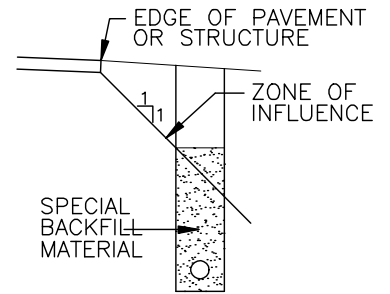
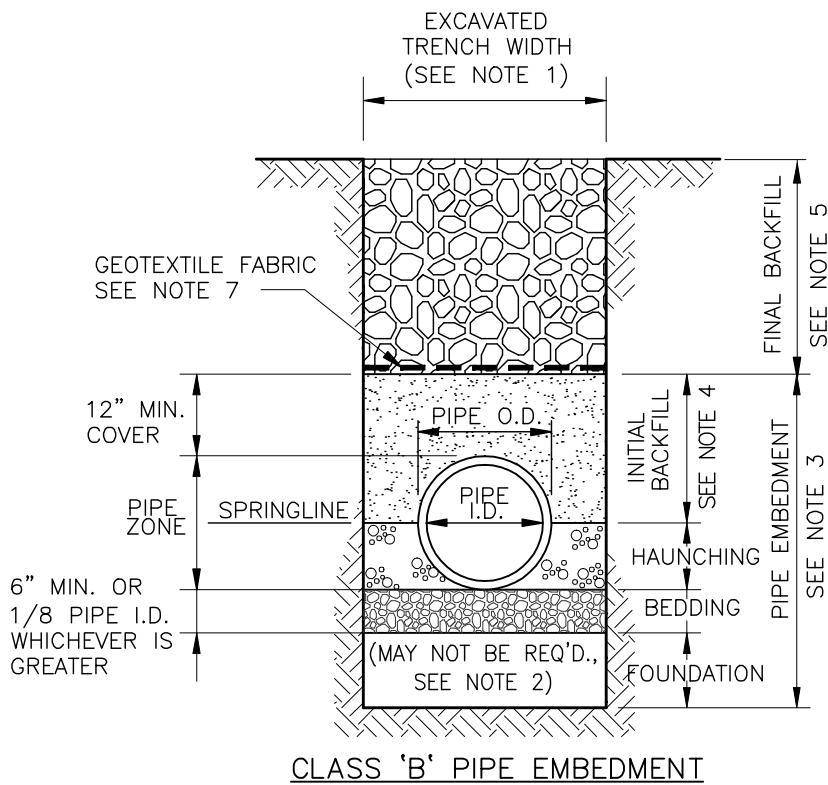
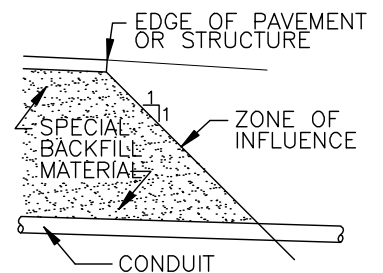


# CITY OF GENEVA



PARALLEL ZONE OF INFLUENCE



TRANSVERSE ZONE OF INFLUENCE

## NOTES:

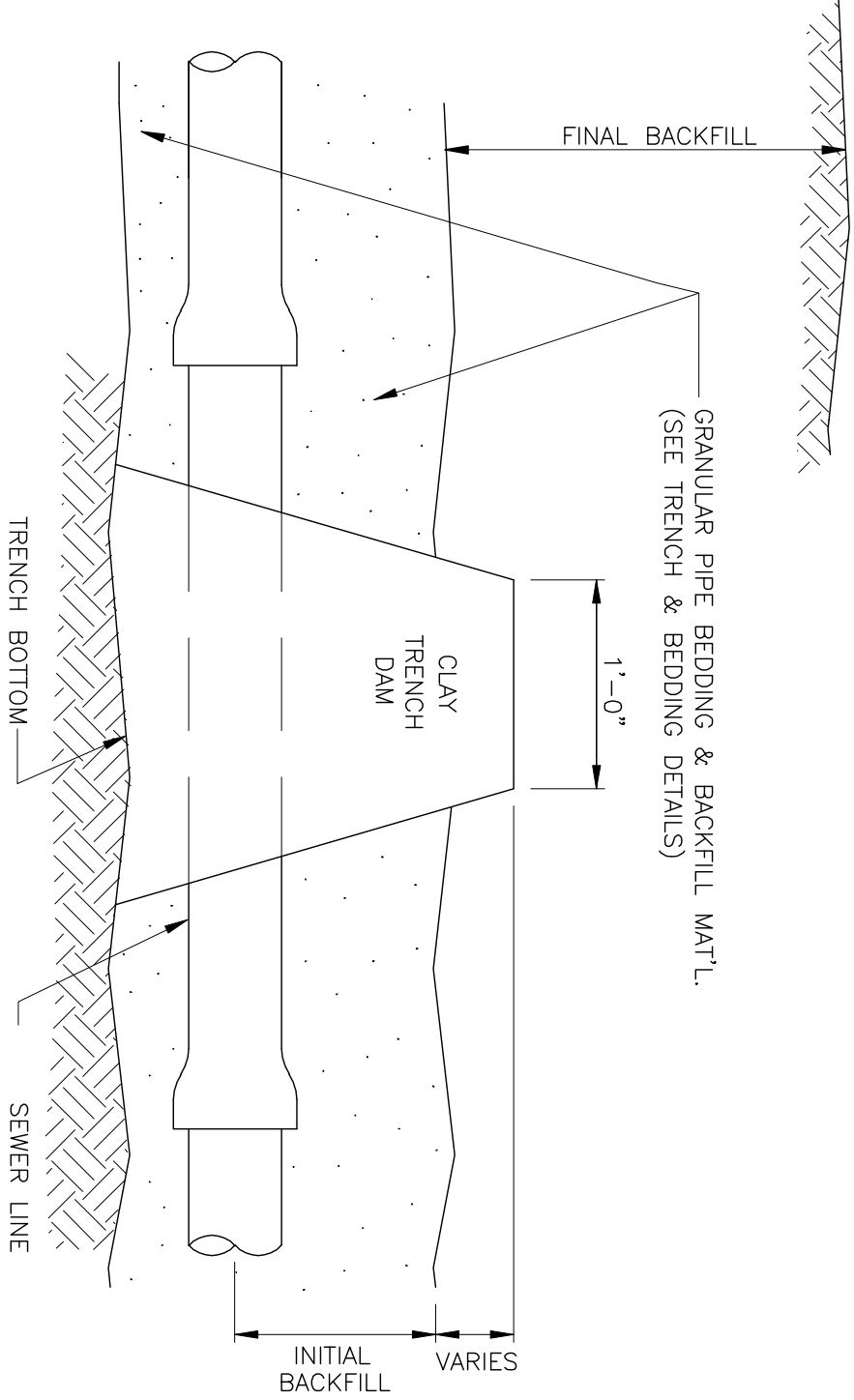
- 1 MAXIMUM EXCAVATED TRENCH WIDTH: THE MAXIMUM EXCAVATED TRENCH WIDTH FROM THE BOTTOM OF THE TRENCH TO 12" OVER THE TOP OF THE PIPE (WITHIN PIPE EMBEDMENT) SHALL BE O.D. + 24" FOR ALL PIPES UP TO AND INCLUDING 24" I.D. + 30" FOR PIPE FROM 24" I.D. TO 54" I.D. AND O.D. + 48" FOR PIPES SIZES 60" I.D. AND OVER.
- 2 FOUNDATION: WHERE AN UNSTABLE TRENCH BOTTOM CONDITION IS ENCOUNTERED, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE CITY AND REPLACE WITH MATERIAL AS DIRECTED BY THE CITY.
- 3 PIPE EMBEDMENT: THE BEDDING, HAUNCHING, & INITIAL BACKFILL SHALL BE GRANULAR PIPE EMBEDMENT. CARE SHALL BE TAKEN TO THOROUGHLY SPADE THE HAUNCHING UNDER THE PIPE SPRING LINE.
- 4 INITIAL BACKFILL SHALL BE COMPACTED WITH WALK-BEHIND COMPACTION EQUIPMENT, MACHINE-MOUNTED EQUIPMENT SHALL NOT BE USED ON INITIAL BACKFILL
- 5 FINAL BACKFILL: IN ALL AREAS UNDER PAVEMENT, STRUCTURES OR WITHIN THE ZONE OF INFLUENCE, THE FINAL BACKFILL SHALL BE SPECIAL BACKFILL MATERIAL. IN ALL AREAS OUTSIDE OF PAVEMENT, STRUCTURES OR THE ZONE OF INFLUENCE, THE FINAL BACKFILL SHALL BE SUITABLE NATIVE MATERIAL APPROVED BY THE CITY.
- 6 CLAY TRENCH DAMS: CLAY TRENCH DAMS SHALL BE IN ACCORDANCE WITH THE TRENCH DAM DETAIL AT INTERVALS NOT TO EXCEED 100' AND AS SHOWN ON PLANS OR AS DIRECTED BY THE CITY.
- 7 GEOTEXTILE FABRIC: INSTALL A GEOTEXTILE FABRIC CONFORMING TO ODOT 712.09, TYPE A.
- 8 GRANULAR PIPE EMBEDMENT: AASHTO NO. 67, 7 OR 8 LIMESTONE.
- 9 SPECIAL BACKFILL: 304 OR 411 LIMESTONE, OR CITY APPROVED SAND. COMPACTED IN 6-INCH LIFTS
- 10 DETECTOR TAPE: INSTALL DETECTABLE WARNING TAPE ABOVE UTILITIES, 12" BELOW FINISHED GRADE, EXCEPT 6 INCHES BELOW SUBGRADE UNDER PAVEMENT AND SLABS.

