



Bonita Springs
Utilities, Inc.™

FATS, OILS, & GREASE (FOG)
STANDARD SPECIFICATIONS & DETAILS

September 2019

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1. ABBREVIATIONS / DEFINITIONS

- 1.1. AHJ: Authority Having Jurisdiction
- 1.2. AOR: Architect of Record
- 1.3. BOD: Biochemical/Biological Oxygen Demand; the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20° C, expressed in mg/L
- 1.4. BSU: Bonita Springs Utilities, Inc.
- 1.5. COD: Chemical Oxygen Demand; a measure of oxygen equivalent of that portion of the organic matter in a sample that is susceptible to oxidation by a strong chemical oxidant
- 1.6. DBPR: Florida Department of Business and Professional Regulation
- 1.7. DFU: Drainage Fixture Unit
- 1.8. EOR: Engineer of Record
- 1.9. FAC: Florida Administrative Code
- 1.10. FBC: Florida Building Code
- 1.11. FDEP: Florida Department of Environmental Protection
- 1.12. FDOH: Florida Department of Health
- 1.13. FDOT: Florida Department of Transportation
- 1.14. FOG: Fats, Oils, & Grease
- 1.15. FSE: Food Service Establishment; restaurants, food manufacturers, food processors, hotels, motels, cafeterias, cafés, delis, bars, coffee shops, smoothie shops, juice bars, caterers, bakeries, commissary kitchens, community centers, clubhouses, meeting spaces, party spaces, break rooms, schools, daycares, assisted living facilities, hospitals, jails, prisons, and other establishments where food is handled or prepared for consumption and where the potential to discharge FOG into the Wastewater System exists through sinks, drains, or any other entry point
- 1.16. GC: General Contractor
- 1.17. GGI: Gravity Grease Interceptor; A plumbing appurtenance or appliance installed in a sanitary drainage system to intercept nonpetroleum fats, oils, and greases (FOG) from wastewater discharge and is identified by volume, thirty (30) minute retention time, baffle(s), a minimum of two (2) compartments, and gravity separation. A GGI operates based on the principle of physics known as Stokes' law; working on a batch basis through the dissipation of kinetic energy, it dissipates the kinetic energy in flow through the application of volume and time.
- 1.18. GI: Grease Interceptor; A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum FOG from a wastewater discharge. There are two (2) types of grease interceptors: gravity and hydromechanical.
- 1.19. HGI: Hydromechanical Grease Interceptor; A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept nonpetroleum FOG from a wastewater discharge and is identified by flow rate and separation and retention efficiency. An HGI operates based on the

- principle of physics known as Bernoulli's principle; working on a continuous basis through the application of kinetic energy, lesser and greater velocities occur through the redirection of kinetic energy through a series of baffles plus the addition of air through air injecting flow control which changes the density of the fluid relative to surface tension and surrounding area of the sides of the FOG particle.
- 1.20. MEP: Mechanical, Electrical, and Plumbing
 - 1.21. PDI: Plumbing & Drainage Institute
 - 1.22. PH (pH): the logarithm (base 10) of the reciprocal of the weight of hydrogen ions in grams per liter of solution, the measure of relative acidity or alkalinity of water
 - 1.23. SFWMD: South Florida Water Management District
 - 1.24. TSS: Total Suspended Solids
 - 1.25. USACE: United States Army Corps of Engineers

2. INTRODUCTION

- 2.1. The purpose of this document is to provide technical and procedural requirements for design and construction of pretreatment, retention (i.e. interceptors and separators), and control structures (i.e. manholes and sample ports) connecting to BSU facilities. This document provides requirements for Developers, Owners, Tenants, EOR's, AOR's, GC's, Underground Utility Contractors, and Plumbers.
- 2.2. The intent of this document is to maintain consistency with all local, state (e.g. **FAC**, **FBC**, etc.), and federal regulations and does not preclude compliance with SFWMD, FDEP, FDOH, FDOT, USACE, City of Bonita Springs Development Standards, Village of Estero Development Standards, Lee County Development Standards, DBPR, and any other AHJ. Any deviations with the technical specifications and details or conflicts with local codes and ordinances should be noted prior to submittal of the plans.
- 2.3. Any reference made to specifications outside of this document is assumed to be to the current edition of such (e.g. **FAC**, **FBC**, PDI, etc.), unless otherwise specified.
- 2.4. Compliance with these Specifications does not preclude compliance with any ordinance enacted by the local governing authority (i.e. City of Bonita Springs, Village of Estero, and Lee County). Also, compliance must be maintained with BSU's Sewer Use Policy.
- 2.5. Specific written approval from BSU is required for all interceptors and separators utilized in the retention of FOG. All establishments require evaluation where the potential exists to discharge any substance into BSU's sanitary sewer system that will require pretreatment.

- 2.5.1. All new establishments are to be evaluated as described above.
- 2.5.2. Existing establishments are to be evaluated where there is a change of use, occupancy/tenancy, hours, number of seats, plumbing or any other change that may affect the pretreatment or retention requirement, whether or not any pretreatment or retention currently exists or not.
 - 2.5.2.1. Existing GGI's are to be pumped in the presence of BSU so that the tank(s) can be measured for capacity verification and inspected for integrity and conformance to current codes and specifications.
 - 2.5.2.2. Existing HGI's are to be scheduled with BSU for a routine inspection.
 - 2.5.2.3. Any new approval issued for an existing grease retention device requires that the grease retention device be brought into compliance with current applicable codes.
- 2.6. Please be advised that the EOR/AOR is responsible for insuring that the plans and specifications for projects are in full compliance with the BSU Fats, Oils, & Grease (FOG) Standard Specifications and the BSU Standard Specifications and Details.
 - 2.6.1. Plans reviewed and approved for construction by BSU, that are not in full compliance with these standards, shall be considered approved contingent upon those deficient items being brought into compliance prior to acceptance by BSU.

2.7. Deviation Request Procedure

- 2.7.1. Any deviation from the BSU Fats, Oils, & Grease (FOG) Standard Specifications or the BSU Standard Specifications and Details, not approved in writing by BSU prior to construction, shall require correction prior to acceptance of, and therefore service to the project. This includes any items not directly addressed during the plan review and approval process that are not in compliance with the requirements of this document.
- 2.7.2. A deviation from these specifications requires specific approval from the BSU Director of Engineering.
 - 2.7.2.1. A formal submittal is required for review by the BSU Engineering staff showing that the requested deviation will meet or exceed the

requirements of the specifications and is, at a minimum, equal to the specified product or methodology.

- 2.7.2.2. Attachments should be included for the requested product or methodology and/or a plan detailing the location for the deviation, if applicable.
- 2.7.2.3. All requests shall be submitted in writing by the EOR (signed and sealed), and shall not be approved for use in the BSU service area until approved in writing by BSU.
- 2.7.2.4. Plan revisions during construction due to unforeseen conflicts shall be submitted in writing to BSU prior to the change being constructed in the field.
 - 2.7.2.4.1. If the plan revision only requires BSU Engineering Staff approval and does not require approval of the Director of Engineering, the request can simply be made via e-mail and the approved changed can subsequently be reflected on the as-built record drawings.
- 2.7.2.5. Reviews for Deviation Requests are subject to the same review time as final plan submittal reviews. Accelerated reviews for Deviation Requests due to unforeseen circumstances will be handled on a case-by-case basis.
- 2.7.2.6. BSU inspectors cannot make decisions in the field, but can make recommendations that can be submitted by the EOR/AOR to the BSU Engineering staff for review.
- 2.7.2.7. Deviation Requests shall be submitted using the Deviation Request Form.

3. PRE-APPLICATION

- 3.1. Applicants are encouraged to set up a pre-application meeting for all construction projects, PRIOR to submitting an Application for Non-Domestic Wastewater Service. Pre-application meetings will aide in eliminating costly redesign of projects based on BSU comments.
- 3.2. Requests for record drawing information of existing BSU infrastructure should be made prior to this meeting.
 - 3.2.1. Utilize the Release of Data Authorization form for Record Drawing and GIS data requests.

- 3.3. Comments provided are subject to revision/modification by BSU staff during the review of the Application for Non-Domestic Wastewater Service, at which time a more thorough review of the project will be performed.

