

**FORCE MAIN DIRECTIONAL DRILL**  
(1+00.00-2+68.52)

H. SCALE: 1" = 10'  
V. SCALE: 1" = 5'

PLANS PREPARED UNDER THE DIRECTION OF:  
ANDREW HOLLEY  
P.E. NUMBER: 76182

REVISIONS:

2022.07.27	REV.	PER CLIENT COMMENT
2022.09.02	REV.	PER AGENCY COMMENT
2022.10.02	REV.	PER AGENCY COMMENT
2023.03.02	REV.	PER AGENCY COMMENT
2023.05.01	REV.	PER AGENCY COMMENT

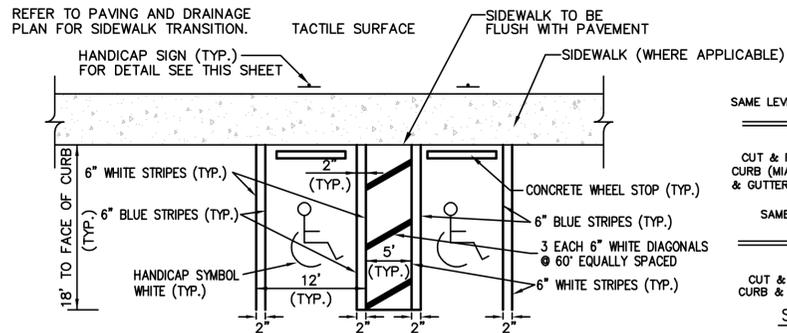
ETM NO. 21-221-01
DRAWN BY: DDS
DESIGNED BY: DDS
CHECKED BY: AAH
DATE: MAY 2022

**England, Thins & Miller, Inc.**  
11000 Highway 19  
Jacksonville, FL 32218  
TEL: (904) 642-8890  
FAX: (904) 642-9485  
REG. #2584 LC 0000316



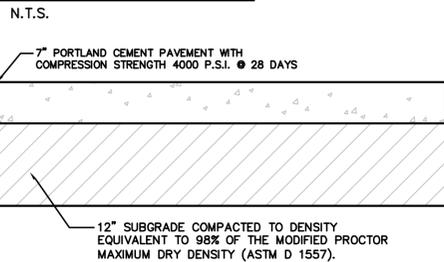
**FORCE MAIN DIRECTIONAL DRILL**  
**LMC EMBLEM AT TRIBUTARY**  
**FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER  
**12**

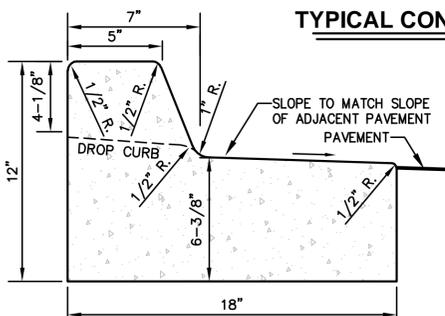


- NOTE:**
- HANDICAP RAMPS, SPACES AND SIGNAGE SHALL MEET AMERICAN NATIONAL STANDARD A117.1 AND ALL APPLICABLE CITY AND STATE REQUIREMENTS.
  - THE CONTRACTOR SHALL INSTALL DETECTABLE WARNING SURFACES IN ACCORDANCE WITH A.D.A. REQUIREMENTS. REFER TO FDOT STANDARD INDEX 522-002 FOR DETECTABLE WARNING PLACEMENT.
  - ALL PAINT AND STRIPING SHALL BE IN ACCORDANCE WITH FDOT INDEX 711-001.

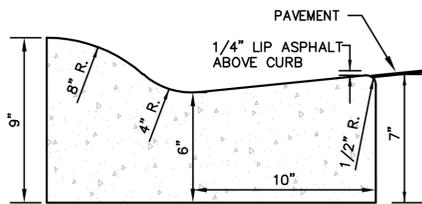
**UNIVERSAL HANDICAP PARKING DETAIL**



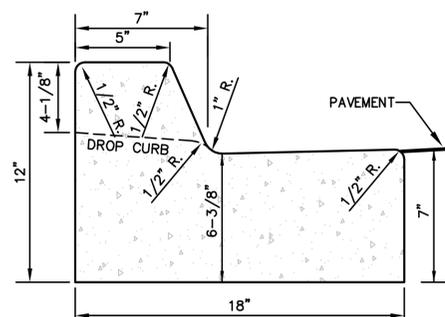
**TYPICAL CONCRETE PAVEMENT SECTION**



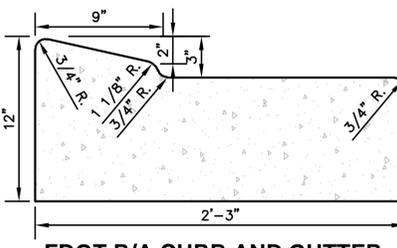
**TYPE "C" CURB AND GUTTER TO BE USED AT ALL MEDIANS**



**MIAMI TYPE CURB AND GUTTER**

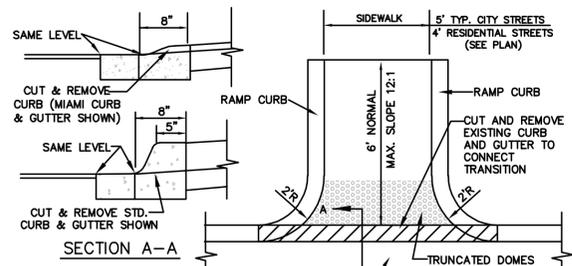


**STANDARD CURB AND GUTTER**



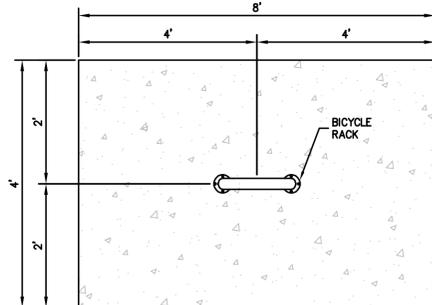
**FDOT R/A CURB AND GUTTER AT CENTER ISLAND ROUNDABOUTS**

- CURB AND CURB & GUTTER NOTES:**
- MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE LATEST FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
  - CONCRETE SHALL BE CLASS 1 CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI UNLESS OTHERWISE APPROVED BY THE ENGINEER OF RECORD.
  - WHEN USED ON THE HIGH SIDE OF ROADWAY SECTIONS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT. WHERE THIS CONDITION IS ENCOUNTERED, THE FRONT FACE VERTICAL DIMENSION SHALL REMAIN AS SHOWN FOR NORMAL SECTIONS SHOWN HEREON.



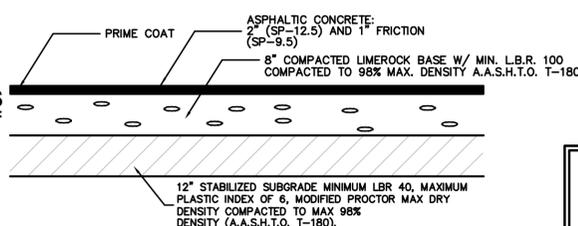
**STANDARD HANDICAP RAMP DETAILS**

- NOTES:**
- HANDICAP RAMPS, SPACES AND SIGNAGE SHALL MEET AMERICAN NATIONAL STANDARD A117.1 AND ALL APPLICABLE CITY AND STATE REQUIREMENTS.
  - THE CONTRACTOR SHALL INSTALL DETECTABLE WARNING SURFACES IN ACCORDANCE WITH A.D.A. REQUIREMENTS. REFER TO FDOT STANDARD INDEX 522-002 FOR FURTHER INFORMATION.



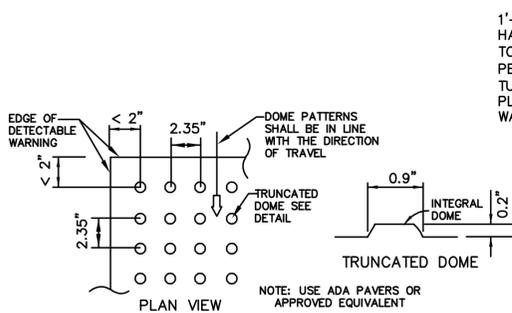
**BICYCLE RACK DETAIL**

- INVERTED "U" SHAPED BICYCLE RACK (OR APPROVED EQUIVALENT) HOT DIPPED GALVANIZED WITH SURFACE MOUNT
- RACK MUST SUPPORT BICYCLE IN TWO PLACES PER COJ LAND DEVELOPMENT CODE SEC. 656.609
- BICYCLE RACKS SHALL BE A MINIMUM OF 3' FROM ANY BUILDING



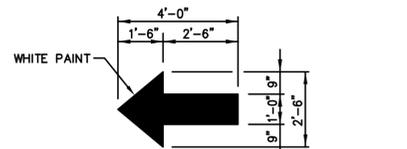
**COUNTY ASPHALT PAVEMENT SECTION**

- NOTES:**
- SOIL ANALYSIS MAY INDICATE THE NEED FOR A THICKER BASE COURSE. THE PAVEMENT THICKNESS MAY BE MODIFIED TO ACCOMMODATE THE BEARING CAPACITY OF VARIOUS SUBGRADES.

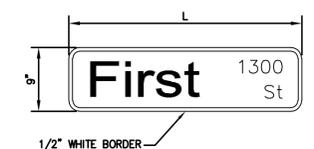


**CURB RAMP DETECTABLE WARNING**

- ALL SIDEWALK CURB RAMPS SHALL HAVE DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24" FROM THE BACK OF CURB



**TYPICAL TRAFFIC ARROW**

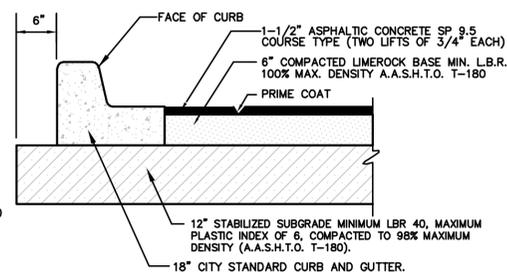


**SHOULDER MOUNTED STREET NAME SIGN DETAILS**

- STREET NAME TO BE: 6" T2000 (SERIES "B" UPPER CASE AND LOWER CASE).
- BLOCK NUMBERS AND RD., ST., AVE. ETC... TO BE: 2.5" SERIES "B" LETTERS UPPER AND LOWER CASE AND NUMBERS.
- ALL SHEETING TO BE GREEN E C FILM COVERED OVER SILVER HIGH INTENSITY GRADE PRISMATIC REFLECTIVE SHEETING.
- SIGN BLANK TO BE .063" THICK ALUMINUM.
- BORDER TO BE 1/2" SILVER HIGH INTENSITY GRADE PRISMATIC REFLECTIVE SHEETING.
- SIGNS TO BE A MINIMUM OF 9"x30" TO A MAXIMUM OF 9"x48". THE SIZE OF THE SIGN SHALL BE INCREASED IN 6" INCREMENTS ONLY.

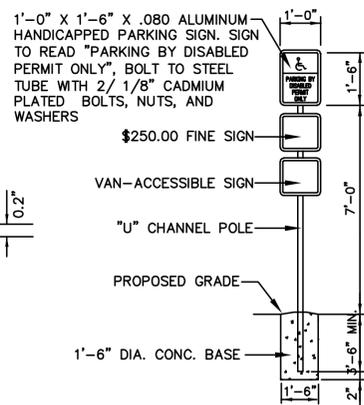
LETTERS	FORCE	BLANK
7 OR LESS	18"	30"
8 TO 10	24"	36"
11 AND OVER	30"	42"

**STREET SIGN DETAIL**



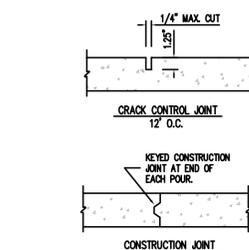
**TYPICAL PAVEMENT SECTION**

- NOTES:**
- ALL DISTURBED AREAS TO BE SEED AND MULCHED
  - SOIL ANALYSIS MAY INDICATE THE NEED FOR THICKER BASE COURSES THAN THOSE HEREIN. THE PAVEMENT THICKNESS SHOWN HEREIN ARE NOT INTENDED TO BE ABSOLUTE, BUT ARE PRELIMINARY CRITERIA AND MAY BE MODIFIED TO ACCOMMODATE THE BEARING CAPACITY OF VARIOUS SUBGRADES.
  - ALL ASPHALTIC CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 331 AND/OR 333, FDOT STANDARD SPECIFICATIONS, LATEST EDITION.
  - CONTRACTOR TO VERIFY PAVEMENT SECTION WITH GEOTECHNICAL REPORT.

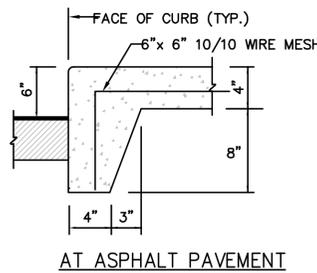


**HANDICAP PARKING SIGN DETAIL**

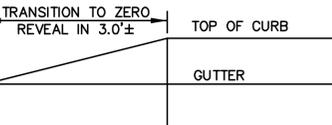
- NOTE:** HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL AND FEDERAL CODES AND REGULATIONS.



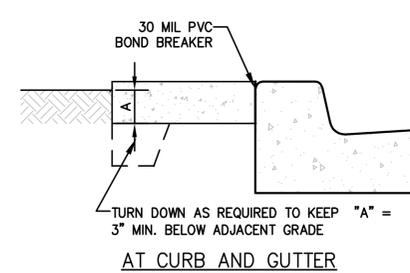
**CONCRETE JOINT DETAIL**



**AT ASPHALT PAVEMENT**



**CURB TRANSITION DETAIL**



**CONCRETE WALK**

- NOTES:**
- CONSTRUCT STRAIGHT JOINTS WITH FACE PERPENDICULAR TO SURFACE OF CONCRETE. TRAVERSE JOINTS SHALL BE AT RIGHT ANGLES TO CENTERLINE UNLESS OTHERWISE INDICATED ON PLANS.
  - PROVIDE EXPANSION JOINTS AT 100' INTERVAL MAXIMUM SPACING ON CENTER.
  - PROVIDE EXPANSION JOINTS FILLER FOR JOINTS ABUTTING CURBS, CATCH BASINS, MANHOLES, INLETS STRUCTURES, WALKS AND OTHER FIXED OBJECTS UNLESS OTHERWISE INDICATED ON PLANS.
  - EXTEND JOINTS FILLER FULL WIDTH AND DEPTH OF JOINT, AND 1/2" BELOW FINISHED SURFACE. PLACE SEALANT OVER JOINT FILLER PER MANUFACTURERS RECOMMENDATIONS.
  - USE PREMOLDED ASPHALT-IMPREGNATED FIBERBOARD, 1/2" THICK CONFORMING TO ASTM D1751. CONTRACTION JOINT SHALL BE SAW CUT (1/4" WIDE BY 1" DEEP).
  - FINISHED SURFACE FOR CONCRETE SIDEWALK SHALL BE GRAY CONCRETE WITH LIGHT BROOM FINISH PERPENDICULAR TO LINE OF TRAFFIC (UNLESS OTHERWISE INDICATED ON PLANS).
  - PROVIDE CRACK CONTROL JOINTS @ (SAME AS WIDTH) O.C.
  - PROVIDE 16" STRIP SOD ADJACENT TO ALL EDGES OF SIDEWALK, CURB AND PAVEMENT AREAS.
  - CONCRETE COMPRESSION STRENGTH 3000 P.S.I. @ 28 DAYS UNLESS OTHERWISE APPROVED BY ENGINEER OF RECORD.
  - SIDEWALK TO BE CONSTRUCTED WITH SLOPES COMPLYING TO WITH LATEST ADA CODE AND FDOT INDEX 522-001. SIDEWALK MAX. VERTICAL SLOPE OF 5.0% AND MAX CROSS SLOPE OF 2.0%.

PLANS PREPARED UNDER THE DIRECTION OF: ANDREW HOLLEY, P.E. NUMBER: 76182

REVISIONS: 2022.07.27-REV. PER CLIENT COMMENT, 2022.09.02-REV. PER AGENCY COMMENT, 2023.03.02-REV. PER AGENCY COMMENT, 2023.05.01-REV. PER AGENCY COMMENT

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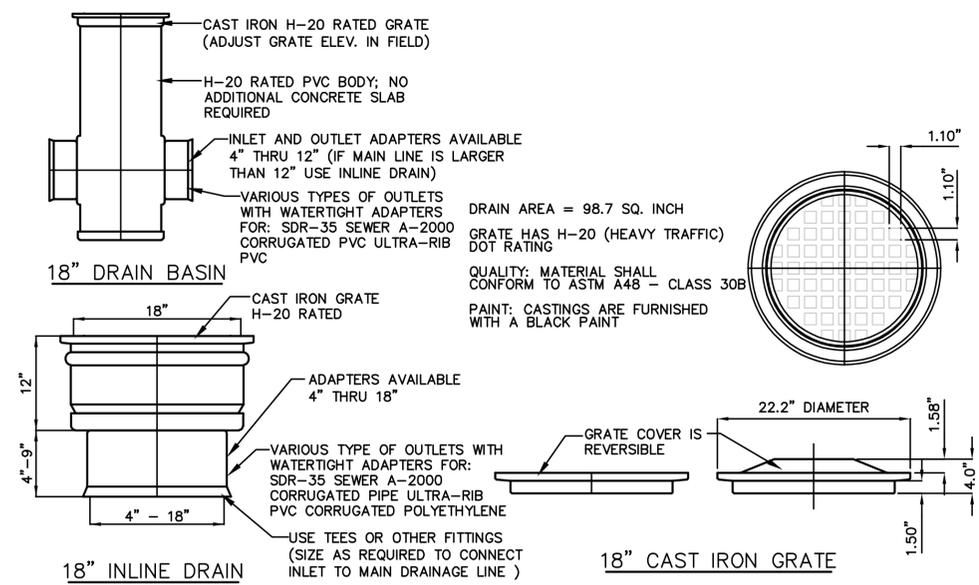
England-Thins & Miller, Inc.  
10000 N. US Highway 1  
Jacksonville, FL 32218  
TEL: (904) 646-9890  
FAX: (904) 646-9885  
REG. #2584 LC-0000316

**ETM**  
VISION • EXPERIENCE • RESULTS

**PAVING AND DRAINAGE DETAILS**  
**LMC EMBLEM AT TRIBUTARY FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER  
**13A**

T:\2021\21-221-01\LandDev\Design\Plas\PDDET-21-221-01.dwg  
PLOTTED: June 1, 2023 - 4:41 PM, BY: Dallas Schrier

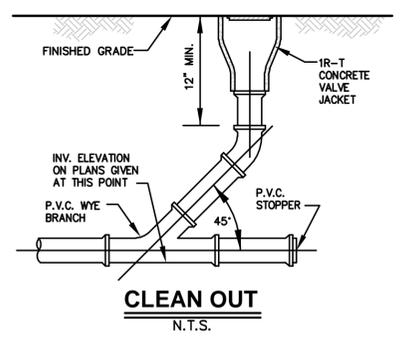


DRAIN AREA = 98.7 SQ. INCH  
 GRATE HAS H-20 (HEAVY TRAFFIC) DOT RATING  
 QUALITY: MATERIAL SHALL CONFORM TO ASTM A48 - CLASS 30B  
 PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

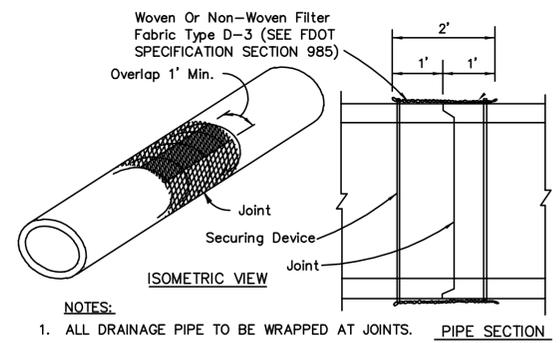
**NOTE:**  
 CONTRACTOR SHALL USE FILTER WRAP AROUND ALL HDPE JOINTS PER MANUFACTURER'S RECOMMENDATIONS

**YARD DRAIN - HDPE STORM SEWER INLETS**

NYLOPLAST OR APPROVED EQUIVALENT  
 N.T.S.

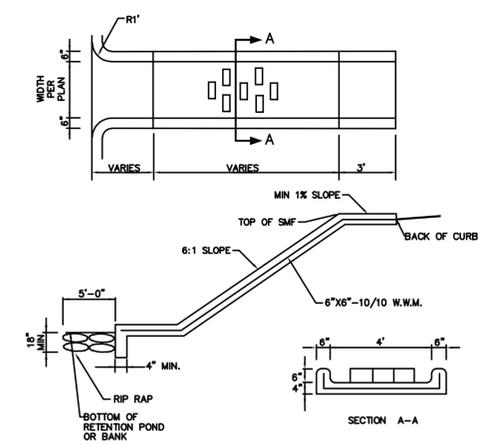


**CLEAN OUT**  
 N.T.S.



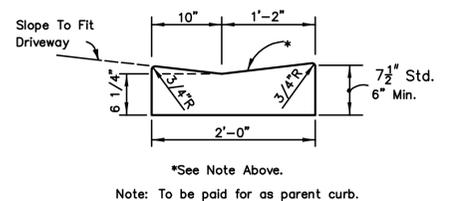
**FILTER FABRIC JACKET**  
 N.T.S.

- NOTES:**
1. ALL DRAINAGE PIPE TO BE WRAPPED AT JOINTS.
  2. COST OF FILTER FABRIC JACKET TO BE INCLUDED IN COST OF PIPE CULVERTS.



**CONCRETE FLUME DETAIL**  
 N.T.S.

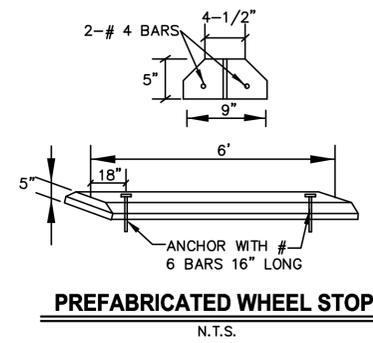
- NOTES:**
1. CONCRETE SPILLWAY TO BE 28 DAY, 2500 P.S.I., 4" THICK.
  2. PLACE SOD AT LEAST 5' AROUND ALL STRUCTURE EDGES ABOVE STANDING WATER.
  3. ALL EXPOSED CORNERS TO BE ROUNDED @ 3/4" MINIMUM RADIUS.



**FDOT TYPE "F" DROP CURB**  
 N.T.S.

\*Note: When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement the thickness of the lip shall be 6", unless otherwise shown on plans

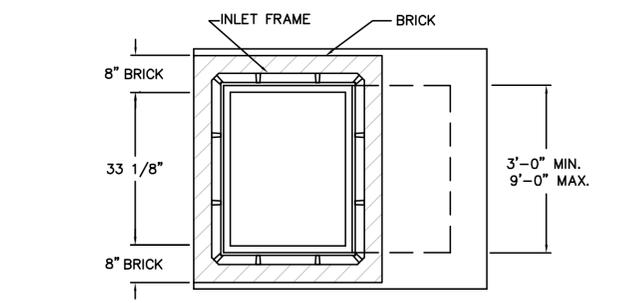
**FDOT TYPE "F" CURB & GUTTER**  
 N.T.S.



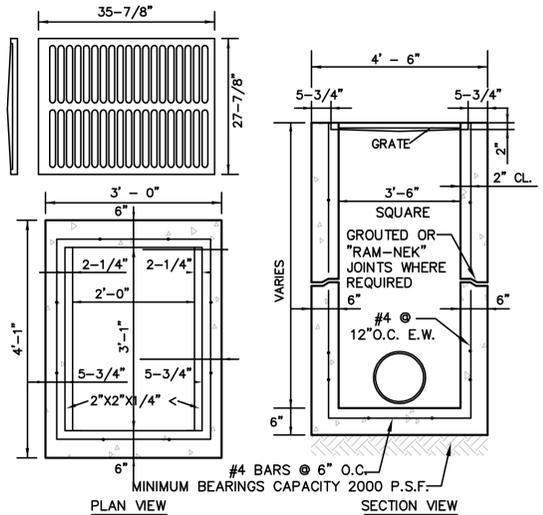
**PREFABRICATED WHEEL STOP**  
 N.T.S.

- NOTES:**
1. TRENCH AND PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 95% MAX. DENSITY (AASHTO T-180).
  2. USE TYPE B BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE COUNTY.
  3. 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
  4. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
  5. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
  6. REFER TO MANUAL FOR SHEETING AND BRACING IN EXCAVATIONS.
  7. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES SURFACE RESTORATION WITHIN COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS

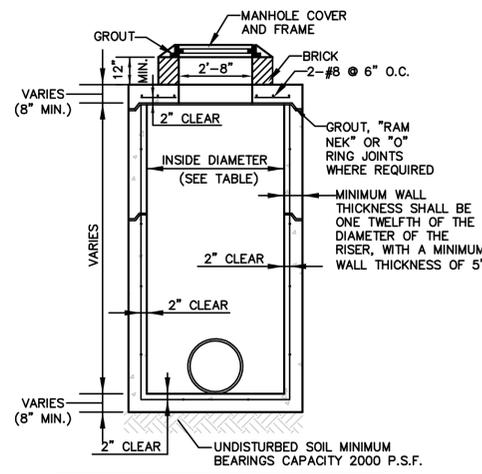
**TYPE B BEDDING AND TRENCH DETAIL**  
 N.T.S.



**STORM SEWER TYPE "B" INLET**  
 N.T.S.



**STORM SEWER TYPE "C" INLET**  
 N.T.S.

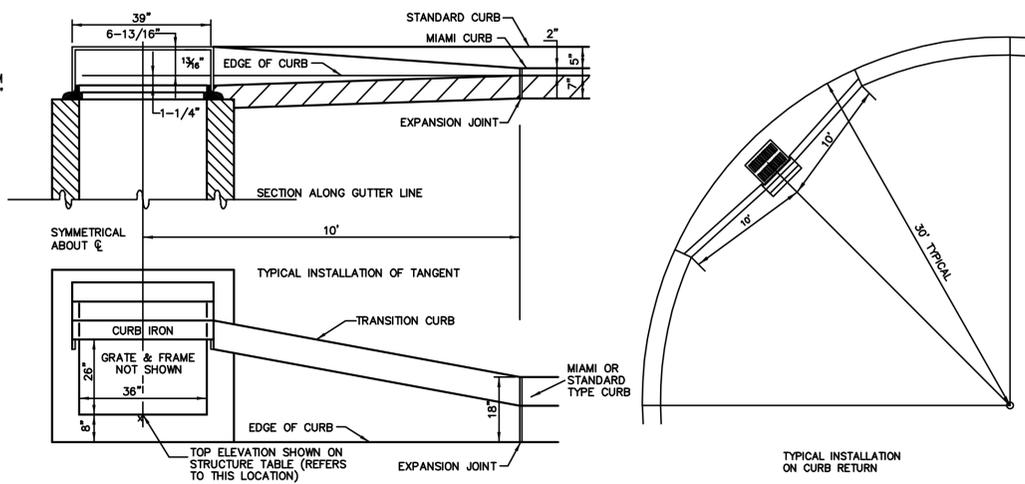


**INSIDE DIAMETER TABLE**

J-1	J-1A	J-1B	J-1C	J-1D	J-1E	J-1F
4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"

- NOTES:**
1. CONCRETE DESIGN STRENGTH 4,000 PSI.
  2. PRECAST IN ACCORDANCE WITH LATEST EDITIONS OF ASTM C 478.
  3. PIPES SHALL BE FLUSH WITH INSIDE WALL.
  4. IN PAVED AREAS FRAME AND GRATE MUST MATCH FINAL ASPHALT AND CROSS-SLOPE.
  5. RING AND COVER SHALL BE TRAFFIC BEARING

**STORM SEWER J-1 MANHOLE**  
 N.T.S.



**RECESSED STORM SEWER CURB INLET**  
 N.T.S.

PLANS PREPARED UNDER THE DIRECTION OF:  
 ANDREW HOLLEY  
 P.E. NUMBER: 76182

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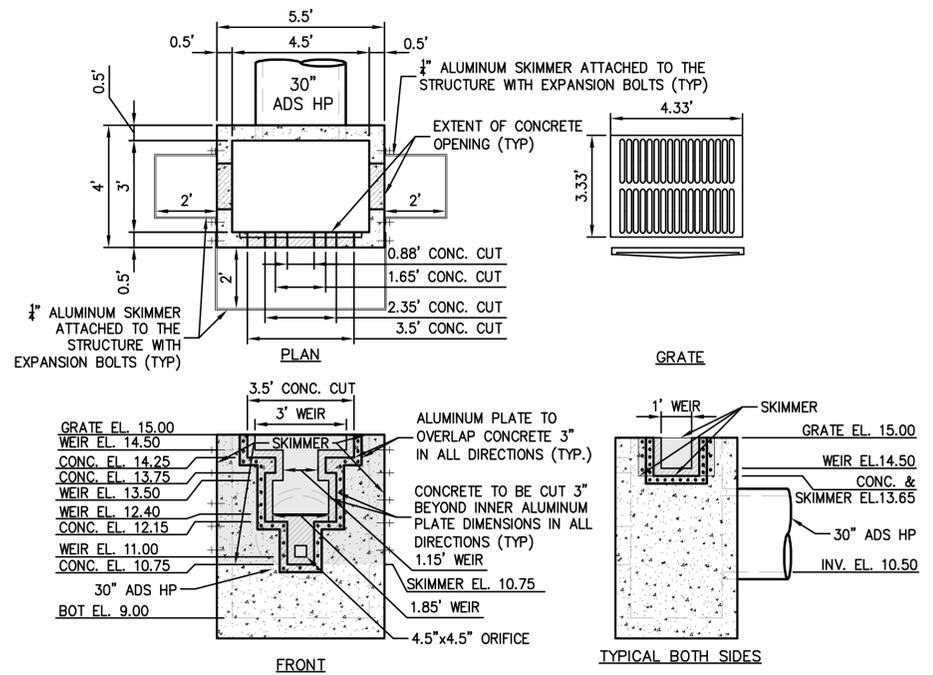
**Englund-Thins & Miller, Inc.**  
 10000 W. Road  
 Jacksonville, FL 32258  
 TEL: (904) 646-8890  
 FAX: (904) 646-9485  
 REG. #2864 LC 0000316

**ETM**  
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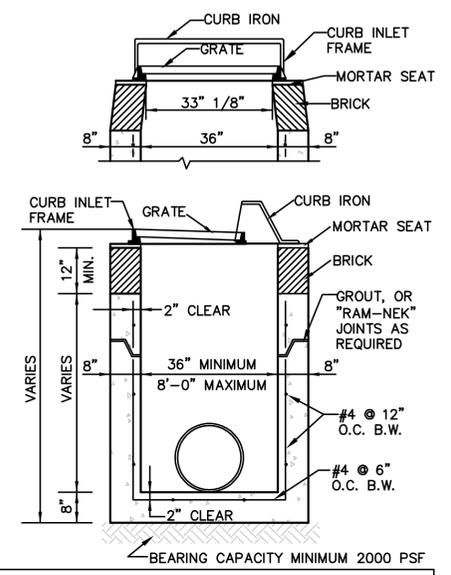
**PAVING AND DRAINAGE DETAILS**  
**LMC EMBLEM AT TRIBUTARY**  
**FOR**  
**LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER  
**13B**

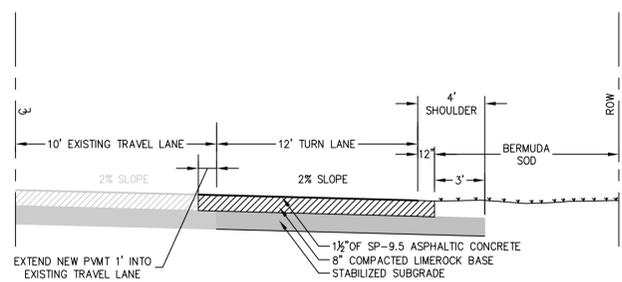
T:\2021\21-221-01\LandDev\Design\Plas\PODET-21-221-01.dwg  
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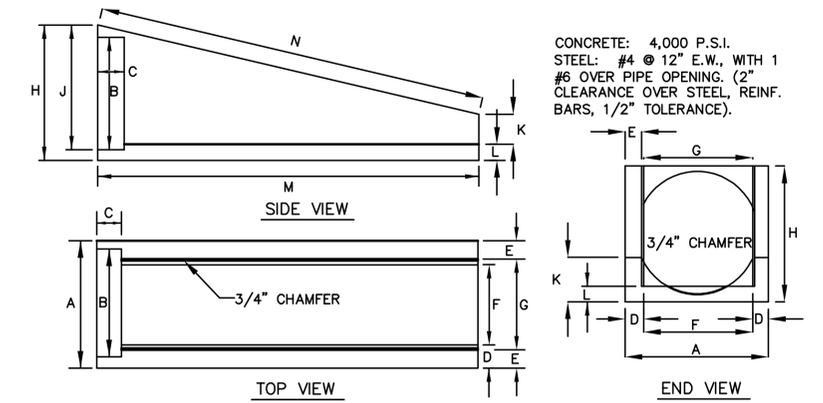
**CONTROL STRUCTURE CS-1 DETAIL  
MOD. TYPE "E" INLET**  
N.T.S.



