LAKELAND REGIONAL SEWER DISTRICT

Kosciusko County, Indiana

DEVELOPMENT STANDARDS MANUAL

FEBRUARY 2017

Revision 1 March 2017

Revision 2 February 2020

Lakeland Regional Sewer District

5002 East 100 North

Warsaw, Indiana 46582

Development Standards Manual

Lakeland Regional Sewer District

Summary of Revisions

Developed & Adopted February 2017

REVISION 1 March 2017:

1. Added REVISION list (i.e., this page).
2. Table of Contents: updated per Revision 1 changes; removed list of Forms.
3. Part 2.A.2: Revised to include references to New Service “NS” Forms.
4. Part 3.B.1: Added ballasting requirement.
5. Part 4: Added reference to tap connection at Force Main.
6. Part 6: Revised to include Forms Packet lists; added New Service “NS” Forms

REVISION 2 February 2020:

1. Revised *Cover* and *Revision List*
2. Table of Contents updated.
3. Part 1.D: added note.
4. Added Parts 2.A.3, 2.B.3, and 3.E.
5. Part 4: added paragraph.
6. Added Part 5 Section C Details C-1 and C-2.
7. Part 6: added Infrastructure Vacation “IV” Forms

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- FORM C – Proposed Building Sewer and Service Connection Location Sketch

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PART 1. ADMINISTRATION

A. INTRODUCTION

This manual is intended to provide information and instructions to property owners ("users") within the Lakeland Regional Sewer District ("the District") boundaries for acceptable connections to the Lakeland Regional Sewer District sanitary sewer system. They shall apply to all residential, commercial, industrial, and institutional users connecting to the District's sanitary sewer collection system. All requirements for obtaining permits for sewer connection as well as construction, material, and testing requirements are included. It is the intent of this document to provide users with the necessary information and the standard forms required to connect to the District's sewer system. All workmanship and materials for building sewer laterals shall be done in accordance with this document and the current Sewer Use Ordinance of the Lakeland Regional Sewer District.

A property owner who connects to the District's sewer system may provide, at the owner's expense, all labor, equipment, and materials from any source to accomplish the connection to the sewer system, subject to inspection and approval by the District. Such inspection shall generally consist of overseeing the use and installation of proper materials and that there are not any prohibited connections. It is recommended that property owners seek multiple quotes from different contractors for the work on their private property. The District assumes no other responsibility for work on private property, and any financial arrangements are strictly between the property owner and the contractor. Refer to the District's current Sewer Rate Ordinance for a listing of all fees for connection and use.

It is the responsibility of the property owner to make every effort necessary to avoid prohibited connections, which include but may not be limited to: broken building sewer cleanouts, rain, surface or subsurface water, downspouts, sump pumps collecting rain and/or ground water, septic tanks, holding tanks, dry wells, field drains, etc.

B. REFERENCES

In part or in entirety, the following list of ordinances, codes, protocols and references are applicable to the work herein described. Where more stringent requirements exist having jurisdiction in the Lakeland Regional Sewer District boundaries, the more stringent requirements take precedence.

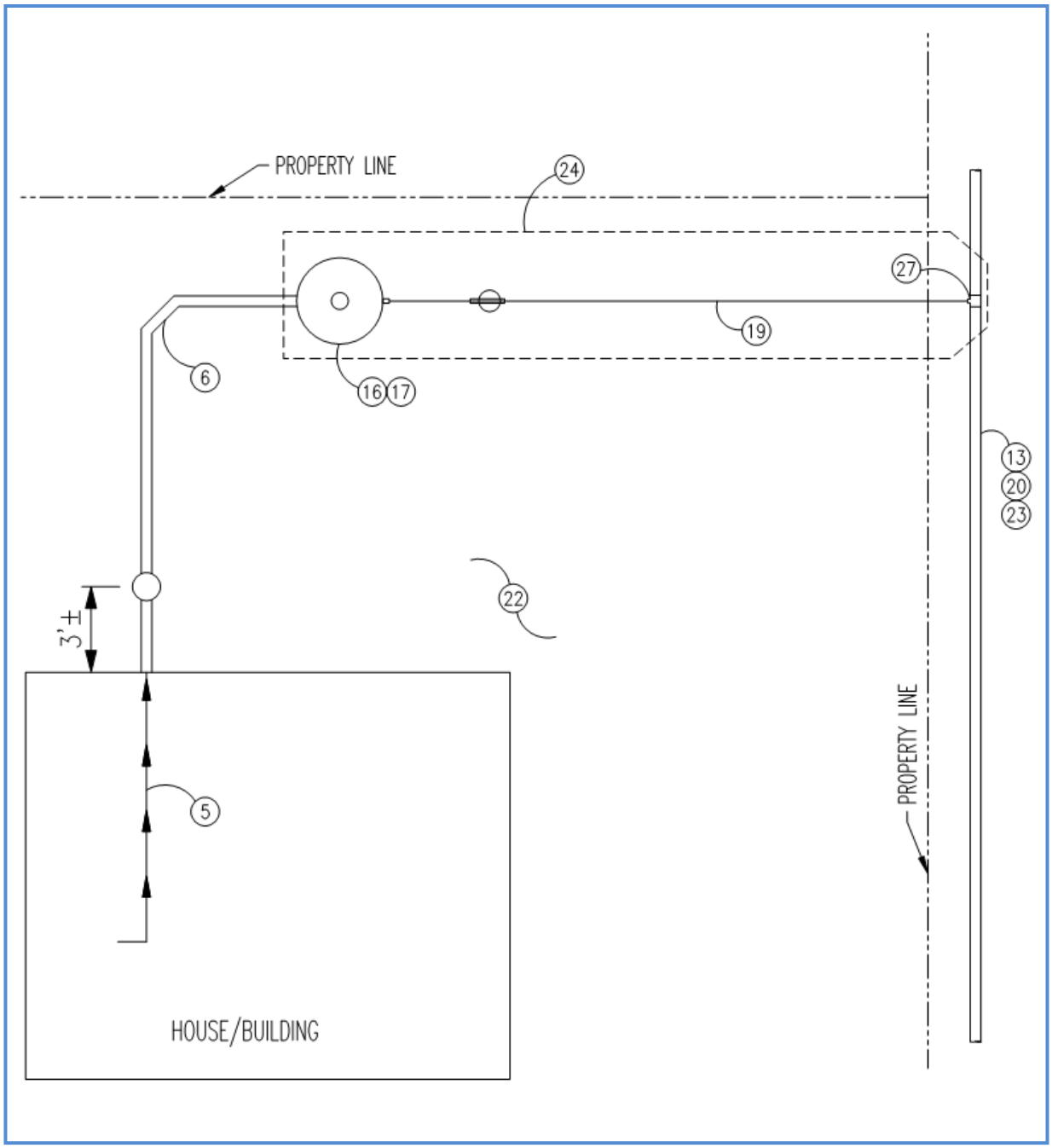
- Sewer Use Ordinance, current version, as adopted by the District.
- Sewer Rate Ordinance, current version, as adopted by the District.
- BOCA National Plumbing Code, current edition, with Indiana amendments
- NFPA 70 National Electrical Code, current edition, with Indiana amendments
- Indiana State Department of Health Rule 410 IAC 6-8.3 "Residential On-Site Sewage Systems" (current edition)
- Indiana State Department of Health Rule 410 IAC 6-10.1 "Commercial On-Site Sewage Systems" (current edition)
- Indiana State Department of Health "Protocol for On-Site Sewage System Abandonment"
- Kosciusko County Department of Health

C. DEFINITIONS

1. Backfill ..... material placed in a trench above the bedding and below the finish grade
2. Backwater Valve ..... a device used to stop flow through a pipe in one direction but allow it in the other direction (also referred to as "Backflow Preventer")
3. Bedding ..... granular material in a trench that provides support for a pipe
4. Building Lateral ..... a privately owned sewer that conveys wastewater from a building sanitary drain to the service connection; also referred to as a building sewer
5. Building Sanitary Drain ..... the plumbing pipes within a building and up to 3' outside of the building which convey wastewater inside the building to the building sewer; also referred to as building plumbing
6. Building Sewer ..... a privately owned sewer that conveys wastewater from a building sanitary drain to the service connection; also referred to as a building lateral.
7. Clear Water ..... rainwater, groundwater, surface runoff, etc. that is not wastewater (sewage) or grey water. Clear water discharge is not allowed in the sanitary sewer system.
8. Customer ..... a person, person(s), or business whose wastewater is collected, conveyed, and treated by the District
9. District ..... the Lakeland Regional Sewer District
10. Ejector Pit ..... a structure that collects wastewater from the building drain so that it can be pumped. Only used if a gravity building sewer is not feasible.
11. Ejector Sewer Pump ..... a pump that lifts wastewater from an Ejector Pit to Ejector Sewer Piping. Only used if a gravity building sewer is not feasible.
12. Ejector Sewer Piping ..... piping that uses pressure from an ejector sewer pump to convey wastewater from a building to a Service Connection. Only used if a gravity building sewer is not feasible.
13. Force Main ..... a sewer that conveys wastewater via pressure from a pump
14. Gravity Sewer ..... a sewer that conveys wastewater via gravity
15. Grey Water ..... water from baths, sinks, dishwashers, washing machines, etc. that does not contain human bodily waste or food waste
16. Grinder Pump Unit ..... see "Grinder Station"
17. Grinder Station ..... the unit that collects wastewater from the building sewer or ejector sewer piping and pumps it into a low pressure sewer lateral; includes the basin, pump, and control/alarm panel; electrical between the basin and control panel, also referred to as "Grinder Pump Station" or "Grinder Pump Unit"

18. I/I ..... acronym for Infiltration and Inflow, which refers to clearwater entry into the sanitary sewer system from defective pipes, pipe joints, structures, etc. as well as from prohibited connections
19. Low Pressure Sewer Lateral .... a sewer that conveys wastewater from the grinder pump unit to the sewer main. It is part of the Service Connection.
20. Low Pressure Sewer Main ..... a sewer that is pressurized and is owned, managed, and maintained by the Lakeland Regional Sewer District
21. Prohibited Connections ..... the connection of any pipes that collect rain, surface or subsurface water, downspouts, broken building sewer cleanouts, sump pumps collecting rain and/or ground water, septic tanks, holding tanks, dry wells, field drains, etc., also referred to as "Illicit Discharges"
22. Property Owner ..... see "Customer"
23. Public Sewer Main ..... the portion of the sewer system that is owned, managed, and maintained by the Lakeland Regional Sewer District; may be referred to as "sewer main"
24. Service Connection ..... grinder station and appurtenances, including the low pressure sewer lateral, that is connected from the building sewer to the public sewer main; typically owned and maintained by the District (thence part of the Public Sewer)
25. Sewer ..... a pipeline which conveys wastewater
26. Sewer Main ..... see "Public Sewer Main"
27. Tap ..... the location where a low pressure sewer lateral connects to a sewer main
28. User ..... an entity (i.e., person, business, corporation) that is serviced by the Lakeland Regional Sewer District sanitary sewer collection system
29. Wastewater ..... water that has been used (i.e. washing, flushing, etc) and thus has waste products; also referred to as sewage

DEFINITIONS KEY



D. INSTALLATION RESPONSIBILITIES

The following table lists the general components that are part of the sanitary sewer connection and then indicates who is responsible for each component. **"RESPONSIBILITY" in this table refers to purchasing and acquiring materials as well as to financing and performing/contracting all work required for the installation of the referenced infrastructure item. This table does not indicate nor imply ownership and/or maintenance obligations**. *NOTE: Responsibility for modifications to existing infrastructure belongs to the Owner initiating and/or causing the modifications. Such cases require individual review by the District.*

ITEM	DISTRICT'S RESPONSIBILITY	PROPERTY OWNER'S RESPONSIBILITY
BUILDING SEWER [including all associated fixtures and appurtenances (e.g., pipe, backwater valve, cleanout, adaptor, etc)]	NO	YES
ELECTRICAL SERVICE [including all fixtures and appurtenances required to provide power for the grinder pump station connected at the control panel]	NO	YES
SERVICE CONNECTION [Includes: Grinder Pump Station, and Low Pressure Sewer Lateral]	YES, If the property WAS included in the initial sewer system and treatment plant construction projects. NO, If the property was NOT included in the initial sewer system and treatment plant construction projects.	NO, If the property WAS included in the initial sewer system and treatment plant construction projects. YES, If the property was NOT included in the initial sewer system and treatment plant construction projects.
GRINDER PUMP STATION [including all fixtures and appurtenances (e.g., pump, basin, basin lid, control/alarm panel, vent, alarm, disconnect box, etc.)]	YES, If the property WAS included in the initial sewer system and treatment plant construction projects. NO, If the property was NOT included in the initial sewer system and treatment plant construction projects.	NO, If the property WAS included in the initial sewer system and treatment plant construction projects. YES, If the property was NOT included in the initial sewer system and treatment plant construction projects.
LOW PRESSURE SEWER LATERAL [including all associated fixtures and appurtenances (e.g., pipe, valves, taps, etc.)]	YES, If the property WAS included in the initial sewer system and treatment plant construction projects. NO, If the property was NOT included in the initial sewer system and treatment plant construction projects.	NO, If the property WAS included in the initial sewer system and treatment plant construction projects. YES, If the property was NOT included in the initial sewer system and treatment plant construction projects.
SEPTIC SYSTEM ABANDONMENT [abandonment of an existing septic system per the local and state requirements]	NO	YES
METERING STRUCTURE [for approved users: includes structure, piping, valves, and appurtenances; excludes "Meter and Appurtenances"]	YES, If the property WAS included in the initial sewer system and treatment plant construction projects. NO, If the property was NOT included in the initial sewer system and treatment plant construction projects.	NO, If the property WAS included in the initial sewer system and treatment plant construction projects. YES, If the property was NOT included in the initial sewer system and treatment plant construction projects.
METER AND APPURTENANCES [for approved users: includes meter, control panel, appurtenances, electrical service, etc.; excludes "Metering Structure"]	NO	YES

PART 2. CONNECTION REQUIREMENTS

Property owners seeking connection to the District sanitary sewer system are required to submit the applicable forms and fees to obtain a Permit from the District **prior to the start of any building sewer connection construction**. The property owners are required to follow all applicable District, local, state, and federal ordinances, codes, and standards with respect to materials and workmanship associated with the installation and maintenance of the connection to the District sanitary sewer system.

The District sanitary sewer system was designed for sanitary sewerage flows only. This excludes stormwater and groundwater flows. No yard drains, roof drains, or sump pumps shall be directed into the District sanitary sewer system. The District will inspect sewer installations. The property owner is required to pay all fees imposed by the District for inspection and testing; and is responsible for any work necessary to obtain approval of the sewer connection (i.e., to pass the inspection).

A. SUBMITTALS

1. BUILDING SEWER CONNECTIONS

All users are required to submit the following, as well as any other items requested by the District:

- FORM A – Sewer Connection Agreement
- FORM B – Application for Sewer Connection Permit
- FORM C – Proposed Building Sewer and Service Connection Location Sketch
- Inspection fee

The District will complete and submit:

- FORM D - Building Sewer Inspection
- FORM E - Septic System Abandonment Verification
- FORM F – Sewer Connection Approval

2. NEW SERVICE CONNECTIONS

All users that were **NOT** included in the initial sewer system and treatment plant construction projects are required to submit the above items (“NS” version) as well as:

- Form NS-A1 – Grinder Station Purchase Agreement
- Easement (if ownership and maintenance of the grinder station is turned over to the District)
- Insurance certificate from Contractor and/or Property Owner

The District, in addition to the above items, will complete and submit:

- FORM NS-D2 – Service Connection Inspection

3. INFRASTRUCTURE VACATION

All users currently connected to the District's sewer system who request and qualify to vacate existing infrastructure shall submit the following:

- Form IV-A – Infrastructure Vacation Agreement
- Form IV-B – Application for Infrastructure Vacation Permit
- Form IV-C – Proposed Infrastructure Vacation Sketch
- Applicable Fees
- Easement (if needed)
- Insurance Certificate

The District shall complete and provide the following applicable forms:

- Form IV-D – Permanent Infrastructure Vacation Inspection AND/OR Form IV-D2 Temporary Infrastructure Vacation Inspection
- Form IV-F – Permanent Infrastructure Vacation Approval AND/OR Form IV-F2 Temporary Infrastructure Vacation Approval

B. INSURANCE

In order to protect the Public Sewer and to finance repairs needed due to damage caused during Tap connection, bonds and insurance may be required by the Owner and/or Contractor who perform Tap connection work.

1. BUILDING SEWER REQUIREMENTS

All contractors, subcontractors, and homeowners connecting to the Public Sewer shall have insurance coverage in case of damage to the Public Sewer caused from the connection work. Homeowners performing their own work shall have adequate homeowners insurance. Contractors performing the work shall have liability insurance.

2. SERVICE CONNECTION REQUIREMENTS

This section applies only to new Service Connections (i.e., those service connections that were not included in the initial sewer system and treatment plant construction projects). **This section does not apply to work done on the Building Sewer or Building Drain.**

CERTIFICATE OF INSURANCE REQUIREMENTS:

The Contractor shall provide the following proof of insurance, as required by the District:

1) Public Liability and Property Damage Insurance in the case of damage or injury to one or more persons. The Contractor shall provide a “Certificate of Insurance.”

The property Owner shall provide the following proof of insurance, if performing his/her own work, as required by the District:

1) A Property Owner completing his/her own service connection work, without a contractor, shall provide either a Property Owner's policy amended to cover the work being completed or obtain a separate policy, to cover damages to the public sewer system from his/her construction operations. The Owner shall provide a “Certificate of Insurance.”

3. INFRASTRUCTURE VACATION

For work which does not require modifications to the grinder basin, the control panel, the low pressure sewer lateral and appurtenances, and the low pressure sewer main and appurtenances, shall at a minimum meet the following:

- All contractors, subcontractors, and homeowners shall have insurance coverage in case of damage to the Public Sewer caused from the work. Homeowners performing their own work shall have adequate homeowners insurance. Contractors performing the work shall have liability insurance.

For work which does require modifications to the grinder basin, the control panel, the low pressure sewer lateral and appurtenances, and the low pressure sewer main and appurtenances, shall at a minimum meet the following:

- CERTIFICATE OF INSURANCE REQUIREMENTS in Paragraph B.2. above.

PART 3. TECHNICAL SPECIFICATIONS

A. BUILDING SEWERS

The building sewer laterals are those that are located three feet from outside the building's exterior wall to the grinder pump station (GPS). The building sewer installation shall not commence until all required submittals and permitting have been completed and approved; and until the District's main sewer collection system and wastewater treatment plant are complete and in service.

Upon request by the District or District's representative, the property owner shall make building facilities (house, basement, garage, etc) available for building drain and electrical panel observation prior to connection to the District collection system.

In connecting to the District sewer system, the Property Owner asserts that all piping and fixtures on the property are in satisfactory condition at the time the connection is made and sewer service is furnished; and that there are no illicit discharges/prohibited connections to the District sanitary sewer system.

1. GENERAL REQUIREMENTS

- **Power supply/electrical service for the Grinder Pump Station shall be installed, functional, inspected, and approved prior to connecting the Building Sewer to the Grinder Pump Station.**
- Building Sewers are recommended to be installed using the shortest and most direct route to the grinder pump station. Modifications to building plumbing may be done to simplify the building sewer alignment.
- Prior to the start of the work, the location and elevation of both the Building Drain outlet and the grinder station inlet (or a previously installed stub from a grinder station) must be identified to determine if adequate slope exists for a gravity Building Sewer.
- For residential connections, if the slope is insufficient for a standard four (4) inch diameter gravity lateral but is sufficient for a six (6) inch diameter gravity lateral; the property owner may request that the District allow that a six (6) inch gravity lateral be installed rather than an ejector lateral.
- If inadequate or negative slope exists, the use of an ejector sewer system may be required. Ejector sewer systems shall only be installed with prior approval from the District.
- All fittings shall be installed in a manner that guides sewage in the direction of intended flow. There shall be no elbows or bends greater than 45 degrees.

