

NOTES:

ALTERNATE MATERIALS for WALLS	D	C	T (MIN)
PRECAST REINF. CONC. SECTION	4'-0" 5'-0"	2'-6" 3'-9"	4" 5"
CONCRETE MASONRY UNIT	4'-0" 5'-0"	2'-6" 3'-9"	5" 5"
CAST-IN-PLACE	4'-0" 5'-0"	2'-6" 3'-9"	6" 6"
BRICK MASONRY	4'-0" 5'-0"	2'-6" 3'-9"	8" 8"

IN ADDITION TO THE REQUIREMENTS OF ART. 602.15 OF THE STANDARD SPECIFICATIONS, THE CONTRACT UNIT PRICE FOR VALVE VAULT SHALL INCLUDE THE AGGREGATE CUSHION, WHEN REQUIRED, AND FURNISHING AND COMPACTING THE SPECIFIED BACKFILL.

A MAXIMUM OF 2 CONCRETE ADJUSTING RINGS WITH A TOTAL MAXIMUM HEIGHT OF 12" WILL BE ALLOWED.

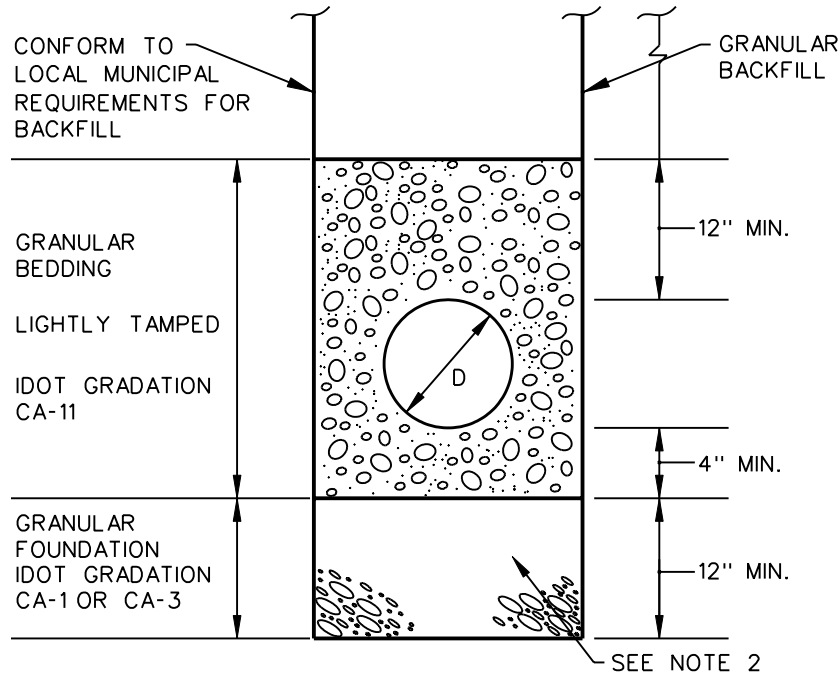
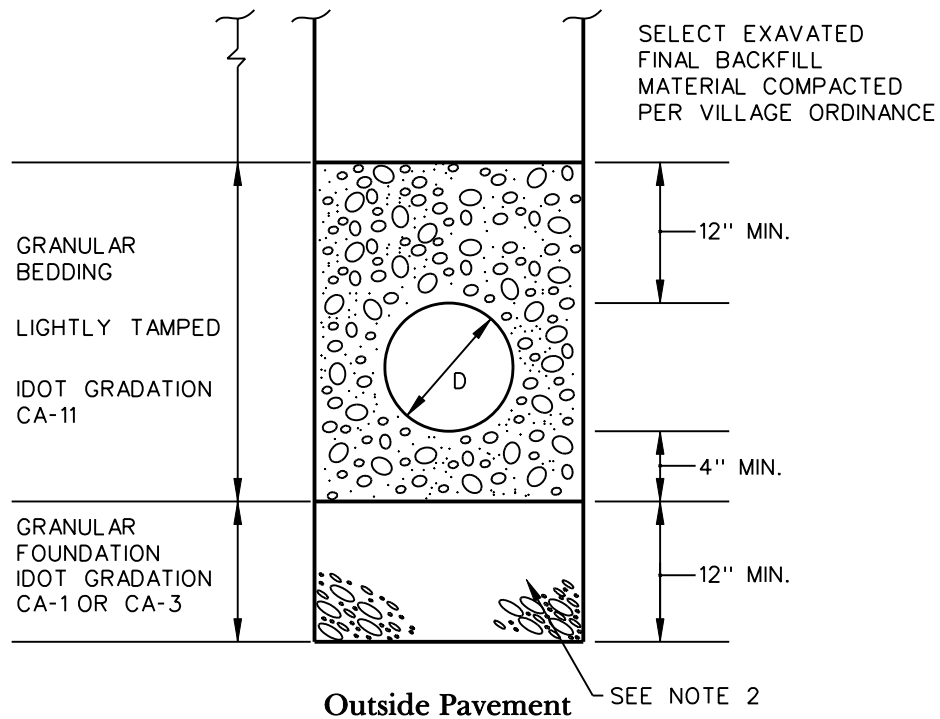
ALL SECTIONS, ADJUSTING RINGS, AND CASTINGS SHALL BE INSTALLED WITH BUTYL ROPE JOINT MATERIAL SEAL.

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Air Release Valve and Vault Detail



Under or within 2' of Pavement

NOTES:

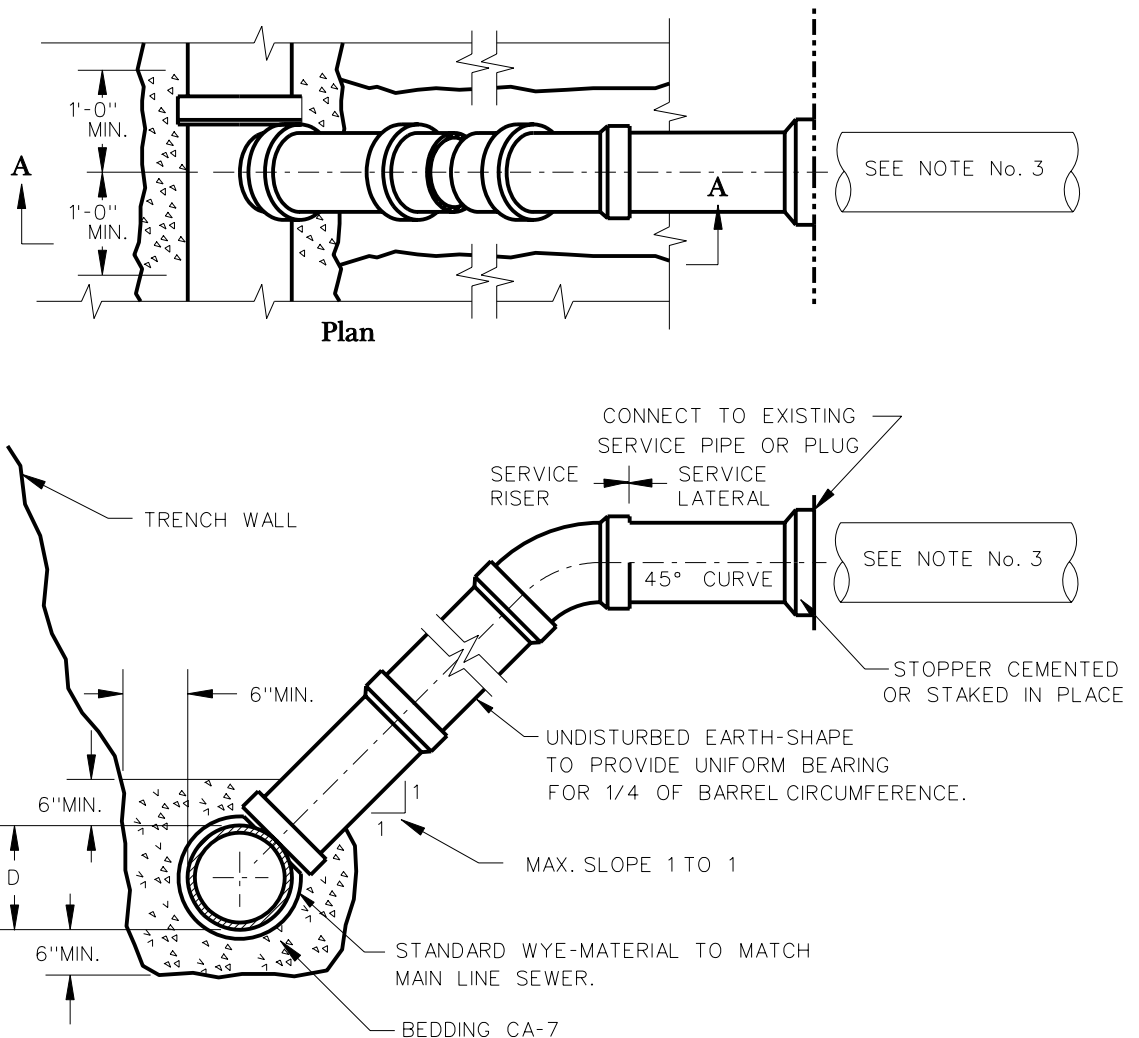
1. ANY MODIFICATIONS TO THE LIMITS, TYPE OR METHOD OF BACKFILL SHALL BE APPROVED BY THE LOCAL MUNICIPALITY AND THE DESIGN ENGINEER
2. CONSTRUCT A GRANULAR FOUNDATION WHERE UNSUITABLE MATERIAL OR WET CONDITIONS ARE ENCOUNTERED AT THE BOTTOM OF THE TRENCH OR AS DIRECTED BY THE ENGINEER.

