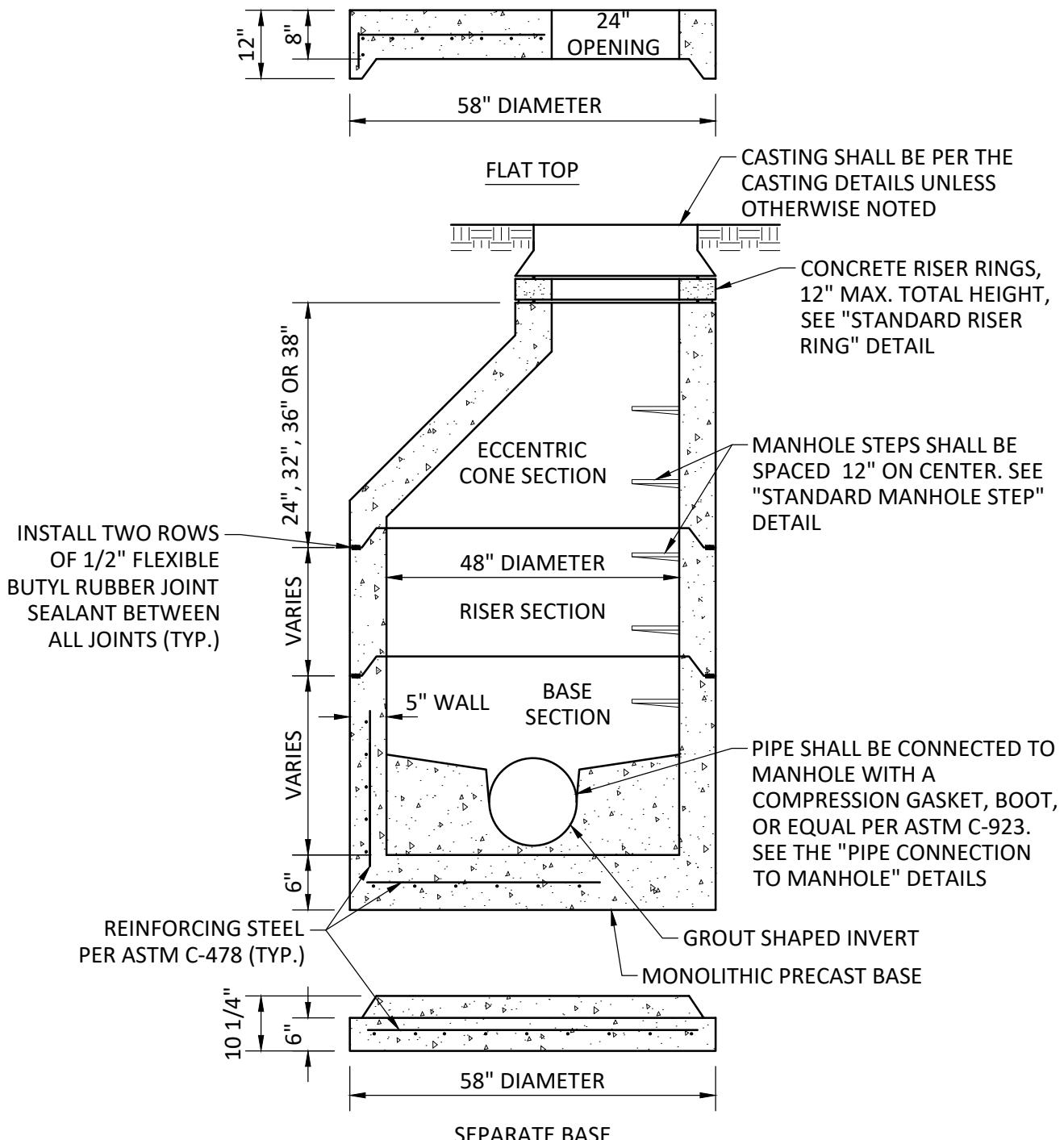


SANITARY INDEX

SAN-1 - SANITARY MANHOLE TYPE I
SAN-2 - SANITARY MANHOLE TYPE II
SAN-3 - SANITARY MANHOLE TYPE III
SAN-4 - SANITARY MANHOLE TYPE IV
SAN-5 - SANITARY DROP MANHOLE TYPE VI
SAN-6 - MANHOLE POURED INVERTS I
SAN-7 - MANHOLE POURED INVERTS II
SAN-8 - PIPE CONNECTION TO MANHOLE - BOOT
SAN-9 - PIPE CONNECTION TO MANHOLE - COMPRESSION
SAN-10 - STANDARD CASTING DETAIL TYPE A
SAN-11 - STANDARD WATERPROOF MANHOLE FRAME WITH BOLTED LID & GASKET
TYPE J
SAN-12 - STANDARD MANHOLE STEP
SAN-13 - STANDARD RISER RING
SAN-14 - SANITARY SEWER SERVICE ROADWAY LAYOUT
SAN-15 - SANITARY SEWER SERVICE TAP (CUT IN WYE METHOD)
SAN-16 - SANITARY SEWER SERVICE TAP (SADDLE CONNECTION)
SAN-17 - SANITARY SEWER SERVICE RISER DETAILS
SAN-18 - SANITARY SEWER SERVICE DEFLECTION
SAN-19 - SANITARY SEWER CLEANOUT
SAN-20 - MODIFIED CLEANOUT DETAIL
SAN-21 - STANDARD CLEANOUT CASTING
SAN-22 - BUILDING SANITARY SEWER CONNECTION LAYOUT
SAN-23 - BUILDING SANITARY SEWER CONNECTION ADAPTER & CLEANOUT
SAN-24 - RIGID PIPE BEDDING DETAILS
SAN-25 - FLEXIBLE PIPE BEDDING
SAN-26 - BACKFILL REQUIREMENTS FOR SANITARY SEWERS CROSSING THE
RIGHT-OF-WAY
SAN-27 - BACKFILL REQUIREMENTS FOR SANITARY SEWERS WITHIN RIGHT-OF-WAY
SAN-28 - SEWER AND WATER MAIN SEPARATION
SAN-29 - TYPICAL OPEN CUT DITCH CROSSING
SAN-30 - TYPICAL CULVERT CROSSING
SAN-31 - ALLOWABLE INSTALLATION DEPTH FOR FLEXIBLE CONDUITS (SANITARY
SEWERS ONLY)
SAN-32 - ALLOWABLE INSTALLATION DEPTHS FOR VARIOUS CLASSES OF RCP
SAN-33 - SANITARY SEWER AIR RELEASE STRUCTURE
SAN-34 - 1000 GALLON GREASE TRAP
SAN-35 - 1500 GALLON GREASE TRAP
SAN-36 - STANDARD LIFT STATION CROSS-SECTION
SAN-37 - STANDARD LIFT STATION PLAN VIEW
SAN-38 - STANDARD LIFT STATION TYPICAL SITE PLAN
SAN-39 - SANITARY SEWER CONSTRUCTION GENERAL NOTES
SAN-40 - SANITARY SEWER CONSTRUCTION GENERAL NOTES CONT.

SANITARY INDEX

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	
STANDARD CONSTRUCTION DETAILS	REVISED DATE	SAN-0	



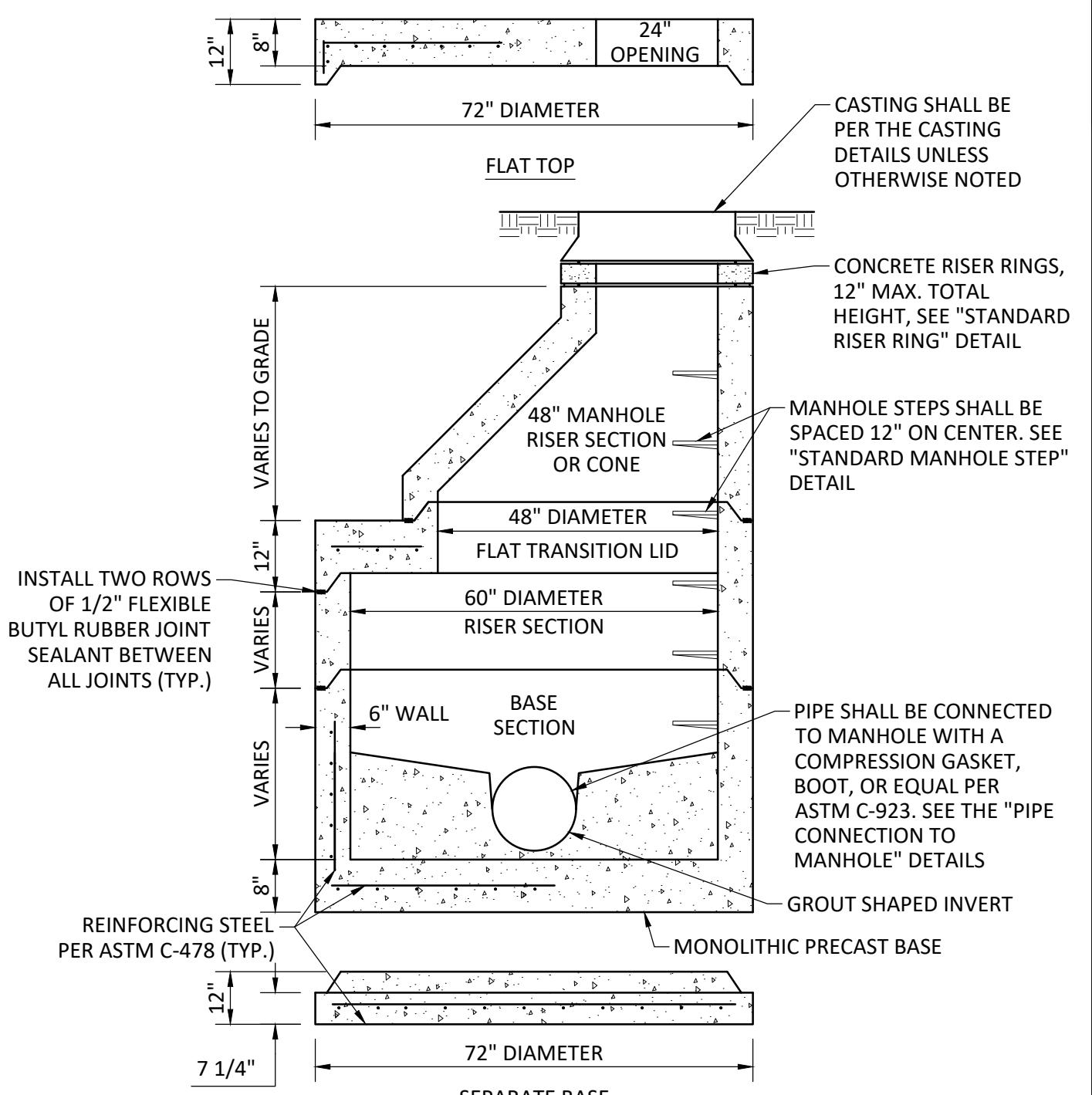
NOTES:

1. ALL MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE PER ASTM C-478.
2. LIFTING HOLES SHALL NOT PENETRATE COMPLETELY THRU THE STRUCTURE WALL AND SHALL BE PLUGGED WITH NON-SHRINK GROUT AFTER SETTING MANHOLE.
3. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL MANHOLE REQUIREMENTS.
4. ALL JOINTS TO BE WATERTIGHT.

SCALE: N.T.S.

SANITARY MANHOLE TYPE I

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	 NEW HAVEN <small>INDIANA</small>
STANDARD CONSTRUCTION DETAILS	REVISED DATE 10/3/2022	SAN-1	



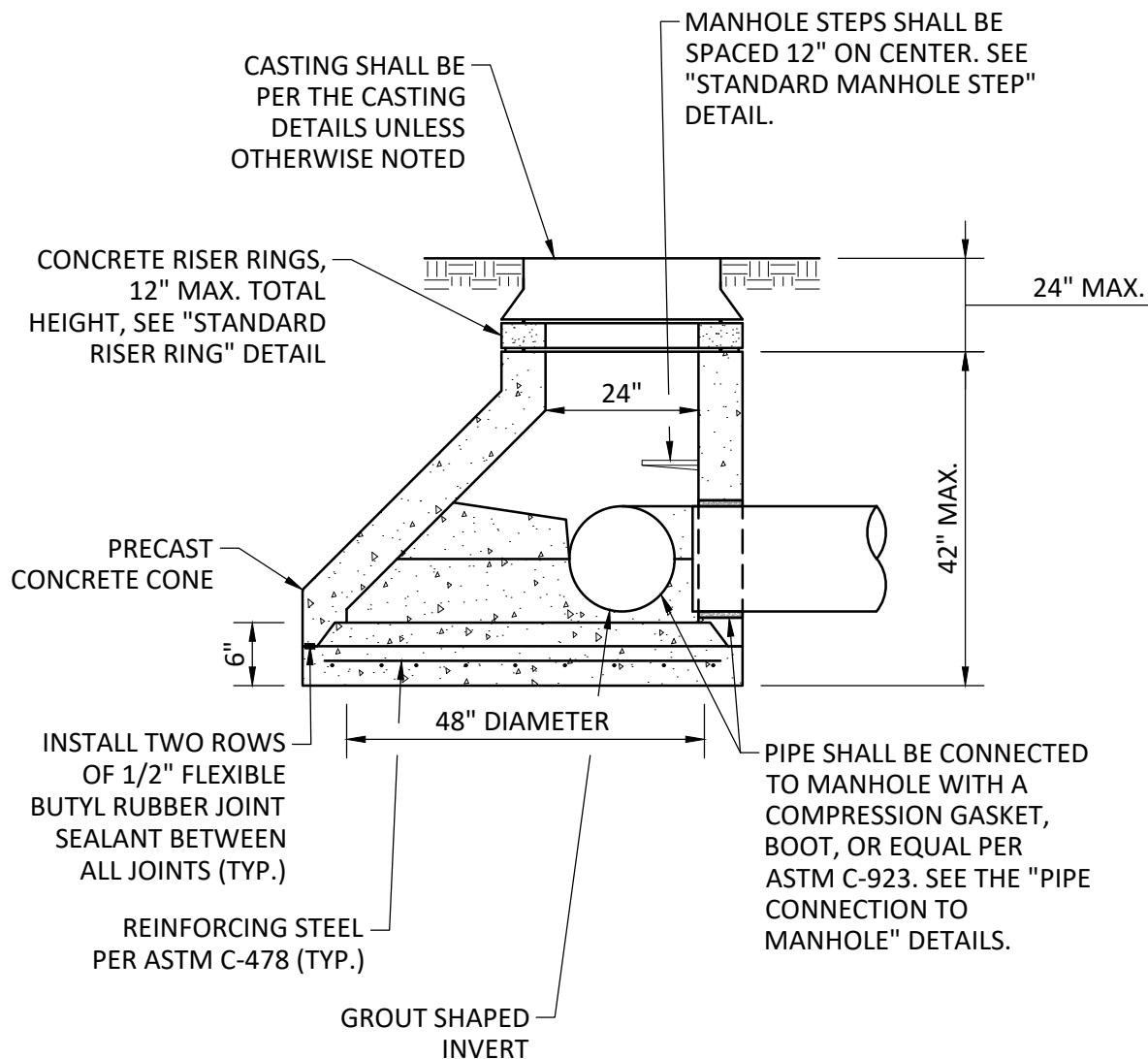
NOTES:

1. ALL MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE PER ASTM C-478.
2. LIFTING HOLES SHALL NOT PENETRATE COMPLETELY THRU THE STRUCTURE WALL AND SHALL BE PLUGGED WITH NON-SHRINK GROUT AFTER SETTING MANHOLE.
3. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL REQUIREMENTS.
4. ALL JOINTS TO BE WATERTIGHT.

SCALE: N.T.S.

SANITARY MANHOLE TYPE II

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	 NEW HAVEN <small>INDIANA</small>
STANDARD CONSTRUCTION DETAILS	REVISED DATE 10/7/2022	SAN-2	



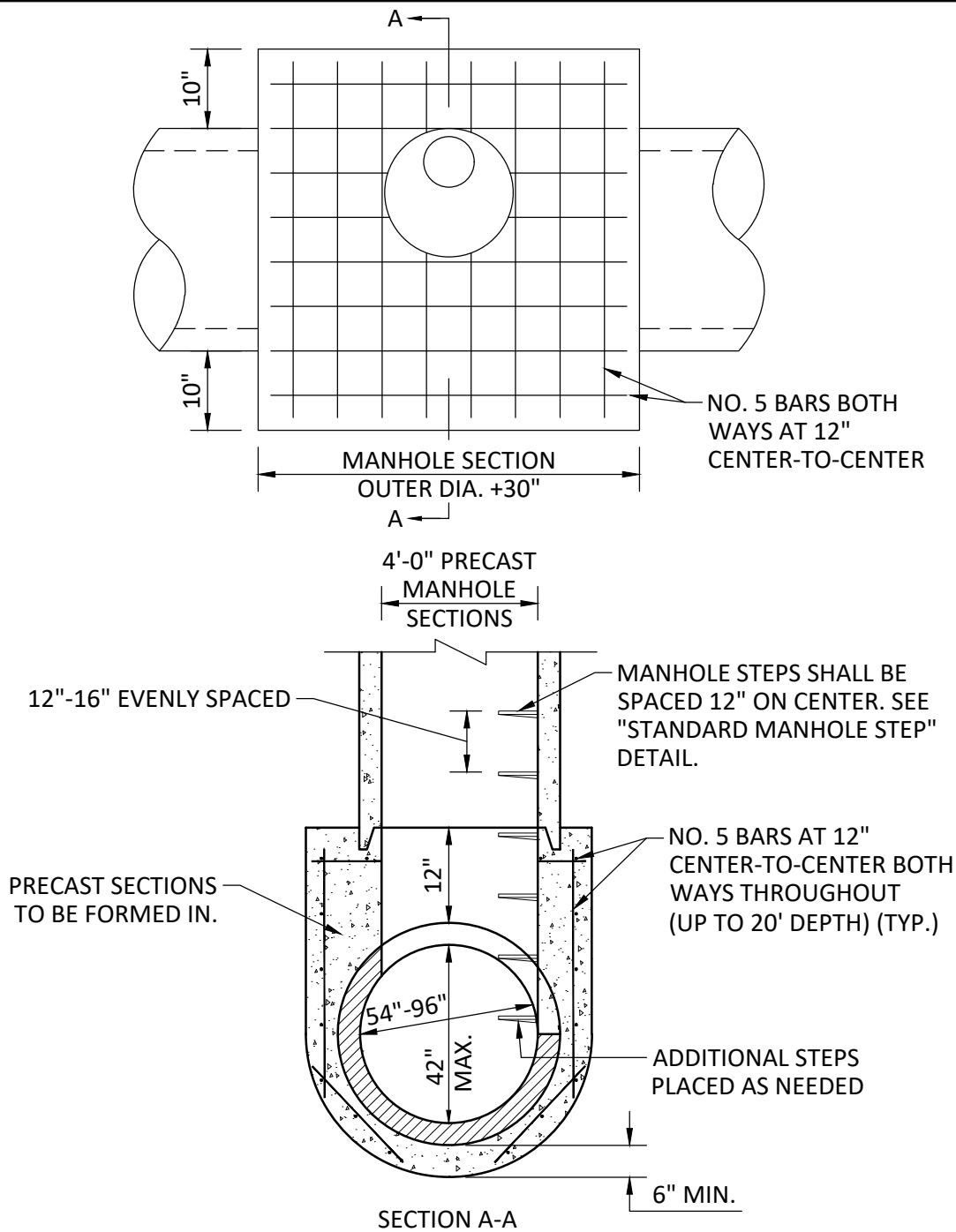
NOTES:

1. ALL MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE PER ASTM C-478.
2. LIFTING HOLES SHALL NOT PENETRATE COMPLETELY THRU THE STRUCTURE WALL AND SHALL BE PLUGGED WITH NON-SHRINK GROUT AFTER SETTING MANHOLE.
3. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL MANHOLE REQUIREMENTS.
4. ALL JOINTS TO BE WATERTIGHT.

SCALE: N.T.S.