2. USE OF EXISTING BUILDING SEWER

New Building Sewer is required from the Building Drain to the Service Connection (i.e., starting 3' from the exterior

wall of the building to the Grinder Station) to ensure that no clear water or other forms of I/I discharge to the sanitary sewer collection system. A variance to use existing Building Sewer can be requested; however, the District reserves the right to deny any variance request.

To be considered for re-use, existing building sewer must meet current District Development Standards. Refer to the Variance Request for Re-Use of Existing Building Sewer included in the Attachments section.

3. GRAVITY BUILDING SEWER

PIPE REQUIREMENTS

General

- Three (3) feet of cover above the top of the pipe is recommended to help guard against the seasonal risk of freezing. Where existing conditions do not allow for this depth, other forms of freeze protection could be implemented by the User when prudent.
- Installation shall meet the requirements of the bedding and backfill section of this document. Installations by horizontal directional drilling should be requested as a variance for District review and approval/denial on a case by case basis.

Material

- Located fifty (50) feet or more from any potable water well:
    - **PVC ASTM-D3034 SDR 26 and 35** with gasketed push-on joints
    - **PVC ASTM-D2665 Schedule 40** with solvent weld joints
- Located within fifty (50) feet from any potable water well:
    - **PVC ASTM-D2241 SDR 21** with gasketed compression-type joints
    - **DI AWWA C150 Class 52** with pressure grade gasketed push-on or mechanical joints

Size and Slope

- 4-inch diameter pipe: 1.33% to 12.0% slope
- 6-inch diameter pipe: 0.67% to 12.0% slope

Fixtures and Fittings

- Flexible, watertight couplings (Fernco or approved equal) shall be used to connect gravity laterals of unequal diameter or differing material.
- A Building Sewer shall have at least one cleanout (see Cleanout Requirements)
- A Building Sewer is recommended to have one backwater valve (see Backwater Valve Requirements)

CLEANOUT REQUIREMENTS

- In order to protect cleanouts from damage that could lead to I/I, they should be located in areas that minimize the potential for lawn mower or vehicular strikes whenever possible.
- A sewer cleanout shall be installed a minimum of 18 inches and a maximum of 10 feet from the building; or as approved by the District based on site feasibility.
- Sewer cleanouts shall be installed a maximum of every 100 feet along any gravity building sewer. It is also recommended that cleanouts are installed at each change of direction on the horizontal alignment.
- Cleanouts shall consist of a Tee or Wye fitting and pipe extension brought to grade.
- Wye fittings shall be installed in the direction of sewer flow and have a 45 degree fitting and pipe extension brought to grade.

- Cleanouts shall be the same diameter as the building sewer pipe.
- The Cleanouts shall be installed in an accessible location and shall be plugged or capped with an approved watertight lid.

BACKWATER VALVE REQUIREMENTS

- When possible, for ease of access and maintenance, the backwater valve is recommended to be installed within the building, near the lowest point of the building sanitary drain.
- If not installed on the building sanitary drain, a backwater valve may be installed on each gravity building sewer lateral between two cleanouts.
- Backwater valves shall be of the same nominal size as the building sewer lateral.
- The valve shall have bell ends with suitable groove for "O" ring gasket weighted removable flapper, self lubricating hinge, and a screw type removable inspection cover when located on the Building Sewer (outside of the building).
- The valve housing screw type lid shall have a replaceable ribbed neoprene gasket of watertight construction.
- The flapper shall be replaceable and weighted with a lead slug to avoid floating.

4. EJECTOR SEWER SYSTEMS

Ejector sewer systems may only be used in instances where the slope is inadequate or negative between the building drain and the grinder station inlet zone. Approval for the use of an ejector sewer system shall be based upon a review by the District.

Piping Requirements:

- Watertight connection to the grinder station per the grinder station manufacturer's specification.
- In cases where the grinder station has been previously installed with a gravity lateral stub, a flexible and watertight coupling (Fernco or approved equal) shall be used to connect the ejector sewer piping to the existing gravity stub.
- Shall be 1 ¼" diameter unless otherwise approved by the District.
- Shall be constructed of water grade pressure pipe.
- Shall have a minimum of 3' of cover.
- Shall meet the requirements of the bedding and backfill section of this document. Installations by horizontal directional drilling should be requested as a variance for District review and approval/denial on a case by case basis.

Pump and Pit Requirements:

- Submittals including pump performance data, shop drawings for the pump and pit, and other information as determined to be necessary by the District shall be submitted for review and approval.
- Shall not exceed a flow rate of 14 gpm and not pump waste in intervals exceeding 24 gallons.
- Shall be privately owned and maintained.

5. GREASE AND SAND TRAPS

A grease or sand trap may be required along the building sewer lateral prior to the grinder station to protect the sewer collection system and the wastewater treatment plant from grease, oil, sand or any other substance that may be discharged from that building. The minimum requirements are as follows:

- On all buildings with a kitchen that will be used in food preparation, processing, and service of food or food products that is above the normal family residential amount
- The design and size of the traps shall meet the needs of the facility.
- All proposed plans for a grease or sand trap, including size, flow calculations, drawings, and a detailed maintenance plan shall be submitted to the District for approval.
- The location of all grease and sand traps shall be along the building sewer prior to the discharge into the grinder station, as approved by the District.
- The installation of all grease traps shall be per the manufacturer's recommendations.

6. ELECTRICAL

Power to all grinder pump stations (GPS) shall be supplied by the property owner from the property owner's electrical service panel to a disconnect box located on the GPS control panel post. If existing electrical service and/or electrical supply panels need upgraded to meet the electrical requirements of the grinder pump station, said upgrades are the responsibility of the property owner. The installation of all electrical requirements and power to the grinder pump station should be established prior to connecting the building sewer to the public sewer system.

The following is required for electrical service:

- **Individual grinder station (one pump):** 240 Volt, Single Phase, with a dedicated 2 Pole, 30 Amp branch circuit breaker in the building electrical service panel
- **Shared grinder station (one pump**): 240 Volt, Single Phase, with a dedicated 2 Pole, 30 Amp branch circuit breaker in EACH building electrical service panel
- **Grinder Stations with two pumps:** require a dedicated 2 Pole, 60 Amp branch circuit breaker in the building electrical service panel
- Cables or wiring from the branch circuit breaker to the GPS disconnect box shall be: one (1) red wire, one (1) black wire, one (1) white wire, and one (1) green (or bare) wire.
- **For individual or shared grinder stations with <u>one</u> pump:** Wire size shall be 3 - #10 and 1 - #10 ground for cable lengths 210' or less from the building electrical service panel breaker to the GPS disconnect box. For cable lengths greater than 210', size cable per a licensed electrician's recommendations such that voltage drop shall not exceed 3.0% phase-to-phase.
- **For individual or shared grinder stations with <u>two</u> pumps**: Wire size shall be 3 - #8 and 1 - #10 ground for cable lengths 165' or less from the building electrical service panel breaker to the GPS disconnect box. For cable lengths greater than 165', size cable per a licensed electrician's recommendations such that voltage drop shall not exceed 3.0% phase-to-phase.
- Property owner is responsible for ensuring that all electrical work is performed in accordance with the National Electric Code, local code, and permitting requirements.
- All conduits must enter the bottom of the disconnect box. Side and top entrances are prohibited.

- Cabling from the building electrical service panel to the GPS disconnect box may be direct buried or in conduit.
- Direct buried cable shall be a minimum of 24 inches deep.
- Conduit shall be a minimum of 18 inches deep.
- Electrical cable connection at the GPS disconnect box will be inspected and verified by a District inspector.
- Any *Surge Protection Devices* (SPD's) installed by Property Owner shall meet National Electric Code Requirements, should be coordinated with Electric Utility, and be adequately sized and installed for use with District Equipment.

7. CONNECTION METERING

The Allowable Metering of sewage flows is defined in current District ordinances (Rate and Use). In these limited cases, the Property Owner shall provide and install all metering requirements which may include, but may not be limited to: flow meter, isolation valves, pipes, structure (if not existing), control wiring, electric service to meter and reading devices, control panels, transmitter and totalizer. Permit applications should include metering location plan and device manufactures (meter, panel, totalizer, transmitter, etc.) for District review and approval. Refer to Details Section of this Manual for installation details.

B. SERVICE CONNECTIONS

The Service Connection includes the grinder station (basin, pump, etc), control/alarm panel, disconnect box, mounting post with two electrical conduits, electrical wiring from the pumps to the control/alarm panel and disconnect box, pressure piping, and required fittings, valves, corporations and curb stops for connection to the main sewer. The service connection shall not be completed until all required submittals and permitting have been completed and approved. The property owner is responsible for the installation of the service connection only if the property was not included in the initial sewer system and treatment plant construction project.

All service connections shall meet the following requirements:

- Installation of a grinder station, including the grinder basin, grinder pump, control/alarm panel and appurtenances as shown in the details.
- Installation of the required conduits and electrical between the grinder basin/pump and the control panel and disconnect box
- Installation of a conduit stub for electrical service from the building electrical panel to the GPS' disconnect box.
- Venting per the District and the Manufacturer's requirements. The vent location shall be either Standard (on top of the grinder basin) or Flood Protection, as shown in the details.
- Installation of pressure piping and fittings from the grinder pump to the main sewer.
- Installation of a curb stop and box assembly
- Corporation or saddle for connection to the main sewer.
- Approval from the District prior to the installation of the service connection.

1. SERVICE CONNECTION MATERIALS

GRINDER STATIONS

The grinder pumps, basins, control panel, piping, valves and other appurtenances shall meet the following requirements of the District as well as all federal, state or local authorities having jurisdiction. Any altering of the requirements shall require prior approval by the District.

- Crane Pumps & Systems, Inc. was the pre-selected manufacturer and supplier of the Grinder Pump Stations in the initial system construction project
- For maintenance and cost benefits, the District requires the use of the following models by Crane Pumps & Systems, Inc.
    - Type I: simplex, two stage, Model OGP with 24” diameter, 84” or 96” deep basin
    - Type II: simplex, two stage, Model OGP with 30” diameter, 84” or 96” deep basin
    - Type III-S: simplex, two stage, Model OGP with 36” diameter, 96” deep basin
    - Type III: duplex, two stage, Model OGP with 36” diameter, 96” deep basin
    - Type IV: duplex, two stage, Model OGP with 48” diameter, 96” deep basin
    - Or as approved by the District
- Basin shall have concrete ballast per detail to address buoyancy and groundwater.
- Basin shall be fiberglass reinforced polyester resin with a 3” ballast support flange
- Cover shall be fiberglass reinforced and grass green color
- Junction Box shall be NEMA 6 rated and mounted on the underside of the cover
- A two inch threaded bug proof mushroom vent shall be provided
- Each basin shall have 300 Stainless Steel “C” channel rail assembly and polypropylene ropes for pump and float tree removal
- The control/alarm panel shall be a post mounted, padlockable NEMA 4X fiberglass enclosure with Stainless Steel hardware
- The disconnect box shall be post mounted, NEMA 4X rated, and have stainless steel hardware
- When located at or below the 100 year floodplain elevation, each GPS shall meet floodplain requirements, have a non-vented fiberglass cover, and a 2” side grommet to accommodate 2” PVC vent pipe (see the Flood Protection for Grinder Pump Stations detail).
- All materials and installation shall meet the Details provided in this Manual

PRESSURE PIPE

The low pressure sewer piping and appurtenances that will run from the grinder station to the sewer main shall meet the following:

- Pipe shall be **HDPE AWWA C901 DR 11**, 160 psi, meeting ASTM D3350
- Pipe shall be smooth wall
- Joints shall be by the butt heat fusion, socket fusion, or compression method.
- Pipe Diameter shall be one and one quarter inches (1-1/4”) in diameter, unless wastewater flows and pumping rates indicate larger lateral sizing and is approved by the District.

- Tracer wire shall be installed as shown in the Details. Tracer wire shall be min. #10 AWG, of extra high strength copper-clad steel conductor, with green 45 mil HDPE insulation
- Open cut trench and horizontal directional drilling are acceptable installation methods.
- Shall meet the requirements of the bedding and backfill section of this document. Installations by horizontal directional drilling should be requested as a variance for District review and approval/denial on a case by case basis.

FITTINGS AND VALVES

All corporations, saddles, check valves, curb stops, curb boxes, and other fittings shall be in accordance with the Details provided in this Manual and shall meet the following:

- Compression fitting tee or wrap around tapping saddles (nylon coated ductile iron with dual stainless steel 3-1/4" width straps with spring washers), pressure rating up to 160 psi, with 18-8 stainless steel hardware, and meet ANSI/AWWA C-800, may be used for tap connections.
- The Curb Stop Assembly shall include a swing check valve, shut off valve (i.e., curb stop) and curb box (i.e. riser) with 18" long extension rod; have a minimum working pressure of 160 psi; and have an.
- Curb stop shall be polypropylene, rated for minimum 160psi, have manual or service key operating handle, have end connections, and shall match the nominal pipe diameter where installed.
- Swing check valves shall be Ultra High Impact PVC, rated for minimum 160psi, have end connection, and match the nominal pipe diameter where installed.
- Curb box (including riser and lid) shall be ductile iron in paved areas and may be polypropylene in non-paved areas.

ELECTRICAL

The electrical requirements for the service connection shall include all required power and control wiring from the grinder pump to the control panel as indicated in the details and by the pump manufacturer.

2. SERVICE CONNECTION INSTALLATION

GRINDER STATIONS

Grinder pump stations shall be installed per manufacturer's recommendation and the Details within this document. All locations shall be preapproved by the District.

PRESSURE PIPE

The construction of the pressure pipe from the GPS to the main sewer connection shall be as shown on the included details. The proposed location of piping shall be approved by the District prior to installation. All the following shall be met for the installation of the pressure sewer pipe:

- Installed with a minimum of five (5) feet of cover.
- Installed with tracer wire as shown on the details.
- Installation shall meet the requirements of the bedding and backfill section of this document. Installations by horizontal directional drilling should be requested as a variance for District review and approval/denial on a case by case basis.

FITTINGS AND VALVES

- The installation of a new service tap on the sewer main shall only be performed by a contractor qualified to complete the work.
- The District shall be notified a minimum of 48 hours prior to the installation of the tap.
- The completed tap shall be inspected and approved by the District prior to being backfilled.
- The installation of all fittings, curb stop assemblies, and service taps shall be per the attached details.

ELECTRICAL

The installation of all electrical requirements and power to the grinder pump station should be established by the Property Owner prior to connecting the Building Sewer to the Service Connection. All electrical work associated with the Service Connection (i.e., wiring between the pump, control/alarm panel, and disconnect box) shall be installed per the attached drawings and the following requirements:

- All electrical work shall be performed in accordance with the National Electric Code, local code, and permitting requirements.
- The GPS disconnect box shall be mounted so that the bottom is at a minimum of 3' above finish grade.
- All conduits must enter the bottom of the disconnect box. Side and top entrances are prohibited.
- Wires or cabling from the grinder pump to the control panel may be direct buried or in conduit.
- Direct buried cable shall be a minimum of 24 inches deep.
- Conduit shall be a minimum of 18 inches deep.
- All wiring above ground shall be in Schedule 80 conduit.
- Electrical work will be verified by a District inspector.

C. BEDDING AND BACKFILL

Bedding and backfill shall be installed according to the Flexible Pipe Bedding Detail and shall meet the following requirements:

- All gravity or pressure sewer pipes shall be bedded in granular material meeting Indiana Department of Transportation (INDOT) No. 8 gradation.
- Bedding shall be carefully placed making sure that the lower quadrants of the pipe are firmly bedded and supported.
- The trench section shall be carefully backfilled with suitable excavated material (under non-paved areas) or compacted aggregates (under and within five feet of paved areas).
- Suitable excavated material used for backfill under non-paved areas shall consist of loam, sand, or other similar materials.
- Suitable material used for backfill under and within five feet of paved areas shall consist of compacted granular material.
- Backfill materials that include organic matter, trash, pieces of concrete, large stones, boulders, or other similar materials shall not be used.
- Native soils may only be used for backfill if they consist of sand or other similar materials and is

approved by the District.

- Native materials that include organic matter, trash, pieces of concrete, large stones, boulders, or other similar materials shall not be used.
- In unpaved areas, a minimum of 2" of topsoil shall be placed above the backfill and then shall be seeded.
- Throughout construction, care shall be taken to keep the trench and any other open excavation free from any ground and surface water.
- **The District shall inspect the trench prior to backfilling.** The trench should be backfilled up to grade within 24 hours of a completed inspection.
- The required equipment shall be provided and maintained to keep excavations dry until the pipe is inspected and the sewer pipe bedding and backfill are complete.
- If dewatering is required, drain or pump water away from the work to a suitable location without interference to adjoining property.

D. SEPTIC SYSTEM ABANDONMENT

It is the intent of the District to comply with state and federal environmental regulations to ensure that all sewage (including grey water) generated from all structures within the District is properly conveyed to the District sanitary collection system in order to be treated at the District wastewater treatment plant. The following is required by Property Owners in order to meet this intent:

- All *piping and appurtenances* that are: currently used to convey sewage, not connected to the District collection system, and not constructed of approved materials or workmanship shall be abandoned.
- *Piping and appurtenances* include, but may not be limited to: building sewer pipe, septic tanks, dry wells, dosing tanks, absorption fields (aka, leach beds), drainage piping, electrical panels, electrical conduit and wiring, etc.

Existing on-site, septic systems shall be removed from service in accordance with the current procedures and standards of the Kosciusko County Department of Health and the Indiana State Department of Health (Rule 410 IAC 6-8.3-90, or successor; and the "Protocol for On-site Sewage System Abandonment"). Minimum requirements are:

- Disconnect power at the source and remove all controls and panels. All above ground electrical lines that will not be used for other purposes must be removed.
- A licensed septic tank cleaner must pump all contents from all tanks in the on-site system. **The contents shall be hauled off site.** The District Sewer Use Ordinance prohibits this septic discharge to the District sewer system. **A dated receipt for this work shall be presented to and verified by the District.**
- Tank Abandonment:
    - Remove the tanks or crush the lids into the tanks.
    - Solid bottoms shall be broken up to allow for proper drainage.
    - Backfill the holes or tanks with debris free sand or other granular material, concrete, or soil material that is compacted in place to prevent settling.
    - After inspection by the District, properly grade and establish vegetative cover.

- Piping and Absorption Field Abandonment:
    - Any and all existing sewer lines connecting the building sanitary drain to the septic tank, that are also tied directly to the lake, or to a storm drain or other structure emptying into the lake, must be disconnected, plugged, and abandoned.
    - If an absorption field is present, its components may be left intact if there are no plans to use the area for other purposes. Vegetative cover shall be maintained.
    - If an absorption field is to be removed, the following applies:
        - Allow sufficient time after the system is taken out of service and the tanks pumped to ensure the entire absorption field is completely dry.
        - Have a licensed septic tank cleaner pump all contents from all distribution boxes in the system.
        - A contractor shall remove the distribution network, aggregate, and sand (if any) from the site. This material must be disposed of at a licensed landfill.
        - Properly grade and establish vegetative cover.
- If effluent has surfaced, affected areas must be covered with hydrated lime followed by topsoil. Vegetative cover shall be maintained.
- Written documentation of tank abandonment must be provided to the local health department by the homeowner in the form of a receipt from the contractor(s).
- Septic system abandonment shall be verified by the District to ensure compliance with all local and State of regulations.

E. INFRASTRUCTURE VACATIONS

The property owner shall provide justification to the District to vacate existing infrastructure and disconnect from the sewer system. All applicable codes and ordinances (including local and state) concerning public health, plumbing, and public sewer systems shall be met. Following are the minimum District requirements governing infrastructure vacations.