**TYPE "A" SINGLE CURB INLET**  
N.T.S.

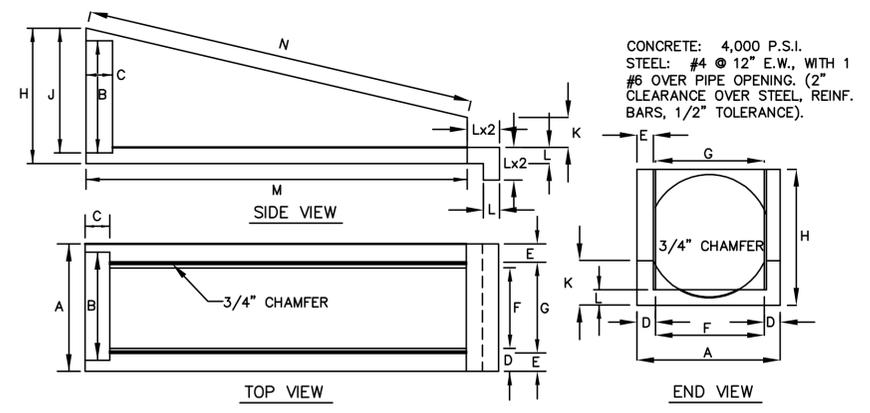


**TYPICAL ROADWAY SECTION @ TURN LANE**  
N.T.S.



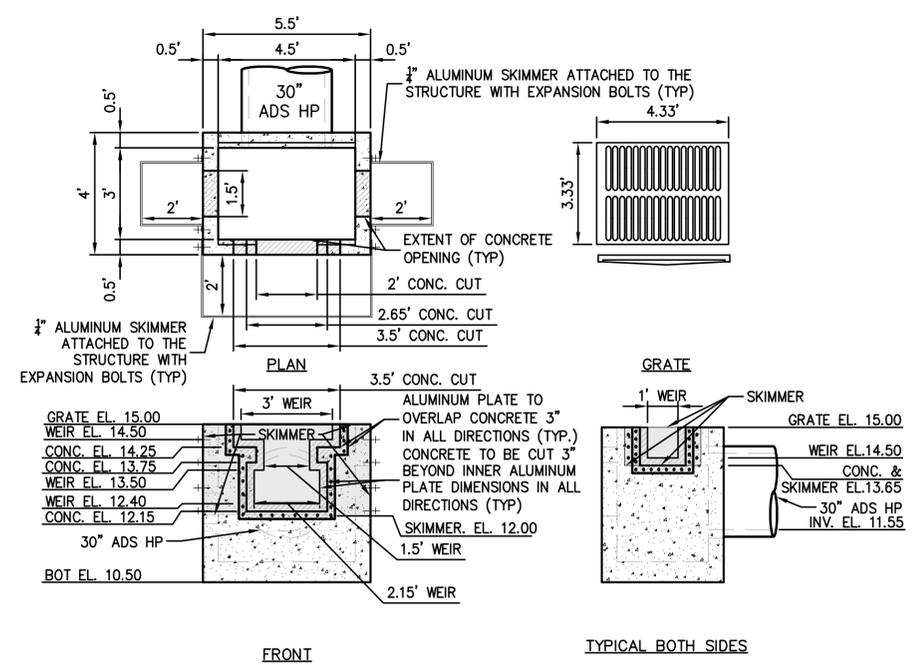
RCP/CMP	A	B	C	D	E	F	G	H	J	K	L	M	N
15" - 18"	2'-7"	2'-1"	6"	6"	6 3/4"	1'-6"	1'-7"	2'-10"	2'-4"	8"	6"	6'-10"	7'-0"
24"	2'-11"	2'-8"	6"	5"	4 1/2"	1'-11"	2'-0"	3'-6"	3'-1"	7 1/2"	5"	10'-0"	10'-3 1/2"
30"	3'-6"	3'-2"	6"	6"	5 1/2"	2'-5"	2'-6 1/2"	3'-9"	3'-5"	7"	5"	11'-5"	11'-8 1/4"
36"	4'-1"	3'-10"	6"	7"	5 1/2"	2'-9"	3'-0"	4'-6"	4'-0"	6"	6"	14'-0"	14'-4 1/2"

**STANDARD MITERED END SECTION**  
N.T.S.



RCP/CMP	A	B	C	D	E	F	G	H	J	K	L	M	N
15" - 18"	2'-7"	2'-1"	6"	6"	6 3/4"	1'-6"	1'-7"	2'-10"	2'-4"	8"	6"	6'-10"	7'-0"
24"	2'-11"	2'-8"	6"	5"	4 1/2"	1'-11"	2'-0"	3'-6"	3'-1"	7 1/2"	5"	10'-0"	10'-3 1/2"
30"	3'-6"	3'-2"	6"	6"	5 1/2"	2'-5"	2'-6 1/2"	3'-9"	3'-5"	7"	5"	11'-5"	11'-8 1/4"
36"	4'-1"	3'-10"	6"	7"	5 1/2"	2'-9"	3'-0"	4'-6"	4'-0"	6"	6"	14'-0"	14'-4 1/2"

**MITERED END SECTION W/ TURNDOWN (WITHIN ROW)**  
N.T.S.



**CONTROL STRUCTURE CS-2 DETAIL  
MOD. TYPE "E" INLET**  
N.T.S.

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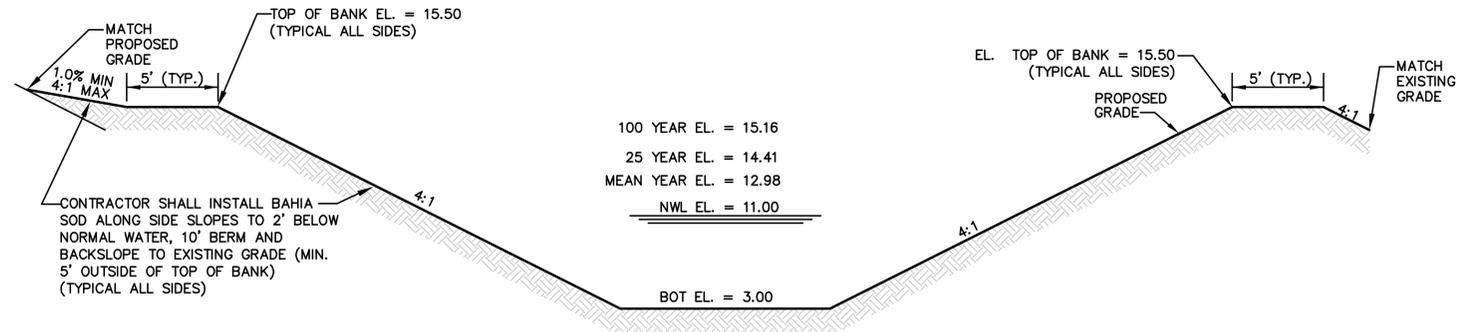
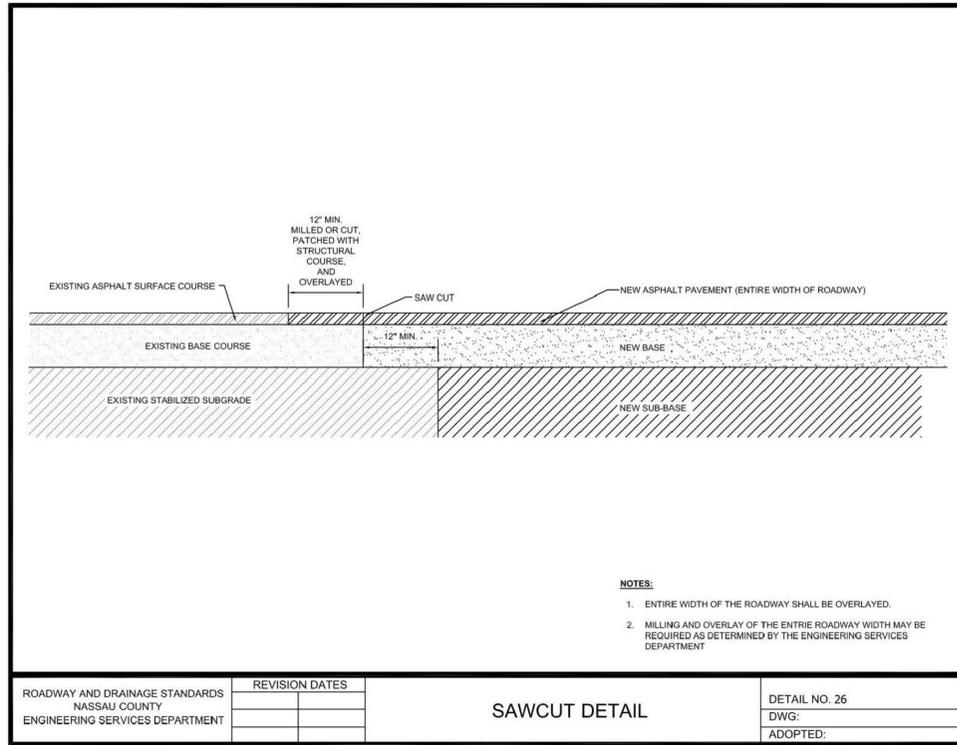
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**PAVING AND DRAINAGE DETAILS**  
**LMC EMBLEM AT TRIBUTARY**  
**FOR**  
**LENNAR MULTIFAMILY COMMUNITIES, LLC**

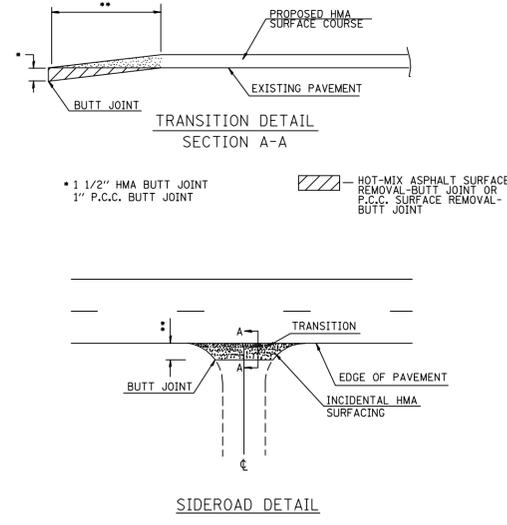
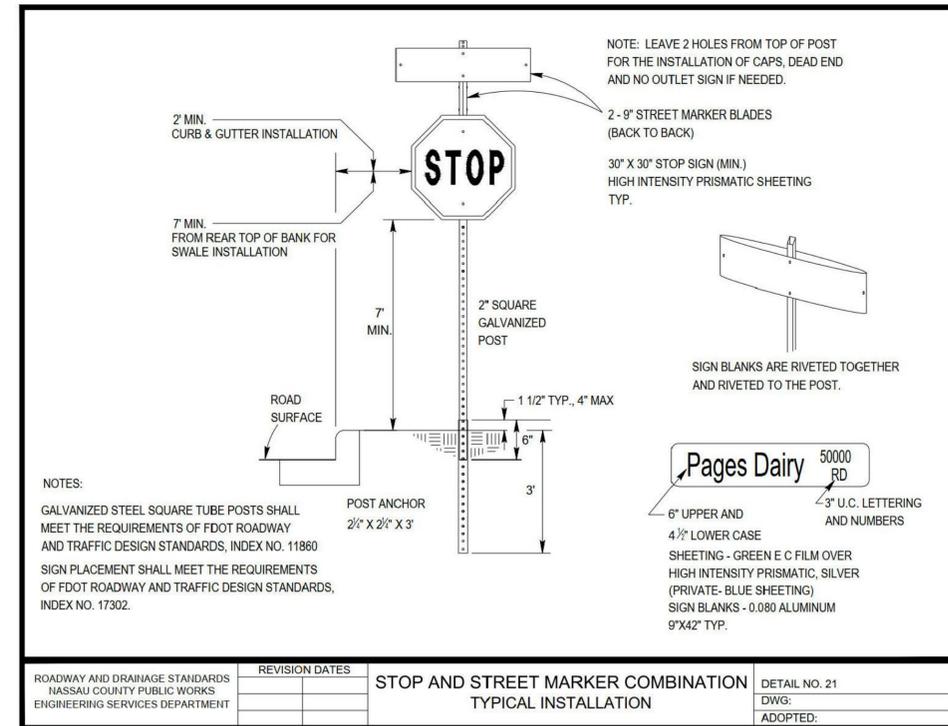
DRAWING NUMBER  
**130**

PLOTTED: June 1, 2023 - 4:41 PM, BY: Dallas Schrier  
ANDREW HOLLEY  
P.E. NUMBER: 76182



- NOTES:**
- SIDES SLOPES SHALL NOT BE STEEPER THAN 4:1 TO DEPTH SHOWN ABOVE (PER SJRWMD REQUIREMENTS). CONTRACTOR SHALL VERIFY SLOPES AND VOLUME ON RECORD DRAWINGS AT SPOTS SHOWN ABOVE AND AT 100' MAXIMUM INTERVALS AND AT ALL TURN POINTS.
  - CONTRACTOR SHALL FILL EMBANKMENTS (BERMS) THAT ARE ABOVE EXISTING GRADE IN LIFTS NOT EXCEEDING 8" IN THICKNESS. SURFACE OF FILL SHALL BE SCARIFIED BETWEEN SUCCESSIVE LIFTS TO PROVIDE BOND AND PRECLUDE SEEPAGE PATHS OR SLICK INTERFACES. FILL SOILS SHALL CONSIST OF CLAYEY FINE SANDS (SC) WITH A MIN. 15 PERCENT OF FINES PASSING THE NO. 200 SIEVE. EMBANKMENT SHALL BE COMPACTED TO 98% OF MODIFIED PROCTOR MAX. DRY DENSITY, WITH 2%± OF OPTIMUM MOISTURE CONTENT. CONTRACTOR SHALL PROVIDE DENSITY TEST ALONG POND EMBANKMENTS AT 200' INTERVALS.
  - CONTRACTOR MAY DISPOSE OF UNSUITABLE MATERIAL IN BOTTOM OF STORM WATER MANAGEMENT FACILITY PROVIDED THAT ALL UNSUITABLE MATERIAL DISPOSED OF IS COVERED WITH A MINIMUM OF 24" OF CLEAN FILL; HOWEVER, CONTRACTOR SHALL NOT DISPOSE OF UNSUITABLE MATERIAL IN SIDE SLOPES OR BERMS, FINAL DEPTH SHALL BE AS SHOWN ON PERMITTED CONSTRUCTION PLANS.
  - NO MOWED OR CUT VEGETATIVE MATERIAL SHALL BE DEPOSITED OR REMAIN IN THE LOW MAINTENANCE ZONE OR DEPOSITED IN THE WATER. CARE SHOULD BE TAKEN TO PREVENT THE OVER-SPRAY OF AQUATIC WEED PRODUCTS INTO THE LOW MAINTENANCE ZONE.
  - REFER TO SHEETS 9A - 9D FOR CORRESPONDING PROPOSED STORMWATER MANAGEMENT FACILITY ELEVATIONS.

**TYPICAL SECTION THRU STORMWATER MANAGEMENT FACILITY**  
N.T.S.



PLANS PREPARED UNDER THE DIRECTION OF:  
ANDREW HOLLEY  
P.E. NUMBER: 76182

REVISIONS:  
2022.07.27-REV. PER CLIENT COMMENT  
2022.09.02-REV. PER AGENCY COMMENT  
2023.03.02-REV. PER AGENCY COMMENT  
2023.05.01-REV. PER AGENCY COMMENT

EM NO. 21-221-01  
DRAWN BY: DDS  
DESIGNED BY: DDS  
CHECKED BY: AAH  
DATE: MAY 2022

England-Thoma & Miller, Inc.  
10000 N. US Highway 1  
Jacksonville, FL 32218  
TEL: (904) 642-8990  
FAX: (904) 642-9485  
REG. #2584 LC-0000316

**ETM**  
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**PAVING AND DRAINAGE DETAILS**  
**LMC EMBLEM AT TRIBUTARY**  
**FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER  
**13D**

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PLOTTED: June 1, 2023 - 4:41 PM, BY: Dallas Schrier

NOT APPLICABLE  
APPLICABLE

### SURVEY AND LOCATE DATA:

- 1. ALL ELEVATIONS ARE BASED ON U.S.C.&G.S. DATUM AND SHOWN IN FEET.
- 2. ELEVATIONS ARE BASED ON NAVD 88.
- 3. LOCATION OF EXISTING UTILITIES OBTAINED BY SOFT DIG LOCATES WHERE SHOWN ON PLANS, OR INCLUDED WITH BID SPECS.
- 4. EXISTING WATER AND SEWER LINES ARE SHOWN AS PER FIELD LOCATES AND SUBDIVISION AS-BUILT PLANS.
- 5. UNDERGROUND UTILITIES WERE LOCATED UTILIZING GROUND PENETRATING RADAR (GPR) AND A DIGITAL LOCATOR. CONTRACTOR SHALL BE AWARE THAT IN SOME CASES UTILITIES HAVE BEEN LOCATED, AND SURVEY HAS BEEN COMPLETED ONLY ON ONE SIDE OF THE ROAD.
- 6. ALL PIPE LENGTHS SHOWN ON PLAN AND PROFILES ARE FROM CENTER TO CENTER OF MANHOLES, CATCH BASINS, INLETS ETC. OR ALONG THE CENTER LINE OF FORCE MAINS AND WATER MAINS.
- 7. INVERT ELEVATIONS SHOWN ON DRAWINGS REFER TO THE CENTERLINE OF MANHOLES, UNLESS OTHERWISE INDICATED.
- 8. THE LOCATION OF ALL EXISTING SEWER AND WATER SERVICE LINES MAY NOT BE INDICATED ON THESE PLANS. THE LOCATION OF NEW SERVICES SHALL BE VERIFIED IN THE FIELD.
- 9. BENCHMARK DATA: \_\_\_\_\_

### PERMIT REQUIREMENTS (NOT ALL INCLUSIVE):

- 1. CONTRACTOR TO OBTAIN ALL REQUIRED RIGHT-OF-WAY PERMITS.
- 2. CONTRACTOR SHALL NOT OPEN CUT STREETS IN THE PROJECT AREA UNLESS SPECIFICALLY SHOWN ON PLANS
- 3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CONSUMPTIVE USE PERMIT (C.U.P.) THROUGH THE ST. JOHNS WATER MANAGEMENT DISTRICT SHOULD DEWATERING ACTIVITIES BE REQUIRED.
- 4. THE DEPARTMENT OF TRANSPORTATION, RAILROAD COMPANIES AND C.O.J. ARE TO BE NOTIFIED IN ADVANCE OF CONSTRUCTION PER THEIR RESPECTIVE PERMIT CONDITIONS.
- 5. ALL WORK SHALL BE IN ACCORDANCE WITH BID DOCUMENTS, JEA WATER AND SEWER STANDARDS, DETAILS AND MATERIALS MANUAL, REV. 2018, AND CITY OF JACKSONVILLE STANDARD SPECIFICATIONS AND DETAILS AND ALL APPLICABLE STATE AND LOCAL REGULATIONS.
- 6. IF SOLVENT CONTAMINATION IS FOUND IN THE PIPE TRENCH, WORK SHALL BE STOPPED AND THE PROPER AUTHORITIES NOTIFIED. WITH APPROVAL OF THE PERMITTING AGENCY, DUCTILE IRON PIPE, FITTINGS AND SOLVENT RESISTANT GASKET MATERIAL SHALL BE USED IN THE CONTAMINATED AREA. THE DUCTILE IRON PIPE SHALL EXTEND AT LEAST 100 FEET BEYOND ANY SOLVENT NOTED.
- 7. THE CONTRACTOR SHALL NOTIFY APPLICABLE UTILITY CONTACT PERSONNEL NOT LESS THAN ONE WEEK PRIOR TO CONSTRUCTION OF FACILITIES IN THEIR RESPECTIVE AREAS.
- 8. TREE PROTECTION SHALL BE IN ACCORDANCE WITH JACKSONVILLE ORDINANCE CODE 656 AND/OR AS DETAILED ON SPECIFIC PLAN SHEETS. NO TRIMMING OF OVERHANGING TREE LIMBS WILL BE ALLOWED. USE SMALLER EQUIPMENT IF NECESSARY.
- 9. THE CONTRACTOR SHALL LOCATE THE DRAINAGE INLET STRUCTURES IN THE PROJECT AREA AND ERECT SEDIMENTATION CONTROL DEVICES AS NECESSARY PER THE CITY OF JACKSONVILLE STORMWATER POLLUTION PREVENTION PLAN.
- 10. CONTRACTOR TO COORDINATE WORK WITH OTHER UTILITIES DURING CONSTRUCTION.

### EXISTING UTILITY PROTECTION:

- 1. IN ORDER TO REDUCE THE DISRUPTION AND COST OF UTILITY DAMAGES OCCURRING IN THE DUVAL COUNTY RIGHT-OF-WAY AND EASEMENTS, THE CONTRACTOR SHALL PREVENT DAMAGES TO EXISTING UTILITIES CAUSED BY HIS WORK THROUGH FIELD VERIFICATION OF THE LOCATION OF THE EXISTING UTILITIES. IN THE CASE OF OPEN EXCAVATION, VERIFICATION MAY BE PERFORMED DURING THE CONTRACTORS WORK. IN THE CASE OF DIRECTIONAL DRILLING, VERIFICATION SHALL TAKE PLACE PRIOR TO MOBILIZATION OF THE DRILLING EQUIPMENT.
- 2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES AS NEEDED TO AVOID CONTACT. EXISTING UTILITIES SHALL BE EXPOSED USING DETECTION EQUIPMENT OR OTHER ACCEPTABLE MEANS. SUCH METHODS MAY INCLUDE BUT SHALL NOT BE LIMITED TO "SOFT DIG" EQUIPMENT AND GROUND PENETRATING RADAR (GPR). THE EXCAVATOR SHALL BE HELD LIABLE FOR DAMAGES CAUSED TO THE CITY'S/JEA'S INFRASTRUCTURE AND THE EXISTING FACILITIES OF OTHER UTILITY COMPANIES.
- 3. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND AVOID ALL UTILITIES, OTHER STRUCTURES AND OBSTRUCTIONS BOTH ABOVE AND BELOW GROUND SURFACE. ALL DAMAGE RESULTING FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

### RESTORATION NOTES:

- 1. THE CONTRACTOR SHALL EMPLOY A LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, TO REFERENCE AND RESTORE PROPERTY CORNERS AND LANDMARKS WHICH MAY BE DISTURBED BY CONSTRUCTION. KNOWN CORNER LOCATIONS ARE AVAILABLE FROM THE CITY OF JACKSONVILLE ENGINEERING DIVISION.
- 2. THE CONTRACTOR SHALL RESTORE/REPLACE ALL CULVERTS, HEADWALLS AND STORM DRAIN INLETS REMOVED OR DISTURBED BY THE CONSTRUCTION OPERATION.
- 3. TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION IN ACCORDANCE WITH CITY OF JACKSONVILLE/FDOT STANDARD SPECIFICATIONS.
- 4. SIDEWALKS, DRIVEWAYS AND CURBING DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH JACKSONVILLE STANDARD SPECIFICATIONS. SIDEWALKS REMOVED AND REPLACED IN CURB AND GUTTER AREAS AT INTERSECTIONS SHALL HAVE HANDICAP RAMPS INSTALLED. DRIVEWAYS AND SIDEWALKS SHALL BE SAWCUT ALONG THE RIGHT-OF-WAY LINE OR NEAREST JOINT AND REMOVED AND REPLACED TO THE EDGE OF STREET.
- 5. GRASS SOD SHALL BE FURNISHED AND PLACED IN THE AREAS DISTURBED OR DAMAGED BY THE CONSTRUCTION OPERATION.
- 6. ALL PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH THE CITY OF JACKSONVILLE/FDOT STANDARD DETAILS AND SPECIFICATIONS LATEST EDITION.
- 7. UNLESS OTHERWISE NOTED, REMOVE AND REPLACE EXISTING PAVEMENT AS PER C.O.J. CASE X (10) PAVEMENT REPLACEMENT DETAIL.
- 8. CONTRACTOR MUST MAINTAIN AND PRESERVE NEWLY GRADED AREAS AND REPAIR AREAS WHERE SETTLING AND EROSION HAVE OCCURRED.

### UTILITY CONTACTS:

- A. AT&T - GENERAL NUMBER-----904-519-2529
- B. AT&T - ADAM DUGAN - NORTH DISTRICT-----904-781-0741
- C. AT&T - BILL LAKE - SOUTH DISTRICT-----904-303-8754
- D. CITY OF JACKSONVILLE - PUBLIC WORKS DEPT.-----904-255-8786
- E. CITY OF JACKSONVILLE - TRAFFIC ENGINEERING-----904-255-7533
- F. FLORIDA DEPT. OF TRANSPORTATION-----904-360-5200
- G. JEA - WATER COLLECTION & DISTRIBUTION - BOB ALLSBROOK-----904-665-7299
- H. JEA - SEWER COLLECTION & DISTRIBUTION - BOB ALLSBROOK-----904-665-7299
- I. JEA - GENERAL INFORMATION-----904-665-6000
- J. JEA - PROJECT OUTREACH-----904-665-7500
- K. JEA - POWER OUTAGES-----904-665-6000
- L. JEA - SEWER PROBLEMS-----904-665-4802
- M. JEA - WATER PROBLEMS-----904-665-4801
- N. JEA - WATER & SEWER LOCATES-----904-665-8410
- O. NASSAU COUNTY - PUBLIC WORKS - CHARLES HOUSTON-----904-491-7334
- P. ST. JOHNS COUNTY - RIGHT-OF-WAY PERMITTING - RICK MAULDIN-----904-209-0134
- Q. ST. JOHNS COUNTY - TRAFFIC SIGNALS - HANK MEIN-----904-209-0173
- R. COMCAST - EMERGENCY HOTLINE-----904-380-6274
- S. TECO/PEOPLES GAS - BEN MOBLEY-----904-545-8958
- T. SUNSHINE ONE CALL-----811

NOT APPLICABLE  
APPLICABLE

### INSTALLATION NOTES:

- 1. CONTRACTOR TO REHABILITATE ALL MANHOLES ON PIPE BURST SEWERS VIA COATING/LINING PER JEA SPECIFICATION 446-2, UNLESS OTHERWISE NOTED ON THE PLANS.
- 2. CONTRACTOR TO RENEW, REHABILITATE, REPLACE OR REINSTALL AS APPLICABLE ALL SERVICE LATERALS TO R.O.W. LINE.
- 3. CONTRACTOR TO INSTALL SEWER SERVICE PIPING A MINIMUM OF 60 INCHES BELOW GRADE. WHERE NEW SANITARY SEWER MAIN IS LESS THAN 5 FEET DEEP, THE SEWER SERVICE PIPE SHALL BE INSTALLED AS DEEP AS POSSIBLE.
- 4. WHEN THE DISTANCE BETWEEN A POWER POLE AND THE TRENCH IS LESS THAN THE TRENCH DEPTH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH JEA ELECTRICAL PERSONNEL TO SECURE POWER POLES. THE CONTACTS FOR JEA ARE AS FOLLOWS:  
NORTHSIDE - EAST of US-1 MIKE CORBITT @ 665-7991 (mobile 662-0635)  
NORTHSIDE - WEST of US-1 ANDY YEAGER @ 665-7998 (mobile 662-0622)  
NORTHSIDE - BACKUP ALAN AINSLEY @ 665-7303 (mobile 662-6557)  
SOUTHSIDE - SOUTH of BEACH BLVD. TOM KERNS @ 665-6847 (mobile 860-1687)  
SOUTHSIDE - NORTH of BEACH BLVD. DERYL BASFORD @ 665-6855 (mobile 662-0616)  
SOUTHSIDE - BACKUP EDDIE GALES @ 665-6855 (mobile 662-0616)  
A MINIMUM OF TWO (2) WORKING DAYS NOTICE IS REQUIRED FOR AN OUTSIDE MEETING WITH JEA ELECTRICAL TO DISCUSS THE REQUIRED WORK. ADDITIONAL TIME WILL BE REQUIRED BY JEA ELECTRICAL FOR ANY REQUIRED WORK TO BE ACCOMPLISHED.
- 5. ALL NEW STORM DRAIN PIPE JOINTS SHALL BE WRAPPED WITH FILTER FABRIC.
- 6. THE DESIGN FOR THE PROJECT IS BASED UPON THE "OPEN-CUT" METHOD OF CONSTRUCTION. IF USING ALTERNATIVE MEANS OR METHODS, THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE STANDARDS FOR THAT MEANS OR METHOD.
- 7. THE CONTRACTOR SHALL MINIMIZE SERVICE INTERRUPTIONS AT SERVICE CONNECTIONS. THE MEANS AND METHODS SHALL BE LEFT TO THE DISCRETION OF THE CONTRACTOR, SUBJECT TO THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS. NO EXISTING ACTIVE SERVICE SHALL BE LEFT INTERRUPTED AT THE END OF THE WORK DAY.
- 8. CONTRACTOR SHALL PROVIDE ADDITIONAL CORPORATION STOPS FOR FILLING AND DRAINING PURPOSES DURING CONSTRUCTION AS NEEDED. CORPORATION STOPS ARE TO BE PLUGGED AND LEFT IN PLACE. INDICATE CORPORATION STOP LOCATIONS ON RECORD DRAWINGS (AS-BUILTS).
- 9. WATER AND SEWER SERVICES SHALL BE TRANSFERRED TO THE NEW MAIN UPON COMPLETION AND F.D.E.P./J.E.A. CERTIFICATION, AND PRIOR TO THE EXISTING MAINS BEING ABANDONED.
- 10. IF EXISTING VALVES ARE IN UNPAVED AREAS AND ARE TO BE TAKEN OUT OF SERVICE, THEY SHALL BE CLOSED AND THE VALVE BOX AND COVER SHALL BE REMOVED. IF THE VALVES ARE UNDER PAVED AREAS, THEY SHALL BE CLOSED, THE VALVE BOX GROUT FILLED AND THE COVER REMOVED.
- 11. CONTRACTOR SHALL REPLACE EXISTING WATER METER BOXES WHEN DEEMED NECESSARY BY THE JEA INSPECTOR.
- 12. CONTRACTOR TO PROVIDE ADDITIONAL DEPTH OF BURY VIA PIPE JOINT DEFLECTION TO ACCOMMODATE VALVE SELECTION PER JEA STANDARDS.
- 13. WATER METERS MAY REQUIRE RELOCATION FOR CONSTRUCTION, CONTRACTOR SHALL CONTACT JEA METER DEPARTMENT AND RELOCATE WATER METERS AS NECESSARY.
- 14. PRIOR TO COMMENCING ANY EXCAVATION OR GRADING, THE CONTRACTOR SHALL OBTAIN ALL GEOTECHNICAL AND TOPOGRAPHIC SURVEY DATA AND LOCATIONS OF ABOVE GROUND AND UNDERGROUND UTILITIES. SHOULD THE CONTRACTOR DISCOVER ANY INACCURACIES, ERRORS OR OMISSIONS IN THE SURVEY DATA, HE SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER IN ORDER THAT PROPER ADJUSTMENTS CAN BE ANTICIPATED AND ORDERED.
- 15. SHEET PILING WILL BE REQUIRED ON ALL EXCAVATIONS DEEPER THAN 16 FEET.

