FULL LENGTH OF PIPE CENTERED AT CROSSING, SEE NOTE #1

LOCATE WIRE, SEE NOTE #3

MECHANICAL JOINT 11\(\frac{1}{4}\), 22\(\frac{1}{2}\)° OR 45° BENDS (SIZE Varies)

SEPARATION Varies (SEE NOTES #1 & #2)

RESTRAINED JOINT (TYP.) SIZE AS REQUIRED

THE LENGTH OF THE PIPE TO BE RESTRAINED ON EACH SIDE OF BEND SHALL BE IN ACCORDANCE WITH RESTRAINT JOINT SCHEDULE. (SEE DETAIL W-31A OR W-31B)

NOTES:


2. FOR MINIMUM VERTICAL SEPARATION REQUIREMENTS SEE DETAIL (W-10 AND W-11).

3. LOCATING WIRE REQUIRED: SEE DETAIL W-44.

4. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 30" (MIN) IN UNPAVED AREAS, 36" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 60", UNLESS APPROVED BY JEA. THE COVER FOR PIPING 24" SIZE AND LARGER SHALL BE 36" (MIN) IN PAVED AND UNPAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVED BY JEA.

5. IF UTILITY CONFLICT IS LOCATED IN A NON-TRAFFIC AREA (NO TRAFFIC LOADS) AND THE NEW PIPE IS D.I.P., THEN THE MINIMUM COVER MAY BE REDUCED TO 24 INCHES (ONLY IN THE AREA OF THE CONFLICT).

CASE "A" CROSSING

ADJUSTMENT OVER EXISTING UTILITIES
MECHANICAL RESTRAINTS

JANUARY 2020

PLATE W-32
THE LENGTH OF PIPE TO BE RODDED SHALL BE IN ACCORDANCE WITH RESTRAINT JOINT SCHEDULE.

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER MAIN 12-INCHES OF SEPARATION IS REQUIRED. A FULL LENGTH OF PIPE SHALL BE CENTERED OVER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSINGS.

2. FOR OTHER LOCATION LIMITATIONS SEE PLATES W-10 & W-11.

3. NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:
   - 3" - 8" DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 10" - 12" DIAMETER MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 14" - 16" DIAMETER MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 18" - 20" DIAMETER MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 24" DIAMETER MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 30" - 36" DIAMETER MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD)
   - 42" - 48" DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
   - 54" DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)

4. LOCATING WIRE REQUIRED: SEE PLATE W-44.

5. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 30" (MIN) IN UNPAVED AREAS, 36" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVE BY JEA. THE COVER FOR PIPING 24" SIZE AND LARGER SHALL BE 36" (MIN) IN PAVED AND UNPAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVE BY JEA.


CASE "A" CROSSING

ADJUSTMENT OVER EXISTING UTILITIES

TIE RODS

JANUARY 2020
CASE "B" CROSSING

NOTES:
1. THE SOILS BETWEEN THE NEW MAIN AND THE CONFLICT PIPE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D 1557
2. FOR MINIMUM VERTICAL SEPARATION REQUIREMENTS SEE DETAILS (W-10 AND W-11)
3. LOCATING WIRE REQUIRED: SEE DETAIL W-44.
4. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 30" (MIN) IN UNPAVED AREA, 36" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 60", UNLESS APPROVED BY JEA. THE COVER FOR PIPING 24" SIZE AND LARGER SHALL BE 36" (MIN) IN PAVED AND UNPAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVED BY JEA.

ADJUSTMENT UNDER EXISTING UTILITIES MECHANICAL RESTRAINTS
NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER MAIN, 12-INCHES OF SEPARATION IS REQUIRED. A FULL LENGTH OF PIPE SHALL BE CENTERED OVER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSINGS.

2. FOR OTHER LOCATION LIMITATIONS SEE PLATE W-10 & W-11.

3. NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:
   - 3" - 8" DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 10" - 12" DIAMETER MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 14" - 16" DIAMETER MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 18" - 20" DIAMETER MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 24" DIAMETER MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 30" - 36" DIAMETER MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD)
   - 42" - 48" DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
   - 54" DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)

4. LOCATING WIRE REQUIRED: SEE PLATE W-44.

5. THE COVER FOR PIPING LESS THAN 24" SIZE SHALL BE 30" (MIN) IN UNPAVED AREAS, 36" (MIN) IN PAVED AREAS AND A MAXIMUM COVER OF 60", UNLESS PRE-APPROVED BY JEA. THE COVER FOR PIPING 24" SIZE AND LARGER SHALL BE 36" (MIN) IN PAVED AND UNPAVED AREAS AND A MAXIMUM COVER OF 84", UNLESS APPROVE BY JEA.


