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Connection Manual

for

Systems Operated

by the

MHOG Utility Department

Adopted January 2015
Amended February 2017
Amended March 2019
Amended November 2022

Marion Howell Oceola Genoa
Sewer & Water Authority
2911 Dorr Road · Brighton, MI 48116 · Ph: 810-224-5835 Fax: 810-227-3420

Water Meter / Connection Fee Form

Note: *Prior to completing this form, perform the attached checklist to determine if MHOG connection fees are applicable*

Date:_____ Township:_____ Subdivision:_____

Site Address/Location:_____

Property Tax Code:_____ Permit Number:_____

Owner's/Developer's Name: _____ Phone Number:_____

Sewer Hook Up Only: _____ Connections (REUs): _____ Meter Size:_____

Assess charges if the following statement is true (further definition on attached checklist):

☐ 1	Main Meter Package Purchase	Meter Package Fee	$_____
☐ 2	Irrigation Meter Package Purchase *Stand Alone Irrigation Meters require an MXU @ Main Meter Price*	Irrigation Meter Fee **Horn Picked Up: Yes No N/A**	$_____
☐ 3	New Construction of Single Family Home – Water	Flushing Fee	$_____
☐ 4	New Construction of Single Family Home – Sanitary Sewer	Sewer Clean Out	$_____
☐ 5	Replacement Meter Horn		$_____
☐ 6	MHOG Water Connection Fee (Footnote 1)	MHOG Connection Fee	$_____
☐ 7	Township Water Connection/Tap Fee	Township Water	$_____
☐ 8	Township Sewer Connection/Tap Fee	Township Sewer	$_____
☐ 9	Other Twp. Fees are applicable to this site *(Example: Land Use)*	Other Fees	$_____

☐ Cash ☐ Check #_____

CUSTOMER TOTAL **$**_____

TOWNSHIP USE ONLY

Check Payable to GCT Meter Fund (Add Lines 1, 2, 3, 4 & 5)	**$**_____
Check Payable to MHOG Connection Fee Account (Line 6)	**$**_____
Balance remaining to Township (Add Lines 7, 8 & 9)	**$**_____
Total (Match Customer Total Above)	**$**_____

Acknowledgement Section

New Meter Package Requirements: A plumbing permit from Livingston County Building Dept. is required for the installation of water meters. **Their phone number is 517-546-3240.** *You, the applicant*, must contact **MHOG Utility Department at 800-881-4109** to schedule a meter installation appointment. *The curb stop must be clearly marked and at finished grade prior to setting the meter. A repeat trip fee will be charged if site conditions prevent the meter from being set.*
Irrigation Meter Package Requirements: You must have the PVB (pressure vacuum breaker) installed and certified by a licensed master plumber.

Applicant's Signature: _____

Footnote 1: The MHOG Water connection Fee is $3,500 per Residential Equivalent Unit and is separate from, and in addition to, the water connection fee of the Township. The fee is paid to the Township and then remitted to MHOG.

MARION HOWELL OCEOLA GENOA

Sewer and Water Authority

2911 Dorr Rd., Brighton, MI 48116
Ph: 810-227-5225
Fax: 810-227-3420

2025
Water Meter Package Cost for 1st Meter with MXU

Meter Type	Cost
¾ - Inch IPERL	$706
1"IPERL	$846
1 ½" OMNI	$2394
2" OMNI	$2700
3"OMNI	$3660
4"OMNI	$5952

*Additional Meter for Irrigation

Meter Type	Cost
¾ - Inch IPERL w/o PVB	$498
1- Inch IPERL w/o PVB	$558
1.5- Inch OMNI w/o PVB	$2106
2 - Inch OMNI w/o PVB	$2412

***Stand Alone Irrigation Meters require an MXU and therefore are sold at the Main Meter Price**

PVB – PRESSURE VACUUM BREAKER

ADDITIONAL METER HORN (REPLACEMENT) COST IS

Meter Size	Cost
¾"	$136
1"	$216

****NEED TO ADD THE NEW USER WATER FEE (50.00) IN ON ALL LAND USE PERMITS FOR MHOG****
*****PRICES SUBJECT TO CHANGE*****

Revised 12/30/24

EASEMENT GRANT

For and in consideration of One Dollar ($1.00), the receipt of which is hereby acknowledged.

_____, _____, Michigan (Grantor(s)) hereby grant(s) and convey(s) to the Genoa Charter Township, 2911 Dorr Road, Brighton, Michigan 48116 (Grantee), an easement for the purposes of the construction, installation, maintenance, repair, alteration, inspection, operation and testing of public utilities including sanitary sewers, storm sewers, and water mains in, on, and under any private or public drives, streets or roadways used as access for property ("Property") located in the Township of Genoa, Livingston County, Michigan as particularly described in ***Exhibit A***.

Grantor(s) further grant and convey an easement to install and maintain feedlines, electrical service, and grinder pumps relating to sanitary service in, on and under the Property ("Grinder Pump Easement"). The easement is more specifically described as a parcel of land 15 feet wide over and upon the Property, which is measured 7.5 feet on each side of the center of the sewer system improvements as constructed pursuant to this agreement, except for electrical service liens where the easement shall be 10 feet wide, measured 5 feet on each side of the center of the electrical service liens.

Any construction, maintenance, replacement or any other activities incident to this Easement Grant shall be performed by the Authority, its agents, employees, or assigns so as not to unreasonably interfere with the reasonable use of the easement area by the Grantor(s) and without cost to Grantor(s). Grantor(s) shall not construct any new buildings or improvements on the easement premises or otherwise use the property in such a way as would interfere with the easement rights of the Grantee.

Upon completion of the construction, maintenance, replacement, repairs, or any other activities by the Grantee within the scope of the easement, Grantee will restore the Property to the same condition as it was prior to such construction, maintenance, replacement, repairs, or other such activity and without cost to the Grantor(s). Grantee shall have the right at all times to go upon and use the easement for all purposes set forth in this Easement Grant.

Grantor(s) release(s) Grantee from any and all damages and claims, alleged or real, suffered by Grantor(s) by reason of any diminution to the value of the Property arising out of this Easement Grant, or on account of the drain or drains or water mains to be constructed. Grantee agrees to indemnify, defend, and save and hold Grantor(s) harmless from losses or damages for personal injury and property arising out of claims made by third persons caused by the activities contemplated by this Easement Grant of the Grantee and/or its contractors or agents.

Furthermore, the Grantor acknowledges that service, inspection, testing, repairs or maintenance of public utilities including sanitary sewers, storm sewers, and water mains, feedlines, electrical service, and grinder pumps relating to sanitary service in, on and under the Property may require Grantee and its employees or contractors to go upon areas outside of this easement. Grantor gives permission to Grantee's employees or contractors to go upon areas outside of this easement for the purpose of performing such service, inspection, testing, repairs or maintenance. Grantee agrees to restore any such area outside of this easement to the condition it was immediately before Grantee's employees or contractors went upon such areas.

This Easement Grant shall be binding upon and inure the benefit of the parties herein, their respective heirs, representatives, successors, or assigns. Whenever used herein, the plural nouns or pronouns shall include the singular.

SIGNED:

_____

_____

STATE OF MICHIGAN)
) SS
COUNTY OF LIVINGSTON)

On this _____ day of _____, 20__, before me a Notary Public in and for said County, State of Michigan, personally appeared _____ who being by me duly sworn, and which executed the within instrument acknowledged that he/she/they executed the same as his/her/their free act and deed.

_____
Notary Public
Livingston County, Michigan
My commission expires:

DRAFTED BY &
ONCE RECORDED PLEASE RETURN TO:
Genoa Charter Township
2911 Dorr Road
Brighton, MI 48116

Exhibit A

Legal
Description

2025 Grinder Pump Fee Table

Item #	Part	Customer Price
1	D001B14B10BG Simplex Chamber, Cover, 54" Bury Depth, 32' cable w/out pump	**$2,540**
2	DH071-93 Simplex Chamber, Cover, Sentry Panel, 54" Bury Depth, 32' cable including pump. DH071-124 with special approval	**$6,380**
3	D200A01A01AA Extreme Pump	**$4,030**
4	NC0047G01 Extreme Series 2' Extension w/ band clamp and cover shroud, no lid	**$840**
5	NC0047G03 Extreme Series 4' Extension w/ band clamp and cover shroud, no lid	**$940**
6	9615 Replacement Lid 2000	**$110**
7	SA1A010B0AA Simplex 240 V Sentry Control Panel	**$580**
8	ND0036G07 Extreme Cable 50'	**$300**
9	ND0036G08 Extreme Cable 75'	**$380**
10	ND0036G09 Extreme Cable 100'	**$460**
11	Ballast Block	**$780**
12	Construction Escrow	**$6,250**

As part of construction, Is property owner relocating Grinder Pump Chamber?

If Yes – Property Owner Will Need to Purchase the Following Items:

Grinder Pump Chamber (Item #1 Above)
Control Panel (Item #8 Above)
The Grinder Panel includes 32' of cable, additional cable may be required (Item #8, #9 & #10 Above)

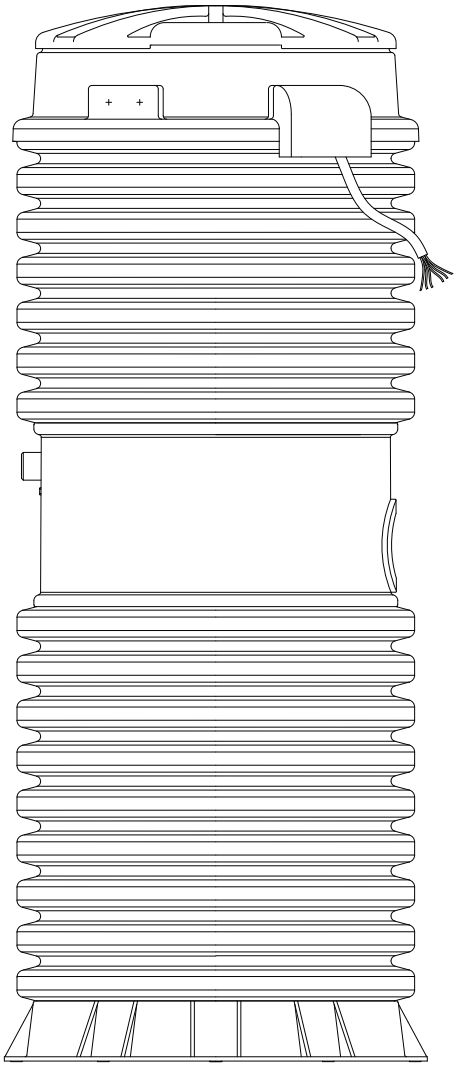
If No – Property Owner Will Need to Purchase the Following Items:

Control Panel (Item #8 Above)
The Grinder Panel includes 32' of cable, additional cable may be required (Item #8, #9 & #10 Above)

Note: The property owner must protect the existing pump chamber during construction activities. If the existing chamber is damaged, a new one will need to be purchased – Item #1 above

All other items shown Above are charged if the municipality has to replace the item due to damage, and are assessed on a case by case basis.

E/ONE EXTREME SERIES



DH071 & DR071 Typical Installation Instructions & Warranty Information

Simplex Station
70-Gal. Capacity

Environment One Grinder Pump Feature Identification

1. GRINDER PUMP BASIN – High density polyethylene (HDPE).

2. ACCESSWAY COVER – HDPE

3. ELECTRICAL QUICK DISCONNECT (EQD) – Cable from pump core terminates here.

4. POWER AND ALARM CABLE – Circuits to be installed in accordance with local codes.

5. ALARM PANEL – NEMA 4X enclosure. Equipped with circuit breakers. Locate according to local codes.

6. ALARM DEVICE – Every installation is to have an alarm device to alert the homeowner of a potential malfunction. Visual devices should be placed in very conspicuous locations.

7. INLET – EPDM grommet (4.5” ID). For 4.5” OD DWV pipe.

8. WET WELL VENT – 2.0” tank vent, supplied by factory in units with accessways.

9. GRAVITY SERVICE LINE – 4” DWV, (4.5” OD). Supplied by others.

9a. STUB-OUT – 4” X 5’ Long **watertight** stub-out, to be installed at time of burial unless the gravity service line is connected during installation. Supplied by others.

10. DISCHARGE VALVE – 1-1/4” Female pipe thread.

11. DISCHARGE LINE – 1-1/4” Nominal pipe size. Supplied by others.

12. CONCRETE ANCHOR – See Ballast Calculations for specific weight for station height. Supplied by others.

13. BEDDING MATERIAL – 6” minimum depth, round aggregate, (gravel). Supplied by others.

14. FINISHED GRADE – Grade line to be 1” to 4” below removable lid and slope away from the station.

15. VENT – Indoor installation. See section 6, Venting, on page 6.

16. VALVE – Full ported ball valve. Recommended option; for use during service operations. Supplied by others.

17. CONDUIT – 1” or 1-1/4”, material and burial depth as required per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7. Supplied by others.

18. UNION – 1-1/4” or compression type coupling. Supplied by others. (Do not use rubber sleeve and hose clamp type coupling.)

19. VALVE – Ball valve, must provide a full-ported 1-1/4” round passage when open. Supplied by others.

20. REBAR – Required to lift tank after ballast (concrete anchor) has been attached, 4 places, evenly spaced around tank.

Figure 1a

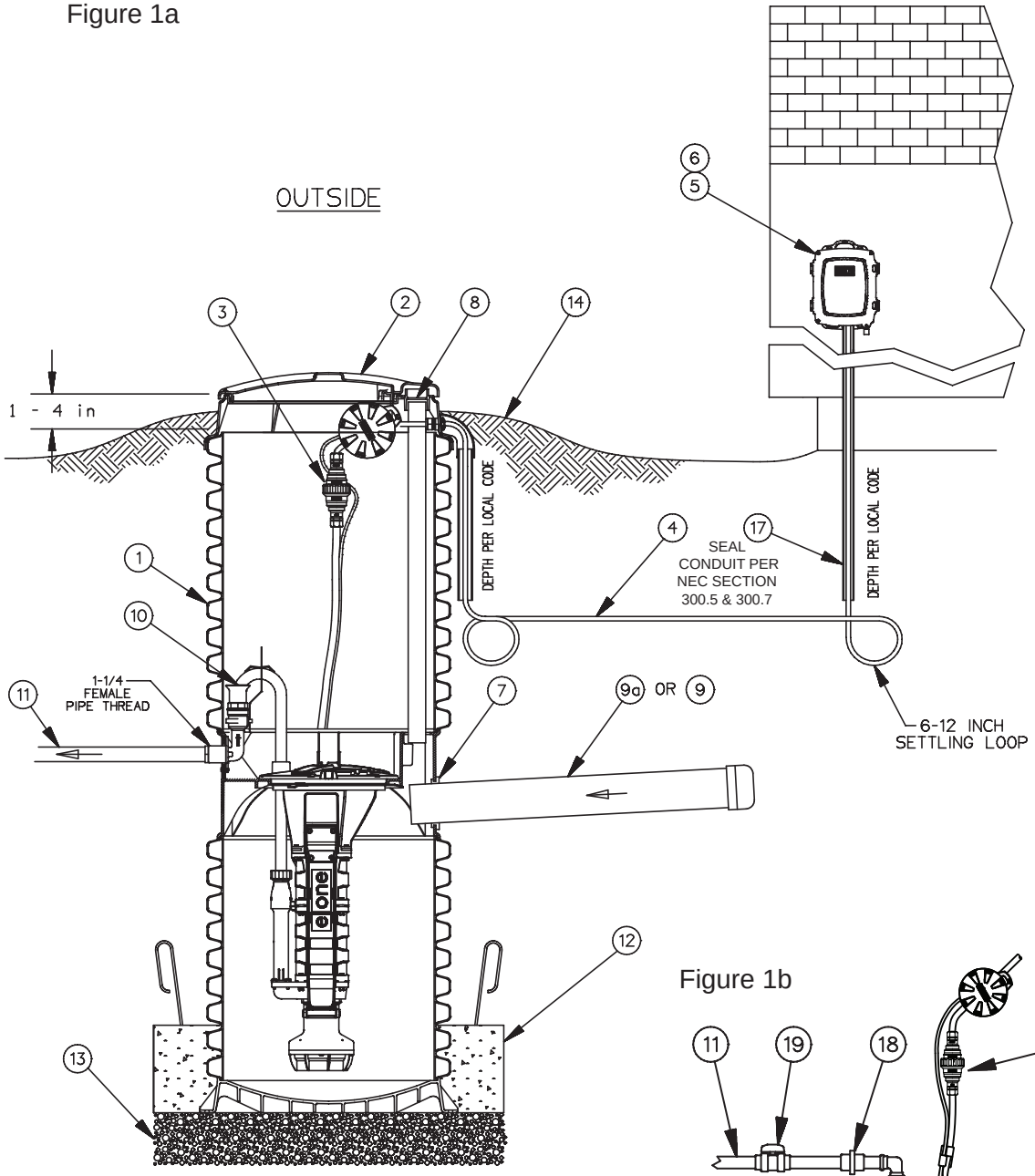
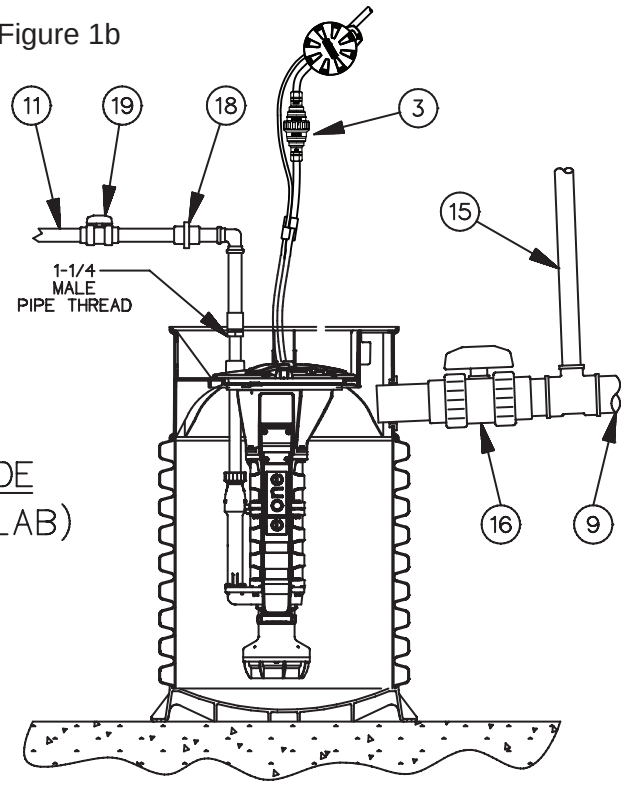


Figure 1b



FAILURE TO COMPLY WITH INSTALLATION INSTRUCTIONS WILL VOID WARRANTY

The Environment One grinder pump is a well-engineered, reliable and proven product; proper installation will assure years of trouble-free service. The following instructions define the recommended procedure for installing the grinder pump station. These instructions cover the installation of units with and without accessways.