**Englund, Thoms & Miller, Inc.**  
14175 Old St. Augustine Road  
Jacksonville, FL 32248  
TEL: (904) 642-8980  
FAX: (904) 642-8981  
CA - 00028264 LC - 0008316

**ETM**  
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THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

NO. SHEETS 1	PROJ. NO.	21-221-01	DESIGN ENGINEER ANDREW HOLLEY	FLORIDA REGISTRATION NO. 76192
	SHEET NO.	JANUARY 2017		
	DRAWING NO.	AS NOTED		
<b>JEA STANDARD</b> <b>GENERAL NOTES LEGEND, AND SHEET INDEX</b> <b>LMC EMBLEM AT TRIBUTARY</b>				
				
<b>JEA STANDARD</b> <b>GENERAL NOTES LEGEND, AND SHEET INDEX</b> <b>LMC EMBLEM AT TRIBUTARY</b>				
<b>JEA</b> <b>Building Community</b>				
<b>JEA STANDARD</b> <b>GENERAL NOTES LEGEND, AND SHEET INDEX</b> <b>LMC EMBLEM AT TRIBUTARY</b>				
<b>JEA</b> <b>Building Community</b>				
<b>JEA STANDARD</b> <b>GENERAL NOTES LEGEND, AND SHEET INDEX</b> <b>LMC EMBLEM AT TRIBUTARY</b>				
<b>JEA</b> <b>Building Community</b>				

HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS

CONFLICTING UTILITY	PROPOSED UTILITY											
	POTABLE WATER			WASTEWATER GRAVITY AND FORCE MAIN			RECLAIMED WATER			VACUUM SEWERS		
	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*	HORIZ.	VERT.	JOINT SPACING*
POTABLE WATER	3' NOTE 1	12"	3' NOTE 2	6' to 10'	12" NOTE 5	6' NOTE 2	3'	12"	6' NOTE 2	3' to 10'	12"	3' NOTE 2
RECLAIMED WATER	3'	12"	6' NOTE 2	3' to 10'	12"	6' NOTE 2	3'	12"	6' NOTE 2	3' to 10'	12"	3' NOTE 2
WASTEWATER (GRAVITY AND FORCE MAIN)	6' to 10'	12"	6' NOTE 2	3' to 10'	12"	6'	3' NOTE 1	12"	3' NOTE 1	3' to 10'	12"	3' NOTE 2
VACUUM SEWERS	3' to 10'	12"	3' NOTE 2	3' to 10'	12"	6'	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2
RIGHT OF WAYS	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A
PERMANENT STRUCTURES (SIGNS, POLES, ETC.)	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A	3' NOTE 1	N/A	N/A
STORM SEWERS	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2
GAS	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2
TREES	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A	3'-6' NOTE 6	N/A	N/A
ALL OTHER UTILITIES	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2	3' NOTE 1	12"	3' NOTE 2	3' to 10'	12"	3' NOTE 2

- NOTES:**
- 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.
  - THE MINIMUM JOINT SPACING REQUIRED FROM CROSSING FROM OTHER UTILITIES WHILE STILL MAINTAINING MINIMUM VERTICAL SEPARATION.
  - DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
  - NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURES.
  - 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.
  - REFER TO POTABLE WATER PIPING- SECTION 350, III.4.11.

SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS

JANUARY 2022

PLATE W-10

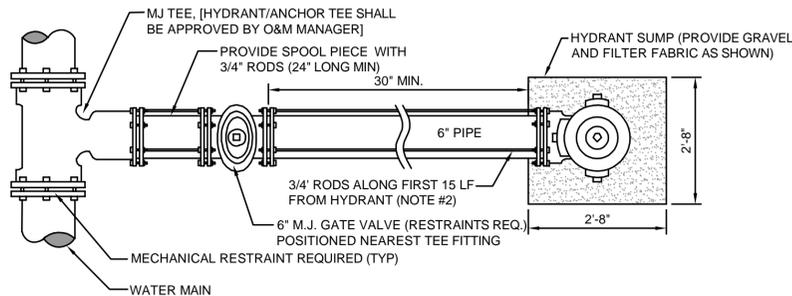
WATER MAIN AND NON-WATER MAIN SEPARATION REQUIREMENTS - NOTES

- 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.
- 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.
- 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).
- 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 PREFERABLY 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.
- 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.
- 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.
- 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.
- 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.

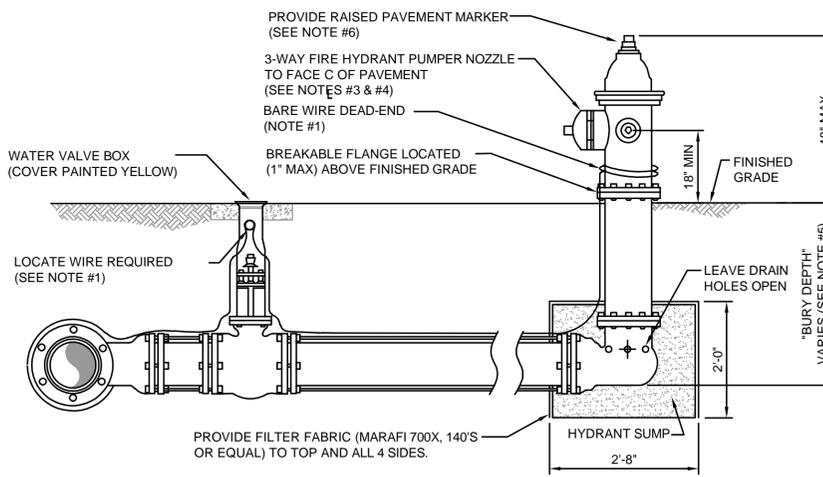
NOTES ON UTILITY SEPARATION REQUIREMENTS

JANUARY 2022

PLATE W-11



PLAN



SECTION

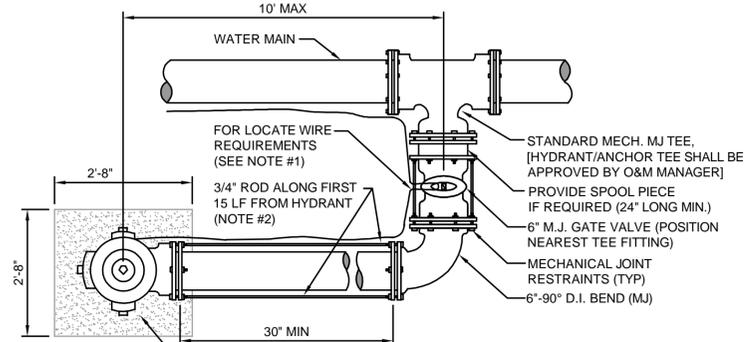
NOTES:

- LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4\"/>
- FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK AND NOT WITHIN SWALE/DITCH AREAS. 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 AND APPLICABLE PERMITTING AGENCIES. DISTANCE SHALL BE MEASURED TO THE CLOSEST PART OF THE FIRE HYDRANT (I.E. THE PUMPER NOZZLE). 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\"/>
- 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.
- 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.
- 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\"/>
- 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.

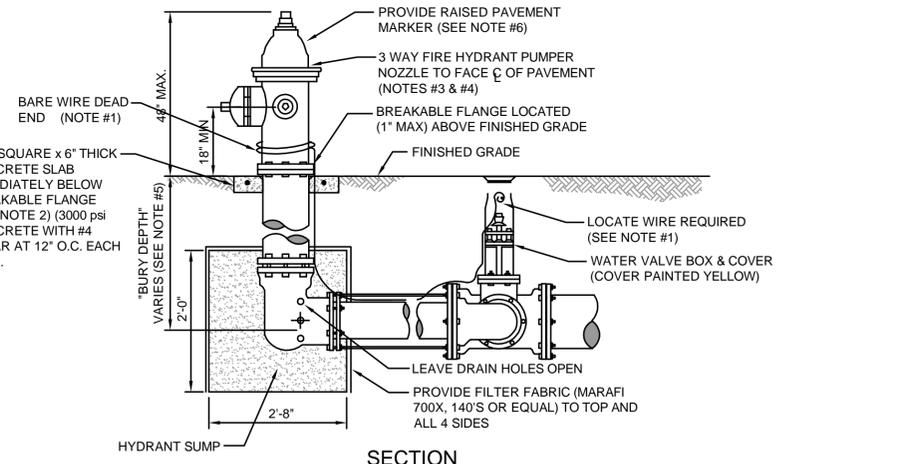
FIRE HYDRANT INSTALLATION USING MECHANICAL JOINT TEE

JANUARY 2022

PLATE W-13



PLAN



SECTION

NOTES:

- LOCATE WIRE SHALL BE ROUTED FROM THE VALVE TO THE HYDRANT AS SHOWN ABOVE LEAVING ENOUGH SLACK TO REACH 4\"/>
- 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\"/>
- 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.
- 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.
- 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\"/>
- 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 2022

PLATE W-14

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Englewood, Thoms & Miller, Inc.  
14775 Old St. Augustine Road  
Jacksonville, FL 32248  
TEL: (904) 642-8980  
FAX: (904) 642-8980  
CA - 0002284 LC - 0008316

ETM

VISION • EXPERIENCE • RESULTS

DESIGNER: ANDREW HOLLEY  
DRAWN BY: ANDREW HOLLEY  
DATE:   
CHECKED BY:   
DATE:   
FLORIDA REGISTRATION NO. 76182

REVISIONS

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DESIGN ENGINEER: ANDREW HOLLEY  
FLORIDA REGISTRATION NO. 76182

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PROJ. NO. 21-221-01  
DATE: JANUARY 2022  
SCALE: AS NOTED

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DATE: JANUARY 2022  
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DATE: JANUARY 2022  
SCALE: AS NOTED

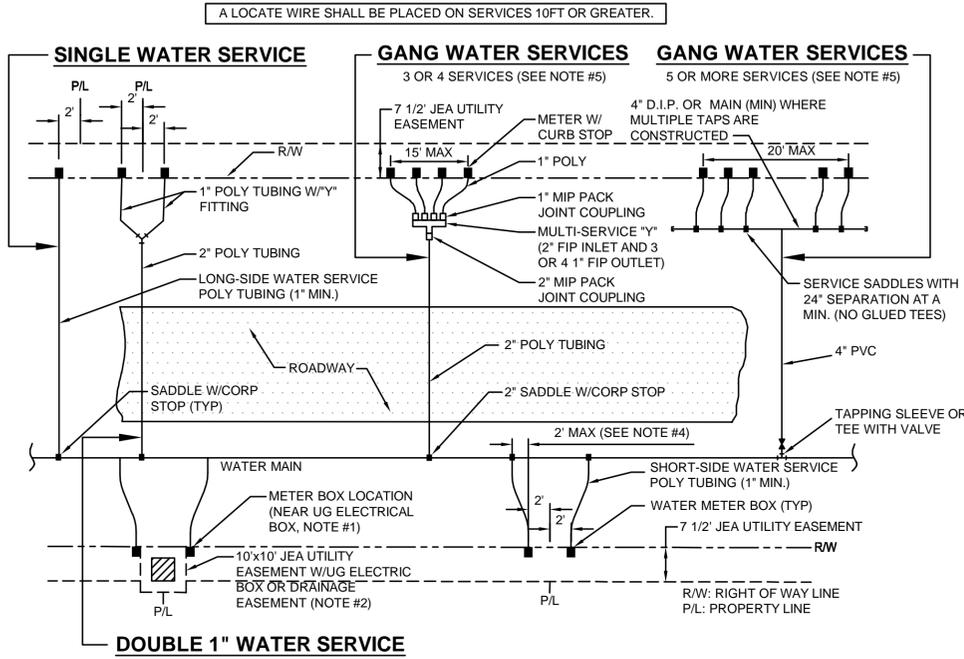
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SCALE: AS NOTED



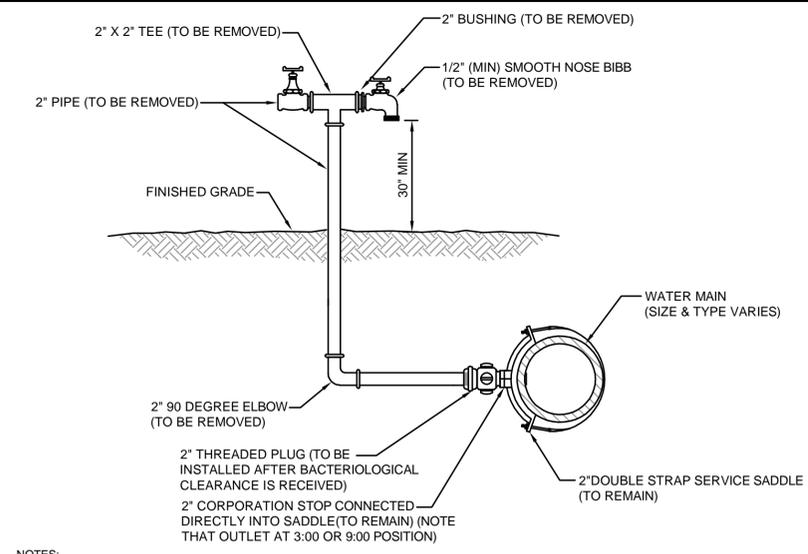
JEA STANDARD WATER AND RECLAIMED DETAILS  
 LMC EMBLEM AT TRIBUTARY

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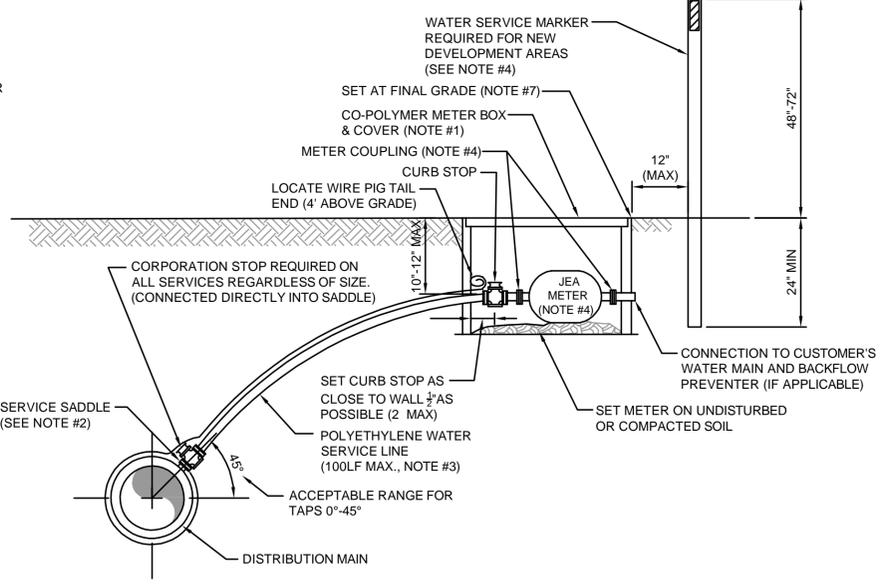
- NOTES:**
- THE SKETCHES ABOVE INDICATE TYPICAL WATER SERVICE AND METER BOX LOCATIONS. ACTUAL LOCATIONS OF BOXES MAY VARY SLIGHTLY ACCORDING TO FIELD CONDITIONS ENCOUNTERED. TYPICALLY, THE METER BOX SHALL BE LOCATED AT THE R/W LINE BUT INSIDE THE 7 1/2' ELECTRIC EASEMENT.
  - UNLESS SPECIFIED OTHERWISE 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 APPROVED BY JEA TO BE LOCATED IN A DRIVEWAY OR SIDEWALK, THEN THE CONSTRUCTION SHALL MEET STANDARD DETAIL NUMBERS W-384, 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.
  - IF DRAINAGE OR OTHER EASEMENT LOCATED BETWEEN LOTS, METER BOXES SHALL BE LOCATED AT THE EASEMENT LINE BUT OUTSIDE THE EASEMENT AREA.
  - 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 TAPED WITH NO CONNECTION TO MAIN WIRE WITH THE LAST 24 INCHES STRIPPED 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.
  - GANG WATER SERVICES: FOR 3 OR 4 SERVICES IN ONE AREA, A DUCTILE IRON PIPE (D.I.P.) WATER MAIN EXTENSION W/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 W/LOCATE WIRE MAY BE UTILIZED ON EITHER SHORT-SIDE OR LONG SIDE SERVICES WHERE SHOWN ON THE DRAWINGS (TAPS STAGGERED AND AT 2 FEET ON CENTER-MIN). FOR WATER SUPPLY HEADERS WHERE 5 OR MORE TAPS ARE CONSTRUCTED, THE HEADER PIPE SHALL BE 4" AT A MINIMUM. 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.
  - DOUBLE 1" WATER SERVICES IS ALLOWED FOR SHORT SIDE OR LONG SIDE SERVICES AND WHERE SHOWN ON THE DRAWINGS.
  - A 1" IRRIGATION SERVICE MAY BE 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).
  - NO 2" AND SMALLER WATER SERVICE TAPS PERMITTED ON WATER MAINS WHICH ARE 20" AND LARGER SIZE.
  - 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.
  - SERVICE SIZE SHALL BE SAME AS THE METER SIZE.

**WATER OR RECLAIM SERVICE INSTALLATIONS**  
**2" AND SMALLER METER**  
JANUARY 2022 PLATE W-1



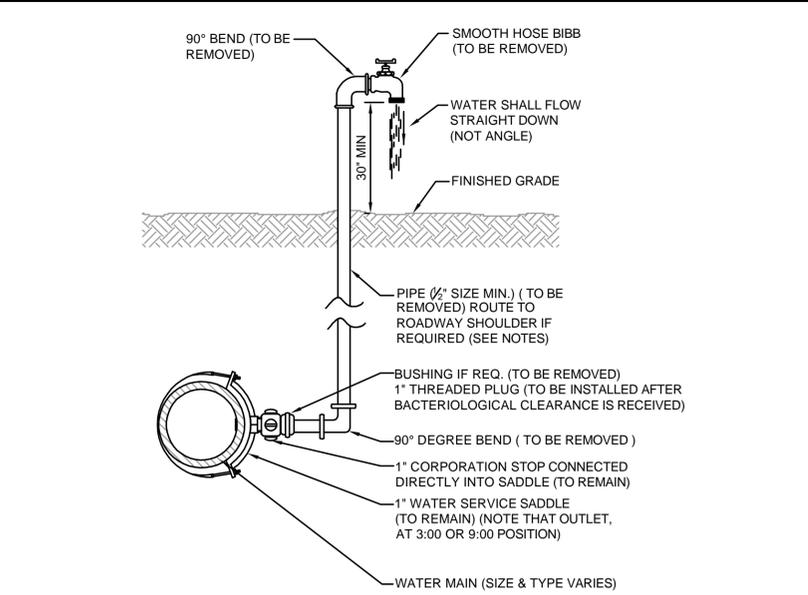
- NOTES:**
- LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROADWAY SHOULDERS (NON-TRAFFIC AREAS).
  - ALL PIPE & FITTING SHALL BE GALVANIZED MATERIAL OR PVC (S-40).
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTING (AS NOTED) AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED
  - THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICES AS OUTLINED BY THE JEA'S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.

**2" TEMPORARY SAMPLE TAP FOR STUB OUT**  
JANUARY 2022 PLATE W-26



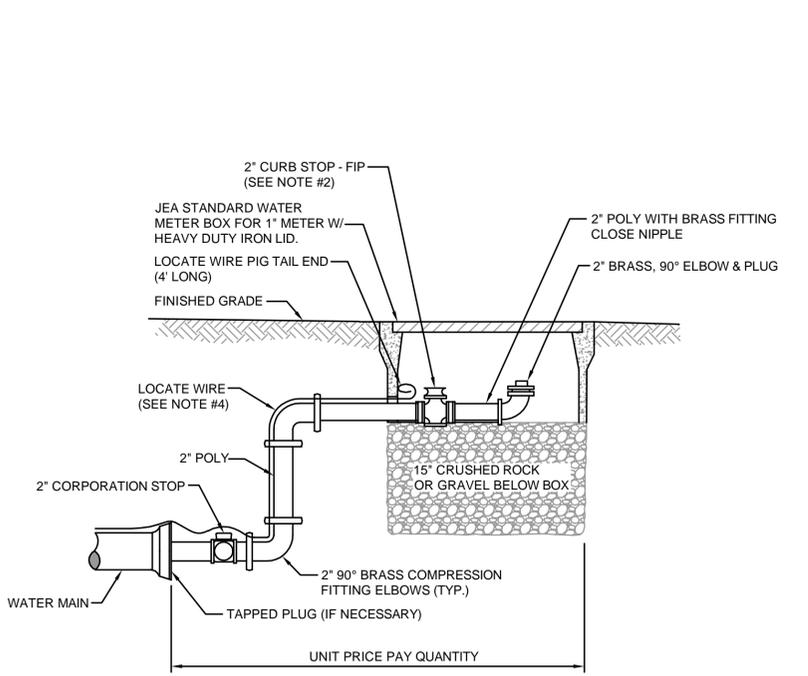
- NOTES:**
- SEE PLATE W-1 FOR METER LOCATION REQUIREMENTS.
  - SINGLE BAND SADDLES SHALL BE UTILIZED ON NEW 1" WATER SERVICES WHICH ARE INSTALLED ON A DRY 10" SIZE OR SMALLER WATER MAIN (NEW WATER MAIN CONSTRUCTION). FOR WET TAPS OR WATER MAINS 12" SIZE AND LARGER, A DOUBLE BAND SADDLE IS REQUIRED. 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.
  - 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.
  - 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).
  - NO 2" AND SMALLER WATER SERVICE TAPS PERMITTED ON WATER MAINS WHICH ARE 20" AND LARGER SIZE.
  - 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.
  - 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).
  - LOCATE WIRING REQUIRED ON ALL SERVICES 10' OR GREATER IN LENGTH. SEE PLATE W-44.

**WATER SERVICE DETAIL- 2" AND SMALLER METER**  
JANUARY 2022 PLATE W-2



- NOTES:**
- LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROADWAY SHOULDERS (NON-TRAFFIC AREAS).
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS (AS NOTED), AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
  - PIPE AND FITTINGS SHALL BE PVC (SCH. 40) OR GALV. MATERIAL.
  - 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.
  - THE CONTRACTOR SHALL COMPLY WITH ALL JEA RULES AND POLICES AS AS OUTLINED BY JEA'S ENVIRONMENTAL RESPONSE COORDINATOR (ERC) AND OTHER ASSOCIATED JEA STANDARDS.

**TEMPORARY SAMPLE TAP**  
JANUARY 2022 PLATE W-25



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

**FLUSHING VALVE BELOW GRADE**  
JANUARY 2022 PLATE W-28

Englund, Thoms & Miller, Inc.  
14175 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 644-8980  
FAX: (904) 644-8980  
CA - 000284 LC - 000316

**ETM**  
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THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

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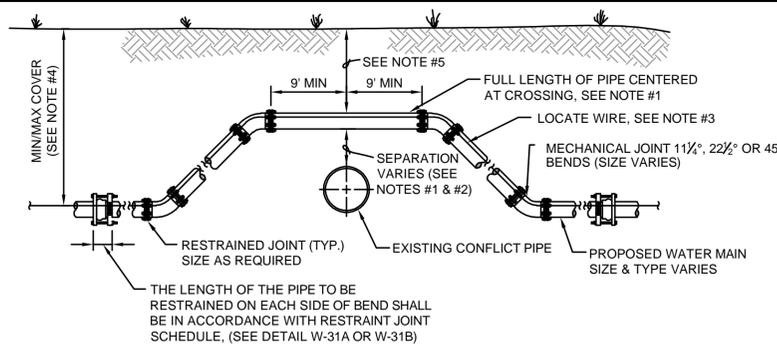
DESIGN ENGINEER  
ANDREW HOLLEY  
FLORIDA REGISTRATION NO.  
76182

DESIGNER  
DRAWN BY  
DATE  
CHECKED BY  
DATE

JEA STANDARD  
WATER AND RECLAIMED DETAILS

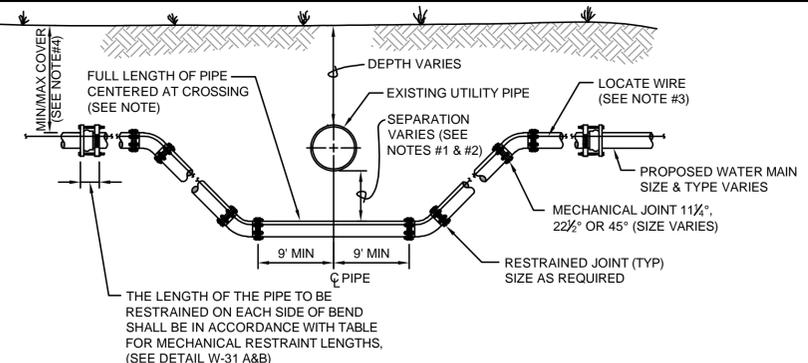
LMC EMBLEM AT TRIBUTARY

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DATE:	JANUARY 2022
SCALE:	AS NOTED
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SHEET NO.	2
DRAWING NO.	14C



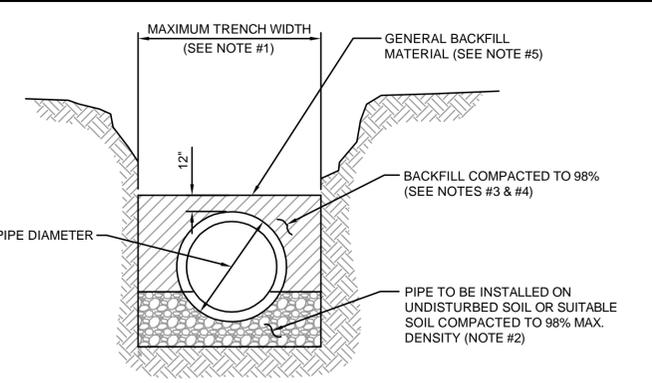
**CASE "A" CROSSING**

- 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 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 "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.
  5. IN LOCATIONS WHERE WATER/RECLAIM MAINS CROSS UNDER A BOX-CULVERT, OR 36-INCH DIAMETER AND LARGER STORM WATER MAIN, JEA WILL REQUIRE DIP TO BE UTILIZED FOR THE MAIN.



**TYPICAL TRENCH**

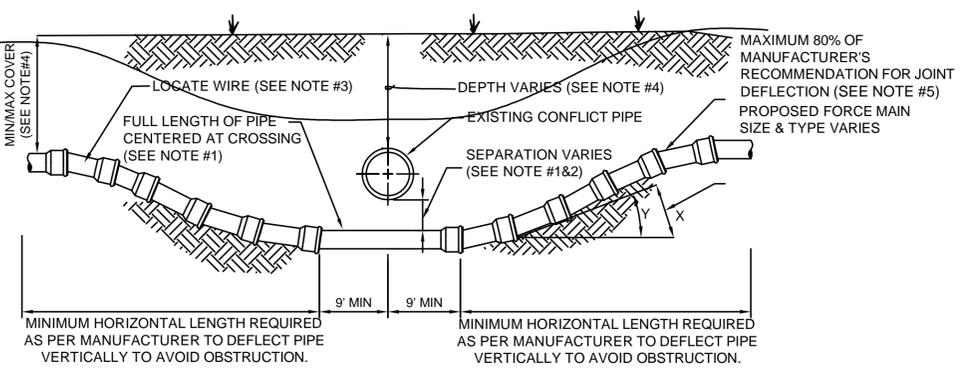
- NOTES:**
1. TRENCH SIDES SHALL BE APPROXIMATELY VERTICAL BETWEEN AN ELEVATION OF 1 FOOT ABOVE THE TOP OF THE PIPE AND THE CENTER LINE OF THE PIPE; OTHERWISE, TRENCH SIDES SHALL BE AS VERTICAL AS POSSIBLE OR AS REQUIRED BY OSHA STANDARDS. REFER TO THE MEASUREMENT AND PAYMENT SECTION (SECTION #801, PARAGRAPH #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. BACK FILL 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 ITS 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.