## TRENCHING, EMBEDMENT AND BACKFILL DETAIL

NO SCALE

**Wastewater Department  
Detail No. 1**

# CITY OF GENEVA



- NOTES:
1. CLAY DAMS SHALL BE INSTALLED AT INTERVALS AS SHOWN ON THE TRENCHING, EMBEDMENT AND BACKFILL DETAIL.
  2. WHERE FINAL BACKFILL IS NATIVE MATERIAL, DAM MUST EXTEND 6" ABOVE TOP OF INITIAL BACKFILL
  3. WHERE FINAL BACKFILL IS SPECIAL BACKFILL OR OTHER BACKFILL, CLAY TRENCH DAM SHALL EXTEND TO 1'-FOOT ABOVE WATER TABLE, BUT IN NO CASE SHALL BE LESS THAN 6" ABOVE TOP OF INITIAL BACKFILL

## TRENCH DAM DETAIL

NO SCALE

**Wastewater Department**  
**Detail No. 2**

# CITY OF GENEVA

EAST JORDAN IRON WORKS 1710 MANHOLE FRAME AND COVER OR EQUAL. COVER SHALL BE LABELED "SANITARY" OR "STORM" AS APPROPRIATE. MAKE FLUSH WITH RIGID OR FLEXIBLE PAVEMENT, TRAVELED ROAD SURFACE OR 3" ABOVE EARTH.

CRETEX CHIMNEY SEAL OR EQUAL, SHALL EXTEND FROM CASTING TO PRECAST CONCRETE CONE/RISER

SET FRAME ON 1" CEMENT MORTAR BED.

PRECAST CONCRETE ADJUSTMENT RINGS PER ASTM C-478 OR RED SOLID SHALE SEWER BRICK (3" MIN. - 12" MAX.) PLASTER INSIDE AND OUT WITH 1/2" CEMENT MORTAR

SEE NOTE 1

ECCENTRIC CONE TOP

'O'-RING GASKETED JOINT (TYP.) PER ASTM C-443

POLYPROPYLENE MANHOLE STEP, M.A. IND. PSI-PF, 16" o/c, FIRST STEP NOT MORE THAN 2'-0" BELOW TOP OF FRAME.

FULL CHANNEL FACE TO FACE OF WALL

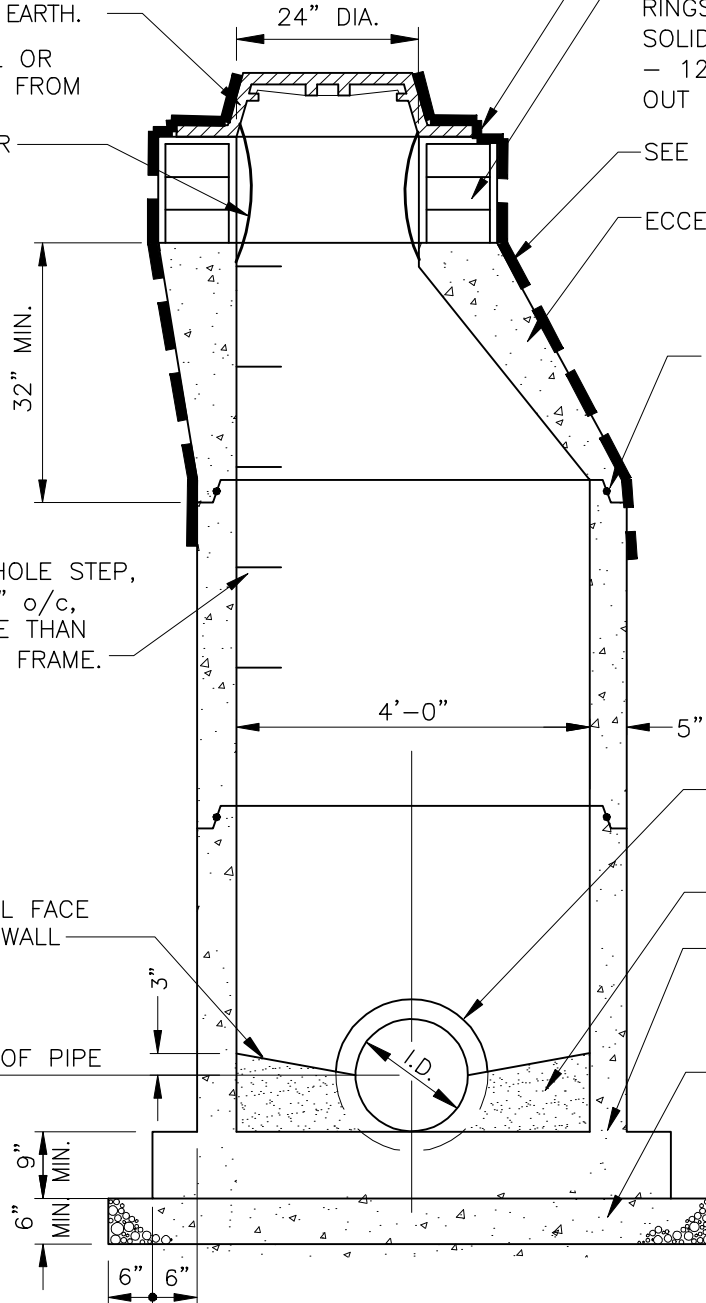
SPRING LINE OF PIPE

RUBBER PIPE CONNECTOR PER ASTM C-923

2000 P.S.I. CONCRETE FILL

CONCRETE PRE-CAST BOTTOM INTEGRAL WITH BASE RISER SECTION (MONOLITHIC)

STONE BASE OR MUD MAT



THOROSEAL INSIDE OF SANITARY MANHOLES ONLY, FULL DEPTH. (ANY COLOR BUT GRAY). ALL JOINTS TO BE WATER PLUGGED.

ALL PRECAST CONCRETE SHALL BE REINFORCED IN ACCORDANCE WITH THE LATEST REVISIONS OF A.S.T.M. DESIGNATION C-478; ALL PRECAST CONCRETE SECTIONS SHALL BE MANUFACTURED AND FURNISHED AS SOLID SECTION WITHOUT LIFT HOLES OF ANY KIND.

