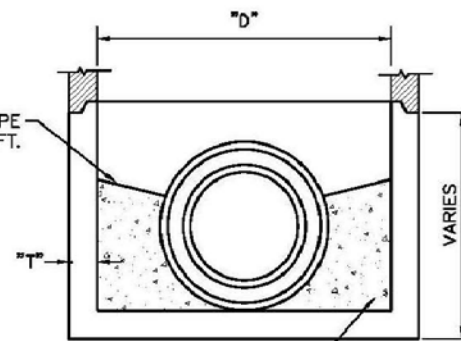
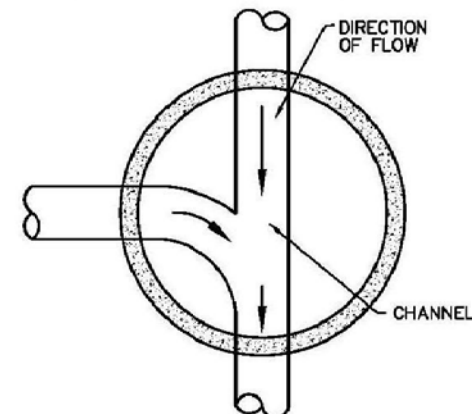


**O-RING JOINT DETAIL**  
(MEETING ASTM SPEC. 443)  
JOINTS MUST BE KEPT TO A MINIMUM.



**PRECAST BASE SECTION**

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



THE FLOW CHANNEL THROUGH MANHOLES SHALL BE MADE TO CONFORM IN SHAPE, SLOPE AND SMOOTHNESS TO THAT OF THE SEWERS.

**STANDARD INVERT CHANNEL**

ALL INVERTS TO BE CHANNLED FOR OPTIMUM FLOW.

**NOTES**

- SANITARY MANHOLE FRAMES AND COVERS SHALL BE EQUAL TO NEENAH NO. R-1767 OR EAST JORDAN IRON WORKS NO. 1600. LID SHALL BE SANITARY LETTERED SOLID NON-VENTED, SELF-SEALING AND NON-BOLTED LIDS. NO LATERALS SHALL PROTRUDE INTO THE INTERIOR MANHOLE. VENTED LIDS ARE PERMITTED BASED UPON DESIGN AT LOCATIONS THAT ARE NOT SUBJECT TO INFLOW FROM SURFACE WATER.
- 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.
- MATERIALS FOR BASES, RISERS, AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENTS SHALL COMPLY WITH ASTM C-478.
- MAXIMUM SANITARY MANHOLE SPACING SHALL BE 350' FOR LESS THAN 15", 400' FOR 15" AND GREATER.
- LOCATE THE CENTERLINE OF MANHOLE COVERS OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- CUT PIPE SHALL NOT EXTEND BEYOND THE INSIDE FACE OF THE MANHOLE WALL.
- 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.
- (4) 3/4" DIA. STAINLESS STEEL ANCHOR BOLTS AND NUTS TO FASTEN MANHOLE FRAME TO MANHOLE CONE OR FLAT LID SECTION WHEN REQUIRED BY THE VILLAGE ENGINEER.

**MANHOLES**

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY MANHOLE CONSTRUCTION AND TOP OF CASTING ELEVATION. EACH MANHOLE SHALL BE CONSTRUCTED WITH A MINIMUM FOUR-INCHES (4") OF BRICK WORK UNDER THE CASTING. MANHOLE TOPS SHALL BE BUILT OR SUBSEQUENTLY ADJUSTED TO MEET SURFACE GRADES ESTABLISHED FOR THE PROJECT. MANHOLE CASTINGS (LIDS) SHALL BE STAMPED "SANITARY."



**TYPE 3 SANITARY MANHOLE**

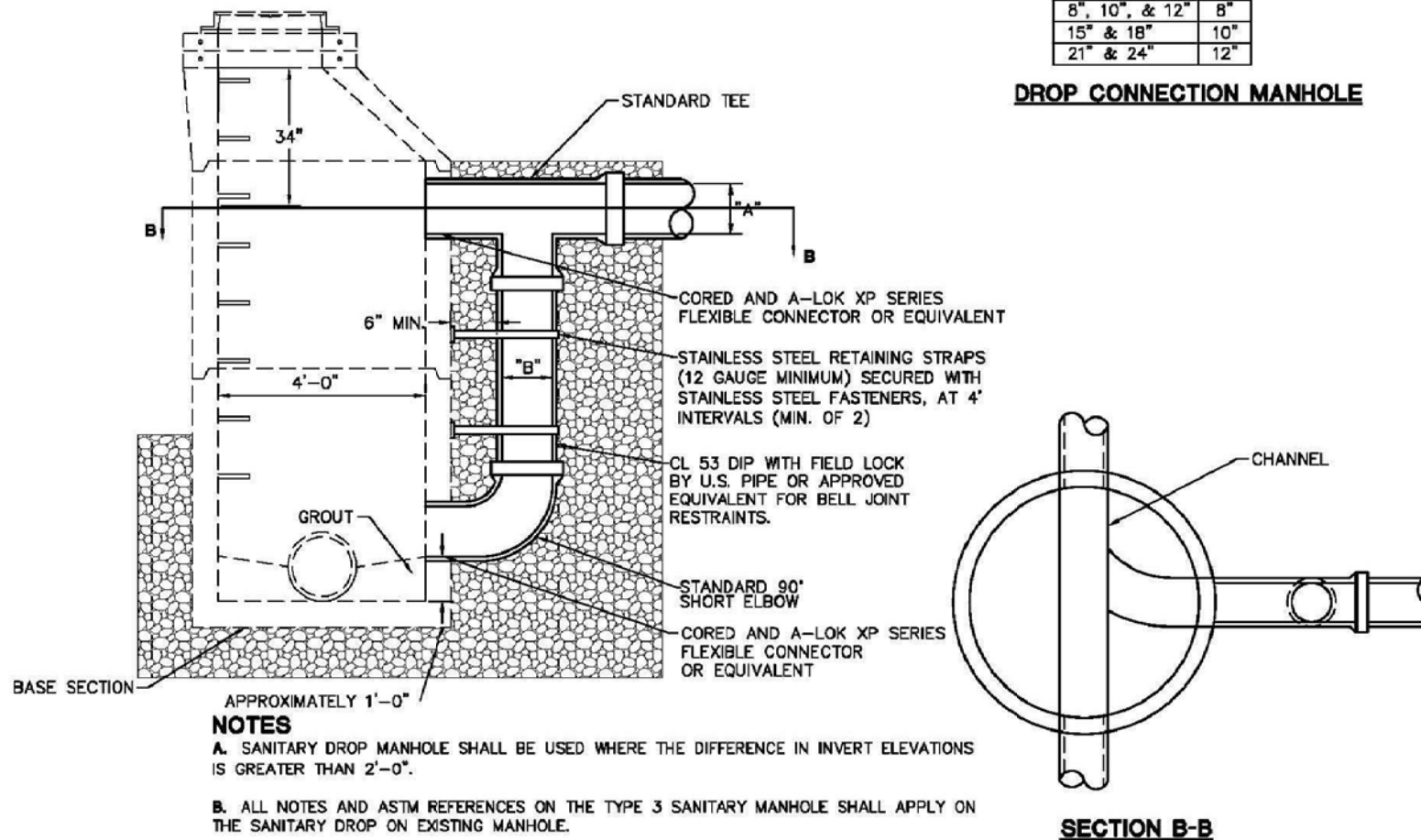
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*A*	*B*
8", 10", & 12"	8"
15" & 18"	10"
21" & 24"	12"

# **DROP CONNECTION MANHOLE**



## **NOTES**

- A.** SANITARY DROP MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS GREATER THAN 2'-0".
- B.** ALL NOTES AND ASTM REFERENCES ON THE TYPE 3 SANITARY MANHOLE SHALL APPLY ON THE SANITARY DROP ON EXISTING MANHOLE.
- C.** ALL NOTES AND ASTM REFERENCES ON THE TYPE D SANITARY DROP MANHOLE SHALL APPLY ON THE SANITARY DROP ON EXISTING MANHOLE.
- D.** THE DUCTILE IRON PIPE SHALL BE ANCHORED TO THE OUTSIDE OF THE EXISTING MANHOLE.

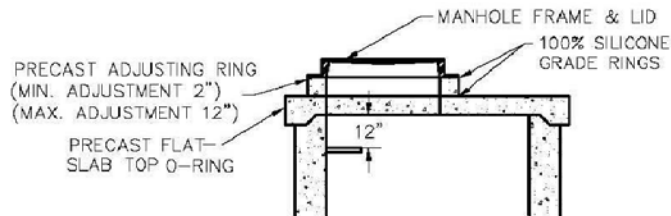


# **SANITARY DROP ON EXISTING MANHOLE**

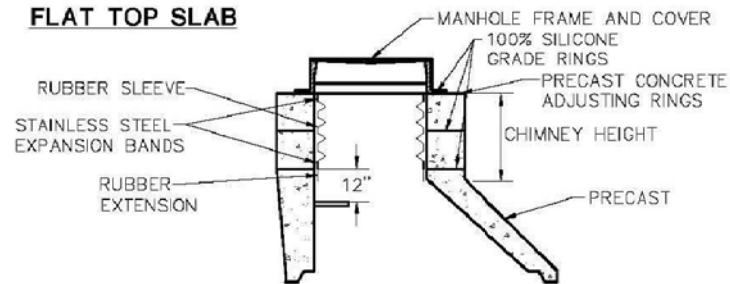
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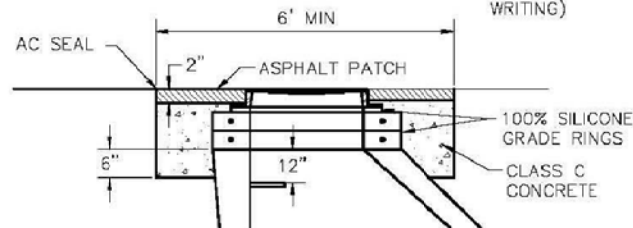