ADJUSTMENT UNDER EXISTING UTILITIES
TIE RODS

JANUARY 2020

PLATE W-35
NOTES:

1. IN LIEU OF BELL/ROD RESTRAINTS, MECHANICAL JOINT RESTRAINTS MAY BE USED.

2. LOCATING WIRE REQUIRED, UTILIZING A LOCATE WIRE BOX INSTALLED AT PLUG LOCATION.

3. NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:
   - 3" - 8" DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 10" - 12" DIAMETER MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 14" - 16" DIAMETER MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 18" - 20" DIAMETER MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 24" DIAMETER MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 30" - 36" DIAMETER MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD)
   - 42" - 48" DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
   - 54" DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)

4. THE LOCATION OF THE DEAD END PLUG SHALL NOT BE UNDER PAVEMENT, IF POSSIBLE. THE STUB OUT SHALL EXTEND BEYOND THE INTERSECTION AREAS OR ROAD CROSSING BY 10 FEET (MIN.) WHERE POSSIBLE.
SECTION "A-A"

NOTES:

1. IN LIEU OF BELL/ROD RESTRAINTS, MECHANICAL JOINT RESTRAINTS MAY BE USED.

2. LOCATING WIRE REQUIRED, UTILIZING A LOCATE WIRE BOX INSTALLED AT PLUG LOCATION.

3. NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:
   - 3" - 8" DIAMETER MAIN: 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 10" - 12" DIAMETER MAIN: 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 14" - 16" DIAMETER MAIN: 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 18" - 20" DIAMETER MAIN: 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 24" DIAMETER MAIN: 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 30" - 36" DIAMETER MAIN: 14 TIE RODS REQUIRED PER JOINT (1" ROD)
   - 42" - 48" DIAMETER MAIN: 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
   - 54" DIAMETER MAIN: 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)

4. THE LOCATION OF THE DEAD END PLUG SHALL NOT BE UNDER PAVEMENT, IF POSSIBLE. THE STUB OUT SHALL EXTEND BEYOND THE INTERSECTION AREAS OR ROAD CROSSING BY 10 FEET (MIN.) WHERE POSSIBLE.

PLUGGED DEAD END USING
MECHANICAL RESTRAINTS

JANUARY 2020
PLATE W-37
NOTES:
1. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL.
2. THESE TABLES SHOW MINIMUM SIZES FOR THRUST BLOCKS IN GOOD SOIL (A-1 THRU A-3, CLEAN SANDS AND GRAVELS) WITH MINIMUM BEARING CAPACITY OF 2000 psi.
3. POOR SOILS A-4 THRU A-8, SILTY SOILS, CLAYS, MUCK AND PEAT WILL REQUIRE LARGER THRUST BLOCKING.
4. BOTH CONCRETE THRUST BLOCKS AND TIE RODS MUST BE USED WHEN, IN THE JUDGEMENT OF THE ENGINEER, THE NATURE AND CRITICALITY OF AN INSTALLATION IS SUCH AS TO REQUIRE POSITIVE ASSURANCE OF STABILITY.
5. THE USE OF THRUST BLOCKS SHALL BE LIMITED TO SITUATIONS SUCH AS POINT REPAIR WHERE EXPOSING SEVERAL JOINTS OF PIPE IS NOT FEASIBLE DUE TO EXISTING GROUND CONDITIONS.
6. MAXIMUM TEST PRESSURE TO BE 150 PSI.
CASE "B" CROSSING

NOTES:
1. IF EXISTING CONFLICT PIPE IS A WATER MAIN, 12-INCHES OF SEPARATION IS REQUIRED. A FULL LENGTH OF PIPE SHALL BE CENTERED OVER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSING.

2. FOR OTHER LOCATION LIMITATIONS SEE DETAIL (W-10 & W-11).

3. LOCATING WIRE REQUIRED: SEE DETAIL W-44.

4. THE COVER OVER ALL PIPING LESS THAN 24" SIZE SHALL BE A MINIMUM OF 30" IN UNPAVED AREAS AND 36" IN PAVED AREAS WITH A MAXIMUM COVER OF 60" UNLESS APPROVED OTHERWISE BY JEA. COVER FOR PIPING 24" SIZE AND LARGER SHALL BE MINIMUM OF 36" (PAVED AND UNPAVED) AND MAXIMUM OF 84" UNLESS APPROVED OTHERWISE BY JEA. THE SOILS BETWEEN THE NEW MAIN AND THE CONFLICT PIPE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST ASTM D 1557.

5. JEA ONLY ALLOWS 80% OF THE PIPE MANUFACTURER'S RECOMMENDATION FOR JOINT DEFLECTION. BENDING THE PIPE BARREL IS NOT ALLOWED. UNLESS OTHERWISE APPROVED BY JEA, THE MAXIMUM ARE LISTED IN TABLE BELOW. ONLY MANUAL FORCE CAN BE UTILIZED TO OBTAIN THESE JOINT DEFLECTION. ALL OFFSETS ARE BASED ON MINIMUM 20LF PIPE LENGTH.

MAXIMUM ALLOWED OFFSET FOR PIPE BY JOINT DEFLECTION

<table>
<thead>
<tr>
<th>PVC PIPE</th>
<th>DUCTILE IRON PIPE (Mechanical Joint)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE SIZE (IN.)</td>
<td>(X) MAX. OFFSET (IN.)</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>8.5</td>
</tr>
<tr>
<td>14 - 24</td>
<td>5</td>
</tr>
<tr>
<td>30 - 48</td>
<td>3.25</td>
</tr>
<tr>
<td>42 - 48</td>
<td>6.7</td>
</tr>
</tbody>
</table>

ADJUSTMENT UNDER EXISTING UTILITIES
PIPE JOINT DEFLECTION

JANUARY 2020
MIN/MAX COVER (SEE NOTE #4)

MAXIMUM 80% OF MANUFACTURER’S RECOMMENDATION FOR JOINT DEFLECTION (SEE NOTE #5)

FULL LENGTH OF PIPE CENTERED AT CROSSING (SEE NOTE #1)

MIN/MAX COVER (SEE NOTE #6)

LOCATE WIRE (SEE NOTE #3)

MINIMUM HORIZONTAL LENGTH REQUIRED AS PER MANUFACTURER TO DEFLECT PIPE VERTICALLY TO AVOID OBSTRUCTION.