4. APPLICATION FOR NON-DOMESTIC WASTEWATER SERVICE / CONSTRUCTION PLANS

- 4.1. Application for construction/evaluation is to be done utilizing Application for Non-Domestic Wastewater Service form.
 - 4.1.1. The Application for Non-Domestic Wastewater Service is to be utilized for review of both new establishments as well as evaluation of existing establishments due to change of use, occupancy/tenancy, hours, number of seats, plumbing or any other change that may affect the pretreatment or retention requirement.
- 4.2. If the project includes infrastructure to be dedicated to BSU (e.g. line extensions) as well as a pretreatment or retention device, the entire project is to be submitted with the standard Application to Construct (i.e. a separate Application for Non-Domestic Wastewater Service is not required in those instances).
- 4.3. There are no required fees associated with the review of the Application for Non-Domestic Wastewater Service.
 - 4.3.1. Submittals are to be sent to or dropped off at BSU.
 - 4.3.1.1. Submittals shall be checked over by BSU staff to verify the form has been completed in its entirety and that all of the required items are included with the Application for Non-Domestic Wastewater Service.
- 4.4. Supporting Documentation Required to Accompany the Application for Non-Domestic Wastewater Service**
 - 4.4.1. MEP Plans (see 4.5.4) (all establishments)
 - 4.4.2. Civil Site Plans (outdoor installations only) (see 4.5.3) (all establishments)
 - 4.4.3. GI Sizing and Selection (see 6.4.17) (FSE's only)
 - 4.4.3.1. Shop drawings from the pre-caster of GGI's and Control Manholes must be submitted for review and approval prior to the devices being constructed and sent to the jobsite.

- 4.4.3.2. Cut-sheet of the HGI's, Solids Separators, and Sample Ports.
- 4.4.4. Cut-sheet of the Sample Port (non-FSE's only)
- 4.4.5. Seating maps (FSE'S only)
 - 4.4.5.1. Seating maps must include any bar and outdoor seating.
- 4.4.6. Proposed Menus (FSE's only)
- 4.4.7. Hours of Operation, including prep and clean up time. (FSE's only)
- 4.4.8. Number of Meals Prepared per Day (take-out, catered, etc.) (FSE's only)
- 4.4.9. Any other documentation that may be necessary in order for BSU to complete a thorough review of potential Non-Domestic Wastewater discharge (non-FSE's)

4.5. Construction Plans

- 4.5.1. For establishments that reside in strip plazas/malls, a site plan must be provided to distinguish the unit location in the building in which it resides.
- 4.5.2. Plans must show detail of the design with the connection to the gravity sanitary sewer system.
- 4.5.3. Civil Site Plans (signed and sealed by EOR)
 - 4.5.3.1. Civil site plans shall be submitted in accordance with the BSU Standard Specifications and Details. BSU Standard Detail sheets shall be included (unaltered) in each plan set.
 - 4.5.3.2. Civil site plans shall show proposed lines (location, size, type of pipe, etc.) and shall not exceed a 1" = 40' scale.
 - 4.5.3.3. Civil site plans shall contain the correct manhole number system as assigned by BSU.
 - 4.5.3.4. Civil site plans shall show the location of all existing and proposed infrastructure, including lines, manholes, clean outs, valves, fire hydrants, air release valves, meters and backflows and other appurtenances.
 - 4.5.3.5. Civil site plans shall show the location of other proposed utilities and of other existing utilities including gas, storm sewer, electric

(including transformers and street lighting), irrigation lines, telephone, and any other utility or other obstruction (including landscaping) that may conflict with the proposed BSU facilities.

4.5.4. MEP Plans (signed and sealed by EOR/AOR)

4.5.4.1. MEP plans are required for sanitary sewer plumbing only.

4.5.4.2. MEP plans must distinguish between grease waste and sanitary sewer lines.

4.5.4.3. MEP plans must show the condensate drain lines.

4.5.4.4. MEP plans must show all fixtures (e.g. appliances, sinks, drains, etc.).

4.5.4.5. MEP plans must include a legend defining all fixtures.

4.5.5. In general, plans will be reviewed within 2 weeks of the submittal. BSU agrees to complete reviews within 30 days of the submittal.

4.6. Plan Approval

4.6.1. Plan approvals expire 1 year from the date of approval.

4.6.1.1. Revised plans conforming to current BSU requirements shall be submitted on all projects where approval has expired. Any changes to BSU Specifications since the expiration of the project approval shall be incorporated in the resubmittal.

4.6.1.2. BSU reserves the right to review previously accepted, expired, resubmitted projects as if they are being submitted for the first time.

4.6.1.3. If underground water and/or wastewater utility construction for a project has not physically commenced prior to the 1 year approval anniversary, the project approval shall be considered as expired and a complete resubmittal shall be required.

4.6.2. BSU approval does not obviate the need for obtaining applicable State, County, City, or Village permits.

4.6.3. Any plan that was submitted that did not receive approval will expire after 1 year of no formal correspondence (e.g. response to Request for Additional Information). If the project is resurrected after expiration, a new submittal shall be required.

5. PRE-CONSTRUCTION

- 5.1. A pre-construction meeting is required for all projects, and no physical water or wastewater utility construction will be permitted prior to.
 - 5.1.1. The start of physical construction shall be designated as actual effort by a GC, underground utility contractor, or plumber performing utility construction, based solely upon BSU discretion. Any break in physical construction greater than 1 year constitutes grounds for BSU to expire the construction plan approval.
 - 5.1.2. All pre-construction meetings are to be conducted on-site at the proposed establishment.
 - 5.1.2.1. In addition to BSU personnel, the Contractors and Plumbers that will install the pretreatment or retention devices or control structure and make the final connection(s) are required to be at the pre-construction meeting.
 - 5.1.3. The Applicant or their representative is responsible for coordinating the pre-construction meeting schedule with all parties.
 - 5.1.4. Pre-construction meetings are scheduled by contacting the Engineering Department at BSU.
 - 5.1.4.1. Names and e-mail addresses of the required participants are required when scheduling the pre-construction meeting.
 - 5.1.5. Revised construction plans (if the plans were approved with stipulations) shall be provided 1 week prior to the pre-construction meeting to allow BSU staff adequate time to review the plans to assure conformance to the stipulations of the approval.
 - 5.1.6. The pre-construction meeting shall be cancelled and required to be rescheduled if the plans have not been resubmitted for review, if the plans have not been revised to reflect all of the stipulations of the approval, and/or if all required parties are not present.
 - 5.1.7. BSU requires four (4) signed and sealed approved plan sets for construction and a .pdf of the same. If the Applicant desires their own plan set(s) stamped by BSU as approved, additional plan sets will need to be provided.

- 5.1.8. Rescheduled pre-construction conferences may require additional fees to be paid prior to the meeting being rescheduled, based upon BSU Tariff rates.
- 5.2. In the event that project approvals were received more than 1 year prior to physical construction, new submittals and reviews are required as noted previously. Changes made subsequent to BSU approvals shall be appropriately indicated, and re-approval of the changes is required prior to construction of those changes.
- 5.3. The Contractor shall retain a copy of the BSU approval letter for the referenced project, a complete set of the BSU Fats, Oils, & Grease (FOG) Standard Specifications and the BSU Standard Specifications and Details and under which the project was approved, and copies of approved Deviation Requests on-site during the course of construction. Non-compliance with this provision is terms for suspending work and inspection services for the project.
- 5.4. A licensed underground utility contractor shall be utilized for all utility work if it is to be dedicated to BSU. A qualified licensed GC may be utilized with prior written approval from BSU.
- 5.5. Fees, based upon BSU Tariff rates, may be required to be paid for any scheduled meetings or inspections with BSU personnel that are cancelled due to the absence of required parties not being present or the lack of required construction preparation. These fees shall be paid prior to scheduling any additional meetings or inspections with BSU personnel for that project. The following are examples of meetings and inspections that may require fees to be paid: Pre-construction, Final Inspection, any required utility testing, etc. It is the Applicant's responsibility to cancel and reschedule any meeting or inspection requiring BSU personnel prior to the scheduled event/time in order to potentially avoid these fees. Five (5) business days' notice is required to schedule a pre-construction conference, and 48 hours' notice is required for all utility testing.

