

SECTION A: PURPOSE AND INTENT

- 1. With the publication of these requirements which amends and supersedes previous specifications and requirements, Low Pressure Sewer Systems constructed as specified herein will be considered for approval for use in the Duckett Creek Sanitary District.
2. The type of Low Pressure Sewer System specified herein shall consist of individual private home/unit Grinder Pump Station with pressure discharge line connection to a pressurized Common Collector Main.
3. The District's intent is to provide an alternative method to sewer undeveloped property presently considered impractical for conventional gravity sewers, and/or existing septic tank subdivisions which may be too hazardous or disruptive to sewer by conventional gravity sewers.

SECTION B: SYSTEM RESPONSIBILITIES

- 1. All construction shall be in accordance with all applicable State, Federal or Local codes, regulations.
2. Construction Plan approval is required from the District. All components of the pressurization/pressurized system require District review and approval.
3. Upon proper completion of installation of the system, ownership and responsibility for maintenance and operation of all parts of the L.P.S.S. system shall be as follows:
a. Upon completion of construction, establishment of easements, final field approval by the District, and proper execution of all required Connection and Dedication Agreements, the District may accept the public dedication of the Common Collector Mains, to include collector main lines, appurtenances directly attached to the main, branch mains and valve vaults.

SECTION C: CONSTRUCTION PLAN SUBMITTALS

- 1. Construction Plan submittals should include the same site and profile design, construction details, etc., information typically required for conventional sewer plan submittals.
2. Site specific hydraulic design information regarding pumps and collection system sizing and layout should be included as an integral part of the construction plan.
3. Pressure Sewer Systems shall be designed and sized for a specific number of units. Extending or altering to any portion of the original pressure system piping to accommodate additional flow will not be allowed, unless by design. District approval is required.

SECTION D: COLLECTOR MAIN

- 1. All Collector Main construction requires plan approval and field inspection by the Duckett Creek Sanitary District. An Engineer's Report shall accompany all plan submittals and shall specify appropriate strength, sizing and type of all materials. A cleaning velocity of at least two feet per second (2 f/s), at least once and preferably several times per day, shall be achieved. Six (6) hour retention times are recommended.
2. All Collector Mains, main branches and Valve Boxes shall be placed in dedicated Recorded Public right-of-way or easement.
3. The Collector Pressure Main shall discharge to a District gravity sewer 42" I.D. manhole or within one foot of the gravity low flow line. Connections to a 48" I.D. manhole may be permitted utilizing District approved "inside-drop pipe".

SECTION E: COLLECTOR MAIN TESTING

- 1. Successful Field Pressure Testing of the Common Collector Main system shall be required prior to initial 50% Escrow Release. Contractor shall perform test in presence of District Inspector.
2. Pressure tests shall be made only after the completion of backfilling operations and after the concrete thrust blocks have set for at least thirty-six (36) hours.
3. The pipe line shall be slowly filled with water. During filling of the pipe and before applying the specified pressure, all air shall be expelled from the pipeline via exercise of the Air Release Valves, Valve Vault Valve Sets and/or Clean-outs.

SECTION F: INDIVIDUAL PUMP STATION/PRESSURE LATERAL SPECS

- A. GENERAL:
1. Developer shall furnish and install Package Grinder Pump Stations completely factory built and tested, each consisting of a grinder pump suitably mounted in a fiberglass basin.
2. All package grinder pump stations in a Low Pressure Sewer System shall be one manufacturer.
3. Developer shall furnish a computer printout showing system pipe sizing and branch analysis for the system as shown on the drawings.
4. Submittals for District review shall include, but not limited to, the following data (Hydraulic Institute Standards, ANSI Standards and ASTM Standards apply):
a. Pump: Name of manufacturer, Type and model, Rotation speed, Net weight of pump, Complete performance curves showing capacity versus head.

B. OPERATING CONDITIONS:

- 1. The pumps shall be capable of delivering 11 gpm against a total dynamic head of 92 feet (40 psig) and 8 gpm at 138 feet (60 psig). The pumps must also be able to operate at negative heads without overloading the motors.
2. The grinder pump stations shall be simplex or duplex design as indicated on the drawings. All pumps shall be of the same horsepower throughout the project area.
3. Characteristics of the liquid to be pumped: domestic wastewater.

C. GENERAL CONSTRUCTION:

- 1. PUMP - The pump shall be custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with mechanical seal. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel.
2. GRINDER - The grinder shall be positioned immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft.
3. TANK - The tank shall be custom molded of fiberglass reinforced polyester resin or thermoplastic or thermo-set material and shall be furnished with one PVC closed lid flange to accept a 4-inch ASTM 3034-ADR 35 pipe.

- All discharge piping shall be constructed of 304 Series Stainless Steel and terminate outside the access way bulkhead with a stainless steel, 1 1/2 inch female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 200 psi WOG.
The access way shall include a NEMA 4X junction box, factory installed with access way penetrations warranted by the manufacturer to be weather tight.
MECHANICAL SEAL - The core shall be provided with a mechanical shaft seal to preclude leakage between the motor and pump.
VALVES - The valves shall be located in a valve chamber and shall include a shutoff valve in said valve chamber.