1. Permanent

a. Refer to DETAIL C-1 PERMANENT INFRASTRUCTURE VACATION

b. Building Sewers, Gravity:
    i. below ground piping may remain in place but open ends should be capped or plugged
    ii. cleanout risers should be removed to below grade and capped or plugged

c. Building Sewers, Ejector:
    i. below ground piping may remain in place but open ends should be capped or plugged
    ii. pits, sumps, or other collection basins should be removed and backfilled, or filled and tightly capped

d. Electric Power to Grinder Pump Stations
    i. wiring shall first be disconnected from the source
    ii. wiring shall be disconnected from the control panel disconnect box
    iii. no wiring, cable ends, or conduit shall remain visible at or above grade

e. Grinder Pump Station
    i. The District has first rights of salvage to all equipment and appurtenances. The Property

Owner is obligated to protect District equipment and appurtenances until said infrastructure is released for vacation by the District (i.e., after District salvaging is complete); at such time it is the Property Owner's obligation to vacate all remaining equipment and appurtenances per District Standards.

ii. no items shall remain visible at or above grade.
iii. below ground piping and conduits may remain in place but open ends shall be capped or plugged
iv. Grinder stations removed by the property owner may be salvaged to the District upon request of the District staff, and delivered to the District's Wastewater Treatment Facility by property owner.

f. Low Pressure Sewer Lateral
   i. The existing force main shall be protected during all work and activities.
   ii. Excavate and expose existing lateral near force main. Existing lateral to be cut and an electrofused cap shall be installed on the lateral end at a location previously approved by the District. Work shall be coordinated, witnessed, inspected and approved by the District.
   iii. Vacating of lateral shall be done prior to all other vacation activities.
   iv. Curb stop assembly shall be removed, and salvaged to the District upon request.

2. Temporary

a. Refer to DETAIL C-2 TEMPORARY INFRASTRUCTURE VACATION

b. All items temporarily vacated are understood to be intended for re-use upon service reconnection. Said items shall be permanently vacated per these Standards and at the Property Owner's expense unless otherwise directed by the District and per the following:
   i. if reconnection is not completed within the agreed upon time frame
   ii. if Property Owner cannot demonstrate to the District that the items intended to be reused have been adequately protected from damage and remain suitable for sewage conveyance at the time of reconnection. See Part 3 Paragraph A.2 concerning reuse of existing sewer.

c. All items temporarily vacated shall be adequately protected from damage. This shall include visible barriers (such as construction snow fencing) that demarcate the item location and deter vehicular and equipment traffic from crossing over.

d. Building Sewers (gravity and ejector) and Electric Power to Grinder Pump Stations
   i. Upstream ends of building sewer intended for reuse shall be capped with a watertight factory made fitting that is specified for use with the existing pipe material and diameter. The capped end shall be marked with 1/2" rebar extending from 3' above grade to center of upstream side of cap.
   ii. wiring shall be disconnected from source and all breakers shall be placed in the "off" position
   iii. For pipes having adequate cover, the Property Owner may choose at his/her own risk to allow crossing over, but the location shall otherwise be marked. The District shall in no way be held accountable for any resulting damage nor requirement for permanent vacation and/or replacement.

e. Grinder Pump Station and Low Pressure Sewer Lateral
   i. the District shall place breakers in the "off" position
   ii. Pipe stubs for reconnecting future building sewers shall be made at the nearest joint upstream of the basin. The pipe stub end shall be capped with a watertight factory made fitting that is specified for use with the existing pipe stub material and diameter. The capped end shall be marked with rebar extending a min. of 3' below grade and 3' above grade.
   iii. the District shall determine on a case by case basis if pumps shall be removed or may remain in place. (see Section E1 for removal requirements)

PART 4. INSPECTION & ACCEPTANCE

The District shall inspect all building sewer laterals, service connections, and Force Main tap connections to ensure compliance with these standards. Inspection requirements include:

- A 48-hour notice for inspections is required.
- All inspections shall occur prior to backfilling of the pipe in order to verify proper materials and installation.
- The excavated trench shall be open at the connection points to the Building Drain (or approved re-used Building Sewer) and the Grinder Station.
- If any of the Building Sewer or Service Connection piping or Tap is backfilled prior to an inspection, the pipe trench shall be re-excavated at the Owner's expense.
- No yard drains, roof drains, or sump pumps shall be directed into the District sanitary sewer system.
- A District inspector may check for prohibited connections (stormwater and groundwater, including yard drains, roof drains, sump pumps, broken building sewer cleanouts, etc.) during the inspection.
- If illicit discharge/prohibited connection exists, it shall be repaired at the User's expense prior to connection to and usage of the District collection system.
- In order to perform a complete inspection, the inspector may need access onto the private property and into the buildings on the private property. The Property Owner is required to be present for the inspection in order to grant access to the District inspector.
- **Trenches should be backfilled within 24 hours of an approved installation (i.e., passed inspection).**

In instances where existing Building Sewer has been requested for re-use and meets current District requirements, the following additional items may be required:

- Visual inspection of existing pipe at the connection point and in areas determined appropriate by the District inspector.
- Televising shall be performed and the video submitted to the District for review.
- The District reserves the right to impose an additional fee to cover the additional inspection responsibilities associated with testing of existing sewer.
- The District shall witness each test to verify that each is conducted correctly and that the existing system appears acceptable.
- It is the responsibility of the Property Owner or his/her contractor to complete all testing, as well as provide all the required labor, materials, tools, equipment, and other materials needed for testing.

The District shall inspect all infrastructure vacation work which may require multiple inspection visits. In addition to applicable items listed above, the inspection(s) shall include:

- The District shall be present for all work within 10' of a low pressure sewer main including while the main is excavated, exposed, and backfilled.

PART 5. DETAILS

The Details are divided into Sections as described below:

Section A Details:

- For properties that **WERE** included in the initial sanitary sewer collection system and treatment plant projects
- The Service Connection was installed by the District
- Property owners are responsible to complete the:
    - Building Sewer
    - Septic Abandonment

Section B Details:

- For properties that **WERE NOT** included in the initial sanitary sewer collection system and treatment plant projects
- Property owners are responsible to complete the:
    - Service Connection
    - Building Sewer
    - Septic Abandonment

Section C Details:

- For Infrastructure Vacation, both permanent and temporary.
- Property Owners are responsible to complete all work excepting equipment salvaging by the District and unless otherwise directed by the District.
- Requires individual review by the District to determine full extent of requirements.

SECTION A – PROPERTIES INCLUDED IN INITIAL SEWER SYSTEM CONSTRUCTION

A-01 Typical Site Plan – Individual Grinder Station with Existing Service Connection

A-02 Typical Site Plan – Shared Grinder Station with Existing Service Connection

A-03 Typical Building Sewer Profile

A-04 Cleanout and Adaptor

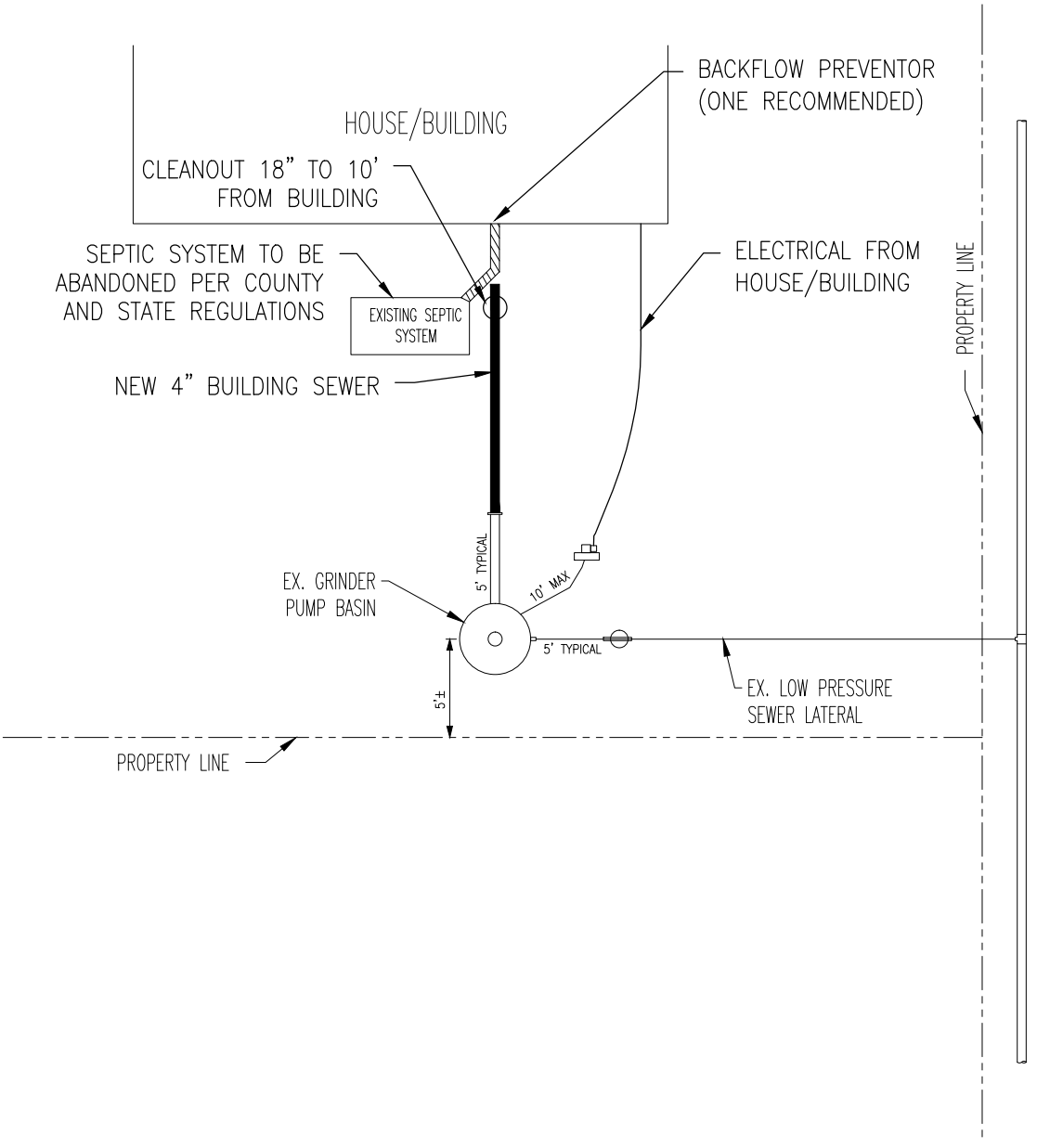
A-05 Electrical Connection to GPS

A-06 Flexible Pipe Bedding

A-07 Meter Pit

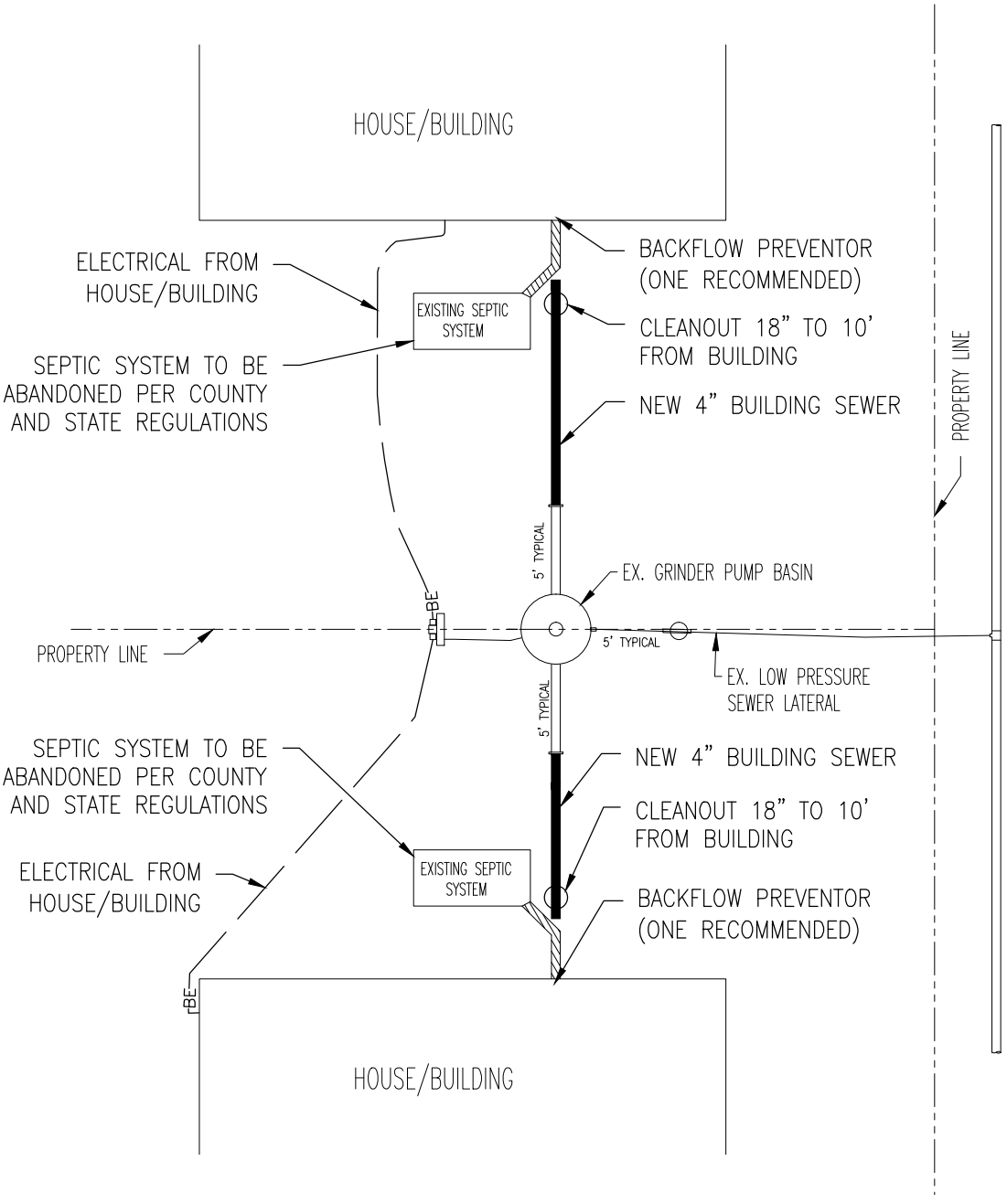
TYPICAL SITE PLAN
INDIVIDUAL GRINDER STATION WITH EXISTING SERVICE CONNECTION

Not to Scale



TYPICAL SITE PLAN
SHARED GRINDER STATION WITH EXISTING SERVICE CONNECTION

Not to Scale



TYPICAL BUILDING SEWER PROFILE

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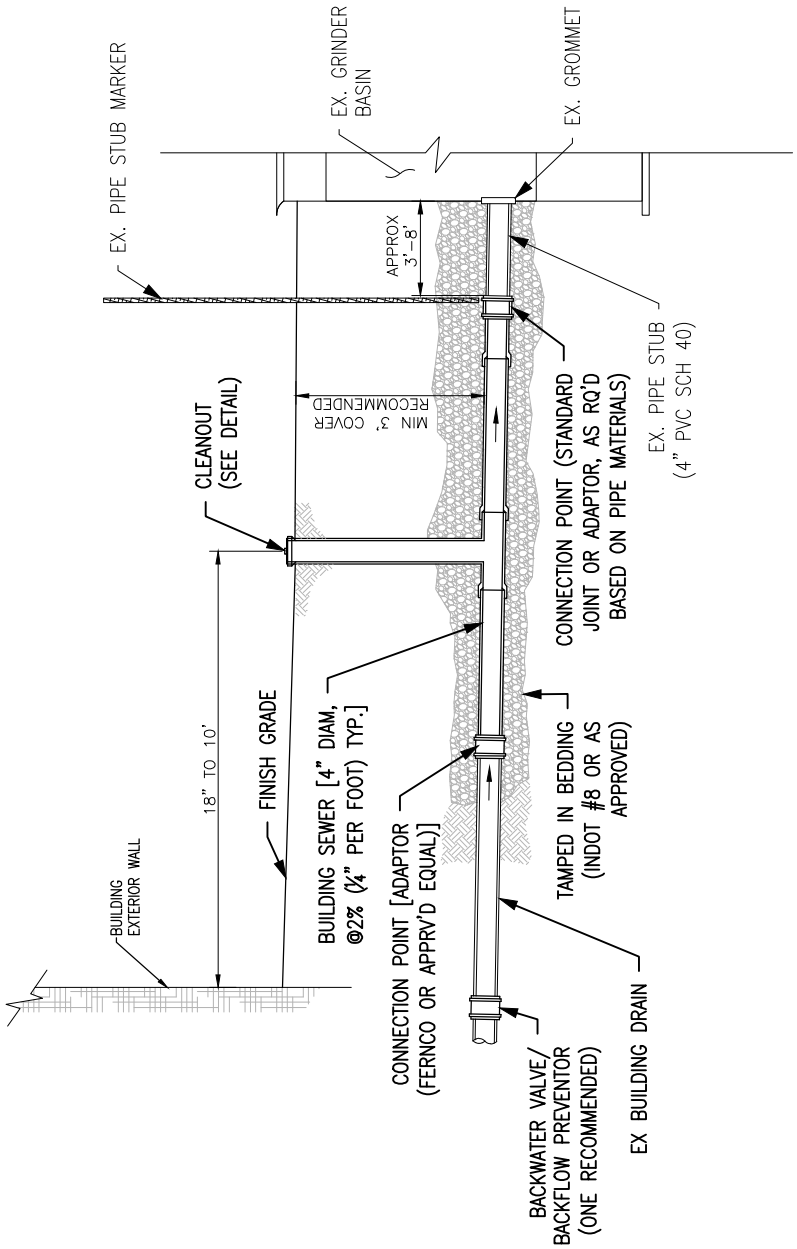

CLEANOUT AND ADAPTOR

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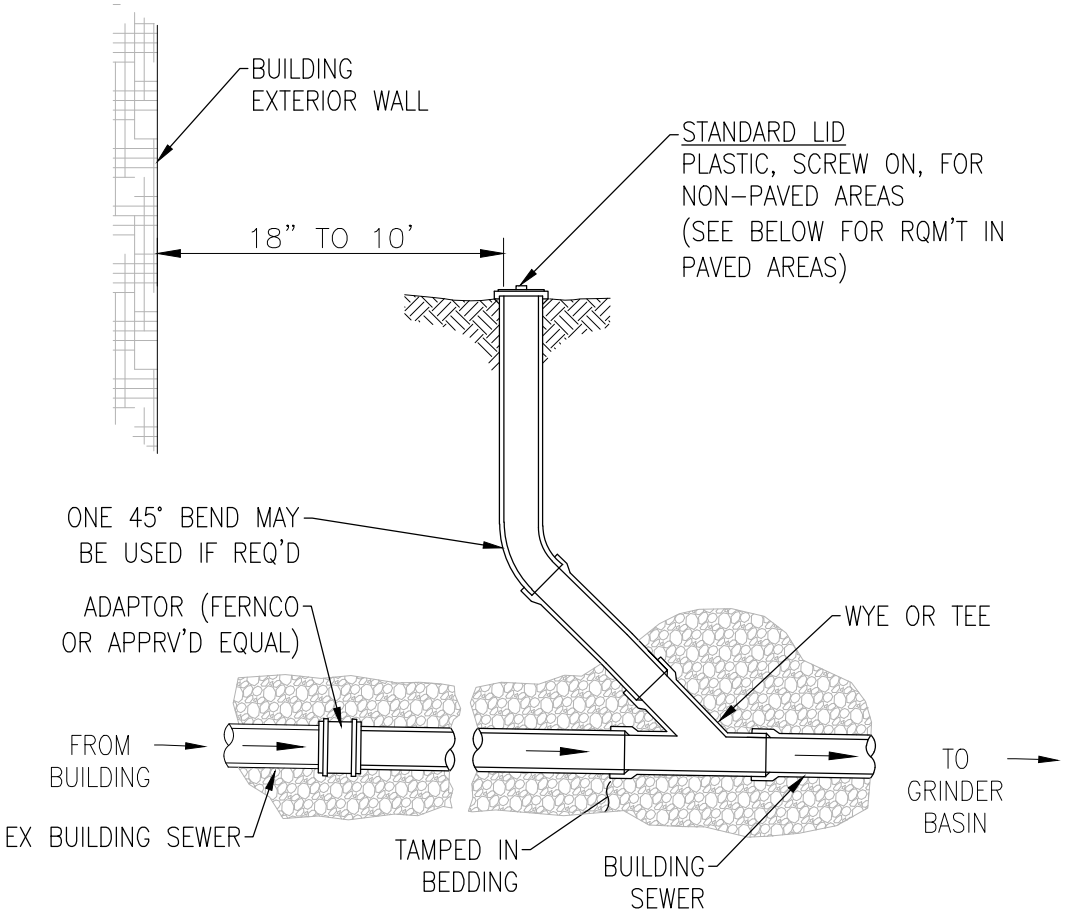

