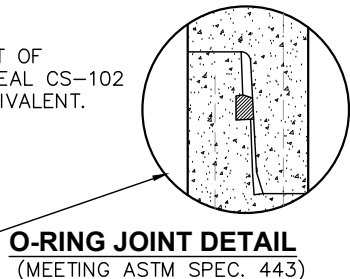


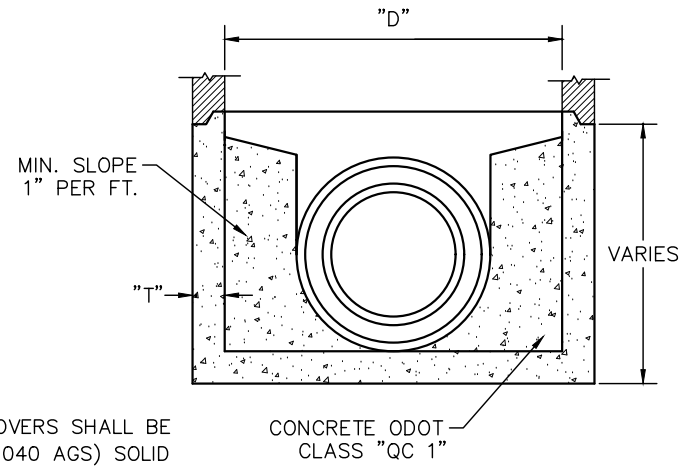
PIPE SIZE	T	D
24" & UNDER	5"	48"
27" & ABOVE	6"	60"



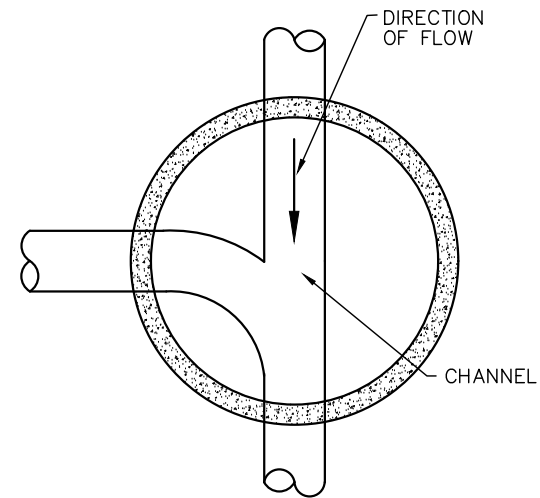
JOINTS MUST BE KEPT TO A MINIMUM

**NOTES**

- A. SANITARY MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO EAST JORDAN IRON WORKS (1040 AGS) SOLID LIDS WITH PICK BARS. THE LID SHALL BE STAMPED "SANITARY". WATERTIGHT MANHOLES SHALL BE EQUAL TO EAST JORDAN IRON WORKS (1040 AGS) BUT ORDERED WATERTIGHT. NO LATERALS SHALL PROTRUDE INTO THE INTERIOR MANHOLE.
- B. TO CONNECT INTO EXISTING MANHOLE, THE MANHOLE SHALL BE CORED AND AN A-LOK XP SERIES FLEXIBLE CONNECTOR OR EQUIVALENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. NON-SHRINK GROUT ALTERNATIVE MAY BE USED IN SPECIAL CIRCUMSTANCES WHEN PREVIOUSLY APPROVED BY VILLAGE.
- C. MATERIALS FOR BASES, RISERS, AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENTS SHALL COMPLY WITH ASTM C-478.
- D. MAXIMUM SANITARY MANHOLE SPACING SHALL BE 400'.
- E. LOCATE THE CENTERLINE OF MANHOLE COVERS OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- F. CONSEAL CS-102 FLEXIBLE BUTYL RESIN SEALANT OR EQUIVALENT SHALL BE 3/8" X 1" MINIMUM STRIPS UNDER GRADE RINGS AND CASTING.
- G. CUT PIPE SHALL NOT EXTEND BEYOND THE INSIDE FACE OF THE MANHOLE WALL.
- H. CONCRETE PLACED INSIDE THE MANHOLE SHALL NOT BE PLACED BETWEEN THE PIPE AND THE OPENING SO AS TO INTERFERE IN ANY WAY WITH THE FLEXIBILITY OF THE JOINT.
- I. WHEN ADJUSTING EXISTING MANHOLE TO GRADE, THE MR. MANHOLE SYSTEM SHALL BE USED AT THE VILLAGES DISCRETION. REFER TO THE MR. MANHOLE SYSTEM NOTES AND DETAILS ON PAGES 500-6, 500-7, 500-8.
- J. ALL SANITARY SEWER MANHOLES SHALL HAVE A CRETEX LSS INTERNAL CHIMNEY SEAL INSTALLED BETWEEN THE MANHOLE FRAME AND THE TOP OF THE CONE SECTION UNLESS MR. MANHOLE IS PERFORMED.



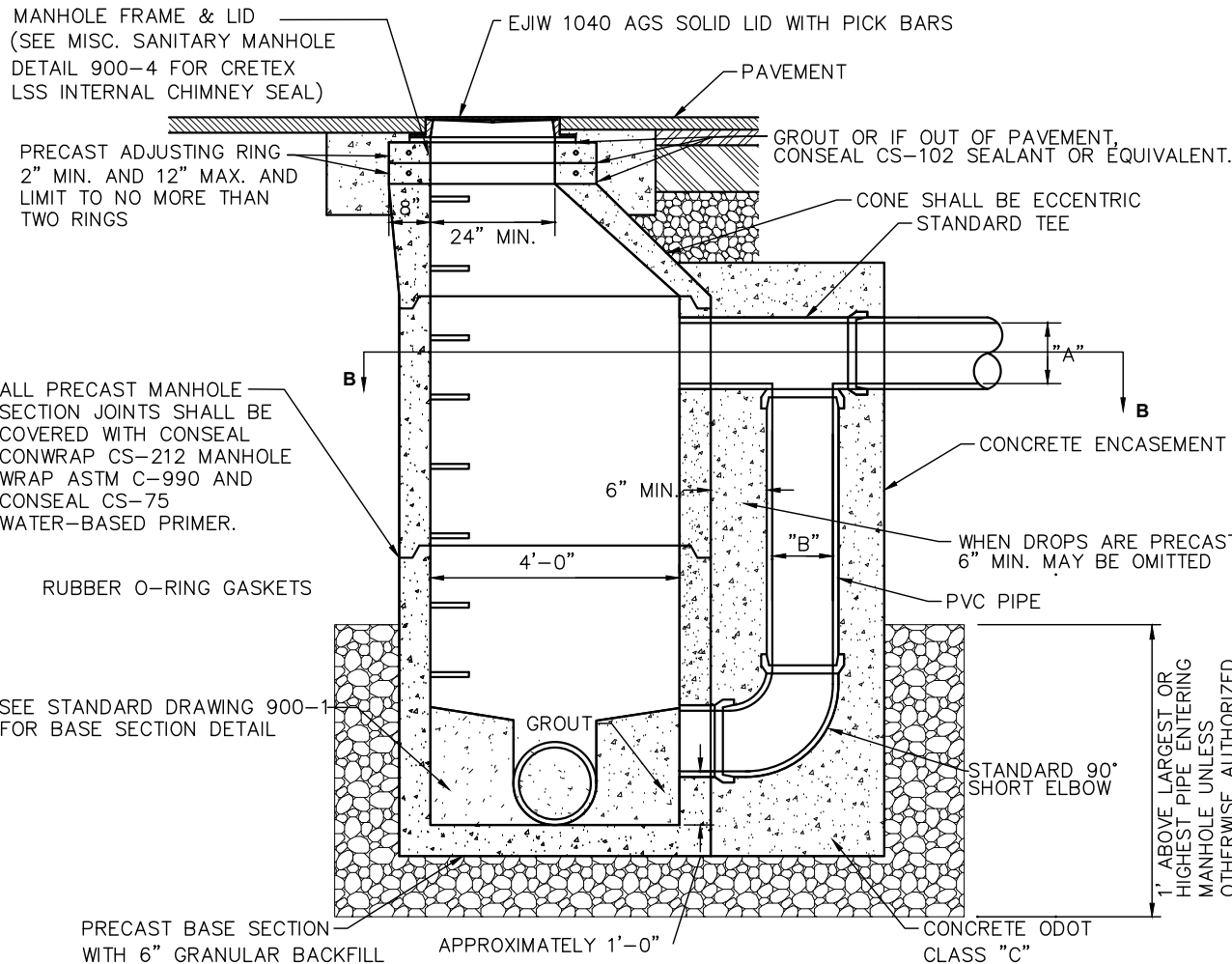
**PRECAST BASE SECTION**



**STANDARD INVERT CHANNEL**

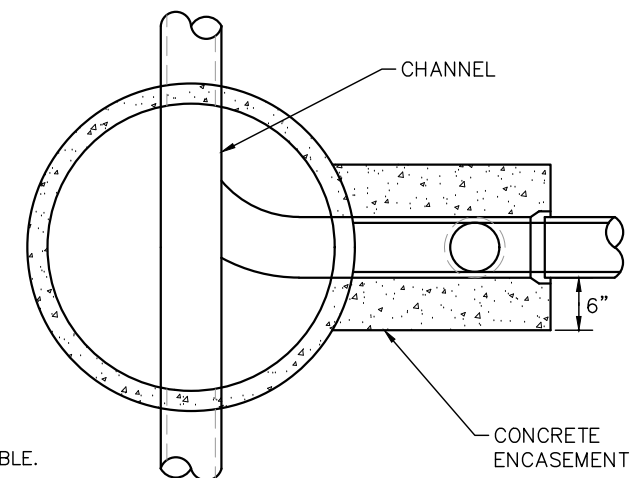
ALL INVERTS TO BE CHanneled FOR OPTIMUM FLOW.

**TYPE 3 SANITARY MANHOLE**



"A"	"B"
8", 10", & 12"	8"
15" & 18"	10"
21" & 24"	12"

### **DROP CONNECTION MANHOLE**

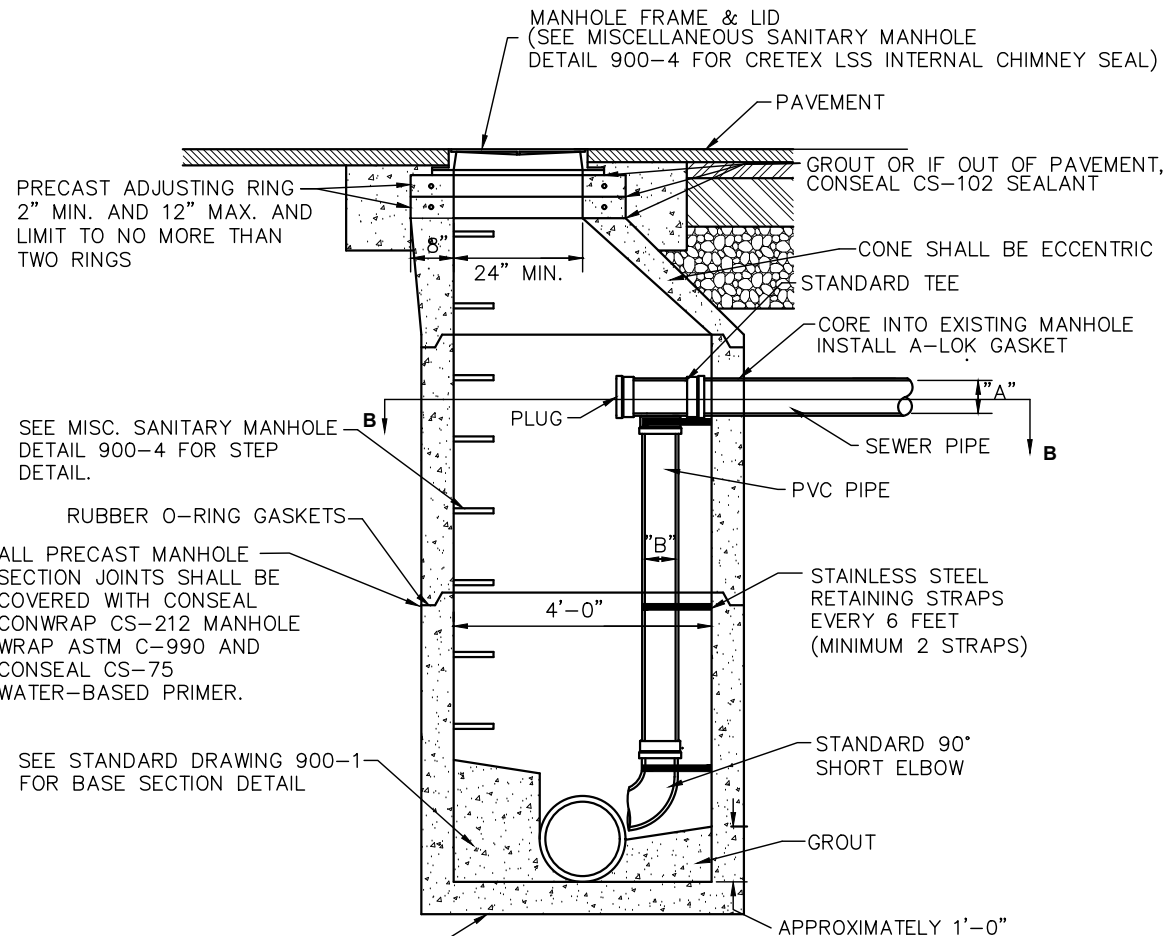


### **SECTIONAL PLAN B-B**

### **NOTES**

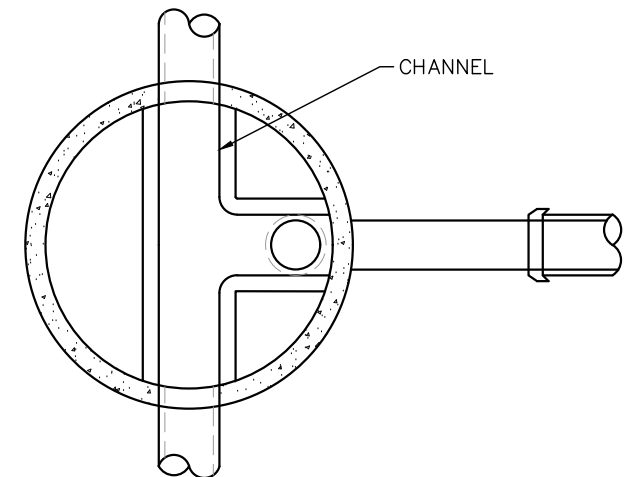
- A. LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- B. TYPE D MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS GREATER THAN 2'-0".
- C. ALL NOTES AND ASTM REFERENCES ON THE TYPE 3 SANITARY MANHOLE APPLY ON THE TYPE D SANITARY DROP MANHOLE.
- D. WHEN ADJUSTING EXISTING MANHOLE TO GRADE, THE MR. MANHOLE SYSTEM SHALL BE USED AT THE VILLAGES DISCRETION. REFER TO MR. MANHOLE NOTES AND DETAILS ON PAGES 500-6, 500-7, 500-8.

## **TYPE D SANITARY DROP MANHOLE**



"A"	"B"
8", 10", & 12"	8"
15" & 18"	10"
21" & 24"	12"

### **DROP CONNECTION MANHOLE**

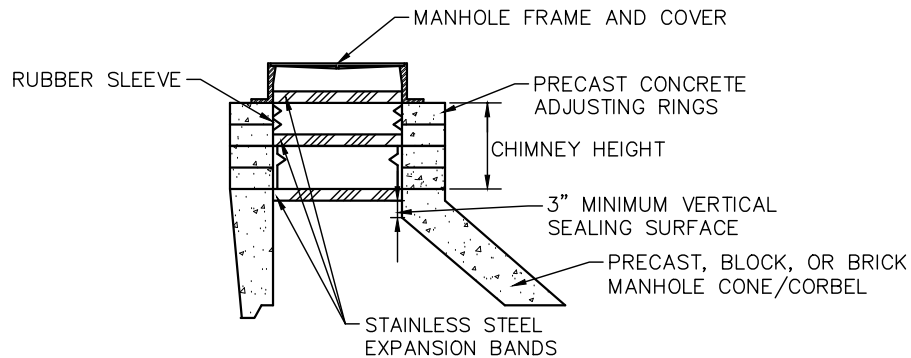


### **SECTIONAL PLAN B-B**

### **NOTES**

- A. FOR EXISTING MANHOLE ONLY WITH VILLAGE APPROVAL.
- B. LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- C. INSIDE DROP MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS GREATER THAN 2'0" AND ONLY IN SPECIAL CIRCUMSTANCES WHEN PRE-APPROVED BY THE VILLAGE.
- D. ALL NOTES AND ASTM REFERENCES ON THE TYPE 3 SANITARY MANHOLE APPLY ON THE INSIDE DROP SANITARY MANHOLE.
- E. WHEN ADJUSTING EXISTING MANHOLE TO GRADE, THE MR. MANHOLE SYSTEM SHALL BE USED AT THE VILLAGES DISCRETION. REFER TO MR. MANHOLE NOTES AND DETAILS ON PAGES 500-6, 500-7, 500-8.

