Minimum Design & Construction Standards & Specifications for Wastewater

Islamorada, Village of Island

February 2024

WADE TRIM

MINIMUM DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS FOR WASTEWATER

Islamorada, Village of Islands

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1.0 GENERAL

The Minimum Design and Construction Standards and Specifications for Wastewater (herein referred to as the “Minimum Design Standards”) are incorporated in and made a part of the Wastewater Utility Policy adopted by the Village, and provide the standards, specifications, and requirements necessary to ensure the quality of wastewater facilities constructed in the Village and to minimize future maintenance and replacement costs. The Minimum Design Standards may be amended by the Village Manager from time to time.

The Minimum Design Standards establish engineering design and construction standards and specifications of the Village applicable to all collection systems and Connections, including any and all facilities and equipment installed, constructed, operated and maintained by a Developer, Owner or Customer, which Connect to the Wastewater System, and the procedures and policies of the Village required for residential and commercial Connections, operation and maintenance of Wastewater facilities, including all requirements for compliance with the KLWTD Agreement and the Grease Interceptor Policy. Applicable Federal, State and County laws and regulations should be considered concurrently with the standards and specifications presented herein.

These Minimum Design Standards are binding as a minimum standard; however, the Village reserves the right to require a more stringent standard to be met when unusual circumstances or conditions exist on a particular project. Where requirements of the Village’s Minimum Design Standards are more restrictive than the Florida Building Code, the Village’s Minimum Design Standards shall prevail. The Village further reserves the right to revise these standards and specifications from time to time, in its sole discretion, as new information and products become available.

END OF SECTION

2.0 TECHNICAL GUIDANCE

The following technical standards and criteria contained in the following manuals and technical publications listed below, or as specified in the last edition or the most current version, and those referenced throughout this document are hereby incorporated by reference.

2.1 Applicable Codes

All design, material and work shall be in accordance with all applicable governmental, regulatory, and testing organizations including, but not limited to the following:

ANSI – American National Standards Institute

ASTM – American Society of Testing and Materials

AWWA – American Water Works Association

DOH – Department of Health

FDEP – Florida Department of Environmental Protection

FDOT – Florida Department of Transportation

Florida Building Code 2010 and Companion Codes as amended

OSHA – Occupational Safety and Health Administration

USEPA – United States Environmental Protection Agency

2.2 Standard Manuals and Publications

In case where the standards and criteria contained in the publications listed below conflict with the Village's Minimum Design Standards or other rules of the Village, the Village Minimum Design Standards and rules shall control.

In cases where the standards and criteria contained in the publications listed below conflict, the standards and criteria contained in the publication listed in 2.2(h), or as specified in the most current version, shall be used.

(a) Airvac 2022 Municipal Design Manual, 4217 N. Old U.S. Highway 31, P.O. Box 528, Rochester, Indiana 46975. info.airvac@aqseptence.com.
(b) Airvac 2010 Landbased Vacuum Systems Operation, Installation and Maintenance Manual, 4217 N. Old U.S. Highway 31, P.O. Box 528, Rochester, Indiana 46975.
(c) Airvac Standard Specification, Division 2 – Site Work, Section 02730 – Underground Vacuum Sewer Piping (Contractor Supplied Equipment, 2012 or latest edition), 4217 N. Old U.S. Highway 31, P.O. Box 528, Rochester, Indiana 46975.

(d) Alternative Sewer Systems, WEF Manual of Practice No. FD-12, Second Edition (2008), Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314-1994. www.wef.org
(e) Design of Wastewater and Stormwater Pumping Stations (1993), Manual of Practice No. FD-4, Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314-1994. www.wef.org
(f) Design Criteria for Mechanical, Electric and Fluid System and Component Reliability-MCD-05 (1974). EPA-430-99-74-001. Office of Water Program Operations, U.S. Environmental Protection Agency, Washington, D.C. 20460. www.dep.state.fl.us/water.
(g) Design and Specification Guidelines for Low Pressure Sewer Systems (1981), Department of Environmental Protection, http://www.dep.state.fl.us/water/wastewater/dom/domcollect.htm
(h) Florida Building Code, https://floridabuilding.org/bc/bc_default.aspx
(i) Gravity Sanitary Sewer Design and Construction (1982). WPCF Manual of Practice No. FD-5, Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314-1994. www.wef.org.
(j) Odor and Corrosion Control in Sanitary Sewage Systems and Treatment Plants (1985). EPA/625/1-85/018. NTIS# PB88184031. National Technical Information Service, 5285 Port Royal, Springfield, VA 22161. www.ntis.gov
(k) Recommended Standards for Wastewater Facilities, 2004 edition, Policies for the Design, Review and Approval of Plans and Specifications for Wastewater Collection and Treatment Facilities, A Report of the Wastewater Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. Published by Health Research Inc., Health Education Services Division, P.O. Box 7126, Albany, NY 12224. www.hes.org.
(l) Vacuum Sewer Systems Design Checklist, Florida Department of Environmental Protection, http://www.dep.state.fl.us/water/wastewater/dom/domcollect.htm
(m) Wastewater Collection Systems Management, Sixth Edition, 2010, WEF Manual of Practice No. 7, Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314-1994. www.wef.org.

END OF SECTION

3.0 DESIGN GUIDELINES

3.1 General

The requirements of this section are a minimum and nothing herein shall be construed to eliminate consideration of a design based on a rational procedure not covered by such requirements. Standards or minimum requirements set forth in this document are not intended to relieve the Owner or the Developer from complying with good engineering and construction practices under specific conditions which require a higher degree of procedure, standards, or requirements.

3.2 Design Capacity

Wastewater facilities should be designed for the estimated buildout population. Parts of the system that can be readily increased in capacity such as lift stations may be submitted for approval based on phased implementation. A Basis of Design Report (BODR) that identifies the required capacity needed for the proposed development or upgrade, including engineering calculations prepared, signed, and sealed by a Registered Engineer in the State of Florida for all projects shall accompany the plan documents submitted to the Village for review and approval.

3.3 Design Flow

Any Owner/Developer seeking to obtain wastewater service from the Village for a new development or re-development that requires installation or extension of wastewater facilities, shall base sewer system design on full ultimate development as known or projected using an Average Daily Flow (ADF) of 157 gallons per day per EDU, rounded to the nearest 1/10 EDU.

3.3.1 Peak Hourly Flow

Peak Hourly Flow (PHF) shall be utilized for the sizing of all gravity sewers, force mains and lift station pump sizing. Peak hourly flow peaking factor (Pf) shall follow Figure 1 - Ratio of Peak Hourly Flow to Design Average Flow, of the "Recommended Standards for Wastewater Facilities", by the Water Supply Committee of the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 2004 Edition. PHF peaking factors for vacuum and low pressure sewers are identified in Sections 5 – Vacuum Sewers and Section 6 – Low Pressure Sewers, respectively of this manual.

3.4 Construction Drawings

All utility plans shall be prepared and submitted on 11"x17" sheets utilizing the following minimum scales:

1” = 20-ft horizontal, 2-ft vertical for vacuum sewer and force main wastewater plan and profile sheets;

1” = 40-ft horizontal, 8-ft vertical for low pressure wastewater plan and profile sheets;

1” = 50-ft horizontal, 5-ft vertical for gravity wastewater profile sheets; and

1” = 10-ft for lift station plans.

Drawings submitted on other size sheets or with other scales will be returned without review.

The additional following items must also be included and/or addressed with submittals:

- Cover sheet with location map;
- A key map shall be included with all plan sheets;
- Standard detail sheets shall be utilized;
- Match lines and phase lines must be clearly delineated;
- Detailed storm piping systems shall be shown on utility plans, including yard drains, roof drains, and exfiltration trenches;
- Field verified data for existing facilities shall be shown;
- Elevations of conflicting pipes shall be shown indicating top and bottom pipe elevations;
- All manholes, fire hydrants, and valves shall be numerically identified;
- Manhole invert and rim elevations shall be shown;
- Piping shall be constructed in road rights-of-way unless unavoidable;
- The number of equivalent dwelling units shall be identified;
- Grease traps. oil/grease interceptors and sand/oil interceptors shall be identified;
- The type, capacity, and location of oil/grease interceptors and sand/oil interceptors shall be identified;
- Proposed utility easements for new and existing facilities shall be identified on utility plans or a separate easement plan;
- Restoration drawings, including the identification of pavement, curb, sidewalk, and private driveway restoration; replacement of all trees, shrubs and landscaping; restoration of any damaged and temporarily relocated utilities and improvements, including all underground utilities;
- Utility plans shall be prepared on State Plan Coordinate System; vertical control shall be tied to NGVD29, National Geodetic Vertical Datum 1929; and
- CAD/PDF utility plan design file is required with every final plan submittal.

END OF SECTION

4.0 WASTEWATER SYSTEMS, GENERAL

Wastewater collection and transmission systems shall be designed to collect and transport wastewater to the designated point of treatment with capital cost, reliability, extended useful life, and operating costs all being considered. Also, the design must be in accordance with all requirements shown herein and meet all local, state, and regulatory requirements. These include, but are not limited to:

- Islamorada, Village of Islands Building Department;
- US Army Corps of Engineers;
- Florida Department of Transportation;
- Florida Department of Environmental Protection;
- The State of Florida Building Code;
- The National Electric Code;
- The National Fire Protection Association;
- Coastal Management Program;
- South Florida Water Management District; and
- Key Largo Wastewater Treatment District Inter-local Agreement.

END OF SECTION

5.0 VACUUM SEWERS

Vacuum sewers are the preferred method of sewering residential and commercial properties within the Village. As a result, a major portion of the collection systems constructed on Plantation, Upper Matecumbe, and Lower Matecumbe Keys consist of vacuum sewers. This section provides options for connecting to an existing vacuum sewer system as well as a general overview of the minimum design and construction standards required for vacuum sewers in the Village.

All vacuum system components shall be manufactured and/or distributed by Airvac-Aqseptance Water Technologies, Inc. (Airvac). All standard details for Airvac vacuum sewer designs are provided in Section 12 – Vacuum Sewer Details, Low Pressure Sewer Details, and Standard Details.

5.1 Preliminary Approval Requirements for Connecting to an Existing Vacuum Sewer System in the Village

The Village must approve the use of vacuum sewers for each specific application before a preliminary plan is prepared for submittal and review by the Owner/Developer. The Owner/Developer must provide the Village with the following minimum information for review and approval for connecting to an existing vacuum sewer system in the Village:

1. The Owner/Developer must obtain written approval from the engineering firm who designed the Village vacuum sewer collection system or from another engineering firm with qualified experience in vacuum sewer design (within the State of Florida) that is acceptable to the Village.

2. The engineering firm shall provide the following:
   a. An evaluation of the capacity of the existing vacuum pump station which determines whether the existing capacity of the facility is sufficient or whether certain upgrades are necessary. Required upgrades needed for the pump station shall be identified in writing and included with the preliminary plan submitted by the Owner/Developer;
   b. An evaluation of the existing capacity of the vacuum collection system (vacuum mains) and a determination of how much capacity in the system exists for additional, future flows;
   c. A hydraulic analysis of the system identifying static and friction losses; and
   d. Calculation of the total design peak flow of the Village's base system (gpm) and the total peak flow expected from the development or re-development.

5.2 Preliminary Plan Submittal Requirements

Upon approval of the use of vacuum sewers for the planned development, the Owner (or Developer) shall submit three (3) copies of preliminary plans to the Village for review and approval. Preliminary plan submittals shall include the following minimum information:

1. Hydraulic analysis
2. General layout;
3. Plan and profile sheets;

4. Vacuum details; including standard options used for connecting with the existing vacuum system (see Section 5.3); and
5. Easement requirements.

Owners of new developments or re-development projects are advised to meet with the Village Engineer to conduct a pre-application meeting and due diligence prior to submitting final engineering plans to discuss the proper procedure for obtaining approval for any modifications.

5.3 Options for Connecting to An Existing Vacuum Sewer System

Owner/Developers that desire to connect with the Village's existing vacuum sewer system have four options available as described below. In all options, maximum peak flows and connections to valve pits and/or buffer tanks are limited as shown in Table 5.1.

5.3.1 Option A: Gravity Service to a Single Valve Pit

This option would be used for 1 to 4 EDUs where the cumulative peak flow from the houses connected to the valve pit is less than 3 gpm and service is provided with a single Airvac valve pit. Under this option, the Village maintains the valve pit and valve.

All gravity lateral service connections with the Airvac valve pit shall be performed by a licensed plumber and witnessed by the Village. Installation of the vacuum valve shall be performed by the Village or its representative if not already previously installed for service to an existing customer.

5.3.2 Option B: Extension of the Vacuum System Within the Village Right-of-Way

Under this option, the developer would pay the cost associated with extending the Village's existing vacuum collection system to the proposed development. This extension of the system would include standard vacuum mains (up to 10 inches), Airvac valve pits, and collection system appurtenances. The Village would own and maintain the extended collection system within the Village right-of-way, including the vacuum mains, valve pits, valves and appurtenances. Standard flushing and testing procedures (see *Section 14*) apply to this option for extension of services.

All gravity lateral service connections with the Airvac valve pit(s) shall be performed by a licensed plumber and witnessed by the Village. Installation of the vacuum valve(s) shall be performed by the Village or its representative if not already previously installed for service to an existing customer.

5.3.3 Option C – Gravity Sewer to Buffer Tank(s)

This option is used when providing a gravity collection system that will connect to a buffer tank(s). The Village will own and operate the buffer tank(s) while the gravity collection system will be responsibility of the Owner/Developer. The Owner/Developer must adhere to Airvac's standards for using buffer tanks (see Section 5.9). Under this option, the Owner/Developer will be required to pay for the installation cost associated with installing an Airvac cycle counter at each buffer tank. Standard flushing and testing procedures (see *Section 14*) apply to this option for extension of services.

All gravity lateral service connections the buffer tank shall be performed by a licensed plumber and witnessed by the Village. Installation of the vacuum valve(s) shall be performed by the Village or its representative if not already previously installed for service to an existing customer.

Table 5-1. Maximum EDU Requirements for Airvac Valve Pits

MAXIMUM # EDU'S THAT CAN BE SERVED BY A SPECIFIC TYPE OF VALVE PIT							
Valve Pit Type	Max Peak Q (gpm)	Type of Customer	ADF/EDU (gpd)	Peak Factor	Peak Q/EDU (gpm/EDU)	Max # EDU's Theoretical	Recm'd
AIRVAC valve pit – 5 ft deep	3 gpm	Residential	157	3.50	0.38 gpm/EDU	n/a	2 conn*
AIRVAC valve pit - all others	3 gpm	Residential	157	3.50	0.38 gpm/EDU	n/a	4 conn*
AIRVAC valve pit - all others	3 gpm	Commercial	157	7.00	0.76 gpm/EDU	3.9	4 EDU
Single Buffer Tank	15 gpm	Commercial	157	7.00	0.76 gpm/EDU	19.7	20 EDU
Dual Buffer Tank	30 gpm	Commercial	157	7.00	0.76 gpm/EDU	39.5	40 EDU
Dual Buffer Tank (2)	60 gpm	Commercial	157	7.00	0.76 gpm/EDU	78.9	80 EDU
Serve by other means	>60 gpm	Commercial	157	7.00	0.76 gpm/EDU		> 80 EDU
In addition to the 3 gpm max peak flow, these valve pits are limited to 2 & 4 physical connections respectively							

5.3.4 Option D – Low Pressure Sewers to Buffer Tank(s)

This option can only be used for connecting a grinder pump station and a grinder pump service lateral connection with a buffer tank where the pumping rate does not exceed the capacity of the buffer tank. For example, when using a single buffer tank, the rated capacity of the grinder pump station cannot exceed **15 gpm**. If using a dual buffer tank, the rated capacity of the grinder pump station(s) cannot exceed **30 gpm**. Option D can only be used if Options A, B and C are not feasible and the limitations for using buffer tanks can be met as stipulated in the *Airvac 2022 Municipal Design Manual* (or latest edition). Standard flushing and testing procedures (see *Section 14*) apply to this option for extension of services.

All service connections with the buffer tank shall be performed by a licensed plumber and witnessed by the Village. Installation of the vacuum valve(s) shall be performed by the Village or its representative if not already previously installed for service to an existing customer.

5.4 Average Daily Flow and Peak Hourly Flow

Based on the *Recommended Standards for Wastewater Facilities (2004)*, flow rates shall be based on documented wastewater flows for each of the service areas defined in the Village Wastewater Master Plan.

For vacuum sewer systems, all vacuum sewers shall be sized based on peak flow rates and peaking factors as defined in the *Airvac 2022 Municipal Design Manual* (or latest edition) and in the *Water Environment Federation Manual of Practice FD-12 – Alternative Sewer Systems, 2nd edition, 2008*.

5.5 Pipe Material

Vacuum main piping is used to connect individual valve pits to the collection tank at the vacuum pump station. Pressure rated schedule 40 or standard dimension ratio (SDR) 21 polyvinyl chloride (PVC) pipe shall be used for vacuum main piping. Doubled lipped "Reiber style" gasketed joints shall be used with all piping. High density polyethylene (HDPE) piping may be used in certain instances where directional borings are allowed by the Village for short piping runs, i.e., under a highway. PVC pressure rated fittings are required for directional changes, branch to main connections, and service lateral to branch or main connections in a vacuum sewer system. Tee fittings and 90-degree bends shall not be used for vacuum service. Bends are restricted to 45-degree elbows only. Pressure rated fittings available for use include solvent welded, assembled/fabricated, and molded as recommended in the most current version of the *Airvac 2022 Municipal Design Manual*.

Gravity stub-outs (the 4" or 6" stub-out pipe from the vacuum valve pit) and gravity service lateral connections shall be constructed of pressure rated Schedule 40 (220 psi) or SDR 21 PVC (200 psi) pipe. Pressure rated pipe shall be used for two reasons. First, the pipe OD must match the valve pit grommet to prevent the entrance of infiltration and inflow (I/I) into the valve pit sump. Second, the building sewer may be exposed to high vacuum at times. Non-pressure rated pipe shall not be used.

5.6 Piping Diameter

Vacuum mains and branches shall be sized per the requirements of the most recent version of the *Airvac 2022 Municipal Design Manual*. Typical vacuum main sizes include 4-inch, 6-inch, 8-inch and 10-inch diameter piping. No vacuum main shall be sized less than 4-inches in diameter or larger than 10-inches in diameter without written approval of Airvac.

5.7 Pipe Velocity

Fluid velocity in a vacuum system can sometimes exceed 20 feet per second and therefore is not a primary design factor for sizing a vacuum sewer system. Self-cleansing velocity will always be achieved in a properly design vacuum main.

5.8 Vacuum Pits

Vacuum pits shall be either of the “one piece” polyethylene (PE) variety or the two-piece hybrid PE/Fiberglass variety. One piece vacuum pit sizes include 5-ft and 6.5-ft vacuum pits. The “two piece” hybrid PE/fiberglass (FRP) pits are available from Airvac provided that Village approval for their use is granted.

For residential and commercial connections, a maximum of 4 single family residential connections (or 4 EDUs) are allowed on a 6.5-ft, 8.0-ft, and 10.0-ft vacuum pits. A maximum of 2 residential connections are allowed on the 5-ft vacuum pit. The use of 5-ft vacuum deep pits is only acceptable for two (2) residential connections (no commercial connections) as long as both homes are being served on the same side of the street and both homes can be served with gravity lateral connections that comply with building code requirements.

To minimize the risk of damage to the valve pit during Owner connection to the system, a 4-inch or 6-inch stub-out pipe of sufficient length, typically 6 feet from the valve pit is recommended. The orientation of the valve pit (as it relates to the house and the wye connection) will vary according to the number of connections to the pit.

Vacuum pit details for 1-piece 5-ft valve pits, 1-piece, 6.5-foot valve pits, and 1-piece 6.5-foot valve pits with a 1-foot extension are provided in Section 12 of this document.

5.9 Vacuum Valves

The Airvac vacuum valve is a full-port 3” valve capable of passing a 3” spherical solid while matching the outside diameter of 3” PVC SDR pipe. To ensure proper air-to-liquid ratios, Airvac recommends a maximum peak flow of 3 gpm be used for all valve pits serving residential customers.

The controller is the key component of the Airvac 3” vacuum valve. The controller relies on three forces for its operation: pressure, vacuum, and atmosphere. The controller requires a source of atmospheric air to the actuator chamber permitting spring assisted closing of the 3” vacuum valve. The in-sump breather uses atmospheric air from the sump and its associated 4” gravity building sewer and 4” air intake or from a 6” dedicated air terminal.

The Airvac 3” vacuum valve and controller combination require 5” Hg vacuum for operation and to avoid low air-to-liquid ratios. The lower the vacuum level, the less differential (atmospheric pressure to line vacuum) exists. This equates to less air entering the system resulting in lower line velocities and sluggish flow characteristics.

5.10 Vacuum Valve Pits and Buffer Tanks

The following are design guidelines for the maximum number of EDUs that can be served with a single vacuum pit, a single buffer tank, and a dual buffer tank. Because the quantity of valve pits has a major bearing on the overall project costs, the engineering design is typically driven toward minimizing the number of valve pits by maximizing the number of homes that can be served by a single pit. This concept is not recommended for use on a widespread, system-wide basis. Rather, the house to pit ratio should not exceed 2.5:1 as established in the FDEP Vacuum Sewer Systems Design Checklist.

Vacuum valve pit design requirements have been established which are included in these Minimum Design Standards. These standards establish the guidelines for the engineering design of residential and commercial properties that will receive centralized wastewater services using vacuum sewers within the Village. Design guidelines have been established based on the Village-wide flow of 157 gallons per capita per day (gpcd) and established peaking factors required for providing service during peak flow periods. These standards have been established to avoid “water-logging” from occurring whereby the vacuum mains are choked-off at the extreme ends of the system.

Residential and Commercial Connections with Vacuum Valve Pits. For single family residential and commercial connections, a maximum of 4 EDUs are allowed on a single valve pit that is 6-ft deep or deeper. A maximum of 2 connections are allow on any 5-ft deep valve pit.

Commercial Connections with Buffer Tanks. Buffer tanks may be used for apartment buildings, commercial buildings, and other large volume users in the system. Buffer tanks cannot be used where individual valve pits could otherwise be used. Buffer tanks shall not be placed at line extremities without consulting with AIRVAC and the Village Engineer.

Single buffer tanks must be connected to a 6-inch diameter or larger vacuum main. Dual buffer tanks must be connected to an 8-inch diameter or larger vacuum main.

For single buffer tanks, design peak flows should not exceed 15 gallons per minute (gpm). For dual buffer tanks, design peak flows should not exceed 30 gpm.

Two (2) dual buffer tanks with a splitter manhole can be for applications for maximum peak flows up to 60 gpm. The maximum number of EDUs and the associated peaking factors are indicated in Table 5.1.

Design rules for the use of buffer tanks must be followed accordingly to the hydraulic limitations set forth in the most current version of the *Airvac 2022 Municipal Design Manual*. These conditions include the following:

- **25% Rule** – No more than 25% of the total peak flow of the entire system can enter through the buffer tanks.

- **50% Rule** – No more than 50% of the total peak flow of a single vacuum main can enter through the buffer tanks.

When a lift station or grinder pump station (from a low pressure sewer) discharges into a buffer tank, the rated discharge capacity of the pump (serving the owner) should be used for design peak flow. The conventional peak flow rates for the customer served by the pump should not be used. For guidance on friction loss values to use in these cases, consult with AIRVAC's Engineering Department.

Standard details for buffer tanks are provided in Section 12 of this document.

5.11 Isolation Valves

Isolation valves shall be incorporated in major branches and service boundaries to allow field maintenance crews to efficiently determine the location of a system failure or open valve. Isolation valves shall be resilient-wedge gate valves. Isolation valves shall be used at the beginning of each branch and on the main line near branch locations. Where branch spacing exceeds 1,500 feet, an isolation valve shall be installed on that section. All isolation valves used shall be in accordance with AWWA C509 standards.

5.12 Vacuum Main, Appurtenances, and Accessories Testing

All testing shall be performed in accordance with the procedures outlined in the most current version of the *Airvac 2022 Municipal Design Manual* and as outlined in *Section 14 – Collection and Transmission System Testing & Reporting Requirements* of this document.

5.13 Normally Open Backwater Valve

Local building code requires the installation of a backwater valve on the single family residential sewer lateral connection used with a vacuum sewer (see Figure 13-2). With most backwater valves, positioning is critical to ensure proper operation of the Airvac vacuum valve; this concern can be alleviated using a "normally opened" backwater valve when installed on a pipe that has an air intake installed. Other valve types will restrict air flow and cause valve double cycling or emptying of traps at a home.

Recommendations and product specifications for backwater valves are provided in the Owner Sewer Connection Packet provided by the Village and are also specified in *Section 11 – Approved Product Lists*.

END OF SECTION

6.0 LOW PRESSURE SEWERS

When vacuum sewers are not feasible, low pressure sewers may be considered as a viable sewering option for residential and commercial properties in the Village. A low pressure sewer system (LPSS) may consist of one or more grinder pump stations. A grinder pump station shall be considered as the individual pumping unit which serves a single family residence or a single commercial building. A grinder pump station consists of a progressive cavity grinder pump, wet well basin, discharge piping, valving, electric motor and level controls, control panel, and related appurtenances and wiring.

The Village must approve the use of low pressure sewers for each specific application before a preliminary plan is prepared for submittal and review. The Owner/Developer shall provide the following minimum information for the evaluation and approval of using low pressure sewers:

(a) An evaluation of the existing sanitary sewer system serving the area detailing why the use of low pressure sewers is necessary;
(b) An evaluation of the existing collection system from the low pressure sewer system connection point to the treatment plant confirming that both collection and treatment capacity exist for conveying the development's additional design flow;
(c) A topographic map identifying:
    a. The project area;
    b. Zoning in the project area;
    c. Existing sanitary sewer system downstream of the project area; and
    d. Finish floor elevations of all intended structures and invert elevations of proposed tie-in locations.
(d) A life cycle cost analysis comparing low pressure sewers with alternative systems. This analysis should consider initial construction and annual operating and maintenance costs. All assumptions should be specified, including the useful life for each alternative.

Upon approval of the use of low pressure sewers for the planned development, the Owner (or Developer) shall submit three (3) copies of preliminary plans to the Village for review and approval. Detailed requirements associated with the preliminary plan submittals are provided in Section 6.21 – Preliminary Plan Submittal Requirements.

All LPSS facilities located in public rights-of-way shall be conveyed to the Village for operation and maintenance. The Owner/Developer shall grant the Village any necessary easements for the installation, operation and maintenance of the low pressure sewer systems.

6.1 Applicability

Standards and requirements contained in this section are applicable to new development, re-development, existing residential properties serving more than 4 EDUs, and commercial properties proposing to utilize grinder pump systems as a sewering option in the Village. Standards and requirements contained in this section are also applicable to single family residences which do not participate in the Village-wide Residential Grinder Pump Program.

Owners of new developments or re-development projects are advised to meet with the Village Engineer to conduct a pre-application meeting and due diligence prior to

submitting final engineering plans to discuss the proper procedure for obtaining approval for any modifications.

6.2 New Developments and Redevelopment Projects

Any development or re-development proposing to use low pressure sewers shall prepare and submit preliminary plans to the Village for review. Submittals shall include the following information:

1. Hydraulic analysis;
2. General layout;
3. Plan and profile sheets;
4. Low Pressure Sewer detail sheets; and
5. Easements.

A detailed discussion of each requirement is presented below:

1. Hydraulic Analysis
    a. Branch analysis – perform a branch analysis in accordance with the guidelines of the grinder pump station manufacturer
    b. Retention time analysis –
        i. Report the cumulative retention time at the extremities of the collection system
        ii. Base analysis on uniform build out level
        iii. Report the predicted hydrogen sulfide buildup based on the estimated retention time. Hydrogen sulfide buildup estimates can be performed using an accepted estimation, e.g. *Odor and Corrosion in Sanitary Sewerage Systems and Treatment Plants (EPA)*
2. General Layout
    a. Include north arrow and scale with the general layout sheet;
    b. Identify datum plane and survey reference points. Vertical control shall be tied to NGVD29, National Geodetic Vertical Datum 1929;
    c. Identify existing and proposed development including all lots, both present and future, to be served by the low pressure sewer system;
    d. Identify existing sanitary sewer system including vacuum and low pressure sewers, existing manhole locations, all invert elevations of incoming and outgoing lines and grade elevations, pipe diameters, pipe material and slopes;
    e. Identify proposed sewer alignment, including all low pressure sewer mains, discharge lines, and each grinder pump station location. Indicate the length and diameter for each line; and
    f. Identify the location of all low pressure sewer appurtenances, including terminal flushing assemblies, cleanouts, air release valves, and isolation valves.
3. Plan and Profile Sheets
    a. Show and label all existing and proposed utilities;
    b. Show all existing and proposed utility easements and rights-of-way;
    c. Show all existing grade as solid line and proposed grades as dashed lines;
    d. All plan/profile sheets shall contain the following:
        i. Low pressure mains

ii. Pump discharge lines
iii. Low pressure sewer detail sheets
iv. Easements

4. Low Pressure Sewer Details Sheets
   a. Include all relevant low pressure details (see *Section 12 – Low Pressure Sewer and Vacuum Sewer Standard Details*).
5. Easements
   a. Locate all low pressure sewer mains in one of the following:
      i. A road right-of-way;
      ii. A platted utility easement;
      iii. A platted wastewater (or sewer) easement;
      iv. A wastewater (or sewer) easement transferred to the Village; or
      v. An easement to be obtained as part of the development.
   b. Submit preliminary plats and draft easements to be acquired as part of the project.

The following should be considered in the design of any proposed low pressure system:

- Geographical location;
- Type of development - number of residences;
- Topography of service area (where applicable);
- Layout of existing or proposed service area;
- Projected wastewater flows;
- Location of nearest existing wastewater facility;
- Soil and water table information; and
- Availability of electric power.

Proposed designs for any low pressure sewer system shall also include an engineering feasibility evaluation which considers why the use of low pressures sewers is the preferred alternative for sewering the subject property (or properties). The alternative evaluation shall include engineering calculations which indicate why vacuum sewers are not possible for the proposed new development or re-development, including static and friction loss calculations as well as wastewater pump, collection tank, and vacuum pump calculations. This engineering evaluation shall be signed and sealed by a Professional Engineer licensed and registered in the State of Florida.

6.3 System Layout and Alignment

The low pressure sewer system shall be designed so that all contributory lines are branched into a main collector. "Looping" and "dead-endings" of macerated wastewater in remote areas of the system shall be avoided.

Pressure lines should be laid out to provide runs as short as possible with a minimum of major change in direction. To facilitate maintenance and repair, low pressure force mains should be laid outside the limits of pavement or heavy traffic areas.

All system lines shall be kept full, under a positive pressure head at all times. This positive pressure can be maintained by locating the system terminus at the highest elevation, or by employment of a positive pressure control devise at the terminus.

To minimize the number of potential air pockets, pressure lines should be installed on a continuously rising grade as much as possible to predetermined points where air release devices and flushing ports can be installed in accordance with the Standard Details for Low Pressure Sewers (see Section 12).

6.4 Design Flow

As with any collection system, a low pressure sewer system must be designed to effectively handle all wastewater flow generated in the service area especially during times of peak flows.

Peak flow shall be determined by accepted sanitary sewer engineering principals and standards established by regulatory agencies. Proper design should assure that each progressive cavity grinder pump unit in the service area, no matter what its location or what other grinder pumping units are operating at the same time, will be able to deliver into the system during peak flow system conditions at a rate sufficient to ensure that there will be no wastewater removal problem at any individual building or unit.

6.5 Peak Hourly Flow

All low pressure mains and the Village's approved grinder pump stations (progressive cavity pump) shall be sized based upon the maximum flow rates expected to occur once or twice per day using the probability method or the rational method. The peak design flow estimates shall follow either Part 4 – Design Flows, of the "Design and Specification Guidelines For Low Pressure Sewer Systems", by the FDEP, latest edition or Chapter 2, "Manual – Alternative Wastewater Collection Systems" (U.S.EPA, 1991).

6.6 Piping and Line Sizing

Pipe for small diameter pressure lines shall be smooth flow, polyvinyl chloride (PVC) pressure pipe color coded green with a flow factor (C) equal to between 140 to 150. Pipe shall be Type I, PVC 1 120 with a hydrostatic design stress of 2000 psi for liquid at 73.4 F. Heavy duty schedule 80 PVC will be used for pressure lines. Where pressure lines cross paved roadways, a protective galvanized steel sleeve will be used to facilitate removal of the pressure pipe.

Minimum service line diameter for residential grinder pump connections shall be 1.25 inches. Minimum service line and tap diameters for commercial connections shall be 2 inches. In the case of tying into an existing 2-inch or 2.5-inch main, a tee with a 2-inch outlet shall be cut in.

6.7 Minimum Flow Velocity

Line sizing must be designed to ensure that scouring velocities will occur in the system pressure lines at some regular interval. At the same time, line velocities must be restricted to avoid excessive system pressures which can jeopardize the delivery capacity of any grinder pump unit on the system.

To maintain an unobstructed low pressure force main and corresponding grinder pump service lateral connection, the pipe velocity should be sufficient to transport grit that may be present in the wastewater, prevent grease buildup on the crown of the pipe, and scour and re-suspend previously settled material in the wastewater. A minimum self-cleaning velocity of 2 to 3 ft/sec should occur in the pressure lines at regular intervals (1-2 times daily minimum).

6.8 System Flushing

Design shall provide for the ability to mechanically purge wastewater from the system at regular intervals. Flushing connections to the force main system are shown in the Low Pressure Sewer Standard Details (Section 12).

6.9 Air Release

Design shall provide for relief of air at high points along the collection system. Recommendations for air release valves are provided in *Section 11 – Approved Product Lists* and *Section 12 – Low Pressure and Vacuum Sewer Standard Details*.

6.10 Grinder Pump Station Design

The engineering design of the Village's low pressure force main (LPFM) collection system for residential connections and permitted commercial applications (duplex, triplex, & quadraplex pump stations) was based on using progressive cavity pumping systems (e.g. E/One pumps).

The progressive cavity pump's design and geometry produces a near-vertical pump curve and is ideal for liquids that contain abrasive solids, e.g., raw sewage. Typical operating pump discharges range from 8 to 14 gpm with a total dynamic head (TDH) ranging from 15 to 180-ft. The ability of the progressive cavity pump to operate over this range makes this pump suitable for the variations commonly found in a low pressure system. Any use of a non-progressive cavity pumping system can potentially impact the upstream pump station users on the Village's LPFM system and possibly lead to a pump failure and a resulting sewer overflow at the permitted pump station.

All residential grinder pump station installations shall comply with the design requirements specified in the Scope of Work – Residential Grinder Pump Program (Exhibit B) of

Construction Change Order No. 5 issued on May 22, 2014.

The manufacturer of grinder pump stations shall be as specified in *Section 11 – Approved Product Lists* of this document. A complete and operating pumping station, including all electrical and instrumentation components, shall be the responsibility of the grinder pump supplier.

All grinder pump stations shall be constructed using a progressive cavity, non-clogging, non-jamming, grinder pump(s) capable of operating at a negative TDH without overloading the motor. Grinder pump stations shall be capable of comminuting all material normally found in domestic or commercial wastewater, including reasonable amounts of foreign objects such as glass, eggshells, sanitary napkins, thin rubber, small wood, plastic and the like to a fine slurry that will pass through the pump, a 1-1/4-inch NPT discharge piping and downstream appurtenances. The grinder impeller shall be a one-piece, rotating type cutter wheel made of hardened 4140 steel. The cutter teeth shall be treated and hardened to 56 to 60 Rockwell C. The shredder ring shall be stationary type with a staggered tooth pattern and made of white cast iron per ASTM A532(1B).

An anti-siphon and check valve shall be integral with the grinder pump station pump. Level sensing control for grinder pump stations shall be a non-fouling type with no moving parts in contact with the wastewater. Each grinder pump station shall have a high level audible and visual warning alarm to warn the residential or commercial property owner(s) of a high wet well level.

Power supply requirement should not exceed 30 amps. Grinder pump stations shall be shop-tested to include visual inspection to confirm construction in accordance with the specifications for correct model, horsepower, impeller length, voltage, phase and hertz. The pump and seal housing chambers shall be tested for moisture and insulation defects.

6.11 Pump Station Wet Well

The wet well shall be molded of high-density polyethylene (HDPE) with a HDPE access-way. Access-way corrugated sections shall be double wall construction with the internal wall surface being generally smooth to promote scouring. Any incidental sections of a single wall construction are to be 0.250 inches thick (minimum). All polyethylene seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum buried depth. All grinder pump station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure.

The wet well basin shall be designed so that all solids will be diverted directly below the grinder pump station inlet to assure proper scouring of the basin. A heavy vertical rib or bottom flange shall be provided for anchoring the basin in concrete to prevent floatation.

The wet well assembly shall include a lockable cover assembly providing low profile mounting and watertight capability. The access cover shall be high density polyethylene, green in color, with a load rating of 150 pounds per square foot. The cover shall contain a captive, not separated gasket. Cover shall be bolted to the basin with type 316 stainless

steel hex head tamperproof bolts and washers. Non-corroding stainless steel threaded inserts shall be fully encapsulated in the upper flange of the HDPE wet well basin. The access-way design and construction shall enable field adjustment of the station height in increments of 6 inches or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

The grinder pump station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable. No secondary welding of the wet well basin or cover will be accepted.

6.12 Wet Well Appurtenances

Wet well appurtenances are identified below and specified in *Section 11 –Approved Product Lists*:

(a) Piping

All discharge piping shall be constructed of PVC, polypropylene, or EPDM. The standard size of internal piping is normally 32 to 38 mm (1-1/4 to 1-1/2 inch) diameter for 1,490 watts (2 horsepower) or less rated pumps. For 2,240 to 3,730 watts (3 to 5 horsepower) rated pumps, 51 to 644 mm (2 to 2-1/2 inch) diameter internal discharge piping is normally required. The tank shall be furnished with a factory installed PVC inlet flange to accept a 4.50: OD (4-inch Schedule 40) inlet pipe.

(b) Valves

The discharge hose assembly shall include a shut-off valve rated for 200 psi WOG and a quick disconnect feature to simplify installation and pump removal. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.

(c) Check valves

The grinder pump station discharge shall be equipped with a factory installed, gravity operated flapper-type integral check valve built into the stainless steel discharge piping. The check value will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. The valve body shall be an injection molded part made of an engineered thermoplastic resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves will not be accepted.

(d) Anti-Siphon Valve

The grinder pump station discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the discharge piping. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength.

The valve body shall be an injection molded part made of an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the grinder pump station discharge piping.

6.13 Sealing of adaptors or piping passing through basin walls

For polyethylene basins, the outlet coupling should be either bonded and coated or bolted to the basin wall with type 316 stainless steel bolts. Appropriate rubber gaskets shall be used for bolted adapters.

6.14 Venting

The cover assembly shall include a 2-inch vent to prevent wastewater gases from accumulating in the wet well basin. Any additional venting requirements shall be specified and provided.

6.15 Flood Conditions

The grinder pump station shall be designed to prohibit inflow from the 25-year flood unless lesser flood levels are appropriate based on local conditions, but not less than the 10-year storm event. Grinder pump stations shall be designed to withstand the effects of buoyancy under submerged conditions (assuming the basin is empty). Ballast calculations signed and sealed by a Florida registered professional engineer shall be included with the design report submitted to the Village or its representative for review and approval.

6.16 Basin Volume

Due to the potential for extended power outages, the grinder pump station basin shall be capable of providing additional storage capacity. The basin must be able to contain a minimum of 190 gallons without discharging wastewater or causing damage to the grinder pump station.

6.17 Electrical Motor and Level Controls

The pump motor shall be of the submersible type, single-phase operation with capacitor start/capacitor run type for high starting torque. Inherent protection against running overloads or locked motor conditions for the pump motor shall be provided by using an automatic-reset, integral thermal overload protector incorporated into the motor.

The stator winding shall be of the open type with Class F insulation. The stator shall be pressed into the cast iron motor housing. The common motor pump and grinder shaft shall be of type 416 stainless steel threaded to take the pump impeller and grinder impeller.

Non-fouling wastewater level controls for controlling pump operations shall be accomplished by monitoring pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and impact resistant. The air column shall have only a single connection between the water level being monitored (in the wet well) and the pressure switch. All connections shall be sealed with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Float switches of any kind, including float trees, will not be accepted.

The control panels and all associated components on each standard simplex Grinder Pump Station shall be U.L. Approved and shall bear the U.L. Approved label. All equipment associated with each grinder pump station shall be meet the current requirements of the National Electric Codes and all applicable Federal, State and local electrical codes. The Owner/Developer shall coordinate and schedule with the Village Building Inspector to perform all required electrical code inspections.

(a) Grinder pump station control system

All electrical elements shall be furnished pre-wired and housed in a NEMA 4X enclosure (control box). Control circuit shall be 115 volt. The door of the control box shall be hinged of the dead type with locking hasp and suitable accessories to allow wall mounting. Motor shall be activated by a magnetic type contactor and a reset overload shall protect the motor against excessive current conditions. A heat sensor thermostat in the motor winding wired in series with the magnetic contactor coil shall protect the motor against excessive heat. The sensor shall reset automatically when motor cools. An alarm test switch, HOA switch, run light, auto/off switch, and overload reset button shall be supplied inside the control box. A terminal strip with box type connections shall be supplied to make all power and control connections. All terminals shall be marked for easy identification. A ground terminal strip shall also be provided and labeled.

(b) Electrical Quick Disconnect

The grinder pump station shall include a factory-installed NEMA 6P electrical quick disconnect (EQD) for all power and control functions. The EQD will be supplied with a minimum of 30 feet of useable electrical supply cable to connect with the alarm panel.

(c) Generator Receptacle and Auto Transfer

The alarm panel shall include a 20 amp, 250 VAC generator receptacle with a spring-loaded, gasketed cover suitably mounted to provide access for connection of an external generator while maintaining a NEMA 4X rating. An automatic transfer switch shall be provided, which automatically switches from AC power to generator power.

(d) Standby Emergency Power Requirements

The minimum emergency storage capacity for systems which are not participating in the Village-wide Residential Grinder Pump Program and all other facilities which are discharging into the Village’s wastewater collection system shall be 12 hours with

standby power manually activated, or four (4) hours with standby power automatically activated, or with a high-water alarm automatically contacting a 24-hour maintenance service (capable of providing standby emergency power) which is approved by the Village.

(e) Service Equipment/Main Service Disconnect Breaker
A separate, internal breaker rated and approved for used as “service equipment” and acts as a main service disconnect of the grinder pump station shall be provided.

(f) Pump and Alarm System Wiring
SealTite conduit, or rigid electrical PVC conduit, shall be supplied for the power supply. The SealTite fittings shall also seal to the junction hub wall with an ”O” gasket or other effective means. Conduits through which moisture may contact energized live parts shall be sealed or plugged at either of both sides so that condensation from the conduit or ground water will not enter the enclosure.

(g) Monitoring Requirements
Each grinder pump station shall be tied into the Village’s telemetry system which supports the Village’s wastewater facilities. The telemetry system shall provide real-time data information pertaining to the monitoring of individual grinder pump station pump failure and wet well high flows as indicated by each individual grinder pump system alarm panel.

6.18 Installation Procedures

Prior to initiating installation, the Owner/Developer shall submit complete and detailed installation procedures that will be utilized for the installation of each grinder pump system to the Village and its representative for review and approval. Recognizing that installation procedures may vary from island to island, installation procedures shall be submitted for review and approval for each island service area.

The Owner/Developer shall coordinate the installation of this work with the Village and each property owner. Installation shall be accomplished so that 1-inch to 4-inches of access way, below the bottom of the lid, extends above the finished grade line. The finished grade line shall slope away from the pumping unit. The diameter of the excavated hold shall be large enough to allow for the concrete anchor.

A 6-inch (minimum) layer of naturally rounded aggregate, clean and free flowing with a particle size of not less than 1/8-inches, or more than 3/4-inches, shall be used as bedding material under each unit.

A concrete anti-floatation collar, sized according to signed and sealed calculations prepared by a Florida registered professional engineer, shall be required and shall be pre-cast to the grinder pump wet well or poured in place. Each grinder pump station with its pre-cast anti-floatation collar shall have a minimum of three lifting eyes for loading and unloading purposes.

If the concrete is poured in place, the unit shall be leveled and 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 manually vibrated to ensure there are no voids. If concrete must be poured to a level higher than the inlet piping, an 8-inch sleeve is required over the inlet prior to the concrete being poured.

6.19 Backfill Requirements

Backfill of clean native earth, free of rocks, roots, and foreign objects shall be thoroughly compacted in lifts not exceeding 12-inches to a final Proctor Density of less than 90 percent. The finish grade line shall be 1" to 4" below the bottom of the lid, and final grade shall slope away from the grinder pumps station.

6.20 Site Restoration

All restoration shall be the responsibility of the Owner/Developer. All property shall be restored to their original condition in all respects, including but not limited to, curb and sidewalk replacement, landscaping, seeding, and restoration of the traveled ways.

6.21 Safety

All maintenance tasks for the grinder pump station must be possible without entry into the grinder pump station per CFR, Part 1910.146 (OSHA Permit-Required Confined Spaces). *"Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as part of the entrant's body breaks the plane of an opening into the space."*

The grinder pump shall be free from electrical and fire hazards as required for functionality in a residential environment. The completed assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. to be safe and appropriate for the intended use. UL listing of components of the grinder pump station, or third-party testing to UL standard is not acceptable.

The grinder pump system shall meet accepted standards for plumbing equipment in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications. As evidence of compliance with this requirement, the grinder pump station shall bear the seal of NSF International. Third party testing to NSF standard is not acceptable.

6.22 Signage

Grinder pump stations shall have signage identifying the residence by ID number and emergency telephone number(s). This information shall be installed on the grinder pump station control panel and be readily visible.

6.23 Grinder Pump Service Laterals

Grinder pump service laterals shall conform to applicable parts of the Florida Building Code. Where requirements of the Village's Minimum Design Standards or the Village Building Code are more restrictive than the Florida Building Code, the Village's Minimum Design Standards or the Village's Building Code shall prevail.

(a) Lateral Materials and Sizing. Grinder pump service laterals for single residential parcels (1 EDU) shall be constructed of 1.25-inch HDPE, minimum SDR 11 and Pressure Class 160 in accordance with ASTM F714. The piping shall be manufactured with an integral color code strip of HDPE, color green.

All other grinder pump service laterals for residential properties up to 4 EDUs shall be sized in accordance with the requirements of the Florida Building Code for building sewers. Common laterals for one (1) building with multiple residential units (up to 4 EDUs) are also prohibited. The intent is to have individually owned residential units served by individual laterals.

(b) Lateral Location. All properties shall be served from the street side of the property. All grinder pump service laterals shall be constructed with a minimum 24 inches of cover. Grinder pump service laterals shall not be located under driveways, retaining walls, or other areas that may restrict access to the private lateral for maintenance and repair or may cause damage to the private lateral.

(c) Service Lateral Casings. Grinder pump service laterals shall be installed inside casing where additional protection of the line is necessary as determined by the Village. Casing end seals shall be installed at either end of the casing pipe to prevent migration of water and soil along the carrier pipe.

(d) Separation Distance. All grinder pump service laterals shall meet the FDEP's requirements for minimum separation from other utilities (F.A.C 62-555.314).

(e) Flushing. All grinder pump service laterals shall be tested after the grinder system is completely installed. Prior to commencement of testing, service lateral pipe sections should first be flushed to remove any debris that may remain inside the lateral. The flushing procedure should develop a water velocity of at least 2.5 feet per second and should result in at least 100% turnover of the water in the service lateral.

(f) Testing. After each service lateral has been installed, flushed, partially backfilled and fully charged with water, each service lateral shall be subjected to a hydrostatic pressure equal to either 150 percent of the maximum operating pressure or 2.5 times the working pressure, whichever is greater, but shall not exceed the pressure rating for the service lateral installed. Testing shall be conducted for a period of not less than two hours at a leakage test pressure of 150 psi in accordance with the Hydrostatic Testing

Requirements of AWWA C600 and C603. If the pressure drops more than 5 psi in one hour, the test shall be considered failed. The applicant is responsible for assuring that the cause of the test failure is determined, all necessary repairs have been made, and repeating the hydrostatic pressure test until the service lateral segment passes.

(g) Prohibited Lateral Connections. Only grinder pump service lateral wastewater lines shall connect to the Village's low pressure wastewater system. Approved discharges include domestic waste and all other commercial discharges that have a valid, current permit issue by the Village. No laterals shall be connected to the Village's wastewater collection system that have any of the following sources of clear water: roof drains, swimming pools, cooling water, or any other sources of clear water such, but not limited to yard and/or driveway drains.

6.24 Maintenance Requirements

All grinder pump stations connected with the Village's wastewater collection system are required to be inspected, maintained, and repaired on a routine basis. Non-participants in the Village Residential Grinder Pump Program connected with the Village's wastewater collection system are required to perform all maintenance, repair, renewal and replacement work on the Grinder Pump Station, Grinder Pumps, Grinder Pump Service Lateral Connections and all appurtenances, including but not limited to routine maintenance, electrical repairs, cleaning, pumping and odor control.

END OF SECTION

7.0 GRAVITY SEWERS AND GRAVITY LATERAL CONNECTIONS

Standards and requirements contained in this section are applicable to new development, re-development, existing residential properties serving more than 4 EDUs, and commercial properties proposing to utilize gravity sewers and transfer pump stations for connecting with the Village's wastewater collection system. While the construction of gravity sewers are acceptable, the Village will not accept ownership or the responsibility of maintenance of gravity sewer collection systems. The Owner/Developer shall be responsible for maintenance of the gravity sewer collection system, including the transfer pump station(s).

7.1 Preliminary Plan Submittal Requirements

Any new development, re-development, existing residential properties serving more than 4 EDUs or commercial properties proposed to utilize gravity sewers shall prepare and submit preliminary plans to the Village for review. The Owner/Developer shall submit three (3) copies of preliminary plans to the Village for review and approval.

Submittals shall include the following minimum information:

1. Hydraulic analysis;
2. General layout;
3. Plan and profile sheets;
4. Gravity sewer detail sheets;
5. Calculation of the total design peak flow of the Village's base system (gpm) and the total peak flow expected from the development. In general, a peaking factor of 3.5 shall be applicable for average daily flow rates; and
6. An evaluation of the proposed transfer pump station requirements for connecting with the Village's wastewater collection system.

Owners of new developments or re-development projects are advised to meet with the Village Engineer to conduct a pre-application meeting and due diligence prior to submitting final engineering plans to discuss the proper procedure for obtaining approval for any modifications.

7.2 Pipe Material

All new gravity sewer shall be green PVC SDR 26, ASTM D-3034. In places where a minimum cover of 3.0 feet cannot be maintained, AWWA C-900 or C-905 green PVC DR-25, Class 100 or concrete encasement shall be used.

7.3 Minimum Size

The minimum allowable gravity sewer pipe line diameter for all new gravity sanitary sewer mains (manhole to manhole) shall be a minimum of 8 inches in diameter.

7.4 Minimum Cover

The minimum depth of cover for gravity sewers shall be 36". Any cover that is proposed to be less than 36" must be given prior approval by the Village Engineer.

7.5 Manholes

(a) Materials. All manholes shall be precast concrete with monolithic bases and concentric conical cone sections. Precast manhole sections and based shall be manufactured in accordance with the latest edition of ASTM C478 with 4000 psi Type 2 cement (ASTM C150). Lift holes through precast structures are not permitted. All pipe penetration shall be precast or core-drilled. Flexible pipe connectors (ASTM C293) shall be used at all pipe penetrations. Brick manholes shall not be permitted. Cast-in-place manholes may be accepted on a case by case basis where conflict resolution is needed.

(b) Location. Manholes are required at end of each line, at all changes in grade, size, or alignment. Stubs eight (8) inches or larger will require a manhole at the terminus point.

Manholes shall be spaced not greater than 300 feet for sewers 15 inches in diameter or less, 400 feet for sewers 18 inches in diameter or greater.

(a) Diameter: All manholes shall be a minimum interior diameter of 48-inches for pipe sizes up to and including 12-inches and a minimum interior diameter of 60-inches for pipe sizes greater than 12-inches with a 30-inch opening at the top of the concentric corbel.

(b) Drop Manholes. Sanitary sewer drop manholes shall only be used under special conditions as approved by the Village. Drops less than 2.0 feet shall not be allowed.

(c) Flow Channel. The flow channel through a manhole shall be made to conform to the shape and slope of the sewer. A positive 0.1 grade differential shall be provided between the upstream and downstream invert on all manholes. Flow direction changes greater than 90 degrees shall not be included in sewer alignments without special consideration. When directional changes exceed 45 degrees, an additional flow line elevation drop of 0.1 foot across the manhole shall be provided.

(d) Coatings. Lift station wet wells, sanitary sewer manholes, valve vaults, and force main receiving manholes shall be constructed using an AGRU American Sure Grip HDPE Liner or AGRU Sure Grip PPR with 3M sealant type 5354 and ADEKA P-201 water stop in strict accordance with the manufacturer's recommendations. The lining shall be checked for pinholes with a high voltage holiday detector at the location of the precast manufacturer prior to job site delivery and shall have notations on the liner indicating the date of spark test and initials of the person

performing the tests. Prior to placing manholes into service, the lining shall be re-tested by a certified tester. The lining shall be free of any pinholes. All linings shall have a minimum five (5) year labor and materials warranty including all costs necessary and related to the repair and replacement of the defective application. All testing shall be performed by a tester certified by Agru Liner. Test reports for each manhole shall be submitted to the Village for approval. The report shall include date of testing, equipment used, manhole location, pass or fail, project name, certified tester's name and telephone number along with the tester address and contact information. If testing fails, report shall indicate what corrective measures were taken.

All existing manholes must be coated and tested. Acceptable coatings for existing manholes include Carboline Bitumastic 300M (2 coats minimum) or approved equal. Manufacturer's recommendations for application conditions and curing schedules shall be followed.

(e) Castings. Gray iron castings for manhole frames, covers, adjustment rings and other items shall conform to ASTM Designation A 48, Class 30. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects that would impair their strength or otherwise make them unfit for the service intended. The seating surface between the frame and cover shall be machined to fit true. No plugging of filling will be allowed. Lifting or "pick" holes shall be provided but shall not penetrate the cover. Casting patterns shall conform to those shown or indicated on the drawings in the Standard Details (*Section 12*). All manhole frames and covers shall be traffic bearing meeting AASHTO H20 loadings. Frames shall be suitable for the future additional of a cast iron ring for upward adjustment of top elevation. Bolt down covers and gasketed covers shall be located as shown on the Drawings.

(f) Covers: New and Existing Manholes

1. All new manholes shall be constructed with bolt-down, gasketed covers regardless of location. No exceptions.

2. Construction and as-built drawings shall demonstrate that existing manholes on the permitted property have been retrofitted with bolt-down, gasketed covers. Accepted variances to this requirement will be granted to the permittee for one of the following conditions:

Condition 1: Existing manholes which are properly retrofitted with an ABS inflow protector to prevent water from infiltrating between the cover and the manhole frame rim; existing manholes retrofitted in the manner will not require a bolt cover;

or

Condition 2: Providing supplemental topographic data that sufficiently demonstrates runoff from a 25-year rainfall event is directed away from all wastewater infrastructure lids and covers and will not pond around the structures, and that the manhole rim elevation is above the 25-year storm surge elevation or the 10-year storm surge elevation if the 25-year storm surge is not available;

or

Condition 3: Providing a signed and sealed engineering study with backup data that demonstrates that the wastewater infrastructure lids and covers will not be prone to inflow during a 25-year rainfall event and 25-year storm surge event or the 10-year storm surge elevations if the 25-year storm surge elevation is not available.

(g) Covers: New and Existing Pump Stations

1. All new pump stations shall be constructed with water-tight access covers.

2. Construction as-built drawings shall demonstrate that existing pump stations on the permitted property have been retrofitted with water-tight access covers. Accepted variances to this requirement will be granted to the permittee for one of the following conditions:

a. Providing supplemental topographic data on the site that sufficiently demonstrates: (1) runoff from a 25-year rainfall event is directed away from all lift station access covers, (2) runoff will not pond around the structure, and (3) that the pump station access cover elevation is above the 25-year storm surge elevation (or the 10-year storm surge elevation, if the 25-year data is unavailable);

or

b. Providing a signed and sealed engineering study with backup data that demonstrates that the pump station access cover will not be prone to inflow during a 25-year rainfall event and a 25-year storm surge event (or the 10-year storm surge elevation, if the 25-year storm data is unavailable).

7.6 Slope

All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Manning's formula using a "n" value of 0.011 for PVC and 0.013 for other pipe materials. The following are minimum slopes allowed:

7-1. Minimum Slope Requirements for Gravity Sewer Pipe

Sewer Size	PVC Pipe Minimum Slope (ft/100 ft)	Other Pipe Material Minimum Slope (ft/100 ft)
8-inch	0.28	0.40
10-inch	0.21	0.28
12-inch	0.17	0.22
15-inch	0.12	0.15
21-inch	0.10	0.12
24-inch	0.08	0.10
27-inch	0.07	0.08
30-inch	0.06	0.07
36-inch	0.05	0.06
42-inch	0.04	0.04

When possible, slopes at least 10% above the minimums shown are preferred. However, in no case will slopes be designed which would provide a mean velocity less than 2.0 feet per second when flowing full, based on an “n” value of 0.013.

All sewers shall be laid in straight alignment and with a constant slope between manholes.

When a smaller sewer joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

Intersecting sewers shall not meet at an alignment angle of less than 90 degrees to downstream flow.

7.7 Service and Lateral Connections

Service connection shall be through a gravity low pressure and miscellaneous appurtenances, as shown in the *Section 12 – Vacuum Sewer Details, Low Pressure Sewer Details, and Standard Details*. Laterals not requiring the open cutting of a roadway or driveway made to an existing Village wastewater collection system must be reviewed and approved by the Village, made by the Owner/Developer’s licensed plumber, and inspected by the Village after payment of all applicable fees and charges. Laterals to new and existing wastewater collection systems for structures within new subdivisions, non-residential uses, multi-family residential improvements, and those installations that require the open cutting of a roadway or driveway must be reviewed and approved by the Village, made by the Owner/Developer’s licensed plumber, and inspected by the Village. The Owner/Developer

shall be responsible for all costs related to the lateral installation and restoration of all disturbed public and private improvements in accordance with Village Minimum Design Standards. Detailed information on the permitting process for gravity and grinder pump service lateral connections is presented in *Section 13 – Permitting for Residential and Commercial Sewer Lateral Connections and Commercial Package Plant Connections*.