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**Detail for Bedding and
Backfilling (PVC) Sewers**



Section A-A

GENERAL NOTES

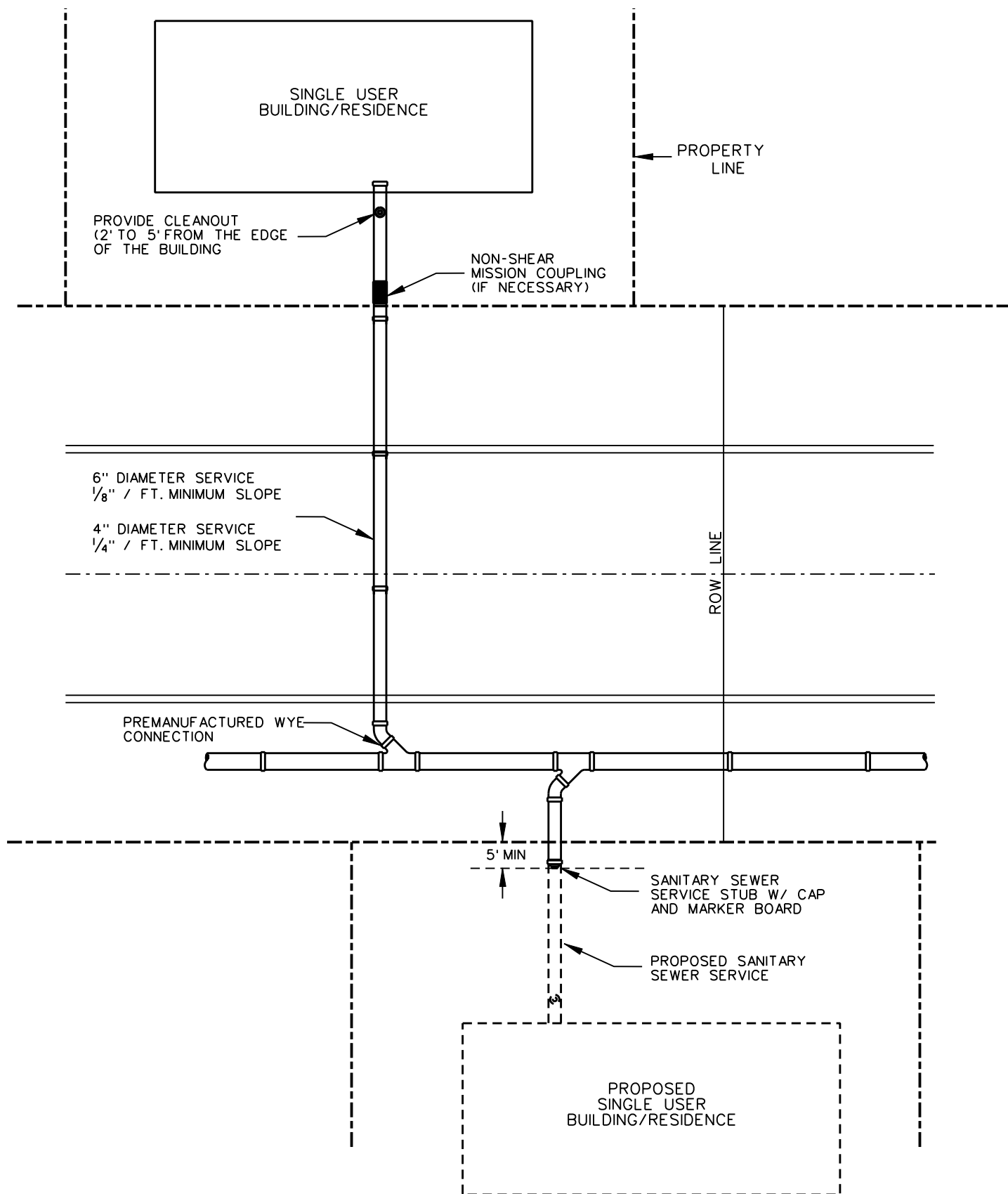
1. MAXIMUM SLOPE SHALL BE LESS THAN 1:1 WHEN IT IS NECESSARY TO SECURE BEDDING IN UNDISTURBED EARTH.
2. SERVICE RISERS SHALL BE CONSTRUCTED OF SAME MATERIALS AS MAIN LINE SEWERS, 4" MIN DIA. WITH TEES, WYES AND FITTINGS TO BE HEAVY DUTY.
3. ALL PIPE SHALL CONFORM TO LOCAL REQUIREMENTS FOR PIPE MATERIALS AND INSTALLATION. PROVIDE SUITABLE "NON-SHEAR" ADAPTER COUPLING (FERNCO OR APPROVED EQUAL) TO JOIN DISSIMILAR PIPE MATERIAL OR SIZES.

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**Sanitary Sewer Service
Riser Detail**

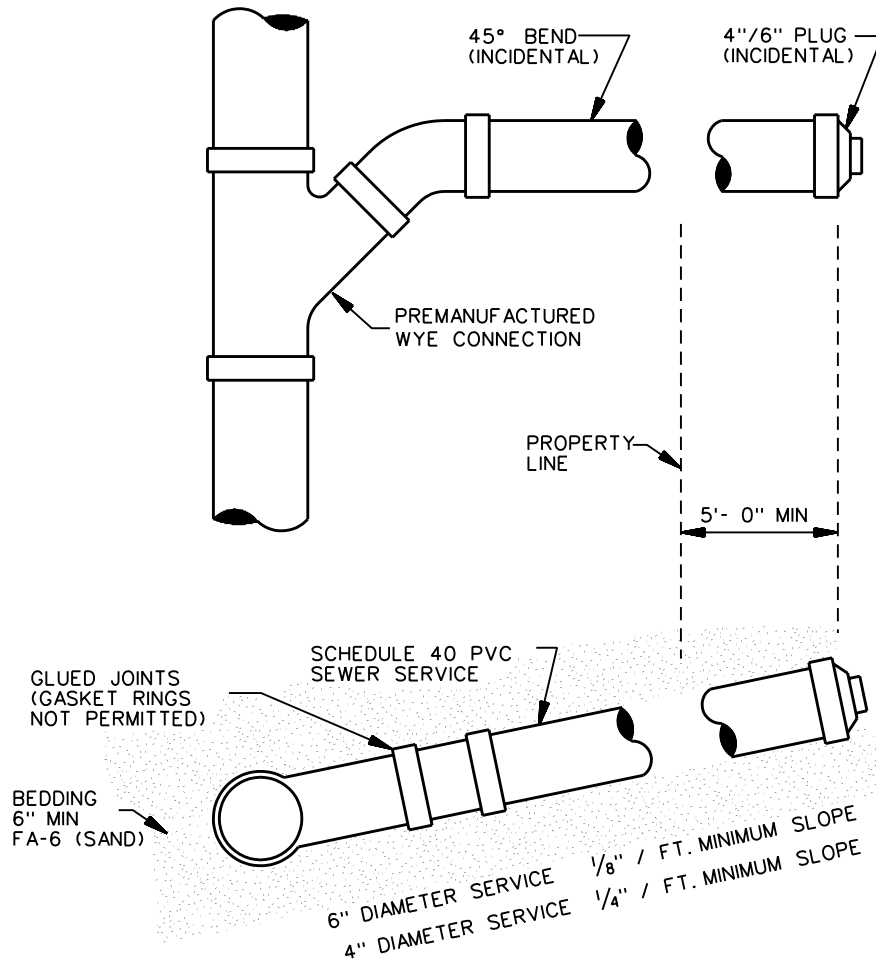


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Sanitary Sewer Service
Layout Detail