NOTE 1: MANHOLE ENCAPSULATION MATERIAL MANUFACTURED BY CANUSA, DIVISION OF SHOW RESOURCES INC., THE WOODLANDS, TX OR EQUAL, IS AN ACCEPTABLE ALTERNATE TO THE CHIMNEY SEAL

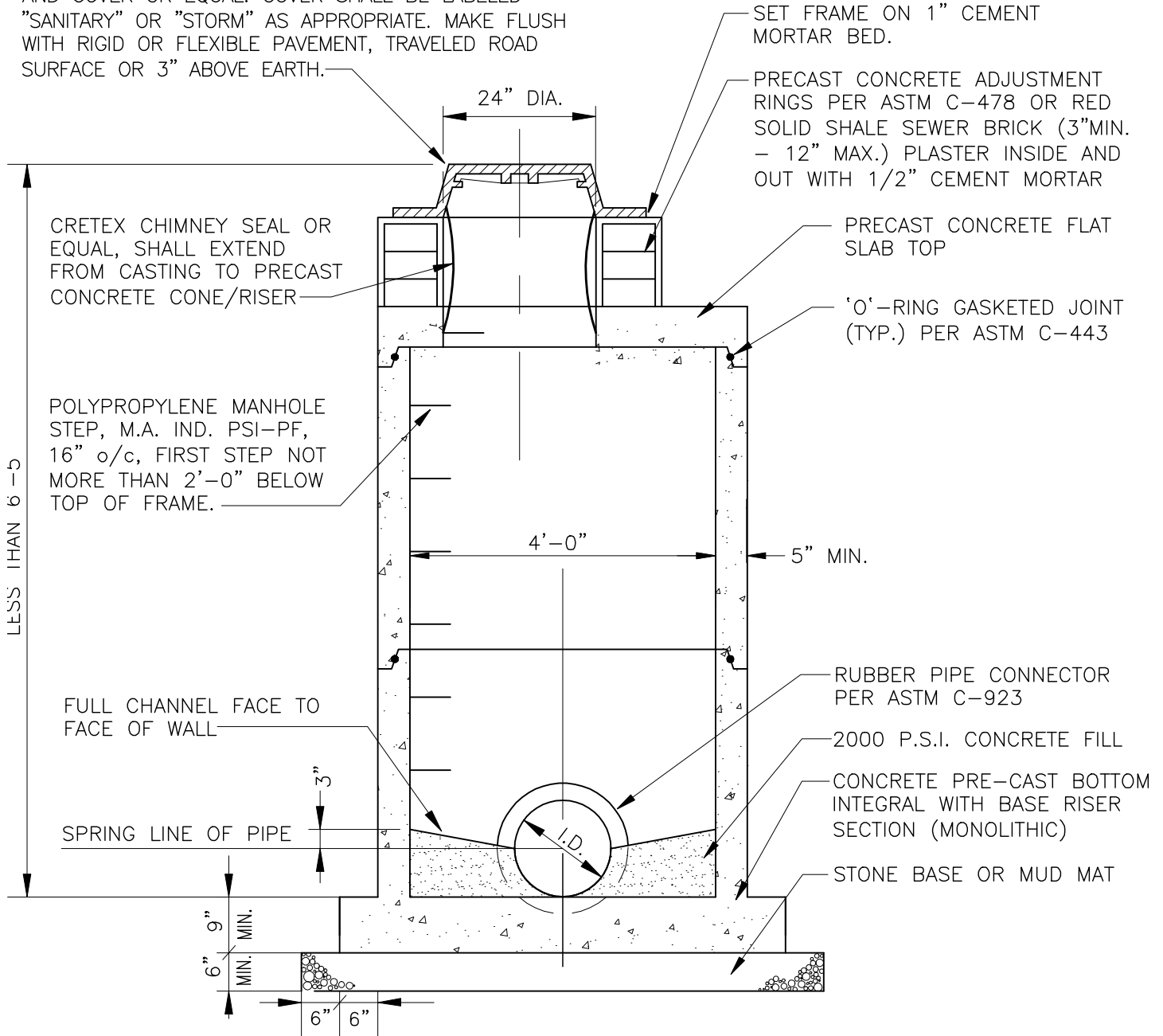
## STANDARD TYPE "A" ECCENTRIC MANHOLE

NO SCALE (SEWER I.D. 24" ID AND LESS)

Wastewater Department  
Detail No. 3

# CITY OF GENEVA

EAST JORDAN IRON WORKS 1710 MANHOLE FRAME AND COVER OR EQUAL. COVER SHALL BE LABELED "SANITARY" OR "STORM" AS APPROPRIATE. MAKE FLUSH WITH RIGID OR FLEXIBLE PAVEMENT, TRAVELED ROAD SURFACE OR 3" ABOVE EARTH.



THOROSEAL INSIDE OF SANITARY MANHOLES ONLY, FULL DEPTH. (ANY COLOR BUT GRAY). ALL JOINTS TO BE WATER PLUGGED.

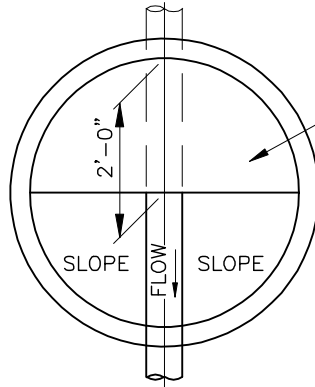
ALL PRECAST CONCRETE SHALL BE REINFORCED IN ACCORDANCE WITH THE LATEST REVISIONS OF A.S.T.M. DESIGNATION C-478; ALL PRECAST CONCRETE SECTIONS SHALL BE MANUFACTURED AND FURNISHED AS SOLID SECTION WITHOUT LIFT HOLES OF ANY KIND.

## **STANDARD SHALLOW PRECAST MANHOLE**

NO SCALE

**Wastewater Department  
Detail No. 4**

# CITY OF GENEVA



EAST JORDAN IRON WORKS 1710 MANHOLE FRAME AND COVER OR EQUAL. COVER SHALL BE LABELED "SANITARY" OR "STORM" AS APPROPRIATE. MAKE FLUSH WITH RIGID OR FLEXIBLE PAVEMENT, TRAVELED ROAD SURFACE OR 3" ABOVE EARTH.

CRETEX CHIMNEY SEAL OR EQUAL, SHALL EXTEND FROM CASTING TO PRECAST CONCRETE CONE/RISER

PLATFORM CONCRETE DETAIL

CONCRETE PLATFORM (INLET SIDE OF STRUCTURE)

SET FRAME ON 1" CEMENT MORTAR BED.

PRECAST CONCRETE ADJUSTMENT RINGS PER ASTM C-478 OR RED SOLID SHALE SEWER BRICK (3" MIN. - 12" MAX.) PLASTER INSIDE AND OUT WITH 1/2" CEMENT MORTAR

PRECAST CONCRETE FLAT SLAB TOP

'O'-RING GASKETED JOINT (TYP.) PER ASTM C-443

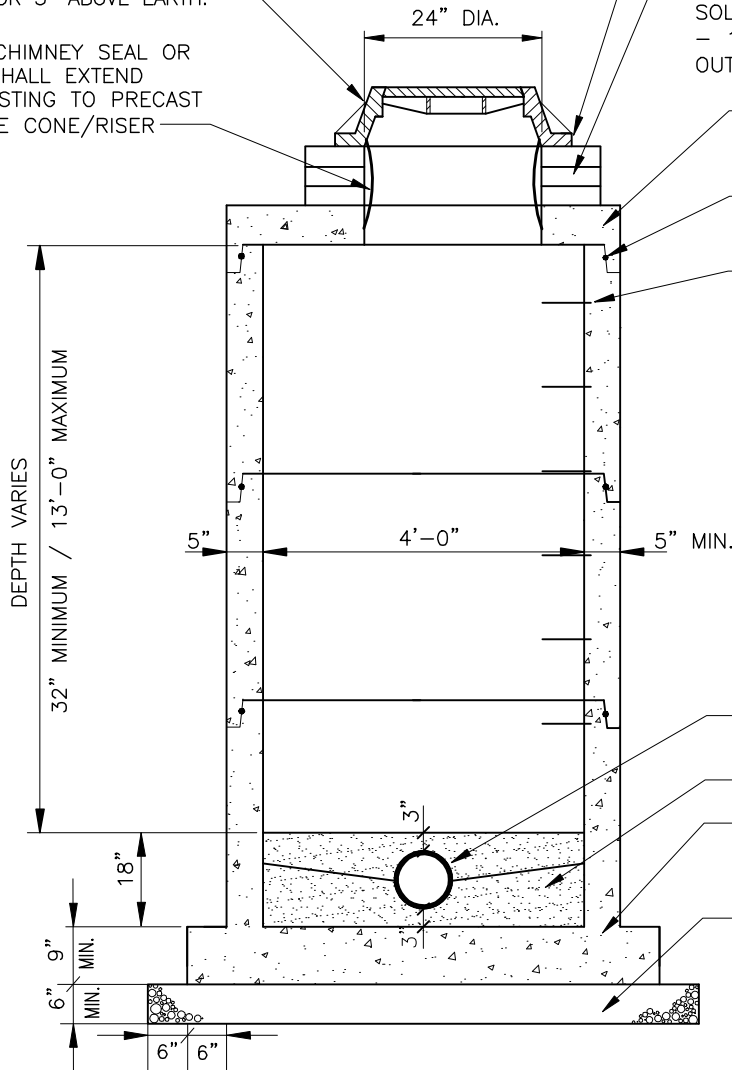
POLYPROPYLENE MANHOLE STEP, M.A. IND. PSI-PF, 16" o/c, FIRST STEP NOT MORE THAN 2'-0" BELOW TOP OF FRAME.