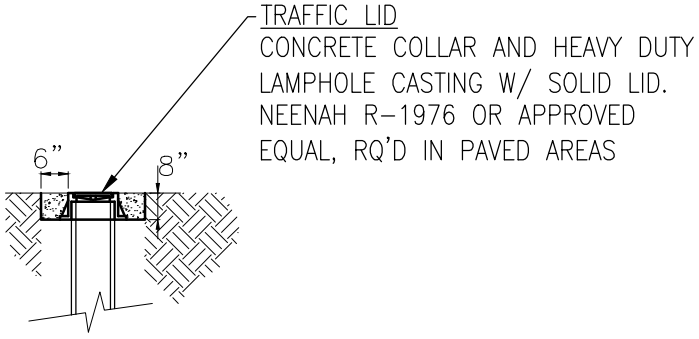

ELECTRICAL CONNECTION TO GPS

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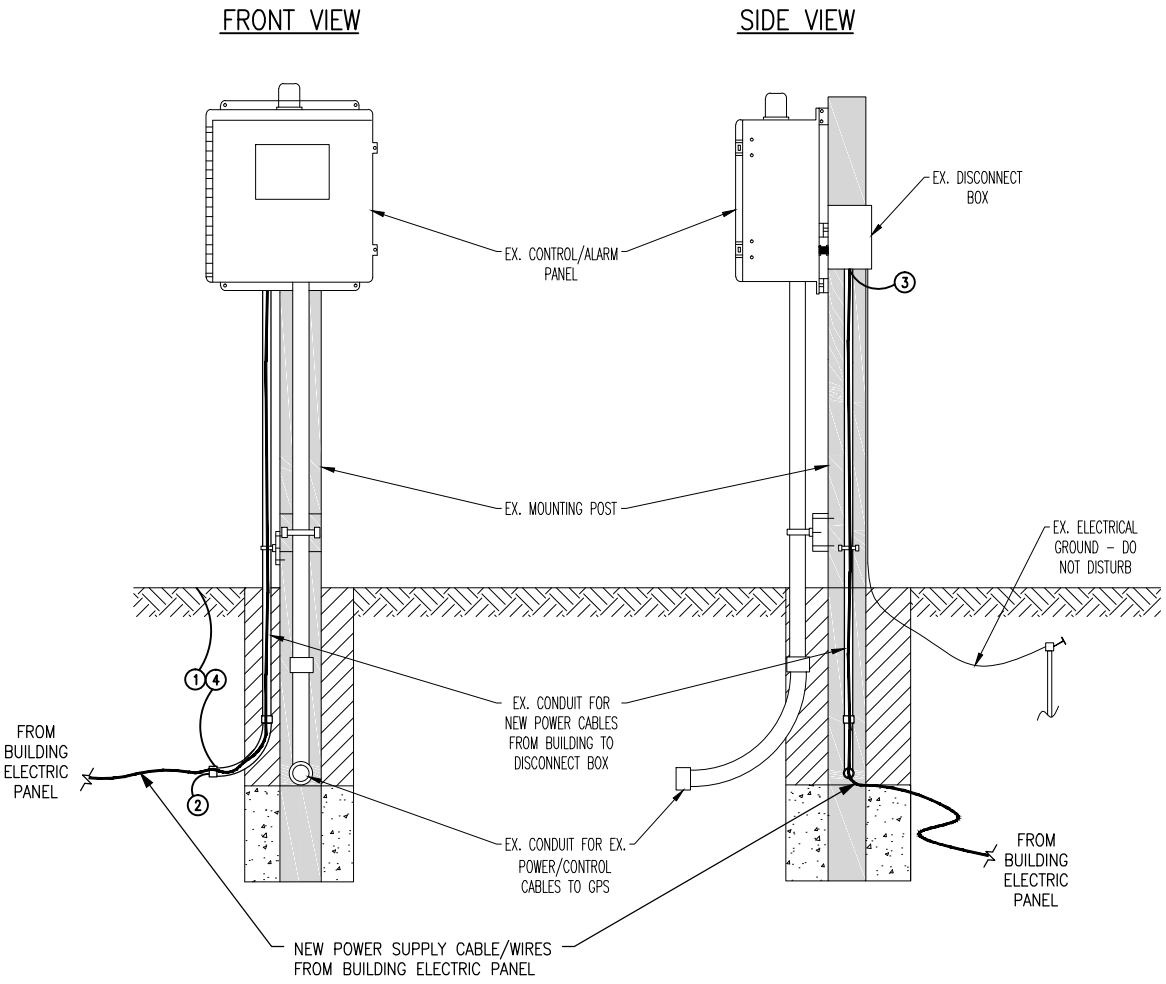
CONNECT POWER SUPPLY CABLES TO GPS:

1. EXPOSE EX. CONDUIT FROM DISCONNECT BOX (do not disturb ex. conduit from control/alarm panel)
2. RUN NEW CABLE UP EX. CONDUIT TO DISCONNECT BOX
3. CONNECT NEW CABLE/WIRES TO DISCONNECT BOX
4. BACKFILL TO EXISTING GRADE



NOTES:

EACH RESIDENTIAL USER IS REQUIRED TO SUPPLY THE REQUIRED POWER:
240 V SINGLE PHASE, 30 AMP (FOR SIMPLEX) OR 60 AMP (FOR DUPLEX) – DOUBLE POLE BREAKER

THE CONDUCTOR SIZE SPECIFIED IS BASED ON A MAXIMUM LENGTH OF 300 FT

CABLE AND WIRE SIZE AND COLOR PER "GUIDELINES FOR SEWER CONNECTIONS" ELECTRICAL SECTION AND DETAILS

DISCONNECT FOR SIMPLEX TYPE GRINDER STATIONS SHALL BE A 30 AMP, 240 VOLT, ON/OFF SWITCH IN NEMA 3R ENCLOSURE
DISCONNECT FOR DUPLEX TYPE GRINDER STATIONS SHALL BE A 60 AMP, 240 VOLT, ON/OFF SWITCH IN NEMA 3R ENCLOSURE

MOUNTING HARDWARE SHALL BE GALVANIZED

FLEXIBLE PIPE BEDDING

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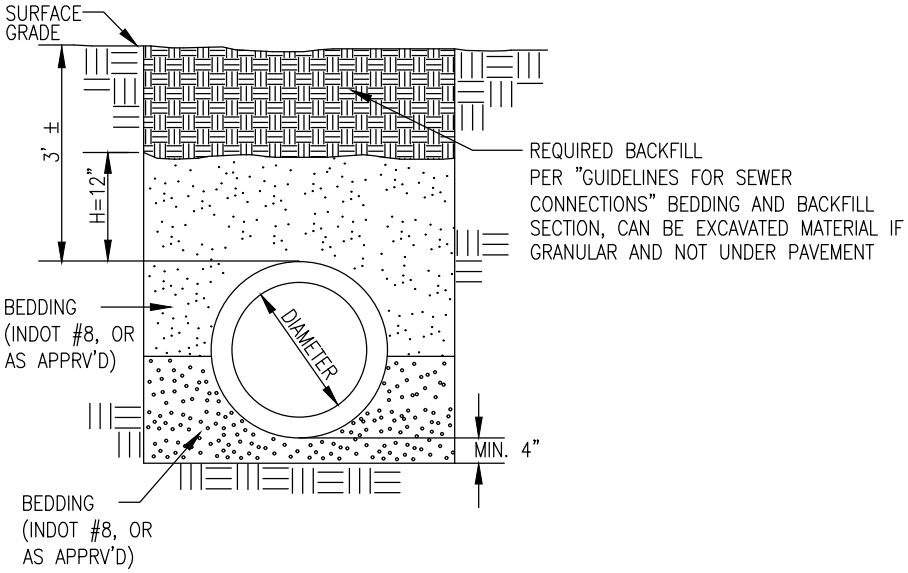

NOTE : FOR ROCK OR OTHER NON-COMPRESSIBLE MATERIALS : THE TRENCH SHOULD BE OVER-EXCAVATED A MINIMUM OF 6" & REFILLED WITH GRANULAR MATERIALS.

FLEXIBLE CONDUITS ARE CONSIDERED THE FOLLOWING PIPES: PVC, HDPE, & DI.

ALL MATERIAL USED FOR BEDDING AND BACKFILL SHALL MEET THE "GUIDELINES FOR SEWER CONNECTIONS" BEDDING AND BACKFILL SECTION.

METER PIT

UTILIZE "VALVE LAYOUT 1" OR "VALVE LAYOUT 2" BASED ON EXISTING CONDITIONS

Not to Scale

SECTION B – PROPERTIES NOT INCLUDED IN INITIAL SEWER SYSTEM CONSTRUCTION

B-01 Typical Site Plan – Individual Grinder Station with New Service Connection

B-02 Typical Site Plan – Shared Grinder Station with New Service Connection

B-03 Typical Service Connection Profile

B-04 Grinder Pump Station Inlet Zone

B-05 Flood Protection for Grinder Pump Stations

B-06 Typical Grinder Basin Extension

B-07 Traffic Rated Cover for Grinder Pump Station

B-08 Concrete Ballast for Grinder Pump Station

B-09 Typical Simplex Grinder Pump and Basin

B-10 Typical Duplex Grinder Pump and Basin

B-11 Typical Duplex Grinder Pump and Basin

B-12 Typical Low Pressure Lateral Installation

B-13 Curb Stop Assembly

B-14 Control/Alarm Panel Mounting Stand

B-15 Flexible Pipe Bedding

B-16 Surface Restoration

B-17 Grinder Pump Wiring Diagram – Individual Grinder Station

B-18 Grinder Pump Wiring Diagram – Shared Grinder Station

B-19 Grinder Pump Wiring Diagram – Individual Grinder Station for Commercial User

B-20 Grinder Pump Wiring Diagram – Shared 3-Way Grinder Station

TYPICAL SITE PLAN
INDIVIDUAL GRINDER STATION WITH NEW SERVICE CONNECTION

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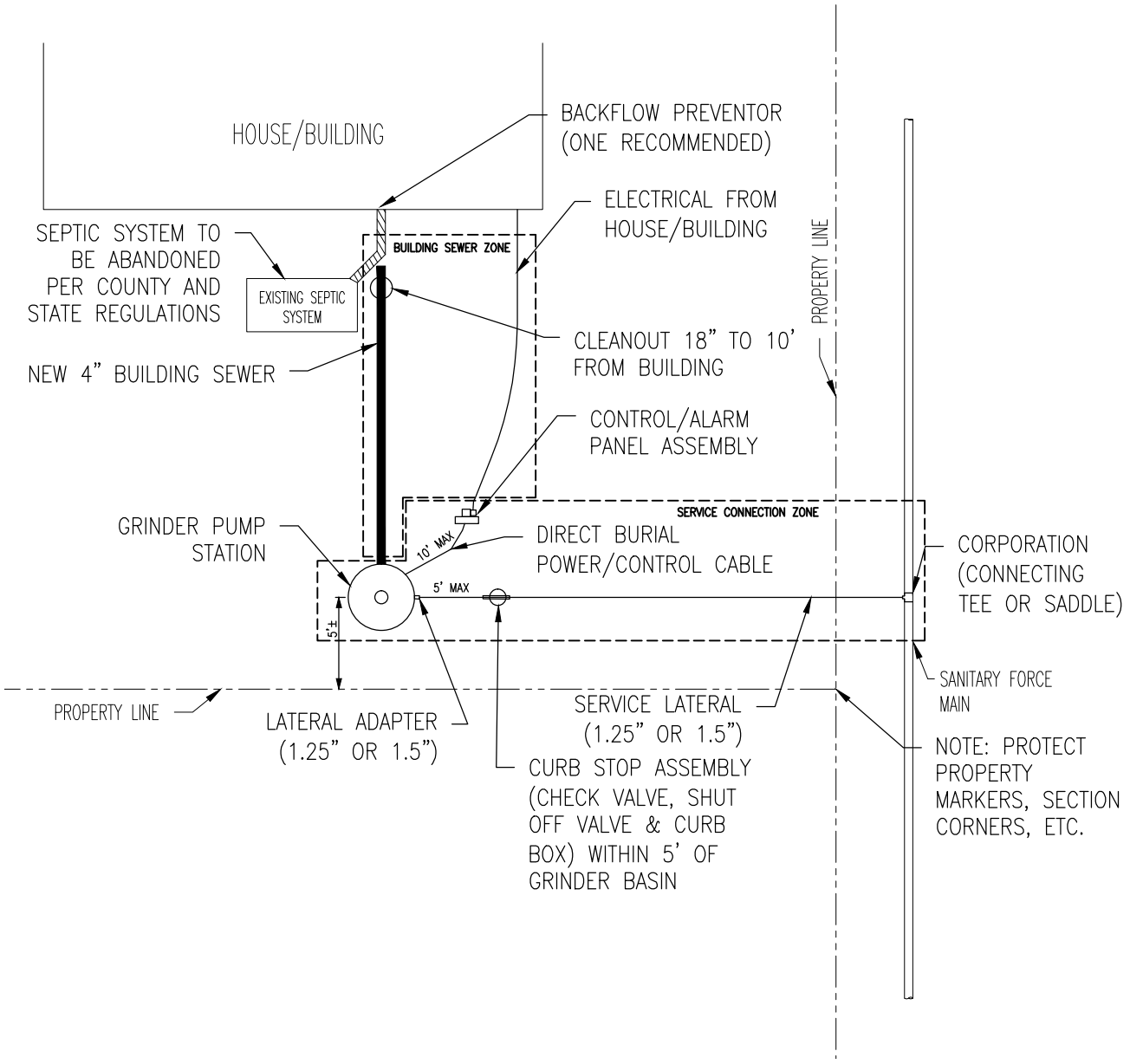

TYPICAL SITE PLAN
SHARED GRINDER STATION WITH NEW SERVICE CONNECTION

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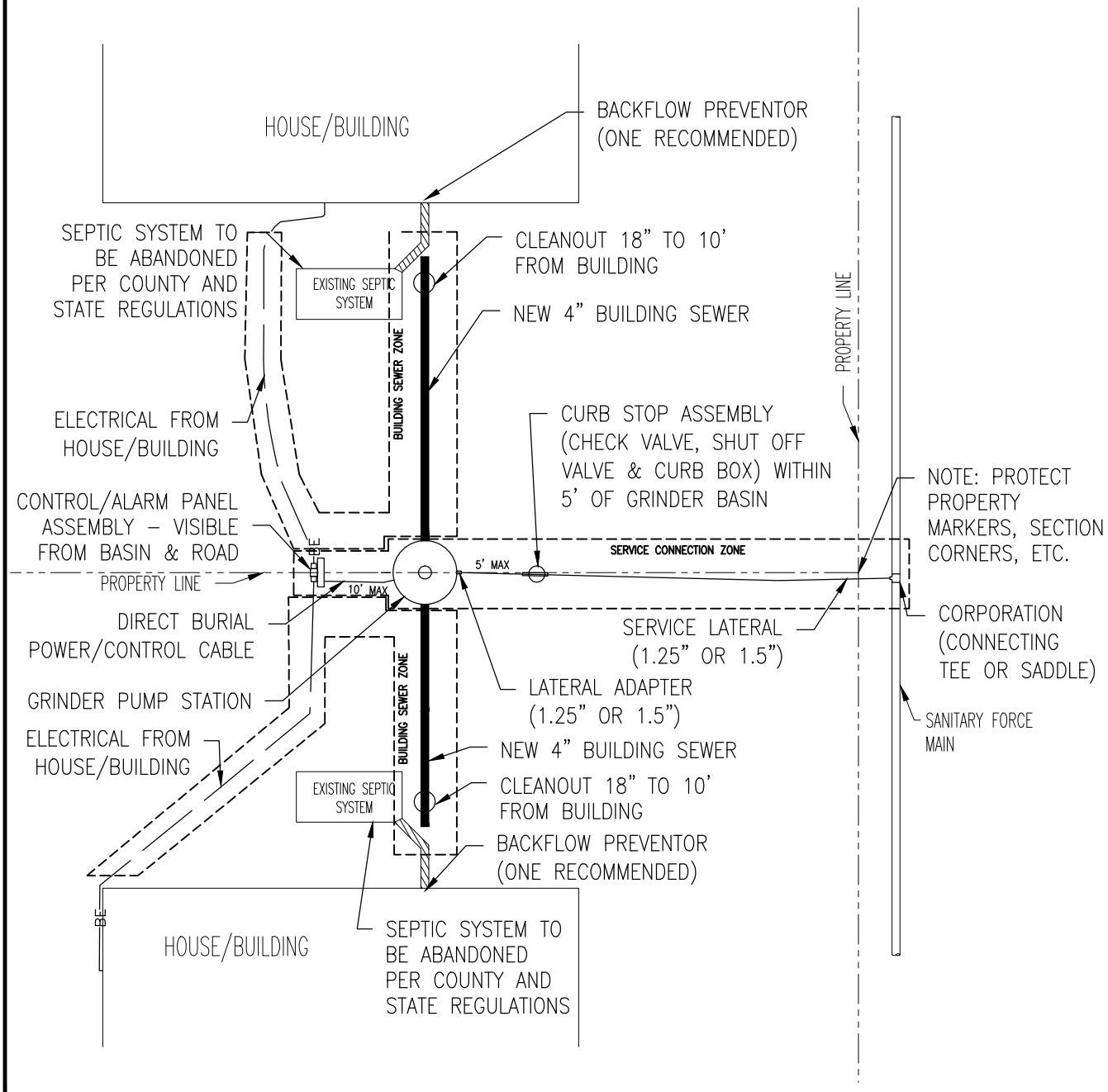

TYPICAL SERVICE CONNECTION PROFILE

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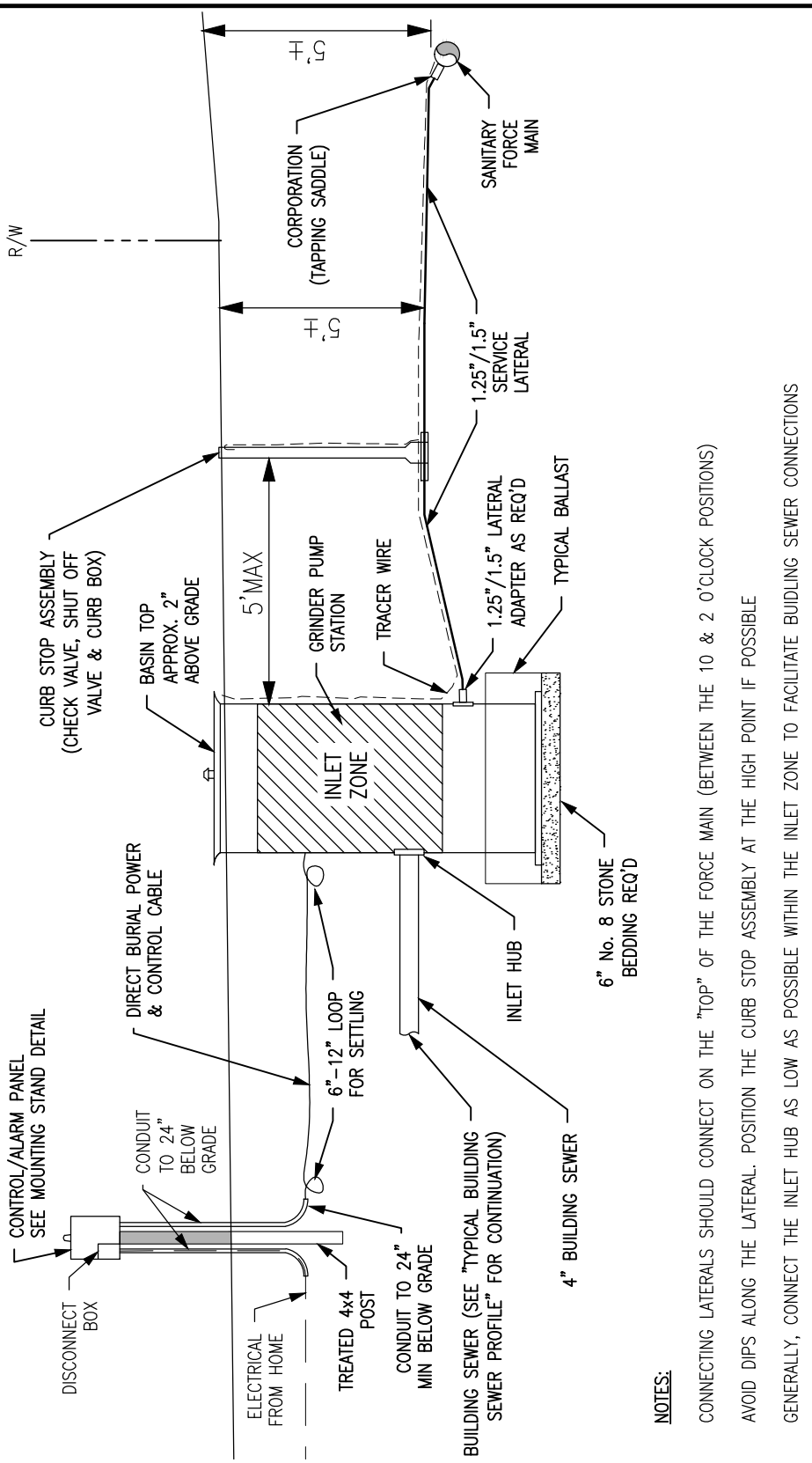

NOTES:

CONNECTING LATERALS SHOULD CONNECT ON THE "TOP" OF THE FORCE MAIN (BETWEEN THE 10 & 2 O'CLOCK POSITIONS)

AVOID DIPS ALONG THE LATERAL. POSITION THE CURB STOP ASSEMBLY AT THE HIGH POINT IF POSSIBLE

GENERALLY, CONNECT THE INLET HUB AS LOW AS POSSIBLE WITHIN THE INLET ZONE TO FACILITATE BUIDLING SEWER CONNECTIONS

TRACER WIRE SHALL BE #10AWG, STEEL CORE COPPER WIRE WITH A GREEN POLYETHYLENE COATING.