This is a sewage handling pump and must be vented in accordance with local plumbing codes. This pump is not to be installed in locations classified as hazardous in accordance with National Electric Code, ANSI / NFPA 70. All piping and electrical systems must be in compliance with applicable local and state codes.

1. REMOVE PACKING MATERIAL: The User Instructions must be given to the homeowner. Hardware supplied with the unit, if any, will be used at installation.

2. TANK INSTALLATION: The tank is supplied with a standard grommet for connecting the 4” DWV (4.50” outside dia.) incoming sewer drain. Other inlet types and sizes are optional (Caution: 4” DR-35 pipe has a smaller diameter and won’t create a watertight joint with the standard grommet). Please confirm that you have the correct inlet before continuing. If concrete ballast is attached to the tank, lift only by the lifting eyes (rebar) embedded in the concrete. **Do not drop, roll, or lay tank on its side. This will damage the unit and void the warranty.**

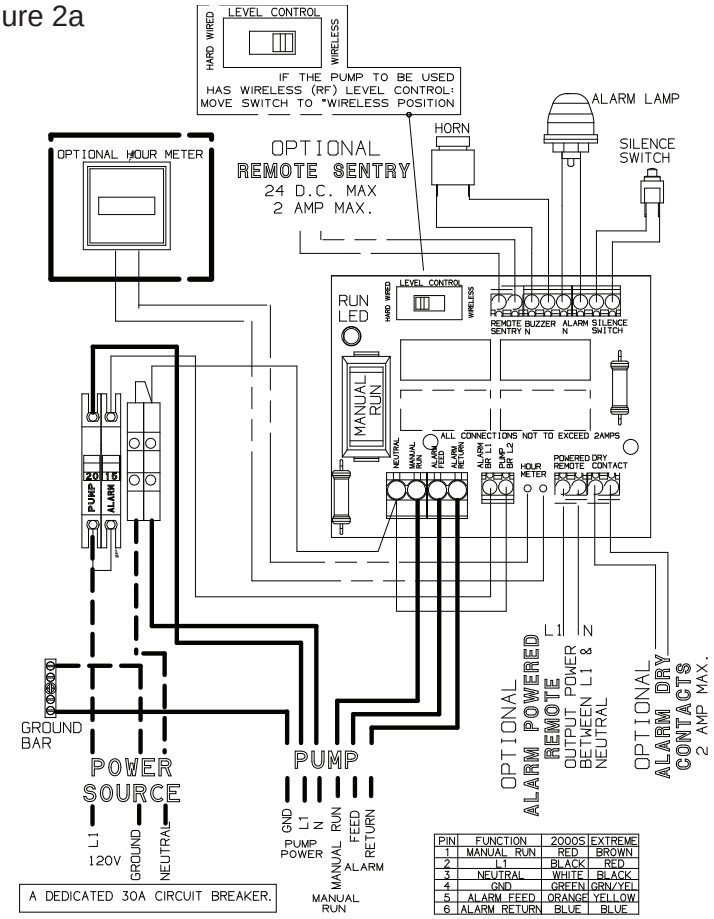
• If the tank has no accessway (Fig. 1b) (Indoor Installation): The pump may be installed on or in the basement floor (see Fig. 1b). If the tank is to be set on the floor, it must be a flat and level bearing surface. If the tank is to go into the basement floor, it must be anchored to prevent unit from floating due to high ground water (see Chart 1, page 13 for weight).

• If the tank is to go in the floor: A hole of the correct width and depth should be excavated. The tank must be placed on a 6” bed of gravel made up of naturally rounded aggregate, clean and free flowing, with particle size not less than 1/8” or more than 3/4” in diameter. The wetwell should be leveled and filled with water prior to pouring the concrete to prevent the tank from shifting. If it is necessary to pour the concrete to a level above the inlet, the inlet must be sleeved with an 8” tube before pouring.

There must be a minimum clearance of three feet directly above the tank to allow for removal of the pump.

• If the tank has an accessway (Fig. 1a): Excavate a hole to a depth so that the removable cover extends above the finished grade line. The grade should slope away from the unit. The diameter of the hole must be large enough to allow for a concrete anchor. Place the unit on a bed of gravel, naturally rounded aggregate, clean and free flowing, with particles not less than 1/8” or more than 3/4” in diameter. The concrete

Figure 2a



120 VOLT WIRING

anchor is not optional. (See Chart 1 on page 13 for specific requirements for your unit.)

The unit should be leveled and the wetwell filled with water to the bottom of the inlet to help prevent the unit from shifting while the concrete is being poured. The concrete must be vibrated to ensure there are no voids.

If it is necessary to pour the concrete to a higher level than the inlet, the inlet must be sleeved with an 8” tube before pouring.

If your unit is a model taller than 93” it may be shipped in two sections, requiring field assembly. See Field Joint Assembly Instructions on page 9 for additional information.

3. INLET PIPE INSTALLATION: Mark the inlet pipe 3-1/2” from the end to be inserted. Inlet pipe should be chamfered and lubricated with a soap solution. Lubricate the inlet grommet with soap solution as well. Insert the pipe into the grommet up to the 3-1/2” mark. Inspect to ensure the grommet has remained intact and in place.

4. DISCHARGE: The use of 1-1/4” PVC pressure pipe Schedule 40 and polyethylene pipe SDR 11 or SIDR 7 are recommended. If polyethylene is chosen, use compression-type fittings to provide a smooth inner passage. It is recommended that a Redundant Check Valve Assembly (E/One part no. PC0051GXX) be installed between the pump discharge and the street main on all installations. Never use a ball-type valve as a check valve. E/One recommends the valve be installed as close to the public right-of-way as possible. Check local codes for applicable requirements.

CAUTION: *Redundant check valves on station laterals and anti-siphon/check valve assemblies on grinder pump cores should not be used as system isolation valves during line tests.*

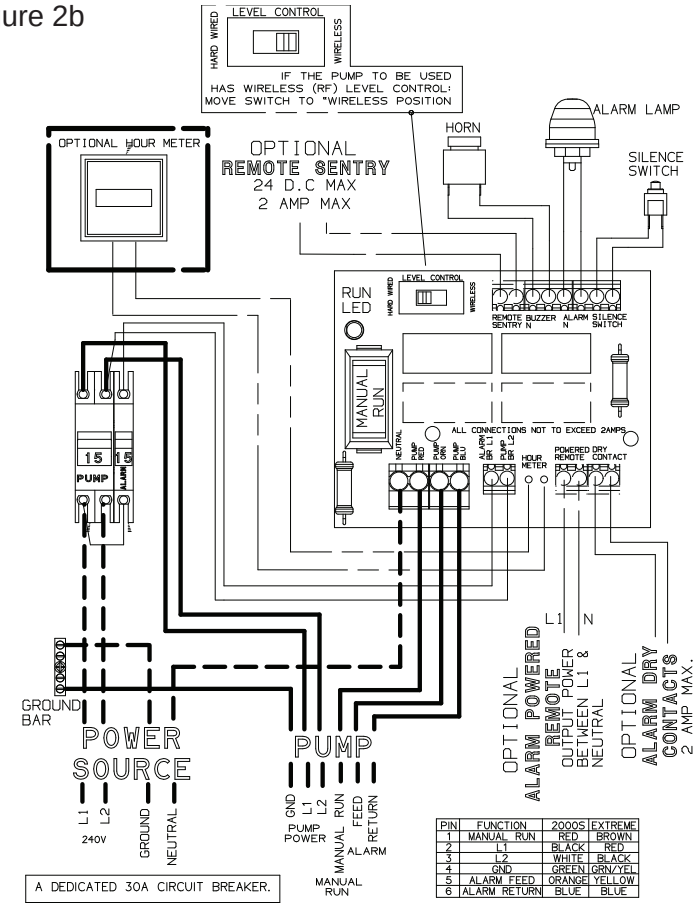
• **If the tank has no accessway: (Indoor Installation)** The discharge connection is 1-1/4” male NPT. The discharge piping must incorporate a shut-off valve and a union with a minimum pressure rating of 160 psi, or a suitable piping disconnect to allow for removal of the pump core. The valve should be of the type that provides a full-ported passage (i.e. a ball or gate valve). A standard 1-1/4” union or a compression type coupling should be used as a disconnect joint.

• **If the tank has an accessway:** There is a ball valve and a quick disconnect pre-installed in the accessway. There is a 1-1/4” female NPT discharge connection on the outside of the tank 41” above the bottom of the tank.

5. BACKFILL REQUIREMENTS: Proper backfill is essential to the long term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil conditions.

The recommended method

Figure 2b



240 VOLT WIRING

of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321. Class 1A and Class 1B are recommended where frost heave is a concern; Class 1B is a better choice when the native soil is sand or if a high, fluctuating water table is expected. Class I, angular crushed stone, offers an added benefit in that it needs minimal compaction. Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density.

If the native soil condition consists of clean, compactible soil with less than 12% fines, free of ice, rocks, roots, and organic material, it may be an acceptable backfill. Such soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density between 85% and 90%. Non-compactable clays and silts are **not** suitable backfill for this or any underground structure such as inlet or discharge lines. If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material be obtained before specifying backfill.

Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped with more than 4 feet between the discharge nozzle and the bottom of the hole because this can cause separation of the constituent materials.

6. VENTING: The unit must be properly vented to assure correct operation of the pump. If you have an indoor unit, it can be vented through the 2” port supplied at the top of the wetwell or through the incoming sewer line with a 2” pipe (the vent must be within 4 feet of the grinder pump, and before the first change of direction fitting).

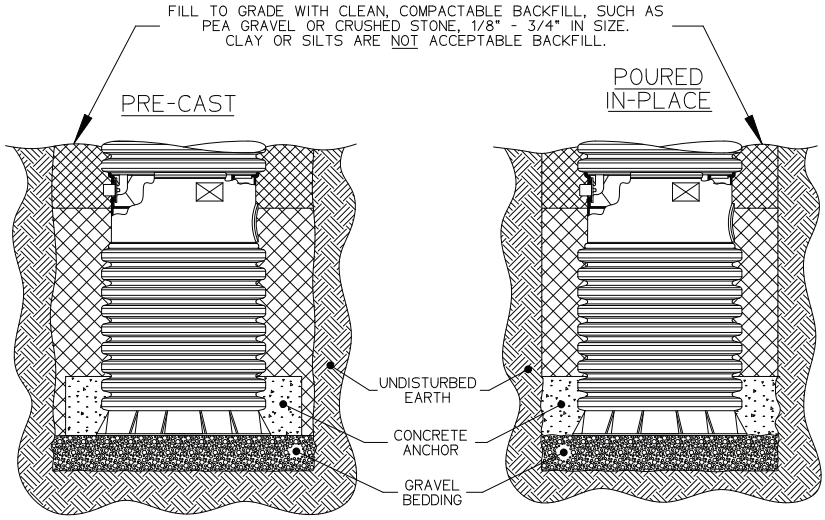
Outdoor units are supplied with a vent pipe from the wetwell to the top of the accessway. Failure to *properly vent* the tank will result in faulty operation and will void the warranty.

7. ELECTRICAL CONNECTION: (Supply panel to E/One Alarm Panel) Before proceeding, verify that the service voltage is the same as the motor voltage shown on the name plate. An alarm device is to be installed in a conspicuous location where it can be readily seen by the homeowner. An alarm device is required on every installation. There shall be no exceptions.

Wiring of supply panel and alarm panel shall be per Figures 2a and 2b, alarm panel wiring diagrams and local codes. A dedicated 30 amp breaker is required before all simplex alarm panels.

8. ELECTRICAL CONNECTION: (Pump to Panel) (Fig. 4) The grinder pump station is provided with a cable for connection between the station and the alarm panel (supply cable). The supply cable is shipped inside the station with a small portion fed through the cable connector mounted on the wall of the fiberglass shroud. The supply cable, a six conductor tray cable, meets NEC requirements for direct burial as long as a minimum of 24” burial depth is maintained. Those portions of the cable which have less than 24” of

Figure 3



TYPICAL IN-GROUND SECTION VIEW

cover must be contained in suitable conduit. This includes the vertical portion dropping to a 24” depth at the station and the length rising out of the ground at the control panel. *NOTE: Wiring must be installed per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7.*

8a. Installing E/One supply cable:

1) Open the lid of the station. Locate the cable and the feed-thru connector on the wall of the shroud. If the station has a field joint and was delivered in two pieces, be sure both halves of the EQD are securely assembled together. Loosen the nut on the connector and pull the supply cable out through the connector until it hits the crimped-on stop feature on the cable, approximately 24” from the EQD. ****IMPORTANT:** All but 24” of the cable must be pulled out of the station, and the EQD and Equalizer should be hung as high in the station as possible to ensure that the pump functions properly. Do <u>not</u> leave the excess cable in the station.*

2) Retighten the nut. This connection must be tight or ground water will enter the station.

3) Feed the wire through the length of conduit (contractor provided), which will protect it until it is below the 24” burial depth.

4) Position the conduit vertically below the cable connector along side of the station reaching down into the burial depth. Attach the small fiberglass guard (protective shroud) provided with the station to protect the exposed cable where it enters the station. Four self-tapping screws are provided.

5) Run the cable underground, in a trench or tunnel, to the location of the alarm panel. Leave a 6- to 12-inch loop of cable at each end to allow for shifting and settling. Connections made at the panel are shown in Figures 2a and 2b.

9. DEBRIS REMOVAL: Prior to start-up test procedure, the core must be removed and the incoming sewer line flushed to force all miscellaneous debris into the tank. Next, all liquid and debris must be removed. Once the tank is clean, re-install the pump and proceed with the test.

10. TEST PROCEDURE: When the system is complete and ready for use, the following steps should be taken to verify proper pump and high level alarm operation:

a) Make sure that the discharge shutoff valve is fully open. This valve must not be closed when the pump is operating. In some installations there may be a valve, or valves, at the street main that must also be open.

(Ignore all Trouble indications, LEDs and/or messages until the panel is reset at the end of this procedure.)

For model DH071:

b) Turn on the alarm breaker.

c) Fill tank with water until the high level alarm turns on. Shut off water.

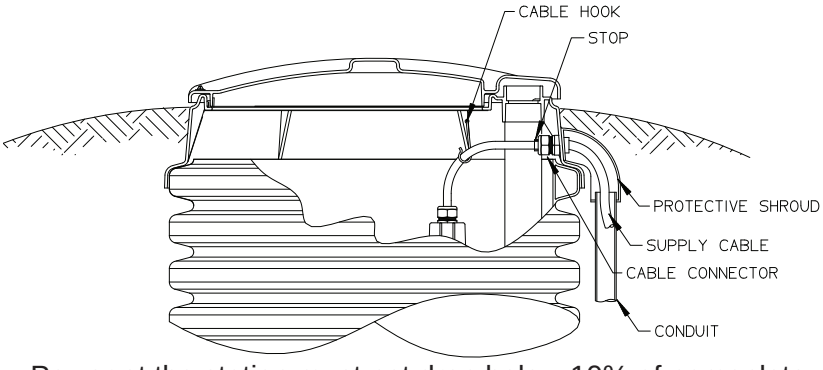
d) Turn on pump breaker; the pump should turn on immediately. Verify that the high level alarm turns off and then the pump turns off. Proceed to Step E.

For model DR071:

b) Fill tank with 50 gallons of water.

c) Turn on pump and alarm breakers; the pump and high level alarm should turn on immediately.

Figure 4



<u>Power at the station must not drop below 10% of nameplate voltage. Maximum Recommended Length:</u>
120 Volt 60’ (min. voltage at pump — 108V)
240 Volt 150’ (min. voltage at pump — 216V)
Consult factory for longer lengths

TYPICAL SUPPLY CABLE CONFIGURATION

d) Verify that the high level alarm turns off and then the pump turns off.

e) Clear/Reset the alarm panel:

Sentry and T260 panels: Reset is not required.

Protect panel: Turn pump and alarm breakers off and back on simultaneously.

Protect Plus panels: Perform a “cold start” from the Initialize System menu. Any user setting that were previously chosen will not be reset.

f) If any Trouble or alarm conditions are indicated after the panel is reset, contact your local service provider.

Field Joint Assembly Instructions

IT IS EXTREMELY IMPORTANT THAT THE JOINT IS SEALED PROPERLY BEFORE BACKFILLING. EXCAVATING A UNIT FOR REPAIR IS VERY EXPENSIVE AND CAN BE EASILY AVOIDED BY USING PROPER CAUTION DURING THE FOLLOWING PROCEDURE.

Parts included in Field Joint Kit: Identify all parts before proceeding with installation.

(16) 3/8-16 x 1-1/2 long screws
(16) 3/8-16 Elastic Stop Nuts
(32) Flat Washers
(1) Length Sealant (Sika) Tape
(1) Hole Punch
(1) Vent Pipe Extension

1) Carefully clean and dry both accessway flanges with solvent. **IMPORTANT: Sealing surfaces must be dry to ensure the sealant adheres correctly.**

2) Starting at one hole of tank flange, apply two layers of Sika Tape around the inside half of the flange. Align the outside edge of the tape with the bolt circle. Move to the adjacent hole and apply one layer of Sika Tape around the outside of the flange. Align inside of tape with the bolt circle. Remove the backing paper as you lay the adhesive on the flange. **Do not stretch Sika tape during application; it may result in a leak.** The tape should overlap at the end by approximately 1/2 inch, as shown in Fig. 5a. If a section of Sika Tape is misapplied, the bad section may be cut out and replaced. Cut away the poorly laid portion cleanly with a knife and be sure to over lap the tape at each end about 1/2 inch.

3) Using the tool provided, punch a hole through the tape at each of the 16 existing bolt holes in the flange. **Be careful to keep the exposed sealant clean and dry.**

4) Insert three of the sixteen 3/8-16 x 1-1/2" long bolts, with a flat washer, into the flange attached to the upper part of the accessway. These will act as guides while aligning the bolt pattern of the two flanges.

5) Support the upper accessway section a few inches over the tank with the green stripes on each lined up. Once aligned, lower the upper section onto the mating flange using the three bolts to guide it to the proper position. See Fig. 5b.

6) Insert the remaining 13 bolts with flat washers into the flanges. Place a flat washer and elastic stop nut on the end of each bolt, turning the nut on just enough to hold the washer in place.

7) Tighten the bolts until the sealant begins to squeeze out from between the flanges. To ensure a consistent, sturdy seal, tighten them in the following sequence: 1, 9; 5, 13; 3, 11; 7, 15; 2, 10; 4, 12; 6, 14; 8, 16. Always be sure to tighten one bolt and then the bolt at the position 180° from it; see figure 1 for position numbers.

8) Using the same sequence as in Step 7, tighten each bolt to 60 in-lbs. Visually inspect the joint, each bolt and each nut should have a flat washer between it and the flange, and a uniform amount of sealant should be protruding from the seam along the entire perimeter.

In the event that there are any voids in the sealant, the joint may leak. Take corrective actions if necessary and be sure that the joint is leak free before continuing.