Laterals and fittings shall be a minimum of six (6) inches in diameter. Services and fittings shall be a minimum of 4 inches in diameter for single family residential installation and 6 inches in diameter for all other installations. Single or double laterals shall be allowed. All laterals shall extend from the sewer main to the right-of-way terminating with a cleanout at each building service branch stub-out. Laterals (4 to 6 inches in diameter) shall have a minimum slope of 1/8-inch per foot (1.04%). No laterals shall be allowed to discharge into a sanitary manhole, except at a terminal manhole.

7.7.1 Gravity Sewer Pipe (Gravity Lateral Connections)

All gravity sewer laterals, fittings, and stub-out pipes shall be pressure rated and constructed using Schedule 40 PVC. Non pressure rate pipe and fittings and foam core pipe are not acceptable.

Pipe: SDR 21 and SDR 26: ASTM D2241; Schedule 40: ASTM D1784.

Fittings Schedule 40: ASTM D1784 and ASTM D2466

7.7.2 Cleanouts

All cleanout boxes located in traffic rated or traffic accessible areas shall utilize 12-inch diameter by 6-inch minimum thick steel reinforced concrete collars. Concrete collars shall have a minimum 3,000 psi

All cleanout covers in traffic rated or traffic accessible areas shall be traffic rated.

7.8 Testing for Lateral Connections

All testing requirements for all Residential and Commercial Sewer Lateral Connections and FDEP Permitted Connections are specified in *Section 14 – Collection and Transmission System Testing & Reporting Requirements*.

7.9 Utility Separation Requirements

Sanitary sewers and storm sewers crossing under water mains shall be laid to provide a minimum vertical distance of eighteen (18) inches between the invert of the upper pipe and the crown of the lower pipe. Where this minimum separation cannot be maintained, the crossing shall be arranged so that the sewer pipe and water main joints are equidistant from the point of crossing with no less than ten (10) feet between any two

joints and both pipes shall be ductile iron pipe (D.I.P.). At locations where these criteria cannot be met, designs shall adhere to the minimum vertical and horizontal sewer and water main separation requirements as provided in F.A.C. Rule 62-555.314, including any amendments.

Where storm sewers cross above or below sanitary sewer mains, the minimum vertical separation between the outside of the storm sewer main and the outside of the sanitary sewer main is 18 inches. Where the minimum separation cannot be maintained, the sewer main shall be constructed of C-900, DR-18 PVC (MH to MH). Vertical separations of less than 12 inches, will not be accepted.

The minimum vertical separation between sanitary sewer mains and any other utility other than those listed above is (12) inches. Vertical separations of less than 12 inches, will not be accepted.

No landscaping or construction of surface features (i.e., walls, fences, fountains, etc.) shall be placed in a manner that would adversely affect access to utility easements or Village infrastructure. Trees shall be a minimum of 10-ft away from any gravity sewer main or service line/lateral. This may be reduced to 7-ft with the use of an approved root barrier system.

All gravity sewer mains shall be a minimum of 10-ft horizontally from any structures. This setback shall be measured from the outside edge of the pipe to the nearest part of the structure, including underground (i.e., footers) or above ground (i.e., roof overhangs) features.

In addition to the above requirements, gravity sewer design shall follow Ten States Standards, at a minimum.

END OF SECTION

8.0 WASTEWATER FORCE MAINS

8.1 Location

Force mains shall be located within dedicated rights-of-way, alleys, or established utility easements with sufficient width. Where this is not possible, a minimum of 20-ft wide Village service easement shall be provided.

No mains shall be placed under buildings, retention ponds, tennis courts, swimming pools, or other structures. Unless approved in writing by the Village Engineer, mains shall not be located within side or rear lot lines. Placement of a main within side or rear lot line may be allowed on a case by a case basis if such a configuration results in efficient placement and utilization of the system. These criteria shall also apply to placement of mains in retention pond berms. In general, manholes shall not be placed on side or rear lot lines.

8.2 Design and Construction

The basic design criteria for force mains are as follows:

Pipe Material

Force mains shall be constructed of C-900 PVC or HDPE (DR-11 min). Minimum force main diameter shall be 4-inches, except in the case of low pressure force mains (LPFMs) where in the minimum diameter shall be 2-inches. All force mains shall be constructed with a minimum cover of 3-ft.

Velocity

At design pumping rates, a minimum cleaning velocity of at least 2 feet per second should be maintained. Maximum velocity at design pumping rates should not exceed 8 feet per second for ductile iron pipe of 5 feet per second for PVC pipe.

Friction Losses

Friction losses through force mains shall be based on the Hazen and Williams formula. In the use of the Hazen and Williams formulas, the “C” value shall be 150 for PVC pipe.

When initially installed, force mains may have significantly higher “C” factor. The higher “C” factor should be considered only in calculating maximum power requirements and duty cycle time of the motor.

Design Pressure

The force main and fittings, including all restrained joint fittings and thrust blocking, shall be designed to withstand pump operating pressures and pressure surges, but not less than 150 psi.

When restrained joints are used in lieu of thrust blocks, the restrained joint table in the STANDARD DETAILS shall be utilized. Bearing area of thrust blocks shall be adequate to prevent any movement of the fitting. The sizes and dimensions of the thrust blocks shall be shown utilizing the format shown on the Standard Details (*Section 12 – Low Pressure Sewer and Vacuum Sewer Standard Details*).

Branches of intersecting force mains shall be provided with appropriate valves such that one branch may be shut down for maintenance and repair without interrupting the flow of other branches. Stub outs on a force main, placed in anticipation of future connections, shall be equipped with a valve to allow such connections without interruption of service.

Air Release and Vacuum Relief Valves

At all times, the force main shall be laid level and per the design elevations approved by the Village. An automatic air release valve shall be placed at all high points of all force mains with a diameter of 4-inches or larger, as indicated on the construction plans and approved by the Village.

All automatic air release/air vacuum valve shall be placed in a manhole as provided in the Village's standard details. Air release valves, or air/vacuum relief valves, shall be provided, as necessary, to prevent air locking and vacuum formation. All such valves shall be clearly delineated on the force main profile in the Drawings. The Developer's Engineer shall submit calculations to the Village justifying the valve sizing.

Force main design drawings are to indicate elevations at all high points and all low points with constant slopes in between such points. Low point drains should be placed at all low points in the force main profile.

Separation Distances

Force main design shall be in accordance with the requirements of FDEP. Designs shall be in compliance with all underground utilities and shall be constructed with a minimum coverage of 36-inches of cover. Force mains shall be designed to maintain a 10-ft horizontal separation and an 18-inch vertical separation from existing water mains wherever possible. At locations where these criteria cannot be met, designs shall adhere to the minimum vertical and horizontal sewer and water main separation requirements as provided in F.A.C. Rule 62-555.314, including any amendments.

The minimum vertical separation between force mains and any other utility is 12-inches. Vertical separations of less than 12-inches, will not be accepted.

When a force main or reclaimed water main is to be installed parallel to a drainage pipe, a minimum horizontal separation of 7-ft shall be maintained. This may be required to be increased for drainage pipes larger than 48-inches in diameter.

Miscellaneous

Approved restrained joints shall be provided at all force main bends.

Terminal ends of force main (permanent or temporary) shall be as shown on the Standard Details.

Force mains shall not terminate directly into a gravity sewer line. Force mains should enter the gravity sewer system at the flow line of the receiving manhole.

Force mains from private pump stations shall be designed to Village standards and connect with the Village's force main system through an approved pressure switch assembly as specified in this Manual and Standard Drawings.

8.3 Private Force Main Tie-Ins

Force mains from private pump stations shall be designed to Village standards and connect with the Village's conveyance force main system. All privately owned and maintained pump stations shall be designed to meet the receiving force main's peak 24-hour operating conditions.

END OF SECTION

9.0 WASTEWATER PUMP STATION DESIGN & CONSTRUCTION

Wastewater pump station design shall meet all requirements of the Florida Department of Environmental Protection, the NEC, and the Village's Minimum Design Standards. Pump stations shall be placed in areas located and designed to minimize the development of nuisance conditions such as noise, odor, etc. in the surrounding area. No portion of the pump station electrical equipment shall be located below the 100-year flood elevation as identified on the most recent FEMA Flood Insurance Rate Map. Pump stations shall be designed to achieve total containment of the influent wastewater prior to being conveyed through the force main and shall be designed such that infiltration and inflow is minimized. Pump stations must be designed to be operational and accessible during the 25-year flood unless lesser flood levels are appropriate, but not less than a 10-year flood event. Designs must be inclusive of Class 1 reliability and all related issues. All pump stations must be equipped with a flow meter and recording device.

9.1 Buoyancy

Below-grade pump station structures shall be protected from the buoyant forces of groundwater and floodwaters, including wave action and scouring. Buoyancy protection shall be demonstrated through the use of flotation calculations. Flotation calculations shall be performed on all pump station structures using the 100-year flood elevation to calculated uplift forces.

9.2 Flood Protection

Pump station structures and all associated electrical and mechanical equipment and appurtenances shall be designed to be protected from the 100-year flood. Such protection measures shall ensure that the pump station shall remain fully functional, operational, accessible, and free from physical damage during a 100-year flood.

9.3 Basic Design Criteria

The basic design criteria for pump stations shall follow the standard criteria defined in the "Recommended Standards for Wastewater Facilities", by the Water Supply Committee of the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, latest edition (i.e., Ten States Standards).

Design flows shall be based upon the total ultimate development flow from all contributory areas to the pump station. The design average daily flow shall be based on 157 gallons per equivalent dwelling unit (EDU), rounded to the nearest 1/10 EDU.

Pump stations shall be sized to handle the peak hourly flows from the tributary areas with the largest pumping unit out of service (firm capacity). The design pumping capability of the station shall be based upon the Peak Design Flow shall be calculated by multiplying the design average daily flow with the applicable minimum peaking factors as outlined in the table below.

Table 9-1. Minimum Peaking Factors for Pump Station Design

Design Average Daily Flow (gpd)	Minimum Peaking Factor for Peak Design Flow Calculation
Flows to 50,000	3.5
50,000 to 250,000	3.0
250,000 to 2,000,000	2.5

Under no circumstances shall peaking factors less than 2.0 be allowed.

Pump total dynamic head shall be based on static head, lift station friction losses and pipeline friction factor (C) of 120. Pumping units shall be capable of operating based on a C=100 and not "running out" based on a C=140. Pumping units shall be capable of passing spheres of at least three (3) inches in diameter. Under normal conditions, pumps operate under a positive suction head.

9.3.1 Wet Wells

All wet wells shall be designed to resist flotation at times of the highest groundwater and/or the 100-year flood (whichever is greater) at the site, without consideration of the weight of the pumps, with a safety factory of at least 1.0.

Wet well cycle times shall be 10 minutes minimum, 30 minutes maximum; based on the formula:

$$T = \frac{V}{Q-S} + \frac{V}{S}$$

where:

T = Cycle time (minutes)

V = Effective volume of wet well (gallons) Q = Pumping rate (gpm)

S = Average daily flow (gpm)

All lift stations shall be given a 1.0-inch coat of Sewper Coat, Strong Seal, Refratta HAC 100 or other approved 100% calcium aluminate material.

All wet wells shall be constructed with water-tight access covers. Construction as-built drawings shall demonstrate that existing pump stations on the permitted property have been retrofitted with water-tight access covers. Accepted variances to this requirement will be granted to the permittee for one of the following conditions:

a. Providing supplemental topographic data on the site that sufficiently demonstrates: (1) runoff from a 25-year rainfall event is directed away from all lift station access covers, (2) runoff will not pond around the structure, and (3) that the pump station access cover elevation is above the 25-year storm surge elevation (or the 10-year storm surge elevation, if the 25-year data is unavailable); or

b. Providing a signed and sealed engineering study with backup data that demonstrates that the pump station access cover will not be prone to inflow during a 25-year rainfall event and a 25-year storm surge event (or the 10-year storm surge elevation, if the 25-year storm data is unavailable).

9.4 Electrical Design Criteria

Electrical systems for wastewater pump stations shall be designed in strict conformance with NFPA 70 “National Electric Code”, ANSI, and all applicable federal, state, and local codes. All electrical and instrumentation/control systems and components shall be protected against corrosion. If located in a wet well or other location where explosive or flammable gases may concentrate, electrical and instrumentation and control systems and all associated components shall meet the requirements for a Class I, Group D, Division 1 location. Every pump and motor unit shall be provided with a separate electrical supply, motor starter, alarm sensors, as well as electrical and instrumentation and control system components. All electrical, instrumentation, and control system components shall be located such they may be disconnected from outside if located inside a wet well. All cables and conduits shall be provided with seals that are both water-tight and gas-tight, shall be protected from corrosion, and shall be provided with strain relief. The main power feed to all pump station equipment shall be equipped with a fused disconnect switch located above the 100-year flood plain as identified on the most recent FEMA Flood Insurance Rate Map.

Panels and enclosures for electrical and control components shall be located outside of any wet well and in a location that is readily accessible, ensures maximum electrical and personal safety, and is protected from flood damage. Enclosures shall have a NEMA-rating appropriate for the installation location.

9.5 Site Fencing

Perimeter fencing at the pump station site shall comply with Village ordinances. In general, all pump station sites shall be fenced. An exception to this requirement may be made by the Village, on a case by case basis, subject to sufficient landscape screening and the satisfactory resolution of station security and public safety issues.

9.6 Landscaping

Landscaping of pump stations, vacuum pump station sites, and wastewater treatment

facilities shall be provided to meet the landscaping requirements of the Village's ordinances. Landscaping and complete site sodding shall be installation along with AC powered automatically controlled complete irrigation system at all pump station sites transferred to the Village. The control box for the irrigation system shall be mounted on the pump station's control panel support system.

9.7 Above Ground Pumping Stations

The wastewater pumps, motors, and standby power generator system for the above ground wastewater pump station shall be housed in an appropriately sized decorative concrete block structure approved by the Village. The building shall conform to all Village building code requirements. Sufficient ventilation and interior and exterior illumination shall be provided and all areas shall be sodded and landscaped. All wastewater pump stations shall be provided with a water system which has adequate capacity and pressure for station wash down and other requirements. A metered potable water line terminating in a hose bib at the building shall be provided by means of a reduced pressure type backflow preventer. The appropriately sized power standby generator and appurtenances shall be fully equipped with an automatic electric starting capability.

9.8 Emergency Power

All pump stations which do not have a permanent standby generator system shall be provided with an external mounted generator power receptacle of the required size.

END OF SECTION

10.0 RECORD DRAWINGS

This section pertains to any new development, re-development, or commercial properties requiring permits for connecting to the Village's wastewater collection system.

Following final inspection and completion of all work to the satisfaction of the Village Engineer, the Owner/Developer shall be responsible for ensuring that the system is properly certified and accepted by the Florida Department of Environmental Protection and as-builts are provided to the Village prior to any use of the system. Final Record Drawings, on full size reproducible material and an electronic file, shall be submitted to the Village as follows:

1. Two (2) final black line record drawings, signed and sealed by a Professional Engineer licensed and registered in the State of Florida. This certification shall consist of the seal bearing the registration number, signature, and date on each data of the drawing set. In addition, the key sheet, cover sheet or first sheet of the plan set shall list the business address and telephone number of the engineer of record.
2. Record drawings shall be legibly marked to record actual construction.
3. Drawings shall show actual location of all underground and above ground water and wastewater piping and related appurtenances. All changes to piping location including horizontal and vertical locations of utilities and appurtenances shall be clearly shown and referenced to permanent surface improvements. Drawing shall show actual installed pipe material, class, etc.
4. Drawings shall clearly show all field changes of dimension and detail.
5. Drawings shall clearly show all detail not indicated on the original contract drawings but constructed in the field. All equipment and piping relocation shall be shown.
6. One (1) record drawing electronic file (.DWG format) in the latest version of AutoCAD. Only one (1) AutoCAD file shall be accepted containing the entire record drawing (additional files used for x-referencing are acceptable) and one Adobe Acrobat file with the entire record drawing as provided on the black line drawing set. AutoCAD files must be established in state plane coordinate system, NAD 83, Florida East Zone. The vertical datum referenced shall be NGVD 29.

Representative items of work that shall be shown on record drawings as verified, changed, or added shall include the following:

1. Plans:
    a. Structure types, location with grade of rim and flow-line elevations
    b. Sewer type, length, size, and elevation
    c. Utility type, length, size, and elevation in conflict structures
    d. All maintenance access structures, valves, and hydrants within right-of-way

e. Spot (critical) elevations at plateaued intersections

f. Sewer laterals shall be stationed between maintenance access structures

2. Pavement Marking and Signing Plans: sign location where installed if different from plans

3. Water and Sewer Plans: Location (horizontal and vertical) of all pipelines, structures, manholes, fittings, valves, valve boxes and appurtenances.

    a. Every valve, tee, bend, fire hydrant, beginning and ending of deflections, maintenance access structure, wet well, etc. shall be located, both horizontally and vertically, from the nearest surface landmark (i.e. centerline of intersection, seawall corner, maintenance access structure, face of a building extended or some other similar landmark that in unlikely to “move” or be buried).

    b. In addition to dimensioning for appurtenances, the elevation along the top of pipe every 200 feet will also be required.

    c. All valves shall be referenced from at least two and preferably three permanent points.

4. As-built of sewer/water lines shall include the following information:

    a. Top of pipe elevations and horizontal location every 200 linear feet (LF)

    b. Locations and elevations of all fittings including bends, tees, gate valves, double detector check valves, fire hydrants, etc.

    c. All tie-ins to existing lines shall be as-built

    d. The ends of all water services at the buildings or home shall be as-built or where the water service terminates

    e. Water services with meter boxes and sanitary sewer laterals with cleanouts at the property line shall be located with a dimension to the nearest landmark.

    f. The depth from finished grade of potable water mains, wastewater collection piping, and sewer force mains shall be indicated at all valve locations.

5. Records of all gravity sanitary sewer lines shall include the following information:

    a. Rims, inverts, and length of piping between structures as well as slopes.

    b. The stub ends of all sewer laterals shall be located and if there are any cleanouts installed on the sewer laterals then the invert elevation of these cleanouts need to be obtained.

6. Profile Views – the following are minimum Record Drawing data that shall be annotated on the Profile Plans:

    a. Every valve, tee, bend, fire hydrant, beginning and ending of deflections, maintenance access structure, wet well, etc. shall be located, both horizontally and vertically, from the nearest surface landmark (i.e. centerline of intersection,

seawall corner, maintenance access structure, face of a building extended or some other similar landmark that in unlikely to “move” or be buried).

b. In addition to dimensioning for appurtenances, the elevation along the top of pipe every 200 feet will also be required.

7. Force Mains and vacuum main records shall be prepared the same as sewer/water line as-builts.
8. Records of all drainage lines shall include the following information:
    a. Rims, inverts, and length of piping between structures and weir elevations if applicable.
    b. The piping size shall be verified by the survey crew at the time of as-built.
9. All rock records for parking lot, roadway, and swale areas shall consist of the following:
    a. Rock elevations at all high and low points, and at enough intermediate points to confirm slope consistency.
    b. Rock as-builts shall be taken at all locations where there is a finish grade elevation shown on the design plans.
    c. All catch basin and manhole rim elevations shall be shown.
    d. Elevations around island area will be required.
10. Retention area as-built elevations shall be taken at the bottom of the retention area and at the top of the bank.
11. Every utility (gas, telephone, power, water, force main, etc.) encountered and/or crossing drainage, water or sanitary sewer facilities (whether a conflict or with sufficient clearances) shall be noted, both horizontally and vertically. The clearance between the facilities horizontal and vertical shall be noted.
12. Pipelines that are “dead” or have been abandoned shall be noted during construction and shall be annotated on the Record Drawings.
13. As-built survey drawings shall meet applicable minimum technical standards for land surveyors as outlined in Section 61G17 of the Florida Administrative Code.

END OF SECTION

11.0 APPROVED PRODUCT LISTS

This section identifies a listing of approved materials and products which can be used with the design and construction of any new development or re-development of wastewater facilities that will be transferred to the Village. Any material or product not on this list shall be approved in advance by the Village. Shop drawings shall be required for all items contained on this list, including manholes, wet wells, and other castings.

Four (4) sets of the Contractor's shop drawings shall be submitted to the Village for the Village's use and approval, plus the number of sets needed for the Contractor use. Ordering material and products without the specific written approval from the Village of the submitted list and shop drawings is not recommended.

11.1 Resilient Seat Gate Valves – All Available Sizes

Mueller A2360 Series
American Series 2500
Clow F-6100 Series
U.S. Pipe Metroseal 250

11.2 Butterfly Valves – 30-inch and Larger Water Mains

Mueller Lineseal B-3211
Kennedy BFV-84
Clow 1450
Dezurik AWWA Series

11.3 Curb Stops – Ball Valve Type

Ford Brass Ball Valve Curb Stop, #B11-666

11.4 Plug Valves – All Available Sizes

Clow Full Flo Series
U.S. Pipe
Dezurik Permaseal Series
Mueller/Pratt, Ballcentric (as approved by the Village)

11.5 Tapping Valves – Resilent Seat Gate Valves

American Series 2500
Kennedy 950X
Clow F6114 Series
M and H 751-01
Mueller H687 (for 12 inches or less)

11.6 Service Saddles, Stainless Steel

Romac Model 306 (Cast iron, DIP, PVC)
Romac Model 306-H (HDPE)

11.7 Check Valves – Lever and Weight

M and H 159-02
Mueller A-2600-6-01
Kennedy 106
Clow F-5380 Series
American 52SC
American Series 2100

11.8 Valve Stops – Ball Valve Type

Clow F-2450 Series
Russell Pipe (Submit Product Information)
Star Industries (Submit Product Information)

11.9 Air Release Valves – Sized Appropriately for Sewer Service

Valmatic 48S
Valmatic 301S

11.10 Backwater Valves – "Normally Opened"

Mainline Backflow Products

11.11 Couplings for Existing Facilities

Fernco
Rockwell 900 Services

11.12 Wastewater Pump Station – Municipal Rated

Flgyt (Submersible)
ABS (Submersible, Dual Guide Only, and meets Flygt Standards)
Gorman-Rupp (Above Ground)

11.13 Liner – Wet Well, Valve Vault, and Force Main Receiving Manhole

AGRU America HDPE and PP Sure Grip® (Light Colored)
GSE StudLiner HDPE (Light Colored)
Fiberglass (Specify Manufacturer _____)
Other (Specify Manufacturer_____)

11.14 Coatings – Wet Wells and Manholes

Sewper Coat
Strong Seal
Refratta HAC 100

11.15 Wet Well and Valve Vault Hatches – Structural Aluminum Type

Halliday Products, Inc.
Other (Specify Manufacturer_____)

11.16 Pump Station Control Panel – Municipal Rated

Sta-Con, Inc.
Quality Control, Inc.

11.17 Vacuum Sewer System Components – Valve Pits, Valves, Controllers, and Appurtenances

Airvac, a brand of Aqseptance Group, Inc.

11.18 Low Pressure Grinder Pump Station – Residential

Environment One Corporation (E/One)
Flygt Progressive Cavity
Zoeller Progressive Cavity

11.19 Low Pressure Grinder Pump Station – Commercial

Environment One Corporation (E/One)
Flygt Progressive Cavity

11.20 Pump Station Radio Telemetry

Curry Controls
Other (Specify Manufacturer_____)

11.21 Sanitary Sewer Lateral Locating Devices

3M Test & Measurement System, Mini-Marker #1258
Industrial Technology Omni Marker

11.22 Manhole Ring and Cover

U.S. Foundry 227AS (Sanitary)
Other (Specify Manufacturer_____)

11.23 Valve Boxes

Tyler 6850 Series
NDS Pro Series
U.S. Foundry 7600 Series

11.24 Detectable Underground Utility Marking Tape

PRESCO Detectable Underground Utility Marking Tape

11.25 ABS Inflow Protector Cover

LFM Rainguard
FRW Industries

SECTION 12

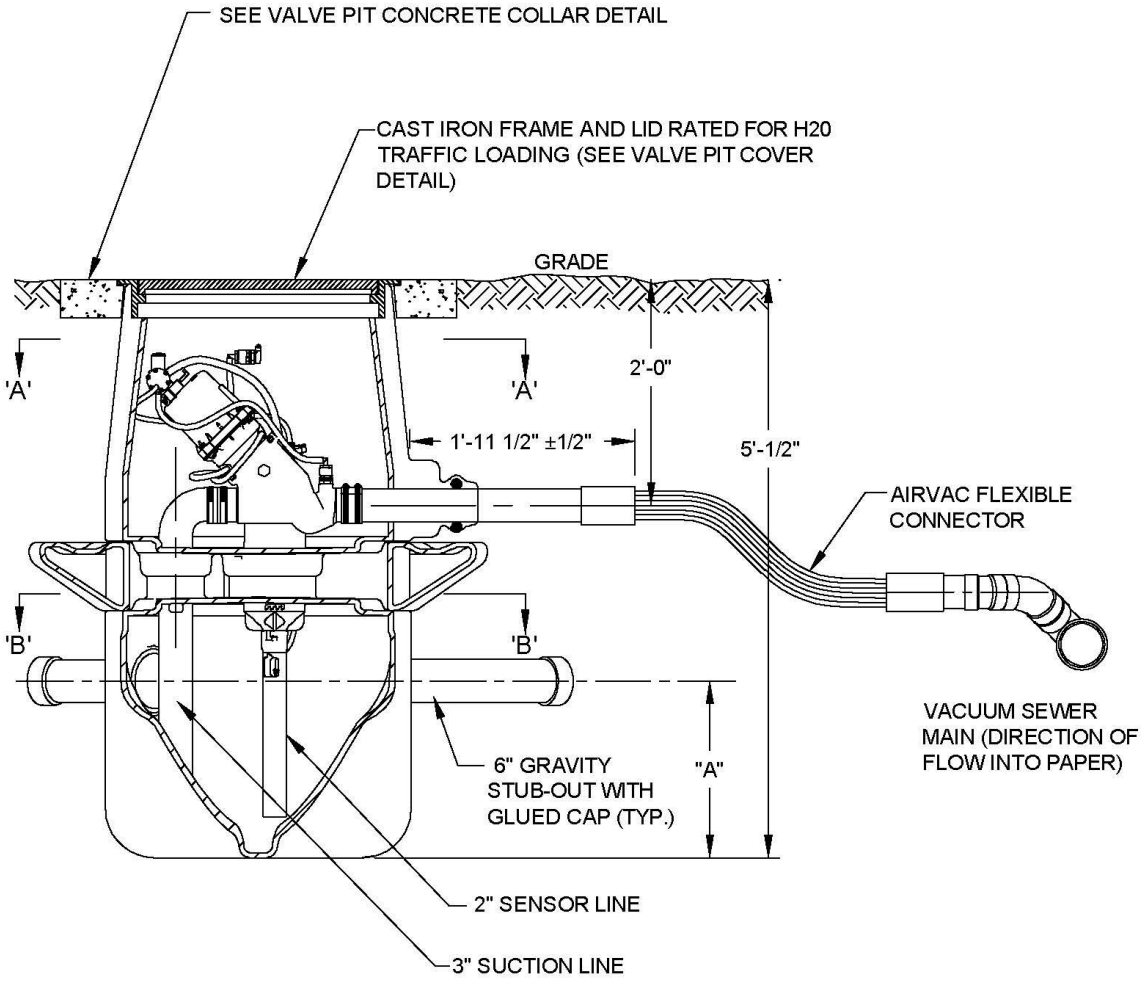
VACUUM SEWER DETAILS,

LOW PRESSURE SEWER DETAILS, AND

STANDARD DETAILS

NOVEMBER 2010

TYPE "A" VALVE PIT MODEL VP3030WT (5' DEEP)

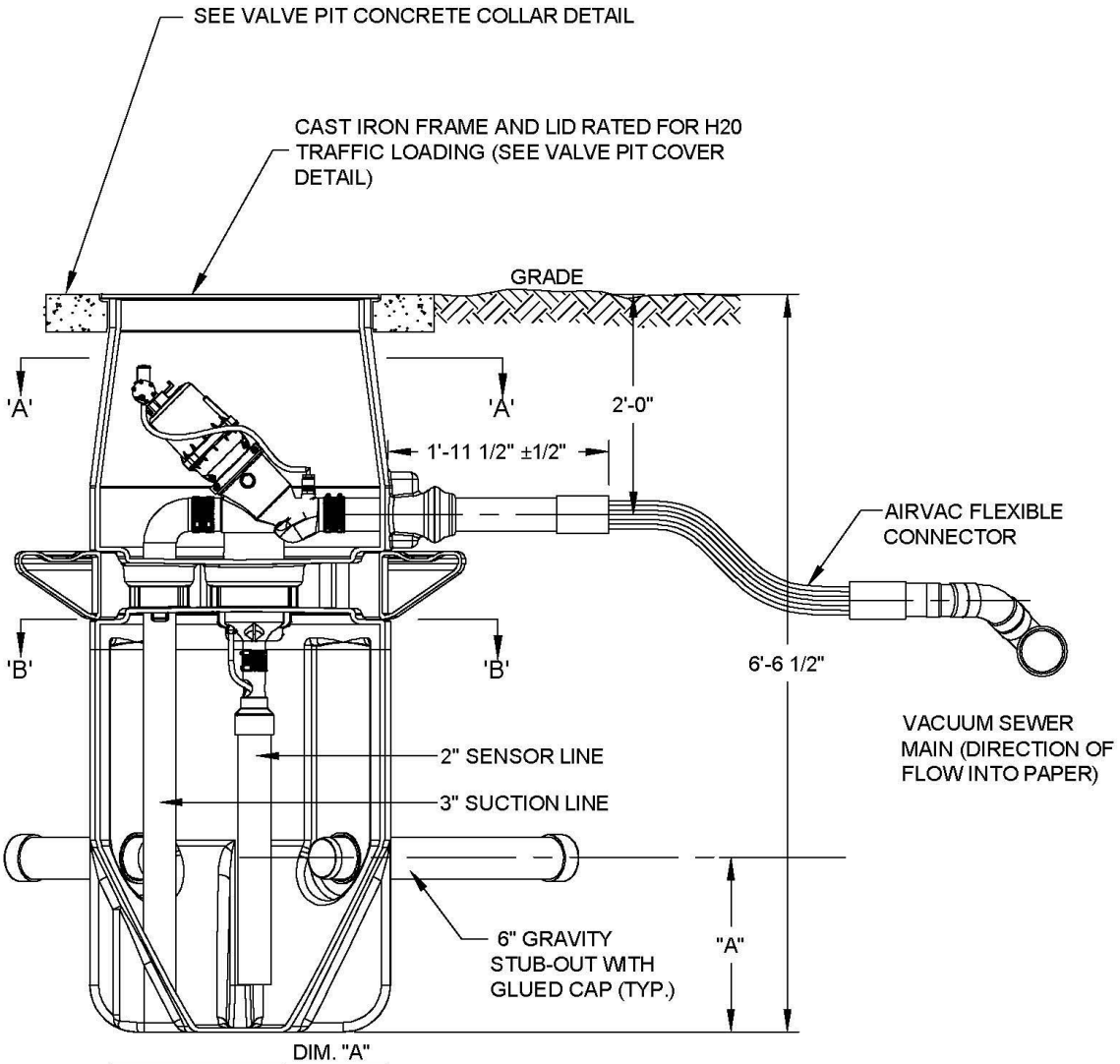


	DIM. "A"
4" GRAVITY	1'-6"
6" GRAVITY	1'-7"

AIRVAC® VACUUM DETAIL	AIRVAC 1-PIECE VALVE PIT - 5' DEEP N.T.S.	DETAIL VAC-1

NOVEMBER 2010

TYPE "B" VALVE PIT MODEL VP4830WT (6.5' DEEP)



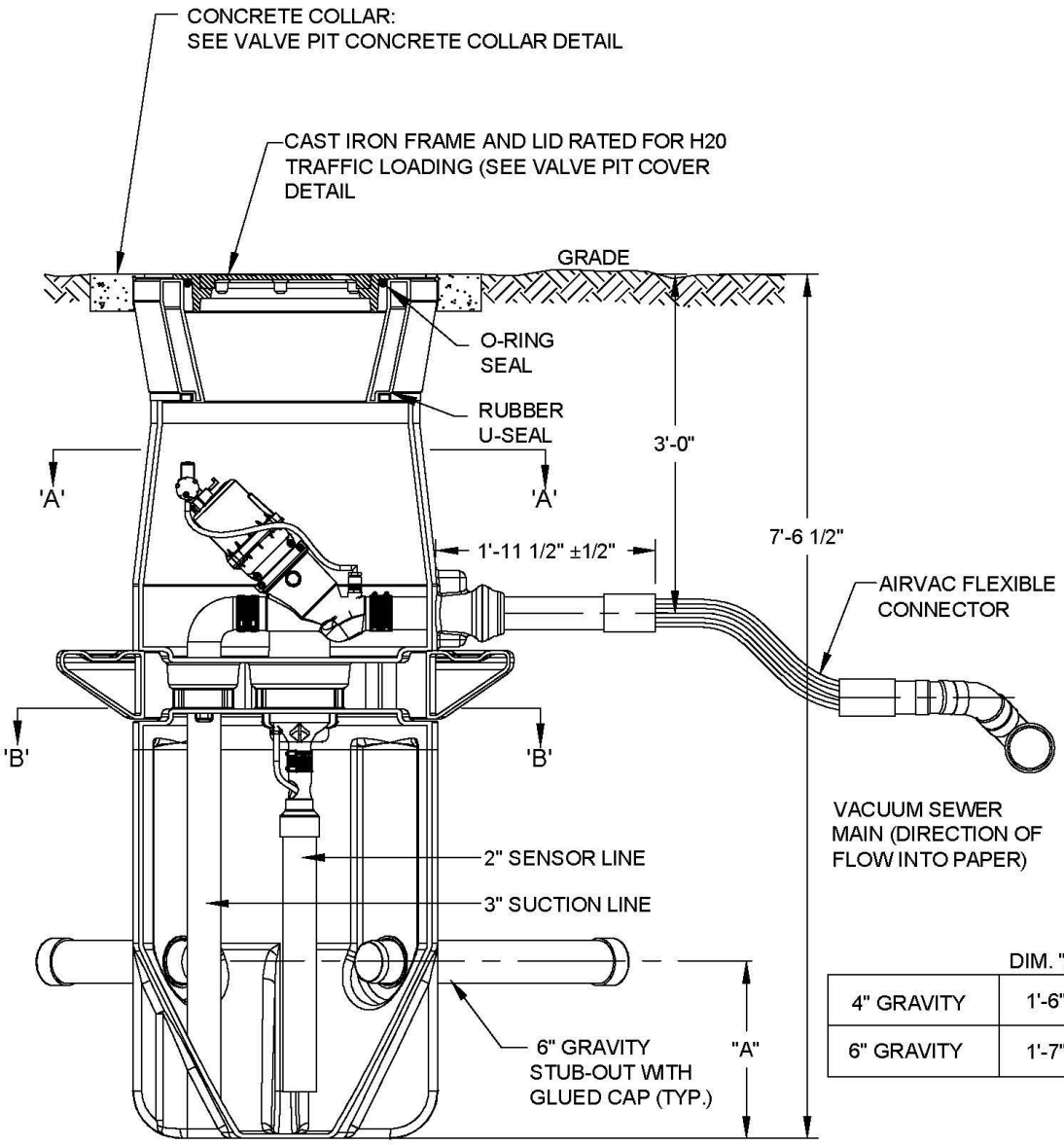
DIM. "A"

4" GRAVITY	1'-6"
6" GRAVITY	1'-7"

AIRVAC® VACUUM DETAIL	AIRVAC 1-PIECE VALVE PIT - 6-1/2' DEEP N.T.S.	DETAIL VAC-2

NOVEMBER 2010

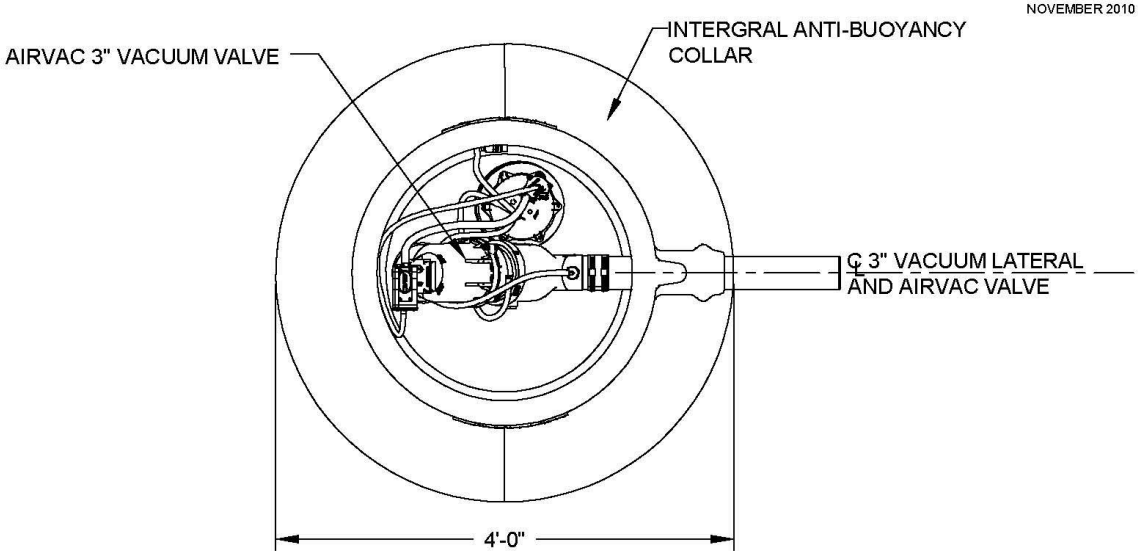
TYPE "C" VALVE PIT MODEL VP4842WT (7.5' DEEP)



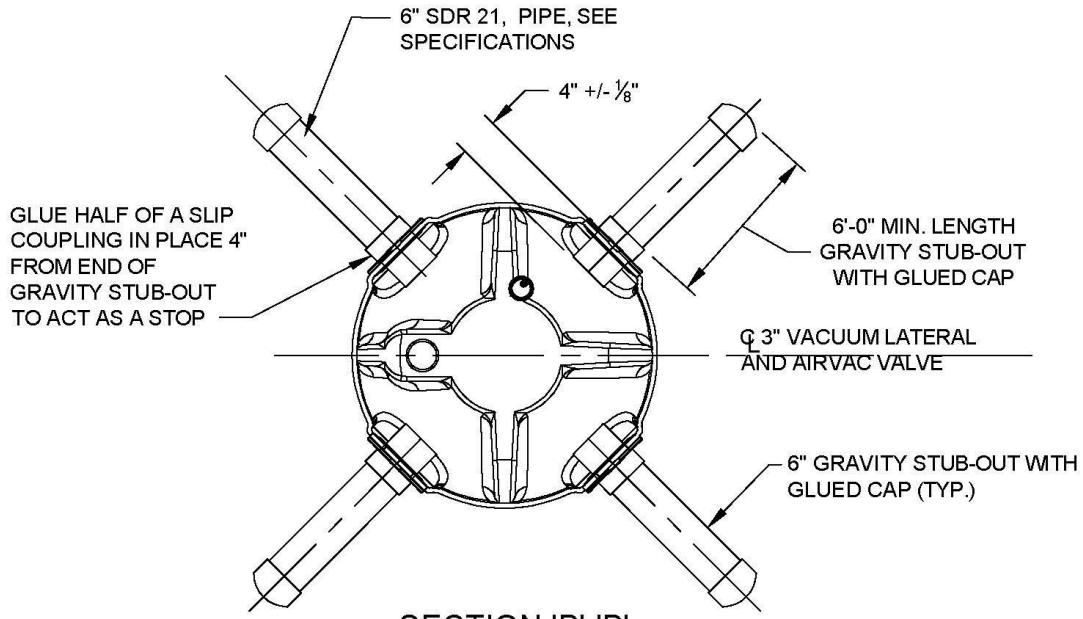
DIM. "A"	
4" GRAVITY	1'-6"
6" GRAVITY	1'-7"

AIRVAC® VACUUM DETAIL	AIRVAC 1-PIECE VALVE PIT - 6-1/2' DEEP w/1FT EXTENSION N.T.S.	DETAIL VAC-3

NOVEMBER 2010



SECTION 'A'-A'



SECTION 'B'-'B'

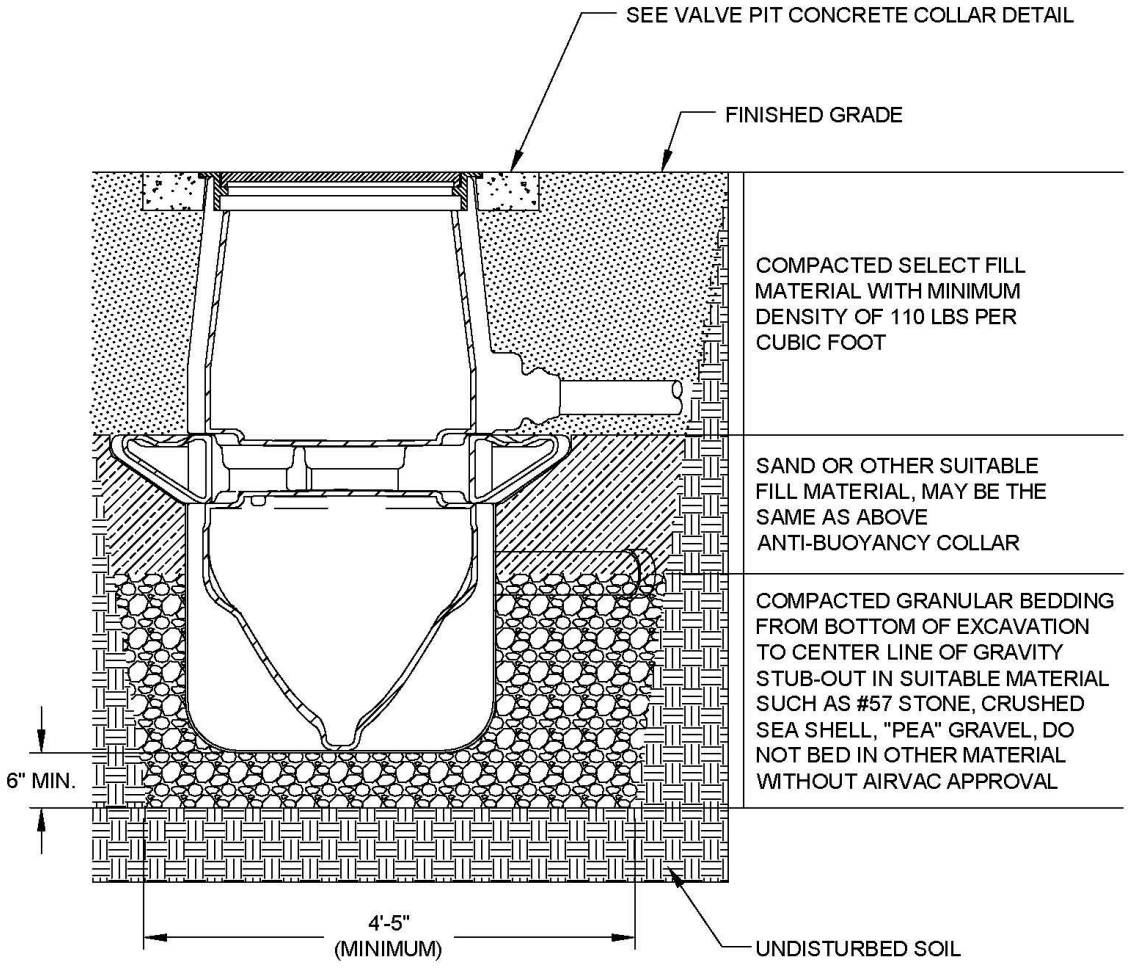
SHOWING UP TO 4 GRAVITY CONNECTIONS TO SUMP

AIRVAC® VACUUM DETAIL	VALVE PIT SECTIONS 'A' AND 'B' N.T.S.	DETAIL VAC-4

NOVEMBER 2010

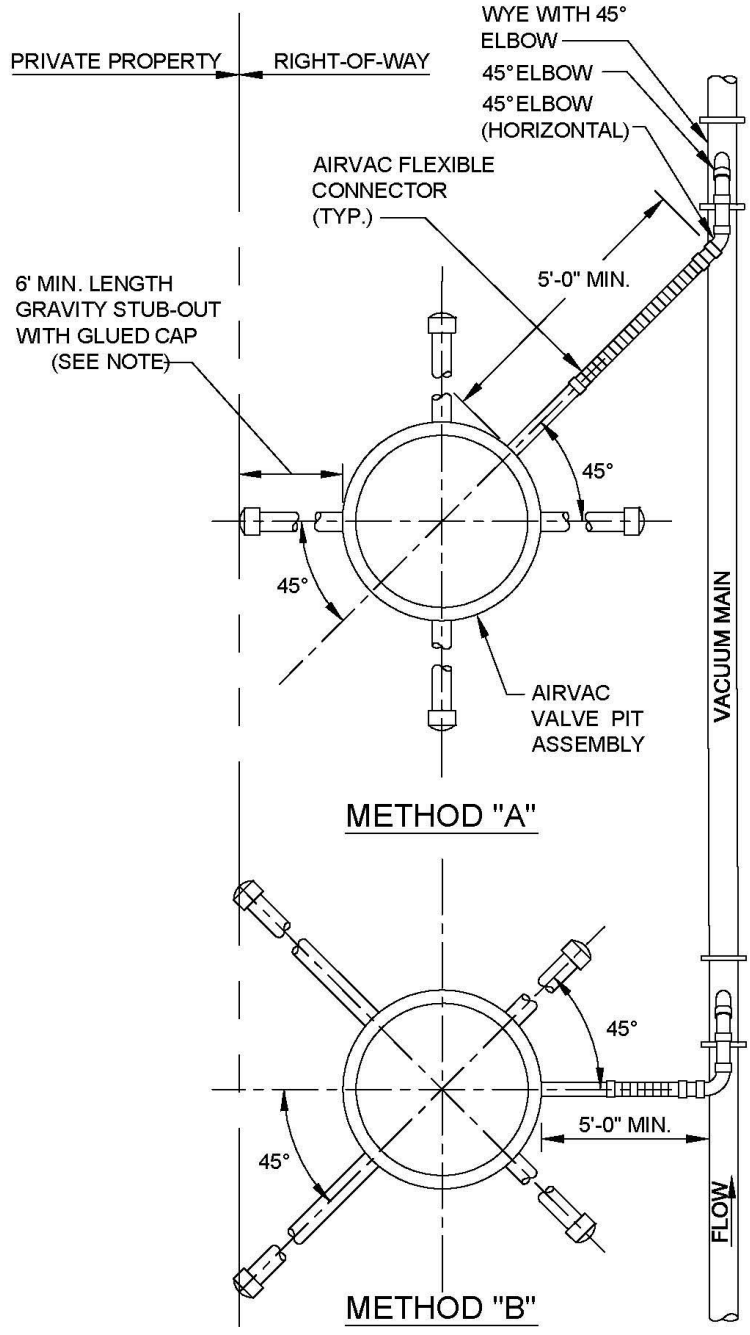
WEIGHT OF CONCRETE REQUIRED (LBS.)

	GROUNDWATER @ SURFACE	GROUNDWATER @ 1FT. DEPTH	GROUNDWATER @ 2FT. DEPTH	GROUNDWATER @ >2FT. DEPTH
VP3030WT	200	0	0	0
VP4830WT	800	400	0	0
VP4842WT	1100	600	200	0



AIRVAC® VACUUM DETAIL	1 PIECE VALVE PIT BEDDING AND BACKFILL N.T.S.	DETAIL VAC-5

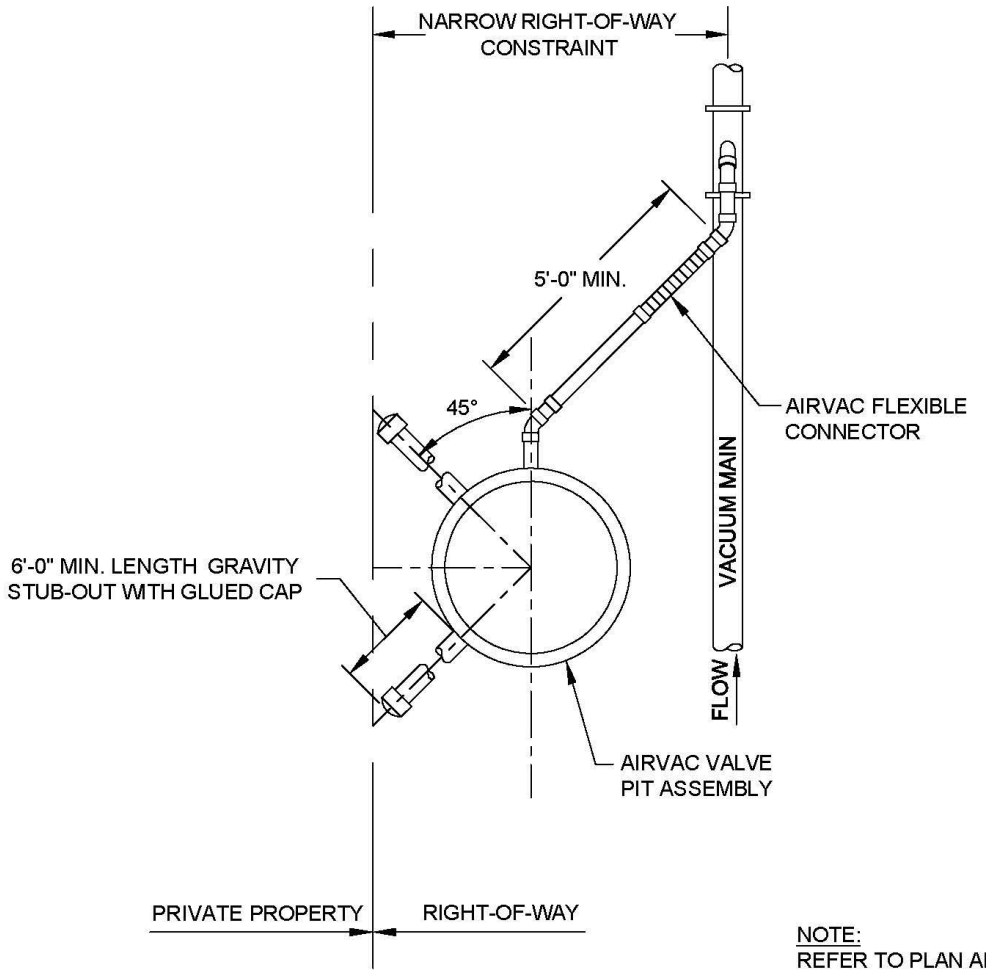
NOVEMBER 2010



NOTE:
REFER TO PLAN AND PROFILE FOR SERVICE LINE ORIENTATION AND DEVIATIONS FROM STANDARD DETAIL.

AIRVAC® VACUUM DETAIL	STANDARD VALVE PIT ORIENTATION N.T.S.	DETAIL VAC-6

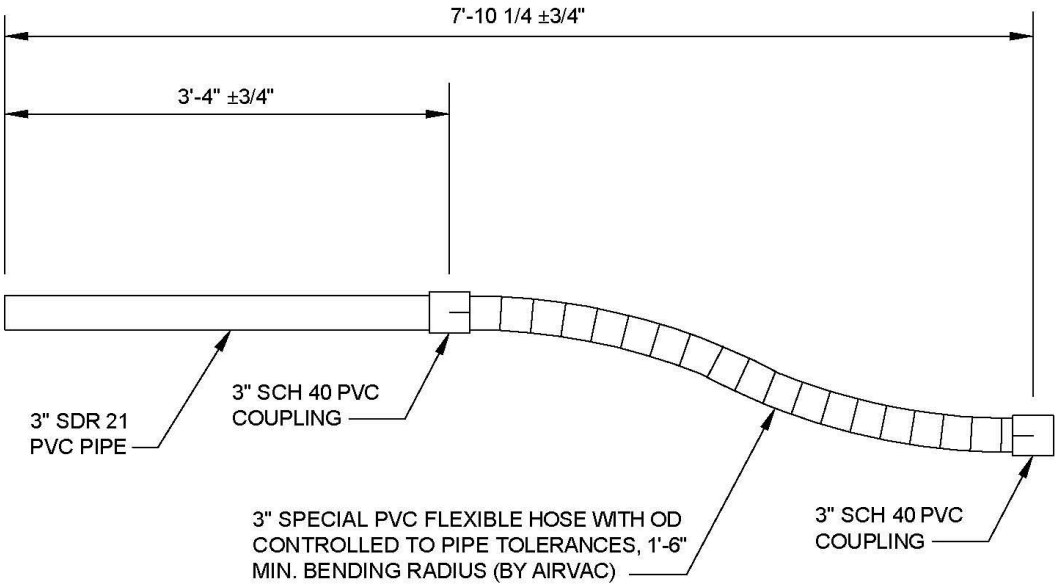
NOVEMBER 2010



NOTE:
REFER TO PLAN AND PROFILE FOR SERVICE LINE ORIENTATION AND DEVIATIONS FROM STANDARD DETAIL.

AIRVAC® VACUUM DETAIL	VALVE PIT IN NARROW RIGHT-OF-WAY N.T.S.	DETAIL VAC-7

NOVEMBER 2010



INITIAL INSTALLATION - TO INSURE PROPER ALIGNMENT

1. FLEXIBLE CONNECTOR LENGTH MAY NOT BE ALTERED. DO NOT CUT PVC PIPE OR THE FLEXIBLE HOSE.

2. INSERT BEVELED END INTO THE ALIGNMENT PORT ON THE VALVE PIT. PUSH FLEXIBLE CONNECTOR ALL THE WAY TO THE 3" SUCTION ELBOW IN THE VALVE PIT.

3. TO INSURE PROPER ALIGNMENT, CONNECT THE BEVELED END TO THE 3" SUCTION ELBOW USING A TEMPORARY SLIP COUPLING. DO NOT GLUE THIS COUPLING.

AFTER VALVE PIT INSTALLATION IS COMPLETED - TO ALLOW FOR VACUUM TESTING

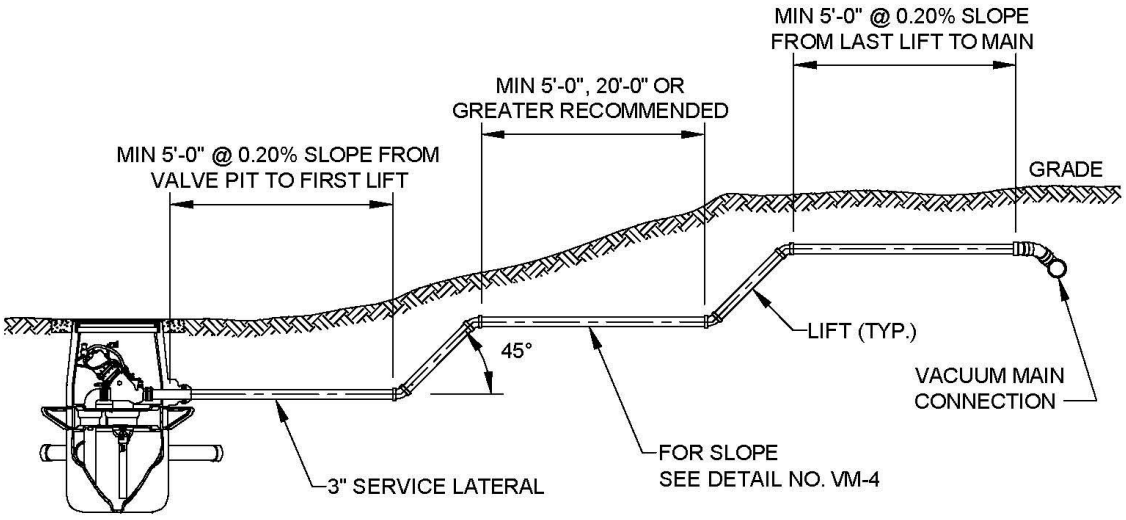
1. AFTER THE VALVE PIT INSTALLATION IS COMPLETE, INCLUDING BACKFILL, REMOVE TEMPORARY PVC COUPLING AND CUT THE PVC PIPE TO THE CENTER OF THE VALVE PIT ±1". GLUE 3" PVC CAP ONTO END OF PVC PIPE.