GRINDER PUMP STATION INLET ZONE

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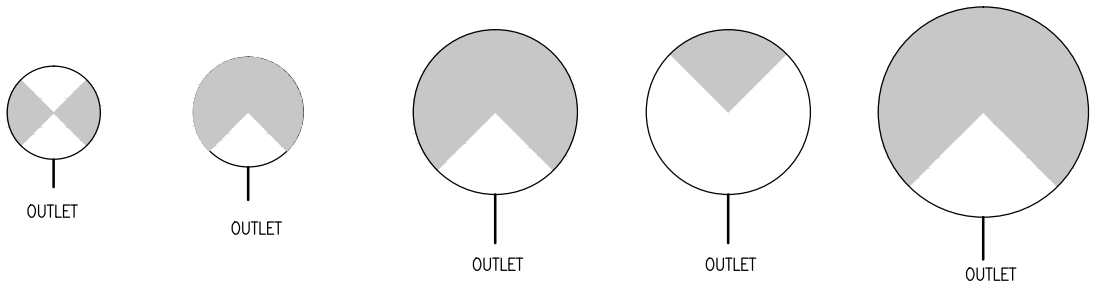

TYPE I	TYPE II	TYPE III–S	TYPE III	TYPE IV
SIMPLEX	SIMPLEX	SIMPLEX	DUPLEX	DUPLEX
24" BASIN	30" BASIN	36" BASIN	36" BASIN	48" BASIN
(1) 4" INLET	(2) 4" INLETS	(3) 4" INLETS	(1) 8" INLET	(1) 8" INLET

INLET ZONE

FLOOD PROTECTION FOR GRINDER PUMP STATIONS

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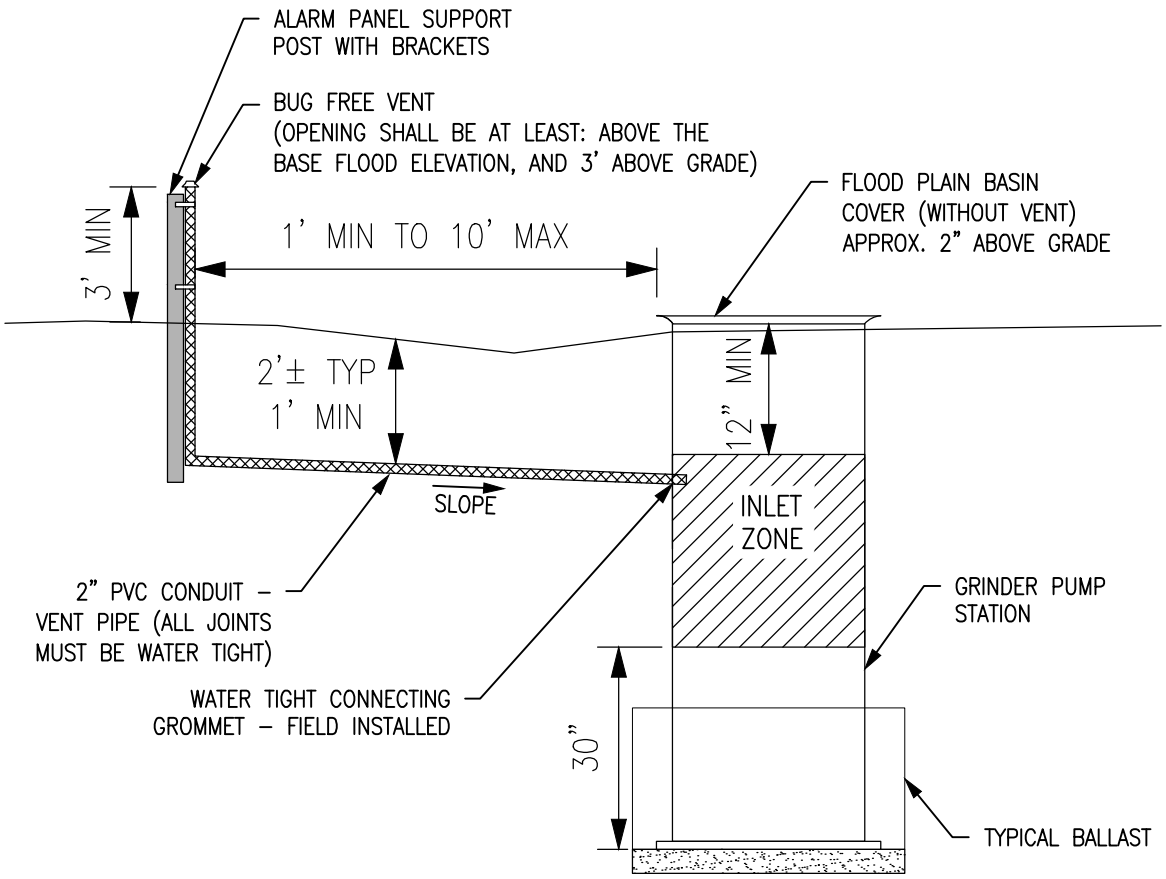

NOTE:

FLOOD PROTECTION IS REQUIRED WHEN THE GRINDER PUMP STATION IS LOCATED AT OR BELOW THE LOCAL BASE FLOOD ELEVATION.

THE VENT PIPE MUST BE SUPPORTED WITHIN 6" OF THE VENT. IT IS RECOMMENDED THAT THE CONTROL PANEL SUPPORT BE USED. COMPONENTS ARE TO BE CONFIGURED TO PREVENT INTERFERENCE.

TYPICAL GRINDER BASIN EXTENSION

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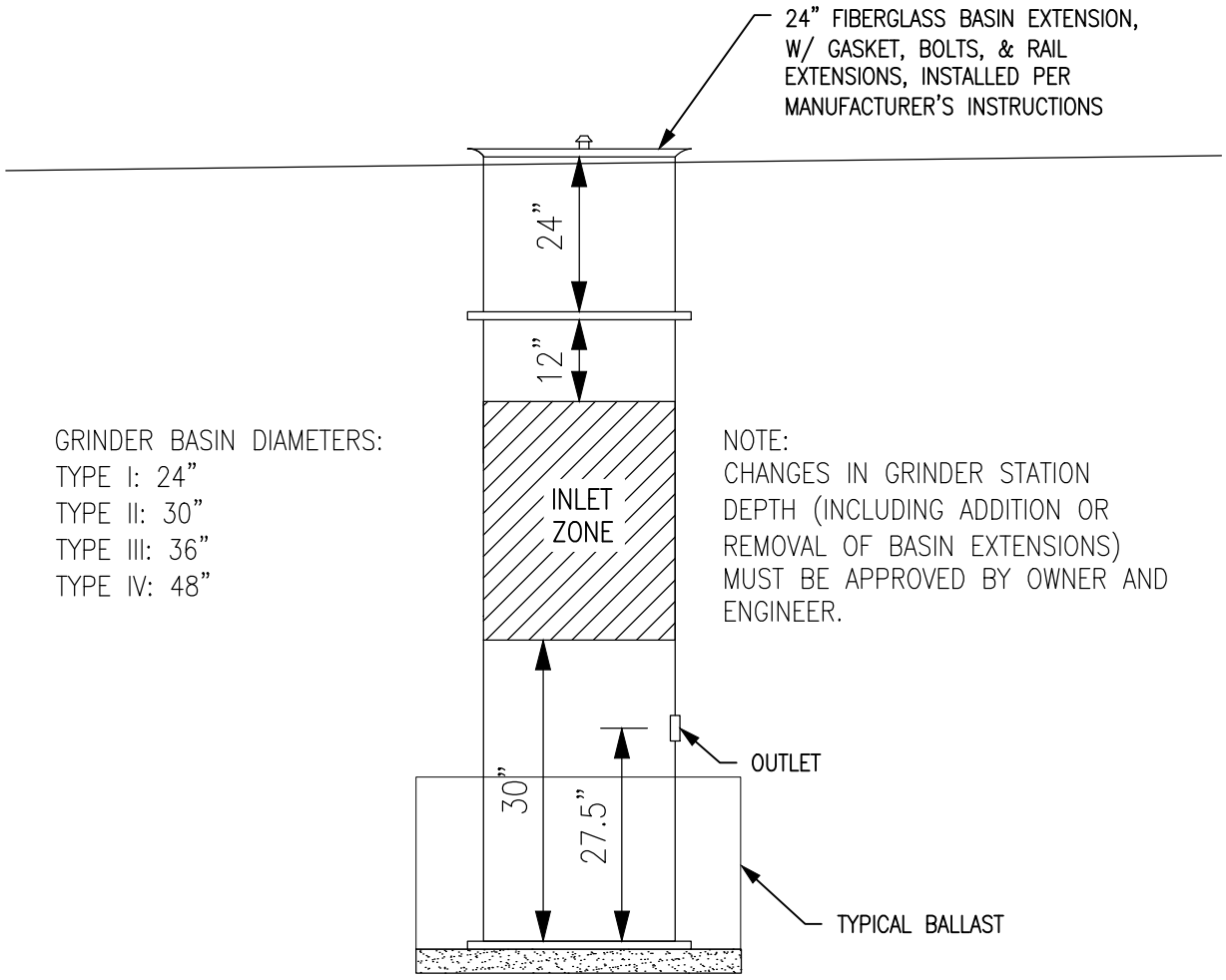

GRINDER BASIN DIAMETERS:
TYPE I: 24"
TYPE II: 30"
TYPE III: 36"
TYPE IV: 48"

NOTE:
CHANGES IN GRINDER STATION DEPTH (INCLUDING ADDITION OR REMOVAL OF BASIN EXTENSIONS) MUST BE APPROVED BY OWNER AND ENGINEER.

TRAFFIC RATED COVER FOR GRINDER PUMP STATION

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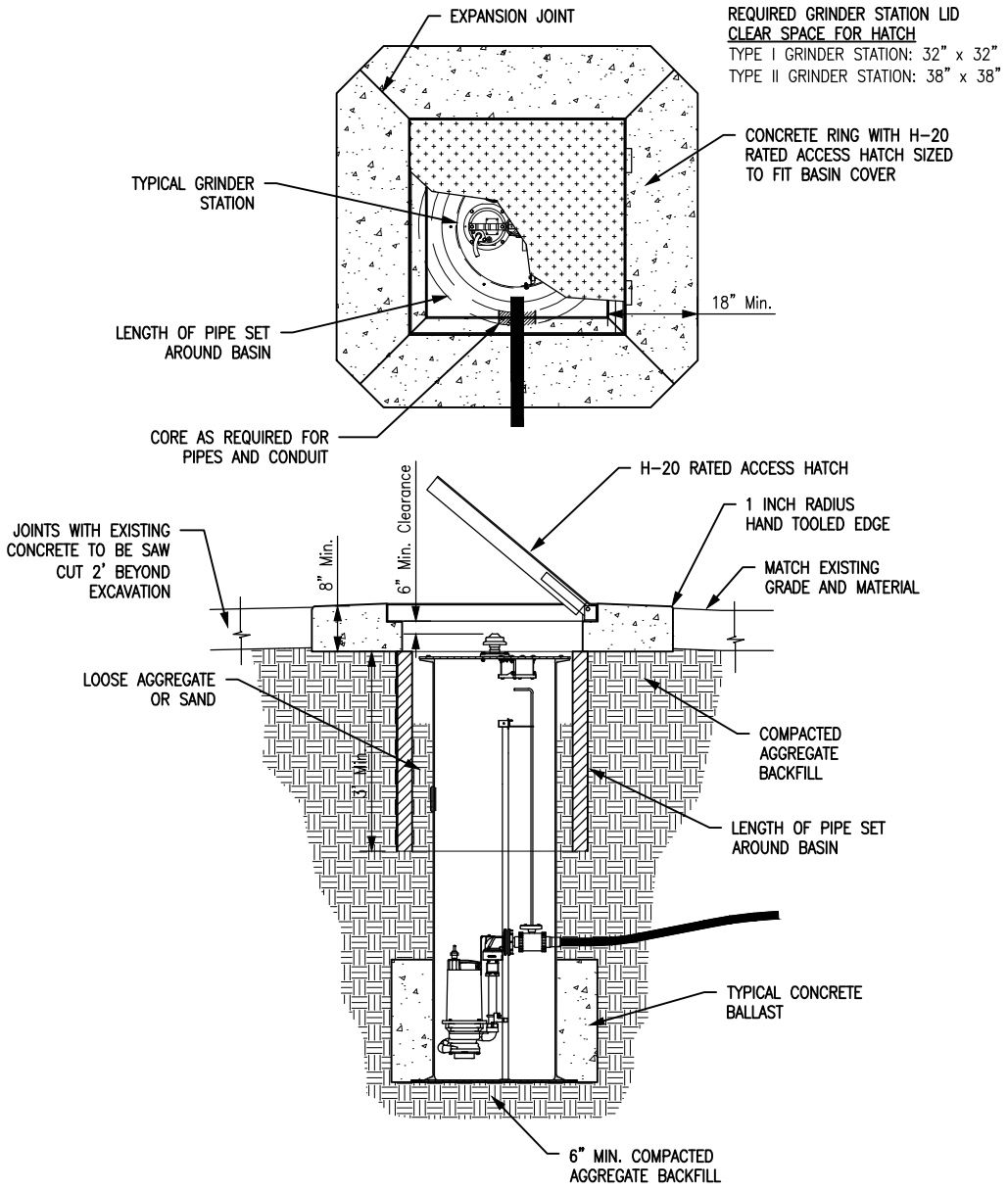

NOTES:

1. INSTALL FIBERGLASS BASIN DEEP ENOUGH TO ENSURE CLEARANCE BETWEEN BASIN COVER/VENT AND HATCH DOOR.
2. BACKFILL MUST BE COMPACTED TO PREVENT SETTLEMENT OF THE CONCRETE RING SUPPORTING THE HATCH.
3. SET A LENGTH OF PIPE AROUND THE BASIN WITH HOLES CUT FOR PIPE AND CONDUIT. (PIPE MAY BE RCP, CMP, OR HDPE)
4. RESTORATION OF DRIVEWAYS TO MATCH EXISTING CONDITIONS.
5. GRADE SURFACE TO DRAIN AWAY FROM GRINDER AND MATCH EXISTING.
6. H20 LOAD RATING FOR ACCESS DOOR. (HALLIDAY MODEL H1R3636 OR APPROVED EQUAL.)

CONCRETE BALLAST FOR GRINDER PUMP STATION

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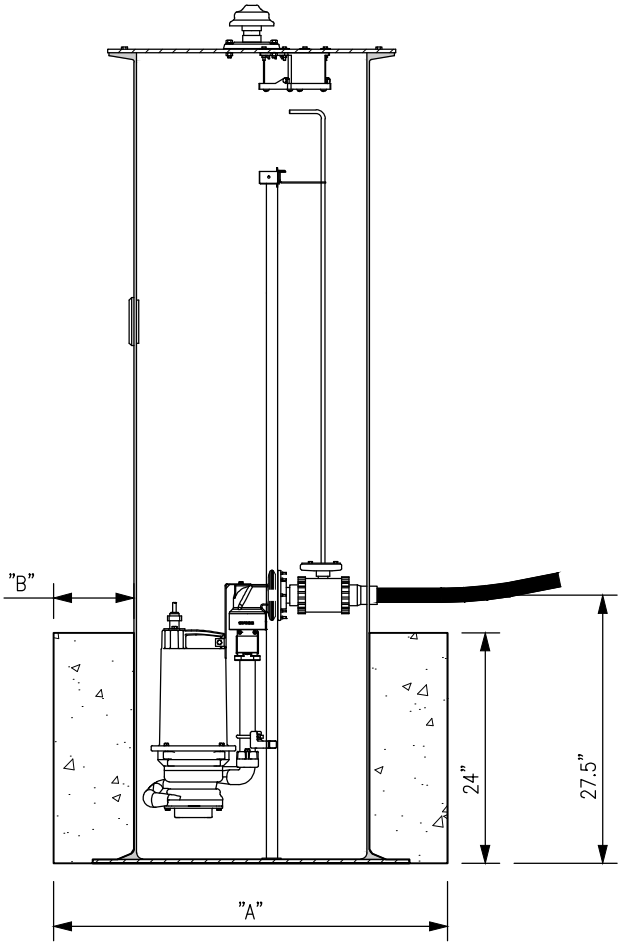


NOTE:
EXCAVATION MUST REMAIN FREE OF STANDING WATER UNTIL BACKFILLED AND COMPACTED.