**ADJUSTMENT OVER EXISTING UTILITIES  
MECHANICAL RESTRAINTS**

JANUARY 2022 PLATE W-32

**ADJUSTMENT UNDER EXISTING UTILITIES  
MECHANICAL RESTRAINTS**

JANUARY 2022 PLATE W-34



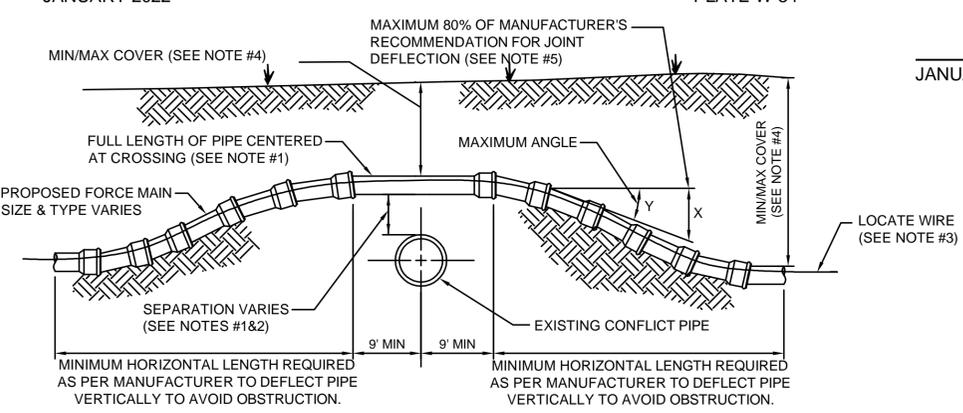
**CASE "B" CROSSING**

- 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**

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

DUCTILE IRON PIPE (Mechanical Joint)			
PIPE SIZE (IN.)	(X) MAX. OFFSET (IN.)	(Y) ANGLE AT ONE BELL	RESULTING RADIUS OF CURVE WITH 20FT. LENGTHS
-	-	-	-
4	27	6.5°	177 FT
6	24	5.7°	200 FT
8 - 12	17.5	4.2°	273 FT
14 - 16	12	2.9°	400 FT
18 - 20	10	2.4°	477 FT
24 - 30	8	1.9°	600 FT
36	7	1.7°	687 FT
42 - 48	6.7	1.6°	716 FT



**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 (S-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**

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

DUCTILE IRON PIPE (Mechanical Joint)			
PIPE SIZE (IN.)	(X) MAX. OFFSET (IN.)	(Y) ANGLE AT ONE BELL	RESULTING RADIUS OF CURVE WITH 20FT. LENGTHS
-	-	-	-
4	27	6.5°	177 FT
6	24	5.7°	200 FT
8 - 12	17.5	4.2°	273 FT
14 - 16	12	2.9°	400 FT
18 - 20	10	2.4°	477 FT
24 - 30	8	1.9°	600 FT
36	7	1.7°	687 FT
42 - 48	6.7	1.6°	716 FT

**ADJUSTMENT UNDER EXISTING UTILITIES  
PIPE JOINT DEFLECTION**

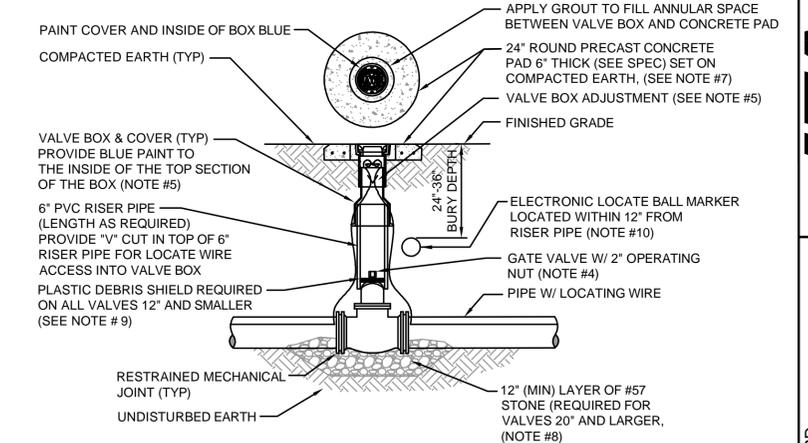
JANUARY 2022 PLATE W-40

**ADJUSTMENT OVER EXISTING UTILITIES  
PIPE JOINT DEFLECTION**

JANUARY 2022 PLATE W-41

**OPEN CUT TRENCH FOR PRESSURE PIPE**

JANUARY 2022 IN CITY RIGHT OF WAY PLATE W-42



**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.
4. IN PAVED AREAS, INSTALL VALVE AT A DEPTH TO ALLOW A 12" MIN. DISTANCE BETWEEN THE VALVE COVER PLATE AND THE TOP OF THE VALVE OPERATING NUT. OUTSIDE OF PAVED AREAS (GRASS), INSTALL VALVE AT A DEPTH TO ALLOW A 6" MINIMUM DISTANCE BETWEEN THE VALVE COVER AND THE TOP OF THE VALVE OPERATING NUT. OPERATING NUT/STEM EXTENSION SHALL BE PROVIDED (WHERE APPLICABLE) SO THAT THE OPERATING NUT WILL BE NO MORE THAN 30 INCHES BELOW FINISHED GRADE.
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 1/2 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 2022 PLATE W-18

**Engelhardt, Thoms & Miller, Inc.**  
14775 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 644-8980  
FAX: (904) 644-8981  
CA - 00028284 LC - 0000316

**ETM**  
VISION • EXPERIENCE • RESULTS

DESIGNER: ANDREW HOLLEY  
DRAWN BY: ANDREW HOLLEY  
CHECKED BY:  
DATE: 1/2022  
FLORIDA REGISTRATION NO.: 76192

REVISIONS

NO.	BY	DATE
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3.		
2.		
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THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

JEA STANDARD  
WATER AND RECLAIMED DETAILS  
LMC EMBLEM AT TRIBUTARY

PROJ. NO.: 21-221-01  
DATE: JANUARY 2022  
SCALE: AS NOTED

NO. SHEETS: 6  
SHEET NO.: 3  
DRAWING NO.: 14D

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**PVC PIPE RESTRAINT NOTES:**

- 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.
- 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.
- BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
- VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, L<sub>U</sub> IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. L<sub>L</sub> IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.
- 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.
- HDPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).
- THE INSTALLATION OF BELL HARNESS RESTRAINTS AT PVC JOINTS (DR-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.

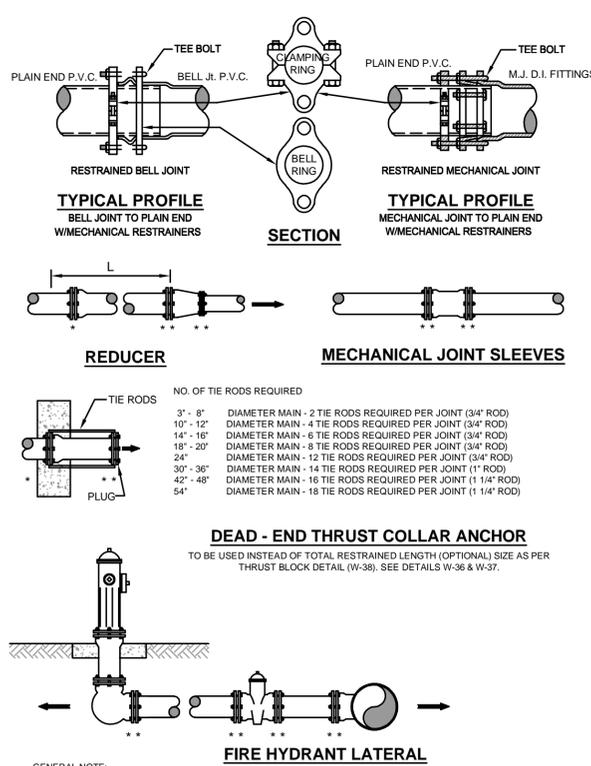
**PVC PIPE RESTRAINT JOINT SCHEDULE**

JANUARY 2022

PLATE W-31A

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS (SEE NOTE 4)		VALVES OR DEAD ENDS L (FT.)	REDUCERS		TEES SEE NOTE 5			
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	UPPER L (FT.)	LOWER L (FT.)		SIZE (IN.)	L (FT.)		RUN SIZE (IN.)	BRANCH SIZE (IN.)	L (FT.)
4	21	9	5	3	17	3	47	6x4	34	4	4	F.O.	
6	30	13	6	3	23	4	66	8x6	38	4	6	10	
8	38	16	8	4	30	6	86	8x4	62	8	8	29	
10	45	19	9	5	36	7	103	10x8	35	10	10	45	
12	53	22	11	6	43	8	121	10x6	63	12	12	13	
14	61	26	13	6	50	9	140	12x10	36	10	8	13	
16	66	28	14	7	55	10	154	12x8	64	12	12	13	
18	73	30	15	8	60	11	170	16x12	66	16	16	32	
20	79	33	16	8	66	12	186	16x10	92	16	12	32	
24	79	33	16	8	77	15	185	20x18	35	20	16	14	
30	93	39	19	10	97	17	222	20x16	66	20	16	14	
36	106	39	21	11	107	20	257	24x20	56	24	20	14	
42	117	49	24	12	120	24	289	24x18	80	24	20	14	
48	144	53	26	13	133	26	321	24x16	101	24	20	14	
								30x24	78	30	24	159	
								36x24	141	30	24	104	
								42x36	75	30	24	104	
								42x30	140	36	30	162	
								48x42	75	36	30	104	
								48x36	139	36	30	104	

F.O. = FITTING ONLY



- GENERAL NOTE:**
- PAY ITEM \*\*\* DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIC.
  - PAY ITEM \*\*\*\* DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.
  - ➔ INDICATES DIRECTION OF THRUST FORCE.

**MECHANICAL RESTRAINT DETAILS - I**

JANUARY 2022

PLATE W-31C

**MECHANICAL RESTRAINT DETAILS - II**

JANUARY 2022

PLATE W-31D

**NOTES:**

- TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN.).
- PAY ITEM \*\*\* DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIC.
- PAY ITEM \*\*\*\* DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.

**DUCTILE IRON PIPE RESTRAINT NOTES:**

- 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.
- 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. W/POLY WRAP, USE RESTRAINT JOINT SCHEDULE FOR PVC PIPE.
- BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
- VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, L<sub>U</sub> IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. L<sub>L</sub> IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.
- 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.
- HDPE TO D.I.P. TRANSITIONS: THE D.I.P. PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).

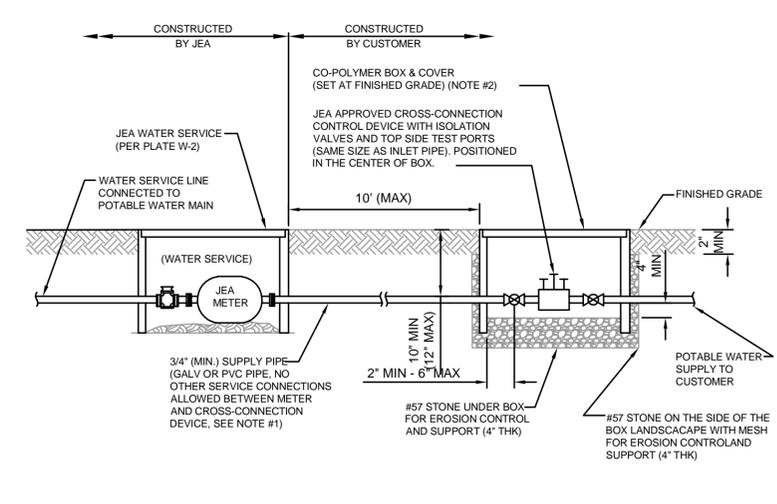
**DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE**

JANUARY 2022

PLATE W -31B

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS (SEE NOTE 4)		VALVES OR DEAD ENDS L (FT.)	REDUCERS		TEES SEE NOTE 5			
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	UPPER L (FT.)	LOWER L (FT.)		SIZE (IN.)	L (FT.)		RUN SIZE (IN.)	BRANCH SIZE (IN.)	L (FT.)
4	17	7	4	2	11	3	30	6x4	22	4	4	F.O.	
6	24	15	5	3	15	4	42	8x6	23	4	4	6	
8	31	13	6	3	20	5	55	8x4	39	8	4 < LESS	6	
10	36	15	8	4	23	6	65	10x8	22	8	6 < LESS	19	
12	42	18	9	5	27	7	77	10x6	40	10	10	29	
14	48	20	10	5	31	7	87	12x10	23	10	8	9	
16	53	22	11	6	35	8	97	12x8	41	12	12	40	
18	58	24	12	6	39	9	107	16x12	42	12	8 < LESS	21	
20	63	27	13	6	42	10	118	16x10	58	16	16	60	
24	63	27	13	7	49	12	118	20x18	22	16	12	25	
30	75	31	15	8	59	14	141	20x16	42	16	10	3	
36	86	36	17	9	68	17	163	20x12	74	20	20	79	
42	95	40	19	10	76	19	183	24x18	51	20	16	48	
48	117	43	21	11	84	21	203	24x16	64	24	24	79	
								30x20	50	24	20	54	
								36x30	50	24	16	23	
								36x24	89	30	30	101	
								42x36	48	30	24	66	
								42x30	89	36	20	38	
								48x42	48	36	16	4	
								48x36	88	36	12 < LESS	1	

F.O. = FITTING ONLY



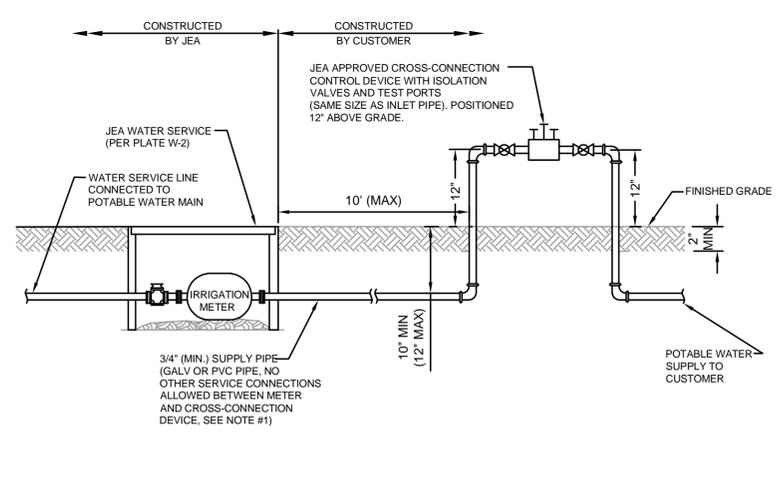
**NOTES:**

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

**RECLAIM CROSS CONNECTION CONTROL DEVICE**

JANUARY 2022

PLATE W-15



**NOTES:**

- WATER SERVICE CONNECTIONS REQUIRE ABOVE GRADE REDUCED PRESSURE BACKFLOW PREVENTERS. (SEE PLATE W-15)
- 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.
- RESIDENTIAL IRRIGATION SERVICES MAY UTILIZE AN ALTERNATE BACKFLOW PREVENTER LOCATION IF THE FOLLOWING CONDITIONS EXIST:  
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.

**CROSS CONNECTION CONTROL DEVICE**

JANUARY 2022

JEA IRRIGATION SERVICE CONNECTIONS

PLATE W-15A

**England, Thoms & Miller, Inc.**  
14775 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 642-8990  
FAX: (904) 642-8991  
CA - 000284 LC - 000816

**ETM**  
VISION • EXPERIENCE • RESULTS

THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

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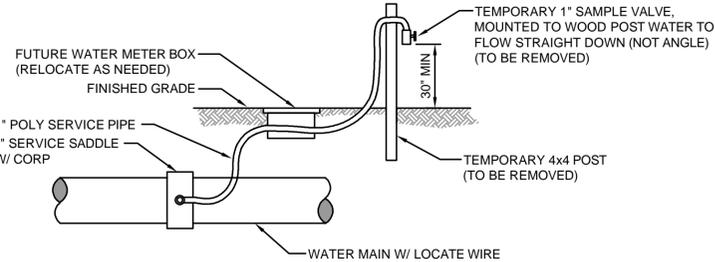
DESIGN ENGINEER: ANDREW HOLLEY  
FLORIDA REGISTRATION NO.: 76182

**JEA**  
Building Community<sup>SM</sup>

JEA STANDARD WATER AND RECLAIMED DETAILS  
LMC EMBLEM AT TRIBUTARY

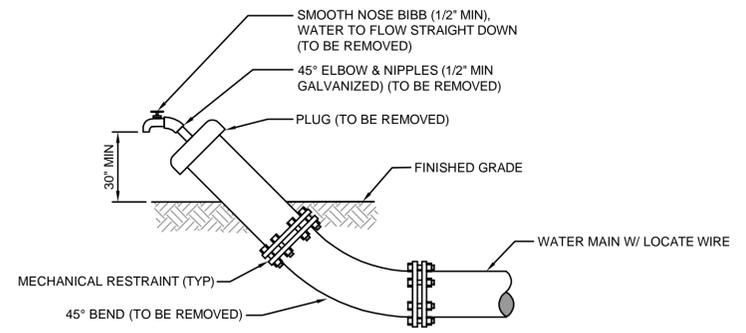
NO. SHEETS	6
SHEET NO.	4
DRAWING NO.	14E
PROJ. NO.	21-221-01
DATE:	JANUARY 2022
SCALE:	AS NOTED

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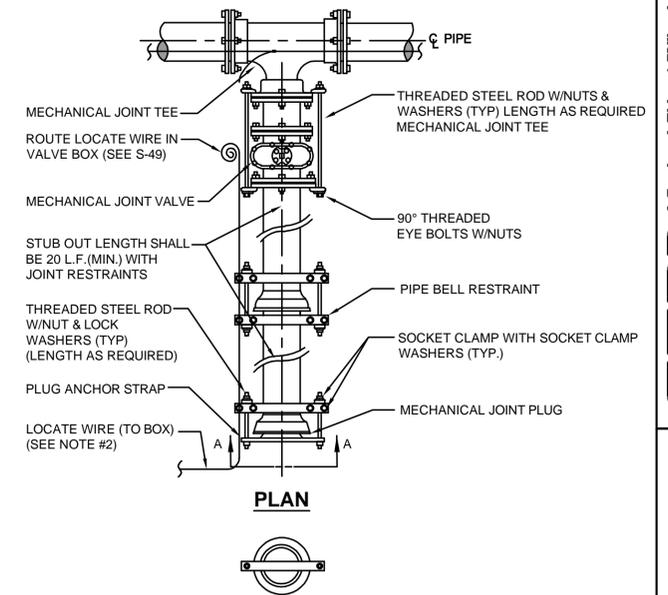
**TEMPORARY SAMPLE TAP UTILIZING A NEW 1" WATER SERVICE**

- 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**

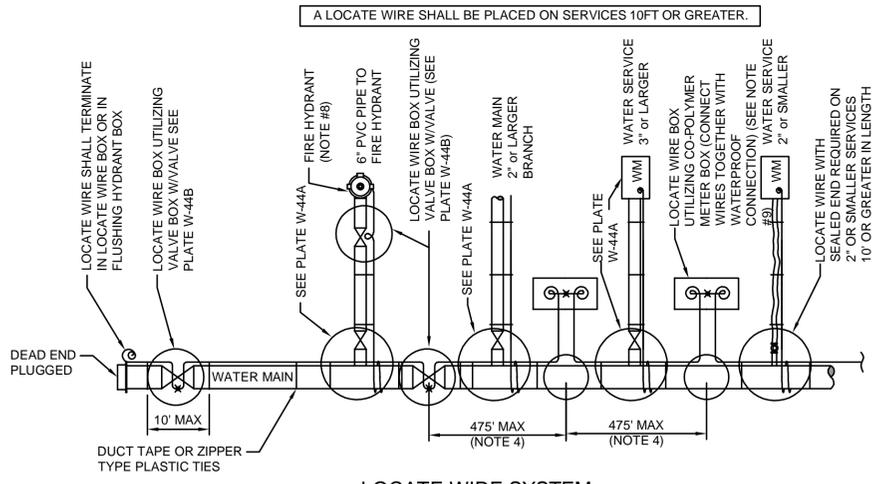
- NOTES:**
1. LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROAD SHOULDERS.
  2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS (AS NOTED) AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
  3. THE CONTRACTOR SHALL UTILIZE THE ABOVE 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. 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.

**TEMPORARY SAMPLE TAP ALTERNATIVE METHOD A**

JANUARY 2022 PLATE W-24



**LOCATE WIRE SYSTEM**

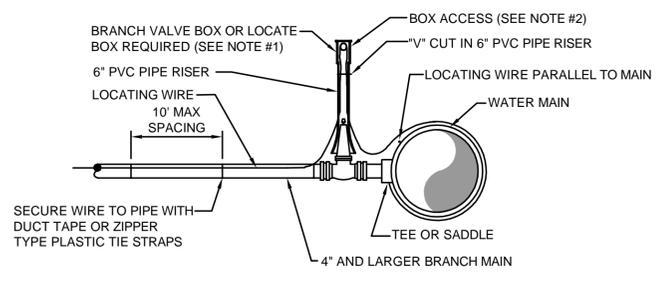
- NOTES:**
1. LOCATING WIRE TO BE INSTALLED IN EITHER THE ONE OR ELEVEN O'CLOCK POSITION ON ALL DUCTILE IRON OR PVC (PRESSURE MAINS). LOCATE WIRE SHALL ALSO BE INSTALLED ON ALL (HDPE) POLY MAIN PIPING (1:00 OR 11:00 POSITION, IF POSSIBLE).
  2. SECURE LOCATING WIRE TO PVC & D.I.P. WATER MAIN BY USE OF 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. \*X\* INDICATES THAT THE WIRES ARE CONNECTED TOGETHER WITH A WATERPROOF CONNECTION. (SEE DETAIL W-44B)
  7. \*P\* 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 2022 PLATE W-44

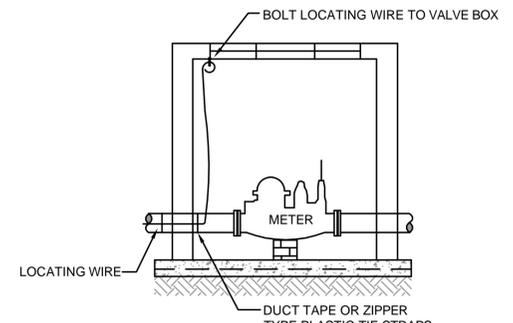
**TEMPORARY SAMPLE TAP ALTERNATIVE METHOD B**

JANUARY 2022 PLATE W-24A



**BRANCH FORCE MAIN**

(2" AND LARGER WATER MAIN OR 3" AND LARGER WATER SERVICE PIPE)



**CONNECTION AT LARGE METER BOX**

(3" OR LARGER SERVICE)

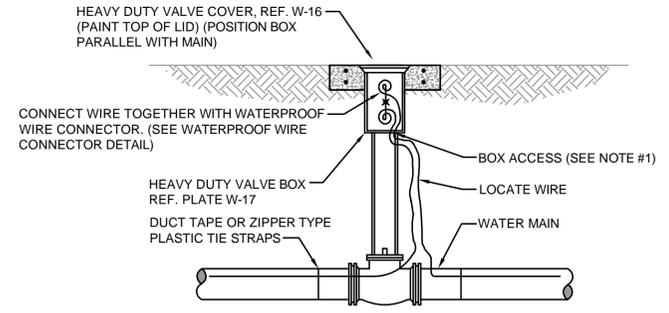
- NOTES:**
1. NOTE THAT THE BRANCH WIRE IS NOT CONNECTED TO THE MAIN WIRE.
  2. LOCATE WIRE SHALL ENTER THE VALVE BOX THROUGH A "V" CUT IN THE 6" PVC RISER PIPE SECTION (SEE W-18).
  3. LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE AND LOCATE POINTS.

**LOCATE WIRE FOR BRANCH MAIN**

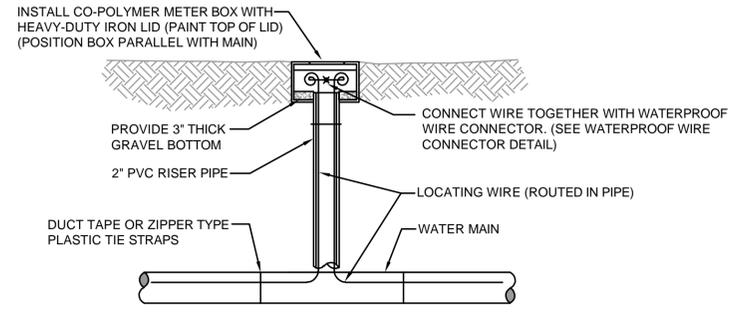
JANUARY 2022 PLATE W-44A

**PLUGGED DEAD END USING MECHANICAL RESTRAINTS**

JANUARY 2022 PLATE W-37



**LOCATE WIRE BOX UTILIZING VALVE BOX**



**LOCATE WIRE BOX UTILIZING METER BOX**

**LOCATE WIRE BOX**

JANUARY 2022 PLATE W-44B

**Englund, Thoms & Miller, Inc.**  
 14175 Old St. Augustine Road  
 Jacksonville, FL 32248  
 TEL: (904) 644-8980  
 FAX: (904) 644-8981  
 CA - 000284 LC - 000316

**ETM**  
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DESIGN ENGINEER: ANDREW HOLLEY  
 FLORIDA REGISTRATION NO.: 76182

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DESIGNER: ANDREW HOLLEY  
 DRAWN BY: ANDREW HOLLEY  
 DATE: DATE  
 CHECKED BY: DATE  
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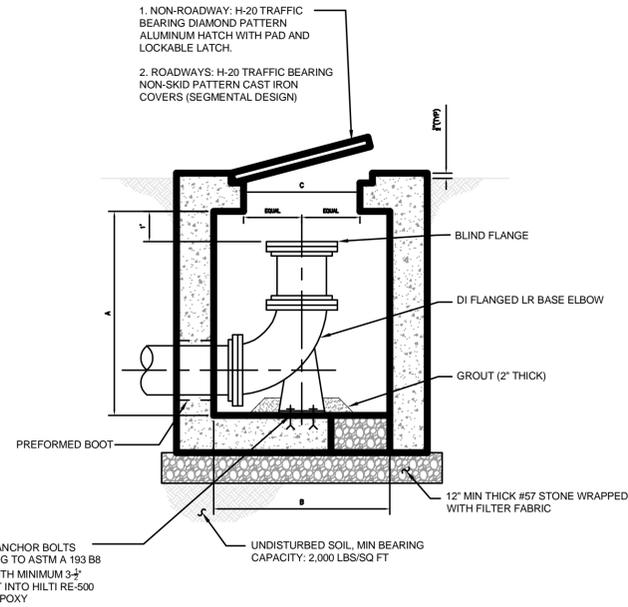
**JEA**  
 Building Community

JEA STANDARD WATER AND RECLAIMED DETAILS LMC EMBLEM AT TRIBUTARY

PROJ. NO.: 21-221-01  
 DATE: JANUARY 2022  
 SCALE: AS NOTED

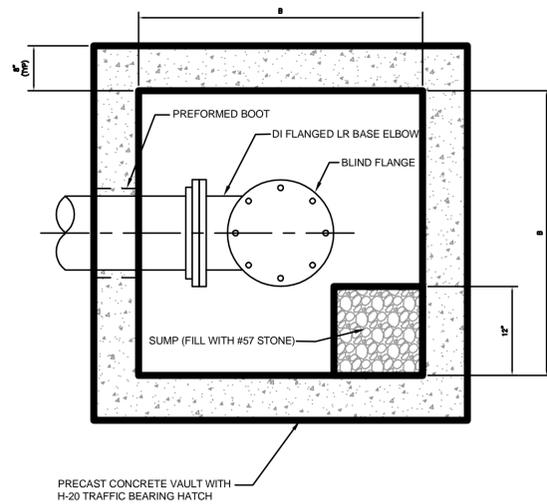
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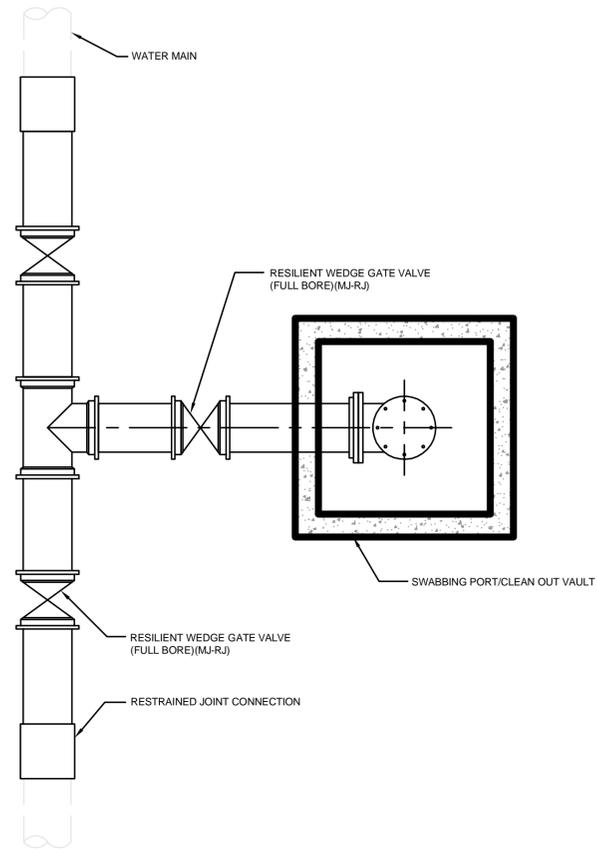
SWABBING PORT AND CLEAN OUT VAULT DETAIL - SECTION

JANUARY 2022 PLATE W-45



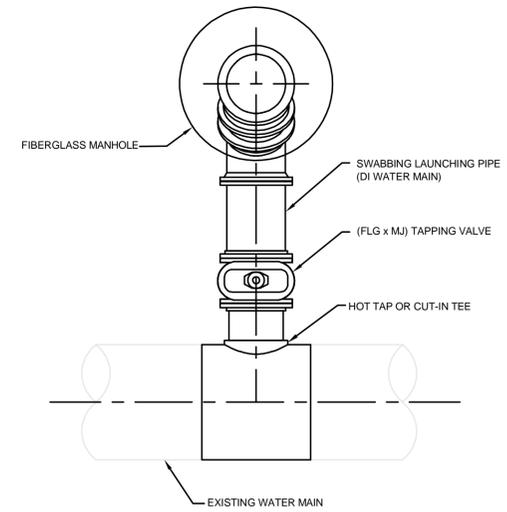
SWABBING PORT AND CLEAN OUT VAULT DETAIL - PLAN

JANUARY 2022 PLATE W-45A



SWABBING LAUNCHING STATION DETAIL FOR NEW WATER MAIN UP TO 24"

JANUARY 2022 PLATE W-45B

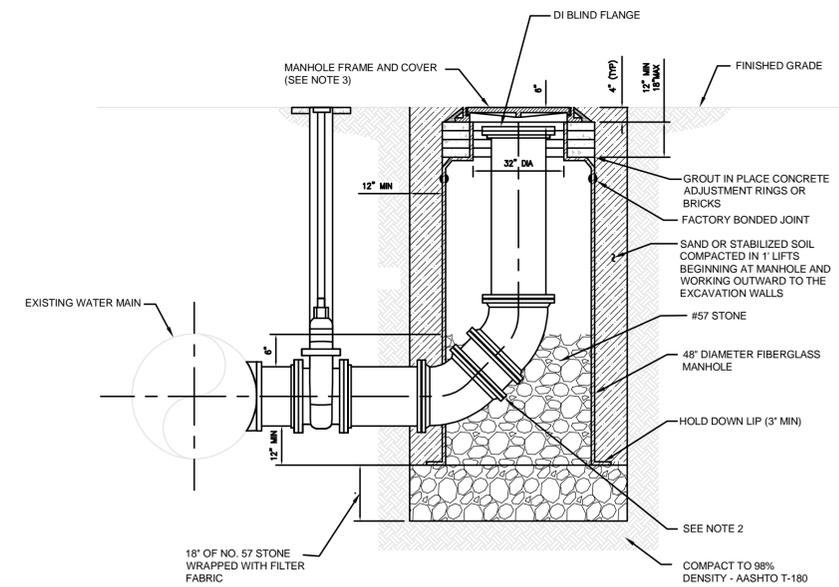


NOTES:

- 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.