SANITARY MANHOLE TYPE III

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	 NEW HAVEN <small>INDIANA</small>
STANDARD CONSTRUCTION DETAILS	REVISED DATE 10/7/2022	SAN-3	



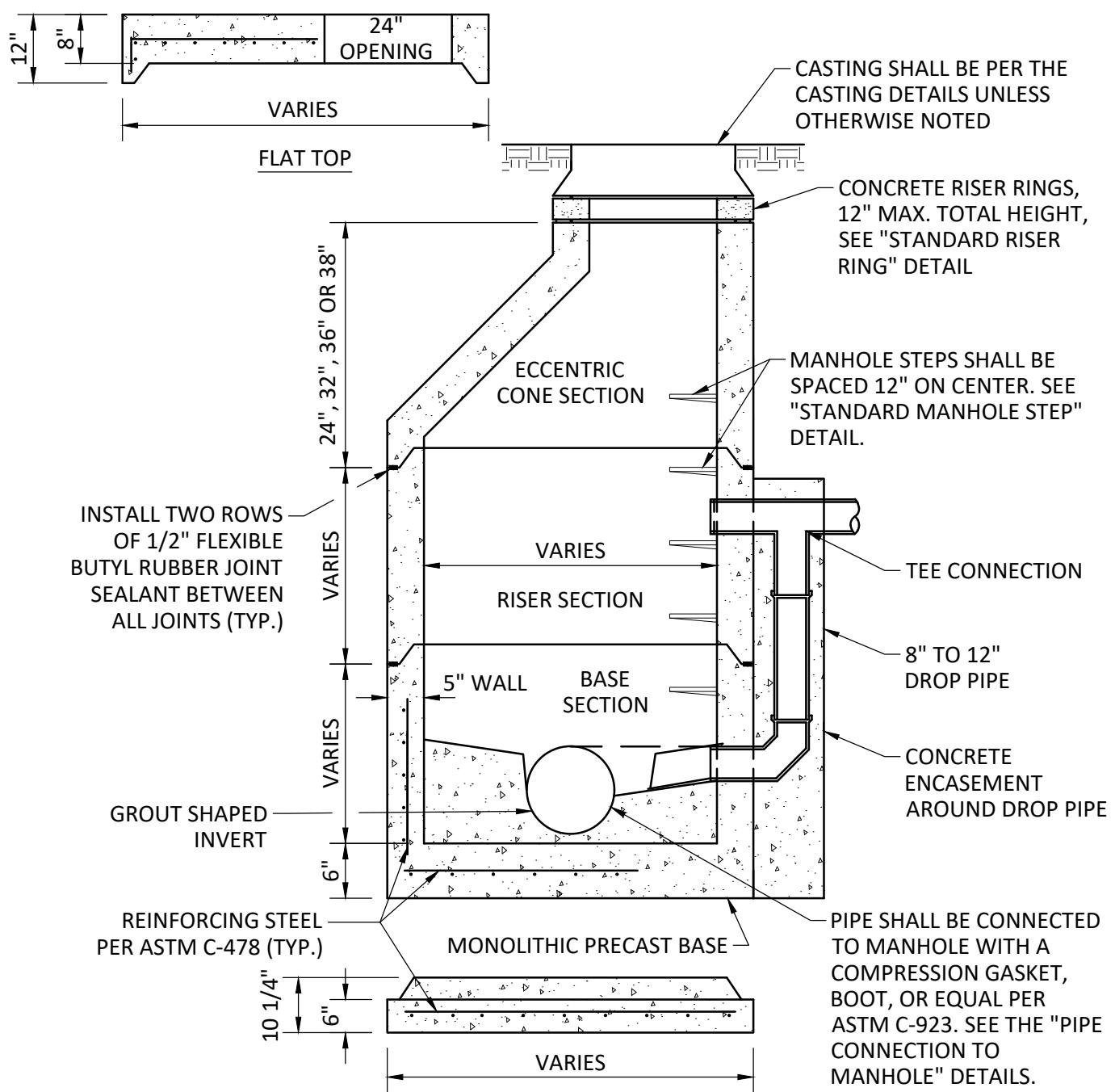
NOTES:

1. GENERAL CONSTRUCTION REQUIREMENTS SAME AS SANITARY MANHOLE TYPE I.
2. LIFTING HOLES SHALL NOT PENETRATE COMPLETELY THRU THE STRUCTURE WALL AND SHALL BE PLUGGED WITH NON-SHRINK GROUT AFTER SETTING MANHOLE.
3. CONCRETE BASE SHALL BE CONSTRUCTED OF MINIMUM 4,000 PSI CONCRETE.
4. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL MANHOLE REQUIREMENTS.
5. ALL JOINTS TO BE WATERTIGHT.

SCALE: N.T.S.

SANITARY MANHOLE TYPE IV

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	
STANDARD CONSTRUCTION DETAILS	REVISED DATE 09/15/2020	SAN-4	



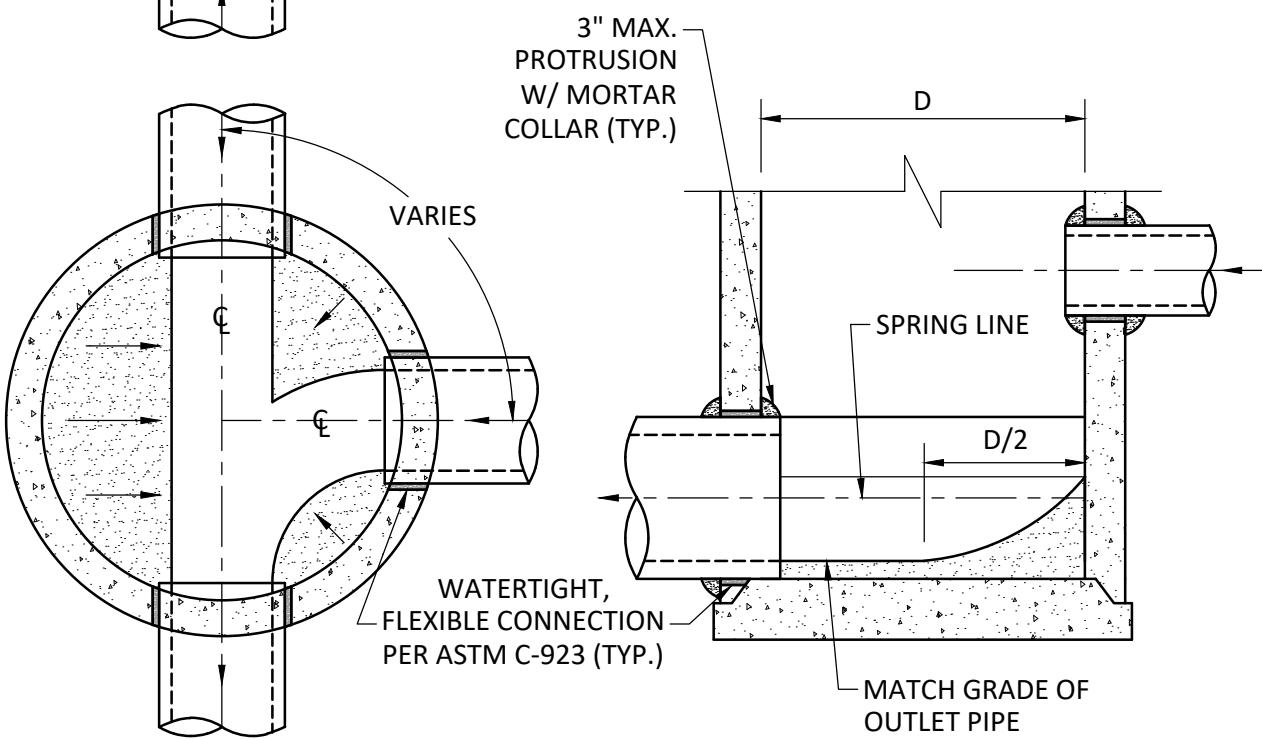
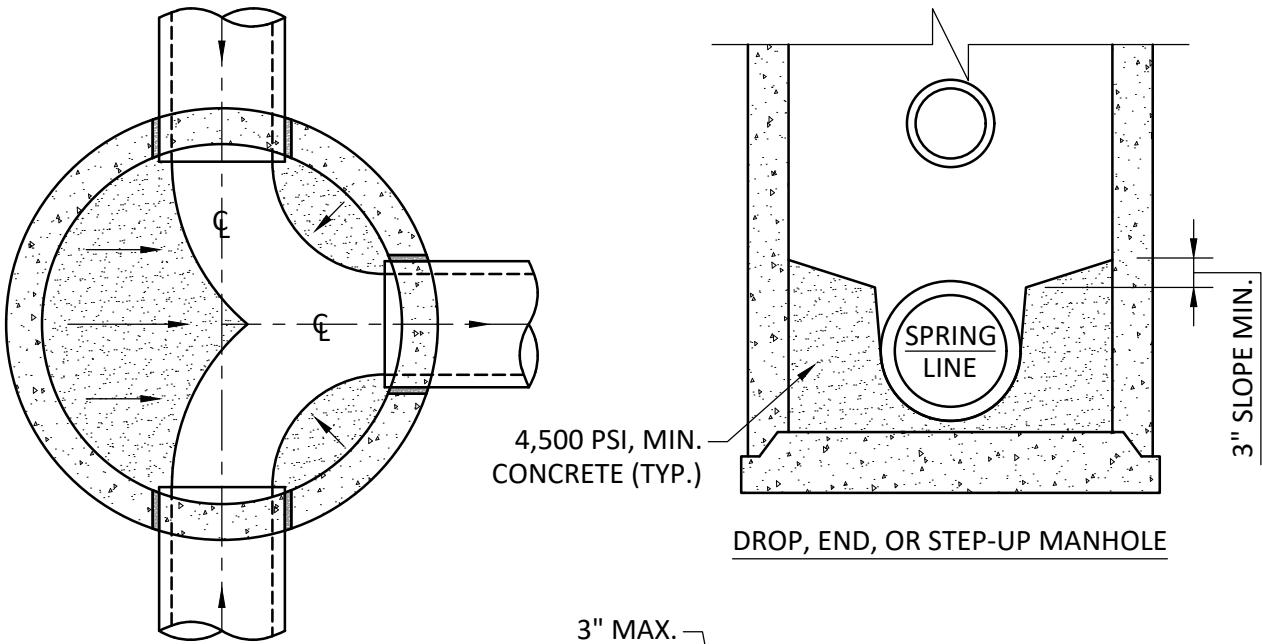
NOTES:

1. ALL MANHOLE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE PER ASTM C-478.
2. LIFTING HOLES SHALL NOT PENETRATE COMPLETELY THRU THE STRUCTURE WALL AND SHALL BE PLUGGED WITH NON-SHRINK GROUT AFTER SETTING MANHOLE.
3. DROP PIPE SHALL BE A MINIMUM OF 8" DIAMETER PIPE FOR 8" TO 12" DIAMETER SEWER PIPES. DROP PIPE SHALL BE 12" DIAMETER FOR ALL SANITARY SEWER PIPES LARGER THAN 12" DIAMETER.
4. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL MANHOLE REQUIREMENTS.
5. ALL JOINTS TO BE WATERTIGHT.

SCALE: N.T.S.

SANITARY DROP MANHOLE TYPE VI

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	 NEW HAVEN <small>INDIANA</small>
STANDARD CONSTRUCTION DETAILS	REVISED DATE 10/3/2022	SAN-5	



LEGEND:

D = INSIDE DIAMETER

NOTES:

1. CENTERLINE OF ALL PIPES TO INTERSECT CENTERLINE OF THE MANHOLE.
2. INVERTS TO BE CAST UNDER DRY PIPE CONDITIONS.
3. MINIMUM 0.1 FT DROP FROM INLET PIPE TO OUTLET PIPE THROUGH MANHOLE.
4. MANHOLES SHALL BE PER ASTM C-478.

SCALE: N.T.S.

MANHOLE Poured INVERTS I

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

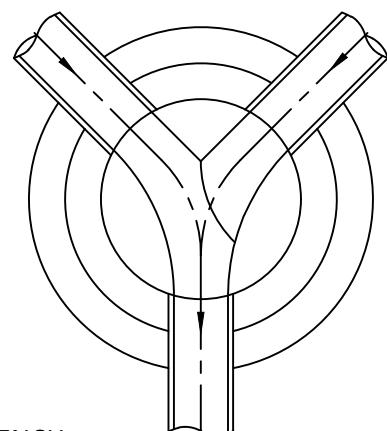
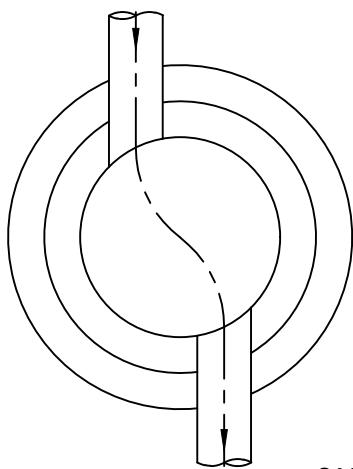
STANDARD CONSTRUCTION DETAILS

REVISED DATE

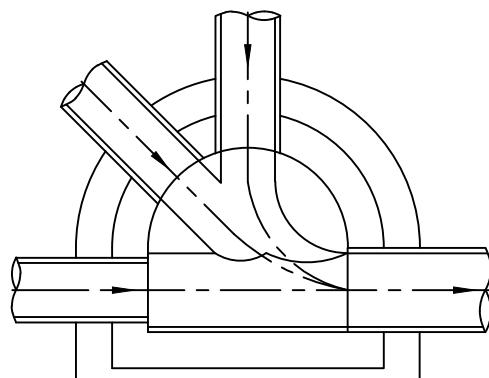
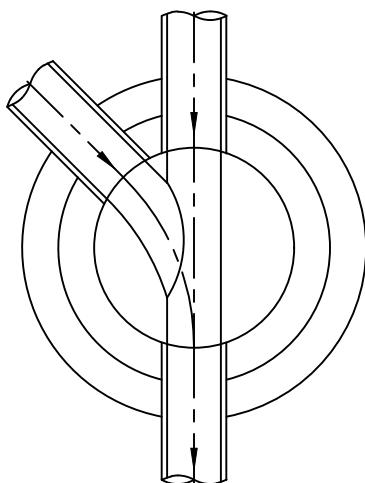
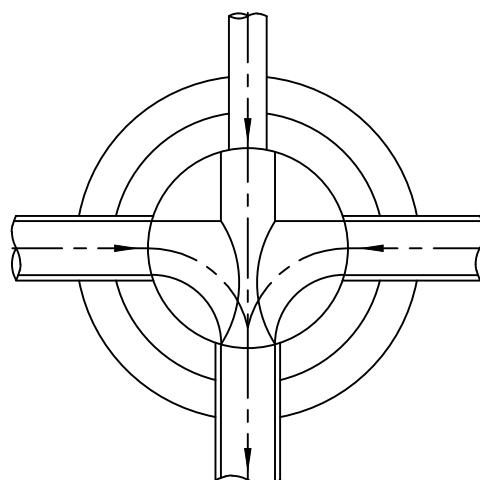
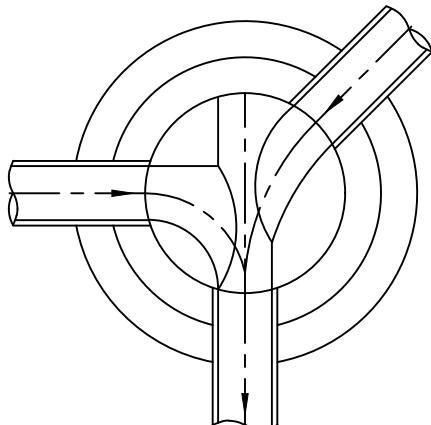
10/3/2022

SAN-6





SANITARY SEWER BENCH
SLOPE = 1/2" PER FOOT



SCALE: N.T.S.

MANHOLE POURED INVERTS II

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

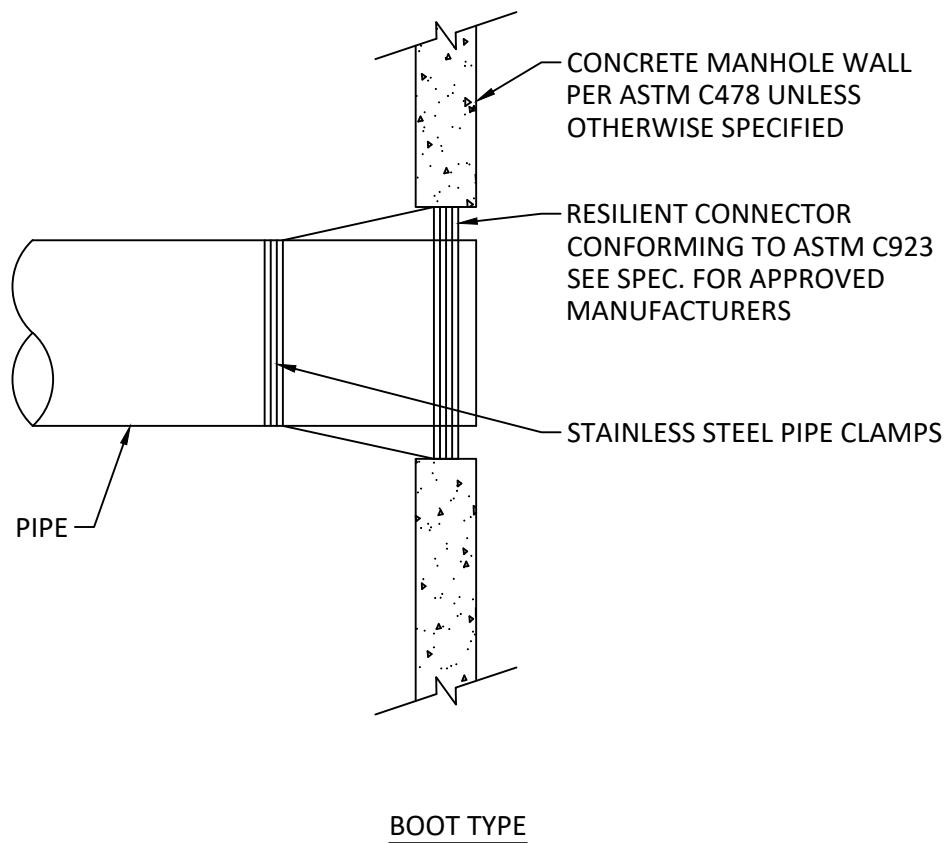
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-7





NOTES:

1. WHEN INSTALLING PIPE STUBS FOR FUTURE PIPELINE, INSTALLATION OF ALL STUBS SHOULD BE PROPERLY RESTRAINED TO PREVENT ANY MOVEMENT.
2. TYPICAL APPLICATION IS FOR PIPES 36" IN DIAMETER OR SMALLER.

SCALE: N.T.S.

PIPE CONNECTION TO MANHOLE - BOOT

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

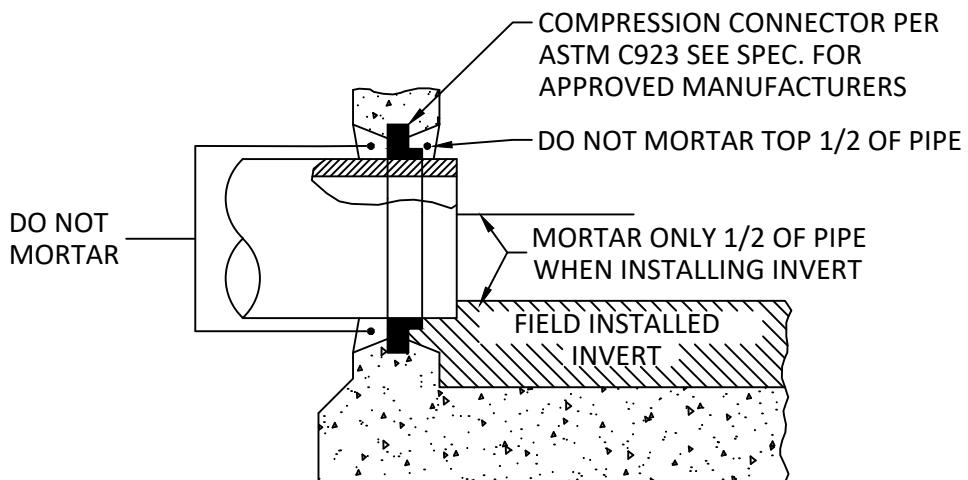
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STANDARD CONSTRUCTION DETAILS

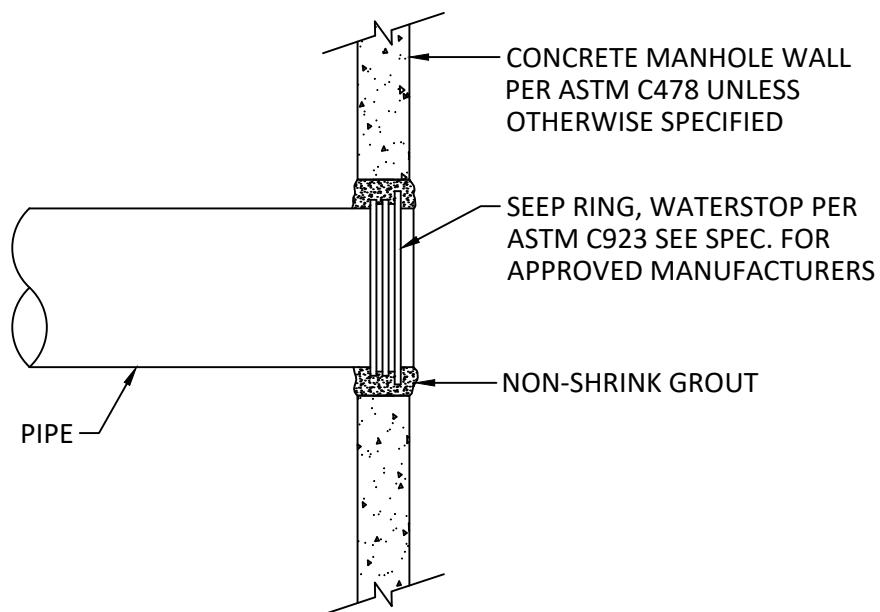
REVISED DATE

SAN-8





COMPRESSION TYPE
CAST-IN-PLACE



COMPRESSION TYPE
CAST-IN-PLACE

NOTES:

1. WHEN INSTALLING PIPE STUBS FOR FUTURE PIPELINE, INSTALLATION OF ALL STUBS SHOULD BE PROPERLY RESTRAINED TO PREVENT ANY MOVEMENT.
2. TYPICAL APPLICATION IS FOR PIPES LARGER THAN 36".