6. DESIGN AND TECHNICAL REQUIREMENTS

- 6.1. The EOR/AOR shall comply with the design and construction requirements as provided by the BSU Fats, Oils, & Grease (FOG) Standard Specifications and the BSU Standard Specifications and Details, and the design shall be in accordance with FDEP, FAC, and FBC requirements.
- 6.2. Conflicts between the Specifications and the Standard Details shall be resolved in favor of the Specifications. Conflicts between the Specifications and Construction Plans shall also be resolved in favor of the Specifications.

- 6.3. Standard Details included in this manual must be included in the plan sets without alteration. These detail sheets in 24"x36" format are provided on the BSU Web page www.bsu.us. If supplementary details are required they shall be included on additional sheets.

6.4. FOG Retention

- 6.4.1. Abatement of FOG is required for all non-residential, non-domestic wastewater discharge containing nonpetroleum FOG.
- 6.4.2. Interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the public sewer. *FBC – Plumbing, Chapter 10, Section 1003.1.*
- 6.4.3. Wastes that do not require treatment or separation shall not be discharged into any interceptor or separator *FBC – Plumbing, Chapter 10, Section 1003.2.*
- 6.4.4. A GI shall receive drainage with characteristics that exceed the limits of Domestic Wastewater from all fixtures and equipment (i.e. appliances, drains, sinks, etc.) in an FSE. That is, all back of house operations of an FSE should be routed through the interceptor and only the restrooms should be routed directly to the sanitary sewer.
- 6.4.4.1. Condensate discharge is not permitted into either the grease waste line or sanitary sewer line.
- 6.4.5. Where food waste grinders connect to GI's, a solids interceptor shall separate the discharge before connecting to the GI's. Solids interceptors and GI's shall be sized and rated for the discharge of the food waste grinder. *FBC – Plumbing, Chapter 10, Section 1003.3.2.*
- 6.4.6. Multiple FSE's are not permitted to discharge to a communal GI.
- 6.4.7. Abatement of FOG must be designed for peak velocity.
- 6.4.8. To aide in the prevention of mechanical and chemical emulsification, flow rates are not to exceed 100 GPM and abatement should occur no greater than 25' from the source.
- 6.4.9. GI's are to be located so that they are readily accessible for routine maintenance and inspections. HGI's can be installed inside or outside of an FSE. GGI's are to be installed outside of an FSE.

- 6.4.10. Parallel installations of multiple GI's are not permitted. Series installations are allowed to retain additional capacity, but not to extend pump out intervals beyond allowable timeframes.
- 6.4.11. Interceptors (and separators) shall be designed so as not to become air bound where tight covers are utilized. Each interceptor (or separator) shall be properly vented *FBC – Plumbing, Chapter 10, Section 1003.9*.
- 6.4.12. GGI's are to be constructed in accordance with BSU Detail SS-11, and the effective grease retention capacity is to be a minimum of 750 gallons, but no greater than 1250 gallons.
- 6.4.12.1. The first chamber of the tank shall have a minimum effective capacity of at least $\frac{2}{3}$ of the total required effective capacity. The second chamber shall have a minimum effective capacity of at least $\frac{1}{5}$ of the total required effective capacity *FAC 64E-6.013 (2)(a)*.
- 6.4.12.2. The liquid depth of compartments for GGI's shall be at least 40", but no greater than 84" *FAC 64E-6.013 (2)(b)*.
- 6.4.12.3. A vented inlet tee, shall be provided to divert the incoming sewage. The inlet tee shall have a minimum diameter of 4" and shall not extend below the liquid surface more than 33% of the liquid depth *FAC 64E-6.013 (2)(d)*.
- 6.4.12.4. Sewage flow between the first and second chamber shall interconnect utilizing a minimum 4" diameter vented tee. The outlet device or slot shall extend below the liquid level of the receptacle so that the invert level is located not less than 30% nor greater than 40% of the liquid depth *FAC 64E-6.013 (2)(h)*.
- 6.4.12.5. The State Health Office's designated approval number for the receptacle, and the effective capacity of the receptacle in gallons shall be cast or stamped into the wall or permanently stenciled or decaled onto the wall at the inlet end, to begin within 6" of the top of the wall. All identifying marks shall be inscribed or affixed at the point of manufacture only. All information supplied in the legend shall be provided with a minimum of 2" high lettering *FAC 64E-6.013 (2)(j)*.
- 6.4.12.6. Each compartment shall have access using manholes, with each manhole having a minimum area of 225 in². Manholes shall be located so as to allow access to the inlet and outlet devices *FAC 64E-6.013 (2)(k)*.

- 6.4.12.7. The inlet invert shall discharge a minimum 2½” above the liquid level line and the outlet pipe shall have a tee with a minimum diameter of 4” that extends to within 8” of the bottom of the tank *FAC 64E-6.013 (7)(a)*.
- 6.4.12.8. Concrete GGI’s must be lined with a protective coating listed in BSU’s Approved Vendor and Product Listing under Manhole and Wetwell Protective Coating.
- 6.4.13. HGI’s must be certified by PDI (<http://www.pdionline.org/certified-grease-interceptors/>).
- 6.4.13.1. Vented Flow Control
- 6.4.13.1.1. The flow control fitting furnished with PDI certified interceptors must be installed prior to the HGI in the waste line beyond the last connection from the fixture and as close as possible to the underside of lowest fixture. When waste of multiple sinks or fixtures are combined to be served by one interceptor, a single flow control fitting should be used. If the drain line drops 10’ or more to the interceptor, check with the manufacturer to see if an additional flow control is needed due to built up head pressures.
- 6.4.13.1.2. Air intake for flow control shall terminate 6” above the flood rim of the sink, terminate in a return bend at the same height and on the outside of the building, or be re-vented into the vent system of the building per *FBC*. When the fixture is individually trapped and back vented, air intake may intersect the vent stack. All installation recommendations shall be subject to approval of the AHJ.
- 6.4.13.2. Venting
- 6.4.13.2.1. HGI’s shall have a vented waste on the outlet side, sized in accordance with *FBC* for venting traps to retain water seal and prevent siphoning.
- 6.4.13.3. A solids separator must be installed upstream of an HGI that is installed outdoors when flow rates are 35 GPM or greater.
- 6.4.14. 6” two-way clean outs (4” with prior written approval from BSU) are required to be installed on the upstream and downstream side of each GI installed below grade for sampling purposes. A sampling box/port may be substituted for the downstream two-way clean out. Installation

of a shallow manhole may replace an existing cleanout for sampling purposes with BSU approval.

- 6.4.15. Manhole lids for GI's shall be labeled "GREASE". Lids labeled "SANITARY" or the lids incorporating the BSU logo are not permitted on GI's.

- 6.4.15.1. Manhole access covers located in "green" areas require the standard concrete collar as described in Detail SS-8.

- 6.4.16. GI's shall be capable of supporting H-20/HS-20 highway loading, regardless of the location *FBC – Plumbing, Chapter 10, Section 1003.5*.

6.4.17. GI Sizing and Selection

- 6.4.17.1. Calculations are to be signed and sealed by the EOR/AOR; results stemming from utilization of online sizing calculators will not be accepted.

- 6.4.17.2. When the final configuration of fixtures and plumbing in a facility are not known, sizing is to be done in accordance with the method outlined in PDI-G101, section 8.3.1, utilizing a drainage period of two (2) minutes for HGI's and one (1) minute for GGI's.

- 6.4.17.3. When specific fixtures and the plumbing configuration in a facility are known, sizing is to be done in accordance with the procedure outlined in PDI-G101, section 8.3.2.

- 6.4.17.3.1. Determine the cubic content of all fixtures in cubic inches.

- 6.4.17.3.2. Determine the capacity in gallons (1 gallon = 231 cubic inches).

- 6.4.17.3.3. Determine the actual drainage load (75% of the capacity).

- 6.4.17.3.4. Determine the flow rate in GPM utilizing a drainage period of two (2) minutes for HGI's and one (1) minute for GGI's.

- 6.4.17.3.5. For fixture drainage routed through the GI defined by DFU's and not by cubic content (e.g. appliances, floor drains, floor sinks, etc.), divide the DFU's by 2 to obtain a gpm and add the value to that obtained in step 4.

