

CITY OF SHEBOYGAN FALLS

STANDARD SPECIFICATIONS

2024 Edition

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UTILITIES – GENERAL

1. Construction shall conform to the "Standard Specifications for Sewer and Water Construction in Wisconsin," sixth edition, December 22, 2003 including Addendum No. 1, dated December 22, 2004 and Addendum No. 2, dated April 22, 2008 (Standard Specifications), except as hereinafter modified.
2. Provide certifications (submittals) for all materials for underground utilities.
3. Backfill trenches with excavated native material in accordance with Chapter 2.6.0, except where granular backfill is shown on the drawings. Consolidate backfill by mechanical compaction. Granular backfill is required when surface layer of asphalt is planned for the same construction year as the installation of the utility.
4. Consolidate granular backfill to minimum 95% maximum density as determined by ASTM D1557, Method D (modified proctor).
5. Consolidate excavated material backfill to minimum 95% compaction as determined by ASTM D698.
6. Take 2 compaction tests every 200 foot of trench. Test when trench has been backfilled halfway and when trench has been completely backfilled. Recompact and retest areas of backfill tested which do not meet minimum requirements.
7. Pavement cuts shall be full depth in a neat straight line in accordance with File No. 1 of Standard Specifications. Pavement restoration shall conform to the Paving section of these specifications.
8. Utility excavation for repairs or connection to existing utilities within existing public right of way shall conform to requirements of the Technical Standards for Right of Way Excavation and the Contractor must obtain a Permit to Excavate in the Public Right of Way from the City of Sheboygan Falls.
9. Deliver one full size, clean, marked up set of record drawings showing any changes to plans to owner and two full size paper sets and an electronic copy in pdf format to the City of Sheboygan Falls.

UTILITIES - SANITARY SEWER

1. Sewer pipe materials: Polyvinyl Chloride pipe (PVC) conforming to the requirements of ASTM D3034, SDR-35, with rubber gasket-type joints.
2. Lateral and riser materials:
 - a. New or Replace Existing Open Cut - 4-inch diameter PVC pipe conforming to ASTM D 1785, Schedule 40 with rubber gasket type joints.
 - b. Replace Existing by Pipe Bursting – 4-inch diameter HDPE DR 17. Polyethylene base resin shall be listed as PE4710 in PPI TR-4 and have a minimum cell classification of PE 445574C in accordance with ASTM D3350.
3. Riser construction: construct risers at 1 to 1 slope in accordance with the attached detail.
4. Lateral connections to sanitary sewer main:
 - a. Connection of new lateral to new sanitary sewer
 - i. Connect with PVC wye fitting.
 - b. Connection of new lateral to existing lined sanitary sewer.
 - i. Connection shall be made directly to liner with an InsertaTEE.
 - ii. If InsertaTEE is not feasible, connect with Fernco Tap Saddle with pressure kit or approved equal. Saddle to be strapped directly to liner.
 - c. Connection of new lateral to existing sanitary sewer main.
 - i. Saw existing lateral as close to sanitary main and still allow for connection with a repair coupling.
5. Manholes: 48-inch I.D. with eccentric cones and no steps. Provide tongue and groove manhole barrel joints with butyl rubber flexible sealant meeting the requirements of ASTM C990. Seal all external manhole barrel joints with an external joint sealer meeting requirements of ASTM C-877, Type II. Manufacturers shall be Cretex Wrap, or equal. Tightening bands required. Install in accordance with the manufacturer's instructions. Extend manhole benches to the crown of the outgoing pipe. See attached detail.
6. Manhole castings: Neenah R-1500 with machined bearing surface and Type "B" self-sealing lid, with concealed pickhole without non-rocking feature.
7. Provide Cretex Pro-Ring expanded polypropylene adjustment rings, with a minimum thickness 2-inches and a maximum thickness of 6-inches. Adjustment rings shall be of thickness larger than 2-inches where sufficient to minimize number of joints between successive rings. Install Finish, Grade, and Angle adjustment rings in accordance with manufacturer instructions using the manufacturer approved M-1 adhesive <https://cretexseals.com/wp-content/uploads/2018/09/PRO-RING-Installation-Instructions-precast-9-18WEB.pdf>. Concrete adjustment rings greater than 4-inch thickness can be used when approved by the City.
8. Provide internal chimney seals as manufactured by Cretex Specialty Products, installed in accordance with the manufacturer's instructions. Test internal chimney seal watertightness at the lower compression band in accordance with Section 3.5.4(f)1.(a) of Standard Specifications.
9. Connect pipe to precast concrete manhole by means of boots or cast-in seals conforming to the requirements of ASTM C923.

10. Leakage test sewers and laterals in accordance with Section 3.7.0 of the Standard Specifications by means of low pressure air. Include lengths of laterals in determining minimum test time. Do not test until benches in testing manholes are constructed.
11. Deflection test sewers in accordance with Section 3.2.6 (i) 4. of the Standard Specifications.
12. Televis sewer and laterals as a final test for leakage and alignment. Add water to sewer prior to televising to detect sags. Use a television camera and equipment specifically designed for sewer and lateral inspection. Supply light using a lamp on the camera capable of being dimmed or brightened remotely. The camera shall be operative in 100% humidity and have minimum resolution of 650 lines of resolution and tested to 400 psi. Measurement shall be by means of metering device accurate to +/- 1 foot/300 feet. Distance readings shall appear in video. The mobile studio shall be large enough to accommodate 3 people for purpose of viewing monitor. Allow access for the City to view the monitor. Provide videos and reports on a flash drive for Owners review.
13. The City will analyze videos and reports to determine whether sewers and laterals constructed under this contract meet requirements of specifications. If defects are found, correct and re-televis sewer at no additional cost to City.
14. Construct sanitary laterals to property line. Mark ends of sanitary sewer laterals with a nominal 2-inch by 4-inch, nominal size wood marker, one continuous piece, of sufficient length to extend from the lateral pipe to 2 feet above the ground level elevation of lateral, at the end, shall be permanently written on marker.
15. Provide tracer wire conforming to Section 2.11.2 of the Standard Specifications on sewers and laterals. Secure wire to pipe at the top of pipe and tape at 5 foot intervals. Terminate sanitary sewer main line tracer wire in manholes at joint between manhole cone and bottom adjustment ring. Positively electrically connect wire to a termination box at property line. Test tracer wire for electrical continuity prior to acceptance.
16. Termination Boxes:
 - a. Valvco Corporation
 - b. Snake Pit, Copperhead Industries, LLC
 - c. Bingham & Taylor
 - d. Cast iron cap marked "SEWER" for sanitary laterals.
 - e. Attach termination box to 6' 2x4 buried at right-of-way line.
17. Repair couplings:
 - a. Fernco Strong Back RC Series repair couplings.
 - b. PVC gasketed solid sleeve

