SKYWAY
WATER AND SEWER
DISTRICT

2011
SIDE SEWER REGULATIONS

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SKYWAY WATER & SEWER DISTRICT
SIDE SEWER REGULATIONS

The following are the 2011 Side Sewer Regulations, revising and rescinding the Code set forth in Skyway Water & Sewer District Resolution No. 11-06-477, and any subsequent amendments thereto, regulating the use of public and private sewers and drains, private sewage disposal, the installation and connection of sewers to buildings, and the discharge of waters and wastes into the District's sanitary sewer system.

Any side sewer connection to the District sewer system shall be completed in accordance with the terms of these Side Sewer Regulations. All side sewer work must conform to State of Washington Department of Ecology (DOE), the Skyway Water & Sewer District, the Uniform Plumbing Code (UPC), Uniform Building Code (UBC), Best Management Practices (BMP's), and other local authority requirements.

The Property Owner agrees to comply with requirements of the most current edition of the following documents in the following order of precedence (1 presiding over 2, 3 and 4; 2 presiding over 3, and 4, and so forth):

1. Skyway Water & Sewer District's "Side Sewer Regulations" (this document)
2. Skyway Water & Sewer District's "Development Guidelines for Construction of Water & Sanitary Sewer Facilities"
3. Standard Specifications for Road, Bridge, and Municipal Construction" as published by the Washington State Department of Transportation (WSDOT).
4. Other Agency or Permitting Standards, Specifications, Requirements, etc.

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ARTICLE I

DEFINITION OF TERMS

1.01 BMP

Best Management Practice, generally referenced in these Regulations as regarding, but not limited to storm drainage discharges, erosion control, and sediment control.

1.02 COMMERCIAL STRUCTURE

The words "Commercial Structure" shall mean all structures other than Residential. Each Commercial Structure connected by canopy, breezeway, or other type cover shall be classed as a separate commercial structure.

1.03 CONTRACTOR

The person or firm, acting as an agent of the Property Owner, who actually constructs the water and/or sanitary sewer improvements. This may be the same party as the Property Owner.

1.04 DEPARTMENT OF ECOLOGY (DOE)

The Washington State Department of Ecology

1.05 DEPARTMENT OF HEALTH (DOH)

The Washington State Department of Health unless otherwise noted.

1.06 DISTRICT

The word "District" shall mean the Skyway Water & Sewer District, a municipal corporation, the Manager of the District, or the Manager's authorized representatives.

1.07 DISTRICT STANDARDS

The information included in the “Development Guidelines for Construction of Water and Sanitary Sewer Facilities” as adopted by the Skyway Water & Sewer District.

1.08 DOWNSPOUT

The word "Downspout" shall mean the leader or pipe above ground which is installed to conduct storm water from the roof gutter or any structure.

1.09 EQUIPMENT

The machinery, accessories, appurtenances, and manufactured articles to be furnished and/or installed under the contract.

1.10 INDUSTRIAL WASTE

The words "Industrial Waste" shall mean any liquid, solid, or gaseous substance, or combination thereof resulting from any process of industry, manufacturing, commercial food processing, business, trade, research, or development.

1.11 MATERIAL OR MATERIALS

These words shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with the contract.

1.12 OCCUPANT

The word “Occupant” shall mean any Person or Owner in physical possession of a structure to which Sewer Service is available.

1.13 ORANGE BOOK

The Washington State Department of Ecology’s “Criteria for Sewage Works Design”, the current edition

1.14 PERFORMANCE BOND

A bond or other financial guarantee approved by the District, furnished by the Property Owner, and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the work will be completed in accordance with the plans and specifications.

1.15 PERSON OR OWNER

The words “Person or Owner” shall mean any individual, company, partnership, corporation, association, society or group who has ownership of a structure to which sewer service is available and the singular term shall include the plural.

1.16 PRIVATE SEWER

The words “Private Sewer” shall mean a Sewer, exclusive of Side Sewers, which are neither owned nor operated by the District.

1.17 PUBLIC SEWER

The words “Public Sewer” shall mean a Sewer, exclusive of Side Sewers, owned or operated by the District.

1.18 RESIDENTIAL STRUCTURE

The words “Residential Structure” shall mean a single family structure or a multiple family structure.

1.19 RIGHT-OF-WAY

Property that is owned by a public agency as a corridor to transport traffic and/or utilities. With regard to the Skyway Water & Sewer District this term will usually pertain to King County. It may also apply to, but not be limited to, Seattle Public Utilities, Seattle City Light, WSDOT, Tukwila, or Renton.

1.20 SANITARY SEWER

The term “sanitary sewer” and “sewer” shall both mean sanitary sewer unless otherwise noted.

1.21 SEWAGE OR DOMESTIC WASTES

The words “Sewage or Domestic Wastes” shall mean water carrying waste discharged from the sanitary facilities of structures occupied or used by people.

1.22 SEWER

The word “Sewer” shall mean a conduit designed or used to transport wastewater, and into which storm water, surface and ground waters are not intentionally admitted. See “Sanitary Sewer”.

1.23 SEWER SERVICE

The words “Sewer Service” shall mean the continuing acceptance by the District of the sewage or wastewater from a structure in the public sewer.

1.24 SEWER SERVICE STUB

That portion of a sewer service line that provides service to a property and extends from a sewer main to a right-of-way line, property line or easement line. Sewer service stubs shall be owned and maintained by the Property Owner.

1.25 SIDE SEWER

The words “Side Sewer” shall mean a conduit system (pressure or gravity) extending from the plumbing system of a structure(s) to and connecting with a Public or Private Sewer Main. Side sewers are privately owned. That portion of a sewer service line on private property that extends from the end of the sewer service stub to the building connection. The side sewer shall be owned and maintained by the Property Owner.

1.26 SIDE SEWER AS-BUILT DRAWING

The words "Side Sewer As-Built Drawing" shall mean a drawing prepared by the District in conjunction with the Side Sewer Permit, and shall show the "As-Built" location of the side sewer installation.

1.27 SIDE SEWER CONTRACTOR

The words “Side Sewer Contractor” shall mean any person, partnership, corporation or association duly qualified and competent to do work incidental to the construction or repair of side sewers under permits issued under these regulations and who shall have been duly licensed and bonded with the State of Washington. Licensed Side Sewer Contractor employed by the Property Owner.

1.28 SKYWAY

Skyway Water & Sewer District

1.29 STORM DRAIN

The words “Storm Drain” shall mean a conduit designed or used to transport storm water.

1.30 STORM WATER

The words “Storm Water” shall mean rainfall, or waters on the surface of the ground or underground resulting from rainfall or other natural precipitation.

1.31 UBC

Uniform Building Code, most current edition

1.32 UPC

Uniform Plumbing Code, most current edition

1.33 WASTEWATER

The words “Wastewater” shall mean water-carrying wastes containing either or both sewage and industrial waste.

ARTICLE II

USE OF SEWERS

2.01 RESPONSIBILITY FOR REPAIRS AND MAINTENANCE

The limit of responsibility of the District shall be maintenance of the public sewer. Side sewers shall be maintained by the Property Owners served. When and if the District is required to maintain and/or repair a side sewer or private sewer in order to protect the operation of the public sewer, the cost for such maintenance/repair shall be charged to the Owner of the property(ies) served by the side sewer. The District may provide private side sewer replacements as a part of a local or regional sewer infrastructure improvement project.

2.02 SIDE SEWER CONNECTIONS

All plumbing outlets shall be connected to the side sewer.

2.03 WASTES OTHER THAN DOMESTIC OR INDUSTRIAL

The discharge into any sewer by direct or indirect means of any of the following is prohibited:

A. Subsoil Foundation Drains.

B. Footing Drains.

C. Window Well Drains.

D. Door Well Drains.

E. Yard Drains.

F. Unroofed Basement Floor Drains.

G. Overflows from unpolluted water storage facilities.

H. Clear water from refrigeration, reverse-cycle heat pumps and cooling or air-conditioning equipment, except for the periodic draining and cleaning of such Systems.

I. Roof drains or downspouts from areas exposed to rainfall or other precipitation.

J. Surface or underground waters.

K. Any liquid or vapor having a temperature higher than 150 degrees Fahrenheit.

L. Any waste that contains more than 100 parts per million by weight of fat, oil, or grease.

M. Any gasoline, benzene, naphtha, oil, or other flammable or explosive liquid, solid, or gas.

N. Any garbage that has not been properly shredded and diluted with water.

O. Any ashes, cinders, sand, mud, straw, hair, shavings, metal, glass, rags, feathers, tar, plastics, wood, or any other solid or substance capable of causing obstruction to the flow in sewers or improper operation of the sewage works.

P. Any waste having a pH lower than 5.5 and higher than 8.5 or having any other corrosive property capable of causing damage or hazard to the structures, equipment or personnel of the District.

Q. Any waste containing a toxic or poisonous substance in sufficient quantity to injure or interfere with any sewage treatment process.

R. Any waste containing suspended solids of such character and quantity that unusual attention or expense is required to handle such materials in the public sewer system or at the sewage treatment plant.

S. Any obnoxious or malodorous gas or substance capable of creating a public nuisance.

T. Septic tank effluent or sludge, except from District approved systems.

2.04 CONNECTION OF CESSPOOLS, SEPTIC TANKS, TRAPS, AND INTERCEPTORS

A. Direct connection from the plumbing fixtures in the structure to the public or private sewer is required.

B. Any connection to a cesspool or septic tank will be removed, and proper connection directly made to the new side sewer. Cesspools or septic tanks shall be abandoned, removed, and properly backfilled by the property Owner.

C. A District-approved grit and oil/water separator shall be required for vehicle wash down facilities.

D. A District-approved grease interceptor shall be installed where required by the District in accordance with the current Fats, Oils, and Grease (FOG) regulations to protect the District's sewer system. All facilities must meet the requirements of the District and/or the King County's Department of Natural Resource, Water and Land Division, Industrial Waste Program for legal fats, oil and grease discharge to sewers, whichever is more stringent. All commercial or industrial facilities, schools, churches, or other non-single family residential facilities that have food service facilities or car washes shall be equipped with 1,000-gallon (minimum) grease interceptors. Submit sizing calculations for District review. A Guide to Restaurant Grease Management is included in Appendix I of these Regulations. All commercial building pads with unidentified or potentially variable uses must be provided with a grease interceptor at the time of initial construction. Provide graywater plumbing to building pad(s).

E. A grease interceptor for an existing public or private facility (restaurant, school, car wash, etc.) may be required if grease build-up becomes present in the downstream public sewage system.

2.05 DECOMMISSIONING OF SEPTIC TANKS

After connection to the sewage system, all septic tanks and similar private sewage disposal facilities shall be decommissioned by the following means:

A. Pump the facility dry by a company licensed in the State of Washington to do so.

B. Remove and dispose of the tank's lid, or break the lid into pieces to be used in the backfilling of the tank. Broken pieces of lid used in the backfilling of the tank shall be of such shape and size and placed in such a manner as to avoid the creation of voids.

C. The tank shall be filled with non-compressible, non-biodegradable material.

ARTICLE III

OBTAINING SIDE SEWER PERMIT

3.01 SEWER AVAILABILITY AND SIDE SEWER PERMIT

A new Side Sewer Permit is required when a new structure is constructed, or an alteration affecting the side sewer is made. No person shall extend, repair, replace or make connections to a public, private or side sewer within the property lines without first obtaining a permit from the District, calling for utility locates, and requesting proper inspection of the work by the District.

A Side Sewer Permit is also required when an existing structure is demolished or disconnected from sewer service. Any existing side sewer proposed for re-use for a new building shall meet the current existing Regulations, or be shall replaced by the Property Owner. No work shall be done regarding the re-use of a disconnected side sewer without approval and inspection of the District.

Anyone wishing to connect a new side sewer to the District's sewer system must contact the District and provide a written request for Sewer Availability. The written request shall include a complete legal description of the parcel, a description of the proposed use of the parcel, a site plan, proposed side sewer location and route, flow requirements, and legal ownership.

A Side Sewer Permit shall be applied for by the Owner or the Side Sewer Contractor, at no cost or liability to the District, and issued by the District prior to any work side sewer work being performed either on private property or within public rights-of-way. Applications for Side Sewer Permits must be submitted at least 24 hours prior to side sewer Preconstruction Conference. If any portion of the installation is within right-of-way, time must be allowed for issuance of King County, City of Renton, City of Tukwila, or City of Seattle right-of-way permit, whichever entity has jurisdiction.

Side sewer installation shall meet the requirements of the most current version of the Skyway Water & Sewer District's Side Sewer Regulations.

Sewer Availability and Sewer Connection forms are included in Appendices B and C of these Regulations.

3.02 PERSON WHO MUST APPLY FOR PERMITS

Application for a Side Sewer Permit will be made personally by the Owner of the property to be served, or by the Owner's authorized agent.

3.03 MATERIAL REQUIRED FOR THE PERMIT APPLICATION

In making an application for a Side Sewer Permit, the Owner or authorized agent shall furnish a site plan showing the size and location of structures on the property, the Owner's name, address, and legal description of the property to be served. The full course of the proposed side sewer from the public sewer in the street to the structure

shall be shown on the plan. Where easements are required, they shall be obtained by the Owner at the Owner's expense and filed with the King County Recorder. Prior to issuance of the permit, a copy of the recorded easements shall be provided to the District.

3.04 PERMIT FEES

Prior to the issuance of any permit, all fees identified on the application shall be paid to the District. The permit fees shall be as established by the District's current fees and rates resolution.

3.05 TERM OF USE

The side sewer construction shall be complete and accepted within one year of date of issuance of the Side Sewer Permit. If allowed by the Property Owner to expire, a new Side Sewer Permit shall be applied for and applicable fees paid.

3.06 PUBLIC RIGHT-OF-WAY PERMIT

A Right-of-Way Permit is required for side sewer work in a public right-of-way. Under its franchise agreement with the underlying land use agency, the District will use its reasonable efforts to obtain the Right-of-Way Permit at Property Owner's expense, on behalf of the Property Owner. The Property Owner shall provide the District with necessary documents required to obtain the permits. The Property Owner and their Contractor agree to comply with all State and County regulations applicable to Developer and/or Contractor while construction is in progress in King County rights-of-way. The Owner shall pay the District for the Right-of-Way Permit at the time that the side sewer permit is purchased. The Right-of-Way Permit is typically issued in approximately 3 weeks. No work shall be performed on the side sewer until the Right-of-Way Permit is obtained and the Preconstruction Conference is conducted.

3.07 CLEARING AND GRADING OR BUILDING PERMIT

The Owner shall be responsible for obtaining a clearing and grading permit or building permit, if required, from the underlying land use agency for installation of the side sewer on private property. The Owner shall furnish a copy of the permit and the permit number to the District prior to beginning work on the side sewer.

3.08 PRIVATE EASEMENTS

The Property Owner shall provide the District with supporting data to verify the location of all proposed private easements for side sewers entering / crossing other private property to connect to the sewer main. A legal description of the easement alignment shall be provided on the private easement document. All private easements shall consist of a tract a minimum of ten (10) feet in width. Exception may be granted by the District if appropriate considering the depth of the proposed side sewer, and the surrounding

terrain. Easements shall be clearly written in a manner that the easement can be plotted from the description. Sample easements are included in Appendix F of these Regulations.

All easements shall be approved by the District prior to their recording with King County. Proof of recording of the private sanitary sewer easements outside of the Owner's property shall be recorded by the Property Owner and a copy delivered to the District prior to the District's approval of the side sewer construction.

3.09 KING COUNTY CAPACITY CHARGES

The property Owner is responsible to King County for the King County Sewage Treatment Capacity Charge for new connections to the sewer system. This fee is collected by the District, and forwarded in its entirety to King County's Wastewater Division. See Appendix C for the Residential Sewer Use Certification Sewage Treatment Capacity Charge form.

3.10 BEST MANAGEMENT PRACTICES

The Contractor/Property Owner shall conform to the most recent version of the Washington State Department of Transportation's "Best Management Practices Field Guide for ESA 4(d) Habitat Protection", and follow the State and King County requirements/guidelines for all aspects of the construction project. BMP's shall be used for work including, but not limited to, sedimentation and erosion control, dewatering, the discharge of flushing water, the monitoring and control of pH, turbidity and temperature of discharged wastewater, and the containment and proper disposal of sawcutting of existing pavement, curb and sidewalks.

3.11 PRECONSTRUCTION CONFERENCE

The Side Sewer Contractor shall contact the District to schedule a Preconstruction Conference for all side sewer installations occurring in the public right-of-way at least 48 hours in advance of the Work. Scheduling of the meeting shall not occur until the District has approved the side sewer plan, and a Certificate of Insurance have been provided to the District. The pre-construction meeting will be held at the project site during normal District office hours. For installations involving a Right-of-Way Permit, the Preconstruction Conference will not be conducted until the District has received the Right-of-Way Permit. The District will coordinate the scheduling of the meeting with the right-of-way inspector.

Side Sewer Contractors or the Owner shall contact One-Call for utility locations. The phone number is 811 or 1-800-424-5555.

3.12 CALL FOR JOB START

Before beginning ANY work in contact with the District's existing system, such as an existing side sewer stub or connection to the existing sewer main, the Side Sewer Contractor shall schedule an initial inspection with the District at least 24 hours in advance. The District's representative must be present for installation of any connection to the District's existing system, including removal of an existing side sewer cap. Failure to call for an initial inspection will result in the Side Sewer Contractor having to clean and conduct a television inspection of the downstream sewer main to remove any debris that may have entered the District's sewer system.

3.13 UNAUTHORIZED WORK

No work shall be started on any side sewer without a permit. No Side Sewer Contractor shall do any side sewer work under any other person's permit, nor shall any unauthorized person do any side sewer work under a Licensed Side Sewer Contractor's Permit. If work is started on any side sewer without a permit or authorization from the District, a fine of $1,000 can be levied against the violator.

3.14 TIME OF ISSUING PERMIT

No permit will be issued for a side sewer connection before the District has accepted the public sewer to which the side sewer will be connected.

3.15 POSTING OF PERMIT

The Contractor's copy of the Side Sewer Permit and side sewer plan shall be readily available on the job to the District representative. No inspection will be made unless such permit and plan is readily available on the job site. The Contractor shall be responsible for all additional costs incurred by the District for additional inspections.

3.16 RESPONSIBILITY OF SIDE SEWER CONTRACTOR

The Side Sewer Contractor shall be responsible for abiding by all applicable requirements of these Regulations.

The District shall at all times have access to the work for the purpose of verifying compliance with the District's requirements, including observation of system testing, and recording as-built information for the sewer card. The Owner shall provide proper and safe facilities for such access and for such observation.

If any work should be covered up without approval or consent of the District, it must be uncovered for review by the District at the Owner's expense.

The Owner shall make tests of the work at the Owner's expense in the presence of the District or their representative.

3.17 FAILURE TO COMPLY WITH PERMIT PROVISIONS

If any work done under a Side Sewer Permit is not in accordance with provisions of these Regulations, and if the Contractor or person doing the work fails and/or refuses to properly construct and complete such work, notice of such failure or refusal shall be given to the Owner or Occupant of the property. The District may cause said work to be stopped. The Owner and/or Contractor shall be responsible for all additional costs incurred by the District related to Owner's and/or Contractor's failure to properly complete the work. If the District incurs costs, it will be billed out for time, materials, and a 15% administration charges.

If the work in the opinion of the District constitutes a hazard to public safety, health, or the public sewer, the District may complete such work. The cost of such work and any materials necessary therefore shall be charged to the Owner and/or Contractor and shall be payable by the Owner and/or Contractor immediately upon written notice given by the District of the amount or by posting a notice on the premises.

3.18 COMPLETION OF WORK

All work shall be completed promptly and in compliance with the governing agency's (City or County) requirements. If such work is not in compliance with governing agency's requirements (King County, City of Renton, City of Tukwila, or the City of Seattle), any costs incurred by the District to bring such work into compliance and to restore the Right-of-Way or private property shall be charged to the property Owner, and shall be payable immediately to the District upon written notification to the Owner.

ARTICLE IV

SIDE SEWER CONTRACTOR LICENSE AND INSURANCE

4.01 INTRODUCTION

Any Side Sewer Contractor intending to do business within the District shall meet the following requirements.

4.02 GENERAL QUALIFICATION

A Side Sewer Contractor must be licensed and bonded with the State of Washington to conform to the nature of the work. A Side Sewer Contractor must provide the District with proof of license and insurance.

4.03 SIDE SEWER PERMIT FEE

The District's current Side Sewer Permit fee shall be charged at the time of side sewer permit acquisition from the District. This permit fee is good for twelve (12) months from the date of acquisition. After twelve months a new Side Sewer Permit and payment of the associated permit fee is required.

4.04 INSURANCE

The Side Sewer Contractor shall obtain and keep in force public liability and property damage insurance with the minimum amounts and coverage as shown below. Any insurance policies shall be issued by companies authorized to do business under the laws of the State of Washington.

A Certificate of Insurance shall be provided to the District and must include "Side Sewer Installations" in the Description of Operations. The insurance certificate must include the provision that such insurance shall not be canceled without at least forty-five (45) days written advance notice to the District.

This insurance certificate must be in the amount of:

Commercial General Liability

- $1,000,000 per occurrence liability (including extended bodily injury)
- $2,000,000 annual aggregate
- Employees and volunteers as additional insureds
- Premises and operations
- Broad form property damage including the hazards of underground, explosion, and collapse (XCU)
- Products completed operations
- Blanket contractual

- Subcontractors
- Personal Injury with Employee exclusion deleted
- Employers liability (Stop gap)

Automobile Liability

- $1,000,000 per accident bodily injury and property damage liability, including
- Any owned automobile
- Hired automobiles
- Non-owned automobile

Umbrella Liability

- $2,000,000 per occurrence
- $2,000,000 aggregate

A. As an alternative to be above indicated Commercial General Liability and Umbrella Liability insurance policies, the Contractor may provide the District with an Owners and Contractors Protective (OCP) policy with a limit of coverage of $5,000,000.

B. The Contractor shall additionally provide the District with evidence that the District has been named as additional insured on the Contractor's general liability policy for at least products completed operations coverage.

C. Providing of coverage in the stated amounts shall not be construed to relieve the Developer from liability in excess of such limits.

4.05 INDEMNIFICATION AND HOLD HARMLESS

Where Owner does work themselves (without a licensed Side Sewer Contractor) they must complete and provide to the District a Hold Harmless and Indemnity Agreement as found in Appendix C of these Regulations.

ARTICLE V

SIDE SEWER CONTRACT WITH OWNER

5.01 SKYWAY WATER & SEWER DISTRICT REGULATIONS

Contracts between Property Owners and Side Sewer Contractors shall provide that such Side Sewer Contractor will comply with all District regulations.

5.02 SPECIAL RELEASES

A. Minimum Grade, Elevation, and/or Depth of Cover Release: If it is determined that one or more of the conditions occur, the Property Owner shall sign and provide the District with a grade release waiver in a form.

1. If the side sewer grade (slope) is determined to be inadequate the grade of the side sewer is to be less than 2% or 1/4 inch per foot.
2. If the side sewer elevation results in an unusual danger of backup, as described in Section 7.13 of these Side Regulations.
3. If the depth of cover over the side sewer pipeline is less than prescribed by Section 7-07 of these Side Sewer Regulations.

The District will record the Release in the office of the County Recorder before acceptance. Recording fees shall be paid by the property Owner. See Appendix D for the Grade Release Waiver Form. The effect of said release waiver shall be to release the District from all future claims for damages due to the installation of said side sewer.

B. Joint Side Sewer: Joint side sewers are not allowed for new or replaced side sewers.

When two or more existing structures not in common ownership are connected to one side sewer (joint side sewer), easements running with the land must be executed and recorded with the County Recorder. Said easements shall be approved by the District, and shall insure that all properties involved shall have perpetual use of the side sewer. Said easements shall contain provisions for joint responsibility for costs of maintenance, repair, and access, and shall be signed by the Owners of the properties subject to the easement. The easement shall be acknowledged, and must be recorded by the Property Owners with the County Recorder and a copy given to the District before a permit will be issued for construction.

C. Side Sewer Stub Location: When a side sewer connection to the sewer main is not along the property frontage, the property Owner shall provide, and provide and record a “Declaration of Restrictive Covenant Notice for Sanitary Sewer Service” per Appendix E of these Regulations.

D. Grinder Pump Side Sewer: Any property that connects into the sewer system with a District approved grinder pump system must sign a Grinder Pump Service Agreement with the District at the time of the side sewer application, and provide and record a "Declaration of Restrictive Covenant Notice for Grinder Pump Side Sewer" per Appendix E of these Regulations.

E. Fees: The Owner or Owners of properties affected shall pay for the recording fees due to grade releases, easements, and covenants.

ARTICLE VI

LOCATION OF EXISTING SEWER STUB

6.01 CONNECTION TO DESIGNATED STUB

Connection of the side sewer shall be made to the stub designated at the time the side sewer permit is issued, unless written permission to do otherwise is obtained from the District.

6.02 STUB LOCATION

The side sewer stub location, as provided by the District, is to the best of the District's records. The locations of existing stubs are usually shown on as-built drawings furnished to the District by others. The District makes no warranty, express or implied, about the accuracy or completeness of such as-built drawings.

6.03 PROSPECTING FOR STUB

If the stub cannot be located with the measurements as furnished by the District, the Side Sewer Contractor shall prospect four feet in all directions, as site conditions allow, from the distance and depth given. If such prospecting fails to disclose the stub, the Contractor shall immediately contact the District and report the circumstances.

ARTICLE VII

MINIMUM REQUIREMENTS FOR INSTALLATION OF SIDE SEWERS - GENERAL

7.01 DISTRICT NOTES

Specifications associated with sewer construction are included in Appendix G of these Regulations. These Notes originate from the District's "Guidelines for Construction of Water and Sanitary Sewer Facilities". The Owner and their Side Sewer Contractor shall be familiar with and comply with the content of these Notes.

7-02 PIPE HANDLING AND STORAGE

Side sewer pipes shall be stored in unit packages provided by the manufacturer. Stored pipe and fittings shall be covered with an opaque material to prevent exposure to direct sunlight. They shall be stored in a manner to prevent excessive heat accumulation. Blows to the pipe causing impact damage shall be prevented. Pipe and fittings shall not be thrown, dropped or dragged. Rubber gaskets shall be stored in a cool, dark location, away from grease, oil and ozone. Pipes and/or fittings not conforming to these requirements or damaged in transit shall be rejected by the District.

7.03 SIDE SEWER LOCATIONS

A. All lots shall have the side sewer located within their own frontage and shall not be located in private side sewer easements without the express prior written consent of the District.

B. Structures that shall not be constructed over the side sewer lines include, but are not limited to, fences, carports, buildings, landscape timbers, retaining walls, mailbox stands, trees, and rockeries.

C. The maximum number of side sewers connected to a manhole is two (2).

D. Side sewers parallel to the foundation wall of any building shall be laid not less than thirty (30) inches from the foundation or building.

7.04 WATER / SANITARY SEWER SEPARATION

A. Parallel water and sewer lines shall be laid at least ten horizontal feet apart wherever possible.

B. Where it is necessary for sewer and water lines to cross, the crossing shall be made at an angle of ninety (90) degrees and the top of the sewer shall be located eighteen (18) inches or more below the bottom of the water line if possible. The longest standard length of sewer pipe shall be installed so that the joints will fall equidistant from any water crossing.

C. Where requirements A and B cannot be achieved, additional mitigation efforts, as allowed by the most recent edition of the Washington State Department of Ecology's "Orange Book" shall be considered.

7.05 OTHER UNDERGROUND FACILITIES

No other underground facilities shall be installed closer than three (3) feet horizontally to the side sewer pipeline as installed.

7.06 RETAINING WALLS / ROCKERIES OVER SIDE SEWERS

In instances where retaining walls or rockeries are to be constructed over (and perpendicular to) a side sewer, the side sewer shall be installed within a steel casing pipe with District-approved spacers. The steel casing shall extend at least ten (10) feet each side of the retaining wall/rockery.

ARTICLE VIII

MINIMUM REQUIREMENTS FOR INSTALLATION OF SIDE SEWERS - GRAVITY

8.01 GRAVITY SIDE SEWER PIPE MATERIALS

Gravity side sewer pipe shall be PVC, ductile iron, or HDPE and meet the following requirements:

PVC Pipe: All PVC gravity sewer pipe and fittings manufacture and installation shall meet or exceed the ASTM recommended specifications D3034-73, latest revision, and all installation shall be in strict compliance with the manufacturer's directions. All pipe shall be clearly marked with the date of manufacture. Any pipe with a manufacturing date 10-years or older shall not be allowed. All pipe shall be provided with a reference mark for proper spigot insertion. Joint gaskets shall meet the requirements of the latest revision of ASTM 1869.

Ductile Iron Pipe and Fittings: All ductile iron pipe shall conform to the latest revisions of ASA Specification A21.51 and AWWA Specification C151, Class 52. Grade of iron shall be a minimum of 60-42-10. Ductile iron pipe for all sanitary sewer applications shall be provided with an interior coating/lining of polyethylene meeting the requirements of ASTM D1248 or Protecto 401 ceramic epoxy, 40 mil minimum thickness. A bituminous coating shall be applied to the pipe's exterior.

Ductile iron fittings shall meet the current application ASA A21.10 (AWWA C110) and ASA A21.11 (AWWA C111). Ductile iron fittings for all sanitary sewer applications shall be provided with an interior coating/lining of polyethylene meeting the requirements of ASTM D1248 or Protecto 401 ceramic epoxy, 40 mil minimum thickness. A bituminous coating shall be applied to the fitting's exterior.

High Density Polyethylene (HDPE) Pipe and Fittings: All pipe and fittings shall bear identification markings in accordance with AWWA designations for HDPE pipe.

The pipe material shall meet the requirements for Type III, Class C, Category 5, Grade P34 material as described in ASTM D1248. Pipe and fittings shall be made in conformance with ASTM F714 and ASTM D3261 as modified for the specified material.

Butt-fusion of gravity side sewer pipes and HDPE fittings shall be performed in accordance with the pipe manufacturer's recommendations as to equipment and technique. The pipe shall be fused in the manner recommended by the pipe supplier and/or the fusion machine manufacturer and reviewed for compliance by the District during construction.

8.02 PIPE DIAMETER

A. No side sewer less than six (6) inches in diameter shall be laid in public right-of-ways or in easements.

B. Single Residence Connection

Side sewers serving a single residential structure shall be six (6) inches in diameter from the sewer main to the property line and a minimum of four (4) inches in diameter on private property to the residence.

C. Non-Single Family Connection

Side sewers serving a non-single family residential structure shall be a minimum of six (6) inches in diameter extending from the sewer main to the building, and shall connect to the sewer main at a (new or existing) manhole.

D. Joint Side Sewers

Replacement of an existing side sewer serving two single-family residential structures shall consist of a six (6) inch diameter (minimum) pipe extending from the sewer main to the wye that is installed at the confluence of the separate side sewers, and extending from the wye to the respective property line for which the side sewer is being installed. A minimum pipe diameter of four (4) inches is allowed from the property line to the building.

New joint side sewers are not allowed.

8.03 CLEANOUTS

Cleanouts shall be as shown on the Standard Detail SS12. Cleanout tees shall be double sweep.

A. Cleanouts

1. Cleanouts shall be installed at intervals not to exceed one hundred (100) feet in straight runs and for each aggregate horizontal change in direction exceeding ninety (90) degrees.
2. A cleanout shall be installed where the side sewer connects to the building stub, and the cleanout shall be no more than three feet from the building foundation.
3. Additional cleanouts, including those for commercial property, shall be installed at locations as designated by the District in accordance with District standards.
4. For single-family residential side sewers, cleanout accesses located in unimproved or landscaped areas shall be no more then 12-inches below ground surface. Cleanout located in sidewalks, pavement, or other improved areas and all cleanouts installed as part of a non-single family development shall be brought to grade as shown in the District's Standard Vertical Sewer Cleanout Detail SS12.

B. Test Tee

A test tee shall be provided at the point of connection to the sewer main, and at any other required point or points in order to insure that all portions of the side sewer or private sewer can be tested.

8.04 GRAVITY SIDE SEWER PIPE INSTALLATION

A. Side sewer shall be installed by a Side Sewer Contractor.

B. The Contractor shall provide and install trench shoring systems meeting the requirements of WAC Chapter 296.

C. Side sewers shall be installed perpendicular to the main and true to grade with the bells up grade. Side sewers within King County road right-of-way shall be placed within ten (10) degrees of perpendicular to road centerline. All side sewers shall be laid on a grade no less than 2-percent (¼ inch per foot) and no greater then one (1) foot vertical to one (1) foot horizontal. When changes in slope between connecting pipes exceeds the manufacturer's recommendations, standard bends shall be used.

D. Sides sewers that are 20-feet or greater in depth at the point of connection to the sewer main shall consist of C900 PVC pipe up to the transition point to 4-inch D3034 PVC.

E. The Contractor shall maintain sufficient pumping equipment on the job to keep side sewer trenches free from groundwater. Pump discharge from the project site shall be free from sediment and silt. Rock, boulder, roots, and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth of 6 inches below pipeline grade. Where material is removed from below pipeline grade, the trench shall be backfilled to grade with material satisfactory to the Engineer and compacted meeting requirements of modified proctor test ASTM D1557.

F. The pipe trench shall be excavated to a depth as required for the installation of the pipe and the required pipe bedding. The Owner and their Contractor shall comply with all applicable OSHA and WISHA safety requirements.

G. Pipe Bedding

1. Bedding material for PVC side sewer pipe shall be crushed surfacing top coarse per WSDOT Standard Specification 9-03.9(3), or pea gravel (100% passing 3/8" Sq. opening, 0-5% passing a No. 8 Sieve).

2. Bedding material shall be placed from a minimum of four (4) inches below the pipe barrel to twelve (12) inches over the top of pipe as shown in the District's Standard Trench Section for Sewer Pipe Detail (SS01). The bedding shall be placed before the pipe is installed and shall be spread smoothly so that the pipe is uniformly supported along the barrel.

Subsequent lifts of not more than six (6) inch thickness shall be placed and individually compacted by hand, to avoid damaging the pipe.

3. Removal of shoring or moveable trench shields or boxes shall be accomplished so that the bedding material placement is not disturbed.

H. Trench Backfill

1. Imported trench backfill and native trench backfill material shall be compactable per Section H3 (below), and shall be free from wood, bark, roots or other extraneous material.

2. Where the side sewer extends through the public right-of-way, the backfill material shall be crushed surfacing base course, or as required by the agency having jurisdiction over the public right-of-way. Where governmental agencies have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of both the District and the agency having the jurisdiction over roadways.

3. Trench compaction shall determined per the Modified Proctor Test, and shall be to 90% of maximum density in private unimproved areas, and 95% in roadways, driveways, sidewalk areas, and in the public right-of-way. Compaction testing shall be by a certified testing laboratory. All test results shall be provided by the Applicant to the District.

   Compaction shall be with the use of a mechanical compactor in a manner acceptable to the District unless otherwise required by the agency that has jurisdiction over a public right-of-way.

4. All bedding, laying and jointing shall be done in accordance with the pipe manufacturer's recommendations.

8.05 MINIMUM SURFACE COVER FOR PIPE

A. Minimum cover for side sewers on private property shall be eighteen (18) inches.

B. Minimum cover for side sewers at property line shall be five (5) feet.

8.06 CONNECTION TO EXISTING SEWER MAIN

Where no tee or wye is provided or available, connection shall be made by machine-made tap and approved saddle, or otherwise as approved by the District. Connections where a new building sewer is the same size as the existing main shall be accomplished by the installation of a new manhole.

Taps shall not be allowed to protrude into the existing main. Maximum angle of service tap is 45 degrees.

The District shall be notified two (2) full working days prior to a tap of a District sewer. A District representative shall be present to witness the tap. The mainline at the tap location shall be videotaped, at the Property Owner’s expense, after tapping and prior to

approval to ensure compliance. The manufactured bevel on the pipe to be inserted into the saddle shall be cut off to avoid pushing the pipe too far into the main.

New side sewer connections on an existing sewer main for a single connection (not in conjunction with a new development) shall conform to the District Standards and the requirements listed below.

A. For existing D3034 PVC Sewer Main (less than 20 feet in depth), the side sewer connection shall be one of the following:

   1. Cut-in PVC side sewer tee
   2. Insert-a-Tee, installed per Inserta Fittings Co.'s requirements
   3. Romac "SST" Stainless Steel Tapping Sleeve with gasket sized for D3034 PVC side sewer; or Romac side sewer saddle, Model CB.

B. For existing C900 PVC Sewer Main (20 feet or greater in depth), the side sewer connection shall be a cut-in tee of one of the following materials:

   1. C900 PVC side sewer tee with a C900 side sewer up to the transition point to 4-inch D3034 PVC
   2. Epoxy-lined ductile iron tee with two (2) epoxy-lined ductile iron sleeves with a C900 side sewer up to the transition point to 4-inch D3034 PVC
   3. Romac "SST" Stainless Steel Tapping Sleeve with gasket sized for D3034 PVC side sewer; or Romac side sewer saddle, Model CB.

C. For existing ductile iron Sewer Main (20 feet or greater in depth), the side sewer connection shall be one of the following materials:

   1. Epoxy-lined ductile iron tee with two (2) epoxy-lined ductile iron sleeves with a C900 side sewer up to the transition point to 4-inch D3034 PVC
   2. Romac "SST" Stainless Steel Tapping Sleeve with gasket sized for D3034 PVC side sewer; or Romac side sewer saddle, Model CB.