Table with 2 columns: Year, Percentage. Rows: 1-5 years with percentages ranging from 100% to 25%.

- 1. Check Valve - The pump discharge shall be equipped with factory installed, gravity operated, flapper-type integral check valve or ball check valve built into the stainless steel discharge pipe.
2. Redundant Check Valve - Each grinder pump station shall include in its package one separate check valve for installation in the 1 1/2" service lateral between the Grinder Pump Station and the sewer main.
3. ELCTRIC MOTOR - The motor shall be a 1 HP, 1725 RPM, 240 volt, 60 Hertz, 1 phase capacitor start, ball bearing, squirrel cage, induction type with a low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds.

- Each level control shall have its own built-in fail safe design which will prevent the entrance of moisture into the controls. To assure reliable operation of the pressure sensitive switches, each pump shall be equipped with a quick disconnect breaker assembly, complete with a check valve to prevent accidental entry of water into the motor compartment.
The grinder pump will be furnished with a minimum of two ten foot (10) lengths of type UF cable, pre-wired and water tight.
ALARM/DISCONNECT PANEL - Each grinder pump station shall include a NEMA 3R, UL listed ALARM/DISCONNECT PANEL suitable for wall or pole mounting.
SERVICABILITY - The grinder pump shall have lifting eyes with nylon/polypropylene rope used to facilitate easy removal of the pump from the tank when necessary.

D. INSTALLATION:

- 1. Installation procedures for grinder pump station shall be as recommended by the pump manufacturer, the Hydraulic Institute Standards, and as required herein.
2. Individual customer pump station and pressure discharge piping from the pump to the valve vault shall conform to the following:
a. Developer/Homeowner shall be responsible for obtaining appropriate Building (Plumbing, Electrical, etc.) Permit(s). Installation of the pump station/control panel shall be by Permit, and Inspected by the appropriate City or County Building Department, and this District.
b. Pressure discharge pipe from the pump to the Valve Box shall be sized appropriately (typically 1-1/4") and either SDR 21 or schedule 40.

E. PERFORMANCE TESTING:

Each grinder pump shall be submerged and operated for five (5) minutes (minimum). At no time during the installation or testing of the grinder pump station shall water be introduced into the access way of the station. Contractor shall consult with the pump manufacturer. Included in this procedure will be the testing of all appurtenances components such as, the anti-siphon valve, check valve, discharge piping, level sensors, each unit's dedicated controls, respective alarm/disconnect panel, etc. All factory tests shall incorporate each of the above listed items.

F. MANUFACTURER'S INSTALLATION AND START-UP SERVICES:

Manufacturer shall provide a factory-trained serviceman to perform installation, start-up, and field testing services prior to acceptance by the Owner. Services shall include: (1) train Contractor on proper installation of equipment, (2) train Contractor on proper testing procedures, (3) inspect all installations and review all test results. All equipment and materials necessary to perform testing shall be the responsibility of the Contractor.

Upon completion of the start-up and testing, the Contractor shall obtain from Manufacturer and submit to Engineer the Manufacturer's start-up authorization form describing the results of the tests performed for each grinder pump station tested, and bearing the signature of the manufacturer's authorized technician, signifying approval of the installation and test results.

G. WARRANTY AND GUARANTEE:

The Manufacturer shall warrant and guarantee to the Owner that all equipment will be in accordance with the equipment specifications and will not be defective. All defective equipment, whether or not in place, may be rejected.

The Manufacturer shall provide the following warranty from the date of final acceptance of the project as established by the Owner. The warranty shall be a full parts and labor warranty covering every component of the station tank, pump housing, controls, wiring, direct burial cable, pump assembly, (including pump start and controls), alarm disconnect panel, and any on site diagnostic time or travel time to pump station site.

Inclusive of this warranty, service provider will be responsible for providing and replacing any defective pump or component with a loaner pump or component during the time frame required to repair to the original pump and replacing original pump and retrieving loaner pump after repair is complete. The time and travel for this will also be covered by this warranty.

This warranty will include service with a maximum two (2) hour response time to the pump station site, twenty-four (24) hours a day, seven (7) days a week utilizing a toll free 1-800 number to a staffed answering service.

This warranty will begin at the date of final acceptance of the project by the Owner and according to the following schedule. This schedule represents the manufacturer's responsibility for parts, labor and other expenses on warranty items with the balance due by the Owner.

Table with 2 columns: Year, Percentage. Rows: 1-5 years with percentages ranging from 100% to 25%.

Any and all service providers must be approved and trained by the Manufacturer. Corresponding Municipal Building Department may require written verification that pump/pump station has been installed by a Factory Authorized Installer. Installer shall be prepared to produce a Letter of Verification stating that he is an Authorized Installer and that the pump/pump station for referenced lot/address has been installed in accordance with the Factory requirements.

SECTION G: EASEMENTMENT

- 1. The Common Collector Main and pressure main branch stub and valve box shall be located within dedicated recorded easement or public right-of-way easily accessible by the District.
2. Record Easement Plans for parcels of land serviced by LPSS System(s) should include the following general information:
a. All pertinent geographical information locating the length and width of easements and specifics information (metes & bounds) locating the easements on the parcel(s) or tract(s) of land.
b. Information specifying the Owner's Name and Deed Book & Page numbers for parcel(s) or tract(s) of land.
c. Other plat or property information as required by the County Recorder of Deeds Office.

