NOTES:
1. MATERIAL: ASTM A-48 CLASS 35B GRAY IRON.
2. RING WEIGHT 230 LBS APPROX.
3. COVER WEIGHT 230 LBS. APPROX.
4. ALL DIMENSIONS ARE SHOWN IN INCHES.
5. FOR MANHOLES WHICH WILL BE MAINTAINED BY JEA (INCLUDING UTILITY DEDICATION PROJECTS), THE COVER SHALL INCLUDE THE "JEA" LOGO AND A NEOPRENE GASKET.
6. FOR MANHOLES WHICH WILL BE MAINTAINED BY PARTIES OTHER THAN JEA (SUCH AS PRIVATE SEWER COLLECTION SYSTEMS, PRIVATE (FORCE MAIN) PUMP OUT BOX AND SYSTEMS NOT MAINTAINED BY JEA), THE COVER SHALL INCLUDE "SANITARY SEWER" GENERIC LETTERING (NO "JEA" LOGO OR NEOPRENE GASKET).

SANITARY SEWER MANHOLE FRAME AND COVER
JANUARY 2020
PLATE S-1
UNDISTURBED SOIL MIN. BEARING CAPACITY: 2000 LB/SQ FT.

SOLID CLASS "C" CONCRETE WITH SOLID FILLER BRICKS ONLY ALLOWED AS FILLER NO RUBBLE, GRADE TO 1/2" PER FOOT.

 LEVELING COURSE, 12" (MIN) THICKNESS OF GRANULAR BACKFILL (57 STONE)

CONSTRUCT SPILLWAY WHERE INVERT OF UPPER SEWER IS ABOVE MID HEIGHT OF LOWER SEWER.

PLASTIC JOINT SEALER (2 SEALERS PER JOINT)

CONCRETE ADJUSTMENT RINGS OR BRICKS (TYP) EPOXY GROUTED IN PLACE

FINISHED GRADE

GROUT

NOTE 1:

PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.

NOTE 2:

THE INTERIOR AND EXTERIOR OF MANHOLE AND ADJUSTING RINGS SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.

NOTE 3:

IF SPECIALTY LINER IS TO BE INSTALLED ON INSIDE SURFACE OF MANHOLE, THE BITUMINOUS WATERPROOFING MATERIAL SHALL BE OMITTED ON THE INSIDE.

NOTE 4:

JUNCTION MANHOLE (CLOSEST TO WETWELL) SHALL BE 5' DIA WITH SPECIALTY LINER.

NOTE 5:

ALL MANHOLE JOINTS BELOW THE TOP COVER SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL. SEE PLATE S-17.

NOTE 6:

IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "A" MANHOLE
8"-21" SEWERS

JANUARY 2020

PLATES S-2, S-3
UNDISTURBED SOIL MIN. BEARING CAPACITY: 2000 LB/SQ FT.

LEVELING COURSE, 12" (MIN) THICKNESS OF GRANULAR BACKFILL (57 STONE)

1'-0" MIN/3'-0" MAX

IN UNSUITABLE SOILS, OVER-EXCAVATION IS REQUIRED (SEE NOTE #2).

NOTES:

1. ALL MANHOLE JOINTS BELOW THE TOP COVER SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL. SEE PLATE S-17.

2. JUNCTION MANHOLE (CLOSEST TO WETWELL) SHALL BE 5' DIA

3. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER POLYMER TYPE "A" MANHOLE 8"-21" SEwers

JANUARY 2020

PLATES S-2A, S-3
MANHOLE FRAME & COVER

FINISHED GRADE

4'-0" DIA

BACKFILL WITH A-3 MATERIAL

ANNULAR SPACE TO BE FILLED WITH "FLOWABLE FILL" PER FDOT STANDARD SPECIFICATION #121

#4'S @ 9" O.C. TO CONNECT SADDLE MANHOLE BASE INSTALLED DURING CONSTRUCTION OF MANHOLE

7" DIAMETER, 10 GAUGE CMP

SET JEA STD. MANHOLE REMOVE CMP BACKFILL AND COMPACT AS PER JEA STANDARDS

MANHOLE PIPE CONNECTION SHALL BE IN COMPLIANCE WITH JEA WATER & SEWER STANDARDS DETAIL S-15 (WATER STOP)

UNDISTURBED SOIL

CONCRETE RINGS FOR ADJUSTMENT (TYP)

SECTION VIEW

MANHOLE BASE 8" THICK 4000 PSI CONCRETE TYPE II

42" 57 STONE

JANUARY 2020

PLATE S-2B

MICRO-TUNNELING WORK SHAFT
NOTES:

1. THE ANGLE BETWEEN ALL INFLOW CHANNELS AND EFFLUENT PIPE SHALL BE BETWEEN 90° - 180° UNLESS OTHERWISE APPROVED BY JEA.

PLAN VIEW (S-3)

(FOR SECTION VIEW SEE S-2, S-2A)
NOTES:

1. THIS ASSEMBLY IS FOR 8" OR 10" GRAVITY INFLUENT LINES ONLY. NEW CONSTRUCTION ONLY NO FORCE MAINS LARGER THAN 6". MAXIMUM OF 2 INSIDE DROP BOWLS PER MANHOLE. A 5'-0" DIA. MANHOLE (6" THICK WALLS) IS REQUIRED IF TWO INSIDE DROPS ARE CONSTRUCTED WITH ONE OR BOTH BEING 10" SIZE. DROP BOWL BY RELINER OR APPROVED EQUAL REQUIRED. THE INSIDE DROP FOR AN 8" HIGH-LINE SHALL BE CONSTRUCTED SIMILAR TO ABOVE (SEE PLATE S-5).

2. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.

3. THE INTERIOR AND EXTERIOR OF MANHOLE AND THE INTERIOR OF ADJUSTMENT RINGS SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.

4. TYPE "B" MANHOLE MUST BE USED FOR 2' OR GREATER INFLUENT PIPE DROPS.

5. THE DROP BOWL ASSEMBLY SHALL BE INSTALLED PRIOR TO APPLICATION OF SPECIALTY LINING MATERIAL.

6. A TYPE "D" MANHOLE SHALL BE UTILIZED WHEN THREE OR MORE (2' OR GREATER) DROPS ARE INVOLVED OR WHEN INFLUENT PIPES AREA LARGER THAN 10" IN SIZE.

7. ADJUSTABLE CLAMP BRACKET (MIN. 2 PER DROP BOWL ASSY). 1-1/2" WIDE, 11 GA. W/ 3/8" X 1" BOLT, ANCHOR & WASHER PER BRACKET ASSY. ALL 304 OR 316 STAINLESS STEEL MATERIALS.

8. ALL MH JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIISTER). TAPE ON THE CONE SECTION IS OPTIONAL.

9. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 96%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "B" MANHOLE 8"-10" SEWERS

JANUARY 2020

PLATES S-4, S-5
NOTES:

1. THIS ASSEMBLY IS FOR 8" OR 10" GRAVITY INFLUENT LINES ONLY. NEW CONSTRUCTION ONLY NO FORCE MAINS LARGER THAN 6". MAXIMUM OF 2 INSIDE DROP BOWLS PER MANHOLE. A 5'-0" DIA. MANHOLE (6" THICK WALLS) IS REQUIRED IF TWO INSIDE DROPS ARE CONSTRUCTED WITH ONE OR BOTH BEING 10" SIZE. DROP BOWL BY RELINER OR APPROVED EQUAL REQUIRED. THE INSIDE DROP FOR AN 8" HIGH-LINE SHALL BE CONSTRUCTED SIMILAR TO ABOVE (SEE PLATE S-5).

2. TYPE "B" MANHOLE MUST BE USED FOR 2’ OR GREATER INFLUENT PIPE DROPS.

3. A TYPE "D" MANHOLE SHALL BE UTILIZED WHEN THREE OR MORE (2’ OR GREATER) DROPS ARE INVOLVED OR WHEN INFLUENT PIPES AREA LARGER THAN 10” IN SIZE.

4. ADJUSTABLE CLAMPING BRACKET (MIN. 2 PER DROP BOWL ASSY). 1-1/2" WIDE, 11 GA. W/ 3/8" DIA. 18-8 PINCH BOLTS AND NUTS. SECURE TO MH WALL WITH (2) 3/8" X 1" BOLT, ANCHOR & WASHER PER BRACKET ASSY. ALL 304 OR 316 STAINLESS STEEL MATERIALS.

5. ALL MANHOLE JOINTS BELOW THE TOP COVER SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL. SEE PLATE S-17A.

6. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).
NOTES:
1. THE ANGLE BETWEEN ALL INFLUENT FLOW CHANNELS AND EFFLUENT PIPE SHALL BE 90° OR GREATER UNLESS APPROVED OTHERWISE BY JEA.
2. THE 8" HIGH-LINE, WHERE UTILIZED, SHALL ENTER THE MANHOLE OFF-CENTER AS SHOWN ABOVE.

PLAN VIEW (S-5)

FOR SECTION VIEW SEE S-4
NOTES:
1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.

2. THE INTERIOR AND EXTERIOR OF MANHOLE AND INTERIOR OF ADJUSTMENT RINGS SHALL BE GIVEN TWO COAT OF BITUMINOUS WATERPROOFING MATERIAL.

3. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24” (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12” (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (S7 STONE).

SANITARY SEWER CONCRETE TYPE "C" MANHOLE 8"-21" SEWERS

JANUARY 2020

PLATE S-6
NOTES:
1. In silts, clay or highly organic soils (fine-grained soils including soil groups ML, CL, OL, MH, CH, OH and PT) the soils shall be over-excavated an additional 24" (at a min.) and backfilled with AASHTO Class A-3 soil (compacted to 98%, ASTM D1557) or over-excavate an additional 12" (at a min.) and backfill with granular backfill (57 stone).

