

**APPENDIX B**

**STANDARD DRAWINGS**

**CLERMONT COUNTY WATER RESOURCES DEPARTMENT**

**CLERMONT COUNTY, OHIO**

## STANDARD DRAWINGS

<u>Drawing No.</u>	<u>Title</u>
General Details	
G1.1	Keyblock Anchors for Water or Sewer Mains on Steep Slopes
G1.2	Creek Crossing Concrete Encasement Detail
G1.3	Concrete Blocking for Pipe Fittings on Water & Force Mains
Water Distribution System	
W1.0	Standard General Notes
W1.1	Gate and Butterfly Valves
W1.2	Valve Restraint Blocking
W2.1	Fire Hydrant Layout & Assembly
W3.1	Detector Check Valve Assembly
W3.2	5/8"x3/4"& 1" Domestic Meters Assembly
W3.3	1-1/2"& 2" Domestic Meters Assembly
W3.4	Water Service Connection Detail
W4.1	Fire Protection with Detector Check
W4.2	Dual Service Branch Setting-Domestic Meters 2" & Smaller
W4.3	3" & Larger Standard Meter Pit Arrangement
W4.4	Dual Service Branch Setting-3" & Larger Meters
W4.5	Standard Water System Chamber
W4.6	Chamber Access Ladder
W5.1	Water Main Trench Section
W5.2	Water Main Lowering Detail
W6.1	Isolation/Access Valve and Manhole
Wastewater Collection System	
S1.1	Standard Manhole for Sewers 8" to 18"
S1.2	Standard Manhole for Sewers 21" to 36"
S1.3	Standard Manhole for Sewers 42"& Larger
S1.4	Inside Drop Manhole
S1.6	Manhole Frame with Vented Lid
S1.7	Manhole Frame with Self Sealing Lid
S1.8	Manhole Frame with Solid Lid & Lock
S1.9	Manhole Step – Copolymer
S1.10	IWPT Sampling Manhole
S1.11	Doghouse Manhole
S2.1	Sanitary Sewer Trench Section
S2.3	Aerial Creek Crossing
S2.4	Pier Support for Aerial Creek Crossing
S3.1	Sewer Lateral installation
S3.2	Dual Service Lateral
S4.1	Commercial Sewer Service Installation
S4.2	Residential Sewer Service Installation
S4.3	Standard Connection to Sewers 12" and Larger

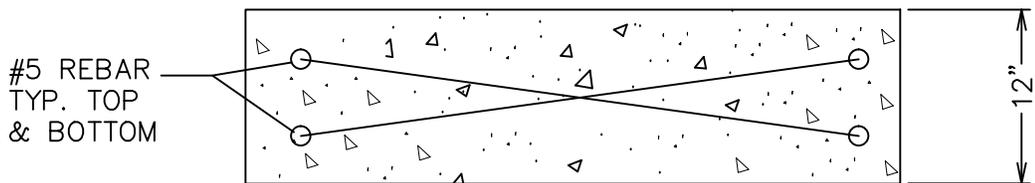
## STANDARD DRAWINGS –Continued

<u>Drawing No.</u>	<u>Title</u>
S5.1	Lift Station Layout
S5.1.1	Bar Screen Manhole Detail
S5.1.2	Lift Station Detail
S5.1.3	Valve Chamber Detail
S5.2.1	Standard Force Main Access Manhole
S5.2.2	Standard Force Main Low Point Manhole
S5.2.3	Air Release Valve in Manhole

## STANDARD DRAWINGS

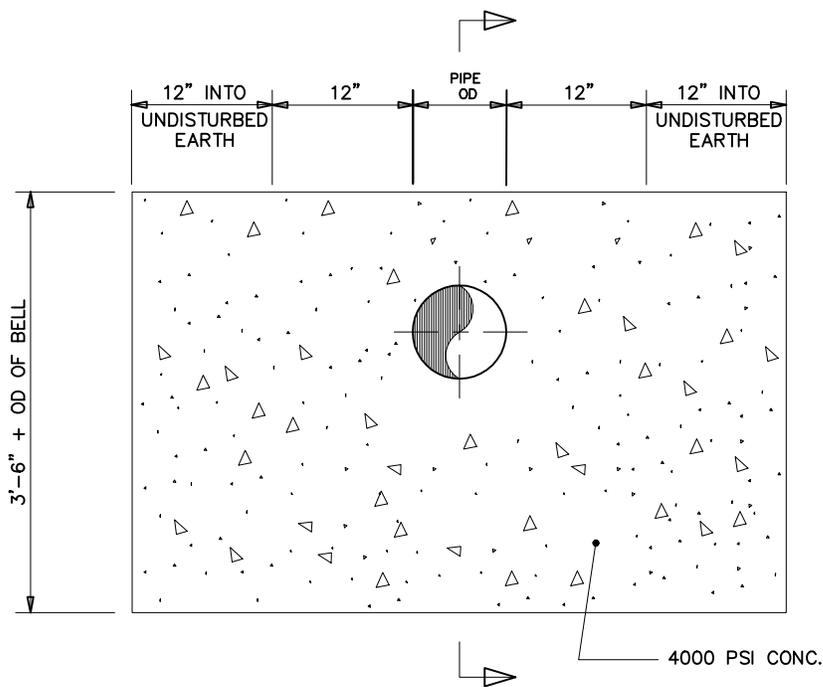
### Wastewater Collection System, Continued

<u>Drawing No.</u>	<u>Title</u>
S6.1	Standard Septic Tank Effluent Pump (STEP)
S6.2	Typical Residential STEP Connection to a LPFM
S6.2.1	Low Pressure Force Main (LPFM) Lateral Installation
S6.3	Typical Residential STEP Connection to Small Diameter Gravity Sewer
S6.3.1	Small Diameter Gravity Sewer Lateral Installation
S6.4	Low Pressure Force Main Flushing Connection Manhole
S6.5	Low Pressure Force Main Flushing MH w/ Air Release Valve
S6.6	Low Pressure Force Main Terminal Manhole
S7.1	Grease Interceptor

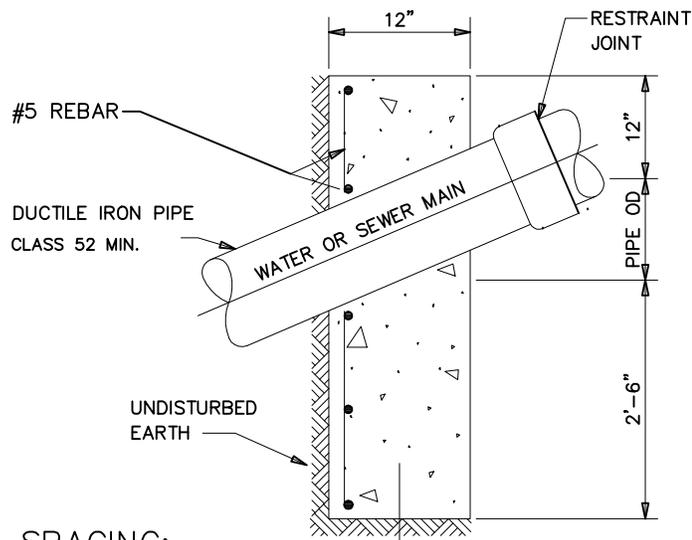


#5 REBAR  
TYP. TOP  
& BOTTOM

TOP



ELEVATION



MINIMUM SPACING:

- 36' ON GRADES 15%–35%
- 24' ON GRADES 35%–50%
- 16' ON GRADES OVER 50%

SECTION

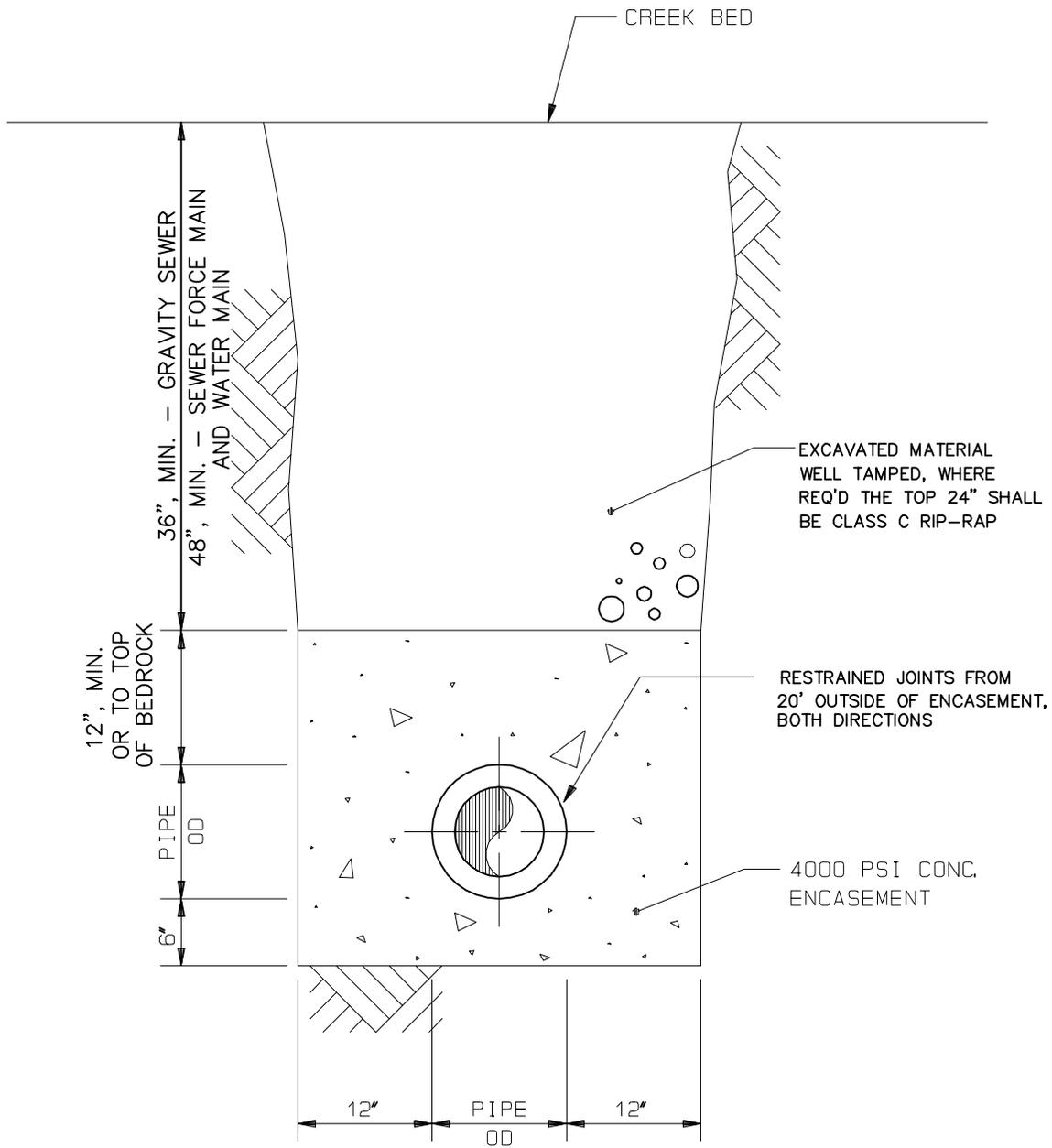
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

KEYBLOCK ANCHORS FOR  
WATER OR SEWER MAINS  
ON STEEP SLOPES

DRAWING NO.  
G1.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



NO SCALE

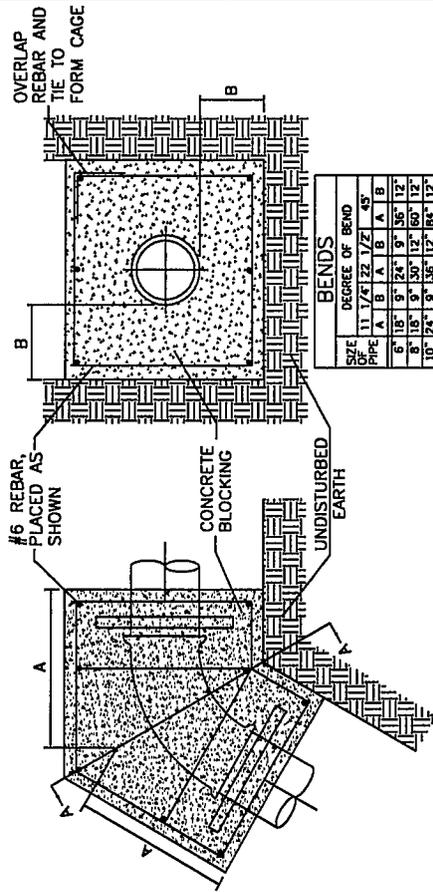
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

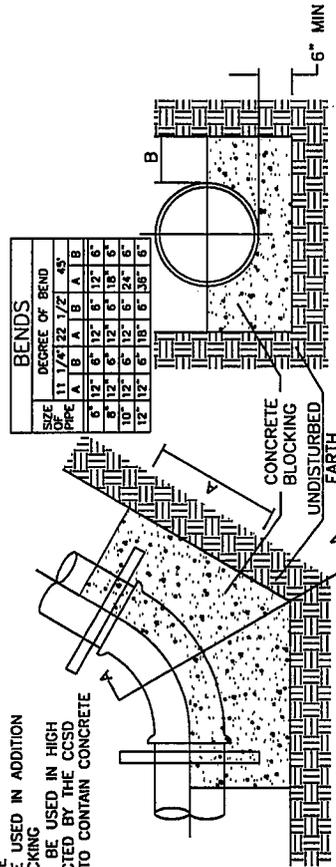
STREAM CROSSING  
CONCRETE  
ENCASEMENT DETAIL

DRAWING NO.

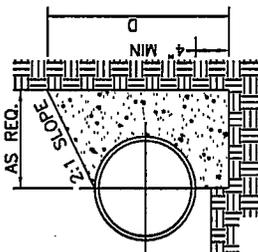
G1.2



ELEVATION SECTION A TYPICAL  
TOP VERTICAL BENDS  
N.T.S.

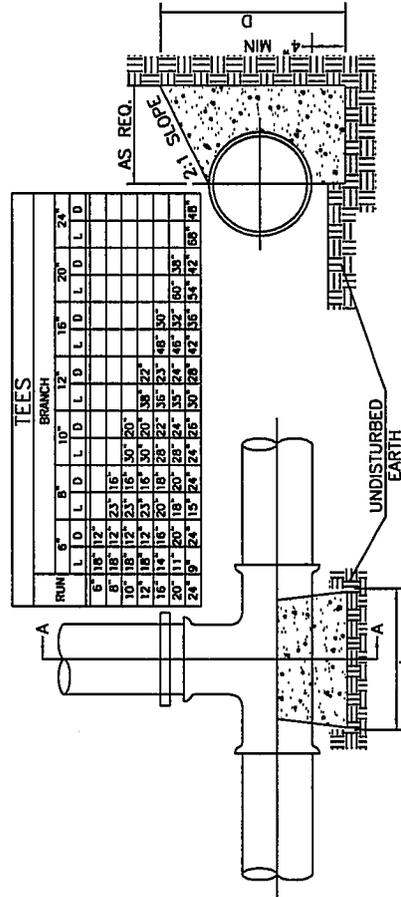
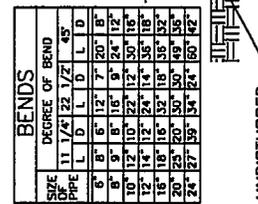


ELEVATION SECTION A TYPICAL  
BOTTOM VERTICAL BENDS  
N.T.S.



SECTION A TYPICAL  
BENDS 45° AND UNDER  
N.T.S.

- BLOCKING NOTES:
1. BLOCKING SHALL BE CLASS "C" CONCRETE
  2. BLOCKING REQUIRED AT ALL BENDS
  3. FACE OF EACH BLOCK MUST BE PERPENDICULAR TO THE LINE OF THRUST
  4. FITTINGS TO BE WRAPPED WITH 4 MIL PLASTIC TO PREVENT CONCRETE CONTACTING BOLTS, GLANDS, AND NUTS
  5. CONCRETE TO BE POURED AGAINST UNDISTURBED EARTH ON THE THRUST SIDE
  6. D.I. RETAINER GLANDS TO BE USED IN ADDITION TO CONCRETE THRUST BLOCKING
  7. 3/4" REINFORCING BARS TO BE USED IN HIGH PRESSURE ZONES AS DIRECTED BY THE CCSD RUDIMENTARY FORMS USED TO CONTAIN CONCRETE IN THRUST AREA



SECTION A TYPICAL  
TEES  
N.T.S.

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

CONCRETE BLOCKING  
FOR PIPE FITTINGS ON  
WATER & FORCE MAINS

DRAWING NO.  
G1.3

**GENERAL NOTES**

**GENERAL:** ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST RULES AND REGULATIONS OF THE CLERMONT COUNTY WATER RESOURCES DEPARTMENT FOUND AT WRD.CLERMONTCOUNTYOHIIO.GOV. IT IS THE INTENT OF THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS TO DESCRIBE A COMPLETE FUNCTIONING SYSTEM IN ALL RESPECTS, WHETHER OR NOT EVERY SUB-ELEMENT OF THE TOTAL SYSTEM IS ACTUALLY DEFINED IN WRITING AND/OR DETAIL. PAYMENT TO THE CONTRACTOR(S) SHALL BE INFERRED TO COVER WORK AND MATERIALS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM SUCH THAT WHEN FINAL PAYMENT IS MADE, THE SYSTEM IS COMPLETELY OPERABLE AND FUNCTIONS IN ALL RESPECTS AS REQUIRED BY THE CONTRACT DOCUMENTS.

THE WORK TO BE PERFORMED UNDER THESE SPECIFICATIONS INCLUDES FURNISHING ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THE WORK CALLED FOR IN THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ELECTRIC, WATER, SANITARY FACILITIES AND WASTE DISPOSAL TO COMPLETE THE WORK.

A SITE VISIT IS HIGHLY RECOMMENDED PRIOR TO SUBMISSION OF BID.

THE EXISTING WATER MAIN IS SHOWN BASED ON FIELD SURVEYS AND THE BEST AVAILABLE INFORMATION. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE START OF WORK.

THE EXISTING WATER MAIN IS TO REMAIN IN SERVICE DURING CONSTRUCTION OF THE NEW WATER MAIN.

THE PROPOSED WATER MAIN SHALL BE INSTALLED AT A MINIMUM 4' BELOW THE PROPOSED GRADE OR AS DIRECTED BY THE ENGINEER.

CONTRACTOR IS RESPONSIBLE TO PROVIDE SUPPORT TO THE EXISTING UTILITY POLES, AS NECESSARY TO COMPLETE THE WORK CALLED FOR IN THE CONTRACT DRAWINGS AND SPECIFICATIONS.

**PAVEMENT:** ALL PAVEMENT AND/ROADWAY SURFACE DISTURBED BY THE CONTRACTOR, SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND IN CONFORMANCE WITH THE REGULATIONS OF THE GOVERNING AUTHORITY OF SAID ROADWAYS. IN THE ABSENCE OF SUCH REGULATIONS, THE RESTORATION SHALL BE IN ACCORDANCE WITH INSTRUCTIONS BY THE OWNER'S REPRESENTATIVE WITH THE OBJECTION OF RESTORING THE PAVING OR ROADWAY SURFACE TO THE ORIGINAL CONDITION OF SAME.

**RESTORATION:** TEMPORARY RESTORATION AND RESTORATION OUTSIDE OF THE LIMITS OF THIS CONSTRUCTION PROJECT ARE THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO VIDEO TAPE AND PHOTOGRAPH ALL AREAS THAT WILL BE DISTURBED AS A RESULT OF HIS CONSTRUCTION ACTIVITIES AND WILL DELIVER TO THE OWNER'S REPRESENTATIVE A COPY OF THE VIDEO TAPE AND PHOTOGRAPHS. ALL PICTURES SHALL BE LABELED WITH THE LOCATION WHERE TAKEN. NONCOMPLIANCE MAY RESULT IN THE CONTRACTOR'S LIABILITY FOR ALL DISPUTED PROPERTY RESTORATIONS.

**EROSION CONTROL:** THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY TO COMPLETE THE WORK AS OUTLINED IN THESE DRAWINGS AND PROJECT SPECIFICATIONS AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. THIS WORK SHALL INCLUDE THE TIME FOLLOWING THE THIRD PARTY RESTORATION. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CLERMONT COUNTY WATER MANAGEMENT AND SEDIMENT CONTROL REGULATIONS AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE

**UTILITIES:** THE EXISTENCE, LOCATION, AND CONDITION OF UTILITIES AND STRUCTURES, BOTH ABOVE AND BELOW GROUND, SHALL BE INVESTIGATED AND VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING WORK. EXCAVATION IN THE VICINITY OF SUCH UTILITIES AND STRUCTURES, SHALL BE DONE CAREFULLY AND BY HAND IF NECESSARY. THE CONTRACTOR SHALL PROTECT ALL SUCH UTILITIES AND STRUCTURES, BOTH MARKED AND UNMARKED, AND BE HELD RESPONSIBLE FOR DAMAGE TO SAME. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ISOLATE, BRACE, SUPPORT, SHEET, ETC. AND PROTECT THE EXISTING UTILITIES FROM MOVING EITHER HORIZONTALLY OR VERTICALLY. IF SUCH MOVEMENT DOES OCCUR DUE TO THE CONTRACTOR'S OPERATIONS, HE SHALL REPAIR THE UTILITY TO THE SATISFACTION OF THE UTILITY OWNER AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL GIVE WRITTEN NOTICE TO ALL OWNERS OF ADJACENT UTILITIES, FIXTURES, AND/OR PROPERTY, OF HIS IMPENDING OPERATIONS, BUT IN NO WAY SHALL SUCH NOTICE RELIEVE THE CONTRACTOR OF HIS LIABILITY FOR DAMAGES TO SAID UTILITIES, FIXTURES, AND/OR PROPERTY. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION IN THE VICINITY OF SAID UTILITY. FIELD LOCATION SHALL BE MADE BY THE UTILITY OR ITS AUTHORIZED AGENCY BEFORE ANY WORK IS PERFORMED BY THE CONTRACTOR. IF AT ANYTIME DURING WORK, AN EXISTING UTILITY IS DAMAGED IN ANY WAY, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE APPROPRIATE GOVERNING ENTITY AND THE OWNER'S REPRESENTATIVE.

**SHUT DOWNS AND SCHEDULING.**

- 1 WEEK TO PLAN
- 48 HOURS NOTICE TO AFFECTED CUSTOMERS REQUIRED PRIOR TO SHUTDOWNS
- CONTRACTOR REQUIRED TO DISTRIBUTE THE SHUT DOWN NOTICES PROVIDED BY THE OWNER

**TESTING AND DISINFECTION OF WATER MAIN**

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO DISINFECT THE COMPLETE WATER PIPE LINE IN ACCORDANCE WITH AWWA C-651 AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ALL PIPING AND APPURTANCES MUST BE PROPERLY DISINFECT WITH A MINIMUM OF 50 MILLIGRAMS PER LITER TOTAL CHLORINE RESIDUAL FOR 48 HOURS. THE PIPING MUST BE FLUSHED TO REMOVE ANY EXCESS CHLORINE. CHLORINE SOLUTION SHALL BE EVENLY APPLIED AND DISTRIBUTED THROUGHOUT THE PIPING.

A HYDROSTATIC TEST AS REQUIRED IN SECTION 4 OF THE STANDARD AWWA SPECIFICATIONS C-600 SHALL BE APPLIED TO INDIVIDUAL VALVED-OFF SECTIONS OF THE MAINS AND FIREHYDRANT LEADS EITHER BEFORE OR AFTER THE TRENCH IS BACKFILLED. THE PRESSURE DURING THE TEST SHALL BE MAINTAINED AT 250 PSI, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE, IN ANY SECTION BEING TESTED. THE DURATION OF EACH TEST SHALL BE AT LEAST TWO HOURS. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, MAKE ALL TAPS OR CONNECTIONS REQUIRED, AND PROVIDED ANY NECESSARY PIPING AND ALL NECESSARY ASSISTANCE FOR CONDUCTING THE TEST.

THE ONLY EXCLUSION OF TESTING IS TIE IN PIPING LESS THAN 18' IN LENGTH. IN THIS CASE, THE PIPE WILL BE SWABBED OR SPRAY DISINFECTED WITH CHLORINE SOLUTION, IN ACCORDANCE WITH AWWA C-657.

**SPECS FOR PIPE, BENDS, VALVES AND APPURTANCES**

DUCTILE IRON PIPE SHALL BE DUCTILE, CENTRIFUGALLY CAST TYPE IN ACCORDANCE WITH ANSI A21.51 (AWWA C-151) UNLESS OTHERWISE NOTED. FOR ALL IN-GROUND INSTALLATIONS THE PRESSURE CLASS SHALL BE CLASS 52, UNLESS A HIGHER CLASS IS REQUIRED BY LAYING CONDITIONS OR PRESSURE IN ACCORDANCE WITH ANSI A21.50 AND APPROVED BY THE OWNER'S REPRESENTATIVE. ALL DUCTILE PIPES SHALL HAVE BITUMINOUS COATED CEMENT LINING COMPLYING WITH AWWA C-104 AND SHALL HAVE AN OUTSIDE COATING OF BITUMASTIC ENAMEL OR APPROVED EQUAL. ALL DUCTILE IRON PIPES SHALL BE PROVIDED WITH EITHER MECHANICAL JOINT ENDS OR PUSH-ON JOINTS ENDS.

ALL FITTINGS, WALL PIPES AND SPECIALS SHALL BE OF DUCTILE IRON OR IN ACCORDANCE WITH ANSI A21.10 (AWWA C-153). ALL FITTINGS SHALL HAVE A BITUMINOUS COATED CEMENT LINING COMPLYING WITH AWWA C-104 AND SHALL HAVE AN OUTSIDE COATING COMPLYING WITH AWWA C-153 OR AN EPOXY COATING COMPLYING WITH AWWA C-116. ALL DUCTILE IRON FITTINGS SHALL BE PROVIDED WITH AND ASSEMBLED USING MECHANICAL JOINT ENDS AND RETAINER GLANDS.

CONCRETE THRUST BLOCKING, SUPPORTS AND/OR BUTTRESSES SHALL BE PROVIDED AT ALL TEES AND BENDS AND AT ANY OTHER LOCATIONS REQUIRED BY THE DISTRICT. THESE CONCRETE STRUCTURES SHALL BE BUILT TO THE LINES, GRADES AND DIMENSIONS SHOWN ON THE STANDARD DRAWINGS. CONCRETE USED FOR BLOCKING SHALL CONFORM TO CLASS C CONCRETE, HAVING A COMPRESSIVE STRENGTH OF 4,000 POUNDS PER SQUARE INCH. ALL CONCRETE SHALL BE MIXED BY MECHANICAL MEANS PRIOR TO INSTALLATION. THE INSTALLATION OF DRY CONCRETE WILL NOT BE PERMITTED.

PIPE JOINTS RESTRAINTS SHALL BE FIELD LOK GASKET, AMERICAN FAST GRIP, OR APPROVED EQUAL AS DETERMINED BY OWNER'S REPRESENTATIVE, EXCEPT AS MODIFIED HEREIN. ALL FIRE HYDRANT LEADS AND FIRE HYDRANT ASSEMBLIES SHALL BE RESTRAINED USING MEGALUG SERIES 1100 MECHANICAL JOINT RESTRAINT OR SIGMA CORPORATION ONE-LOCK SERIES SLIDE MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON PIPE OR APPROVED EQUAL AS DETERMINED BY OWNER'S REPRESENTATIVE.

POLYETHYLENE ENCASEMENT SHALL BE INSTALLED IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 METHODS A OR B AND THE COUNTY'S SPECIFICATIONS. THE POLYETHYLENE ENCASEMENT SHALL BE A LOW-DENSITY POLYETHYLENE FILM MADE FROM VIRGIN LOW-DENSITY POLYETHYLENE RAW MATERIAL CONFORMING TO ASTM D4976 AND SHALL BE A MINIMUM OF EIGHT MILS IN THICKNESS.

**GATE VALVES:** ALL GATE VALVES SHALL CONFORM TO AWWA C-509 OR C-515 EXCEPT AS MODIFIED HEREIN. NEW GATE VALVES SHALL BE FULLY ENCAPSULATED RESILIENT WEDGE, PARALLEL SEATS, NON-RISING STEM, LEFT HAND OPEN (COUNTER CLOCKWISE), AND SHALL HAVE RUBBER 'O'-RING, PACKING SEALS AND MECHANICAL JOINT ENDS WITH A 250 PSI PRESSURE RATING, UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE. THE INTERNAL VALVE COATING SHALL BE IN ACCORDANCE WITH AWWA-C550. APPROVED MODELS ARE: AMERICAN FLOW CONTROL SERIES 2500, MUELLER 2360, US PIPE METROSEAL 250, AND M&H 4067.

VALVE BOXES SHALL BE EQUAL TO F-2450 SERIES AS MANUFACTURED BY CLOW CORP OR SIGMA CORPORATION VB261-8. VALVE BOX ASSEMBLY SHALL BE OF CAST IRON WITH STAY PUT COVER AND PROPERLY SIZED BASE FOR THE VALVE BEING FITTED. COVER SHALL BE MARKED "WATER". ALL BOXES SHALL BE FURNISHED WITH THE NECESSARY EXTENSIONS TO BRING THE TOP OF THE BOX TO THE FINISHED GRADE.

**BUTTERFLY VALVES:** ALL BUTTERFLY VALVES SHALL CONFORM TO THE AWWA STANDARD SPECIFICATION FOR RUBBER SEATED BUTTERFLY VALVES; DESIGNATION AWA C-504 OF THE LATEST REVISION EXCEPT MODIFIED HEREIN. VALVES SHALL BE SUITABLE FOR FLOW IN EITHER DIRECTION AND SHALL BE BUBBLE TIGHT IN EITHER DIRECTION. WAFFER VALVES SHALL NOT BE ACCEPTABLE. INTERNAL VALVE COATING SHOULD BE IN ACCORDANCE WITH AWWA-C550. VALVES SHALL BE AWWA CLASS 250B DESIGNED FOR 250 PSI NON-SHOCK SHUT-OFF PRESSURE AND A VELOCITY OF 16 FEET PER SECOND. VALVES AND APPURTANCES, INCLUDING OPERATORS, SHALL BE CAST IRON SUITABLE FOR BURIED AND SUBMERGED SERVICE. VALVES FOR USE WITH DUCTILE IRON PIPE SHALL HAVE MECHANICAL JOINT ENDS FURNISHED WITH HIGH STRENGTH CAST IRON TEE HEAD BOLTS AND HEX NUTS, AND RUBBER GASKETS. BODIES SHALL BE EITHER CAST IRON CONFORMING TO ASTM A126, CLASS B OR ASTM A48, CLASS 40 DUCTILE IRON CONFORMING TO ASTM A536 GRADE 65-45-12. UNLESS OTHERWISE APPROVED, SHAFTS SHALL BE STAINLESS STEEL CONFORMING WITH ASTM A276, TYPE 304, OR MONEL, TURNED, GROUND AND POLISHED AND SECURED TO THE VALVE DISC BY ONE OR MORE TANGENTIALLY FITTED MONEL OR STAINLESS STEEL TAPER PINS DRIVEN INTO REAMED TAPERED HOLES AND HELD SNUG BY MEANS OF A

LOCKING NUT OR HEX-MATED TO VALVE DISC AND DESIGNED TO EXCLUDE EXPOSURE TO WATER. VALVES SHALL BE DESIGNED TO SEAT AT 90 DEGREES TO THE PIE AXIS AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIALS. SEATS SHALL BE OF A RUBBER COMPOUND COMPLYING WITH THE REQUIREMENTS OF SECTION B OF AWWA C-504-75. RUBBER SEATS SHALL BE ON THE BODY. OPERATORS SUITABLE FOR BURIED AND SUBMERGED SERVICE SHALL BE FURNISHED WITH EACH VALVE. OPERATORS SHALL BE DESIGNED TO DELIVER AN OUTPUT TORQUE TO THE VALVE SHAFT EQUAL TO THAT SHOWN ON THE FOLLOWING TABLE:

MAXIMUM OPERATING TORQUES: VALVE DIAMETER(IN)	TORQUE(FT-LBS)
3	19
4	36
6	93
8	175
10	320
12	510
14	720
16	1030

OPERATORS SHALL BE DESIGNED TO PRODUCE THE SPECIFIED OUTPUT TOUQE WITH A MAXIMUM INPUT TORQUE OF 150 FOOT-POUNDS APPLIED TO THE OPERATING NUT. TRAVELING NUT TYPE OPERATORS SHALL BE TYPE MDT AS MANUFACTURED BY PRATT, OR APPROVED EQUAL. THE TOTAL NUMBER OF TURNS APPLIED TO THE WRENCH NUT REQUIRED TO COMPLETELY OPEN (CLOSE) THE VALVE FROM COMPLETELY CLOSED (OPEN) POSITION SHALL BE NOT LESS THAN TWICE THE NOMINAL VALVE DIAMETER IN INCHES FOR VALVES LESS THAT 16 INCHES IN DIAMETER AND SHALL BE NOT LESS THAN 30 TURNS FOR 16 INCH AND LARGER VALVES. ALL OPERATORS SHALL BE LEFT-HAND (COUNTER CLOCKWISE) OPENING.

APPROVED BUTTERFLY VALVES ARE: DEZURIK-250B, MUELLER LINESEAL XP-250B OR HENERY PRATT COMPANY-MODEL HP-250.

VALVE BOXES SHALL BE EQUAL TO F-2450 SERIES AS MANUFACTURED BY CLOW CORP OR SIGMA CORPORATION VB261-8. VALVE BOX ASSEMBLY SHALL BE OF CAST IRON WITH STAY PUT COVER AND PROPERLY SIZED BASE FOR THE VALVE BEING FITTED. COVER SHALL BE MARKED "WATER". ALL BOXES SHALL BE FURNISHED WITH THE NECESSARY EXTENSIONS TO BRING THE TOP OF THE BOX TO THE FINISHED GRADE.