9) Install the vent pipe extension piece, which was shipped inside the upper piece of the accessway. Push the extension pipe into the bell mouth fitting on the pipe installed in the wet well tank. Be sure the pipe is seated correctly. Slide the top end of the extension pipe into the receptacle on the bottom of the lid.

Figure 5a

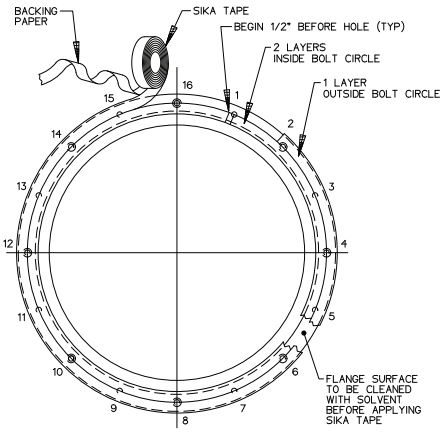
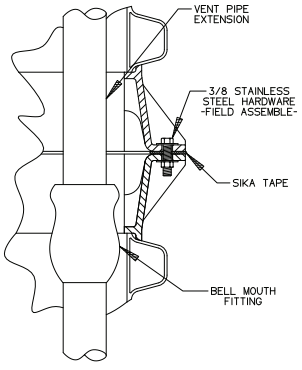


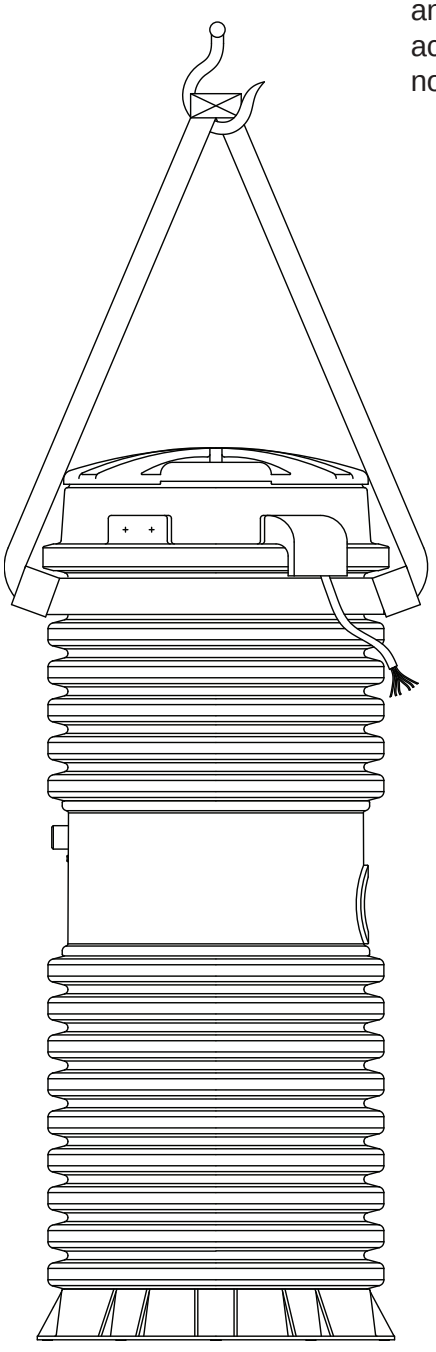
Figure 5b



Lifting Instructions

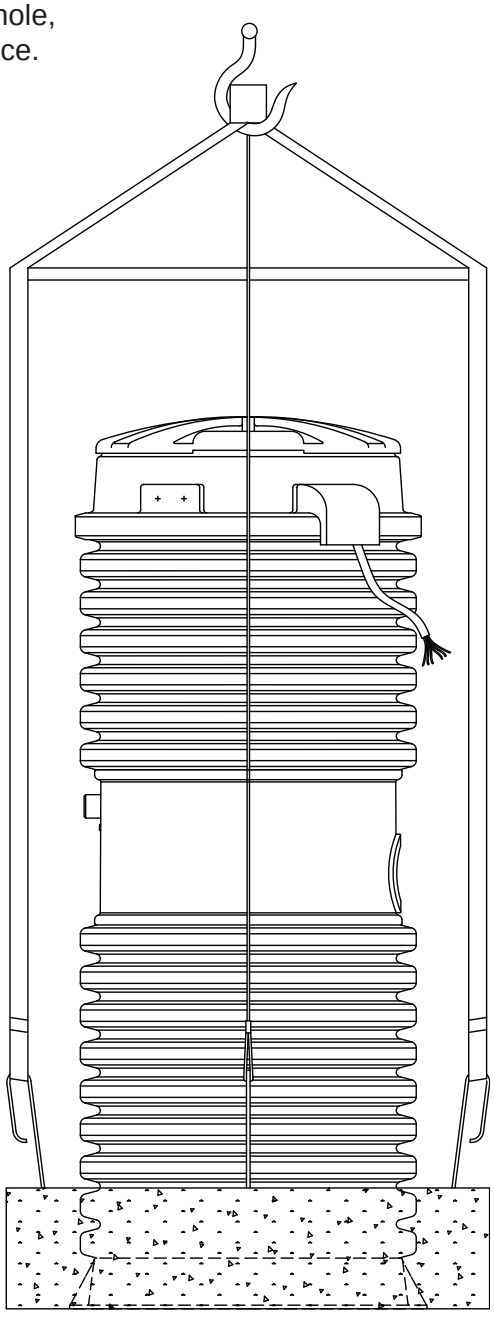
FAILURE TO FOLLOW THESE INSTRUCTIONS COMPLETELY WILL VOID THE WARRANTY.

1. Transporting unit to installation site: Always lift a unit from the bottom for the purpose of transportation. The station should be received attached to a pallet for this purpose. **Never roll a station or move it on its side.**



2. No Ballast (to be poured in place): If the concrete anchor is to be poured while the station is in place, lift the unit using 2 nylon straps wrapped around the accessway making a sling, as shown below. Keep station oriented vertically to avoid any damage. Only lift from the accessway to put unit in hole, not for moving any distance.

3. Precast Ballast: Never lift a station that has a ballast attached by any means except the rebar. The weight of the concrete will damage the station if you attempt to lift it from any part of the station.



E/One Grinder Pump Station Ballast Calculations

Any buried vessel that is submerged, or partially submerged, in water will be acted on by an upward buoyant force that attempts to return the vessel to a non-submerged state. The magnitude of this buoyant force is equal to the volume of the vessel that is submerged multiplied by the density of water. On most in-ground installations a ballast, or concrete anchor, of proper volume and weight is required to resist the buoyant force. The amount of ballast required for a given set of installation site conditions may be calculated as follows.

Installation Site Assumptions

1. Low water table – under worst case ground water or flood conditions only the wet well portions of the E/One grinder pump stations will be submerged.

2. Backfill materials are per these installation instructions.

3. The consulting engineer should perform a soil test to determine if the assumptions that have been made are valid for the specific installation site. If the site conditions differ from these assumptions, then the consulting engineer must revise the calculations as shown in this document.

Physical Constants

1. Density of Water = 62.4 lb/cu ft
2. Density of Concrete = 150 lb/cu ft (in air)
3. Density of Concrete = 87.6 lb/cu ft (in water)
4. Density of Dry Compacted Backfill = 110 lb/cu ft
5. Density of Saturated Backfill = 70 lb/cu ft

Procedure

A. Determine The Buoyant Force Exerted On The Station

1. Determine the buoyant force that acts on the grinder pump station when the wet well is submerged in water.
2. Subtract the weight of the station from the buoyant force due to the submerged wet well to determine the net buoyant force acting on the station.

B. Determine The Ballast Force Exerted On The Station

1. Determine the ballast force applied to the station from the concrete, saturated soil and dry soil.

C. Subtract The Ballast Force From the Buoyant Force.

1. Note – if the installation site conditions are different from those listed above, the consulting engineer should recalculate the concrete ballast.

Ballast Calculations

The following calculations are to outline the areas used to determine the volumes of the different materials for the ballast. All sections referred to in the calculations are marked on the accompanying drawing.

E/One Grinder Pump Station Ballast Calculations

Sample Calculation

Volume of Station Wet Well = 13.2 cu ft
Station Weight = 270 lb
Station Height = 91.8 in

A. Buoyant Force

1. The buoyant force acting on the submerged DH071-93 is equal to the weight of the displaced water for the section of the tank that is submerged (wet well).

$F_{buoyant}$ = (density of water)(volume of DH071-93 wet well)
= (62.4 lb/cu. ft)(13.2 cu. ft)
= 823.7 lb

2. The net buoyant force acting on the station ($F_{net\text{-}buoyant}$) is equal to the buoyant force ($F_{buoyant}$) minus the weight of the grinder pump station.

$F_{net\text{-}buoyant}$ = 823.7 lb – 270 lb
= 553.7 lb

B. Ballast Force

1. Determine the volume of concrete (if applicable) & soil (saturated and dry)

Section I: Used To Determine The Volume Of Concrete

Area = (Height)(Width)
= (10”)[(36” – 26.4”)/2]
= 48in^2

Volume= (Area)(Average Perimeter of the cylinder)
= (48in^2)(π)((36” + 26.4”)/2)
= (4704.8 in^3)(1/1728 ft^3/in^3)
= 2.7 ft^3

Section II: Used To Determine The Volume Of Saturated Soil

Area = (Height)(Width)
= (28.5”)[(36” – 26.4”)/2]
= 136.8in^2

Volume = (Area)(Average Perimeter of the cylinder)
= (136.8in^2)(π)((36” + 26.4”)/2)
= (13408.8in^3)(1/1728 ft^3/in^3)
= 7.8 ft^3

E/One Grinder Pump Station Ballast Calculations

Sample Calculation, Continued

Section III: Used To Determine The Volume Of Dry Soil

Area = (Height)(Width)
= (50.3in)[(36in – 26.4in)/2]
= 241.4in^2

Volume = (Area)(Average Perimeter of the cylinder)
= (241.4in^2)(π)((36" + 26.4")/2)
= (23661.5 in^3)(1/1728 ft^3/in^3)
= 13.7 ft^3

2. Determine the combined ballast

Ballast (total) = Ballast (concrete) + Ballast (saturated soil) + Ballast (dry soil)

= ($V_{concrete}$)(density concrete in water) + (V_{soil})(density wet soil) + (V_{soil})(density dry soil)

= (2.7 cu ft)(87.6 lb/ft^3) + (7.8 cu ft)(70 lb/ft^3) + (13.7 cu ft)(110 lb/ft^3)

= 236.5 lb + 546.0 lb + 1507.0 lb

= 2289.5 lb

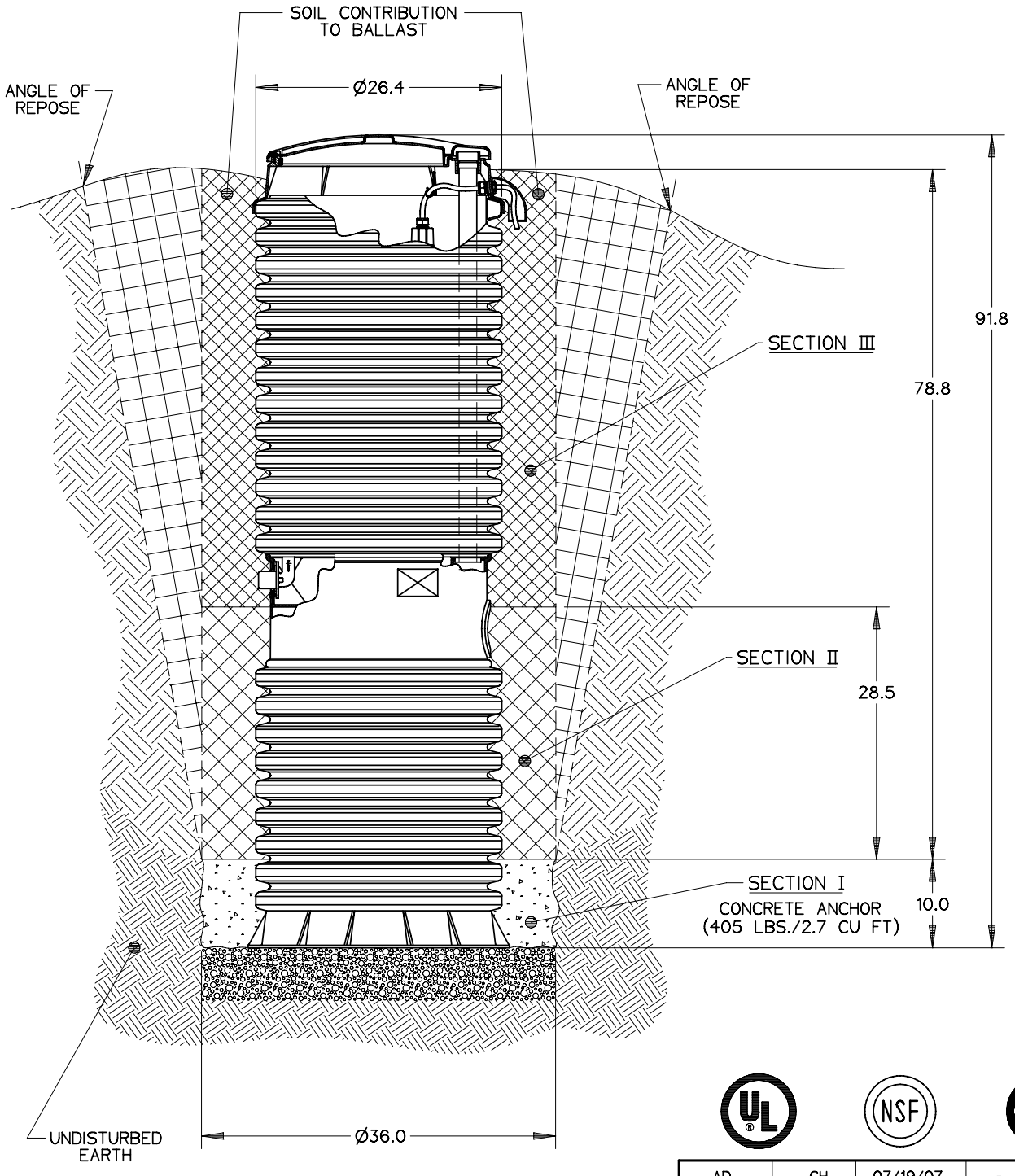
C. Subtract the buoyant force from the ballast force to determine the final condition

Final Condition = Ballast Force – Buoyant Force
= 2289.5 lb – 553.7 lb
= 1735.8 lb

The approach outlined above may be used to calculate the ballast requirements listed below.

Chart 1

Station Height (in)	Wetwell Volume (cu ft)	FNet-Buoyant (lb)	Station Weight (lb)	Fballast (lb)	Volume Concrete (cu ft)	Weight Concrete in Air (lb)
61 inches	13.2	582.7	241	1332.5	2.7	405
74 inches	13.2	569.7	254	1717.5	2.7	405
93 inches	13.2	553.7	270	2289.5	2.7	405
124 inches	13.2	543.7	280	3213.5	2.7	405
129 inches	13.2	523.7	300	3367.5	2.7	405
158 inches	13.2	498.7	325	4236.5	2.7	405
160 inches	13.2	494.7	329	4291.5	2.7	405



AD	CH	07/19/07	-	1/16
DR BY	CHK'D	DATE	ISSUE	SCALE

SEWER SYSTEMS

BALLAST INFORMATION

SECTION III - DRY SOIL (ACCESS WAY)

SECTION II - SATURATED SOIL (WET WELL)

SECTION I - CONCRETE ANCHOR

ROUND AGGREGATE (GRAVEL)

Adjusting the Height of the Grinder Pump Station

TO INCREASE STATION HEIGHT 6 INCHES

1. Increasing station height can be done without cutting the station. Use the E/One Extender cover shroud kit (ND0082G01) and follow the instructions that are included with the kit.

TO INCREASE STATION HEIGHT MORE THAN 6 INCHES or TO REDUCE THE STATION HEIGHT:

REMOVE EXISTING COVER ASSEMBLY (Fig. 6)

If your existing station has a welded-on cover shroud you will need the appropriate replacement cover kit (see Table 2).

1. Turn off all power to the grinder pump station.
2. Remove the tank lid and the electrical shroud.
3. Unplug the electrical quick disconnect (EQD) and remove the EQD from the supply cable. *Note: DO NOT CUT CABLE*. Loosen liquid tight cable connector and pull the supply cable out through the connector on the side of tank.
4. Tape the pump breather cable to the vent pipe in the tank.
5. Remove the soil around the tank, exposing three of the tank corrugations below grade. Use caution not to damage buried cable.
6. Remove existing cover shroud.

6a. Welded-on shroud (standard) - Using a hand saw, cut the tank in the valley between the two corrugations at grade, discard existing welded-on shroud and attached corrugations *(shroud is not to be reused)*. *Caution: Be careful not to cut either the vent pipe or the pump breather cable.*

6b. Clamped-on shroud - Remove band clamp and cover shroud.

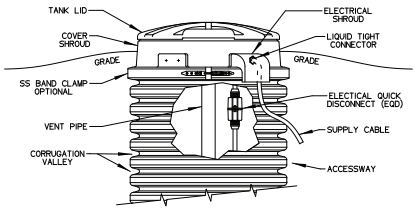


Figure 6

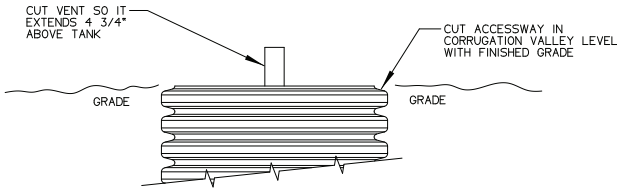


Figure 7

REDUCING STATION HEIGHT (Fig. 7)

7. Using a hand saw, cut the tank in the valley between the two corrugations at grade.
8. Cut vent pipe 4 ¾" above the cut made on the tank. *Proceed to step 16.*

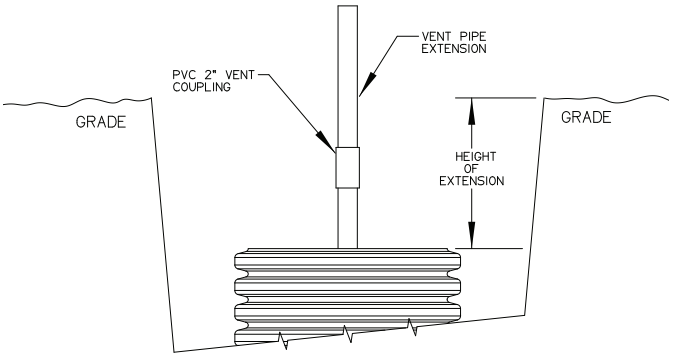


Figure 8

INCREASING STATION HEIGHT (Fig. 8 and Fig. 9)

9. Remove the soil around the tank exposing it 18" deeper than the extension being installed. For example, if you have a 2' extension (not including the coupler) you must dig down 3'6" minimum from grade; if you have a 4' extension (not including the coupler) you must dig down 5'6" minimum from grade. Use caution not to damage buried cable.
10. Measure from grade down 2' (for a 2' extension) or 4' (for a 4' extension) and mark accessway. Using a hand saw, cut the tank in the valley between the two corrugations that are closest to your mark. *Note: Make sure the welded-on shroud of the extension will be at grade level. Be sure you are not cutting into the wet well and you must have two corrugations below your cut, if there are less than two corrugations, this extension kit can not be used.*

Caution: *Be careful not to cut either the vent pipe or the pump breather cable.*

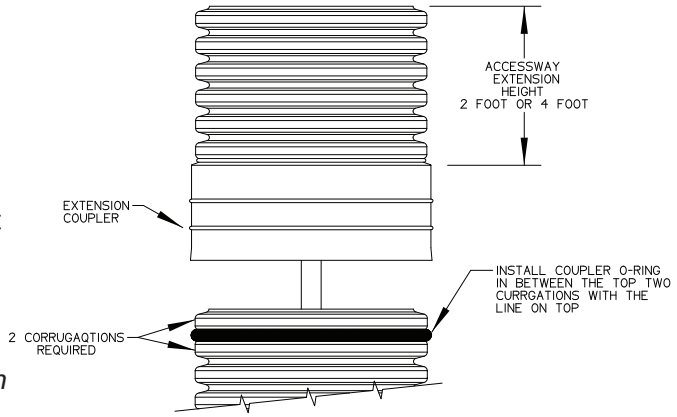


Figure 9

11. Attach the vent pipe extension with the 2” vent coupling, bringing the vent well above grade.

12. Clean all dirt and debris from top four corrugations on tank. Install the 24” coupler O-ring on the tank between the top two corrugations with the white or yellow line facing out and on top.