SANITARY SEWER POLYMER TYPE "C" MANHOLE
8"-21" SEWERS

JANUARY 2020

PLATE S-6A
NOTES:

1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.

2. THE INTERIOR AND EXTERIOR OF MANHOLE AND THE INTERIOR OF THE ADJUSTMENT RINGS SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.

3. IF SPECIALTY LINER IS TO BE INSTALLED ON INSIDE SURFACE OF MANHOLE, THE BITUMINOUS WATERPROOFING SHALL BE OMITTED ON INSIDE.

4. TYPE "D" MANHOLE SHALL BE USED FOR 10" OR LARGER INFLUENT PIPES W/ 2' OR GREATER DROP.

5. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

6. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "D" MANHOLE
12"-21" SEWERS

JANUARY 2020

PLATES S-7, S-8
NOTES:

1. TYPE "D" MANHOLE SHALL BE USED FOR 10" OR LARGER INFLUENT PIPES W/ 2' OR GREATER INFLUENT DROP.

2. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

3. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER POLYMER TYPE "D" MANHOLE
12"-21" SEWERS

JANUARY 2020
PLATES S-7A, S-8
NOTES:

1. THE ANGLE BETWEEN ALL INFLUENT FLOW CHANNELS AND EFFLUENT PIPE SHALL BE 90° OR GREATER UNLESS APPROVED OTHERWISE BY JEA.

2. THE INTERIOR AND EXTERIOR OF THE MANHOLE AND THE INTERIOR OF THE ADJUSTMENT RINGS SHALL BE GIVEN 2 COATS OF BITUMINOUS WATERPROOFING MATERIAL.

3. IF SPECIALITY LINER IS TO BE INSTALLED ON INSIDE OF MANHOLE, THE BITUMINOUS WATERPROOFING MATERIAL SHALL BE OMITTED ON THE INSIDE.

4. TYPE "D" MANHOLES SHALL BE USED FOR 12" OR LARGER INFLUENT PIPES W/ 2' OR GREATER INFLUENT DROP.

PLAN VIEW (S-8)

(REFER TO S-15 DETAIL)

SOLID CLASS "C" CONCRETE, SOLID FILLER BRICKS ONLY ALLOWED AS FILLER, NO RUBBLE.
GRADE TO 1/2" PER FOOT.

LEVELING COURSE 12" (MIN.)
THICKNESS OF GRANULAR BACKFILL (#57 STONE)
SANITARY SEWER PIPE

Provide one section of PVC SDR-26 pipe through manhole. No sewer pipe joints to occur within manhole or within 30" of outside of manhole (see note #6).

NOTES:

1. Precast manhole sections to be manufactured in accordance with the latest editions of A.S.T.M. C-478 with 4000 lb. conc., type II cement. All lifting holes and outside inserts shall be filled with non-shrink grout and coated with bituminous waterproofing material.

2. Type "E" manholes are to be utilized where conflict exists between storm water pipe and sanitary sewer pipes. The use of this style of manhole shall be minimized where possible.

3. In silts, clay or highly organic soils (fine-grained soils including soil groups ML, CL, OL, MH, CH, OH and PT) the soils shall be over-excavated an additional 24" (at a min.) and backfilled with AASHTO Class A-3 soil (compacted to 96%, ASTM D1557) or over-excavate an additional 12" (at a min.) and backfill with granular backfill (57 stone).

4. If the gravity sewer pipe is located below the top third of the storm water pipe, then the sump depth shall be as follows:
   a) For storm pipes 36" and smaller, a 24" deep sump is required.
   b) For storm pipes larger than 36", a 36" deep sump is required.

5. No water main, reclaimed water main or sewer force main shall be allowed to penetrate a storm water structure.

6. Special approval is required for gravity sewer pipes 12" and larger and will be considered on a case by case basis. If approved, construction details may be required.

SANITARY SEWER CONCRETE TYPE "E" MANHOLE THRU STORM WATER MANHOLE

JANUARY 2020  PLATE S-9
SANITARY SEWER PIPE

PROVIDE ONE SECTION OF PVC SDR-26 PIPE THROUGH MANHOLE. NO SEWER PIPE JOINTS TO OCCUR WITHIN MANHOLE OR WITHIN 30” OF OUTSIDE OF MANHOLE (SEE NOTE #5)

NOTES:

1. TYPE “E” MANHOLES ARE TO BE UTILIZED WHERE CONFLICT EXISTS BETWEEN STORM WATER PIPE AND SANITARY SEWER PIPES. THE USE OF THIS STYLE OF MANHOLE SHALL BE MINIMIZED WHERE POSSIBLE.

2. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24” (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12” (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

3. IF THE GRAVITY SEWER PIPE IS LOCATED BELOW THE TOP THIRD OF THE STORM WATER PIPE, THEN THE SUMP DEPTH SHALL BE AS FOLLOWS:
   a) FOR STORM PIPES 36” AND SMALLER, A 24” DEEP SUMP IS REQUIRED.
   b) FOR STORM PIPES LARGER THAN 36”, A 36” DEEP SUMP IS REQUIRED.

4. NO WATER MAIN, RECLAIMED WATER MAIN OR SEWER FORCE MAIN SHALL BE ALLOWED TO PENETRATE A STORM WATER STRUCTURE.

5. SPECIAL APPROVAL IS REQUIRED FOR GRAVITY SEWER PIPES 12” AND LARGER AND WILL BE CONSIDERED ON A CASE BY CASE BASIS. IF APPROVED, CONSTRUCTION DETAILS MAY BE REQUIRED.

SANITARY SEWER POLYMER TYPE "E" MANHOLE THRU STORM WATER MANHOLE

JANUARY 2020  PLATE S-9A
NOTES:

1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.

2. THE INTERIOR AND EXTERIOR OF MANHOLE AND THE INTERIOR OF THE ADJUSTMENT RINGS SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.

3. IF SPECIALTY LINER IS TO BE INSTALLED ON INSIDE SURFACE OF MANHOLE, THE BITUMINOUS WATERPROOFING SHALL BE OMITTED ON INSIDE.

4. TYPE "F" MANHOLE SHALL BE USED FOR 12" OR LARGER INFLUENT PIPES W/ 2' OR GREATER INFLUENT DROP. THIS MANHOLE IS TO BE USED WHERE THE INFLUENT GRAVITY LINE IS TO BE EXTENDED IN THE FUTURE (SEE DETAIL).

5. ALL MH JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

6. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SECTION VIEW

SANITARY SEWER CONCRETE TYPE "F" MANHOLE
12" - 21" SEWERS

JANUARY 2020

PLATE S-10
NOTES:

1. TYPE "F" MANHOLE SHALL BE USED FOR 12" OR LARGER INFLUENT PIPES W/ 2' OR GREATER INFLUENT DROP. THIS MANHOLE IS TO BE USED WHERE THE INFLUENT GRAVITY LINE IS TO BE EXTENDED IN THE FUTURE (SEE DETAIL).

2. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

3. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH, AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER POLYMER TYPE "F" MANHOLE
12" - 21" SEWERS

JANUARY 2020

PLATE S-10A
NOTES:
1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.
2. THE EXTERIOR ONLY OF MANHOLE SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.
3. SPECIALTY LINER IS TO BE INSTALLED ON INSIDE SURFACE OF MANHOLE IN ACCORDANCE WITH AS-602, THEREFORE, THE BITUMINOUS WATERPROOFING SHALL BE OMITTED ON INSIDE.
4. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.
5. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "G" MANHOLE
24" - 60" SEWERS
1. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

2. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SECTION VIEW

NOTES:

1. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18" WIDE (MIN) EXTERIOR JOINT TAPE (WITH PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

2. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER POLYMER TYPE "G" MANHOLE
24" - 60" SEWERS

JANUARY 2020 PLATE S-11A
NOTES:
1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.
2. THE EXTERIOR OF MANHOLE SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.
3. OUTSIDE DROPS REQUIRED IF DROPS ARE 2' OR GREATER.
4. SPECIALTY LINER IS TO BE INSTALLED ON INSIDE SURFACE OF MANHOLE IN ACCORDANCE WITH AS-602. THEREFORE, THE BITUMINOUS WATERPROOFING SHALL BE OMITTED ON INSIDE. SEE SPECIFICATIONS FOR APPROVED SPECIALTY LINERS.
5. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.
6. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "H" MANHOLE
24" - 60" SEWERS

JANUARY 2020
PLATE S-12
NOTES:

1. OUTSIDE DROPS REQUIRED IF DROPS ARE 2' OR GREATER.

2. ALL MH JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18'' WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.

3. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24'' (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 96%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12'' (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER POLYMER TYPE "H" MANHOLE
24'' - 60'' SEWERS

JANUARY 2020
PLATE S-12A
NOTES:
1. THIS ASSEMBLY IS FOR 8" OR 10" GRAVITY INFLUENT LINES ONLY. NO DROPS ALLOWED FOR FORCE MAINS. DROP BOWL BY RELINER OR APPROVED EQUAL REQUIRED.
2. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.
3. THE EXTERIOR OF THE MANHOLE AND INTERIOR OF ADJUSTMENT RINGS SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.
4. THIS DETAIL FOR 2' OR GREATER ELEVATIONS DIFFERENCE BETWEEN INVERT OF INCOMING PIPE AND ELBOW OUTLET.
5. THE DROP BOWL ASSEMBLY SHALL BE INSTALLED PRIOR TO APPLICATION OF SPECIALTY LINING MATERIAL IN ACCORDANCE WITH AS-602, THEREFORE, BITUMINOUS WATERPROOFING MATERIAL SHALL BE OMITTED FROM THE INSIDE OF MANHOLE. SEE SPECIFICATIONS FOR THE INSTALLATION OF SPECIALTY LINING MATERIAL SECTION 446.
6. ADJUSTABLE CLAMPING BRACKET (MIN. 2 PER DROP BOWL ASSY). 1-1/2" WIDE, 11 GA. W/ 3/8" PINCH BOLTS AND NUTS. SECURE TO M/H WALL WITH (2) 3/8" X 1" BOLT, ANCHOR & WASHER PER BRACKET ASSY. ALL 304 OR 316 STAINLESS STEEL MATERIALS.
7. ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 6" WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.
8. IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24" (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

SANITARY SEWER CONCRETE TYPE "I" MANHOLE
24" - 60" SEWERS
1. **NOTES:**

- **THIS ASSEMBLY IS FOR 8” OR 10” GRAVITY INFLUENT LINES ONLY. NO DROPS ALLOWED FOR FORCE MAINS. DROP BOWL BY RELINER OR APPROVED EQUAL REQUIRED.**

- **THIS DETAIL FOR 2’ OR GREATER ELEVATIONS DIFFERENCE BETWEEN INVERT OF INCOMING PIPE AND ELBOW OUTLET.**

- **ADJUSTABLE CLAMPING BRACKET (MIN. OF 2 REQUIRED, SEE NOTE #4) 1-1/2” WIDE, 11 GA. W/ 3/8” DIA. 18-8 PINCH BOLTS AND NUTS. SECURE TO M/H WALL WITH (2) 3/8” X 1” BOLT, ANCHOR & WASHER PER BRACKET ASSY. ALL 304 OR 316 STAINLESS STEEL MATERIALS.**

- **ALL M/H JOINTS BELOW THE TOP CONE SECTION SHALL INCLUDE A 18” WIDE (MIN) EXTERIOR JOINT TAPE (W/PRIMER). TAPE ON THE CONE SECTION IS OPTIONAL.**

- **IN SILTS, CLAY OR HIGHLY ORGANIC SOILS (FINE-GRAINED SOILS INCLUDING SOIL GROUPS ML, CL, OL, MH, CH, OH AND PT) THE SOILS SHALL BE OVER-EXCAVATED AN ADDITIONAL 24” (AT A MIN.) AND BACKFILLED WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12” (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).**

**SANITARY SEWER POLYMER TYPE "I" MANHOLE 24" - 60" SEWERS**

**JANUARY 2019**

**PLATE S-13A**
1. **A STANDARD TYPE “A” MANHOLE SHALL INCLUDE A SOLID BOTTOM WITH 3” HOLD DOWN FLANGE.**

2. **CONCRETE BASE TO BE SIZE BY ENGINEER. THE MINIMUM SIZE IS SHOWN ABOVE.**

3. **IF EXPOSED, THE INTERIOR OF CONCRETE ADJUSTING RINGS WILL BE GIVEN 2 COATS OF BITUMINOUS WATERPROOFING MATERIAL.**
NOTES:

1. A STANDARD TYPE "A" MANHOLE SHALL INCLUDE A SOLID BOTTOM WITH 3" HOLD DOWN FLANGE.

2. CONCRETE BASE TO BE SIZE BY ENGINEER. THE MINIMUM SIZE IS SHOWN ABOVE.

POLYMER "DOG HOUSE" MANHOLE

JANUARY 2020

PLATE S-14A
NOTES:
1. AFTER INSTALLING THE BASE POLYMER BASE AND RISER ATTACHED GUIDE AND ADD ADDITIONAL RISERS AS REQUIRED.
2. CONTRACTOR SHALL FOLLOW ALL CONFINED SPACE REGULATIONS AND PROSECUTES.
3. FILL ANNULAR SPACE BETWEEN THE OLD AND NEW MANHOLE WITH "FLOWABLE FILL" AND BACK FILL AS REQUIRED TO EXISTING GRADE.
NOTES:
THE USE OF THE POURED IN PLACE MANHOLE BOTTOM SHALL BE MINIMIZED
AND SHALL BE SPECIFICALLY APPROVED BY JEA PRIOR TO CONSTRUCTION.

SOLID CLASS "C" CONCRETE W/ SOLID FILLER BRICKS ONLY ALLOWED AS FILLER NO RUBBLE.
FILL INTERIOR VOID AREAS W/ EPOXY PACKING GROUT AND COAT WITH APPROVED EPOXY COATING.

GRAVITY SEWER PIPE
PRECAST CONCRETE MANHOLE
6" (TYP)
#4-6" O.C. E.W.
Poured in place 4,000 LB P.S.I. CONCRETE PAD
MANHOLE BOTTOM
DIA OF MANHOLE VARIES
VARIES W/ MANHOLE DIA
GROOVE TO BE FORMED WITH AN ACCURATE BELL RING FORM
POURED IN PLACE
4,000 LB P.S.I. CONCRETE PAD
#4-6" O.C. E.W.
NOTES:
THE USE OF THE POURED IN PLACE MANHOLE BOTTOM SHALL BE MINIMIZED
AND SHALL BE SPECIFICALLY APPROVED BY JEA PRIOR TO CONSTRUCTION.

RUBBER BOOT
FOR NEW M/H CONSTRUCTION ONLY, MAXIMUM DEPTH 15FT

SEAL W/ COAL TAR MASTIC OR PREMOLDED PLASTIC JOINT SEALER (2 PLACES PER JOINT) SEE S-17 FOR DETAILS
8" (MIN) EXTERIOR JOINT TAPE APPLIED OVER PRIMER (TYP)
MANHOLE INVERT
PRECAST MANHOLE BASE
CUT PIPE FLUSH TO EDGE OF INTERIOR WALL
FILL INTERIOR VOID AREAS W/ EPOXY PACKING GROUT AND COAT WITH APPROVED EPOXY COATING
NOTES:
RUBBER BOOT, DOUBLE BANDED, 316 S/S CLAMPS, MEETING THE ASTM C923 STANDARD. Kor-N-Seal® I EX SERIES CONNECTOR WITH DOUBLE STAINLESS STEEL BANDS OR EQUAL.

CONCRETE MANHOLE PIPE CONNECTION DETAIL
JANUARY 2020
PLATE S-15
POLYMER CONCRETE FLOATATION COLLARS

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>MINIMUM BASE EXTENDER (IN)</th>
<th>MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)</th>
<th>MINIMUM BASE EXTENDER (IN)</th>
<th>MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)</th>
<th>MINIMUM BASE EXTENDER (IN)</th>
<th>MINIMUM WEIGHT OF TOTAL STRUCTURE (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>2</td>
<td>7801</td>
<td>1</td>
<td>6101</td>
<td>2</td>
<td>7701</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>10000</td>
<td>3</td>
<td>11500</td>
<td>3</td>
<td>10400</td>
</tr>
<tr>
<td>72</td>
<td>3</td>
<td>16500</td>
<td>3</td>
<td>17300</td>
<td>1</td>
<td>18900</td>
</tr>
<tr>
<td>84</td>
<td>3</td>
<td>24700</td>
<td>3</td>
<td>27000</td>
<td>2</td>
<td>30600</td>
</tr>
<tr>
<td>96</td>
<td>3</td>
<td>35600</td>
<td>3</td>
<td>37600</td>
<td>2</td>
<td>46600</td>
</tr>
</tbody>
</table>

NOTES:
1. BUOYANCY FACTOR OF SAFETY = 1.2
2. ASSUMED LID THICKNESS = 8IN
3. MANHOLES ASSUMED TO BE STRAIGHT WITH NO REDUCER
4. GROUND WATER LEVEL ASSUMED TO BE AT SURFACE

FLOTATION COLLAR

POLYMER MANHOLE BASE
FILL VOID AREAS WITH POLYMER GROUT
MANHOLE INVERT
POLYMER MANHOLE BASE
CUT PIPE Flush TO EDGE OF INTERIOR WALL
FILL INTERIOR VOID AREAS W/ POLYMER PACKING GROUT Flush W/ INSIDE OF MANHOLE
MANHOLE INVERT
FILL ALL LIFTING HOLES W/NON SHRINKING GROUT AND COAT W/ BITUMINOUS WATERPROOFING MATERIAL
FILL ALL EXTERIOR VOIDS AND ENCAPSULATE ALL EXTERIOR PARTS OF THE RUBBER BOOT CREATING A COLLAR W/ NON SHRINK GROUT
GRAVITY SEWER PIPE
SOLID CLASS "C" CONCRETE W/ SOLID FILLER BRICKS ONLY ALLOWED AS FILLER NO RUBBLE
PRECAST CONCRETE MANHOLE
NOTES:
RUBBER BOOT, DOUBLE BANDED, 316 S/S CLAMPS, MEETING THE ASTM C923 STANDARD. Kor-N-Seal® I EX SERIES CONNECTOR WITH DOUBLE STAINLESS STEEL BANDS OR EQUAL.