**WATER SERVICE, FITTINGS, AND METER SETTING**

DIRECT TAPS ARE TO BE USED FOR 3/4" CONNECTIONS, TAPPING SADDLES ARE TO BE USED FOR CONNECTIONS LARGER THAT 3/4". TAPPING SADDLES SHALL BE MANUFACTURED FOR THE FORD METER BOX COMPANY STYLE 202BS WITH STAINLESS STEEL STRAP AND BRASS BODY WITH CC THREAD OUTLET.

CORPORATION STOPS- APPROVED CORPORATION STOPS SHALL BE:  
 3/4" AND 1"- FORD METER BOX COMPANY F1000-3-G-NL  
 1 1/2"- FORD METER BOX COMPANY FB1000-6-G-NL  
 2"- FORD METER BOX COMPANY FB1000-7-G-NL

WATER SERVICE LINES, WHICH EXTEND FROM THE WATER MAIN TO 3' BEYOND THE METER, SHALL BE TYPE "K" COPPER CONFORMING TO ASTM B-88 SPECIFICATIONS.

METER BOXES SHALL BE:  
 3/4" METER- OLD CASTLE HEAVY WALL METER PIT 0020-30 B BODY B-W 2 MSHI  
 1" METER- OLD CASTLE HEAVY WALL METER PIT 0020-30 BODY B-W 2 MSHI  
 1 1/2" AND 2"- OLD CASTLE HEAVY WALL METER PIT 0030-30 B BODY B-W 2 MSHI OR APPROVED EQUAL.

ALL METERS USED IN THE CLERMONT COUNTY WATER RESOURCES DEPARTMENT DISTRIBUTION SYSTEM MUST BE PURCHASED FROM THE WATER RESOURCES DEPARTMENT AND INSTALLED ACCORDING TO THE WATER RESOURCES DEPARTMENT STANDARD DRAWINGS. WHERE EXISTING WATER SERVICES ARE BEING RELOCATED OR RECONNECTED, THE EXISTING WATER METER CAN BE RE-USED.

ANGLE VALVES FOR RELOCATED 3/4" X 3/4" AND 1" WATER METERS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND INSTALLED ACCORDING TO THE CLERMONT COUNTY WATER RESOURCES DEPARTMENT STANDARD DRAWINGS:

METER SIZE	ANGLED YOKE VALVE, W/ PADLOCK WING	ANGLED CHECK VALVE
3/4" X 3/4"	FORD AV94-323-WG-NL OR APPROVED EQUAL	FORD HA94-323-G-NL OR APPROVED EQUAL
1"	FORD AV94-444-WG-NL OR APPROVED EQUAL	FORD L94-44-G-NL OR APPROVED EQUAL

THE EXISTING WATER METER, YOKE AND EXPANSION WHEEL ASSEMBLY SHALL BE RE-USED AND RE-INSTALLED BY THE CONTRACTOR.

METER ASSEMBLIES FOR 1 1/2" AND 2" DOMESTIC METERS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND INSTALLED ACCORDING TO CLERMONT COUNTY WATER RESOURCES DEPARTMENT STANDARD DRAWINGS: 1 1/2" METERS- FORDVH76-18-11-66-G-NL, 2" METERS- FORD VH77-18-11-77-G-NL.

COMPRESSION FITTINGS USED FOR RELOCATED AND RECONNECTED WATER METERS SHALL BE FORD GRIP JOINT COUPLING (C44-XX-G-NL STYLE), FORD PACK JOINT COUPLING (C44-XX-NL STYLE), OR APPROVED EQUAL.

CONTRACTOR MUST SUBMIT LITERATURE AND/OR CATALOG CUT SHEETS FOR REVIEW AND APPROVAL PRIOR TO ORDERING OF ALL MATERIAL AND FITTINGS TO BE USED ASSOCIATED WITH THE INSTALLATION OF 2" AND SMALLER SIGNLE, DOMESTIC WATER SERVICES.

SUBMIT LITERATURE DETAILING THE CONSTRUCTION METHOD TO BE USED TO PROVIDE TRENCHLESS INSTALLATION OF WATER SERVICES FOR REVIEW AND APPROVAL. TRENCHLESS SERVICE LINE INSTALLATION IS REQUIRED FOR ALL SERVICES CROSSING PUBLIC ROADWAYS.

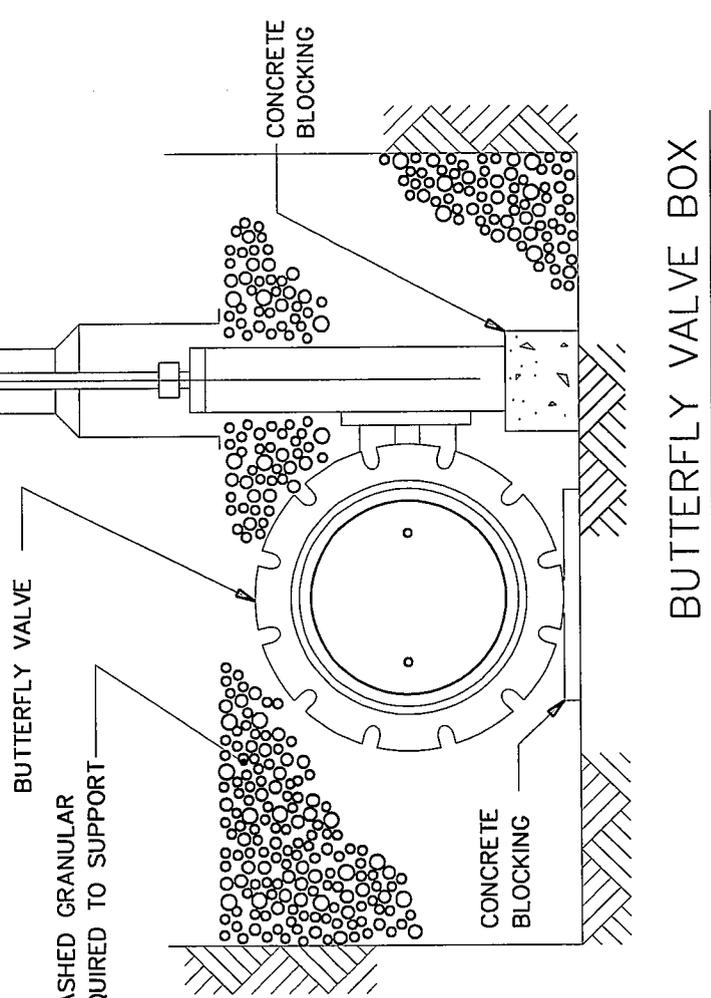
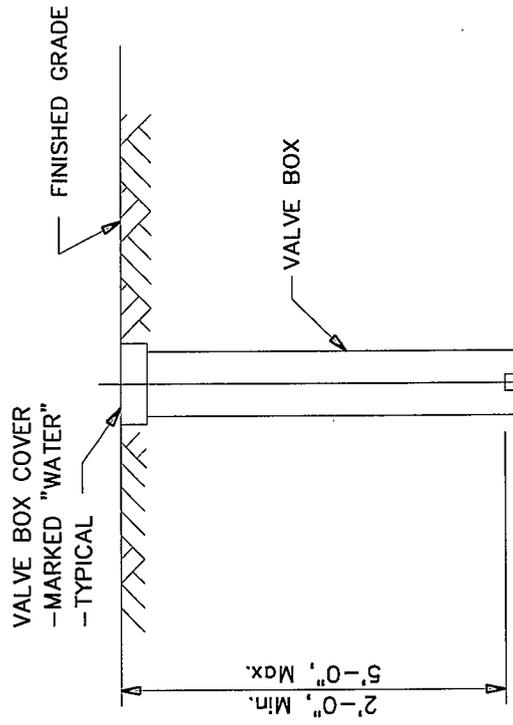
DATE	11/27/14
REVISION NO.	

GENERAL WATER NOTES

SCALE N/A

DATE JANUARY 2014

CLERMONT COUNTY WATER RESOURCES DEPARTMENT  
 4400 HASKELL LANE  
 BATONIA, OHIO 45103



BUTTERFLY VALVE BOX

GATE VALVE BOX

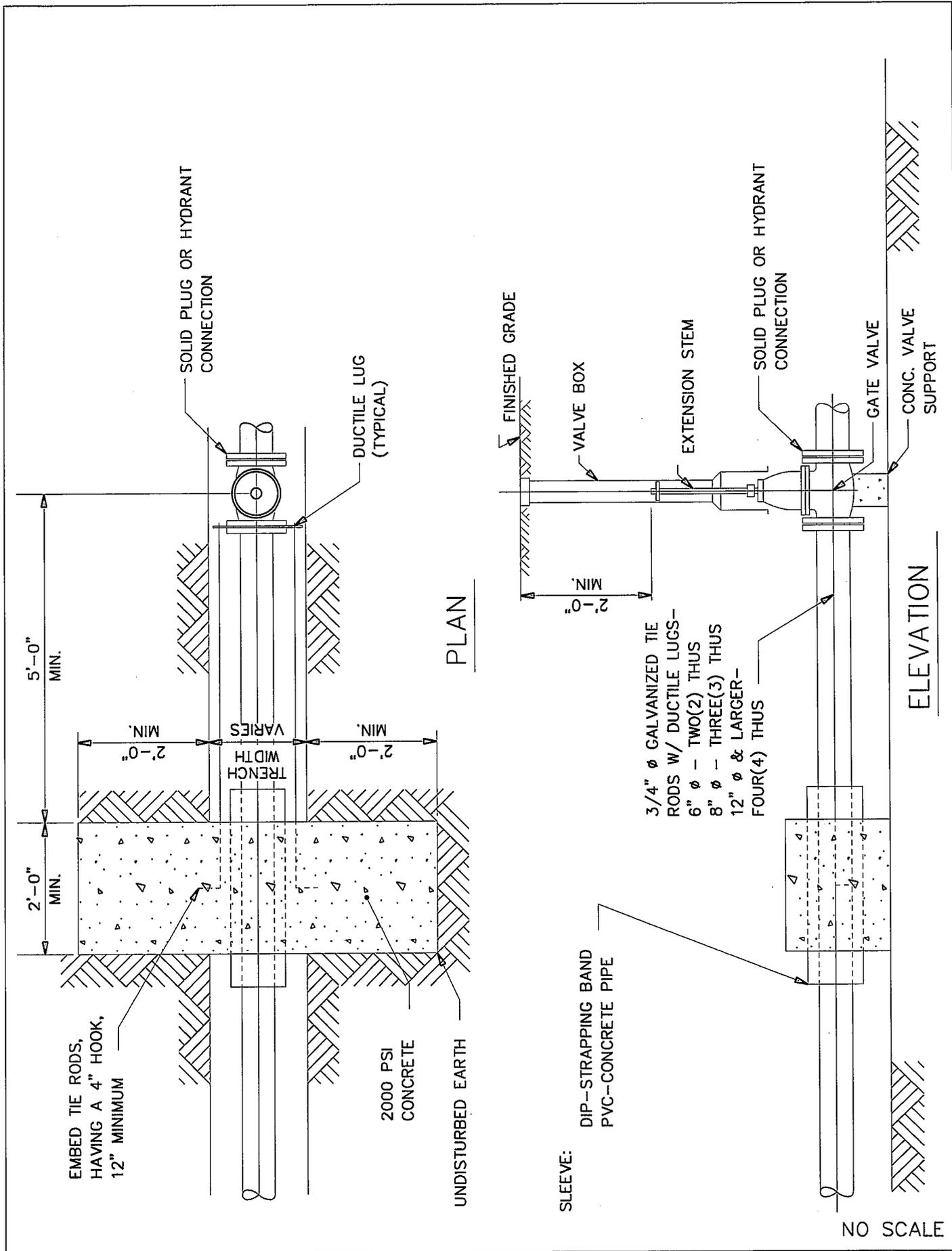
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

GATE & BUTTERFLY  
VALVES

DRAWING NO.  
W1.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

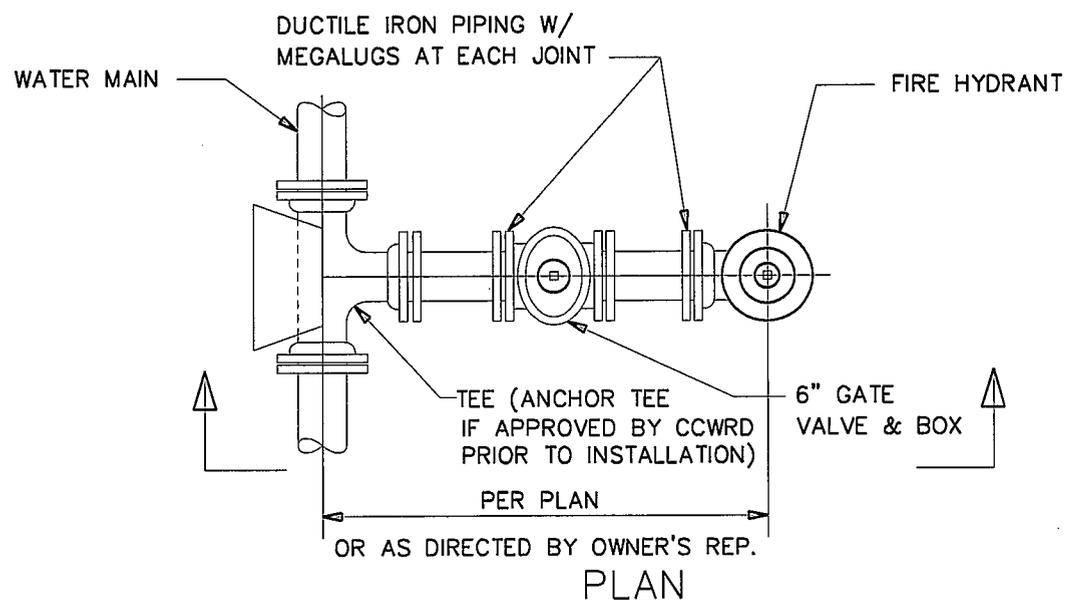
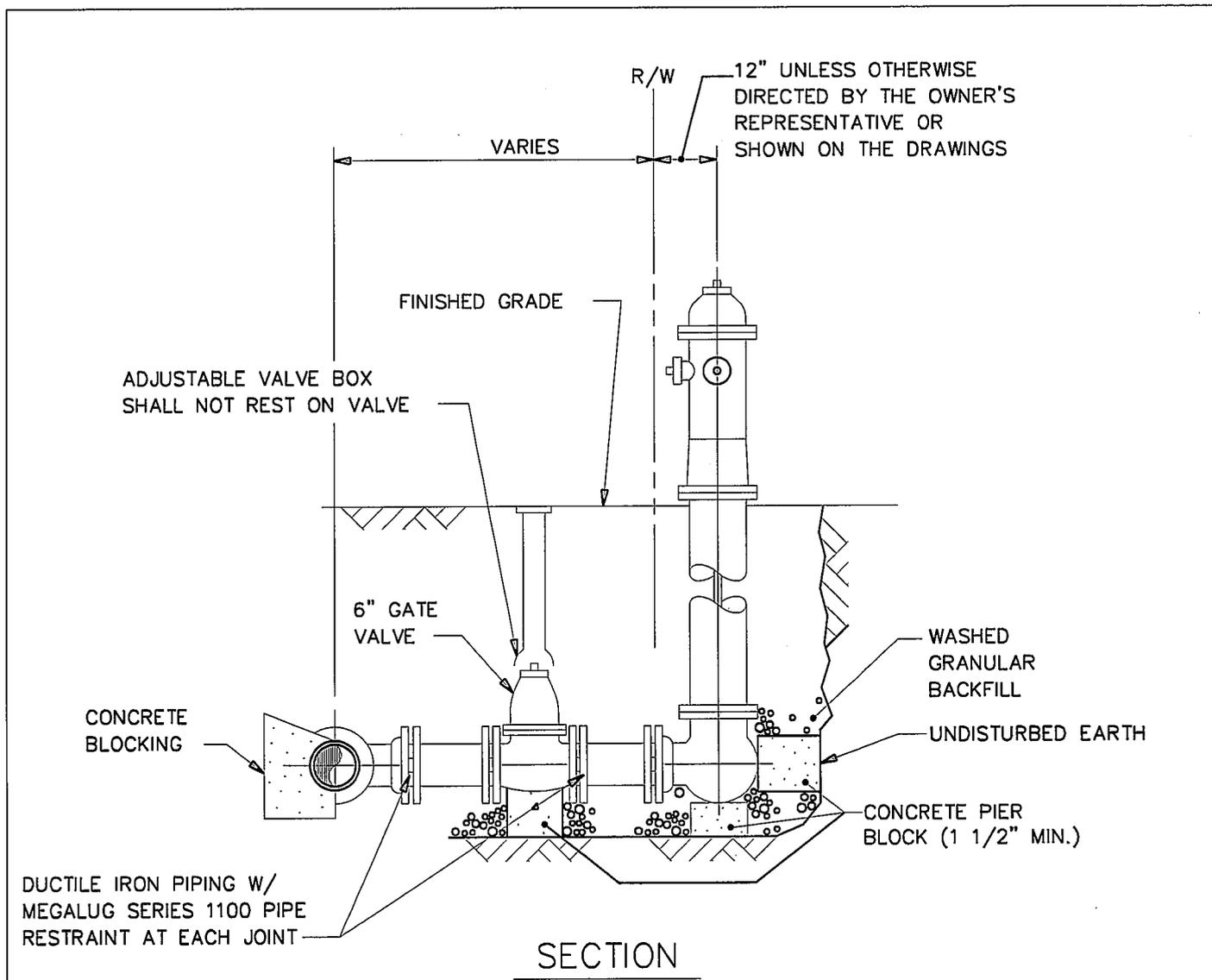


CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

VALVE RESTRAINT  
BLOCKING

DRAWING NO.  
W1.2

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



NO SCALE

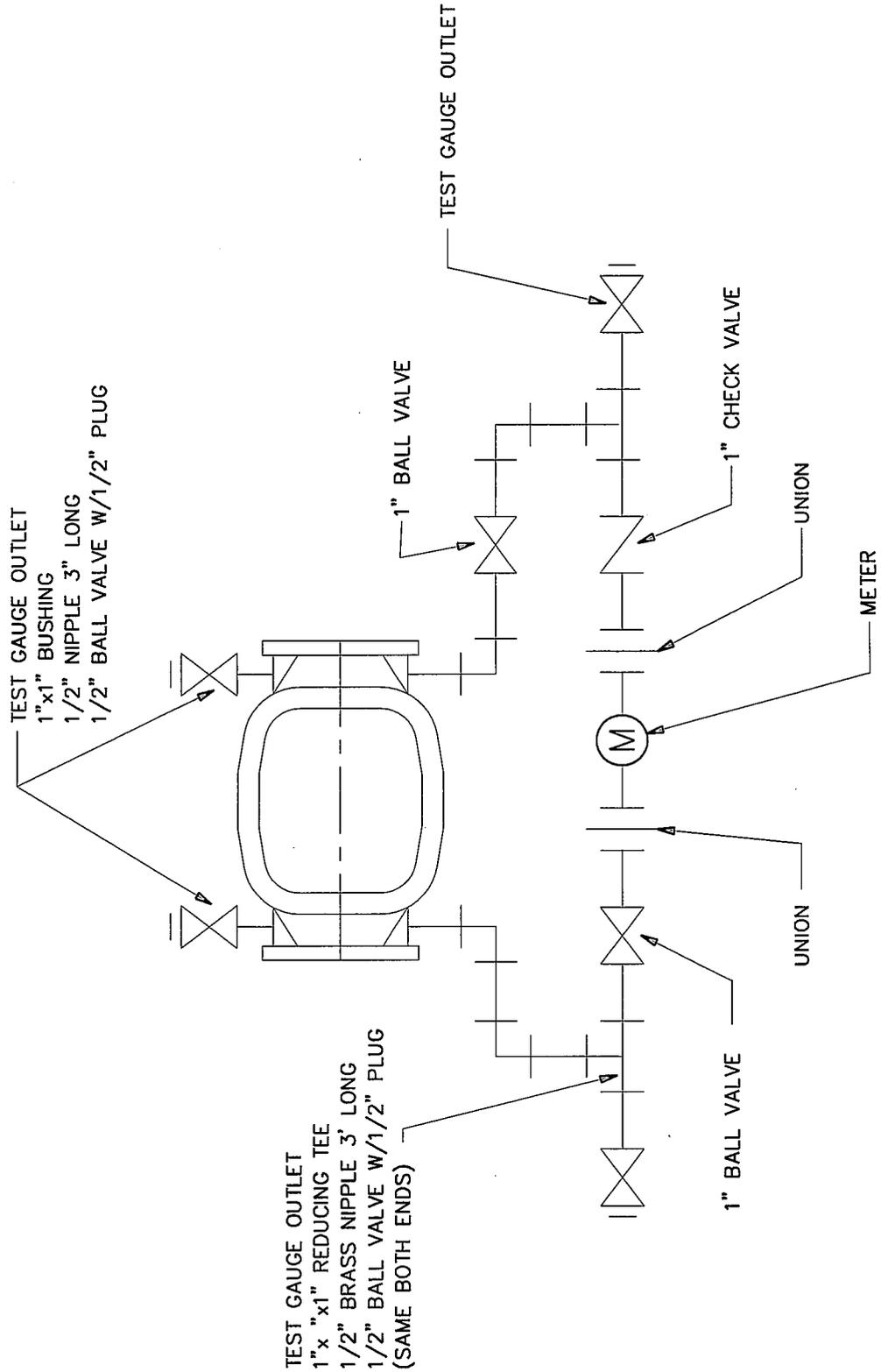
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

FIRE HYDRANT  
LAYOUT & ASSEMBLY

DRAWING NO.

W2.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



NO SCALE

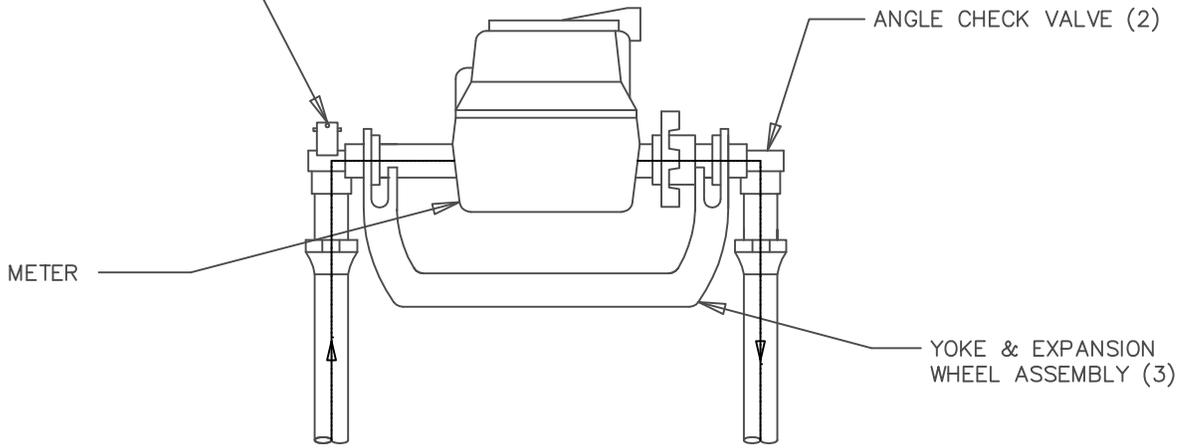
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

DETECTOR  
CHECK VALVE  
ASSEMBLY

DRAWING NO.  
W3.1

ANGLED YOKE VALVE  
COMPRESSION COPPER  
W/ PADLOCK WING (1)



$\frac{5}{8}$ " X  $\frac{3}{4}$ " & 1" METERS

NOTE:

METERS SHALL BE PURCHASED FROM CCWRD

METER SIZE	1	2	3
$\frac{5}{8}$ " X $\frac{3}{4}$ "	FORD AV94-323-WG-NL OR EQUAL	FORD HA94 -323-G-NL OR EQUAL	YOKE-FORD Y502, WHEEL-EC-23-NL OR EQUAL
1"	FORD AV94-444-WG-NL OR EQUAL	FORD HA91-444-NL-W OR EQUAL	YOKE-FORD Y504, WHEEL-EC4-NL OR EQUAL

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

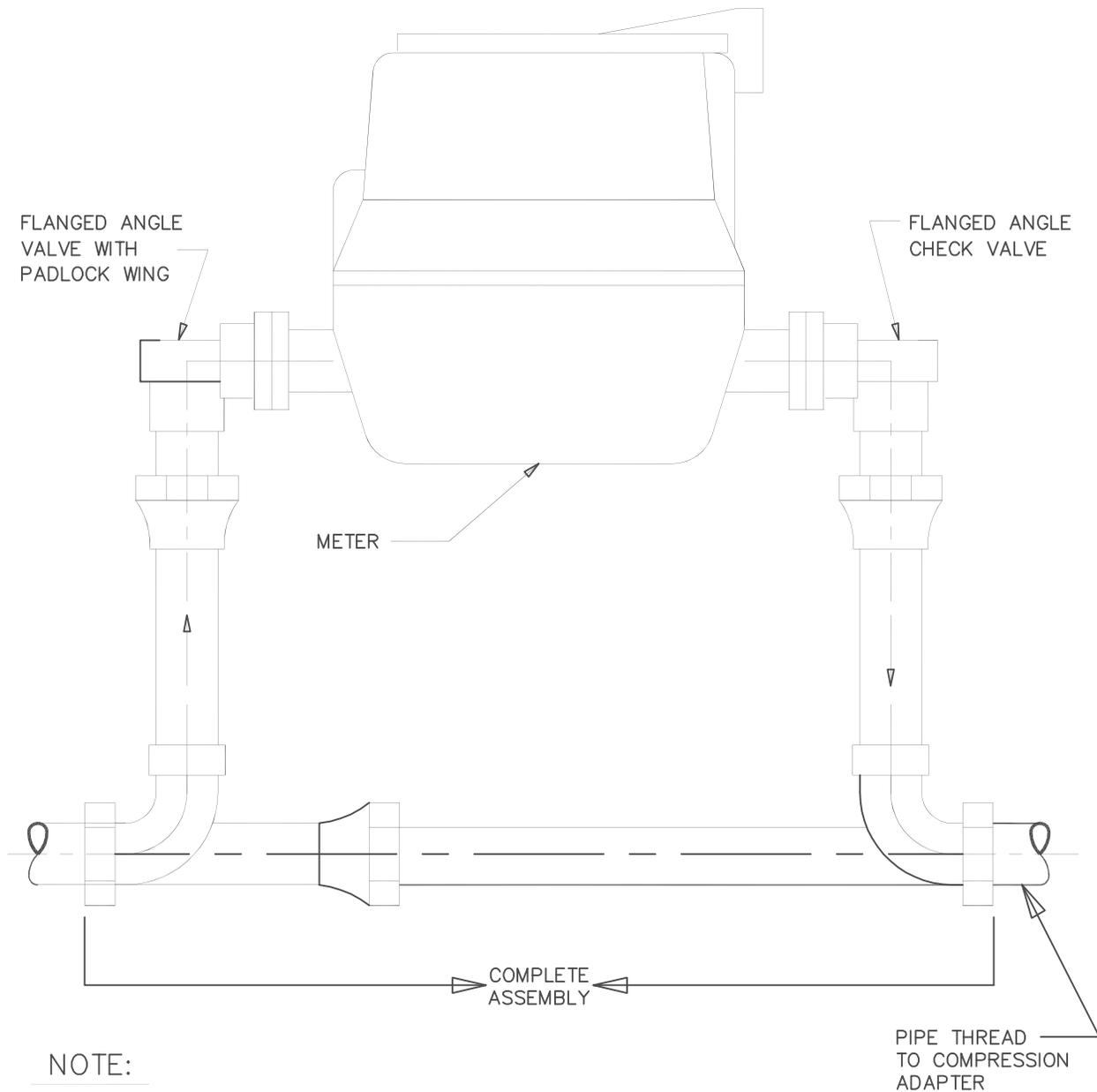
APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

REVISED MAY 2016

$\frac{5}{8}$ " X  $\frac{3}{4}$ " & 1"  
DOMESTIC METERS  
ASSEMBLY

DRAWING NO.

W3.2



**NOTE:**

1. METERS SHALL BE PURCHASED FROM CCWRD
2. COMPLETE ASSEMBLY TO BE USED.

METER SIZE	COMPLETE ASSEMBLY
1 1/2"	VH76-18-11-66-G-NL
2"	VH77-18-11-77-G-NL

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

REVISED DEC 2013

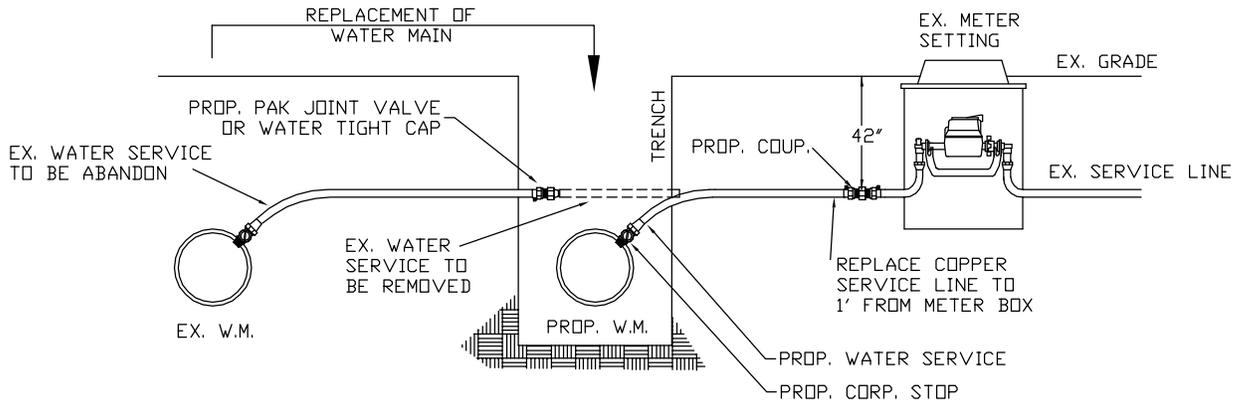
1-1/2" & 2"  
DOMESTIC CUSTOM  
METER ASSEMBLY

DRAWING NO.  
W3.3

# WATER MAIN RELOCATION—SERVICE RECONNECTIONS

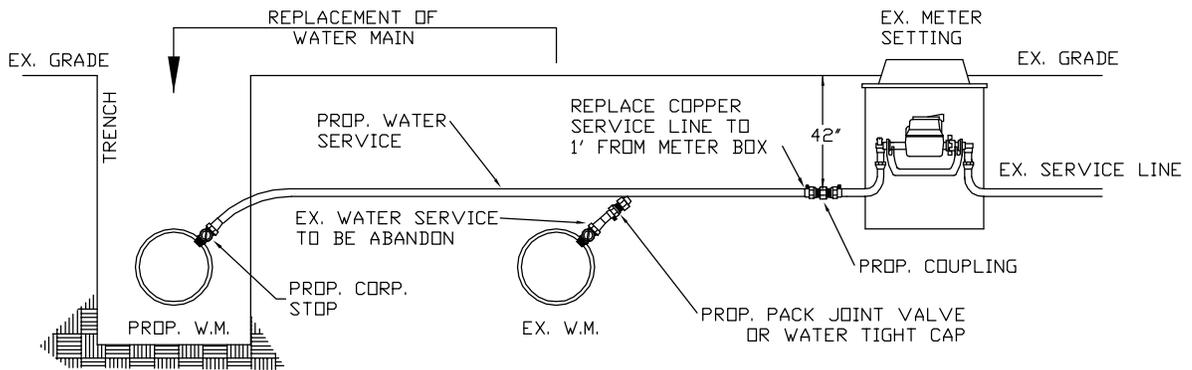
## TYPE 1 CONNECTION

PROPOSED WATER MAIN INSTALLED BETWEEN THE EXISTING WATER MAIN AND THE WATER METER (SHORTER SERVICE)



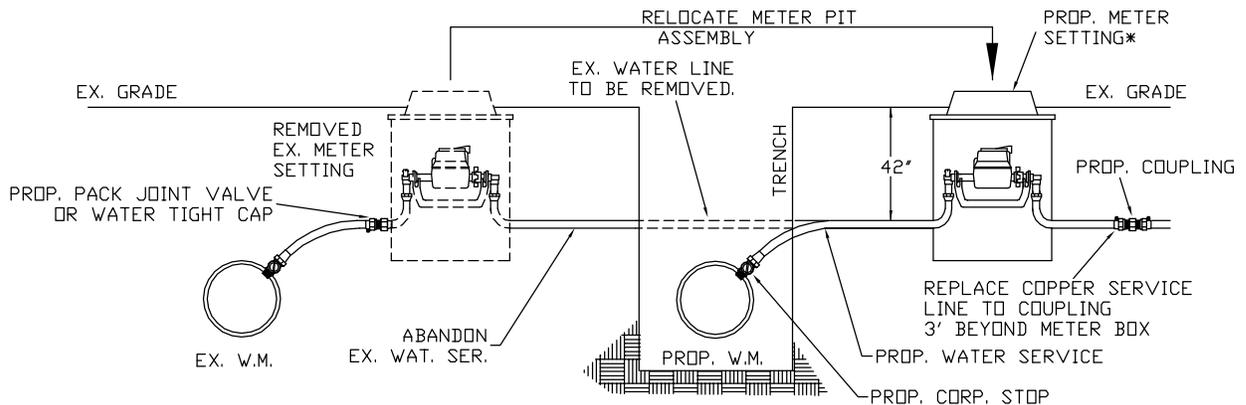
## TYPE 2 CONNECTION

PROPOSED WATER MAIN INSTALLED ON OPPOSITE SIDE OF EXISTING WATER MAIN, FROM THE METER SETTING (LONG SERVICE)



## TYPE 3 CONNECTION

PROPOSED WATER MAIN IS INSTALLED BEHIND THE EXISTING WATER METER (MOVE WATER METER)



\*METER SETTING, METER, AND METER BOX SHALL BE REPLACED. THE METER SHALL BE SUPPLIED BY COUNTY. EXISTING LID TO BE REUSED.

CONTRACTOR TO FREEZE SERVICE TO MAKE ALL CONNECTIONS. NO CRIMPING WILL BE PERMITTED. CONTRACTOR TO CAP ALL WATER SERVICE LINES TO BE ABANDONED.

