

GRAND HAVEN CHARTER TOWNSHIP PUBLIC SERVICES DEPARTMENT

WASTEWATER CONNECTION SPECIFICATIONS

1. All work shall be completed in accordance with the plans and specifications and shall meet the approval of the Grand Haven Charter Township Public Service Department, the Grand Haven Township Plumbing Inspector, and the BOCA National Plumbing Code and amendments/Currently Adopted Edition.
2. A street cut permit, where necessary, shall be obtained from the Ottawa County Road Commission or the City of Grand Haven before any road cuts or crossings begin.

Application For Permit - P-111.0

1. Plumbing work shall not commence until a permit for such work has been issued. Application for a permit shall be made by the person, or agent, to install all or part of any plumbing system.
2. Submission and approval of plans and specifications in duplicate showing the nature and extent of the proposed work is required in specific instances. If in the course of the work, it is found necessary to make changes from the approved plans and specifications on which the permit has been issued, amended plans and specifications shall be submitted.

Where necessary, plans and specifications shall include a plan view showing the work. Such plans shall show the direction of flow, pipe sizes, and grade of horizontal piping.

It is the permittee's responsibility to contact the Public Services Director if there is **any** question whether plans and specifications should be submitted. Failure to do so may delay connection to the municipal sewer.

3. Submission of a site plan is required showing the location of water service and sewer connections, including sampling pit(s) where applicable, with respect to any building in which a plumbing system is to be installed.

Definitions - P-201.0

- Accessible:** *Accessible* when applied to a fixture, appliance or equipment shall mean having access thereto, but which first may require the removal of an access panel of similar obstruction.
- Building Drain:** That part of the lowest piping of a *drainage system* which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the *building sewer*.
- Building Sewer:** That part of the *drainage system* which extends from the end of the building drain and conveys its discharge to a public sewer.
- Cleanout:** An accessible opening in the drainage system used for the removal of obstructions.
- Drainage System:** Includes all the piping within a public or private premises which conveys sewage, rain water or other liquid wastes to a point of disposal. It does not include the mains of public sewer systems or a private or public sewage treatment or disposal plant.

Protection of Pipes - 308.0

1. Pipes passing under or through walls shall be protected from breakage. Any plumbing pipe passing under a footing or through a foundation wall shall be provided with a relieving arch or sleeve two pipe sizes greater than the pipe passing through the wall. Annular space between sleeves and pipes shall be filled with an approved caulking material.
2. *Building sewers* shall be a minimum of 36-inches below grade in non-traffic areas and a minimum of 5-feet below grade within areas of vehicular traffic.
3. Where trenches are excavated to grade such that the bottom of the trench forms the bed for the pipe, a solid and continuous bearing shall be provided between joints, and bell holes shall be provided at points where the pipe is joined, and the pipe shall not be supported on blocks to grade.

Where trenches are excavated below grade such that the bottom of the trench does not form a bed for the pipe, the trench shall be backfilled to grade with sand or fine gravel placed in layers of 6-inches maximum depth and compacted after each placement. The pipe shall not rest on rock at any point including the joints.

If soft materials of poor bearing qualities are found at the bottom of the trench,

stabilization shall be achieved by over-excavating a minimum of two pipe diameters and bring up to grade fine gravel or crushed stone or a concrete foundation. Such a concrete foundation shall be bedded with sand tamped in place so as to provide a uniform bearing for the pipe between joints.

4. Loose earth free of rocks, broken concrete or bituminous pavement, frozen chunks and other rubble, shall be placed in the trench in 6-inch layers and tamped in place. The backfill under and beside the pipe shall be compacted for pipe support. Backfill shall be brought up evenly on both sides of the pipe so that it retains alignment.

Building Sewer Pipe - 403.3

TABLE 1

| BUILDING SEWER PIPE | |
|---|---|
| Materials | Standard |
| Acrylonitrile butadiene styrene (ABS) plastic pipe ¹ | ASTM D2661; ASTM D2751; ASTM F628 |
| Asbestos cement pipe | ASTM C428 |
| Bituminized fiber pipe | ASTM D1861; ASTM D1862 |
| Cast iron pipe | ASTM A74; CISPI 301 |
| Concrete pipe | ASTM C14; ASTM C76 |
| Copper or copper alloy tubing (Type K or L) | ASTM B75; ASTM B88; ASTM B251 |
| Polyvinyl chloride (PVC) plastic pipe ¹ (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100) | ASTM D2665; ASTM D2949 ASTM D3034; ASTM F891 |
| Vitrified clay pipe | ASTM C4; ASTM C700 |

1. When the *building sewer* is installed in the same trench as the water service as provided in the "Sewer and Water Separation" section, the building sewer pipe shall conform to one of the standards for ABS plastic pipe, cast iron pipe, copper or copper alloy tubing, or PVC plastic pipe listed in Table 1.
2. When a *building sewer* is installed on filled or unstable ground, the drainage pipe

¹Thermoplastic sewer pipe shall be installed in accordance with ASTM D2321

shall conform to one of the standards for ABS plastic pipe, cast iron pipe, copper or copper alloy tubing, or PVC plastic pipe listed in Table 1.

3. Existing *building sewers* and *drains* shall connect with new *building sewer* and *drainage systems* only when found by examination and test to conform to the new system in quality of material.

