Logan County Commissioners

The Colonial Building
117 E. Columbus Ave. Suite 100 ◆ Bellefontaine, Ohio 43311
(937) 599-7283 ◆ (937) 599-7268 (Fax)

John Bayliss ◆ Dustin Wickersham ◆ Joe Antram

BRIAN DUNN
SPECIAL PROJECTS COORDINATOR

KACY D. KIRBY
CLERK/ADMINISTRATOR

Resolution No. 196-18

The Logan County Board of Commissioners met in regular open session on this date of May 8, 2018 with the full board present.

Mr. Joseph M. Antram moved that the following resolution be adopted:

RE: A RESOLUTION ADOPTING UPDATED SANITARY SEWER CONSTRUCTION STANDARDS FOR THE LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT IN ACCORDANCE WITH THE OHIO REVISED CODE SECTION 6117

WHEREAS, the Ohio EPA required Logan County Water Pollution Control District to develop and implement a Capacity Management, Operations and Maintenance (CMOM) program for the sanitary sewer system; and

WHEREAS, Resolution 381-12 was adopted on November 20, 2012 that established Construction Standards and Design Criteria for the construction, reconstruction and rehabilitation of sanitary sewers and to establish criteria for such connections; and

WHEREAS, the Logan County Water Pollution Control District has developed updates to the Construction Standards and has advertised and solicited comments from the public and interested parties including engineers, developers and contractors on the attached proposed Construction Standards identified as "Exhibit B"; and

WHEREAS, the Logan County Water Pollution Control District received no comments from interested party reviewers; and

WHEREAS, the Logan County Water Pollution Control District Director has recommended that the Construction Standards be updated to reflect changes in construction methodology, provide clarification as to testing requirements and additional requirements intended to protect the Sanitary Sewer System and its Users; and

WHEREAS, In accordance with the Ohio Revised Code, Section 6117.01 (D) The board of county commissioners may adopt, publish, administer, and enforce rules for the construction, maintenance, protection, and use of county-owned or county-operated sanitary and drainage facilities and prevention or replacement facilities outside municipal corporations, and of sanitary and drainage facilities and prevention or replacement facilities within municipal corporations that are owned or operated by the county or that discharge into sanitary or drainage facilities or prevention or replacement facilities owned or operated by the county, including, but not limited to, rules for the establishment and use of any connections

NOW THEREFORE BE IT RESOLVED by the Board of Commissioners of Logan County, Ohio:

SECTION 1. In accordance with ORC 6117.01 (D), the Board of Commissioners of Logan County hereby adopts the attached Sanitary Sewer Construction Standards (Exhibit B) for the Logan County Water Pollution Control District applicable to public sanitary sewers and private sanitary sewer systems.
SECTION 2. The Board of Commissioners of Logan County hereby requires all work subject to the jurisdiction of the Logan County Water Pollution Control District to comply with these standards for all construction, reconstruction and rehabilitation of both public and privately owned sanitary sewers and appurtances.

SECTION 3. That the Director of the Logan County Water Pollution Control District and his/her authorized designees shall enforce the provisions of the standards and shall have the authority issue Stop Work Orders for work that is not in compliance.

SECTION 4. That the Director of the Logan County Water Pollution Control District shall make final determination(s) to grant variances, approve alternates and/or equals and resolve conflicts that may arise with implementation and adherence to the Construction Standards and design criteria, on a case by case basis, based on the best interest of the County and the Water Pollution Control District.

SECTION 5. That any open Sanitary Sewer Permits issued prior to the adoption date of this Resolution shall be considered grandfathered for a period not to exceed 12 months. After 12 months grandfathered permits shall be closed and a new permit shall be required. All Sanitary Sewer permits issued after adoption date of this Resolution shall comply with these Construction Standards.

Mr. John Bayliss seconded the motion.

Roll call resulted as follows:

Mr. John Bayliss, President

Mr. Dustin A. Wickersham, Vice President — yes

Mr. Joseph M. Antram, Member — yes

I, Kacy D. Kirby, Clerk/Administrator, hereby certify this to be a true copy of the proceedings as taken from the minutes of the meeting of the Logan County Commissioners on this date of May 8, 2018.

Kacy D. Kirby, Clerk/Administrator

LOGAN COUNTY Ohio

Water Pollution Control District

Public Notice for Comment

The Logan County Water Pollution Control District is revising its Construction Standards regarding the installation, repair and inspection of Public & Private Sewers. The Standards can be viewed in person in the LCWPCD Office or on the District's website. Comments will be accepted until February 23, 2018. Comments submitted by US mail shall be addressed to:

Logan County WPC District
Attn: Brian Schultz – Construction Standards
8100 St. Rt. 708 South
PO Box 1550
Russells Point, Ohio 43448-1550

Comments submitted via email shall be addressed to:

bschultz@logancowpc.com with Construction Standards in the Subject line.

BELLEFONTAINE EXAMINER

Vol. 127 • No. 47

Thursday, February 8, 2018

50 CENTS

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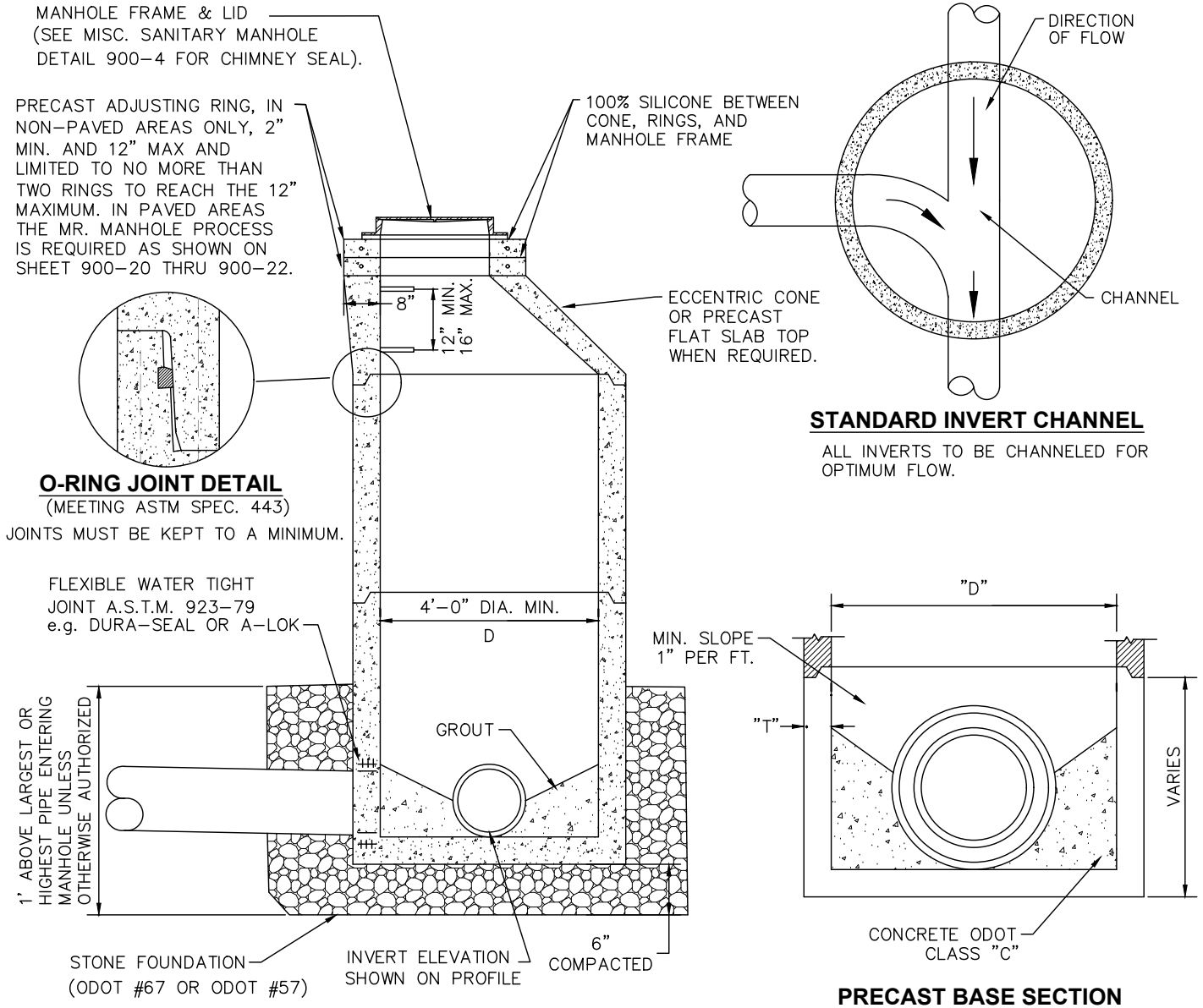
Feb. 8, 2018-t6 consec.



PRECAST BASE SECTION

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

NOTES

A. SANITARY MANHOLES IN NEW CONSTRUCTION SHALL HAVE FRAMES AND COVERS EQUAL TO NEENAH NO. R–1642 OR EAST JORDAN IRON WORKS NO. 1040. LID SHALL BE SANITARY LETTERED SOLID NON–VENTED, SELF–SEALING, GASKETED AND NON–BOLTED LIDS.

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.

C. MATERIALS FOR BASES, RISERS, AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENTS SHALL COMPLY WITH ASTM C–478.

D. MAXIMUM SANITARY MANHOLE SPACING SHALL BE 350' FOR LESS THAN 15", 400' FOR 15" AND GREATER.

E. LOCATE THE CENTERLINE OF MANHOLE COVERS OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.

F. CUT PIPE IS TO EXTEND TO, BUT NOT BEYOND, THE INSIDE FACE OF THE MANHOLE WALL.

G. 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.

H. (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 DISTRICT DIRECTOR.

I. MANHOLES INSTALLED OUTSIDE OF PAVED, STONED, OR CONCRETE AREAS MAY HAVE EXTERNAL CHIMNEY SEALS INSTALLED IN LIEU OF INTERNAL SEALS. ALL OTHERS SHALL HAVE INTERNAL CHIMNEY SEALS INSTALLED. SEE SHEET 900–4, MISCELLANEOUS SANITARY MANHOLE DETAILS.

J. THE CONTRACTOR IS REQUIRED TO PROVIDE RECORD DRAWINGS OF ALL SANITARY SEWER INSTALLED. THE RECORD DRAWINGS SHALL INCLUDE THE FOLLOWING: MANHOLE TOP ELEVATION, INVERT ELEVATIONS, PIPE SIZES AND MATERIAL, PIPE LENGTHS AND GRADE, AND MATERIAL SUBMITTALS. ALL ELEVATIONS ARE TO BE ON NAVD 88 ELEVATION DATUM.

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

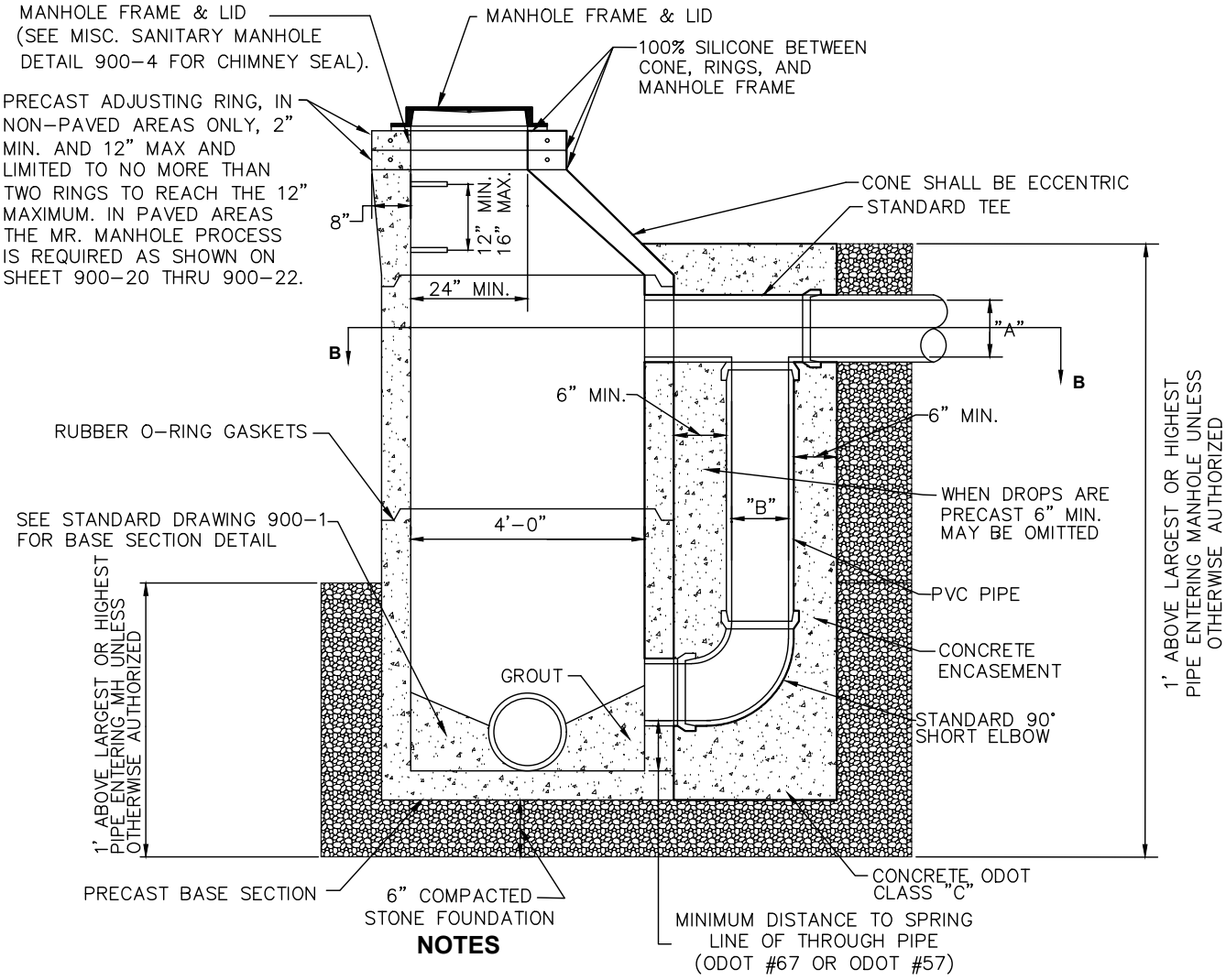
LOGAN COUNTY WATER
POLLUTION CONTROL DISTRICT

ChoiceOne Engineering

TYPE 3 SANITARY MANHOLE

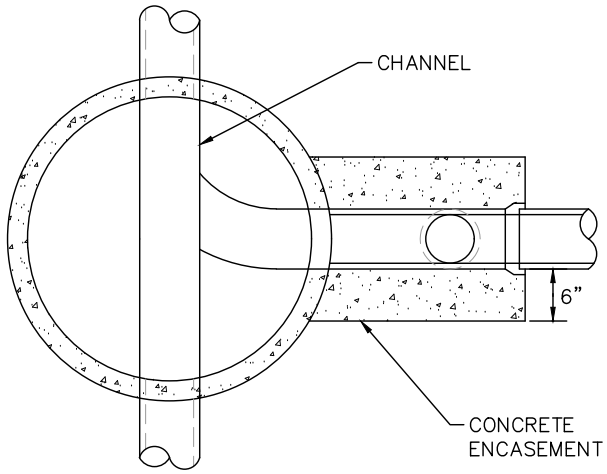
REVISIONS: JAN. 2018

DATE APPROVED: AUG. 2012



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

DROP CONNECTION MANHOLE



SECTION 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 SHALL APPLY ON THE TYPE D SANITARY DROP MANHOLE.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT

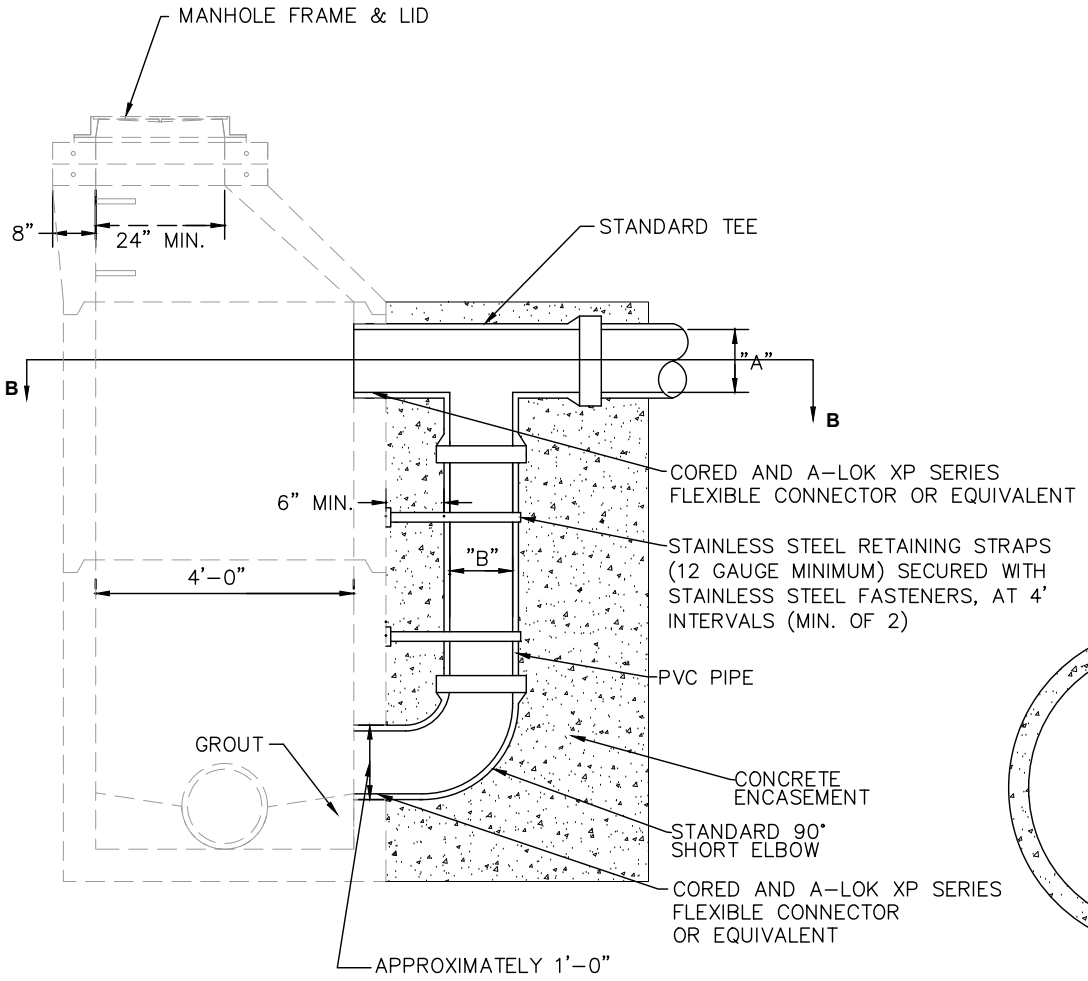
ChoiceOne Engineering

TYPE D SANITARY DROP MANHOLE

REVISIONS: JAN. 2018

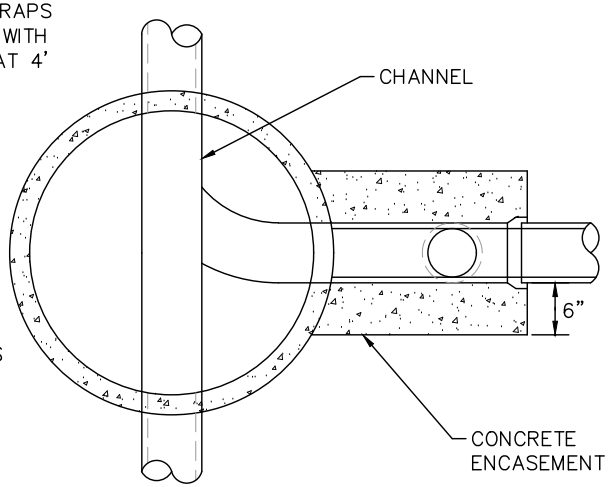
DATE APPROVED: AUG. 2012

PAGE No. 900-2



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

DROP CONNECTION MANHOLE



SECTION B-B

NOTES

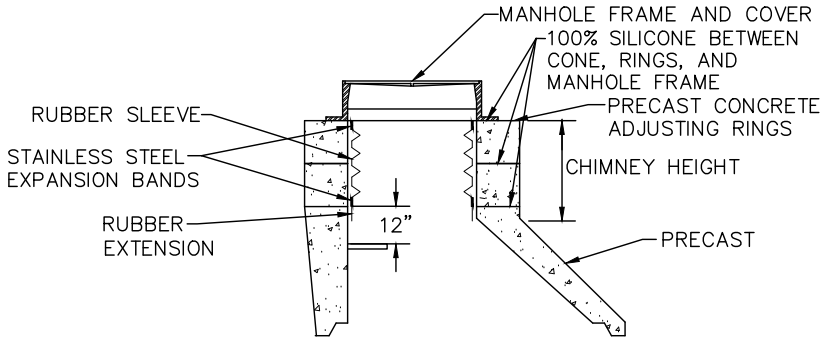
A. SANITARY DROP MANHOLE SHALL BE USED WHERE THE DIFFERENCE IN INVERT ELEVATIONS IS GREATER THAN 2'–0".