SCALE: N.T.S.

PIPE CONNECTION TO MANHOLE - COMPRESSION

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

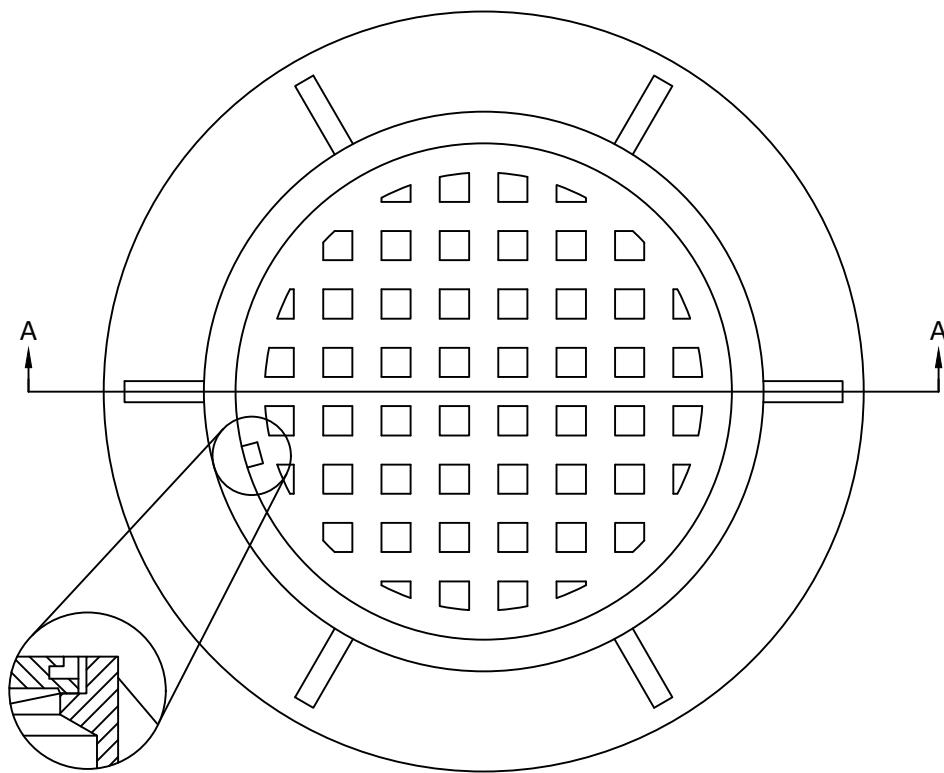
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-9

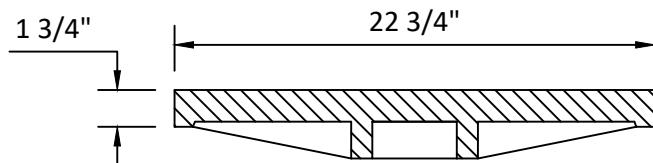




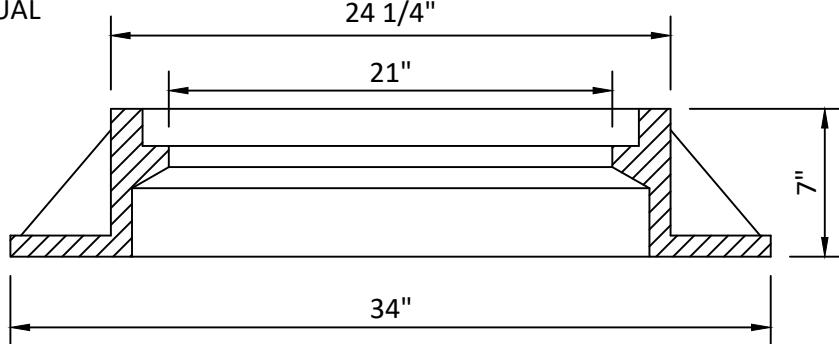
CONCEALED PICKHOLE DETAIL

NOTES:

1. ASTM A48-83 CLASS NO. 35
2. ALL BEARING SURFACES TO BE MACHINED



FRAME AND SOLID LID
NEENAH R-1772
E. JORDAN 1022, HEAVY DUTY
OR APPROVED EQUAL



SECTION A-A

SCALE: N.T.S.

STANDARD CASTING DETAIL TYPE A

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

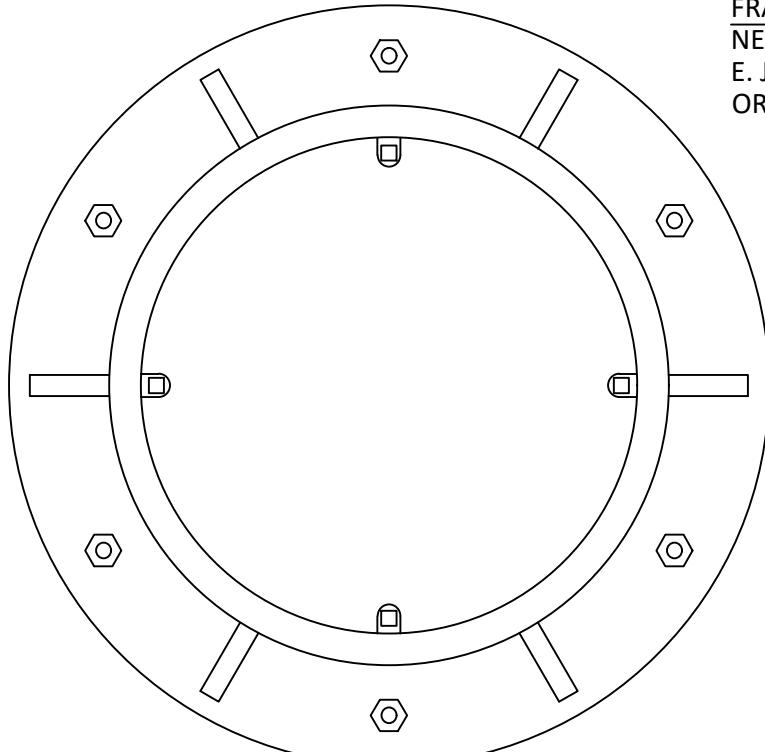
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STANDARD CONSTRUCTION DETAILS

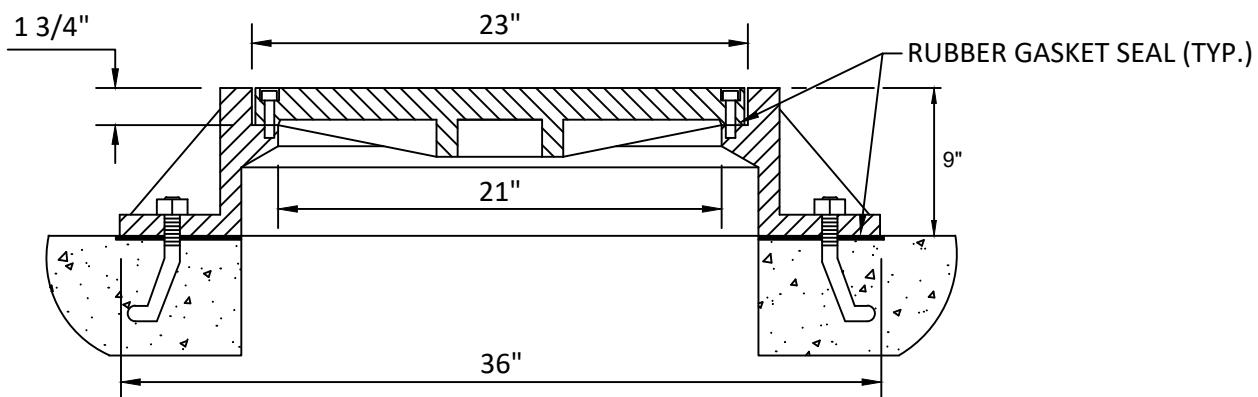
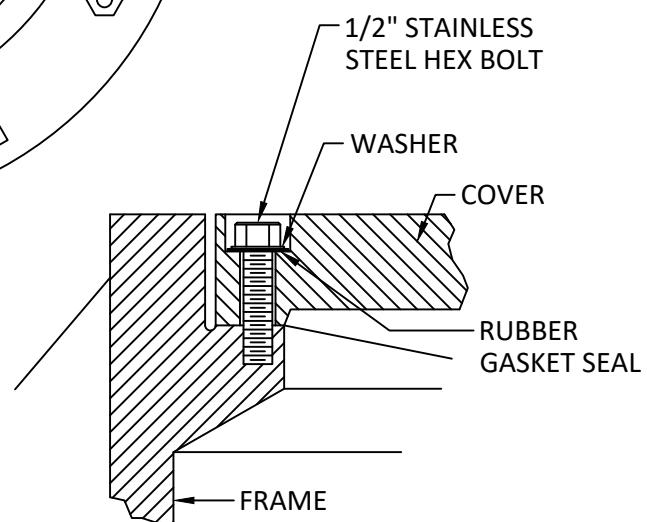
REVISED DATE

SAN-10





FRAME AND BOLTED LID
NEENAH R-1916-C
E. JORDAN 1561
OR APPROVED EQUAL



SCALE: N.T.S.

STANDARD WATERPROOF MANHOLE FRAME WITH BOLTED LID & GASKET TYPE J

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

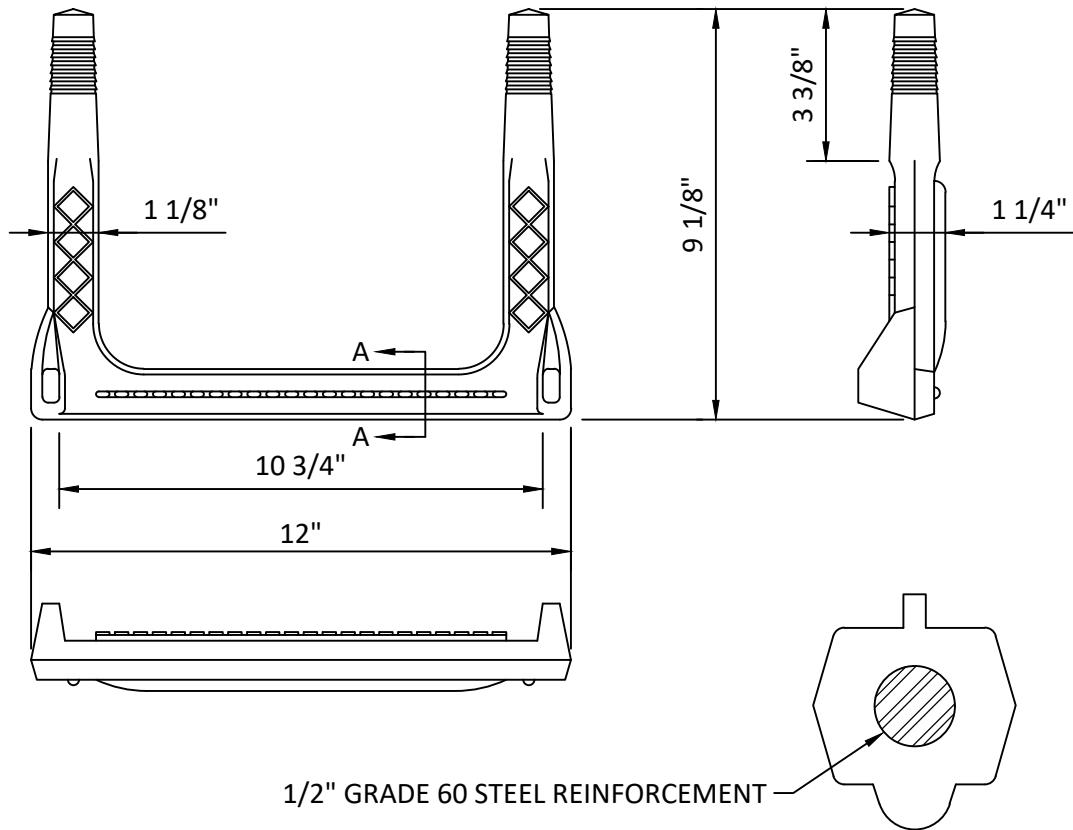
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STANDARD CONSTRUCTION DETAILS

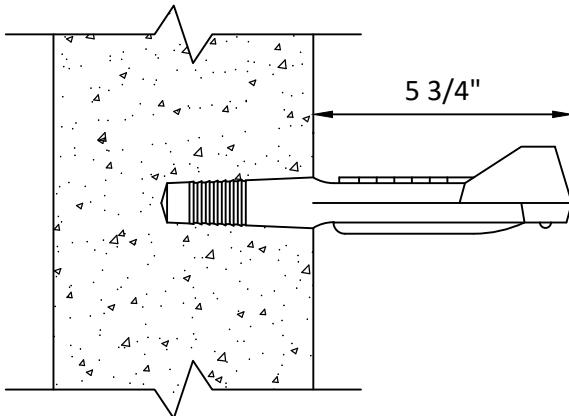
REVISED DATE

SAN-11





SECTION A-A



NOTES:

1. STEPS SHALL BE IN ACCORDANCE WITH ASTM C-478.
2. MINIMUM DESIGN LIVE LOAD 300 FT-LBS.
3. MANHOLE STEPS SHALL BE PLACED AT 12" ON CENTER WITH 1ST STEP AT A MAX OF 24" BELOW THE TOP OF THE MANHOLE CASTING.

SCALE: N.T.S.

STANDARD MANHOLE STEP

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

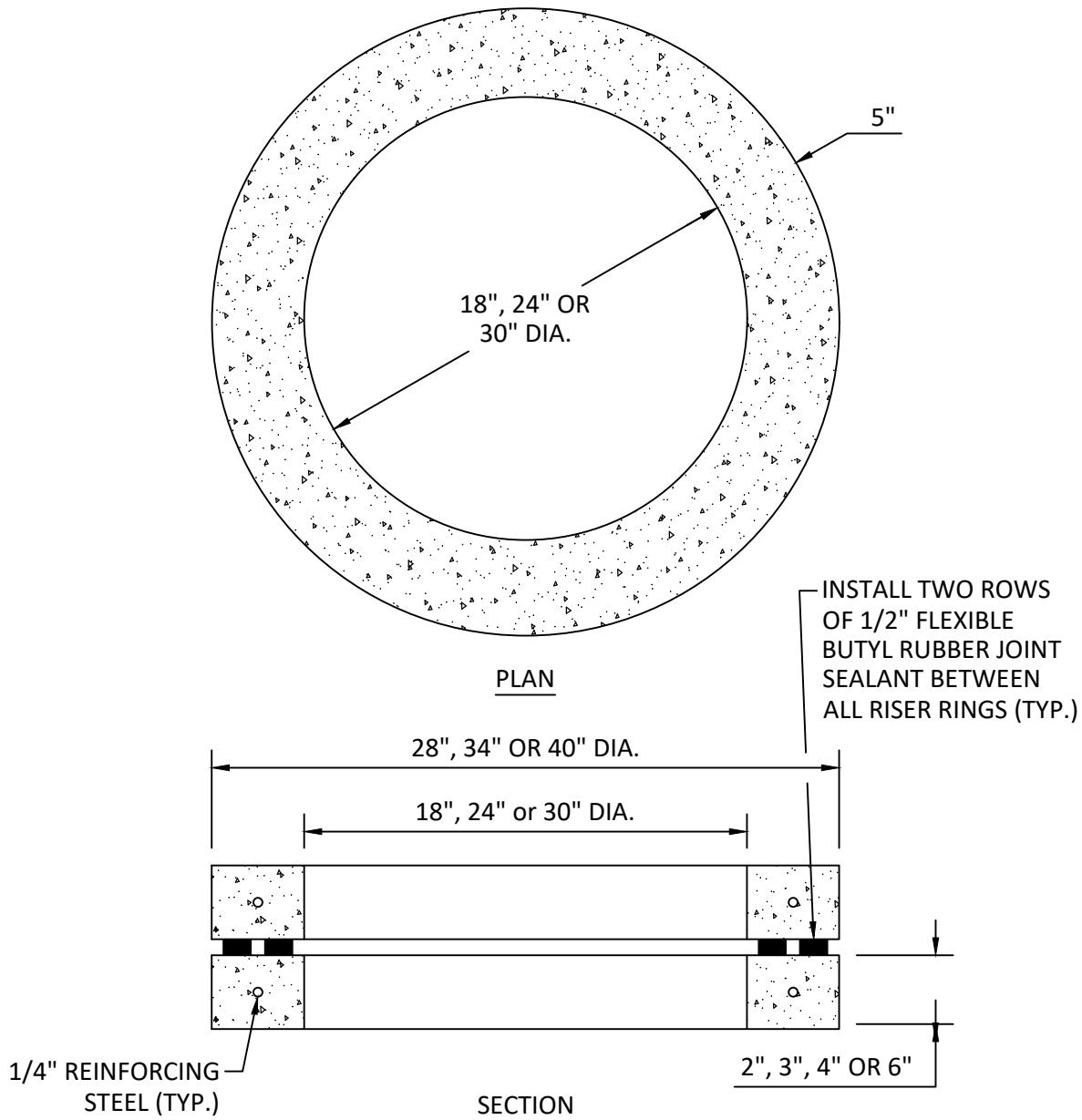
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-12





NOTES:

1. ALL MANHOLES IN UNIMPROVED AREAS SHALL HAVE A MINIMUM OF 3" TOTAL HEIGHT OF RISER RINGS AND A MAXIMUM OF 12" TOTAL HEIGHT OF RISER RINGS.
2. ALL MANHOLES IN A PAVED AREA SHALL HAVE A MINIMUM OF 3" TOTAL HEIGHT OF RISER RINGS AND A MAXIMUM OF 9" OF TOTAL HEIGHT OF RISER RINGS.
3. RINGS SHALL BE MINIMUM 4500 PSI CONCRETE.
4. ONLY ONE (1) 2" RISER RING IS PERMITTED. ALL OTHER RISER RINGS SHALL BE A MINIMUM OF 3" IN HEIGHT PER RISER RING.
5. WHERE MANHOLES REQUIRE ADJUSTMENT RINGS TO ADJUST THE CASTING TO THE PROPER ELEVATION, THE RINGS SHALL BE SET IN TWO (2) ROWS OF 1/2" FLEXIBLE BUTYL RUBBER JOINT SEALANT FOR PROPER SEALING.
6. INSTALL RISER RINGS WITH A WATERTIGHT SEAL BETWEEN ALL RISER RINGS, MANHOLE SECTIONS, AND CASTINGS.

SCALE: N.T.S.