SECTION H: CONDITIONS AND NOTES

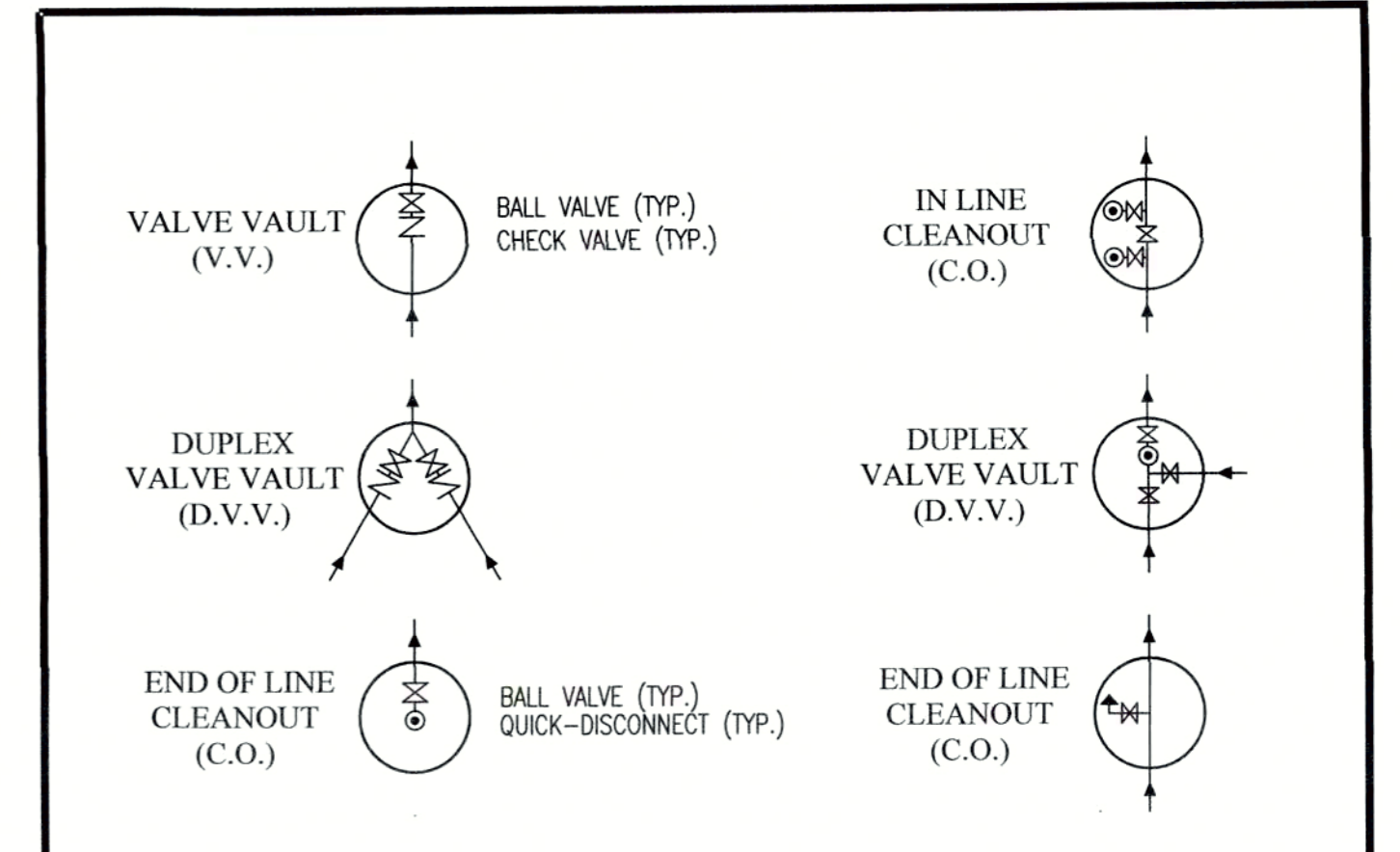
- 1. Due to the nature of Low Pressure Sewer Systems and operational policies of the District herein established, the District shall not be responsible for the operation or maintenance of individual gravity sewer lateral, individual pump station and appurtenances or individual pressure discharge line to the connection in the valve vault.
2. For LPSS systems in new subdivision construction the following notification shall be included on the Construction Plans, Record Easement Plat and also as a provision in the subdivision's Standard Covenants and Restrictions.
a. Lots are served by Low Pressure Sewer System. Notification is hereby given declaring the owner of lot(s), which is served by a pressure sewer system which is located or will be located, an individual pressurization unit such as a grinder pump, shall maintain and repair or replace the individual pressurization unit and appurtenances in accordance with the manufacturer's specifications and Duckett Creek Sanitary District requirements or the owner's sole cost and expense.