UTILITIES - STORM SEWER

1. Storm sewer materials:
 - a. 15 inch and larger: reinforced concrete pipe conforming to the requirements of ASTM C76, Class III, with rubber gasket joints or High Density Polyethylene plastic (HDPE) pipe meeting requirements of ASTM F2648.
 - b. 12-inch and smaller: PVC pipe conforming to the requirements of ASTM D3034, SDR-35, with rubber gasket type joints or High Density Polyethylene plastic (HDPE) pipe meeting requirements of ASTM F2648..
 - c. Storm water catch basin leads: 12-inch PVC pipe conforming to the requirements of ASTM D3034, SDR-35, with rubber gasket-type joints.
 - d. Apron endwall: concrete in accordance with manufacturer's standard. Connect to endwall with concrete pipe.
2. Storm sewer lateral materials: 4-inch Diameter PVC pipe conforming to the requirements of ASTM D1785, Schedule 40, with rubber gasket type joints.
3. Storm sewer manholes: 48-inch I.D., flat top slabs, except where otherwise shown on drawings. Extend manhole benches to the spring line of outgoing pipe. Connect flexible pipe to precast concrete manhole by means of boots or cast-in seals conforming to the requirements of ASTM C923. Connect rigid pipe with a mortar collar. Storm manhole castings: Neenah R-1500 with machine bearing surface and Type "B" lid with pickhole, and without non-rocking feature.
4. Storm water catch basins: construct in accordance with the requirements of Section 3.6.3 and File No. 25, except inside dimensions of catch basin shall be 36-inch By 24-inch. Provide 36-inch deep sump in catch basin. Provide catch basins with Neenah R-3067 casting with type "L" grate for inlets on a grade and type "VB" for inlets in a sag. Provide grate with environment notice with fish logo and 3/4 inch lettering "DUMP NO WASTE DRAINS TO RIVER".
5. Provide Cretex Pro-Ring expanded polypropylene adjustment rings, with a minimum thickness 2-inches and a maximum thickness of 6-inches. Adjustment rings shall be of thickness larger than 2-inches where sufficient to minimize number of joints between successive rings. Install Finish, Grade, and Angle adjustment rings in accordance with manufacturer instructions using the manufacturer approved M-1 adhesive <https://cretexseals.com/wp-content/uploads/2018/09/PRO-RING-Installation-Instructions-precast-9-18WEB.pdf>. Concrete adjustment rings greater than 4-inch thickness can be used when approved by the City.
6. Construct storm laterals to property line.
7. Provide tracer wire conforming to Section 2.11.2 of the Standard Specifications on sewers and laterals. Secure wire to pipe at the top of pipe and tape at 5 foot intervals. Positively electrically connect wire to a termination box at property line. Run tracer wire for laterals connected to concrete sewer mains from termination box looped around main sewer and back to termination box. Test tracer wire for electrical continuity prior to acceptance.
8. Termination Boxes:
 - a. Valvco Corporation

- b. Snake Pit, Copperhead Industries, LLC
 - c. Bingham & Taylor
 - d. Cast iron cap marked "SEWER" for storm laterals.
 - e. Attach termination box to 6' 2x4 buried at right-of-way line.
9. Deflection test flexible storm sewers in accordance with Section 3.2.6 (i) 4. Of the Standard Specifications.
10. Televising storm sewer and laterals as a final test for alignment. Add water to sewer prior to televising to detect sags. Use a television camera and equipment specifically designed for sewer and lateral inspection. Supply light using a lamp on the camera capable of being dimmed or brightened remotely. The camera shall be operative in 100% humidity and have minimum resolution of 650 lines of resolution and tested to 400 psi. Measurement shall be by means of metering device accurate to +/- 1 foot/300 feet. Distance readings shall appear in video. The mobile studio shall be large enough to accommodate 3 people for purpose of viewing monitor. Allow access for the City to view the monitor. Provide videos and reports on a flash drive for Owners review.
11. The City will analyze videos and reports to determine whether sewers and laterals constructed under this contract meet requirements of specifications. If defects are found, correct and re-televising sewer at no additional cost to City.

UTILITIES - WATER MAIN

1. Water main materials: Polyvinyl Chloride (PVC) pipe conforming to the requirements of chapter 8.20.0 of Standard Specifications and AWWA C900, except as modified below:
 - a. Class: 235
 - b. Dimension ratio (DR): 18
2. Pipe joints: push-on conforming to the requirements of AWWA C111. Gaskets shall be neoprene or other synthetic rubber.
3. Fittings: Chapter 8.22.0 of Standard Specifications except as modified below:
 - a. Compact style in accordance with AWWA C153 with mechanical joints.
 - b. Cement lined, AWWA C104.
 - c. No unrestrained pipe to pipe joints within 15 feet of a fitting.
4. Thrust restraint: Sigma One-Lock by Sigma Corporation or Mega-Lug by EBAA Iron, Inc.
5. Tapping Sleeves: Stainless steel double bolt tapping saddles with full circumferential gasket, MJ integral outlet flange end connection, and working pressure equal to or exceeding working pressure of pipe. Manufactured by Mueller, Romac, or equal.
6. Gate valves: epoxy-lined, resilient wedge valves conforming to the AWWA C515, with mechanical joints, ductile iron body, bronze-mounted with bronze non-rising stems, O-ring seals and open left. Valve body bolts shall be stainless steel. Valves shall be Mueller, American Flow Control, or Clow C515.
7. All valve boxes shall be installed upon the valve with the use of a gate valve adaptor as manufactured by Adaptor Inc.
8. Valve box: 3-piece, screw type with 5 1/4 inch shaft and no-tilt drop cover marked "Water". Valve boxes shall be Tyler Model 6860, size 'G' or equal with extensions as needed.
9. Hydrants: Waterous "Pacer", Model WB-67, traffic-type with break-off coupling on both standpipe and rod. Equip hydrants with 6-inch Inlet with mechanical joint connection and 5 1/4-inch valve opening, one 4 1/2-inch pumper nozzle, two 2 1/2-inch hose nozzles with NTS threads and 1-inch pentagonal operating nut, open counterclockwise. Provide O-ring packing. Paint hydrants red.
10. Leads: 6-inch PVC. Restrain all joints from main tee to hydrant. Provide 6-inch isolation gate valve at each hydrant.
11. All underground T-bolts and nuts, ANSI/AWWA C111/A21.11: Cor-Blue by Birmingham Fastener, Inc.
12. Water services: 1-inch diameter C.T.S. DR 9 HDPE (High Density Polyethylene) tubing conforming to ASTM D-2737. Polyethylene resin shall be PE3608 or PE4710 conforming to ASTM D-3350. Tubing to be N.S.F 14 and 61 approved.
13. Corporation stops: 1.5-inch plug valve type with compression connections, Mueller H-15008, (compression fitting), A. Y. McDonald 74701 or Ford FB 1000-4-Q-NL.
14. Tapping Saddles: Stainless steel double bolt tapping saddles with skirted gasket, Romac Model No. 306-9.05 x 1 inch C.C. or Ford Model No. FS-303-905-OS-CC4
Curb stops: 1-inch, Mueller H-15209, (compression fitting), A. Y. McDonald 76104 or Ford B 44-444M-Q-NL. Curb stops shall not be deeper than 7-ft below finished grade.