SWABBING PIG LAUNCHING STATION DETAIL FOR WATER MAINS UP TO 24" - PLAN

JANUARY 2022 PLATE W-45C



NOTES:

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

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

JANUARY 2022 PLATE W-45D

Englund, Thoms & Miller, Inc.  
14175 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 644-8990  
FAX: (904) 644-8991  
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DRAWN BY: ANDREW HOLLEY  
DATE: FLORIDA REGISTRATION NO. 76182  
CHECKED BY: DATE:

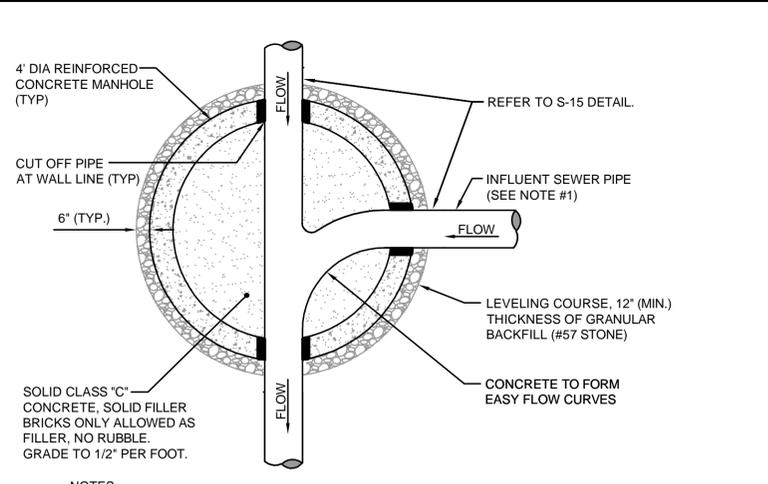
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JEA Building Community<sup>SM</sup>

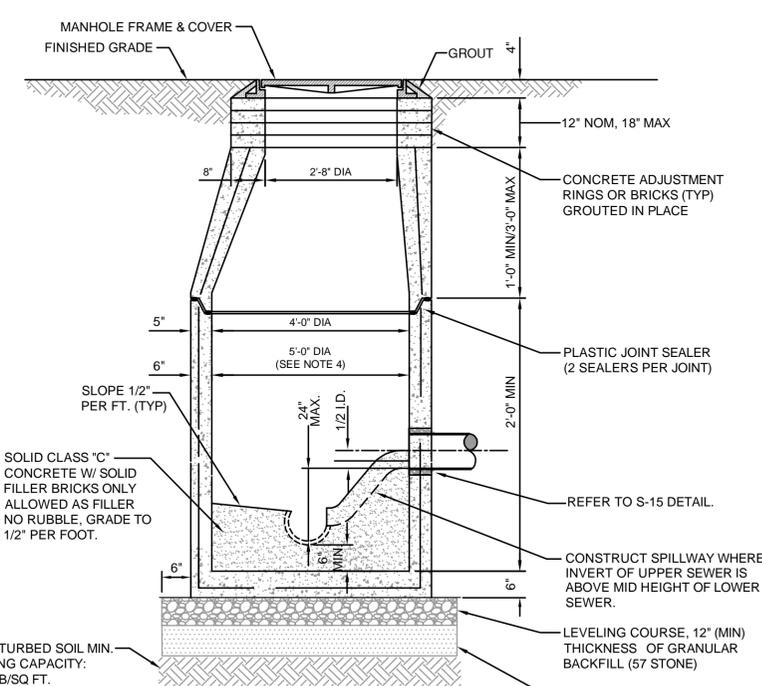
JEA STANDARD WATER AND RECLAIMED DETAILS LMC EMBLEM AT TRIBUTARY

PROJ. NO. 21-221-01	DATE: JANUARY 2022
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DRAWING NO. 145	

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**PLAN VIEW (S-3)**  
(FOR SECTION VIEW SEE S-2)

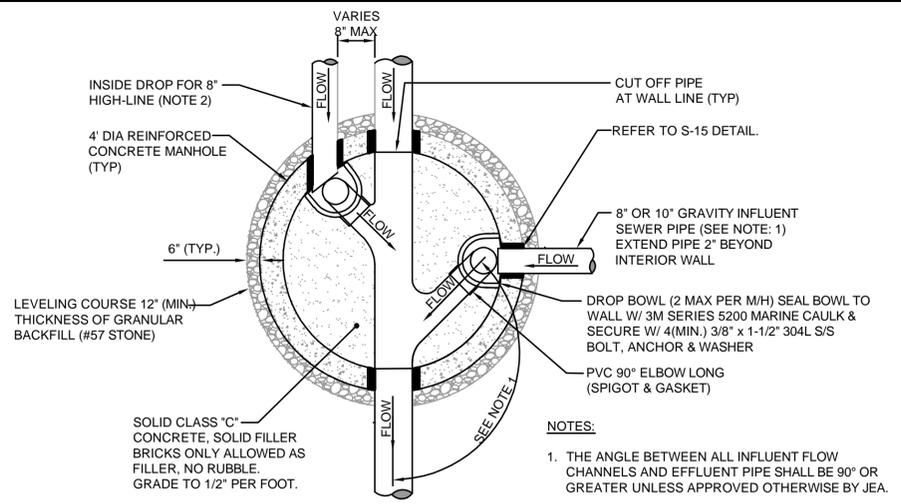


**SECTION VIEW (S-2)**  
(FOR PLAN VIEW SEE S-3)

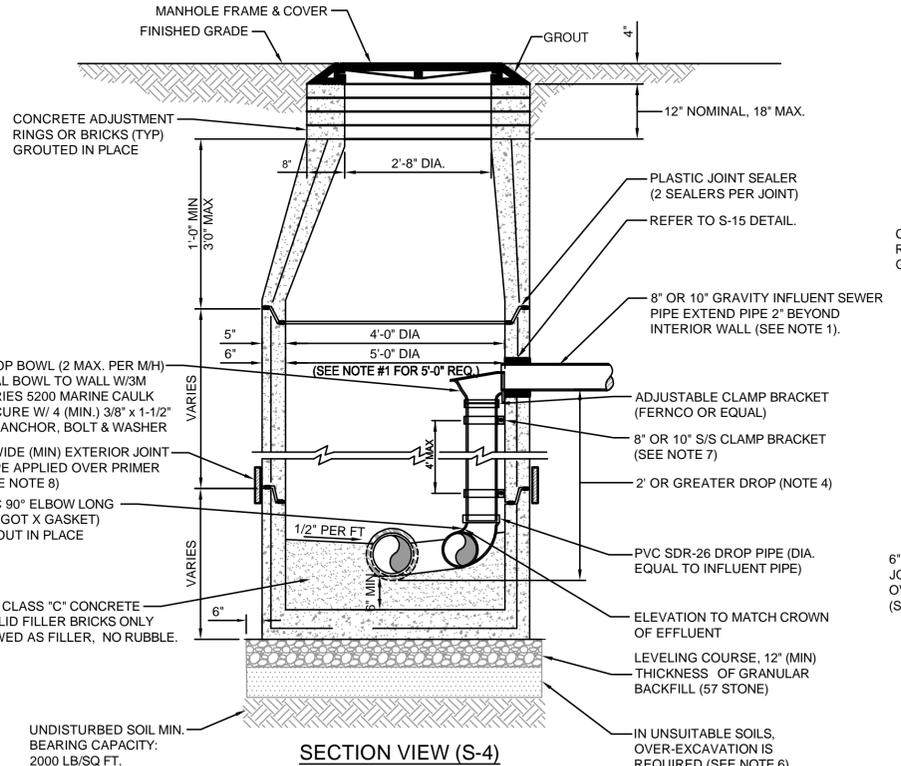
- NOTES:**
1. PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITIONS OF A.S.T.M. C-478 WITH 4000 LB. CONC., TYPE II CEMENT. ALL LIFTING HOLES AND OUTSIDE INSERTS SHALL BE FILLED WITH NON-SHRINK GROUT AND COATED WITH BITUMINOUS WATERPROOFING MATERIAL.
  2. THE INTERIOR AND EXTERIOR OF MANHOLE AND ADJUSTING 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 MATERIAL SHALL BE OMITTED ON THE INSIDE.
  4. JUNCTION MANHOLE (CLOSEST TO WETWELL) SHALL BE 5' DIA WITH SPECIALTY LINER.
  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.
  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 TYPE "A" MANHOLE**  
**8"-21" SEWERS**

JANUARY 2022 PLATES S-2, S-3



**PLAN VIEW (S-5)**  
(FOR SECTION VIEW SEE S-4)

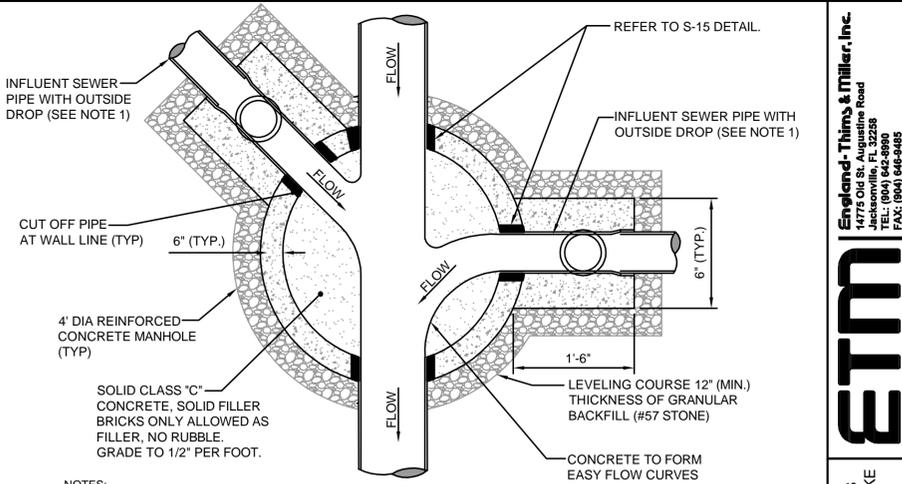


**SECTION VIEW (S-4)**  
(FOR PLAN VIEW SEE S-5)

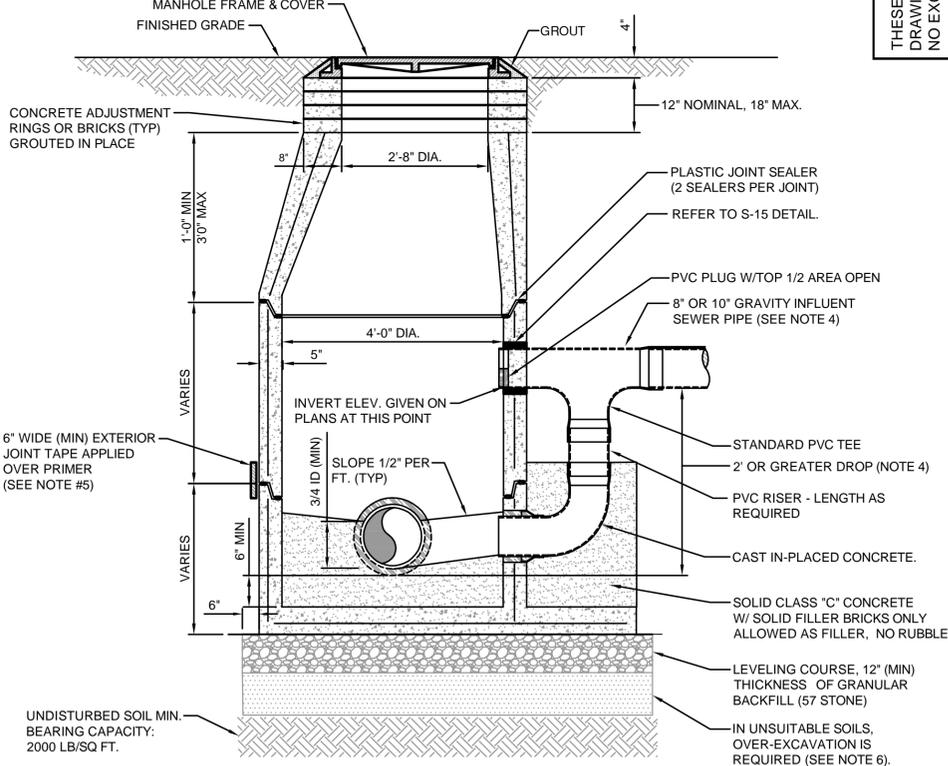
- NOTES:**
1. THIS ASSEMBLY IS FOR 8" OR 10" GRAVITY INFLUENT LINES ONLY. NO DROPS ALLOWED FOR FORCE MAINS. MAXIMUM OF 2 INSIDE DROP BOWLS PER MANHOLE. A 5'-0" DIA. MANHOLE (6" THICK WALLS) IS REQUIRED IF TWO INSIDE DROPS ARE CONSTRUCTED WITH ONE OR BOTH BEING 10" SIZE. DROP BOWL BY RELINER OR APPROVED 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 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 M/H WALL WITH (2) 3/8" X 1" BOLT, ANCHOR & WASHER PER BRACKET ASSY. ALL 304 OR 316 STAINLESS STEEL MATERIALS.
  8. 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.
  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 98%, ASTM D1557) OR OVER-EXCAVATE AN ADDITIONAL 12" (AT A MIN.) AND BACKFILL WITH GRANULAR BACKFILL (57 STONE).

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

JANUARY 2022 PLATES S-4, S-5



**PLAN VIEW (S-8)**  
(FOR SECTION VIEW SEE S-7)



**SECTION VIEW (S-7)**  
(FOR PLAN VIEW SEE S-8)

- 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 12" OR LARGER INFLUENT PIPES W/ 2' OR GREATER INFLUENT 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 TYPE "D" MANHOLE**  
**12"-21" SEWERS**

JANUARY 2022 PLATES S-7, S-8

**ETM**  
 Englund, Thoms & Miller, Inc.  
 14775 Old St. Augustine Road  
 Jacksonville, FL 32218  
 TEL: (904) 644-8980  
 FAX: (904) 644-8980  
 CA - 0002284 LC - 000316

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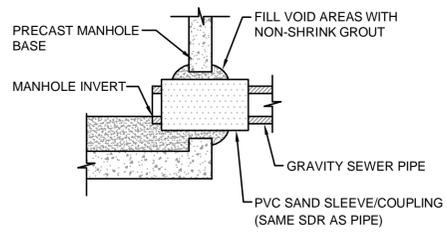
DESIGN ENGINEER: ANDREW HOLLEY  
 FLORIDA REGISTRATION NO.: 76182

DESIGNER: JEA  
 DRAWN BY: JEA  
 CHECKED BY: JEA  
 DATE: JEA

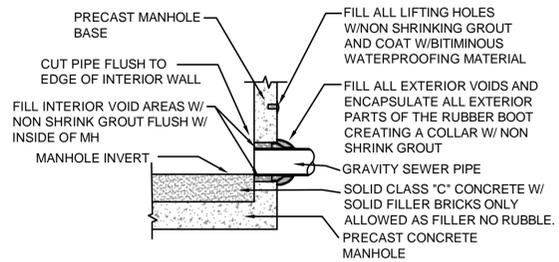
JEA STANDARD  
 SANITARY SEWER DETAILS  
 LMC EMBLEM AT TRIBUTARY

PROJ. NO.:	21-221-01
DATE:	JANUARY 2022
SCALE:	AS NOTED

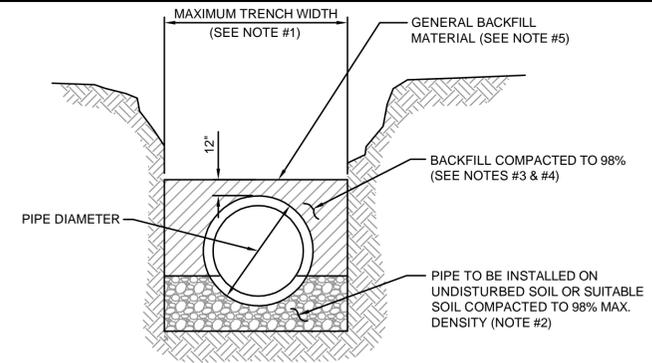
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**PVC SAND SLEEVE**  
(FOR EXISTING AND NEW MH CONSTRUCTION)

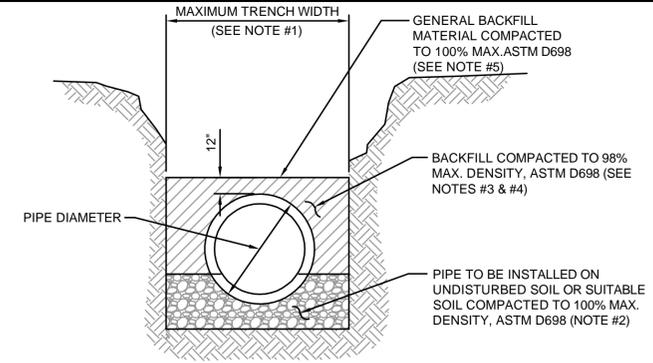


**RUBBER BOOT**  
(FOR NEW M/H CONSTRUCTION ONLY, MAXIMUM DEPTH 15FT)



**TYPICAL TRENCH**

- NOTES:**
- 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.
  - 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.
  - BACK FILL 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.
  - 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 ITS MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D1557.
  - 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.

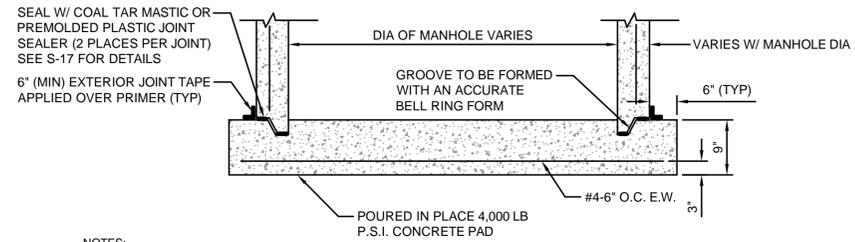


**TYPICAL TRENCH**

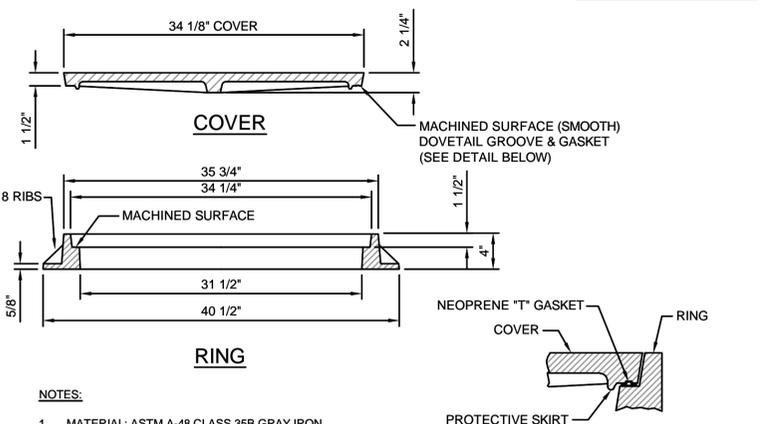
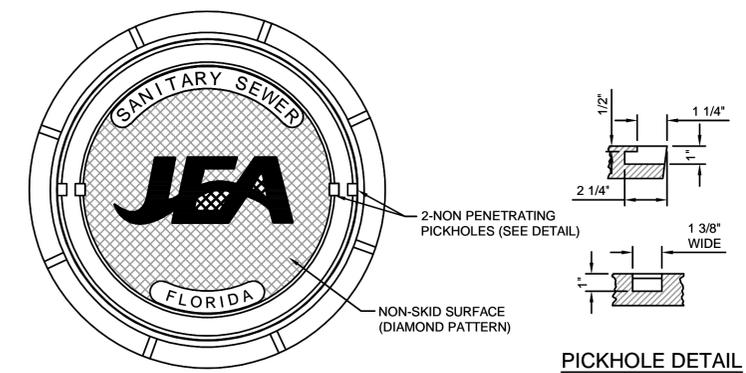
- NOTES:**
- TRENCH SIDES SHALL BE APPROXIMATELY VERTICAL BETWEEN AN ELEVATION OF 1 FOOT ABOVE THE TOP OF THE PIPE AND THE CENTER LINE OF THE PIPE; OTHERWISE, TRENCH SIDES SHALL BE AS VERTICAL AS POSSIBLE OR AS REQUIRED BY OSHA STANDARDS. REFER TO THE MEASUREMENT AND PAYMENT SECTION (SECTION #801, PARAGRAPH #4) TO DETERMINE MAXIMUM PAYLINE WIDTHS.
  - 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.
  - BACK FILL 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.
  - 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 ITS MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D698.
  - 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.

**OPEN CUT TRENCH FOR PRESSURE PIPE**  
JANUARY 2022 IN CITY RIGHT -OF-WAY PLATE W-42

**OPEN CUT TRENCH FOR PRESSURE PIPE**  
JANUARY 2022 IN STATE ROAD RIGHT -OF-WAY PLATE W-42A

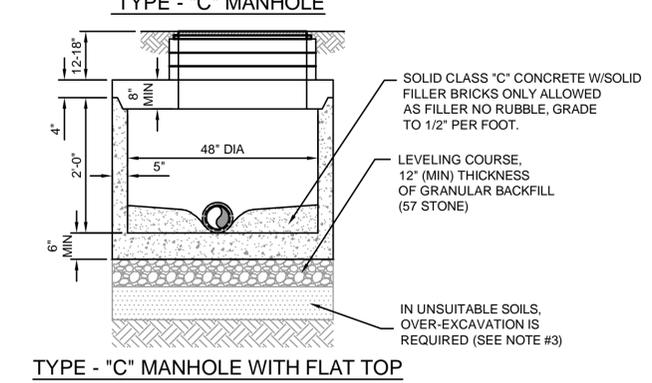
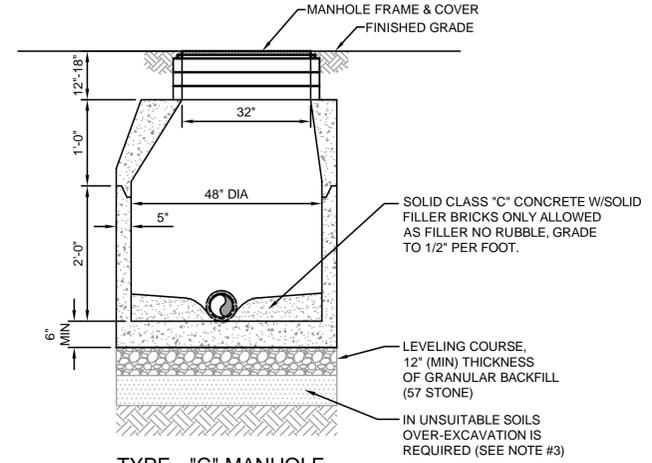


**MANHOLE PIPE CONNECTION DETAIL**  
JANUARY 2022 PLATE S-15



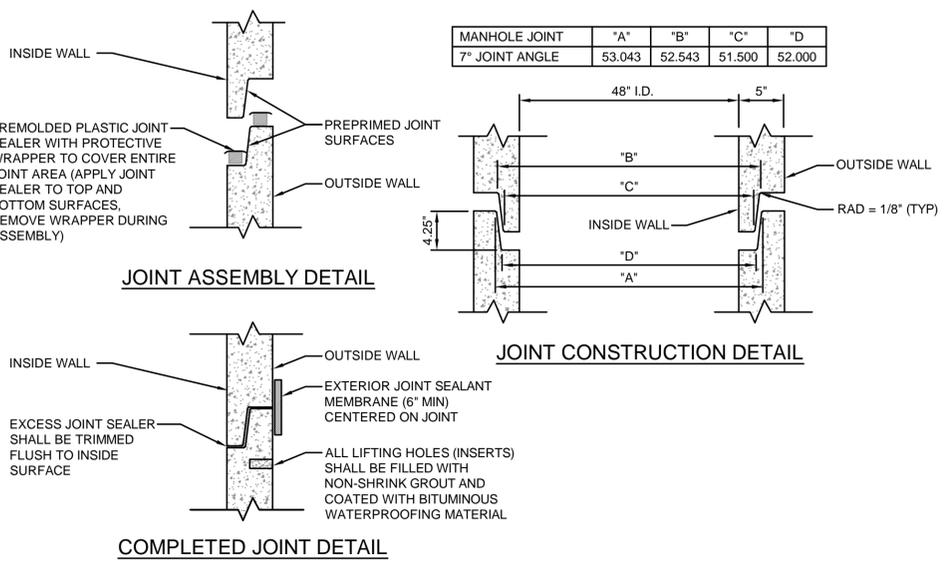
- NOTES:**
- MATERIAL: ASTM A-48 CLASS 35B GRAY IRON.
  - RING WEIGHT 230 LBS APPROX.
  - COVER WEIGHT 230 LBS. APPROX.
  - ALL DIMENSIONS ARE SHOWN IN INCHES.
  - FOR MANHOLES WHICH WILL BE MAINTAINED BY JEA (INCLUDING UTILITY DEDICATION PROJECTS), THE COVER SHALL INCLUDE THE "JEA" LOGO AND A NEOPRENE GASKET.
  - 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 2022 PLATE S-1



- NOTES:**
- 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.
  - THE INTERIOR AND EXTERIOR OF MANHOLE AND INTERIOR OF ADJUSTMENT RINGS SHALL BE GIVEN TWO COAT OF BITUMINOUS WATERPROOFING MATERIAL.
  - 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 TYPE "C" MANHOLE**  
8"-21" SEWERS  
JANUARY 2022 PLATE S-6



**PRECAST SEWER MANHOLE JOINT DETAIL**  
JANUARY 2022 PLATE S-17

MANHOLE JOINT	"A"	"B"	"C"	"D"
7" JOINT ANGLE	53.043	52.543	51.500	52.000

**Englund, Thoms & Miller, Inc.**  
14175 Old St. Augustine Road  
Jacksonville, FL 32248  
TEL: (904) 644-8980  
FAX: (904) 644-8980  
CA - 0002284 LC - 000316

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DESIGN ENGINEER: ANDREW HOLLEY  
FLORIDA REGISTRATION NO.: 76182

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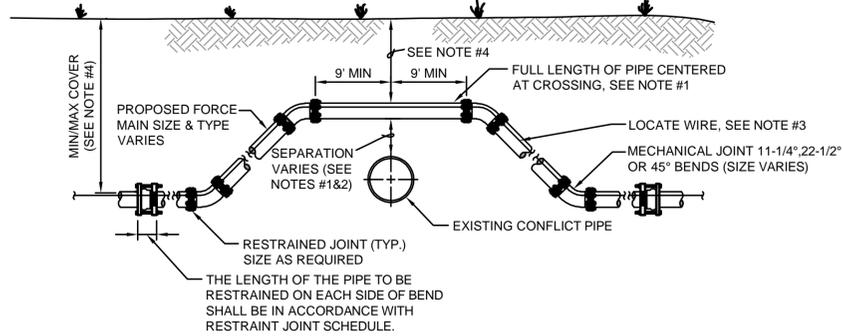
**JEA**  
Building Community

DESIGNER: JEA STANDARD  
DRAWN BY: SANITARY SEWER DETAILS  
DATE: JANUARY 2022  
CHECKED BY: LMC EMBLEM AT TRIBUTARY  
DATE:

PROJ. NO.: 21-221-01  
DATE: JANUARY 2022  
SCALE: AS NOTED

NO. SHEETS	SHEET NO.	DRAWING NO.
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**CASE "A" CROSSING**

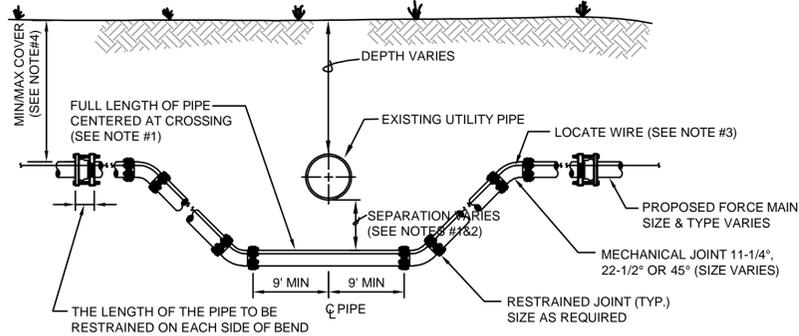
**NOTES:**

- 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.
- FOR OTHER LOCATION LIMITATIONS SEE DETAIL (S-26 & S-27).
- LOCATING WIRE REQUIRED: SEE DETAIL S-49.
- 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.
- THE SOILS BETWEEN THE 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.

**ADJUSTMENT OVER EXISTING UTILITIES  
MECHANICAL RESTRAINTS**

JANUARY 2022

PLATE S-39



**CASE "B" CROSSING**

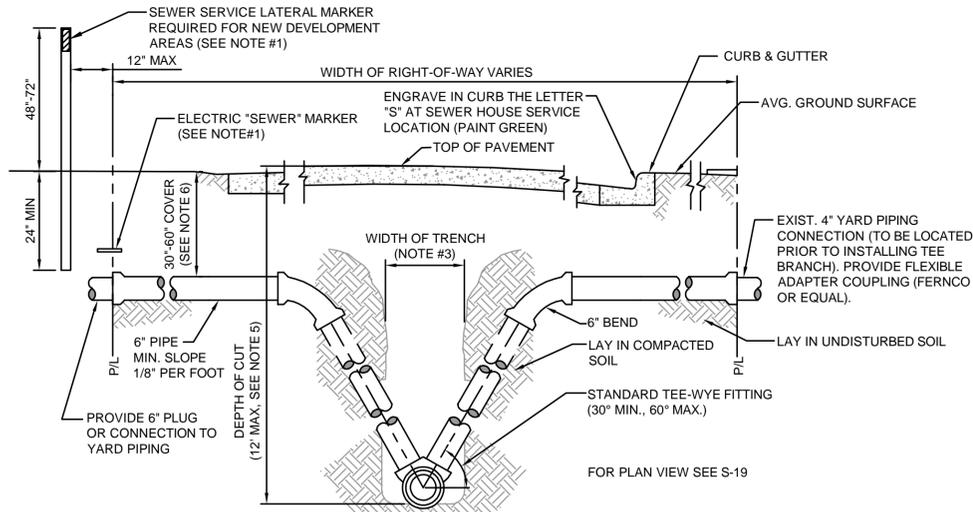
**NOTES:**

- 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.
- FOR OTHER LOCATION LIMITATIONS SEE DETAIL (S-26 & S-27).
- LOCATING WIRE REQUIRED: SEE DETAIL S-49.
- 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.
- THE SOILS BETWEEN THE 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.

**ADJUSTMENT UNDER EXISTING UTILITIES  
MECHANICAL RESTRAINTS**

JANUARY 2022

PLATE S-41



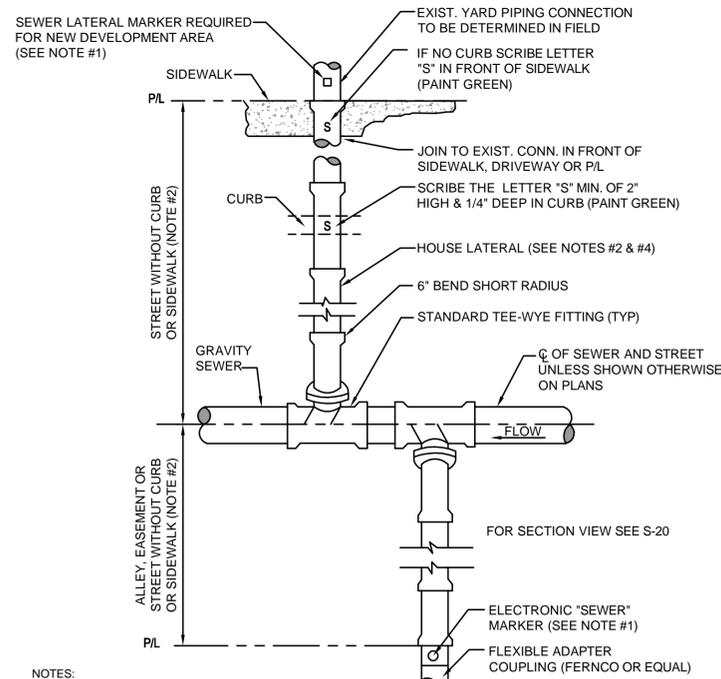
**NOTES:**

- 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 "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. WHERE REQUIRED BY JEA OR NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER SHALL BE INSTALLED TO MARKER SHALL ALSO BE INSTALLED.
- 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).
- SEE MEASUREMENT AND PAYMENT SECTION FOR MAXIMUM PAYMENT WIDTHS.
- ALL GRAVITY SEWER MAINS AND ASSOCIATED SEWER LATERAL PIPE AND FITTINGS (INCLUDING THE TEE-WYE FITTING) SHALL BE PVC SDR-26.
- 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.
- 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.
- 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 2022

PLATE S-20



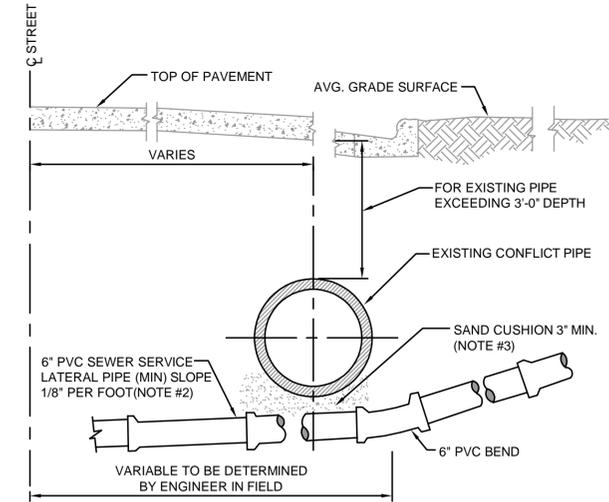
**NOTES:**

- 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 "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. WHERE REQUIRED BY JEA OR NO CONCRETE CURB EXIST, AN ELECTRONIC "SEWER" MARKER SHALL BE INSTALLED TO MARKER SHALL ALSO BE INSTALLED.
- 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).
- NO SEWER SERVICE CONNECTIONS PERMITTED ON GRAVITY SEWER PIPE WHICH ARE 16" AND LARGER.
- ALL GRAVITY SEWER MAINS AND ASSOCIATED SEWER LATERAL PIPE AND FITTINGS (INCLUDING THE TEE-WYE FITTING) SHALL BE PVC SDR-26.