2. DO NOT CONDUCT MAIN LINE VACUUM TESTING UNTIL THE TEMPORARY COUPLING HAS BEEN REMOVED AND THE PVC CAP GLUED ON.

SEE AIRVAC INSTALLATION INSTRUCTIONS FOR ADDITIONAL DETAILS

AIRVAC® VACUUM DETAIL	AIRVAC FLEXIBLE CONNECTOR N.T.S.	DETAIL VAC-8

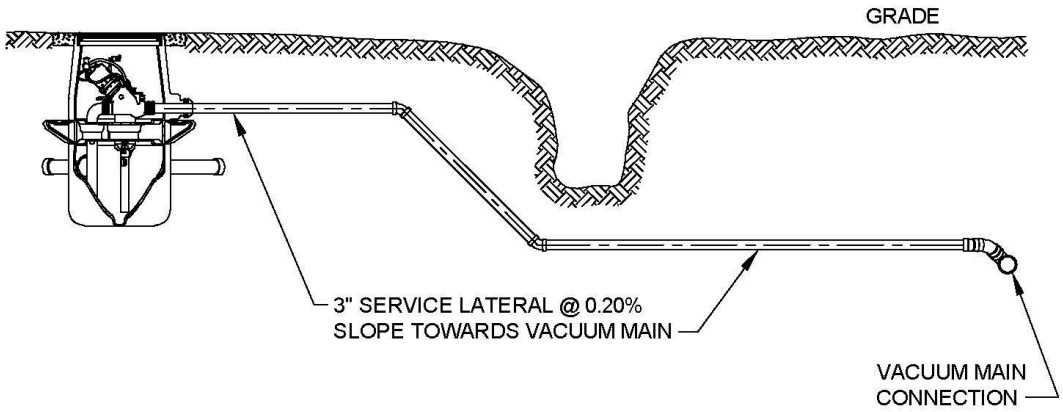
NOVEMBER 2010



SERVICE LATERAL NOTES	
MINIMUM SLOPE ON 3" SERVICE LATERAL	0.20%
MINIMUM SLOPE BETWEEN LIFTS	SEE DETAIL NO. VM-4
MAXIMUM NUMBER OF LIFTS	5
MINIMUM DISTANCE, VALVE PIT TO FIRST LIFT	5'-0"
MINIMUM DISTANCE, LAST LIFT TO VACUUM MAIN	5'-0"
MAXIMUM LIFT HEIGHT	3'-0"
RECOMMENDED LIFT HEIGHT	1'-0"

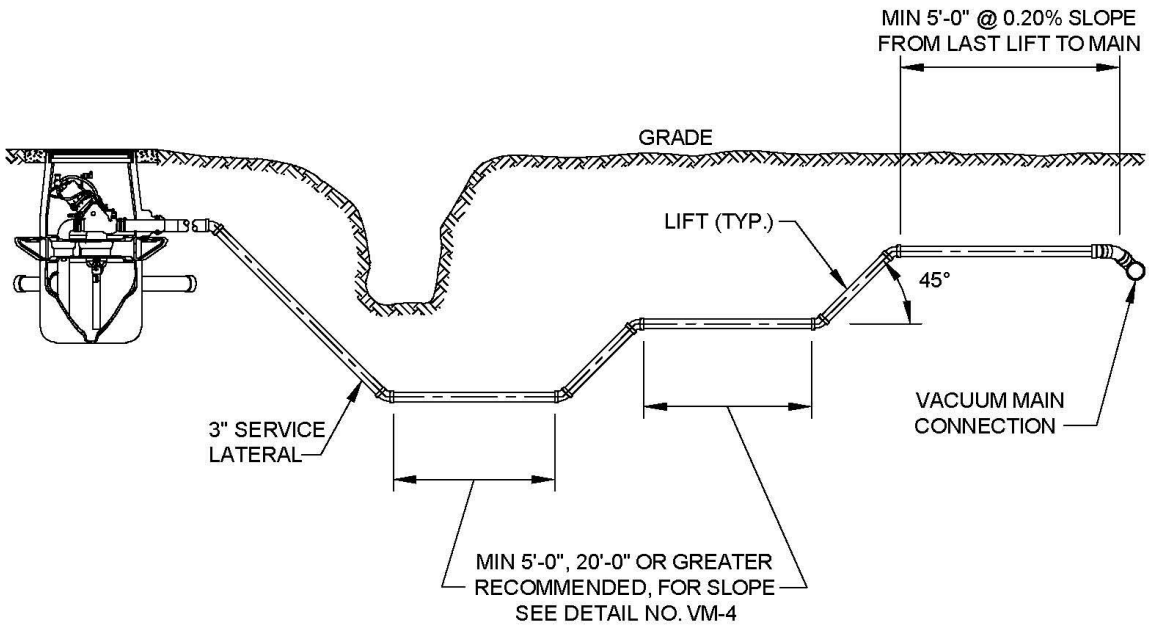
AIRVAC® VACUUM DETAIL	SERVICE LATERAL - UPHILL TO VACUUM MAIN N.T.S.	DETAIL VAC-9

NOVEMBER 2010



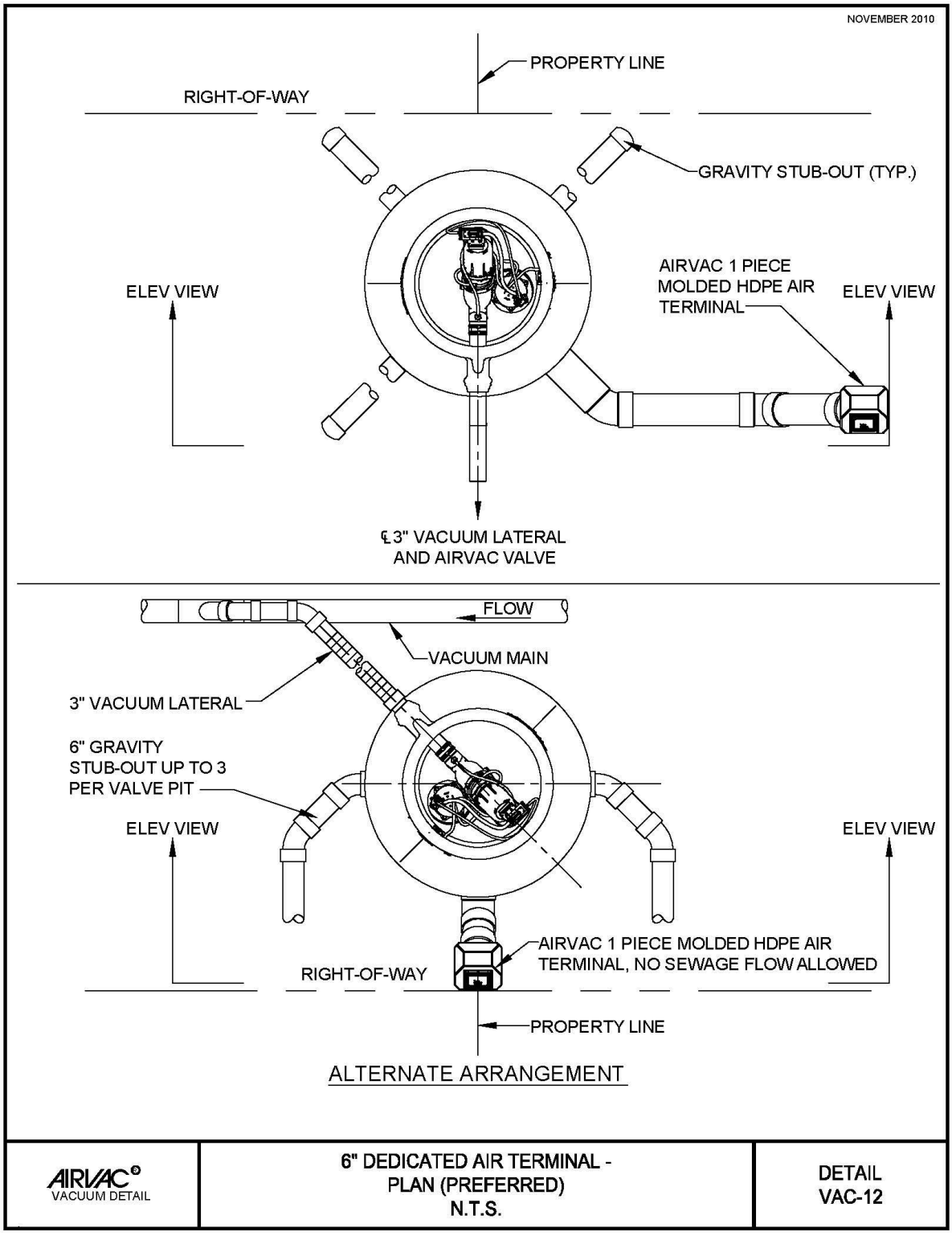
AIRVAC® VACUUM DETAIL	SERVICE LATERAL - CROSSING A SWALE WITH NO LIFTS N.T.S.	DETAIL VAC-10

NOVEMBER 2010

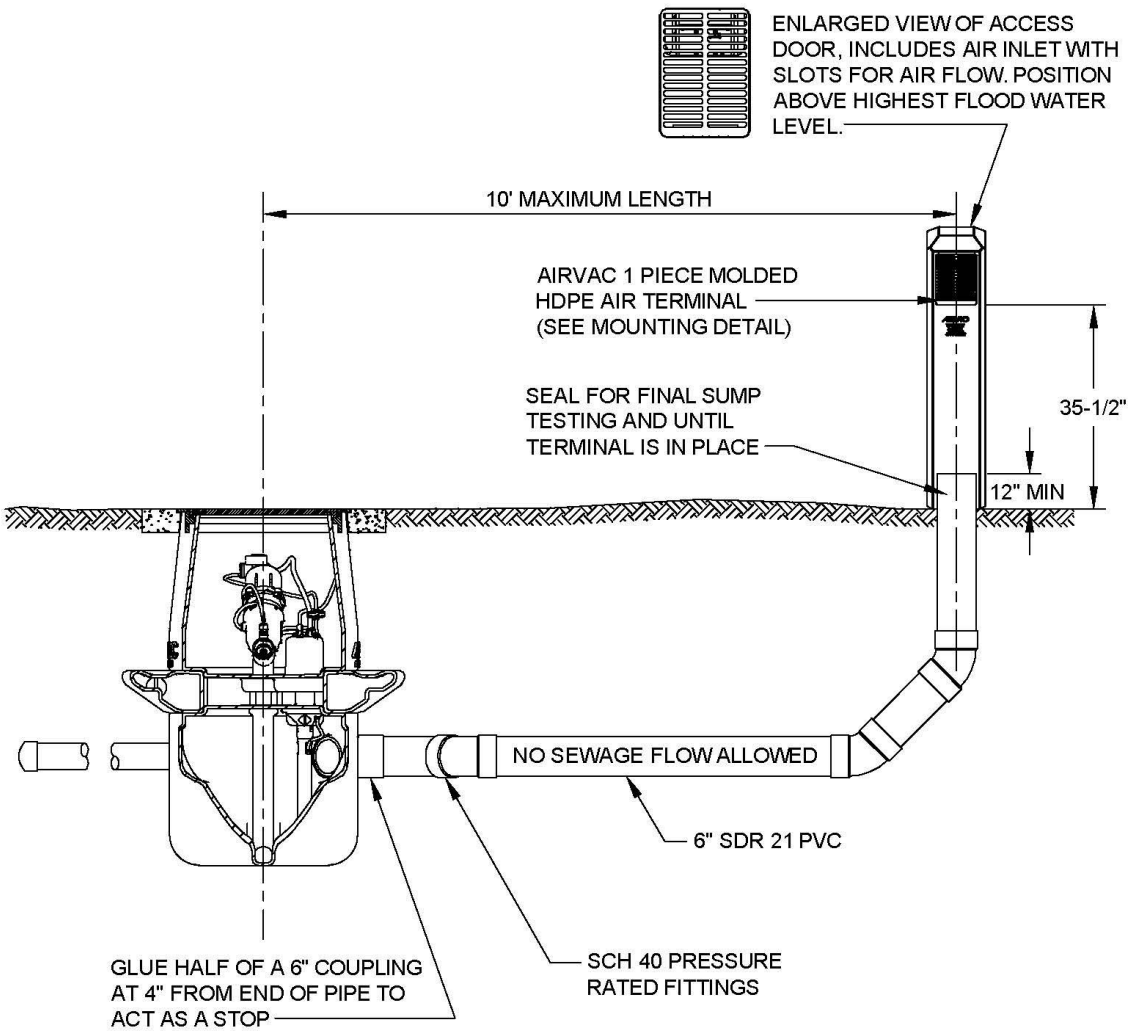


SERVICE LATERAL NOTES	
MINIMUM SLOPE ON 3" SERVICE LATERAL	0.20%
MINIMUM SLOPE BETWEEN LIFTS	SEE DETAIL NO. VM-4
MAXIMUM NUMBER OF LIFTS	5
MINIMUM DISTANCE, VALVE PIT TO FIRST LIFT	5'-0"
MINIMUM DISTANCE, LAST LIFT TO VACUUM MAIN	5'-0"
MAXIMUM LIFT HEIGHT	3'-0"
RECOMMENDED LIFT HEIGHT	1'-0"

AIRVAC® VACUUM DETAIL	SERVICE LATERAL - CROSSING A SWALE WITH LIFTS N.T.S.	DETAIL VAC-11


NOVEMBER 2010
PROPERTY LINE
RIGHT-OF-WAY
GRAVITY STUB-OUT (TYP.)
ELEV VIEW
AIRVAC 1 PIECE
MOLDED HDPE AIR
TERMINAL
ELEV VIEW
℄ 3" VACUUM LATERAL
AND AIRVAC VALVE
FLOW
VACUUM MAIN
3" VACUUM LATERAL
6" GRAVITY
STUB-OUT UP TO 3
PER VALVE PIT
ELEV VIEW
ELEV VIEW
AIRVAC 1 PIECE MOLDED HDPE AIR
TERMINAL, NO SEWAGE FLOW ALLOWED
RIGHT-OF-WAY
PROPERTY LINE
ALTERNATE ARRANGEMENT
AIRVAC®
VACUUM DETAIL
6" DEDICATED AIR TERMINAL -
PLAN (PREFERRED)
N.T.S.
DETAIL
VAC-12

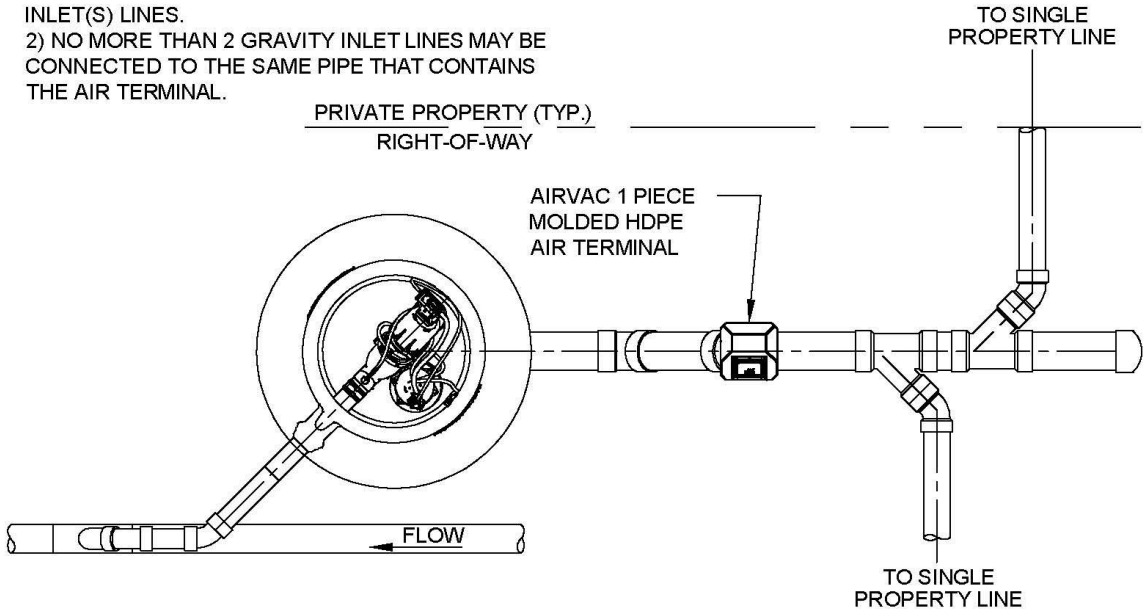
NOVEMBER 2010

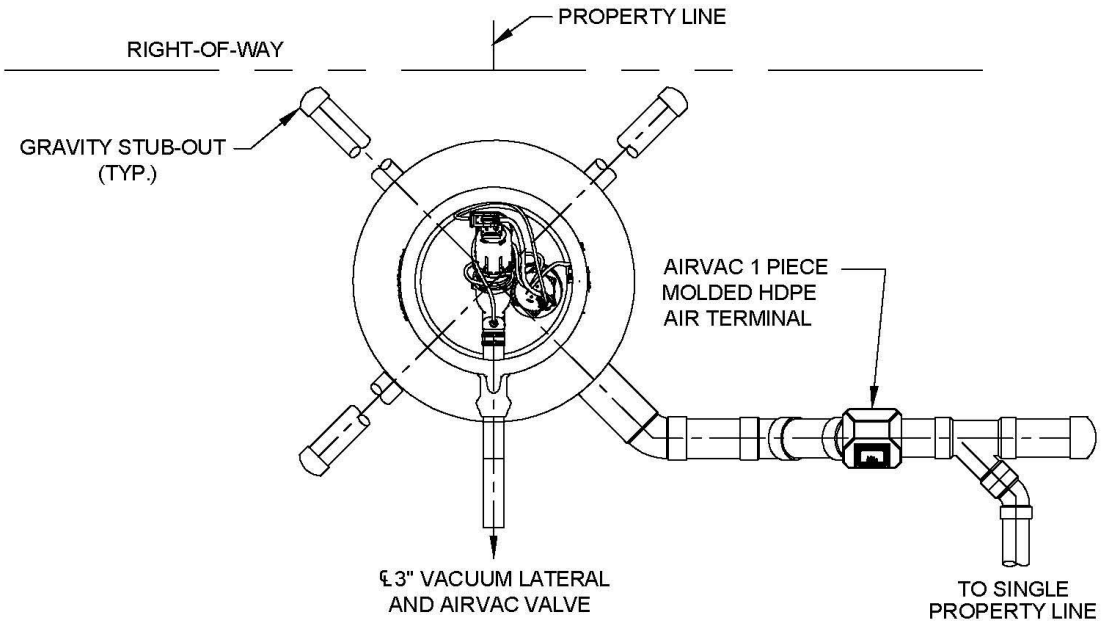


AIRVAC® VACUUM DETAIL	6" DEDICATED AIR TERMINAL - ELEVATION (PREFERRED) N.T.S.	DETAIL VAC-13

NOVEMBER 2010

NOTES:
1) THE AIR TERMINAL MUST BE POSITIONED BETWEEN THE VALVE PIT AND THE GRAVITY INLET(S) LINES.
2) NO MORE THAN 2 GRAVITY INLET LINES MAY BE CONNECTED TO THE SAME PIPE THAT CONTAINS THE AIR TERMINAL.

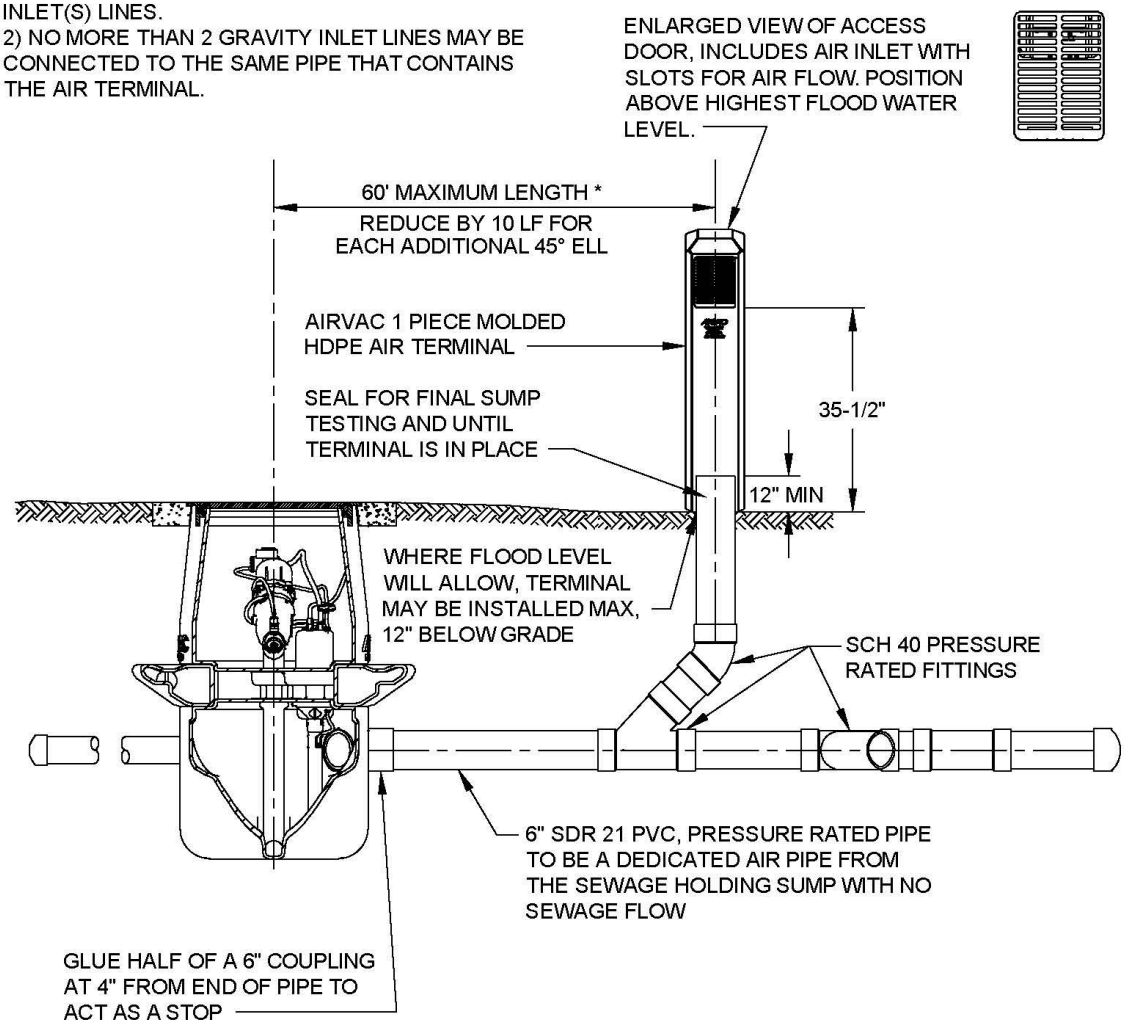




AIRVAC® VACUUM DETAIL	6" NON-DEDICATED AIR TERMINAL - PLAN (OPTIONAL) N.T.S.	DETAIL VAC-14

NOVEMBER 2010

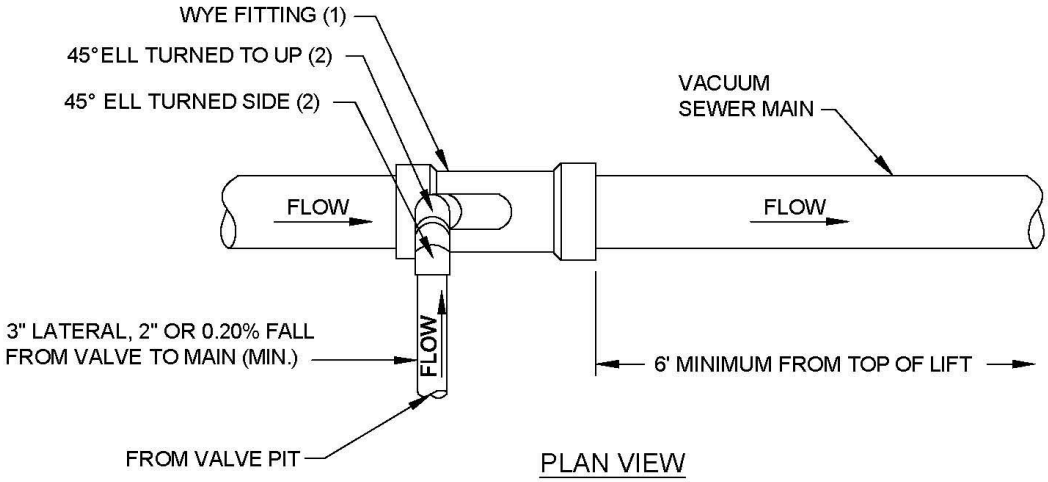
NOTES:
1) THE AIR TERMINAL MUST BE POSITIONED BETWEEN THE VALVE PIT AND THE GRAVITY INLET(S) LINES.
2) NO MORE THAN 2 GRAVITY INLET LINES MAY BE CONNECTED TO THE SAME PIPE THAT CONTAINS THE AIR TERMINAL.



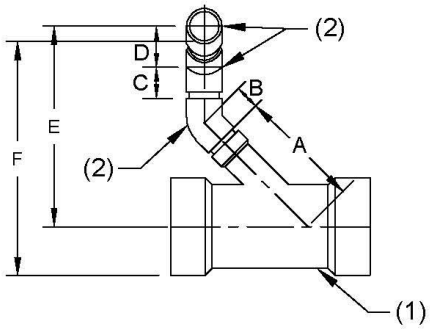
* 20' MIN IN AREAS WITH A WINTER DESIGN (DRY BULB TEMPERATURE 32°F OR LOWER)

AIRVAC® VACUUM DETAIL	6" NON-DEDICATED AIR TERMINAL - ELEVATION (OPTIONAL) N.T.S.	DETAIL VAC-15

NOVEMBER 2010



PLAN VIEW



ELEVATION

DIMENSIONS BASED ON SPEARS MANUFACTURING

1. 45 DEG WYE, SOCKET x SOCKET x SOCKET
2. 45 DEG ELL, SOCKET x SOCKET

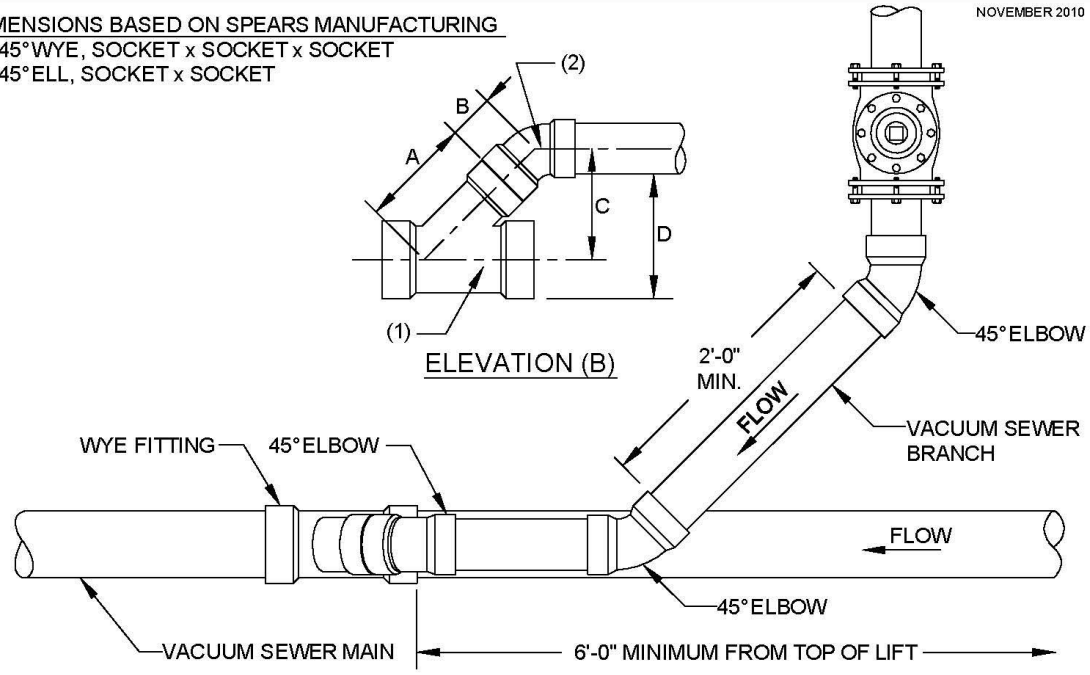
WYE SIZE	A	B	C	D	E	F- INVERT
4 x 4 x 3	8 7/8"	2 7/8"	2 7/8"	3 23/32"	14.93"	1.24'
6 x 6 x 3	10 1/4"	2 7/8"	2 7/8"	3 23/32"	15.35"	1.32'
8 x 8 x 3	13"	2 7/8"	2 7/8"	3 23/32"	17.82"	1.48'
10 x 10 x 3	14 5/8"	2 7/8"	2 7/8"	3 23/32"	18.97"	1.58'

AIRVAC® VACUUM DETAIL	PREFERRED VALVE PIT TO MAIN CONNECTIONS N.T.S.	DETAIL VAC-16

NOVEMBER 2010

DIMENSIONS BASED ON SPEARS MANUFACTURING
1. 45° WYE, SOCKET x SOCKET x SOCKET
2. 45° ELL, SOCKET x SOCKET

ELEVATION (B)

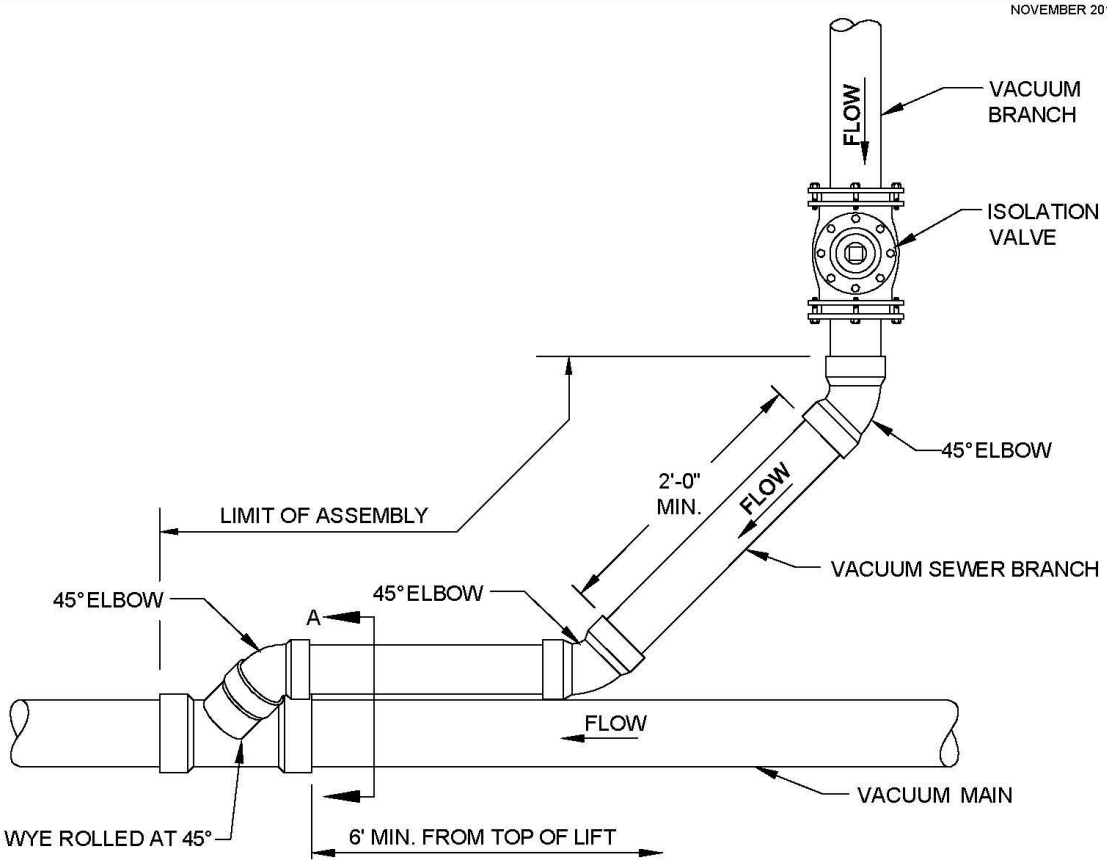


PLAN VIEW (B)

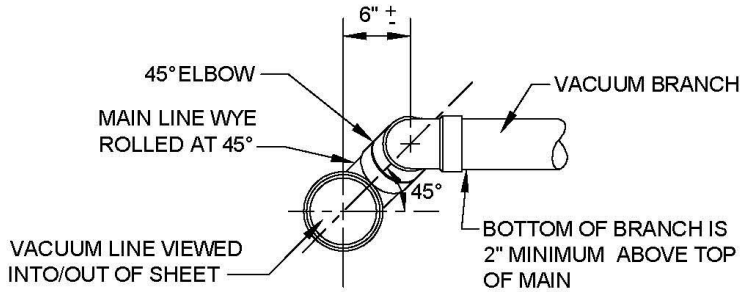
WYE SIZE	A	B	C	D- INVERT
4 x 4 x 4	8 1/4"	3 3/32"	8.02"	0.67'
4 x 4 x 3	8 7/8"	2 7/8"	8.30"	0.63'
6 x 6 x 6	11 21/32"	5 7/32"	11.93"	0.99'
6 x 6 x 4	10 1/4"	3 3/32"	9.44"	0.78'
6 x 6 x 3	10 1/4"	2 7/8"	9.28"	0.77'
8 x 8 x 8	15 1/4"	6 7/16"	15.34"	1.28'
8 x 8 x 6	16 1/8"	5 7/32"	15.09"	1.26'
8 x 8 x 4	14 1/4"	3 3/32"	12.26"	1.02'
8 x 8 x 3	13"	3 7/8"	11.22"	0.94'
10 x 10 x 10	22 1/8"	8 1/8"	21.34"	1.78'
10 x 10 x 8	16 25/32"	6 7/16"	16.42"	1.37'
10 x 10 x 6	15 7/8"	5 7/32"	14.92"	1.24'
10 x 10 x 4	15 1/2"	3 3/32"	13.15"	1.10'
10 x 10 x 3	14 5/8"	2 7/8"	12.37"	1.03'

AIRVAC® VACUUM DETAIL	BRANCH TO MAIN CONNECTION ASSEMBLY OPTION 1 N.T.S.	DETAIL VAC-17

NOVEMBER 2010



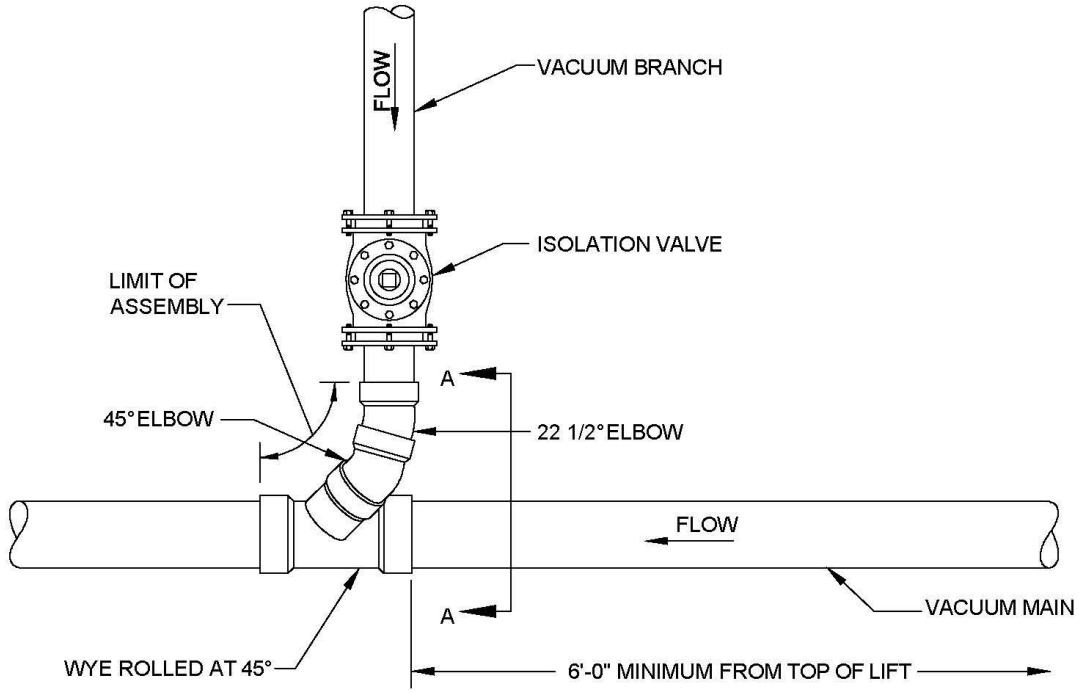
PLAN VIEW



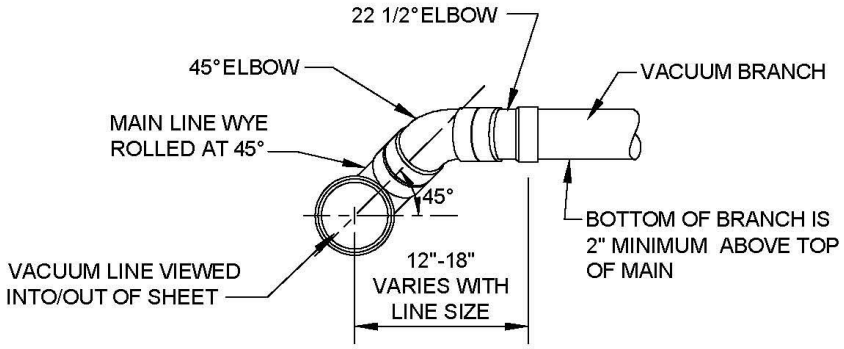
SECTION A-A

AIRVAC® VACUUM DETAIL	BRANCH TO MAIN CONNECTION ASSEMBLY OPTION 2 N.T.S.	DETAIL VAC-18

NOVEMBER 2010



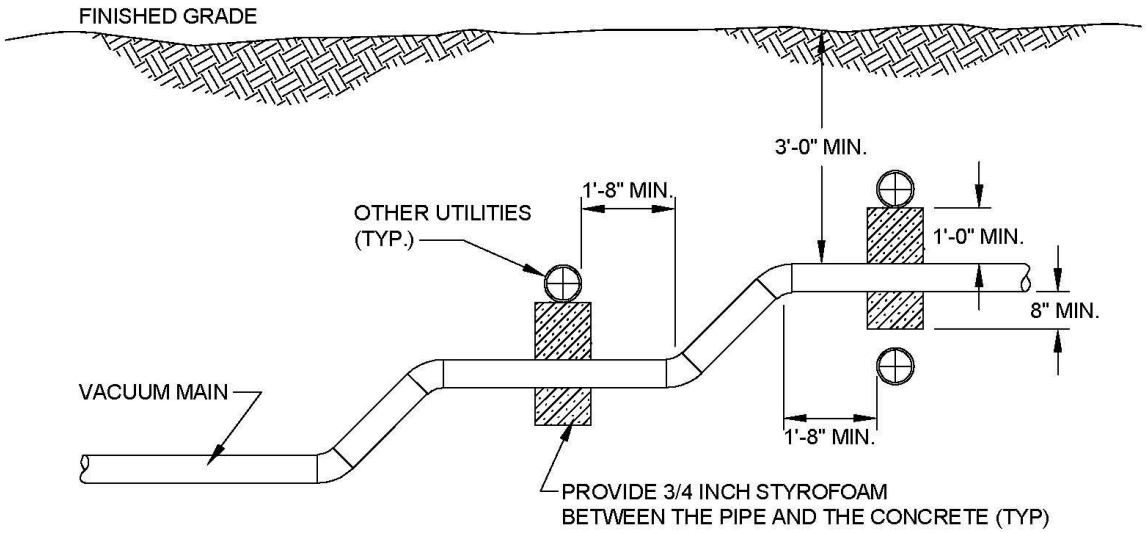
PLAN VIEW (A)



SECTION A-A

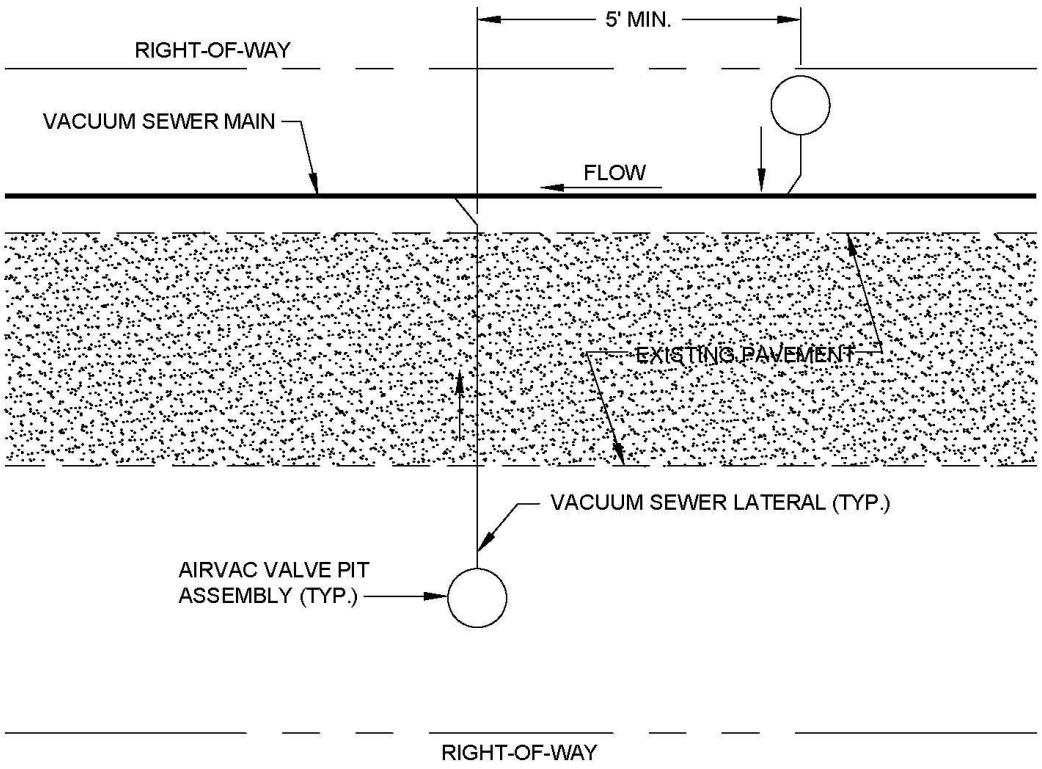
AIRVAC® VACUUM DETAIL	BRANCH TO MAIN CONNECTION ASSEMBLY OPTION 3 N.T.S.	DETAIL VAC-19

NOVEMBER 2010



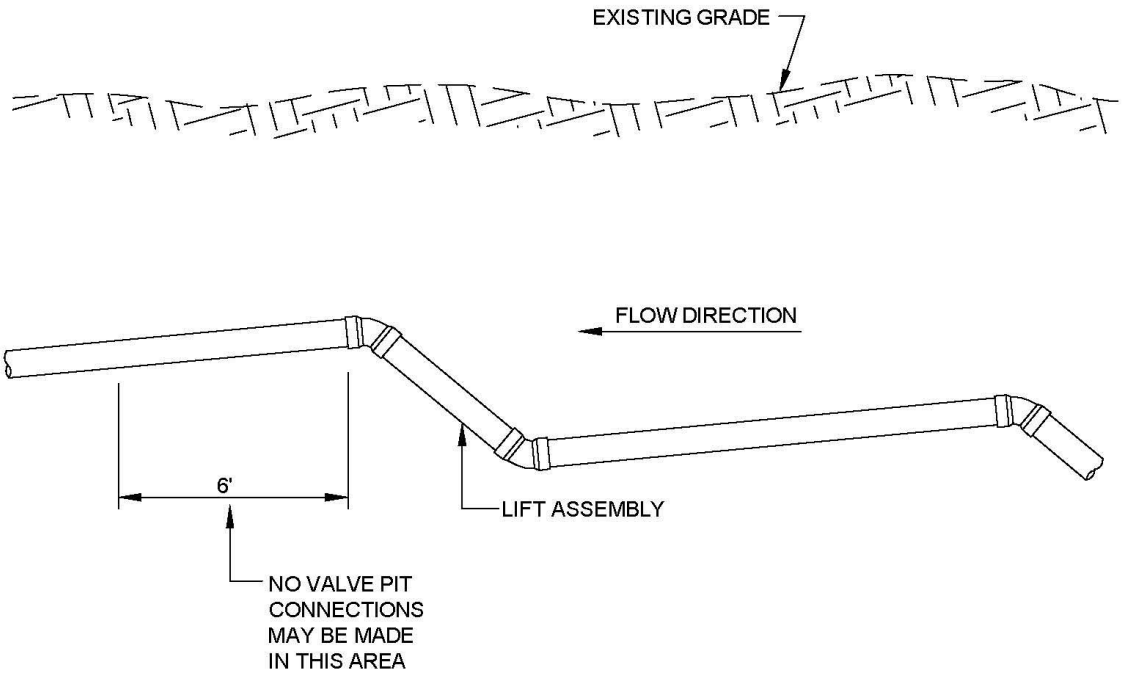
AIRVAC® VACUUM DETAIL	TYPICAL UTILITY CROSSING N.T.S.	DETAIL VAC-20

NOVEMBER 2010



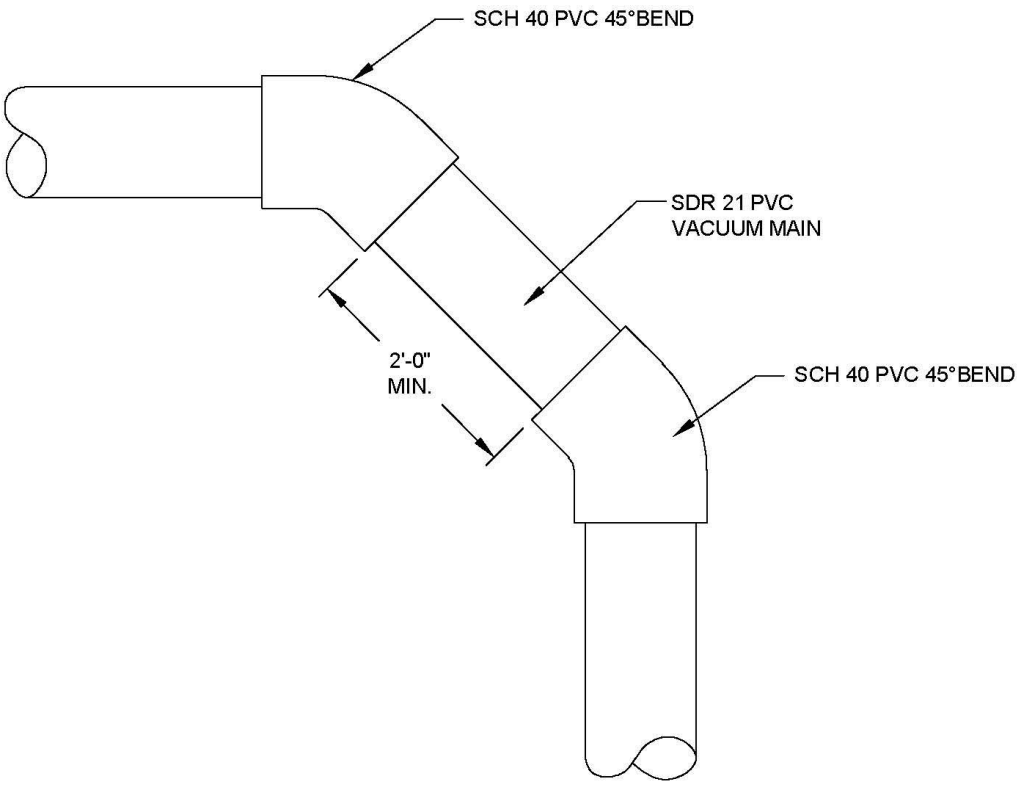
AIRVAC® VACUUM DETAIL	MINIMUM SPACING BETWEEN CONNECTIONS N.T.S.	DETAIL VAC-21

NOVEMBER 2010



AIRVAC® VACUUM DETAIL	PROHIBITED CONNECTIONS N.T.S.	DETAIL VAC-22

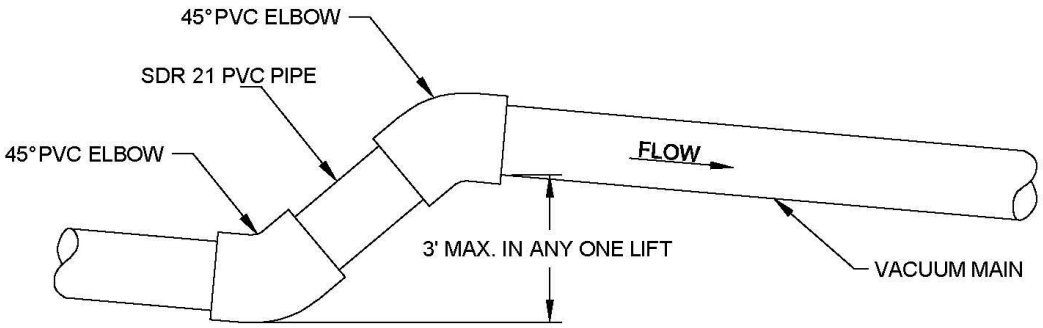
NOVEMBER 2010



NOTE:
1) SCH 40 PVC RIEBER GASKET FITTINGS ARE ALSO ACCEPTABLE
2) 90° FITTINGS ARE NOT TO BE USED FOR CHANGES IN DIRECTION

AIRVAC® VACUUM DETAIL	CHANGE IN DIRECTION N.T.S.	DETAIL VAC-23

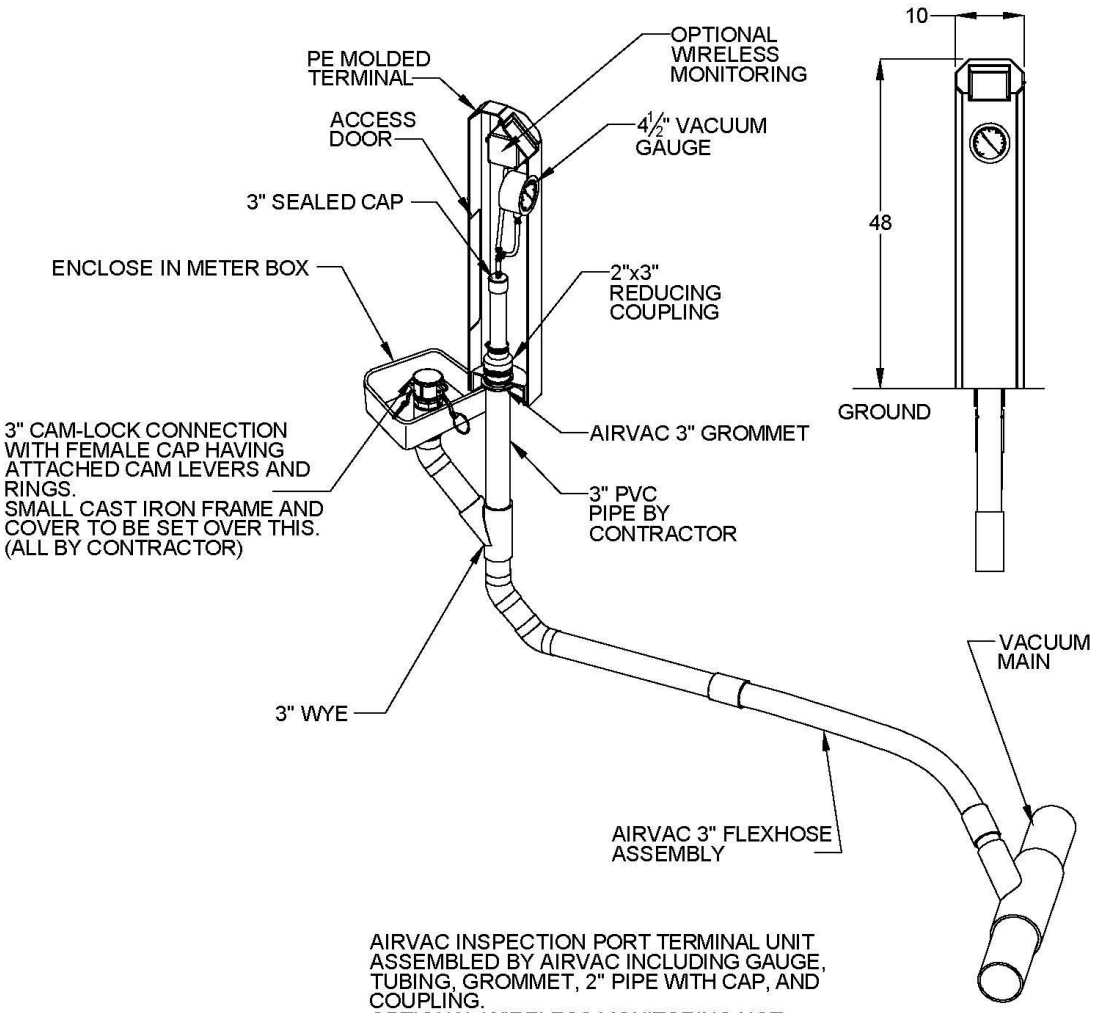
NOVEMBER 2010



SLOPE SCHEDULE			
PIPE DIA.	MINIMUM FALL BETWEEN LIFTS * USE GREATER VALUE OF (A) OR (B)		DISTANCE AT WHICH (B) GOVERNS
	(A)	(B)	
3"	0.20 FT	0.2% x DISTANCE	> 100 FT
4"	0.25 FT	0.2% x DISTANCE	> 125 FT
6"	0.25 FT	0.2% x DISTANCE	> 125 FT
8"	0.25 FT	0.2% x DISTANCE	> 125 FT
10"	0.25 FT	0.20% x DISTANCE	> 125 FT

* WHEN NOT BETWEEN LIFTS, USE 0.2% SLOPE

AIRVAC® VACUUM DETAIL	LIFT DETAIL AND SLOPE SCHEDULE N.T.S.	DETAIL VAC-24



AIRVAC INSPECTION PORT TERMINAL UNIT ASSEMBLED BY AIRVAC INCLUDING GAUGE, TUBING, GROMMET, 2" PIPE WITH CAP, AND COUPLING.
OPTIONAL WIRELESS MONITORING NOT INCLUDED UNLESS SPECIFIED AT ADDITIONAL COST.

INSPECTION PORT TERMINAL UNIT

AIRVAC® VACUUM DETAIL	INSPECTION PORT TERMINAL UNIT N.T.S.	DETAIL VAC-25

NOTE:

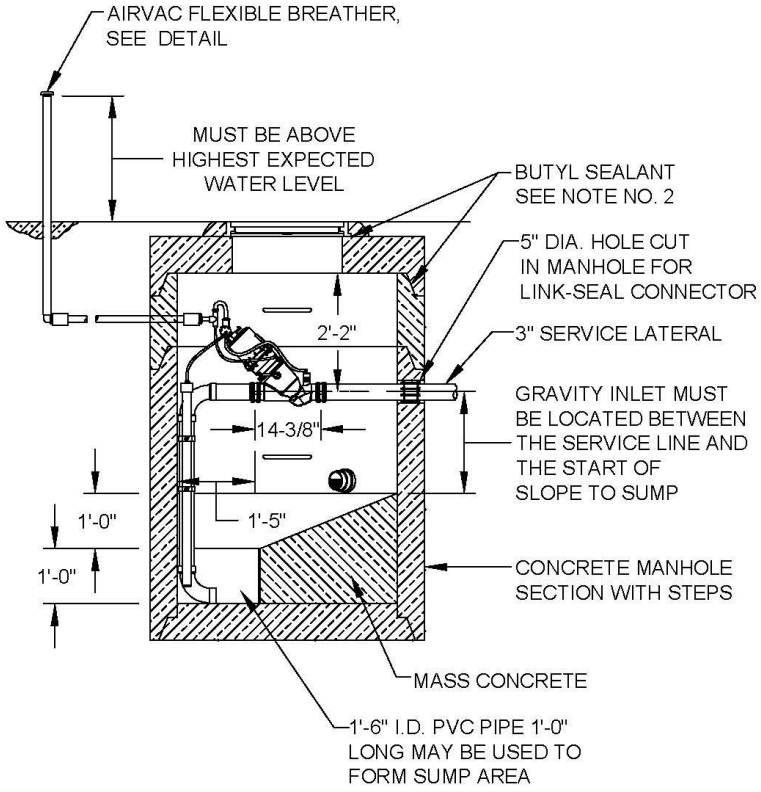
1. BREATHER DOME HEIGHT MUST BE ABOVE FLOOD LEVEL AND SHOULD BE PLACED NEXT TO A STATIONARY OBJECT.

2. BUFFER TANK UNIT MUST BE WATER TIGHT. SEAL ALL JOINTS WITH BUTYL SEALANT. TEST FOR LEAKS PER AIRVAC SPECIFICATIONS IN INSTALLATION MANUAL.

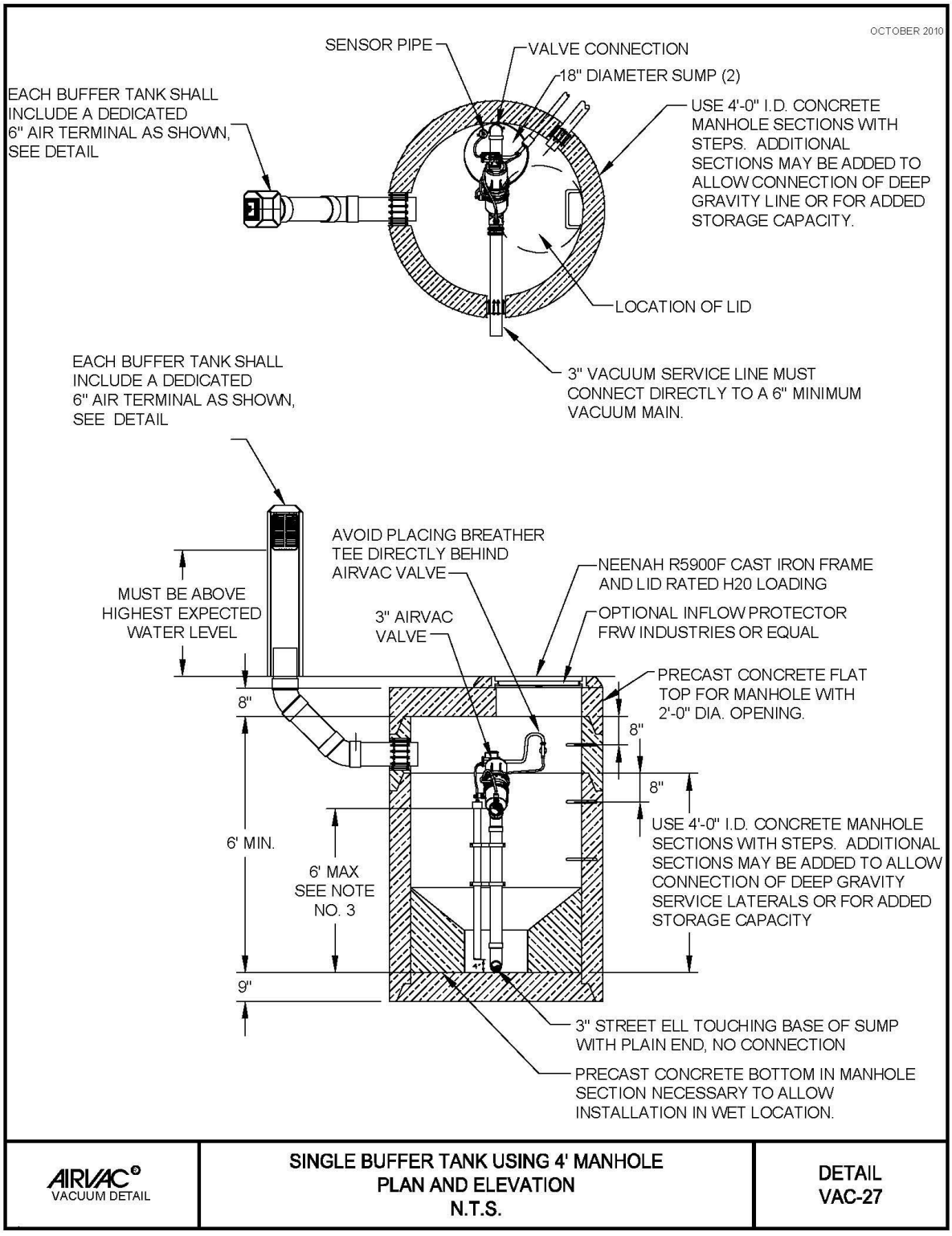
3. ANY LIFT EXCEEDING 6' MUST BE ADDED TO HEAD LOSSES ON VACUUM MAIN AND SERVICE LINE TO DETERMINE IF SUFFICIENT VACUUM HEAD IS AVAILABLE.