D. The existing sewer pipe shall be cut with a saw or approved equal to give a smooth symmetrical edge of the proper size and the lip shall be filed smooth.

E. When installing a side sewer saddle, the pipe cut-in shall be in accordance with the manufacturer's instructions for a tapping tee or Insert-a-Tee. The connection to the main must be reviewed by District personnel during installation. If the existing pipe becomes cracked or damaged during the cut-in, the damaged section shall be replaced to the satisfaction of the District.

F. Connection to the house soil pipe shall be made by means of flexible clamp-type coupling or other method approved by the District.

G. All connections must be clean and visible during inspection.

8.07 CONNECTION TO EXISTING SEWER MANHOLE

Connections to existing manholes shall be made as follows:

A. Manholes must be core drilled.

B. A water tight joint (Kor-n-Seal boot or approved equal) shall be provided where the pipe passes through the manhole wall. The nut of the Kor-n-Seal boot shall be positioned away from the crown of the pipe so that it does not interfere with jetting equipment.

C. If the manhole is "live", the manhole channel shall be tightly covered to prevent debris from entering the sewer line prior to breaking into the manhole wall. Immediately after the connection is made, the new pipe shall be plugged and blocked in such a manner that no water shall enter into the existing manhole. The plug shall not be removed without permission of the District.

D. If the existing manhole is not "live", a plug shall be installed in the downstream or discharge pipe of the existing manhole in addition to the above. Where new connections to existing manholes require an outside drop, two plugs for each drop shall be installed and blocked.

E. The existing manhole shall be rechanneled per the Gravity Sewer Notes. See Appendix G of these Regulations.

F. The opening through which the side sewer passes shall be completely and thoroughly grouted.

8.08 GRAVITY FLOW BELOW MINIMUM ELEVATION

Wherever a situation exists involving an unusual danger of backup, the District may require the minimum elevation at which the structure drain may be discharged to the sewer. Sewers below such minimum elevation, if allowed by the District, shall be lifted by artificial means.

Chapter 7 of The Uniform Plumbing Code (UPC), as adopted by the WAC 51-56-003, requires backwater valves on building sewers where the finished floor is below the rim of the upstream manhole or below the main sewer level.

See Appendix D for Minimum Side Sewer Grade, Elevation, and Depth of Cover Release form.

8.09 BACKWATER VALVES

Backwater valves, if they are installed, must be located within the building footprint upstream of the cleanout. The District is not responsible for their installation, maintenance, or operation. The side sewer permit for a building with a backwater valve shall include a hold harmless clause which indemnifies the District against any liability, damage, or cost which may accrue from the installation and operation of a backwater

valve in the side sewer by providing and recording a Minimum Side Sewer Grade, Elevation, and Depth of Cover Release from per Appendix D of these Regulations.

Additional information about backwater valve requirements and considerations are included in Appendix I of these Regulations.

ARTICLE IX

MINIMUM REQUIREMENTS FOR INSTALLATION OF SIDE SEWERS - PRESSURE

9.01 PRESSURE SIDE SEWER APPROVAL

In any building structure in which the plumbing drain is too low to permit gravity side sewer flow to an existing or future gravity sewer along the property's frontage, an alternate means of side sewer conveyance must be considered. The use of grinder pump assemblies to "lift" sewage by artificial means and discharge into the sewer system may be allowed by formal approval of the District's Board of Commissioners. District approval will allow for permanent or temporary pressure side sewer connection depending on the location and depth of the available sewer main connection(s).

9.02 REDUCED PRESSURE BACKFLOW ASSEMBLY

The Property Owner shall install a reduced pressure backflow assembly on each water service at properties where pressure sanitary sewer facilities exist. The Owner shall take into account that the use of a reduced pressure backflow assembly may cause a reduction in pressure of the domestic water service.

9.03 GRINDER PUMP SIDE SEWER

Pressure side sewers, their associated grinder pump assemblies, and the potable water service reduced pressure backwater assembly shall be owned, operated, and maintained by the Property Owner. All pump installations must meet all building, plumbing, and electrical codes.

The design of any side sewer extension/connection shall conform to District Standards, the DOE's "Criteria of Sewage Works Design" (Orange Book), and any applicable standards as set forth herein.

Before any installation of a grinder pump system is made, the side sewer Owner will be required to provide and record a "Declaration of Restrictive Covenants & Notice For Grinder Pump Side Sewer" agreement per Appendix E of these Regulations.

9.04 PRESSURE SEWER MATERIALS

A. Grinder Pump Assemblies shall be Environment One model number DH071-___, (___ is dependant on depth) as manufactured by Environment One Corporation.

B. For individual grinder pump discharge pressure pipes, HDPE, SDR 11, rated at 200 psi minimum, shall be used. Pipe shall be provided with a continual green strip along its length.

HDPE pipe material and installation shall meet the requirements of publication MS-3/2009 by the Plastics Pipe Institute.

C. HDPE pipeline segments shall be connected by butt-fuse welding, or by use of stainless steel stiffening insert with compression couplings.

D. Grinder pump stations shall be equipped with both a check valve and a gate valve on the discharge line.

E. Pressure side sewer pipe shall be installed with tracer wire per Section 9-07 below.

F. Fitting configuration for connection to the existing District system shall be determined on a case-by-case basis, as proposed by the property Owner or Side Sewer Contractor. Fittings for pressure side sewer systems shall be brass or stainless steel. Joints shall be by compression style couplings. Joints, in pipes with diameter of 2-inch or less, shall be made only at pump basins, valves, fittings, and changes in pipe diameter. For pipe larger than 2-inch in diameter, joints between pipe sections shall be thermal fusion butt-welded. All flanges and fittings on pipes larger than 2-inch in diameter shall be thermal fusion butt welded to the pipe. Operators of fusion welding equipment shall be trained by pipe manufacturer, who shall certify that operator are qualified.

9.05 PRESSURE SIDE SEWER INSTALLATION

A. Side sewers shall be installed by a Side Sewer Contractor.

B. The method of connection of pressure side sewers to the District's sewer system shall be proposed by the pressure side sewer designer, and determined & reviewed by the District on a case by case basis. Pressure side sewers within King County road right-of-way shall be within ten (10) degrees of perpendicular to road centerline. Unless otherwise approved by King County Road Engineer, pressure side sewers shall be jacked or bored under road.

C. The Contractor shall provide and install trench shoring systems meeting the requirements of WAC Chapter 296. The Owner and their Contractor shall comply with all applicable OSHA and WISHA safety requirements.

D. The pipe trench shall be excavated to a depth as required for the installation of the pipe and the required pipe bedding.

E. The Contractor shall maintain sufficient pumping equipment on the job to keep side sewer trenches free from groundwater. Pump discharge from the project site shall be free from sediment and silt. Rock, boulder, roots, and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth of 6 inches below pipeline grade. Where material is removed from below pipeline grade, the trench shall be backfilled to grade with material satisfactory to the Engineer and compacted meeting requirements of modified proctor test ASTM D1557.

F. Pipe Bedding

1. Bedding material for HDPE pressure side sewer pipe shall be crushed surfacing top coarse per WSDOT Standard Specification 9-03.9(3), or pea gravel (100% passing 3/8" Sq. opening, 0-5% passing a No. 8 Sieve).

2. Bedding material shall be placed from a minimum of four (4) inches below the pipe barrel to twelve (12) inches over the top of pipe as shown in the District's Standard Trench Section for Sewer Pipe Detail (SS01), see Appendix H of these Regulations. The bedding shall be placed before the pipe is installed and shall be spread smoothly so that the pipe is uniformly supported along the barrel. Subsequent lifts of not more than six (6) inch thickness shall be placed and individually compacted by hand, to avoid damaging the pipe.

3. Removal of shoring or moveable trench shields or boxes shall be accomplished so that the bedding material placement is not disturbed.

G. Trench Backfill

1. Imported trench backfill and native trench backfill material shall be compactable per Section G3 (below), and shall be free from wood, bark, roots or other extraneous material.

2. Where the side sewer extends through the public right-of-way, the backfill material shall be crushed surfacing base course, or as required by the agency having jurisdiction over the public right-of-way. Where governmental agencies have jurisdiction over roadways, the backfill and compaction shall be done to the satisfaction of both the District and the agency having the jurisdiction over roadways.

3. Trench compaction shall determined per the Modified Proctor Test, and shall be to 90% of maximum density in private unimproved areas, and 95% in roadways, driveways, sidewalk areas, and in the public right-of-way. Compaction testing shall be by a certified testing laboratory. All test results shall be provided by the Applicant to the District.

   Compaction shall be with the use of a mechanical compactor in a manner acceptable to the District unless otherwise required by the agency that has jurisdiction over a public right-of-way.

4. All bedding, laying and jointing shall be done in accordance with the pipe manufacturer's recommendations.

9.06 MINIMUM SURFACE COVER FOR PIPE

Pressure system side sewers shall have a minimum 36 inches of cover to top of pipe.

9.07 TRACER WIRE AND TRACER TAPE

All piping shall be installed with tracer wire for locating purposes. Tracer wire shall be installed for all non-metallic pressure service pipe. The wire shall be a continuous, 10-gauge, insulated copper wire, taped or fastened to the pipe a minimum of every 15 feet. Care shall be taken to preserve the integrity of the insulation of the tracer wire. The tracer wire must provide a continuous loop. The Contractor shall test the tracer wire for

continuity prior to paving or final restoration, in the presence of the District. Any damage shall be repaired at the Property Owner's expense.

Tracer wire shall be brought to final grade within all below-grade boxes, vaults, etc., in a manner acceptable to the District. Tracer Wire location boxes shall consist of the District's standard valve box. For sewer applications the lid shall be stamped "SEWER". Tracer wire location boxes shall be provided at each horizontal bend with a maximum distance between tracer wire access points being 300 feet. Each access point shall be provided with the following:

A. A 3/4" pipe saddle to the pipe (facing vertical). The saddle shall NOT be tapped, and shall have all rubber gaskets removed.

B. A vertical length of 3/4" copper or brass pipe shall be connected to the pipe saddle (with brass adapter if needed) and extended toward the ground surface within the location box (valve box per Standard Detail WA09 with lid reading "SEWER").

C. The 10-gauge wire shall be wrapped around the vertical copper or brass pipe or run within the copper or brass pipe, and extended to within two-inches (2") of the ground surface.

Tracer tape shall be installed for all non-metallic service gravity pipe. The tape shall be a continuously installed 12 to 18 inches under the final ground surface. The tape shall be non-biodegradable, bright-colored, continuously-printed plastic ribbon tape not less than 6-inches wide by 4-mil thick. Tape shall include a magnetically detectable non-separable metal core or backing.

9.08 CONNECTION TO GRAVITY SANITARY SEWER

Connections to an existing gravity sanitary sewer shall require a 6-inch PVC gravity side sewer. The Side Sewer Contractor shall install a gravity side sewer in conformance with the District's Standard Details. The transition between the HDPE pressure side sewer and the gravity side sewer shall require the installation of a pressure line to gravity sanitary sewer connection including installation of the six-inch (6") cleanout assembly at the property line. The six-inch side sewer shall connect to the sewer main per Section 8.06 of these Regulations.

The Property Owner shall submit a plan of their proposed force main termination facilities during the design review process. The District may also require shop drawings for further clarification to be submitted during the construction phase.

9.09 MANHOLES AT TERMINUS OF PRESSURE SIDE SEWER

The connection of new pipelines to existing manholes shall be accomplished by core-drilling the existing manhole. The discharge of sewage flow into the connecting channels shall be constructed so as not to interrupt existing flow patterns.

The pressure side sewer discharge manhole shall be coated with Tnemec Series 141 PotaPox 80, 16 mils Dry Film Thickness (DFT) (exterior); and Tnemec Series 435 Perma Shield, 40 mils DFT (interior), or a District-approved manhole coating system by Raven Lining Systems.

Preparation for both the exterior and interior of the manhole shall provide a surface that is clean, dry, and free from contaminants. Surface preparation shall meet the requirements of the product representative. Manhole voids shall be repaired with an approved surface filler prior to application of coatings. Surface preparation and coating applications shall be under the direction of the product representative.

9.10 GRINDER PUMP SYSTEM

The grinder sewer pump system shall be manufactured by Environment-One. The local supplier is Correct Equipment, Redmond, WA; phone number 1-877-371-4555.

The grinder pump system shall include the following items:

A. The tank shall be supplied with a pump guide rail system for removal of pump unit. All exposed surfaces on guide rail system shall be stainless steel including the lift chain.

B. The package system shall meet the requirements of the Washington State Department of Labor & Industries, Division for Residential grinder pump systems.

9.11 GRINDER PUMP INSTALLATION

A. Contact the District for a Preconstruction Conference before installation of any work or equipment associated with the grinder pump system. The Contractor shall determine the depth of the existing building's sewer discharge before the Preconstruction Conference.

B. The Contractor shall review the proposed grinder pump site layout with the District prior to installation of any work.

C. There shall be no additional junction boxes, splices or changes made once the system has been installed and inspected by District personnel. Anyone tampering with the approved system shall be liable to the District for any expense, loss, damage, cost of inspection or cost of correction incurred by the District, plus a penalty not to exceed $1,000.

D. The grinder pump tank shall be installed so that the finished grade shall be free draining around and away from the tank so that surface water cannot pond around the station.

E. Position the grinder pump tank to minimize the number of bends in the discharge pressure piping. Any necessary bends should be installed in the gravity portion of the side sewer.

See Appendix E of these Regulations for the District's "Declaration of Restrictive Covenants & Notice For Grinder Pump Side Sewer" agreement.

9.12 EXISTING GRINDER PUMP REMOVAL

A. Obtain Permit from Skyway Water & Sewer District for abandonment of the grinder pump assembly which includes connecting to gravity sewer system.

B. Shut off breaker in house panel.

C. Shut off breaker on outside panel.

D. Unplug and remove pump core.

E. Pump remaining sewage from chamber.

F. Flush side sewer discharge line.

G. Remove top of pump chamber 6 inches below grade and fill chamber with compacted granular material, or

H. Remove chamber and backfill with compacted granular material.

I. Remove electrical wire and conduit.

J. Install new side sewer connection and as-built sewer installation.

ARTICLE X

INSPECTION AND TESTING OF SIDE SEWER INSTALLATIONS

10.01 CALL FOR INSPECTION

Arrangements for inspection of a side sewer or grinder pump system installation shall be made with the District at least 24 hours in advance. The District reserves the right to set the time for facility review. Side sewer permits must be obtained from the District prior to scheduling an inspection. All inspections will be performed during normal working hours. Cancellations must be made a minimum of one (1) hour before the scheduled appointment. Additional inspection may result in additional fees in accordance with the District's fee schedule.

The Property Owner shall make arrangements separately for grinder pump system electrical inspection with the appropriate agency.

10.02 ACCESS FOR SIDE SEWER CONSTRICTION REVIEW

The Owner agrees to allow access by authorized representatives of the District on to the property described in the Permit at any reasonable time for the purpose of review and inspection for compliance with District regulations.

10.03 TESTING OF FINAL INSTALLATION - GRAVITY AND PRESSURE SIDE SEWERS

The Contractor shall not perform system testing for District review without the District's representative being present. The Side Sewer Contractor or job foreman must be present at the job during the system testing.

Testing apparatus and water shall be furnished by the Side Sewer Contractor. Visible leakage shall be corrected and the line shall be retested. All side sewer trenches must be maintained in a safe condition according to the regulations and requirements.

Gravity Side Sewers: Side sewers shall be tested their entire length from the cleanout at the lower end of the line by testing for visible leakage before backfilling by inserting a removable plumber's plug in the test tee at the lower end of the line and filling the line with water to a minimum of six-feet (6') above the side sewer's highest point.

Grinder Pump Side Sewers: Side sewers using pump systems shall be tested at 50 psig, or as directed by the District for actual conditions. Following is the procedure used for testing the discharge line:

A. Close the in-line ball valve in the grinder valve box.

B. Open the riser ball valve in the grinder valve box.

C. Close the ball valve at the collector valve box for the street connection.

D. Pressurize with water or air, introduced at the low end, to test for leakage.

E. Hold the required pressure for ten minutes. Allowable leakage = 0

Pressure testing of sanitary sewer force mains and pressure system side sewers shall meet the requirements for water main testing, per the Hydrostatic Pressure Test, Section 7-09.3(23) of the WSDOT Standard Specifications.

10.04 RATE OF LEAKAGE

No loss allowed for gravity side sewers. Pressure side sewer's allowable leakage is as allowed by the WSDOT Standard Specifications, Section 7-093(23) testing procedure.

10.05 AS-BUILT DRAWINGS

As-built drawings shall be prepared by the District in conjunction with the Side Sewer Permit. The Contractor shall not backfill the side sewer piping until review of the Work and the As-Built Drawing by the District are complete.

ARTICLE XI

RESTORATION

11.01 RESTORATION WITHIN A CITY, COUNTY, OR STATE RIGHT-OF-WAY

It shall be the responsibility of the Side Sewer Contractor to restore the roadway surfacing within the limits of any public thoroughfare or right-of-way. Such work shall be conducted in strict accordance with the rules and regulations of the agency having jurisdiction of said thoroughfare or right-of-way. All road cuts shall be made in accordance with agency's right-of-way regulations and must be cold patched the same day the cut is made and prior to the Contractor leaving the site on the day of the road cut.

11.02 RESTORATION WHERE NOT PRESCRIBED BY CITY, COUNTY, OR STATE

The Side Sewer Contractor shall follow the most current edition of the King County Road Standards.

11.03 CLEAN UP

The Side Sewer Contractor shall remove all debris and excess excavation and shall notify the District of any damage and shall repair such damage, in public or private property, in kind immediately after backfilling.

ARTICLE XII

SAFETY

12.01 SAFETY EQUIPMENT

The Side Sewer Contractor, before beginning excavation, shall have at the site sufficient barricades to properly protect the work. The barricades shall be illuminated during the night-time hours in accordance with right-of-way regulations and requirements. Traffic control shall be per the permitting agency's requirements, and shall at a minimum be per the most recent version of the Manual of Uniform Traffic Control Devices (MUTCD) and the WSDOT Standard Plans.

During the pipe laying operation, a ditch pump shall be readily available on-site for immediate use. Pump discharge shall be filtered of particulates and shall be clear when released from the site.

The Contractor shall install Trench Safety Systems as required by WAC Chapter 296, and other applicable State and Federal Regulations.

ARTICLE XIII

MAINTENANCE AND/OR REPAIR OF SIDE SEWER INSTALLATIONS

13.01 SIDE SEWER CLEANING

All side sewer cleaning contractors and/or plumbers, Side Sewer Contractors and/or Owners, prior to or while actually engaged in cleaning existing side sewers (as distinguished from plumbing and septic tank facilities), shall notify the District of such operations which are located within the service area of the District.

13.02 EXCAVATION AND/OR MODIFICATION OF SIDE SEWER INSTALLATIONS

No side sewer cleaning contractor, plumbers, Side Sewer Contractors, or Owners shall excavate for the purpose of exposing a side sewer and such persons shall make no repair or modification to an existing side sewer (including the cutting of holes in the pipe line and/or installation of additional fittings) until notification has been given to the District and a permit has been obtained from the District. The District Inspector must be present before the Contractor removes the side sewer stub cap.

13.03 DEMOLISHED OR REMOVED BUILDINGS

The Property Owner or their Contractor engaged in demolishing or removing any structure connected to the public sewer shall notify the District of such work, and obtain a Side Sewer Permit from the District. Existing building side sewer and sewer service stubs may be used in connection with new buildings or buildings with expanded facilities/footprints only when they are found to be, on review of video examination and tests (observed by the District), to meet the requirements for new construction (i.e. material type, diameter, slope, overall condition, etc.). The disconnected side sewer, if approved for reuse, shall be temporarily exposed and plugged at the property line by the Property Owner in accordance with the requirements of the District with this Regulation

The Property Owner shall replace those side sewer and sewer service stubs requested for reuse, but not meeting the requirements for new construction. Disconnection of the side sewer at the sewer main shall occur if the side sewer is being abandoned.

A District representative must observe temporary and permanent plugging.

ARTICLE XIV

PENALTIES

14.01 VIOLATORS

Any person who shall violate any provision of this Regulation shall be liable to the District for any expense, loss, damage, cost of inspection or cost of correction incurred by the District, plus a penalty not to exceed $1,000.

14.02 NOTICE OF VIOLATION

Any person violating any provision of this Regulation shall be notified by written notice of such violation and shall respond within ten (10) working days of the date of the written notice for the satisfactory correction.

ARTICLE XV

VALIDITY SAVINGS CLAUSE

15.01 VALIDITY OF THIS REGULATION

If any section or portion of these Side Sewer Regulations or any application thereof is adjudged invalid, such adjudication shall not affect the validity of the remaining portion of these Side Sewer Regulations or other application.

Appendix A

Resolution Adopting New Regulations

SKYWAY WATER AND SEWER DISTRICT

RESOLUTION NO. 11-06-477

A RESOLUTION of the Board of Commissioners of Skyway Water and Sewer District Adopting Comprehensive Side Sewer Regulations.

WHEREAS, the Board of Commissioners of Skyway Water and Sewer District ("District") has determined that the existing side sewer regulations that were adopted in 1990 need to be updated;

WHEREAS, changes in technology and governmental regulations necessitate the need for updating the regulations;

WHEREAS, the purpose of the regulations is to be consistent with State, District and Uniform Plumbing Code regulations;

WHEREAS, the District's staff and consultants have done a comprehensive review of the regulations.

NOW, THEREFORE BE IT RESOLVED as follows:

The District hereby adopts the 2011 Side Sewer Regulations that establish comprehensive regulations governing any extension, repair, replacement or connection to the District's sewer system and establishing permit requirements.

PASSED BY THE BOARD OF COMMISSIONERS OF SKYWAY WATER AND SEWER DISTRICT OF KING COUNTY, WASHINGTON, at its regular meeting held May 10, 2011.

Jon Ault, President and Commissioner

Joyce Clark, Vice President and Commissioner

ATTEST:

Don Henry, Secretary and Commissioner

Appendix B

Sewer Availability Forms

- **Availability Certificate Request**
- **King County Certificate of Sewer Availability**
- **(District) Attachment to King County Certificate of Sewer Availability**

Skyway Water and Sewer District

Availability Certificate Request

Type: ☐ Water Availability ☐ Sewer Availability

Purpose: ☐ Short Subdivision ☐ Building Permit ☐ Preliminary Plat ☐ Rezone or Other _____

You have requested District completion of a King County Water and/or Sewer Availability Certificate. To assist us in preparing the document, please provide information as requested below. Fees for this service must be paid in advance as follows:

Single Family Home/Lot	$30/each
Commercial Building/Lot	$60/each
Multiple Family Building/Lot	$60/each

The District will complete the Certificate no later than 10 working days from the date that all required information has been provided, unless there are services issues that require additional research or Board of Commissioner approval. The Certificate may be picked up or mailed out upon request.

Applicant Information

Applicant's Name: _____

Applicant's Address: _____

Phone number: _____

Property Information

1) Owner Name: _____

2) Property Address: _____

3) Property Legal Description: _____

4) Property Parcel Number: _____

5) Property Proposed Use: (include number of single-family residences, number of apartments, type of business, and flow requirement if known)

_____

_____

_____

_____

6) Provide a conceptual plan that indicates: a) the parcel(s); b) the location of proposed structure(s) and access; c) adjacent roadways; d) proposed utility layout; e) measurement scale; f) north arrow.

7) For commercial uses, provide 1 year of water use data for a similar or existing establishment to demonstrate water demand requirements.

Amount Paid: _____ Receipt#: _____

Date: _____ By: _____

King County
Department of Development and Environmental Services
900 Oakesdale Avenue Southwest
Renton, WA 98057-5212
206-296-6600 TTY 206-296-7217

SEWER AVAILABILITY:
KING COUNTY CERTIFICATE OF SEWER AVAILABILITY

For alternate formats, call 206-296-6600.

This certificate provides the Public Health - Seattle & King County Department and the Department of Development and Environmental Services with information necessary to evaluate development proposals.

Do not write in this box

Number _____ Name _____

☐ Building Permit ☐ Preliminary Plat or PUD
☐ Short Subdivision ☐ Rezone or other: _____

Applicant's name: _____
Proposed use: _____
Location (attach map and legal description if necessary):

Sewer agency information:

1. ☐ a. Sewer service will be provided by side sewer connection only to an _____ size sewer _____ feet from the site and the sewer system has the capacity to serve the proposed use.

OR

☐ b. Sewer service will require an improvement to the sewer system of:

☐ (1) _____ feet of sewer trunk or lateral to reach the site; and/or
☐ (2) The construction of a collection system on the site; and/or
☐ (3) Other (describe):

2. ☐ a. The sewer system improvement is in conformance with a County approved sewer comprehensive plan.

OR

☐ b. The sewer system improvement will require a sewer comprehensive plan amendment.

3. ☐ a. The proposed project is within the corporate limits of the district or has been granted Boundary Review Board approval for extension of service outside the district or city.

OR

☐ b. Annexation or Boundary Review Board (BRB) approval will be necessary to provide service.

4. Service is subject to the following:
   a. Connection charge: _____
   b. Easement(s): _____
   c. Other: _____

Comments: _____

I certify that the above sewer agency information is true. This certification shall be valid for one year from date of signature.

Agency name _____ Signatory name _____

Title _____ Signature _____ Date _____

Check out the DDES Web site at www.kingcounty.gov/permits

Skyway Water & Sewer District October 2011

ATTACHMENT TO
KING COUNTY
CERTIFICATE OF SEWER AVAILABILITY

The following terms and conditions apply to the attached "King County Certificate of Sewer Availability":

1. This Certificate is valid only for the real property described in the Certificate for the purpose of submission to the King County Department of Development and Environmental Services (DDES) and/or the Seattle/King County Department of Public Health.

2. Skyway Water & Sewer District makes no representations that the applicant will be able to obtain the necessary permits and authorizations from King County or any other governmental agency prior to utilization of utility service.

3. This Certificate creates no contractual relationship between Skyway Water & Sewer District and the applicant. While sewer service is available as of the Date of Issuance of the Certificate, the issuance does not guarantee that sewer will be available at the Date of Application for service. "Date of Issuance" means the date the Certificate is issued. "Date of Application" means the date the applicant applies to the District for utility service.

4. All applicable federal, state and District laws, ordinances, policies and regulations in effect at the Date of Application for utility service shall apply. All District charges, fees and assessments in effect at the Date of Connection to the District's utility system shall apply.

5. This Certificate expires one year from the date it was signed by the District's authorized representative. This Certificate may be renewed annually, provided written renewal request is received at the District's office prior to expiration of the Certificate and there are no changes in the service requested in the original Certificate.

6. This Certificate does not constitute approval of plans for the construction of the utility. Plans stamped by an engineer must be submitted to the District prior to construction. District approval of such plans shall be for a three-year period and may be renewed for an additional three-year period, provided that a written renewal request is received at the District's office prior to expiration of the plans' approval and there are no changes in the plans. Changes in governmental rules, regulations, ordinances and resolutions may require changes to approved plans. No later than 30 days after completion of construction of the utility, the District shall be provided with one set of as-built plans stamped by an engineer or land surveyor.

Appendix C

Sewer Connection Forms

- **Estimated Connection Fees**
- **Residential Sewer Use Certification Sewage Treatment Capacity Charge**
- **Application for Sewer Service Connection**
- **Hold Harmless and Indemnity Agreement**

ESTIMATED CONNECTION FEES

Service Address: _____

WATER

METER SERVICE INSTALLATION	**$** _____
LOCAL GENERAL FACILITIES CHARGE (LGFC)	**$** _____
REGIONAL CAPITAL FACILITIES CHARGE (RCFC)	**$** _____
TOTAL WATER	**$**

SEWER

DISTRICT SIDE SEWER PERMIT	**$** _____
LOCAL GENERAL FACILITIES CHARGE	**$** _____
KING COUNTY RIGHT OF WAY PERMIT And INSPECTION FEES (2 hr. minimum $____ if applicable)	**$** _____
TOTAL SEWER	**$**
TOTAL WATER & SEWER	**$**

*Charges over minimum will be billed at permit close out.

The above estimate is based on information provided by the project representative requesting Water/Sewer Availability. It is an estimate only. Actual charges will be determined at the time of meter installation or sewer connection. All charges must be paid in full before meter installation and/or side sewer connection is scheduled.

_____

Prepared By Date

Department of Natural Resources and Parks
Wastewater Treatment Division
King County

Residential Sewer Use Certification Sewage Treatment Capacity Charge

- To be completed for all new sewer connections, re-connections, or change of use of existing connections.
- This form does not apply to repairs or replacements of existing sewer connections within five years of disconnect.

Please Print or Type

For King County Use Only

Account #_____

No. of RCEs_____

Monthly Rate _____

_____

_____

_____

_____

_____

_____
Property Street Address

_____
City State ZIP

_____
Owner's Name

_____
Owner's Mailing Address

_____
City State ZIP

_____
Owner's Phone Number (with Area Code)

_____
Property Contact Phone Number (with Area Code)

Party to be Billed (if different than Owner):

_____
Name

_____
Street Address

_____
City State ZIP

_____
Sewer District / Agency Contact & Phone Number

_____
Date of Sewer Connection

_____
Side Sewer Permit Number

_____
Required: Property Tax Parcel Number

_____
Subdivision Name Subdivision Number

_____
Lot Number Block Number

_____
Building Name

Please check appropriate box: **Residential Customer Equivalent (RCE)**

☐ Single-family (free standing, detached only) 1.0

Multi-Family (any shared walls):

☐ Duplex (0.8 RCE per unit) 1.6

☐ 3-Plex (0.8 RCE per unit) 2.4

☐ 4-Plex (0.8 RCE per unit) 3.2

☐ 5 or more (0.64 RCE per unit)
No. of Units _____ x 0.64 = ☐

☐ Mobile home space (1.0 RCE per space)
No. of Spaces _____ x 1.0 = ☐

If Multi-family, will units be sold individually? ☐ Yes ☐ No

If yes, will this property have a Homeowner's Association? ☐ Yes ☐ No

Please report any demolitions of pre-existing building on this property. Credit for a demolition may be given under some circumstances.

Demolition of pre-existing building? ☐ Yes ☐ No

Was building on Sanitary Sewer? ☐ Yes ☐ No

Was Sewer connected before 2/1/90? ☐ Yes ☐ No

Sewer disconnect date: _____

Type of building demolished?_____

Request to apply demolition credit to multiple buildings?
☐ Yes ☐ No

Pursuant to King County Code 28.84, all sewer customers who establish a new service which uses metropolitan sewage facilities shall be subject to a capacity charge. The amount of the charge is established annually by the Metropolitan King County Council as a rate per month per residential customer or residential customer equivalent for a period of fifteen years. The purpose of the charge is to recover costs of providing sewage treatment capacity for new sewer customers. **All future billings can be prepaid at a discounted amount.**

Questions regarding the capacity charge or this form should be referred to King County Wastewater Treatment Division at 206-684-1740.

I certify that the information given is correct. I understand that the capacity charge levied will be based on this information and any deviation will require resubmission of corrected data for determination of a revised capacity charge.

Signature of Owner/Representative _____ Date _____

Print Name of Owner/Representative_____

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

Non-Residential Sewer Use Certification

- To be completed for all new sewer connections, reconnections or change of use of existing connections.
- This form does not apply to repairs or replacements of existing sewer connections within five years of disconnect.

Please Print or Type

For King County Use Only

Account # _____

No. of RCEs _____

Monthly Rate _____

_____

_____

_____
Property Street Address

_____
City State ZIP

_____
Owner's Name

Subdivision Name _____ Lot # _____

Subdiv. # _____ Block # _____

Building Name _____
(if applicable)

(_____) _____
Owner's Phone Number (with Area Code)

(_____) _____
Property Contact Phone Number (with Area Code)

Owner's Mailing Address

_____

_____

Property Tax ID # _____

Party to be Billed (if different from owner) _____

_____

_____

_____

City or Sewer District _____

Date of Connection _____

Side Sewer Permit # _____

Please report any demolitions of pre-existing building on this property. Credit for a demolition may be given under some circumstances.

Demolition of pre-existing building? ☐ Yes ☐ No

Was building on Sanitary Sewer? ☐ Yes ☐ No

Was Sewer connected before 2/1/90? ☐ Yes ☐ No

Sewer disconnect date: _____

Type of building demolished? _____

Request to apply demolition credit to multiple buildings? ☐ Yes ☐ No

A. Fixture Units

Fixture Units x Number of Fixtures = Total Fixture Units

Kind of Fixture	Fixture Units		No. of Fixtures		Total Fixture Units
	Public	Private	Public	Private	
Bathtub and Shower	4	4			
Shower, per head	2	2			
Dishwasher	2	2			
Drinking fountain (each head)	1	.5			
Hose bibb (interior)	2.5	2.5			
Clotheswasher or laundry tub	4	2			
Sink, bar or lavatory	2	1			
Sink, Clinic flushing	8	8			
Sink, kitchen	3	2			
Sink, other (service)	3	1.5			
Sink, wash fountain, circle spray	4	3			
Urinal, flush valve, 1 GPF	5	2			
Urinal, flush valve, >1 GPF	6	2			
Urinal, waterless	0	0			
Water closet, tank or valve, 1.6 GPF	6	3			
Water closet, tank or valve, >1.6 GPF	8	4			
				Total Fixture Units	

Residential Customer Equivalent (RCE)
20 fixture units equal 1.0 RCE

$$\frac{\text{Total No. of Fixture Units}}{20} = \text{[ ]} \text{ RCE}$$

B. Other Wastewater Flow

(in addition to Fixture Units identified in Section A)

Type of Facility/Process:

_____

Estimated Wastewater Discharge:

_____ Gallons/days

Residential Customer Equivalents (RCE):
187 gallons per day equals 1.0 RCE

$$\frac{\text{Total Discharge (gal/day)}}{187} = \text{[ ]} \text{ RCE}$$

C. Total Residential Customer Equivalents:

(add A & B)

A [ ]
\+
B [ ]

= [ ] RCE

Pursuant to King County Code 28.84, all sewer customers who establish a new service which uses metropolitan sewage facilities shall be subject to a capacity charge. The amount of the charge is established annually by the King County Council at a rate per month per residential customer or residential customer equivalent for a period of fifteen years. The purpose of the charge is to recover costs of providing sewage treatment capacity for new sewer customers. All future billings can be prepaid at a discounted amount. **All future billings can be prepaid at a discounted amount.**

Questions regarding the capacity charge or this form should be referred to King County's Wastewater Treatment Division at 206-684-1740.

I certify that the information given is correct. I understand that the capacity charge levied will be based on this information and any deviation will require resubmission of corrected data for determination of a revised capacity charge.

Signature of Owner/Representative _____ Date _____

Print Name of Owner/Representative _____

6723 South 124th Street
Seattle, WA 98178
206-772-7343
FAX 206-772-5860

APPLICATION FOR SEWER SERVICE CONNECTION

SERVICE ADDRESS_____

PARCEL #_____ LEGAL DESCRIPTION_____

OWNER NAME _____ PHONE _____

MAILING ADDRESS _____

Work to be Done:

☐ New Connection	OR	☐ Upgrade/Repair
☐ By Contractor	OR	☐ By Owner
☐ Inside Property	OR	☐ Outside Property
☐ Irrigation Meter	OR	☐ No Irrigation Meter
☐ Single Connection	OR	☐ Joint Connection

Dwelling Type: ☐ Single Family ☐ Multi-Family #Units_____ ☐ Commercial

Basement: ☐ Yes ☐ No

ULID: ☐ Yes ☐ No ☐ **Zone 5 Acct/File Incorporated**

CONTRACTOR NAME _____ PHONE _____

CONTRACTOR ADDRESS _____

CONTRACTOR REG.#_____ EXP.DATE _____

☐*Current Contractor Registration Provided* ☐ *Current Certificate of Insurance provided*

ESTIMATED CONNECT DATE _____

****

Application is hereby made for sewer service from Skyway Water and Sewer District. The applicant agrees to pay for such service as now and in the future required by the District and abide by all rules and resolutions concerning such service. Applicant is aware and agrees that failure to pay for the service in the amount and time required by the District will result in a lien against the property being filed and/or suit by Skyway Water and Sewer District as provided in RCW 57.08.081.

It is understood and agreed that Skyway Water and Sewer District does not have the authority to permit side sewer construction within wetlands, steep slopes, setbacks or other sensitive or restricted areas. Nothing in this application or the side sewer permit shall be construed to give such permission. Permits from the appropriate agency with jurisdiction (i.e. King County) for construction within such areas shall be the applicant's responsibility and are required in addition to the authority granted by this application/permit.

It is further understood and agreed that Skyway Water and Sewer District is not liable for interruption of service, whether caused by accident, construction or any other cause. It is understood/agreed that fees below are for connection only. Skyway Water and Sewer District shall remain the owner of the sewer main. The sewer service stub and side sewer shall be owned and maintained by the property owner.

