



# Ferdinand Wastewater Treatment Collection System Specifications

Revised December 2020

The Followings Specifications can be revised from time to time without notice. Engineers and Contractors shall talk to the Wastewater Superintendent as to changes and submittals prior to construction to make sure specifications have not changed.

## General Sewer Construction

### Description of Work

- A. Sanitary sewer mains as shown on plan and profile sheet.

### Excavation and Grading

Excavating shall be as indicated on the plan and profile sheet to lines, grades, and elevations shown. All grades and elevations shall be done with a pipe laser.

If rock is encountered, then rock shall be removed to a point of 6 inches below pipe and bedded with number 8 crushed limestone. The final rock grade shall be 6" above the pipe crown. Under Town Streets rock shall be installed to full grade and must extend 4 foot past the curb and gutter.

Trench excavation with 8" pipe will be 24" wide following 10 State Standards.

Adequate and proper shoring of all excavations shall be the responsibility of the contractor, and they shall provide barricades, signs, fencing, etc. to protect trenches.

### Pipe laying, Bedding and Backfilling

Pipe shall be laid accurately to the lines and grade as shown on the plans and profile sheet. Pipe laying shall proceed up-grade, beginning at the lower end of the sewer with an laser.

All sewer pipe will be put to grade on a minimum of 4" of number 8 crushed limestone rock. There shall be no voids under or around the pipe. The pipe shall have a minimum of 6" of number 8 crushed limestone above the pipe crown. If the rock is encountered during excavation, a minimum of 6" of number 8 crushed limestone will be used under the pipe.

No materials shall be used as backfill that contains stone having a dimension greater than 2 inches, nor shall debris, rock, broken concrete, balcktop, wood be used.

All pipe laying shall be in accordance with ASTM D-2321.

The sanitary sewer line shall be separated from a water line with 18" vertical and 10 feet horizontal clearance.

### **Vertical Separation**

If the 18" vertical separation is not practical the crossing shall be arranged so that the sewer joints will not be equal distant and as far as possible from the water main joints. The contractor shall follow the latest Ten States Standards manual recommendation.

### **Horizontal Clearance**

Horizontal clearance shall be at least 10 feet. If this is not practical the design engineer may require construction of a slip on or mechanical joint pipe complying with public water supply design standards of the agency and be pressure tested to 150 psi (1034kpa) to assure watertightness before backfilling.

### **Stream Crossing**

All materials and construction shall be in accordance with INDOT specifications, and in Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, and must comply with all requirements of the permit as issued by IDEM and Town of Ferdinand Specifications.

The top of all sewers entering or crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general, the following cover requirements must be met:

- a. One foot of cover where sewer is located on rock;
- b. Three feet of cover in other material. In major streams, more than 3 feet of cover may be required; and
- c. In paved stream channels, the top of the sewer line should be placed below the bottom of the channel pavement.

The pipe segment is composed of a material not subject to damage from freezing, such as ductile iron. PVC piping encased in concrete will not necessarily be adequately protected.

### **Inspection**

When the job is in progress, the Town of Ferdinand will inspect and approve and/or reject any portion of the construction that has been performed even if there is a site inspector.

No portion of the work shall be covered prior the Town of Ferdinand's inspection or a field inspector selected by the Town. A 24 hour notice shall be given to the Wastewater Superintendent prior to the start of construction.

### **Air Testing**

All sewer pipe shall be tested according to 327 I.A.C. 3-5-3 (ASTM F-1417) for PVC pipe. The Town of Ferdinand shall be notified 48 hours in advance of testing. All testing shall be recorded and a copy of the report be given the the Wastewater Superintendent within 48 hours of the testing.

The forms will be provided by the Wastewater Superintendent if the contractor needs one. Prior to the Testing the wastewater personal will explain to the they are to follow the F-1417 requirements set by IDEM.