### FLAT TOP SLAB



### INTERNAL MANHOLE CHIMNEY SEAL

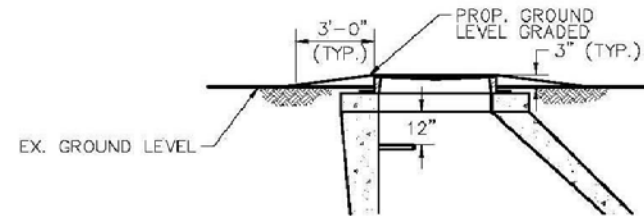
(REQUIRED ON ALL SANITARY APPLICATIONS UNLESS APPROVED BY THE ENGINEER IN WRITING)



### MANHOLE REPAIR CASTING CONSTRUCTION

#### NOTES:

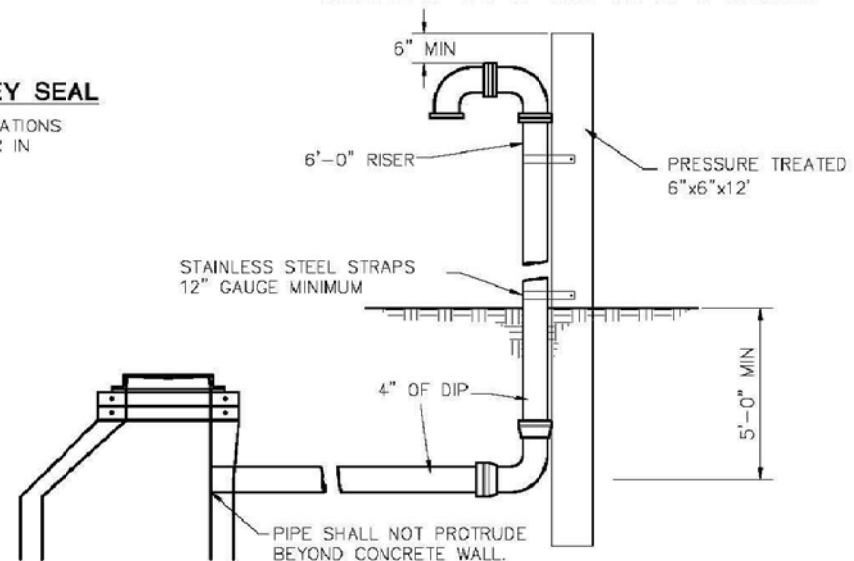
1. PRECAST CONCRETE ADJUSTING RINGS- ENCASE WITH CONCRETE 6" DOWN FROM BARRELL TOP AND UP TO WITHIN 2" OF SURFACE AND EXTENSIONS. METAL ADJUSTING RINGS WILL NOT BE ALLOWED.
2. SET MANHOLE, PRECAST CONCRETE ADJUSTING RINGS AND CASTING AND PAVE OVER MANHOLE. THEN DIG OUT, ENCASE COLLARS AND CASTING AS PER DETAIL WITH CONCRETE TO WITHIN 2" OF SURFACE. THE MANHOLE WILL HAVE A PATCHED RADIUS OF (2") ASPHALT.
3. ON ALL REPAIRED AND/OR ADJUSTED TO GRADE SANITARY MANHOLES AN INTERNAL CHIMNEY SEAL SHALL BE INSTALLED. IF NOT ALREADY PROVIDED.



### TYPICAL OFF STREET MANHOLE GRADING

#### NOTES

- A. MANHOLE STEPS SHALL BE SECURELY INSTALLED INTO EACH MANHOLE SECTION, BY THE MANUFACTURER, PRIOR TO DELIVERY TO THE JOB SITE.
- B. MANHOLE STEPS SHALL BE PF-1 STEP BY M.A. INDUSTRIES OR EQUIVALENT. STEPS SHALL BE INSTALLED IN ALL NEW MANHOLES TO ALLOW FOR ANCHORING FLOW METERING EQUIPMENT AND SAMPLING EQUIPMENT. STEPS SHALL BE 12" AND 34" FROM THE TOP OF MANHOLE.



### VENTED MANHOLE DETAIL

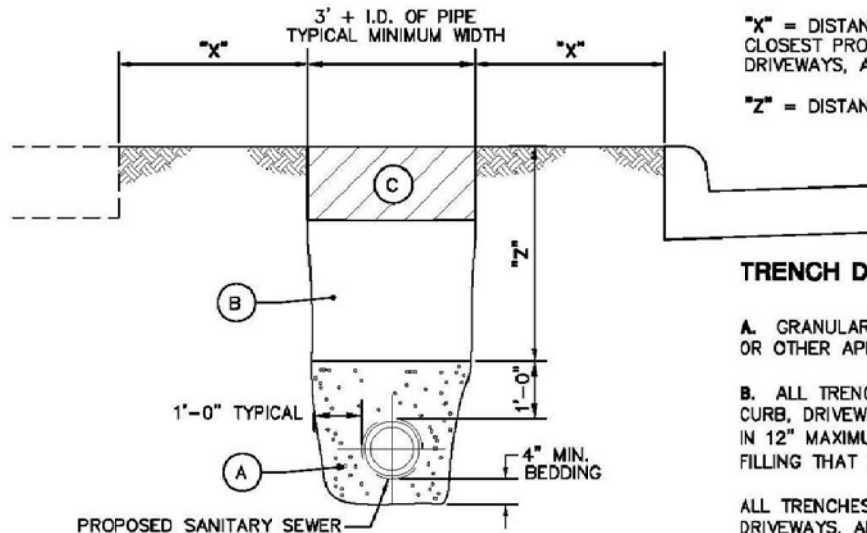


# MISCELLANEOUS SANITARY MANHOLE DETAILS

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**SANITARY SEWER TRENCH DETAIL**  
SHOWN AS "OFF ROAD" APPLICATION

#### BEDDING AND BACKFILL

ALL PIPE SHALL BE INSTALLED AS PER THE MANUFACTURER'S SPECIFICATION AND CONFORM TO ITEM 901. THE VILLAGE REQUIRES TYPE 1 BEDDING AS SPECIFIED IN CITY OF COLUMBUS STANDARD DRAWINGS. FOR ALL SANITARY LINES, BEDDING SHALL CONSIST OF #57 AGGREGATE. BACKFILL OVER BEDDING SHALL BE FREE OF ROCKS, ORGANIC REFUSE OF OTHER OBJECTIONABLE MATERIAL. ALL SEWERS UNDER PAVEMENT SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIAL, AS PER ITEM 912 FROM THE BOTTOM OF THE TRENCH TO THE SUBGRADE AND SHALL BE INSTALLED IN ACCORDANCE WITH ITEM 912. COST OF BEDDING AND BACKFILL SHALL BE INCLUDED IN THE PRICE BID FOR SEWER LINE.

#### TRENCH DAM FOR SANITARY SEWER SERVICES

THE CONTRACTOR SHALL PLACE A CUT OFF TRENCH DAM OF NATIVE CLAY OR IMPERVIOUS SOIL ACROSS AND ALONG THE TRENCH UPSTREAM FROM THE MAIN LINE CONNECTION TO RETARD OR RESIST THE MOVEMENT OF GROUNDWATER THROUGH THE TRENCH GRANULAR BEDDING OR BACKFILL MATERIAL. THE TRENCH DAM SHALL BE CAREFULLY COMPACTED AND SHALL BE 6' IN LENGTH, AS MEASURED ALONG THE SERVICE CENTERLINE AND SHALL BE CONSTRUCTED AGAINST THE UNDISTURBED TRENCH SIDES AND BOTTOM TO A LIMIT OF 36" OVER THE TOP OF THE PIPE.

"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. GRANULAR BEDDING SHALL BE CRUSHED STONE OR GRAVEL, ODOT 603 TYPE 3 (#57 OR #67), OR OTHER APPROVED EQUIVALENT.

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 CITY. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONES, 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 GRANULAR BACKFILL MATERIAL ODOT 603 TYPE 1 OR TYPE 2, IN 6" MAXIMUM LIFTS OR LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613 TYPE 1 UNTIL THE TOP OF THE COMPACTED GRANULAR BACKFILL OR LOW STRENGTH MORTAR BACKFILL IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z".

A DENSITY TEST ON GRANULAR BACKFILL OF 98% OF ASTM D698 STANDARD PROCTOR CURVE MAY BE REQUIRED TO BE PERFORMED BY A COMMERCIAL TESTING LAB SATISFACTORY TO THE CITY.

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 3" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659, LAWN MIXTURE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-19.