PVC SAND SLEEVE
(FOR EXISTING AND NEW M/H CONSTRUCTION)

RUBBER BOOT
(FOR NEW M/H CONSTRUCTION ONLY, MAXIMUM DEPTH 15FT)

DIAGRAMS SHOWING
- PVC SAND SLEEVE
- FLOTAION COLLAR
- MANHOLE BOTTOM

NOTES:
- DIA OF MANHOLE VARIES
- VARIES W/ MANHOLE DIA
- REFER TO TABLE

POLYMER MANHOLE PIPE CONNECTION DETAIL
JANUARY 2020
PLATE S-15A
REFER TO S-15 DETAIL

ENCASE CONNECTION IN CONCRETE

NEW PRECAST CONCRETE MANHOLE

CUT PIPE FLUSH TO EDGE OF INTERIOR WALL

MANHOLE INVERT

EXISTING CLAY PIPE WITH LINER

EXISTING FIBERGLASS LINED CLAY PIPE

REPLACE 12" MIN OF CLAY PIPE LEAVING FIBERGLASS LINER EXPOSED

ENCASE CONNECTION IN CONCRETE

PVC PIPE (SDR-26) SECTION 24" LONG TYPICAL

FERNCO BOOT

SEAL ANNULAR SPACE BETWEEN LINER AND HOST PIPE WITH NON-SHRINK GROUT

12" MIN

EXISTING FIBERGLASS LINED CAST IRON PIPE

ENCASE CONNECTION IN CONCRETE

PVC PIPE (SDR-26) SECTION 24" LONG TYPICAL

FERNCO BOOT

12" MIN

NEW PRECAST CONCRETE MANHOLE

CUT PIPE FLUSH TO EDGE OF INTERIOR WALL

MANHOLE INVERT

EXISTING CAST IRON PIPE WITH LINER

MISCELLANEOUS MANHOLE CONNECTIONS

JANUARY 2020

PLATE S-16
MANHOLE JOINT  |  "A"  |  "B"  |  "C"  |  "D"
7° JOINT ANGLE |  53.043  |  52.543  |  51.500  |  52.000

PREMOLDED PLASTIC JOINT SEALER WITH PROTECTIVE WRAPPER TO COVER ENTIRE JOINT AREA (APPLY JOINT SEALER TO TOP AND BOTTOM SURFACES, REMOVE WRAPPER DURING ASSEMBLY)

PREPRIMED JOINT SURFACES

OUTSIDE WALL

INSIDE WALL

EXCESS JOINT SEALER SHALL BE TRIMMED FLUSH TO INSIDE SURFACE

EXTERIOR JOINT SEALANT MEMBRANE (6" MIN) CENTERED ON JOINT

ALL LIFTING HOLES (INSERTS) SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL
48"-72" JOINT DETAIL

BUTYL MASTIC

EXTERIOR JOINT SEALANT MEMBRANE (18" MIN) CENTERED ON JOINT

RUBBER GASKET

THREADING LIFTING INSERT

FRP REBAR (TYP)

REHAB JOINT DETAIL

BUTYL MASTIC

RISER ALIGNMENT GUIDE

OUTSIDE OF MANHOLE

FRP REBAR (TYP)

BUTYL MASTIC

RUBBER GASKET

FRP REBAR (TYP)

84"-144" JOINT DETAIL

EXTERIOR JOINT SEALANT MEMBRANE (18" MIN) CENTERED ON JOINT
NOTE:
ANGLE BETWEEN INFLUENT FORCE MAIN AND GRAVITY EFFLUENT PIPE SHALL BE BETWEEN 135° - 225° UNLESS APPROVED OTHERWISE BY JEA.

MANHOLE FRAME & COVER
FINISHED GRADE
PROVIDE NEW INTERIOR SPECIALTY LINER (PROTECTIVE COATING) AS SPECIFIED IN SECTION 446

FORM CONCRETE CHANNELS TO FORM EASY FLOW CURVES

GRAVITY EFFLUENT
GRAVITY INFLUENT

FORCE MAIN (INFLUENT)

PLAN

FLOW

MANHOLE FRAME & COVER
FINISHED GRADE
GROUT

GATE VALVE (4" MIN) REQUIRED PRIOR TO DROP

FORM CONCRETE CHANNELS TO FORM EASY FLOW CURVES

GRAVITY EFFLUENT

FLOW

TYPICAL FORCE MAIN CONNECTION TO MANHOLE

JANUARY 2020
PLATE S-18
NOTES:

1. TO MARK THE LOCATION OF THE 6" PLUG FOR NEW SERVICE: FOR PROJECTS WHERE NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER IS REQUIRED FOR ALL LATERALS WHICH ARE BEING INSTALL FOR FUTURE USE AT A MAX DEPTH OF 3' AT FINISH GRADE. FOR NEW DEVELOPMENT AREAS WHERE THE SEWER LATERAL IS "NOT IN USE", A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED GREEN) SHALL BE INSTALLED. WHERE REQUIRED BY JEA OR NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER SHALL BE INSTALLED TO MARKER SHALL ALSO BE INSTALLED.

2. THE MINIMUM SIZE OF ALL HOUSE LATERALS SHALL BE 6 INCHES. THE MAXIMUM LENGTH OF A HOUSE LATERAL SHALL BE 60 FEET (LENGTH BETWEEN SEWER MAIN OR MANHOLE TO CUSTOMER'S PROPERTY LINE).

3. NO SEWER SERVICE CONNECTIONS PERMITTED ON GRAVITY SEWER PIPE WHICH ARE 16" AND LARGER.

EXIST. 4" YARD PIPING CONNECTION (TO BE LOCATED PRIOR TO INSTALLING TEE BRANCH). PROVIDE FLEXIBLE ADAPTER COUPLING (FERNCO OR EQUAL).

STANDARD TEE-WYE FITTING (30° MIN., 60° MAX.)

LAY IN UNDISTURBED SOIL

LAY IN COMPACTED SOIL

DEPTH OF CUT (12" MAX, SEE NOTE 6)

WIDTH OF TRENCH (NOTE #3)

6" BEND

6" PIPE MIN. SLOPE 1/8" PER FOOT

PROVIDE 6" PLUG OR CONNECTION TO YARD PIPING

FOR PLAN VIEW SEE S-19

NOTES:

1. TO MARK THE LOCATION OF THE 6" PLUG FOR NEW SERVICE: FOR PROJECTS WHERE NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER IS REQUIRED FOR ALL LATERALS WHICH ARE BEING INSTALL FOR FUTURE USE AT A MAX DEPTH OF 3' AT FINISH GRADE. FOR NEW DEVELOPMENT AREAS WHERE THE SEWER LATERAL IS "NOT IN USE": A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED GREEN) SHALL BE INSTALLED. WHERE REQUIRED BY JEA OR NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER SHALL BE INSTALLED TO MARKER SHALL ALSO BE INSTALLED.

2. THE MINIMUM SIZE OF ALL HOUSE LATERALS SHALL BE 6 INCHES. THE MAXIMUM LENGTH OF A HOUSE LATERAL SHALL BE 60 FEET (LENGTH BETWEEN SEWER MAIN OR MANHOLE TO CUSTOMERS PROPERTY LINE).

3. SEE MEASUREMENT AND PAYMENT SECTION FOR MAXIMUM PAYMENT WIDTHS.


5. UNLESS APPROVED OTHERWISE BY A JEA O&M MANAGER, NO GRAVITY SEWER MAIN WITH SEWER SERVICE LATERALS SHALL BE CONSTRUCTED WITH A "DEPTH OF CUT" GREATER THAN 12 FEET.

6. SEWER SERVICE LATERALS ASSOCIATED WITH GRAVITY SEWER MAINS WHICH ARE DEEPER THAN 12 FEET, MUST BE ROUTED TO A GRAVITY SEWER HIGH-LINE, A MANHOLE OR OTHER JEA APPROVED METHOD.

7. THE SEWER SERVICE LATERAL SHALL BE CONSTRUCTED AT A DEPTH TO ALLOW A GRAVITY CONNECTION BY THE CUSTOMER, WHERE POSSIBLE (CONTINGENT UPON MEETING THE CUSTOMER'S ON-SITE CONDITIONS AND LOCAL CONSTRUCTION STANDARDS). A LATERAL REQUIRING MORE THAN 60" OF COVER MUST BE APPROVED, PRIOR TO CONSTRUCTION, BY JEA.

HOUSE LATERAL - SECTION VIEW

JANUARY 2020

PLATE S-20
<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>
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</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 S-21
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. L4 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"
COMMON SANITARY STUB-OUT ALONG CONTINUOUS RIGHT-OF-WAY

EXISTING JEA SANITARY FORCE MAIN (GREATER THAN 12 INCH)

JEA APPROVED TAPPING SLEEVE AND VALVE. (4" OR AS SPECIFIED BY JEA)

4" PLUG

FORCE MAIN SERVICE STUB FOR 16" AND LARGER PIPING

FORCE MAIN SIZE | DISTANCE BETWEEN TAPS
-----------------|---------------------
16"              | 300LF               
20"              | 500LF               
24"              | 1000LF              
30"              | 1000LF              

SANITARY FORCE MAIN CONNECTION FOR 16" AND LARGER PIPING FOR PRIVATE PUMPING STATIONS

JANUARY 2020

PLATE S-22
NOTES:
1. ALTERNATE GRADIENT FOR 6 INCH LATERAL SEWERS AT CONFLICTS WITH EXISTING UTILITIES.
2. FLATTER SLOPES MUST BE PRE-APPROVED BY JEA O&M MANAGER (ONLY) PRIOR TO CONSTRUCTION.

HOUSE LATERAL OVER CONFLICT PIPE

JANUARY 2020
PLATE S-23
NOTES:

1. ALTERNATE GRADIENT FOR 6 INCH LATERAL SEWERS AT CONFLICTS WITH EXISTING UTILITIES.

2. FLATTER SLOPE MUST BE PRE-APPROVED BY JEA O&M MANAGER (ONLY) PRIOR TO CONSTRUCTION.


HOUSE LATERAL UNDER CONFLICT PIPE

JANUARY 2020

PLATE S-24
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>
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<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>36</td>
<td>42</td>
<td>48</td>
<td>54</td>
<td>60</td>
<td>66</td>
</tr>
<tr>
<td>WALL THICKNESS RAILROAD-(FEC)</td>
<td>0.25</td>
<td>1.25</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.50</td>
<td>0.50</td>
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<td>0.688</td>
<td>0.781</td>
<td>0.781</td>
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<tr>
<td>WALL THICKNESS RAILROAD-(CSX)</td>
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<td>0.375</td>
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<td>0.469</td>
<td>0.469</td>
<td>0.562</td>
<td>0.625</td>
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<td>0.688</td>
<td>0.781</td>
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<td>WALL THICKNESS DOT</td>
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<td>0.25</td>
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<td>0.312</td>
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<td>0.312</td>
<td>0.375</td>
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<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
<td></td>
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<tr>
<td>NUMBER OF TIE RODS (EACH END)</td>
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<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>TIE ROD SIZE (DIA.)</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>3/4”</td>
<td>1”</td>
<td>1”</td>
<td>1 1/4”</td>
<td>1 1/4”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 CARRIERS 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".

