

# ORIGINAL SECTION SEWER NORTH PHASE 3

## CITY OF GREENACRES PALM BEACH COUNTY, FLORIDA



### CONTACTS:

OWNER: CITY OF GREENACRES

CONTACT: CARLOS CEDEFIÑO, PUBLIC WORKS DIRECTOR  
PHONE: (561)-642-2074

ENGINEER OF RECORD: CRAVEN THOMPSON & ASSOCIATES, INC.  
CONTACT: LEONARD Z. GAMBLE, P.E.  
PHONE: (954)-739-6400

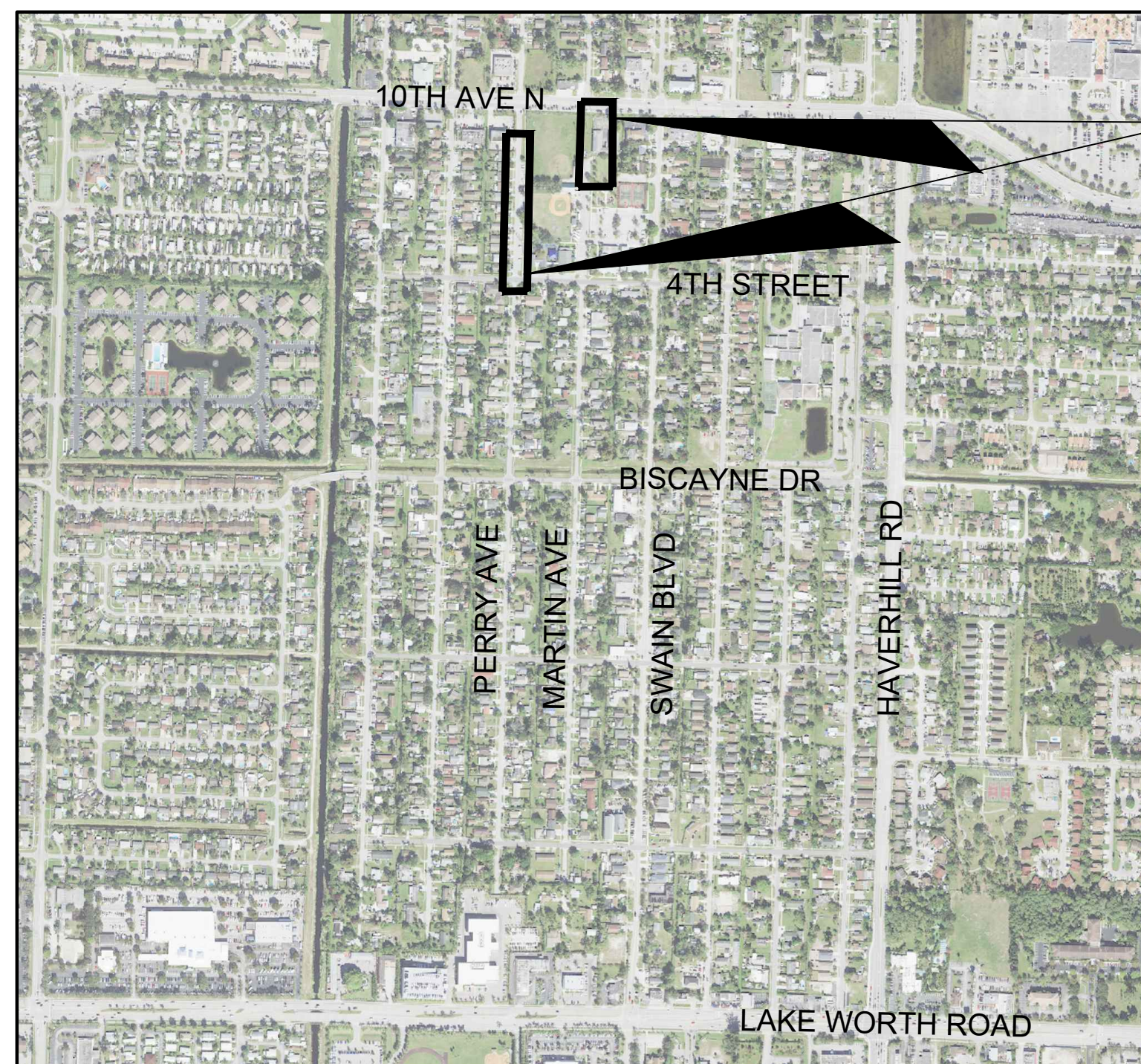
BUILDING DEPARTMENT: CITY OF GREENACRES  
CONTACT: ILEINYS CAPOTE  
PHONE: (561)-642-2164

LAKE WORTH DRAINAGE DISTRICT  
CONTACT: NICOLE SMITH  
PHONE: (561)-498-5363

UTILITY: PALM BEACH COUNTY WATER UTILITY DEPARTMENT  
CONTACT: JACKIE MICHELS  
PHONE: (561)-493-6000

POWER COMPANY: FLORIDA POWER & LIGHT  
CONTACT: ALEX ARNOLD  
PHONE: (561)-616-1611

 **CRAVEN • THOMPSON AND ASSOCIATES, INC.**  
ENGINEERS • PLANNERS • SURVEYORS  
3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-6409 TEL.: (954) 739-6400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS No. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS No. 0000114



PROJECT LOCATION

### LOCATION MAP

SECTION 23, TOWNSHIP 44S, RANGE 42E

PREPARED FOR:  
**CITY OF GREENACRES**  
PLANNING & ENGINEERING DEPARTMENT  
5800 MELALEUCA LANE GREENACRES, FL 33463  
TEL: 561.642.2054

INDEX OF ROADWAY PLANS		
SHEET NO.	SHEET DESCRIPTION	REV
C-1	COVER SHEET	
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C-3	SANITARY SEWER PLAN AND PROFILES	
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C-6 TO C-11	SEWER DETAILS	
C-12 TO C-17	WATER DETAILS	
C-18 TO C-23	LIFT STATION DETAILS	

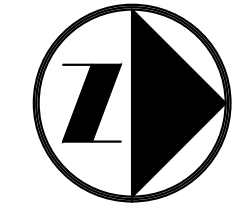
BID NO 25-007  
DATE: 03/23/25

PBCWUD #XXXXX

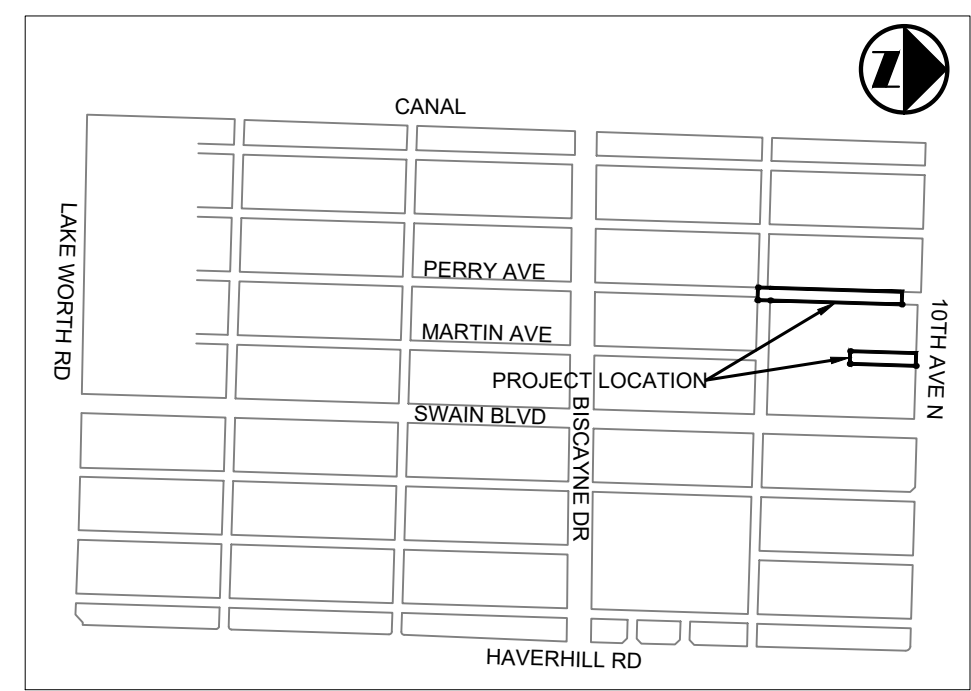
Leonard Z. Gamble  
Florida P.E. No. 65921

CTA PROJECT NUMBER: 21-0044-001-07

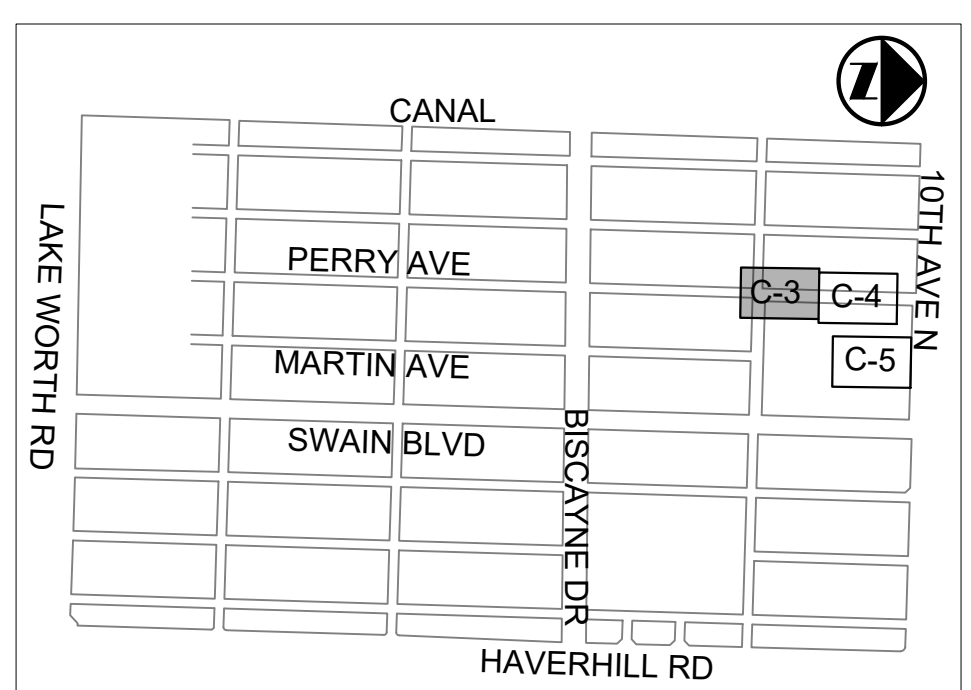




0 30' 60'  
SCALE: 1" = 30'



**LOCATION MAP**  
SECTION 23, TOWNSHIP 44S, RANGE 42



**KEY MAP**

ALL ELEVATIONS SHOWN  
REFERENCE N.A.V.D. 1988

**GENERAL WATER NOTES**

1. ALL EXISTING WATER SERVICES TO REMAIN. IF RELOCATION IS REQUIRED IT MUST BE DONE UNDER THE SUPERVISION OF THE PROJECT'S WUD INSPECTOR OR DONE BY PBCWUD PERSONNEL ONLY.
2. ALL WATER SERVICE BRASS FITTINGS ARE REQUIRED TO BE LEAD FREE.
3. ALL EXISTING PBCWUD FACILITIES (IE. VALVES) TO BE OPERATED BY PBCWUD PERSONNEL ONLY OR BY DIRECTION AND UNDER THE SUPERVISION OF THE PROJECT WUD INSPECTOR.

**GENERAL SEWER NOTES**

1. SEWER LATERALS ARE PUBLICLY OWNED AND MAINTAINED UP TO CLEANOUT AT THE PROPERTY LINE.
2. SEWER CLEANOUT MINI-MANHOLES ARE REQUIRED ON ALL CLEANOUTS WITHIN PAVEMENT AND/OR SIDEWALK AREAS.

**PBCWUD WASTEWATER NOTE**

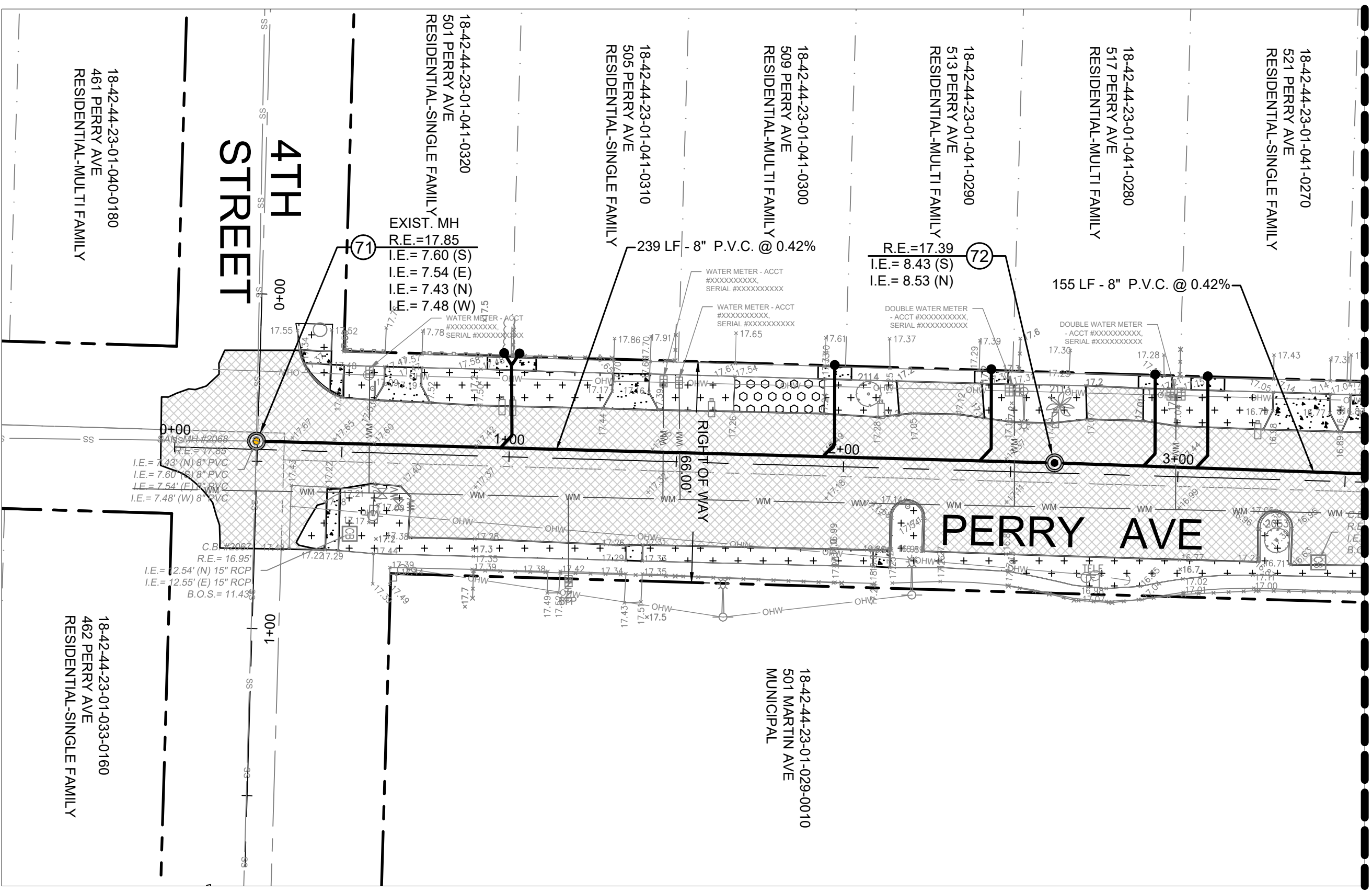
1. ALL GRAVITY SEWER MAINS, MANHOLES AND LATERALS ON THIS PROJECT TO BE CONSTRUCTED PER THE MARCH 2023 PALM BEACH COUNTY WATER UTILITIES DEPARTMENT (WUD) MINIMUM DESIGN AND CONSTRUCTION STANDARDS.

**GENERAL LANDSCAPE NOTES**

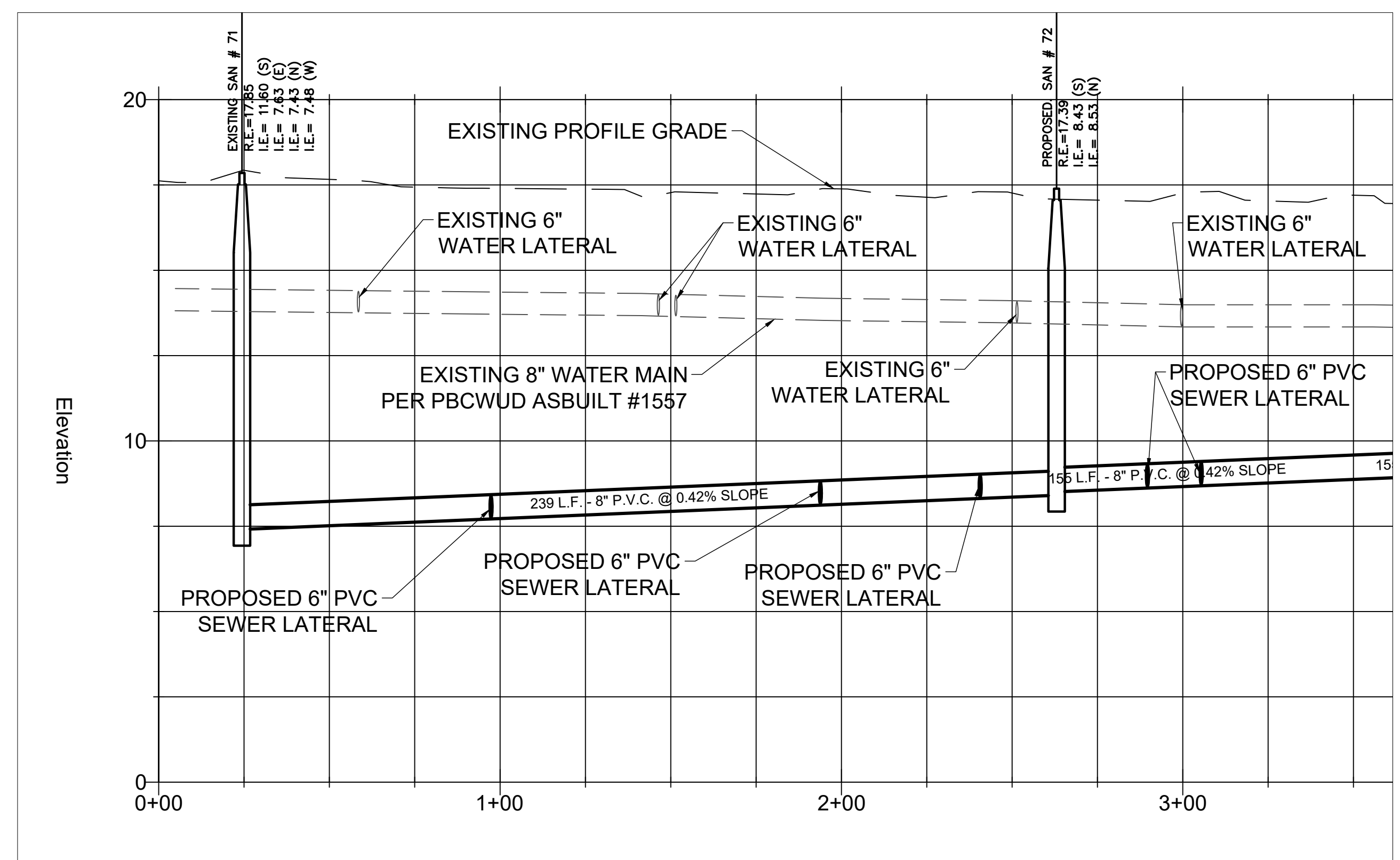
1. IF ANY NEW LANDSCAPE MATERIALS ARE INSTALLED AS PART OF THIS PROJECT THEN SOD ONLY WITH NO SHRUBS AND/OR TREES ARE TO BE INSTALLED WITHIN 5' OF ANY WATER METER AND WITHIN 7.5' OF ANY FIRE HYDRANT. TREES CANNOT BE INSTALLED WITHIN 10' OF A WUD WATER OR FORCE MAIN WITHOUT PRIOR PBCWUD APPROVAL AND THE INSTALLATION OF A ROOT BARRIER. ALSO IF ANY EXISTING TREES ARE LESS THAN 10' MINIMUM OF ANY NEW GRAVITY SEWER MAINS A ROOT BARRIER IS REQUIRED TO BE INSTALLED OR TREE RELOCATED/REMOVED

**GRAVITY SEWER AVAILABILITY NOTE:**

THIS GRAVITY SEWER SYSTEM IS BEING CONSTRUCTED AT THE CITY OF GREENACRES OWN RISK PENDING DESIGN, APPROVAL AND CONSTRUCTION OF THE FUTURE GRAVITY SEWER SYSTEM. THE GRAVITY SEWER MAINS AND SEWER LATERALS DESIGNED, APPROVED AND CONSTRUCTED BY THIS PROJECT ARE "DRY LINES" WITH NO PUBLIC CONNECTION PERMITTED TO THE GRAVITY SEWER SYSTEM UNDER THIS PROJECT.

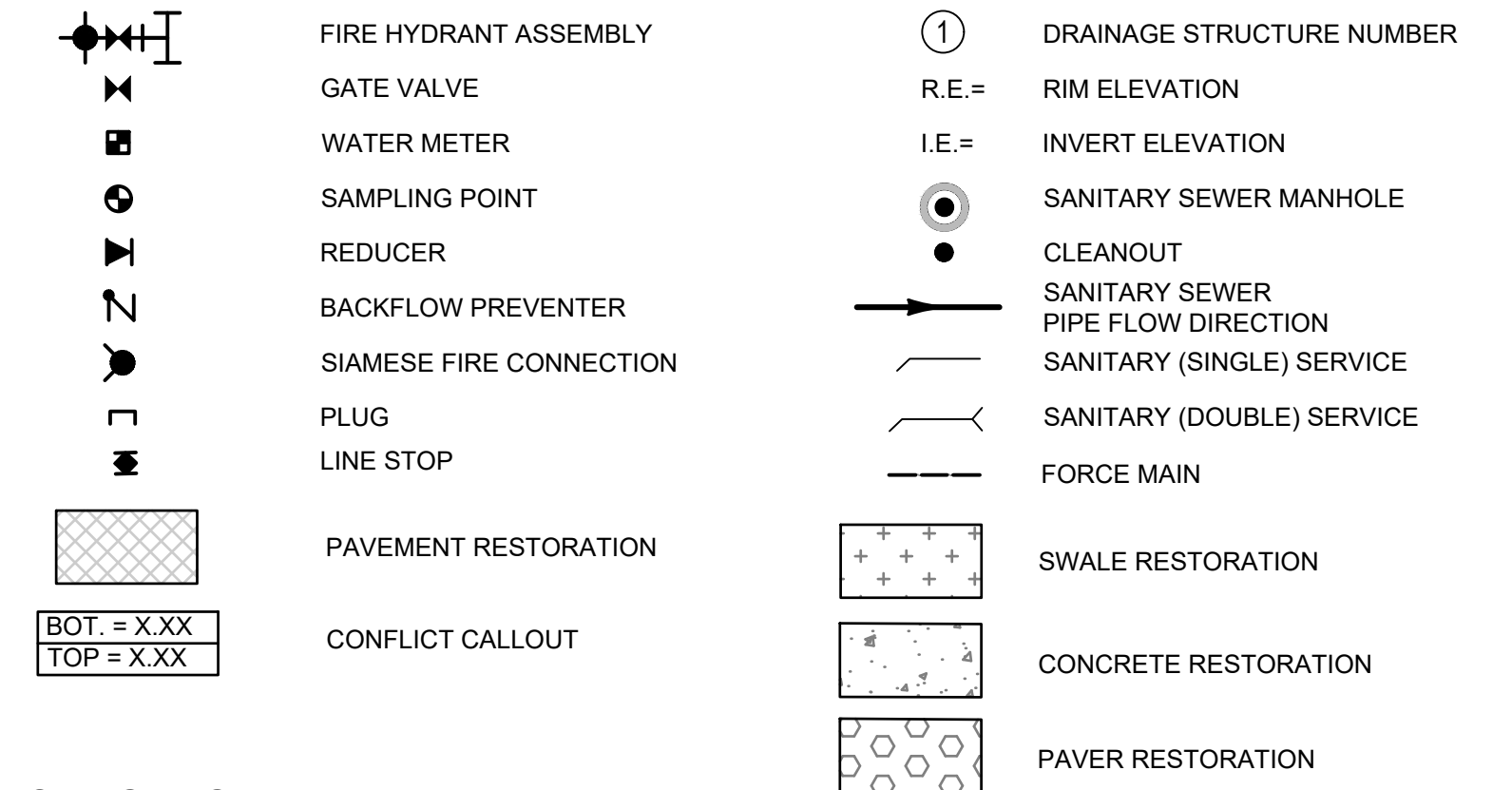


PLAN VIEW  
SCALE: 1"=30'



PROFILE VIEW  
VERTICAL SCALE: 1"=3'  
HORIZONTAL SCALE: 1"=30'

**PROPOSED WATER AND SEWER LEGEND:**



**EXISTING LEGEND:**



PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025

**REVISIONS**

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE

CHECKED BY: \_\_\_\_\_  
SUPERVISED BY: \_\_\_\_\_

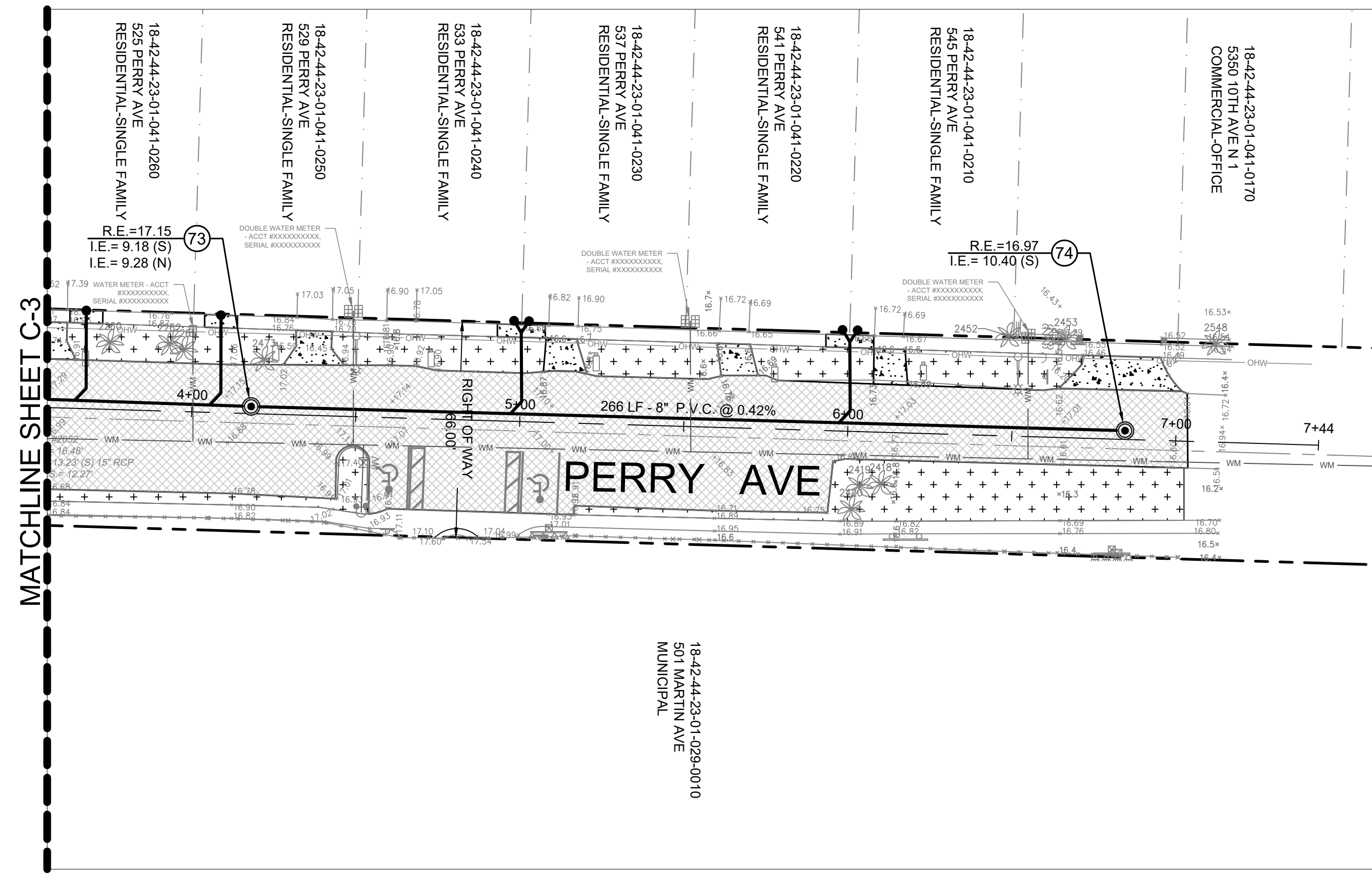
**Craven • Thompson and Associates, Inc.**  
ENGINEERS • PLANNERS • SURVEYORS  
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FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. C000114

ORIGINAL SECTION SEWER  
NORTH PHASE 3  
CITY OF GREENACRES

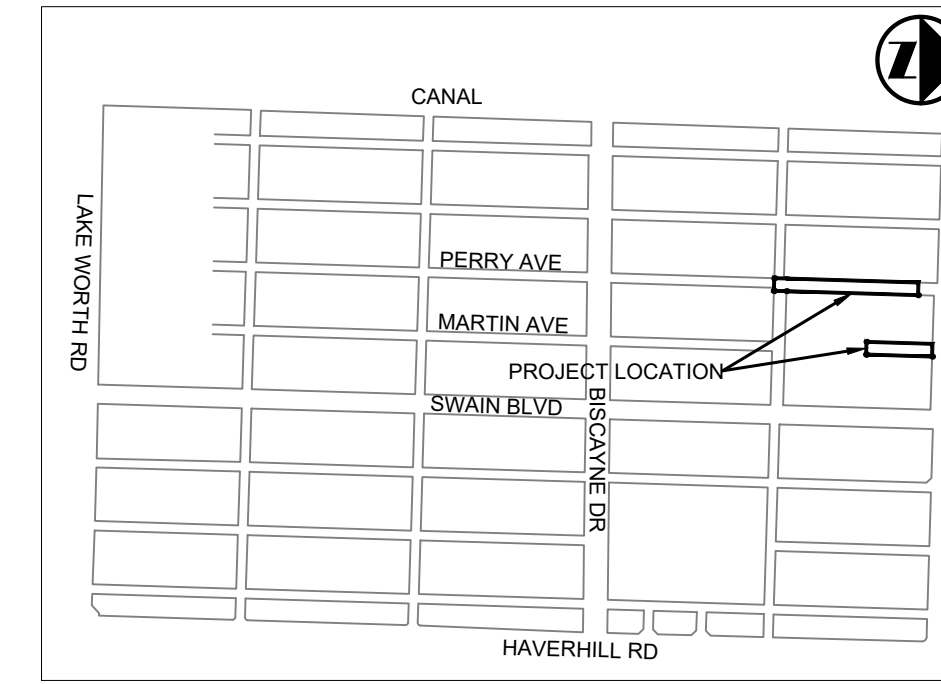
**SANITARY SEWER PLAN**

SHEET NO.  
**C-3**

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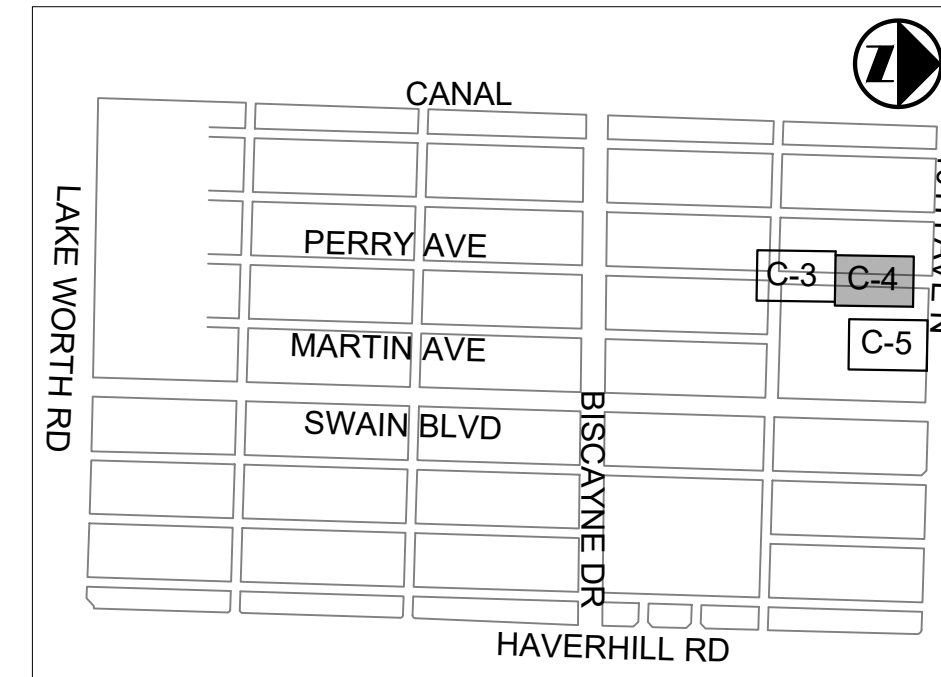


PLAN VIEW  
SCALE: 1"=30'



**LOCATION MAP**

SECTION 23, TOWNSHIP 44S, RANGE 42



**KEY MAP**

ALL ELEVATIONS SHOWN  
REFERENCE N.A.V.D. 1988

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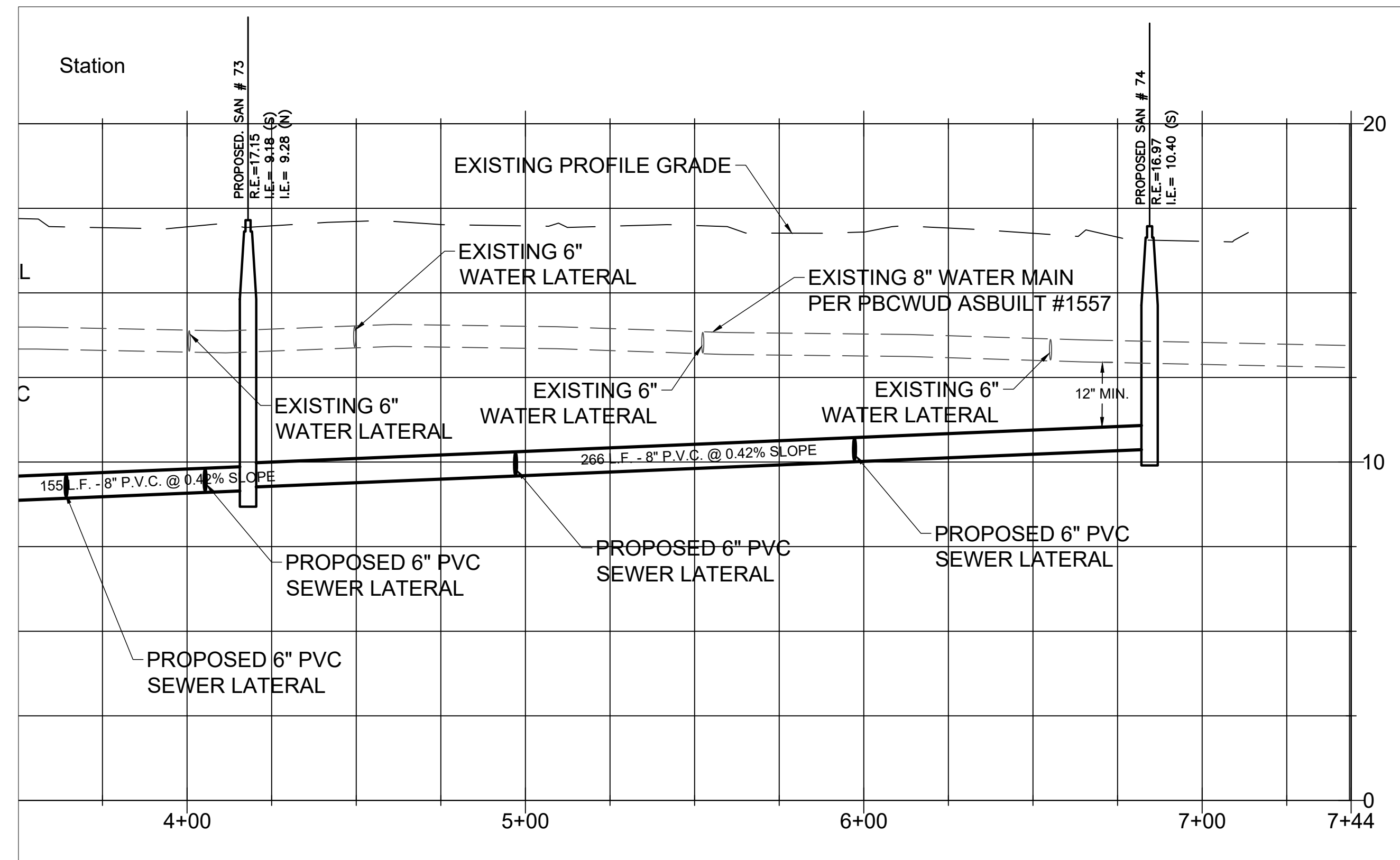
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**PROPOSED WATER AND SEWER LEGEND:**

- |  |                         |        |                                    |
|--|-------------------------|--------|------------------------------------|
|  | FIRE HYDRANT ASSEMBLY   |        | DRAINAGE STRUCTURE NUMBER          |
|  | GATE VALVE              | R.E. = | RIM ELEVATION                      |
|  | WATER METER             | I.E. = | INVERT ELEVATION                   |
|  | SAMPLING POINT          |        | SANITARY SEWER MANHOLE             |
|  | REDUCER                 |        | CLEANOUT                           |
|  | BACKFLOW PREVENTER      |        | SANITARY SEWER PIPE FLOW DIRECTION |
|  | SIAMESE FIRE CONNECTION |        | SANITARY (SINGLE) SERVICE          |
|  | PLUG                    |        | SANITARY (DOUBLE) SERVICE          |
|  | PAVEMENT RESTORATION    |        | FORCE MAIN                         |
|  | CONFLICT CALLOUT        |        | SWALE RESTORATION                  |
|  |                         |        | CONCRETE RESTORATION               |

**EXISTING LEGEND:**

- |  |                     |  |                          |  |                           |
|--|---------------------|--|--------------------------|--|---------------------------|
|  | ANCHOR              |  | METAL LIGHT POLE         |  | TRAFFIC POLE              |
|  | BLOW-OFF VALVE      |  | MONITORING WELL          |  | TRAFFIC PULL BOX          |
|  | CATCH BASIN         |  | PIPE                     |  | TRANSFORMER PAD           |
|  | CONCRETE LIGHT POLE |  | PARKING LIGHT 2 SQUARE   |  | WATER BLOW-OFF            |
|  | CONCRETE POST       |  | SANITARY MANHOLE         |  | WATER VALVE               |
|  | CONCRETE POWER POLE |  | SIGN                     |  | WOOD POWER POLE           |
|  | CURB INLET          |  | SPOT-FLOOD LIGHT         |  | OVER HEAD WIRES           |
|  | ELECTRICAL OUTLET   |  | SANITARY SEWER CLEAN OUT |  | TOP OF BANK               |
|  | ELECTRICAL PANEL    |  | STORM MANHOLE            |  | TOE OF SLOPE              |
|  | ELECTRICAL PULL BOX |  | TELEPHONE MANHOLE        |  | WATER MAIN                |
|  | ELECTRICAL MANHOLE  |  | TELEPHONE PEDESTAL       |  | GUARDRAIL                 |
|  | GAS MARKER          |  | TELEPHONE PULL BOX       |  | NON-VEHICULAR ACCESS LINE |
|  | HEADWALL            |  |                          |  |                           |



PROFILE VIEW  
VERTICAL SCALE: 1"=3'  
HORIZONTAL SCALE: 1"=30'

PBCWUD #XXXX

**REVISIONS**

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE

CHECKED BY: \_\_\_\_\_  
SUPERVISED BY: \_\_\_\_\_

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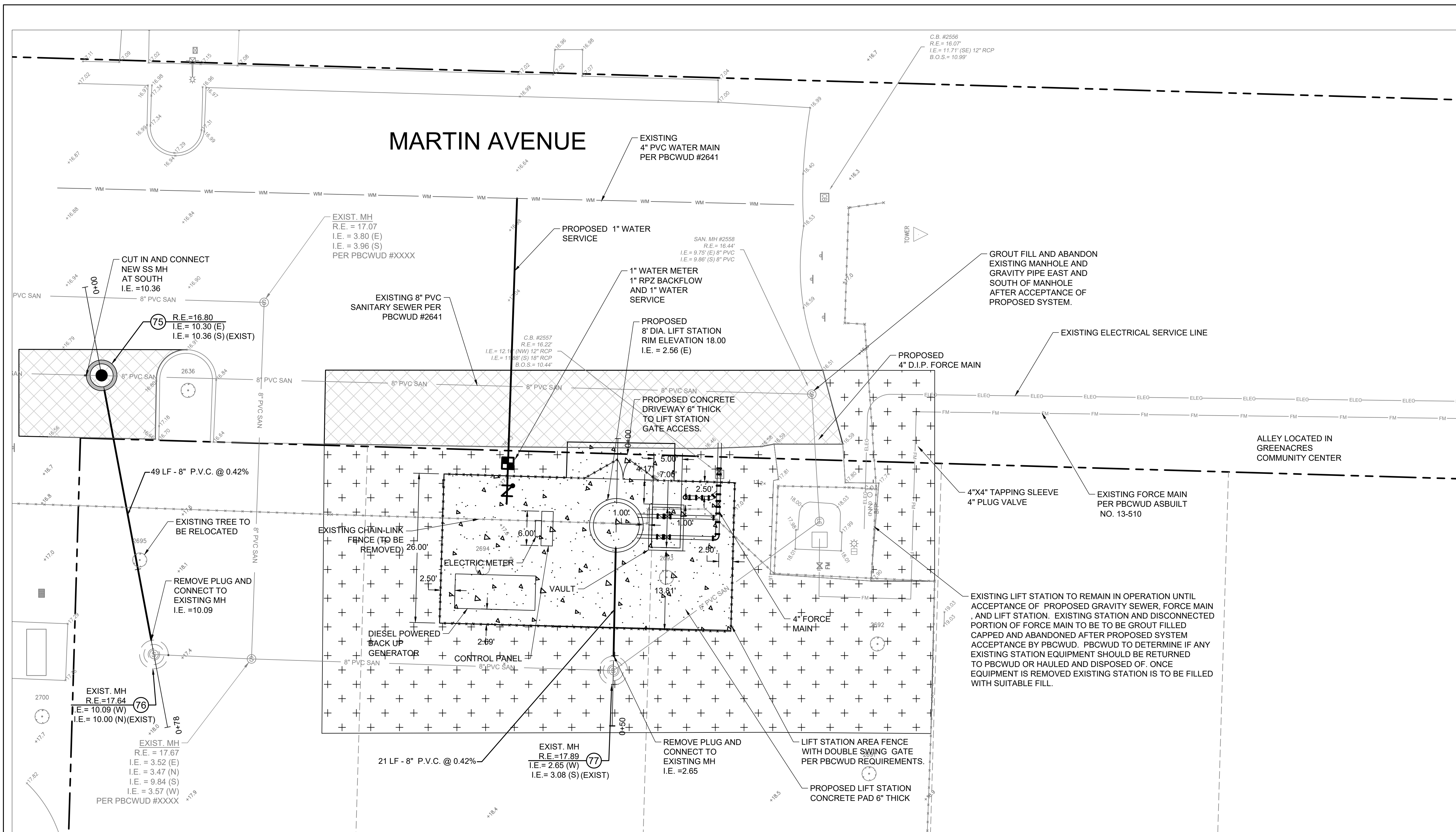
ORIGINAL SECTION SEWER  
NORTH PHASE 3  
CITY OF GREENACRES

**SANITARY SEWER PLAN**

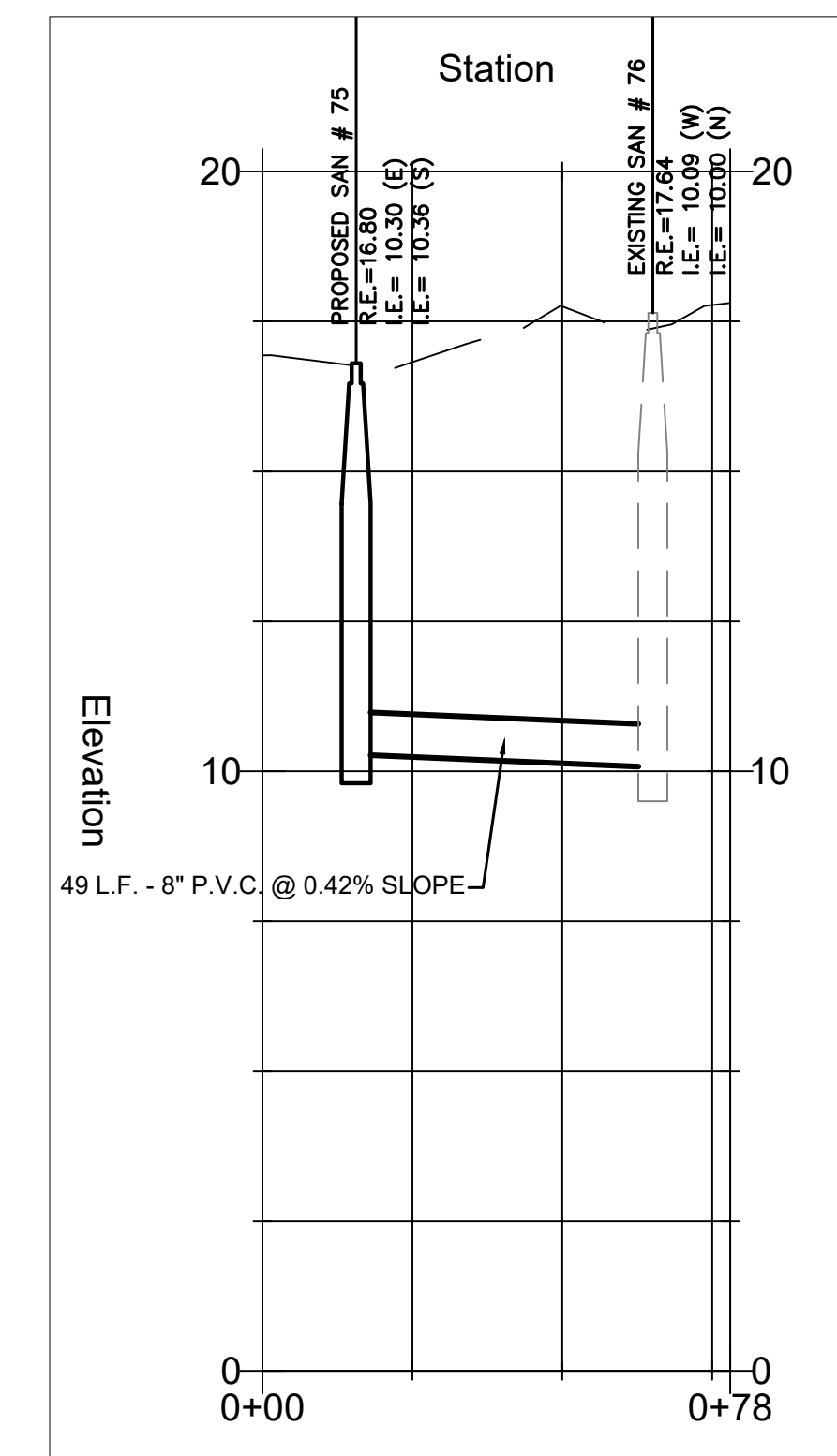
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C-4

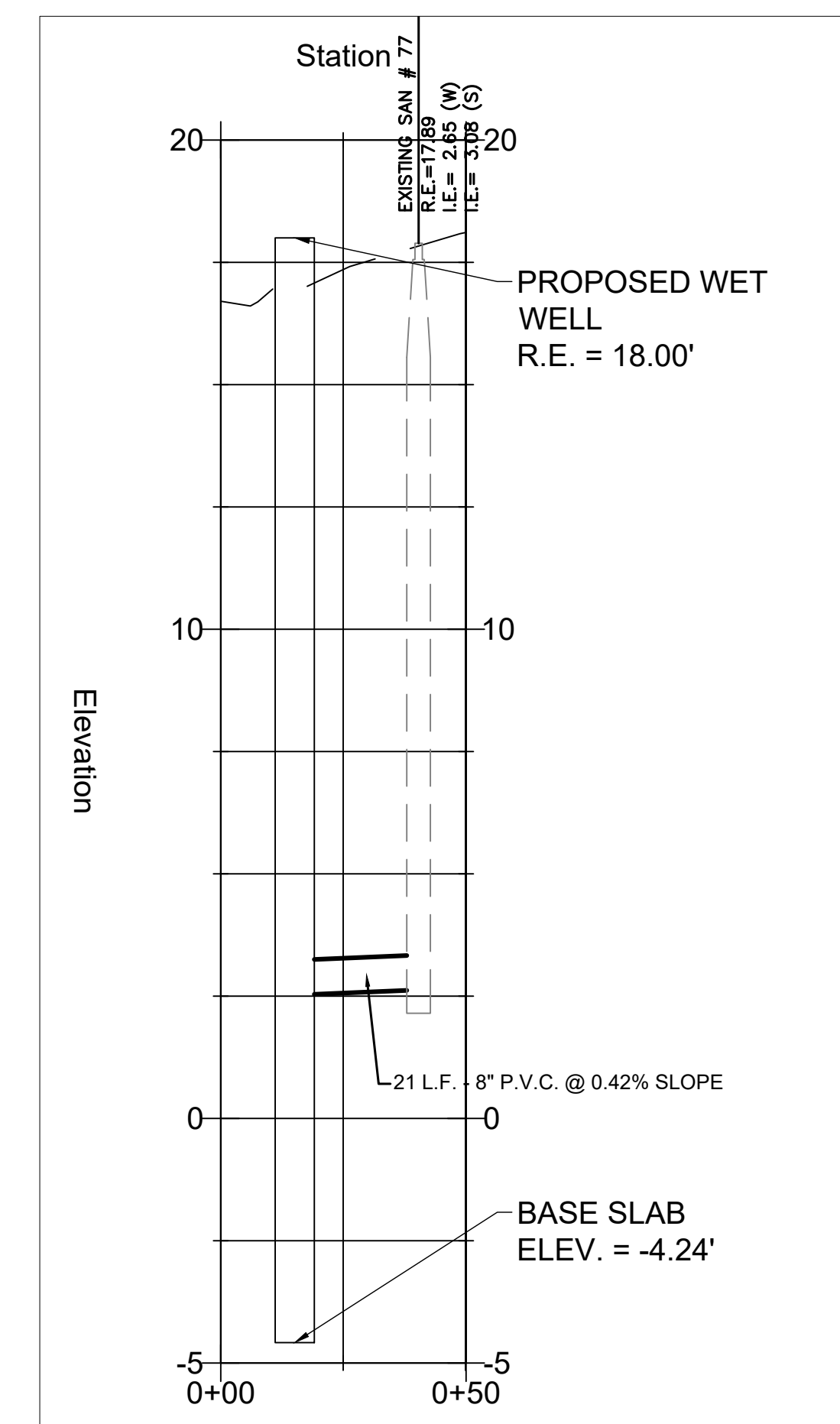
Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025



PLAN VIEW  
SCALE: 1"=10'



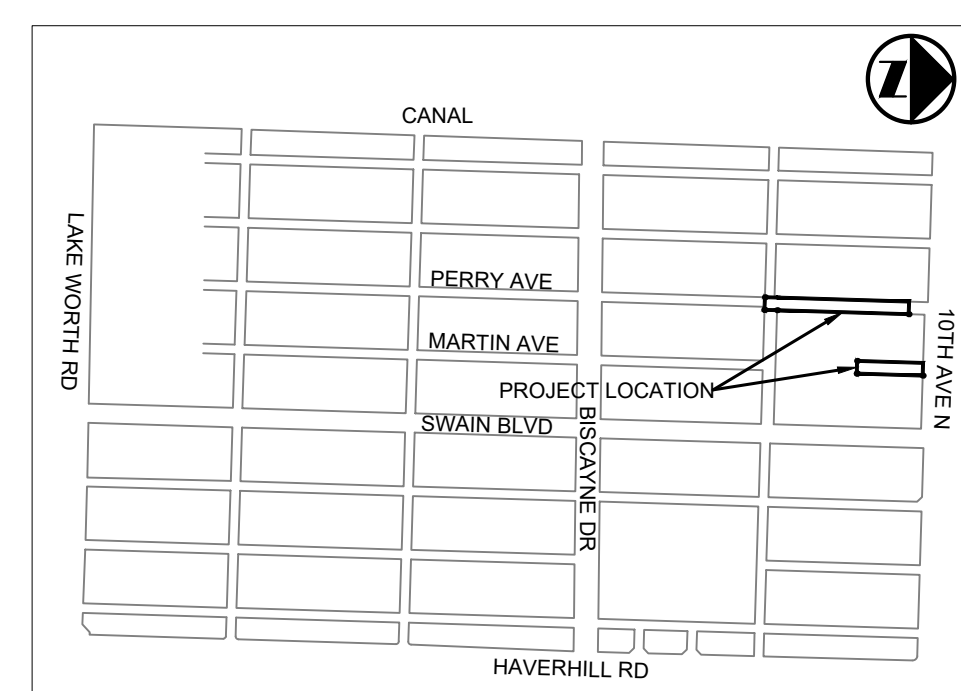
PROFILE VIEW  
VERTICAL SCALE: 1"=3'  
HORIZONTAL SCALE: 1"=30'



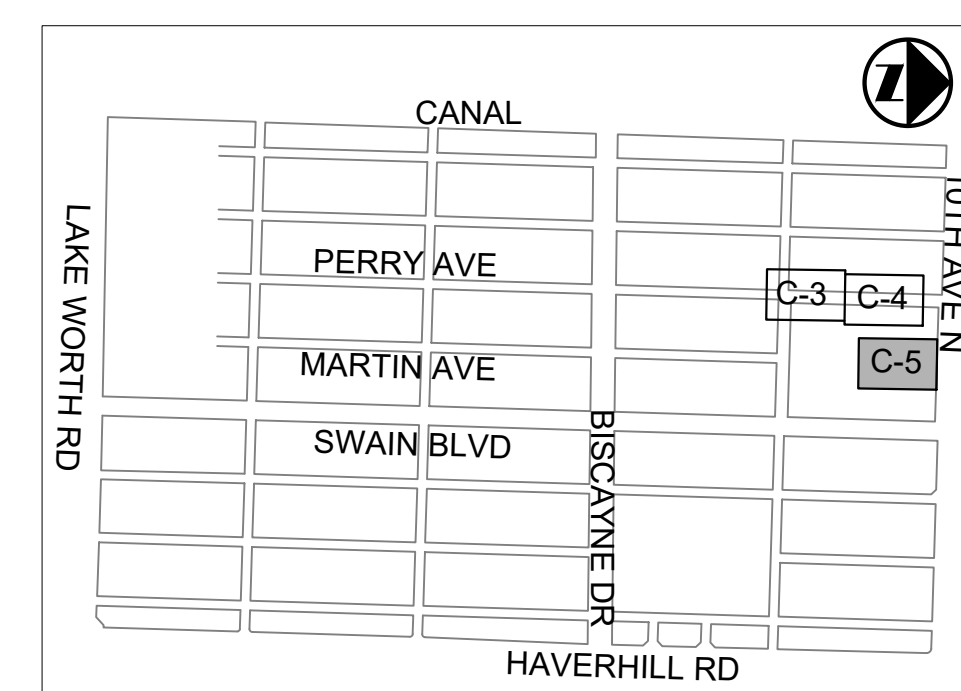
PROFILE VIEW  
VERTICAL SCALE: 1"=3'  
HORIZONTAL SCALE: 1"=30'

PROPOSED WATER AND SEWER LEGEND:

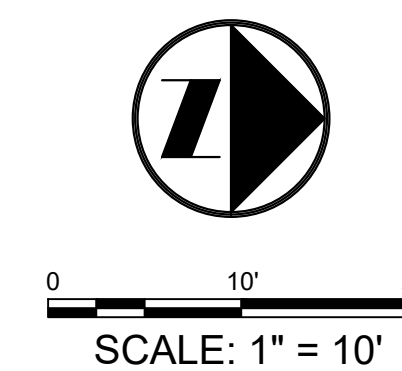
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|--|-------------------------|-------|--------------------------------------|
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|  | PAVEMENT RESTORATION    |       | — FORCE MAIN                         |
|  | CONFLICT CALLOUT        |       | — SWALE RESTORATION                  |
|  |                         |       | — CONCRETE RESTORATION               |