15. Curb boxes: Mueller H-10387, A. Y. McDonald 5614 or Ford EM-70-56. Set curb boxes to finished grade. Furnish with stainless steel riser rod and stainless steel connector pin. Cap shall have termination stud for tracer wire connection.
13. Termination Boxes (For use at hydrants):
 - a. Valvco Corporation
 - b. Snake Pit, Copperhead Industries, LLC
 - c. Bingham & Taylor
 - d. Cast iron cap marked "WATER".
16. All ductile iron fittings, hydrants, and valves shall be polyethylene wrapped in accordance with section 4.4.4 of Standard Specifications.
17. Delete the provisions of Section 4.3.4 of Standard Specifications and replace with the following: support valves, hydrants, and special fittings in vertical position on solid concrete block or concrete support.
18. Where limits of restrained joints shown on drawings, provide joint restraints as specified.
19. Tracer wire on PVC water mains and services: Conform to Section 2.11.2 of Standard Specifications. Secure wire to PVC pipe at top of pipe and tape at 5 foot intervals. Positively electrically connect wire to curb box termination stud and tracer wire access box at front of each hydrant. Test tracer wire for electrical continuity prior to acceptance.
20. Lay water main to line and grade so horizontal and vertical deflections will not be more than 50 percent of maximum deflection as recommended by manufacturer. Where greater deflections necessary, use proper fittings.
21. Reasonable amounts of water for flushing and testing purposes may be obtained from the Sheboygan Falls Water Utility at no cost to contractor.
22. Manipulation of existing valves required to construct the water main shall be performed by the Sheboygan Falls Water Utility.
23. Install hydrant in accordance with attached hydrant detail.
24. Set curb boxes 3 feet from back of curb or as determined by Sheboygan Falls Water Utility. Locate outside of driveways.
25. Provide Sheboygan Falls Water Utility with one copy of catalog "cuts" for all water main materials used upon completion of construction.
26. Hydrostatic pressure test new mains and water services from main to curb stop in accordance with 4.15.0 of Standard Specifications.
27. Disinfection of water mains:
 - a. Section 4.3.12 and Chapter 4.16.0 Standard Specifications, except as modified below.
 - b. Where pipe, valves, and fittings installed at connections to existing mains cannot be flushed and sterilized the same as new installations, use following procedures.
 - i. After existing pipe, valve, and fittings exposed and plug removed, wash existing bell clean with not less than 2 applications of 25% solution of sodium hypochlorite.
 - ii. Clean and wash each new fitting, valve, and pipe section to remove foreign materials which could cause contamination. After cleaning and just before lowering into trench, wash with 2 applications of 25% solution sodium hypochlorite. Sterilize joint material before use. In making installation, avoid

contaminating surfaces coming in contact with water when the installation is restored to service.

- iii. Sheboygan Falls Water Utility will determine location(s) for sampling, and sample and perform two bacteriological tests at each location, one at least 16 hours and second test at least 40 hours after flushing, at no cost to contractor. Generally each dead-end and major branch and every additional approximately 1000 foot segment of main will be sampled. If, in opinion of the City, trench water or excessive quantities of dirt or debris has entered or exists in main, samples in such areas will be taken at intervals of approximately every 200 feet. Temporary sample cocks and fittings shall be furnished, installed and removed by contractor, and main plugged with watertight CC threaded brass plugs at completion of sample. It shall be contractor's responsibility to keep sample points, as well as main and hydrants, from freezing. Should further flushing and/or rechlorination to obtain safe samples become necessary, Sheboygan Falls Water Utility will perform additional sampling and testing, the cost of which shall be borne by contractor.

EROSION AND SEDIMENT CONTROL

1. All erosion control products shall conform to the current version of the Wisconsin Erosion Control Product Acceptability List. The list can be found at:
<https://wisconsin.gov/Documents/doing-business/eng-consultants/cnslt-rsrcs/tools/pal/pal.pdf>
2. Provide silt fence, conforming to Wisconsin Department of Natural Resources Technical Standard 1056 at locations shown on drawings.
 - a. Install silt fence in accordance with Wisconsin Department of Natural Resources Technical Standard 1056.
 - b. Inspect silt fence after every rain storm and remove sediment when it reaches a depth of 1 foot.
 - c. Silt fence to remain in place until grass has reached a height of 2 inches with coverage of 90% of the seeded area. Contractor shall remove the silt fence, smooth the topsoil and seed the area disturbed by silt fence removal, after the lawn has been established.
 - d. Place and maintain silt fence along downslope portions of fill areas as well as around perimeter of stockpiles.
3. Provide inlet protection, conforming to Wisconsin Department of Natural Resources Technical Standard 1060 at locations shown on drawings.
 - a. Install Type A inlet protection for field inlets in locations with disturbed ground surfaces.
 - b. Install Type D inlet protection for inlets in roadways.
4. Apply appropriate additional erosion control measures, as required, to protect project area and adjacent lands. These measures may include, but not be limited to mulching, rapid growth vegetation, erosion mat, hay bales, filter barriers, sediment traps, and basins. Comply with provisions of the Department of Natural Resources web site "https://dnr.wisconsin.gov/topic/Stormwater/standards/const_standards.html", and the storm-water management and erosion control plan prepared for this project.
5. Provide erosion control measures, in place, before commencing actual construction on job site, and maintain during course of construction.
6. Inspect the erosion control measures within 24 hours of each rain of 0.5 inches or more, and at least once each week. Make needed repairs as determined by the inspections. Document the findings of each inspection and any needed repairs in a site erosion and sediment control log, which shall include the date of each inspection and the name of the person conducting the inspection. Maintain a copy of the site erosion and sediment control log and the erosion control plan on-site and provide it to the city for inspection upon request.