I HEREBY ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND CONDITIONS

_____ _____

Property Owner/Representative for Owner *Date*

**********(For Office Use Only)**********

☐ Map and Legal Description Provided

Receipt #_____ Date:_____

Side Sewer Permit# _____

☐ Right of Way Permit Application

Date _____ By _____

☐ Right of Way Permit

Date _____ #_____

☐ King County Capacity Certification Signed

○ Mailed to KC - Date:_____ By:_____

○ Copy to Customer

☐ As Built Record Completed/Filed

Sewer Inspect Date _____ By: _____

☐ Recorded Easement Copy Provided

☐ Hold Harmless/Indemnity Signed

☐ **KC Right of Way Fees Billed/Paid**

Account Set-Up Date_____

Service Begin Date _____

Assigned Account # _____

SEWER FEES	
District Side Sewer Permit	$_____
Local General Facilities Charge	$_____
King County Right Of Way Permit and Inspection Fees	$_____
(2-hour minimum $350 if applicable)	
Charges over minimum will be billed at permit close out	
City of Renton System Development Fee	$_____
TOTAL SEWER	$_____

KING COUNTY SEWER TREATMENT CAPACITY CHARGE

Residential $ _____

Non Residential *(2-4 Units = 0.8 RCEs)*

(5+ Units = 0.64 RCEs) $ _____

The purpose of this charge is to pay for increasing sewage treatment capacity to serve <u>new</u> connections to the sewer system. This charge will be billed directly to the customer by King County DNR Wastewater Treatment Division. For questions regarding this charge, please contact King County at 206-684-1740.

(For Commercial Accounts Only)

Assigned Route#:_____ Seq. #_____

No. Reads: ☐1 OR ☐ 2 (if irrigation meter)

☐ Account Included in Metro Quarterly Report

SKYWAY WATER & SEWER DISTRICT
Hold Harmless and Indemnity Agreement

THIS AGREEMENT is made by and between Skyway Water and Sewer District of King County, Washington, a municipal corporation ("District") and the undersigned _____.

RECITALS

The undersigned requests approval for the connection of its side sewer to the District's public sewer system for the property legally described in the attached Exhibit A, which is incorporated herein by reference. The undersigned represents and warrants that it is the owner according to the records of King County of the property legally described in Exhibit A.

The undersigned intends to install his/her own side sewer and not utilize the services of a side sewer contractor.

NOW, THEREFORE in consideration of the mutual provisions contained herein the parties agree as follows:

1. **Consent.** District consents to the undersigned connecting its side sewer to the District's sewer system in accordance with the District's Side Sewer Regulations as adopted by Resolution No. 90-12-129, including any amendments.

2. **Hold Harmless**. The undersigned agrees at its sole expense to defend, indemnify and hold District harmless from any and all costs, expenses, losses, damages, claims or other obligations and liabilities of every nature or kind whatsoever arising form or out of the installation and connection of its side sewer line to the District's sewer system.

3. **Attorney's Fees.** In the event a dispute arises between the parties concerning the terms of its agreement, the prevailing party in such dispute shall receive its attorneys' fees and costs.

DATED this _____ day of _____, 20____.

Skyway Water & Sewer

_____

Property Owner

_____

_____

Appendix D

Minimum Side Sewer Grade, Elevation, and Depth of Cover Release

MINIMUM SIDE SEWER GRADE, ELEVATION, AND DEPTH OF COVER RELEASE

1. Skyway Water & Sewer District, a Municipal corporation in King County, Washington ("District"), owns and operates a sanitary sewer system in King County, Washington.
2. The undersigned owns real property as legally described on Exhibit "A" attached hereto and incorporated herein by this reference ("Property"). The undersigned has applied to the District to construct a side sewer to connect the Property to the District's sewer system.
3. If it is determined that one or more of the following conditions apply to the Property Owner's side sewer, the Property Owner shall sign and provide the District with a "Minimum Side Sewer Grade, Elevation, and Depth of Cover Release waiver.
4. **Grade:** District policy requires that all side sewers shall be laid on a grade of not less than one-quarter inch per foot (2%). However, the proposed grade of the side sewer to connect the Property to the District's sewer system will be less than one-quarter inch per foot (2%). The District will allow the undersigned to install and connect a side sewer at less than the required grade of 2 percent for connection of the Property to the District's sewer system on the condition that such connection be made in accordance with all other District policies, rules and regulations regarding such side sewer connection.
5. **Elevation:** If the side sewer elevation results in an unusual danger of backup, as described in Section 7.13 of the District's Side Regulations. The undersigned shall install a back-flow prevention device as determined and required by the District in its discretion on the side sewer providing service to the Property.
6. **Depth of Cover:** If the depth of cover over the side sewer pipeline is less than prescribed by Section 7-07 of the District's Side Sewer Regulations.
7. In consideration of the District's approval of the side sewer connection, the undersigned agrees to accept full responsibility for and to defend, indemnify, and hold the District harmless from any liability, damages, and/or losses or costs of any nature of kind for any injury or damage to personal or real property resulting from, or in any way related to, the side sewer connection authorized herein and/or sewer backups in the side sewer and/or on the Property.
8. This agreement and release shall be recorded by the District with the King County Office of Records and Elections upon its execution by the parties herein. The provisions of this agreement and release shall be a covenant running with the Property described on Exhibit "A" attached hereto, and shall be binding upon all parties and their successors and assigns. Recording fees shall be paid by the property Owner. The effect of said release waiver shall be to release the District from all future claims for damages due to the installation of said side sewer.

9. Variance in District Standards (check one minimum)
   A. Grade Release _____
   B. Elevation Release _____
   C. Inadequate Depth of Cover _____

SKYWAY WATER & SEWER DISTRICT ("District")

Dated: _____ By: _____ (printed)

Signature_____

Title _____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the _____ of SKYWAY WATER & SEWER DISTRICT to be the free and voluntary act of such municipal corporation for the uses and purposes mentioned in the instrument.

Dated: _____ NAME: _____
(Print Name)

Notary Public in and for the State of Washington,

Commission Expires: _____

PROPERTY OWNER

Dated: _____ By: _____ (printed)

Signature_____

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated: _____ NAME: _____
(Print Name)

Notary Public in and for the State of Washington,

Commission Expires: _____

PROPERTY OWNER

Dated: _____ By: _____ (printed)

Signature_____

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated: _____ NAME: _____
(Print Name)

Notary Public in and for the State of Washington,

Commission Expires: _____

Appendix E

Declaration of Restrictive Covenants & Notice (Samples)

- **For Sanitary Sewer Service - Sample (2 pages)**
- **For Grinder Pump Side Sewer - Sample (4 pages)**

When recorded return to:
Skyway Water & Sewer District
6723 South 124th Street
Seattle, WA 98178

DECLARATION OF RESTRICTIVE COVENANTS & NOTICE FOR SANITARY SEWER SERVICE

Grantor: _____
Grantee: Skyway Water & Sewer District, a municipal corporation
Legal Description:

_____
__
_____
__
Tax Parcel Number _____

This Declaration of Restrictive Covenants ("Declaration") running with the land is made this _____day of _____, 20_____ by _____ for the benefit of their selves, their heirs, executors, administrators , successors and assigns.

RECITALS

A. _____, hereinafter ("Declarant") is the owner of the following described real property ("Property") situate in the County of King, State of Washington:

B. Declarant requests (water/sanitary sewer) service from Skyway Water and Sewer District ("District / Grantee") to be provided to the above described lot by a service connection that is located about _____ feet from the sanitary sewer main *with the meter being located near the water main* (for water only).

Now, therefore, the Declarant does hereby make the following restrictive covenants:

1. Sanitary Sewer Service Connection. The Declarant shall be allowed to connect to the District's (water/sanitary sewer) system upon compliance with the District's resolutions and regulations plus the payment of all applicable fees, costs and charges.

2. Location of Main. The sanitary sewer service connection shall be located about _____feet from the sanitary sewer main in a private utility easement. Declarant shall be responsible for the repair, maintenance and replacement of the sanitary sewer service connection located between the sewer main and the residence.
3. Run with the Land. The covenants and restrictions contained in this Declaration shall run with the land and inure to the benefit of and be binding on all persons claiming under them. In the event the original Declarant sells the property, then the new owner(s) shall be responsible for complying with the terms of these Covenants.

DATED THIS _____day of _____, 20_____

DECLARANT:

_____

_____

STATE OF WASHINGTON)

)ss.

COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ and _____ are the persons who appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____day of _____, 20____

_____

NOTARY PUBLIC in and for the State

of Washington, residing at _____

My Appointment expires _____

When recorded return to:
Skyway Water & Sewer District
6723 South 124th Street
Seattle, WA 98178

Skyway Water & Sewer District

DECLARATION OF RESTRICTIVE COVENANT

& NOTICE FOR GRINDER PUMP SIDE SEWER

Grantor: (last name, first) _____
Site Address: _____
Legal Description: (abbreviated) _____
Tax Parcel No. _____
Grantee: Skyway Water & Sewer District, a Municipal Corporation

This Declaration of Restrictive Covenants ("Declaration") running with the land is made this _____ day of _____20___ by _____, _____ for the benefit of themselves, their heirs, executors, administrators, successors and assigns.

RECITALS

A. Skyway Water & Sewer District's ("District / Grantee") sewer construction standards provide for sewer service to be provided by gravity flow. In cases where gravity flow is not available the District will allow, if certain conditions are met, service by a grinder pump system, provided that connection to a gravity flow system be made when such gravity service becomes available.

B. _____, _____, hereinafter ("Declarant"/ "Grantor") are the owners of the real property ("Property") legally described in attached Exhibit A. The street address is _____, Seattle, WA.

C. The District will allow Declarant to connect to the District's sewer system in order to provide service to Declarant's Property, subject to the conditions set forth in these Covenants.

Now, therefore, the Declarant does hereby make the following restrictive covenants:

1. Temporary Sanitary Sewer Service Through a Private Pressure Sanitary Side Sewer. The Declarant shall be allowed to connect to the District's sewer system upon compliance with the District's regulations and resolutions and the payment of all fees and costs. Initial service shall be provided on a temporary of interim basis to the

Property by pumping into a private pressure side sewer that flows into the District's gravity sewer system at _____.

2. Service to Lot. A map showing the Property to be served by the private pressure side sewer and grinder pump is attached and marked as Exhibit B.

3. Private Grinder Pump System and Pressure Side Sewer Line. The Property shall be served by a grinder pump system and private pressure side sewer line meeting the District's standards as set forth in the most current version of the District's Guidelines for Construction of Water and Sanitary Sewer Facilities. Declarant or subsequent property owner shall be responsible for the construction, installation, maintenance, repair or replacement of the grinder pump and private pressure side sewer line serving the Property until such time as gravity sewer service is available, as stated in paragraph No. 6 below.

4. Sewer Connection Costs. Connection costs to public sewers include but are not limited to the following:

   a) Side Sewer Permit Fee (the fee in effect at the time of application; the fee for the year 20____ is $_____); and
   b) Capital facilities charges; and
   c) All other fees, costs and charges, including but no limited to any applicable latecomer's fees, charged by the District or any other agency with authority and jurisdiction to levy fees, costs or charges.

5. Future Local Improvement District. In the event a Utility Local Improvement ("ULID") is proposed for the formation of a gravity sewer system in the area that includes the Property, Declarant agrees not to protest the formation of said ULID. If a ULID is formed and a final assessment roll adopted, a credit will be provided for any capital facilities charges that have been paid.

6. Future Gravity Sewer. Declarant or subsequent property owner agrees that the Property described above shall be connected to public gravity sewers when such service becomes available, but in no event later than 90 days after the issuance of a notice of gravity sewer service availability by the District. Declarant shall pay all costs of connection to the public sewer, including the side sewer connection, all costs of abandoning the grinder pump system including disconnection of the side sewer from the public sewer main, and complying with Health Department. Department of Ecology, and District rules and regulations regarding abandonment of grinder pumps and associated side sewers.

7. Run with the Land. The covenants and restrictions contained in this Declaration shall run with the land and inure to the benefit of and be binding on all persons claiming under them for a period of fifty (50) years from the date this Declaration is recorded. In the event the original Declarant sells the Property, then the new owner(s) of record shall be responsible for complying with the terms of these Covenants, including but not limited to maintenance, repair and / or replacement of the private pressure side sewer line and grinder pump the costs of connection to the public gravity sewer, and the cost for grinder pump and associated side sewer disconnection and abandonment, as described in paragraph No. 6 above. The District shall record this Declaration with King County Department of Records and Elections.

8. Hold Harmless. Declarant shall defend, indemnify and hold harmless the District, its officers, employees and agents for all losses and damages to Declarant or any third party arising out of or caused by the grinder pump unit for any reason, including but not limited to sewage overflow, power failure, and / or temporary loss of service. Losses and damages include but are not limited to property damage or personal injury or death.

DATED THIS ____day of _____, 20____

DECLARANT(S):

_____

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____day of _____, 20____

_____
NOTARY PUBLIC in and for the State of
Washington, residing at _____
My Appointment expires _____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____day of _____, 20____

_____
NOTARY PUBLIC in and for the State of
Washington, residing at _____
My Appointment expires _____

Appendix F

Easement Examples

- **Private Sewer Utility Easement- Sample (5 pages)**
- **Joint Side Sewer Utility Easement Agreement- Sample (6 pages)**

When recorded return to:

GRANTEE ADDRESS here

PRIVATE SEWER UTILITY EASEMENT

Grantor(s): _____

_____
(Last name, first name of each Subject Party)

Site Address: _____

King County Assessor's Tax Parcel No.: _____

Legal Description of each Subject Property (abbreviated): _____

_____

_____

Grantee(s): _____

_____
(Last name, first name of each Subject Party)

Site Address: _____

King County Assessor's Tax Parcel No.: _____

Legal Description of each Subject Property (abbreviated): _____

_____

_____

THIS SEWER UTILITY EASEMENT is between _____
_____, hereinafter "Grantor(s)", and _____
_____, hereinafter, "Grantee(s)."

For and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged, Grantor hereby conveys, grants and warrants to Grantee a permanent non-exclusive easement ("Easement") for a sewer utility line, including all appurtenances related thereto, under, over, through, upon, and across the real property legally described on the attached Exhibit A and as shown on the map attached as Exhibit B.

Grantee shall have the right, without prior institution of any suit or proceeding at law, at times as may be necessary, to enter upon the Easement and adjoining property owned by Grantor for the purposes of installing, constructing, operating, maintaining, removing, repairing, replacing and using the sewer utility line, together with all the connections and appurtenances thereto.

The Grantee shall, if the Easement is disturbed by the maintenance, removal, repair, or replacement of the sewer utility line or appurtenances restore the surface of the Easement to a condition substantially equal to the condition that existed prior to the commencement of the maintenance, removal, repair, or replacement.

The Grantor shall have the right to use the surface of said Easement area so long as Grantor's use does not interfere with the work of repairing, removing, replacing and adding to the sewer utility line and appurtenances, provided that no permanent building or structure of any kind shall be located on said Easement. The Grantor shall not plant trees, shrubs or vegetation having deep root patterns that may cause damage to or interfere with the utilities to be placed within the Easement. The Grantor shall not change the ground surface elevation within the Easement. The construction and installation of asphalt or concrete parking surfaces by Grantor shall be a permitted use.

This easement and the covenants herein shall be covenants running with the land and shall benefit and bind the parties and their respective successors and assigns. Grantor warrants that Grantor has good title to the property, and warrants Grantee's title to and quiet enjoyment of the Easement conveyed herein.

Dated this _____ day of _____, 20___

GRANTOR(S)

_____

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ _____ is the person who appeared before me, and said person(s) acknowledged that he/she signed this instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____day of _____, 20__

_____

NOTARY PUBLIC in and for the State of Washington, residing at _____

My Appointment expires _____

EXHIBIT A

Insert
LEGAL DESCRIPTION
here

EXHIBIT B

Insert
MAP
here

JOINT SIDE SEWER UTILITY EASEMENT AGREEMENT
(TWO PARTY)

Grantor(s): _____
_____
(Last name, first name of each subject party)
Grantor's Site Address: _____
Grantor's King County Assessor's Tax Parcel No.: _____
Grantor's Property Legal Description (abbreviated): _____
_____

Grantee(s): _____
_____
(Last name, first name of each subject party)
Grantee's Site Address: _____
Grantee's King County Assessor's Tax Parcel No.: _____
Grantee's Property Legal Description (abbreviated): _____
_____
THIS JOINT SIDE SEWER UTILITY EASEMENT AGREEMENT is between _____
_____ and _____
_____
_____ is the owner of the real property legally described on the attached Exhibit A and as shown on the map attached as Exhibit B.

_____ is the owner of the real property legally described on the attached Exhibit C and as shown on the map attached as Exhibit D.
The owners want to establish a side sewer easement for the benefit of each of said properties.
For and in consideration of the mutual covenants stated herein, the parties agree as follows:
Section 1. The side sewer shall be constructed as follows: (See attached legal description and map showing location of side sewer.)
Section 2. The cost of the construction of the side sewer and appurtenances shall be borne by the property owners as follows: (set forth mutual agreement on costs)
Section 3. Each property owner conveys, grants and warrants to the other property owner a permanent non-exclusive easement ("Easement") for a sewer line, including appurtenances, under, over, through, upon, and across the real property legally described as follows:

_____
_____
_____
Section 4. Grantees shall have the right, without prior institution of any suit or proceeding at law, at times as may be necessary, to enter upon the Easement and adjoining property owned by Grantors for the purposes of installing, constructing, operating, maintaining, removing, repairing, replacing and using the sewer line, together with all the connections and appurtenances thereto.
Section 5. Grantees shall, if the Easement is disturbed by the maintenance, removal, repair, or replacement of the sewer line or appurtenances, restore the surface of the Easement to a condition substantially equal to the condition that existed prior to the commencement of the maintenance, removal, repair, or replacement.
Section 6. The Grantors shall have the right to use the surface of said Easement area so long as Grantors' use does not interfere with the work of repairing, removing, replacing and adding to the sewer line and appurtenances, provided that no permanent building or structure of any kind shall be located on said Easement. Grantors shall not plant trees,

shrubs or vegetation having deep root patterns, which may cause damage to or interfere with said utilities.

Section 7. The cost of maintenance, repair or reconstruction of the sewer used in common by the property owners shall be borne in equal shares.

Section 8. This easement and the covenants herein shall be covenants running with the land and shall benefit and bind the parties and their respective successors and assigns. Grantors warrant that Grantors have good title to the property, and warrants Grantees' title to and quiet enjoyment of the Easement conveyed herein.

Dated this _____ day of _____, 20____.

GRANTOR(S)

_____

_____

GRANTEE(S)

_____

_____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____day of _____, 20_____

_____
NOTARY PUBLIC in and for the State
of Washington, residing at _____
My Appointment expires _____

EXHIBIT A

Insert
LEGAL DESCRIPTION
here

EXHIBIT B

Insert
MAP
here

EXHIBIT C

Insert
LEGAL DESCRIPTION
here

EXHIBIT D

Insert
MAP
here

Appendix G

General, Gravity, and Pressure Sewer Notes

GENERAL NOTES

1. All workmanship and materials shall conform to requirements of the Skyway Water & Sewer District (District). All work shall be performed in accordance with the most current edition of the State of Washington Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT) including the APWA Supplement to Division 1, and the Washington State Department of Ecology's (DOE) "Criteria for Sewage Works Design", current edition, except as otherwise amended, modified, or specified herein.
2. NAVD 88 datum as used by King County shall be used for all vertical control. Horizontal control shall be NAD 83/91 as used by King County.
3. The Developer/Contractor shall ensure that all approvals and permits required by the District, King County, and other regulatory agencies shall be obtained prior to the start of construction. If construction is to take place in the County right-of-way, the Developer/Contractor shall contact the District in writing regarding application to the King County for the right-of-way permits. The construction operation must follow all provisions of the permit.
4. The Developer/Contractor shall pay for all State, County, City, and District inspection and permit fees.
5. All governmental safety regulations shall be strictly adhered to, including OSHA, WISHA, and the Washington Department of Labor and Industry.
6. The Developer/Contractor has the responsibility to comply with the requirements of other agencies.
7. The Developer must receive written approval of the Plans from the District prior to scheduling a pre-construction conference. The pre-construction conference shall be held with King County and the District prior to the start of construction.
8. It shall be the responsibility of the Contractor to have a copy of the approved Contract Documents on the site at all times.
9. The Developer/Contractor shall be fully responsible for the horizontal and vertical location and protection of all existing utilities. Prior to beginning construction, the Developer/Contractor shall call "One Call" (1-800-424-5555) for existing utility locations. "One Call" must be notified within ten working days prior to excavation at a particular location.
10. The Developer/Contractor is responsible for determining the extent of any hazard created by existing below-ground and above-ground utilities in all areas and shall follow procedures during construction as required by all applicable laws and regulations. Prior to construction, the Contractor shall meet with the utility owners and determine the extent of hazard and remedial measures and shall take whatever precautions may be required.

11. Prior to construction, the Developer/Contractor shall take and submit to the District pre-construction photos or video meeting the requirements of Section 1.16 of the Skyway Water & Sewer Development Guidelines. The photos or video shall clearly show the existing condition of the areas where construction will occur. If a disagreement occurs after construction is complete regarding the restoration to a pre-existing condition and photos or a video cannot verify the condition, it shall be the Developer/Contractor's responsibility to restore the area to a condition that is acceptable to the property owner at no expense to the District.
12. All areas that contain improvements disturbed by the construction process shall be restored to a condition equal to or better than was present prior to construction.
13. Four (4) sets of shop drawings and/or catalog cuts shall be submitted to the District for approval prior to that item's installation. Items proposed for use shall be designated by the use of an "arrow" directed toward that item on the submitted information. It is recommended that materials or parts not be ordered prior to review and acceptance by the District.
14. The Contractor shall furnish all materials.
15. The Contractor shall install equipment in accordance with the manufacturer's recommendations.
16. All proposed changes to the approved design shall first be submitted for review and approval by the District. The installation of the water and/or sewer facilities and appurtenances shall be in accordance with the Construction Plans, as accepted by the District's Engineer. Any deviation or changes are to be accepted by the District's Engineer before the change is incorporated into the work.
17. The Contractor shall notify the District in the event of discovery of poor soils, standing ground water or discrepancies from the Plans in grades, locations and construction of utilities, structures, and other existing conditions.
18. The Contractor shall provide and maintain erosion and sediment control measures as required by King County and/or as directed by the District. This includes, but is not limited to, using catch basin inlet protection, silt fence, hay bales, hydroseeding, mulching, construction entrances, street sweeping, a storm water tank(s) (Baker tank), and/or a vactor truck. At the pre-construction conference, the Contractor shall designate a WSDOT-certified Erosion and Sediment Control Manager, and the Developer/Contractor shall provide a 24-hour telephone number.
19. The Contractor shall keep streets and driveways clean at all times by sweeping. Washing of streets and driveways will not be allowed. Dust resulting from the sweeping operation shall be controlled/contained and shall not leave the project site.

20. The Contractor shall furnish, install, and operate all necessary equipment to keep excavations above the foundation level free from water during construction. The Contractor shall dewater and dispose of the water so as not to cause injury to public or private property or nuisance to the public. Sediment from the water shall be captured, prevented from leaving the work site, and properly disposed of by the Contractor. A storm water tank(s) (Baker tank) may be required to effectively settle out the solids prior to discharging the water.
21. Working with AC pipe requires registration through King County. The Contractor shall provide a copy of the accepted registration to the District. When the abandonment of AC pipe is completed, any AC water and sewer pipe greater than one foot in length may be buried at the project site if it is covered with three feet or more of non-asbestos fill materials. All asbestos-containing waste materials, including pipe fragments, protective clothing, HEPA filters, and asbestos-contaminated containers and debris, shall be sealed in a leak-tight, labeled container while adequately wet, and disposed of in accordance with Puget Sound Air Pollution Control Agency Asbestos Control Standards, Regulation III, Article 4.
22. Construction signing and traffic control shall be per the 'Manual of Uniform Traffic Control Devices' (MUTCD). The Contractor shall submit County-approved traffic control plans to the District for informational purposes. At the pre-construction conference, the Contractor shall designate their Traffic Control Manager and Traffic Control Supervisor, and the Developer/Contractor shall provide 24-hour telephone numbers.
23. The Contractor shall safely maintain traffic and continuous access to private and/or public property. The Contractor shall employ flaggers at locations of lane closures and where portions of intersections will be blocked to traffic.
24. After completion of all items shown in the Construction Documents and before acceptance of the project, the Contractor shall obtain a 'punch list' prepared by a representative of the District detailing remaining items of work to be completed. All items of work shall be completed prior to the District's acceptance of the work.
25. The Developer/Contractor shall provide the District with certified as-built/record drawings upon completion of construction. The Drawings shall contain information including, but not limited to, water and/or sewer system connection/intertie locations, and the size, location, and depth of the actual improvements and of existing underground utilities. The District may require bi-weekly review of the as-built/record drawings during the course of the project.
26. The Developer/Contractor shall provide a two-year warranty on all workmanship and material following acceptance of the project by the District.
27. The approval of these Plans by the District does not relieve the Developer or Contractor of the responsibility to comply with the requirements of other governing agencies.

SEWER NOTES

1. The Developer/Contractor shall be responsible for the field staking of all sewer mains. The staking must be accomplished by a Washington State-licensed engineering or surveying firm qualified to perform such work, at the Developer/Contractor's expense.
2. The District shall be notified a minimum of two full working days in advance of commencing work on a sanitary sewer connection. A District representative shall be present at the time of the connection.
3. The Contractor shall pothole to verify the location and depth of utility crossings and connections prior to beginning construction in that area.
4. The Contractor shall be responsible for verifying all existing pipe types and sizes for couplings, connections, and live taps, at their expense. Parts must be on-site prior to scheduling cut-ins or connections. All charges for cut-ins and live taps are the responsibility of the Developer/Contractor.
5. The Contractor shall furnish a watertight plug of the appropriate size, which shall be installed in the end of the sewer pipe any time that work is delayed or stopped.
6. A minimum of ten (10) feet of horizontal clearance must be maintained between potable water facilities and sanitary sewer facilities unless otherwise allowed by the District.
7. A minimum of 1-foot vertical separation shall be maintained between all utilities with the exception of water crossings, where an 18-inch minimum vertical separation is required. If the required vertical separation absolutely cannot be obtained, Ethafoam shall be installed between the utilities.
8. The Contractor shall store and handle pipe and fittings per the manufacturer's recommendations and shall meeting the Skyway Water & Sewer District's requirements. Stored PVC and HDPE pipe and fittings shall be kept cool, out of direct sunlight, and covered with an opaque material. Impact damage to and dragging of the pipe and fittings shall be prohibited. Pipes and/or fittings not confirming to these requirements or damaged in transit shall be rejected by the District.
9. All PVC/HDPE side sewer piping shall be installed with continuous tracer tape installed 12" to 18" under the proposed finished subgrade.
10. Ductile iron pipe shall be Class 52, unless otherwise specified, and shall conform to the latest revisions of the ASA A21.51 and AWWA C151 specifications. Ductile iron pipe for all sanitary sewer applications shall be provided with an interior coating/lining of polyethylene meeting the requirements of ASTM D1248 or Protecto 401 ceramic epoxy, 40 mil minimum thickness. A bituminous coating shall be applied to the pipe's exterior.
11. Ductile iron fittings shall meet current application ASA A21.10 (AWWA C110) and ASA A21.11 (AWWA C111) specifications. Ductile iron fittings for all sanitary sewer applications shall be provided with an interior coating/lining of polyethylene meeting the requirements of ASTM D1248 or Protecto 401 ceramic epoxy, 40 mil minimum thickness. A bituminous coating shall be applied to the fitting's exterior.

12. Sewer service stub markers shall be plastic, white in color, non-biodegradable, metal core or backing marked sewer that can be detected by a standard metal detector.
13. Bedding of the pipelines and compaction of backfill material shall be required in accordance with the Standard Specifications.
14. The Contractor shall provide and install protective devices in order to prevent pipe degeneration at those locations where pipe of dissimilar metal are joined, or where metallic pipe is being installed and cathodic protection has been employed on an adjacent or crossing pipeline.
15. Prior to backfill, all mains and appurtenances shall be reviewed and approved by the District. Approval shall not relieve the Developer/Contractor for correction of any deficiencies and/or failures as determined by subsequent testing and inspections. It shall be the Developer/Contractor's responsibility to notify the District at least two full working days in advance of the required reviews and tests.
16. Sewer system trenches shall be backfilled and compacted to 95 percent of the soil's maximum density in right-of-way and improved areas (roads, driveways, sidewalks, etc.) and compacted to 90 percent of the soil's maximum density in unimproved areas (lawns, landscaping, natural vegetation, etc.), as determined by the Modified Proctor test, ASTM D1557. Compaction testing is required for all open cuts. Test depth and frequency shall be determined by the District. Testing shall be accomplished at the Developer/ Contractor's expense.
17. Recycled concrete SHALL NOT be allowed as trench backfill, or in lieu of crushed surfacing top course.
18. Existing sewer facilities being abandoned and/or abandoned crossing pipes, shall be made watertight by plugging/capping prior to backfilling at their inlets/outlets. The plugs/caps shall be properly fitted mechanical fittings or commercial concrete. Commercial concrete plugs shall extend into the pipe a minimum of two pipe diameters.
19. Water settling of trenches shall not be allowed.
20. Temporary street patching shall be allowed for as approved by the King County utility inspector and the District. Cold mix temporary patch shall be placed and maintained in such a manner as to prevent traffic hazards until a permanent pavement patch has been placed. Temporary patching shall be removed and properly disposed of when pavement is placed. If the temporary patching is not adequately constructed and/or maintained, the District, after notification to the Contractor, has the option of installing additional cold mix at the Developer/Contractor's expense.
21. Existing pavement and sidewalk shall be in "sawcut" condition prior to patching. Removal area shall be minimum necessary to install the facilities. Sawcutting tailings and wastewater shall be contained, removed, and properly disposed of by the Contractor.

22. No free-flowing connection shall be made between the new main and the existing system until the new piping has been flushed and successfully pressure tested. Flow through the downstream (connecting) manhole of the new system shall be plugged by the Developer in order to catch construction debris prior to their entering the existing sanitary sewer system.
23. All side sewer stubs and sewer mains shall be high-velocity cleaned, videoed (TV'ed) and pressure tested following the installation of all other underground utilities and the construction of roadway subgrade, but prior to paving, in conformance with the Standard Specifications. Videoing shall be per Section 3.7.1 of this Manual. Testing shall take place in the presence of the District. The Contractor shall provide all equipment necessary for testing. Re-videoing following the Developer's corrective action shall be at the Developer's expense.
24. Hydrant flushing of lines is not an acceptable cleaning method. The Contractor shall ensure that flushing debris are captured prior to entering the District's existing sanitary sewer system. The encatchment method shall meet the approval of the District. A District representative must be present when flushing occurs.
25. Final acceptance of sewer installation will not be made until tests and inspections are complete and proven satisfactory.

GRAVITY SEWER NOTES

1. Manholes shall be WSDOT Type 1-48 modified with eccentric cones for manholes 8 feet and greater in depth, Type 3-48 for manholes less than 8 feet in depth.
2. All manhole joints shall be grouted with “Tams Speedcrete Redline” non-shrink grout or “Allcrete” non-shrink grout. The contractor shall not re-temper grout after initial mixing. Any re-tempered grout shall be rejected.
3. Manhole Vacuum Testing shall be per Section 3.3.5 of the Skyway Water & Sewer District’s “Guidelines for Construction of Water and Sanitary Sewer Facilities”. Manholes shall be successfully vacuum tested prior to backfilling.
4. Repair of new manholes / manhole products shall not be allowed for new construction. An exception may be considered by the District where there are sufficient extenuating circumstances, a repair method acceptable to the District is proposed, and sufficient additional maintenance securities are submitted to the District BEFORE the repair is made.
5. Manhole frames shall be cast iron, and manhole covers shall be ductile iron; three bolt locking type, East Jordan Iron Works product number 00371564 or 00370063 or equal. Bolts shall be 5/8” stainless steel allen head, countersunk. The cover shall have the word “SEWER” in 2” raised letters cast in it. Ductile iron frames will be considered for use as proposed by the Developer.
6. Manhole rungs shall be polypropylene, injection molded around ½” grade 60 steel reinforcing bar with anti-slip tread. They shall be installed at 12” OC.
7. Manhole channels shall be field poured and constructed of minimum 6-sack (cement) containing 3/8” minus gravel or pea gravel- 3.500 psi concrete. Construction shall occur in one monolithic pour. The proposed channel mix shall be submitted to the District for review and consent for its use prior to manhole channel construction.
8. Rechanneling of existing manholes to adapt a new inlet pipe, and manhole channels constructed with insufficient depth or sidewalls shall be repaired only by removing the existing/defective channel completely and re-pouring the channel to the correct depth. Adding a layer of non-shrink grout to the surface of a previously constructed channel is not an acceptable means of channel construction.
9. All gravity side sewer stubs shall be 6” diameter minimum for single family residential, multi-family, and commercial services. They shall be laid on a minimum slope of 2 percent. All side sewer stubs shall be provided with a cleanout and test tees for each lot to be served. Single-family residential side sewers (on private property outside of traffic areas) may be reduced to 4-inch diameter.
10. All sewer service stub cleanouts located in paved or traffic bearing locations shall be brought to grade and have a cast iron ring and cover per Standard Detail SS12.

11. Gravity sanitary sewer pipe shall be PVC meeting the requirements of ASTM D3034-73, SDR 35; ductile iron per the District's standard "Sewer Notes"; or HDPE, PE3408 as rated by the Plastics Pipe Institute, also meeting the specification of ASTM D3350. If butt-fused welded HDPE sewer pipe is proposed for use by the Developer, the Developer shall provide the District with their proposed piping system installation techniques for review and approval prior to their ordering of materials.
12. Butt-fusion of HDPE pipes and fittings shall meet the requirements of ASTM D2657 and D3261, and be performed in accordance with the pipe manufacturer's recommendations as to equipment and technique. The pipe shall be fused in a manner recommended by the pipe supplier and/or fusion machine manufacturer and reviewed for compliance by the District during construction.
13. HDPE fusion side sewer stub saddles shall be made of polyethylene pipe compound that meets the requirements of ASTM 1248, Class C and suitable for fusion welding or electrofusion to polyethylene pipe. Fusion saddles shall be "Branch Saddle" by Chevron-Phillips, "Fusion Saddle" by Dupont, or equal.

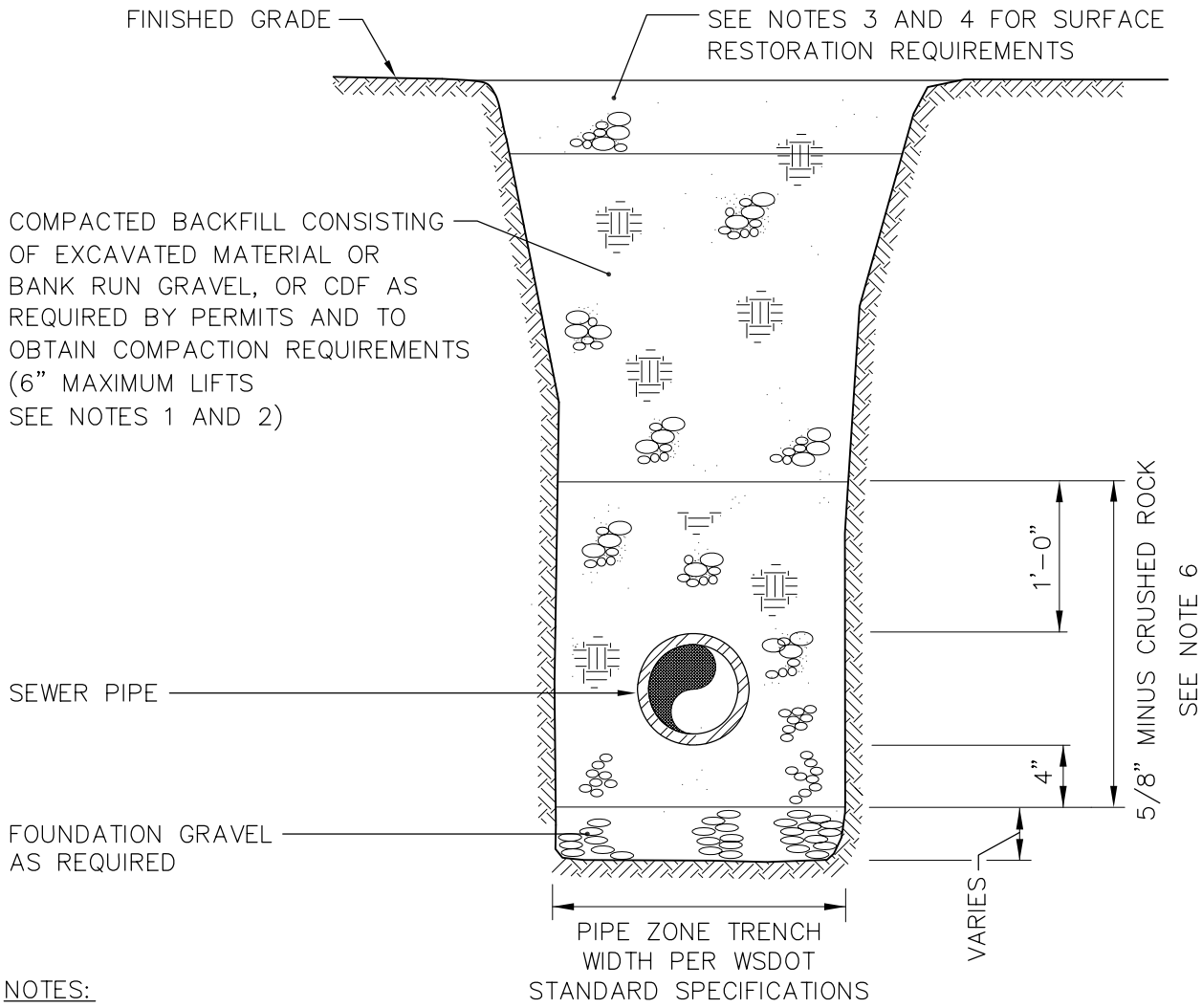
PRESSURE SEWER NOTES

1. Force mains for sizes 3-12 inches shall be ductile iron, Class 52, conforming to AWWA C151, with ductile iron fittings and gasketed joints. Class 54 ductile iron pipe shall be used where depth of cover is less than three feet. Ductile iron pipe and fittings shall be provided with an interior coating/lining of polyethylene meeting the requirements of ASTM D1248 or Protecto 401 ceramic epoxy, 40 mil minimum thickness. A bituminous coating shall be applied to the pipe's exterior.
2. Force main low point drains, force main terminus manholes and the manhole(s) immediately downstream (of the terminus manholes) shall be interior and exterior coated per Section 3.5.6 of the Skyway Water & Sewer District "Guidelines for Construction of Water and Sanitary Sewer Facilities".
3. Submersible pump station wet wells shall be controlled by a neotronic probe, with a float system operating as backup.
4. All buried power for grinder pump pressure system shall be installed with continuous tracer tape installed 12" above the buried power. The marker shall be plastic non-biodegradable; metal core backing marked 'POWER'. The Contractor shall furnish the tracer tape.
5. A cleanout shall be provided at the upstream terminus of each mainline branch of pressure sewer systems.
6. All non-metallic sanitary sewer pressure piping shall be provided with an insulated tracer wire per Section 3.3.11 of the Skyway Water & Sewer District's "Guidelines for Construction of Water and Sanitary Sewer Facilities".
7. Individual grinder pump discharge pressure pipe shall be butt-fuse welded HDPE pipe rated at a minimum of 200 psi. An alternate means of pipe connection may be considered by the District. HDPE pipe shall be PE3408 as rated by the Plastics Pipe Institute and shall meet the specifications of ASTM D3350 with a minimum cell classification of PE345434C. All pipe and fittings shall bear identification markings in accordance with AWWA designations for HDPE pipe.
8. Fittings used for HDPE grinder pump station force main pipe shall be brass and/or stainless steel.
9. Grinder pump stations shall be equipped with both a check valve and a gate valve on the discharge line.
10. Properties directly served by pressure sewer facilities (pumping stations) shall install a reduced pressure backflow preventer on their water service pipeline.
11. Grinder pump stations shall be operated and maintained by the property owner.
12. Grinder pump assemblies shall be manufactured by Environment One Corporation.
13. Pressure main valves and appurtenances shall conform to water main construction specifications. All pressure mains shall be hydrostatically tested in conformance with the Standard Specification for testing water mains.