84" GRINDER UNITS

GRINDER TYPE	MIN. VOLUME	MIN. "A"	MIN. "B"
TYPE I	7.9 CFT	36"	6"
TYPE II	12.3 CFT	45"	7.5"
TYPE III	17.7 CFT	54"	9"
TYPE IV	31.4 CFT	72"	12"

96" GRINDER UNITS

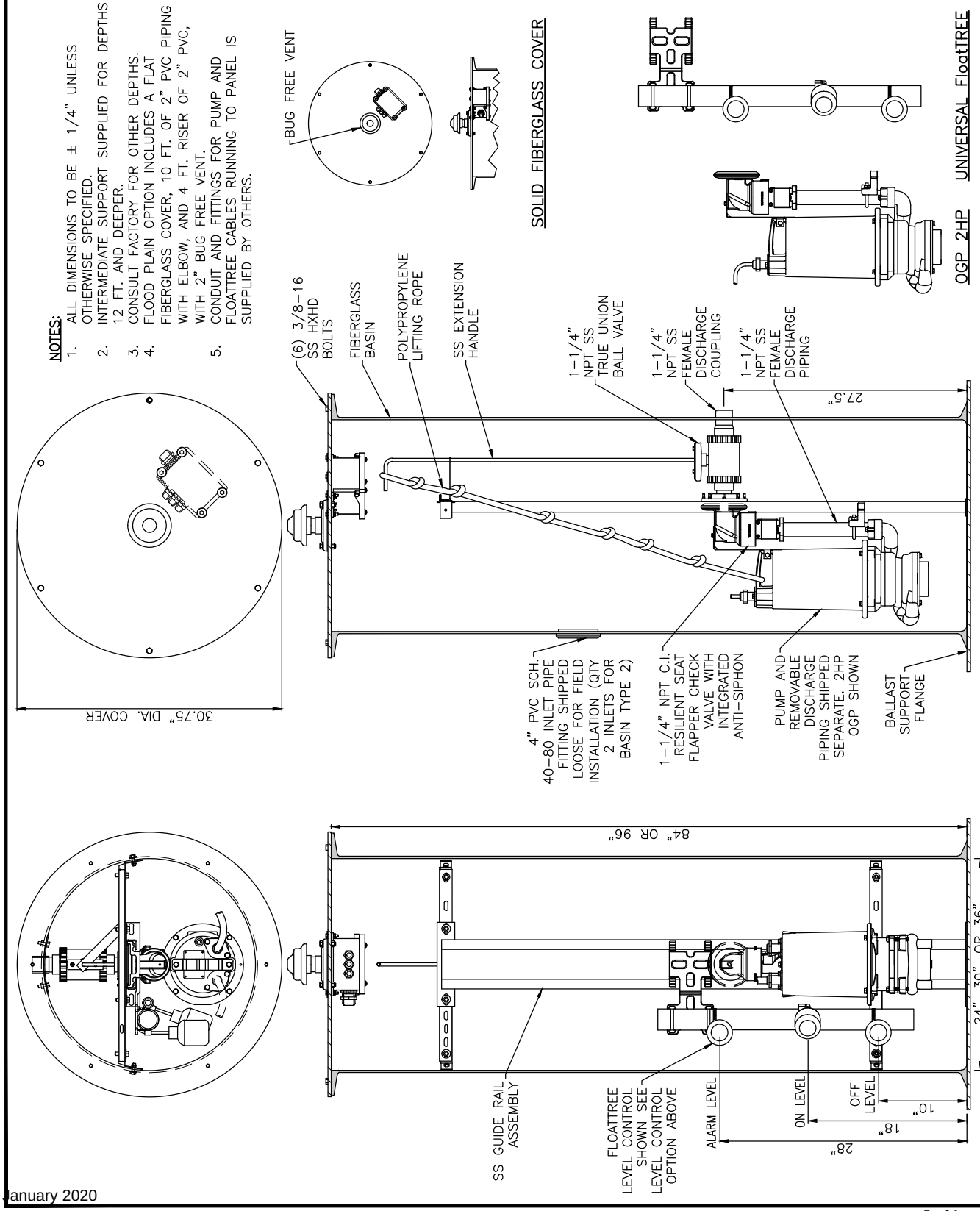
GRINDER TYPE	MIN. VOLUME	MIN. "A"	MIN. "B"
TYPE I	7.9 CFT	36"	6"
TYPE II	12.3 CFT	45"	7.5"
TYPE III	17.7 CFT	54"	9"
TYPE IV	31.4 CFT	72"	12"

120" GRINDER UNITS

GRINDER TYPE	MIN. VOLUME	MIN. "A"	MIN. "B"
TYPE I	8.7 CFT	37"	6.5"
TYPE II	13.3 CFT	46"	8"
TYPE III	18.9 CFT	55"	9"
TYPE IV	33 CFT	73"	12.5"

TYPICAL SIMPLEX GRINDER PUMP AND BASIN

Not to Scale

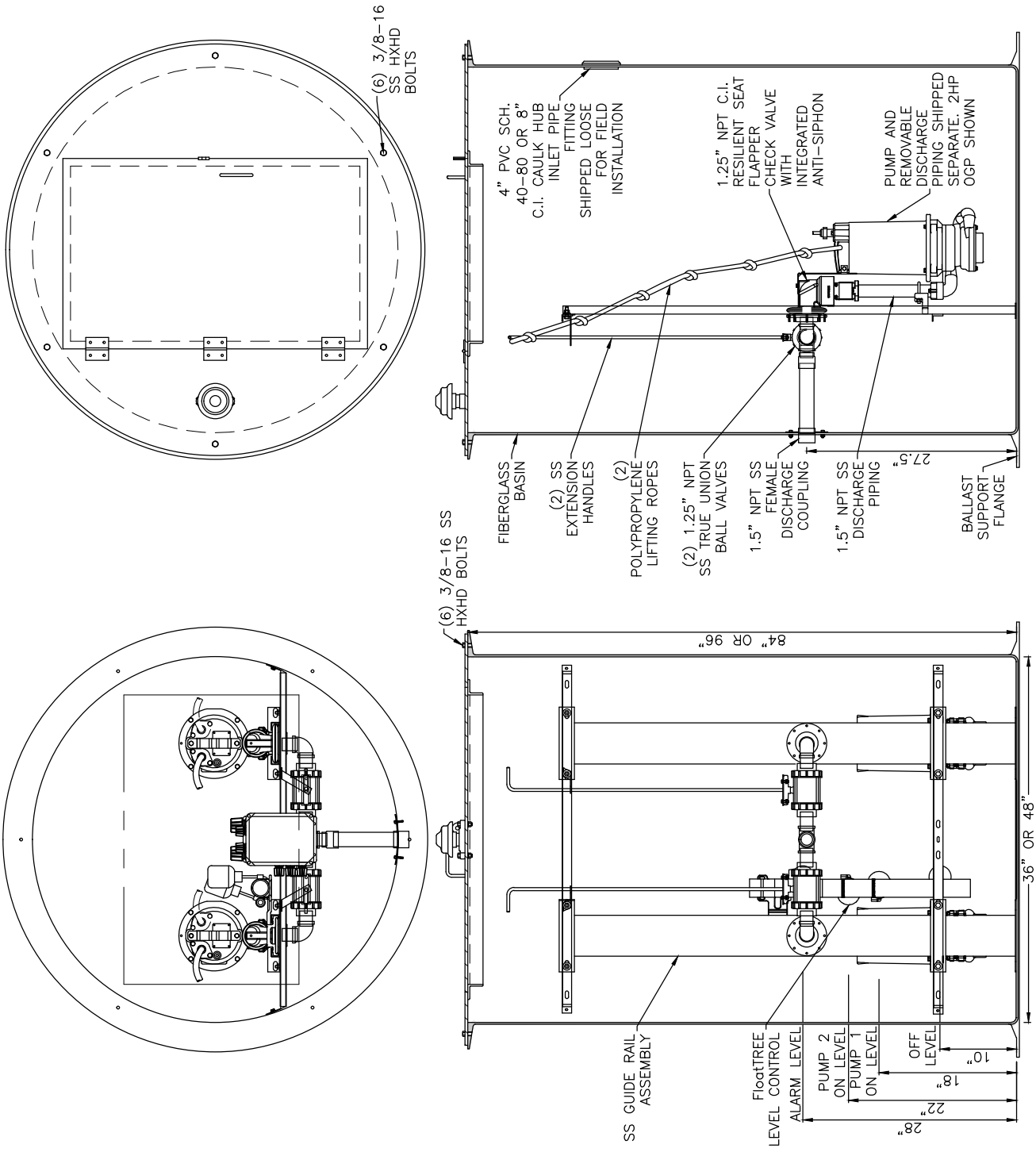


TYPICAL DUPLEX GRINDER PUMP AND BASIN (1)

Not to Scale

NOTE:
SEE SHEET 2 OF 2 FOR CONTINUATION OF DETAIL.

SHEET 1 OF 2



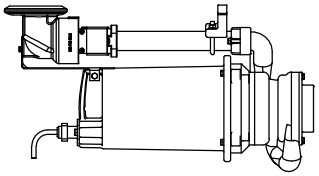
TYPICAL DUPLEX GRINDER PUMP AND BASIN (2)

Not to Scale

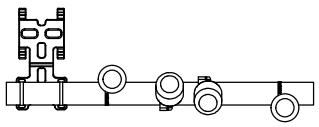
NOTE:
SEE SHEET 1 OF 2 FOR CONTINUATION OF DETAIL.

SHEET 2 OF 2

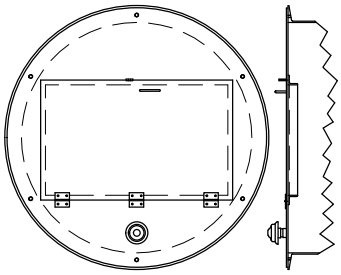
NOTES:
1. ALL DIMENSIONS TO BE ± 1/4" UNLESS OTHERWISE SPECIFIED.
2. INTERMEDIATE SUPPORT SUPPLIED FOR DEPTHS 12 FT. AND DEEPER.
3. CONSULT FACTORY FOR OTHER DEPTHS.
4. FLOOD PLAIN OPTION INCLUDES A FLAT FIBERGLASS COVER, 10 FT. OF 2" PVC PIPING WITH ELBOW, AND 4 FT. RISER OF 2" PVC, WITH 2" BUG FREE VENT.
5. CONDUIT AND FITTINGS FOR PUMP AND FLOATTREE CABLES RUNNING TO PANEL IS SUPPLIED BY OTHERS.



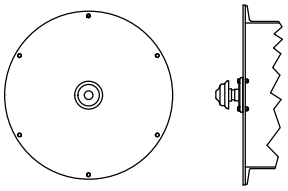
OGP 2HP PUMP



UNIVERSAL FloatTREE



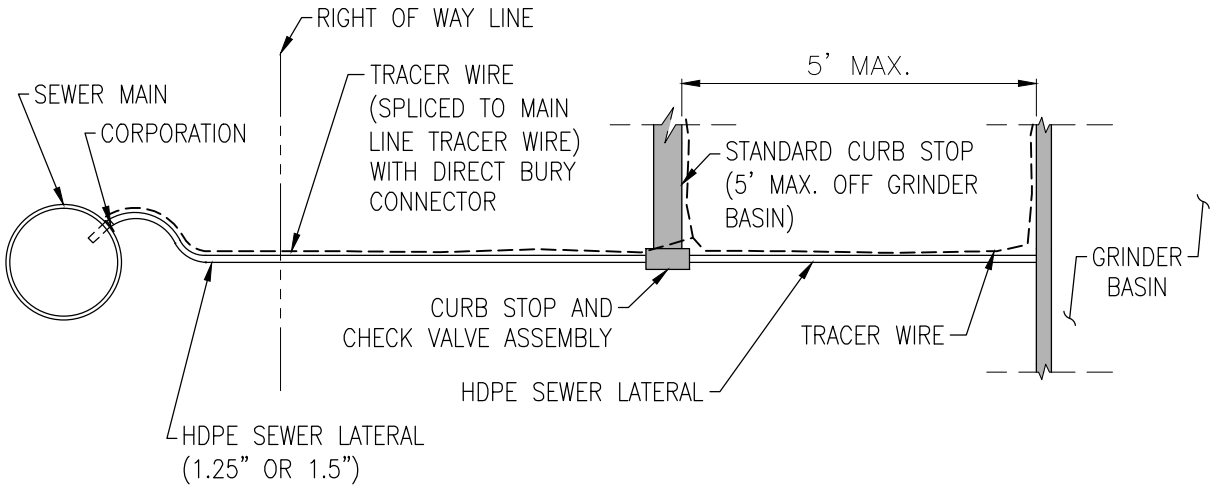
ALUMINUM HATCH COVER
AVAILABLE ON 48" DIAMETER ONLY



SOLID FIBERGLASS COVER
AVAILABLE ON 36" DIAMETER ONLY

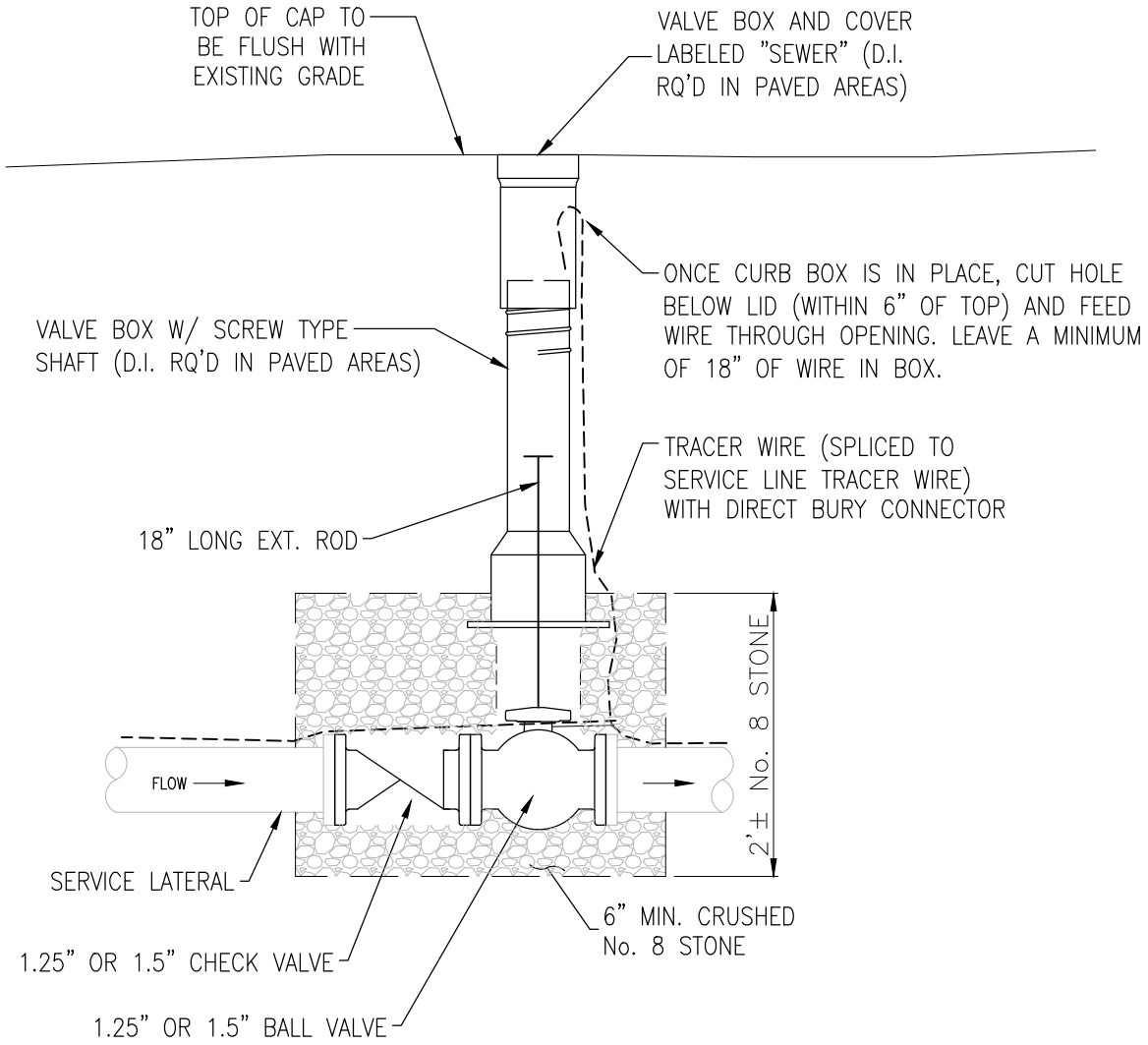
TYPICAL LOW PRESSURE LATERAL INSTALLATION

Not to Scale



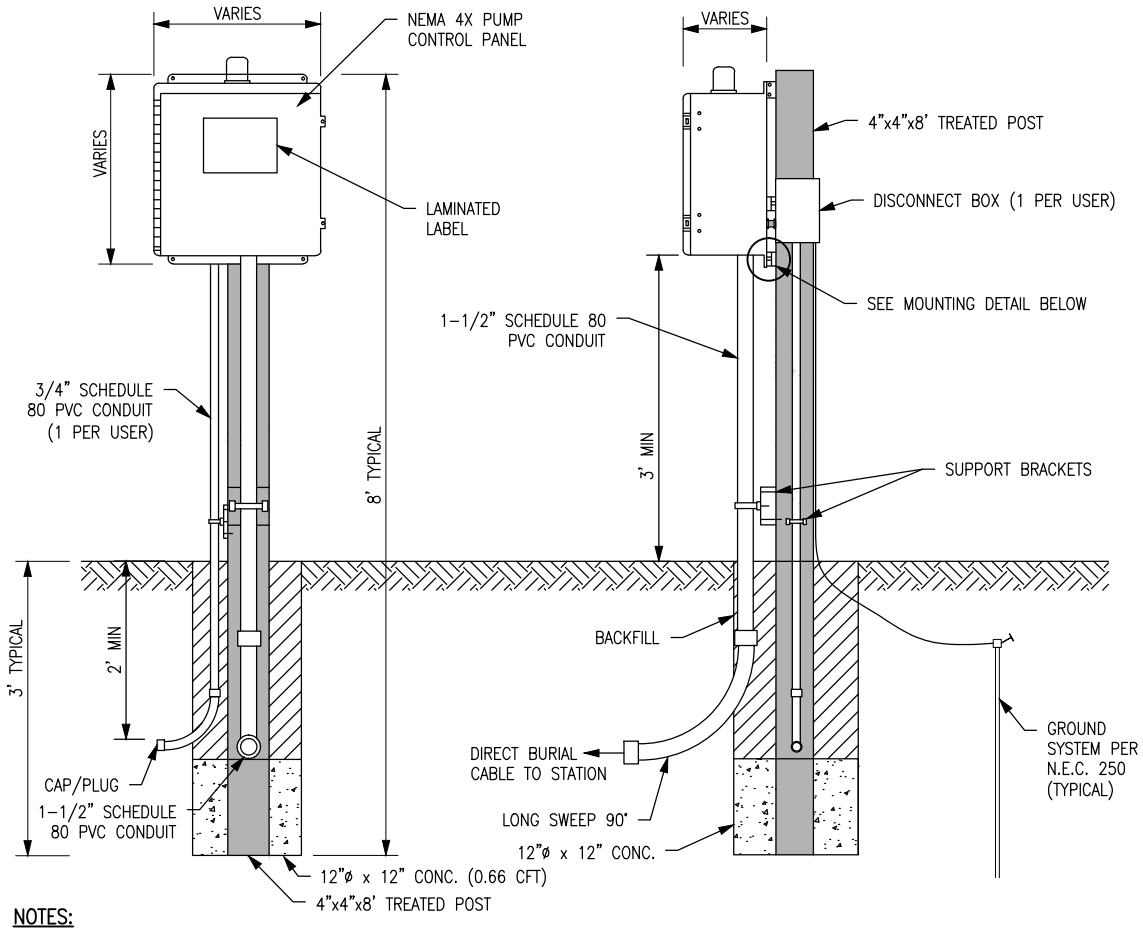
CURB STOP ASSEMBLY

Not to Scale



CONTROL / ALARM PANEL MOUNTING STAND

Not to Scale



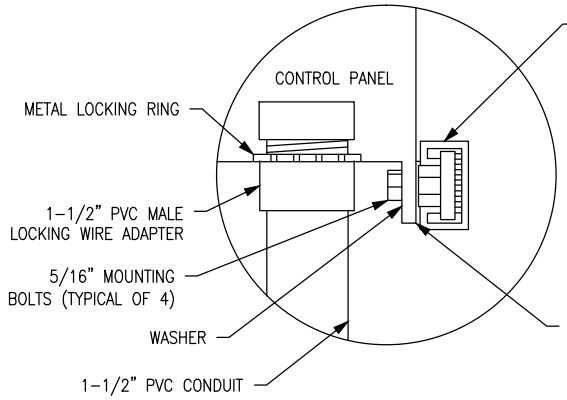
NOTES:

EACH RESIDENTIAL USER IS REQUIRED TO SUPPLY THE REQUIRED POWER:
240 V SINGLE PHASE, 30 AMP (SIMPLEX) OR 60 AMP (DUPLEX) – DOUBLE POLE BREAKER

THE CONDUCTOR SIZE SPECIFIED IS BASED ON A MAXIMUM LENGTH OF 300 FT

DISCONNECT FOR SIMPLEX TYPE GRINDER STATIONS SHALL BE A 30 AMP, 240 VOLT, ON/OFF SWITCH IN NEMA 3R ENCLOSURE
DISCONNECT FOR DUPLEX TYPE GRINDER STATIONS SHALL BE A 60 AMP, 240 VOLT, ON/OFF SWITCH IN NEMA 3R ENCLOSURE

MOUNTING HARDWARE SHALL BE GALVANIZED



MOUNTING DETAIL

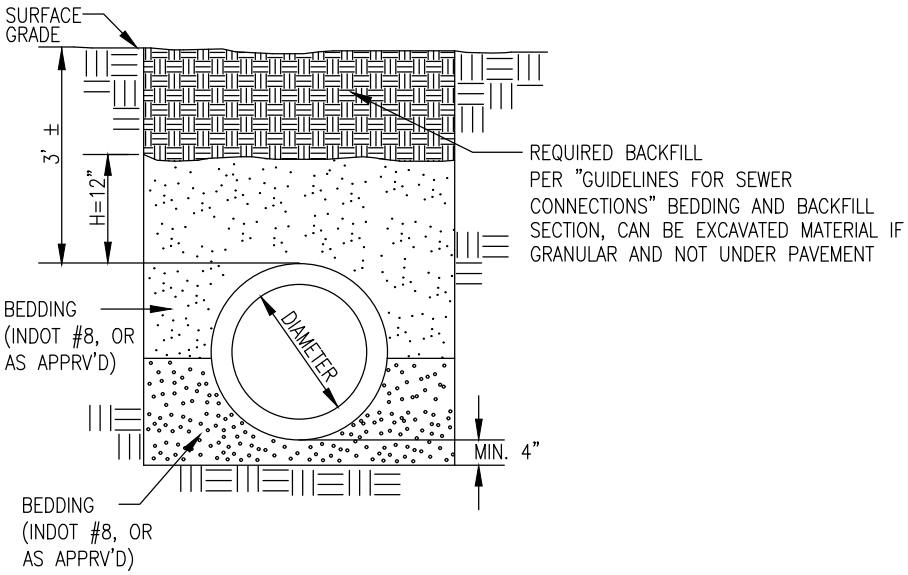
MOUNTING DETAIL NOTES:

CONTRACTOR SHALL PROVIDE AND INSTALL ENGRAVED LAMINATED LABEL WITH MECHANICAL FASTENERS, INDICATING PUMP NUMBERS, SERVICED BY DISCONNECTING MEANS. OWNER SHALL PROVIDE NUMBERS TO CONTRACTOR DURING CONSTRUCTION.