13. Lube extension coupler and coupler O-ring with pipe lube or dish soap.

14. Manually press coupling evenly over lubricated O-ring. If additional force is needed, place a plywood cover over the accessway and apply gentle mechanical pressure to the coupler. *Note: Care must be used when pushing down on the coupler. Excessive force or impact may result in damage and leakage.*

15. Frequent visual inspections during installation must be performed to determine when the tank has fully engage the coupler.

INSTALL REPLACEMENT COVER ASSEMBLY (Fig. 10)

16. Clean top corrugation on accessway extension and mating surface of replacement shroud with acetone.

17. Liberally apply the silicone sealer provided to the under side of the replacement shroud where it will come in contact with the accessway extension.

18. Lube wet well vent grommet and vent pipe extension with pipe lube, non-grit hand cleaner or dish soap and slide vent pipe through grommet until tank shroud seats to accessway.

19. Place SS band clamp around top corrugation and the replacement shroud. Tap with a mallet around clamp to help seat the clamp. Torque stud assembly on band clamp to a maximum 125 inlb.

20. Reinstall the supply cable, EQD**, tank lid and electrical shroud and tighten cable connector. (**See “EQD wiring order,” Table 1)

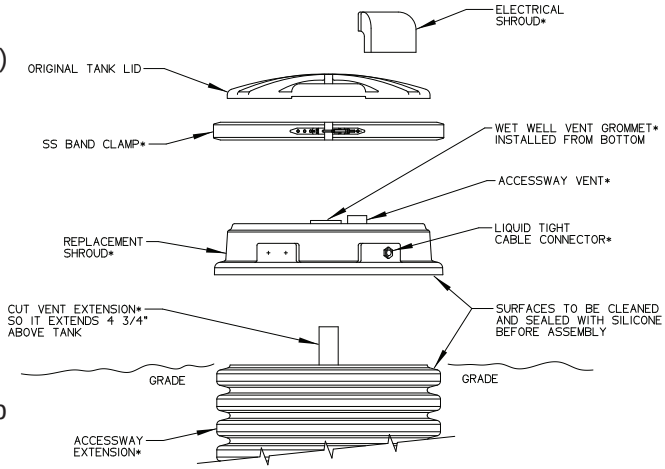


Figure 10

21. Follow start-up procedures to ensure proper pump operation (you will find the start-up instructions in our service manual or the station installation instruction guide).

**EQD wiring order

PIN #	COLOR
1	Brown
2	Red
3	Black
4	Grn/Yellow
5	Yellow
6	Blue

Table 1

Table 2

DESCRIPTION	PART NO.
Simplex station	NC0022G15
Simplex, flood plain config	NC0022G16
Duplex station	NC0022G17
Duplex, flood plain config	NC0022G18

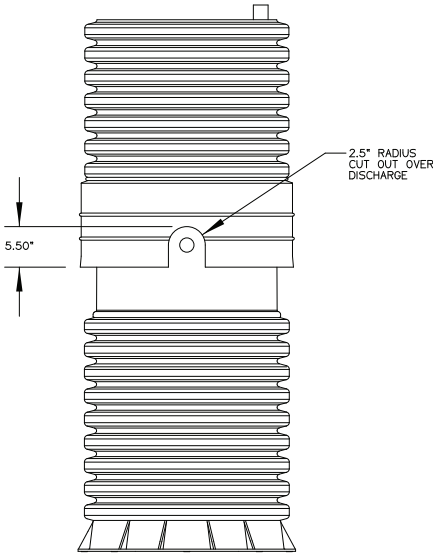


Figure 11

NOTE: IF EXISTING ACCESSWAY HAS ONLY 2 CORRUGATIONS (Fig. 11)

- If the coupler will not engage completely because the discharge piping is in the way, and it doesn’t have a cut out, you will need to cut a slot in the coupler.
- Using a hand, reciprocating or hole saw, cut an arch in the coupler; the cut-out is not to exceed 5.50” tall or 5.00” wide.

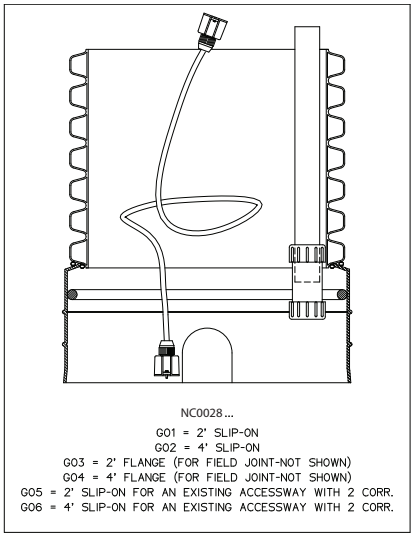


Figure 12

A Precision Castparts Company

Environment One Corporation
2773 Balltown Road
Niskayuna, New York 12309–1090

Voice: (01) 518.346.6161
Fax: 518.346.6188

www.eone.com

NA0061P01 Rev. B
7/12

User Instructions for the Environment One Grinder Pump

General Information

Your home is served by a low pressure sewer system; the key element is an Environment One grinder pump. The tank collects all solid materials and wastewater from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the wastewater. The grinder pump generates sufficient pressure to pump this slurry from your home to the wastewater treatment receiving line and/or disposal plant.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference; and 2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Care and Use of your Grinder Pump

The Environment One grinder pump is capable of accepting and pumping a wide range of materials, and an extensive grind test is required in order to obtain NSF approval. However, regulatory agencies advise that the following items should not be introduced into any sewer, either directly or through a kitchen waste disposal unit:

Glass	Seafood shells	Diapers, socks, rags or cloth	Syringes
Cotton swabs	Personal/cleaning wipes & sponges	Disposable toothbrushes	Latex/vinyl items
Metal	Plastic objects (toys, utensils, etc.)	Kitty litter	Dental floss
Aquarium gravel	Sanitary napkins or tampons	Cigarette butts	

Caution: Kitchen garbage disposals do not keep grease/oil out of the plumbing system

In addition, you must **never** introduce into any sewer:

Explosives	Strong chemicals	Lubricating oil and/or grease
Flammable material	Gasoline	

Items introduced into the sewer system from your home can potentially impact the water environment. Proper disposal of household wastes such as window cleaners, unused/expired pharmaceuticals, paint thinners, fats, fruit labels, etc. is important. For more information, visit http://www.wef.org.

Periods of Disuse

If your home or building is left unoccupied for longer than a couple of weeks, perform the following procedure:

Purge the System. Run clean water into the unit until the pump activates. Immediately turn off the water and allow the grinder pump to run until it shuts off automatically.

Duplex Units. Special attention must be taken to ensure that both pumps turn on when clean water is added to the tank.

Caution: Do not disconnect power to the unit

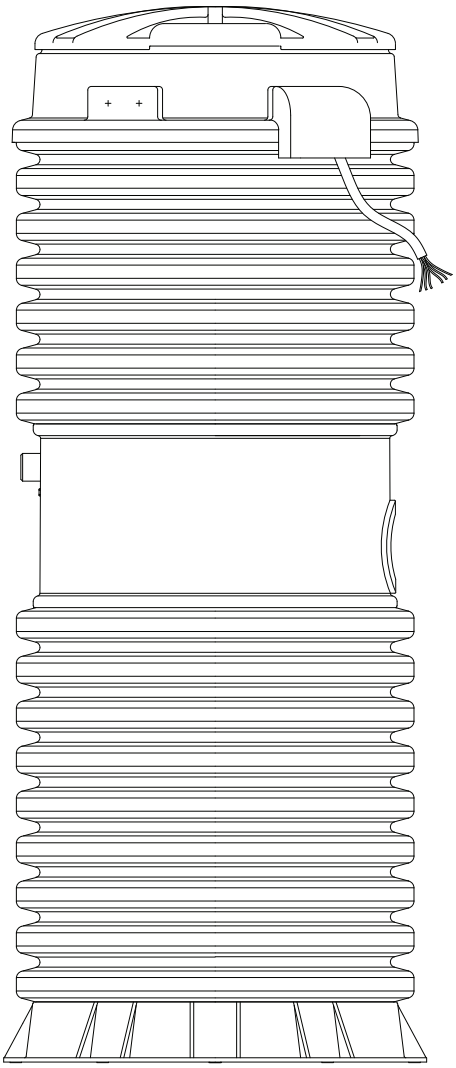
Power Failure

Your grinder pump cannot dispose of wastewater without electrical power. If electrical power service is interrupted, keep water usage to a minimum.

Pump Failure Alarm

Your Environment One grinder pump has been manufactured to produce an alarm signal (120 volt) in the event of a high water level in the basin. The installer must see that the alarm signal provided is connected to an audible and/or visual alarm in such a manner as to provide adequate warning to the user that service is required. During the interim prior to the arrival of an authorized service technician, water usage must be limited to the reserve capacity of the tank.

For service, please call your local distributor:



Limited Warranty

For E/One Extreme D-Series,
W-Series & Upgrade

Environment One Corporation offers a limited warranty that guarantees its product to be free from defects in material and factory workmanship for a period of two years from the date of installation, or 27 months from the date of shipment, whichever occurs first, provided the product is properly installed, serviced and operated under normal conditions and according to manufacturer's instructions. Repair or parts replacement required as a result of such defect will be made free of charge during this period upon return of the defective parts or equipment to the manufacturer or its nearest authorized service center.

Model Number: _____

Serial Number:_____

Installation Date: _____

e|one
SEWER SYSTEMS

2773 Balltown Rd • Niskayuna NY USA 12309
(01) 518.346.6161 • www.eone.com

INVOICE

MHOG Utilities
2911 Dorr Rd.
Brighton, MI
810.227.5225

Bill To:

Date:
Invoice/Record File #

Development Name:

Project:

Item No.	Description	Amount
1	Construction Plan Review	Paid
2	Construction Inspection and Office Support	$0.00
3	MHOG Construction Fees	$0.00
4	Project Contingency (20%)	$0.00
	TOTAL:	$0.00

Comments:

Item 1 must be deposited with MHOG prior to starting the construction plan review. Construction Plan review fees include the initial review and one resubmittal.

Item 2 includes construction inspection, mileage, equipment, shop drawing review, pre-construction meeting attendance and additional office support as needed. If the total inspection time on site exceeds the assumption listed in Item No. 2 above the developer will be required to deposit additional escrow funds.

Items 2, 3, and 4 must be deposited with MHOG before the pre-construction meeting.

Item 4 will be returned after Final Acceptance, less any costs incurred.

Make check payable to the **MHOG Escrow Fund**. Amounts are per the rate table in the MHOG Connection Manual and are subject to annual adjustments by the Board.

ESCROW INVOICE
SUPPORTING DOCUMENTATION

DEVELOPMENT NAME:
RECORD FILE NUMBER:
DATE:

ENGINEERING CONSULTANT FEES

Construction Plan Review

Includes initial review, one resubmittal of plans, and transmittal of the permit application to the MDEQ

Item	Cost	Unit	Quantity	Total
<1,000 LF Municipal Utilities	$ 1,200.00	each		$ -
1,000-5,000 LF Municipal Utilities	$ 1,800.00	each		$ -
5,000 - 15,000 LF Municipal Utilities	$ 2,900.00	each		$ -
>15,000 LF Municipal Utilities	TBD	each		

Total: $ -

Construction Inspection

Daily fee includes 10 hours on site and 2 hours for office support, including preconstruction meeting, shop drawing review, record preparation, mileage, equipment, and inspection coordination.

Sanitary Sewer (2 day minimum)

Item	Unit	Quantity	Production	Total (days)
Pipe	LF		1 day for 250 LF	
Pipe > 10 FT Deep	LF		1 day for 150 LF	
Manholes	each		1 day for 2 Manholes	
Connections	each		1 day for 2 connections	
Leads	each		1 day for 6 leads	
Testing	days		1 day minimum	

Subtotal:

Water Main (3 day minimum)

Item	Unit	Quantity	Quantity	Total (days)
Pipe	LF		1 day for 250 LF	
Live Tap	each		1/2 day per tap	
Hydrants	each		1 day for 3 hydrants	
Valves	each		1 day for 4 valves	
Tie In	each		1 day for 2 tie ins	
Leads	each		1 day for 8 leads	
Testing	days		2 day minimum	
			Subtotal:	

TOTAL: **Total Days rounded to half day:**

Amount at $1,600/day $ -

Note: *Amount charged per day is based on an assumed 12 hour working day*

ESCROW INVOICE
SUPPORTING DOCUMENTATION

DEVELOPMENT NAME:
RECORD FILE NUMBER:
DATE:

MHOG CONSTRUCTION FEES

Item	Cost	Unit	Quantity	Total
Administration Base Amount	$ 500.00	each		$ -
Disconnect/Abandonment Fee	$ 75.00	each		$ -
Water Line Construction	$ 1.50	LF		$ -
Water Valves	$ 20.00	each		$ -
Hydrants	$ 20.00	each		$ -
Bacteriological Sampling	$ 25.00	each		$ -
Water Leads	$ 12.00	each		$ -
Tracer Wire Continuity Verification	$ 0.05	LF		$ -
Fire Suppression Line	$ 1,000.00	each		$ -
Single Live Tap Fee, Sewer or Water	$ 250.00	each		$ -
Sewer Line Construction	$ 1.50	LF		$ -
Sanitary Sewer Structures	$ 20.00	each		$ -
Sewer Leads	$ 12.00	each		$ -
	TOTAL:	**MHOG Construction Fees**		$ -

See Section 4 of MHOG Connection Manual for Description of Fees

MHOG Utilities

2911 Dorr Road ● Brighton, MI 48116 ● 810-227-5225

Hydrant Meter Rental Agreement

DATE_____ **HYDRANT NO.**_____

SITE ADDRESS/LOCATION_____

BUSINESS NAME_____

MAILING ADDRESS_____

CONTACT NAME_____

PHONE NUMBER_____ **CELL NUMBER**_____

WATER WILL BE USED FOR_____

RENTAL PERIOD_____
(≤30 days, ≤ 60 days, ≤90 days, ≤120 days, Fees Vary Based on Rental Period)

DEPOSIT AMOUNT _____
($1,000 for 1-inch Meter, $1,500 for 3-inch Meter, $150 for Stand)

METER #_____ **OUTGOING READ**_____

INCOMING READ_____**GALLONS USED** _____

A deposit is required for temporary use of a water meter. Upon completion of use, the meter is to be returned to Genoa Township. At such time the meter will be inspected to insure working order. A billing for the rental, water usage, and any damage will be calculated for the applicant at rates set forth in attached return form. The amount due will be deducted from your deposit and either a refund check or invoice for the balance will be mailed to you. The person renting the meter is responsible for the meter. You will also need to pump the hydrant down after every use each day freezing temperatures exist.

By signing this agreement, applicant has read and agrees to the above conditions, and will pay the applicable fees in the attached hydrant return form upon return.

Applicant Authorized Signature

MHOG Representative Signature

Check # _____ (Make payable to MHOG Utilities & attach a copy to this form)

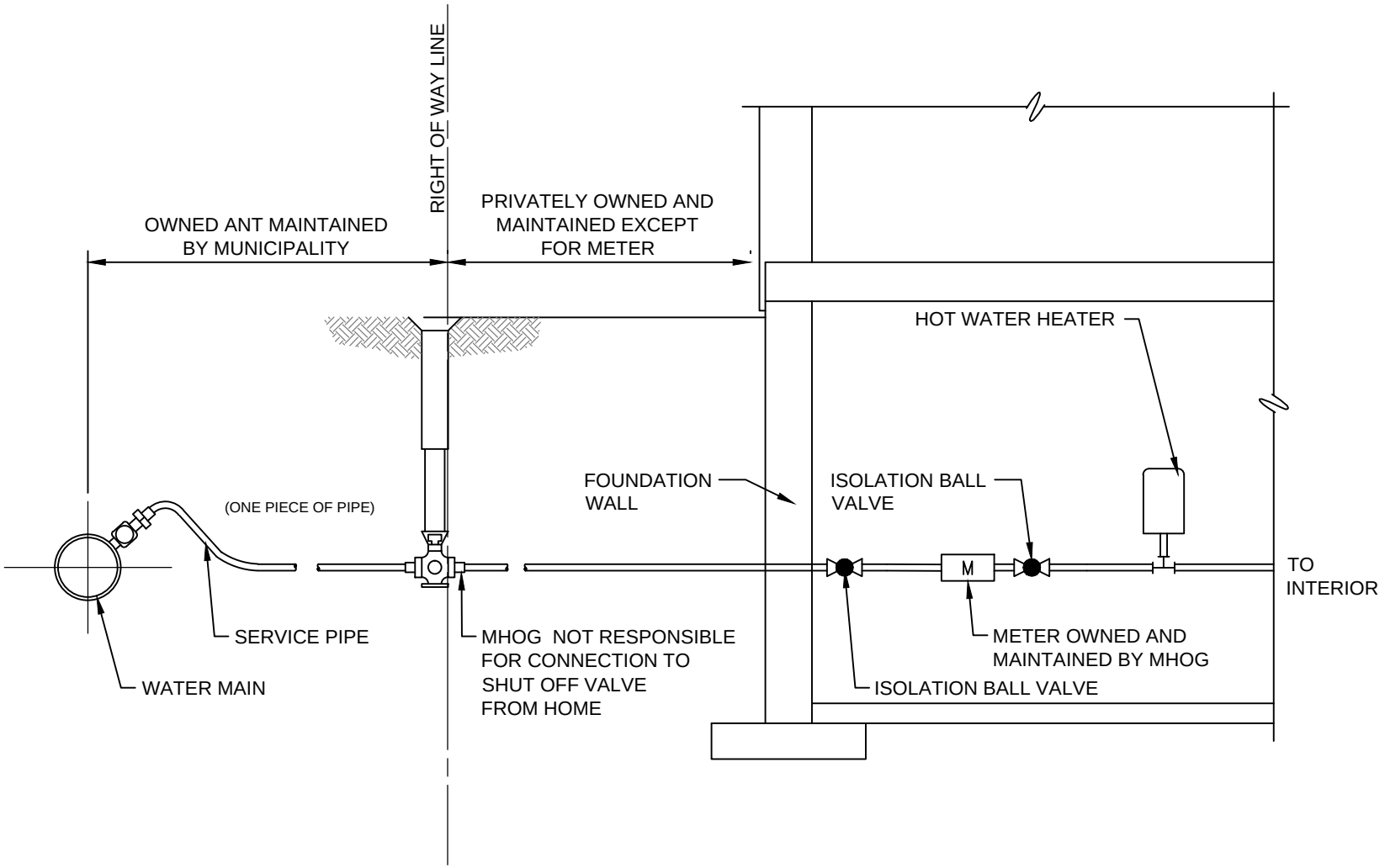
****

FOR QUESTIONS, Contact the MHOG Utility Dept. at: 810-227-5225, Monday-Friday, 9:00 a.m.-5:00 p.m.