Pipe Fittings - 405.1

TABLE 2

| PIPE FITTINGS | |
|------------------------|--|
| Materials | Standard |
| Cast iron | ASME B16.4; ASME B16.12 |
| Copper or copper alloy | ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29; ASME B16.32; |
| Plastic | ASTM D2464; ASTM D2466; ASTM D2467; ASTM D2468; ASTM D2609; ASTM F409; ASTM F437;ASTM F438;ASTM F439; |
| Steel | ASME B16.9; ASME B16.11; ASME B16.28 |

Drainage Piping Installation - 602.2

1. Horizontal drainage piping shall be installed in uniform alignment at uniform slopes. The minimum pitch of a horizontal drainage pipe shall be in accordance with Table 3.

TABLE 3

| PITCH OF HORIZONTAL DRAINAGE PIPE | |
|-----------------------------------|-------------------------------|
| Size (inches) | Minimum pitch (inch per foot) |
| 2 ½ or less | 1/4 |
| 3 to 6 | 1/8 |
| 8 or larger | 1/16 |

Fittings and Connections - 603.0

1. All connections and changes in direction of the sanitary drainage system shall be made with approved drainage-type fittings. The fittings shall not obstruct or retard the flow.
2. Fittings shall be installed to guide sewage and waste in the direction of flow. Changes in direction shall be made by fittings installed in accordance with Table 4. Changes in direction by combination fittings, side inlets, increasers, or reducers shall be installed in accordance with Table 4 based on the pattern of flow created by the fitting. Double sanitary tee patterns shall be prohibited from receiving the discharge of blowout fixtures and fixtures or appliances with pumping action discharge.

TABLE 4

FITTINGS FOR CHANGE IN DIRECTION

| Type of fitting pattern | Change in direction | | |
|---------------------------------|------------------------|------------------------|--------------------------|
| | Horizontal to vertical | Vertical to horizontal | Horizontal to horizontal |
| Sixteenth bend | X | X | X |
| Eighth bend | X | X | X |
| Sixth bend | X | X | X |
| Quarter bend | X | | |
| Short sweep | X | X | |
| Long sweep | X | X | X |
| Sanitary tee | X | | |
| Wye | X | X | X |
| Combination wye and eighth bend | X | X | X |

Pipe Cleanouts - 1100.0

1. All *building sewers* shall have *cleanouts* located not more than 100-feet apart.
2. Accessible *cleanouts* shall be installed at each change of direction of the *building drain* or of horizontal waste or soil lines, which is greater than 45 degrees (0.79 rad.)
3. There shall be a *cleanout* at the junction of the *building drain* and the *building sewer*. This clean out shall be either inside or outside the building wall and shall be brought up to finish grade or to the basement floor level. The *cleanout* at the junction of the *building drain* and the *building sewer* shall not be required if the *cleanout* on a 3-inch or larger diameter vertical soil stack is located within 10-feet of the *building drain* and *building sewer* connection.
4. Buildings sewers 10-inches in diameter or larger shall have approved manholes for cleanouts. Manholes shall be located at every change of direction, elevation, grade

and size of the building sewer and at intervals not more than 400 feet.

Sewer and Water Separation - 1502.2

1. Water service pipe and the *building sewer* shall be separated by undisturbed or compacted earth.
2. The water service pipe shall only be placed in the same trench with the *building drain* and *building sewer* when installed in accordance with the following requirements:
 - a) The bottom of the water service pipe at all points shall be a minimum of 12 inches above the top of the *building drain* and *building sewer* at its highest point. When the water line is **less than** 12 inches above the top of the *building drain* and *building sewer* at its highest point, a minimum of 10' of separation is required between the *building drain* and *building sewer* and the water service pipe.
 - b) The water service pipe shall be placed on a solid shelf excavated at one side of the common trench.
3. Where the water service pipe crosses the *building drain* and *building sewer*, the bottom of the water service within 10 feet of the point of crossing shall be at least 12 inches above the top of the *building drain* and *building sewer*.

Sampling Manholes

A sampling manhole is required on building sewer installations for all industrial/commercial applications. The sampling manhole shall be constructed of concrete and be a minimum of four (4) feet in diameter. The manhole shall have rubber boots installed where the pipe(s) enter and/or exits the structure. Manhole steps shall be installed at 16" intervals from the top to the bottom of the structure. The top opening shall have a minimum of a 24" diameter opening and shall be covered with a cast iron casting and cover. The cover shall be constructed without holes and meet finish grade upon completion of the project. A proper traffic bearing cover (similar in design to an E.J.I.W. 1140 casting and cover) shall be required when the manhole is installed in a traffic area (parking lot or driveway).

The flow channel within the manhole shall be constructed from a full length of pipe the same diameter or larger than the building sewer. Joints shall not be installed inside a sampling manhole. The top half of the pipe shall be removed so as to expose an open flow channel the full length of the manhole. The outside of the pipe shall be filled with mixed concrete. The concrete shall be flush with the top edge of the pipe flow channel and shall

taper at no less than $\frac{1}{4}$ " of rise per foot toward the outside edges of the manhole. The concrete shall be troweled to a smooth finish.

The building sewer shall be installed so that there is a minimum of ten (10) feet of straight pipe ahead (up stream) of the sampling manhole. This ten (10) feet run of pipe shall be the same diameter as the pipe used for the construction of the flow channel within the manhole.

Testing

The *building sewer* shall be tested by insertion of a test plug at the point of connection with the public sewer. The *building sewer* shall then be filled with water under a head of not less than 10-feet (4.33 PSI). The water level at the top of the test head of water shall not drop for at least 15 minutes.

An alternate test method would entail inserting test plugs in all portions of the *building sewer* and pressurizing the piping to a pressure of not less than 4.33 PSI. The pressure in the pipe shall not drop for at least 15 minutes.