RUBBER PIPE CONNECTOR PER ASTM C-923

2000 P.S.I. CONCRETE FILL

CONCRETE PRE-CAST BOTTOM INTEGRAL WITH BASE RISER SECTION (MONOLITHIC)

STONE BASE OR MUD MAT



THOROSEAL INSIDE OF SANITARY MANHOLES ONLY, FULL DEPTH. (ANY COLOR BUT GRAY). ALL JOINTS TO BE WATER PLUGGED.

ALL PRECAST CONCRETE SHALL BE REINFORCED IN ACCORDANCE WITH THE LATEST REVISIONS OF A.S.T.M. DESIGNATION C-478; ALL PRECAST CONCRETE SECTIONS SHALL BE MANUFACTURED AND FURNISHED AS SOLID SECTION WITHOUT LIFT HOLES OF ANY KIND.

## PRECAST SAMPLING AND METERING MANHOLE DETAIL

NO SCALE

Wastewater Department  
Detail No. 5

# CITY OF GENEVA

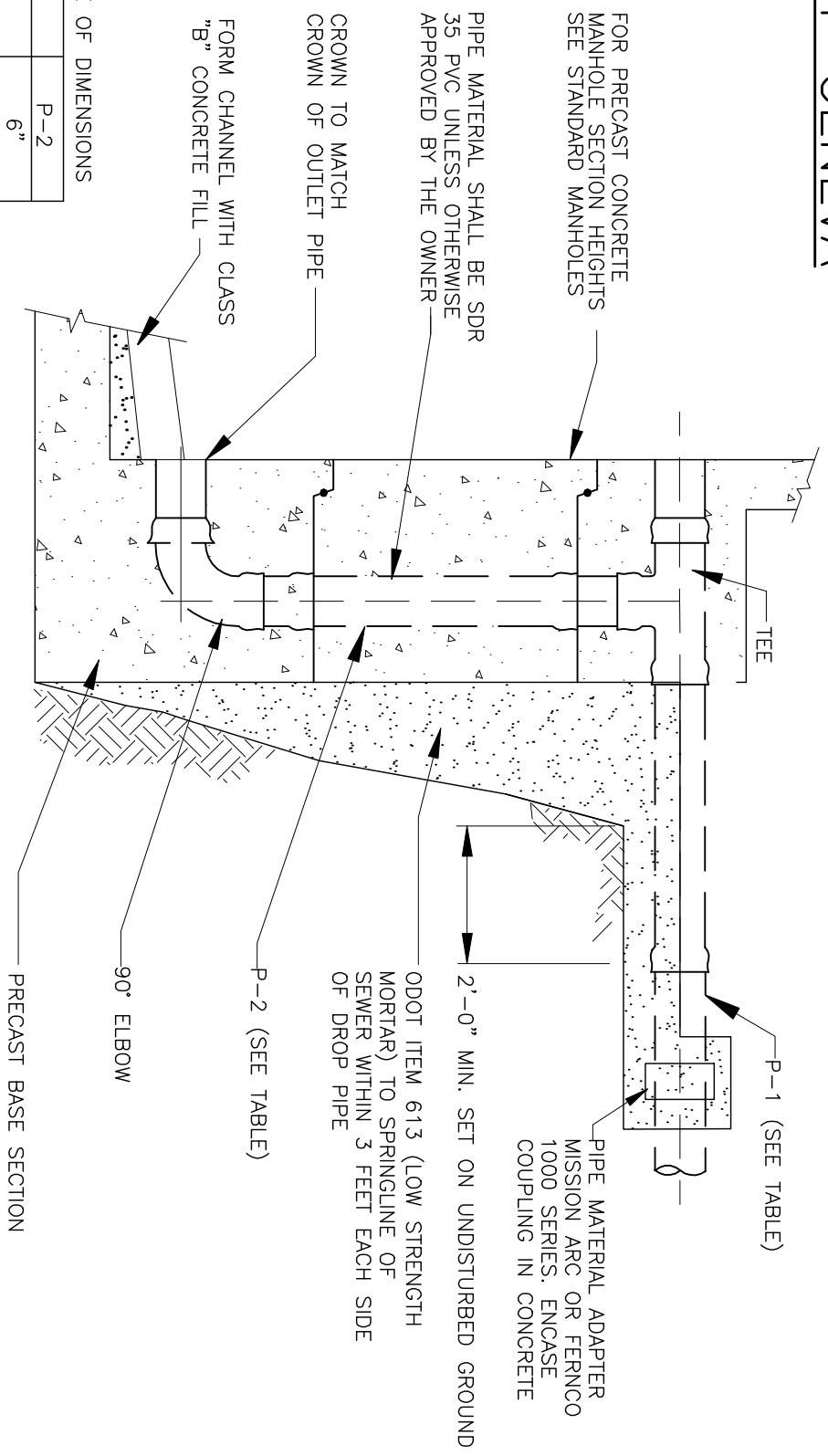


TABLE OF DIMENSIONS

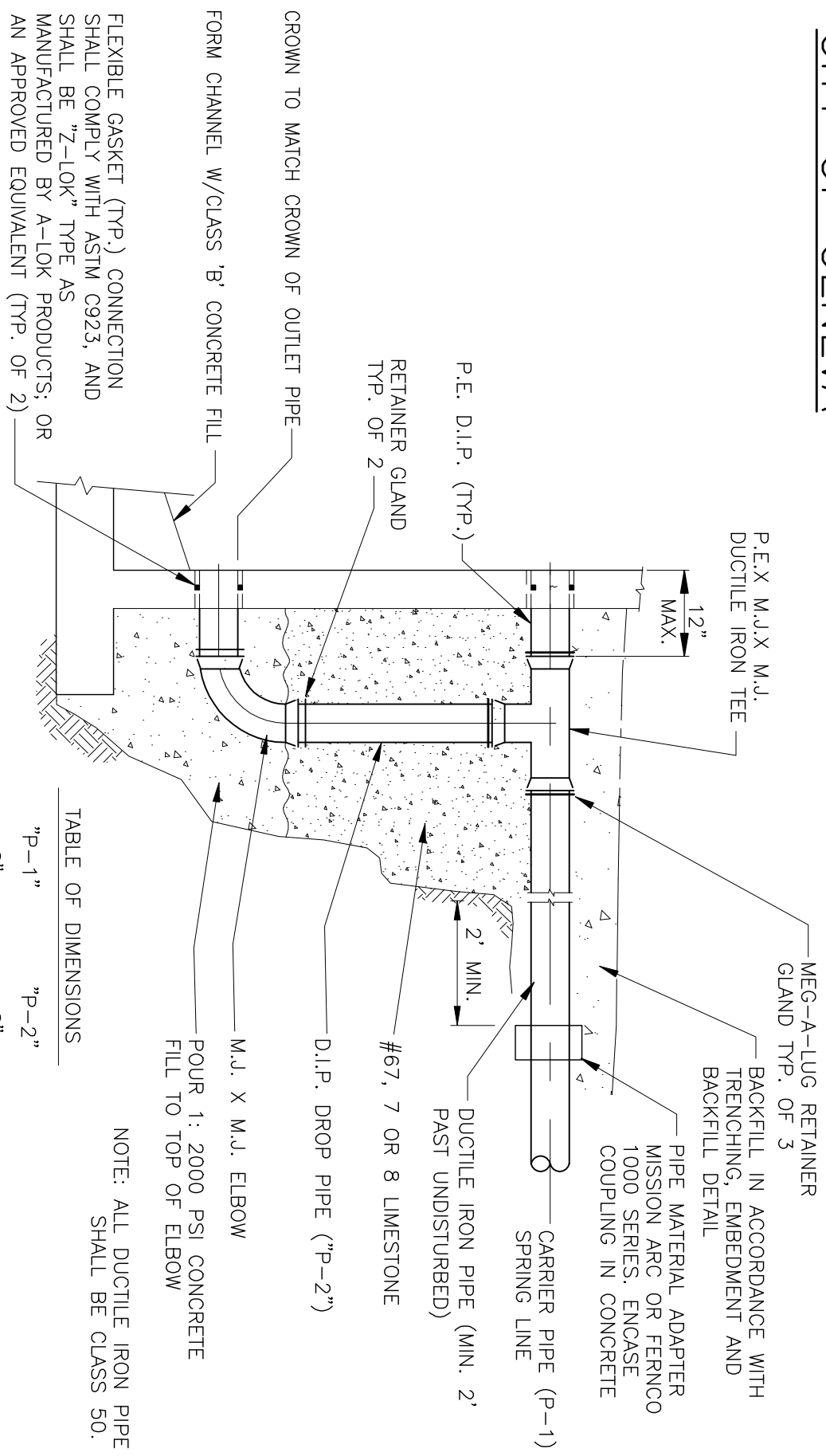
P-1	P-2
6"	6"
8"	6"
10"	8"
12"	8"
15"	8"
18"	10"
21"	10"
24"	12"