ALL NEW PIPE, FITTINGS & FIXTURES SHALL MEET THE NEW EPA LEAD-FREE RULES.

NOT TO SCALE

CLERMONT COUNTY WATER RESOURCES DEPARTMENT	WATER SERVICE CONNECTION DETAIL	DRAWING NO.  W3.4
APPROVED _____ DATE _____		

REVISED APRIL 2016

LID TO BE HALLIDAY PRODUCTS MODEL NO. S1R024024 ALUMINUM WITH RECESSED LIFT HANDLE, S.S. HARDWARE, S.S. & ALUMINUM HOLD OPEN ARM, AND S.S. SLAM LOCK WITH KEY OR APPROVED EQUAL. CENTER LID OVER DETECTOR CHECK VALVE ASSEMBLY

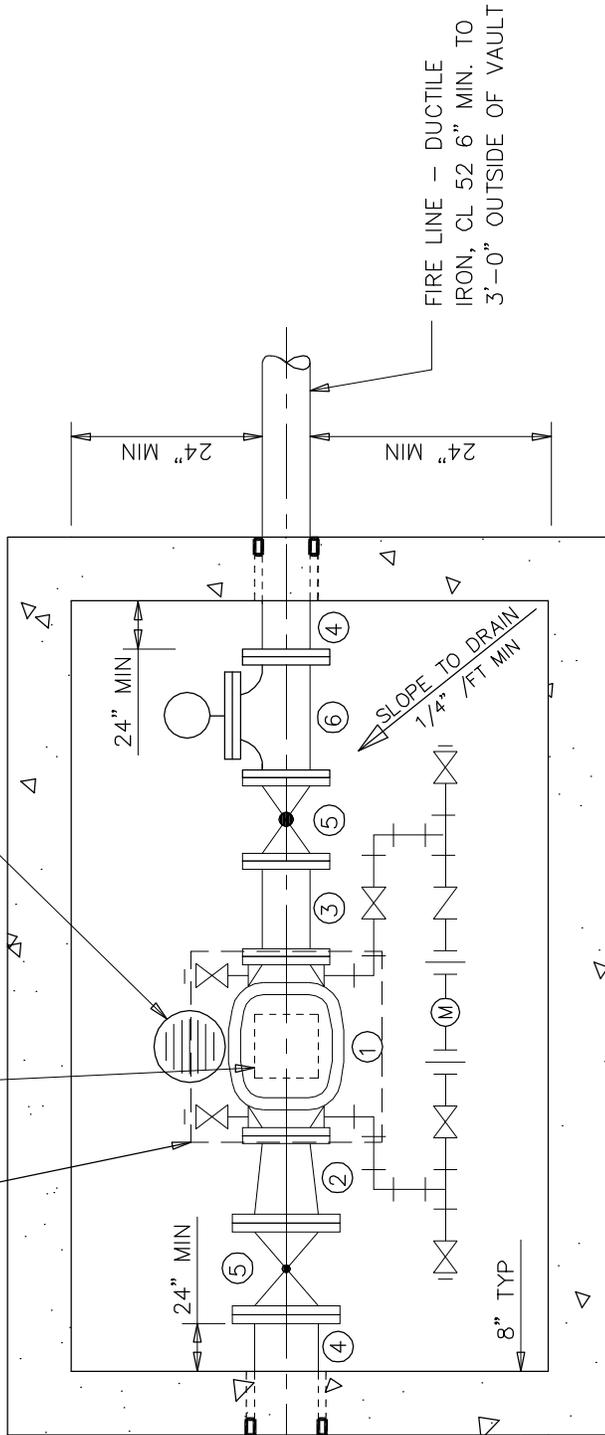
6" FLOOR DRAIN  
JOSAM TYPE 32226 OR  
EQUAL TO STORM  
SEWER (CENTER DRAIN  
UNDER MANHOLE LID)

8" SQ. 2000 PSI  
CONCRETE BASE

MECH. LINK SEALS  
(TYP) 5/8" THREAD  
RODS BACK TO  
WALL

from main

DUCTILE IRON, CL 52  
6" MIN



NOTE:

SEE CCWRD STANDARD DWGS W4.5  
& W4.6 FOR WATER SYSTEM  
CHAMBER DETAILS

① DETECTOR CHECK VALVE ASSEMBLY. SEE CCWRD STD. DWG. W3.1

② FLANGED CONCENTRIC REDUCER

③ FLANGED SPOOL x 12" LENGTH

④ FLANGED - PLAIN END (3' MIN. LENGTH)

⑤ FLANGED INDICATOR GATE VALVE W/ HANDWHEEL OR POST INDICATOR VALVE, AS REQUIRED BY FIRE DEPARTMENT  
ELECTRONIC SUPERVISION OF VALVE AS REQUIRED

⑥ FIRE DEPARTMENT CONNECTION AND/OR FIRE ALARM SYSTEM, IF REQUIRED BY FIRE DEPARTMENT

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

FIRE PROTECTION  
WITH DETECTOR  
CHECK

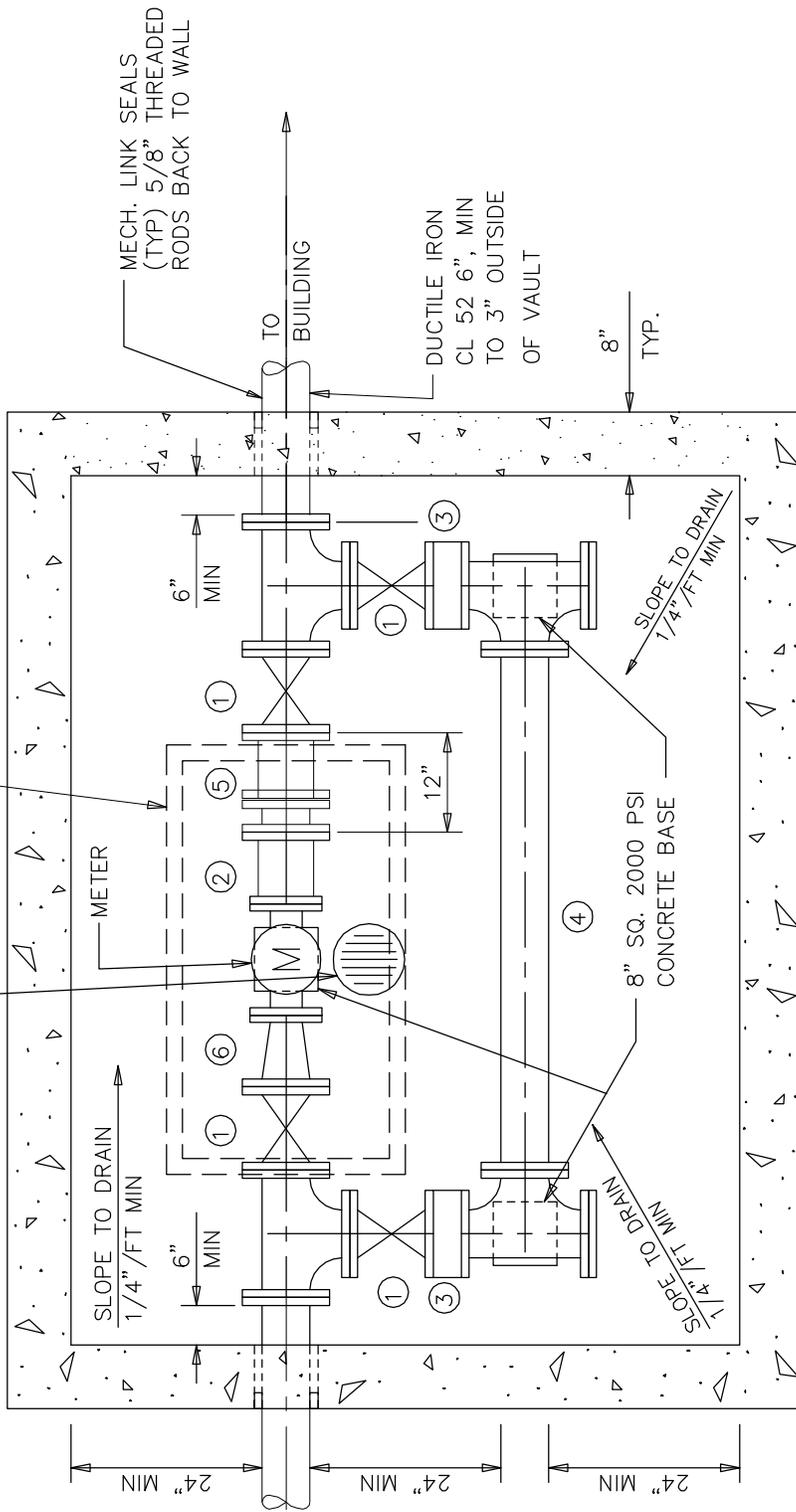
DRAWING NO.  
W4.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



LID TO BE HALLIDAY PRODUCTS MODEL NO. S1R024048 ALUMINUM WITH RECESSED LIFT HANDLES, S.S. HARDWARE, S.S. & ALUMINUM HOLD OPEN ARM, AND S.S. SLAM LOCK WITH KEY OR APPROVED EQUAL. CENTER LID LENGTHWISE OVER DOMESTIC METER

6" FLOOR DRAIN JOSAM TYPE 32226 OR EQUAL TO STORM SEWER (CENTER DRAIN UNDER MANHOLE LID)



NOTE:

SEE CCWRDD STANDARD DWGS W4.5 & W4.6 FOR WATER SYSTEM CHAMBER DETAILS

- ① FLANGED INDICATOR GATE VALVE W/ HANDWHEEL
- ② FLANGED SPOOL OR SPACER
- ③ FILLER FLANGE OR SPOOL PIECE AS REQUIRED
- ④ BY-PASS LINE TO BE SAME SIZE AS DOMESTIC LINE
- ⑤ FLANGED ADAPTER EQUAL TO DRESSER STYLE 128 WITH 2" NPT TAP & PLUG (TEST PORT)
- ⑥ FLANGED STRAINER

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

3" & LARGER  
STANDARD METER  
PIT ARRANGEMENT

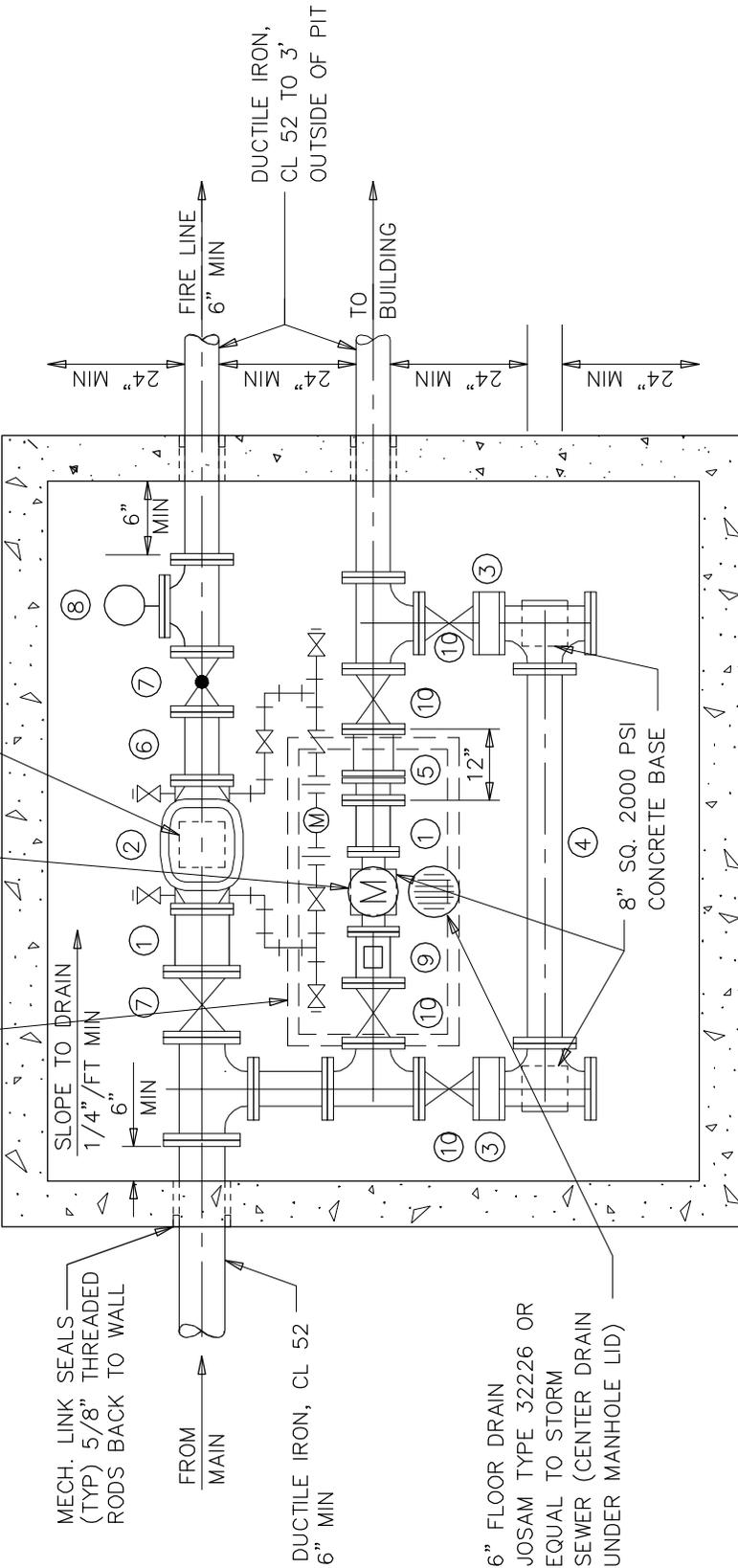
DRAWING NO.  
W4.3

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

NOTE:

SEE CCWRD STANDARD DWGS W4.5 & W4.6 FOR WATER SYSTEM CHAMBER DETAILS

LID TO BE HALLIDAY PRODUCTS MODEL NO. S1R024048 ALUMINUM WITH RECESSED LIFT HANDLES, S.S. HARDWARE, S.S. & ALUMINUM HOLD OPEN ARM, AND S.S. SLAM LOCK WITH KEY OR APPROVED EQUAL. CENTER LID LENGTHWISE OVER DOMESTIC METER



SLOPE TO DRAIN  
1/4" / FT MIN

MECH. LINK SEALS  
(TYP) 5/8" THREADED  
RODS BACK TO WALL

FROM  
MAIN

DUCTILE IRON, CL 52  
6" MIN

6" FLOOR DRAIN  
JOSAM TYPE 32226 OR  
EQUAL TO STORM  
SEWER (CENTER DRAIN  
UNDER MANHOLE LID)

8" SQ. 2000 PSI  
CONCRETE BASE

- ① FLANGED SPOOL OR SPACER
- ② DETECTOR CHECK VALVE ASSEMBLY. SEE CCWRD STD. DWG. W3.1
- ③ FILLER FLANGE OR SPOOL PIECE AS REQUIRED
- ④ BY-PASS LINE TO BE SAME SIZE AS DOMESTIC LINE
- ⑤ FLANGED ADAPTER EQUAL TO DRESSER STYLE 128 WITH 2" NPT TAP & PLUG (TEST PORT)
- ⑥ FLANGED SPOOL 12" x LENGTH
- ⑦ FLANGED INDICATOR GATE VALVE W/ HANDWHEEL OR POST INDICATOR VALE, AS REQUIRED BY FIRE DEPARTMENT ELECTRONIC SUPERVISION OF VALVE AS REQUIRED
- ⑧ FIRE DEPARTMENT CONNECTION, IF REQUIRED BY FIRE DEPARTMENT
- ⑨ FLANGED STRAINER
- ⑩ FLANGED GATE VALVE W/ HANDWHEEL

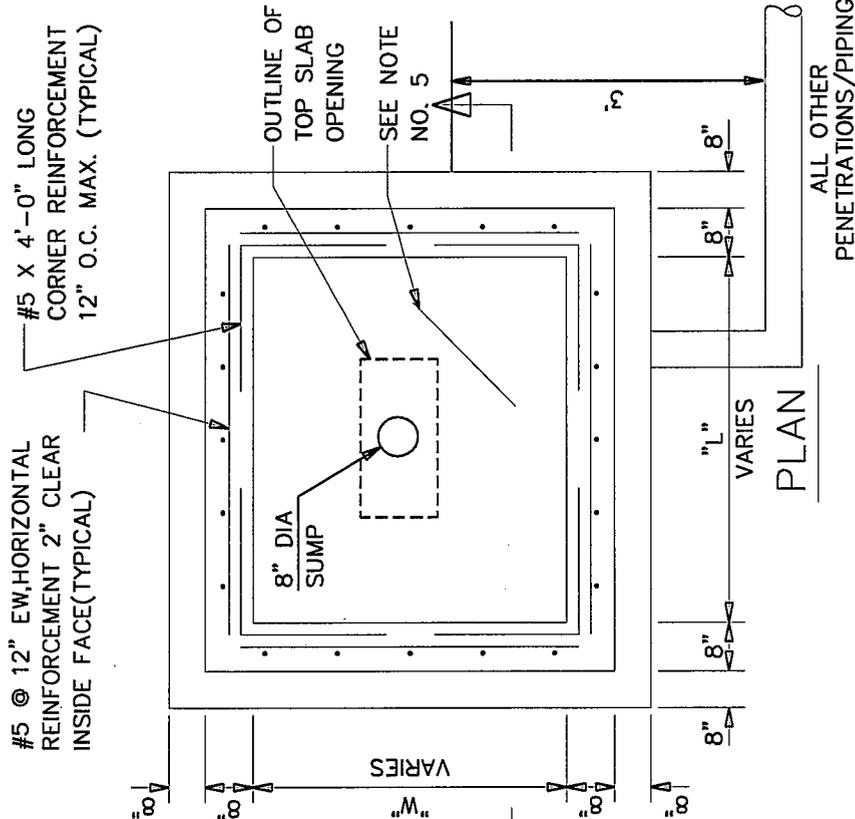
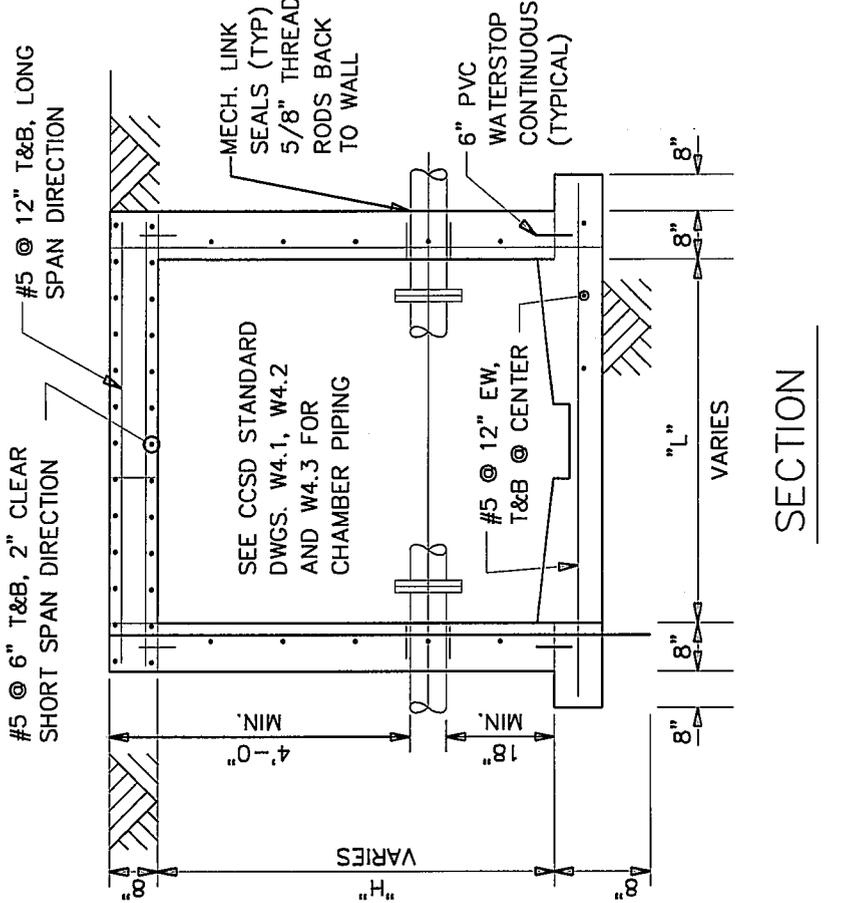
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

DUAL SERVICE  
BRANCH SETTING— 3"  
& LARGER METERS

DRAWING NO.  
W4.4

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTES:**

1. IF A STORM SEWER IS UNAVAILABLE FOR THE 6" PVC SDR 23.5 CHAMBER DRAIN CONNECTION, AN 8 INCH DIAMETER SUMP SHALL BE PROVIDED. SUMP SHALL BE CAST MONOLITHICALLY WITH BASE SLAB. SUMP PUMPS MAY BE CONSIDERED ONLY FOR FIRE SUPPRESSION VAULTS WITH ELECTRONIC MONITORING ONLY IF POSITIVE DRAINAGE CANNOT BE PROVIDED. ELECTRIC CIRCUIT MUST BE GFCI PROTECTED & INSTALLED IN ACCORDANCE TO NATIONAL ELECTRIC CODE. FROM MINIMUM HORIZONTAL CLEARANCE OF 3 FEET.
2. 6" FLOOR DRAIN SHALL BE JOSAM TYPE 32226 OR EQUAL. DRAIN SHALL BE CENTERED UNDER MANHOLE LID.
3. FOR MINIMUM CHAMBER DIMENSIONS: "L", "W", "H" AND LID PLACEMENT & SIZING, SEE CCWRD STANDARD DWGS. W4.1, W4.2 AND W4.3.
4. SEE CCWRD STANDARD DWG. W4.6 FOR CHAMBER ACCESS LADDER.
5. ADDITIONAL REINFORCEMENT SHALL BE PROVIDED AT EACH CORNER OF EVERY TOP SLAB OPENING--#5 X 2'-0" LONG T&B MINIMUM.
6. REINFORCEMENT SHOWN IS MINIMUM REQUIRED. TOP AND BASE SLABS SHALL BE DESIGNED FOR A UNIFORM LOADING OF 300 PSF LIVE LOAD, WALLS SHALL BE DESIGNED FOR A UNIFORM VARYING LOAD OF 80 PCF PER FOOT FOOT OF DEPTH, WITH A SAFETY OF 1.7 MIN.
7. CHAMBERS SHALL BE CAST-IN-PLACE OR PRECAST CONCRETE (4000 PSI)
8. ALL OTHER PENETRATIONS SHALL BE NO MORE THAN 18" BELOW SURFACE

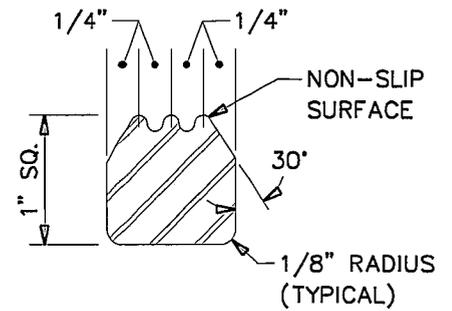
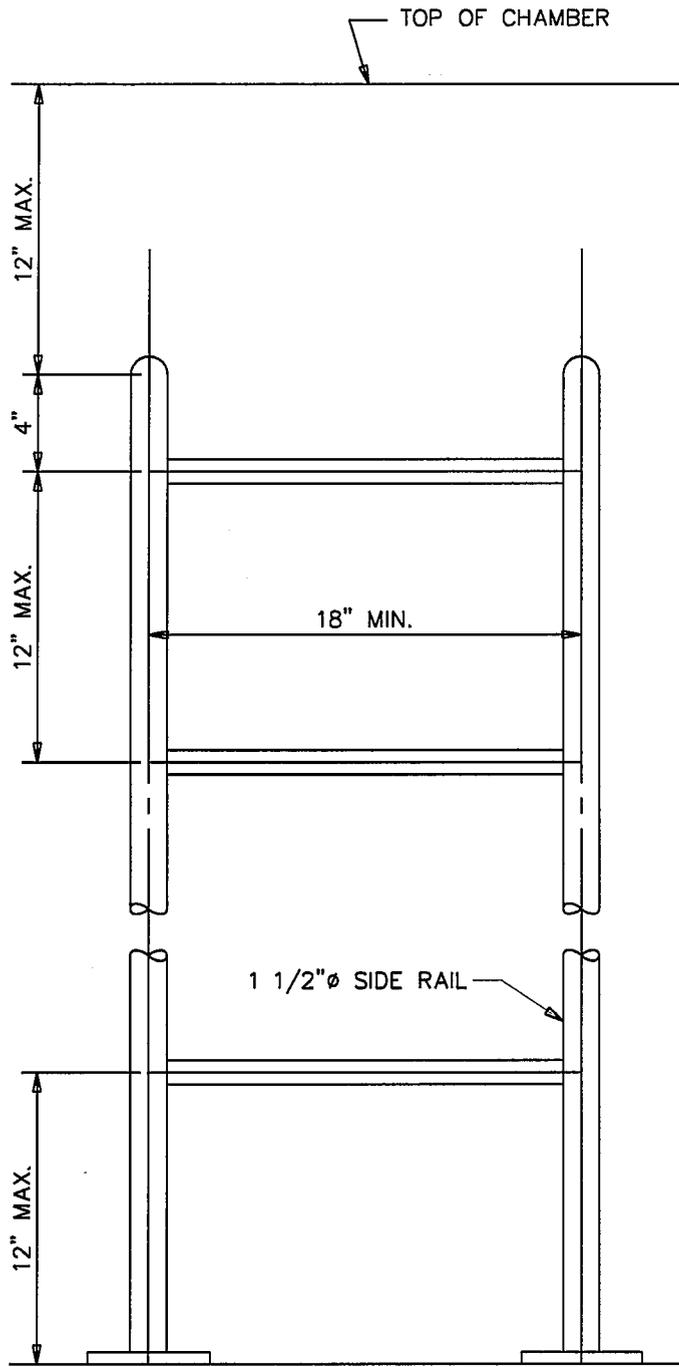
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD  
WATER SYSTEM  
CHAMBER

DRAWING NO.  
W4.5

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



RUNG DETAIL

NOTES:

- 1.LADDERS SHALL BE FABRICATED FROM ALUMINUM TUBING, PLATES & BARS CONFORMING TO ALLOY & TEMPER 6061-T6.
- 2.TUBING SHALL HAVE A 1/8" MIN. WALL THICKNESS.
- 1.LADDER MUST BE FASTENED TO WALL AND FLOOR WITH STAINLESS STEEL ANCHORS.

NO SCALE

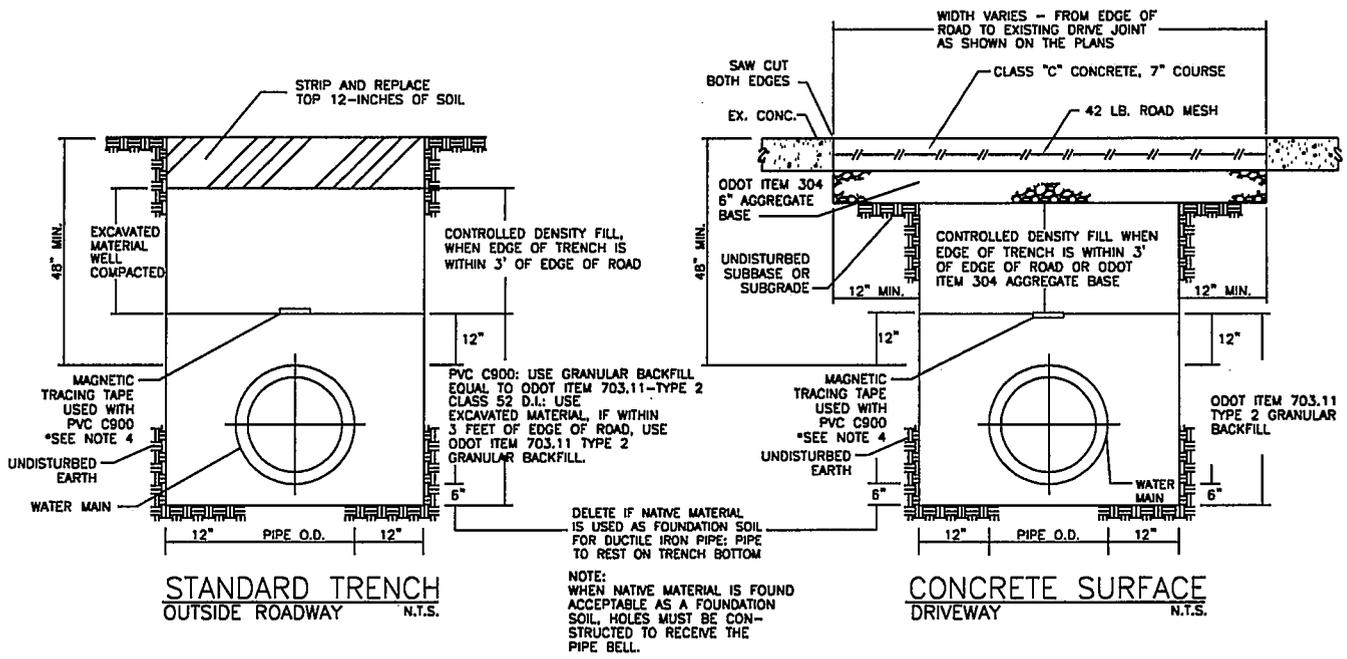
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

CHAMBER ACCESS  
LADDER

DRAWING NO.

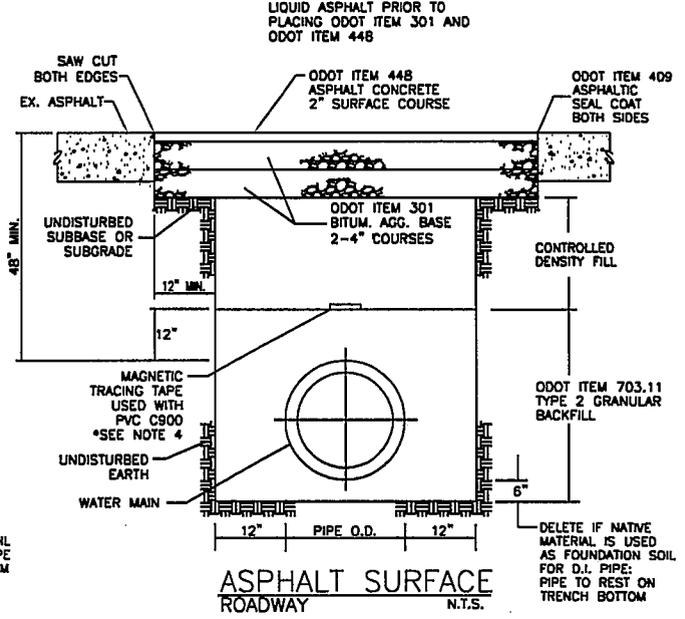
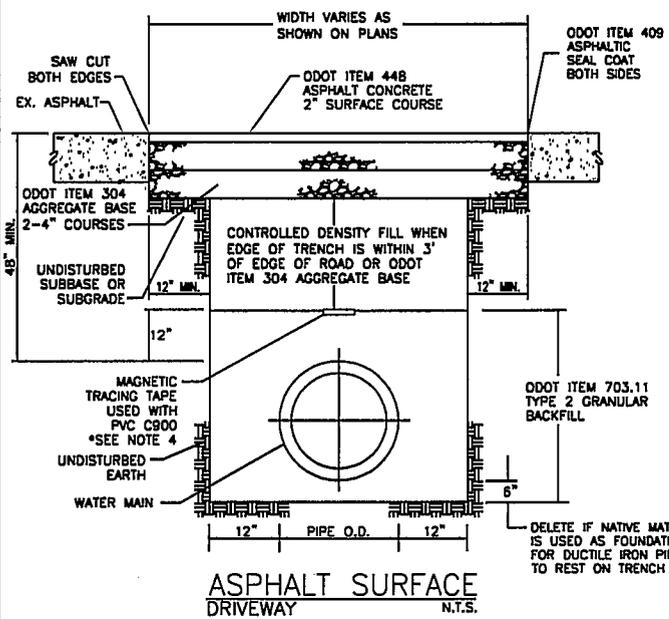
W4.6

APPROVED \_\_\_\_\_  
DATE



NOTE: VERTICAL EDGES OF EXISTING TRENCH TO BE COATED WITH LIQUID ASPHALT PRIOR TO PLACING ODOT ITEM 304 AND ODOT ITEM 448

NOTE: VERTICAL EDGES OF EXISTING TRENCH TO BE COATED WITH LIQUID ASPHALT PRIOR TO PLACING ODOT ITEM 301 AND ODOT ITEM 448



**NOTES:**

1. "PAVEMENT" AS USED IN THIS DETAIL SHALL ALSO MEAN SIDEWALKS, CURBS, SLABS & OTHER GRADED STRUCTURES.
2. ALL BACKFILL & BEDDING IS TO BE COMPACTED AS CALLED FOR IN THE SPECIFICATIONS.
3. BEDDING AND BACKFILL MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION FOR THE SPECIFIC PIPE MATERIAL BEING INSTALLED.
4. IN ADDITION TO MAGNETIC TRACER TAPE, ALL PVC WATER MAIN SHALL INCLUDE A TRACER WIRE SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 2120 OF THE CCWRD STANDARD SPECIFICATIONS

5.6' LONG CLAY BULKHEADS TO BE INSTALLED AROUND PIPE EVERY 100' IN ACCORDANCE WITH SECTION 1200 OF THE CCWRD SPECIFICATIONS.