**HOUSE LATERAL - PLAN VIEW**

JANUARY 2022

PLATE S-19



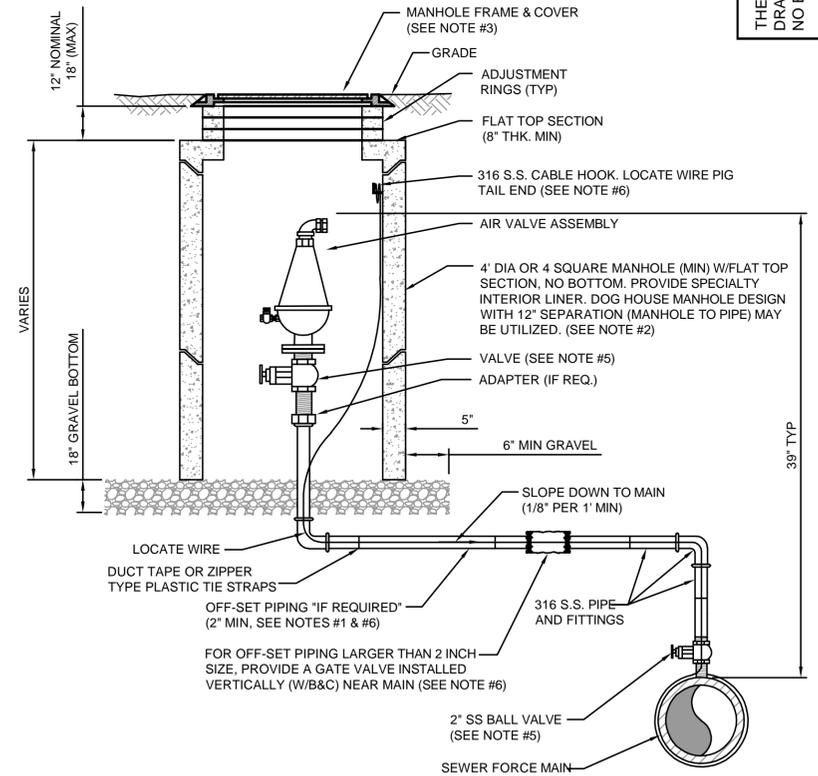
**NOTES:**

- ALTERNATE GRADIENT FOR 6 INCH LATERAL SEWERS AT CONFLICTS WITH EXISTING UTILITIES.
- FLATTER SLOPE MUST BE PRE-APPROVED BY JEA O&M MANAGER (ONLY) PRIOR TO CONSTRUCTION
- 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.

**HOUSE LATERAL UNDER CONFLICT PIPE**

JANUARY 2022

PLATE S-24



**NOTES:**

- THE AIR ASSEMBLY MANHOLE SHALL BE LOCATED OUTSIDE OF THE ROADWAY PAVEMENT AREA (I.E. LOCATED IN NON-TRAFFIC AREAS). IF OFF-SET PIPING IS REQUIRED, THE PIPING SHALL BE 2 INCH MINIMUM, (SAME SIZE AS AIR VALVE INLET). FOR PIPE SIZES 3 INCH AND SMALLER: PIPING SHALL BE 316 STAINLESS STEEL SCH.40, STD GRADE, THREADED. FOR PIPE SIZES 4 INCH AND LARGER: PIPING SHALL BE 316 STAINLESS STEEL SCH. 10 (MIN), WELDED OR PVC DR-18 PIPE AND FITTINGS-RESTRAINED.
- 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.
- 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).
- 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.
- 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.
- LOCATE WIRE SHALL HAVE ENOUGH SLACK TO REACH 4' ABOVE FINAL GRADE.

**AIR VALVE ASSEMBLY INSIDE MANHOLE**

JANUARY 2022

PLATE S-29

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Engelund, Thoms & Miller, Inc.  
14775 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 644-8980  
FAX: (904) 644-8981  
CA - 000284 LC - 000316

**ETM**  
VISION • EXPERIENCE • RESULTS

NO.	BY	DATE	REVISIONS
4.	ANDREW HOLLEY		
3.			
2.			
1.			

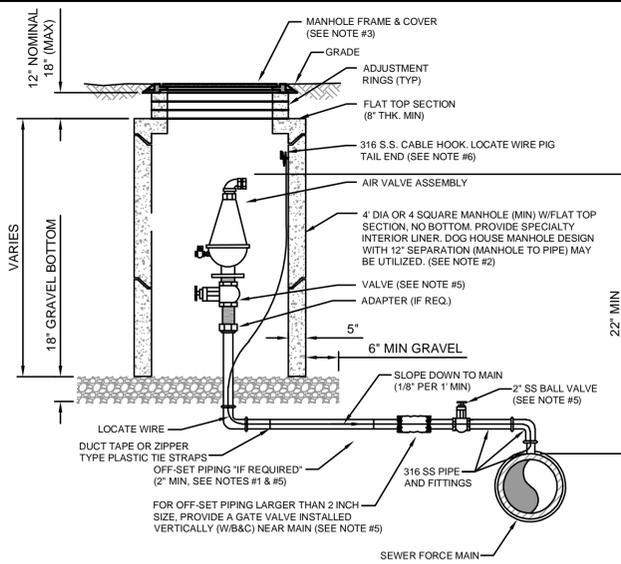
DESIGN ENGINEER  
ANDREW HOLLEY  
FLORIDA REGISTRATION NO.  
76182

DESIGNER  
DATE  
CHECKED BY  
DATE

THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

JEA STANDARD  
SANITARY SEWER DETAILS  
LMC EMBLEM AT TRIBUTARY

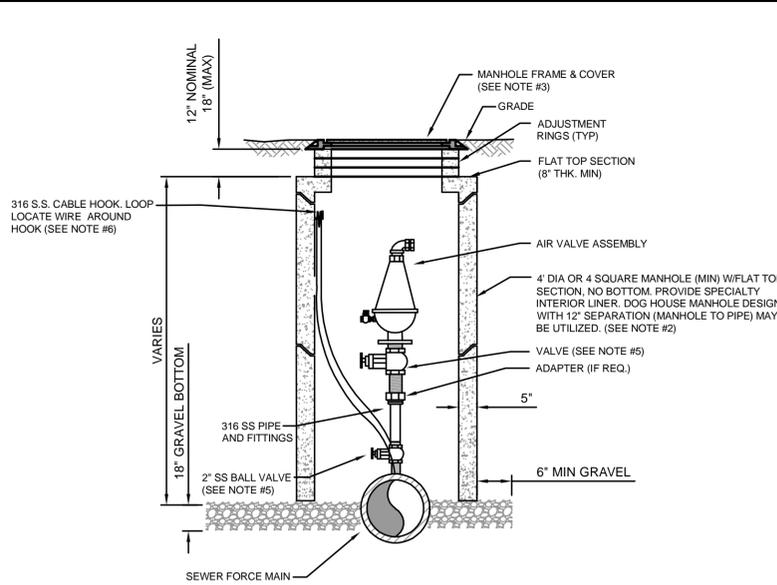
NO. SHEETS	21-221-01
SHEET NO.	JANUARY 2022
DRAWING NO.	AS NOTED
14J	



- NOTES:**
1. THE AIR ASSEMBLY MANHOLE SHALL BE LOCATED OUTSIDE OF THE ROADWAY PAVEMENT AREA (I.E. LOCATED IN NON-TRAFFIC AREAS). IF OFF-SET PIPING IS REQUIRED, THE PIPING SHALL BE 2 INCH MINIMUM, (SAME SIZE AS AIR VALVE INLET). FOR PIPE SIZES 3 INCH AND SMALLER: PIPING SHALL BE 316 STAINLESS STEEL SCH.40, STD GRADE, THREADED. FOR PIPE SIZES 4 INCH AND LARGER: PIPING SHALL BE 316 STAINLESS STEEL SCH. 10 (MIN), WELDED OR PVC DR-18 PIPE AND FITTINGS-RESTRAINED.
  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.

### OPTIONAL LOW PROFILE AIR VALVE ASSEMBLY INSIDE MANHOLE

JANUARY 2022 PLATE S-29A



- 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 2022 PLATE S-29B

LENGTH (L) TO BE RESTRAINED (SEE PLATE Nos. 38C & 38D FOR ADDITIONAL DETAILS)

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS (SEE NOTE 4)		VALVES OR DEAD ENDS L (FT.)
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	UPPER L (FT.)	LOWER L (FT.)	
4	21	9	5	3	17	3	47
6	30	13	6	3	23	4	66
8	38	16	8	4	30	6	86
10	45	19	9	5	36	7	103
12	53	22	11	6	43	8	121
14	61	26	13	6	50	9	140
16	66	28	14	7	55	10	154
18	73	30	15	8	60	11	170
20	79	33	16	8	66	12	186
24	79	33	16	8	77	15	185
30	93	39	19	10	97	17	222
36	106	39	21	11	107	20	257
42	117	49	24	12	120	24	289
48	144	53	26	13	133	26	321

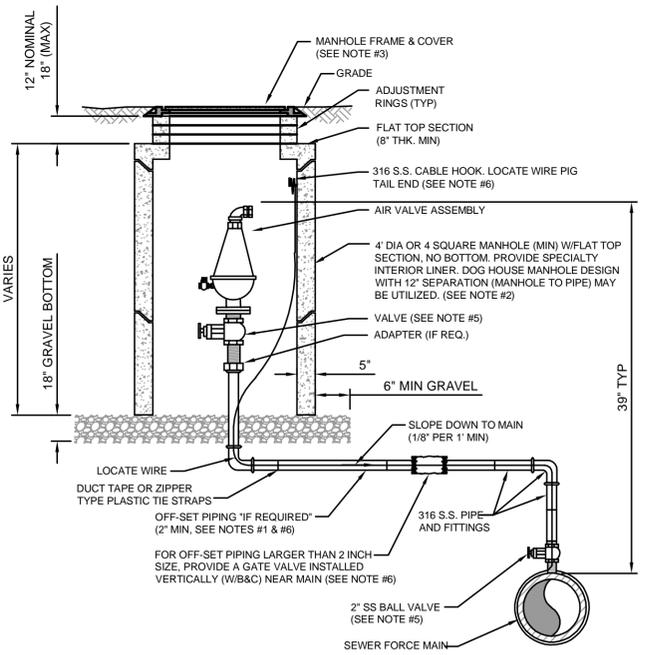
  

SIZE (IN.)	L (FT.)	TEES SEE NOTE 5		
		RUN SIZE (IN.)	BRANCH SIZE (IN.)	
6x4	34	4	4	F.O.
8x6	36	4	6	F.O.
8x4	62	4	4 < LESS	F.O.
10x8	35	8	8	F.O.
10x6	63	8	6 < LESS	F.O.
12x10	36	10	10	F.O.
12x8	64	10	8 < LESS	F.O.
16x12	66	12	12	F.O.
16x10	92	12	10 < LESS	F.O.
20x18	35	16	16	F.O.
20x16	66	16	12 < LESS	F.O.
20x12	117	20	20	F.O.
24x20	56	20	20	F.O.
24x18	80	24	16 < LESS	F.O.
24x16	101	24	16 < LESS	F.O.
30x24	78	24	24	F.O.
30x20	121	30	30	F.O.
36x30	78	30	30	F.O.
36x24	141	36	36	F.O.
42x36	75	42	42	F.O.
42x30	140	42	42	F.O.
48x42	75	48	48	F.O.
48x36	139	48	48	F.O.

- 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<sub>U</sub> IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. L<sub>L</sub> 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 RESTRAINED LENGTH ON TEE "BRANCH" LINE.
  6. HOPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).
  7. THE INSTALLATION OF BELL HARNESS RESTRAINTS AT PVC JOINTS (DR-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

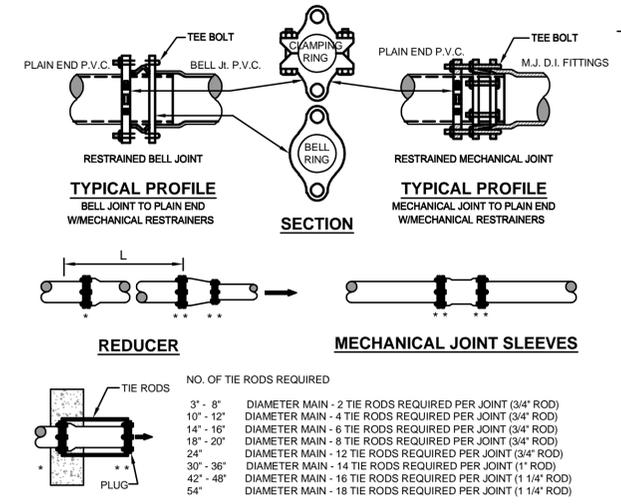
JANUARY 2022 PLATE S-38A



- NOTES:**
1. THE AIR ASSEMBLY MANHOLE SHALL BE LOCATED OUTSIDE OF THE ROADWAY PAVEMENT AREA (I.E. LOCATED IN NON-TRAFFIC AREAS). IF OFF-SET PIPING IS REQUIRED, THE PIPING SHALL BE 2 INCH MINIMUM, (SAME SIZE AS AIR VALVE INLET). FOR PIPE SIZES 3 INCH AND SMALLER: PIPING SHALL BE 316 STAINLESS STEEL SCH.40, STD GRADE, THREADED. FOR PIPE SIZES 4 INCH AND LARGER: PIPING SHALL BE 316 STAINLESS STEEL SCH. 10 (MIN), WELDED OR PVC DR-18 PIPE AND FITTINGS-RESTRAINED.
  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

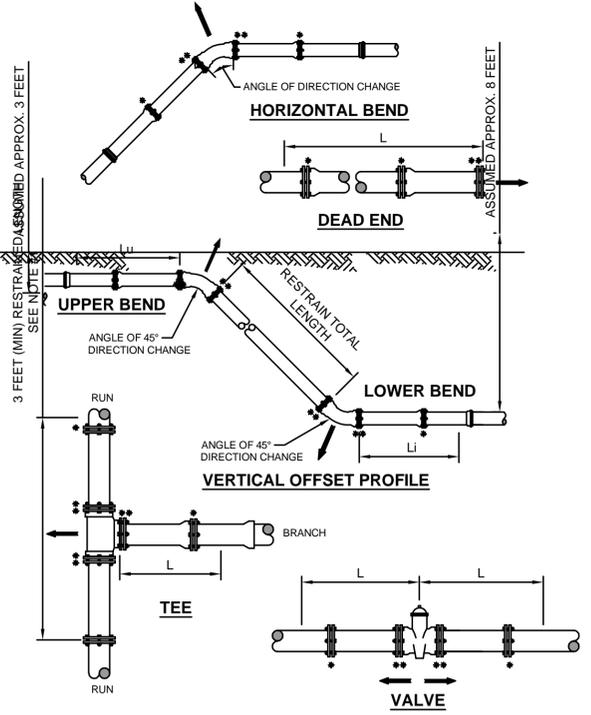
JANUARY 2022 PLATE S-29



- DEAD - END THRUST COLLAR ANCHOR**  
TO BE USED INSTEAD OF TOTAL RESTRAINED LENGTH (OPTIONAL) SIZE AS PER THRUST BLOCK DETAIL (W-38). SEE DETAILS W-36 & W-37.
- 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

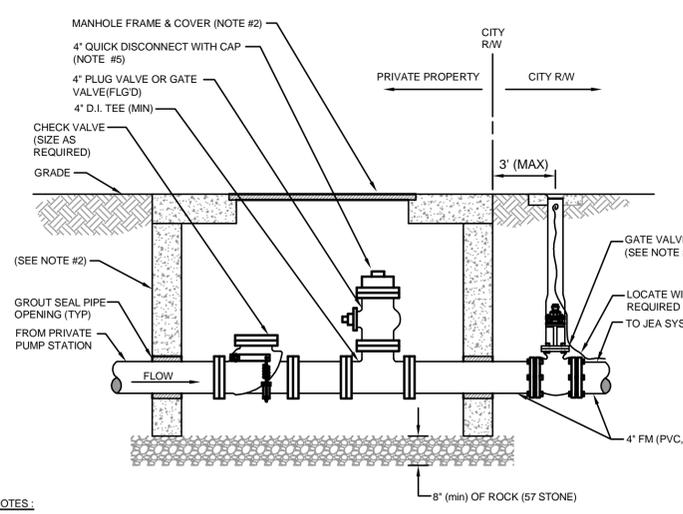
JANUARY 2022 PLATE S-38C



- 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 BASIS.
  3. PAY ITEM \*\*\*\* DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.

### MECHANICAL RESTRAINT DETAILS - II

JANUARY 2022 PLATE S-38D



- NOTES:**
1. SEWER PUMP-OUT BOX SHALL BE CONSTRUCTED ON PRIVATE PROPERTY AND LOCATED AT THE RW 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-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 RW LINE FOR ALL FORCE MAIN PIPING WHICH EXCEEDS 15' LINEAR FEET WITHIN THE CITY RW AREA. THE GATE VALVE AT THE RW 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 RW 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.

### PRIVATE PUMP OUT ASSEMBLY

JANUARY 2022 PLATE S-46

**Englund, Thoms & Miller, Inc.**  
14775 Old St. Augustine Road  
Jacksonville, FL 32218  
TEL: (904) 644-8980  
FAX: (904) 644-8981  
CA - 000284 LC - 000316

**ETM**  
VISION • EXPERIENCE • RESULTS

THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

NO.	BY	DATE	REVISIONS
4	ANDREW HOLLEY		
3			
2			
1			

DESIGN ENGINEER: ANDREW HOLLEY  
FLORIDA REGISTRATION NO.: 76182

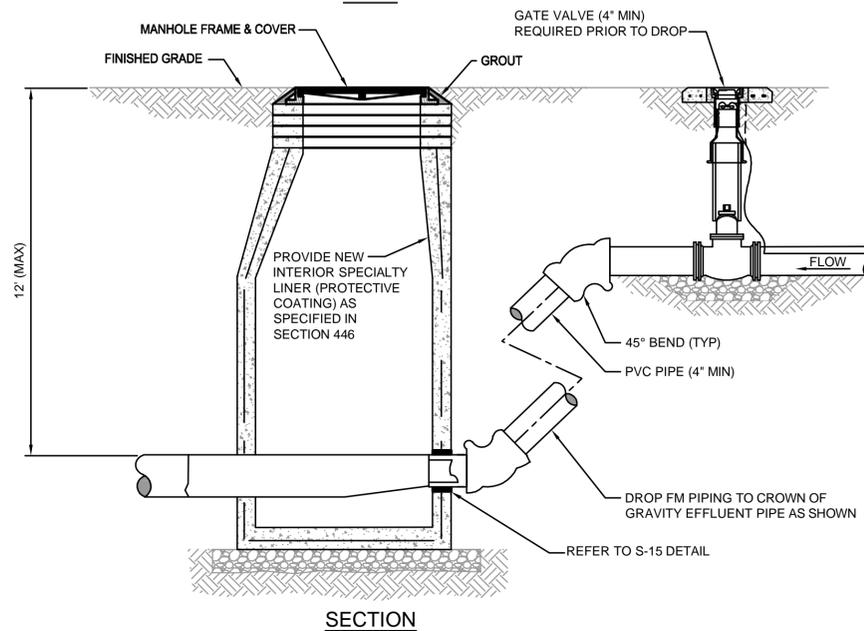
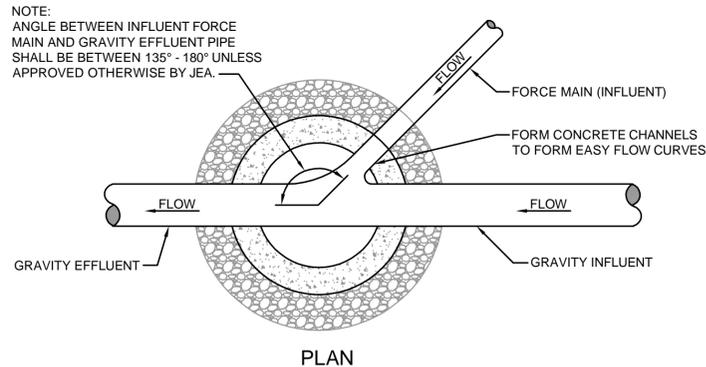


JEA STANDARD  
SANITARY SEWER DETAILS  
LMC EMBLEM AT TRIBUTARY

PROJ. NO.	DATE	SCALE
21-221-01	JANUARY 2022	AS NOTED

NO. SHEETS	SHEET NO.	DRAWING NO.
5	4	14K

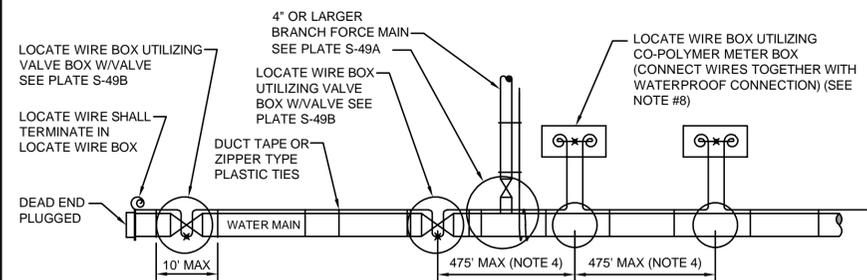
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### TYPICAL FORCE MAIN CONNECTION TO MANHOLE

JANUARY 2022

PLATE S-18



### LOCATE WIRE SYSTEM

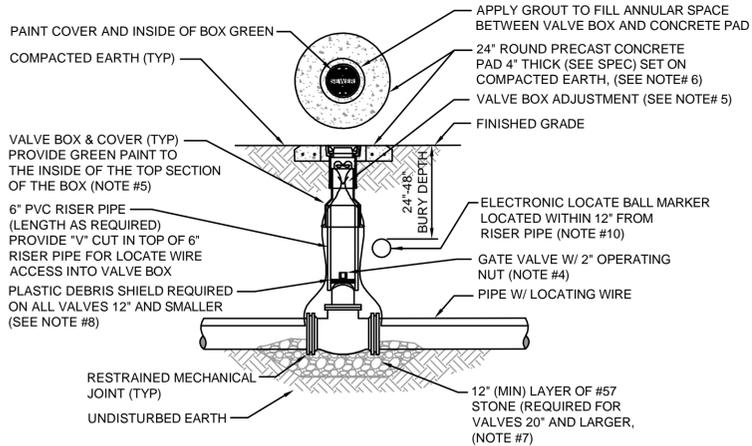
**NOTES:**

- 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).
- SECURE LOCATING WIRE TO PVC FORCE 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.
- 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.
- 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.
- 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.
- \* INDICATES THAT THE WIRES ARE CONNECTED TOGETHER WITH WATERPROOF CONNECTION. (SEE DETAIL W-49B)
- ⊗ INDICATES A WIRE PIG-TAIL (24" LONG)
- AN "LW" CUT SHALL BE CARVED IN THE CONCRETE CURB AND PAINTED AT ALL LOCATE WIRE BOXES.
- 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 2022

PLATE S-49



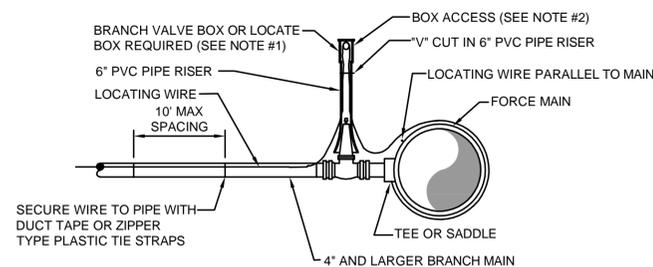
**NOTES:**

- 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.
- LOCATING WIRE IS REQUIRED ON ALL PRESSURE PIPING (SEE DETAIL S-49).
- 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.
- IN PAVED AREAS, INSTALL VALVE AT A DEPTH TO ALLOW A 12" MIN. DISTANCE BETWEEN THE VALVE COVER PLATE AND THE TOP OF THE VALVE OPERATING NUT. OUTSIDE OF PAVED AREAS (GRASS), INSTALL VALVE AT A DEPTH TO ALLOW A 6" MINIMUM DISTANCE BETWEEN THE VALVE COVER AND THE TOP OF THE VALVE OPERATING NUT. OPERATING NUT/STEM EXTENSION SHALL BE PROVIDED (WHERE APPLICABLE) SO THAT THE OPERATING NUT WILL BE NO MORE THAN 30 INCHES BELOW FINISHED GRADE.
- 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.
- BRASS IDENTIFICATION TAG INDICATING "SEWER", VALVE SIZE, DIRECTION AND TURNS TO OPEN & VALVE TYPE. PROVIDE A 1/2" 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.
- 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.
- GRAVEL SHALL BE PROVIDED UNDER ALL VALVES 20" AND LARGER. THE MINIMUM VERTICAL LIMIT OF GRAVEL IS 12" UNDER THE VALVE UP TO 1/2 THE OVERALL HEIGHT OF THE VALVE.
- 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.
- ALL VALVES SHALL BE INSTALLED WITH AN ELECTRIC LOCATE MARKER. MARKER SHALL BE 4" DIA. COLOR CODED BALL MARKER (3M-1404XR FOR SEWER).

### SEWER VALVE DETAIL

JANUARY 2022

PLATE S-30



### BRANCH FORCE MAIN

(4" AND LARGER SEWER MAIN)

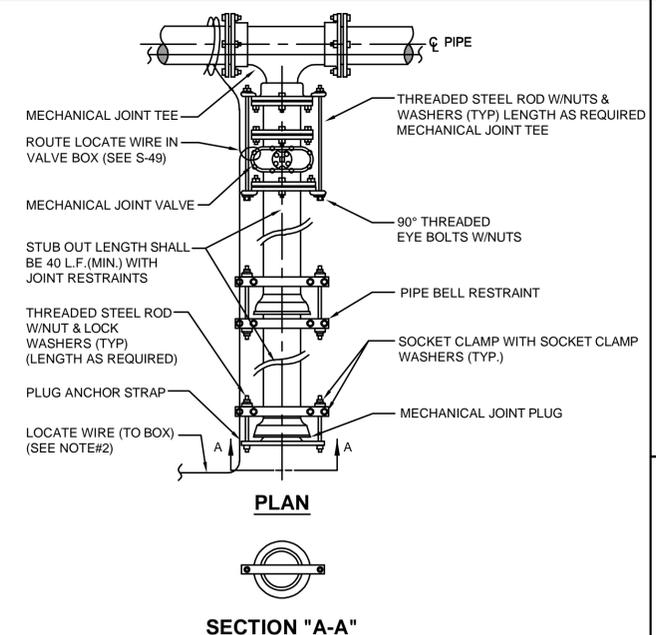
**NOTE:**

- NOTE THAT THE BRANCH WIRE IS NOT CONNECTED TO THE MAIN WIRE.
- LOCATE WIRE SHALL ENTER THE VALVE BOX THROUGH A "V" CUT IN THE 6" PVC RISER PIPE SECTION (SEE S-30).
- LOCATE WIRE BOX SHALL BE INSTALLED OUTSIDE OF SIDEWALKS, DRIVEWAYS AND PAVEMENT.
- ⊗ INDICATES A WIRE PIG-TAIL (4' LONG)

### LOCATE WIRE FOR BRANCH MAIN

JANUARY 2022

PLATE S-49A



### SECTION "A-A"

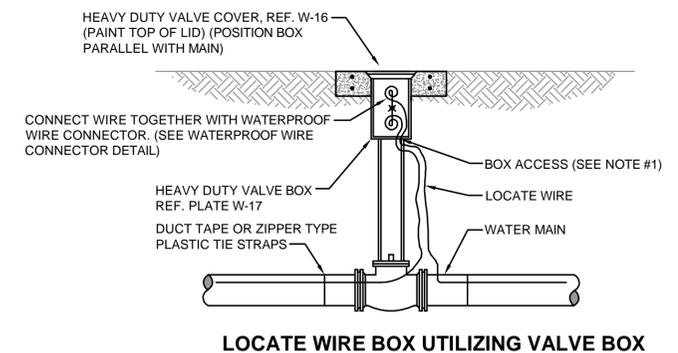
**NOTES:**

- IN LIEU OF BELL/ROD RESTRAINTS, MECHANICAL JOINT RESTRAINTS MAY BE USED.
- LOCATING WIRE REQUIRED, UTILIZING A LOCATE WIRE BOX INSTALLED AT PLUG LOCATION.
- 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)
- 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.

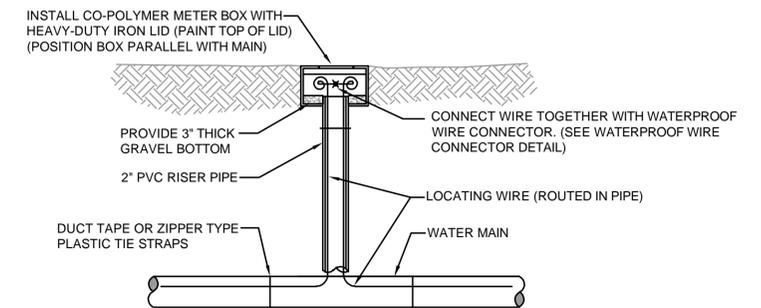
### PLUGGED DEAD END USING MECHANICAL RESTRAINTS

JANUARY 2022

PLATE S-44



### LOCATE WIRE BOX UTILIZING VALVE BOX



### LOCATE WIRE BOX UTILIZING METER BOX

### LOCATE WIRE BOX

JANUARY 2022

PLATE S-49B

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**Englund, Thoms & Miller, Inc.**  
 14775 Old St. Augustine Road  
 Jacksonville, FL 32218  
 TEL: (904) 644-8980  
 FAX: (904) 644-8981  
 CA - 000284 LC - 000316

VISION • EXPERIENCE • RESULTS

THESE DETAILS AS SHOWN ON THIS DRAWING ARE BY THE JEA. WE TAKE NO EXCEPTION TO THE DESIGN

**JEA**  
 Building Community

DESIGNER:	ANDREW HOLLEY
DRAWN BY:	ANDREW HOLLEY
DATE:	
CHECKED BY:	
DATE:	
FLORIDA REGISTRATION NO.:	76182

NO.	BY	DATE	REVISIONS
4.			
3.			
2.			
1.			