### **Deflection Testing**

All deflection testing shall be done according to 327 I.A.C. 3-2-3. Deflection testing will be performed 30 days after the final backfill has been in place.

No pipe shall exceed a deflection of 5%. If deflection exceeds 5%, replacement or correction shall be accomplished in accordance with requirements in the approved specifications.

The ridid ball or mandrel used for the deflection test shall have a diameter not less than 95% of the inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specifications, including the appendix, to which the pipe is manufactured. The test shall be performed without mechanical pulling devices.

### **Manhole Testing**

All manholes testing shall be in accordance with ASTM C1244-93, Standard Test Method for concrets Sewer Manholes by Negative Air Pressure (Vacuum) Test.

This test method is intended to be used as a preliminary test to enable the installer to demonstrate the condition of the concrete manholes prior to backfilling. It may also be used to test manholes after backfilling; however, testing should be correlated with the Town 48 hours in advance.

### **Maps**

Upon completion of the project, 3 sets of AS-Builts plans will be made to show the exact location of all cleanouts, Why's, elevations, grades, etc. These plans shall be given to the Town of Ferdinand within 30 days after the deflection testing is complete. All CAD Drawings and electric files shall also be given to the Town of Ferdinand with all changes.

### **Guarantee**

Work shall be guaranteed for 1 year from the date of acceptance ( after deflection testing has been completed). This guatantee will be on cleanouts, pipe, connections, backfilling, yard work, road patches, etc., and the workmanship associated with the installation of the sewer system.

The developer and/or contractor shall be responsible for requesting the Town to accept the sewer mains after the 1 year warranty period. This shall be done at a regular Town Council Meeting as to provide proof in the minutes recorded by the Town Clerk/Treasurer of the request. If this is not

recorded it will be the developer and/or the contractor's responsibility for any and all cost of upkeep and/or repairs of the sewer mains they installed.

## Sewer Specifications

### Sewer Pipe

All **sewer mains** shall be SDR-26 Heavy Wall Pipe and will comply with ASTM-D-3034 Specifications.

Sewer mains shall have a minimum depth of 48 inches and sewer mains shall be constructed to allow for basement connections.

**Home service lines** shall be SCH-40 pressure pipe with belled end. All fittings shall be SCH-40, ASTM-D-1785 & ASTM D-2665.

**(NO SDR-35 Pipe or fittings shall be allowed)**

Commercial and Industrial connections shall be 6" or larger in size

Home service connections can be either 4 or 6" in size.

### Connections

All new construction shall be sewer tees installed as the pipe are being laid. The service Tap than shall be brought to 3 feet above grade onevery lot proposed in the new sub-division. Fernco Flexible Saddles are only allowed with pre-existing sewer mains and must be approved prior to insulation by the Wastewater Superintendent. (No Inserta TEE shall be allowed in the collection system).

### Pipe Grade

4" = ¼ per foot

6" = 1/8" per foot

8" = 1/16" per foot

All service lines shall have a number 12 ga. Tracer wire **taped every 6 foot with 3 rounds of tape** to pipe. A 12 ga. Solid coated copper wire shall be secured along the pipe and brought 12" above grade next to the home and wire placed into a 1 inch PVC pipe and secured to the wall 12" above grade and the wire shall be extended 4" out of the PVC pipe. If the wire is to be spliced a water proof connectors shall be used.

On all new construction and sub-divisions every lot shall have the home service tap installed and brought 36" above grade for future homes. The pipe size will be determined at the time of construction. The pipe shall be capped with a PVC cap not glued.

### **Manhole Pipe Entry**

All manhole pipe entries that need to be installed other than casted in place shall be cored drilled and a sealed with a Pressed Seal Gasket (PSX Boot) or equal. (Link Seal Not Allowed)

**(Note No seams shall be cored. There shall be a minimum of 6" clearance above and below a seam of any manhole section)**

### **Manhole Pipe Connection**

All manhole pipe connections shall be either Pressed Seal Gasket (PSX) provided with 2 Stainless Steel Bands per connection, A-Loc or equal too.

