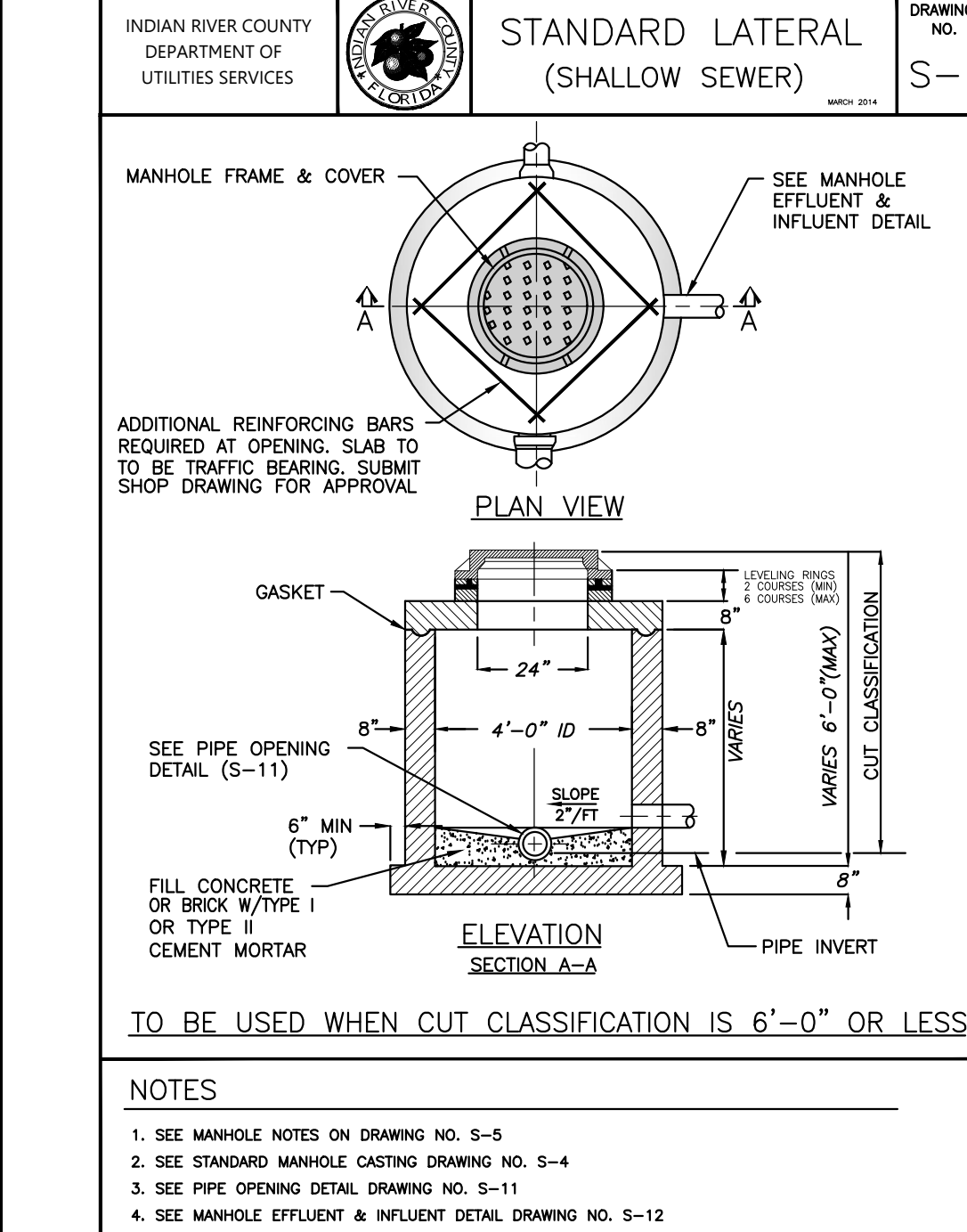


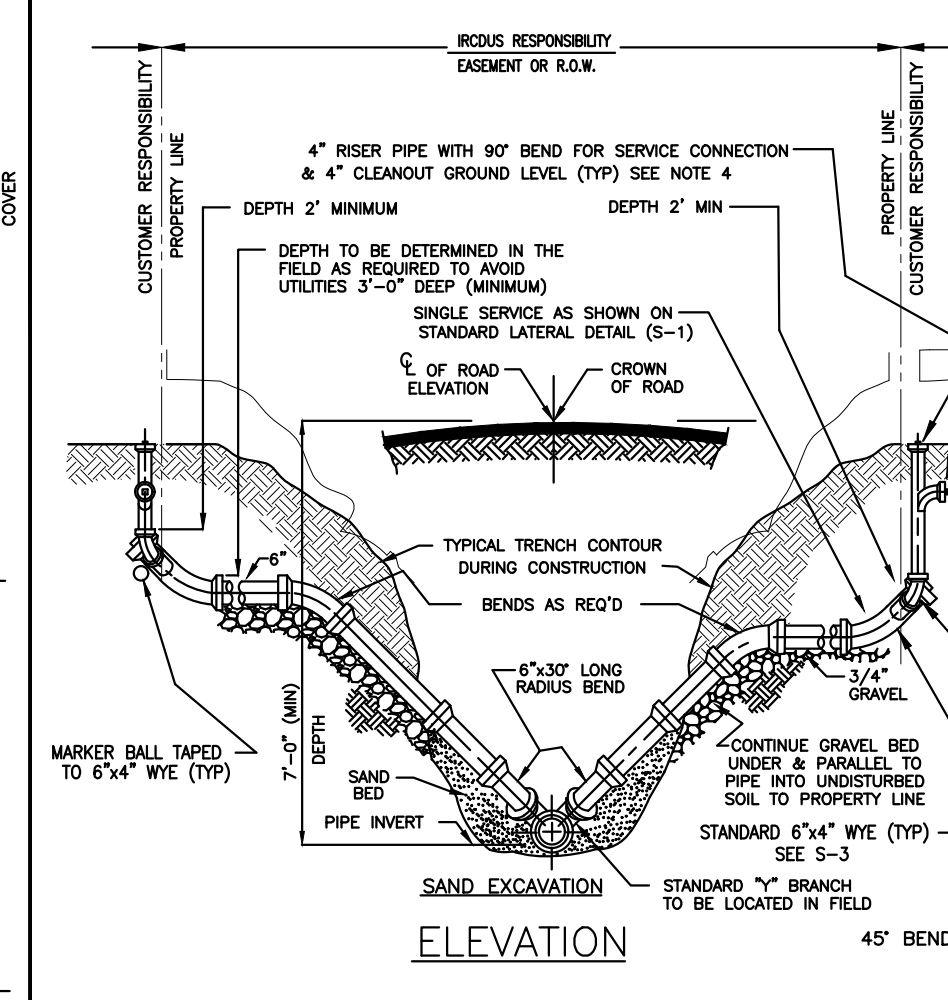
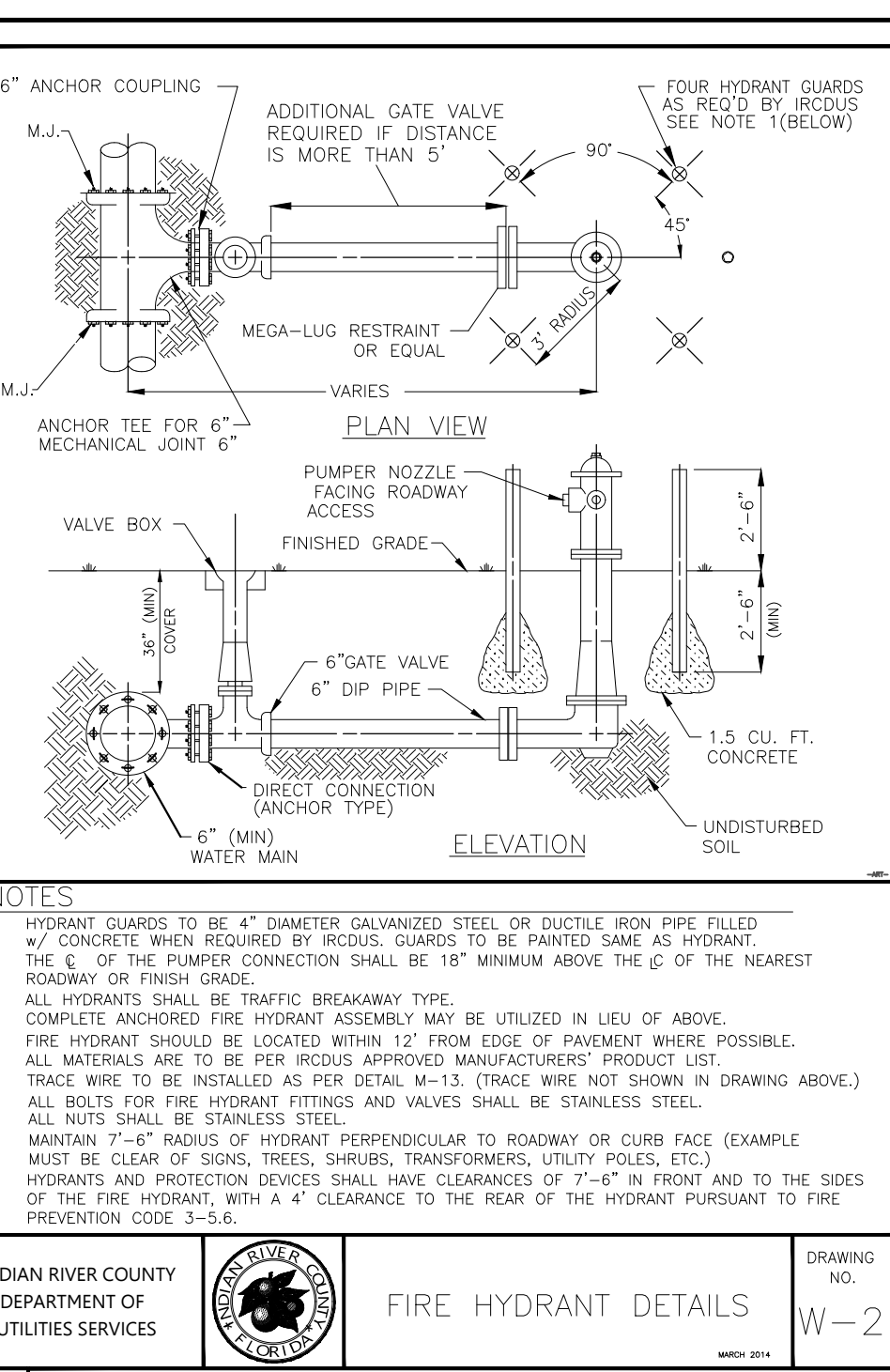
NOTE