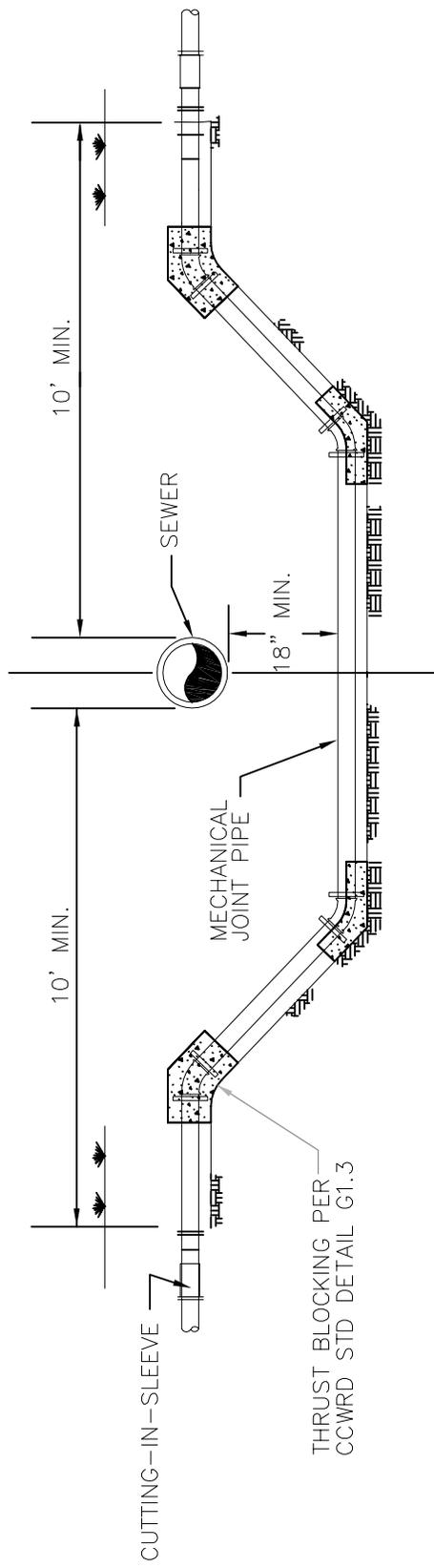
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

WATER MAIN  
TRENCH SECTION

DRAWING NO.  
W5.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



NOTE  
 DUCTILE IRON RETAINER GLANDS SHALL BE USED  
 ON ALL FITTINGS AND PIPE.

NOT TO SCALE

CLERMONT COUNTY  
 WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
 DATE \_\_\_\_\_

WATER MAIN  
 LOWERING DETAIL

DRAWING NO.  
 W5.2

NOTE: FLEXIBLE BUTYL RUBBER SEALANT EQUAL TO CONSEAL TYPE CS-102 SHALL BE USED TO: SEAL CASTING TO MANHOLE, TO SEAL ADJUSTING RINGS TOGETHER AND TO RISERS, AND TO SEAL MANHOLE RISER JOINTS. THE SEALANT MUST BE APPLIED TO THE OUTSIDE AND INSIDE HORIZONTAL PORTION OF EACH MANHOLE JOINT.

4- $\frac{3}{4}$ " $\phi$  EXP. ANCHORS ON 34" B.C. @ 90°

WATER-TIGHT MANHOLE FRAME & LID EQUAL AS PER CCWRD STANDARD DWG. S1.7. REPLACE "SANITARY SEWER" LETTERING WITH "WATER"

GRADE RINGS (TWO MAX.) (12" MAXIMUM HEIGHT)

O-RING GASKET ASTM C-443

A-LOK X CELL OR APPROVED EQUAL

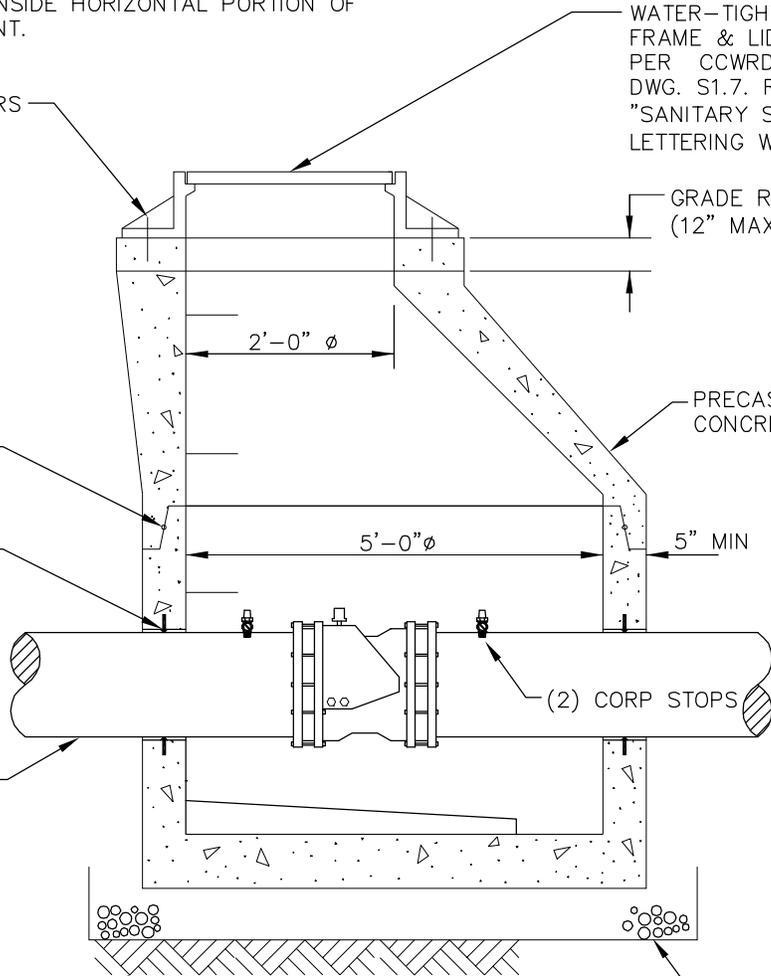
PRECAST REINFORCED CONCRETE MANHOLE

WATER MAIN

(2) CORP STOPS

UNDISTURBED EARTH

6" AGGREGATE BASE #57 STONE



WATER MAIN SIZE	VALVE TYPE	CORP SIZE
< 12"	GATE	1"
≥ 12"	BUTTERFLY	2"

THE VALVE AND MANHOLE OPENING SHALL BE ALIGNED TO PERMIT OPERATION OF THE VALVE NUT FROM OUTSIDE AND ABOVE THE MANHOLE. WHERE CALL FOR ON THE CONTRACT DRAWINGS, FLAT TOP MANHOLE LID WITH RISER SHALL BE SUBSTITUTE FOR THE ECCENTRIC RISER.

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

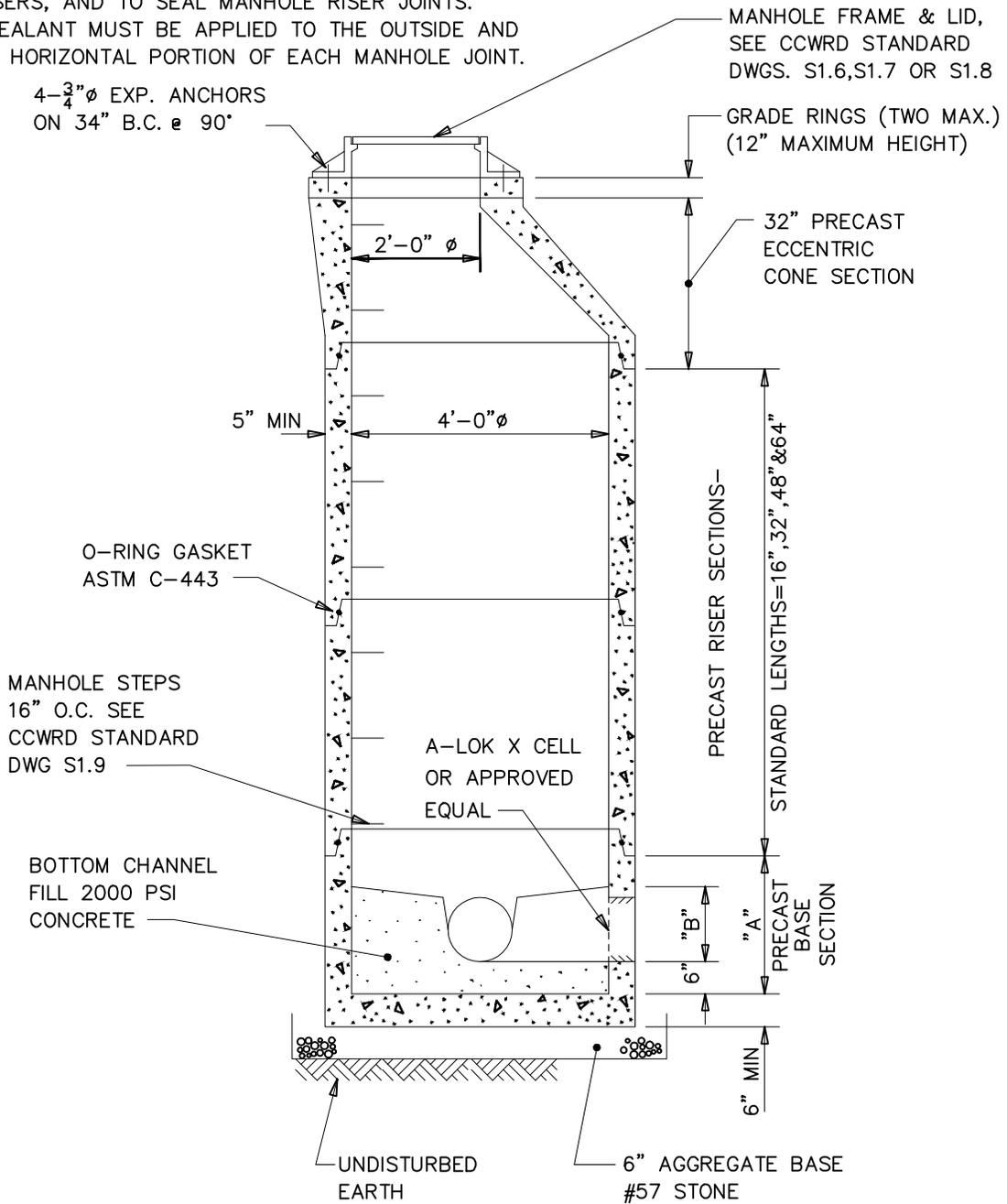
ISOLATION/ACCESS  
VALVE AND MANHOLE

DRAWING NO.  
W6.1

**NOTE:**

FLEXIBLE BUTYL RUBBER SEALANT EQUAL TO CONSEAL TYPE CS-302 SHALL BE USED TO: SEAL CASTING TO MANHOLE, TO SEAL ADJUSTING RINGS TOGETHER AND TO RISERS, AND TO SEAL MANHOLE RISER JOINTS. THE SEALANT MUST BE APPLIED TO THE OUTSIDE AND INSIDE HORIZONTAL PORTION OF EACH MANHOLE JOINT.

4- $\frac{3}{4}$ " $\phi$  EXP. ANCHORS  
ON 34" B.C. @ 90°



"A" DIMENSION	SEWER SIZE
24"	8" & 10"
30"	12" & 15"
38"	18"

"B" DIMENSION	SEWER SIZE
PIPE ID + 2"	8", 10" & 12"
1/2 PIPE ID + 2"	15" & LARGER

KOR-N-SEAL I OR APPROVED EQUAL FOR CONNECTION TO EXISTING MANHOLES

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD MANHOLE  
FOR SEWERS  
8" TO 18"

DRAWING NO.

S1.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

**NOTE:**

FLEXIBLE BUTYL RUBBER SEALANT EQUAL TO CONSEAL TYPE CS-302 SHALL BE USED TO: SEAL CASTING TO MANHOLE, SEAL ADJUSTING RINGS TOGETHER AND TO RISERS, AND TO SEAL MANHOLE RISER JOINTS. THE SEALANT MUST BE APPLIED TO THE OUTSIDE AND INSIDE HORIZONTAL PORTION OF EACH MANHOLE JOINT.

4- $\frac{3}{4}$ "  $\phi$  EXP. ANCHORS ON 34" B.C. 90°

MANHOLE FRAME & LID, SEE CCWRD STANDARD DWGS. S1.6,S1.7 OR S1.8

GRADE RINGS (TWO MAX.) (12" MAXIMUM HEIGHT)

32" PRECAST ECCENTRIC CONE SECTION

4'-0"  $\phi$  RISERS AS REQUIRED

PRECAST ECCENTRIC TRANSITION 32"

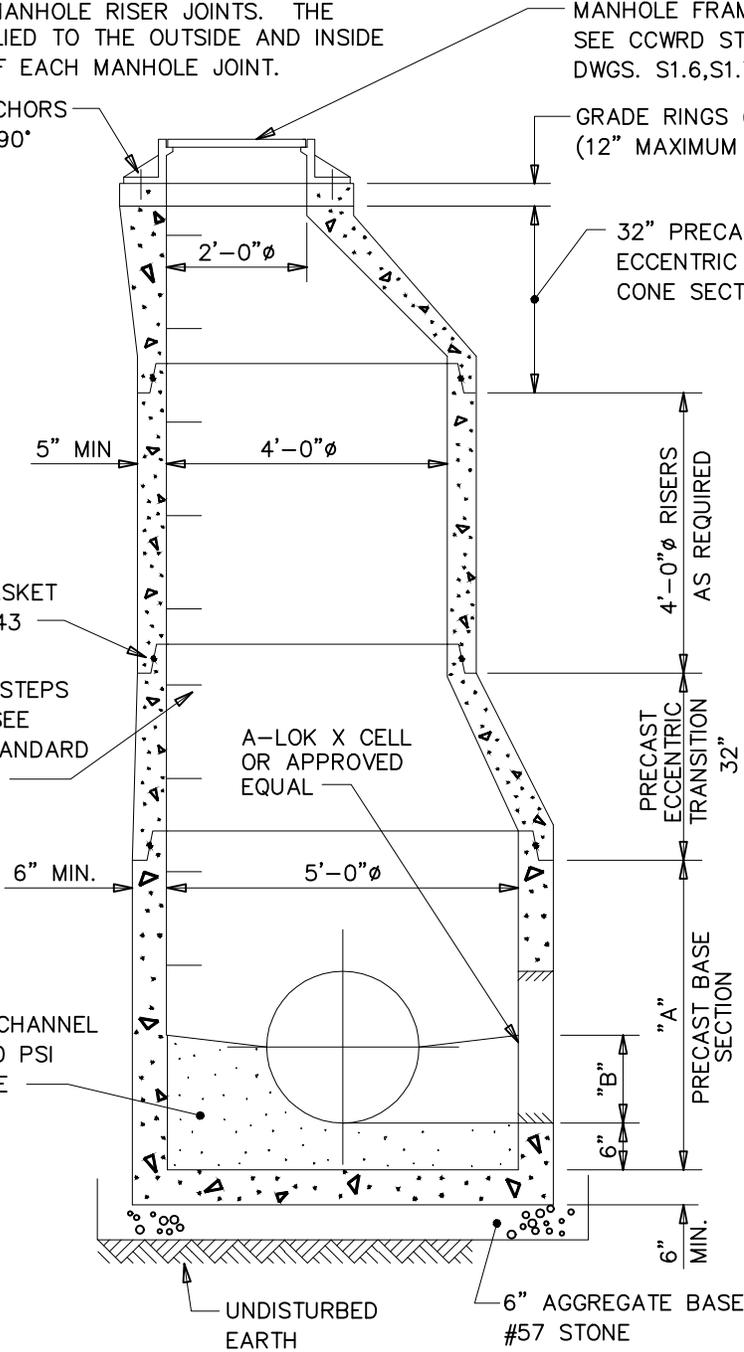
"A"  
"B"  
PRECAST BASE SECTION

O-RING GASKET ASTM C-443

MANHOLE STEPS 16" O.C. SEE CCWRD STANDARD DWG S1.9

A-LOK X CELL OR APPROVED EQUAL

BOTTOM CHANNEL FILL 2000 PSI CONCRETE



"A" DIMENSION	SEWER SIZE
42"	21" - 27"
58"	30" - 36"

"B" DIMENSION	SEWER SIZE
1/2 PIPE ID + 2"	ALL

KOR-N-SEAL I OR APPROVED EQUAL FOR CONNECTION TO EXISTING MANHOLES

NO SCALE

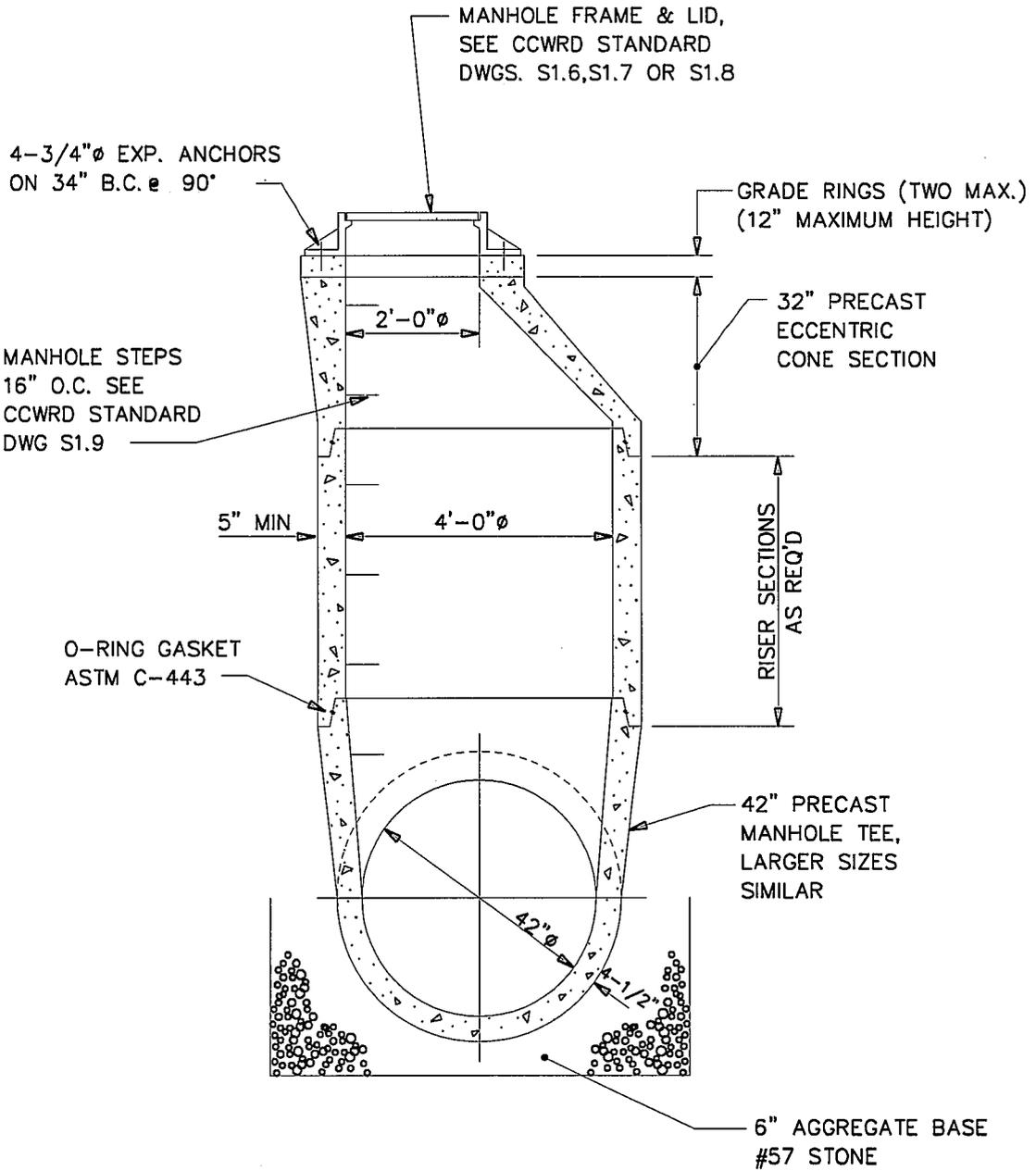
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD MANHOLE  
FOR SEWERS  
21" TO 36"

DRAWING NO.

S1.2

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTES:**

1. MANHOLE RISER SHALL BE CAST MONOLITHICALLY WITH 8" LG. PIPE SECTION.
2. FLEXIBLE BUTYL RUBBER SEALANT EQUAL TO CONSEAL TYPE CS-302 SHALL BE USED TO: SEAL CASTING TO MANHOLE, SEAL ADJUSTING RINGS TOGETHER AND TO RISERS, AND TO SEAL MANHOLE RISER JOINTS. THE SEALANT MUST BE APPLIED TO THE OUTSIDE AND INSIDE HORIZONTAL PORTION OF EACH MANHOLE JOINT.

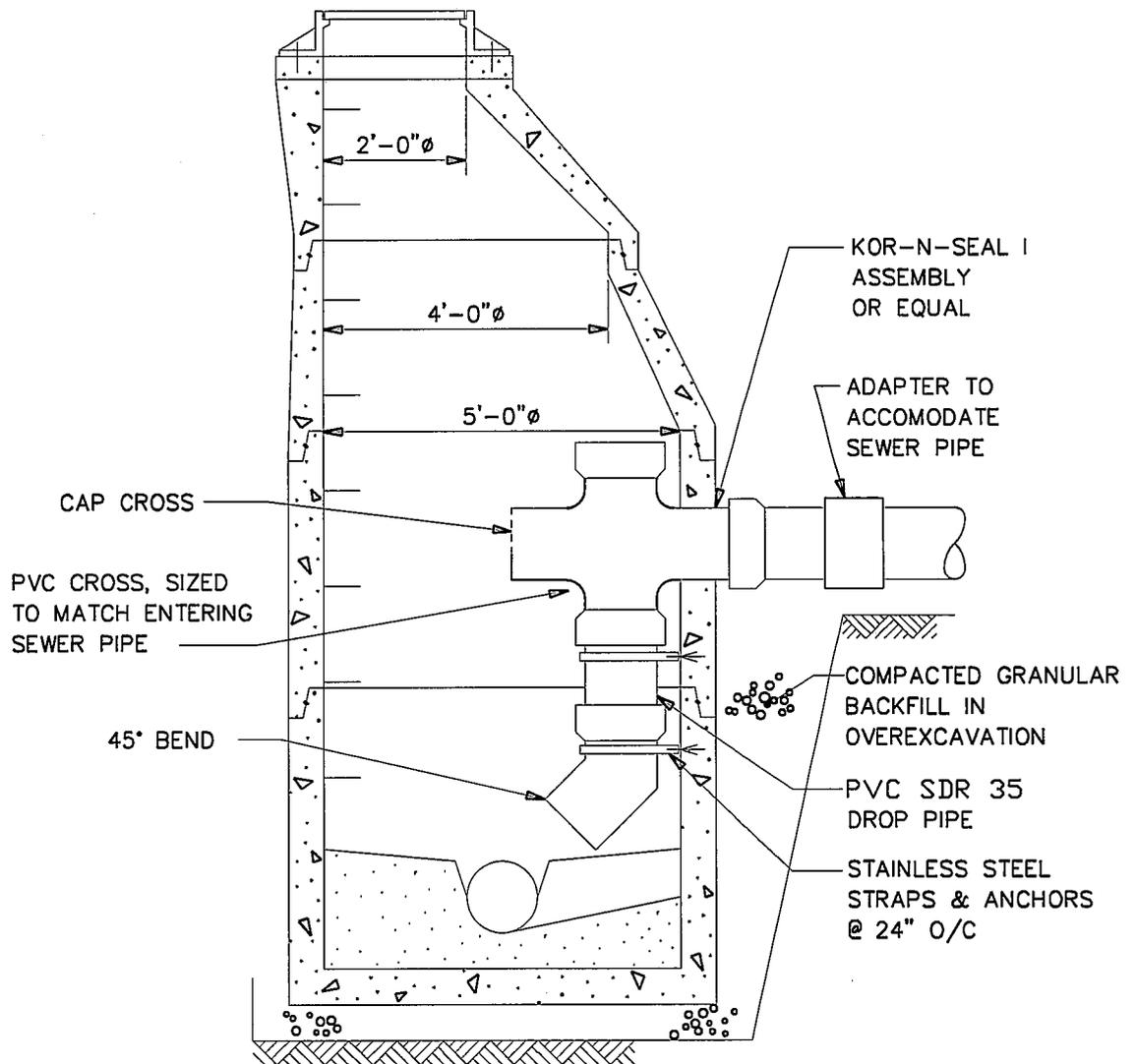
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD MANHOLE  
FOR SEWERS  
42" & LARGER

DRAWING NO.  
S1.3

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



SEWER PIPE SIZE	DROP PIPE SIZE
8"	8"
10"	10"
12"	12"
15" & OVER	12" UNLESS OTHERWISE APPROVED

**NOTES:**

1. IN LIEU OF THE DROP STRUCTURE SHOWN, A RELINER BRAND INSIDE DROP SYSTEM MAY BE USED.
2. ALL OTHER CHARACTERISTICS ARE SIMILAR TO THE STANDARD MANHOLES. SEE CCWRD STANDARD DWGS. S1.1-S1.3.

NO SCALE

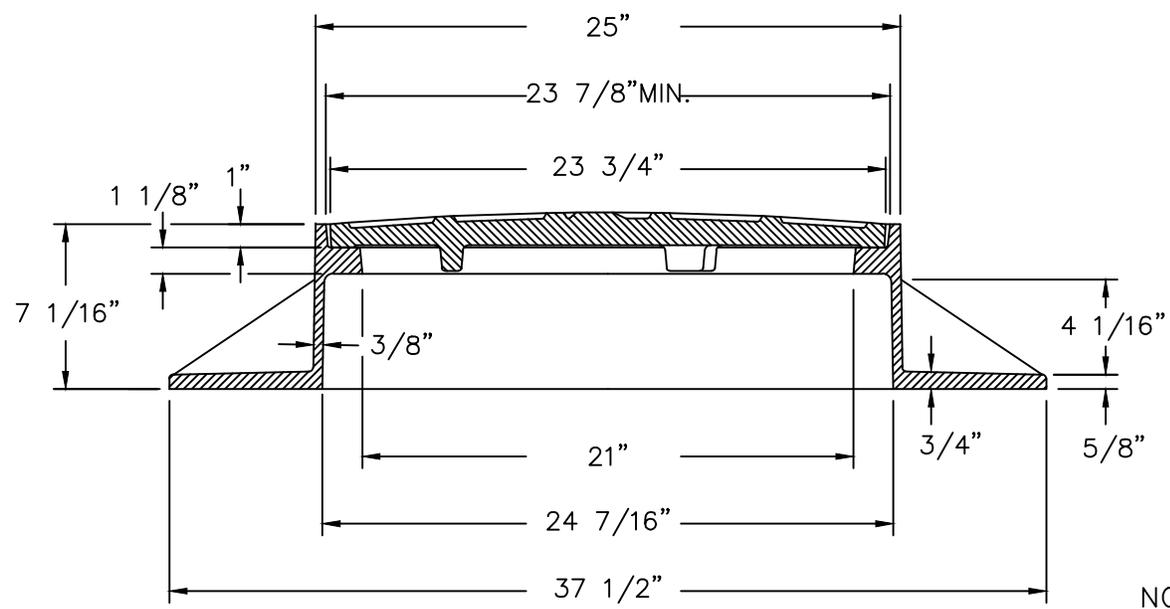
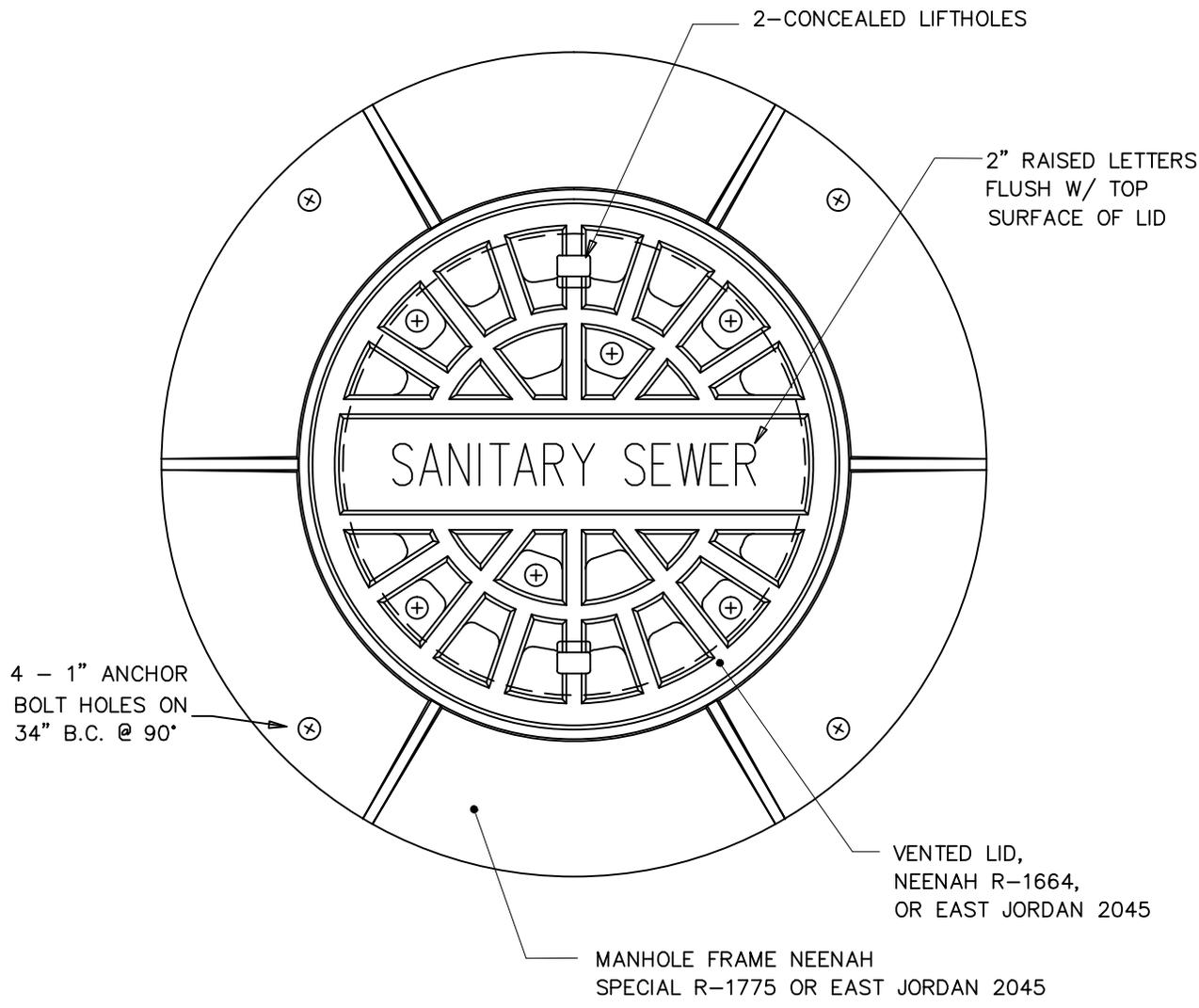
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

INSIDE DROP  
MANHOLE

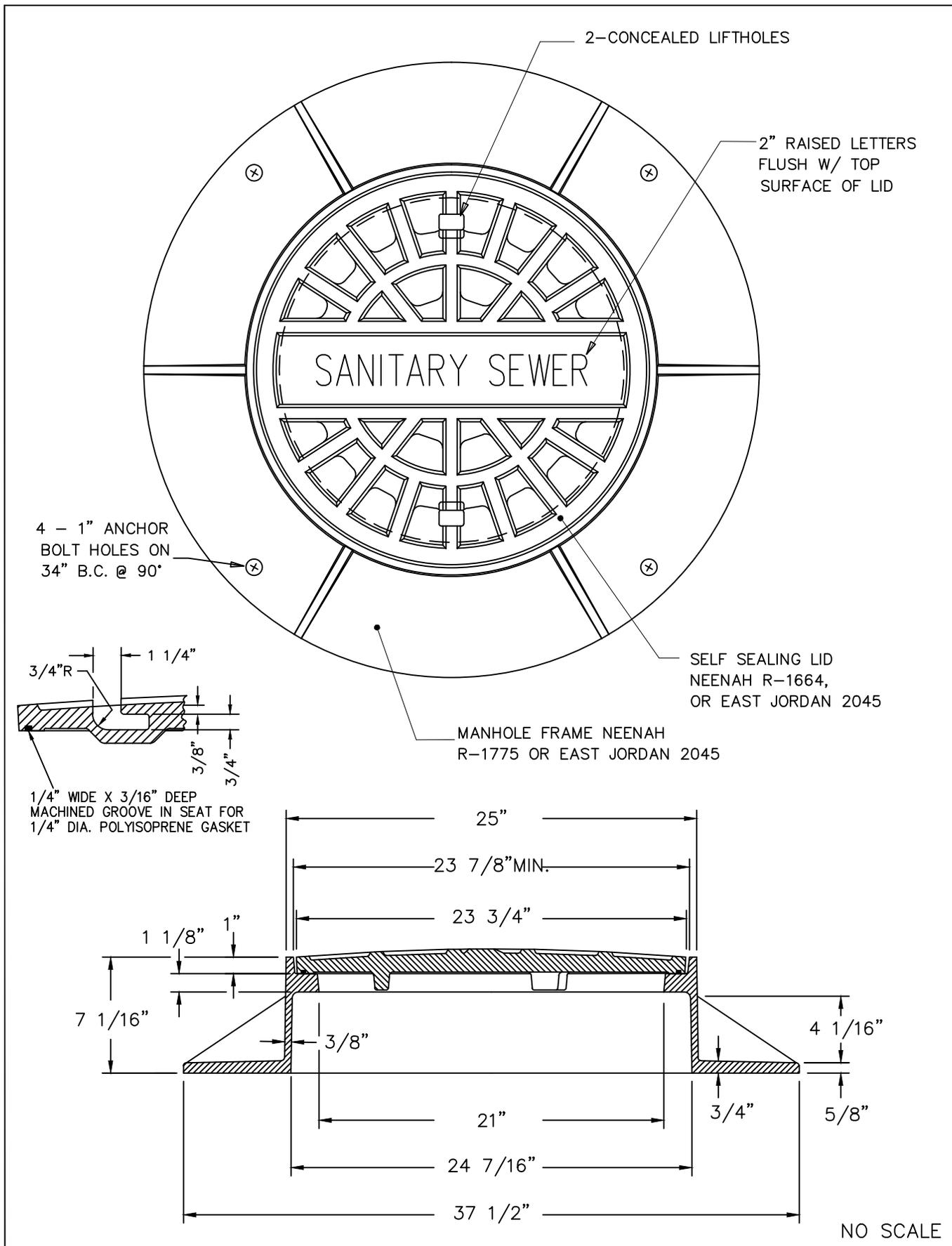
DRAWING NO.