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

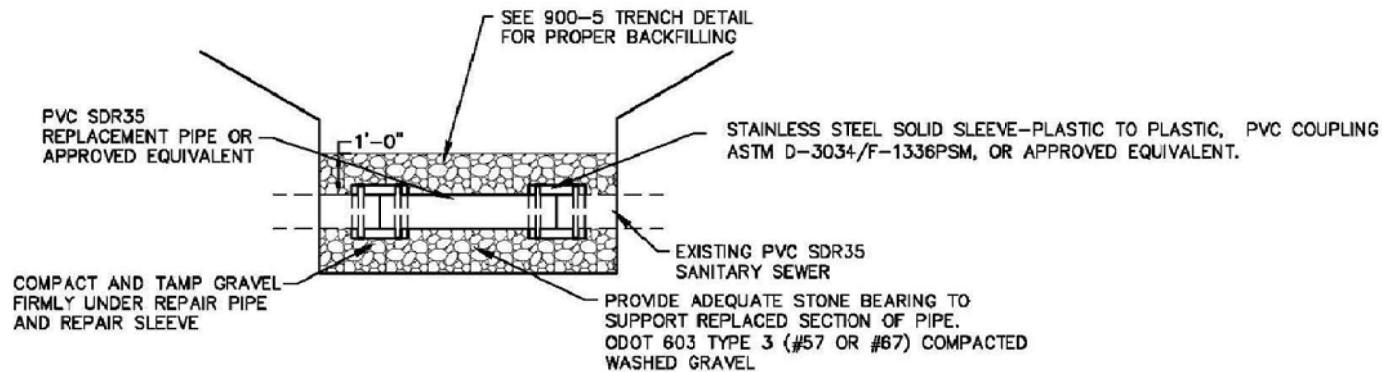


# SANITARY SEWER TRENCH DETAIL

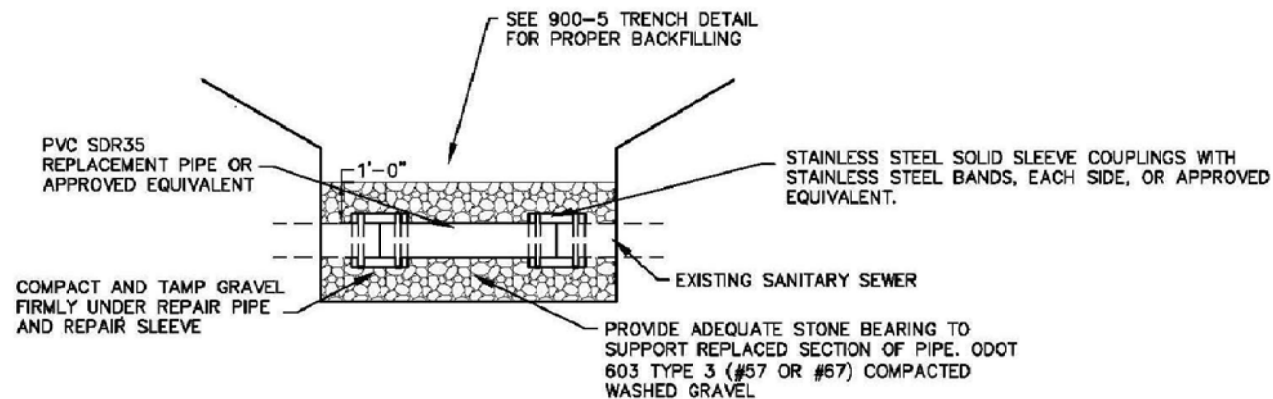
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### REPAIR OF EXISTING PVC SDR35 SANITARY SEWER



### REPAIR OF EXISTING SANITARY SEWER OTHER THAN PVC



# REPAIR OF EXISTING SANITARY SEWER PIPE DETAIL

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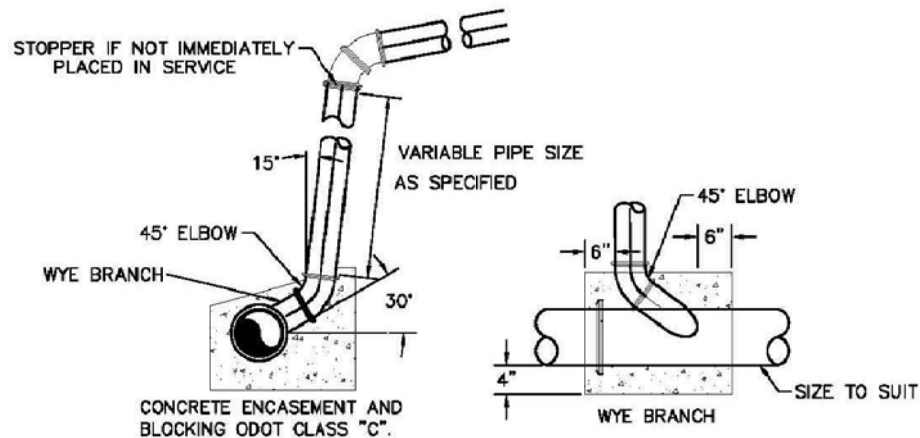
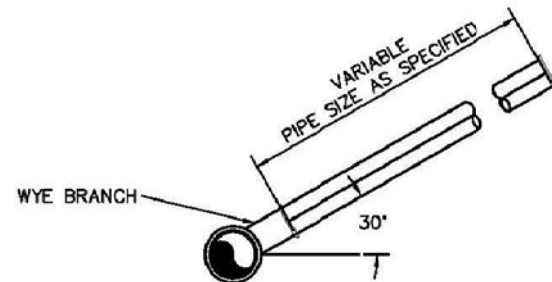
## NOTES

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

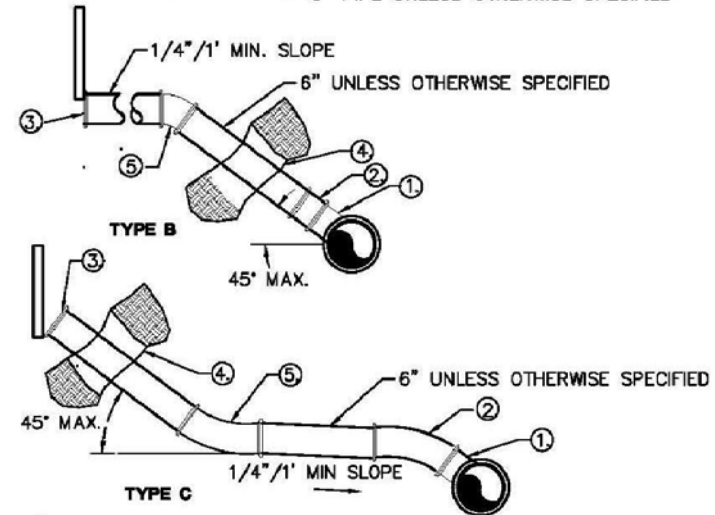
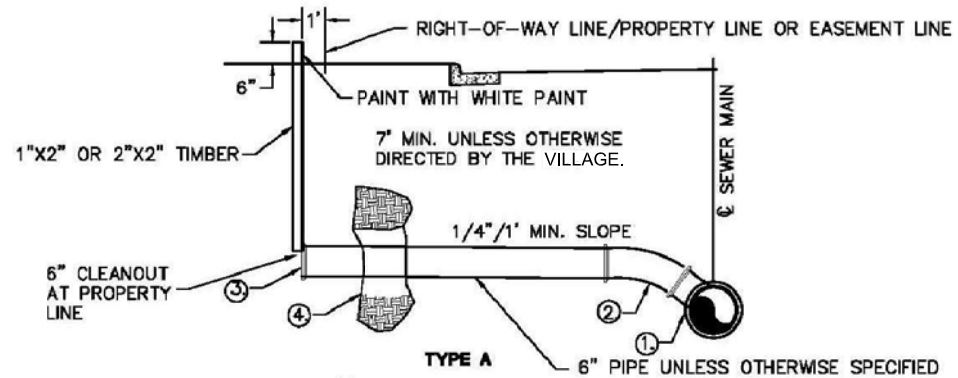
**B.** RISER PIPE TO BE INSTALLED SO THAT CONNECTING SERVICE SHALL HAVE A MINIMUM DEPTH OF 7' AT THE PROPERTY LINE UNLESS OTHERWISE DIRECTED BY THE VILLAGE.

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

**D.** EACH SANITARY LATERAL MUST BE IN SEPARATE TRENCHES.



**SERVICE RISER**



- ① 6" WYE—ROTATE 45° FROM HORIZONTAL UNLESS OTHERWISE SPECIFIED.
- ② 6" 1/8" BEND OR 1/16" BEND AS NEEDED.
- ③ CAP UNLESS JOINING EXISTING SERVICE LATERAL.
- ④ BED PIPE WITH 8" GRANULAR MATERIAL AND BACKFILL WITH GRANULAR MATERIAL TO 8" ABOVE PIPE, ODOT 603 TYPE 3 #57 OR #67.
- ⑤ EXACT MEASUREMENTS MUST BE PROVIDED SHOWING DISTANCE FROM NEAREST MANHOLE, LENGTH OF LATERAL, BENDS, AND THE END OF LATERAL ELEVATION RELATIVE TO THE BACK OF CURB ELEVATION OR SOME OTHER REFERENCE POINT EASILY RECOVERED.

**SERVICE LATERAL**



# SERVICE RISER AND SERVICE LATERAL NEW CONSTRUCTION ONLY

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**PIPE RISERS AND WYE FITTINGS**

ALL WYES SHALL HAVE A TWO-FOOT (2') MINIMUM SERVICE RISER. WHERE DEPTH FROM WYE FITTING TO THE EXISTING OF PROPOSED SURFACE ELEVATIONS EXCEED 10-FEET (10'), AN ADDITIONAL RISER SHALL BE INSTALLED, EXCEPT FOR LONG HOUSE SERVICES. TOP OF RISER SHALL BE 9-FEET (9') ± BELOW EXISTING SURFACE ELEVATIONS. INSTALLATION OF ALL RISERS AND WYES SHALL BE IN ACCORDANCE WITH ITEM 914 AND ITEM 915, RESPECTIVELY.

**WYE POLES**

WYE POLES ARE TO BE INSTALLED AT THE LOCATION OF ALL ENDS OF SERVICE LOCATIONS, AND SANITARY STUBS. WYE POLES SHALL CONSIST OF A MINIMUM FOUR BY FOUR INCH (4"X4") WOOD POST. THE POST SHALL BE TOPPED WITH A METAL CAP SO THAT THE POLE CAN BE LOCATED IN THE FUTURE. WYE POLES ARE TO BE A MINIMUM THREE-INCHES (3") BELOW THE GROUND SURFACE SO THAT THE YARD IS ABLE TO BE MOWED.