- 6.4.17.4. Device selection:

- 6.4.17.4.1. For HGI's, select the interceptor from Table 1 in PDI-G101 which corresponds to the flow rate calculated. Note, the next largest size is to be selected when the flow rate falls between two sizes listed.

6.4.17.4.2. For GGI's, multiply the flow rate by a retention time of 30 minutes to determine the required volume (effective capacity) in gallons.

6.4.17.5. Sizing calculations per *FAC Chapter 64E-6 (7)(d)* will be accepted for re-evaluation of existing GGI's originally designed by said criteria. Loading factors utilized in the original design may be grandfathered for current use provided that the original approved sizing calculation is provided.

6.4.17.5.1. Restaurants:

$(S) \times (GS) \times (HR/12) \times (LF) =$ required effective capacity of GGI in gallons.

S = number of Seats in the dining area
(including bar and outdoor seating)

GS = Gallons of wastewater per seat:
(25 gallons for ordinary restaurants)
(10 gallons for single service article restaurants, e.g. disposable plates/utensils)

HR = number of Hours FSE is open
(i.e. hours of operation, including prep and clean up time)

LF = Loading Factor
(2.0 for interstate highways, e.g. I-75)
(1.5 for other freeways, e.g. US-41, Bonita Beach Road)
(1.25 for recreational areas)
(1.0 for main highways, e.g. Old 41 Road)
(0.75 for other roads)

6.4.17.5.2. Other type of FSE with commercial kitchens (take-out meals, catered meals, etc.):

$(M) \times (GM) \times (LF) =$ required effective capacity of GGI in gallons.

M = Meals prepared per day

GM = Gallons of wastewater per Meal
(use 5 gallons)

LF = Loading Factor
(1.00 with dishwashing)
(0.75 without dishwashing)

6.5. Non-FSE Pretreatment

- 6.5.1. For establishments not categorized as FSE's per BSU's Sewer Use Policy (e.g. Brewery/Winery, Manufacturing, Medical/Dental, etc.), an Application is still required to be submitted for evaluation of pretreatment requirements.
- 6.5.2. If available, submit a lab analysis of a waste sample from the establishment. The analysis should show levels of materials identified in BSU's Sewer Use Policy.
 - 6.5.2.1. For a Brewery/Winery, the analysis should include levels of COD, BOD, TSS, and pH. For all other establishments, consult with BSU's Engineering Department.
- 6.5.3. At repair garages, car-washing facilities, at factories where oily and flammable liquid wastes are produced, and in hydraulic elevator pits, oil separators shall be installed into which all oil-bearing, grease-bearing, or flammable wastes shall be discharged before emptying into the BSU system *FBC – Plumbing, Chapter 10, Section 1003.4.*
 - 6.5.3.1. An oil separator is not required in hydraulic elevator pits where an approved alarm system is installed *FBC – Plumbing, Chapter 10, Section 1003.4.*
 - 6.5.3.2. Oil separators shall have a depth of not less than 2' below the invert of the discharge drain. The outlet opening of the separator shall have not less than an 18" water seal *FBC – Plumbing, Chapter 10, Section 1003.4.2.1.*
 - 6.5.3.3. Where automobiles are serviced, greased, repaired, washed, or where gasoline is dispensed, oil separators shall have a minimum capacity of 6 ft³ for the first 100 ft² of area to be drained, plus 1 ft³ for each 100 ft² of area to be drained into the separator. Parking garages in which servicing, repairing, or washing is not conducted, and in which gasoline is not dispensed, shall not require a separator. Areas of commercial garages utilized only for storage of automobiles are not required to be drained through a separator *FBC – Plumbing, Chapter 10, Section 1003.4.2.2.*
- 6.5.4. Laundry facilities not installed within an individual dwelling unit or intended for individual family use shall be equipped with an interceptor with a wire basket or similar device, removable for cleaning, that prevents passage into the BSU system of solids ½" or larger in size,

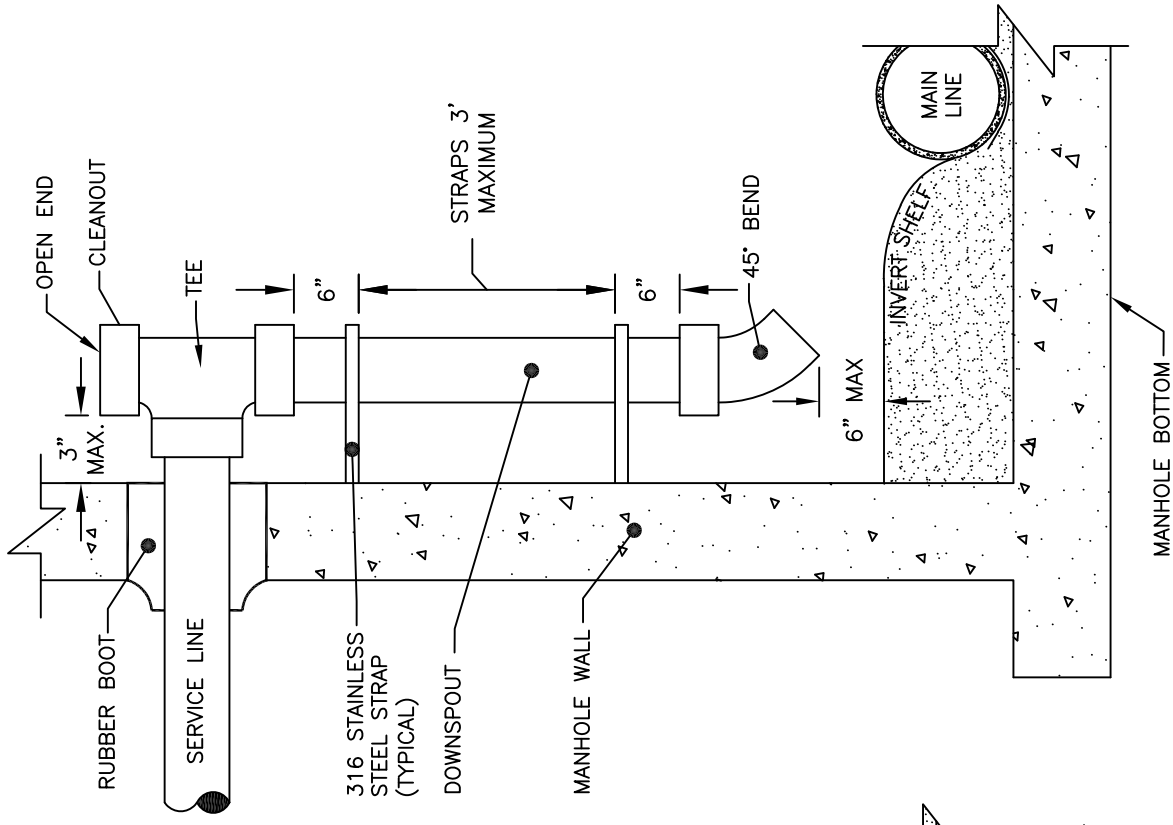
strings, rags, buttons, or other materials detrimental to the BSU system
FBC – Plumbing, Chapter 10, Section 1003.6.

- 6.5.5. Sand and similar interceptors for heavy solids shall be designed and located as to be provided with ready access for cleaning, and shall have a water seal of not less than 6” *FBC – Plumbing, Chapter 10, Section 1003.11.*
- 6.5.6. At a minimum, a control structure (preferably a sample port) will be required to be installed to BSU Standard Specifications outside of the establishment to allow BSU to collect instantaneous or composite samples for analysis.
 - 6.5.6.1. Subsequent to the opening date of the establishment, BSU may collect samples at roughly 30, 60, and 90 days to test for compliance to those limits allowed by BSU’s Sewer Use Policy.
 - 6.5.6.1.1. BSU will coordinate with the establishment for appropriate dates and times to collect samples.
 - 6.5.6.1.2. If all tested values at 30, 60, and 90 day sampling are within compliance, no further requirements will be necessary. Routine inspections and/or sample collections will follow, similar to those performed for FSE’s.
 - 6.5.6.1.3. If any of the tested values are out of compliance, acceptable pretreatment is to be implemented in a timeframe designated by BSU; otherwise, BSU will cease to accept the process discharge from the establishment.