14. The Developer shall be responsible for scheduling field testing of the pumping facilities by the manufacturer's representative. Field testing shall occur following installation, and shall be in the presence of the District.

APPENDIX H
Sanitary Sewer Standard Details

SS01	Trench Section for Sewer Pipe
SS02	Manhole Type 1
SS03	Manhole Type 2
SS04	Manhole Type 3
SS05	Cut-In Manhole
SS06	Outside Drop Manhole
SS07	Manhole Frame and Cover
SS08	Polypropylene Ladder and Manhole Steps
SS11	Sewer Service Stub
SS12	Vertical Sewer Cleanout
SS13	Private Side Sewer Installation
SS14	Wastewater Access Chamber (WAC)
SS15	Grinder Pump/ Gravity & Pressure Side Sewer Installation
SS16	Grinder Pump/ Pressure Side Sewer Installation
SS21	A/C Water Main Replacement at Sanitary Sewer Crossing
SS22	100% Backfill Under A/C Water Main at Sanitary Sewer Crossing
SS31	Backup Mercury Float Switch
SS32	Low Point Drain
SS41A	Grease Interceptor
SS41B	Grease Interceptor Notes



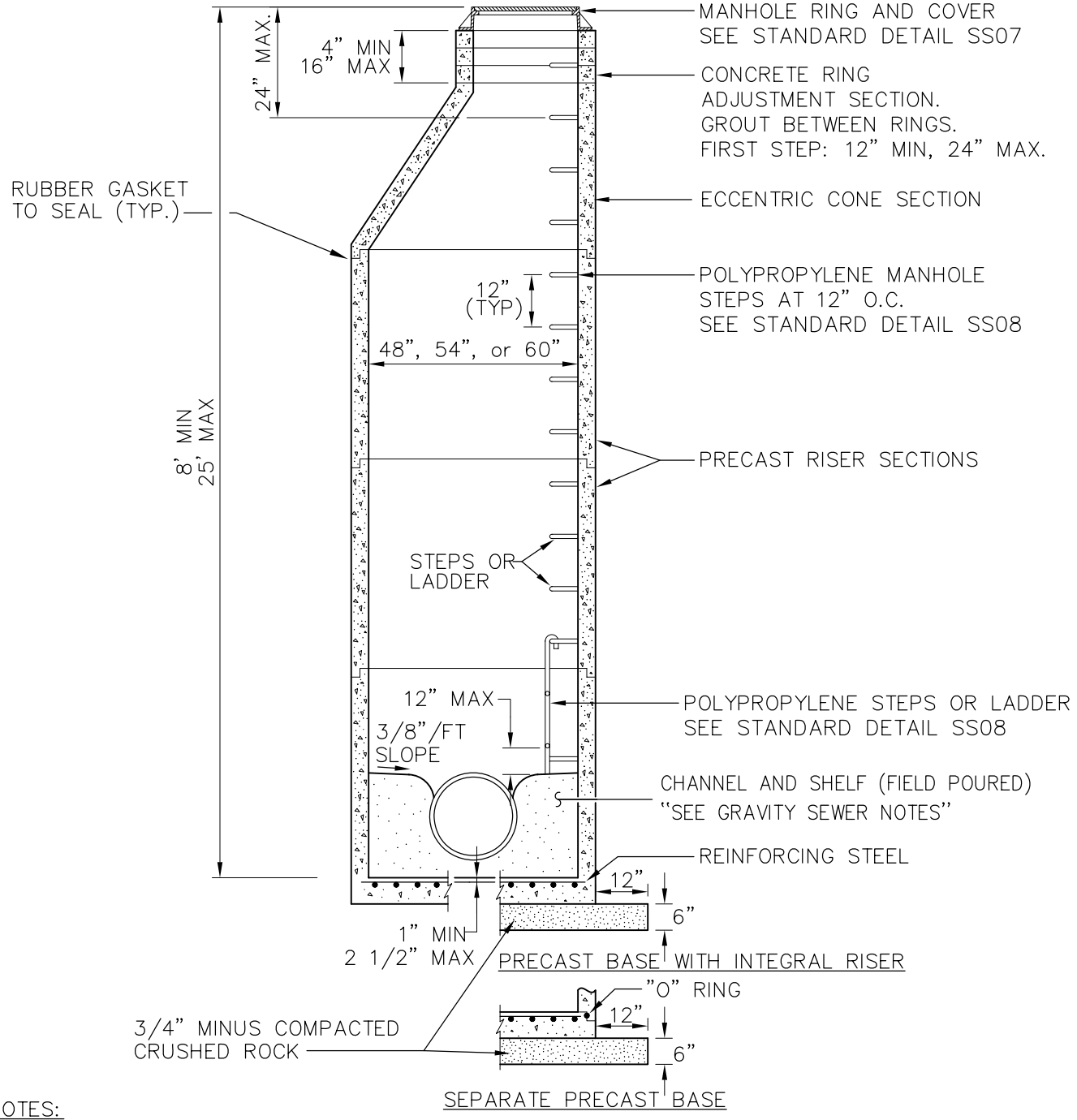
NOTES:

1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARDS AND/OR KING COUNTY, CITY, AND STATE PERMIT REQUIREMENTS.
2. UNLESS OTHERWISE REQUIRED, NATIVE MATERIAL IS ACCEPTABLE AS TRENCH BACKFILL IF IT CAN BE COMPACTED TO THE FOLLOWING PERCENTAGES OF ITS MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D1557: 95% FOR R-O-W AND IMPROVED AREAS (ROADS, DRIVEWAYS, SIDEWALKS, ETC.) & 90% FOR UNIMPROVED AREAS. (LAWNS, LANDSCAPING, NATURAL VEGETATION, ETC.) IF THIS IS NOT THE CASE, THE CONTRACTOR SHALL IMPORT BANK RUN GRAVEL MEETING WSDOT STANDARD SPECIFICATION 9-03.19, OR ANOTHER APPROVED MATERIAL.
3. PAVEMENT, ALLEY, AND SIDEWALK RESTORATION IN THE PUBLIC RIGHT-OF-WAY SHALL MEET THE REQUIREMENTS OF THE PERMITTING AGENCIES. UNLESS OTHERWISE SPECIFIED BY THE PERMITTING AGENCIES, THESE IMPROVEMENTS ON PRIVATE PROPERTY SHALL, AT A MINIMUM, MEET THE MORE STRINGENT OF THE REQUIREMENTS OF THE KING COUNTY ROAD STANDARDS OR EXISTING CONDITIONS.
4. LAWNS, DITCHES, AND ALL OTHER AREAS WITH DISTURBED GRASSES SHALL BE RESTORED USING 6 INCHES OF TOPSOIL AND FINISHED WITH EITHER SOD OR HYDROSEED. SOD MUST BE USED IN THE RESTORATION OF MAINTAINED GRASSED AREAS. HYDROSEED SHALL CONSIST OF A LAWN-TYPE MIXTURE.
5. AFTER BACKFILL AND COMPACTION IN TRAVELED AREAS, AN IMMEDIATE COLD PATCH SHALL BE PLACED AND MAINTAINED BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE ENGINEER.
6. THE DISTRICT MAY CONSIDER ALTERNATIVE PIPE BEDDING MATERIAL FOR USE IN UNUSUAL SUB-SURFACE CONDITIONS.

N.T.S.

TRENCH SECTION FOR SEWER PIPE

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS01
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: SEPTEMBER 2007



NOTES:

1. MANHOLES SHALL BE CORE-DRILLED PRIOR TO DELIVERY.
2. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, SAND COLLAR OR A-LOCK.
3. PICK HOLES AND JOINTS SHALL BE GROUTED W/ NON-SHRINK GROUT ON BOTH INSIDE AND OUTSIDE OF MANHOLE.

MANHOLE DIMENSION TABLE

DIA	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in^2/ft EACH DIRECTION	
					INTEGRAL BASE	SEPARATE BASE
48"	4"	6"	36"	8"	0.15	0.23
54"	4 1/2"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25

N.T.S.

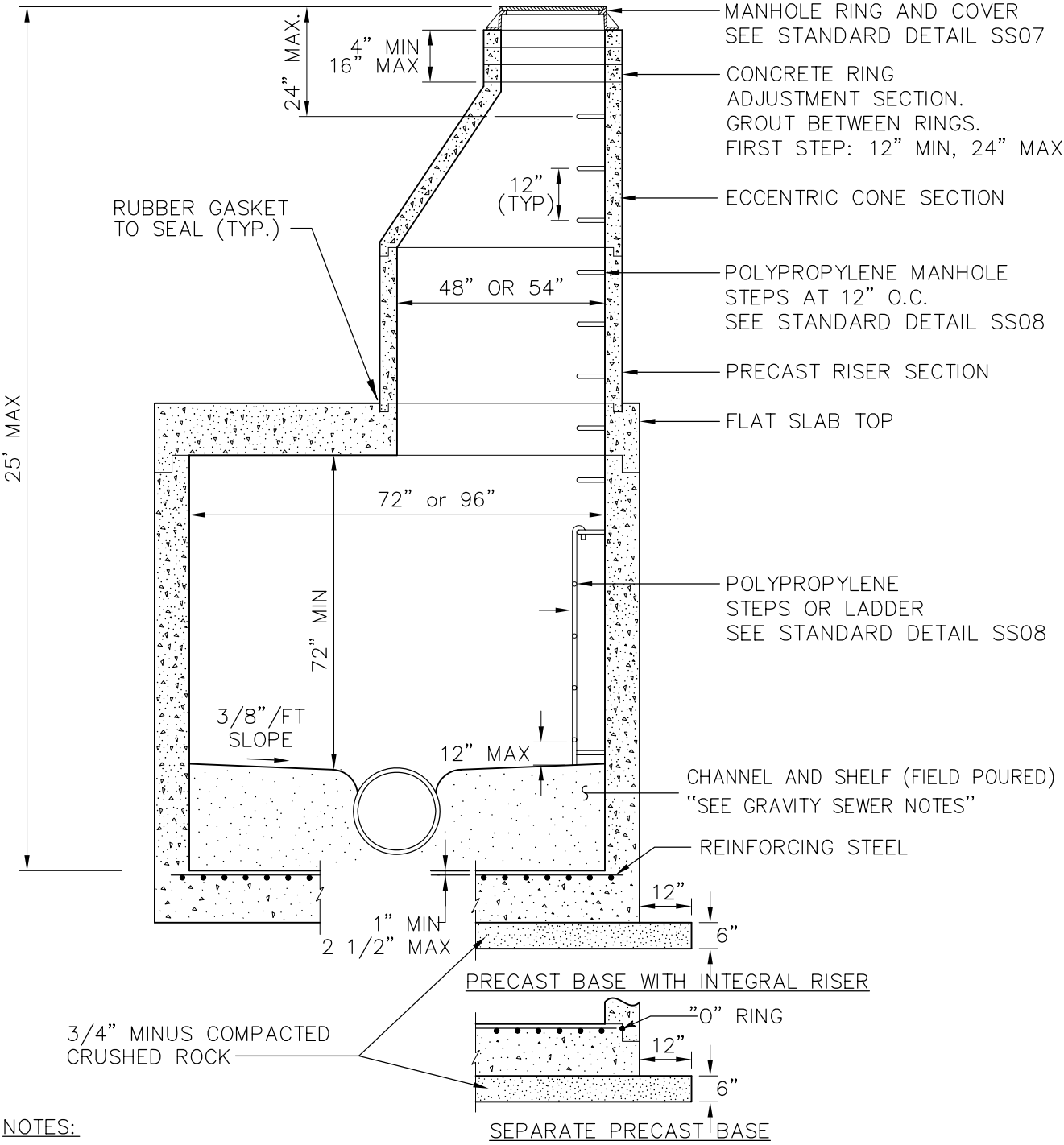
MANHOLE TYPE 1

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS02



NOTES:

1. MANHOLES SHALL BE CORE-DRILLED PRIOR TO DELIVERY.
2. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, SAND COLLAR OR A-LOCK.
3. PICK HOLES AND JOINTS SHALL BE GROUTED W/ NON-SHRINK GROUT ON BOTH INSIDE AND OUTSIDE OF MANHOLE.

MANHOLE DIMENSION TABLE

DIA	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in^2/ft EACH DIRECTION	
					INTEGRAL BASE	SEPARATE BASE
72"	6"	8"	60"	12"	0.24	0.35
96"	8"	12"	84"	12"	0.29	0.39

N.T.S.

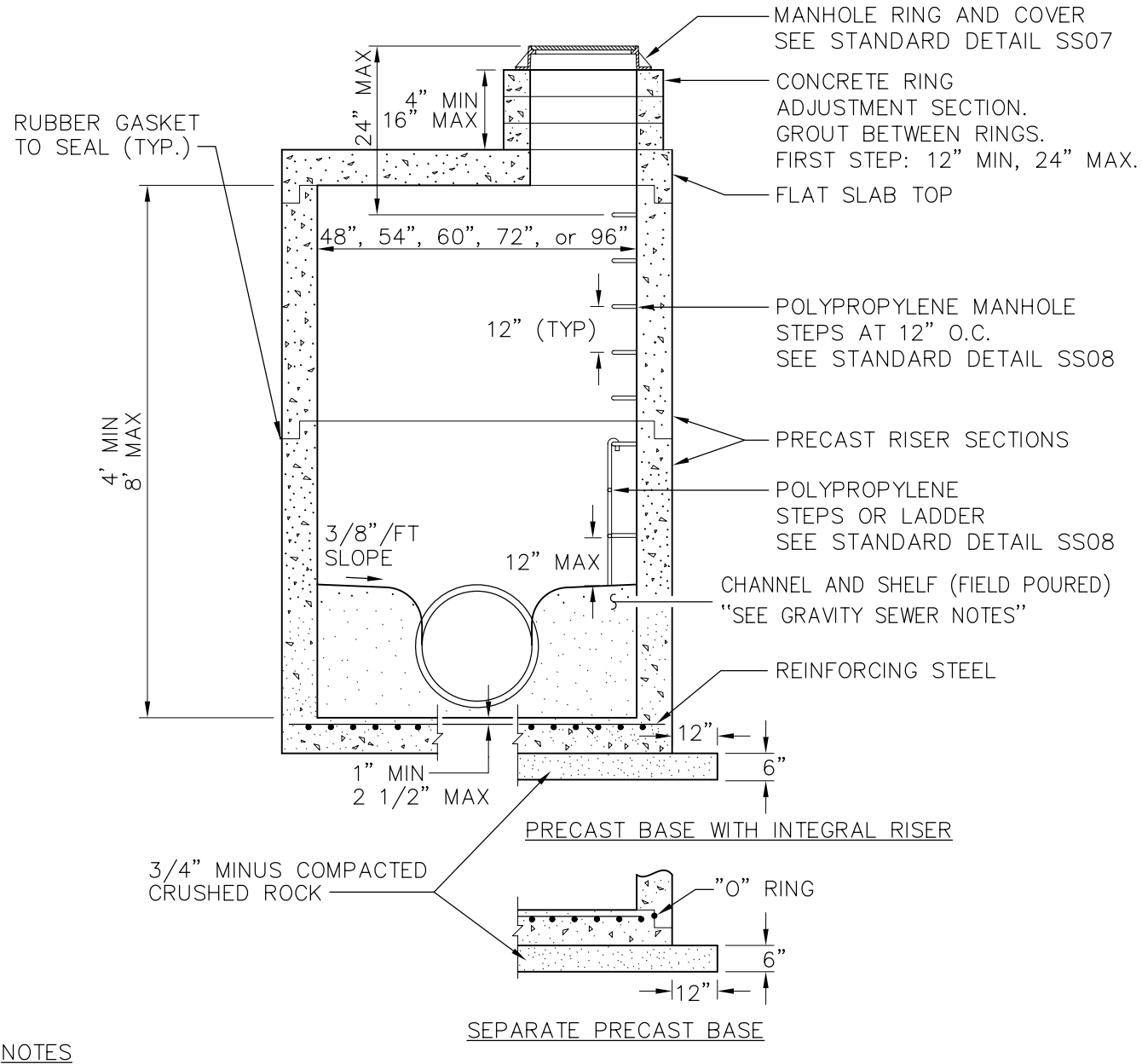
MANHOLE TYPE 2

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS03



NOTES

1. MANHOLE SHALL BE CORE-DRILLED PRIOR TO DELIVERY.
2. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, SAND COLLAR OR A-LOCK.
3. PICK HOLES AND JOINTS SHALL BE GROUTED W/ NON-SHRINK GROUT ON BOTH INSIDE AND OUTSIDE OF MANHOLE.

MANHOLE DIMENSION TABLE

DIA	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in^2/ft IN EACH DIRECTION	
					INTEGRAL BASE	SEPARATE BASE
48"	4"	6"	36"	8"	0.15	0.23
54"	4 1/2"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25
72"	6"	8"	60"	12"	0.24	0.35
96"	8"	12"	84"	12"	0.29	0.39

N.T.S.

MANHOLE TYPE 3

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

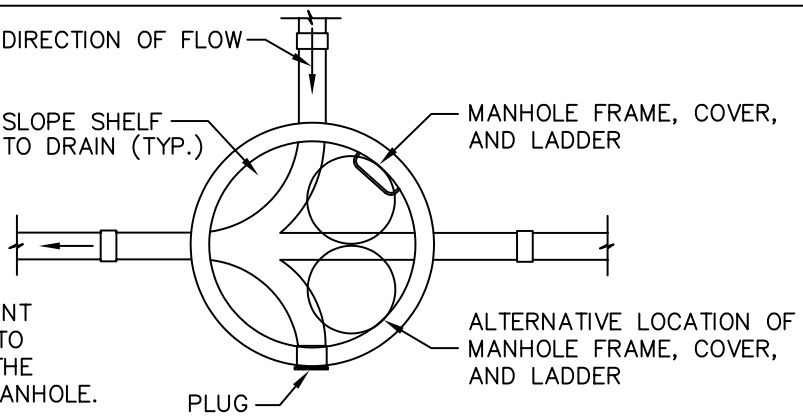
REVISED DATE: SEPTEMBER 2007

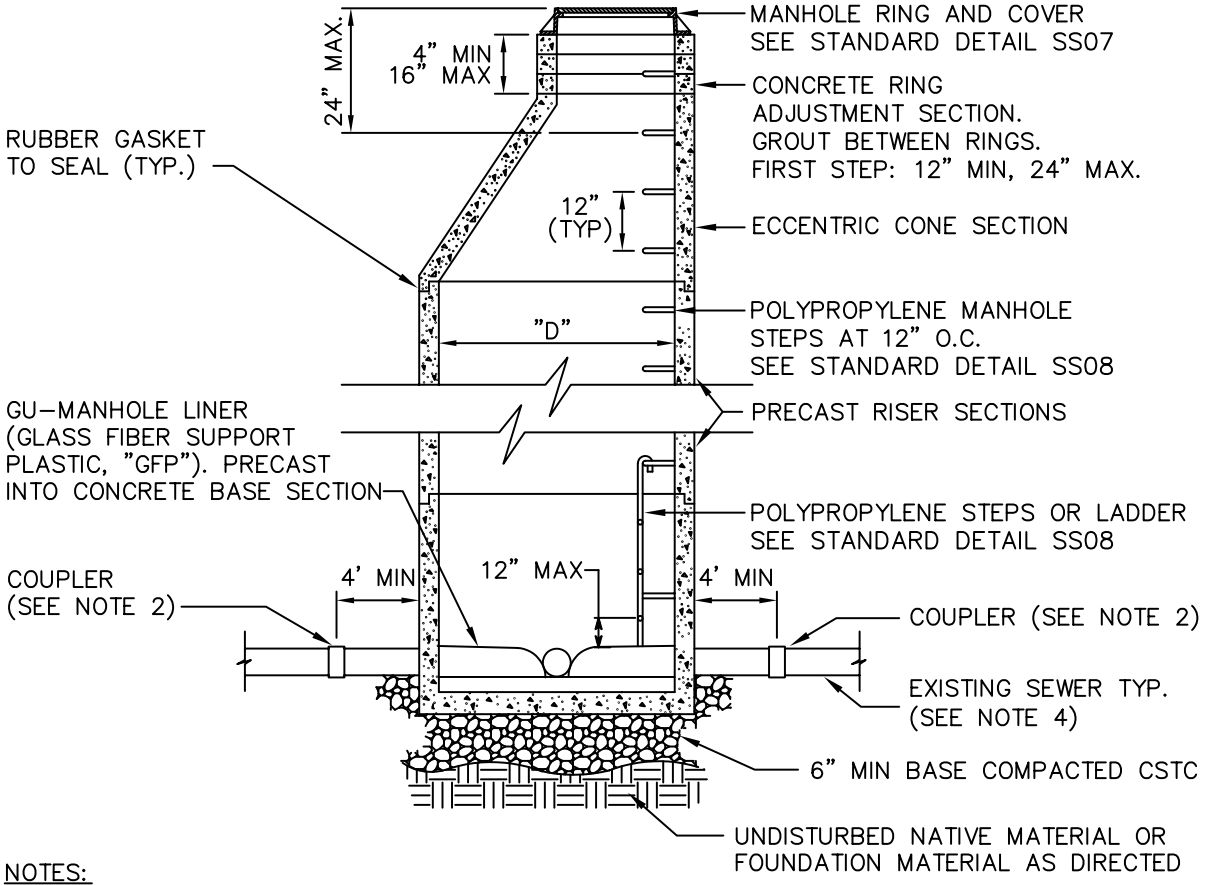
DETAIL NUMBER: SS04

GENERAL MANHOLE DIAMETERS

PIPE SIZE	MH DIA. ("D")
24" OR LESS	48"
36" OR LESS	54"
42" OR LESS	72"
72" OR LESS	96"

NOTE:
MANHOLE SIZE WILL BE DEPENDENT UPON THE NUMBER OF PIPES INTO THE MANHOLE, PIPE SIZE, AND THE CONFIGURATION THROUGH THE MANHOLE.





NOTES:

1. EXISTING SANITARY SEWER SHALL BE CUT, NEW MANHOLE INSTALLED, AND CONNECTED USING GU COUPLERS. MAXIMUM 1/8" ALLOWED GAP TOTAL (BOTH ENDS COMBINED).
2. COUPLERS SHALL BE MANUFACTURED BY GPK PRODUCTS, INC. OR BY KOR-N-SEAL.
3. PICK HOLES AND JOINTS SHALL BE GROUTED W/ NON-SHRINK GROUT ON BOTH INSIDE AND OUTSIDE OF MANHOLE.
4. SLOPE SHALL BE FIELD VERIFIED BY CONTRACTOR. MEASURED SLOPE SHALL THEN BE PRESENTED TO DISTRICT PRIOE TO CONTRACTOR'S ORDERING MANHOLE.

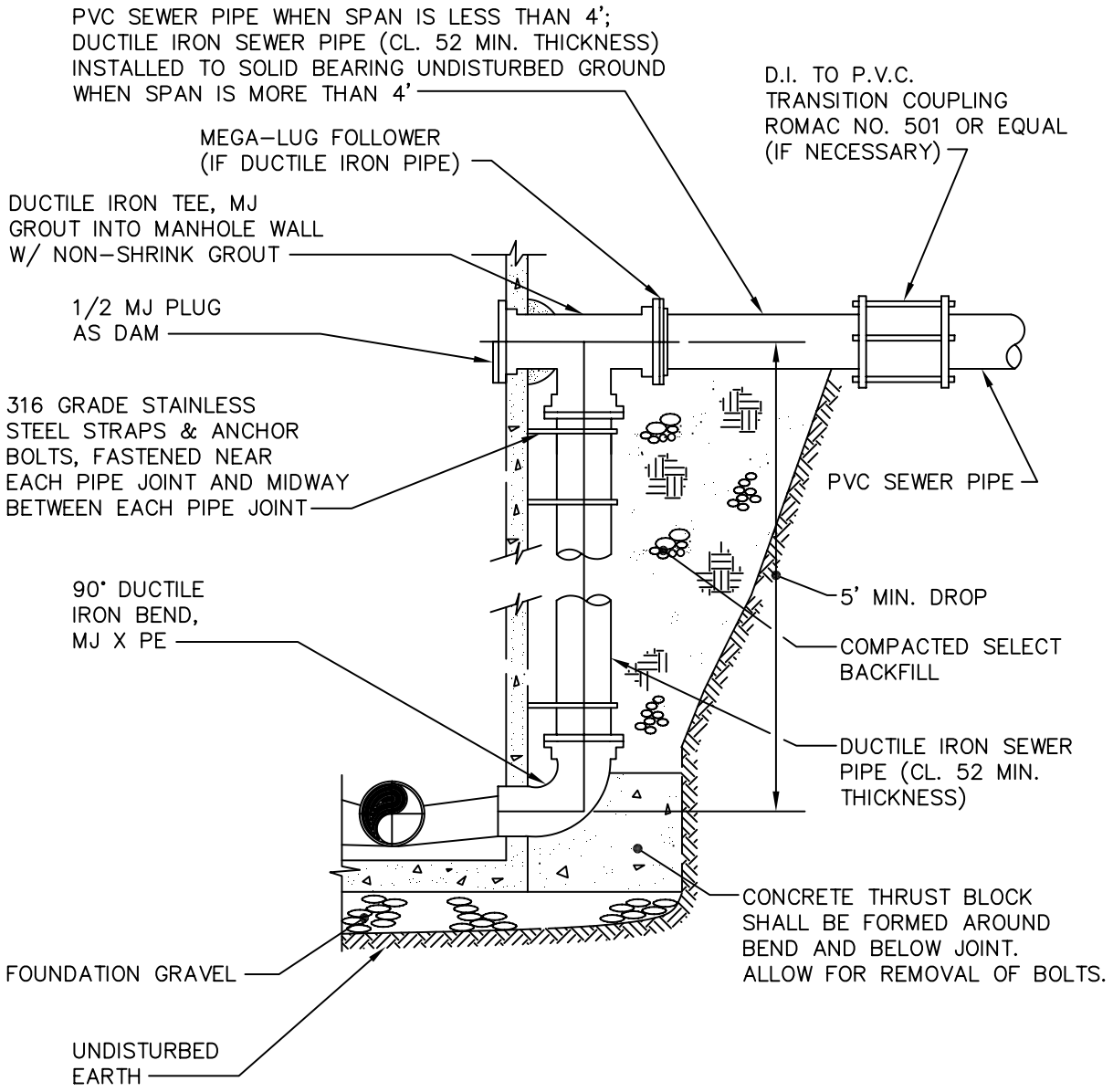
N.T.S.

CUT-IN MANHOLE

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: SS05



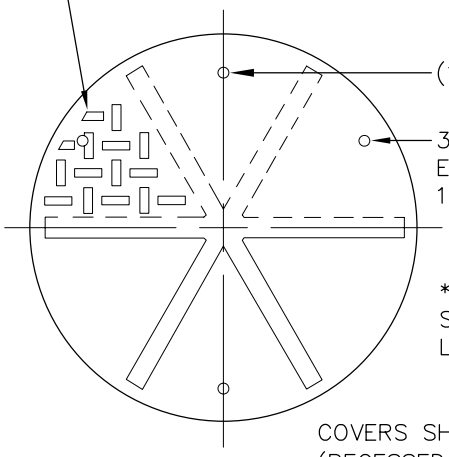
NOTES:

1. FIELD LOK GASKETS AND MEGA-LUG FOLLOWERS SHALL BE USED FOR VERTICAL PIPING.
2. MAINTAIN A MINIMUM OF 1' BETWEEN MANHOLE JOINTS AND DUCTILE IRON TEE.
3. THE INTERIOR OF ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE COATED WITH AN INTERIOR COATING/LINING OF POLYETHYLENE MEETING THE REQUIREMENTS OF ASTM D1248 OR PROTECTO 401 CERAMIC EPOXY, 40 MIL MINIMUM THICKNESS.

N.T.S.

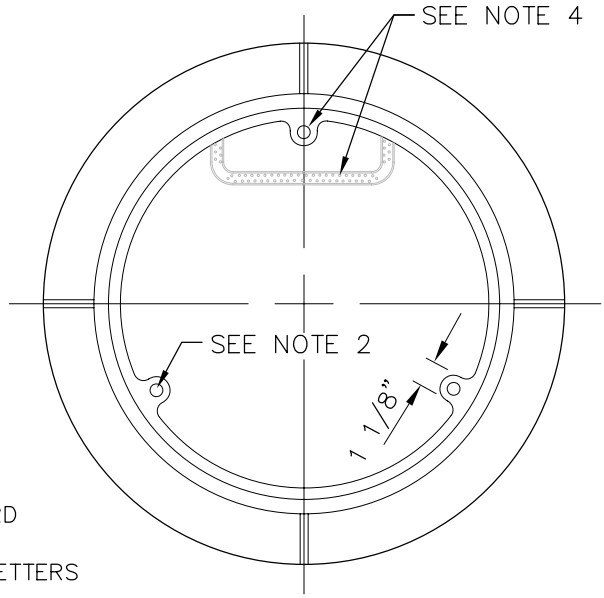
OUTSIDE DROP MANHOLE

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS06
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

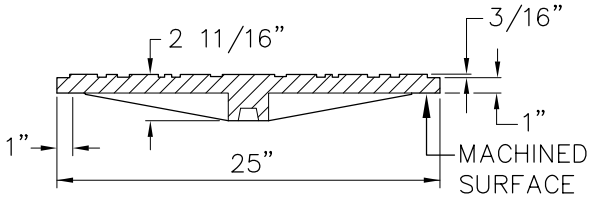


COVERS SHALL HAVE THE WORD (RECESSED FLUSH) "SEWER" IN 3" HIGH RAISED LETTERS

PLAN VIEW

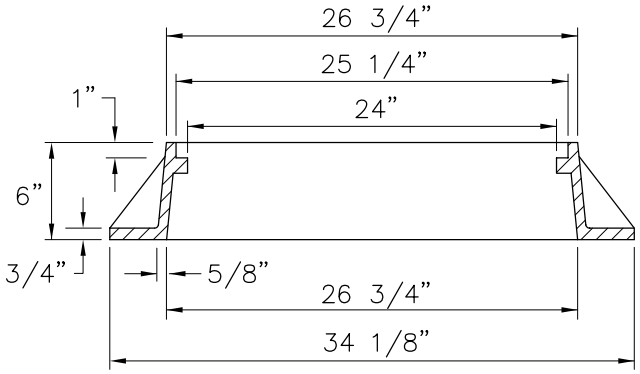


PLAN VIEW

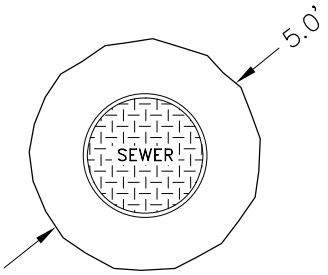


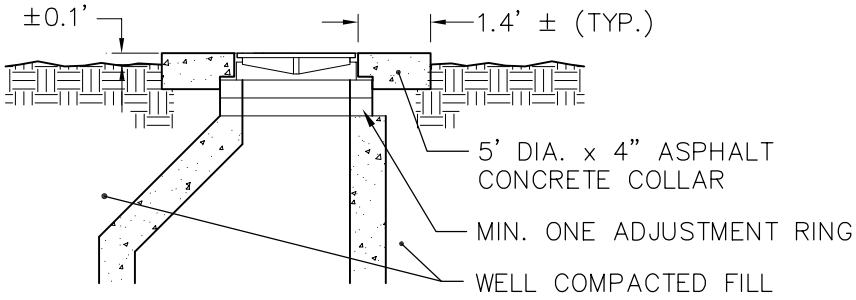
SECTION VIEW

DUCTILE IRON COVER



SECTION VIEW





NOTES

1. MATERIALS SHALL BE PER WSDOT STANDARD SPECIFICATION 9-05.15(1) AND AASHTO M306.
2. ALL MANHOLES SHALL BE EQUIPPED WITH LOCKING COVERS. BOLT HOLES THROUGH FRAME AND COVER SHALL BE 3/4" DIA. COVER HOLES SHALL BE COUNTERSUNK 11/16" DEEP x 1-13/16" DIA. CONTRACTOR TO PROVIDE ALLEN HEAD 5/8"-11 x 1.5 STAINLESS STEEL BOLTS.
3. FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS, INC., PRODUCT NO. 00371564 OR 00370063, OR EQUAL.
4. INSTALL FRAME WHERE ONE OF THE BOLT HOLES IS CENERTED OVER THE LADDER RUNGS

N.T.S.

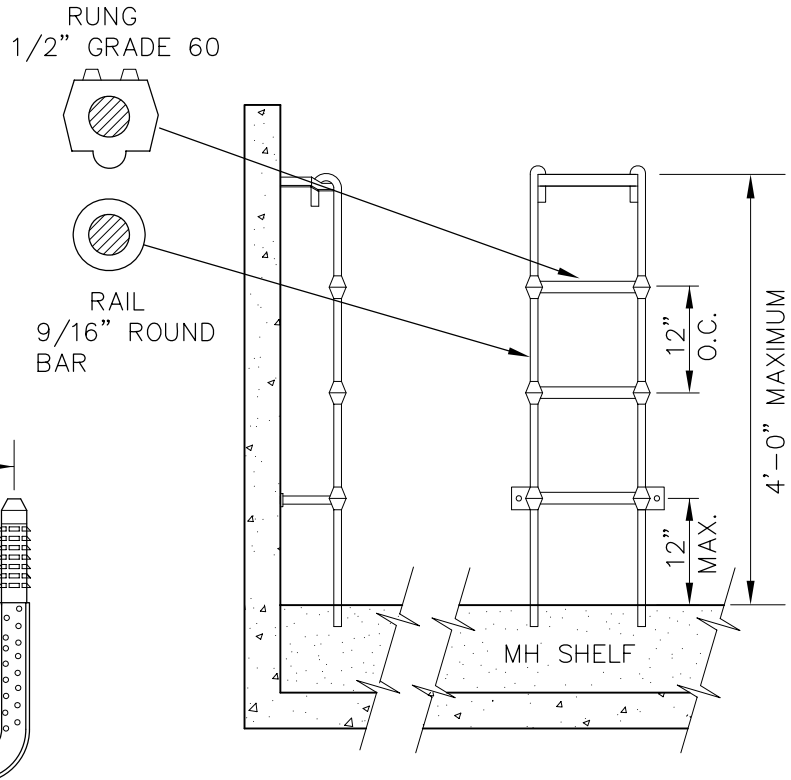
MANHOLE FRAME AND COVER

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

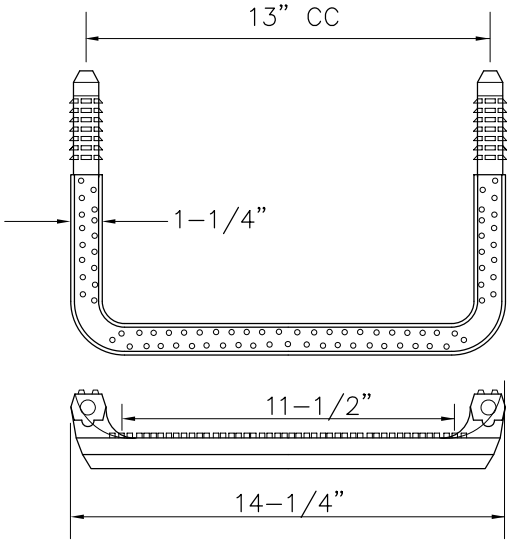
DETAIL NUMBER: SS07

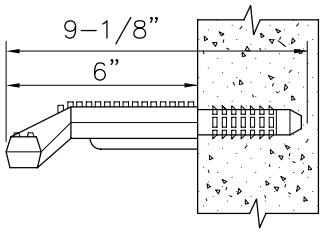


POLYPROPYLENE LADDER

LADDER SHALL CONFORM TO POLYPROPYLENE ASTM D-4101 1/2" GRADE 60 REINFORCING BAR A-615 9/16" COLD DRAWN BAR C-1018

HANGING LADDERS SHALL BE PERMANENTILY FASTENED TO THE MANHOLE BY BOLTING OR EMBEDDING THE BOTTOM OF THE LADDER IN THE CONCRETE SHELF.