S1.4



NO SCALE

CLERMONT COUNTY WATER RESOURCES DEPARTMENT	MANHOLE FRAME WITH VENTED LID	DRAWING NO. S1.6
APPROVED _____ DATE _____		

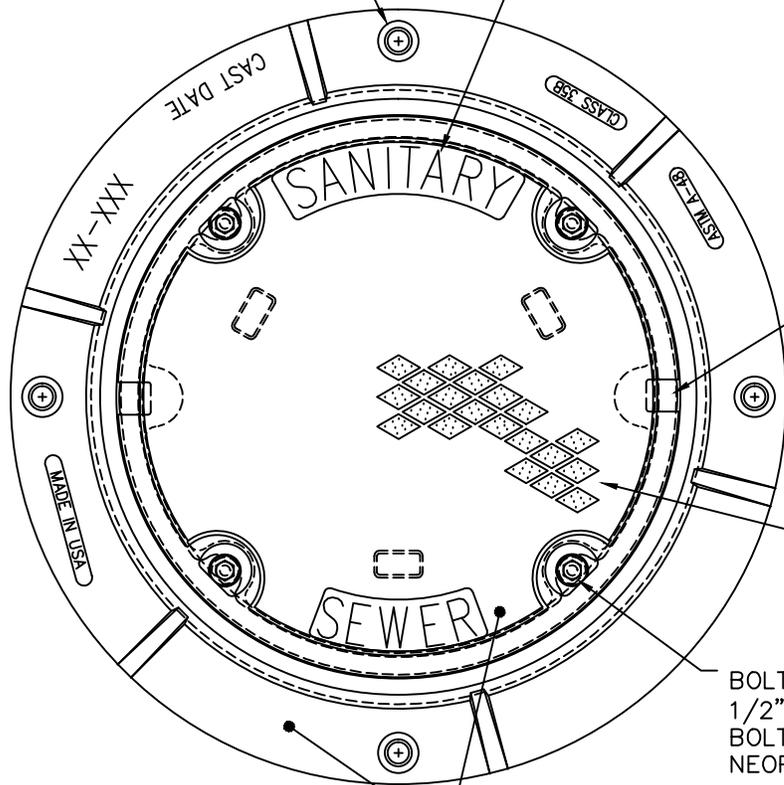


CLERMONT COUNTY WATER RESOURCES DEPARTMENT	MANHOLE FRAME WITH SELF SEALING LID	DRAWING NO. S1.7
APPROVED _____ DATE _____		

REVISED JUNE 2013

4 - 1" ANCHOR BOLTS  
ON 32 3/4" B.C. @ 90°

2" RAISED LETTERING  
FLUSH WITH TOP SURFACE

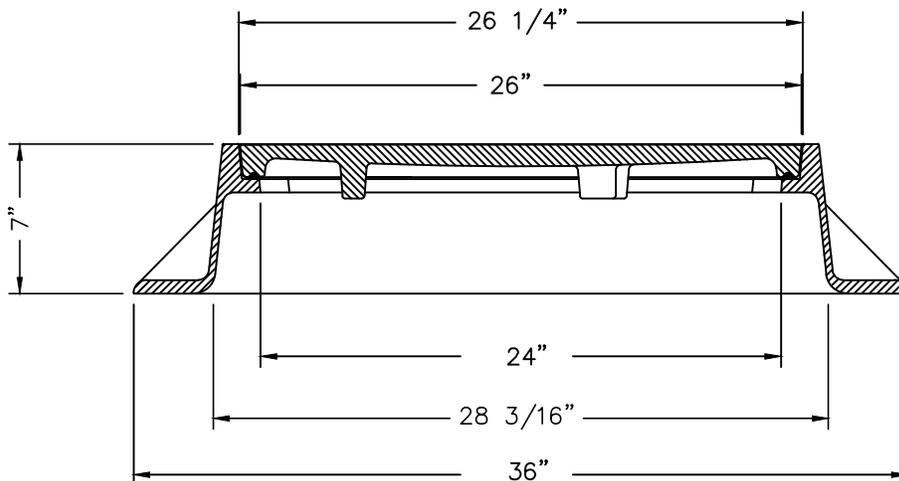


2 CONCEALED PICK HOLES

TEXTURE TYPICAL ON LID

BOLT LID TO FRAME WITH 4  
1/2"-13 X 2 1/4" SS HEX.  
BOLT, WITH SS WASHER AND  
NEOPRENE WASHER

WATERTIGHT FRAME AND PLATEN LID  
EAST JORDAN 1045ZPT OR NEENAH  
R-1916-F



NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

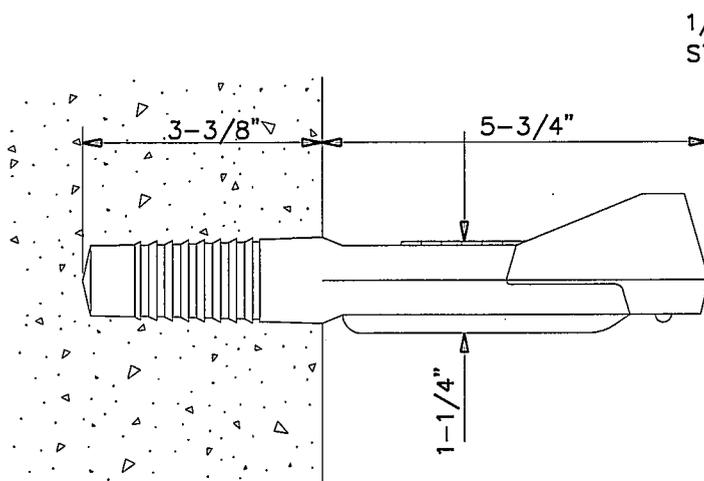
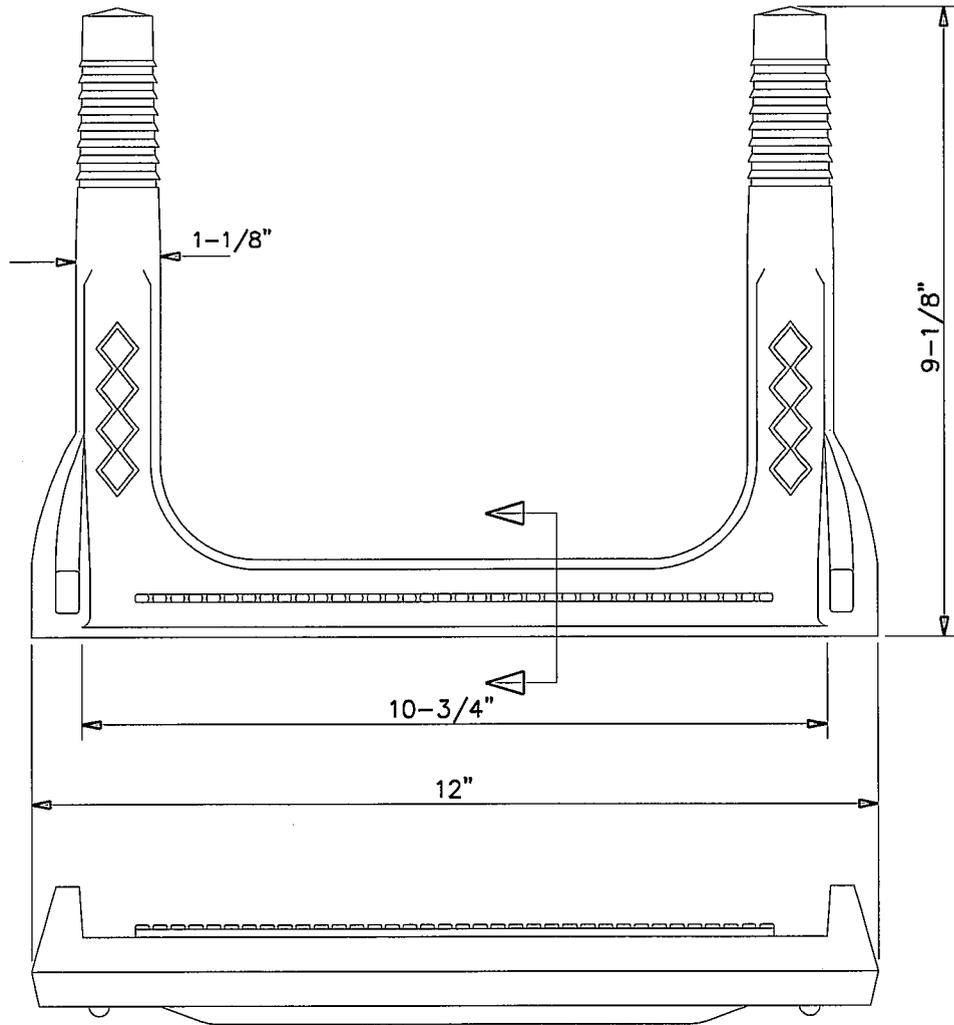
WATERTIGHT FRAME  
WITH BOLT DOWN LID

DRAWING NO.

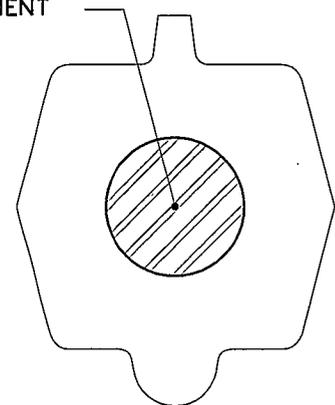
S1.8

APPROVED \_\_\_\_\_

DATE \_\_\_\_\_



1/2"Ø GRADE 60  
STEEL REINFORCEMENT



SECTION

NO SCALE

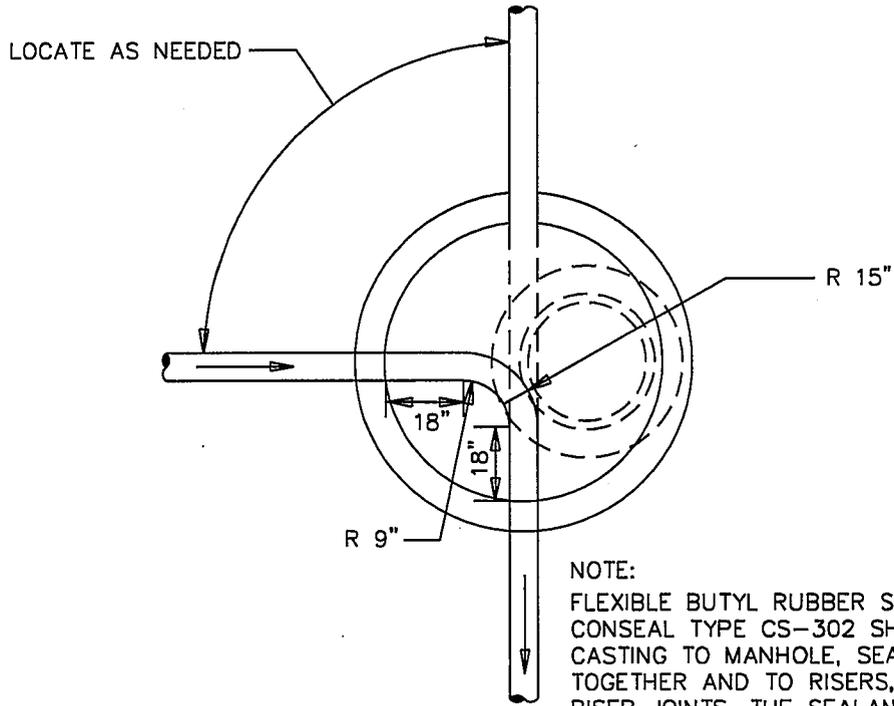
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

MANHOLE STEP-  
COPOLYMER

DRAWING NO.

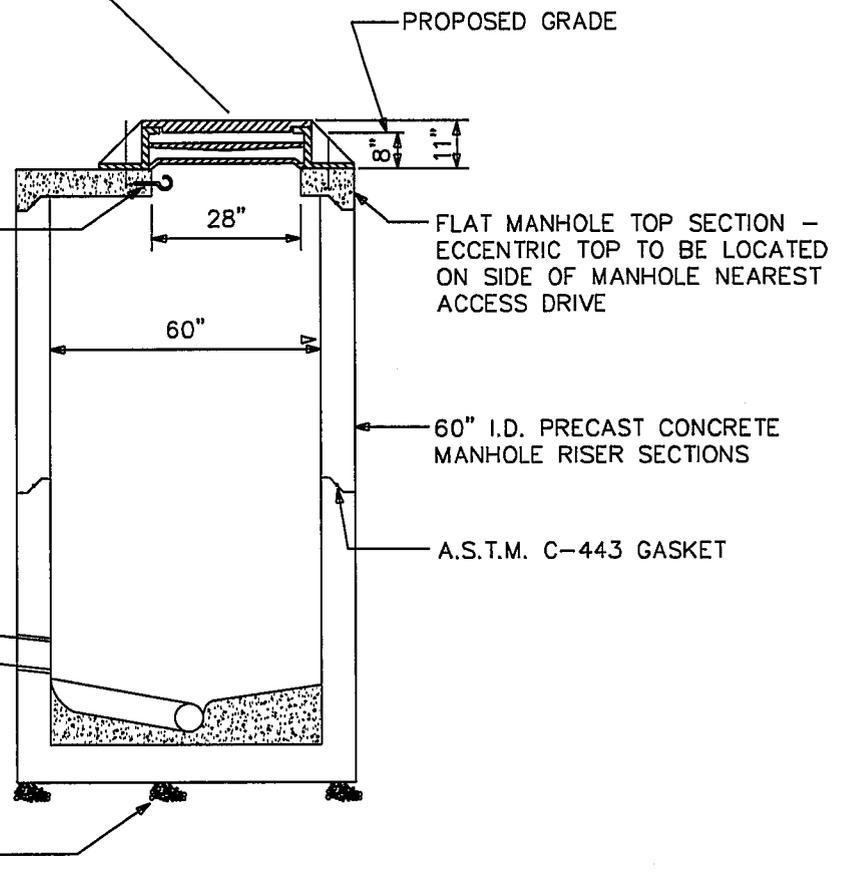
S1.9



IN NON-PAVED/UNTRAVELED AREAS  
INSTALL AN ALUMINUM LID,  
NEENAH TYPE R-1751-A WITH  
2-1/2" DIA. TYPE "C" DROP HANDLES  
& LOCKABLE INNER LID

IN PAVED/TRAVELED AREAS INSTALL  
A CAST IRON LID NEENAH R-1751-A  
WITH 2 1/2" DIA. TYPE "C" DROP  
HANDLES & LOCKABLE INNER LID

1/2" Ø STAINLESS STEEL EYEBOLT,  
TWO REQUIRED OVER CENTRAL  
PORTION OF MANHOLE CAVITY,  
90° APART



NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

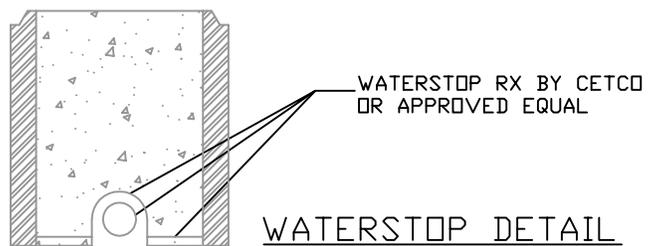
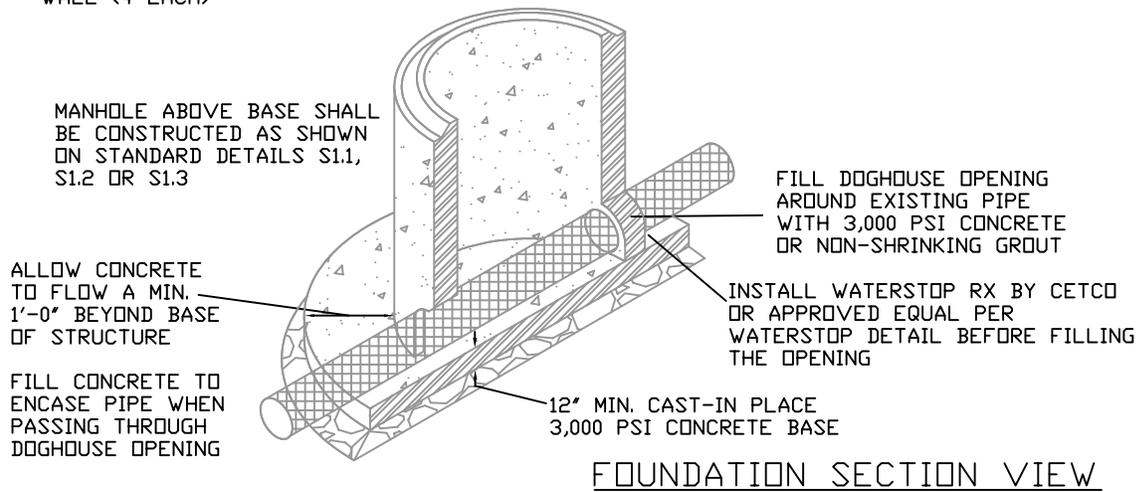
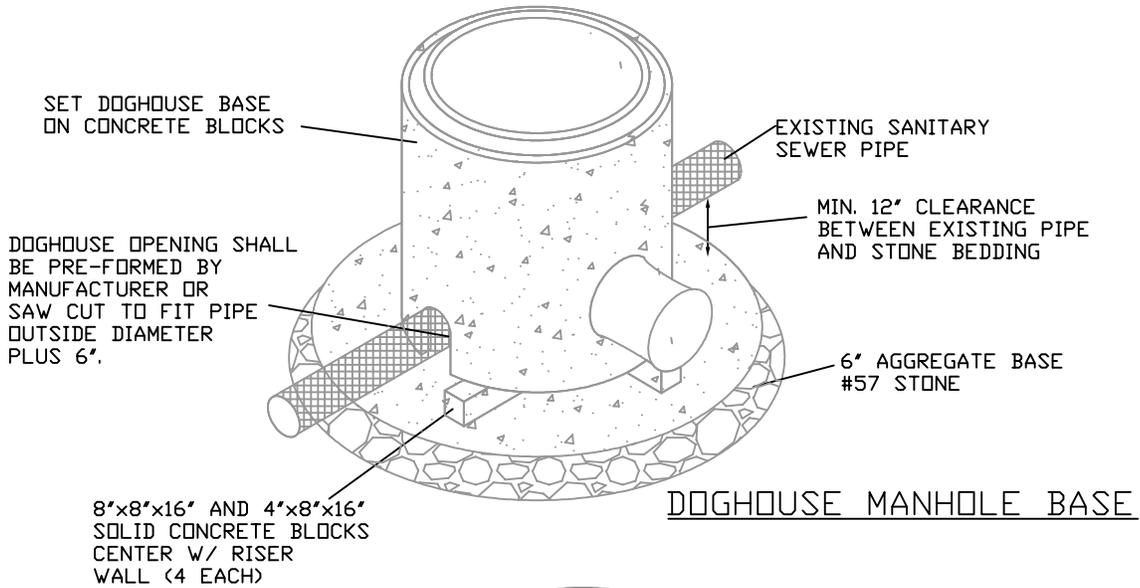
IWPT SAMPLING  
MANHOLE

DRAWING NO.

S1.10

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

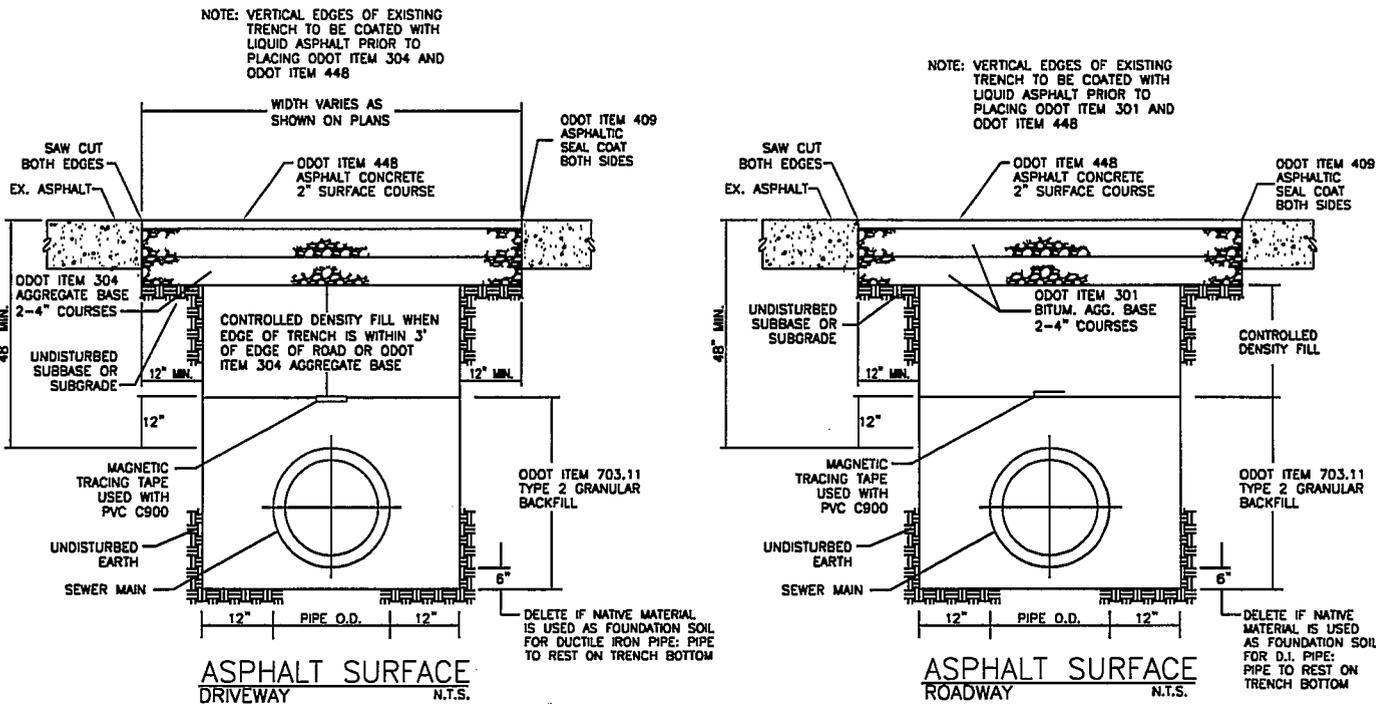
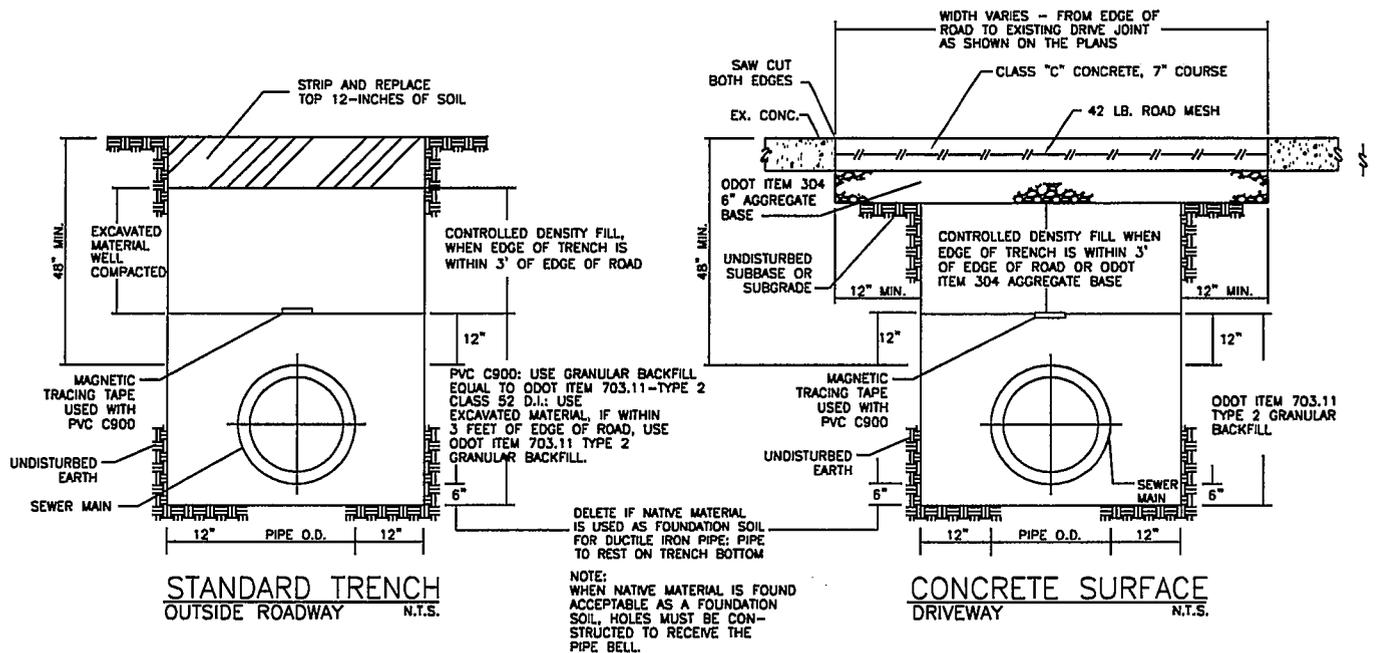
PRECAST CONCRETE MANHOLE BASES SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 3200 OF THE CCWRD SPECIFICATIONS.



NOTES:

1. CONSTRUCT A FORMED INVERT FROM NEW SEWER LINE TO ALLOW FLOW TO THE EXISTING PIPE.
2. POUR A BENCH TO THE LOWER HALF OF THE EXISTING PIPE.
3. CUT AND REMOVE THE TOP HALF OF EXISTING PIPE TO WITHIN 6" OF THE MANHOLE WALLS AFTER THE INVERT AND BENCH HAVE BEEN FORMED, AND THE MH HAS BEEN FULLY TESTED IN ACCORDANCE WITH CCWRD SPECIFICATIONS.

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>MANHOLE BASE "DOGHOUSE" INSTALLATION</p>	<p>DRAWING NO.  S1.11</p>
<p>APPROVED _____ DATE _____</p>		



**NOTES:**

1. "PAVEMENT" AS USED IN THIS DETAIL SHALL ALSO MEAN SIDEWALKS, CURBS, SLABS & OTHER GRADED STRUCTURES.
2. ALL BACKFILL & BEDDING IS TO BE COMPACTED AS CALLED FOR IN THE SPECIFICATIONS.
3. BEDDING AND BACKFILL MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION FOR THE SPECIFIC PIPE MATERIAL BEING INSTALLED.
4. 6' LONG CLAY BULKHEADS TO BE INSTALLED AROUND PIPE EVERY 100' IN ACCORDANCE WITH SECTION 1200 OF THE CCWRD SPECIFICATIONS.

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

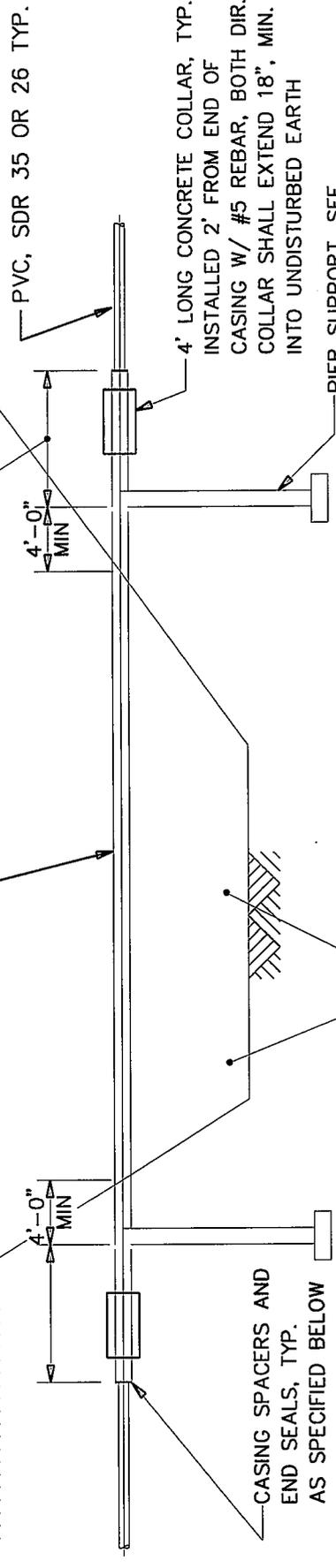
SANITARY SEWER  
TRENCH SECTIONS

DRAWING NO.  
S2.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

1/2" THICK STEEL CASING PIPE W/ UV RESISTANT BITUMINOUS COATING. DIAMETER TO BE A MINIMUM 4" LARGER THAN LARGEST O.D. OF SEWER MAIN.

EXTEND CASING A MIN. 8' BEYOND THE LAST PIER, TYP.



PVC, SDR 35 OR 26 TYP.

4' LONG CONCRETE COLLAR, TYP. INSTALLED 2' FROM END OF CASING W/ #5 REBAR, BOTH DIR. COLLAR SHALL EXTEND 18", MIN. INTO UNDISTURBED EARTH

PIER SUPPORT, SEE CCWRD STD. DWG. S2.4

ALL PIERS ARE TO BE LOCATED OUTSIDE OF THE OPEN AREA OF THE CREEK.

OPEN AREA BETWEEN PIPE, PIER AND CREEK BED MUST BE LARGE ENOUGH TO ALLOW UNOBSTRUCTED FLOW OF 50 YEAR STORM RUNOFF. PROVIDE CALCULATIONS TO CCWRD FOR REVIEW. AERIAL CROSSING TO BE PERPENDICULAR TO STREAM.

APPROVED CASING SPACERS:  
MODEL CCS, CASCADE WATERWORKS  
MODEL BWM-SS, BWM COMPANY

APPROVED END SEALS:  
MODEL CCES, CASCADE WATERWORKS  
MODEL BWM-PO, BWM COMPANY

NOTE:  
THIS DETAIL IS A MINIMUM STANDARD ONLY.  
ACTUAL AERIAL STRUCTURE AND PIPE SUPPORT TO BE DESIGNED BY A PROFESSIONAL ENGINEER AND APPROVED BY THE CCWRD.