GRADING

1. Construction shall conform to the State of Wisconsin, "Standard Specifications for Highway and Structure Construction," current edition, except as hereinafter modified.
2. Construct subgrade in accordance with Subsections 205.3, 207.3.1, 207.3.2, and 207.3.6.3 and the grades and typical sections shown on the drawings.
3. Undercut cut areas to provide for 4-inches of salvaged topsoil.
4. Adjust manhole frames and water main valve boxes as necessary to position 3/8 inch below finished grade. Adjust to binder pavement layer if asphalt surface layer is not planned for same construction season as binder pavement layer.
5. Proof roll areas to receive fill material to detect soft or loose zones prior to placing fill. Remove and replace soft or loose zones. Proof roll roadway subgrade prior to placement of aggregate base course. Conform to 205.3.13.

PAVING

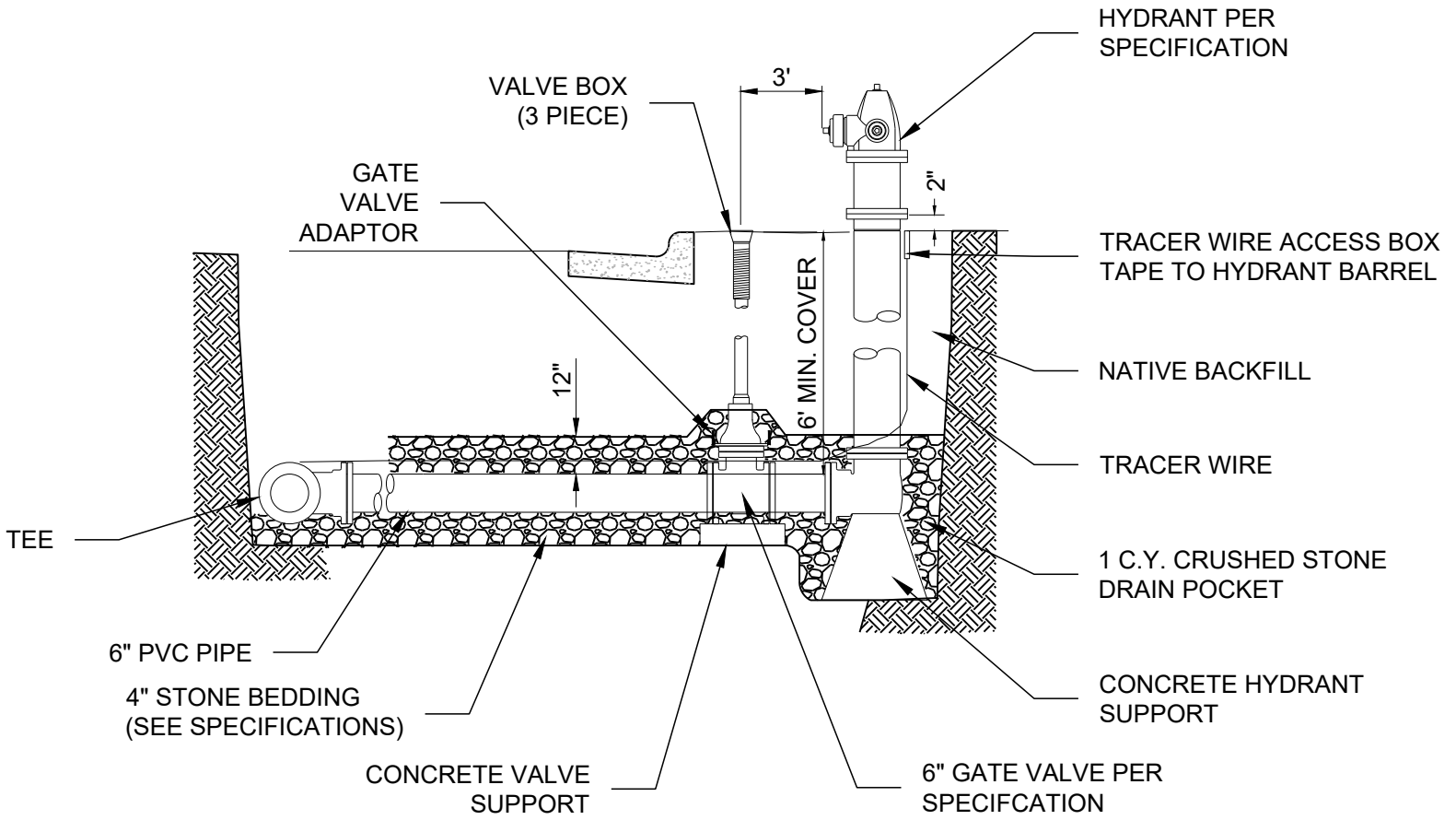
1. Shall conform to the State of Wisconsin, "Standard Specifications for Highway and Structure construction," current edition, except as hereinafter modified.
2. Base aggregate dense:
 - a. Conform to physical properties as specified in Subsection 301.2.4.5
 - b. 1-1/4 inch gradation as specified in Subsection 305.2.2.1
3. Concrete curbs and sidewalks:
 - a. Concrete: grade "A2" concrete in accordance with Subsection 501.3 with Size No. 1 coarse aggregate
 - b. Expansion joint filler: 3/4-inch wide in accordance with Subsection 415.2.3
 - c. Place expansion joint on each side of inlet about 3 feet from inlet, at locations where tangent and radial curb meet, and on tangent sections at maximum spacing of 300 foot
 - d. Contraction joints: space not less than 6 feet nor more than approximately 10 feet in length.
 - e. Detectable Warning Field: Conform to Section 602.2. Color: Natural Patina.
 - f. Follow standard detail drawings for layout of sidewalk ramps.
 - g. Form contraction joints by sawing or by placing steel separators.
 - h. Concrete curing agent: in accordance with Subsection 415.2.4.
 - i. Round back edge of curbs, edge of gutter adjacent to pavement, and edges adjacent to joints with edger of 1/4-inch radius.
 - j. Cure curb and gutter, sidewalk and driveway aprons in accordance with impervious coating method specified in Subsection 415.3.12.2.
 - k. Stamp or cut a plus sign on top of curb at each water lateral curb stop location.
4. Hot mix asphaltic pavement:
 - a. Minimum street section shall be 12-inches of base aggregate dense and 4-inches of hot mix asphaltic pavement consisting of a 1-3/4-inch layer of 5 LT 58-28 S over a 2-1/4-inch layer of 3 LT 58-28 S conforming with Section 460.
 - b. Before the start of hot mix asphalt paving, submit to City the proposed mix design for the upper and lower layers. Mix composition including asphalt cement content, shall be that particular mix approved by the State of Wisconsin for the plant and aggregate source used. Mix design shall be from the same year as construction.
 - c. Contractor shall obtain two samples of the asphalt cement in the presence of City during the paving. City reserves the right to require that up to four additional samples be provided. Sampling shall be in accordance with Subsection 455.2.2.1.
 - d. Contractor shall take uncompacted samples of the asphaltic concrete mixture from the paver. Samples will be taken at an approximate rate of one per each 500 tons of mixture or one per each paving day, whichever is more frequent. Each sample shall be a minimum of 4 pounds in size. Extraction tests shall be conducted by an independent testing laboratory retained by contractor to determine compliance with the job-mix formula. The tolerance allowed in Subsection 460.2.8.2.1.5 will be used to determine if the extraction results comply with the asphalt content and gradation requirements.
 - e. Perform density test in conformance with Subsection 460.3.3.