POLYPROPYLENE STEP, LANE NO. P-13938 OR EQUAL

POLYPROPYLENE MANHOLE STEPS

N.T.S.

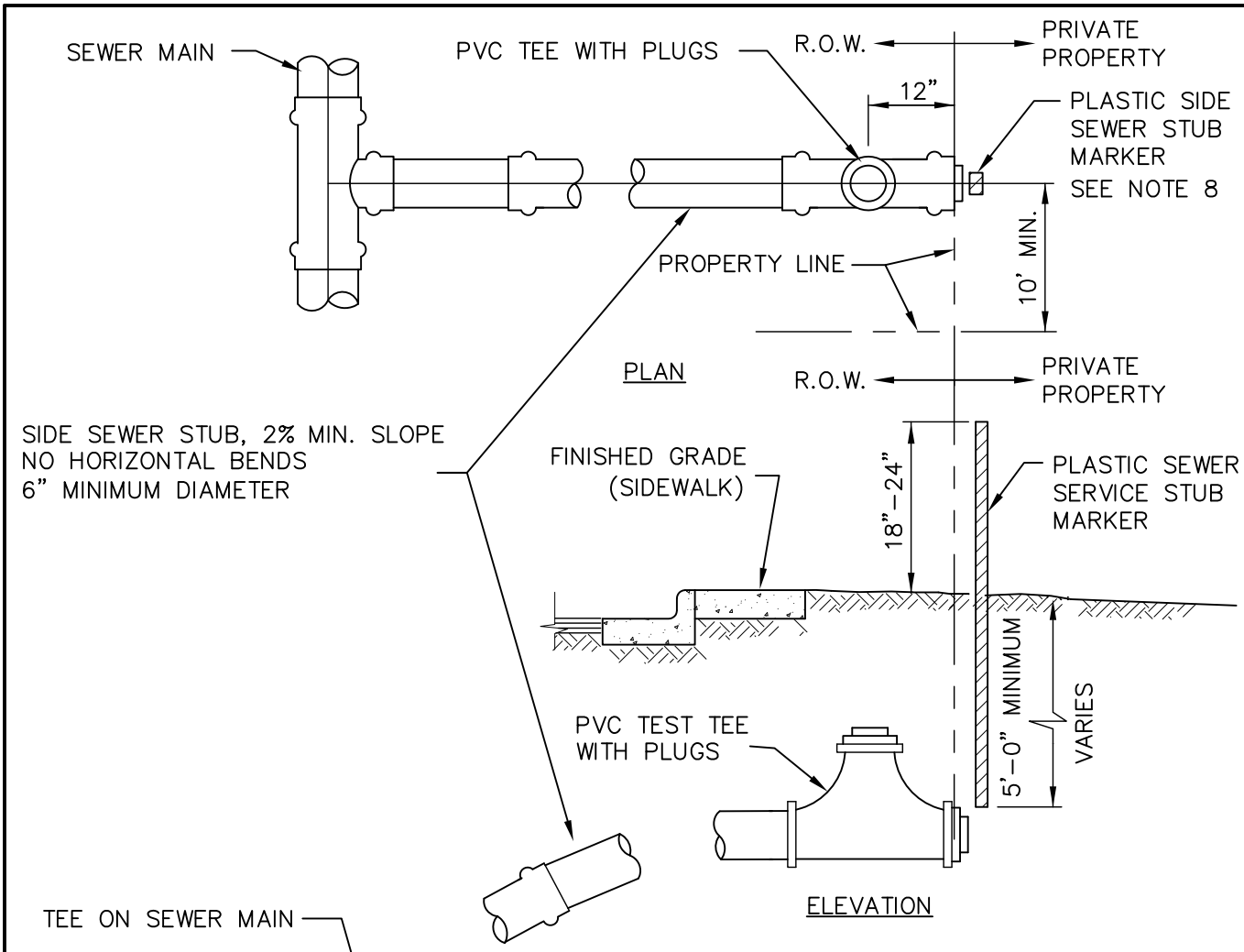
POLYPROPYLENE LADDER AND MANHOLE STEPS

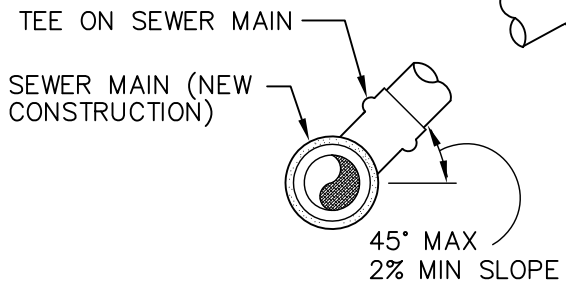
APPROVED: _____ DISTRICT ENGINEER _____ DATE

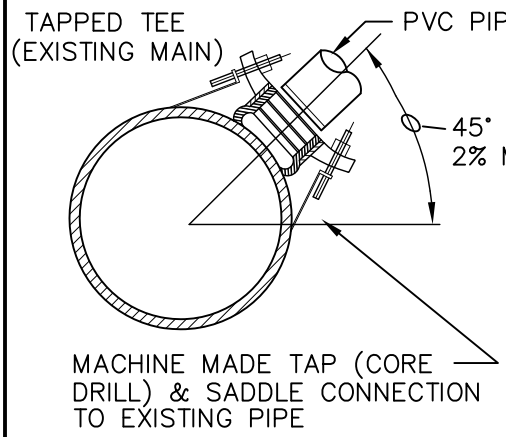
SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS08







NOTES:

1. INSERT-A-TEE SADDLE FOR CONCRETE.
2. ROMAC STYLE "CB" SADDLE FOR PVC PIPE.
3. SIDE SEWER STUBS SHALL NOT EXTEND BEYOND THE INTERIOR WALL OF THE SANITARY SEWER MAIN.
4. MAXIMUM DEFLECTION NOT TO EXCEED 50% OF PIPE MANUFACTURER'S RECOMMENDATION.
5. SIDE SEWER STUB SHALL BE PVC OR BUTT-FUSE WELDED HDPE.
6. SIDE SEWER STUBS ARE TO EXTEND THROUGH THE JOINT TRENCH EASEMENT WHERE APPLICABLE.
7. TRENCH BACKFILL FOR SIDE SEWER STUB PIPE SHALL BE PER STANDARD DETAIL SS01.
8. THE SIDE SEWER MARKER SHALL BE PLASTIC, WHITE IN COLOR, NON-BIODEGRADABLE, METAL CORE OR BACKING MARKED SEWER THAT CAN BE DETECTED BY A STANDARD METAL DETECTOR.
9. SEE DISTRICT "GRAVITY SEWER NOTES" FOR HDPE SEWER PIPING.

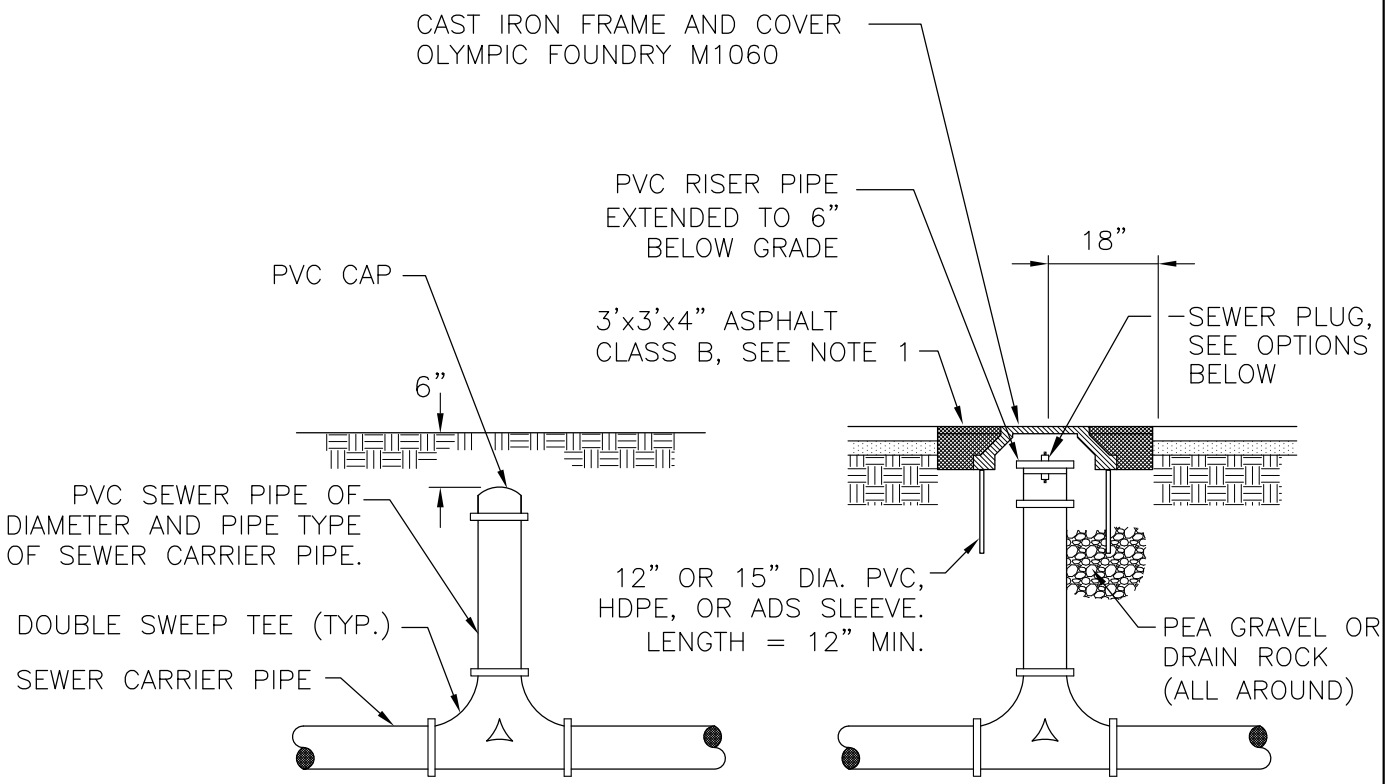
N.T.S.

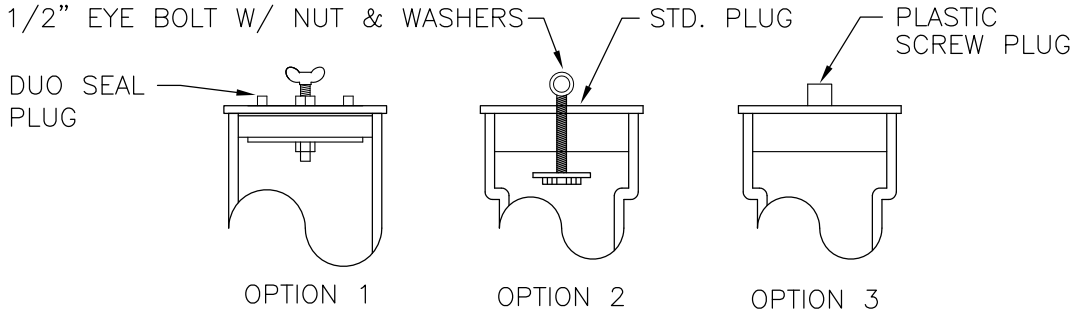
SIDE SEWER STUB

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: AUGUST 2011

DETAIL NUMBER: SS11





SEWER PLUG OPTIONS

NOTES

1. VERTICAL SEWER CLEANOUT FOR USES IN EXISTING & FUTURE TRAFFIC BEARING AND/OR PAVED LOCATIONS.
2. NEAT LINE CUT SHALL BE SEALED AT THE TOP WITH A HOT PAVING GRADE ASPHALT AND FACE OF CUT TACKED.
3. ALL MATERIAL SHALL CONFORM TO THE THE LATEST EDITION OF THE WSDOT/APWA STANDARD SPECIFICATIONS.
4. MACHINE BEARING FACES OF FRAME AND COVER TO INSURE POSITIVE FIT.
5. CLEANOUTS AT BENDS SHALL BE INSTALLED THAT IT OPENS TO ALLOW CLEANING IN THE DIRECTION OF THE FLOW.

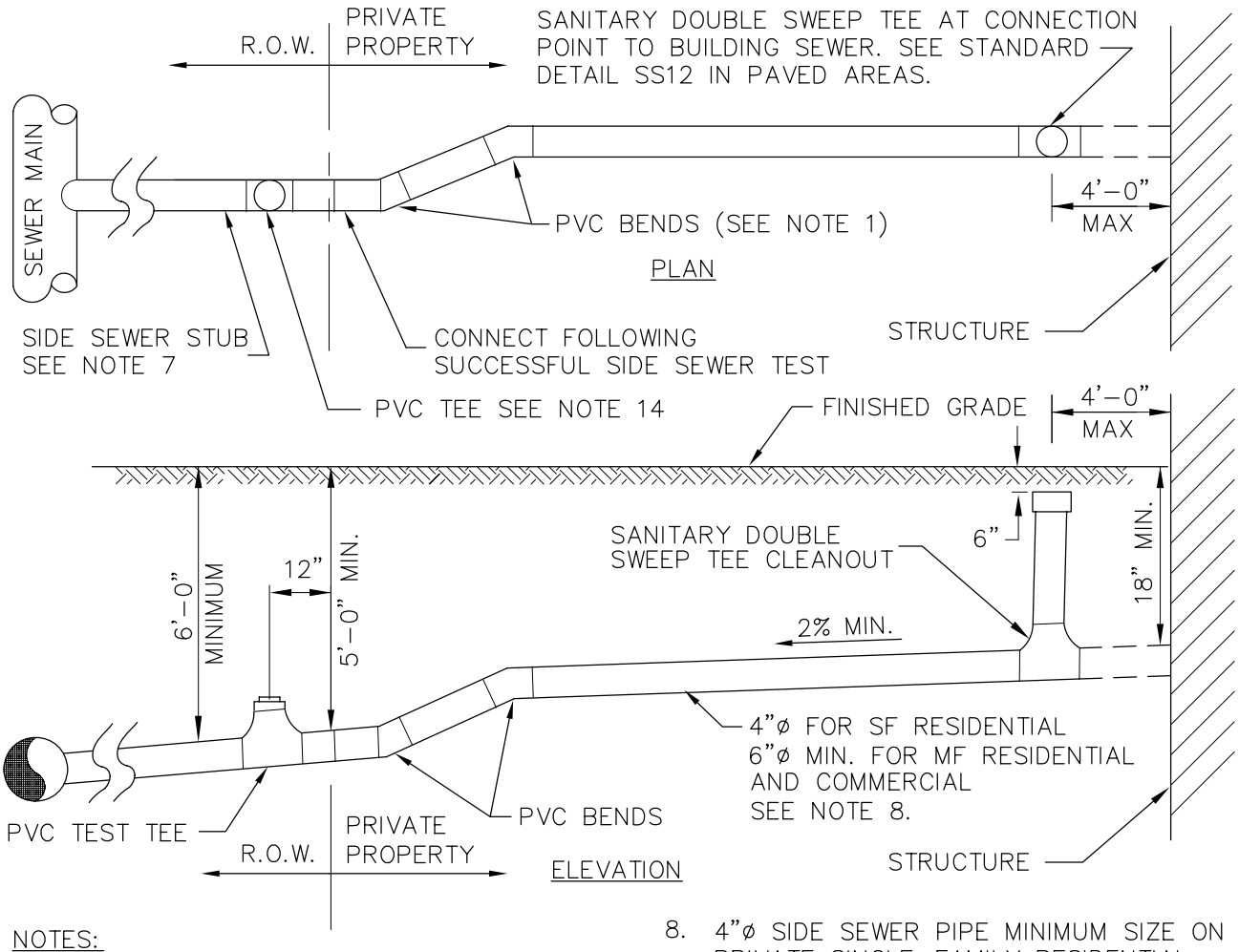
N.T.S.

VERTICAL SEWER CLEANOUT

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: JANUARY 2011

DETAIL NUMBER: SS12



NOTES:

1. ELBOWS SHALL NOT BE GREATER THAN 45°.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° BEND ACCUMULATED/100'.
3. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION.
4. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" MAXIMUM LIFTS.
5. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE WITH AN ELBOW AND WYE. 3' STRAIGHT SECTION BETWEEN ELBOWS.
7. 6"ø MINIMUM SIDE SEWER STUB PIPE IN RIGHT-OF-WAYS AND DISTRICT EASEMENTS. 2% MINIMUM GRADE, 45° MAXIMUM GRADE.
8. 4"ø SIDE SEWER PIPE MINIMUM SIZE ON PRIVATE SINGLE-FAMILY RESIDENTIAL PROPERTY. 6"ø SIDE SEWER PIPE MINIMUM SIZE ON COMMERCIAL PROPERTIES. 2% MINIMUM GRADE, 45° MAXIMUM GRADE.
9. CONSTRUCTION IN RIGHT-OF-WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
10. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
11. PLACE CONDUCTIVE TRACING TAPE IN ALL UNLOCATABLE FACILITY TRENCHES.
12. THE CUSTOMER'S SIDE SEWER SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF THIS DETAIL, THE UPC, AND APPLICABLE BUILDING CODES.
13. SIDE SEWER PIPE SHALL BE BEDDED AND BACKFILLED WITH 5/8" MINUS CRUSHED ROCK FROM 4" BELOW THE PIPE TO 6" ABOVE THE PIPE.
14. TEST TEE LOCATION FOR SIDE SEWER CONNECTIONS TO EXISTING SEWER MAINS SHALL BE ON THE FIRST PIPE AT THE CONNECTION TO THE MAIN.

N.T.S.

SIDE SEWER INSTALLATION

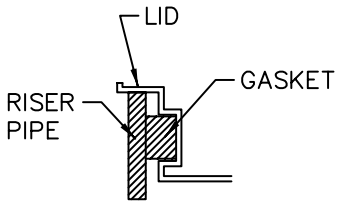
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

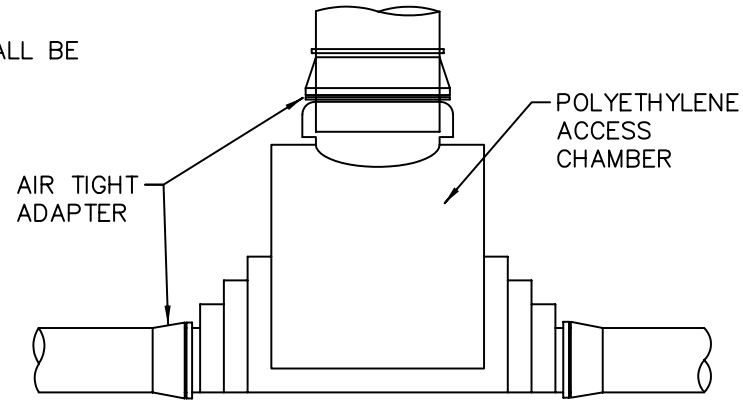
REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS13

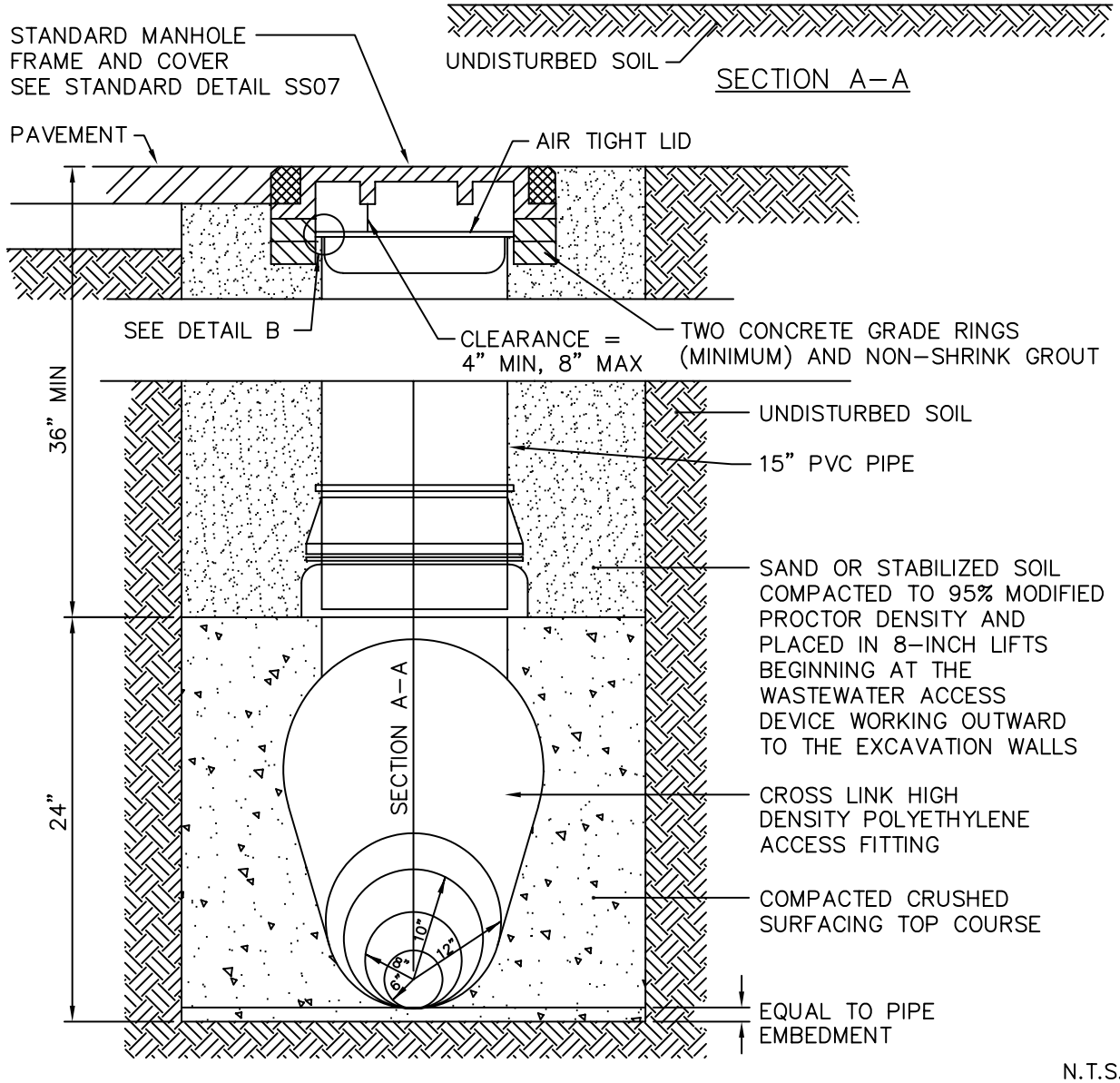
NOTES:
1. WASTEWATER ACCESS DEVICE SHALL BE MANUFACTURED BY UPONOR ETI, OR APPROVED EQUIVALENT.



DETAIL B
N.T.S.



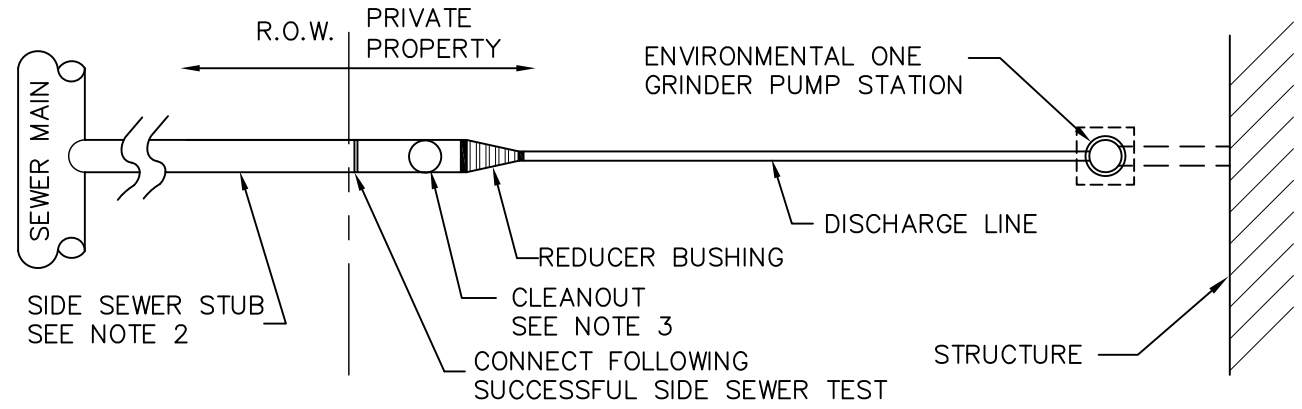
SECTION A–A



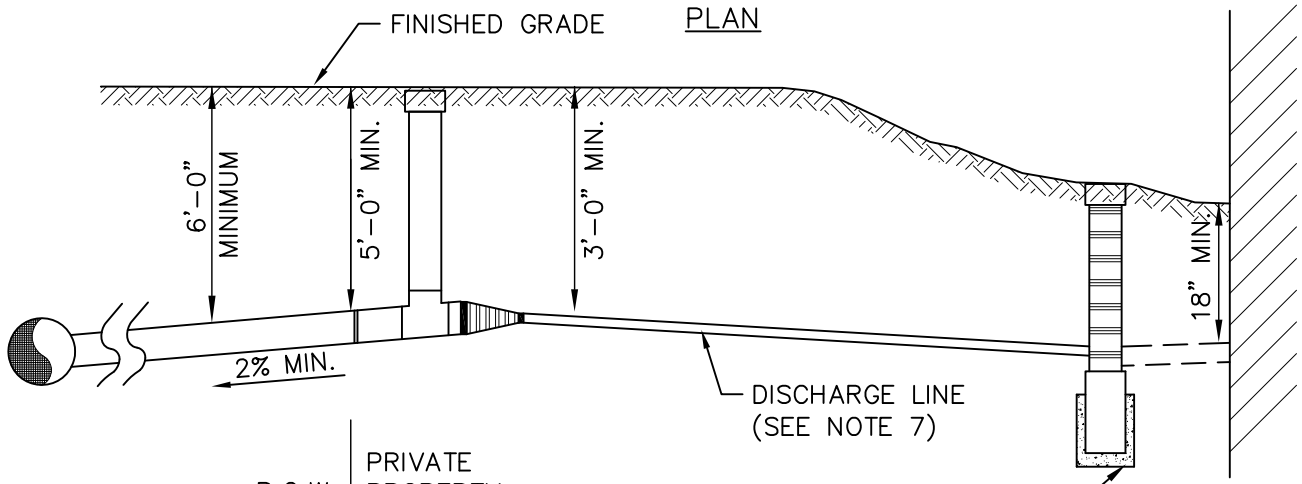
N.T.S.

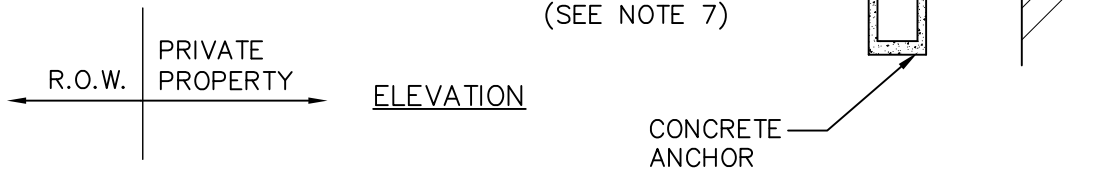
WASTEWATER ACCESS CHAMBER (WAC)

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS14
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



PLAN





ELEVATION

NOTES:

1. SEE SKYWAY WATER & SEWER DISTRICT "PRESSURE SEWER NOTES".
2. SEE SKYWAY WATER & SEWER DISTRICT DETAIL SS13 NOTES FOR GRAVITY SIDE SEWER INSTALLATION.
3. CLEANOUT IS TO BE OUTSIDE OF RIGHT-OF-WAY OR EASEMENT. SEE SKYWAY WATER & SEWER DISTRICT DETAIL SS12.
4. GRINDER PUMP SHALL BE ENVIRONMENTAL ONE MODEL DH071 OR APPROVED EQUAL. FOR LARGER CAPACITY, GRINDER PUMP SHALL BE ENVIRONMENTAL ONE MODEL DH151 OR WH231.
5. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SELECTION AND INSTALLATION OF GRINDER PUMP, CONTROL PANEL WITH ALARM, ELECTRICAL WIRING, AND CONCRETE ANCHOR.
6. FITTINGS FOR HDPE GRINDER PUMP SHALL BE BRASS OR STAINLESS STEEL.
7. DISCHARGE PRESSURE LINE SHALL BE BUTT-FUSE WELDED HDPE PIPE RATED AT A MINIMUM 200 PSI. PIPE SIZE SHALL BE DETERMINED ON CASE BY CASE BASIS.
8. CONSTRUCTION IN RIGHT-OF-WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
9. ALL CONSTRUCTION REQUIRES A SEWER PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
10. PLACE CONDUCTIVE TRACING TAPE IN ALL UNLOCATABLE FACILITY TRENCHES.
11. THE CUSTOMER'S SIDE SEWER SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF THIS DETAIL, THE UPC, AND APPLICABLE BUILDING CODES.
12. SIDE SEWER PIPE AND ELECTRICAL SHALL BE BEDDED AND BACKFILLED WITH 5/8" MINUS CRUSHED ROCK FROM 4" BELOW THE PIPE TO 6" ABOVE THE PIPE.

N.T.S.

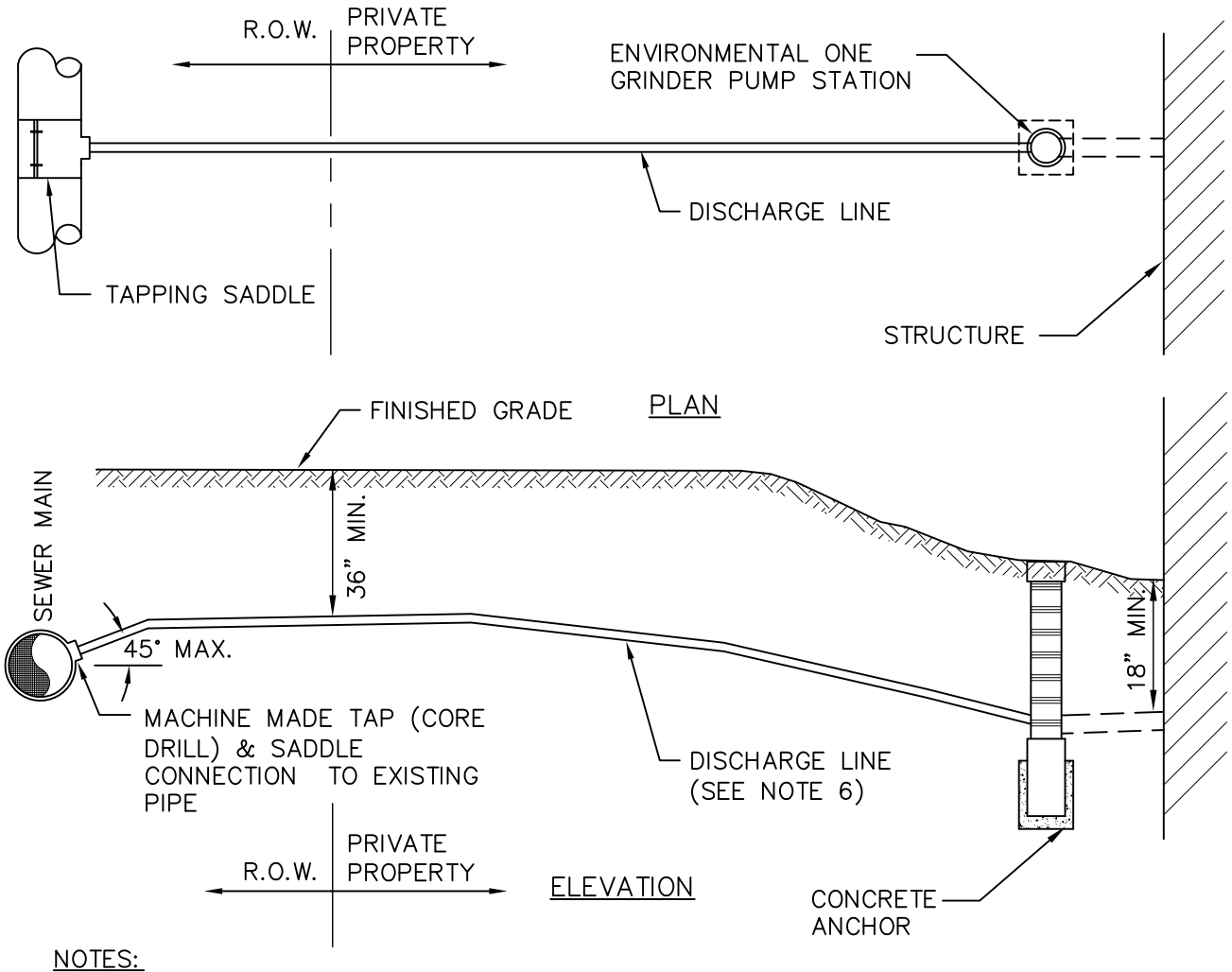
GRINDER PUMP/GRAVITY & PRESSURE SIDE SEWER INSTALLATION

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: AUGUST 2011

DETAIL NUMBER: SS15



NOTES:

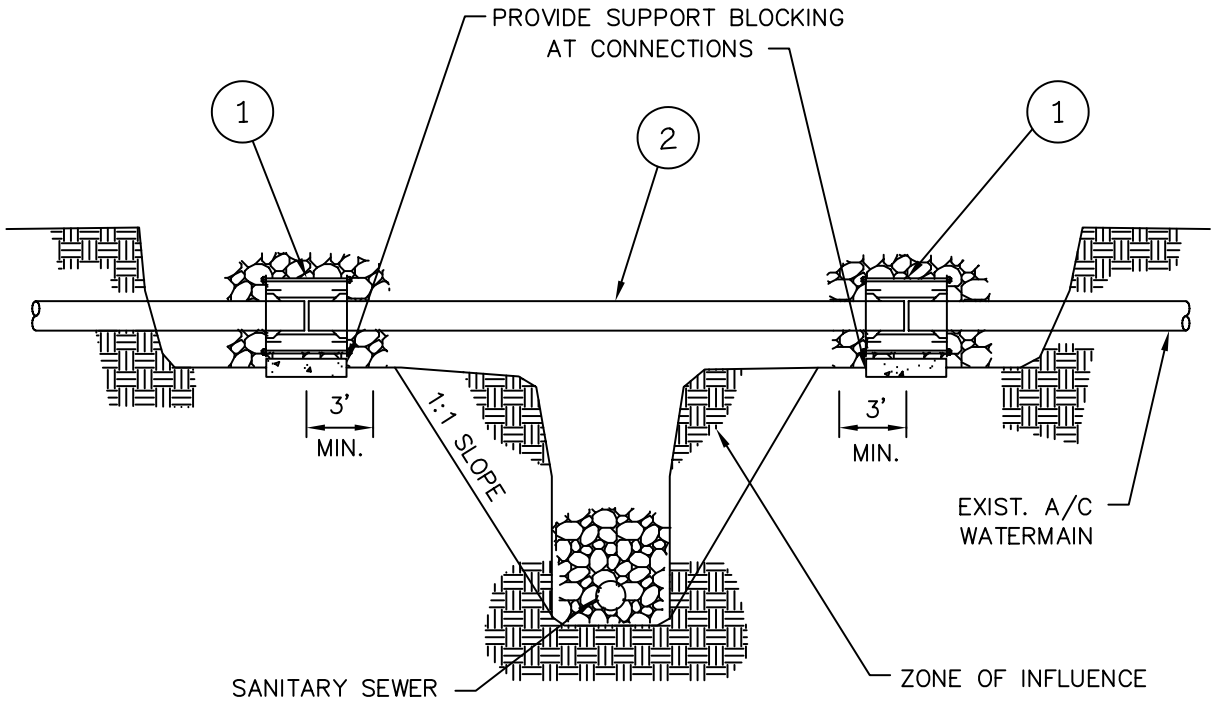
1. SEE SKYWAY WATER & SEWER DISTRICT "PRESSURE SEWER NOTES".
2. TAPPING SADDLE SHALL BE STAINLESS STEEL ROMAC STYLE 306 WITH DOUBLE BOLT OR APPROVED EQUAL.
3. GRINDER PUMP SHALL BE ENVIRONMENTAL ONE MODEL DH071 OR APPROVED EQUAL. FOR LARGER CAPACITY, GRINDER PUMP SHALL BE ENVIRONMENTAL ONE MODEL DH151 OR WH231.
4. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SELECTION AND INSTALLATION OF GRINDER PUMP, CONTROL PANEL WITH ALARM, ELECTRICAL WIRING, AND CONCRETE ANCHOR.
5. FITTINGS FOR HDPE GRINDER PUMP SHALL BE BRASS OR STAINLESS STEEL.
6. DISCHARGE PRESSURE LINE SHALL BE BUTT–FUSE WELDED HDPE PIPE RATED AT A MINIMUM 200 PSI. PIPE SIZE SHALL BE DETERMINED ON CASE BY CASE BASIS.
7. CONSTRUCTION IN RIGHT–OF–WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
8. ALL CONSTRUCTION REQUIRES A SEWER PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
9. PLACE CONDUCTIVE TRACING TAPE IN ALL UNLOCATABLE FACILITY TRENCHES.
10. THE CUSTOMER'S SIDE SEWER SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF THIS DETAIL, THE UPC, AND APPLICABLE BUILDING CODES.
11. SIDE SEWER PIPE AND ELECTRICAL SHALL BE BEDDED AND BACKFILLED WITH 5/8" MINUS CRUSHED ROCK FROM 4" BELOW THE PIPE TO 6" ABOVE THE PIPE.