LOCATION MAP  
SECTION 23, TOWNSHIP 44S, RANGE 42



KEY MAP



ALL ELEVATIONS SHOWN  
REFERENCE N.A.V.D. 1988

PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025

REVISIONS				REVISIONS			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

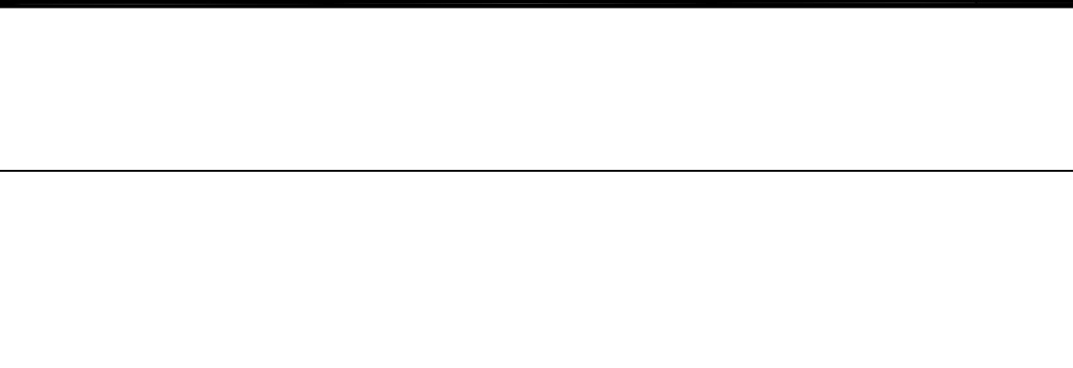
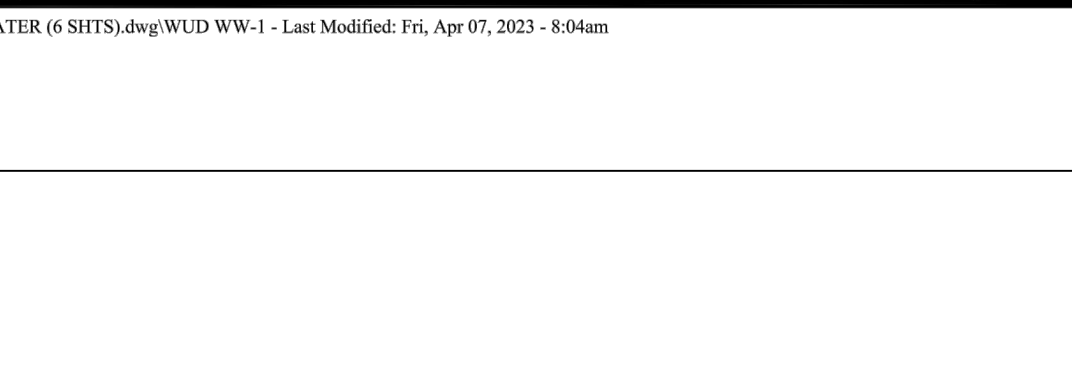
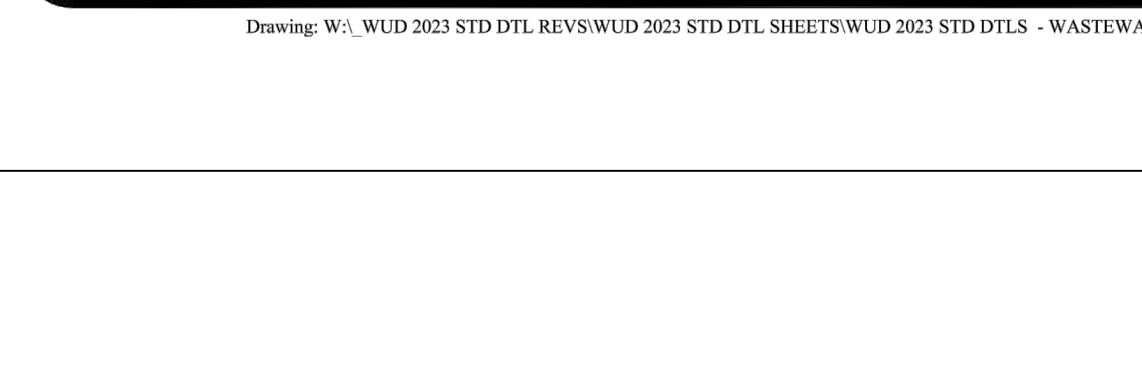
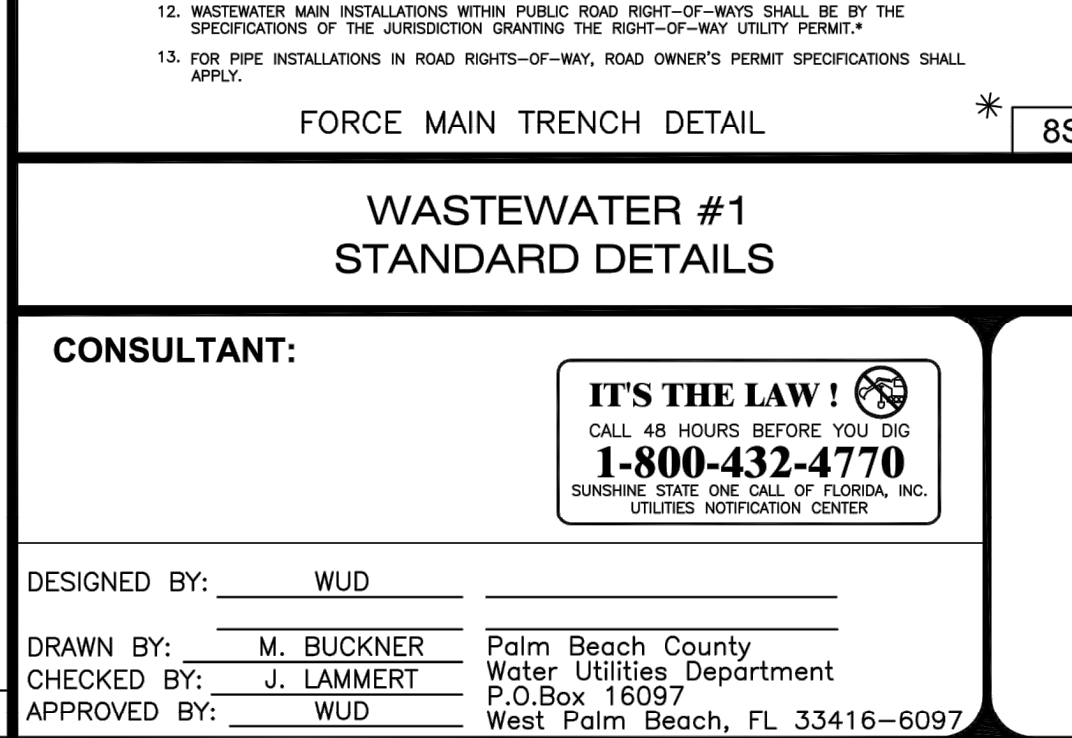
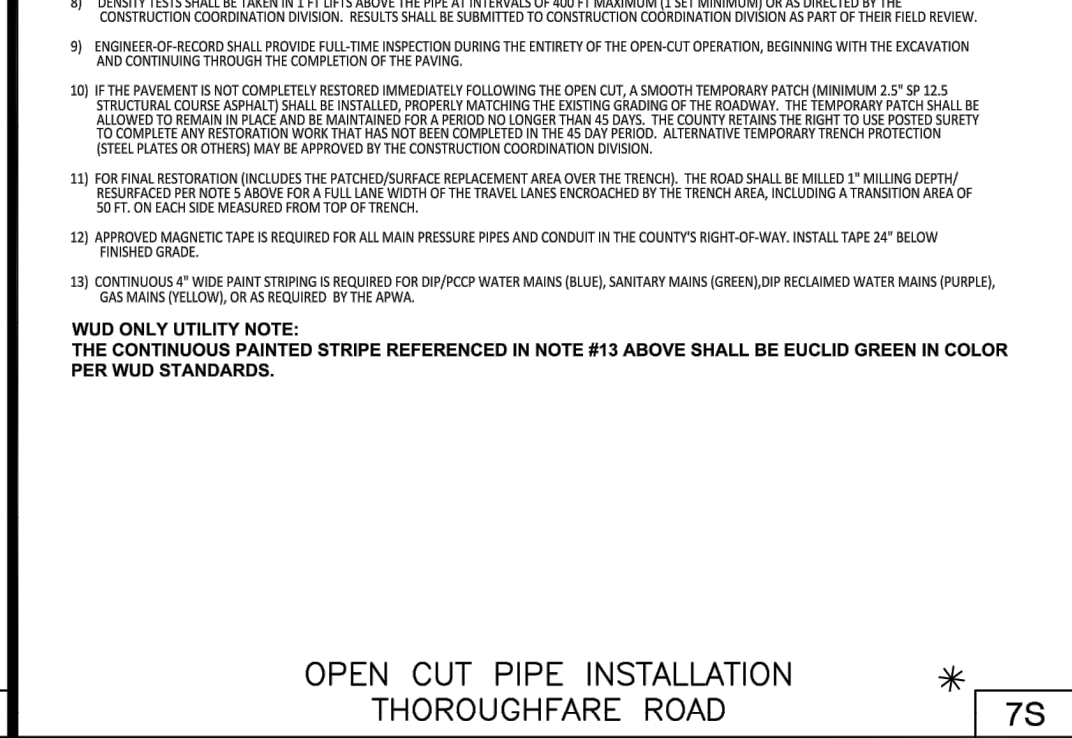
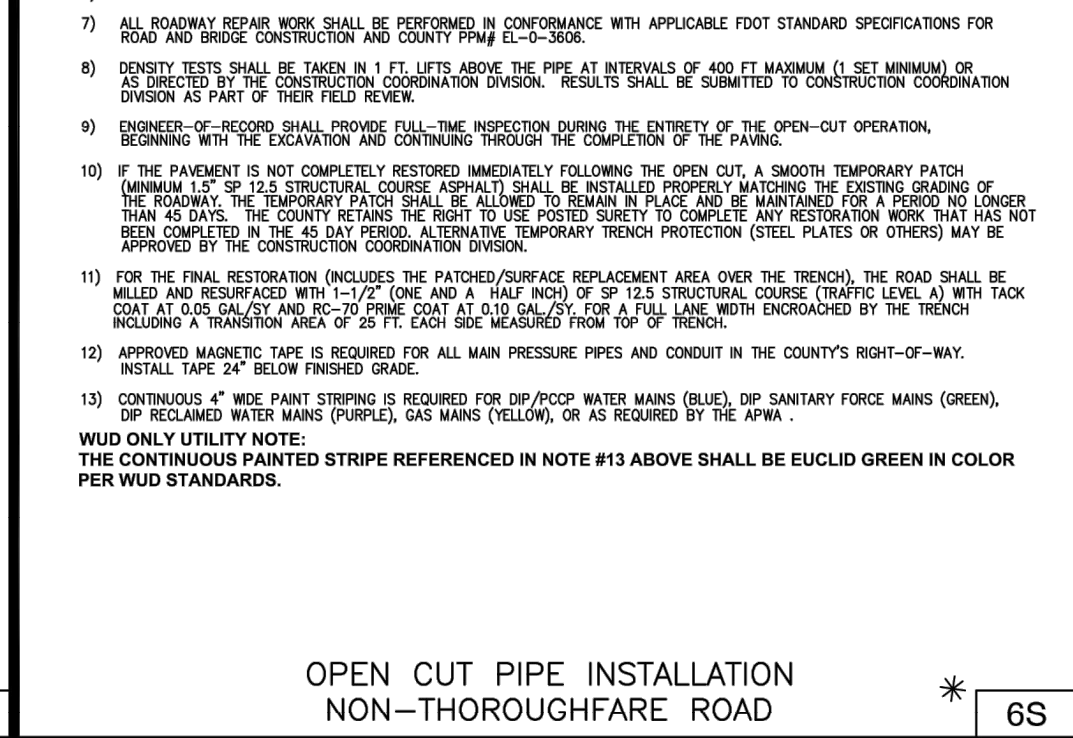
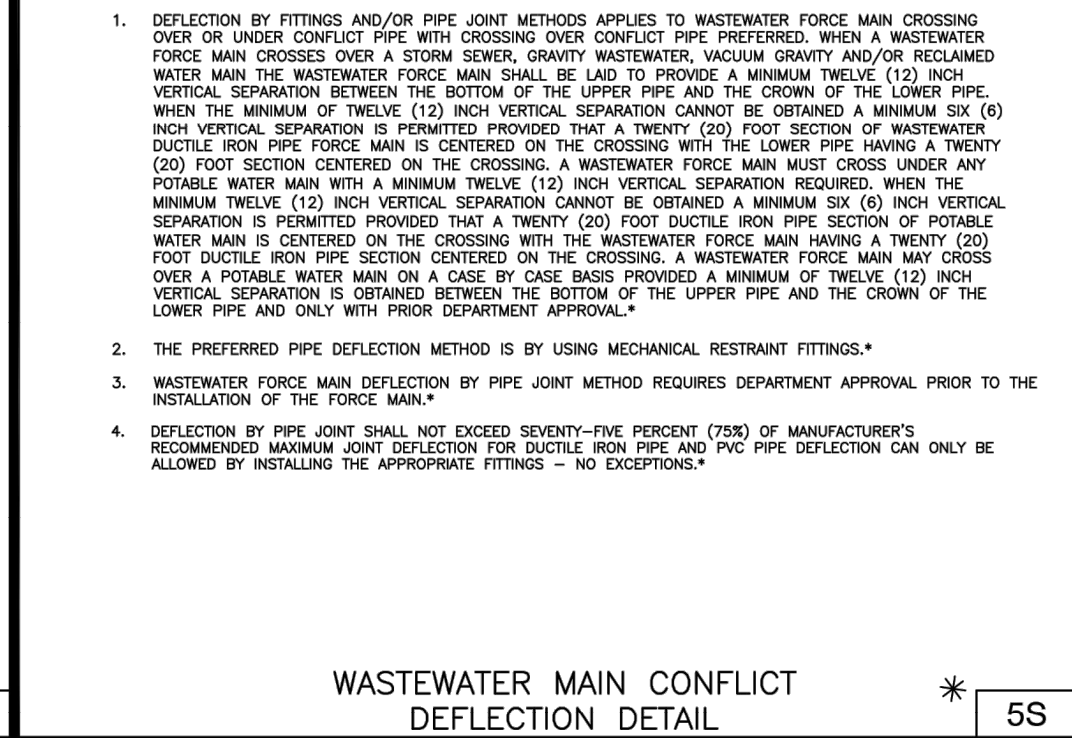
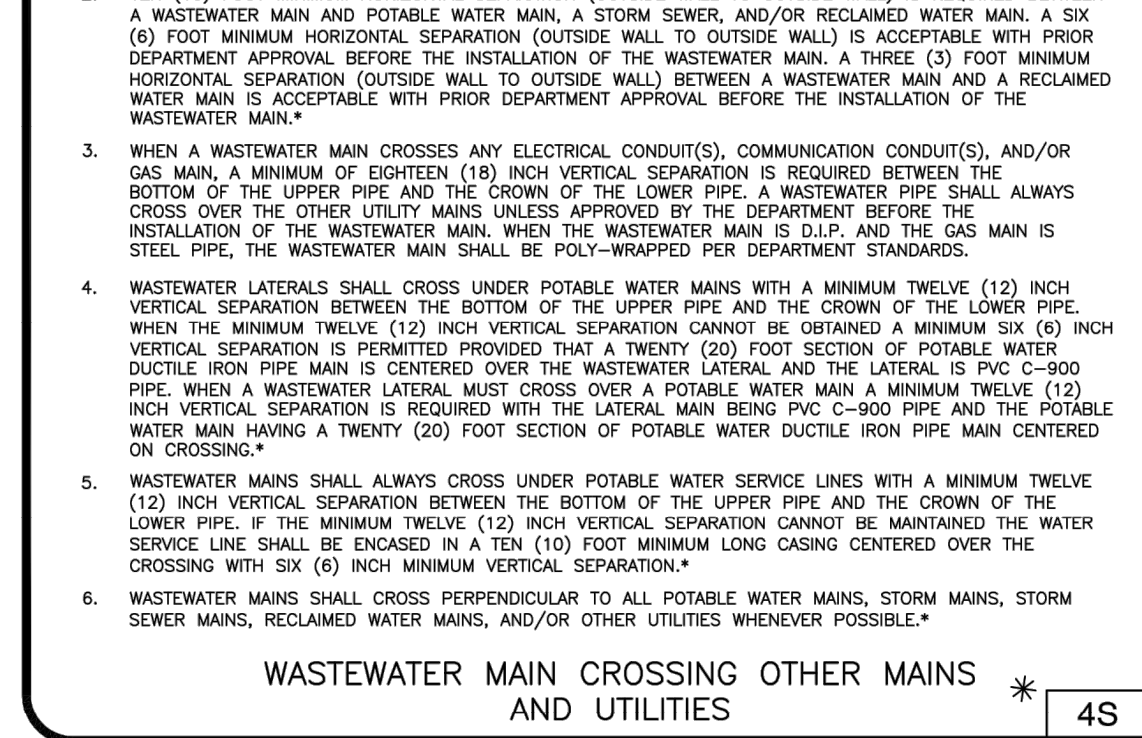
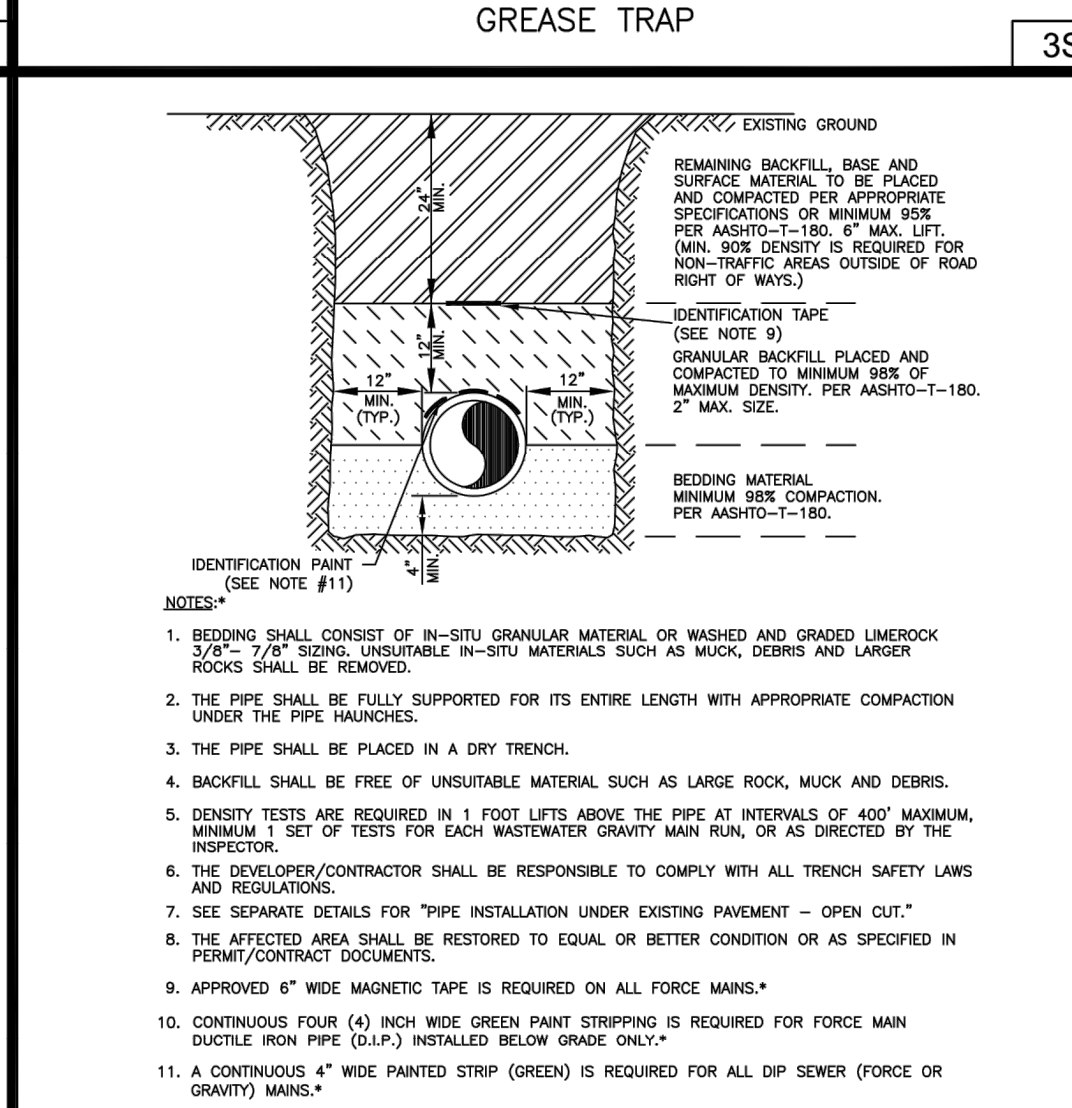
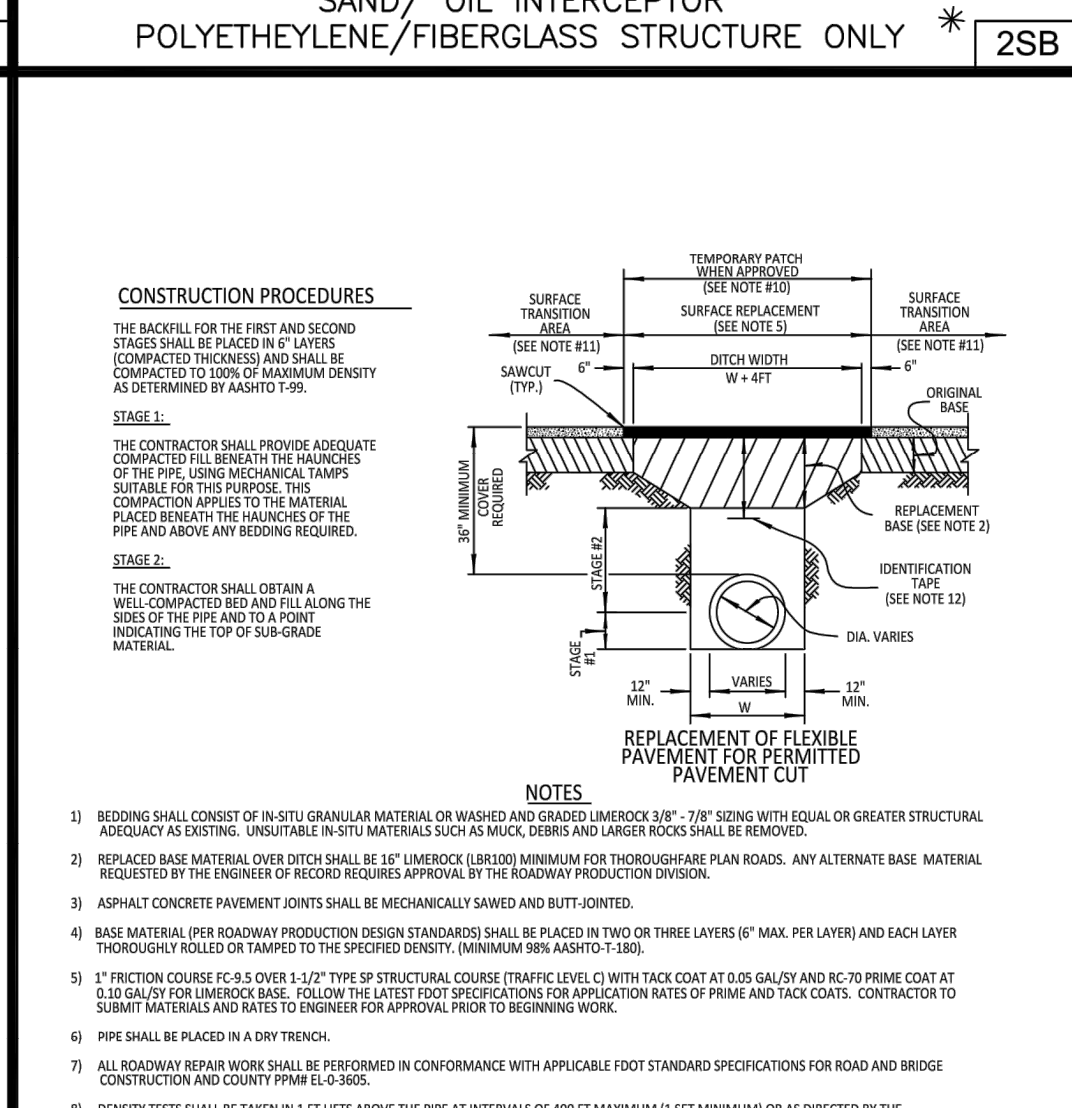
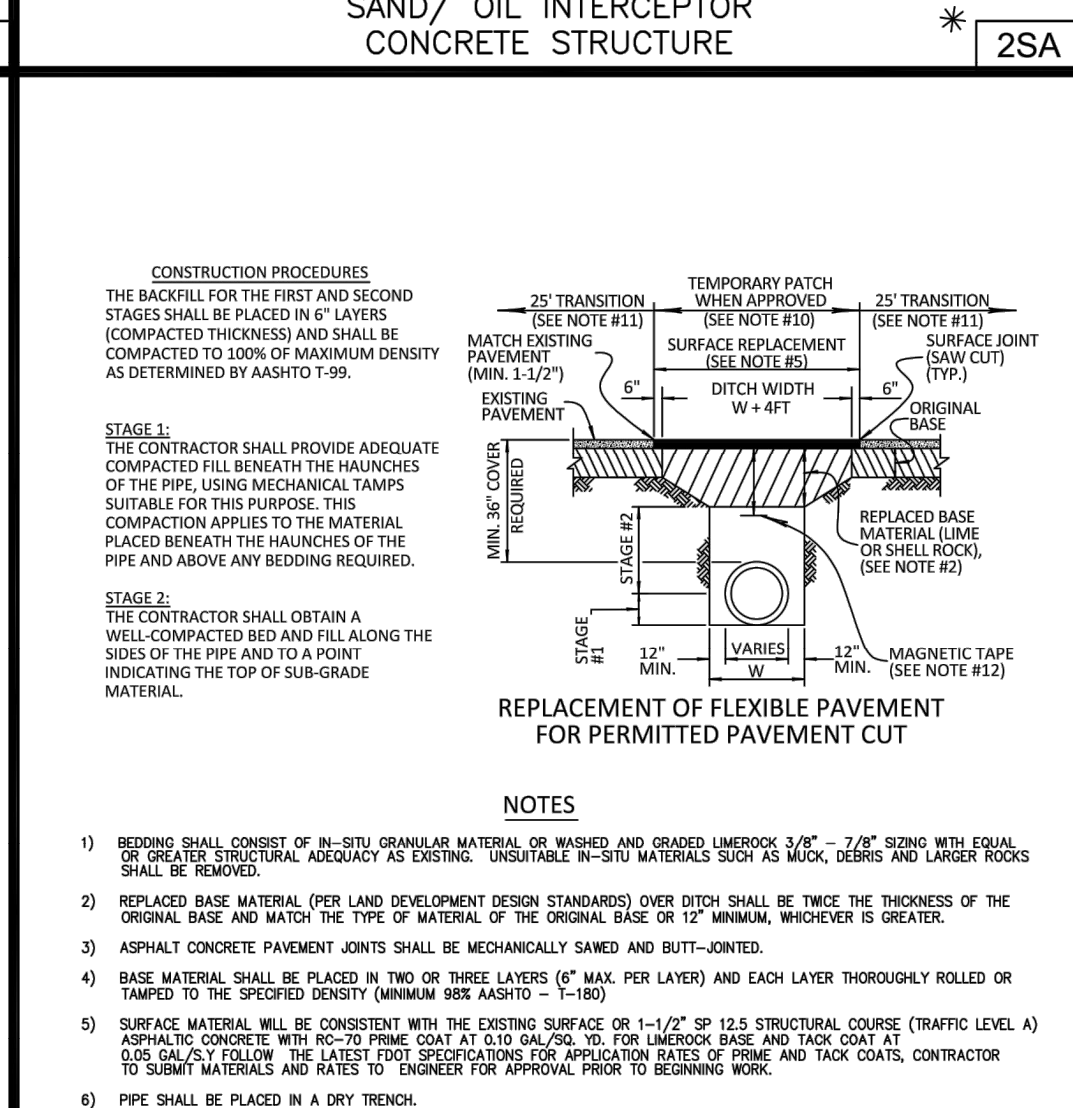
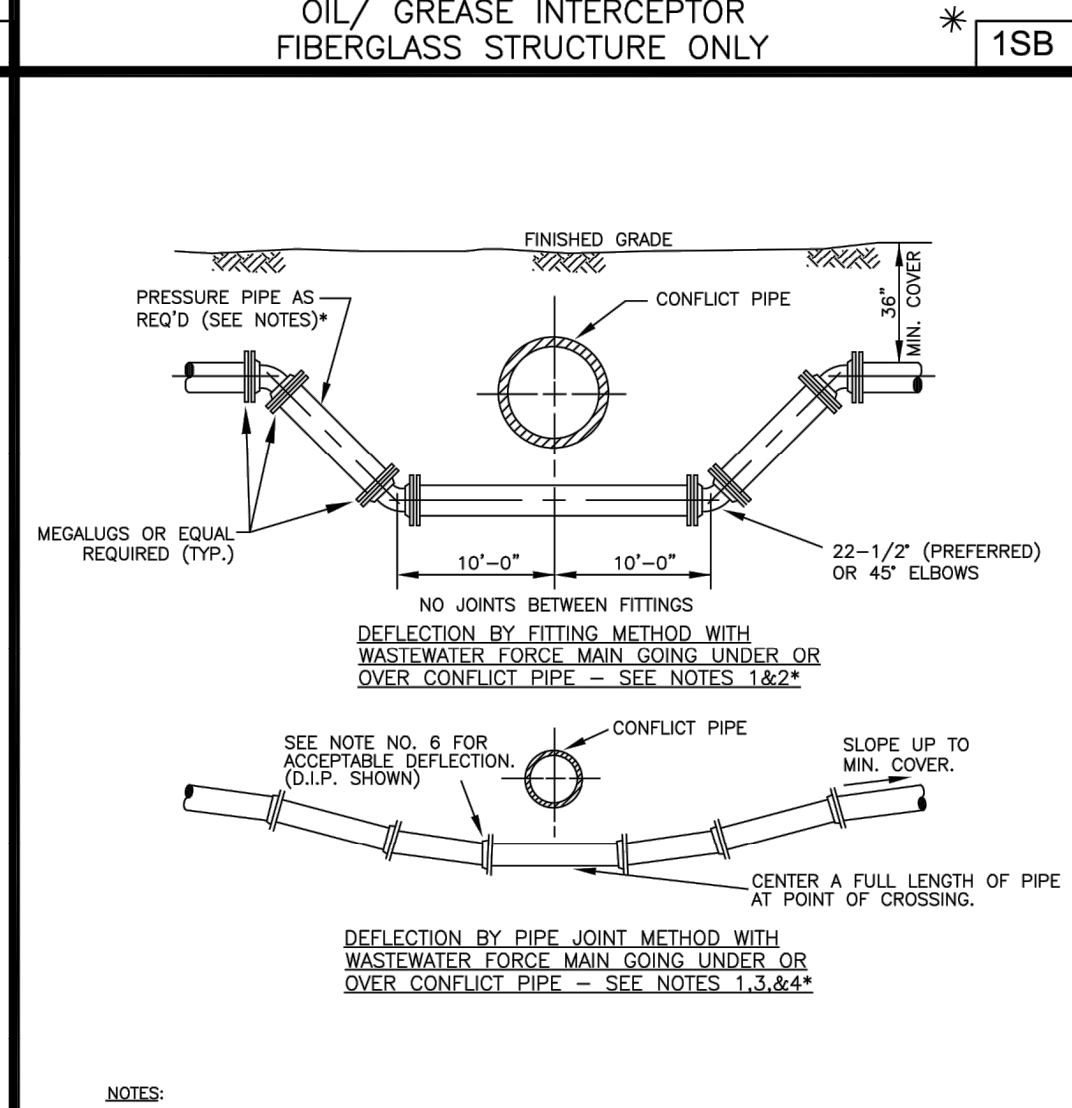
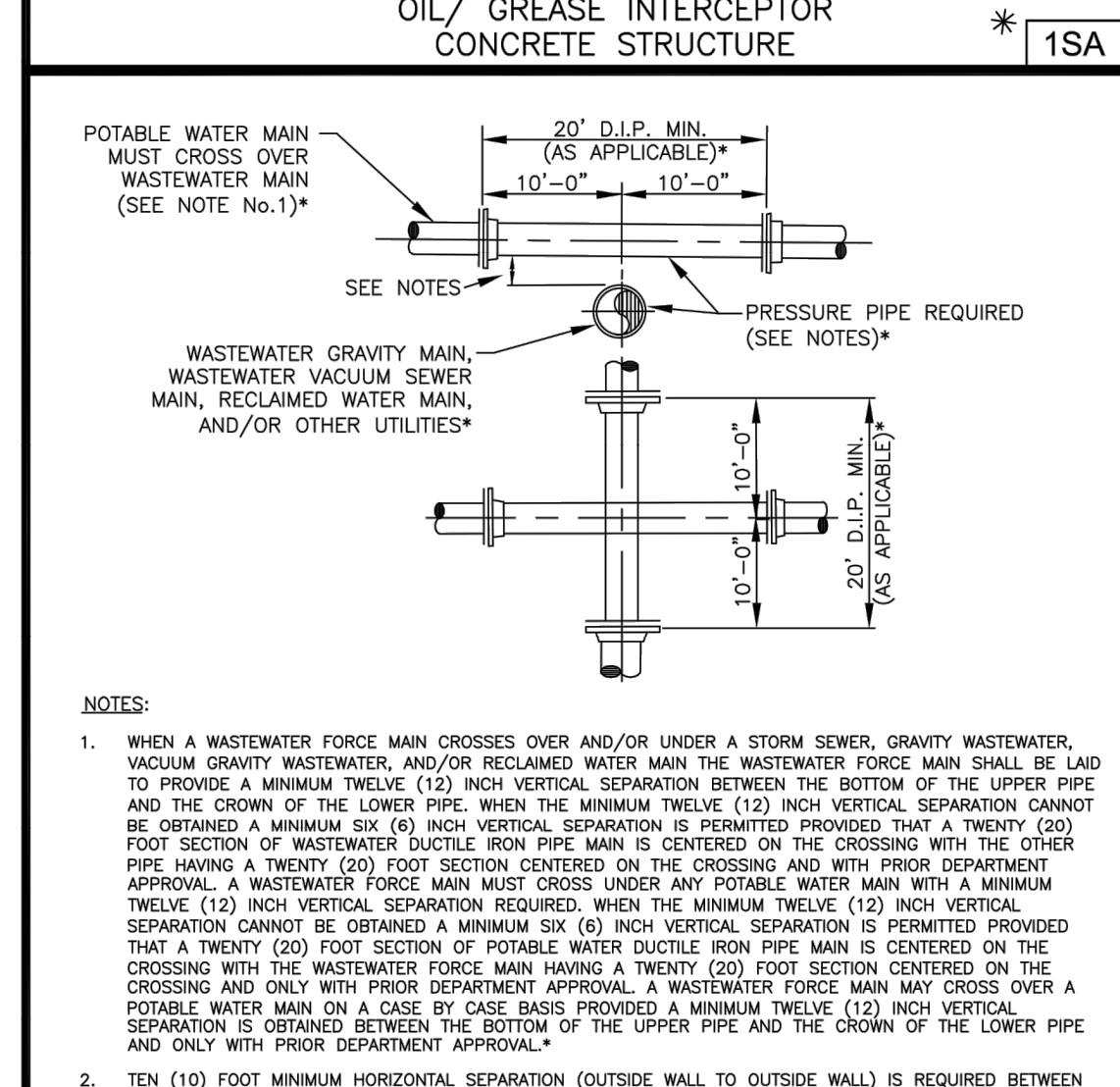
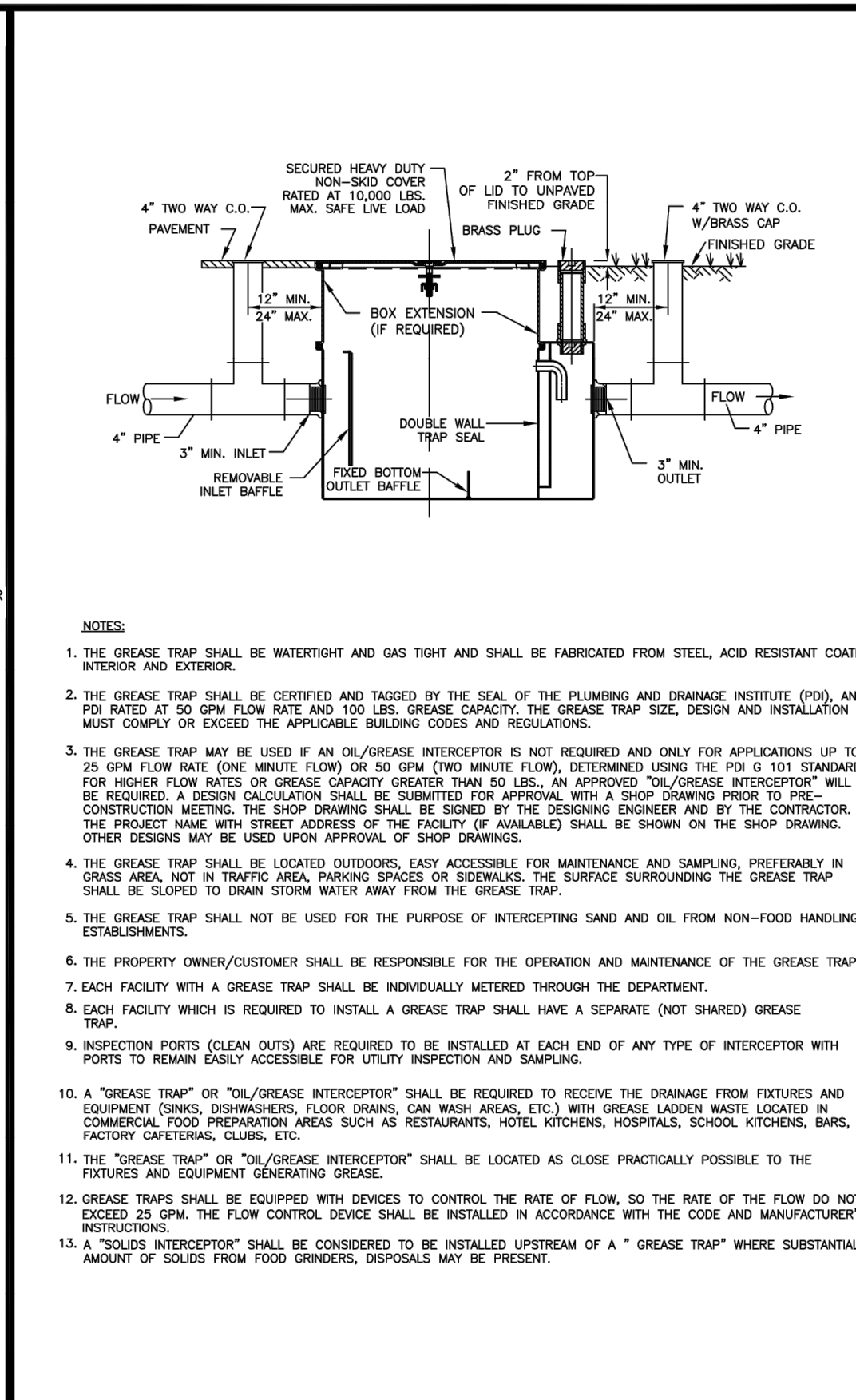
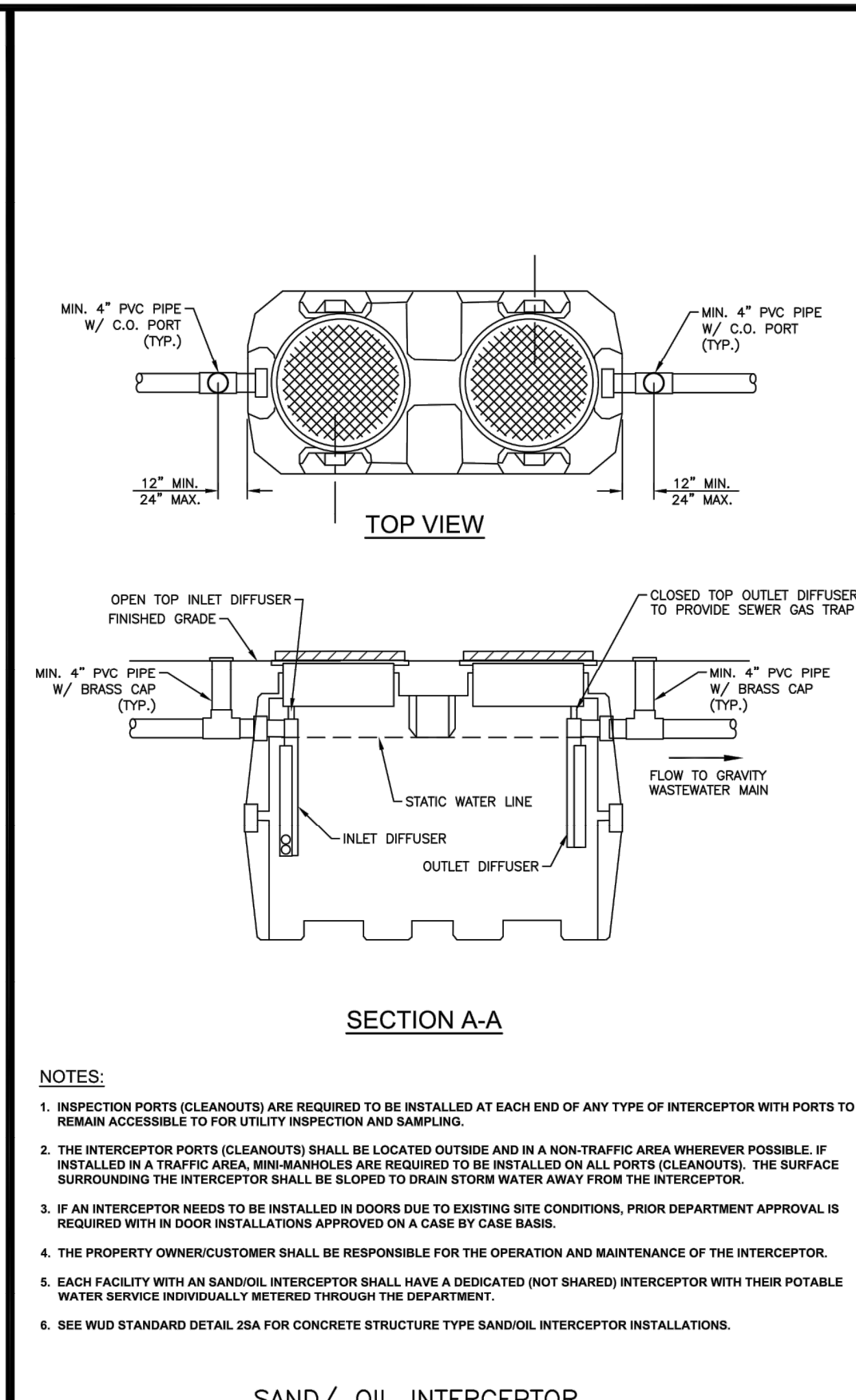
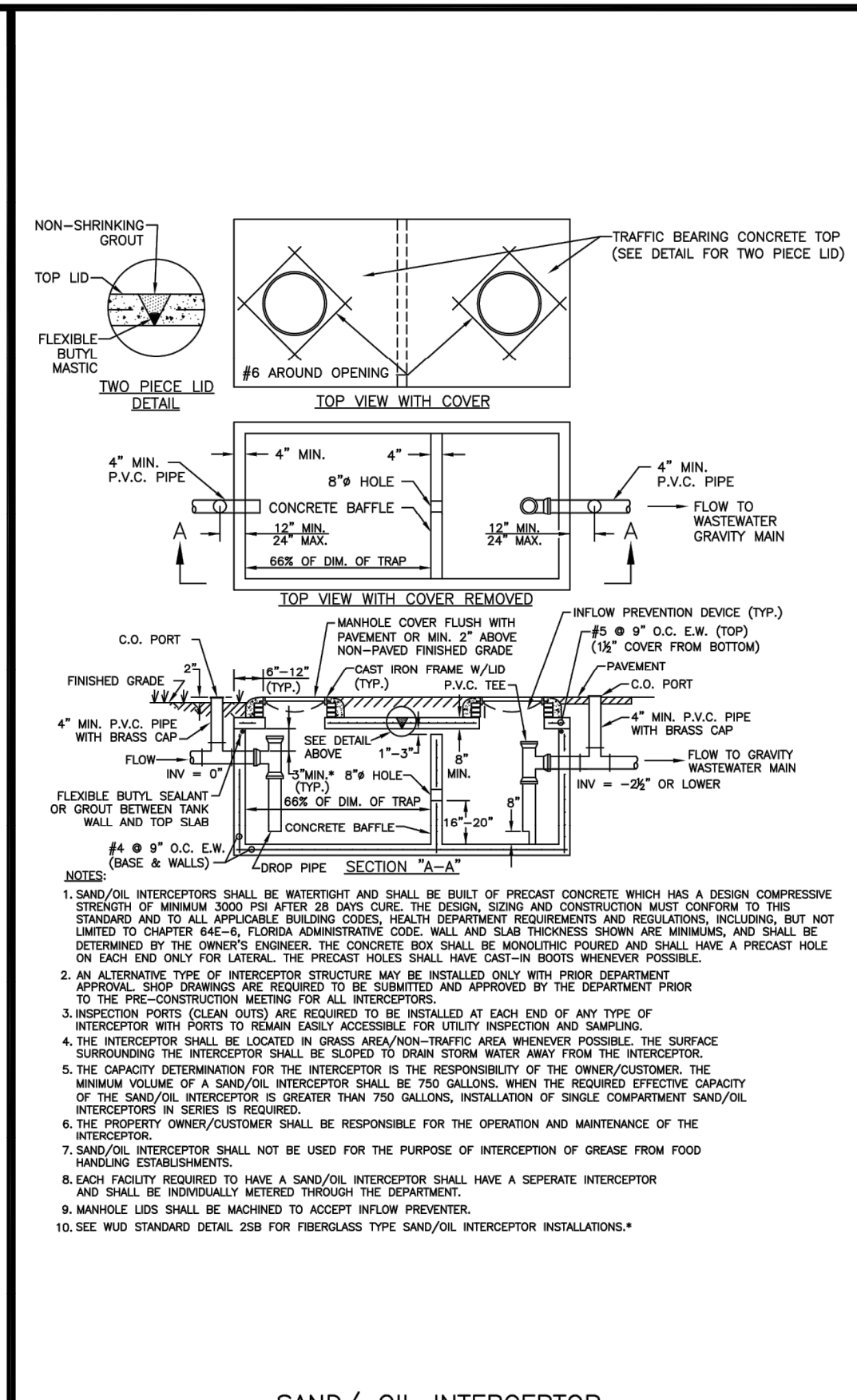
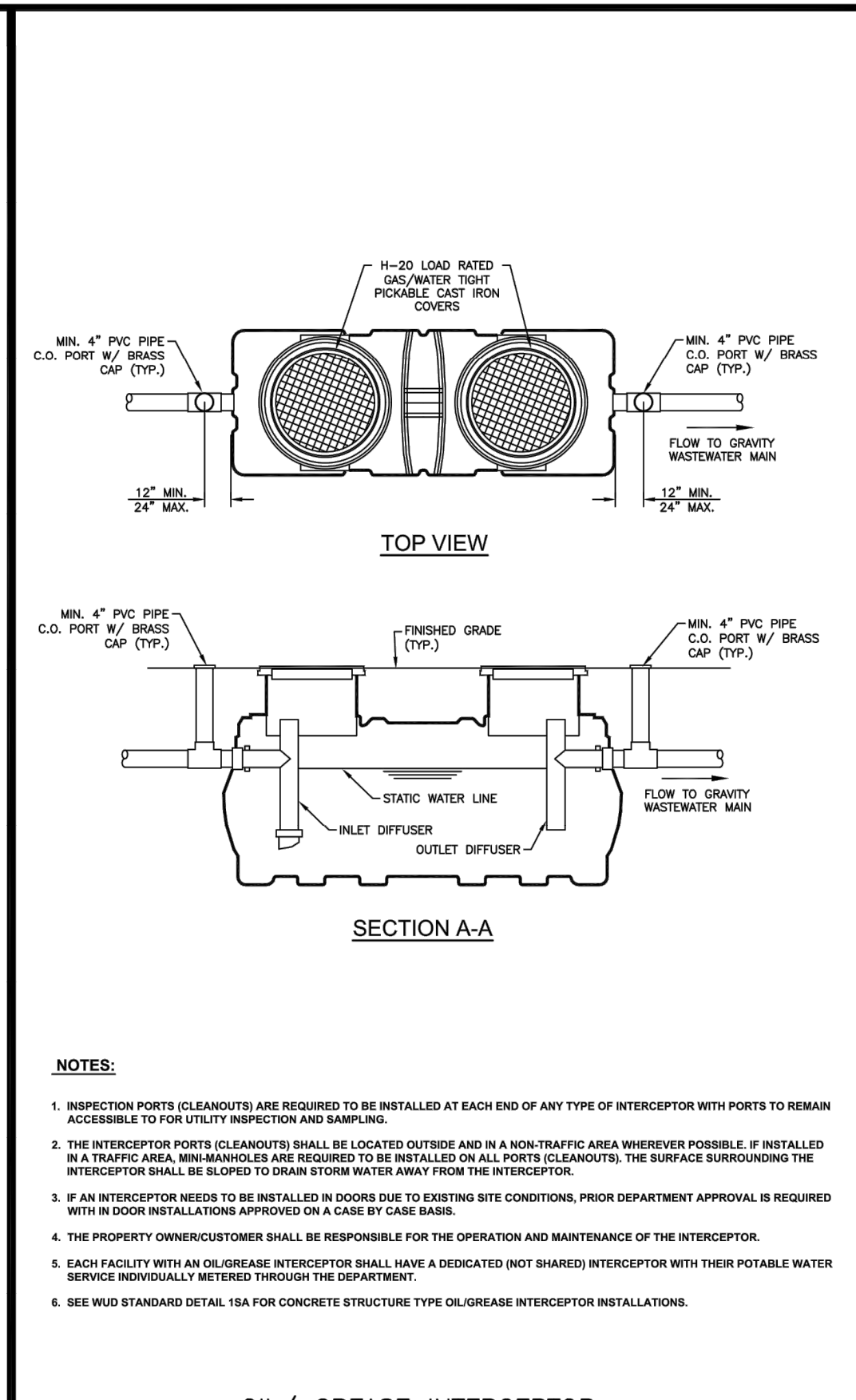
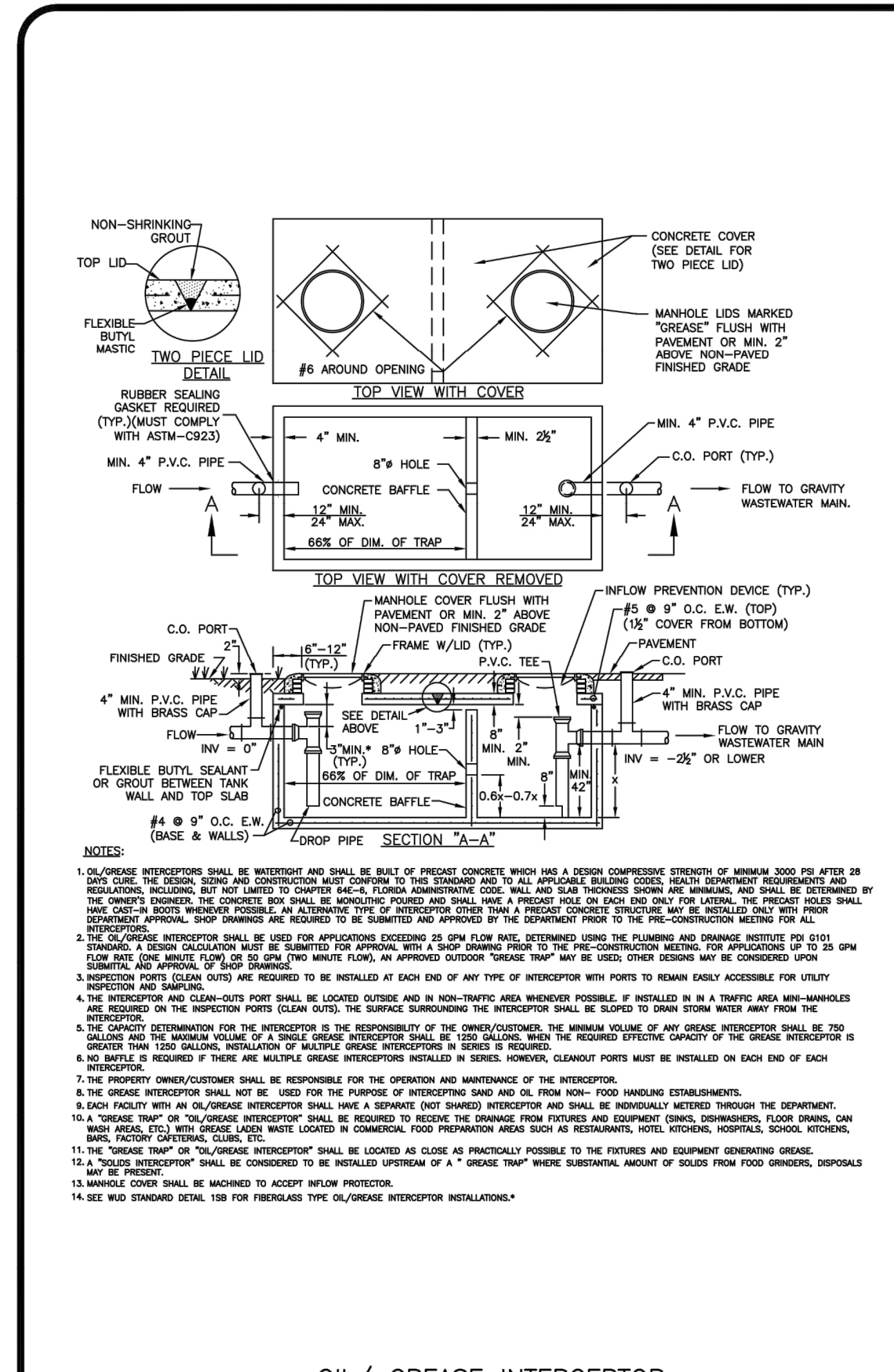
DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE

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ORIGINAL SECTION SEWER  
NORTH PHASE 3  
CITY OF GREENACRES

LIFT STATION SITE PLAN

SHEET NO.  
C-5



REVISIONS table with columns for DATE, BY, DESCRIPTION.

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Drawing: W:\WUD 2023 STD DET REV\WUD 2023 STD DET SHEETS\WUD 2023 STD DTLS - WASTEWATER (6 SHITS).dwg WUD 11-1 - Last Modified: Fri, Apr 07, 2023 - 8:46am



ORIGINAL SECTION SEWER NORTH PHASE 2 CITY OF GREENACRES

WASTEWATER STANDARD DETAILS SHEET NO. C-6

WUD PROJECT No. 00-000

WUD PROJECT NAME



PALM BEACH COUNTY WATER UTILITIES DEPARTMENT P.O. BOX 16097 WEST PALM BEACH, FL 33418 (561)498-6000

Table with columns for NO., DATE, REVISION, and REMARKS. Includes dates DEC 2021 and JAN 2022.

STD DETAILS

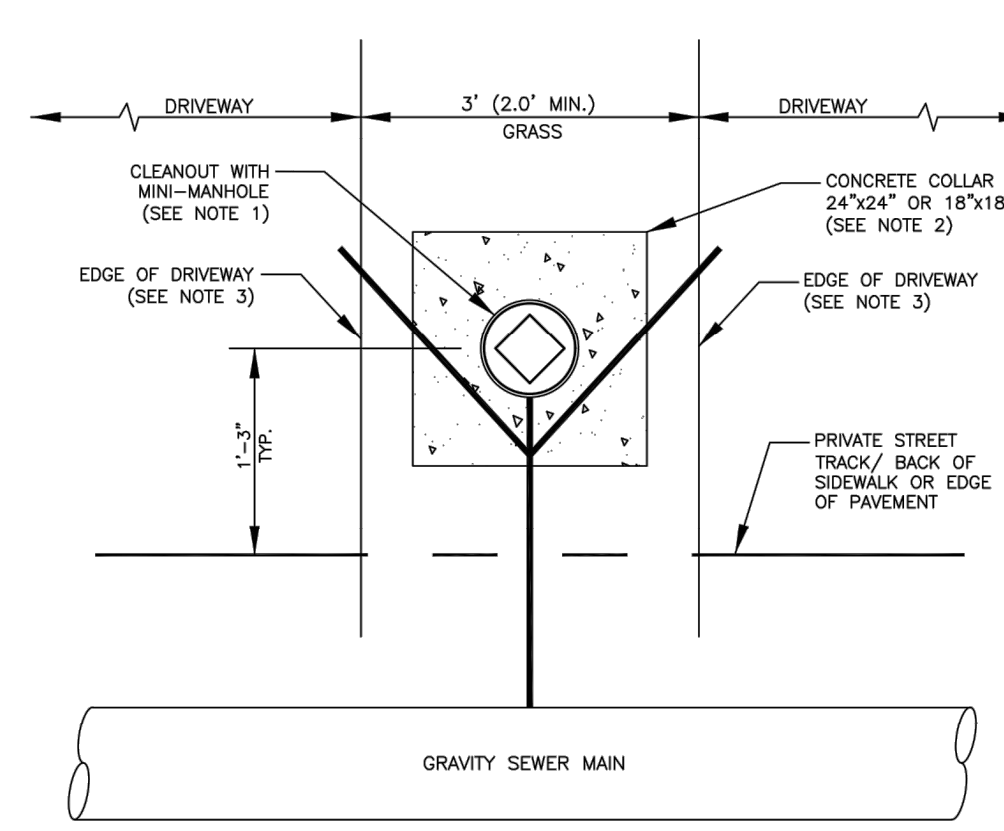
SHEET NUMBER 0 OF 0

SEAL

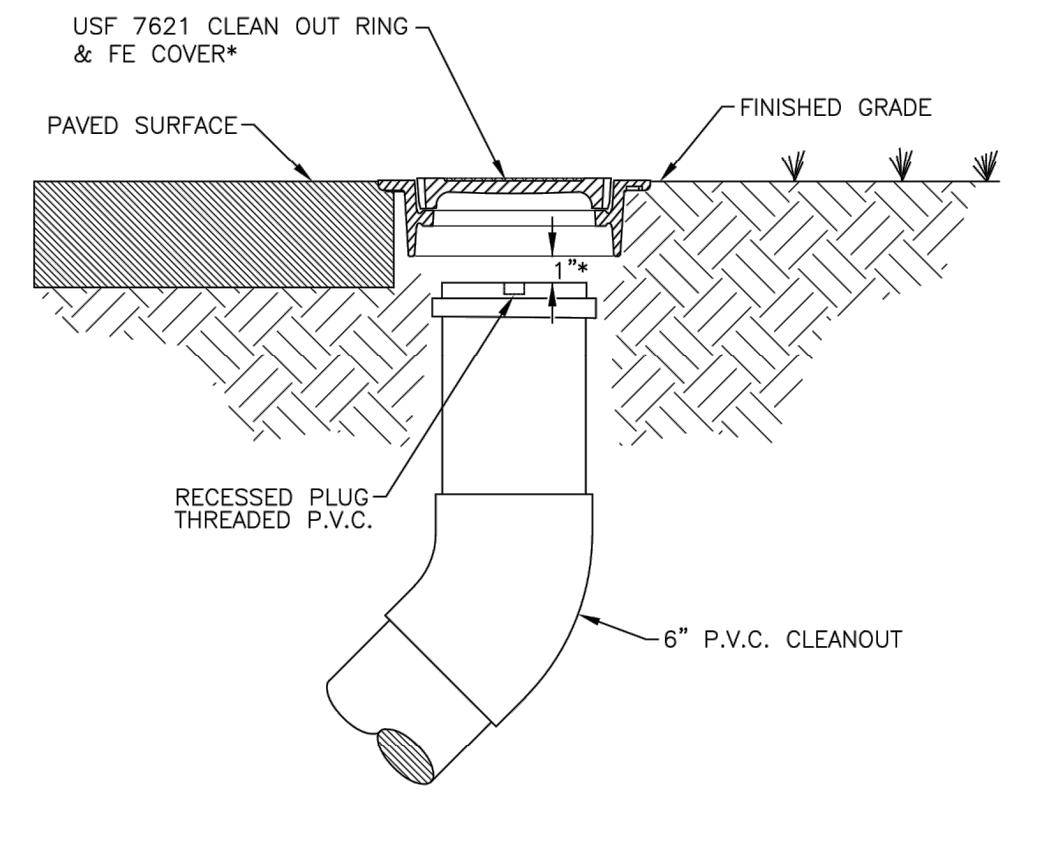
Mar 01, 2023

- DEFINITIONS: DEPARTMENT - THE PALM BEACH COUNTY WATER UTILITIES DEPARTMENT. UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS. ENGINEER - ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION. PROCEDURE: 1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INSTALLATION OF ANY POTABLE WATER, RECLAIMED WATER AND/OR WASTEWATER SYSTEM CONSTRUCTION...

- GENERAL NOTES: 1. THESE SHALL BE 36" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE. 2. DUCTILE IRON PIPE (DIP) THICKNESS SHALL CONFORM TO THE DEPARTMENT'S APPROVED MATERIAL LIST. POTABLE WATER AND RECLAIMED WATER MAINS DIP SHALL BE CEMENT LINED. FORCE MAIN DIP SHALL BE CERAMIC EPOXY LINED. 3. PVC PRESSURE PIPE SHALL BE 3000, SDR-35...



- NOTES: 1. CLEANOUT WITH MINI-MANHOLE MUST BE CENTERED BETWEEN DRIVEWAYS IN GRASS AREA. 2. DRIVEWAYS THAT ARE SEPARATED BY (3)THREE FEET INSTALL A 24"x24" CONCRETE COLLAR. WHEN THERE IS LESS THAN (3)THREE FEET SEPARATION BETWEEN DRIVEWAYS INSTALL A 18"x18" CONCRETE COLLAR. 3. THE EDGE OF THE DRIVEWAY IS EITHER THE ASPHALT/CONCRETE PAVEMENT AREA AND/OR PAVER BRICK AREA WHICH MAY INCLUDE ANY CONCRETE EDGING.



- 1. CLEANOUTS TO BE LOCATED IN GRASS AREA WHENEVER POSSIBLE WITH A MINIMUM OF THREE (3) FEET FROM EDGE OF PAVEMENT, BACK OF CURB, EDGE OF DRIVEWAY, AND TRANSFORMERS ON RESIDENTIAL AND NON-RESIDENTIAL LOTS UNLESS LOTS ARE ASSOCIATED WITH TOWNHOME OR ZERO LOT LINE LOTS. ON ZERO LOT LINE LOTS THE MINIMUM DIMENSION SHALL BE ONE (1) FOOT INSTEAD OF THREE (3) FOOT MINIMUM UNLESS OTHERWISE APPROVED BY THE DEPARTMENT. 2. CLEANOUTS SHALL NOT BE INSTALLED IN TRAFFIC LANES OR AREAS UNDER HEAVY TRAFFIC LOADS. 3. THE COVER TO BE MARKED "S". 4. CLEANOUTS TO BE INSTALLED PRIOR TO WATER METER RELEASE. 5. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR CLEANOUT INSTALLATION PRIOR TO WATER METER INSTALLATION AS SPECIFIED BY THE DEPARTMENT. 6. A CONCRETE COLLAR MAY BE REQUIRED IF CLEANOUT IS LOCATED BETWEEN DRIVEWAYS. SPECIAL CONSTRUCTION DETAIL WILL BE REQUIRED. 7. ALONG STREETS WITH ADJACENT NON-EXCLUSIVE UTILITY EASEMENT, THE CLEANOUTS ENDING PROXIM MAINTENANCE RESPONSIBILITY SHALL BE INSTALLED MIN. 12" MAX. 18" INTO THE EASEMENT.

I. FORCE MAINS AND GRAVITY WASTEWATER MAINS WITHIN WELLFIELD PROTECTION ZONE

PRESSURE TEST PROCEDURE TO FOLLOW THE CURRENT AMCA C-600 STANDARD (150psi (2) HOUR DURATION). THERE SHALL BE NO PRESSURE DROP IN THE PIPE DURING THE TEST ("ZERO" FILL-UP TOLERANCE).

II. FORCE MAINS OUTSIDE OF WELLFIELD PROTECTION ZONE

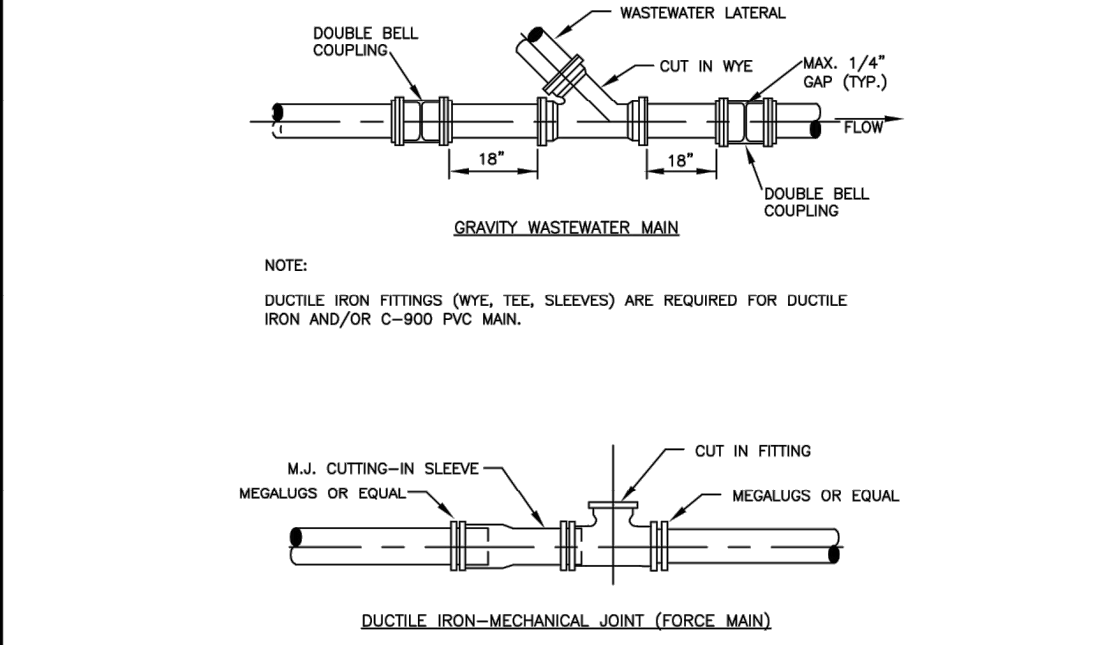
MAXIMUM QUANTITY OF WATER (GALLONS PER HOUR) THAT MAY BE SUPPLIED TO MAINTAIN PRESSURE WITHIN 5 P.S.I. OF THE SPECIFIED TEST PRESSURE (MECHANICAL OR PUSH-ON JOINT, 18 FT. NOMINAL LENGTHS, PER 1000 FT. OF PIPE)

Table with columns: AVG. TEST PRESSURE (PSI), PIPE DIAMETER (INCHES). Rows for 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 42, 48 inch diameters.

FORMULA BASIS: L = (53 x (D) x (P)^1/2) x 1/2. L = MAXIMUM QUANTITY OF WATER TO BE ADDED (GALLONS PER HOUR). S = LENGTH OF PIPE TESTED (FEET). D = DIAMETER OF PIPE (INCHES). P = TEST PRESSURE (P.S.I.).

- NOTES: 1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9. 2. THE MAXIMUM QUANTITY OF ADDED WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE BY THE DURATION OF THE TEST IN HOURS AND BY THE TOTAL LENGTH OF THE LINE BEING TESTED DIVIDED BY 1000. IF THE LINE TEST CONTAINS SECTIONS OF VARYING DIAMETERS, THE MAXIMUM QUANTITY ADDED WILL BE THE SUM OF THE COMPUTED QUANTITIES FOR EACH SIZE. 3. MAXIMUM TEST LENGTH = 1500 FEET PER SECTION. 4. THIS STANDARD SHALL REFLECT ANY REVISION OF A.W.M.A. C-600, HOWEVER, THE MAXIMUM QUANTITY OF WATER ADDED SHALL NOT EXCEED 50% OF THE RECOMMENDED LIMIT PER APPLICABLE AMCA C-600 STANDARD. 5. STANDARD TEST PRESSURE = 150 P.S.I. 6. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.