**SEWER SERVICES**

PIPE FOR ALL SIX-INCH (6") HOUSE SERVICES SHALL BE PVC SEWER PIPE ASTM D-3034, SDR-35. THE SERVICES ARE SUBJECT TO THE INFILTRATION, EXFILTRATION, OR AIR TEST. ALL SERVICE EXTENSIONS SHALL BE LAID AT A MINIMUM GRADE OF ¼ INCH PER FOOT (2.08%) AND SHALL BE CONSTRUCTED AT THE TIME OF CONSTRUCTION OF THE MAIN SEWER, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ALL ENDS OF SERVICES SHALL BE LOCATED AT THE RIGHT-OF-WAY LINE, OR AS DIRECTED BY THE ENGINEER. INSTALLATION OF SANITARY HOUSE SERVICES SHALL BE IN ACCORDANCE WITH ITEM 918. THE COST OF THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR ITEM 918.

**MISCELLANEOUS SEWER CONNECTIONS:**

ROOF DRAINS, FOUNDATION DRAINS, FIELD TILE, AND ANY OTHER SOURCES OF "CLEAN" WATER ARE PROHIBITED FROM CONNECTION TO THE SANITARY SEWER SYSTEM.



# SERVICE RISER AND SERVICE LATERAL NEW CONSTRUCTION ONLY

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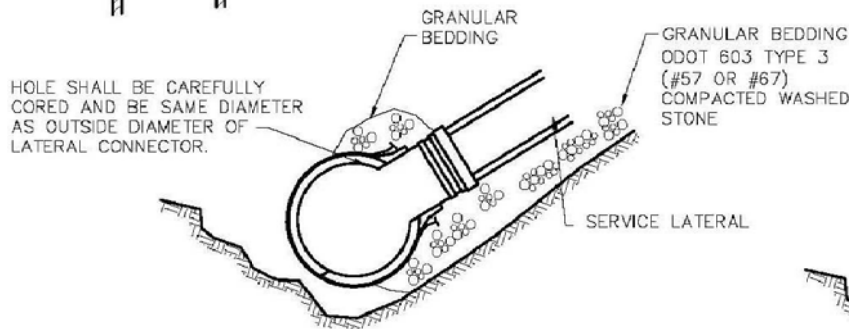
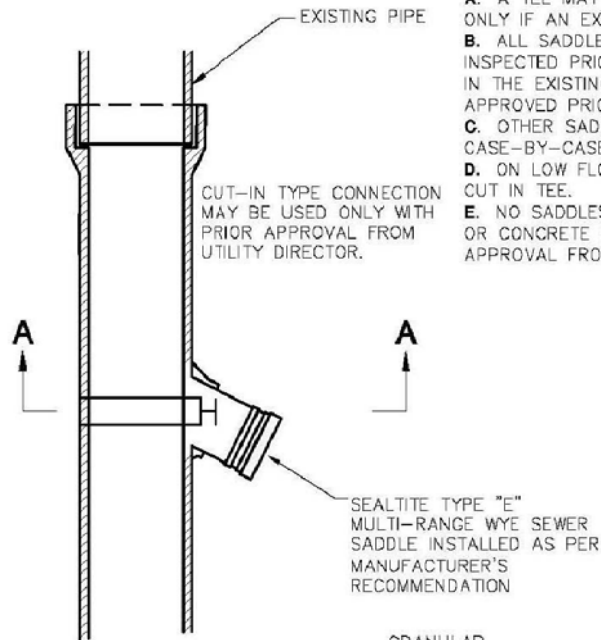
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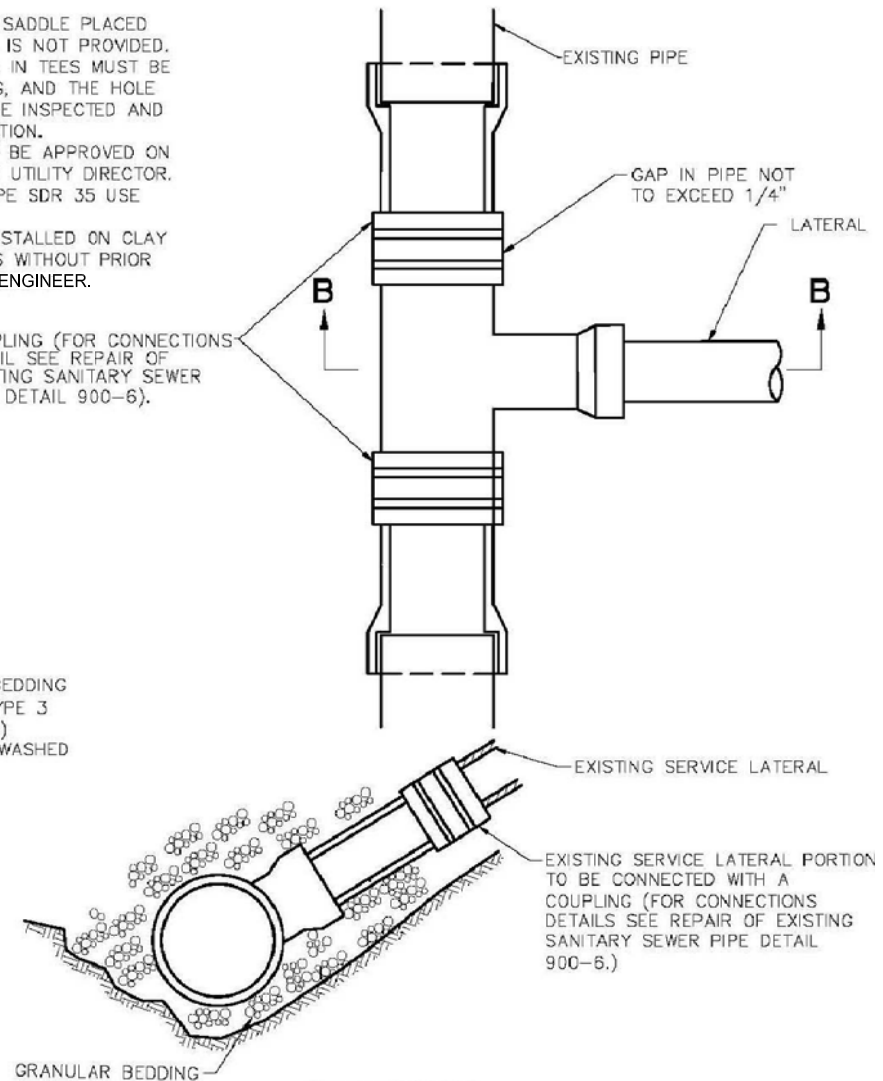
## NOTES

- A. A TEE MAY BE CUT IN OR SADDLE PLACED ONLY IF AN EXISTING LATERAL IS NOT PROVIDED.
- B. ALL SADDLES AND CUTTING IN TEES MUST BE INSPECTED PRIOR TO COVERING, AND THE HOLE IN THE EXISTING PIPE SHALL BE INSPECTED AND APPROVED PRIOR TO INSTALLATION.
- C. OTHER SADDLE TYPES MAY BE APPROVED ON CASE-BY-CASE BASIS BY THE UTILITY DIRECTOR.
- D. ON LOW FLOW AND PVC PIPE SDR 35 USE CUT IN TEE.
- E. NO SADDLES ARE TO BE INSTALLED ON CLAY OR CONCRETE SANITARY MAINS WITHOUT PRIOR APPROVAL FROM THE VILLAGE ENGINEER.



**SECTION A-A**

COUPLING (FOR CONNECTIONS DETAIL SEE REPAIR OF EXISTING SANITARY SEWER PIPE DETAIL 900-6).