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.

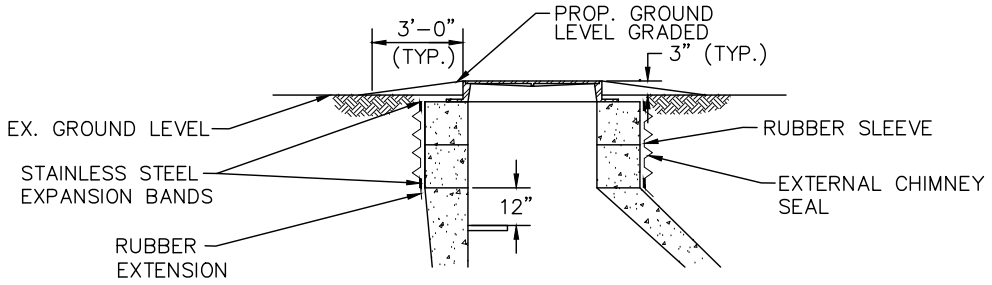
D. THE DROP PIPE SHALL BE ANCHORED TO THE OUTSIDE OF THE EXISTING MANHOLE.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	# SANITARY DROP ON EXISTING MANHOLE	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900–3



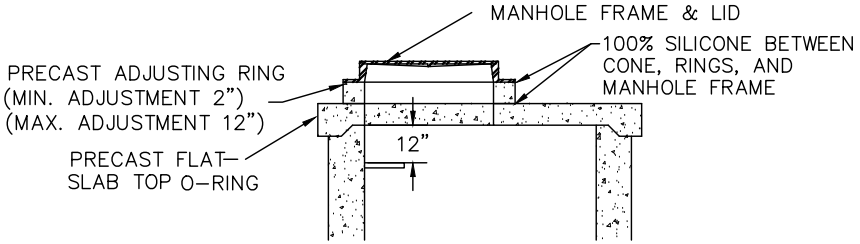
INTERNAL MANHOLE CHIMNEY SEAL

(REQUIRED ON ALL OFF STREET SANITARY MANHOLES UNLESS APPROVED BY THE DISTRICT DIRECTOR IN WRITING)



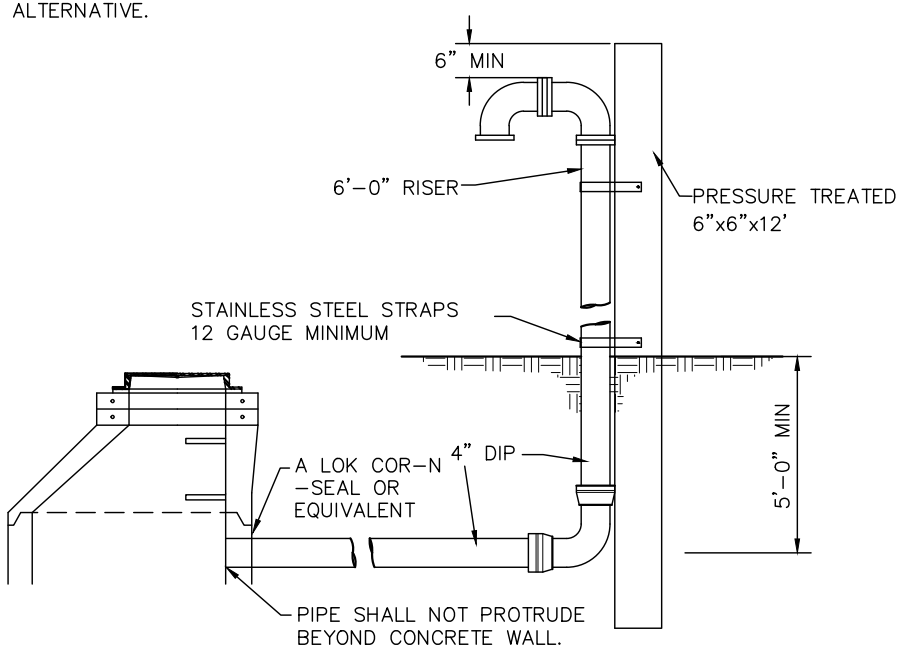
TYPICAL OFF STREET MANHOLE GRADING

NOTE; MANHOLE CHIMNEY RECONSTRUCTION DETAILS ON SHEET 900-20 TO 900-22 ARE AN APPROVED ALTERNATIVE.



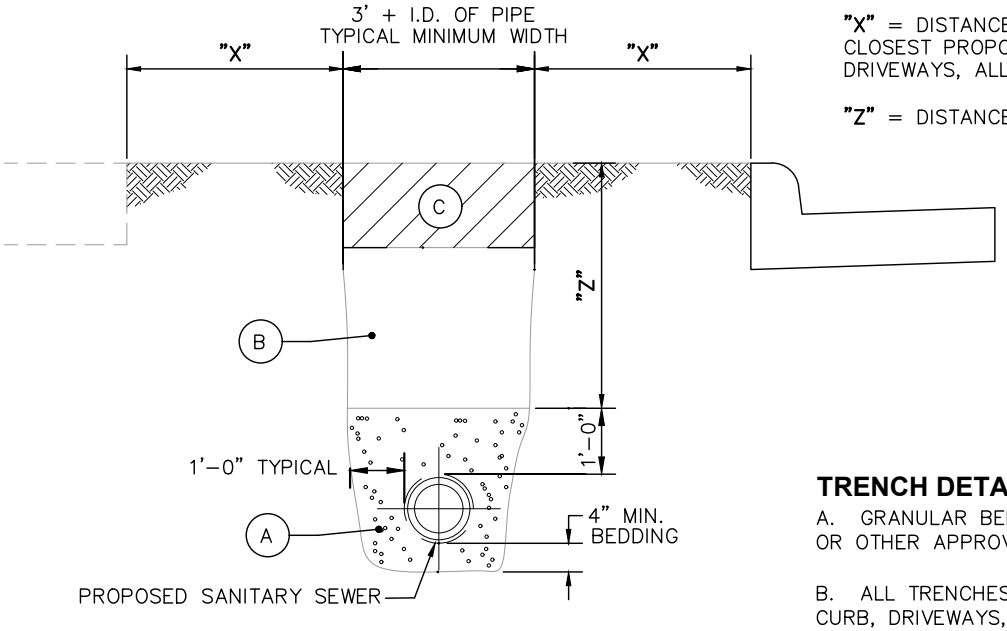
FLAT TOP SLAB

NOTE: ANY PENETRATION INTO MANHOLE SHALL HAVE A-LOK, KOR-N-SEAL OR EQUIVALENT WATERTIGHT CONNECTION.



VENTED MANHOLE DETAIL

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**MISCELLANEOUS SANITARY MANHOLE DETAILS**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900-4



SANITARY SEWER TRENCH DETAIL

SHOWN AS "OFF ROAD" APPLICATION

"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 DISTRICT. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONES, ROCKS, ETC., GREATER THAN 4" DIAMETER.

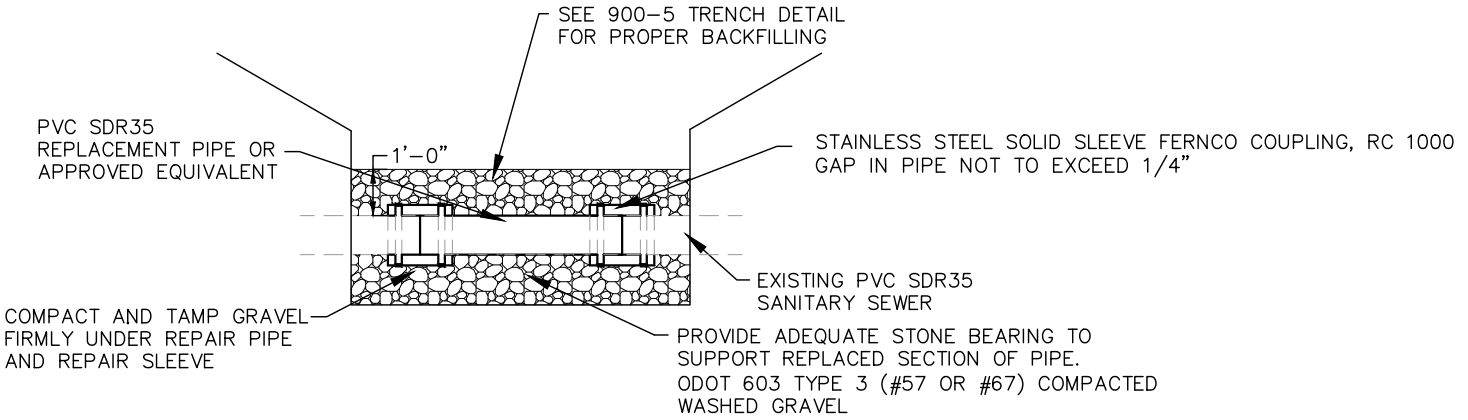
ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH GRANULAR BACKFILL MATERIAL ODOT 603 TYPE 1 OR TYPE 2, IN 6" MAXIMUM LIFTS OR LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613 TYPE 1 UNTIL THE TOP OF THE COMPACTED 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 DISTRICT.

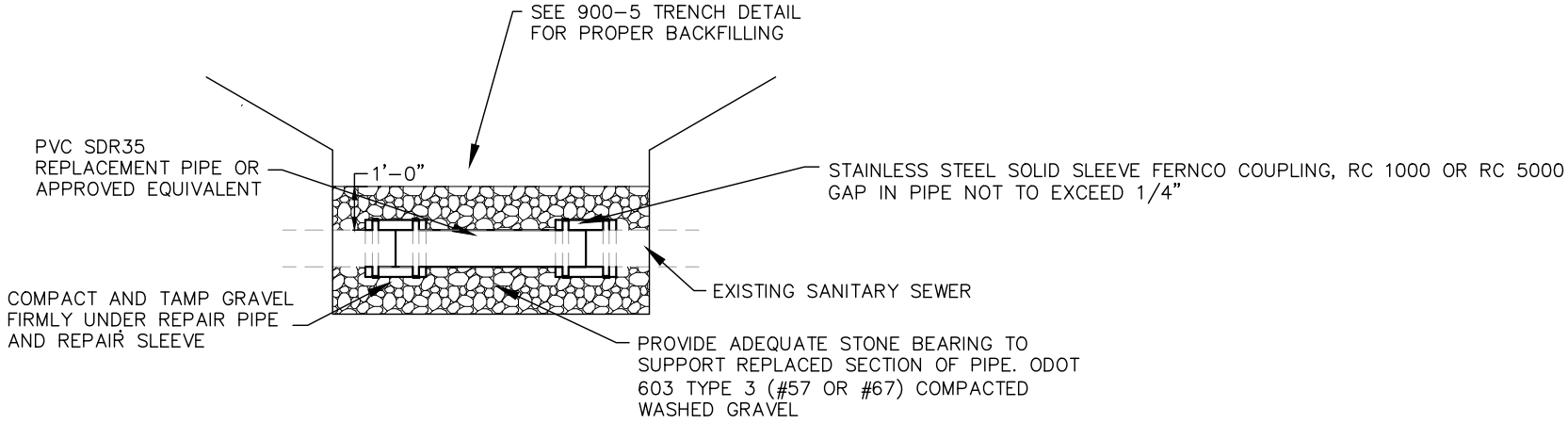
C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659, LAWN MIXTURE UNLESS OTHERWISE APPROVED BY THE DISTRICT DIRECTOR OR APPROPRIATE JURISDICTION.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS, AS REQUIRED BY THE APPROPRIATE JURISDICTION.

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



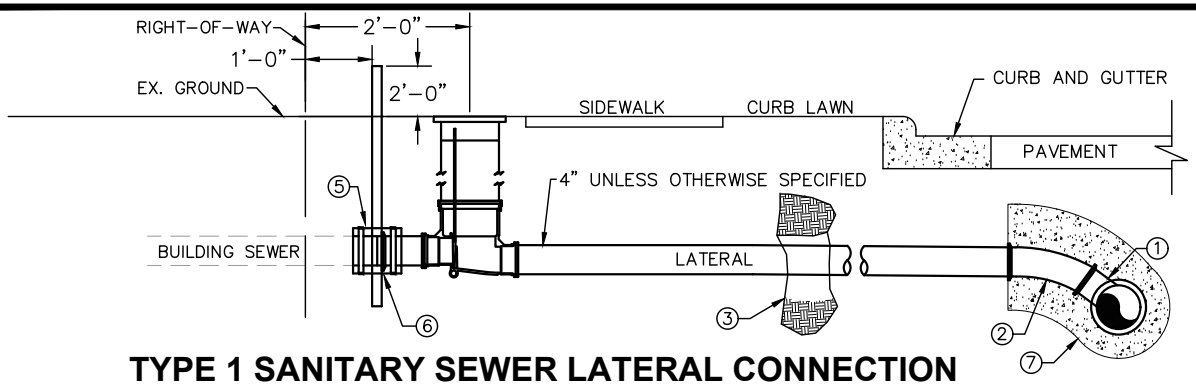
REPAIR OF EXISTING PVC SDR35 SANITARY SEWER



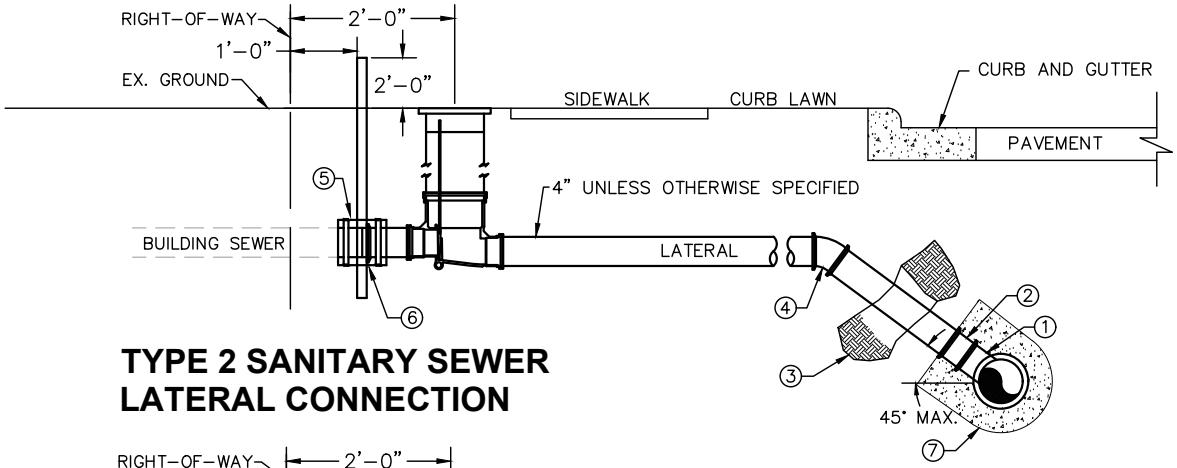
REPAIR OF EXISTING SANITARY SEWER OTHER THAN PVC

NOTE; LATERAL REPAIR SHALL REQUIRE FERNCO COUPLING
WITH STAINLESS STEEL SHEER RINGS

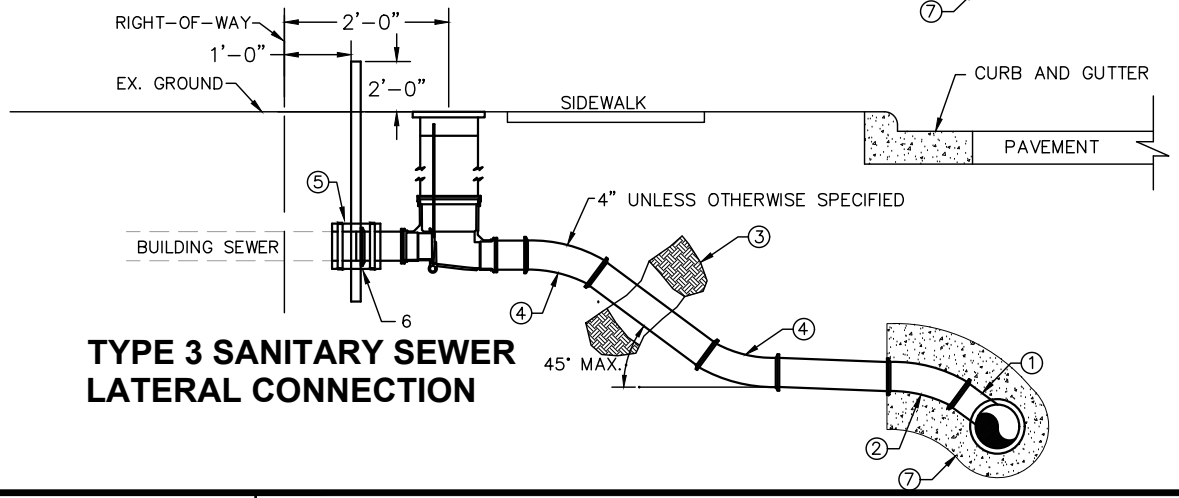
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT	REPAIR OF EXISTING SANITARY SEWER PIPE DETAIL	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012
ChoiceOne Engineering			PAGE No. 900–6



TYPE 1 SANITARY SEWER LATERAL CONNECTION



TYPE 2 SANITARY SEWER LATERAL CONNECTION



TYPE 3 SANITARY SEWER LATERAL CONNECTION

LEGEND

① 4" TEE OR WYE–ROTATE 45° FROM HORIZONTAL UNLESS OTHERWISE SPECIFIED.
② 4" 1/8 BEND OR 1/16 BEND AS NEEDED.
③ STRUCTURAL BACKFILL FOR BEDDING FOR ALL SANITARY LATERALS SHALL BE CRUSHED STONE OR GRAVEL, PER ODOT 703.11, TYPE 3 (#57 OR #67). BEDDING SHALL BE PLACED FROM 4 INCHES BELOW TO 8 INCHES ABOVE THE LATERAL.
④ EXACT RECORD OF BEND LOCATIONS MUST BE MADE, AS TO DEPTH FROM SURFACE AND DISTANCE FROM CENTERLINE OF SEWER, BEFORE BACKFILL IS PLACED.
⑤ CONNECT TO EXISTING SANITARY LATERAL AT THE RIGHT–OF–WAY LINE. CONNECTION TO BE MADE WITH FERNCO COUPLINGS WITH STAINLESS STEEL BANDS, EACH SIDE, OR OTHER FITTINGS APPROVED BY THE DISTRICT.
⑥ USE A WATER TIGHT CAP AND A 2"x2" WOOD STAKE WITH A PAINTED GREEN TOP IF NOT TYING INTO AN EXISTING BUILDING SEWER.
⑦ CONCRETE ENCASEMENT AND BLOCKING REQUIRED IF DEPTH OF CONNECTION IS 12' OR GREATER. CONCRETE SHALL BE 4" MIN. THICKNESS AROUND THE MAIN SEWER AND 6" MIN. THICKNESS AROUND THE LATERAL.