PRESSURE TEST CRITERIA FOR GRAVITY WASTEWATER MAIN IN WELL FIELD & FORCE MAIN

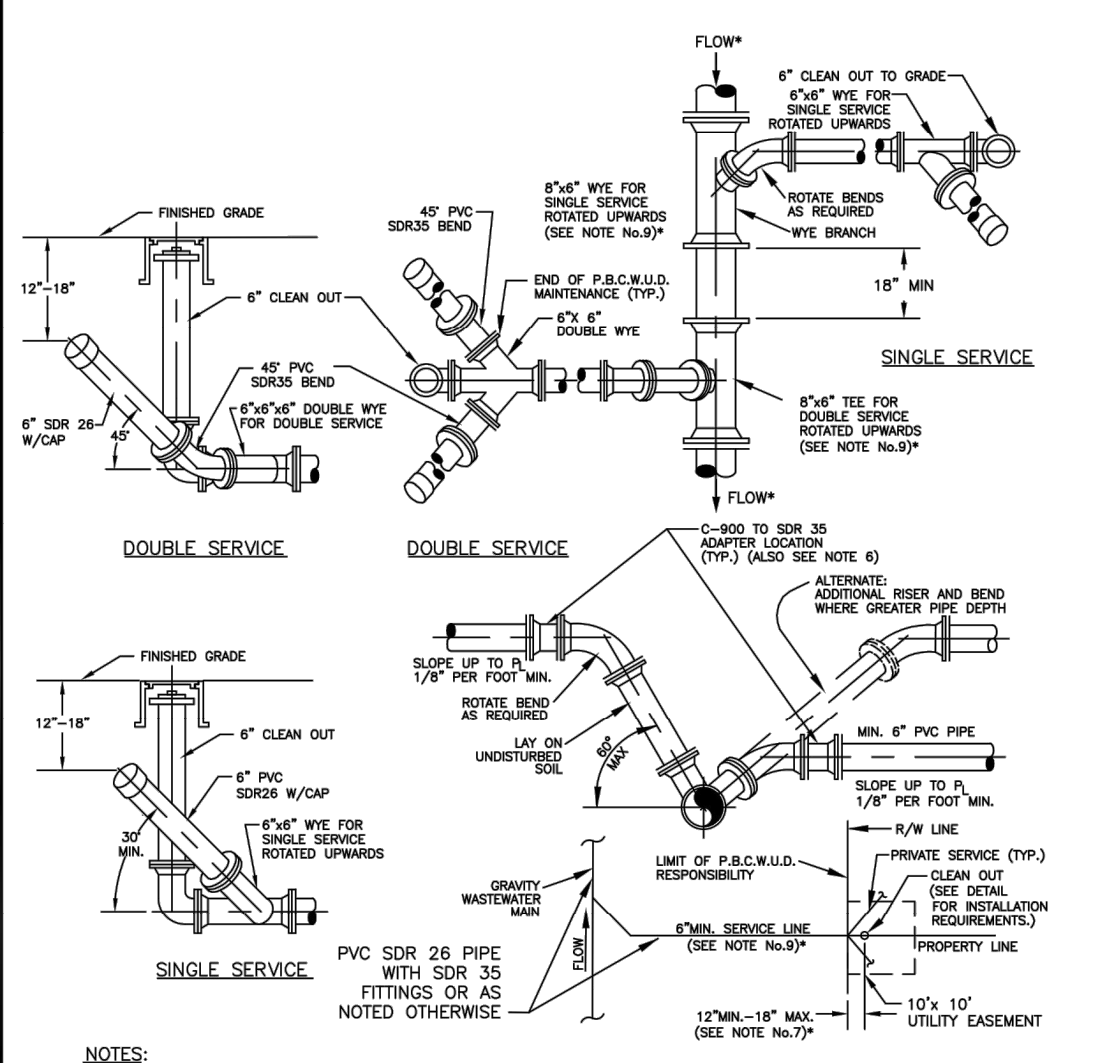


NOTE: DUCTILE IRON FITTINGS (WYE, TEE, SLEEVES) ARE REQUIRED FOR DUCTILE IRON AND/OR C-900 PVC MAIN.



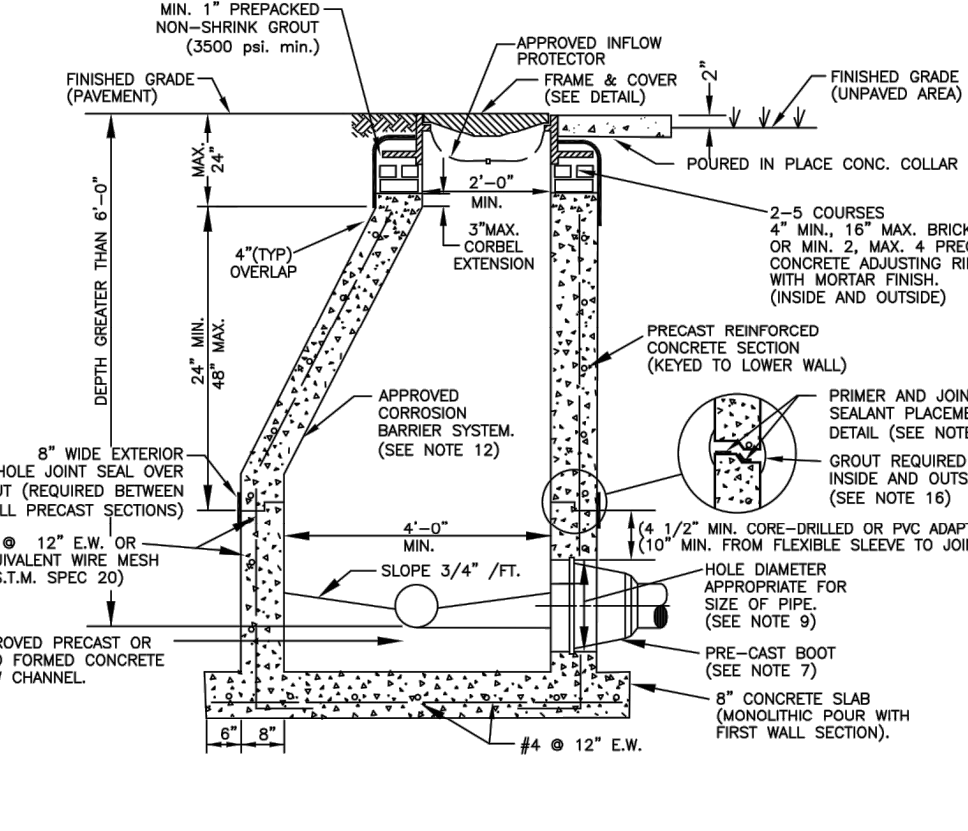
NOTE: MEGALUGS OR EQUAL ARE REQUIRED THROUGHOUT ASSEMBLY.

WASTEWATER SYSTEM STANDARD CUT-IN DETAILS 9S



- NOTES: 1. MIN. 3' AND 2' MAX. DEPTH IS REQUIRED, UNLESS PLANS SHOW OTHERWISE, FOR SERVICE LATERAL WYE AT THE CLEAN OUT ENDING P.B.C.W.U.D. OWNERSHIP AND MAINTENANCE RESPONSIBILITY. 2. CLEAN OUT IS TO BE INSTALLED PER DEPARTMENT STANDARDS PRIOR TO WATER METER INSTALLATION. 3. WASTEWATER MAIN WYE BRANCH TO MATCH MAIN PIPE MATERIAL. 4. CLEAN OUTS DESIGNATING THE END OF THE DEPARTMENT'S MAINTENANCE RESPONSIBILITY SHALL BE LOCATED WITHIN AN UTILITY EASEMENT OR RIGHT-OF-WAY DESIGNATED FOR UTILITIES. 5. THE DEVELOPER/PROPERTY OWNER OR ASSIGNEE SHALL BE RESPONSIBLE FOR CLEAN OUT INSTALLATION PRIOR TO WATER METER INSTALLATION AS SPECIFIED BY THE DEPARTMENT. 6. SEE MINIMUM SEPARATION STATEMENT FOR P.V.C. C-900 SDR 18 PIPE LATERAL REQUIREMENTS AT WASTEWATER LATERAL/POTABLE WATER MAIN CROSSINGS. 7. ALONG STREETS WITH ADJACENT NON-EXCLUSIVE UTILITY EASEMENT, THE CLEANOUT ENDING PROXIM MAINTENANCE RESPONSIBILITY SHALL BE INSTALLED 12" MIN. TO 18" MAX. INTO THE UTILITY EASEMENT. 8. MIN. 3' HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN CLEANOUTS AND EDGE OF PAVEMENT, BACK OF CURB, EDGE OF DRIVEWAY, LIGHTPOLES, TRANSFORMERS, POWER POLES. 9. GRAVITY SEWER MAINS ARE 8" DIAMETER WITH ALL SEWER LATERAL CONNECTIONS TO A GRAVITY SEWER MAINS REQUIRED TO BE 8" DIAMETER IN SIZE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.

TYPICAL WASTEWATER SERVICE CONNECTION 12S



- NOTES: 1. PRECAST CONCRETE TYPE II ADD 400 P.S.I. CALCEAREOUS AGGREGATE REQUIRED (MIN. C6000 CONTENT: 65% IN LARGE AGGREGATE, 30% IN CONCRETE SCREENING). 2. INSTALL APPROVED JOINT SEALANT AT ALL RISER JOINTS WITH GROUT ON INSIDE AND OUTSIDE. MANHOLE SHOP DRAWINGS SHALL INCLUDE THE SIZE AND PLACEMENT OF JOINT SEALANT. AN APPROVED JOINT PRIMER SHALL BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY). 3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT. 4. FLOW CHANNELS SHALL BE PRECAST OR FIELD CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL). 5. LIFT HOLES ARE PERMITTED. 6. ALL PIPE HOLES SHALL BE PRECAST OR CORE - DRILLED. 7. A. FOR PVC PIPE ENTERING MANHOLE WITH PRECAST HOLES USE THE APPROVED, PRECAST FLEXIBLE MANHOLE SLEEVE FOR THE APPROPRIATE PIPE DIAMETER AND DIMENSION RATIO. DOUBLE BANDING IS REQUIRED FOR FLEXIBLE MANHOLE SLEEVE. B. CONNECTION TO A MANHOLE WITH A CORE DRILLED HOLE SHALL BE MADE USING A 2" MIN. PVC COUPLER OR 18 AND THE APPROVED PVC-MANHOLE ADAPTER. THE ADAPTER SHALL NOT EXTEND MORE THAN 1" INTO THE MANHOLE. C. THE INSIDE AND OUTSIDE SPACE BETWEEN PIPE AND MANHOLE WALL SHALL BE FILLED WITH GROUT. 8. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.00 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE RISERS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES. 9. 6" DIAMETER PIPE: 18" HOLE FOR PVC - 10" DIAMETER PIPE: 17" HOLE FOR PVC. 10. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD. 11. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND A SERVICE WYE. 12. MANHOLES TO BE COATED INSIDE WITH AN APPROVED CORROSION BARRIER SYSTEM. SOLID THERMOPLASTIC CAST-IN LINER IS REQUIRED FOR LAST MANHOLE PRIOR TO LIFT STATION. MANHOLES DEEPER THAN 14 FT. MANHOLES WITH OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION, (SEE APPROPRIATE DETAILS). 13. APPROVED INFLOW PROTECTORS ARE REQUIRED. 14. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS. 15. SPECIAL PRE-APPROVED GROUT IS REQUIRED FOR PRECAST STRUCTURES WITH ANTIMICROBIAL ADJUTIVE.

STANDARD MANHOLE 13S

TYPICAL CLEANOUT INSTALLATION 11SA

CLEANOUT INSTALLATION DETAIL BETWEEN TOWNHOME DRIVEWAYS 11SB

SHALLOW MANHOLE 14S

DROP CONNECTION PRECAST MANHOLE 15S

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WASTEWATER #2 STANDARD DETAILS

CONSULTANT: WUD. DESIGNED BY: WUD. DRAWN BY: M. BUCKNER. CHECKED BY: J. LAMBERT. APPROVED BY: WUD. Palm Beach County Water Utilities Department, P.O. Box 16097, West Palm Beach, FL 33416-6097. Mar 01, 2023.

IT'S THE LAW! CALL 48 HOURS BEFORE YOU DO! 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

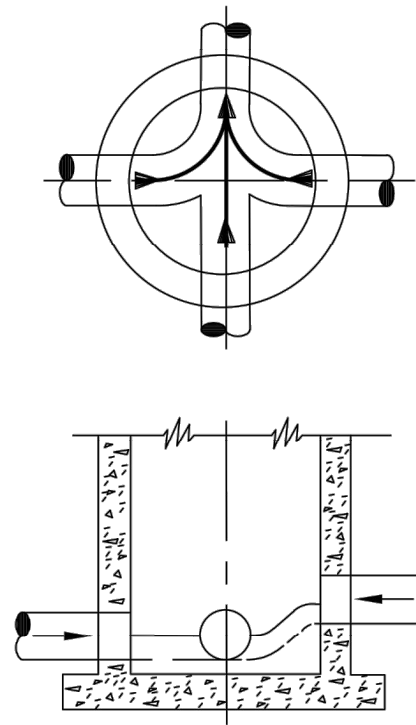
PBCWUD #XXXX

Leonard Z. Gamble Florida P.E. No. 65921 March 3, 2025

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Drawing: W:\WUD 2023 STD DTL REV\WUD 2023 STD DTL SHEETS\WUD 2023 STD DTL - WASTEWATER (6 SHEETS).dwg\WUD WW-2 - Last Modified: Wed, Mar 01, 2023 - 3:00pm

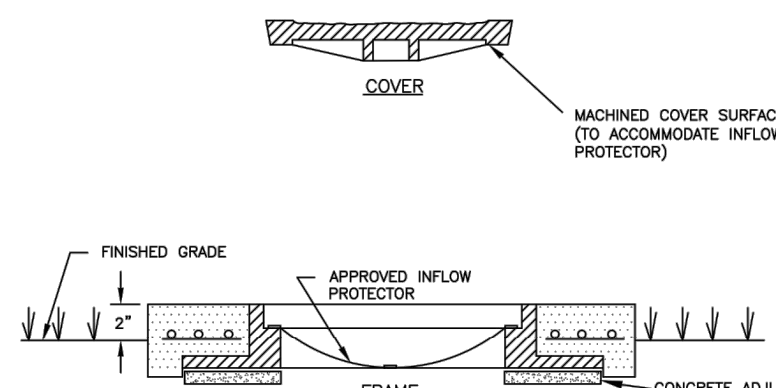
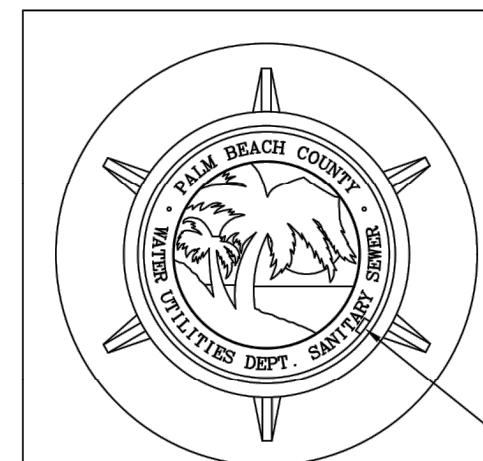
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- NOTES:**
- PROPERLY SHAPED INVERT CHANNELS AND SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
  - SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON PLANS AND THEN MUST BE TREATED AS MAINS (ELEVATIONS SHOWN, PRECAST HOLE FLOW CHANNEL), PRECAST CONCRETE FLOW CHANNELS, OR FIELD INSTALLED CONCRETE FLOW CHANNELS ARE REQUIRED.
  - APPROVED PRECAST POLYPROPYLENE OR FIBER REINFORCED POLYMER (FRP) FLOW CHANNELS WITH INTEGRATED PIPE INVERTS (SEE SEPARATE DETAILS), PRECAST CONCRETE FLOW CHANNELS, OR FIELD INSTALLED CONCRETE FLOW CHANNELS ARE REQUIRED.
  - SOEWALLS OF FLOW CHANNELS SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.
  - NO INSIDE DROP LARGER THAN 6" SHALL BE ALLOWED WITH 3 OR 4 INVERTS AND MANHOLES WITH A CHANGE OF DIRECTION OF FLOW OF MORE THAN 45 DEGREES.
  - THE FIELD APPLIED CONSTRUCTION UNLESS PRECAST THERMOPLASTIC LINER IS USED, THE FIELD APPLIED CORRUGATED BARRIER MAY NOT BE APPLIED TO THE FLOW CHANNEL.

INVERT FLOW CHANNELS

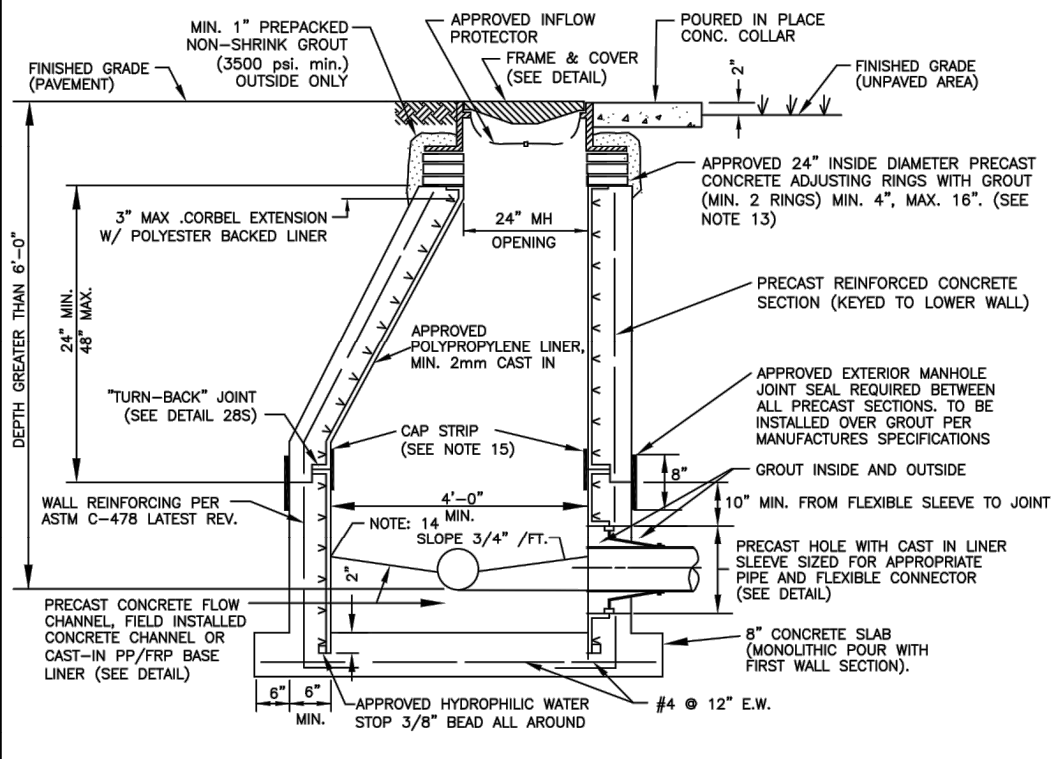
16S



- NOTES:**
- COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
  - STANDARD FRAME AND COVER SIZE SHALL BE SEVEN INCHES (7"). A 4" FRAME MAY ONLY BE USED WITH PRIOR APPROVAL.
  - A STEEL MANHOLE RISER, APPROVED PRECAST CONCRETE ADJUSTING RINGS OR ADDITIONAL BRICKS MAY BE USED TO ELIVATE EXISTING MANHOLE COVERS TO RESURFACED GRADE (MAX. 4" HEIGHT).
  - COVER SHALL FIT FLUSH WITH THE FRAME WITH THE INFLOW PROTECTOR INSTALLED.

GRAVITY SEWER MANHOLE FRAME & COVER

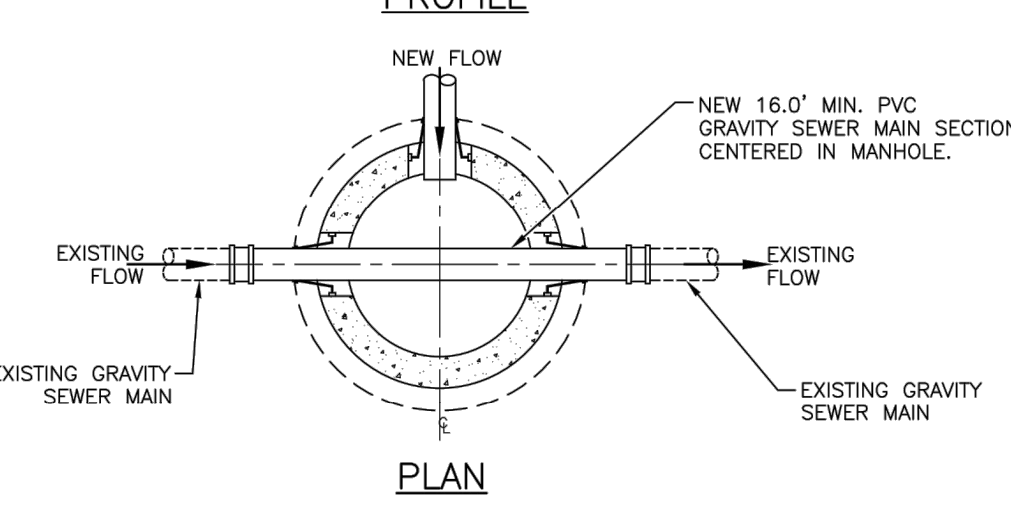
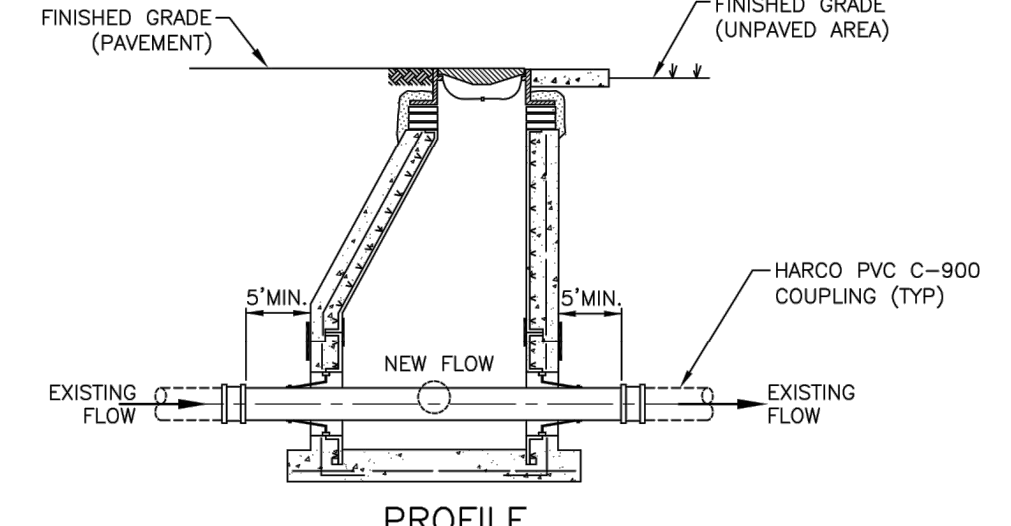
17S



- NOTES:**
- PRECAST CONCRETE TYPE II 4000 P.S.I. CALCEAREOUS AGGREGATE REQUIRED (MIN. C60/30 CONTENT: 65% IN LARGE AGGREGATE, 35% IN CONCRETE SUBGRADE).
  - APPROVED PRIMER AND SEALANT GASKET AT ALL RISER JOINTS. SEALANT GASKET SIZE AND PLACEMENT SHALL BE CALLED OUT ON SHOP DRAWINGS. PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).
  - ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
  - CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLYPROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EXPOSED INTO CORED OPENING AND THERMALLY WELDED TO WALL LINER.
  - FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFILTRANT INTO FLOW STREAM. APPROVED CAST-IN FRP/FRP BASE LINER IS ACCEPTABLE (SEE DETAIL).
  - LIFT HOLES ARE PERMITTED.
  - INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
  - MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
  - MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE OR ANY PIPE JOINT.
  - ONLY APPROVED THERMOPLASTIC LINER SYSTEM SHALL BE USED. LINERS MUST BE WELDED BY LINER MFG CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
  - APPROVED INFLOW PROTECTORS ARE REQUIRED.
  - MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
  - SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBANN 5354 SEALANT TAPE OR APPROVED EQUAL.
  - MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED FOR ALL JOINTS.
  - SOLID THERMOPLASTIC CAST-IN LINER IS REQUIRED FOR LAST MANHOLE PRIOR TO LEFT STATION. MANHOLES DEEPER THAN 14 FT. MANHOLES WITH OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. (SEE APPROPRIATE DETAILS)
  - MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

STANDARD MANHOLE WITH CAST-IN LINER

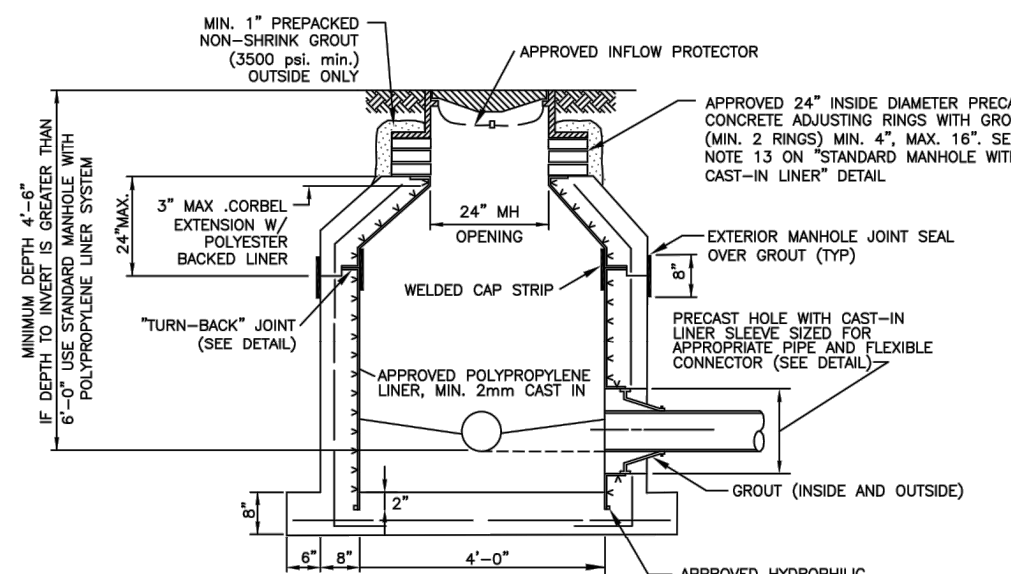
18SA



- NOTES:**
- MANHOLE TO BE CONSTRUCTED AND INSTALLED PER WUD STANDARD DETAIL 18SA.
  - A TEMPORARY GRAVITY SEWER MAIN BYPASS SIXTEEN(16) FOOT MINIMUM TO BE INSTALLED THROUGH NEW MANHOLE TO MAINTAIN EXISTING WASTEWATER FLOW DURING CONSTRUCTION OF NEW GRAVITY SEWER SYSTEM.
  - ONCE THE NEW GRAVITY SEWER SYSTEM INSTALLATION IS COMPLETED AND HAS RECEIVED FINAL DEEP WASTEWATER CERTIFICATION THE TEMPORARY BYPASS PIPE SHALL BE CUT AND REMOVED FROM WITHIN THE MANHOLE WITH A NEW FLOW CHANNEL CONSTRUCTED PER WUD MINIMUM DESIGN STANDARDS.
  - AFTER ALL CONSTRUCTION HAS BEEN COMPLETED, INCLUDING THE REMOVAL OF THE BYPASS PIPE AND CONSTRUCTION OF THE NEW FLOW CHANNEL, THE EXISTING UPSTREAM AND DOWNSTREAM GRAVITY SEWER MAIN SHALL BE LAMPED TO VERIFY NO ADVERSE DAMAGE OCCURRED DURING CONSTRUCTION TO THE EXISTING GRAVITY SEWER MAIN.

NEW MANHOLE CUT INTO EXISTING GRAVITY SEWER MAIN

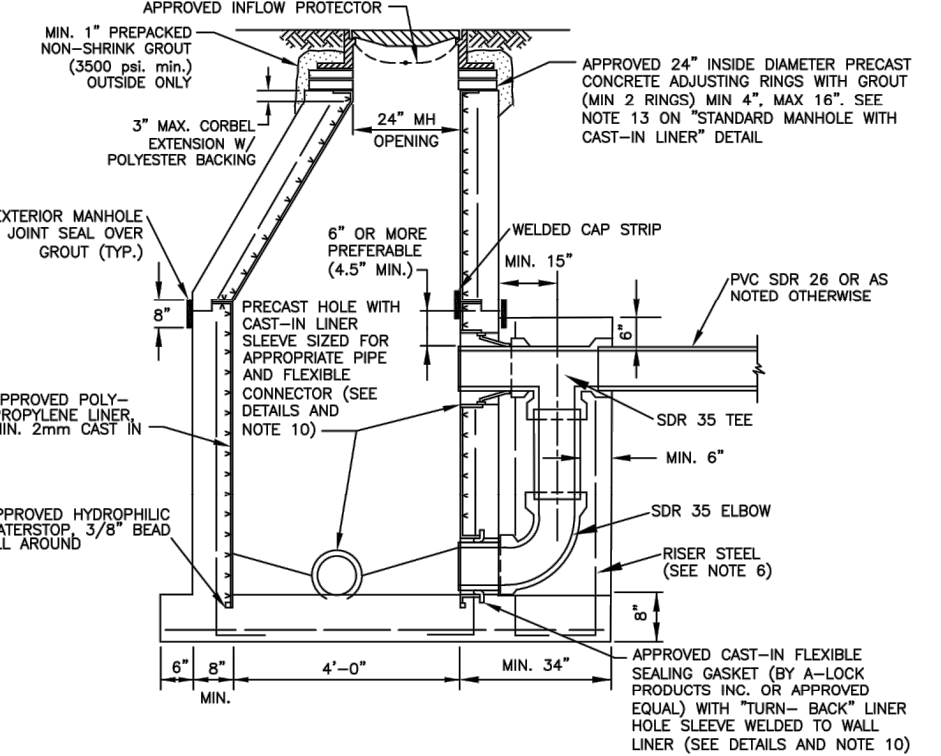
18SB



- NOTES:**
- ALL "STANDARD MANHOLE WITH POLYPROPYLENE LINER SYSTEM" NOTES AND DETAILS ARE APPLICABLE.
  - SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBANN 5354 SEALANT TAPE (OR APPROVED EQUAL).
  - SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

SHALLOW MANHOLE WITH CAST-IN LINER

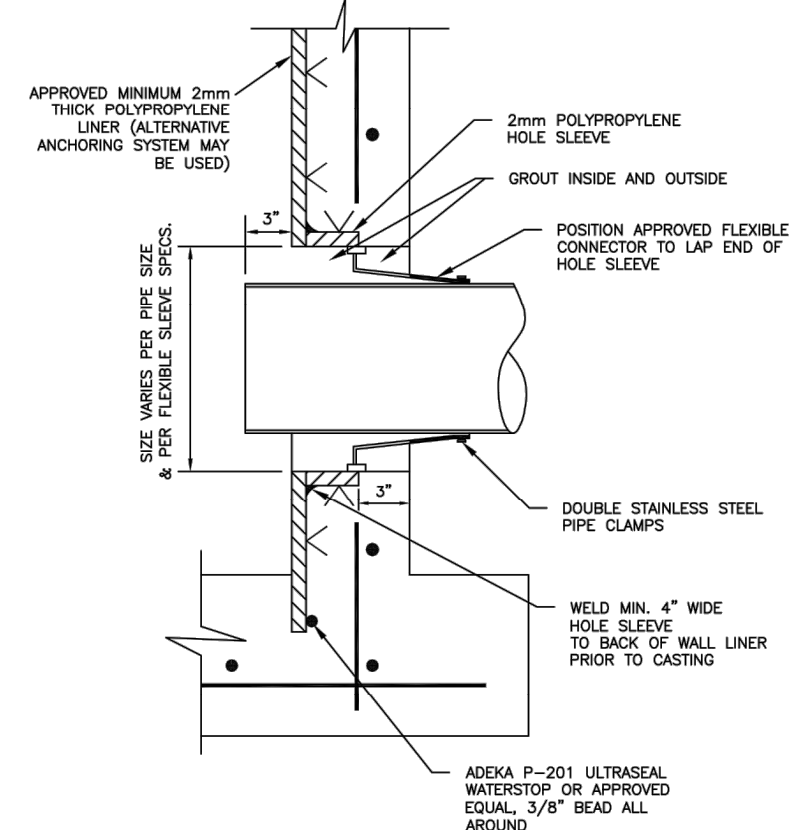
19S



- NOTES:**
- ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
  - THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
  - PRECAST DROP ENCASUREMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN REMAINDER OF DROP ENCASUREMENT.
  - DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFILTRANT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
  - PVC SDR 26 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
  - DROP ENCASUREMENT REINFORCING STEEL TO BE CAST IN PLACE WITH BASE (4 BARS) OR USE 4-1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE TO BE USED WITH 1/2" COIL RODS. COIL LOOP INSERTS TO BE "DAYTON SUPERIOR" B16, 1/2" X 4" OR APPROVED EQUAL.
  - MIN. 4" WIDE FIELD WELDED CAP STRIP IS REQUIRED OVER ALL JOINTS.
  - SEAL INVERT BENCH AND CHANNEL TO WALL LINER WITH 3M WEATHERBANN 5354 SEALANT TAPE (OR APPROVED EQUAL).
  - SEE SEPARATE DETAIL FOR OPTIONAL CAST-IN POLYPROPYLENE OR FIBER REINFORCED POLYMER BASE LINER.

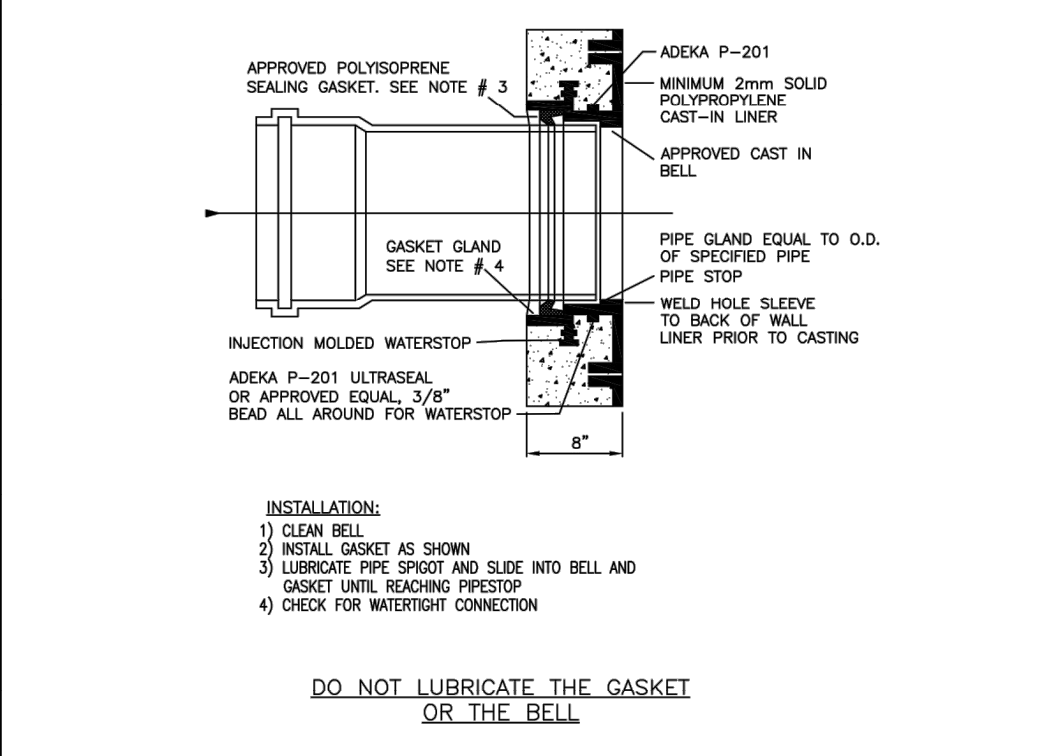
OUTSIDE DROP MANHOLE WITH CAST-IN LINER

20S



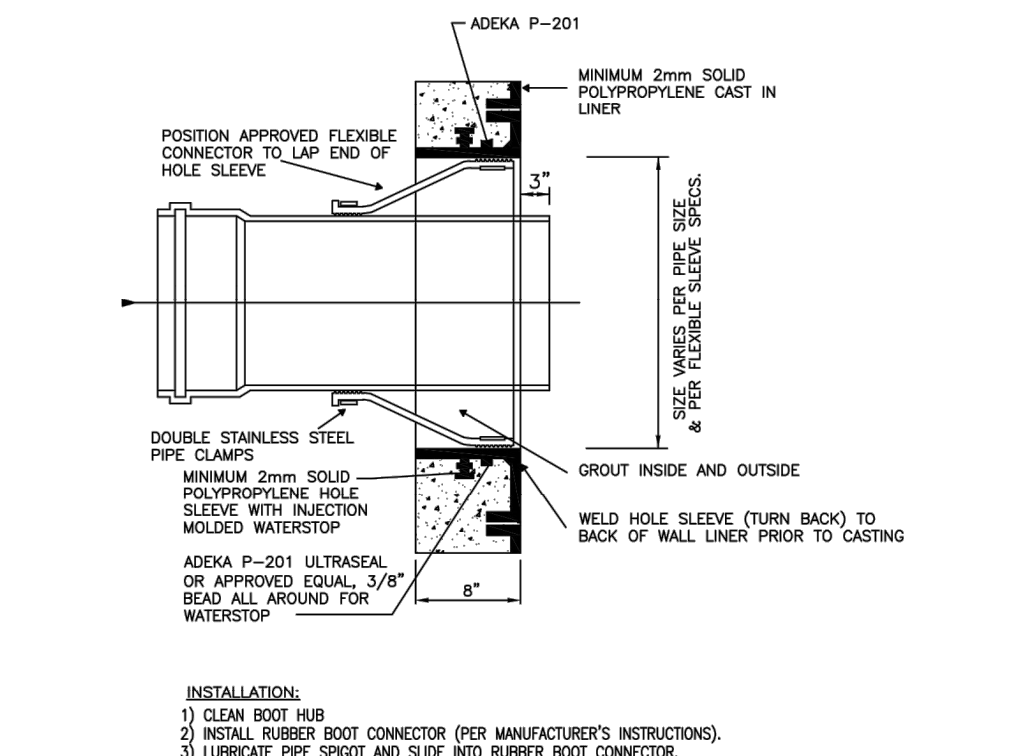
PIPE TO MANHOLE CONNECTION - TYPE "A"

21S



PIPE TO MANHOLE CONNECTION - TYPE "B"

22S



PIPE TO MANHOLE CONNECTION - TYPE "C"

23S

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WASTEWATER #3 STANDARD DETAILS

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DESIGNED BY: WUD  
DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

WUD PROJECT NO. 00-000

WUD PROJECT NAME



PALM BEACH COUNTY  
WATER UTILITIES DEPARTMENT  
P.O. BOX 16097  
WEST PALM BEACH, FL 33416  
(561) 460-8000

NO.	DATE	REVISION / REMARKS
1	DEC 2021	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

STD DETAILS  
SHEET NUMBER  
0 OF 0

Mar 01, 2023

PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

NAME	DATE	NAME	DATE
DESIGNED BY		DRAWN BY	
CHECKED BY		CHECKED BY	
SUPERVISED BY			

**Craven • Thompson and Associates, Inc.**  
ENGINEERS • PLANNERS • SURVEYORS  
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FAX: (954) 739-8409 TEL: (954) 739-8400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS NO. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. C000114

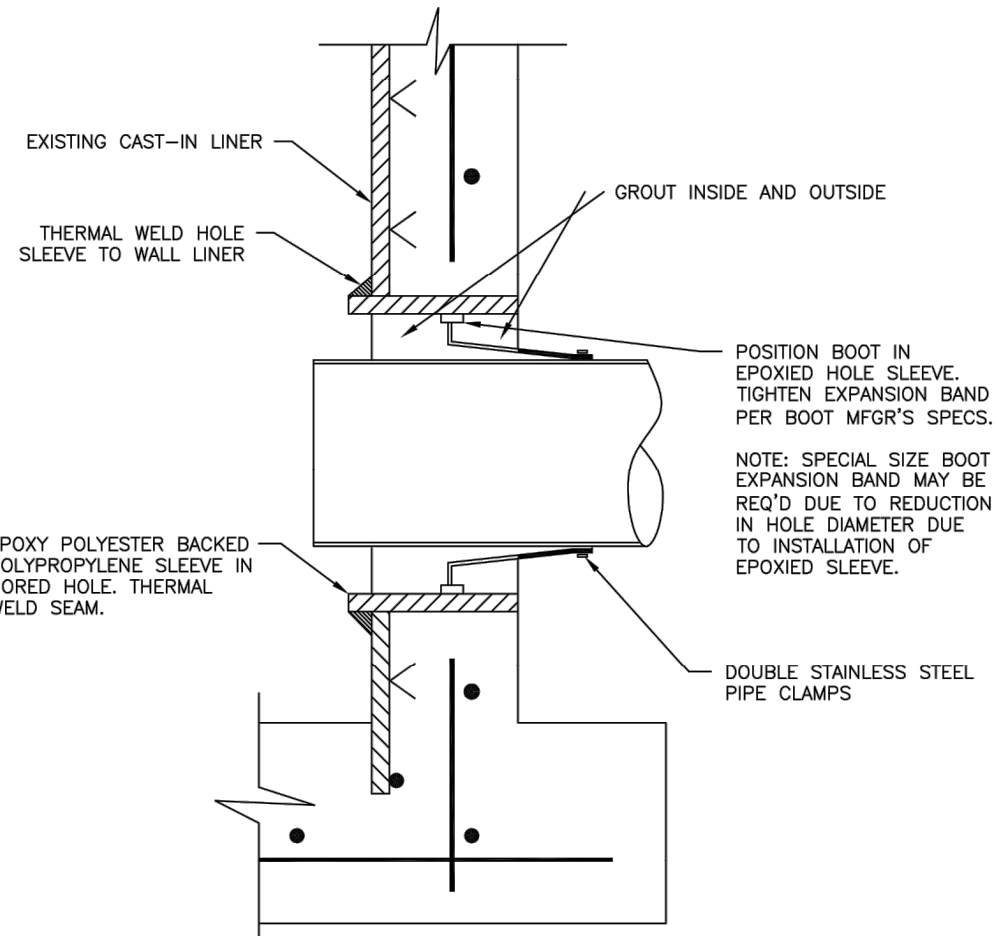
ORIGINAL SECTION SEWER  
NORTH PHASE 2  
CITY OF GREENACRES

WASTEWATER STANDARD  
DETAILS

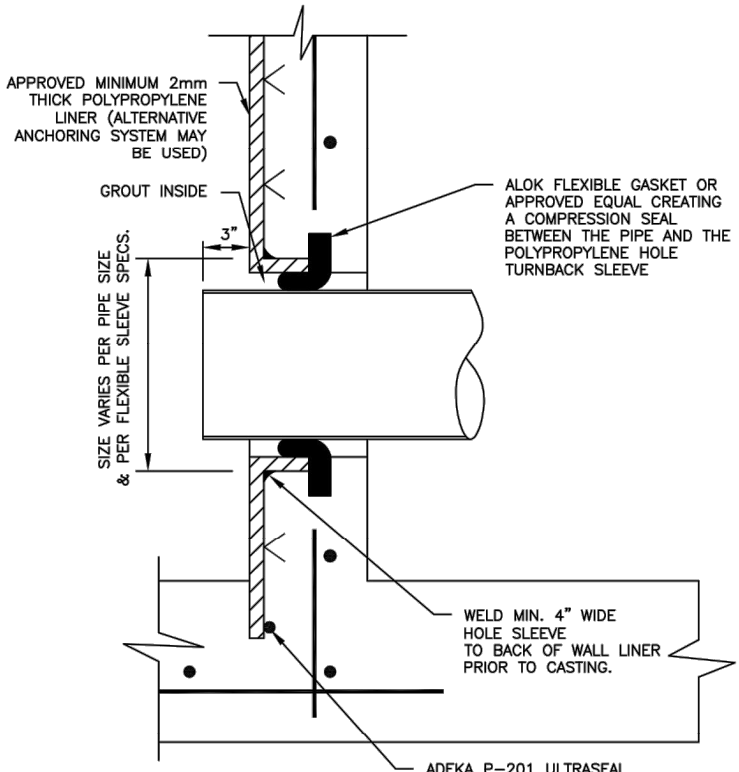
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C-8



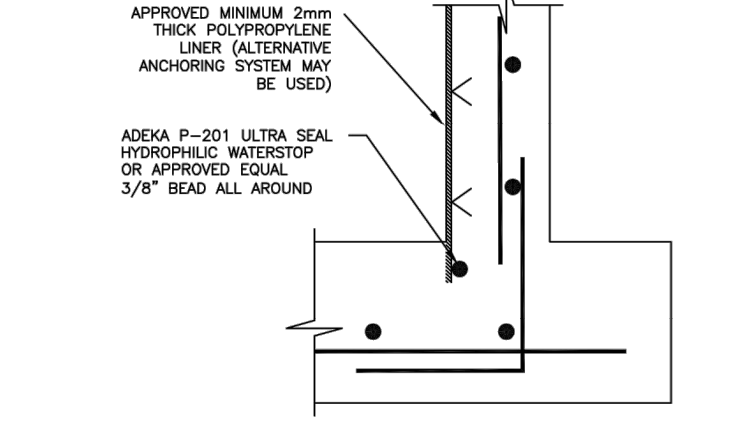
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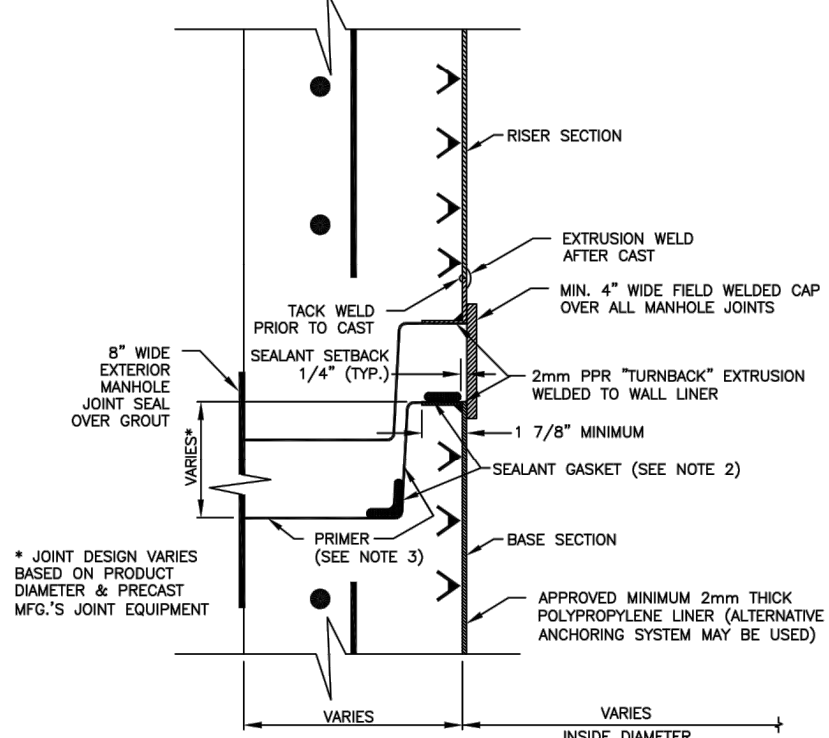
CORED HOLE W/FLEX. CONNECTOR & TURNBACK SLEEVE POLYPROPYLENE LINER SYSTEM CAST-IN 243



PIPE TO DROP MANHOLE CONNECTION LOWER INVERT 255

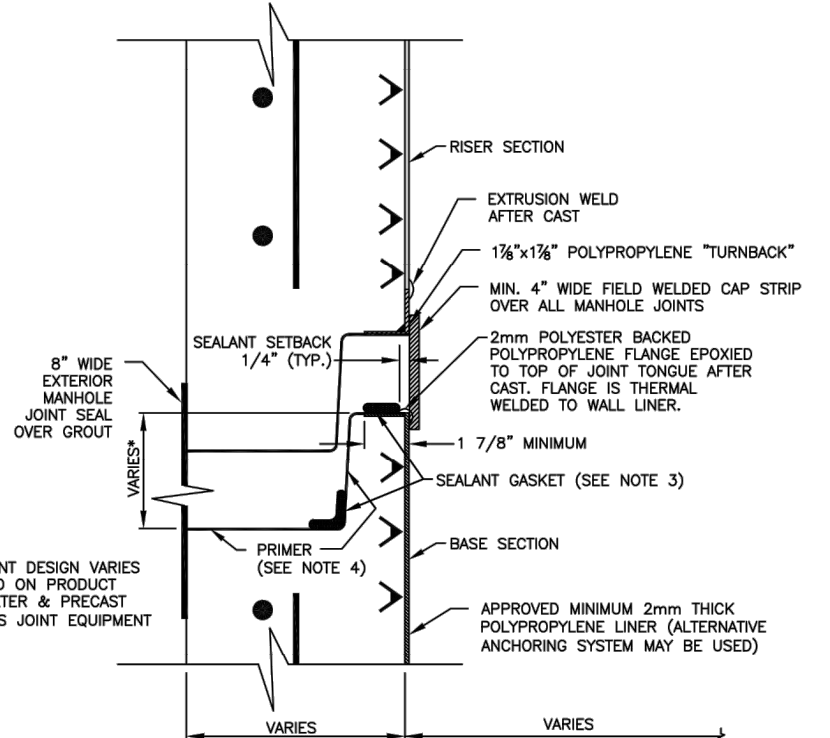


BASE MANHOLE SECTION WATERSTOP DETAIL 265



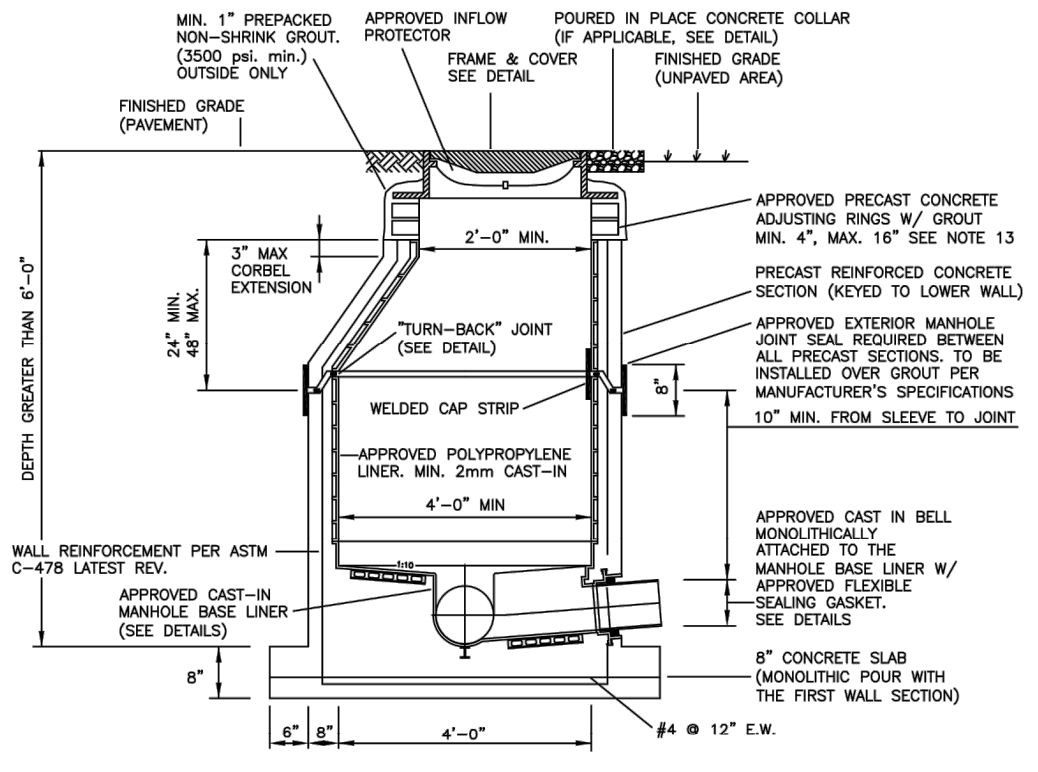
TURN BACK JOINT INSTALLED PRIOR TO CAST 275

- NOTES:
1. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
  2. STRUCTURE SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND PLACEMENT OF THE JOINT SEALANT.
  3. JOINT PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).



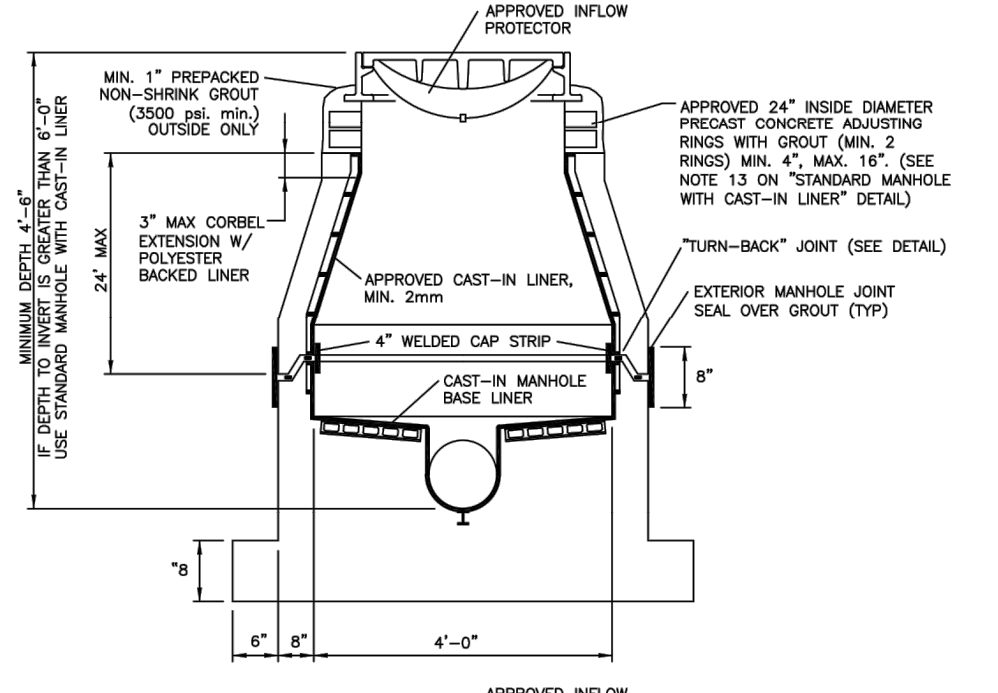
TURN BACK JOINT INSTALLED AFTER CAST 285

- NOTES:
1. THE "AFTER CAST" TURNBACK JOINT IS USED WHEN THE "PRIOR TO CAST" TURNBACK JOINT IS NOT FEASIBLE.
  2. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
  3. STRUCTURE SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND PLACEMENT OF THE JOINT SEALANT.
  4. JOINT PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).

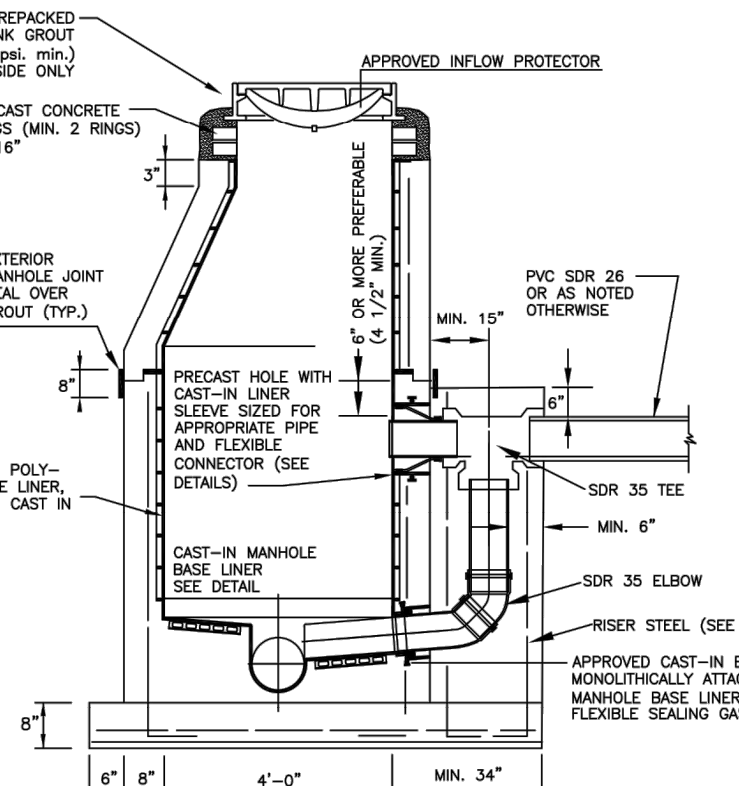


STANDARD MANHOLE WITH CAST-IN LINER AND BASE LINER 295

- NOTES:
1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCEDEOUS AGGREGATE REQUIRED (MIN. 60% CONTENT) 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
  2. RUB'N HDX (RU 106) OR APPROVED EQUAL AT ALL RISER JOINTS. SIZES TO BE SPECIFIED ON SHOP DRAWINGS.
  3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
  4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLYPROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXYED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER. BY LICENSED CONTRACTOR.
  6. FLOW CHANNELS SHALL DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
  7. LIFT HOLES ARE PERMITTED.
  8. INVERT DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 3.0 FEET. MAX. 4" INVERT DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
  9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
  10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE.
  11. MANHOLES SHALL BE LINED INSIDE WITH AN APPROVED POLYPROPYLENE LINER SYSTEM. LINERS MUST BE WELDED BY LINER MFG. CERTIFIED WELDERS AND BE CAST INTO THE MANHOLE BY A LINER MANUFACTURER CERTIFIED PRECASTER.
  12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
  13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
  14. APPROVED THERMO-PLASTIC CHIMNEY LINER SHALL COMPLETELY COVER THE PRECAST CONCRETE GRACE RINGS AND SHALL BE SEALED TO THE CORREL LINER BY MEANS OF AN APPROVED POLYPROPYLENE LP SEAL GASKET AND SEALED TO THE RING USING APPROVED BUTYL STRIPS. (SEE DETAIL).
  15. SOLID THERMO-PLASTIC CAST-IN LINER SYSTEM IS REQUIRED FOR LAST MANHOLE PRIOR TO A LIFT STATION. MANHOLES DEEPER THAN 14 FEET, MANHOLES WITH AN OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. SEE APPROPRIATE DETAILS.
  16. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

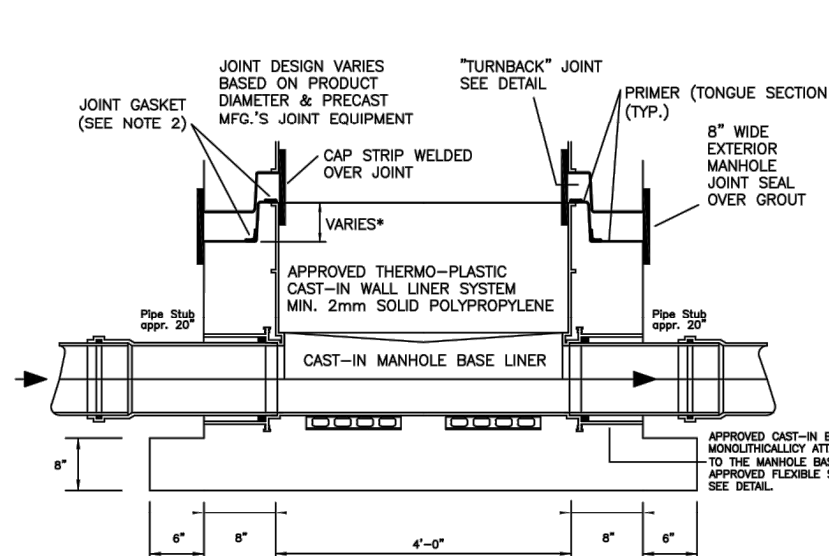


SHALLOW MANHOLE WITH CAST-IN LINER AND BASE LINER 305



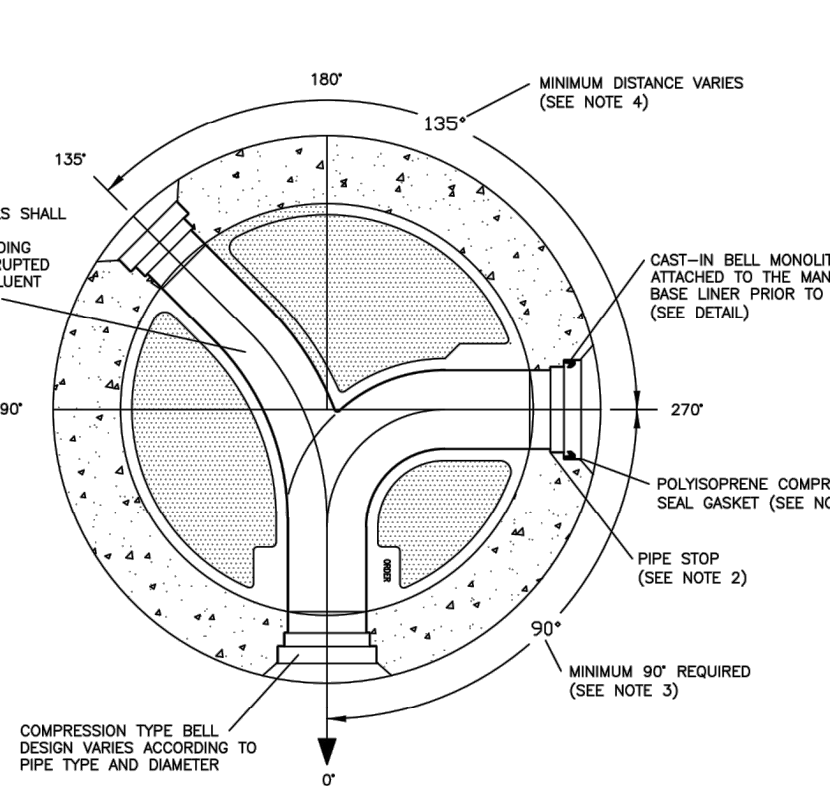
OUTSIDE DROP MANHOLE WITH CAST-IN LINER AND BASE LINER 315

- NOTES:
1. ALL DETAILS AND SPECIFICATIONS FOR "STANDARD MANHOLE WITH SOLID POLYPROPYLENE LINER SYSTEM" ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
  2. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY.
  3. PRECAST DROP ENCASUREMENT REQUIRED UP TO TOP EDGE OF 90 DEGREE ELBOW, BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN REMAINDER OF DROP ENCASUREMENT.
  4. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
  5. PVC SDR 25 PIPE WITH PVC SDR 35 FITTINGS SHALL BE UTILIZED IN THE DROP ASSEMBLY.
  6. DROP ENCASUREMENT REINFORCING STEEL TO BE CAST IN PLACE WITH BASE (4 RODS) OR USE 4x1/2" DIA. COIL LOOP INSERTS CAST IN PLACE WITH BASE (TO BE USED WITH 1" DIA. COIL RODS). COIL LOOP INSERTS TO BE "DAVON SUPERIOR" B16, 1/2" X 4" OR APPROVED EQUAL.