- f. If any of the tests on asphaltic material or asphaltic concrete pavement fail to meet the specified requirements, contractor shall perform additional testing in order to define the limits of the pavement that does not meet specifications. All pavement represented by failed tests shall be removed and replaced at the contractor's expense.
- g. Sawcut joints formed between existing asphaltic concrete pavement and new asphaltic concrete pavement and tack before placing new asphaltic concrete pavement.

TOPSOIL, SEED, FERTILIZER, EROSION MAT, AND MULCH

1. Shall conform to the State of Wisconsin, "Standard Specifications for Highway and Structure construction," current edition, except as hereinafter modified.
2. Topsoil, seed and fertilize all right-of-way and drainage areas in accordance with Sections 625, 627, 628, 629, and 630. Seed shall be mixture No. 40. Fertilizer shall be Type A. .
3. All other disturbed areas shall be seeded with 3 pounds/acre seeding of oats or rye, or the seed mix specified above. Modify seed amount for dormant seeding per Section 630.
4. Cover all newly seeded areas with hydromulch and soil stabilizer in accordance with Section 627 and 628. Products must be listed in the Wisconsin Erosion Control Product Acceptability List.
5. Contractor is responsible for a catch of grass 2-inch in height. Reseed bare spots.
6. Seed all areas within 7 days of the completion of grading and topsoiling.
7. Place erosion mat on all graded slopes exceeding 3 horizontal and 1 vertical and on the bottom 2 feet of drainage swales.
8. All erosion mat shall conform to the current version of the Wisconsin Erosion Control Product Acceptability List. The list can be found at: <https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/pal/default.aspx>

STANDARD DETAILS



NOTE:
 WITH THE WRITTEN APPROVAL OF THE ENGINEER, TIE RODS AND/OR THRUST BLOCKS MAY BE USED AS AN ALTERNATIVE TO MECHANICAL JOINT RESTRAINT. RESTRAIN ALL JOINTS FROM MAIN TEE TO HYDRANT.

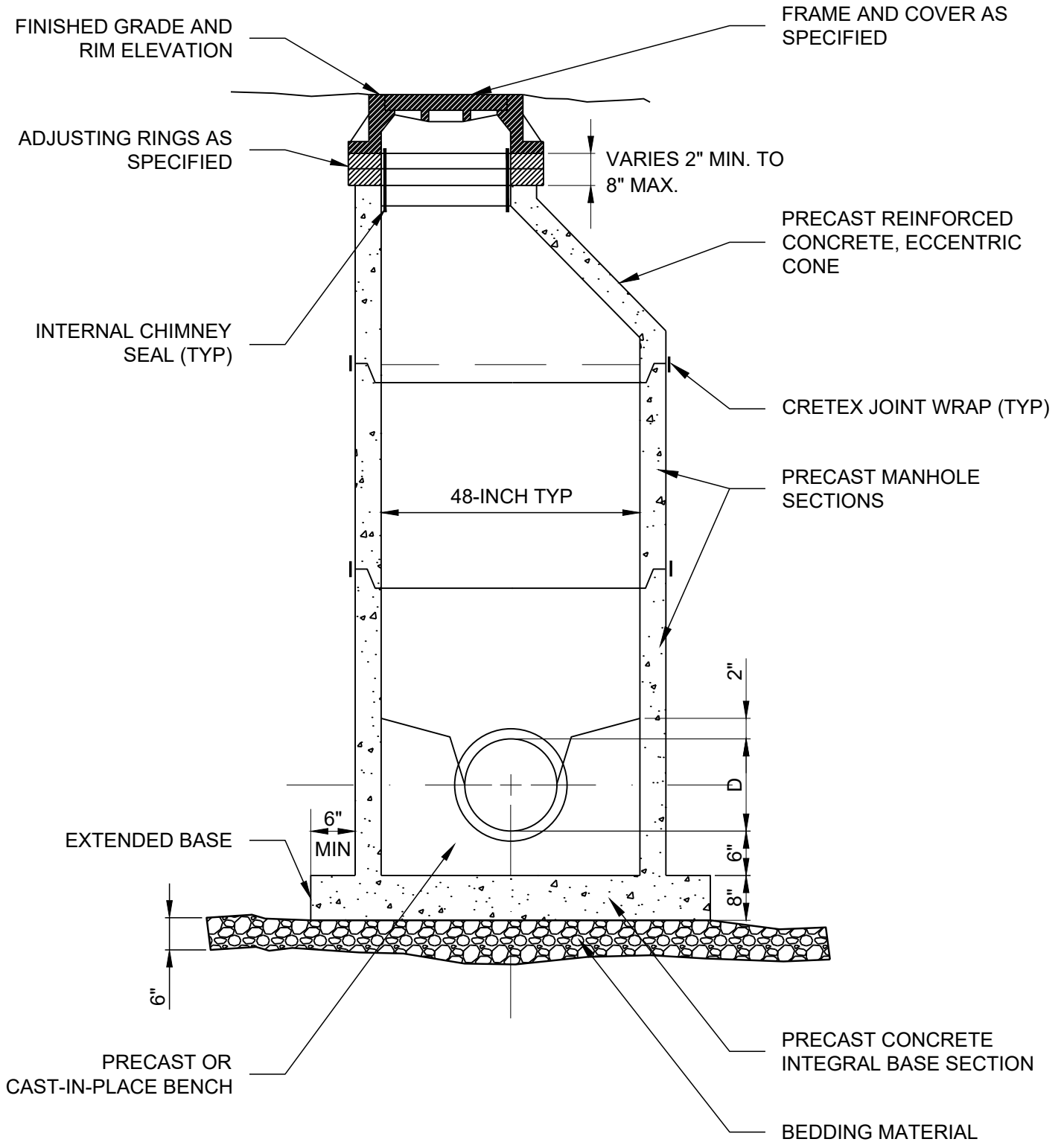
POLY WRAP HYDRANT ASSY., D.I. PIPE AND TEE.