- SANITARY SEWER LATERALS SHALL BE A MINIMUM OF 6" IN DIAMETER.
- MAGNETIC DETECTION TAPE SHALL BE INSTALLED OVER ALL SERVICE LATERALS.
- ALL MATERIALS ARE TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.
- MARKER BALLS TO BE TAPED TO 6"x4" WYE 24" BELOW FINISHED GRADE.
- PLUMBING CONTRACTOR WILL BE RESPONSIBLE FOR RISER PIPE WITH BEND FOR SERVICE CONNECTION AND FOR CUTTING SEWER CLEANOUT TO FINISH GRADE PRIOR TO CONNECTION. (SEE S-3 DETAIL)



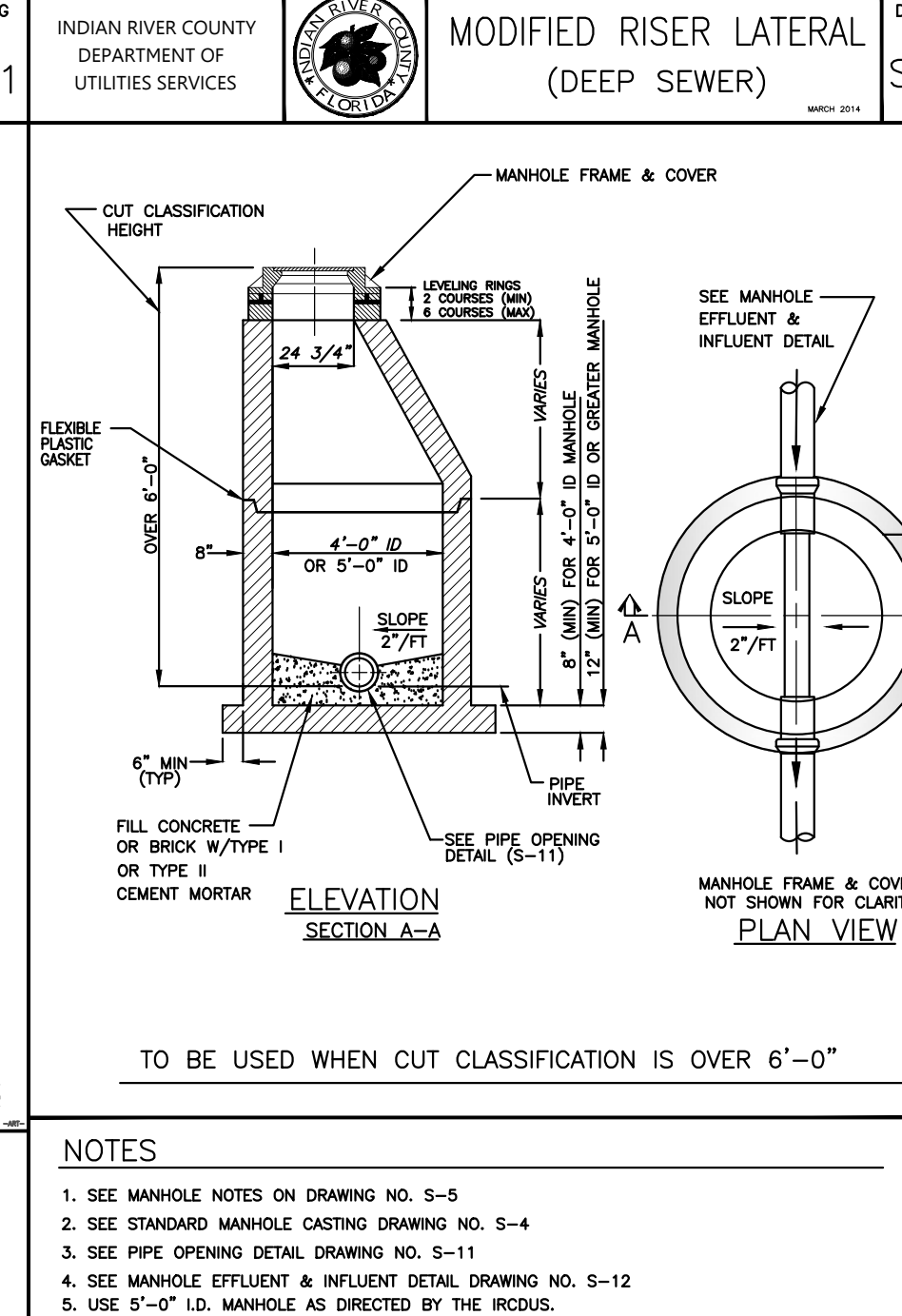
NOTE

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE STANDARD MANHOLE CASTING DRAWING NO. S-4
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



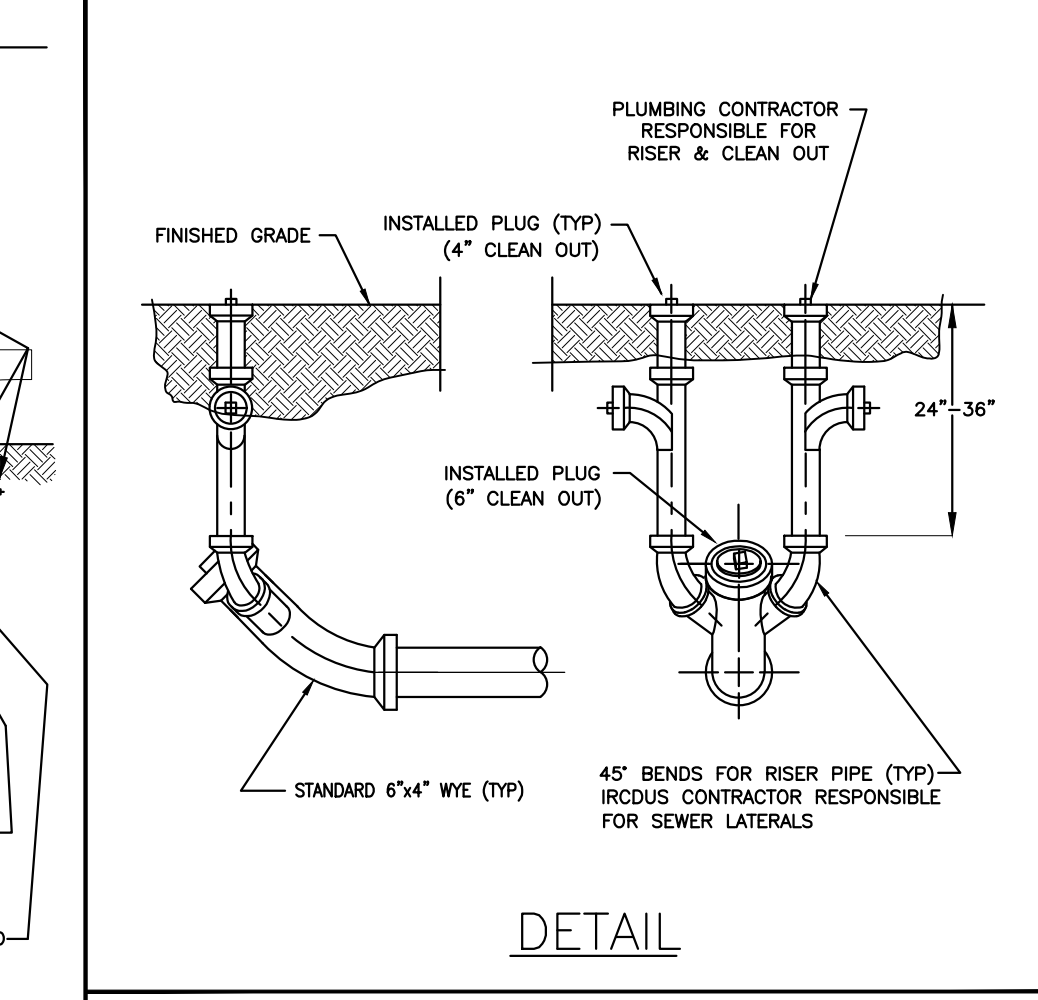
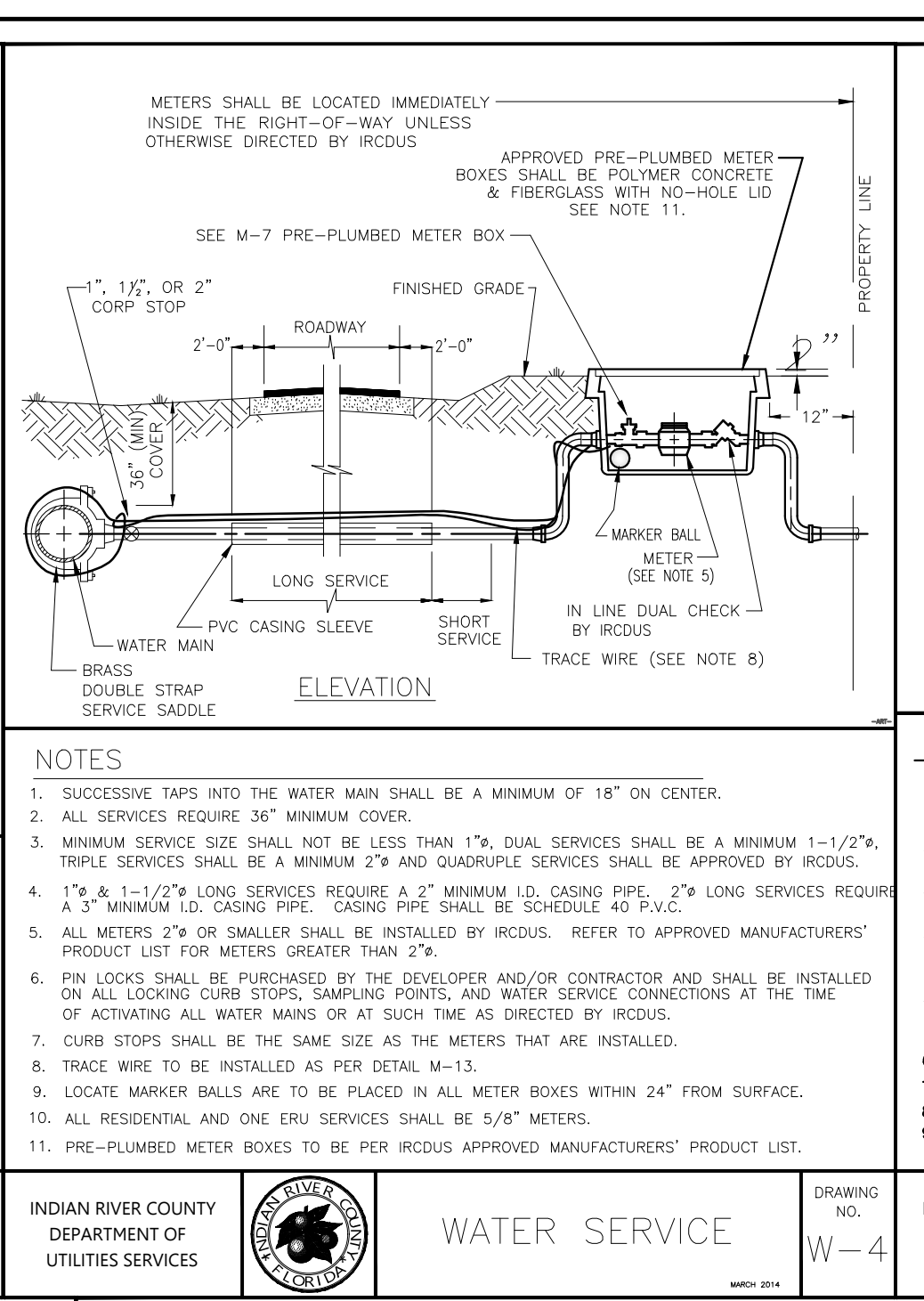
NOTES