STANDARD RISER RING

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

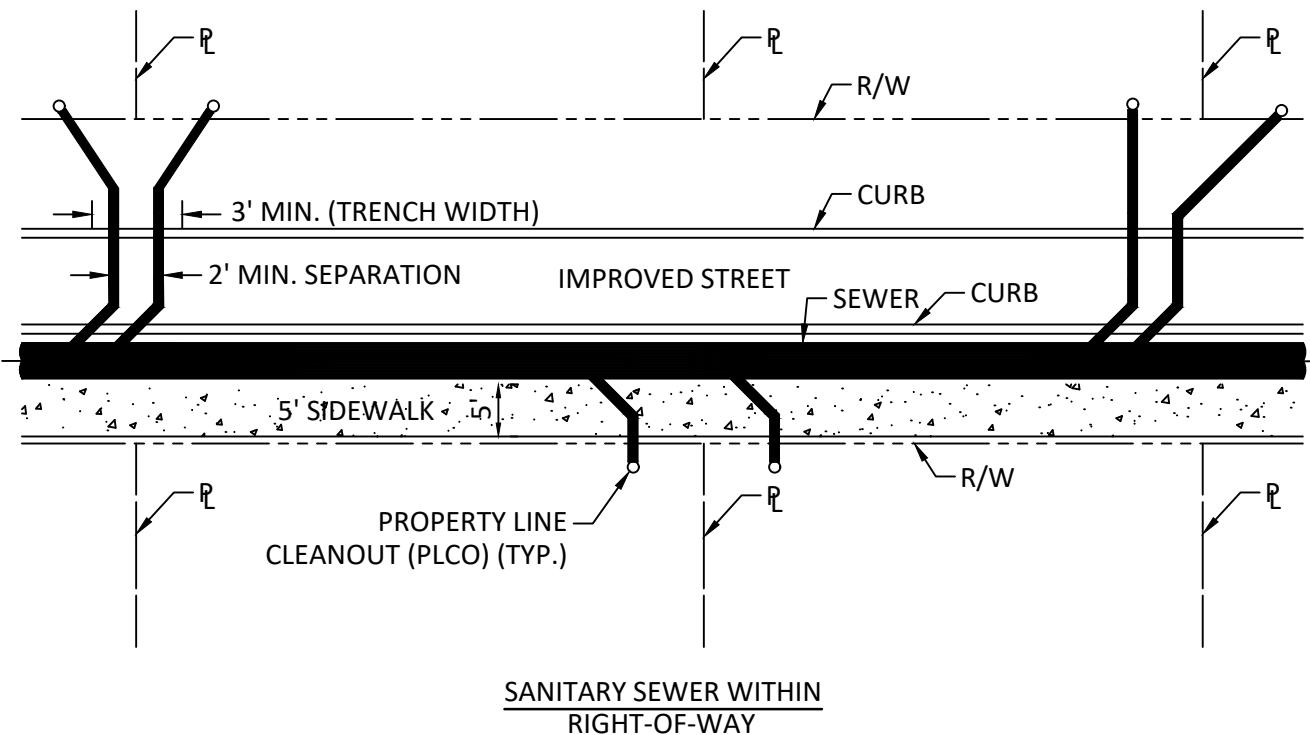
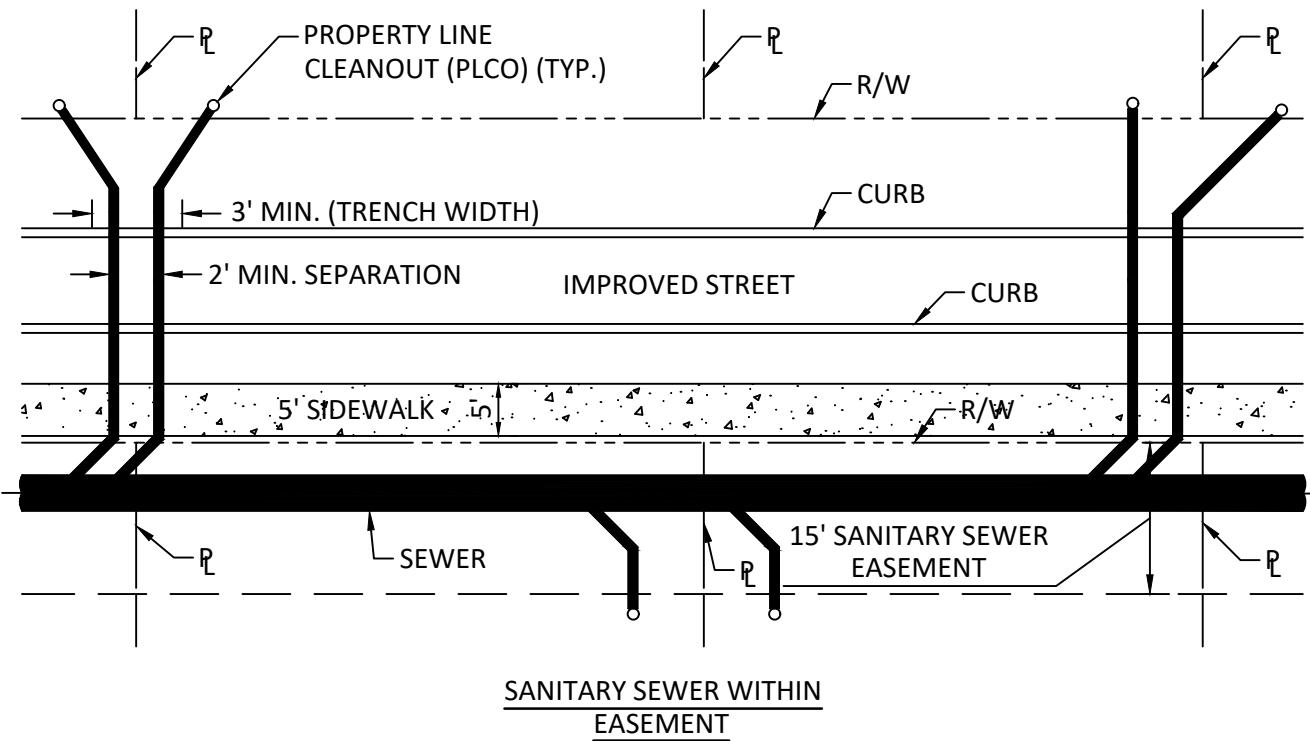
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-13





SCALE: N.T.S.

SANITARY SEWER SERVICE ROADWAY LAYOUT

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

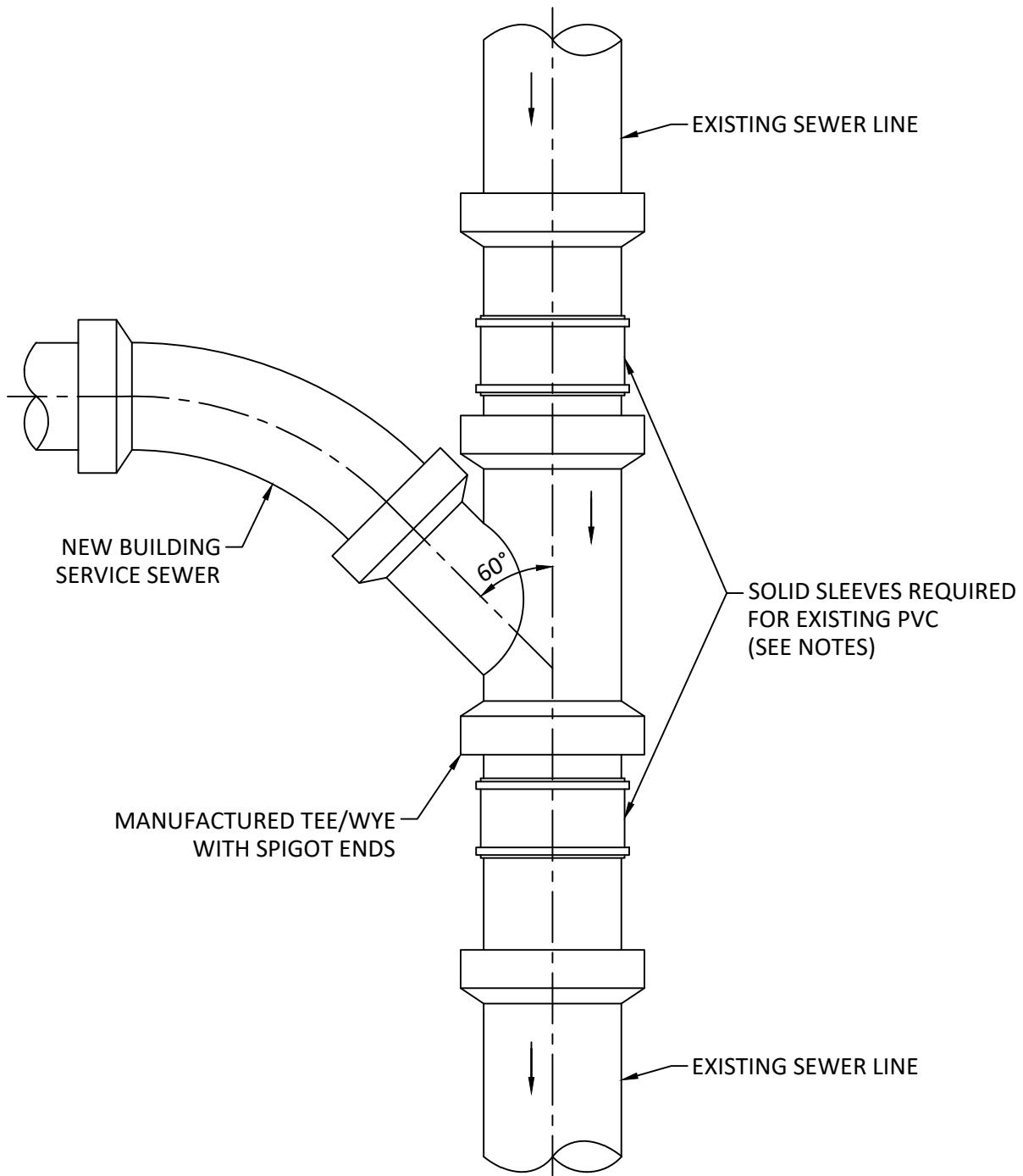
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-14





NOTES:

1. PROPERLY SIZED **SHIELDED FERNCO** TYPE COUPLING OR APPROVED EQUAL ALLOWED ONLY WITH EXISTING CLAY SEWER. EXISTING PVC REQUIRES SOLID SLEEVES.

SCALE: N.T.S.

SANITARY SEWER SERVICE TAP (CUT IN WYE METHOD)

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

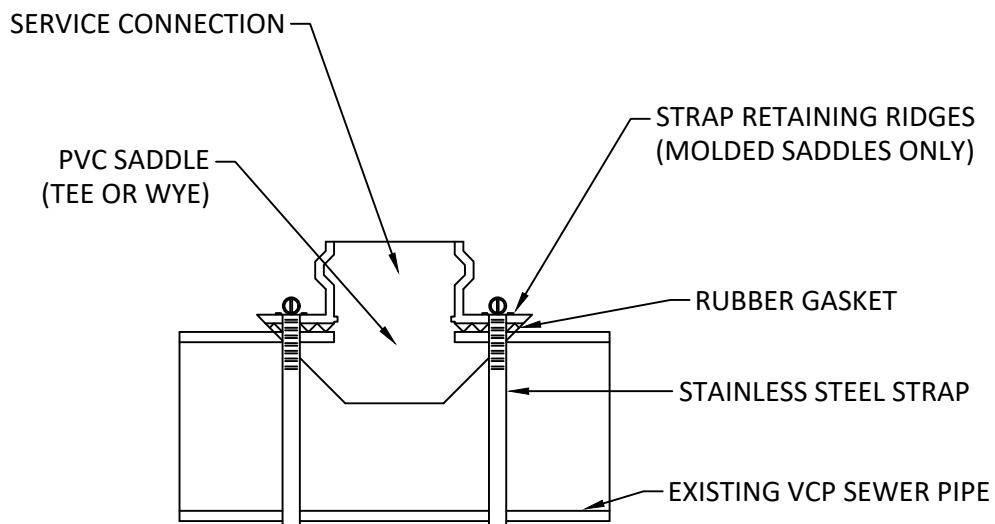
STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-15



PIPES 15" AND LARGER
(VCP ONLY)



SADDLE INSTALLATION:

1. PLACE SADDLE ON PIPE IN THE DESIRED LOCATION. DRAW THE HOLE SIZE BY PLACING MARKING PENCIL INSIDE THE BRANCH OPENING AND MARKING PIPE.
2. CUT 1/4" OUTSIDE THE LINE. REMOVE COUPON FROM INSIDE OF PIPE. SCRAPE ANY BURRS THAT APPEAR AROUND THE HOLE.
3. PLACE SADDLE ON PIPE TO ASSURE THAT THE PIPE OPENING IS LARGE ENOUGH TO PREVENT OBSTRUCTION. ENLARGE HOLE AS NECESSARY.

SCALE: N.T.S.

SANITARY SEWER SERVICE TAP (SADDLE CONNECTION)

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

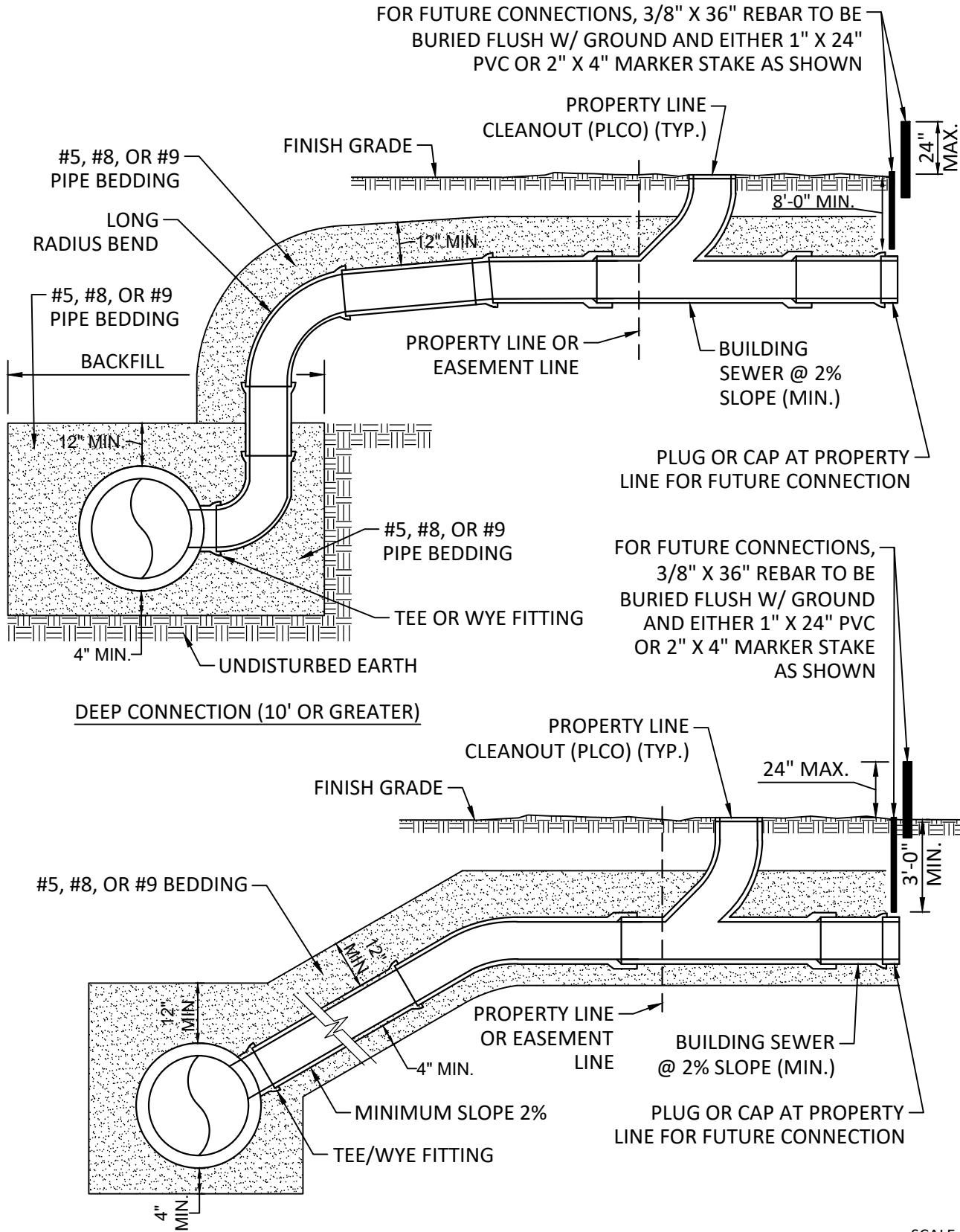
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-16





SANITARY SEWER SERVICE RISER DETAILS

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

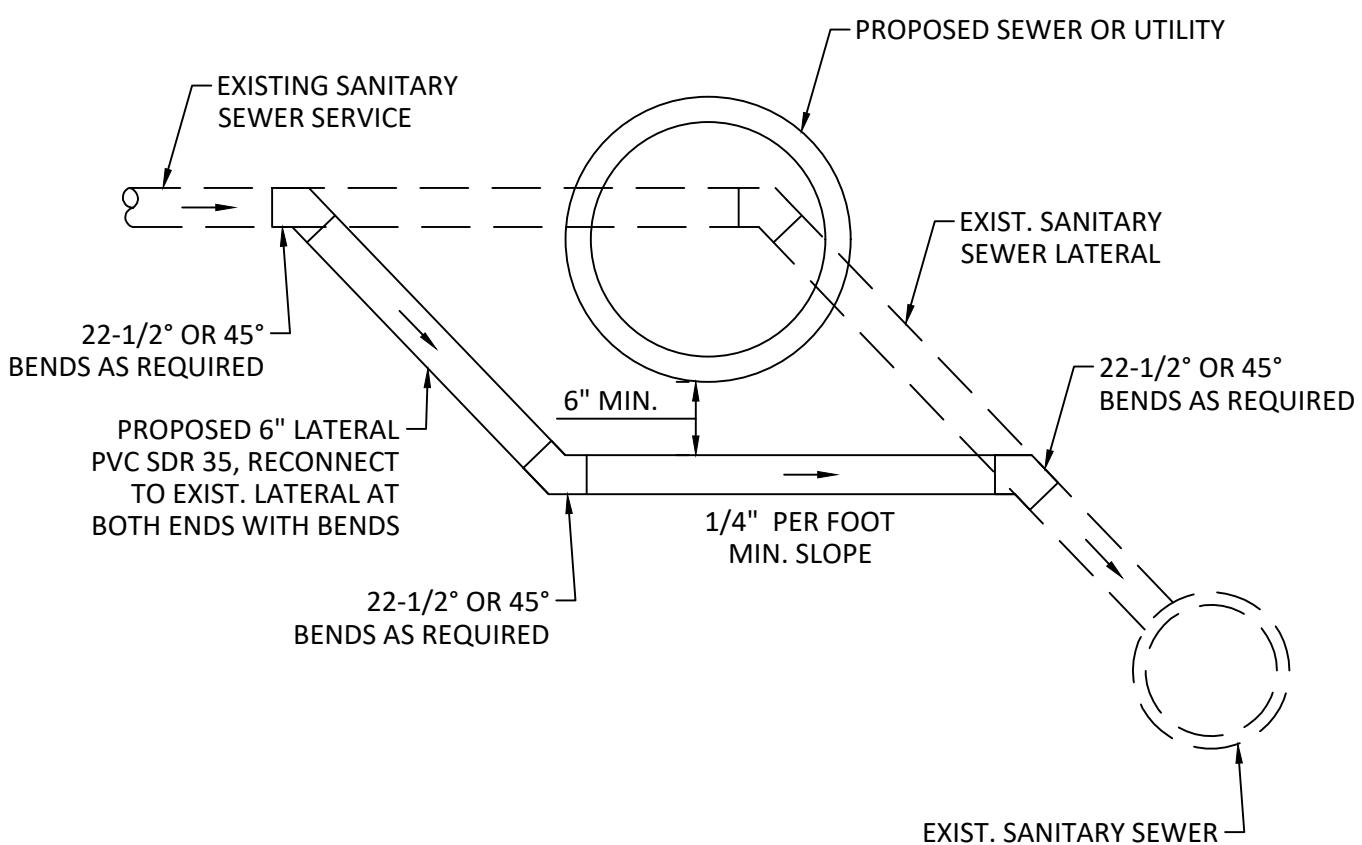
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-17





SCALE: N.T.S.

SANITARY SEWER SERVICE DEFLECTION

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

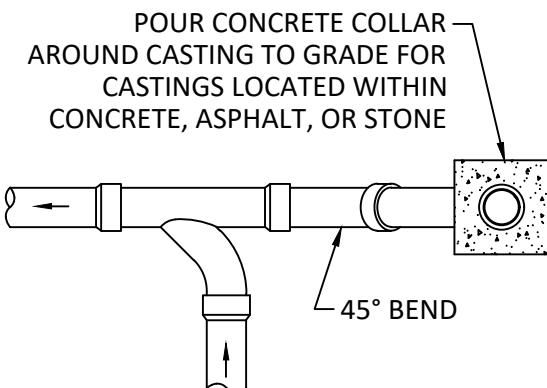
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STANDARD CONSTRUCTION DETAILS

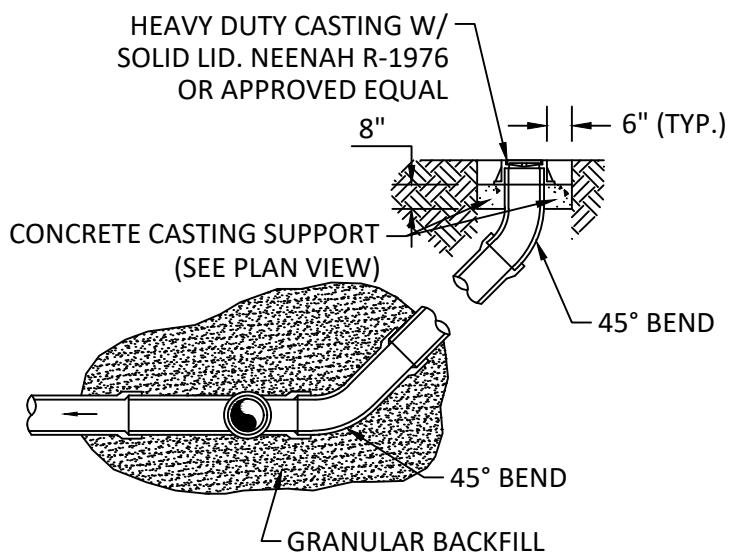
REVISED DATE

SAN-18

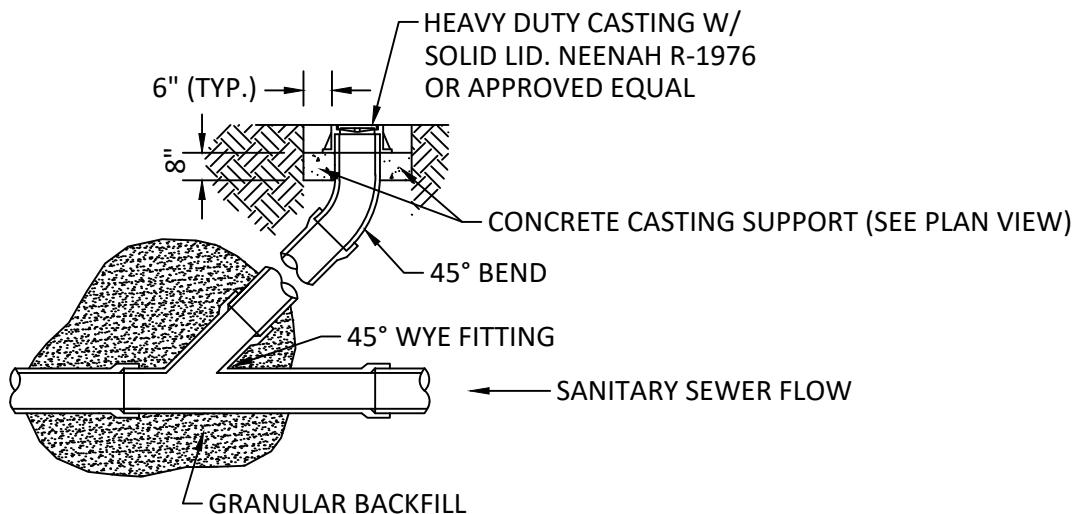




CHANGE IN DIRECTION PLAN VIEW



CHANGE IN DIRECTION PROFILE VIEW



IN LINE CLEANOUT

NOTES:

1. IN PUBLIC RIGHT-OF-WAY CLEANOUT CASTINGS SHALL BE HEAVY DUTY W/ SOLID LID, NEENAH R-1976 OR APPROVED EQUAL.
2. CLEANOUTS LOCATED WITHIN CONCRETE OR ASPHALT ROADWAYS OR SIDEWALKS SHALL BE NEENAH R-1976 OR APPROVED EQUAL.
3. CLEANOUTS LOCATED OUTSIDE OF THE RIGHT-OF-WAY AND IN NON-TRAFFIC AREAS MAY BE A PVC CLEANOUT ADAPTER AND THREADED PLUG. SEE "BUILDING SANITARY SEWER CONNECTION ADAPTER AND CLEANOUT" DETAIL.