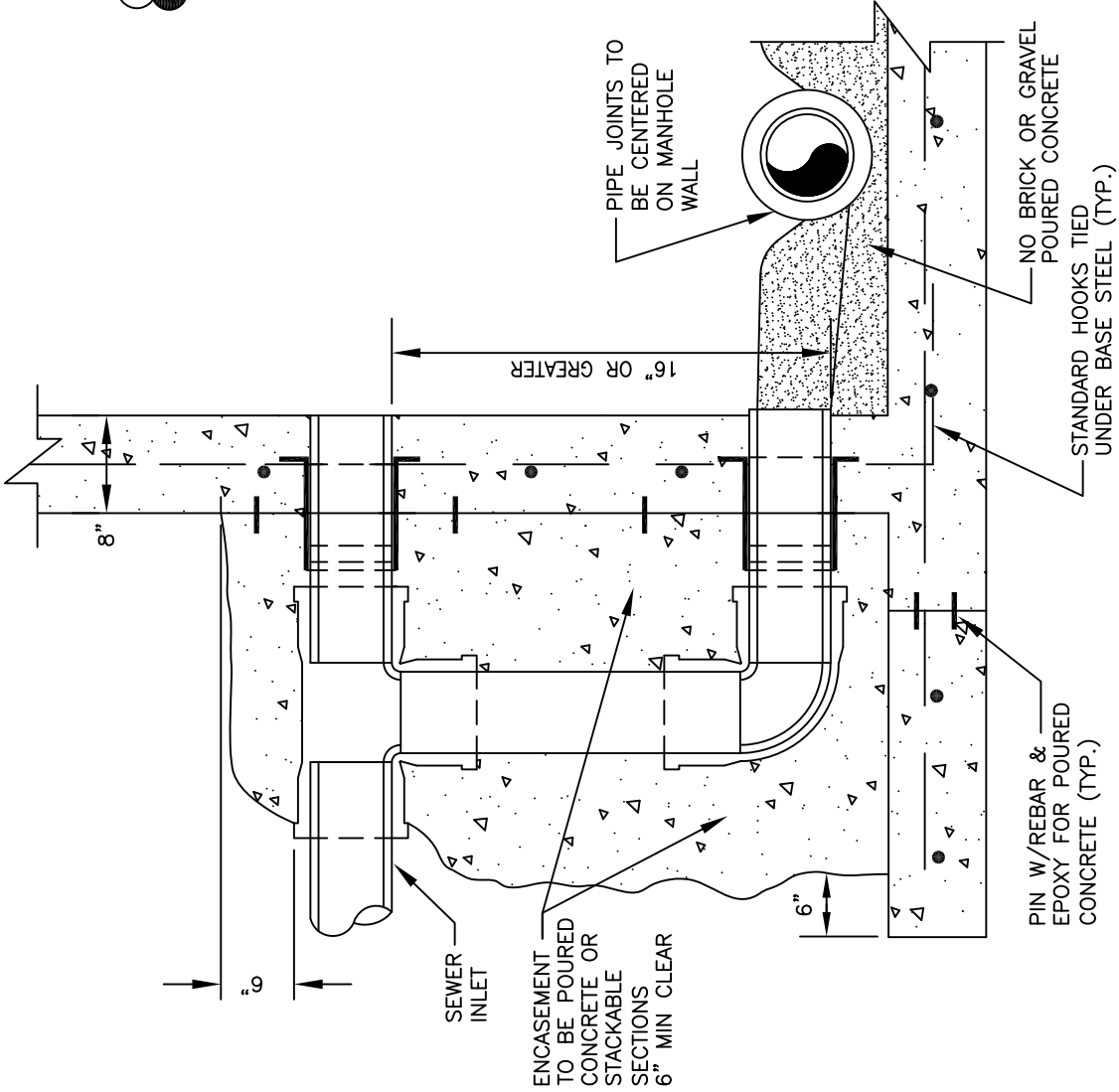
7. CONSTRUCTION / TESTING SPECIFICATIONS AND APPROVAL FOR SERVICE

- 7.1. All Construction / Testing Specifications and Approval for Service Requirements shall be per the BSU Standard Specifications.

STANDARD DETAILS



INTERNAL DROP MANHOLE CONNECTION
(WITH WRITTEN BSU APPROVAL ONLY)