- HYDRANT GUARDS TO BE 4" DIAMETER GALVANIZED STEEL OR DUCTILE IRON PIPE FILLED 3/4" CONCRETE WHEN REQUIRED BY IRCUS. GUARDS TO BE PAINTED SAME AS HYDRANT.
- THE 6" OF THE PLUMBER CONNECTION SHALL BE 18" MINIMUM ABOVE THE 6" OF THE NEAREST ROADWAY OR FINISH GRADE.
- ALL HYDRANTS SHALL BE TRAFFIC BREAKAWAY TYPE.
- COMPLETE ANCHORED FIRE HYDRANT ASSEMBLY MAY BE UTILIZED IN LIEU OF ABOVE.
- FIRE HYDRANT SHOULD BE LOCATED WITHIN 12" FROM EDGE OF PAVEMENT WHERE POSSIBLE.
- ALL MATERIALS ARE TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.
- TRACE WIRE TO BE INSTALLED AS PER DETAIL M-13. (TRACE WIRE NOT SHOWN IN DRAWING ABOVE.)
- ALL BOLTS FOR FIRE HYDRANT FITTINGS AND VALVES SHALL BE STAINLESS STEEL.
- MAINTAIN 3'-6" RADIUS OF HYDRANT PERPENDICULAR TO ROADWAY OR CURB FACE (EXAMPLE MUST BE CLEAR OF SIGNS, TREES, SHRUBS, TRANSFORMERS, UTILITY POLES, ETC.)
- HYDRANTS AND PROTECTION DEVICES SHALL HAVE CLEARANCES OF 7'-6" IN FRONT AND TO THE SIDES OF THE FIRE HYDRANT WITH A 4" CLEARANCE TO THE REAR OF THE HYDRANT PURSUANT TO FIRE PREVENTION CODE 3-3-6.
- PRE-PLUMED METER BOXES TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.



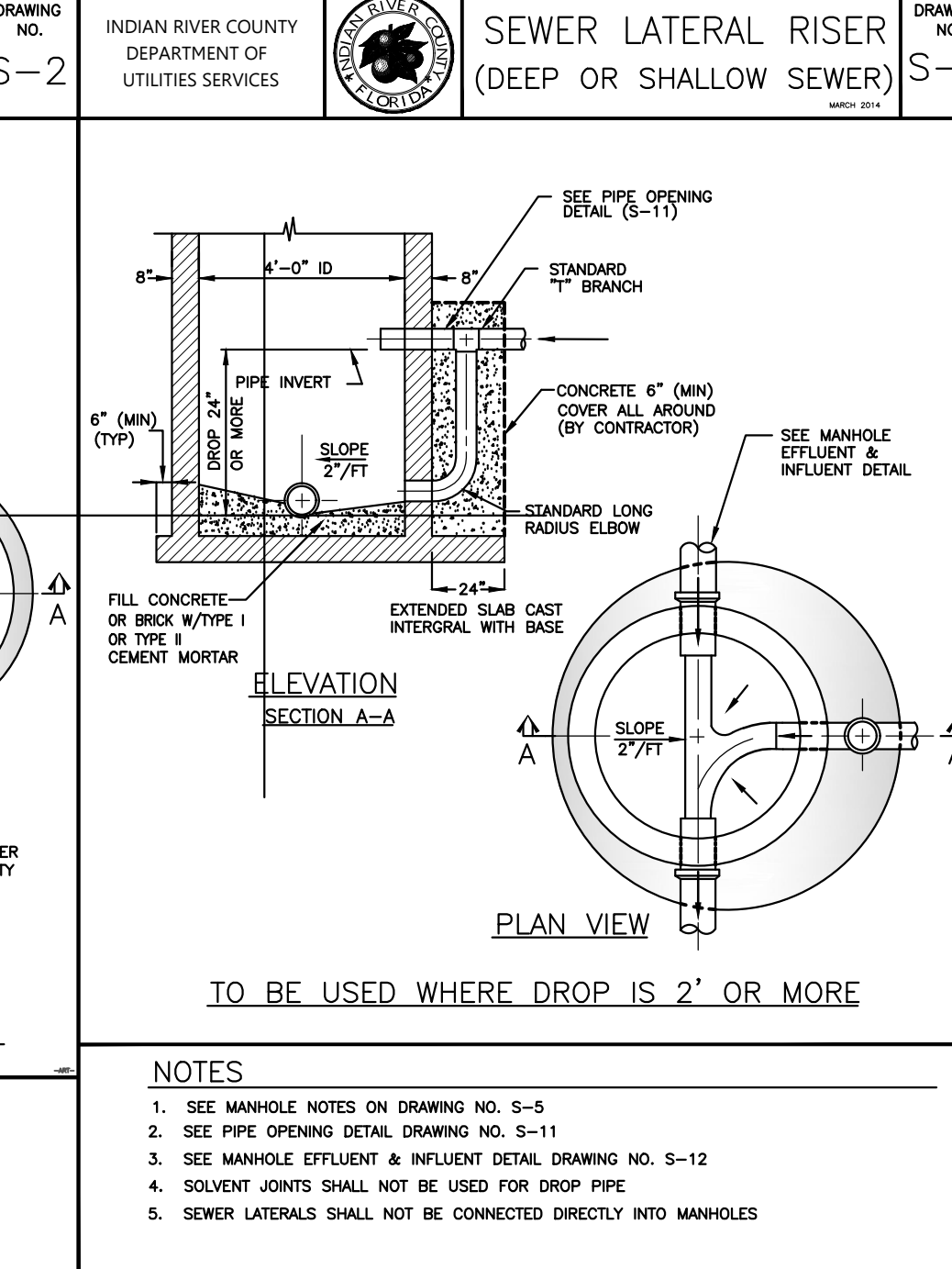
NOTES

- 3/4" GRAVEL BEDDING SHALL BE USED FOR EXCAVATION IN ROCK.
- SAND BEDDING SHALL BE USED FOR EXCAVATION IN SAND.
- ALL MATERIALS ARE TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.
- MARKER BALLS TO BE TAPED TO 6"x4" WYE 24" BELOW FINISHED GRADE.
- PLUMBING CONTRACTOR WILL BE RESPONSIBLE FOR RISER PIPE WITH BEND FOR SERVICE CONNECTION AND FOR CUTTING 4" SEWER CLEANOUT TO FINISH GRADE PRIOR TO CONNECTION.