TYPICAL CASING DETAIL - SEWER

JANUARY 2020

PLATE S-25
NOTES

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 CARRIERS 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”.

SECTION "A-A"

<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>
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<td>CASING PIPE NOM. DIA. (D₂)</td>
<td>14</td>
<td>16</td>
<td>20</td>
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<td>1 1/4&quot;</td>
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</table>

NOTES

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 CARRIERS 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”.

SECTION "B-B"

| STEEL CASING PIPE, FERGUSON WORKS MATERIAL OR EQUAL |
| CASING SPACERS TYP | PROVIDE COLD ROLLED STEEL TIE RODS FROM THE END OF THE STEEL CASING PIPE TO THE FIRST JOINT OF PIPE OUTSIDE THE CASING. THE RODS ARE TO BE WELDED TO THE CASING AND CONNECTED TO A BELL TYPE CLAMP ON THE PIPE. (TYPICAL EACH SIDE). SEE TABLE BELOW FOR THE MINIMUM NUMBER OF TIE RODS REQUIRED AT EACH END, TIE ROD SIZE AND QUANTITY. |
| CASING SPACER 2 OR 3 REQUIRED PER JOINT OF PIPE SEE ABOVE |
| ANNULAR SPACE SHALL REMAIN EMPTY. SEAL BOTH ENDS WITH 12" (RR) OR 8" (DOT) THICK CLASS "C" CONCRETE PLUGS (SEE SPECS) |

SECTION "C-C"

| MATERIAL: PIPE - ASTM A53, GRADE B, ERW, STD WALL, CARBON STEEL |
| WELDS PLATE - STM A36, GRADE B, CARBON STEEL (THICKNESS AS NOTED) ALL WELDS SHALL BE PERFORMED BY A CERTIFIED WELDER |
| LININGS/COATINGS: INTERIOR - BARE EXTerior - BARE |

PIPEC MAIN FOR CROSSINGS USING SPLIT CASING PIPE

NOT ALLOWED UNDER RAILROADS

TYPICAL SPLIT CASING DETAIL - SEWER

JANUARY 2020

PLATE S-25A
## HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS

### PROPOSED UTILITY

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<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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<tbody>
<tr>
<td></td>
<td>HORIZ.</td>
<td>VERT.</td>
<td>JOINT SPACING*</td>
<td>HORIZ.</td>
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<td>3'</td>
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<td>VACUUM SEWERS</td>
<td>3' to 10'</td>
<td>12&quot;</td>
<td>3' NOTE 2</td>
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<td>RIGHT OF WAYS</td>
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<td>PERMANENT STRUCTURES (BUILDINGS, SIGNS, POLES, ETC.)</td>
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<td>STORM SEWERS</td>
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<td>TREES</td>
<td>3'-6&quot;</td>
<td>NOTE 6</td>
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<td>ALL OTHER UTILITIES</td>
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<td>NOTE 1</td>
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<td>3'</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 SECTION 429, III.4.3.

7. REFER TO SECTION 429, III.4.2 FOR MINIMUM SEPARATION REQUIREMENTS FROM PIPE TO STRUCTURES.
WATER MAIN AND NON-WATER MAIN SEPARATION REQUIREMENTS - NOTES

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 OR STORM SEWER 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 AT 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; 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.
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.
NOTES:


2. THE CONCRETE MANHOLE SHALL INCLUDE A POLYURETHANE SPECIALTY LINER (PER SPEC SECTION 446) TO BE INSTALLED ON THE INTERIOR SURFACES INCLUDING THE RISER SECTION TOP AND THE ADJUSTMENT RINGS. A BITUMINOUS WATERPROOFING MATERIAL SHALL BE PROVIDED ON THE OUTSIDE SURFACES OF THE MANHOLE.

3. FRAME AND COVER SHALL BE JEA STANDARD. THE COVER SHALL HAVE NO GASKET TO ALLOW AIR TO EXIT VAULT (REMOVE GASKET IF NECESSARY FROM THE UNDER SIDE OF STANDARD JEA COVER). THE COVER (WHEN FLIPPED OPEN) MUST CLEAR THE AIR VALVE ASSEMBLY AT ALL TIMES OR A SQUARE TOP WITH ALUMINUM DOOR SHALL BE PROVIDED (NON-TRAFFIC LOCATIONS ONLY).

4. FOR PIPE SIZES 3 INCH AND SMALLER, PROVIDE A STAINLESS STEEL BALL VALVE (2" MIN). FOR PIPE SIZES 4 INCH AND LARGER, PROVIDE A FLANGE GATE VALVE (WHEEL OPERATOR) OR PLUG VALVE. (LEVER ARM OPERATOR) SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

5. FOR A 2" AIR VALVE, PROVIDE A 2" STAINLESS STEEL BALL VALVE AT THE MAIN. FOR AIR VALVES LARGER THAN 2" SIZE, PROVIDE A TAPPING SLEEVE OR DUCTILE IRON TEE FITTING. ALSO, FOR OFF-SET PIPING LARGER THAN 2 INCH SIZE, PROVIDE A GATE VALVE (INSTALLED VERTICALLY NEAR MAIN), SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

6. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE.
NOTES:
2. THE CONCRETE MANHOLE SHALL INCLUDE A POLYURETHANE SPECIALTY LINER (PER SPEC SECTION 446) TO BE INSTALLED ON THE INTERIOR SURFACES INCLUDING THE RISER SECTION TOP AND THE ADJUSTMENT RINGS. A BITUMINOUS WATERPROOFING MATERIAL SHALL BE PROVIDED ON THE OUTSIDE SURFACES OF THE MANHOLE.
3. FRAME AND COVER SHALL BE JEA STANDARD. THE COVER SHALL HAVE NO GASKET TO ALLOW AIR TO EXIT VAULT (REMOVE GASKET IF NECESSARY FROM THE UNDER SIDE OF STANDARD JEA COVER). THE COVER (WHEN FLIPPED OPEN) MUST CLEAR THE AIR VALVE ASSEMBLY AT ALL TIMES OR A SQUARE TOP WITH ALUMINUM DOOR SHALL BE PROVIDED (NON-TRAFFIC LOCATIONS ONLY).
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6. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE.

OPTIONAL LOW PROFILE
AIR VALVE ASSEMBLY INSIDE MANHOLE

JANUARY 2020
NOTES:

1. THE AIR ASSEMBLY MANHOLE SHALL BE LOCATED OUTSIDE OF THE ROADWAY PAVEMENT AREA (I.E. LOCATED IN NON-TRAFFIC AREAS).

2. THE CONCRETE MANHOLE SHALL INCLUDE A POLYURETHANE SPECIALTY LINER (PER SPEC SECTION 446) TO BE INSTALLED ON THE INTERIOR SURFACES INCLUDING THE RISER SECTION TOP AND THE ADJUSTMENT RINGS. A BITUMINOUS WATERPROOFING MATERIAL SHALL BE PROVIDED ON THE OUTSIDE SURFACES OF THE MANHOLE.

3. FRAME AND COVER SHALL BE JEA STANDARD. THE COVER SHALL HAVE NO GASKET TO ALLOW AIR TO EXIT VAULT (REMOVE GASKET IF NECESSARY FROM THE UNDER SIDE OF STANDARD JEA COVER). THE COVER (WHEN FLIPPED OPEN) MUST CLEAR THE AIR VALVE ASSEMBLY AT ALL TIMES OR A SQUARE TOP WITH ALUMINUM DOOR SHALL BE PROVIDED (NON-TRAFFIC LOCATIONS ONLY).

4. FOR PIPE SIZES 3 INCH AND SMALLER, PROVIDE A STAINLESS STEEL BALL VALVE (2" MIN). FOR PIPE SIZES 4 INCH AND LARGER, PROVIDE A FLANGE GATE VALVE (WHEEL OPERATOR) OR PLUG VALVE. (LEVER ARM OPERATOR) SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

5. FOR A 2" AIR VALVE, PROVIDE 2" STAINLESS STEEL BALL VALVE AT THE MAIN. FOR AIR VALVES LARGER THAN 2" SIZE, PROVIDE A TAPPING SLEEVE OR DUCTILE IRON TEE FITTING. ALSO, FOR OFF-SET PIPING LARGER THAN 2 INCH SIZE, PROVIDE A GATE VALVE (INSTALLED VERTICALLY NEAR MAIN). SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

6. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE.

AIR VALVE ASSEMBLY INSIDE MANHOLE IN ROW

JANUARY 2020

PLATE S-29B
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 S-49).

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


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 "SEWER", VALVE SIZE, DIRECTION AND TURNS TO OPEN & VALVE TYPE. PROVIDE A 3/8" 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 3/8" 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-1404XR FOR SEWER).
HEAVY DUTY RATING

NOTES:

1. PAINT TOP OF THE COVER WITH ENAMEL PAINT (GREEN COLOR).

2. LID WEIGHT: APPROX. 12 LBS.
NOTES:
1. PAINT THE INSIDE OF THE TOP SECTION OF THE BOX WITH GREEN COLOR.
2. HEAVY DUTY RATING (TOTAL WEIGHT APPROX. 50 LBS.).
3. REFERENCE SECTION 430, PARAGRAPH VI.2.