HYDRANT AND VALVE INSTALLATION DETAIL

NTS

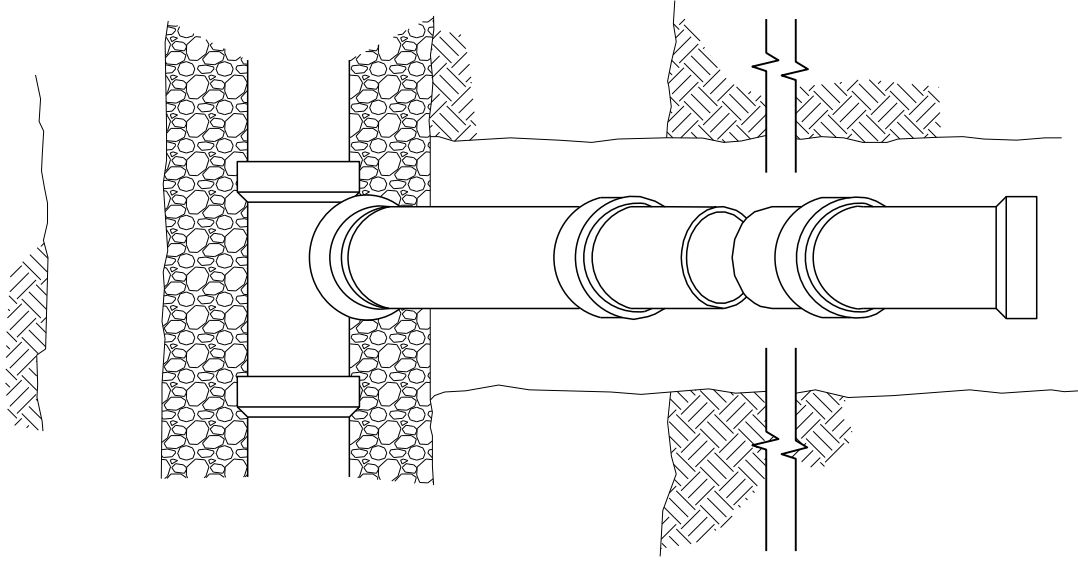
NOTES:

1. CONTRACTOR SHALL ADJUST SURROUNDING GRADES TO BLEND INTO MANHOLE FRAME AND COVER. FRAME AND COVER TO REMAIN LEVEL.
2. NO CONNECTIONS FROM SANITARY LATERALS DIRECTLY TO MANHOLE.