## **INSIDE SANITARY DROP MANHOLE**

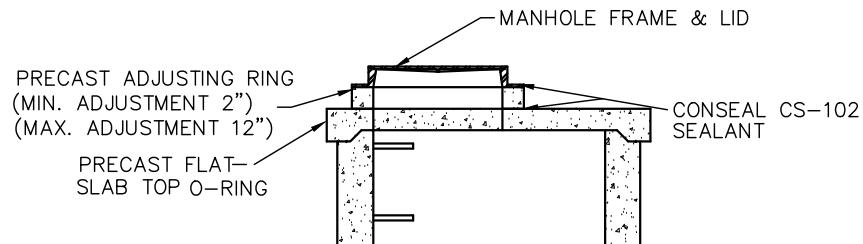


### PRECAST MANHOLE WITH INTERNAL SEAL

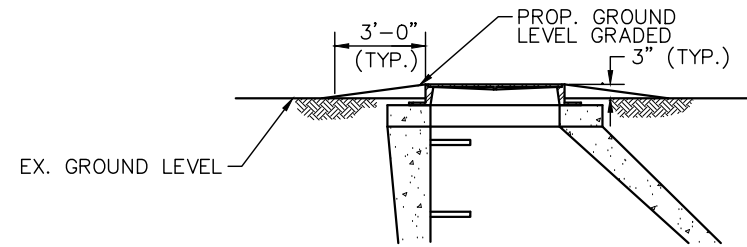
- A.** THE RUBBER SLEEVE IS AVAILABLE IN HEIGHTS OF 8" (0-6), 10" (6-12), 14" (12-18), AND 17" (18-24). THE SAME EXPANSION BANDS ARE USED ON ALL FOUR SEALS WITH 3 BONDS BEING REQUIRED ON THE 14" AND 17" SLEEVES.
- B.** SEE THE CHIMNEY HEIGHT TABLE BELOW FOR SEAL NEEDED TO SPAN FROM THE FRAME TO THE TOP OF THE CONE ON MANHOLES WITH VARIOUS CHIMNEY HEIGHTS. FRAME OFFSETS OR DIAMETER DIFFERENTIALS WILL REDUCE THESE SPAN HEIGHTS.
- C.** THE TOP OF THE CONE SHALL HAVE A MINIMUM OF 3" HIGH VERTICAL SEALING SURFACE THAT IS SMOOTH AND FREE OF ANY FORM OFFSETS OR EXCESSIVE HONEYCOMB.
- D.** FOR CHIMNEY HEIGHTS GREATER THAN 24", EXTENSIONS MAY BE ADDED. CONSULT CRETEX SPECIALTY PRODUCTS FOR RECOMMENDATIONS

### CHIMNEY HEIGHT TABLE

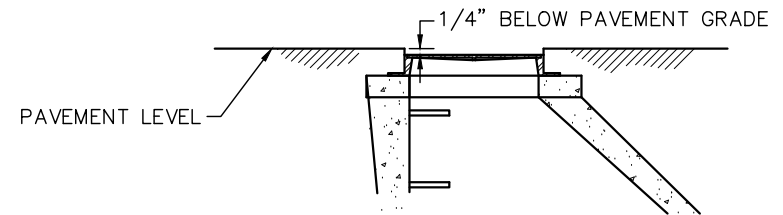
SEAL WIDTH	TO SPAN CHIMNEY HEIGHTS OF:
LSS 0-6	0 TO 6"
LSS 6-12	6" TO 12"
LSS 12-18	12" TO 18"
LSS 18-24	18" TO 24"



### FLAT TOP SLAB



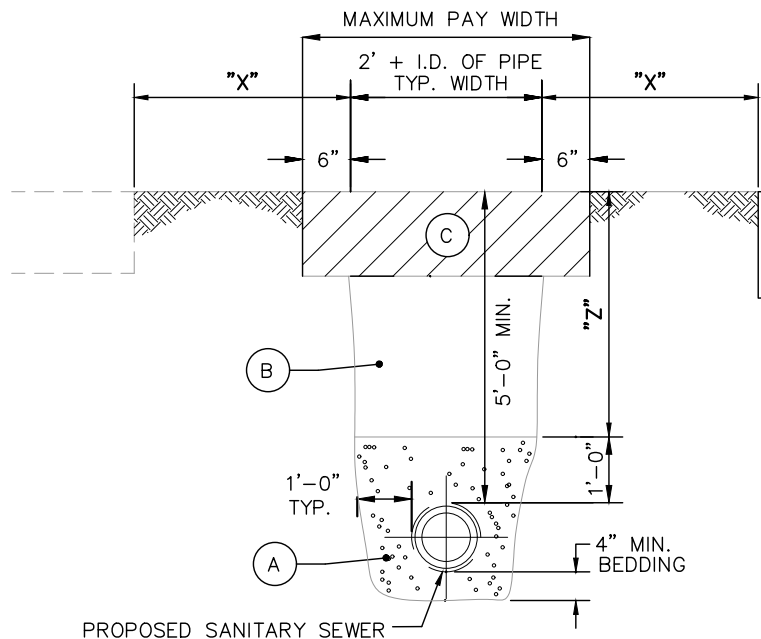
### TYPICAL OFF STREET MANHOLE GRADING



### TYPICAL IN STREET MANHOLE GRADING

### NOTES

- A.** WHEN ADJUSTING EXISTING MANHOLE TO GRADE, THE MR. MANHOLE SYSTEM SHALL BE USED AT THE VILLAGES DISCRETION. REFER TO MR. MANHOLE NOTES AND DETAILS ON PAGES 500-6, 500-7, 500-8.
- B.** MANHOLE STEPS SHALL BE SECURELY INSTALLED INTO EACH MANHOLE SECTION, BY THE MANUFACTURER, PRIOR TO DELIVERY TO THE JOB SITE
- C.** MANHOLE STEPS SHALL BE PF-1 STEP BY M.A. INDUSTRIES OR EQUIVALENT



**SANITARY SEWER TRENCH DETAIL**

"X" = DISTANCE FROM EDGE OF TRENCH TO EDGE OF CLOSEST PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS.

"Z" = DISTANCE FROM TOP OF BEDDING TO FINISH SURFACE.

### TRENCH DETAIL NOTES

A. STRUCTURAL BEDDING SHALL BE ODOT 703.11 TYPE 3 (#57) OR #9, #8, OR OTHER APPROVED EQUIVALENT. THIS BEDDING SHALL BE USED FOR ALL SANITARY SEWER MAIN, LATERALS, AND APPURTENANCES APPLICABLE TO THE SANITARY SEWER SYSTEM.

B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE VILLAGE. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

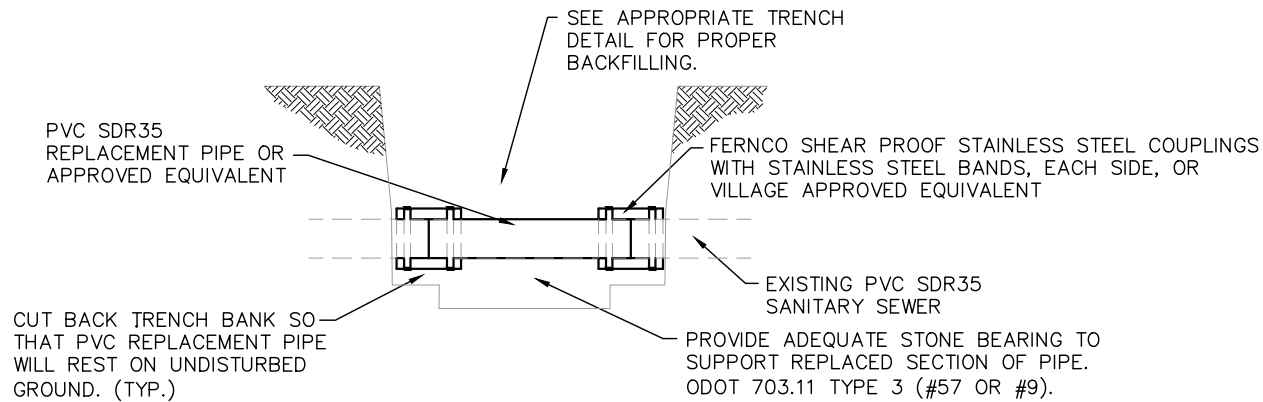
ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH STRUCTURAL BACKFILL MATERIAL ODOT ITEM #304, #411 OR ODOT 703.05(MANUFACTURED SAND) UNTIL THE TOP OF THE COMPACTED STRUCTURAL BACKFILL IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z". ODOT 703.11 TYPE 1(#57, #8, #9) ARE PROHIBITED FOR STRUCTURAL BACKFILL.

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

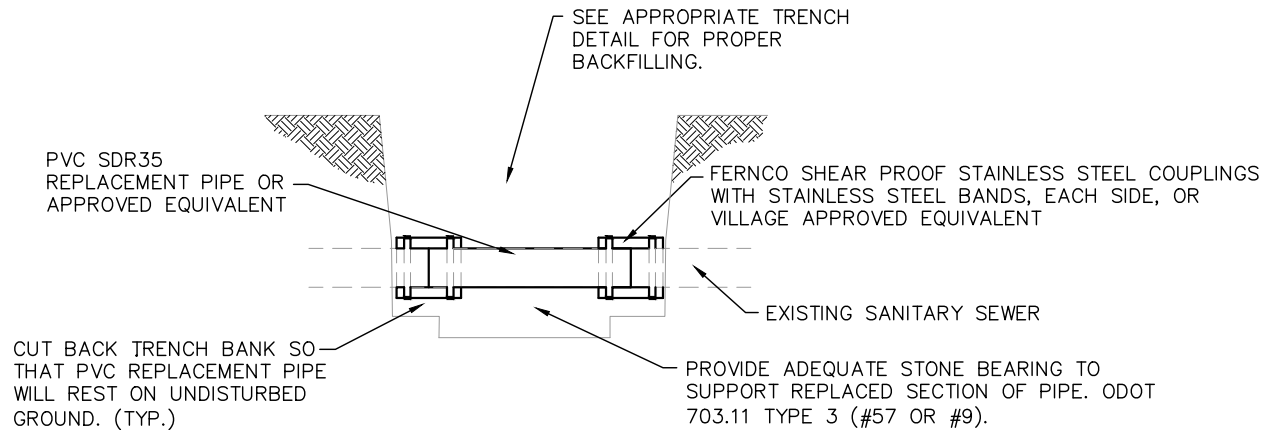
IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-17.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.

E. TRENCHES AND DISTURBED AREAS IN LAWN AREAS SHALL BE COMPACTED BY MECHANICAL MEANS TO 90% STANDARD PROCTOR WITH A MINIMUM OF 2" LOOSE TOPSOIL PLACED ON TOP OF THE AFFECTED AREA FOR LAWN RESTORATION. TRENCHES AND DISTURBED AREAS IN ROADWAYS, DRIVEWAYS, AND SIDEWALKS SHALL BE MECHANICALLY COMPACTED TO 98% STANDARD PROCTOR.



## REPAIR OF EXISTING PVC SDR35 SANITARY SEWER



## REPAIR OF EXISTING SANITARY SEWER OTHER THAN PVC

## NOTES

**A.** RISER PIPE TO BE BEDDED SOLIDLY AGAINST UNDISTURBED GROUND. ALSO, TEE MAY BE SUBSTITUTED FOR WYE BRANCH IF SPECIFIED, AND APPROVED BY VILLAGE.

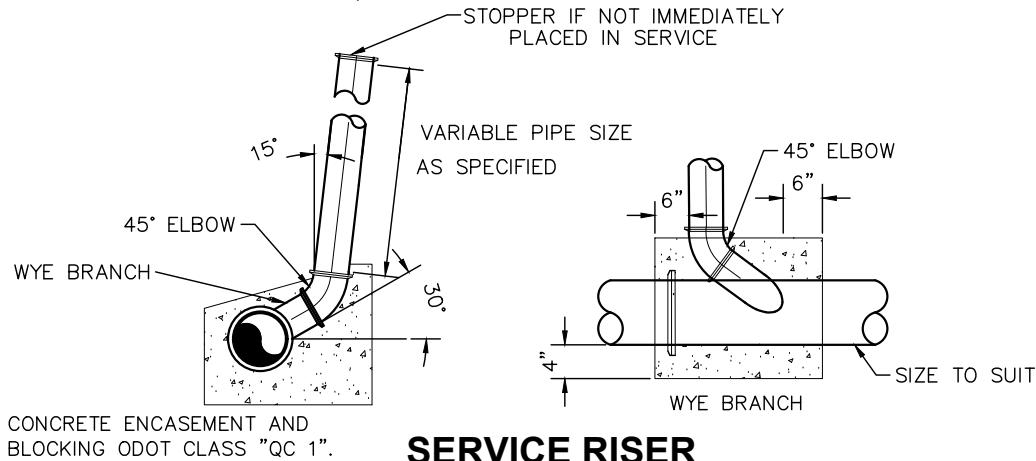
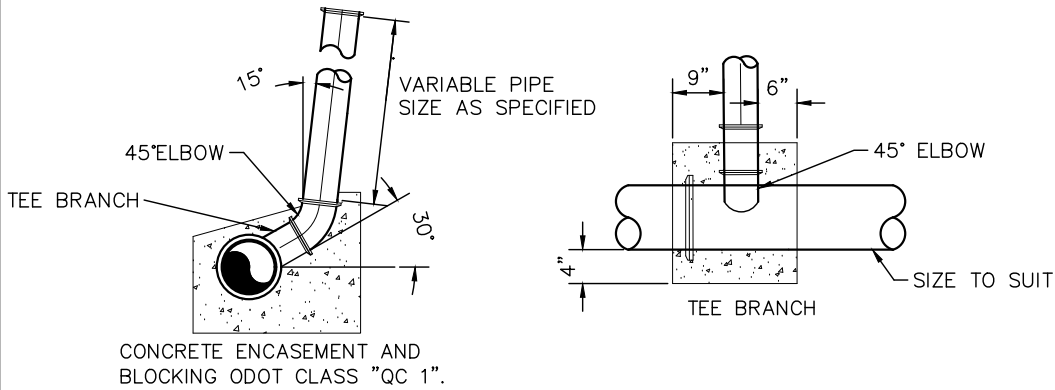
**B.** ALL SERVICE LATERALS SHALL BE WYE BRANCHES UNLESS APPROVED BY VILLAGE.

**C.** RISER PIPE TO BE INSTALLED SO THAT CONNECTING SERVICE SHALL HAVE A MINIMUM DEPTH OF 7' AT THE PROPERTY LINE UNLESS OTHERWISE DIRECTED BY THE VILLAGE.

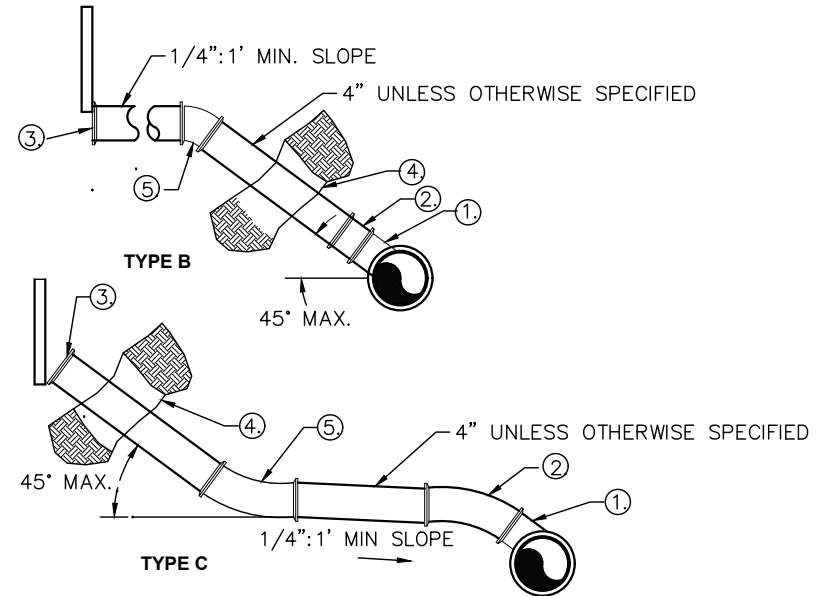
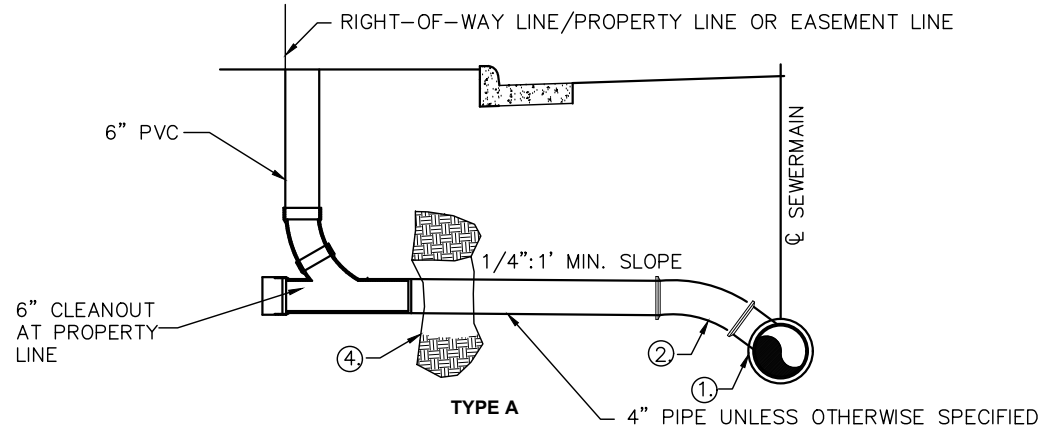
**D.** CONCRETE ENCASEMENT AND BLOCKING REQUIRED IF DEPTH OF CONNECTION IS 12' OR GREATER.