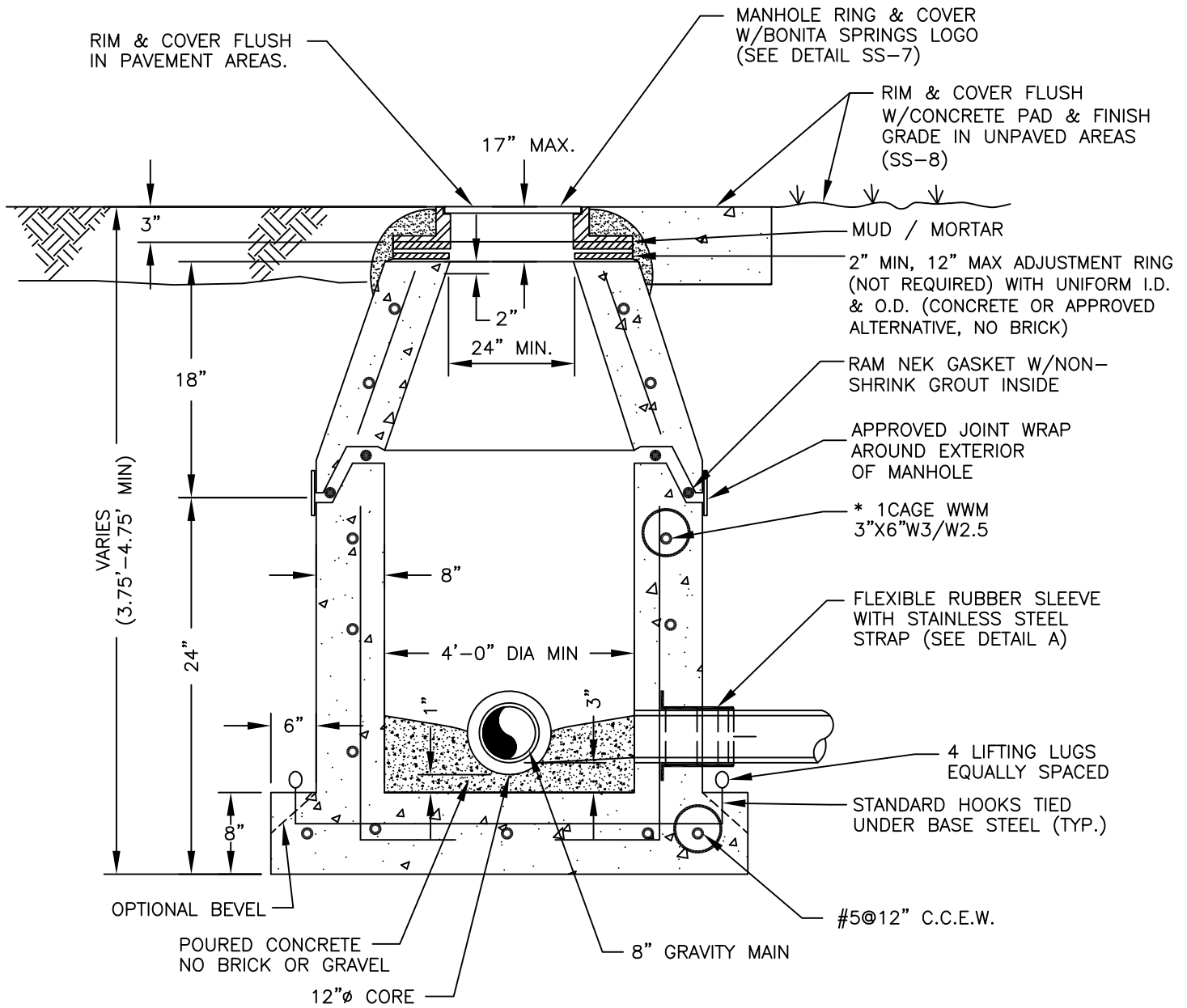


EXTERNAL DROP MANHOLE CONNECTION

BONITA SPRINGS UTILITIES, INC.
11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE
DATE: APRIL 2019
DWG #: SS-3.DWG

DROP MANHOLE CONNECTIONS
SS-3



SHALLOW MANHOLE

SS-4

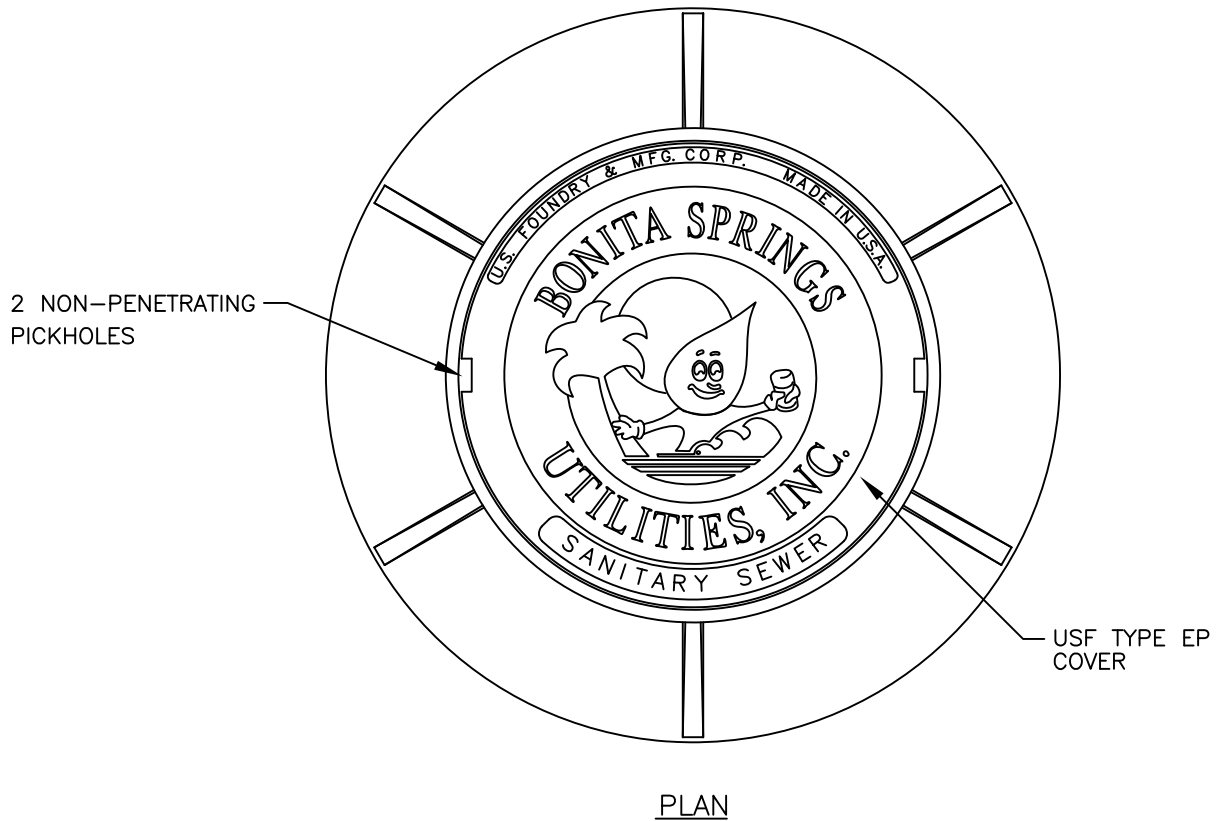
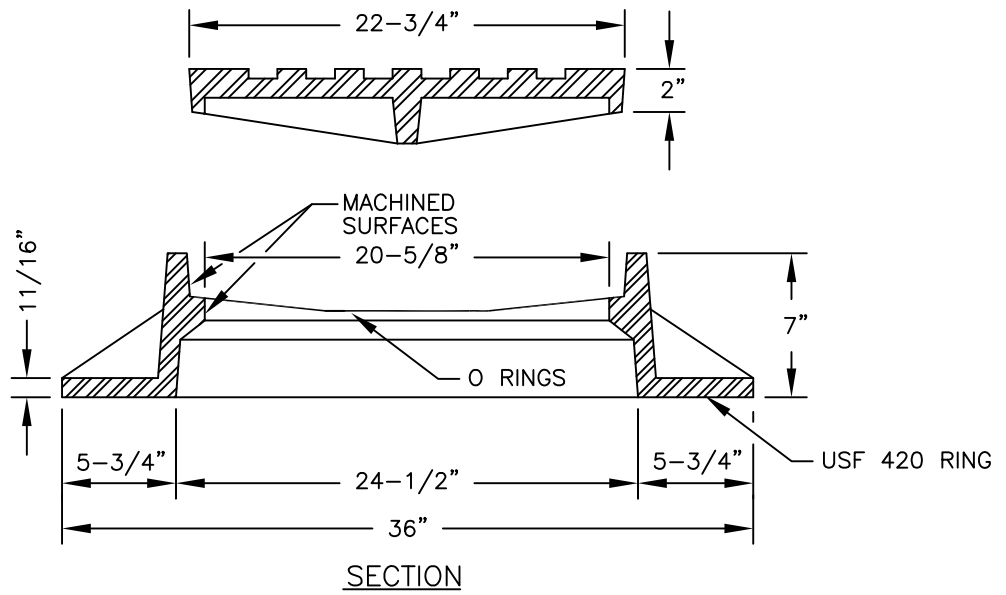
BONITA SPRINGS UTILITIES, INC.

11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

SCALE: NOT TO SCALE

DATE: APRIL 2019

DWG #: SS-4.DWG



MANHOLE RING & COVER DETAIL

SS-7

* COVER W/BSU CASTING NOT TO BE USED FOR GREASE INTERCEPTORS;
GREASE INTERCEPTOR COVERS TO BE LABELED "GREASE".