PROPOSED FORCE MAIN SIZE & TYPE VARIES

EXISTING CONFLICT PIPE

MINIMUM HORIZONTAL LENGTH REQUIRED AS PER MANUFACTURER TO DEFLECT PIPE VERTICALLY TO AVOID OBSTRUCTION.

CASE "A" CROSSING

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER MAIN, 12-INCHES OF SEPARATION IS REQUIRED. A FULL LENGTH OF PIPE SHALL BE CENTERED OVER EXISTING UTILITY MAIN TO PROVIDE MAXIMUM JOINT SPACING FOR ALL CROSSING.

2. FOR OTHER LOCATION LIMITATIONS SEE DETAIL (W-10 & W-11).

3. LOCATING WIRE REQUIRED: SEE DETAIL W-44.

4. THE COVER OVER ALL PIPING LESS THAN 24" SIZE SHALL BE A MINIMUM OF 30" IN UNPAVED AREAS AND 36" IN PAVED AREAS WITH A MAXIMUM COVER OF 60" UNLESS APPROVED OTHERWISE BY JEA. COVER FOR PIPING 24" SIZE AND LARGER SHALL BE MINIMUM OF 36" (PAVED AND UNPAVED) AND MAXIMUM OF 84" UNLESS APPROVED OTHERWISE BY JEA. THE SOILS BETWEEN THE NEW MAIN AND THE CONFLICT PIPE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST ASTM D 1557.

5. JEA ONLY ALLOWS 80% OF THE PIPE MANUFACTURER’S RECOMMENDATION FOR JOINT DEFLECTION. BENDING THE PIPE BARREL IS NOT ALLOWED UNLESS OTHERWISE APPROVED BY JEA. THE MAXIMUM ARE LISTED IN TABLE BELOW. ONLY MANUAL FORCE CAN BE UTILIZED TO OBTAIN THESE JOINT DEFLECTION. ALL OFFSETS ARE BASED ON MINIMUM 20LF PIPE LENGTH.

<table>
<thead>
<tr>
<th>PVC PIPE</th>
<th>X OFFSET (IN.)</th>
<th>Y ANGLE AT ONE BELL</th>
<th>RESULTING RADIUS OF CURVE WITH 20FT. LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE SIZE (IN.)</td>
<td>(X) OFFSET (IN.)</td>
<td>(Y) ANGLE AT ONE BELL</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>7°</td>
<td>158 FT</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>2.4°</td>
<td>480 FT</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>2.4°</td>
<td>480 FT</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>2.4°</td>
<td>480 FT</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>2.4°</td>
<td>480 FT</td>
</tr>
<tr>
<td>12</td>
<td>8.5</td>
<td>2°</td>
<td>564 FT</td>
</tr>
<tr>
<td>14 - 24</td>
<td>5</td>
<td>1.2°</td>
<td>960 FT</td>
</tr>
<tr>
<td>30 - 48</td>
<td>3.25</td>
<td>0.8°</td>
<td>1477 FT</td>
</tr>
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<table>
<thead>
<tr>
<th>DUCTILE IRON PIPE (Mechanical Joint)</th>
<th>X OFFSET (IN.)</th>
<th>Y ANGLE AT ONE BELL</th>
<th>RESULTING RADIUS OF CURVE WITH 20FT. LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE SIZE (IN.)</td>
<td>(X) OFFSET (IN.)</td>
<td>(Y) ANGLE AT ONE BELL</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>27</td>
<td>6.5°</td>
<td>177 FT</td>
</tr>
<tr>
<td>6</td>
<td>24</td>
<td>5.7°</td>
<td>200 FT</td>
</tr>
<tr>
<td>8 - 12</td>
<td>17.5</td>
<td>4.2°</td>
<td>273 FT</td>
</tr>
<tr>
<td>14 - 16</td>
<td>12</td>
<td>2.9°</td>
<td>400 FT</td>
</tr>
<tr>
<td>18 - 20</td>
<td>10</td>
<td>2.4°</td>
<td>477 FT</td>
</tr>
<tr>
<td>24 - 30</td>
<td>8</td>
<td>1.9°</td>
<td>600 FT</td>
</tr>
<tr>
<td>36</td>
<td>7</td>
<td>1.7°</td>
<td>687 FT</td>
</tr>
<tr>
<td>42 - 48</td>
<td>6.7</td>
<td>1.6°</td>
<td>716 FT</td>
</tr>
</tbody>
</table>

ADJUSTMENT OVER EXISTING UTILITIES
PIPE JOINT DEFLECTION
TYPICAL TRENCH

NOTES:

1. TRENCH SIDES SHALL BE APPROXIMATELY VERTICAL BETWEEN AN ELEVATION OF 1 FOOT ABOVE THE TOP OF THE PIPE AND THE CENTER LINE OF THE PIPE; OTHERWISE, TRENCH SIDES SHALL BE AS VERTICAL AS POSSIBLE OR AS REQUIRED BY OSHA STANDARDS. REFER TO THE MEASUREMENT AND PAYMENT SECTION (SECTION #801, PARAGRAPH #4) TO DETERMINE MAXIMUM PAYLINE WIDTHS.