GENERAL NOTES

1. ALL SANITARY SERVICES SHALL BE INSTALLED IN A FULL DEPTH TRENCH CONSISTING OF FA-6 (SAND)
2. SANITARY SEWERS SHALL BE SCHEDULE 40 WITH GLUE JOINTS
3. ALL SERVICES SHALL BE REFERENCED BY THE CONTRACTOR TO THE NEAREST DOWNSTREAM MANHOLE AND SUCH INFORMATION SHALL BE FURNISHED TO THE ENGINEER FOR HIS USE IN PREPARING "AS BUILT" PLANS.
4. ALL SEWER SERVICES SHALL TERMINATE AT A POINT A MINIMUM OF FIVE (5) FEET INTO THE LOT. AT THE UPPER END OF THE SEWER SERVICE,
5. YELLOW PINE POST MARKED RED SHALL BE SET UPON THE BRICK TO EXTEND FROM THE BOTTOM OF THE TRENCH TO 3 FEET ABOVE THE SURFACE.
6. NO SADDLE TAPS ARE ALLOWED ALL SERVICES TO EXISTING SEWERS SHALL BE CUT-IN WYE CONNECTION JOINED WITH NON-SHEAR MISSION COUPLING(S)

Northern Moraine Wastewater Reclamation District

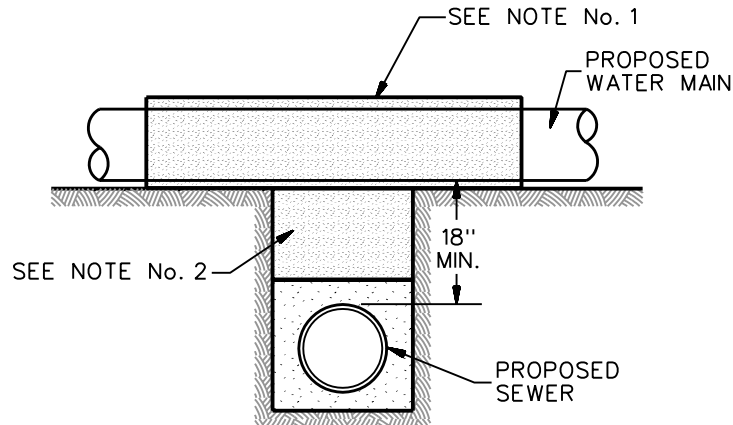
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Sanitary Sewer Service

PROPOSED WATER MAIN ABOVE PROPOSED SEWER
LINE WITH 18" MINIMUM SEPARATION.

NOTE: CLASS IV MATERIAL TO BE COMPACTED TO
95% OF STANDARD PROCTOR MAXIMUM DENSITY.



GUIDELINES:

1. OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER THE TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10 FEET ON EITHER SIDE OF SEWER LINE.
2. IF SELECT GRANULAR BACKFILL EXISTS; REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.

Vertical Separation

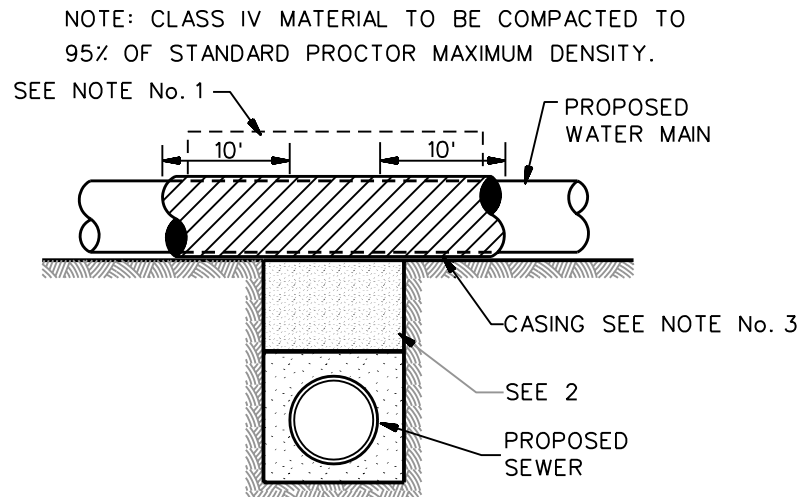
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Water & Sewer Separation
Requirement - Detail

PROPOSED WATER MAIN ABOVE PROPOSED SEWER LINE WITH LESS THAN 18" MINIMUM SEPARATION.



GUIDELINES:

1. OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER THE TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10 FEET ON EITHER SIDE OF SEWER LINE.
2. IF SELECT GRANULAR BACKFILL EXISTS; REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. USE A CASING FOR PROPOSED WATER MAIN AND SEAL ENDS OF CASING.
4. POINT LOADS SHALL NOT BE ALLOWED BETWEEN WATER MAIN OR WATER MAIN CASING AND SEWER.

Vertical Separation

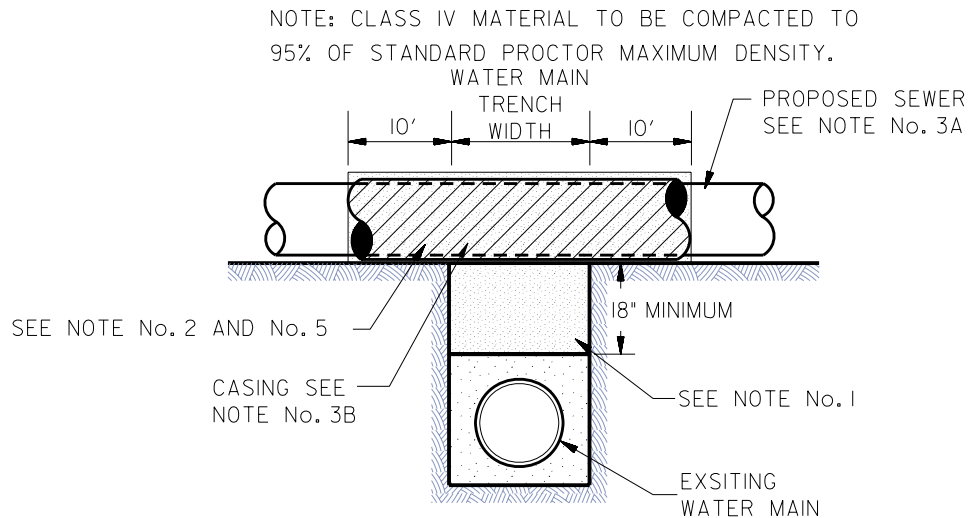
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**Water & Sewer Separation
Requirement - Detail**

EXISTING WATER MAIN BELOW PROPOSED SEWER LINE WITH 18" MINIMUM SEPARATION.



GUIDELINES:

1. IF SELECT GRANULAR BACKFILL EXISTS; REMOVE WITHIN WIDTH OF PROPOSED SEWER TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
2. OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER THE TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10 FEET ON EITHER SIDE OF WATER MAIN.
3. A: PROPOSED SEWER CONSTRUCTED OF WATER MAIN MATERIAL (ACROSS WATER MAIN TRENCH PLUS 10 FT. EACH SIDE) AND PRESSURE TEST, OR;
B: PROVIDE CASING FOR PROPOSED SEWER, TO EXTEND 10 FT. EACH SIDE OF WATER MAIN TRENCH AND SEAL ENDS OF CASING.
4. POINT LOADS SHALL NOT BE ALLOWED BETWEEN SEWER OR SEWER CASING AND WATER MAIN.
5. PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