SEWER SYSTEM VALVE BOX

JANUARY 2020

PLATE S-32
WEARING SURFACE (IF REQ.)
VALVE BOX & COVER,
SET TOP MAX 1/8" BELOW
EXISTING PAVEMENT
ASPHALT
(FULL DEPTH)
24" DIA. CUTOUT (MIN). FILL WITH ASPHALT
(FULL DEPTH) 1/2 INCH ABOVE TOP OF NEW
PAVEMENT

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.

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

SEWER VALVE JACKET ADJUSTMENT AFTER
ROADWAY RE-SURFACING

JANUARY 2020
PLATE S-33
WEARING SURFACE (IF REQ.)

MANHOLE FRAME & COVER, SET COVER TO MATCH FINISHED GRADE (MAX 1/8" BELOW TOP SURFACE)

EXISTING PAVEMENT

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

JEA MANHOLE FRAME AND COVER

WEARING SURFACE (IF REQ.)

EXISTING PAVEMENT

GROUTED IN PLACE CONCRETE — ADJUSTMENT RINGS OR BRICKS (TYP) PROVIDE 1/2" THICK MORTAR INTERIOR SURFACE W/BITUMINOUS COATING

FILL WITH ASPHALT (FULL DEPTH) 1/2 INCH ABOVE TOP OF NEW PAVEMENT

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.

MANHOLE FRAME AND COVER ADJUSTMENT AFTER ROADWAY RE-SURFACING

JANUARY 2020
CROSS-SECTION

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</tr>
<tr>
<td>S</td>
<td>19.71&quot;</td>
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<td>21.39&quot;</td>
<td>23.07&quot;</td>
<td>23.91&quot;</td>
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<td>27.26&quot;</td>
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</tr>
<tr>
<td>T</td>
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<td>15.91&quot;</td>
<td>17.58&quot;</td>
<td>19.26&quot;</td>
<td>20.94&quot;</td>
</tr>
</tbody>
</table>

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 EMBEDEMENT 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.
POLES TO BE DESIGNED BY ENGINEER FOR LOAD REQUIREMENTS

MATERIAL SCHEDULE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PIPE 4&quot;-14&quot;</th>
<th>PIPE 16&quot;-24&quot;</th>
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<td>A</td>
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<td>12&quot; 25.0</td>
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<td>12&quot; 25.0</td>
</tr>
<tr>
<td>C</td>
<td>12&quot; 25.0</td>
<td>12&quot; 25.0</td>
</tr>
<tr>
<td>D</td>
<td>1/2&quot; U-BOLT</td>
<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>
</tr>
</tbody>
</table>

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 FORCE MAIN

JANUARY 2020
NOTES:

1. FOR PIPE 16" AND LARGER, UTILIZE CHANNEL SIZES AS SCHEDULED ON PLATE S-36, BUT CUSTOMIZE BOLT PATTERN DIMENSIONS TO FIT PIPE SIZE. SEE PLATE S-36 FOR ASSEMBLY LAYOUT.

PIPE SUPPORT DETAILS FOR POLE ASSEMBLY

JANUARY 2020

PLATE S-37
**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, \( L_u \) is the restrained length for the upper (top) level. \( L_l \) 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 (OR-18 & 25 pipe) shall be completed per the manufacturers recommendation, which includes not over tightening the parallel rods/nuts. These nuts should only be snug tight. The home marks on the pipe should always be visible after the restraint is installed. Overhoming the joint may cause a failure at the bell resulting in a service outage.**

---

### PVC Pipe Restraint Joint Schedule

![Image of table](image.png)

**Figure 1: PVC Pipe Restraint Joint Schedule.**

**Figure 2: PVC Pipe Restraint Joint Schedule continued.**

---

**Note:**

- F.O. = Fitting Only

---

**January 2020**

**Plate S-38A**
S-38B
NOT USED
TIE RODS

RESTRAINED BELL JOINT
BELL JOINT TO PLAIN END
W/MECHANICAL RESTRainers

TEE BOLT
RESTRAINED MECHANICAL JOINT
W/MECHANICAL RESTRainers
MECHANICAL JOINT TO PLAIN END

TO BE USED INSTEAD OF TOTAL RESTRAINED LENGTH (OPTIONAL) SIZE

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.

MECHANICAL RESTRAINT DETAILS - I
JANUARY 2020
PLATE S-38C
NOTES:

1. TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL
   BE A TOTAL DISTANCE OF 6 FEET (MIN.). THE PROJECT ENGINEER CAN INCREASE THIS LENGTH TO
   REDUCE THE NUMBER OF RESTRAINTS REQUIRED. ANY CHANGES TO THIS TABLE MUST BE SUBMITTED
   TO JEA FOR APPROVAL.

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.

MECHANICAL RESTRAINT DETAILS - II

JANUARY 2020
CASE "A" CROSSING

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER OR RECLAIMED 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 DETAIL (S-26 & S-27).

3. LOCATING WIRE REQUIRED: SEE DETAIL S-49.

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 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 APPROVED BY JEA.


ADJUSTMENT OVER EXISTING UTILITIES
MECHANICAL RESTRAINTS

JANUARY 2020
PLATE S-39
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 CROSSINGS.

2. FOR OTHER LOCATION LIMITATIONS SEE DETAIL (S-26 & S-27).

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 DETAIL S-49.

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 OVER EXISTING UTILITIES
TIR RODS

JANUARY 2020
PLATE S-40
NOTES:
1. IF EXISTING CONFLICT PIPE IS A WATER OR RECLAIMED 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 DETAIL (S-26 & S-27).
3. LOCATING WIRE REQUIRED: SEE DETAIL S-49.
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 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 APPROVED BY JEA.

ADJUSTMENT UNDER EXISTING UTILITIES MECHANICAL RERAINTS
CASE "B" CROSSING

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER OR RECLAIM 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 DETAIL (S-26 & S-27).

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)
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   - 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 DETAIL S-49.

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 S-42
MECHANICAL JOINT VALVE

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 TIRE RODS

JANUARY 2020

PLATE S-43
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" DIA. MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 10" - 12" DIA. MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 14" - 16" DIA. MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 18" - 20" DIA. MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 24" DIA. MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)
   - 30" - 36" DIA. MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD)
   - 42" - 48" DIA. MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
   - 54" DIA. 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
THRUST BLOCK FOR TEES & PLUGS

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<tr>
<th>SIZE</th>
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<th>S.F. BEARING SURFACE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>4&quot;</td>
<td>16</td>
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<td>6&quot;</td>
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<td>102</td>
</tr>
<tr>
<td>36&quot;</td>
<td>156</td>
<td>104</td>
</tr>
</tbody>
</table>

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. CONCRETE COLLARS WITH TIE RODS MAY BE USED ON DEAD END LINES AT THE CONTRACTOR'S DISCRETION.
7. MAXIMUM TEST PRESSURE TO BE 150 PSI.
NOTES:

1. SEWER PUMP-OUT BOX SHALL BE CONSTRUCTED ON PRIVATE PROPERTY AND LOCATED AT THE R/W LINE. THE PREFERRED CONSTRUCTION LAYOUT IS SHOWN ABOVE.

2. ASSEMBLY TO BE ENCLOSED WITHIN A 48"x48" (MIN) PRECAST CONCRETE BOX WITH OPEN BOTTOM WITH H-20 TRAFFIC LOADING COVER OR TYPE "C" MANHOLE OPEN BOTTOM WITH FRAME AND COVER (NON-JEA LOGO TYPE COVER).

3. A JEA APPROVED GATE VALVE (4" MIN) SHALL BE PROVIDED AT THE R/W LINE FOR ALL FORCE MAIN PIPING WHICH EXCEEDS 15' LINEAR FEET WITHIN THE CITY R/W AREA. THE GATE VALVE AT THE R/W LINE IS NOT REQUIRED WHERE THE CONNECTION (CONNECTION AT JEA MAIN) IS LOCATED ON THE SAME SIDE OF THE STREET AS THE PUMP-OUT BOX (SHORT-SIDE SERVICE) AND CONSIST OF 15 LINEAR FEET OR LESS WITHIN THE CITY R/W AREA.

4. NO CONNECTIONS PERMITTED INTO JEA FORCE MAINS WHICH ARE GREATER THAN 12" WITHOUT PRIOR JEA APPROVAL.

5. QUICK DISCONNECT WITH CAP SHALL BE ALUMINUM AND BE POSITIONED DIRECTLY UNDER MANHOLE LID FOR ACCESS.
CASE "B" CROSSING

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER MAIN OR RECLAIM 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 (S-26 & S-27).

3. LOCATING WIRE REQUIRED: SEE DETAIL S-49.

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 96% 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

| PVC PIPE |
|----------|----------|----------|---------------|
| PIPE SIZE (IN.) | (X) MAX. OFFSET (IN.) | (Y) ANGLE AT ONE BELL | RESULTING RADIUS OF CURVE WITH 20FT LENGTHS |
| 2         | 30       | 7°        | 158 FT       |
| 4         | 10       | 2.4°      | 480 FT       |
| 6         | 10       | 2.4°      | 480 FT       |
| 8         | 10       | 2.4°      | 480 FT       |
| 10        | 10       | 2.4°      | 480 FT       |
| 12        | 8.5      | 2°        | 564 FT       |
| 14 - 24   | 5        | 1.2°      | 960 FT       |
| 30 - 48   | 3.25     | 0.8°      | 1477 FT      |

ADJUSTMENT UNDER EXISTING UTILITIES

PIPE JOINT DEFLECTION

JANUARY 2020

PLATE S - 47
CASE "A" CROSSING

NOTES:

1. IF EXISTING CONFLICT PIPE IS A WATER MAIN OR RECLAIM 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 (S-26 & S-27).