**SECTION B-B**



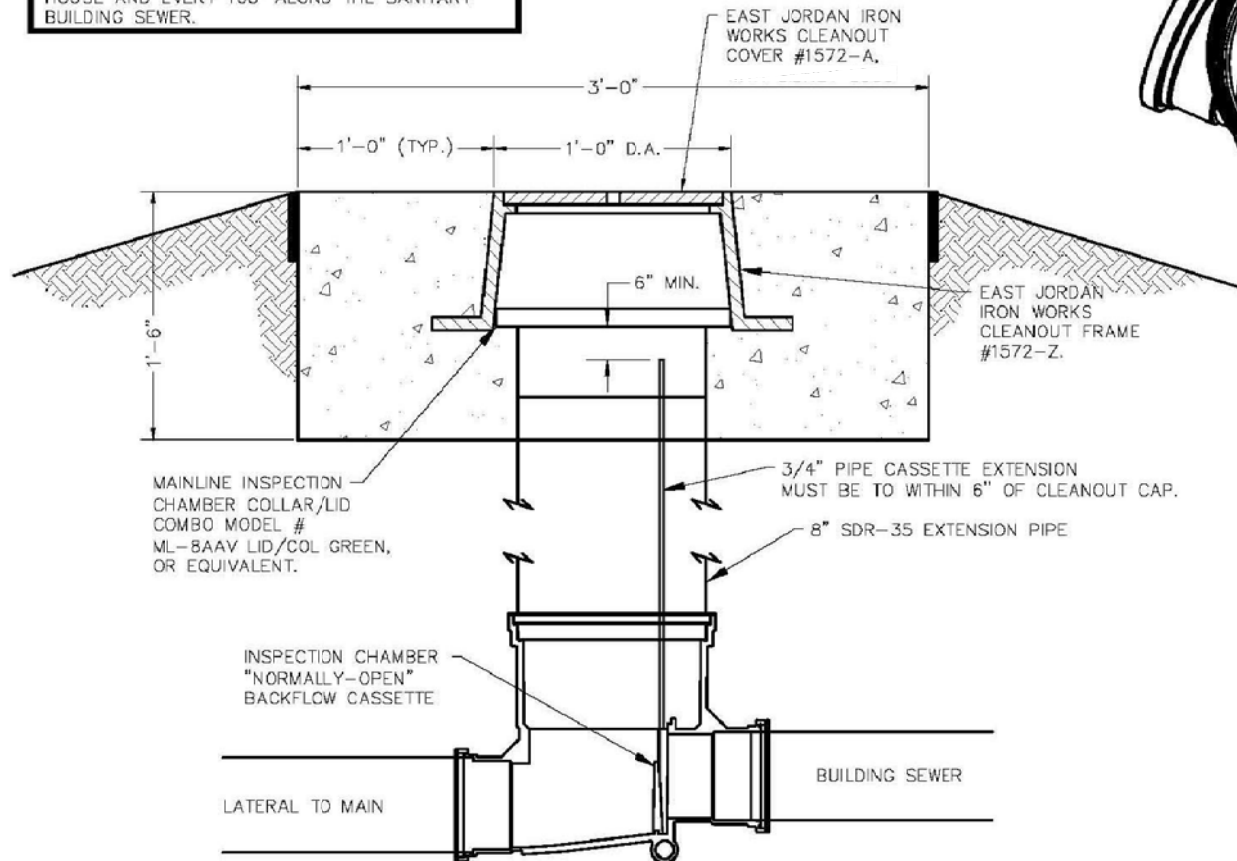
# SANITARY SEWER SADDLE DETAILS

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CAST IRON CLEANOUT COVER SHALL BE USED IN ALL APPLICATIONS WHERE CLEANOUT WILL BE SUBJECT TO VEHICULAR TRAFFIC.

THIS CLEANOUT IS TO BE USED OUTSIDE THE HOUSE AND EVERY 100' ALONG THE SANITARY BUILDING SEWER.



### INSPECTION VALVE/TEE DETAIL

INSPECTION VALVE/TEE SHALL BE MANUFACTURED BY MAINLINE OR AN APPROVED EQUIVALENT. INSPECTION VALVE/TEE PLACED IN RIGHT-OF-WAY INLINE WITH WATER METER PREFERRED.

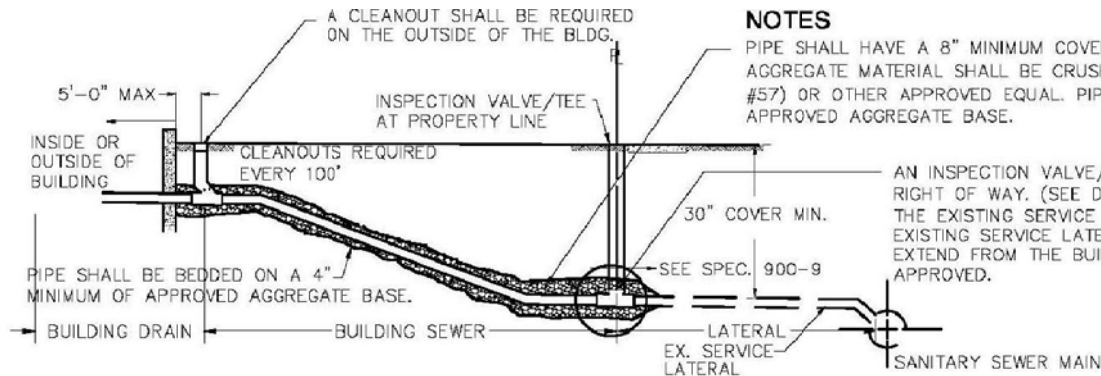


# PUBLIC SANITARY SEWER CLEANOUT DETAIL

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## NOTES

PIPE SHALL HAVE A 8" MINIMUM COVER OF APPROVED AGGREGATE MATERIAL. APPROVED AGGREGATE MATERIAL SHALL BE CRUSHED STONE OR GRAVEL, ODOT 603 TYPE 3 (#67 OR #57) OR OTHER APPROVED EQUAL. PIPES SHALL BE BEDDED ON A 4" MINIMUM OF APPROVED AGGREGATE BASE.

AN INSPECTION VALVE/TEE, MANUFACTURED BY MAINLINE, IS TO BE INSTALLED IN THE RIGHT OF WAY. (SEE DETAIL 900-9). THE TEE SHALL BE INSTALLED INTO THE END OF THE EXISTING SERVICE LATERAL (WITH THE TEST PLUG INSERTED). IF THERE IS NO EXISTING SERVICE LATERAL AND ONE MUST BE INSTALLED, THEN THE TEST SHALL EXTEND FROM THE BUILDING TO THE SANITARY SEWER MAIN, UNLESS OTHERWISE APPROVED.

## NOTES

- SEPTIC TANKS, WHEN ABANDONED, SHALL BE DEWATERED BY AN ACCEPTED SEPTAGE HAULER AND PROPERLY FILLED WITH GRANULAR MATERIAL. DRAIN HOLES SHALL BE BROKEN OUT ON THE BOTTOM AND SIDES OF THE TANK WHEN DIRECTED BY THE CITY.
- ROOF DOWNSPOUTS, EXTERIOR FOUNDATION DRAINS, AREAWAY DRAINS OR OTHER SURFACE RUNOFF OR GROUNDWATER SHALL NOT BE CONNECTED TO THE SANITARY SEWER MAIN. ALSO SEE MISC. NOTE B.
- ANY INDIVIDUAL OR FIRM INSTALLING SEWER LATERAL CONNECTIONS TO THE MAIN SHALL BE APPROVED BY THE CITY.
- BEFORE BEGINNING WORK, A SEWER TAP PERMIT MUST BE OBTAINED FROM UTILITY BILLING OFFICE AND APPLICABLE FEES MUST BE PAID.
- WHEN THE LATERAL MUST ENTER INTO A PAVED PORTION OF THE STREET OR ALLEY, A STREET OPENING PERMIT MUST BE OBTAINED FROM THE CITY ENGINEERING DEPARTMENT BEFORE BEGINNING WORK.
- WATER SERVICES SHALL BE A MINIMUM OF 10' MEASURED HORIZONTALLY FROM THE SEWER SERVICE AND SHALL BE A MINIMUM OF 18" ABOVE THE CROWN (WHENEVER POSSIBLE) OF THE SANITARY SEWER MAIN WHERE THE WATER SERVICE CROSSES THE SEWER MAIN.

## PIPE

- THE PIPE MATERIAL SHALL BE PVC SDR 35 OR, SCHEDULE 40, UTILIZING PURPLE PRIMER, OR AN APPROVED EQUIVALENT.
- PIPE SIZES FOR LATERAL (NEW) SHALL BE 6" MINIMUM.
- THE BUILDING SEWER MAYBE 4" DIAMETER FOR SINGLE FAMILY RESIDENTIAL AND 6" DIAMETER FOR ALL OTHERS.

## INSPECTION

- A TAP INSPECTION SHALL BE REQUIRED ON ALL NEW BUILDING CONNECTIONS AND ALSO ON THE REPLACEMENT OF EXISTING BUILDING CONNECTIONS.
- WHEN THE BUILDING SEWER IS READY FOR INSPECTION, THE CITY SHALL BE GIVEN 24 HOURS ADVANCE NOTICE. THE PIPE SHALL BE LEFT UNCOVERED UNTIL AN INSPECTION HAS BEEN MADE AND APPROVED.
- ALL NEW LATERALS SHALL BE INSTALLED WITH AN INSPECTION VALVE/TEE, MANUFACTURED BY MAINLINE, LOCATED AT THE PROPERTY LINE. ANY NEW BUILDING CONNECTION INSTALLED WITHOUT AN INSPECTION SHALL RESULT IN NO ISSUANCE OF A WATER METER FOR THE BUILDING. IF THIS OCCURS, THE ENTIRE LATERAL SHALL BE UNCOVERED SO THAT A PROPER INSPECTION CAN BE MADE.
- NO TAP FEE IS REQUIRED IF AN OLD BUILDING SEWER IS TO BE REUSED. AN INSPECTION WILL BE REQUIRED, THE SERVICE DEPT. SHALL INSPECT THE ENTIRE BUILDING CONNECTION FROM THE CLEANOUT TO THE PROPERTY LINE CONNECTION OR TO THE MAIN SEWER, WHICHEVER IS APPLICABLE.
- WHEN A SADDLE IS TO BE INSTALLED, THE INSPECTOR SHALL BE PRESENT WHILE THE SANITARY SEWER MAIN IS BEING CUT INTO. A SADDLE MAY BE USED WHERE A TEE OR WYE IS NOT PRESENT FOR LATERAL CONNECTION.

## TESTING

- THE OUTSIDE PLUMBER SHALL BE RESPONSIBLE FOR THE TESTING FROM THE CONNECTION TO THE EXISTING SERVICE LATERAL TO THE CLEANOUT.
- ALL NEW BUILDING CONNECTIONS SHALL BE BY AIR WITH 4 PSI PRESSURE.

- THE SEWER TEST SHALL BE FROM THE BUILDING SEWER CLEANOUT TO THE PROPERTY LINE CONNECTION OR TO THE MAIN SEWER, WHICHEVER IS APPLICABLE.

- WHEN A SUBSTANTIAL AMOUNT OF AN EXISTING LATERAL IS REPLACED, THE NEW PORTION OF THE LATERAL SHALL REQUIRE A TEST UNLESS OTHERWISE APPROVED.

## MISC.

- STREET EXCAVATION REQUIRES A STREET OPENING PERMIT.
- BASEMENT FLOOR DRAINS AND SUMP PUMPS, THAT CARRY GRAY WATER, SHALL BE CONNECTED TO THE SANITARY SEWER. FOUNDATION DRAINS AND ALL OTHER SUMP PUMPS, EXCEPT AS NOTED ABOVE, ARE TO BE CONNECTED TO THE STORM SEWER OR DISCHARGED ONTO THE GROUND.