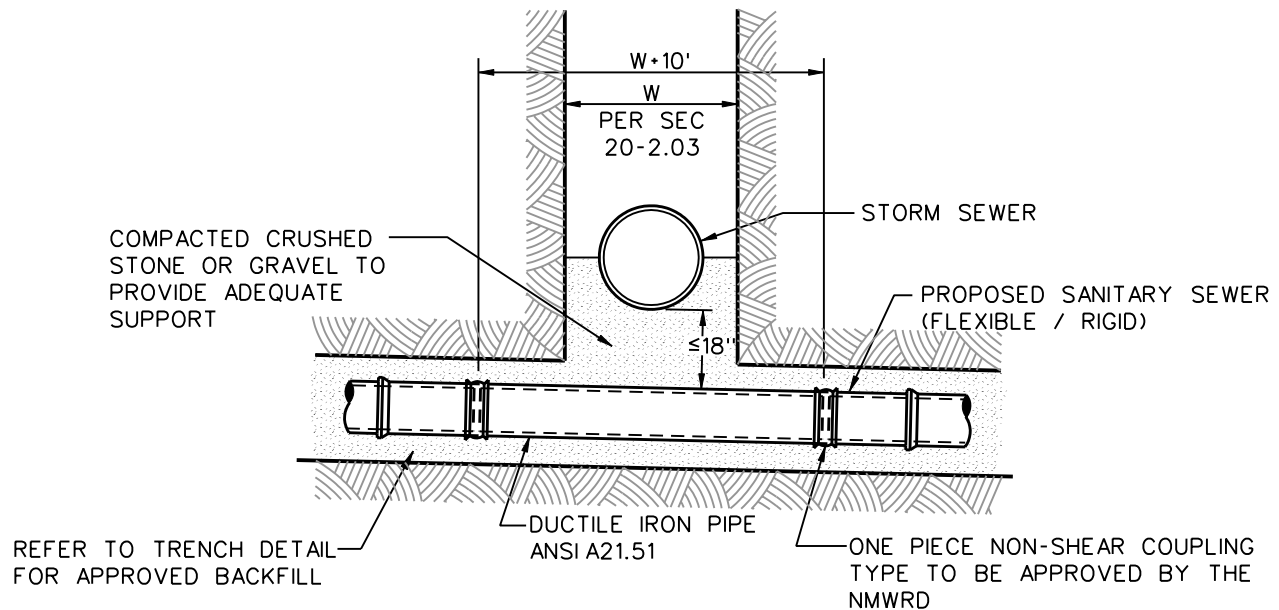
Vertical Separation

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**Water & Sewer Separation
Requirement - Detail**



Sectional Elevation

NOTE:

DUCTILE IRON PIPE SHALL BE REQUIRED WHEN THE BOTTOM OF THE STORM SEWER IS WITHIN 18" OF THE TOP OF THE SANITARY SEWER. UNDER NO CIRCUMSTANCES SHALL THE STORM SEWER BE SUPPORTED BY THE SANITARY LINE.

Vertical Separation

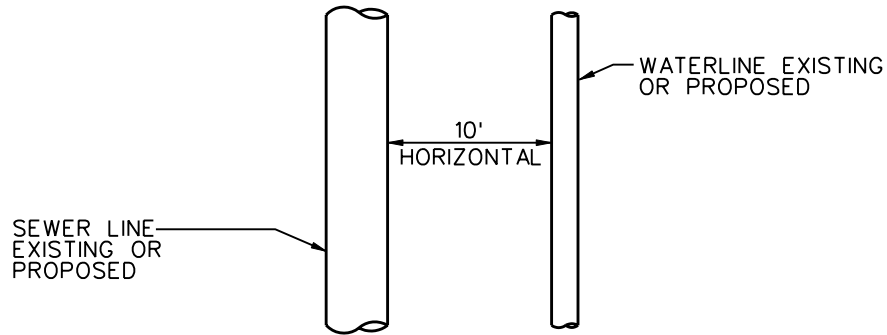
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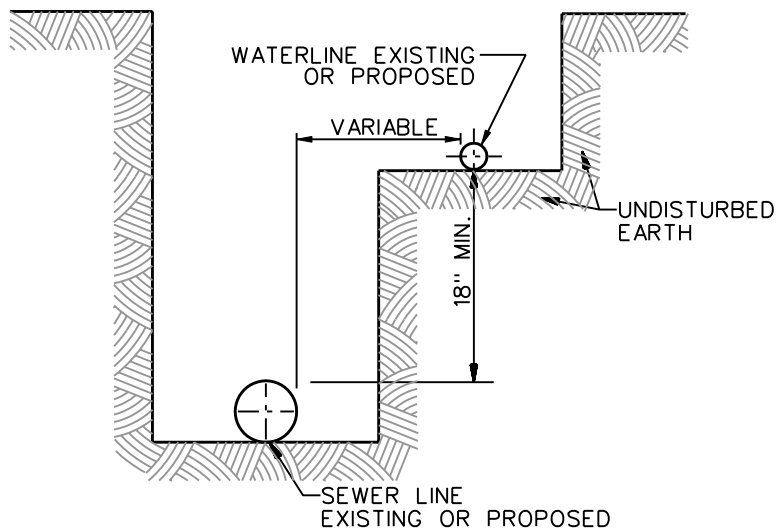
**Sanitary Sewer at Storm
Sewer Crossing Detail**

PROPOSED SEWER (OR WATER) IS LOCATED 10 FEET OR MORE FROM EXISTING WATER (OR SEWER).



PLAN VIEW

PROPOSED SEWER (OR WATER) IS LOCATED LESS THAN 10 FEET FROM EXISTING WATER (OR SEWER).



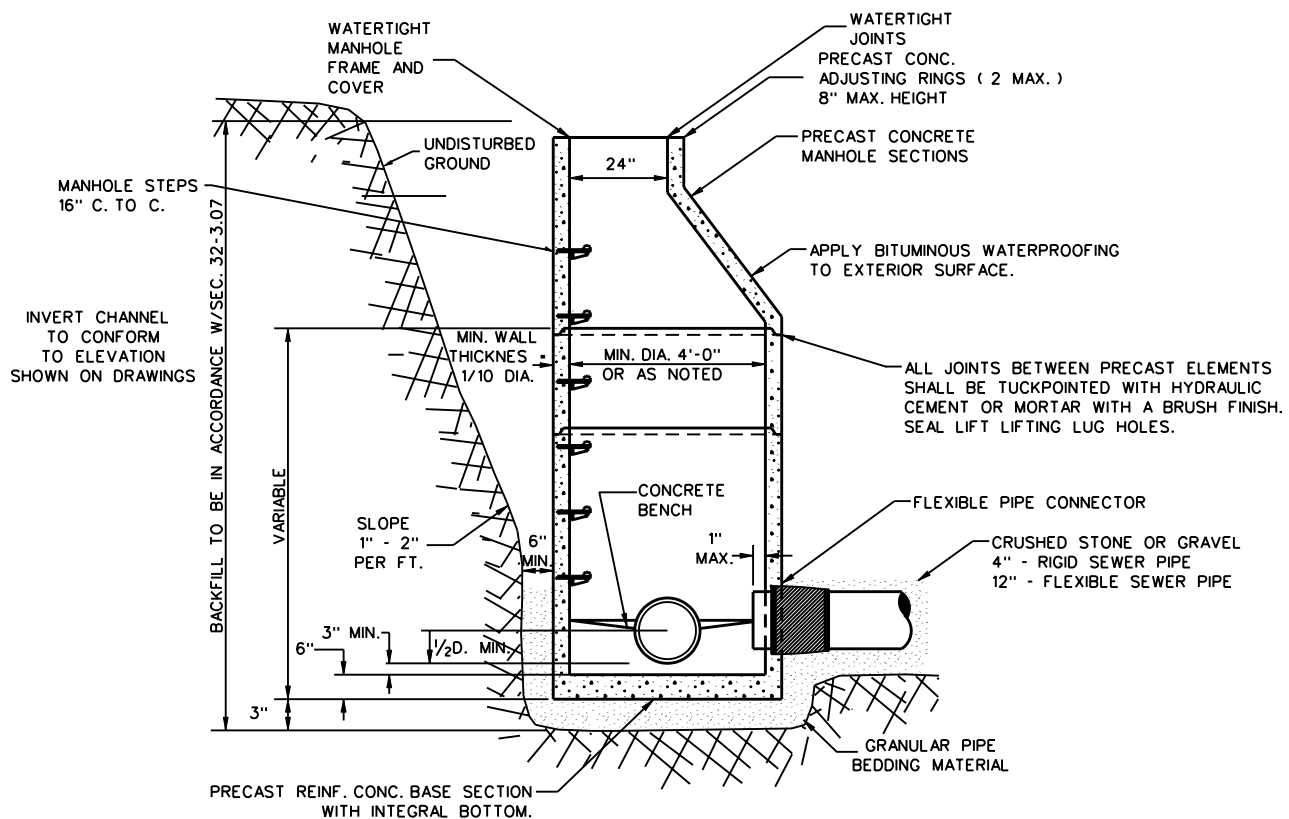
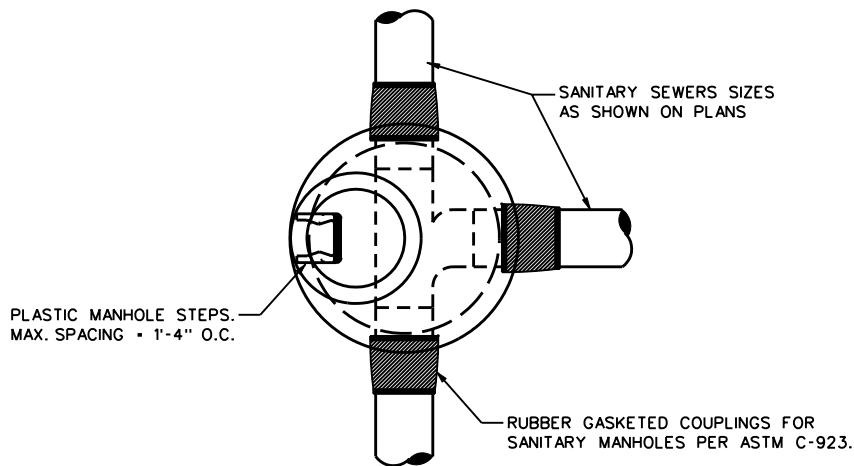
Horizontal Separation