ALARM CONTROL PANEL IS TO BE MOUNTED ON TREATED POST USING UNI-STRUT METAL FRAMING & REQUIRED FITTINGS

FLEXIBLE PIPE BEDDING

Not to Scale



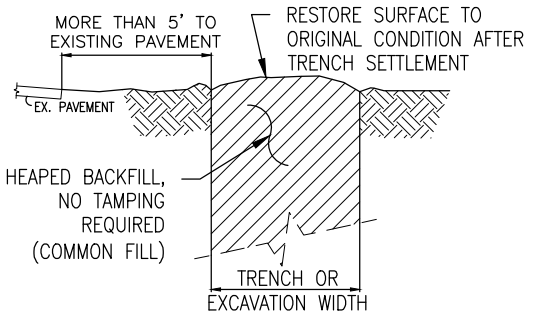
NOTE : FOR ROCK OR OTHER NON-COMPRESSIBLE MATERIALS : THE TRENCH SHOULD BE OVER-EXCAVATED A MINIMUM OF 6" & REFILLED WITH GRANULAR MATERIALS.

FLEXIBLE CONDUITS ARE CONSIDERED THE FOLLOWING PIPES: PVC, HDPE, & DI.

ALL MATERIAL USED FOR BEDDING AND BACKFILL SHALL MEET THE "GUIDELINES FOR SEWER CONNECTIONS" BEDDING AND BACKFILL SECTION.

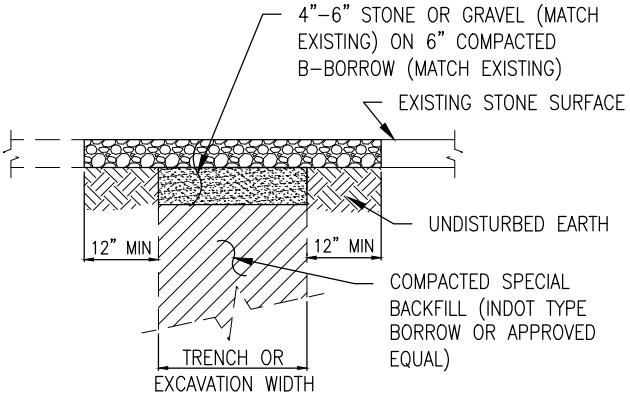
SURFACE RESTORATION

Not to Scale

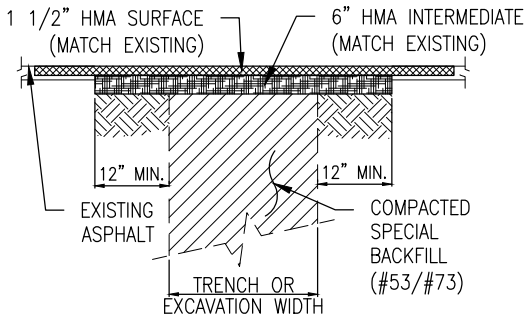


NOTES:
1. GRANULAR BACKFILL AND PIPE BEDDING REQUIRED FOR TRENCHES LESS THAN 5 FEET FROM EDGE OF PAVEMENT.

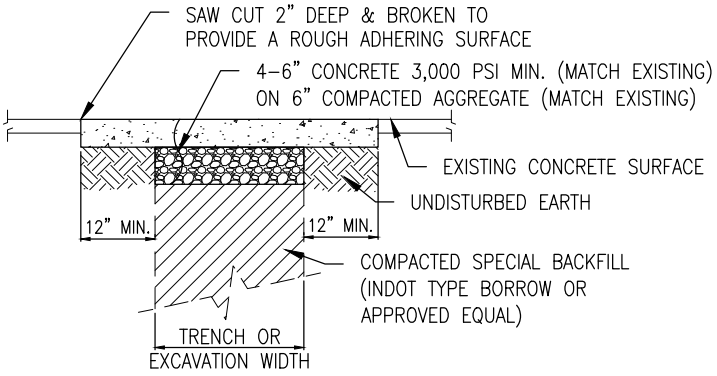
UNIMPROVED SURFACE PATCH



STONE SURFACE PATCH



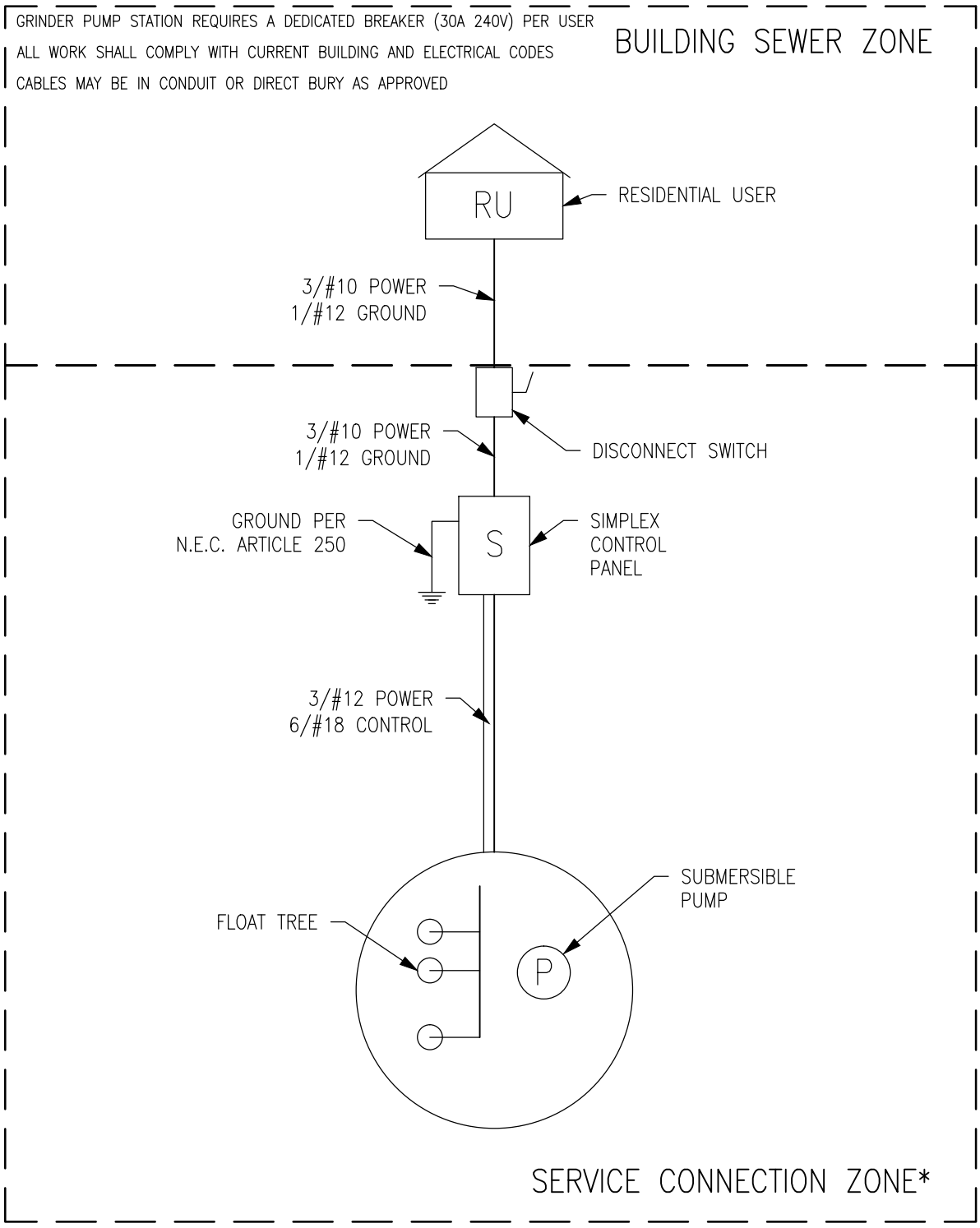
ASPHALT SURFACE PATCH



CONCRETE SURFACE PATCH

GRINDER PUMP WIRING DIAGRAM
INDIVIDUAL GRINDER STATION

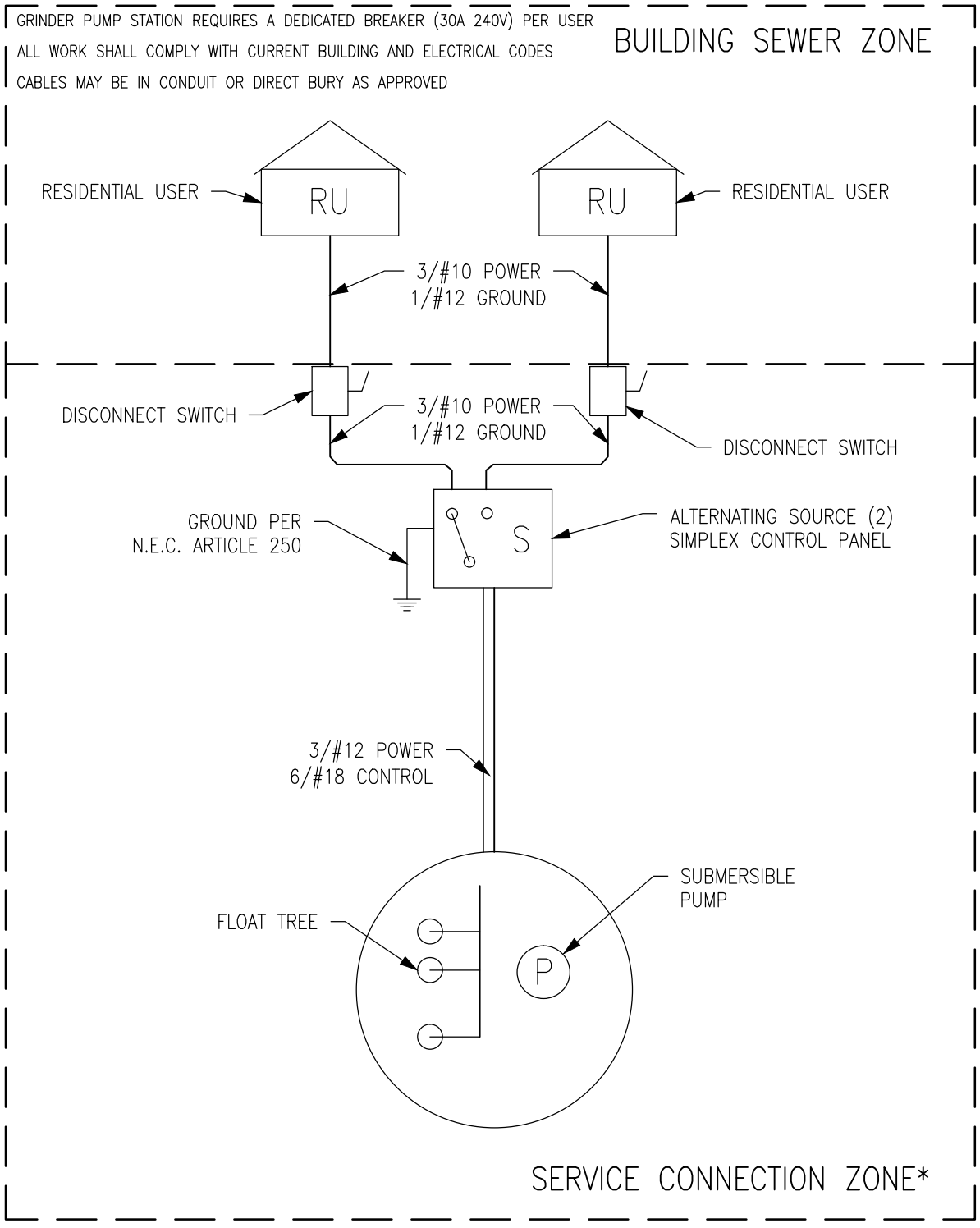
Not to Scale



* WORK WITHIN THE "SERVICE CONNECTION ZONE" IS THE PROPERTY OWNER'S RESPONSIBILITY ONLY IF THE PROPERTY DOES NOT HAVE AN EXISTING SERVICE CONNECTION THAT WAS INCLUDED IN THE ORIGINAL SEWER SYSTEM CONSTRUCTION.

GRINDER PUMP WIRING DIAGRAM
SHARED GRINDER STATION

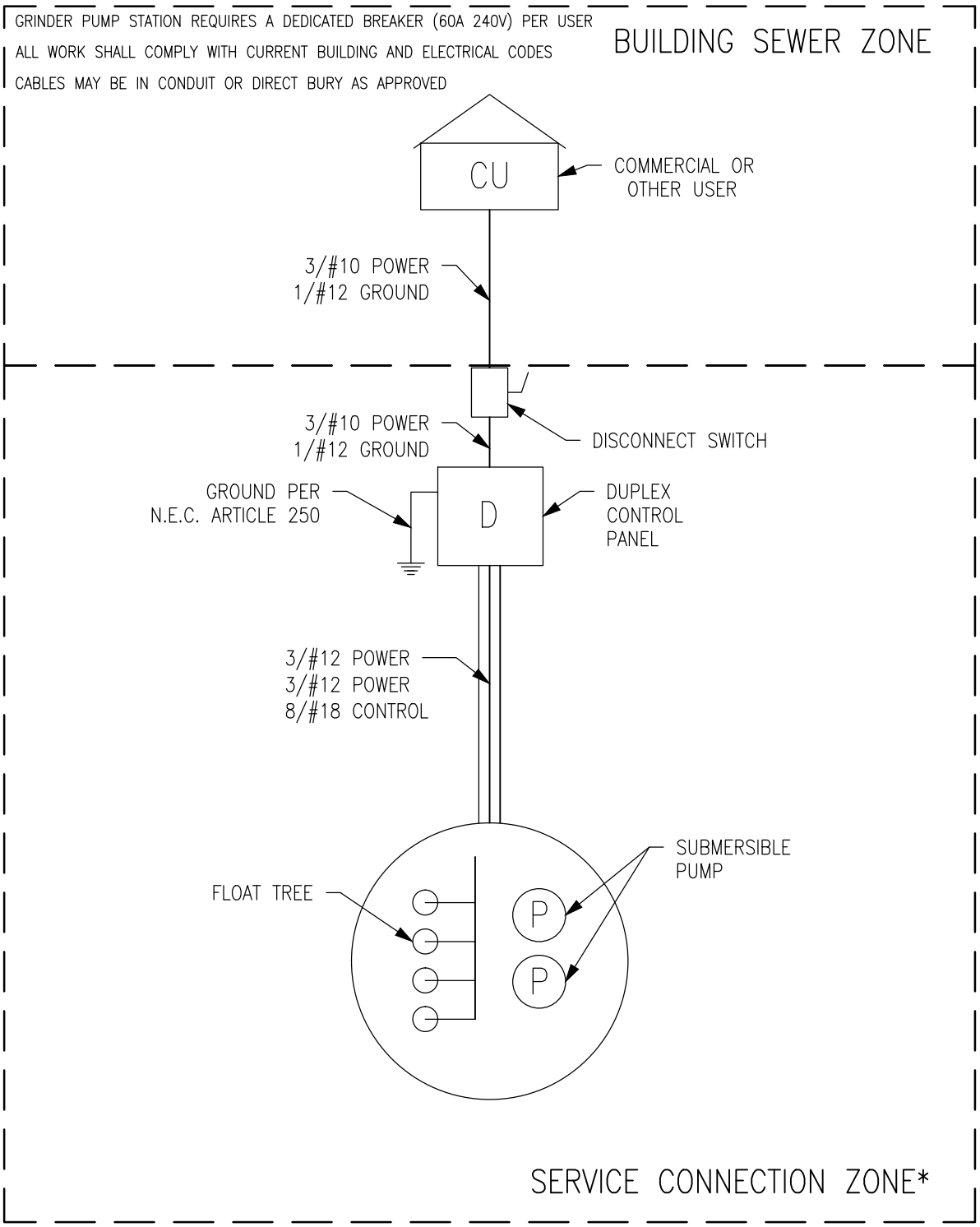
Not to Scale



* WORK WITHIN THE "SERVICE CONNECTION ZONE" IS THE PROPERTY OWNER'S RESPONSIBILITY ONLY IF THE PROPERTY DOES NOT HAVE AN EXISTING SERVICE CONNECTION THAT WAS INCLUDED IN THE ORIGINAL SEWER SYSTEM CONSTRUCTION.