NOTES

A. RISER PIPE TO BE BEDDED IN STRUCTURAL BACKFILL SOLIDLY AGAINST UNDISTURBED GROUND. ALSO, TEE MAY BE SUBSTITUTED FOR SADDLE 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 DISTRICT.

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

D. EACH SANITARY LATERAL MUST BE IN SEPARATE TRENCHES.

E. THE BUILDING SEWER LATERAL SHALL BE A MINIMUM OF 4" AND A MAXIMUM OF 6" UNLESS OTHERWISE APPROVED, IN WRITING, BY THE DIRECTOR AND SHALL MEET THE MINIMUM SLOPE REQUREMENTS OF:

- 4" LATERAL – 2% GRADE (1/4" PER FOOT)
- 6" LATERAL – 1% GRADE (1/8" PER FOOT)

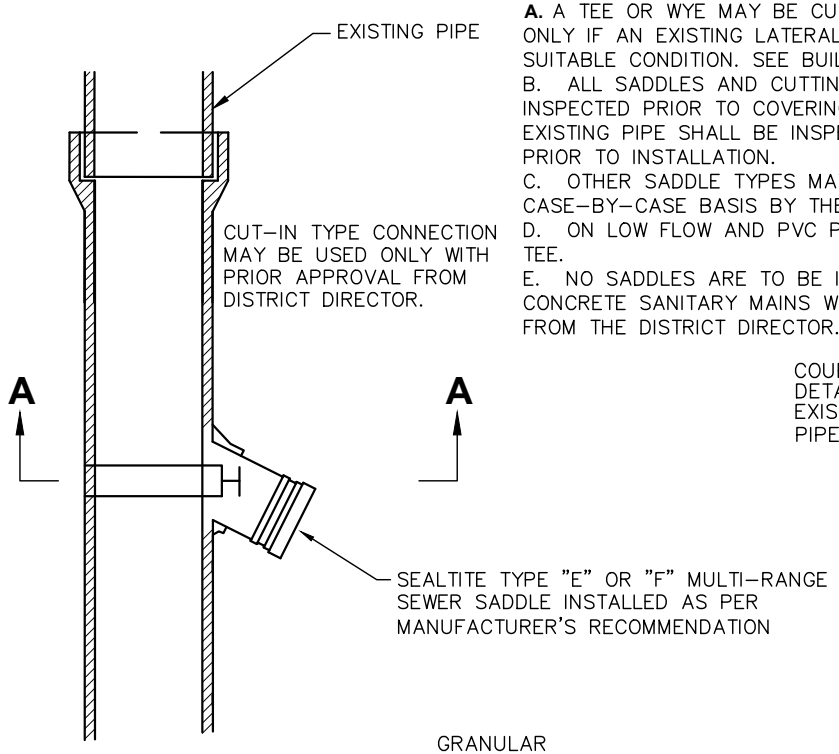
F. THE BUILDING SEWER AND LATERAL SHALL HAVE A MINIMUM COVER OF 36" TO THE TOP OF PIPE.

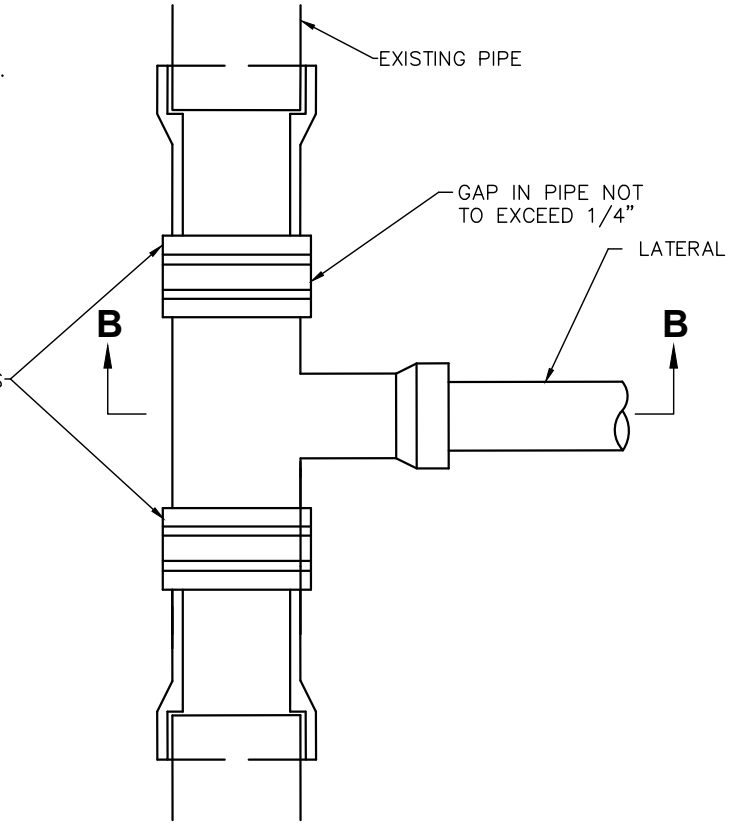
G. EXACT MEASUREMENTS MUST BE PROVIDED SHOWING DISTANCE FROM NEAREST MANHOLE, LENGTH OF LATERAL, BENDS, AND THE END OF LATERAL ELEVATION RELATIVE TO THE BACK OF CURB ELEVATION OR SOME OTHER REFERENCE POINT EASILY RECOVERED.

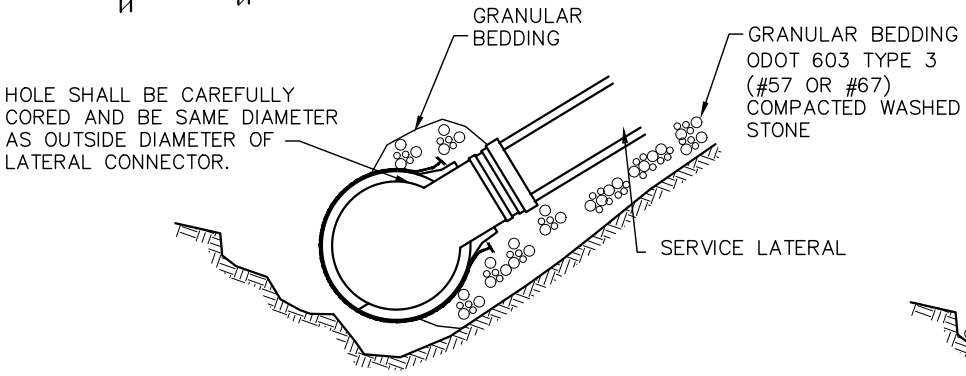
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**NEW SERVICE LATERAL CONSTRUCTION ONLY**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900–7

NOTES

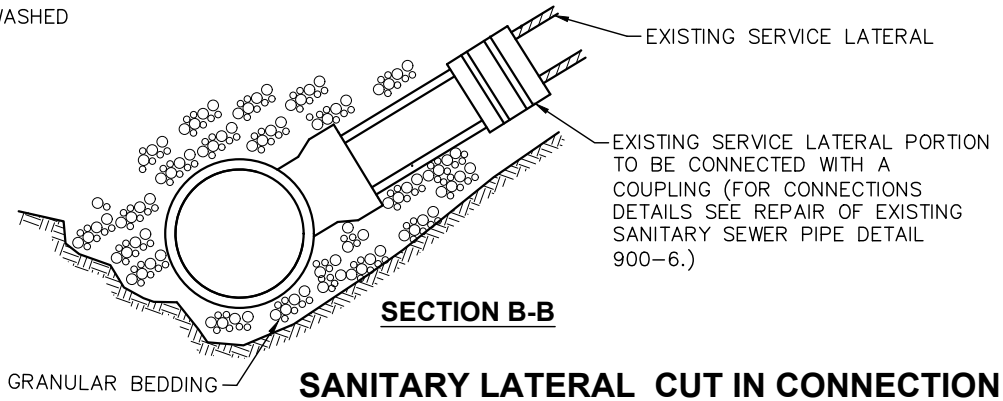
A. A TEE OR WYE MAY BE CUT IN OR SADDLE PLACED ONLY IF AN EXISTING LATERAL IS NOT PROVIDED OR SUITABLE CONDITION. SEE BUILDING CONNECTION DETAIL.
B. ALL SADDLES AND CUTTING IN TEES MUST BE INSPECTED PRIOR TO COVERING, AND THE HOLE IN THE EXISTING PIPE SHALL BE INSPECTED AND APPROVED PRIOR TO INSTALLATION.
C. OTHER SADDLE TYPES MAY BE APPROVED ON CASE-BY-CASE BASIS BY THE DISTRICT 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 DISTRICT DIRECTOR.







SECTION A-A

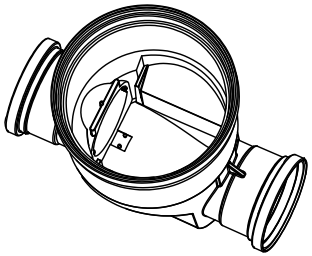


SECTION B-B

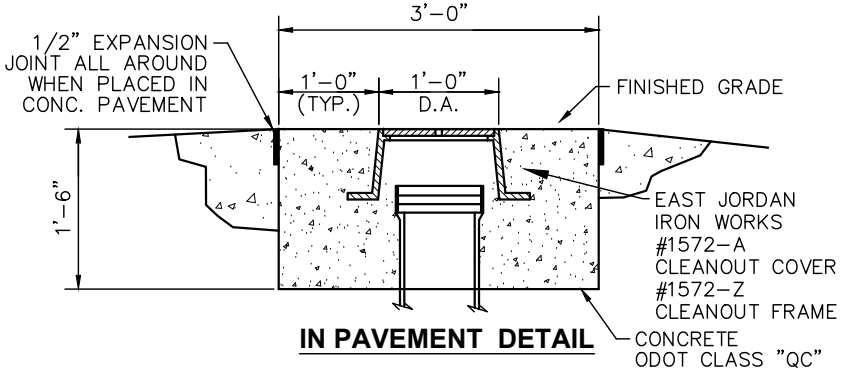
SANITARY LATERAL SADDLE CONNECTION

SANITARY LATERAL CUT IN CONNECTION

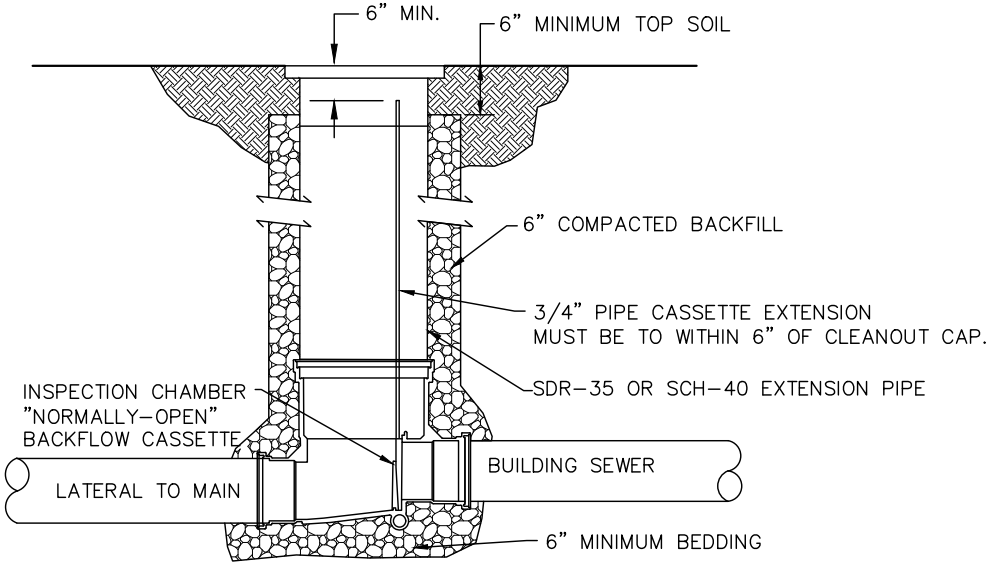
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT	# SANITARY SEWER SADDLE DETAILS	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012
ChoiceOne Engineering			PAGE No. 900-8



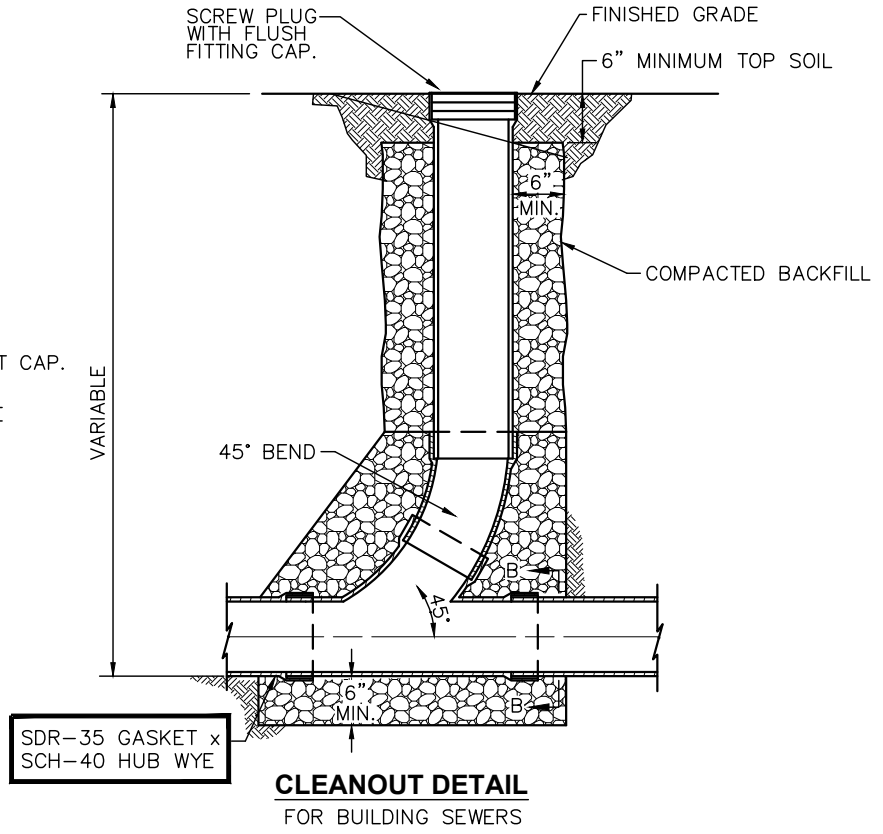
INSPECTION VALVE/TEE AND CLEANOUT COVER IS TO BE USED IN ALL APPLICATIONS INCLUDING BUT NOT LIMITED TO CONCRETE, STONE, AND ASPHALT AREAS.



IN PAVEMENT DETAIL



ACCESS VALVE/CLEANOUT DETAIL FOR SANITARY LATERALS



CLEANOUT DETAIL
FOR BUILDING SEWERS

NOTES

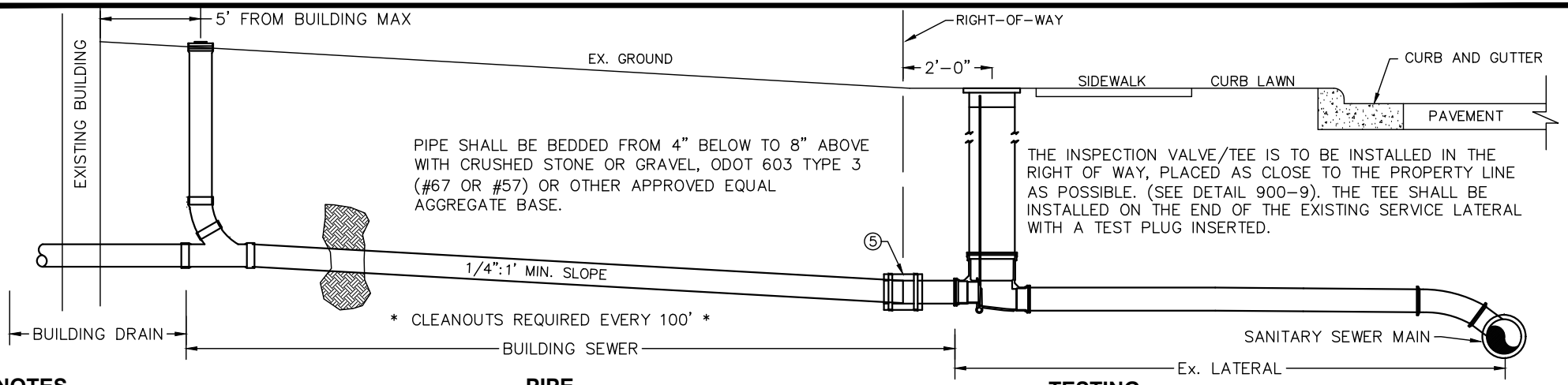
A. ACCESS VALVES SHALL BE AT THE PROPERTY LINE OR RIGHT OF WAY LINE AND SHALL BE:

NEW CONSTRUCTION: 4" MAINLINE ML4XPVC; 6" MAINLINE MLSF668PNC OR APPROVED EQUIVALENT

EXISTING CONSTRUCTION: 4" MAINLINE MLSF446PNC OR ML4XPVC (ML4XPVC WILL BE REQUIRED IF THE GRADE PERMITS ITS USE); 6" MAINLINE MLSF668PNC OR APPROVED EQUIVALENT; ML4XPVC SHALL HAVE NORMALLY OPEN CASSETTE INSTALLED UNLESS SERVICE IS TERMINATED

NOTE
CLEANOUT TO BE PLACED 5' FOR BUILDING ON EVERY 100'

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT	SANITARY SEWER ACCESS VALVE & CLEANOUT DETAIL	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012
ChoiceOne Engineering			PAGE No. 900-9



NOTES

A. 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.

B. ROOF DOWNSPOUTS, EXTERIOR FOUNDATION DRAINS, AREAWAY DRAINS OR OTHER SURFACE RUNOFF OR GROUNDWATER SHALL NOT BE CONNECTED TO THE SANITARY SEWER MAIN. BASEMENT FLOOR DRAINS AND SUMP PUMPS, THAT CARRY GRAY WATER, SHALL BE CONNECTED TO THE SANITARY SEWER.