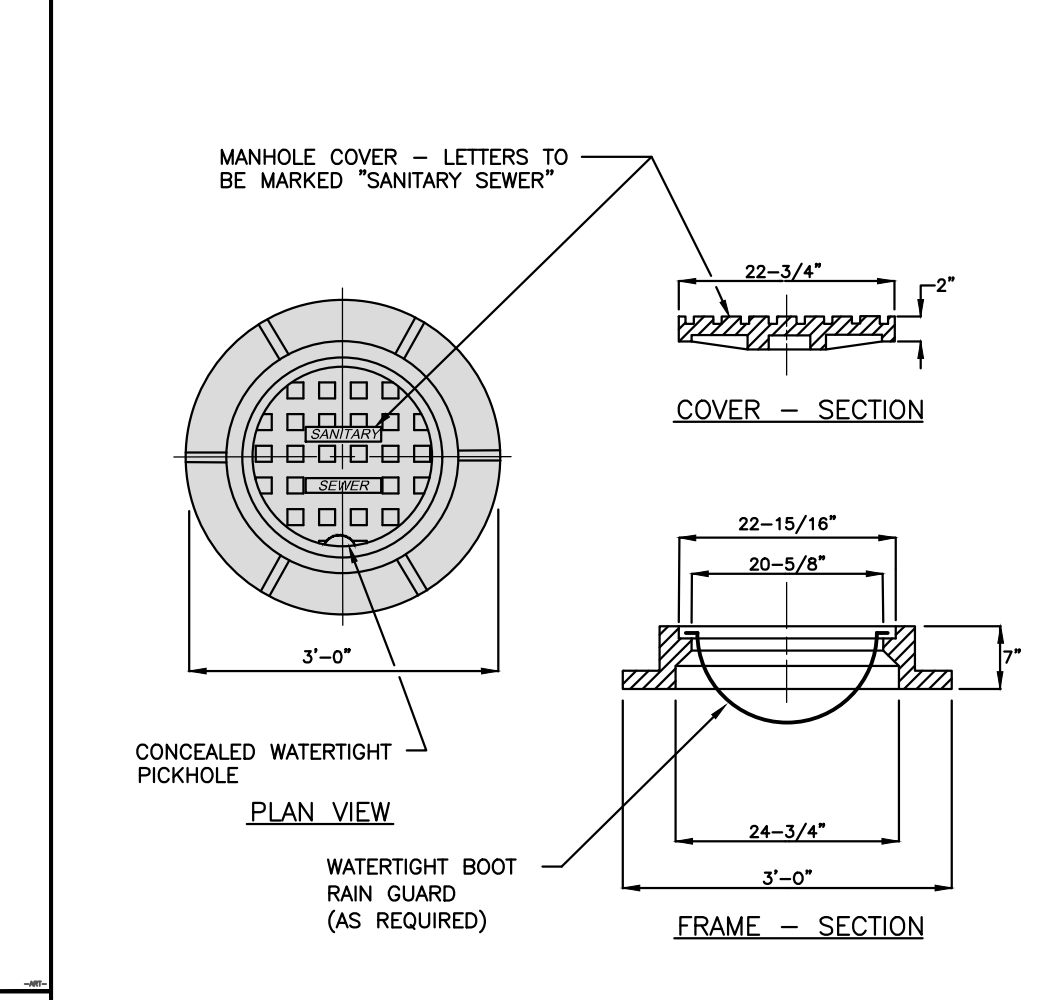
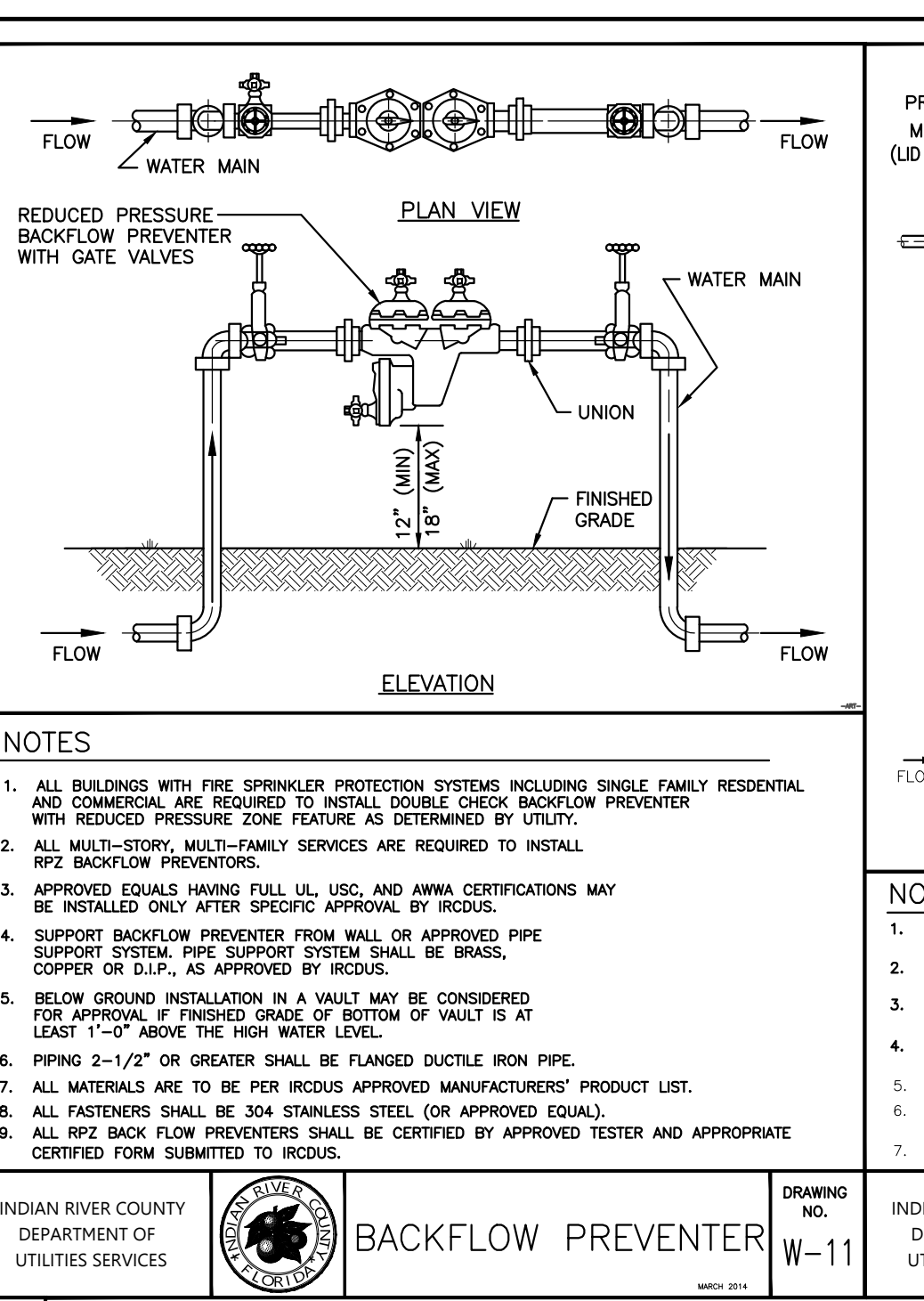
NOTES

- SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE A MINIMUM OF 18" ON CENTER.
- ALL SERVICES REQUIRE 36" MINIMUM COVER.
- MINIMUM SERVICE SIZE SHALL NOT BE LESS THAN 1/2". DUAL SERVICES SHALL BE A MINIMUM 1-1/2". TRIPLE SERVICES SHALL BE A MINIMUM 2" AND QUADRUPEL SERVICES SHALL BE APPROVED BY IRCUS.
- 1 1/2" & 1-1/2" LONG SERVICES REQUIRE A 2" MINIMUM I.D. CASING PIPE. 2" LONG SERVICES REQUIRE A 3" MINIMUM I.D. CASING PIPE. CASING PIPE SHALL BE SCHEDULE 40 P.V.C.
- ALL METERS 2" OR SMALLER SHALL BE INSTALLED BY IRCUS. REFER TO APPROVED MANUFACTURERS' PRODUCT LIST FOR METERS GREATER THAN 2".
- PN LOCKS SHALL BE PURCHASED BY THE DEVELOPER AND/OR CONTRACTOR AND SHALL BE INSTALLED ON ALL LOCKING CURB STOPS, SAMPLING POINTS, AND WATER SERVICE CONNECTIONS AT THE TIME OF ACTIVATING ALL WATER MAINS OR AT SUCH TIME AS DIRECTED BY IRCUS.
- CURB STOPS SHALL BE THE SAME SIZE AS THE METERS THAT ARE INSTALLED.
- TRACE WIRE TO BE INSTALLED AS PER DETAIL M-13.
- LOCATE MARKER BALLS ARE TO BE PLACED IN ALL METER BOXES WITHIN 24" FROM SURFACE.
- ALL RESIDENTIAL AND ONE ERU SERVICES SHALL BE 5/8" METERS.
- PRE-PLUMED METER BOXES TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.



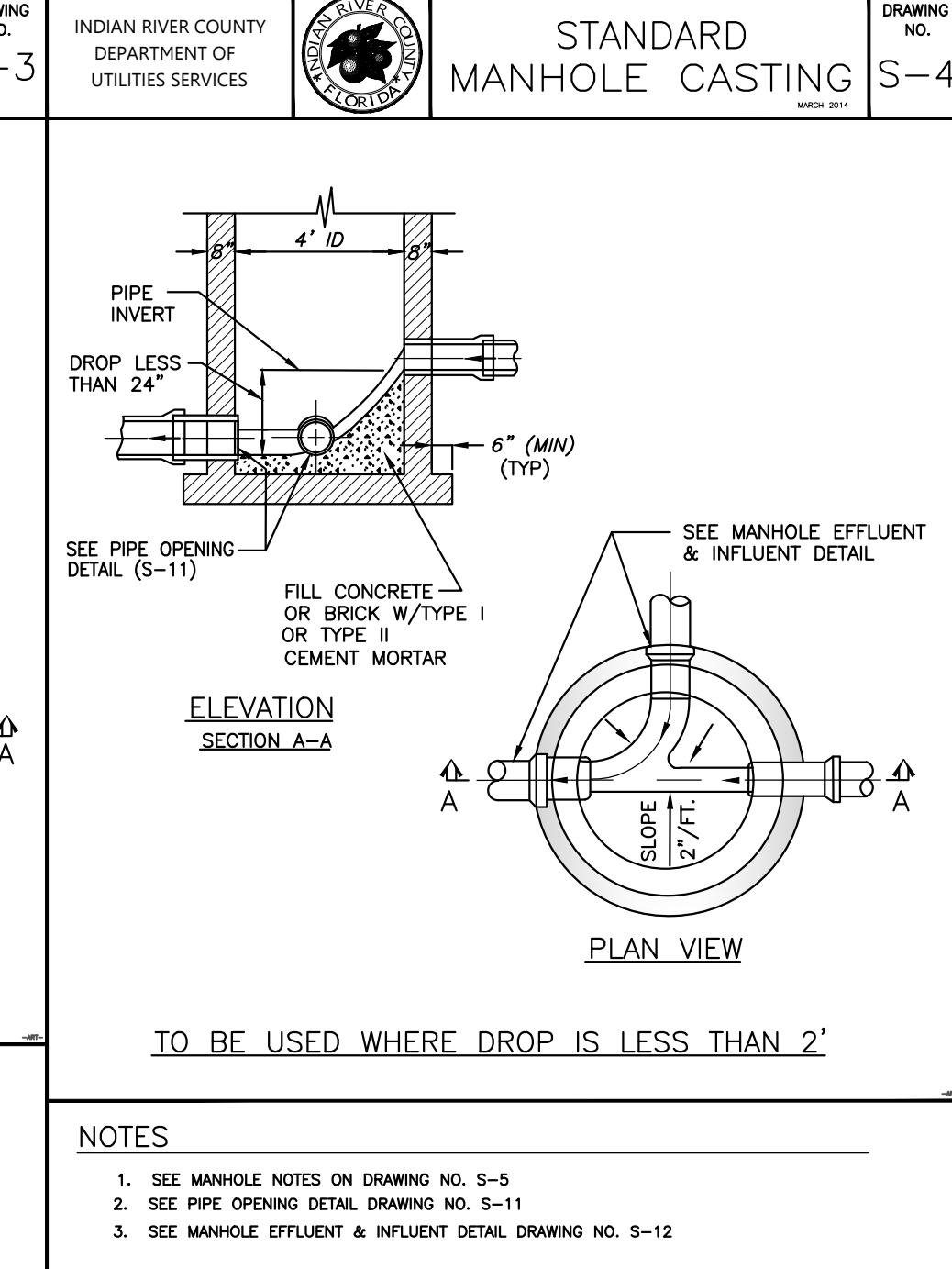
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12
- SOLVENT JOINTS SHALL NOT BE USED FOR DROP PIPE
- SEWER LATERALS SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES



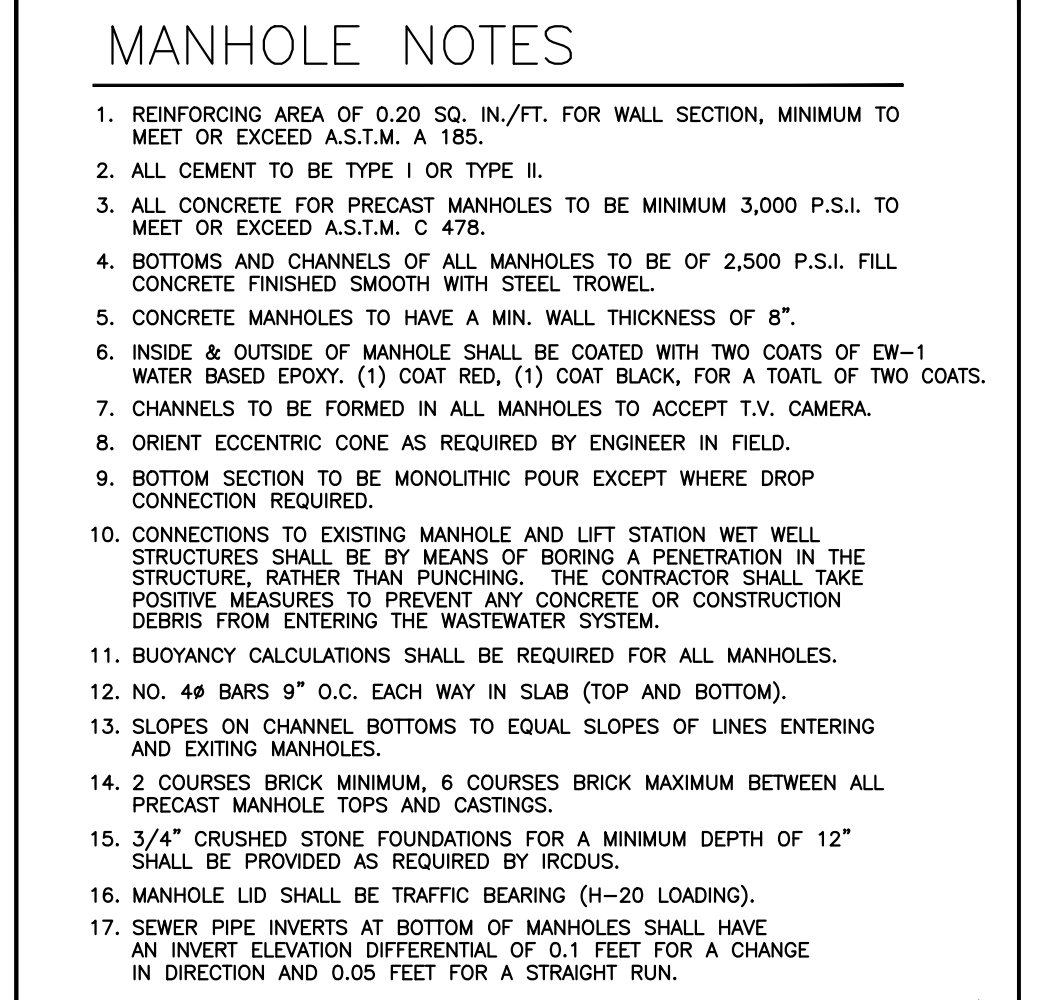
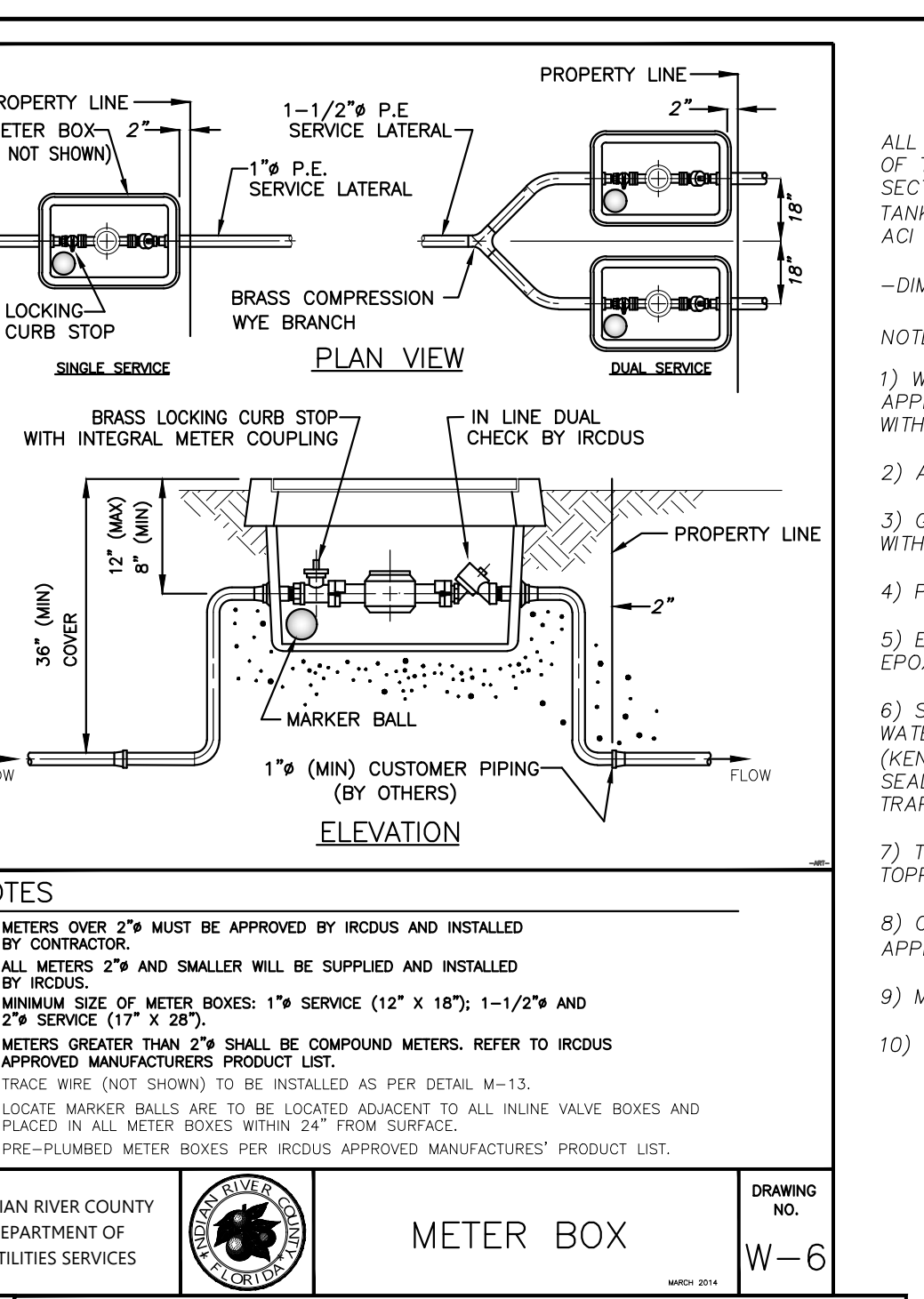
NOTES

- ALL BUILDINGS WITH FIRE SPRINKLER PROTECTION SYSTEMS INCLUDING SINGLE FAMILY RESIDENTIAL AND COMMERCIAL ARE REQUIRED TO INSTALL DOUBLE CHECK BACKFLOW PREVENTER WITH REDUCED PRESSURE ZONE FEATURE AS DETERMINED BY UTILITY.
- ALL MULTI-STORY, MULTI-FAMILY SERVICES ARE REQUIRED TO INSTALL PIPE BACKFLOW PREVENTERS.
- APPROVED EQUALS HAVING FULL UL, USC, AND ANMA CERTIFICATIONS MAY BE INSTALLED ONLY AFTER SPECIFIC APPROVAL BY IRCUS.
- SUPPORT BACKFLOW PREVENTER FROM WALL OR APPROVED PIPE SUPPORT SYSTEM. PIPE SUPPORT SYSTEM SHALL BE BRASS, COPPER OR D.I.P., AS APPROVED BY IRCUS.
- BELOW GROUND INSTALLATION IN A WAULT MAY BE CONSIDERED FOR APPROVAL IF FINISHED GRADE OF BOTTOM OF VAULT IS AT LEAST 1'-0" ABOVE THE HIGH WATER LEVEL.
- PIPING 2-1/2" OR GREATER SHALL BE FLANGED DUCTILE IRON PIPE.
- ALL MATERIALS ARE TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.
- ALL FASTENERS SHALL BE 304 STAINLESS STEEL (OR APPROVED EQUAL).
- ALL RPZ BACK FLOW PREVENTERS SHALL BE CERTIFIED BY APPROVED TESTER AND APPROPRIATE CERTIFIED FORM SUBMITTED TO IRCUS.



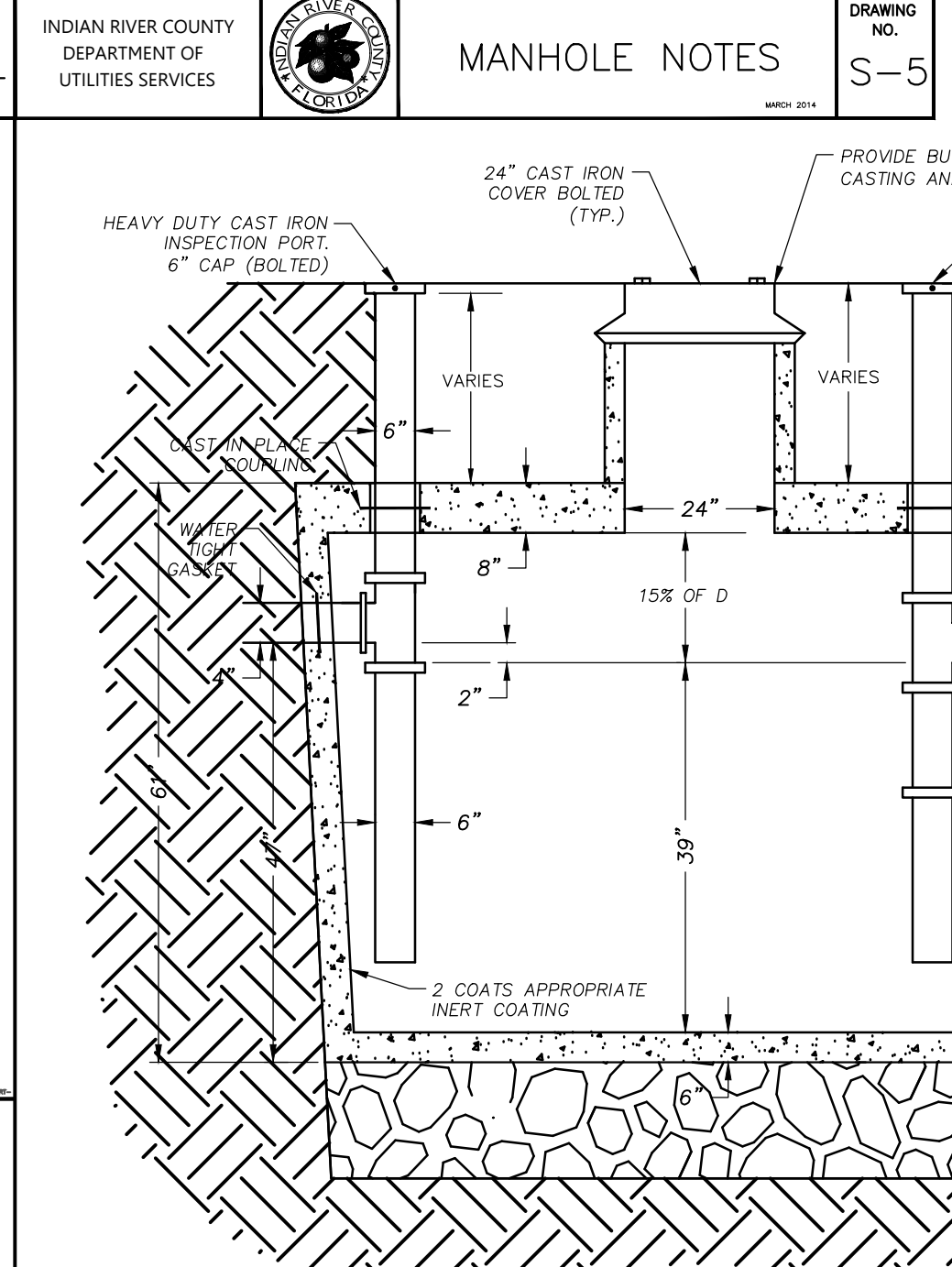
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