ELEVATION

NO SCALE

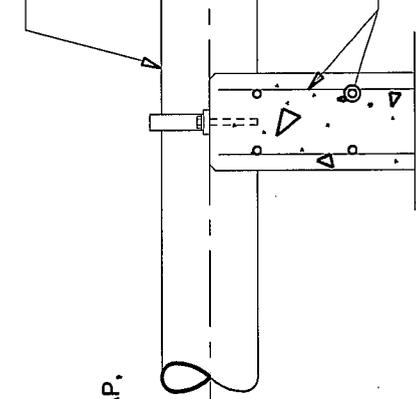
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

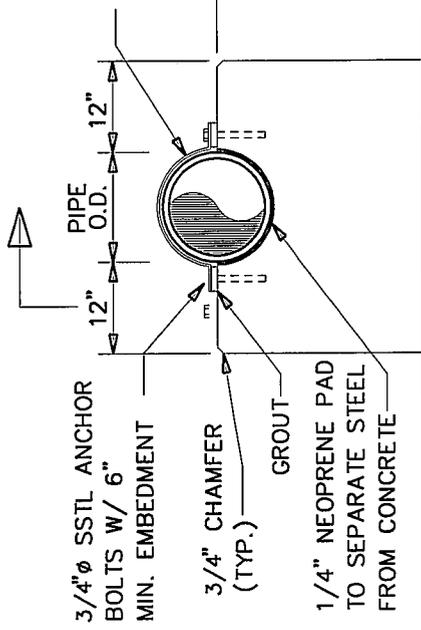
CREEK CROSSING  
AERIAL TYPE

DRAWING NO.  
S2.3

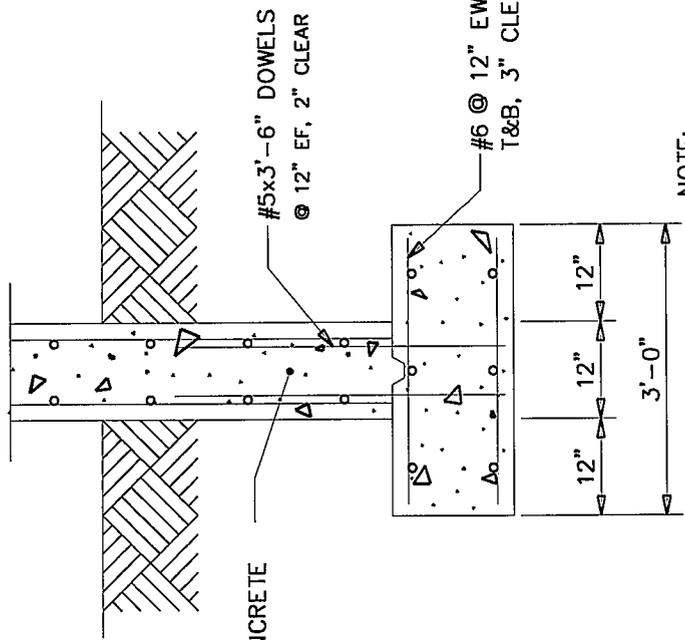
1/2" THICK STEEL CASING PIPE  
W/ UV RESISTANT BITUMINOUS  
COATING, DIAMETER TO BE A MIN.  
4" LARGER THAN LARGEST O.D. OF  
SEWER MAIN



STAINLESS STEEL PIPE STRAP,  
1/4" THICK X 3" WIDE



4,000 PSI CONCRETE



NOTE:  
THIS DETAIL IS A MINIMUM  
STANDARD ONLY. ACTUAL  
PIER DIMENSIONS AND STEEL  
REINFORCING TO BE DESIGNED  
BY A PROFESSIONAL ENGINEER  
AND APPROVED BY THE CCWRD

SECTION

ELEVATION

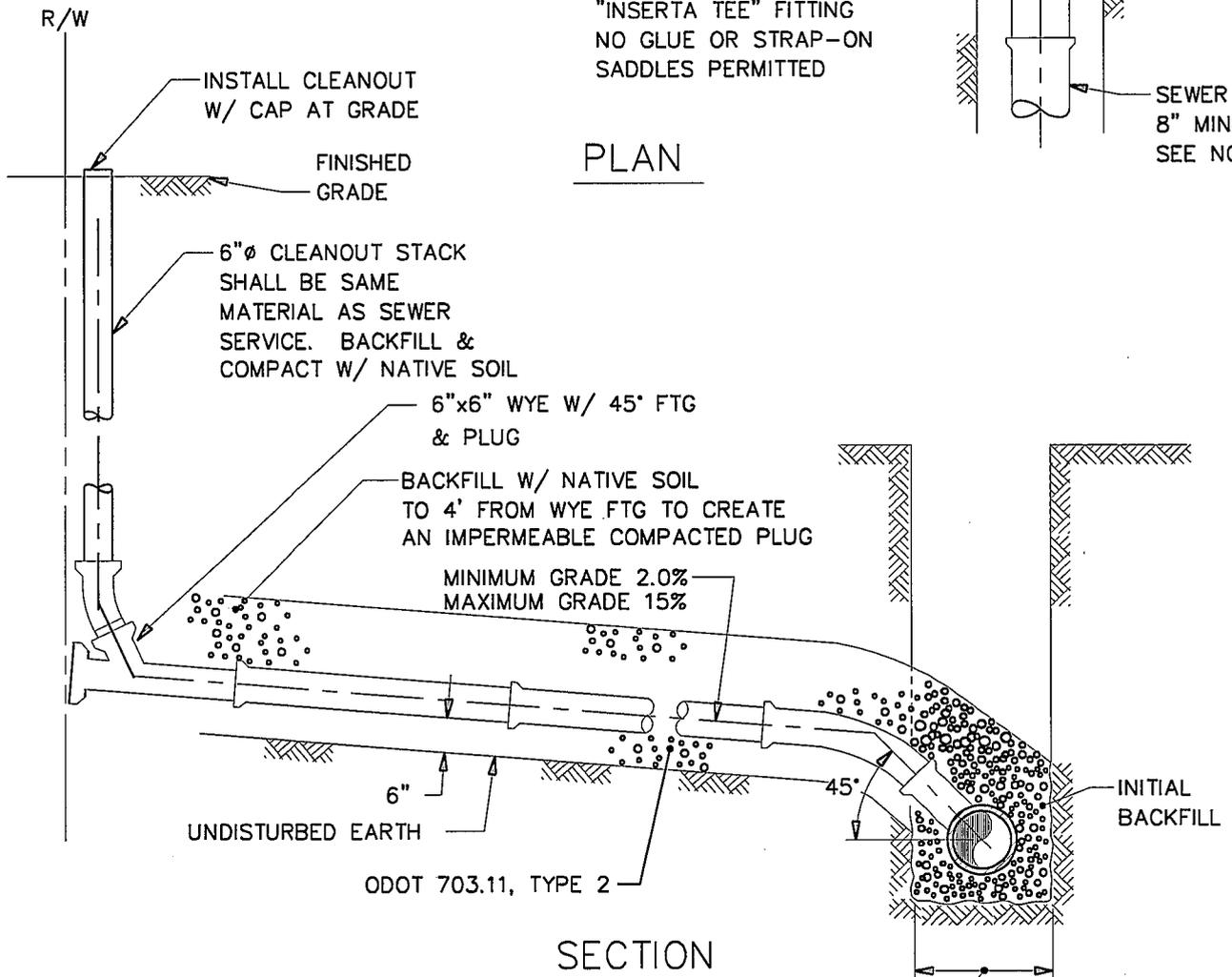
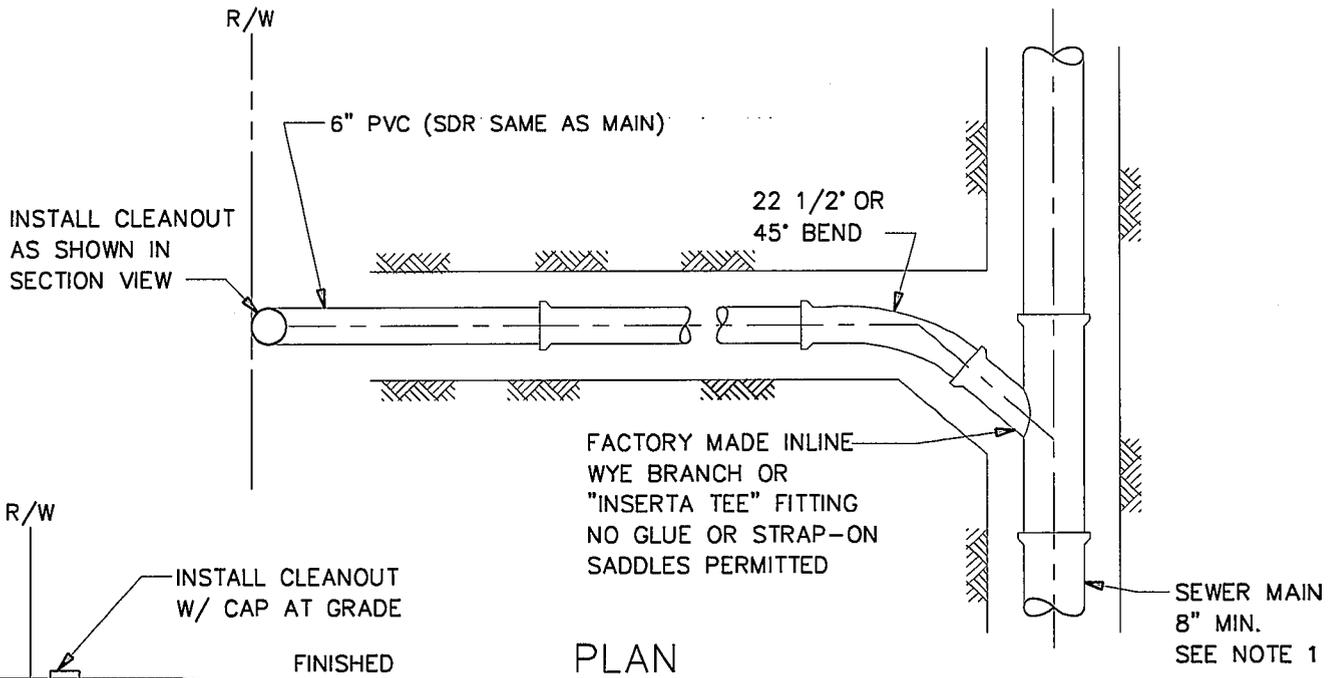
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

SUPPORT PIER

DRAWING NO.  
S2.4

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTES:**

1. SEWER LATERAL PIPE SHALL BE THE SAME MATERIAL AS THE MAIN (PVC SDR 35, 26, or 17)
2. DURING CONSTRUCTION OF THE SEWER MAIN AND LATERALS THE CLEANOUT SHALL BE BURIED APPROXIMATELY 3 FEET WITH A 2" BY 2" POLE SET ON THE BACK SIDE OF THE CLEAN OUT. WHEN THE STRUCTURE IS CONNECTED, THE CLEANOUT SHALL BE BROUGHT TO GRADE AS DETAILED.

SEE TYPICAL TRENCH DETAIL  
CCWRD STANDARD  
DWG. S2.1

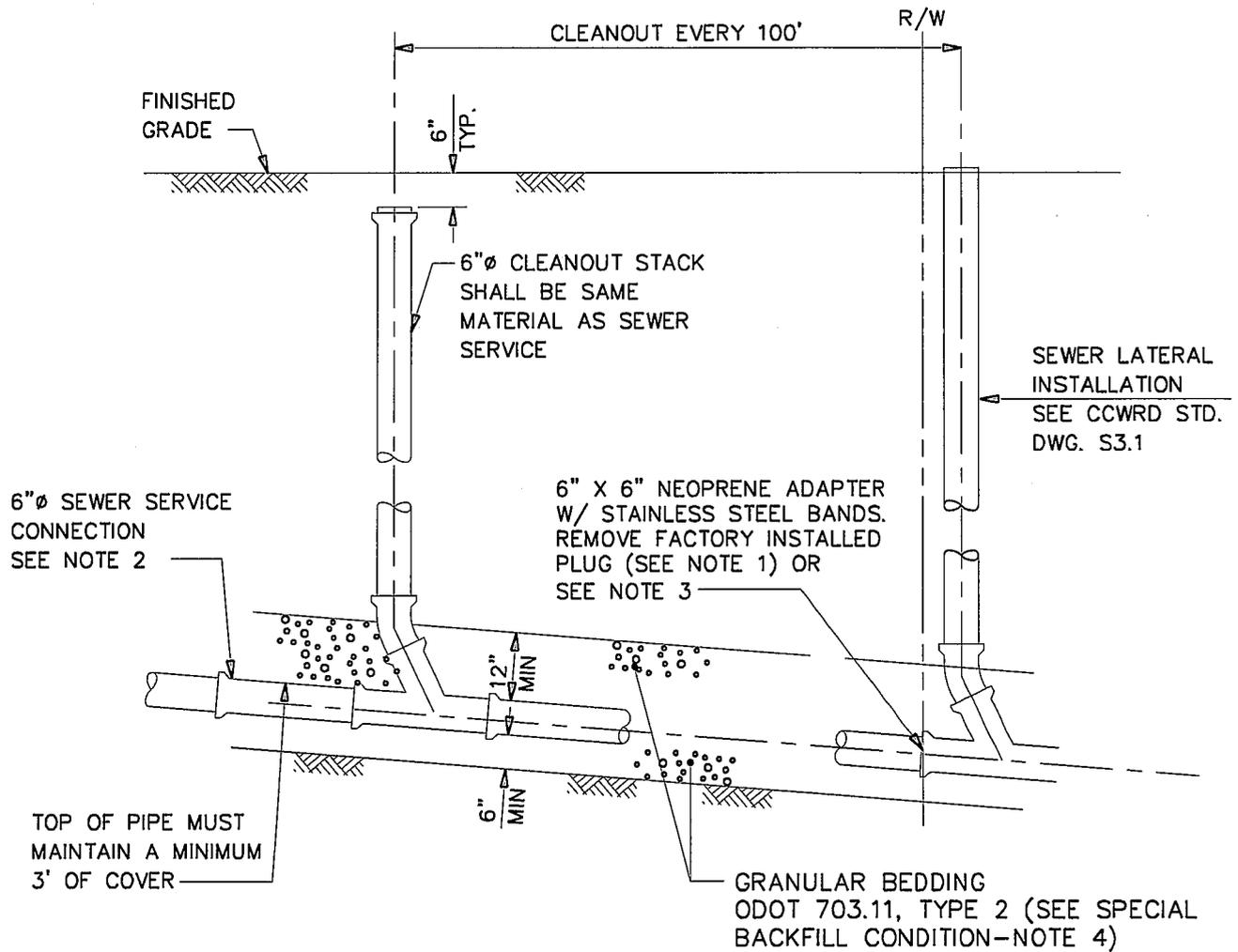
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

SEWER LATERAL  
INSTALLATION

DRAWING NO.  
S3.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTES:**

1. SEWER SERVICE CONNECTION TO SEWER LATERAL SHALL BE BY MEANS OF FLEXIBLE PIPE CONNECTORS (SHIELDED COUPLING AND DONUT TYPE) WHEN JOINING PIPES OF DIFFERENT MATERIAL.
2. SEWER SERVICE PIPE MATERIAL SHALL BE ANY OF THE FOLLOWING: PVC SCH-40 SOLID WALL, ASTM-D3034 WITH GLUED JOINTS, PVC SDR 35, OR (WHEN SEWER IS 15' OR DEEPER) PVC SDR 26
3. IN LIEU OF CONNECTING TO THE WYE FITTING AT THE R/W LINE, THE BUILDING SEWER MAY BE CONNECTED DIRECTLY TO THE 6" CLEANOUT PIPE, USING THE APPROPRIATE FITTINGS AS EXPLAINED IN NOTE 1.
4. AT A DISTANCE APPROXIMATELY 20' FROM THE STRUCTURE NATIVE SOIL (IN LIEU OF ODOT 703.11) WILL BE USED AS BACKFILL FOR APPROXIMATELY 4' TO CREATE AN IMPERMEABLE COMPACTED PLUG.

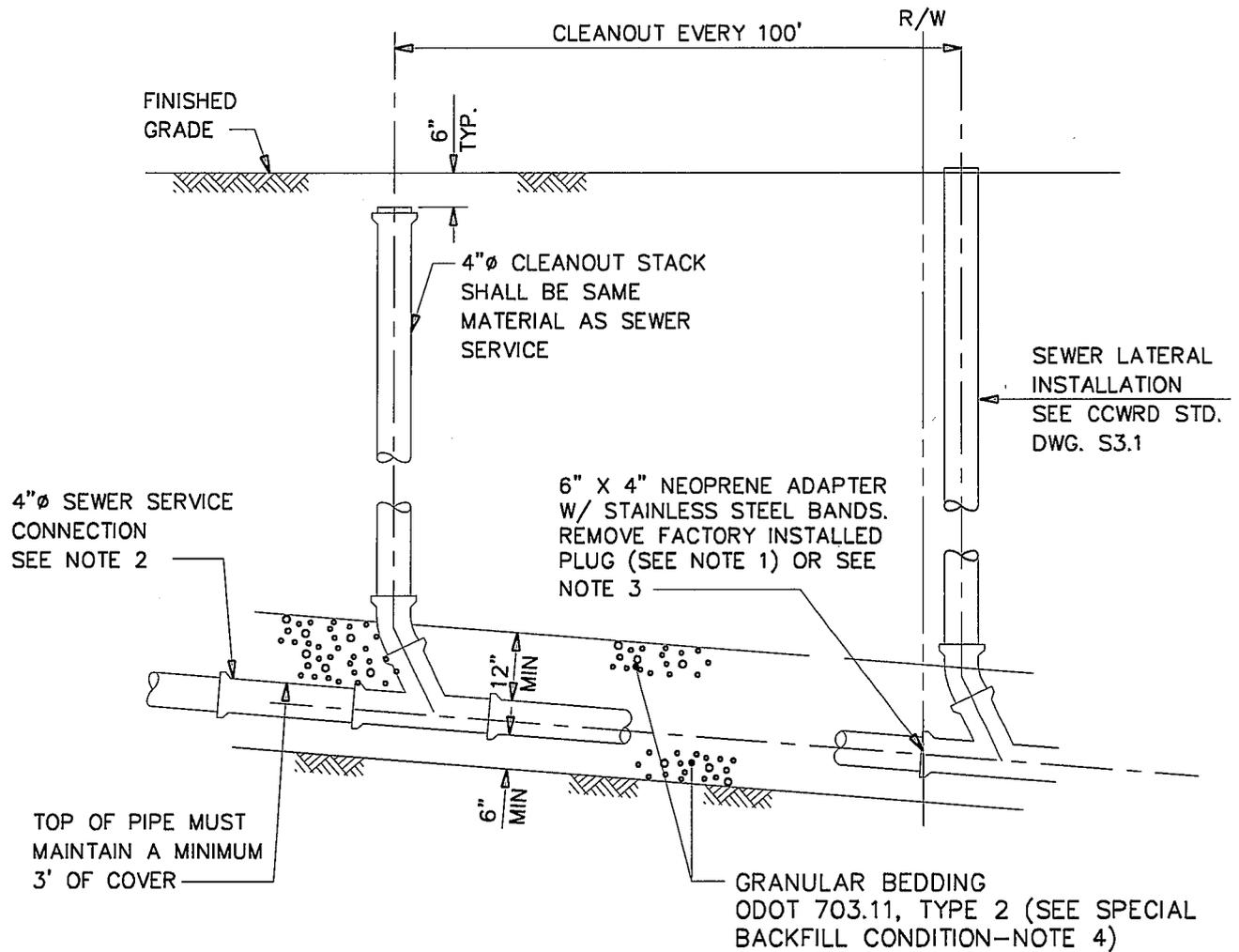
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

COMMERCIAL  
SEWER SERVICE  
INSTALLATION

DRAWING NO.  
S4.1

APPROVED \_\_\_\_\_  
DATE



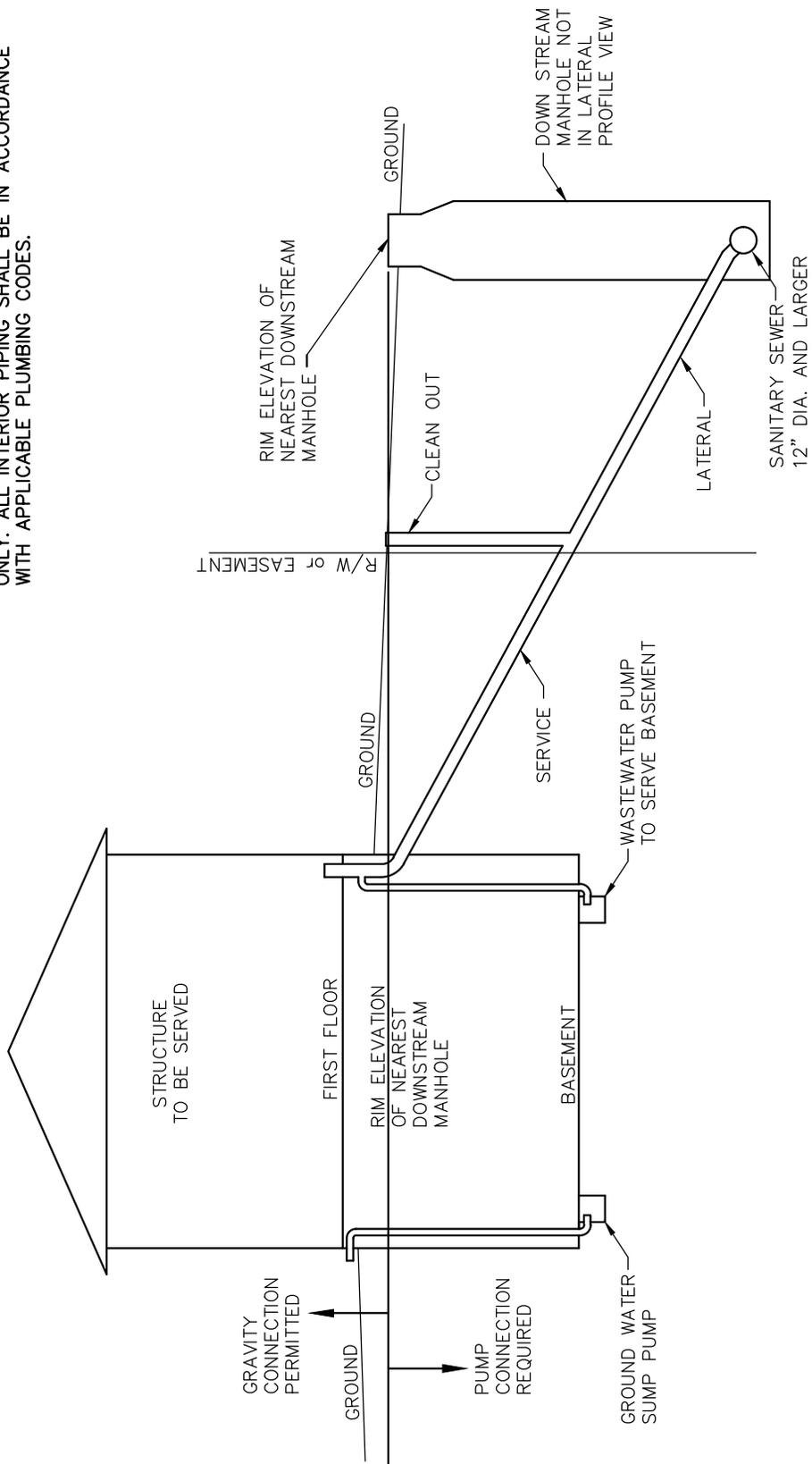
**NOTES:**

1. SEWER SERVICE CONNECTION TO SEWER LATERAL SHALL BE BY MEANS OF FLEXIBLE PIPE CONNECTORS (SHIELDED COUPLING AND DONUT TYPE) WHEN JOINING PIPES OF DIFFERENT MATERIAL.
2. SEWER SERVICE PIPE MATERIAL SHALL BE ANY OF THE FOLLOWING: PVC SCH-40 SOLID WALL, ASTM-D3034 WITH GLUED JOINTS, PVC SDR 35, OR (WHEN SEWER IS 15' OR DEEPER) PVC SDR 26
3. IN LIEU OF CONNECTING TO THE WYE FITTING AT THE R/W LINE, THE BUILDING SEWER MAY BE CONNECTED DIRECTLY TO THE 6" CLEANOUT PIPE, USING THE APPROPRIATE FITTINGS AS EXPLAINED IN NOTE 1.
4. AT A DISTANCE APPROXIMATELY 20' FROM THE STRUCTURE NATIVE SOIL (IN LIEU OF ODOT 703.11) WILL BE USED AS BACKFILL FOR APPROXIMATELY 4' TO CREATE AN IMPERMEABLE COMPACTED PLUG.

NO SCALE

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>RESIDENTIAL SEWER SERVICE INSTALLATION</p>	<p>DRAWING NO. S4.2</p>
<p>APPROVED _____ DATE _____</p>		

- NOTES:
1. SEWER LATERAL AND SEWER SERVICE CONNECTION TO BE CONSTRUCTED IN ACCORDANCE WITH CCWRD STANDARD DETAILS S3.1, S4.1, AND S4.2.
  2. STRUCTURE PLUMBING SHOWN FOR REFERENCE ONLY. ALL INTERIOR PIPING SHALL BE IN ACCORDANCE WITH APPLICABLE PLUMBING CODES.



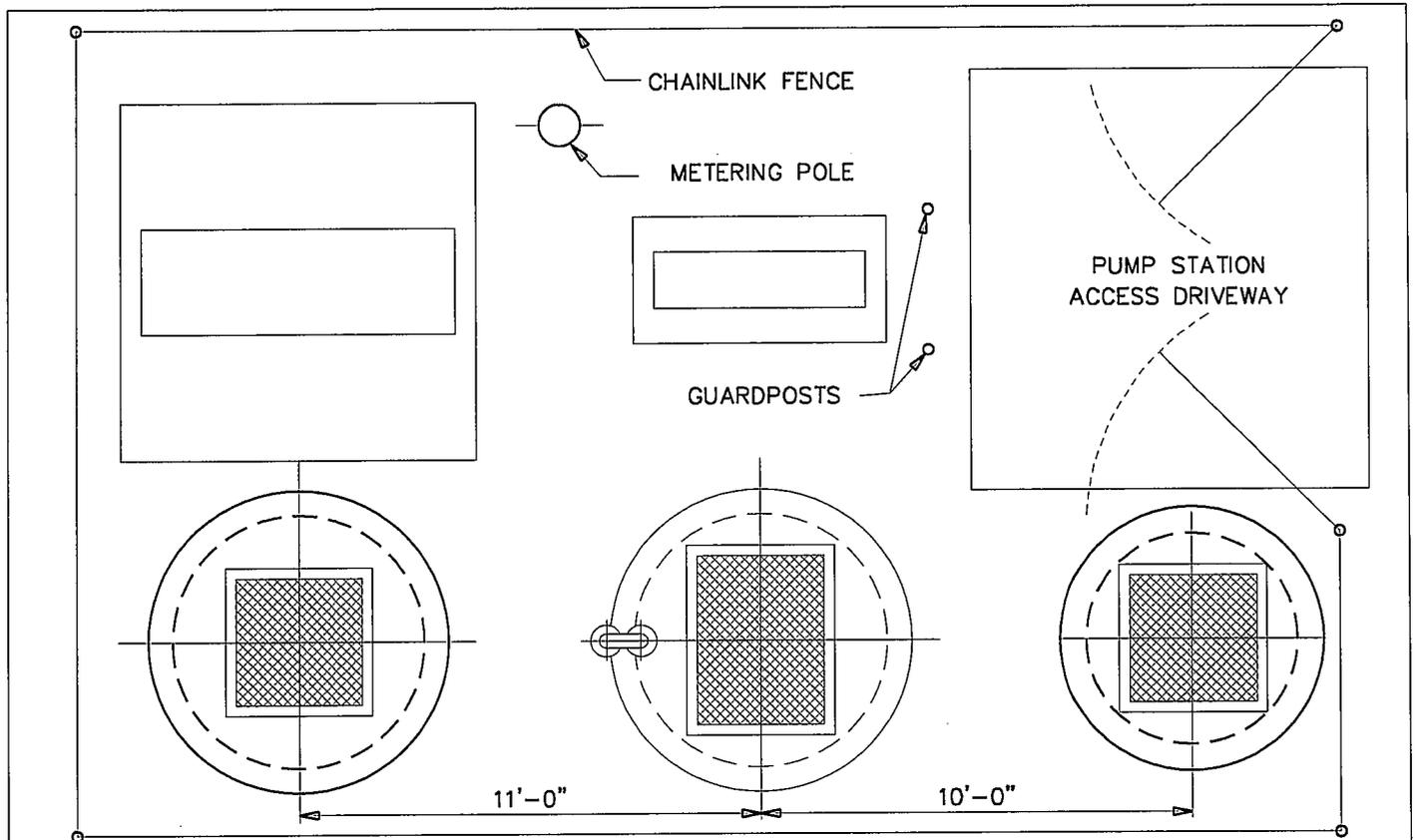
NO SCALE

CLERMONT COUNTY  
 WATER RESOURCES DEPARTMENT

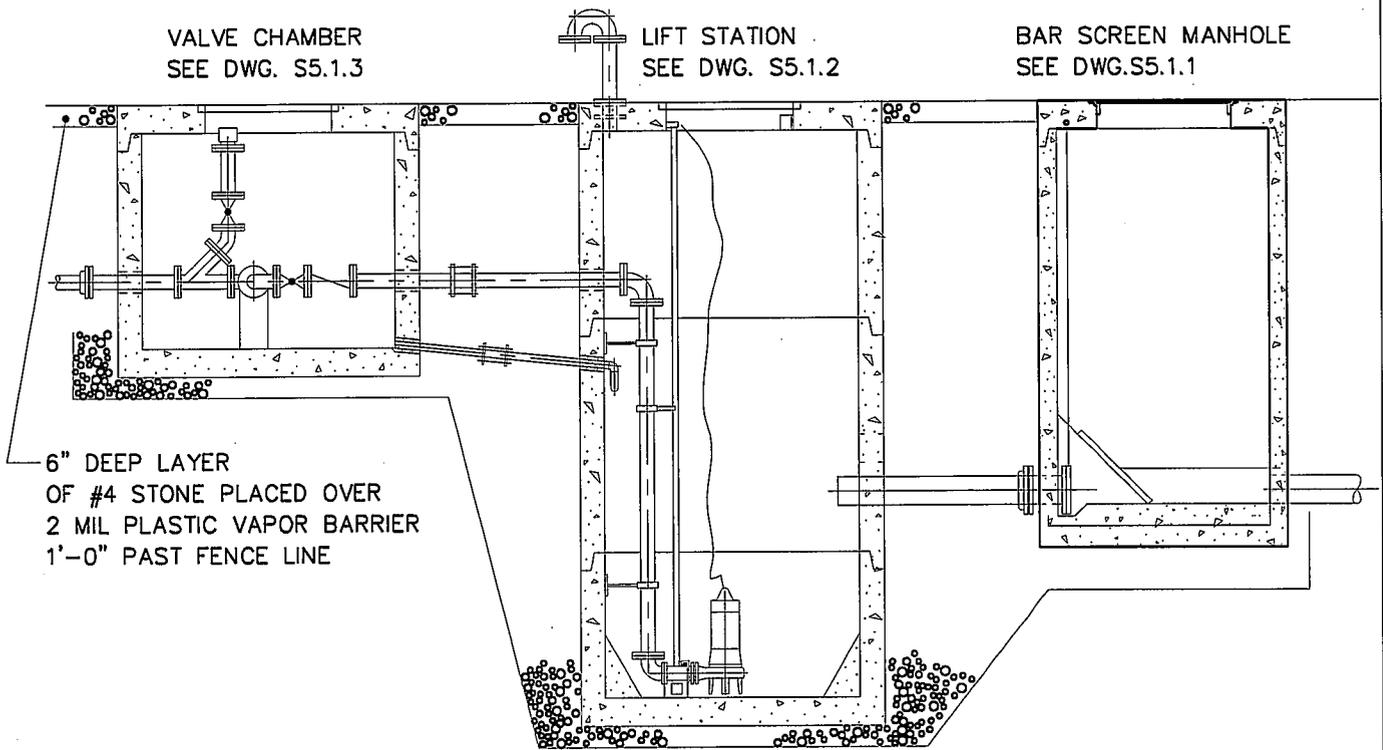
APPROVED \_\_\_\_\_  
 DATE \_\_\_\_\_

STANDARD CONNECTION  
 TO SEWERS 12" AND  
 LARGER

DRAWING NO.  
 S4.3



TOP PLAN



SECTION

NO SCALE

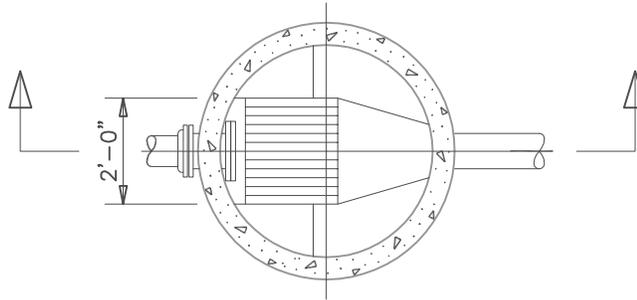
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

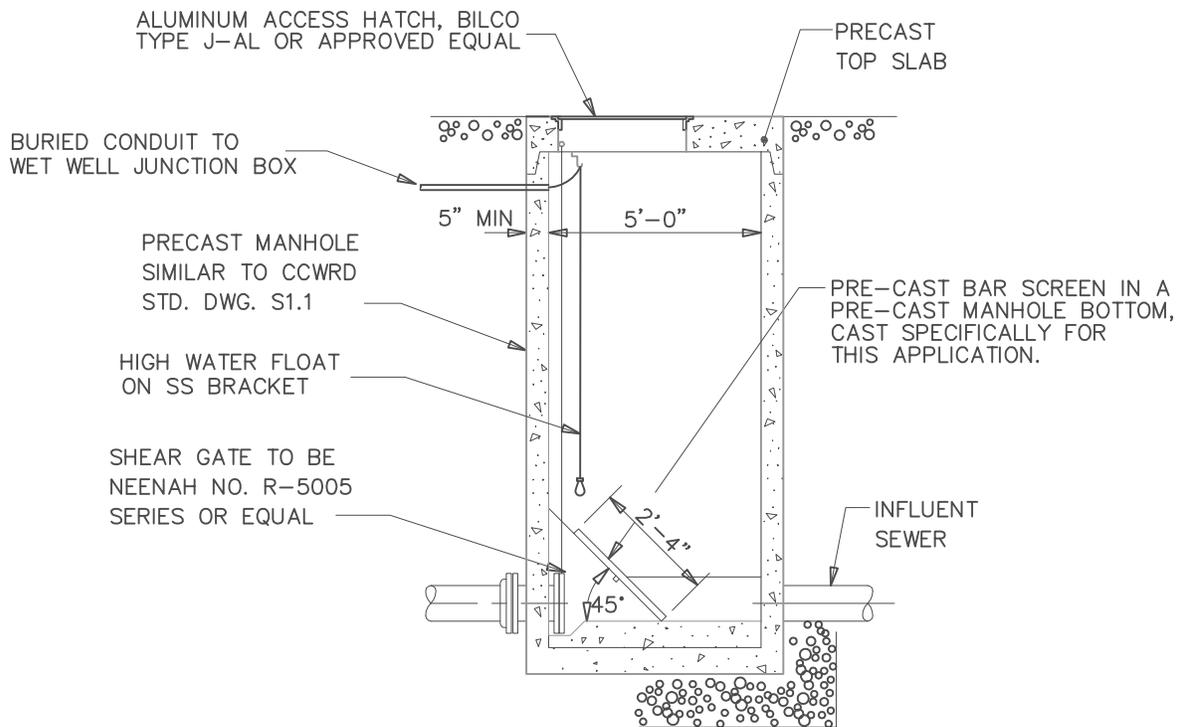
LIFT STATION  
LAYOUT

DRAWING NO.

S5.1



PLAN

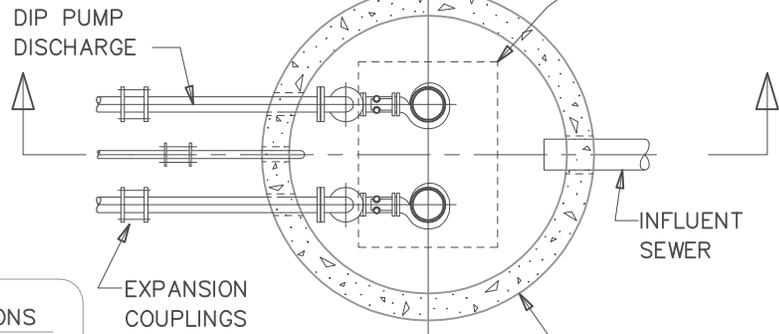


SECTION

NO SCALE

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>BAR SCREEN MANHOLE DETAIL</p>	<p>DRAWING NO. S5.1.1</p>
<p>APPROVED _____ DATE _____</p> <p>REVISED JUNE 2016</p>		

ALUMINUM ACCESS HATCH, BILCO MODEL J-9AL OR APPROVED EQUAL, W/ FALL PROTECTION GRATING SYSTEM.