C. ANY INDIVIDUAL OR FIRM INSTALLING A SEWER, SEWER TAP, LATERAL OR WORKING ON ANY APPURTENANCE IN THE RIGHT OF WAY OR EASEMENTS SHALL HAVE SUBMITTED FOR AND RECEIVED DISTRICT APPROVAL TO BE LISTED AS A SEWER BUILDER.

D. BEFORE BEGINNING WORK, A SEWER PERMIT MUST BE OBTAINED FROM THE DISTRICT OFFICE AND APPLICABLE FEES MUST BE PAID.

E. WHEN THE LATERAL MUST ENTER INTO A PAVED PORTION OF THE STREET OR ALLEY, A STREET OPENING PERMIT MUST BE OBTAINED FROM THE LOCAL JURISDICTION BEFORE BEGINNING WORK.

F. 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

A. THE PIPE MATERIAL SHALL BE PVC SDR 35 OR SCHEDULE 40, UTILIZING PURPLE PRIMER, OR AN APPROVED EQUIVALENT.

B. PIPE SIZES FOR BUILDING SEWER SHALL BE A MINIMUM OF 4" AND MAXIMUM OF 6" FOR SINGLE FAMILY RESIDENCES. THE BUILDING DRAIN AND BUILDING SEWER DIAMETER SHALL NOT EXCEED THE PIPE DIAMETER OF THE LATERAL.

INSPECTION

A. AN INSPECTION SHALL BE REQUIRED ON ALL NEW BUILDING CONNECTIONS AND ALSO ON THE REPLACEMENT OF EXISTING BUILDING CONNECTIONS.

B. WHEN THE BUILDING SEWER/LATERAL IS READY FOR INSPECTION, THE COUNTY SHALL BE GIVEN 24 HOURS ADVANCE NOTICE. THE PIPE SHALL BE LEFT UNCOVERED UNTIL AN INSPECTION HAS BEEN MADE AND APPROVED.

C. 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 THE ENTIRE LATERAL BEING UNCOVERED SO THAT A PROPER INSPECTION CAN BE MADE.

D. IF AN EXISTING BUILDING SEWER IS TO BE REUSED, AN INSPECTION IS REQUIRED. THE DISTRICT SHALL INSPECT THE ENTIRE BUILDING CONNECTION FROM THE CLEANOUT TO THE PROPERTY LINE CONNECTION OR TO THE MAIN SEWER, WHICHEVER IS APPLICABLE.

E. 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

A. THE OUTSIDE PLUMBER SHALL BE RESPONSIBLE FOR THE TESTING FROM THE CONNECTION TO THE EXISTING SERVICE LATERAL TO THE CLEANOUT.

B. ALL TESTING SHALL BE BY AIR WITH 4 PSI PRESSURE. SEE SHEET 900-11.

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

D. WHEN ANY EXISTING LATERAL IS REPLACED, THE BUILDING SEWER SHALL BE TESTED TO THE ACCESS VALVE UNLESS OTHERWISE APPROVED.

PIPE LAYING

A. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED OR OTHERWISE CLOSED WITH A WATERTIGHT PLUG TO THE APPROVAL OF THE COUNTY BEFORE LEAVING THE WORK SITE FOR THE NIGHT.

B. THE JOINING OF PIPE WITH CONCRETE SHALL NOT BE ACCEPTED.

C. 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.

D. 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.

E. THE BUILDING CONNECTION LINE SHALL BE LAID IN AS STRAIGHT A LINE, FROM THE BUILDING TO THE EXISTING LATERAL, AS POSSIBLE.

F. ALL NEW CONSTRUCTION SHALL HAVE SANITARY LATERALS INSTALLED TO EACH PARCEL.

G. MINIMUM SLOPE OF THE BUILDING SEWER AND LATERAL SHALL BE:

4" PIPE – 2% ($\frac{1}{4}$" PER FOOT)
6" PIPE – 1% ($\frac{1}{8}$" PER FOOT)

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**BUILDING CONNECTION DETAIL**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900-10

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. THE BUILDING SEWER SHALL BE TESTED IN THE SAME MANNER, BETWEEN THE ACCESS VALVE AND THE BUILDING. THE BUILDING SEWER TRENCH MAY BE LEFT OPEN TO CONDUCT TESTING.

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 LOGAN COUNTY WATER POLLUTION CONTROL REPRESENTATIVE.

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 LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ACCEPTS ANY SANITARY SEWER AND BEFORE THE FINAL PAYMENT, THE CONTRACTOR WILL SUPPLY THE LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT WITH PASSING VIDEO IN AN APPROVED FORMAT AND WRITTEN 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 IS THE RESPONSIBILITY OF THE CONTRACTOR.

THE LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT SHALL REQUIRE THE USE OF A PAN AND TILT TYPE CAMERA OR CUES DUC TO REVIEW ALL LATERAL AND MAIN LINE CONNECTIONS ON SEWER MAIN REPLACEMENT PROJECTS.

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

THE LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT RESERVES THE RIGHT TO A FINAL TELEVISING OF THE SEWER SYSTEM AT THE COUNTY'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 USING AVANTI AV–202 MULTIGROUT.

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

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT

ChoiceOne Engineering

SANITARY SEWER TESTING NOTES

PUBLIC & PRIVATE

REVISIONS: JAN. 2018

DATE APPROVED: AUG. 2012

NOTES

ALL SANITARY SEWERS AND THEIR ASSOCIATED APPURTENANCES, REGARDLESS OF PUBLIC OR PRIVATE USE, SHALL MEET AND COMPLY WITH THE DISTRICT'S DESIGN AND CONSTRUCTION STANDARDS.

A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE DISTRICT UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT.

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 DISTRICT.

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–ETHELYNE 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 DISTRICT.

E. CONSTRUCTION OF SANITARY SEWERS SHALL INCLUDE DYE TESTING AS DETERMINED BY THE DISTRICT 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 DISTRICT PROPERTY, UNLESS OTHERWISE DIRECTED.

G. NEW SEWERS MUST HAVE COUNTY AND EPA PLAN APPROVAL OR ANY SEWER THAT IS RELOCATED OR RESIZED.

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.

APPROVAL OF EQUIVALENTS

A. EQUAL MATERIALS MUST BE SUBMITTED TO THE DISTRICT DIRECTOR FOR APPROVAL PRIOR TO ORDERING MATERIALS.

B. SUBMITTALS SHALL INCLUDE ALL MATERIAL DATA AND OR CUT SHEETS PERTAINING TO THE ITEM.

C. THE DISTRICT RESERVES THE RIGHT TO REQUEST A SAMPLE OF THE OR EQUAL ITEM FOR THEIR OWN USE DURING THE REVIEW PROCESS.

D. THE COST OF THE ITEM SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR OWNER AND NOT THE SEWER DISTRICT.

E. THE DISTRICT SHALL REVIEW THE SUBMITTAL WITHIN 72 WORKING HOURS OF SUBMITTAL.

HOUSING/BUILIDING CONNECTIONS

A. LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT PROHIBITS "SHARED" CONNECTIONS TO A BUILDING SEWER OR LATERAL FROM MULTIPLE PARCELS REGARDLESS OF OWNERSHIP. ONLY BUILDINGS ON A SINGLE PARCEL MAY BE CONNECTED TO THE BUILDING SEWER, LATERAL AND TAP FOR THAT PROPERTY. IF AT ANY POINT THE PARCEL IS SPLIT, ANY AFFECTED BUILDINGS SHALL THEN BE REQUIRED TO PROVIDE THEIR OWN SANITARY SEWER TAP, LATERAL AND BUILDING SEWER.

B. NO SERVICE LINE SHALL BE ALLOWED TO CONNECT DIRECTLY INTO A MANHOLE, SUBJECT TO APPROVAL BY THE DISTRICT DIRECTOR IN SPECIFIC CASES.

C. THE ENDS OF ALL SERVICE LINES OR TEES SHALL BE ACCURATELY LOCATED, MAPPED, AND GIVEN TO THE DISTRICT WITHIN 15 DAYS AFTER INSTALLATION.

D. BEFORE MAKING A CONNECTION TO AN EXISTING SEWER TAP OR SEWER LATERAL. LCWPCD SHALL CHECK THE EXISTING PIPE TO VERIFY THAT THE EXISTING PIPE IS CONNECTED TO THE MAIN SEWER AND IS IN ACCEPTABLE CONDITION. IF IT IS DEEMED UNACCEPTABLE A NEW LATERAL WILL BE REQUIRED.

E. LATERALS FROM THE MAIN TO THE PROPERTY LINE SHALL BE 4" MINIMUM WITH AN INSPECTION VALVE/TEE, MANUFACTURED BY MAINLINE, AT THE PROPERTY LINE. (900–9)

F. STREET EXCAVATION REQUIRES A STREET/ROAD OPENING PERMIT BY THE LOCAL JURISDICTION.

G IN THE EVENT OF A DEMOLITION OF AN EXISTING BUILDING, A DEMOLITION PERMIT SHALL BE OBTAINED. THE LATERAL SHALL BE CUT AND CAPPED WITH AN ACCESS VALVE INSTALLED PER SERVICE LATERAL TYPE A DETAIL ON 900–7 AND 900–9. BILLING WILL CONTINUE UNTIL THE 1ST OF THE FOLLOWING MONTH AFTER THE WORK HAS BEEN INSPECTED AND APPROVED.

PIPE (SEWER MAINS)

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

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

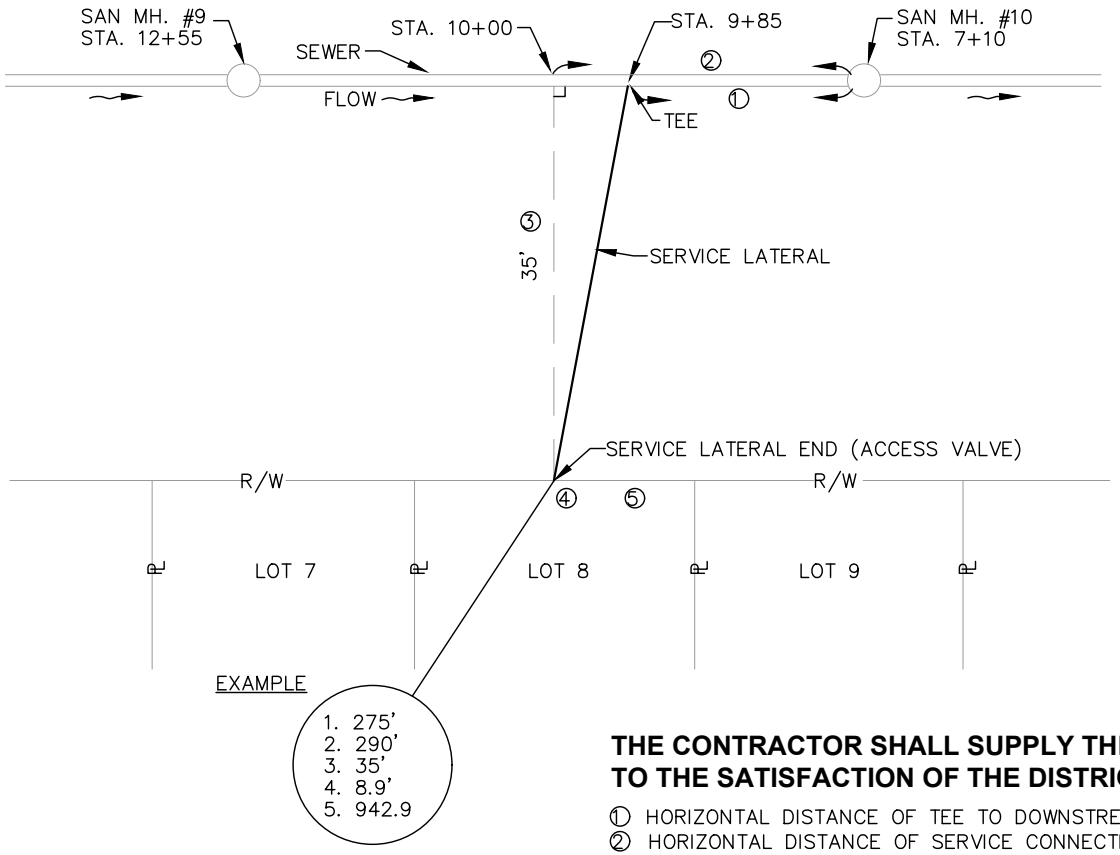
C. ALL JOINTS SHALL BE OF THE BELL AND SPIGOT TYPE, THE BELLS BEING FORMED INTEGRALLY WITH THE PIPE. THE BELL SHALL CONTAIN A FACTORY INSTALLED ELASTOMETRIC GASKET WHICH IS POSITIVELY RETAINED. NO SOLVENT CEMENT JOINTS WILL BE PERMITTED IN FIELD CONSTRUCTION EXCEPT AS SPECIFICALLY AUTHORIZED BY THE DISTRICT.

D. LOCATOR WIRE SHALL BE REQUIRED TO BE INSTALLED ON FORCEMAIN SANITARY SEWERS. LOCATOR WIRE SHALL CONFORM TO FORCEMAIN PRESSURE CLEANOUT DETAIL ON 900–15.

FLEXIBLE PIPES	MATERIAL SPECIFICATIONS	JOINT SPECIFICATIONS
POLYVINYL CHLORIDE	ASTM D–3034 (SDR–35) PIPE STIFFNESS = 46PSI ASTM D–3212	ELASTOMERIC GASKET
DUCTILE IRON	ANSI A–21.51 & AWWA C–151	ANSI A–21.11 & AWWA C–111

1. SDR = OUTSIDE DIAMETER DIVIDED BY WALL THICKNESS.

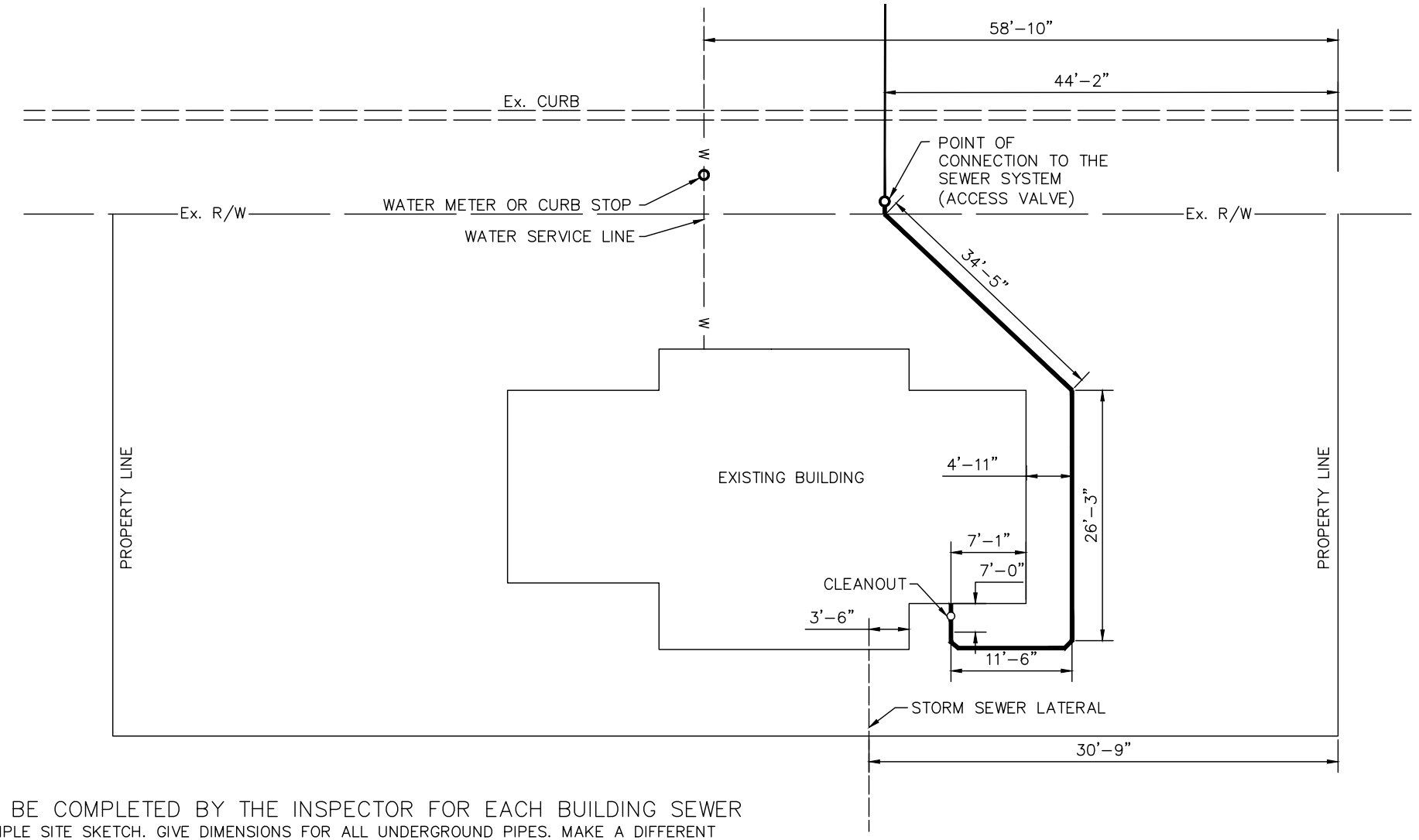
2. THE SPECIFICATIONS ABOVE SHALL BE THOSE MOST RECENTLY ADOPTED BY THE APPROPRIATE STANDARDS SETTING ORGANIZATIONS.



THE CONTRACTOR SHALL SUPPLY THE FOLLOWING INFO TO THE SATISFACTION OF THE DISTRICT

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.