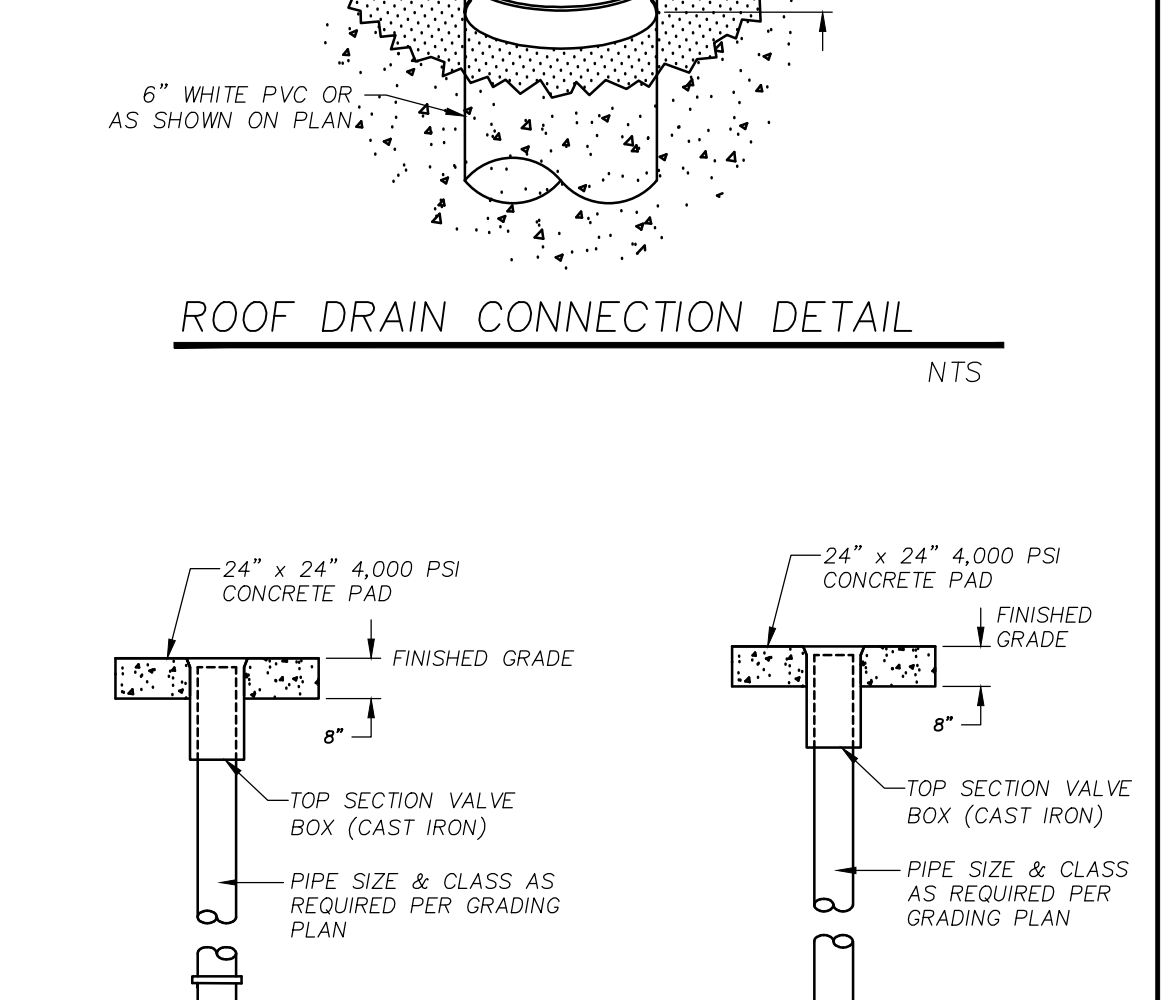
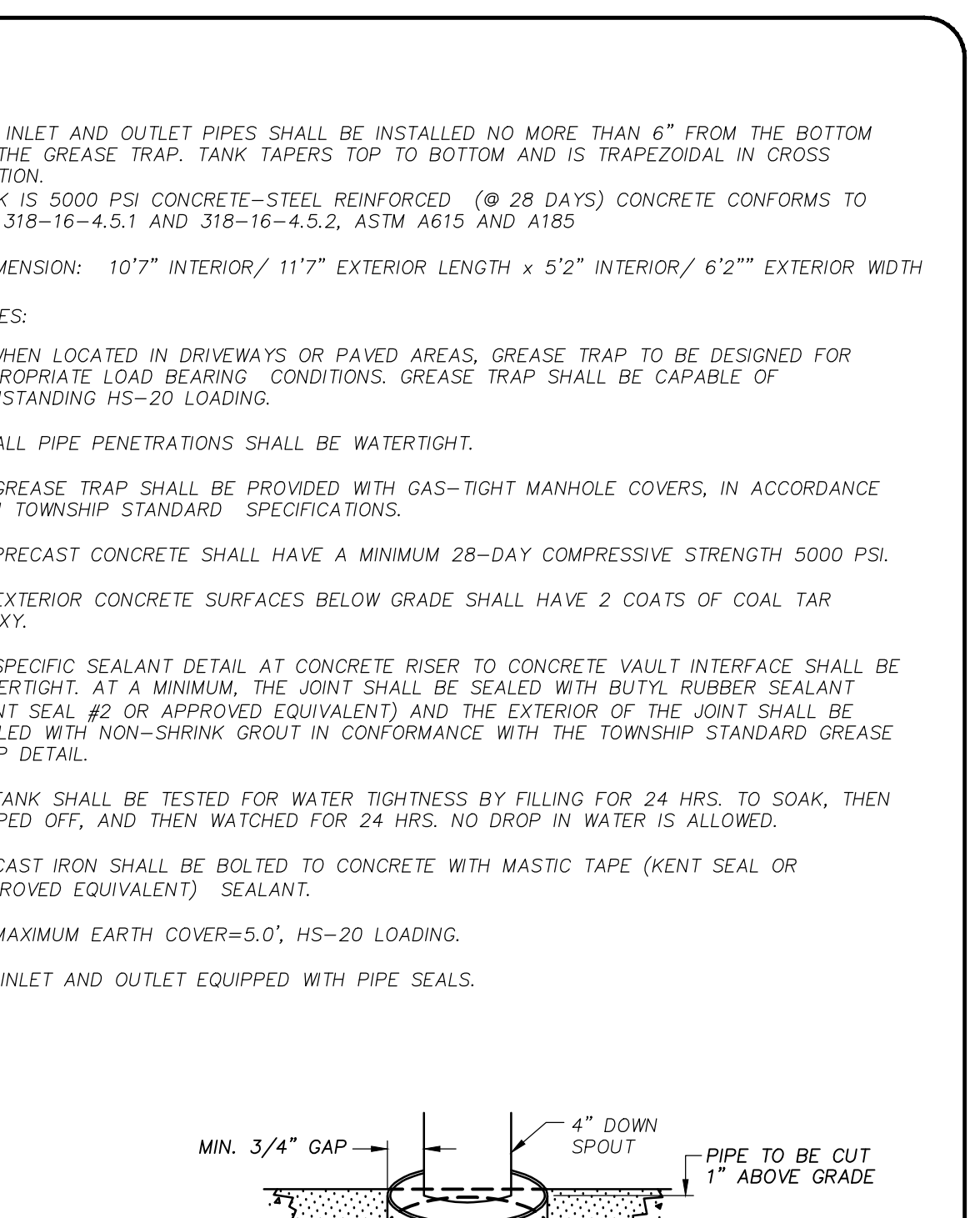
NOTES

- METERS OVER 2" SHALL BE APPROVED BY IRCUS AND INSTALLED BY CONTRACTOR.
- ALL METERS 2" AND SMALLER WILL BE SUPPLIED AND INSTALLED BY IRCUS.
- MINIMUM SIZE OF METER BOXES: 1 1/2" SERVICE (12" X 18"); 1-1/2" SERVICE (17" X 24")
- METERS GREATER THAN 2" SHALL BE COMPOUND METERS. REFER TO IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.
- TRACE WIRE (NOT SHOWN) TO BE INSTALLED AS PER DETAIL M-13.
- LOCATE MARKER BALLS ARE TO BE LOCATED ADJACENT TO ALL INLINE VALVE BOXES AND PLACED IN ALL METER BOXES WITHIN 24" FROM SURFACE.
- PRE-PLUMED METER BOXES PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST.