Grouting shall be around all incoming and out going pipe connections in the inside of manholes.

### **Manhole Sections and Jointing**

Manhole barrel sections and bases shall be precast and be in accordance with ASTM 478-72 or equal too. The manhole mono base and sections shall have a water sealant such as Ipanex and/or a waterproof coating sprayed onto the exterior concrete manhole prior to shipping to site. This shall be done at the concrete MFG. not on the job site.

The manhole shall have a rock base of 12" under the mono base section. The rock shall be free of lime and shall be level prior to installing of base.

After the connecting pipes are placed, rock shall be placed 6" above the pipe crown.

All joints shall be have water proof Rx Sealant installed CS-231 sealant or equal.  $\frac{3}{4}$ " x 1" mastic sealant.

The contractor and/or plumber shall notify the Superintendent 24 hours in advance as to inspect the manhole prior to installation. The Superintendent will inspect the manhole structure and will let the contractor and/or plumber know if they pass and/or fail. The contractor and/or plumber shall be on site at time of inspection.

Any manholes sections or mono base having cracks or defects Shall be Rejected. The contractor shall have the rejected section removed from the job site ASAP and replaced at his expense.

### **Approved Manhole Manufactures**

Spencer Concrete

Thorn Orwick Concrete

M&W Concrete now Sherman Dixie Concrete

Other manhole manufactures need prior approval by Wastewater Superintendent

Due to progress, some materials that may be new to our area, the contractor and/or sub-contractors shall gain approval from the wastewater superintendent. No unapproved materials are to brought onto the job site. The contractor and/or sub-contractor shall provide all written information on the new

product they are seeking to use and shall give the information to the wastewater superintendent 10 days in advance or that product shall be rejected.

### **Concrete Riser Rings**

Concrete riser rings will be used to bring only the frame and lid to surface grade. (No more than 12" will be allowed per manhole. Contact Superintendent if adjustment can't be achieved.

Concrete riser rings shall be sealed with  $\frac{3}{4}$ " x 1" CS-231 or equal mastic sealant. The seal must overlap by 6" and be pressed together to form a water tight seal. All debris shall be removed from surface before sealant is installed. Must be kept clean at all times.

### **Steel Riser Rings**

Steel riser rings shall be used only to bring casting and lid to surface grade. No more than 8 inches shall be allowed.

### **Manhole Frame and Lid**

Frame and lid shall have all bearing surfaces machined, and shall be the same as the Town of Ferdinand castings.

- A> John Bouchard and Son Company (JBS) Number 1140 with a non-bolted lid with o-ring.
- B> NEENAH Number R-1530 with a non-bolted self-sealing lid with o-ring.
- C> East Jordan Iron Works Number 1022Z1 with a non-bolted water tight lid with o-ring.

**Note Before ordering any frame and lid, the contractor shall have the Wastewater Superintendent's approval.**

The frame shall be installed with  $\frac{3}{4}$ " x 1" mastic sealant (CS-231 or equal). No castings with bolt down holes allowed.

## **Please note;**

Due to progress, some materials may be new to our area, the contractor and/or sub-contractors shall gain approval from the water/wastewater superintendent. The Superintendent has all final say as to materials used. No unproved materials are to be brought onto the job site. The contractor and/or sub-contractor shall provide all written information on the new product they are seeking to use and shall give the information to the water/wastewater superintendent 10 days in advance of start of project or that product shall be rejected.

If Engineering specifications state other type of materials on project the Town of Ferdinand specifications are to be followed. Some engineering firms are not aware of our requirements or used the wrong or outdated specifications. Engineering firms and/or contractors shall follow Town specifications and talk to the water/wastewater superintendent as to current specifications. Some projects may have been designed years ago and not using the current specifications.

**NOTE; All older specifications written before 2020 are Voided from this date on. This has been Revised as of December 2020.**