MANHOLE BASE SECTION 325

- NOTES:
1. LINER WELDING SHALL BE PERFORMED EXCLUSIVELY BY LICENSED, CERTIFIED WELDERS.
  2. SHOP DRAWINGS SHALL CALL OUT THE SIZE, TYPE AND POSITIONING OF THE APPROVED JOINT SEALANT.
  3. PRIMER TO BE APPLIED BY THE PRECASTER (TONGUE SECTION ONLY).



FLOW CHANNEL/PIPE CONNECTION TO NEW CAST-IN BASE LINER 335

- NOTES:
1. ONLY THE POLYPROPYLENE GASKET PROVIDED BY THE MANHOLE BASE LINER MANUFACTURER SHALL BE USED IN COMPRESSION TYPE BELLS.
  2. CONNECTION PIPES SHALL BE INSERTED COMPLETELY INTO THE BELL CONNECTOR FLUSH WITH THE PIPE STOP PROVIDING A SMOOTH TRANSITION FROM PIPE TO MANHOLE BASE LINER CHANNEL.
  3. MINIMUM OF 90 DEGREES BETWEEN INBOARD, LEFT OR RIGHT OF OUTBOARD PIPE. DISTANCE BETWEEN CONNECTIONS MAY VARY ACCORDING TO MANHOLE DIAMETER, PIPE SIZE AND TYPE.
  4. MINIMUM DISTANCE BETWEEN INFLUENT PIPE CONNECTIONS MAY VARY AND SHALL BE SPECIFIED BY THE LINER MANUFACTURER ACCORDING TO MANHOLE AND/OR PIPE DIAMETER AND TYPE.

- NOTES:
1. PRECAST CONCRETE TYPE II 4000 P.S.I. CALCEDEOUS AGGREGATE REQUIRED (MIN. 60% CONTENT) 65% IN LARGE AGGREGATE, 50% IN CONCRETE SCREENING).
  2. RUB'N HDX (RU 106) OR APPROVED EQUAL AT ALL RISER JOINTS. SIZES TO BE SPECIFIED ON SHOP DRAWINGS.
  3. ALL PIPE OPENINGS SHALL BE GAS TIGHT AND WATER TIGHT WITH NO EXPOSED CONCRETE SURFACES.
  4. CAST OPENINGS SHALL BE MANUFACTURED WITH A POLYPROPYLENE SLEEVE CAST IN APPROVED FLEXIBLE MANHOLE CONNECTORS SHALL BE USED AT PIPE CONNECTIONS. HOLE SIZE PER BOOT MANUFACTURER'S SPECIFICATIONS. DOUBLE PIPE CLAMPS MUST BE INSTALLED ON FLEXIBLE SLEEVES WHERE REQUIRED BY BOOT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  5. CORED PIPE OPENINGS SHALL BE INSTALLED PER DETAIL. APPROVED FLEXIBLE CONNECTOR WILL BE INSTALLED ONTO POLYPROPYLENE WALL SLEEVE. WALL SLEEVE SHALL BE EPOXYED INTO CORED OPENING AND THERMAL WELDED TO WALL LINER. BY LICENSED CONTRACTOR.
  6. FLOW CHANNELS SHALL DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
  7. LIFT HOLES ARE PERMITTED.
  8. INVERT DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND NOT CONSTRUCTED TO EXCEED 3.0 FEET. MAX. 4" INVERT DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
  9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
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  12. APPROVED INFLOW PROTECTORS ARE REQUIRED.
  13. MAXIMUM HEIGHT OF CHIMNEY SHALL NOT EXCEED 24" (INCLUDING FRAME CASTING).
  14. APPROVED THERMO-PLASTIC CHIMNEY LINER SHALL COMPLETELY COVER THE PRECAST CONCRETE GRACE RINGS AND SHALL BE SEALED TO THE CORREL LINER BY MEANS OF AN APPROVED POLYPROPYLENE LP SEAL GASKET AND SEALED TO THE RING USING APPROVED BUTYL STRIPS. (SEE DETAIL).
  15. SOLID THERMO-PLASTIC CAST-IN LINER SYSTEM IS REQUIRED FOR LAST MANHOLE PRIOR TO A LIFT STATION. MANHOLES DEEPER THAN 14 FEET, MANHOLES WITH AN OUTSIDE DROP, AND MANHOLES WITH A FORCE MAIN CONNECTION. SEE APPROPRIATE DETAILS.
  16. MANHOLES IN ROADWAYS SHALL BE LOCATED OUTSIDE OF WHEEL PATHS.

STANDARD MANHOLE WITH CAST-IN LINER AND BASE LINER 295

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WASTEWATER #4 STANDARD DETAILS

CONSULTANT:

**IT'S THE LAW!**  
CALL 48 HOURS BEFORE YOU DIG  
**1-800-432-4770**  
SUNSHINE STATE ONE CALL OF FLORIDA, INC.  
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD  
DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

Palm Beach County  
Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

WUD PROJECT NO. 00-000

WUD PROJECT NAME



PALM BEACH COUNTY  
WATER UTILITIES DEPARTMENT  
P.O. BOX 16097  
WEST PALM BEACH, FL 33416  
(561)463-6000

NO.	DATE	REVISION / REMARKS
1	DEC 2021	GENERAL REVISION
2	JAN 2023	GENERAL REVISION

STD DETAILS  
SHEET NUMBER 0 OF 0

Mar 01, 2023

PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 85921  
March 3, 2025

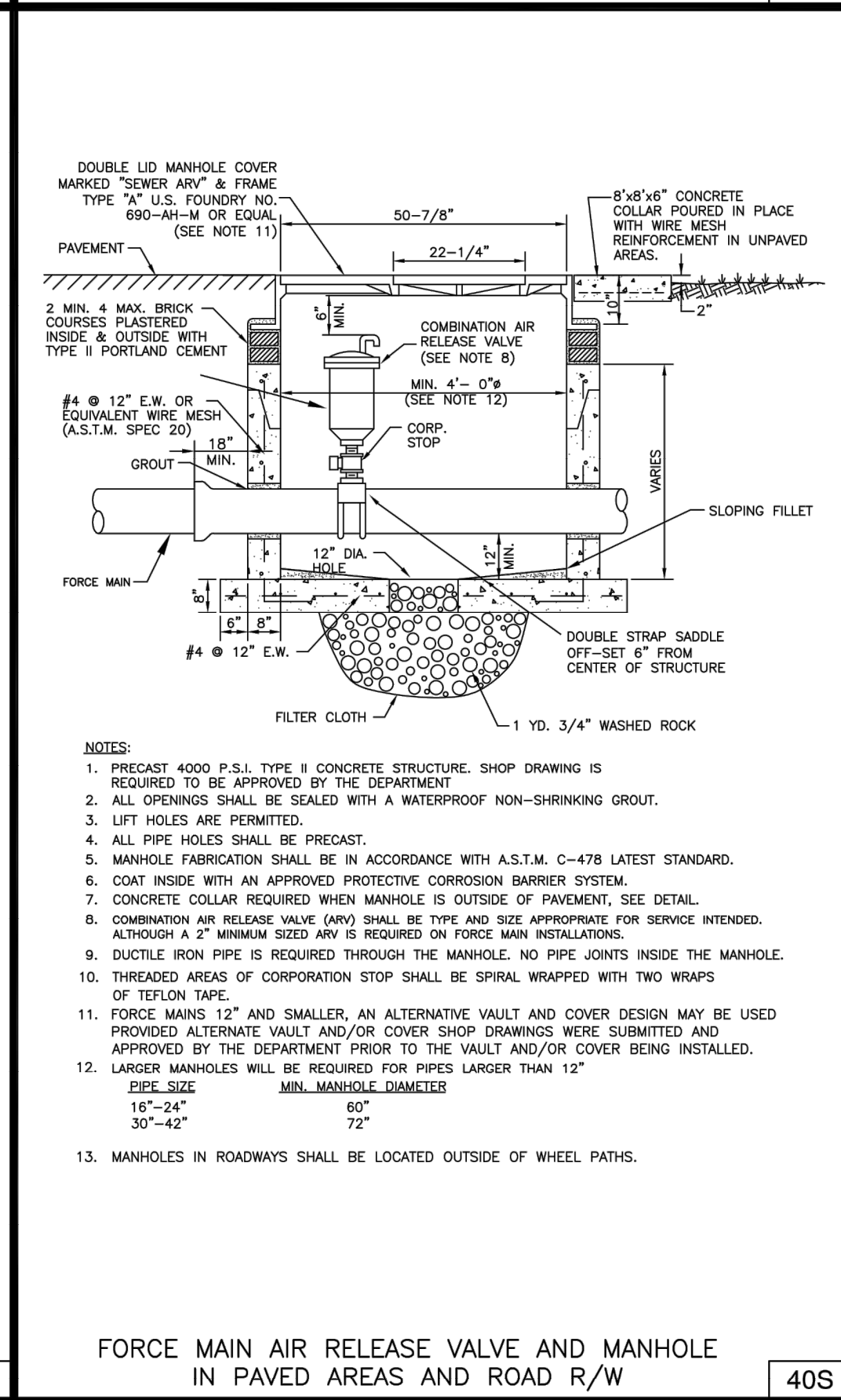
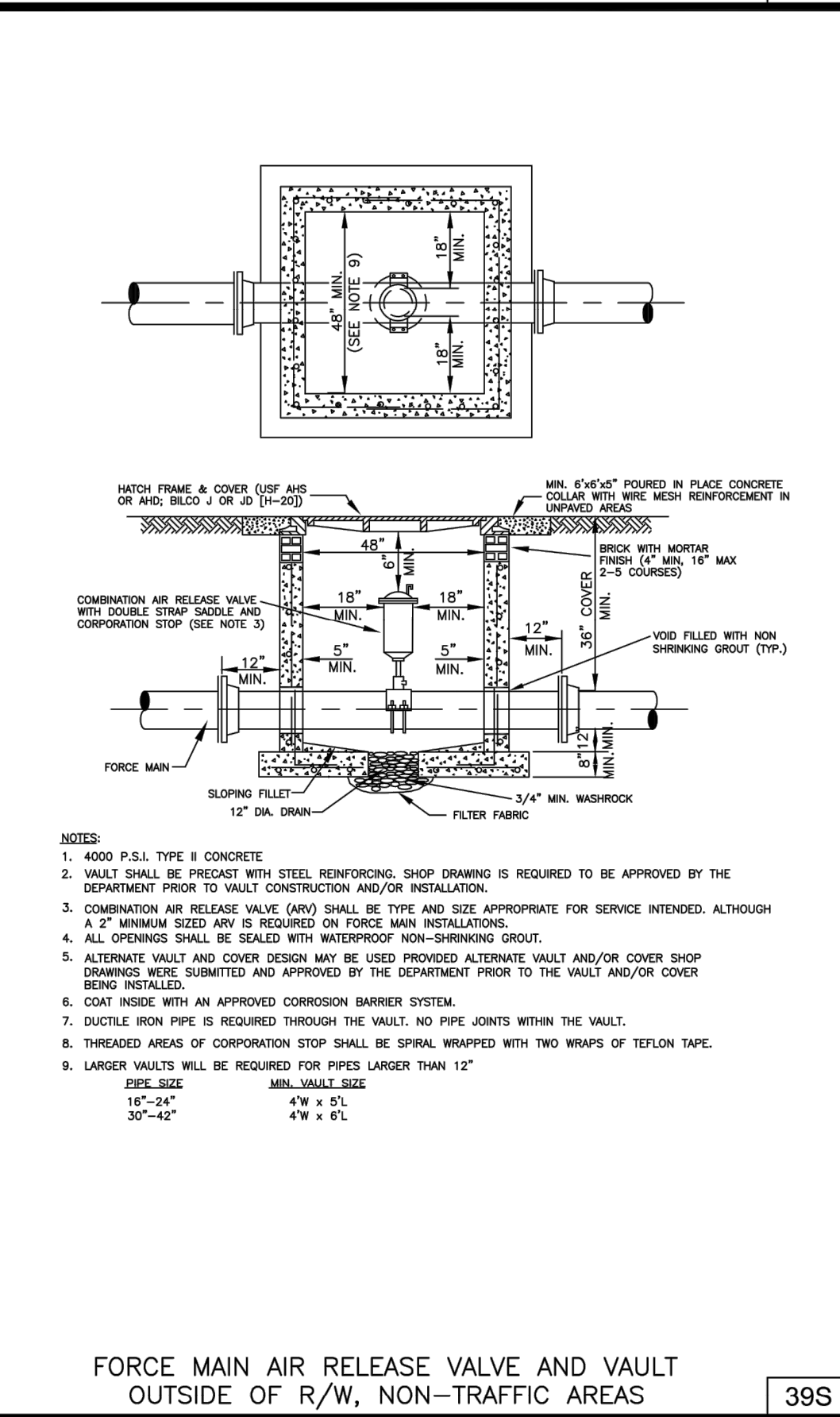
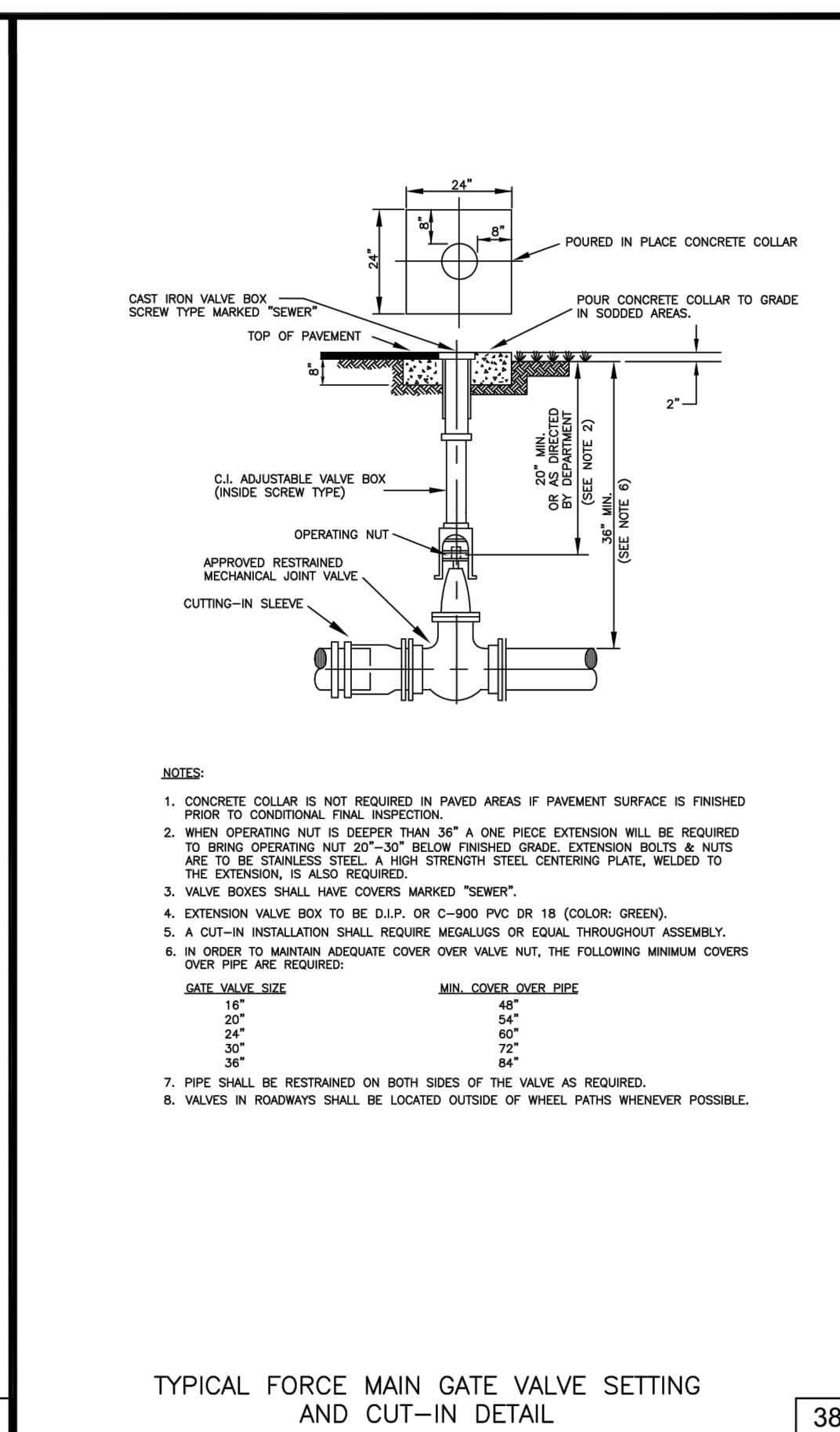
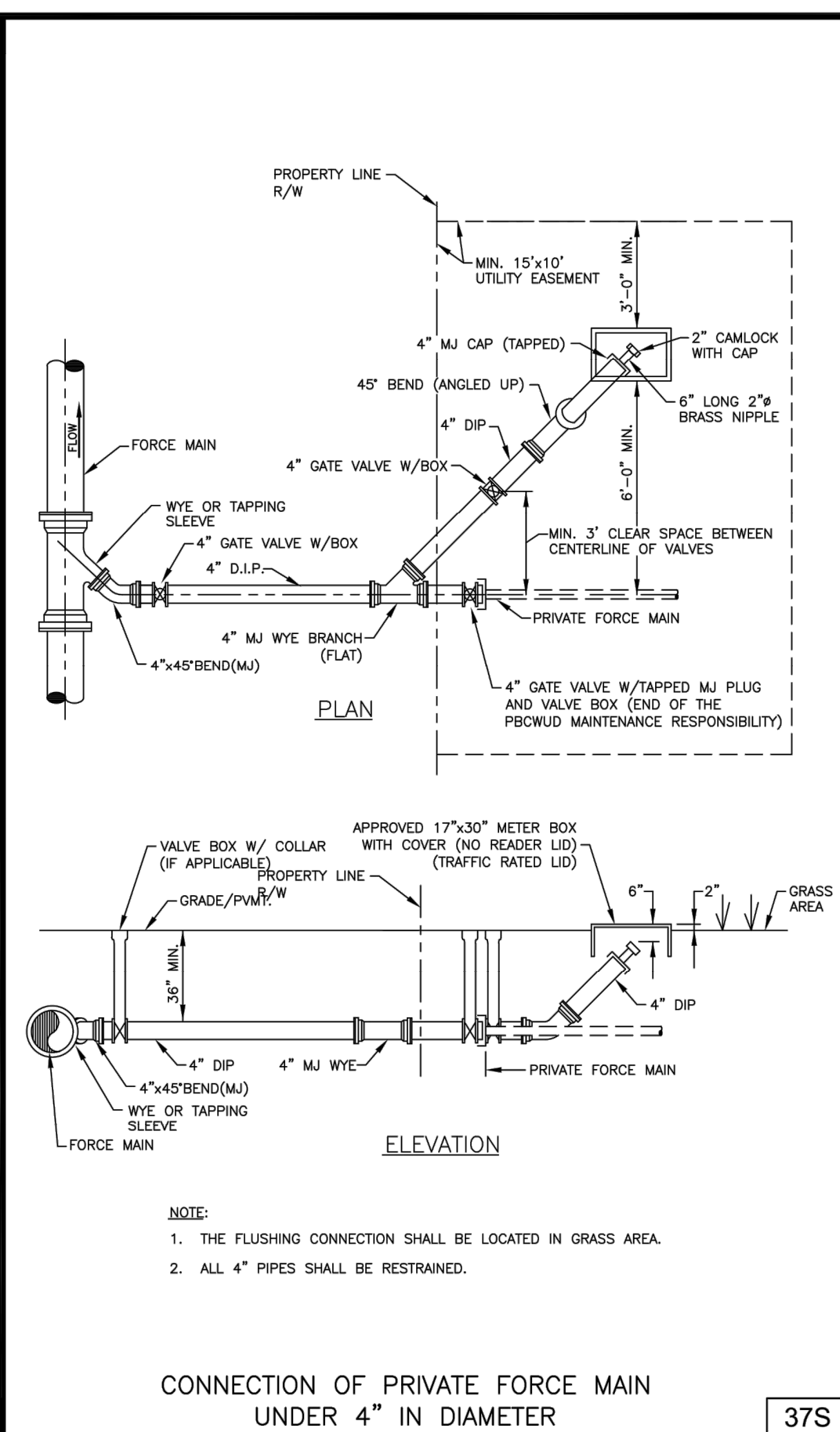
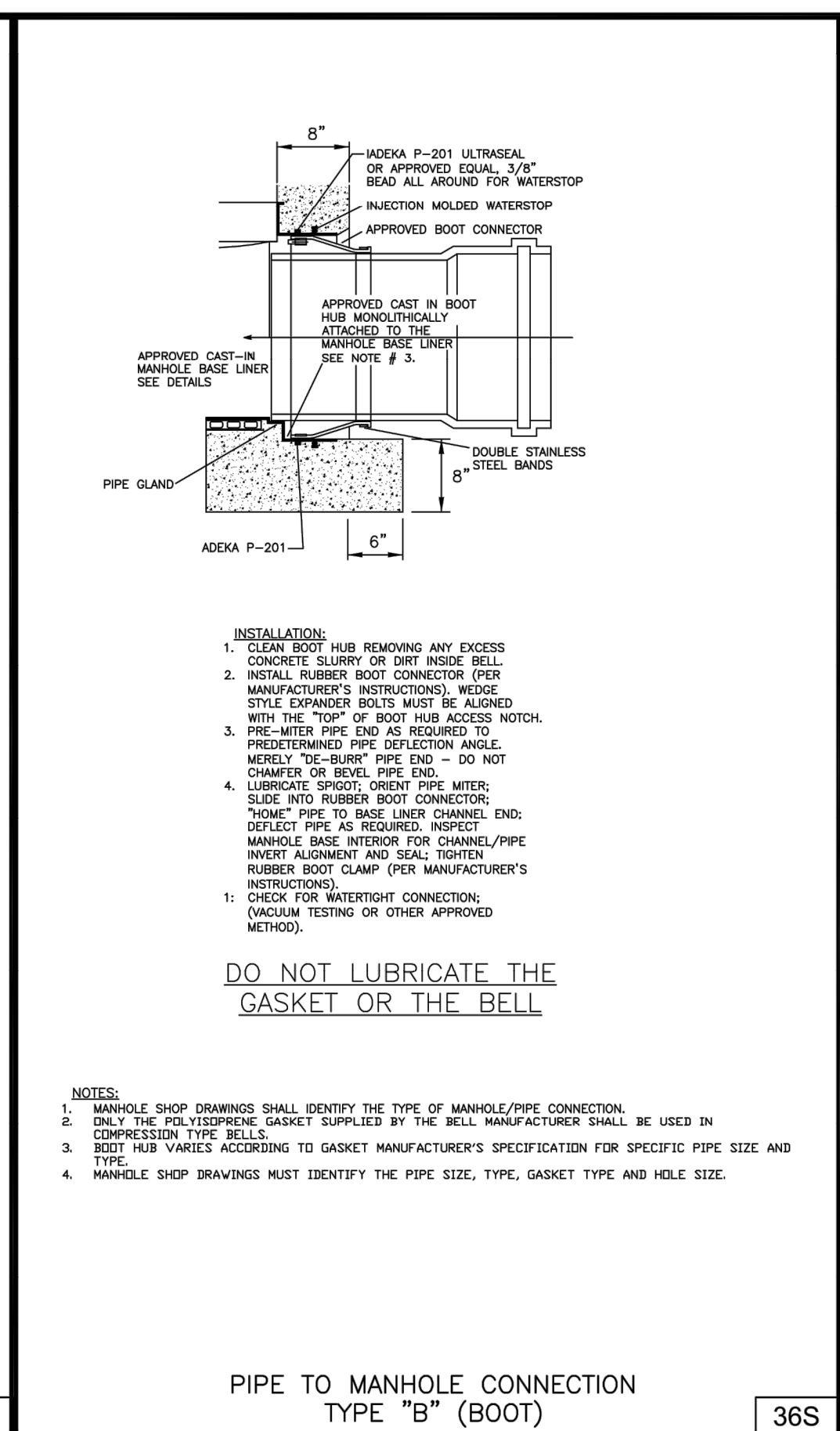
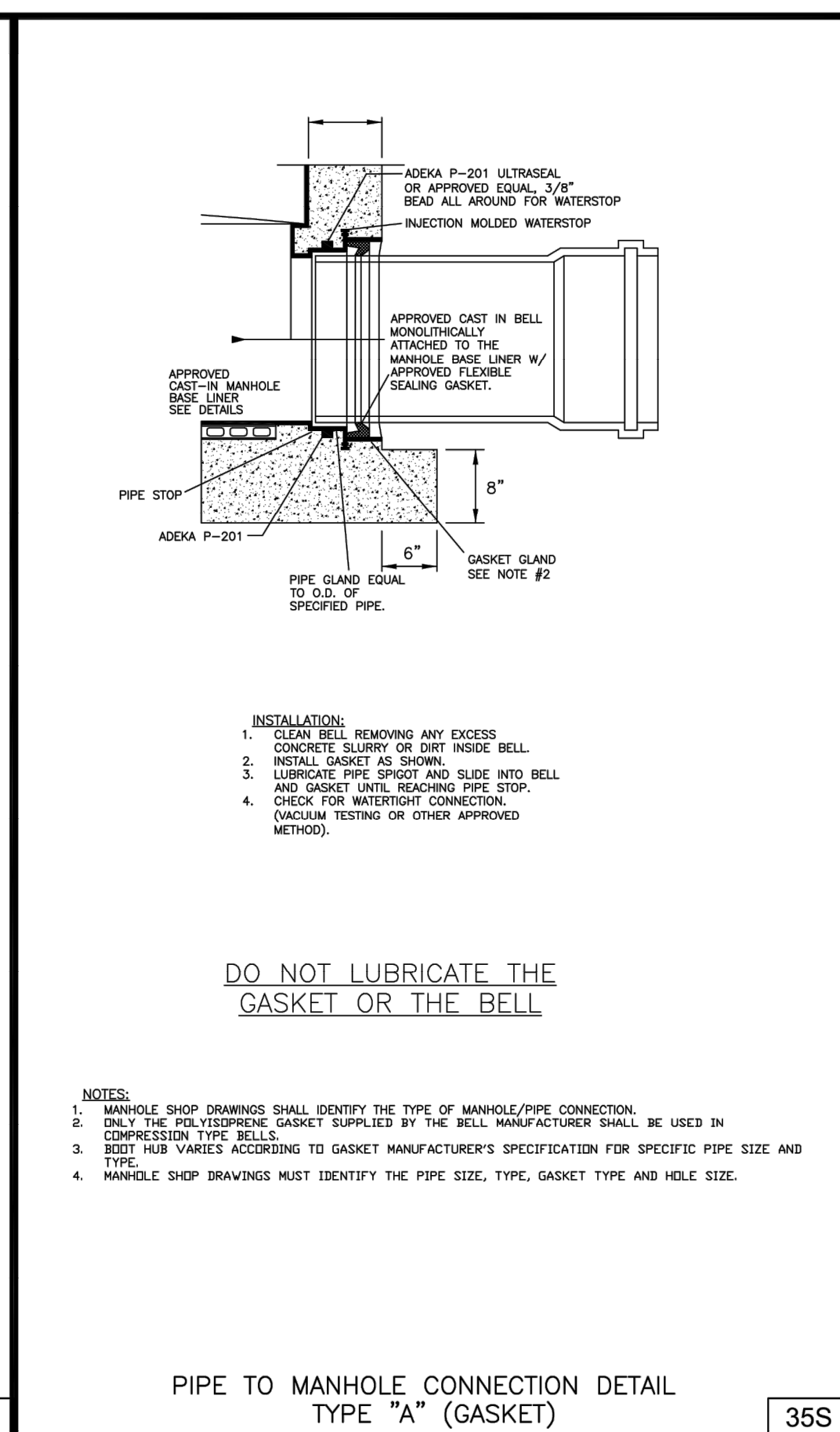
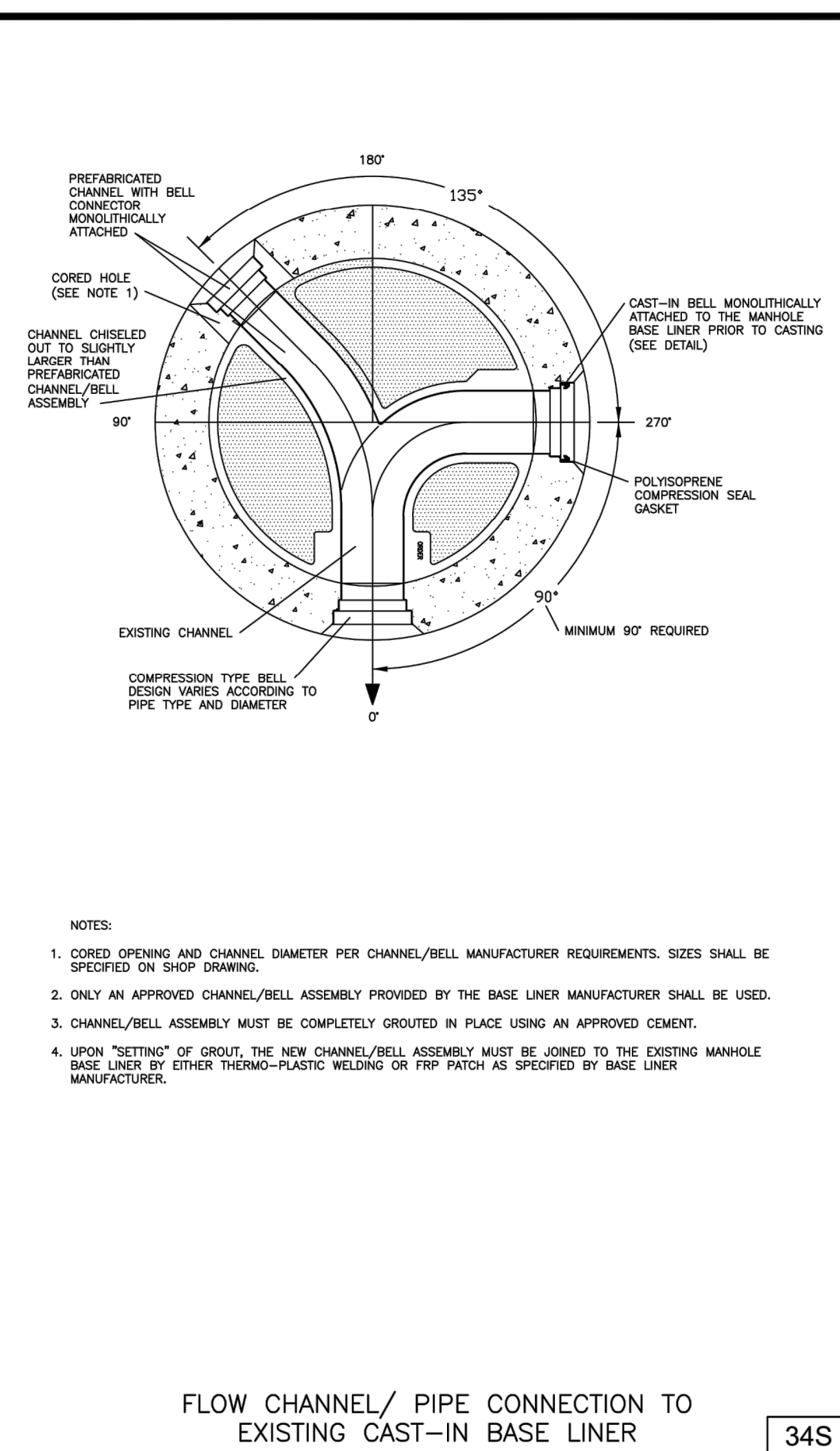
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**Craven • Thompson and Associates, Inc.**  
ENGINEERS • PLANNERS • SURVEYORS  
3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-8409 TEL: (954) 739-8400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS NO. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. C000114

ORIGINAL SECTION SEWER  
NORTH PHASE 2  
CITY OF GREENACRES

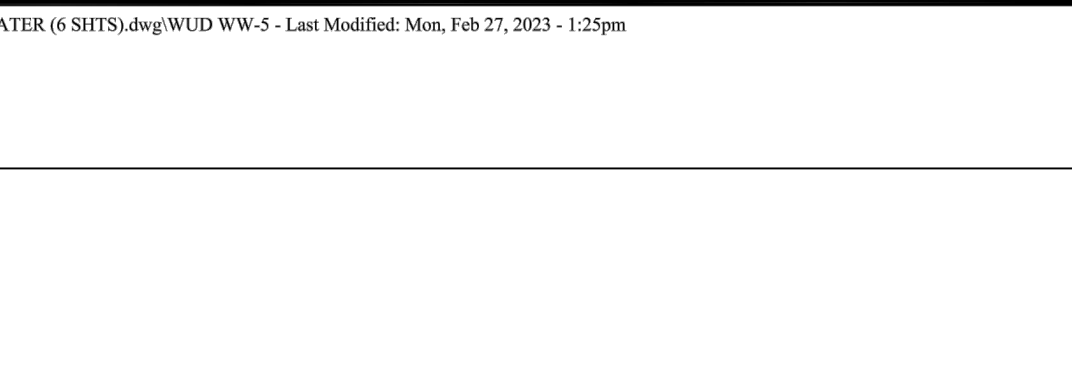
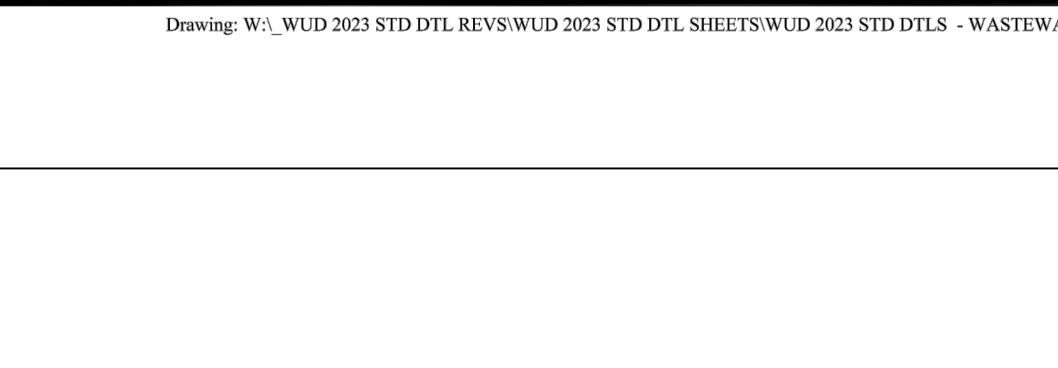
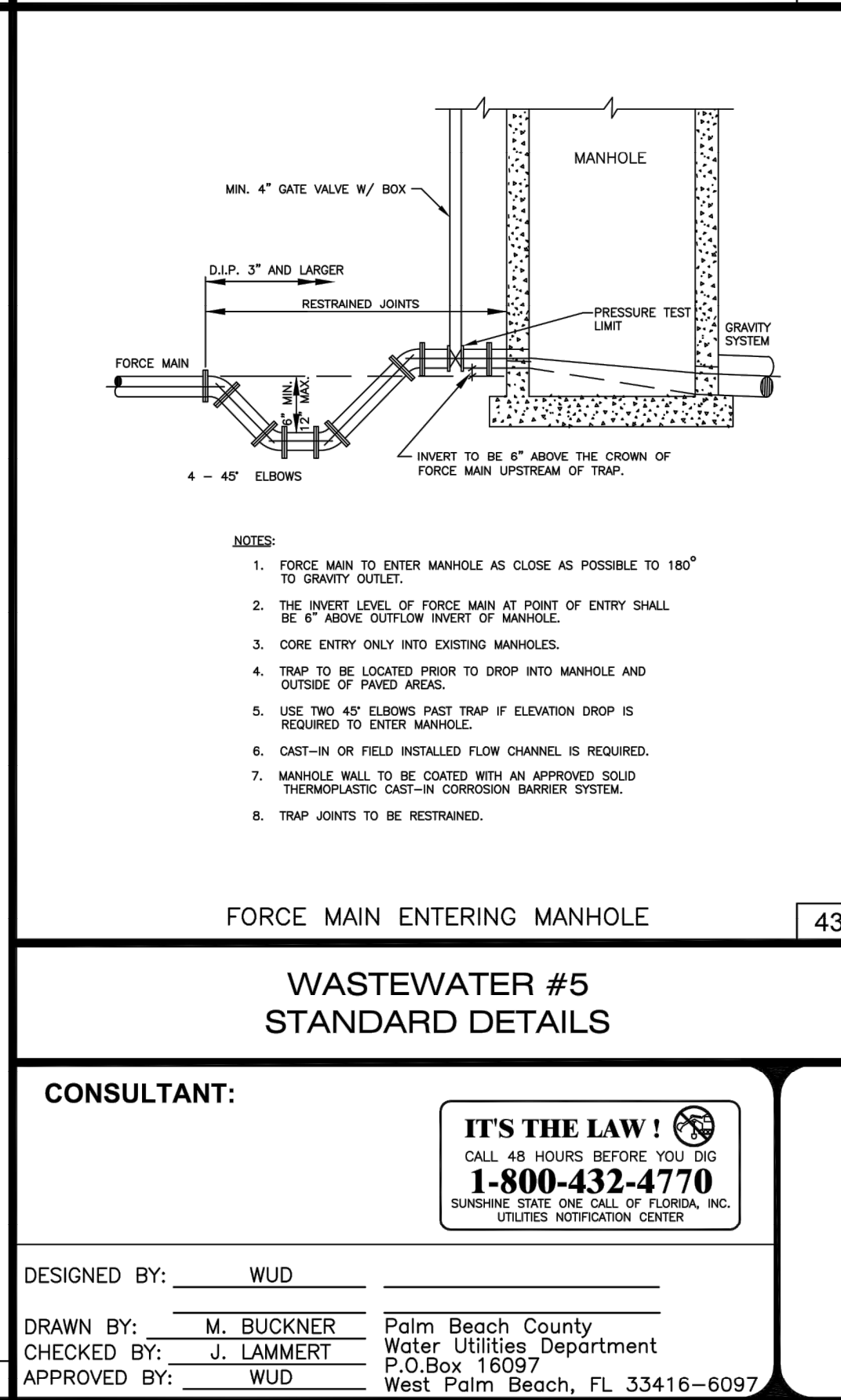
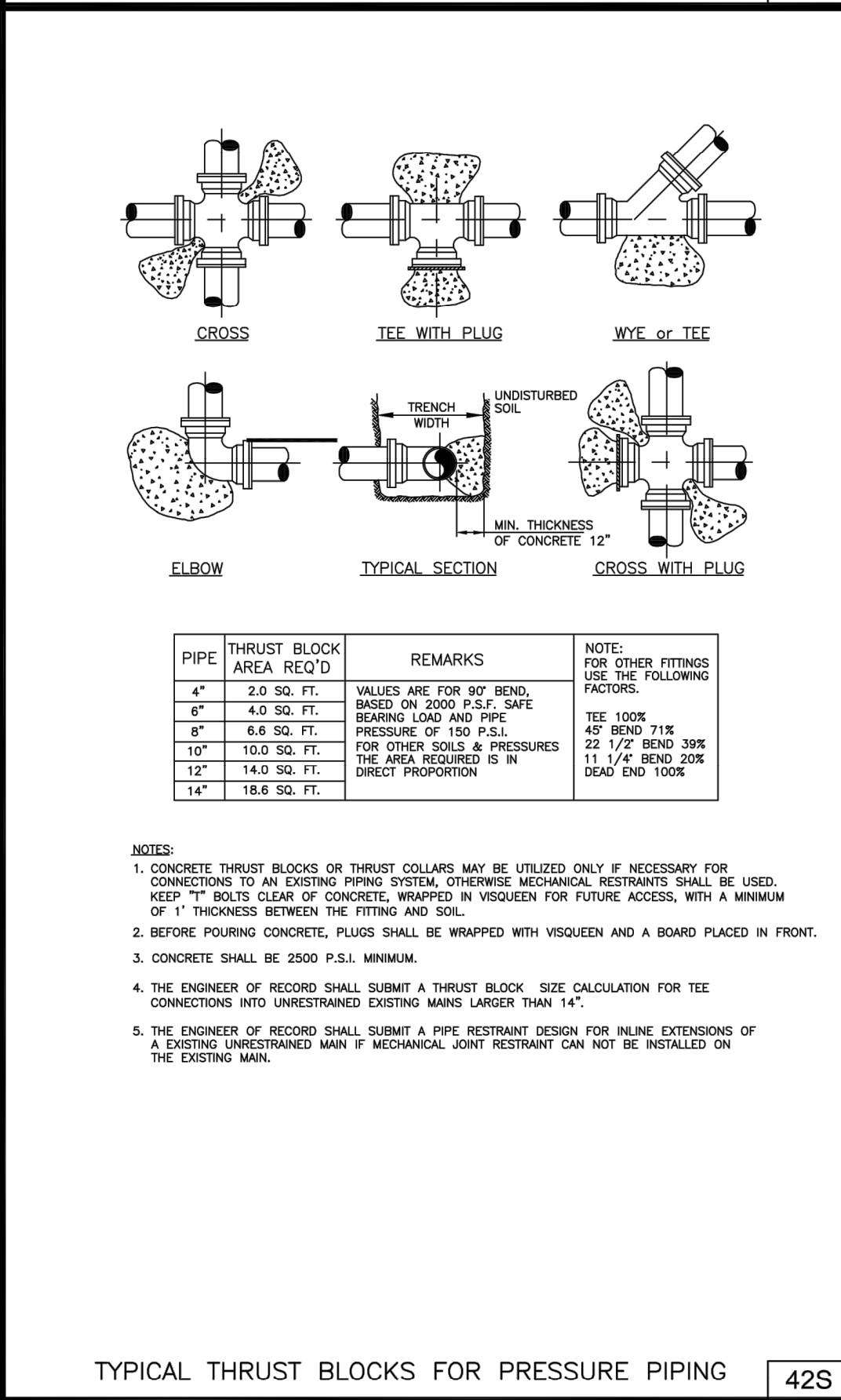
WASTEWATER STANDARD  
DETAILS

SHEET NO.  
C-9



MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED  
(SOURCES: EBA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND SPRING THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)

FITTING TYPE	PIPE SIZE															
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	72"	84"	96"
90° HORIZ. BEND	14	20	25	30	35	45	54	63	72	84	93	101	117	133	149	165
45° HORIZ. BEND	6	8	11	13	15	19	22	26	30	35	38	42	48	54	60	66
22.5° HORIZ. BEND	3	4	5	6	7	8	9	11	12	15	17	18	20	22	24	26
11.25° HORIZ. BEND	1	2	3	3	3	4	5	6	7	8	9	10	11	12	13	14
UPPER 90° OFFSET	29	41	53	64	74	93	115	134	160	185	207	228	268	318	368	418
UPPER 45° OFFSET	7	10	13	16	19	25	30	35	42	49	56	62	71	81	91	101
UPPER 22.5° OFFSET	12	19	24	29	34	39	46	56	66	77	86	94	108	124	140	156
UPPER 11.25° OFFSET	3	4	6	7	8	10	12	15	18	20	23	26	29	33	37	41
LOWER 90° OFFSET	6	9	12	14	17	19	23	27	32	37	41	45	51	57	63	69
LOWER 45° OFFSET	1	2	4	4	4	5	6	7	8	10	11	12	14	15	16	18
LOWER 22.5° OFFSET	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LOWER 11.25° OFFSET	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PLUG (DEAD END)	32	45	59	70	83	107	129	151	180	208	237	268	318	368	418	468
IN-LINE VALVE	32	45	45	45	45	55	65	80	85	95	105	115	135	155	175	195
4\"/>																



NOTE: THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:

- SOIL TYPE-SAND
- TEST PRESSURE-150 P.S.I.
- DEPTH OF BURIAL-4 FT.
- MINIMUM PIPE LENGTH ALONG THE RESTRAINT-15 FT.
- VERTICAL OFFSET-3\"/>



CONSULTANT: IT'S THE LAW! CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770

DESIGNED BY: WUD  
DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

Palm Beach County Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

WUD PROJECT No. 00-000

WUD PROJECT NAME

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT  
P.O. BOX 16097  
WEST PALM BEACH, FL 33416  
(561)489-6000

REVISIONS

NO.	DATE	REVISION
1	JUNE 2019	GENERAL REVISION
2	OCT 2021	GENERAL REVISION
3	JAN 2023	GENERAL REVISION

STD DETAILS

SHEET NUMBER 0 OF 0

Feb 27, 2023

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DESIGNED BY	DATE	NAME	DATE	NAME	DATE	CHECKED BY	DATE	NAME	DATE	CHECKED BY	DATE	NAME	DATE	

Craven • Thompson and Associates, Inc. ENGINEERS • PLANNERS • SURVEYORS  
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FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS No. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS No. C00014

ORIGINAL SECTION SEWER NORTH PHASE 2 CITY OF GREENACRES

WASTEWATER STANDARD DETAILS SHEET NO. C-10

CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	24"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.375
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

**NOTES:**

- A PROFILE DRAWING TO SCALE FOR EACH JACK AND BORE, DIRECTIONAL DRILL OR DIRECT BORED INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION. A SPILT CASING IS REQUIRED WHEN SHOP DRAWINGS ARE REQUIRED TO BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION AND/OR INSTALLATION.
- THICKER WALL CASINGS AND LARGER COVER OVER CASING MAY BE REQUIRED BY THE RIGHT-OF-WAY OWNER.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM RISE CONTINUOUS STRIKE, COLOR CODED TO MATCH THE PIPE IDENTIFICATION MARKINGS ON THE TOP OF THE CASING.
- PIPE IN CASING SHALL BE PULLED TO FULLY ENGAGE RESTRAINT.
- STEEL CASING IS REQUIRED FOR ALL WASTEWATER MAIN INSTALLATIONS INCLUDING JACK AND BORE CONSTRUCTION AND WHEN MAINS ARE INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS. WHEN THE CASING IS INSTALLED UNDER FENCES, WALLS, OR LANDSCAPE BERMS IT SHALL BE COVERED ON THE PREVIOUS BARRIER AND IS REQUIRED TO EXTEND 10' MINIMUM PAST BARRIER ON EACH SIDE UNLESS OTHERWISE PREVIOUSLY APPROVED BY THE DEPARTMENT.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATER-TIGHT SEAL AT EACH END OF CASING.
- FLAT BARS TO BE SLOTTED WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
- CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
- 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 2)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	24"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.375
24"	42"	.500
30"	48"	.500
36"	54"	.625
42"	60"	.625
48"	72"	.625

**NOTES:**

- A SHOP DRAWING TO SCALE FOR EACH SPLIT CASING INSTALLATION IS REQUIRED AND TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- THE RIGHT-OF-WAY OWNER MAY REQUIRE THICKER WALL CASING AND LARGER COVER OVER CASING.
- STEEL CASING SHALL BE COATED OUTSIDE WITH COAL TAR EPOXY (MIN. 16 MILS DFT) AND BE PAINTED WITH A 4" MINIMUM CONTINUOUS STRIKE, ALUMINA BLUE IN COLOR, ALONG THE TOP EDGE OF THE CASING.
- SPILT STEEL CASING IS REQUIRED ON ALL EXISTING WASTEWATER INSTALLATIONS WHEN A NEW STORM DRAINAGE OR OTHER UTILITY PIPE IS INSTALLED AND CANNOT ACHIEVE THE PROPER VERTICAL SEPARATION FOR WUD STANDARDS ALONG WITH A NEW FENCE, WALL, OR LANDSCAPE BERM IS INSTALLED OVER AN EXISTING POTABLE WATER MAIN WITH A SPLIT CASING IS INSTALLED UNDER A FENCE, WALL, OR LANDSCAPE BERM SEE WUD STANDARD DETAIL 913 FOR INSTALLATION REQUIREMENTS.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED TO OBTAIN WATER-TIGHT SEAL AT EACH END OF CASING.
- FLAT BARS TO BE SLOTTED WELDED AT 6" LENGTHS TO EDGE OF CASING ON EACH SIDE.
- CASING TO BE ASSEMBLED IN FIELD WITH 1/2" STAINLESS STEEL BOLTS, WASHERS, AND NUTS ON EACH SIDE.
- 1/4" NEOPRENE GASKET MATERIAL EXTENDING PAST CASING JOINT FOR POSITIVE SEAL ON EACH SIDE.

**NOTES:**

- ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILED BARRIS. RETAINER GASKETS AND UNIFORM FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED OR LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE SHALL BE FACTORY TESTED.
- SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
- FAN GUARDS ARE REQUIRED. SEE FAN GUARD/PILE CAP DESIGN DETAILS FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
- ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
- ALL HARDWARE SHALL BE PAINTED WITH COAL-TAR EPOXY.
- PIPE SHALL BE CRAWLED ON 3" THICK NEOPRENE (COURTMETER GRADE 50) CURRENT FOOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
- THE DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
- PIPE CRADLE IN CAP SHALL CONTACT 3" CIRCUMFERENCE OF PIPE (SEE FAN GUARD DETAIL).
- SHOW EXISTING CANAL CROSS SECTION, ULTIMATE CANAL SECTION, AND RELIANT ELEVATIONS AND DISTANCES ON A TO SCALE DETAIL DRAWING.
- PILE LEFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
- THE AREA OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TETLON TAPE.
- THICKETS AND CAP DESIGN SHALL BE SHOWN ON TO SCALE SIGNED AND SEALED DETAIL DRAWINGS. MIN. 12"X12" TYPE 1A FLORIDA DOT INDEX PILES ARE REQUIRED. PILE PENETRATION BELOW CANAL BOTTOM SHALL BE 12" MINIMUM. MINIMUM LOAD CAPACITY OF 50 TONS PER PILE IS REQUIRED (FOOT STANDARDS APPLY). SIGNED AND SEALED SHOP DRAWINGS ARE REQUIRED.
- PREFABRICATED STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDING MIN. 1" BEYOND PIPE CRADLE. THE PIPE SHALL BE INSTALLED BY STEEL PIPE MANUFACTURER PRIOR TO PAINTING.
- FORCE MAIN CROSSINGS OVER BODIES OF WATER MAY BE SUBJECT TO A D.E.P. "NOTICED GENERAL ENVIRONMENTAL RESOURCE POINT" (NGEP).

**NOTES:**

- FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
- HARDWARE SHALL BE PAINTED WITH COAL TAR EPOXY.
- FRAMING WITH HARDWARE SHALL BE FABRICATED FROM DOUBLE HOT DIPPED GALVANIZED STEEL.
- SHOP DRAWINGS FOR FAN GUARD, CAPS, AND PILES MUST BE SUBMITTED TO ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION BIDDING.
- REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60, MIN. 2" CONCRETE COVER OVER ALL STEEL.
- SEE "TYPICAL CANAL CROSSING DETAIL" FOR ADDITIONAL REQUIREMENTS.
- NO WELDING OF REBAR TO REBAR OR REBAR TO PILE CANAL CROSSING.
- DESIGN DRAWINGS ARE REQUIRED.
- LONG RADIUS WELDED ON UPPER BENDS ARE ACCEPTABLE FOR STEEL PIPE.
- IF A PILE/CAP STEEL CONNECTION IS REQUIRED BY DESIGNING ENGINEER, MIN. (2) #4 REINFORCING BARS SHALL BE DRILLED AND DOWELED (EPOXIED) MIN. 18" DEEP INTO THE PILE AND TIED WITH THE CAP STEEL.
- ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.

**NOTES:**

- APPROVED PLUMBING PLAN MUST BE ON JOB SITE FOR INSPECTION. IF NOT, INSTALLATION WILL BE REJECTED.
- PLUMBING SHALL CONFORM TO ALL PALM BEACH COUNTY AND OTHER APPLICABLE CODES.
- TEMPORARY CAP IN PLACE (NO SEWAGE), UPSTREAM OF THE VENT PIPE TO BE IN PLACE UNTIL WUD INSPECT AND INSTALL VALVE.
- EXISTING SEPTIC TANK TO BE ABANDONED IN ACCORDANCE WITH LOCAL HEALTH DEPT. SPECIFICATIONS.
- AIR INTAKE ASSEMBLY IS REQUIRED.
- AIR VAC VALVE WILL BE INSTALLED BY UTILITY AFTER 4" AIR-INTAKE ASSEMBLY IS IN PLACE.
- SEWER CONNECTION FEES TO BE PAID PRIOR TO CONNECTION.
- TEMPORARY CAP IN PLACE UNTIL WUD INSPECT AND INSTALL VALVE.
- CAP IS NOT TO BE REMOVED UNTIL WUD HAS INSTALLED VALVE.

**NOTES:**

- RIP-RAP RUBBLE AND ITS INSTALLATION MUST MEET CANAL OWNERSHIP SPECIFICATIONS AND PERMITTING REQUIREMENTS.
- DUMP RUBBLE IN PLACE FORMING A COMPACT LAYER CONFORMING TO THE CANAL DESIGN SECTION SLOPE. ENSURE THAT RUBBLE DOES NOT SEGREGATE SO THAT SMALLER PIECES EVENLY FILL THE VOIDS BETWEEN LARGER PIECES.
- AN ALTERNATIVE DESIGN WILL BE CONSIDERED AND MUST RECEIVE PRIOR APPROVAL FROM THE CANAL PROPERTY OWNER.

**NOTES:**

- TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. TREES MAY BE FIELD ADJUSTED TO AVOID CONFLICTS WITH DRIVEWAYS AND UNDERGROUND UTILITIES. IN ANY CASE THE TREES SHALL BE LOCATED IN THE FIELD IN ACCORDANCE WITH THE PLANTING DETAILS SHOWN HEREON.
- TREES ARE TO BE INSTALLED WITH A TEN FOOT (10') SEPARATION FROM ANY WATER OR SEWER MAIN AND/OR SERVICE HYDRANTS, AND LIFT STATIONS. IF A TEN FOOT (10') SEPARATION CANNOT BE ACHIEVED, THE TREE CAN BE INSTALLED WITH A ROOT BARRIER SYSTEM. HOWEVER, IN NO CASE SHALL A TREE ENCRoACH INTO A PDBOE WITHOUT PRIOR DEPARTMENT APPROVAL.

**NOTES:**

- OFF-SET DISTANCE VARIES ON LOCATION OF FORCE MAIN TO ARV ENCLOSURE. IN NO CASE SHALL THE OFF-SET DISTANCE EXCEED 10' UNLESS OTHERWISE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- 2" DOUBLE STRAP SADDLE TO BE INSTALLED PERPENDICULAR TO FORCE MAIN IN THE DIRECTION OF FLOW.
- ALL PVC PIPING AND FITTINGS TO BE SCHEDULE 80.
- 2" BALL VALVE AND CORROSION STOP SHALL BE BRASS WITH COMPRESSION FITTINGS ON EACH END.
- ALL FITTINGS AND VALVES SHALL BE COMPRESSION TYPE.
- CONCRETE PAD FOR WATER METER ASSEMBLY SHALL BE 4" THICK WITH WIRE MESH (4"x4") CONCRETE PAD IS REQUIRED TO BE BROOM FINISHED.
- VENTED ENCLOSURE SHALL BE CHANNELL COMPANY #SPH1420. SEE APPROVED MATERIALS AND EQUIPMENT LIST. ENCLOSURE SHALL BE CAPABLE OF HOLDING THE SAME AMOUNT OF AIR FLOW AS THE ARV.
- THIS FORCE MAIN OFF-SET ARV REQUIRES PREVIOUS DEPARTMENT APPROVAL PRIOR TO INSTALLATION.

**NOTES:**

- STEEL CASING PER WUD STANDARD DETAIL 44S (SOLID CASING) OR WUD STANDARD DETAIL 44AS (SPLIT CASING) AS APPLICABLE.
- STEEL CASING SHALL EXTEND TEN (10) FEET MINIMUM PAST FENCE OR WALL. FIVE (5) FEET MINIMUM MAY BE ACCEPTABLE ON A CASE-BY-CASE BASIS DUE TO SITE CONDITIONS AND ONLY WITH PRIOR DEPARTMENT APPROVAL.
- STEEL CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM. IF BERM CASING IS ASSOCIATED WITH A WALL OR FENCE INSTALLATION OF THE CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST THE TOE OF THE BERM OR TEN (10) FEET MINIMUM PAST THE WALL OR FENCE WHICH EVER IS GREATER.
- STEEL CASING INSTALLATION REQUIRED WHEN A BERM IS TWO (2) FEET OR HIGHER ABOVE SURROUNDING GRADE.
- TOP OF STEEL CASING SHALL BE THREE (3) FEET MINIMUM BELOW THE TOE OF THE BERM OR BASE OF WALL OR FENCE ELEVATION WHICHEVER IS LOWER.

**NOTES:**

- THE CONFLICT STRUCTURE IS TO BE DESIGNED FOR CURRENT FOOT UTILITY CONFLICT THRU DRAINAGE STRUCTURE TRANSMISSION.
- A SHOP DRAWING TO SCALE FOR EACH CONFLICT STRUCTURE INSTALLATION IS REQUIRED TO BE APPROVED BY THE DEPARTMENT PRIOR TO INSTALLATION.
- STEEL CASING SHALL EXTEND THREE (3) FEET MINIMUM PAST TOE OF STRUCTURE. CASING CAN EXTEND FURTHER PAST THE STRUCTURE WHEN EXISTING CONDITIONS WARRANT AND ONLY PRIOR TO DEPARTMENT APPROVAL.
- STEEL CASING SHALL BE GRADED IN PLACE WITH NON-SHRINKABLE CEMENT GROUT TO PROVIDE A WATER-TIGHT SEAL TO PREVENT ANY LEAKAGE INTO THE STRUCTURE.
- NON-SHRINKABLE CEMENT GROUT TO BE INSTALLED AT EACH END OF CASING TO OBTAIN WATER-TIGHT SEAL.
- 18" AND LARGER WASTEWATER MAINS REQUIRING A CONFLICT STRUCTURE WILL BE COVERED BY THE DEPARTMENT UNLESS OTHERWISE SPECIFICALLY NOTED WHEN THE MAIN CANNOT BE SLOTTED THROUGH THE DRAINAGE PIPE.