## PIPE LAYING

- THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE CITY BEFORE LEAVING THE WORK SITE FOR THE NIGHT.
- THE JOINING OF PIPE WITH CONCRETE SHALL NOT BE ACCEPTED.
- BEFORE MAKING A CONNECTION TO AN EXISTING SEWER OR SERVICE LATERAL, THE CONTRACTOR SHALL CHECK THE EXISTING PIPE BY UTILIZING A DYE TEST TO SEE THAT THE EXISTING PIPE IS CONNECTED TO THE SANITARY SEWER MAIN.
- IN THE CASE WHERE A 90° CORNER IS REQUIRED IN THE BUILDING CONNECTION LINE, TWO 45° BENDS SHALL BE USED IN LIEU OF A 90° BEND.
- THE BUILDING CONNECTION LINE SHALL BE LAID IN AS STRAIGHT A LINE, FROM THE BUILDING TO THE EXISTING LATERAL, AS POSSIBLE.
- ALL NEW CONSTRUCTION SHALL HAVE SANITARY LATERALS INSTALLED.
- MINIMUM SLOPE OF SANITARY LATERAL SHALL BE 1% GRADE (1/8" PER FOOT) MAXIMUM SLOPE (SEE 900-7).



# BUILDING SEWER CONNECTION DETAIL

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## LOW PRESSURE AIR TEST

A. AFTER BACKFILLING, THE AIR TEST SHALL BE CONDUCTED BETWEEN TWO CONSECUTIVE MANHOLES PER ASTM F-1417. 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.)	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.
4	0.380L	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	0.854L	5:40	5:40	5:40	5:40	5:40	5:40	5:42
8	1.520L	7:34	7:34	7:34	7:34	7:36	8:52	10:08
10	2.374L	9:26	9:26	9:26	9:53	11:52	13:51	15:49
12	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47
15	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36
18	7.692L	17:00	19:13	25:38	32:03	38:27	44:52	51:16
21	10.470L	19:50	26:10	34:54	43:37	52:21	61:00	69:48
24	13.674L	22:47	34:11	45:34	56:58	68:22	79:46	91:10

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

\*ALL TESTS SHALL BE WITNESSED BY A VILLAGE OF JOHNSTOWN ENGINEERING DEPARTMENT REPRESENTATIVE SERVICE.

## DEFLECTION TEST

A. DEFLECTION TESTS SHALL BE PERFORMED BY THE CONTRACTOR 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.

## SANITARY SEWER TV REQUIREMENTS

BEFORE THE VILLAGE OF JOHNSTOWN ACCEPTS SANITARY SEWER AND BEFORE THE FINAL PAYMENT, THE CONTRACTOR WILL SUPPLY THE CITY OF SIDNEY WITH AN ACCEPTABLE INSPECTION VIDEO IN MPEGII OR MPEG IV FORMAT ON A CD-ROM OR DATA-DVD AND VIDEO LOG OF THE ENTIRE NEW SYSTEM. THIS VIDEO MUST SHOW THE LOCATION OF ALL LATERALS, THEIR CLOCK POSITIONS AND DISTANCE FROM THE MANHOLE. THE VIDEO 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 VIDEO RECORDING IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE VILLAGE SHALL REQUIRE THE USE OF A PAN AND TILT TYPE CAMERA TO REVIEW ALL LATERAL AND MAIN LINE CONNECTIONS ON SEWER MAIN REPLACEMENT PROJECTS. THE VIDEO SHALL BE IN COLOR AND IN FOCUS WITH SUFFICIENT ILLUMINATION TO EVALUATE THE ENTIRE PIPE.

THE ABOVE PROCEDURES WILL BE AT THE CONTRACTOR'S EXPENSE.

THE VILLAGE OF JOHNSTOWN RESERVES THE RIGHT TO A FINAL TELEVISIONING OF THE SEWER SYSTEM AT THE CITY'S EXPENSE BEFORE THE PROJECT IS FINALIZED.

## MANHOLE VACUUM TEST

ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED BY THE CONTRACTOR 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 CASTING 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.

DEPTH (FT.)	DIAMETER, INCHES		
	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



# SANITARY SEWER TESTING NOTES

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## NOTES

**A.** NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAYS 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 ALL 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. 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 NEW CASTING OR OTHER PUBLIC PROPERTY IS ABANDONED IT REMAINS VILLAGE PROPERTY; UNLESS OTHERWISE DIRECTED.

**G.** NEW SEWERS OR ANY SEWER THAT IS RELOCATED OR RESIZED MUST HAVE EPA PLAN APPROVAL PRIOR TO CONSTRUCTION.

## 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 INSIDE THE PIPE WHENEVER POSSIBLE 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 - ALL PHASES PERFORMED BY CONTRACTOR OR DEVELOPER

**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 BY THE CONTRACTOR. SEWER-JET PROCEDURE MUST BE PERFORMED BEFORE CONTRACTOR T.V. TESTS THE PIPE.

## 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 NEEDED, THE CONTRACTOR MAY NEED TO USE A HYDRAULIC SEWER CLEANER.

**D.** LATERALS FROM THE MAIN TO THE PROPERTY LINE SHALL BE 6" MINIMUM WITH AN INSPECTION TEE IN THE RIGHT OF WAY.

**E.** A RIGHT-OF-WAY PERMIT TO OPEN INTO, ALTER, OR DISTURB ANY PUBLIC SEWER MUST BE OBTAINED.

**F.** IN THE DEMOLITION OF EXISTING BUILDING, ALL ABANDONED SEWER LATERALS SHALL BE CAPPED AT THE OWNER'S EXPENSE.

## PIPE

**A.** ALL MAINLINE PIPE AND SPECIALS SHALL BE PVC SDR-35 UNLESS OTHERWISE APPROVED BY THE VILLAGE. MINIMUM DIAMETER OF PIPE SHALL BE 8".

**B.** DUCTILE IRON PIPE WILL BE USED IN STREAM CROSSINGS AND WHERE MAXIMUM SEPARATION CANNOT BE MAINTAINED OR WHEN DEPTH OF SEWER EXCEEDS 25 FEET.

**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
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DUCTILE IRON	ANSI A-21.51 & AWWA C-151	ANSI A-21.11 & AWWA C-111
--------------	------------------------------	------------------------------

**1.** SDR = OUTSIDE DIAMETER DIVIDED BY WALL THICKNESS.

**2.** THE SPECIFICATIONS ABOVE SHALL BE THOSE MOST RECENTLY ADOPTED BY THE APPROPRIATE STANDARDS SETTING ORGANIZATIONS.

**D.** LOCATOR WIRE SHALL BE REQUIRED TO BE INSTALLED ON FORCEMAIN SANITARY SEWERS.

## SANITARY SEWER PUMP STATION

REFER TO SANITARY SEWER DESIGN CRITERIA FOR ADDITIONAL CONSTRUCTION STANDARDS.



# MISCELLANEOUS SANITARY SEWER NOTES

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**DETECTABLE WARNING**

DETECTABLE WARNING TAPE (POLYETHYLENE FILM WARNING TAPE ENCASED A METALLIC CORE, MINIMUM 6 INCHES WIDE AND 4 MILS THICK, CONTINUOUSLY INSCRIBED WITH "CAUTION SEWER LINE") SHALL BE PLACED TWO FEET (2') ABOVE THE PIPE AND FOLLOW THE ALIGNMENT OF THE PIPE. THE COST OF ALL DETECTABLE WARNING TAPE SHALL BE INCLUDED IN THE PRICE BID FOR SEWER LINE.

**OEPA PERMITS TO INSTALL:**

CONNECTIONS TO THE SANITARY SEWER WILL BE PERMITTED UPON RECEIVING AN OEPA PERMIT TO INSTALL (PTI), AND UPON RECEIVING A SATISFACTORY LETTER FROM THE DESIGN ENGINEER STATING THAT THE PROJECT HAS BEEN CONSTRUCTED AS PER THE PLANS, AND ALL OF THE CONDITIONS OF THE PTI HAVE BEEN MET. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL REQUIRED OHIO EPA APPROVALS AND PAYING REVIEW FEES.

**SANITARY DESIGN REQUIREMENTS:**

SANITARY SEWAGE COLLECTION SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RULES, REGULATIONS, STANDARDS AND SPECIFICATIONS OF THE VILLAGE OF JOHNSTOWN, OHIO EPA, OHIO DEPARTMENT OF HEALTH AND THE CURRENT EDITION OF THE GREAT LAKES-UPPER MISSISSIPPI RIVER BOARD (TEN STATES) - RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES.

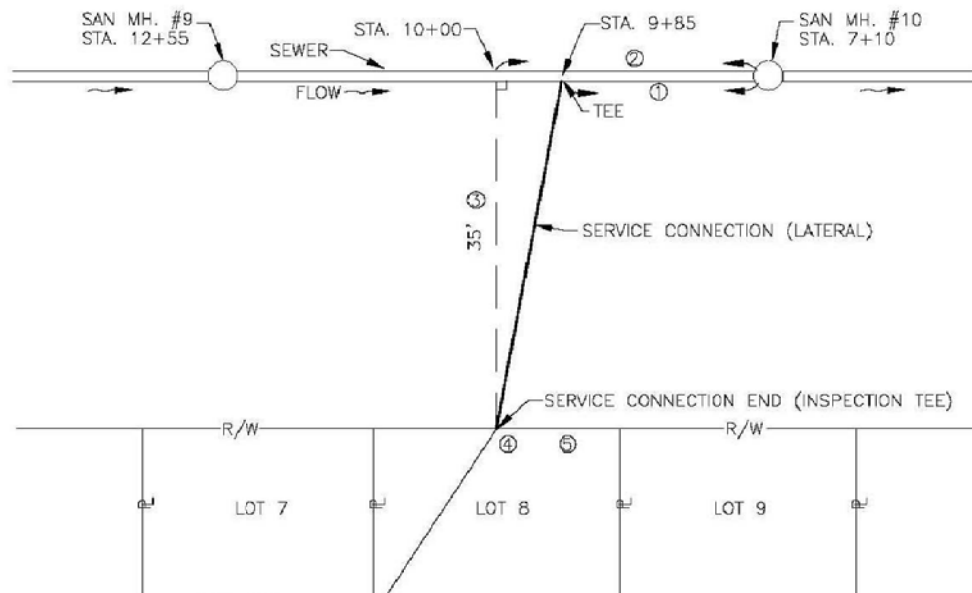


# MISCELLANEOUS SANITARY SEWER NOTES

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EXAMPLE

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

**THE CONTRACTOR SHALL SUPPLY THE FOLLOWING  
INFO TO THE SATISFACTION OF THE VILLAGE**

- 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.
- ⑥ ELEVATION OF BACK OF CURB OR SOME OTHER REFERENCE POINT ABOVE LATERAL.
- ⑦ LOCATE PLUGGED END OF LATERAL USING STATE PLANE COORDINATES (NAD 83, CORS96).