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**Water & Sewer Separation
Requirement - Detail**



GENERAL NOTES

ALL MANHOLES SHALL BE CLEANED OF ANY ACCUMULATION OF SILT, DEBRIS OR FOREIGN MATTER OF ANY KIND AND SHALL BE FREE FROM SUCH ACCUMULATIONS AT THE TIME OF FINAL INSPECTION. ALL MANHOLES SHALL BE INSPECTED BY NMWRD PRIOR TO ACCEPTANCE.

MANHOLE STEPS TO BE STEEL REINFORCED POLYPROYLENE SPACED AT 16 INCHES O.C.

ECCENTRIC -CONES REQUIRED, FLAT SLAB TOPS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.

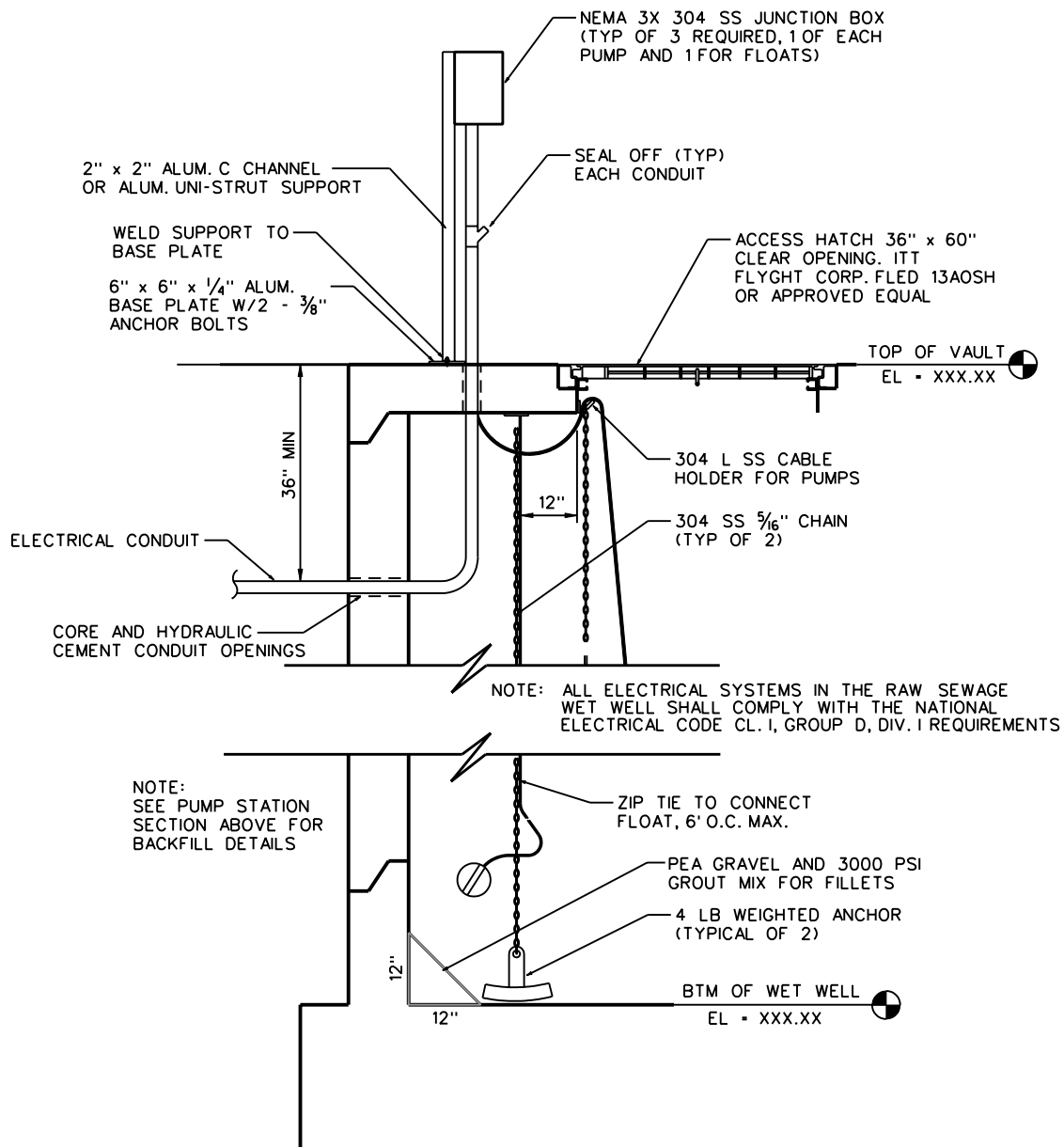
USE 4'-0" DIAMETER FOR SEWER SIZES 8" THRU 21", 5'-0" DIAMETER FOR SEWER SIZES 24" THRU 33", UNLESS OTHERWISE NOTED.

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Sanitary Sewer Manhole Detail



Float Detail

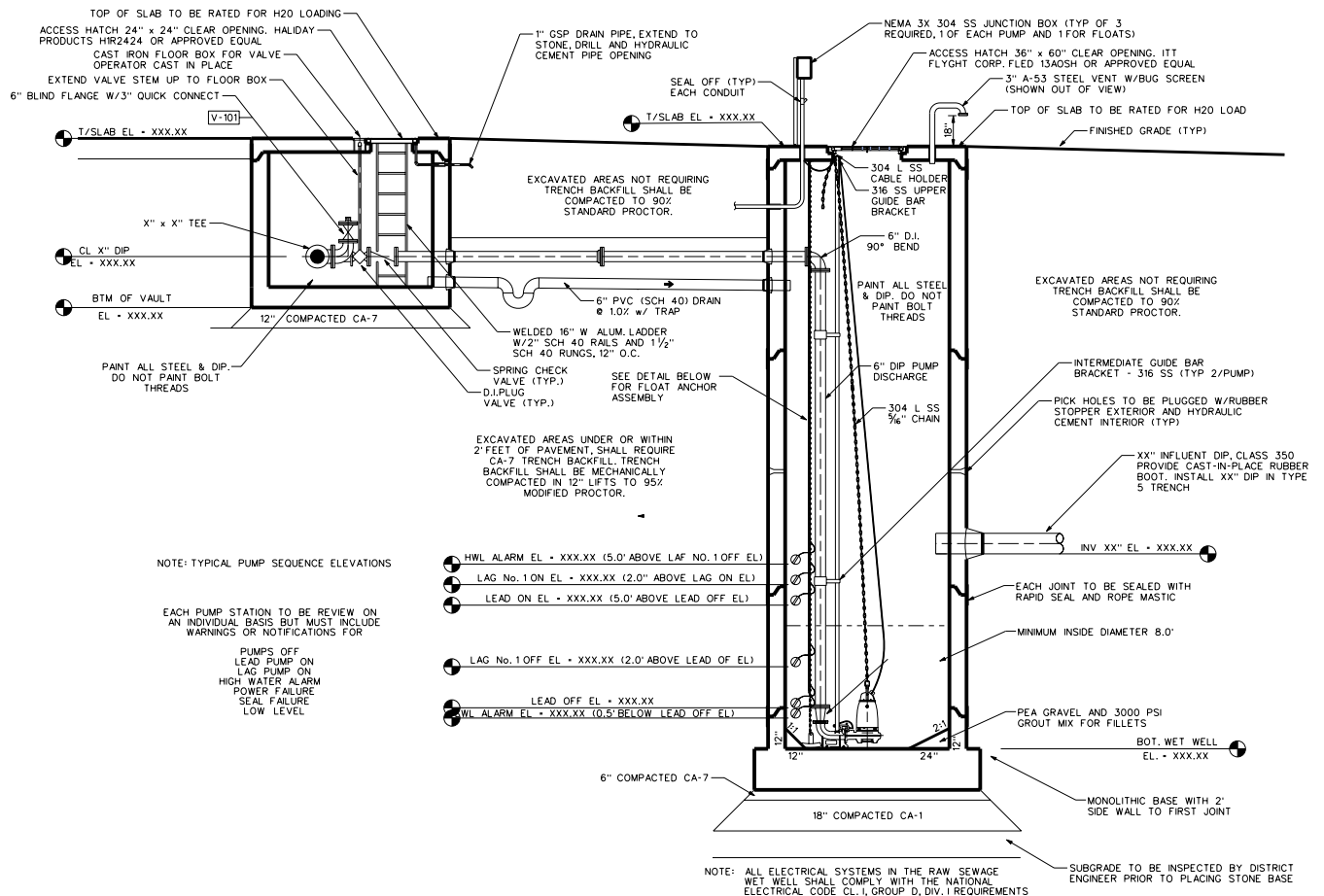
SCALE (NTS)