NO.	DATE	REVISION / REMARKS

NO.	DATE	REVISION / REMARKS

NO.	DATE	REVISION / REMARKS

NO.	DATE	REVISION / REMARKS

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UTILITIES NOTIFICATION CENTER

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DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

Palm Beach County  
Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE

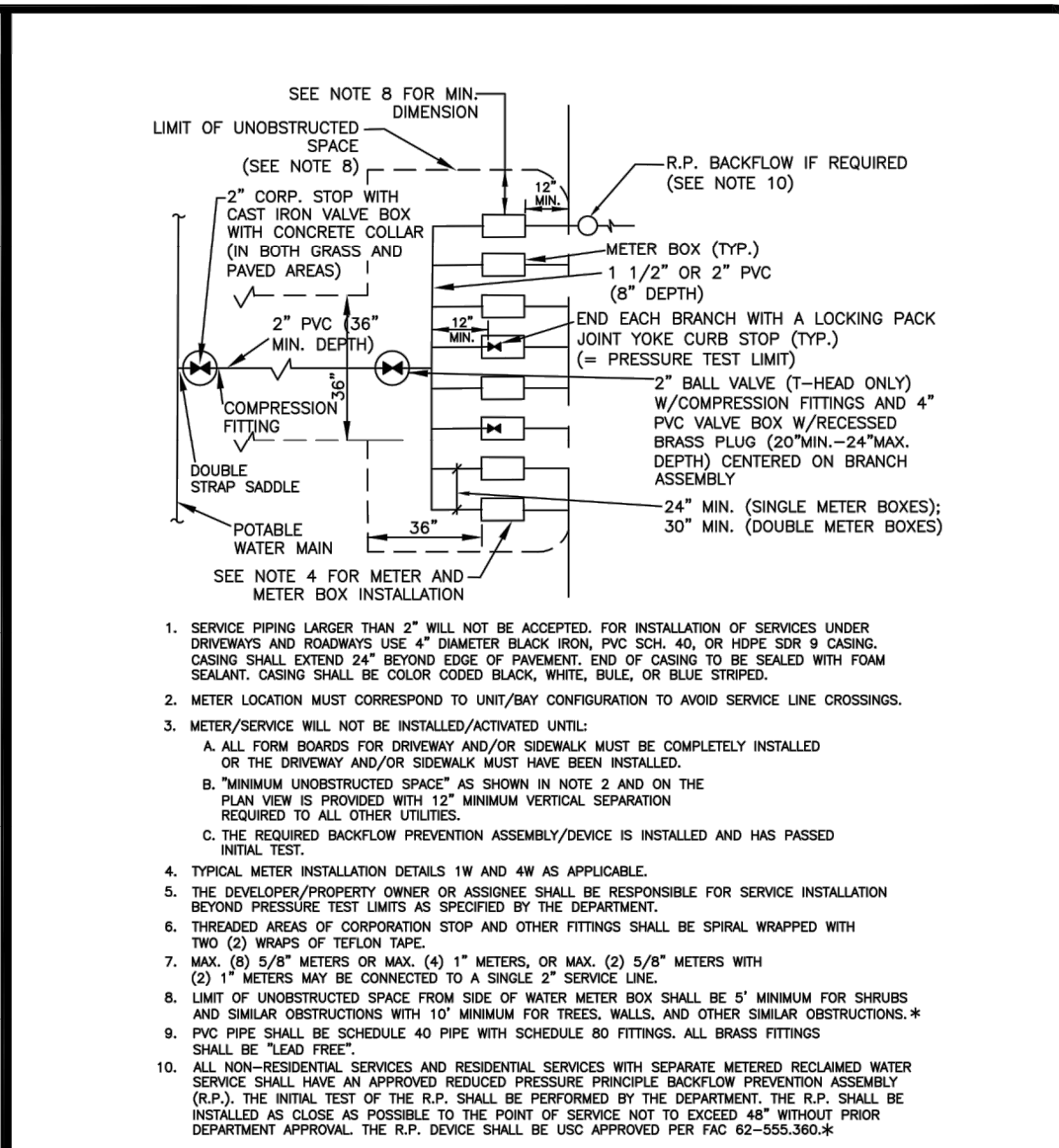
CRAVEN • THOMPSON AND ASSOCIATES, INC.  
ENGINEERS • PLANNERS • SURVEYORS  
3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-8409 TEL: (954) 739-8400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS NO. 271  
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ORIGINAL SECTION SEWER NORTH PHASE 2 CITY OF GREENACRES

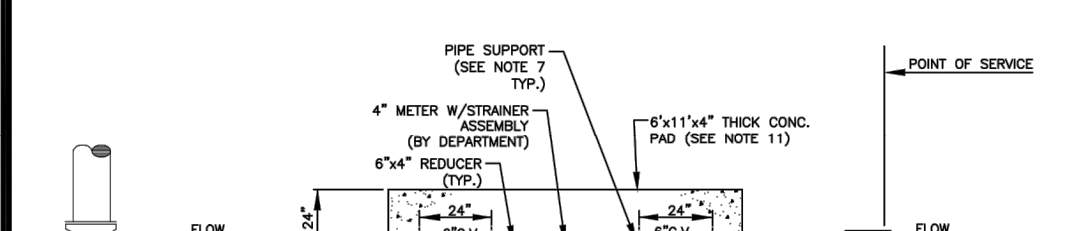
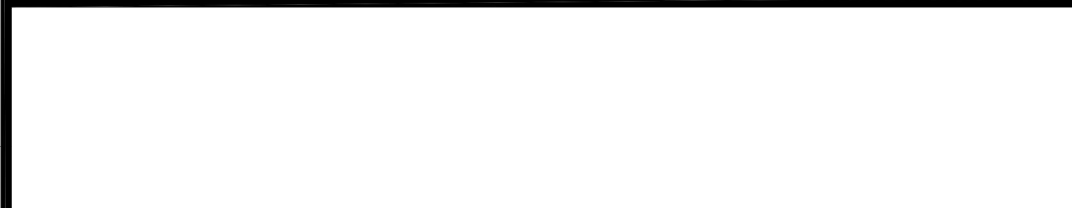
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PBCWUD #XXXX

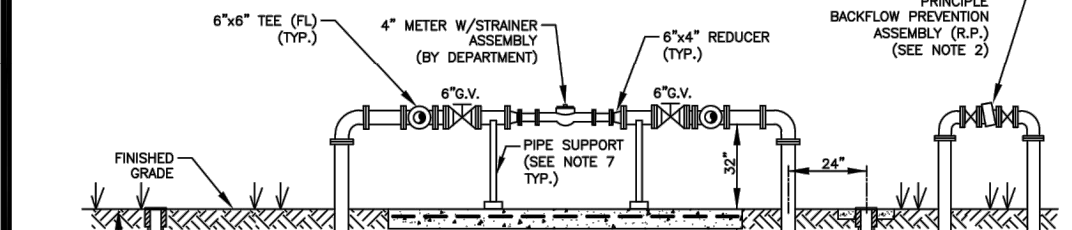
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March 3, 2025



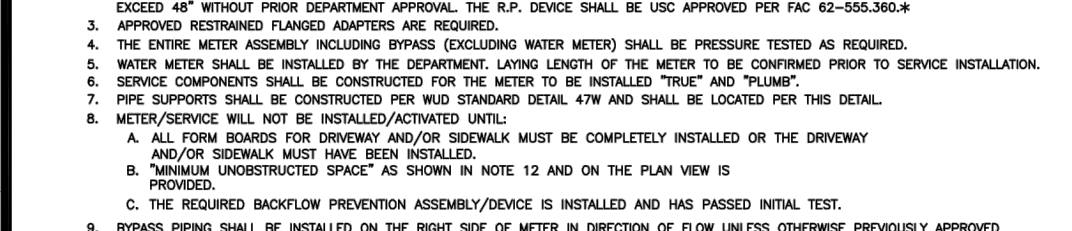
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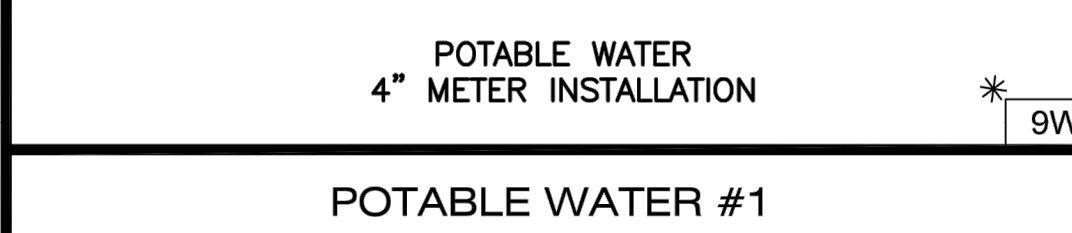
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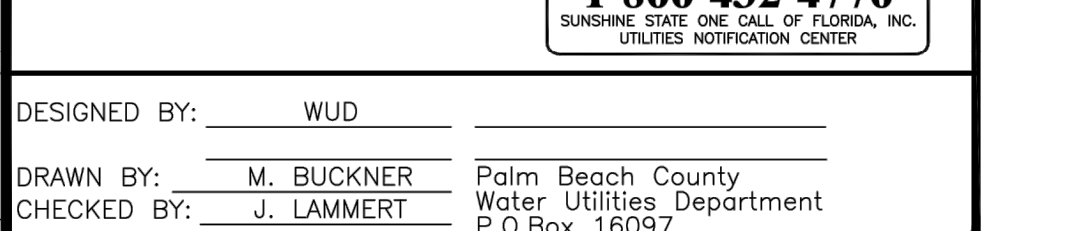
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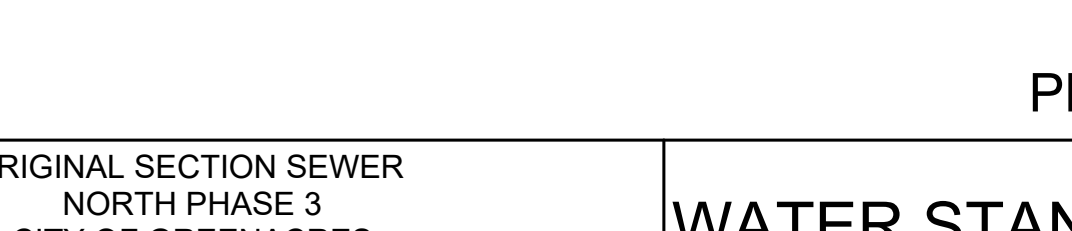
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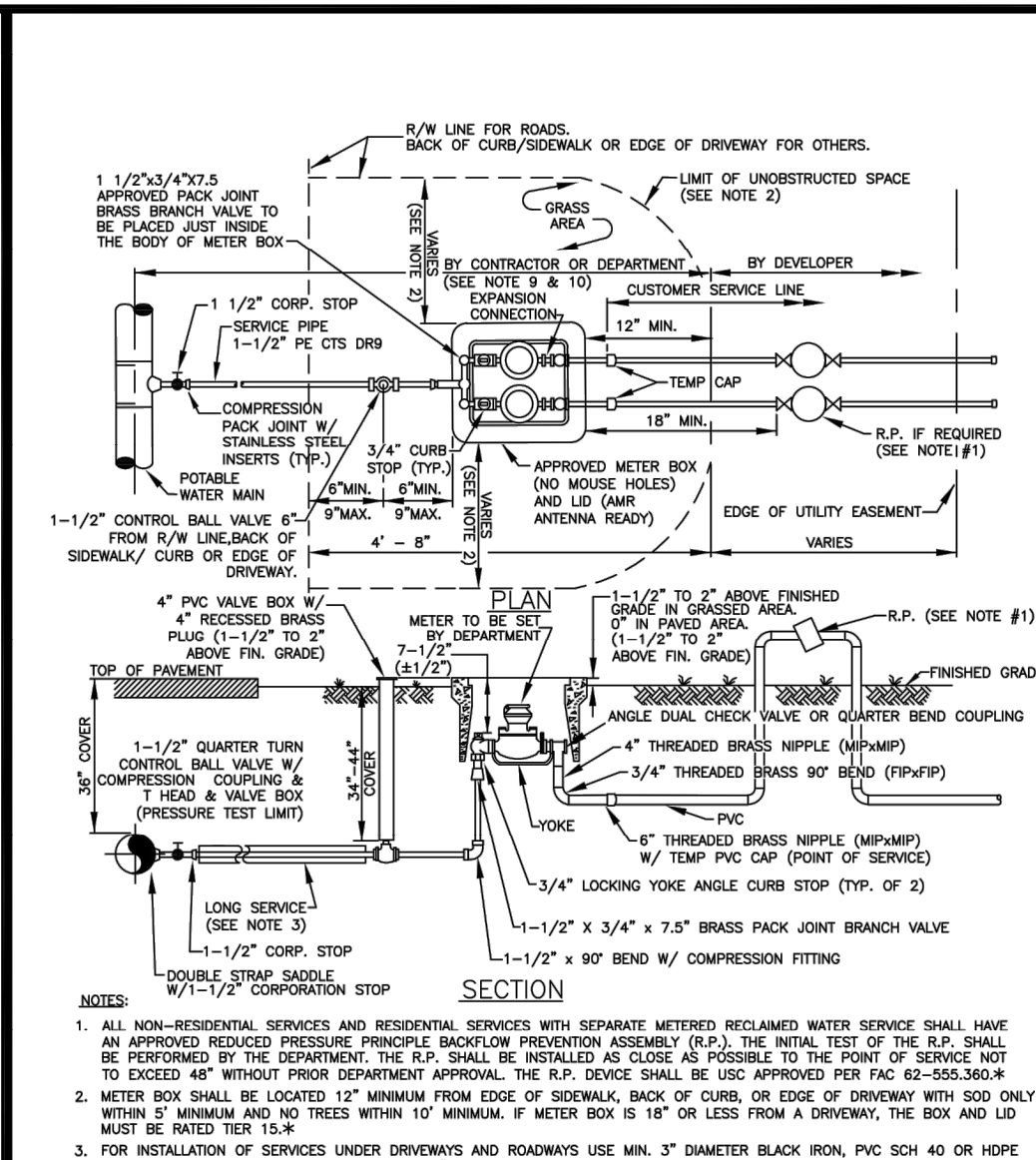
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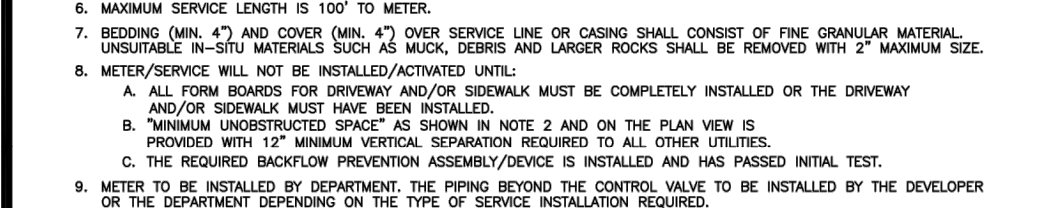
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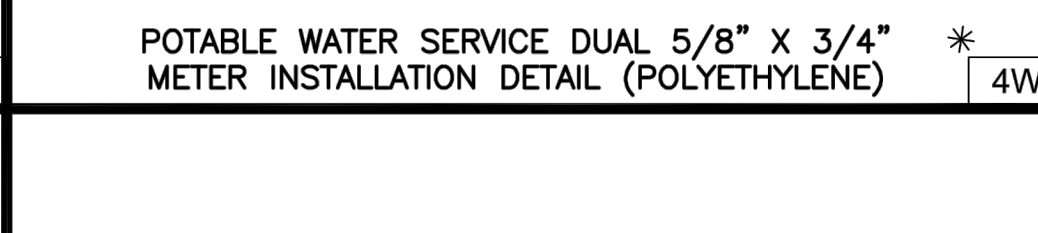
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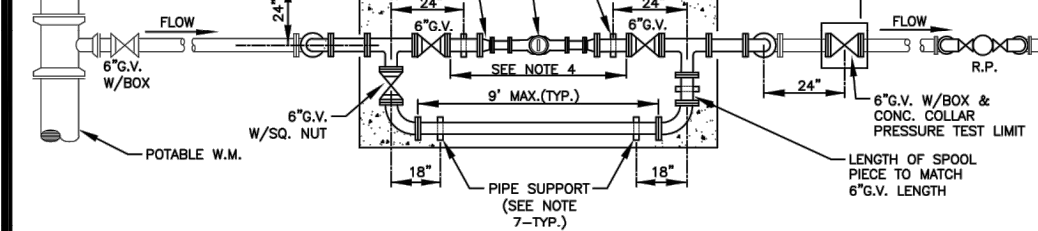
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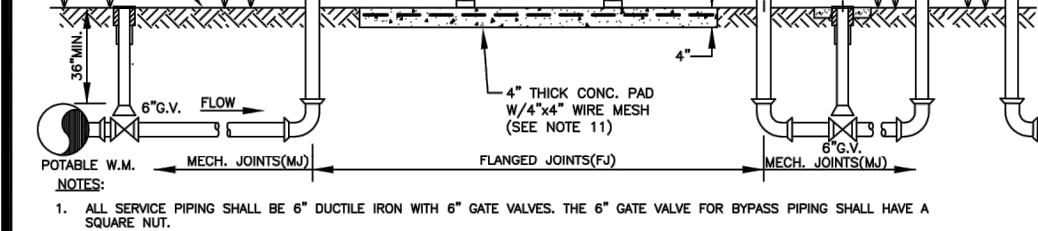
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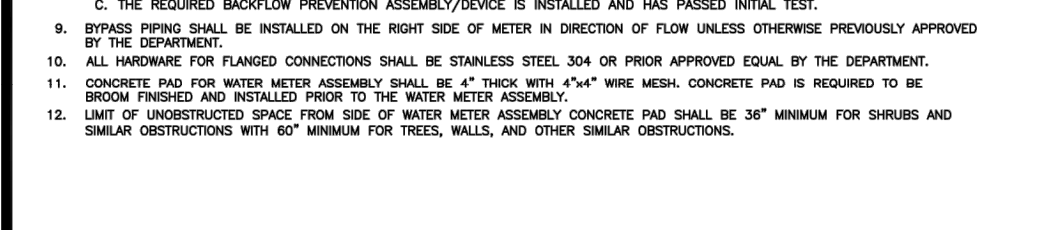
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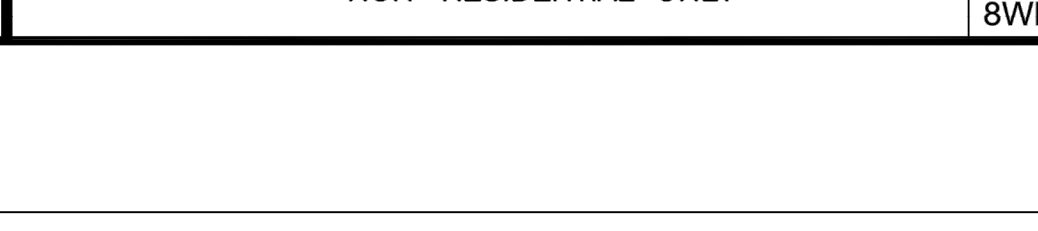
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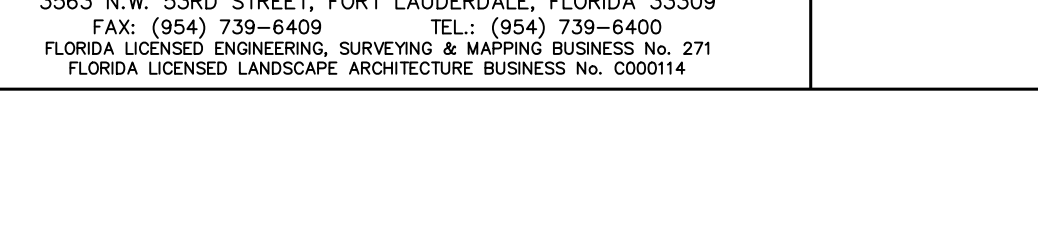
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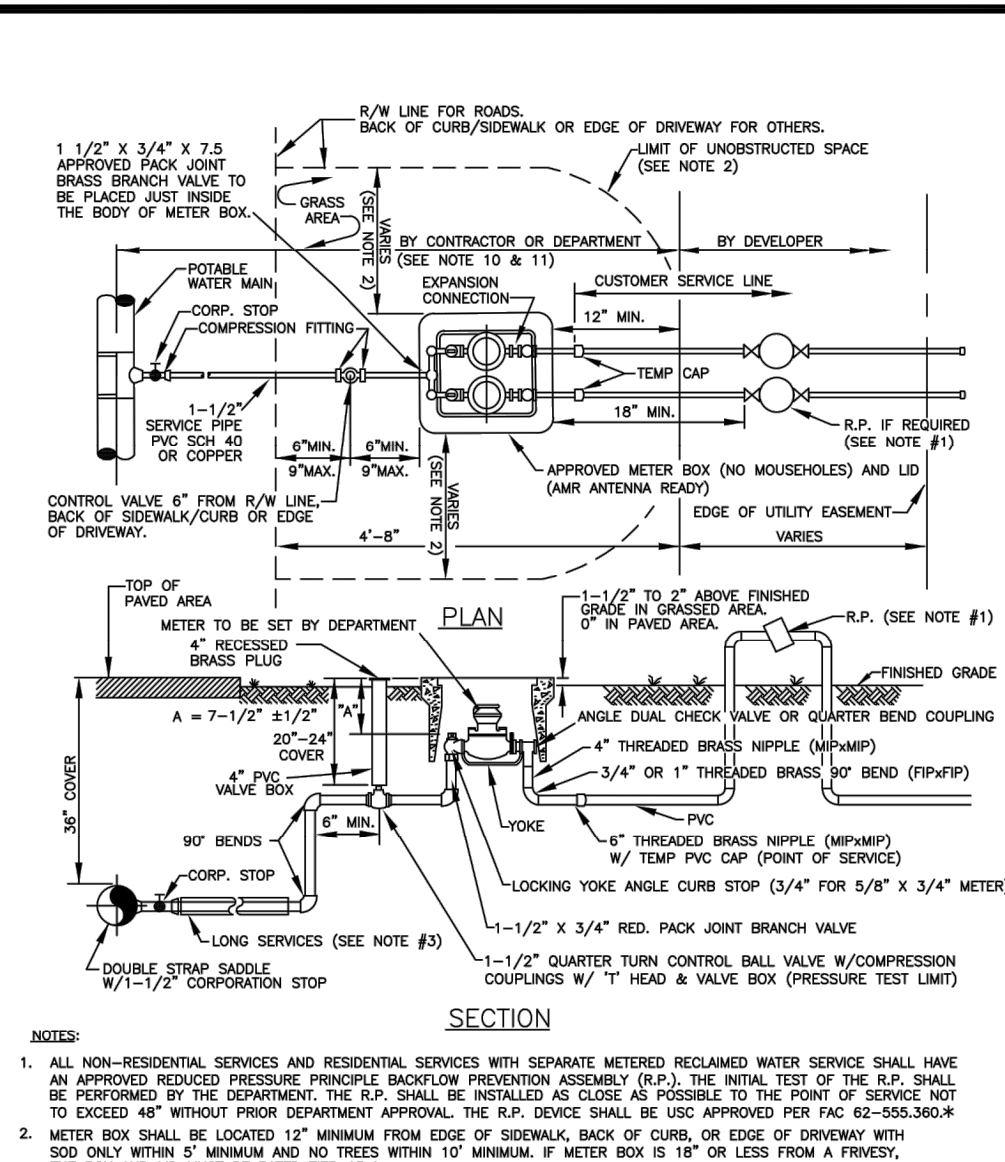
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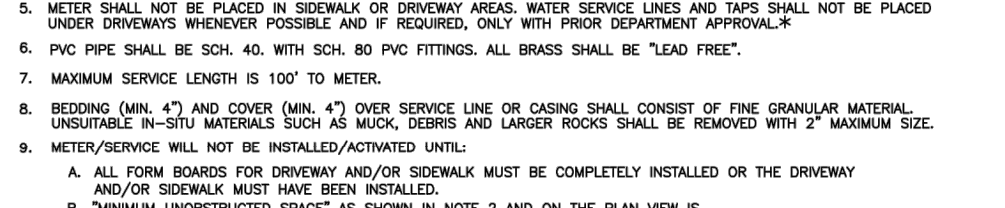
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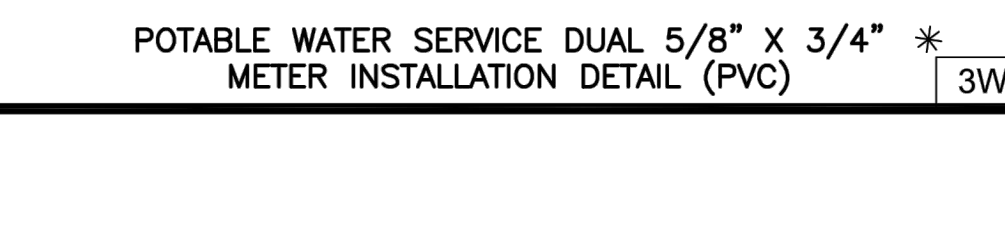
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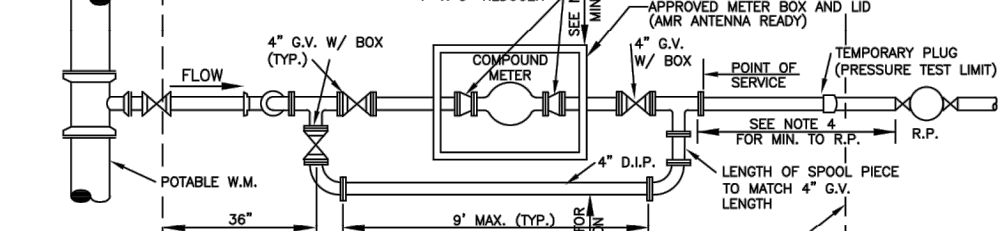
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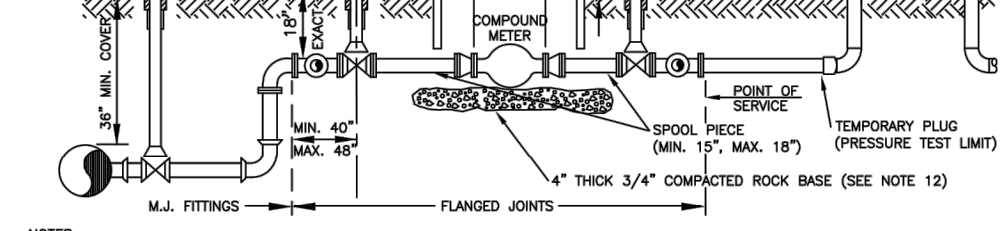
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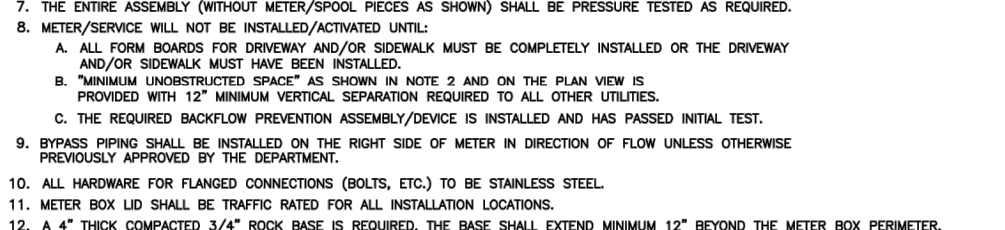
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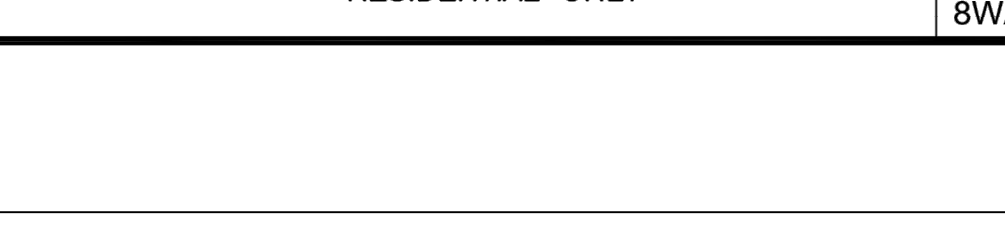
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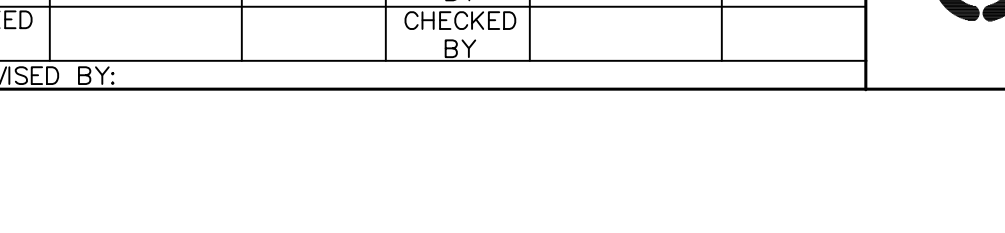
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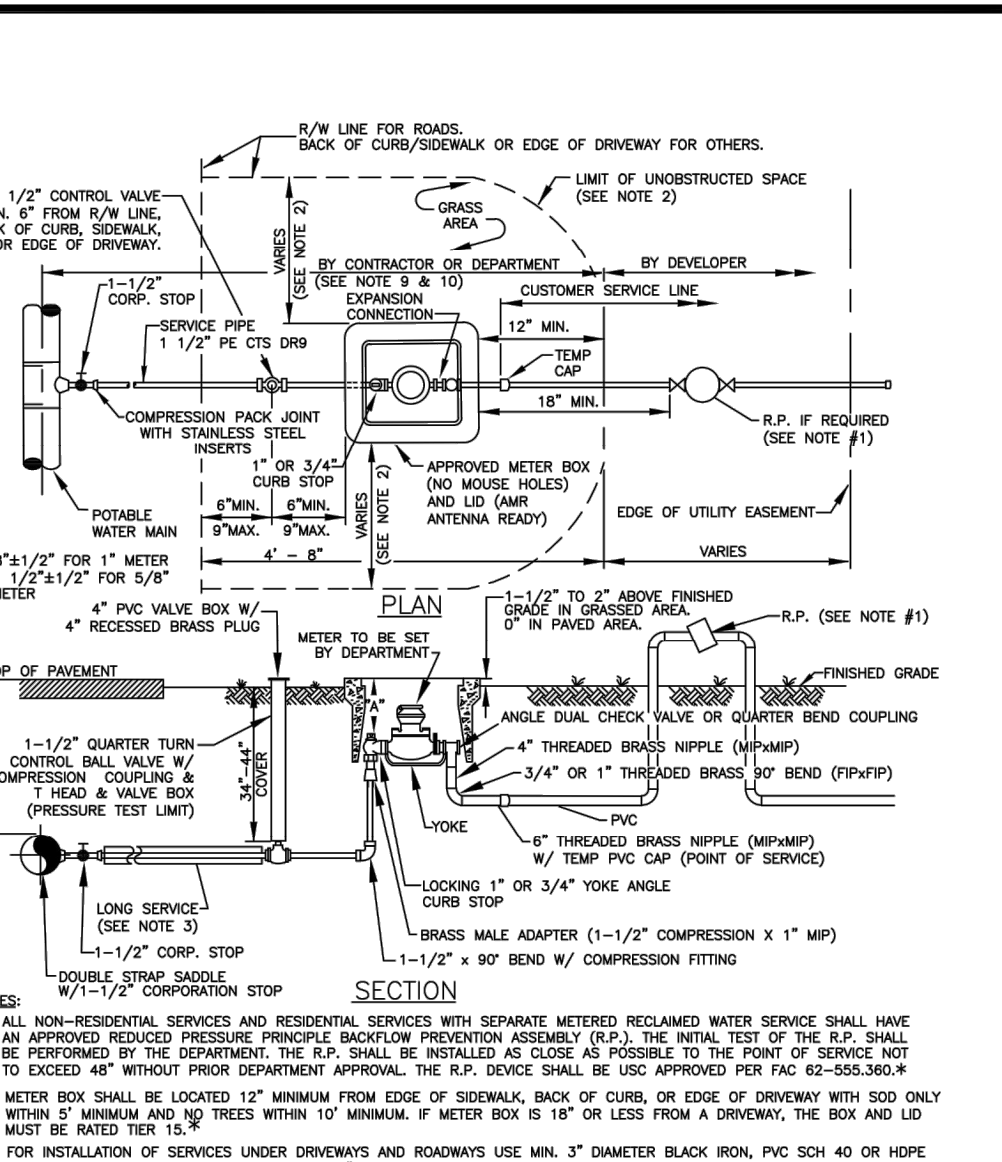
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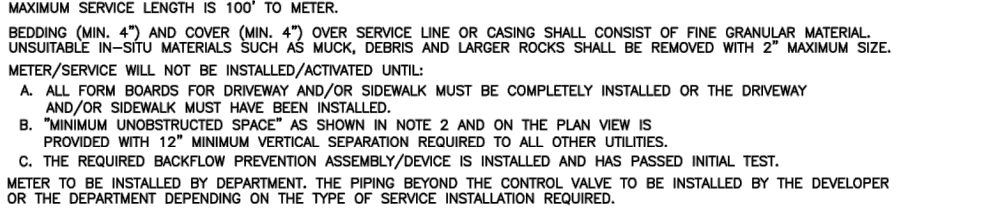
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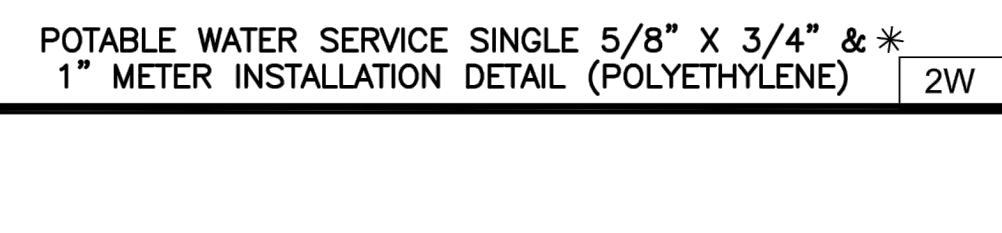
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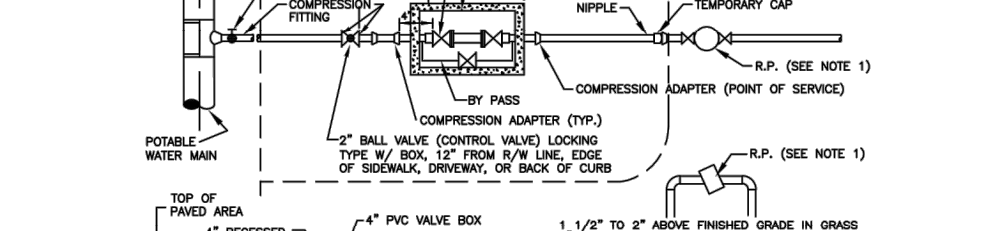
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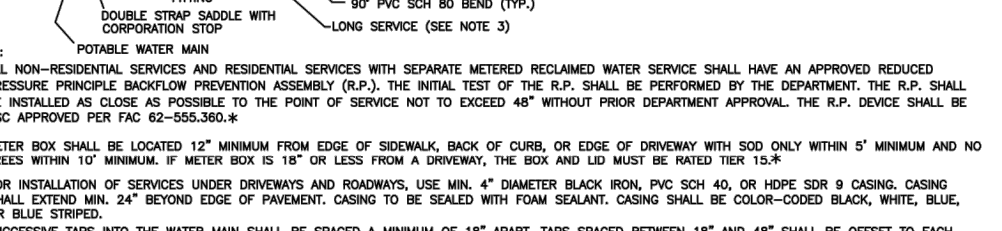
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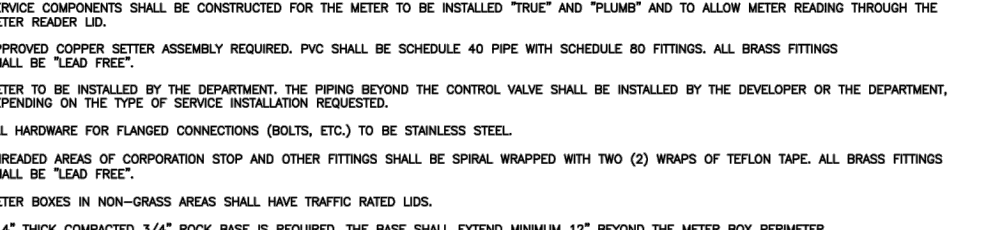
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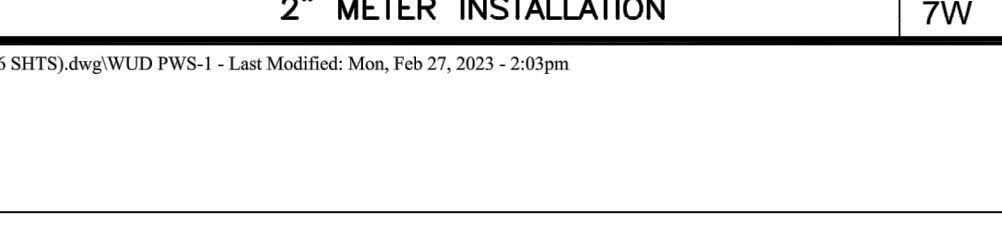
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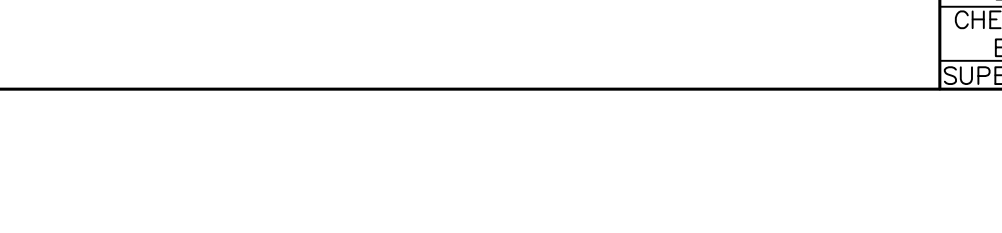
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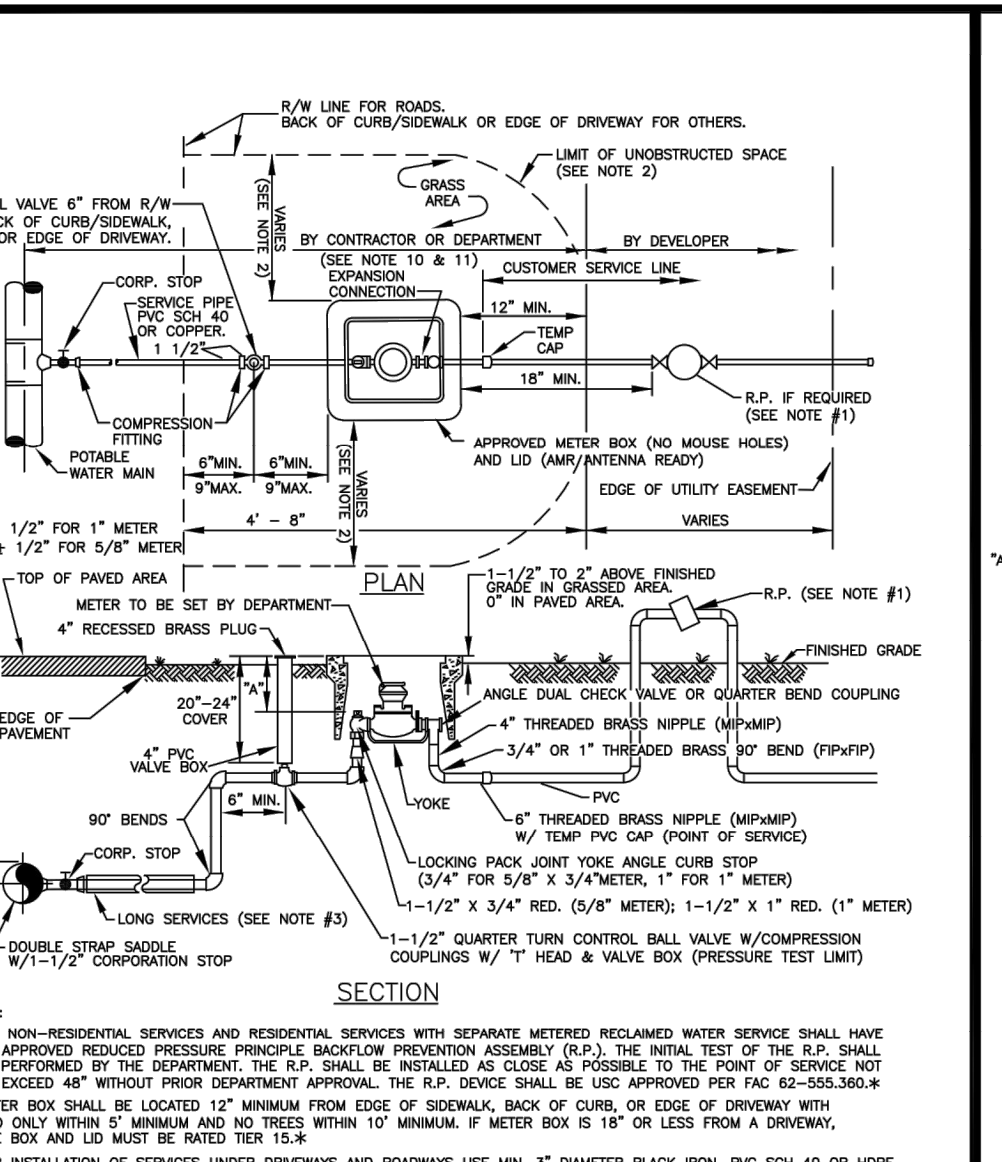
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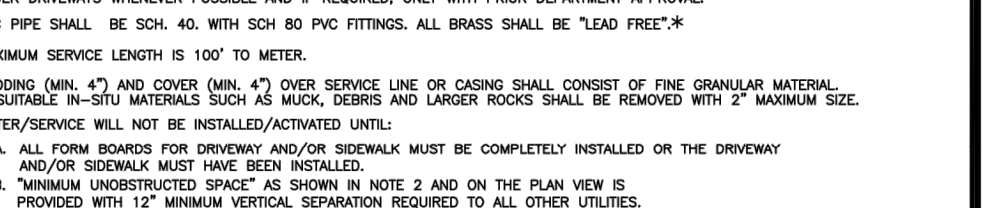
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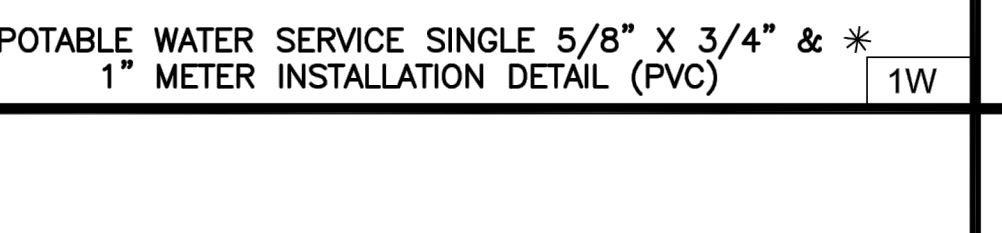
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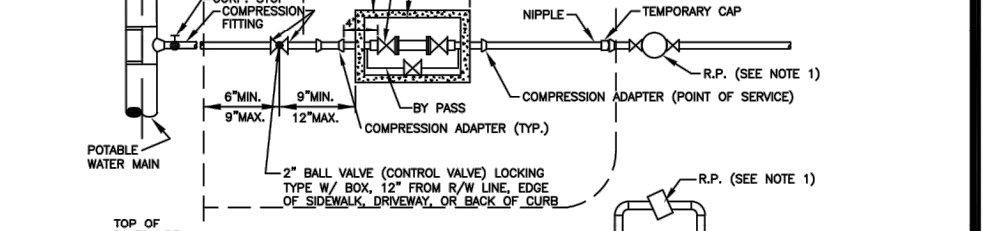
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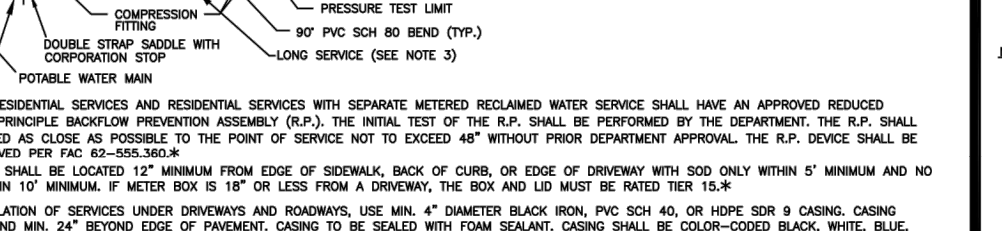
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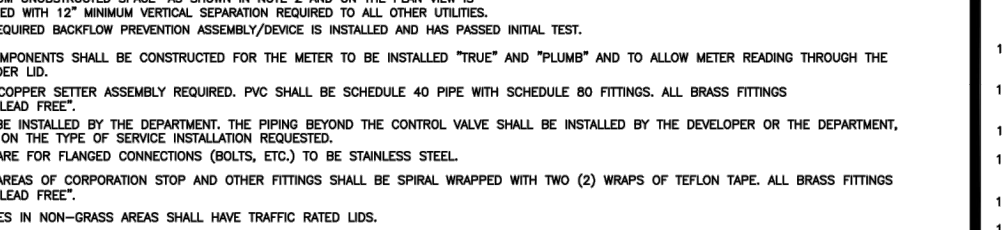
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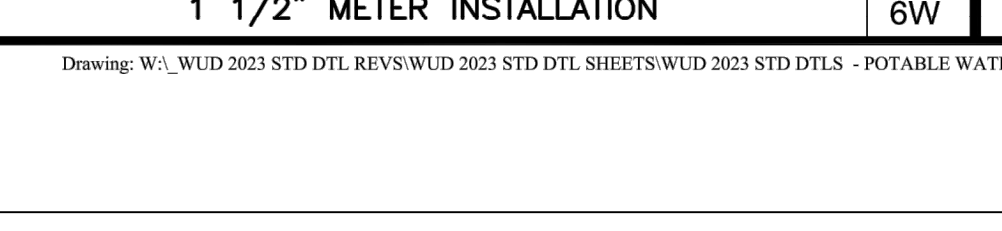
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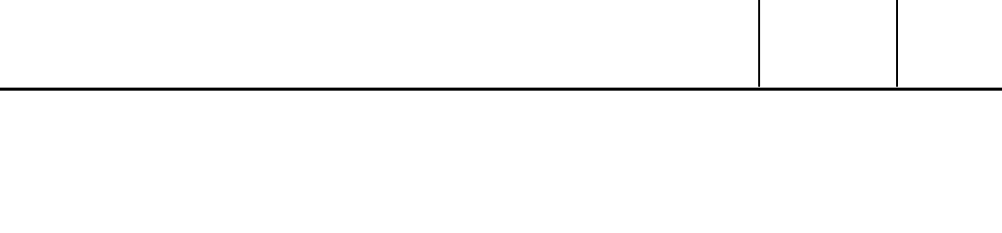
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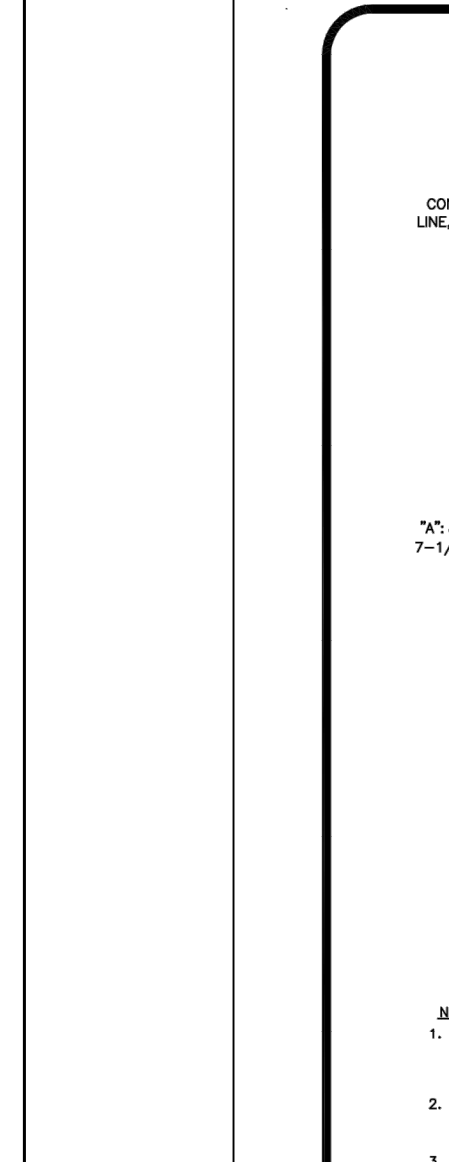
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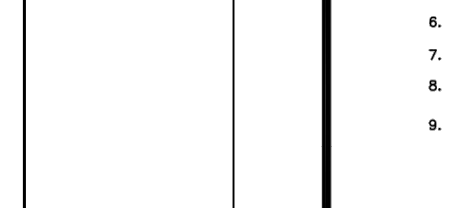
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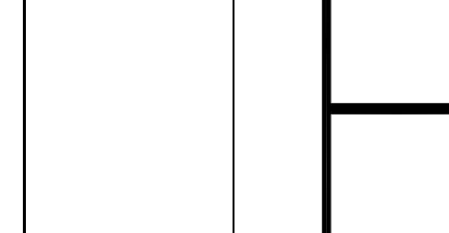
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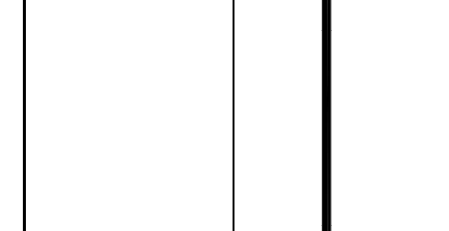
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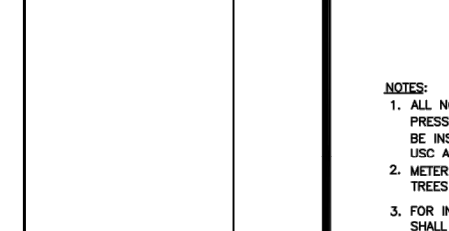
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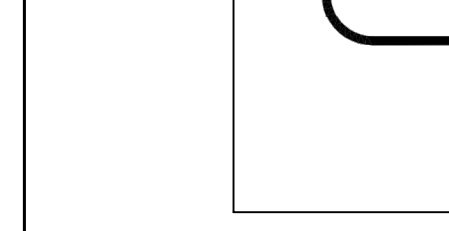
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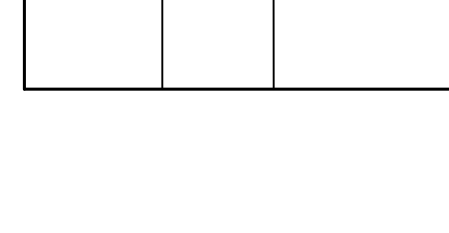
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ORIGINAL SECTION SEWER NORTH PHASE 3 CITY OF GREENACRES

WATER STANDARD DETAILS

SHEET NO. C-12

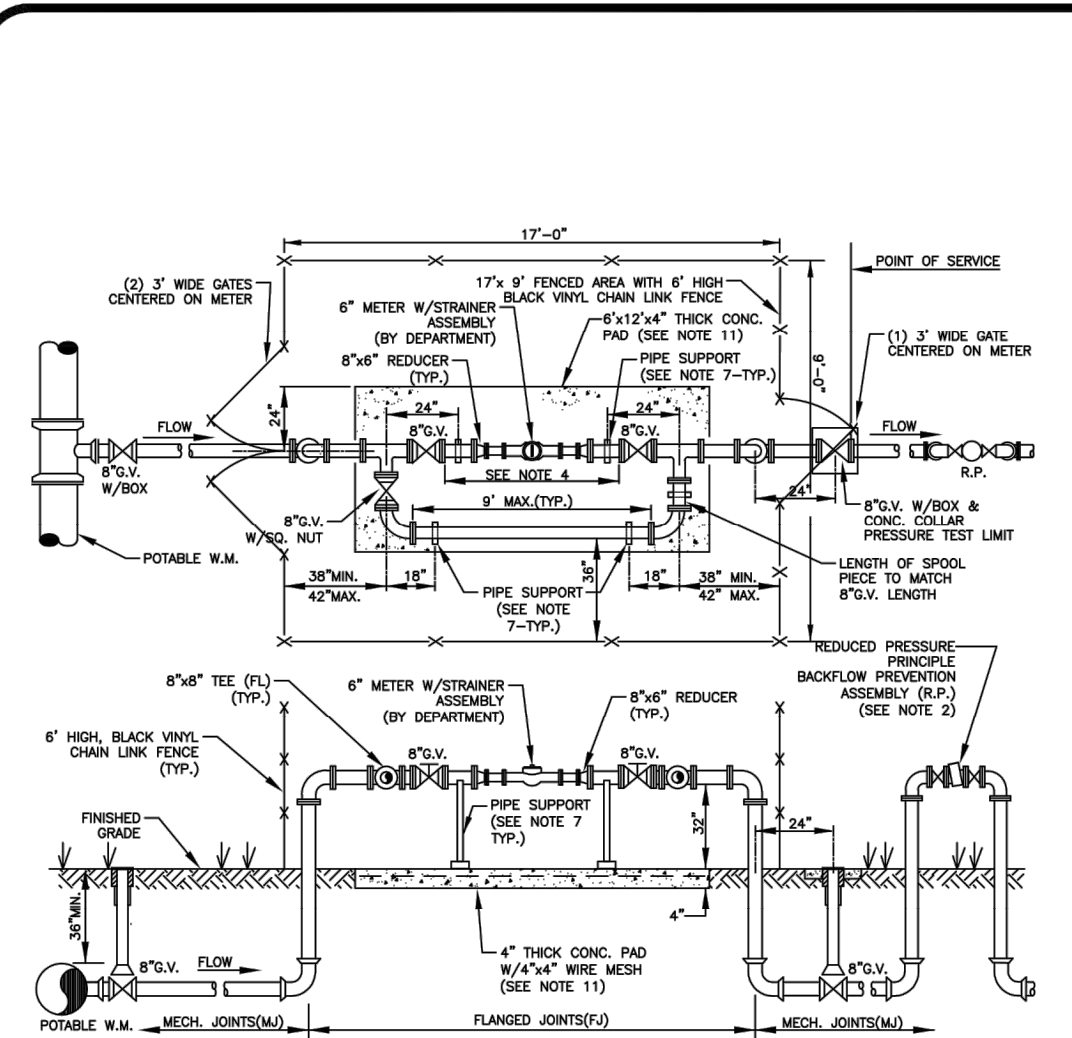


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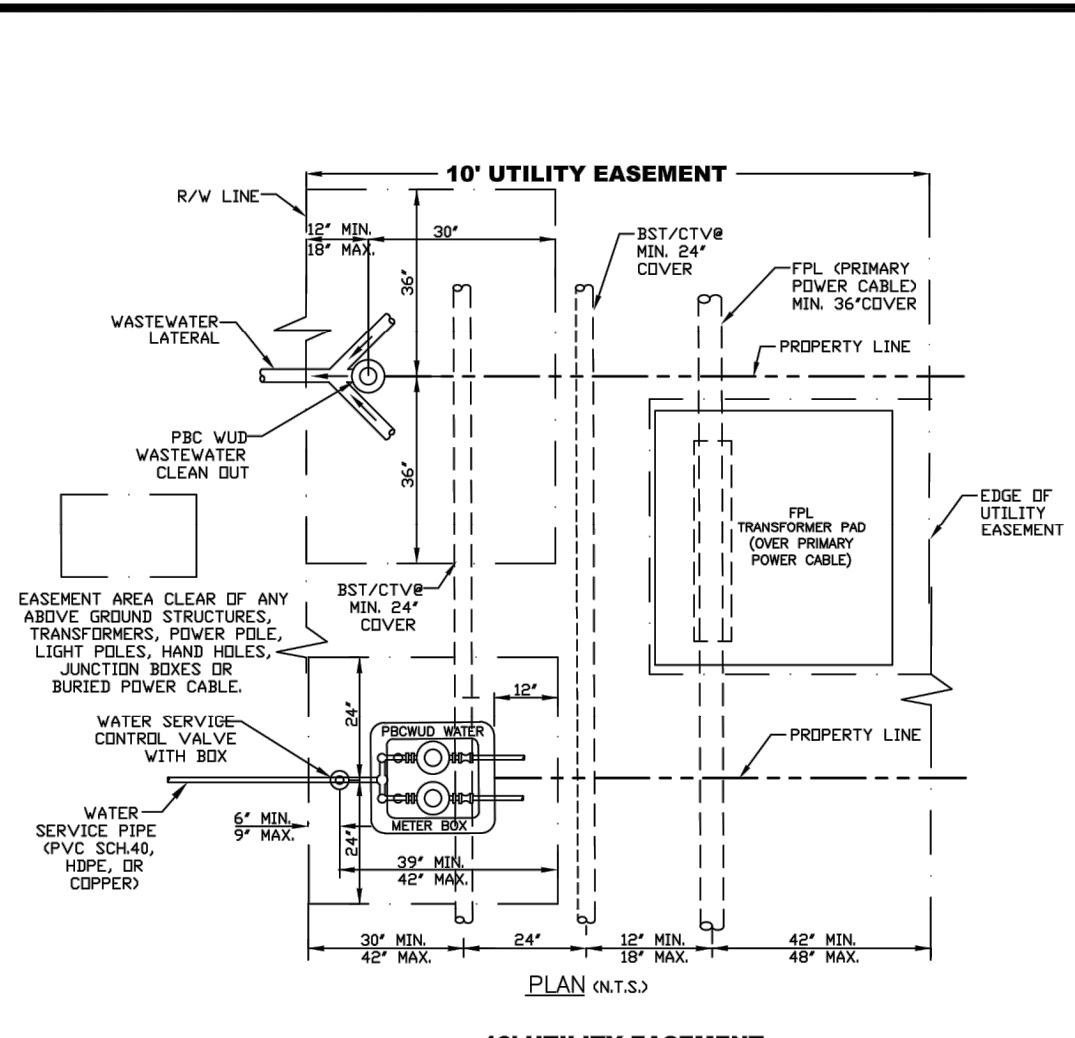
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SHEET NUMBER  
0 OF 0

SEAL

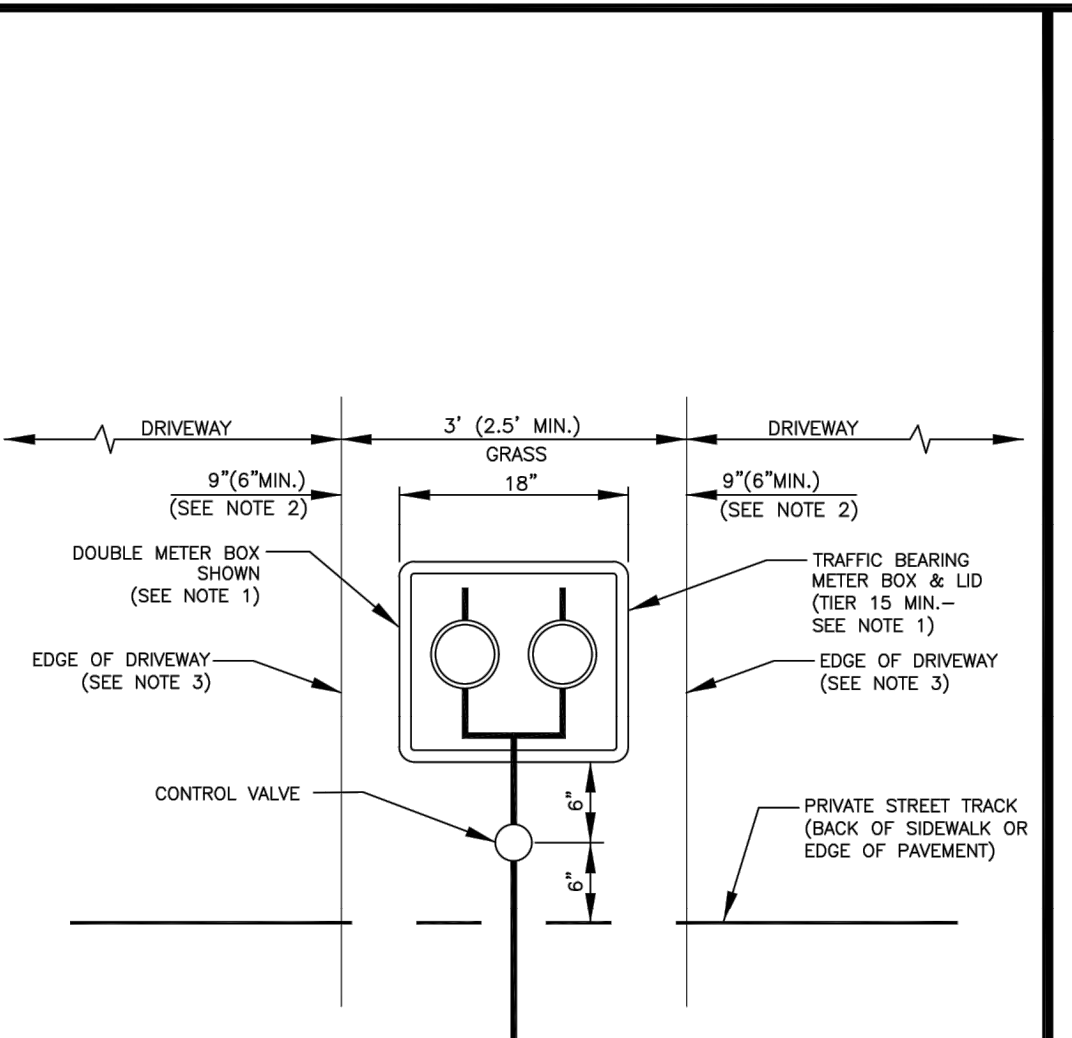
Mar 01, 2023



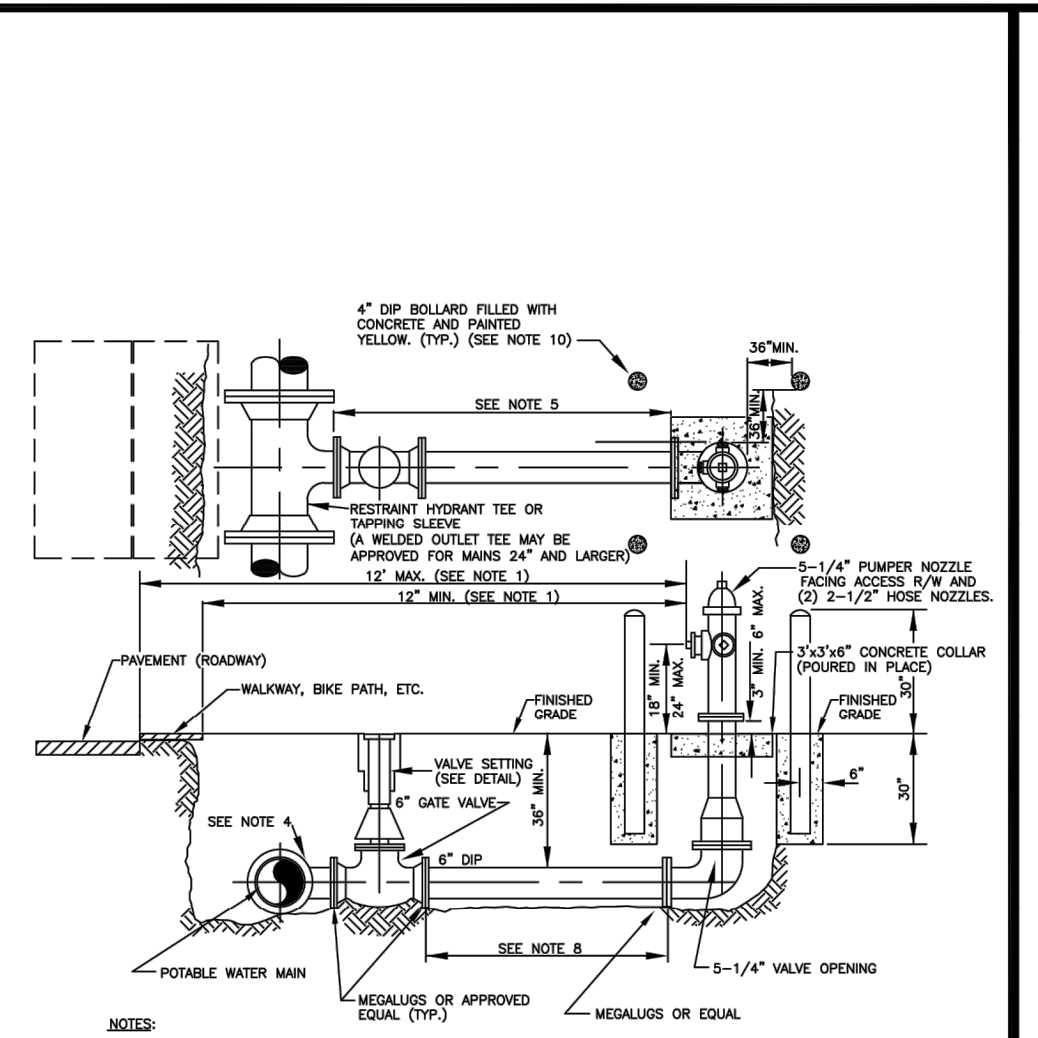
- NOTES:**
- ALL SERVICE PIPING SHALL BE 8\"/>



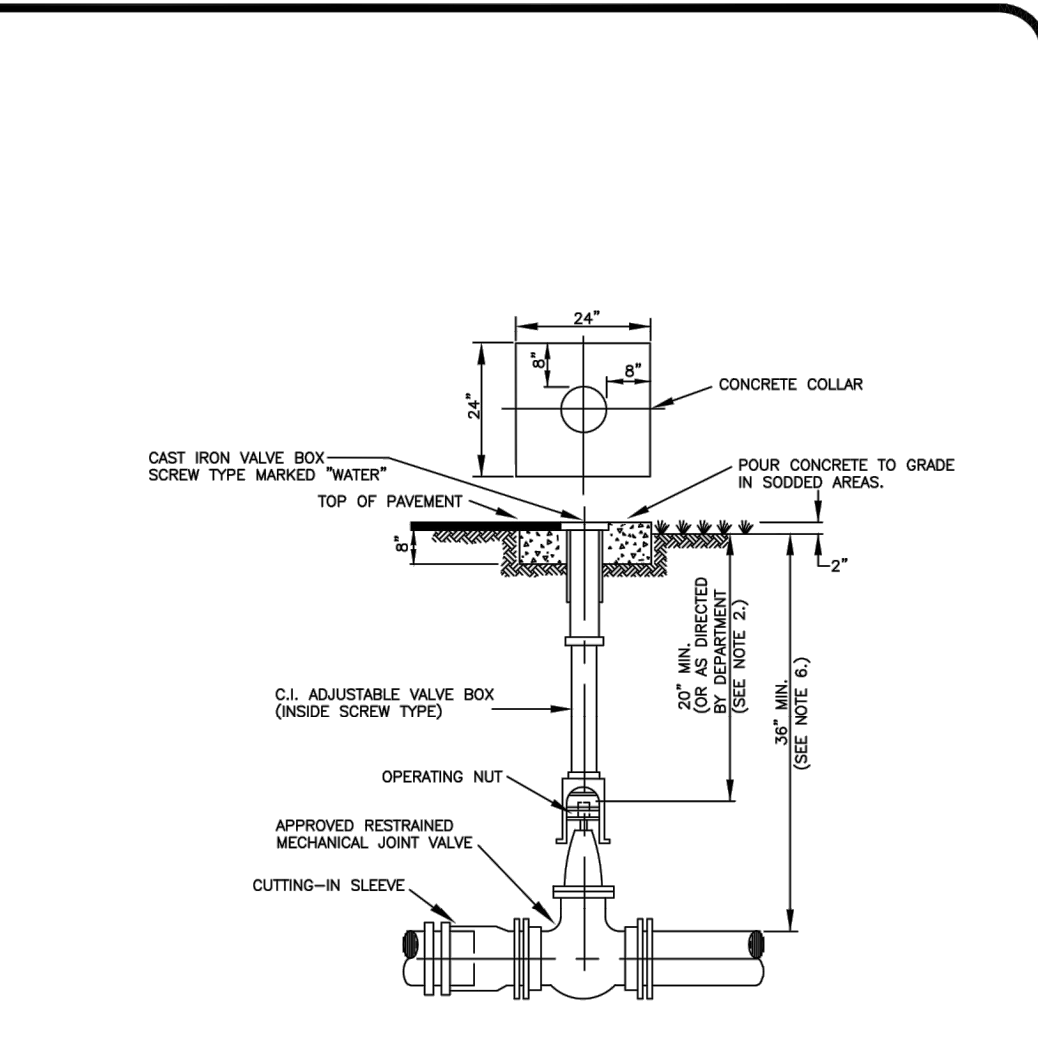
- NOTES:**
- THE DETAIL WAS DEVELOPED IN COLLABORATION WITH UTILITY COMPANIES SUPPLYING VARIOUS UTILITY SERVICES TO PUBLIC-UTILITY CUSTOMERS.
  - THE DIMENSIONS SHOWN SHALL SERVE AS A GENERAL GUIDELINE TO INSTALL UTILITIES WITHIN A 10' WISE UTILITY EASEMENT PARALLEL TO A RIGHT-OF-WAY.
  - THE PARTICIPATING UTILITIES PLEASE TO OBSERVE, FOLLOW, AND ENFORCE THE INSTALLATION PARAMETERS SHOWN IN THIS DETAIL.