4. IF MANHOLE IS MORE THAN 5' DEEP A SERVICE PLATFORM MAY BE REQUIRED FOR VALVE MAINTENANCE.

5. SECURE 2" SENSOR PIPE AND 3" SUCTION PIPE TO BUFFER TANK SIDE WALL WITH STAINLESS STEEL UNISTRUT, SEE STANDARD DETAILS.



AIRVAC® VACUUM DETAIL	**SINGLE BUFFER TANK USING 4' MANHOLE ELEVATION AND NOTES N.T.S.**	**DETAIL VAC-26**



AIRVAC® VACUUM DETAIL	SINGLE BUFFER TANK USING 4' MANHOLE PLAN AND ELEVATION N.T.S.	DETAIL VAC-27

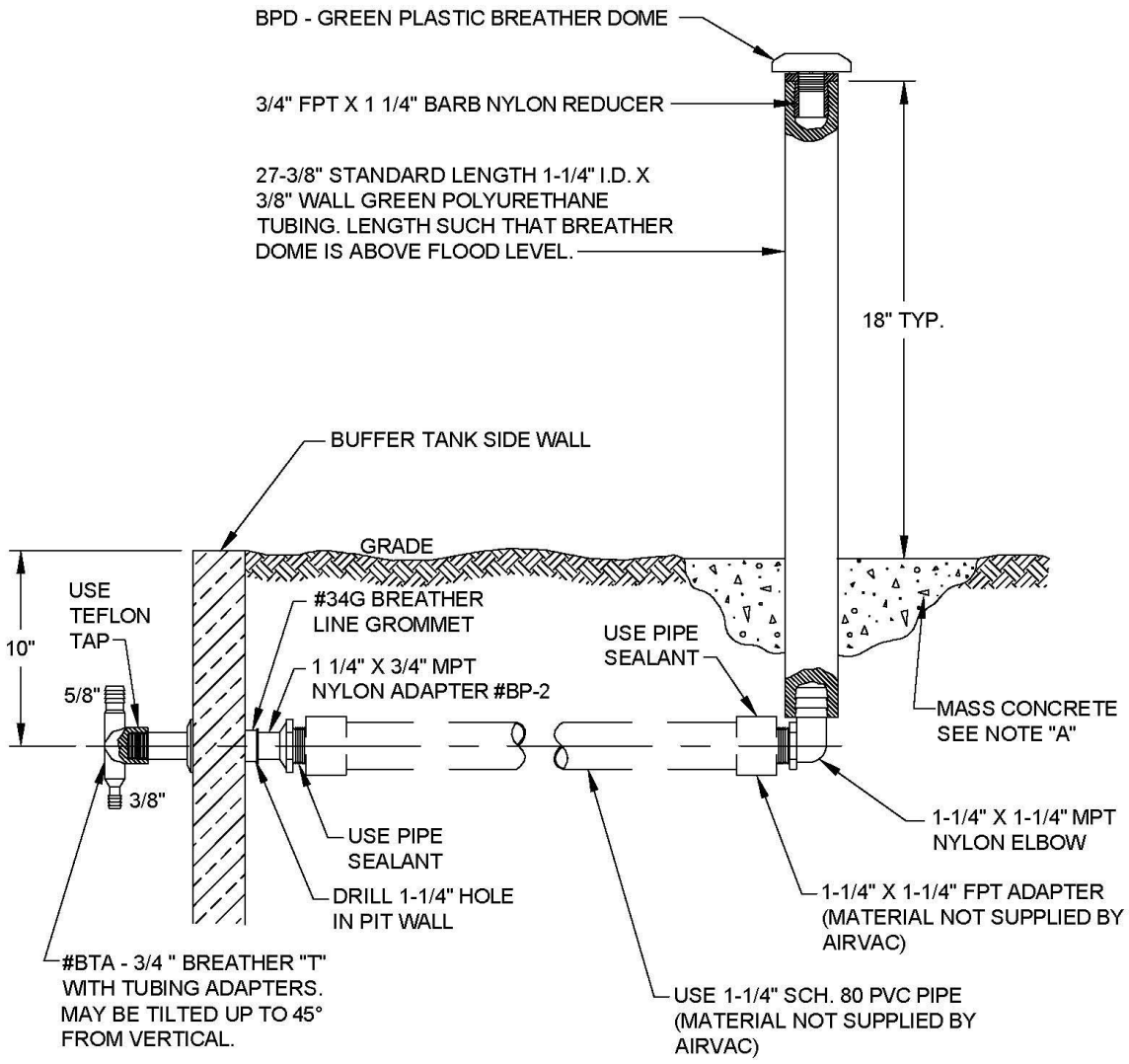
OCTOBER 2010

NOTE:

1. CAN BE PLACED NEXT TO A STATIONARY OBJECT, OUT OF TRAFFIC AREA OR NEXT TO A 4 X 4 WOOD POST IN PLACE OF CONCRETE

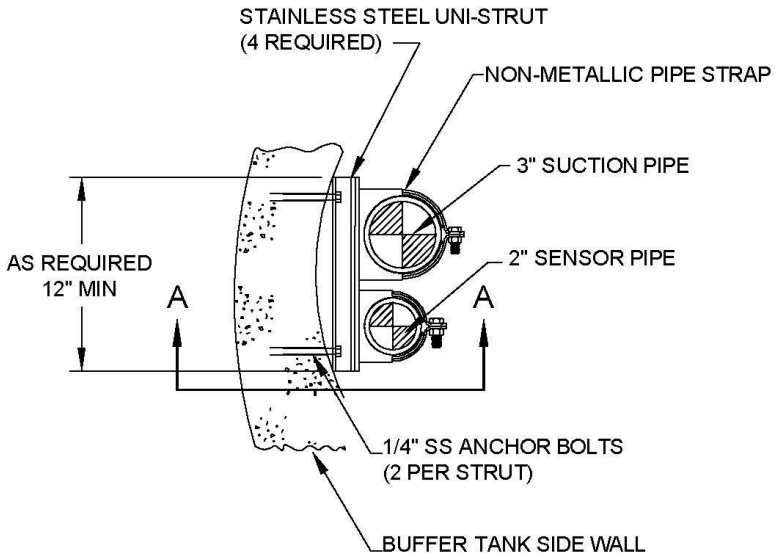
2. A BLADE TYPE CUTTER SUCH AS RIGID NO. 138 PLASTIC PIPE CUTTER IS RECOMMENDED (NOT SUPPLIED BY AIRVAC)

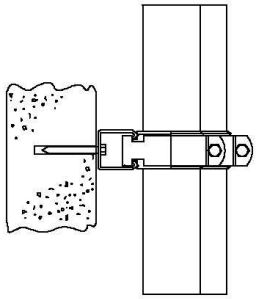
3. AVOID CONNECTING BREATER PIPING DIRECTLY BEHIND AIRVAC VALVE



AIRVAC® VACUUM DETAIL	FLEXIBLE BREATHER PIPE ASSEMBLY N.T.S.	DETAIL VAC-28

OCTOBER 2010

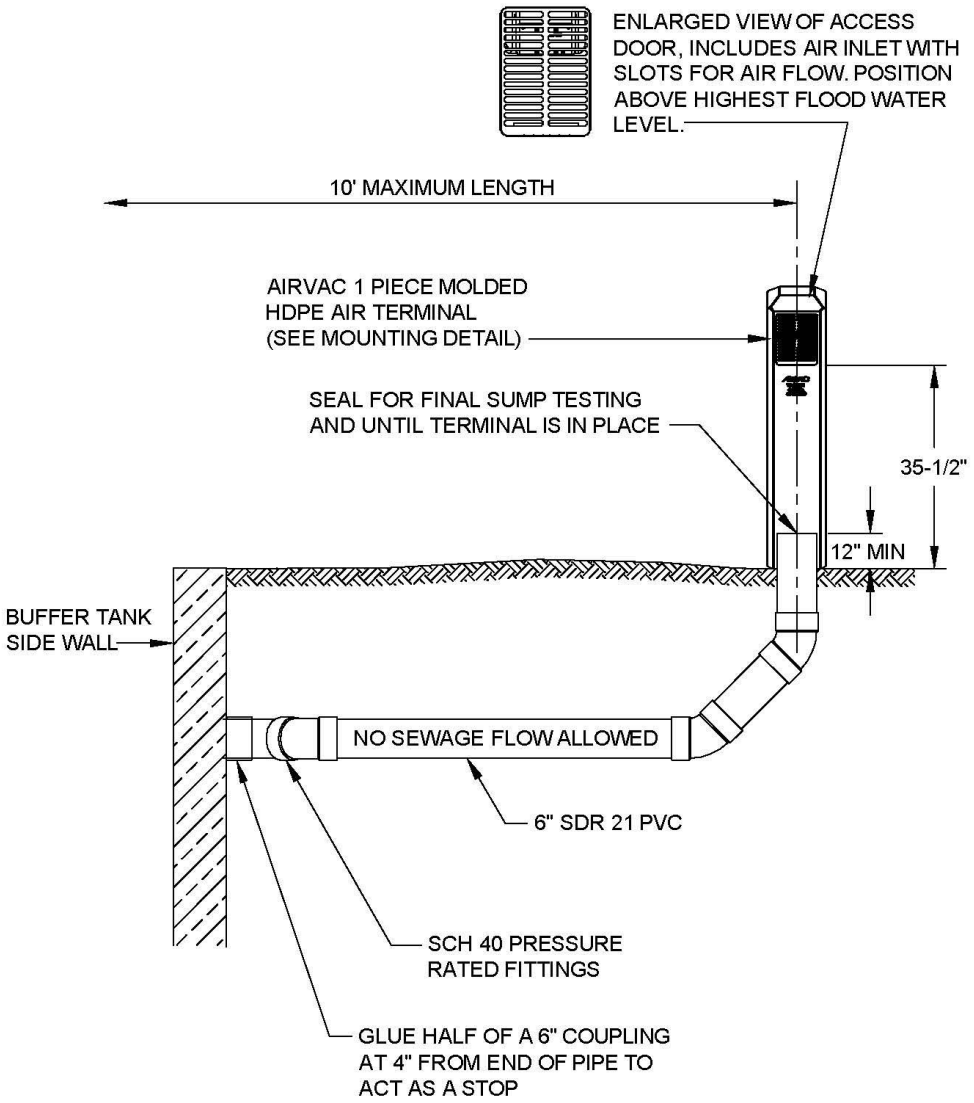




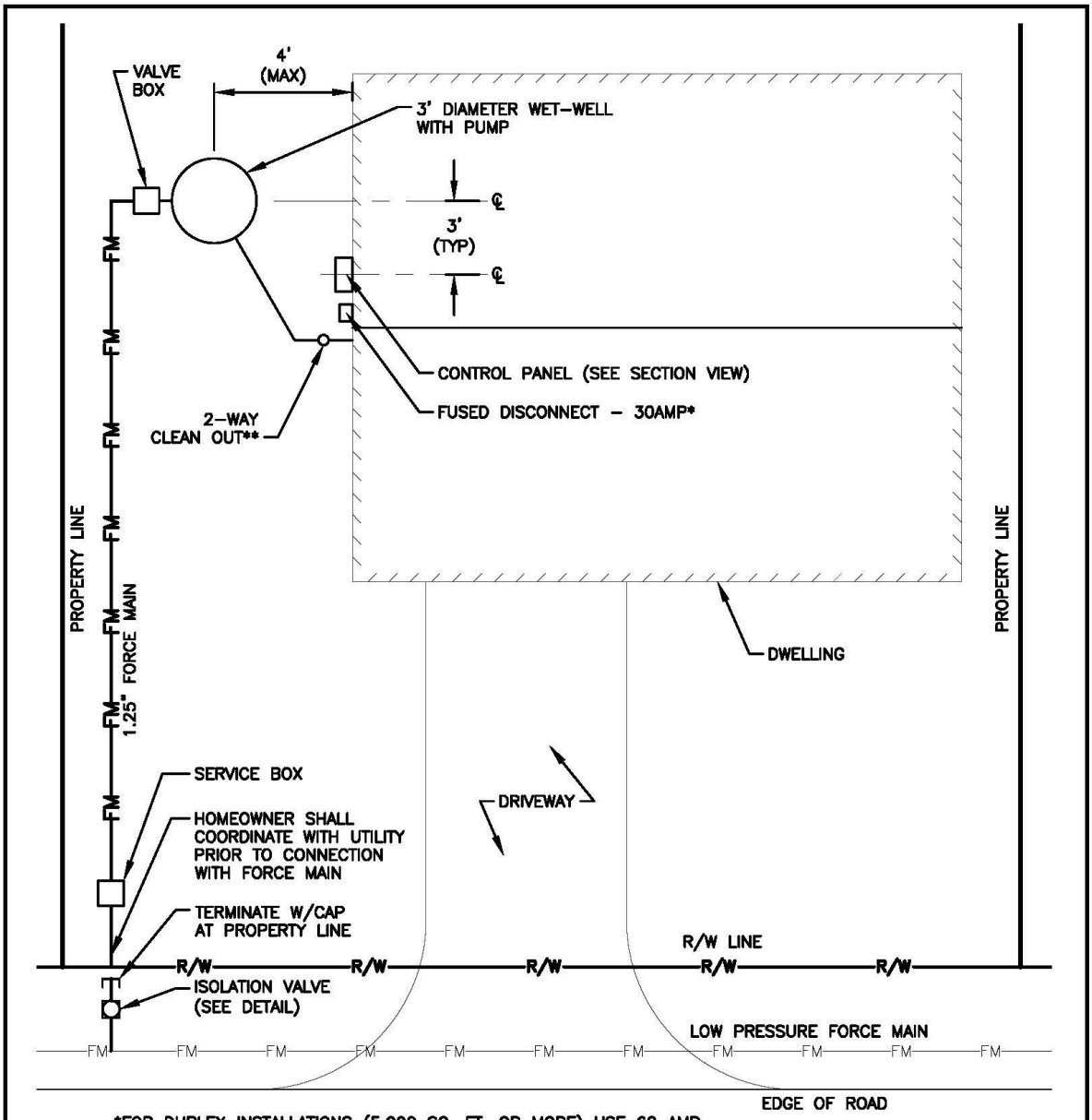
SECTION A-A

AIRVAC® VACUUM DETAIL	PIPE ANCHORING DETAIL N.T.S.	DETAIL VAC-29

OCTOBER 2010



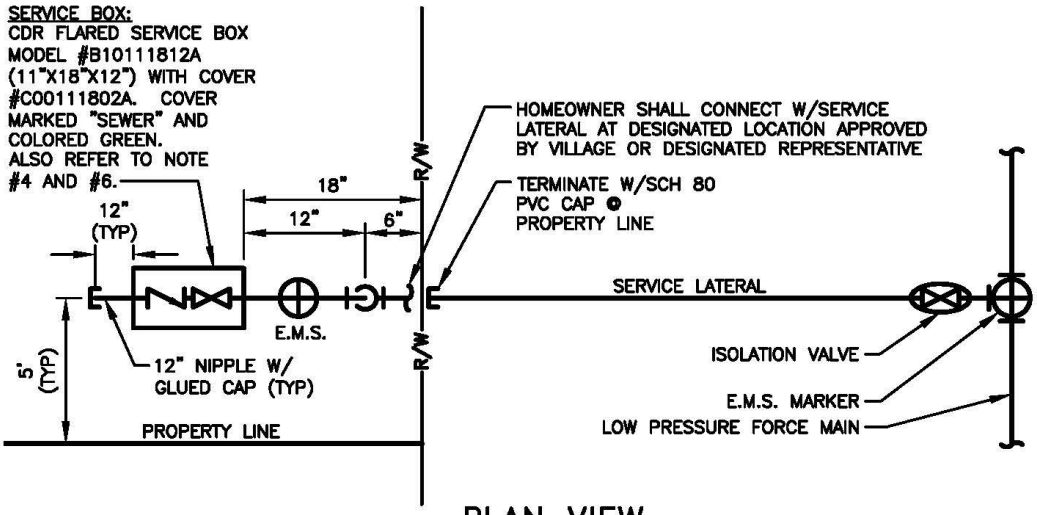
AIRVAC® VACUUM DETAIL	6" DEDICATED AIR TERMINAL FOR BUFFER TANK (MOLDED) N.T.S.	DETAIL VAC-30



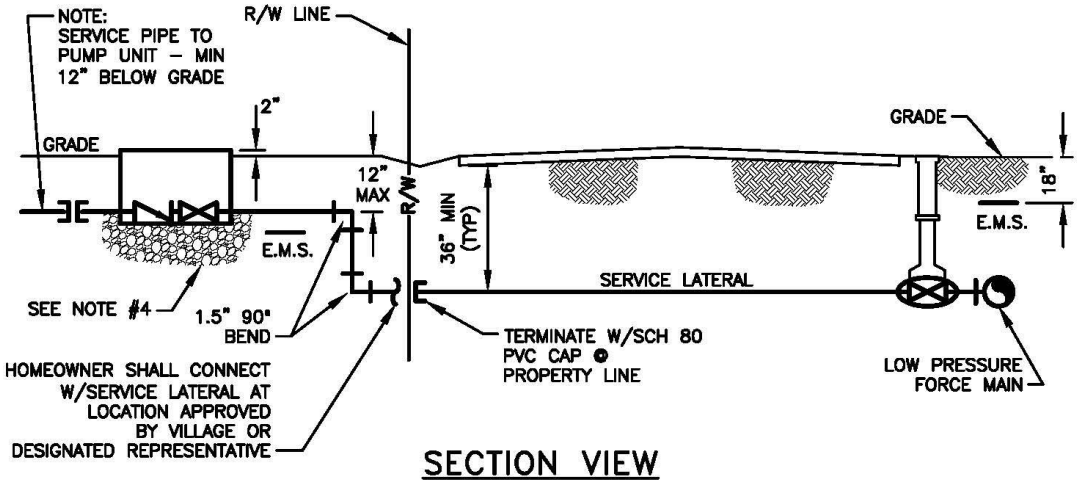
*FOR DUPLEX INSTALLATIONS (5,000 SQ. FT. OR MORE) USE 60 AMP FUSEABLE DISCONNECT.

**REPLACE EXISTING CLEANOUT IF NOT 2-WAY.

	TYPICAL RESIDENTIAL GRINDER SYSTEM LAYOUT (PLAN VIEW) N.T.S.	DETAIL LP-1 (FOR REFERENCE ONLY)



PLAN VIEW

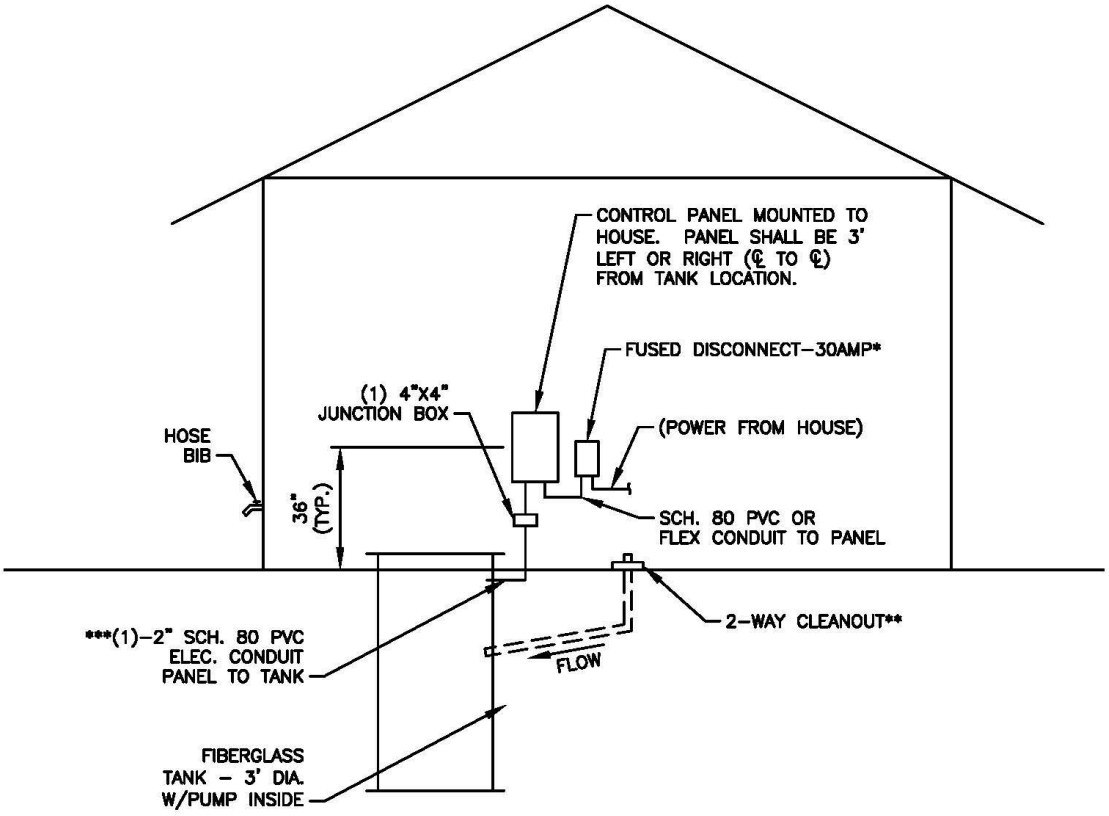


SECTION VIEW

NOTES:

1. ACTUAL LOCATIONS OF SERVICES SHALL BE DETERMINED IN FIELD BY RESIDENT ENGINEER DEPENDING UPON EXISTING CONDITIONS & LOCATIONS OF EXISTING SEPTIC TANK.
2. SEE PLAN SHEET FOR LOCATION OF SERVICES.
3. MIN 4" OF #57 ROCK BEDDING SHALL BE PLACED BELOW VALVE BOXES.
4. VALVES INSIDE SERVICE BOX SHALL BE SCH 80 1.5" PVC BALL VALVE, SPEARS MFG OR APPROVED EQUAL. CHECK VALVE SHALL BE 2" FLOWMATIC PVC BALL CHECK VALVE, (MODEL–208S) SLIP x SLIP WITH 2"x1.5" BUSHINGS.
5. EMS MARKER SHALL BE #1258 ELECTRONIC MARKER SYSTEM AS MFG BY 3M TEST AND MEASUREMENT SYSTEM.
6. SERVICE BOXES LOCATED IN PAVEMENT SHALL BE TRAFFIC RATED.

	TYPICAL RESIDENTIAL GRINDER SYSTEM LAYOUT (PLAN VIEW) N.T.S.	DETAIL LP-1A (FOR REFERENCE ONLY)

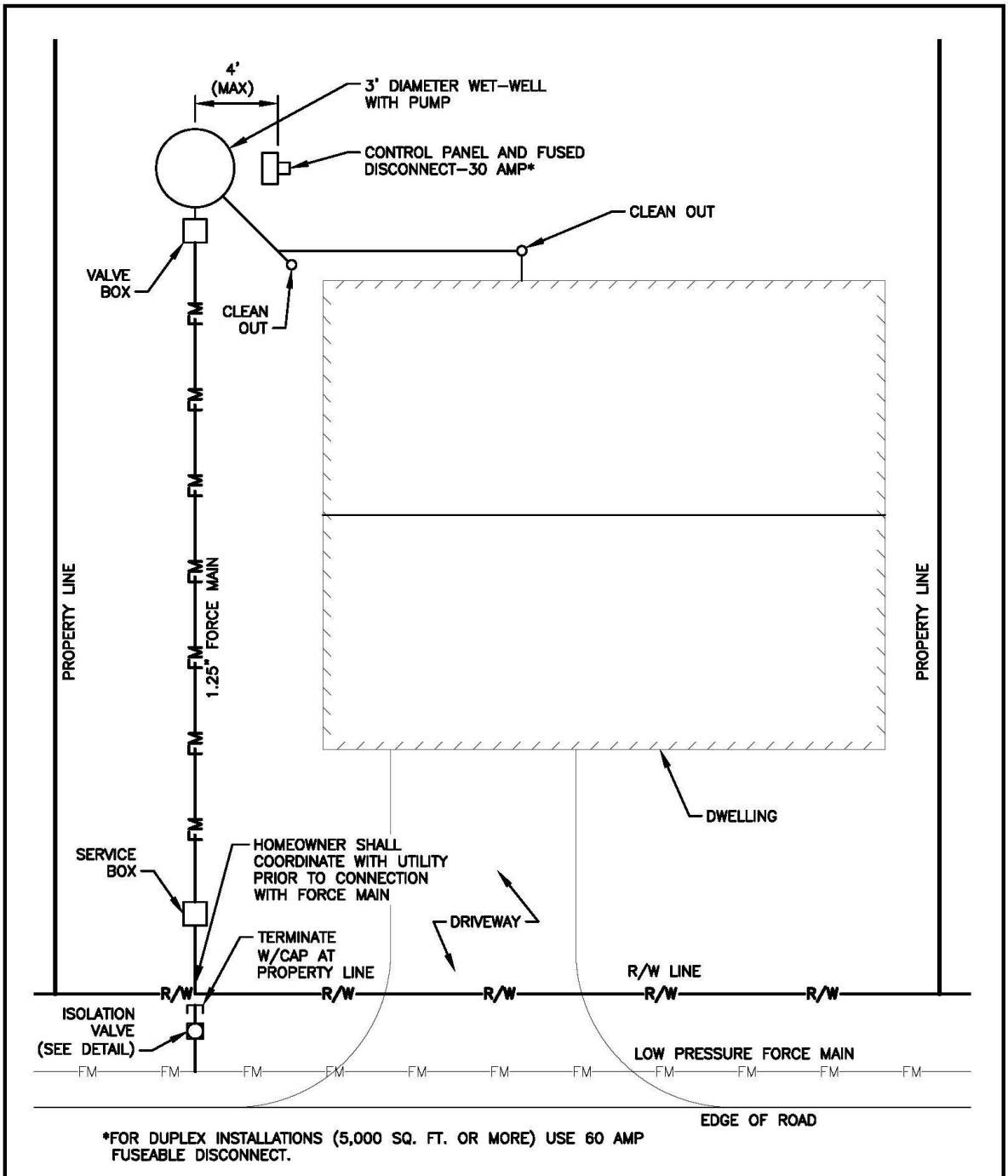


*FOR DUPLEX INSTALLATIONS (5,000 SQ. FT. OR MORE) USE 60 AMP FUSEABLE DISCONNECT.

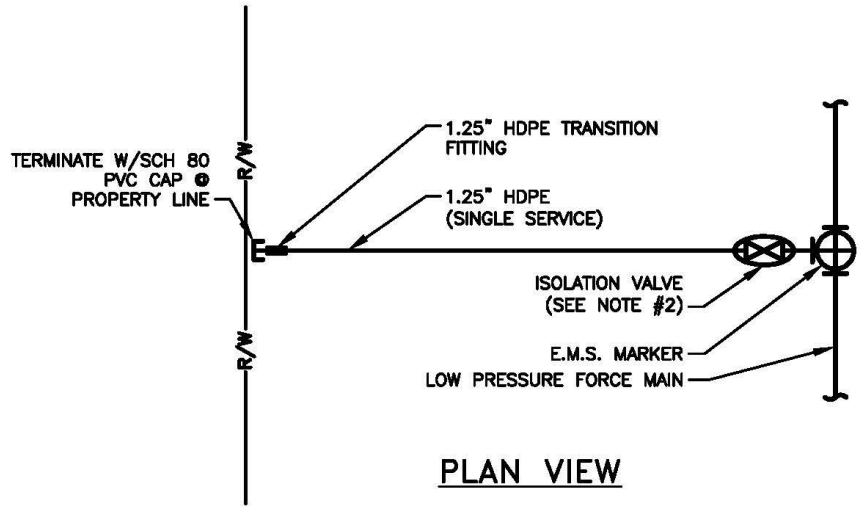
**REPLACE EXISTING CLEANOUT IF NOT 2–WAY.

***FOR DUPLEX STATIONS, USE TWO (2) – 2" SCH. 80 CONDUITS.

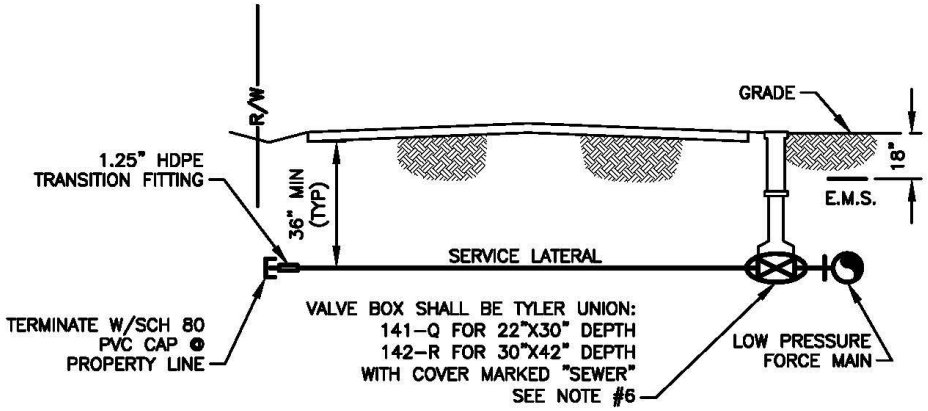
	TYPICAL RESIDENTIAL GRINDER SYSTEM LAYOUT (SECTION VIEW) N.T.S.	DETAIL LP-2 (FOR REFERENCE ONLY)



	ALTERNATE RESIDENTIAL GRINDER SYSTEM LAYOUT (PLAN VIEW) N.T.S.	DETAIL LP-3 (FOR REFERENCE ONLY)



PLAN VIEW

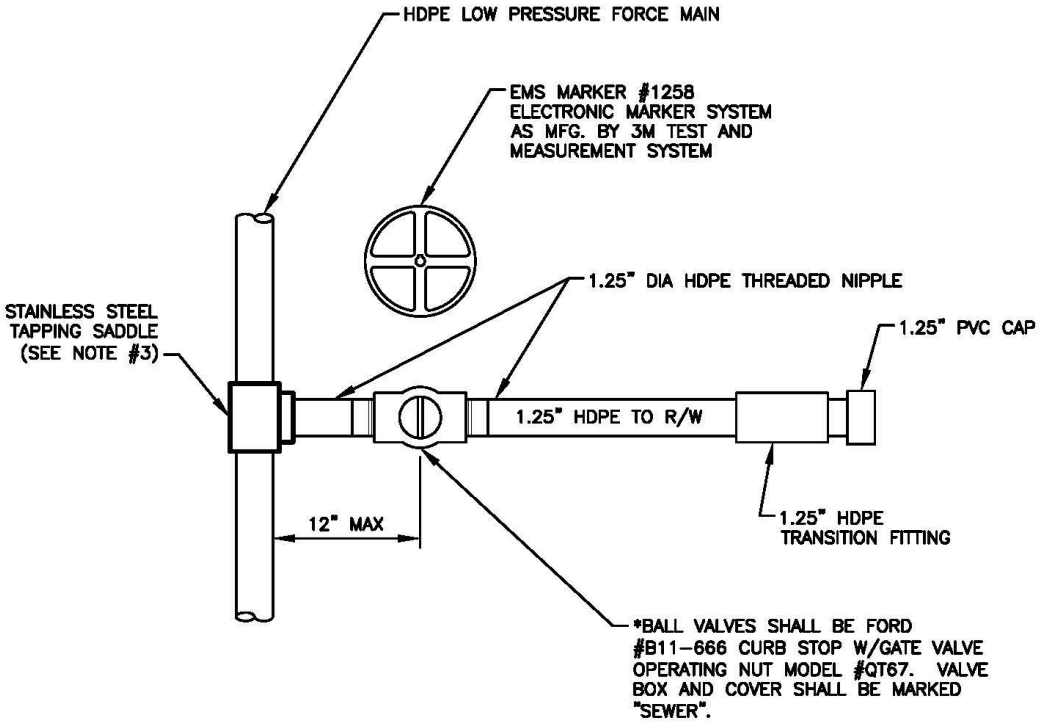


TYPICAL ROAD CROSSING SECTION VIEW

NOTES:

1. ACTUAL LOCATIONS OF SERVICES SHALL BE DETERMINED IN FIELD BY RESIDENT ENGINEER DEPENDING UPON EXISTING CONDITIONS & LOCATIONS OF EXISTING SEPTIC TANK.
2. IN R.O.W. ALL BALL VALVES SHALL BE FORD BRASS BALL VALVE CURB STOP #B11-666 FOR 1.25" W/FORD QT67 OPERATING NUT, USE BRASS NIPPLES EACH SIDE OF BRASS BALL VALVES.
3. SEE PLAN SHEET FOR LOCATION OF SERVICES.
4. MIN 4" OF #57 ROCK BEDDING SHALL BE PLACED BELOW VALVE BOXES.
5. WHERE SERVICES ARE BORED UNDER A ROADWAY, A VALVE BOX SHALL BE CONSTRUCTED WITH THE ISOLATION VALVE (SEE DETAILS ABOVE).
6. EMS MARKER SHALL BE #1258 ELECTRONIC MARKER SYSTEM AS MFG BY 3M TEST AND MEASUREMENT SYSTEM.

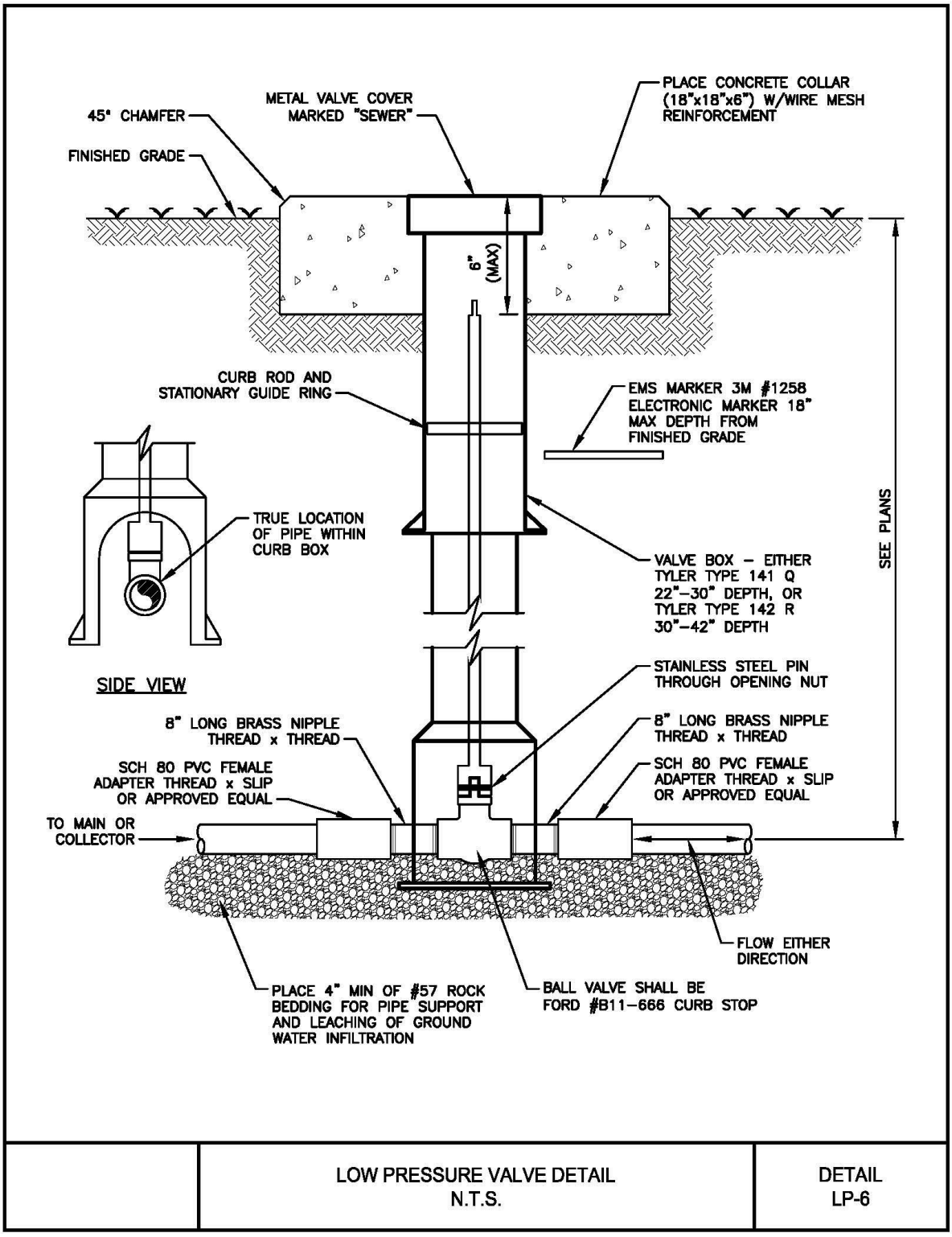
	TYPICAL SINGLE SERVICE SCHEMATIC N.T.S.	DETAIL LP-4



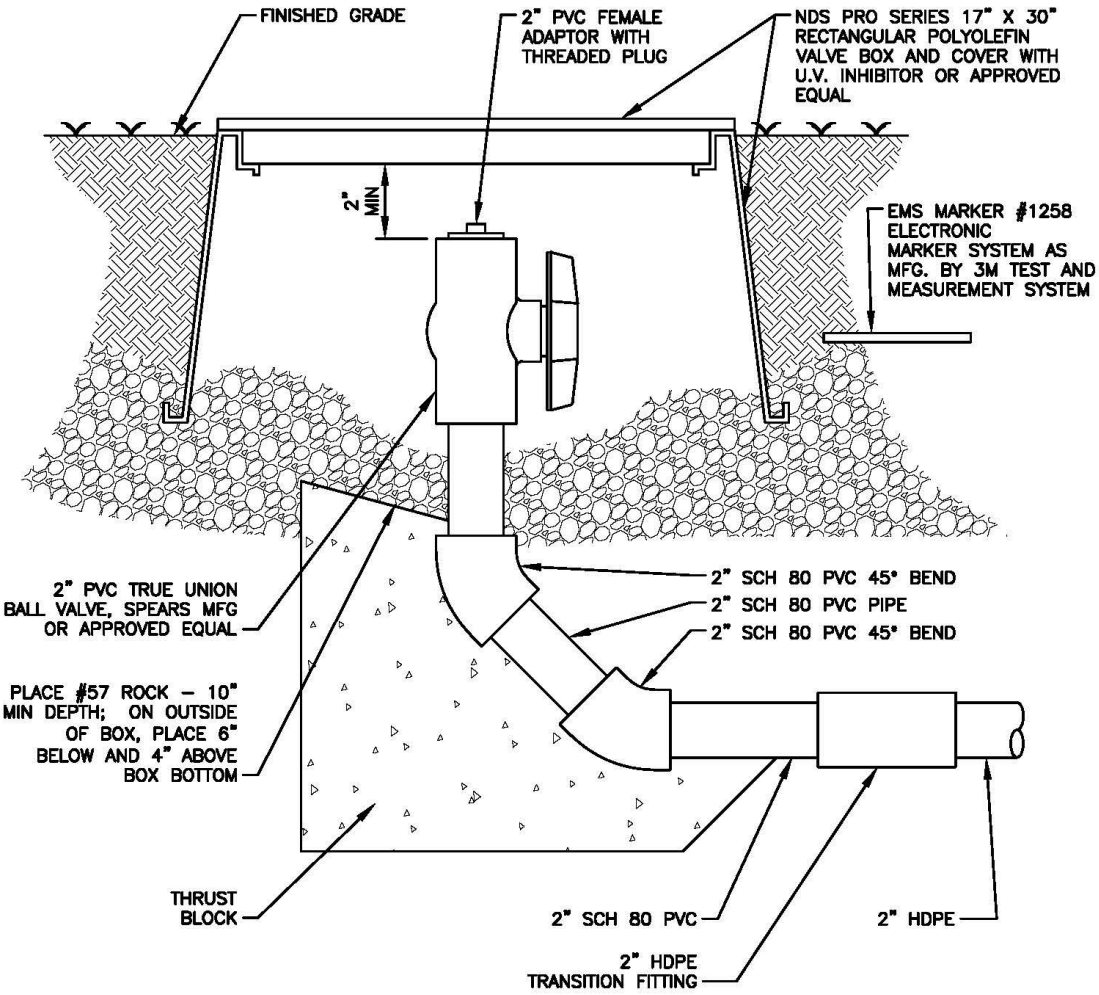
NOTES:

1. EMS SHALL BE INSTALLED ON STREET SIDE OF TEE AND VALVE.
2. VALVE BOX SHALL BE TYLER 142-R FOR 30"-42" DEPTH WITH CURB ROD TO WITHIN 6" OF FINISHED GRADE. (SEE DETAIL #LP-6)
3. TAPPING SADDLE SHALL BE ROMAC MODEL 306 FOR CAST IRON, DIP, AND PVC PIPE. USE MODEL 306-H FOR HDPE PIPE.

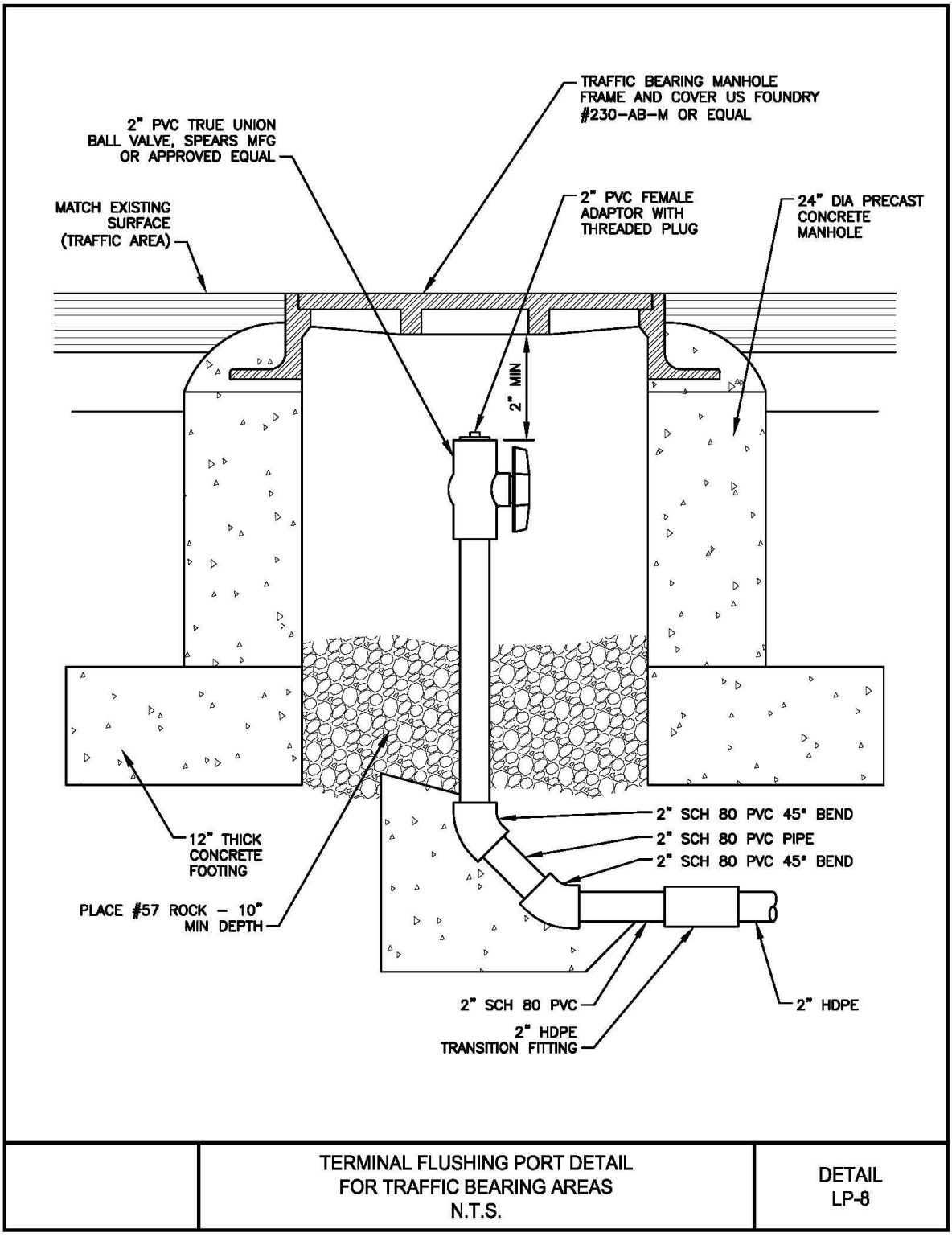
	LOW PRESSURE TIE-IN DETAIL N.T.S.	DETAIL LP-5



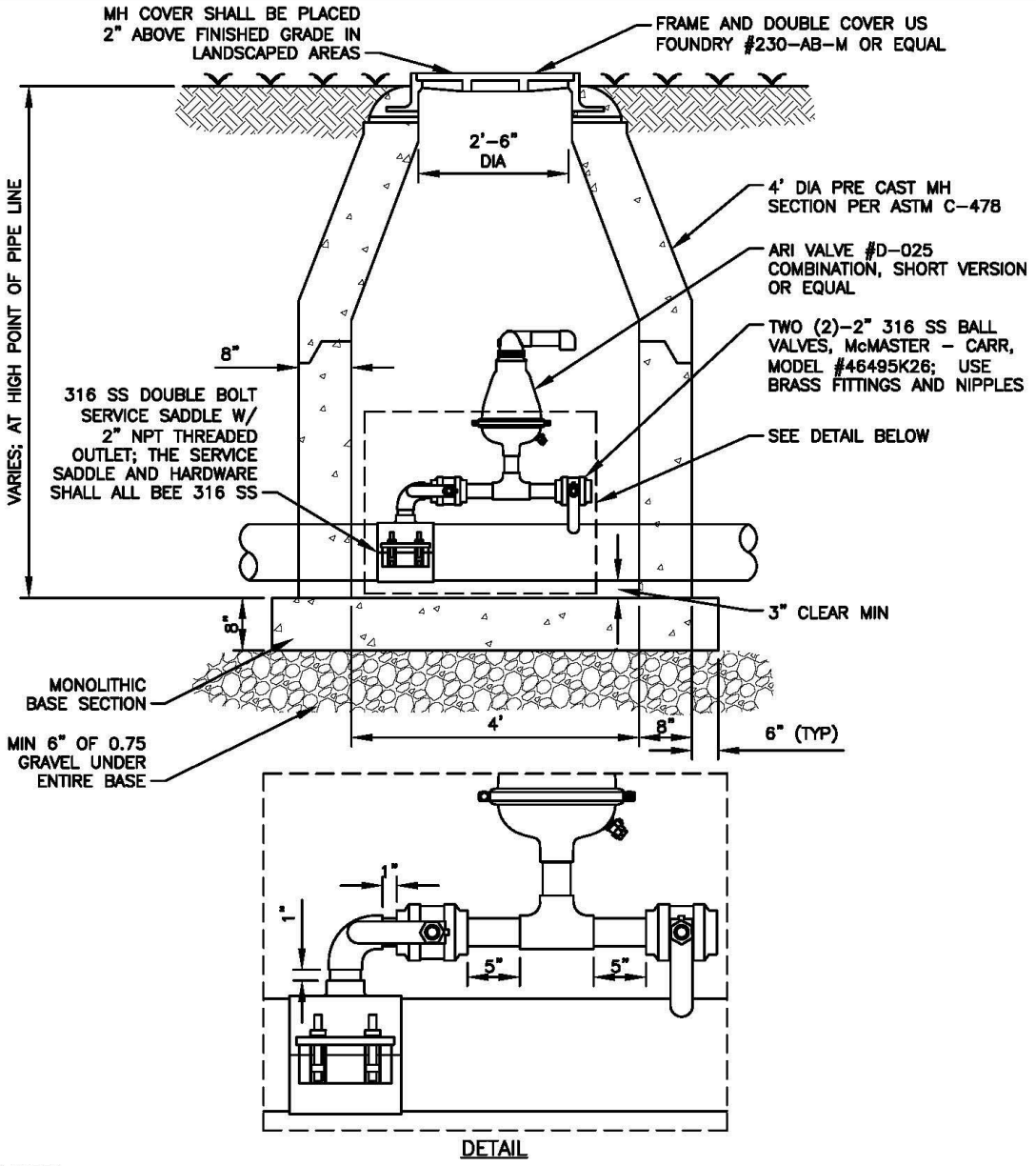
	LOW PRESSURE VALVE DETAIL N.T.S.	DETAIL LP-6



	TERMINAL FLUSHING PORT DETAIL FOR NON-TRAFFIC BEARING AREAS N.T.S.	DETAIL LP-7



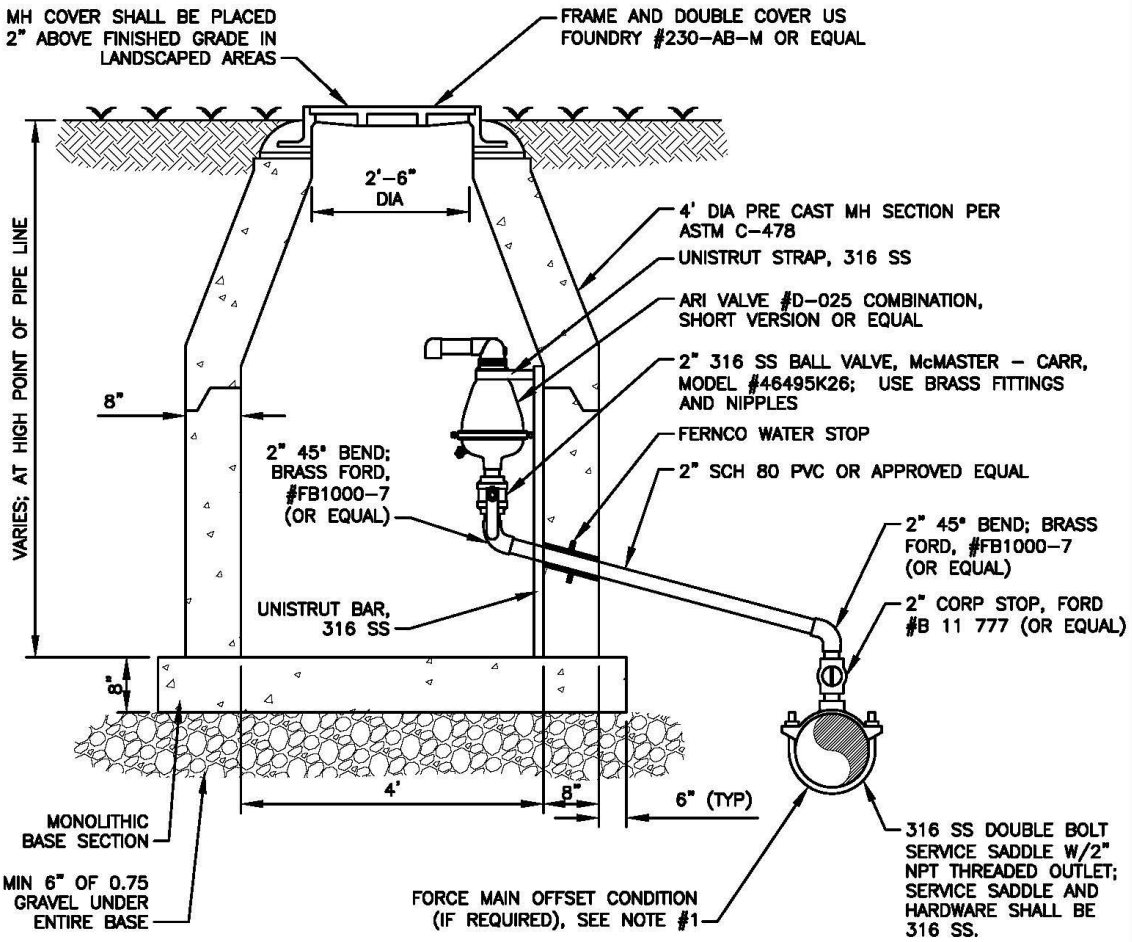
	TERMINAL FLUSHING PORT DETAIL FOR TRAFFIC BEARING AREAS N.T.S.	DETAIL LP-8



NOTES:

1. IF OFFSET CONDITION IS UTILIZED, AIR VALVE IN MANHOLE STRUCTURE SHALL BE ADEQUATELY SUPPORTED ON A 4" THICK CONCRETE PAD ON M.H. FLOOR.
2. ARV SHALL BE CENTERED UNDER MANHOLE OPENING.
3. TOP OF AIR RELEASE VALVES SHALL BE NO LESS THAN 12" FROM INSIDE MANHOLE RIM ELEVATION AND NO GREATER THAN 24".

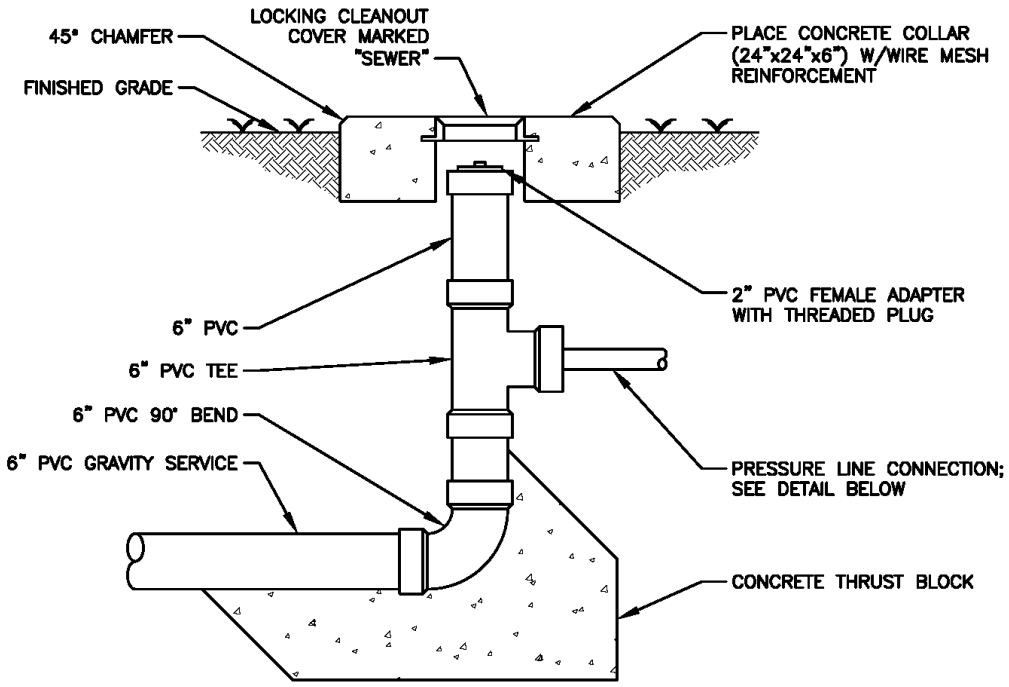
	AUTOMATIC AIR RELEASE VALVE DETAIL N.T.S.	DETAIL LP-9

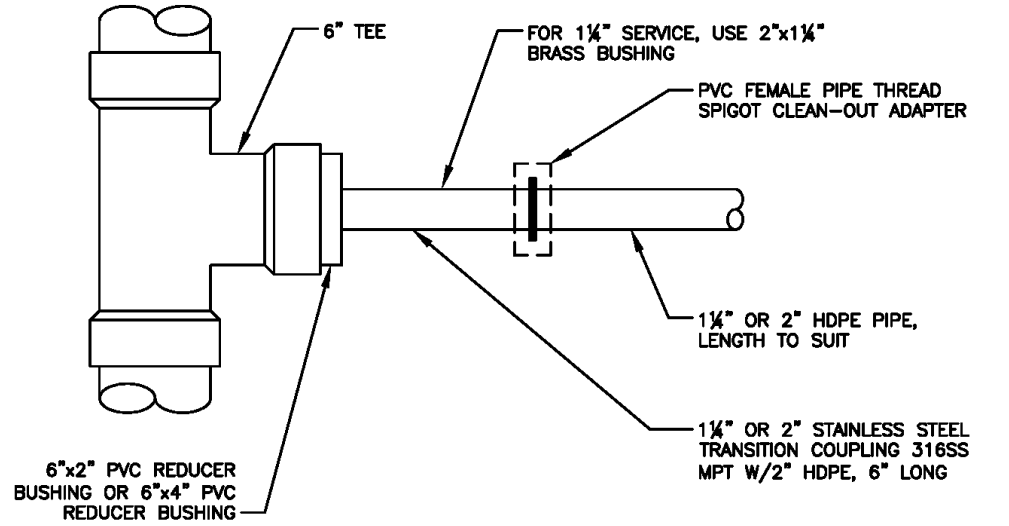


NOTES:

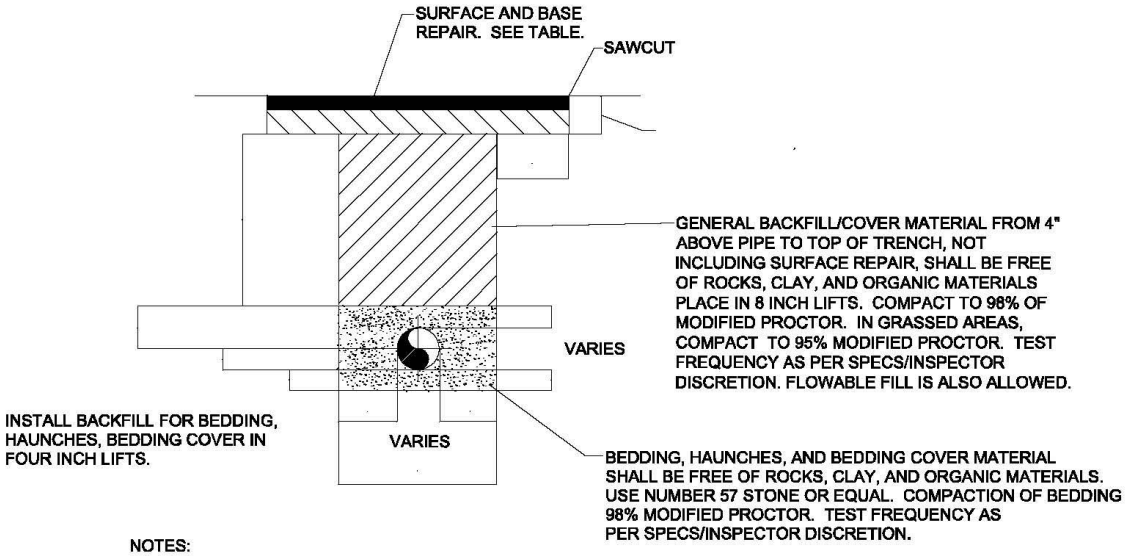
1. FOR OFFSET CONDITION, AIR VALVE IN MANHOLE STRUCTURE SHALL BE ADEQUATELY SUPPORTED ON 316 SS UNISTRUT BAR ANCHORED TO THE CONCRETE WALLS OF MANHOLE AND/OR ANCHORED TO THE CONCRETE ON MANHOLE FLOOR.
2. UNISTRUT BARS SHALL BE 316 SS OR NON CORROSIVE TYPE, STRAPS ANCHORING ARV TO UNISTRUT SHALL BE OF SAME TYPE MATERIAL.