N.T.S.

GRINDER PUMP/PRESSURE SIDE SEWER INSTALLATION

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: AUGUST 2011 | DETAIL NUMBER: SS16



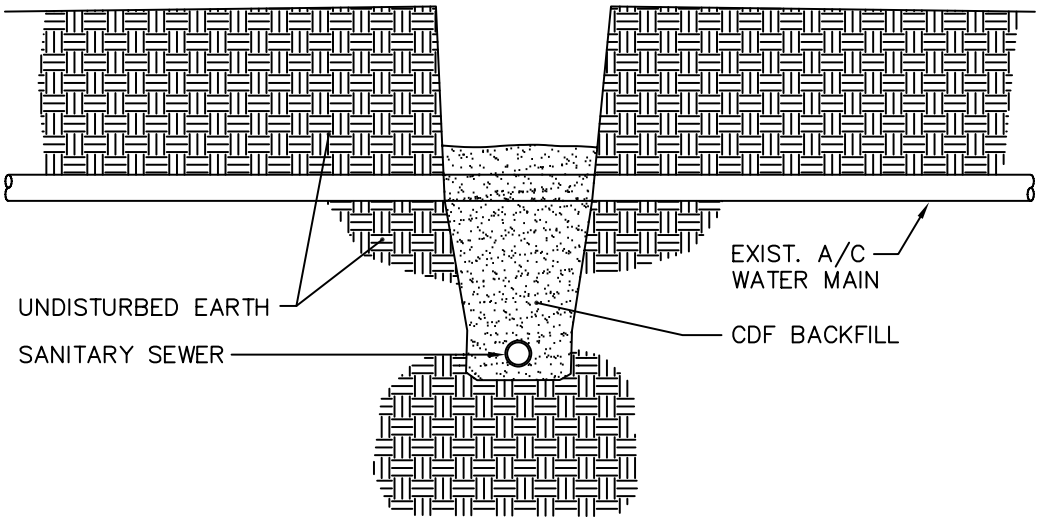
NOTES:

1. COUPLING: ASBESTOS–CEMENT (A/C) BY DUCTILE IRON (ROMAC STYLE 501, OR EQUIVALENT).
2. DUCTILE IRON PIPE, CL. 52, DIAMETER TO MATCH EXISTING A/C.
3. BED AND BACKFILL EXISTING A/C AND COUPLING WITH CDF TO 1' ABOVE PIPE. BACKFILL AND COMPACT REMAINDER PER DISTRICT AND APPLICABLE ROAD STANDARDS.
4. A/C DISPOSAL PER WAC173–400–075, WAC 295–65, PUGET SOUND AIR POLLUTION CONTROL AGENCY REQUIREMENTS, AND DISTRICT STANDARDS.
5. REPLACEMENT ONLY AT CROSSINGS DESIGNATED BY ENGINEER OR THE DISTRICT.

N.T.S.

A/C WATER MAIN REPLACEMENT AT SANITARY SEWER CROSSING

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS21
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



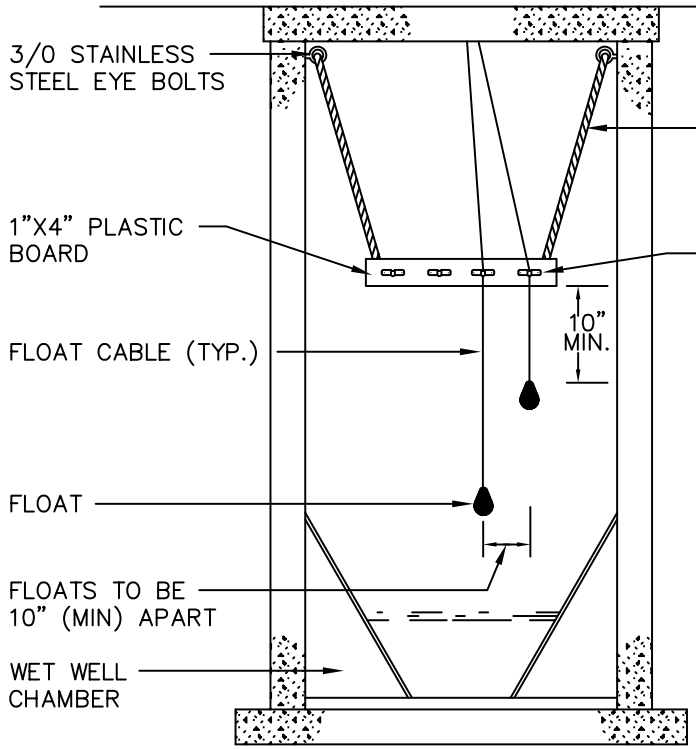
NOTES:

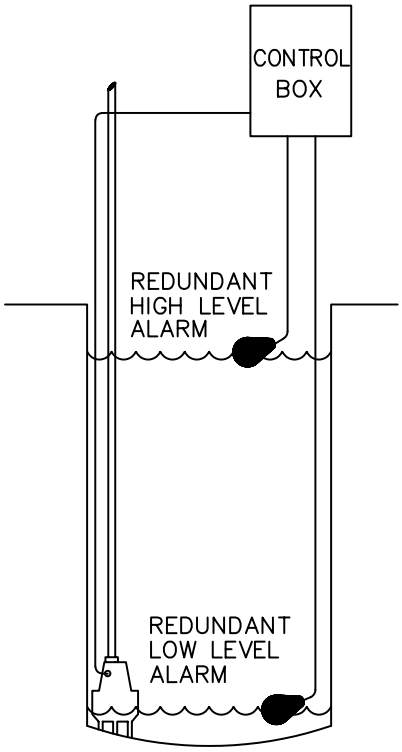
1. INSTALL CDF 1' ABOVE EXISTING A/C WATER MAIN.
2. INSTALL CDF 3' BELOW PIPE (OR GREATER IF NECESSARY FOR SPECIFIED COMPACTION REQUIREMENTS).
3. CDF SHALL EXTEND LONGITUDINALLY ALONG THE SANITARY SEWER MAIN AT A 1:1 SIDE SLOPE FROM 1' BEYOND THE CENTERLINE OF THE A/C WATER MAIN TO THE SEWER MAIN TRENCH BOTTOM.

N.T.S.

100% BACKFILL UNDER A/C WATER MAIN AT SANITARY SEWER CROSSING

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS22
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

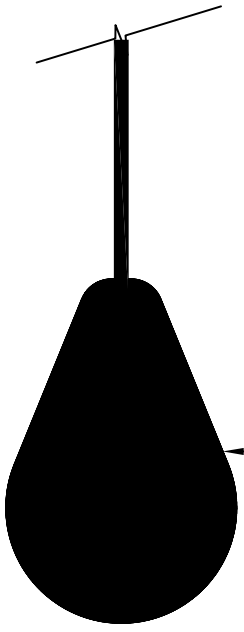




MULTIPLE FLOAT SYSTEM

NOTES:

1. PUMP STATION CONTROL IS BY MULTITRODE LEVEL MONITORING AND CONTROL SYSTEMS AS MANUFACTURED BY FLYGT.
2. FLOAT SWITCHES SHALL BE PROVIDED AS BACK UP.

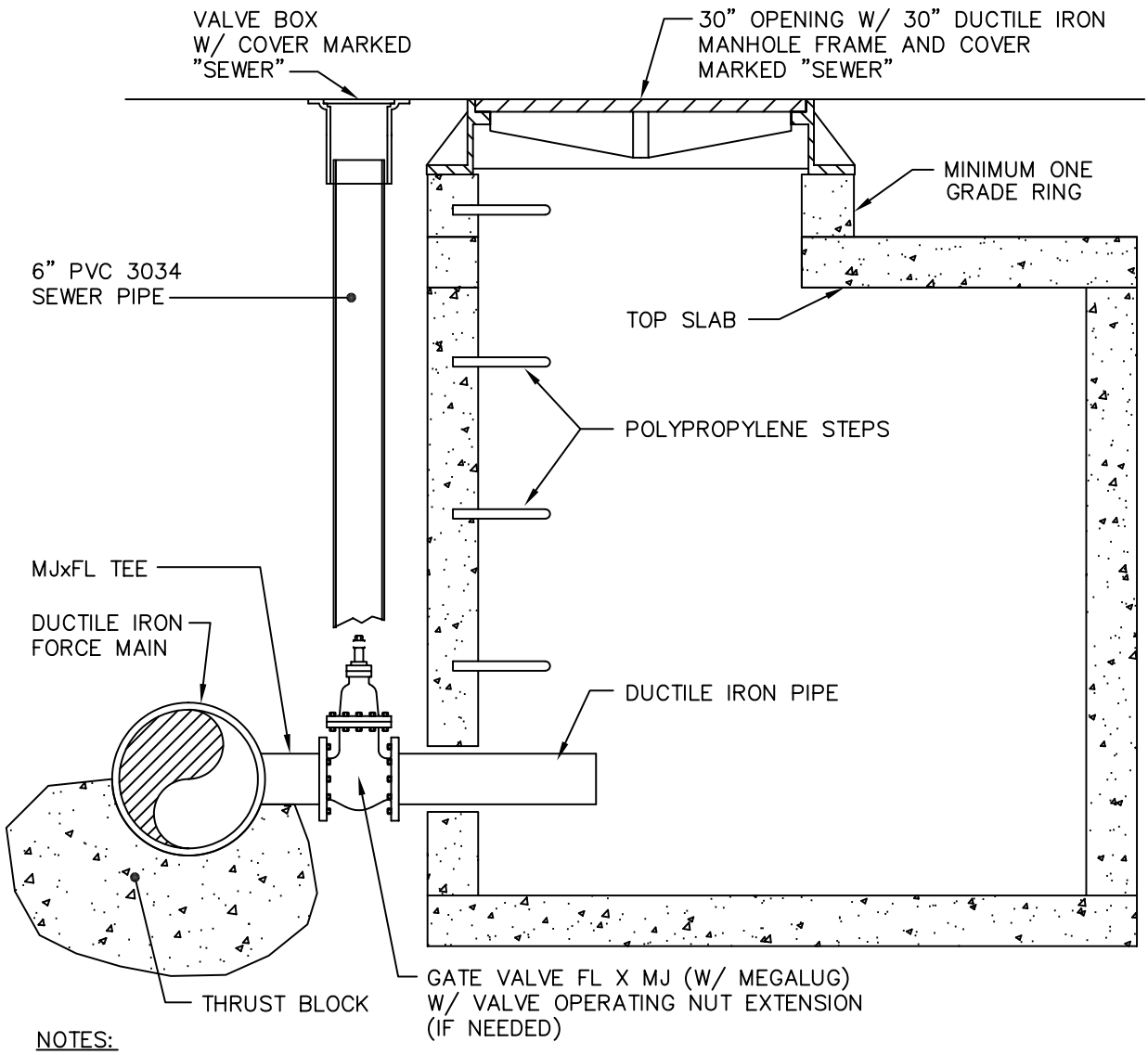


FLOAT

N.T.S.

MERCURY BACKUP FLOAT SWITCH

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS31
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



NOTES:

1. MANHOLE SHALL BE SHALL BE COATED WITH TNEMEC SERIES 141 POTAPOX 80, 16 MILS DRY FILM THICKNESS (DFT) (EXTERIOR); AND TNEMEC SERIES 435 PERMA SHIELD, 40 MILS DFT (INTERIOR), OR BY DISTRICT–APPROVED EQUALS.

2. PREPARATION FOR BOTH THE EXTERIOR AND INTERIOR OF THE MANHOLE SHALL PROVIDE A SURFACE THAT IS CLEAN, DRY, AND FREE FROM CONTAMINANTS, AND SURFACE PREPARATION SHALL MEET THE REQUIREMENTS OF SSPC–SP 13 ABRASIVE BLAST, PROVIDING A FINE GRIT STANDARD PROFILE. MANHOLE VOIDS SHALL BE REPAIRED WITH SURFACE FILLER TNEMEC SERIES 218 MORTAR CLAD, OR BY A DISTRICT–APPROVED EQUAL, PRIOR TO APPLICATION OF COATINGS.

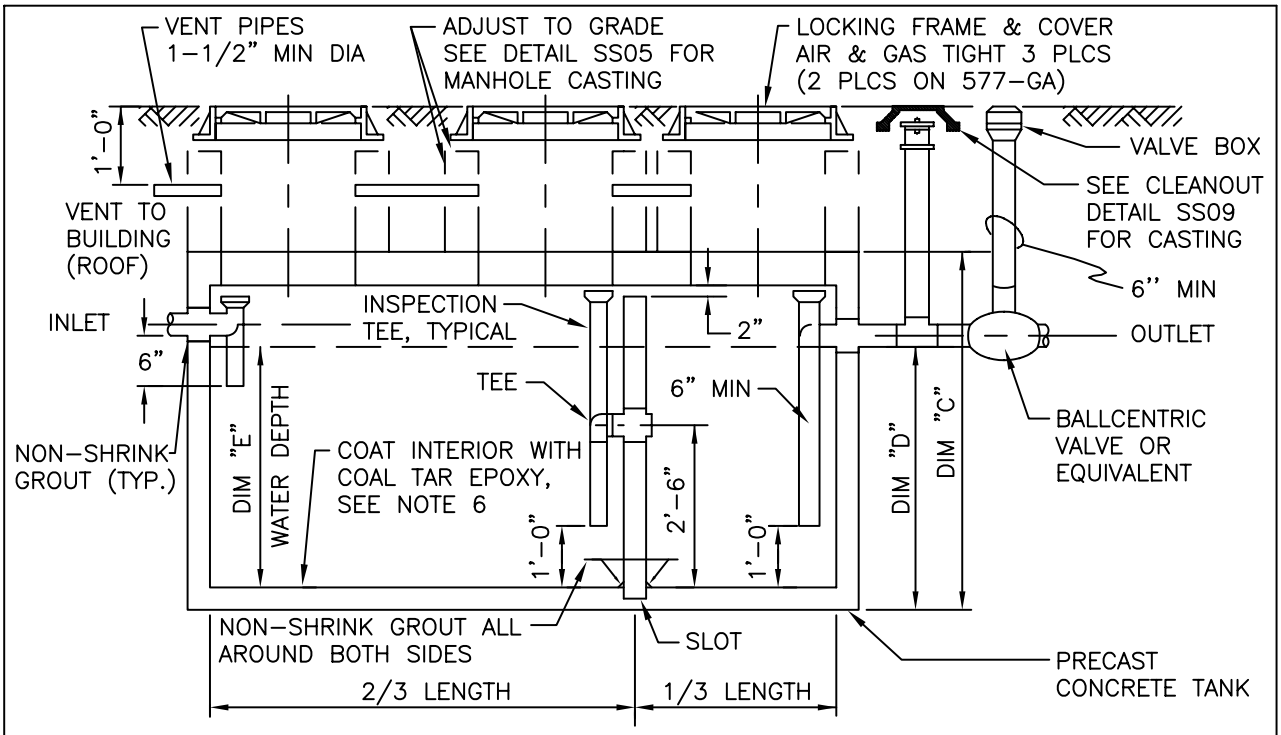
3. DUCTILE IRON PIPE AND FITTINGS SHALL BE PROVIDED WITH AN INTERIOR COATING/LINING OF POLYETHYLENE MEETING THE REQUIREMENTS OF ASTM D1248 OR PROTECTO 401 CERAMIC EPOXY, 40 MIL MINIMUM THICKNESS. A BITUMINOUS COATING SHALL BE APPLIED TO THE PIPE AND/OR FITTING'S EXTERIOR.

4. MINIMUM VOLUME OF FLAT TOP MANHOLE SHALL BE DETERMINED BY CONSIDERING DOWNSTREAM PIPE SIZE, VALVING, AND OUTLET CONDITIONS.

N.T.S.

LOW POINT DRAIN

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS32
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



MANUFACTURER	MODEL NUMBER

MINIMUM INTERCEPTOR SIZE = 750 GAL.

PLUMBING FIXTURES SERVED

# OF 3 COMPARTMENT SINKS	# OF 2 COMPARTMENT SINKS
DISHWASHER AND OTHER FIXTURES	FLOOR DRAINS

DESIGN CRITERIA SOURCE:
USE MOST CURRENT ADOPTED VERSION
OF THE UNIFORM PLUMBING CODE – APPENDIX H

FORMULA:
OF MEALS X WASTE FLOW X RETENTION X STORAGE = CAPACITY
PER PEAK HR. RATE TIME FACTOR IN GAL.

(_____GALLONS AT DESIGN WATER SURFACE ELEVATION)

EXAMPLE: __ HOUR RESTAURANT WITH DISHWASHER SERVING
__ MEALS PER. PEAK HOUR.

(__MEALS/HR.) X (__GALS.) X (__HOURS) X (_) = ___GALS
(___ GALLONS AT DESIGN WATER SERVICE ELEVATION)

NOTE:

THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY, TO SHOW THE MINIMUM DESIGN INFORMATION REQUIRED. A MORE PRACTICAL AND/OR COST EFFICIENT DESIGN COULD BE POSSIBLE FOR ACTUAL CONSTRUCTION OF THIS PROJECT.

FOR NOTES, SEE STANDARD DETAIL SS41B

N.T.S.

GREASE INTERCEPTOR

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: SS41A

1. GREASE INTERCEPTORS SHALL BE DESIGNED AND PROVIDED PER APPENDIX H OF THE MOST CURRENT VERSION OF THE UNIFORM PLUMBING CODE (UPC) ADOPTED BY THE DISTRICT.
2. EFFLUENT FROM GREASE INTERCEPTORS SHALL NOT EXCEED 100 mg/l FAT, OIL, AND GREASE DISCHARGED TO THE SANITARY SEWER.
3. GREASE INTERCEPTORS INSTALLED IN PAVED AREAS SHALL COMPLY WITH H–20 LOADING.
4. PLUMBING/PIPING SHALL BE CONSTRUCTED TO ESTABLISH "PARALLEL FLOW" (90° TO THE TANK BAFFLE) THROUGH THE GREASE INTERCEPTOR. NO RADIUS, BEND, OR ELBOW SHALL BE ALLOWED IN THE INLET PIPE, FOR A MINIMUM OF 10 FEET OR 20 PIPE DIAMETERS (WHICHEVER IS GREATER) UPSTREAM OF THE INTERCEPTOR.
5. VENTING OF THE INTERCEPTOR SHALL BE IN ACCORDANCE WITH CHAPTERS 4, 5, AND 7 OF THE MOST CURRENT VERSION OF THE UNIFORM PLUMBING CODE OR AS ADOPTED BY THE DISTRICT.
6. THE INSIDE OF THE INTERCEPTOR SHALL BE CURED A MINIMUM OF 28 DAYS AND SHALL BE CLEAN AND DRY PRIOR TO COATING. IT SHALL BE WATER PROOFED BY THE MANUFACTURER AT THEIR MANUFACTURING FACILITY WITH TWO (2) COATS OF BITUMINOUS COAL TAR EPOXY COATING SPECIALLY FORMULATED FOR SUBMERGED SERVICE AND EXPOSURE TO RAW SEWAGE. COAL TAR EPOXY SHALL BE BITUMASTIC NO. 300M AS MANUFACTURED BY KOPPERS COMPANY, INC., OR SIMILAR COATING BY TNEMEC OR AMERON. THE MANUFACTURER SHALL RECEIVE PRIOR APPROVAL FROM THE DISTRICT BEFORE USING ANY MATERIAL OTHER THAN BITUMASTIC NO. 300M.
7. THE GREASE INTERCEPTOR SHALL BE INSTALLED ON LEVEL UNDISTURBED SOIL WITH A MINIMUM TOTAL LOAD BEARING CAPACITY OF 2,000 POUNDS PER SQUARE FOOT.
8. THE GREASE INTERCEPTOR SHALL BE SO INSTALLED AND CONNECTED TO THE SEWER SYSTEM SUCH THAT IT IS EASILY ACCESSIBLE FOR INSPECTION, CLEANING, AND GREASE REMOVAL AT ALL TIMES. THE INTERCEPTOR SHALL BE PLACED AS CLOSE AS PRACTICAL TO THE FIXTURES SERVED. ALL MANHOLE COVERS SHALL BE GAS–TIGHT IN CONSTRUCTION AND SHALL HAVE A MINIMUM OPENING OF 24 INCHES IN DIAMETER.
9. ALL SEWER LINE CONNECTIONS TO THE GREASE INTERCEPTOR SHALL BE CORE–DRILLED AND SEALED WITH NON–SHRINK GROUT UNLESS THE MANUFACTURER HAS PROVIDED IT WITH A CONNECTION PORT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL LOCATION OF THE INTERCEPTOR AND FOR PUMPING AND FILLING OF ANY TANKS THAT MAY BE DISCONNECTED FROM THE EXISTING SYSTEM. ALL PUMPING AND FILLING OF TANKS SHALL BE IN ACCORDANCE WITH SECTION 1119 OF THE 1991 UNIFORM PLUMBING CODE OR THE MOST RECENTLY ADOPTED VERSION BY THE DISTRICT.
11. A BALLCENTRIC VALVE SHALL BE LOCATED IN THE DISCHARGE PIPING, A MAXIMUM OF 8 FEET FROM THE GREASE INTERCEPTOR AND MAXIMUM OF 3 FEET FROM THE VERTICAL CLEANOUT. THIS VALVE SHALL BE CLOSED WHEN CLEANING OR SERVICING THE DEVICE. ANY PUMP MECHANISM SHALL BE INSTALLED DOWNSTREAM OF THE INTERCEPTOR TO PREVENT FAT, OIL, AND GREASE EMULSIFICATION. A 'TEE' CONNECTION SHALL BE INSTALLED IN THE DISCHARGE PIPING TO PROVIDE FOR SAMPLE COLLECTION.
12. THE DESIGN ENGINEER SHALL PROVIDE THE DISTRICT OR THEIR REPRESENTATIVE WITH A LETTER OF INSPECTION CERTIFYING THAT THE INSTALLATION WAS PERFORMED IN ACCORDANCE WITH ALL REGULATIONS AND THE APPROVED PLAN.
13. FINAL INSPECTION IS REQUIRED BY THE DISTRICT OR THEIR REPRESENTATIVE PRIOR TO CONNECTION TO THE SANITARY SEWER.
14. THE PROPERTY OWNER SHALL RETAIN OWNERSHIP OF THE GREASE INTERCEPTOR AND SIDE SEWER LINES AND SHALL BE RESPONSIBLE FOR THEIR OPERATION AND MAINTENANCE. A SERVICE/MAINTENANCE RECORD SHALL BE KEPT ON THE PREMISES AT ALL TIMES AND SHALL BE IMMEDIATELY AVAILABLE TO THE DISTRICT OR THEIR REPRESENTATIVE UPON REQUEST.
15. THE PROPERTY OWNER SHALL REPORT IMMEDIATELY TO THE DISTRICT ANY SPILL, SURCHARGE, BYPASS, OR MECHANICAL FAULT OR FAILURE WHICH INTERRUPTS OR OTHERWISE REDUCES THE CAPACITY OR REMOVAL EFFICIENCY OF THE GREASE INTERCEPTOR.

GREASE INTERCEPTOR NOTES

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: SS41B
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

Appendix I

Miscellaneous References

- **Skyway Water & Sewer District – Sewer Service Installation**
- **A guide to Restaurant Grease Management**
- **Dupont Circle Neighborhood Flooding – Interim Prevention Measures**

SKYWAY WATER & SEWER DISTRICT – SEWER SERVICE INSTALLATION

The information is intended to assist the contractor or homeowner in the installation of a single, residential sanitary sewer service. The District's "Guidelines for Construction of Water & Sanitary Sewer Facilities" may be consulted for further detail. Any work to be performed in existing public right-of-way must be performed by a contractor licensed in the State of Washington and meeting Skyway Water and Sewer District's (Skyway's) requirements for insurance and bonding. The contractor shall ensure that all approvals and permits required by Skyway, King County, and State are obtained prior to the start of construction. Work on private property may be performed by the property owner provided that all materials and methods are in accordance with Skyway Standards.

Definitions

District Standards – The information included in the "Development Guidelines for Construction of Water and Sanitary Sewer Facilities" as adopted by Skyway.

Sewer Service Stub – That portion of a sewer line that extends from a sewer main to a property line or easement line. Sewer service stubs shall be owned and maintained by the Developer/property owner.

Side Sewer – That portion of a sewer service line on private property that extends from the end of the sewer service stub. The side sewer shall be owned and maintained by the Developer/property owner.

Requirements

Taps – Taps shall be machine-made and an Insert-A-Tee saddle shall be installed if the sewer main is concrete or a Romac style "CB" or Insert-A-Tee saddle shall be installed if the sewer main is PVC. The Developer shall propose to the District for approval, a saddle for use on ductile iron pipe.

Tees – A double sweep tee shall be located at the property line and brought to finished grade.

Cleanouts – Located within two (2) feet of the structure, at all bends totaling 90°, at 100-foot intervals, at the end of sewer service stubs, or as directed by Skyway. Combination (double sweeping) tees required for cleanouts, HS-20 loading design in driving areas. Cleanouts in driving areas must be brought to the surface with cleanout ring & cover.

Pipe material – Services shall be ductile iron pipe conforming to ASA Specifications A21.51 and AWWA Specification C151 and any revisions thereof, or PVC pipe meeting or exceeding ASTM D3034-73 and any revisions thereof, or butt-fused welded HDPE SDR 11) and any revisions thereof.

Pipe Size – 6" pipe shall be installed for the sewer service stub. On private property, the side sewer can be reduced to 4" for single family residences.

Slope – Sewer service stubs and side sewers shall be laid at a 2% or greater slope. Maximum angle of service tap is 45 degrees.

Depth – The minimum depth of cover to the top of pipe for the sewer service stub shall be 5'.

Observation – Skyway shall be notified a minimum of 48 hours in advance of commencing work on a sewer main connection. Skyway shall be present at the time of the connection. A Skyway representative shall be given an opportunity to observe the installation of the sewer service stub before the trench is covered.

Water and Sewer crossings – A minimum horizontal separation of 10 feet between sanitary sewers and any existing potable water lines, and a minimum vertical separation of 18" between the bottom of the water line and the crown of the sewer, shall be maintained unless otherwise approved by Skyway.

Tracer Tape – All services shall be installed with continuous tracer tape installed 12" to 18" under the final ground surface. The marker shall be plastic non-biodegradable, metal core or backing which a standard metal detector can detect. Tape shall be Terra Tape "D" or approved equal.

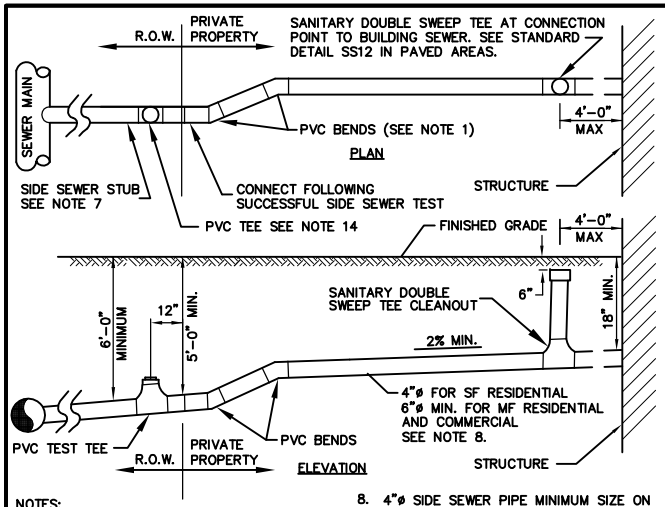
Trench Backfill – Sewer service stub trenches within R/W shall be backfilled and compacted to 95% of the soil's maximum density as determined by the Modified Proctor test, ASTM D1557. Backfill from 4" below the service piping to 12" above the service piping shall be 3/4" minus crushed rock.

Testing – Air or water exfiltration tests are required on all sewer services.

Decommission of Septic Tanks – After connection to the sewage system, all septic tanks and similar facilities shall be decommissioned by pumping the facility dry by a company licensed to do so, removing the tank's lid, and filling the tank with a non-compressible, non-biodegradable material.

Installation Guidelines – Typical diagrams are on the reverse side of this sheet. Additional information can be found in the District's Development Guidelines.

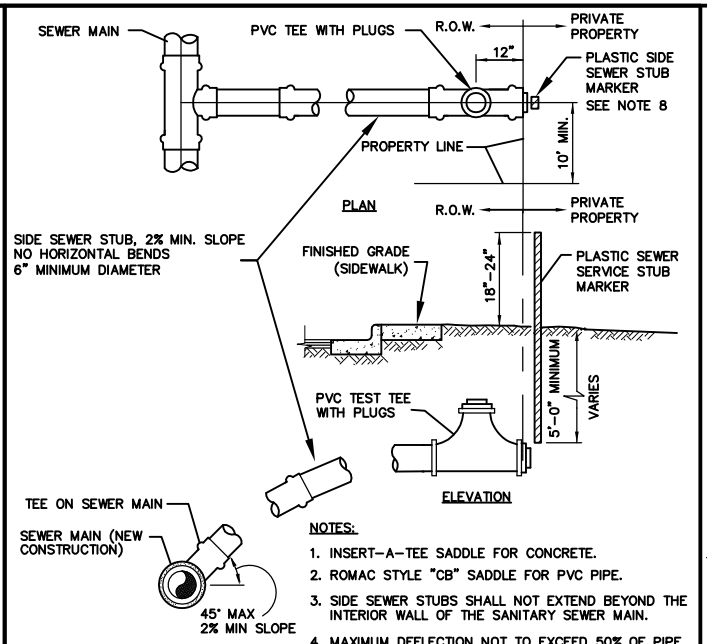
Submittals – All materials proposed shall be submitted to Skyway to ensure compliance with the District Standards. Submittals shall be in the form of product specification sheets or catalog cut sheets.



NOTES:

1. ELBOWS SHALL NOT BE GREATER THAN 45°.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° BEND ACCUMULATED/100'.
3. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION.
4. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" MAXIMUM LIFTS.
5. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE WITH AN ELBOW AND WYE. 3' STRAIGHT SECTION BETWEEN ELBOWS.
7. 6"ø MINIMUM SIDE SEWER STUB PIPE IN RIGHT-OF-WAYS AND DISTRICT EASEMENTS. 2% MINIMUM GRADE, 45° MAXIMUM GRADE.
8. 4"ø SIDE SEWER PIPE MINIMUM SIZE ON PRIVATE SINGLE-FAMILY RESIDENTIAL PROPERTY. 6"ø SIDE SEWER PIPE MINIMUM SIZE ON COMMERCIAL PROPERTIES. 2% MINIMUM GRADE, 45° MAXIMUM GRADE.
9. CONSTRUCTION IN RIGHT-OF-WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
10. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
11. PLACE CONDUCTIVE TRACING TAPE IN ALL UNLOCATABLE FACILITY TRENCHES.
12. THE CUSTOMER'S SIDE SEWER SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF THIS DETAIL, THE UPC, AND APPLICABLE BUILDING CODES.
13. SIDE SEWER PIPE SHALL BE BEDDED AND BACKFILLED WITH 5/8" MINUS CRUSHED ROCK FROM 4" BELOW THE PIPE TO 6" ABOVE THE PIPE.
14. TEST TEE LOCATION FOR SIDE SEWER CONNECTIONS TO EXISTING SEWER MAINS SHALL BE ON THE FIRST PIPE AT THE CONNECTION TO THE MAIN.
15. FOR MORE INFORMATION SEE SKYWAY WATER & SEWER DISTRICT STANDARD DETAIL SS13.

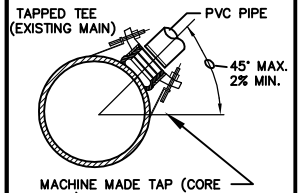
N.T.S.

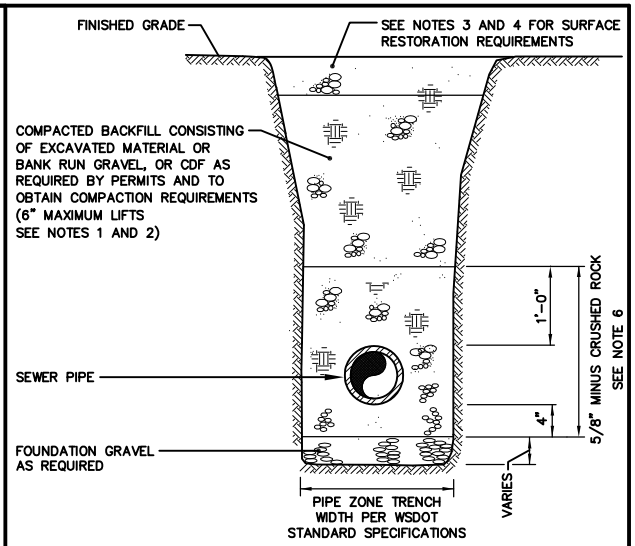


NOTES:

1. INSERT-A-TEE SADDLE FOR CONCRETE.
2. ROMAC STYLE "CB" SADDLE FOR PVC PIPE.
3. SIDE SEWER STUBS SHALL NOT EXTEND BEYOND THE INTERIOR WALL OF THE SANITARY SEWER MAIN.
4. MAXIMUM DEFLECTION NOT TO EXCEED 50% OF PIPE MANUFACTURER'S RECOMMENDATION.
5. SIDE SEWER STUB SHALL BE PVC OR BUTT-FUSE WELDED HDPE.
6. SIDE SEWER STUBS ARE TO EXTEND THROUGH THE JOINT TRENCH EASEMENT WHERE APPLICABLE.
7. TRENCH BACKFILL FOR SIDE SEWER STUB PIPE SHALL BE PER STANDARD DETAIL SS01.
8. THE SIDE SEWER MARKER SHALL BE PLASTIC, WHITE IN COLOR, NON-BIODEGRADABLE, METAL CORE OR BACKING MARKED SEWER THAT CAN BE DETECTED BY A STANDARD METAL DETECTOR.
9. SEE DISTRICT "GRAVITY SEWER NOTES" FOR HDPE SEWER PIPING.
10. FOR MORE INFORMATION SEE SKYWAY WATER & SEWER DISTRICT STANDARD DETAIL SS11.

N.T.S.