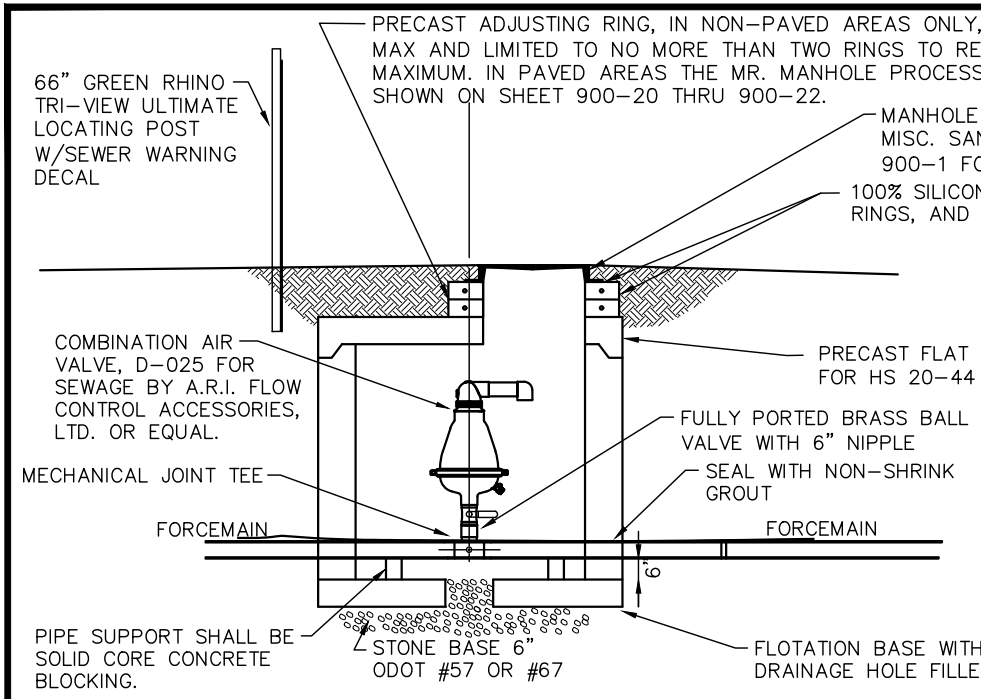
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**SERVICE LATERAL LOCATION REFERENCE (VACANT LOT)**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900– 13



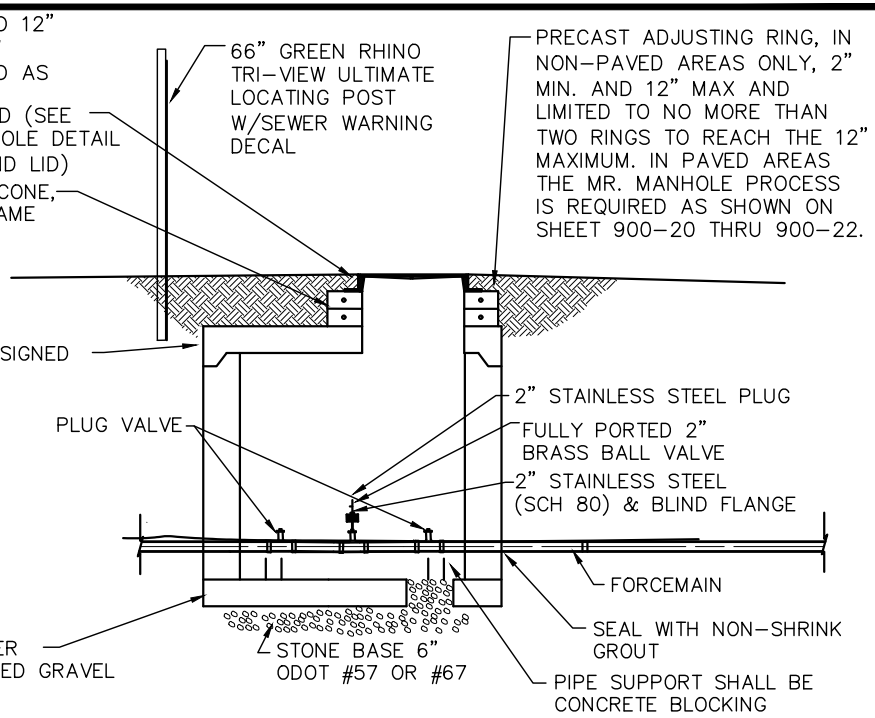
TO BE COMPLETED BY THE INSPECTOR FOR EACH BUILDING SEWER

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.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**SERVICE LATERAL LOCATION REFERENCE (BUILDING IN PLACE)**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900–14A



SEWAGE COMBINATION AIR VALVE IN MANHOLE



FORCE MAIN PRESSURE CLEANOUT

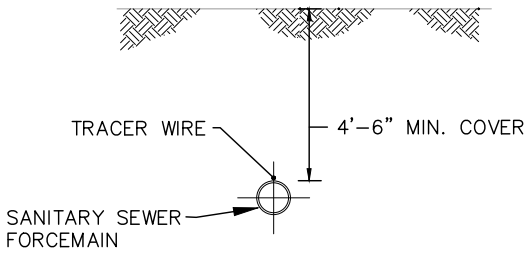
NOTES:

A. ALL STRUCTURES SHALL BE FINISHED TO SAME ELEVATION AS EXISTING GRADE.
B. ALL FORCEMAIN FITTINGS ARE TO BE RESTRAINED.
C. CHIMNEY SEALS MUST BE INSTALLED. SEE 900-4.
D. THE MANHOLE DIAMETER IS TO BE DESIGNED BASED ON THE SIZE OF FORCEMAIN AND EACH INDIVIDUAL SITUATION. THE MINIMUM INSIDE DIAMETER IS 5'-0".
E. ALL INTERNAL COMPONENTS SHALL HAVE A 12" MIN. CLEARANCE FROM THE STRUCTURE WALLS.
F. IN WET AREAS, SEAL BOTTOM WITH POURED CONCRETE BASE OR PRECAST MANHOLE BASE.
G. THE LOCATION OF COMBINATION AIR RELEASE VALVES SHALL BE APPROVED BY THE MANUFACTURE. FINAL APPROVAL IS AT THE DISCRETION OF THE DISTRICT DIRECTOR. (TYPICAL AROUND 650')

TRACER WIRE NOTES

A. DIRECTIONAL DRILL CONSTRUCTION: TRACER WIRE SHALL BE 12ga. COPPERHEAD SOLOSHOT EHS REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC. OR DISTRICT APPROVED EQUIVALENT.

OPEN CUT CONSTRUCTION: TRACER WIRE SHALL BE COPPERHEAD HS REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC OR DISTRICT APPROVED EQUIVALENT.
B. TRACER WIRE MUST BE RUN ON TOP OF THE PIPE CONTINUOUSLY FOR THE FULL LENGTH OF THE PIPE.
C. TRACER WIRE WILL COME TO THE SURFACE AT EVERY VALVE, PUMP STATION, AIR RELEASE, AND VALVE VAULT.
D. TRACER WIRE THAT MUST BE SPLICED SHALL USE SNAKEBITE TRACER WIRE CONNECTORS MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC OR DISTRICT APPROVED EQUIVALENT.
E. TRACER WIRE SHALL BE TAPED TO THE PIPE USING 1 1/2" POLYETHYLENE TAPE WRAPPED TWICE AROUND THE PIPE.



SANITARY SEWER FORCEMAIN TRACER WIRE DETAILS

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**AIR RELEASE VALVE AND CLEANOUT CHAMBER, HIGH PRESSURE**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900-15

SEWER TELEVISING STANDARDS

A. ALL SEWER TELEVISING CONTRACTORS SHALL BE CERTIFIED BY NASSCO FOR PIPELINE ASSESSMENT. ALL SANITARY TELEVISING WORK SHALL COMPLY WITH NASSCO STANDARDS.

B. ALL TELEVISING WORK SHALL BE DONE IN COLOR WITH THE PROPER AMOUNT OF ILLUMINATION TO CLEARLY SHOW THE ENTIRE PIPE DIAMETER.

C. THE CAMERA SHALL BE OF THE PAN AND TILT TYPE OR CUES DUC AS DETERMINED BY THE DISTRICT DIRECTOR.

D. THE TELEVISING CONTRACTOR SHALL PROVIDE A FLASH DRIVE RECORDING OF THE ENTIRE TELEVISING PROCESS. THE RECORDING SHALL BE COMPATIBLE WITH MPEG4.

E. AT THE START OF THE TELEVISING PROCESS THE RECORDING SHALL CONTAIN THE FOLLOWING:

a. DATE/TIME
b. OPERATOR AND COMPANY NAME
c. SEWER PROJECT NAME
d. ADDRESS OR INTERSECTION OF MANHOLE WORKING ON
e. DIRECTION ON TELEVISING
f. COUNTER SETTING

F. THE RECORDING MUST SHOW THE DISTANCE COUNTER THROUGHOUT THE TELEVISING PROCESS.

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

H. THE OPERATOR SHALL PAN EACH SEWER JOINT AND NOTE ANY DEFICIENCIES ON THE TAPE.

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

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

K. THE OPERATOR SHALL NOTE ANY DEFICIENCIES ON THE MAIN SCREEN.

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

a. DIAGRAM OF SEWER FROM MANHOLE TO MANHOLE SHOWING DIRECTION OF FLOW.
b. SHALL NOTE ALL SEWER LATERALS WITH CLOCK POSITIONS AND DISTANCE FROM MANHOLES.
c. DEFICIENCIES IN THE SEWER PIPE INCLUDING BELLIES.
d. SPECIAL NOTES DESCRIBING AREAS OF CONCERN.
e. 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:

PIPE SIZES

SLOPE	8"	10"	12"	15"	18"	21"	24"	>27"
0.10%	N/A	N/A	N/A	N/A	N/A	4"	4.5"	5"
0.12%	N/A	N/A	N/A	N/A	4"	4"	5"	5"
0.15%	N/A	N/A	N/A	3.5"	3.5"	4"	4"	4"
0.22%	N/A	N/A	3"	3"	3.5"	3.5"	3.5"	4"
0.28%	N/A	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 TELEVISING PROCEDURES FOR NEW SEWER CONSTRUCTION

A. THE SANITARY SEWER SHALL BE COMPLETELY CLEAN AND FREE OF DEBRIS USING A HIGH PRESSURE JETTER 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 SHALL MAKE SURE THAT THERE IS NO FLOW EMANATING UPSTREAM. IF SO, THE CONTRACTOR SHALL STOP THIS FLOW DURING THE TELEVISING.

SEWER TELEVISING PROCEDURES FOR SEWER RECONSTRUCTION PROJECTS

A. BEFORE COMMENCEMENT OF THE CLEANING PROCESS, THE TELEVISING 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 ACCESS VALVES, IF PRESENT, SHALL BE OPENED PRIOR TO CLEANING

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

D. ALL DEBRIS SHALL BE VACUUMED OUT OF THE SEWER MAIN.

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

F. 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.

G. THE CONTRACTOR SHALL TELEVISE THE SEWER FOLLOWING THE TELEVISING STANDARDS.

PASSING SANITARY SEWERS

A. THE DISTRICT WILL NOT PASS OR APPROVE THE SANITARY SEWER FOR FINAL PAYMENT OR ACCEPT OWNERSHIP WITHOUT HAVING A PASSING VIDEO AND LOG OF THE SANITARY SEWER TELEVISING FOLLOWING THE STANDARDS PREVIOUSLY DESCRIBED.

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

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

NOTES:

A. ALL ELECTRIC WORK SHALL BE PER NEC STANDARDS.

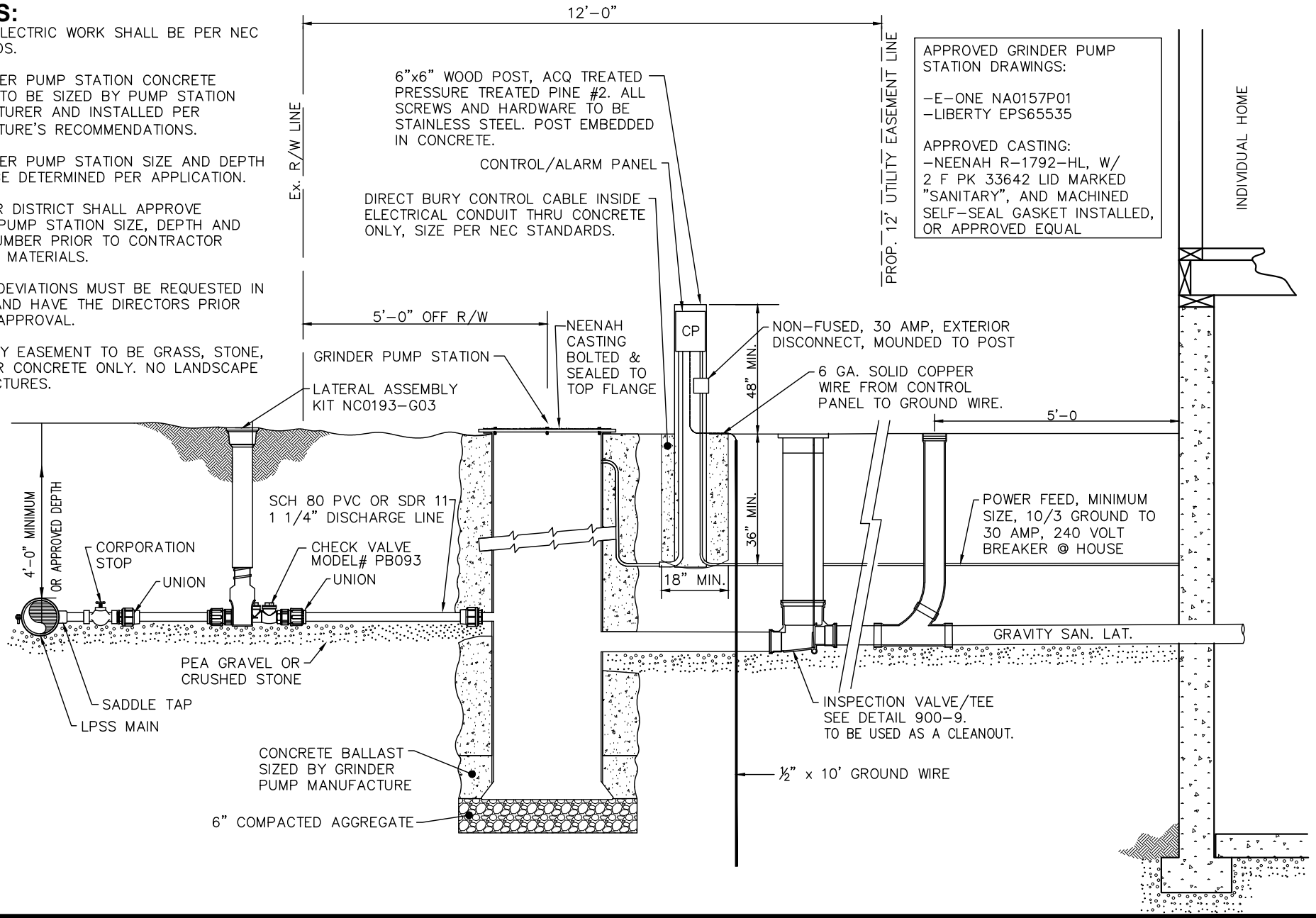
B. GRINDER PUMP STATION CONCRETE BALLAST TO BE SIZED BY PUMP STATION MANUFACTURER AND INSTALLED PER MANUFACTURE'S RECOMMENDATIONS.

C. GRINDER PUMP STATION SIZE AND DEPTH ARE TO BE DETERMINED PER APPLICATION.

D. SEWER DISTRICT SHALL APPROVE GRINDER PUMP STATION SIZE, DEPTH AND MODLE NUMBER PRIOR TO CONTRACTOR ORDERING MATERIALS.