2. BELL HOLE SHALL BE DUG TO PERMIT THE ENTIRE STRAIGHT BARREL OF THE Pipe TO REST ON THE UNDISTURBED TRENCH BOTTOM. BOULDERS OR LOOSE ROCKS LARGER THAN 3/4 INCH IN SIZE WILL NOT BE PERMITTED IN BACKFILL UP TO 1 FOOT ABOVE THE TOP OF THE PIPE.

3. BACKFILL MATERIAL UP TO A LEVEL OF 1 FOOT OVER THE PIPE SHALL CONSIST OF AASHTO CLASS A-3 SOIL (SUITABLE SOIL) AND SHALL EXCLUDE CLAY MATERIALS AND LOOSE ROCKS LARGER THAN 3/4 INCH SIZE.

4. BACKFILL MATERIAL UP TO A LEVEL 1 FOOT OVER THE TOP OF PIPE OR BOTTOM OF STRUCTURES SHALL BE PLACED IN 6 INCH COMPACTED THICKNESS LAYERS AND SHALL BE COMPACTED TO 98% OF IT’S MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D1557.

5. SEE *EXCAVATION AND EARTHWORK*, SECTION 408 FOR ADDITIONAL REQUIREMENTS INCLUDING REMOVAL AND REPLACEMENT OF UNSUITABLE SOILS, DEWATERING, COMPACTION REQUIREMENTS AND DENSITY TESTING OF COMPACTED SOILS.

OPEN CUT TRENCH FOR PRESSURE PIPE

JANUARY 2020
IN CITY RIGHT -OF-WAY
PLATE W-42
PIPE TO BE INSTALLED ON UNDISTURBED SOIL OR SUITABLE SOIL COMPACTED TO 100% MAX. DENSITY, ASTM D698 (NOTE #2)

BACKFILL COMPACTED TO 98% MAX. DENSITY, ASTM D698 (SEE NOTES #3 & #4)

GENERAL BACKFILL MATERIAL COMPACTED TO 100% MAX. ASTM D698 (SEE NOTE #5)

MAXIMUM TRENCH WIDTH

PIPE TO BE INSTALLED ON UNDISTURBED SOIL OR SUITABLE SOIL COMPACTED TO 100% MAX. DENSITY, ASTM D698 (NOTE #2)

NOTES:

1. TRENCH SIDES SHALL BE APPROXIMATELY VERTICAL BETWEEN AN ELEVATION OF 1 FOOT ABOVE THE TOP OF THE PIPE AND THE CENTER LINE OF THE PIPE; OTHERWISE, TRENCH SIDES SHALL BE AS VERTICAL AS POSSIBLE OR AS REQUIRED BY OSHA STANDARDS. REFER TO THE MEASUREMENT AND PAYMENT SECTION (SECTION #801, PARAGRAPH #4) TO DETERMINE MAXIMUM PAYLINE WIDTHS.

2. BELL HOLE SHALL BE DUG TO PERMIT THE ENTIRE STRAIGHT BARREL OF THE PIPE TO REST ON THE UNDISTURBED TRENCH BOTTOM. BOULDERS OR LOOSE ROCKS LARGER THAN 3/4 INCH IN SIZE WILL NOT BE PERMITTED IN BACKFILL UP TO 1 FOOT ABOVE THE TOP OF THE PIPE.

3. BACKFILL MATERIAL UP TO A LEVEL OF 1 FOOT OVER THE PIPE SHALL CONSIST OF AASHTO CLASS A-3 SOIL (SUITABLE SOIL) AND SHALL EXCLUDE CLAY MATERIALS AND LOOSE ROCKS LARGER THAN 3/4 INCH SIZE.

4. BACKFILL MATERIAL UP TO A LEVEL 1 FOOT OVER THE TOP OF PIPE OR BOTTOM OF STRUCTURES SHALL BE PLACED IN 6 INCH COMPACTED THICKNESS LAYERS AND SHALL BE COMPACTED TO 100% OF IT'S MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D698.

5. SEE "EXCAVATION AND EARTHWORK", SECTION 408 FOR ADDITIONAL REQUIREMENTS AND EXCEPTIONS INCLUDING REMOVAL AND REPLACEMENT OF UNSUITABLE SOILS, DEWATERING, COMPACTION REQUIREMENTS AND DENSITY TESTING OF COMPACTED SOILS.

TYPICAL TRENCH

OPEN CUT TRENCH FOR PRESSURE PIPE

JANUARY 2020
IN STATE ROAD RIGHT-OF-WAY
PLATE W-42A
<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>MINIMUM ALLOWABLE BENDING RADIUS - Rs (FT)</th>
<th>MAXIMUM ALLOWABLE PULLING FORCE (DR18) (K-LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>6&quot;</td>
<td>144</td>
<td>21</td>
</tr>
<tr>
<td>8&quot;</td>
<td>189</td>
<td>37</td>
</tr>
<tr>
<td>10&quot;</td>
<td>231</td>
<td>56</td>
</tr>
<tr>
<td>12&quot;</td>
<td>275</td>
<td>80</td>
</tr>
</tbody>
</table>

* PIPE SIZES GREATER THAN 12" SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), CALCULATIONS SUPPLIED BY THE DESIGNED ENGINEER