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**Lift Station Details
Profile View**



Pump Station Section

SCALE (NTS)

PUMP SEQUENCE OF OPERATION	
RISING CYCLE	
LEAD ON	XXX.XX
LAG No. 1 ON	XXX.XX
HIGH LEVEL ALARM	XXX.XX
FALLING CYCLE	
LAG No. 1 OFF	XXX.XX
LEAD OFF	XXX.XX
LOW LEVEL ALARM	XXX.XX

Pump Sequence

VALVE No.	SIZE	TYPE	OPERATOR	SPEC SECTION
V-101	6"	PLUG	1/4 TURN WITH LEVER	15110
V-102	6"	PLUG	1/4 TURN WITH EXTENDED NUT	15110
V-103	6"	CHECK	WEIGHTED LEVER	15110
V-104	6"	PLUG	1/4 TURN WITH EXTENDED NUT	15110
V-105	6"	CHECK	WEIGHTED LEVER	15110

Valve Schedule

General Notes

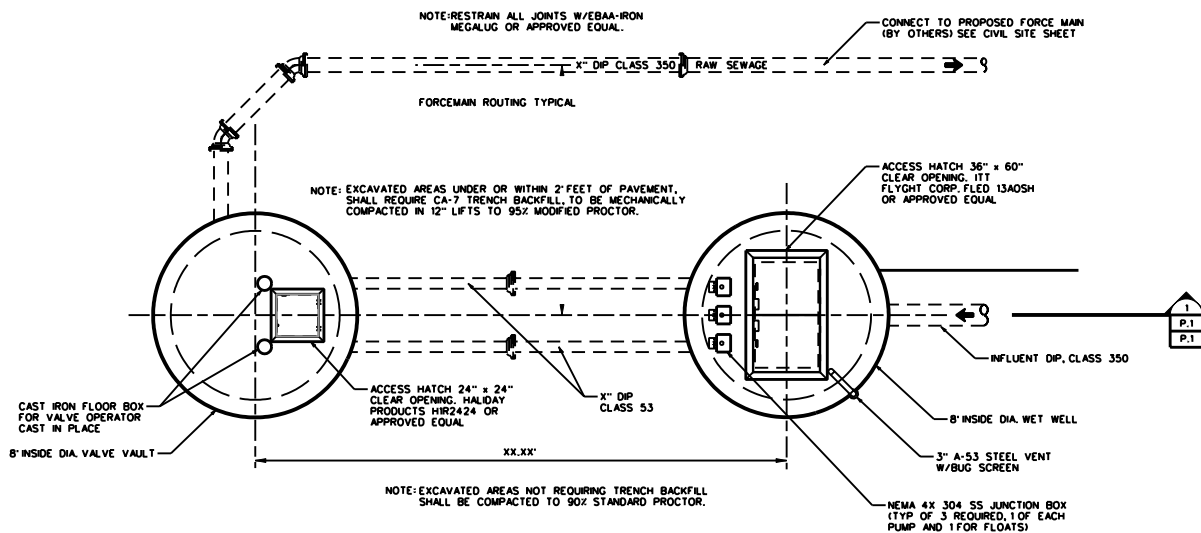
- THE WET WELL AND VALVE VAULT MUST BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS
 - THE WET WELL AND VALVE VAULT SHALL BE SEPARATED BY A DISTANCE (MEASURED BETWEEN CLOSEST EXTERNAL WALLS) EQUAL TO THE DEPTH OF THE WET WELL (MEASURED T/ SLAB TO B/ WELL)
 OR
 - ALL EXCAVATED AREAS WITH THE WET WELL AND WITHIN A HORIZONTAL DISTANCE EQUAL TO THE DEPTH OF THE WET WELL (MEASURED T/SLAB TO B/WELL) SHALL BE BACKFILLED WITH CA-7. THE RENCH SHALL BE MECHANICALLY COMPACTED IN 12" LIFTS TO 95% MODIFIED PROCTOR.
- UNIFLANGE ADAPTERS ARE NOT PERMITTED.

Northern Moraine Wastewater Reclamation District

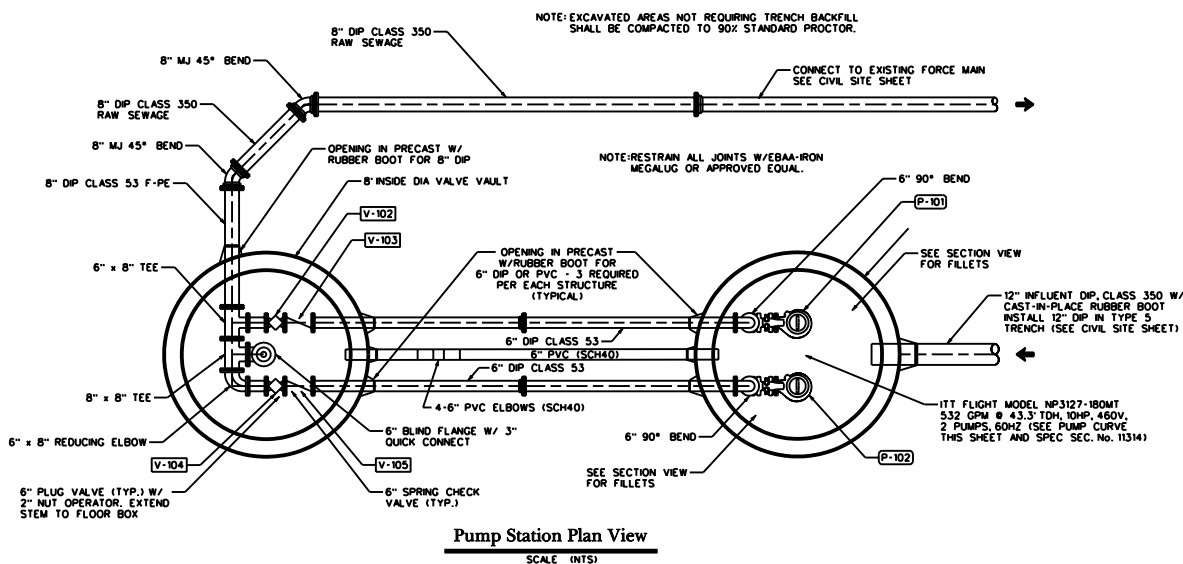
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Lift Station Details Profile View



Pump Station Plan View



Pump Station Plan View

SCALE (INTS)