**E.** EACH SANITARY LATERAL MUST BE IN SEPARATE TRENCHES, UNLESS APPROVED BY THE VILLAGE.

**F.** ALL SERVICES TO HAVE CLEANOUT AT R/W OR EASEMENT LINE.



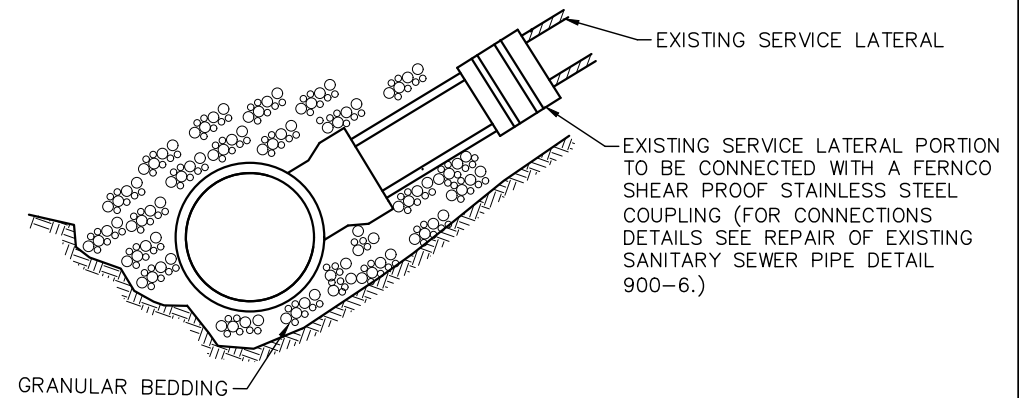
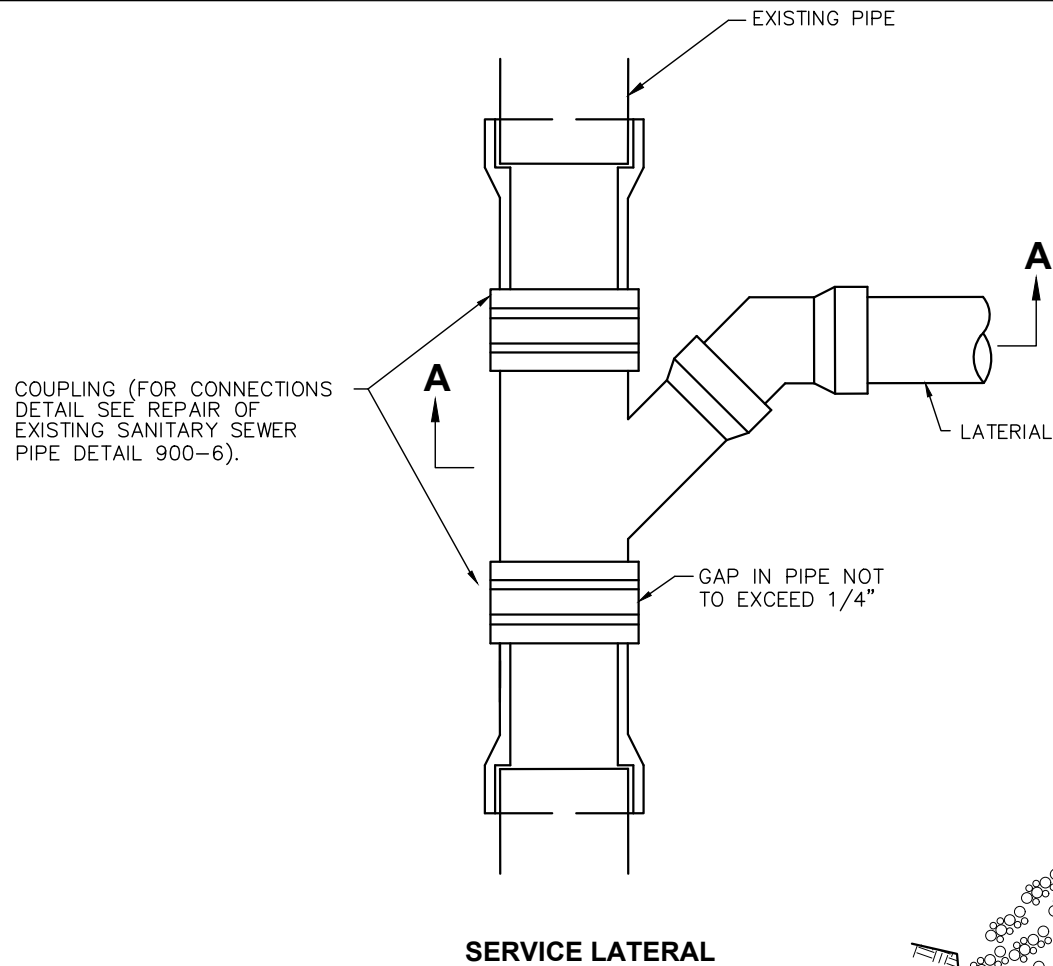
**SERVICE RISER**



- ① 4" TEE OR WYE—ROTATE 45° FROM HORIZONTAL UNLESS OTHERWISE SPECIFIED.
- ② 4" 1/8 BEND OR 1/16 BEND AS NEEDED.
- ③ CAP UNLESS JOINING EXISTING SERVICE LATERAL.
- ④ BED PIPE WITH 8" STRUCTURAL MATERIAL AND BACKFILL WITH STRUCTURAL MATERIAL TO 8" ABOVE PIPE. ODOT 703.11 TYPE 3 #57, OR #9, #8.
- ⑤ EXACT RECORD OF BEND LOCATIONS MUST BE MADE, AS TO DEPTH FROM SURFACE AND DISTANCE FROM CENTERLINE OF SEWER, BEFORE BACKFILL IS PLACED.

**SERVICE LATERAL**





#### NOTES

A WYE MAY BE CUT IN OR SADDLE PLACED ONLY IF  
AN EXISTING LATERAL IS NOT PROVIDED.

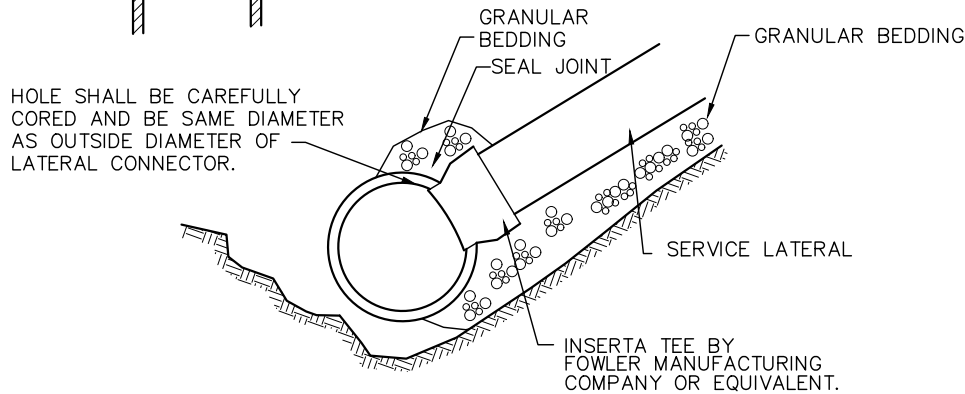
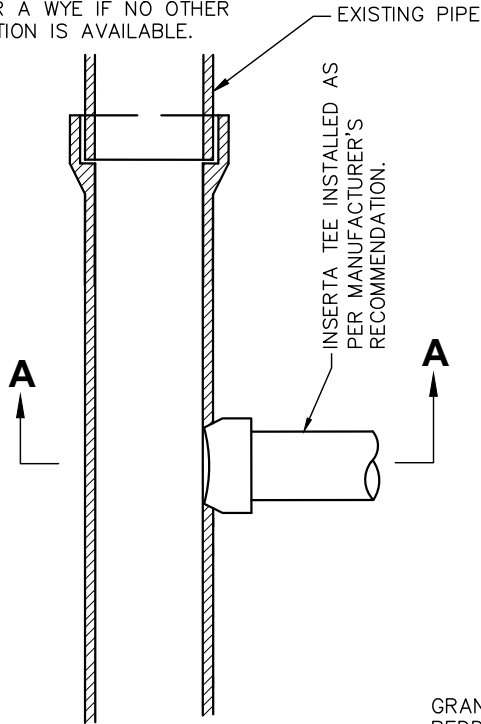
#### CONNECTION DETAIL



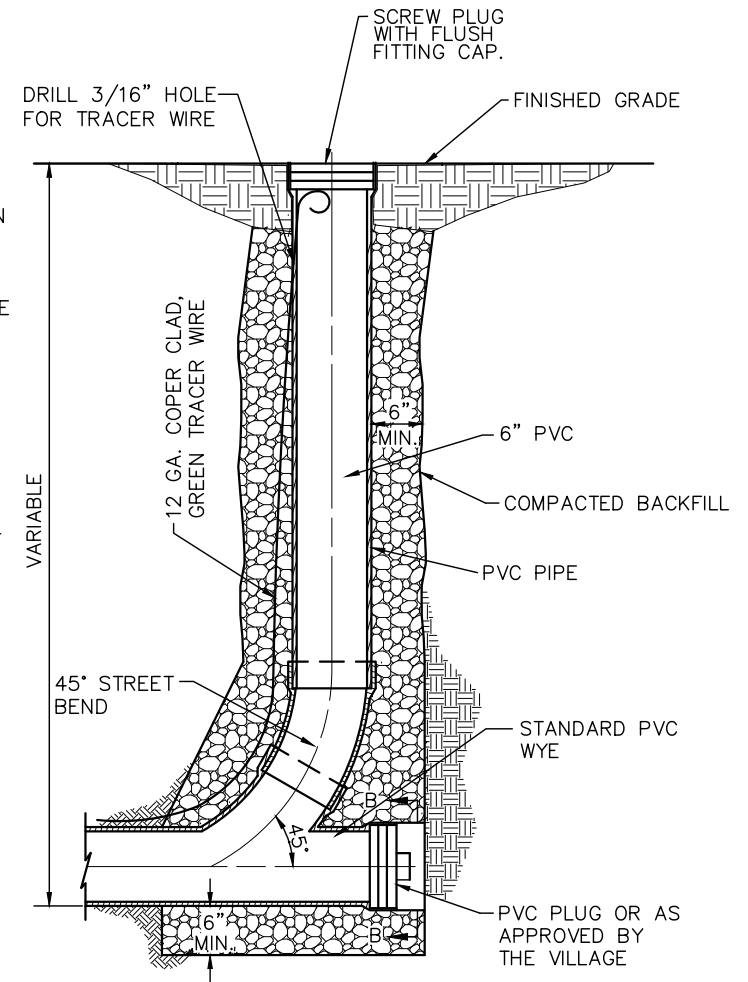
INSERTA TEES SHALL BE USED WHEREVER POSSIBLE. MAIN SHALL ONLY BE CUT FOR A WYE IF NO OTHER OPTION IS AVAILABLE.

### CLEANOUT DETAIL

- A. AT SANITARY LATERALS ONLY.
- B. CLEANOUT REQUIRED AT ALL R/W OR EASEMENT LINES.
- C. QWIK-SEAL GASKETS MAY BE USED FOR INSTALLATION INTO EXISTING CLAY SANITARY SEWER MAINS.
- D. CLEANOUT MATERIALS SHALL BE SCHEDULE 40 GLUED JOINTS OR SDR35 PVC MATCHING THE LATERAL PIPE SIZE DIAMETER.
- E. TRACER WIRE REQUIRED FOR EACH SANITARY SEWER LATERAL FROM THE MAIN TO THE CLEANOUT. TRACER WIRE SHALL BE EXTENDED UP THE CLEANOUT RISER TO A POINT JUST BELOW CLEANOUT CAP WHERE A 3/16" HOLE SHALL BE DRILLED THROUGH THE WALL OF THE PIPE.
- F. TRACER WIRE SHALL BE EXTENDED INTO THE CLEANOUT RISER WITH A MINIMUM OF 16" OF SPARE TRACER WIRE LEFT INSIDE OF THE RISER ONCE CAP IS INSTALLED.
- G. TRACER WIRE SHALL BE 12 GA. COPPER CLAD, GREEN IN COLOR. SPLICES IN TRACER WIRE SHALL BE MADE WITH A 3M DIRECT BURY SPLICE KIT, DBR/Y-6 OR VILLAGE APPROVED EQUAL.



### SECTION A-A





## LOW PRESSURE AIR TEST

A. AFTER BACKFILLING, THE AIR TEST SHALL BE CONDUCTED BETWEEN TWO CONSECUTIVE MANHOLES. ALL PIPE OUTLETS MUST BE PLUGGED IN THE SECTION BEING TESTED WITH SUITABLE TEST PLUGS. ONE OF THE PLUGS USED AT A MANHOLE MUST BE TAPPED AND EQUIPPED FOR AN AIR INLET CONNECTION FOR FILLING THE LINE FROM THE AIR COMPRESSOR. AIR SHALL BE SUPPLIED SLOWLY TO THE TEST SECTION UNTIL THE INTERNAL PRESSURE REACHES APPROXIMATELY 4 PSI. IF THE PIPE IS BELOW EXISTING GROUNDWATER LEVEL, THE INTERNAL PRESSURE SHALL BE INCREASED BY THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE, BUT IN NO CASE SHOULD THE INTERNAL PRESSURE EVER EXCEED 5 PSI.

B. AT LEAST 2 MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE. WHEN THE PRESSURE HAS STABILIZED AND IS AT OR ABOVE 3.5 PSI, THE AIR SUPPLY SHALL BE DISCONNECTED AND TIMING SHALL BEGIN WITH A STOP WATCH. THE STOP WATCH SHALL BE ALLOWED TO RUN UNTIL THE PRESSURE HAS DROPPED 1.0 PSI. IF THE TIME SHOWN ON THE STOP WATCH IS GREATER THAN THE SPECIFIED MINIMUM TIME, THE SECTION SHALL BE CONSIDERED TO HAVE PASSED THE TEST. TIME MAY BE INTERPOLATED FROM THE FIGURES LISTED BELOW.

PIPE DIA. (in.)	Min. Time (min:sec.)	Length For Min. Time (ft.)	Time for Longer Length (sec.)	Specified Minimum for Length (L) Shown (min:sec)									
				100 FT.	150 FT.	200 FT.	250 FT.	300 FT.	350 FT.	400 FT.	450 FT.		
4	3:46	597	0.380L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46		
6	5:40	398	0.854L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24		
8	7:34	298	1.520L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24		
10	9:28	239	2.374L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48		
12	11:20	199	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38		
15	14:10	159	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04		
18	17:00	132	7.692L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:42		
21	19:50	114	10.470L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:32		
24	22:47	100	13.674L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33		

### SPECIFICATION TIME FOR LENGTH (L) SHOWN (MIN:SEC)

\*ALL TESTS SHALL BE WITNESSED BY A VILLAGE REPRESENTATIVE.

## DEFLECTION TEST

A. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS TO PERMIT STABILIZATION OF THE SOIL-PIPE SYSTEM.

B. NO PIPE SHALL EXCEED A DEFLECTION OF 5%. IF DEFLECTION EXCEEDS 5%, REPLACEMENT OR CORRECTION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF APPROVING AGENCY.

C. THE RIGID BALL OR MANDREL USED FOR THE DEFLECTION TEST SHALL HAVE A DIAMETER NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER OR AVERAGE INSIDE DIAMETER OF THE PIPE DEPENDING ON WHICH IS MANUFACTURED. THE PIPE SHALL BE MEASURED IN COMPLIANCE WITH ASTM D-2122 STANDARD TEST METHOD OF DETERMINING DIMENSIONS OF THERMOPLASTIC PIPE AND FITTINGS. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.

## HDPE PIPE MATERIAL HYDROSTATIC TESTING

A. AFTER THE PIPE HAS BEEN LAID AND BACKFILLED, ALL NEWLY LAID PIPE SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE AND LEAKAGE TEST. ALL HDPE PE 4710 PIPE MATERIAL MUST BE HYDROSTATICALLY TESTED FOLLOWING ASTM F-2164, "STANDARD PRACTICE FOR FIELD LEAK TESTING OF POLYETHYLENE (PE) PRESSURE PIPING SYSTEM USING HYDROSTATIC PRESSURE." THE TESTS MUST BE PERFORMED BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE VILLAGE. THE LEAKAGE TEST PRESSURE SHOULD BE BETWEEN THE SYSTEM DESIGN PRESSURE AND 1.5 TIMES THE SYSTEM DESIGN PRESSURE. THE DURATION OF THE LEAKAGE TEST PHASE SHALL NOT BE LESS THAN 1 HOUR. HYDROSTATIC PRESSURE SHALL BE APPLIED BY MEANS OF A PUMP TAKING WATER FROM AN AUXILIARY SUPPLY. ALL PIPING MUST BE PROPERLY FILLED AND FLUSHED TO DISPEL ALL AIR BEFORE THE TEST IS MADE USING POTABLE WATER.

B. LEAKAGE IS DEFINED AS THE QUANTITY OF WATER TO BE SUPPLIED INTO THE NEWLY LAID PIPE, OR ANY VALVED SECTION THEREOF, NECESSARY TO MAINTAIN THE SPECIFIED LEAKAGE TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR EXPELLED.

C. THERE IS NO LEAKAGE ALLOWANCE FOR A SECTION OF HEAT-FUSION JOINT POLYETHYLENE PIPING, BECAUSE PROPERLY MADE HEAT FUSION JOINTS DO NOT LEAK.

D. IF NO VISUAL LEAKAGE IS OBSERVED AND THE PRESSURE DURING THE TESTING PHASE HOLDS STEADY (WITHIN 5% OF THE TEST PHASE PRESSURE) FOR THE 1 HOUR TEST PHASE PERIOD, A PASSING TEST IS INDICATED.

## MANHOLE VACUUM TEST

ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED USING THE FOLLOWING PROCEDURES FROM ASTM C-1244.

### A. PREPARATION OF THE MANHOLE

1. ALL LIFT HOLES SHALL BE PLUGGED.
2. ALL PIPES ENTERING THE MANHOLE SHALL BE TEMPORARILY PLUGGED TAKING CARE TO SECURELY BRACE THE PIPES AND PLUGS TO PREVENT THEM FROM BEING DRAWN INTO THE MANHOLE.

### B. PROCEDURE

1. THE FIRST HEAD SHALL BE PLACED AT THE TOP OF THE MANHOLE IN THE PRECAST CONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. A VACUUM OF 10" OF MERCURY (4.9 PSI) SHALL BE DRAWN ON THE MANHOLE, THE VALVE ON THE VACUUM LINE OF THE TEST HEAD CLOSED, AND THE VACUUM PUMP SHUT OFF. THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9" OF MERCURY (4.4 PSI).
3. THE MANHOLE SHALL PASS IF THE TIME FOR THE VACUUM READING TO DROP FROM 10" OF MERCURY (4.9 PSI) TO 9" OF MERCURY (4.4 PSI) MEETS OR EXCEEDS THE VALUES INDICATED ON THE TABLE.
4. IF THE MANHOLE FAILS THE INITIAL TEST, NECESSARY REPAIRS SHALL BE MADE BY AN APPROVED METHOD. THE MANHOLE SHALL THEN BE RETESTED UNTIL A SATISFACTORY TEST IS OBTAINED.