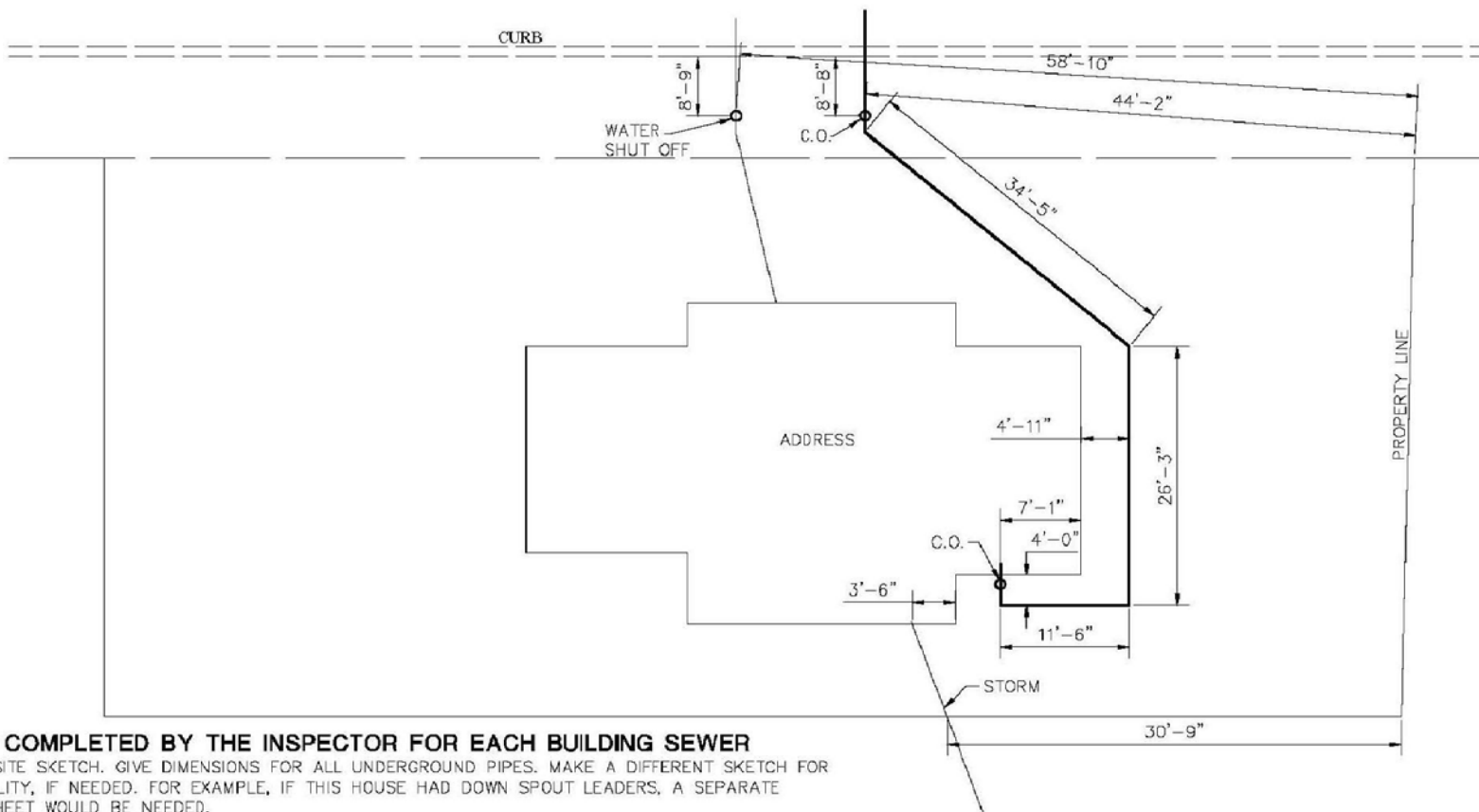


# SERVICE CONNECTION LOCATION REFERENCE

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# SERVICE CONNECTION LOCATION REFERENCE (BUILDING IN PLACE)

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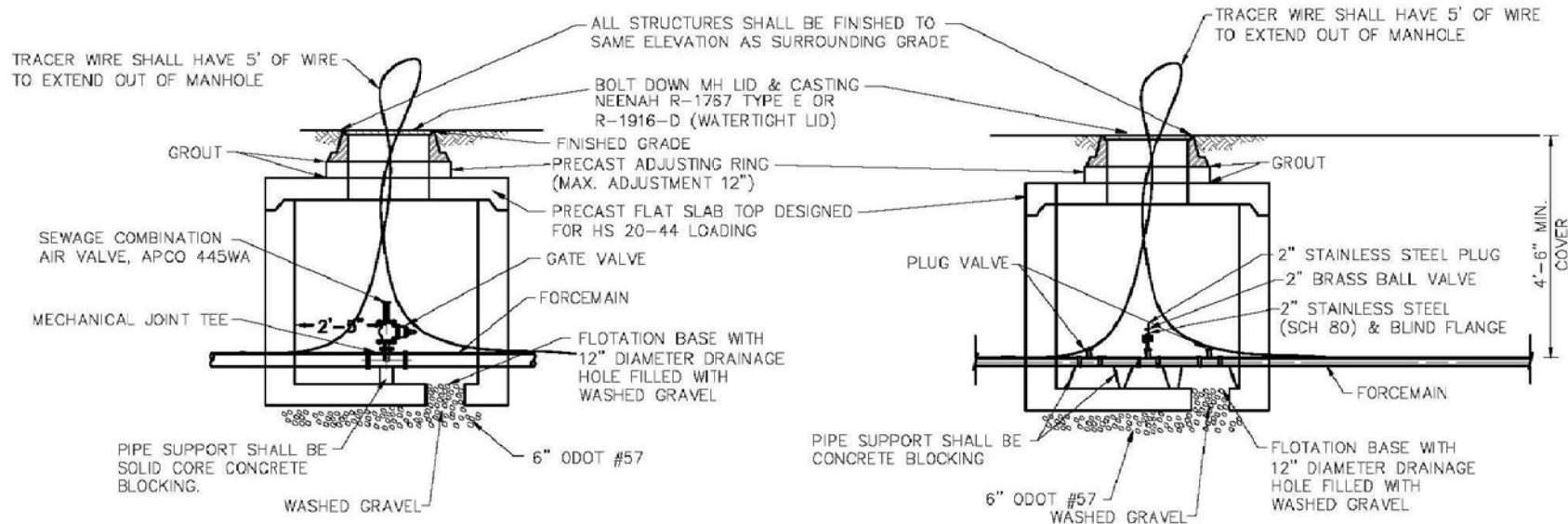
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## NOTES:

- A. ALL FITTINGS TO BE RESTRAINED.
- B. CHIMNEY SEALS MUST BE INSTALLED.
- C. PRECAST MANHOLE RISER SECTION 5'-0" DIAMETER MIN. ASTM C478. NOTE ACTUAL SIZE TO BE DESIGNED WITH SIZE OF FORCEMAIN AND EACH INDIVIDUAL SITUATION.
- D. IN WET AREAS SEAL BOTTOM WITH POURED CONCRETE BASE OR PRECAST MANHOLE BASE.
- E. LOCATION OF THESE ARE AT THE DISCRETION OF THE VILLAGE ENGINEER. (TYPICAL AROUND 650')
- F. ALL PLASTIC FORCE MAIN SHALL BE INSTALLED WITH GREEN 12ga COPPERHEAD HS REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC. GREEN FOR SANITARY. CONNECTORS FOR SERVICES OR SPLICES SHALL BE LOCKING GREEN "SNAKEBITE" CORROSION PROOF WIRE CONNECTORS MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC.



**SEWAGE COMBINATION  
AIR VALVE IN MANHOLE**

**FORCE MAIN PRESSURE  
CLEANOUT**



# SEWAGE COMBINATION AIR VALVE CHAMBER

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## SEWER TELEVISION STANDARDS

**A.** ALL SEWER TELEVISION CONTRACTORS SHALL BE CERTIFIED BY NASSCO FOR PIPELINE ASSESSMENT AND CERTIFICATION. (PACP)

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

**C.** ALL TELEVISION WORK SHALL BE DONE 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 CD-ROM OR DATA DVD TO PROVIDE THE ENTIRE RECORDING PROCESS IN EITHER MPEG II OR MPEG IV FORMAT.

**F.** AT THE START OF THE RECORDING PROCESS, THE VIDEO SHALL RECORD THE FOLLOWING:

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

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

**H.** THE VIDEO 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 VIDEO.

**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 EXCEEDS THE FOLLOWING CRITERIA:

SLOPE	PIPE SIZES							
	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 OF JOHNSTOWN WILL NOT PASS OR ACCEPT THE SANITARY SEWER FOR FINAL PAYMENT WITHOUT HAVING A PASSING VIDEO 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.