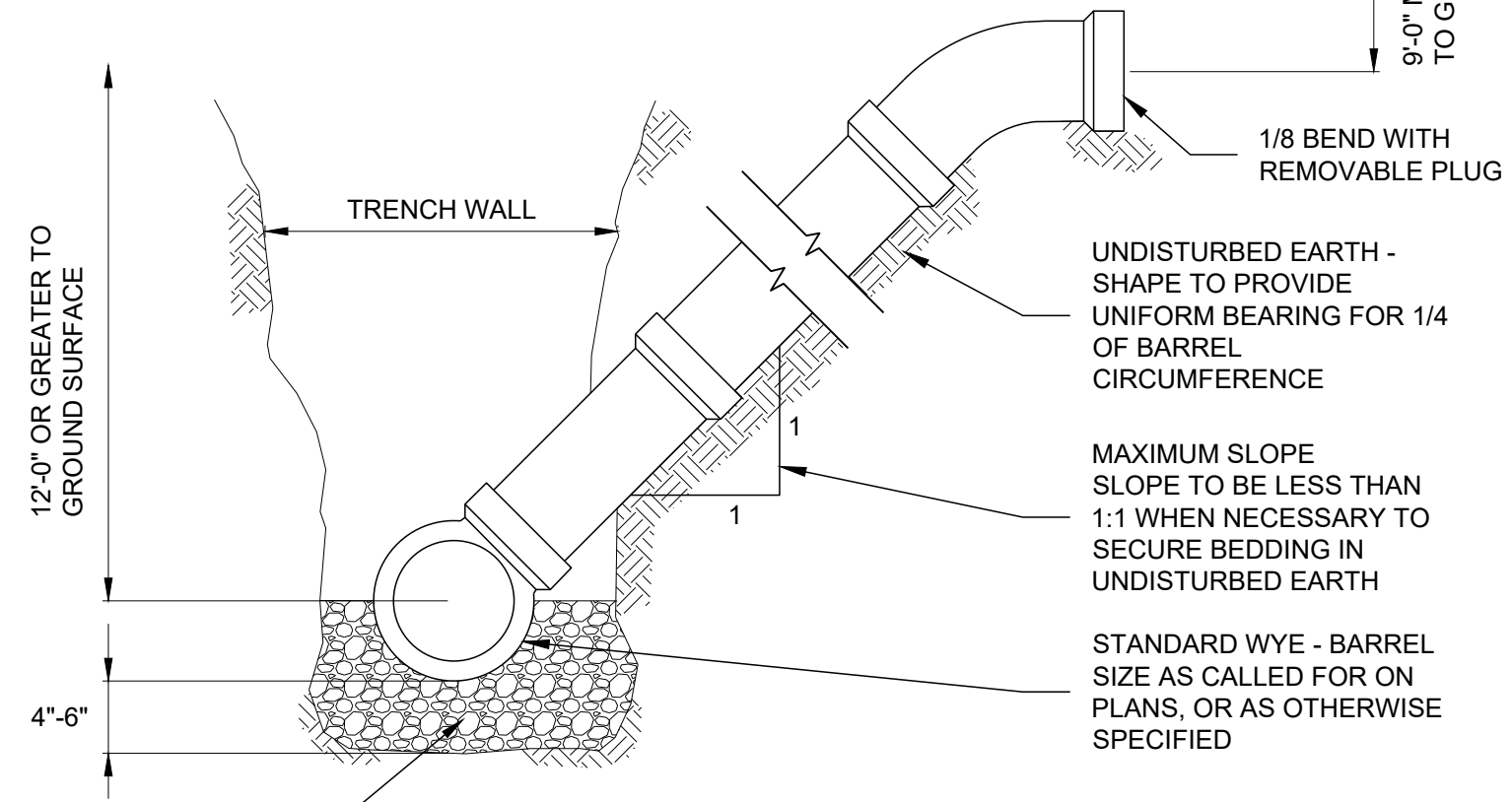
STANDARD SANITARY MANHOLE DETAIL

NTS



PLAN

9'-0" MAXIMUM TO GROUND SURFACE



SECTION

12'-0" OR GREATER TO GROUND SURFACE

TRENCH WALL

1/8 BEND WITH REMOVABLE PLUG

UNDISTURBED EARTH - SHAPE TO PROVIDE UNIFORM BEARING FOR 1/4 OF BARREL CIRCUMFERENCE

MAXIMUM SLOPE SLOPE TO BE LESS THAN 1:1 WHEN NECESSARY TO SECURE BEDDING IN UNDISTURBED EARTH

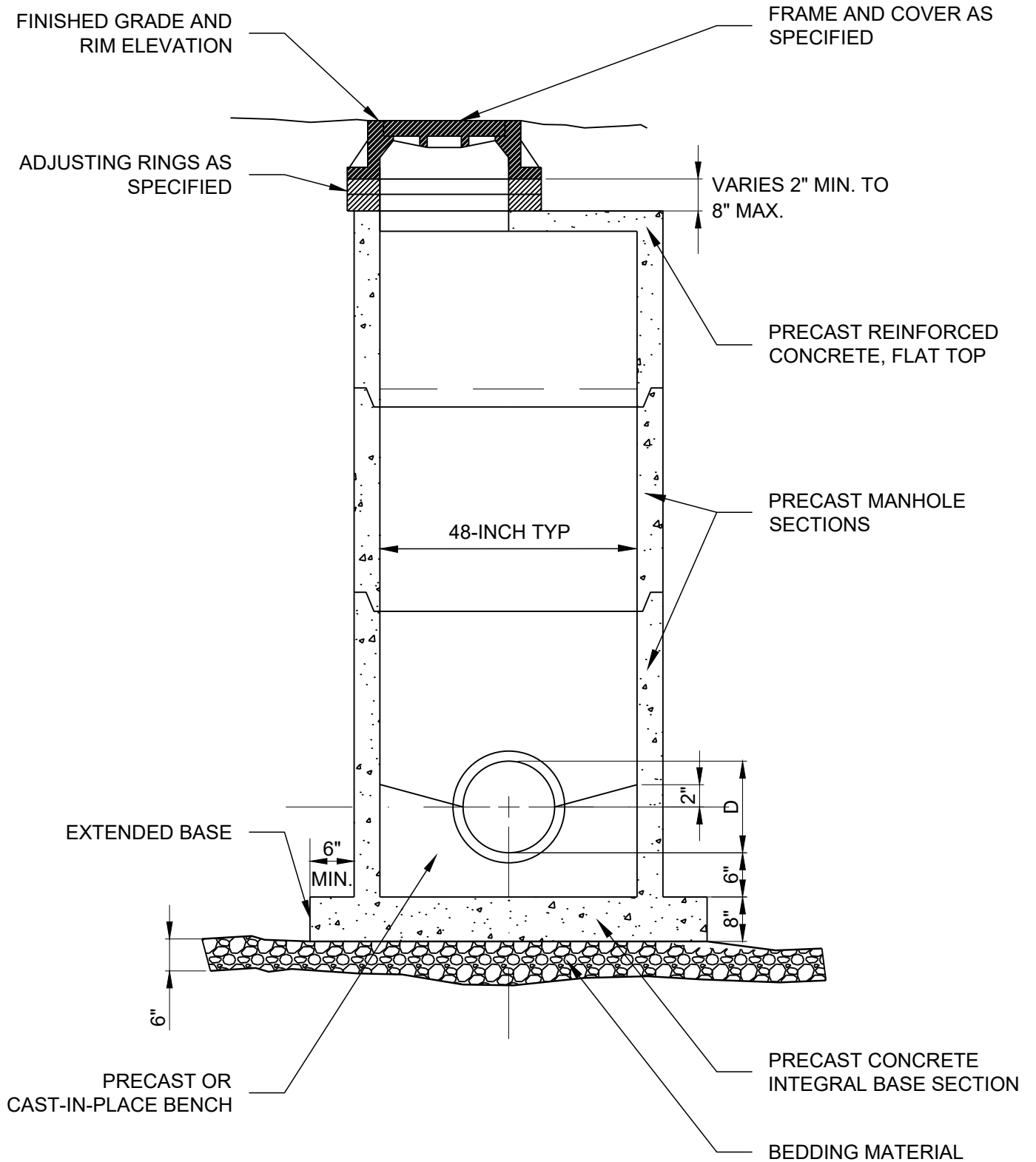