DIAMETER, INCHES

DEPTH (FT.)	48	60	72
	TIME, SECONDS		
8 OR LESS	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

### MINIMUM TEST TIMES FOR VARIOUS MANHOLE DIAMETERS

## NOTES

- A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAY'S NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.
- B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.
- C. ROOF DRAINS, FOUNDATION DRAINS, SUMP PUMPS, AND OTHER CLEAR WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED.
- D. WHEN A SEWER IS TO BE EXTENDED AT THE DOWNSTREAM MANHOLE OR FIRST MANHOLE IN THE NEW LINE, IT SHALL BE PLUGGED BEFORE CONSTRUCTION BEGINS. IF THE SEWER IS SMALLER OR EQUAL TO 12" DIAMETER, IT SHALL BE PLUGGED BY PLACING A POLY-ETHYLENE BAG APPROXIMATELY 6" INTO THE SEWER PIPE AND POURING CONCRETE INTO AND AROUND THE SEWER PIPE AS DIRECTED BY THE VILLAGE. SIZES LARGER THAN 12" WILL BE PLUGGED BY OTHER APPROVED METHODS. NO PLUGS SHALL BE REMOVED UNTIL CONSTRUCTION IS COMPLETED AND SOIL IS STABILIZED AND THEN ONLY AS DIRECTED BY THE VILLAGE.
- E. CONSTRUCTION OF SANITARY SEWERS SHALL INCLUDE THE VILLAGE DYE TESTING AS DETERMINED BY THE VILLAGE OF ALL PIPES TO BE CONNECTED TO THE NEW SEWER PRIOR TO BACKFILLING.
- F. WHEN A CASTING OR OTHER PUBLIC PROPERTY IS ABANDONED IT REMAINS VILLAGE PROPERTY.
- G. NEW SEWERS MUST HAVE EPA PLAN APPROVAL.

## EXCAVATION AND PIPE LAYING

- A. THE LAYING OF THE PIPE SHALL COMMENCE AT THE LOWEST POINT, WITH THE BELL END LAID UPGRADE. THE PIPE SHALL BE CENTERED IN THE TRENCH AND ALL PIPE SHALL BE LAID WITH ENDS ABUTTING AND TRUE TO LINE AND GRADE.
- B. LASER SHALL BE USED UNLESS OTHERWISE APPROVED.

## UTILITY STAKING

- A. LASER METHOD – OFFSET AND GRADE AT EACH MANHOLE. OFFSET AND GRADE 50' AND 100' OUT FROM EACH MANHOLE UNLESS OTHERWISE APPROVED.

## TESTING

- A. BEFORE ANY SEWER LINE IS PLACED INTO SERVICE OR ACCEPTED BY THE VILLAGE, IT SHALL BE SUBJECTED TO AND PASS LOW PRESSURE AIR TEST. EACH RUN BETWEEN MANHOLES, WITH ALL SERVICE LATERALS STUBBED INTO PROPERTY LINES, SHALL BE TESTED BEFORE BEING ACCEPTED. THE CONTRACTOR OR DEVELOPER SHALL FURNISH ALL EQUIPMENT AND MATERIAL NECESSARY TO CONDUCT THIS TEST. THE TRENCH SHALL BE COMPLETELY BACKFILLED BEFORE TESTING.
- B. SEE SANITARY TESTING NOTES.
- C. BEFORE FINAL ACCEPTANCE BY THE VILLAGE AND BEFORE ANY SERVICE LINE IS PUT INTO USE, ALL SANITARY SEWERS AND MANHOLES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER BY USE OF A SEWER-JET, OR EQUAL, TYPE OF EQUIPMENT.

## HOUSE CONNECTIONS

- A. NO SERVICE LINE SHALL BE ALLOWED TO CONNECT DIRECTLY INTO A MANHOLE, SUBJECT TO APPROVAL BY THE VILLAGE IN SPECIFIC CASES.
- B. THE ENDS OF ALL SERVICE LINES OR TEES SHALL BE ACCURATELY LOCATED, MAPPED, AND GIVEN TO THE VILLAGE WITHIN 15 DAYS AFTER INSTALLATION.
- C. BEFORE MAKING A CONNECTION TO AN EXISTING SEWER TAP OR SEWER LATERAL, THE CONTRACTOR SHALL CHECK THE EXISTING PIPE BY UTILIZING A SEWER EEL, STRAP, OR SEWER ROD TO SEE THAT THE EXISTING PIPE IS CONNECTED TO THE MAIN SEWER. IF NECESSARY, THE VILLAGE WILL PROVIDE, AT THE CONTRACTOR'S EXPENSE, A HYDRAULIC SEWER CLEANER WHICH WILL PRODUCE LARGE VOLUMES OF WATER TO CHECK THE LATERAL.
- D. LATERALS FROM THE MAIN TO THE PROPERTY LINE SHALL BE 4" MINIMUM WITH CLEANOUT AT THE PROPERTY LINE.
- E. A PERMIT TO OPEN INTO, ALTER, OR DISTURB ANY PUBLIC SEWER MUST BE OBTAINED.
- F. ALL ABANDONED SEWER LATERALS SHALL BE CAPPED AT THE OWNER'S EXPENSE.

## PIPE

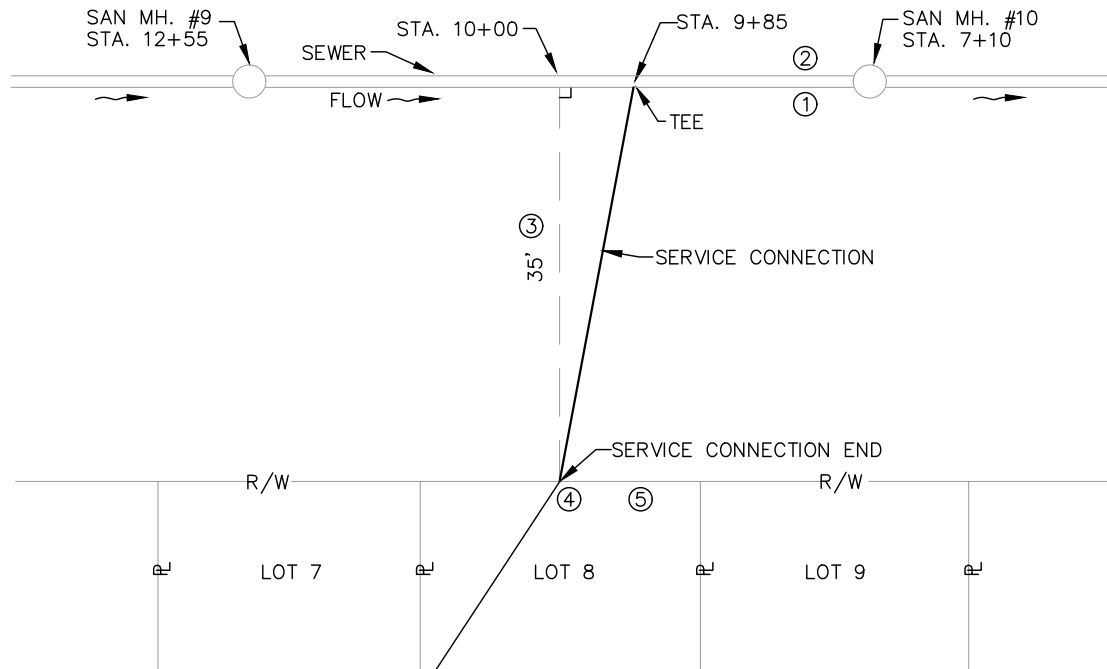
- A. ALL PIPE AND SPECIALS SHALL BE PVC SDR-35 UNLESS OTHERWISE APPROVED BY THE VILLAGE. MINIMUM DIAMETER OF PIPE SHALL BE 8".
- B. FORCEMAIN PIPE MATERIAL SHALL BE HDPE SDR-11 FOR PIPE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING AND SDR-21 OR C-900 PVC FOR PIPE INSTALLED BY OPEN CUTTING.
- C. ALL JOINTS SHALL BE OF THE BELL AND SPIGOT TYPE, THE BELLS BEING FORMED INTEGRALLY WITH THE PIPE. THE BELL SHALL CONTAIN A FACTORY INSTALLED ELASTOMETRIC GASKET WHICH IS POSITIVELY RETAINED. NO SOLVENT CEMENT JOINTS WILL BE PERMITTED IN FIELD CONSTRUCTION EXCEPT AS SPECIFICALLY AUTHORIZED BY THE VILLAGE.

FLEXIBLE PIPES	MATERIAL SPECIFICATIONS	JOINT SPECIFICATIONS
POLYVINYL CHLORIDE	ASTM D-3034 (SDR-35) PIPE STIFFNESS = 46PSI	ELASTOMERIC GASKET ASTM D-3212
HIGH DENSITY POLYETHYLENE	ASTM F-714 (SDR-11)	N/A
POLYVINYL CHLORIDE	AWWA C900	ASTM D-3139
POLYVINYL CHLORIDE	ASTM D-2241 (SDR-21)	ASTM D-3139

1. SDR = OUTSIDE DIAMETER DIVIDED BY WALL THICKNESS.
2. THE SPECIFICATIONS ABOVE SHALL BE THOSE MOST RECENTLY ADOPTED BY THE APPROPRIATE STANDARDS SETTING ORGANIZATIONS.

## SANITARY SEWER CAMERA INSPECTION REQUIREMENTS

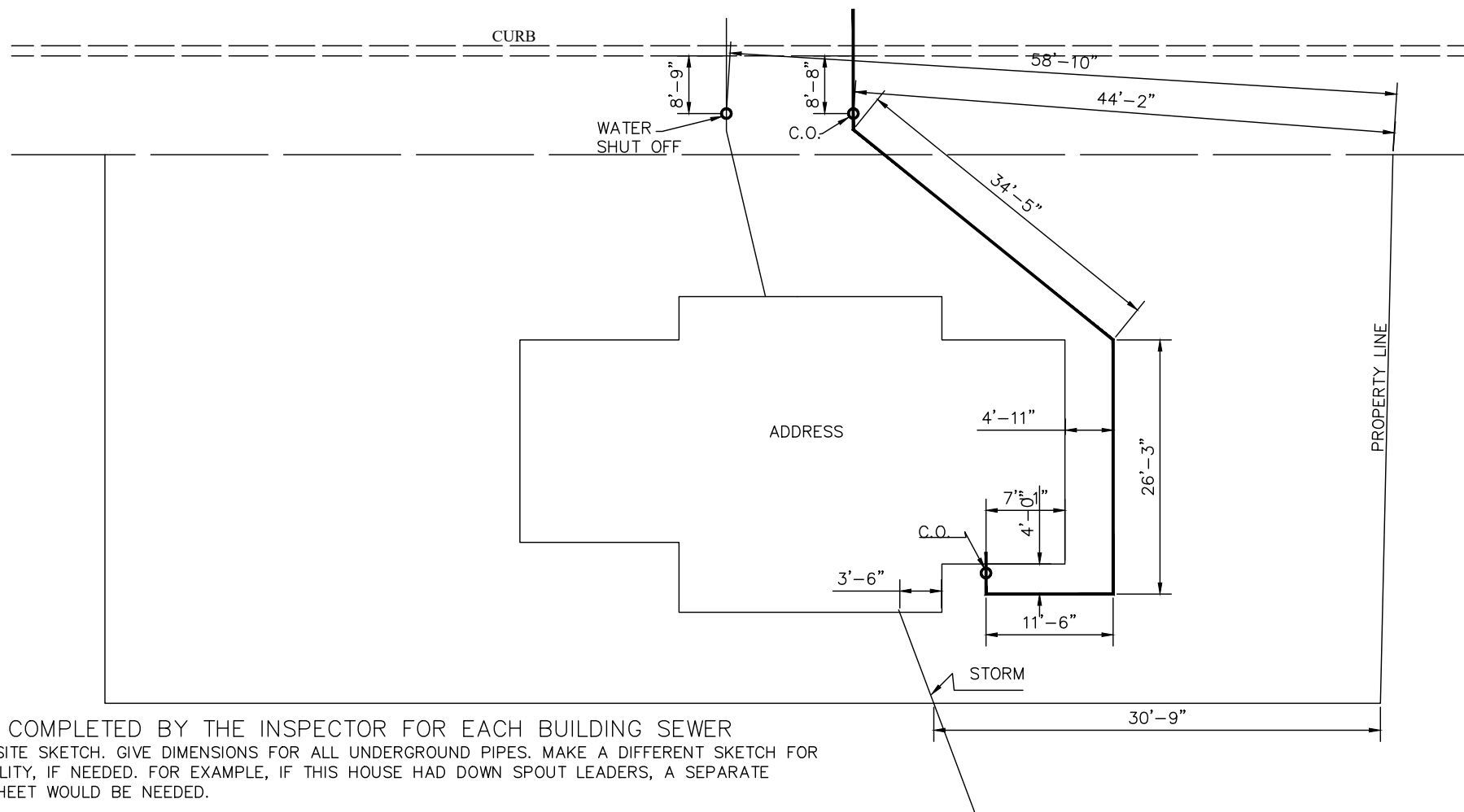
BEFORE THE VILLAGE ACCEPTS ANY SANITARY SEWER AND BEFORE THE FINAL PAYMENT, THE CONTRACTOR WILL SUPPLY THE VILLAGE WITH PASSING DVD OR USB FLASH DRIVE AND WRITTEN LOG OF THE ENTIRE NEW SYSTEM. THIS TAPE MUST SHOW THE LOCATION OF ALL LATERALS, THEIR CLOCK POSITIONS AND DISTANCE FROM THE MANHOLE. THE TAPE MUST ALSO SHOW A SYSTEM CLEAR OF ANY BENDS, BELLIES, LEAKS, PIPE IMPERFECTIONS, DEBRIS OR ANY CONDITIONS NOT SPECIFICALLY SHOWN ON THE PLANS. THE CONTRACTOR MUST ALSO SUPPLY A WRITTEN COPY OF ALL LATERAL LOCATIONS. ANY SEWER JETTING OR OTHER CLEANING ASSOCIATED WITH A PASSING DVD OR USB FLASH DRIVE IS THE RESPONSIBILITY OF THE CONTRACTOR. THE VILLAGE SHALL REQUIRE THE USE OF A PAN AND TILT TYPE CAMERA TO REVIEW ALL LATERAL CONNECTIONS ON SEWER MAIN REPLACEMENT PROJECTS. THE ABOVE PROCEDURES WILL BE AT THE CONTRACTOR'S EXPENSE. THE VILLAGE RESERVES THE RIGHT TO A FINAL TELEVISIONING OF THE SEWER SYSTEM AT THE VILLAGE'S EXPENSE BEFORE THE PROJECT IS FINALIZED.



EXAMPLE

1. 275'
2. 290'
3. 35'
4. 8.9'
5. 942.9

- ① HORIZONTAL DISTANCE OF TEE TO DOWNSTREAM MANHOLE.
- ② HORIZONTAL DISTANCE OF SERVICE CONNECTION END TO DOWNSTREAM MANHOLE ALONG SEWER.
- ③ PERPENDICULAR DISTANCE FROM SEWER TO SERVICE CONNECTION END.
- ④ DEPTH OF SERVICE CONNECTION END FLOW LINE TO ORIGINAL GROUND.
- ⑤ ELEVATION OF SERVICE CONNECTION END FLOW LINE.



TO BE COMPLETED BY THE INSPECTOR FOR EACH BUILDING SEWER  
 SAMPLE SITE SKETCH. GIVE DIMENSIONS FOR ALL UNDERGROUND PIPES. MAKE A DIFFERENT SKETCH FOR  
 EACH UTILITY, IF NEEDED. FOR EXAMPLE, IF THIS HOUSE HAD DOWN SPOUT LEADERS, A SEPARATE  
 STORM SHEET WOULD BE NEEDED.

## SERVICE CONNECTION LOCATION REFERENCE (BUILDING IN PLACE)



## SEWER TELEVISION STANDARDS

**A.** ALL SEWER TELEVISION CONTRACTORS SHALL BE CERTIFIED BY NASSCO FOR PIPELINE ASSESSMENT AND CERTIFICATION, UNLESS OTHERWISE APPROVED BY THE VILLAGE.

**B.** SANITARY TELEVISION WORK SHALL COMPLY WITH NASSCO STANDARDS.

**C.** ALL TELEVISION WORK SHALL BE PERFORMED IN COLOR WITH THE PROPER AMOUNT OF ILLUMINATION TO CLEARLY SHOW THE ENTIRE PIPE DIAMETER.

**D.** THE CAMERA SHALL BE OF THE PAN AND TILT TYPE.

**E.** THE TELEVISION CONTRACTOR SHALL USE A COMPUTER OR DVD RECORDER TO RECORD THE ENTIRE TELEVISION PROCESS.

**F.** AT THE START OF THE TELEVISION PROCESS, THE TAPE SHALL RECORD THE FOLLOWING:

- DATE/TIME
- OPERATOR AND COMPANY NAME
- SEWER PROJECT NAME
- ADDRESS OR INTERSECTION OF MANHOLE WORKING ON
- DIRECTION ON TELEVISION
- COUNTER SETTING

**G.** THE RECORDING MUST SHOW THE COUNTER RECORDING THROUGHOUT THE TELEVISION PROCESS.

**H.** THE RECORDING SHALL SHOW THE CLOCK POSITION AND DISTANCE FROM THE MANHOLE FOR EACH LATERAL.

**I.** THE OPERATOR SHALL PAN EACH SEWER JOINT AND NOTE ANY DEFICIENCIES ON THE RECORDING.

**J.** THE OPERATOR SHALL PAN AND TILT EACH LATERAL AND SHALL POSITION THE CAMERA TO LOOK UP EACH LATERAL CONNECTION.

**K.** AT NO TIME SHALL THE OPERATOR ALLOW THE CAMERA HEAD TO BE SUBMERGED.

**L.** THE OPERATOR SHALL NOTE ANY DEFICIENCIES ON THE MAIN SCREEN.

**M.** THE OPERATOR SHALL KEEP AN ACCURATE LOG CONSISTING OF THE FOLLOWING:

- DIAGRAM OF SEWER FROM MANHOLE TO MANHOLE SHOWING DIRECTION OF FLOW.
- SHALL NOTE ALL SEWER laterals WITH CLOCK POSITIONS AND DISTANCE FROM MANHOLES.
- DEFICIENCIES IN THE SEWER PIPE INCLUDING BELLIES.
- SPECIAL NOTES DESCRIBING AREAS OF CONCERN.
- ANY DEFICIENCIES NOTED SHALL ACCOMPANY A DIGITAL PHOTO ATTACHED OR INCLUDED IN THE REPORT.