PROJ. NO.:	21-221-01
DATE:	JANUARY 2022
SCALE:	AS NOTED
NO. SHEETS:	5
SHEET NO.:	5
DRAWING NO.:	14L

- PVC PIPE RESTRAINT NOTES:**
- 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.
  - ASSUMPTIONS: PVC PIPE, SAFETY FACTOR=1.5, TEST PRESSURE=150PSI, SOIL=GM OR SM, TRENCH TYPE 3, DEPTH OF COVER=36 INCHES.
  - BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
  - 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.
  - TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 3 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE. THE PROJECT ENGINEER CAN INCREASE THIS DISTANCE TO REDUCE THE RESTRAINS REQUIRED ON THE BRANCH SIDE. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.
  - HDPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).
  - THE INSTALLATION OF BELL HARNESS RESTRAINTS AT PVC JOINTS (DR-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.

(SEE PLATE Nos. 31C & 31D FOR ADDITIONAL DETAILS)

RUN SIZE (IN.)	P.V.C. PIPE TEE - L (FT.) SEE NOTE 5. FOR													
	BRANCH SIZE (IN.)													
4	29													
6	23	44												
8	18	41	61											
10	12	37	58	75										
12	6	33	55	73	91									
14	1	29	52	71	89	107								
16	1	24	48	68	86	105	119							
18	1	19	45	65	84	103	118	133						
20	1	15	41	62	82	101	116	132	147					
24	1	4	34	56	76	97	112	128	144	173				
30	1	1	21	46	68	89	106	123	139	169	209			
36	1	1	8	35	59	82	99	117	134	165	206	244		
42	1	1	1	23	49	73	92	111	128	160	202	241	276	
48	1	1	1	10	39	64	84	104	122	155	198	238	273	307

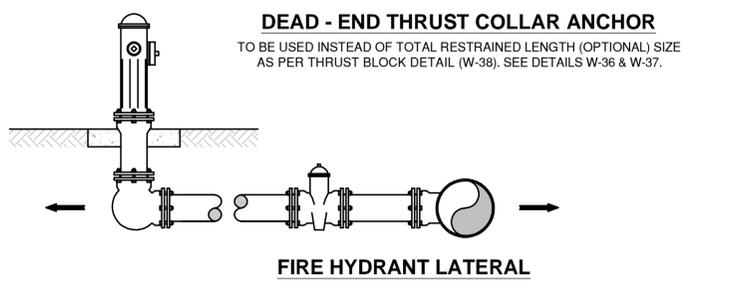
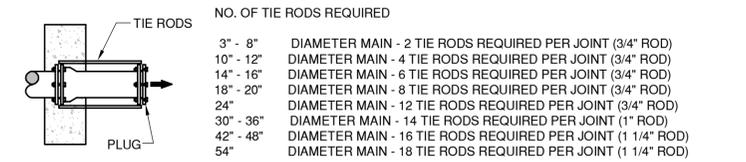
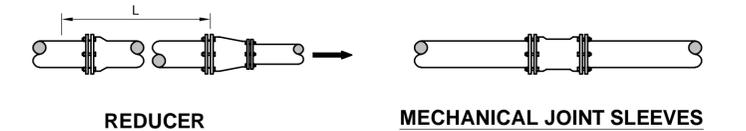
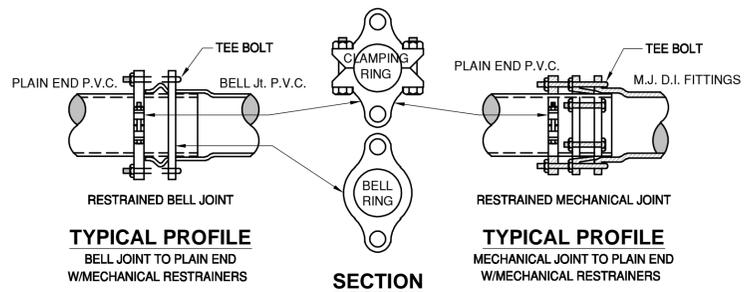
P.V.C. PIPE REDUCERS - L (FT.) SEE NOTE 5. FOR

LARGE END (IN.)	SMALL END (IN.)												
	6	29											
8	52	31											
10	71	53	29										
12	89	74	54	30									
14	105	95	78	57	31								
16	121	111	96	78	56	30							
18	136	127	114	98	79	56	30						
20	151	143	131	117	100	79	56	30					
24	179	172	163	151	137	120	101	80	56				
30	217	211	204	195	184	171	156	140	121	78			
36	253	249	243	235	226	216	204	190	175	141	78		
42	285	282	277	271	263	255	245	233	221	192	140	75	
48	318	315	310	305	299	292	283	273	263	238	194	139	75

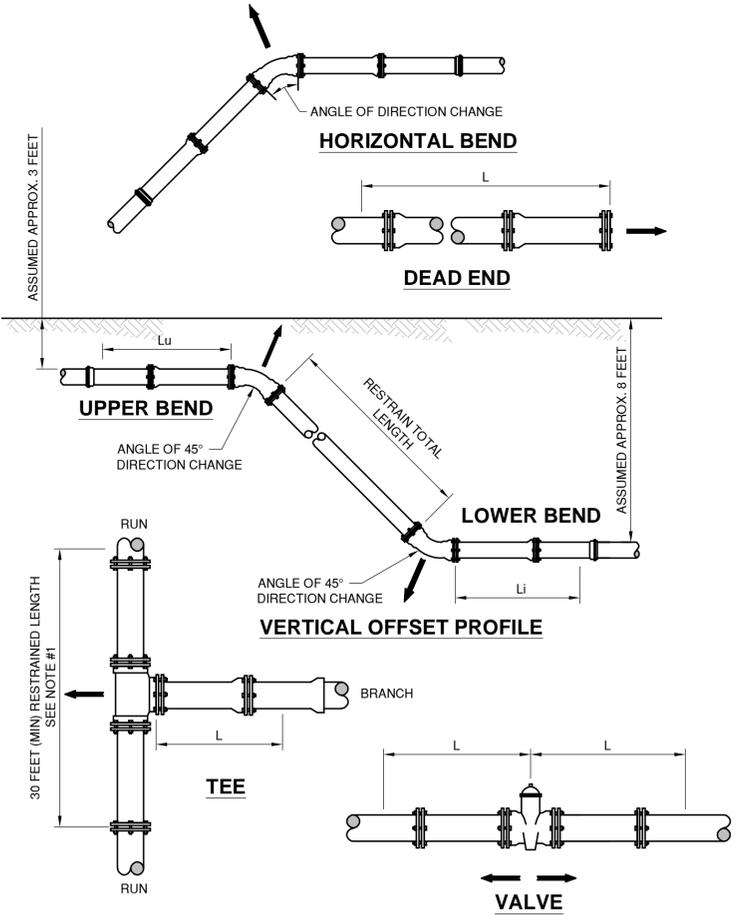
P.V.C. PIPE FITTING, PLUGS & VALVES - L (FT.)

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL BENDS			VALVES OR DEAD ENDS L (FT.)
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	
4	18	8	4	2	17	8	4	39
6	25	11	5	3	23	11	6	55
8	33	14	7	4	30	15	8	72
10	39	16	8	4	36	18	9	87
12	45	19	9	5	43	21	11	102
14	52	22	11	6	50	24	12	119
16	57	24	12	6	55	27	13	131
18	63	26	13	7	60	29	15	145
20	68	29	14	7	66	32	16	159
24	79	33	16	8	77	37	19	185
30	93	39	19	10	92	45	22	222
36	106	44	21	11	107	52	26	257
42	117	49	24	12	120	58	29	289
48	128	53	26	13	133	64	32	321

**PVC PIPE RESTRAINT JOINT SCHEDULE**



GENERAL NOTE:  
1. → 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.).

(SEE PLATE Nos. 31C & 31D FOR ADDITIONAL DETAILS)

RUN SIZE (IN.)	D.I. PIPE TEE - L (FT.) SEE NOTE 5. FOR													
	BRANCH SIZE (IN.)													
4	18													
6	15	29												
8	12	26	39											
10	8	24	37	48										
12	4	21	35	47	58									
14	1	18	33	45	57	67								
16	1	16	31	43	55	66	76							
18	1	13	29	42	54	64	75	85						
20	1	10	27	40	52	63	74	84	94					
24	1	3	22	36	49	60	71	82	92	110				
30	1	1	14	29	44	56	68	78	89	108	133			
36	1	1	5	23	38	51	63	74	85	105	131	155		
42	1	1	1	15	32	46	59	70	82	102	129	153	175	
48	1	1	1	7	25	40	54	66	78	99	126	151	173	194

D.I. PIPE REDUCERS - L (FT.) SEE NOTE 5. FOR

LARGE END (IN.)	SMALL END (IN.)												
	6	19											
8	34	20											
10	45	34	19										
12	57	48	35	20									
14	67	59	48	35	19								
16	77	71	61	50	36	19							
18	87	81	73	63	50	36	19						
20	96	91	84	75	64	51	36	19					
24	114	109	103	96	87	77	64	51	36				
30	138	135	130	124	117	109	100	89	77	50			
36	161	158	154	150	144	137	130	121	111	89	50		
42	181	179	176	172	167	162	155	148	140	122	89	48	
48	201	199	196	193	189	184	179	173	166	150	122	88	48

D.I. PIPE FITTING, PLUGS & VALVES - L (FT.)

NOMINAL PIPE SIZE (IN.)	HORIZONTAL BENDS				VERTICAL BENDS			VALVES OR DEAD ENDS L (FT.)
	90° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	45° BENDS L (FT.)	22.5° BENDS L (FT.)	11.25° BENDS L (FT.)	
4	15	6	3	2	11	5	3	25
6	20	9	4	2	15	7	4	36
8	26	11	6	3	20	10	5	47
10	31	13	7	4	23	11	6	56
12	36	15	8	4	27	13	7	65
14	41	17	9	4	31	15	8	74
16	46	19	10	5	35	17	9	84
18	50	21	10	5	39	19	10	92
20	55	23	11	6	42	21	10	101
24	63	27	13	7	49	24	12	118
30	75	31	15	8	59	28	14	141
36	86	36	17	9	68	33	17	163
42	95	40	19	10	76	37	18	183
48	104	43	21	11	84	41	20	203

- DUCTILE IRON PIPE RESTRAINT NOTES:**
- 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.
  - ASSUMPTIONS: DUCTILE IRON PIPE (WITHOUT POLY WRAP), SAFETY FACTOR=1.5, TEST PRESSURE=150PSI, SOIL=GM OR SM, TRENCH TYPE 3, DEPTH OF COVER=36 INCHES. FOR D.I.P. W/POLY WRAP, USE RESTRAINT JOINT SCHEDULE FOR PVC PIPE.
  - BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
  - 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.
  - TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 3 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE. THE PROJECT ENGINEER CAN INCREASE THIS DISTANCE TO REDUCE THE RESTRAINS REQUIRED ON THE BRANCH SIDE. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.
  - HDPE TO D.I.P. TRANSITIONS: THE D.I.P. PIPE SIDE SHALL BE RESTRAINED 35 FT (MIN).

**MECHANICAL RESTRAINT DETAILS - I**

**MECHANICAL RESTRAINT DETAILS - II**

**DUCTILE IRON PIPE RESTRAINT JOINT SCHEDULE**

PLANS PREPARED UNDER THE DIRECTION OF:

REVISED: 2022.07.27-REV. PER CLIENT COMMENT  
2022.09.02-REV. PER AGENCY COMMENT  
2023.03.02-REV. PER AGENCY COMMENT  
2023.05.01-REV. PER AGENCY COMMENT

EM NO. 21-221-01  
DRAWN BY: DDS  
DESIGNED BY: DDS  
CHECKED BY: AAH  
DATE: MAY 2022

**Englund-Thins & Miller, Inc.**  
10000 W. Road  
Jacksonville, FL 32258  
TEL: (904) 642-8890  
FAX: (904) 646-9485  
REG. #2584 LC 0000316

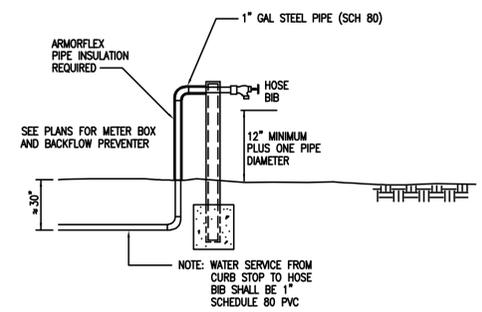
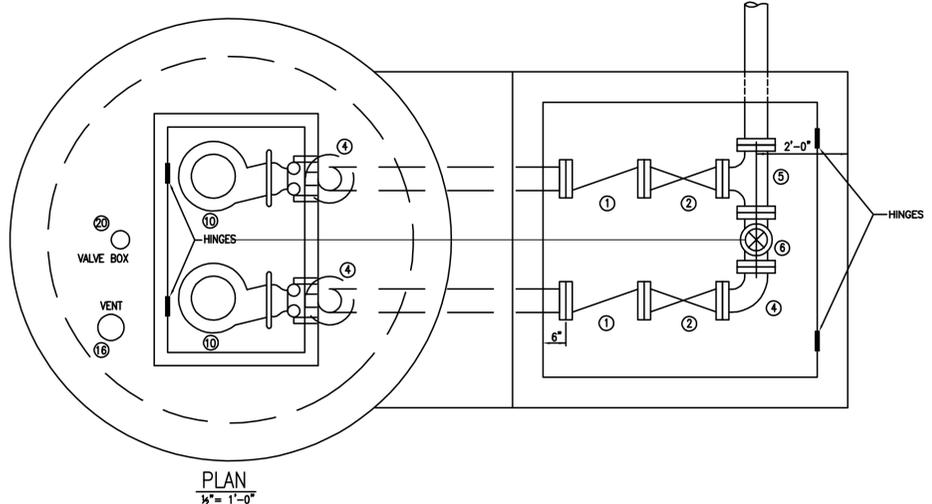
**VISION • EXPERIENCE • RESULTS**

**FIRE MAIN RESTRAINT SCHEDULE**  
**LMC EMBLEM AT TRIBUTARY FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

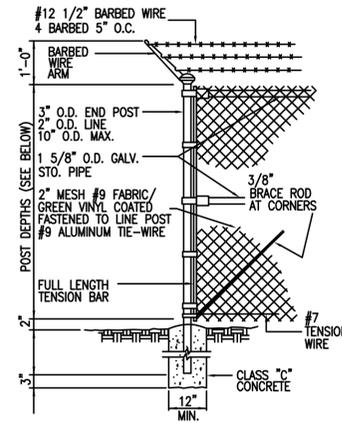
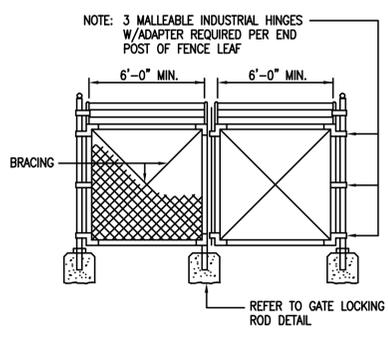
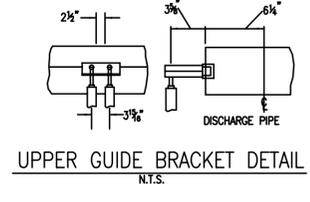
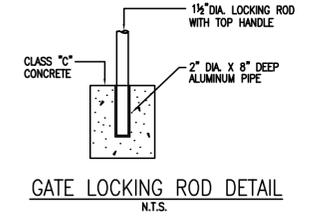
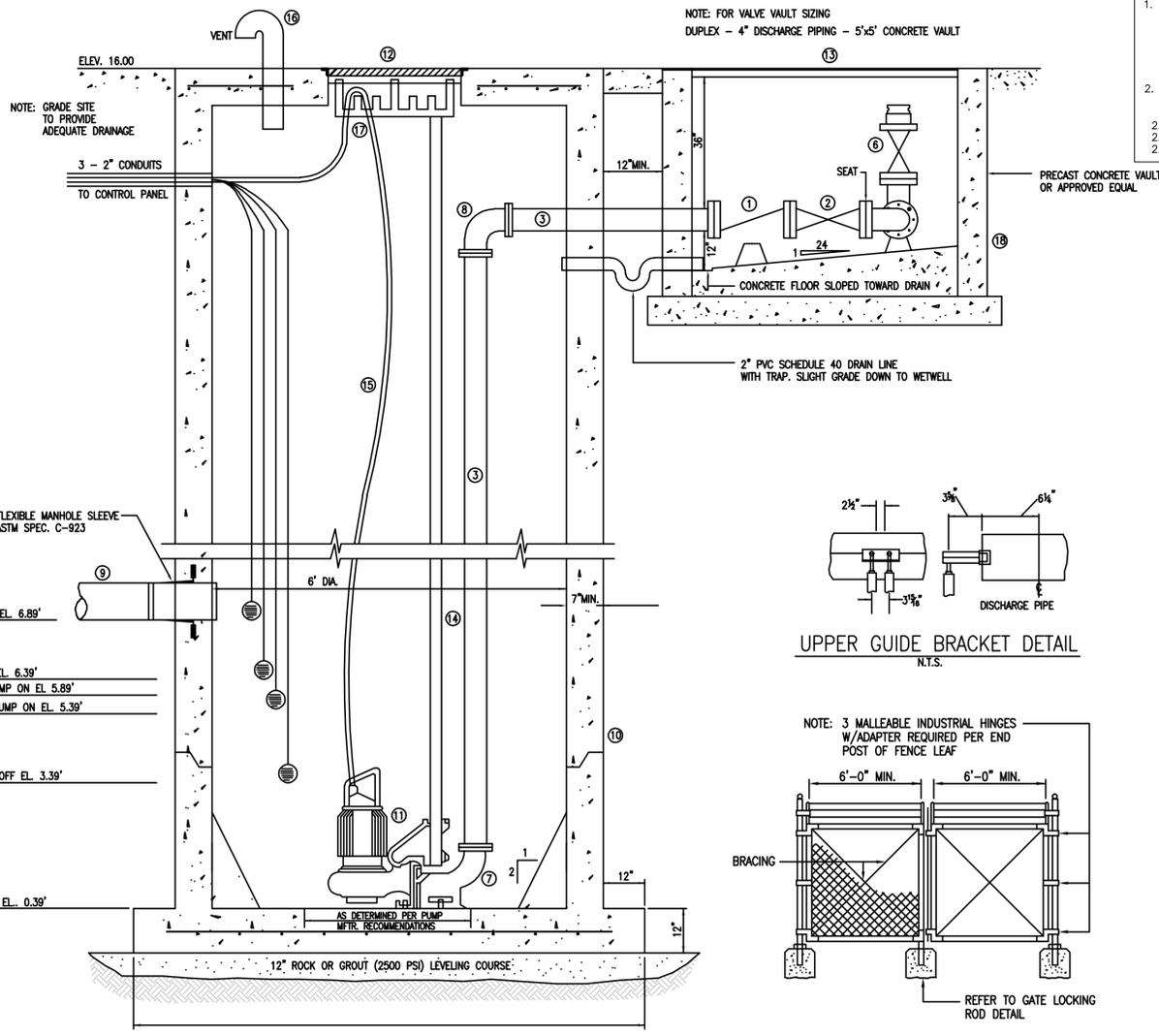
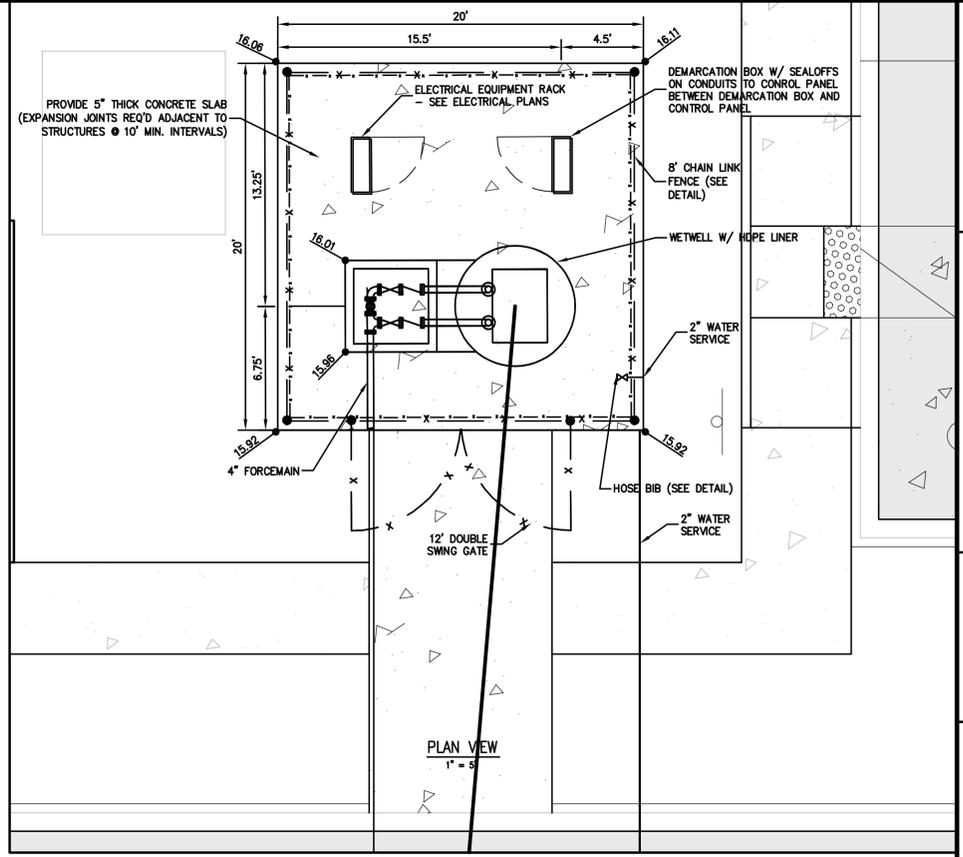
DRAWING NUMBER  
**15**

PLOTTED: June 1, 2023 4:46 PM, BY: Dallas Schrier

**SEE SHEET 11D FOR LOCATION OF THIS LIFT STATION**



**NOTES:**  
 1. CONTROL PANEL SHALL MEET ALL CODE AND EDP REQUIREMENTS. PANEL TO HAVE RUNNING TIME METERS TO EACH PUMP, ALTERNATOR, NEMA 4X SS OR COMPOSITE ENCLOSURE, GENERATOR RECEPTACLE, LIGHTNING ARRESTORS AND SURGE PROTECTION. CONVENIENCE OUTLET W/ GFCI, AUDIO AND VISUAL HIGH WATER ALARM, WITH BATTERY BACKUP AND STANDARD ITEMS FOR A COMPLETE SYSTEM, 230V THREE PHASE.  
 2. WEATHER RESISTANT SIGN IS REQUIRED TO BE POSTED AT PUMP STATION ON WALL WITH THE FOLLOWING INFORMATION. PROVIDE DETAILED SHOP DRAWING FOR REVIEW BY ENGINEER PRIOR TO FABRICATION.  
 2.1. TWENTY-FOUR (24) HOUR TELEPHONE NUMBER FOR OPERATOR NOTIFICATION.  
 2.2. NAME AND ADDRESS OF OPERATOR.  
 2.3. NAME, ADDRESS AND TELEPHONE NUMBER OF THE PUMP STATION OWNER.



**POST DEPTHS:**

GATE POSTS	3" x 12'-6"	SS-20
END POSTS	3" x 12'-6"	SS-20
CORNER POSTS	3" x 12'-6"	SS-20
LINE POSTS	2" x 10'-0"	SS-20

**MECHANICAL EQUIPMENT SCHEDULE**

- 4" CHECK VALVE, MUELLER OR MAH SWING-TYPE, LEVER & SPRING OPERATED, IRON BODY, BRONZE MOUNTED
- 4" PLUG VALVE, DEZURIK, CAST IRON BODY, LEVER ACTUATED
- 4" SCH-10 STAINLESS STEEL PIPE
- 4" STAINLESS STEEL SHORT RADIUS 90° BEND
- 4" DUCTILE IRON TEE
- 4" D.I. TEE, 3" PLUG VALVE, 3" KAMLOCK S.S. W/ CAP
- 4" DUCTILE IRON PUMP BASE AS SUPPLIED BY FLYGT
- 4" STAINLESS STEEL 90° BEND
- 8" INFLUENT PIPE, PVC SDR-26
- 6" DIAMETER PRECAST CONCRETE WETWELL, MINIMUM WALL THICKNESS 7"
- FLYGT NP 3153 SH 3-274, 174 mm, 23 HP, 208V, 3ø, 58A 229 GPM @ 162.7'
- ALUMINUM WETWELL ACCESS COVER WITH A 30"x48" CLEAR DIMENSION AND RECESSED LOCK
- ALUMINUM VALVE VAULT ACCESS COVER WITH A 48" x 48" CLEAR DIMENSION AND RECESSED LOCK
- STAINLESS STEEL GUIDE RAILS
- PUMP MOTOR CABLE SUPPLIED BY FLYGT
- 3" SCHEDULE 80 PVC AIR VENT WITH PROTECTIVE SCREEN
- CABLE HOLDER
- VALVE BOX W/ 6" MINIMUM WALL THICKNESS

**GENERAL NOTES:**

- PRECAST CONCRETE WETWELL WALL SHALL COMPLY WITH ASTM C-478, 4000 PSI, TYPE II CEMENT. MINIMUM WALL THICKNESS SHALL BE 7" IN. BASE SLAB AND WALLS SHALL BE PRECAST CONCRETE WITH STEEL REINFORCEMENT MINIMUM DESIGN FOR ASHTO H-20 TRUCK LOADING. THE L/S WALLS, TOP, AND BASE SLAB SHALL BE CONSTRUCTED OF TYPE II CEMENT WITH RIVER ROCK OR GRANITE AGGREGATE. JOINTS SHALL BE SEALED WITH A DOUBLE RING BUTYL OR BITUMASTIC MATERIAL, PLACED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. EXTERIOR OF WETWELL AND VALVE VAULT SHALL BE COATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS WITH FABRICITE AS MANUFACTURED BY BRIGGS BITUMINOUS COMPOSITION COMPANY.
- ALL EXPOSED CONCRETE INSIDE THE WETWELL AND RECEIVING MANHOLE SHALL BE LINED PER JEA STANDARDS AND SPECIFICATIONS.
- VALVE VAULT SHALL COMPLY WITH ASTM C 913-79 AND ASTM C 890-76, 4000 PSI, TYPE II CEMENT. MINIMUM WALL THICKNESS SHALL BE 6 INCHES. BASE SLAB, TOP SLAB, AND WALLS SHALL BE PRECAST CONCRETE WITH STEEL REINFORCEMENT MINIMUM DESIGN FOR ASHTO H-20 TRUCK LOADING.
- ALL PIPING AND FITTINGS UP TO CHECK VALVE SHALL BE SCH-10 STAINLESS STEEL PIPE. INSTALLATION OF THE UN-FLANGED JOINTS SHALL NOT BE ALLOWED. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE PROVIDED WITH A FACTORY APPLIED INTERIOR PROTECTO 401 LINING.
- ALL POURED-IN-PLACE CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
- SOIL FOUNDATION FOR THE WETWELL AND VALVE VAULT SHALL BE COMPACTED TO 100% PROCTOR DENSITY. RESULTS OF COMPACTION TEST SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO INSTALLATION OF WETWELL AND VALVE VAULT.
- PROVIDE AND INSTALL A LOCK JOINT FLEXIBLE MANHOLE SLEEVE (ASTM C-923) ON ALL GRAVITY LINES ENTERING THE WETWELL.
- CABLE HOLDER SHALL BE MOUNTED WITHIN THE WETWELL AS FAR AWAY AS POSSIBLE FROM THE INFLUENT PIPE.
- ALL ANCHORING AND HARDWARE SHALL BE OF STAINLESS STEEL MATERIAL INCLUDING FLANGED BOLTS.
- ALL PENETRATIONS THROUGH THE WETWELL WALL SHALL BE SEALED WITH A NON-SHRINK GROUT.
- LIFT STATION INSTALLATION MUST BE INSPECTED AND APPROVED PRIOR TO START UP. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO SCHEDULING START UP.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF PROPOSED INSTALLATION FOR APPROVAL PRIOR TO CONSTRUCTION.
- ANY VARIATION TO DRAWINGS OR SPECIFICATIONS MUST BE APPROVED PRIOR TO CONSTRUCTION.
- LEVEL CONTROLS (FLOATS) SHALL BE PROVIDED TO CONTROL PUMP.
- ALTERNATE FIBERGLASS WETWELL WILL BE ALLOWED WITH ADEQUATE ANTI-FLOTATION PROVISIONS. SPECIFICATION AND INSTALLATION OF FIBERGLASS WETWELL WILL BE IN ACCORDANCE WITH CURRENT EDP SPECIFICATIONS.
- PROVIDE STAINLESS STEEL 1/2-INCH PRESSURE GAUGE NIPPLE WITH BALL VALVE ON EACH PUMP DISCHARGE PIPE UPSTREAM OF CHECK VALVES IN VALVE BOX. A SINGLE NIPPLE AND VALVE SHALL BE PROVIDED ON THE DISCHARGE SIDE OF PLUG VALVES AT A POINT OF COMMON PRESSURE WITH FORCEMAIN IN VALVE BOX.