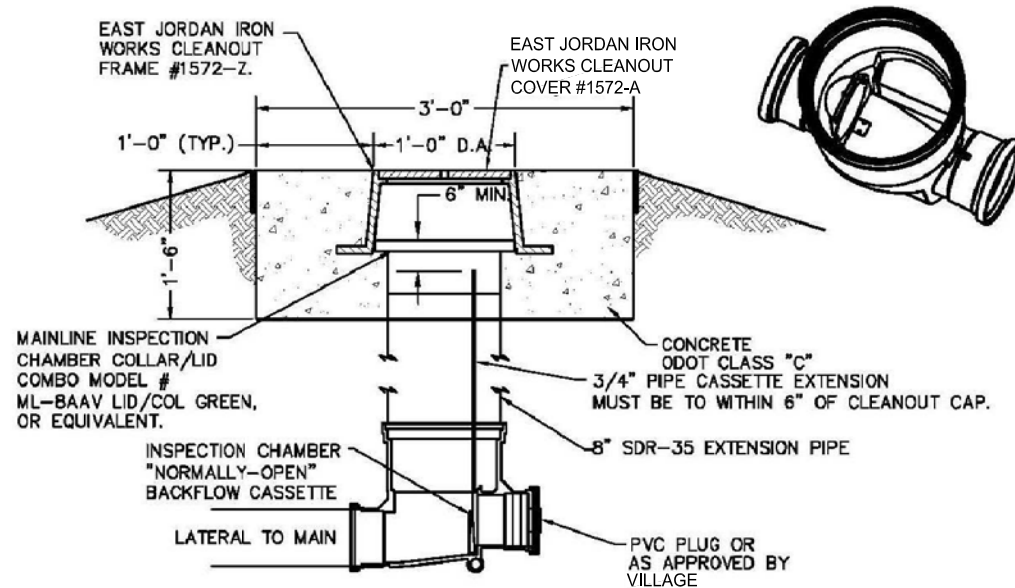
# SANITARY SEWER TELEVISION STANDARDS

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INSPECTION VALVE/TEE AND CLEANOUT COVER IS TO BE USED IN ALL APPLICATIONS INCLUDING BUT NOT LIMITED TO GRASS, CONCRETE, STONE, AND ASPHALT AREAS.



### PRIVATE CLEANOUT DETAIL

AT SANITARY LATERALS ONLY

THIS CLEANOUT IS TO BE USED ON ALL NEW DEVELOPMENTS DURING CONSTRUCTION OF THE SANITARY LATERAL FROM THE MAIN SEWER TO THE PROPERTY LINE.

CAST IRON CLEANOUT COVER SHALL BE USED IN ALL APPLICATIONS WHERE CLEANOUT WILL BE SUBJECT TO VEHICULAR TRAFFIC.



# PRIVATE SANITARY SEWER CLEANOUT DETAIL

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**SEWERAGE LIFT PUMPING SYSTEM:**

THE SEWAGE LIFT STATION SHALL INCLUDE TWO SUBMERSIBLE NON-CLOG PUMPS MOUNTED ON GUIDE RAILS, PLUG VALVES, CHECK VALVES, HYDRAULIC SEALING FLANGES, PIPING, DUPLEX PUMP CONTROLLER WITH HIGH WATER ALARM UNIT, AND SEALED NON-MERCURY TUBE FLOAT SWITCHES, AS SHOWN ON THE DRAWINGS. THE PUMP AND MOTOR HOUSING SHALL BE CONSTRUCTED OF CAST IRON. IMPELLERS SHALL BE CONSTRUCTED OF CAST-IRON WITH A SEWAGE-RESISTANT COAL TAR EPOXY COATING AND SHALL BE KEYED INTO A STAINLESS STEEL SHAFT. EACH PUMP SHALL HAVE THE CAPACITY AT THE HEAD SHOWN ON THE DRAWING. THE PUMPS SHALL BE CAPABLE OF HANDLING RAW UN-SCREENED SEWAGE, PASSING 3-INCH SPHERICAL SOLIDS, AND SHALL BE FURNISHED WITH 2 REMOVAL GUIDE RAILS AND HYDRAULICALLY SEALED FLANGES. THE PUMPS AND MOTORS SHALL BE HEAVY DUTY, DESIGNED FOR COMMERCIAL SERVICE. MOTORS AND BEARINGS SHALL BE PERMANENTLY LUBRICATED AT THE FACTORY. MOTORS SHALL BE SUPPLIED WITH A MOTOR THERMAL PROTECTION SWITCH.

**PUMP MOTORS AND CABLES:**

PUMP MOTORS SHALL BE OF THE HERMETICALLY SEALED, SUBMERSIBLE TYPE, WITH BALL BEARINGS AND HIGH DIELECTRIC OIL-FILLED HOUSINGS FOR BEARING LUBRICATION AND HEAT DISSIPATION. THE PUMP MOTORS SHALL BE WOUND FOR THE ELECTRICAL SERVICE INDICATED ON THE DRAWINGS. PUMP MOTOR SHAFT SHALL BE STAINLESS STEEL. THE PUMP POWER CABLES SHALL BE HEAVY DUTY SUBMERSIBLE TYPE AND SHALL BE CONNECTED TO AND SEALED WITHIN THE MOTOR HOUSING. EXTRA CONDUCTORS SHALL BE PROVIDED EITHER IN THE POWER CABLE OR AS AN ADDITIONAL SUBMERSIBLE CABLE, FOR MOISTURE SENSORS AND MOTOR THERMAL PROTECTION SWITCHES TO ENSURE MOTOR WARRANTY. MOTOR CABLES SHALL EXTEND TO THE CONTROLLER WITHOUT SPLICE.

**GUIDE RAILS:**

GUIDE RAILS SHALL BE GALVANIZED STEEL PIPE AND SIZED BY APPROVED PUMP MANUFACTURER.

**FLOAT SWITCHES AND SUPPORT BRACKET:**

SUMP LEVEL AND ALARM SIGNAL SHALL BE CONTROLLED BY NON-MERCURY TUBE FLOAT SWITCHES EQUAL TO CUSTOM SWITCH INC. MODEL LS-1944-1. FLOAT SWITCH ELEMENTS SHALL BE FACTORY SEALED IN A CORROSION AND SHOCK-RESISTANT FLOAT, WEIGHTED TO HOLD POSITION IN THE SUMP. FOUR FLOAT SWITCHES SHALL BE PROVIDED AS FOLLOWS: BOTH PUMPS OFF, FIRST PUMP ON, ALARM ON AND SECOND PUMP ON. FLOAT SWITCH CORDS SHALL BE NEOPRENE JACKETED, EXTRA FLEXIBLE AND SHALL EXTEND, UNSPLICED, TO THE CONTROLLER AND SHALL BE COMPLETE WITH FLOAT SWITCH SUPPORT BRACKET AND CORD SNUBBERS TO ALLOW FLOAT SWITCH ADJUSTMENT.

**PIPE FITTINGS:**

DUCTILE IRON FITTINGS SHALL CONFORM TO ANSI A.21.10/ AWWA C-110.

**ELECTRICAL EQUIPMENT:**

ELECTRICAL SYSTEMS AND COMPONENTS (E.G., MOTORS, LIGHTS, CABLES, CONDUITS, SWITCH BOXES, CONTROL CIRCUITS, ETC.) IN RAW WASTEWATER WET WELLS SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE REQUIREMENTS FOR CLASS 1 GROUP D, DIVISION 1 LOCATIONS. IN ADDITION, EQUIPMENT LOCATED IN THE WET WELL SHALL BE SUITABLE FOR USE UNDER CORROSIVE CONDITIONS.

**EXISTING PUMP STATION DEMOLITION:**

CONTRACTOR TO FIELD VERIFY ELEVATIONS ON EXISTING LIFT STATION PRIOR TO COMMENCING ANY PROJECT WORK.

EXISTING PUMP STATION SHALL BE MAINTAINED UNTIL SUCH TIME AS THE NEW LIFT STATION IS TESTED AND APPROVED BY THE VILLAGE.

CONTRACTOR SHALL SET UP AND MAINTAIN ADEQUATE BYPASS PUMPING WHILE DEMOLITION WORK IS PERFORMED ON EXISTING WET WELL.

AFTER REMOVAL OF INTERNAL PIPING, PUMPS, GUIDES, WIRING, ETC., CONTRACTOR SHALL FILL WET WELL TO APPROXIMATELY ONE FOOT BELOW THE PROPOSED INVERT WITH NO. 4 STONE. A 1' THICK CONCRETE CAP SHALL BE INSTALLED ON TOP OF THE NO. 4 STONE TO THE SPECIFIED ELEVATIONS, AND INVERT CHANNEL FORMED IN POURED CONCRETE BOTTOM.

ALL EXISTING PUMP STATION EQUIPMENT, INCLUDING BUT NOT LIMITED TO PUMPS, GUIDES, SUPPORTS, FLOAT SYSTEM, CONTROL/TELEMETRY, ETC., SHALL BE SALVAGED TO THE GREATEST EXTENT POSSIBLE AND RETURNED TO THE VILLAGE AT THE WWTP. CONTRACTOR MUST COORDINATE WITH THE VILLAGE BEFORE COMMENCING WITH THIS WORK.

**SHOP DRAWINGS:**

THE CONTRACTOR SHALL SUBMIT FOUR SETS OF SHOP DRAWINGS OF PUMPS (INCLUDING PUMP CURVES) TO THE VILLAGE ENGINEER FOR APPROVAL PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.



**SANITARY LIFT STATION DETAILS**

REVISIONS:  
XX/XX/XXXX

DATE  
APPROVED:  
APRIL 2014

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