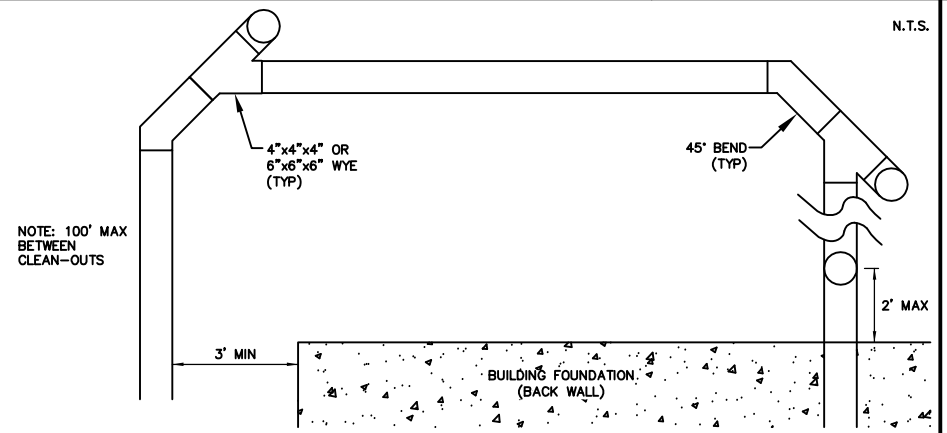




NOTES:

1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARDS AND/OR KING COUNTY, CITY, AND STATE PERMIT REQUIREMENTS.
2. UNLESS OTHERWISE REQUIRED, NATIVE MATERIAL IS ACCEPTABLE AS TRENCH BACKFILL IF IT CAN BE COMPACTED TO THE FOLLOWING PERCENTAGES OF ITS MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D1557: 95% FOR R-O-W AND IMPROVED AREAS (ROADS, DRIVEWAYS, SIDEWALKS, ETC.) & 90% FOR UNIMPROVED AREAS. (LAWNS, LANDSCAPING, NATURAL VEGETATION, ETC.) IF THIS IS NOT THE CASE, THE CONTRACTOR SHALL IMPORT BANK RUN GRAVEL MEETING WSDOT STANDARD SPECIFICATION 9-03.19, OR ANOTHER APPROVED MATERIAL.
3. PAVEMENT, ALLEY, AND SIDEWALK RESTORATION IN THE PUBLIC RIGHT-OF-WAY SHALL MEET THE REQUIREMENTS OF THE PERMITTING AGENCIES. UNLESS OTHERWISE SPECIFIED BY THE PERMITTING AGENCIES, THESE IMPROVEMENTS ON PRIVATE PROPERTY SHALL, AT A MINIMUM, MEET THE MORE STRINGENT OF THE REQUIREMENTS OF THE KING COUNTY ROAD STANDARDS OR EXISTING CONDITIONS.
4. LAWNS, DITCHES, AND ALL OTHER AREAS WITH DISTURBED GRASSES SHALL BE RESTORED USING 6 INCHES OF TOPSOIL AND FINISHED WITH EITHER SOD OR HYDROSEED. SOD MUST BE USED IN THE RESTORATION OF MAINTAINED GRASSED AREAS. HYDROSEED SHALL CONSIST OF A LAWN-TYPE MIXTURE.
5. AFTER BACKFILL AND COMPACTION IN TRAVELED AREAS, AN IMMEDIATE COLD PATCH SHALL BE PLACED AND MAINTAINED BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE ENGINEER.
6. THE DISTRICT MAY CONSIDER ALTERNATIVE PIPE BEDDING MATERIAL FOR USE IN UNUSUAL SUB-SURFACE CONDITIONS.
7. FOR MORE INFORMATION SEE SKYWAY WATER & SEWER DISTRICT STANDARD DETAIL SS01.

N.T.S.



TYPICAL BUILDING SEWER PLAN

A Guide to Restaurant Grease Management

A Regulator's Desk Reference

Interagency Resource for Achieving Cooperation (*IRAC*)

Dates: September 2004
February 2010 – rev*

About Interagency Resource for Achieving Cooperation (*IRAC*):

The Interagency Resource for Achieving Cooperation (*IRAC*) is part of the Local Hazardous Waste Management Program in King County. *IRAC* is a forum for regulators from different agencies to work together sharing their diverse perspectives in addressing regulatory conflicts or gaps.

Disclaimer:

This publication provides research information and practical guidance regarding the handling, storage and disposal of restaurant grease within King County. It is not intended to be a complete reference to all laws and regulations; local jurisdictions may have regulations that differ from the recommendations in this report.

Additional copies of this report:

A PDF version of "***Restaurant Grease; A Regulator's Guide***" is available at:
http://www.lhwmp.org/IRAC/resources/publications.aspx *2010 - rev

Acknowledgements:

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Introduction.

The IRAC Restaurant Grease Management Workgroup was formed to address the problem of grease entering the storm drainage system and sewers from improper grease handling and storage practices.

The goals of the workgroup:

- **Provide information and guidance to regulators and food service establishment operators about how best to collect, store, and dispose of fats, oils, and grease generated from the preparation of food.**
- **Provide regulators with information and guidance for conducting inspections of food service establishments.**
- **Provide outreach materials for assisting food service establishments.**
- **Provide regulators with an information matrix list for sewer districts in the King County region.**
- **Provide food service establishments with a list of contractors and service providers.**

Table of Contents

Section 1: Universal Standards

NOTE: These standards were compiled by the IRAC Restaurant Grease Management workgroup to provide over-all guidance for the acceptable handling, storage, and disposal of grease at food service establishments. These standards should be considered best management practices and design standards for kitchens as well as inside and outside grease storage areas.

- Use, store and dispose of grease properly.
- Don't dispose of grease to the storm or sanitary sewers.
- Collect fryer and cooking grease in watertight containers.
- Don't leave the lids to grease bins open to the weather.
- Keep collection bins or barrels in areas protected from traffic and the weather and away from drains.
- Keep collection bins in an area where spills will be contained or directed to the sanitary sewer.
- Clean up grease spills by scraping up as much as possible before mopping.
- Absorb oil spills with sphagnum moss or other dry oil absorbent. Place the used absorbent inside two plastic bags or other sealed container and dispose of it in the trash.
- Clean hood filters in sinks that flow to grease retention devices attached to the sanitary sewer. Do this on a frequent basis.
- Dispose of kitchen floor mop water to sinks that flow to grease retention devices attached to the sanitary sewer.
- Use low emulsion-type soaps for floor and hood cleaning.
- Connect trash compactors to the sanitary sewer or place them on pads that have a drain connected to the sanitary sewer.

Section 2: Inspector Guidelines

Inspection Procedures for Grease Interceptors and Grease Traps

Grease interceptors and traps reduce the likelihood of sanitary sewer overflows caused by grease from food services. Inspections are performed to ensure compliance with local discharge limits for fats, oils, and grease. This procedure describes how to inspect grease interceptors and traps, how to determine which interceptors or traps require inspection, and how to determine the quantity of grease accumulated in each device. It also includes information on the equipment used when doing inspections, a description of grease interceptors and traps, and how to inspect each device.

NOTE: All grease retention devices should be inspected for discharge compliance at least quarterly.

Inspection Equipment Lists

Equipment needed for inspecting grease interceptors and traps is provided below.

For Grease Interceptor Vaults

Manhole puller	Thread Tap for manhole bolt holes
Small sledge hammer	WD-40 or other lubricant
Mirror	Extra manhole bolts
Flashlight	Probe to check depth and condition of baffle tees
Ditch spade (shovel with narrow blade)	Disposable gloves
8' clear plastic tube (fluorescent light safety cover)	Paper towels
Portable pH meter	Sample cup on a rope or sample pump
Sample bottle provided by laboratory	
Sample inspection log sheet	

For Grease Traps

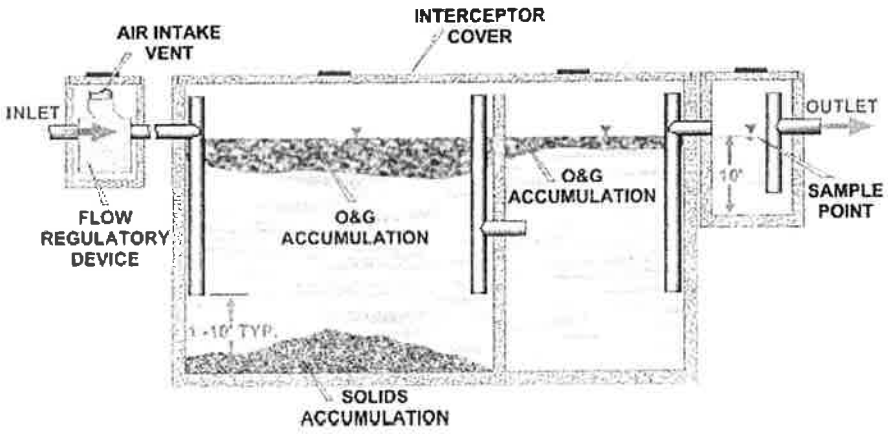
Large flat head screw driver
Large adjustable wrench
Other hand tools, including hex head or star head driver (may be required to open trap lid)
Clean-out plug wrench
2' to 4' clear plastic tube (fluorescent light safety cover cut to size)
Portable pH meter
Sample bottle provided by laboratory
Sample inspection log sheet
Small shovel or garden trowel
Disposable gloves
Paper towels
Flashlight
Turkey baster for sampling discharge water

Grease Interceptors

Description

A standard grease interceptor is a large-capacity underground vault with at least two chambers installed on the gray water discharge from a kitchen facility (see figure below). The large capacity of the vault slows down the wastewater, allowing oil and grease to float to the surface and solid material to settle out. These vaults are installed outside the building as near as possible to the source of oil/grease.

The vault has a concrete lid with manhole openings in the top. These allow access into the vault for cleaning and for inspection of vault components, and they allow for visual inspection of all interior baffle tees. These baffle tees are usually made of 6" PVC. Vault capacity is determined using a calculation provided in the Uniform Plumbing Code (see the most current version of UPC for calculation). The vault also must meet the standard specifications of the local jurisdiction.



Inspection Procedures

1) Open lid(s) covering all chambers of the interceptor vault.
2) Visually inspect inlet baffle tee and note any problems.
3) Determine inlet pH (if desired) using a portable pH meter.
4) Determine depth of grease blanket, including both liquid and solid grease, and note this on the inspection log. The depth of the grease blanket can be determined using either of two methods:
   a) Push the blade of a ditch spade (narrow blade shovel) into the grease blanket until no more resistance is felt. Pull the shovel out, making a hole in the grease blanket, and estimate the depth of the blanket.
   b) Using a clear plastic tube, obtain a core sample of the interceptor. Prepare the tube by routing a length of braided fishing leader through the tube (tying a small weight to the leader will aid in this task) and attach the leader to a rubber stopper with an eye-bolt inserted through it.
   Holding the tube vertically, push it through the grease blanket to the bottom of the interceptor and pull the plug into place with the fishing leader. Placing a cap or stopper on the upper end of the tube will help in keeping the leader taught and the plug in place.
   Pull the tube up and measure the amount of grease and solids in the interceptor. Empty the contents of the tube back into the vault and dispose of the tube in the on-site garbage, if available. Keep the stopper with eyelet for future use.

5) Inspect the inlet and baffle tees, if visible, and note any problems on the inspection log . If the baffle tee isn't visible and there are three lids over the vault, it may be visible under the center lid. To determine the depth of the tees, use a probe at least 10 feet long with something on the end that can hook onto the edge of a pipe. Two 5-foot sections of ¾ inch PVC pipe that screw together in the middle and have caps on the ends works well. This can also be used to determine if the baffle tee is in place in the event that it is not visible from above.

6) Inspect discharge tee and note any problem s on the inspection log. Look for accumulation of grease on the walls of the tee or in the discharge. Look for rainbow sheen on the discharge flow.

7) Determine pH of discharge flow (if desired) using a portable pH meter.

8) Determine depth of grease blanket using procedure noted in #4 above.

9) Take sample of discharge flow (if desired).

10) Be sure to replace all access lids.

11) Leave the interceptor vault in the same condition in which it was found. If the lids were bolted down, re-bolt them, etc.

12) If any baffle tees are missing, or if there is significant grease (> 25 % of the static liquid volume), inform the facility manager or person in charge. Note the name of the person you talked to and the content of the discussion.

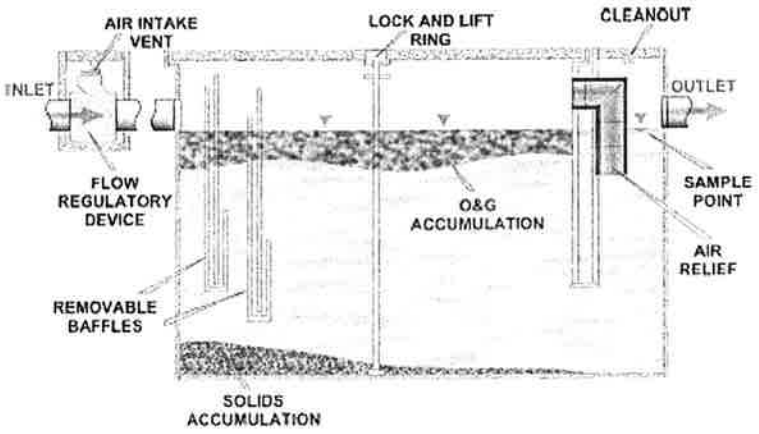
Grease Traps

Description

Grease traps are made of rust resistant metal and can be installed above or below the floor level, usually in the kitchen near the fixtures that discharge to them. A grease trap has a much smaller capacity than a grease interceptor vault (see figure below). .

A solid metal lid is usually affixed to the grease trap body with a screw on each corner, although some lids have one large screw or bolt in the middle of the lid. Some grease traps have a separate discharge section with a clean-out plug at the top of the section.

Up to four fixtures can be connected to a grease trap, and the trap is sized according to the number of fixtures that can connect to it. Sizing criteria can be found in the Uniform Plumbing Code.



Inspection Procedures

1) Open the lid covering the grease trap and visually inspect all visible internal components and note any problems
2) Determine depth of grease blanket, including both liquid and solid grease, and determine the quantity of solids at the bottom. The following two methods can be used to determine the depth of the grease blanket.
    1. Push the blade of a small garden shovel or trowel into the grease blanket until no more resistance is felt. Pull the shovel out, making a hole in the grease blanket and estimate the depth of the blanket.
    2. Using a clear plastic tube and rubber stopper, pull out the contents of the grease trap. (This process works similar to holding your finger over the end of a straw and pulling the liquid up when you lift the straw.) Follow these steps:
        i) Hold the tube vertically and push it to the bottom of the grease trap.
        ii) Plug the top opening of the tube with a rubber stopper, making sure the plug is tight enough to create a vacuum.
        iii) Pull the tube up, stopping just before the bottom of the tube comes up out of the grease blanket.
        iv) Note the layers of grease blanket, liquid and solids in the trap.
        v) Empty contents of tube into the trap and dispose of the tube in the garbage on-site, if available.

3) Collect a sample of the discharge flow (if desired).
4) Close the grease trap lid.
5) Leave the trap in the same condition in which it was found. If the lid was bolted down, re-bolt it.
6) If any of the grease retention components are missing, or if there is significant grease leaving the trap in the discharge (that is, enough to pose a threat of blockage), inform the facility manager or person in charge prior to leaving the site. Note the name of the person and the content of the discussion.

Section 3: Regulators' Outreach Materials

NOTE: The following documents and templates may be provided to restaurants to guide them through a grease management program.

▪ Restaurant owner guidelines for implementing a grease reduction program:

There are many ways to cut down on your grease output and avoid costly maintenance and fines. By using common sense and good housekeeping practices and by reducing the accumulation of grease, you can minimize your impact on the sewer system and avoid costly cleanup of grease spills.

Pretreatment Methods: All pretreatment methods require a commitment to maintenance and, in most cases, a change in kitchen management policies. If you install a pretreatment device, remember that extremely hot water and solvents defeat the purpose of pretreatment devices by keeping the grease suspended in the gray water. Vendors can provide assistance on installation, maintenance, and information. They are listed in the Yellow Pages (see also Appendices A and B).

- **Recycle grease and oils when possible**: When using deep fat fryers, or processes that produce large amounts of plant or animal byproducts, separate the oils and fats from the food products. Recycle the fat and food products through one of the area grease rendering companies or food recyclers. If food recycling isn't an option, dispose of food products in sealed containers with your solid waste. In the future there may be better options for composting food waste.

- **Avoid using the food disposal**: Disposals and food grinders are bad for your system because they allow grease and food to leave your system ground up and suspended in liquid. These byproducts drop out and adhere to the walls of the pipe, fill up your pretreatment devices, and create a potential future backup.

- **Install grease traps:** These go inside the building near the sink and act as a holding facility for kitchen water before it is discharged into the side sewer. Grease traps usually require constant cleaning (every day for many businesses), but when sized and properly maintained, they effectively remove grease from kitchen wastewater.

- **Install a grease interceptor**: A grease interceptor is a large tank or vault (usually 750 gallons or larger) is installed outside the building and provides the most efficient way to remove grease and oils. However, it requires routine maintenance. The amount of maintenance depends on your use. Both grease interceptors and grease traps should be sized according to the Uniform Plumbing Code or other local standard.
- **Use of bacteria (bugs):** Get permission from your local sewer agency before using these products.
- **Grease removal devices**: Several types of skimmers or dippers can mechanically remove grease from kitchen wastewater. They should be emptied and cleaned regularly.

Notice: If your establishment discharges more than the maximum amount of grease allowable, you may be liable for damage claims and cleaning costs resulting from grease discharges.

Education and Housekeeping: Periodic cleaning of the pretreatment device is imperative to insure that it is working properly. If no device exists, it is critical that kitchen staff understand how to clean dishes—that is, they must pre-scrape food waste into the solid waste, keep sink strainer baskets clean and replaced when necessary, etc.. Grease prevention procedures must be part of the standard training of new employees.

Good housekeeping is the first step in a good grease reduction program.
Here are some tips to help you eliminate grease before it becomes a problem:

- **Deep Fat Fryer:** Put waste grease in a container then pour it into the rendering barrel for recycling. Wipe the fryer down with paper towels and dispose of them with solid waste. Wash out the remaining the grease (there shouldn't be much).
- **Grill and Roaster/Broiler:** Empty drip pans into the rendering container and wipe everything off with paper towels. Dispose these with the solid waste. Any remaining grease can be washed.
- **Gravy and Sauce:** Wipe greasy pans and dishes prior to washing, putting leftover material into the rendering container. Residues should go out with the solid waste.
- **Frosting Containers:** Pre-scrape containers and wipe them with paper towels. Attempt to recycle or reuse large quantities and dispose of small quantities in the solid waste.
- **Butter and Butter by-products:** Pre-scrape utensils and containers prior to washing and dispose of non-recyclable materials in the solid waste.
- **Meat Scraps and Trimmings:** Wipe meat processing equipment clean with a paper towel prior to cleaning and put meat trimmings into the rendering container. Recycle floor sweepings or put them in the solid waste.
- **Avoid using the Garbage Disposal:** Garbage disposals send unwanted food byproducts into the sanitary sewer where they will drop out of solution, build up on the walls of your side sewer, and cause a backup.
- **Keep your Sink Strainers in place:** The best way to stop backups is to eliminate the source. Small food particles should be cleaned often from sink strainers and disposed as solid waste.
- **Recycle unprepared Food Waste:** Recycling is the preferred method of disposing of significant volumes of food waste. Most recycling companies provide rendering barrels or food waste barrels. Small quantities of food can be disposed in the solid waste if it's in a plastic bag or container.(See Appendix B for Contractor List)
- **Maintain Traps and Interceptors:** Small kitchen-sized traps should be cleaned at least weekly, sometimes more often. This can be done in-house, usually after hours, by kitchen staff. Larger vault-sized interceptors should be cleaned on a regular cycle, depending on the amount of grease accumulated.

▪ Spill Prevention and Cleanup

NOTE: These are recommendations for businesses to follow for spill prevention and cleanup:

- Store and transport liquids in containers with tight-fitting lids.
- Regularly inspect containers for leaks.
- Develop and implement an emergency spill prevention plan (see attached template). The plan should be posted at appropriate locations in the building (near areas that have a high potential for spills).
- Put an emergency spill containment and cleanup kit near the spill prevention plan.
- Train all employees about the plan and kit.
- Clean up all spills properly and immediately.

▪ Spill Prevention and Cleanup Plan (Template)

NOTE: This form might be used to provide a guideline for developing a written spill prevention plan. A spill kit should be part of the plan. It is recommended to post and educate employees about the plan when completed.

Company Name: _____
Address: _____
Phone Number: _____

Describe primary facility activities:

_____
_____
_____
_____

List types of chemicals used at the facility:

Provide Contact Names and Phone numbers for the following in the table below:

	Contact Names	Contact Phone Numbers
Owner		
Onsite Spill Cleanup Coordinator(s)		
Agencies to contact in the event of a spill. (i.e., Local City, County, and State agencies)		

Provide a small facility map that includes the following information:

- Location of Spill Kits
- Waste Storage areas
- Chemical Storage Areas
- Locations of Catch Basins on the Facility Property

Provide a short description of emergency cleanup and disposal procedures:

a) _____
b) _____
c) _____
d) _____

▪ Spill Contact Directory: (Example)

The following are examples of important agencies to list in a spill prevention plan:

▪ Washington State Department of Ecology (NW region)	(425) 649-7000
▪ Fire Department	911
▪ King County Industrial Waste (Monday thru Friday, business hours)	(206) 263-3000
▪ King County Public Health	(206) 296-4600
▪ Seattle Public Utilities	(206) 386-1218
▪ Seattle Surface Water Quality Hotline	(206) 684-7587
▪ After Hours Seattle Drainage Emergency Response	(206) 386-1849

▪ Useful resources for regulators and restaurants:

NOTE: Always respect copyrights when reprinting original material.

- Stormwater Journal; http://www.forester.net/sw.html
- EPA-NPDES regulations; http://www.epa.gov/OWM/mtb/spillprv.pdf
- Green Plan for The Food Service Industry; www.p2pays.org/food/main/oil.htm
- Washington Restaurant Association; www.wrahome.comhttp://www.des.nh.gov/SWTAS/greaseDisposal.htm
- Pollution Prevention Regional Information Center; http://www.p2ric.org/
- King County FOG page; http://dnr.metrokc.gov/wlr/indwaste/fog.htm
- North Carolina FOG poster; http://www.p2pays.org/ref/13/12327.pdf
- North Caroline FOG poster (Spanish version); http://www.p2pays.org/ref/13/12311.pdf
- King County map page; http://dnr.metrokc.gov/wlr/indwaste/map.htm

▪ Grease Trap Operation and Maintenance (TEMPLATE)

Note: This form may be used to track maintenance of grease traps inside of the building. Proper maintenance can help reduce stoppages in the plumbing and reduce blockages forming in main lines of the sewer collection system. Completion of this form will show the business's record of the maintenance for the equipment in service.

Company Information

Company Name: _____ Site Address: _____

Date	Maintenance Performed[1]	Quantity Removed[2]	Maintenance Performed By[3]	Signature of Responsible Party[4]

1. Please mark one of the following: Cleaned (Grease/oil Removal), Inspected, or Pumped by professional cleaner.
2. List the quantity of grease and/or oil removed in approximate gallons.
3. Note the name of the employee and/or the company performing maintenance
4. The signature can be your employee or the employee of the company performing maintenance.

▪ Choosing a Sewer Contractor:

NOTE: If you have had re-occurring problems, chances are you already have a contractor. Find someone with a proactive treatment program that will work to solve your problem and reduce your maintenance cost, not just jet your sewer lines. The following are some of the things a good contractor should offer:

Education: The contractor should work with the kitchen staff to identify sources of grease and look for ways of eliminating them. They should also instruct the kitchen staff on alternatives to current practices that could be adding to the problem.

Maintenance: In addition to rodding and jetting, the full service contractor should set up a maintenance schedule and log book for any existing pre-treatment device, and assign the duties of cleaning the device to kitchen personnel. In the case of large separators, the contractor may inquire as to the maintenance schedule, and make recommendations for adjusting the cycle of cleaning if grease buildup persists.

Follow up: The contractor should check back periodically to insure the grease program they have implemented is still working. This includes checking the interceptor, log books, and talking with the kitchen staff. A good contractor should provide you with a program that will reduce the amount of jetting required for keeping your line clear, thus reducing your annual maintenance cost.

Pre-treatment Devices: Small devices require frequent maintenance and are less efficient. Larger devices allow for a greater storage time and more grease retention. Mechanical separators are fairly small units and work well as long as they are cleaned and maintained on a daily basis.

Section 4: Best Management Practices Manual for Fats, Oil, and Grease

Information, Pollution Prevention, and Compliance Information for Publicly-Owned Treatment Plants

NOTE: This manual was developed from a document produced by Brown and Caldwell for the Oregon Association of Clean Water Agencies (OACWA). This King County manual includes several modifications of the original document.

The original Brown and Caldwell/OACWA document was funded in part by the Oregon Department of Environmental Quality, through its Pollution Prevention Incentives for States grant awarded by the federal Environmental Protection Agency (Source: http://www.oracwa.org).

Fats, oil and grease, also called FOG in the wastewater business, can have negative impacts on wastewater collection and treatment systems. Most wastewater collection system blockages can be traced to FOG. Blockages in the wastewater collection system are serious, causing sewage spills, manhole overflows, or sewage backups in homes and businesses.

Two types of FOG pollutants are common to wastewater systems. Petroleum-based oil and grease (non-polar concentrations) occur at businesses using oil and grease, and can usually be identified and regulated by municipalities through local limits and associated pretreatment permit conditions. Animal and vegetable-based oil and grease (polar concentrations) are more difficult to regulate due to the large number of restaurants and fast-food outlets in every community.

This manual is written to provide municipal pretreatment staff, plus restaurant and fast food business managers and owners, with information about animal and vegetable-based oil and grease pollution prevention techniques for food service establishments. Use of the information provided in this manual can be effective in both reducing maintenance costs for business owners, and preventing oil and grease discharges to the sewer system.

Many of the nation's fast-food restaurant chains participate in FOG recycling programs. Ensuring that grease trap and grease interceptors are properly installed, and most importantly, properly maintained is more difficult. This manual focuses on proper maintenance of grease traps and interceptors, and includes inspection checklists for municipal pretreatment inspectors.

Knowledgeable municipal pretreatment staff, working with business owners, can effectively prevent oil and grease buildup, and associated problems, for both the sewerage agency and the restaurant owner.

Manual Contents

Frequently Asked Questions About Grease:

Is grease a problem?
What is a grease trap and how does it work?
What is a grease interceptor and how does it work?
Do I need a grease trap or interceptor?
Do I have a grease trap or interceptor?
Is the grease trap I have adequate?
How do I clean my grease trap?
Can you recommend a maintenance schedule?
What if I don't install a grease trap?
Who determines if I need a grease trap or interceptor?
How can I get in compliance?
What are the criteria for inspecting grease traps?

Is grease a problem?

In the sewage collection and treatment business, the answer is an emphatic YES! Grease is singled out for special attention because of its poor solubility in water and its tendency to separate from the liquid solution.

Large amounts of oil and grease in the wastewater cause trouble in the collection system pipes. It decreases pipe capacity and, therefore, requires that piping systems be cleaned more often and/or some piping to be replaced sooner than otherwise expected.

Oil and grease also hamper effective treatment at the wastewater treatment plant. Grease in a warm liquid may not appear harmful. But, as the liquid cools, the grease or fat congeals and causes nauseous mats on the surface of settling tanks, digesters, and the interior of pipes and other surfaces which may cause a shutdown of wastewater treatment units.

Problems caused by wastes from restaurants and other grease-producing establishments have served as the basis for ordinances and regulations governing the discharge of grease materials to the sanitary sewer system. This type of waste has forced the requirement of the installation of preliminary treatment facilities, commonly known as grease traps or interceptors.

What is a grease trap and how does it work?

A trap is a small reservoir built into the wastewater piping a short distance from the grease producing area. Baffles in the reservoir retain the wastewater long enough for the grease to congeal and rise to the surface. The grease can then be removed and disposed properly. See the "*How It Works*" section for a description of how the various components of a grease trap function.

What is a grease interceptor and how does it work?

An interceptor is a vault with a minimum capacity of between 500 and 750 gallons that is located on the exterior of the building. The vault includes a minimum of two compartments, and flow between each compartment is through a 90 degree fitting designed for grease retention. The capacity of the interceptor provides adequate residence time so that the wastewater has time to cool, allowing any remaining grease not collected by the traps time to congeal and rise to the surface where it accumulates until the interceptor is cleaned. See the "*How It Works*" section for a description of how the various components of a grease interceptor function.

Do I need a grease trap or interceptor?

Any establishment that introduces grease or oil into the sewage system in quantities large enough to cause line blockages or hinder sewage treatment is required to install a grease trap or interceptor. Grease interceptors are usually required for high volume restaurants (full menu establishments serving more than 40 meals per peak hour) and large commercial establishments such as hotels, hospitals, factories, or school kitchens.

Grease traps are required for small volume (fast food or take-out restaurants with limited menus, minimum dishwashing, and/or minimal seating capacity) and medium volume (full menu establishments operating 8-16 hrs/day and/or serving less than 40 meals per peak hour) establishments. Medium volume establishments may be required to install an interceptor depending upon the size of the establishment.

Do I have a grease trap or interceptor?

If the establishment is uncertain whether it has a grease trap or interceptor, the owner should contact the local sewer agency for the community served.

Is the grease trap I have adequate?

The Uniform Plumbing Code requires that no grease trap have a capacity less than 20 gallons per minute (gpm) or more than 55 gpm. The size of the trap depends upon the number of fixtures connected to it. The following table provides criteria for sizing grease traps:

Total number of fixtures connected	Required rate of flow, gpm	Grease retention capacity, lbs
1	20	40
2	25	50
3	35	70
4	50	100

How do I clean my grease trap or interceptor?

Refer to the "Grease Trap and Interceptor Maintenance" section.

Can you recommend a maintenance schedule?

Some establishments will find it necessary to clean their traps more often than once each week. If the establishment has to clean it too often, the owner should evaluate the effectiveness of food and grease handling practices. The owner also should consider installing a larger trap or interceptor. All grease interceptors should be cleaned at least twice each year.

If a grease trap is not maintained regularly it will not provide the necessary grease removal. The establishment should work out a specific cleaning schedule that is right for the establishment. All grease traps need to have the grease cleaned out periodically and no one likes to do the job. It is a dirty job. Running extremely hot water down the drain only moves the problem down stream. It does not go away. Catch the grease at the source! This is the most economical means to reduce all costs.

What if I don't install a grease trap?

If the establishment uses grease and oil in food preparation, it will eventually encounter a maintenance problem with a plugged building sewer line. The blockage can create a sewer backup situation and ultimately a potential health problem in the establishment. Someone will have to pay for removing the blockage. If the problem is in the building sewer line, then the establishment has direct responsibility for paying for the maintenance. If the blockage or restriction is in the public sewer main and it can be proven that the establishment is the cause of the blockage, then the establishment may have to pay for the public sewer to be maintained. Blocking a sanitary sewer line is also a violation of the federal Clean Water Act.

Who determines if I need a grease trap or interceptor?

When waste pretreatment is required by the local jurisdiction, an approved grease trap or interceptor must be installed according to the Uniform Plumbing Code or other standard of the local jurisdiction.

How can I get in compliance?

The establishment should contact its local jurisdiction.

What are the criteria for inspecting grease traps?

All food service establishments suspected of causing problems to the collection system or treatment facilities will be inspected. Some agencies use the following criteria to inspect grease traps:

Percent of Trap Filled	Trap Condition
25	Good
25 – 50	Fair
>50	Poor

If the trap is in "FAIR" condition, the establishment should be advised to keep an eye on the maintenance schedule. The cleaning frequency may need to be increased. If the trap is in "POOR" condition, the establishment may be issued a compliance order to have it cleaned immediately. The establishment may then be required to contact the local jurisdiction within 30 days to verify that the grease trap has been properly cleaned.

Best Management Practices (BMPs)

- **Prevent Blockages in the Sanitary Sewer System.**
- **Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System**
- **Prevent Fats, Oil, and Grease From Entering Creeks and Streams Through the Storm Drain System**

Prevent Blockages in the Sanitary Sewer System (Part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Train kitchen staff and other employees about how they can help ensure BMPs are implemented.	People are more willing to support an effort if they understand the basis for it.	All of the subsequent benefits of BMPs will have a better chance of being implemented.	Talk to the establishment manager about the training program that he/she has implemented.
Post "No Grease" signs above sinks and on the front of dishwashers.	Signs serve as a constant reminder for staff working in kitchens.	These reminders will help minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.	Check appropriate locations of "No Grease" signs.
Use water temperatures less than 140° F in all sinks, especially the pre-rinse sink before the mechanical dishwasher. The mechanical dishwasher requires a minimum temperature of 160° F, but the Uniform Plumbing Code (UPC) prohibits discharging the dishwasher to grease traps.	Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal or solidify in the sanitary sewer collection system as the water cools.	The food service establishment will reduce its costs for the energy – gas or electric – for heating the water.	Check boiler or hot water tank discharge temperature. Measure the temperature of the hot water being discharged from the closest sink.

Prevent Blockages in the Sanitary Sewer System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Use a three-sink dishwashing system, which includes sinks for washing, rinsing, and sanitizing in a 50-100 ppm bleach solution. Water Temperatures are less than 140° F. (See previous BMP)	The three-sink system uses water temperatures less than 140° F where a mechanical dishwasher requires a minimum temperature of 160° F. (See above) Note: The Uniform Plumbing Code (UPC) prohibits the discharge of dishwasher water to grease traps.	The food service establishment will reduce its costs for the energy - gas or electric - for heating the water for the mechanical dishwasher and for operating the dishwasher.	Measure temperature of the hot water at the three-sink system.
Recycle waste cooking oil.	There are many waste oil recyclers throughout Washington.	The food service establishment may be paid for the waste material and will reduce the amount of garbage it must pay to have hauled away.	Obtain name of recycler used. Review recycling records. Confirm records with recycler.
"Dry wipe" pots, pans, and dishware prior to dishwashing.	The grease and food that remains in pots, pans, and dishware will likely go to the landfill. By "dry wiping" and disposing in garbage receptacles, the material will not be sent to the grease traps and interceptors.	This will reduce the amount of material going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs.	Observe dishwashing practices.
Dispose of food waste by recycling and/or solid waste removal.	Some recyclers will take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed as solid waste in landfills by solid waste haulers.	Recycling of food wastes will reduce the cost of solid waste disposal. Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.	Inspect grease traps and interceptors for food waste accumulation. Confirm the recycler or solid waste removal company with the establishment manager.

Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System (part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Witness all grease trap or interceptor cleaning and maintenance activities to ensure the device is properly operating.	Grease trap/interceptor pumpers may take shortcuts. If the establishment manager inspects the cleaning operation and ensures it is consistent with the procedures in the section on *Grease Trap and Interceptor Maintenance* they are more assured of getting full value for their money.	The establishment will ensure it is getting value for the cost of cleaning the grease trap or interceptor.	Inspect maintenance log or service invoices to determine cleaning frequency.
Clean undersink grease traps weekly.	Undersink grease traps have less volume than grease interceptors. Weekly cleaning of undersink grease traps by the establishment's own maintenance staff will reduce the cost of cleaning the grease interceptor. If the establishment does not have a grease interceptor, the undersink grease trap is the only means of preventing grease from entering the sanitary sewer system. If the grease trap is not providing adequate protection, the local sewer agency may require installation of a grease interceptor.	This will extend the length of the cleaning cycle for grease interceptors that the establishment maintains.	Visually inspect the contents of the undersink grease trap. Inspect cleaning records. If grease traps are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased.

Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Clean grease interceptors routinely.	Grease interceptors must be cleaned routinely to ensure that grease accumulation does not cause the interceptor to operate poorly. The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged by the establishment.	Routine cleaning will prevent plugging of the sewer line between the food service establishment and the sanitary sewer system. If the line plugs, the sewer line may back up into the establishment, and the business will need to hire someone to unplug it.	No more than 25% of the depth should be a combination of grease (top) and sediment (bottom).
Keep a *maintenance log.*	The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the pretreatment program to ensure that grease trap/interceptor maintenance is performed on a regular basis.	The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce cost.	Inspect maintenance log. Provide the establishment with a sample maintenance log if it does not have one. Confirm the maintenance log with the grease hauler identified.

Prevent Fats, Oil, and Grease from Entering Creeks and Streams through the Storm Drain System (part 1 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Cover outdoor grease and oil storage containers. Some local jurisdictions will have BMPs in place for stormwater also.	Uncovered grease and oil storage containers can collect rainwater. Since grease and oil float, the rainwater can cause an overflow onto the ground. Such an overflow will eventually reach the stormwater system and nearby streams.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect containers for covers. Remove covers to ensure containers have not overflowed and do not have excess water.
Locate grease dumpsters and storage containers away from storm drain catch basins.	The farther away from the catch basin, the more time someone has to clean up spills or drainage prior to entering the storm drain system. Be aware of oil and grease dripped on the ground while carrying waste to the dumpster, as well as oil and grease that may "ooze" from the dumpster.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Observe storage area for signs of oil and grease. Inspect the closest catch basin for signs of accumulated grease and oil.
Use absorbent pads or other material in the storm drain catch basins if grease dumpsters and containers must be located nearby. Do not use free flowing absorbent materials such as "kitty litter" or sawdust.	Absorbent pads and other materials can serve as an effective barrier to grease and oil entering the storm drain system.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Check the nearest catch basin and drainage paths for signs of grease and oil. Require absorbent pads if the basin is within 20 feet of grease dumpsters or containers, or if there are signs of grease in the catch basin at any distance. Discourage the use of free flowing absorbent material such as "kitty litter."

Prevent Fats, Oil, and Grease from Entering Creeks and Streams through the Storm Drain System (part 2 of 2)

BMP	Reason For	Benefits to Food Service Establishment	Pretreatment Inspection Tips
Use absorbent pads or other material to clean up spilled material around outdoor equipment, containers or dumpsters. Free flowing absorbent materials such as "kitty litter" or sawdust may be used for minor "spot spills" as long as all material is swept up.	Absorbent pads or materials can help clean up grease and oil that is spilled on the ground and prevent it from flowing to the storm drain system.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	If grease and oil are observed on the ground in the storage area, recommend the use of absorbents to minimize movement of the grease and oil. Encourage the use of absorbent pads. Remind the personnel at the establishment that free flowing absorbent material, such as "kitty litter," should only be used for "spot spills." No residual free flowing material should remain that might flow into storm drains.
Routinely clean kitchen exhaust system filters.	If grease and oil escape through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams. In addition, it is a violation of water quality regulations and might also result in legal penalties or fines.	Inspect roof (if safely accessible) for signs of oil and grease. Require a maintenance schedule and records for cleaning exhaust filters. Cleaning is usually by washing, which will discharge the grease to the interceptor where it can be controlled.