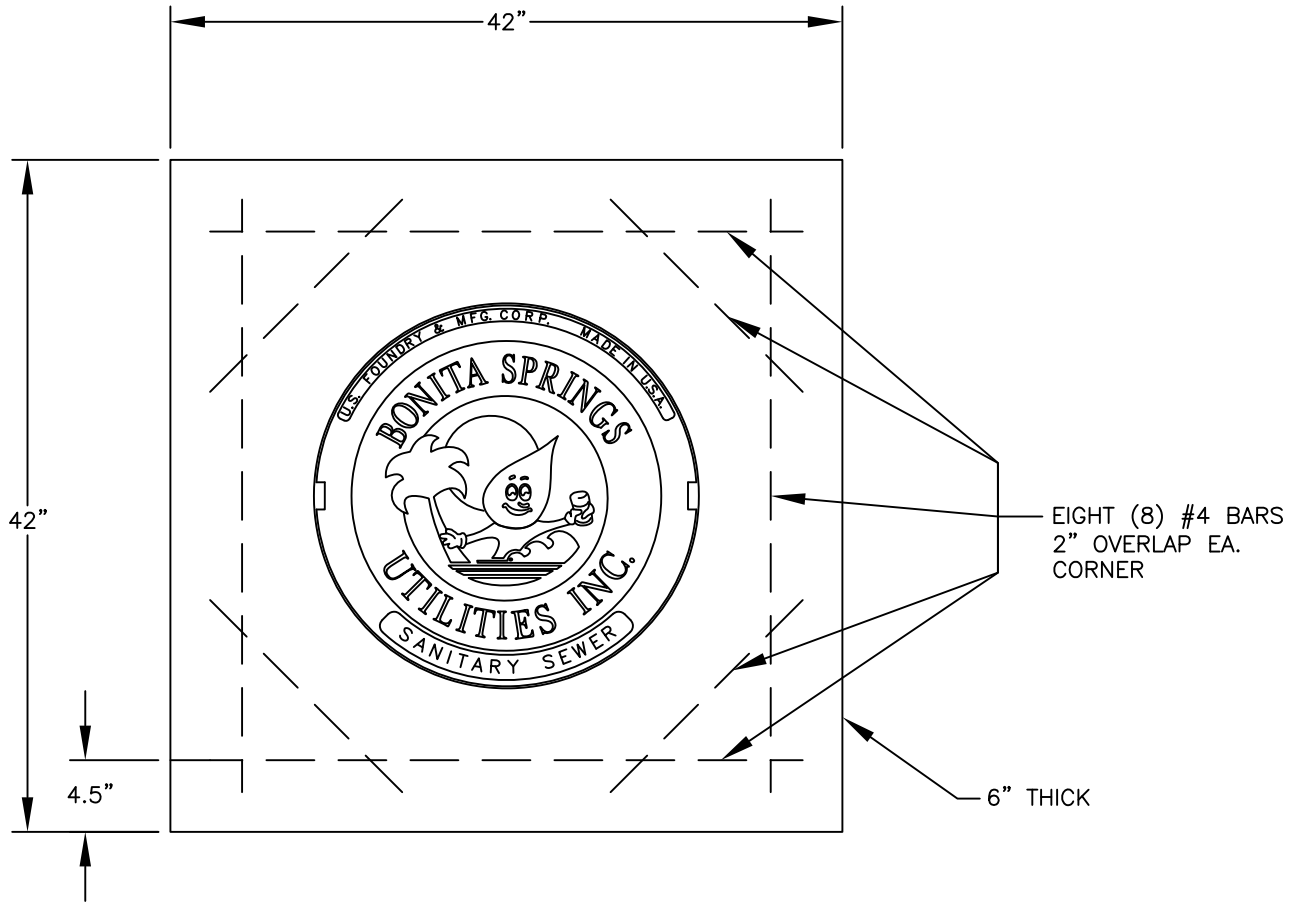
**BONITA SPRINGS
UTILITIES, INC.**

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DATE: APRIL 2019

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MANHOLE CONCRETE COLLAR
SS-8

*FOR USE IN UNPAVED
AREAS AND/OR AT THE
DISCRETION OF BSU

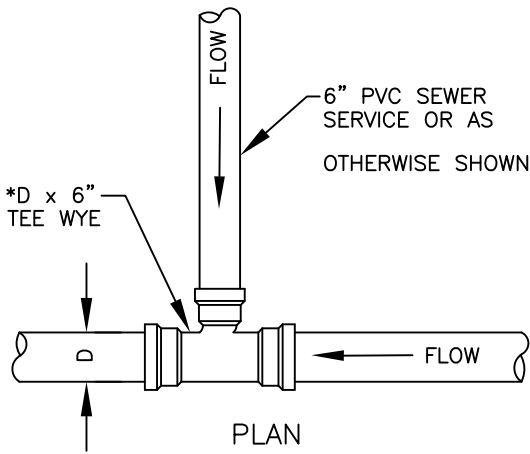
**BONITA SPRINGS
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11900 E. TERRY STREET
BONITA SPRINGS, FLORIDA 34135

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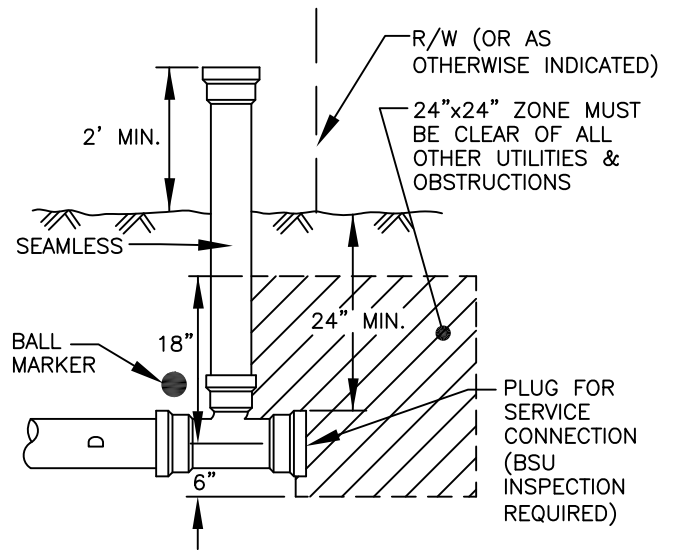
DATE: APRIL 2019

DWG #: SS-8.DWG

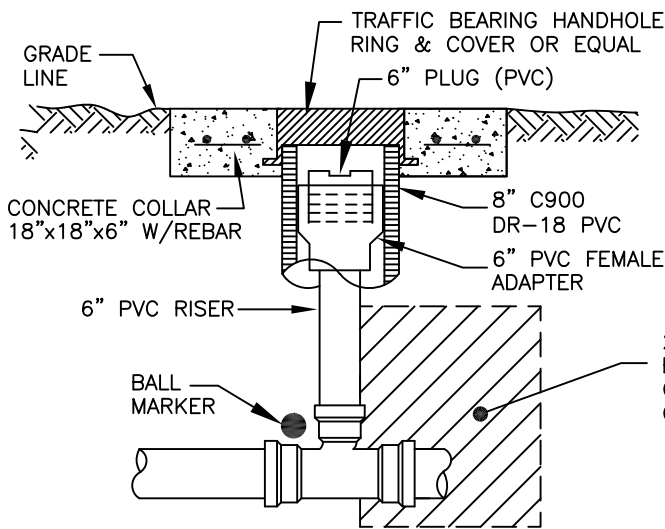


SEWER SERVICE CONNECTION

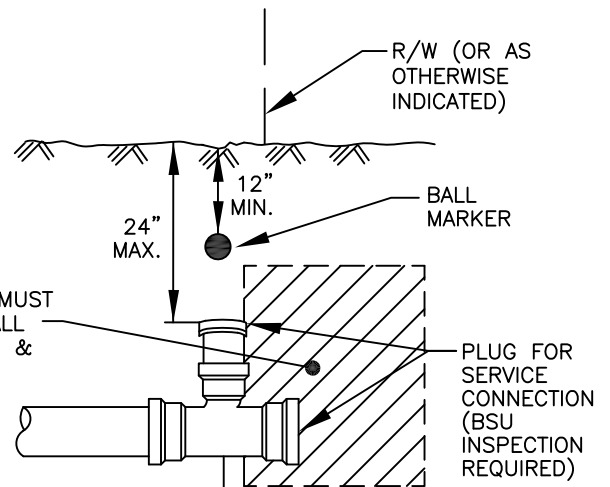
* D IS 8" MIN. Ø



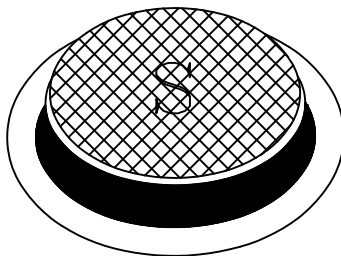
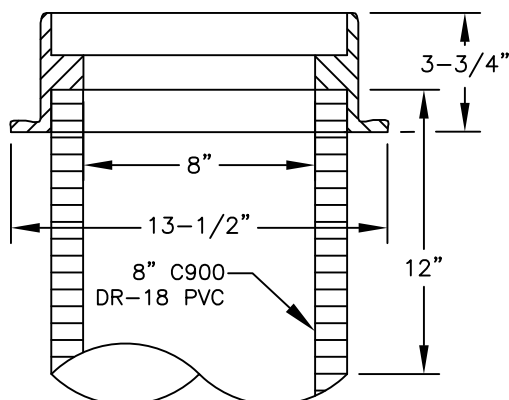
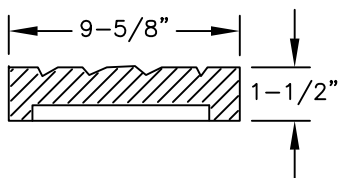
TEMPORARY SERVICE