MHOG
Hydrant Rental Meter Return Form
2023

Return Information		
Date Out: _____	Date Returned:_____	
Total Days Rented:_____ (Note: First 30 Days No Additional Charge)		
Renter's Company Name:_____		
Name of MHOG Employee Checked In By:_____		
Meter #_____	Stand Rental: YES or NO	Hydrant Wrench Rental: YES or NO
Outgoing Read:_____	Returned Read:_____	
Total Gallons Used (in 1,000 gals.):_____		Water District _____

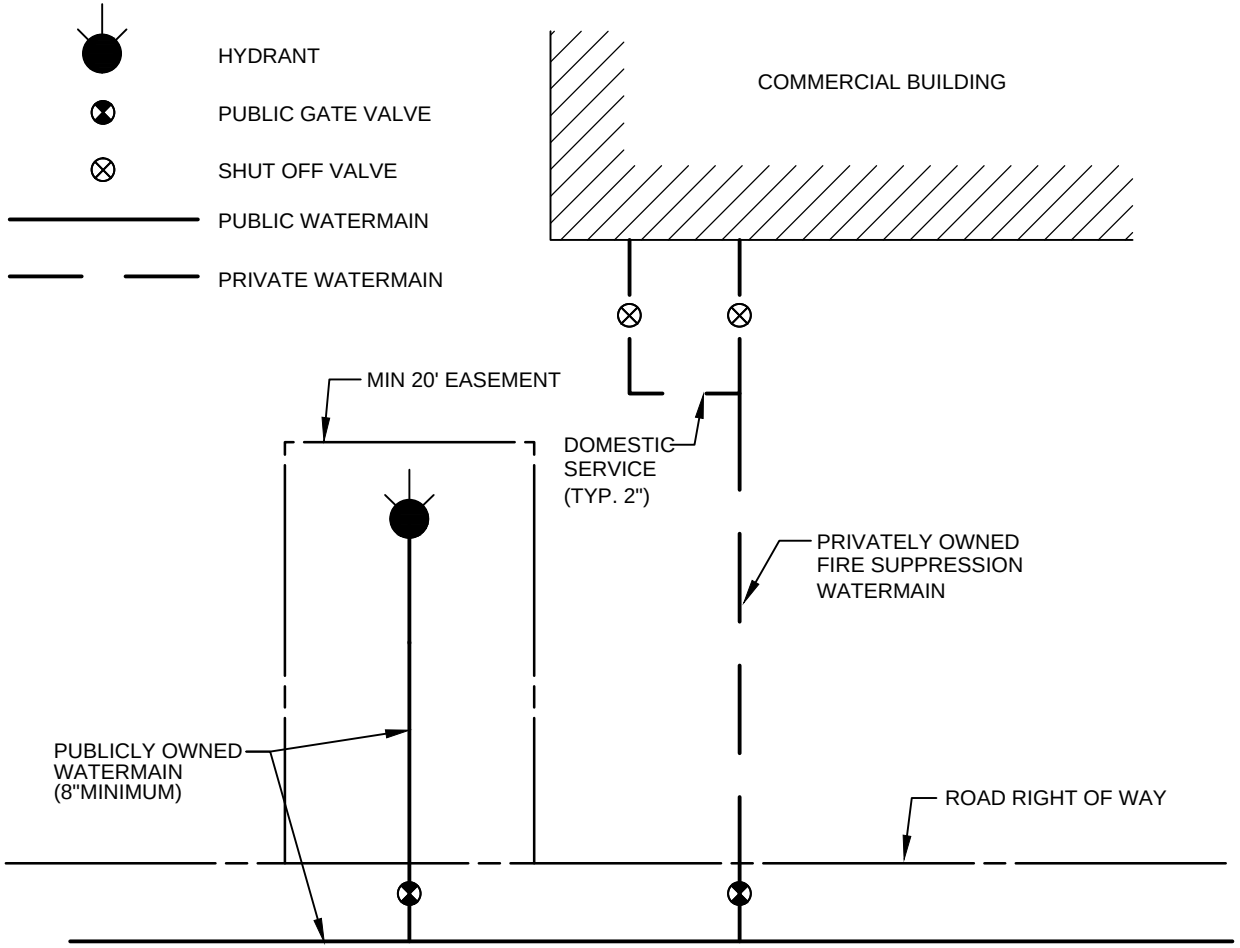
Determination of Charges	
Total 1,000 Gallons Used:_____ x $7.25/1,000 Gallons	$
Days (0 - 30) $0 _____ Days (30 -60) $75 _____ Days (60 - 90) $150 _____ Days (90 - 120) $225 _____ Days (120 - 150) $300 _____ Days (150 - 180) $375 _____	$
Days Out Beyond Indicated Days @ $5.00 per day	$
1-Inch Meter Returned Okay: _____Yes _____No _____ NA (Replace @$350)	$
2-Inch Meter Returned Okay: _____Yes _____No _____ NA (Replace @$995)	$
1-Inch RPZ Returned Okay: _____Yes _____No _____ NA (Replace @$670)	$
2-Inch RPZ Returned Okay: _____Yes _____No _____ NA (Replace @$1,038)	$
Meter Stand Return Okay: _____Yes _____No _____ NA (Replace @$165)	$
Ball Valves on RPZ Okay: _____Yes _____No _____ NA (Replace @$15)	$
2" NPT Pipe Nipples Okay: _____Yes _____No _____ NA (Replace @$15)	$
Hydrant Wrench Okay:_____ Yes_____ No_____ NA (Replace @ $50)	$
Total Charges	$
Less Deposit	$
Amount: _____ **Refund** _____ **Due**	$
Customer Signature_____	Date:_____



MHOG CONNECTION MANUAL

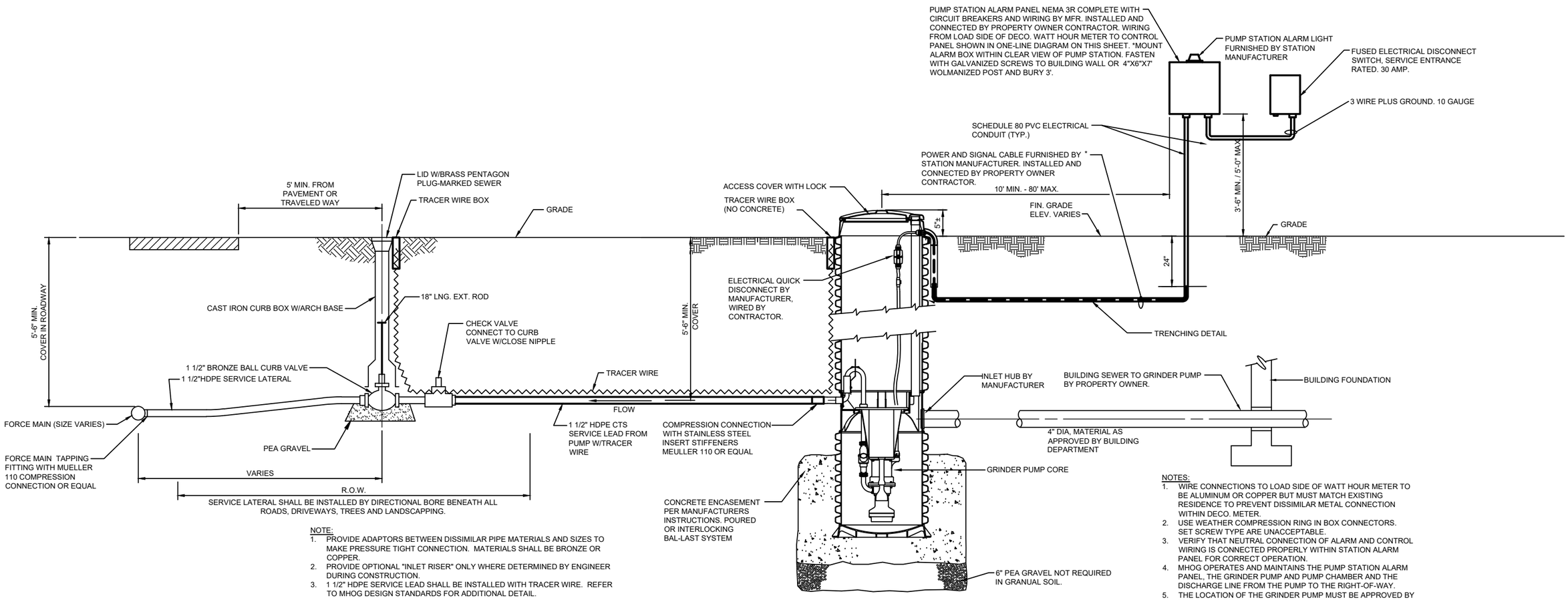
WATER SERVICE CONNECTION TO HOME OR BUISINESS

ATTACHMENT 1



NOTE: FOR FIRE SUPPRESSION LINES, THE MUNICIPALITY WILL ONLY OWN UP TO THE GATE VALVE WHICH MUST BE PLACED WITH IN THE EXISTING ROAD RIGHT OF WAY OR WATER MAIN EASMENT

	MHOG CONNECTION MANUAL *FIRE SUPPRESSION WITH HYDRANT*	ATTACHMENT 2

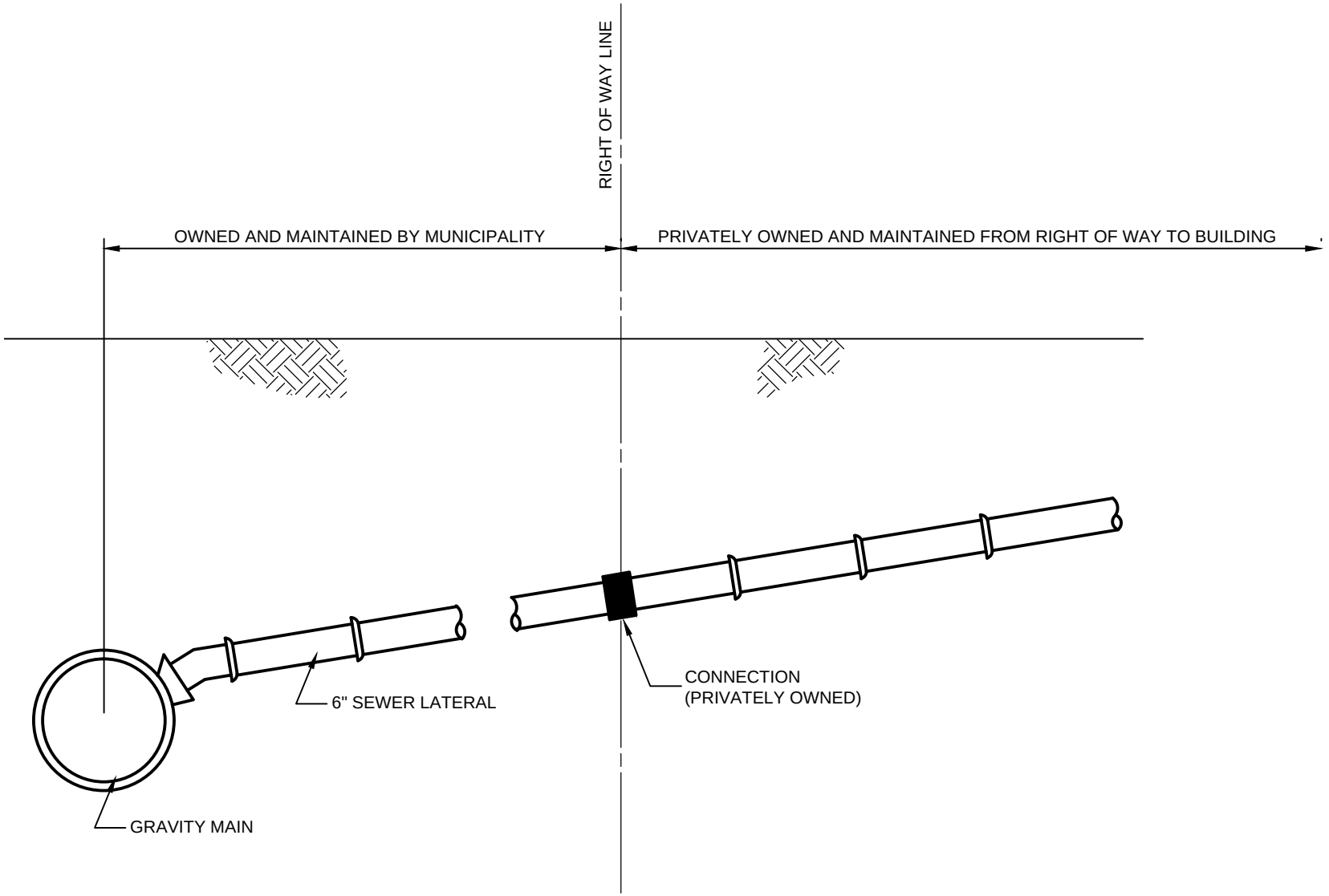


NOTE:
1. PROVIDE ADAPTORS BETWEEN DISSIMILAR PIPE MATERIALS AND SIZES TO MAKE PRESSURE TIGHT CONNECTION. MATERIALS SHALL BE BRONZE OR COPPER.
2. PROVIDE OPTIONAL "INLET RISER" ONLY WHERE DETERMINED BY ENGINEER DURING CONSTRUCTION.
3. 1 1/2" HDPE SERVICE LEAD SHALL BE INSTALLED WITH TRACER WIRE. REFER TO MHOG DESIGN STANDARDS FOR ADDITIONAL DETAIL.

NOTES:
1. WIRE CONNECTIONS TO LOAD SIDE OF WATT HOUR METER TO BE ALUMINUM OR COPPER BUT MUST MATCH EXISTING RESIDENCE TO PREVENT DISSIMILAR METAL CONNECTION WITHIN DECO. METER.
2. USE WEATHER COMPRESSION RING IN BOX CONNECTORS. SET SCREW TYPE ARE UNACCEPTABLE.
3. VERIFY THAT NEUTRAL CONNECTION OF ALARM AND CONTROL WIRING IS CONNECTED PROPERLY WITHIN STATION ALARM PANEL FOR CORRECT OPERATION.
4. MHOG OPERATES AND MAINTAINS THE PUMP STATION ALARM PANEL, THE GRINDER PUMP AND PUMP CHAMBER AND THE DISCHARGE LINE FROM THE PUMP TO THE RIGHT-OF-WAY.
5. THE LOCATION OF THE GRINDER PUMP MUST BE APPROVED BY MHOG PRIOR TO INSTALLATION. THE GRINDER PUMP MUST BE SERVICEABLE (ACCESSIBLE BY TRUCK) AND FREE FROM OBSTRUCTION.
6. MHOG MUST BE ONSITE FOR STARTUP OF ALL NEW GRINDER PUMPS.