General Notes

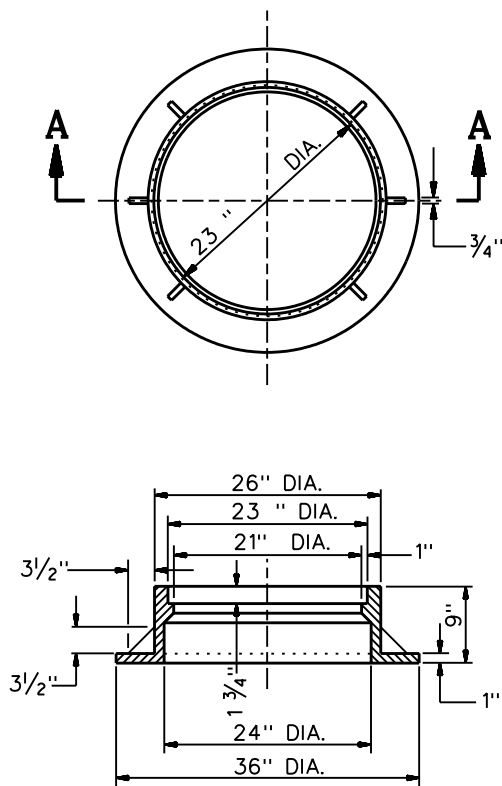
1. AN ACCESS ROAD SHALL BE PROVIDED IMMEDIATELY ADJACENT TO THE WET WELL AND VALVE VAULT. THE ROADWAY SHALL HAVE A MINIMUM WIDTH OF 15' AND BE CONSTRUCTED IN ACCORDANCE WITH THE LOCATION MUNICIPALITIES DESIGN REQUIREMENTS FOR ROADWAY CONSTRUCTION.
2. UNFLANGE ADAPTERS ARE NOT PERMITTED.

Northern Moraine Wastewater Reclamation District

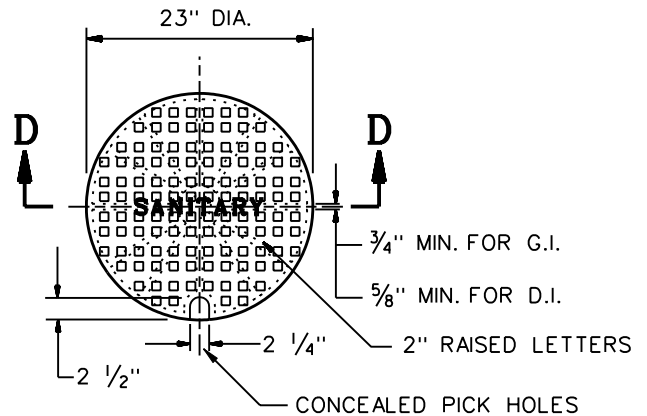
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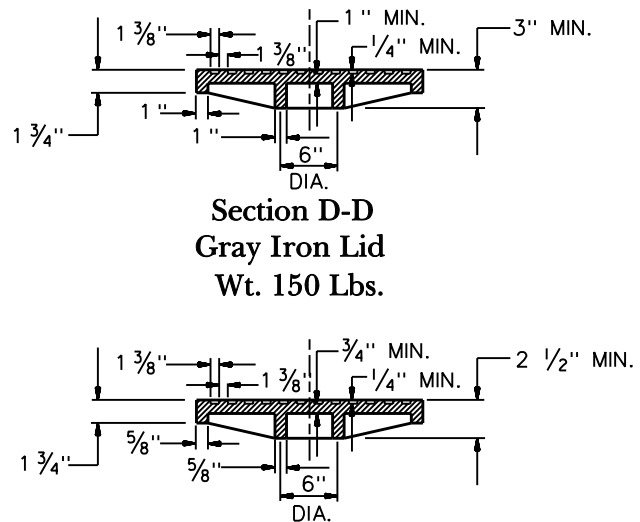
Lift Station Details Plan View



Section A-A
Cast Frame - Gray Iron
Wt. 390 Lbs.



Section D-D
Gray Iron Lid
Wt. 150 Lbs.



Section D-D
Ductile Iron Lid
Wt. 115 Lbs.
Cast Closed Lid

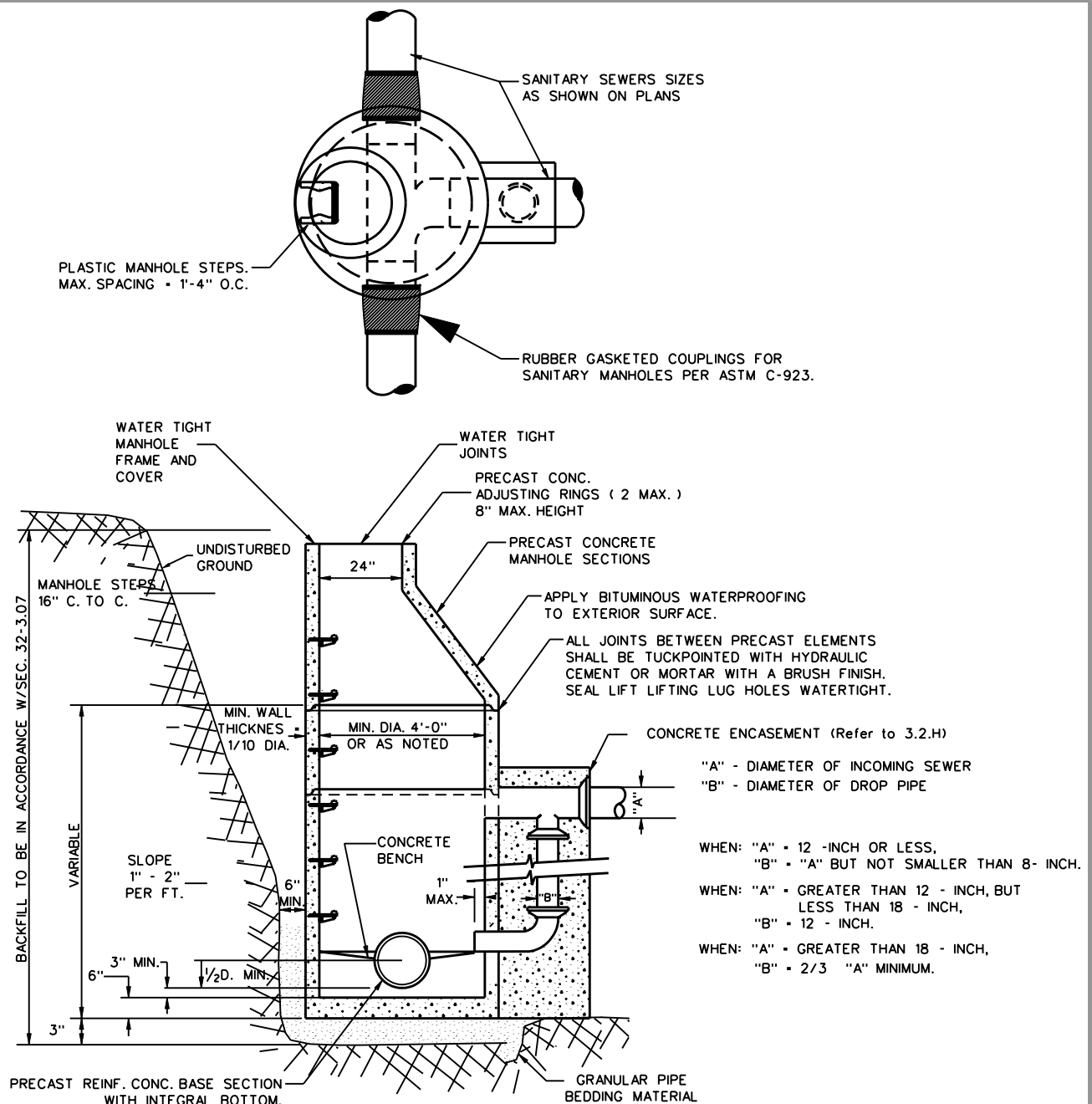
1. DUCTILE IRON CASTING SHALL BE GRADE 60-40-18 AND SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
2. ALL LIDS AND COVERS SHALL BE MACHINED.
3. MANHOLE COVERS SHALL HAVE RAISED LETTERS AS SHOWN.
4. AS AN ALTERNATE TO DUCTILE IRON LID, GRAY IRON MAY BE USED.
5. MINIMUM WEIGHTS FOR THE CASTING AS SHOWN.
6. DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN *1050 EXHD (540 lbs) or NEENAH *R-1713

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Frame and Lid Detail



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USE OUTSIDE DROP WHEN ANY ENTERING SEWER INVERT DIFFERS BY 2'-0" OR MORE FROM INVERT OF MANHOLE. MATCH CROWN OF OUTLET PIPE WHERE OUTLET PIPE IS 30-INCH DIA. OR SMALLER. SEE PLAN SHEETS FOR INVERT ELEVATIONS FOR PIPE SIZES LARGER THAN 30 - INCH DIAMETER.