GRINDER PUMP WIRING DIAGRAM
INDIVIDUAL GRINDER STATION FOR COMMERCIAL USER

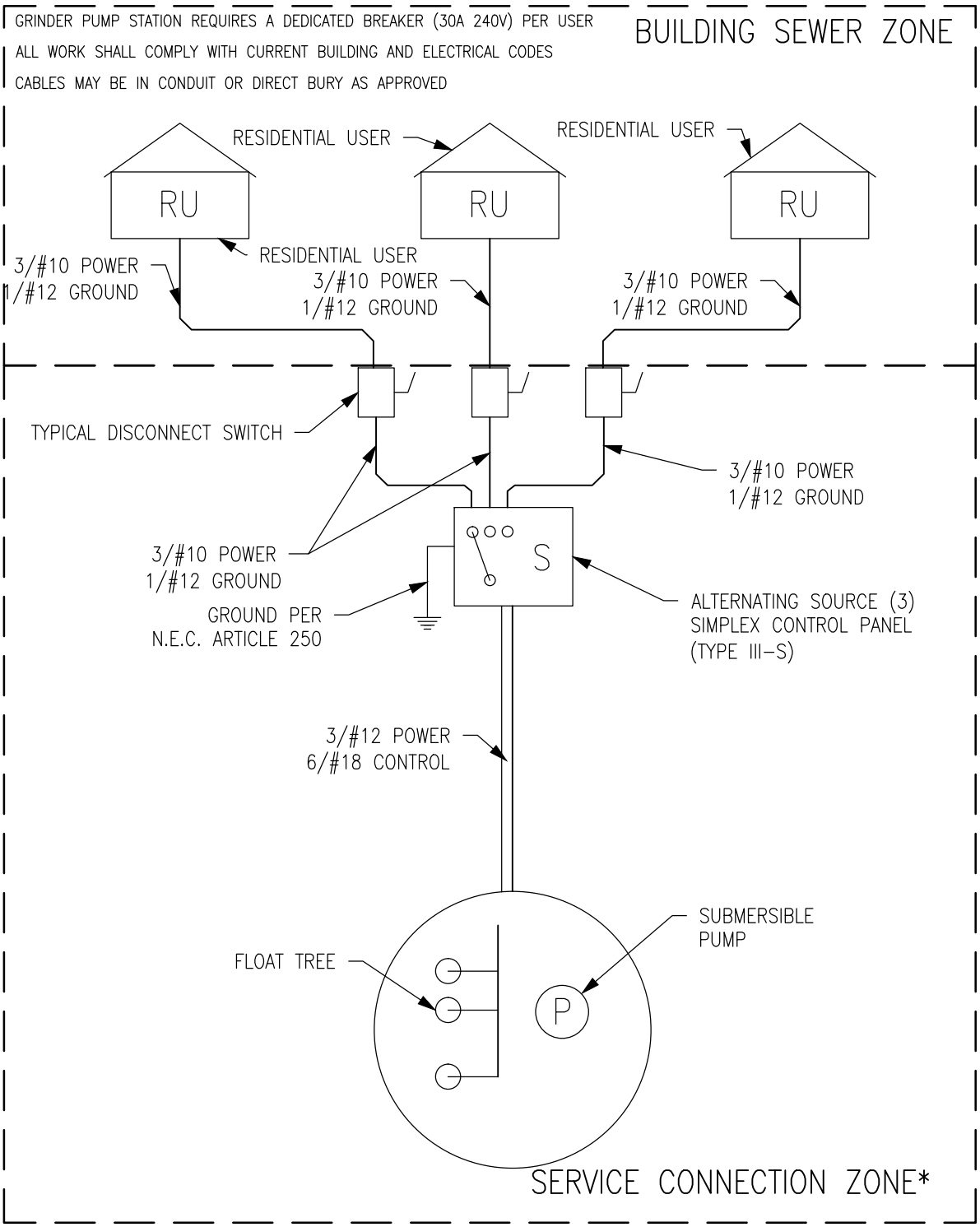
Not to Scale



* WORK WITHIN THE "SERVICE CONNECTION ZONE" IS THE PROPERTY OWNER'S RESPONSIBILITY ONLY IF THE PROPERTY DOES NOT HAVE AN EXISTING SERVICE CONNECTION THAT WAS INCLUDED IN THE ORIGINAL SEWER SYSTEM CONSTRUCTION.

GRINDER PUMP WIRING DIAGRAM
SHARED 3-WAY GRINDER STATION

Not to Scale



* WORK WITHIN THE "SERVICE CONNECTION ZONE" IS THE PROPERTY OWNER'S RESPONSIBILITY ONLY IF THE PROPERTY DOES NOT HAVE AN EXISTING SERVICE CONNECTION THAT WAS INCLUDED IN THE ORIGINAL SEWER SYSTEM CONSTRUCTION.

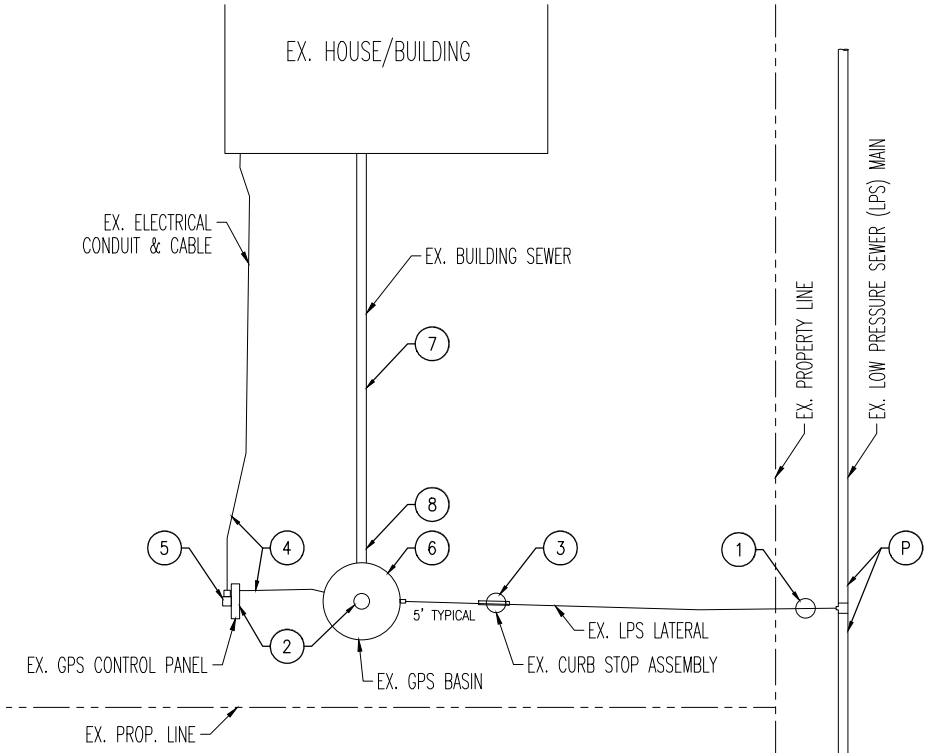
SECTION C – INFRASTRUCTURE VACATION

C-01 Permanent Infrastructure Vacation

C-02 Temporary Infrastructure Vacation

PERMANENT INFRASTRUCTURE VACATION REQUIREMENTS

Not to Scale



ABBREVIATIONS:

EX EXISTING
GPS GRINDER PUMP STATION
LPS LOW PRESSER SEWER

REQUIREMENTS:

P. PROTECT

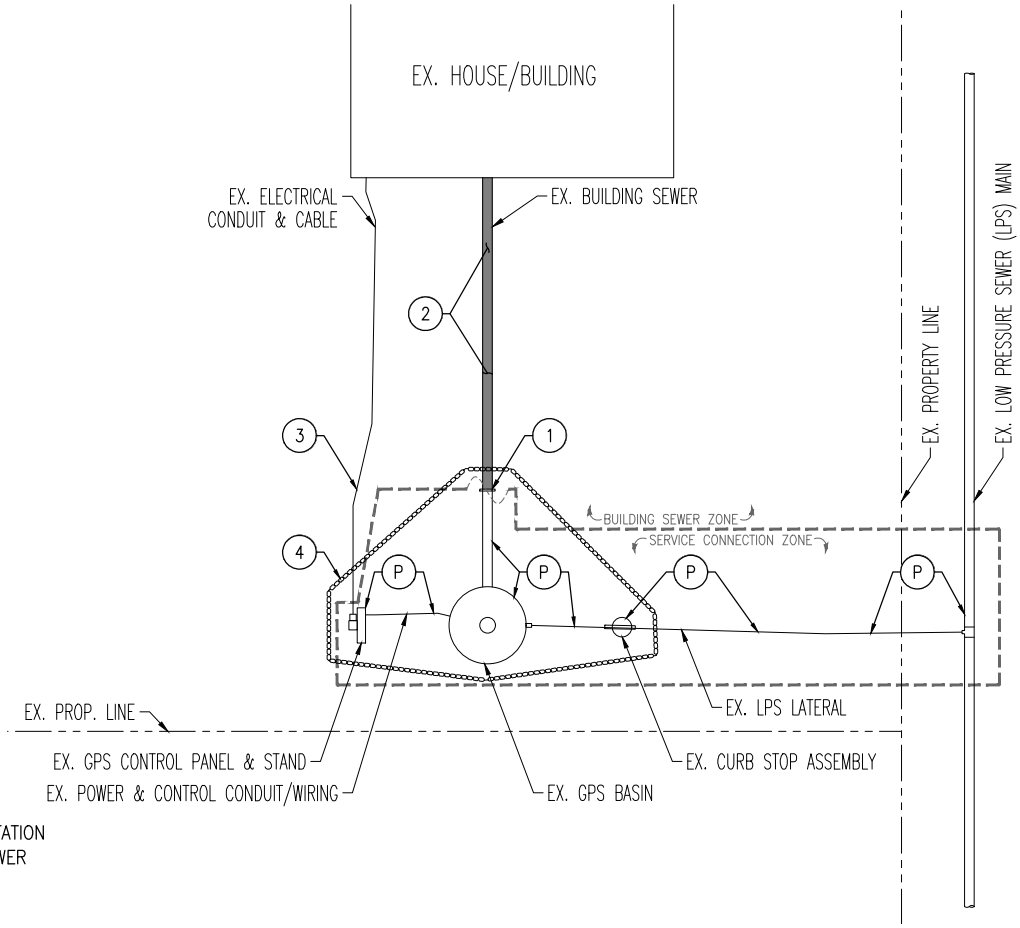
1. EXCAVATE AND EXPOSE EXISTING LATERAL. LATERAL TO BE CUT AND INSTALL AN ELECTROFUSE CAP ON LATERAL WITHIN 5' OF MAIN, OR AT APPROVED LOCATION BY THE DISTRICT. PROTECT EX CORP STOP. PROTECT EX LPS MAIN. PROVIDE SAFETY FENCING AROUND EXCAVATION. CONTACT DISTRICT OPERATIONS TO WITNESS ALL WORK AND DISCONNECT EX LPS LATERAL. THIS SHALL BE COMPLETED PRIOR TO ALL OTHER VACATING ACTIVITIES. SEE NOTE C. DISTRICT SHALL BE PRESENT FOR WORK WITHIN 10' OF MAIN.
2. CONTACT DISTRICT OPERATIONS TO REMOVE PUMPS, CONTROL PANEL, AND ALL OTHER DISTRICT OWNED ITEMS CHOSEN TO BE SALVAGED. OWNER IS RESPONSIBLE TO DISPOSE OF ALL REMAINING ITEMS.
3. REMOVE EX CURB STOP ASSEMBLY IN ENTIRETY AND HAND OVER TO DISTRICT UNLESS OTHERWISE DIRECTED BY DISTRICT.
4. REMOVE ELECTRICAL WIRING IN ENTIRETY. BURIED PORTIONS OF WIRE AND CONDUIT RUNS MAY REMAIN.
5. REMOVE CONTROL PANEL STAND AND APPURTENANCES.
6. REMOVE EX GPS BASIN IN ENTIRETY AND BACKFILL TO GRADE; OR REMOVE TOP 2' OF BASIN, THOROUGHLY PUNCTURE BOTTOM OF BASIN FOR DRAINAGE, AND BACKFILL TO GRADE. PROVIDE SAFETY FENCING AROUND EXCAVATION. REMOVED GRINDER STATIONS MAY BE SALVAGED TO THE DISTRICT UPON REQUEST OF THE DISTRICT, AND SHALL BE DELIVERED TO THE LAKELAND WASTEWATER TREATMENT PLANT BY THE OWNER.
7. REMOVE BUILDING SEWER PIPE INCLUDING ALL APPURTENANCES, FITTINGS, CLEANOUTS, ETC. BURIED PIPING MAY REMAIN IF OPEN ENDS ARE CAPPED OR PLUGGED.
8. IF ONLY THE BUILDING SEWER IS TO BE PERMANENTLY VACATED, BUT THE SERVICE CONNECTIONS IS TO REMAIN: CAP THE BASIN STUB PIPE AT THE JOINT NEAREST TO THE BASIN. CAP SHALL BE A REMOVABLE WATERTIGHT FACTORY MADE FITTING. MARK STUB LOCATION WITH 1/2" REBAR EXTENDING FROM 3' ABOVE GRADE TO CENTER OF UPSTREAM SIDE OF CAP.

NOTES:

A. DISTRICT HOLDS SALVAGE RIGHTS; OWNER IS RESPONSIBLE TO PROTECT DISTRICT EQUIPMENT. ALL ITEMS NOT SALVAGED BY DISTRICT SHALL BE REMOVED AND DISPOSED OF BY OWNER, UNLESS OTHERWISE DIRECTED BY DISTRICT.
B. OWNER IS RESPONSIBLE TO DISCONNECT POWER TO THE GPS PRIOR TO WORK.
C. NO ITEMS SHALL REMAIN VISIBLE AT OR ABOVE GRADE UPON COMPLETION OF VACATION.
D. PROPERTY OWNER IS RESPONSIBLE TO OBTAIN ALL PERMITS FROM ALL AUTHORITIES HAVING JURISDICTION, INCLUDING THE DISTRICT AND ALL OTHER STATE, LOCAL, AND COUNTY AUTHORITIES.
E. WORK WITHIN ROAD RIGHT OF WAY SHALL BE PERMITTED THROUGH THE COUNTY HIGHWAY DEPARTMENT. ALL PERMITTING AND RESTORATION SHALL MEET COUNTY STANDARDS AND ARE THE SOLE RESPONSIBILITY OF THE PROPERTY OWNER.
F. THIS DETAIL REPRESENTS TYPICAL MINIMUM REQUIREMENTS. ALL INFRASTRUCTURE VACATIONS ARE SUBJECT TO INDIVIDUAL REVIEW AND ADDITIONAL CASE-BE-CASE REQUIREMENTS MAY BE IMPLEMENTED AS DEEMED NECESSARY BY THE DISTRICT.
G. REFER TO DEVELOPMENT STANDARDS MANUAL FOR EJECTOR SYSTEM REQUIREMENTS.

TEMPORARY INFRASTRUCTURE VACATION REQUIREMENTS

Not to Scale



ABBREVIATIONS:

EX EXISTING
GPS GRINDER PUMP STATION
LPS LOW PRESSER SEWER

REQUIREMENTS:

P. PROTECT

1. SEGMENT OF BUILDING SEWER TO BE TEMPORARILY VACATED: CAP PIPE END AT A FACTORY JOINT WITH A REMOVABLE WATERTIGHT FACTORY MADE FITTING. MARK END WITH 1/2" REBAR EXTENDING FROM 3' ABOVE GRADE TO CENTER OF UPSTREAM SIDE OF CAP.
2. SEGMENT OF BUILDING SEWER TO BE PERMANENTLY VACATED: REMOVE BUILDING SEWER PIPE INCLUDING ALL APPURTENANCES, FITTINGS, CLEANOUTS, ETC. (BURIED PIPING MAY REMAIN IF ALL OPEN ENDS ARE CAPPED OR PLUGGED.)
3. POWER SHALL BE DISCONNECTED FROM THE SOURCE AND ALL BREAKERS PLACED IN THE "OFF" POSITION. REMOVE POWER SUPPLY WIRE IN ENTIRETY. BURIED PORTIONS OF WIRE AND CONDUIT RUNS MAY REMAIN. CONTACT DISTRICT TO ACCESS DISCONNECT BOX LOCATED ON THE CONTROL PANEL STAND.
4. VISIBLE BARRIER (SNOW FENCE OR OTHER) SHALL BE INSTALLED TO DEMARCATE AND PROTECT ALL ITEMS TEMPORARILY VACATED.

NOTES:

A. ALL INFRASTRUCTURE WITHIN THE "SERVICE CONNECTION ZONE" SHALL BE PROTECTED. ANY AND ALL DAMAGE TO THIS INFRASTRUCTURE SHALL BE IMMEDIATELY REPAIRED BY THE PROPERTY OWNER AND AT NO COST TO THE DISTRICT.

B. DISTRICT SHALL PLACE ALL CONTROL PANEL AND DISCONNECT BREAKERS IN THE "OFF" POSITION. DISTRICT SHALL DETERMINE ON A CASE-BY-CASE BASIS IF PUMPS SHALL BE REMOVED FROM THE BASIN.

C. PROPERTY OWNER SHALL BE HELD RESPONSIBLE FOR REMOVAL OF ANY AND ALL GRAVEL, SILT, AND OTHER DEBRIS INTRODUCED INTO THE BASIN FROM THE BUILDING SEWER OR OTHER CONSTRUCTION ACTIVITIES, AND FOR ANY DAMAGE TO DISTRICT EQUIPMENT CAUSED THEREFROM.

D. ALL INFRASTRUCTURE WITHIN THE "BUILDING SEWER ZONE" SHALL BE REMOVED AND DISPOSED OF BY THE PROPERTY OWNER UNLESS A TEMPORARY INFRASTRUCTURE VACATION HAS BEEN APPROVED. FOR TEMPORARY INFRASTRUCTURE VACATIONS, THE PROPERTY OWNER SHALL DEMONSTRATE TO THE DISTRICT'S SATISFACTION THAT SAID INFRASTRUCTURE HAS BEEN PROTECTED FROM DAMAGED, IS SUITABLE FOR SEWAGE CONVEYANCE, AND OTHERWISE MEETS ALL DISTRICT AND INDUSTRY STANDARDS AT THE TIME OF RECONNECTION.

E. PROPERTY OWNER IS RESPONSIBLE TO OBTAIN ALL PERMITS FROM ALL AUTHORITIES HAVING JURISDICTION, INCLUDING THE DISTRICT AND ALL OTHER STATE, LOCAL, AND COUNTY AUTHORITIES.

F. WORK WITHIN ROAD RIGHT OF WAY SHALL BE PERMITTED THROUGH THE COUNTY HIGHWAY DEPARTMENT. ALL PERMITTING AND RESTORATION SHALL MEET COUNTY STANDARDS AND ARE THE SOLE RESPONSIBILITY OF THE PROPERTY OWNER.

G. THIS DETAIL REPRESENTS TYPICAL MINIMUM REQUIREMENTS. ALL INFRASTRUCTURE VACATIONS ARE SUBJECT TO INDIVIDUAL REVIEW AND ADDITIONAL CASE-BE-CASE REQUIREMENTS MAY BE IMPLEMENTED AS DEEMED NECESSARY BY THE DISTRICT.

H. REFER TO DEVELOPMENT STANDARDS MANUAL FOR EJECTOR SYSTEM REQUIREMENTS.

PART 6. ATTACHMENTS

This section includes the Forms that are to be used in the Building Sewer and New Service construction and connection process. Forms for the User/Property Owner to complete and, for reference, Forms that the District will complete are included.

Forms available upon Request to the District.

B. **Forms Packet**: for properties included in initial sewer system construction

FORMS TO BE COMPLETED BY THE PROPERTY OWNER:

- General Checklist and Sewer Connection Process
- FORM A – Sewer Connection Agreement
- FORM B – Application for Sewer Connection Permit
- FORM B2 – Variance Request for Re-Use of Existing Building Sewer
- FORM C – Proposed Building Sewer and Service Connection Location Sketch

FORMS TO BE COMPLETED BY THE DISTRICT:

- FORM D - Building Sewer Inspection
- FORM D2 – Service Connection Inspection
- FORM E – Septic System Abandonment Verification
- FORM F – Sewer Connection Approval

C. **NS Forms Packet:** for New Service properties (i.e., properties NOT in Initial Sewer System Construction)

FORMS TO BE COMPLETED BY THE PROPERTY OWNER:

- General Checklist and Sewer Connection Process
- FORM NS - A – Sewer Connection Agreement
- FORM NS - A1 – Grinder Station Purchase Agreement
- FORM NS - B – Application for Sewer Connection Permit
- FORM NS - B2 – Variance Request for Re-Use of Existing Building Sewer
- FORM NS - C – Proposed Building Sewer and Service Connection Location Sketch

FORMS TO BE COMPLETED BY THE DISTRICT:

- FORM NS - D - Building Sewer Inspection
- FORM NS - D2 – Service Connection Inspection
- FORM NS - E – Septic System Abandonment Verification
- FORM NS - F – Sewer Connection Approval

D. **IV Forms Packet:** for Infrastructure Vacations

FORMS TO BE COMPLETED BY THE PROPERTY OWNER:

- General Checklist and Infrastructure Vacation Process
- FORM IV - A – Infrastructure Vacation Agreement
- FORM IV - B – Application for Infrastructure Vacation Permit
- FORM IV - C – Proposed Infrastructure Vacation Sketch

FORMS TO BE COMPLETED BY THE DISTRICT:

- FORM IV - D – Permanent Infrastructure Vacation Inspection
- FORM IV - D2 – Temporary Infrastructure Vacation Inspection
- FORM IV - F – Permanent Infrastructure Vacation Approval
- FORM IV – F2 – Temporary Infrastructure Vacation Approval