	AUTOMATIC AIR RELEASE VALVE OFFSET FORCE MAIN CONDITION DETAIL N.T.S.	DETAIL LP-10





	LOW PRESSURE CONNECTION WITH GRAVITY SEWER DETAILS N.T.S.	DETAIL LP-11



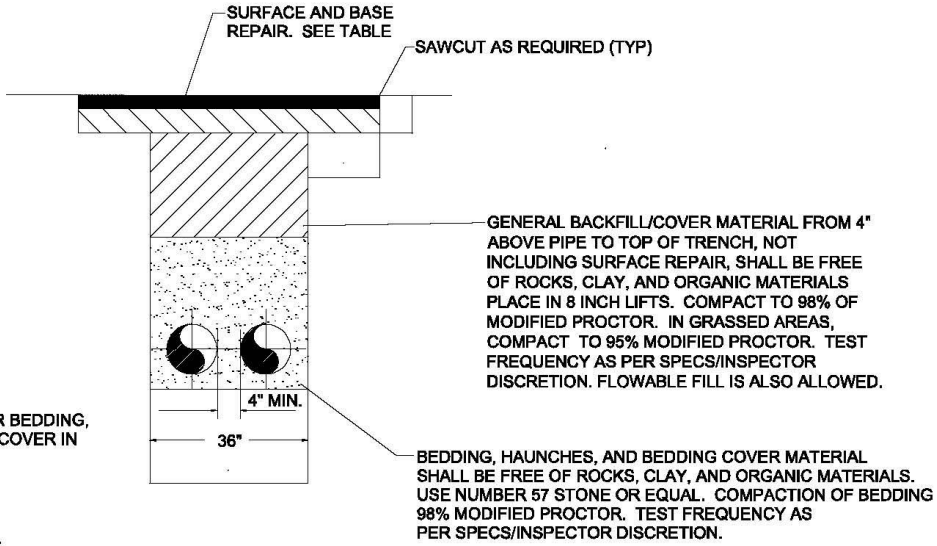
NOTES:

1. CONTRACTOR SHALL FOLLOW THE BEDDING, HAUNCHES AND BEDDING COVER OF THIS DETAIL FOR ALL PIPELINE INSTALLATION OUTSIDE FDOT JURISDICTION.
2. FOR ALL WORK INSTALLED IN FDOT JURISDICTION FOLLOW THE FDOT DETAIL CRITERIA FOR THE TRENCH AREA ABOVE BEDDING COVER.
3. TEMPORARY ASPHALT SHALL BE APPLIED TO ALL TRENCHES NOT REPAIRED WITHIN 30 DAYS AFTER PIPING INSTALLATION WHERE THE FLOW ABLE FILL OPTION IS NOT USED.
4. AT THE CONTRACTORS OPTION, FLOWABLE FILL MAY BE INSTALLED FLUSH WITH EXISTING PAVEMENT AS A TEMPORARY MEASURE. FINAL RESTORATION WILL REQUIRES MILLING OF THE FLOWABLE FILL AND INSTALLATION OF 1 1/2" OF ASPHALT.

SURFACE REPAIR REQUIREMENTS

TYPE	PROCEDURE
FDOT ROADWAY/INTERSECTING STREETS IN FDOT RIGHT-OF-WAY	FOLLOW FDOT CRITERIA
CONCRETE DRIVES, ETC.	6" - 3000 psi CONCRETE; 8" LIMEROCK BASE OR FLOWABLE FILL
SIDEWALKS	4" - 3000 psi CONCRETE; 8" LIMEROCK BASE OR FLOWABLE FILL
SHELL DRIVES, ETC.	6" - SHELL; 8" LIMEROCK BASE OR FLOWABLE FILL
NON-FDOT ASPHALT ROADWAY/DRIVES	MINIMUM 1-1/2" S-1; 8" LIMEROCK BASE OR FLOWABLE FILL
OTHER/NON PAVED/OPEN	RESTORE TO CONDITIONS THAT EXISTED PRIOR TO START OF CONSTRUCTION.
HERITAGE TRAIL	

	TRENCHING/BEDDING DETAIL N.T.S.	STANDARD DETAIL 1



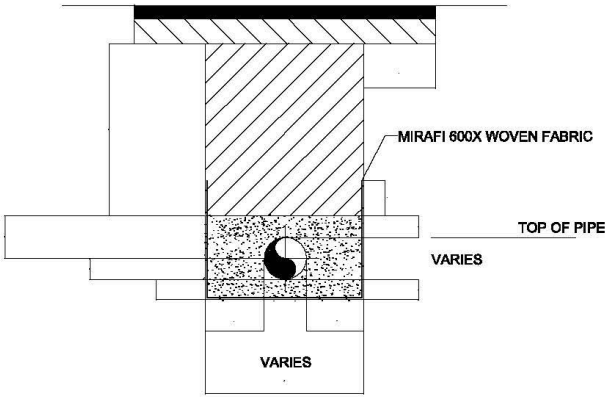
NOTES:

1. CONTRACTOR SHALL FOLLOW THE BEDDING, HAUNCHES AND BEDDING COVER OF THIS DETAIL FOR ALL PIPELINE INSTALLATION OUTSIDE FDOT JURISDICTION.
2. FOR ALL WORK INSTALLED IN FDOT JURISDICTION FOLLOW THE FDOT DETAIL CRITERIA FOR THE TRENCH AREA ABOVE BEDDING COVER.
3. TEMPORARY ASPHALT SHALL BE APPLIED TO ALL TRENCHES NOT REPAIRED WITHIN 30 DAYS AFTER PIPING INSTALLATION WHERE THE FLOW ABLE FILL OPTION IS NOT USED.
4. AT THE CONTRACTORS OPTION, FLOWABLE FILL MAY BE INSTALLED FLUSH WITH EXISTING PAVEMENT AS A TEMPORARY MEASURE. FINAL RESTORATION WILL REQUIRES MILLING OF THE FLOWABLE FILL AND INSTALLATION OF 1 1/2" OF ASPHALT.

SURFACE REPAIR REQUIREMENTS

TYPE	PROCEDURE
FDOT ROADWAY/INTERSECTING STREETS IN FDOT RIGHT-OF-WAY	FOLLOW FDOT CRITERIA
CONCRETE DRIVES, ETC.	6" - 3000 psi CONCRETE; 8" LIMEROCK BASE OR FLOWABLE FILL
SIDEWALKS	4" - 3000 psi CONCRETE; 8" LIMEROCK BASE OR FLOWABLE FILL
SHELL DRIVES, ETC.	6" - SHELL; 8" LIMEROCK BASE OR FLOWABLE FILL
NON-FDOT ASPHALT ROADWAY/DRIVES	MINIMUM 1-1/2" S-1; 8" LIMEROCK BASE OR FLOWABLE FILL
OTHER/NON PAVED/OPEN	RESTORE TO CONDITIONS THAT EXISTED PRIOR TO START OF CONSTRUCTION.
HERITAGE TRAIL	

	TRENCHING/BEDDING DOUBLE PIPE DETAIL N.T.S.	STANDARD DETAIL 2



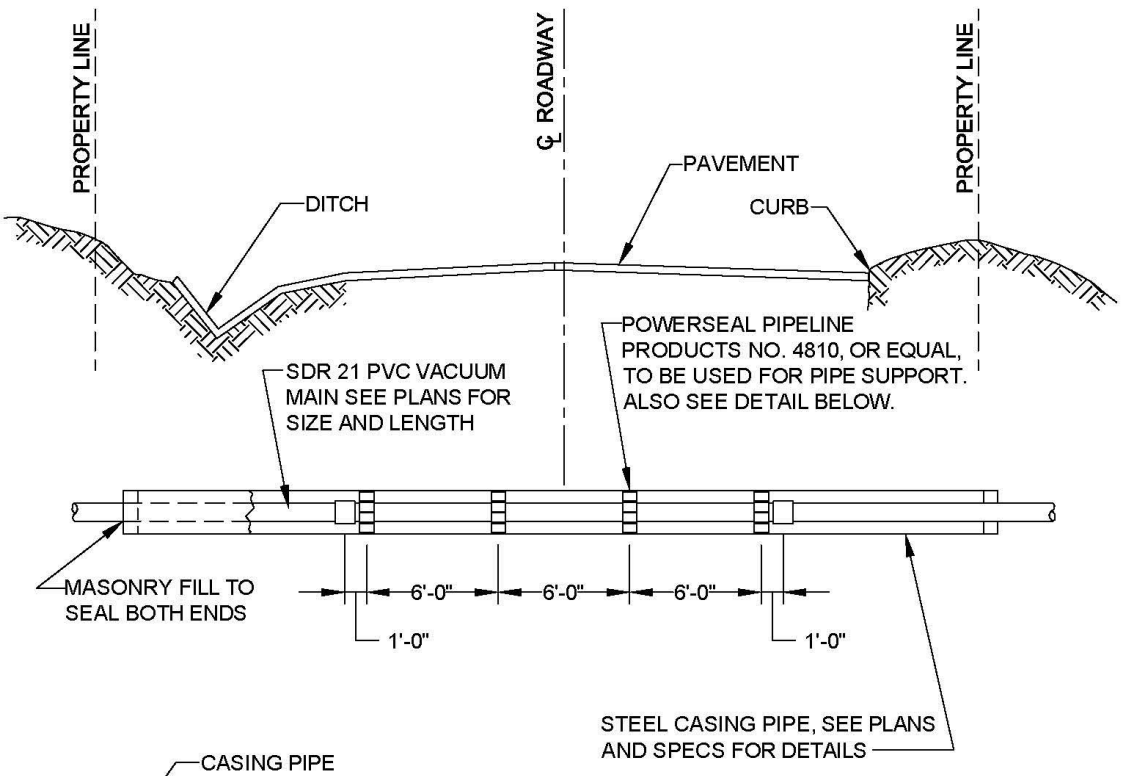
FILTER FABRIC PLACEMENT OVER
UNSUITABLE SOILS

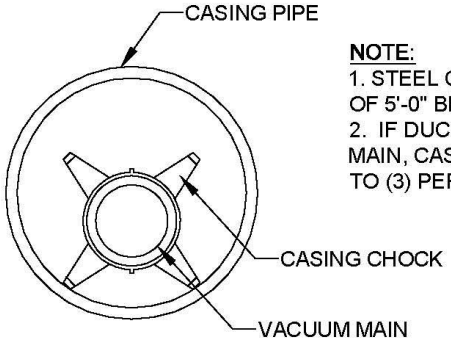
SEE ALSO TRENCH DETAILS FOR ADDITIONAL INFORMATION. ALL ITEMS ARE NOT SHOWN FOR CLARITY.

NOTE: FABRIC MUST EXTEND A MINIMUM OF 12" OVER THE TOP OF THE PIPE OR 12" ABOVE THE UNSTABLE SOILS INTERFACE.

	FILTER FABRIC PLACEMENT DETAIL N.T.S.	STANDARD DETAIL 3

NOVEMBER 2010

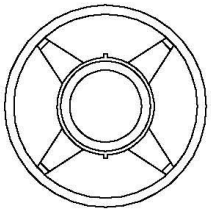




DETAIL
N.T.S.
(STANDARD CONFIG)

NOTE:
1. STEEL CASING TO EXTEND A MINIMUM OF 5'-0" BEYOND THE EDGE OF PAVEMENT.
2. IF DUCTILE PIPE IS USED AS VACUUM MAIN, CASING CHOCKS MAY BE REDUCED TO (3) PER LENGTH OF PIPE.

POWERSEAL PIPELINE PRODUCTS NO. 4810, OR EQUAL, TO BE USED FOR PIPE SUPPORT



DETAIL
N.T.S.
(CENTERED CONFIG)

	TYPICAL JACK AND BORE N.T.S.	STANDARD DETAIL 4

PIPE RESTRAINT FOR PVC PIPE (C-900/C-905 DR 18)
MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING

PIPE SIZE - INCHES

FITTING TYPE	4	6	8	10	12	14	16	18	20	24
VERT. UP OR HORIZ										
11-1/4 BEND	1	2	2	3	3	4	4	4	5	5
22-1/2 BEND	2	3	4	5	6	7	8	9	9	11
45 BEND	5	7	9	11	13	15	16	18	20	22
90 BEND	12	18	22	27	31	36	40	43	47	54
VERTICAL DOWN										
11-1/4 BEND	3	5	6	8	9	10	11	12	14	16
22-1/2 BEND	7	10	13	15	18	20	23	25	27	32
45 BEND	14	20	26	32	37	42	47	52	57	66
90 BEND	35	49	64	77	90	102	115	127	138	160
BRANCH OF TEE	-10	2	15	27	39	56	62	74	85	106
DEAD END	35	49	64	77	90	102	115	127	138	160
REDUCERS										
SIZE	6X4	8X4	8X6	10X6	10X8	12X6	12X8	12X10	14X6	14X8
RESTR.LENGTH	26	46	27	48	26	67	48	27	84	68
SIZE	16X6	16X8	16X12	18X8	18X12	18X16	20X12	20X16	24X12	24X16
REST.LENGTH	100	86	49	102	70	26	89	49	123	90

PIPE RESTRAINT FOR D.I. PIPE
MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING

PIPE SIZE - INCHES

FITTING TYPE	4	6	8	10	12	14	16	18	20	24	30	36
VERT. UP OR HORIZ												
11-1/4 BEND	1	2	2	2	3	3	4	4	4	5	6	7
22-1/2 BEND	2	3	4	5	6	7	7	8	9	10	12	14
45 BEND	5	7	9	10	12	14	15	17	18	21	25	28
90 BEND	12	16	21	25	29	33	37	41	44	51	60	68
VERTICAL DOWN												
11-1/4 BEND	3	4	5	6	7	8	9	11	11	13	16	18
22-1/2 BEND	6	8	11	13	15	17	19	21	23	27	32	37
45 BEND	12	17	22	27	31	36	40	44	48	56	67	78
90 BEND	29	41	53	64	75	86	96	107	116	136	162	187
BRANCH OF TEE	-8	2	13	22	33	43	52	62	71	90	114	138
DEAD END	29	41	53	64	75	86	96	107	116	136	162	187
REDUCERS												
SIZE	6X4	8X4	8X6	10X6	10X8	12X6	12X8	12X10	14X6	14X8	16X6	16X8
RESTR.LENGTH	21	39	22	40	22	56	41	22	71	57	84	72
SIZE	16X12	18X12	18X16	20X12	20X16	24X12	24X16	30X18	30X20	30X24	36X20	36X24
REST.LENGTH	42	59	22	75	42	104	76	105	105	90	144	132

NOTES

1. INCREASE RESTRAINED LENGTH WHEN TEST PRESSURES EXCEED 150 PSI
2. RESTRAINED LENGTH BASED ON USING DUCTILE IRON FITTINGS.
3. RESTRAINED LENGTHS SHOWN ARE BASED ON LAYING CONDITON 4, AND MINIMUM COVER OF 3 FT.
4. RESTRAINED LENGTH BASED ON GOOD SAND SOILS (SW, SP), INT. FRICTION ANGLE = 36, DENSITY = 100 PCF PIPE TO SOIL FRICTION RATIO OF 0.7 (PVC), 0.8 (DI), PIPE TO SOIL COHESION RATIO OF 0.0 (PVC) AND 0.0 (DI) ADJUST RESTRAINED LENGTHS FOR DIFFERENT SOIL TYPES.
5. INCREASE DIP RESTRAINED LENGTH WHEN USING POLYETHYLENE ENCASEMENT.
6. TEE RESTRAINT SHOWN IS FOR NON-REDUCING TEES. FOR REDUCING TEES, THE RESTRAINED LENGTH OF THE BRANCH SHALL BE EITHER THE LENGTH BASED ON THE DIAMETER OF THE RUN OF THE TEE OR THE LENGTH REQUIRED FOR A REDUCER FITTING, WHICHEVER IS GREATER.
7. AT ALL TEES, THE TOTAL LENGTH BETWEEN THE FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A MIN. TOTAL DISTANCE OF 30 FT. SEE ABOVE TABLE FOR RESTRAINT LENGTH ON TEE BRANCH LINE.
8. ALL PROPOSED REVISIONS TO THE ABOVE SHALL BE APPROVED BY THE ENGINEER.
9. THE SAFETY FACTOR UTILIZED FOR THE ABOVE TABLE IS 1.5.

	PIPE RESTRAINT TABLE AND NOTES N.T.S.	STANDARD DETAIL 5

PROPOSED UTILITY	MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS									
	POTABLE WATER		RECLAIMED WATER*		SANITARY SEWER FORCE MAIN		SANITARY SEWER GRAVITY MAIN		STORM SEWER OR VACUUM TYPE SANITARY SEWER	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
POTABLE WATER	–	--	3'	12"	6'	12"	6' **	6" ABOVE 12" BELOW	3'	6" ABOVE 12" BELOW
RECLAIMED WATER	3'	12"	--	–	3'	12"	3'	12"	–	–
SANITARY SEWER FORCE MAIN	6'	12"	3'	12"	–	–	--	–	–	–
SANITARY SEWER GRAVITY MAIN	6' **	6" ABOVE 12" BELOW	3'	12"	–	–	--	–	–	–
FIRE HYDRANT W/UNDERGROUND DRAINS	–	--	3'	–	6'	–	6'	–	3'	–
STORM SEWER OR VACUUM TYPE SANITARY SEWER	3'	6" ABOVE 12" BELOW	–	–	–	–	--	–	–	–

1. THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN F.D.E.P. RULES PER THE FLORIDA ADMINISTRATION CODE (F.A.C.). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN NEWLY PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.

*2. FOR THE PURPOSE OF THIS TABLE RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 62-610. OTHER TYPES OF RECLAIMED WATER ARE CONSIDERED RAW SEWAGE AND SEPARATION LISTED FOR SANITARY SEWER SHALL APPLY.

3. ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.

**4. THE MINIMUM HORIZONTAL SEPARATION BETWEEN POTABLE WATER AND GRAVITY SANITARY SEWER MAY BE REDUCED TO 3 FEET IF THE BOTTOM OF THE WATER MAIN IS LOCATED AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SEWER.

5. AT UTILITY CROSSINGS ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER UTILITY PIPELINE MAXIMIZING THE SEPARATION OF PIPELINE JOINTS. ALTERNATIVELY, WATER MAIN JOINTS MUST BE:

   A. AT LEAST 3' FROM ALL JOINTS IN VACUUM TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR UNRESTRICTED PUBLIC ACCESS RECLAIMED WATER.

   B. AT LEAST 6' FROM ALL JOINTS IN GRAVITY OR PRESSURE SANITARY SEWERS, WASTEWATER FORCE MAINS, AND ALL OTHER TYPES OF RECLAIMED WATER.

6. NO WATER PIPE SHALL PASS THROUGH OR BE CONSTRUCTED TOUCHING ANY PART OF A SANITARY MANHOLE OR STORM SEWER MANHOLE OR INLET STRUCTURE.

7. NEW OR RELOCATED WATER MAINS AND FIRE HYDRANTS WITH UNDERGROUND DRAINS MUST BE AT LEAST 10 FEET FROM ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT SYSTEM" (OSTADS) AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E-6.002 F.A.C. EXAMPLES OF OSTADS INCLUDE SEPTIC TANKS, DRAINFIELDS, AND GREASE TRAPS.

8. THE FOLLOWING ARE ACCEPTABLE ALTERNATIVE CONSTRUCTION VARIANCES WHERE IT IS NOT POSSIBLE TO MEET THE SEPARATION REQUIREMENTS, AND ARE ONLY TO BE IMPLEMENTED UPON RECEIPT OF EXPRESSED WRITTEN CONSENT FROM THE ENGINEER.

   A. WHERE A WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE AND/OR WHERE A WATER MAIN CROSSING HAS LESS THAN THE MINIMUM REQUIRED DISTANCE BETWEEN JOINTS:

      1. USE OF PRESSURE RATED PIPE CONFORMING TO AWWA STANDARDS, FOR A GRAVITY OR VACUUM TYPE PIPE LINE.

      2. USE OF WELDED, FUSED OR OTHERWISE RESTRAINED JOINTS FOR EITHER PIPE.

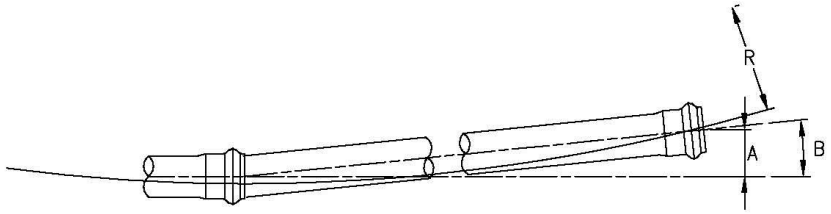
      3. USE OF WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR EITHER PIPE.

   B. WHERE A WATER MAIN IS BEING LAID LESS THAN 3 FEET HORIZONTALLY FROM ANOTHER PIPE LINE AND/OR WHERE A WATER MAIN IS BEING LAID WITH LESS THAN THE REQUIRED MINIMUM VERTICAL SEPARATION:

      1. USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (AT LEAST EQUAL TO 0.25" THICK D.I.P.), OR CONCRETE ENCASEMENT AT LEAST 4" THICK FOR THE WATER MAIN AND THE OTHER PIPELINE IF THE OTHER PIPE LINE CONVEYS WASTEWATER OR RECLAIMED WATER.

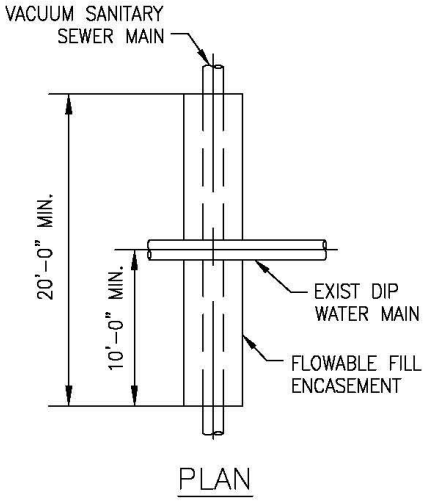
	MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS N.T.S.	STANDARD DETAIL 6

PVC DEFLECTION SCHEDULE						
NOMINAL SIZE PVC PIPE (INCHES)	MAXIMUM DISTANCE OF OFFSET (INCHES)		MAXIMUM ANGLE OF OFFSET (DEG.)		MINIMUM RADIUS OF CURVE (FT.)	
	A		B		C	
	20'	10'	20'	10'	20'	10'
4	8	4	2	2	450	300
6	8	4	2	2	570	380
8	8	4	2	2	570	380
10	8	4	2	2	570	380

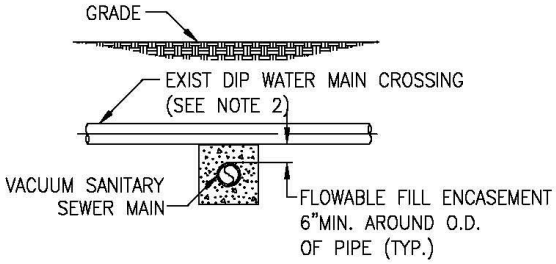


NOTE:
1) MINIMUM RADIUS OF CURVATURE VALID FOR 20' & 10' PIPE LENGHTS

	PVC PIPE DEFLECTION N.T.S.	STANDARD DETAIL 7



PLAN

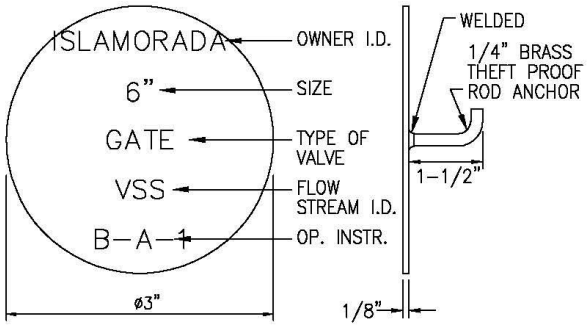


SECTION

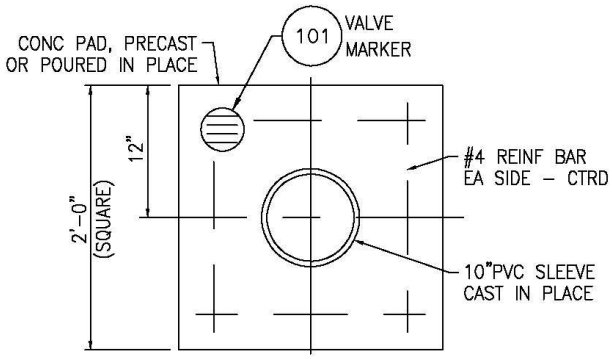
NOTES:

1. FLOWABLE FILL MIX: (1,500 PSI)
2. MATERIALS SHALL BE AS SPECIFIED IN SECTION 03300–CONCRETE.
3. REQUIREMENT IS SAME FOR EXIST. WATER MAINS CROSSING UNDER VACUUM SANITARY SEWER MAINS.
4. THIS DETAIL SHALL BE USED WHERE VACUUM SEWER MAIN CROSSES ABOVE OR BELOW AN EXISTING OR PROPOSED WATERMAIN AND VERTICAL SEPARATION PER FAC 62–555 CANNOT BE MET.

	FLOWABLE FILL ENCASEMENT (VACUUM SANITARY SEWER MAINS) N.T.S.	**STANDARD DETAIL 8**



VALVE MARKER

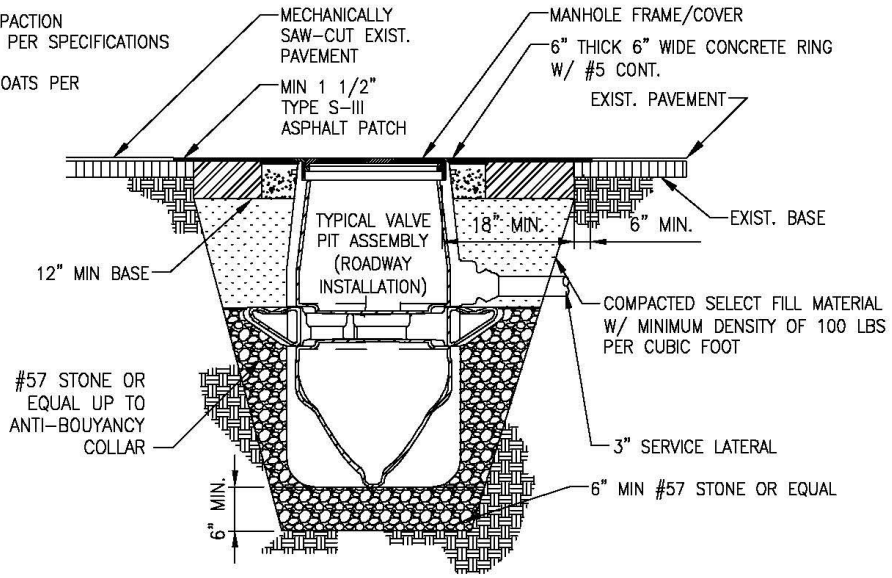


CONC VALVE BOX PAD

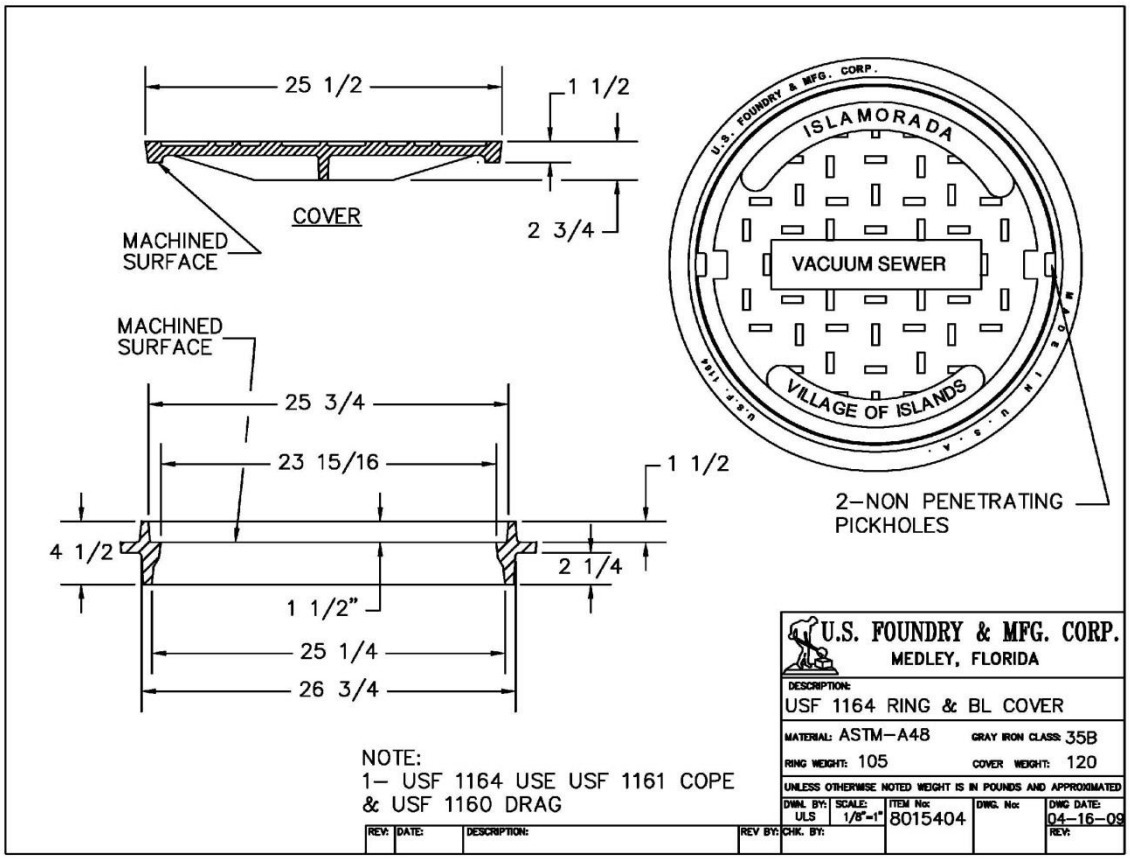
	VALVE BOX AND MARKER DETAIL **N.T.S.**	**STANDARD DETAIL** **9**

NOTES:

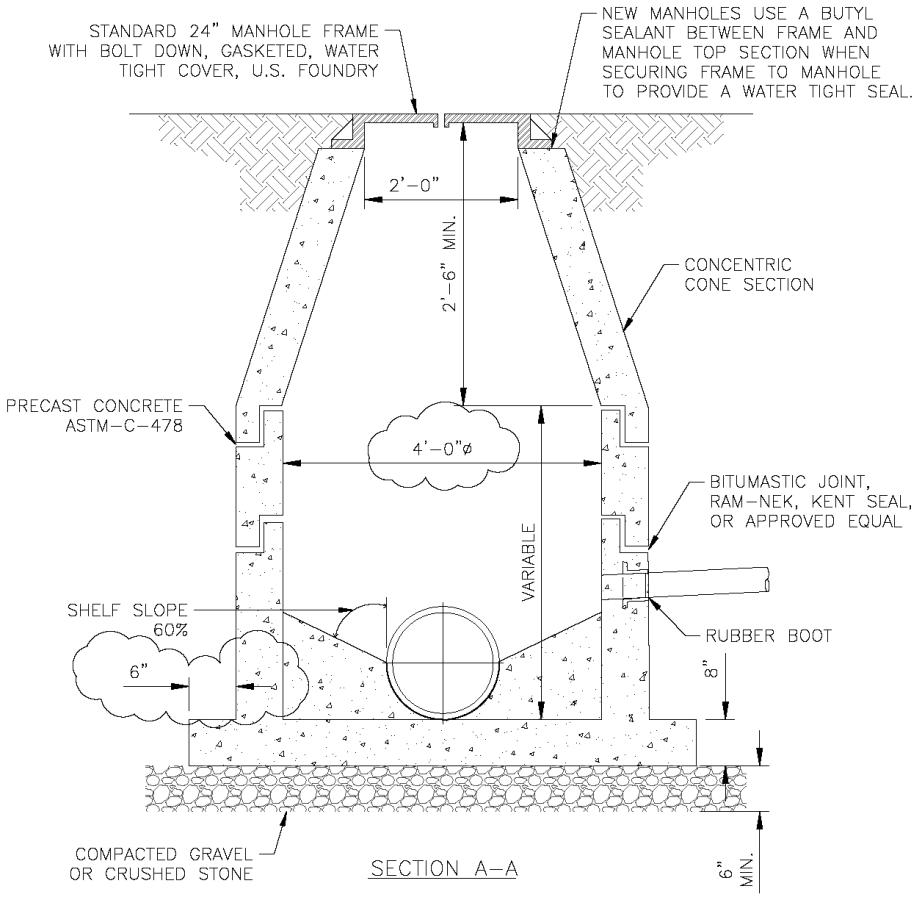
1. SHIM MANHOLE FRAME/COVER TO MEET ROADWAY CROSS SECTION.
2. MATERIAL AND COMPACTION REQUIREMENTS AS PER SPECIFICATIONS
3. PRIME AND TACK COATS PER SPECIFICATIONS.



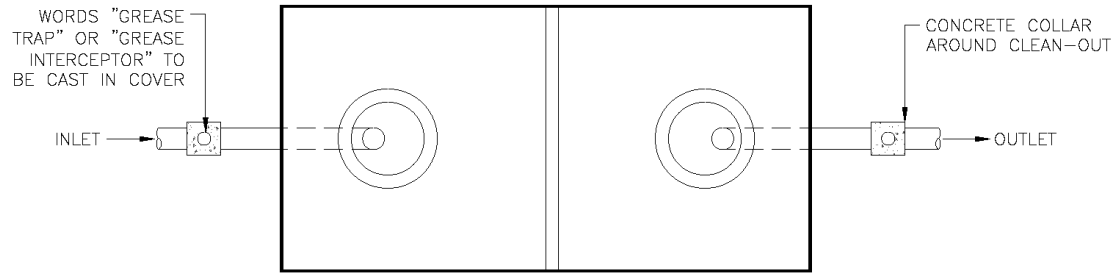
	1 PIECE VALVE PIT INSTALLATION IN PAVED AREAS N.T.S.	STANDARD DETAIL 10



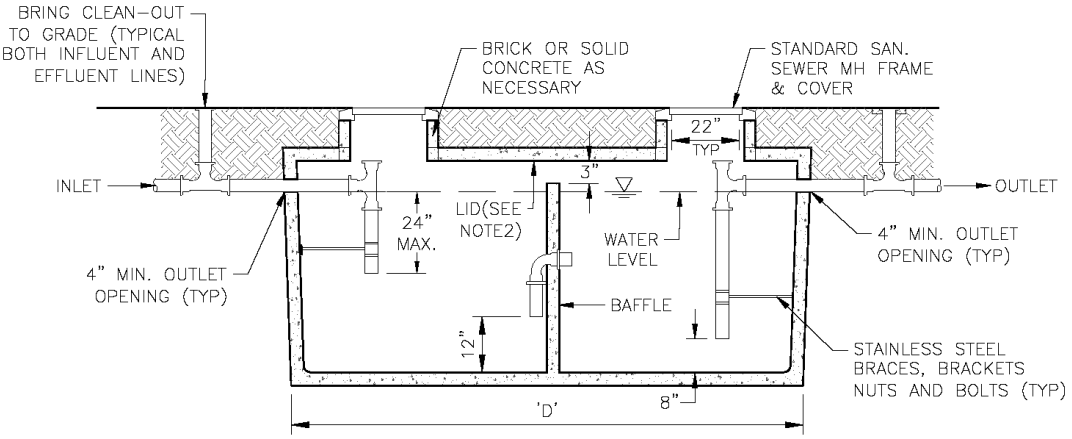
	MANHOLE COVER DETAIL N.T.S.	STANDARD DETAIL 11



DATE: APRIL, 2016	STANDARD GRAVITY SANITARY SEWER MANHOLE N.T.S.	DETAIL STD-12 (FOR REFERENCE ONLY)



TOP VIEW



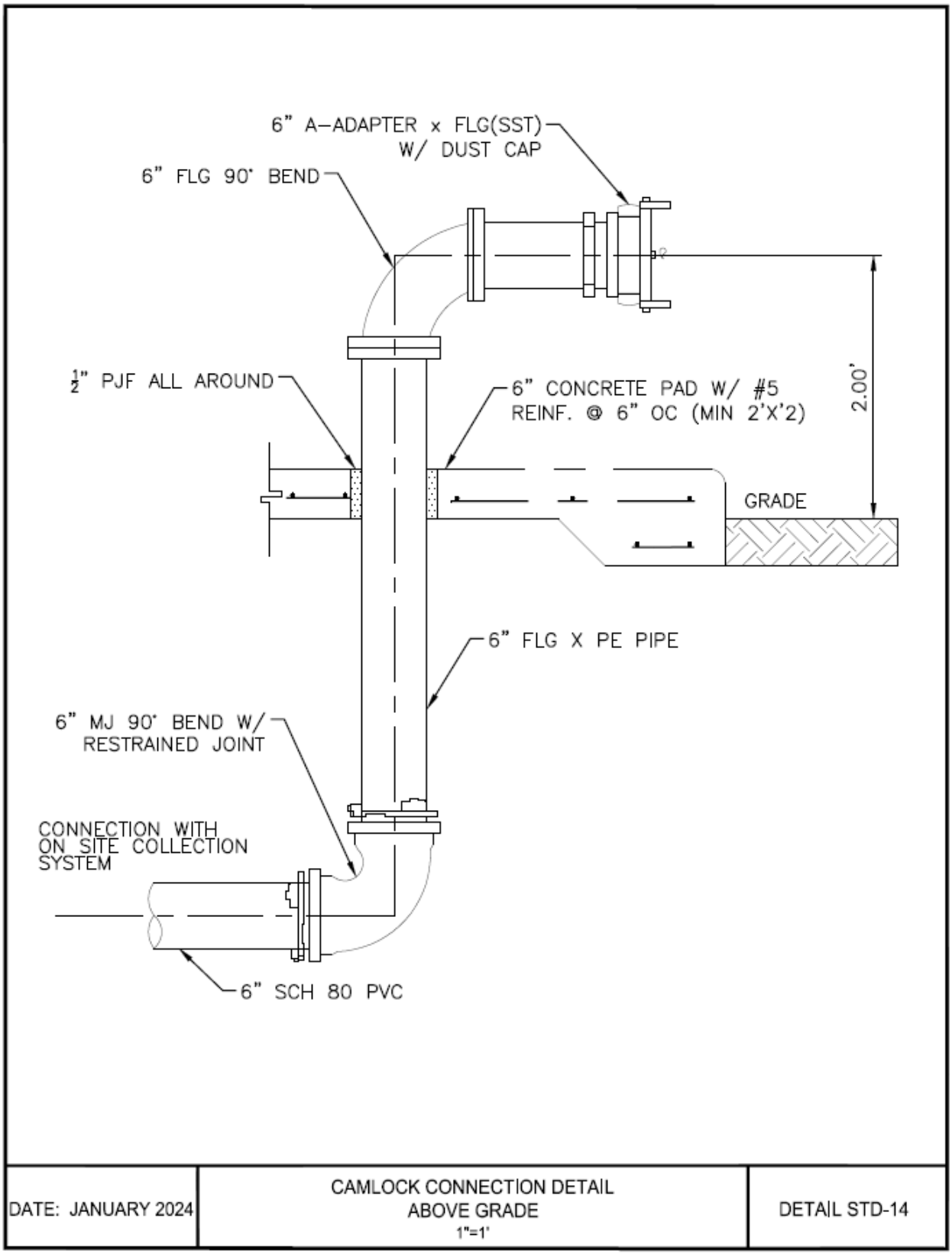
SECTION VIEW

NOTES:

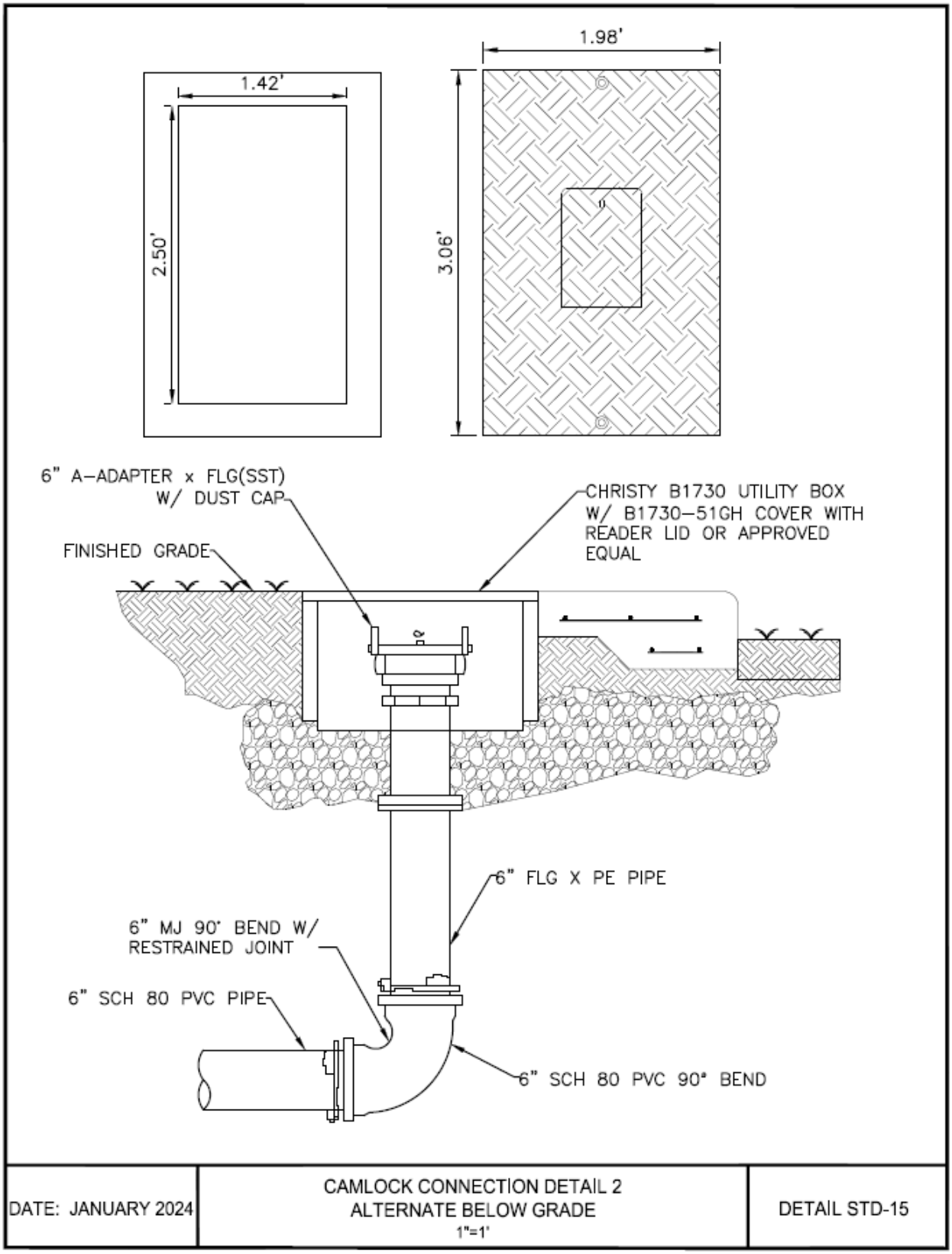
1. ALL PIPING SHALL BE A MINIMUM OF 4" PVC.
2. THE INTERCEPTOR TANK SHALL BE DESIGNED TO WITHSTAND THE EFFECTS OF BUOYANCY UNDER SUBMERGED CONDITIONS (ASSUMING THE TANK IS EMPTY).
3. SANITARY 'T' INLET SHALL BE INSTALLED 4" INSIDE OF WALL.
4. TANK SHALL BE A MINIMUM OF 750 GALLONS AND A MAXIMUM OF 1250 GALLONS PER CHAMBER.
5. GREASE TRAPS AND GREASE TRAP LIDS FOR TRAFFIC INSTALLATION SHALL BE DESIGNED, SIGNED, AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA.
6. THE LIQUID DEPTH SHALL BE AT LEAST 42".
7. THE INLET INVERT SHALL ENTER THE TANK 2 1/2" ABOVE THE LIQUID LEVEL OF THE TANK.
8. RISER JOINTS SHALL COMPLY WITH ASTM C 443, LATEST REVISION.
9. THE DESIGN, SIZING AND CONSTRUCTION MUST CONFORM TO ALL APPLICABLE BUILDING CODE AND HEALTH DEPARTMENT REQUIREMENTS AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO CHAPTER 64E-6 FLORIDA ADMINISTRATIVE CODE.
10. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE GREASE INTERCEPTOR IS GREATER THAN 1250 GALLONS, INSTALLATION OF GREASE INTERCEPTORS IN SERIES IS REQUIRED.
11. SECTIONS SHALL BE JOINED AND SEALED WITH MINIMUM 1" "RAM-NEK" SEALER OR EQUIVALENT TO FORM A WATER TIGHT SEAL.
12. THE OIL AND GREASE INTERCEPTOR (MODEL AND CAPACITY) SHALL BE IDENTIFIED ON THE APPLICABLE PLAN SHEET.
13. TWO-WAY CLEAN-OUTS SHALL BE INSTALLED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ALL GREASE INTERCEPTORS. CLEAN-OUT BOXES LOCATED IN TRAFFIC RATED OR TRAFFIC ACCESSIBLE AREAS SHALL UTILIZE REINFORCED CONCRETE COLLARS WITH A MINIMUM 3,000 PSI.
14. THE OIL AND GREASE INTERCEPTOR SHALL BE PROVIDED INSPECTION PORTS (TWO-WAY CLEAN OUTS) WHICH ARE EASILY ACCESSIBLE FOR INSPECTION/SAMPLING.
15. FOR GREASE INTERCEPTORS UP TO 1,250 GALLONS, UTILIZE STANDARD 24-INCH MANHOLE FRAME AND GASKETED, WATER-TIGHT COVER, U.S. FOUNDRY.
16. ALL INTERNAL COMPONENTS WILL BE CONSTRUCTED BY GREASE TRAP INSTALLER.
17. BAFFLE SHALL BE INSTALLED 1/2 (ONE HALF) TO 2.3 (TWO THIRDS) 'D'.

DATE: APRIL, 2016	**GREASE INTERCEPTOR DETAIL** **N.T.S.**	**DETAIL STD-13** **(FOR REFERENCE ONLY)**

c:\pw_work\nharris\d0664016\Vac Sewer Standard Details No 5.dwg Islamorada, Village of Islands Construction Standards



DATE: JANUARY 2024	CAMLOCK CONNECTION DETAIL ABOVE GRADE 1"=1'	DETAIL STD-14



DATE: JANUARY 2024	CAMLOCK CONNECTION DETAIL 2 ALTERNATE BELOW GRADE 1"=1'	DETAIL STD-15

13.0 PERMITTING FOR RESIDENTIAL AND COMMERCIAL SEWER LATERAL CONNECTIONS

13.1 Types of Service Connections

The connection of a single-family residential and single-building commercial property to the wastewater collection system is permitted through the Village Building Department. The connection of other property types or properties that will be directly connected to the conveyance force main require permitting through the Village Building Department and the FDEP. The FDEP permits are generally required of properties with existing package treatment plants and for those properties with multiple buildings other than those classified as single family residential by the Monroe County Property Appraiser. Service connections are provided for three types of properties within the Village described in the sections below.

13.1.1 Single Family Residential and Single Building Commercial Connections

The design of service connections for single family residential properties and single building commercial properties must meet the requirements of the current version of the Florida Building Code. Detailed descriptions of the various types of connections associated with these property types when connected into the Village wastewater collection system are presented in **Table 13-1** and described in the sections which follow.

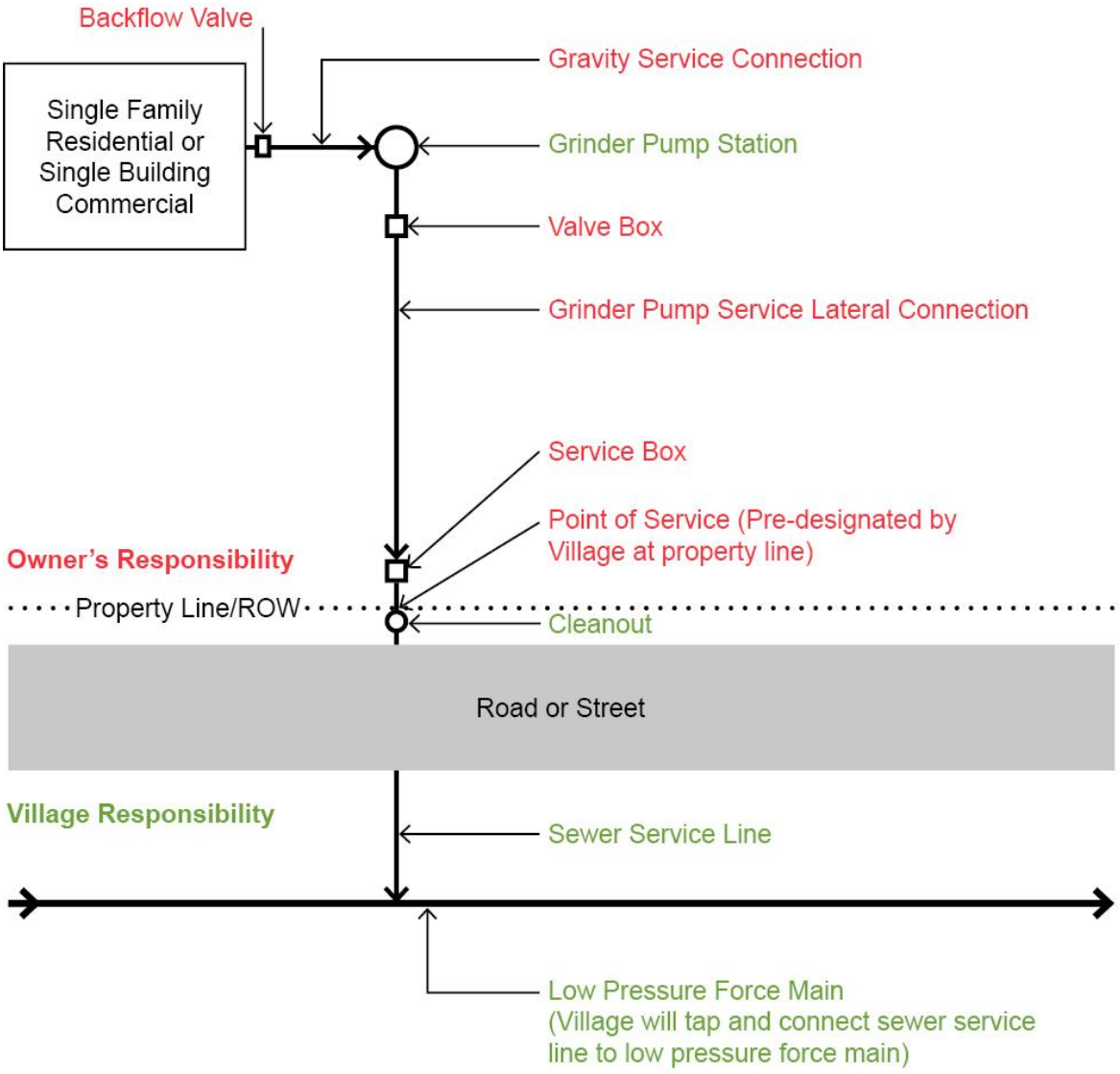
As indicated in **Table 13-1**, all Single Family Residential and Single Building Commercial properties must obtain a connection permit through the Village Building Department. Additionally, these facilities must obtain a permit from the Monroe County DOH to decommission, abandon, or otherwise disconnect from the existing OSTDS in accordance with the requirements of the DOH and FDEP.

The type of service connection for these properties will depend on the type of collection system installed (low pressure or vacuum sewer) as indicated in **Table 13-1**.

Single Family Residential (SFR). Single Family Residential connections consist of a single building which must connect with the Village wastewater collection system. As shown in **Table 13-1**, SFR connections typically consist of a grinder pump service lateral connection or a single gravity service lateral connection as described below.

1. A grinder pump service lateral which connects with the Village's permitted Low Pressure Force Main (LPFM). **Figure 13-1** illustrates the general layout

Figure 13-1. Single Family Residential & Single Building Commercial Connections: Grinder Pump Station with Low Pressure Force Main



Notes:

1. Installation of the Gravity Service Connection and appurtenances (between the SFR/SBC and the Grinder Pump Station) are the responsibility of the Owner or his/her designated Contractor.
2. Installation of the Grinder Pump Station, the Grinder Pump Service Lateral Connection, and all appurtenances located on the Private Property are the responsibility of the Village for customers participating in the Residential Grinder Pump Program (4 EDUs or less).
3. Non-participants in the Residential Grinder Pump Program (4 EDUs or less) are responsible for the installation and maintenance of the Grinder Pump Station, the Grinder Pump Service Lateral Connection, and all appurtenances.
4. Items shown in the right-of-way (ROW) are the responsibility of the Village to install.

for this connection type. Single Family Residential property connections with the LPFM can be accomplished in one of the following two methods:

a. As a participant in the Village Residential Grinder Pump Program; or
b. As a private homeowner installation (a non-participant in the Village Residential Grinder Pump Program).

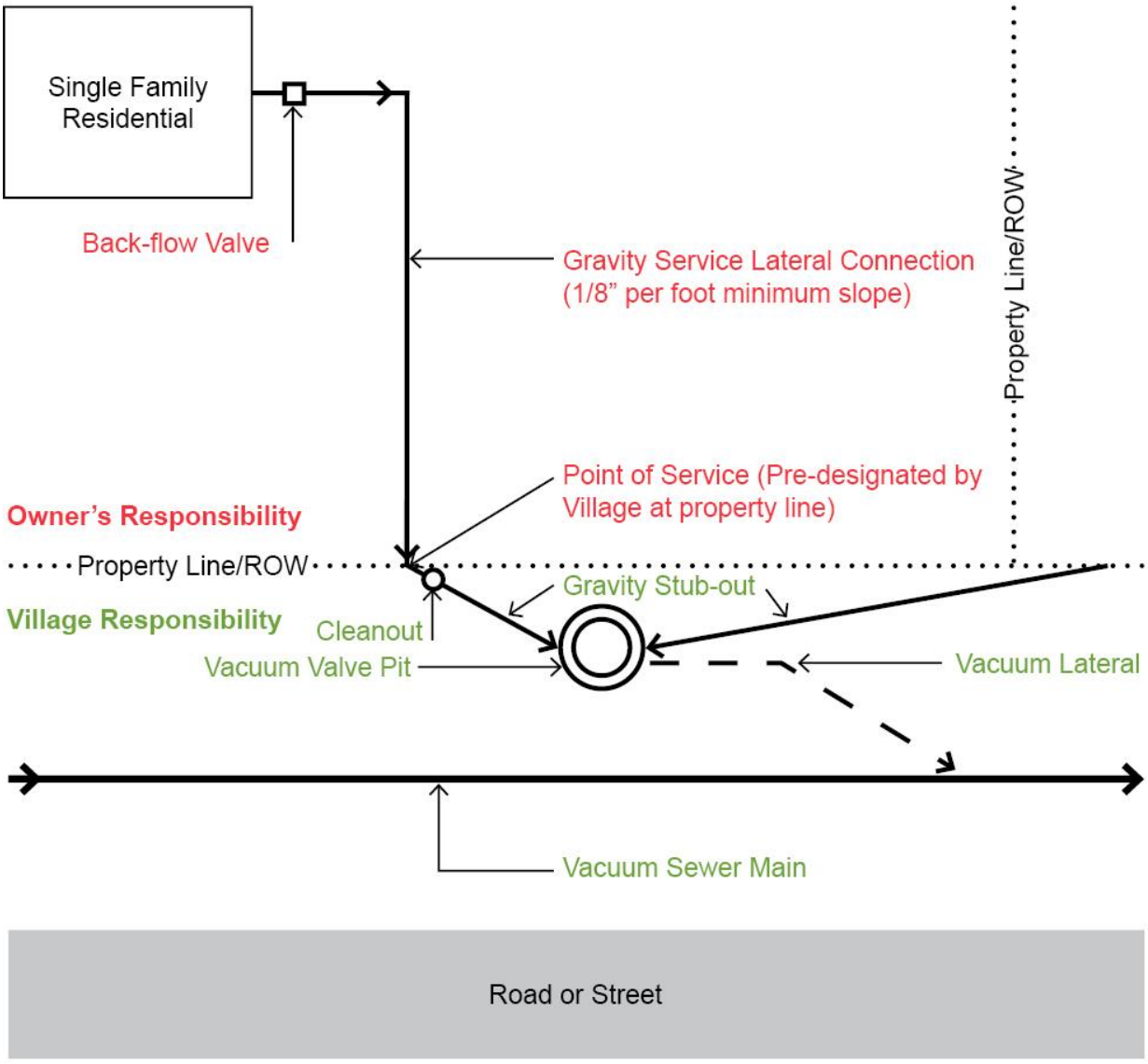
Table 13-1. Permitting Requirements for Single Family Residential and Single Building Commercial Connections

Building Connection	Village Sewer System Connection	Connection Method	Village Building Permit Required?	FDEP Permit Required?	Monroe County DOH Permit Required?
Single Family Residential	Low Pressure Force Main (LPFM)	Grinder Pump Service Lateral	Yes	No	Yes
Single Family Residential	Vacuum Sewer	Gravity Service Lateral into Vacuum Valve Pit	Yes	No	Yes
Single Building Commercial	Low Pressure Force Main (LPFM)	Grinder Pump Service Lateral	Yes	No	Yes
Single Building Commercial	Vacuum Sewer	Gravity Service Lateral or Grinder Pump Service Lateral into a Buffer Tank	Yes	No	Yes

2. A single gravity service lateral which discharges into a Village vacuum valve pit located in the right-of-way and connects with the Village permitted vacuum sewer main. **Figure 13-2** illustrates the general layout for this connection type.