## STANDARD PRECAST SANITARY MANHOLE WITH INTEGRAL DROP CONNECTION

NO SCALE

Wastewater Department  
 Detail No. 6

# CITY OF GENEVA

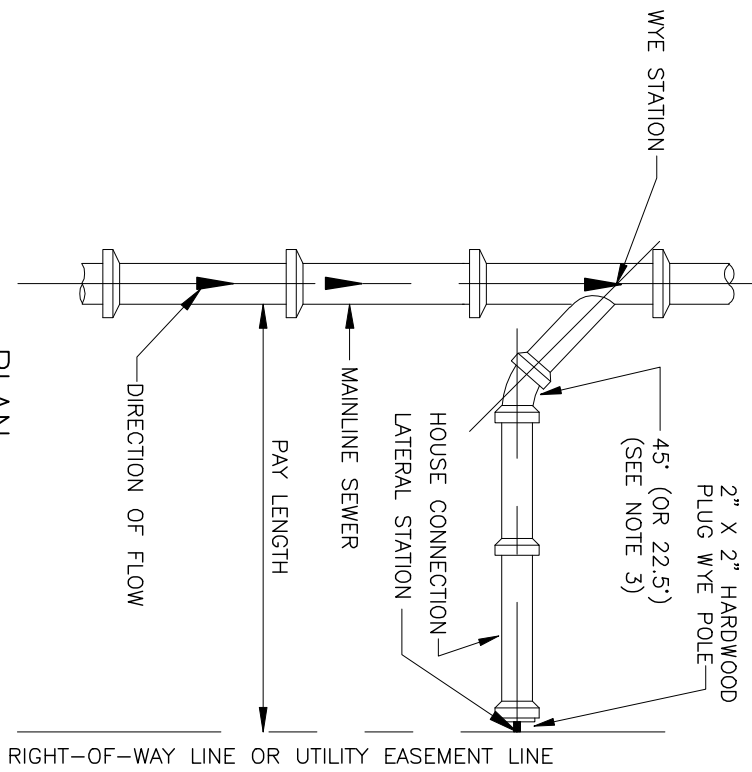


## NEW DROP CONNECTION ON EXISTING MANHOLE

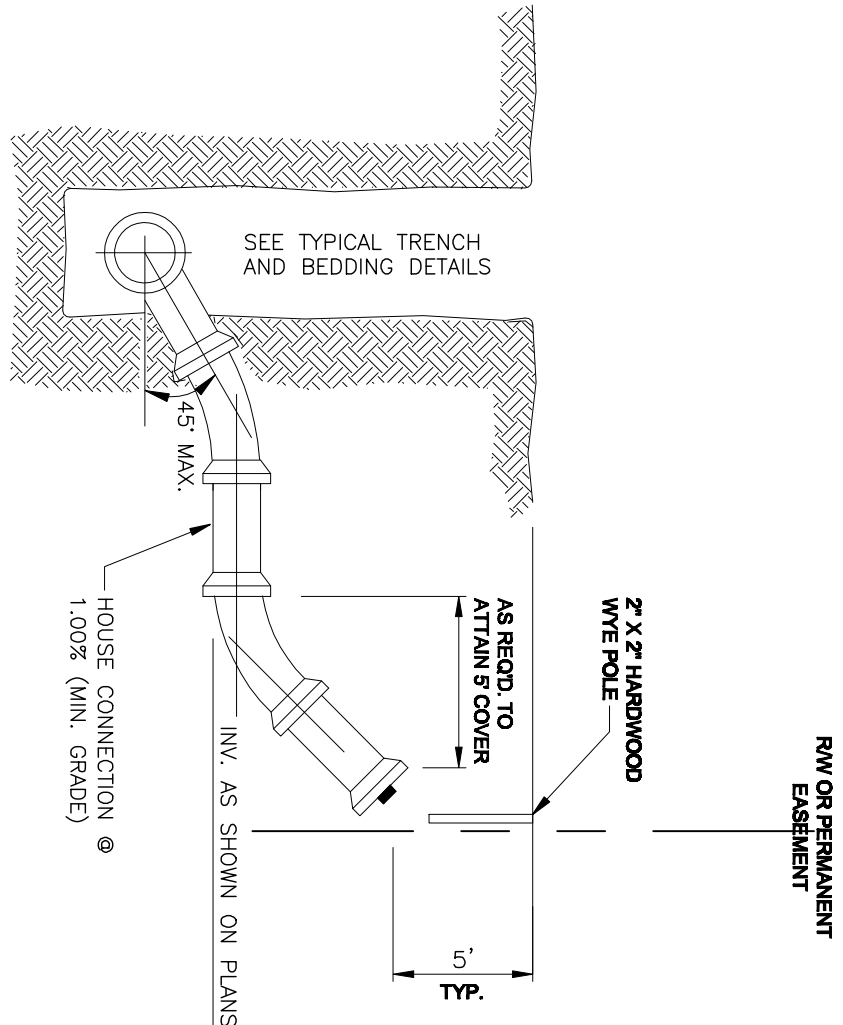
NO SCALE

## Wastewater Department Detail No. 7

# CITY OF GENEVA



**PLAN**



**SECTION**

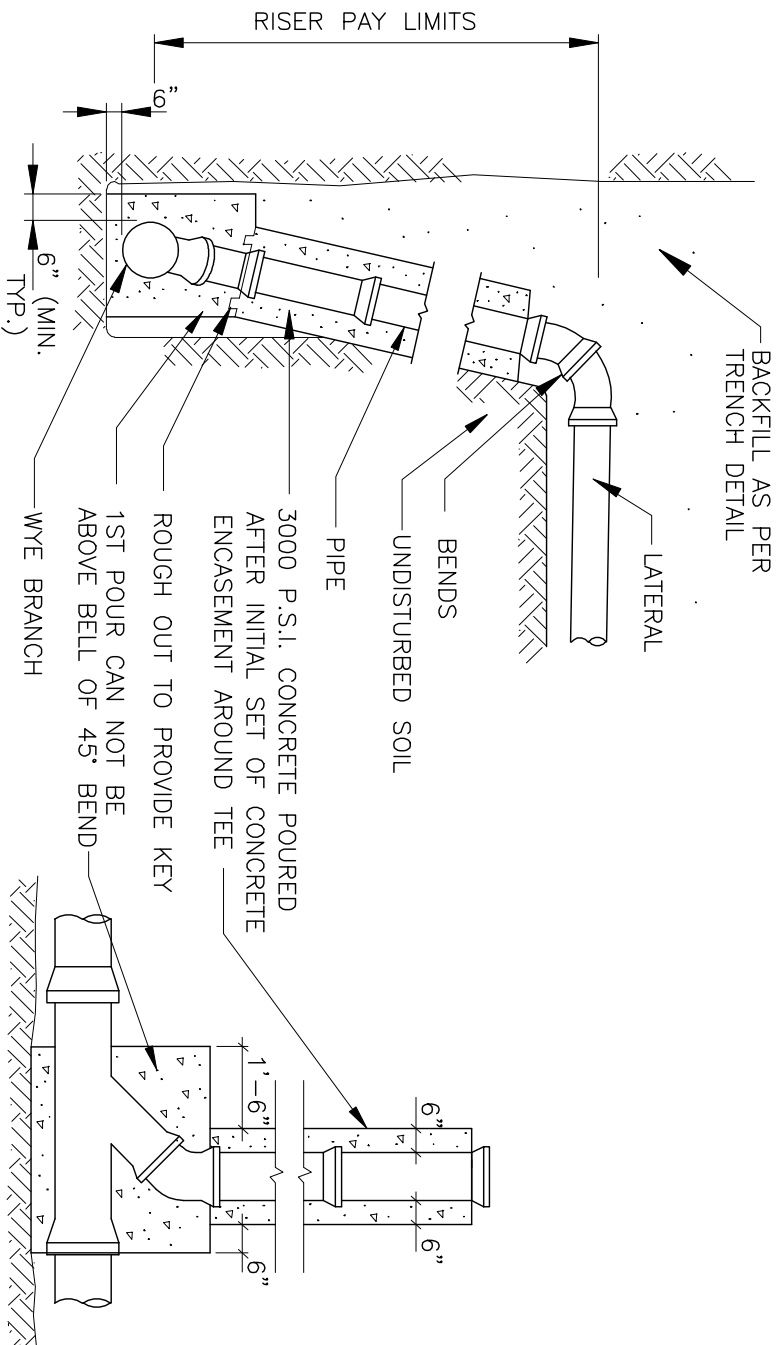
1. LATERAL TO UNSEWERED HOMES OR VACANT LOTS ARE TO BE INSTALLED AT A MINIMUM SLOPE OF 1%. LATERAL BURIED DEPTH AT THE EDGE OF PAVEMENT SHALL BE 12" DEEP, EXCEPT WHEN PROHIBITED BY THE SEWER MAIN LINE SEWER DEPTH. ALL EXCEPTIONS SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
2. LATERALS SHALL BE 6" DIAMETER, EXCEPT FOR RESIDENTIAL LOTS WHERE 4" DIAMETER MAY BE ACCEPTABLE WITH PRIOR APPROVAL OF THE CITY
3. WYES ONLY ARE TO BE PROVIDED FOR ALL SANITARY CONNECTIONS TO THE MAIN LINE SEWER. USE 45° OR 22.5° ALL AS REQUIRED TO REDIRECT LATERALS PERPENDICULAR TO MAIN LINE SEWER.