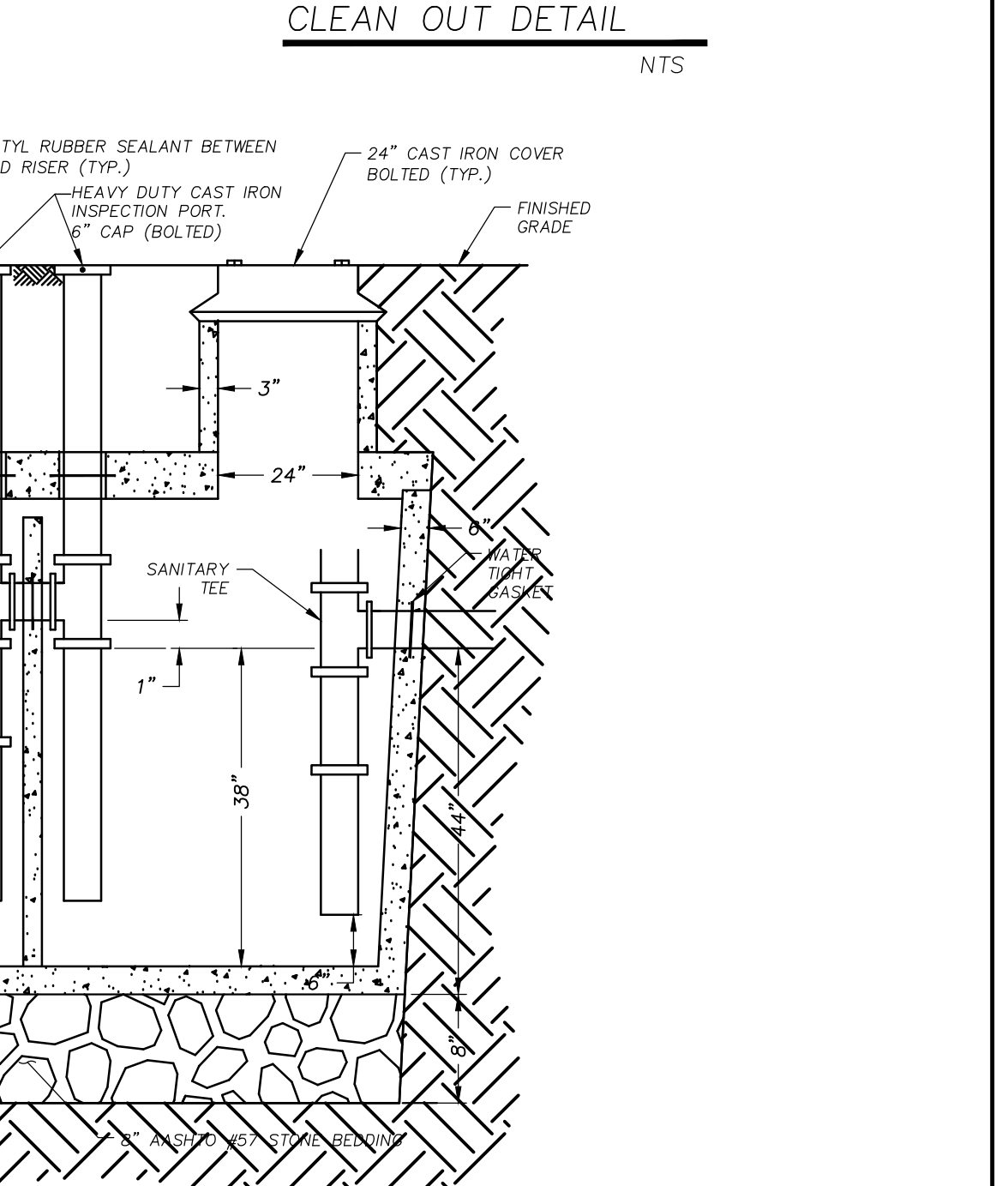
MANHOLE NOTES

- REINFORCING AREA OF 0.20 SQ. IN./FT. FOR WALL SECTION, MINIMUM TO MEET OR EXCEED A.S.T.M. A 185.
- ALL CEMENT TO BE TYPE I OR TYPE II.
- ALL CONCRETE FOR PRECAST MANHOLES TO BE MINIMUM 3,000 P.S.I. TO MEET OR EXCEED A.S.T.M. C 478.
- BOTTOMS AND CHANNELS OF ALL MANHOLES TO BE OF 2,500 P.S.I. FILL CONCRETE FINISHED SMOOTH WITH STEEL TROWEL.
- CONCRETE MANHOLES TO HAVE A MIN. WALL THICKNESS OF 8".
- INSIDE & OUTSIDE OF MANHOLE SHALL BE COATED WITH TWO COATS OF EW-1 WATER BASED EPOXY. (1) COAT RED, (1) COAT BLACK, FOR A TOTAL OF TWO COATS.
- CHANNELS TO BE FORMED IN ALL MANHOLES TO ACCEPT TV. CAMERA.
- ORIENT ECCENTRIC CONE AS REQUIRED BY ENGINEER IN FIELD.
- BOTTOM SECTION TO BE MONOLITHIC POUR EXCEPT WHERE DROP CONNECTION REQUIRED.
- CONNECTIONS TO EXISTING MANHOLE AND LIFT STATION WET WELL STRUCTURES SHALL BE BY MEANS OF BORING A PENETRATION IN THE STRUCTURE, RATHER THAN PUNCHING. THE CONTRACTOR SHALL TAKE POSITIVE MEASURES TO PREVENT ANY CONCRETE OR CONSTRUCTION DEBRIS FROM ENTERING THE WASTEWATER SYSTEM.
- BUOYANCY CALCULATIONS SHALL BE REQUIRED FOR ALL MANHOLES.
- NO. 4# BARS 9" O.C. EACH WAY IN SLAB TOP AND BOTTOM.
- SLOPES ON CHANNEL BOTTOMS TO EQUAL SLOPES OF LINES ENTERING AND EXITING MANHOLES.
- 2 COURSES BRICK MINIMUM, 6 COURSES BRICK MAXIMUM BETWEEN ALL PRECAST MANHOLE TOPS AND CASTINGS.
- 3/4" CRUSHED STONE FOUNDATIONS FOR A MINIMUM DEPTH OF 12" SHALL BE PROVIDED AS REQUIRED BY IRCUS.
- MANHOLE LID SHALL BE TRAFFIC BEARING (H-20 LOADING).
- SEWER PIPE INVERTS AT BOTTOM OF MANHOLES SHALL HAVE AN INVERT ELEVATION DIFFERENTIAL OF 0.1 FEET FOR A CHANGE IN DIRECTION AND 0.05 FEET FOR A STRAIGHT RUN.
- A WATER TIGHT RAIN GUARD BOOT, TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST, SHALL BE PROVIDED FOR ALL MANHOLE FRAME/COVERS.
- MATERIALS FOR LIVING MANHOLES, WHERE REQUIRED, TO BE PER IRCUS APPROVED MANUFACTURERS' PRODUCT LIST. MANHOLE LINERS SHALL BE INSTALLED ON ALL MANHOLES RECEIVING PUMPED SEWAGE, PLUS 5 MANHOLES IN EACH DIRECTION. (AS DIRECTED BY IRCUS.)
- PUMP OUT MANHOLE SHALL BE LOCATED WITHIN 20' OF LIFT STATION AND CONSTRUCTED OUT OF RIGHT OF WAY.



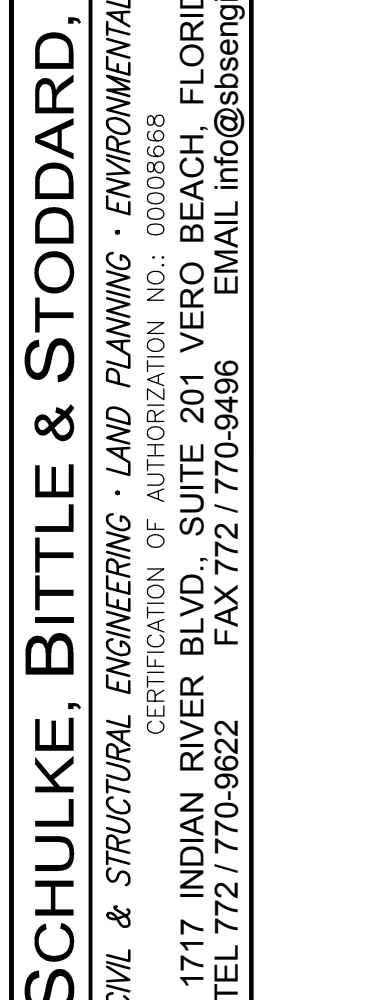
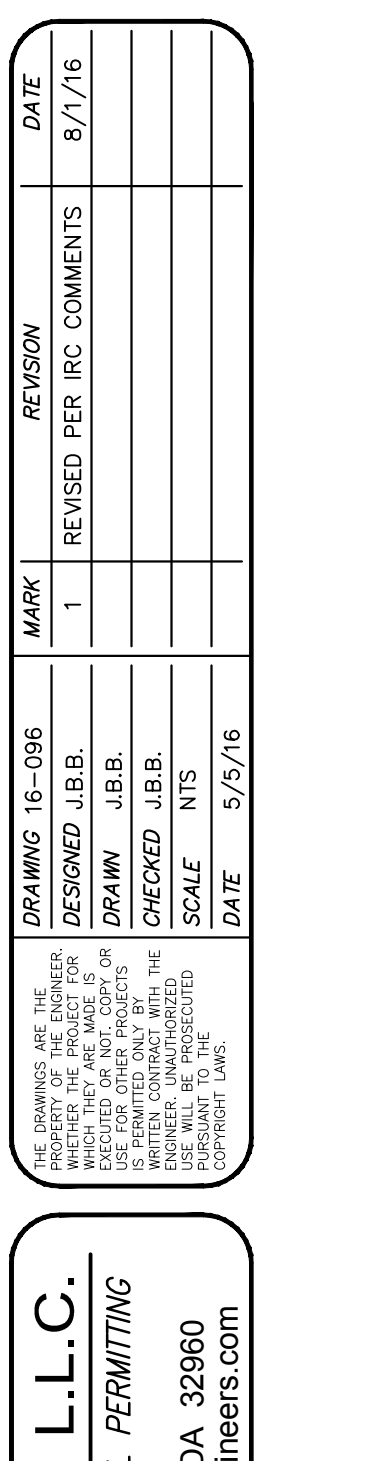
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE STANDARD MANHOLE CASTING DRAWING NO. S-4
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



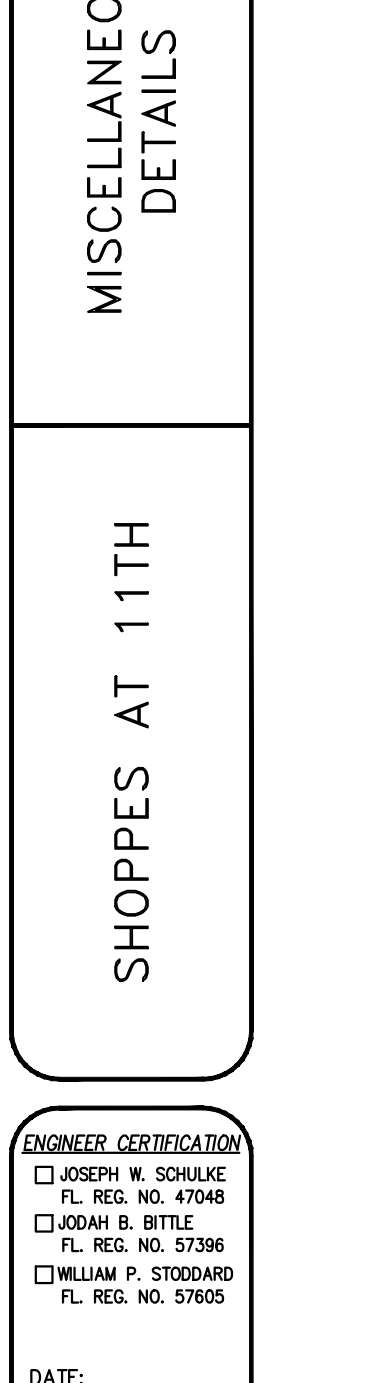
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