SIMPLEX/DUPLEX GRINDER PUMPING STATION

NO SCALE

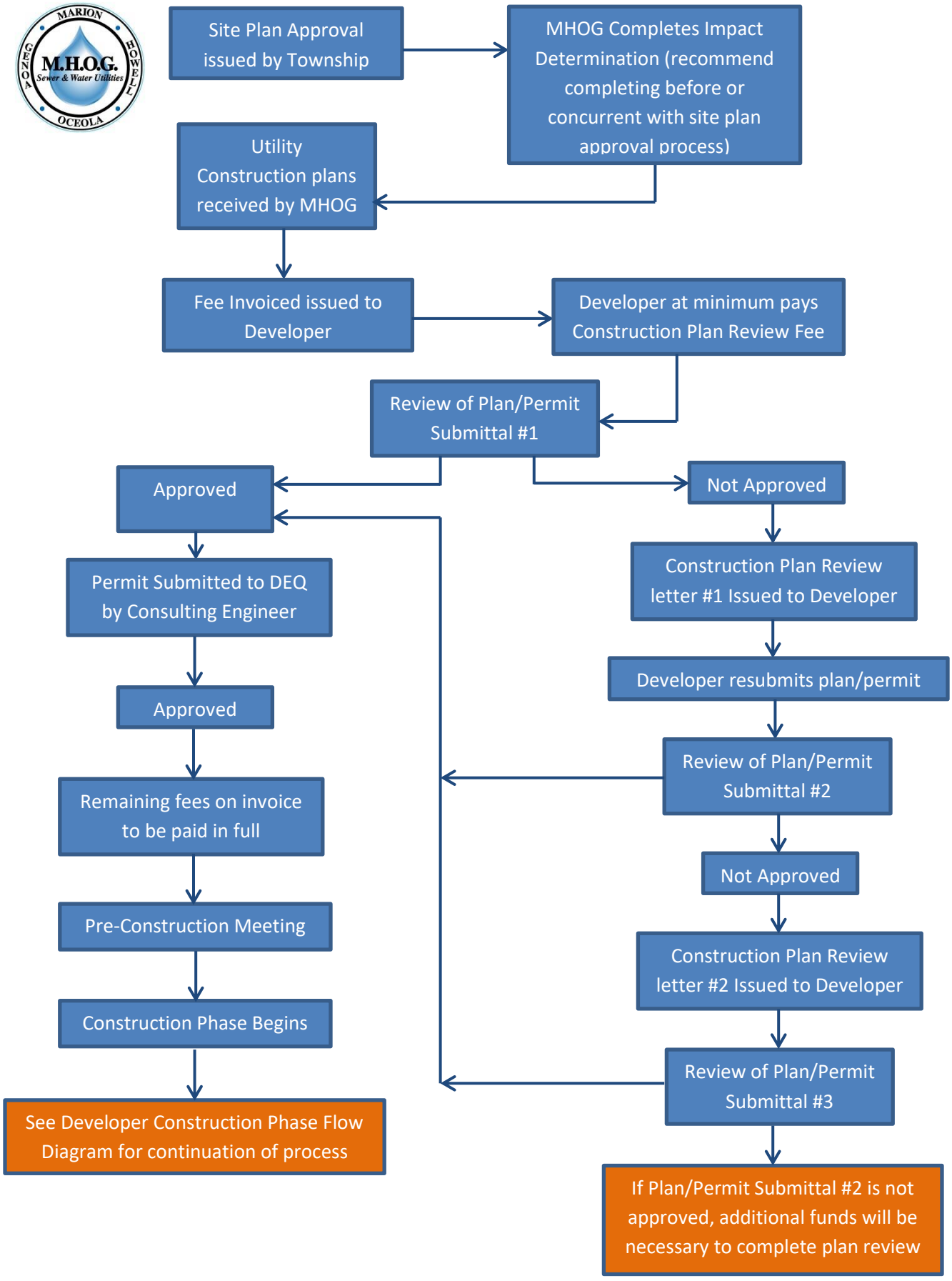


MHOG CONNECTION MANUAL

GRAVITY SERVICE LEAD TO HOME OR BUILDING

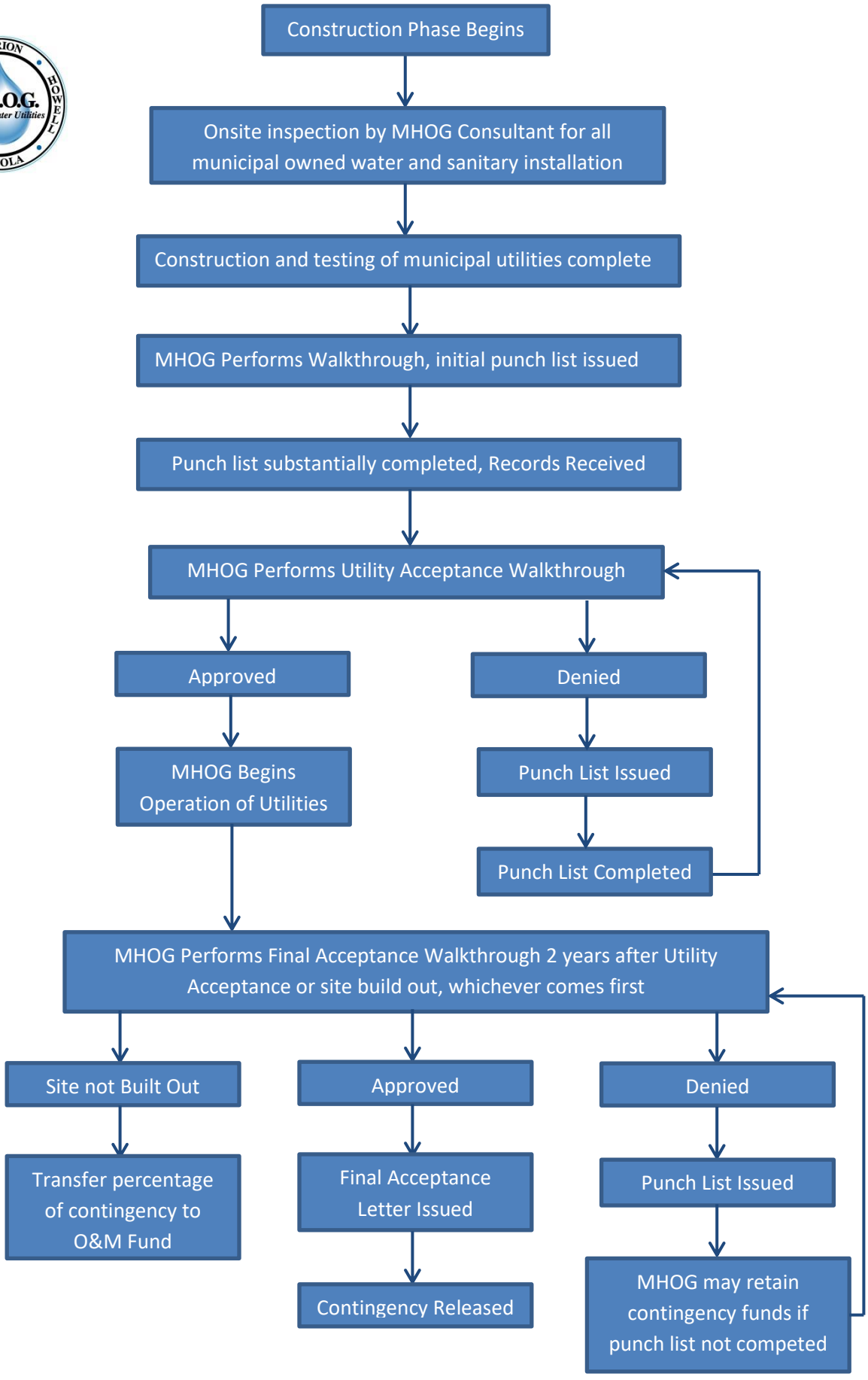
ATTACHMENT 4

DEVELOPER PLAN REVIEW FLOW DIAGRAM



CONSTRUCTION PHASE FLOW DIAGRAM

Attachment 6



SECTION 1 – GENERAL INFORMATION

The MHOG Utility Department, oversees the operation and maintenance of the municipal water systems in Marion and Howell Townships, and the municipal water and sanitary sewer systems in Genoa and Oceola Townships. This Connection Manual outlines the processes for the various ways in which property owners and developers can connect to, modify, or expand the existing municipal sanitary sewer and water systems.

SUMMARY OF INTERGOVERMENTAL RELATIONSHIP

Through an Intergovernmental Cooperation Agreement, the MHOG Utility Department (Department) oversees the day to day operations, planning, and operation of the MHOG (Marion, Howell, Oceola, and Genoa) Sewer and Water Authority, the Genoa-Oceola Sewer and Water Authority, and the Genoa Charter Township Systems of Oak Pointe and Lake Edgewood. Together, this comprises joint operations of three (3) wastewater and two (2) water systems. This combined function saves each system operational expenses and provides a level of technical expertise and staffing that the systems would be unable to support independently. Additionally, it allows cost sharing and partnership between these member systems that otherwise would not be possible.

DESCRIPTION OF MUNICIPAL UTILITIES

Municipal utilities are the water and sanitary mains owned, operated, constructed, maintained and repaired exclusively by the Department. These utilities provide public water and sewer service to privately-or publicly-owned properties. Water mains typically range from 8” to 24” in diameter, and include such features as gate valves and hydrants. Sewer mains typically range from 8” to 27” diameter, and include manholes, gravity mains, force (pressure) mains, grinder pumps, pump (lift) stations, generators and other features. Municipal utilities are located in a public right of way or dedicated easement, to guarantee permanent right of access to the Department and its personnel.

Private service leads are located on private property, and they typically extend from the building premises to the municipal service lead at the public right of way. Municipal utilities are typically not located on private property.

The Department reserves the right to prohibit the installation of any private main connected to the municipal water of sanitary sewer main, except by prior authorization of the Township and the Department.

Municipal Water:

In general, the Department operates and maintains the municipal water main and all of its components up to the shut off valve (curb stop), typically located at the right of way line.

All new hydrants installed are operated and maintained by the Department; therefore all water main leading up to hydrants shall be public and shall fall under system expansion requirements of this manual.

Municipal Sanitary Sewer:

Applicable to Genoa and Oceola Township municipal systems that are operated by the MHOG Utility Department.

In general, the Department operates and maintains the municipal sanitary sewer and all of its components located within the public road right of way or within an easement. Individual parcels are served by either a gravity sanitary lead or a grinder pump, and the limits of municipal ownership for the service leads vary by the type of lead to the parcel.

For a gravity sewer lead, the Department operates and maintains the lead up to the right-of-way line.

For a grinder sewer system connected to a publically owned low pressure force main, the Department operates and maintains the municipally owned control panel on the home, the electric lines from the pump to the house, the grinder pump and pump chamber, the discharge line from the pump up to the public right of way, and the main line.

Example diagrams of the municipal and private components of the water and sanitary sewer systems are shown in the following attachments:

- Attachment 1: Water Service Connection to Home or Business
- Attachment 2: Fire Suppression with Hydrants
- Attachment 3: Grinder Pump System to Home or Business
- Attachment 4: Gravity Lead Service to Home or Business

DESCRIPTION OF PRIVATE SYSTEM COMPONENTS

The MHOG Utility Department does not maintain the private components as outlined below:

The private components of water systems include:

- The connection between the curb stop and building and all internal plumbing. Multiple connections to a private lead or private main are prohibited. Private mains having service leads to multiple parcels are prohibited except by prior authorization of the respective Township and/or governing Authority. The meter is the only internal component the Department owns and maintains.
- Private fire suppression lines beyond the shut off valve from the main. (Note: Fire suppression lines can only be private if no hydrants are connected to them).

The private components of the sanitary sewer system include:

- The lead from the building up to the right-of-way line. Multiple connections to a private lead or private main are prohibited. Private mains having service leads to multiple parcels are prohibited except by prior authorization of the Township and/or the governing Authority.
- The gravity lead from the building to a grinder pump.
- All internal sanitary sewer components.
- The Department may require a new grinder pump be privately owned if it does not meet the requirement outlined in Section 5.2 – New Grinder Pump Connection – of this Manual

DESCRIPTION OF MUNICIPAL SYSTEMS NOT COVERED BY THIS MANUAL

The MHOG Utility Department Does Not maintain the following municipal sanitary sewer and water systems in the Howell and Brighton Area:

- City of Brighton Municipal Utilities. Contact 810-225-8004 for more information
    - The City of Brighton maintains the municipal water and sanitary sewer in the eastern portion of Genoa Township, including the Pine Creek Subdivision.
- City of Howell Municipal Utilities. Contact 517-546-3500 for more information
    - The City of Howell maintains the municipal sanitary sewer in Marion Township. MHOG provides operational services for the municipal water in Marion Township.
- Sanitary sewer in Howell Township. Contact 517-546-2817 for sewer information. MHOG provides operational service for the municipal water in Howell Township.

PRE-CONNECTION PHASE – SUMMARY OF TOWNSHIP REQUIREMENTS AND CONNECTION ASSISTANCE SERVICES PROVIDED BY MHOG UTILITY DEPARTMENT

In all instances, the property owner must meet Township planning and zoning requirements prior to connecting to a participating MHOG Utility Department utility. A summary of the Township requirements is listed below:

- Verify the parcel requesting connection is within the municipal water and/or sanitary sewer district boundary
- Payment of tap fees
- Issuance of land use permit
- Collection of meter fees, flushing, and sewer fees
- Provide lead sheets (if one is available)
- For larger scale developments requesting expansion of the municipal sanitary sewer and water system, site plan approval from the Township will be required.

The MHOG Utility Department is pleased to offer the following services during the investigation phase of a potential connection to the municipal utility system:

- As Built Record Drawings of Transmission Mains and Subdivision Plans
- Available Fire Flow Maps from the Hydraulic Water Model
- Evaluation of the Type of Connection
    - In all new connection instances, the Department will evaluate the type of site use being proposed for the new connection. Depending on the type of use, additional requirements may be implemented. For instance, to protect our sanitary sewer system, grease traps are required for all restaurants, and backflow devices are required for all irrigation and commercial uses.
    - In addition, the quantity of usage associated with a new connection will be evaluated by Department staff. Typically, new developments with greater than 100 projected residential equivalent units will be required to go through an Impact Assessment process to determine if the existing utility systems can handle the increased usage.
    - Due to these potential additional steps that may be required, it is recommended that the property owner and/or Township contact the MHOG Utility Department during the planning phase of all new connections to the utility systems.
    - Meter sizing

The MHOG Utility Department is located within the Genoa Township Hall; therefore for the above listed items please contact the main line of Genoa Township at (810)227–5225 or planreview@mhog.org

SECTION 2.1 – PURCHASE OF A WATER METER

This procedure has been developed to assist property and or business owners with the purchase and installation of a water meter.

1. *Purchase at Each* Township

Within the MHOG System, water meters are purchased directly at each participating Township. Prior to authorizing a meter purchase, the Township will verify that any necessary tap or connection fees are paid as well as ensuring that necessary land use permits are obtained. The cost for a meter package includes the meter, a horn or flanges, and the radio read device. In addition, for all new construction, there is a water loss fee paid as part of the meter package price to cover water typically used during construction. It should be noted that the Department will not sell or set a meter without a meter package purchase from the corresponding Township. A copy of the meter purchase form and current cost for the meter package is included in Appendix A.

Irrigation Package

It is recommended that a resident or business also choose to purchase an irrigation meter as part of their meter package purchase. An irrigation meter can save significant money as sewer charges are not assessed for water that goes through the irrigation meter. If an irrigation meter is purchased, the cost of the radio read device is subtracted from the cost, as one reading device can accommodate two meters.

For all irrigation meters, a certification of the Pressure Vacuum Breaker (PVB) device on the irrigation system is required before the Department will set the meter. A copy of the device test flow report must be made available to the technician who sets the meter.

2. *Meter Size Determination*

As part of the meter purchase, the proper size of the meter needs to be specified. For all homes, a 1-inch meter is standard. A ¾ inch meter is only allowed where there is an existing 5/8 inch well service or where upsizing to a one-inch meter may cause pressure problems. For commercial applications, it is best to match the meter size to the inlet pipe size to maximize future building use. A MHOG staff member can assist in sizing if maximum Gallon Per Minute (GPM) requirements are provided for the facility.

For a commercial meter set, a backflow device is required to protect the potable water supply from potential building uses that can compromise the safety of the domestic supply, should a low pressure event occur. This applies to fire suppression systems, high hazard, and low hazard uses. For all new high hazard uses, a RPZ device is required to isolate the supply from the building use.

3. Arranging For and Conducting Meter Installation

For a one inch or less meter purchases, the meter horn will be available at the Township Hall at the time of the meter sale. The property owner will be responsible for installing the meter horn, or hiring a plumber to install the meter horn. Once the meter horn is installed or a time is known that the horn will be installed, the property owner will contact the Utility Department to set an appointment to have the meter set. The technician will bring the meter and radio read device with them. The radio read device is preferred to be outside the home and connected to the meter via a direct wire. This will allow for future maintenance to occur to the device without having to get inside the premises, making it more convenient for the property owner.

For a 1.5 inch or larger meter, the property owner may be provided the meter and flange set at the time of the meter purchase (depending on the requested size, the meter may need to be ordered) or may be picked up at a time when they are ready to install the meter. Once the meter is installed, the property owner will contact MHOG to install the radio read device. An appointment will be set for MHOG's technician to install the radio read device. For a commercial business, a suitable backflow prevention device shall be provided and tested prior to the technician setting the reading device. In addition, depending on the level of hazard, annual testing of the backflow prevention device and inspection by the Department may be required.

Site Conditions

Before MHOG will set the meter or install the reading device, the following site conditions must be met:

1. The Curb Stop or exterior shut off box must be at grade and accessible. Additionally, this box must be straight and allow for a key to be inserted to readily turn the water supply on or off.
2. The exterior of the building must be finished for the purpose of mounting the radio read device to the exterior of the house. The radio read device will not be installed if siding, brick, or block work needs to be completed that could impact or cover the radio read device.
3. Someone responsible for the property must be present during the meter set as the technician will not turn on water without the property owner or suitable representative present to assure that items are not on that can cause property damage.
4. If the above conditions are not met, a $25 re-trip fee will be charged to the property owner.

4. Acceptable Meter Locations

All meters shall be installed in an easily accessible location, fully heated, and free of obstruction. Meters shall have a sufficient working space around them that allows for a human person to access, remove, and replace the meter freely. Meters shall not be installed in pits or crawl spaces. Meters for multi-family buildings shall be located in a common area that is heated and accessible from a common area in the building; meters shall not be located within the individual residential units of a multi-family building. For commercial buildings where multiple tenant spaces will exist, a common meter room shall be provided to manifold individual meters to the units.

SECTION 2.2 – NEW WATER SERVICE CONNECTION

This procedure has been developed to assist property owners with the various steps associated with completing a new service connection to the municipal water system. This section applies to new connections to the municipal water system for domestic service only, typically a single family residence or a commercial business with lower water usage.

To connect a building to the water supply system, a lead must be present. A lead is defined as the connection between the water main and the shut off valve at the right of way line of the property to be served with municipal water.

Installing water service to your property will fall under one of the following three scenarios:

1) Connect to Existing Curb Stop
-A lead was installed previously by a Developer or the Township

2) MHOG Utility Department Installs Curb Stop
- No lead has been installed, and MHOG installs the new lead

3) Commercial Property Owner Installs Curb Stop
- No lead has been installed, and the property owner installs the new lead.

The cost to the property owner will vary based on which scenario is applicable to their site and what the tap in fees with the Township include. The general process for a new water service connection is outlined below:

1. Determine Availability of Water Main with Township

The property owner shall contact the Township in which the potential connection is located to determine availability of municipal water for a new service connection. If permitted by the Township, either the Township or MHOG Utility Department will provide a lead sheet or field located the existing lead. The lead sheet for the property will outline the location and size of the existing shut off valve (curb stop).

Ultimately, the Township needs to approve all new water service connections before the property owner works with the MHOG Utility Department.

All property owners completing a new service connection must purchase a meter through the Township in which the site is located. See Procedure 2.1 in this manual.

If a lead exists, proceed to Step #2: Field Connection – Existing Curb Stop.

If no lead exists, the property owner should work with the Township first to determine what part, if any, of the fees paid to the Township are for lead installation. As the policies for each individual

parcel vary depending on the special assessment district and the tap fee amount due to MHOG varies by parcel, all tap fees are collected by the Township. Typically, if the tap fees include lead installation, MHOG will install the lead on behalf of the Township. If the cost of the lead exceeds the tap fee collected by MHOG Utility Department, the Township will pay the difference. If tap fees do not include lead installation, the property owner pays for lead installation. Proceed to Step #3: Field Connection – MHOG Installs Curb Stop or Step #4: Field Connection – Property Owner Installs Curb Stop depending on who will be installing the new lead.

2. Field Connection – Existing Curb Stop

MHOG Utility Department does not require any site inspections of a connection to an existing curb stop. However, department operators are available to assist in locating and operating the existing curb stop.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the shut off valve into the building. See **Attachment 1** for further information.

Inspection of the private components of the water service lead is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them.

A MISS DIG request should be called in prior to field work and MHOG will mark the location of water system components for which as built records are available. MHOG is not responsible for any site restoration.

Proceed to Step #5: Permits.

3. Field Connection – MHOG Utility Department Installs Curb Stop

MHOG will proceed with lead installation following approval from the Township. As MHOG utilizes sub-contractors for this work, the timing of the lead installation will vary. The property owner or Township should work with MHOG to determine the proper size of the service lead. For single family homes, a 1-inch service lead is standard. The property owner should also submit to MHOG staff a sketch showing the requested location of the new service lead.