**FUSIBLE PVC PIPE**
**ALLOWABLE BEND RADIUS AND PULLING FORCE**

JANUARY 2020

PLATE W-43
NOTES:
1. POINTS A, B, C, & D PULL FORCE ON PIPE.
2. L1-ADDITIONAL LENGTH OF PIPE REQUIRED FOR HANDLING AND THERMAL CONTRACTION
3. L2-HORIZONTAL DISTANCE TO ACHIEVE DESIRED DEPTH
4. L3-ADDITIONAL DISTANCE TO TRAVERSE AT DESIRED DEPTH
5. L-4 HORIZONTAL DISTANCE TO RISE TO SURFACE
6. H-DEPTH OFF BORE HOLE FROM GROUND SURFACE
7. HORIZONTAL AND VERTICAL DISTANCE BETWEEN BORE "A" TO BORE "B"

DUAL DIRECTIONAL DRILLING
JANUARY 2020
PLATE W-43A
LOCATE WIRE SYSTEM

NOTES:
1. LOCATING WIRE TO BE INSTALLED IN EITHER THE ONE OR ELEVEN O’CLOCK POSITION ON ALL DUCTILE IRON OR PVC (PRESSURE MAINS). LOCATE WIRE SHALL ALSO BE INSTALLED ON ALL (HDPE) POLY MAIN PIPING (1:00 OR 11:00 POSITION, IF POSSIBLE).

2. SECURE LOCATING WIRE TO PVC & D.I.P. WATER MAIN BY USE OF DUCT TAPE OR ZIPPER TYPE PLASTIC TIE STRAPS SPACED AT A MAXIMUM DISTANCE OF TEN (10') AND AT EACH SIDE OF BELL JOINT OR FITTING.

3. THE ENTIRE LOCATING SYSTEM SHALL BE SUBJECTED TO TESTING TO DETERMINE ITS RELIABILITY. WHERE INSTALLED UNDER PAVEMENT AREAS, TESTING SHALL BE DONE PRIOR TO THE PLACEMENT OF PAVEMENT, UNLESS APPROVED OTHERWISE BY JEA.

4. LOCATING WIRE SHALL TERMINATE WITHIN AN ACTIVE VALVE BOX (WITH A VALVE) OR A METER BOX (IF NO VALVE) AT 475' INTERVALS. SEE DETAIL PLATE W-44B. WIRE CONNECTIONS BELOW GROUND (OUTSIDE OF A BOX) SHALL BE AVOIDED.

5. REFER TO SECTION 350 FOR LOCATE WIRE SPECIFICATIONS.

6. "M" INDICATES THAT THE WIRES ARE CONNECTED TOGETHER WITH A WATERPROOF CONNECTION. (SEE DETAIL W-44B)

7. "R" INDICATES A WIRE PIG-TAIL (4' LONG)

8. FOR FIRE HYDRANT LOCATE WIRE REQUIREMENTS AND EXCLUSIONS, SEE PLATES W-12,13 AND 14.

9. AN "LW" CUT SHALL BE CARVED IN THE CONCRETE CURB AND PAINTED AT ALL LOCATE WIRE BOXES.

10. FOUR LANES OF TRAFFIC (HAVING TWO LANES OF TRAFFIC IN EACH DIRECTION) OR GREATER THE LOCATE WIRE AND VALVE BOX SHALL BE OFF-SET TO THE RIGHT-OF-WAY.

LOCATE WIRE CONSTRUCTION FOR WATER MAINS

JANUARY 2020

PLATE W-44
LOCATING WIRE

DUCT TAPE OR ZIPPER TYPE PLASTIC TIE STRAPS.

CONNECTION AT LARGE METER BOX

(3" OR LARGER SERVICE)

BOLT LOCATING WIRE TO VALVE BOX

NOTES:
1. NOTE THAT THE BRANCH WIRE IS NOT CONNECTED TO THE MAIN WIRE.
2. LOCATE WIRE SHALL ENTER THE VALVE BOX THROUGH A "V" CUT IN THE 6" PVC RISER PIPE SECTION (SEE W-18).
3. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE AND LOCATE POINTS.

LOCATE WIRE FOR BRANCH MAIN

JANUARY 2020

PLATE W-44A
**LOCATE WIRE BOX UTILIZING VALVE BOX**

2. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE AND LOCATE POINTS.
3. LOCATE WIRE CONNECTION SHALL ONLY BE A 2 WAY CONNECTION.

**LOCATE WIRE BOX UTILIZING METER BOX**

**WATERPROOF WIRE CONNECTOR DETAIL**

NOTES:
2. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE AND LOCATE POINTS.
3. LOCATE WIRE CONNECTION SHALL ONLY BE A 2 WAY CONNECTION.
SWABBING PORT AND CLEAN OUT VAULT DETAIL - SECTION

JANUARY 2020  PLATE W-45
SWABBING PORT AND CLEAN OUT VAULT DETAIL - PLAN

JANUARY 2020

PREFORMED BOOT
DI FLANGED LR BASE ELBOW
BLIND FLANGE
SUMP (FILL WITH #57 STONE)

PRECAST CONCRETE VAULT WITH H-20 TRAFFIC BEARING HATCH
SWABBING LAUNCHING STATION DETAIL FOR NEW WATER MAIN UP TO 24"

JANUARY 2020

PLATE W-45B
SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN

JANUARY 2020

SWABBING LAUNCHING PIPE (DI WATER MAIN)
(FLO x MJ) TAPPING VALVE
HOT TAP OR CUT-IN TEE
EXISTING WATER MAIN

NOTES:
1. FOR HOT TAP CONNECTIONS ON EXISTING WATER MAINS 10" DIAMETER AND GREATER, DIAMETER OF TAPPING VALVE AND PIG LAUNCHING PIPE SHALL BE ONE NOMINAL SIZE LESS THAN EXISTING WATER MAIN.
MANHOLE FRAME AND COVER
(SEE NOTE 3)