## SEWER LATERAL DETAIL

**Wastewater Department**  
**Detail No. 8**



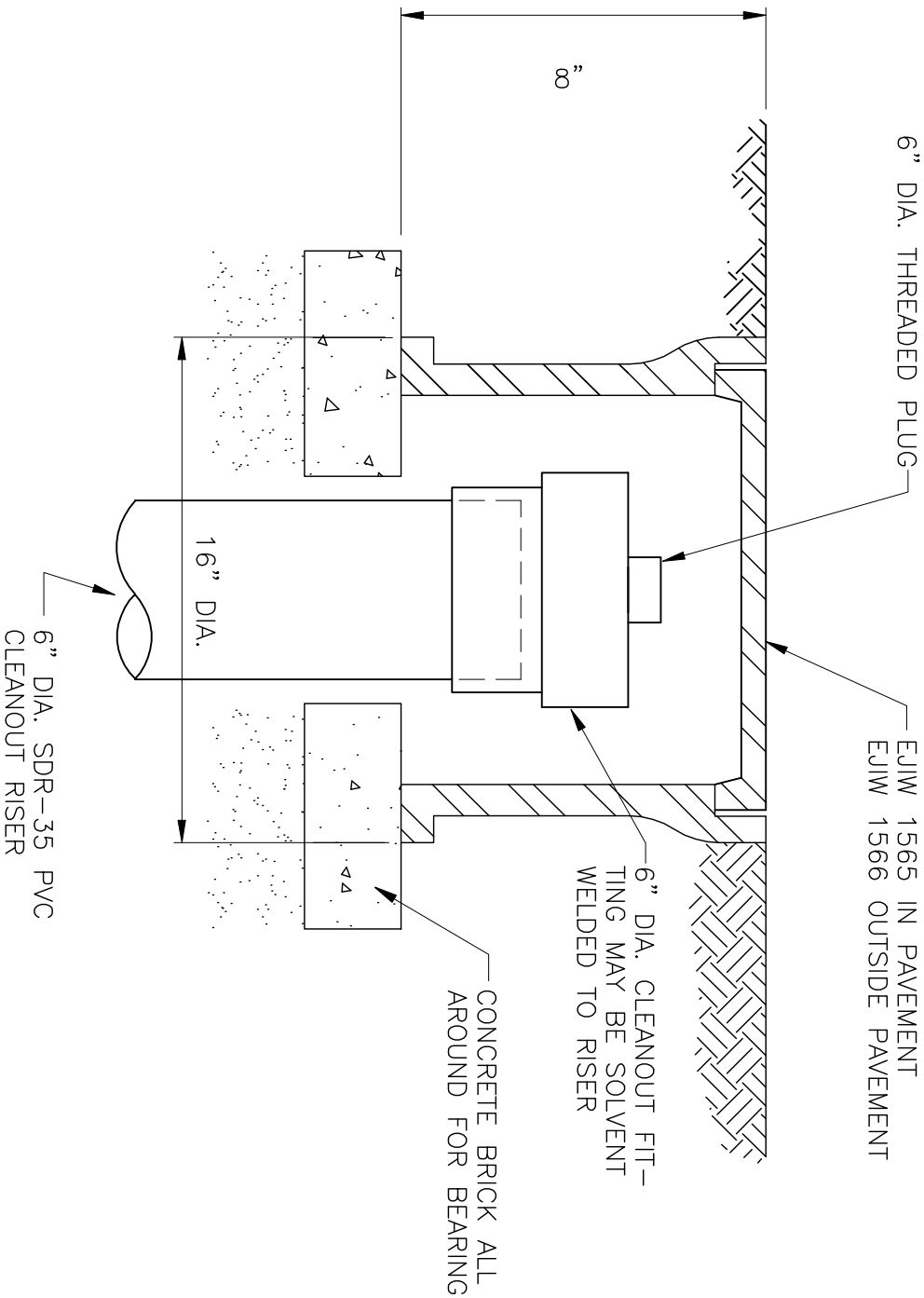
# CITY OF GENEVA



## SANITARY RISER DETAIL

**Wastewater Department**  
**Detail No. 9**

# CITY OF GENEVA

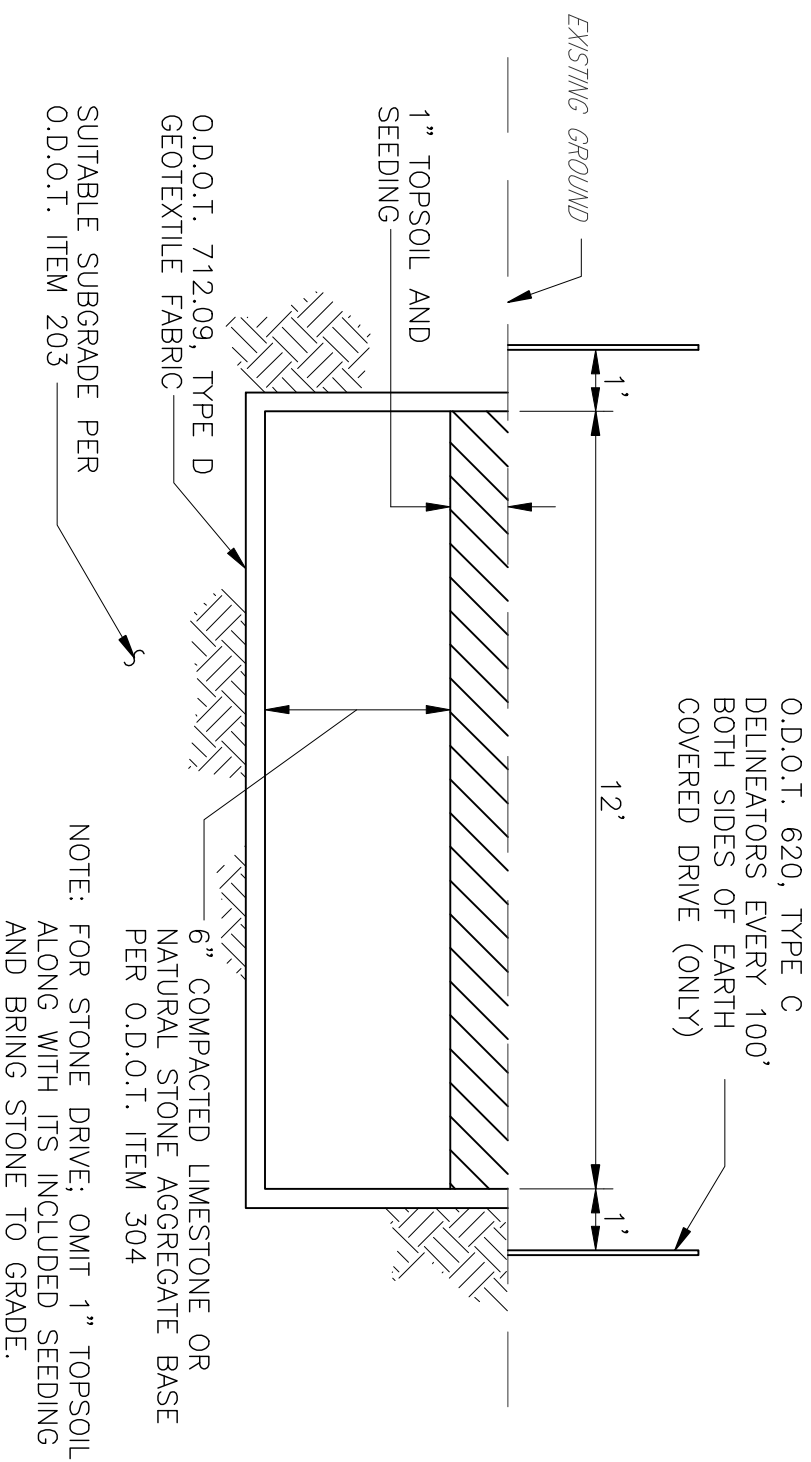


## SURFACE CLEANOUT-BOX DETAIL

NOTE:  
RESIDENTIAL LATERALS MAY BE 4"  