E. ANY DEVIATIONS MUST BE REQUESTED IN WRITING AND HAVE THE DIRECTORS PRIOR WRITTEN APPROVAL.

F. UTILITY EASEMENT TO BE GRASS, STONE, MULCH OR CONCRETE ONLY. NO LANDSCAPE OS STRUCTURES.



LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT

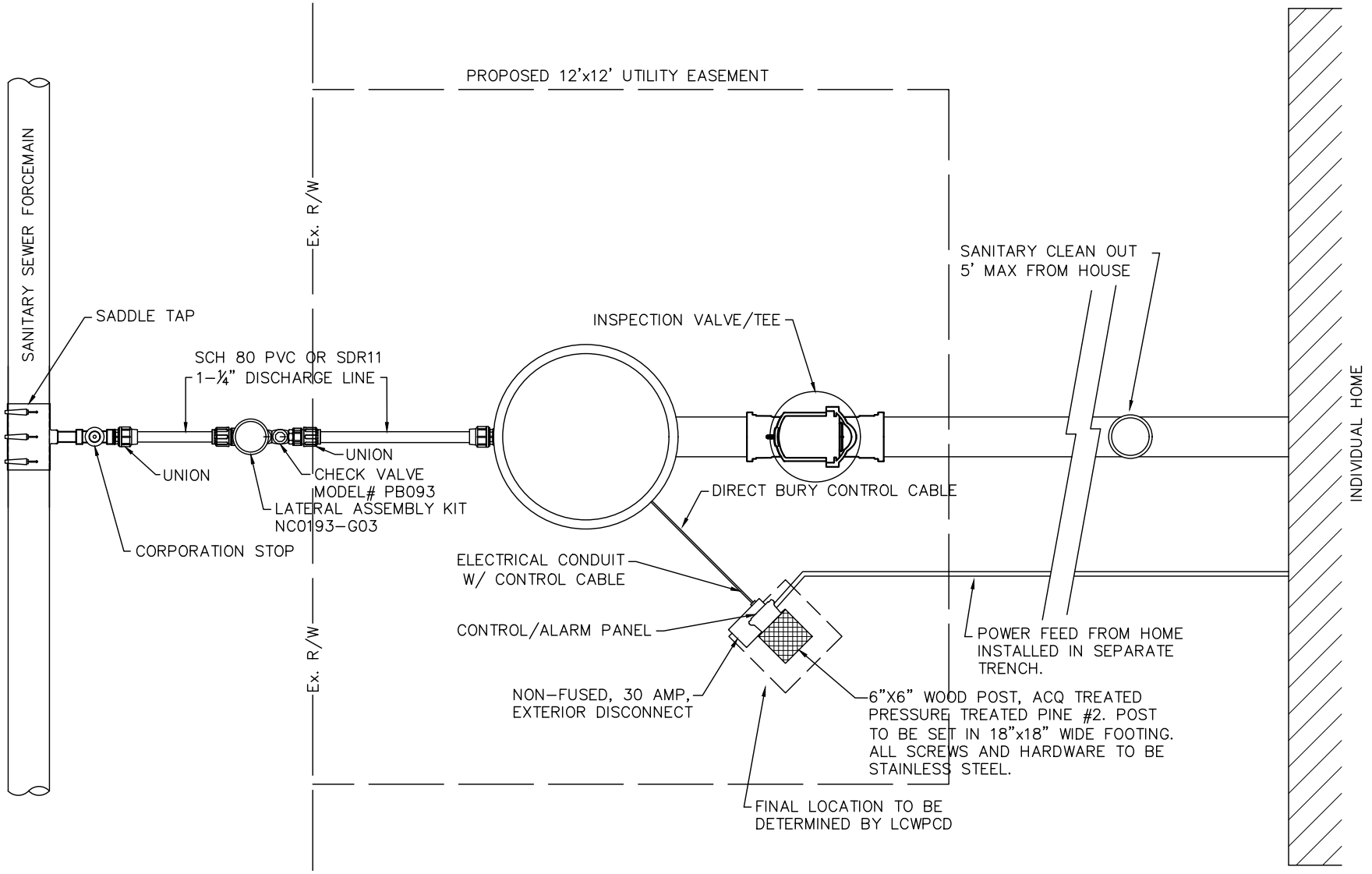
ChoiceOne Engineering

OUTSIDE SIMPLEX GRINDER PUMP PROFILE VIEW

REVISIONS: JAN. 2018

DATE APPROVED: AUG. 2012

PAGE No. 900-17A



LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT

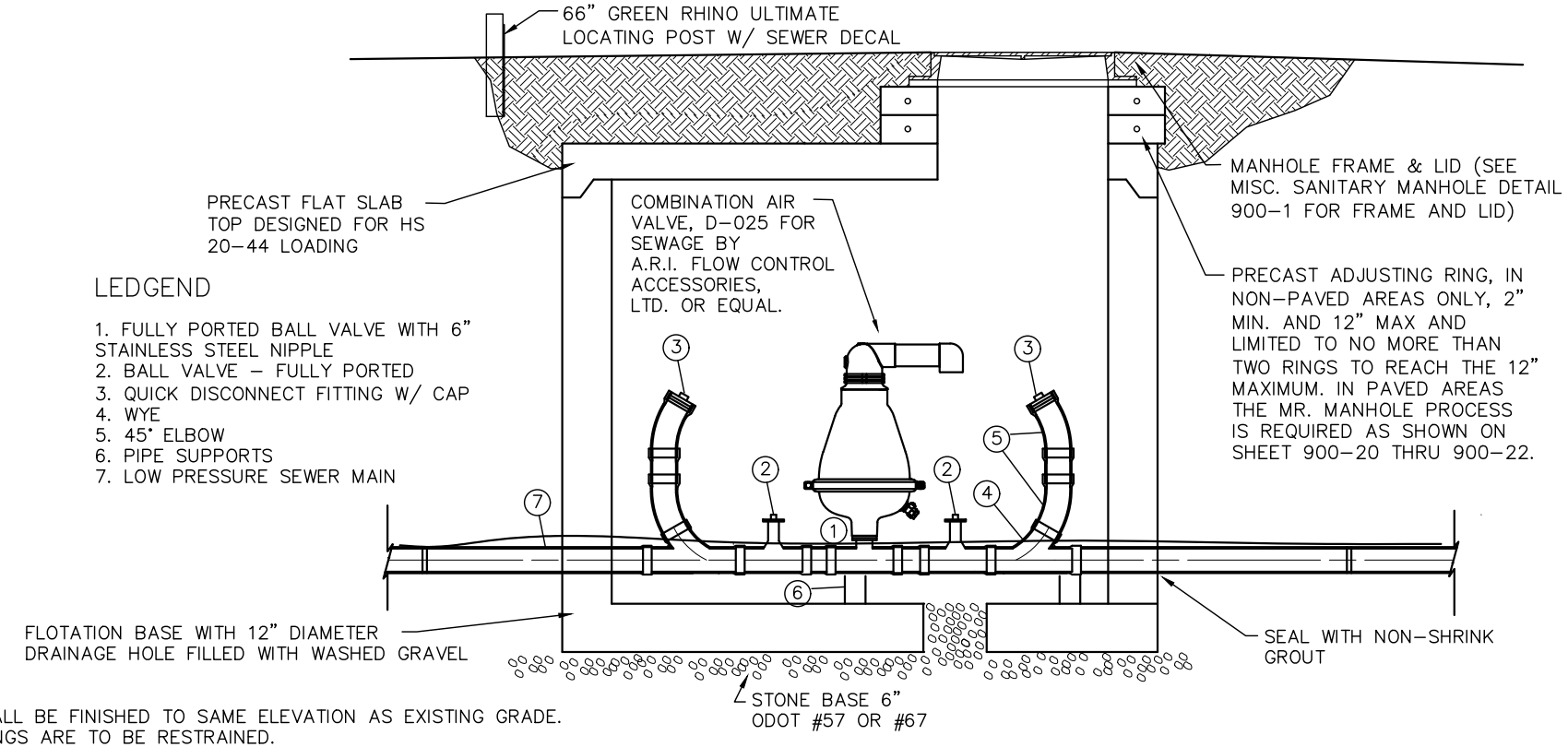
ChoiceOne Engineering

OUTSIDE SIMPLEX GRINDER PUMP PLAN VIEW

REVISIONS: JAN. 2018

DATE APPROVED: MARCH 2016

PAGE No. 900-17B



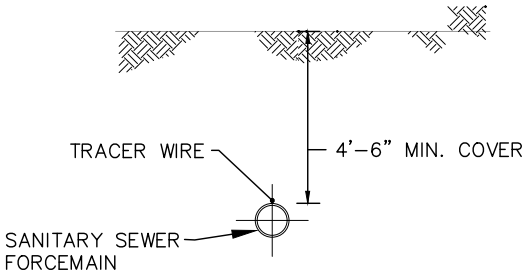
NOTES:

A. ALL STRUCTURES SHALL BE FINISHED TO SAME ELEVATION AS EXISTING GRADE.
B. ALL FORCEMAIN FITTINGS ARE TO BE RESTRAINED.
C. CHIMNEY SEALS MUST BE INSTALLED. SEE 900-4.
D. THE MANHOLE DIAMETER IS TO BE DESIGNED BASED ON THE SIZE OF FORCEMAIN AND EACH INDIVIDUAL SITUATION. THE MINIMUM INSIDE DIAMETER IS 5'-0".
E. ALL INTERNAL COMPONENTS SHALL HAVE A 12" MIN. CLEARANCE FROM THE STRUCTURE WALLS.
F. IN WET AREAS, SEAL BOTTOM WITH POURED CONCRETE BASE OR PRECAST MANHOLE BASE.
G. THE LOCATION OF COMBINATION AIR RELEASE VALVES SHALL BE APPROVED BY THE MANUFACTURE. FINAL APPROVAL IS AT THE DISCRETION OF THE DISTRICT DIRECTOR. (TYPICAL AROUND 650')

TRACER WIRE NOTES

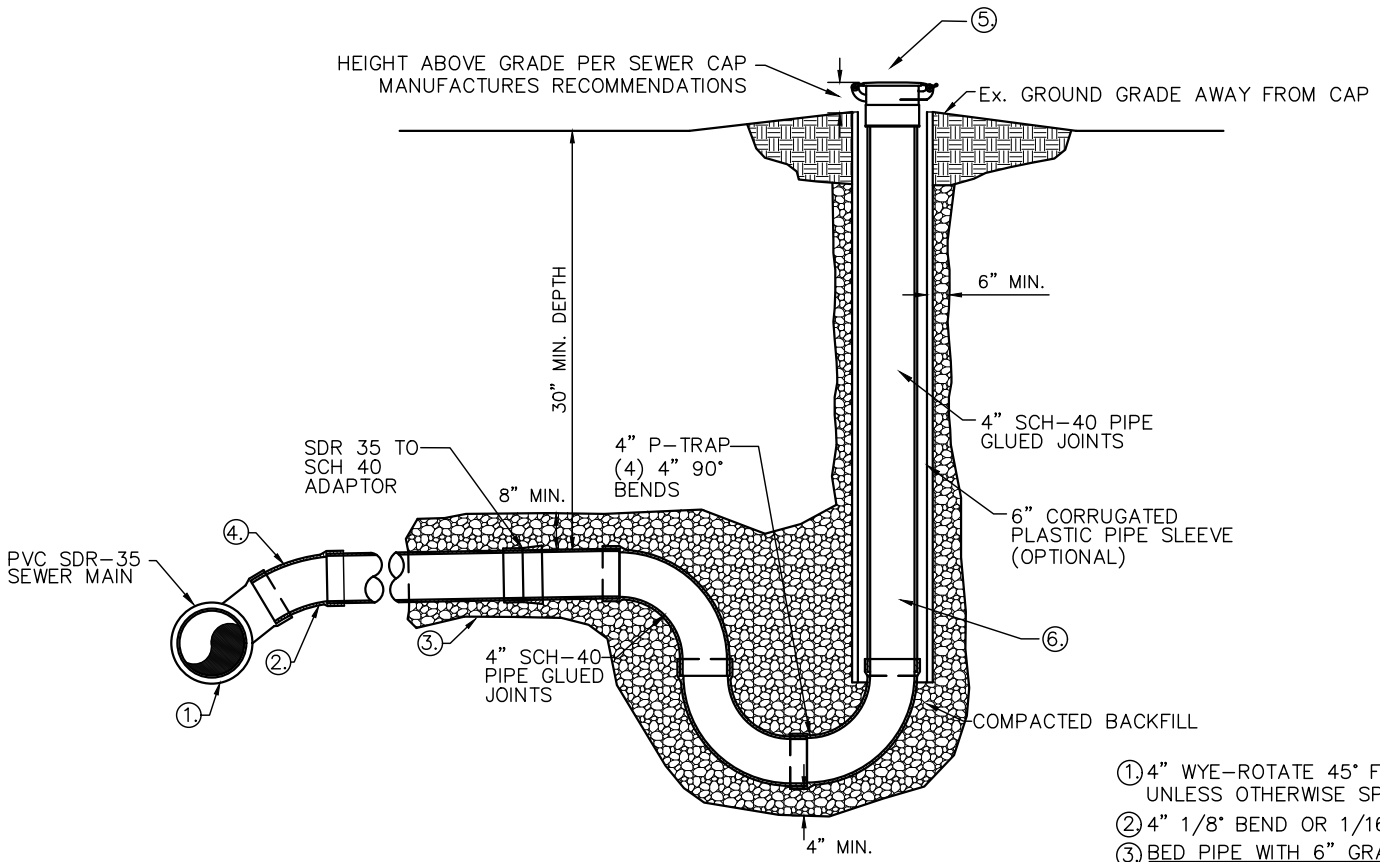
A. DIRECTIONAL DRILL CONSTRUCTION: TRACER WIRE SHALL BE 12ga. COPPERHEAD SOLOSHOT EHS REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC. OR DISTRICT APPROVED EQUIVALENT.

OPEN CUT CONSTRUCTION: TRACER WIRE SHALL BE COPPERHEAD HS REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC OR DISTRICT APPROVED EQUIVALENT.
B. TRACER WIRE MUST BE RUN ON TOP OF THE PIPE CONTINUOUSLY FOR THE FULL LENGTH OF THE PIPE.
C. TRACER WIRE WILL COME TO THE SURFACE AT EVERY VALVE, PUMP STATION, AIR RELEASE, AND VALVE VAULT.
D. TRACER WIRE THAT MUST BE SPLICED SHALL USE SNAKEBITE TRACER WIRE CONNECTORS MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC OR DISTRICT APPROVED EQUIVALENT.
E. TRACER WIRE SHALL BE TAPED TO THE PIPE USING 1 1/2" POLYETHYLENE TAPE WRAPPED TWICE AROUND THE PIPE.



SANITARY SEWER FORCEMAIN TRACER WIRE DETAILS

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**AIR RELEASE VALVE AND CLEANOUT CHAMBER, LOW PRESSURE**	REVISIONS: JAN. 2018	DATE APPROVED: AUG. 2012 PAGE No. 900-18



NOTE:

PURPLE PRIMER SHALL BE USED TO GLUE VERTICAL RISER, P-TRAP AND AT LEAST 5' OF HORIZONTAL PORTION BEYOND P-TRAP.

① 4" WYE-ROTATE 45° FROM HORIZONTAL UNLESS OTHERWISE SPECIFIED.

② 4" 1/8° BEND OR 1/16° BEND AS NEEDED.

③ BED PIPE WITH 6" GRANULAR MATERIAL AND BACKFILL WITH GRANULAR MATERIAL TO 4" ABOVE PIPE. ODOT 703 TYPE 3 #57 OR #67.

④ 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.

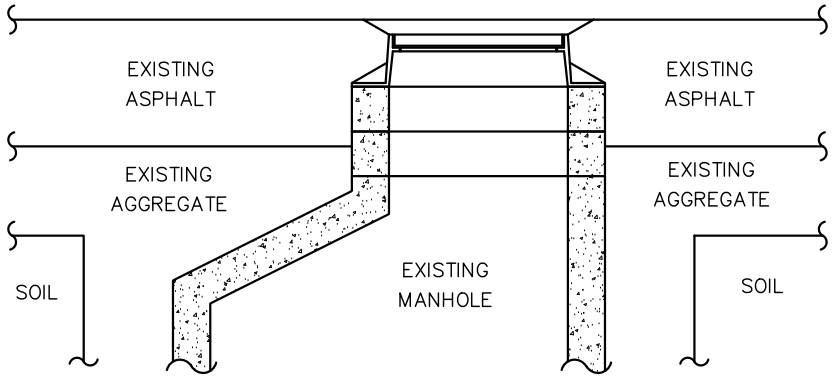
⑤ 3.5" FEMALE FOOTLOOSE SEWER CAPS, AS MANUFACTURED BY ENVIRO DESIGN PRODUCTS OR EQUAL.

⑥ SCHEDULE 40 OR 80 PIPE SHALL BE USED FOR VERTICAL RISER & TRAP.

⑦ DUE TO SEASONAL USE, SEWERS SHOULD BE PROTECTED TO PREVENT FREEZE/THAW CYCLES FROM SEPARATING PIPE JOINTS.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**RV AND CAMPSITE SEWER CONNECTION DETAIL**	REVISIONS:	DATE APPROVED: JAN. 2018 PAGE No. 900-19

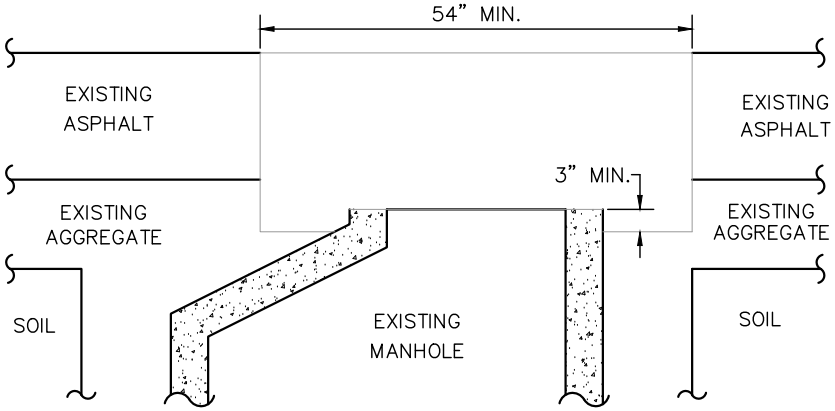
STEP #1 - CHIMNEY REMOVAL/PREPARATION



EXISTING MANHOLE WITH ADJUSTING RINGS AND POOR VERTICAL ALIGNMENT (SECTIONAL VIEW)

LEGEND

= CONCRETE



CHIMNEY REMOVED (SECTIONAL VIEW)

–PRECAUTIONS MUST BE TAKEN TO PREVENT DEBRIS FROM ENTERING THE MANHOLE DURING THE ENTIRE REMOVAL AND RECONSTRUCTION PROCESS. THIS WILL PREVENT THE POSSIBILITY OF PLUGGED SEWERS, INTERRUPTIONS IN SEWAGE FLOW AND TIME REQUIRED TO REMOVE THE DEBRIS AFTER CONSTRUCTION.

–CUT AND REMOVE THE ASPHALT PAVEMENT, AROUND THE EXISTING MANHOLE CASTING, IN A CIRCULAR FASHION WITH A MINIMUM DIAMETER OF 54" AND CENTERED ABOUT THE CASTING. DISPOSE OF THE ASPHALT.

–REMOVE THE EXISTING MANHOLE FRAME AND COVER, RETURN TO DISTRICT. A NEW FRAME AND COVER SHALL BE USED. WHEN A **27"** PIPE IS NEEDED, RISER FRAMES AND COVERS SHALL BE EQUAL TO NEENAH NO. R–1772 OR EAST JORDAN IRON WORKS NO. 1020. WHEN A **30"** RISER PIPE IS NEEDED, FRAMES AND COVERS SHALL BE EQUAL TO NEENAH NO. R–1642 OR EAST JORDAN IRON WORKS NO. 1040. LID SHALL BE SANITARY LETTERED SOLID NON–VENTED, SELF–SEALING W/ GASKET AND NON–BOLTED LIDS.

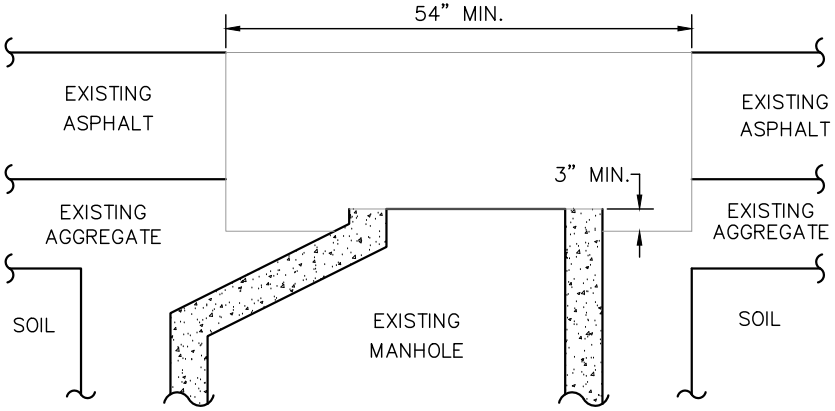
–REMOVE ALL ADJUSTING RINGS TO THE TOP OF THE CONCRETE CONE. DISPOSE OF THIS MATERIAL.

–REMOVE ALL AGGREGATE AROUND THE MANHOLE THAT HAS BEEN EXPOSED BY THE ASPHALT REMOVAL AND DISPOSE OF THIS AGGREGATE. THE AGGREGATE MUST BE REMOVED TO A MINIMUM OF 3" BELOW THE LEVEL OF THE TOP OF THE CONCRETE CONE.