DI BLIND FLANGE

FINISHED GRADE

GROUT IN PLACE CONCRETE
ADJUSTMENT RINGS OR
BRICKS

FACTORY BONDED JOINT

SAND OR STABILIZED SOIL
COMPACTED IN 1' LIFTS
BEGINNING AT MANHOLE AND
WORKING OUTWARD TO THE
EXCAVATION WALLS

#57 STONE

18" DIAMETER FIBERGLASS
MANHOLE

HOLD DOWN LIP (3" MIN)

SEE NOTE 2

COMACT TO 98%
DENSITY - AASHTO T-180

NOTES:
1. PROVIDE ALL MATERIALS IN ACCORDANCE TO JEA WATER AND WASTEWATER STANDARD
   SPECIFICATIONS.
2. USE TWO VERTICAL 45 DEGREE MJ BENDS OR LONG RADIUS 90 DEGREE MJ BEND.
3. PROVIDE STANDARD JEA FRAME AND COVER.
4. RESTRAIN ALL JOINTS.

EXISTING WATER MAIN

18" OF NO. 57 STONE
WRAPPED WITH FILTER
FABRIC

RETROFIT SWABBING LAUNCHING STATION
DETAIL FOR WATER MAINS UP TO 24" - SECTION

JANUARY 2020

PLATE W-45D
NOTES ON UTILITY SEPARATION REQUIREMENTS

1. THE SEPARATION REQUIREMENT IS TO PROVIDE ACCESIBILITY FOR CONSTRUCTION AND MAINTENANCE. THE FIRST PART OF HORIZONTAL SEPARATION IS THE SPACING FOR EASE OF SAFETY IN THE EVENT OF CONFLICT. FOR PIPES BURIED AT SIMILAR DEPTHS, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.

2. THE MINIMUM SPACING IS REQUIRED TO PROVIDE ACCESS TO OTHER UTILITIES WHILE STILL MAINTAINING MINIMUM VERTICAL SEPARATION.

3. ENTRANCE AND EXIT FROM OUTSIDE OF PIPES TO OUTSIDE OF PIPE.

4. NO ADJUSTMENT TO HORIZONTAL OR VERTICAL SEPARATION WITH ANY PIPING OR MAINTENANCE OR CONFIGURATIONS.

5. ALL OTHER UTILITIES OTHER THAN WATER MAINS MAY BE BURIED ALONGSIDE THE WATER MAIN.

6. REFER TO PICTURED WATER MAINS. SECTION 350, § 11.

HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS

PROPOSED UTILITY

CONTACTING WATER

PORTABLE WATER

NOTE 1

6'-3" O.C.

10'-3" O.C.

NOTE 2

7'-6" O.C.

12'-3" O.C.

NOTE 3

VACUUM BLOWERS

NOTE 4

6'-6" O.C.

10'-1" O.C.

NOTE 5

WATER

NOTE 6

3'-0" O.C.

6'-3" O.C.

NOTE 7

WATER MAINS

NOTE 8

ALL OTHER UTILITIES

NOTE 9

WATER & RECLAIMED WATER MAINS

NOTE 10

NOTE 11

NOTE 12

NOTES:

1. FOR WATER MAINS, WATER AND RECLAIMED WATER MAINS, THE DISTANCE RANGE FROM EDGE OF ADJACENT PAVEMENT, BACK OF CURB AND FACE OF SIDEWALK SHALL BE IN COMPLIANCE WITH LOCAL COUNTY FIRE DEPARTMENT RULES AND AS APPROVED BY JEA. FOR OTHER LOCATION LIMITATIONS SEE PLATES W-10 AND W-11.

2. FIRE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS. THIS IS ESPECIALLY IMPORTANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATER MAIN. UNLESS APPROVED OTHERWISE BY JEA, THE HYDRANTS SHALL BE ORDERED WITH PROPER "BURY DEPTH" TO MEET ACTUAL FIELD CONDITIONS.

3. RESTRAINING WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4' TO 6' HIGH (FLARED END). THE END OF THE WIRE SHALL BE SECURED TO THE PIPE MAIN. SEE SECTION 350, LOCATE WIRE INSTALLATION PARA 10 FOR MORE INFORMATION.

4. FIRE HYDRANTS SHALL BE INSTALLED FROM THE SIDE OF THE ROAD AND BACK TO THE HYDRANT LOCATION. THE FIRE HYDRANT INSTALLED SHALL FACE TOWARDS THE ROADWAY CENTERLINE. THE HYDRANT FACE SHALL NOT BE UTILIZED TO THROTTLE OUTLET FLOW.

5. A FIRE HYDRANT INSTALLATION LIMITED SPACE SHALL BE UTILIZED FROM THE SIDE OF THE ROAD AND BACK TO THE HYDRANT LOCATION. THE FIRE HYDRANT INSTALLATION LIMITED SPACE SHALL BE PLACED IN THE CENTER OF THE TRAVEL LANE, DIRECTLY ACROSS FROM AND ADJACENT TO EACH FIRE HYDRANT.

SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS

Water and Reclaimed Water Main Separation Requirements - Notes

NOTE 1

1. HYDRAULICALLY AND MATERIALLY INSIGNIFICANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATery MAIN.

NOTE 2

1. HYDRAULICALLY AND MATERIALLY INSIGNIFICANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATery MAIN.

NOTE 3

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NOTE 4

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NOTE 5

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NOTE 6

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NOTE 7

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NOTE 8

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NOTE 9

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NOTE 10

1. HYDRAULICALLY AND MATERIALLY INSIGNIFICANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATery MAIN.

NOTE 11

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NOTE 12

1. HYDRAULICALLY AND MATERIALLY INSIGNIFICANT FOR BRANCH LINES WHICH TEE-OFF A 12" OR LARGER WATery MAIN.

Fire Hydrant Installation

Fire Hydrant Installation Limited Space
### ADJUSTMENT OVER EXISTING UTILITIES
#### MECHANICAL RESTRAINTS

**CASE A CROSSING**

1. If existing compact pipe is a water main, 12 inches of backfill is required. A full length of pipe shall be compacted over existing utility to provide maximum joint spacing for all crossings.
2. For other location limitations, compact minimum of pipe depth as noted.
3. Locating wire required. See details W-14.
4. The pipe over all lengths less than 24" shall be a minimum of 12" in diameter for bored crossings. See details W-25.
5. The compound pipe shall be compacted to the maximum density as determined by the laboratory modified density (NOTE #2).
6. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

**CASE B CROSSING**

1. If existing compact pipe is a water main, 3 inches of separation is required. A full length of pipe shall be compacted over existing utility to provide maximum joint spacing for all crossings.
2. For other location limitations, compact minimum of pipe depth as noted.
3. Locating wire required. See details W-14.
4. The compound pipe over all lengths shall be a minimum of 12" in diameter for bored crossings. See details W-25.
5. The compound pipe shall be compacted to the maximum density as determined by the laboratory modified density (NOTE #2).
6. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

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1. If existing compact pipe is a water main, 3 inches of separation is required. A full length of pipe shall be compacted over existing utility to provide maximum joint spacing for all crossings.
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4. The compound pipe over all lengths shall be a minimum of 12" in diameter for bored crossings. See details W-25.
5. The compound pipe shall be compacted to the maximum density as determined by the laboratory modified density (NOTE #2).
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**CASE B CROSSING**

1. If existing compact pipe is a water main, 3 inches of separation is required. A full length of pipe shall be compacted over existing utility to provide maximum joint spacing for all crossings.
2. For other location limitations, compact minimum of pipe depth as noted.
3. Locating wire required. See details W-14.
4. The compound pipe over all lengths shall be a minimum of 12" in diameter for bored crossings. See details W-25.
5. The compound pipe shall be compacted to the maximum density as determined by the laboratory modified density (NOTE #2).
6. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

### WATER VALVE INSTALLATION DETAIL

**January 2020**

**PLATE W-16**

**OPEN CUT TRENCH FOR PRESSURE PIPE**

1. For unpaved locations, a pipe cutter coated pipe pad shall be provided and installed flush with the ground. Concrete pads shall not be used.
2. Location wire required. See details W-14.
3. The maximum length of interference shall be limited to 200 feet (SEE NOTE #3).
4. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

**PLATE W-42**

1. For unpaved locations, a pipe cutter coated pipe pad shall be provided and installed flush with the ground. Concrete pads shall not be used.
2. Location wire required. See details W-14.
3. The maximum length of interference shall be limited to 200 feet (SEE NOTE #3).
4. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

**PLATE W-44**

1. For unpaved locations, a pipe cutter coated pipe pad shall be provided and installed flush with the ground. Concrete pads shall not be used.
2. Location wire required. See details W-14.
3. The maximum length of interference shall be limited to 200 feet (SEE NOTE #3).
4. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.

**PLATE W-45**

1. For unpaved locations, a pipe cutter coated pipe pad shall be provided and installed flush with the ground. Concrete pads shall not be used.
2. Location wire required. See details W-14.
3. The maximum length of interference shall be limited to 200 feet (SEE NOTE #3).
4. Backfill material up to a level of 1 foot over the pipe shall consist of shoveling soil at a maximum depth of 1 foot over the pipe. See "Excavation and Earthwork" for additional requirements including removal and replacement of existing materials.
PAY ITEM "**" DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.

INDICATES DIRECTION OF THRUST FORCE.

**TYPICAL PROFILE**

**PVC PIPE RESTRAINT NOTES:**

1. PVC PIPE RESTRAINTS SHALL BE USED ON ALL WATER, SEWER FORCE MAIN OR PRESSURE MAIN, OR VERTICAL OFFSET (SEE PLATE W-31A). THE RESTRAINTS SHALL BE USED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   a. PVC PLASTIC PIPE RESTRAINTS SHALL BE OF THE SLEEVE TYPE AS SHOWN ON THE TYPICAL PROF.
   b. PVC PLASTIC PIPE RESTRAINTS SHALL BE INSTALLED IN DIAMETERS OF 18 INCHES AND SMALLER PIPE SIZE.
   c. PVC PLASTIC PIPE MAY BE INSTALLED IN DIAMETERS OF 20 INCHES AND LARGER PIPE SIZE.

2. PVC PLASTIC PIPE RESTRAINTS SHALL BE USED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   a. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN DIAMETERS OF 18 INCHES AND SMALLER PIPE SIZE.
   b. PVC PLASTIC PIPE MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   c. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:

3. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
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   c. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:

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   c. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:

6. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
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   b. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
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7. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   a. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   b. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:
   c. PVC PLASTIC PIPE RESTRAINTS MAY BE INSTALLED IN RAGGED HOLES FOR THE PLUMBING OR RECLAMATION OF THE ABOVE SCHEDULE. AT A MINIMUM:

VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, L1 IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.