MHOG will use the sketch provided by the property owner to locate the new curb stop as near this location as possible. However, MHOG may modify this location based on site conditions including utility conflicts. MHOG will prepare a lead sheet for use by the property owner for connecting to the newly installed service.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the shut off valve into the building. See **Attachment 1** for more information.

Inspection of the private components of the water service lead is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them. MHOG does not require any site inspections of the connection to the newly installed curb stop; however we do recommend tracer wire installation.

A MISS DIG should be called in prior to field work, and MHOG will mark the location of the water main - as available as built records provide. MHOG is not responsible for any site restoration associated with the private lead installation.

Proceed to Step #5: Permits.

4. Field Connection – Property Owner Installs Curb Stop

In the case where a commercial site is being developed, it may be the best option to have the development contractor install the curb stop. MHOG will require that department operators inspect the live tap and curb stop box during installation by the property owner's contractor.

The permissible materials for the pipe, curb stop, curb box, and corporation stop can be found in MHOG Sanitary Sewer and Water Design Standards, Part IV – Approved Procedures.

MHOG will prepare a lead sheet during the field inspection.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the shut off valve into the building. Inspection of the private components of the water service lead is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them.

A MISS DIG should be called in prior to field work, and MHOG will mark the location of the water main. MHOG is not responsible for any site restoration.

Proceed to Step #5: Permits.

5. Permits

All other applicable permits are the responsibility of the property owner, including, but not limited to land use permits, road right-of-way permits, building department permits, and health department permits.

6. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Township Fees (including tap fees)	The Township in which the site resides
Meter Fee	Appendix A (Meter Purchase Form) of this Manual
Flushing Fee	The Township in which the site resides
Single Live Tap, Sewer or Water	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner
Well Abandonment	Livingston County Environmental Health Department (Contractor Hired by Property Owner)
Road Right of Way	Livingston County Road Commission or MDOT

SECTION 2.3 – NEW FIRE SUPPRESSION CONNECTION

This procedure has been developed to assist property owners with the various steps associated with completing a new connection to the municipal water system for a fire suppression lead. A fire suppression lead is used for connection to a fire suppression system and is intended for use during a fire only. This section assumes that a hydrant is not being installed and therefore, a MDEQ permit is not required for the work. If hydrants are involved, please refer to Section 3 of this document.

The following procedure outlines the steps necessary to coordinate the fire suppression lead installation with MHOG:

1. ***Determine Availability of Water Main with Township***

   The property owner shall contact the Township in which the potential connection is located to determine availability of municipal water for a new fire suppression connection.

   Note: The MHOG Utility Department can assist in this step by providing any plans for the water main.

   Ultimately, the Township needs to approve all new fire service connections before the property owner works with the MHOG Utility Department.

2. ***Work with MHOG to Obtain Available Fire Flow Data***

   Prior to installing fire suppression systems, the fire suppression company typically requires available fire flow data from the municipal water system. The MHOG Water System has multiple pressure districts; and fire flow and pressure throughout the system vary depending on the booster stations that are in operation, the level of the water towers, and the demand for water from the users of the system.

   Obtaining fire flow data can be accomplished in one of two ways:

   Hydraulic Water Model Data: MHOG maintains a hydraulic water model of the distribution system, and can provide property owners with available fire flow and residual pressure during the peak hour demand conditions.

   Fire Flow Test: A fire flow test can be performed at the nearest existing hydrant to the site. It is the responsibility of the property owner to complete the fire flow test and notify MHOG. MHOG must be on site to observe the fire flow test and to operate the hydrant. It should be noted that the hydraulic water model data is typically more conservative than the on-site fire flow test as the hydraulic water model assumes peak hour demand conditions.

3. Construction Plan Review

Construction plans must be submitted to MHOG for review of all proposed fire suppression systems. Following Township or Site Plan approval, MHOG will generate a construction plan review escrow invoice. Upon receipt of the funds, MHOG will review the proposed fire suppression lead for general conformance with the MHOG Design Standards. Upon approval of construction plans, MHOG will stamp the plan set approved.

The construction plans shall specify the proposed materials for the pipe, valve, and valve box. The permissible materials can be found in MHOG Sanitary Sewer and Water Design Standards, Part IV – Approved Procedures and on the standard detail sheets.

4. Field Connection

MHOG owns and operates the water main up to the shut off valve which is typically located at the right-of-way line. As a result, prior to construction commencing, MHOG will generate a construction inspection escrow invoice. Upon receipt of the escrow funds, less any remaining escrow from the plan review stage, the petitioner shall schedule a pre-construction meeting between the site contractor, owner/developer, MHOG's engineer, and MHOG Operators.

MHOG's engineer observes the installation of the pipe, tie in to the municipal main, pressure test, and bacteriological sampling of the new fire suppression line as well as generates redlines of the approved construction plans with any modifications observed during installation. The full description of the procedure for water main testing can be found in the MHOG Sanitary Sewer and Water Design Standards, Part IV – Approved Procedures.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the shut off valve into the building. Inspection of the private components of the fire suppression line is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them.

It is required that tracer wire be installed on the fire suppression line.

A MISS DIG (811) should be called in prior to field work, and MHOG will mark the location of the municipal water main. MHOG is not responsible for any site restoration.

MHOG should be notified for operation of the newly installed fire suppression valve during the testing of the fire suppression system, if required by the fire department and/or the county building department.

It is the responsibility of the petitioner to provide MHOG with as-built drawings in State Plane Coordinates of the newly installed main prior to MHOG accepting operation of the public portion of the new fire suppression line.

5. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Township Fees (including tap fees)	The Township in which the site resides
MHOG Fees - Fire Suppression Line	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner
Fire Department Inspection	Brighton Area Fire Department or Howell Area Fire Department
Road Right of Way	Livingston County Road Commission or MDOT

SECTION 2.4 – ABANDONMENT OF WATER SERVICE

This procedure has been developed to assist property owners with the various steps associated with abandoning an existing water service lead. A lead is defined as the connection between the water main and the shut off valve on the property to be served with municipal water.

The following procedure outlines the steps necessary to coordinate the lead abandonment with MHOG:

1. ***Locate Lead - Records Available with Township***

   The property owner shall contact the Township in which the abandonment is located to determine land use requirements.

2. ***Notify MHOG of Lead Abandonment***

   The Township or property owner shall contact MHOG at 810-227-5225 to notify them of the proposed lead abandonment.

3. ***Notification and Abandonment Procedure***

   The property owner shall contact MHOG at 810-227-5225 to schedule shut off of the existing curb stop and disconnection of the existing meter. This must be done prior to any excavation work on the site. In addition, upon removal of the meter and shutting off of the curb stop, the account can be suspended from the billing system.

   The property owner and MHOG shall identify if there is a future need for the lead that is being abandoned. If the abandonment is permanent, the water main shall be excavated and the lead shall be abandoned at the corporation stop (the tap to the municipal water main). If the abandonment is temporary the curb stop will be turned off. The lead line beyond the curb stop will need to be cut and capped preventing any debris from entering the pipe, and then will need to be marked with a board at the surface for future identification. MHOG staff shall be present to inspect the cut and capped water service prior to backfill.

   MHOG will modify the as built records and/or billing records to reflect the field changes for each lead abandonment.

   MISS DIG should be called in prior to field work, and MHOG will mark the location of the municipal water main.

   MHOG is not responsible for any site restoration associated with lead abandonment.

4. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Disconnect/Abandonment Fee	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner

SECTION 2.5 – NON-MUNICIPAL IRRIGATION SOURCE

This procedure has been developed to assist property and or business owners with guidelines, approval, and installation of a non-municipal irrigation source.

1. Non-Municipal Irrigation Source

Non-municipal irrigation sources include surface water bodies and irrigation wells. Due to the risk of potential cross contamination of the municipal water supply, when a non-municipal irrigation source is utilized, the use of non-municipal sources of water for irrigation is discouraged. However, there are instances whereby the use of a non-municipal irrigation source can benefit both the property owner and the municipality, such as decreasing the peak demand periods in summer months, which stresses the municipality's distribution system. Therefore, non-municipal irrigation sources will be permitted only if the following conditions are met:

1. The Township in which the property resides approves the irrigation well.
2. The property will be subject to annual inspection by the Authority's Cross Connection Control Contractor. Where applicable annual backflow testing will also be required.
3. The cost of the Non-Municipal Irrigation Fee, as outlined in Section 4 of this Manual, is applied annually to the utility bill for the site.
4. The system can be installed totally independent of the municipal water source with no piping located within the same building as municipal potable water piping.

2. Procedure for Approval

Following are the procedures to seek approval for the installation of non-municipal irrigation source of water for irrigation. It should be noted that MHOG's approval of an alternative source of water for irrigation in no manner excuses the petitioner from securing necessary well, surface, and/or wetland permits required from other agencies.

<u>Initial Site Development (Applicable to Commercial Sites)</u>
During initial development of a commercial or common area site for a residential development, the property owner or developer may request installation of an alternative irrigation source. The proposed system should be clearly shown on the proposed development plans during both site and construction plan review. Review and approval of the system shall occur during the overall site review process. As part of the submittal package, plans showing a detailed layout and construction of the irrigation system shall be provided along with the following information:

1) Peak gpm demand of the proposed irrigation system
2) Total site square footage to be irrigated
3) Estimated total daily volume of usage
4) Proposed irrigation time schedule

Final approval of the irrigation system shall be made as part the construction plan review process. The MHOG Authority will generate a letter to the development to assist in obtaining and securing necessary permits through the Livingston County Building and Environmental Health Departments.

Retroactive Installation (Applicable to Commercial Sites)

In the event that an existing commercial site that is developed and serviced by municipal water wishes to add an alternative non-municipal irrigation source, the petitioner shall send written correspondence and a plan to MHOG for review. The plan shall include:

1) Peak gpm demand of the proposed irrigation system
2) Total site square footage to be irrigated
3) Estimated total daily volume of usage
4) Proposed irrigation time schedule
5) Manner in which the existing irrigation system will be modified to prevent potential cross connection. At a minimum, this shall include removal of the existing irrigation line from the municipal water, removal of nearby associated potable water piping, and construction and connection of the new non-municipal source to the existing irrigation system.

Existing Well and Connection to Municipal Water (Applicable to Residential and Commercial Sites)

One of the common scenarios encountered is the request to use an existing well for irrigation when the property is converted over to municipal water for domestic use. This is the scenario that creates the most risk for potential cross contamination. In this case, as with other alternative sources, the well line must be removed from the building and the connection to the irrigation system must be made outside of the existing building. Failure to remove the existing pressure tank and keep the well service in proximity to the proposed potable municipal service will result in denial of the request. If it is proposed to keep the existing well for irrigation, the petitioner must provide:

1) Peak gpm demand of the proposed irrigation system
2) Total site square footage to be irrigated
3) Estimated total daily volume of usage
4) Proposed irrigation time schedule
5) Manner in which the existing well and irrigation system will be modified to prevent potential cross connection. At a minimum, this shall include removal of the existing irrigation line from the municipal water, removal of nearby associated potable water piping, and construction and connection of the new non-municipal source to the existing irrigation system.

3. Application

Petitioner shall complete and submit the application as outlined in **Appendix G** of this Manual. All other applicable permits are the responsibility of the property owner, including, but not limited to land use permits, health department permits, and any necessary surface water permits.

4. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Annual Non-Municipal Irrigation Fee	Section 4 of this Manual
Well Installation	Liv Co Environmental Health Department

SECTION 3 – SYSTEM EXPANSION REQUIREMENTS

This portion of the connection manual is intended for expansion of the publically owned utility systems. Typically, expansion of the public utilities is associated with a project that requires site plan approval by the Township, examples of such projects include a new commercial building, a new residential subdivision, expansion of an existing commercial building, and running a fire hydrant to an existing or proposed building. During site plan review, the Township's consulting engineer will copy MHOG on all review letters that have any proposed impact to the municipal water or sanitary sewer system. All publicly owned and operated system components require permits from the Michigan Department of Environmental Quality before installation, a list of the publically owned components is outlined below:

Municipal Water Main

- 8-inch and greater water main (not including private fire suppression lines with no hydrants connected to them)
- Fire Hydrants
- System Valves
- Booster Stations

Municipal Sanitary Sewer

- 8-inch and greater gravity sanitary sewer
- Manholes
- Force Main
- Air Release Structures
- Pump Stations

The petitioner is responsible for installing the proposed municipal utility systems in accordance with the MHOG and GO Sanitary Sewer and Water Design Standards. MHOG staff and consultants will ensure the proposed municipal utilities are built in accordance with the standards. The following steps outline the procedure for expansion of the existing water main and sanitary sewer systems.

1. Impact Determination Process

Any new user or group of contiguous new users that is anticipated to have an equivalent usage of 100 REUs or greater shall go through the Impact Determination Process. The proposed usage will be reviewed to determine if the improvement or usage will negatively impact the existing municipal water and sanitary sewer systems. MHOG will provide written documentation of the findings of the impact determination. It should be noted that impacts to the system may result in the requirement to install additional upgrades beyond the scope of the proposed project to ensure reliable service for all existing customers. It is therefore recommended that this step be completed as early in the planning step for a proposed project as possible.

2. Construction Plan Review & Permit Requirements

Construction plans must be submitted to MHOG for all publicly owned utility extensions. This step is typically completed after site plan approval from the Township is obtained. The plans will be reviewed for conformance with MHOG & GO Sanitary Sewer and Water Design Standards.
All municipal water extensions must obtain an Act 399 Permit and all sanitary sewer extensions must obtain a Part 41 Construction Permit from the Michigan Department of Environmental Quality (MDEQ). As part of the construction plan review process the petitioner shall submit a completed MDEQ Permit Application for Water Supply Systems (Required under the Authority of 1976 PA 399, as amended) and/or a completed MDEQ Permit Application for Wastewater Systems (Required under the Authority of Part 41, Act 451, PA 1994 as amended).

MHOG will review the submitted construction plans and permit applications. Once all review comments have been satisfactorily addressed, a letter of approval shall be issued by MHOG. MHOG will then sign the permit applications and submit them to the MDEQ for the necessary construction permits.

A flow diagram outlining the construction plan review phase in included as ***Attachment 5***.

The petitioner is responsible for securing all other permits associated with the construction site, included, but not limited to, land use permits, soil erosion and sedimentation control permits, and road commission permits.

3. Construction Inspection Requirements

A representative of MHOG shall be on site to observe the installation of all publicly owned municipal water and sanitary sewer systems. No public utilities can be constructed until MDEQ permits, as described above, have been obtained. MHOG shall attend a pre-construction meeting with the developer. At the pre-construction meeting, MHOG will review the requirements for construction and testing of the municipal utilities. Allowable construction methods, materials, and testing requirements can be found in the MHOG & GO Sanitary Sewer and Water Design Standards.

MHOG will take redline notes on the approved construction plans and provide them to the petitioner for incorporation into as-built plans for the municipal utilities. MHOG will generate lead sheets for all individual service connections install as part of the municipal utility extension.

For water main projects, MHOG staff will collect and test bacteriological samples of the water main prior to placing in service.

A flow diagram outlining the construction phase in included as ***Attachment 6***.

4. Construction Closeout and Acceptance

MHOG will complete a walkthrough and issue a punch list after construction and testing of the municipal utilities are completed. MHOG will issue a Utility Acceptance Letter after the punch list is substantially complete, the site is restored at the main line components, and record files (included, but not limited to, shop drawings, as built drawings, and daily reports) are received. Following Utility Acceptance, MHOG will begin operation and maintenance of the utilities. A final walk through will occur after buildout of the site or two years following Utility Acceptance, whichever comes first. Buildout of the site is defined by the construction of at least 90% of buildings and/or the establishment of final grade and restoration at the site.

A construction contingency escrow will be collected to ensure the punch list is addressed, all documentation is received, and to provide incentive to the developer to protect the newly installed municipal utilities during buildout of the site. More details on the contingency escrow and other fees associated with system expansion can be found in **Section 4** of this manual.

SECTION 4 – FEE SCHEDULE

The MHOG Utility System has spent significant funds over the past years improving existing infrastructure, organizing and identifying all as-built records, developing design and construction standards, and implementing a Geographic Information Systems (GIS) database of all sewer and water utility appurtenances. The purpose of this fee schedule is to provide funds for MHOG to ensure that construction of new infrastructure within the system is an asset to current and future users and become incorporated into the existing infrastructure management system, while minimizing the impact to existing customers.

The following section outlines the fees associated with additions to the municipal sanitary sewer and water system that will be collected by MHOG:

1. MHOG Fees

MHOG collects fees for staff time associated with the management, inspection, and operation services necessary for the connections. The MHOG Fee Tables are outlined below; the first table is for charges typically associated with a single residential or business collection, the second table outlines charges for system expansion projects:

Single Residential or Business Connection		
Item	**Cost**	**Unit**
Flushing Fee	$50	Each
Sewer Clean Out Fee	$25	Each
Non-Municipal Irrigation Fee	$100	Annual
Meter Set Re-Trip Fee	$25	Each
Water Meter	See Appendix A	

System Expansion		
Item	**Cost**	**Unit**
Administrative Base Amount	$500	Each
Water Line Construction	$1.50	LF
Water Valves	$20	EA
Hydrants	$20	EA
Bacteriological Sampling	$25	EA
Water Leads	$12	EA
Tracer Wire Verification	$0.05	LF
Sewer Line Construction	$1.50	LF
Sanitary Sewer Structures	$20	EA
System Expansion (continued)		
Item	**Cost**	**Unit**
Sewer Leads	$12	EA

Hydrant Meter Rental – 1”	$1,000 Deposit
Hydrant Meter Rental – 3”	$1,500 Deposit
Water Meter	See Appendix A

2. *Escrow Fees (Applicable to Fire Suppression and System Expansion Projects)*

As outlined in Section 3, System Expansion, expansions to the existing municipal water or sanitary infrastructure require additional review, inspection, and acceptance processes from the smaller residential or business connection. Examples of these projects include a new commercial building, a new residential subdivision, expansion of an existing commercial building, and installation of a fire hydrant on an existing site. A sample invoice can be found in Appendix E, and the text below further describes the additional fees associated with system expansion projects.

Construction Plan Review and Construction Inspection – Engineering Consulting Fees

The MHOG Sewer and Water utilities department rely upon outside consultants for plan review and construction inspection fees. Appendix E contains the current fee table for the Engineering Consultant fees for construction plan review and construction inspection services for system expansion projects.

The Construction Plan Review fee consists of the initial review of plans, specifications, permit application, and one resubmittal. The initial Construction Plan Review Fee must be paid before plan review starts. Any additional submittals necessary will be charged to the developer on a time and materials basis.

The Construction Inspection Services Fee includes shop drawing review, coordination, on-site representation for a specified number of days, red line mark ups, and office support. If the number of days on-site exceeds the original number of days calculated in Appendix E, the developer will be charged for this additional effort on a time and material basis.