   For either residential connection, the Owner must obtain a Village Building Permit (see Section 13.4). The tie-in to the connection point at the street cannot be completed until the written Service Availability and Connection Notice has been received from the Village and the Owner has successfully passed all applicable Village inspections and required testing. The Owner must also submit a Monroe County DOH Septic Tank Abandonment permit application (see Section 13.4).

Figure 13-2. Single Family Residential Connections: Vacuum System



Notes:

1. Items shown above the property line are the responsibility of the Owner or his/her designated contractor to install.
2. Items shown below the property line are the responsibility of the Village to install.

Single Building Commercial (SBC). A Single Building Commercial connection consists of a single commercial establishment which must connect with the Village wastewater system. As shown in **Table 13-1**, SBC connections can consist of grinder pump service lateral connection or a gravity service lateral connection as described below.

1. A grinder pump service lateral which is connected to the Village's permitted Low Pressure Force Main (LPFM) located in the right-of-way. **Figure 13-1** illustrates the general layout for this connection type.

2. A single family residential or single building commercial connection using a grinder pump station to connect with the Village's vacuum sewer collection system via a vacuum valve pit or buffer tank located in the Village right-of-way that connects with the Village permitted vacuum sewer main. **Figures 13-3a and 13-3b** illustrate the general layouts for these grinder pump service lateral connections.

In either case, the Owner must obtain a Village Building Permit (see Attachments). The tie-in to the connection point at the street cannot be completed until the written Service Availability and Connection Notice has been received from the Village and the Owner has successfully passed all applicable Village inspections. The Owner must also submit a Monroe County DOH Septic Tank Abandonment permit application (see Section 13.4). All service connections with the Village-owned collection system shall be performed by a Florida licensed plumber.

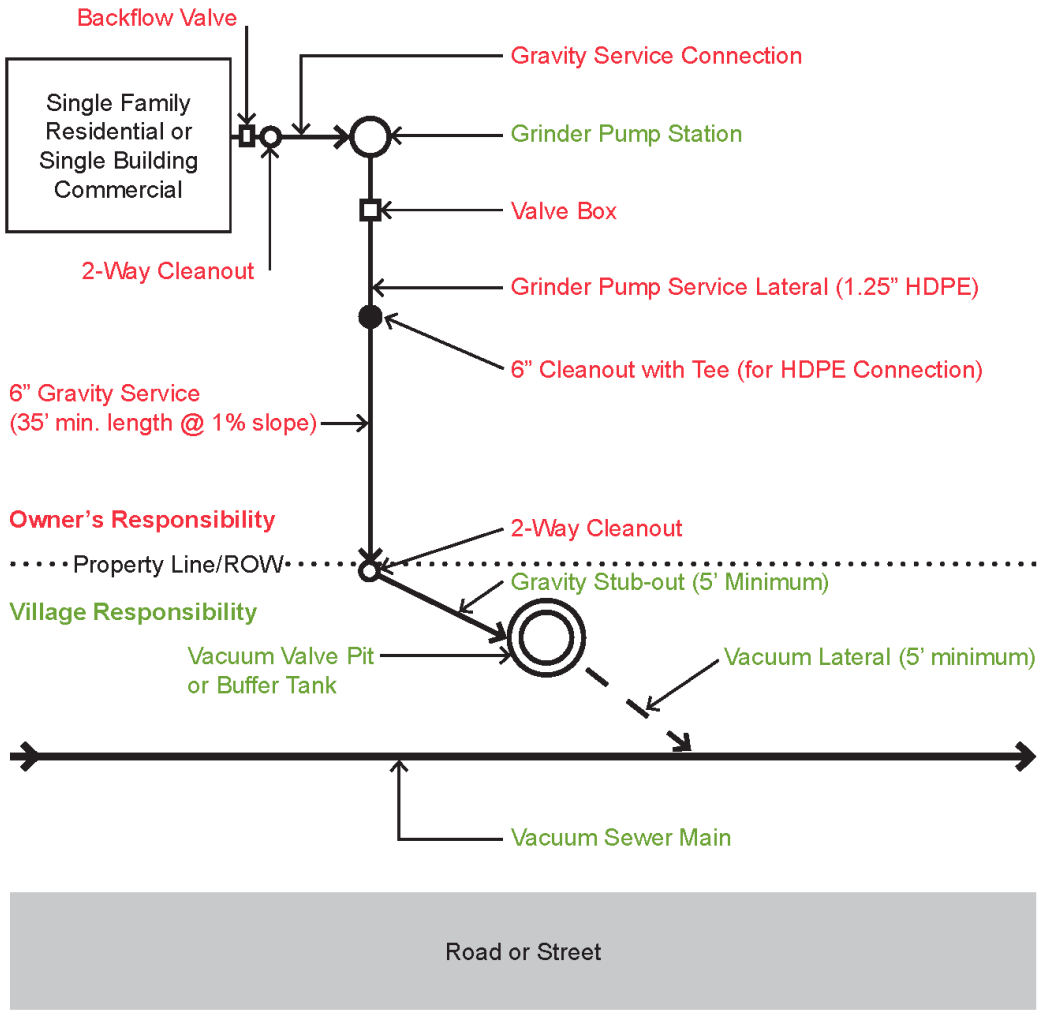
13.1.2 FDEP Permitted Connections

The design of connections for properties that require permitting through the FDEP must comply with the requirements of Rule 62-604, F.A.C. The Village (through the KLWTD) must certify that treatment plant capacity is available for these FDEP permitted connections.

The different connection methods associated with FDEP permitted facilities that must connect with the Village wastewater collection system are presented in **Table 13-2**. As indicated in **Table 13-2**, any multiple family residential building with a private collection system and/or a pumping station is required to obtain both a Village sewer system permit and a FDEP collection system permit (DEP Form 62-604.300(8)(a)).

Additionally, two or more buildings connected into a common sewer line are considered a private collection system and therefore must obtain both

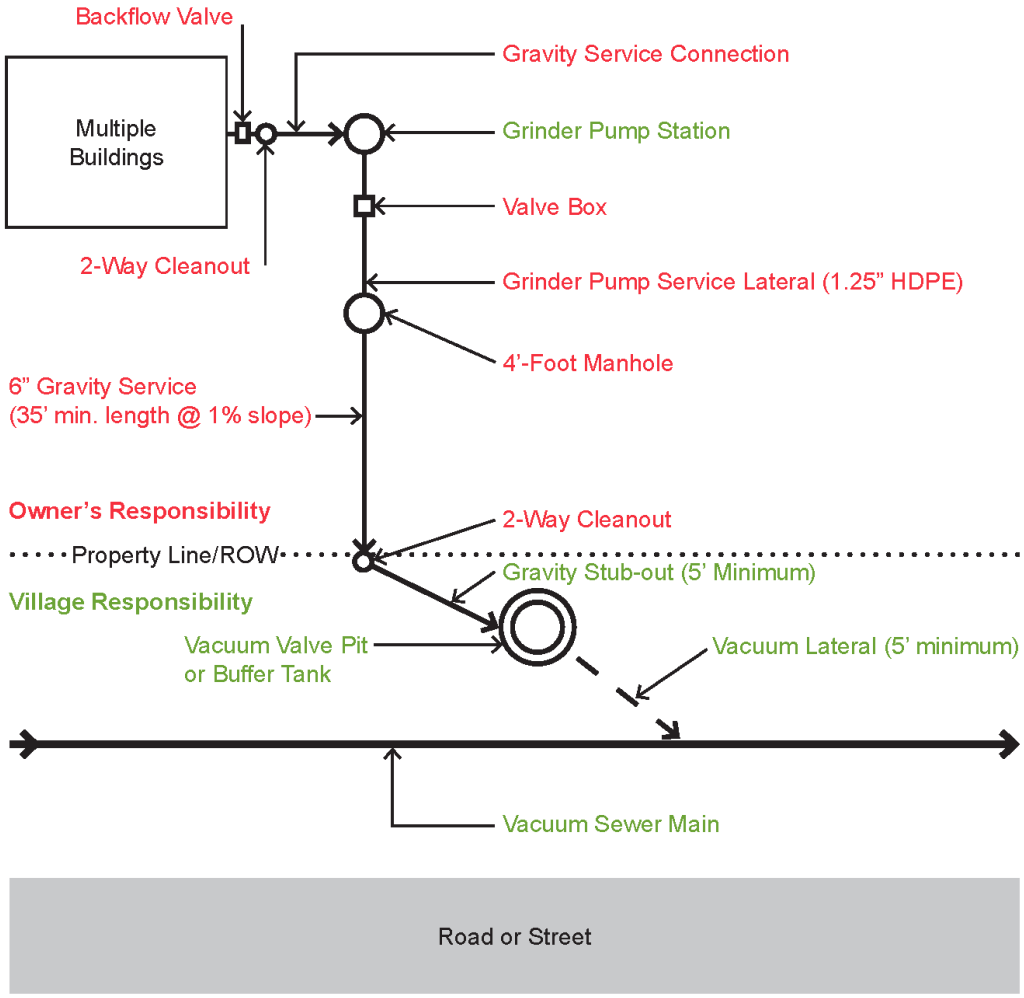
Figure 13-3a. Single Grinder Pump Station Connection with Vacuum Valve Pit (Single Connection Only)



Notes:

1. The 1.25-inch HDPE discharge line shall connect with the 6-inch gravity service line via a 1-1/4 inch or 2-inch stainless steel transition coupling.
2. A minimum of 35-foot length of 6-inch gravity sewer shall be used for connecting with the Village's vacuum valve pit located in the right-of-way.
3. Any additional single family residential or single building commercial connections with the vacuum valve pit with this connection type must be approved by the Village Engineer.

Figure 13-3b. Grinder Pump Station Connection with Vacuum Valve Pit (Multiple Connections)



Notes:

1. A 4-foot transitional manhole shall be used for connecting the 1.25-inch HDPE discharge line with a 6-inch gravity service line that connects with the designated vacuum valve pit located in the Village right-of-way.
2. A minimum of 35-foot length of 6-inch gravity sewer shall be used for connecting with the Village's vacuum valve pit in the right-of-way.
3. Any additional residential connections with the designated vacuum valve pit using this connection type must be approved by the Village Engineer.

a Village sewer system permit and a FDEP collection system permit. Any single commercial building connecting with the conveyance force main would also be required to obtain both a Village sewer permit and a FDEP collection system permit.

Additionally, these facilities must also obtain a Monroe County DOH permit for permitting, decommissioning or abandoning the existing OSTDS located on the premises. Owners are also responsible for the testing of any existing collection systems to be connected with the Village wastewater collection system to ensure adequacy and compliance with the Village's infiltration and inflow requirements. Copies of the required DEP permit and the Monroe County DOH permit applications are provided in Section 13.4.

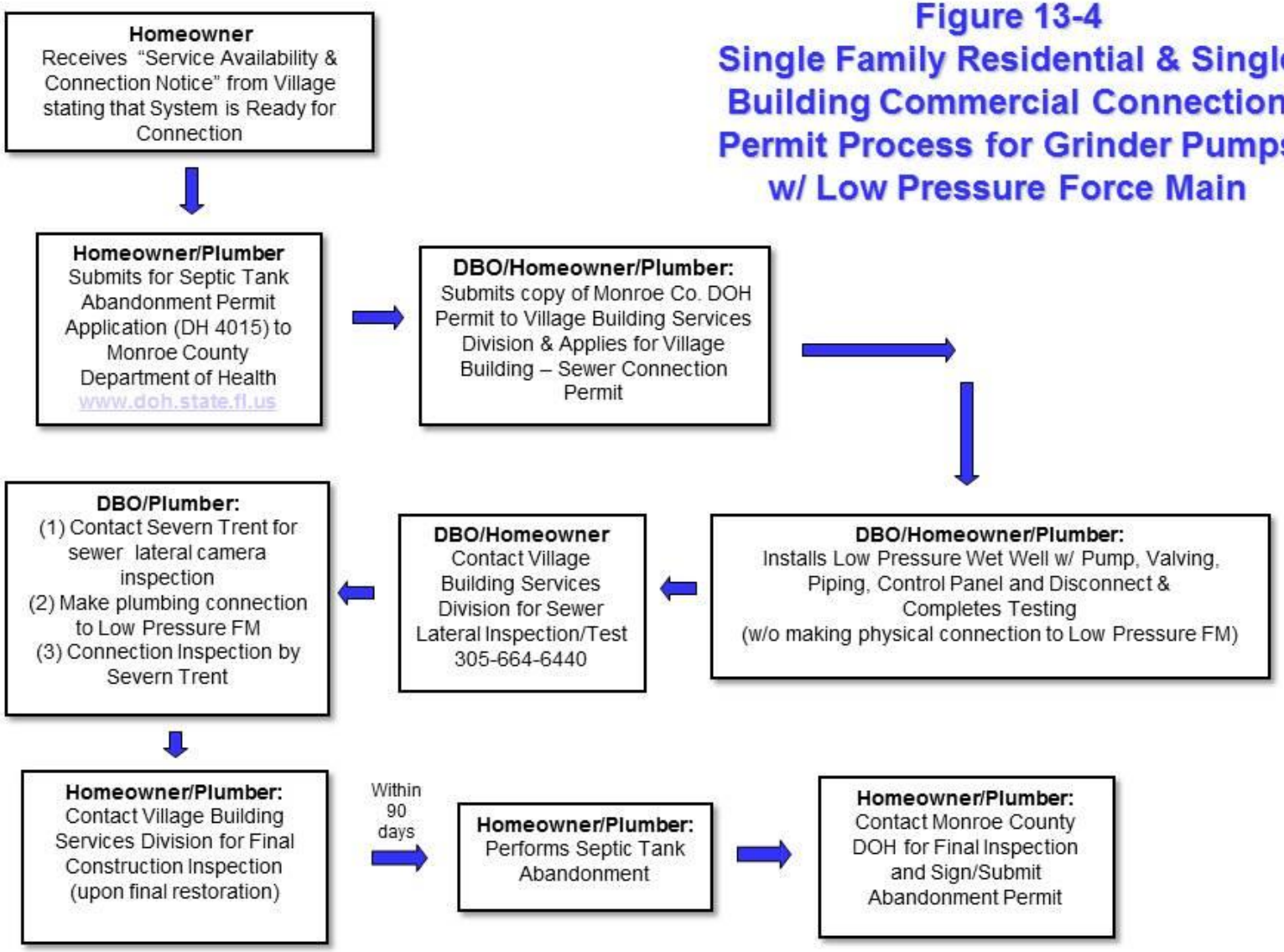
13.2 Service Connection Permitting

This section presents the permit requirements for each type of service connection described in Section 13.1 and also identifies the report submittal requirements associated with each permit. The flowchart in **Figure 13-4** illustrates the permitting process for Single Family Residential and Single Building Commercial Sewer Connections for Low Pressure Sewer Connections (using Grinder Pumps). The permit process for these connection types is described below.

An Owner desiring to obtain a sewer connection will receive a Service Availability and Connection Notice stating the Village's collection system is ready for Owner connection.

- Upon receipt of the notification, the Owner (or plumber) will prepare and submit a Septic Tank Abandonment Permit Application (DH 4015) to the Monroe County Department of Health (see website at www.doh.state.fl.us).
- Upon receipt of the DOH Permit, the Owner shall submit a copy of the County Health Department Septic Tank Abandonment Permit to the Village Building Services Division.
- For participants in the Residential Grinder Pump Program, the Owner shall apply for a Village Building - Sewer Connection Permit. This permit is required for (1) the electrical connection to the grinder pump station electrical panel and (2) for the gravity lateral connection between the home (or building) and the Village-installed Grinder Pump Station.
- For non-participants in the Residential Grinder Pump Program, the Owner shall apply for a Village Building – Sewer Connection Permit. This permit is required for (1) the Owner-installed Grinder Pump Station, (2) the electrical connection to the Grinder Pump Station, and (3) the gravity lateral connection between the home (or building). Permit submittals for individual connections shall include shop drawings of the proposed grinder pump system, wet well basin, valves, piping, SCADA system, and control panel. All shop drawings shall be submitted to the Village Wastewater Department for review and approval. All components associated with the grinder pump installation shall comply with the Village's Minimum Design Standards.

Figure 13-4
Single Family Residential & Single Building Commercial Connection Permit Process for Grinder Pumps w/ Low Pressure Force Main



File: HomeownerSewerConnectionPermitProcess.ppt

Upon receipt of a Village Building – Sewer Connection Permit, the Owner/Plumber can proceed with the installation of the grinder pump system on personal property without physically connecting with the Village low pressure force main (located in the right-of-way). All installations shall be made in accordance with Village Minimum Design Standards, local plumbing and electrical codes, and regulations of the Florida Department of Environmental Protection.

- Upon completion of installing the grinder system, the Owner/Plumber shall contact the Village Building Services Division and request a sewer lateral inspection and test. Testing and reporting requirements are provided in Section 14 – Collection & Transmission System Testing and Reporting Procedures.
- Upon completion of a satisfactory inspection and test, a licensed Plumber will be permitted to connect the Low Pressure pumping system with the Village Low Pressure Force Main and disconnect and properly abandon the existing onsite treatment system which the property is connected.
- Excavations shall remain open and protected until such time as an inspection has been performed and a satisfactory connection is made. A connection inspection will be required by the Village Building Services Department upon successful completion of the Owner's Low Pressure system with the Village Low Pressure Force Main. Upon final restoration, the Owner/Plumber will request a final inspection from the Village.
- The Owner/Plumber shall contact the Monroe County Department of Health for a final inspection of the abandoned septic system.

Table 13-2. Permitting Requirements for Multiple Family Residential and Commercial Buildings

Building Connection	Village Sewer System Connection	Connection Method	Village Building Permit Required?	FDEP Permit Required?	Monroe County DOH Permit Required?
Multiple Family Residential Buildings	CFM or LPFM or Buffer Tank	Private Collection and/or Pump Station	Yes	Yes	Yes
Multiple Commercial Buildings	CFM or LPFM or Buffer Tank	Private Collection and/or Pump Station	Yes	Yes	Yes
Single Commercial Building	CFM	Pump Station	Yes	Yes	Yes

Notes:

1. *CFM = Conveyance Force Main*
2. *LPFM = Low Pressure Force Main*

The key permits required for these facilities include:

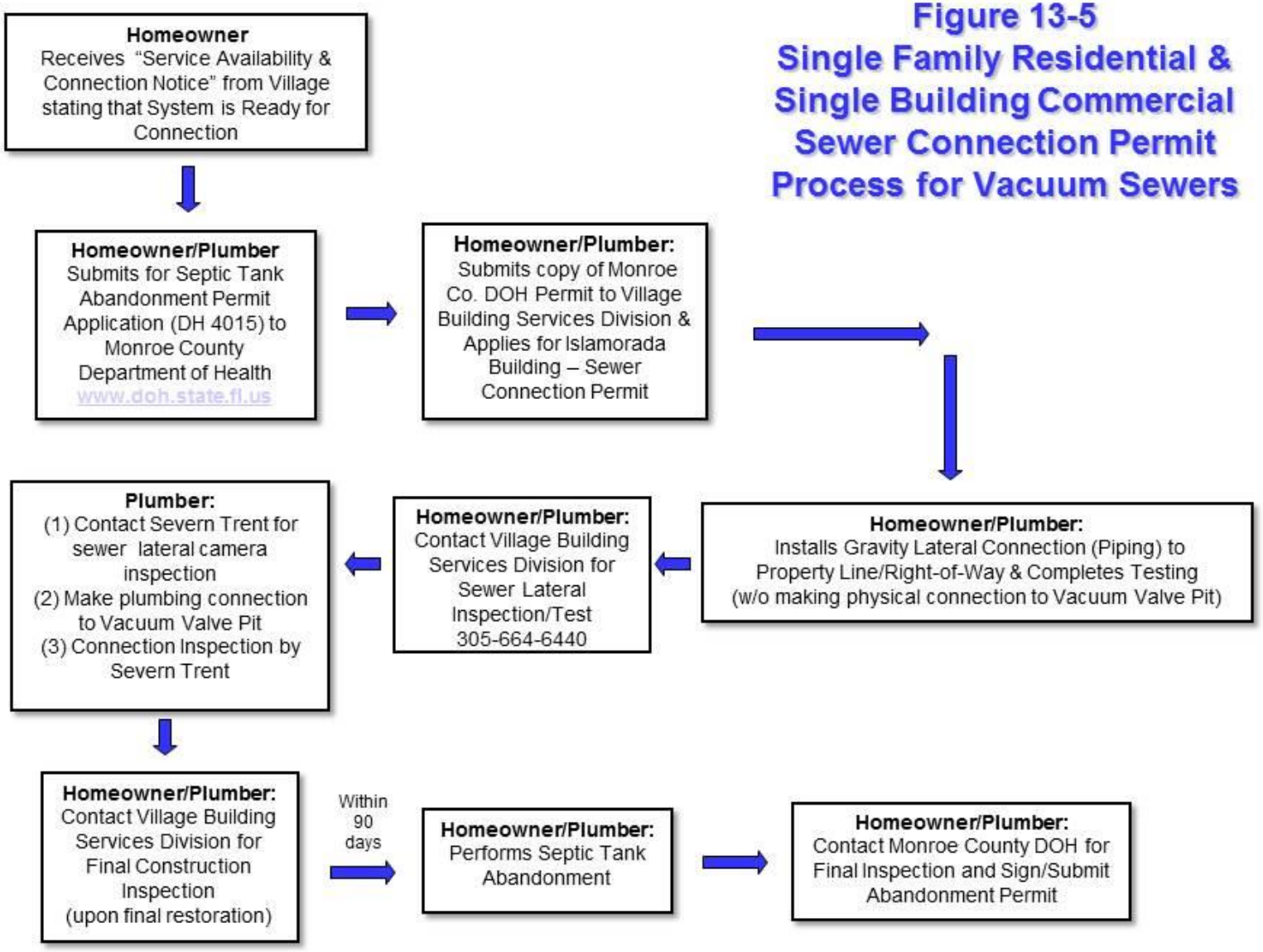
- Monroe County DOH Septic Tank Abandonment Permit (DH 4015)
- Village Building Sewer Connection Permit

The flowchart in **Figure 13-5** illustrates the permitting requirements for Single Family Residential and Single Building Commercial Sewer Connections for Vacuum Sewer Connections. The permit process for these connection types is described below.

- An Owner desiring to obtain a sewer connection will receive a Service Availability and Connection Notice stating that the Village's collection system is ready for Owner connection.
- Upon receipt of the notification, the Owner (or Plumber) will prepare and submit a Septic Tank Abandonment Permit Application (DH 4015) to the Monroe County Department of Health (see website at www.doh.state.fl.us).
- Upon receipt of the DOH Permit, the Owner shall submit a copy of the County Health Department Septic Tank Abandonment Permit to the Village Building Services Division
- Owner shall apply for a Village Building – Sewer Connection Permit.

- Upon receipt of a Village Building – Sewer Connection Permit, the Owner/Plumber can proceed with installation of the gravity service lateral connection, backflow preventer, and cleanout on their personal property, but without making a physical connection with the vacuum valve pit located in the Village right-of-way.
- All plumbing installations shall be made in accordance with Village Minimum Design Standards referenced herein, local plumbing and electrical codes, and the regulations of the Florida Department of Environmental Protection.
- Upon completion of installing the service lateral connection, the Owner/Plumber shall contact the Village Building Services Division and request a sewer lateral inspection and test (see *Section 14 – Collection & Transmission System Testing and Reporting Requirements*).
- Upon completion of a satisfactory inspection, a licensed Plumber (certified in making service connections with the vacuum sewer system) will be permitted to make the plumbing connection with the vacuum pit and properly abandon the existing onsite treatment system to which the property is connected.
- Lateral connection excavations shall remain open and protected until such time as a connection inspection has been performed by the Village Building Services Division upon successful completion of the Owner's gravity lateral connection with the Village vacuum pit and vacuum sewer main. Upon final restoration, the Owner shall request a final inspection from the Village.
- The Owner/Plumber shall contact the Monroe County DOH for a final inspection of the abandoned septic system.

Figure 13-5
Single Family Residential & Single Building Commercial Sewer Connection Permit Process for Vacuum Sewers



The key permits required for these facilities include:

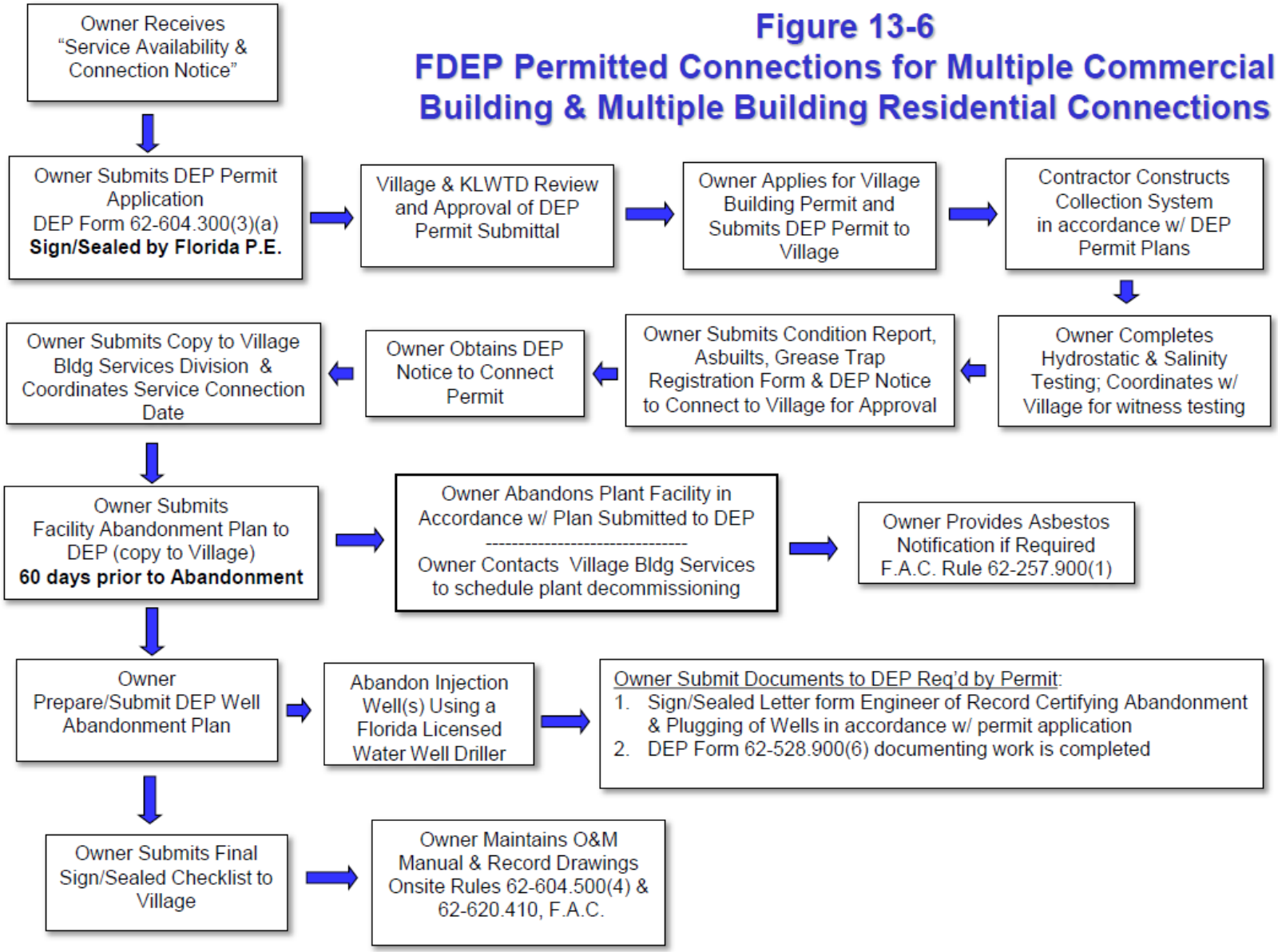
- Monroe County DOH Septic Tank Abandonment Permit (DOH 4015)
- Village Building Sewer Connection Permit

The flowchart in **Figure 13-6** illustrates the permit and reporting requirements for Multiple Commercial Buildings and Multiple Building Residential Connections which connect with the Village Wastewater System. The key permits and reports required for these facilities which obtain permits include:

- FDEP Collection System Permit (DEP Form 62-604.300(3)(a))
- Engineering Report, including Infrastructure Testing Report and Condition Report
- Grease Trap Inspection Report (if applicable)
- FDEP Facility Abandonment Plan
- FDEP Asbestos Notification (if required)
- Injection Well Abandonment Certification Letter (sign/sealed by a Florida licensed Engineer of Record)
- Injection Well Abandonment Certification Letter from County Clerk (w/ doc stamps and recorded survey from a Florida licensed Professional Land Surveyor)
- FDEP Injection Well Plugging and Abandonment Permit Application (DEP Form 62-528.900(6))
- FDEP Injection Well Completion Form (DEP Form 62-528.900(2))

Testing and reporting requirements are presented in ***Section 14 – Collection and Transmission System Testing and Reporting Procedures***. Package Plant Abandonment and De-commissioning Protocol are presented in ***Section 17 – Package Plant Abandonment and Decommissioning Requirements.***

Figure 13-6
FDEP Permitted Connections for Multiple Commercial Building & Multiple Building Residential Connections



Revised 1/2024

13.3 Agency Contacts

The following is a listing of agency contacts for required for residential, commercial and FDEP permitting facilities.

Village Building Services Department Permit

Islamorada Building Services Division
305/664-6440
http://www.islamorada.fl.us/

Commercial Package Plant Abandonment Permit

Florida Department of Environmental Protection
South District Marathon Branch Office
2796 Overseas Highway, Suite 221
Marathon, FL 33050
305/289-7070

Multiple Buildings and/or Building Directly Connected to Village Conveyance Force Main

Florida Department of Environmental Protection
South District Marathon Branch Office
2796 Overseas Highway, Suite 221
Marathon, FL 33050
305/289-7070

Septic Tank, Cess Pit or ATU Abandonment Permits

Monroe County Health Department
Suite 202
102050 Overseas Highway (MM 102.8 Bayside) Murray Nelson Government Center
Key Largo, FL 33037
305/453-8750
Hours: M-F 8:30 am – 5:00 pm (closed from 12:00-1:00 pm for lunch)

13.4 Permit Applications, Forms and References

13.4.1 Village Building Permit Application (Page 1/2)

ISLAMORADA, VILLAGE OF ISLANDS
APPLICATION FOR BUILDING PERMIT

Office Use Only	
Flood Zone:	**Permit #:**
Base Flood El.:	Zoning: FLUM:
Panel #:	FWS: Y N

2010 Florida Building Code in effect.
Minimum Application Deposit: $108.00

INSTRUCTIONS: Complete all sections of this form, including contact information and notarized signatures of the property owners and contractors. Submit completed application with all necessary documentation and submittals to the Building Services Department. Applicants may be asked to submit additional information during the permit review process.

PROPERTY OWNER:		**CONTRACTOR:**	
Name:		Business Name:	
Mailing Address:		Mailing Address:	
City/State/Zip:		City/State/Zip:	
Home/Mobile:	Office:	Home/Mobile:	Office:
E-mail:	Fax:	E-mail:	Fax:

AUTHORIZED AGENT / CONTRACTOR CONTACT:		**SUB-CONTRACTORS:**
Name:		Electrical:
Mailing Address:		Plumbing:
City/State/Zip:		Mechanical:
Home/Mobile:	Office:	Roofing:
E-mail:	Fax:	Sign:

PROPERTY DESCRIPTION:

Physical Address:			Mile Marker:
Lot:	Block:	Subdivision:	
☐ Plantation Key	☐ Windley Key	☐ Upper Matecumbe Key	☐ Lower Matecumbe Key
Parcel ID (Real Estate) Number:			Alternate Key:
Existing Use of Property:			
Business Name:			

PERMIT TYPE (Check all that apply): ☐ Building ☐ Electrical ☐ Plumbing ☐ Mechanical ☐ Roofing ☐ Gas ☐ Demolition ☐ Right-of-Way ☐ Change of Occupancy

Detailed Description of Proposed Development: _____

_____

_____

_____

Value of Work: $_____ Square/Linear Feet of Construction: _____

Change Requested: ☐ Contractor ☐ Revision _____ (Original/Previous Permit #) ☐ Renew Expired Permit _____ (Original/Previous Permit #)

Office Use Only
Rec'd By: ___ Date: ___/___/_____ **Reviewed By:** Planning: ___ Building: ___ Fire: ___ Public Works/Utilities: ___

Page 1 of 2
86800 Overseas Highway • Islamorada, Florida 33036-3162
Phone 305.664.6400 • Fax 305.664.6469 • www.islamorada.fl.us

13.4.1 Village Building Permit Application (Page 2/2)

Islamorada, Village of Islands
Application for Building Permit

Application is hereby made to obtain a permit to do the work and installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work will be performed to meet the standards of all laws regulating construction in this jurisdiction. I understand that a separate permit must be secured for ELECTRICAL WORK, PLUMBING, SIGNS, WELLS, POOLS, FURNACES, BOILERS, HEATERS, TANKS, and AIR CONDITIONERS, etc. [F.S. 713.135(6)(a)]

OWNER'S AFFIDAVIT: I certify that all the foregoing information is accurate and that all work will be done in compliance with all applicable laws regulating construction and zoning, including but not limited to, the current edition of the Florida Building Code, the Florida Fire Prevention Code and the Code of Ordinances of Islamorada, Village of Islands, Florida, as amended from time to time. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents. Furthermore, I understand that if the actual cost of the repair, reconstruction, rehabilitation, or improvement of a structure equals or exceeds 50 percent (50%) of the market value of the structure, then the structure must conform to all current laws and Codes.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED, A COPY OF THE RECORDED NOTICE MUST BE SUBMITTED TO THE BUILDING SERVICES DEPARTMENT AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. A NOTICE OF COMMENCEMENT IS EFFECTIVE FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF RECORDING, UNLESS A DIFFERENT DATE IS SPECIFIED. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE COMMENCING WORK OR RECORDING YOUR NOTICE OF COMMENCEMENT. [F.S. 713.135(6)(a)]

NOTICE: In addition to the requirements of this permit, there may be additional restrictions applicable to this property that may be found in the public records of this county, and there may be additional permits required from other governmental entities such as water management districts, state agencies or federal agencies. [2007 FBC 105.3.3]

Asbestos Notification Statement: It shall be the owner's or operator's responsibility to comply with the provisions of Section 469.003, Florida Statutes, and to notify the Department of Environmental Protection of his or her intentions to remove asbestos, when applicable, in accordance with state and federal law. [2007 FBC 105.9; F.S. 469.003]

If one or more previously unidentified artifacts or human skeletal or fossilized remains or non-human vertebrate fossils are found on the property during development or other site-disturbing activity, all development or disruptive activity directly over the potential find shall immediately cease. Before any further development or disruptive activity continues, the Village shall be notified of the potential find and the procedures pursuant to the Islamorada Code of Ordinances shall apply. [VC Sec. 30-1699]

PROPERTY OWNER:

Signature: _____

Print Name: _____

Date: _____

NOTARY PUBLIC:

STATE OF _____, COUNTY OF _____

Sworn to and subscribed before me this ____ day of _____,

20__, by _____ (name of person making statement).

Signature: _____

☐ Personally Known ☐ Produced Identification

Type of ID Produced: _____

Notary Seal:

CONTRACTOR OR AUTHORIZED AGENT:

Signature: _____

Print Name: _____

Date: _____

NOTARY PUBLIC:

STATE OF _____, COUNTY OF _____

Sworn to and subscribed before me this ____ day of _____,

20__, by _____ (name of person making statement).

Signature: _____

☐ Personally Known ☐ Produced Identification

Type of ID Produced: _____

Notary Seal:

APPLICATION APPROVED BY:

_____ _____

GERALD E. ALBERTSON, CBO/CFM, BUILDING OFFICIAL DATE

☐ **DEVELOPMENT.** Pursuant to Chapter 9J-1, F.A.C., this permit shall not take effect or be acted upon until forty-five (45) days after rendition to the Florida Department of Community Affairs, unless a later date is specified, and the effectiveness of this permit shall be stayed by the filing of a notice of appeal pursuant to Section 380.07, Florida Statutes.

☐ **NOT DEVELOPMENT (EXEMPT)**

Page 2 of 2

13.4.2 Monroe Co. Septic Tank Abandonment Permit Application (Page 1/2)

STATE OF FLORIDA
DEPARTMENT OF HEALTH
ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEM
APPLICATION FOR CONSTRUCTION PERMIT

PERMIT NO. _____
DATE PAID: _____
FEE PAID: _____
RECEIPT #: _____

APPLICATION FOR:
[ ] New System [ ] Existing System [ ] Holding Tank [ ] Innovative
[ ] Repair [ ] Abandonment [ ] Temporary [ ] _____

APPLICANT: _____

AGENT: _____ TELEPHONE: _____

MAILING ADDRESS: _____

==========

TO BE COMPLETED BY APPLICANT OR APPLICANT'S AUTHORIZED AGENT. SYSTEMS MUST BE CONSTRUCTED BY A PERSON LICENSED PURSUANT TO 489.105(3)(m) OR 489.552, FLORIDA STATUTES. IT IS THE APPLICANT'S RESPONSIBILITY TO PROVIDE DOCUMENTATION OF THE DATE THE LOT WAS CREATED OR PLATTED (MM/DD/YY) IF REQUESTING CONSIDERATION OF STATUTORY GRANDFATHER PROVISIONS.

==========

PROPERTY INFORMATION

LOT: _____ BLOCK: _____ SUBDIVISION: _____ PLATTED: _____

PROPERTY ID #: _____ ZONING: _____ I/M OR EQUIVALENT: [Y/N]

PROPERTY SIZE: _____ ACRES WATER SUPPLY: [ ] PRIVATE PUBLIC [ ]<=2000GPD [ ]>2000GPD

IS SEWER AVAILABLE AS PER 381.0065, FS? [Y/N] DISTANCE TO SEWER: _____FT

PROPERTY ADDRESS: _____

DIRECTIONS TO PROPERTY: _____

_____

_____

BUILDING INFORMATION [ ] RESIDENTIAL [ ] COMMERCIAL

Unit No	Type of Establishment	No. of Bedrooms	Building Area Sqft	Commercial/Institutional System Design Table 1, Chapter 64E-6, FAC
1				
2				
3				
4				

[ ] Floor/Equipment Drains [ ] Other (Specify) _____

SIGNATURE: _____ DATE: _____

DH 4015, 08/09 (Obsoletes previous editions which may not be used)
Incorporated 64E-6.001, FAC

Page 1 of 4

13.4.2 Monroe Co. Septic Tank Abandonment Permit Application (Page 2/2)

APPLICANT:	Property owner's full name.
AGENT:	Property owner's legally authorized representative.
TELEPHONE:	Telephone number for applicant or agent.
MAILING ADDRESS:	P.O. box or street, city, state and zip code mailing address for applicant or agent.
LOT, BLOCK, SUBDIVISION:	Lot, block, and subdivision for lot (recorded or unrecorded subdivision). If lot is not in a recorded subdivision, a copy of the lot legal description or deed must be attached.
DATE OF SUBDIVISION:	Official date of subdivision recorded in county plat books (month/day/year) or date lot originally recorded. Dividing an approved lot into two or more parcels for the purpose of conveying ownership shall be considered a subdivision of the lot.
PROPERTY ID#:	27 character number for property. CHD may require property appraiser ID # or section/township/range/parcel number.
ZONING:	Specify zoning and whether or not property is in I/M zoning or equivalent usage.
PROPERTY SIZE:	Net usable area of property in acres (square footage divided by 43,560 square feet) exclusive of all paved areas and prepared road beds within public rights-of way or easements and exclusive of streams, lakes, normally wet drainage ditches, marshes, or other such bodies of water. Contiguous unpaved and non-compacted road rights-of-way and easements with no subsurface obstructions may be included in calculating lot area.
WATER SUPPLY:	Check private or public <= 2000 gallons per day or public > 2000 gallons per day.
SEWER AVAILABILITY:	Is sewer available as per 381.0065, Florida Statutes, and distance to sewer in feet.
PROPERTY ADDRESS:	Street address for property. For lots without an assigned street address, indicate street or road and locale in county.
DIRECTIONS:	Provide detailed instructions to lot or attach an area map showing lot location.
BUILDING INFORMATION:	Check residential or commercial.
TYPE ESTABLISHMENT:	List type of establishment from Table II, Chapter 64E-6, FAC. Examples: single family, single wide mobile home, restaurant, doctor's office.
NO. BEDROOMS:	Count all rooms designed primarily for sleeping and those areas expected to routinely provide sleeping accommodations for occupants.
BUILDING AREA:	Total square footage of enclosed habitable area of dwelling unit, excluding garage, carport, exterior storage shed, or open or fully screened patios or decks. Based on outside measurements for each story of structure.
BUSINESS ACTIVITY:	For commercial/institutional applications only. List number of employees, shifts, and hours of operation, or other information required by Table II, Chapter 64E-6, FAC.
FIXTURES:	Mark Floor/Equipment Drains or Others and specify item or "NA" if not applicable.
SIGNATURE / DATE:	Signature of applicant or agent. Date application submitted to the CHD with appropriate fees and attachments.

ATTACHMENTS: A site plan drawn to scale, showing boundaries with dimensions, locations of residences or buildings, swimming pools, recorded easements, onsite sewage disposal system components and location, slope of property, any existing or proposed wells, drainage features, filled areas, obstructed areas, and surface water. Location of wells, onsite sewage disposal systems, surface waters, and other pertinent facilities or features on adjacent property, if the features are with 75 feet of the applicant lot. Location of any public well within 200 feet of lot. For residences, a floor plan (residences) showing number of bedrooms and building area of each unit. For nonresidential establishments, a floor plan showing the square footage of the establishment, all plumbing drains and fixture types, and other features necessary to determine composition and quantity of wastewater.

13.4.3 FDEP Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System

13.4.3.1 DEP Form No. 62-604.300(3)(a), F.A.C. (October 4, 2021)

13.4.4 FDEP Application for Class V Well Plugging and Abandonment Permit

13.4.4.1 DEP Form No. 62-528.900(6)

END OF SECTION

14.0 TESTING AND REPORTING REQUIREMENTS

This section provides information and guidance on testing and reporting requirements for all wastewater facilities and wastewater connections prior to approval by the Village, including new development, re-development, existing residential properties greater than 4 EDUs, commercial properties, and any residential properties which are not participating in the Residential Grinder Pump Program. Any existing wastewater piping that remains as part of the Owner's onsite plumbing connection with the Village wastewater collection system must also comply with the testing and reporting requirements presented herein. All testing, procedures, and video inspections shall be performed by the Owner/Developer in the presence of Village inspection personnel and a representative from the Key Largo Wastewater Treatment District and certified by the Owner/Developer's Engineer. The Owner/Developer shall be responsible for furnishing all necessary labor, equipment, and water required for all testing and inspections.

14.1 General Testing Requirements

1. Testing shall be accomplished through the combination of visual inspections, deflection testing, low pressure air tests, and leakage test methods.
2. The Owner/Developer shall provide all necessary test equipment.
3. All testing required by the Village shall be paid for by the Owner/Developer.
4. All final testing must be witnessed by a Florida licensed professional engineer and testing reports must be signed and sealed by a Florida licensed professional engineer.
5. Final testing shall mean testing that is performed the presence of a representative from the Village and a representative from the Key Largo Wastewater Treatment District (KLWTD) whereby all previously required testing on the Owner's collection system has been completed, passed and certified by a Florida licensed professional engineer.. The Village shall be notified at least 72 hours (not including holidays or weekends) in advance of any work which is to be inspected or tested. The Village will provide KLWTD with notification of the proposed testing date and time. Tests performed in the absence of a Village and District representative shall be considered invalid and shall be repeated at the Owner's expense.
6. All testing shall only be performed after all work adjacent to and over the pipeline to be tested has been completed.
7. Gauges used for pressure pipe testing shall be scaled to the nearest 1.0 psi.
8. Gauges and pumps shall be in good working order with no noticeable leaks.
9. Backfilling, placement of fill, grading, initial base layering of pavement, concrete work, and any other superimposed loads shall be completed and in place prior to testing.
10. Pressure and leak testing for buried piping shall be made after all jointing operations are completed and restraints have been in place at least seven (7) days.
11. Sections of the system may be tested separately, but any defect which develops in a section previously tested and accepted shall be promptly corrected and retested.
12. Pressure tests shall be made between valves to demonstrate the ability of valves to sustain pressure.
13. Short sections of piping such as those between valves, may be isolated for testing. If short sections are tested, test plugs or bulkheads required at the ends of the test section

together with anchors, braces, and other devices required to withstand the hydrostatic pressure without imposing any thrust on the pipe line, shall be furnished and installed by the Owner/Developer. The Owner shall be solely responsible for any damage which may result from the failure of test plugs or supports.

14. All defects in piping systems shall be repaired and/or replaced and retested until acceptable. Repairs shall be made to the stand of quality specified for the entire system.
15. Testing shall include:
    a. All laterals to main gravity line, including wyes
    b. Each individual lateral connecting with a manhole
    c. Individual manholes
    d. Each force main
    e. Each lift station
    f. All valves and controls
    g. All under building sewer connections
16. The entire system shall be operated for two days to prove compatibility of equipment and to achieve proper adjustment for operation. Valves, pipes, tanks, and other items that are not operational or are only operated on occasion, shall be tested for the ability to meet required design criteria.
17. Prior to testing, the Owner/Engineer shall develop and submit scaled drawings to the Village Building Department of the existing and new plumbing scheduled for testing. The submitted drawings shall denote pipe lengths, pipe diameters, locations of pump stations, manholes, cleanouts, and any appurtenances and shall indicate all segments designated for final testing.

14.2 Vacuum Main, Appurtenances, and Accessories Testing

Prior to testing any segment of vacuum main, appurtenances or accessories, care shall be taken to protect all installed vacuum equipment during testing. Temporary taps and air releases, as allowed by the vacuum system manufacturer, shall be permissible to facilitate testing. The Owner/Developer is responsible to provide all required water required for these testing requirements at the Owner/Developer's cost. Water used for testing purposes shall be disposed of in a Village-approved location in accordance with state and federal laws and regulations.

All testing shall be performed in accordance with the procedures outlined in the *Airvac 2022 Municipal Design Manual* (or the most current version), the *Airvac 2010 Landbased Vacuum Systems Operation, Installation and Maintenance Manual* (or the most current version), and the Airvac Standard Specifications, Division 2 – Site Work, Section 02730 – Underground Vacuum Sewer Piping, Contractor Supplied Equipment, 2012 (or the most current version). In the event that a conflict occurs between the testing requirements specified in these documents, the most current version of the Airvac Standard Specifications shall prevail.

All testing shall be conducted in the presence of the vacuum system manufacturer's field representative as well as the Village, the Owner/Developer, and the Engineer of Record or other authorized representative. The results of all testing shall be submitted to the Village

as part of the construction record documentation. The following testing items are listed as examples and are not all inclusive:

- Airvac Sump Testing, 1-Piece and 2-Piece Pits;
- Buffer Tank Testing;
- External Breather Testing; and
- Vacuum Main Testing

.

14.3 Gravity Sewers

This section outlines the requirements for testing of gravity sewer pipe and gravity lateral connections. The Owner/Developer is responsible for providing any and all water required for these testing requirements at the Owner/Developer's costs.

14.3.1 Visual Inspections: New Systems Only

1. Prior to inspections and testing, all installed pipelines and manholes shall be cleaned.

2. The Village representative shall visually inspect all newly installed gravity sewer piping to verify alignment and grade and to ensure that the pipe is free from obstructions and debris.

3. A light source and mirrors will be used for "flashing" the sewer pipe one section at a time.

4. When the full diameter of the pipe is visible between adjacent manholes, the inspected segment of piping shall be deemed properly aligned and free of sags and debris.

5. Any sewer in which the direct light of a lamp cannot be viewed in either direction, full circle, between adjacent manholes shall be considered unsatisfactory unless the line is designed with horizontal deflections and shall be repaired.

6. If the inspected segment fails the visual inspection, the segment of pipe shall be cleaned and/or replaced and re-tested.

14.3.2 Leakage Testing: New and Existing Systems

Leakage is defined as the quantity of water to be supplied in the newly laid pipe or any valve section under test, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. Should any test of pipe laid disclose leakage greater than that allowed, the Owner/Developer shall locate, replace, and/or repair the defective joints, pipe, or valve until the leakage from the subsequent testing is within the specified allowance.

1. The allowable limits of infiltration or exfiltration for the entire system, or any portion thereof, shall not exceed a rate of 100 gallons per inch of inside pipe diameter per mile per 24 hours. No additional allowance will be made for residential service lines. The allowable limits of infiltration or exfiltration of manholes shall not exceed a rate of four gallons per manhole per 24 hours.

2. Any part or all of the system may be tested for infiltration or exfiltration, as directed by the Village. Prior to testing for infiltration, isolate the system to eliminate all external water sources. The system shall then be pumped out so that normal infiltration conditions at the time of testing are permitted.

3. The amounts of infiltration or exfiltration shall be determined by pumping into or out of calibrate drums or by other methods approved by the Village.

4. The exfiltration test will be conducted by filling the portion of the system being tested with water to a level equal to the lowest part of the manhole frame.

5. Tests shall be conducted on portions of the system not exceeding three (3) manhole runs or maximum of 1,200 feet whichever is greater unless otherwise directed by the Village. Tests shall be run continuously for two (2) hours. Test duration may be reduced to less than 2 hours at the discretion of the Village inspector.

6. Where infiltration or exfiltration exceed the allowable limits specified herein, the defective pipe, joints, or other fault construction shall be located and repaired. If the defective portions cannot be located, these portions shall be removed and reconstructed to the extent necessary to conform to the specified allowable limits.

7. The Owner/Developer, at no expense to the Village, shall provide all labor, equipment, and materials and shall conduct all testing required, under the direction of the Village.

14.3.3 Compensating for Ground Water Pressure

1. Where ground water exists, install pipe nipple at same time sewer line is placed. Use ½-inch capped pipe nipple approximately 10-inches long. Make installation through manhole wall on top of the sewer line where line enters manhole.

2. Immediately before performing line leakage test, remove cap, clear pipe nipple with air pressure, and connect clear plastic tube to nipple. Support tube vertically and allow water to rise in tube. After water stops rising, measure height in feet of water over invert of pipe. Divide this height by 2.3/psi to determine ground water pressure to be used in line testing.

14.3.4 Deflection Testing: New Systems Only

1. A deflection test shall be required for all plastic sewer pipe installed. Pipeline deflection testing shall be conducted after the final backfill has been in place for at least 30 days.

2. A GO-NO-GO Mandrel shall be pulled through the pipe a minimum of 60 days after the final placement of backfill and superimposed loads.

3. The deflection of the sewer pipe shall not exceed 5% when tested with a Mandrel specifically designed for the installed size and type of pipe.

4. Pipe segments which fail the Mandrel test shall be removed and replaced and retested. Because the inside diameter of composite plastic piping varies from solid wall PVC pipe, equipment systems used to perform Mandrel tests shall be specifically designed for the pipe material being tested.

5. Mandrels that do not specifically state the size and type of piping for which the testing is applicable shall not be allowed.

6. The minimum Mandrel diameter shall be accordance with the following:

Table 14-1. Minimum Mandrel Diameters

Material and Wall Construction	Nominal Pipe Size (inches)	Average I.D. (inches)	Minimum Mandrel Diameter (inches)
PVC–Solid (SDR 26)6	6	5.764	5.476
	8	7.715	7.329
	10	9.646	9.162
PVC–Solid (SDR 35)12	12	11.737	11.150
	15	14.374	13.655
	18	17.629	16.748
	21	20.783	19.744
	24	23.381	22.120
	27	26.351	25.033
PVC-Truss	8	7.750	7.363
	10	9.750	9.263
	12	11.790	11.201
	15	14.770	14.032
HDPE – Profile	18	18.000	17.100
	21	21.000	19.950
	24	24.000	22.800
	27	27.000	25.650
	30	30.000	28.500

7. Deflection testing shall be considered satisfactory if the mandrel can be pulled by hand through the pipe being tested. If the mandrel cannot be pulled through the pipe, replace, or correct the pipe and re-test until testing is satisfactory. Any pipe removed or corrected due to failing deflection testing shall also be re-tested for leakage.

14.4 Force Mains and Grinder Pump Service Lateral Connections

This section outlines the requirements for testing of wastewater force mains, including low pressure force mains and grinder pump service lateral connections.

14.4.1 Pressure and Leakage Testing: PVC and Ductile Iron Mains

1. All pipes shall be pressure tested in accordance with the current AWWA C-600 Standard with a no leakage tolerance.

2. Piping shall be slowly filled with water and all air expelled. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the installed air valves.

3. Prior to the commencement of testing, service lateral and force main pipe sections shall be flushed to remove any debris that may remain inside the lateral or main. The flushing procedure should develop a water velocity of at least 2.5 feet per second and should result in at least a 100% turnover of the water in the service lateral or main being flushed.

4. After each service lateral has been installed, flushed, partially backfilled, and fully charged with water, a hydrostatic test pressure of 150 psi shall be applied for a 10 minute period and for such additional period as necessary for the Village to complete inspection of the line under test. Do not exceed the pipe manufacturer's suggested time duration for the test pressure. If defects are noted, repairs shall be made and the test repeated until all parts of the pipe line withstand the test pressure.

   Apply leakage test pressure of 150 psi. Maintain pressure at a maximum variation of 5% during the entire leakage test. The duration of the leakage test shall be two (2) hours minimum, and for such additional time necessary for the Village to complete inspection of the line under test. Testing shall be conducted in accordance with the Hydrostatic Testing Requirements of AWWA C600 and C603. If the pressure drops more than 5 psi in one hour, the test shall be considered failed. The Owner is responsible for assuring that the cause of the test failure is determined, all necessary repairs have been made, and repeating the pressure test until the service lateral segment passes. Leakage measurements shall not be started until a constant test pressure has been established. The line leakage shall be measured by means of a water meter installed on the supply side of the pressure pump.

5. No leakage is allowed in exposed piping, buried piping with flanged, threaded, or welded joints or buried non-potable piping in conflict with potable water lines.

6. No more than 1,000' of force main shall be tested at one time.

7. Tested sections of buried piping with slip-type or mechanical joints will not be accepted if the piping has a leakage rate in excess of the rate determined by the following formulas:

   a. AWWA C-600 Ductile Iron Mains: **L = SDP/133,200**

   b. AWWA Manual No. M-23 – PVC Main: **L = NDP/7,400**

   where

L = the maximum permissible leakage rate, in gallons per hour, throughout the entire length of line being tested;

S = length of line tested (in feet);

D = nominal internal diameter (inches) of the pipe; and

P = the square root of the actual pressure (psig) on all joints in the tested portion of the pipe line. This actual pressure shall be determined by finding the difference between the average elevation of all the tested pipe joints and the elevation of the pressure gauge and adding the difference in elevation head to the authorized test pressure.

14.4.2 Pressure and Leakage Testing: Polyethylene Mains

1. Piping shall be slowly filled with water and all air expelled. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the installed air valves.

2. Subject pipeline shall be tested to a 4-hour expansion phase prior to commencing leakage testing. Pipeline expansion shall be accomplished by applying a hydrostatic test pressure of 150 psi. To compensate for the initial expansion of the pipeline, add sufficient make-up water at hourly intervals to return to the required test pressure. At the end of the fourth hour, the test phase is to commence.

3. At the conclusion of the fourth hour of the expansion phase, fill the pipeline again with makeup water to return to the test pressure. The test phase shall consist of a 2 or 3-hour pressure test as required by the Village. At the end of the test phase, measure the amount of makeup water required to return to the test pressure. The pipeline passes the pressure test if the makeup water required does not exceed the quantity identified in the table below:

Table 14-2. Allowable Makeup Water for 2-hr and 3-hr Pressure Testing

Nominal Pipe Size (in)	Allowable Makeup Water (Gallons/100 ft of Pipeline)	
	Two Hour Test	Three Hour Test
4	0.25	0.40
6	0.60	0.90
8	1.0	1.5
12	2.3	3.4
16	3.3	5.0
18	4.3	6.5
20	5.5	8.0
24	8.9	13.3

4. If any defects or leaks are revealed, the leaks shall be corrected and the pipeline retested after a minimum 24-hour recuperation period between tests. Total testing conducted on a section of pipeline shall not exceed 8 hours within a 24-hour period.

5. All apparent leaks discovered within one year from the date of final approval of the work by the Owner shall be located and repaired by the Contractor, regardless of the total line leakage rate.

14.5 Manholes

The section outlines the requirements for testing manholes.