SCALE: N.T.S.

SANITARY SEWER CLEANOUT

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

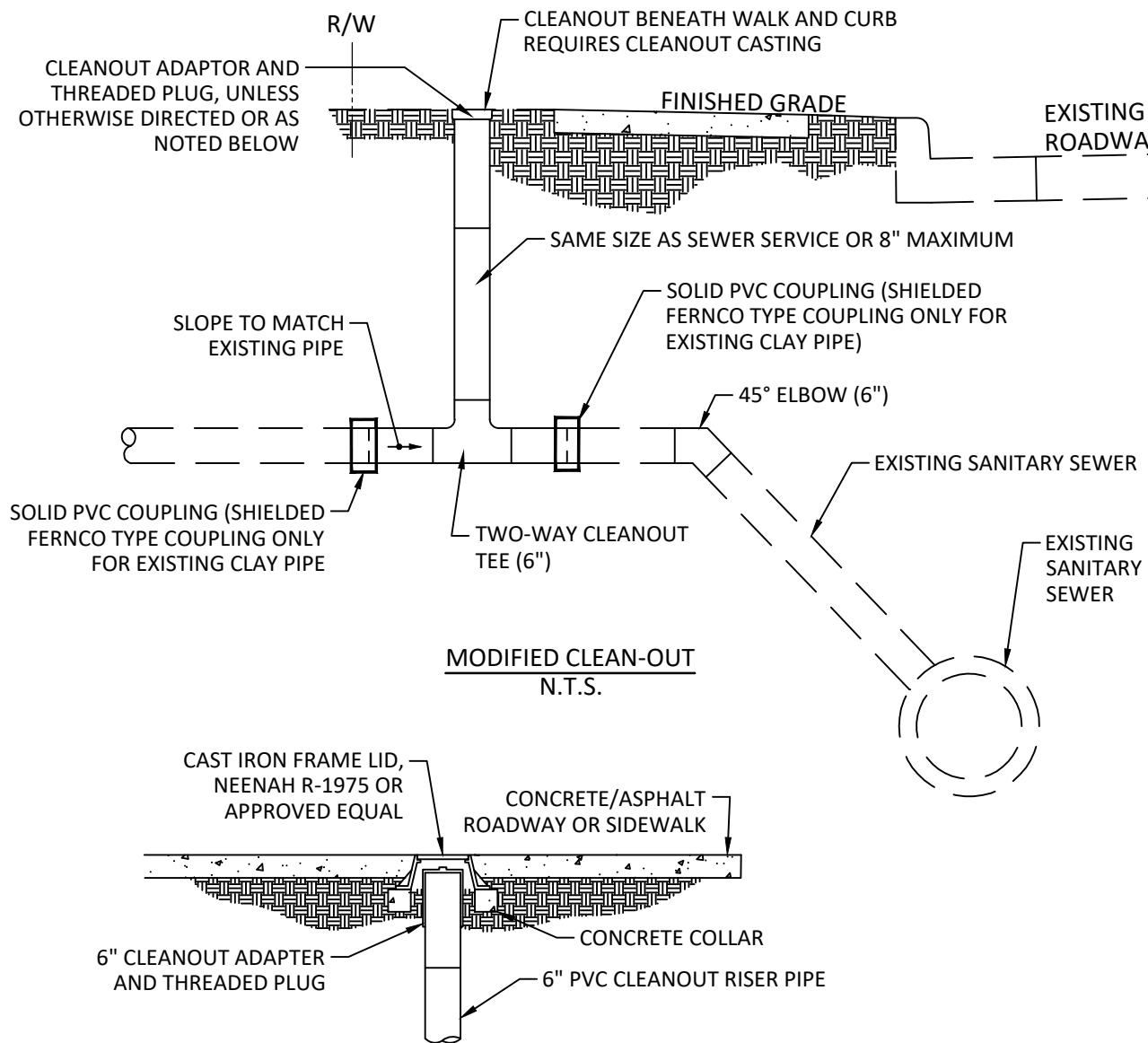
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-19





CLEANOUT CASTING FOR ASPHALT/CONCRETE/RIGHT-OF-WAY INSTALLATION
N.T.S.

NOTES:

1. LOCATE CLEAN-OUT SUCH THAT PLUG IS NOT LOCATED IN SIDEWALK UNLESS DIRECTED OTHERWISE.
2. IN NON-TRAFFIC AREAS, TOP OF CLEAN-OUT SHALL REQUIRE AN ADAPTER AND A THREADED PLUG.
3. IN CONCRETE OR ASPHALT ROADWAYS/DRIVeways, SIDEWALKS, OR WITHIN RIGHT-OF-WAY, CLEANOUT AND PLUG TO BE LOCATED WITHIN A CASTING. CASTING FRAME AND LID SHALL BE NEENAH #R-1975 OR APPROVED EQUAL. SEE ASPHALT/CONCRETE INSTALLATION LAYOUT, THIS PAGE.
4. THIS DETAIL SHALL BE FOR CLEAN-OUTS INSTALLED ON EXISTING SANITARY SERVICES ONLY AS APPROVED BY THE CITY.
5. CONNECTION TO THE EXISTING SANITARY SERVICE SHALL BE WITH SOLID PVC OR SHIELDED FERNCO COUPLINGS OR APPROVED EQUAL. SEE NOTE ABOVE AND ON PREVIOUS SHEETS.
6. THE CONTRACTOR OR DEVELOPER SHALL PROVIDE THE DEPARTMENT OF ENGINEERING WITH "AS BUILT" DRAWINGS OF ALL SANITARY SEWER AND SERVICE REPAIRS OR MODIFICATIONS LOCATED FROM DOWNSTREAM MANHOLE AND TO CLOSEST PROPERTY LINES.
7. ALL NEW LATERALS INSTALLED OR REPAIRS TO SERVICE LATERALS SHALL REQUIRE A PERMIT AND MAY REQUIRE TAPPING FEES.
8. IF CLEANOUT IS BETWEEN SIDEWALK AND CURB, A CLEANOUT CASTING SHOULD BE INSTALLED.

SCALE: N.T.S.

MODIFIED CLEANOUT DETAIL

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

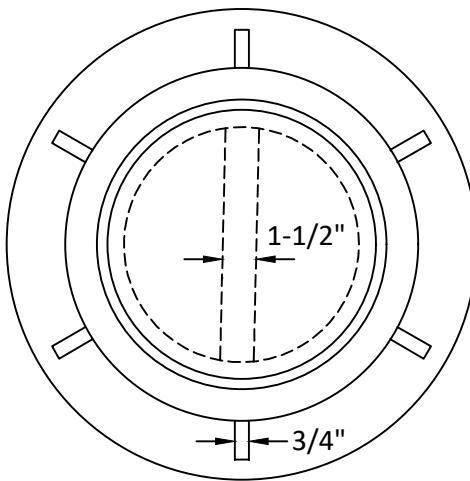
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STANDARD CONSTRUCTION DETAILS

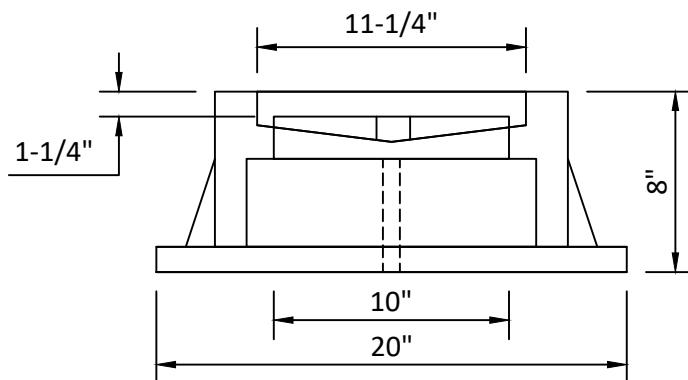
REVISED DATE

SAN-20





FRAME & LID
NEENAH R-1976
E. JORDAN 1578
OR APPROVED EQUAL



NOTES:

1. CASTINGS SHALL BE USED FOR ALL CLEANOUTS LOCATED WITHIN THE RIGHT-OF-WAY, SIDEWALK, PAVEMENT, CONCRETE, OR OTHER SURFACE REQUIRING HEAVY LOAD.

SCALE: N.T.S.

STANDARD CLEANOUT CASTING

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

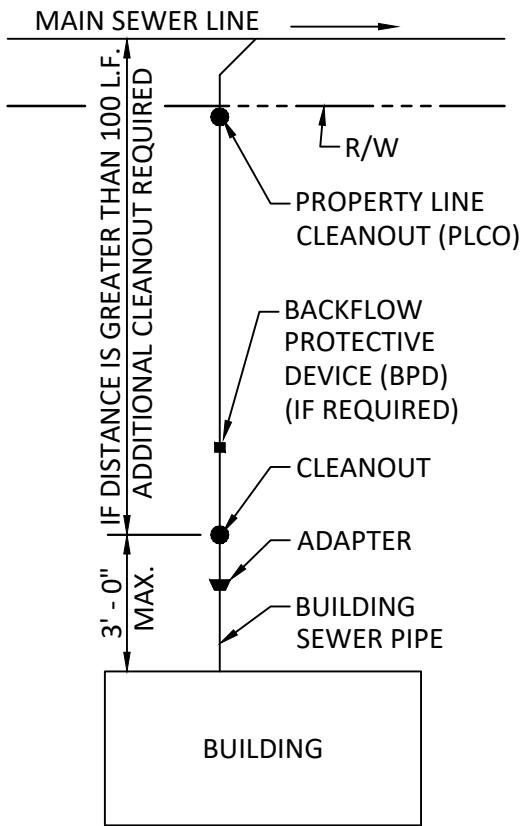
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

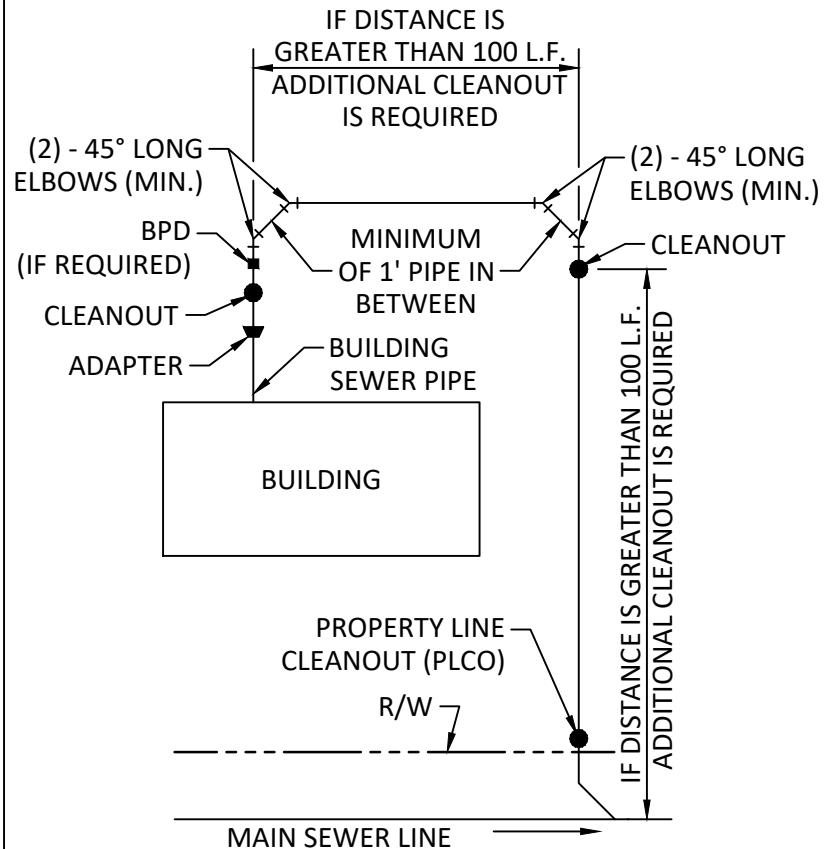
REVISED DATE

SAN-21





STRAIGHT CONNECTION



AROUND THE BUILDING CONNECTION

NOTES:

1. NO 90° ELBOW IS PERMITTED IN BUILDING SEWER.
2. MINIMUM SLOPE OF BUILDING SEWER SHALL BE 2% (1/4" PER FOOT).
3. MINIMUM SIZE FOR BUILDING SEWER SHALL BE 6" IN DIAMETER.
4. BUILDING SEWER LINE SHALL BE INSPECTED AND APPROVED BEFORE EXCAVATION IS BACKFILLED.
5. TRACER WIRE IS OPTIONAL ON ALL SANITARY SEWER LATERALS.
6. INSTALL A PROPERTY LINE CLEANOUT (PLCO) FOR ALL SERVICE LATERALS AT OR BEHIND ALL PROPERTY LINES.
7. A BACKFLOW PROTECTIVE DEVICE (BPD) IS REQUIRED IF THE HOMES LOWEST FLOOR LEVEL WITH PLUMBING IS NOT AT LEAST ONE FOOT ABOVE THE ELEVATION OF THE UPSTREAM MANHOLE.

SCALE: N.T.S.

BUILDING SANITARY SEWER CONNECTION LAYOUT

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

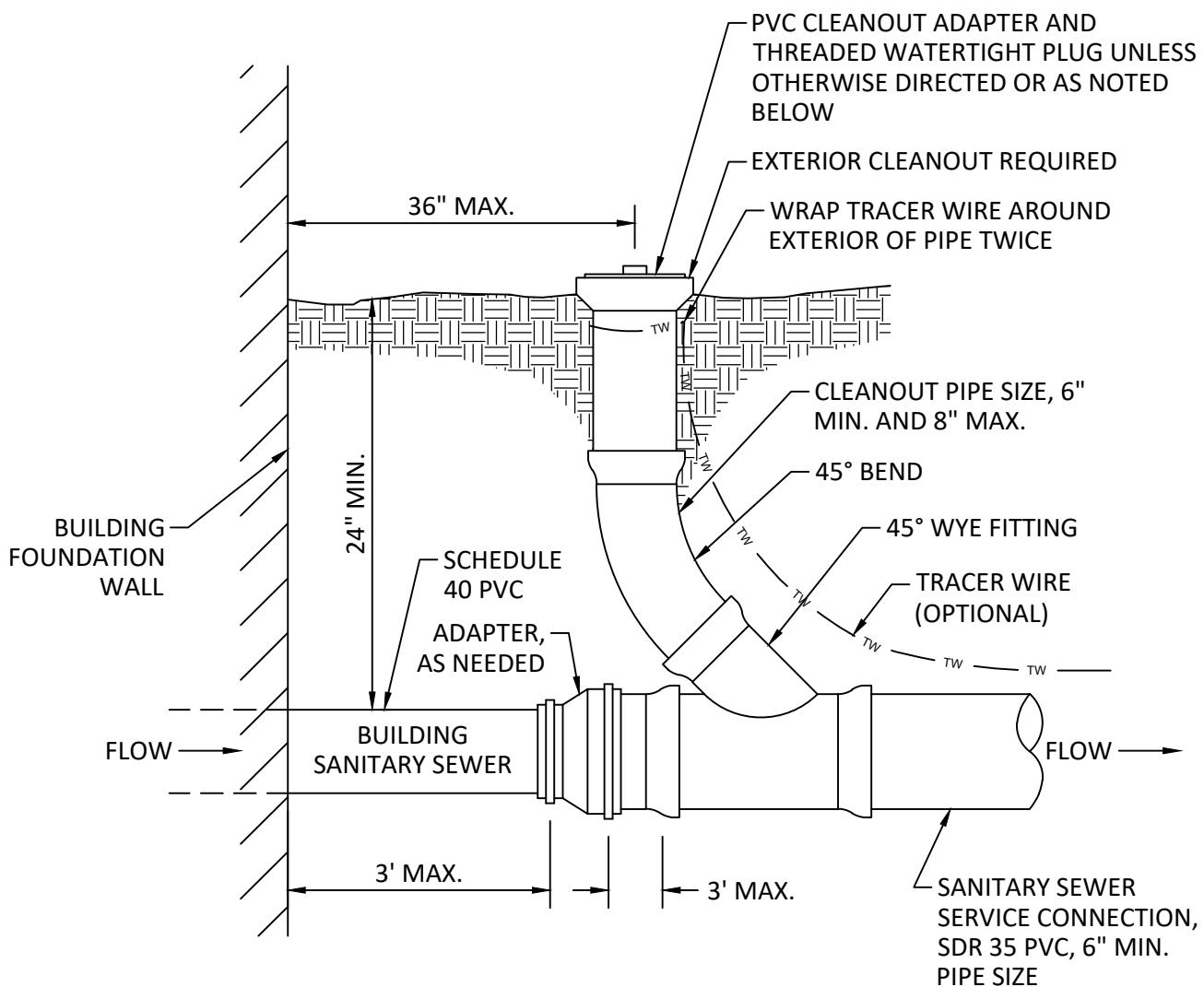
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-22





NOTES:

1. LOCATE CLEANOUT SUCH THAT PLUG IS NOT LOCATED IN SIDEWALK UNLESS DIRECTED OTHERWISE.
2. IN NON-TRAFFIC AREAS, TOP OF CLEANOUT SHALL REQUIRE AN ADAPTER AND A THREADED PLUG.
3. IN CONCRETE OR ASPHALT ROADWAYS OR SIDEWALKS, CLEANOUT AND PLUG TO BE LOCATED WITHIN A CASTING. CASTING FRAME AND LID TO BE NEENAH #R-1976 OR APPROVED EQUAL. SEE "SANITARY SEWER CLEANOUT" AND "STANDARD CLEANOUT CASTING" DETAILS.

SCALE: N.T.S.