## STANDARDS FOR BELLIES/DIPS IN SEWER MAINS

SANITARY SEWERS SHALL BE DECLARED AS "NOT APPROVED" IF BELLIES/DIPS IN THE MAIN LINE EXCEED THE FOLLOWING CRITERIA:

PIPE SIZES								
SLOPE	8"	10"	12"	15"	18"	21"	24"	>27"
0.10%	2"	2.5"	3"	4"	4"	4"	4.5"	5"
0.12%	2"	2.5"	3"	4"	4"	4"	5"	5"
0.15%	2"	2.5"	3"	3.5"	3.5"	4"	4"	4"
0.22%	2"	2.5"	3"	3"	3.5"	3.5"	3.5"	4"
0.28%	2"	2"	2"	2"	2.5"	2.5"	3"	3"
0.40%	2"	2"	2"	2"	2"	2.5"	2.5"	2.5"
0.60%	1"	1"	1"	1"	1"	1"	1"	1"
1.00%	0"	0"	0"	0"	0"	0"	0"	0"

MAXIMUM ALLOWABLE BELLIES IN PIPE (INCHES)

## SEWER TELEVISION PROCEDURES FOR NEW SEWER CONSTRUCTION

**A.** THE SANITARY SEWER SHALL BE COMPLETELY CLEAN AND FREE OF DEBRIS USING A HIGH PRESSURE JET RODDER CAPABLE OF SCOURING THE PIPE WALLS.

**B.** ALL DEBRIS SHALL BE VACUUMED OUT OF THE SEWER MAIN.

**C.** ONCE CLEANING HAS BEEN COMPLETED, THE CONTRACTOR SHALL RUN CLEAR WATER IN THE NEW SEWER MAIN TO FILL ANY POTENTIAL BELLIES IN THE LINE. THE CONTRACTOR SHALL CALCULATE THE VOLUME GALLON CAPACITY OF THE SEWER MAIN AND SHALL USE THAT MUCH WATER TO FILL POTENTIAL BELLIES/DIPS.

**D.** THE CONTRACTOR MAY RENT A WATER HYDRANT METER FROM THE VILLAGE TO PERFORM THIS TASK.

**E.** THE CONTRACTOR SHALL MAKE SURE THAT THERE IS NO FLOW EMANATING UPSTREAM. IF SO, THE CONTRACTOR SHALL STOP THIS FLOW DURING THE TELEVISION.

**F.** THE CONTRACTOR SHALL TELEVISION THE SEWER FOLLOWING THE TELEVISION STANDARDS.

## SEWER TELEVISION PROCEDURES FOR SEWER RECONSTRUCTION PROJECTS

**A.** BEFORE COMMENCEMENT OF THE CLEANING PROCESS, THE TELEVISION CONTRACTOR SHALL NOTIFY ADJACENT AND AFFECTED PROPERTY OWNERS BY GOING DOOR-TO-DOOR AND NOTIFYING THEM OF THE POSSIBILITY OF SEWER BACKUP DURING THE CLEANING PROCESS.

**B.** THE SANITARY SEWER SHALL BE COMPLETELY CLEANED AND FREE OF DEBRIS USING A HIGH PRESSURE JET RODDER.

**C.** ALL DEBRIS SHALL BE VACUUMED OUT OF THE SEWER MAIN.

**D.** ONCE CLEANING HAS BEEN COMPLETED, THE CONTRACTOR SHALL BAG THE UPSTREAM MANHOLE AND PUMP THE SEWAGE FLOW DOWNSTREAM AND SHALL MAINTAIN PUMPING DURING THE TELEVISION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWER FLOODING AS A RESULT OF THEIR ACTIVITIES.

**E.** AFTER THE PUMP BYPASS HAS BEEN ESTABLISHED, THE CONTRACTOR SHALL RUN CLEAR WATER IN THE RECONSTRUCTED SEWER MAIN TO FILL ANY POTENTIAL BELLIES IN THE LINE. THE CONTRACTOR SHALL CALCULATE THE VOLUME GALLON CAPACITY OF THE SEWER MAIN AND SHALL USE THAT MUCH WATER TO FILL POTENTIAL BELLIES/DIPS.

**F.** THE CONTRACTOR MAY RENT A WATER HYDRANT METER FROM THE VILLAGE TO PERFORM THIS TASK.

**G.** THE CONTRACTOR SHALL TELEVISION THE SEWER FOLLOWING THE TELEVISION STANDARDS.

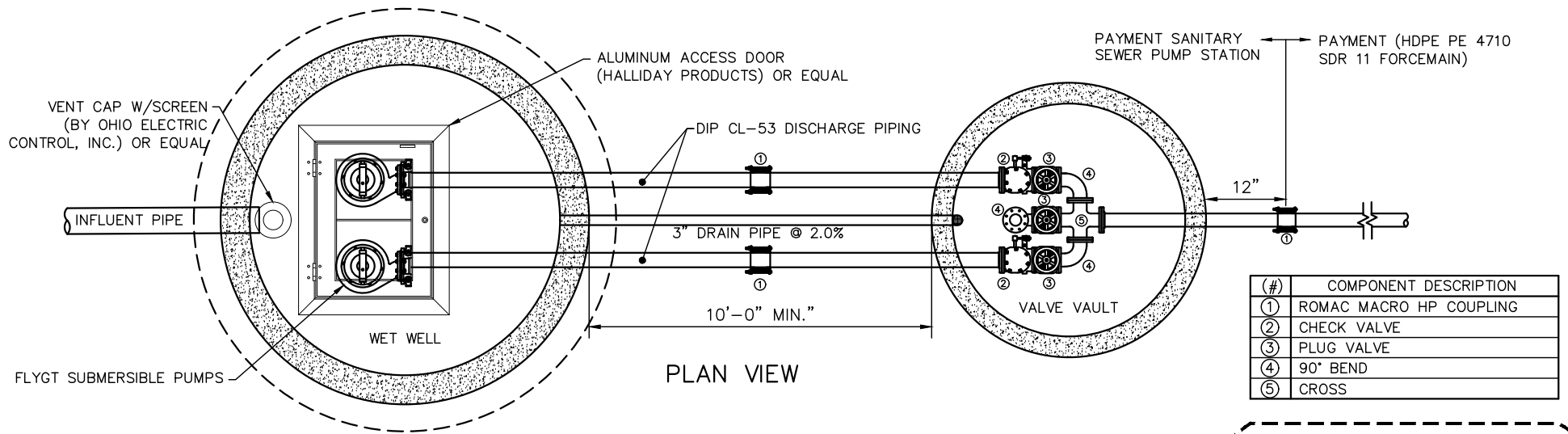
## PASSING SANITARY SEWERS

**A.** THE VILLAGE WILL NOT PASS OR ACCEPT THE SANITARY SEWER FOR FINAL PAYMENT WITHOUT HAVING A PASSING RECORDING AND LOG OF THE SANITARY SEWER TELEVISION FOLLOWING THE STANDARDS PREVIOUSLY DESCRIBED.

**B.** ALL TELEVISION WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

**C.** THE VILLAGE RESERVES THE RIGHT TO A FINAL RE-TELEVISION AT THE CONTRACTOR'S EXPENSE IF DEFICIENCIES ARE NOTED ON THE INITIAL TELEVISION WORK AND AFTER THE CONTRACTOR MAKES THE NECESSARY REPAIRS.

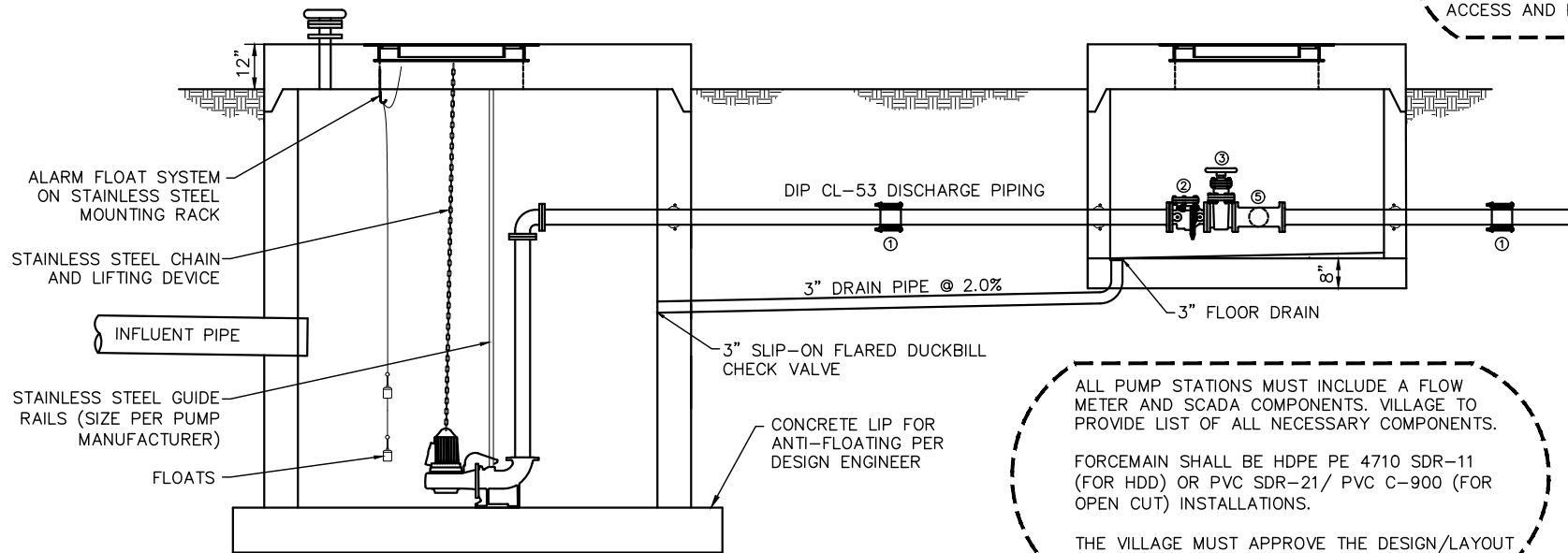




PLAN VIEW

WET WELL TO BE SIZED BY ENGINEER AND  
VERIFIED BY VILLAGE.

VALVE VAULT SHALL BE SIZED TO  
ACCOMMODATE ALL NECESSARY COMPONENTS  
AND GIVE THE VILLAGE ENOUGH ROOM TO  
ACCESS AND PROVIDE MAINTENANCE.

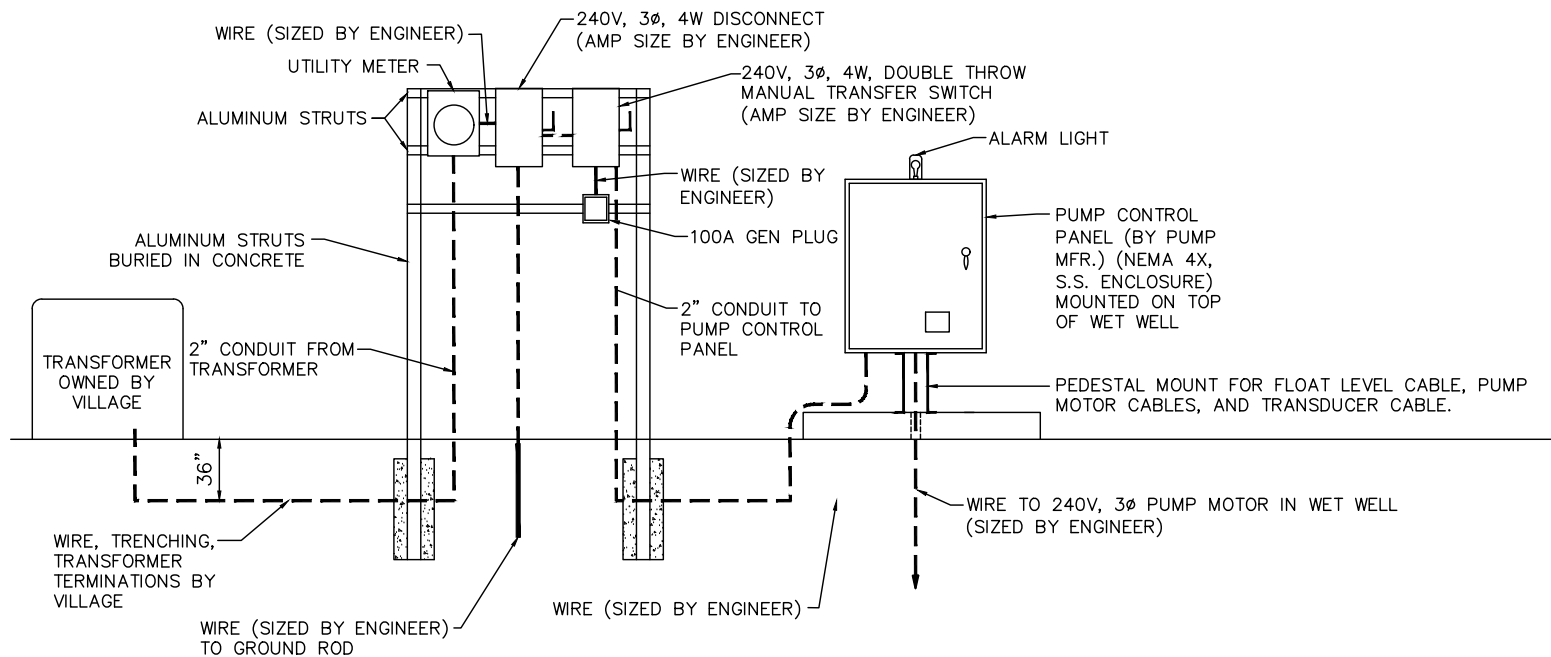


PROFILE VIEW

ALL PUMP STATIONS MUST INCLUDE A FLOW  
METER AND SCADA COMPONENTS. VILLAGE TO  
PROVIDE LIST OF ALL NECESSARY COMPONENTS.

FORCEMAIN SHALL BE HDPE PE 4710 SDR-11  
(FOR HDD) OR PVC SDR-21/ PVC C-900 (FOR  
OPEN CUT) INSTALLATIONS.

THE VILLAGE MUST APPROVE THE DESIGN/LAYOUT  
OF THE PUMP STATION



## ELECTRICAL LAYOUT

CONDUIT AND CONCRETE FOR TRANSFORMER PAD BY CONTRACTOR.

ALL GROUNDING PER THE CURRENT NEC STANDARD.

INSTALLATION TO COMPLY WITH THE CURRENT NEC STANDARD.

ALL ELECTRICAL CONDUIT SHALL BE PVC, SCH-40.

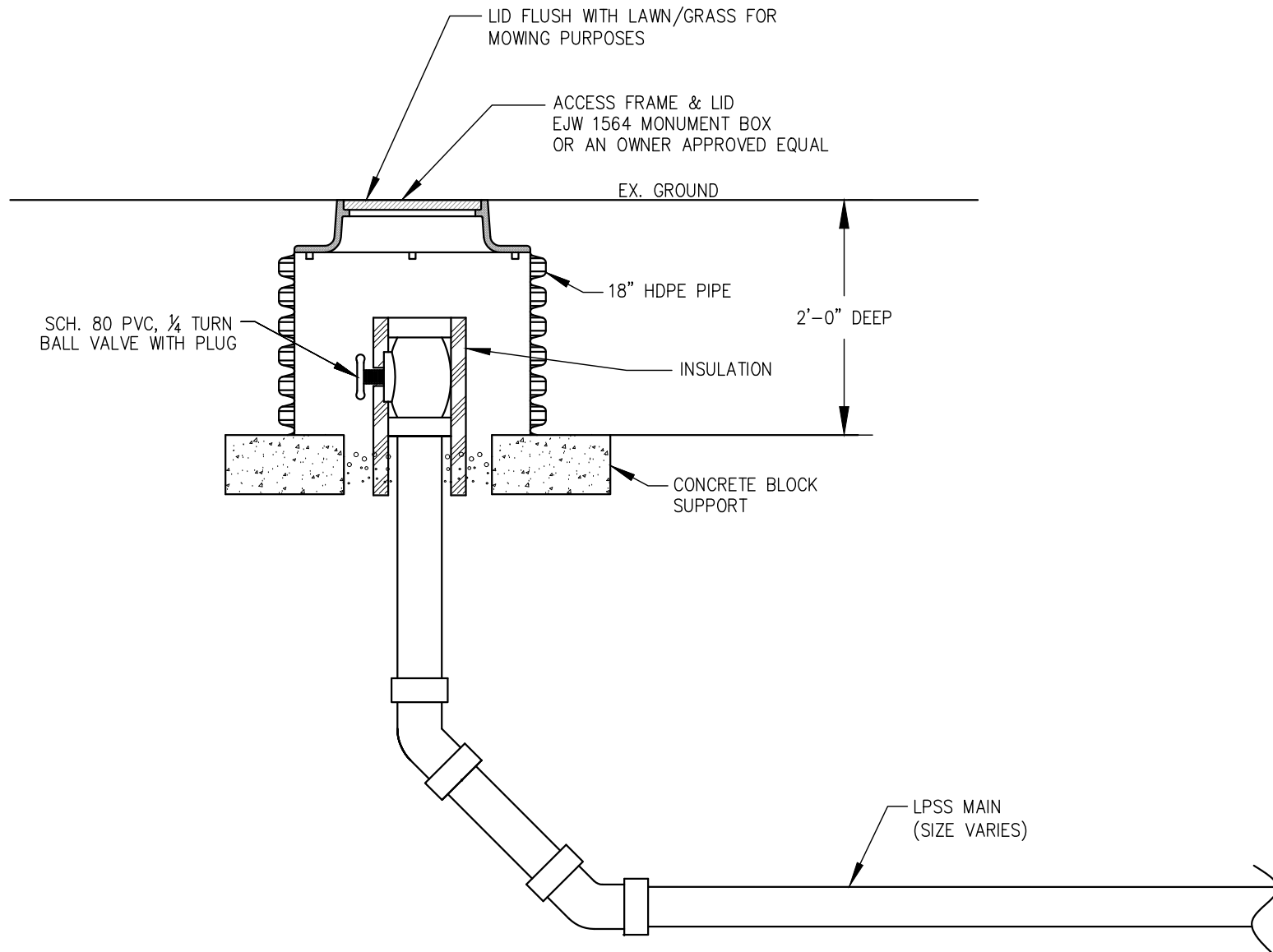
ALL BURIED CONDUIT SHALL HAVE A MIN. DEPTH OF 36" OR MORE.