1. Plug inlets and outlets and file manhole with water to height determined by the Village. Bypass pump wastewater as required.

2. Where practical, a manhole may be filled 24 hours prior to the time of testing, if desired, to permit normal adsorption into the pipe walls to take place.

3. The leakage allowance in each manhole shall not exceed 0.1 gallon/hour per foot diameter of the manual per foot of head above the invert. All manhole leakage testing shall be conducted during a low tide event and observed for a minimum of 30 minutes.

4. Defective manholes shall be repaired based on plan submitted and approved by the Village. Retest as specified.

14.6 Grease Interceptors

The section outlines the requirements for testing grease interceptors.

1. Plug inlets and outlets and fill manhole with water to height determined by the Village. Bypass pump wastewater as required.

14.7 Infiltration Testing under Buildings

All building sewers which are installed in permeable material subject to high water tables from adjacent bodies of water may be tested by the infiltration test when allowed. Decisions in all cases shall be made by the Village. Infiltration for each 100 feet of pipe shall not exceed the limits shown in the table below.

Table 14-3. Maximum Allowable Infiltration Rates for Buildings

Sewer Pipe Size (in)	Maximum Allowable Infiltration (Gals/100-ft of Building Sewer/hr)
4	1.6
6	2.4
8	3.2

All equipment required to conduct the foregoing tests, including, but not limited to, plugs, hoses, blocking, air pumps, water, and any other necessary equipment, shall be furnished by the Owner/Contractor.

The Contractor shall make a trial test of the installation and shall satisfy himself that the testing is acceptable before calling for an inspection. If an inspection fails to meet test requirements, then the Contractor shall locate and repair or replace all defective materials and workmanship. The type of repair and extent of repair which may be allowed shall be subject to the approval of the Village Building Department. After replacement or repairs have been made, the installation shall be retested until acceptable.

14.7 Salinity Testing

The section outlines the requirements for salinity testing and procedures for salinity testing.

1. Conduct field testing for salinity and submit documentation in accordance with the Florida Department of Environmental Protection (FDEP) FT 1300- Field Measurement of Salinity, dated March 31, 2008

2. Salinity testing shall be conducted at the pump station wet well during high tide events for the purpose of identifying the presence of tidal infiltration. Care should be exercised when selecting the high tide for salinity testing since the elevation of each high tide varies.

3. Acceptable salinity concentration shall be less than 1 part per thousand (ppt).

4. Reporting of salinity testing shall include the following information:
   a. Date and time of testing
   b. Location(s) of testing
   c. Make and model of instrumentation used for salinity measurements
   d. Reference current date and method of calibration used for instrumentation
   e. Report results of salinity measurements taken

An example Salinity Testing Form is provided at the end of this section.

14.8 Sequence of Testing

This section outlines the sequence of testing to be utilized for Village inspections. The sequence of testing shall be as follows:

1. Construction completed and all backfill and superimposed loads in place;

2. All landscaping over and around sewer appurtenances completed;

3. Manholes completed;

4. Lines thoroughly cleaned;

5. Visual inspections and testing (“flashing”);

6. Mandrel testing;

7. Pressure testing;

8. Leakage testing – Piping, Manholes & Grease Interceptors; and

9. Salinity testing.

14.9 Reporting Requirements

1. A Condition Report, signed and sealed by an engineer licensed in the State of Florida, must be accepted by the Village before the final tie-in is completed.

2. The Condition Report shall include the following:
   a. A description of the facility’s buildings and ancillary facilities which are connected (or plan to be connected) to the Village wastewater collection system. Describe the location and the type of facilities located at the site.
   b. A written evaluation of the condition of the existing collection and transmission facilities located at the site – include all gravity mains, laterals, manholes, pump stations, treatment facilities, force mains, valving, control panels, etc. Include materials of construction, age, and general condition of each system component. Describe the condition of manhole(s) and wet well interiors.
   c. Note if any of the following were observed:
      i. Standing water
      ii. Inflow and/or infiltration
      iii. Evidence of root intrusion
      iv. Roof drains, yard drains and/or storm drains tied into the system
      v. Incorrectly sized, clogged or non-functional grease traps
      vi. Other noticeable or apparent problems and/or abnormalities
   d. A drawing or sketch of the collection and/or transmission system tested; include all pipe lengths and pipe diameters. Include a typical cross section of existing manholes.
   e. A testing report that identifies personnel present at the time of testing; times and dates of testing; the testing and inspection procedures conducted; results of the tests; and any calculations.
   f. Results of testing conducted in accordance with Village testing requirements, indicating whether the test passed or failed. For sections of the system which failed, describe the course of action to correct deficiencies, and include the results of retesting. Include calculations and salinity testing results, include make and model of field instrumentation used, testing procedures referenced, and method of calibration used with field instrumentation.

END OF SECTION

FORM 14-1
SALINITY TESTING REPORT
VILLAGE WASTEWATER DEPARTMENT

Owner/Permittee:	**Salinity Tests Conducted By:**
Address:	**Other Individuals Present:**
Date of Salinity Testing:	**Islamorada High Tide (Location,Time & Level):**
Salinity Instrument Used (make & model #):	**Calibration Method Used:**
Most Recent Calibration (date):	**Comments:**

Time	Location Description	Salinity (ppt)

Signatures:

Village of Islamorada: _____

KLWTD Representative: _____

Engineer-of-Record: _____

15.0 GREASE INTERCEPTOR POLICY

15.1 Introduction

Grease, oil and sand can pose a serious problem for any wastewater collection system if not properly and adequately handled. When discharged into a collection system, grease can result in operational and maintenance problems inside the collection system as well as in the downstream lift stations and force mains. Additionally, grease inhibits the biological processes at the wastewater treatment facility. Ineffectively designed, installed, and/or maintained grease interceptors transfer costs properly borne by the grease generators to the Utility's customers.

Consideration of frequent and adequate cleaning of interceptors is important. Interceptors shall be provided when the resulting discharge from a commercial building contains excessive amounts of grease, oil, lint, sand or other solids and substances that are harmful or hazardous when discharged into wastewater, or in the opinion of the Village Wastewater Department the resultant discharge from such an occupancy will be detrimental to Village facilities and/or the KLWTD treatment facilities.

15.2 Contact Information

Questions regarding this program can be directed to wastewater@islamorada.fl.us or contact the Village Wastewater Department at 305-664-6450.

Written notifications must be delivered or mailed to the Village. Mailing information for the Village is as follows:

Islamorada, Village of Islands
Attn: Village Wastewater Department
86800 Overseas Highway, 3rd Floor
Islamorada, Florida 33036

15.3 Policies Regarding FOG Removal Devices and Operation

1. Facilities generating fats, oils, or grease (FOG) as a result of food manufacturing, processing, preparation or food service shall install, utilize and maintain grease interceptors. These facilities include but are not limited to restaurants, food manufacturers, food processors, hospitals, hotels, schools, nursing homes, mobile food trucks, and any other facility preparing, serving, or otherwise making food items for consumption. Interceptors shall not be required for residential users.

2. Facilities that have potential to discharge waste containing residual petroleum-based oil and grease, but not limited to car washes, boat yards, automotive repair facilities shall install and maintain an approved oil/water separator.

3. Other facilities may be required by the Village to install an approved FOG removal device, as appropriate, for the handling and disposal of wastes containing fats, oils, or greases.

4. Garbage or food grinders are not permitted in any establishment that discharges to the wastewater collection system.

5. Grease, oil and sand interceptors shall be provided when, in the opinion of the Village Wastewater Department (or its representative), they are necessary for the proper handling of wastewater containing excessive amounts of grease, oil or sand.

6. All interceptor units shall be of the type and capacity approved by the Village Wastewater Department (or its representative) and shall be located in such a manner to be easily accessible for inspection, sampling, sludge measurements, cleaning and proper maintenance. FOG removal devices shall function properly and be maintained in good operating condition according to the Minimum Design Standards specified herein, the manufacturer's guidelines, applicable codes, rules and regulations.

7. Grease interceptors shall be located in the facility's wastewater service lateral between all fixtures which may introduce oil and/or grease into the collection system and connection with the wastewater collection system. The location of any newly installed interceptors or FOG removal device must be approved by the Village Wastewater Department (or its representative) and the property Owner.

8. Interceptors or FOG removal devices shall be installed at the Owner's expense. Proper operation, maintenance and repair shall also be the Owner's expense.

9. Interceptors shall be cleaned, and repaired regularly, as needed, by the Owner at the Owner's expense.

10. Repair or maintenance of a grease interceptor or FOG removal device shall be completed within 15 days of written notification received from the Village Wastewater Department.

11. Wastewater from sanitary facilities and other similar fixtures shall not be introduced into the FOG removal device.

12. In the maintaining of these interceptors, the Owner shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates and means of disposal which are subject to review by the Village (or its representative). Any removal and hauling of the collected materials not performed by the Owner must be performed by a licensed waste disposal firm.

13. Existing food service establishments which do not have a grease interceptor or grease trap shall be required to install an interceptor or trap in compliance with the design specifications found in this policy within 90 days of approval of this program.

14. Existing food service establishments which have a grease interceptor or grease trap which is not in compliance with the design specifications found in this policy shall be required to upgrade or replace the existing interceptor or trap upon a significant change in the determinative factors for grease interceptor or grease trap sizing, including seating capacity increases, as stated in this policy and/or in the most current edition of the Florida Building Code – Plumbing, Chapter 10. All existing food service establishments shall notify the Village Wastewater Department of any changes in the grease interceptor or grease trap sizing factors described above within 60 days of the change(s). Interceptor upgrades may also be required if a grease waste discharge causes the accumulation of grease downstream of the food service establishment, reduces the capacity of the Village's wastewater collection system, or causes adverse impacts on the operation of the Village's wastewater collection system.

15. Existing grease interceptors shall be pumped out, pressure washed, inspected by the facility's Engineer-of-Record or the Village Building Department inspector, and pass a hydrostatic test to confirm that the grease interceptor is not subject to inflow or infiltration. Hydrostatic testing shall be observed by a Village Building Department inspector or a representative from the Village Wastewater Department. Facilities with existing grease interceptors which are not permitted through FDEP shall perform these requirements within the initial 180 days of registering their grease trap with the Village. These facilities shall submit a cleaning and maintenance report and a testing report to the Village Wastewater Department for confirmation.

16. New food service establishments shall have a grease interceptor or grease trap of the type and capacity specified by the project design professional and approved by the Village Building Department. Interceptors shall be located and designed to be easily accessible for inspection and maintenance and to assure compliance with (reference the section on maintenance). Grease traps are prohibited in new construction except where specifically authorized by the Village Building Department.

17. Liquid wastes shall be discharged to the FOG removal device through the inlet pipe only and in accordance with the guidelines of this document, the manufacturer's guidelines, and applicable codes.

18. No chemical, enzyme, live bacteria, or other grease cutter or additive may be introduced to the FOG removal device or to the food service facility for emulsifying fats, oils or greases for the purpose of clearing drains or circumventing the design of the interceptor. Systems or additives that dissolved fats, oils or greases are prohibited.

19. No user may intentionally allow the direct discharge of fats, oils or grease into the wastewater collection system.

20. No person shall modify or use a FOG removal device for anything other than its intended use as defined in the guidelines of this document, the manufacturer's guidelines, and applicable codes, rules, and regulations.

15.4 Design and Capacity

Grease interceptors will be required on all food service establishments where any kind of food is prepared on site, or in the opinion of the Village Engineer the resultant discharge from such an occupancy will be detrimental to the Village wastewater collection and/or treatment facilities. Examples of business that will be required to have a grease interceptor include restaurants, delis, bakeries, sandwich shops, bars, clubs, hotel kitchens, schools, hospitals, mobile food dispensing vehicles (MFDVs), etc.

When multiple interceptors are required, they must be installed in series. This requirement also applies to pre-existing restaurants (or any facility) that requires additional capacity to augment their existing interceptors. Any existing tanks plumbed in parallel must be modified to be routed in series, where possible.

Interceptors shall not be shared by multiple business locations. Each business locations shall be required to have its' own interceptor(s) and its' own separate plumbing to the interceptor(s). When the same establishment has multiple discharge points that require installation of interceptors at different locations, such as an institutional facility with a kitchen and a laundry, each use shall be provided with a separate plumbing and the require interceptor(s).

All equipment and plumbing fixtures in a food service facility that may introduce fats, oil or grease into the Village wastewater facilities must be connected through the grease interceptor, including but not limited to:

a) Scullery sinks (two or three compartment)
b) Pots and pan sinks
c) Floor drains in kitchens, walk-in coolers, and washing areas (not including public restrooms)
d) Pre-wash sinks
e) Janitor sinks
f) Dishwashers and other washing machines
g) Automatic hood wash units
h) Indoor garbage can washes
i) Garbage grinders or disposals

Grease interceptors shall be sized, designed, tested and installed in accordance with the most current version of the Florida Building Code – Plumbing. The design of a grease interceptor shall be based on peak flow and shall be sized and designed to allow efficient removal of fats, oils, and grease from discharges into the Village's wastewater collection system. Grease interceptors shall be sized and designed on an individual case by case basis

as determined by the guidelines set forth in these Minimum Design Standards; applicable codes, rules, and regulations, and as approved by the Village Wastewater Department or its representative. Sound engineering judgement shall be applied to each system design.

An under-the-sink grease trap may be permitted for installation at a new facility after review and approval of a variance by the Wastewater Department or its representative. Existing facilities which utilize an under-the-sink grease trap may be required to install a properly designed outdoor grease interceptor if the indoor under-the-sink grease trap is found to be in violation of the standards set forth herein more than two (2) times in a six (6) month period.

Oil/Water interceptors are required for all establishments where automobiles are serviced, greased, or repaired. Engine oil, transmission oil, coolant, solvents, additives, brake fluid and any other fluid collected in the process of serving vehicles/mechanical equipment shall not be discharged into the interceptor or other plumbing; the handling and disposal of these fluids shall comply with the FDEP and Village rules and regulations.

Oil/Water interceptors are also required for outdoor hydraulic elevators where sump pumps and/or drains are proposed to discharge to the Village's wastewater collection system. Indoor elevators may discharge to the Village wastewater collection system, only if an approved alarm is installed that meets the most current edition of the Florida Building Code.

Oil/Water separators shall be sized based on the most current version of the *Florida Building Code – Plumbing.*

Lint interceptors are required for all launder mats, apartment complexes, and resorts with a central laundry room with at least five (5) washing machines or more. Interceptors shall be equipped with a wire basket, secondary screen, or similar device that's removable for cleaning and prevents passage of solids ½-inch or larger in size, strings, rags, buttons, or other materials detrimental to the wastewater facilities. Lint interceptors shall be sized based on the following formula: (number of washers) x (cycles per hour) x (20 gallons per cycle) x (2.0 hours retention time) x (1.5 storage factor). The minimum sized lint interceptor shall be **750 gallons**. The interceptor shall be installed with a gasketed cover to provide a water-tight seal. Lint interceptors shall be cleaned on a regular basis but are not required to submit cleaning and maintenance reports to the Village.

All interceptors shall be constructed of concrete and its construction shall meet all applicable standards found in Chapter 64E-6, Florida Administrative Code. Other design construction materials may be considered by the Village Wastewater Department where site constraints render the standard concrete interceptor less feasible.

All interceptors shall be provided with two (2) access manholes: one (1) over the inlet and one (1) over the outlet. Village approved traffic rated lids shall be installed with manhole covers to finished grade. For interceptors sized 1,250 gallons or less, manhole frame and covers and inside openings in the top slab shall be manufactured by U.S. Foundry with a 24-inch minimum clear opening. For interceptors larger than 1,250 gallons, manhole frame and covers and inside openings in the top slab shall be manufactured by U.S. Foundry, Model 230-AB-M, double ring and cover, and with a 30-inch minimum clear opening.

All manhole covers shall be marked with the lettering “GREASE”, “OIL” or “LINT”, as applicable. All grease interceptor manhole covers shall be bolted down, gasketed covers with watertight capability. Interceptor manhole covers should terminate 1-inch above finished grade. Interceptors should not be constructed in flood prone areas and or near flow from rainwater down spouts or other stormwater conveyances.

Construction as-built drawings shall demonstrate that existing grease interceptors on the permitted property have been retrofitted with bolt-down, gasketed covers. Accepted variances to this requirement will be granted to the permittee for one of the following conditions:

a. Existing grease interceptors which are retrofitted with an ABS Plastic Inflow Protector Cover; or

b. Providing supplemental topographic data that sufficiently demonstrates runoff from a 25-year rainfall event is directed away from all wastewater infrastructure lids and covers and will not pond around the structures, and that the grease interceptor rim elevation is above the 25-year storm surge elevation or the 10-year storm surge elevation if the 25-year storm surge elevation is not available; or

c. Providing a signed and sealed engineering study with backup data that demonstrates that the wastewater infrastructure lids and covers will not be prone to inflow during a 25-year rainfall event and 25-year storm surge event or the 10-year storm surge elevation if the 25-year storm surge elevation is not available.

15.5 Interceptors – Schedule of Pumping and Upgrades

All grease interceptors shall be pumped out at a minimum frequency of every 90 days to ensure than sediment and floating materials do not accumulate and impair the efficiency of the interceptor. At the discretion of the Village Wastewater Department, existing facilities may be required to increase their pump-out frequency or upgrade the capacity of their existing grease interceptor whenever the following conditions exists:

a) The facility is found to contribute fats, oils, and/or grease in quantities that are causing stoppages, overflows or creating increased maintenance within the Village’s collection system.

b) The facility has a discharge concentration of fats, oils and grease that exceeds 100 mg/L.

If an upgrade of the existing grease interceptor is required, the new grease interceptor shall be designed and sized in accordance with applicable codes, rules, and regulations.

The Owner is responsible to ensure submittal to and receipt of all records by the Village Wastewater Department or its representative. This responsibility may be handled by the Owner or a designated representative, such as property manager or ground lessee.

Records for each quarterly cleaning shall be submitted to the Village Wastewater Utility Department within two (2) weeks from the last day of each 90-day period.

15.6 Interceptors – Schedule of Deep Cleaning

Grease interceptors shall be deep cleaned at least once a year or at a greater frequency as required to ensure proper operation. Pressure washing or craping walls, baffles, inlet and outlet tees are acceptable methods for deep cleaning.

Deep cleaning records shall be submitted to the Village Wastewater Department (or designated representative) within two (2) weeks from the last day of the month of when the deep cleaning activity was performed.

In lieu of the deep cleaning requirements, a facility manager or property owner may submit information to the Village Wastewater Department (or designated representative) for the purpose of demonstrating that deep cleaning of the interceptor is not required. Acceptable information to be considered for review by the Wastewater Department shall include: photographs, actual measured depths of floatable materials, and measured depths of solid materials that have collected on the tank bottom. The deep cleaning requirement may only be waived by the Village Wastewater Department (or designated representative). The waiver may only apply for the year in which the waiver was submitted and the deep cleaning requirement for the following year will be waived (if approved by the Village Wastewater Department). Facilities may re-apply for an annual waiver.

15.7 Grease Traps – Schedule of Cleaning

Existing under-the-sink grease traps must be cleaned twice (2) weekly at a minimum, or as frequently as required, to prevent the pass through of fats, oils, and grease into the Village's wastewater collection system.

Cleaning records for these devices shall be maintained by the facility manager or the Owner and submitted to the Village Wastewater Department on a monthly basis. Cleaning records must be received by the Village Wastewater Department within two (2) weeks from the last day of the month reporting.

15.8 Pumping and Maintenance General Requirements

All food service establishments are required to utilize a licensed grease waste hauler to pump out the grease interceptor. All pump-out vendors utilized in the Village shall hold a current Village Contractors Registration. A log of pumping activities shall be posted in a conspicuous location for access by Village Wastewater Department personnel. The log shall include date, time, volume pumped, and the hauler's name, license number, and signature.

All grease interceptors shall be pumped at a minimum frequency of once every 90 days. More frequent pumping may be required to meet the article requirements above. The Village

may also mandate more frequency pumping based on inspection results and the wastewater collection system capacity.

For each pump-out, the licensed hauler or facility manager (or his designee) shall submit a service record with the following information:

- Date of service
- Business name of the licensed hauler
- Signature of the licensed hauler
- Volume of grease pumped (gals)

The food service establishment shall provide proof of ongoing service by a licensed grease waste hauler upon request by the Village.

Grease interceptor cleaning and maintenance shall include pumping the interceptor until empty, and cleaning the side walls, baffle walls and cross-pipes, and inlet and outlet pipes. Decanting, skimming, or back flushing is prohibited. A full pump-out is required. Pipes shall be immediately restored to their original design configuration should any damage occur. No emulsifiers, grease cutters, or other chemicals which can cause grease to pass through the interceptor may be used in the maintenance of grease interceptors or drain lines.

Grease interceptors shall be pumped at a frequency to maintain a grease layer of less than 6 inches on the top of the interceptor and a solids layer of less than 8 inches on the bottom of the interceptor. The measurement point for determination of the grease and solids layer shall be adjacent to the outlet pipe.

15.9 Disposal of Grease Waste and Solids

Fats, oils, grease, and solids removed from any fats, oil and grease removal device shall be disposed of at a County-approved facility authorized to accept such materials and dispose of said materials in accordance with the requirements of all federal, state and local regulations.

15.10 Spill Reporting

Upon knowledge or awareness of any accident, spill or other discharge of grease waste in excess of 20 gallons which has occurred within the Village, the licensed grease waste hauler shall notify the Village within 24 hours, following procedures contained in the approved waste hauler's permit.

The licensed hauler shall be responsible for all clean-up activities for any spill which he was responsible. All cleanup activities shall be performed in a manner approved by federal, state, and local agencies.

15.11 Recordkeeping and Reporting

A file of records pertaining to interceptor maintenance and grease disposal shall be maintained onsite by the responsible party for a period of at least three (3) years. Written

records of inspections, pumping and disposal information, cleaning, and maintenance activities shall be made available to the Village (or its designated representative) during normal working hours.

15.12 Non-Compliance

The Village may issue, but shall not be required, a written notice of violation and non-compliance to Owner and/or Customer stating the nature of the violation. The Owner and/or Customer shall have five (5) business days to schedule corrective action and the corrective action shall be completed within fifteen (15) days after date of the written notice. The Owner and/or Customer shall submit confirmation to the Village (or its authorized representative) that demonstrates compliance within five (5) business days of the date of the corrective action. The schedule shall govern unless an alternate schedule is approved by the Village or its authorized representative. The Village may have any pumping, cleaning, repairs, upgrades and/or device installations performed on behalf of a non-compliant Owner and/or Customer and charge all applicable costs and fees to an Owner and/or Customer, and shall have all rights and remedies for enforcement of this Grease Interceptor Policy as set forth In the Wastewater Utility Policy.

An Owner and/or Customer shall be considered in violation and out of compliance if any of the following occur:

a) The grease or solids collector/reservoir in a grease trap is more than 80 percent full.
b) The top layer of oil and grease exceeds 12 inches or the solids layer on the bottom of the interceptor exceeds 12 inches.
c) For a FOG removal device, if the retained oil leaks into the discharge, the captured oil reservoir is full or overflowing, or the containment area or vault is flooded with oil or water.
d) A facility is found to be contributing oil or grease in quantities sufficient to cause stoppages, overflows, or require increased maintenance in the wastewater collection system.
e) A facility is found to have discharge concentration of fats, oil and grease that exceeds 100 mg/L.
f) Any failure to properly maintain or repair the FOG removal device in accordance with the provisions stipulated herein.
g) Failure to complete, sign, and submit pumping activity reports and maintenance records within the established timeframe required by the Village.
h) Failure to maintain and provide access to logs, files, receipts, and records for inspection or monitoring as required by the Village or its designated representative during normal business hours.
i) Failure to provide the Village or its representative access to the FOG removal device for compliance inspections.
j) A facility that generates fats, oil and grease and does not have an approved FOG removal device.
k) If the grease interceptor baffle, or inlet and/or outlet piping are in poor condition, or if an improper seal is allowing leakage or odors to escape.

15.13 Exemptions

It is Village's objective to avoid the introduction of fats, oils, and grease into the wastewater collection system. However, there are conditions of occupancy where a grease interceptor may not be necessary. To qualify to an exemption from being required to install a grease interceptor, the following minimum criteria must be met:

a) No food preparation on-site;
b) The following equipment is prohibited from being on-site: oven, dishwasher, stove top cooking surfaces/griddle, fryers, ranges, or any equipment used to cook food.
    1. Only pre-made food will be allowed to be heated onsite using the following equipment: toasters, microwaves, or sandwich presses.
    2. If serving food on-site, all food is served on paper/plastic plates using disposable utensils or in the pre-packaging which it was brought on-site;
    3. All condiments are pre-packaged in individual servings.

If the above criteria cannot be initially met or if it is found that after an exemption has been given and subsequently observed that the above criteria are no longer being complied with, then a Village-approved grease interceptor shall be installed. Failure to install the interceptor will result in a violation of the Village's Wastewater Utility Policy outlined in the Florida Administrative Code and may result in fines issued against the property.

Any exemptions provided are permanent, as long as these requirements are continually met.

15.14 Best Management Practices

Best management practices (BMPs) are standards which have been established and proven to be beneficial in the removal and reduction of oils and grease. Employees should be instructed in using BMPs with periodic training sessions to enhance their knowledge of oil and grease management. Training courses and exams for voluntary certification in industrial pretreatment are offered through the Florida Industrial Pretreatment Association (FIPA). These courses are open to industrial pretreatment professionals, laboratory personnel, and water/wastewater operators. For upcoming dates on training courses, go to http://fipaonline.com/training.htm.

15.15 Definitions

Fats, Oils and Greases (FOG) – Organic polar compounds derived from animal and/or plant sources that contain multiple carbon chain triglyceride molecules. These substances are detectable and measurable using analytical test procedures outlined in 40 CFR 136, as may be amended from time to time. All are sometimes referred to herein as "grease" or "greases".

FOG Removal Device – Inclusive of all devices constructed for the removal of fats, oils and grease, including, but not limited to, grease interceptors, grease traps, and oil/water separators.

Food Service Establishment – Establishments which prepare and/or package food for

beverages for sale or consumption, on or off-site, with the exception of private residences. Food service establishments shall include, but are not limited to, food manufacturers, food packagers, restaurants, grocery stores, bakeries, lounges, hospitals, nursing homes, churches, schools and all other food service establishments not listed above.

Grease Interceptor, Grease Trap, or Grease Removal Device – An appurtenance designed to separate grease, oils and fats from wastewater flow with a containment area designed to collect, contain, or remove food wastes prior to discharge to the wastewater collection system.

a) **Grease Interceptor** – a vault with a rated flow of more than 50 gallons per minute (gpm), a minimum capacity of 750 gallons, and a maximum capacity of 1,250 gallons, normally installed underground, outside of a food service establishment. The capacity of the interceptor provides adequate residence time so that the wastewater has time to cool, allowing time for any grease to congeal and rise to the surface where it accumulates until the interceptor is cleaned.

b) **Grease Trap** – a smaller separator/containment box with a rated flow of 50 gpm or less located inside or outside the food service establishment. These are sometimes called under-the-sink interceptors or under-the-counter grease traps.

c) **Grease Removal Device** – a grease trap than has an automatic mechanism to remove the separated fats, oil, and grease.

Grease Waste Hauler – a business which collects and transports grease waste to a disposal facility that complies with all applicable federal, state, and local laws and ordinances. A grease waste hauler may also provide other services to a food service establishment related to grease interceptor or grease trap maintenance. All grease waste haulers utilized in the Village shall hold a current Village Contractors Registration.

Oil/Water Separator – a device used to separate oil from wastewater before being discharged into the wastewater collection system. This device shall be utilized at, but not limited to, mechanical repair and maintenance shops, boat yards, car washes and facilities where floor drains collect motor oil, transmission fluid, lubricating oil, grease, hydraulic oil, etc.

Wastewater Treatment Facility (WWTF) – a “treatment works” as defined by Section 212 of the Act (33 U.S.C. _ 1292). This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of wastewater or industrial wastes of a liquid nature and any conveyances which convey wastewater to a treatment plant.

END OF SECTION

Form 15-1

GREASE TRAP CLEANING AND MAINTENANCE REPORT

FACILITY NAME: _____ **TELEPHONE:**_____ **SUBMITTAL DATE:** _____

FACILITY ADDRESS: _____ **CONTACT NAME:** _____

UTILITY ACCOUNT #:_____ **GREASE REMOVAL DEVICE SIZE:** _____

CLEANING COMPANY: _____ **ADDRESS:**_____ **TELEPHONE:**_____

DATE	TIME	EMPLOYEE OR COMPANY	GALLONS REMOVED (Qty & Material Type)	METHOD OF DISPOSAL	COMMENTS/ NOTED DEFECTS	WITNESS (Initials)

FORM 15-2. FATS, OILS AND GREASE REMOVAL DEVICE REGISTRATION FORM

Facility Name:						Date:					
Facility Address:											
Contact Name:											
Telephone #:						Alternate Phone#:					
Mailing Address *(if different from above)*											
Initial ONLY if your facility DOES NOT generate Fats, Oils, and Grease as described in the Village's Minimum Design Standards, Section 15. PLEASE NOTE, YOU ARE STILL REQUIRED TO SIGN PAGE 2 OF THIS FORM.										Initial Here	
Seating Capacity *(if applicable):*	0-50:		51-100:		101-250:		>250:				
1. Chose the description that best described your facility type:											
Fast Food Restaurant		Hospital		Other							
Full Service Restaurant		Hotel		If Other please describe:							
Drive Thru Restaurant		Office									
Coffee Shop/Cafe		Marine Service									
Bakery		Marina									
Supermarket		Auto Repair									
2. Check each day your business is open:											
Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
3. Check the meals served at your facility (if applicable);											
Breakfast:		Lunch:		Dinner:		Snack/Coffee:		Food Prep Only:			
4. Does this business have a grease removal device?	Yes:		No:		*If 'No', go to Question #6*						
5. Complete the following for EACH grease removal device at your business (If more than 1 device exists at your business, use additional sheets as necessary)											
FOG REMOVAL DEVICE INFORMATION											
Indoor or Outdoor:		Size (gallons):									
Location:											
Manufacturer:											
How frequently is your FOG device cleaned and/or pumped?											
How is grease disposed of?											
If a Contractor or Pumper is utilized, please complete the following:											
Company Name:											
Address:											

Telephone #:							
6. Chose each of the items listed below that are present at your facility:							
Fryer		How many?		Grill		How many?	
Oven		How many?		Tilt Kettle		How many?	
3-Bay Pot Sink		How many?		2-Bay Pot Sink		How many?	
Single Bay Pot Sink		How many?		Pre-Rinse Sink		How many?	
Dishwasher		How many?		Mop Sink		How many?	
Work Station		How many?		Other		How many?	
If "Other" is selected, please describe:							
7. If your facility has grills/ovens, which type of exhaust cleaning system is used to clean the filters:							
Automatic Cleaning System:				Manual Cleaning System:			
8. If you manually clean hood filters, where are they cleaned?		Onsite		Offsite *(by a contractor)*			
9. If cleaning hood filters on-site, described the process in detail, e.g. location, method, frequency, etc.							
10. If fats, oils and grease are stored on the premises, described where materials is stored:							
11. Do you use additives associated with your grease containment device, floor drains, sewer lines, etc. to assist with cleaning them:		Yes		No			
12. If you answered "yes" to Question #11, please describe the additives used:							
13. If you answered "yes" to Question #11, please describe where additives are used:							
By signing below you acknowledge that the information that is provided herein is factual to the best of your knowledge. You also acknowledge that you have read and understand the Village's Grease Interceptor Policy that is available to down at www.islamorada.fl.us. You are also aware that you must notify the Village Utility Department within 30 days if any of the information provided on this Registration Form changes. Questions regarding the program and its requirements should be directed to the Village Utility Department at 305-664-6464.							
Signature:				Date:			
Print Name:							
Please complete this form in its entirety and forward via email, fax or mail to: Islamorada, Village of Islands Wastewater Department Attention: Grease Trap Maintenance Program 86800 Overseas Highway Islamorada, Florida 33036 Fax: 305-664-6464 Email: suzi.rubio@islamorada.fl.us							

SECTION 16

NOTIFICATION/APPLICATION FOR CONSTRUCTING A DOMESTIC WASTEWATER COLLECTION/TRANSMISSION SYSTEM

DEP FORM 62-604.300(3)(a)

https://floridadep.gov/sites/default/files/Form%2062-604.300_3a_10_04_2021.pdf

Florida Department of Environmental Protection

Notification/Application for Constructing a Domestic Wastewater Collection/Transmissions System

Part I - General

Subpart A: Permit Application Type (Check only one)*

☐ Individual permit for a domestic wastewater collection/transmission system serving **10 or greater** equivalent dwelling units (EDU). An EDU is equal to 3.5 persons. Criteria for an individual permit are contained in Rule 62-604.600(7), F.A.C.
Application fee: $500

☐ Individual permit for a domestic wastewater collection/transmission system serving **less than 10** equivalent dwelling units (EDU). An EDU is equal to 3.5 persons. Criteria for an individual permit are contained in Rule 62-604.600(7), F.A.C.
Application fee: $300

☐ Minor revision to an individual permit for a domestic wastewater collection/transmission system.
Application fee: $250

☐ Notice of Intent to use the general permit for a domestic wastewater collection/transmission system. Criteria for a general permit are contained in Rule 62-604.600(6), F.A.C. Projects not meeting the criteria in Rule 62-604.600(6), F.A.C., must apply for an individual permit.
Application fee: $250

***Note**: Each non-contiguous project (i.e., projects that are not interconnected or are not located on adjacent streets or in the same neighborhood) requires a separate application and fee.

Subpart B: Instructions

(1) This form shall be completed for all public and private domestic wastewater collection/transmission system construction projects as follows:
- If this is a Notice of Intent to use the general permit, this notification shall be submitted to the Department **at least 30 days prior to initiating construction**.
- If this is an application for an individual permit, the permit must be obtained prior to initiating construction.

(2) One copy of the completed form shall be submitted to the appropriate DEP district office or delegated local program along with the appropriate fee, and one copy of the following supporting documents. Checks should be made payable to the Florida Department of Environmental Protection, or the name of the appropriate delegated local program. Forms and documents may be submitted electronically in accordance with the Wastewater Electronic Document Submission instructions available from DEP's website.
- If this is a Notice of Intent to use the general permit, attach a site plan or sketch showing the size and approximate location of new or altered gravity sewers, pump stations and force mains; showing the approximate location of manholes and isolation valves; and showing how the proposed project ties into the existing or proposed wastewater facilities. The site plan or sketch shall be signed and sealed by a professional engineer registered in Florida.
- If this is an application for an individual permit, one set of plans and specifications shall be submitted with this application. The plans and specifications shall include lift station design calculations if a lift station is proposed. Chapters 10 and 20 of *Recommended Standards for Wastewater Facilities*, 2014, provide helpful guidance on the proper preparation of plans and specifications. The plans and specifications shall be signed and sealed by a Professional Engineer registered in Florida.

(3) All information shall be typed or printed in ink if submitting paper forms. Where attached sheets (or other technical documentation) are utilized in lieu of the blank spaces provided, indicate appropriate cross-references on the form. For Items (1) through (4) of Part II of this application form, if an item is not applicable to your project, indicate "NA" in the appropriate space provided.

Part II – Project Documentation

(1) Collection/Transmission System Permittee

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

(2) General Project Information

Project Name _____

Project Address _____

City _____ State _____ Zip _____

County _____ Latitude _____ Longitude _____

Project Description and Purpose (including the total length and material of each diameter of proposed gravity sewers and forcemains, total number of manholes, total number of pump stations, and connections to existing system):

Estimated date for: Start of construction _____ Completion of Construction _____

Number of connections to existing system or treatment plant _____

(3) Project Capacity

Type of Unit	Number of Units	Population Per Unit	Total Population (Number of Units x Population Per Unit)	Per Capita Flow in Gallons per Day (GPD)	Total Average Daily Flow in GPD (Total Population x Per Capita Flow)	Peak hour flow in Gallons Per Minute (GPM)
Single-Family Home						
Mobile Home						
Apartment						
Commercial, Institutional, or Industrial Facility*						
Total	NA	NA		NA		

* Description of commercial, institutional, and industrial facilities and explanation of method used to estimate per capita flow for these facilities:

(4) Pump Station Data (attached additional sheets as necessary

Location	Type	Maximum Estimated Flow to the Station (GPD)	Average Estimated Flow to the Station (GPD)	Minimum Estimated Flow to the Station (GPD)	Operating Conditions [GPM @ FT (TDH)]

(5) Collection/Transmission System Design Information

A. This information must be completed for all projects by the applicant's professional engineer, and if applicable, those professional engineers in other disciplines who assisted with the design of the project. The checklist below shall be used for conventional collection/transmission systems while Attachment I to this form shall be used for low pressure sewer systems, including septic tank effluent pump (STEP) systems, and Attachment II shall be used for vacuum sewer systems (include Attachments I or II with the submittal of this form as applicable). These checklists cover important items but are not necessarily completely comprehensive of collection system construction and do not relieve the engineer from designing the collection system following sound engineering practices.

Complete the tables below (or Attachments I or II as applicable) as follows:

- The engineer shall initial each requirement if the project has been designed to comply with the standard or criteria.
- Mark "NA" if the requirement does not apply to this project and provide an explanation in section (5)B.
- Mark "NC" if the project has not been designed to comply with the requirement and provide an explanation in section (5)B, including any rule references.

Note, if the project has not been designed in accordance with the standards and criteria set forth in Rules 62-604.400(1) and (2), F.A.C., an application for an individual permit shall be submitted. However, if Rules 62-604.400(1) and (2), F.A.C., specifically allow for another alternative that will result in an equivalent level of reliability and public health protection, the project can be constructed using the general permit. Also note that each requirement below and in Attachments I and II includes a reference to guidance or rule for further information. The guidance documents given in the checklists are as follows:

- "RSWF" – Recommended Standards for Wastewater Facilities (2014). Health Research, Inc., Health Education Services Division, P.O. Box 7126, Albany, NY 12224, www.healthresearch.org
- "MOPFD-12" – Alternative Sewer Systems, Manual of Practice No. FD-12. Alternative Sewer Systems (1986). Water Environment Federation, 602 Wythe Street, Alexandria, VA 22314, www.wef.org.
- "FL DSG" – Design and Specification Guidelines for Low Pressure Sewer Systems (1981). Department of Environmental Protection, 2600 Blair Stone Road, MS 3540, Tallahassee, FL 32399-2400, www.floridadep.gov.
- "EPA ACS" - Alternative Wastewater Collection Systems (1991). EPA/625/1-91/024. NTIS# PB93-1162591N2; National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, www.ntis.gov.

General Requirements

Initials (or "NA" or "NC")	Item Number	Requirement
	1	The project is designed based on an average daily flow of 100 gallons per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification is used to better estimate the flow. The design includes an appropriate peaking factor, which covers I/I contributions and non-wastewater connections to those service lines.(Note, see Attachment I for low pressure sewer systems) [RSWF 11.243]
	2	Procedures are specified for operation of the collection/transmission system during construction if work is performed on a system currently in operation. [RSWF 20.15]
	3	The project is designed to be located on public rights-of-way, land owned by the permittee, or easements and to be located no closer than 100 feet from a public drinking water supply well and no closer than 75 feet from a private drinking water supply well; or documentation is provided in Part II.(5)B., showing that another alternative will result in an

Initials (or "NA" or "NC")	Item Number	Requirement
		equivalent level of reliability and public health protection. [62-604.400(1)(b) and (c), F.A.C.]
	4	The project is designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water pipes passing through or coming into contact with any part of a sewer manhole. [RSFW 38.1]
	5	The project is designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, non-contact cooling water except as provided by Rule 62-610.668(1), F.A.C., and sources of uncontaminated wastewater, except to augment the supply of reclaimed water in accordance with Rule 62-610.472(3)(c), F.A.C. [62-604.400(1)(d), F.A.C.]
	6	The project is designed so that all new or relocated, buried sewers and force mains, are located in accordance with the separation requirements from water mains and reclaimed water lines of Rules 62-604.400(2)(g) and (h), F.A.C. Note, if the criteria of Rules 62-604.400(2)(g) 4. or (2)(h)3., F.A.C., are used, describe in Part II.(5)B. alternative construction features that will be provided to afford a similar level of reliability and public health protection. [62- 604.400(2)(g) and (h), F.A.C.; 62-555.314, F.A.C.]

Gravity Sewers

Initials (or "NA" or "NC")	Item Number	Requirement
	7	The project is designed with no public gravity sewer conveying raw wastewater less than 8 inches in diameter. [RSWF 33.1]
	8	The design considers buoyancy of sewers, and appropriate construction techniques are specified to prevent flotation of the pipe where high groundwater conditions are anticipated. [RSWF 33.3]
	9	All sewers are designed with slopes to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Manning's formula using an "n" value of 0.013; or if it is not practicable to maintain these minimum slopes and the depth of flow will be 0.3 of the diameter or greater for design average flow, the owner of the system has been notified that additional sewer maintenance will be required. The pipe diameter and slope are selected to obtain the greatest practical velocities to minimize solids deposition problems. Oversized sewers are not specified to justify flatter slopes. [RSWF 33.41, 33.42, and 33.43]
	10	Sewers are designed with uniform slope between manholes. [RWSF 33.44]
	11	Where velocities greater than 10 fps are designed, provisions to protect against displacement by erosion and impact are specified. [RSWF 33.45]
	12	Sewers on 20% slopes or greater are designed to be anchored securely with concrete, or equal, anchors spaced as follows: not over 36 feet center to center on grades 20% and up to 35%; not over 24 feet center to center on grades 35% and up to 50%; and not over 16 feet center to center on grades 50% and over. [RSWF 33.46]
	13	Sewers 24 inches or less are designed with straight alignment between manholes. Where curvilinear sewers are proposed for sewers greater than 24 inches, the design specifies compression joints; ASTM or specific pipe manufacturer's maximum allowable pipe joint deflection limits are not exceeded; and curvilinear sewers are limited to simple curves which start and end at manholes. [RSWF 33.5]
	14	Suitable couplings complying with ASTM specifications are required for joining dissimilar materials. [RSWF 33.7]
	15	Sewers are designed to prevent damage from superimposed loads. [RSWF 33.7]
	16	Appropriate specifications for the pipe and methods of bedding and backfilling are provided so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressures and ovalation of the pipe, nor seriously impair flow capacity. [RSWF 33.81]
	17	Appropriate deflection tests are specified for all flexible pipe including PVC. Testing is

Initials (or "NA" or "NC")	Item Number	Requirement
		required after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system. Testing requirements specify: 1) no pipe shall exceed a deflection of 5%; 2) using a rigid ball or mandrel for the deflection test with a diameter not less than 95% of the base inside diameter or average inside diameter of the pipe, depending on which is specified in the ASTM specification, including the appendix, to which the pipe is manufactured; and 3) performing the test without mechanical pulling devices. [RSWF 33.85]
	18	Leakage tests are specified requiring that: 1) the leakage exfiltration or infiltration does not exceed 100 gallons per inch of pipe diameter per mile per day for any section of the system; 2) exfiltration or infiltration tests be performed with a minimum positive head of 2 feet; and 3) air tests, as a minimum, conform to the test procedure described in ASTM C-828 for clay pipe, ASTM C 924 for concrete pipe, ASTM F-1417 for plastic pipe, and for other materials appropriate test procedures. [RSWF 33.93, 33.94, and 33.95]
	19	If an inverted siphon is proposed, documentation of its need is provided in Part II.[5]B. Inverted siphons are designed with: 1) at least two barrels; 2) a minimum pipe size of 6 inches; 3) necessary appurtenances for maintenance, convenient flushing, and cleaning equipment; and 4) inlet and discharge structures having adequate clearances for cleaning equipment, inspection, and flushing. Design provides sufficient head and appropriate pipe sizes to secure velocities of at least 3.0 fps for design average flows. The inlet and outlet are designed so that the design average flow may be diverted to one barrel, and that either barrel may be cut out of service for cleaning. [RSWF 35]

Manholes

Initials (or "NA" or "NC")	Item Number	Requirement
	20	The project is designed with manholes at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches or less and 500 feet for sewers 18 inches to 30 inches, except in the case where adequate modern cleaning equipment is available at distances not greater than 600 feet. [RSWF 34.1]
	21	Design requires drop pipes to be provided for sewers entering manholes at elevations of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert is designed with a fillet to prevent solids deposition. Inside drop connections (when necessary) are designed to be secured to the interior wall of the manhole and provide access for cleaning. Design requires the entire outside drop connection be encased in concrete. [RSWF 34.2]
	22	Manholes are designed with a minimum diameter of 48 inches and a minimum access diameter of 24 inches. [RSWF 34.3]
	23	Design requires that a bench be provided on each side of any manhole channel when the pipe diameter(s) are less than the manhole diameter and that no lateral sewer, service connection, or drop manhole pipe discharges onto the surface of the bench. [RSWF 34.5]
	24	Design requires: 1) manhole lift holes and grade adjustment rings be sealed with non-shrinking mortar or other appropriate material; 2) inlet and outlet pipes be joined to the manhole with a gasketed flexible watertight connection or another watertight connection arrangement that allows differential settlement of the pipe and manhole wall; and 3) watertight manhole covers be used wherever the manhole tops may be flooded by street runoff or high water. [RSWF 34.6]
	25	Manhole inspection and testing for water-tightness or damage prior to placing into service are specified. Air testing, if specified for concrete sewer manholes, conforms to the test procedures described in ASTM C-1244. [RSWF 34.7]
	26	Electrical equipment specified for use in manholes is consistent with Item 46 of this checklist. [RSWF 34.9]

Stream Crossings

Initials (or "NA" or "NC")	Item Number	Requirement
	27	Sewers and force mains entering or crossing streams are designed to be constructed of ductile iron pipe with mechanical joints or so they will remain watertight and free from changes in alignment or grade or constructed of HDPE with fused joints for directional drilling. Appropriate materials which will not readily erode, cause siltation, damage pipe during placement, or corrode the pipe are specified to backfill the trench. [RSWF 36.21]
	28	Stream crossings are designed to incorporate valves or other flow regulating devices (which may include pump stations) on the shoreline or at such distances from the shoreline to prevent discharge in the event the line is damaged. [62- 604.400(2)(j)5., F.A.C.]
	29	Sewers and force mains entering or crossing streams are designed at a sufficient depth below the natural bottom of the stream bed to protect the line. At a minimum, the project is designed with subaqueous lines to be buried at least three feet below the design or actual bottom, whichever is deeper, of a canal and other dredged waterway or the natural bottom of streams, rivers, estuaries, bays, and other natural water bodies; or if it is not practicable to design the project with less than three-foot minimum cover, alternative construction features (e.g. a concrete cap, sleeve, or some other properly engineered device to insure adequate protection of the line) are described in Part II.C. [62-604.400(2)(j)1., F.A.C., and RSWF 36.11]
	30	Specifications require permanent warning signs be placed on the banks of canals, streams, and rivers clearly identifying the nature and location (including depths below design or natural bottom) of subaqueous crossings and suitably fixed signs be placed at the shore, for subaqueous crossings of lakes, bays, and other large bodies of water, and in any area where anchoring is normally expected. [62-604.400(2)(j)2., F.A.C.]
	31	Provisions for testing the integrity of subaqueous lines are specified. [62-604.400(2)(j)4., F.A.C.]
	32	Supports are designed for all joints in pipes utilized for aerial crossings and to prevent overturning andsettlement. Expansion jointing is specified between above ground and below ground sewers and force mains. The design considers the impact of floodwaters and debris. [RSWF 37]
	33	Aerial crossings are designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property owners. [62-604.400(2)(j)3., F.A.C.]

Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	34	In areas with high water tables, pump stations are designed to withstand flotation forces when empty. When siting the pump station, the design considers the potential for damage or interruption of operation because of flooding. Pump station structures and electrical and mechanical equipment are designed to be protected from physical damage by the 100-year flood. Pump stations are designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2)(e), F.A.C.]
	35	Pump stations are designed to be readily accessible by maintenance vehicles during all weather conditions. [RSWF41.2]
	36	Wet well and pump station piping is designed to avoid operational problems from the accumulation of grit. [RSWF 41.3]
	37	Dry wells, including their superstructure, are designed to be completely separated from the wet well. Common walls are designed to be gas tight. [RSWF 42.21]
	38	The design includes provisions to facilitate removing pumps, motors, and other mechanical and electrical equipment. [RSWF 42.22]
	39	The design includes provisions for: 1) suitable and safe means of access for persons wearing self-

Initials (or "NA" or "NC")	Item Number	Requirement
		contained breathing apparatus are provided to dry wells, and to wet wells; 2) stairway access to wet wells more than 4 feet deep containing either bar screens or mechanical equipment requiring inspection or maintenance; 3) for built-in-place pump stations, a stairway to the dry well with rest landings at vertical intervals not to exceed 12 feet; 4) for factory-built pump stations over 15 feet deep, a rigidly fixed landing at vertical intervals not to exceed 10 feet unless a manlift or elevator is provided; and 5) where a landing is used, a suitable and rigidly fixed barrier to prevent an individual from falling past the intermediate landing to a lower level. If a manlift or elevator is provided, emergency access is included in the design. [RSWF 42.23]
	40	Specified construction materials are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. [RSWF 42.25]
	41	Multiple pumps are specified, and each pump has an individual intake. Where only two units are specified, they are of the same size. Specified units have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourly flow. [RSWF 42.31 and 42.36]
	42	Bar racks are specified for pumps handling wastewater from 30 inch or larger diameter sewers. Where a bar rack is specified, a mechanical hoist is also provided. The design includes provisions for appropriate protection from clogging for small pump stations. [RSWF 42.322]
	43	Pumps handling raw wastewater are designed to pass spheres of at least 3 inches in diameter. Pump suction and discharge openings are designed to be at least 4 inches in diameter. Note, this provision is not applicable to grinder pumps. [RSWF 42.33]
	44	The design requires pumps be placed such that under normal operating conditions they will operate under a positive suction head, unless pumps are suction-lift pumps. [RSWF 42.34]
	45	The design requires: 1) pump stations be protected from lightning and transient voltage surges; and 2) pump stations be equipped with lightning arrestors, surge capacitors, or other similar protection devices and phase protection. Note, small pump stations serving a single building are not required to provide surge protection devices if not necessary because the pump station is protected by the surge protection device of the single building. [62-604.400(2)(b), F.A.C.]
	46	The design requires 1) electrical systems and components (e.g., motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, comply with the National Electrical Code requirements; 2) electrical equipment located in wet wells be suitable for use under corrosive conditions; 3) each flexible cable be provided with a watertight seal and separate strain relief; 4) a fused disconnect switch located above ground be provided for the main power feed for all pump stations; 5) electrical equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4; 6) a 110 volt power receptacle to facilitate maintenance be provided inside the control panel for pump stations that have control panels outdoors; and 7) ground fault interruption protection be provided for all outdoor outlets. [RSWF 42.35]
	47	The design requires a sump pump equipped with dual check valves be provided in dry wells to remove leakage or drainage with discharge above the maximum high water level of the wet well. [RSWF42.37]
	48	Pump/pump station design capacities are based on the peak hourly flow and are adequate to maintain a minimum velocity of 2 feet per second in the force main. [RSWF 42.38]
	49	The design includes provisions to automatically alternate the pumps in use. [RSWF 42.4]
	50	The design requires: 1) suitable shutoff valves be placed on the suction line of pumps/dry pit pumps; 2) suitable shutoff and check valves be placed on the discharge line of each pump (except on screw pumps); 3) a check valve be located between the shutoff valve and the pump; 4) check valves be suitable for the material being handled; 5) check valves be placed on the horizontal portion of discharge piping (except for ball checks, which may be placed in the vertical run); 6) all valves be capable of withstanding normal pressure and

Initials (or "NA" or "NC")	Item Number	Requirement
		water hammer; and 7) all shutoff and check valves be operable from the floor level and accessible for maintenance. [RSWF 42.5]
	51	The effective volume of wet wells is based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations were utilized in selecting the minimum cycle time. [RSWF 42.62]
	52	The design requires wet well floors have a minimum slope of 1 to 1 to the hopper bottom and the horizontal area of hopper bottoms be no greater than necessary for proper installation and function of the inlet. [RSWF 42.63]
	53	For covered wet wells, the design provides for air displacement to the atmosphere, such as an inverted "j" tube or other means. [RSWF 42.64]
	54	The design provides for adequate ventilation at all pump stations. Mechanical ventilation shall be provided where the dry well is below the ground surface. Permanently installed ventilation shall be provided if screens or mechanical equipment requiring maintenance or inspection are located in the wet well. Pump stations are designed with no interconnection between the wet well and dry well ventilation systems. [RSWF 42.71]
	55	The design requires all intermittently operated ventilation equipment to be interconnected with the respective pit lighting system and the manual lighting/ventilation switch to override the automatic controls. [RSWF 42.73]
	56	The design requires the fan wheels of ventilation systems be fabricated from non-sparking material and automatic heating and dehumidification equipment be provided in all dry wells. [RSWF 42.74]
	57	If wet well ventilation is continuous, design provides for at least 12 complete 100% fresh air changes per hour; if wet well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour; and design requires air to be forced into wet wells by mechanical means rather than solely exhausted from the wet well. [RSWF 42.75]
	58	If dry well ventilation is continuous, design provides at least 12 complete 100% fresh air changes per hour; and dry well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour, unless a system of two speed ventilation with an initial ventilation rate of 30 changes per hour for 10 minutes and automatic switch over to 6 changes per hour is used to conserve heat. [RSWF 42.76]
	59	Pump stations are designed and located on the site to minimize adverse effects from odors, noise, and lighting. [62- 604.400(2)(c), F.A.C.]
	60	The design requires pump stations be enclosed with a fence or otherwise designed with appropriate features to discourage the entry of animals and unauthorized persons. Posting of an unobstructed sign made of durable weather resistant material at a location visible to the public with a telephone number for a point of contact in case of emergency is specified. [62-604.400(2)(d), F.A.C.]
	61	The design requires suitable devices for measuring wastewater flow at all pump stations. Indicating, totalizing, and recording flow measurement are specified for pump stations with a 350 gpm or greater design peak flow. [RSWF 42.8]
	62	The project is designed with no physical connections between any potable water supplies and pump stations. If a potable water supply is brought to a station, reduced-pressure principle backflow-prevention assemblies are specified. [RSWF 42.9 and 62-555.30(4), F.A.C.]

Additional Items to be Completed for Suction-Lift Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	63	The design requires all suction-lift pumps to be either self-priming or vacuum-priming and the combined total of dynamic suction-lift at the "pump off" elevation and required net positive suction head at design operating conditions not to exceed 22 feet. For self-priming

Initials (or "NA" or "NC")	Item Number	Requirement
		pumps, the design requires: 1) pumps be capable of rapid priming and repriming at the "lead pump on" elevation with self-priming and repriming accomplished automatically under design operating conditions; 2) suction piping not to exceed the size of the pump suction or 25 feet in total length; and 3) priming lift at the "lead pump on" elevation to include a safety factor of at least 4 feet from the maximum allowable priming lift for the specific equipment at design operating conditions. For vacuum-priming pump stations, the design requires dual vacuum pumps capable of automatically and completely removing air from the suction-lift pumps and the vacuum pumps be adequately protected from damage due to wastewater. [RSWF 43.1]
	64	The design requires: 1) suction-lift pump equipment compartments to be above grade or offset and to be effectively isolated from the wet well to prevent a hazardous and corrosive sewer atmosphere from entering the equipment compartment; 2) wet well access not to be through the equipment compartment and to be at least 24 inches in diameter; 3) gasketed replacement plates be provided to cover the opening to the wet well for pump units to be remove for service; and 4) no valving be located in the wet well. [RSWF 43.2]

Additional Items to be Completed for Submersible Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	65	Submersible pumps and motors are designed specifically for raw wastewater use, including totally submerged operation during a portion of each pump cycle and to meet the requirements of the National Electrical Code for such units. Provisions for detecting shaft seal failure or potential seal failure are included in the design. [RSWF 44.1]
	66	The design requires submersible pumps be readily removable and replaceable without dewatering the wet well or disconnecting any piping in the wet well. [RSWF 44.2]
	67	In submersible pump stations, electrical supply, control, and alarm circuits are designed to provide strain relief; to allow disconnection from outside the wet well; and to protect terminals and connectors from corrosion by location outside the wet well or through use of watertight seals. [RSWF 44.31]
	68	In submersible pump stations, the design requires the motor control center to be located outside the wet well, readily accessible, and protected by a conduit seal or other appropriate measures meeting the requirements of the National Electrical Code, to prevent the atmosphere of the wet well from gaining access to the control center. If a seal is specified, the motor can be removed and electrically disconnected without disturbing the seal. The design requires control equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4. [RSWF 44.32]
	69	In submersible pump stations, the design requires: 1) pump motor power cords be flexible and serviceable under conditions of extra hard usage and to meet the requirements of the National Electrical Code standards for flexible cords in wastewater pump stations; 2) ground fault interruption protection be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable; and 3) power cord terminal fittings be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, provided with strain relief appurtenances, and designed to facilitate field connecting. [RSWF 44.33]
	70	In submersible pump stations, the design requires all shut-off and check valves be located in a separate valve pit. Provisions to remove or drain accumulated water from the valve pit are included in the design. [RSWF 44.4]

Emergency Operations for Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	71	Pump stations are designed with an alarm system which activates in cases of power failure, sump pump failure, pump failure, unauthorized entry, or any cause of pump station malfunction. Pump station alarms are designed to be telemetered to a facility that is manned 24 hours a day. If such a facility is not available and a 24-hour holding capacity is not provided, the alarm is designed to be telemetered to utility offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours. Note, if an audio-visual alarm system with a self-contained power supply is provided in lieu of a telemetered system, documentation is provided in Part II.(5)B. showing an equivalent level of reliability and public health protection. [RSWF 46]
	72	The design requires emergency pumping capability be provided for all pump stations. For pump stations that receive flow from one or more pump stations through a force main or pump stations discharging through pipes 12 inches or larger, the design requires uninterrupted pumping capability be provided, including an in-place emergency generator. Where portable pumping and/or generating equipment or manual transfer is used, the design includes sufficient storage capacity with an alarm system to allow time for detection of pump station failure and transportation and connection of emergency equipment. [62-604.400(2)(a)1. and 2., F.A.C., and RSWF 47.423 and 47.433]
	73	The design requires: 1) emergency standby systems to have sufficient capacity to start up and maintain the total rated running capacity of the station, including lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation; 2) special sequencing controls be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating; 3) a riser from the force main with rapid connection capabilities and appropriate valving be provided for all pump stations to hook up portable pumps; and 4) all pump station reliability design features be compatible with the available temporary service power generating and pumping equipment of the authority responsible for operation and maintenance of the collection/transmission system. [62-604.400(2)(a)3., F.A.C., and RSWF 47.431]
	74	The design provides for emergency equipment to be protected from operation conditions that would result in damage to the equipment and from damage at the restoration of regular electrical power. [RSWF 47.411, 47.417, and 47.432]
	75	Where independent substations are used for emergency power, each separate substation and its associated transmission lines is designed to be capable of starting and operating the pump station at itsrated capacity. [RSWF 47.44]

Force Mains

Initials (or "NA" or "NC")	Item Number	Requirement
	76	Force mains are designed to maintain, at design pumping rates, a cleansing velocity of at least 2 feet per second. The minimum force main diameter specified for raw wastewater is not less than 4 inches. (Not applicable to low pressure sewer systems) [RSWF49.1]
	77	The design requires: 1) branches of intersecting force mains be provided with appropriate valves such that one branch may be shut down for maintenance and repair without interrupting the flow of other branches; and 2) stub-outs on force mains, placed in anticipation of future connections, be equipped with a valve to allow such connection without interruption of service. [62-604.400(2)(f), F.A.C.]
	78	The design requires air relief valves be placed at high points in the force main to prevent air locking. [RSWF492]
	79	Specified force main pipe and joints are equal to water main strength materials suitable for design conditions. The force main, reaction blocking, and station piping are designed to withstand water hammer pressures and stresses associated with the cycling of wastewater

Initials (or "NA" or "NC")	Item Number	Requirement
		pump stations. [RSWF 49.4]
	80	When the Hazen and Williams formula is used to calculate friction losses through force mains, the value for "C" is 100 for unlined iron or steel pipe for design. For other smooth pipe materials, such as PVC, polyethylene, lined ductile iron, the value for C does not exceed 120 (130 for PVC and HDPE) for design. (Not applicable to low pressure sewer systems) [RSWF 49.61]
	81	Where force mains are constructed of material, which might cause the force main to be confused with potable water mains, specifications require the force main to be clearly identified. [RSWF 49.7]
	82	Leakage tests for force mains are specified including testing methods and leakage limits. [RSWF 49.8]

Note, if this project is an alternative collection system (i.e. a low pressure sewer system or a vacuum sewer system), complete the checklist items on Attachment I for low pressure sewer systems or Attachment II for vacuum sewer systems. Include the attachment with the submittal. For any items marked "NA" or "NC," provide an explanation in section 5(B).