- NOTES:**
- METER BOX AND LID MUST BE TIER 15 RATED MINIMUM AND APPLIES TO BOTH A SINGLE METER BOX OR A DOUBLE METER BOX.
  - WHEN INSTALLING A SINGLE METER BOX THE 9\"/>



- NOTES:**
- FIRE HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION AND SHALL NOT INTERFERE WITH PEDESTRIAN WALKWAYS, BIKE PATHS AND OTHER SIMILAR WALKWAYS WITH THE EDGE OF THE PLUMBER NOZZLE AND/OR HOSE NOZZLES BEING A MINIMUM OF 12\"/>



- NOTES:**
- CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
  - WHEN OPERATING NUT IS DEEPER THAN 24\"/>

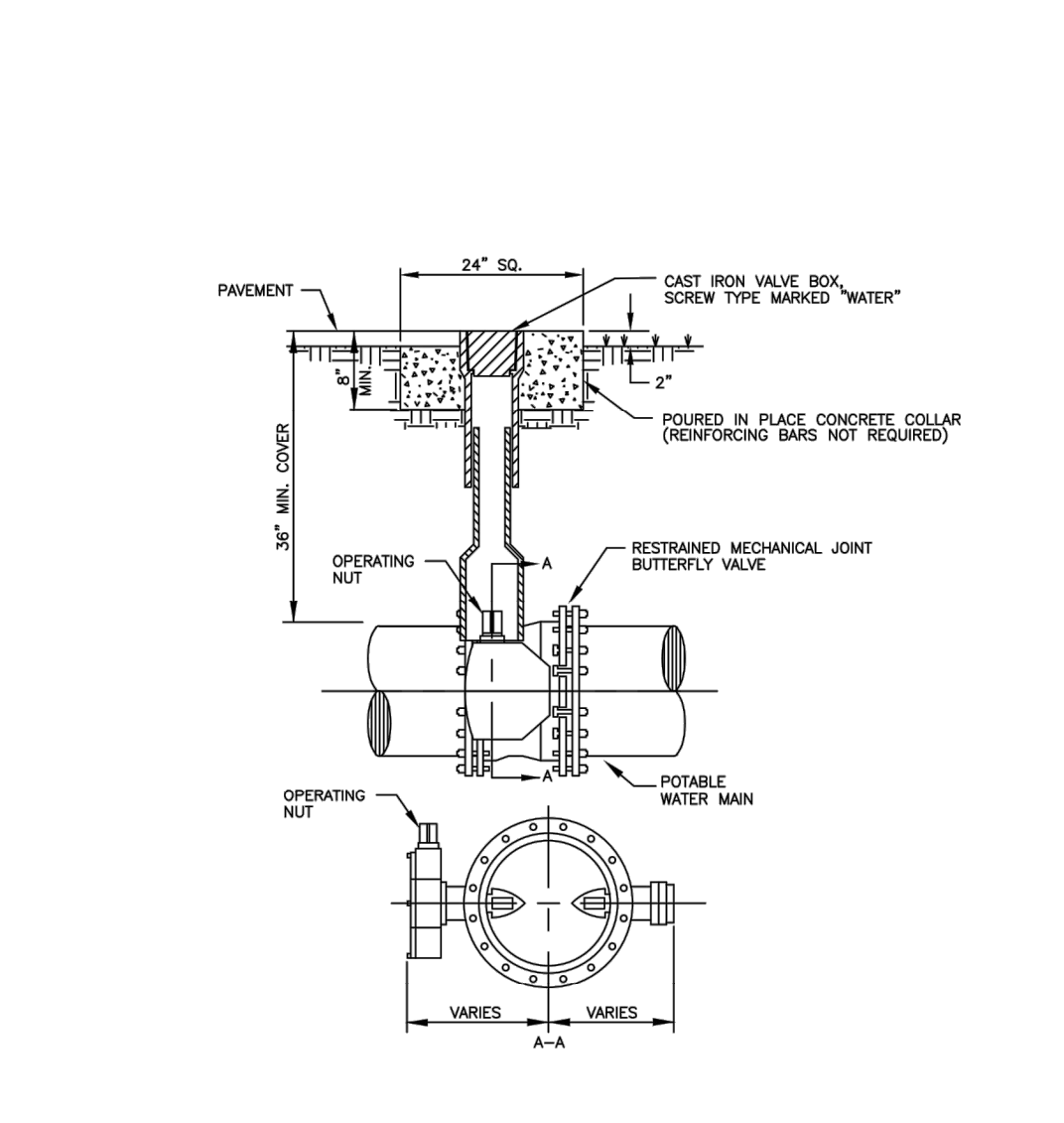
POTABLE WATER 6\"/>

TYPICAL UTILITY INSTALLATION DETAIL IN A 10' UTILITY EASEMENT ADJACENT TO R/W

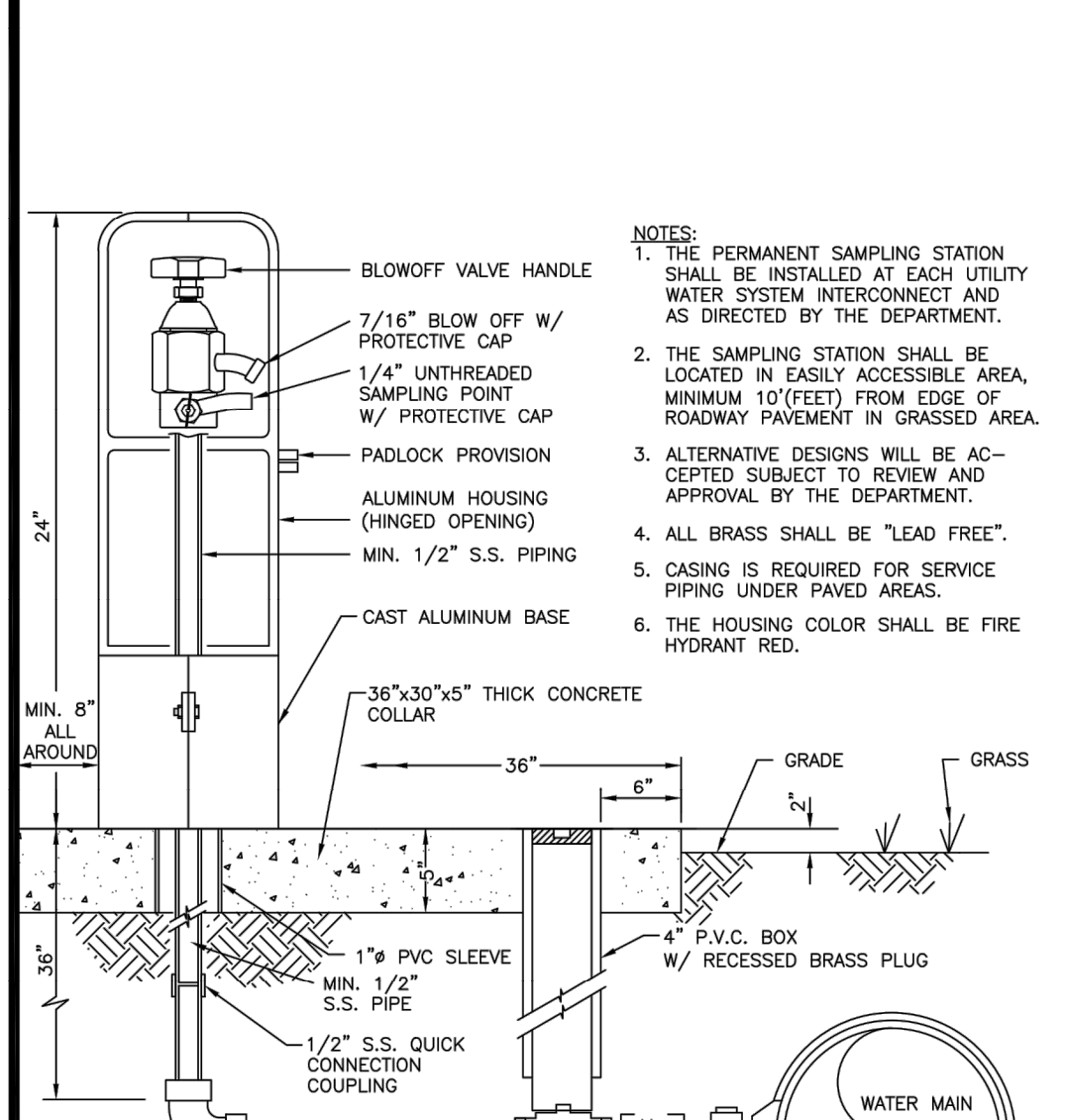
WATER METER BOX BETWEEN TOWNHOME DRIVEWAYS DETAIL

TYPICAL FIRE HYDRANT INSTALLATION WITH BOLLARDS DETAIL

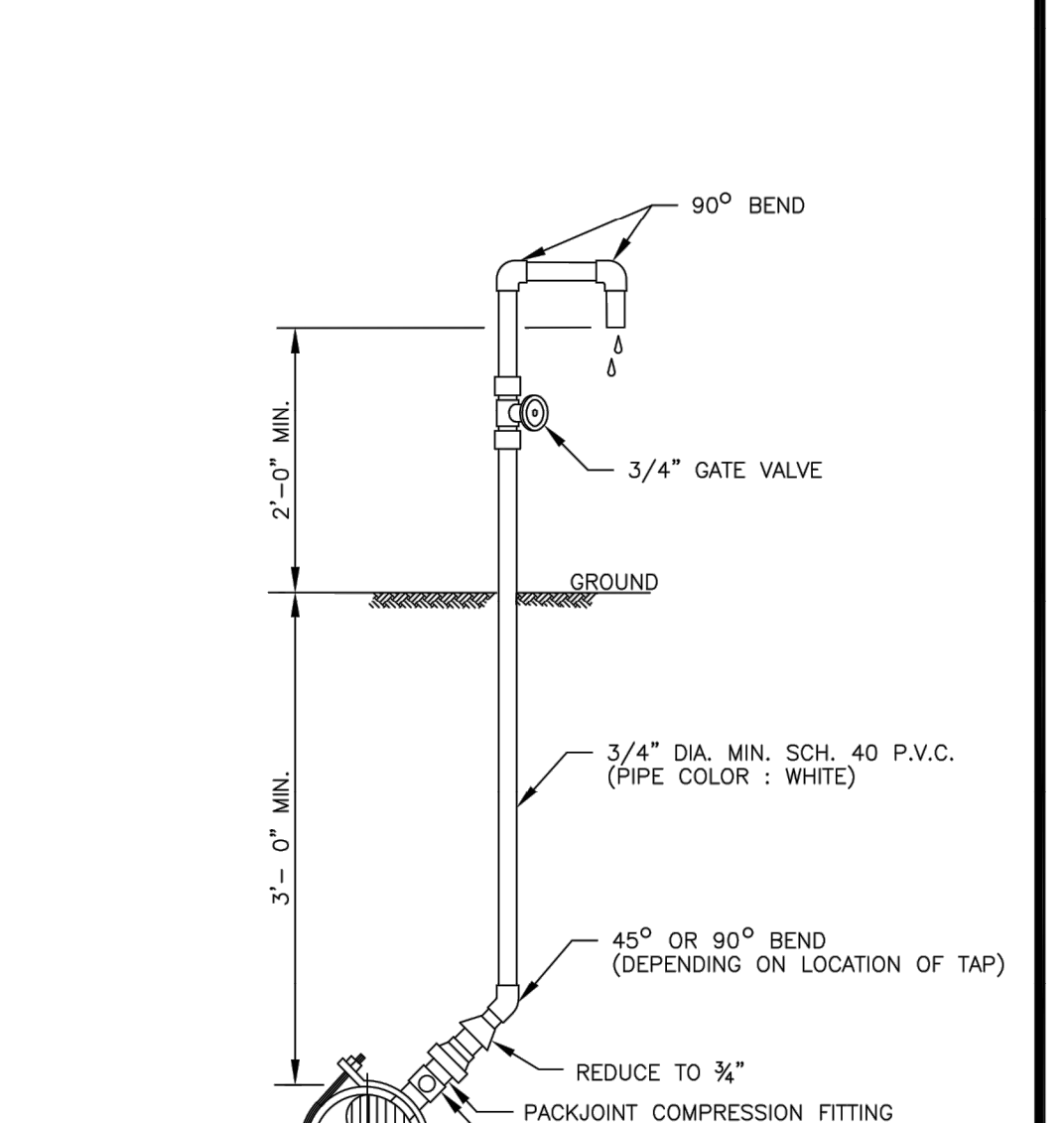
POTABLE WATER MAIN TYPICAL GATE VALVE SETTING AND MAIN CUT-IN DETAIL



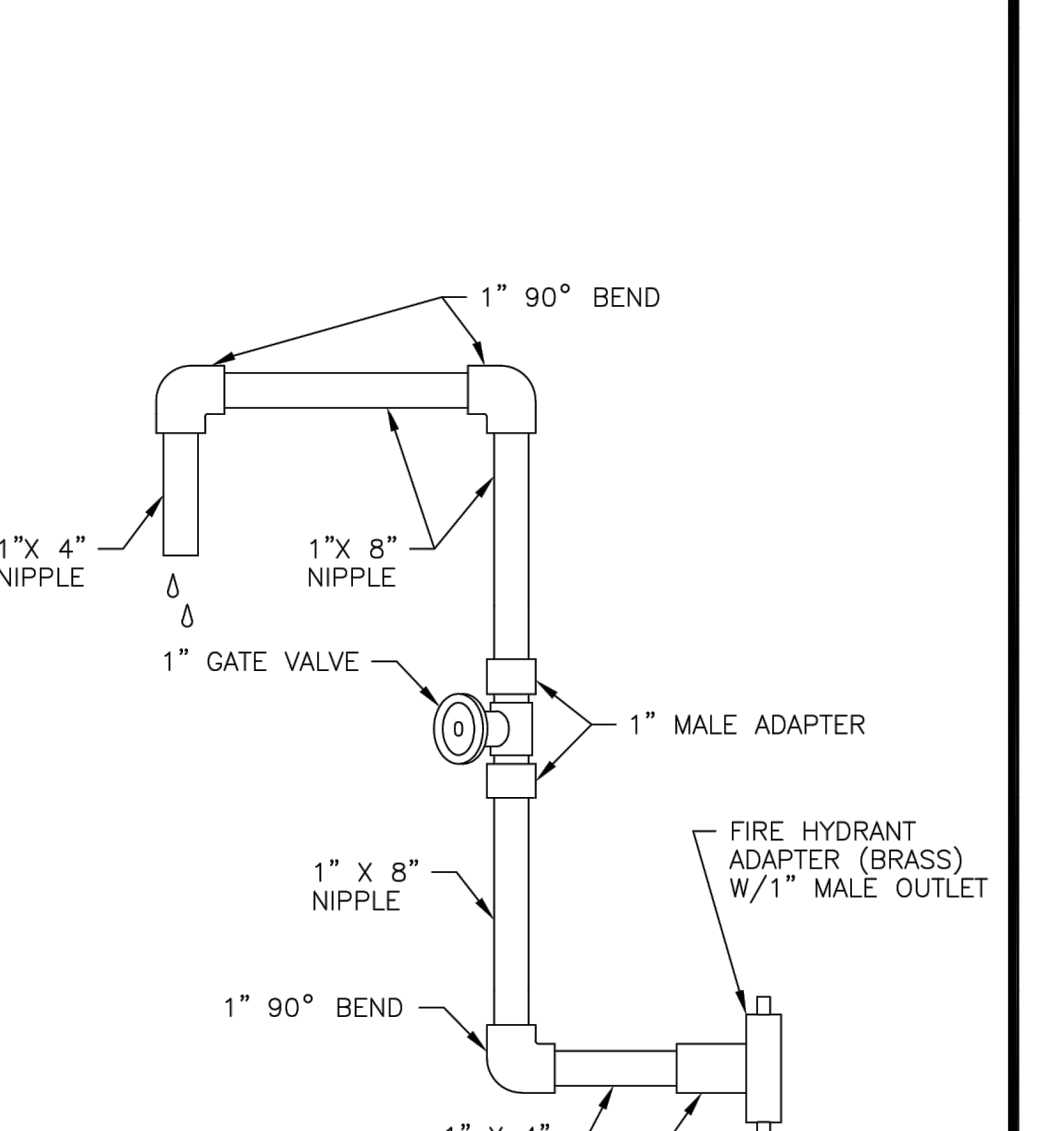
- NOTES:**
- CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
  - WHEN TOP OF OPERATING NUT IS DEEPER THAN 42\"/>



- NOTES:**
- THE PERMANENT SAMPLING STATION SHALL BE INSTALLED AT EACH UTILITY WATER SYSTEM INTERCONNECT AND AS DIRECTED BY THE DEPARTMENT.
  - THE SAMPLING STATION SHALL BE LOCATED IN EASILY ACCESSIBLE AREA, MINIMUM 10'(FEET) FROM EDGE OF ROADWAY PAVEMENT IN GRASSED AREA.
  - ALTERNATIVE DESIGNS WILL BE ACCEPTED SUBJECT TO REVIEW AND APPROVAL BY THE DEPARTMENT.
  - ALL BRASS SHALL BE "LEAD FREE".
  - CASING IS REQUIRED FOR SERVICE PIPING UNDER PAVED AREAS.
  - THE HOUSING COLOR SHALL BE FIRE HYDRANT RED.



- NOTE:**
- SAMPLE POINT SHOULD BE A SERVICE LINE OR FIRE HYDRANT IF POSSIBLE.
  - THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
  - CLOSE AND CAP CORPORATION STOP AFTER SAMPLING COMPLETION.



- NOTES:**
- USE HYDRANT WRENCH ONLY.
  - ALL PIPES AND FITTINGS SCH. 40 P.V.C. (PIPE COLOR : WHITE).

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POTABLE WATER #2 STANDARD DETAILS

CONSULTANT:

DESIGNED BY: WUD  
DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

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SUNSHINE STATE ONE CALL OF FLORIDA, INC.  
UTILITIES NOTIFICATION CENTER

Palm Beach County  
Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

Drawing: W:\WUD 2023 STD DTL REV WUD 2023 STD DTL SHEETS\WUD 2023 STD DTL - POTABLE WATER (6 SHTS).dwg\WUD PWS-2 - Last Modified: Wed, 01, 2023 - 3:13pm

\\c:\nafe02\Eng\Projects\2021\21-0044-001-07-WATR DETAILS.dwg [C-13] Mar 03, 2025 1:36pm RBURKERT

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	NAME	DATE	NAME	DATE
						DESIGNED BY		DRAWN BY	
						CHECKED BY		CHECKED BY	
						SUPERVISED BY			

**Craven • Thompson and Associates, Inc.**  
ENGINEERS • PLANNERS • SURVEYORS  
3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-8409 TEL: (954) 739-8400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS NO. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. C000114

ORIGINAL SECTION SEWER  
NORTH PHASE 3  
CITY OF GREENACRES

WATER STANDARD DETAILS

SHEET NO.  
C-13

**18W**

PIPE THURST BLOCK AREA REQ'D	REMARKS	NOTE FOR OTHER FITTINGS
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND
6"	4.0 SQ. FT.	BASED ON 2000 P.S.I. SAFE
8"	6.8 SQ. FT.	PRESSURE OF 150 P.S.I.
10"	10.0 SQ. FT.	FOR OTHER FITTINGS AS SPECIFIED
12"	14.0 SQ. FT.	THE WOOD 40° BEND 316
14"	18.8 SQ. FT.	1 1/4" BEND 316
		HEAD END 208

**19W**

**20W**

**21W**

**22WA**

CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 3)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.312
18"	30"	.312
20"	36"	.372
24"	42"	.500
30"	48"	.500
36"	54"	.525
42"	60"	.625
48"	72"	.625

CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS (SEE NOTE 3)
4"	12"	.188
6"	14"	.250
8"	20"	.250
10"	20"	.250
12"	24"	.250

**22WB**

**23W**

**24W**

**25W**

**POTABLE WATER #3 STANDARD DETAILS**

**CONSULTANT:**

DESIGNED BY: WUD  
 DRAWN BY: M. BUCKNER  
 CHECKED BY: J. LAMMERT  
 APPROVED BY: WUD

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 CALL 48 HOURS BEFORE YOU DIG  
**1-800-432-4770**  
 SUNSHINE STATE ONE CALL OF FLORIDA, INC.  
 UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD  
 DRAWN BY: M. BUCKNER  
 CHECKED BY: J. LAMMERT  
 APPROVED BY: WUD

DATE: JUN 2019  
 GENERAL REVISION  
 JAN 2023  
 GENERAL REVISION

BY: [Signature]  
 REVISION / REMARKS

NO. DATE BY REVISION / REMARKS

DATE: JUN 2019  
 GENERAL REVISION  
 JAN 2023  
 GENERAL REVISION

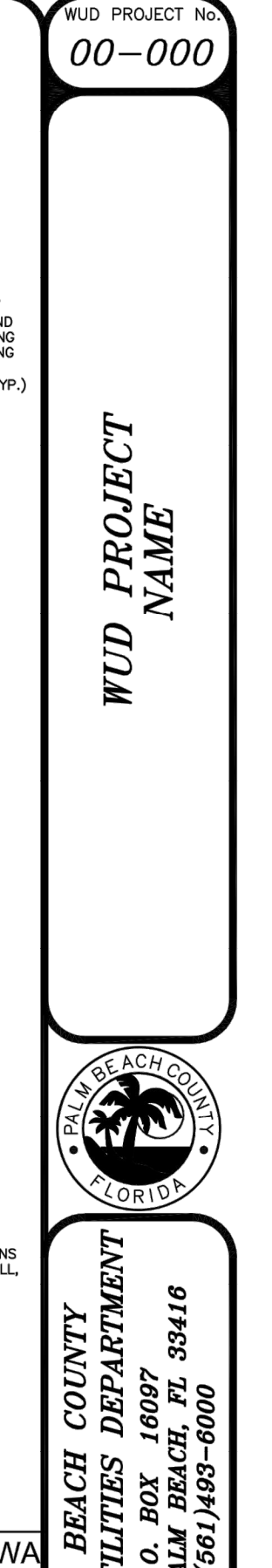
BY: [Signature]  
 REVISION / REMARKS

NO. DATE BY REVISION / REMARKS

WUD PROJECT NO. 00-000

WUD PROJECT NAME

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT  
 P.O. BOX 16097 WEST PALM BEACH, FL 33416  
 (561) 966-8000



DATE	BY	DESCRIPTION

NAME	DATE	NAME	DATE
DESIGNED BY		DRAWN BY	
CHECKED BY		CHECKED BY	
SUPERVISED BY			

**Craven • Thompson and Associates, Inc.**  
**ENGINEERS • PLANNERS • SURVEYORS**  
 3563 N.W. 63RD STREET, FORT LAUDERDALE, FLORIDA 33309  
 FAX: (954) 739-8409 TEL: (954) 739-8400  
 221 FLORIDA LICENSURE ENGINEERING, SURVEYING & MAPPING BUSINESS NO.  
 FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. 0000114

ORIGINAL SECTION SEWER NORTH PHASE 3 CITY OF GREENACRES

DESIGNED BY: WUD  
 DRAWN BY: M. BUCKNER  
 CHECKED BY: J. LAMMERT  
 APPROVED BY: WUD

DATE: JUN 2019  
 GENERAL REVISION  
 JAN 2023  
 GENERAL REVISION

BY: [Signature]  
 REVISION / REMARKS

NO. DATE BY REVISION / REMARKS

PBCWUD #XXXX

LEONARD Z. GAMBLE  
 Florida P.E. No. 65921  
 March 3, 2025

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STD SHEET NUMBER  
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SHEET NO. C-14

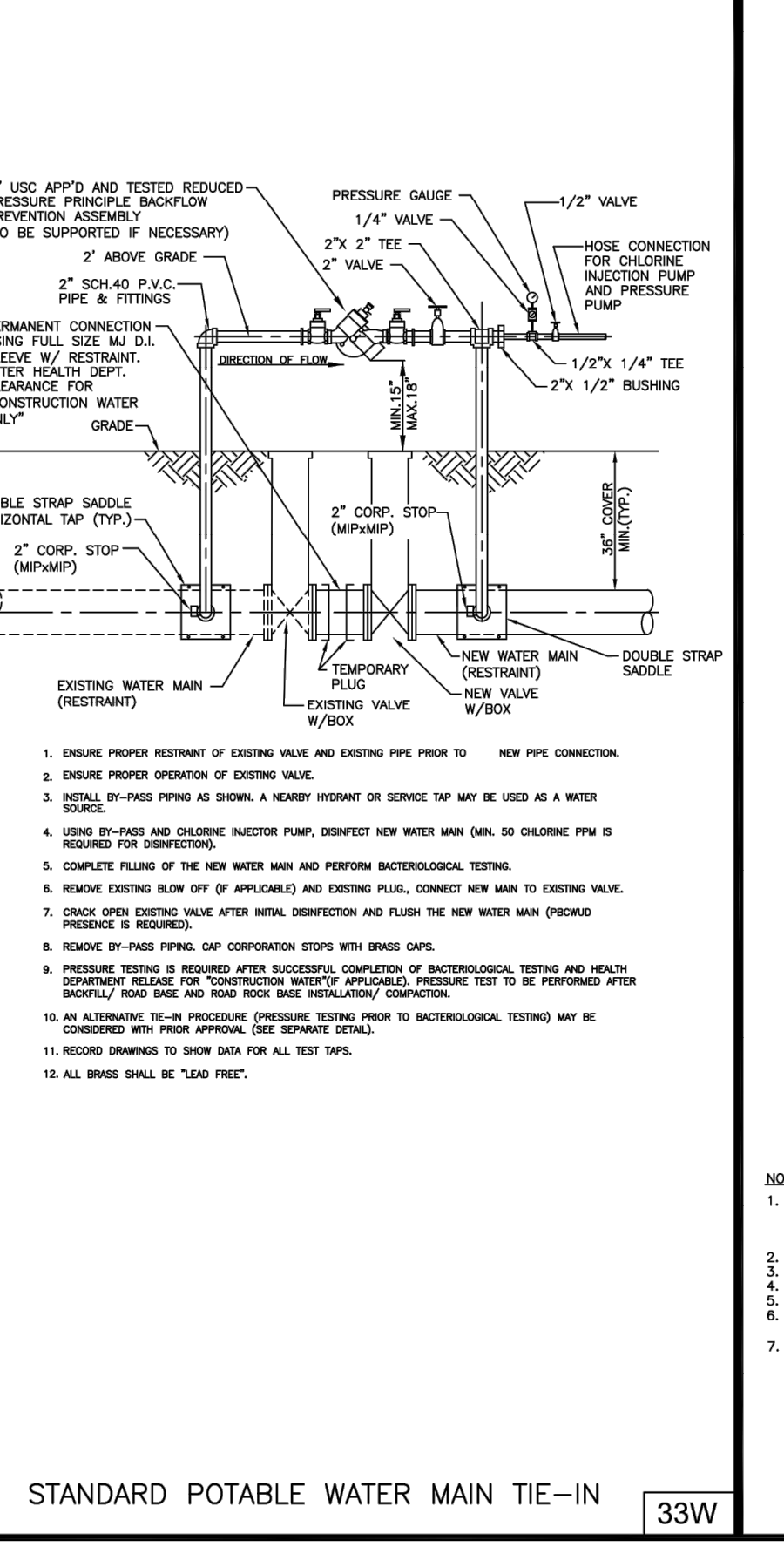
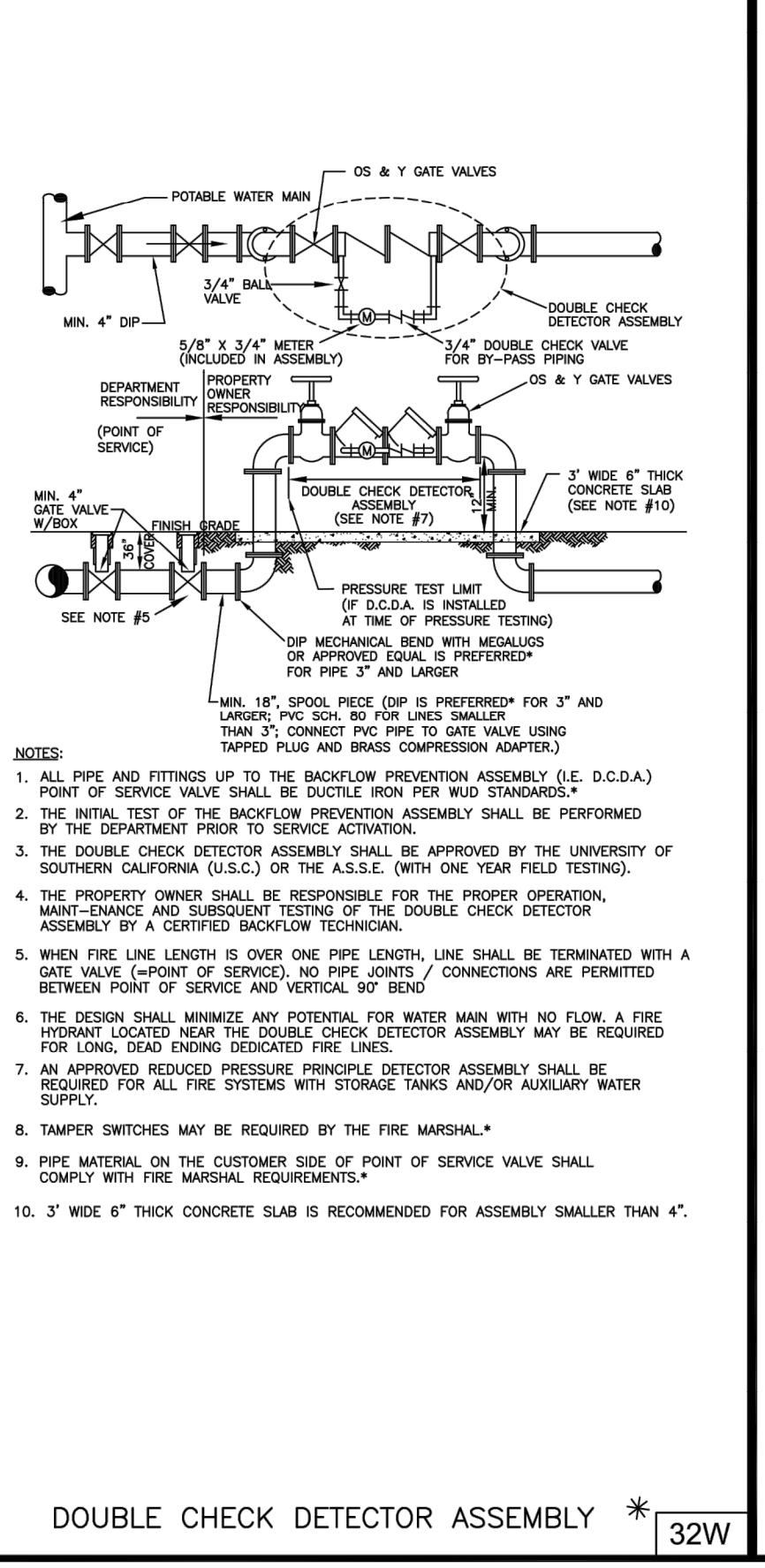
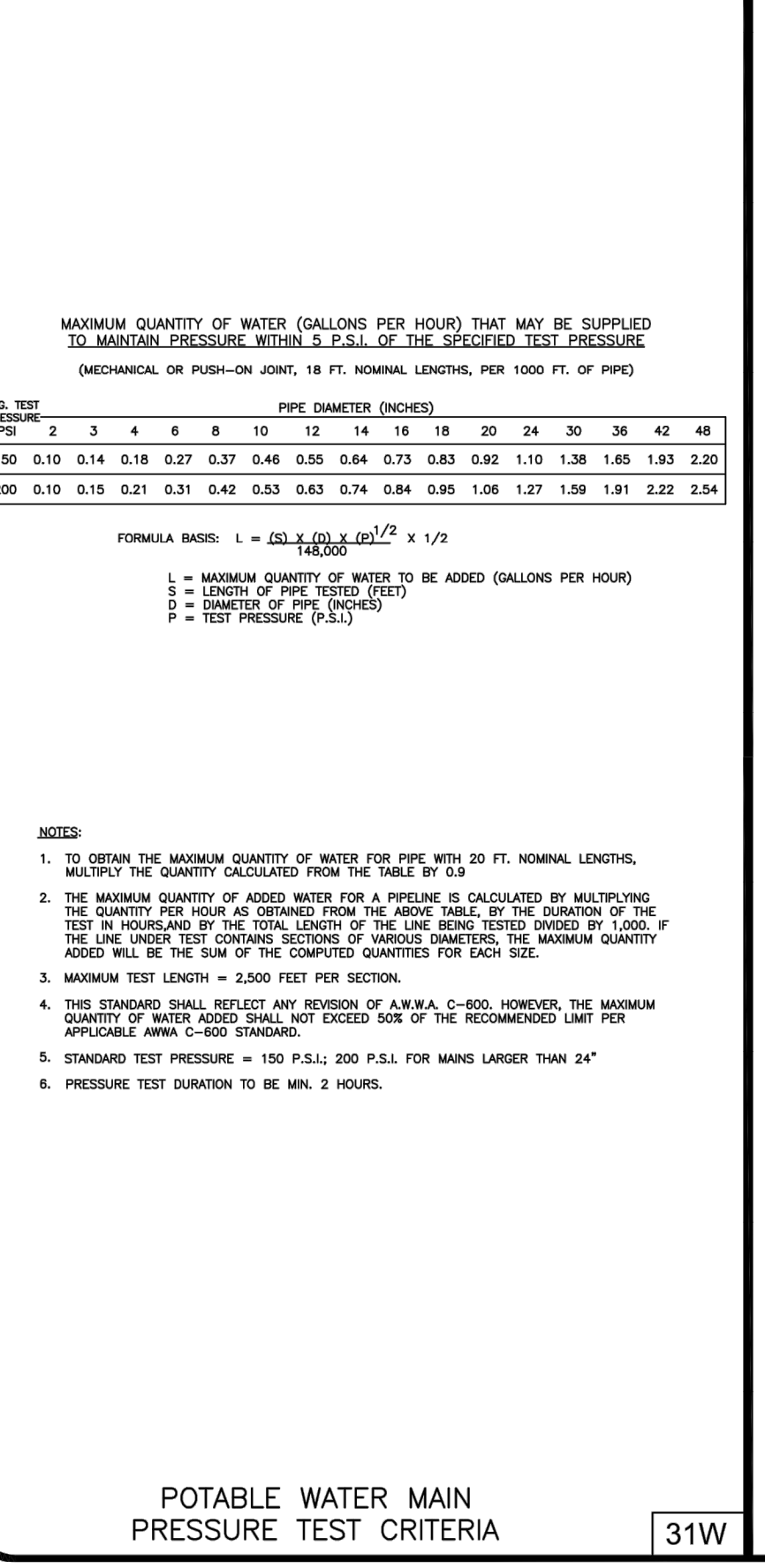
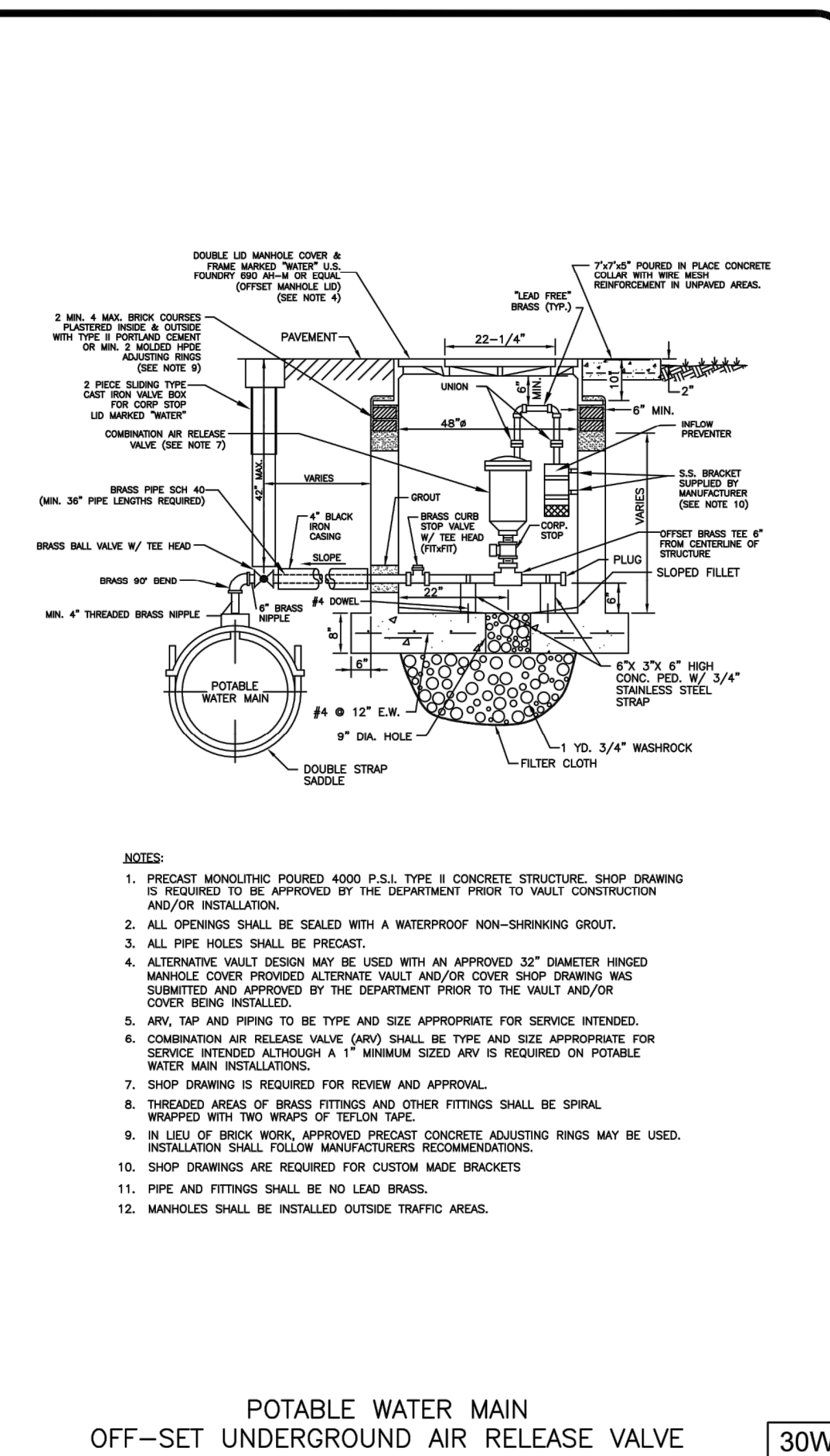
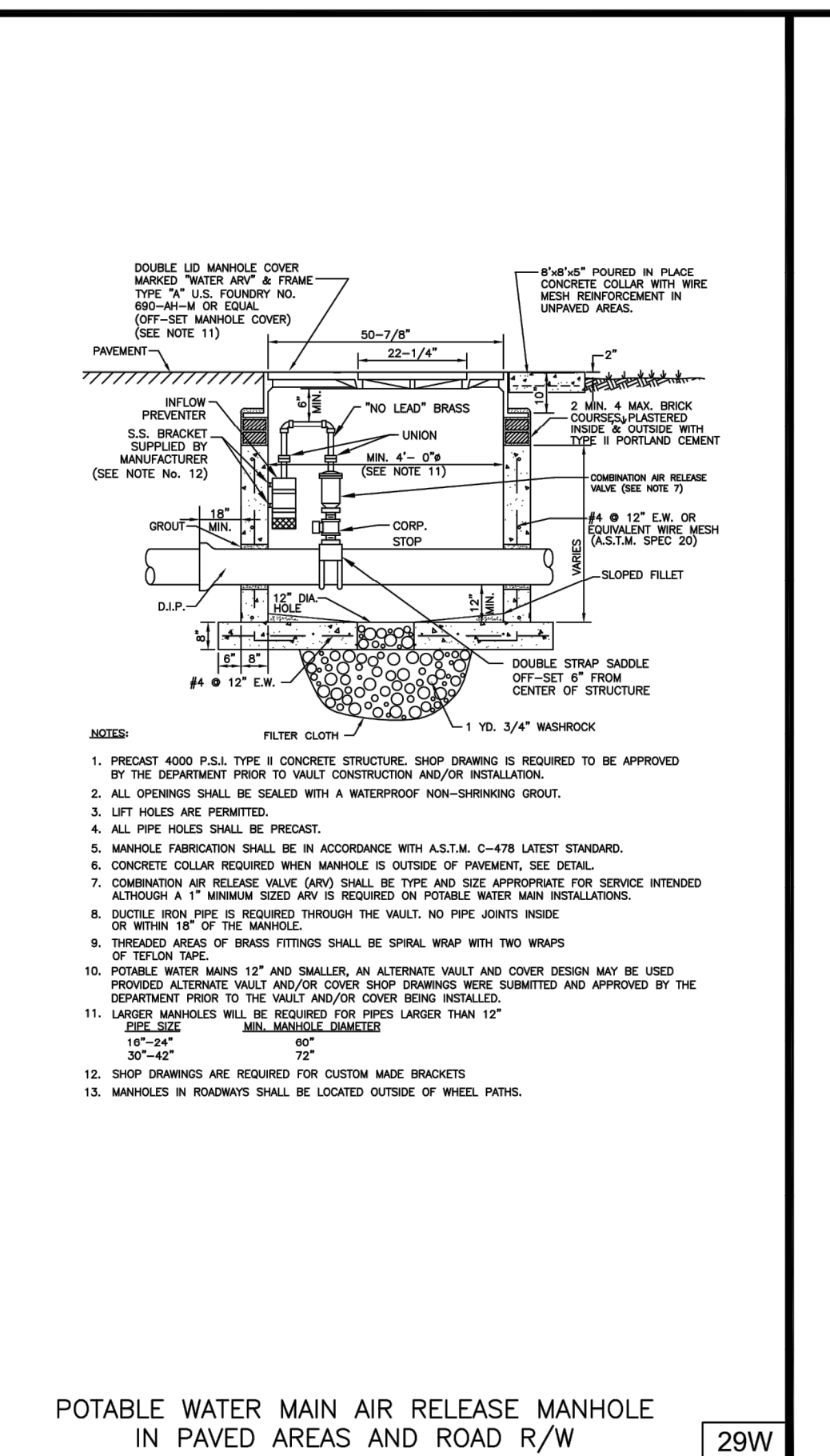
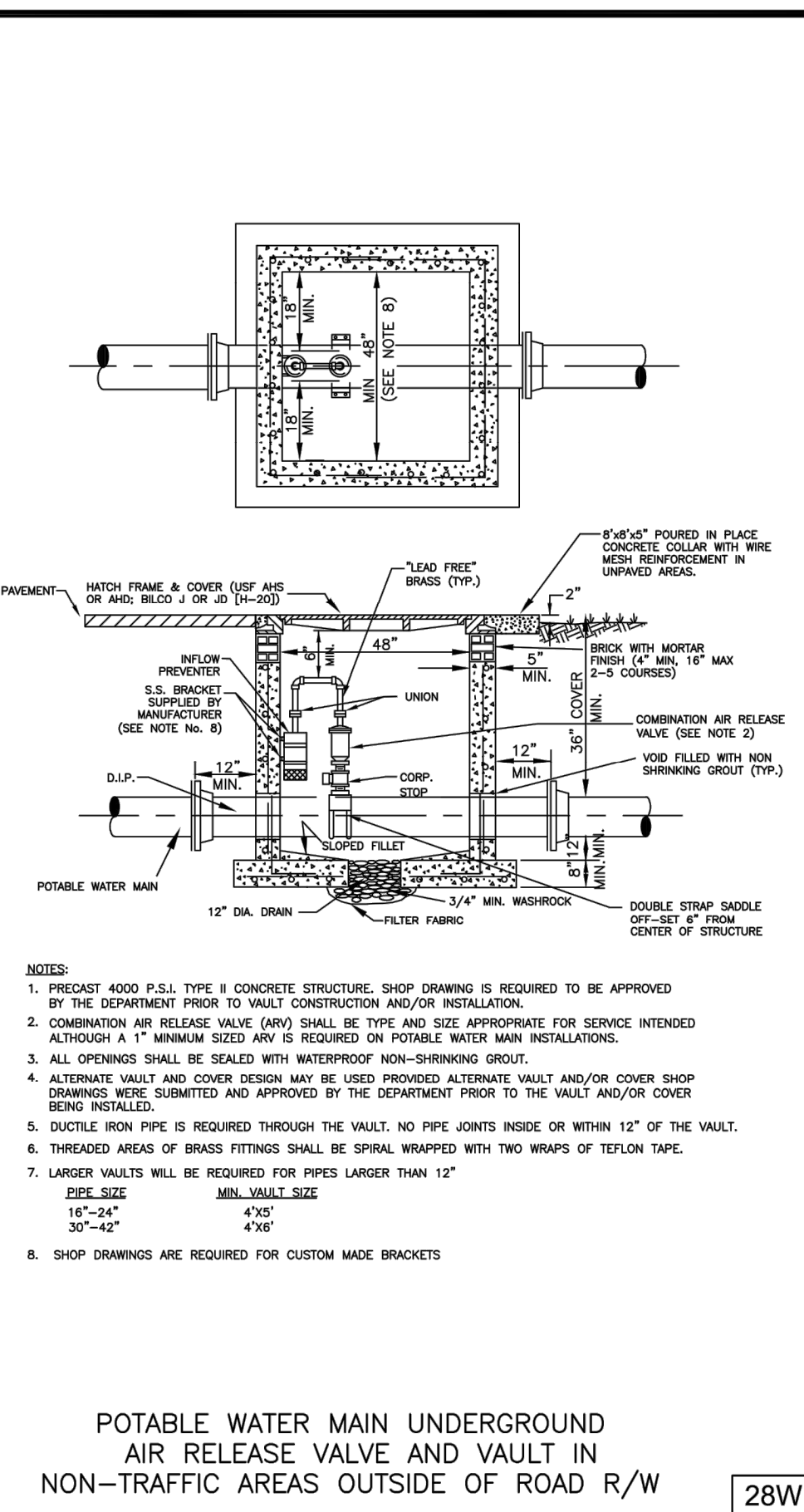
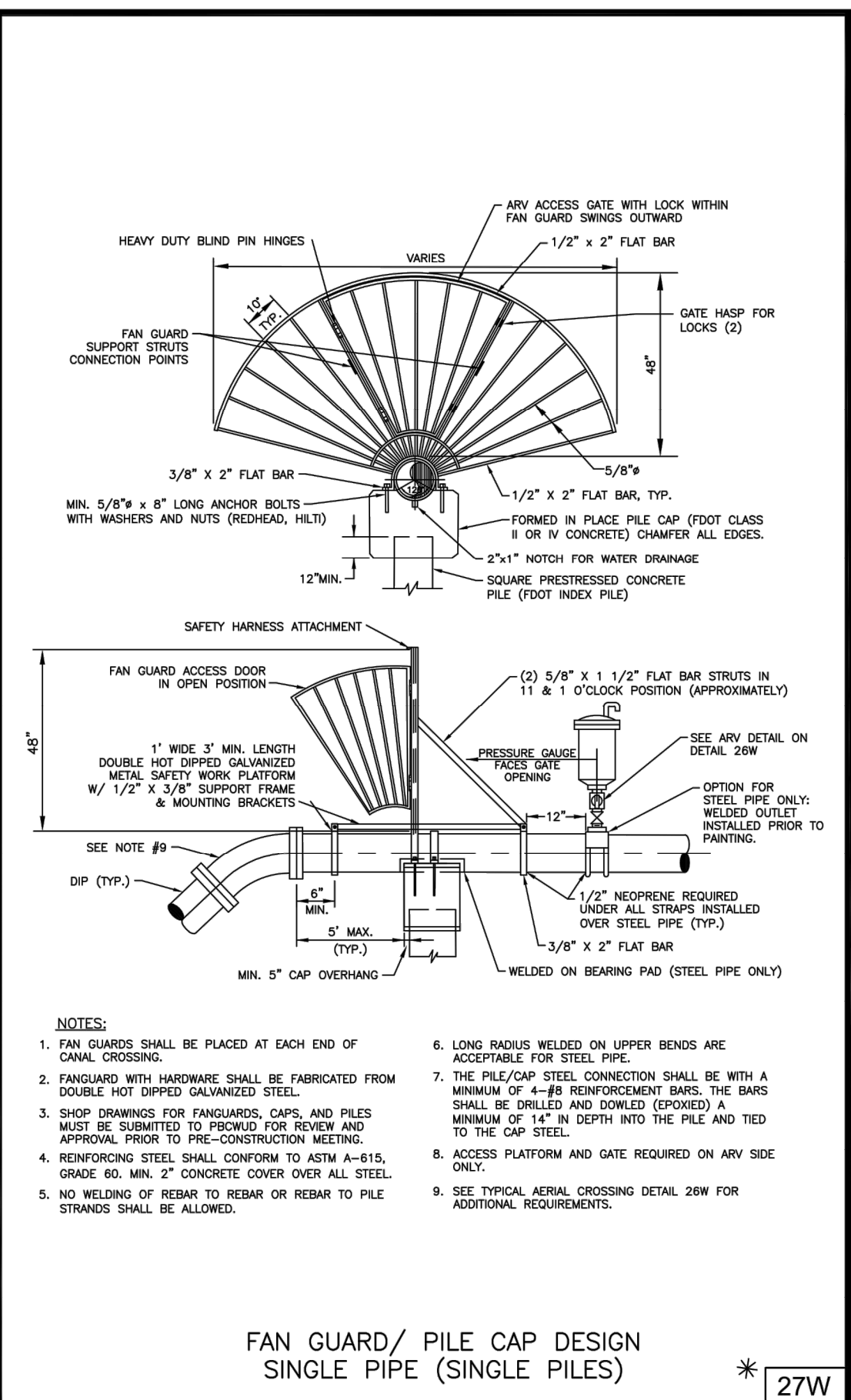
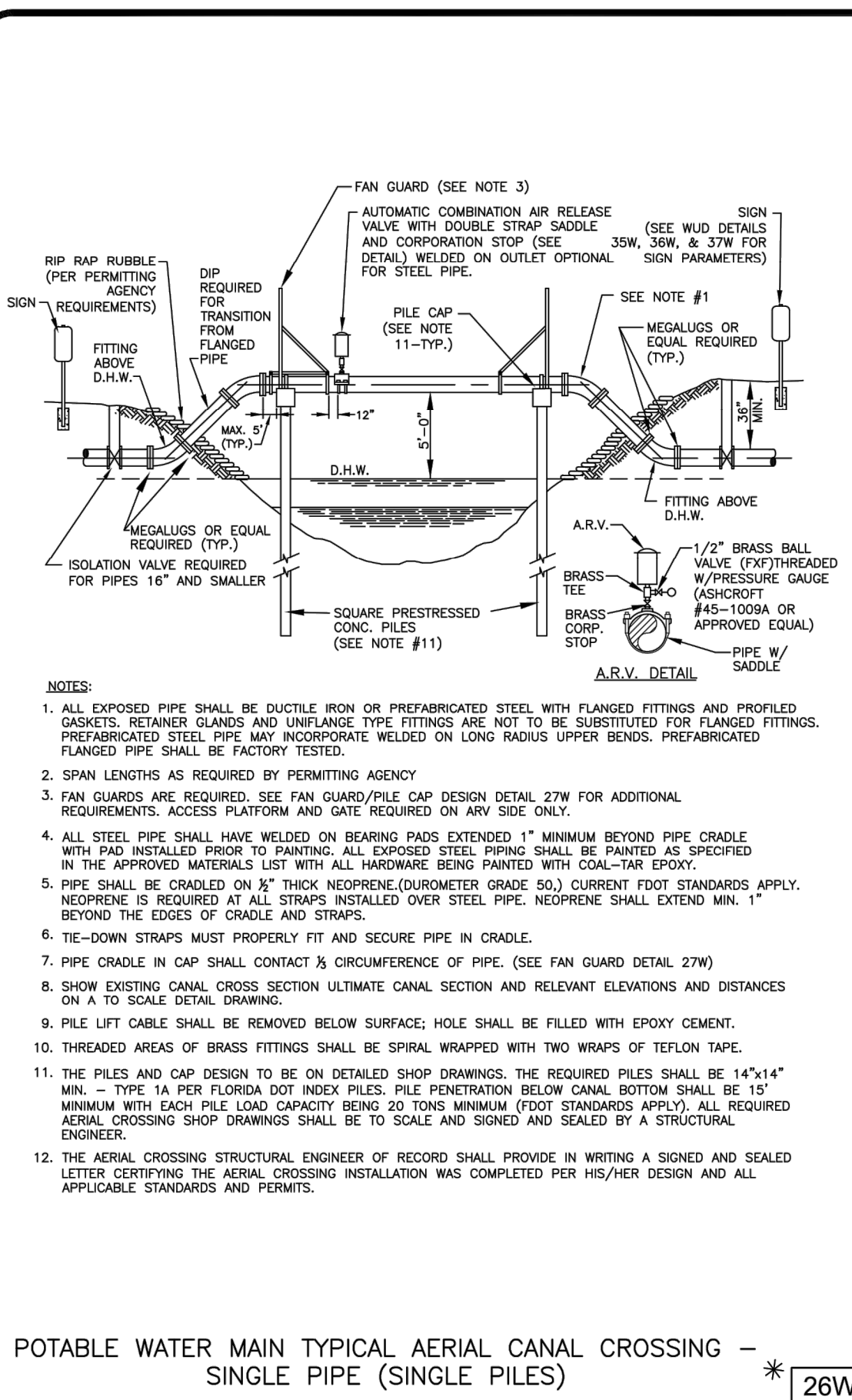


Table 34W: MECHANICAL THRUST RESTRAINT MINIMUM PIPE LENGTHS. Lists pipe sizes and required lengths for different fitting types.

Table 35W: MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED. Lists pipe sizes and required lengths for different fitting types.

Diagram 36W: POTABLE WATER #4 STANDARD DETAILS. Includes a diagram of a manhole and a 'CONSULTANT' box with contact information for Craven-Thompson and Associates.

Table 37W: REVISIONS. Lists revision dates, descriptions, and responsible parties.

Table 38W: DESIGN, CHECKED, DRAWN, CHECKED BY. Lists project personnel and their roles.

Complex block containing project information, including the company name (Craven-Thompson and Associates), address, and contact details.

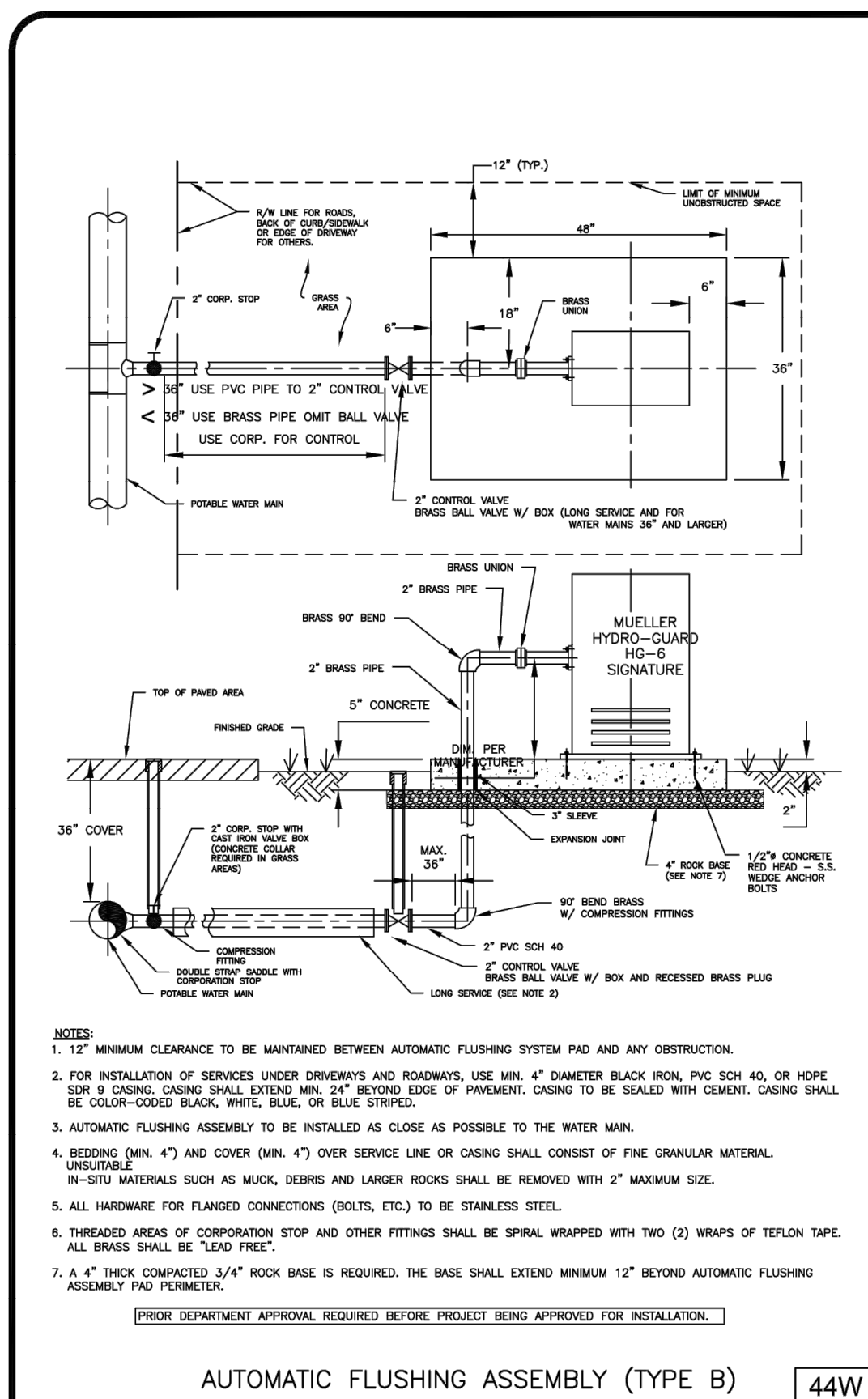
Complex block containing project information, including the company name (Craven-Thompson and Associates), address, and contact details.

Complex block containing project information, including the company name (Craven-Thompson and Associates), address, and contact details.