–CLEAN AND INSPECT THE TOP SURFACE OF THE CONCRETE CONE. THE SURFACE SHOULD BE SMOOTH AND FREE OF BUMPS AND PITS THAT MAY PREVENT A GOOD WATER TIGHT SEAL. GRIND THE SURFACE AS NEEDED TO REMOVE PROTRUSIONS. UTILIZE COMPRESSED AIR TO BLOW DUST AND DEBRIS FROM THE SURFACE AFTER GRINDING. CLEAN THE SURFACE WITH ACETONE. UTILIZE A HYDRAULIC CEMENT, ACCORDING TO MANUFACTURERS RECOMMENDATIONS, TO FILL IN DEPRESSIONS.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	# MANHOLE CHIMNEY RECONSTRUCTION PAGE 1 OF 3	REVISIONS:	DATE APPROVED: JAN. 2018 PAGE No. 900–20

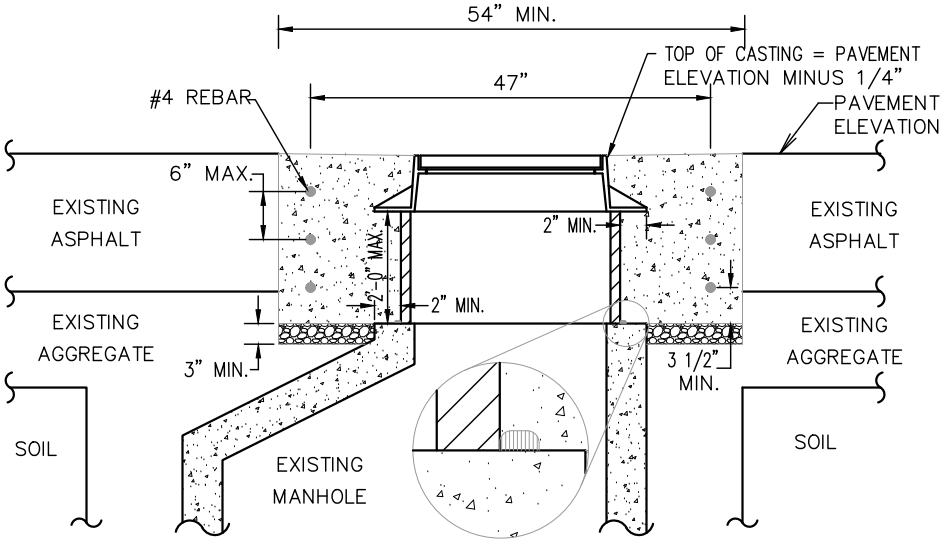
STEP #2 - CHIMNEY RECONSTRUCTION



CHIMNEY REMOVED (SECTIONAL VIEW)

LEGEND

= CONCRETE
= WATERSTOP
= EPOXY COATED #4 REBAR
= VYLON PIPE (SPECIFICATIONS ON SHEET 900-22)
= ODOT #57 AGGREGATE



CHIMNEY RECONSTRUCTION (SECTIONAL VIEW)

– BRING THE AREA AROUND THE CONE BACK TO FLUSH WITH THE TOP OF THE CONE USING ODOT #57 AGGREGATE. THIS AGGREGATE LAYER IS INTENDED TO LESSEN THE EFFECTS OF FREEZE/THAW ON THE CONCRETE COLLAR BY PROVIDING VOIDS FOR EXCESS WATER TO EXPAND INTO IF SUBJECTED TO FREEZING CONDITIONS. MANHOLES WITH EXCESSIVE FREE WATER AROUND THEM MUST BE REMEDIATED ON A CASE BY CASE BASIS TO FURTHER PREVENT FREEZE/THAW PROBLEMS FROM OCCURRING.
– A VYLON®PIPE SHALL BE USED AS A CHIMNEY LINER AND MUST BE CUT TO THE EXACT PROFILE OF THE ROAD IN ALL DIRECTIONS SUCH THAT WHEN THE MANHOLE RIM AND COVER ARE RESTING ON TOP OF THE LINER, THE TOP OF THE CASTING SHALL BE EXACTLY 0.25" BELOW FLUSH WITH THE PAVEMENT SURFACE IN ALL DIRECTIONS.
– THE LINER SHALL BE MARKED IN SUCH A WAY, UPON COMPLETION OF THE CUTTING PROCESS, THAT ROTATION DOES NOT OCCUR, WHICH COULD BE DETRIMENTAL TO THE END PRODUCT. THE TOP AND/OR BOTTOM OF THE LINER SHALL ALSO BE MARKED TO PREVENT THE LINER FROM BEING INSTALLED UP SIDE DOWN, WHICH COULD BE DETRIMENTAL TO THE END PRODUCT.
– APPLY A LIBERAL AMOUNT OF WHITE SOLAR SEAL #900 ADHESIVE/SEALANT OR EQUIVALENT PRODUCT TO THE BOTTOM OF THE LINER AND SET IN PLACE ON TOP OF THE CONCRETE CONE WHILE MAKING SURE IT IS PROPERLY ALIGNED. SOLAR SEAL IS MANUFACTURED BY NPC COLORED SEALANTS. THIS WILL CREATE A WATER TIGHT SEAL BETWEEN THE LINER AND THE CONCRETE CONE.
– APPLY A LIBERAL AMOUNT OF WHITE SOLAR SEAL #900 ADHESIVE/SEALANT TO THE TOP OF THE LINER. SET THE MANHOLE RIM CASTING ON THE LINER WHILE MAKING SURE IT IS PROPERLY ALIGNED. THIS WILL CREATE A WATER TIGHT SEAL BETWEEN THE LINER AND THE MANHOLE RIM CASTING.
– PLACE THE MANHOLE LID ON THE RIM CASTING TO LESSEN THE POSSIBILITY OF DEBRIS ENTERING THE MANHOLE.
– PLACE EPOXY COATED #4 REBARS AS SHOWN BELOW. THE CIRCULAR SHAPED REBARS SHALL HAVE A 6" MAXIMUM OVERLAP.
– APPLY WATERSTOP AS SHOWN BELOW AND SPECIFIED ON SHEET 3 OF 3. THIS WILL ADD AN ADDITIONAL WATER TIGHT SEAL WHERE THE LINER MEETS THE CONCRETE CONE.
– UTILIZE ODOT-CLASS QC CONCRETE, (WITH CONCRETE FIBERS), WITH BLACK DYE TO CAST A CONCRETE COLLAR AROUND THE RIM CASTING AND LINER. THE SURFACE OF THE CONCRETE SHALL BE FINISHED FROM FLUSH WITH THE PAVEMENT TO FLUSH WITH THE RIM CASTING. THE EDGE OF THE CONCRETE SHALL BE ROUNDED (1/4" RADIUS) WHERE IT MEETS THE ASPHALT. THIS WILL CREATE A SMALL GROOVE FOR A JOINT SEALER AT THIS LOCATION.
– FILL THE GROOVE WITH A COLD POUR CRACK SEALER SUCH AS BREWER COTE BRAND LIQUID CRACK FILLER JETCOAT OR EQUIVALENT. THIS WILL PREVENT WATER FROM ENTERING THE CIRCULAR SEAM WHERE THE CONCRETE COLLAR MEETS THE ASPHALT. BREWER COTE LIQUID CRACK FILLER IS AVAILABLE FROM THE BREWER COMPANY OF MARKHAM, ILLINOIS.
– APPLY AN ACRYLIC POLYMER CONCRETE CURING AND SEALING COMPOUND, SUCH AS REZ-SEAL, TO THE SURFACE OF THE CONCRETE COLLAR. REZ-SEAL IS AVAILABLE FROM THE EUCLID CHEMICAL COMPANY (WWW.EUCLIDCHEMICAL.COM).
– BARRICADE THE AREA AROUND THE CONCRETE TO PROTECT IT UNTIL THE CONCRETE ATTAINS A MODULUS OF RUPTURE OF 400 POUNDS PER SQUARE INCH. A CHEMICAL ADMIXTURE THAT ACTS AS A CONCRETE ACCELERATOR MAY BE USED TO SPEED UP THE PROCESS IF THE ROADWAY NEEDS TO BE OPENED SOONER.
– IN ORDER TO MINIMIZE INCONVENIENCE TO MOTORISTS, THE CONTRACTOR PERFORMING THE WORK DESCRIBED IN THIS SPECIFICATION MUST BE CAPABLE OF PERFORMING ALL OF THE STEPS OF THIS SPECIFICATION IN 1.5 HOURS OR LESS.
– THE CONTRACTOR SHALL WARRANT THE RECONSTRUCTED MANHOLE CHIMNEY TO BE LEAK FREE AND STRUCTURALLY SOUND FOR A MINIMUM OF 5 YEARS FROM THE DATE OF RECONSTRUCTION.
– THE MUNICIPALITY SHALL MAINTAIN THE CRACK SEALER OVER TIME TO PREVENT WATER FROM ENTERING THE SEAM WHERE THE CONCRETE COLLAR MEETS THE ASPHALT.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**MANHOLE CHIMNEY RECONSTRUCTION PAGE 2 OF 3**	REVISIONS:	DATE APPROVED: JAN. 2018 PAGE No. 900-21

CHIMNEY LINER SPECIFICATIONS:

THE CHIMNEY LINER SHALL BE CONSTRUCTED OF VYLON PVC SLIPLINER PIPE, OR ITS EQUIVALENT. THE CHIMNEY LINER MUST BE MADE FROM POLYVINYL CHLORIDE COMPOUNDS WHICH COMPLY WITH THE REQUIREMENTS FOR A MINIMUM CELL CLASSIFICATION OF 12364 AS DEFINED BY ASTM D–1784.

THE CHIMNEY LINER MUST ALSO MEET ALL THE FOLLOWING PHYSICAL REQUIREMENTS:

1. PIPE STIFFNESS – MINIMUM PIPE STIFFNESS SHALL BE 46 PSI WHEN TESTED IN ACCORDANCE WITH ASTM D–2412

2. IMPACT RESISTANCE – NO VISUAL CRACKING OR SPLITTING OF THE WATERWAY WALL SHALL BE EVIDENCED WHEN TESTED IN ACCORDANCE WITH ASTM D–2444 WITH A 20 LB. WEIGHT, TUP B, FLAT PLATE HOLDER B TO A LEVEL OF 220 FT. LBS.

3. FUSION QUALITY – THERE SHALL BE NO SIGN OF FLAKING OR DISINTEGRATION WHEN IMMERSED IN ANHYDROUS ACETONE FOR 20 MINUTES AS DESCRIBED IN ASTM D–2152.

4. DUCTILITY – THERE SHALL BE NO EVIDENCE OF CRACKING OR SPLITTING WHEN PIPE IS FLATTENED IN A CIRCUMFERENTIAL ORIENTATION BETWEEN TWO FLAT PLATES BY SIXTY PERCENT (60%) OF THE ORIGINAL DIAMETER.

5. AIR TIGHTNESS – EACH LENGTH OF PIPE SHALL PASS A FACTORY 3.5 PSI AIR TEST AS DESCRIBED IN ASTM F–1803.

WATERSTOP SPECIFICATIONS:

THE WATERSTOP SHALL BE CONSTRUCTED OF WATERSTOP–RX OR SWELLSTOP 3/8" X 3/4" CONTROLLED EXPANSION WATERSTOP OR EQUIVALENT. SWELLSTOP IS AVAILABLE FROM GREENSTREAK, 3400 TREE COURT INDUSTRIAL BLVD., ST. LOUIS, MO 63122.

THE WATERSTOP MUST MEET ALL OF THE FOLLOWING PHYSICAL REQUIREMENTS:

1. SPECIFIC GRAVITY – SHALL BE 1.55 +/– 5% WHEN TESTED IN ACCORDANCE WITH ASTM D–71.

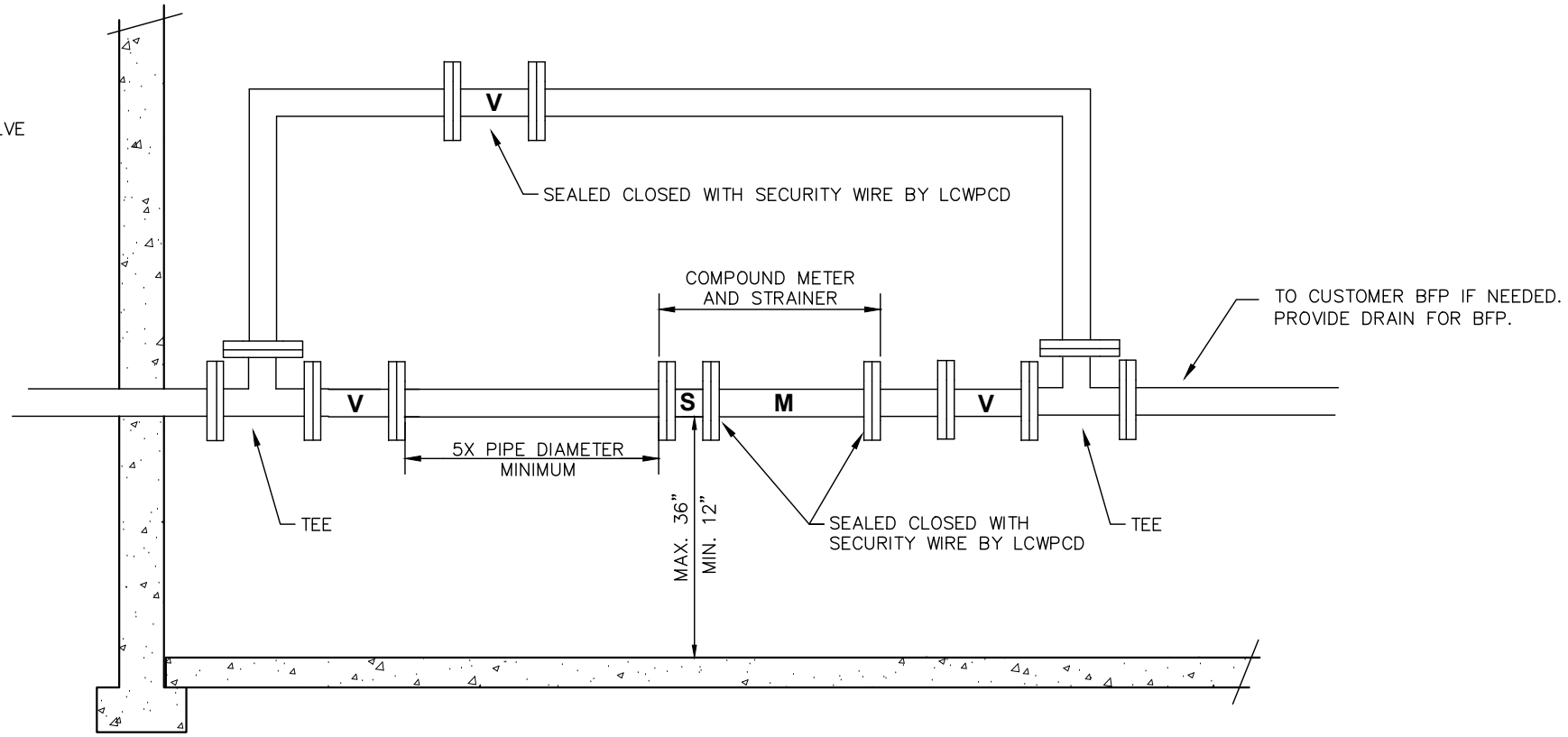
2. VOLATILE MATTER – SHALL NOT EXCEED 1% WHEN TESTED IN ACCORDANCE WITH ASTM D–6.

3. APPLICATION TEMPERATURE – MUST BE ABLE TO BE APPLIED FROM –10 DEGREES F TO 125 DEGREES F AS A MINIMUM.

4. SERVICE TEMPERATURE – MUST BE ABLE TO FUNCTION PROPERLY IN SERVICE FROM –30 DEGREES F TO 180 DEGREES F AS A MINIMUM.

WORK BEING DONE IN DRAWINGS 900–20, 900–21, AND 900–22 SHALL TAKE PLACE 2 WEEKS AFTER THE FINAL COAT OF ASPHALT IS APPLIED IN NEW ROADWAYS.

M = METER
S = STRAINER
V = BALL VALVE



NOTES

A. CENTERLINE OF METER TO BE NO MORE THAN 36" FROM THE FLOOR.

B. METER MUST BE MOUNTED HORIZONTALLY.

C. FULL FACE FLANGE GASKETS AND STAINLESS STEEL OR BRASS NUTS AND BOLTS TO BE USED.

D. ALL PIPING TO BE THOROUGHLY SUPPORTED.

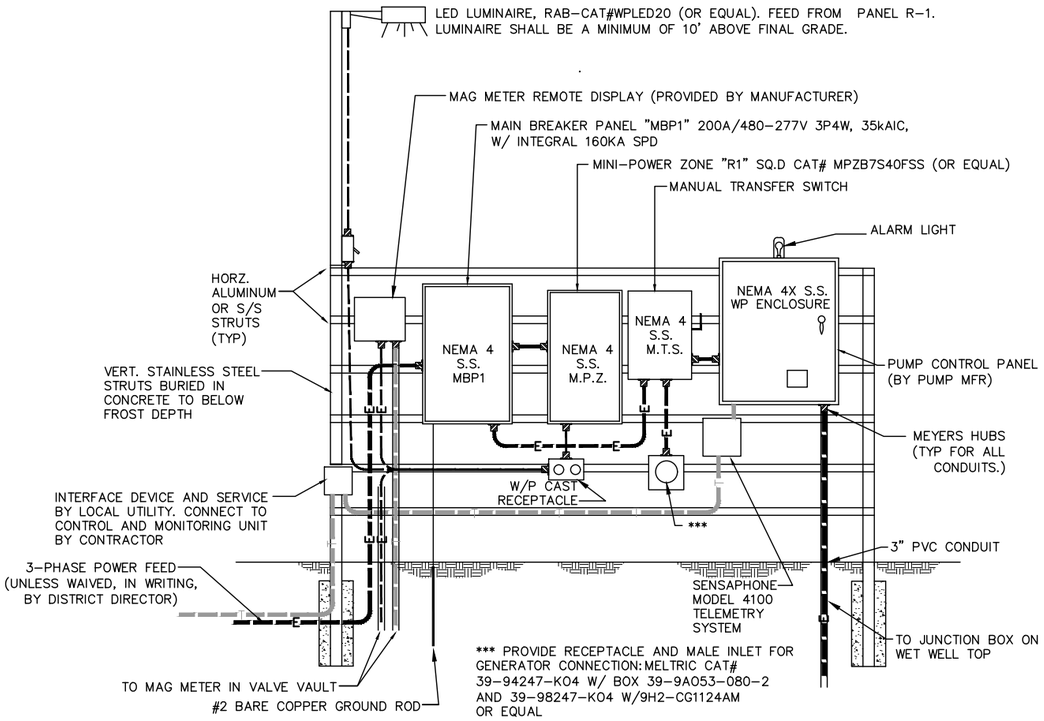
E. THE LCWPCD IS NOT RESPONSIBLE FOR MAINTENANCE OF INSIDE PLUMBING.

F. PROVIDE THREE (18–22 GAUGE) CONDUCTOR WIRE TO OUTSIDE OF BUILDING AT AN APPROVED LOCATION.

G. BYPASS VALVE SHALL BE LOCKABLE.

H. LOCAL MUNICIPALITY STANDARDS WILL SUPERCEDE LCPWCD DETAILS IF APPLICABLE.

LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT ChoiceOne Engineering	**INSIDE WATER METER DETAIL**	REVISIONS:	DATE APPROVED: JAN. 2018 PAGE No. 900–23



LIFT STATION CONTROL PANEL BOARD

NTS

ELECTRICAL NOTES

ALL CONDUIT SHALL BE RIGID GALV. STEEL OR AS NOTED IN THE DRAWINGS.