MANHOLE STEPS TO BE STEEL REINFORCED POLYPROYLENE SPACED AT 16 INCHES O.C.

ALL DROP MANHOLES SHALL BE CONSTRUCTED WITH EXTERIOR PREMANUFACTURED DROP SECTIONS

ECCENTRIC - CONES REQUIRED, FLAT SLAB TOPS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.

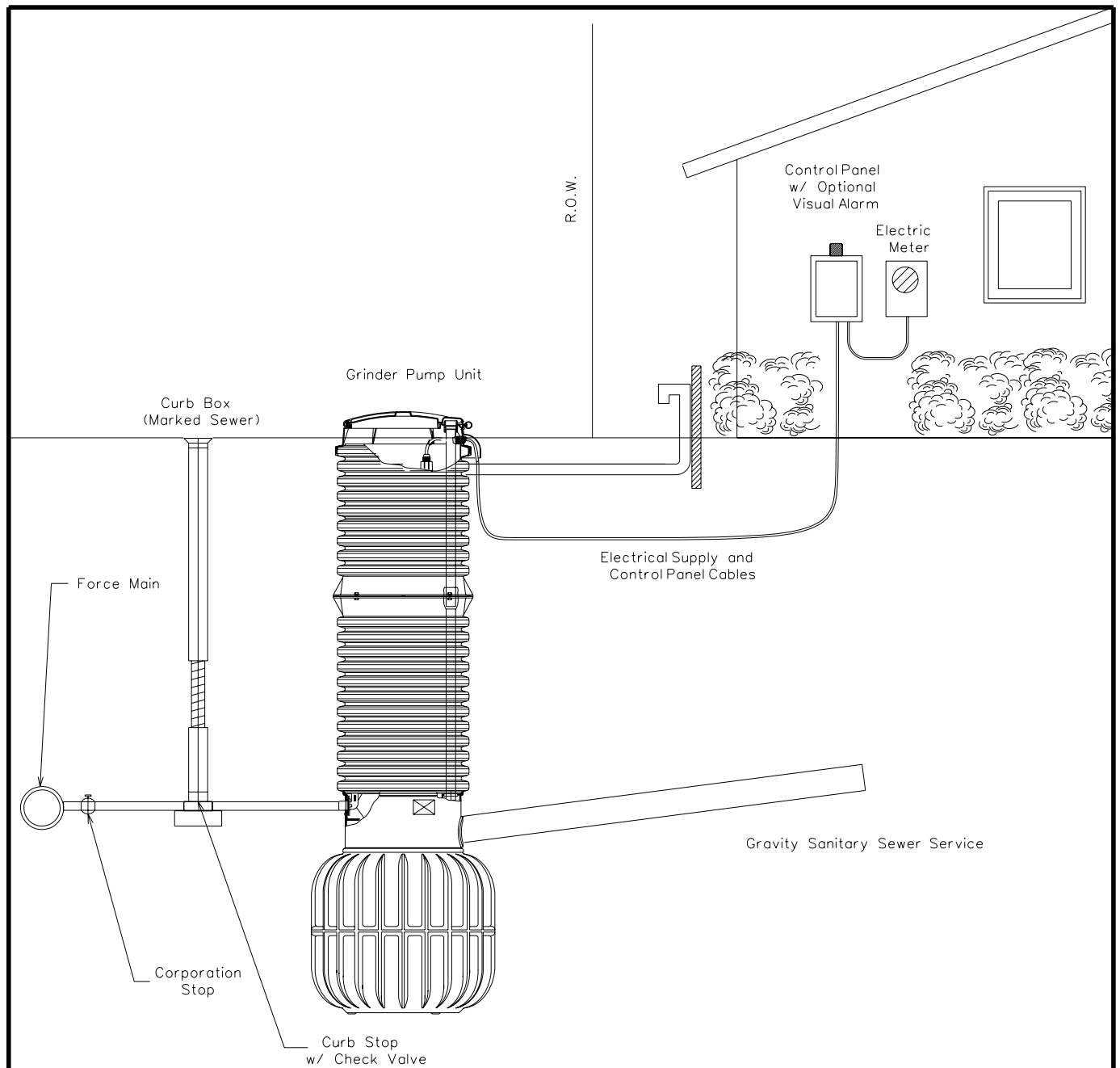
USE 4'-0" DIAMETER FOR SEWER SIZES 8" THRU 21", 5'-0" DIAMETER FOR SEWER SIZES 24" THRU 33", UNLESS OTHERWISE NOTED.

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Sanitary Sewer Drop Manhole Detail



GENERAL NOTES

GRINDER PUMP UNITS SHALL REMAIN THE PROPERTY OF THE DISTRICT AND PLACED IN THE RIGHT OF WAY

CONTROL PANELS WILL BE OWNED BY THE CORRESPONDING USER

ELECTRICAL SERVICE SHALL BE ROUTED FROM THE USER'S ELECTRICAL METER

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL PLUMBING, ELECTRICAL AND DISTRICT CODES

CONTROL BOXES SHALL BE PLACED ON STRUCTURES AND VISIBLE FROM THE CORRESPONDING GRINDER PUMP UNIT

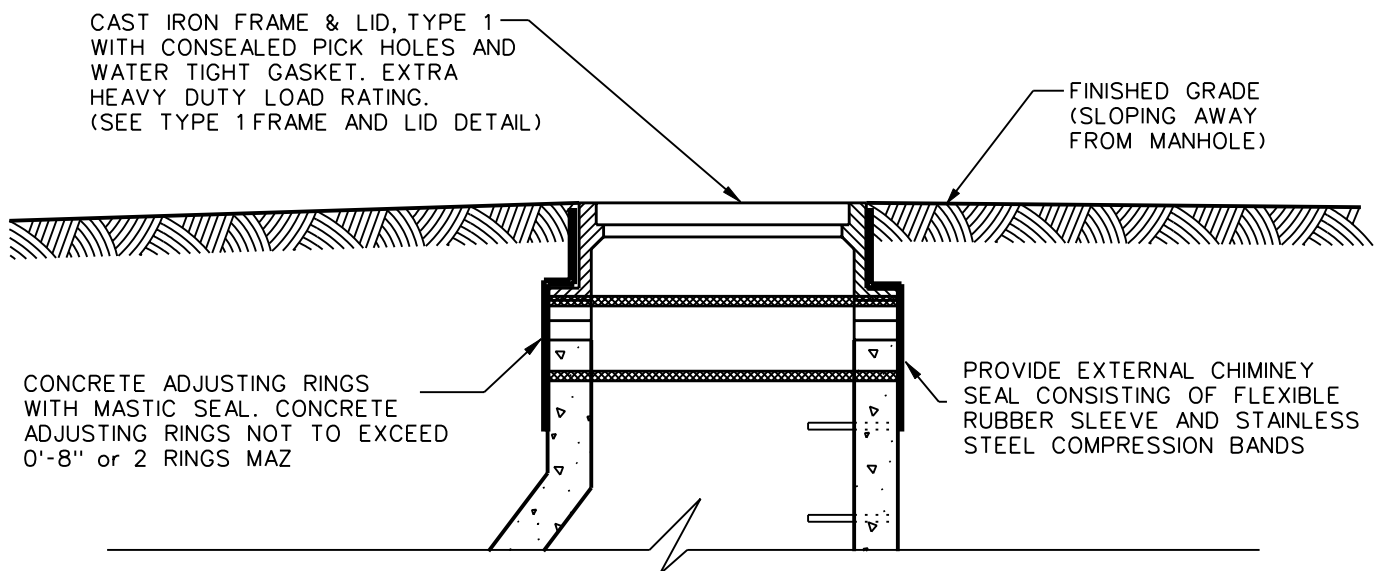
GRINDER PUMP VENTING SHALL BE THROUGH THE LID OR ROUTED ADJACENT TO A PERMANENT STRUCTURE

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Low Pressure Sanitary Sewer System Detail



GENERAL NOTES

THE FRAME SHALL BE SLOPED WHEN REQUIRED
TO MATCH THE FINISH GRADE, THROUGH THE
USE OF ADJUSTMENT RING(S) AND MORTAR.

USE INTERNAL FRAME SEAL IN PAVED AREAS

USE AN EXTERNAL SEAL IN UNPAVED AREAS

ACCEPTABLE MANUFACTURER: CRETEX SPECIALITY PRODUCTS

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**Flexible Watertight Frame
Chimney Seal Detail**