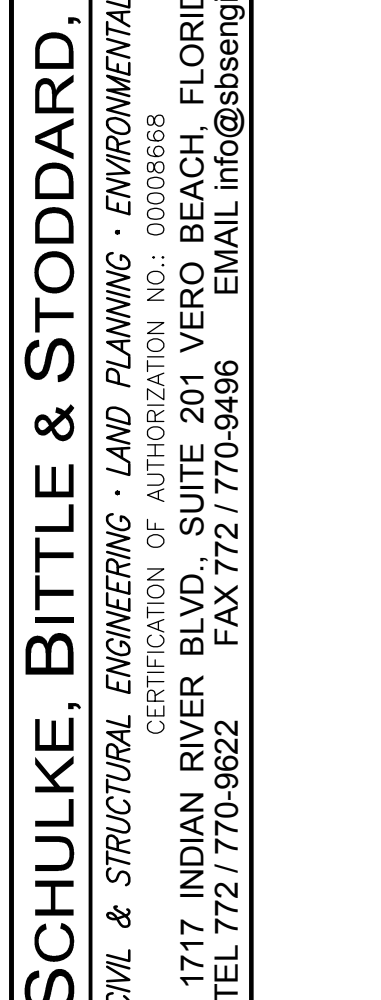
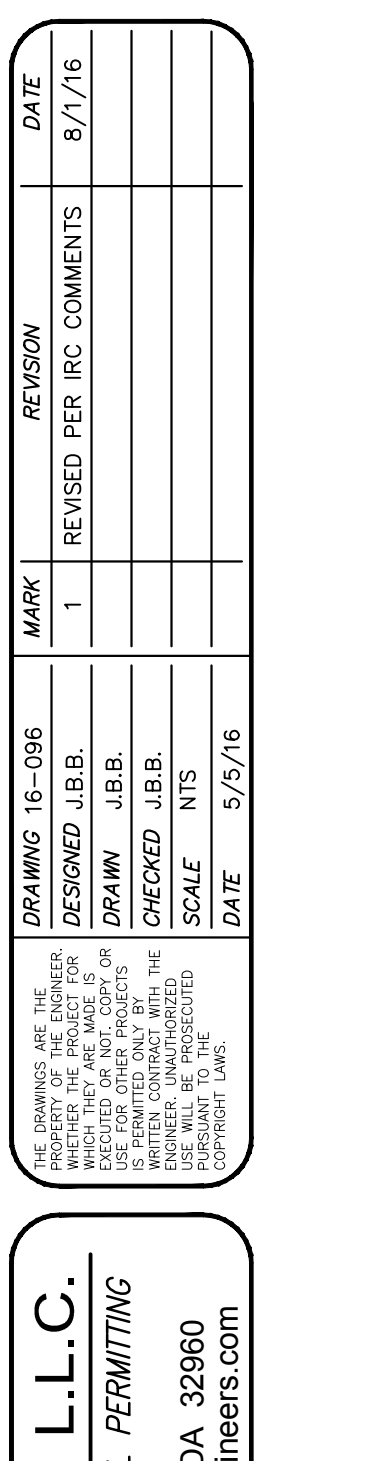
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



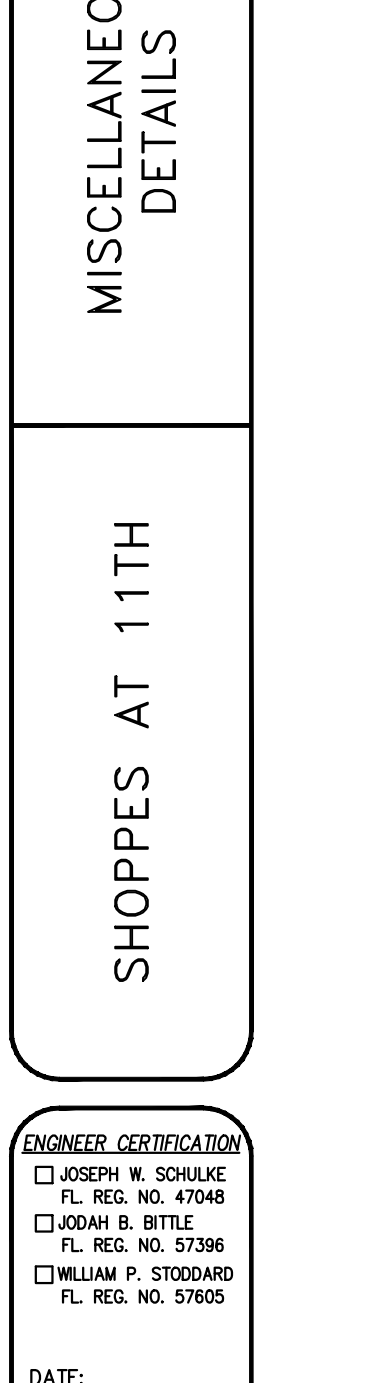
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



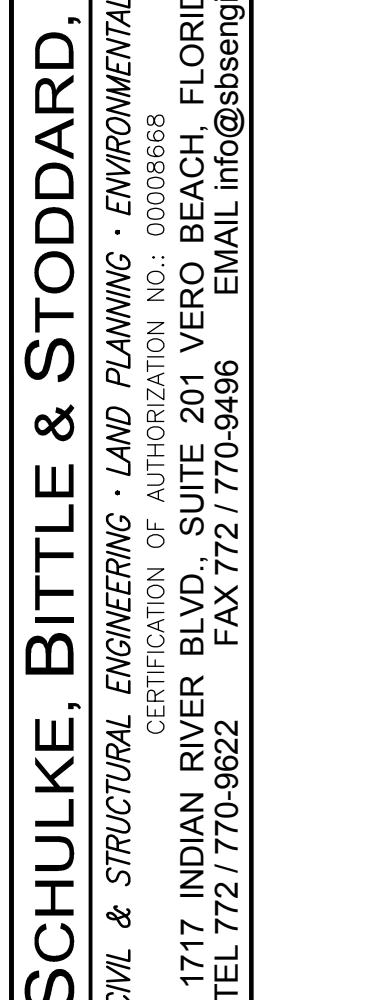
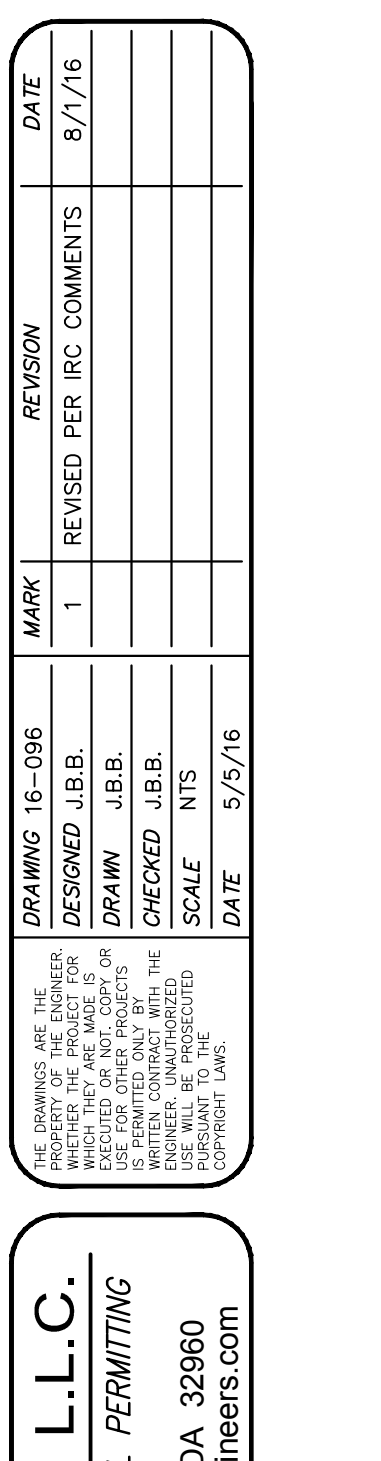
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



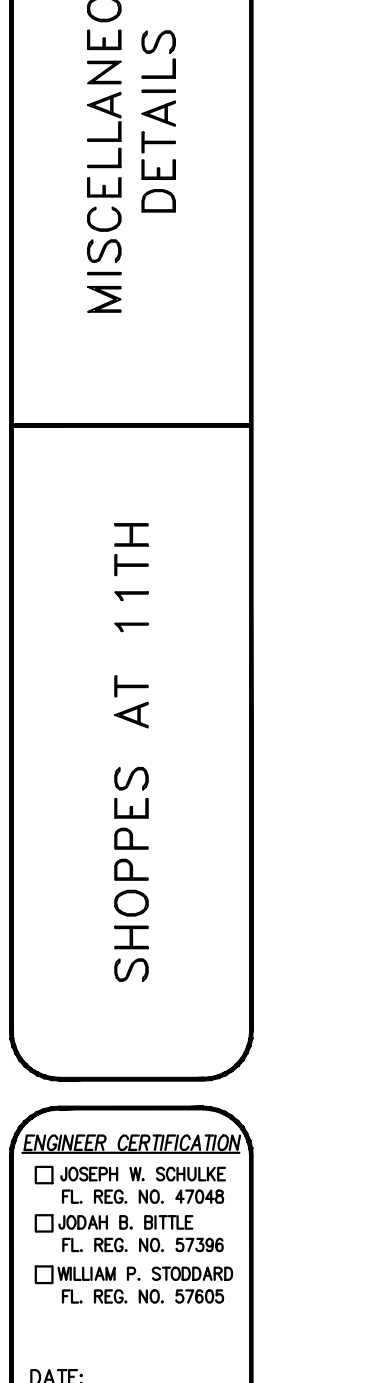
NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12



NOTES

- SEE MANHOLE NOTES ON DRAWING NO. S-5
- SEE PIPE OPENING DETAIL DRAWING NO. S-11
- SEE MANHOLE EFFLUENT & INFLUENT DETAIL DRAWING NO. S-12

SCHULKE, BITTLE & STODDARD, L.L.C.
 CIVIL & STRUCTURAL ENGINEERING - LAND PLANNING - ENVIRONMENTAL PERMITTING
 CERTIFICATION OF AUTHORIZATION NO.: 0000988
 1717 INDIAN RIVER BLVD., SUITE 201 VERO BEACH, FLORIDA 32960
 TEL: 772/770-9622 FAX: 772/770-9496 EMAIL: info@sbsengineers.com

MISCELLANEOUS DETAILS

SHOPPES AT 11TH

ENGINEER CERTIFICATION

□ JOSEPH W. SCHULKE
 FL REG. NO. 47048
 □ JUDITH E. BITTLE
 FL REG. NO. 57396
 □ WILLIAM P. STODDARD
 FL REG. NO. 57605

DATE: SHEET **11**
PROJECT NO. 16-096