DIAMETER WITH PRIOR APPROVAL  
OF THE CITY, SEE DETAIL NO. 8

**Wastewater Department**  
**Detail No. 10**

# CITY OF GENEVA

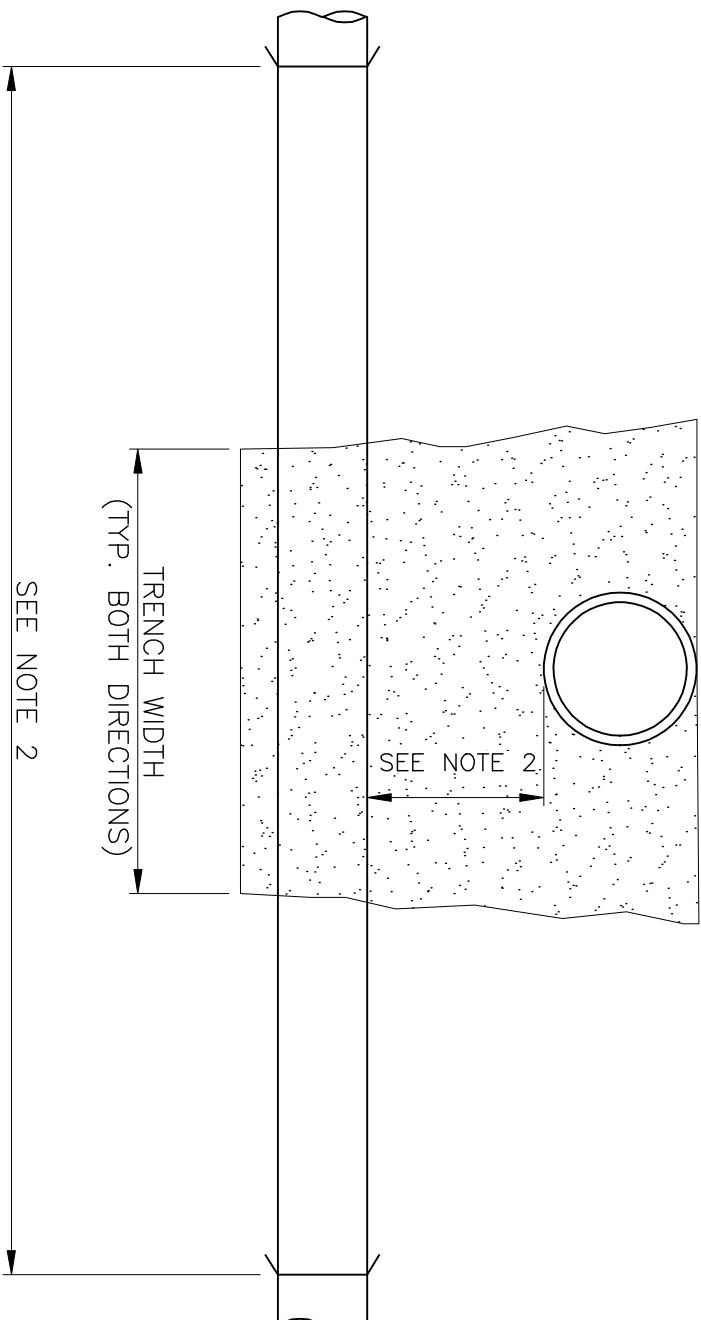


## TURF COVERED DRIVE / STONE DRIVE TYPICAL SECTION

N.T.S.

NOTE: FOR STONE DRIVE; OMIT 1" TOPSOIL  
ALONG WITH ITS INCLUDED SEEDING  
AND BRING STONE TO GRADE.