Prohibitions Relating to Discharge of Fats, Oil, and Grease (part 1 of 1)

DO NOT...	Basis
Do not discharge fats, oil, and grease in concentrations that will cause an obstruction to the flow in a sewer, or pass through or interference at a wastewater treatment facility.	Grease can solidify and trap other solid particles to completely plug the wastewater collection system. Some jurisdictions have specific concentration limits.
Do not discharge grease, improperly shredded garbage, animal guts or tissues, paunch manure, bones, hide, hair, fleshings, or entrails.	These materials in combination or alone can cause blockages and other operations and maintenance problems in the wastewater collection and treatment system.
Do not discharge wastewater with temperatures in excess of 140° F to any grease traps. Mechanical dishwashers are not allowed to discharge to grease traps.	Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal and cause blockages further downstream in the sanitary sewer collection system as the water cools. Note: High temperature water, such as from a dishwasher, should be discharged to the remotely-located grease interceptor, if there is one. The remote location and the high volume of the interceptor allows the water time to cool so that there is not a problem with dissolving grease and moving it further downstream. The high volume also provides dilution of the detergents in the dishwasher waste.
Do not discharge waste from a food waste disposal unit to any grease traps. Discharging food waste disposal units to a grease interceptor may require the installation of a larger interceptor.	The food waste will greatly reduce the capacity of the grease trap for retaining grease and can cause worse problems with blockages.
Do not discharge caustics, acids, solvents, or other emulsifying agents.	Though emulsifying agents can dissolve solidified grease, the grease can re-congeal further downstream in the sanitary sewer collection system. Caustics, acids, and solvents can have other harmful effects on the wastewater treatment system and can be a hazard to employees working in the wastewater collection system.
Do not discharge fats, wax, grease or oils containing substances that will become viscous between 32° F (0° C) and 150° F (65° C).	The temperatures shown are temperatures that can occur in the wastewater collection and treatment system. If these substances congeal, solidify, or become too viscous, they can cause blockages and other operations and maintenance problems.
Do not utilize biological agents for grease remediation without permission from the sanitary agency receiving the waste.	The biological agents may disrupt the biological treatment process at the wastewater treatment plant.
Do not clean equipment outdoors in an area where water can flow to the gutter, storm drain, or street.	Grease and dirt will be washed off the equipment and enter the storm drain system and flow to nearby streams.

Grease Trap and Interceptor Maintenance

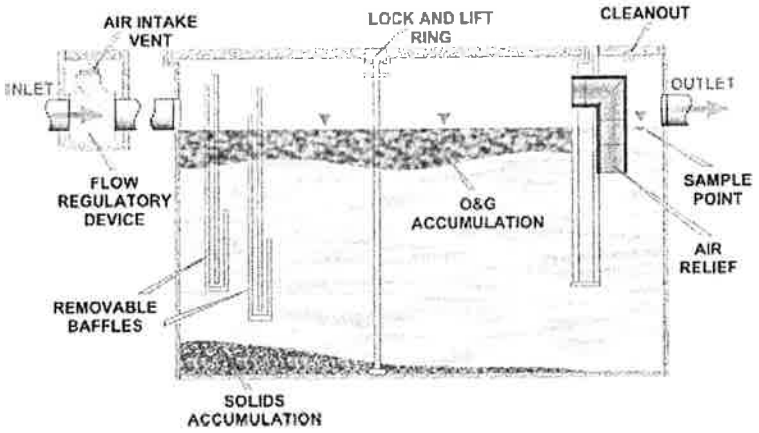
Grease trap maintenance is generally performed by maintenance staff, or other employees of the establishment. Grease interceptor (GI) maintenance, which is usually performed by permitted haulers or recyclers, consists of removing the entire volume (liquids and solids) from the GI and properly disposing of the material in accordance with all Federal, State, and/or local laws. When performed properly and at the appropriate frequency, grease interceptor and trap maintenance can greatly reduce the discharge of fats, oil, and grease (FOG) into the wastewater collection system.

The required maintenance frequency for grease interceptors and traps depends greatly on the amount of FOG a facility generates as well as any best management practices (BMPs) that the establishment implements to reduce the FOG discharged into its sanitary sewer system. In many cases, establishments that implement BMPs will realize financial benefit through a reduction in the frequency of required grease interceptor and trap maintenance. Refer to the "*Best Management Practices*" section for examples of BMPs that FOG generating establishments should implement.

WARNING! *Do not use hot water, acids, caustics, solvents, or emulsifying agents when cleaning grease traps and interceptors.*

Grease Trap Maintenance

A proper maintenance procedure for a grease trap is outlined below:



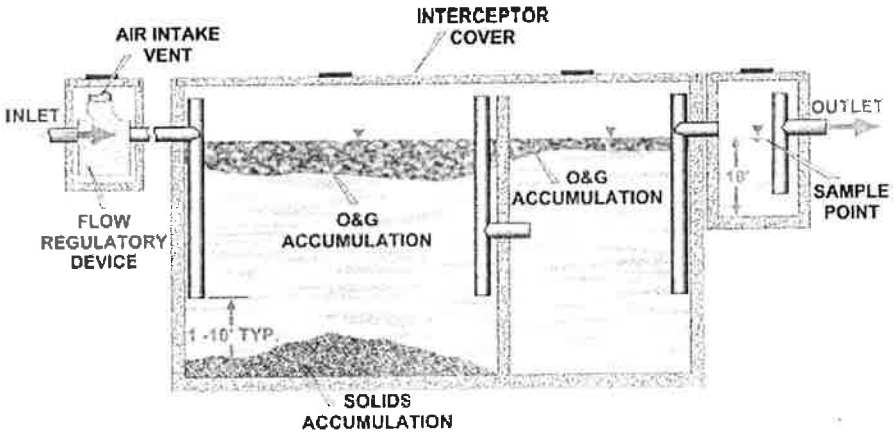
Step	Action
1.	Dip the accumulated grease out of the interceptor and deposit in a watertight container.
2.	Remove baffles if possible.
3.	Scrape the sides, the lid, and the baffles with a putty knife to remove as much of the grease as possible, and deposit the grease into a watertight container.
4	Remove solids from the bottom with a strainer or similar device.
5.	Replace the baffle and the lid.
6.	Record the volume of grease removed on the maintenance log.
7.	Contact a hauler or recycler for grease pick-up.

Grease Interceptor Maintenance

Grease interceptors, due to their size, need to be cleaned by grease haulers or recyclers.

A proper maintenance procedure for a grease interceptor is outlined below:

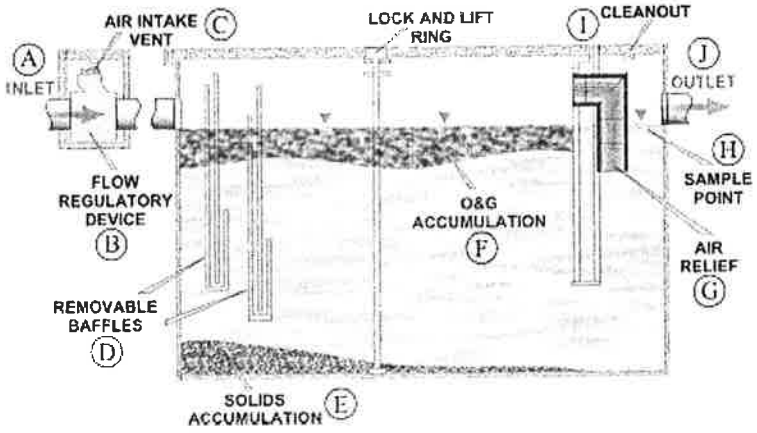
NOTE: Since the establishment is liable for the condition of their pretreatment devices, the establishment owners/representatives should witness all cleaning/maintenance activities to verify that the interceptor is being fully cleaned and properly maintained. (Note: UPC does not require a flow-regulating device. Check with the local jurisdiction to see if they will require a flow regulating device.)



Step	Action
1.	Contact a grease hauler or recycler for cleaning.
2.	Pump out the entire contents of the interceptor..
3.	Clean the sides, the lid, and the baffles to remove as much of the grease as possible.
4.	Replace the baffle and the lid.
5.	Record the volume of grease removed on the maintenance log.

How it Works

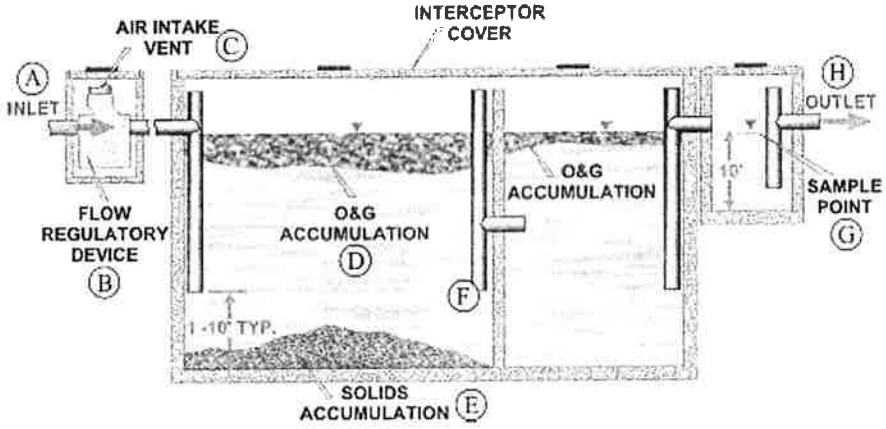
Grease Traps



A	Flow from four or fewer kitchen fixtures enters the grease trap.
B	An approved flow control or restricting device must be installed to restrict the flow to the grease trap to the rated capacity of the trap.
C	An air intake valve allows air into the open space of the grease trap to prevent siphonage and back-pressure.
D	The baffles help to retain grease toward the upstream end of the grease trap since grease floats and will generally not go under the baffle. This helps to prevent grease from leaving the grease trap and moving further downstream where it can cause blockage problems.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease trap and will need to be removed during routine grease trap cleaning.
F	Oil and grease floats on the water surface and accumulates behind the baffles. The oil and grease will be removed during routine grease trap cleaning.
G	Air relief is provided to maintain proper air circulation within the grease trap.
H	Some grease traps have a sample point at the outlet end of the trap to sample the quality of the grease trap effluent.
I	A cleanout is provided at the outlet or just downstream of the outlet to provide access into the pipe to remove any blockages.
J	The water exits the grease trap through the outlet pipe and continues on to the grease interceptor or to the sanitary sewer system.

How it Works

Grease Interceptors



A	Flow from undersink grease traps or directly from plumbing fixtures enters the grease interceptor. The UPC requires that all flow entering the interceptor must enter through the inlet pipe
B	Not required by UPC (Check with the local jurisdiction to see if a flow regulating device will be required).
C	An air intake valve allows air into the open space of the grease interceptor to prevent siphonage and back-pressure.
D	Oil and grease floats on the water surface and accumulates behind the grease retaining fittings and the wall separating the compartments. The oil and grease will be removed during routine grease interceptor cleaning.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease interceptor and will need to be removed during routine grease interceptor cleaning.
F	Grease retaining fittings extend down into the water to within 12 inches of the bottom of the interceptor. Because grease floats, it generally does not enter the fitting and is not carried into the next compartment. The fittings also extend above the water surface to provide air relief.
G	Some interceptors have a sample box so that inspectors or employees of the establishment can periodically take effluent samples. Having a sample box is recommended by the UPC but not required.
H	Flow exits the interceptor through the outlet pipe and continues on to the sanitary sewer system.

Compliance Checklists

Installation Checklist (part 1 of 3)

Number	Item Description	Compliance Status[1]
1.	Each grease trap serves not more than four single compartment sinks of the same depth. Grease trap is sized based upon the number of fixtures discharging to it. See FAQs.	
2.	Grease traps have a water seal of not less than two inches in depth or the diameter of its outlet, whichever is greater. (**Note:** Not specifically cited by UPC)	
3.	No food waste disposal unit or dishwasher is connected to or discharges into any grease trap.	
4.	Waste from toilets and urinals do not discharge to the grease interceptor.	
5.	Waste in excess of 140 degrees F is not discharged to any grease trap.	
6.	The vertical distance between the fixture outlets and grease trap weirs is as short as practical.	
7.	Grease interceptor is as close as practical to the fixtures served.	
8.	Each fixture connected to a grease trap is provided with an approved type flow control or restricting device installed in a readily accessible and visible location. Devices shall be designed so that the flow through the device or devices at no time exceeds the rated capacity of the grease trap or interceptor.	
9.	Each fixture discharging into a grease trap or interceptor is individually trapped and vented in an approved manner. The plumbing inspector should address this.	
10.	Each grease trap and interceptor is properly vented to allow air circulation throughout the entire drain system. The plumbing inspector should address this.	
11.	No water-jacketed grease trap or interceptor is installed.	
12.	Grease interceptor is easily accessible for inspection and cleaning and access does not require the use of ladders or the removal of bulky equipment.	
13.	There is a minimum of one access point into each compartment of the interceptor and no access points are greater than 10 feet apart. Each access opening is leak-resistant and cannot slide, rotate, or flip.	
14.	Location of grease interceptor is shown on approved building plans. Drawings of interceptor are complete and show all dimensions, capacities, reinforcing and structural design calculations.	

Installation Checklist (part 2 of 3)

Number	Item Description	Compliance Status[1]
15.	Grease interceptor is not installed in any part of a building where food is handled. Location shall meet the approval of the local jurisdiction.	
16.	Grease interceptor serves a single business establishment.	
17.	Grease interceptor has a minimum of two compartments and fittings designed for grease retention. The compartments shall be separated by partitions or baffles that extend at least 6 inches above the water level. The inlet compartment shall be 2/3 of the total interceptor capacity and shall have a minimum liquid volume of 333 gallons. The length of the inlet compartment shall be longer than the inside width of the interceptor.	
18.	The inlet and outlet fittings shall be a baffle tee (or similar flow device) that extends at least 4 inches above the water level to within 12 inches of the bottom of the interceptor. Flow between the separate compartments is through a baffle tee or bend that extends down to within 12 inches of the bottom of the interceptor.	
19.	The liquid depth shall be greater than or equal to 2'-6" and less than 6'-0".	
20.	There shall be a minimum of 9 inches of open vent space above the water level to the top of the interceptor. The airspace has a minimum capacity equal to 12-1/2% of the grease interceptor liquid volume.	
21.	The grease interceptor has at least one square foot of surface area for every 45 gallons of liquid capacity.	
22.	All waste enters the interceptor through the inlet pipe.	
23.	Grease interceptor cover is gas tight and has a minimum opening of 20 inches in diameter.	
24.	Grease interceptors located in areas of pedestrian or vehicle travel are adequately designed to support the imposed loads. Review of structural calculations may be required to verify adequacy.	
25.	Redwood baffles are not installed in grease interceptor.	
26.	A sample box is provided on the outlet side of the grease interceptor. This is recommended and may be required by the UPC so that the local jurisdiction can periodically sample the effluent quality.	
27.	Check to see if the grease interceptor is permanently and legibly marked with the manufacturer's name of trademark, model number, UPC certification mark and registration (if product is listed by the International Association of Plumbing and Mechanical Officials), and any other markings required by law.	

Installation Checklist (part 3 of 3)

Instructions for form:

1. Completely fill out general information.
2. For items that require some measurement of field data, the inspector should obtain the necessary data or information and record it under the column titled, "Field Data."
3. For all items marked in violation, note the fact that the establishment contact was notified of the violation and the contact's response.

[1]An entry should be made for each item using the following codes:

- "C" – Compliance with the item
- "V" – Violation of the item (provide explanation in the notes)
- "NA" – Not applicable (provide explanation in the notes)
- "NC" – Not checked (provide explanation in the notes)

Establishment: _____

Address: _____

Installed by: _____

Signatures: _____

Date: _____ _____

Notes: _____

_____

_____

_____

Inspection Checklist (part 1 of 2)

Number	Item Description	Field Data	Compliance Status[1]
1.	The establishment has implemented a training program to ensure that the BMPs are followed.		
2.	"No Grease" signs are posted in appropriate locations.		
3.	The establishment recycles waste cooking oil and can provide records of this.		
4.	Water temperatures at all sinks are less than 140°F. (Make special note of the pre-rinse sink before the mechanical dishwasher or the sinks in the three-sink system.) Measure and record temperature.		
5.	The establishment "dry wipes" pots, pans, and dishware prior to rinsing and washing.		
6.	Food waste is disposed of by recycling or solid waste removal and is not discharged to the grease traps or interceptors.		
7.	Grease trap(s) is cleaned regularly. Note and record the frequency of cleaning.		
8.	Grease trap cleaning frequency is documented on a *maintenance log* (obtain a copy of the document).		
9.	Grease interceptor does not contain greater than 25% the depth in grease or solids accumulation. Estimate and record amount of grease in interceptor.		
10.	Grease interceptor is cleaned and maintained regularly. Note and record frequency of cleaning.		
11.	Grease interceptor cleaning and maintenance frequency is documented on a *maintenance log* (obtain a copy of the document).		
12.	Outdoor grease and oil storage containers are covered and do not show signs of overflowing.		
13.	Grease and oil storage containers are protected from discharge to storm drains.		
14.	Absorbent pads (preferred) or other materials (e.g., "kitty litter", etc.) are used to clean up any spills or leakages that could reach the storm drain. No residual free-flowing absorbent materials (e.g., "kitty litter", etc.) should remain that might flow into storm drains.		
15.	Storm drain catch basins show no signs of grease or oil.		
16.	The roof shows no signs of grease and oil from the exhaust system.		
17.	Exhaust system filters are cleaned regularly, which is documented by cleaning records. Note and record frequency of cleaning.		

Inspection Checklist (part 2 of 2)

Instructions for completing the form:

1. Completely fill out general information.
2. For items that require some measurement of field data, the inspector should obtain the necessary data or information and record it under the column titled, "Field Data."
3. For all items marked in violation, note the fact that the establishment contact was notified of the violation and the contact's response.

[1]An entry should be made for each item using the following codes:

- "C" – Compliance with the item
- "V" – Violation of the item (provide explanation in the notes)
- "NA" – Not applicable (provide explanation in the notes)
- "NC" – Not checked (provide explanation in the notes)

Establishment: _____

Address: _____

Contact name: _____

Date: _____ _____

Inspector: _____

Contact info: _____

Time Inspection Started: _____

Time Inspection Completed: _____

Signatures: _____

Notes: _____

_____

_____

Appendix A: Grease Pretreatment Devices Contractor List.

The businesses listed below provide maintenance or installation of grease pretreatment devices. This list is not intended to be inclusive of all contractors available and is being provided as an example of contractors who, as of this printing, are available to provide these services. However any licensed and bonded contractor can also provide these services (check your local yellow page under Engineers-Mechanical, Food Facilities-Consultants, Plumbing, Restaurant Equipment and Tanks-Cleaning). This list represents businesses that have made themselves known to the City of Seattle Public Utilities. The City of Seattle Public Utilities and the Interagency Regulatory Analysis Committee (IRAC) make no recommendations regarding specific businesses that perform grease maintenance and removal.

The following companies provide grease pretreatment and removal devices.

NAME AND ADDRESS	INTERCEPTOR INSTALLATION	MAINTENANCE
Area Recyclers (Baker Commodities, Seattle Rendering) P.O. Box 58368 Seattle, WA 98138 206-243-4781 Contact: Mike Bulleri	no	yes
Auburn Mechanical P.O. Box 249 Aubu rn, WA 98071 253-838-9780 Contact: Kim Johnson	yes (grease traps only)	no
Best Plumbing 4129 Stone Way N. Seattle, WA 98103 206-633-1700 Contact: Patti Taylor	yes	no
Darling International 2041 Marc Av. P.O. Box 1716 Tacoma, WA 98401 1-253-377-1775 Contact: Mike Olson	no	yes
Drainage System Consultants P.O. Box 46876 Seattle, WA 98146 206-242-7280 Contact: Dennis Presteen	no	yes
D.J. Hopkins Co. Inc. 5617 236th Av. N.E. Redmond, WA 98053-2506 425-868-8600 Contact: N/A	yes	no
Evergreen Sanitation P.O. Box 259 Lake Stevens, WA 98258 1-800-433-1678 Contact: N/A	no	yes

NAME AND ADDRESS	INTERCEPTOR INSTALLATION	MAINTENANCE
Northwest Cascade/Flow Hawks P.O. Box 73399 Puyallup, WA 98373 1-800-562-4256 or 425-471-1555 Contact: John Parker	yes	yes (sell and install Nibbler system for on-site sewer systems).
Mechanical Agents 8230 5th Av S Seattle, WA 98108 206-464-1925 Contact: Gary Babb	yes	no
McKinstry Mechanical P.O. Box 24567 Seattle, WA 98124 206-818-1378 Contact: Tom Bagget	yes	yes
Mr. Rooter Plumbing 1120 S.W. 16th St. Ste. 1A Renton, WA 98055 206-763-9010 Contact: Vinnie Sposari	yes (traps only)	yes (plumbing only)
Northwest Cascade (multiple locations) 800-444-2371	yes	yes
O'Neill Plumbing 6056 California Av. S.W. Seattle, WA 98136 206-932-5283 Contact: N/A	yes	yes
Roto-Rooter Plumbing 20508 56th Av. W. Suite C Lynnwood, WA 98036 206-633-5506 Contact: Robin French	yes	yes
Rescue Rooter P.O. Box 719 Kent, WA 98035 1-800-869-6980	yes	yes (jetting and plumbing only - no pumping)
University Mechanical 11611 49th Pl W. Mukilteo, WA 98275 206-364-9900 Contact: N/A	yes	yes

Note: It is prudent to obtain at least three bids. This is a competitive field and it is often possible to realize substantial savings by soliciting competitive bids. Once you have chosen a contractor be sure and obtain the necessary permits to do the work you desire. If you or your contractor have any problems, be sure and contact your city's grease management program for more information.

Appendix B: Grease Management Service Provider Contractor List.

The businesses listed below provide grease pick up, delivery to and in some cases rendering of restaurant grease for disposal. This list is not intended to be inclusive of all contractors available and is being provided as an example of contractors who, as of this printing, are available to provide these services. However any licensed and bonded contractor can also provide these services (check your local yellow pages). This list represents businesses that have made themselves known to the City of Seattle Public Utilities. The City of Seattle Public Utilities and the Interagency Regulatory Analysis Committee (IRAC) make no recommendations regarding specific businesses that perform grease management services.

The following companies offer different types of food and grease recycling services.
NOTE: They may require relatively large volumes to justify pickup.

NAME AND ADDRESS

Area Recyclers Inc.
(Baker Commodities, Seattle Rendering)
P.O. Box 58368
Seattle, WA 98138
206-243-4781 Contact: Mike Bulleri or Fred Roberts

Darling Restaurant Services
2041 Marc Av.
P.O. Box 1716
Tacoma, WA 98401
253-572-3922 Contact: Mike Olson

Pacific Rendering Co. Inc.
4023 West Marginal Way S.
Seattle, WA 98106
206-938-2061 Contact: Jim Johnstone

Rainier Ranch, Inc.
P.O. Box 301
Seahurst, WA 98062
206-243-2044 Contact: Roxann Wydick

Note: It is prudent to obtain at least three bids. This is a competitive field and it is often possible to realize substantial savings by soliciting competitive bids. Once you have chosen a contractor be sure and obtain the necessary permits to do the work you desire. If you or your contractor have any problems be sure and contact your cities grease management program for more information.

Appendix C: References.

- Brown and Caldwell – Fats, Oils, and Grease BMP Manual (http://www.oracwa.org)
- King County Public Rules and Regulations PUT 8-13 (PR)
- Washington Department of Labor and Industries, Washington Industrial Safety and Health, Washington Administrative Code (WAC 296-62 & 296-64)
- King County Code (KCC 28.84.060.)
- Revised Code of Washington (RCW Title 35.58.)
- Clean Water Act (33 U.S.C. 1251 et seq.).
- General Pretreatment Regulations (40 CFR 403).
- Uniform Plumbing Code

Dupont Circle Neighborhood Flooding
Interim Prevention Measures

Background

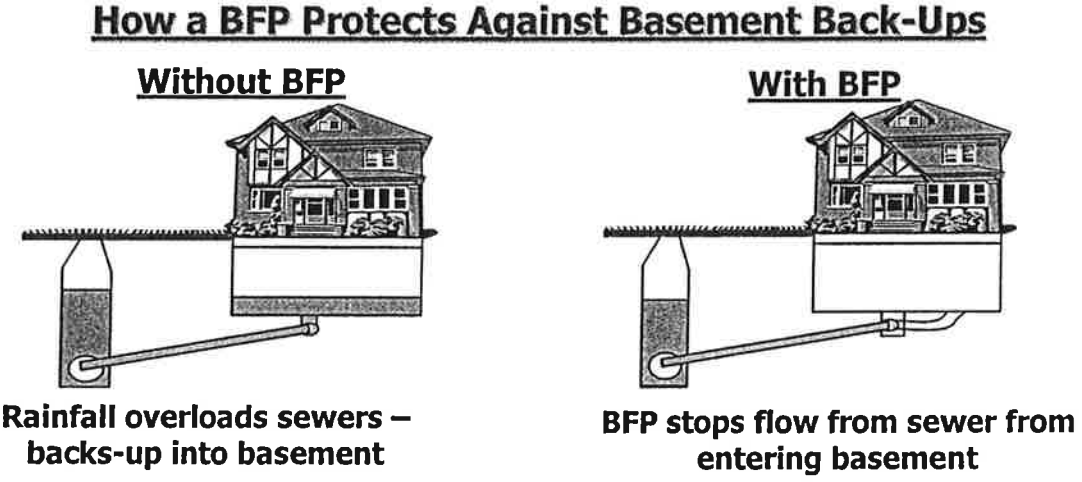
Neighborhoods in the vicinity of Dupont Circle have experienced sewer backups into basements and other low areas since August 2001. The flooding occurs when the sewer becomes full, and wastewater reverses flow through the sewer lateral and into the dwelling. The D.C. Water and Sewer Authority (WASA) is performing an assessment of the area to determine the cause of the backups and to identify a remedy. While this is taking place, residents have requested information on interim measures that can be taken to reduce the problem.

Interim Measures

Modification to the internal plumbing within a home or business can provide a measure of protection against basement backups. A common device called a backflow preventer (BFP) can be installed within the plumbing system to effectively shut off the home or business from the street sewer system during sewage backups

How a BFP Protects Against Basement Backups

A BFP is a valve on the sewer line which is closed to prevent backups. Valves can be operated manually or automatically and some types include battery operated alarms to advise the resident when it is opened or closed.



A description of the common types of BFP and their advantages and disadvantages are discussed below:

1. **Manually Operated Valve**
This is a valve installed in the building sewer pipe that must be manually closed to prevent a backup.

Advantages:
- Simplicity

Disadvantages:
- A person must be at home and awake at the time of the rain event to close the valve, otherwise the system will not function
- The homeowner must remember to open the valve once the storm event has passed, so that wastewater may leave the residence through the sewer lateral.

2. **Flapper-type Check Valve**:
This is a valve installed in the sewer pipe. When the sewer begins to back up, the sewage/water moving backward in the pipe automatically closes the valve

Advantages:
- Valve operation is automatic

Disadvantages:
- Valve has a tendency to clog, and may not provide protection. Regular cleaning may also be required.
- Plumbing fixtures cannot be used while the valve is closed

3. **Automatic Gate-type Check Valve**
This performs like a flapper type check valve except it is uses a gate to shut off the pipe. Some can be equipped with a battery-operated alarm and lights to indicate when it is open or closed. Some of these types of valves are also less prone to clogging.

Advantages:
- Valve operation is automatic
- Can include alarms and lights to indicate operation

Disadvantages:
- Higher cost
- Plumbing fixtures cannot be used while the valve is closed

Important Considerations
Several important considerations are discussed below:

- Dupont circle is located in the combined sewer area which means that storm water from downspouts, area drains, catch basins as well as domestic sewage enters the sewer system. In many houses, roof downspouts, footing drains and sump pumps are connected to the sewer lateral. These devices must be connected downstream of a BFP. If they are not, the closure of the BFP will prevent these items from functioning properly, possibly causing flooding or other damage to the house.
- When a BFP is closed, the plumbing system cannot be used. While this may be acceptable in a single family house, it may be impractical in a large apartment building. If a BFP is closed in a large apartment building and some residents use plumbing fixtures, residents located at lower levels can be flooded.

Other Measures
There are two other options to a BFP:

- Plug the fixtures with a plumber's plug.
  This is a plug that has a wing nut that allows the plug to be tightened against the opening in the fixture. This may be practical if there are few plumbing fixtures (like a laundry sink) in the basement. The approach may not be practical for toilets or washing machines.
- Pump-Around System
  The homeowner disconnects from the existing sewer lateral and installs a sewer system that collects and pumps the wastewater into the public sewer. The use of the pump prevents the wastewater from backing up through the lateral and into the residence. It is recommended to use a two (dual), grinder pump system. The second pump gives the system redundancy in the event of a failure of the first pump. This system would require extensive construction and is fairly complex and expensive. The system would also need to be approved by the D.C. building department. The system would not work during a power outage.

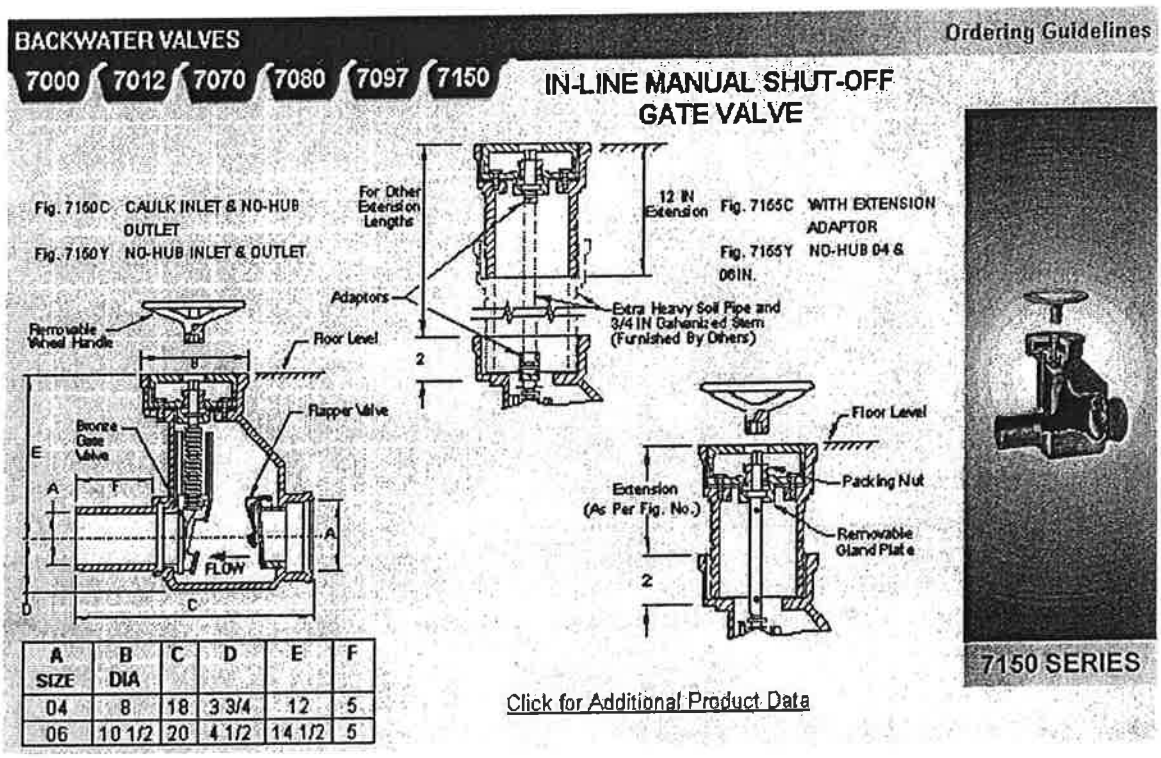
Cost and Practicality
The cost and practicality of many of these measures depend significantly on the plumbing configuration in buildings, the configuration of the basement, the location of other utilities in the building and other factors. Soliciting information from several licensed plumbers, after they have made a site visit, is probably the best way to obtain information on cost and practicality.

More Information
The following table provides additional sources to obtain information on BFP valves. The manufacturer's listed are not endorsed by WASA and are provided to illustrate the nature of the equipment available. Other manufacturer's make similar equipment.

MORE INFORMATION ON SEWER BACKWATER VALVES

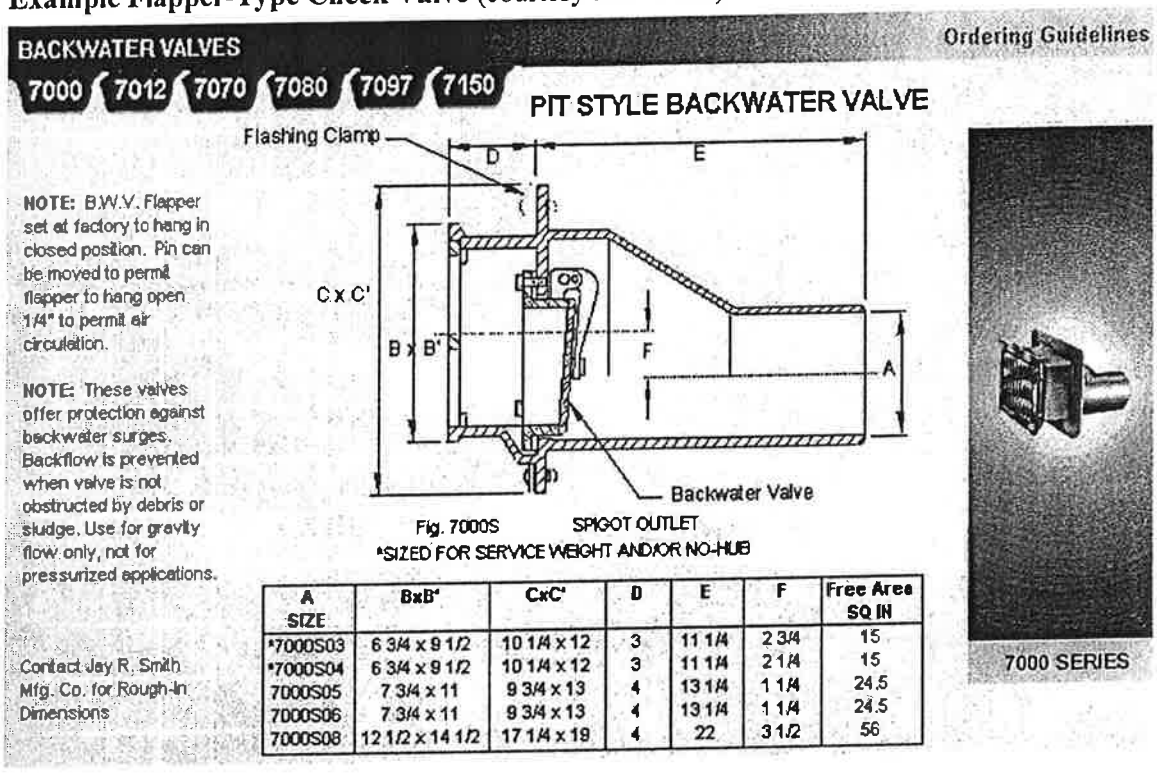
Type	*Manufacturer*	*Product*	*Website*
Manually Operated Valves	J.R. Smith	7150 Series Manual Shut off Valve	www.jrsmith.com
	RedValve	Series G Knife Gates- Manual Valve	www.redvalve.com
	Valterra	PVC Gate Valve	www.valterra.com
Flapper-type Check Valve	J.R. Smith	7022 Series Manual Shut off Valve	www.jrsmith.com
	Canplas	In-line PVC Flap Gate Backwater Vale	www.canplas.com
	Flo	In-line PVC Flap Gate Backwater Vale	www.flocontrol.com
	Mainline Valve	Backwater Valve	www.backwatervalve.com
Automatic Knife Gates	J.R. Smith	Floodgate	www.jrsmith.com

Example Manually Operated Valve (courtesy J.R. Smith)



A SIZE	B DIA	C	D	E	F
04	8	18	3 3/4	12	5
06	10 1/2	20	4 1/2	14 1/2	5

Example Flapper-Type Check Valve (courtesy J.R. Smith)



A SIZE	BxB'	CxC'	D	E	F	Free Area SQ IN
*7000S03	6 3/4 x 9 1/2	10 1/4 x 12	3	11 1/4	2 3/4	15
*7000S04	6 3/4 x 9 1/2	10 1/4 x 12	3	11 1/4	2 1/4	15
7000S05	7 3/4 x 11	9 3/4 x 13	4	13 1/4	1 1/4	24.5
7000S06	7 3/4 x 11	9 3/4 x 13	4	13 1/4	1 1/4	24.5
7000S08	12 1/2 x 14 1/2	17 1/4 x 19	4	22	3 1/2	56

Example Automatic Knife Gate (courtesy J.R. Smith)