PLAN

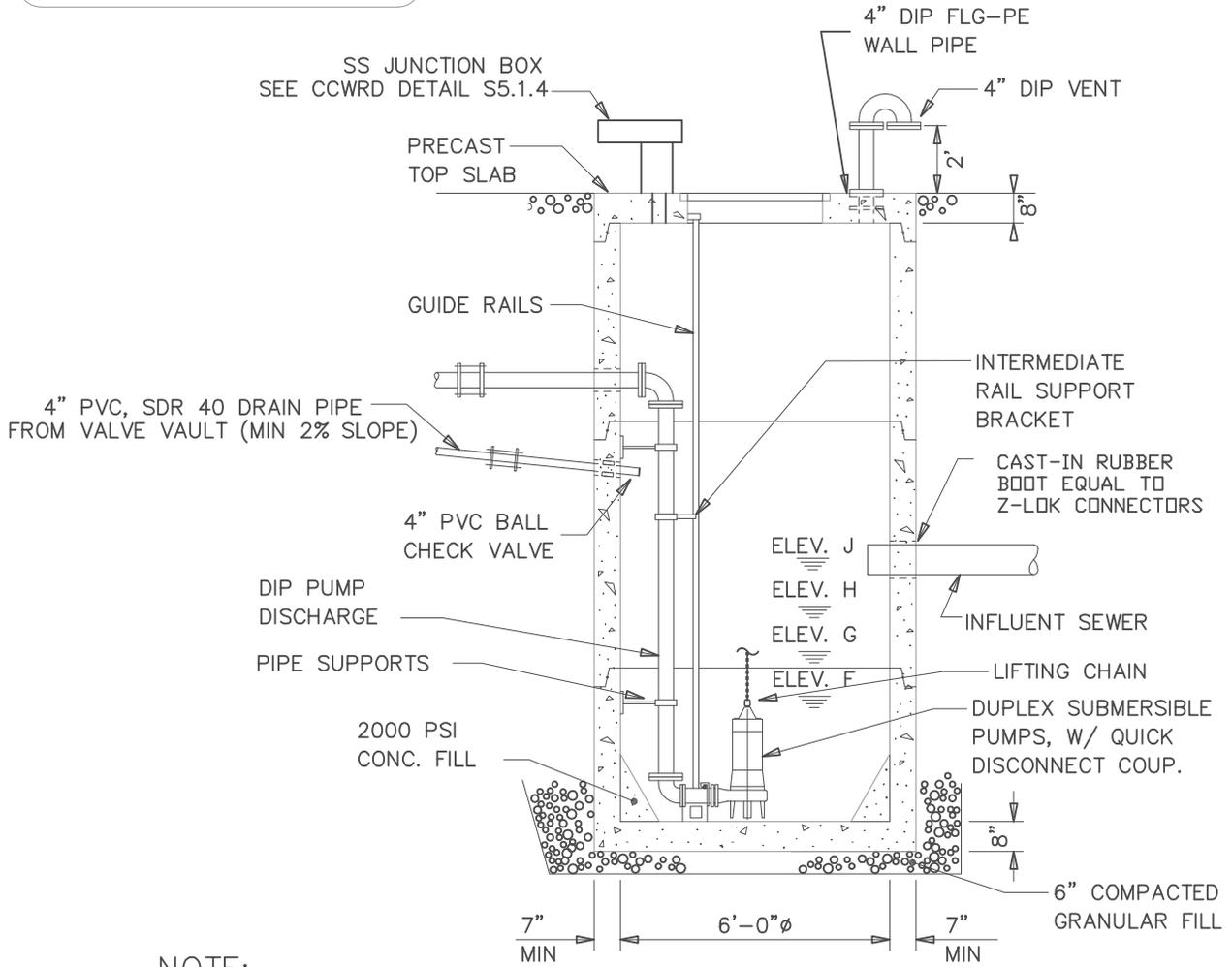
**PUMP CONTROL ELEVATIONS**

PUMPS OFF- ELEV. "F"

START LEAD PUMP- ELEV. "G"

START LAG PUMP- ELEV. "H"

HIGH LEVEL ALARM- ELEV. "J"



SECTION

**NOTE:**

LEVEL CONTROL FLOAT, LEVEL TRANSDUCER, & BRACKET NOT SHOWN. SEE CCWRD DETAIL S5.1.4

NO SCALE

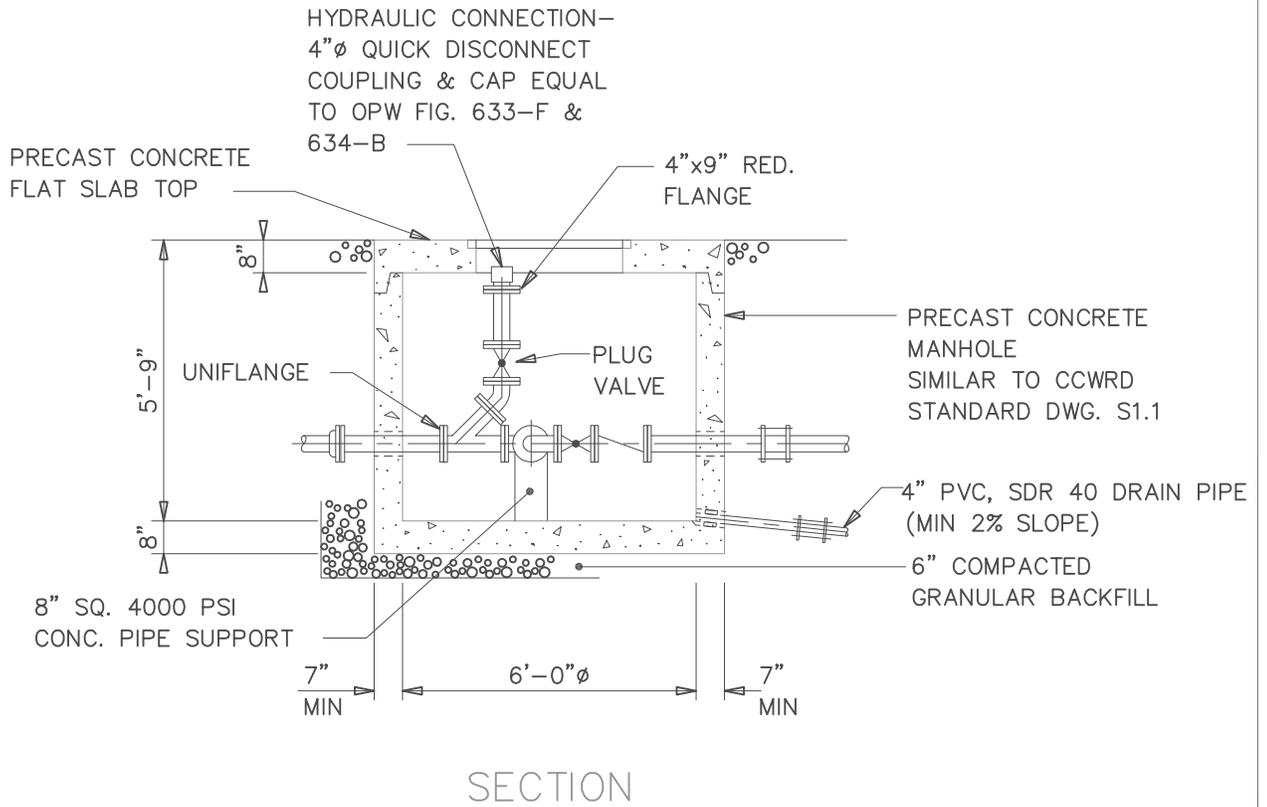
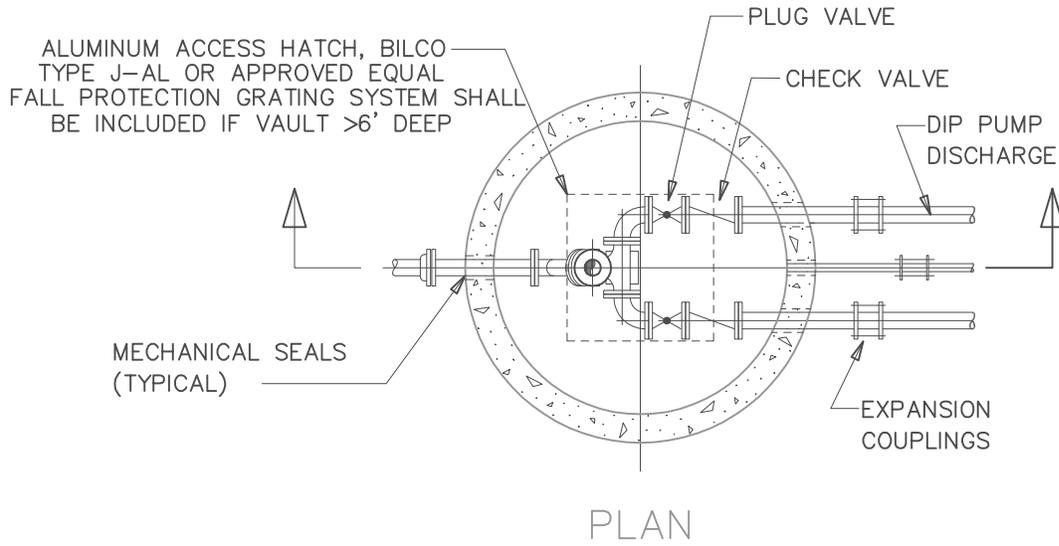
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

REVISED JUNE 2016

LIFT STATION  
DETAIL

DRAWING NO.  
S5.1.2



NO SCALE

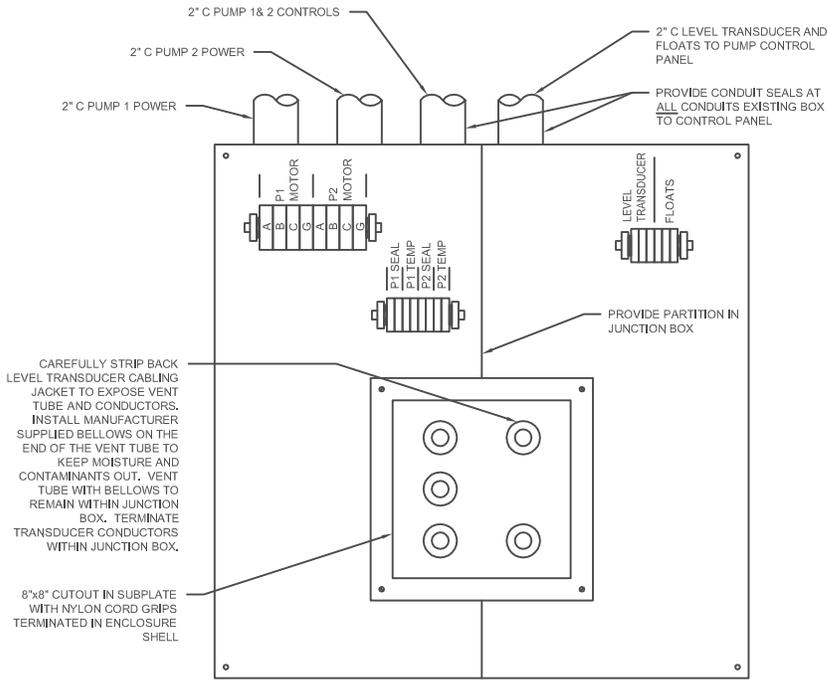
CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

VALVE CHAMBER  
DETAIL

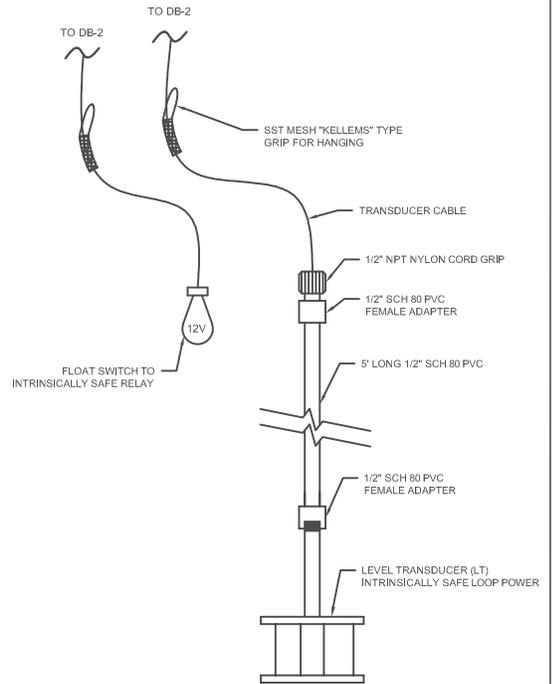
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S5.1.3

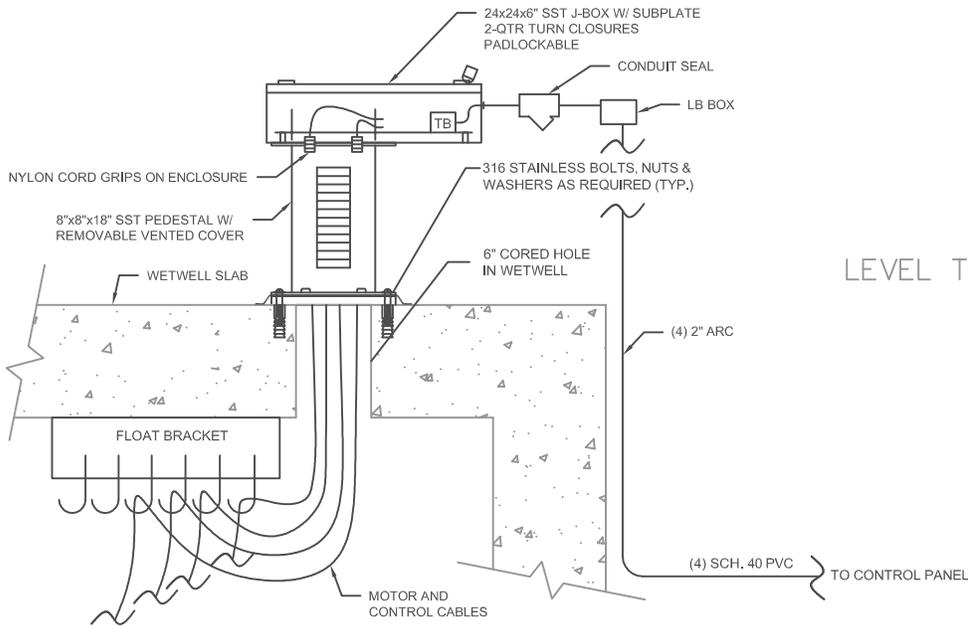
APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



WET WELL JUNCTION BOX  
PLAN VIEW



LEVEL TRANSDUCER & FLOAT  
SWITCH DETAIL



WET WELL JUNCTION BOX  
PROFILE VIEW

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

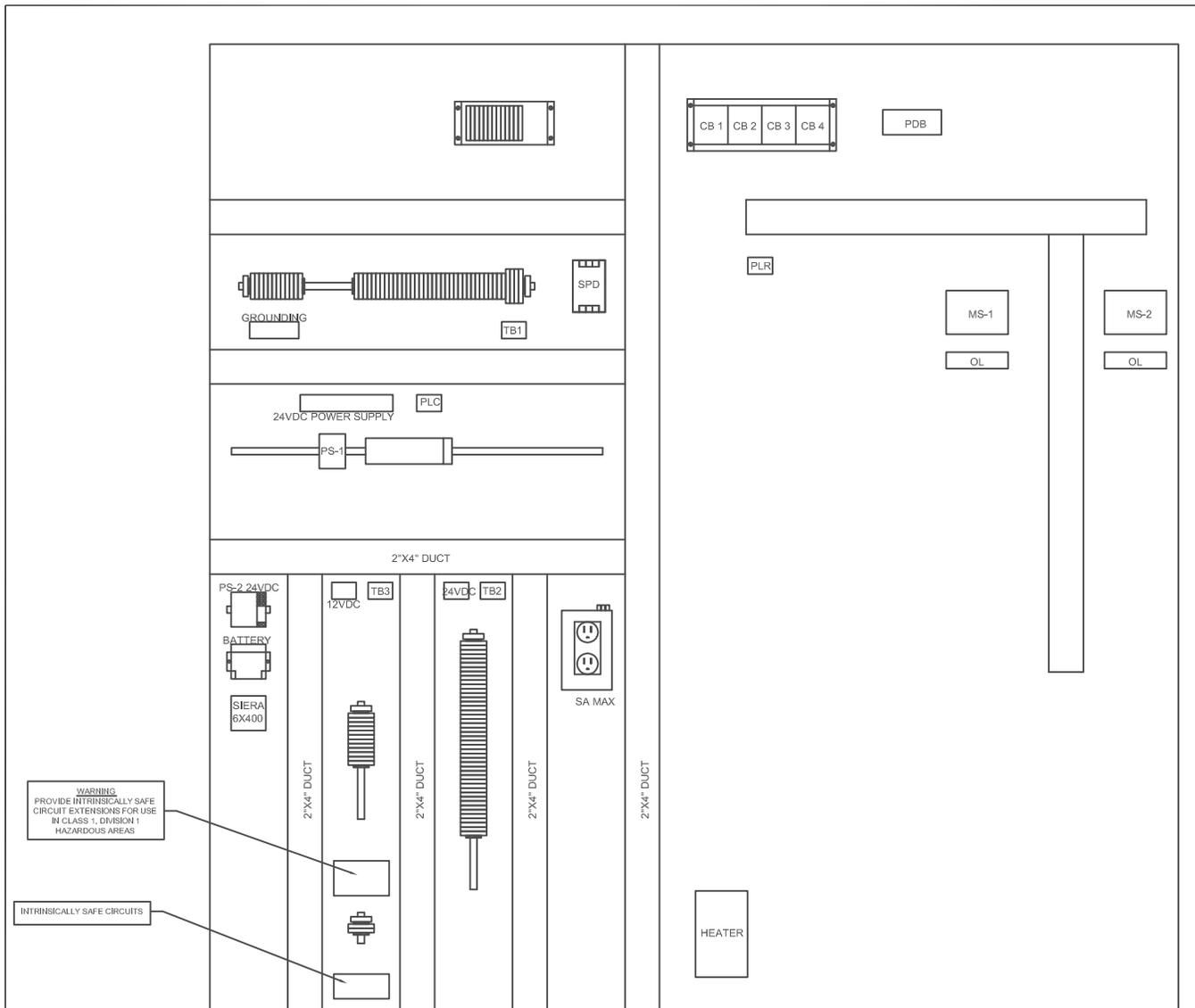
WET WELL ELECTRIC  
DETAIL

DRAWING NO.

S5.1.4

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

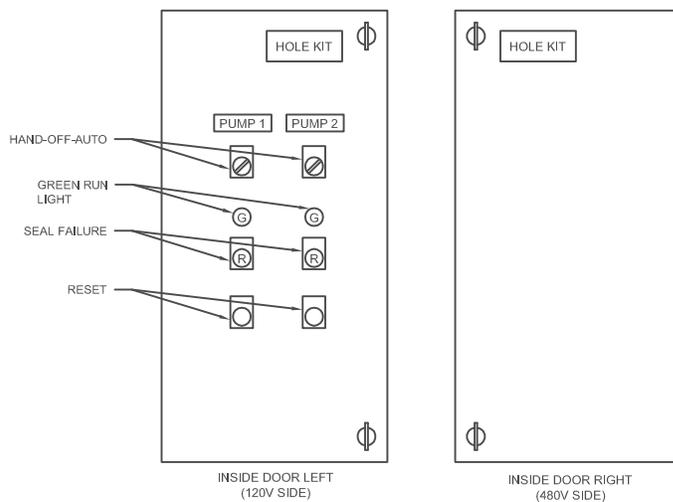
REVISED JUNE 2016



PANEL INTERIOR

NOTES:

1. TYPICAL GENERAL LAYOUT SHOWN FOR SEPARATION OF 480V AND 120V DEVICES AND LOCATION OF CIRCUIT BREAKERS WITHIN DOOR HOLE KITS.
2. SOME ANCILLARY PANEL DEVICES MAY NOT BE SHOWN. CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL NECESSARY MATERIALS AND APPURTENANCES FOR A COMPLETE AND FULLY FUNCTIONAL PANEL IN ACCORDANCE WITH DRAWING INTENT AND SPECIFICATIONS.
3. USE COPPER MTW FOR INDIVIDUAL CONDUCTORS WITHIN THE CONTROL PANEL SIZED PER UL 50BA, 16 AWG MINIMUM. USE BLACK FOR AC POWER WIRING, RED FOR 120 VAC CONTROL WIRING, WHITE FOR ALL 120 VAC NEUTRAL WIRING, BLUE FOR +24 VDC WIRING, BLUE/WHITE FOR ALL 24 VDC COM WIRING, AND YELLOW FOR ALL VOLTAGE SUPPLIED EXTERNAL TO THE PANEL.
4. FOR ANALOG SIGNAL CABLE USE 18 AWG TSP INTERNAL PANEL WIRING AND 16 AWG TSP FOR EXTERNAL WIRING.
5. REFERENCE CCWRD STANDARD DETAIL S5.1.6 FOR PLC I/O LIST.



PANEL SUB-DOORS

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

DUPLEX LIFT STATION  
CONTROL PANEL  
GENERAL LAYOUT

DRAWING NO.  
S5.1.5

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

JUNE 2016

Port	Description	Wire #	Comments
I:0/0	High Level	WW HW I:0/0	Input Present when High Water Float Closed (INPUT FROM 12VDC RELAY)
I:0/1	Pumps Stop Level	PUMP STOP I:0/1	Input Present when Control/Stop Float Closed
I:0/2	Lead Pump Start Level	LEAD LVL I:0/2	Input Present when Lead Float Closed
I:0/3	Lag Pump Start Level	LAG LVL I:0/3	Input Present when Lag Float Closed
I:0/4	Pump 1 Running	P1 RUNNING I:0/4	Input Present when Pump #1 Running
I:0/5	Pump 1 Fault	P1 FLT I:0/5	Input Present when Pump #1 Faulted / Jumper to disable pump
I:0/6	Pump 2 Running	P2 RUNNING I:0/6	Input Present when Pump #2 Running
I:0/7	Pump 2 Fault	P2 FLT I:0/7	Input Present when Pump #2 Faulted / Jumper to disable pump
I:0/8	Spare		
I:0/9	Spare		
I:0/10	Transfer Sw on Emergency	XFER ON EMER I:0/10	Input Present when Transfer connected to Utility Power, Jumper w/ no Gen.
I:0/11	Utility Power Fault	UPF I:0/11	Input Present when Utility Power Normal/ Phase Monitor Working
I:0/12	Generator Fault	GEN FLT I:0/12	Input Present when Generator Faulted/ Input Off w/No Generator
I:0/13	Diesel Tank Low Level	FUEL LOW LVL I:0/13	Input Present when Diesel Tank Level Low/ Off w/ No Generator
I:0/14	Rain Guage	RG I:0/14	Pulse input if Rain Guage Present/ Off w/ No Rain Guage
I:0/15	Tranducer/Float	XDCR/FLOAT I:0/15	Jumper to 24vdc + when on Transducer/ Remove jumper for Float Control

O:0/0	Pump 1 Run	P1 RUN O:0/0	Output Present when Pump #1 Called to Run
O:0/1	Pump 2 Run	P2 RUN O:0/1	Output Present when Pump #2 Called to Run
O:0/2	Spare		
O:0/10	Bioxide Pump Run	BX RUN O:0/10	Output Present when Bioxide Pump Called to Run
O:0/11	High Level Output	WW HW O:0/11	Output present upon High Level Condition, Floats or Transducer

IV0	Pump 1 Amps	P1 AMPS IV0	Pump 1 Amps Input 0-10vdc
IV1	Pump 2 Amps	P2 AMPS IV1	Pump 2 Amps Input 0-10vdc
IV2	Spare		
IV3	Spare		

Analog Expansion Card #1			
IV1:0	Station Well Level	WW LVL IV1:0	Wet Well Transducer Input 4-20mA
IV1:1	Bioxide Tank Level	BX LVL IV1:1	Bioxide Level Input 4-20mA
IV1:2	Pump 1 Speed Reference	P1 SPD REF IV1:2	Pump 1 Speed Reference from VFD 4/20mA
IV1:3	Pump 2 Speed Reference	P2 SPD REF IV1:3	Pump 2 Speed Reference from VFD 4/20mA

Analog Expansion Card #2			
OV2:0	Pump 1 Speed Control	P1 SPD CTRL OV2:0	Pump 1 Speed Control to VFD 4/20mA
OV2:1	Pump 2 Speed Control	P2 SPD CTRL OV2:1	Pump 2 Speed Control to VFD 4/20mA
OV2:2	Spare		
OV2:3	Spare		

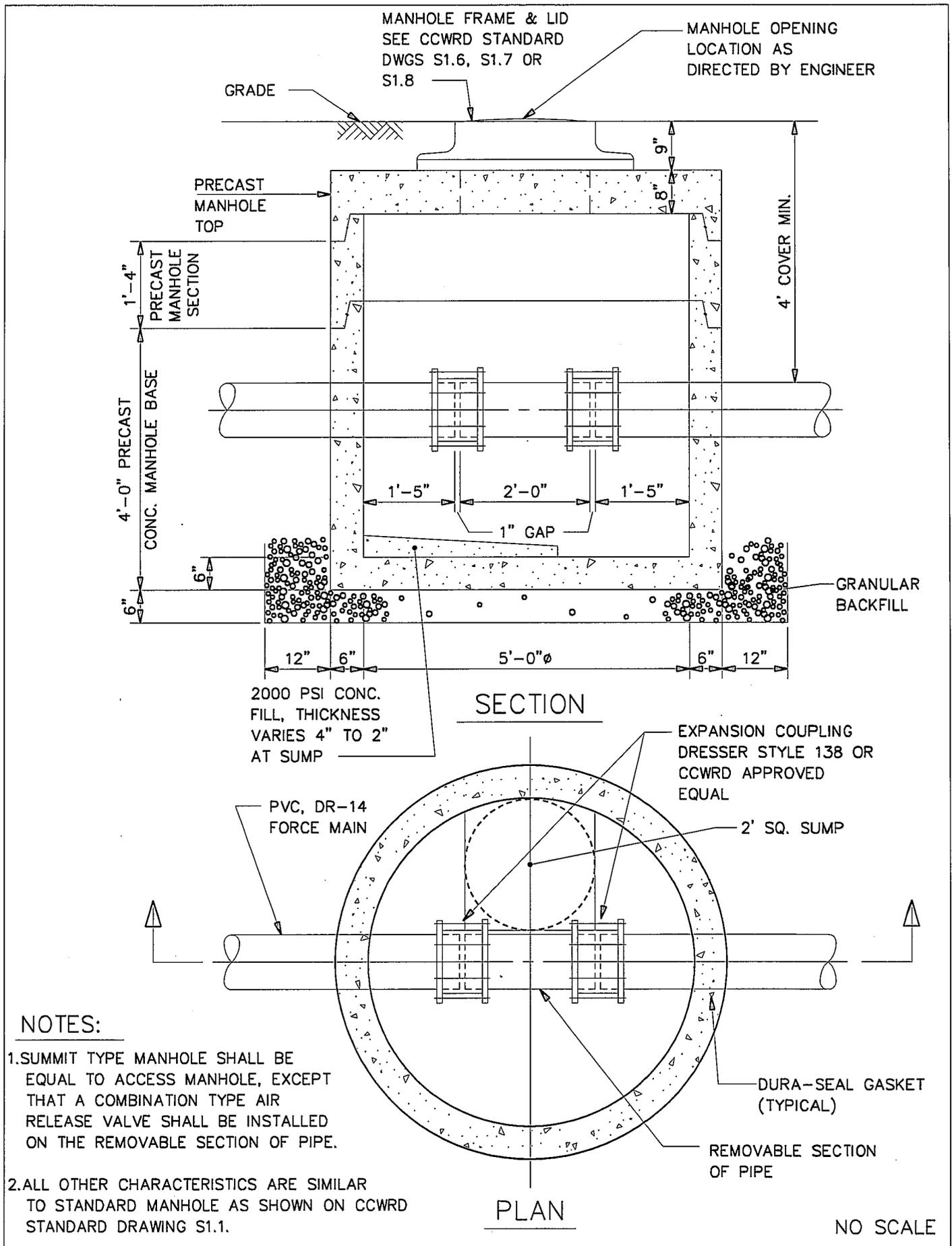
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

DUPLEX LIFT STATION  
I/O LIST

DRAWING NO.  
S5.1.6

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTES:**

- 1. SUMMIT TYPE MANHOLE SHALL BE EQUAL TO ACCESS MANHOLE, EXCEPT THAT A COMBINATION TYPE AIR RELEASE VALVE SHALL BE INSTALLED ON THE REMOVABLE SECTION OF PIPE.
- 2. ALL OTHER CHARACTERISTICS ARE SIMILAR TO STANDARD MANHOLE AS SHOWN ON CCWRD STANDARD DRAWING S1.1.

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD FORCE  
MAIN ACCESS  
MANHOLE

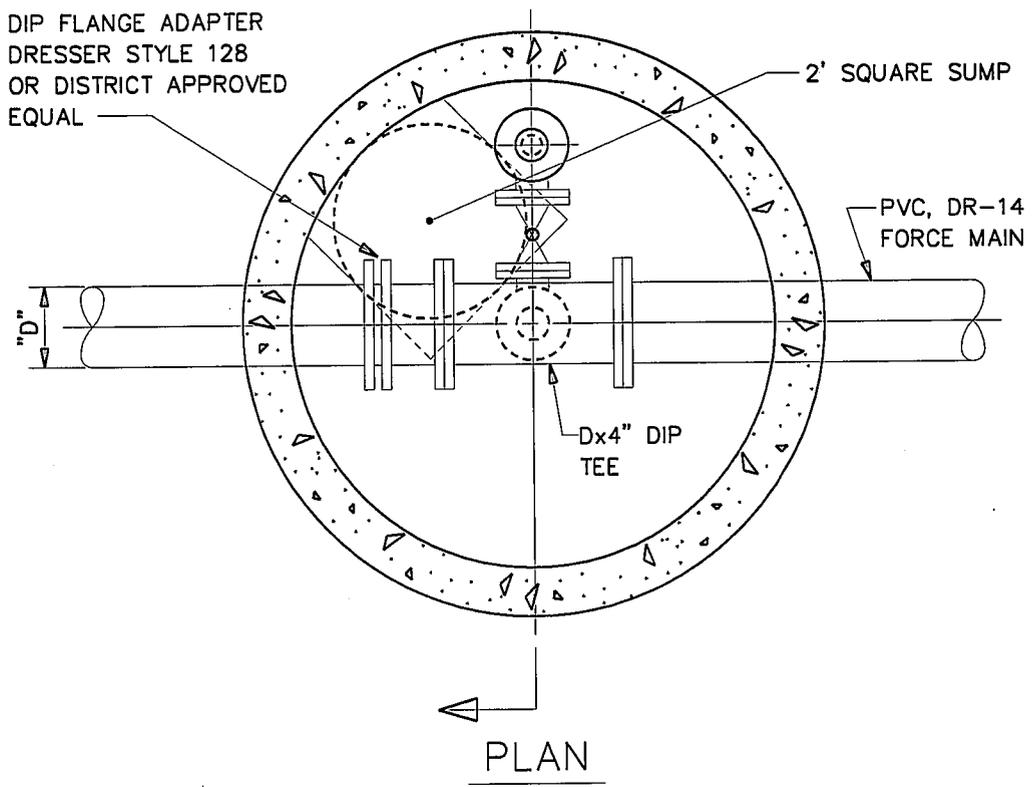
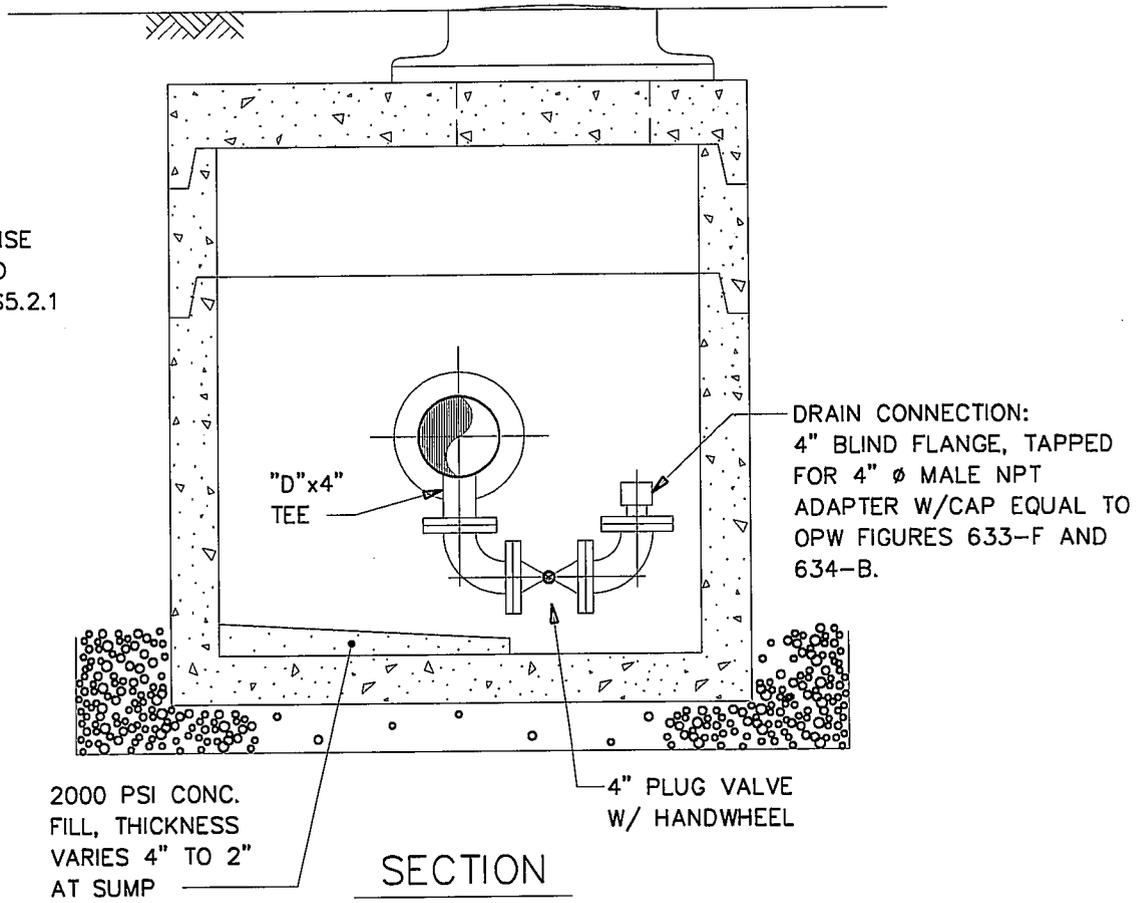
DRAWING NO.  
S5.2.1

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

NO SCALE

**NOTE:**

MANHOLE OTHERWISE  
SIMILAR TO CCWRD  
STANDARD DWG. S5.2.1



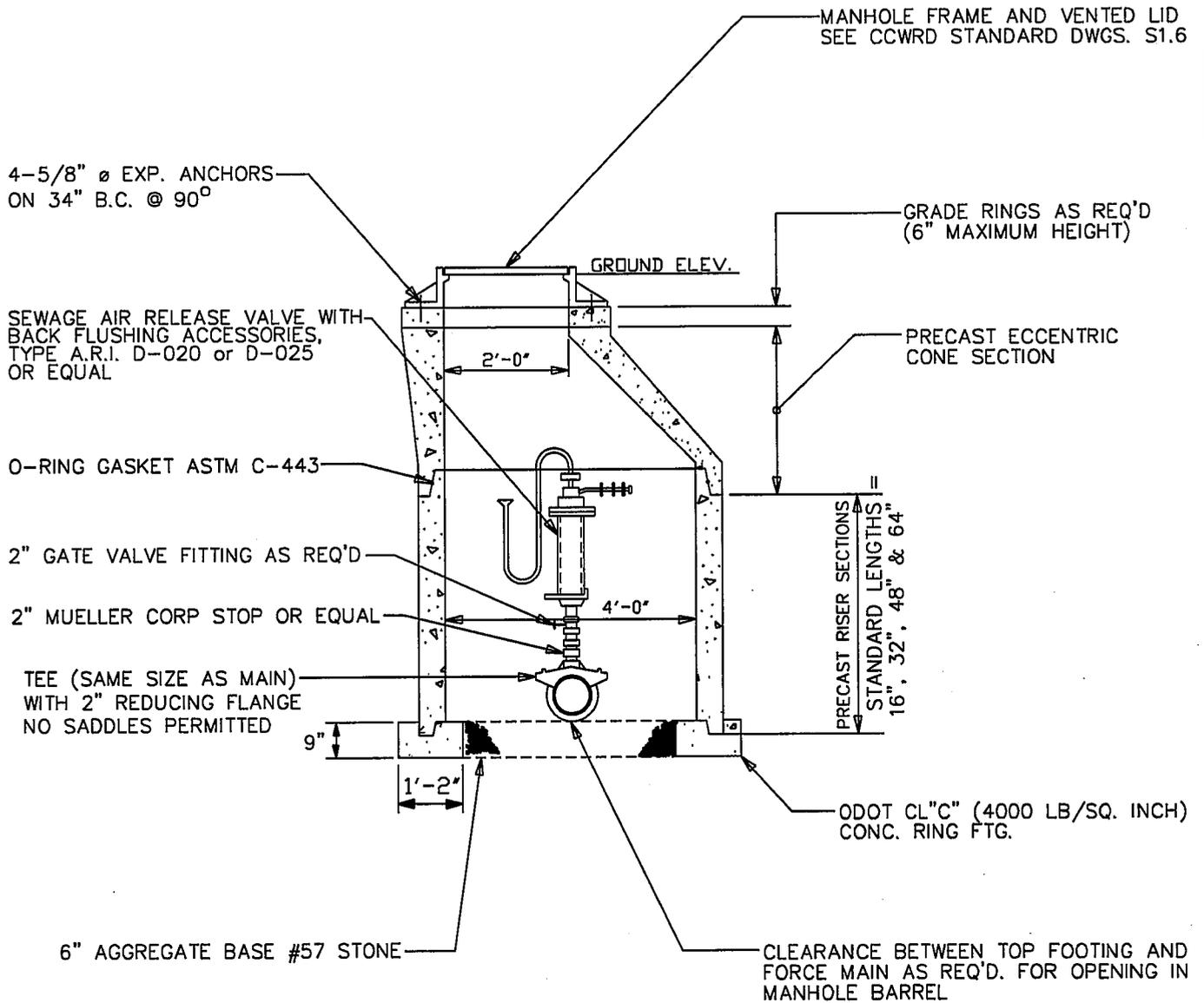
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

STANDARD  
FORCE MAIN  
LOW POINT MANHOLE

DRAWING NO.  
S5.2.2

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_



**NOTE:**

FLEXIBLE BUTYL RUBBER SEALANT EQUAL TO CONSEAL TYPE CS-302 SHALL BE USED: TO SEAL CASTING TO MANHOLE, TO SEAL ADJUSTING RINGS TOGETHER AND TO RISERS, AND TO SEAL MANHOLE RISER JOINTS.