**Wastewater Department**  
**Detail No. 11**

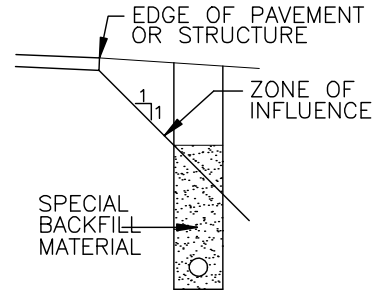
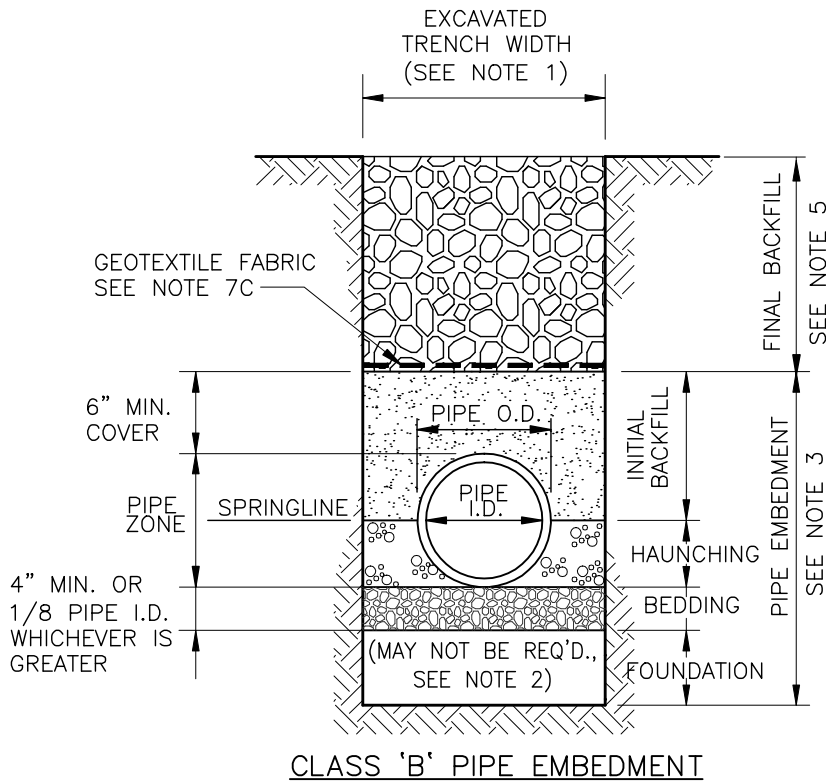


NOTE:

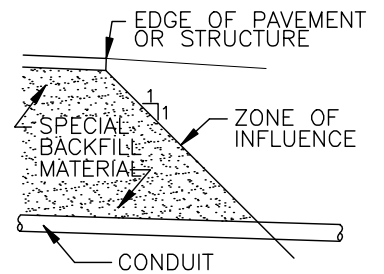
1. UNLESS OTHERWISE DIRECTED BY THE OWNER, WHERE TWO PIPES CROSS EACH OTHER, GRANULAR PIPE EMBEDMENT SHALL BE TAMPED IN 6" LAYERS AROUND BOTH PIPES. SUCH TAMPED BACKFILL SHALL BE CONTINUOUS FROM THE CRADLE OF THE LOWER PIPE TO THE TOP OF THE UPPER PIPE AND AT THE BOTTOM SHALL EXTEND IN BOTH DIRECTIONS, FOR THE FULL WIDTH OF THE TRENCH.
2. WHERE PIPE CROSSING IS LESS THAN 18" OF SEPARATION, THE SANITARY SEWER SHALL BE CONSTRUCTED OF PRESSURE RATED (WATERMAIN) PIPE ACCEPTABLE TO THE CITY. CENTER FULL LENGTH PIPE.

**PIPE CROSSING DETAIL**

# CITY OF GENEVA



PARALLEL ZONE OF INFLUENCE



TRANSVERSE ZONE OF INFLUENCE

**NOTES:**

1. THE TRENCH WIDTH IN AREA OF PIPE EMBEDMENT SHALL BE A MINIMUM OF PIPE O.D. PLUS 12" AND A MAXIMUM OF O.D. PLUS 24".
2. FOUNDATION: WHERE AN UNSTABLE TRENCH BOTTOM CONDITION IS ENCOUNTERED, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE CITY AND REPLACE WITH MATERIAL AS DIRECTED BY THE CITY.
3. PIPE EMBEDMENT: THE BEDDING, HAUNCHING & INITIAL BACKFILL SHALL BE GRANULAR PIPE EMBEDMENT. CARE SHALL BE TAKEN TO THOROUGHLY SPADE THE HAUNCHING UNDER THE PIPE SPRING LINE.
4. GRANULAR PIPE EMBEDMENT: AASHTO NO. 67, 7, OR 8 LIMESTONE ONLY.
5. FINAL BACKFILL:
  - A. WITHIN THE RIGHT OF WAY (ROW), SPECIAL BACKFILL SHALL BE USED UNDER SIDEWALKS, STRUCTURES, OR WITHIN THE ZONE OF INFLUENCE FOR PAVEMENT OR STRUCTURES.
  - B. OUTSIDE THE ROW: THE FINAL BACKFILL MAY BE SUITABLE NATIVE MATERIAL. THE CITY STRONGLY RECOMMENDS, BUT DOES NOT REQUIRE, SPECIAL BACKFILL UNDER PRIVATE DRIVEWAYS AND OR SIDEWALKS.
6. SPECIAL BACKFILL: 304 OR 411 LIMESTONE, MACHINE COMPACTED IN LIFTS NOT TO EXCEED 6".
7. WHEN CROSSING UNDER SIDEWALKS OR HARD-SURFACED DRIVEWAY APRONS WITHIN THE ROW:
  - A. TUNNELING IS NOT PERMITTED;
  - B. ENTIRE SECTIONS OF THE HARD SURFACE SHALL BE REMOVED TO THE NEXT CONTROL JOINT;
  - C. GEOTEXTILE FABRIC SHALL BE INSTALLED;
  - D. PAVEMENT SHALL BE REPLACED, PER CITY ORDINANCES CHAPTERS 1022 AND 1024.
8. CLAY TRENCH DAMS, AT INTERVALS NOT TO EXCEED 100', MAY BE REQUIRED. SEE SUPERINTENDENT AND Wastewater Department DETAIL NO. 2.

## **LATERAL TRENCHING, EMBEDMENT AND BACKFILL DETAIL**

NO SCALE

**Wastewater Department  
Detail No. 13**

## City of Geneva Handout for Sanitary Lateral Work

1. *All sanitary sewer work*, new installation or repairs anywhere outside the house, *requires a permit and inspection* during construction.
2. All necessary fees and permits shall be paid prior to the commencement of work unless previous arrangements have been made.
3. Proof of sufficient liability insurance must be provided for *anyone* performing any work on sanitary sewers. This includes homeowners if doing their own repairs. Current minimums are \$100,000 for injury to any one person and for damage to property, and \$300,000 for all persons injured in one accident. Call City Hall for details (466-4675).
4. At least 24 hours notice shall be given to the Wastewater Department (466-4228) prior to the commencement of work: emergencies excepted.
5. Work done on weekends, holidays, or begun after 3:30 p.m. will be charged at the rate of \$45.00 per hour for inspection.
6. Material Specifications:
  - A. 4" or 6" gasketed PVC, either SDR-35 or SDR-26
  - B. All fittings below ground shall be bell and spigot type, gasketed only: no glued fittings.
  - C. No 90° bends are permitted.
  - D. With the exception of inspection tees, no tee fittings may be used. Wye or wye and bend fittings are acceptable.
  - E. Transitions between dissimilar pipe materials shall be either gasketed or use Fernco or Mission style couplers which must be completely encased in wet or dry concrete.
7. A cleanout shall be installed on the exterior of the building to facilitate cleaning of the lateral. The cleanout shall be the same diameter as the pipe and installed as close to the building as possible. See also City of Geneva Detail No. 10 for monument box protection which is required for each cleanout.
8. Laterals greater than 100' in length from the building to the main may require installation of additional cleanouts. Speak to the inspector.
9. Minimum slope shall be 1% for 4" and 0.6% for 6" pipe.
10. When installing a new lateral or replacing an entire lateral, neither water nor gas service shall be laid in the same ditch as the sanitary sewer.
11. Trench width for the area of pipe embedment (See Wastewater Detail No. 13) shall be a minimum of pipe O.D. plus 12", but not wider than O.D. plus 24".
12. AASHTO No. 67, 7, or 8 crushed limestone shall be used for pipe embedment.
13. Sequence of stone placement: bedding shall be placed over subgrade the entire width of the trench before pipe is laid. Pipe shall be laid, aligned, and graded. Pipe shall be haunched in stone. Then the trench shall be filled to a minimum of 6" over top of the pipe with stone.

This short handout cannot cover all situations. Please contact the Wastewater superintendent or his representative at 466-4228 prior to beginning work if there are any questions.