SECTION I: CONSTRUCTION ESCROW REQUIREMENTS

- 1. For LPSS systems in new subdivision construction approval, Developers shall be required by this District to establish sanitary sewer construction escrow for the common Collector Pressure Main and appurtenances thereof, individual branch stubs from the main to the valve box, and valve box units.
2. Escrow release and disbursements by the escrow holder to be made only upon written notification by the Sewer District, shall be typically of 50% of the Escrow Sum upon initial completion of installation of the Common Collector Main improvements and successful pressure testing of same.
3. For LPSS systems in existing subdivision rehab construction, such as in the elimination of septic systems, the aforementioned paragraph 2a, 2b and 2c shall be included on the Construction Plan and included as a provision in the amended subdivision Standard Covenants and Restrictions.

SECTION J: CONNECTION AGREEMENTS

- 1. Execution of Site Specific Low Pressure Sewer System Connection Agreements are required prior to construction plan approval or prior to actual connection to the system in existing subdivision septic tank elimination situations.
2. The District reserves the right to modify or revise its requirements to compensate for special situations.

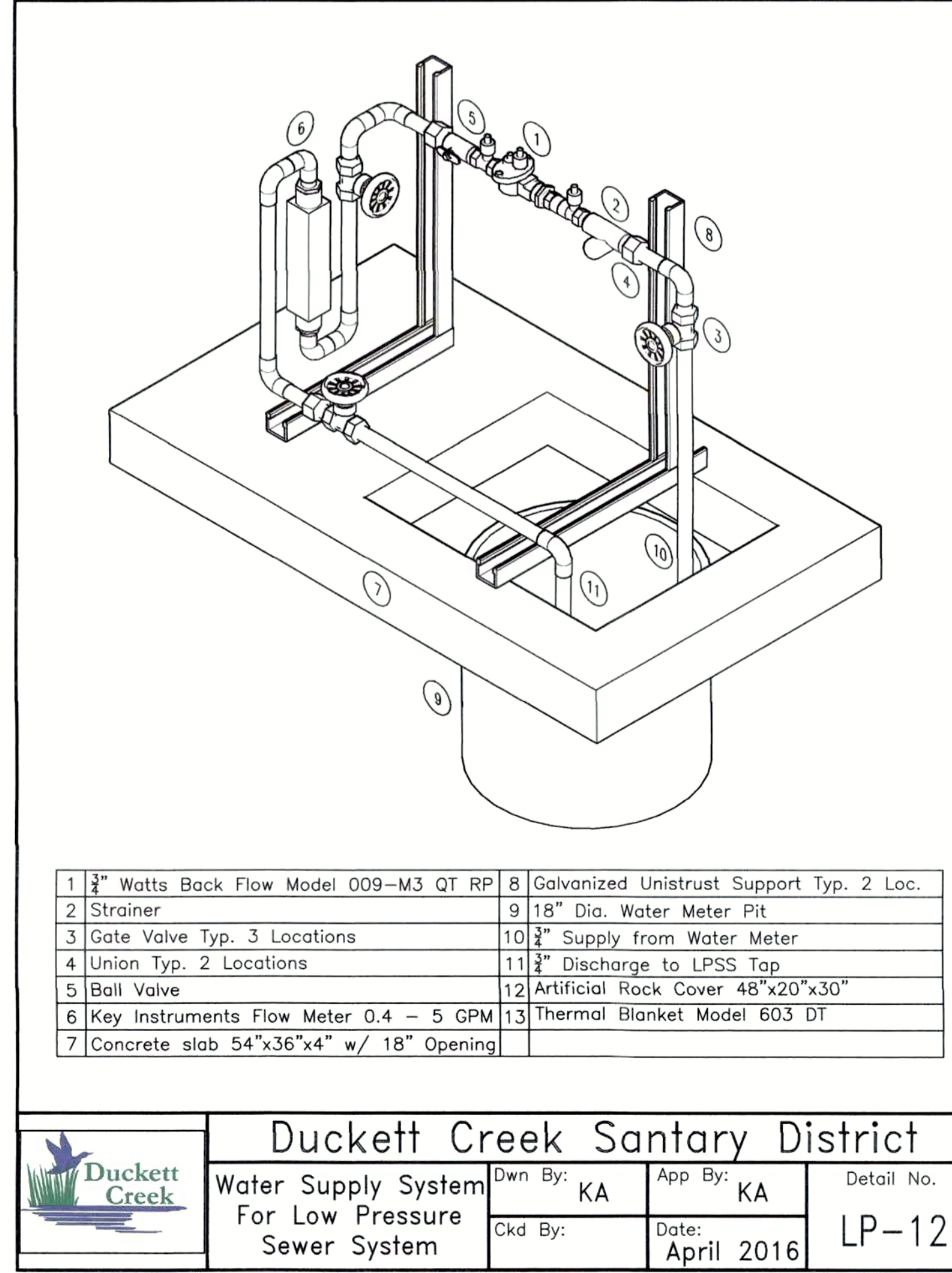
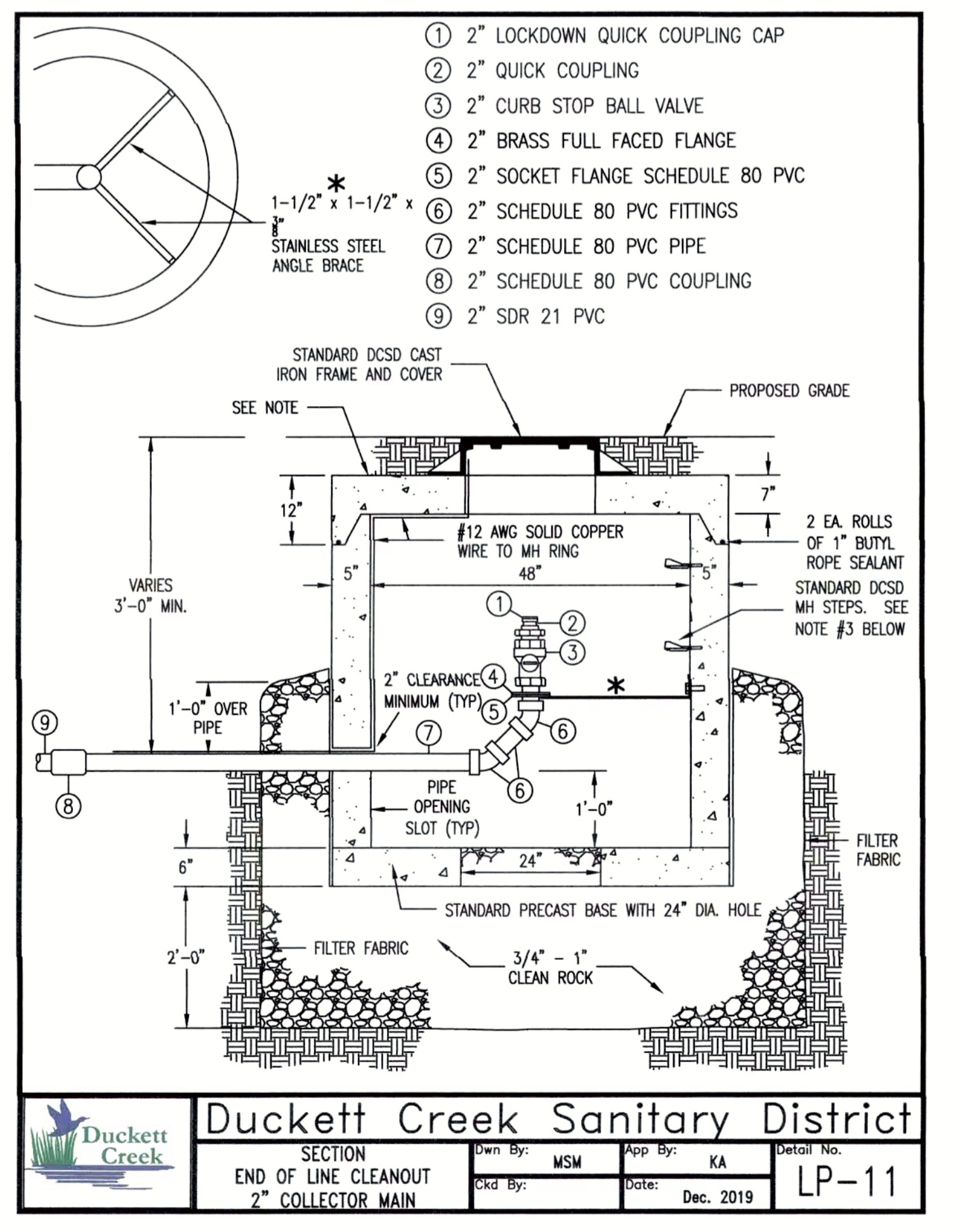
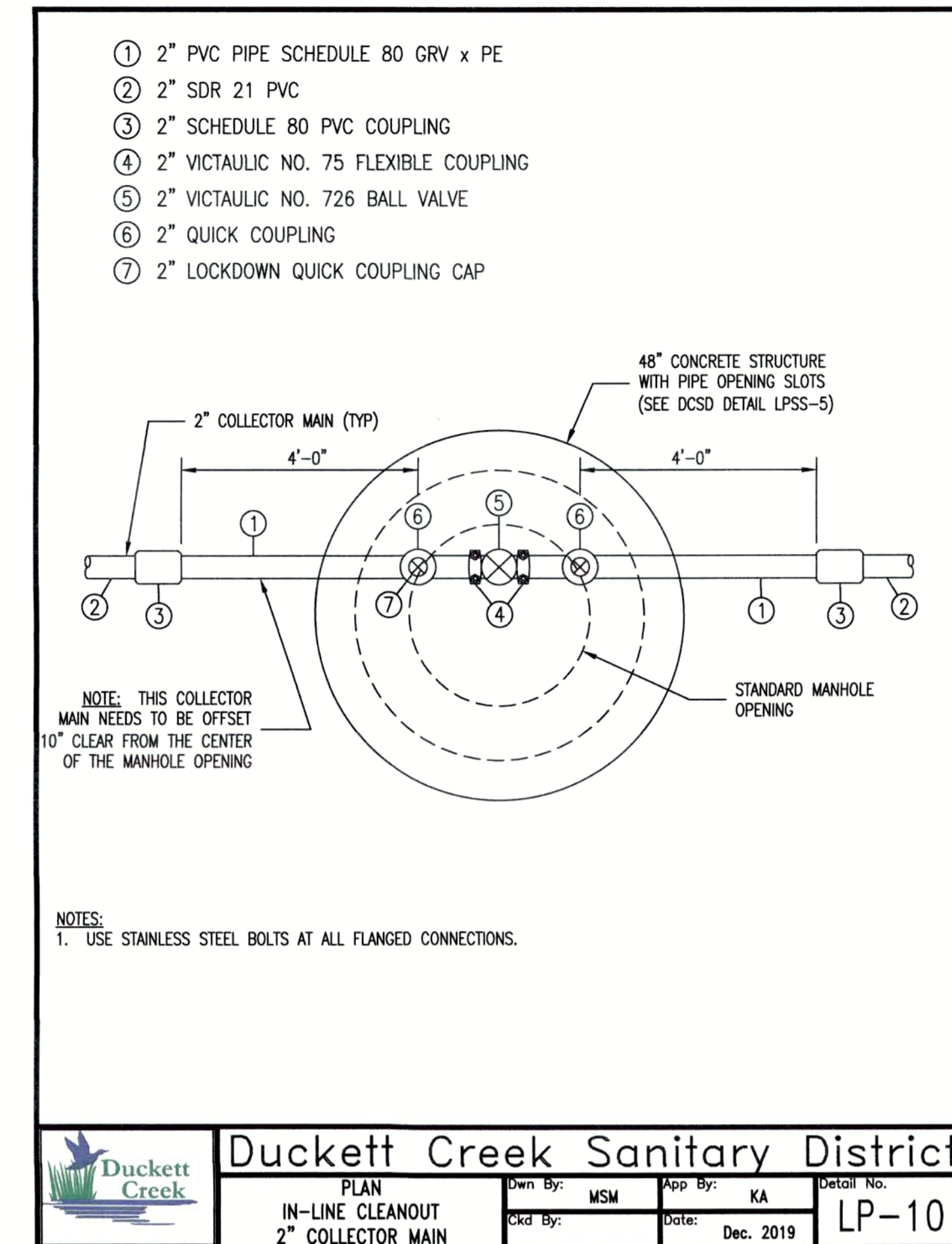
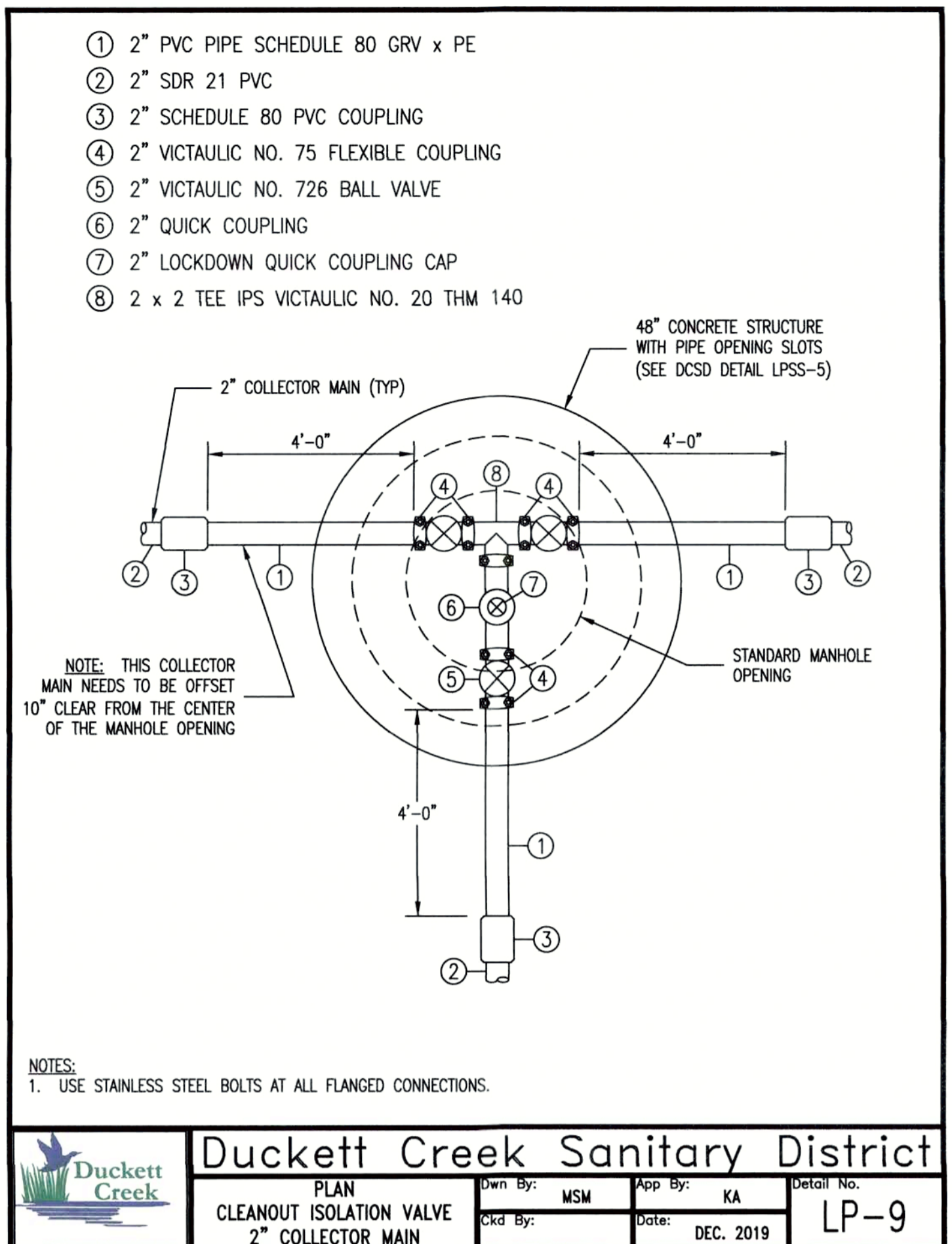
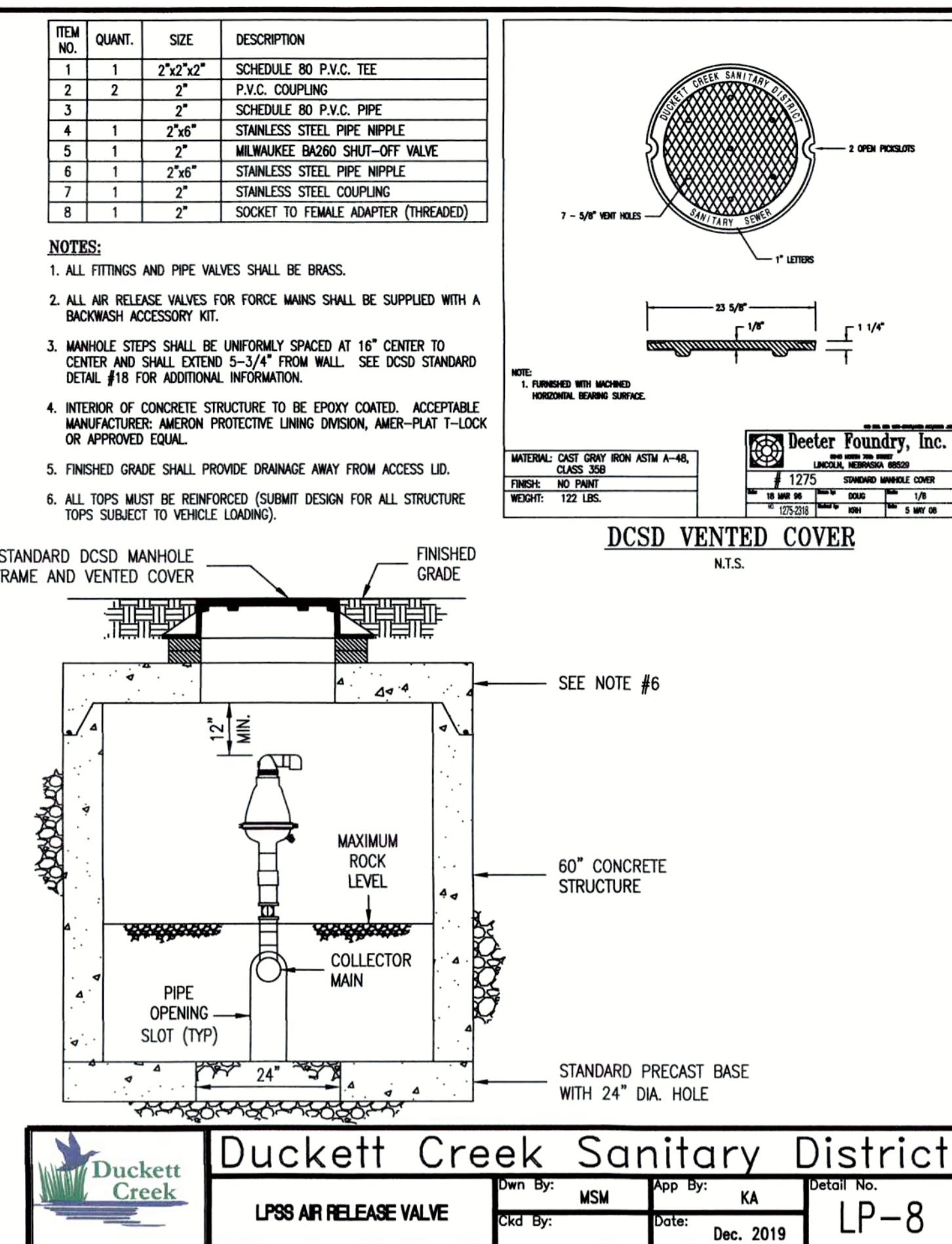
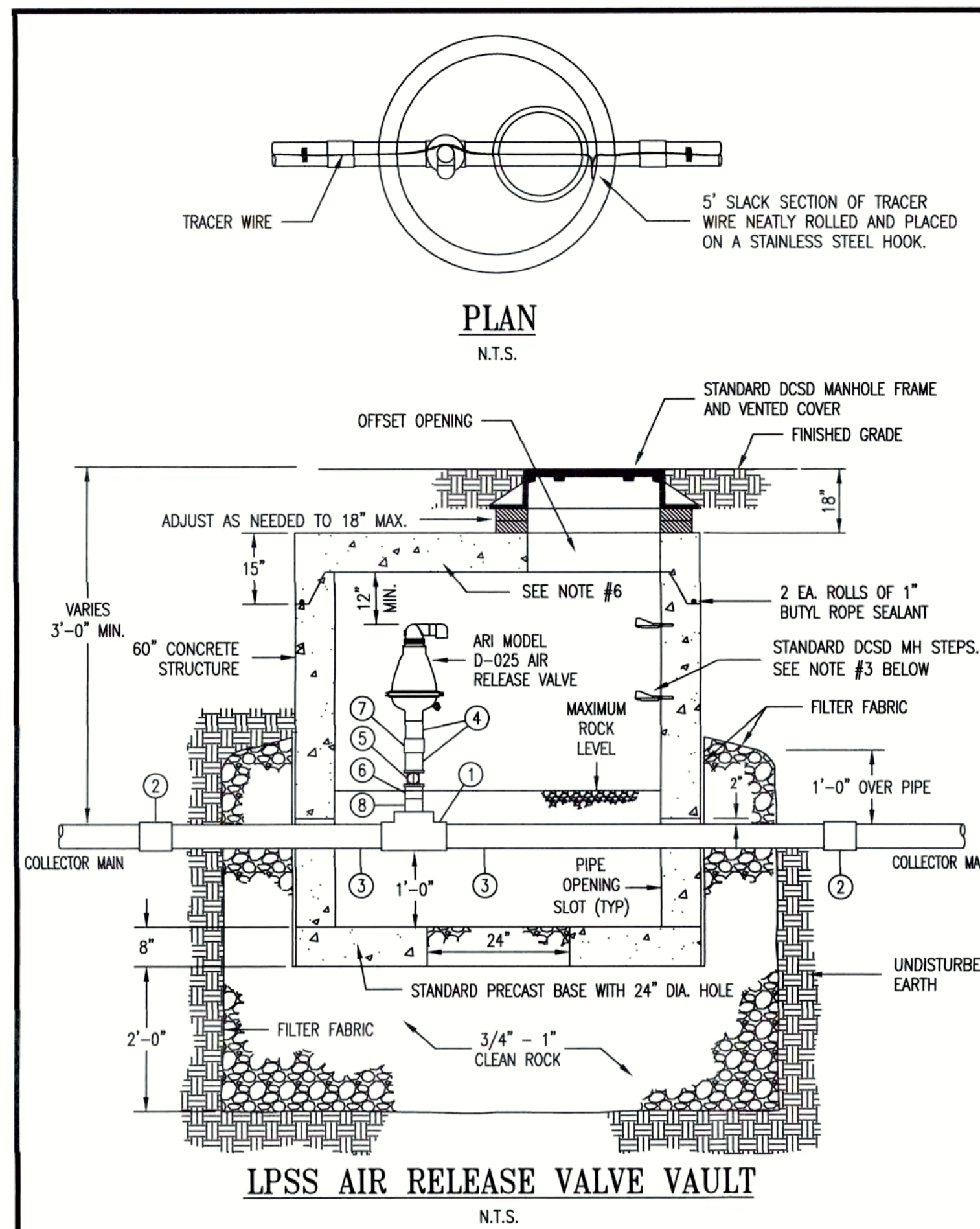