3. LOCATING WIRE REQUIRED: SEE DETAIL S-49.

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 OFFSET AT ONE BELL</th>
<th>RESULTING CURVE WITH 20FT. LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
<td>2°</td>
<td>150 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>
</tbody>
</table>

MAXIMUM ALLOWED OFFSET FOR PIPE BY JOINT DEFLECTION

ADJUSTMENT OVER EXISTING UTILITIES PIPE JOINT DEFLECTION
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 FORCE MAIN BY USE OF DUCT TAPE OR ZIPPER TYPE PLASTIC TIES 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 S-49B. WIRE CONNECTIONS BELOW GROUND (OUTSIDE OF A BOX) SHALL BE AVOIDED.

5. LOCATING WIRE SHALL BE 12 GAUGE COPPER WIRE WITH .03 INCHES (MINIMUM) HDPE INSULATION THICKNESS, 0.141 INCHES (MINIMUM) O.D. RATED BREAK LOAD 250lbs., UF RATED (DIRECT BURIAL), GREEN COLOR. FOR HDD INSTALLATIONS, THE LOCATE WIRE SHALL BE COPPER CODED STEEL AS SPECIFIED IN SPEC. SECTION 750.

6. "X" INDICATES THAT THE WIRES ARE CONNECTED TOGETHER WITH WATERPROOF CONNECTION. (SEE DETAIL W-49B)

7. "O" INDICATES A WIRE PIG-TAIL (24" LONG)

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

9. 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 FORCE MAINS

JANUARY 2020

PLATE S-49
NOTE:
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 S-30).
3. LOCATE WIRE BOX SHALL BE INSTALLED OUTSIDE OF SIDEWALKS, DRIVEWAYS AND PAVEMENT.
4. "W" INDICATES A WIRE PIG-TAIL (4' LONG)
LOCATE WIRE BOX UTILIZING VALVE BOX

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.
LOW PRESSURE SERVICE CONNECTION POINT

L.P. CONNECTION INTO LATERAL

LOW PRESSURE MANIFOLD SYSTEM

NOTES:

1. THIS LOW PRESSURE (LP) SEWER SERVICE ARRANGEMENT IS FOR *SPECIAL CASES ONLY* AND MUST FIRST BE APPROVED BY JEA PRIOR TO DESIGN OR CONSTRUCTION. THIS LOW PRESSURE SEWER MANIFOLD ARRANGEMENT MAY BE UTILIZED TO SERVE UP TO 20 EQUIVALENT RESIDENTIAL UNITS (ERU) AND SHALL BE PERMITTED SIMILAR TO A GRAVITY SEWER MAIN. THIS STANDARD SHALL APPLY TO RESIDENTIAL CUSTOMERS ONLY.

2. RESIDENTIAL PUMP STATION (PS) SHALL BE MAINTAINED BY THE CUSTOMER AND SHALL MEET EPB RULE No.3 (DUVAL COUNTY). THE CUSTOMER IS RESPONSIBLE FOR FINAL PUMP DESIGN AND SELECTION. A CHECK VALVE AND BALL VALVE SHALL BE PROVIDED AT THE PS AND MAINTAINED BY THE CUSTOMER.

3. EACH CUSTOMER SHALL HAVE A SEPARATE "LOW PRESSURE SERVICE CONNECTION POINT" (SEE ABOVE DETAIL). THE CHECK VALVE LOCATED IN THE BOX SHALL DEFINE THE "POINT OF SERVICE". THIS BOX (2" METER BOX WITH PVC PLUG IN TOP) SHALL BE APPROXIMATELY 7 FEET INSIDE THE R/W AND A MINIMUM OF 6 FEET FROM THE WATER METER BOX (IN FRONT OF CUSTOMER HOME).

4. LOW PRESSURE FORCE MAIN DROP CONNECTION AT M/H SHALL INCLUDE A 4" GATE VALVE AND BE IN ACCORDANCE WITH JEA STANDARD PLATE No. S-18. FOR OTHER LOCATION LIMITATIONS SEE DETAIL (W-10 & W-11).

5. ALL PUMP STATIONS, PIPES (W/LOCATE WIRE), VALVES AND FITTINGS WHICH ARE MAINTAINED BY JEA SHALL BE OF JEA APPROVED MATERIALS AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH JEA W&S STANDARD

6. PER DEP RULES AND EPB RULE No.3, A LOW PRESSURE PUMP STATION CONNECTION INTO A JEA FORCE MAIN IS NOT ALLOWED. (NO EXCEPTIONS).

7. AS BUILTS FOR ALL UTILITIES WITHIN THE R/W SHALL BE PROVIDED TO JEA IN ACCORDANCE WITH JEA STANDARDS.

8. LOCATE WIRE IS REQUIRED ALONG THE MAIN PIPING AND SERVICE LATERALS TO THE LAST CUSTOMER CONNECTION BOX. (AS SHOWN IN DETAIL)

9. FOR RESIDENTIAL CUSTOMERS LOCATED IN AREAS OF LOW ELEVATION, THE CUSTOMER MAY BE REQUIRED TO OPERATE AND MAINTAIN A LOW PRESSURE PUMP STATION (SEE NOTE #2) WHICH MAY DISCHARGE INTO A 6 INCH GRAVITY SEWER SERVICE LATERAL. IN THESE CASES, THE CUSTOMER SHALL PROVIDE AND MAINTAIN A 4 INCH CLEAN-OUT LOCATED AT THE CONNECTION POINT AT R/W LINE.

LOW PRESSURE RESIDENTIAL SEWER FORCE MAIN CONNECTIONS

JANUARY 2020
NOTES:

1. THIS STANDARD MAY APPLY TO CONDO'S AND/OR TOWNHOMES WITH PRIVATE LOT LINES LESS THAN 40 FEET WIDE.

2. THE "POINT OF SERVICE" (POS) SHALL BE DEFINED AT THE R/W LINE FOR ALL LATERALS. JEA WILL ONLY BE RESPONSIBLE FOR O&M (EXCLUDING STOPPAGES) BEGINNING AT THE P.O.S. TO THE MAIN (60 FEET MAX). THEREFORE, O&M RESPONSIBILITY BETWEEN THE P.O.S. AND THE CUSTOMER IS BY OTHER (HOME OWNER ASSOCIATION OR OTHER). CUSTOMER WILL CONTINUE TO BE RESPONSIBLE FOR FREE FLOW OF SEWAGE BETWEEN CUSTOMER TO MAIN.

3. SERVICE LATERALS BETWEEN MAIN AND R/W SHALL BE 6" SDR-26 (PVC) AT 1/4" SLOPE, AT A MINIMUM, AND SERVE A MAXIMUM OF 6 HOME UNITS. ENGRAVE AN "S" IN CURB TO SHOW LOCATION OF LATERAL. MANHOLE SHALL BE REQUIRED AT THE MAIN IF THE LATERAL IS LARGER THAN 6 INCH SIZE. LARGER LATERALS SHALL BE SIZED BY DESIGN ENGINEER. ALL PIPING ON PRIVATE PROPERTY SHALL MEET LOCAL PLUMBING CODE REQUIREMENTS AND BE MAINTAINED BY OWNER. ALL CLEANOUTS LOCATED IN PAVED AREAS SHALL BE CAST IRON FRAME AND TOP.
NOTES:

1. AN "S" SHALL BE SCRIBED IN THE CURB (PAINTED GREEN) TO INDICATE LOCATION OF LATERAL AT THE R/W. FOR SEPTIC TANK PHASE-OUT PROJECTS AN ELECTRONIC "SEWER" MARKER IS REQUIRED FOR ALL LATERALS WHICH ARE "NOT IN USE". FOR NEW DEVELOPMENT AREAS WHERE THE SEWER LATERAL IS "NOT IN USE", A LANDSCAPE TIMBER OR 3x3 MIN. P.T. POST (TOP PAINTED GREEN) SHALL BE INSTALLED TO MARK THE LOCATION OF THE 6" PLUG.

2. THE MINIMUM SIZE OF ALL HOUSE LATERALS SHALL BE 6 INCHES AND SHALL BE 6 FEET LONG, AT A MINIMUM. THE MAXIMUM LENGTH OF A HOUSE LATERAL SHALL BE 60 FEET (LENGTH BETWEEN VALVE PIT OR MANHOLE TO CUSTOMERS PROPERTY LINE).

3. LOCATE WIRE SHALL BE INSTALLED ALONG THE 6" GRAVITY SEWER LATERALS BEGINNING INSIDE THE POD (PROVIDE A 2" DIA. x 1/8" THICK BRASS TAG INDICATING THE HOME SERVICE ADDRESS OR APPROVED PROPERTY I.D. (EMBOSSED) AND ATTACH TO THE END OF THE WIRE) TO THE R/W. WIRE END SHALL BE TAPED WATER TIGHT AND SECURED TO THE PIPE, BELOW GROUND. THE END OF THE LOCATE WIRE AT THE R/W DOES NOT HAVE TO BE EXPOSED. LOCATE WIRE SHALL BE 10 GAGE, SINGLE STRAND, UF RATED (DIRECT BURIAL). COPPER WIRE WITH 30 MIL (MIN.) INSULATION WITH EITHER WHITE OR YELLOW COLOR. THE CONTRACTOR SHALL PROVIDE FIELD LOCATE WIRE TESTING AS PART OF THE FINAL PROJECT INSPECTION.

4. REMOVE THE VALVE OUT OF PODS WHICH SERVE NOT IN USE PODS (NO ACTIVE LATERALS) AFTER DRY FIT HAS BEEN CONFIRMED AND PROVIDE 3" PVC SPOON PIECE AS SHOWN ABOVE. FOR THESE CASES, DELIVER THE NEW UNUSED VALVE TO JEA OEM DEPARTMENT FOR FUTURE INSTALLATION.