Project Close Out Contingency Fund

MHOG requires the developer to provide a Project Close Out Contingency Fund that will be held in an escrow account as cash or certified check deposit. The Project Close Out Contingency Fund ensures completion of the final punch list, subsequent close out documents are received, and protection of the newly installed municipal utilities during site buildout. MHOG shall have the authority to utilize the existing contingency to cover costs incurred by the Utility Department prior to final acceptance. The Project Close Out Fund is calculated as 20% of the sum of the Engineering Services Fee and the MHOG Construction Fee.

A final site walkthrough will occur after buildout of the site or two years following Utility Acceptance, whichever comes first. Following this final walk through MHOG will issue a Final Acceptance Letter which will outline the state of the project and contingency fund. If the site is 100% built out, all punch list items have been addressed, and all record files have been received; then any unused funds associated with the project will be refunded to the developer. The refund will be issued

to the party on the check that deposited the escrow fees. If a different party is to receive the escrow refund, it should be noted on the initial deposit.

If the site is not 100% built out two years following Utility Acceptance the MHOG Utility Department will transfer a portion of the project closeout contingency fund to the corresponding system's operation and maintenance budget. The percentage returned to the developer will be calculated based on the percentage of site buildout at the time of final site walkthrough.

3. Description of MHOG Construction Fees

Below is a summary of the tasks performed by the MHOG Utility Department for the fees associated with new connections to the municipal water and/or sanitary sewer system:

Residential or Business Connection	
Item	**Description**
Disconnection/Abandonment Fee	Witnessing the cutting and capping of sewer or water lead. Witnessing installation of marking post at end of lead, removal from billing system, lead sheet updates, and GIS updates
Fire Suppression Line	Plan review, inspection of live tap, two bacteriological samples, pressure test, construction inspection, integration into GIS, as built updates
Live Tap Inspection Fee, Sewer or Water	Inspect connection to the existing utility, generate lead sheet, if necessary
Meter Set Re-Trip Fee	If site conditions prevent setting of meter at first appointment the fee covers technician time to go to site and administrative time to set up a new appointment.
Flushing Fee	Fee charged to new homes for unmetered water loss during construction. Includes water to disinfect and flush lines, test system, and in construction tasks.
Sewer Cleanout Fee	Fee charged to new homes for sewer line cleaning following completion of the subdivision. Fee covers typical construction debris deposited into sewer line during construction.
Non-Municipal Irrigation Fee	Fee charged on utility bill to properties listed as high hazard due to non-municipal irrigation source. Fee covers the annual inspection and reporting requirements for compliance with the water systems cross connection program.
Water Meter	A water meter must be purchased from the Township in which the building is located in. For instructions on the purchase and installation of a meter, refer to Section 2.1 – Purchase of a Water Meter. The fees payable to MHOG include the cost of the meter and MXU radio read device, inputting the data into our billing system, and a site visit for installation.

Below is a summary of the tasks performed by the MHOG Utility Department for the fees associated with expansion of the municipal water and/or sanitary sewer system:

System Expansion	
Item	**Description**
Administrative Base Amount	Developer coordination, internal plan review, permit execution, close out procedures, assigning MHOG IDs, preconstruction meetings, and general office support
Water Line Construction	Linear foot cost covers operator's periodic inspection, witnessing of live taps, shut down of water main as necessary, walkthrough, and GIS updates
Water Valves	During initial and final walkthroughs, operation of valves during construction, inspection of valve box or well, verification of operation nut, GIS updates
Hydrants	During initial and final walkthroughs, covers operator time to operate the hydrant, inspect break away coupling and valve box depth, verify centering of operating nut, and GIS updates
Bacteriological Sampling	Covers cost of operator to collect and preserve samples, testing of the sample in the MHOG lab, and published results
Water Leads	Covers cost of operator verifying water lead curb stop is to grade and accessible. Includes staff time to add the lead to GIS, populate the attributes, and file the lead sheet in the record file system.
Tracer Wire Verification	Covers cost of operating connecting locating equipment to tracer wire, verifying conductivity, and tracer wire being to grade and accessible.
Sewer Line Construction	Linear foot cost covers operators periodic inspection, witnessing of live taps, and GIS updates
Sanitary Sewer Structures	During initial and final walkthrough, covers operator time to open manhole, inspect casting, grouting around casting and infiltration, verify grouting and smoothness of flow channel, and GIS updates
Sewer Leads	Covers cost of operator verifying sewer lead marking is to grade and accessible. Includes staff time to add the lead to GIS, populate the attributes, and file the lead sheet in the record file system.
Hydrant Meter Rental	Usage of a hydrant meter to supply water during construction. If the contractor will be using MHOG water, renting a certified hydrant meter from the Authority is a requirement. This fee is a one-time deposit based on the hydrant meter size required (see Appendix F for pricing) by the contractor. The balance of this will be returned to the developer, less the cost of the water used, billed at the current rate. If the amount of the water exceeds the original deposit, the developer will be billed for the excess usage. A copy of the hydrant rental forms are provided in Appendix F.

SECTION 5.1 – NEW GRAVITY SERVICE CONNECTION

For Genoa and Oceola Township Municipal Systems that are Operated by the MHOG Utility Department

This procedure has been developed to assist property owners with the various steps associated with completing a new service connection to the municipal gravity sanitary sewer system. Where gravity sewer main is available, and the site has appropriate fall, gravity leads can service single family homes and large commercial users. To connect a building to the sanitary sewer collection system, a lead must be present. A lead is defined as the connection between the gravity sanitary sewer main and the private lead to building.

Installing the lead to your property line will fall under one of the following scenarios:

3.1.A) Connect to An Existing Lead
- A lead was installed previously by the Developer or Township

3.1.B) MHOG Installs New Lead
- No lead has been installed, and MHOG installs the new lead

The cost to the property owner will vary depending on which scenario is applicable to their site and what the tap fees with the Township include. The general process for a new gravity service connection is outlined below:

1. Determine Availability of Gravity Sanitary Sewer with Township

The property owner shall contact the Township in which the potential connection is located to determine availability of municipal sanitary sewer for a new service connection.
If permitted by the Township, either the Township or MHOG Utility Department will provide a lead sheet or field locate the existing lead. The lead sheet for the property will outline the location of the end of the sewer lead.

Ultimately, the Township needs to approve all new sewer service connections before the property owner works with the MHOG Utility Department.

If a municipal water connection is also proposed, then the property owner shall purchase a meter through the Township in which the site is located. If the proposed connection is sanitary sewer only; the Township shall notify the MHOG billing department of the proposed connection.

If a lead exists, proceed to Step #2: Field Connection – Existing Lead

If no lead exists, proceed to Step #3 – Determine Feasibility of New Gravity Service Lead

2. Field Connection – Existing Lead

Typically, existing gravity sanitary sewer leads are 6-inch diameter plastic pipe terminated at the property line. The approximate location and elevation of the lead will be shown on the lead sheet, and it some instances additional markers will be available in the field, such as a 4x4 post or electronic marker system. Existing leads are often buried more than 8-feet for basement service, and since they are plastic, they must be found by exploratory excavation, which can sometimes be time consuming and costly depending on the available information for the site. The cost of finding the sanitary sewer lead is the responsibility of the property owner.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the wye into the building. Inspection of the private components of the sanitary sewer service lead is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them.

MHOG requires notification of connection to an existing wye, but does not require any site inspections.

A MISS DIG should be called in prior to field work, and MHOG will mark the location of sanitary sewer system components for which as built records are available

MHOG is not responsible for any site restoration associated with the private lead installation.

Proceed to Step #6: Permits.

3. Determine Feasibility of New Gravity Sanitary Sewer Lead

Prior to approving a new sanitary sewer lead, the Township shall work with MHOG to determine the feasibility of serving the site by gravity. Site conditions, such as elevation of the building in relation to the gravity sewer, or depth of service under a roadway, may make a gravity lead unfeasible.

It is up to the property owner to notify MHOG and/or the Township of the elevation and location of the proposed sanitary lead. MHOG will review the existing as built documentation and site conditions and determine if a new gravity lead is feasible. If a new lead is feasible, a sketch showing the proposed connection will be generated.

MHOG does not pay for lead installation; these fees and the policy for an individual parcel will vary depending on the special assessment and tap in fees paid to the Township. Typically, if the Township fees include lead installation, MHOG will install the lead on behalf of the Township. If the Township fees do not cover lead installation, the property owner will pay MHOG upfront to install the lead.

4. Field Connection- MHOG Installs Lead

MHOG will proceed with installation of a new lead following approval from the Township. MHOG will utilize its authorized contractor to install the new lead. The timing of the lead installation will vary depending on site conditions, weather, and availability. The lead will be located per the sketch

developed in Step 3. However, MHOG may modify this location based on site conditions including utility conflicts. MHOG will prepare a lead sheet for use by the property owner for connecting to the gravity sanitary sewer.

The property owner is responsible for installation of the privately owned components of the service lead, which include the pipe from the wye into the building. See **Attachment 4** for more information. Inspection of the private components of the sanitary sewer service lead is under the jurisdiction of the Livingston County Building Department, and the permissible materials for the pipe and fittings should be approved by them.

A MISS DIG should be called in prior to field work, and MHOG will mark the location of the municipal sanitary sewer - as available as built records provide.

MHOG is not responsible for any site restoration associated with the private lead installation.

Proceed to Step #6: Permits.

5. Permits

All other applicable permits are the responsibility of the property owner, including, but not limited to, land use permits, road right-of-way permits, building department permits, and health department permits.

6. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	**Further Info on Amount Can be Found**
Township Fees (including tap fees)	The Township in which the site resides
Meter Fee	Appendix A (Meter Purchase Form) of this Manual
Single Live Tap, Sewer	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner
Septic Field Abandonment	Livingston County Environmental Health Department (Contractor Hired by Property Owner)
Road Right of Way Permits	Livingston County Road Commission or MDOT

SECTION 5.2 –GRINDER PUMP INSTALLATION

For Genoa and Oceola Township Municipal Systems that are Operated by the MHOG Utility Department

Grinder pumps typically service single family residences where the municipal sewer is a low-pressure force main. Sometimes grinder pumps are connected to gravity main when the parcel in question cannot be served by gravity. This procedure has been developed to assist property owners with the various steps associated with completing a new service connection to the municipal sanitary sewer system via a grinder pump or relocation of an existing grinder pump on a property.

1. Siting Requirements

Eventually, grinder pumps will break down and alarm when they reach a high water condition. The Utility Department services grinder pumps when the homeowners call and notify the Utility Department of a problem. As a result, the grinder pump must be located in an area that is serviceable by our technicians and their equipment. As part of site plan approval for proposed construction, the location of the grinder pump and alarm panel must be shown on the plans and approved by the Utility Department. Staff is available at no cost to meet with the property owner or builder regarding the proposed grinder location, if required. For a grinder pump location to be approved, the following conditions must be met:

1) The depth of the grinder can shall be 93 inches as shown on Page 12 of **Appendix D**;
2) A minimum of 3-feet of clearance shall be maintained around the grinder pump from any structure to allow technician access for service and repair;
3) Landscaping, such as rocks or retaining walls, trees that hang over the grinder pump access lead, steep slopes, or ornamental bushes or fences that preclude or make access difficult are prohibited; and,
4) A minimum of 6-foot access to the grinder pump shall be maintained from the road or driveway to allow for a small excavator to remove or repair the pump. Fences, retaining walls, steep slopes, or unsafe steps are not permitted to access the grinder pump.

Please note that the inability of the technicians to safely access the pump for service may result in termination of service by MHOG.

In the event of a grinder pump relocation due to remodeling, addition to a home or garage, parcel split, or demolition and reconstruction of a home, the Utility Department, at no charge will remove the grinder pump from the pumping chamber and shut off the service valve to the property. This way the homeowner's contractor can remove and demolish the pumping chamber. During demolition, the Utility Department will witness the cutting and capping of the discharge line from the grinder pump. The location of the cut and capped line should be marked with a post above grade, or if not practical to mark above grade, mark below grade with a metal stake or rod.

2. Service Piping

A grinder pump system consists of a 4-inch diameter gravity service line and a 1.5-inch pressurized discharge line. **Attachment 3** provides a drawing of a typical grinder pump installation including the gravity line and discharge line, electrical service, property owner, MHOG installation responsibilities, and approved materials. The following describes the installation procedure for the service piping:

Property Owner

The property owner shall be responsible to meet with MHOG staff to determine the location of the grinder pump chamber. The homeowner's contractor is also responsible to connect the 4-inch gravity line to the grinder chamber. Care must be exercised by the contractor to not extend the 4-inch pipe more than 3.5-inches into the rubber boot on the grinder chamber or it can otherwise interfere with setting and removal of the grinder pump. It is highly recommended, even though the inspection of the gravity line fall under the jurisdiction of the Livingston County Building Department, to have MHOG staff inspect the pipe prior to backfill.

MHOG

MHOG shall be responsible to install the ballasted chamber and the discharge line from the chamber to the shut off curb box at the roadway. MHOG will make all attempts to install a single, un-spliced HDPE pipe. In certain instances, this may not be possible to access the existing line or install the new line in the case of a relocated grinder pump. In the event of a relocation, please note that additional charges may be required if a new line has to be installed from the grinder pump to the curb shut off box. The line will be installed at a depth of at least 5-feet to prevent from freezing, especially under driven surfaces.

Easement

Prior to MHOG conducting any work on site, the property owner must sign an easement, a copy is presented in **Appendix B.** This easement provides access to remove, repair, and/or replace the grinder pump or the service line, including excavation. Permitted land uses over and within easement include driveways, non-permanent moveable structures such as sheds, landscaping features such as trees, shrubs, and rocks. Utility operators will make reasonable efforts to remove features in the easement; however, they will not be responsible for repair and replacement. Any grass or driven surfaces will be restored following utility work. The Utility Department is also not responsible for repair of irrigation systems damaged in the easement during repair activities. Prohibited structures in the easement include permanent structures such as garages or home additions. In addition, retaining walls and fences are also prohibited in the easement.

3. Electrical Service

The homeowner, is responsible for the electrical service from the home circuit or service panel to the exterior disconnect, the grinder alarm and operation panel, and from the panel into the grinder pump chamber. Details of the electrical installation are provided in **Attachment 3 and Appendix D**. In general, the service must be double pole 30 Amp breaker. Wiring shall be 3 wire plus ground to provide two hot wires, a neutral, and a ground. The 30 Amp disconnect on the outside of the home must be fused or blade style to permit operators to service the pump panel safely without having to turn off interior breakers. If a generator is used to power the grinder pump, it must be connected to the main service panel and be of sufficient wattage and amperage to operate the grinder pump along with other household demands such as a well pump or other appliances.

4. Charges and Fees

In the event of a new installation on a previously vacant parcel of land, the homeowner assessment or cost to purchase into the district will provide them with the supply and installation of a service tap, a shut off valve and access box, a check valve, and up to 300 feet of piping from the pump to the shut off valve. It will cover all costs of the Utility Department Installation with the exception of the electrical and home plumbing described previously.

In the event of a required pump relocation due to remodeling, addition to a home or garage, parcel split, or demolition and reconstruction of a home, the homeowner will bear all costs of the relocation with the exception of the grinder pump itself. On the cost table presented in Appendix C, are the costs for the various components that may or may not be required as part of a grinder pump relocation. A cost not shown on the table is the actual construction cost for installation of the pump chamber and connection of the discharge line. This is due to the cost being variable based upon site conditions and variable distances between the pump and connection point of the discharge line. The Utility Department will collect a $6,250 escrow to perform the construction and return any unused portion along with the contractor's invoice to the homeowner or builder.

Related Documents in MHOG Utility Department Connection Manual:

Attachment 3 – Utility Department Standard Detail for Grinder Pump Installation
Appendix B – Sample Grinder Pump Easement
Appendix C – Grinder Pump Fee Table
Appendix D – E-one Corporation Grinder Pump Installation Guide

SECTION 5.3 – ABANDONMENT OF EXISTING GRINDER PUMP

For Genoa and Oceola Township Municipal Systems that are Operated by the MHOG Utility Department

This procedure has been developed to assist property owners with the various steps associated with abandoning an existing grinder pump. MHOG operates and maintains the municipally owned control panel on the home, the grinder pump and pump chamber, the discharge line from the pump up to the public right of way, and the main line.

The following procedure outlines the steps necessary to coordinate the abandonment with MHOG:

1. Notify MHOG of Grinder Pump Abandonment

The Township or property owner shall contact MHOG to notify them of the proposed grinder pump abandonment.

2. Schedule Inspection of Abandonment

The grinder pump and control panel shall be pulled by MHOG. The property owner shall contact MHOG to coordinate return of this municipally owned equipment. .

It is the property owner's responsibility to properly abandon the low pressure service lead from the grinder pump to the low pressure force main. The property owner shall contact MHOG to schedule shut off of the existing curb stop. The property owner and MHOG shall identify if there is a future need for the low pressure grinder pump lead that is being abandoned. If the abandonment is permanent the low pressure force main shall be excavated and the lead shall be abandoned at the corporation stop (the tap to the force main). If the abandonment is temporary than the curb stop will be turned off.

MHOG will modify the as built records and/or billing records to reflect the field changes for any grinder pump abandonment.

3. Field Inspection

A MISS DIG should be called in prior to field work, and MHOG will mark the location of the municipal sanitary sewer.

MHOG will perform a field inspection of the abandoned force main lead, if applicable.

MHOG is not responsible for any site restoration associated with grinder pump abandonment.

4. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Disconnect/Abandonment Fee	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner

SECTION 5.4 – ABANDONMENT OF GRAVITY SANITARY SEWER SERVICE

For Genoa and Oceola Township Municipal Systems that are Operated by the MHOG Utility Department

This procedure has been developed to assist property owners with the various steps associated with abandoning an existing gravity sanitary sewer lead.

The following procedure outlines the steps necessary to coordinate the lead abandonment with MHOG:

1. Notify MHOG of Lead Abandonment

The Township or property owner shall contact MHOG to notify them of the proposed lead abandonment.

2. Schedule Inspection of Abandonment

The gravity sanitary sewer lead shall be capped, ideally as close to the right-of-way as possible. MHOG will take measurements to update the lead sheet, and the contractor shall leave a marker post in the location of the capped lead. The property owner shall contact MHOG to schedule inspection of the cap and removal of the meter, if applicable.

MHOG will modify the as built records and/or billing records to reflect the field changes for each lead abandonment.

3. Field Connection

A MISS DIG request should be called in prior to field work, and MHOG will mark the location of the municipal sanitary sewer.

MHOG is not responsible for any site restoration associated with lead abandonment.

4. Fees

The potential fees that may be required for this procedure are listed below:

Description of Fee	Further Info on Amount Can be Found
Disconnect/Abandonment Fee	Section 4 of this Manual
Plumbing Department Inspection Fees	Contact Livingston County Building Dept.
Contractor Fees (Excavation & Plumbing)	To be hired by Property Owner