INSTALL KOR-N-SEAL GASKETS AT MANHOLE INTERFACE WITH PIPE

NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

AIR RELEASE  
VALVE IN  
MANHOLE

DRAWING NO.

S5.2.3

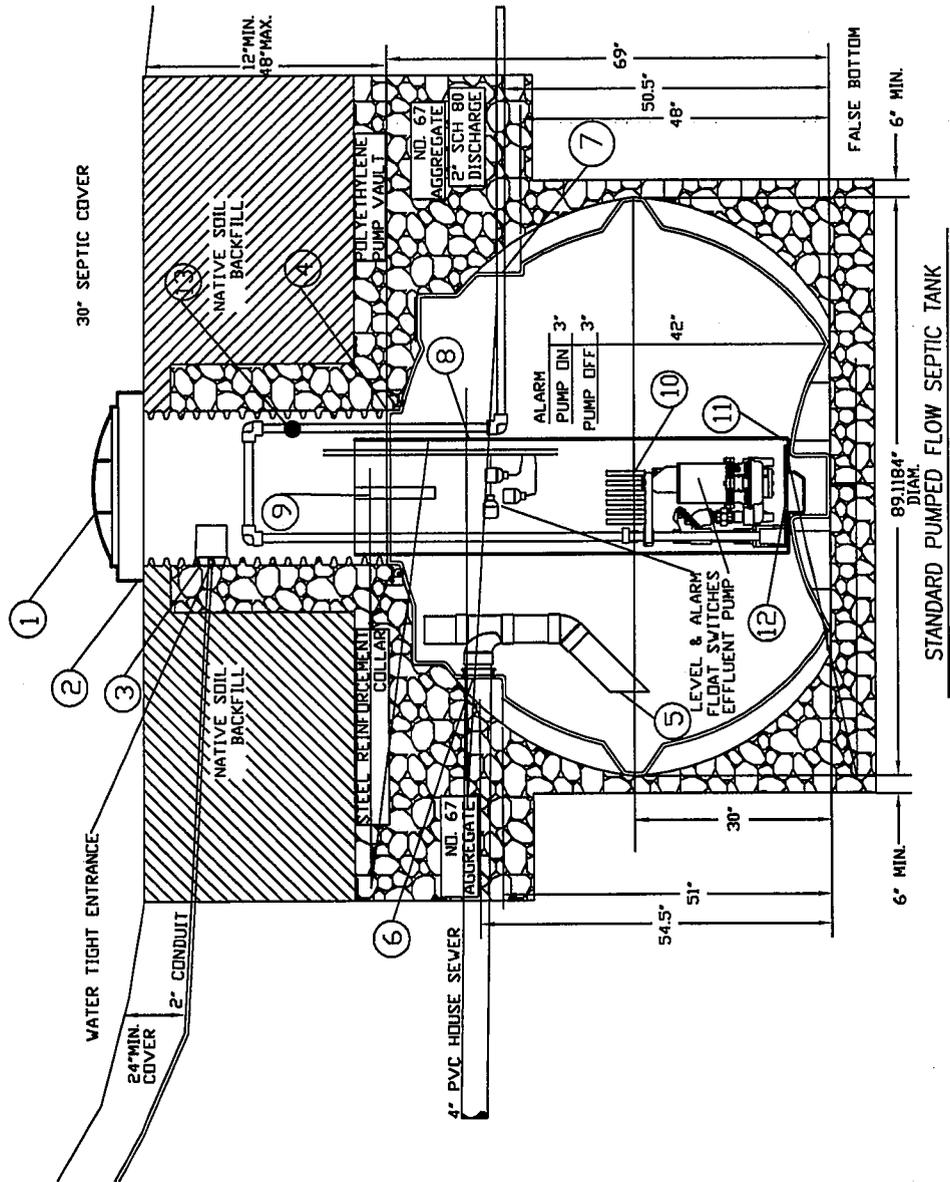
APPROVED \_\_\_\_\_

DATE \_\_\_\_\_

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

**PUMPED FLOW SEPTIC TANK  
STANDARD FEATURES**

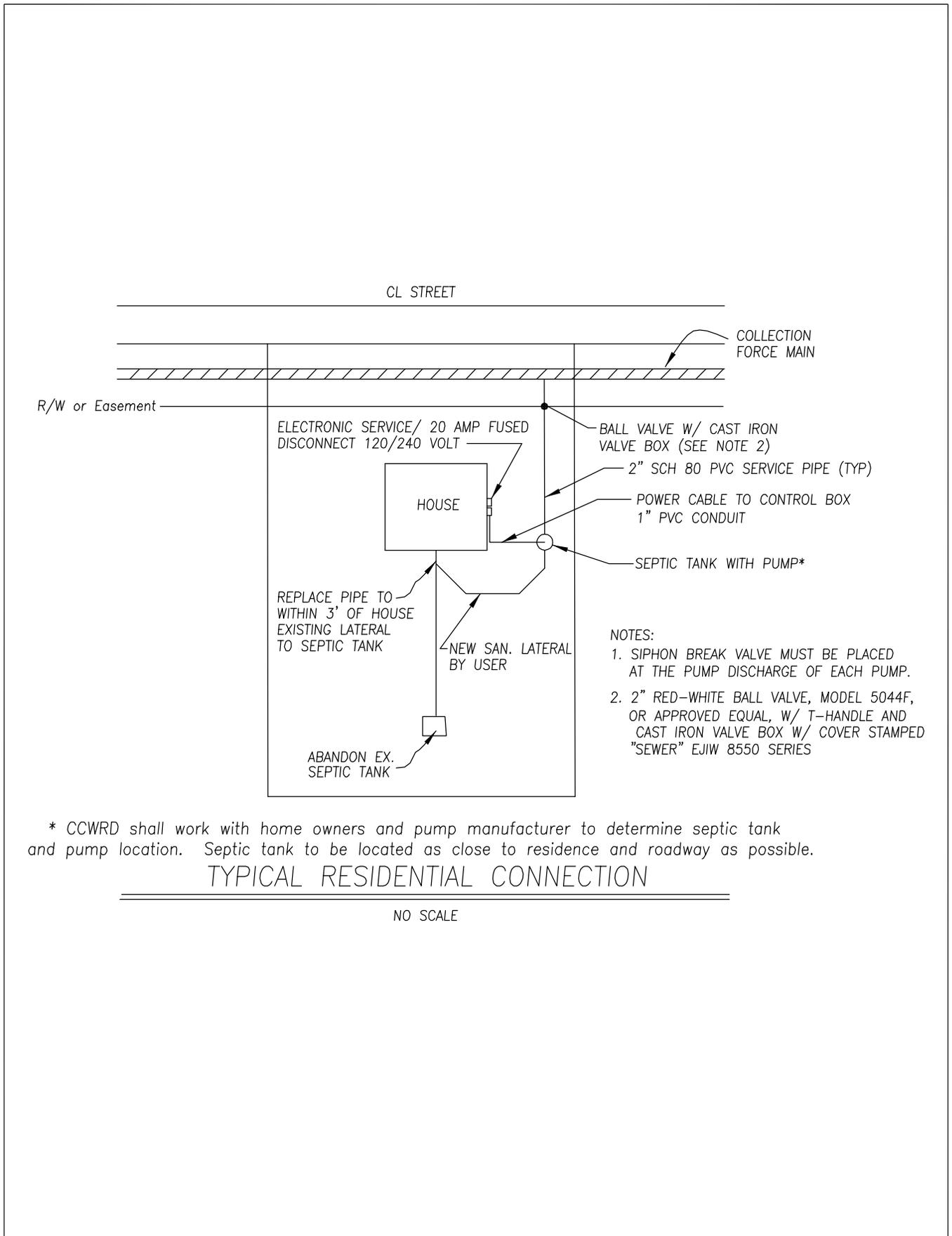
1. High density structure foam polyethylene manhole cover.
2. Overhanging lip on the manhole cover for security and odor prevention.
3. Hi density polyethylene corrugated riser.
4. Water tight riser to tank connection with gasket tape and stainless steel lag screws.
5. Factory installed PVC baffle which meets the requirements of ASTM D2729, sewer and drain pipe.
6. Gasketed bell, field installed. 4" PVC SDR 35 (ASTM D3034).
7. Custom fit neoprene grommet sized for 2" SCH 80 discharge pipe.
8. High density polyethylene pump vault.
9. Pump vault lift-out holes.
10. Pump vault inlet holes located in septic tank clear zone.
11. Guiding flanges to assure proper pump vault alignment.
12. Heavy duty pump support pad, 3/8" thick.
13. 2" Ball Valve and Union



**STANDARD PUMPED FLOW SEPTIC TANK**  
STEP 22/POLY VALVE/SEVERE DUTY

NOTE: THE REQUIRED CLASS OF ALL TANKS IS SEVERE DUTY. SELECT AGGREGATE BACKFILL MUST COMPLETELY COVER THE TANK TO A MINIMUM DEPTH OF 6 INCHES. ALL TANKS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND THE REQUIREMENTS OF THE CLERMONT COUNTY SEWER DEPARTMENT.

NO SCALE

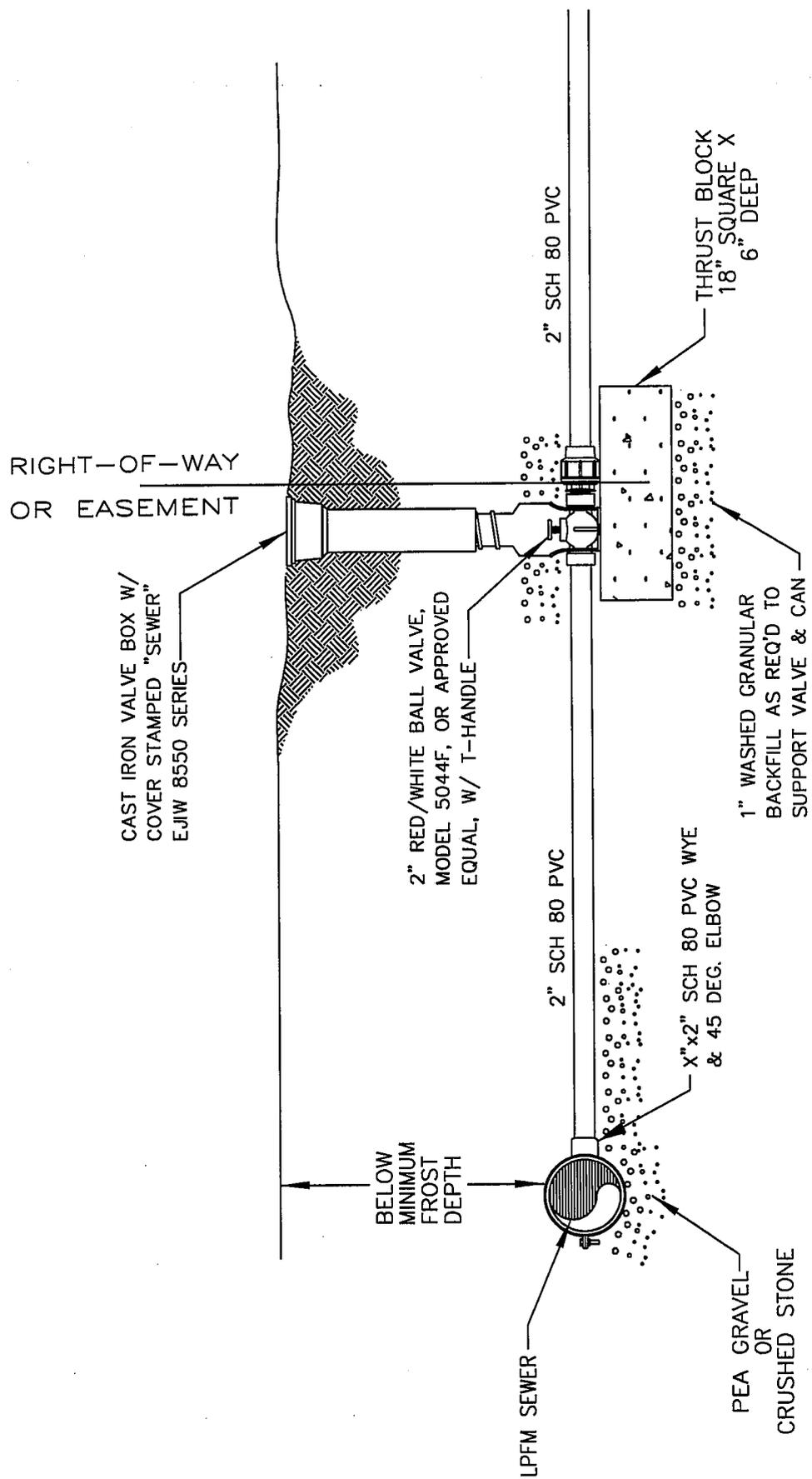


\* CCWRD shall work with home owners and pump manufacturer to determine septic tank and pump location. Septic tank to be located as close to residence and roadway as possible.

**TYPICAL RESIDENTIAL CONNECTION**

NO SCALE

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>TYP. RESIDENTIAL STEP CONNECTION TO A LOW PRESSURE FORCE MAIN</p>	<p>DRAWING NO. S6.2</p>
<p>APPROVED _____ DATE _____</p> <p>REVISED APRIL 2016</p>		



TYPICAL LATERAL INSTALLATION

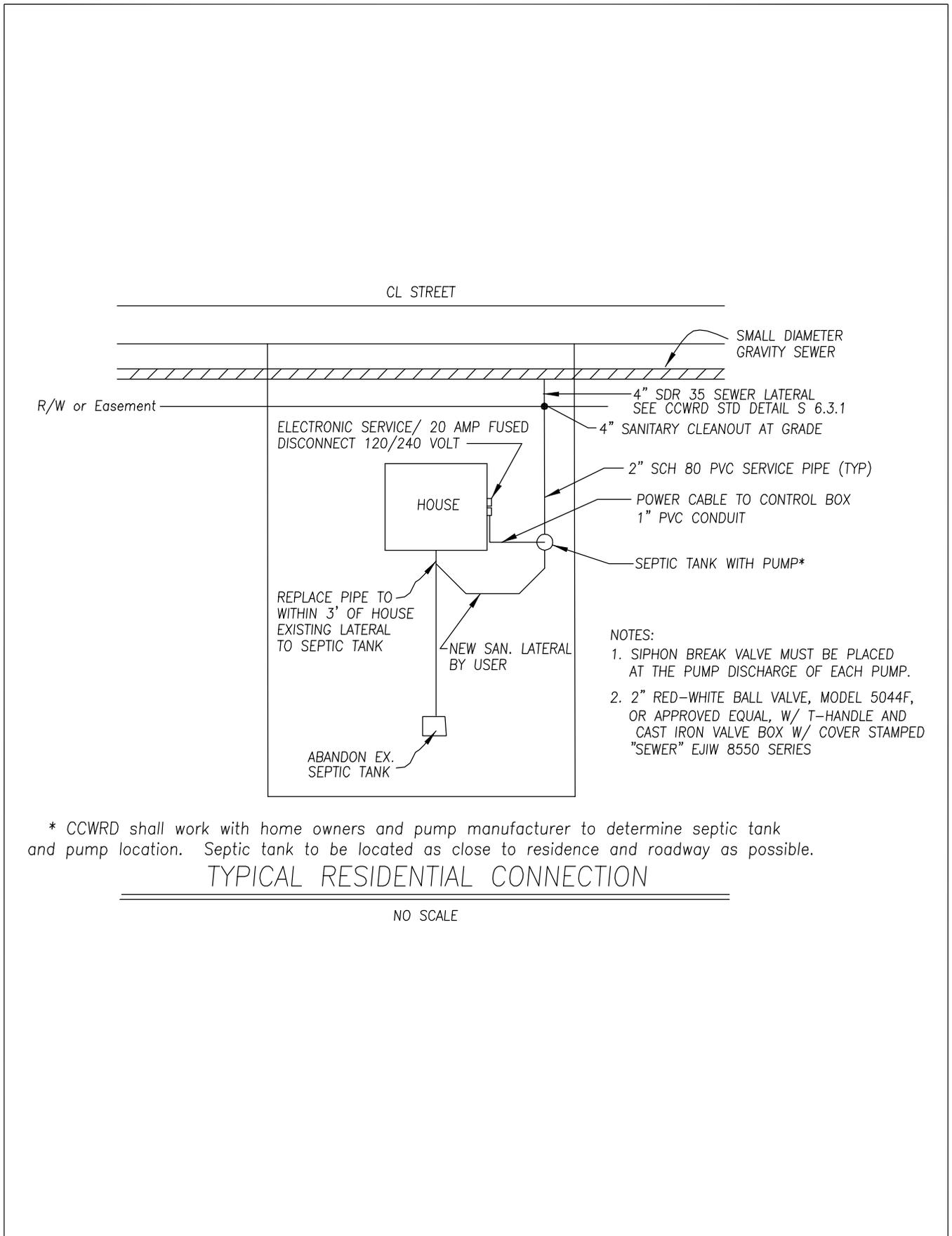
N.T.S.

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

LOW PRESSURE FORCE  
MAIN (LPFM)  
LATERAL INSTALLATION

DRAWING NO.  
S6.2.1

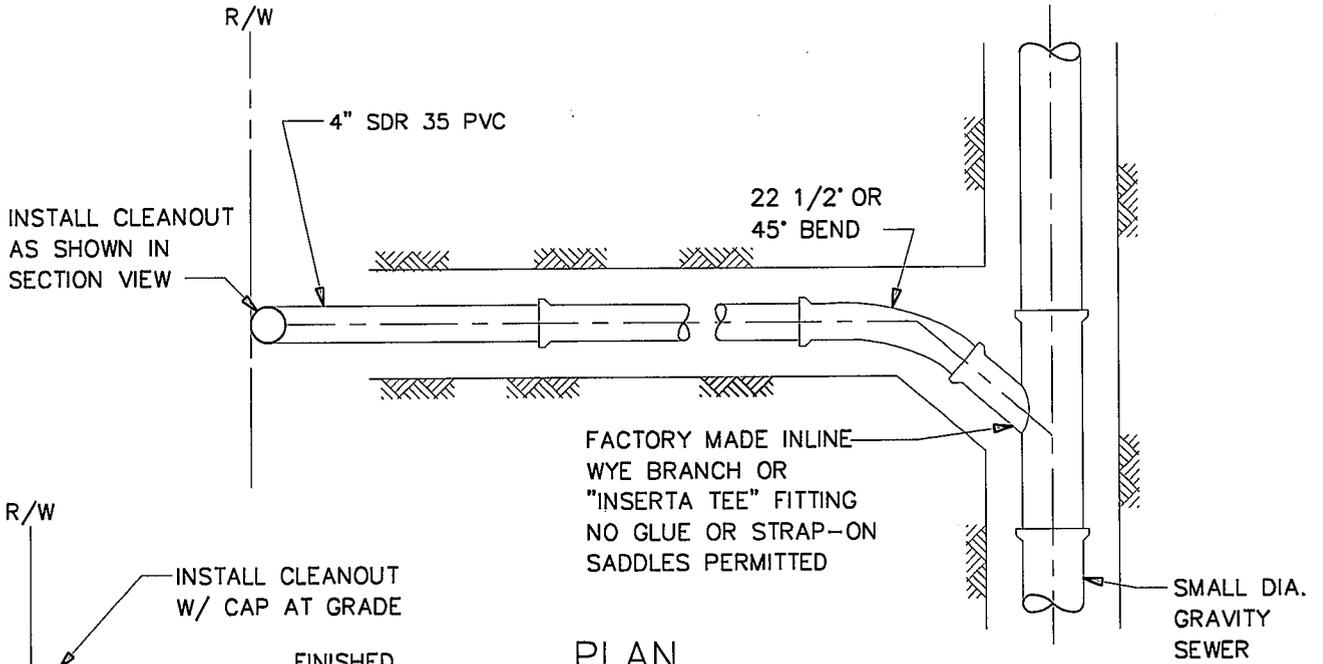


\* CCWRD shall work with home owners and pump manufacturer to determine septic tank and pump location. Septic tank to be located as close to residence and roadway as possible.

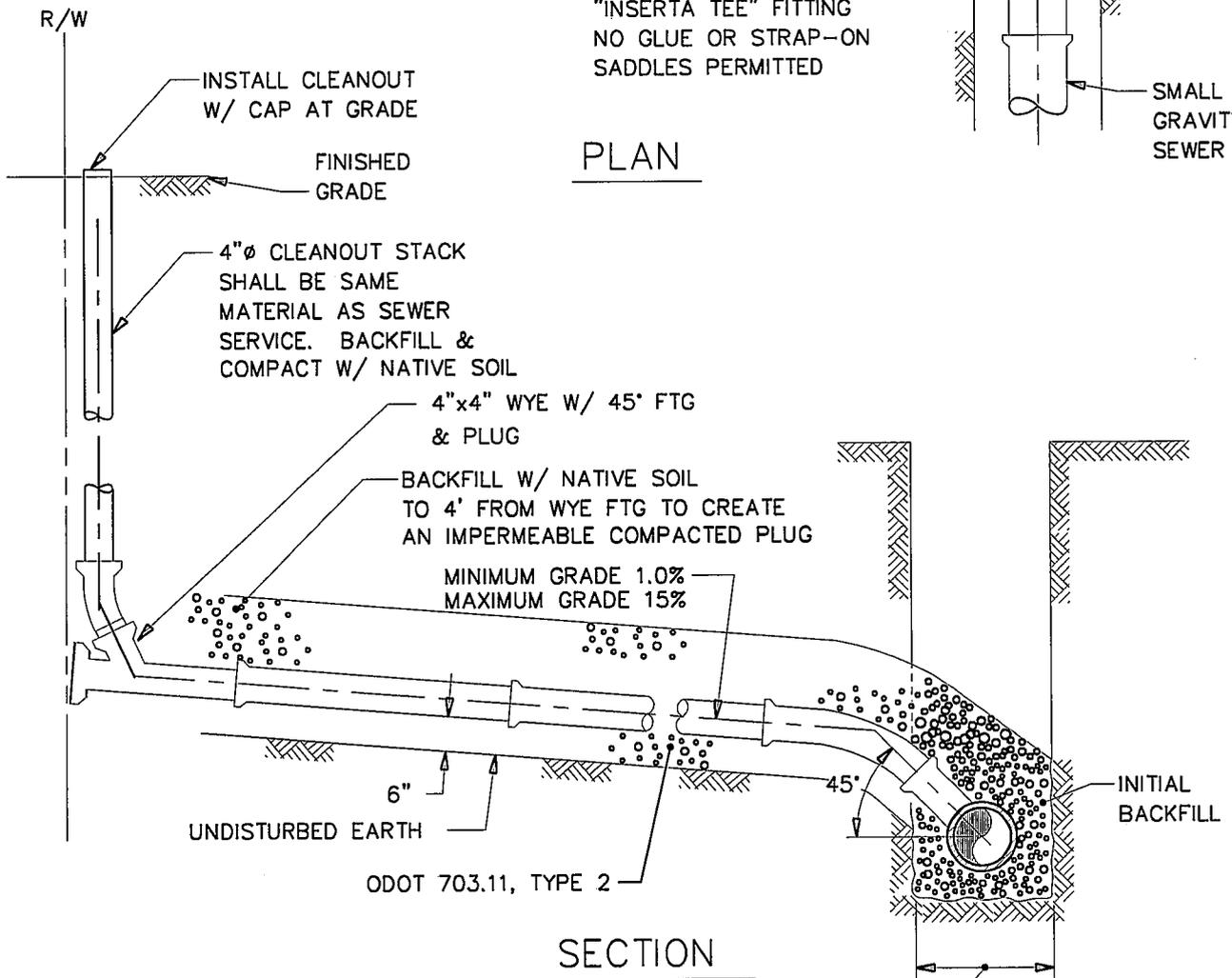
**TYPICAL RESIDENTIAL CONNECTION**

NO SCALE

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>TYP. RESIDENTIAL STEP CONNECTION TO SMALL DIAMETER GRAVITY SEWER</p>	<p>DRAWING NO.  S6.3</p>
<p>APPROVED _____ DATE _____</p> <p>REVISED APRIL 2016</p>		



PLAN



SECTION

NOTE:

1. DURING CONSTRUCTION OF THE SEWER MAIN AND LATERALS THE CLEANOUT SHALL BE BURIED APPROXIMATELY 3 FEET WITH A 2" BY 2" POLE SET ON THE BACK SIDE OF THE CLEAN OUT. WHEN THE STRUCTURE IS CONNECTED, THE CLEANOUT SHALL BE BROUGHT TO GRADE AS DETAILED.

SEE TYPICAL TRENCH DETAIL CCWRD STANDARD DWG. S2.1

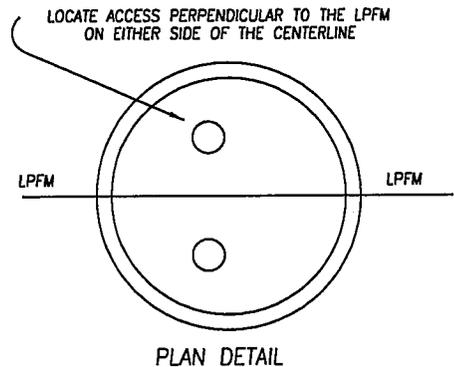
NO SCALE

CLERMONT COUNTY  
WATER RESOURCES DEPARTMENT

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

SMALL DIAMETER  
GRAVITY SEWER  
LATERAL INSTALLATION

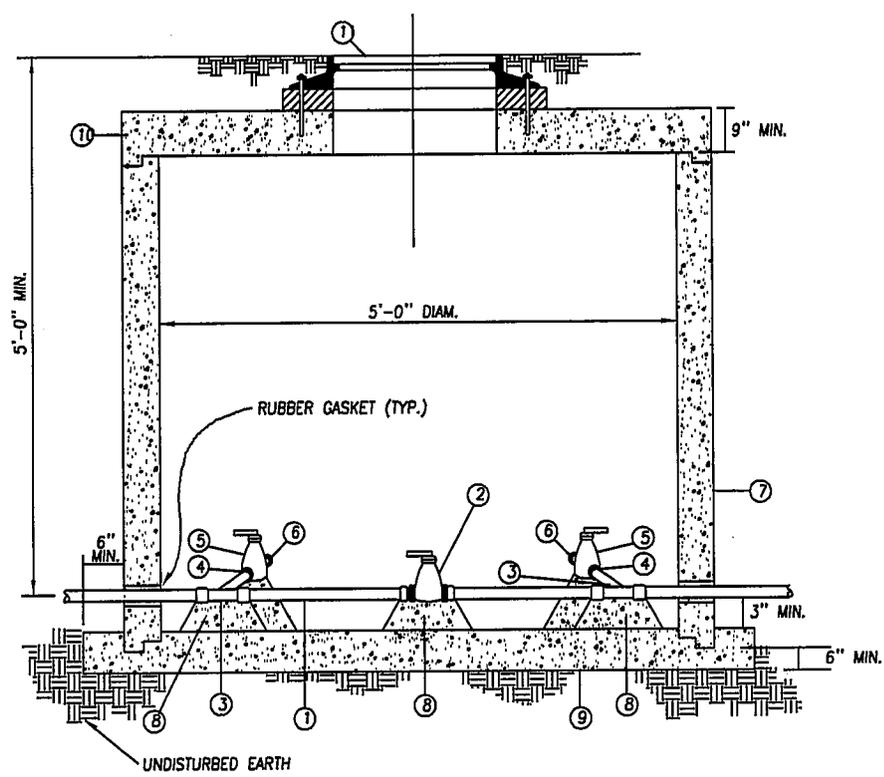
DRAWING NO.  
S6.3.1



NOTES: WHERE APPLICABLE, ALL FEATURES NOT NOTED TO BE THE SAME AS SHOWN ON CLERMONT COUNTY STANDARD DETAILS AND SPECIFICATIONS.

ITEMS WITH DESIGNATIONS ③, ④, ⑤, AND ⑥ ARE TO BE ROTATED (ABOUT THE 3" WYE) TO A LOCATION WHICH IS LEVEL WITH THE FLOOR SLAB OR UP TO 30" ABOVE LEVEL AND SUPPORTED IN CONCRETE SUCH THAT NEITHER THE CHAMBER WALLS, FLOOR, OR THE CONCRETE SUPPORT RESTRICT CONNECTION TO THE 3" QUICK DISCONNECT FITTING.

MANHOLE ACCESS TO BE LOCATED PERPENDICULAR TO THE LPFM AS SHOWN IN THE PLAN DETAIL.



FLUSHING CONNECTION MANHOLE DESIGNATIONS AND GENERAL NOTES

- ① LOW PRESSURE SEWER SYSTEM
- ② BALL VALVE - FULLY PORTED SIZE OF LPSS MAIN WITH T-HANDLE\*
- ③ WYE - SIZE OF LPSS MAIN W/ 3" BRANCH
- ④ 3" THREADED ADAPTER - SEARS OR EQUAL
- ⑤ 3" BALL VALVE - FULLY PORTED WITH T-HANDLE\*
- ⑥ 3" STAINLESS STEEL OR ALUMINUM QUICK DISCONNECT FITTING WITH CAP
- ⑦ 5' DIAM. MANHOLE
- ⑧ CONCRETE SUPPORT
- ⑨ CONCRETE BOTTOM (CLASS "C")
- ⑩ PRECAST SLAB TOP PER CLERMONT COUNTY DETAILS AND SPECIFICATIONS.
- ⑪ WATERTIGHT COVER AND FRAME ADJUST TO GRADE WITH CONC. MH. ADJUSTMENT RINGS (NO BRICK). MORTAR (INSIDE) AND BUTYL MASTIC SEAL (OUTSIDE) TO BE USED BETWEEN RINGS, MH. TOP AND FRAME.

\*BALL VALVES TO BE RED/WHITE, 600 WOG, 150 WSP, FIG. #5044F OR EQUAL WITH T-HANDLE

<p>CLERMONT COUNTY WATER RESOURCES DEPARTMENT</p>	<p>LOW PRESSURE FORCE MAIN FLUSHING CONNECTION MANHOLE</p>	<p>DRAWING NO. S6.4</p>
<p>APPROVED _____ DATE _____</p>		