BUILDING SANITARY SEWER CONNECTION ADAPTER & CLEANOUT

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

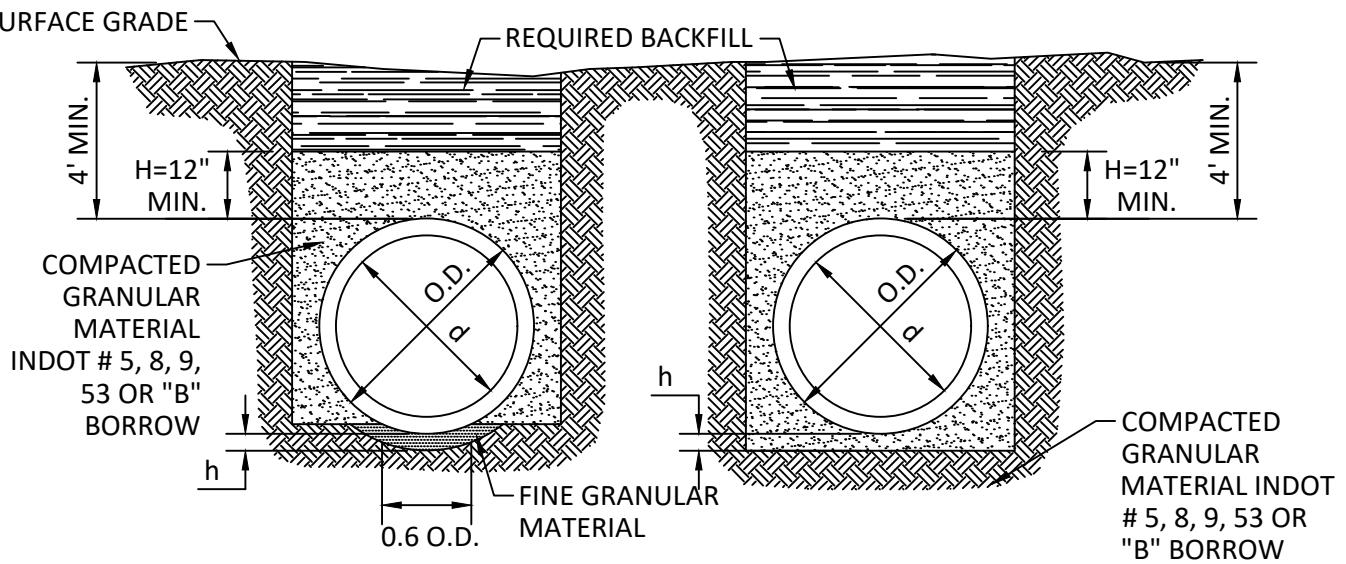
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-23





SHAPED SUBGRADE WITH COMPACTED
GRANULAR BEDDING CLASS 'B1'

COMPACTED GRANULAR BEDDING
CLASS 'B'

LEGEND:

O.D. = OUTSIDE DIAMETER

H = BACKFILL COVER ABOVE TOP OF PIPE

d = INSIDE DIAMETER

$$h = \frac{O.D.}{8}; 4" \text{ MINIMUM}$$

NOTES:

1. THIS BEDDING DETAIL SHALL BE FOR RIGID PIPE ONLY INCLUDING REINFORCED CONCRETE PIPE, BOTH LINED AND UNLINED.
2. ALL FLEXIBLE PIPE SHALL BE BEDDED PER THE "FLEXIBLE PIPE BEDDING" DETAIL.
3. FOR ROCK OR OTHER NON-COMPRESSIVE MATERIAL: THE TRENCH SHOULD BE OVER-EXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR MATERIAL.

SCALE: N.T.S.

RIGID PIPE BEDDING DETAILS

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

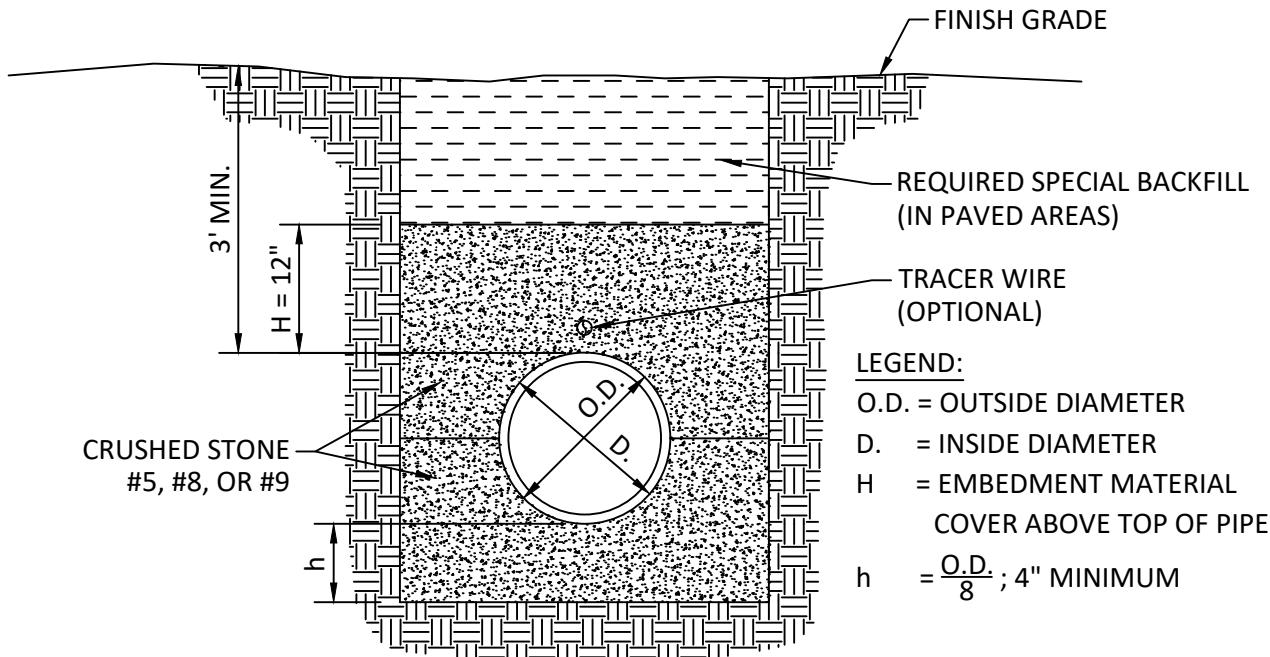
STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-24



CLASS 'F'



NOTES:

1. FOR ROCK OR OTHER NON-COMPRESSIBLE MATERIALS: THE TRENCH SHOULD BE OVER-EXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR MATERIAL.
2. FLEXIBLE CONDUITS ARE CONSIDERED THE FOLLOWING PIPES: PVC, HDPE, DIP, AND CMP.

SCALE: N.T.S.

FLEXIBLE PIPE BEDDING

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

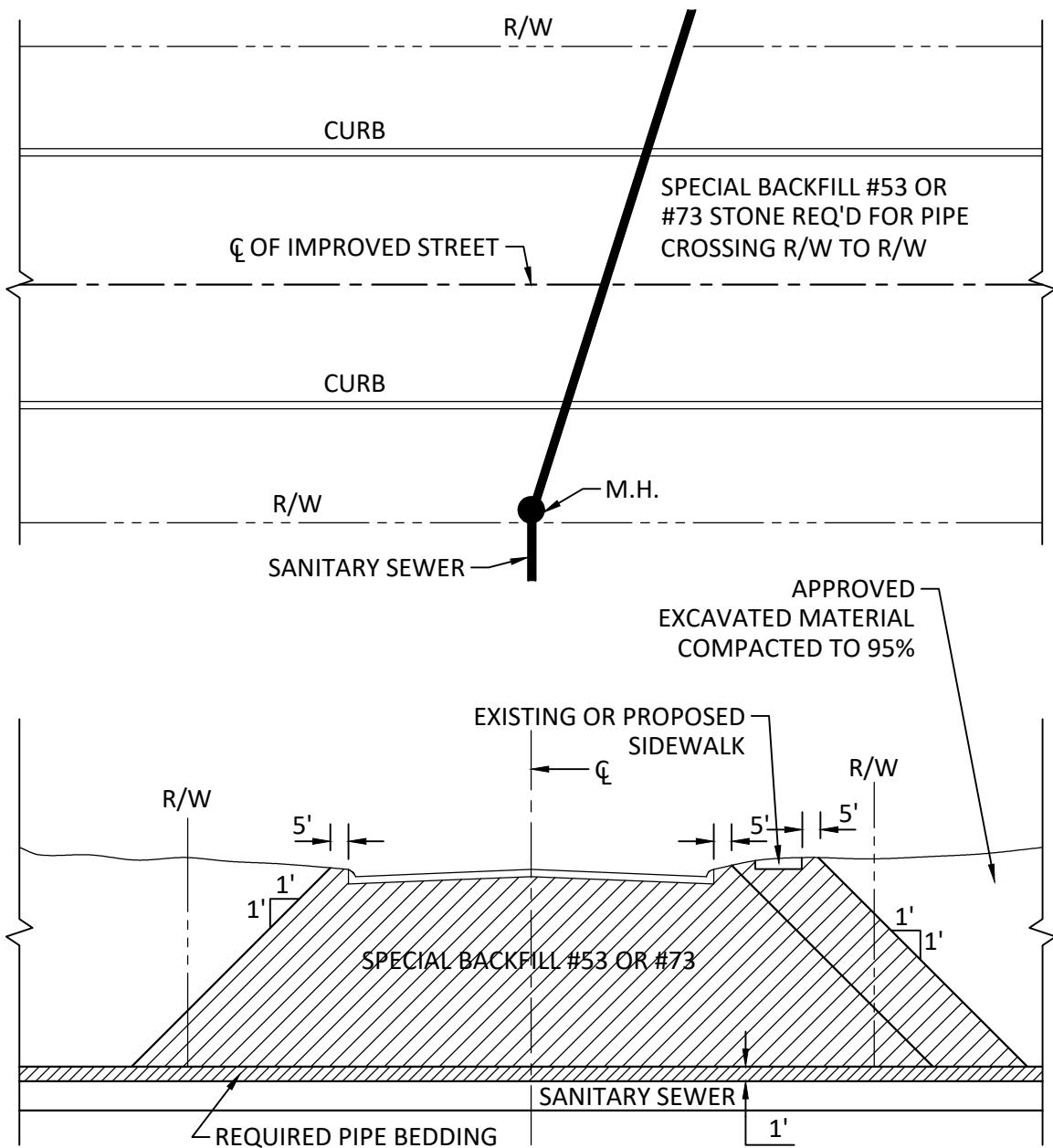
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-25





NOTES:

1. ALL DRIVEWAYS SHALL BE BACKFILLED WITH SPECIAL BACKFILL #53 OR #73 STONE AND COMPACTED BY MECHANICAL MEANS.
2. AREAS UNDER EXISTING OR PROPOSED SIDEWALK TO BE BACKFILLED WITH COMPACTED #53 OR #73 STONE.
3. ALL SANITARY SEWER LATERALS LOCATED UNDER EXISTING OR FUTURE ROADWAYS, DRIVEWAYS, AND SIDEWALKS SHALL BE BACKFILLED WITH SPECIAL BACKFILL #53 OR #73 STONE AND COMPACTED.

SCALE: N.T.S.

BACKFILL REQUIREMENTS FOR SANITARY SEWERS CROSSING THE RIGHT-OF-WAY

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

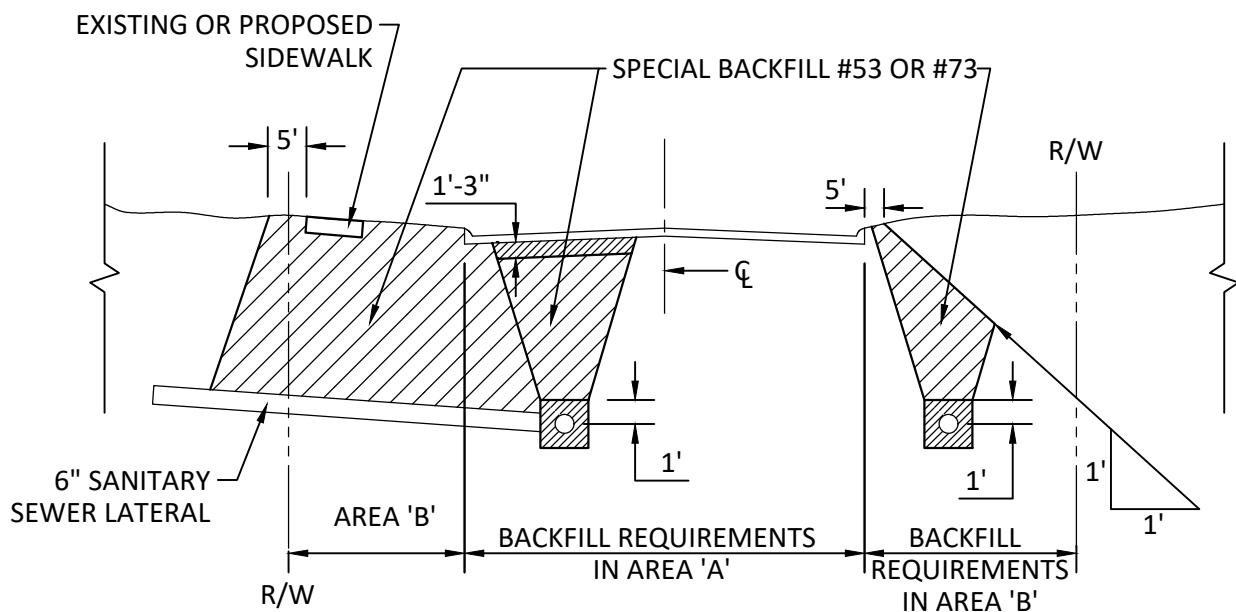
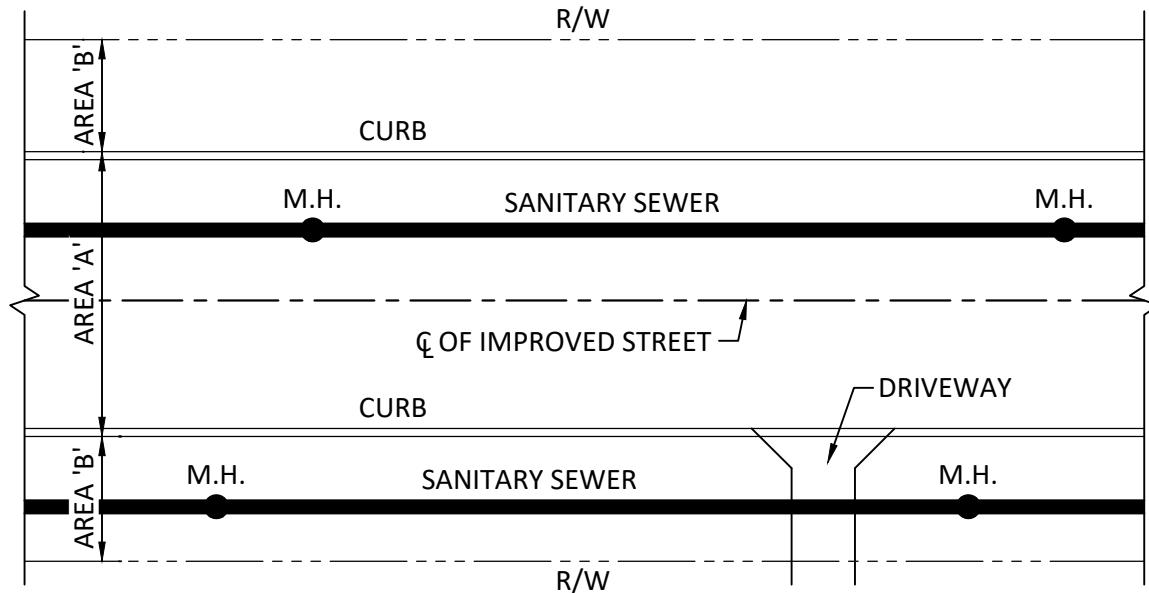
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-26





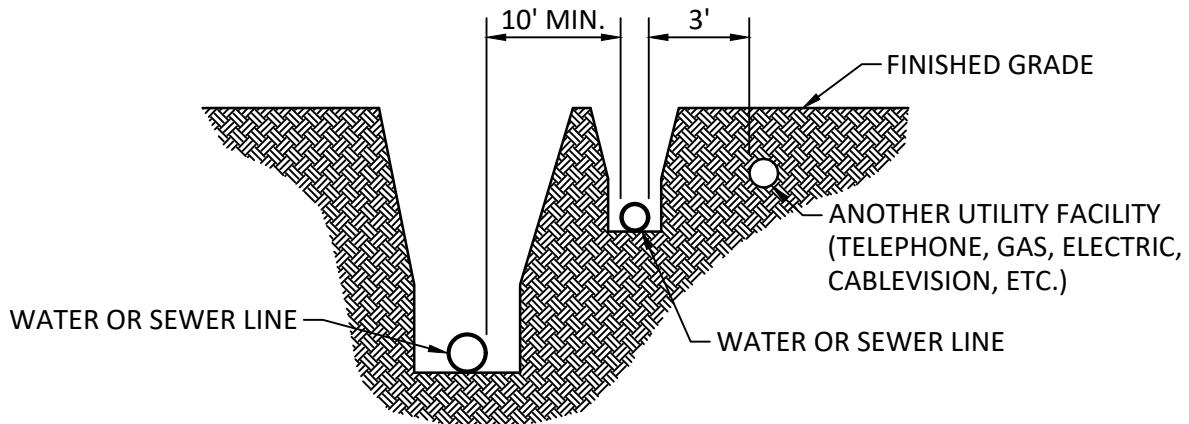
NOTES:

1. ALL DRIVEWAYS SHALL BE BACKFILLED WITH SPECIAL BACKFILL #53 OR #73 STONE AND COMPACTED BY MECHANICAL MEANS.
2. AREAS UNDER EXISTING OR PROPOSED SIDEWALK TO BE BACKFILLED WITH COMPACTED #53 OR #73 STONE.
3. ALL SANITARY SEWER LATERALS LOCATED UNDER EXISTING OR FUTURE ROADWAYS, DRIVEWAYS, AND SIDEWALKS SHALL BE BACKFILLED WITH SPECIAL BACKFILL #53 OR # 73 STONE AND COMPACTED.

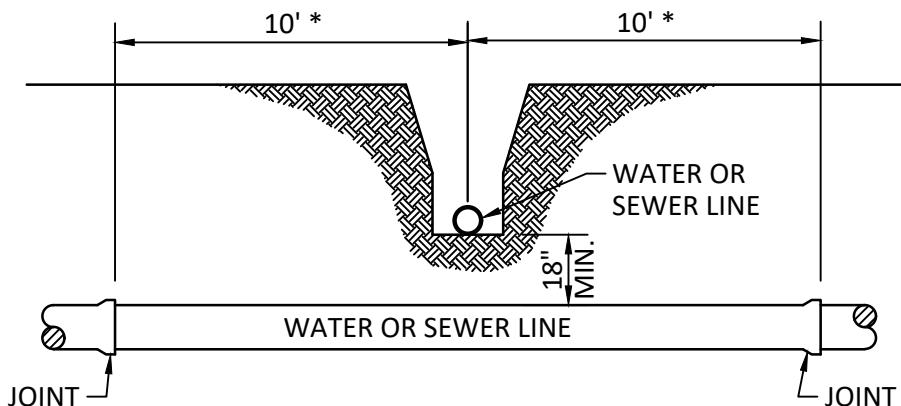
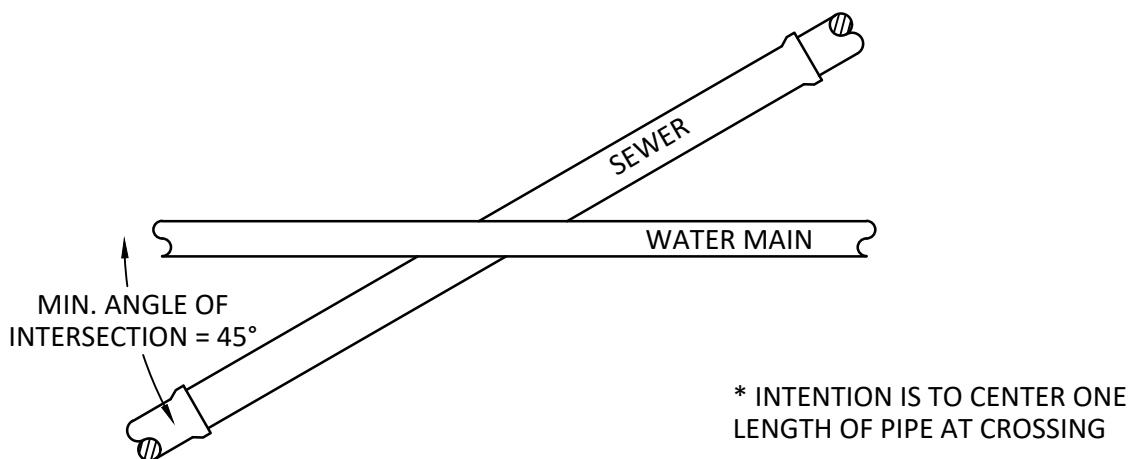
SCALE: N.T.S.

BACKFILL REQUIREMENTS FOR SANITARY SEWERS WITHIN RIGHT-OF-WAY

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	
STANDARD CONSTRUCTION DETAILS	REVISED DATE	SAN-27	



WATER MAIN LAYING PARALLEL TO SEWER



WATER MAIN CROSSING SEWER

NOTES:

1. WATER MAIN SHALL NOT BE LOCATED IN THE SAME TRENCH AS SANITARY SEWERS.
2. SEPARATION OF 3 FEET HORIZONTAL WITH ANY UTILITY REQUIRED.
3. 5' MINIMUM DEPTH OF COVER ON WATER MAIN.
4. PREFERENCE IS FOR THE WATER MAIN TO BE LOCATED ABOVE ALL SEWERS.

SCALE: N.T.S.