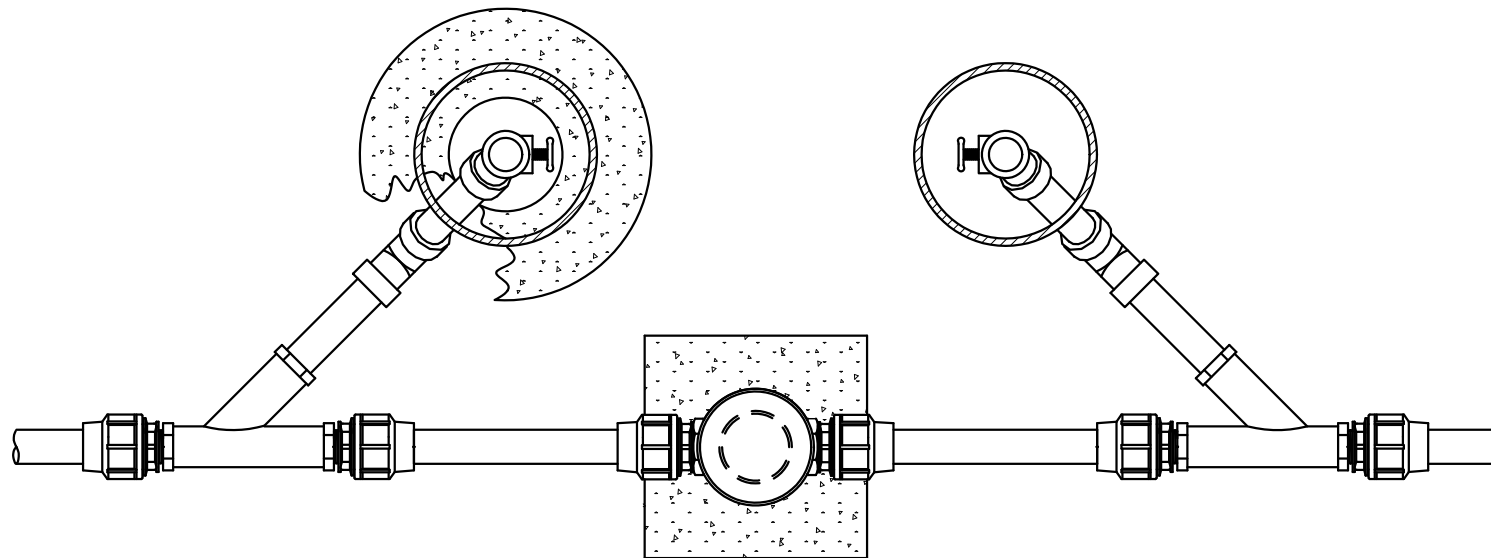
## NOTES

**A.** FLYGT IS THE REQUIRED PUMP MONITOR FOR ALL SUBMERSIBLE PUMPS.

**B.** 240V, 3-PHASE PUMPS ONLY.

**C.** ALL PIPE COUPLINGS BETWEEN WET WELL AND BYPASS VALVE SHALL BE ROMAC MACRO HP COUPLINGS.

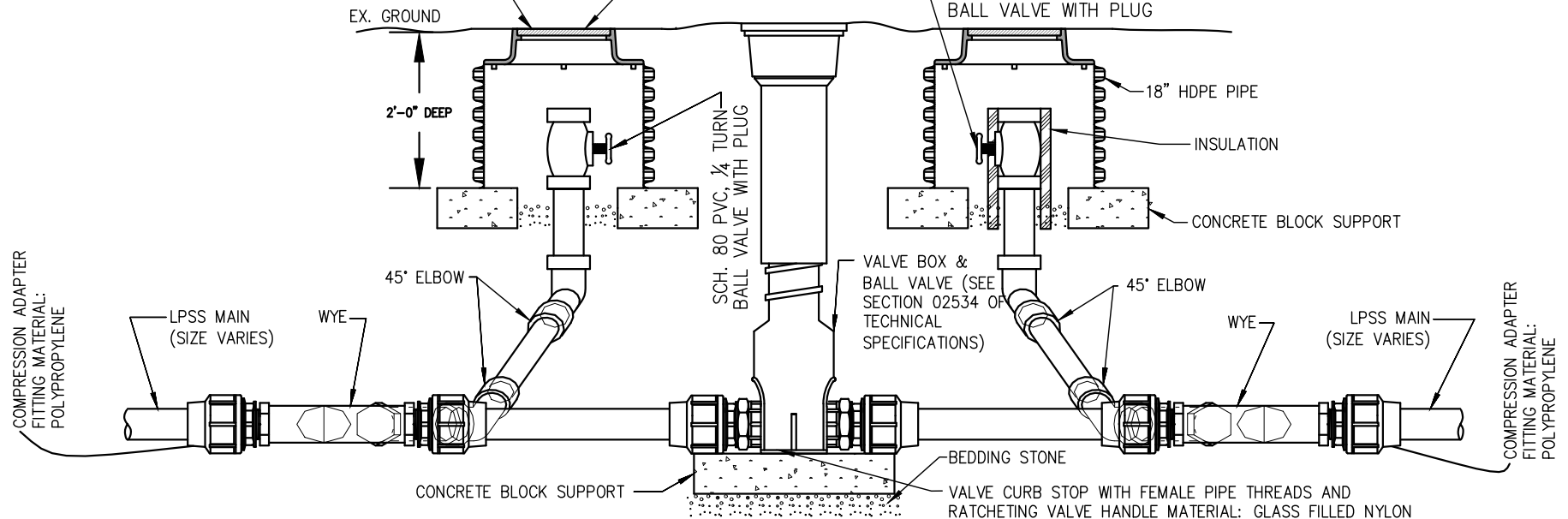




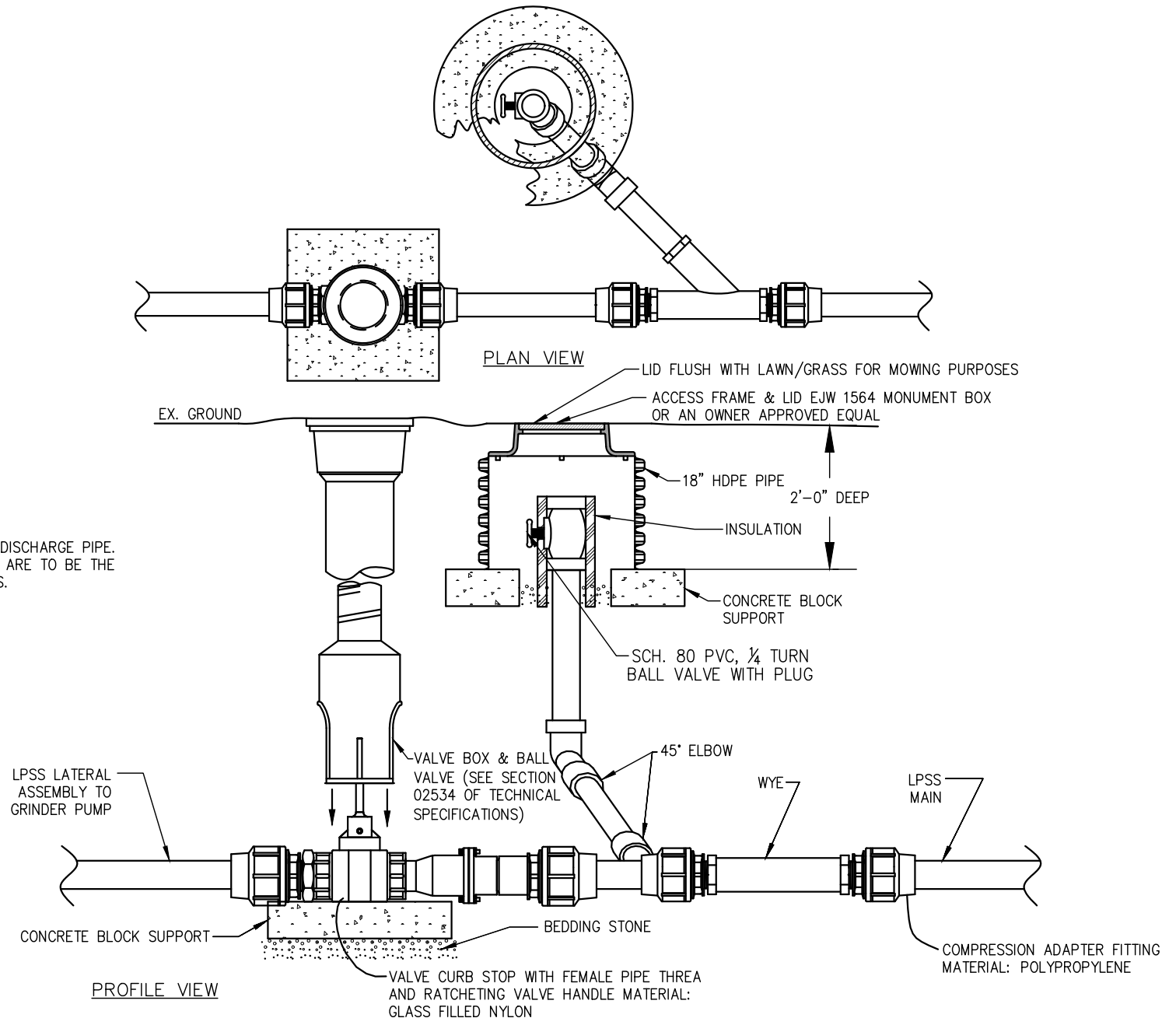
ACCESS FRAME & LID  
EJW 1564 MONUMENT BOX  
OR AN OWNER APPROVED EQUAL

LID FLUSH WITH LAWN/GRASS FOR  
MOWING PURPOSES

NOTE:  
WASTE TO BE FLUSHED TOWARDS DISCHARGE PIPE.  
ALL PIPING, VALVES AND FITTINGS ARE TO BE THE  
SAME SIZE AS THE INCOMING LPSS.



NOTE:  
WASTE TO BE FLUSHED TOWARDS DISCHARGE PIPE.  
ALL PIPING, VALVES AND FITTINGS ARE TO BE THE  
SAME SIZE AS THE INCOMING LPSS.



NOTES:

1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS

2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND A LAYER OF PIPE DOPE(SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS

\*FOR SS FITTING INTO SS THREAD, USE PIPE DOPE OR TEFLON TAPE, NOT BOTH

3. ASSEMBLY IS TO BE PRESSURE TESTED

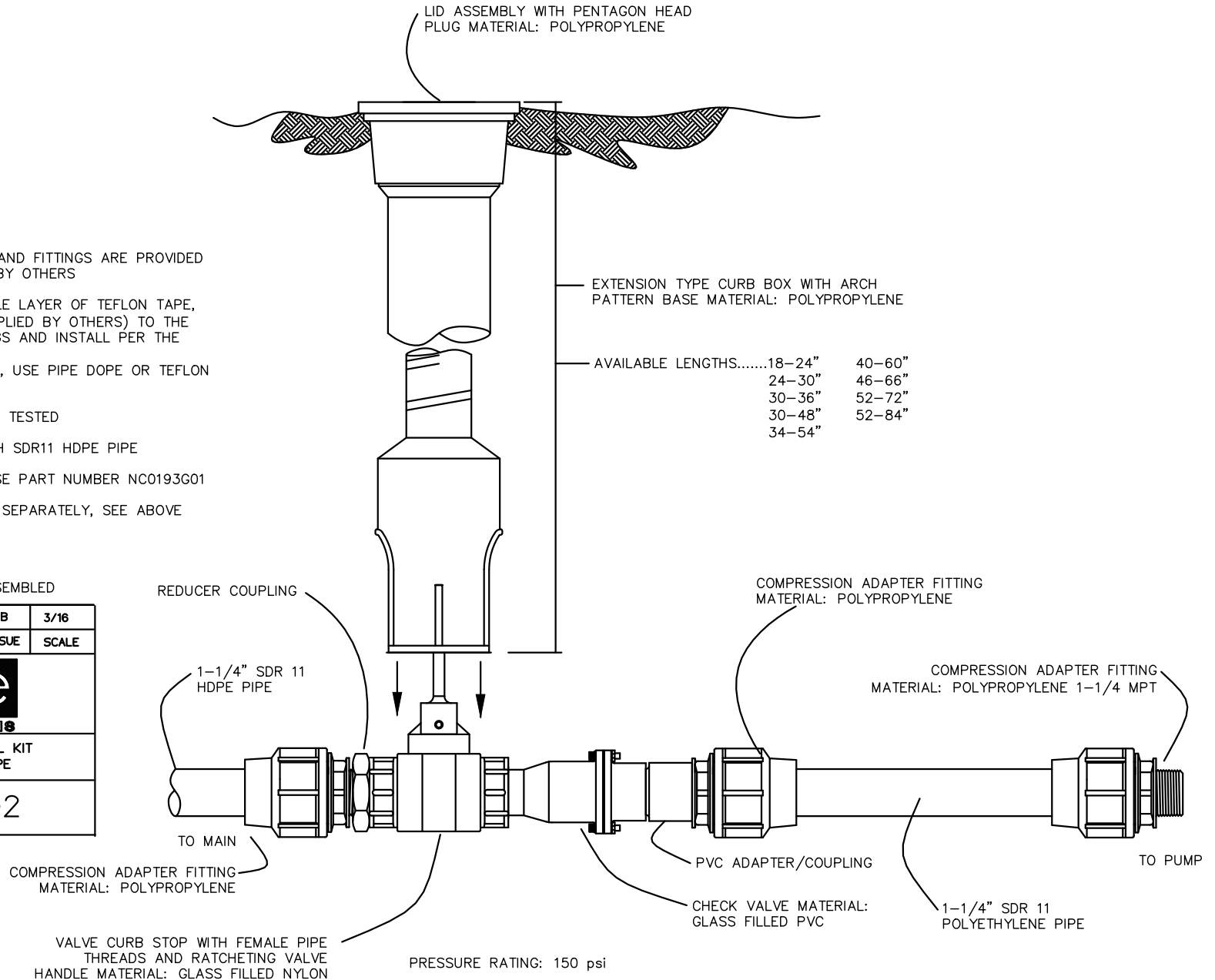
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE

5. TO ORDER SS LATERAL KIT, USE PART NUMBER NC0193G01

6. CURB BOX IS TO BE ORDERED SEPARATELY, SEE ABOVE

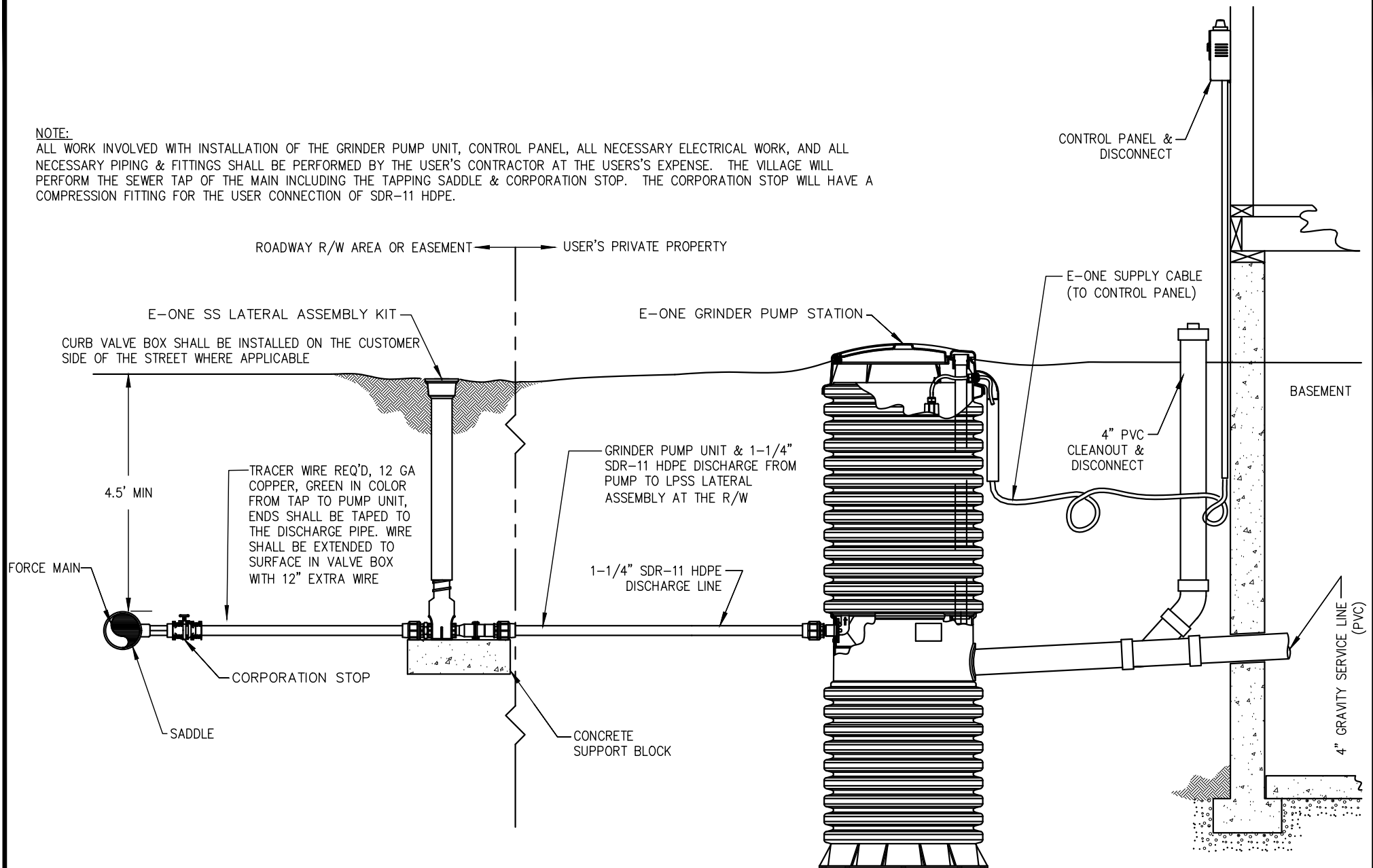
KIT PARTS ARE NOT ASSEMBLED

SGS	DN	11/02/11	B	3/16
DR BY	CHK'D	DATE	ISSUE	SCALE
				
STAINLESS STEEL LATERAL KIT				
1-1/4" SDR 11 HDPE PIPE				
NA0330P02				



**NOTE:**

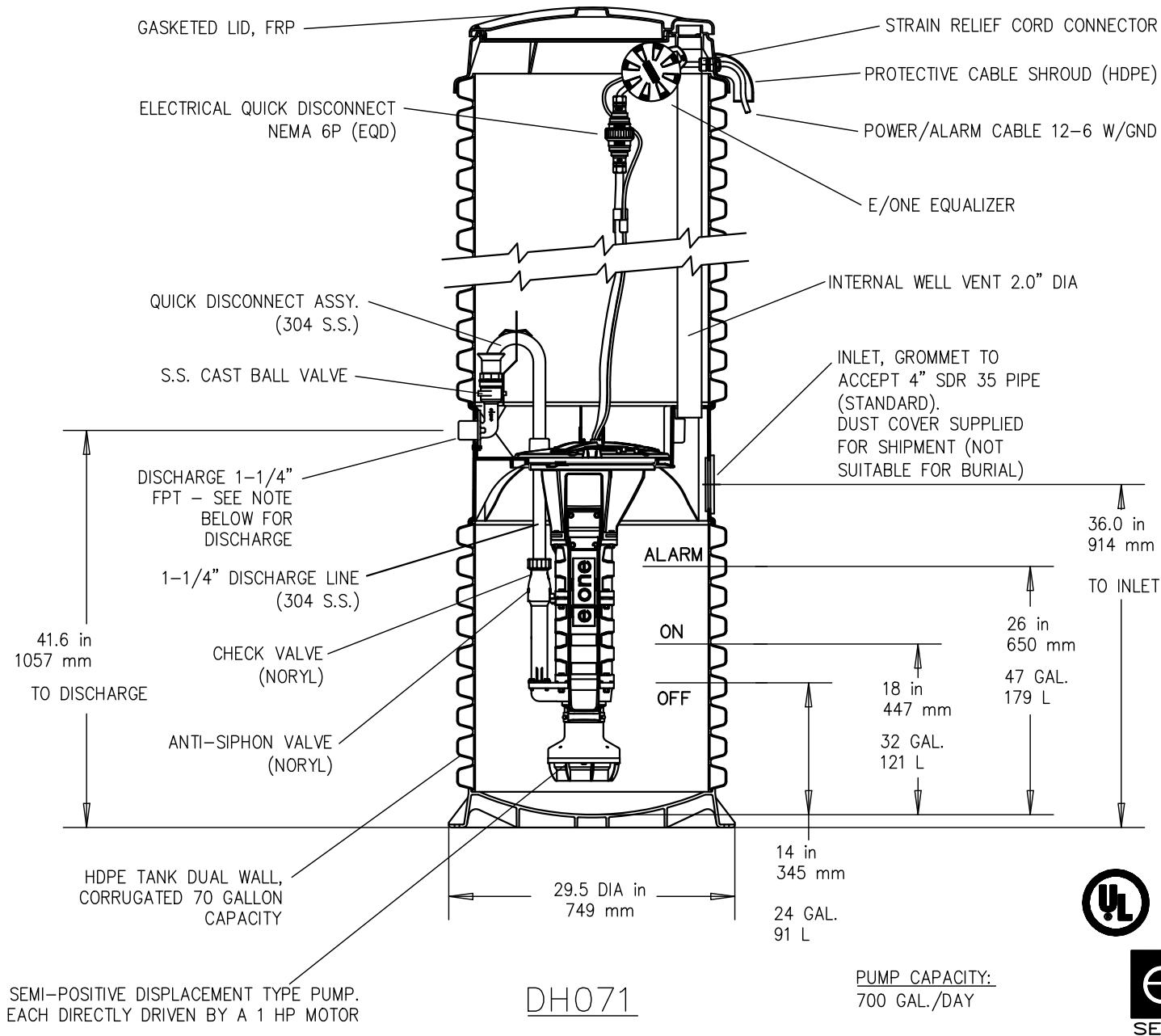
ALL WORK INVOLVED WITH INSTALLATION OF THE GRINDER PUMP UNIT, CONTROL PANEL, ALL NECESSARY ELECTRICAL WORK, AND ALL NECESSARY PIPING & FITTINGS SHALL BE PERFORMED BY THE USER'S CONTRACTOR AT THE USER'S EXPENSE. THE VILLAGE WILL PERFORM THE SEWER TAP OF THE MAIN INCLUDING THE TAPPING SADDLE & CORPORATION STOP. THE CORPORATION STOP WILL HAVE A COMPRESSION FITTING FOR THE USER CONNECTION OF SDR-11 HDPE.



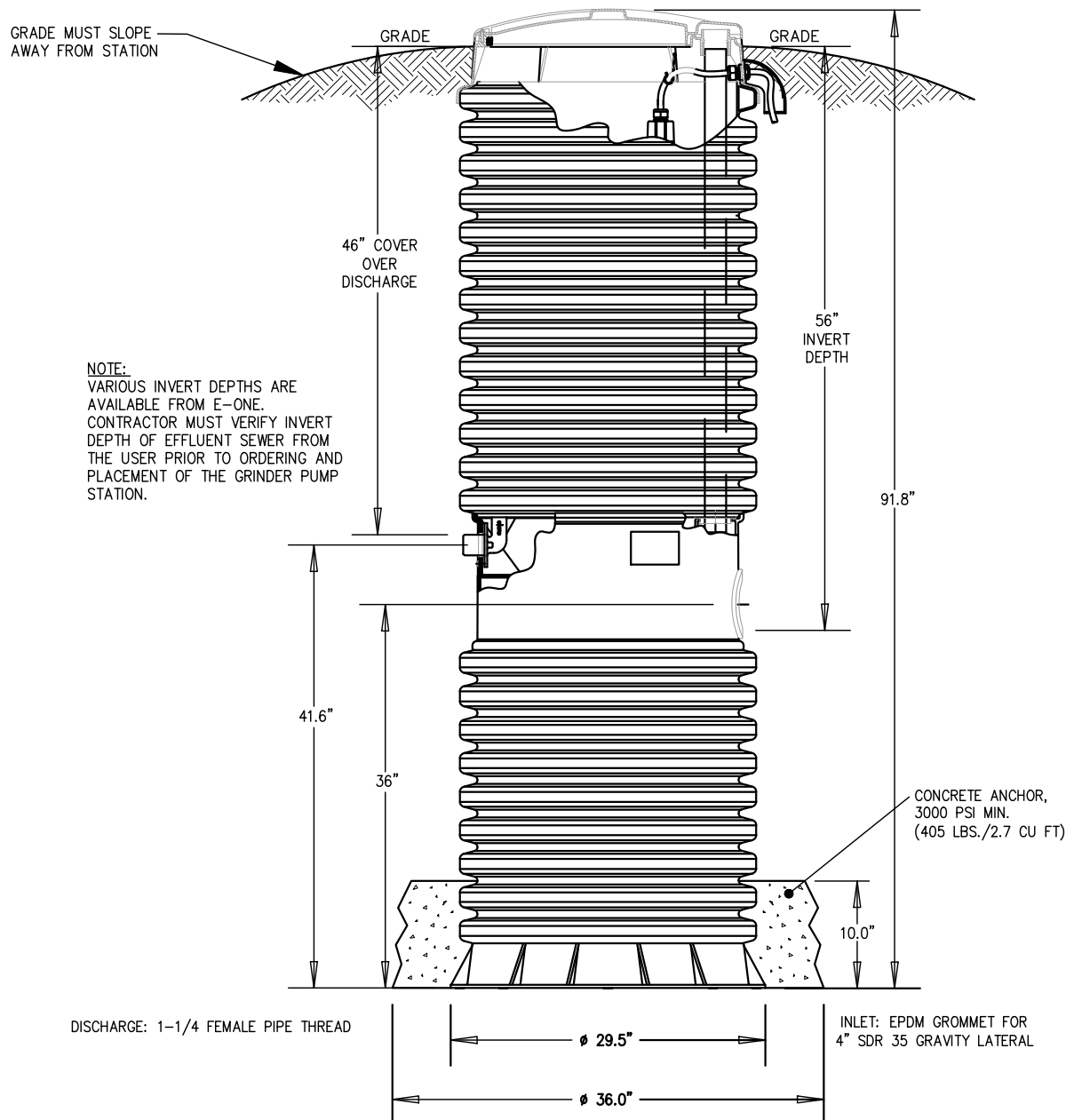
## TYPICAL GRINDER PUMP STATION INSTALLATION DETAIL







**eone**  
SEWER SYSTEMS



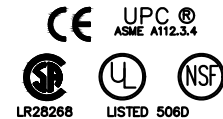
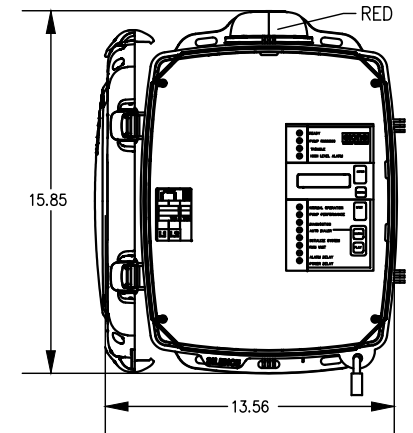
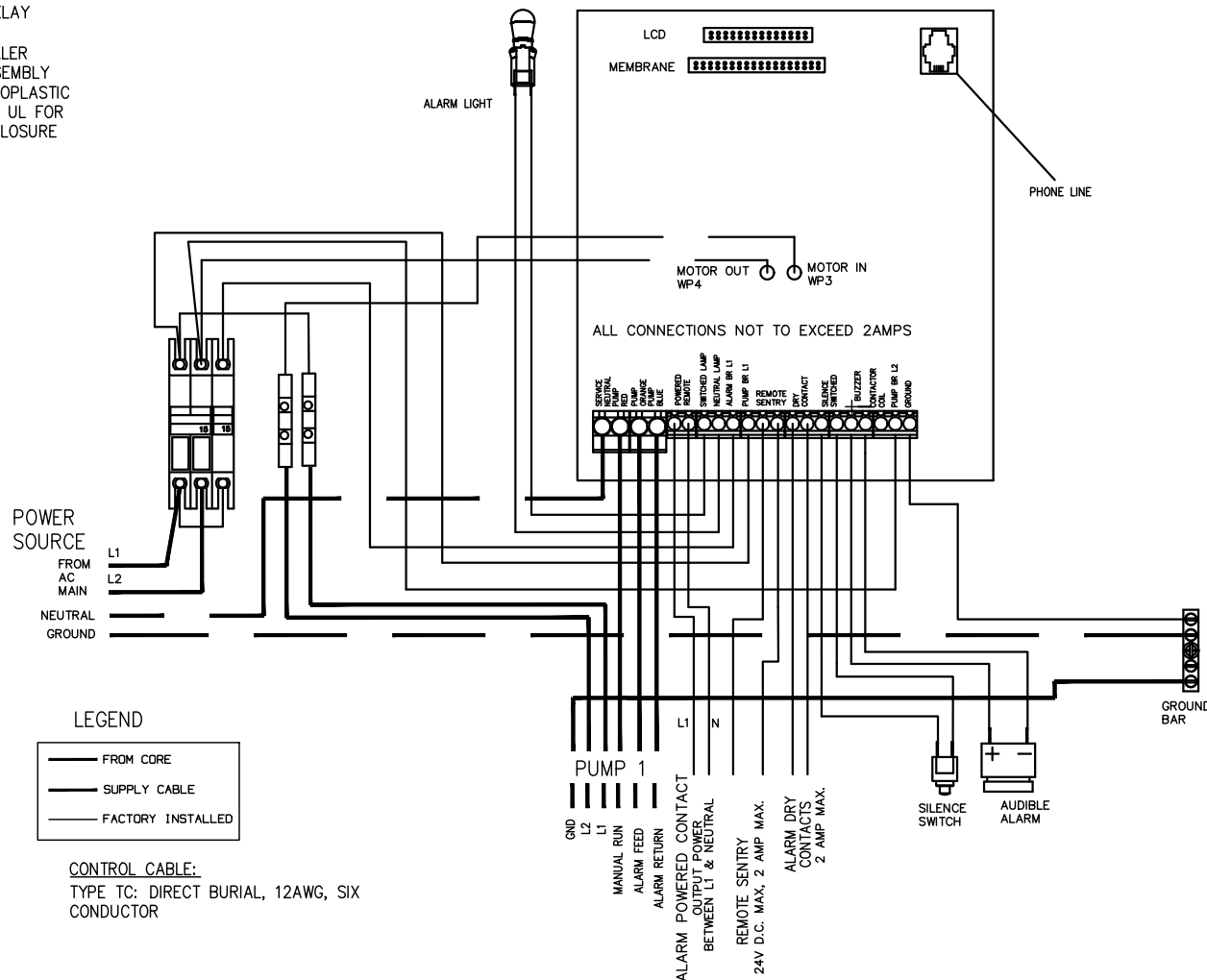
DH071-93

2 WORKING DAYS  
BEFORE YOU DIG  
CALL TOLL FREE 800-362-2764  
OHIO UTILITIES PROTECTION SERVICE

## SENTRY SIMPLEX PRESTAT

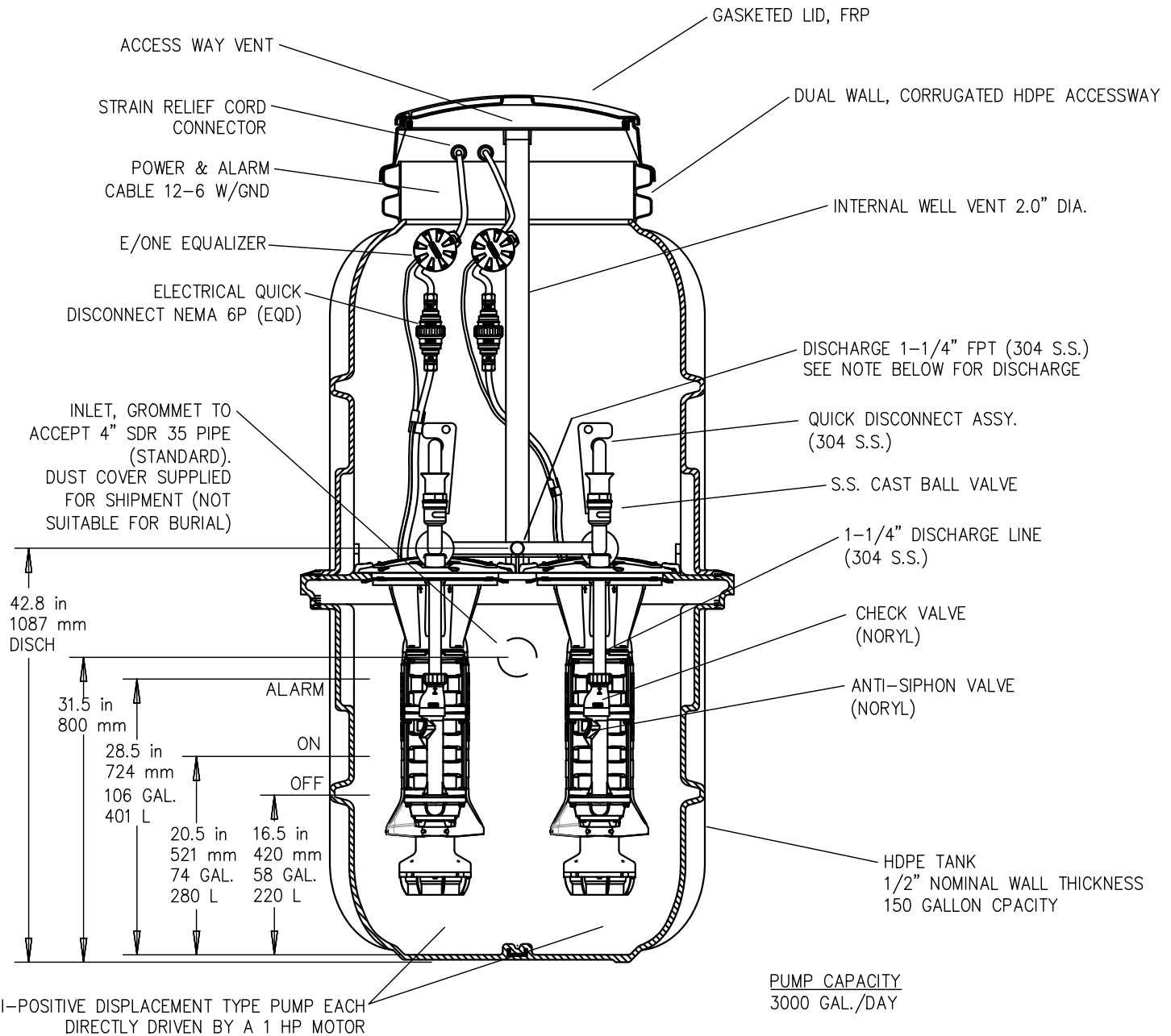
REDUNDANT RUN (HIGH LEVEL)  
EXTERNAL VISUAL & AUDIBLE ALARM  
EXTERNAL LATCHING MANUAL SILENCE  
MANUAL RUN  
PUMP RUN INDICATOR  
CONFORMAL COATED CIRCUIT BOARD  
PADLOCK  
DEAD FRONT  
PREDICTIVE ALARMS  
REAL TIME PUMP PERFORMANCE  
ADJUSTABLE ALARM DELAY  
ADJUSTABLE RUN TIME DELAY  
HOUR/CYCLE COUNTER  
PROGRAMMABLE AUTO DIALER  
NEMA 4X ENCLOSURE ASSEMBLY  
CORROSION PROOF THERMOPLASTIC  
POLYESTER APPROVED BY UL FOR  
ELECTRICAL CONTROL ENCLOSURE

PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
3	L2	WHITE	BLACK
4	GND	GREEN	GRN/YEL.
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE



AD	SM	05-03-07	C	N/A
DR BY	CHK'D	DATE	ISSUE	SCALE
SENTRY SIMPLEX PRESTAT PANEL, 240V, 60Hz DOUBLE POLE POWER				
LM000334				

## E-ONE SIMPLEX CONTROL PANEL

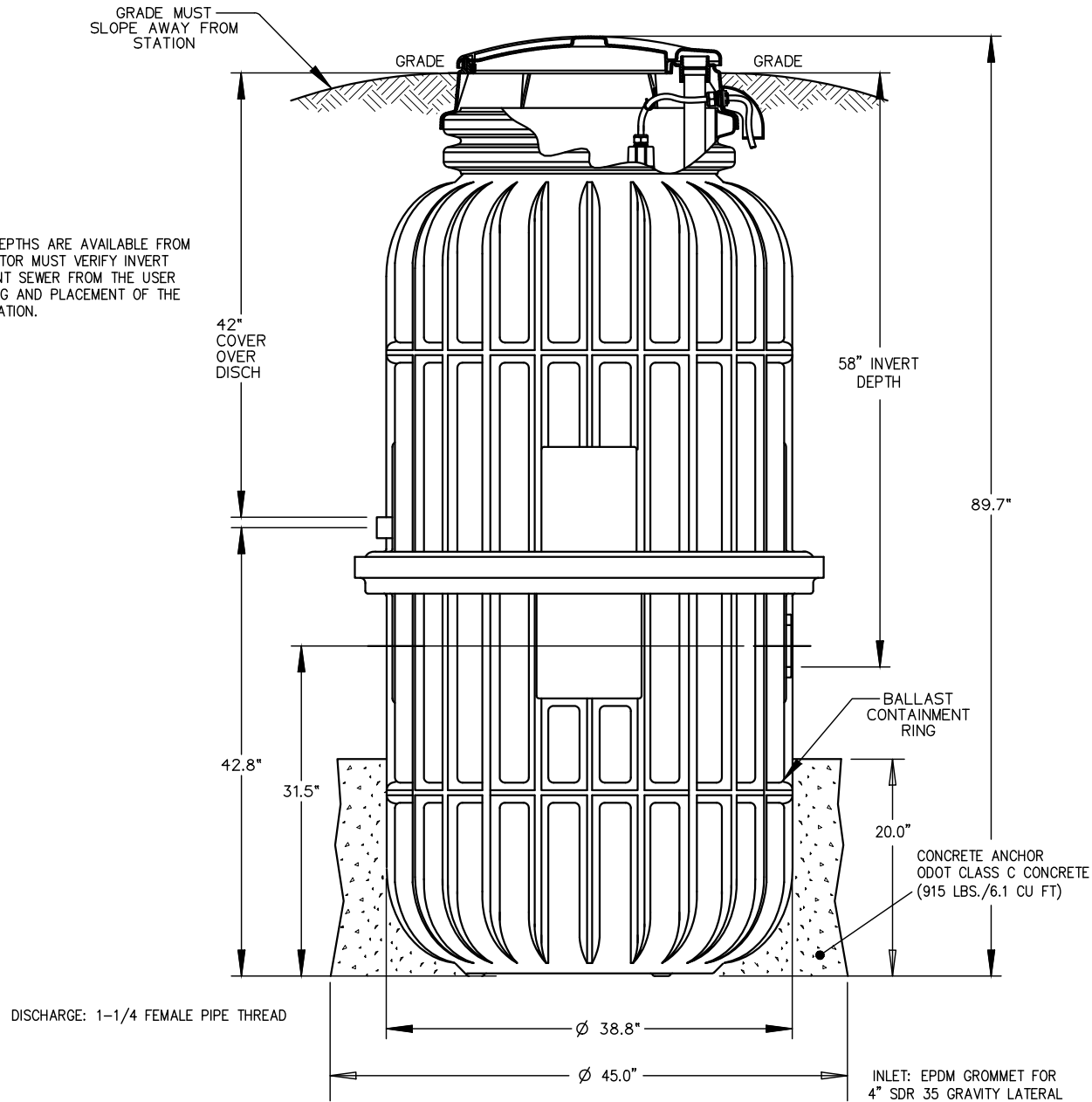


DH152



**eone**  
SEWER SYSTEMS

NOTE:  
VARIOUS INVERT DEPTHS ARE AVAILABLE FROM  
E-ONE. CONTRACTOR MUST VERIFY INVERT  
DEPTH OF EFFLUENT SEWER FROM THE USER  
PRIOR TO ORDERING AND PLACEMENT OF THE  
GRINDER PUMP STATION.



DH152-93

2 WORKING DAYS  
BEFORE YOU DIG  
CALL TOLL FREE 800-362-2764  
OHIO UTILITIES PROTECTION SERVICE

OPTIONS:



**DUPLEX ALTERNATING PANEL  
T-260**

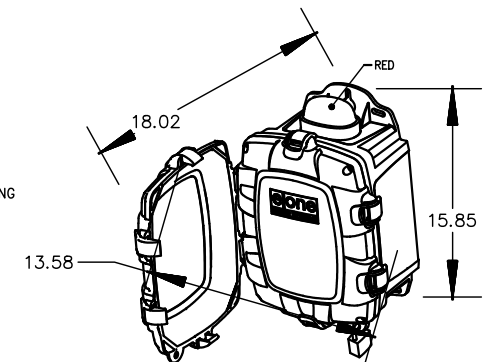
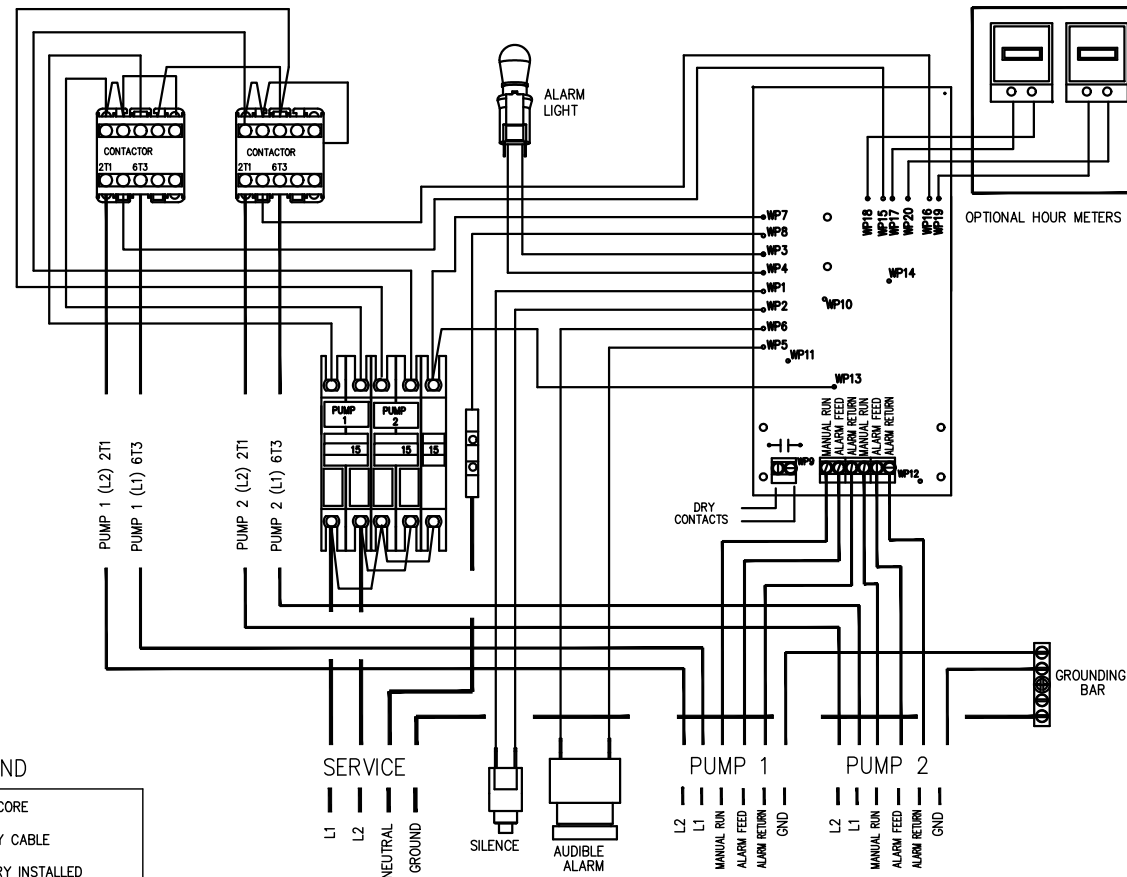
EXTERNAL VISUAL & AUDIBLE ALARM  
EXTERNAL LATCHING MANUAL SILENCE  
MANUAL RUN  
PUMP RUN INDICATORS  
CONFORMAL COATED CIRCUIT BOARD  
PADLOCK  
ALARM DRY CONTACT  
NEMA 4X ENCLOSURE ASSEMBLY  
CORROSION PROOF THERMOPLASTIC  
POLYESTER APPROVED BY UL FOR  
ELECTRICAL CONTROL ENCLOSURE

**LEGEND**

—	FROM CORE
—	SUPPLY CABLE
—	FACTORY INSTALLED

PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
3	L2	WHITE	BLACK
4	GND	GREEN	GRN/YEL.
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE

CONTROL CABLE:  
TYPE TC: DIRECT BURIAL, 12AWG,  
SIX CONDUCTOR



AD	SM	09-24-07	C	N/A
DR BY	CHK'D	DATE	ISSUE	SCALE
<b>SEWER SYSTEMS</b> DUPLEX T-260 ALTERNATING PANEL, 240V 60Hz DOUBLE POLE POWER WIRED LEVEL CONTROL				
LM000329 P1				





## LOW-PRESSURE SEWER SYSTEM REQUIREMENTS

### GRINDER PUMP REQUIREMENT:

WHERE TRADITIONAL GRAVITY SANITARY SEWER CONNECTIONS ARE NOT AVAILABLE, A LOW-PRESSURE SEWER SYSTEM MAY BE INSTALLED TO CONNECT TO THE VILLAGE SANITARY SEWER COLLECTION SYSTEM. ALL LOW-PRESSURE SANITARY SEWER CONNECTIONS MUST UTILIZE AT PRE-ENGINEERED GRINDER PUMP UNIT, EXTERNAL TO THE STRUCTURE. SEPTIC TANKS/HOLDING TANKS WITH EFFLUENT PUMPS AND STEP SYSTEMS (SEPTIC TANK EFFLUENT PUMPING SYSTEM) ARE PROHIBITED. GRINDER PUMP UNIT SHALL BE MADE BY ENVIRONMENT ONE CORPORATION. SIZE & MODEL OF GRINDER PUMP UNIT SHALL BE DETERMINED BY THE VILLAGE. BY RULE, A SINGLE USER WILL REQUIRE A SIMPLEX PUMP STATION, AND A MULTI-USER (SUCH AS DUPLEX OR BUSINESS) WILL REQUIRE A DUPLEX PUMP STATION.

### UNDERGROUND UTILITIES:

THE CONTRACTOR IS RESPONSIBLE TO NOTIFY THE OHIO UTILITIES PROTECTION SERVICE TWO WORKING DAYS PRIOR TO THE START OF ANY WORK AT 1-800-362-2764. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DONE TO ANY UTILITIES BY THEIR OPERATIONS.

### CUSTOMER REQUIREMENTS:

THE CUSTOMER SHALL OBTAIN A TAP PERMIT FROM THE VILLAGE OF VERSAILLES PRIOR TO THE START OF ANY INSTALLATION WORK.

PRIOR TO FINAL CONNECTION TO THE COLLECTION SYSTEM, IT SHALL BE REQUIRED OF THE CUSTOMER TO DISCONNECT ALL NON-WASTE PRODUCING UNITS FROM THE SEWER LINE (SUMP PUMPS, FOUNDATION DRAINS, ROOF DOWNSPOUTS, ETC.). SUCH CONNECTIONS WILL FLOOD THE GRINDER PUMP UNIT & THE USER WILL BE RESPONSIBLE FOR ANY & ALL COST ASSOCIATED WITH REPAIR OR REPLACEMENT(S). THE VILLAGE OF VERSAILLES CANNOT ACCEPT STORM WATER INTO THE SANITARY SEWER COLLECTION SYSTEM

THE DARKE COUNTY PLUMBING INSPECTOR WILL CONDUCT AN INSPECTION INSIDE OF THE BUILDING TO VERIFY THAT ALL NON-WASTE WATER IS NOT ENTERING THE SANITARY SEWER OUTLET.

### TAPPING OF MAINS:

ALL TAPS INTO VILLAGE SANITARY SEWER FORCE MAINS WILL BE CONDUCTED BY VILLAGE PERSONNEL ONLY, UNLESS OTHERWISE APPROVED IN WRITING BY THE VILLAGE OF VERSAILLES UTILITY SUPERINTENDENT.

### CONTRACTOR REQUIREMENT:

ALL TAPS INTO VILLAGE SANITARY SEWER FORCE MAINS WILL BE PERFORMED BY VILLAGE PERSONNEL ONLY, UNLESS OTHERWISE APPROVED IN WRITING BY THE VILLAGE OF VERSAILLES UTILITY SUPERINTENDENT.

A DETAILED SKETCH OF THE INSTALLATION MUST BE PROVIDED TO THE VILLAGE AT THE TIME OF CONNECTION FOR AS-BUILT RECORDS. ACCEPTANCE OF SEWAGE SHALL NOT BE APPROVED UNLESS AN AS-BUILT SKETCH IS PROVIDED.  
THE SKETCH MUST PROVIDE:

- 1.) THE LOCATION OF THE PUMP IN RELATION TO THE STRUCTURE WITH DISTANCES.
- 2.) LOCATION, DEPTH, & SIZE OF ALL PIPE INSTALLED INCLUDING BENDS. PIPE MATERIAL INSTALLED MUST BE INDICATED ON THE SKETCH.

- 3.) LOCATION OF THE CONTROL PANEL & ELECTRICAL DISCONNECT.

- 4.) LOCATION OF POWER CONNECTION INDICATING IF THE POWER IS PROVIDED FROM THE MAIN ELECTRICAL PANEL OF THE STRUCTURE OR FROM THE ELECTRIC METER BASE.

### PIPE MATERIAL:

ALL GRAVITY INLET PIPING FROM THE FOUNDATION WALL OF THE BUILDING TO THE GRINDER PUMP UNIT SHALL BE PVC PIPE (SCHEDULE 40, SDR-35, OR SDR-21) & FITTINGS WITH ELASTOMETRIC, "PUSH-ON" JOINTS. NO GLUED FITTINGS ARE PERMITTED.

DISCHARGE PIPING (LOW-PRESSURE FORCE MAIN) FROM THE GRINDER PUMP TO FORCE MAIN MAIN SHALL BE SDR-11 HDPE PIPING. ANY CONNECTIONS ON THIS PIPE MATERIAL SHALL REQUIRE A COMPRESSION FITTING OR SHALL BE ELECTRO-FUSED. EACH GRINDER PUMP INLET HAS A PROVIDED 4" RUBBER-GASKET GROMMET OPPOSITE THAT OF THE DISCHARGE CONNECTION FOR SDR-35 PVC PIPE.

GRAVITY PIPE MUST BE BEDDED PER THE INSTALLATION DETAIL. INSPECTORS WILL REQUIRE INSPECTION OF PIPE MATERIAL & JOINTS PRIOR TO PIPE COVERAGE WITH BEDDING MATERIAL. DISCHARGE PIPING DOES NOT REQUIRE GRANULAR BACKFILL.

A CLEANOUT SHALL BE PROVIDED AT THE FOUNDATION OF THE STRUCTURE OF EQUAL SIZE OF THE LATERAL GRAVITY SEWER. A REMOVABLE TYPE PLUG OR CAP IS REQUIRED.

### BACKFILLING THE GRINDER PUMP UNIT:

6" MINIMUM OF #57 OR #9 GRANULAR BEDDING SHALL BE USED TO SET THE BASE OF THE GRINDER PUMP UNIT ON ONCE EXCAVATION IS COMPLETE.

A CONCRETE BALLAST JACKET SHALL BE POURED AROUND THE BASE OF THE UNIT BELOW ALL PIPING. CONCRETE FOR THIS BALLAST JACKET SHALL BE A MINIMUM OF 3000 PSI MIX. REFER TO THE PUMP DRAWINGS FOR THE NECESSARY DEPTH & WEIGHT OF CONCRETE.

ONCE GRAVITY INLET PIPING & THE DISCHARGE LINE HAS BEEN CONNECTED, THE CONTRACTOR SHALL BACKFILL THE EXCAVATION FROM THE BOTTOM OF TRENCH/HOLE WITH #57 OR #9 GRANULAR BACKFILL TO 6" ABOVE THE DISCHARGE & OUTLET PIPING. NATIVE BACKFILL CAN BE USED FROM 6" ABOVE THE PIPE TO THE SURFACE.

THE GRINDER PUMP UNIT FINISH TOP GRADE SHALL BE 6" HIGHER THAN THAT OF THE EXISTING GROUND. THIS IS TO INSURE THAT THE VENT TUBE OF THE PUMP HAS AMPLE CLEARANCE FOR VENTILATION & REDUCE THE RISK OF FLOODING THE GRINDER PUMP. THE GRINDER PUMP WILL NOT FUNCTION CORRECTLY IF THIS VENT IS COVERED.

### ELECTRICAL REQUIREMENT:

REFER TO THE VILLAGE OF VERSAILLES GRINDER PUMP UNIT ELECTRICAL DETAIL FOR WIRING DETAILS. ALL ELECTRICAL WORK SHALL CONFORM TO ALL APPLICABLE ELECTRICAL CODE AND WILL BE SUBJECT TO INSPECTION BY THE DARKE COUNTY BUILDING DEPARTMENT. CONTRACTOR MUST VERIFY ALL UNIT VOLTAGES.