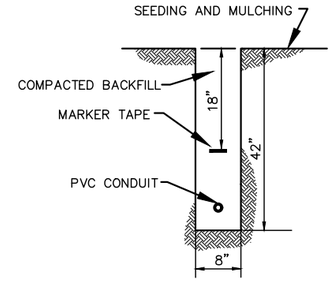
ALL BURIED CONDUIT SHALL HAVE A MINIMUM OF 36" OF COVER WITH MARKER TAPE.

ALL ENCLOSURES SHALL BE NEMA 4 OR 4X.

THE CONTRACTOR SHALL BE RESPONSIBLE TO GET ANY NECESSARY AND REQUIRED ELECTRIC PERMITS FROM THE STATE OF OHIO, ELECTRIC COMPANY, AND ANY OTHER AGENCY. THE CONTRACTOR WILL ALSO SUPPLY ANY NECESSARY OR ADDITIONAL INFORMATION OR DRAWINGS REQUIRED FOR THEIR APPROVAL.

ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, THE NATIONAL ELECTRICAL SAFETY CODE, APPLICABLE CODES OF THE NATIONAL FIRE PROTECTION ASSOCIATES, THE OHIO BASIC BUILDING CODE, ALL LOCAL STATE AND FEDERAL SAFETY REGULATIONS / LAWS AND ORDINANCES AND ALL OTHER PUBLIC AUTHORITIES HAVING JURISDICTION.

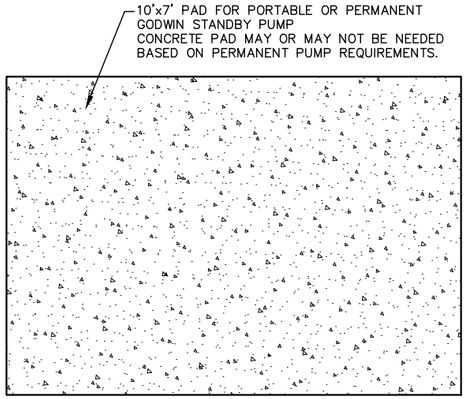
THE CONTRACTOR SHALL SUPPLY AN ARC FLASH ANALYSIS REPORT OF THE ELECTRICAL SYSTEMS AFTER THE INSTALLATION HAS BEEN COMPLETED AND EVALUATED.

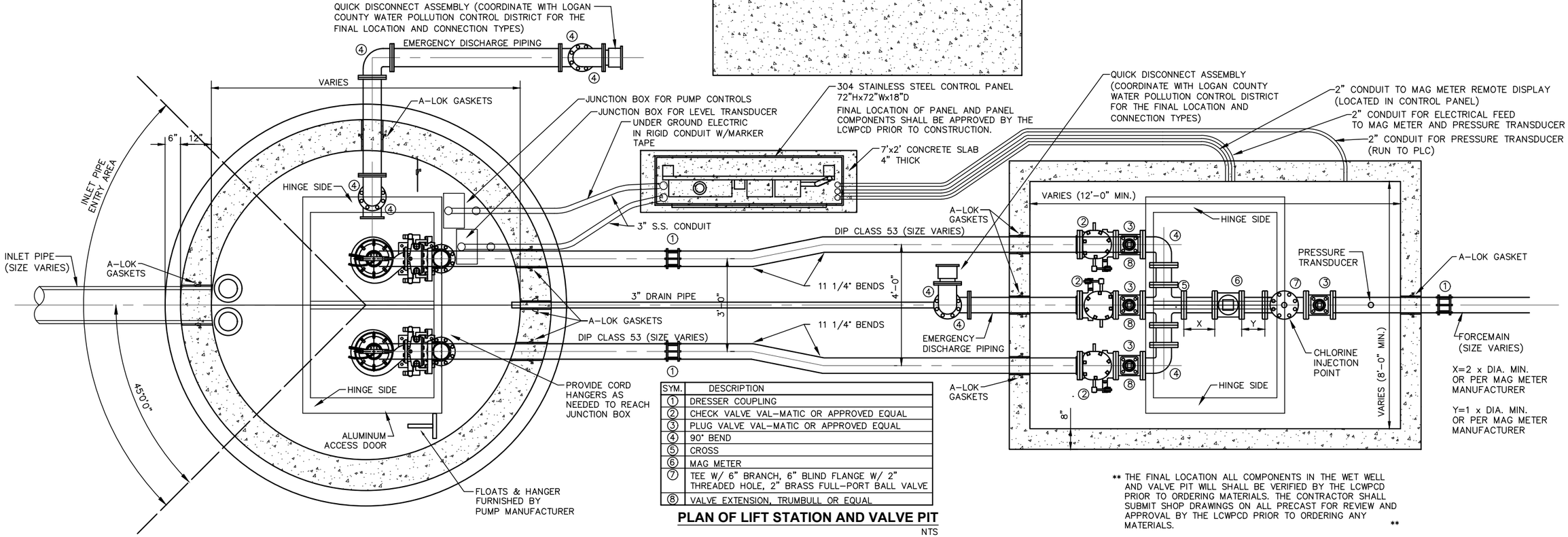


ELECTRIC TRENCH DETAIL

NOTES:
1.ELECTRIC HOOKUP TO BE COORDINATED BY CONTRACTOR WITH LOGAN COUNTY COOPERATIVE POWER & LIGHT ASSN. INC.

2.TELEPHONE HOOK–UP TO BE COORDINATED BY CONTRACTOR





SYM.	DESCRIPTION
①	DRESSER COUPLING
②	CHECK VALVE VAL–MATIC OR APPROVED EQUAL
③	PLUG VALVE VAL–MATIC OR APPROVED EQUAL
④	90° BEND
⑤	CROSS
⑥	MAG METER
⑦	TEE W/ 6" BRANCH, 6" BLIND FLANGE W/ 2" THREADED HOLE, 2" BRASS FULL–PORT BALL VALVE
⑧	VALVE EXTENSION, TRUMBULL OR EQUAL

PLAN OF LIFT STATION AND VALVE PIT

NTS

** THE FINAL LOCATION ALL COMPONENTS IN THE WET WELL AND VALVE PIT WILL SHALL BE VERIFIED BY THE LCWPCD PRIOR TO ORDERING MATERIALS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL PRECAST FOR REVIEW AND APPROVAL BY THE LCWPCD PRIOR TO ORDERING ANY MATERIALS. **

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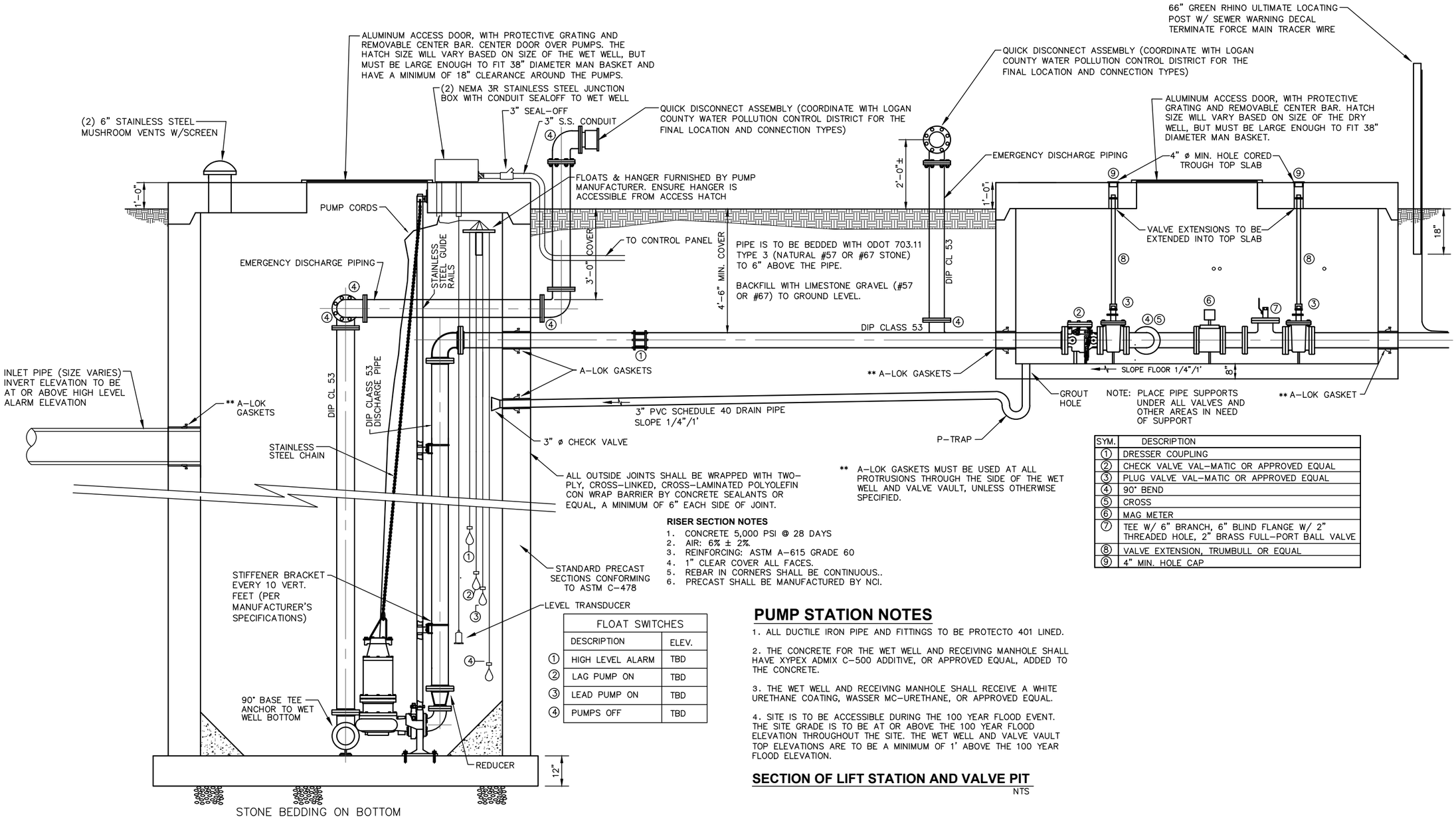
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT
LIFT STATION STANDARD DRAWINGS
TYPICAL PUMP STATION PLAN

APPROVED DATE
XX–XX–2017

REVISIONS

SHEET NUMBER
901–1



SYM.	DESCRIPTION
①	DRESSER COUPLING
②	CHECK VALVE VAL-MATIC OR APPROVED EQUAL
③	PLUG VALVE VAL-MATIC OR APPROVED EQUAL
④	90° BEND
⑤	CROSS
⑥	MAG METER
⑦	TEE W/ 6" BRANCH, 6" BLIND FLANGE W/ 2" THREADED HOLE, 2" BRASS FULL-PORT BALL VALVE
⑧	VALVE EXTENSION, TRUMBULL OR EQUAL
⑨	4" MIN. HOLE CAP

** A-LOK GASKETS MUST BE USED AT ALL PROTRUSIONS THROUGH THE SIDE OF THE WET WELL AND VALVE VAULT, UNLESS OTHERWISE SPECIFIED.

RISER SECTION NOTES

1. CONCRETE 5,000 PSI @ 28 DAYS
2. AIR: 6% ± 2%.
3. REINFORCING: ASTM A-615 GRADE 60
4. 1" CLEAR COVER ALL FACES.
5. REBAR IN CORNERS SHALL BE CONTINUOUS..
6. PRECAST SHALL BE MANUFACTURED BY NCI.

FLOAT SWITCHES		
	DESCRIPTION	ELEV.
①	HIGH LEVEL ALARM	TBD
②	LAG PUMP ON	TBD
③	LEAD PUMP ON	TBD
④	PUMPS OFF	TBD

PUMP STATION NOTES

1. ALL DUCTILE IRON PIPE AND FITTINGS TO BE PROTECTO 401 LINED.

2. THE CONCRETE FOR THE WET WELL AND RECEIVING MANHOLE SHALL HAVE XYPEX ADMIX C-500 ADDITIVE, OR APPROVED EQUAL, ADDED TO THE CONCRETE.

3. THE WET WELL AND RECEIVING MANHOLE SHALL RECEIVE A WHITE URETHANE COATING, WASSER MC-URETHANE, OR APPROVED EQUAL.

4. SITE IS TO BE ACCESSIBLE DURING THE 100 YEAR FLOOD EVENT. THE SITE GRADE IS TO BE AT OR ABOVE THE 100 YEAR FLOOD ELEVATION THROUGHOUT THE SITE. THE WET WELL AND VALVE VAULT TOP ELEVATIONS ARE TO BE A MINIMUM OF 1' ABOVE THE 100 YEAR FLOOD ELEVATION.

SECTION OF LIFT STATION AND VALVE PIT

NTS

NOTE

THIS DOCUMENT SHOWS GENERAL REQUIREMENTS AND GUIDANCE FOR THE DESIGN OF LIFT STATIONS. EXACT SIZE AND LAYOUT OF STRUCTURES AND COMPONENTS WILL BE DETERMINED BY DESIGN REQUIREMENTS AND DETAILED ON THE SITE PLAN SUBMITTAL.

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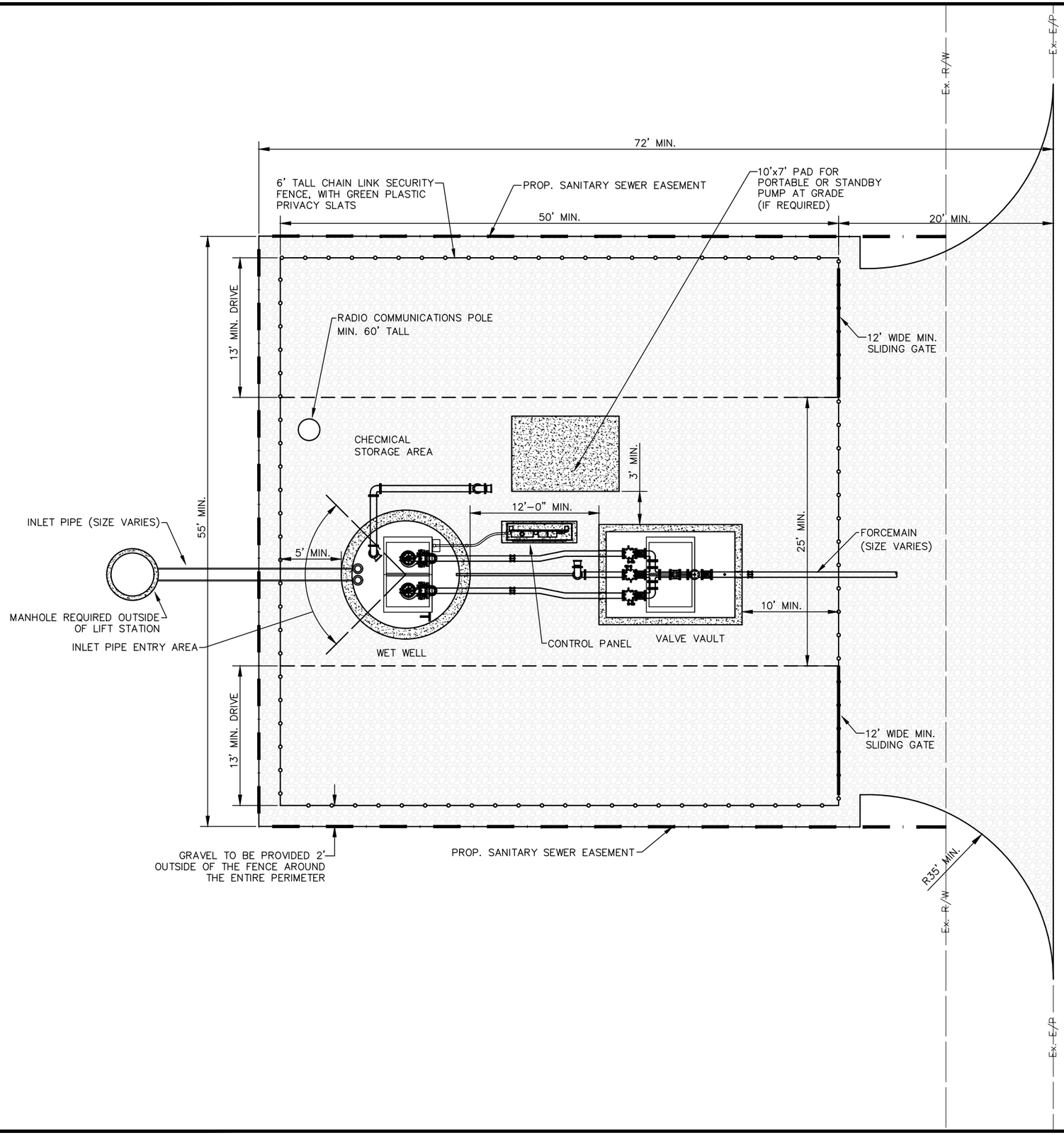
LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT
LIFT STATION STANDARD DRAWINGS
TYPICAL WET WELL AND VALVE VAULT SECTION VIEW

APPROVED DATE
XX-XX-2017

REVISIONS

SHEET NUMBER
901-2



LEGEND

LIFT STATION GRAVEL ACCESS DRIVE
ITEM 304 – 12" AGGREGATE BASE (IN 3 EQUAL LIFTS)

PROPOSED EASEMENT

PROPOSED SECURITY FENCING

NOTES

THIS DOCUMENT SHOWS GENERAL REQUIREMENTS AND GUIDANCE FOR THE DESIGN OF LIFT STATIONS. EXACT SIZE AND LAYOUT OF STRUCTURES AND COMPONENTS WILL BE DETERMINED BY DESIGN REQUIREMENTS AND DETAILED ON THE SITE PLAN SUBMITTAL.

SUBMITTALS FOR THE LIFT STATION DESIGN INCLUDE:

–DETAILED LIFT STATION PLAN FOR EACH LIFT STATION
–LIFT STATION SECTION DETAIL, INCLUDING WET WELL LEVEL SETTINGS
–LIFT STATION SITE PLAN
–DESIGN CALCULATIONS
–PUMP SPECIFICATIONS, INCLUDING PUMP CURVES
–BOUYANCY CALCULATIONS FOR THE WET WELL AND VALVE VAULT

SITE PLAN MUST CONFORM TO LOCAL ZONING REGULATIONS.

SITE IS TO BE ACCESSIBLE DURING THE 100 YEAR FLOOD EVENT. THE SITE GRADE IS TO BE AT OR ABOVE THE 100 YEAR FLOOD ELEVATION THROUGHOUT THE SITE. THE WET WELL AND VALVE VAULT TOP ELEVATIONS ARE TO BE A MINIMUM OF 1' ABOVE THE 100 YEAR FLOOD ELEVATION.

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LOGAN COUNTY WATER POLLUTION CONTROL DISTRICT
LIFT STATION STANDARD DRAWINGS
TYPICAL LIFT STATION SITE PLAN

APPROVED DATE
XX–XX–2017

REVISIONS

SHEET NUMBER
901–3