SEWER AND WATER MAIN SEPARATION

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

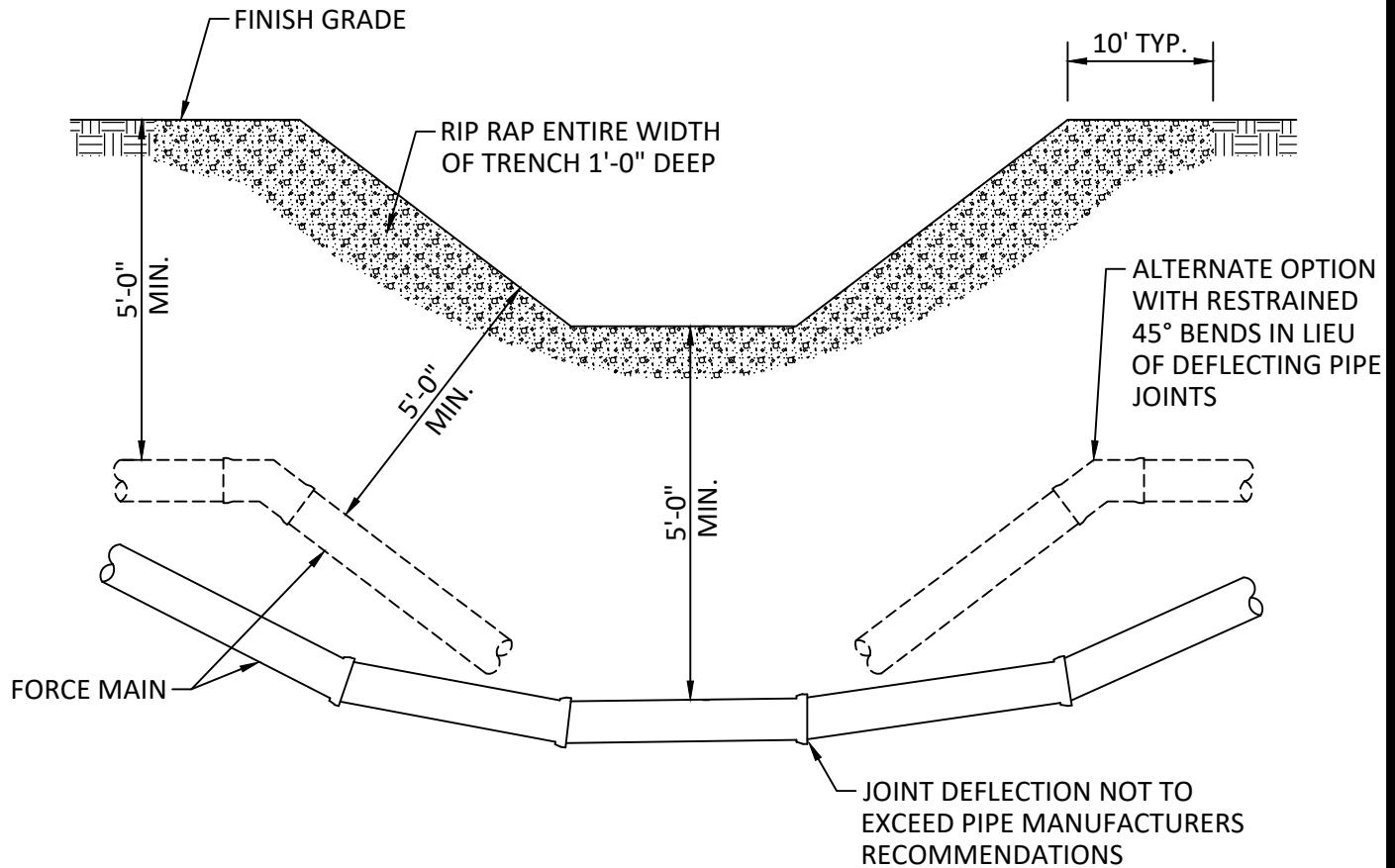
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-28





NOTES:

1. CONTRACTOR MAY ELECT TO USE (4) - 45° BENDS TO ACCOMPLISH CROSSING IN LIEU OF DEFLECTING THE PIPE.
2. PROVIDE EROSION CONTROL MEASURES FOR ALL AREAS DISTURBED BY CONSTRUCTION
3. ALL PIPE, FITTINGS, & RIP RAP TO BE INCLUDED IN THE LUMP SUM COST OF THE DITCH CROSSING.
4. RIP RAP ALL UTILITY CROSSINGS.
5. IT SHOULD BE NOTED THAT ALL APPLICABLE PERMITS FOR LEGAL DRAIN CROSSINGS MUST BE SECURED, FROM ALL GOVERNING ENTITIES, PRIOR TO CONSTRUCTION (I.E. ALLEN COUNTY SURVEYOR'S OFFICE, IDEM, USAC, AND IDNR).

SCALE: N.T.S.

TYPICAL OPEN CUT DITCH CROSSING

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

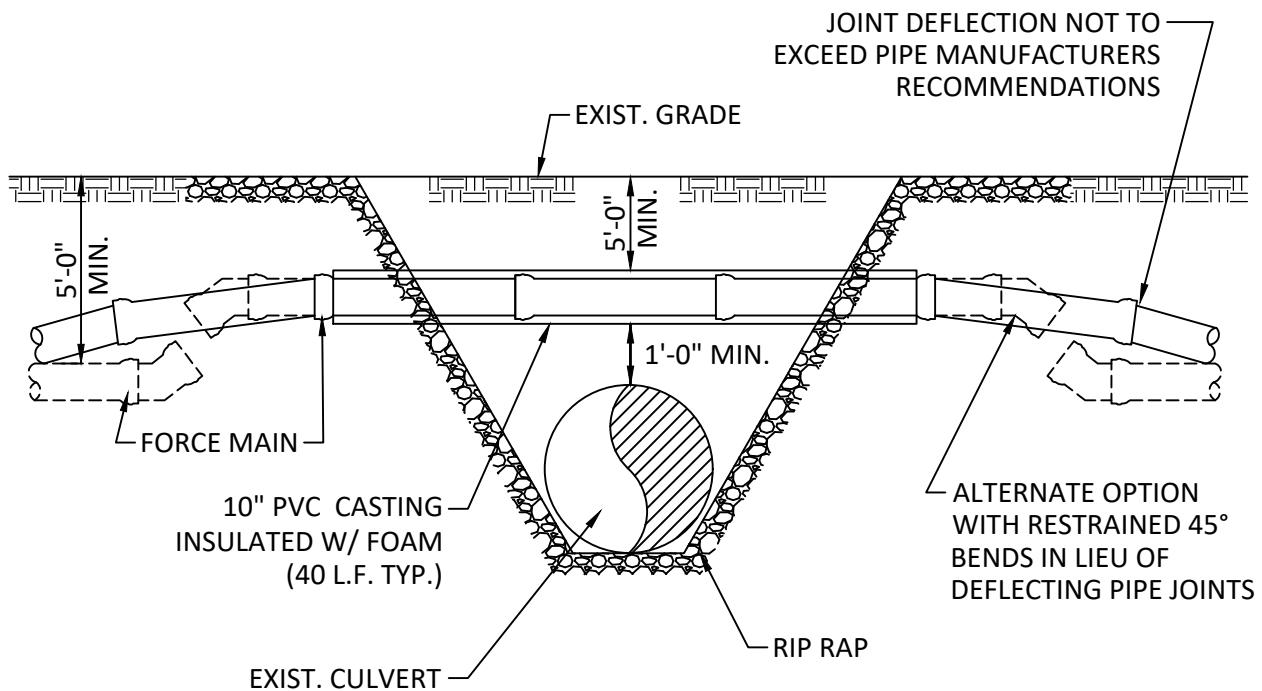
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-29





NOTES:

1. CONTRACTOR MAY ELECT TO USE (4) - 45° BENDS TO ACCOMPLISH CROSSING IN LIEU OF DEFLECTING THE PIPE (TO BE APPROVED BY NEW HAVEN ENGINEERING DEPARTMENT).
2. PROVIDE EROSION CONTROL MEASURES FOR ALL AREAS DISTURBED BY CONSTRUCTION
3. ALL PIPE, FITTINGS, & RIP RAP TO BE INCLUDED IN THE LUMP SUM COST OF THE DITCH CROSSING.

SCALE: N.T.S.

TYPICAL CULVERT CROSSING

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

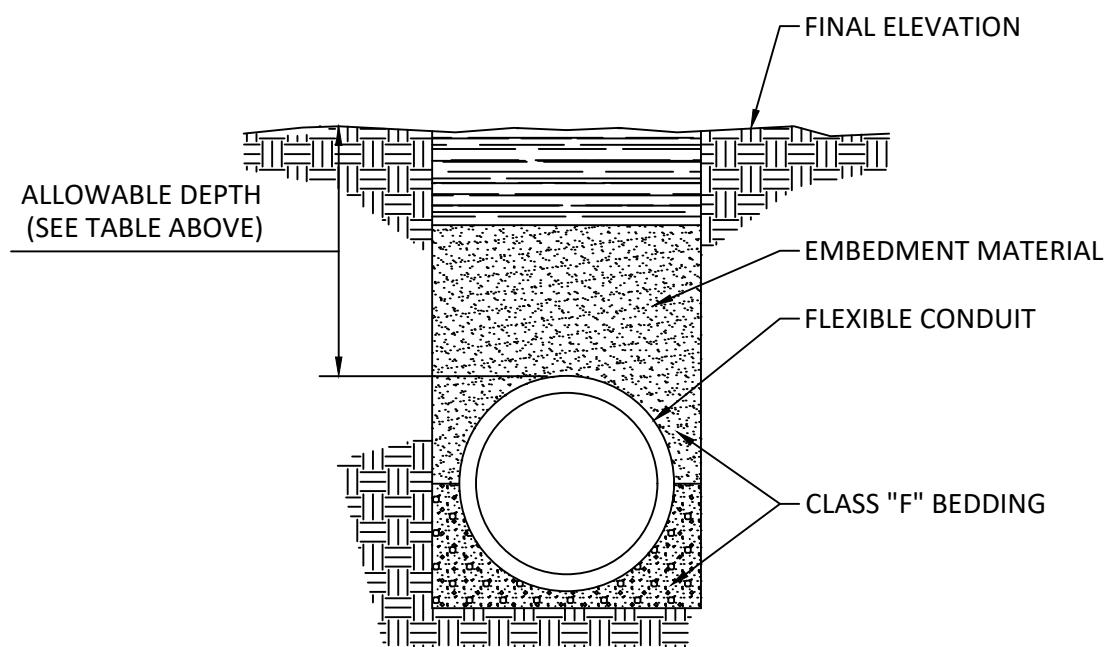
STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-30



TYPE OF CONDUIT	RANGE OF DEPTH						
	3'	10'	18'	20'	21'	27'	30'
PVC SDR-35 (ASTM-D3034)							
PVC SDR-32.5 (ASTM-D2241)							
PVC SDR-40 (ASTM-D1785)							
PVC SDR-26 (ASTM-D2241)							
PVC SDR-26 (ASTM-D3034)							
PVC SDR-21 (ASTM-D2241)							
PVC SDR-80 (ASTM-D1785)							



NOTES:

1. SEE "SANITARY SEWER CONSTRUCTION GENERAL NOTES" DETAIL FOR ADDITIONAL BEDDING AND INSTALLATION REQUIREMENTS.

SCALE: N.T.S.

ALLOWABLE INSTALLATION DEPTH FOR FLEXIBLE CONDUITS (SANITARY SEWERS ONLY)

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-31



PIPE SIZE	12"	15"	18"	21"	24"	27"	30"	33"	36"	42"	48"
FT. OR COVER DEPTH											
1	IV	IV	IV	IV	III						
2	III										
3	III	II	II	II	II						
4	III	III	III	III	III	III	II	II	II	II	II
5	III	III	III	III	III	III	II	II	II	II	II
6	III	III	III	III	III	III	II	II	II	II	II
7	III	III	III	III	III	III	II	II	II	II	II
9	III	III	III	III	III	III	II	II	II	II	II
11	IV	IV	III								
13	IV	III	III								
15	IV										
17	V	V	IV								
19	V	V	V	IV							
21	V*	V	V	V	V	IV	IV	IV	IV	IV	IV
23	V*	V*	V	V	V	V	IV	IV	IV	IV	IV
25	V*	V*	V*	V	V	V	V	V	V	IV	IV
27	V*	V*	V*	V	V	V	V	V	V	V	V
29	V*	V*	V*	V*	V	V	V	V	V	V	V
31	V*	V*	V*	V*	V	V	V	V	V	V	V
33	V*	V*	V*	V*	V	V	V	V	V	V	V
35	V*	V*	V*	V*	V*	V	V	V	V	V	V

* - PIPE REQUIRES RIGID PIPE BEDDING

SCALE: N.T.S.

ALLOWABLE INSTALLATION DEPTHS FOR VARIOUS CLASSES OF RCP

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

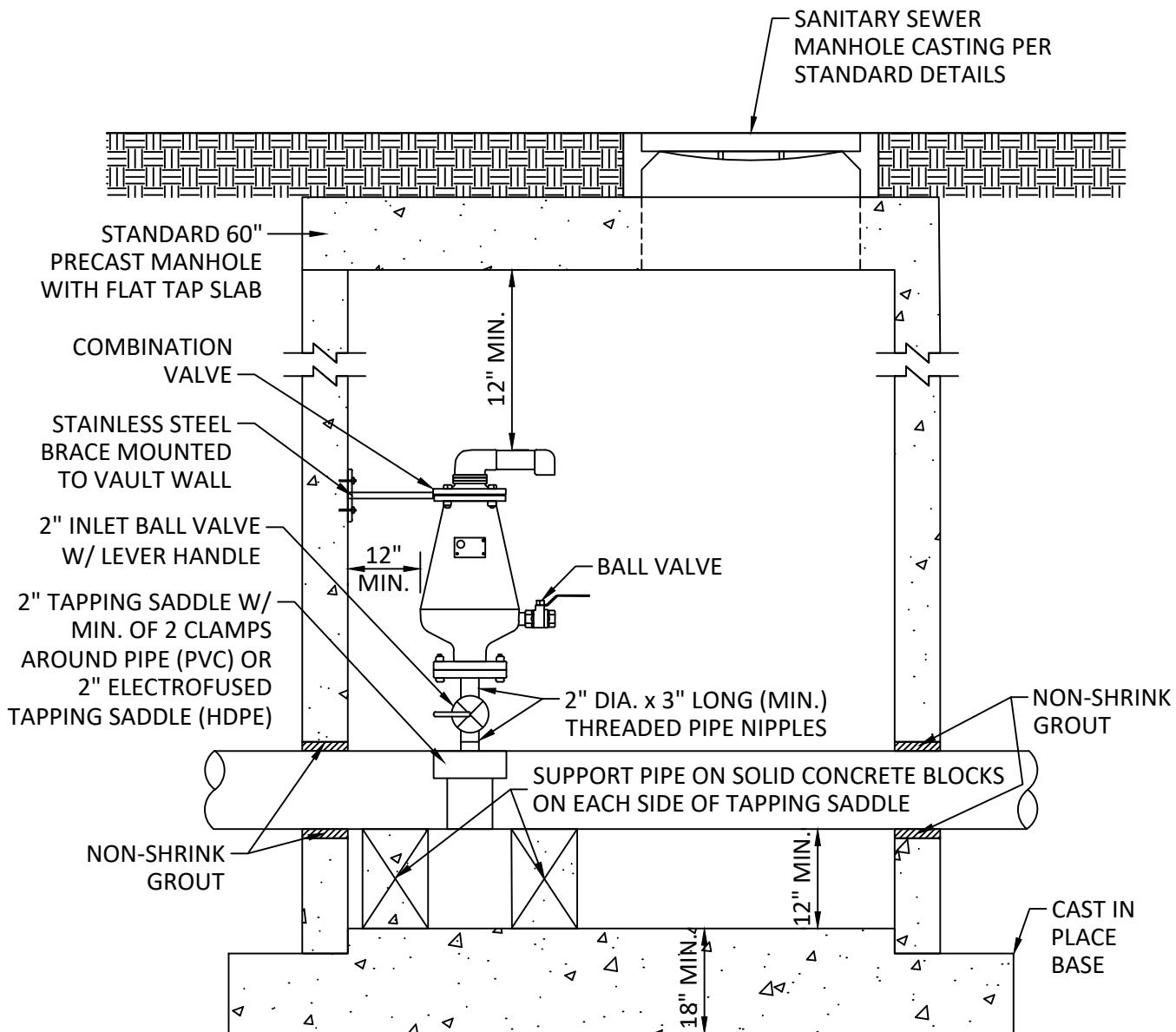
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-32





NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR BRACING VALVE TO PREVENT ANY TYPE OF MOVEMENT.
2. CONTRACTOR SHALL INSTALL COMBINATION VALVE OFFSET FROM CENTER OF STRUCTURE AND ON OPPOSITE SIDE OF MANHOLE ACCESS TO PROVIDE UNIMPEDED ACCESS TO STRUCTURE.
3. WEIGHT OF COMBINATION VALVE SHALL NOT BE SUPPORTED BY THE FORCE MAIN PIPE.
4. PROJECT ENGINEER SHALL PROVIDE VALVE MODEL AND SIZE.
5. MINIMUM CLEARANCE OF STRUCTURE SHALL BE 6 FEET FROM FLOOR TO STRUCTURE CEILING.
6. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONTROLLING MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR CONSTRUCTION AND IS THEREFORE RESPONSIBLE FOR CONTROLLING THE QUALITY OF WORK.

SCALE: N.T.S.

SANITARY SEWER AIR RELEASE STRUCTURE

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

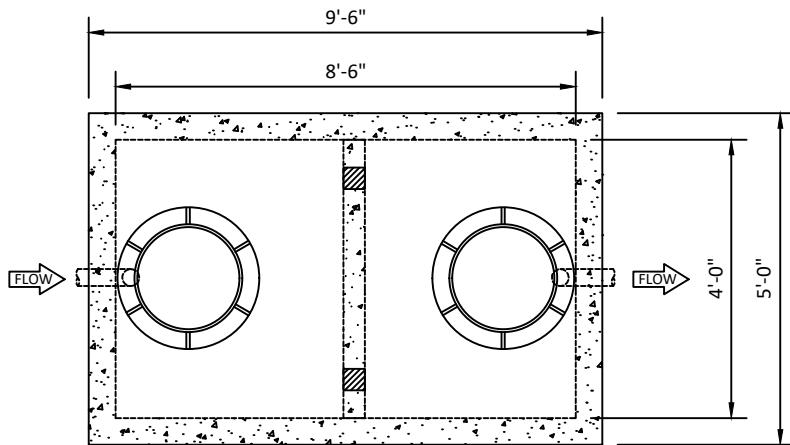
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

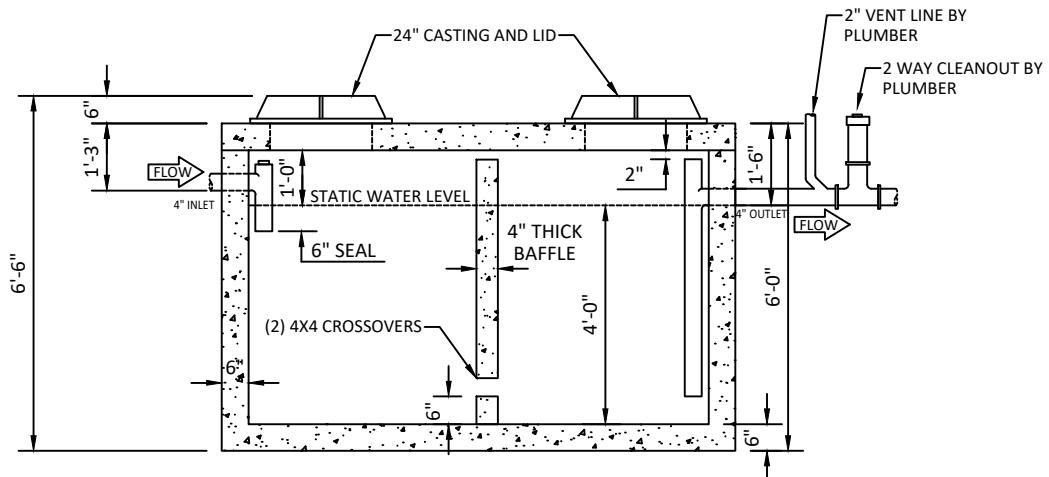
REVISED DATE

SAN-33





PLAN VIEW



ELEVATION VIEW

NOTES:

1. TANK ACCESS RISERS, CASTINGS, AND LIDS SHOULD BE TO GRADE.
2. CONCRETE SHALL BE CLASS 1 WITH A DESIGN STRENGTH MINIMUM OF 4500 PSI AT 28 DAYS.
3. REINFORCING BARS SHALL CONFORM TO ASTM A-615 GRADE 60 STEEL.
4. ALL REINFORCING BARS SHALL BE CUT AND FORMED TO THE DIMENSIONAL TOLERANCES SPECIFIED IN ACI-315 OR ACI-318 EXCEPT WHERE NOTED ON DRAWINGS.
5. ALL BARS SHALL BE BENT COLD. BARS WITH KINKS AND BENDS NOT INDICATED SHALL NOT BE USED. HEATING AND REBENDING OF BARS IS NOT PERMITTED.
6. REINFORCING STEEL SHALL BE #4 REBAR AT 12" O.C. BOTH WAYS TIED TO 6X6 10/10 WELDED WIRE MESH. TOP OF GREASE TRAP TO HAVE DOUBLE LAYER OF STEEL.
7. EARTH COVER: 2'-0" MINIMUM UP TO 5'-0" MAXIMUM. SIZE PAD ACCORDING TO AMOUNT OF EARTH COVER.
8. CASTING AND LID SHALL BE HEAVY DUTY, TRAFFIC LOAD, CAST IRON, AND SHALL BE A MINIMUM OPENING OF 24" DIAMETER.