STANDARD WYE - BARREL SIZE AS CALLED FOR ON PLANS, OR AS OTHERWISE SPECIFIED

COMPACTED GRANULAR BEDDING & HAUNCHING

STANDARD SEWER RISER DETAIL

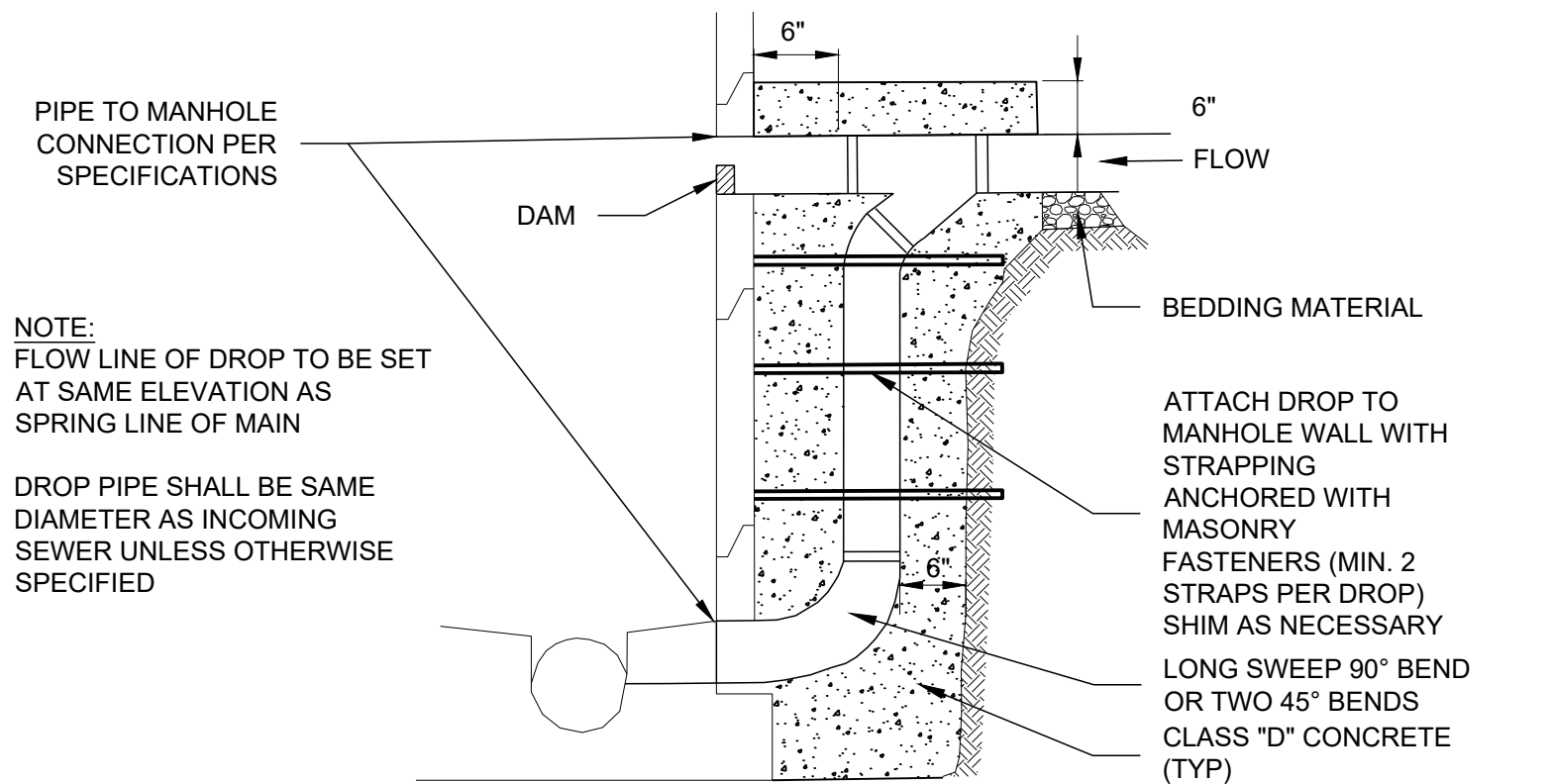
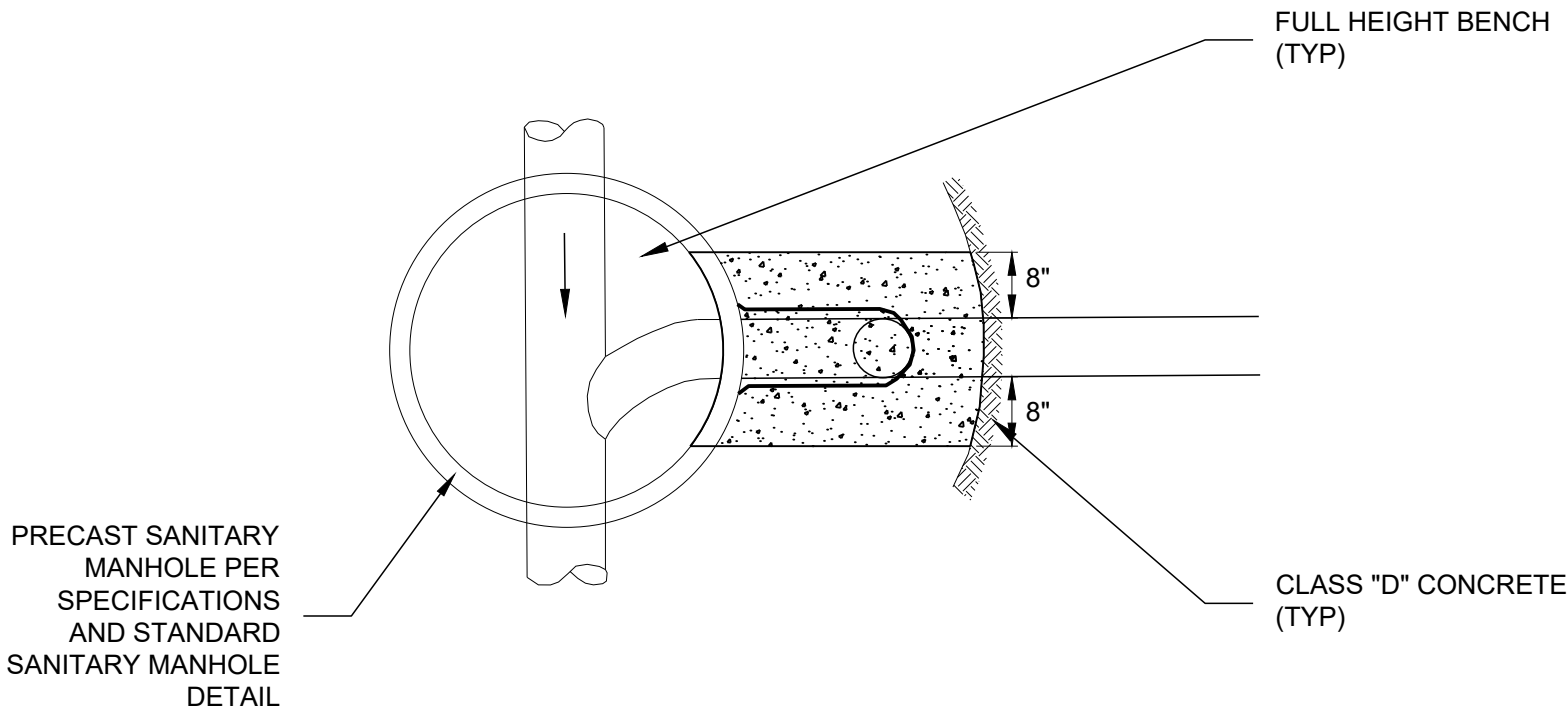
NTS

NOTE:
CONTRACTOR SHALL ADJUST SURROUNDING GRADES TO BLEND INTO MANHOLE FRAME AND COVER. FRAME AND COVER TO REMAIN LEVEL.



STANDARD STORM MANHOLE DETAIL

NTS



STANDARD OUTSIDE DROP MANHOLE DETAIL