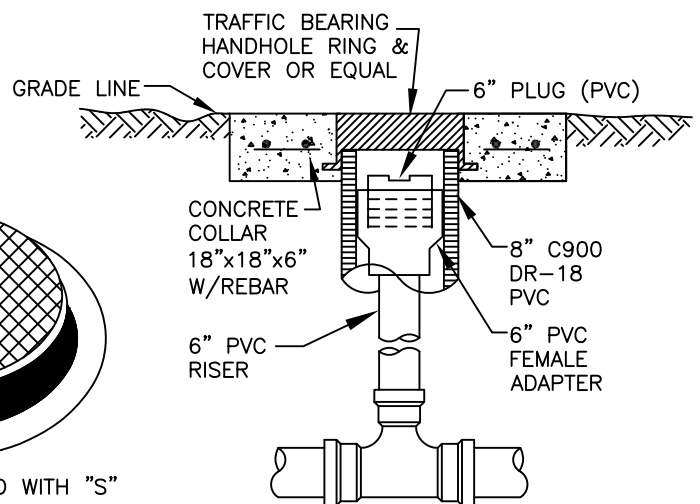
PERMANENT SERVICE



**PERMANENT SERVICE
(REQUIRES WRITTEN BSU APPROVAL)**



COVERS ARE MARKED WITH "S"



TWO-WAY CLEAN OUT ASSEMBLY

CLEANOUT ASSEMBLY

SS-9

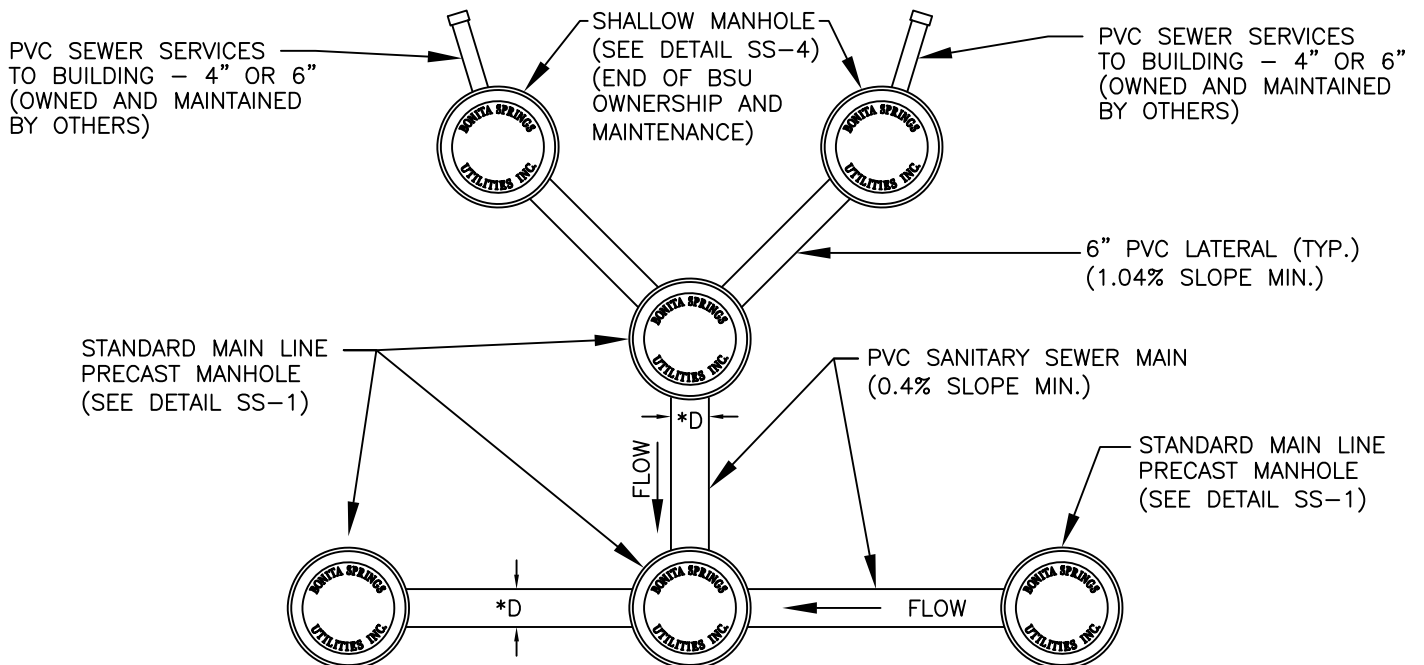
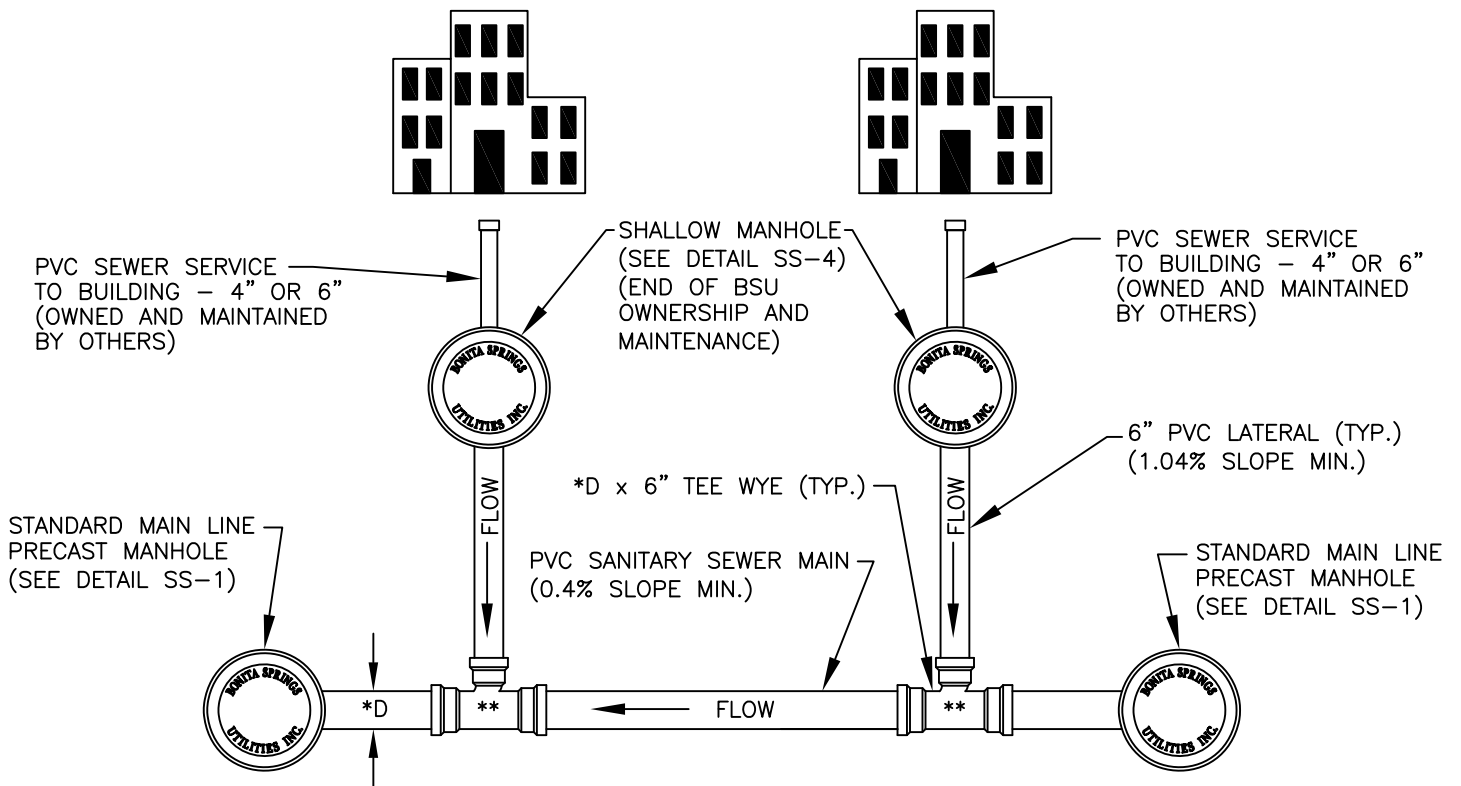
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DATE: APRIL 2019

DWG #: SS-9.DWG



**CONNECTION OPTIONS WITH SHALLOW MANHOLES FOR
MULTIPLE MULTI-FAMILY OR
MULTI-UNIT/MULTI STORY COMMERCIAL BUILDINGS**

SS-25

* D IS 8" MIN. ϕ

** CAN ALSO CONNECT DIRECTLY TO A M.H. WITH A 6" LATERAL

**BONITA SPRINGS
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DATE: APRIL 2019

DWG #: SS-25.DWG

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