SCALE: N.T.S.

1000 GALLON GREASE TRAP

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

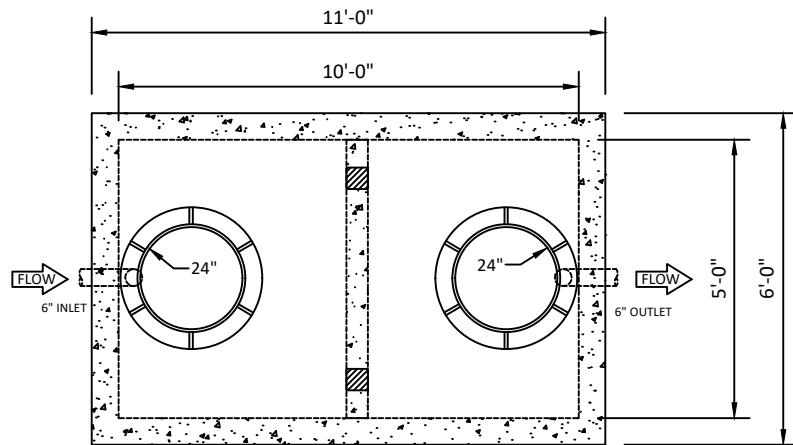
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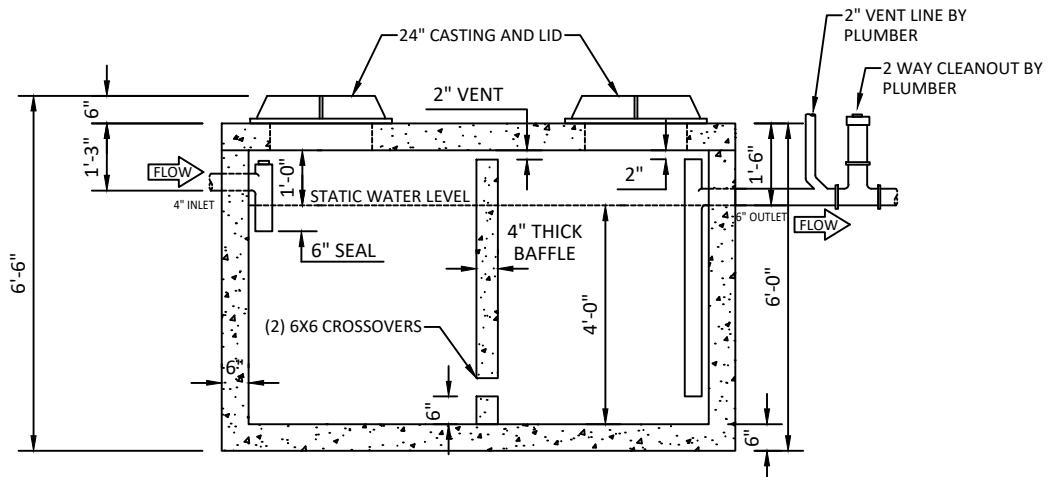
REVISED DATE

SAN-34





PLAN VIEW



ELEVATION VIEW

NOTES:

1. TANK ACCESS RISERS, CASTINGS, AND LIDS SHOULD BE TO GRADE.
2. CONCRETE SHALL BE CLASS 1 WITH A DESIGN STRENGTH MINIMUM OF 4500 PSI AT 28 DAYS.
3. REINFORCING BARS SHALL CONFORM TO ASTM A-615 GRADE 60 STEEL.
4. ALL REINFORCING BARS SHALL BE CUT AND FORMED TO THE DIMENSIONAL TOLERANCES SPECIFIED IN ACI-315 OR ACI-318 EXCEPT WHERE NOTED ON DRAWINGS.
5. ALL BARS SHALL BE BENT COLD. BARS WITH KINKS AND BENDS NOT INDICATED SHALL NOT BE USED. HEATING AND REBENDING OF BARS IS NOT PERMITTED.
6. REINFORCING STEEL SHALL BE #4 REBAR AT 12" O.C. BOTH WAYS TIED TO 6X6 10/10 WELDED WIRE MESH. TOP OF GREASE TRAP TO HAVE DOUBLE LAYER OF STEEL.
7. EARTH COVER: 2'-0" MINIMUM UP TO 5'-0" MAXIMUM. SIZE PAD ACCORDING TO AMOUNT OF EARTH COVER.
8. CASTING AND LID SHALL BE HEAVY DUTY, TRAFFIC LOAD, CAST IRON, AND SHALL BE A MINIMUM OPENING OF 24" DIAMETER.

SCALE: N.T.S.

1500 GALLON GREASE TRAP

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

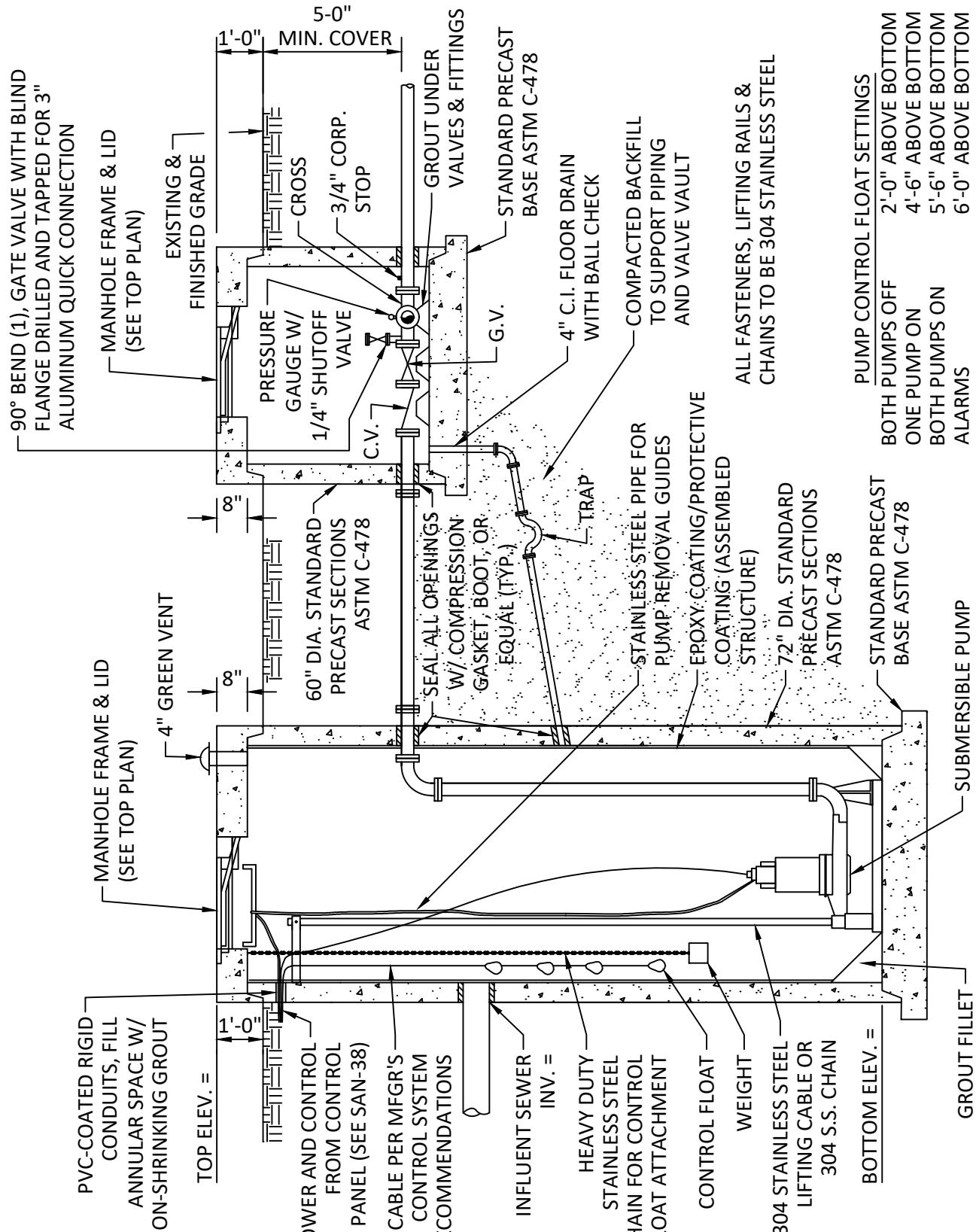
DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-35





STANDARD LIFT STATION CROSS-SECTION

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

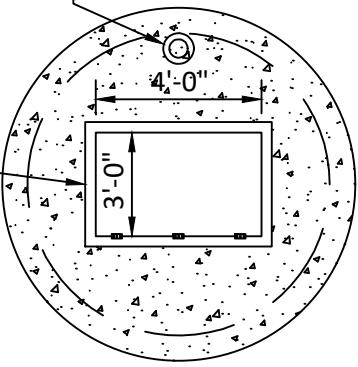
STANDARD CONSTRUCTION DETAILS

REVISED DATE

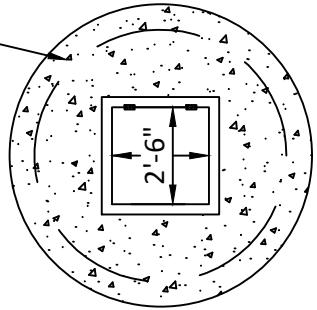
SAN-36



- CAST-IN-PLACE MANHOLE FRAME & LID TO BE HALLIDAY S1R 3648, LIGHT DUTY. FLUSH "T" HINGES WITH HASP & LOCK OR EAST JORDAN MODEL, BILCO MODEL, OR NEENAH MODEL. WITH DOUBLE LEAF ALUMINUM CHANNEL FRAME WITH STAINLESS STEEL HARDWARE, OR EQUAL



— CAST-IN-PLACE MANHOLE FRAME & LID TO BE HALLIDAY S1R 3030, LIGHT DUTY. FLUSH "T" HINGES WITH HASP & LOCK OR EAST JORDAN MODEL, BILCO MODEL, OR NEENAH MODEL. WITH DOUBLE LEAF ALUMINUM CHANNEL FRAME WITH STAINLESS STEEL HARDWARE, OR EQUAL



TOP PLAN

LIFT STATION

VALVE VAULT

NOTE LOCATION OF ELECTRICAL APPURTENANCES
TO BE VERIFIED BY OWNER

VALVE VAULT
- 90° BEND (1), GATE VALVE WITH BLIND
FLANGE DRILLED AND TAPPED FOR 3"
ALUMINUM QUICK CONNECTION

Technical drawing of a pump station structure. The structure is circular with an outer diameter of 72" and an inner diameter of 60". The top section is 10'-0" high, and the bottom section is 20'-0" high. The drawing shows two submersible pumps at the bottom, connected to a 4" PVC pipe. The pipe then splits into two vertical lines, each ending in a 90° bend (2) and a gate valve (2). These lines converge into a cross (CROSS) and then a vertical line ending in a 3/4" corporation stop. A pressure gauge with a 1/4" shutoff valve is also connected to the system. The entire structure is made of 60" standard precast sections ASTM C-478 and 72" standard precast sections ASTM C-478. The bottom section is coated with epoxy protective coating (assembled structure).

10'-0"

20'-0"

60" DIA. STANDARD
PRECAST SECTIONS
ASTM C-478

72" DIA. STANDARD
PRECAST SECTIONS
ASTM C-478

EPOXY
COATING/PROTECTIVE
COATING (ASSEMBLED
STRUCTURE)

GATE VALVE (2)

90° BEND (2)

CROSS

D.I.

3/4" CORPORATION STOP

PRESSURE GAUGE W/
1/4" SHUTOFF VALVE

CHECK VALVE WITH
OUTSIDE LEVER &
WEIGHT (2)

D.I.

D.I.

D.I.

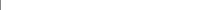
D.I.

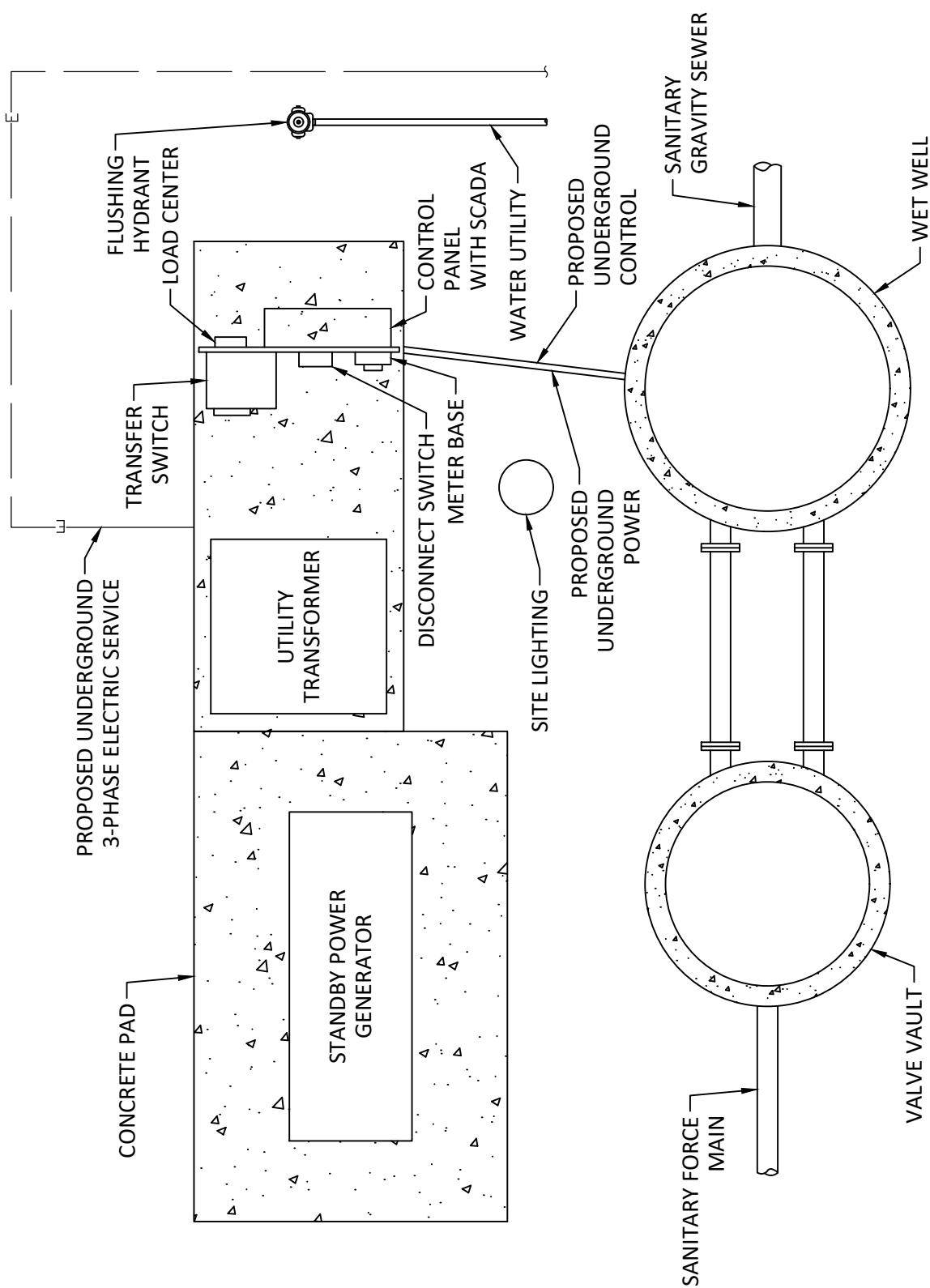
D.I.

SCAL

SCALE: N.T.S.

STANDARD LIFT STATION PLAN VIEW

CITY OF NEW HAVEN	APPROVED DATE 6/18/2019	DETAIL NO.	
STANDARD CONSTRUCTION DETAILS	REVISED DATE	SAN-37	



SCALE: N.T.S.

STANDARD LIFT STATION TYPICAL SITE PLAN

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-38



SANITARY SEWER CONSTRUCTION GENERAL NOTES

1. All construction and materials shall conform to the City of New Haven Engineering Department Standards and Specifications.
2. All reinforced concrete pipe shall conform to ASTM Specification C-76.
3. All RCP joints shall conform to ASTM Specification C-443 Rubber Gasket Joints.
4. All poly-vinyl chloride pipe (PVC) shall conform to ASTM Specification D-3034 Class 12 454-B ASTM D-1784 SDR 35 and SDR 26.
5. All PVC joints shall conform to ASTM Specification D-3212 for elastomeric gasket joints conforming to ASTM F-477 having a minimum cross section area of 0.20 square inches.
6. Pipe Bedding: Class B Bedding for rigid pipe or Class F for flexible pipe shall be bedded with #5, #8, or #9 crushed limestone and shall be carried 12" above the top of the pipe.
7. All sewer trenches within the road right-of-way under parking lots, drive, sidewalks, and existing pipes shall be embedded with #5, #8, or #9 crushed limestone, backfilled with #53 or #73 crushed limestone, and compacted at 95% modified proctor density.
8. Any existing pipe or tiles which are cut during construction shall be replaced with equal or better materials and construction methods.
9. Any pavement or improved road service or sidewalk cut during construction shall be replaced with equal or better materials and construction methods.
10. All grassed areas which are disturbed during the coarse of construction shall be seeded with comparable grass seed and covered with straw. Water shall be applied as required to assure growth.
11. All areas disturbed during construction shall be re-graded to the original contours prior to completion of project.
12. All manholes are to be Standard Type I with 48" diameter precast reinforced concrete unless noted otherwise.
13. All precast concrete manhole components (cones, adjusting rings, sections, etc.) shall conform to ASTM Specification C-478.
14. All manhole frames to be Neenah R-1772 C casting with solid lids or equal unless otherwise noted.
15. All manholes with force main discharge connection(s) and all concrete lift station wet wells shall be lined with an interior coating system after the entire structure has been assembled. The interior coating shall be an epoxy liner per the City of New Haven standard specifications or as specified.
16. Top of casting elevation shall be flush with mowed dense grass elevation, be above grade and high water elevation in vicinity of open drainage ways, and be 1/4" below vehicular traveled surface.
17. Flow channel through a manhole shall be made to conform in shape, and slope to that of connection sewers. The channel walls shall be shaped or formed to the full height of the crown of the outlet sewer (327 3-6-16g) so that maintenance, inspection, and flow in the manhole are not obstructed.

SANITARY SEWER CONSTRUCTION GENERAL NOTES

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

09/15/2020

SAN-39



SANITARY SEWER CONSTRUCTION GENERAL NOTES CONT.

18. Flow channel to be constructed with a fall of 1 tenth of a foot from influent to effluent connecting sewers to maintain velocity of sewage.
19. Drop connections required on all sewers entering with an invert of 1.99' or more above invert out of manhole.
20. Contractor shall install a 6" wye sanitary tap at location shown on the plans and shall physically mark the location of each tap on the ground with 3/8" rebar so as to be locatable with a metal locator. The contractor will also furnish as-built plans showing the location of each tap referenced to the nearest property line and from downstream manhole.
21. Infiltration/Exfiltration into pipe shall NOT exceed 200 gallons per inch of pipe diameter per day per mile of pipe. It shall be the responsibility of the contractor to arrange for the testing and to provide certified tests to the engineer. Air pressure tests shall be performed by the contractor and witnessed by City of New Haven Engineering employees. All required materials and equipment shall be provided by contractor . Results of the testing shall be provided to this office thirty (30) days after completion of construction.
22. All permits required for the execution of the work shall be obtained and paid for by the contractor.
23. Sewer and water main separation distances shall conform to Section 29 of the recommended standards for sewage works. (1978 Revised Edition). Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18" below the water main. When the elevation of the sewer cannot be buried to meet said requirements, the sewer shall be reconstructed with ductile iron pipe or AWWA C900 Class 150 SDR 18 PVC for a distance of 10 feet on each side of the water main. One full length of sewer pipe shall be centered over the water main so that both joints will be as far from the water main as possible. And all occurrences where water lines and sanitary sewer lines do not permit a minimum of 10 feet horizontal separation, the sewer must be constructed equal to water tight with compression joints and shall be pressure tested to assure water tightness prior to backfilling.
24. Deflection tests shall be performed on all flexible pipe after the final backfill has been in place at least thirty (30) days. Deflection mandrel shall be supplied by the contractor. No pipe shall exceed a vertical deflection of 5%. Deflection test results shall be submitted with the infiltration/exfiltration test results. The following are considered flexible pipes:

PVC
HDPE
Ductile Iron Pipe

SANITARY SEWER CONSTRUCTION GENERAL NOTES CONT.

CITY OF NEW HAVEN

APPROVED DATE

6/18/2019

DETAIL NO.

STANDARD CONSTRUCTION DETAILS

REVISED DATE

SAN-40