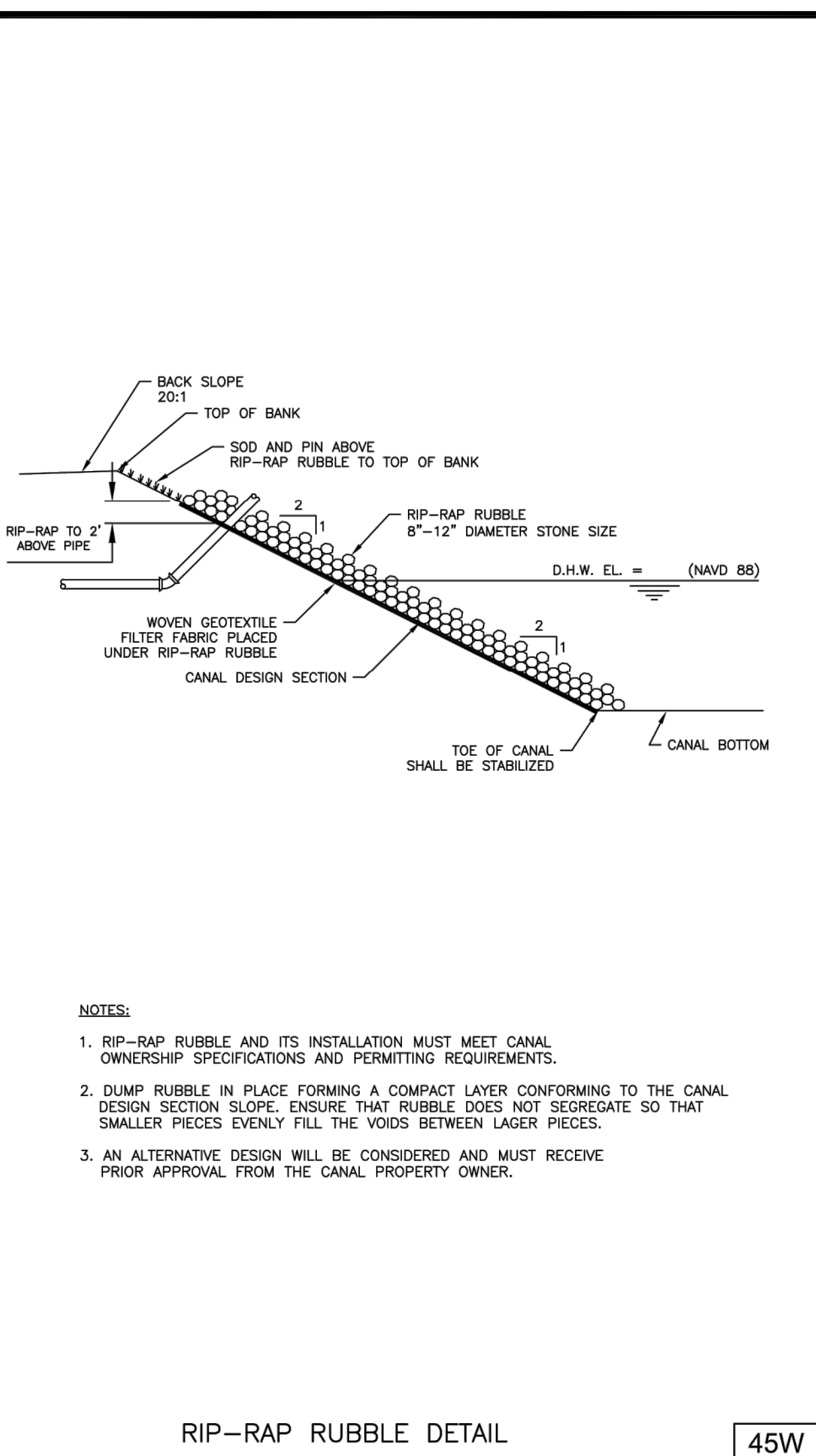
Complex block containing project information, including the company name (Craven-Thompson and Associates), address, and contact details.



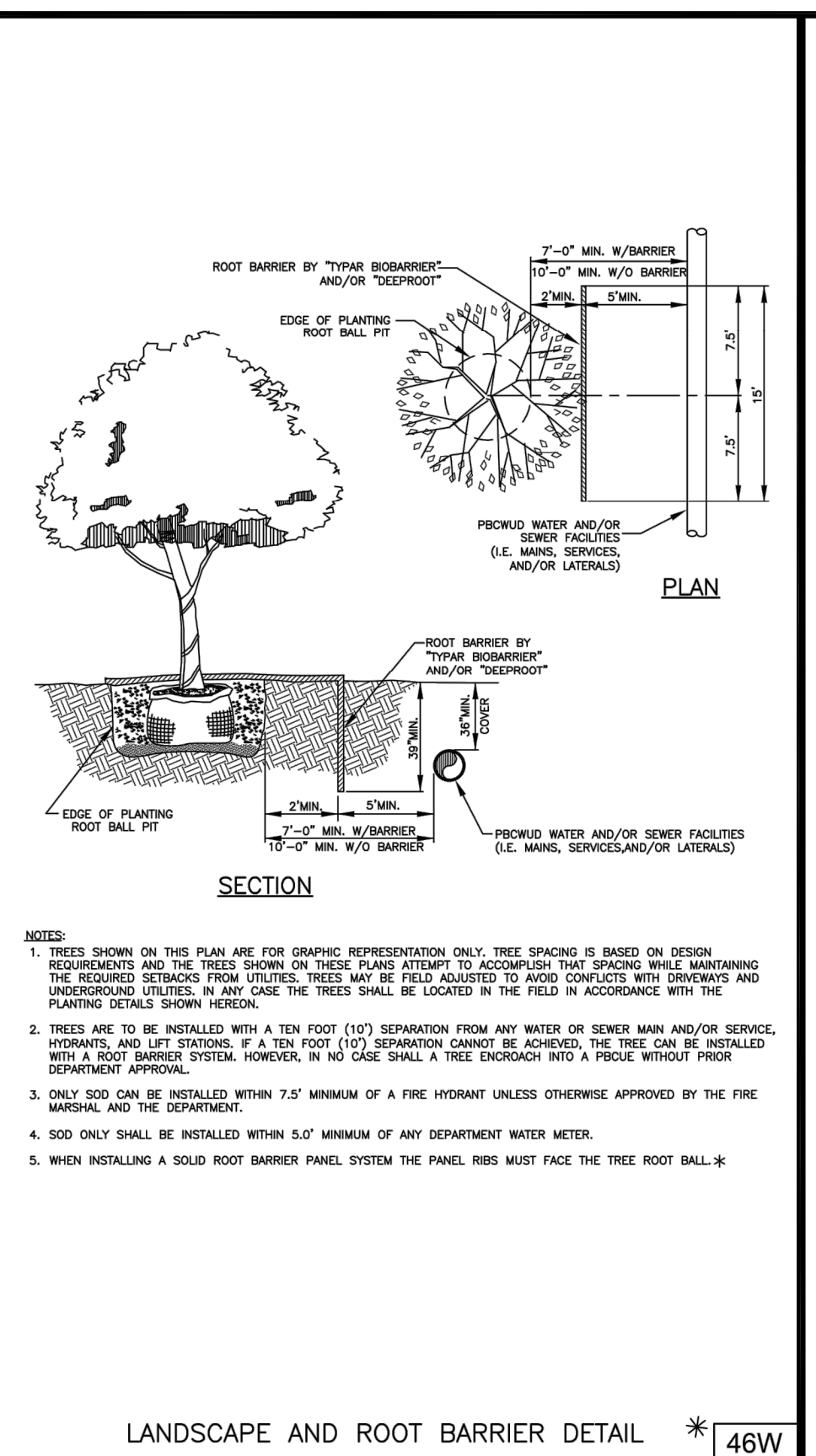




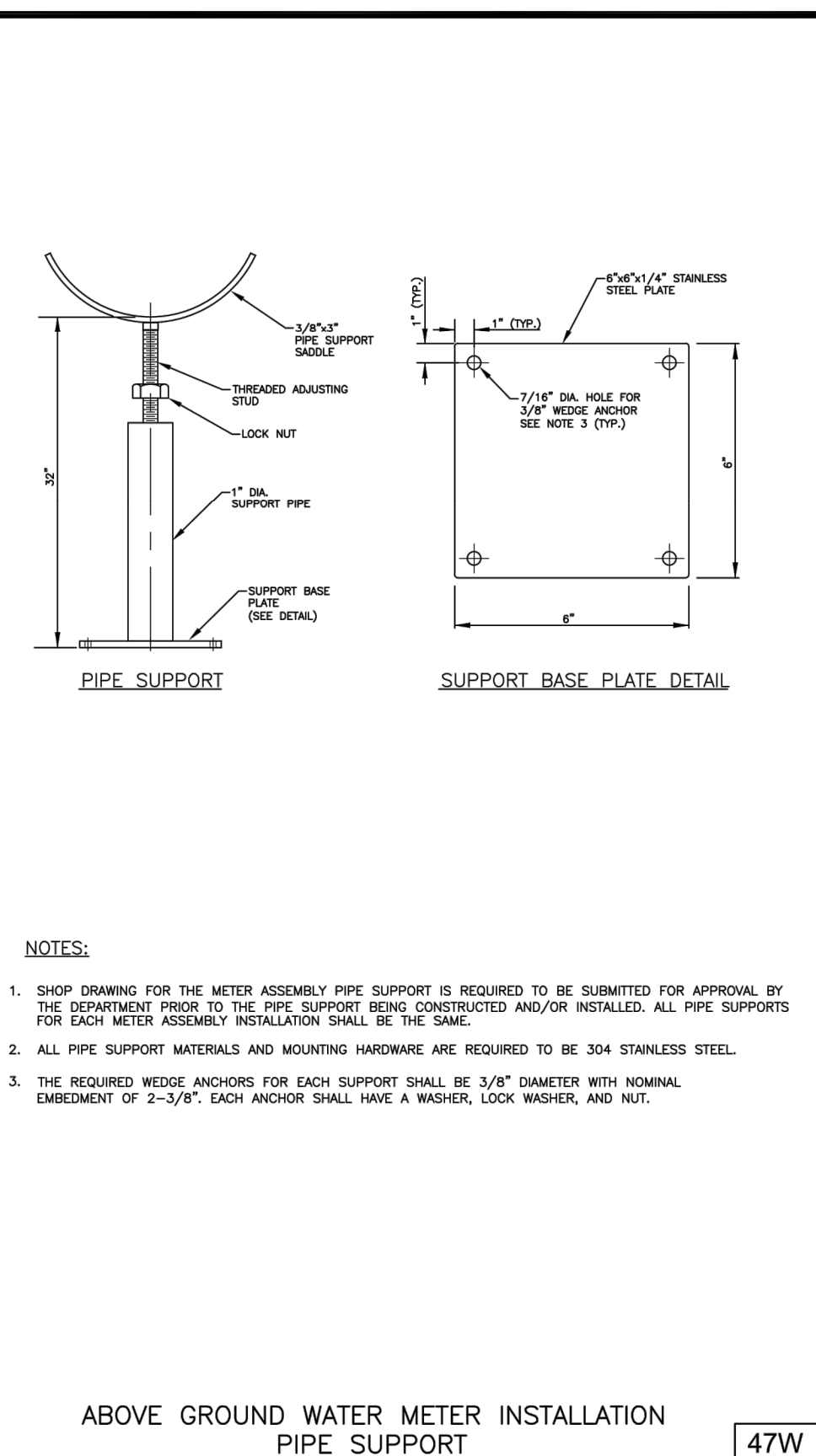
AUTOMATIC FLUSHING ASSEMBLY (TYPE B) 44W



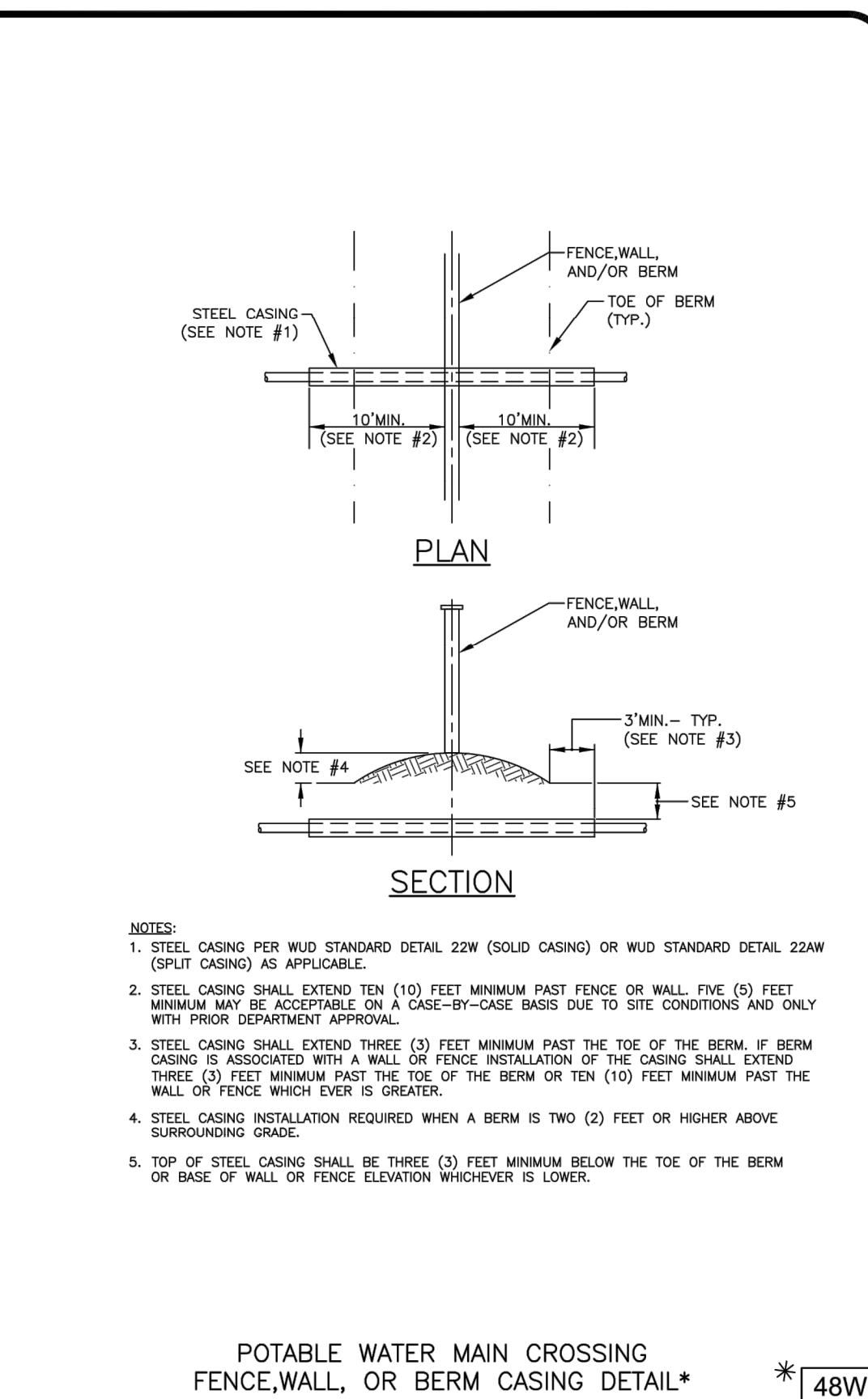
RIP-RAP RUBBLE DETAIL 45W



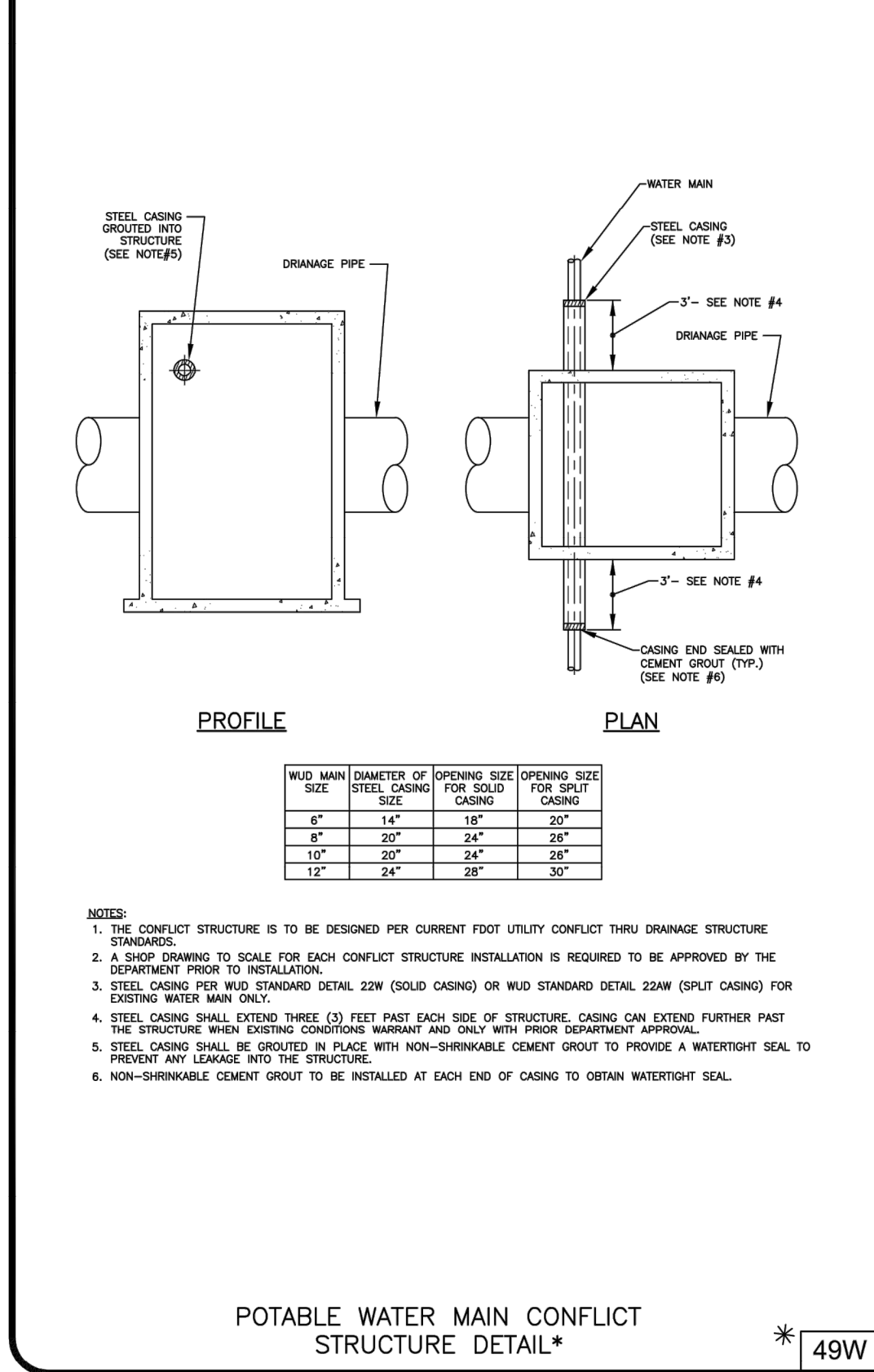
LANDSCAPE AND ROOT BARRIER DETAIL 46W



ABOVE GROUND WATER METER INSTALLATION PIPE SUPPORT 47W



POTABLE WATER MAIN CROSSING FENCE, WALL, OR BERM CASING DETAIL 48W



POTABLE WATER MAIN CONFLICT STRUCTURE DETAIL 49W

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POTABLE WATER #6 STANDARD DETAILS

CONSULTANT: **IT'S THE LAW!** CALL 48 HOURS BEFORE YOU DIG 1-800-432-4770 SUNSHINE STATE ONE CALL OF FLORIDA, INC. UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD  
 DRAWN BY: M. BUCKNER  
 CHECKED BY: J. LAMMERT  
 APPROVED BY: WUD

Palm Beach County  
 Water Utilities Department  
 P.O. Box 16097  
 West Palm Beach, FL 33416-6097

REVISION / REMARKS  
 NO. DATE  
 \* JUNE 2019 GENERAL REVISION  
 \* JAN 2023 GENERAL REVISION

STD DETAILS  
 SHEET NUMBER  
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 OF  
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SEAL

WUD PROJECT No. 00-000

WUD PROJECT NAME

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT  
 1000 PALM BEACH BLVD  
 WEST PALM BEACH, FL 33416  
 (561) 499-6000

DATE: MAR 01, 2023

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Drawing: W:\WUD 2023 STD DTL REV\WUD 2023 STD DTL SHEETS\WUD 2023 STD DTL - POTABLE WATER (6 SHITS).dwg\WUD PWS-6 - Last Modified: Wed, Mar 01, 2023 - 2:50pm

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

CRAVEN • THOMPSON AND ASSOCIATES, INC.  
 ENGINEERS • PLANNERS • SURVEYORS  
 3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
 FAX: (954) 739-8409 TEL: (954) 739-8400  
 FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS No. 271  
 FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS No. C000114

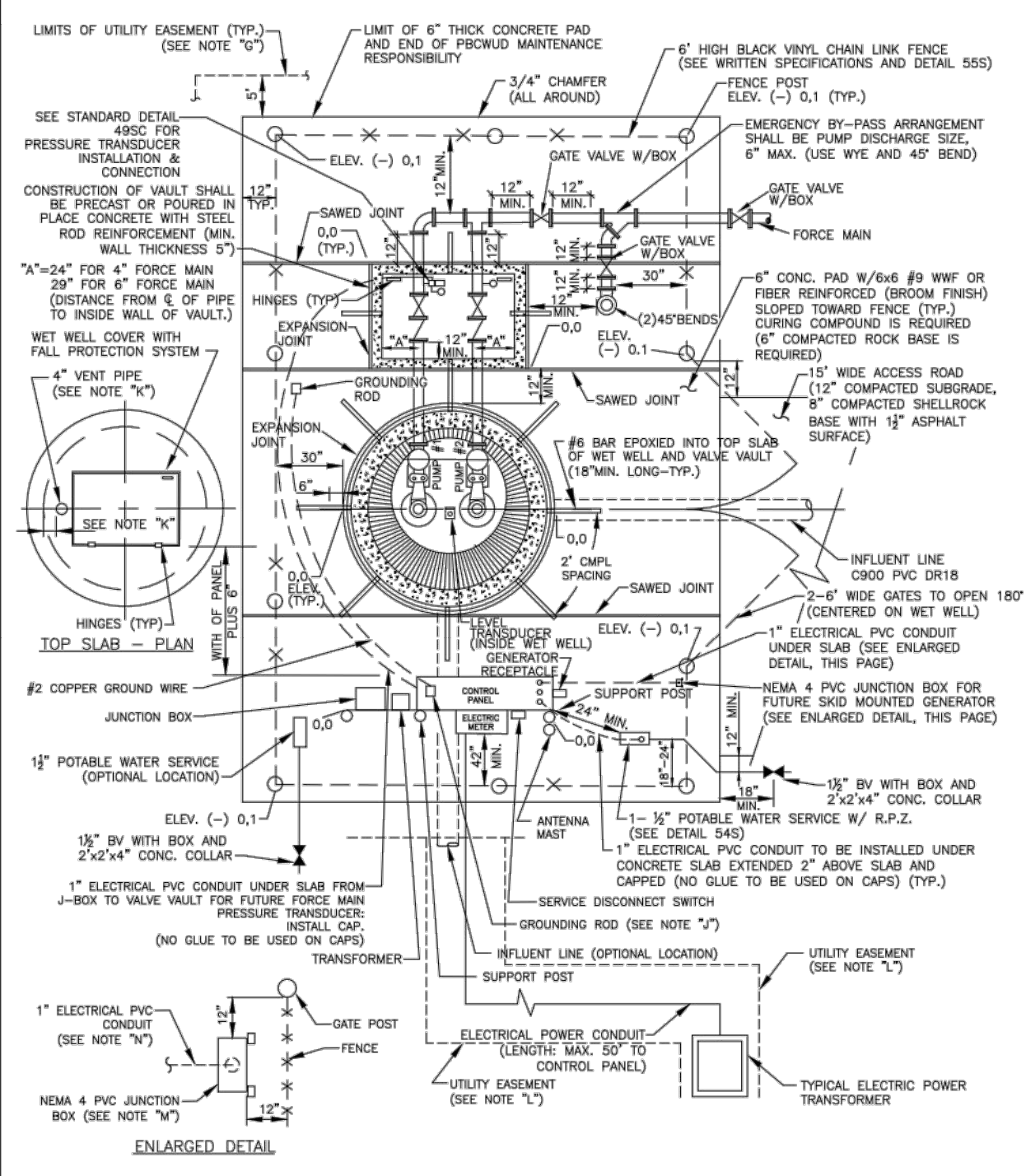
ORIGINAL SECTION SEWER  
 NORTH PHASE 3  
 CITY OF GREENACRES

WATER STANDARD DETAILS

SHEET NO. C-17

Leonard Z. Gamble  
 Florida P.E. No. 65921  
 March 3, 2025

PBCWUD #XXXX

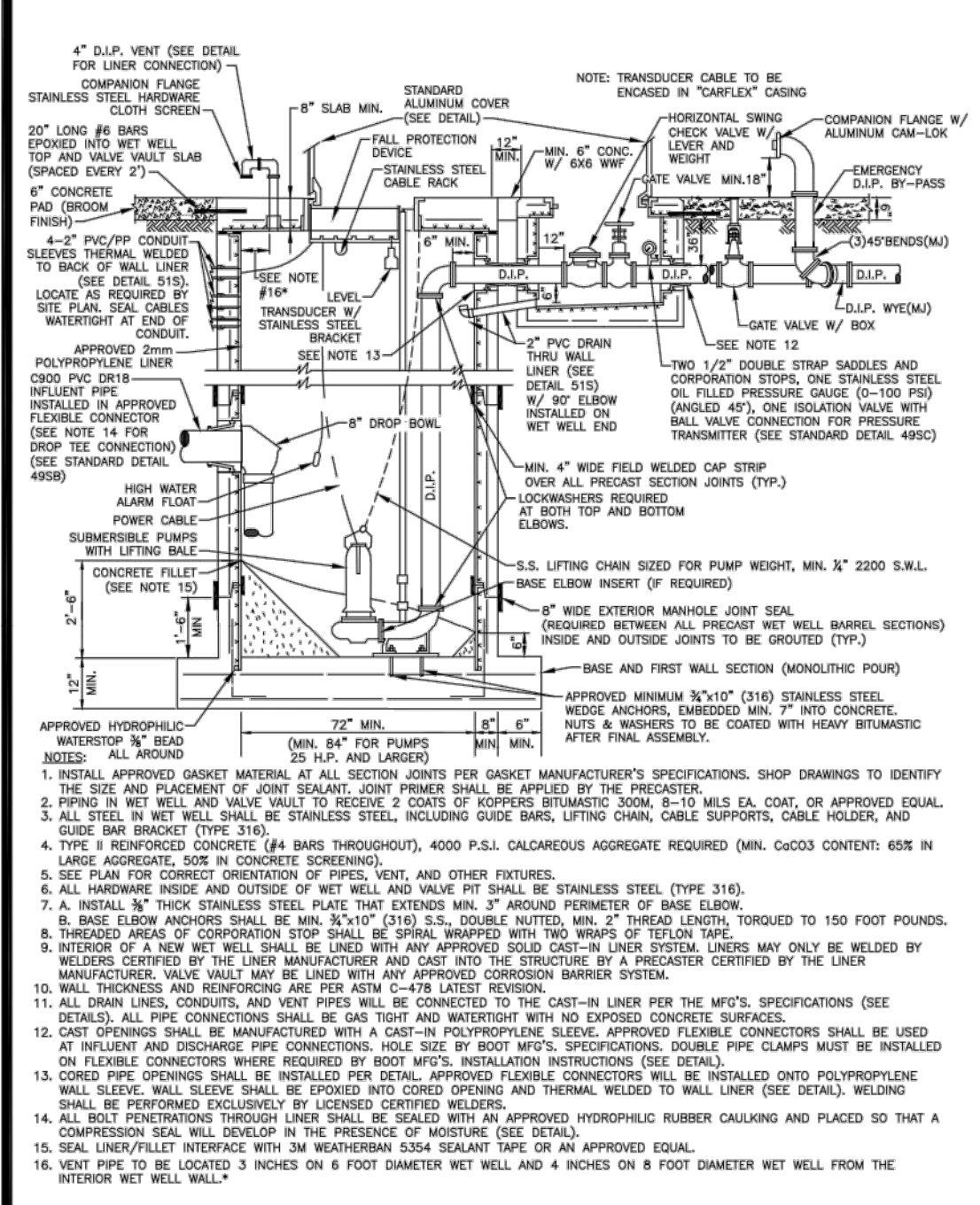


NOTE: SEE DETAIL 48S FOR NOTES RELATED TO 47S

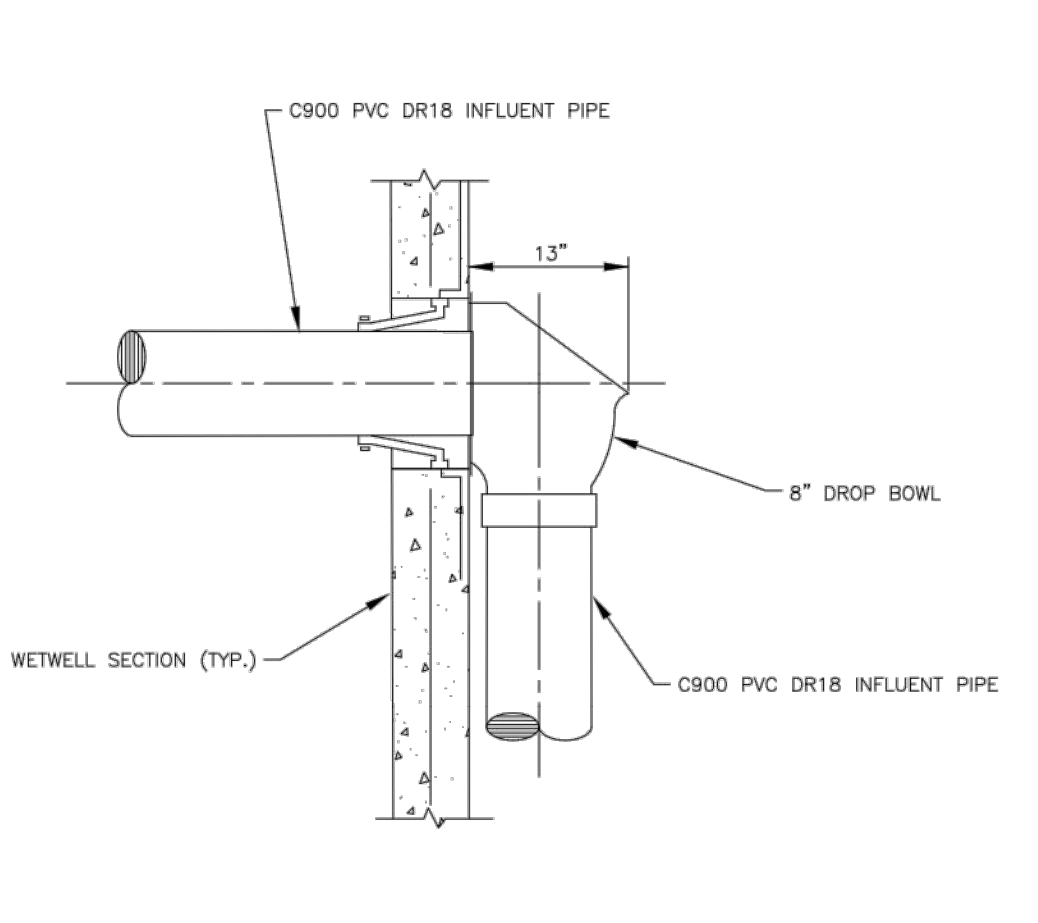
TYPICAL LIFT STATION SITE PLAN DETAIL \* 47S

- NOTES:
- ENGINEER SHALL DESIGN SITE PLAN USING THE "TYPICAL LIFT STATION SITE PLAN DETAIL". "SITE PLAN LOCATION" DETAIL SHALL BE DRAWN TO SCALE NOT SMALLER THAN 1"=10' WITH:
    - NORTH ARROW, STREET NAME.
    - FENCE WITH 2'-6" WIDE GATES.
    - INFLUENT LINE ENTRY LOCATION WITH MANHOLE AND GRAVITY MAIN DATA.
    - HINGE LOCATION (HINGES FOR WET WELL COVER MUST BE LOCATED ON THE CONTROL PANEL SIDE; HINGES FOR VALVE VAULT COVER SHALL BE LOCATED ON DISCHARGE SIDE OF FORCE MAIN.)
    - POWER SERVICE FEED (WITH "AS BUILT"), MAXIMUM LENGTH OF ELECTRICAL SERVICE FROM THE TRANSFORMER / HANDHOLE TO CONTROL PANEL.
    - EMERGENCY PUMP OUT LOCATION (SHALL BE SAME SIZE AS PUMP DISCHARGE).
    - THE STATION SHALL BE POSITIONED SO THE FRONT OF CONTROL PANEL DOES NOT FACE WEST OR SOUTH (NORTH AND EAST ARE PREFERRED).
  - HORIZONTAL DISTANCE FROM PANEL FRONT TO WET WELL OPENING SHALL BE: WIDTH OF CONTROL PANEL PLUS 6".
  - DESIGN TO BE COORDINATED WITH "TYPICAL LIFT STATION PLAN DETAIL".
  - FENCED AREA TO BE COVERED WITH 2 PLY 4.0 (FOUR) MIL VISQUEEN AND A 6" CONCRETE PAD WITH #9 MESH (6" x 8") - BROOM FINISH REQUIRED. INFLUENT MAIN SHALL BE CLEAR OF VAULT.
  - LANDSCAPE AREA ADJACENT TO LIFT STATION SITE MAY BE SUBJECT TO PRIOR APPROVAL BY THIS DEPARTMENT. ONLY TREES WITH NON-AGGRESSIVE ROOT SYSTEM WILL BE APPROVED. HEDGES ARE REQUIRED TO BE FIVE (5) FEET MINIMUM FROM THE EDGE OF THE CONCRETE PAD AND/OR DRIVEWAY. TREES ARE REQUIRED TO BE TEN (10) FEET MINIMUM FROM THE DRIVEWAY ONLY WITH PRIOR APPROVAL BY THIS DEPARTMENT. THE DEVELOPER AND SUCCESSOR SHALL BE RESPONSIBLE FOR ALL LANDSCAPE MAINTENANCE INCLUDING ALL SODDED AREAS. APPROVED HEDGES ARE: EUCLIDIA, SURNAM CHERRY, MAX MYRTLE, SIMPSON STOPPER, AND SOUTHERN RED CEDAR. NO WOODEN FENCES ARE PERMITTED WITHIN THE LIFT STATION EASEMENT AREA GRATED BY PLAT OR BY SEPARATE INSTRUMENT.
  - A PLATED LIFT STATION EASEMENT OR EXCLUSIVE PALM BEACH COUNTY UTILITY EASEMENT (PBCUE) BY SEPARATE INSTRUMENT IS REQUIRED TO EXTEND FIVE (5) FEET MINIMUM PAST THE LIFT STATION CONCRETE PAD.
    - 4" PIPING: 5'(L) x 6"(W) x 4"(D)
    - 6" PIPING: 5'(L) x 7"(W) x 4"(D)
  - MINIMUM TWO GROUNDING RODS SHALL BE MIN. 6' APART AND SHALL BE RECESSED THROUGH 6" PVC SLEEVES IN CONCRETE SLAB. THE RODS SHALL BE CONNECTED WITH A #2 BARE TINNED COPPER GROUNDING WIRE. (SEE DETAIL 34S)
  - WETWELL VENT PIPE SHALL BE INSTALLED SO NOT TO INTERFERE WITH ACCESS TO THE WETWELL AND INSTALLED OPPOSITE OF GATE.
  - THE ELECTRIC POWER SERVICE FEED FROM THE POWER TRANSFORMER TO THE CONTROL PANEL SHALL BE LOCATED WITHIN AN UTILITY EASEMENT.
  - NEMA 4 - 4"x4"x4" PVC JUNCTION BOX TO BE MOUNTED ON 316 STAINLESS STEEL UNISTRUT SUPPORT 24" ABOVE SLAB WITH 316 STAINLESS STEEL HARDWARE.
  - 1" PVC ELECTRICAL CONDUIT TO BE INSTALLED UNDER THE SLAB FROM THE CONTROL PANEL TO JUNCTION BOX AT THE FENCE LINE.

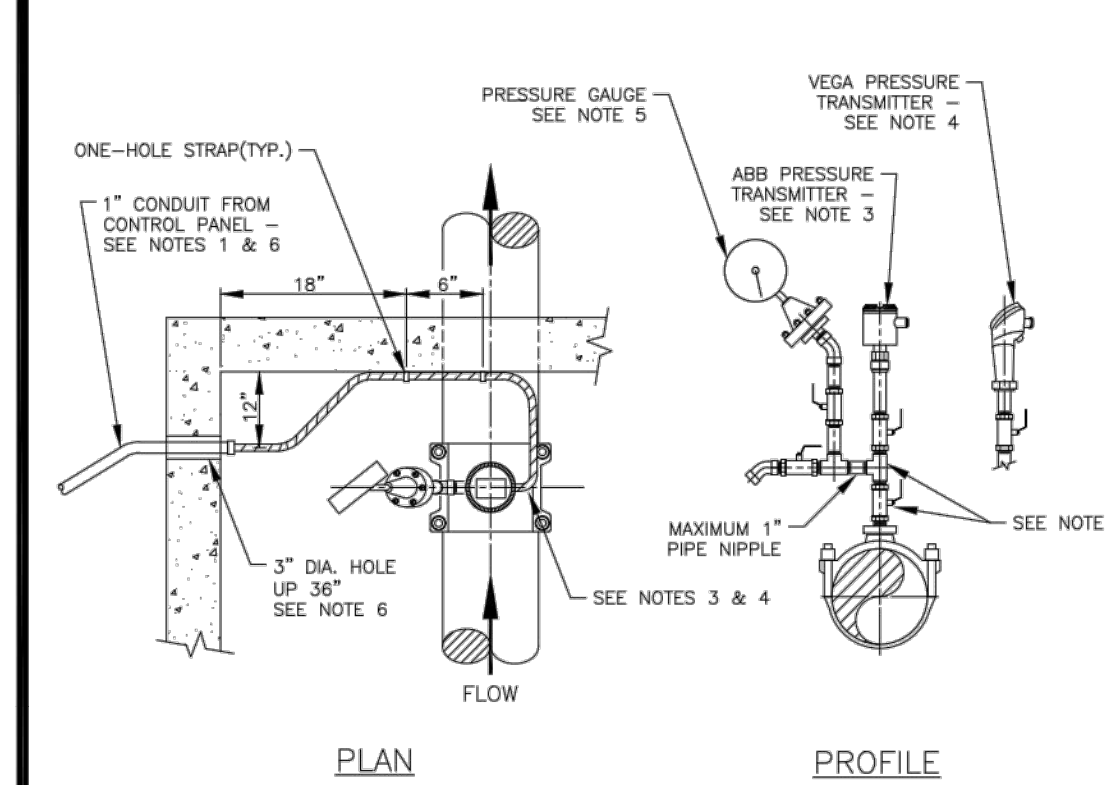
TYPICAL LIFT STATION SITE PLAN NOTES \* 48S



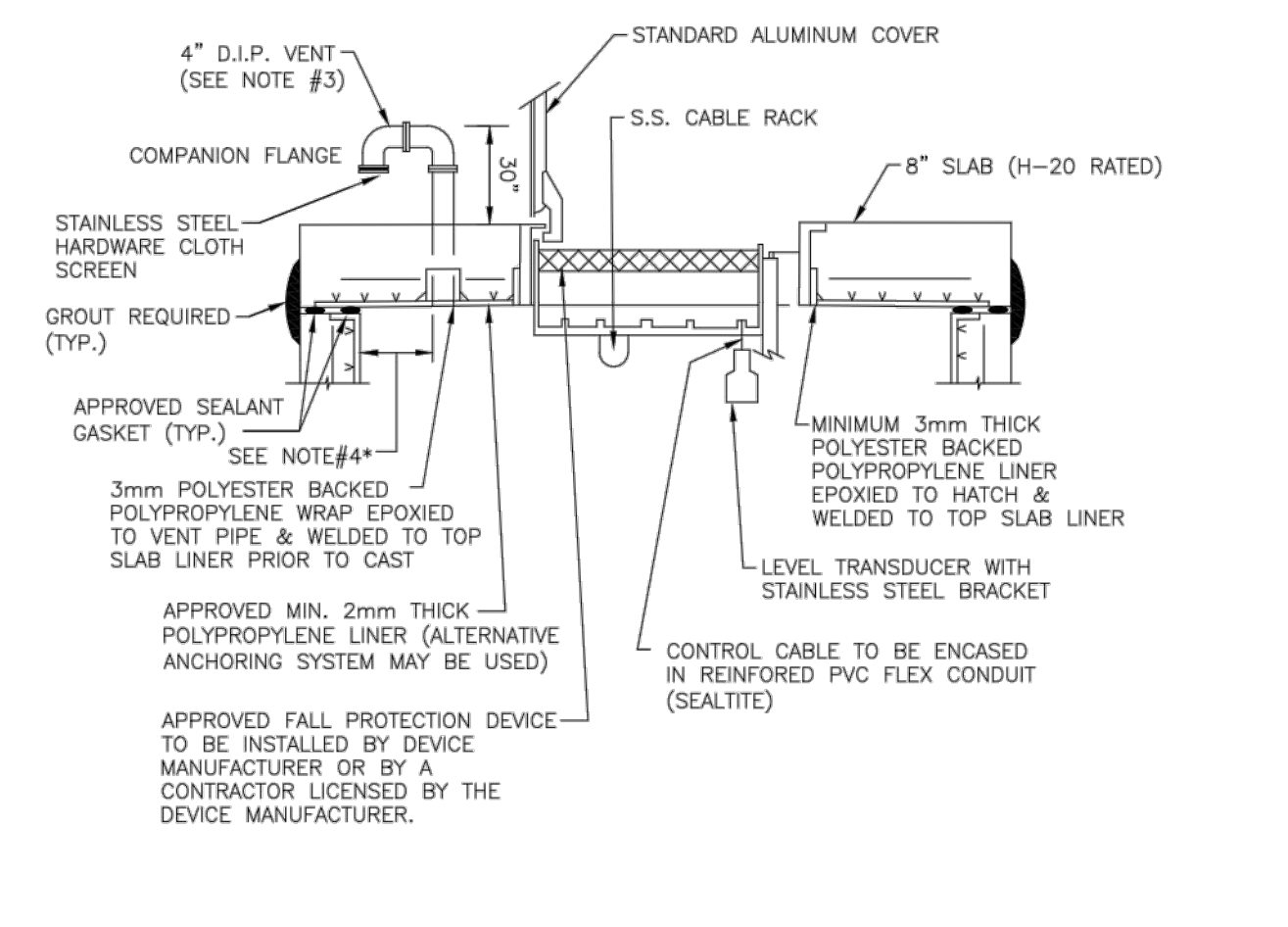
TYPICAL LIFT STATION SECTION WITH CAST-IN LINER \* 49SA



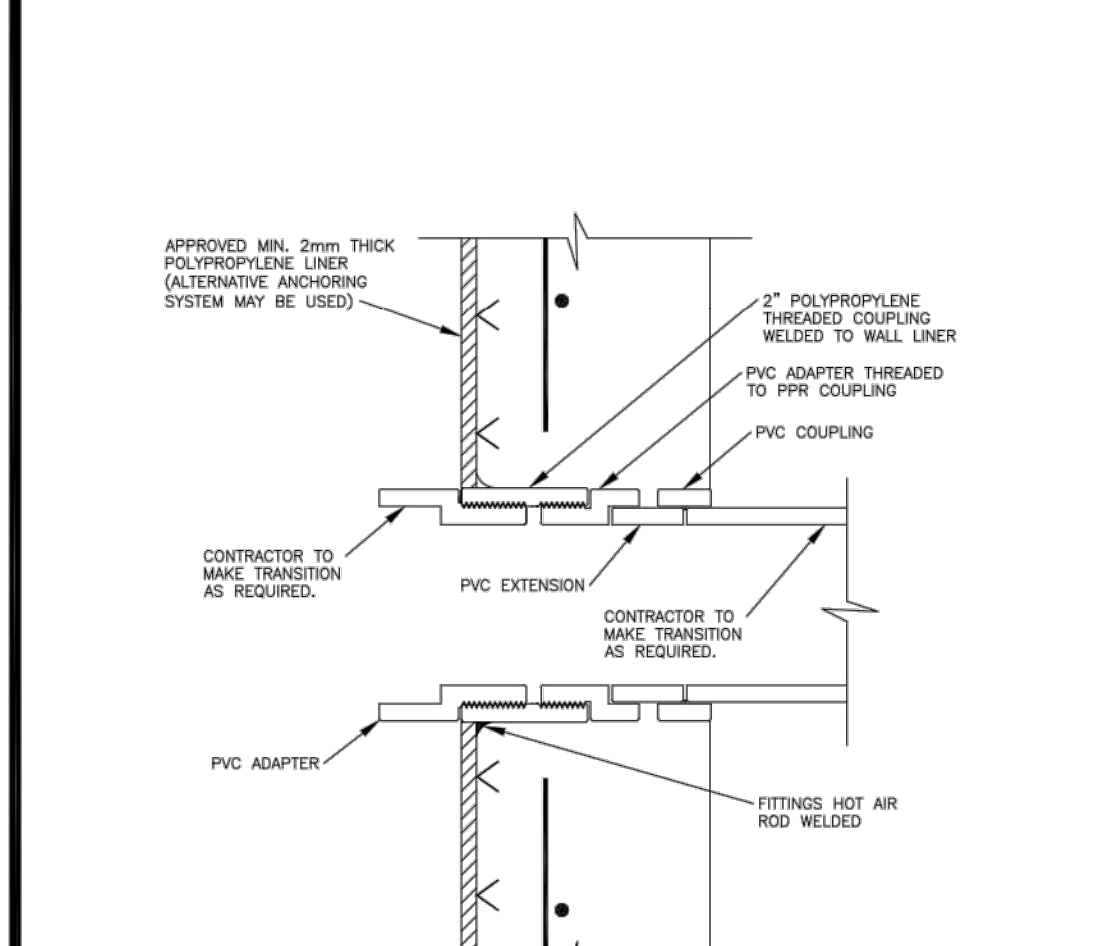
TYPICAL LIFT STATION SECTION DROP PIPE DETAIL & NOTES \* 49SB



TYPICAL LIFT STATION VALVE VAULT PRESSURE TRANSMITTER DETAIL & NOTES \* 49SC



LIFT STATION TOP SLAB \* 50S



LIFT STATION 2" DIAMETER CONDUIT CONNECTION \* 51S

PROPOSED		WET WELL DATA	
STATION NUMBER	0574	AS-BUILT	
DIAMETER	8"	HIGH WATER ALARM	2.50'
TOP SLAB ELEV.	18.00'	STANDBY PUMP ON	2.00'
BASE SLAB ELEV.	-4.24'	DUTY PUMP ON	1.50'
INFLUENT ELEV.	2.56'	BOTH PUMPS OFF	0.70'
		FINISHED GRADE	18.00'
		LOCATED ON SHEET	C-5

PUMP DATA	
PUMP STATION NUMBER	0574 0574
PUMP NUMBER	1 2
MAX./MIN. G.P.M.	61.43 61.43
MIN./MAX. T.D.H.	34.91 34.91
MANUFACTURER	FLYGT FLYGT
MODEL	N3102 N3102
IMPELLER NUMBER	162 MM 162 MM
R.P.M.	1770 1770
H.P.	5 5
SIZE	4" 4"
MAX. SOLID SIZE	3" 3"
PHASE	3 3
CYCLE	
VOLTS	230 230

RTU RECORD DATA	
ADDRESS	
GEOGRAPHICAL LOCATION	LAT: 26° ' ' N LONG: 80° ' ' W
HEIGHT OF ANTENNA ABOVE SLAB	FEET
FREQUENCY	MHZ
POWER	WATTS
P.B.C. LIFT STATION No.	

**LIFT STATION MECHANICAL STANDARD DETAILS, 1 OF 2**

CONSULTANT: **IT'S THE LAW!**  
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SUNSHINE STATE ONE CALL OF FLORIDA, INC.  
UTILITIES NOTIFICATION CENTER

DESIGNED BY: WUD  
DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMBERT  
APPROVED BY: WUD

Palm Beach County  
Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

SEP 19, 2024

WUD PROJECT NO. 00-000

WUD PROJECT NAME

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT  
P.O. BOX 16097  
WEST PALM BEACH, FL 33416  
(561) 498-6000

REVISIONS / REMARKS

NO.	DATE	GENERAL REVISION
1	DEC 2021	GENERAL REVISION
2	JAN 2023	GENERAL REVISION
3	OCT 2024	GENERAL REVISION

LS MECH M-1

SHEET NUMBER 0 OF 0

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Drawing: W:\\_WUD 2024 STD DTL REV\WUD 2023 STD DTL - LIFT STATION (6 SHTS).dwg | WUD\_LS\_M1 - Last Modified: Thu, Sep 19, 2024 - 1:11pm

REVISIONS		REVISIONS	
DATE	BY	DATE	BY

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE
CHECKED BY			CHECKED BY		
SUPERVISED BY:					

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3563 N.W. 53RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-6409 TEL: (954) 739-6400  
FLORIDA LICENSED ENGINEERING, SURVEYING & MAPPING BUSINESS NO. 271  
FLORIDA LICENSED LANDSCAPE ARCHITECTURE BUSINESS NO. C000114

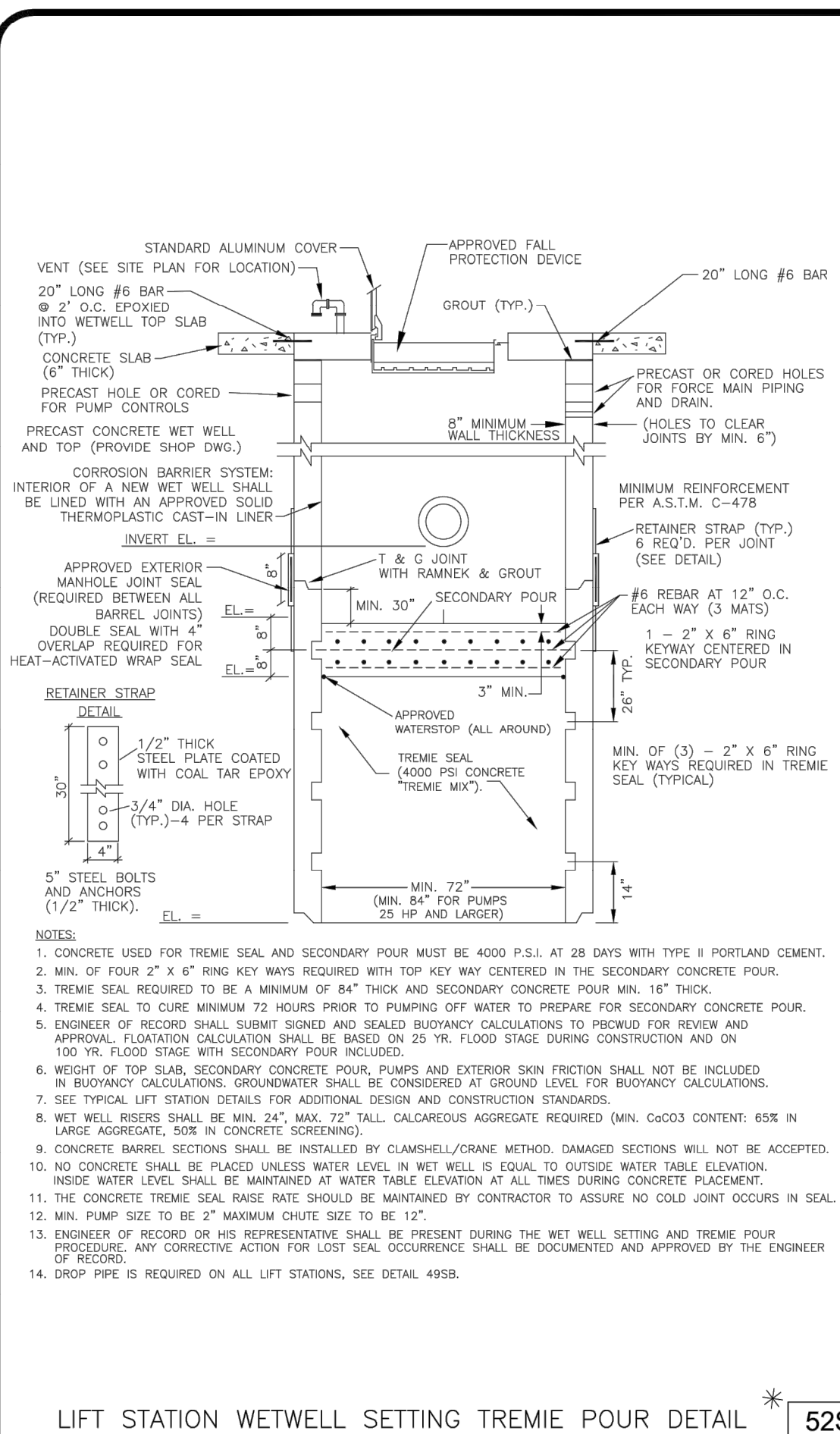
ORIGINAL SECTION SEWER  
NORTH PHASE 3  
CITY OF GREENACRES

PBCWUD #XXXX

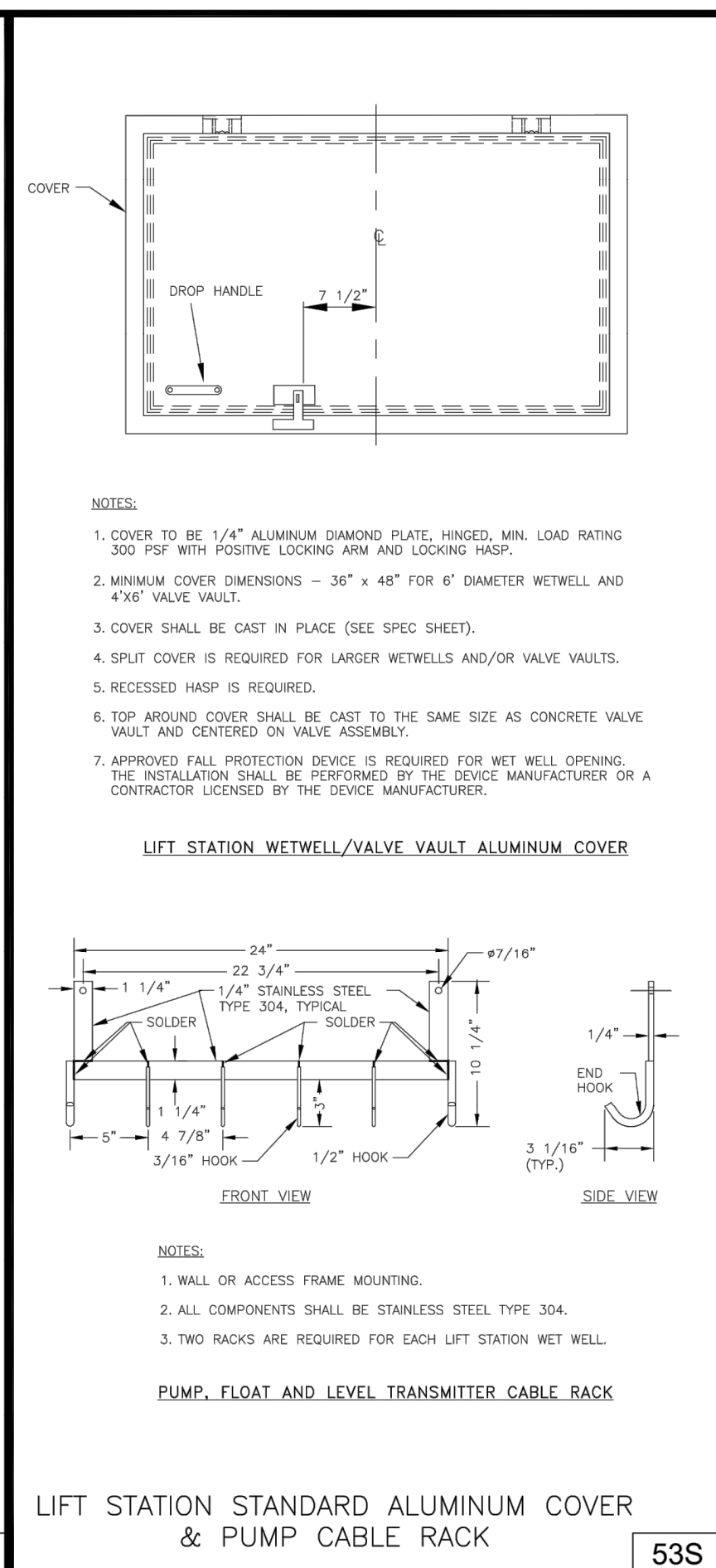
**LIFT STATION DETAILS**

SHEET NO. C-18

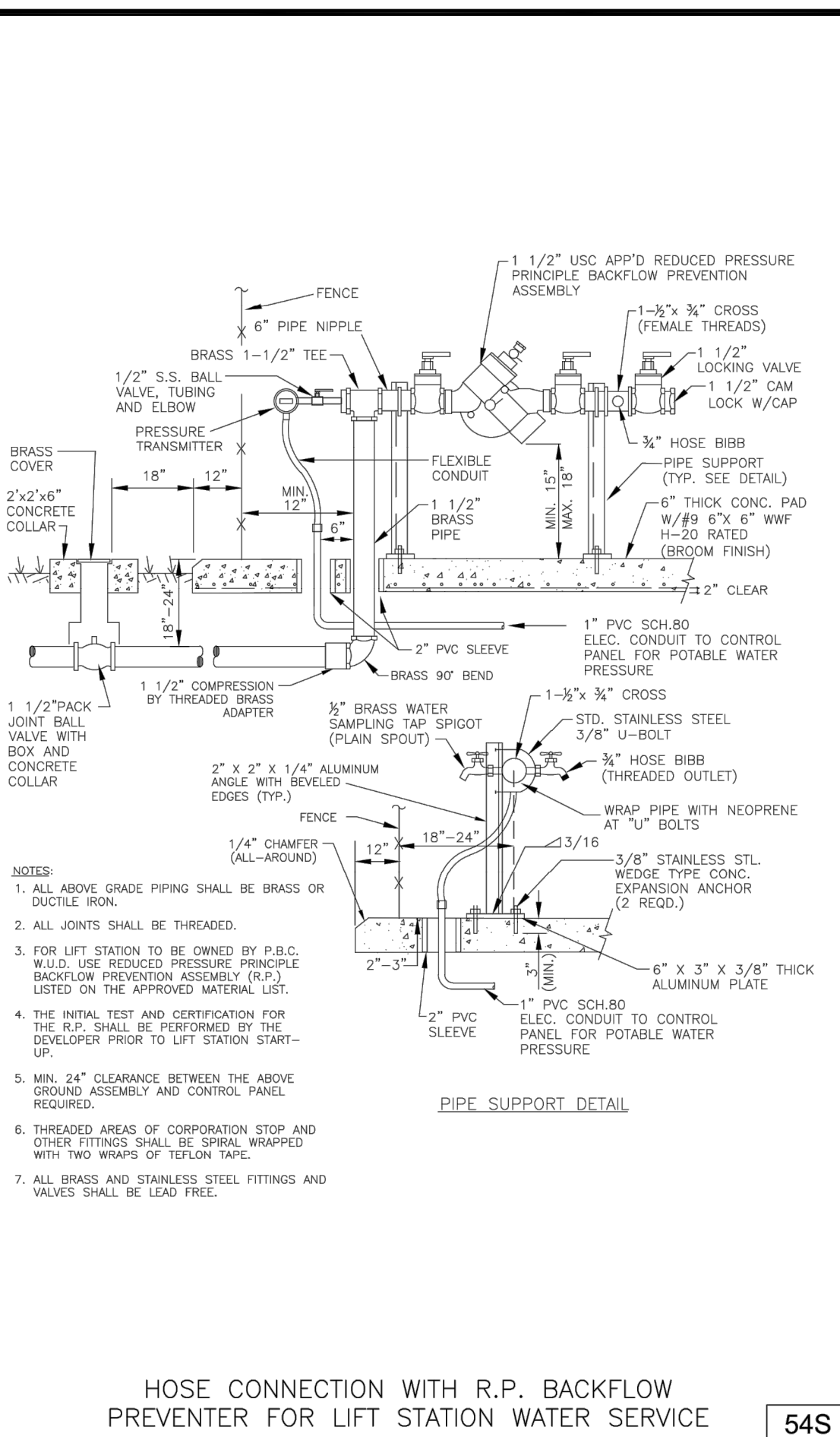
Leonard Z. Gamble  
Florida P.E. No. 65921  
March 19, 2025



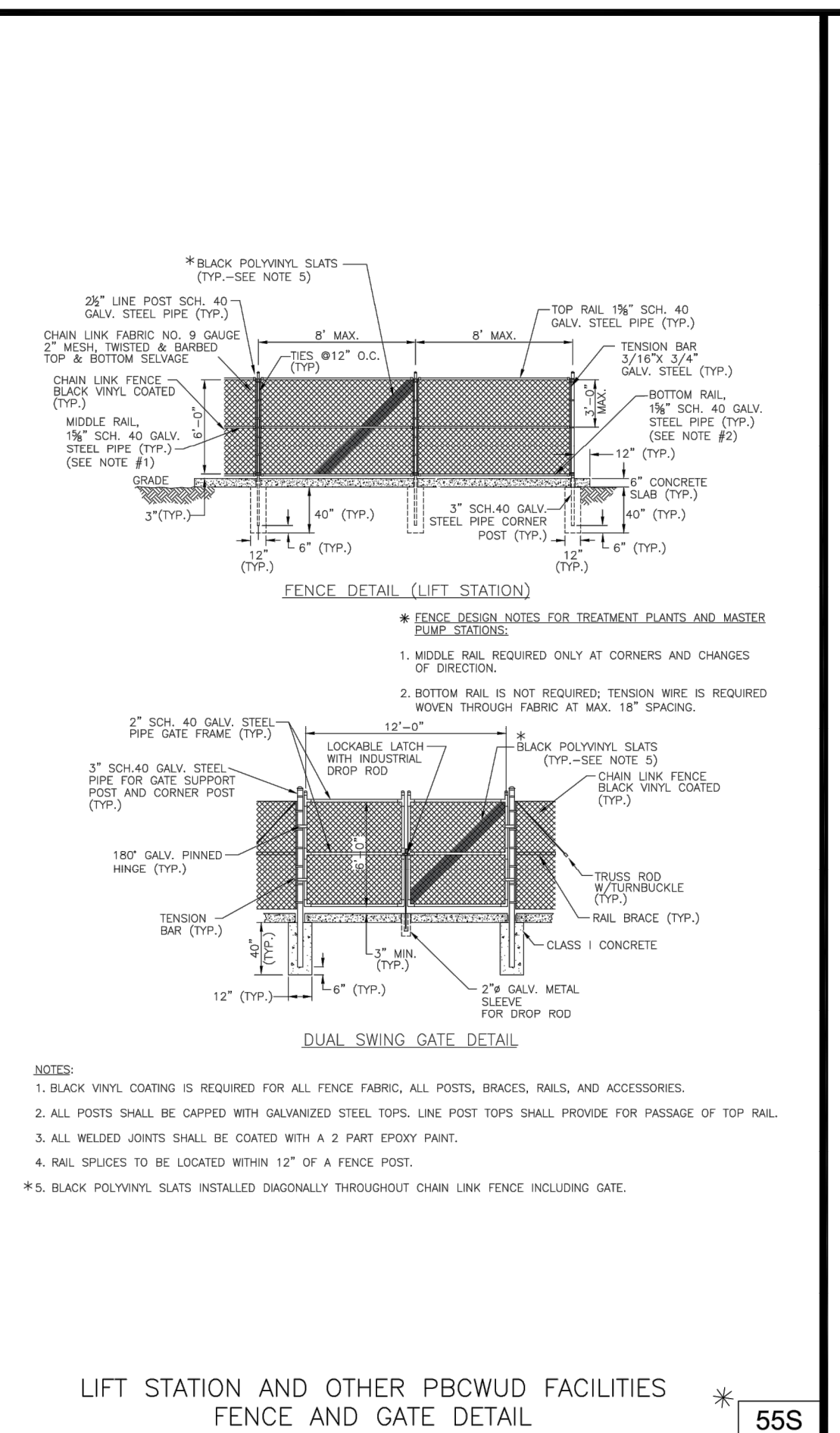
LIFT STATION WETWELL SETTING TREMIE POUR DETAIL \* 52S