B. Explanation for Requirements or Standards Marked "NA" or "NC" in II(5)A above, which includes Attachments I and II (attach additional sheets if necessary):

PART III - Certifications

(1) Collection/Transmission System Permittee

I, the undersigned owner or authorized representative* of _____ am fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. I agree to retain the design engineer or another professional engineer registered in Florida, to conduct on-site observation of construction, to prepare a certification of completion of construction, and to review record drawings for adequacy. Further, I agree to provide an appropriate operation and maintenance manual for the facilities pursuant to Rule 62-604.500(4), F.A.C., and to retain a professional engineer registered in Florida to examine (or to prepare if desired) the manual. I am fully aware that Department approval must be obtained before this project is placed into service for any purpose other than testing for leaks and testing equipment operation.

Signed _____ Date _____

Name _____ Title _____

Attach a letter of authorization.

(2) Owner of Collection/Transmission System

I, the undersigned owner or authorized representative* of _____ certify that we will be the Owner of this project after it is placed into service. I agree that we will operate and maintain this project** in a manner that will comply with applicable Department rules. Also, I agree that we will promptly notify the Department if we sell or legally transfer ownership of this project.

Signed _____ Date _____

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

* *Attach a letter of authorization*

**Description of the owner's portion if split _____

Second Owner of Collection/Transmission System (if system is divided with different owners

I, the undersigned owner or authorized representative* of _____ certify that we will be the Owner of this project after it is placed into service. I agree that we will operate and maintain this project in a manner that will comply with applicable Department rules. Also, I agree that we will promptly notify the Department if we sell or legally transfer ownership of this project.

Signed _____ Date _____

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

* *Attach a letter of authorization*

**Description of the second owner portion if split _____

(3) Wastewater Facility Serving Collection/Transmission System**

If this is a Notice of Intent to use a general permit, check here: ☐

☐ The undersigned owner or authorized representative* of the _____ wastewater facility

hereby certifies that the above referenced facility has the capacity to receive the wastewater generated by the proposed collection system; is in compliance with the capacity analysis report requirements of Rule 62-600.405, F.A.C.; is not under a Department order associated with effluent violations or the ability to treat wastewater adequately; and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

If this is an application for an individual permit, check one:

☐ The undersigned owner or authorized representative* of the _____ wastewater facility hereby certifies that the above referenced facility has and will have adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

☐ The undersigned owner or authorized representative* of the _____ wastewater facility hereby certifies that the above referenced facility currently does not have, but will have prior to placing the proposed project into operation, adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

Name of Treatment Plant Serving Project _____

County _____ City _____

DEP Facility ID: FL_____

Maximum monthly average daily flow over the last 12 month period _____ MGD Month(s) used _____

Maximum three-month average daily flow over the last 12 month period _____ MGD Month(s) used _____

Current permitted capacity _____ MGD ☐ AADF ☐ MADF ☐ TMADF

Current outstanding flow commitments (including this project) against treatment plant capacity _____ MGD

Signed _____ Date _____

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

** Attach a letter of authorization*

*** If there is an intermediate satellite collection system between the project and the final receiving facility collection system, a letter shall be attached certifying that the intermediate downstream satellite collection system has adequate reserve capacity to accept the flow from this project.*

(4) Professional Engineer Registered in Florida

I, the undersigned professional engineer registered in Florida, certify that I am in responsible charge of the preparation and production of engineering documents for this project; that plans and specifications for this project have been completed; that I have expertise in the design of wastewater collection/transmission systems; and that, to the best of my knowledge and belief, the engineering design for this project complies with the requirements of Chapter 62-604, F.A.C.

(Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the project for which responsible: _____

Second Engineer (if applicable)

(Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible: _____

Third Engineer (if applicable) (Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible: _____

Fourth Engineer (if applicable) (Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible: _____

Attachment I – Requirements for Low Pressure Sewer Systems

General

Initials (or "NA" or "NC")	Item Number	Requirement
	1	A central management entity, be it public or private, is identified for the operation and maintenance of the on-lot facilities associated with alternative collection/transmission systems. [FL DSG Page I-24 and 62-604.400(4), F.A.C.]
	2	The project is designed based on a minimum average daily flow of 50 to 70 gallons per capita (100 gallons per capita is recommended) plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification is used to better estimate the flow. The design includes an appropriate peaking factor, which covers I/I contributions and non-wastewater connections to those service lines. A typical value is 200 gallons per day per EDU (350 is recommended). [MOPFD 12 – Page 45,46, 232 and EPA Manual ACS 2.4.1.1 and FL DSG Page I-23]
	3	Procedures are specified for operation of the collection/transmission system during construction if work is performed on a system currently in operation. [RSWF 20.15]
	4	Except for on-lot facilities, the project is designed to be located on public rights-of-way, land owned by the permittee, or easements (surveyed or implied) and located no closer than 100 feet from a public drinking water supply well and no closer than 75 feet from a private drinking water supply well; or documentation is provided in Part II.(5)B., showing that another alternative will result in an equivalent level of reliability and public health protection. [62-604.400(1)(b) and (c)„ F.A.C.]
	5	Systems must be designed on the basis of the type of pressurization unit employed and peak flows from the number of people to be served by the system. [FL DSG Page I-14]
	6	Specifications require all materials of construction be capable of withstanding the environmental conditions of service. All components of the STEP system exposed to the atmosphere (not always submerged) must be highly resistant to corrosion. [FL DSG Page I-12, RSWF 42.25]
	7	The project is designed so that all new or relocated, buried sewers and force mains, are located in accordance with the separation requirements from water mains and reclaimed water lines of Rules 62-604.400(2)(g) and (h), F.A.C. Note, if the criteria of Rules 62-604.400(2)(g) 4. or (2)(h)3., F.A.C., are used, describe in Part II.(5)B. alternative construction features that will be provided to afford a similar level of reliability and public health protection. [62- 604.400(2)(g) and (h), F.A.C.; 62-555.314, F.A.C.]
	8	The project is designed with no physical connections between any potable water supplies and pump stations. If a potable water supply is brought to a station, reduced-pressure principal backflow-prevention assemblies are specified. [RSWF 42.9 and 62-555.360, F.A.C.]
	9	Specifications require the contractor keep a signed approved record copy of all specifications, plans, addenda, supplementary drawings, working drawings, change orders and similar documents in good order at the construction site and at another convenient location where they are readily available. [FL DSG Page III-14]
	10	Specifications include a maintenance plan and schedule for end users. Specifically, the plan shall include responsibilities of maintenance be it the end user or wastewater managing authority and schedules for float switch cleaning/repair (annually), STEP system effluent screens (annually) and septic tank inspection and solids/scum removal (3-5 years). Spare parts must also be addressed in the maintenance plan. [MOPFD-12 Pages 88, 225, and 270 - 279]

Septic Tank and Wetwell Design

Initials (or "NA" or "NC")	Item Number	Requirement
	11	Pressurization unit covers and septic tank risers incorporate locking mechanisms which

Initials (or "NA" or "NC")	Item Number	Requirement
		provide relief under emergency conditions. [FL DSG Page I-12 and II-6]
	12	Pressurization units are properly vented. (Underwriters Laboratory 778 does not consider grinder pumps to be hazardous locations as defined in the National Electrical Code). [FL DSG Page I-12 and II-14 EPA ACS 2.4.7]
	13	STEP system septic tanks are vented through the building plumbing stack. [MOPFD-12 Page 244]
	14	For grinder pump station designs, the minimum storage capacity required is 50 gallons (additional storage capacity may be required based on local conditions). Storage capacity is determined by the operating volume (volume between the pump off and alarm) plus the reserve volume (volume between the alarm level and the top of the basin). [MOPFD-12 Page 62]. STEP system septic tank residual capacity is at least 100 gallons and 50 gallons storage capacity (as defined above) in the pressurization unit. [FL DSG Page I-13 and II-1]
	15	In areas with high water tables, grinder pump stations and septic tanks are designed to withstand flotation forces when empty. When siting the pressurization unit, the design considers the potential for damage or interruption of operation because of flooding. Pressurization unit structures and electrical and mechanical equipment are designed to be protected from physical damage by the 100-year flood. Pressurization units are designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. FEMA flood elevations can be found at: https://msc.fema.gov/portal/home [62-604.400(2)(e), F.A.C., FL DSG Pages II-1 and II-4, MOPFD-12 Page 259]
	16	Septic tanks should be located in areas not subject to vehicular traffic but if subject to vehicular traffic, shall be provided with an approved structural design and have traffic lids designed to withstand vehicular traffic. [FL DSG Page II-1]
	17	STEP system septic tanks are located where they are easily accessible for periodic inspection and removal of accumulated solids. [MOPFD-12 Page 243]
	18	STEP system septic tank materials specified are corrosion resistant as shown by test, experience, or analysis. [FL DSG Page II-4]
	19	Provisions are included to ensure water-tightness of septic tanks when used in pressure sewers, including tank covers, manhole risers and covers, and inlet and outlet connections. [FL DSG 2(5), MOPFD-12 p225, 246]
	20	Septic tank construction shall meet the requirements of Chapter 64E-6, F.A.C., or department regulations
	21	Specifications include provisions for tank inspection of any existing septic tank to be converted for use in a pressure system (vacuum testing is preferred) and if determined to not be watertight, the tank shall be replaced. [FL DSG Page II-6, MOPFD-12 Pages 24,25,236, and 246, EPA ACS 2.5.3]
	22	Specifications include provisions to require that pressurization units are watertight and structurally sound. The specifications include a loading diagram depicting the loads the tank will be subjected to, commensurate with burial depth, groundwater depth, soil types, foundation, bedding and backfill to be used, and other parameters. [MOPFD-12 Page 44]

Appurtenances

Initials (or "NA" or "NC")	Item Number	Requirement
	23	Grinder pump systems and STEP septic tank effluent filters are NSF/ANSI 46 (Wastewater Treatment System Components and Devices) certified. If the systems are not NSF 46 certified, provide a list of the items that have not been tested and demonstrated to pass through the system without issue. [FL DSG Pages II-6 and 9]
	24	STEP system effluent pumps are of cast iron, bronze, and/or plastic construction of the centrifugal type with submersible motor. Pumps are mounted in the pump wetwell or septic tank on three integral support feet or base. [FL DSG Page II-9]

Initials (or "NA" or "NC")	Item Number	Requirement
	25	Specifications include measures for the control/alarm panel to be located outside the house in full view of the pressurization unit and contained in a lockable or tamper-free, corrosion-proof and weatherproof NEMA 4x (or greater) enclosure. [FL DSG Page I-13, MOPFD-12 Page 12]
	26	Specifications include provisions that grinder pump systems and STEP systems utilize an audio and visual high-water level alarm. [FL DSG Page II-13]
	27	For all pressurization unit designs, a check valve is installed in the internal piping on the discharge side of either the grinder pump or STEP system. A redundant check valve may also be installed between the discharge coupling of the wetwell and the pressure sewer main connection. [FL DSG Page II-15, MODFD-12 Page 12, 57]
	28	The design includes a gate or ball valve to be located in the pressurization unit wetwell to prevent backflow when the pressurization unit is removed for service. (FL DSG 2(G)(4)) (MOPFD-12 p12, 64)
	29	The design includes a corporation stop or U-valve to be installed near the service line/pressure sewer main connection to isolate the service line at each service. Service lines are specified to be installed at right angles to the main. [FL DSG Page II-16, EPA ACS 2.4.2.2(e), MOPFD-12 Page 39, 56]
	30	Specifications require boxes and vaults for air release facilities, cleanouts and other appurtenances to be sized to permit easy removal of the facilities, and to permit operation of the valves. The available space inside of a grinder pump station or septic tank is acceptable for valves, discharge piping and other appurtenances. [FL DSG Page III-12]
	31	Designs for all valves shall be full-diameter opening to permit cleaning with a polypig or other devices. Valves in nonmetallic pressure sewer pipelines shall be iron, bronze, PVC, nylon or other approved material and shall have screwed or flanged ends. Valves in metal pressure sewer pipelines shall be iron body, bronze mounted with flanged or mechanical joint ends, except that in the smaller sizes, valves may be all bronze with screwed ends. [FL DSG Page III-12]
	32	The specifications include provisions for all valves to be hydrostatically shop pressure tested at 1,725 kPa (25.0 psi) first by applying the hydrostatic pressure with the valve in the open position and then with the valve in the closed position. Valves failing to be tight and secure under the test pressure shall be rejected for pressure sewer installations. [FL DSG Page III-12]
	33	For designs with valves installed on pressure sewers constructed with flexible pipe materials, the design shall not have the valve supported by the pipe but shall be supported by an anchored concrete cradle or concrete block. [FL DSG Page III-12]
	34	Specifications must provide provisions for valve boxes to be constructed of vehicular traffic-rated plastic or coated cast iron and set into position during backfilling operations so they will be in a vertical alignment and parallel to the valve operating stem. The lower casing of the unit shall be first installed in such a manner as to be cushioned and to not rest directly upon the body of the valve or upon the pressure sewer main. The upper casing of the unit shall then be placed in proper alignment and adjusted to final grade. Backfilling shall be placed and compacted uniformly around the structure so as not to disturb the vertical alignment. [FL DSG Page III-12]
	35	For STEP systems, specifications include effluent screens. [EPA ACS 2.4.6.1, MODFD-12 Page 226]
	36	Specifications call for all appurtenances to be properly labeled to avoid confusion with potable water and other utility services [MOPFD-12 Page 40, FL DSG Page III-12]

Electrical

Initials (or "NA" or "NC")	Item Number	Requirement
	37	The design includes pressurization units and control/alarm panels listed by testing

Initials (or "NA" or "NC")	Item Number	Requirement
		laboratories, e.g. Underwriters Laboratories (UL), Canadian Standards Association, or Factory Mutual. [EPA ACS 2.4.4.2, MOPFD-12 Page 79]
	38	In pressurization units, pump motor connections must be watertight [FL DSG Page I-13]
	39	Specifications require conduit ends to be sealed to prevent moisture and corrosive gases from traveling though the conduit and into the control/alarm panel. [MOPFD-12 Page 79]
	40	For grinder pumps, single-phase motors shall be of the capacitor start/capacitor run type for high starting torque. All grinder pumps shall be standard commercial shop-tested to include visual inspection to confirm construction in accordance with the specifications for correct model, horsepower, cord length, impeller size, voltage, phase and hertz. [FL DSG Page II-9]
	41	Designs for grinder pumps require: Since the single-phase submersible centrifugal grinder pump has a capacitor start type motor, the capacitors and start relays must be located in a separate control panel enclosure. • The control panel should include, but not be limited to, a magnetic starter with ambient compensated bimetallic overload relay. • The relay should have a test button for simulation of overload trip and manual reset button. • Fault protection should be provided via a molded case magnetic circuit breaker with internal common trip or multiple poles. • A hand-off-automatic toggle switch for hand operation with a green light to indicate the pump-running mode should be provided for each grinder pump and mounted on a bracket inside the control panel enclosure. • The control panel enclosure should be of high-quality construction that meets state and local safety codes as well as national electrical codes. • Should there be a power failure, grinder pump malfunction, or flooded wetwell, pump controls and wiring must be accessible and comply with all code regulations to ensure safety of the service user or operating personnel. • As an alternate an explosion-proof combination motor control/junction box may be installed inside the grinder pump wetwell. Semi-positive displacement pumps having the starter and capacitor located in the pump core require only a standard junction box hook-up to the power source. [FL DSG II-12]
	42	Designs for STEP systems require: Effluent pump starters and capacitors are located inside the motor housing and do not require a separate control panel containing these components. [FL DSG II-13]
	43	Specifications require the wiring to connect grinder pump or STEP systems to the power source be suitable for direct burial and comply with state and local electrical codes. Wiring for the level sensors and control panel (if required) must also comply with these requirements. [FL DSG Page II-13]

Force Mains and Service Lines

Initials (or "NA" or "NC")	Item Number	Requirement
	44	The project is designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water pipes passing through or coming into contact with any part of a sewer manhole. [RSFW 38.1 and 48.5]
	45	Grinder pump force mains are designed to occur, at design pumping rates, a cleansing velocity of at least 2 feet per second (1 ft/second for STEP system force mains) once or twice daily. Maximum velocities shall not exceed 8 feet per second. Pipe sizes shall be determined based on these criteria. FL DSG Page I-16, RSWF 42.38, EPA ACS 2.4.1.2, MOPFD-12 Pages 49, 238]
	46	For projects with existing building sewer service lines, the specifications note that the existing building sewers shall be inspected as described in the Uniform Plumbing Code and

Initials (or "NA" or "NC")	Item Number	Requirement
		laboratories, e.g. Underwriters Laboratories (UL), Canadian Standards Association, or Factory Mutual. [EPA ACS 2.4.4.2, MOPFD-12 Page 79]
	38	In pressurization units, pump motor connections must be watertight [FL DSG Page I-13]
	39	Specifications require conduit ends to be sealed to prevent moisture and corrosive gases from traveling though the conduit and into the control/alarm panel. [MOPFD-12 Page 79]
	40	For grinder pumps, single-phase motors shall be of the capacitor start/capacitor run type for high starting torque. All grinder pumps shall be standard commercial shop-tested to include visual inspection to confirm construction in accordance with the specifications for correct model, horsepower, cord length, impeller size, voltage, phase and hertz. [FL DSG Page II-9]
	41	Designs for grinder pumps require: Since the single-phase submersible centrifugal grinder pump has a capacitor start type motor, the capacitors and start relays must be located in a separate control panel enclosure. • The control panel should include, but not be limited to, a magnetic starter with ambient compensated bimetallic overload relay. • The relay should have a test button for simulation of overload trip and manual reset button. • Fault protection should be provided via a molded case magnetic circuit breaker with internal common trip or multiple poles. • A hand-off-automatic toggle switch for hand operation with a green light to indicate the pump-running mode should be provided for each grinder pump and mounted on a bracket inside the control panel enclosure. • The control panel enclosure should be of high-quality construction that meets state and local safety codes as well as national electrical codes. • Should there be a power failure, grinder pump malfunction, or flooded wetwell, pump controls and wiring must be accessible and comply with all code regulations to ensure safety of the service user or operating personnel. • As an alternate an explosion-proof combination motor control/junction box may be installed inside the grinder pump wetwell. Semi-positive displacement pumps having the starter and capacitor located in the pump core require only a standard junction box hook-up to the power source. [FL DSG II-12]
	42	Designs for STEP systems require: Effluent pump starters and capacitors are located inside the motor housing and do not require a separate control panel containing these components. [FL DSG II-13]
	43	Specifications require the wiring to connect grinder pump or STEP systems to the power source be suitable for direct burial and comply with state and local electrical codes. Wiring for the level sensors and control panel (if required) must also comply with these requirements. [FL DSG Page II-13]

Force Mains and Service Lines

Initials (or "NA" or "NC")	Item Number	Requirement
	44	The project is designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water pipes passing through or coming into contact with any part of a sewer manhole. [RSFW 38.1 and 48.5]
	45	Grinder pump force mains are designed to occur, at design pumping rates, a cleansing velocity of at least 2 feet per second (1 ft/second for STEP system force mains) once or twice daily. Maximum velocities shall not exceed 8 feet per second. Pipe sizes shall be determined based on these criteria. FL DSG Page I-16, RSWF 42.38, EPA ACS 2.4.1.2, MOPFD-12 Pages 49, 238]
	46	For projects with existing building sewer service lines, the specifications note that the existing building sewers shall be inspected as described in the Uniform Plumbing Code and

Initials (or "NA" or "NC")	Item Number	Requirement
		replaced if not watertight. [MOPFD-12 Page 243]
	47	Designs utilize the following: when calculating friction losses through pressure mains, utilize a Hazen-Williams roughness coefficient C in English units of 130 to 150 for Polyvinyl Chloride (PVC) and High-Density Polyethylene Pipe (HDPE). [FL DSG Page I-16]
	48	The design shows each building sewer with a cleanout located outside and close to the structure (building or home) and/or at the point of demarcation between building owner and district maintenance. [MOPFD-12 Pages 60 - 61]
	49	Specified pressure main pipe and joints are equal to water main strength materials suitable for design conditions. (FL DSG Table 1-5(5)) [RSWF 48.4, FL DSG Pages II-15, and III-1 through 4.]
	50	Where pressure mains are constructed of material that might cause the pressure main to be confused with potable water mains, specifications require the force main to be clearly identified. [RSWF 48.7]
	51	Specifications include measures for inductive wire (toning cable) to be buried with pressure mains for future location assistance. [FL DSG Pages I-20 and III-13, EPA ACS 2.4.2.1.c, MOPFD-12 Page 266]
	52	The design includes cleanouts and/or shutoff valves to be located at all pipe junctions, pipe terminations, and at locations where pipe sizes change. Note, this requirement may be fulfilled in phases for new developments with approval of the Department. Stub outs on pressure mains are placed in anticipation of future connections and equipped with a valve to allow such connection without interruption of service. At intersections, valves are placed on the upstream side so that individual incoming pipes can be isolated without cutting off service to the other branches. Isolation valves shall always be fully ported type valves. [FL DSG Page I-21 and III-12, EPA ACS 2.4.5.1, MOPFD-12 Pages37 and 55, 62-604.400(2)(f), F.A.C.]
	53	Designs include the spacing of inline shut-off valves at least every 600 ft in high-density areas and not more than 1000 ft in low-density areas. [FL DSG Page I-21]
	54	Designs provide for wastewater type air relief valves to be placed at high points in the force main to prevent air locking. Automatic air release valves are designed to prevent wastewater solids and grease from reaching the valve operating mechanism. Air and gases are released from the valve by float action. Air Release valves are provided for downslopes in excess of 10%. Provisions for cleaning the valve by backflushing shall be provided. [RSWF 48.2, FL DSG Pages I-22 and III-11, EPA ACS 2.4.2.1.e and 2.4.5.2, MOPFD-12 Pages 12 and 38]
	55	The design provides for adequate preventive measures to avoid the accumulation of gases and air in pressure sewer mains. These include: • Submersion of pressurization unit pump intake to prevent siphoning or vortexing after shut-off. • Proper design to prevent undue retention time of wastes in pressure sewer where biological and chemical activity may produce gases. [FL DSG Page I-22]
	56	The design minimizes the liberation of hydrogen sulfide gas where appropriate, such as at discharges to conventional gravity sewers. For example, the connection point of a pressure sewer system to a conventional gravity sewer system should be designed by introducing the pressure sewer discharge into the stream of the gravity sewer main or equal alternative. [FL DSG Page I-23]
	57	Leakage tests for force mains are specified including testing methods and leakage limits. [RSWF 48.8]
	58	Specifications require service lines to be installed at a depth sufficient to prevent any mechanical damage but not less than 1 foot. [FL DSG Page II-16]
	59	Specifications require all pressure sewer mains to be constructed to a minimum depth of 30 inches or as required and as measured from the final ground surface to the top of the barrel of the pipe. [FL DSG Page III-4, MOD FD-12 Page 11]
	60	Specifications require pressure sewer main installation be in accordance with AWWA C600 for ferrous pressure pipe, D2774 for thermoplastic pressure sewer pipe, ASTM 3839 for

Initials (or "NA" or "NC")	Item Number	Requirement
		thermosetting pressure sewer pipe or approved manufacturers' written installation instructions. [FL DSG Page III-6]

Bridge and Stream Crossings

Initials (or "NA" or "NC")	Item Number	Requirement
	61	The low pressure sewer system or STEP system is designed to meet the "Stream Crossings" portion (Items 27-33) of the Collection/Transmission System Design Information beginning on page 4 of DEP Form 62- 604.300(3)(a), Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System. [62-604.300(3)(a), F.A.C.]

Emergency Operations

Initials (or "NA" or "NC")	Item Number	Requirement
	62	Pump stations are designed with an alarm system which activates in cases of pump failure, or high level. The audio-visual alarm system shall have a self-contained power supply. [RSWF 46]
	63	Generators are not required for individual grinder pump stations, however if emergency electric generation systems are utilized, they shall have sufficient capacity to start up and maintain the total rated running capacity of the station. [62-604.400(2)(a)3., F.A.C., and RSWF 47.431]
	64	The design provides for emergency equipment to be protected from operation conditions that would result in damage to the equipment and from damage at the restoration of regular electrical power. [RSWF 47.411, 47.417, and 47.432]

Conventional Force Mains, Pump Stations, Gravity Sewers and Manholes

Initials (or "NA" or "NC")	Item Number	Requirement
	65	For conventional force mains, pump stations, gravity sewers and manholes used after leaving the lower pressure sewer system or STEP system, the project design meets the "General Requirements" and applicable portions of the Collection/Transmission System Design Information beginning on page 2 of DEP Form 62-604.300(3)(a), Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System. [62-604.300(3)(a), F.A.C.]

Attachment II – Requirements for a Vacuum Sewer System

General

Initials (or "NA" or "NC")	Item Number	Requirement
	1	The project is designed based on an average daily flow of 100 gallons per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification is used to better estimate the flow. [RSWF 11.243]
	2	The design includes an appropriate peaking factor (minimum ratio of 3 for peak hour/design average flow). [RSWF 11.243]
	3	Procedures are specified for operation of the existing collection/transmission system during construction if work is performed on a system currently in operation. [RSWF 20.15]
	4	Except for on-lot facilities, the project is designed to be located on public rights-of-way, land owned by the permittee, or easements. [62-604.400(1)(b), F.A.C.]
	5	A central management entity, be it public or private, is identified for operation and maintenance of the on-lot facilities associated with alternative collection/transmission systems. [FL DSG Page I-24 and 62-604.400(4), F.A.C.]
	6	The project is designed to be located no closer than 100 feet from a public drinking water supply well and no closer than 75 feet from a private drinking water supply well; or documentation is provided showing that another alternative will result in an equivalent level of reliability and public health protection. [62-604.400(1)(c), F.A.C.]
	7	The project is designed with no physical connections between a public or private potable water supply system. [RSWF 38.1 and 48.5]
	8	The project is designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, non-contact cooling water and sources of uncontaminated wastewater. [62-604.400(1)(d), F.A.C.]
	9	At the completion of each day's work, testing on vacuum mains and vacuum service pit connections laid that day is specified requiring; 1) the completed portion of the system be plugged and subjected to a vacuum of 22 inches Hg and then allowed to stabilize for 15 minutes prior to monitoring; and 2) a vacuum loss of less than l % per hour during the minimum testing period of 2 hours. [MOPFD-12 #1 Page 205]
	10	Final testing on completed vacuum mains and vacuum service pit connections is specified requiring: 1) the completed portion of the system be plugged and subjected to a vacuum of 22 inches Hg and then allowed to stabilize for 15 minutes prior to monitoring; and 2) a vacuum loss of less than l % per hour during the minimum testing period of 4 hours. [MOPFD-12 #2 Page 205]

Vacuum Collection System

Initials (or "NA" or "NC")	Item Number	Requirement
	11	The entire piping network is designed to keep the bore of the entire pipeline open; sections of pipeline are not purposely sealed. [MOPFD-12 #2 Page 200]
	12	The vacuum sewer system is designed with a minimum air-to-liquid ratio of two parts air to one part liquid. [MOPFD-12 #5 Page 200]
	13	The vacuum sewer system is designed with a maximum static loss of 13 feet and a maximum friction loss of 5 feet in any single flow path. [MOPFD-12 #6 and #7 Page 200]
	14	The project is designed with no vacuum sewer mains less than 4 inches in diameter. [MOPFD-12 #2 Page 201]
	15	Pipe and fittings for vacuum sewer pipe is SDR 21 pressure rated PVC pipe with double-lipped, pushon gasketed joints. [MOPFD-12 #13 Page 202 and Page 129]
	16	General design configuration for uphill transport is based on a saw tooth pipeline profile;

Initials (or "NA" or "NC")	Item Number	Requirement
		or documentation is provided showing other vertical profiles are justified by appropriate engineering data. [MOPFD-12 #1 Page 201]
	17	When vacuum sewer mains or branches must ascend a hill, multiple lifts are designed at a minimum distance of 20 feet apart. Between each lift, vacuum lines are installed with a uniform slope, so that minimum fall of 0.25 feet is achieved between these lifts. [MOPFD-12 #10 Pages 201 and 202]
	18	The project is designed with no single lift of vacuum sewer main exceeding 3 feet in height. [MOPFD-12 #6 Page 201]
	19	The project is designed with 5 maximum lifts in a series. A series of 5 lifts is designed to be separated by at least 100 feet of vacuum mains from the next lift or series of lifts, at least one energy input is designed in the zone of separation. [62-4.070(3), F.A.C.]
	20	If not uphill transport, vacuum sewer mains are designed with a minimum slope of 0.20%. For profile changes less than 125 feet apart, the minimum fall between profile changes is 0.25 feet. [MOPFD-12 #3 Page 201]
	21	If directional drilling, installation tolerances for vacuum sewer main slope are specified the same as those required for open trenching. [62-4.070(3), F.A.C.]
	22	The maximum design flows (i.e., peak flows) for vacuum sewer main sizing is designed as follows: 4-inch pipe/38 gallons per minute (gallons per minute (gpm)); 6-inch pipe/105 gpm; 8-inch pipe/210 gpm; and 10-inch pipe/375 gpm. For vacuum mains larger than 10-inches, flow data supports the peak design flow capacity of that pipe size. [MOPFD-12 #4 Page 201]
	23	The project is designed with 2000 feet maximum length for any one run of 4-inch diameter vacuum sewer main. [MOPFD-12 #5 Page 201]
	24	For changes in horizontal alignment, two 45-degree bends connected by a short section of piping are designed, rather than one 90-degree bend. [MOPFD-12 #8 Page 201]
	25	The project is designed with isolation valves at every branch connection and at intervals no greater than 1500 feet on vacuum sewer mains. Resilient coated wedge gate valves and a valve box or other approved apparatus, to facilitate proper use of the valve, are specified. [MOPFD-12 #9 Page 201]
	26	The vacuum sewer system is designed to prevent damage from superimposed loads. [RSWF 33.7]
	27	The vacuum sewer system is designed to meet the "Stream Crossings" portion (Items 27-33) of the Collection/Transmission System Design Information beginning on page 4 of DEP Form 62- 604.300(3)(a), Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System. [62-604.300(3)(a), F.A.C.]
	28	The project is designed so that all new or relocated, buried vacuum sewers, are located in accordance with the separation requirements from water mains and reclaimed water lines of Rules 62-604.400(2)(g) and (h), F.A.C. Note, if the criteria of Rules 62-604.400(2)(g) 4. or (2)(h)3., F.A.C., are used, describe in Part II.(5)B. alternative construction features that will be provided to afford a similar level of reliability and public health protection. [62-604.400(2)(g) and (h), F.A.C.; 62-555.314, F.A.C]

Vacuum Valves

Initials (or "NA" or "NC")	Item Number	Requirement
	29	Vacuum valves with the ability to pass a 3-inch spherical solid are specified. [MOPFD-12 #1 Page 204]
	30	Valves that are vacuum-operated on opening and spring-assisted on closing are specified. [MOPFD-12 #2 Page 204]
	31	Valve configuration is designed so that the collection system vacuum ensures positive valve seating. Valve plunger and shaft is designed to be completely out of the flow path when valve is in the open position. [MOPFD-12 #3 Page 204]

Initials (or "NA" or "NC")	Item Number	Requirement
	32	The valve is designed to be equipped with a sensor-controller that relies on atmospheric air and vacuum pressure from the downstream side of the valve for its operation, thereby requiring no other power source. The controller is designed to be capable of maintaining the valve fully open for a fixed period of time and be field-adjustable over a range of 3 to 10 seconds. [MOPFD-12 #4 Page 204]
	33	With the exception of the gravity lateral line air-intake, no other external sources of air are designed as a part of the valve assembly. [MOPFD-12 #5 Page 204]
	34	An internal sump breather unit arrangement is designed to connect the valve controller to its air source and provide a means of ensuring that no liquid can enter the controller during system shutdowns and restarts. It shall also be designed to prevent sump pressure from forcing the valve open during low vacuum conditions and provide positive sump venting, regardless of traps in the home gravity service line. [MOPFD-12 #6 Page 204]

Valve Pits

Initials (or "NA" or "NC")	Item Number	Requirement
	35	Peak flow to any vacuum valve pit is designed to a maximum of 3 gallons per minute. [MOPFD-12 #3 Page 202]
	36	When specific valve service lines having suction lifts in excess of 5.5 feet are designed, the static losses added to the losses for that main do not exceed 13 feet. [MOPFD-12 #6 Page 200]
	37	Suction lifts from the bottom of the holding sump to the valve centerline do not exceed 8 feet. [MOPFD-12 #6 Page 200]
	38	A single valve pit is designed to serve a maximum of four separate building sewers, but no more than 3 gallons per minute. [MOPFD-12 #1 Page 202]
	39	On a system-wide design basis, the overall separate building sewer to valve pit ratio does not exceed 2.5: l. [MOPFD-12 #1 Page 202]
	40	No single property or parcel is designed to be served by more than one valve pit, unless justification is provided to support multiple valve pits. [MOPFD-12 #2 Page 202]
	41	Valve pits installed within a road right-of-way or other area subject to vehicular traffic shall be designed and installed to withstand appropriate traffic loads. [MOPFD-12 #4 Page 202]
	42	Valve pits are designed to have a receiving sump with a minimum of 50 gallons of storage. [MOPFD-12 #5 Page 202]
	43	Valve pits are designed to prevent entrance of water in the sump and for the vacuum valve to remain fully operational if submerged. [MOPFD-12 #6 Page 203]
	44	Valve pit locations are designed to be easily accessible, so that valves may be easily removed and replaced. [MOPFD-12 #7 Page 203]
	45	Valve pits are designed to include a 3" flexible PVC connector connected directly to the valve pit between the valve pit and vacuum sewer main. [MOPFD-12 Page 162]
	46	Valve pits are designed to include gravity service connection stub-outs piping to which the sewer customer will ultimately connect. Customer connections are designed via gravity flow to the vacuum pit location. [MOPFD-12 #9 Page 203 and #1 Page 209]

Buffer Tanks

Initials (or "NA" or "NC")	Item Number	Requirement
	47	Buffer tanks are designed instead of single valve pits if there are nonresidential/commercial or high flow inputs greater than 3-gpm peak flow or if there is no other practical method of serving the property by additional vacuum mains and valve pits. [MOPFD-12 #1 Page 203]

Initials (or "NA" or "NC")	Item Number	Requirement
	48	Buffer tanks are designed to have an operating sump of no less than 10 gallons at a wastewater depth of 10 to 14 inches. [MOPFD-12 #3 Page 203]
	49	No more than 25% of the total peak design flow on a system-wide basis is designed to enter through buffer tanks, unless justification is provided depending on static and friction loss and buffer tank location. [MOPFD-12 #4 Page 203]
	50	No more than 50% of the total peak design flow is designed to enter a single vacuum main through buffer tanks, unless justification is provided depending on static and friction loss and buffer tank location. [MOPFD-12 #5 Page 203]
	51	One 3-inch vacuum valve is designed to be used for every 15 gpm at peak wastewater flow. For higher flows, the wastewater is designed to be admitted to a splitter manhole which will evenly split and divert the flow to multiple valve buffer tank units. [MOPFD-12 #6 Page 203]
	52	When specific buffer tank valve pits having suction lifts in excess of 5.5 feet are designed, the static losses added to the losses for that main do not exceed 13 feet. [MOPFD-12 #6 Page 200]
	53	Suction lifts from the bottom of the holding sump to the valve centerline do not exceed 8 feet. [MOPFD-12 #6 Page 200]
	54	Dual buffer tanks are designed to be connected to a 6-inch or larger vacuum main; where three or more valves are used, an 8-inch vacuum main or larger is specified. [MOPFD-12 #7 Page 204]
	55	The design requires: 1) buffer tanks be constructed of minimum 4-feet internal diameter precast concrete manhole sections; and 2) all joints and connections on the buffer tank must be water-tight. Above ground venting of the vacuum valve must be installed, to ensure proper venting, in the event that the buffer tank becomes filled with wastewater. [MOPFD-12 #8 Page 204]
	56	Provisions are included with the buffer tank design to allow for separation of the valve access area from the sanitary wastewater storage area. [MOPFD-12 #9 Page 204]
	57	Provisions are included with the buffer tank design for maintenance personnel access. [MOPFD-12 #9 Page 204]

Individual Gravity Laterals

Initials (or "NA" or "NC")	Item Number	Requirement
	58	Inspection and approval of individual gravity laterals are specified before final connection and vacuum valve installation requiring: 1) laterals be no less than 4 inches in diameter; and 2) laterals be schedule 40 PVC or pressure-rated PVC (SDR 21 or SDR 26) or similar. [MOPFD-12 #2 and #5 Page 210]
	59	Air-intakes for each individual gravity lateral are specified requiring that: 1) air-intake piping and fittings be the same diameter as the lateral; 2) air-intakes extend a minimum of 2 feet above ground level with a gooseneck to protect against flooding; 3) air-intakes contain a stainless-steel screen to prevent the entry of rodents, insects, and debris; and 4) air-intakes be located to prevent damage to the piping. As an alternative to air-intakes, 6-inch Dedicated Air Terminals are specified. [MOPFD-12 #8 Page 203 and #4 Page 210]

Vacuum/Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	60	In areas with high water tables, stations are designed to withstand flotation forces when empty. When siting the station, the design considers the potential for damage or interruption of operation because of flooding. Station structures and electrical and

Initials (or "NA" or "NC")	Item Number	Requirement
		mechanical equipment are designed to be protected from physical damage by the 100-year flood. Stations are designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2)(e), F.A.C.]
	61	Stations are designed to be readily accessible by maintenance vehicles during all weather conditions. [RSWF 41.2]
	62	The total volume of the vacuum collection tank is designed to be three times the collection tank operating volume, plus 400 gal, with a minimum size of 1000 gallons. [MOPFD-12 #3 Page 207]
	63	Necessary pipe, fittings, and valves are specified to allow for emergency pumping out of the vacuum collection tank. [MOPFD-12 #9 Page 206]
	64	A minimum of two pumping units are specified for both the vacuum pumps and the wastewater pumps, with each being capable of handling peak flow conditions with the other out of service. [MOPFD-12 #3 Page 206]
	65	The design includes provisions to automatically alternate the pumps in use. [RSWF 42.4]
	66	Vacuum pumps are designed for both peak flow from the vacuum valves adjusted to a 2:1 air-liquid inlet time ratio and for a system pump down time between 1 and 3 minutes with one pump not in service. [MOPFD-12 #2 Page 207 and 208]
	67	Wastewater discharge pumps are designed using an appropriate peaking factor. [MOPFD-12 #2 Page 206 and 207]
	68	Pumps handling raw wastewater are designed to pass spheres of at least 3 inches in diameter. Pump suction and discharge openings are designed to be at least 4 inches in diameter. Note, this is not applicable to grinder pumps. [RSWF 42.33]
	69	The design requires pumps be placed such that under normal operating conditions they will operate under a positive suction head. [RSWF 42.34]
	70	Wastewater discharge pumps are adequate to maintain a minimum velocity of 2 feet per second in the force main. [RSWF 42.38]
	71	Certification is specified from the pump manufacturer stating that wastewater discharge pumps are suitable for use in a vacuum sewer installation. [MOPFD-12 #5 Page 206]
	72	The design requires: 1) suitable shutoff valves (plug valves or resilient coated wedge gate valves) be placed on the suction line of wastewater discharge pumps; 2) suitable shutoff and check valves be placed on the discharge line of each wastewater discharge pump; 3) a check valve be located between the shutoff valve and the wastewater discharge pump; 4) check valves be suitable for the material being handled; 5) check valves be placed on the horizontal portion of discharge piping (except for ball checks, which may be placed in the vertical run); 6) all valves be capable of withstanding normal pressure and water hammer; and 7) all shutoff and check valves be operable from the floor level and accessible for maintenance. [MOPFD-12 #6 and #8 Page 206 and RSWF 42.5]
	73	Isolation valves are specified between the vacuum collection tank, vacuum pump(s), influent line, and raw wastewater discharge pipe. [MOPFD-12 #7 Page 206]
	74	Vacuum station piping and fittings 4 inches and larger are specified to be 150 #ANSI flanged ductile iron. Piping and fittings less than 4 inches are specified to be schedule 80 PVC with solvent-welded joints. [MOPFD-12 #10 Page 206]
	75	Station testing requirements are specified in accordance with the vacuum system manufacturer's standard. [MOPFD-12 #12 Page 206]
	76	Instrumentation and control systems to provide operational functionality are specified to manufacturer's standard. Provisions for automatic pump alternation are included in the instrumentation and control system. The instrumentation and control system to bear the UL label, per the requirements of UL 508 and UL 508A. [MOPFD-12 #1 and #2 Page 208]
	77	The design requires: 1) stations be protected from lightning and transient voltage surges; and 2) stations be equipped with lighting arrestors, surge capacitors, or other similar protection devices and phase protection. [62-604.400(2)(b), F.A.C.]
	78	The design provides for adequate ventilation in accordance with RSWF 42.7. [MOPFD-12 Page 208 and RSWF 42.7]

Initials (or "NA" or "NC")	Item Number	Requirement
	79	Electrical equipment and installation are designed to meet the requirements of the National Electrical Code. [MOPFD-12 #2 Page 208]
	80	Adequate temperature control is designed for the main electrical equipment and primary power distribution. [MOPFD-12 #5 Page 209]
	81	Potable water, power, and telephone service is specified to be provided to the vacuum/pump station. [MOPFD-12 #6 Page 209]
	82	Outdoor lighting for security is specified. [MOPFD-12 #9 Page 209]
	83	Stations are designed and located on the site to minimize adverse effects from odors, noise, and lighting. [62-604.400(2)(c), F.A.C.]
	84	The design requires stations be enclosed with a fence or otherwise designed with appropriate features to discourage the entry of animals and unauthorized persons. Posting of an unobstructed sign made of durable weather resistant material at a location visible to the public with a telephone number for a point of contact in case of emergency is specified. [62-604.400(2)(d), F.A.C.]
	85	The design provides for suitable and safe means of access in accordance with RSWF 42.23. [RSWF 42.23]
	86	Specified construction materials are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. The ferrous metal components of the vacuum pump station are specified to be protectively coated to prevent corrosion. [MOPFD-12 #11 Page 206 and RSWF 42.25]
	87	The design includes provisions to facilitate removing pumps, motors, and other mechanical and electrical equipment. [RSWF 42.22]
	88	The design requires suitable devices for measuring wastewater flow at all pump stations. Indicating, totalizing, and recording flow measurement are specified for stations with a 350 gpm or greater design peak flow. [RSWF 42.8]
	89	The station is designed with no physical connections with any potable water supplies. If a potable water supply is brought to a station, reduced-pressure principle backflow-prevention assemblies are specified. [RSWF 42.9 and 62-555.360(4), F.A.C.]

Emergency Operations for Vacuum/Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
	90	Stations are designed with an alarm system which activates in cases of power failure, pump failure, unauthorized entry, or any cause of pump station malfunction. Station alarms are designed to be telemetered to a facility that is manned 24 hours a day. If such a facility is not available, the alarm is designed to be telemetered to utility offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours. Note, if an audio-visual alarm system with a self-contained power supply is provided in lieu of a telemetered system, documentation is provided showing an equivalent level of reliability and public health protection. [RSWF 46]
	91	The design requires emergency pumping capability be provided for all stations. For stations discharging through pipes 12 inches or larger, the design requires uninterrupted pumping capability be provided, including an in-place emergency generator. Where portable pumping and/or generating equipment or manual transfer is used, the design includes sufficient storage capacity with an alarm system to allow time for detection of station failure and transportation and connection of emergency equipment. [62-604.400(2)(a)1. and 2., F.A.C., MOPFD-12 #4 Page 209 and RSWF 47.423 and 47.433]
	92	The design requires: 1) emergency standby systems to have sufficient capacity to start up and maintain the total rated running capacity of the station, including lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation; 2) special sequencing controls be provided to start pump motors unless the generating equipment

Initials (or "NA" or "NC")	Item Number	Requirement
		has capacity to start all pumps simultaneously with auxiliary equipment operating; 3) a riser from the force main with rapid connection capabilities and appropriate valving be provided for all stations to hook up portable pumps; and 4) all station reliability design features be compatible with the available temporary service power generating and pumping equipment of the authority responsible for operation and maintenance of the collection/transmission system. [62-604.400(2)(a)3., F.A.C. and RSWF 47.431]
	93	The design provides for emergency equipment to be protected from operation conditions that would result in damage to the equipment and from damage at the restoration of regular electrical power. [RSWF 47.411, 47.417, and 47.432]
	94	For permanently installed internal combustion engines, underground fuel storage and piping facilities are designed in accordance with applicable state and federal regulations; and the design requires engines to be located above grade with adequate ventilation of fuel vapors and exhaust gases. [RSWF 47.414 and 47.415]
	95	For permanently installed or portable engine-driven pumps are used, the design includes provisions for manual start-up. [RSWF 47.422]
	96	Where independent substations are used for emergency power, each separate substation and its associated transmission lines is designed to be capable of starting and operating the pump station at its rated capacity. [RSWF 47.44]

Conventional Force Mains, Pump Stations, Gravity Sewers and Manholes

Initials (or "NA" or "NC")	Item Number	Requirement
	97	For conventional force mains, pump stations, gravity sewers and manholes used after leaving the vacuum/pump station, the project design meets the "General Requirements" and applicable portions of the Collection/Transmission System Design Information beginning on page 2 of DEP Form 62- 604.300(3)(a), Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System. [62-604.300(3)(a), F.A.C.]

17.0 PACKAGE PLANT ABANDONMENT AND DECOMMISSIONING REQUIREMENTS

This section provides requirements and information pertaining to the abandonment and decommissioning of package treatment plants located in the Village. All testing, decommissioning procedures, demolition and abandonment of shall be performed by the Owner/Developer in the presence of Village inspection personnel and/or its designated representative and certified by the Owner/Developer's Engineer. The Owner/Developer shall be responsible for furnishing all necessary labor, equipment, and water required for all testing and inspections. Prior to beginning any package plant abandonment and decommissioning, the Owner/Developer's Engineer-of-Record shall contact the Village Wastewater Department and schedule a briefing meeting for the purpose of coordinating schedules and reviewing protocol and documentation responsibilities.

17.1 General Decommissioning Protocol

1. The Owner shall contact the Village and its wastewater operator, Severn Trent Environmental Services (STES), to schedule a date and time to initiate the decommissioning of the package treatment plant facilities.

2. No sludge or solids from the package treatment plant facilities may be disposed of into the Village's collection facilities. Only clear effluent liquids after solids (sludge) have settled to the tank bottom will be accepted.

3. The clear effluent liquid discharged into the Village's collection system must meet a salinity standard of less than 1 part per thousand with a neutral pH (7.0).

4. Blowers at the package treatment plant shall be turned off at least 12 hours prior to the transfer of clear effluent into the Village's collection system.

5. Once the maximum quantity of sludge has settled and a maximum depth of clear liquid effluent has been obtained, the Owner shall contact the Village and its wastewater operator (STES).

6. STES staff, with Village representatives present, will arrive onsite and perform the following tasks:
   a. Measure the clear liquid effluent level using a sludge judge and provide markings on the tank indicating the acceptable zone of clear liquid can be transferred into the Village's collection system.
   b. Take a salinity measurement of the clear effluent.
   c. Take a pH measurement of the clear effluent.

7. STES representatives shall be on site to monitor the transfer operation and to verify that only clear liquids are being transferred to the Village's collection system. The STES representative may stop the transfer operation if solids begin to appear in the clear effluent being transferred to the Village's collection system.

8. The transfer operation shall occur in 8-hour increments between the working hours of 8:00 am and 5:00 pm, Monday through Friday, taking two or more days if required.

9. The Owner (or Designated Contractor) of the package treatment plant shall be responsible for disposal of settled plant solids and sludge at a licensed disposal facility.

17.2 Owner Responsibilities

1. The Owner of the package treatment plant facilities is responsible for submitting a Facility Abandonment Plan to FDEP 60 days prior to abandonment.

2. The Owner is required to obtain the FDEP permit to abandon Class V injection well(s). Abandonment of the injection wells shall be performed by a Florida licensed water well driller.

3. The Owner is required to properly abandon the package treatment plant facilities in accordance with the submitted Facility Abandonment Plan and ensuring public health, access control, and safety.

4. The Owner shall notify the Village of commencement of demolition prior to beginning construction.

5. The Owner shall notify the Village of completion of demolition at least 10 working days prior to the expected completion date to permit the scheduling of final inspection.

6. The Owner shall validate that the demolition conforms to the submitted Facility Abandonment Plan and all changes have been documented on as-built drawings submitted to the Village.

7. The Owner shall schedule and successfully pass a final inspection of the facility with the Village and its designated representatives.

8. The Owner shall provide any additional plan review documentation required by the Village to complete the review process.

9. The Owner shall provide the Village with a satisfactory response to all review comments issued by the Village to complete the plan and permit review process for the abandonment of the facilities within 30 days of the request for information or a connection permit to the Village’s collection system will be denied.

END OF SECTION

18.0 STANDARD NOTES FOR COMMERCIAL PERMIT PLAN SUBMITTALS

18.1 General Notes – the following general notes shall be included on commercial design plan submittals for the Village for permitting:

a. Existing and new collector system infrastructure shall be tested in accordance with Village's Minimum Design Standards and the KLWTD testing requirements per the KLWTD/Village of Islamorada Inter-Local Agreement.

b. All final testing shall be made in the presence of a representative from the Village. A minimum 72-hour notice shall be provided to the Village and KLWTD prior to the initiation of all final system testing.

c. All testing required by the Village, KLWTD and FDEP shall be paid for by the Owner/Contractor.

d. Commercial service laterals with multiple connections shall be green 6-inch diameter or larger.

e. All gravity sanitary sewer lines shall be green PVC SDR 26, ASTM D-3034. In locations where a minimum cover of 3.0 feet cannot be maintained, AWWA C-900 or C-905 Green PVC DR-25, Class 100 or concrete encasement shall be used.

f. Minimum slope for gravity laterals 4-6 inches in diameter shall be 1/8-inch per foot (1.04%).

g. All cleanout boxes located in traffic rated or traffic accessible areas shall utilize 12-inch diameter by 6-inch thick (minimum) reinforced concrete collars. Concrete collars shall have a minimum 3,000 psi.

h. All cleanout covers in traffic rated or traffic accessible areas shall be traffic rated.

18.2 Low Pressure Sewers – the following notes shall be included on permit plan submittals including grinder pump stations and/or connections with the Village Low Pressure Force Main (LPFM) or the Conveyance Force Main (CFM):

a. All grinder pump stations shall be designed to prohibit inflow for the 10-year storm event and shall be designed to withstand the effects of buoyancy under submerged conditions (assuming the basin is empty). Ballast calculations shall be included with the Engineering Design Report submitted to the Village for review and approval.

b. All grinder pump service laterals shall be constructed with a minimum 24 inches of cover.

c. All grinder pump service laterals shall be tested after the grinder system is completely installed. Prior to the commencement of testing, service lateral pipe sections should first be flushed to remove any debris that may remain inside the lateral. The flushing procedure should develop a water velocity of at least 2.5 feet per second and should result in at least 100% turnover of the water in the service lateral.

d. All testing must be witnessed, and testing reports must be signed and sealed by a Florida licensed professional engineer.

e. All final testing shall be performed in the presence of a representative from the Village. The Village shall be notified at least 72 hours (not including holidays or weekends) in advance of any work which is to be inspected or tested. Tests performed in the absence of a Village representative shall be considered invalid and shall be repeated at the Owner's expense.

END OF SECTION

19.0 DESIGN STANDARDS FOR MOBILE FOOD DISPENSING VEHICLES

19.1 Introduction

1. This section of the Minimum Design and Construction Standards stipulates standards and requirements for mobile food trucks (herein referred to as *Mobile Food Dispensing Vehicles*) that desire to physically connect with the Village's wastewater collection system for the disposal of wastewater sewage.

19.2 Definitions

1. *Mobile Food Dispensing Vehicle (MFDV).* Any vehicle that is a public food service establishment and that is self-propelled or otherwise movable from place to place and includes self-contained utilities to cook, prepare, and assemble food items and beverage products on and/or in the vehicle.

19.3 General Requirements

1. All MFDVs shall have the written consent of the property owner prior to operate on private property.

2. MFDVs owners are only permitted to operate on private commercial properties that currently have a FDEP Permitted Connection with the Village. Any Single Building Commercial Connection property without a FDEP Permitted Connection requesting approval for an MFDV must apply for a Village Building permit and a FDEP wastewater collection permit.

3. One (1) MFDV per parcel shall be permitted, including any property consisting of multiple parcels joined under a unity of title or governed by a single Village approved site plan.

4. All MFDVs permitted to operate in the Village must display all State, County and local licenses, permits, and regulations in accordance with the Village's Code of Ordinances.

19.4 Design Standards

1. Grease Interceptors.

    i. All MFDVs shall have a formal written agreement with the Village for the proper disposal of grease.

    ii. All MFDVs shall have a grease interceptor on site connected with the Village's wastewater collection system. The grease interceptor shall be designed by a Florida Professional Engineer.

iii. All grease interceptors shall be designed and operated in accordance with the Village's Minimum Design and Construction Standards, current version.

iv. Grease interceptors shall be sized, designed, tested and installed in accordance with the most current version of the Florida Building Code – Plumbing. The design of a grease interceptor shall be based on peak flow and shall be sized and designed to allow efficient removal of fats, oils, and grease from discharges into the Village's wastewater collection system.

v. All mobile food truck owners shall have an active maintenance contract with a Village-licensed contractor for maintaining their onsite grease interceptor. All grease interceptors must be pumped out at a minimum frequency of 90-days in accordance with the Village's Minimum Design and Construction Standards.

2. All MFDVs shall utilize a standard above ground camlock disconnect at a permitted connection point with the private onsite wastewater collection system for connecting the wastewater discharge from the mobile food truck. No rotating connection points will be allowed.

3. Restrictions

    i. Grease or any waste materials shall not be discarded into the stormwater system, sidewalks, streets, parking lots or onto any public or private property.

19.5 Operations

1. MFDVs may operate at a single location for a minimum duration of 6 months. No short-term connections will be permittable in the Village.

2. Records pertaining to grease interceptor maintenance and grease disposal shall be maintained by the responsible party for a period of at least three (3) years. Written records of inspections, pumping and disposal, cleaning, and maintenance activities shall be made available to the Village (or its designated representative) during normal working hours.

19.6 Permitting Requirements

1. All MFDV owners and operations which desire to obtain a wastewater service connection with the Village shall obtain a Village Building Permit.

2. All MFDVs owners and operators seek to obtain a wastewater service connection with the Village's Wastewater Collection System shall submit a permit application to the Village's Wastewater Utility Department supplemented by any plans, specifications or other information required by the Minimum Design and Construction Standards and

Specifications for Wastewater or other information considered pertinent in the judgement of the Village.

3. All permitted MFDVs shall be required to install and maintain a grease interceptor.

19.7 Extreme Weather Event Preparation Requirements

1. All MFDVs shall be disconnected from the Village wastewater collection system within 24-hours of the NOAA National Hurricane Center (NHC) issuing a Tropical Storm Watch for the Florida Keys.

2. Any MFDVs which are not disconnected from the Village wastewater collection system within 24 hours of the NHC issuing a Tropical Storm Watch for the Florida Keys will be subject to penalties and fines in accordance with the Village's Utility Policy,

19.8 Violations

1. All MFDVs shall be subject to penalties and fines stipulated under the Village Utility Policy.

END OF SECTION

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