**EMBLEM**  
VISION • EXPERIENCE • RESULTS

**PRIVATE LIFT STATION DETAIL**  
**LMC EMBLEM AT TRIBUTARY**  
**LENNAR MULTIFAMILY COMMUNITIES, LLC**

EM NO. 21-221-01  
 DRAWN BY: DDS  
 DESIGNED BY: DDS  
 CHECKED BY: AAH  
 DATE: MAY 2022

REVISIONS:  
 2022.07.27-REV. PER CLIENT COMMENT  
 2022.09.02-REV. PER AGENCY COMMENT  
 2022.10.10-REV. PER AGENCY COMMENT  
 2023.03.02-REV. PER AGENCY COMMENT  
 2023.05.01-REV. PER AGENCY COMMENT

PLANS PREPARED UNDER THE DIRECTION OF:  
 ANDREW HOLLEY  
 P.E. NUMBER: 76182

DRAWING NUMBER  
**16**

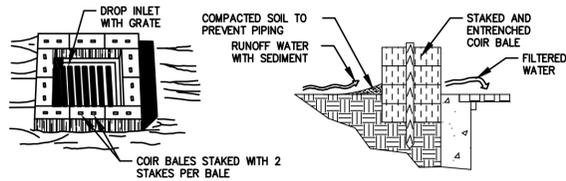
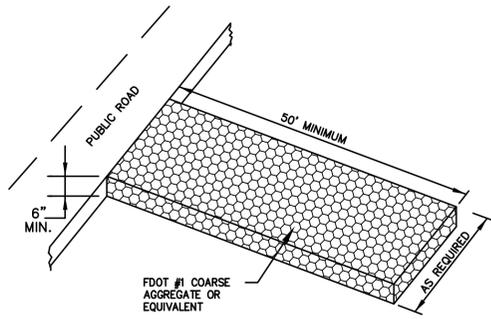
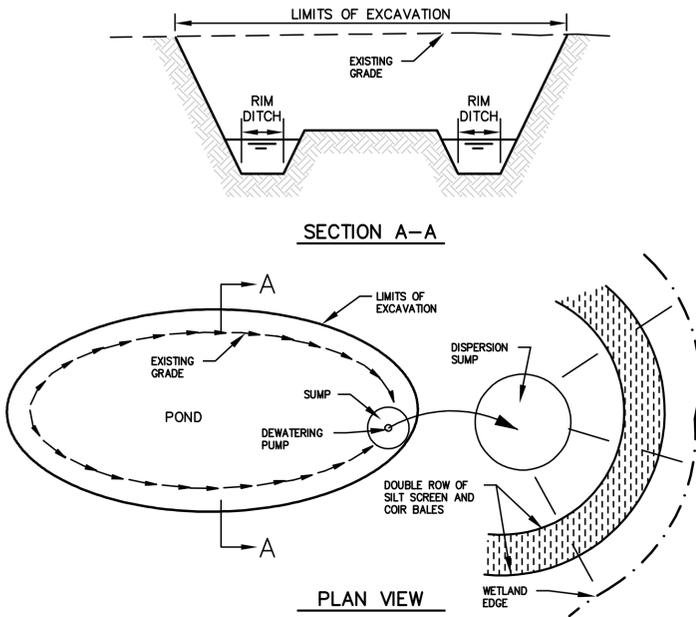


**SEDIMENT AND EROSION CONTROL NOTES**

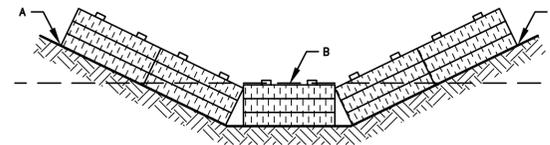
- THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.
- THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.
- ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.
- CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
- WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS A MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE INLET STRUCTURE. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS REQUIRED, THE STRIPS SHALL BE OVERLAPPED.
- FOOT NO. 1 COARSE AGGREGATE SHALL BE PLACED OVER THE WIRE MESH AS INDICATED ON SEDIMENT FILTER DETAIL (SEE DETAIL THIS SHEET). THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
- IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONES MUST BE PULLED AWAY FROM THE INLET, CLEANED AND REPLACED.
- BALES SHALL BE EITHER WIRE-BOUND OR STRING-TIED WITH THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.
- BALES SHALL BE PLACED LENGTHWISE IN A SINGLE ROW SURROUNDING THE INLET, WITH THE ENDS OF ADJACENT BALES PRESSED TOGETHER.
- THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 4 INCHES. AFTER THE BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.
- EACH BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST TWO STAKES OR REBARS DRIVEN THROUGH THE BALE.
- LOOSE COIR SHOULD BE WEDGED BETWEEN BALES TO PREVENT WATER FROM ENTERING BETWEEN BALES.
- COIR BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
- CLOSE ATTENTION SHALL BE GIVEN TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES.
- NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.
- SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. IT MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
- ANY SEDIMENT DEPOSITS REMAINING IN PLACE, AFTER THE COIR BALE OR FILTER BARRIERS, AND OR SILT FENCES ARE NO LONGER REQUIRED, SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
- SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED IMMEDIATELY.
- STRUCTURES SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS REQUIRED.
- SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
- THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS, SPECIFICATIONS AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT RULES AND REGULATIONS.
- FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.P.) CHAPTER 6.
- EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAILS (THIS SHEET) FOR TYPICAL CONSTRUCTION.
- SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.
- ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.
- DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.
- ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED AND MULCHED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED. CONTRACTOR SHALL USE ADDITIONAL MEASURES TO STABILIZE DISTURBED AREAS THROUGH COMPACTION, SILT SCREENS, COIR BALES, AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.
- ALL DEWATERING, EROSION, AND SEDIMENT CONTROL SHALL REMAIN IN PLACE UNTIL AFTER COMPLETION OF CONSTRUCTION, AND REMOVED ONLY WHEN AREAS HAVE BEEN STABILIZED.
- THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.
- THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES, RELATIVE TO COMPLIANCE OF SURVMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.
- EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS AND PRESERVATION EASEMENTS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING A PERMANENT STAND OF SOD AND/OR GRASS PER THE CONTRACT DOCUMENTS AND MEETING THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, NASSAU COUNTY AND NPDES FINAL STABILIZATION REQUIREMENTS.
- THESE PLANS INCLUDING THE POLLUTION PREVENTION PLAN INDICATE THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES REQUIRED FOR THIS PROJECT. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO

SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (F.D.E.P.) CHAPTER 6. CONTRACTOR SHALL PROVIDE EROSION PROTECTION AND TURBIDITY CONTROL AS REQUIRED TO INSURE CONFORMANCE TO STATE AND FEDERAL WATER QUALITY STANDARDS AND MAY NEED TO INSTALL ADDITIONAL CONTROLS TO CONFORM TO AGENCIES REQUIREMENTS. IF A WATER QUALITY VIOLATION OCCURS, THE CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL DAMAGE AND ALL COSTS WHICH MAY RESULT INCLUDING LEGAL FEES, CONSULTANT FEES, CONSTRUCTION COSTS, AND FINES.

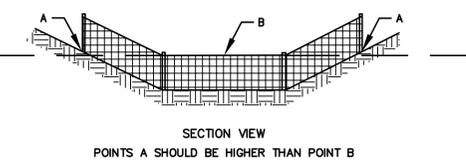
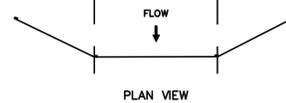
35. 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A "NOTICE OF INTENT" TO THE EPA IN ACCORDANCE WITH NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM RULES AND REGULATIONS. (FOR ANY CONSTRUCTION NOT COVERED BY THE OWNER'S "NOTICE OF INTENT" PERMIT)



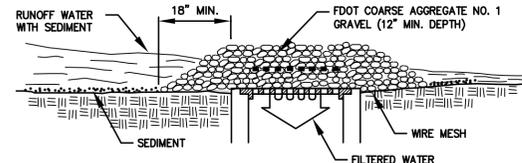
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.



**PROPER PLACEMENT OF COIR BALE IN A DRAINAGE WAY**  
N.T.S.

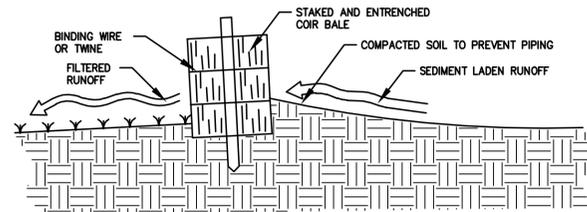


**PROPER PLACEMENT OF A FILTER BARRIER IN DRAINAGE WAY**  
N.T.S.

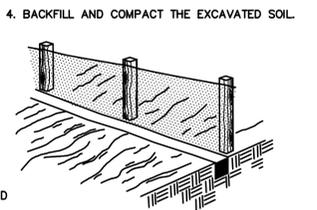
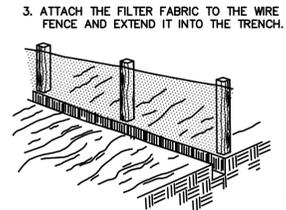
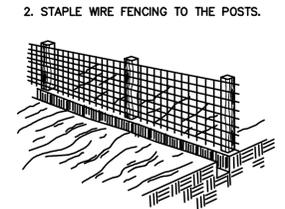
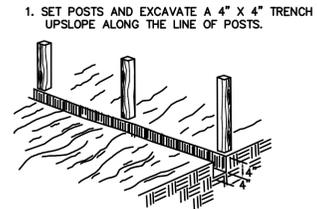


THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

**GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER**  
N.T.S.



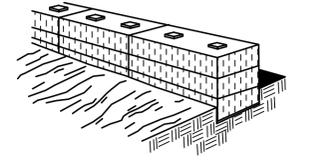
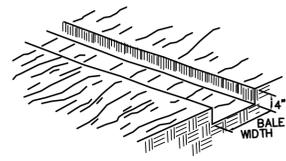
**CROSS-SECTION OF A PROPERLY INSTALLED COIR BALE**  
N.T.S.



**CONSTRUCTION OF SILT FENCE**  
N.T.S.

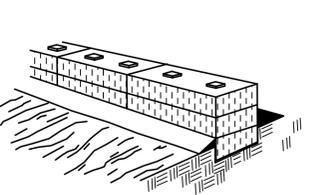
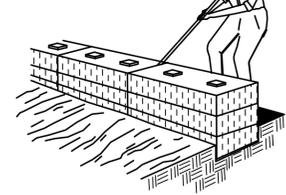
1. EXCAVATE THE TRENCH

2. PLACE AND STAKE COIR BALES.



3. WEDGE LOOSE COIR BETWEEN BALES.

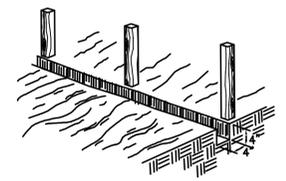
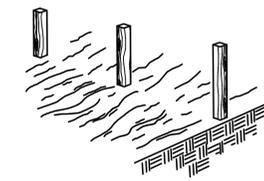
4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



**CONSTRUCTION OF A COIR BALE BARRIER**  
N.T.S.

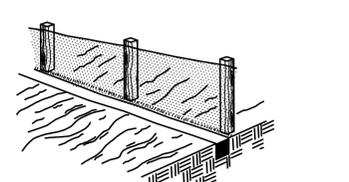
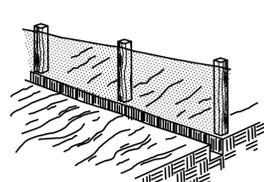
1. SET THE STAKES.

2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES



3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.

4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



**CONSTRUCTION OF A FILTER BARRIER**  
N.T.S.

PLANS PREPARED UNDER THE DIRECTION OF:

REVISIONS:  
2022.07.27-REV. PER CLIENT COMMENT  
2022.09.02-REV. PER AGENCY COMMENT  
2023.03.02-REV. PER AGENCY COMMENT  
2023.05.01-REV. PER AGENCY COMMENT

EM NO. 21-221-01

DRAWN BY: DDS

DESIGNED BY: DDS

CHECKED BY: AAH

DATE: MAY 2022

England-Thins & Miller, Inc.  
10000 Highway 100  
Jacksonville, FL 32218  
TEL: (904) 646-8890  
FAX: (904) 646-9485  
REC-2584 LC-0000316

**ETM**  
VISION • EXPERIENCE • RESULTS

**SEDIMENT AND EROSION CONTROL DETAILS**

**LMC EMBLEM AT TRIBUTARY FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER

**18**

OWNER'S REQUIREMENTS

CONTRACTOR'S REQUIREMENTS

Form containing site description, general requirements, sequence of major activities, controls, and pollution prevention plan certification.

Form containing inventory for pollution prevention plan, spill prevention, hazardous products, structural practices, and other controls.

Form containing maintenance/inspection procedures, contractor's certification, and dewatering requirements.

Form containing a signature table for the stormwater pollution prevention plan and drawing number information.

Vertical sidebar containing project information, revision history, and company logo for EMM.

**LMC EMBLEM AT TRIBUTARY**  
**STORM WATER POLLUTION PREVENTION PLAN**  
**INSPECTION AND MAINTENANCE REPORT FORM**

THIS IS THE CONTRACTORS CERTIFICATION REQUIRED BY THE EPA'S NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND THE STATE OF FLORIDA'S SWPPP. ALL SWPPP CERTIFICATION MUST BE COMPLETED WEEKLY AND AFTER EVERY RAINFALL EVENT OF 0.50 INCHES OR GREATER.

INSPECTOR: \_\_\_\_\_

INSPECTOR'S QUALIFICATIONS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

DAYS SINCE LAST RAINFALL: \_\_\_\_\_ AMOUNT OF LAST RAINFALL: \_\_\_\_\_ INCHES

STABILIZATION MEASURES

INSPECTION AREA (DESCRIPTION OF LOCATION)	DATE SINCE LAST DISTURBED	DATE OF NEXT DISTURBANCE	STABILIZED ? (YES/NO)	STABILIZED WITH	CONDITION

STABILIZATION REQUIRED: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TO BE PERFORMED BY: \_\_\_\_\_ ON OR BEFORE \_\_\_\_\_

PAGE 1 OF 4

**LMC EMBLEM AT TRIBUTARY**  
**STORM WATER POLLUTION PREVENTION PLAN**  
**INSPECTION AND MAINTENANCE REPORT FORM**

DATE: \_\_\_\_\_

STRUCTURAL CONTROLS

EARTH DIKES/SWALES

DIKE OR SWALE	FROM	TO	IS DIKE/SWALE STABILIZED ?	IS THERE EVIDENCE OF WASHOUT OR OVERTOPPING

MAINTENANCE REQUIRED FOR EARTH DIKE/SWALE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TO BE PERFORMED BY: \_\_\_\_\_ ON OR BEFORE \_\_\_\_\_

CATCH BASIN/CURB INLET/OUTFALL TURBIDITY CONTROLS

STRUCTURE/ OUTFALL	ARE TURBIDITY CONTROLS IN PLACE	ANY EVIDENCE OF CLOGGING/WASHOUT OR BYPASSING ?	ARE TURBIDITY CONTROLS IN NEED OF REPLACING	DOES SILT NEED TO BE REMOVED FROM CONTROL

MAINTENANCE REQUIRED FOR CATCH BASIN/CURB INLETS/OUTFALLS TURBIDITY CONTROLS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TO BE PERFORMED BY: \_\_\_\_\_ ON OR BEFORE \_\_\_\_\_

PAGE 2 OF 4

**LMC EMBLEM AT TRIBUTARY**  
**STORM WATER POLLUTION PREVENTION PLAN**  
**INSPECTION AND MAINTENANCE REPORT FORM**

SEDIMENT BASIN

DEPTH OF SEDIMENT IN BASIN	DEPTH OF SEDIMENT SIDE BASIN	ANY EVIDENCE OF OVERTOPPING OF THE EMBANKMENT ?	CONDITION OF OUTFALL FROM SEDIMENT BASIN

MAINTENANCE REQUIRED FOR SEDIMENT BASIN: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TO BE PERFORMED BY: \_\_\_\_\_ ON OR BEFORE \_\_\_\_\_

OTHER CONTROLS

STABILIZED CONSTRUCTION ENTRANCE

DOES MUCH SEDIMENT GET TRACKED ON TO ROAD ?	IS THE GRAVEL CLEAN OR IS IT FILLED WITH SEDIMENT?	DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO LEAVE THE SITE ?	IS THE CULVERT BENEATH THE ENTRANCE WORKING? (IF APPLICABLE)

MAINTENANCE REQUIRED FOR STABILIZED CONSTRUCTION ENTRANCE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TO BE PERFORMED BY: \_\_\_\_\_ ON OR BEFORE \_\_\_\_\_

PAGE 3 OF 4

**LMC EMBLEM AT TRIBUTARY**  
**STORM WATER POLLUTION PREVENTION PLAN**  
**INSPECTION AND MAINTENANCE REPORT FORM**

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REASONS FOR CHANGES: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY MAINTAIN THE SYSTEM AND THAT THE PERSONNEL ARE RESPONSIBLE FOR GATHERING THE INFORMATION OR PERSONNEL WHO MAINTAIN THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

PAGE 4 OF 4

**20**

DRAWING NUMBER

**CONTRACTORS CERTIFICATION**

**LMC EMBLEM AT TRIBUTARY**

**FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

**Englund-Thins & Miller, Inc.**  
10000 W. Road  
Jacksonville, FL 32258  
TEL: (904) 642-8890  
FAX: (904) 642-8685  
REG - 2584 LC - 0000316

ETM NO. 21-221-01  
DRAWN BY: DDS  
DESIGNED BY: DDS  
CHECKED BY: AAH  
DATE: MAY 2022

REVISIONS:  
2022.07.27-REV. PER CLIENT COMMENT  
2022.09.02-REV. PER AGENCY COMMENT  
2022.10.02-REV. PER AGENCY COMMENT  
2023.03.02-REV. PER AGENCY COMMENT  
2023.05.01-REV. PER AGENCY COMMENT

PLANS PREPARED UNDER THE DIRECTION OF:  
**ANDREW HOLLEY**  
P.E. NUMBER: 76182



LEGEND	
	WORK AREA PHASE 1
	WORK AREA PHASE 2

- TRAFFIC CONTROL PLAN NOTES**
- NOTIFY THE TRAFFIC ENGINEERING DIVISION (904-530-6225) A MINIMUM OF 5 WORKING DAYS PRIOR TO IMPLEMENTATION OF THE MOT.
  - MINIMUM LANE WIDTHS SHALL BE 10'
  - THE ROADWAY SHALL BE RESTORED TO AT LEAST A LIMEROCK SURFACE BEFORE IT IS REOPENED TO TRAFFIC AND BEFORE THE CONTRACTOR MOVES TO THE NEXT CONSTRUCTION ZONE.
  - ANY MODIFICATIONS OF THIS MAINTENANCE OF TRAFFIC PLAN SHALL BE SUBMITTED TO NASSAU COUNTY TRAFFIC ENGINEERING DIVISION FOR REVIEW AND ACCEPT PRIOR TO IMPLEMENTATION.
  - THE CONTRACTOR SHALL CONFIRM THAT EXISTING SIGNAGE WILL NOT POSE A CONFLICT FOR WORK ZONE TRAFFIC CONTROL. THE CONTRACTOR SHALL COVER OR REMOVE ALL SIGNING IN CONFLICT WITH THE TRAFFIC CONTROL DURING CONSTRUCTION OPERATIONS.
  - IF SIGNS ARE DAMAGED DURING CONSTRUCTION ACTIVITY, THE CONTRACTOR IS REQUIRED TO REPLACE THEM IMMEDIATELY IN ACCORDANCE WITH CURRENT CITY STANDARD SPECIFICATIONS.
  - NASSAU COUNTY PROHIBITS MID-BLOCK CROSSINGS OF PEDESTRIANS. WHEN AN ALTERNATE PAVED PEDESTRIAN ROUTE IS NOT FEASIBLE, THE CONTRACTOR SHALL MAINTAIN A 4 FT. WIDE STABLE PEDESTRIAN PATHWAY IN ACCORDANCE WITH FDOT INDEX 660.
  - MAINTENANCE OF TRAFFIC PLANS WITHIN FDOT RIGHT-OF-WAY ARE SUBJECT TO FDOT APPROVAL.
  - NASSAU COUNTY ROAD CLOSURE POLICY NOTIFICATIONS SHALL BE FOLLOWED. CHURCH PATRONS AND RESIDENTS SHALL BE ABLE TO ACCESS AT ALL TIMES.
  - CONTRACTOR TO ENSURE NO DROP-OFFS ARE LEFT OVERNIGHT AT THE EDGE OF PAVEMENT DURING CONSTRUCTION.

**EM**  
VISION • EXPERIENCE • RESULTS

**MAINTENANCE OF TRAFFIC PLAN**  
**LMC EMBLEM AT TRIBUTARY**  
**LENNAR MULTIFAMILY COMMUNITIES, LLC**

PLANS PREPARED UNDER THE DIRECTION OF:  
ANDREW HOLLEY  
P.E. NUMBER: 76182

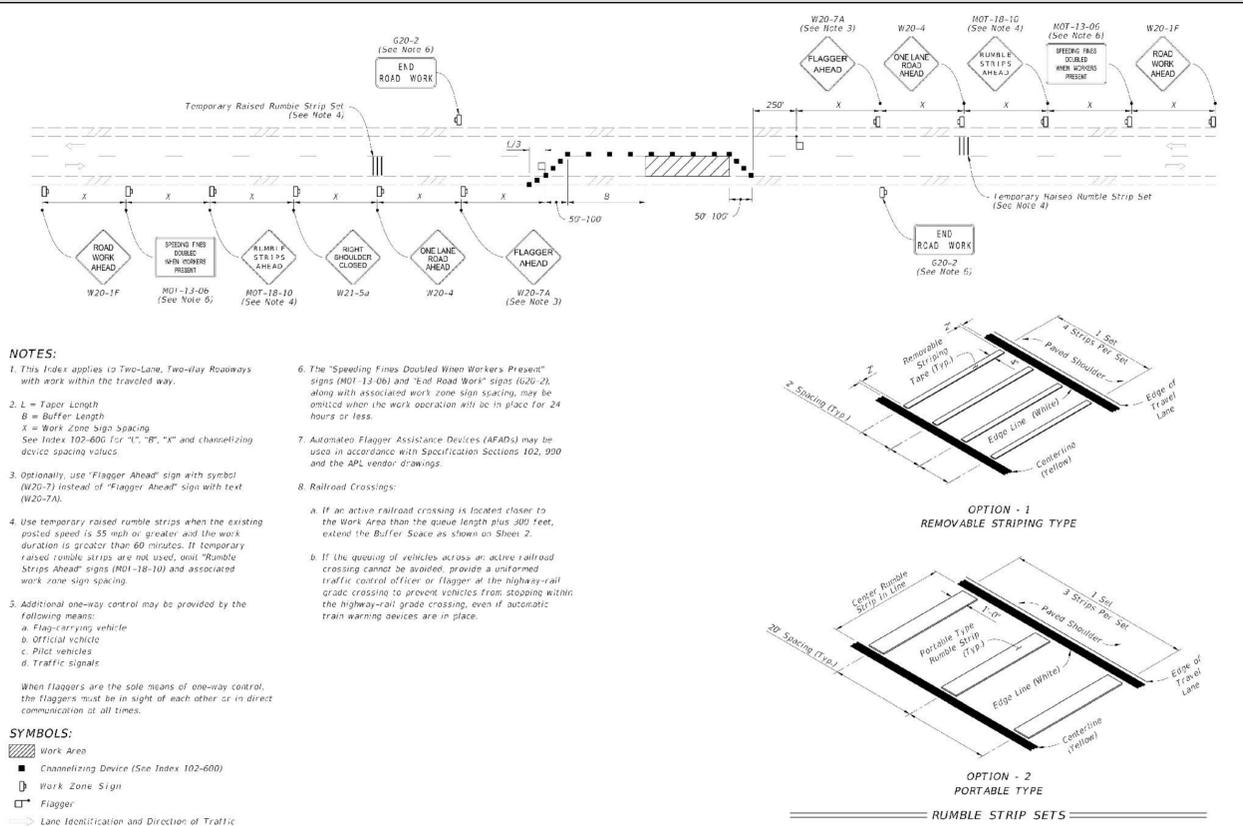
REVISIONS:  
2022.07.27-REV. PER CLIENT COMMENT  
2022.09.02-REV. PER AGENCY COMMENT  
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REG. #2584 LC 0000316

DRAWING NUMBER  
**21**

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PLOTTED: June 1, 2023 - 4:51 PM, BY: Dallas Schrier



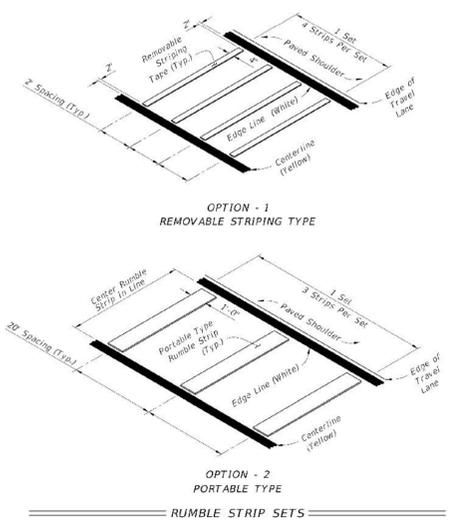
**NOTES:**

- This Index applies to Two-Lane, Two-Way Roadways with work within the traveled way.
- L = Taper Length  
B = Buffer Length  
X = Work Zone Sign Spacing  
See Index 102-600 for "L", "B", "X" and channelizing device spacing values.
- Optionally, use "Flagger Ahead" sign with symbol (W20-7) instead of "Flagger Ahead" signs with text (W20-7A).
- Use temporary raised rumble strips when the existing posted speed is 55 mph or greater and the work duration is greater than 60 minutes. If temporary raised rumble strips are not used, omit "Rumble Strips Ahead" signs (MOT-18-10) and associated work zone sign spacing.
- Additional one-way control may be provided by the following means:  
a. Flag-carrying vehicle  
b. Official vehicle  
c. Pilot vehicles  
d. Traffic signals

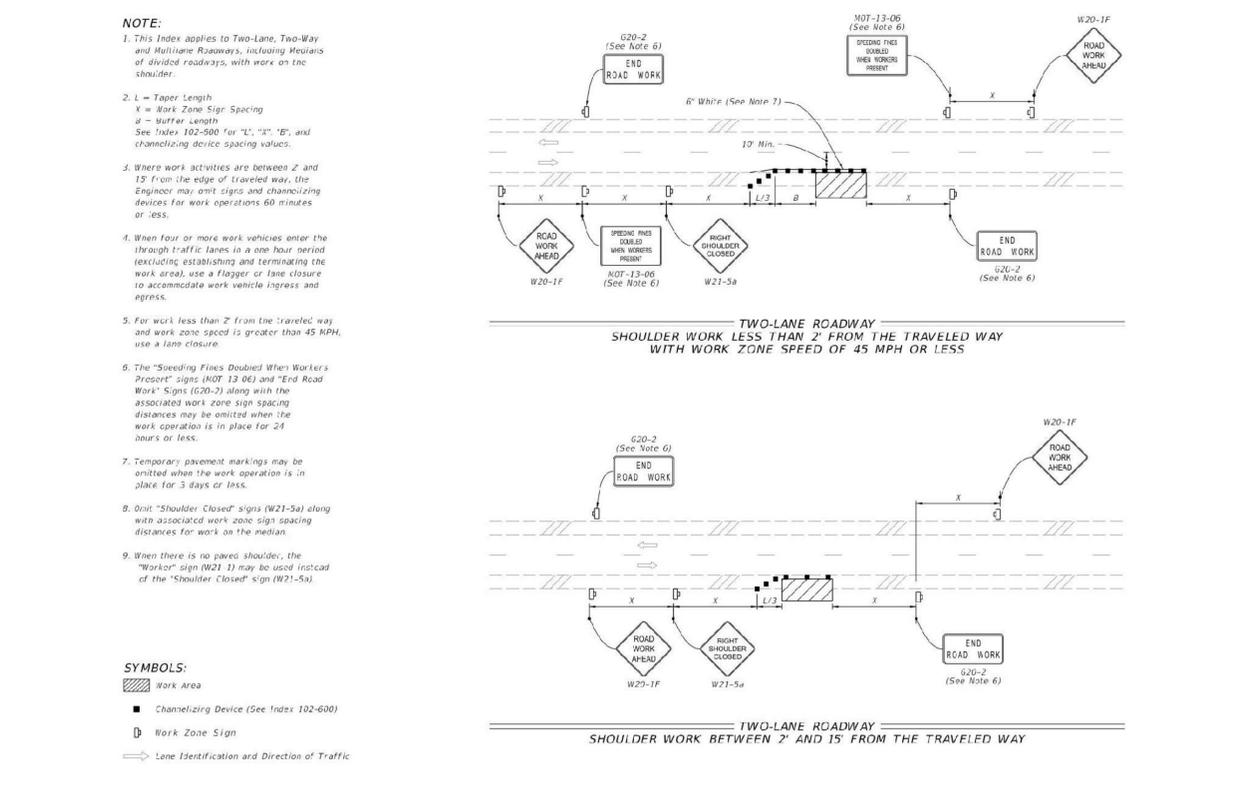
When flaggers are the sole means of one-way control, the flaggers must be in sight of each other or in direct communication at all times.

**SYMBOLS:**

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Flagger
- Lane Identification and Direction of Traffic



LAST REVISION 11/01/21	DESCRIPTION: FY 2022-23 STANDARD PLANS	FY 2022-23 STANDARD PLANS	TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY	INDEX 102-603	SHEET 1 of 2
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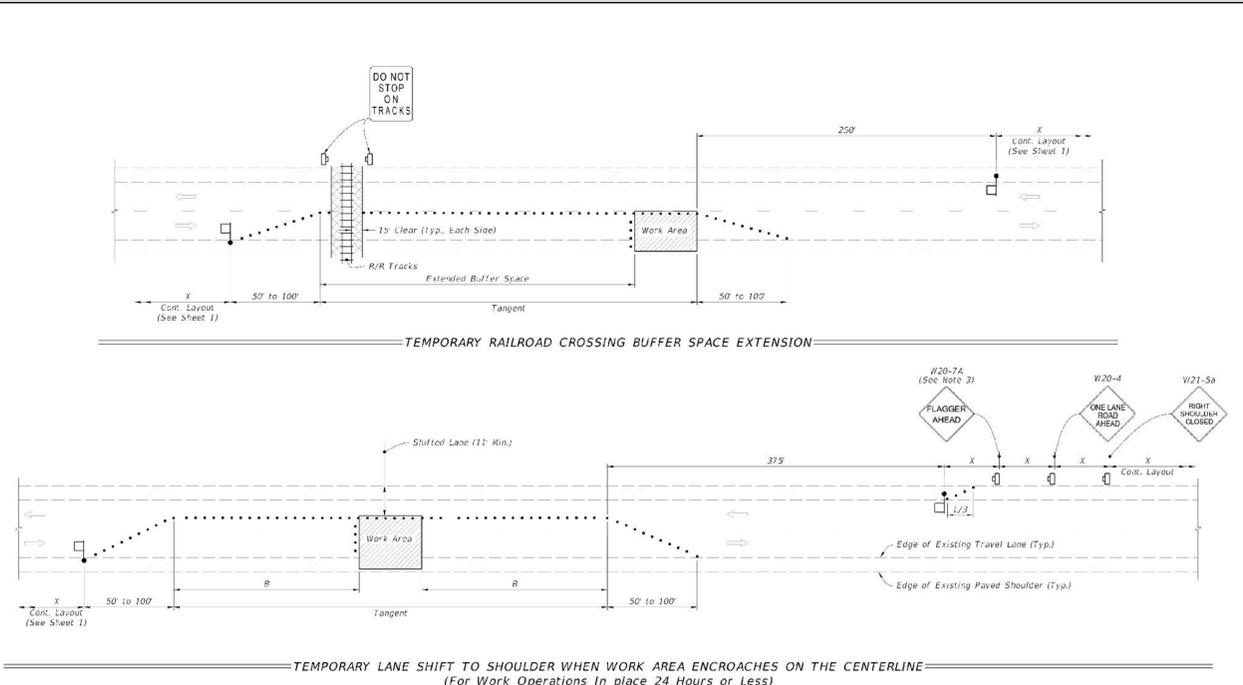
**NOTE:**

- This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.
- L = Taper Length  
X = Work Zone Sign Spacing  
B = Buffer Length  
See Index 102-500 for "L", "X", "B", and channelizing device spacing values.
- When work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes or less.
- When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), use a flagger or lane closure to accommodate work vehicle ingress and egress.
- For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.
- The "Speeding Fines Doubled When Workers Present" signs (MOT 13 06) and "End Road Work" Signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.
- Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.
- Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.
- When there is no paved shoulder, the "Work" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

**SYMBOLS:**

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic

LAST REVISION 11/01/21	DESCRIPTION: FY 2022-23 STANDARD PLANS	FY 2022-23 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX 102-602	SHEET 1 of 2
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**SYMBOLS:**

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Flagger
- Lane Identification and Direction of Traffic

LAST REVISION 11/01/21	DESCRIPTION: FY 2022-23 STANDARD PLANS	FY 2022-23 STANDARD PLANS	TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY	INDEX 102-603	SHEET 2 of 2
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SPECIAL CONDITIONS

EM NO. 21-221-01	PER CLIENT COMMENT 2022.07.27-REV. PER AGENCY COMMENT 2022.09.02-REV. PER AGENCY COMMENT 2023.03.02-REV. PER AGENCY COMMENT 2023.05.01-REV. PER AGENCY COMMENT
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**ETM**  
 VISION • EXPERIENCE • RESULTS

**MAINTENANCE OF TRAFFIC DETAILS**  
**LMC EMBLEM AT TRIBUTARY FOR LENNAR MULTIFAMILY COMMUNITIES, LLC**

DRAWING NUMBER  
**22**