TYPICAL LPSS VAULT CONFIGURATIONS

Duckett Creek Sanitary District logo and title. Below it, a table with fields: LPSS DESIGN REQUIREMENTS, Own By: MSM, App By: LRK, Detail No.: LP-1, and a date stamp: MAY 2023.







**E/ONE EXTREME**

## DH071/DR071

**General Features**

The model DH071 or DR071 grinder pump station is a complete unit that includes: the grinder pump, check valve, HDPE (high density polyethylene) tank, controls, and alarm panel. A single DH071 or DR071 is a popular choice for one, average single-family home and can also be used for up to two average single-family homes where codes allow and with consent of the factory.

- Rated for flows of 700 gpd (2650 lpd)
- 70 gallons (265 liters) of capacity
- Indoor or outdoor installation
- Standard outdoor heights range from 61 inches to 160 inches

The DH071 is the "hardwired," or "wired," model where a cable connects the motor controls to the level controls through watertight penetrations.

The DR071 is the "radio frequency identification" (RFID), or "wireless," model that uses wireless technology to communicate between the level controls and the motor controls.

**Operational Information**

**Motor**  
1 hp, 1,725 rpm, high torque, capacitor start, thermally protected, 120/240V, 60 Hz, 1 phase

**Inlet Connections**  
4-inch inlet grommet standard for DWV pipe. Other inlet configurations available from the factory.

**Discharge Connections**  
Pump discharge terminates in 1.25-inch NPT female thread. Can easily be adapted to 1.25-inch PVC pipe or any other material required by local codes.

**Discharge**  
15 gpm at 0 psig (0.95 lps at 0 m)  
11 gpm at 40 psig (0.69 lps at 28 m)  
7.8 gpm at 80 psig (0.49 lps at 56 m)

**Accessories**  
E/One requires that the Uni-Lateral, E/One's own stainless steel check valve, be installed between the grinder pump station and the street main for added protection against backflow.

Alarm panels are available with a variety of options, from basic monitoring to advanced notice of service requirements.

The Remote Sentry is ideal for installations where the alarm panel may be hidden from view.

Patent Numbers: 5,752,315  
5,692,254 5,439,180

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