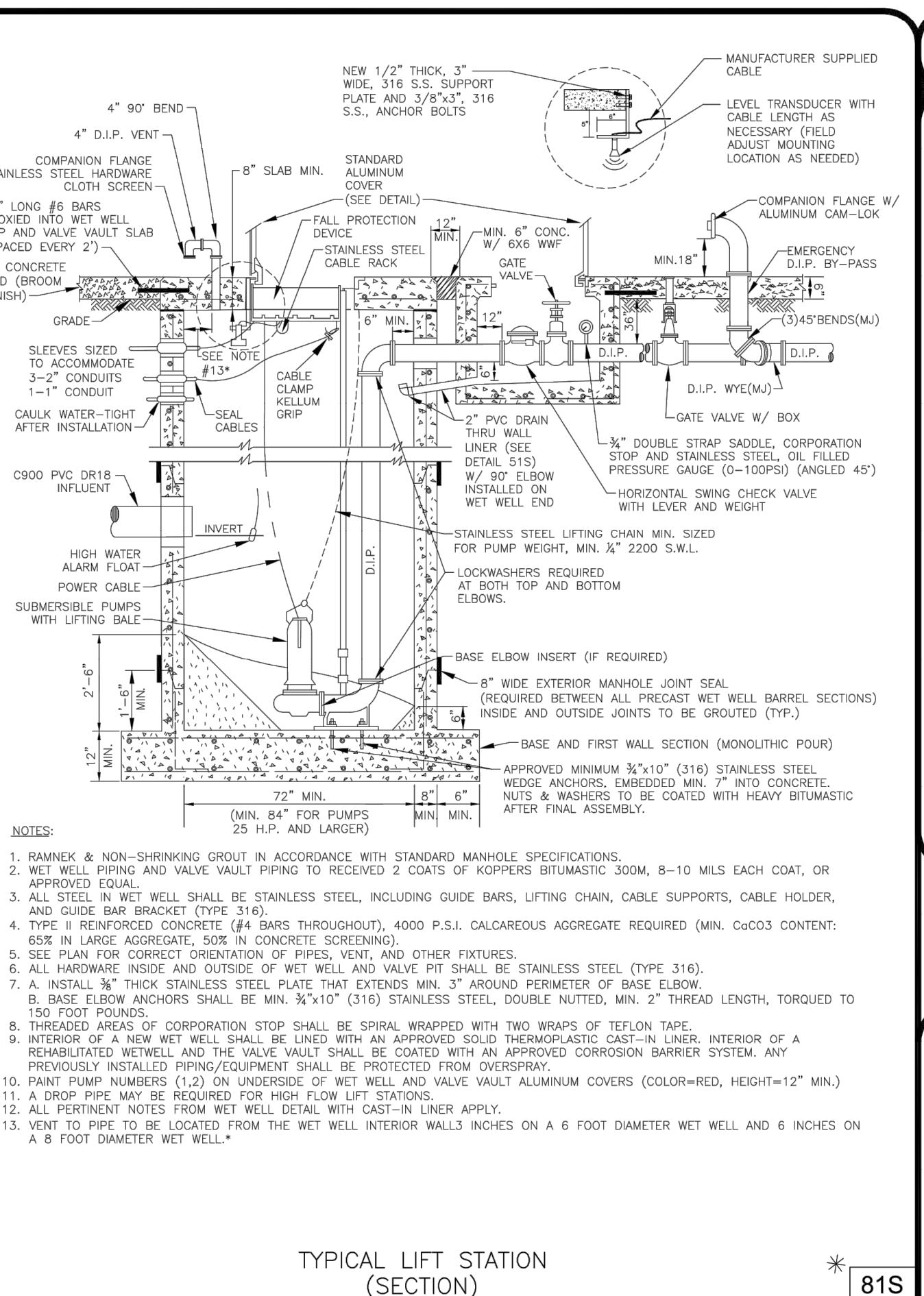
LIFT STATION STANDARD ALUMINUM COVER & PUMP CABLE RACK 53S



HOSE CONNECTION WITH R.P. BACKFLOW PREVENTER FOR LIFT STATION WATER SERVICE 54S



LIFT STATION AND OTHER PBCWUD FACILITIES FENCE AND GATE DETAIL \* 55S



TYPICAL LIFT STATION (SECTION) \* 81S

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**LIFT STATION MECHANICAL STANDARD DETAILS, 2 OF 2**

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DRAWN BY: M. BUCKNER  
CHECKED BY: J. LAMMERT  
APPROVED BY: WUD

Palm Beach County  
Water Utilities Department  
P.O. Box 16097  
West Palm Beach, FL 33416-6097

Mar 17, 2023

WUD PROJECT NO. 00-000

WUD PROJECT NAME

PALM BEACH COUNTY WATER UTILITIES DEPARTMENT  
P.O. BOX 16097  
WEST PALM BEACH, FL 33416  
(561) 498-6000

NO.	DATE	REVISION / REMARKS
*	DEC 2021	GENERAL REVISION
*	JAN 2023	GENERAL REVISION

LS MECH M-2

SHEET NUMBER 0 OF 0

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Drawing: W:\WUD 2023 STD DTL REV\WUD 2023 STD DTL SHEETS\WUD 2023 STD DTL - LIFT STATION (6 SHITS).dwg2\_WUD\_LS\_M2 - Last Modified: Fri, Mar 17, 2023 - 10:05am

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**LIFT STATION DETAILS**

SHEET NO. C-19

PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025



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1	JAN 2023	GENERAL REVISION

LS ELEC. E-1

SHEET NUMBER 0 OF 0

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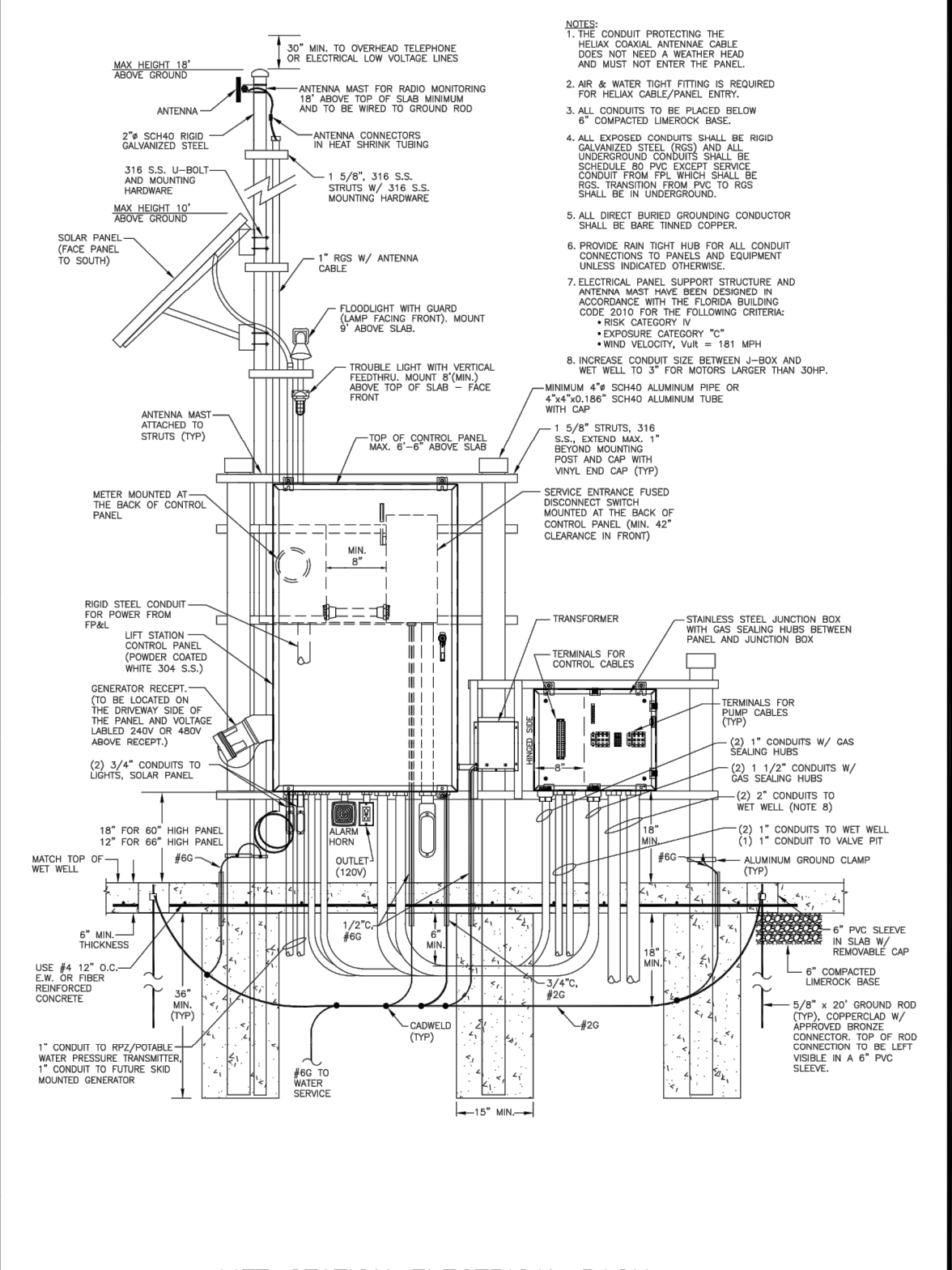
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CHECKED BY: J. LAMMERT Water Utilities Department  
APPROVED BY: WUD P.O. Box 16097  
West Palm Beach, FL 33416-6097

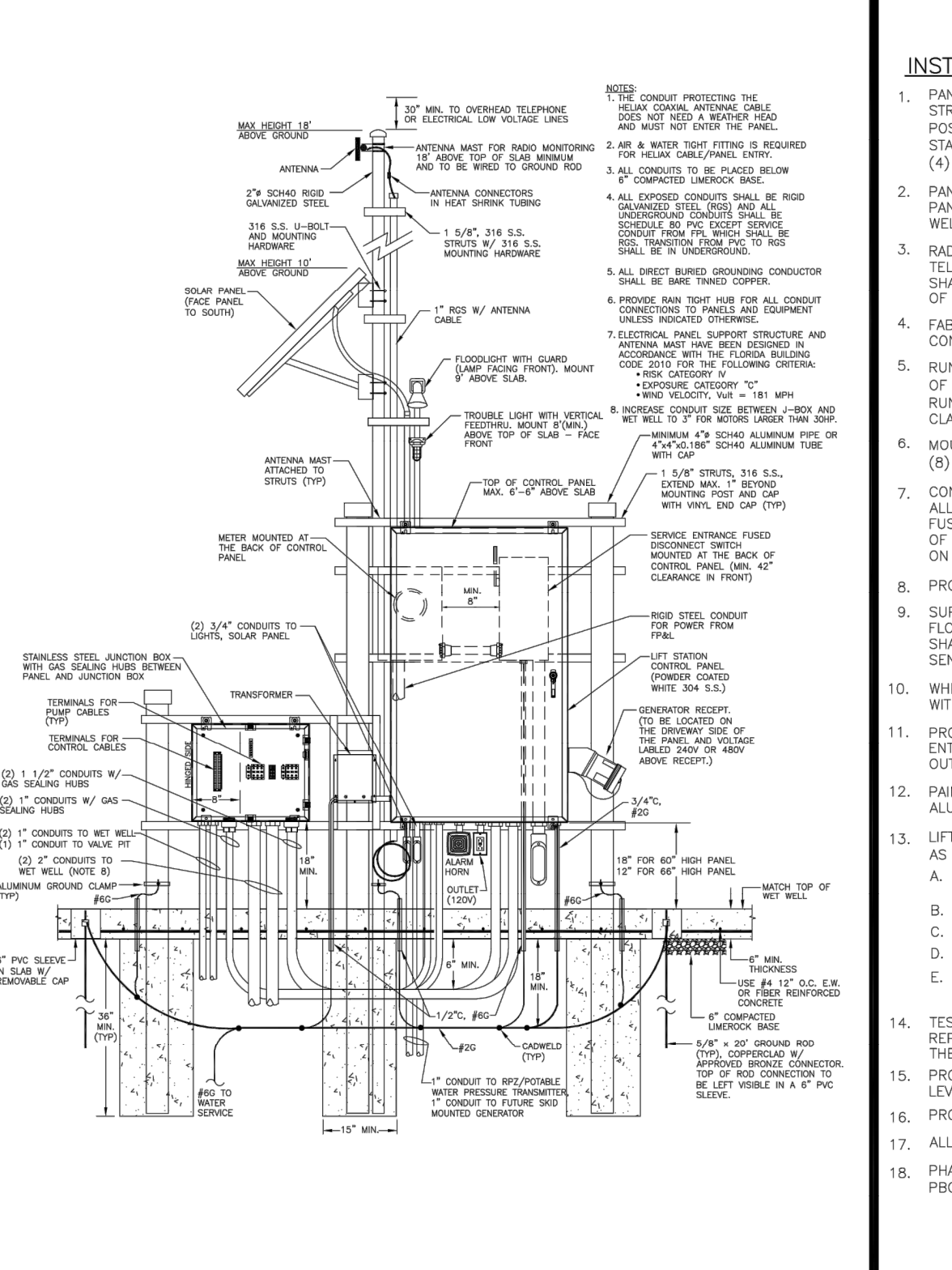
Mar 17, 2023

PBCWUD #XXXX

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025



LIFT STATION ELECTRICAL RACK FOR GENERATOR RECEPTACLE LOCATED ON LEFT SIDE \* 56S

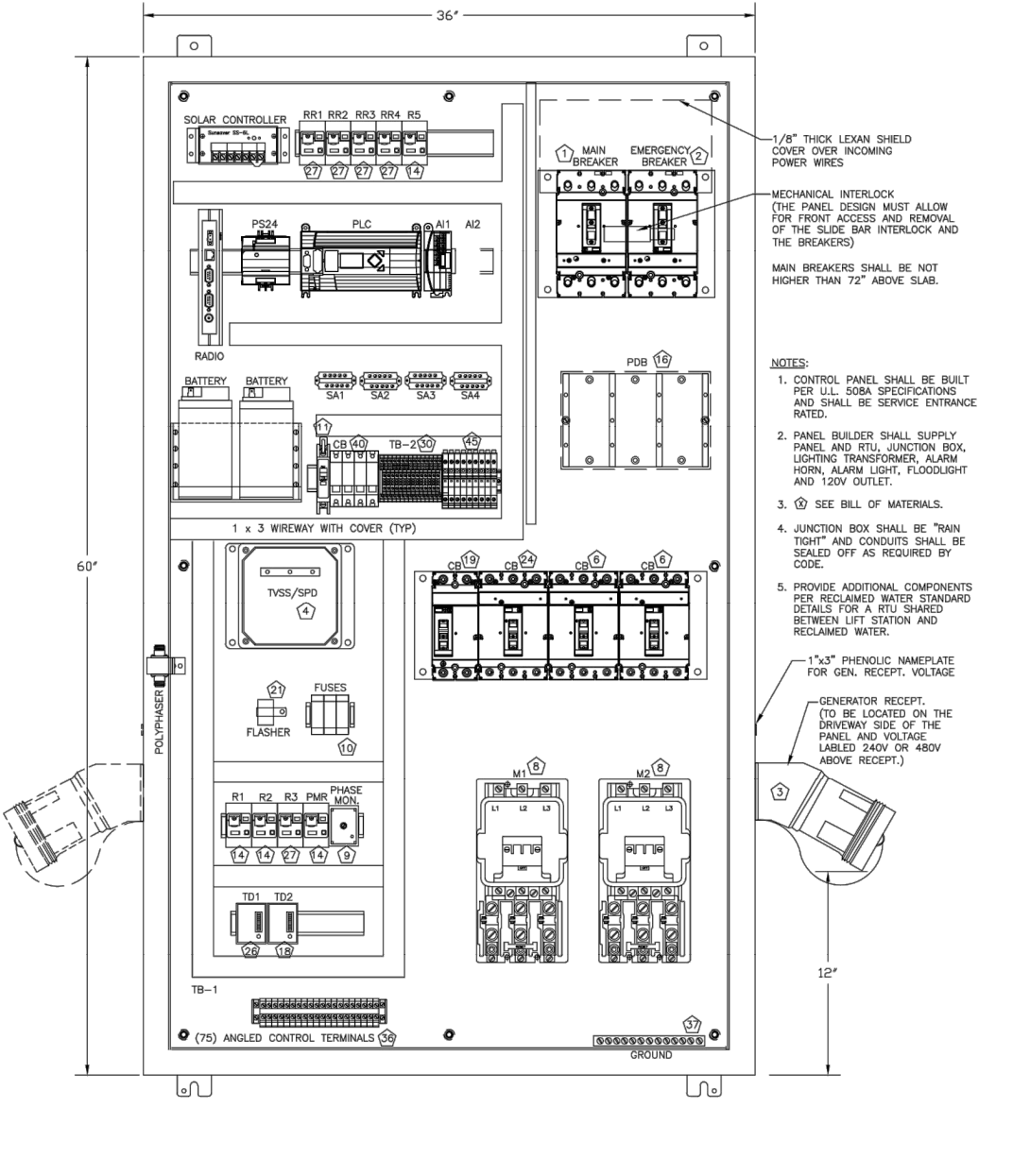


LIFT STATION ELECTRICAL RACK FOR GENERATOR RECEPTACLE LOCATED ON RIGHT SIDE \* 57S

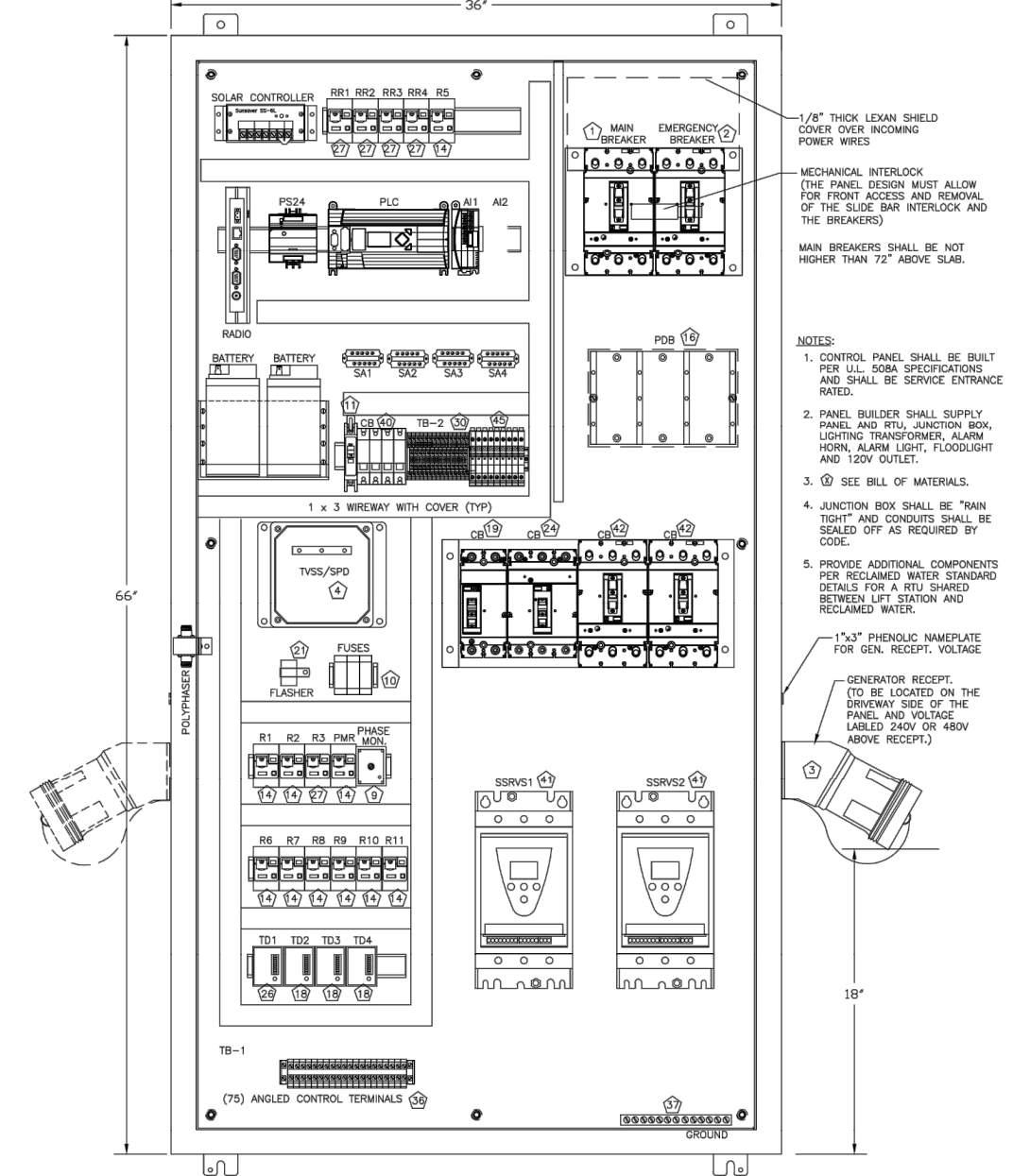
**INSTALLATION NOTES**

- PANEL, METER, JUNCTION BOX AND 120 VOLT TRANSFORMER ARE TO BE MOUNTED ON STAINLESS STEEL STRUTS, WITH STAINLESS STEEL FASTENING DEVICES, AND SHALL BE SUPPORTED BY MINIMUM OF THREE POSTS; MIN. FOUR (4) INCH DIAMETER PIPE OR MIN. FOUR (4) INCH SQUARE TUBE (ALUMINUM OR STAINLESS STEEL) CAPPED AT THE TOP. PAINT BELOW GRADE SUPPORTS WITH ASPHALTUM PAINT TO FOUR (4) INCHES ABOVE GRADE.
- PANEL SHALL BE AT 42 INCHES FROM THE WET WELL OPENING MEASURED FROM THE FRONT OF THE PANEL UNLESS OTHERWISE SHOWN IN THE DRAWINGS. FRONT OF CONTROL PANEL SHALL FACE TO THE WELL.
- RADIO TO MATCH PALM BEACH COUNTY'S SYSTEM INCLUDING RUN TIME TRANSMITTAL, LIVE TEST OF THE TELEMETRY SYSTEM MUST BE DONE AND APPROVED AT THE PUMP STATION START-UP. ANTENNA AND CABLE SHALL BE PART OF THE RADIO SYSTEM. ANTENNA SHALL BE SEPARATELY GROUNDED TO THE GROUND ROD OF THE STATION.
- FABRICATE ANTENNA FROM 21 FEET LENGTH OF 2" DIAMETER SCHEDULE 40 GALVANIZED STEEL CONTINUOUS PIPE. PAINT LOWER 42 INCHES WITH ASPHALTUM PAINT, CAP THE TOP OF PIPE.
- RUN (1) INCH RIGID GALVANIZED CONDUIT UP THE MAST FOR THE ANTENNA CABLE TO WITHIN 16 INCHES OF THE TOP. RUN SECOND 3/4 INCH CONDUIT UP THE MAST FOR ALARM AND FLOOD LIGHTS AS SHOWN. RUN THIRD 3/4 INCH CONDUIT UP THE MAST FOR SQUARE SEAL. USE STAINLESS STEEL UNISTRUT AND CLAMPS TO HOLD CONDUITS TO THE MAST.
- MOUNT FLOOD LIGHT AND FLASHING RED LIGHT ON THE ANTENNA MAST AT NINE (9) FEET AND EIGHT (8) FEET ABOVE GRADE.
- CONDUIT TO THE POWER COMPANY SERVICE POINT SHALL BE RIGID GALVANIZED WITH ASPHALTUM PAINT ON ALL FITTINGS AND ON ALL RISERS TO 12 INCHES ABOVE GRADE. CONDUIT FROM SERVICE ENTRANCE TO THE PANEL SHALL BE RIGID GALVANIZED CONDUIT ENTERING THE BOTTOM OF THE PANEL. ALL WIRE SHALL BE COPPER, HIGH LEG, ON 240 VOLT SHALL BE TAPED ORANGE AND PUT ON CENTRAL TERMINAL IN PANEL AND RIGHT TERMINAL IN METER.
- PROVIDE PVC SCHEDULE 80 CONDUITS WITH SNEEP BENDS FROM THE JUNCTION BOX TO THE WET WELL.
- SUPPORT PUMP CABLES WITH STAINLESS STEEL BASKET KELLUM (OR EQUAL) GRIPS IN WET WELL. SUPPORT FLOAT CABLE ON S.S. THIMBLE FROM THE RACK. ALL HARDWARE IN THE WET WELL AND ALL FASTENERS SHALL BE STAINLESS STEEL. CABLES SHALL BE CONTINUOUS FROM THE JUNCTION BOX TO THE MOTORS OR SENSORS.
- WHEN CONNECTIONS ARE COMPLETE IN THE JUNCTION BOX, COAT THE TERMINAL BLOCKS AND WIRE ENDS WITH PROTECTIVE COMPOUND, NO-OXIDE OR EQUAL, TO PREVENT CORROSION.
- PROVIDE 3/4 INCH RIGID GALVANIZED CONDUIT FROM THE PANEL TO 120 VOLT TRANSFORMER. ALL CONDUITS ENTER BOTTOM OF THE PANEL UNLESS OTHERWISE SHOWN. SEAL ALL CONDUITS WITH DUCT SEAL TO KEEP OUT MOISTURE.
- PANEL PVC PIPES, CONDUITS AND ANY PARTS NOT STAINLESS OR ALUMINUM WITH TWO (2) COATS OF ALUMINUM PAINT.
- LIFT STATION START UP SHALL BE PERFORMED DURING THE ANTICIPATED PEAK FLOW CONDITIONS. TEST AS FOLLOWS (PUMP SUPPLIER'S FIELD REPRESENTATIVE MUST BE PRESENT AT THE START UP).
  - MEASURE MOTORS, MOTORS SHALL BE 20 MEGOHMS OR MORE TO GROUND, DO NOT MUGGER LOW VOLTAGE CONTROLS.
  - CHECK VOLTAGE, CHECK PUMP ROTATION, RECORD VOLTAGE AND AMPS UNDER LOAD.
  - DEMONSTRATE PROPER OPERATION OF ALL CONTROLS.
  - CONDUCT DRAWDOWN TESTS AS REQUIRED TO CONFIRM PROPER PUMP/MELLER INSTALLATION.
  - CHECK OPERATION WITH OWNER'S PORTABLE GENERATOR CHANGE WIRE CONNECTIONS IN THE PANEL TO GIVE CORRECT ROTATION.
- TEST AND DEMONSTRATE PROPER OPERATION OF THE RADIO TELEMETRY SYSTEM. SUPPLIER'S FIELD REPRESENTATIVE SHALL MOUNT AND CONNECT THE ANTENNA AND MAKE THE FINAL CONNECTIONS TO THE SYSTEM.
- PROVIDE LIQUID TIGHT NONMETALLIC FLEXIBLE CONDUIT (CARLON CARPLEX) WITH SEAL TYPE FITTINGS FOR LEVEL TRANSMITTER CABLE INSIDE THE WET WELL.
- PROVIDE GAS SEALOFF WITH CHCO COMPOUND FOR CONDUITS BETWEEN JUNCTION BOX AND CONTROL PANEL.
- ALL STAINLESS STEEL SHALL BE 316 UNLESS INDICATED OTHERWISE.
- PHASE SEQUENCE IN CONTROL PANEL SHALL BE SETUP FOR CLOCKWISE ROTATION TO MATCH THE ROTATION OF PBCWUD PORTABLE STANDBY GENERATORS.

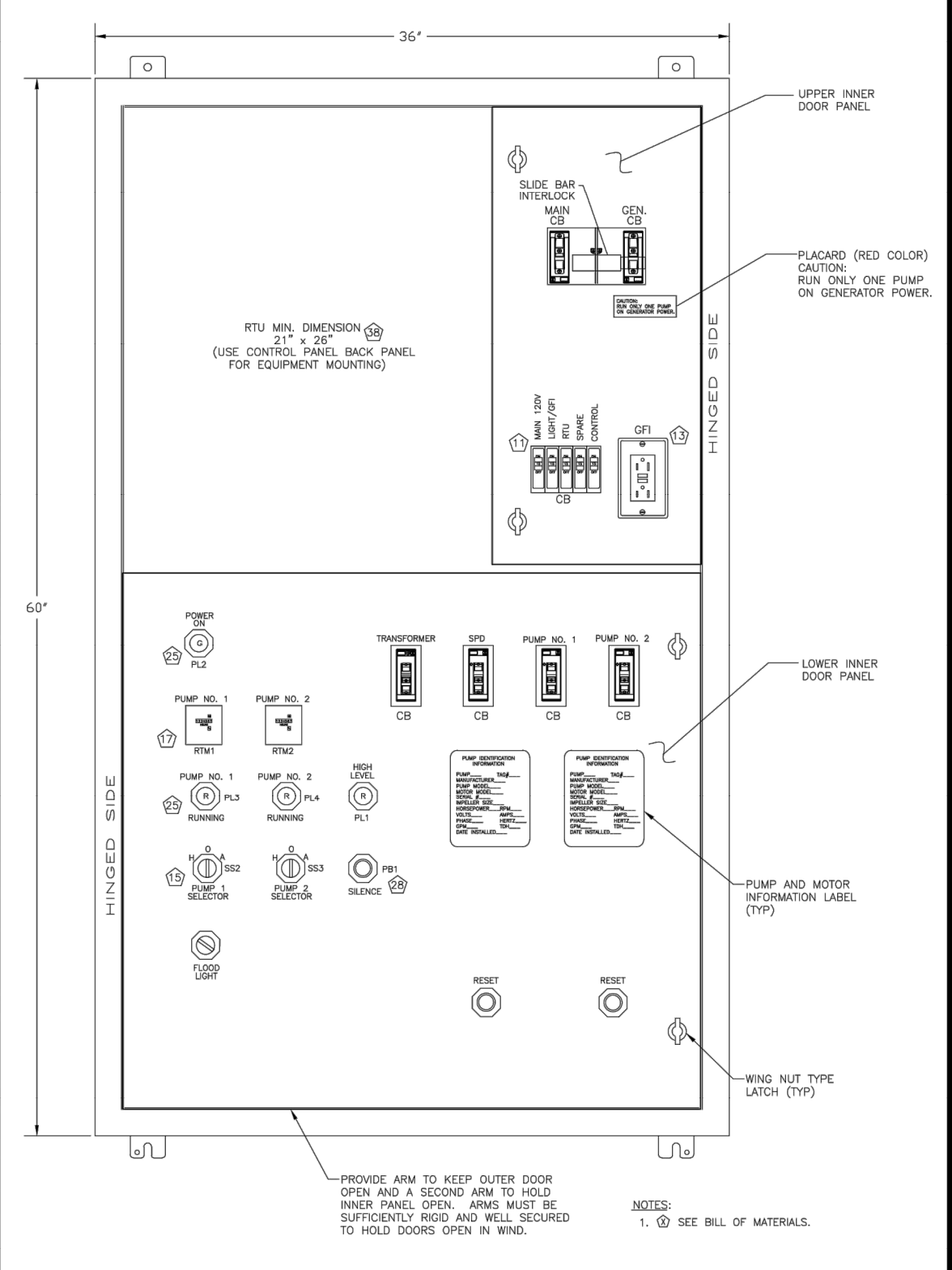
CONTROL PANEL INSTALLATION NOTES \* 58S



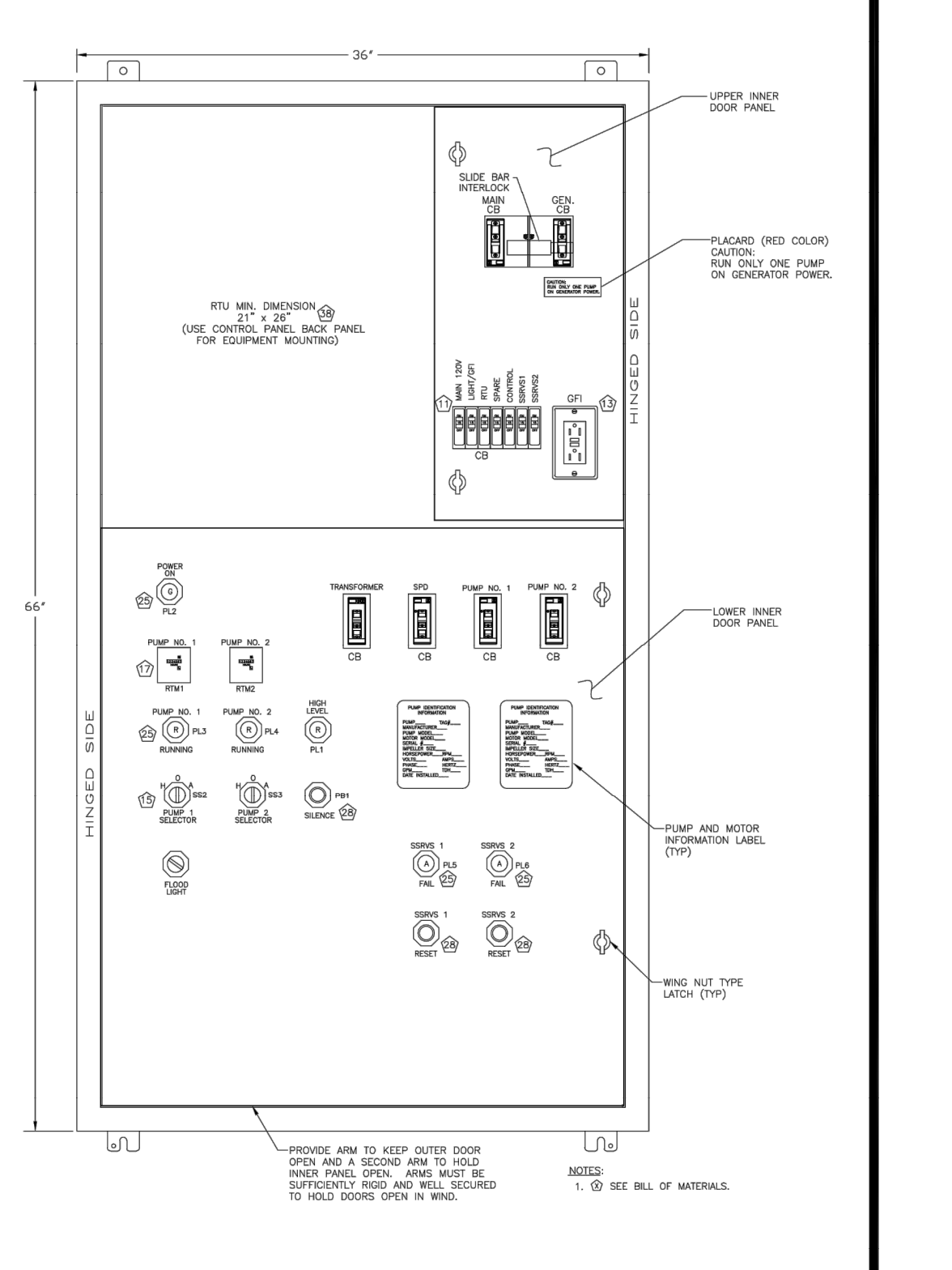
LIFT STATION CONTROL PANEL INTERNAL LAYOUT FOR MOTORS SMALLER THAN 20 HP \* 59S



LIFT STATION CONTROL PANEL INTERNAL LAYOUT FOR 20 HP MOTORS AND LARGER \* 60S



LIFT STATION CONTROL PANEL INNER DOORS FOR MOTORS SMALLER THAN 20HP \* 61S



LIFT STATION CONTROL PANEL INNER DOORS FOR 20HP MOTORS AND LARGER \* 62S

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LIFT STATION ELECTRICAL STANDARD DETAILS, 1 OF 3

REVISIONS

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3563 N.W. 63RD STREET, FORT LAUDERDALE, FLORIDA 33309  
FAX: (954) 739-8409 TEL: (954) 739-8400  
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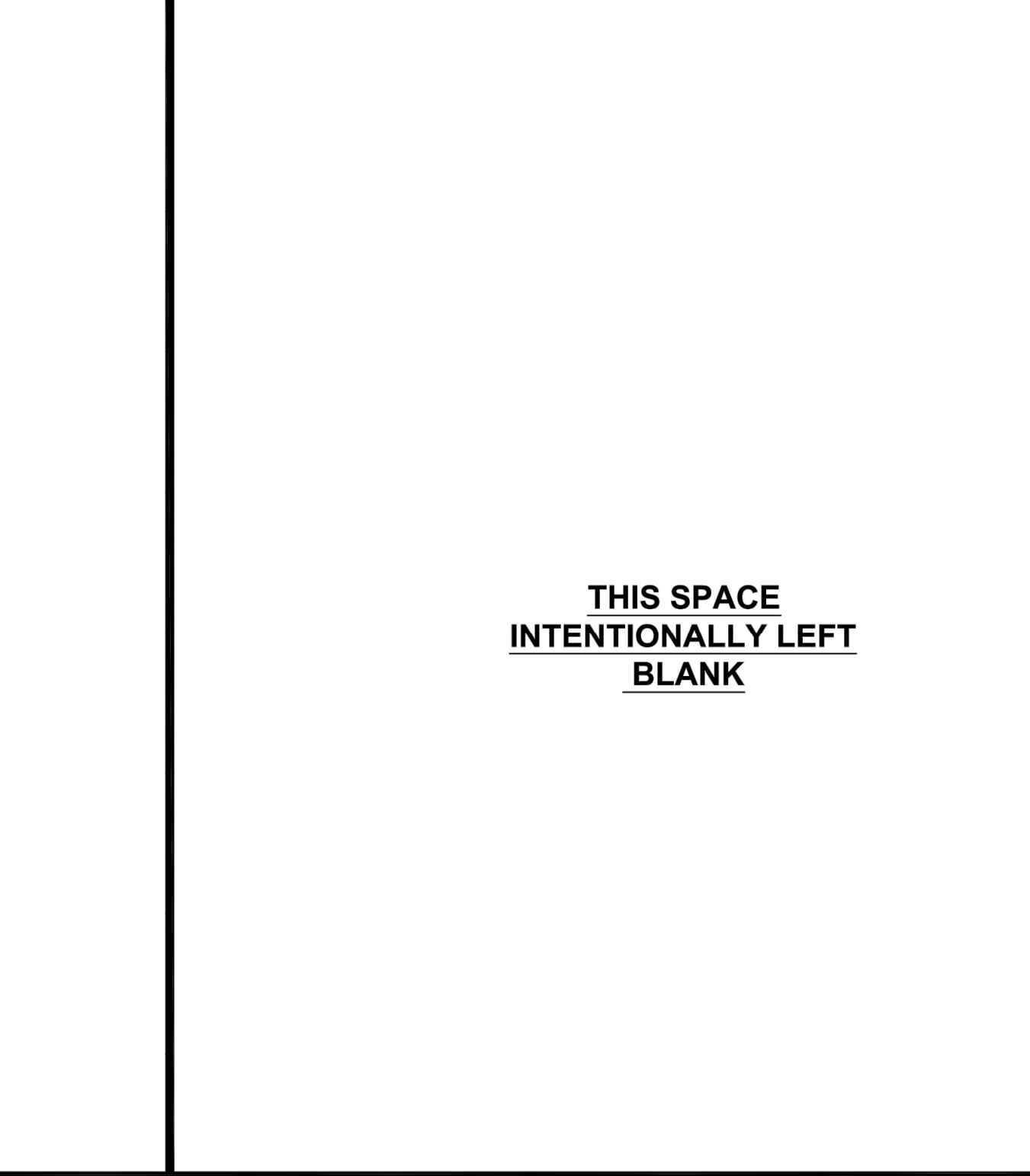
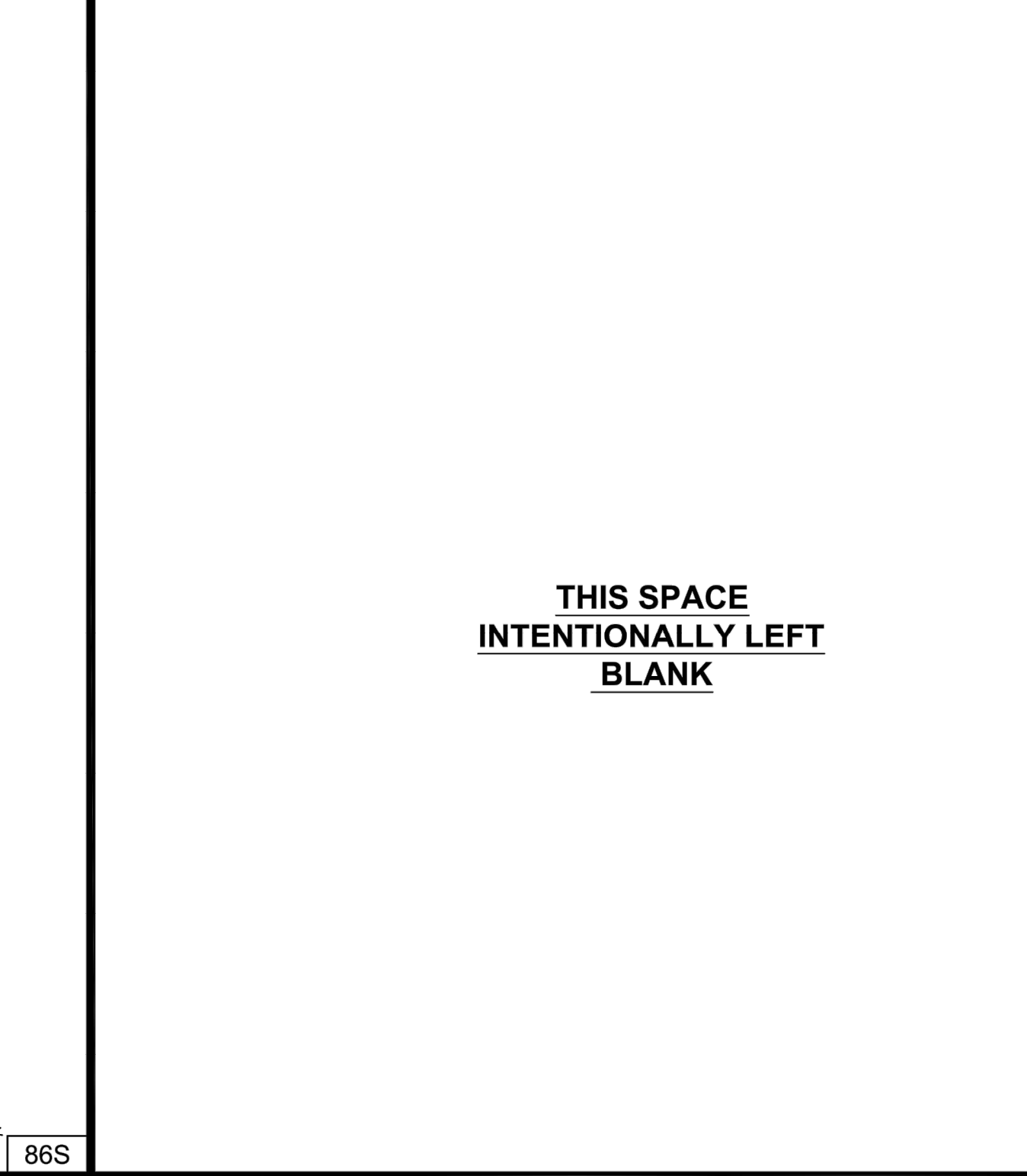
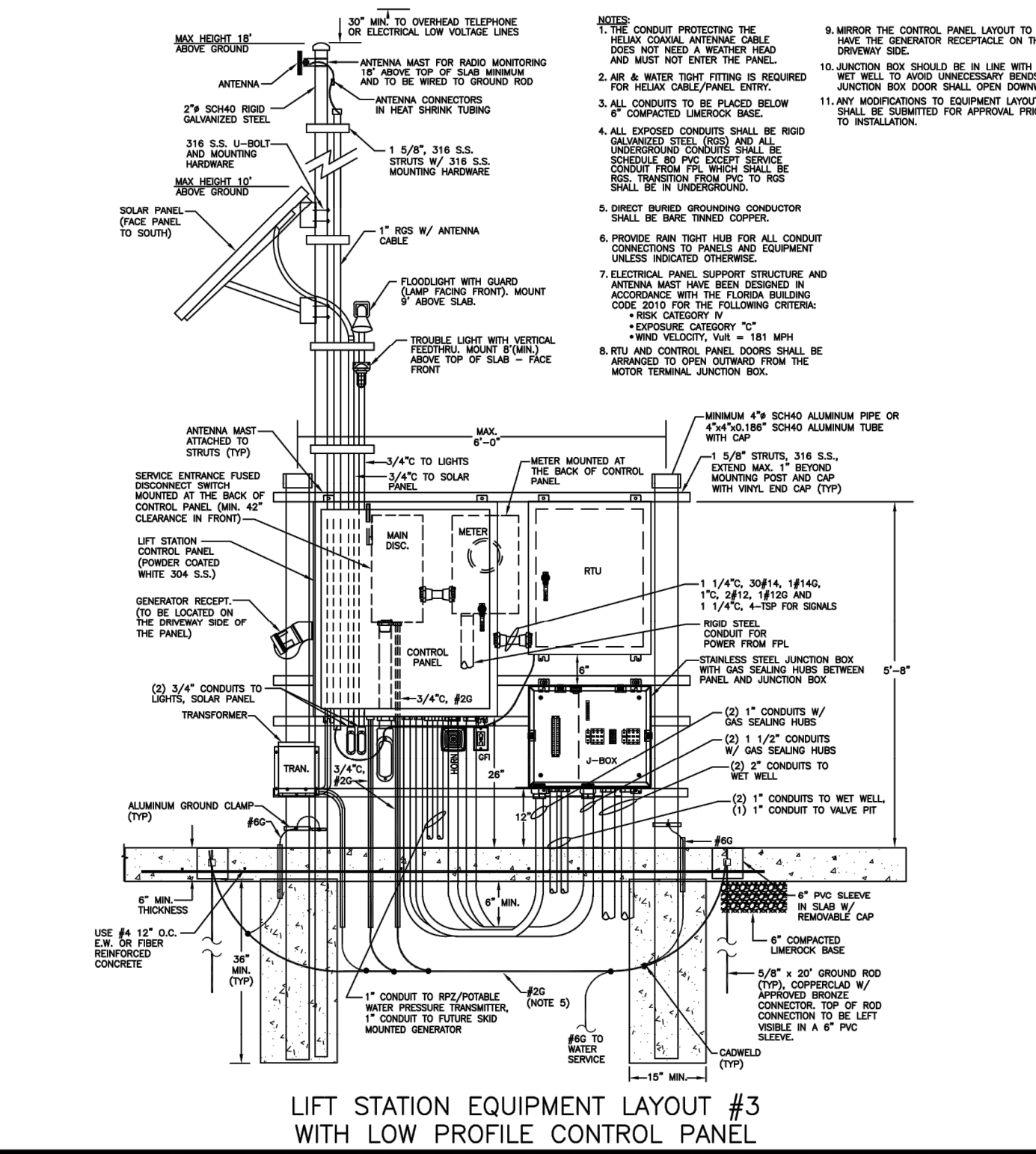
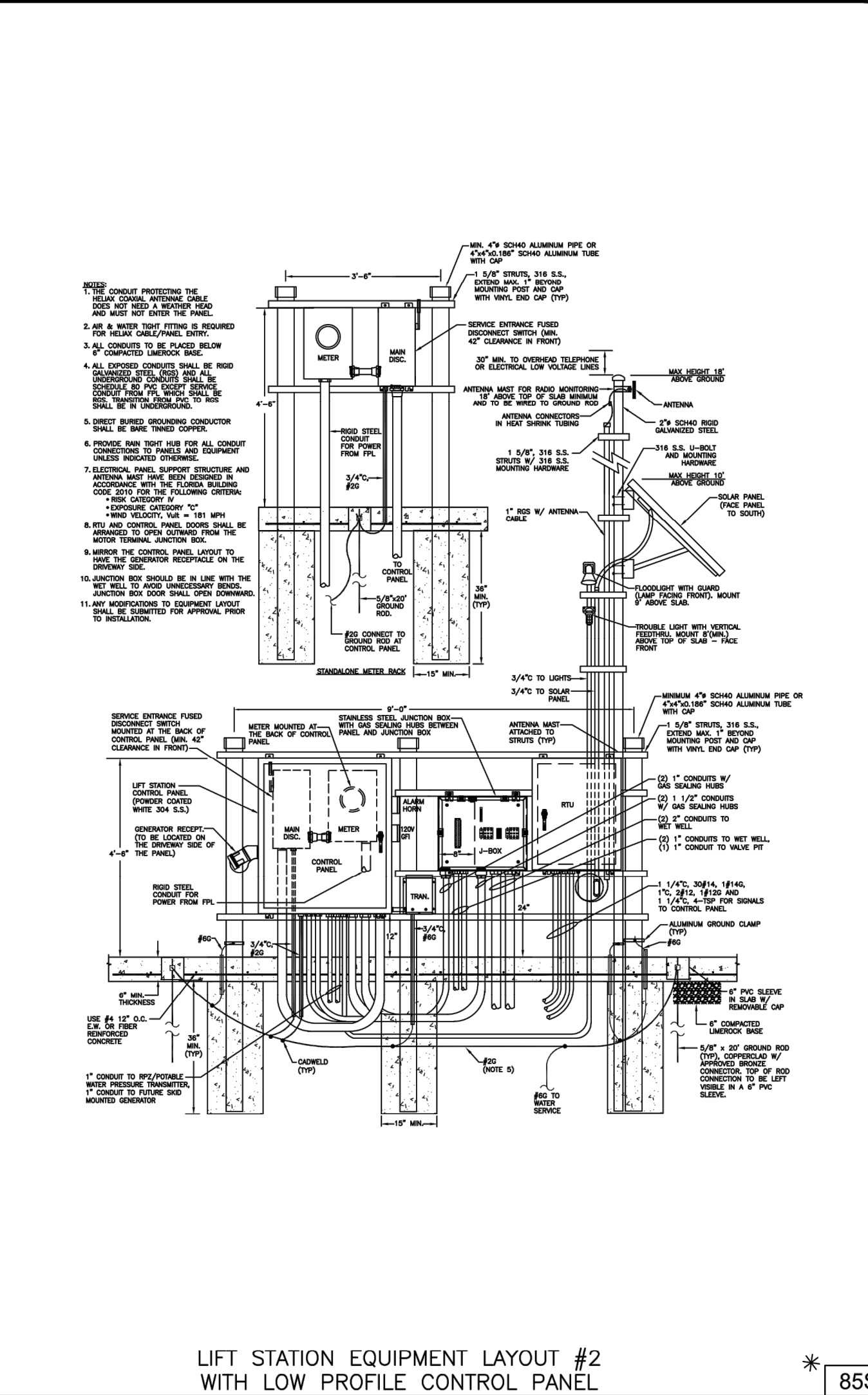
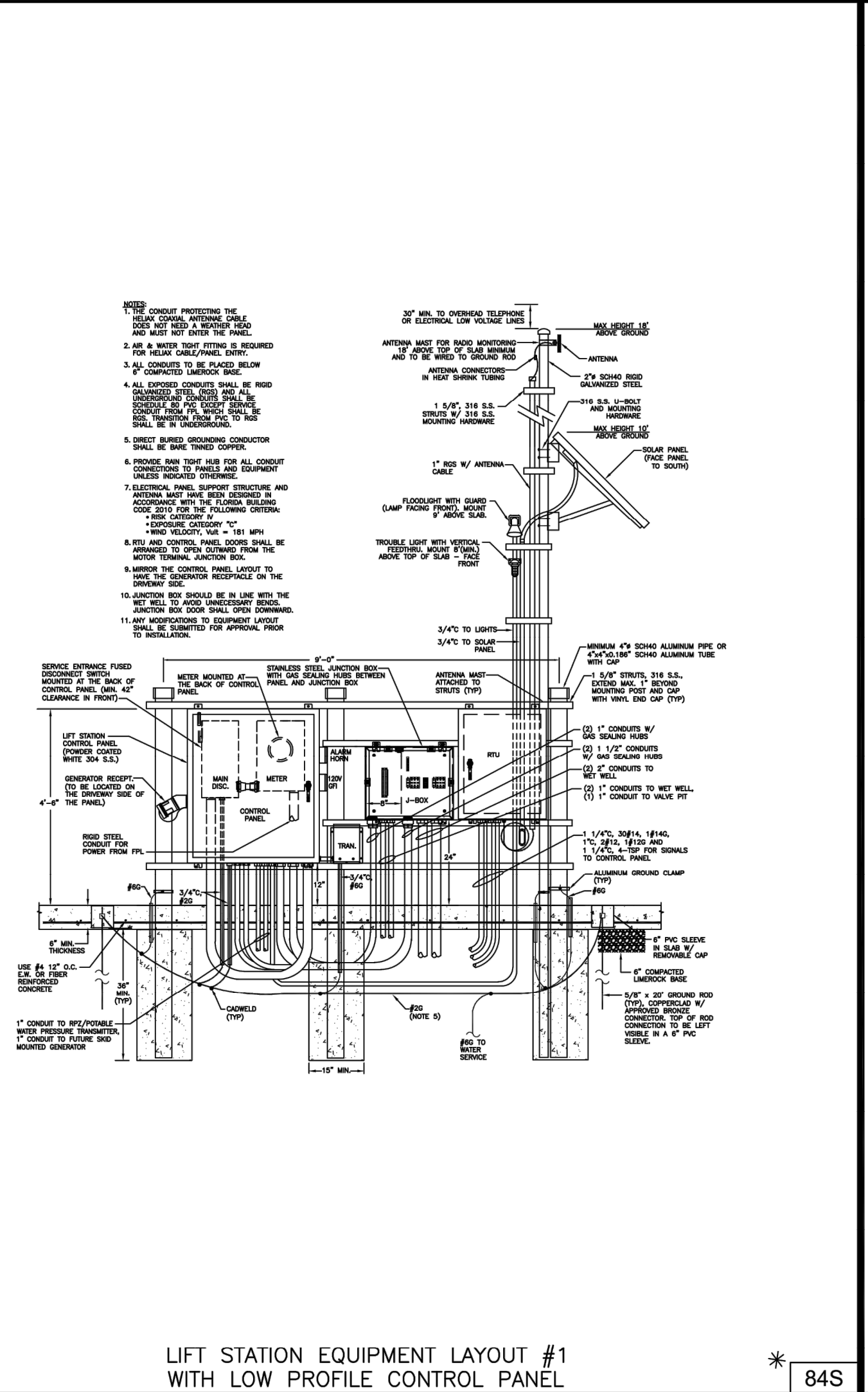
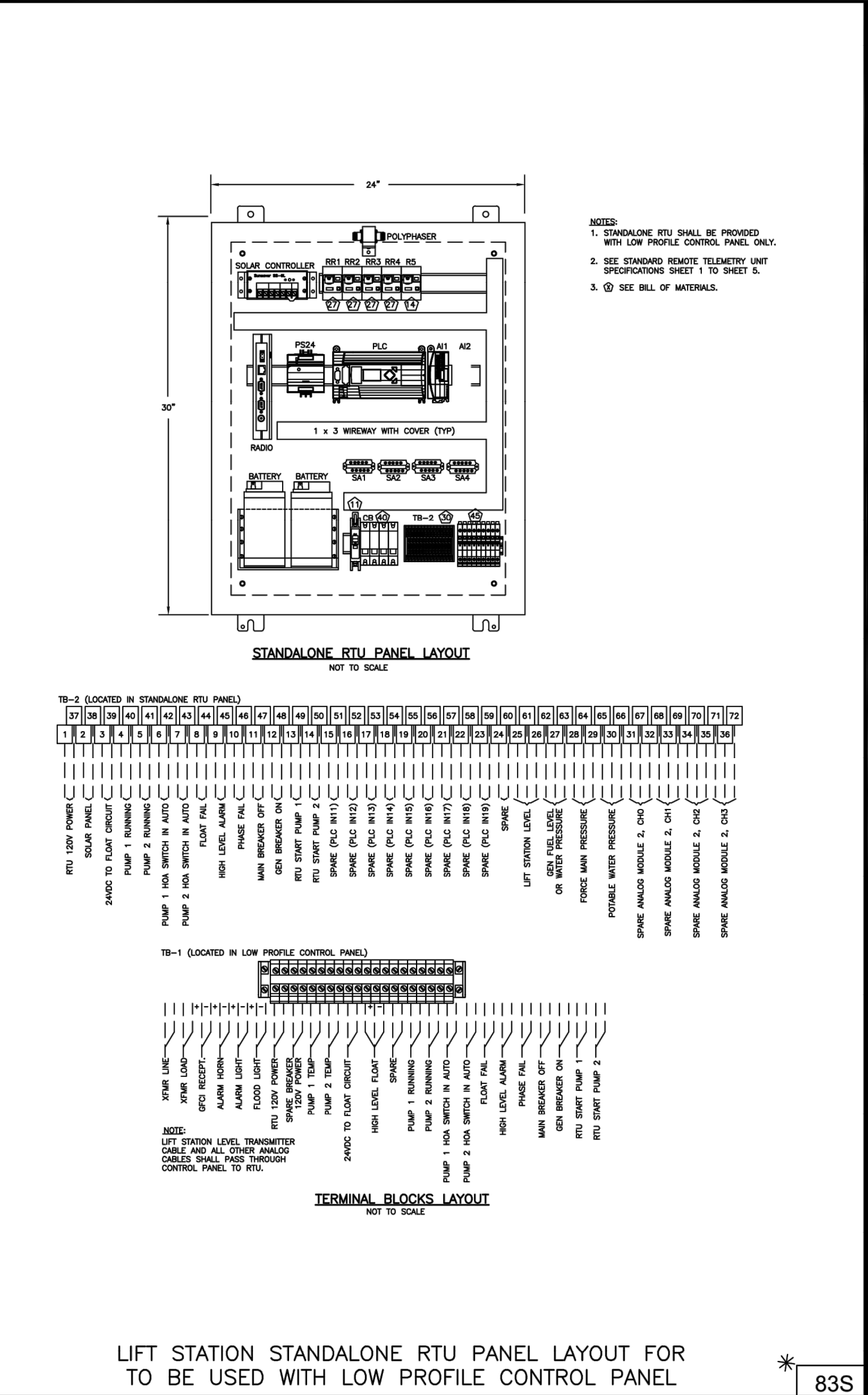
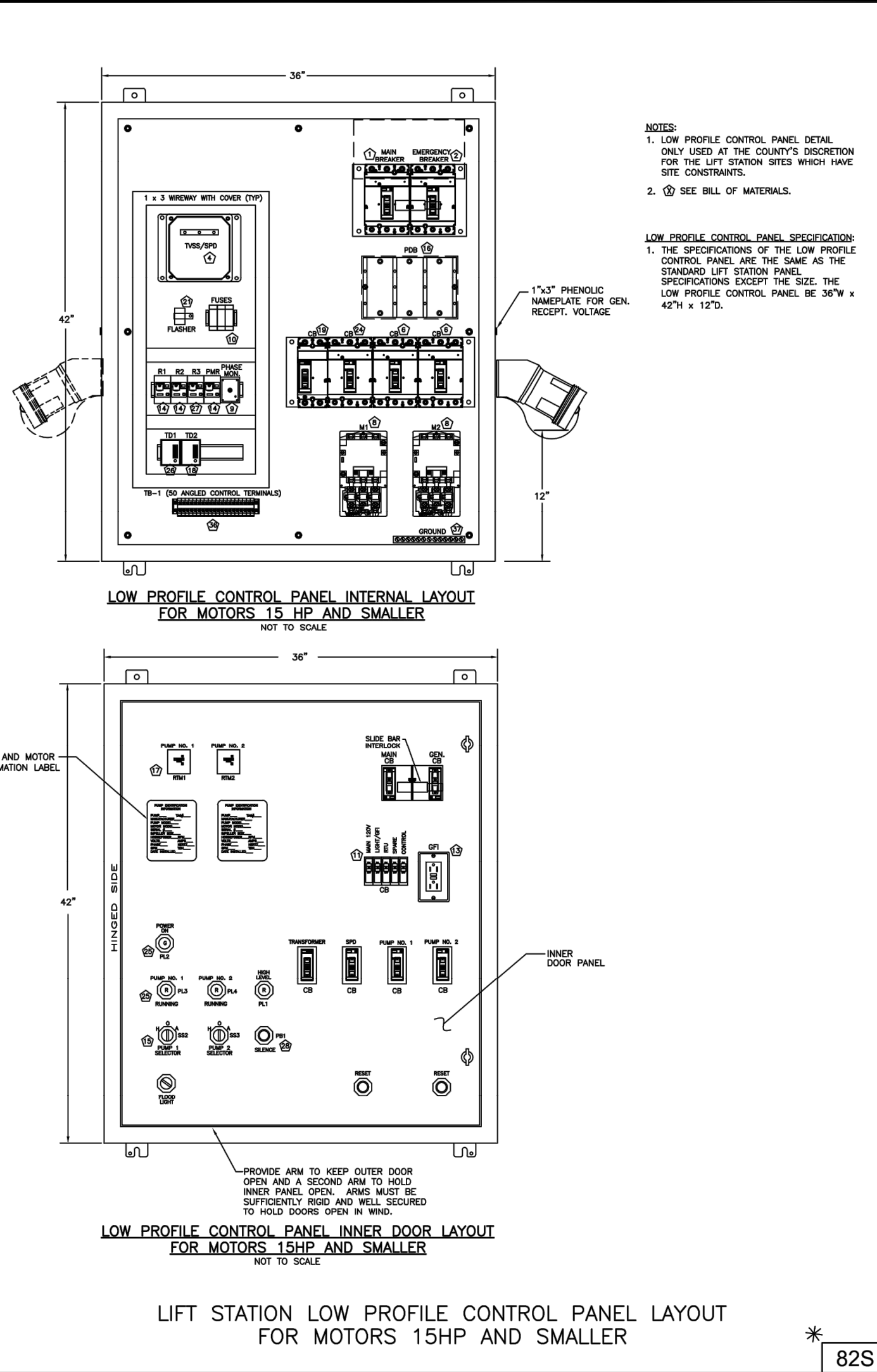
LIFT STATION DETAILS

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**LIFT STATION ELECTRICAL STANDARD DETAILS 3 OF 3**

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DRAWN BY: M. BUCKNER Palm Beach County  
CHECKED BY: J. LAMMERT Water Utilities Department  
APPROVED BY: WUD West Palm Beach, FL 33416-6097

Mar 17, 2023

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2	JAN 2023	GENERAL REVISION

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PBCWUD #XXXX  
**LIFT STATION DETAILS**

SHEET NO.  
**C-22**

Leonard Z. Gamble  
Florida P.E. No. 65921  
March 3, 2025