5. VACUUM SEWER MAINS (PIPE AND FITTINGS) SHALL BE GREEN PVC DR-25 MEETING ASTM D-3139. THE USE OF WYE FITTINGS (PVC OR D.I.P. WITH EPOXY COATINGS) SHALL BE UTILIZED (NO TEE FITTING).

6. VACUUM SEWER (POD) SHALL NOT BE PLACED IN DRIVEWAY, REFERENCE RULES AND REGULATIONS FOR WATER, SEWER AND RECLAIM SERVICES.

SEWER LATERAL VACUUM SYSTEM
PRE-CAST CONCRETE BUILDING FLOOR PLAN

NOTES:
1. THE ELECTRICAL BUILDING SHALL BE A PRECAST CONCRETE BUILDING AS MANUFACTURED BY OLD CASTLE PRECAST, INC. THE BUILDING DIMENSIONS SHALL BE AS REQUIRED TO ACCOMMODATE THE EQUIPMENT FURNISHED BUT NO LESS THAN MINIMUMS INDICATED ABOVE.
2. SEE STRUCTURAL DRAWING FOR FOUNDATION DETAILS.
3. INTERIOR AND EXTERIOR COLORS OF ELECTRICAL BUILDING TO BE SPECIFIED BY JEA PROJECT MANAGER
4. BUILDING SHALL BE EQUIPPED WITH 7'-0" HIGH ALUMINUM DOORS AND DOOR FRAMES, 316 STAINLESS STEEL HARDWARE, AND JEA STANDARD DOOR LOCKSETS AND KEYS.
5. BUILDING INTERIOR SHALL BE SEALED AND PAINT FINISHED. BUILDING FLOOR SHALL BE SLIP RESISTANT GRAY AND WALLS & CEILINGS SHALL BE PAINTED WHITE.
6. BUILDING EXTERIOR SHALL HAVE TWO APPLICATIONS OF THOROSEAL FINISHED WITH ONE EXPOSED OF THOROCOAT PAINT.

PRECAST CONCRETE ELECTRICAL BUILDING GENERAL DESCRIPTION AND RATINGS:

STRUCTURAL:
OUTSIDE DIMENSION: 28'-0" LONG x 11'-8" WIDE x 10'-5" HIGH
FLOOR LOAD RATING: 250 PSF ROOF LOAD RATING: 65 PSF
WIND LOAD RATING: 150 MPH, EXP "C"
SEISMIC ZONE: ZONE 4
TIE DOWN KIT: BRACKETS AND BOLTS PROVIDED BY MANUFACTURER AS REQUIRED BY WIND LOAD
FINISHES:
EXTERIOR WALLS: EXPOSED AGGREGATE
INTERIOR WALLS: 1/8" FRP MOUNTED ON 1/2" PLYWOOD. WHITE PAINT
INSULATION: MIN R-15 ON WALLS AND R-22 ON CEILING FLOOR, PREPARED, PRIMED AND FINISHED. SLIP RESISTANT GRAY
COLOR ROOFING: WHITE ELASTOMERIC COATING. SLOPED SO CENTER RIDGE LINE IS AT LEAST ONE INCH ABOVE SIDES

DOORS AND OPENINGS:
DOORS: SEE FLOOR PLAN. 1 3/4" THICK ALUMINUM
LOCKS: JEA STANDARD LOCKSETS, INTERIOR PANIC BARS
HARDWARE: ALL HARDWARE AND WEATHER STRIP SHALL BE 316 STAINLESS STEEL
DOOR HOOD: DOOR DRIP CAPS - 2.5" WIDE
FLOOR: PREPARED, PRIMED AND FINISHED SLIP RESISTANT GRAY COLOR
OPENINGS: FLOOR AND WALL BLOCK-OUTS PER FLOOR PLAN
OVERALL BUILDING HEIGHT = 11'-3"

OVERALL ROOF LENGTH = 28'-4"

OVERALL SHELTER LENGTH = 28'-0"

SEE PLATE 53A FOR PLAN AND NOTES

PREFABRICATED CONCRETE ENCLOSURE

JANUARY 2020
SEE PLATE 53A FOR PLAN AND NOTES

OVERALL ROOF WIDTH = 12'-0"
OVERALL SHELTER WIDTH = 11'-8"

PREFABRICATED CONCRETE ENCLOSURE

JANUARY 2020
PLATE S-53C
SWABBING PORT AND CLEAN OUT VAULT DETAIL-SECTION

JANUARY 2020  PLATE S-54
SWABBING PORT AND CLEAN OUT VAULT
DETAIL-PLAN

JANUARY 2020

PLATE S-54A
SWABBING LAUNCHING STATION DETAIL FOR NEW FORCE MAIN UP TO 24"

JANUARY 2020

PLATE S-54B
NOTES:
1. FOR HOT TAP CONNECTIONS ON EXISTING FORCE MAINS 10" DIAMETER AND GREATER, DIAMETER OF TAPPING VALVE AND PIG LAUNCHING PIPE SHALL BE ONE NOMINAL SIZE LESS THAN EXISTING FORCE MAIN.
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.

RETROFIT SWABBING LAUNCHING STATION
DETAIL FOR FORCE MAINS UP TO 24" - SECTION
NOTES:

SOLID CLASS "C" CONCRETE W/SOLID

REMOVE WRAPPER DURING
PREMOLDED PLASTIC JOINT
SEALER TO TOP AND
SEALER WITH PROTECTIVE
JOINT AREA (APPLY JOINT
WRAPPER TO COVER ENTIRE
MANHOLE INVERT
BASE INSIDE WALL
FLUSH TO INSIDE
EXCESS JOINT SEALER
SURFACE

PREMOLDED PLASTIC JOINT
SEAL W/ COAL TAR MASTIC OR
6" (MIN) EXTERIOR JOINT TAPE

JANUARY 2020

PVC SAND SLEEVE

NOTES:

THE USE OF THE POURED IN PLACE MANHOLE BOTTOM SHALL BE MINIMIZED
AND SHALL BE SPECIFICALLY APPROVED BY JEA PRIOR TO CONSTRUCTION.

PRECAST SEWER MANHOLE JOINT DETAIL

COMPLETED JOINT DETAIL

PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M.

2. THE INTERIOR AND EXTERIOR OF MANHOLE AND INTERIOR OF ADJUSTMENT RINGS SHALL BE GIVEN TWO COAT
(MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE). WITH AASHTO CLASS A-3 SOIL (COMPACTED TO 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12"

PLATE S-15

PLATE S-17

PLATE S-5

PLATE S-6

SANITARY SEWER TYPE "C" MANHOLE
8"-21" SEwers

JANUARY 2020

JANUARY 2020

JANUARY 2020

JANUARY 2020

JEAs Standard:
Sanitary Sewer Details

AS-STD-1

DESIGN ENGINEER

CHECKED BY:

DATE:

NO. SHEETS

SHEET NO.

PAGE: 1 OF 1
**PVC PIPE RESTRAINT NOTES:**

1. **UPPER (TOP) LEVEL.** In the RESTRAINED LENGTH for the LOWER (DEEPER) BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING. ONLY BE SNUG TIGHT. THE HOME MARKS ON THE PIPE SHOULD ALWAYS BE VISIBLE.

2. **VERTICAL OFFSETS.** ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET.

3. **GENERAL NOTE:** PVC PIPE RESTRAINT JOINT SCHEDULE

   **PLAIN END P.V.C.**
   
   PAY ITEM "**" DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE. PAY ITEM "*" DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIC.

   REDUCE THE NUMBER OF RESTRAINTS REQUIRED. ANY CHANGES TO THIS TABLE MUST BE SUBMITTED TO JEA FOR APPROVAL.

   **ASSUMPTIONS:** PVC PIPE, SAFETY FACTOR = 1.5, TEST PRESSURE = 150 PSI, SOIL = GM OR JANUARY 2020.

   **DATE:** JANUARY 2020

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### PVC PIPE RESTRAINT JOINT SCHEDULE

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### MECHANICAL RESTRAINT DETAILS - I

**GENERAL NOTE:**

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

**DATE:** JANUARY 2020

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### MECHANICAL RESTRAINT DETAILS - II

**DATE:** JANUARY 2020
LOCATE WIRE CONSTRUCTION FOR FORCE MAINS

1. LOCATE WIRE TERRAIN & LOCATE WIRE BOX

2. LOCATE WIRE BOX UTILIZING VALVE BOX

3. LOCATE WIRE BOX UTILIZING METER BOX

4. LOCATE WIRE SYSTEM

5. LOCATE WIRE FOR BRANCH MAIN

6. LOCATE WIRE BOX

NOTE:

1. LOCATE WIRE TO BE INSTALLATION IN THE AREA OF THE VALVE BOX LOCATION WHERE APPROPRIATE (SEE NOTE 2). LOCATE WIRE MUST BE ACCESSIBLE TO PERFORM MAINTENANCE AND ABILITY TO LOCATE WIRE FOR THE SYSTEM. LOCATE WIRE MUST BE ACCESSIBLE TO PERFORM MAINTENANCE.

2. LOCATE WIRE SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX. LOCATE WIRE SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX. LOCATE WIRE SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX.

3. LOCATE WIRE FOR BRANCH MAIN SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX. LOCATE WIRE FOR BRANCH MAIN SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX. LOCATE WIRE FOR BRANCH MAIN SHALL BE CONNECTED TO THE MAIN WIRE AT THE LOCATION OF THE VALVE BOX.

4. LOCATE WIRE BOX shall be placed in a manner that allows easy access for maintenance and repair.

5. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.

6. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.

7. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.

8. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.

9. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.

10. LOCATE WIRE BOX shall be installed in a manner that allows easy access for maintenance and repair.