REDUCERS: SHALL BE RESTRAINED ON BOTH SIDES OF REDUCER. NO RESTRAINTS SHALL BE USED AT THE 90° JUNCTIONS.

BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.

DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE

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<tr>
<th>PIPE SIZE (IN.)</th>
<th>48</th>
<th>36</th>
<th>30</th>
<th>24</th>
<th>16</th>
<th>12</th>
<th>8</th>
<th>6</th>
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<tr>
<td>BENDS</td>
<td>117</td>
<td>106</td>
<td>79</td>
<td>79</td>
<td>45</td>
<td>38</td>
<td>8</td>
<td>6</td>
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<tr>
<td>TOTAL L.</td>
<td>289</td>
<td>222</td>
<td>121</td>
<td>121</td>
<td>86</td>
<td>47</td>
<td>34</td>
<td>23</td>
</tr>
</tbody>
</table>

(SEE PLATE Nos. 38C & 38D FOR ADDITIONAL DETAILS)
TEMPORARY SAMPLE TAP UTILIZING A NEW 1" WATER SERVICE

1. LOCATION OF SAMPLE POINT MUST NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MARKING OF ALL TEMPORARY TAP INSTALLATION, AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
3. THE CONTRACTOR SHALL INSTALL THE ABOVE ALTERNATIVE METHODS FOR CONSTRUCTION OF TEMPORARY SAMPLE POINTS ON ALL JEA, WHERE POSSIBLE.
4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA'S ENVIRONMENTAL STANDARDS.

PLUGGED DEAD END USING MECHANICAL RERAINTS

1. MECHANICAL JOINT RESTRAINTS MAY BE USED.
2. LOCATING WIRE TUBE MUST TERMINATE IN PLUGGED DEAD END LOCATION AT FLUSHING LOCATION.
3. MECHANICAL JOINT PLUG (SEE S-49) REQUIRED.

LOCATE WIRE FOR BRANCH MAIN

1. LOCATION OF BRANCH MAIN SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MARKING OF ALL TEMPORARY TAP INSTALLATION, AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
3. THE CONTRACTOR SHALL INSTALL THE ABOVE ALTERNATIVE METHODS FOR CONSTRUCTION OF TEMPORARY SAMPLE POINTS ON ALL JEA, WHERE POSSIBLE.
4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA'S ENVIRONMENTAL STANDARDS.

LOCATE WIRE BOX UTILIZING VALVE BOX

1. INSTALL CO-POLYMER METER BOX WITH HEAVY-DUTY IRON LID (PAINT TOP OF LID)
2. PROVIDE 3" THICK GRAVEL BOTTOM
3. LOCATE WIRE CONSTRUCTION FOR WATER MAINS
4. LOCATE WIRE FOR BRANCH MAIN

TEMPORARY SAMPLE TAP UTILIZING PLUG AT FLUSHING LOCATION

1. LOCATION OF SAMPLE POINT MUST NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MARKING OF ALL TEMPORARY TAP INSTALLATION, AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
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LOCATE WIRE BOX CONSTRUCTION FOR WATER MAINS

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3. THE CONTRACTOR SHALL INSTALL THE ABOVE ALTERNATIVE METHODS FOR CONSTRUCTION OF TEMPORARY SAMPLE POINTS ON ALL JEA, WHERE POSSIBLE.
4. THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICIES AS OUTLINED BY THE JEA'S ENVIRONMENTAL STANDARDS.
SWABBING PORT AND CLEAN OUT VAULT DETAIL - SECTION
JANUARY 2020
PLATE W-45

SWABBING PORT AND CLEAN OUT VAULT DETAIL - PLAN
JANUARY 2020
PLATE W-45A

SWABBING LAUNCHING STATION DETAIL FOR NEW WATER MAINS UP TO 24" - PLAN
JANUARY 2020
PLATE W-45B

SWABBING LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - SECTION
JANUARY 2020
PLATE W-45C

NOTES:
1. PROVIDE ALL MATERIALS IN ACCORDANCE TO JEA WATER AND WASTEWATER STANDARD SPECIFICATIONS.
2. USE TWO VERTICAL 45 DEGREE MJ BENDS OR LONG RADIUS 90 DEGREE MJ BEND.
3. PROVIDE STANDARD JEA FRAME AND COVER.
4. RESTRAIN ALL JOINTS.

DI BLIND FLANGE
DI FLANGED LR BASE ELBOW
BLIND FLANGE
SUMP (FILL WITH #57 STONE)
PRECAST CONCRETE VAULT WITH H-20 TRAFFIC BEARING HATCH
EXISTING WATER MAIN
SWABBING LAUNCHING PIPE (DI WATER MAIN)
(FLG x MJ) TAPPING VALVE
HOT TAP OR CUT-IN TEE
FIBERGLASS MANHOLE

DIAMETER:
SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN
JANUARY 2020
PLATE W-45C

EXISTING WATER MAIN
NOTES:
1. PROVIDE ALL MATERIALS IN ACCORDANCE TO JEA WATER AND WASTEWATER STANDARD SPECIFICATIONS.
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SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN
JANUARY 2020
PLATE W-45C

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SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN
JANUARY 2020
PLATE W-45C

EXISTING WATER MAIN
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SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN
JANUARY 2020
PLATE W-45C

EXISTING WATER MAIN
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DIAMETER: